United States Earthquakes, 1986

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United States Earthquakes, 1986

By Carl. W. Stover *and* Lindie R. Brewer

U.S. GEOLOGICAL SURVEY BULLETIN 2089

A summary of data for earthquakes in the 50 States and Puerto Rico during 1986. Descriptions of individual earthquakes include hypocenters, magnitudes, intensities, and damages. The report also contains results from regional networks and data recorded by strong-motion seismographs

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CONTENTS

FIGURES

TABLES

United States Earthquakes, 1986

By Carl W. Stover *and* Lindie Brewer

INTRODUCTION

This publication describes all earthquakes that were reported felt in the United States and nearby territories in 1986. Its purpose is to provide a continuous history of U.S. earthquakes to be used in estimating areal seismic risk, for designing earthquake-resistant structures, and for answering inquiries from scientists, engineers, and the public.

The U.S. Geological Survey's National Earthquake Information Center (USGS/NEIC) collects intensity information primarily by mailing questionnaires, "Earthquake Report" forms, to postmasters and other public institutions (police departments and (or) fire departments) in the earthquake area. Completed questionnaires are returned to the USGS, where they are evaluated and intensities are assigned. For damaging earthquakes, the questionnaires are supplemented by USGS field investigations. The USGS/ NEIC publishes preliminary maximum intensity data for U. S. earthquakes in the *Preliminary Determination of Epicenters, Monthly Listing (PDE)* (for example, Irby and others, 1982). The latest and most complete information is published with maps, diagrams, and photographs in *United States Earthquakes* (now published as a USGS Bulletin) issued annually since 1928. Copies of issues prior to 1982 can be obtained from Open-File Services, Earth Science Information Center, U.S. Geological Survey, Box 25286, Mail Stop 517 Federal Center, Denver, CO 80225.

This current bulletin is composed of four major sections: (1) "Earthquake Descriptions," which includes a summary of macroseismic data reported for each earthquake and a chronological list of earthquakes by State (table 1); (2) "Network Operations," which summarizes the results from local seismic networks; (3) "Miscellaneous Activities," which contains information on the principal earthquakes of the world (table 6); and (4) "Strong-Motion Seismograph Data" (table 7). The intensities and macroseismic data in "Earthquake Descriptions" are compiled from questionnaires returned to USGS/NEIC (see previous paragraph), newspaper articles, and reports prepared by other Federal government organizations, State institutions, local organizations, and individuals. Each description includes date, hypocenter, source of the hypocenter computation, magnitude, maximum intensity (Modified Mercalli), and (or) macroseismic effects reported from localities where the earthquake was felt.

Discussion of Tables

The earthquake parameters in tables 1 and 6 include date, origin time, hypocenter (epicenter and focal depth), and magnitude. Table 1 also lists the maximum observed Modified Mercalli (MM) intensity. The origin time and date are listed in Coordinated Universal Time (UTC). The epicenters are taken principally from those published in the USGS *Preliminary Determination of Epicenters, Monthly Listings*. These data have been updated and new data added from subsequent publications of universities or State agencies who operate seismic networks. The accuracy of the epicenters is that claimed by the institution supplying the hypocenter data and is not necessarily the accuracy indicated by the number of decimals listed. The epicenters located by the USGS/NEIC vary in degree of accuracy, but for most of the area of the United States the epicenters should be accurate to within two-tenths of a degree. See *Preliminary Determination of Epicenters, Monthly Listing,* for an explanation of the accuracy of USGS hypocenters. Depths are listed to the nearest kilometer.

Magnitudes listed in the tables 1 and 6 are either furnished by cooperating institutions or determined by the USGS. The computational sources are indicated by letter codes identified in headnotes to the tables.

Epicenter and Isoseismal Maps

Figures 1–3 are computer plots of all earthquake epicenters in the conterminous United States, Alaska, and Hawaii listed in table 1. Figures 4–5 show only those earthquakes whose computed magnitudes are 5.0 or larger.

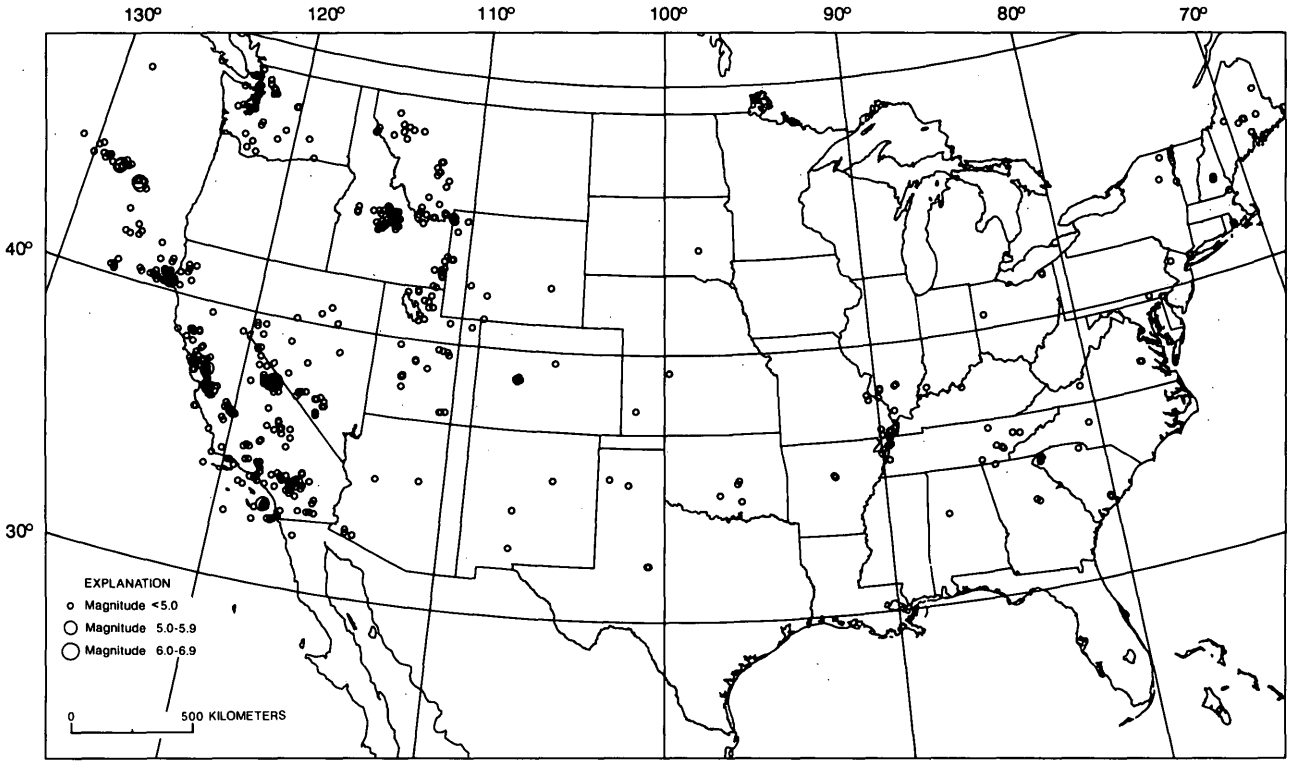

Figure 1. Earthquake epicenters in the conterminous United States for 1986 (from table 1).

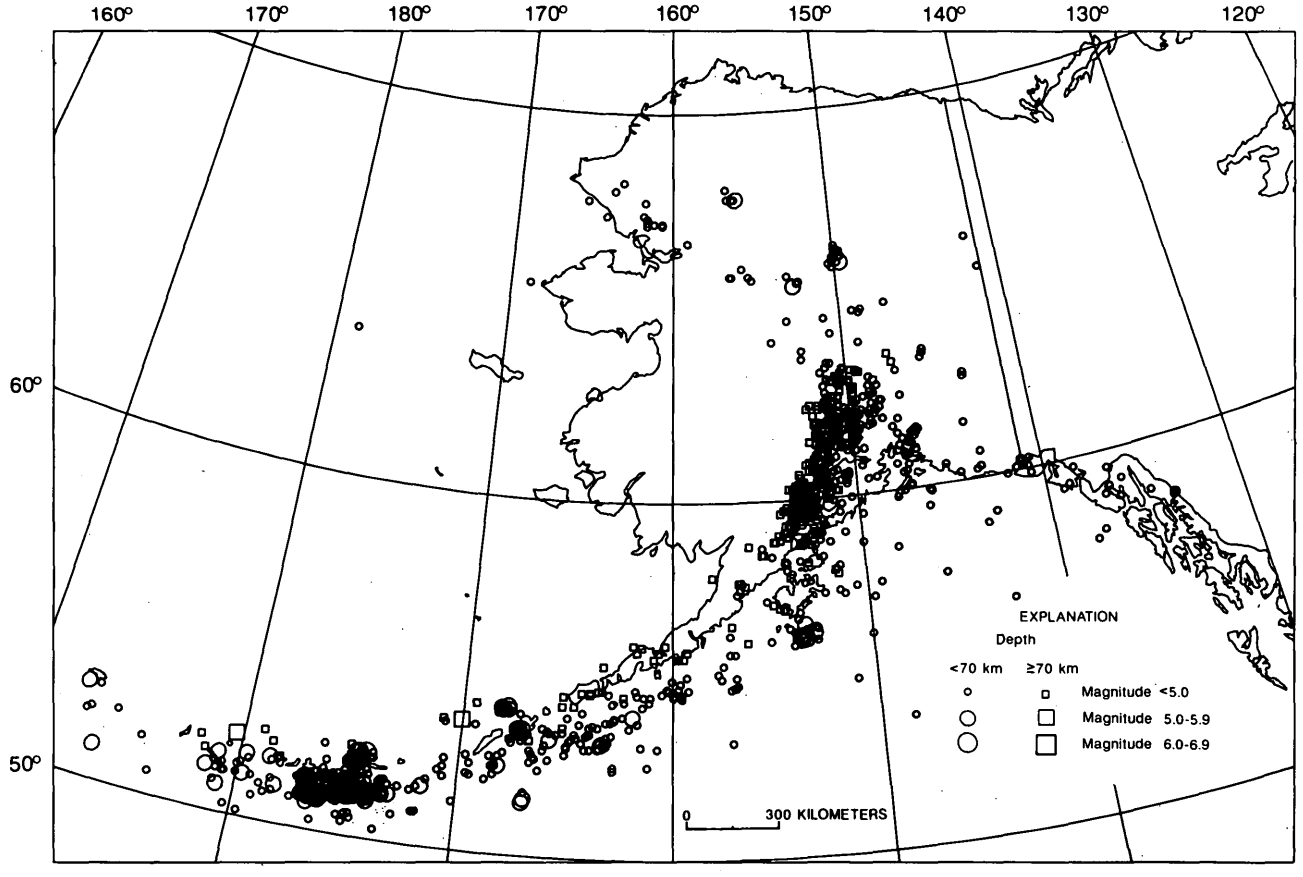

Figure 2. Earthquake epicenters in Alaska for 1986 (from table 1).

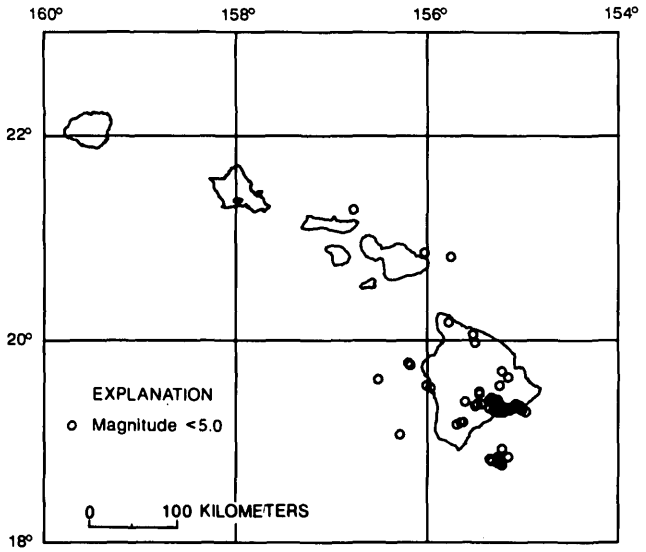

Figure 3. Earthquake epicenters in Hawaii for 1986 (from table 1).

Figures 6–8 are maps showing the maximum intensity of earthquakes in the conterminous United States, Alaska, and Hawaii.

The USGS/NEIC coordinates the collection of all types of earthquake information; the special objective is to correlate instrumentally determined earthquake locations with noninstrumental locations indicated by intensity data. This correlation is achieved through regional investigations of earthquakes by local organizations and the USGS. Primary data are gathered by a mail canvass of the epicentral area using questionnaire cards. A field survey is usually made for damaging earthquakes. When returned and analyzed, this information is used to prepare isoseismal maps that show the areal pattern of intensity associated with individual earthquakes.

The selection of earthquakes for isoseismal maps (shown in the "Earthquake Descriptions") is governed largely by the size of the area affected. As a result, sharp, localized shocks of intensity VI, which are common in California, may not be represented by maps; more widely felt earthquakes of intensity V and VI, which are characteristic of the Eastern and Central States, commonly are illustrated because of the larger felt areas. Isoseismal contours are a generalization of intensity data and are extrapolated in regions that have reported few observations. The isoseismals do not account for each intensity observation because they are drawn to show the general patterns at a level of intensity or range of intensities.

Magnitude and Intensity

Magnitude, a measure of the size of an earthquake, is related to the energy release at the focus of an earthquake. Although the magnitude scale has neither maximum nor minimum values, the highest magnitude ever calculated was greater than 9.0 and the lowest magnitude ever calculated was about –3.0. On this logarithmic scale, a magnitude-6.0 shallow-focus earthquake represents elastic-wave energy about 30 times greater than that generated by a magnitude 5.0 earthquake, 900 times greater than that of a magnitude 4.0 shock, and so forth. Many factors enter into the determination of earthquake magnitude, including earthquake focal depth, frequency content of the sampled energy, and the earthquake radiation pattern. Magnitude values calculated by the USGS are based on the following five formulas:

Surface-wave magnitude

$$M_S = \log (A/T) + 1.66 \log D + 3.3, \quad (1)$$

as adopted by the International Association of Seismology and Physics of the Earth's Interior (IASPEI; Bath, 1966, p. 153), where A is the maximum vertical surface-wave ground amplitude, in micrometers; T is the period, in seconds, and $18 \leq T \leq 22$; and D is the distance in geocentric degrees (station to epicenter), and $20° \leq D \leq 160°$. No depth correction is made for depth less than 50 km, and no M_S magnitudes are computed for depths greater than 50 km.

Body-wave magnitude

$$m_b = \log (A/T) + Q(D,h), \quad (2)$$

as defined by Gutenberg and Richter (1956), except that T, the period in seconds, is restricted to $0.1 \geq T \geq 3.0$, and A, the ground amplitude in micrometers, is not necessarily the maximum of the P-wave group. Q is a function of distance D and depth h, where $D > 5°$.

Local magnitude

$$M_L = \log A - \log A_o, \quad (3)$$

as defined by Richter (1958, p. 340), where A is the maximum trace amplitude in millimeters, written by a Wood-Anderson torsion seismometer, and $\log A_o$ is a standard value that is a function of distance, where distance ≤600 km. Values of M_L are also calculated from other seismometers by conversion of recorded ground motion to the expected response of the torsion seismometer. M_L magnitudes are not listed for events with depths greater than 70 km.

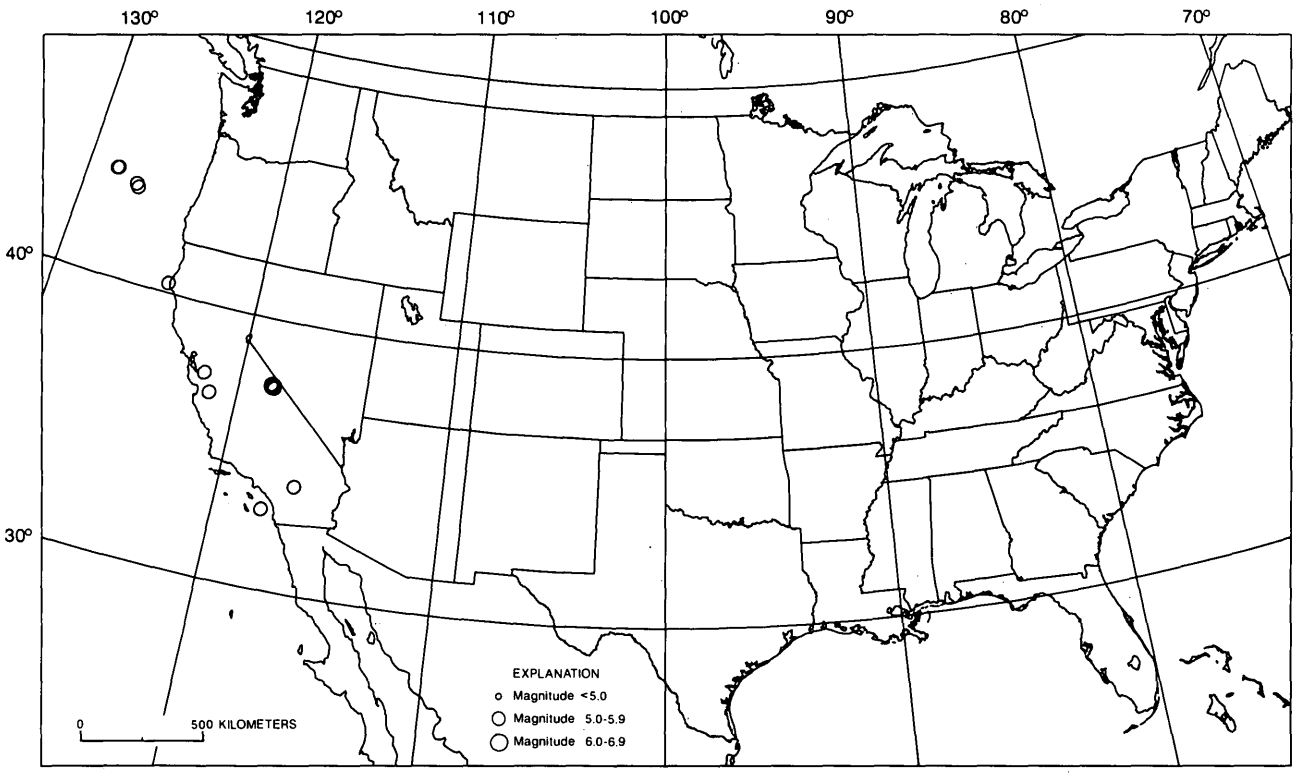

Figure 4. Epicenters in the conterminous United States for earthquakes with magnitudes greater than or equal to 5.0 in 1986.

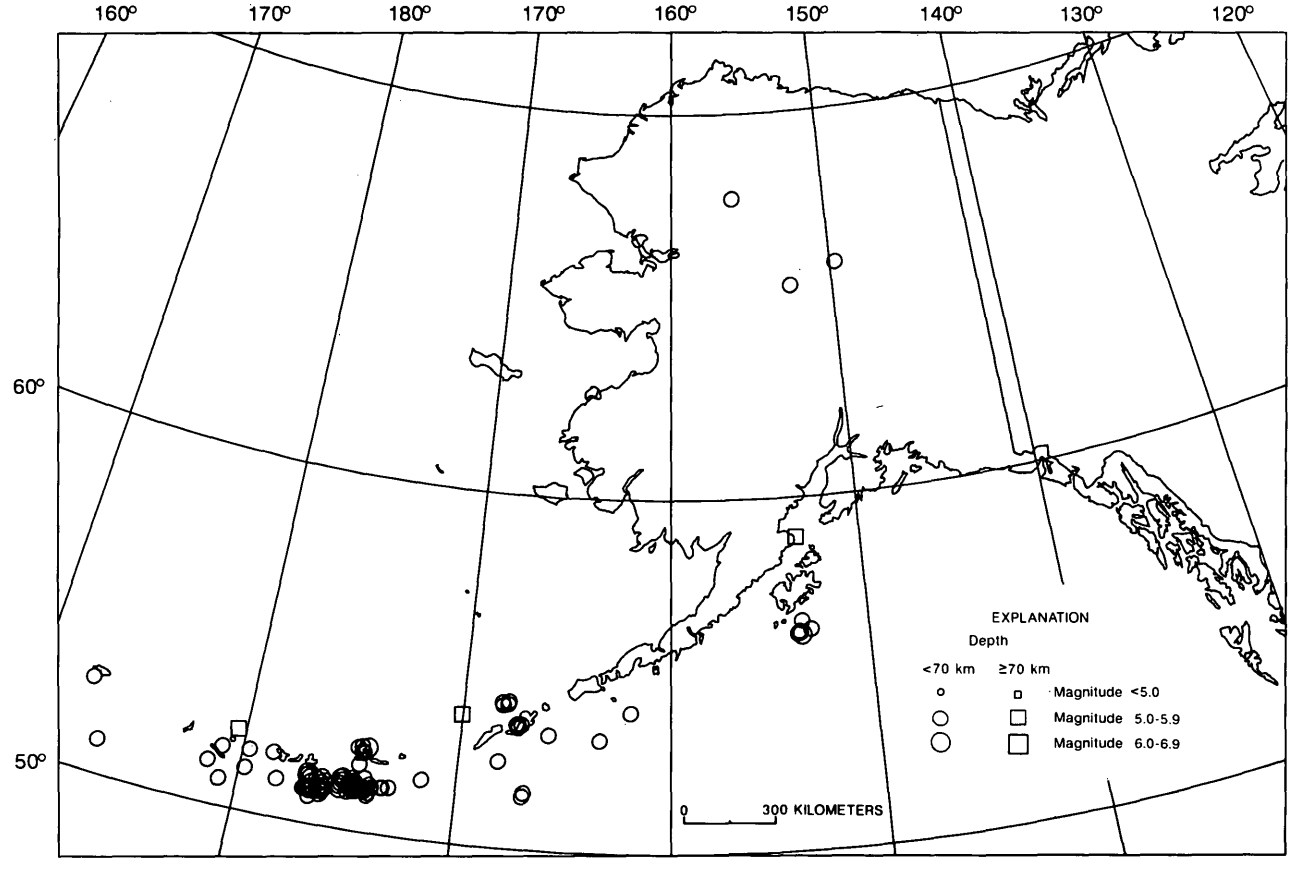

Figure 5. Epicenters in Alaska for earthquakes with magnitudes greater than or equal to 5.0 in 1986.

Local magnitude

$$M_n=3.75+0.90\ (\log D)+\log\ (A/T)$$
$$0.5°\leq D\leq 4°,$$
$$M_n=3.30+1.66\ (\log D)+\log\ (A/T) \quad (4)$$
$$4°\leq D\leq 30°$$

as proposed by Nuttli (1973) for North America east of the Rocky Mountains, where A/T is expressed in micrometers per second, calculated from the vertical-component 1-second Lg waves, and D is the distance in geocentric degrees.

Moment magnitude

$$M_W=2/3\ \log M_o-10.7 \quad (5)$$

as defined by Hanks and Kanamori (1979), where M_o is the seismic moment in dyne-centimeters.

Other types of magnitudes computed by other organizations or universities are also listed in this publication and are defined in the following two paragraphs.

M_D designates duration or coda-length magnitude. M_D is usually computed from the difference, in seconds, between P_n- or P_g-wave arrival time and the time the final coda amplitude decreases to the background-noise amplitude. Duration-magnitude scales are normally adjusted to agree with M_L or M_n estimates so that resulting magnitudes are compatible. Thus, the M_D formulas vary for different geographic regions and seismograph systems.

Some seismograph-network operators determine a magnitude formula for their specific network based on a comparison of their computed magnitudes with magnitudes published from other sources, such as from the USGS. These values are usually compared with m_b, M_L, or M_n magnitudes. In this bulletin these types of magnitudes are designated as m_x for body-wave magnitudes (m_b) and M_x for local magnitudes (M_L or M_n).

The seismic moment is tabulated for some earthquakes in the "Earthquake Descriptions" section. Moments contributed by the University of California, Berkeley, are computed according to the procedure described by Bolt and Herraiz (1983). Moments contributed by the U.S. Geological Survey, Golden, Colorado, are computed according to the procedure described by Sipkin (1982). Moments contributed by Harvard University are computed according to the procedure described by Dziewonski and others (1981).

Intensity, as applied to earthquakes, represents a quantity determined from the effects on people, manmade structures, and the Earth's surface (landslides, ground fissures, and such). Intensities are assigned according to the descriptions listed in the Modified Mercalli Intensity Scale of 1931 (Wood and Neumann, 1931). There are 12 discrete steps in the MM scale (see next section). An earthquake in a populated area will have different intensities at different localities, owing to the distance from the focus of the earthquake, type of focal mechanism, local geological conditions, structural design of buildings, and the earthquake magnitude.

The text of this bulletin gives the intensity at locations where an earthquake was reported felt and summaries of the strongest effects. Each earthquake is further characterized by its maximum intensity, which is given in the text and in table 1. The word "FELT" in the maximum intensity columns of table 1 indicates that only minimal or sketchy information was available. This designation does not imply that the earthquake was felt at a low-intensity level but indicates that the available data are not sufficient for assigning an intensity value.

Although the 1931 Modified Mercalli Intensity Scale is in many instances inadequate for present-day requirements, the scale has been the guide used by the USGS and will continue to be so until a new scale has been devised and has been accepted in the engineering and seismological communities.

Modified Mercalli Intensity Scale of 1931

Adapted from Sieberg's Mercalli-Cancani scale, modified and condensed.

I Not felt, or except rarely under especially favorable circumstances. Under certain conditions, at and outside the boundary of the area in which a great shock is felt: sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced; sometimes trees, structures, liquids, bodies of water, may sway—doors may swing very slowly.

II Felt indoors by few, especially on upper floors, or by sensitive, or nervous persons. Also, as in grade I, but often more noticeably: sometimes hanging objects may swing, especially when delicately suspended; sometimes trees, structures, liquids, bodies of water, may sway, doors may swing, very slowly; sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced.

III Felt indoors by several, motion usually rapid vibration. Sometimes not recognized to be an earthquake at first. Duration estimated in some cases. Vibration like

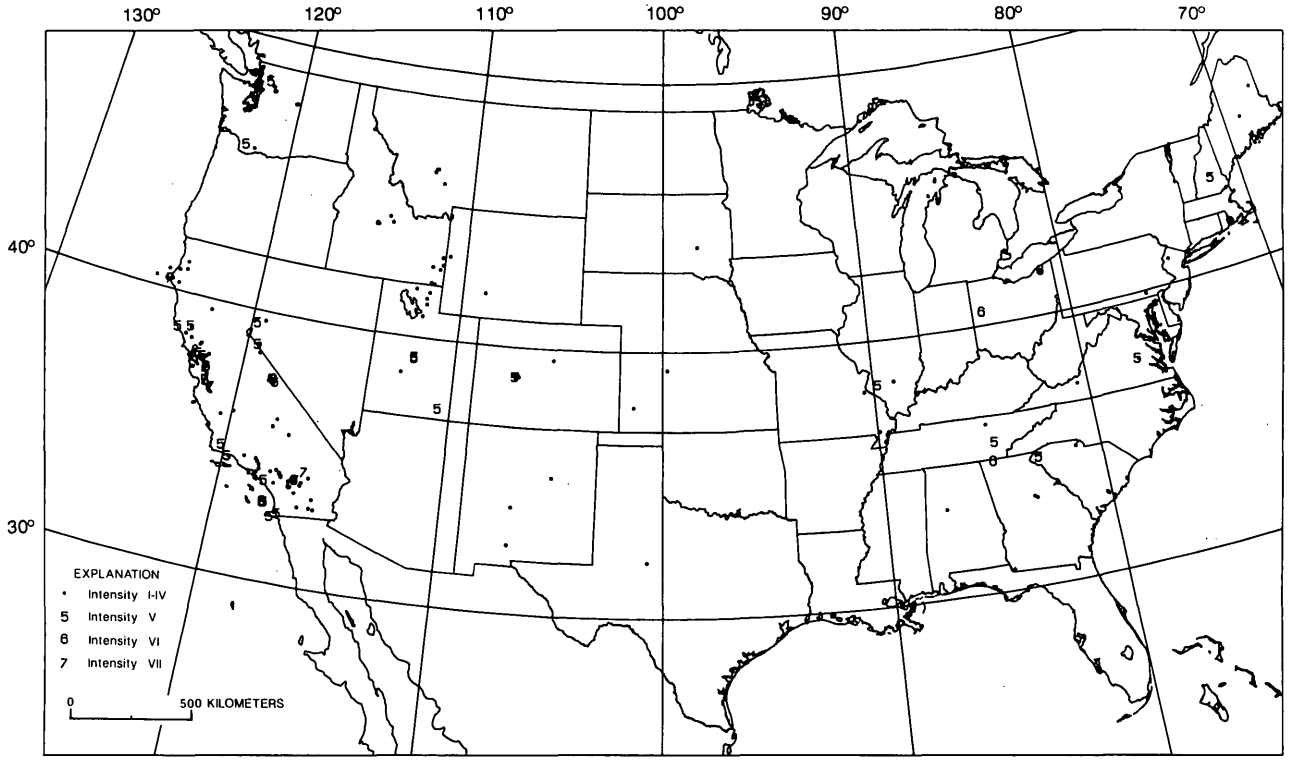

Figure 6. Earthquakes in the conterminous United States that were felt or caused damage in 1986. The maximum observed intensity for each earthquake is plotted at the epicenter.

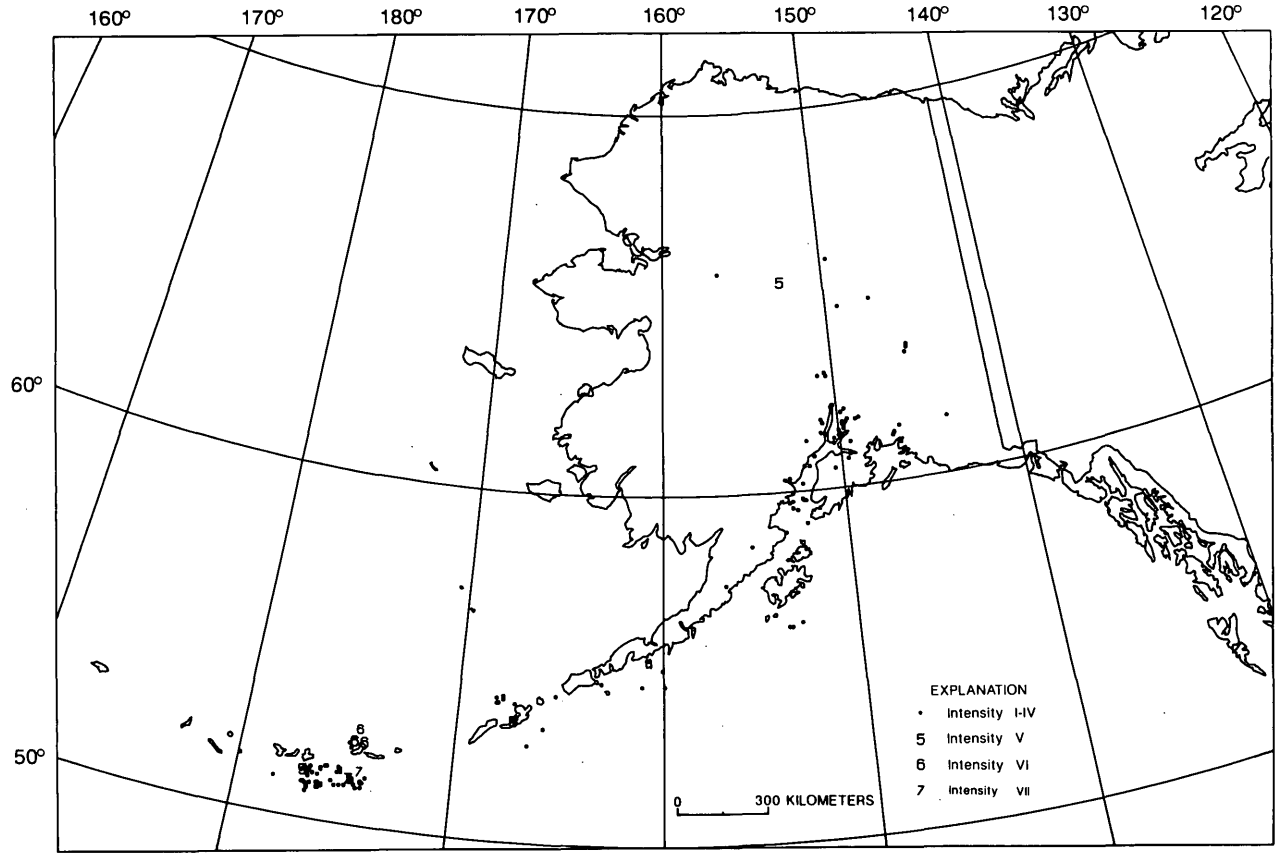

Figure 7. Earthquakes in Alaska that were felt or caused damage in 1986. The maximum observed intensity for each earthquake is plotted at the epicenter.

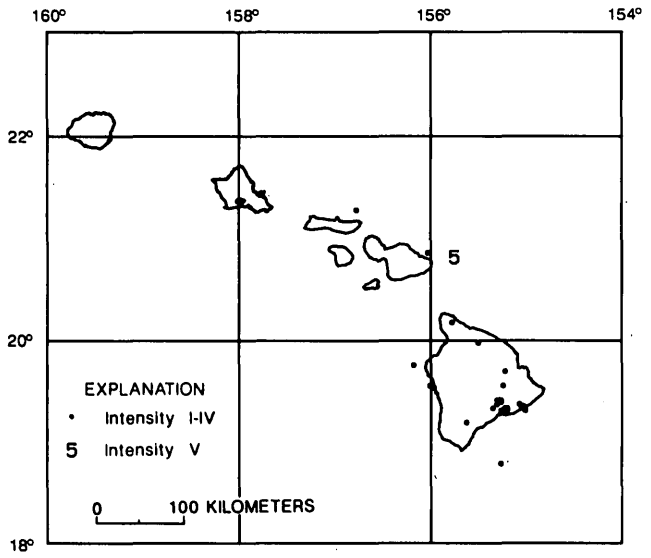

Figure 8. Earthquakes in Hawaii that were felt or caused damage in 1986. The maximum observed intensity for each earthquake is plotted at the epicenter.

that due to passing of light, or lightly loaded trucks, or heavy trucks some distance away. Hanging objects may swing slightly. Movements may be appreciable on upper levels of tall structures. Rocked standing motor cars slightly.

IV Felt indoors by many, outdoors by few. Awakened few, especially light sleepers. Frightened no one, unless apprehensive from previous experience. Vibration like that due to passing of heavy or heavily loaded trucks. Sensation like heavy body striking building, or falling of heavy objects inside. Rattling of dishes, windows, doors; glassware and crockery clink and clash. Creaking of walls, frame, especially in the upper range of this grade. Hanging objects swung, in numerous instances. Disturbed liquids in open vessels slightly. Rocked standing motor cars noticeably.

V Felt indoors by practically all, outdoors by many or most: outdoors direction estimated. Awakened many, or most. Frightened few—slight excitement, a few ran outdoors. Buildings trembled throughout. Broke dishes, glassware, to some extent. Cracked windows—in some cases, but not generally. Overturned vases, small or unstable objects, in many instances, with occasional fall. Hanging objects, doors, swing generally or considerably. Knocked pictures against walls, or swung them out of place. Opened, or closed, doors, shutters, abruptly. Pendulum clocks stopped, started, or ran fast, or slow. Moved small objects, furnishings, the latter to slight extent. Spilled liquids in small amounts from well filled open containers. Trees, bushes, shaken slightly.

VI Felt by all, indoors and outdoors. Frightened many, excitement general, some alarm, many ran outdoors. Awakened all. Persons made to move unsteadily. Trees, bushes, shaken slightly to moderately. Liquid set in strong motion. Small bells rang—church, chapel, school, etc. Damage slight in poorly built buildings. Fall of plaster in small amount. Cracked plaster somewhat, especially fine cracks in chimneys in some instances. Broke dishes, glassware, in considerable quantity, also some windows. Fall of knickknacks, books, pictures. Overturned furniture in many instances. Moved furnishings of moderately heavy kind.

VII Frightened all. General alarm, all ran outdoors. Some, or many, found it difficult to stand. Noticed by persons driving motor cars. Trees and bushes shaken moderately to strongly. Waves on ponds, lakes, and running water. Water turbid from mud stirred up. Incaving to some extent of sand or gravel stream banks. Rang large church bells, etc. Suspended objects made to quiver. Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Cracked chimneys to considerable extent, walls to some extent. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows, furniture to some extent. Shook down loosened brickwork and tiles. Broke weak chimneys at the roofline (sometimes damaging roofs). Fall of cornices from towers and high buildings. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking. Damage considerable to concrete irrigation ditches.

VIII Fright general. Alarm approaches panic. Disturbed persons driving motor cars. Trees shaken strongly—branches, trunks, broken off, especially palm trees. Ejected sand and mud in small amounts. Changes: temporary, permanent; in flow of springs and wells; dry wells renewed flow; in temperature of spring and well waters. Damage slight in structures (brick) built especially to withstand earthquakes. Considerable in ordinary substantial buildings, partial collapse: racked, tumbled down, wooden houses in some cases; threw out panel walls in frame structures, broke off decayed piling. Fall of walls. Cracked, broke, solid stone walls seriously. Wet ground to some extent, also ground on steep slopes. Twisting, fall, of chimneys, columns, monuments, also factory stacks, towers. Moved conspicuously, overturned, very heavy furniture.

IX Panic general. Cracked ground conspicuously. Damage considerable in (masonry) structures built especially to withstand earthquakes: threw out of plumb some wood-frame houses built especially to withstand earthquakes; great in substantial (masonry) buildings, some collapse in large part; or wholly shifted

frame buildings off foundations, racked frames; serious to reservoirs; underground pipes sometimes broken.

X Cracked ground, especially when loose and wet, up to widths of several inches; fissures up to a yard in width ran parallel to canal and stream banks. Landslides considerable from river banks and steep coasts. Shifted sand and mud horizontally on beaches and flat land. Changed level of water in wells. Threw water on banks of canals, lakes, rivers, etc. Damage serious to dams, dikes, embankments. Severe to well-built wooden structures and bridges, some destroyed. Developed dangerous cracks in excellent brick walls. Destroyed most masonry and frame structures, also their foundations. Bent railroad rails slightly. Tore apart, or crushed endwise, pipelines buried in earth. Open cracks and broad wavy folds in cement pavements and asphalt road surfaces.

XI Disturbances in ground many and widespread, varying with ground material. Broad fissures, earth slumps, and land slips in soft, wet ground. Ejected water in large amounts charged with sand and mud. Caused seawaves ("tidal" waves) of significant magnitude. Damage severe to wood-frame structures, especially near shock centers. Great to dams, dikes, embankments often for long distances. Few, if any (masonry) structures remained standing. Destroyed large well-built bridges by the wrecking of supporting piers, or pillars. Affected yielding wooden bridges less. Bent railroad rails greatly, and thrust them endwise. Put pipelines buried in earth completely out of service.

XII Damage total—Practically all works of construction damaged greatly or destroyed. Disturbances in ground great and varied, numerous shearing cracks. Landslides, falls of rock of significant character, slumping of river banks, etc., numerous and extensive. Wrenched loose, tore off, large rock masses. Fault slips in firm rock, with notable horizontal and vertical offset displacements. Water channels, surface and underground, disturbed and modified greatly. Dammed lakes, produced waterfalls, deflected rivers, etc. Waves seen on ground surfaces (actually seen, probably, in some cases). Distorted lines of sight and level. Threw objects upward into the air.

COLLABORATORS

Active cooperation in earthquake investigations in the United States is provided by several seismological collaborators. The following served as collaborators to the USGS during 1986:

Alaska.—Staff of National Oceanic and Atmospheric Administration–Alaska Tsunami Warning Center, Palmer.

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California (southern).—Clarence R. Allen and L.K. Hutton, California Institute of Technology, Pasadena.

Canada—Staff of Earth Physics Branch, Seismological Service of Canada, Ottawa.

Canada—Staff of Pacific Geoscience Centre, Sidney, British Columbia.

Connecticut.—Robert Miller, University of Connecticut, Groton.

Delaware.—Kenneth D. Woodruff, University of Delaware, Newark.

Florida and Georgia.—Leland T. Long, Georgia Institute of Technology, Atlanta.

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Indiana.—Chi-Kin Lam, Department of Geology, Indiana University, Bloomington.

Kansas.—Don W. Steeples, Kansas Geological Survey, Lawrence.

Kentucky.—Ronald L. Street, University of Kentucky, Lexington.

Missouri, Illinois, Arkansas area.—Robert B. Herrmann, Saint Louis University, Saint Louis.

Montana.—Michael C. Stickney, Montana Bureau of Mines and Geology, Butte.

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Oregon.—Randy Jacobson, Oregon State University, Corvallis.

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Virginia.—G.A. Bollinger, Virginia Polytechnic Institute and State University, Blacksburg.

Washington.—Robert S. Crosson and Ruth S. Ludwin, University of Washington, Seattle.

Wyoming.—R.A. Hutchinson, National Park Service, Yellowstone National Park.

EARTHQUAKE DESCRIPTIONS

All United States and Puerto Rico earthquakes that were reported felt in 1986 are listed in this section alphabetically by State and chronologically within each State. The origin time of each earthquake is given in Coordinated Universal Time (UTC). Time is expressed continuously from midnight to midnight, or 0 to 24 hours.

Sources of noninstrumental information (macroseismic data) in this publication include questionnaire canvasses conducted by the USGS, newspaper articles, bulletins of the Seismological Society of America, and special earthquake reports of other organizations. Instrumental data are provided by the USGS/NEIC, other government agencies, and universities that operate seismic networks.

Roman numerals in the earthquake descriptions refer to the Modified Mercalli Intensity Scale of 1931. Where more than one degree of earthquake intensity is reported from a town, the town is assigned the highest intensity reported. All earthquake questionnaires or press reports that do not contain enough detail from which to assign an intensity are listed as "Felt."

The following codes indicate sources for hypocenters, magnitudes, intensities, and (or) felt data:

(AK) Geophysical Institute, University of Alaska, College.
(BK) University of California, Berkeley.
(BU) Montana Bureau of Mines and Geology, Butte.
(DE) Delaware Geological Survey, Newark.
(EE) Engdahl, E. R., Billington, S., and Kisslinger, C., 1989, Journal of Geophysical Research, v. 94, no. B11, p. 15,481–15,498.
(EN) Department of Energy, Washington, D.C.
(EP) Geophysics Division, Geological Survey of Canada, Ottawa, Ontario.
(GM) U.S. Geological Survey, Menlo Park, Calif.
(GP) U.S. Geological Survey, Pasadena, Calif.
(GS) U.S. Geological Survey, Golden, Colo.
(GT) Georgia Institute of Technology, Atlanta.
(HJ) Hauksson, Egill, and Jones, L.M., 1988, Seismological Society of America Bulletin, v. 78, no. 6, p. 1885–1906.
(HR) Harvard University, Cambridge, Mass.
(HV) Hawaiian Volcano Observatory, U.S. Geological Survey, Hawaii Volcanoes National Park.
(KS) Kansas Geological Survey, Lawrence.
(LD) Lamont-Doherty Geological Observatory, Palisades, N.Y.
(NI) Nicholson and others, 1988, Seismological Society of America Bulletin, v. 78, no. 1, p. 188–217.
(PG) Pacific Geoscience Centre, Sydney, B.C., Canada.
(PM) Alaska Palmer Observatory, National Oceanic and Atmospheric Administration, Palmer, Alaska.
(PS) California Institute of Technology, Pasadena.
(RN) University of Nevada, Reno.
(SC) University of South Carolina, Columbia.
(SL) St. Louis University, St. Louis, Mo.
(SZ) Schwartz, S.Y., and Christensen, D.H., 1988, Eastern Section, Seismological Society of America, Seismological Research Letters, v. 59, no. 2, p. 57–62.
(TC) Tennessee Earthquake Information Center, Memphis.
(TU) Oklahoma Geological Survey, Leonard.
(UU) University of Utah, Salt Lake City.
(VP) Virginia Polytechnic Institute and State University, Blacksburg.
(WA) University of Washington, Seattle.
(WO) Weston Observatory, Weston, Mass.

Depth: Normal. Depth was assumed to be 33 km.

ALABAMA

7 May (GT) Central Alabama
Origin time: 02 27 00.4
Epicenter: 33.335N., 87.347W.
Depth: 1 km
Magnitude: 4.2m_b(GS), 4.5M_n(GS), 4.0M_n(TU)
Felt: Tuscaloosa County. Mine collapse (GT).

ALASKA

14 January (GM) Southern Alaska
Origin time: 08 20 13.9
Epicenter: 60.222N., 152.294W.
Depth: 81 km
Magnitude: 3.7M_L(PM)
Intensity II: Homer (PM).

15 January (GM) Southern Alaska
Origin time: 04 29 53.2
Epicenter: 59.538N., 152.907W.
Depth: 91 km

Magnitude: 3.7M_L(PM)
Intensity II: Homer (PM).

16 January (GM) Southern Alaska
Origin time: 14 36 36.1
Epicenter: 61.489N., 146.537W.
Depth: 28 km
Magnitude: 4.0M_L(PM)
Intensity IV: Valdez.
Felt: Anchorage (press report), Cordova (press report), Palmer (press report).

18 January (GM) Southern Alaska
Origin time: 04 36 29.3
Epicenter: 61.542N., 150.996W.
Depth: 75 km
Magnitude: 3.0M_L(PM)
Felt: Anchorage (PM).

19 January (GM) Southern Alaska
Origin time: 10 11 47.1
Epicenter: 59.729N., 152.308W.
Depth: 63 km
Magnitude: 4.2M_L(PM)
Felt: Homer (PM).

26 January (GM) Southern Alaska
Origin time: 23 11 54.1
Epicenter: 61.869N., 148.738W.
Depth: 38 km
Magnitude: 4.1m_b(GS), 3.6M_L(PM)
Intensity II: Palmer (PM).

13 February (LD) Alaska Peninsula
Origin time: 08 43 09.3
Epicenter: 54.655N., 159.998W.
Depth: 5 km
Magnitude: 5.0m_b(GS), 4.6M_S(GS), 4.6M_L(PM), 4.5m_x(LD)
Intensity IV: Sand Point.
Intensity III: False Pass.
Intensity II: King Cove.

14 February (GS) Central Alaska
Origin time: 12 46 33.9
Epicenter: 63.069N., 150.835W.
Depth: 97 km
Magnitude: None computed
Felt: Talkeetna (PM).

14 February (GS) Central Alaska
Origin time: 19 01 29.5
Epicenter: 64.967N., 147.248W.

ALASKA—Continued

Depth: 10 km
Magnitude: 3.2M_L(PM)
Felt: Fairbanks area (press report).

16 February (GM) Southern Alaska
Origin time: 21 31 06.1
Epicenter: 61.495N., 150.711W.
Depth: 63 km
Magnitude: 3.7M_L(PM)
Felt: Anchorage (PM).

24 February (GS) Central Alaska
Origin time: 18 55 14.8
Epicenter: 63.075N., 150.383W.
Depth: 112 km
Magnitude: 4.6m_b(GS)
Intensity II: Gold Creek (PM).

28 February (GS) Alaska Peninsula
Origin time: 15 12 24.1
Epicenter: 57.474N., 156.696W.
Depth: Normal
Magnitude: 4.1m_b(GS), 4.1M_L(PM)
Felt: King Salmon (PM).

28 February (GS) Southern Alaska
Origin time: 17 01 45.3
Epicenter: 60.345N., 152.966W.
Depth: 125 km
Magnitude: 4.7m_b(GS)
Intensity III: Homer (PM).

2 March (EE) Andreanof Islands, Aleutian Islands
Origin time: 20 42 29.1
Epicenter: 51.373N., 176.714W.
Depth: 36 km
Magnitude: 5.1m_b(GS), 4.4M_S(GS), 5.2M_L(PM)
Felt: Adak Island (PM).

8 March (GS) Southern Alaska
Origin time: 05 37 51.3
Epicenter: 60.673N., 151.843W.
Depth: 83 km
Magnitude: 4.3m_b(GS)
Felt: Anchorage (PM), Kenai (PM).

8 March (GM) Southern Alaska
Origin time: 17 33 14.5
Epicenter: 61.038N., 146.566W.
Depth: 9 km
Magnitude: 4.0M_L(PM)
Felt: Valdez (PM).

9 March (GS) Fox Islands, Aleutian Islands
Origin time: 13 49 28.2
Epicenter: 54.256N., 167.864W.
Depth: Normal
Magnitude: 5.2m_b(GS), 5.5M_S(GS), 5.5M_S(BK),
Moment: 4.5 x 10^{24} dyne-cm (HR)
Felt: Dutch Harbor (PM), Unalaska (PM).

12 March (GS) Central Alaska
Origin time: 02 48 03.9
Epicenter: 64.882N., 149.197W.
Depth: Normal
Magnitude: 3.7M_L(PM)
Intensity III: Nenana (press report), Fairbanks (press report).

18 March (GS) Fox Islands, Aleutian Islands
Origin time: 16 12 30.2
Epicenter: 54.028N., 168.070W.
Depth: Normal
Magnitude: 4.7m_b(GS), 4.5M_L(PM)
Intensity III: Unalaska (PM).

20 March (GS) Fox Islands, Aleutian Islands
Origin time: 19 40 08.8
Epicenter: 54.202N., 168.187W.
Depth: Normal
Magnitude: 4.8m_b(GS), 4.3M_S(GS), 5.0M_L(PM)
Felt: Unalaska (PM).

22 March (GM) Southern Alaska
Origin time: 05 30 01.9
Epicenter: 60.348N., 153.297W.
Depth: 165 km
Magnitude: 4.4m_b(GS)
Felt: Homer (PM).

22 March (GM) Southern Alaska
Origin time: 21 45 48.9
Epicenter: 61.217N., 150.382W.
Depth: 16 km
Magnitude: 3.5M_L(PM)
Felt: Anchorage (PM).

30 March (GS) Andreanof Islands, Aleutian Islands
Origin time: 18 13 29.3
Epicenter: 51.537N., 179.940W.
Depth: Normal
Magnitude: 4.8m_b(GS), 3.9M_L(PM)
Felt: Adak Island (PM).

1 April (GM) Southern Alaska
Origin time: 20 26 34.4
Epicenter: 61.558N., 149.984W.
Depth: 46 km
Magnitude: 3.6M_L(PM)
Intensity II: Butte (PM), Palmer (PM).

1 April (GM) Southern Alaska
Origin time: 23 46 51.4
Epicenter: 61.886N., 150.937W.
Depth: 72 km
Magnitude: 3.9m_b(GS), 4.0M_L(PM)
Intensity II: Anchorage (PM), Butte (PM), Palmer (PM).

3 April (GS) Southern Alaska
Origin time: 10 02 36.8
Epicenter: 61.449N., 150.039W.
Depth: 45 km
Magnitude: 3.0M_L(PM)
Felt: Anchorage (PM).

3 April (GS) Central Alaska
Origin time: 21 11 47.7
Epicenter: 63.634N., 145.435W.
Depth: Normal
Magnitude: 3.7M_L(PM)
Felt: Richardson Highway, Mile 221 Marker (PM).

3 April (GS) Central Alaska
Origin time: 21 14 49.4
Epicenter: 63.550N., 145.411W.
Depth: Normal
Magnitude: 2.8M_L(PM)
Felt: Richardson Highway, Mile 221 Marker (PM).

3 April (GS) Central Alaska
Origin time: 21 16 55.0
Epicenter: 63.444N., 145.564W.
Depth: Normal
Magnitude: 3.2M_L(PM)
Felt: Richardson Highway, Mile 221 Marker (PM).

7 April (GS) Fox Islands, Aleutian Islands
Origin time: 17 07 46.8
Epicenter: 54.058N., 167.343W.
Depth: Normal
Magnitude: 4.0m_b(GS), 4.4M_L(PM)
Intensity II: Unalaska (PM).

8 April (GS) Fox Islands, Aleutian Islands
Origin time: 06 36 48.0
Epicenter: 54.048N., 168.156W.
Depth: Normal
Magnitude: 4.4m_b(GS), 4.6M_L(PM)
Intensity III: Unalaska (PM).

11 April (GS) Fox Islands, Aleutian Islands
Origin time: 17 22 20.8
Epicenter: 54.164N., 167.883W.
Depth: Normal
Magnitude: 5.3m_b(GS), 5.9M_S(GS), 6.0M_S(BK)
Moment: 1.1 x 10^{25} (HR)
Intensity IV: Unalaska.

27 April (GM) Southern Alaska
Origin time: 10 55 41.2
Epicenter: 59.723N., 152.918W.
Depth: 96 km
Magnitude: 4.0m_b(GS), 4.0M_L(PM)
Felt: Homer (PM).

28 April (GM) Southern Alaska
Origin time: 07 32 56.1
Epicenter: 61.498N., 149.893W.
Depth: 59 km
Magnitude: 3.5M_L(PM)
Intensity III: Anchorage (PM).
Intensity II: Palmer (PM).

2 May (GM) Southern Alaska
Origin time: 00 51 57.7
Epicenter: 61.238N., 149.410W.
Depth: 35 km
Magnitude: 2.1M_L(PM)
Felt: Anchorage (PM).

3 May (GM) Southern Alaska
Origin time: 10 11 13.6
Epicenter: 61.426N., 149.859W.
Depth: 46 km
Magnitude: 3.2M_L(PM)
Felt: Anchorage (PM).

7 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 20 43 33.3
Epicenter: 51.234N., 174.741W.
Depth: 25 km
Magnitude: 6.1m_b(GS), 6.0M_S(GS), 6.1M_L(PM), 6.1M_S(BK)
Moment: 2.7 x 10^{25} dyne-cm (HR)
Felt: Adak Island.

7 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 22 47 12.3
Epicenter: 51.325N., 174.751W.
Depth: 31 km
Magnitude: 6.4m_b(GS), 7.7M_S(GS), 7.9M_S(BK)
Moment: 1.0 x 10^{28} dyne-cm (HR)

ALASKA—Continued

This earthquake is the largest to occur in Alaska since the February 4, 1965, Rat Islands earthquake. It caused moderate damage to structures on Adak Island and minor damage on Atka Island. The building damage consisted of cracked masonry and concrete walls, failure of partitions and suspended ceilings, spalling on concrete beams and concrete piers, and failure of piping (Glick and others, 1986).

Some houses experienced differential foundation settlements of several cm, causing considerable damage to the structures (Glick and others, 1986).

Sand boils were noted in one localized area where an antenna array was located. One antenna foundation settled about 3 ft, and others were out of plumb. Soil liquefaction was noted in localized areas of back-filled soil. Lateral spreading cracks of about 8 to 20 cm and differential ground settlement occurred along a small wharf. Some slumping was observed on a side slope of the approach to a bridge. Rock falls occurred at two quarry sites, and snow avalanches were observed in steep mountain regions (Glick and others, 1986).

Horizontal peak ground accelerations between 0.20 *g* and 0.25 *g* were recorded on the foundation slab near the AIMO hanger, and horizontal accelerations greater than 0.60 *g* were recorded at the bottom chord of a steel roof truss in the same area (Glick and others, 1986).

This earthquake also caused a tsunami that was recorded throughout the Pacific Ocean. In Alaska, Adak Island stations recorded wave heights of 175 cm, Unalaska 20 cm, and Sand Point 10 cm. In Hawaii the heights ranged from 91 to 122 cm at Kapaa, Kauai, to 8 cm at Kailua-Kona, Hawaii. Wave heights were also measured in Japan, along the west coast of South America, and on many islands of the southern Pacific Ocean.

Intensity VII:

Adak Island–The AIMO hanger (two-story shop area) had many vertical and diagonal cracks in the masonry walls and in the stairwell area. The Navy Exchange (a precast-concrete structure) had permanent vertical offset, loose bolts, and bent connectors between adjacent precast roof panels. One concrete pier spalled and cracked near an expansion joint. Wood-frame housing units sustained minor interior wall cracking and differential settlement of as much as 13 cm. File cabinets were overturned; windows were cracked; power was disrupted; and many items were displaced and overturned (Glick and others, 1986).

Intensity VI:
Atka Island– Some parts of the airstrip "dropped" 30 cm, and there were cracks in the strip. Landslides and slumping of road fill occurred. Standing and moving vehicles rocked moderately; plaster walls sustained hairline cracks; much merchandise was thrown off store shelves; small appliances overturned; a few windows cracked; many glassware items or dishes broke; many small objects overturned and fell; hanging pictures fell; buildings shook strongly; people had difficulty standing or walking; felt by and frightened everyone.

9 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 01 05 31.2
Epicenter: 51.061N., 176.902W.
Depth: 23 km
Magnitude: $5.5m_b$(GS), $5.6M_S$(GS), $5.4M_L$(PM), $5.7M_S$(PS)
Intensity III: Adak (PM).

9 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 01 08 10.5
Epicenter: 51.062N., 176.856W.
Depth: 18 km
Magnitude: $5.6m_b$(GS), $5.5M_S$(GS), $5.5M_L$(PM)
Intensity IV: Adak Island.

9 May (GS) Fox Islands, Aleutian Islands
Origin time: 18 22 49.8
Epicenter: 54.324N., 165.372W.
Depth: 101 km
Magnitude: $4.6m_b$(GS)
Felt: Cold Bay (PM), Sand Point (PM).

11 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 10 46 21.8
Epicenter: 50.970N., 176.095W.
Depth: 16 km
Magnitude: $5.0m_b$(GS), $4.7M_S$(GS), $4.9M_L$(PM)
Moment: 1.0×10^{24} dyne-cm (HR)
Intensity II: Adak Island (PM).

11 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 22 48 47.2
Epicenter: 51.371N., 174.616W.
Depth: 29 km
Magnitude: $5.5m_b$(GS), $5.2M_S$(GS), $5.7M_L$(PM), $5.2M_S$(BK)
Moment: 3.6×10^{24} dyne-cm (HR)
Intensity IV: Adak Island (PM).

ALASKA—Continued

12 May (GS) Andreanof Islands, Aleutian Islands
Origin time: 20 16 45.8
Epicenter: 52.700N., 172.432E.
Depth: Normal
Magnitude: $4.9m_b$(GS), $5.1M_S$(GS)
Intensity III: Attu Island (PM).

15 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 06 38 37.9
Epicenter: 52.432N., 174.719W.
Depth: 15 km
Magnitude: $5.7m_b$(GS), $6.4M_S$(GS), $5.5M_L$(PM), $6.4M_S$(BK)
Moment: 4.4×10^{25} dyne-cm (HR)
Intensity VI:
Atka Island–Underground pipes broke; there was slight damage to bridges; standing and moving vehicles rocked moderately; interior walls sustained hairline cracks; many items were shaken off store shelves; furniture was overturned; many glassware items or dishes broke; many small objects overturned and fell; hanging pictures fell; a few windows cracked; buildings shook strongly; people had difficulty standing and walking; felt by everyone.
Intensity II: False Pass (PM).
Felt: Adak Island.

15 May (LD) Alaska Peninsula
Origin time: 23 21 13.2
Epicenter: 54.693N., 163.089W.
Depth: 3 km
Magnitude: $4.5m_b$(GS), $4.4m_x$(LD)
Felt: Cold Bay (PM), False Pass (PM), Sand Point (PM).

17 May (GM) Southern Alaska
Origin time: 06 31 14.2
Epicenter: 62.038N., 149.730W.
Depth: 51 km
Magnitude: $2.6M_L$(PM)
Felt: Anchorage (PM).

17 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 16 20 24.3
Epicenter: 52.443N., 174.271W.
Depth: 15 km
Magnitude: $5.8m_b$(GS), $6.6M_S$(GS), $6.5M_S$(BK)
Moment: 4.7×10^{25} dyne-cm (GS)
Intensity VI:
Atka Island–Airstrip damaged and officially closed. Underground pipes broke; landslides occurred; standing vehicles rocked moderately; trees and bushes shook strongly; plaster walls cracked; furniture overturned; many items were shaken off store shelves; many glassware items or dishes broke;

many small objects overturned and fell; a few windows cracked; hanging pictures fell; buildings shook strongly; people had difficulty standing or walking; felt by and frightened everyone.
Felt: Adak Island.

19 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 02 37 34.7
Epicenter: 52.359N., 174.955W.
Depth: 15 km
Magnitude: 5.1m_b(GS), 5.2M_S(GS), 4.9M_L(PM), 5.0M_S(BK)
Moment: 1.3 x 10^{24} dyne-cm (HR)
Intensity II: Adak Island (PM), Atka Island (PM).

21 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 07 05 15.7
Epicenter: 51.351N., 176.214W.
Depth: 33 km
Magnitude: 4.6m_b(GS), 4.4M_L(PM)
Intensity III: Adak Island (PM).

21 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 22 12 20.9
Epicenter: 51.647N., 175.325W.
Depth: 46 km
Magnitude: 4.8m_b(GS), 4.6M_L(PM)
Intensity II: Adak Island (PM).

23 May (GS) Southern Alaska
Origin time: 23 18 42.2
Epicenter: 58.906N., 153.377W.
Depth: 80 km
Magnitude: 5.0m_b(GS),
Moment: 5.5 x 10^{23} dyne-cm (HR)
Intensity III: Homer (PM), Kodiak (PM).
Felt: Chiniak (press report).

29 May (GS) Southern Alaska
Origin time: 02 40 11.2
Epicenter: 59.119N., 152.163W.
Depth: 61 km
Magnitude: 4.5m_b(GS), 4.2M_L(PM)
Felt: Homer (PM), Seldovia (PM).

29 May (EE) Andreanof Islands, Aleutian Islands
Origin time: 19 18 46.3
Epicenter: 51.464N., 175.289W.
Depth: 35 km
Magnitude: 4.9m_b(GS), 4.7M_L(PM)
Felt: Adak Island (PM), Atka Island (PM).

3 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 23 05 28.8

ALASKA—Continued

Epicenter: 51.256N., 174.631W.
Depth: 20 km
Magnitude: 5.4m_b(GS), 5.1M_S(GS), 5.8M_L(PM), 5.1M_S(BK)
Intensity II: Adak Island (PM).

4 June (GS) Central Alaska
Origin time: 15 48 20.8
Epicenter: 65.636N., 152.604W.
Depth: 10 km
Magnitude: 5.2m_b(GS), 4.7M_S(GS), 5.7M_L(PM)
Intensity V:
Tanana– A few items were shaken off store shelves; a few small objects overturned and fell; standing and moving vehicles rocked slightly; buildings shook moderately, felt by and frightened many.
Intensity IV: Galena Air Force Station, Hughes, Huslia, Indian Mountain Air Force Station, Lake Minchumina, Manley Hot Springs, Rampart.
Intensity III: Bettles, College, Fairbanks, Livingood (5 mi west), Minto, Ruby, Shungnak.
Felt: North Pole (press report).

4 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 19 25 43.3
Epicenter: 51.287N., 174.580W.
Depth: 20 km
Magnitude: 4.9m_b(GS), 4.0M_L(PM)
Intensity II: Adak Island (PM).

5 June (GS) Andreanof Islands, Aleutian Islands
Origin time: 14 22 04.7
Epicenter: 51.093N., 174.341W.
Depth: Normal
Magnitude: 4.5m_b(GS), 4.1M_L(PM)
Felt: Adak Island (PM).

5 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 15 24 53.7
Epicenter: 51.138N., 174.177W.
Depth: 20 km
Magnitude: 4.7m_b(GS), 4.2M_L(PM)
Felt: Adak Island (PM).

5 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 17 32 40.6
Epicenter: 51.094N., 175.350W.
Depth: 20 km
Magnitude: 5.1m_b(GS), 4.5M_L(PM)
Felt: Adak Island (PM).

5 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 20 27 03.2
Epicenter: 51.296N., 174.210W.

Depth: 22 km
Magnitude: 5.4m_b(GS), 4.8M_S(GS), 4.5M_L(PM), 4.8M_S(BK)
Moment: 1.0 x 10^{24} dyne-cm (HR)
Felt: Adak Island (PM).

15 June (GS) Andreanof Islands, Aleutian Islands
Origin time: 02 22 52.9
Epicenter: 51.396N., 174.760W.
Depth: Normal
Magnitude: 4.3m_b(GS), 4.3M_L(PM)
Intensity III: Adak Island (PM).

16 June (GM) Southern Alaska
Origin time: 21 54 02.0
Epicenter: 61.838N., 149.433W.
Depth: 43 km
Magnitude: 3.8M_L(PM)
Intensity III: Hatcher Pass (PM).
Intensity II: Willow (PM).

18 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 08 05 16.4
Epicenter: 51.465N., 176.833W.
Depth: 41 km
Magnitude: 5.8m_b(GS), 6.3M_S(GS), 6.0M_L(PM), 6.4M_S(BK)
Moment: 5.8 x 10^{25} dyne-cm (HR)
Intensity IV: Adak Island (PM).
Intensity III: Atka (PM).

18 June (GS) Central Alaska
Origin time: 23 43 04.4
Epicenter: 63.067N., 150.911W.
Depth: 131 km
Magnitude: None computed
Felt: Talkeetna (PM).

19 June (GS) Southern Alaska
Origin time: 09 09 09.2
Epicenter: 56.331N., 152.914W.
Depth: 17 km
Magnitude: 6.0m_b(GS), 6.3M_S(GS), 5.4M_L(PM), 6.4M_S(BK)
Moment: 1.6 x 10^{26} dyne-cm (HR)
Intensity IV: Kodiak.

19 June (LD) Alaska Peninsula
Origin time: 22 28 38.8
Epicenter: 54.644N., 161.096W.
Depth: 15 km
Magnitude: 4.3m_b(GS), 3.4m_x(LD)
Felt: False Pass (PM), King Cove (PM).

ALASKA—Continued

20 June (GM) Southern Alaska
Origin time: 07 39 32.8
Epicenter: 60.676N., 152.107W.
Depth: 82 km
Magnitude: 4.0M_L(PM)
Felt: Anchorage (PM), Homer (PM), Kenai (PM).

20 June (GM) Southern Alaska
Origin time: 22 13 49.6
Epicenter: 62.248N., 150.234W.
Depth: 10 km
Magnitude: 3.8M_L(PM)
Felt: Talkeetna (PM).

21 June (GS) Southern Alaska
Origin time: 12 07 30.2
Epicenter: 59.947N., 152.851W.
Depth: 101 km
Magnitude: 4.9m_b(GS)
Felt: Anchorage (PM), Eagle River (PM), Homer (PM), Kenai (PM).

22 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 05 28 52.4
Epicenter: 51.108N., 175.170W.
Depth: 16 km
Magnitude: 4.9m_b(GS), 4.9M_S(GS), 4.3M_L(PM)
Moment: 1.3 x 10^{24} dyne-cm (HR)
Felt: Adak Island (PM).

23 June (GM) Southern Alaska
Origin time: 02 47 41.6
Epicenter: 61.740N., 149.765W.
Depth: 47 km
Magnitude: 3.1M_L(PM)
Felt: Anchorage (PM), Eagle River (PM).

24 June (GM) Southern Alaska
Origin time: 09 35 23.4
Epicenter: 58.529N., 155.219W.
Depth: 140 km
Magnitude: None computed.
Felt: King Salmon Air Force Base (PM).

24 June (GS) Western Alaska
Origin time: 13 38 25.6
Epicenter: 65.905N., 156.564W.
Depth: Normal
Magnitude: 3.6M_L(PM)
Felt: Kobuk (PM).

24 June (GS) Central Alaska
Origin time: 20 46 02.7
Epicenter: 66.133N., 149.639W.
Depth: 10 km
Magnitude: 4.9m_b(GS), 5.2M_L(PM), 5.9M_S(BK)
Intensity III: Fairbanks, Stevens Village.
Felt: Alyeska PLS Pump Station No. 6 (PM).

26 June (GM) Southern Alaska
Origin time: 13 55 43.6
Epicenter: 59.730N., 152.182W.
Depth: 23 km
Magnitude: 3.6M_L(PM)
Felt: Anchor Point (PM), Homer (PM).

26 June (GM) Southern Alaska
Origin time: 16 34 19.0
Epicenter: 62.228N., 150.180W.
Depth: 12 km
Magnitude: 3.3M_L(PM)
Felt: Talkeetna (PM).

28 June (LD) Alaska Peninsula
Origin time: 16 01 19.7
Epicenter: 55.116N., 160.029W.
Depth: 52 km
Magnitude: 4.3m_b(GS), 4.4m_x(LD), 4.3M_L(PM)
Felt: Sand Point (PM).

29 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 04 30 04.0
Epicenter: 52.539N., 174.792W.
Depth: 15 km
Magnitude: 4.9m_b(GS), 5.2M_S(GS), 4.6M_L(PM), 5.3M_S(BK)
Moment: 1.5 x 10^{24} dyne-cm (HR)
Felt: Adak Island (PM), Atka Island (PM).

29 June (GS) Andreanof Islands, Aleutian Islands
Origin time: 04 32 10.8
Epicenter: 52.255N., 174.836W.
Depth: Normal
Magnitude: 4.7m_b(GS), 4.3M_L(PM)
Felt: Adak Island (PM), Atka Island (PM).

30 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 01 21 30.0
Epicenter: 51.414N., 176.655W.
Depth: 39 km
Magnitude: 4.8m_b(GS), 4.1M_S(GS), 4.5M_L(PM)
Intensity III: Adak Island (PM).

ALASKA—Continued

30 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 04 39 08.8
Epicenter: 51.338N., 176.643W.
Depth: 33 km
Magnitude: 4.5m_b(GS)
Intensity II: Adak Island (PM).

30 June (EE) Andreanof Islands, Aleutian Islands
Origin time: 06 23 47.1
Epicenter: 51.089N., 176.139W.
Depth: 21 km
Magnitude: 5.1m_b(GS), 4.7M_S(GS), 4.9M_L(PM)
Moment: 1.3 x 10^{24} dyne-cm (HR)
Intensity III: Adak Island (PM).

30 June (GS) Andreanof Islands, Aleutian Islands
Origin time: 06 28 01.9
Epicenter: 51.543N., 176.596W.
Depth: Normal
Magnitude: 4.2m_b(GS), 4.3M_L(PM)
Intensity II: Adak Island (PM).

30 June (GS) Andreanof Islands, Aleutian Islands
Origin time: 06 55 09.4
Epicenter: 51.117N., 176.124W.
Depth: Normal
Magnitude: 4.2m_b(GS), 4.7M_L(PM)
Intensity II: Adak Island (PM).

1 July (GM) Southern Alaska
Origin time: 19 26 42.6
Epicenter: 61.597N., 149.704W.
Depth: 43 km
Magnitude: 3.7M_L(PM)
Intensity III: Anchorage (PM), Eagle River (PM).
Intensity II: Palmer (PM).

3 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 17 33 31.8
Epicenter: 51.204N., 175.589W.
Depth: 20 km
Magnitude: 5.0m_b(GS), 4.8M_L(PM)
Felt: Adak Island (PM), Atka Island (PM).

4 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 05 58 51.9
Epicenter: 51.602N., 175.827W.
Depth: 42 km
Magnitude: 4.9m_b(GS), 4.7M_L(PM)
Felt: Adak Island (PM).

9 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 17 10 24.6

Epicenter: 51.545N., 176.083W.
Depth: 42 km
Magnitude: 5.2m_b(GS), 4.9M_S(GS), 4.9M_L(PM), 4.9M_S(BK)
Moment: 2.1 x 10^{24} dyne-cm (HR)
Intensity IV: Adak Island (PM), Atka Island (PM).

9 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 20 24 52.7
Epicenter: 51.433N., 176.815W.
Depth: 41 km
Magnitude: 4.9m_b(GS), 5.1M_L(PM)
Moment: 3.7 x 10^{23} dyne-cm (HR)
Felt: Adak Island (PM), Atka Island (PM).

13 July (GM) Southern Alaska
Origin time: 03 54 40.5
Epicenter: 62.254N., 150.228W.
Depth: 11 km
Magnitude: 3.9M_L(PM)
Felt: Big Lake (PM), Palmer (PM), Talkeetna (PM).

13 July (GS) Southern Alaska
Origin time: 03 58 02.5
Epicenter: 62.216N., 150.286W.
Depth: 10 km
Magnitude: 3.0M_L(PM)
Felt: Talkeetna (PM).

17 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 18 37 20.0
Epicenter: 51.180N., 174.494W.
Depth: 20 km
Magnitude: 4.8m_b(GS)
Felt: Adak Island (PM).

19 July (GS) Fox Islands, Aleutian Islands
Origin time: 04 31 55.9
Epicenter: 53.352N., 165.882W.
Depth: Normal
Magnitude: 5.5m_b(GS), 5.1M_S(GS), 5.9M_L(PM), 4.9M_S(BK)
Moment: 2.8 x 10^{24} dyne-cm (HR)
Intensity IV: Akutan (press report), Unalaska (press report).

19 July (GS) Fox Islands, Aleutian Islands
Origin time: 05 04 08.2
Epicenter: 53.339N., 165.859W.
Depth: Normal
Magnitude: 5.1m_b(GS), 4.5M_S(GS), 5.6M_L(PM)
Moment: 6.9 x 10^{23} dyne-cm (HR)
Intensity IV: Unalaska (press report).

ALASKA—Continued

19 July (GS) Fox Islands, Aleutian Islands
Origin time: 06 53 17.8
Epicenter: 53.600N., 167.171W.
Depth: Normal
Magnitude: 5.5m_b(GS), 5.7M_S(GS), 5.8M_L(PM), 5.6M_S(BK),
Moment: 1.0 x 10^{25} dyne-cm (HR)
Intensity IV: Unalaska (press report).
Felt: Akutan (PM).

19 July (GS) Fox Islands, Aleutian Islands
Origin time: 11 31 07.5
Epicenter: 53.617N., 167.408W.
Depth: Normal
Magnitude: 5.0m_b(GS), 4.6M_S(GS), 5.1M_L(PM)
Felt: Akutan (PM), Unalaska (PM).

19 July (GS) Fox Islands, Aleutian Islands
Origin time: 20 52 09.6
Epicenter: 53.662N., 167.184W.
Depth: Normal
Magnitude: 4.9m_b(GS)
Intensity III: Unalaska.

19 July (GS) Fox Islands, Aleutian Islands
Origin time: 22 32 36.0
Epicenter: 53.521N., 167.301W.
Depth: Normal
Magnitude: 5.6m_b(GS), 5.6M_S(GS), 5.6M_S(BK)
Moment: 1.1 x 10^{25} dyne-cm (HR)
Intensity V:
Akutan– Objects were knocked off walls and shelves; cars shook noticeably (press report).
Unalaska– Things were knocked off walls and shelves; cars shook noticeably; runway lights were knocked out at the Dutch Harbor-Unalaska airport (press report).

20 July (GS) Fox Islands, Aleutian Islands
Origin time: 01 59 08.2
Epicenter: 53.530N., 167.344W.
Depth: Normal
Magnitude: 4.9m_b(GS), 4.5M_S(GS), 5.2M_L(PM)
Moment: 5.8 x 10^{23} dyne-cm (HR)
Felt: Unalaska (PM), Cold Bay.

24 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 00 42 00.8
Epicenter: 51.012N., 176.639W.
Depth: 20 km
Magnitude: 4.9m_b(GS), 4.5M_S(GS), 5.3M_L(PM)
Felt: Adak Island (PM), Atka Island (PM).

24 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 14 03 30.0

Epicenter: 51.492N., 175.173W.
Depth: 40 km
Magnitude: 4.9m_b(GS), 4.5M_S(GS), 4.3M_L(PM)
Felt: Adak Island (PM), Atka Island (PM).

25 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 09 01 32.6
Epicenter: 51.079N., 176.137W.
Depth: 21 km
Magnitude: 5.3m_b(GS), 5.6M_S(GS), 5.3M_L(PM), 5.5M_S(BK)
Moment: 6.1 x 10^{24} dyne-cm (HR)
Intensity IV: Adak Island (PM).

25 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 09 04 16.3
Epicenter: 51.056N., 175.996W.
Depth: 20 km
Magnitude: 5.4m_b(GS), 5.6M_S(GS)
Felt: Adak Island (PM).

28 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 04 06 50.5
Epicenter: 51.404N., 174.016W.
Depth: 21 km
Magnitude: 5.4m_b(GS), 4.8M_S(GS), 4.5M_L(PM), 4.6M_S(BK)
Moment: 1.3 x 10^{24} dyne-cm (HR)
Intensity III: Adak Island.

28 July (GS) Fox Islands, Aleutian Islands
Origin time: 05 01 59.6
Epicenter: 52.862N., 166.590W.
Depth: Normal
Magnitude: 5.0m_b(GS), 4.6M_S(GS), 4.7M_L(PM)
Felt: Unalaska (PM).

28 July (GM) Southern Alaska
Origin time: 14 31 14.1
Epicenter: 60.577N., 150.386W.
Depth: 47 km
Magnitude: 4.4m_b(GS), 4.6M_L(PM)
Intensity IV: Anchorage (PM).
Felt: Homer (PM), Kenai (PM), Palmer (PM), Seward (PM).

28 July (EE) Andreanof Islands, Aleutian Islands
Origin time: 21 57 16.6
Epicenter: 51.573N., 175.221W.
Depth: 42 km
Magnitude: 5.4m_b(GS), 4.9M_S(GS), 4.9M_L (PM)
Moment: 1.9 x 10^{24} dyne-cm (HR)
Intensity III: Adak Island.

ALASKA—Continued

31 July (GM) Southern Alaska
Origin time: 09 33 14.3
Epicenter: 61.767N., 149.567W.
Depth: 41 km
Magnitude: 3.2M_L(PM)
Felt: Anchorage (PM), Palmer (PM), Willows (PM).

31 July (GM) Southern Alaska
Origin time: 14 04 34.5
Epicenter: 60.797N., 149.614W.
Depth: 45 km
Magnitude: 3.7M_L(PM)
Felt: Anchorage (PM), Girdwood (PM).

1 August (GS) Fox Islands, Aleutian Islands
Origin time: 16 43 06.4
Epicenter: 53.495N., 167.236W.
Depth: Normal
Magnitude: 4.6m_b(GS), 4.5M_L(PM), 4.1m_x(LD)
Felt: Unalaska (PM).

1 August (EE) Andreanof Islands, Aleutian Islands
Origin time: 20 24 59.3
Epicenter: 50.954N., 176.185W.
Depth: 20 km
Magnitude: 4.8m_b(GS), 4.9M_S(GS), 4.9M_L(PM)
Felt: Adak Island (PM).

1 August (EE) Andreanof Islands, Aleutian Islands
Origin time: 21 05 40.1
Epicenter: 51.262N., 174.224W.
Depth: 22 km
Magnitude: 5.5m_b(GS), 5.0M_S(GS), 4.6M_L(PM)
Moment: 1.5 x 10^{24} dyne-cm (HR)
Intensity IV: Adak Island (PM).

3 August (EE) Andreanof Islands, Aleutian Islands
Origin time: 02 39 28.7
Epicenter: 51.244N., 174.125W.
Depth: 20 km
Magnitude: 5.0m_b(GS), 4.0M_L(PM)
Felt: Adak Island (PM).

3 August (EE) Andreanof Islands, Aleutian Islands
Origin time: 13 29 10.4
Epicenter: 51.026N., 176.749W.
Depth: 22 km
Magnitude: 5.4m_b(GS), 5.6M_S(GS), 5.6M_L(PM), 5.7M_S(BK)
Moment: 8.1 x 10^{24} dyne-cm (HR)
Intensity IV: Adak Island.
Felt: Atka (PM).

3 August (EE) Andreanof Islands, Aleutian Islands
Origin time: 13 44 54.2

Epicenter: 50.808N., 176.671W.
Depth: 20 km
Magnitude: 4.7m_b(GS), 5.1M_L(PM)
Felt: Adak Island (PM).

3 August (EE) Andreanof Islands, Aleutian Islands
Origin time: 20 08 20.5
Epicenter: 50.918N., 176.638W.
Depth: 20 km
Magnitude: 4.8m_b(GS), 4.9M_S(GS), 4.2M_L(PM)
Felt: Adak Island (PM).

8 August (GS) Fox Islands, Aleutian Islands
Origin time: 04 31 21.3
Epicenter: 53.594N., 167.320W.
Depth: Normal
Magnitude: 4.5m_b(GS), 4.3M_S(GS), 5.0M_L(PM)
Felt: Unalaska (PM).

11 August Central Alaska
Origin time: 11 00
Epicenter: Not located.
Depth: None computed.
Magnitude: 3.0M_L(PM)
Felt: Fairbanks (PM).

25 August (GM) Southern Alaska
Origin time: 23 27 54.3
Epicenter: 61.352N., 150.333W.
Depth: 47 km
Magnitude: 4.5m_b(GS), 4.4M_L(PM)
Intensity III: Anchorage (PM), Palmer (PM), Willow (PM).
Intensity II: Talkeetna (PM).

3 September (EE) Andreanof Islands, Aleutian Islands
Origin time: 11 51 06.4
Epicenter: 51.106N., 178.224W.
Depth: 30 km
Magnitude: 5.0m_b(GS), 5.0M_L(PM)
Intensity III: Adak Island.

12 September (GS) Southern Alaska
Origin time: 23 57 15.6
Epicenter: 56.201N., 153.405W.
Depth: 31 km
Magnitude: 6.1m_b(GS), 6.3M_S(GS), 6.0M_S(BK)
Moment: 6.8 x 10^{25} dyne-cm (GS)
Intensity IV: Larsen Bay.

13 September (GM) Southern Alaska
Origin time: 12 30 40.7
Epicenter: 61.245N., 146.939W.
Depth: 42 km

ALASKA—Continued

Magnitude: 3.8M_L(PM)
Felt: Valdez (PM).

14 September (GM) Southern Alaska
Origin time: 11 38 53.6
Epicenter: 61.703N., 149.682W.
Depth: 47 km
Magnitude: 3.4M_L(PM)
Felt: Palmer (PM).

15 September (EE) Andreanof Islands, Aleutian Islands
Origin time: 06 29 38.6
Epicenter: 51.368N., 177.011W.
Depth: 35 km
Magnitude: 4.9m_b(GS), 4.0M_S(GS), 4.8M_L(PM)
Felt: Adak Island (PM).

15 September (GM) Southern Alaska
Origin time: 14 48 22.1
Epicenter: 61.528N., 143.800W.
Depth: 52 km
Magnitude: 4.5m_b(GS), 4.7M_L(PM), 4.7M_L(EP)
Intensity IV: Chitina, Valdez.
Intensity III: Cordova (PM).

16 September (GS) Southern Alaska
Origin time: 20 57 21.9
Epicenter: 56.222N., 153.600W.
Depth: Normal
Magnitude: 5.3m_b(GS), 5.5M_S(GS), 5.1M_L(PM), 5.1M_S(BK)
Moment: 7.7 x 10^{24} dyne-cm (HR)
Intensity III: Kodiak.

18 September (GS) Southern Alaska
Origin time: 20 56 05.8
Epicenter: 61.798N., 149.721W.
Depth: 57 km
Magnitude: 4.6m_b(GS), 4.6M_L(PM)
Intensity IV: Anchorage, Chugiak, Eagle River, Skwentna, Wasilla, Willow.
Intensity III: Anchorage International Airport, Moose Pass, Spenard, Sutton.
Intensity II: Whittier.
Felt: Girdwood (PM), King Mountain Lodge (PM), Mile 90 on Glenn Highway (PM), Palmer (PM).

28 September (GM) Southern Alaska
Origin time: 10 41 48.8
Epicenter: 59.782N., 152.320W.
Depth: 61 km
Magnitude: 4.1M_L(PM)
Intensity III: Homer (PM).

29 September (EE) Andreanof Islands, Aleutian Islands
Origin time: 12 20 43.9
Epicenter: 51.118N., 174.957W.
Depth: 20 km
Magnitude: 5.0m_b(GS), 4.5M_S(GS), 5.2M_L(PM)
Intensity III: Adak Island (PM).

1 October (EE) Andreanof Islands, Aleutian Islands
Origin time: 15 56 06.4
Epicenter: 51.623N., 175.901W.
Depth: 45 km
Magnitude: 5.3m_b(GS), 4.5M_S(GS), 4.8M_L(PM)
Moment: 1.2 x 10^{24} dyne-cm (HR)
Intensity III: Adak Island (PM).

5 October (EE) Andreanof Islands, Aleutian Islands
Origin time: 03 25 57.7
Epicenter: 51.078N., 176.179W.
Depth: 20 km
Magnitude: 4.9m_b(GS), 4.5M_L(PM)
Intensity II: Adak Naval Air Station (PM).

6 October (EE) Andreanof Islands, Aleutian Islands
Origin time: 04 21 48.9
Epicenter: 51.513N., 176.089W.
Depth: 48 km
Magnitude: 5.1m_b(GS), 4.2M_S(GS), 4.9M_L(PM)
Moment: 7.3 x 10^{23} dyne-cm (HR)
Intensity III: Adak Naval Air Station (PM).

9 October (GM) Southern Alaska
Origin time: 01 21 06.1
Epicenter: 62.129N., 149.544W.
Depth: 58 km
Magnitude: 4.5m_b(GS), 4.3M_L(PM)
Intensity III: Anchorage (PM).
Intensity II: Talkeetna (PM).

15 October (GS) Southern Alaska
Origin time: 23 35 51.2
Epicenter: 59.705N., 153.072W.
Depth: 121 km
Magnitude: 4.6m_b(GS)
Intensity III: Homer.

18 October (GS) Central Alaska
Origin time: 19 22 10.1
Epicenter: 63.153N., 150.443W.
Depth: 119 km
Magnitude: None computed
Felt: Cantwell (PM).

ALASKA—Continued

19 October (GM) Southern Alaska
Origin time: 21 53 34.0
Epicenter: 59.509N., 152.682W.
Depth: 81 km
Magnitude: 4.0M_L(PM)
Intensity II: Homer (PM).

22 October (GM) Southern Alaska
Origin time: 18 31 34.1
Epicenter: 61.339N., 146.849W.
Depth: 38 km
Magnitude: 4.0M_L(PM)
Intensity III: Valdez (PM).

24 October (EE) Andreanof Islands, Aleutian Islands
Origin time: 11 00 50.3
Epicenter: 51.384N., 176.750W.
Depth: 37 km
Magnitude: 5.2m_b(GS), 4.3M_S(GS), 4.7M_L(PM)
Moment: 7.1 x 10^{23} dyne-cm (HR)
Intensity III: Adak Island (PM).

24 October (GM) Southern Alaska
Origin time: 14 34 53.8
Epicenter: 60.946N., 151.486W.
Depth: 69 km
Magnitude: 3.2M_L(PM)
Felt: Eagle River (PM).

27 October (GM) Southern Alaska
Origin time: 19 39 36.5
Epicenter: 60.928N., 149.464W.
Depth: 39 km
Magnitude: 3.6M_L(PM)
Intensity IV: Anchorage.
Intensity III: Eagle River.

4 November (GM) Southern Alaska
Origin time: 06 14 18.7
Epicenter: 61.341N., 151.900W.
Depth: 98 km
Magnitude: 4.7m_b(GS)
Intensity III: Hurricane (PM).
Intensity II: Anchorage (PM).

6 November (EE) Andreanof Islands, Aleutian Islands
Origin time: 18 27 02.9
Epicenter: 51.242N., 176.631W.
Depth: 39 km
Magnitude: 5.1m_b(GS), 5.5M_S(GS), 5.2M_L(PM), 5.6M_S(BK)
Moment: 8.5 x 10^{24} dyne-cm (HR)
Intensity IV: Adak Island.

6 November (EE) Andreanof Islands, Aleutian Islands
Origin time: 19 45 40.5
Epicenter: 51.072N., 176.516W.
Depth: 20 km
Magnitude: 4.8m_b(GS)
Intensity IV: Adak Island.

19 November (GS) Andreanof Islands, Aleutian Islands
Origin time: 19 00 11.4
Epicenter: 51.036N., 176.001W.
Depth: Normal
Magnitude: 4.5M_L(PM)
Intensity III: Adak Island.

26 November Central Alaska
Origin time: 08 41
Epicenter: Not located.
Depth: None computed.
Magnitude: 3.5M_L (AK)
Intensity IV: North Pole (press report).
Intensity III: Eielson Air Force Base.
Felt: Fairbanks (press report).

26 November (GM) Southern Alaska
Origin time: 21 04 43.4
Epicenter: 61.774N., 150.887W.
Depth: 62 km
Magnitude: 3.6M_L(PM)
Intensity III: Skwentna.

3 December (EE) Andreanof Islands, Aleutian Islands
Origin time: 05 05 36.7
Epicenter: 51.352N., 176.465W.
Depth: 36 km
Magnitude: 4.6m_b(GS)
Intensity III: Adak Island.

16 December (EE) Andreanof Islands, Aleutian Islands
Origin time: 10 27 24.4
Epicenter: 51.492N., 175.319W.
Depth: 35 km
Magnitude: 5.1m_b(GS), 4.4M_S(GS), 5.0M_L(PM)
Moment: 6.7 x 10^{23} dyne-cm (HR)
Intensity IV: Adak Island.

19 December (EE) Andreanof Islands, Aleutian Islands
Origin time: 13 50 13.3
Epicenter: 51.391N., 176.903W.
Depth: 37 km
Magnitude: 5.3m_b(GS)
Moment: 4.6 x 10^{23} dyne-cm (HR)

ALASKA—Continued

Intensity V:
Adak Island–A few small objects overturned and fell; people had difficulty standing or walking; buildings shook strongly.

27 December (GM) Southern Alaska
Origin time: 03 35 41.4
Epicenter: 61.828N., 148.954W.
Depth: 15 km
Magnitude: 3.1M_L(PM)
Intensity II: Lazy Mountain (PM).

ARIZONA

23 June (PS) Baja California, Mexico
Origin time: 23 46 08.5

See California listing.

8 July (GP) Southern California
Origin time: 09 20 44.5

See California listing.

13 July (HJ) Off the coast of Southern California
Origin time: 13 47 08.2

See California listing.

ARKANSAS

24 May (SL) Southeastern Missouri
Origin time: 12 48 13.5

See Missouri listing.

CALIFORNIA

5 January (BK) Central California
Origin time: 05 18 49.1
Epicenter: 37.262N., 121.665W.
Depth: 6 km
Magnitude: 2.7M_L(BK)
Moment: 7.4 x 10^{19} dyne-cm (BK)
Felt: Halls Valley area (BK).

6 January (BK) Central California
Origin time: 19 52 42.7
Epicenter: 37.010N., 121.483W.
Depth: 9 km
Magnitude: 3.7M_L(BK)
Moment: 4.4 x 10^{21} dyne-cm (BK)
Intensity III: Aptos, Morgan Hill.
Felt: Gilroy (press report), Hollister (press report).

14 January (BK) Central California
Origin time: 03 07 54.9
Epicenter: 36.563N., 121.203W.
Depth: 7 km
Magnitude: 3.4M_L(BK)
Moment: 1.8 x 10^{20} dyne-cm (BK)
Felt: Bear Valley (press report), Gonzales (press report), Greenfield, Morgan Hill (press report), Soledad (press report).

14 January (BK) Central California
Origin time: 03 09 36.3
Epicenter: 36.572N., 121.205W.
Depth: 7 km
Magnitude: 5.0m_b(GS), 4.8M_L(BK)
Moment: 9.1 x 10^{22} dyne-cm (BK)
Intensity IV: Castroville, Chualar, Gonzales, Greenfield, Hollister, Pacific Grove, Paicines, Salinas, San Ardo, San Juan Bautista, Santa Cruz, Soledad.
Intensity III; Aromas, Coulterville, Davenport, Felton, Half Moon Bay, King City, La Selva Beach, Lockwood, Moss Landing, Redwood Estates, Seaside, Watsonville.
Felt: Placerville (press report).

14 January (PS) Southern California
Origin time: 13 12 14.0
Epicenter: 33.914N., 116.697W.
Depth: 13 km
Magnitude: 3.2M_L(PS), 3.4M_L(GP)
Felt: Palm Desert (PS), Palm Springs (PS).

16 January (BK) Central California
Origin time: 09 38 47.4
Epicenter: 38.428N., 122.645W.
Depth: 5 km
Magnitude: 2.5M_L(BK)
Intensity IV: Santa Rosa.

21 January (BK) Central California
Origin time: 20 07 30.8
Epicenter: 38.543N., 122.995W.
Depth: 1 km
Magnitude: 2.3M_L(BK)
Intensity IV: Guerneville (bottles reported to have been knocked from shelves in a liquor store).

CALIFORNIA—Continued

26 January (BK) Central California
Origin time: 19 20 51.2
Epicenter: 36.810N., 121.275W.
Depth: 7 km
Magnitude: 5.3m_b(GS), 5.3M_S(GS), 5.5M_L(BK)
Moment: 2.0 x 10^{24} dyne-cm (BK)

This earthquake was felt over a land area of about 36,000 km^2 (fig. 9). Some of the effects listed below were taken from a survey by K.K. Harms, U.S. Geological Survey, Menlo Park, Calif., on 26 January 1986 supplemented by information from M.M. Clark, U.S. Geological Survey, Menlo Park, Calif., on 19 March 1986.

Intensity VII:
Paicines–At Almaden Vineyard's Cienaga Winery a 20,000-gallon vat of wine was moved 6.1 m off its foundation and shattered. Several other vats leaked, causing a total loss of 30,000 gallons of wine. The winery estimated damage and loss of wine at $800,000 (from press reports). A few items were thrown from store shelves; hanging pictures fell; shaking was described as strong; felt by many people.
Intensity VI:
Hollister–Broken gas pipes were reported at a few homes and at one apartment building. A water line ruptured; a rockslide occurred on Airline Highway near Murphy Road east of Hollister; merchandise was shaken from shelves at Nob Hill and K&S Markets breaking glass items; two people were slightly injured from glass cuts; and a tree fell onto an old house south of town (press reports). A few windows cracked; felt by many people.
Reynolds Martin Ranch (in Santa Ana Valley)–Boulder-masonry walls at entrance to driveway were partly destroyed; many hanging pictures were shaken off wall hooks in house; pencils were ejected from glass container on table.
Santa Ana Valley–A chimney cracked; young girl was thrown to floor; plumbing for swimming pool was broken when its filter moved 20 cm off its mount. Items fell off shelves in homes; china fell in a cabinet; one house sustained some minor cracks. A water heater moved off its mount in one home (press report).
Tres Pinos–Tres Pinos Inn had vertical structural cracks in the front part of building and a cracked window. At the 19th Hole Bar, two chimneys fell; kitchen stove shifted; bottles fell off shelves and broke; and customers ran out into the street. At the post office a 10-lb scale was knocked off the safe and landed about 0.9 m away. One residential chimney cracked; plaster and dry wall sustained large cracks; many items were thrown off store shelves; many glassware items broke; many small

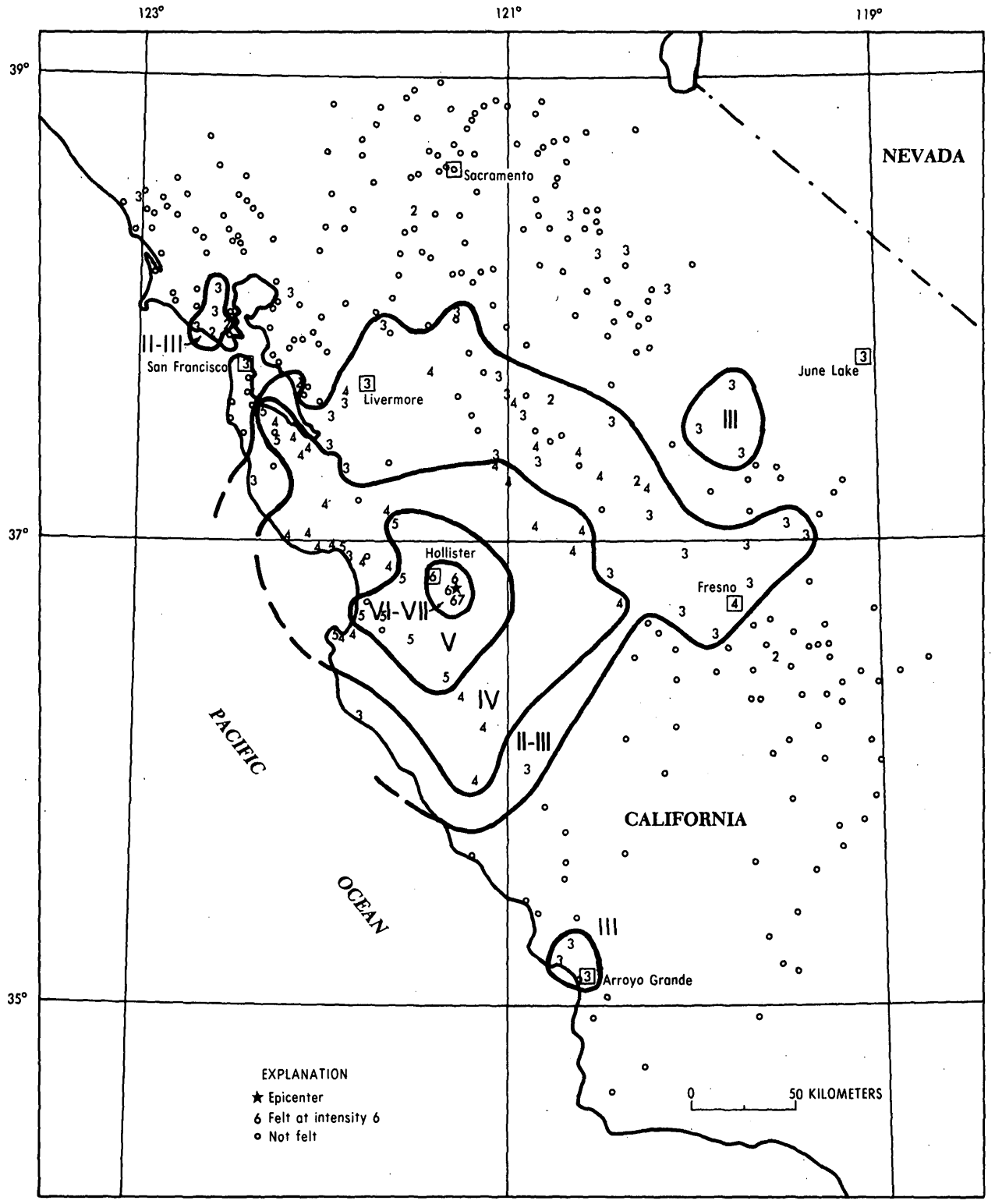


Figure 9. Isoseismal map for the central California earthquake of 26 January, 1986, 19 20 51.2 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed contour lines are inferred isoseismals, and small boxes show locations of towns and cities whose names are plotted.

objects overturned and fell; buildings shook strongly; people had difficulty standing; felt by everyone.

Intensity V:

Aptos–A few items were thrown from store shelves; a few small objects overturned and fell; shaking was described as strong; felt by and frightened several people.

Chualar–Plaster walls sustained hairline cracks; a few items were thrown off store shelves; a few small objects overturned and fell; buildings shook strongly; windows, doors, and dishes rattled loudly; trees and bushes shook moderately; standing vehicles rocked moderately; felt by everyone.

Marina–A few small objects overturned and fell; hanging pictures were out of place; shaking was described as strong; felt by everyone.

Pacific Grove–Standing and moving vehicles rocked moderately; trees and bushes shook moderately; windows, doors, and dishes rattled loudly; buildings shook moderately; the vibration was described as strong; felt by and frightened many people.

Redwood City–A few small objects fell; hanging pictures fell; water splashed onto sides of swimming pools; felt by many people.

Salinas–Trees and bushes shook moderately; standing vehicles rocked slightly; a few small objects overturned and fell; hanging pictures swung; buildings shook moderately; shaking was described as moderate with some difficulty in standing; felt by many people.

San Juan Bautista (press report)–Standing and moving vehicles rocked slightly; trees and bushes shook slightly; hanging pictures swung; shaking was described as moderate; felt by everyone.

San Martin–A few items were thrown off store shelves; standing vehicles rocked slightly; trees and bushes shook slightly; pictures swung out of place; windows, doors, and dishes rattled loudly; shaking was described as moderate with some difficulty in standing; felt by everyone.

San Mateo–Standing and moving vehicles rocked slightly; trees and bushes shook slightly; a few items were thrown off store shelves; a few glassware items broke; a few small objects overturned and fell; hanging objects swung violently; shaking was described as strong; felt by and frightened many people.

Silva Ranch–Items fell off shelves; water sloshed out of the toilet; there were some minor cracks in the house.

Soledad–Standing vehicles rocked slightly; trees and bushes shook slightly; a few small objects overturned and fell; hanging pictures swung; buildings shook slightly; felt by and frightened many people.

Intensity IV: Aromas, Campbell, Capitola, Ceres, Davenport, East Santa Cruz, Felton, Fresno, Greenfield, Gustine, Hilmar, Jolon, King City, LeGrand, Los Altos, Los Banos, Mendota, Merced, Moffett Field Naval Air Station, Monterey, Monterey Bay Academy, Morgan Hill, Mount Hermon, Mountain View, Newman, Palo Alto, Pleasanton, Redwood Estates, San Carlos, Santa Clara, Santa Cruz, Santa Rita Park, Seaside, Soquel, South Dos Palos, Stanford University (press report), Tracy, Watsonville, Winton.

Intensity III: Ahwahnee, Alviso, Arnold, Arroyo Grande, Auberry, Avila Beach, Big Sur, Bolinas, Brentwood, Chowchilla, Clovis, Coyote, Crows Landing, El Portal, Fairfax, Firebaugh, Fremont, Friant, June Lake, Kerman, Keyes, La Selva Beach, Lathrop, Livermore, Long Barn, Madera, Mariposa, Modesto, Mountain Ranch, Novato, Pescadero, Pine Grove, Port Costa, Raisin, San Luis Obispo (press report), Salida, San Ardo, San Francisco (press report), San Francisco International Airport, San Jose, Stevinson, Stockton (press report), Sunol, Tollhouse, Villa Grande.

Intensity II: Clarksburg, Dos Palos, Kingsburg, Larkspur, Planada, San Lorenzo, Stinson Beach, Waterford.

Felt: Gilroy (press report).

30 January (BK) Central California
Origin time: 17 47 07.5
Epicenter: 37.645N., 121.837W.
Depth: 4 km
Magnitude: 2.9M_L(BK)
Moment: 6.6 x 10^{20} dyne-cm (BK)
Felt: Livermore (BK), Pleasanton (BK).

2 February (BK) Northern California
Origin time: 19 31 22.8
Epicenter: 40.802N., 124.063W.
Depth: 25 km
Magnitude: 3.2M_L(BK)
Moment: 1.6 x 10^{20} dyne-cm (BK)
Felt: Eureka (BK).

15 February (BK) Northern California
Origin time: 22 27 01.0
Epicenter: 39.630N., 122.072W.
Depth: 22 km
Magnitude: 3.1M_L(BK)
Moment: 1.0 x 10^{22} dyne-cm (BK)
Intensity III: Durham.
Intensity II: Artois.
Felt: Chico (BK).

17 February (PS) Southern California
Origin time: 02 12 33.5
Epicenter: 34.116N., 116.030W.
Depth: 11 km

Magnitude: 4.0M_L(PS), 3.8M_L(GP)
Felt: Palm Springs (PS).

17 February (PS) Southern California
Origin time: 10 58 38.6
Epicenter: 32.966N., 115.552W.
Depth: 8 km
Magnitude: 3.3M_L(PS), 3.4M_L(GP)
Intensity IV: Brawley (press report).

18 February (PS) Southern California
Origin time: 01 25 29.0
Epicenter: 32.962N., 115.543W.
Depth: 5 km
Magnitude: 3.0M_L(PS)
Felt: Brawley (press report).

18 February (PS) Southern California
Origin time: 01 26 29.0
Epicenter: 32.957N., 115.554W.
Depth: 5 km
Magnitude: 3.0M_L(PS), 3.1M_L(GP)
Felt: Brawley (press report).

19 February (GP) Southern California
Origin time: 00 47 24.5
Epicenter: 32.485N., 117.567W.
Depth: 6 km
Magnitude: 3.9M_L(PS), 3.8M_L(GP)
Intensity III: San Diego (press report).

19 February (BK) Central California
Origin time: 03 01 09.1
Epicenter: 36.827N., 121.277W.
Depth: 9 km
Magnitude: 3.1M_L(BK)
Moment: 1.2 x 10^{21} dyne-cm (BK)
Felt: Hollister (press report).

19 February (BK) Central California
Origin time: 23 49 07.7
Epicenter: 36.848N., 121.297W.
Depth: 9 km
Magnitude: 3.1M_L(BK),
Moment: 1.7 x 10^{21} dyne-cm (BK)
Felt: Hollister (press report).

3 March (PS) Southern California
Origin time: 13 18 20.3
Epicenter: 33.746N., 117.525W.
Depth: 6 km
Magnitude: 3.2M_L(PS), 3.3M_L(GP)
Intensity IV: Corona.

CALIFORNIA—Continued

Intensity III: Canyon Lake, El Toro, Rio, Riverside, Silverado.
Felt: Colton (press report).

3 March (BK) Central California
Origin time: 14 45 20.0
Epicenter: 36.835N., 121.268W.
Depth: 6 km
Magnitude: 2.7M_L(BK)
Felt: Hollister (BK).

9 March (BK) Central California
Origin time: 01 28 13.0
Epicenter: 37.672N., 122.498W.
Depth: 7 km
Magnitude: 3.0M_L(BK)
Moment: 4.8 x 10^{20} dyne-cm (BK)
Felt: Daly City (BK), San Francisco area (BK).

9 March (PS) Southern California
Origin time: 22 41 42.6
Epicenter: 34.113N., 117.769W.
Depth: 5 km
Magnitude: 3.3M_L(PS), 3.5M_L(GP)
Intensity IV: Azusa, Claremont, La Verne, Mount Baldy, Pomona.
Intensity III: Cucamonga, Glendora, Guasti, Ontario, Upland.

10 March (GP) Southern California
Origin time: 15 33 16.0
Epicenter: 34.403N., 119.813W.
Depth: 24 km
Magnitude: 4.4m_b(GS), 4.1M_L(PS), 4.0M_L(GP), 4.4M_L(BK)
Intensity V:
Goleta–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; interior walls sustained hairline cracks; a foundation cracked; trees and bushes shook slightly; standing vehicles rocked slightly; felt by everyone.
Santa Barbara–People ran out into the streets; gas leaks were reported; it was felt on offshore drilling platforms; standing and moving vehicles rocked slightly; trees and bushes shook slightly; felt by most people.
Intensiy IV: Los Olivos, Santa Ynez, Solvang, Summerland, Ventura.
Intensity II: Oxnard.

16 March (PS) Southern California
Origin time: 01 45 45.3
Epicenter: 34.150N., 117.313W.
Depth: 5 km

Magnitude: 2.9M_L(PS), 3.0M_L(GP)
Felt: San Bernardino (press report).

19 March (GS) Central California
Origin time: 09 27 39.2
Epicenter: 37.468N., 118.611W.
Depth: 5 km
Magnitude: 3.4M_L(PS), 3.4M_L(BK)
Intensity III: Miramonte.
Intensity II: Auberry.

20 March (PS) Southern California
Origin time: 06 49 40.3
Epicenter: 33.794N., 118.310W.
Depth: 10 km
Magnitude: 3.2M_L(PS), 3.3M_L(GP)
Felt: Carson (press report), Downey (press report), Gardena (press report), Long Beach (press report), San Pedro (press report), Torrance (PS).

23 March (BK) Central California
Origin time: 04 58 01.4
Epicenter: 38.845N., 122.887W.
Depth: 2 km
Magnitude: 3.7m_b(GS), 3.7M_L(BK)
Intensity V:
Cobb–A few small objects overturned; buildings shook strongly; windows, doors, and dishes rattled loudly; shaking was described as strong; felt by and frightened many people.
Intensity IV: Jenner, Loch Lomond.
Intensity III: Boyes Hot Springs, Freestone.

24 March (PS) Southern California
Origin time: 05 14 40.0
Epicenter: 33.785N., 118.305W.
Depth: 8 km
Magnitude: 2.8M_L(PS)
Intensity IV: Palos Verdes Peninsula, Paramount, Torrance, Wilmington.
Intensity III: Gardena, Lomita.
Felt: Carson (press report), Compton (press report), Long Beach (press report).

29 March (BK) Central California
Origin time: 16 24 04.2
Epicenter: 37.872N., 122.201W.
Depth: 9 km
Magnitude: 4.1M_L(BK)
Moment: 2.5 x 10^{22} dyne-cm (BK)

CALIFORNIA—Continued

Intensity V:
Alameda Naval Air Station–Plaster cracked; small objects moved; windows and doors rattled.
Concord–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned or fell.
Kensington–Exterior stucco walls cracked and some stucco fell; shaking was described as strong; felt by and frightened many people.
Martinez–A few glassware items or dishes broke; a few small objects overturned and fell; felt by and frightened many people.
Pleasant Hill– A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; a bottom hinge on the entrance door of the post office was broken; felt by many people.
Intensity IV: Alameda, Albany, Berkeley, Berkeley (Grizzly Peak area–press report), Canyon, Danville, Diablo, El Cerrito (a plate-glass store window cracked), Hayward, Hercules, Lafayette, Moraga, Martinez, Oakland, Pacheco, Pinole, Port Costa, Richmond, Rodeo, Ross, San Pablo, South Berkeley.
Intensity III: San Leandro, Vallejo.
Intensity II: Oakland International Airport.
Felt: Mill Valley (press report), San Francisco (press report).

31 March (BK) Central California
Origin time: 11 55 40.1
Epicenter: 37.488N., 121.693W.
Depth: 8 km
Magnitude: 5.5m_b(GS), 5.5M_S(GS), 5.7M_L(BK)
Moment: 2.6 x 10^{24} dyne-cm (BK)

This earthquake, called the Mount Lewis earthquake, caused minor injuries to six people (two in Fremont and four in San Jose) and light damage in Fremont, Mount Hamilton, Newark, and San Jose. It was felt over a land area of about 39,500 km^2 (fig. 10). No surface rupture was reported by geologists in the field (Bolt and Uhrhammer, 1986).

The Mount Lewis earthquake was preceded by two M_L 2.6 foreshocks, the first on March 24 at 01:54 UTC and the second on March 31 at 04:05 UTC, and was followed by 22 aftershocks with magnitudes $\geq M_L$ 2.5 (Bolt and Uhrhammer, 1986).

Thiel and Arnold (1986) reported a peak acceleration of 0.31 *g* in the north-south direction from the strong-motion records for the roof of the Santa Clara County Administration building. Damage to the building was estimated at between $45,000 and $100,000; most of the damage was to the elevator. The other damage occurred on

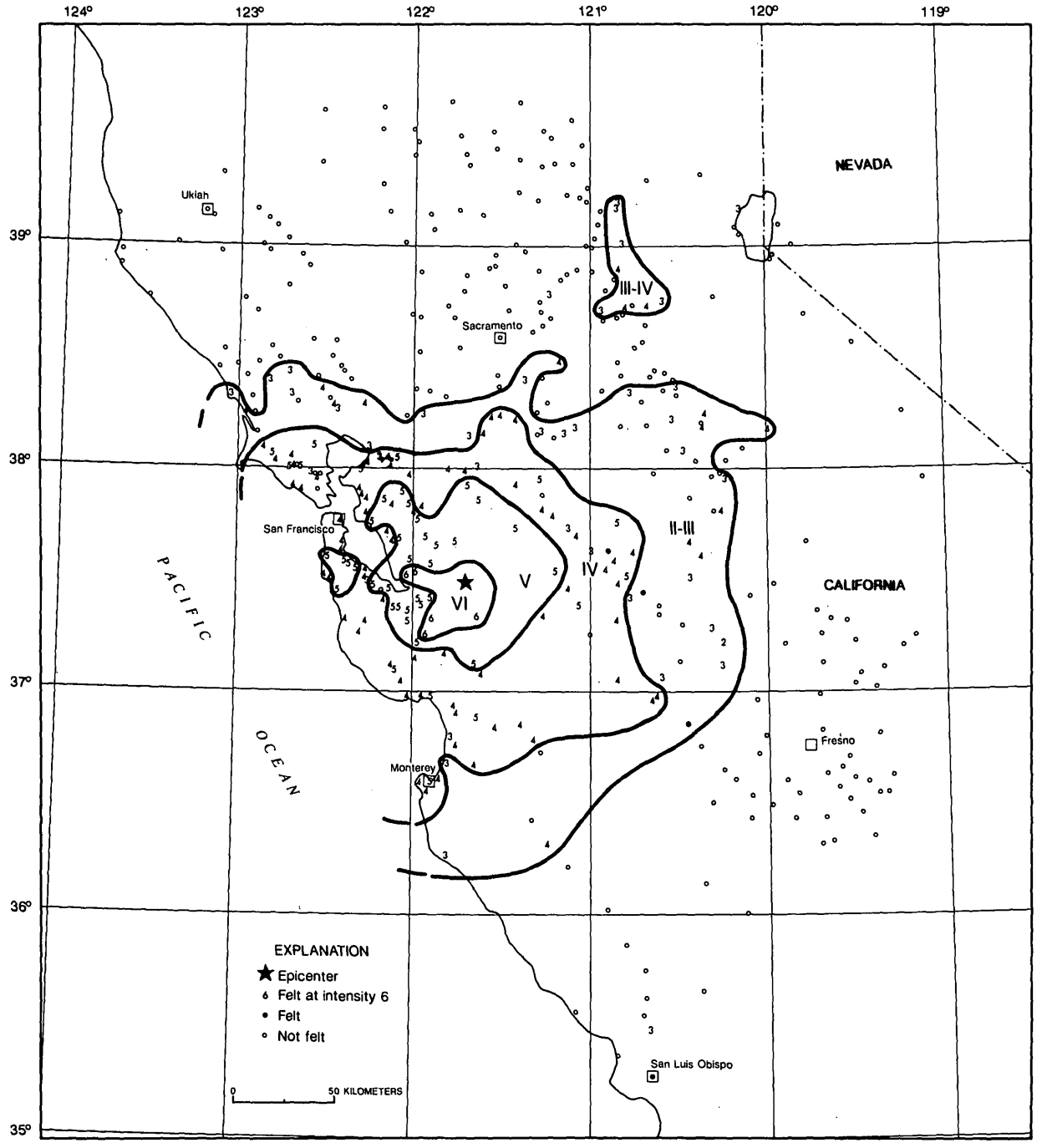


Figure 10. Isoseismal map for the Mount Lewis, California, earthquake of 31 March, 1986, 11 55 40.1 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed contour lines are inferred isoseismals, and small boxes show locations of towns and cities whose names are plotted.

the upper stories of the building, from the 7th through the 12th floors, where cabinets and bookcases were thrown down, glass panels broken, and file cabinets tipped over. Other damage was to overhead power lines (15 burned; 15 had fuses burned out, causing some disruption; and 14 shorted) (Schiff, 1986).

Intensity VI:

Fremont–A water line broke at a Safeway warehouse; many bottles broke at Abe's Liquors; at Lucky Food Center many jars and bottles broke; 14 ceiling tiles fell; and a 3-month-old store wall cracked; at SyQuest Technology a half-dozen wooden structural beams were cracked (press reports). A few windows cracked; many small objects overturned and fell; buildings shook strongly; felt by and frightened many people.

Mount Hamilton–Exterior reinforced-concrete walls cracked; many glassware items or dishes broke; many small objects overturned and fell; hanging pictures fell; buildings shook strongly; standing vehicles rocked moderately; trees and bushes shook moderately. At Lick Observatory several existing cracks in a building were widened; some fittings in the hydraulic system of the telescope were cracked and required repair (press report).

Newark–Ceiling tiles fell in the Walgreen drug store; picture frames, clocks, and ceramic gift items fell to the floor and broke in Scribbles and Giggles store; merchandise fell off store shelves in Alpha Beta Market and the floor had a small crack (press report).

San Jose–Chimneys cracked; foundations cracked; tombstones fell; interior walls sustained hairline cracks; small appliances overturned; many glassware items or dishes broke; many items were shaken off store shelves; buildings shook strongly; people had difficulty standing or walking; felt by many people. The Santa Clara Administration building had damage to two elevators (one guide rail was bent; one brake failed; and several motor generator sets moved); many file cabinets and bookcases were thrown over on the upper floors (Thiel and Arnold, 1986). Twelve power lines burned, causing power failure (Schiff, 1986).

San Jose (Cambrian Park)–Some windows were broken out; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; felt by and frightened many people.

The most common effects at the places listed below were that: shaking was described as moderate; buildings shook moderately; a few small objects overturned and fell; pictures swung with some left out of place; windows, doors, and dishes rattled; felt by many people.

Intensity V:

Agnew–A few windows cracked; a few glassware items or dishes broke; a few small appliances overturned; a few items were shaken off store shelves; many small objects overturned and fell; trees and bushes shook moderately.

Alameda–A few items were shaken off store shelves; windows, doors, and dishes rattled loudly.

Alamo–Dry wall sustained hairline cracks; windows, doors, and dishes rattled loudly.

Alviso–A few windows cracked; a few glassware items or dishes broke; people had difficulty standing.

Aptos–A few items were shaken off store shelves; hanging pictures fell; small appliances overturned; a few glassware items or dishes broke; many small objects overturned and fell; trees and bushes shook moderately.

Aromas–Interior walls sustained hairline cracks.

Benicia–Plaster walls sustained hairline cracks.

Brentwood–Interior walls sustained hairline cracks; trees and bushes shook slightly.

Brookdale.

Burlingame–A few items fell from shelves; racked an armoire (press report).

Byron–Buildings shook strongly; windows, doors, and dishes rattled loudly.

Canyon–People had difficulty standing; trees and bushes shook slightly.

Crows Landing–Small appliances overturned.

Cupertino–A few windows cracked.

Denair–A few glassware items or dishes broke.

Dublin–People had difficulty standing; interior walls sustained hairline cracks; mortar was loosened on a fireplace.

East Palo Alto–A few glassware items or dishes broke; windows, doors, and dishes rattled loudly; shaking was described as strong.

Half Moon Bay–A few items were shaken off store shelves; a few glassware items or dishes broke; buildings shook strongly.

Lagunitas–A few windows cracked; a few glassware items or dishes broke.

Livermore–A water heater was knocked off its supports; minor rockslides occurred nearby (press report).

Los Altos–Dry wall sustained hairline cracks.

Los Gatos–Plaster walls sustained hairline cracks; moving vehicles rocked slightly; trees and bushes shook slightly.

Millbrae–A few small appliances overturned.

Milpitas–There were hairline cracks in a wall of one of the minimum security buildings of the Elmwood Rehabilitation Center (press report). A few glassware items or

dishes broke; a foundation cracked; buildings shook strongly.
Monterey–A few windows cracked; a few glassware items or dishes broke.
Morgan Hill–Dry wall sustained hairline cracks.
Mountain View–A few items were shaken off store shelves; standing and moving vehicles rocked slightly; trees and bushes shook slightly; small appliances overturned.
Novato–Standing and moving vehicles rocked slightly; trees and bushes shook slightly.
Oakdale–Plaster walls sustained hairline cracks.
Pacifica–A few items shook off of shelves in the Central Market (press report).
Pinole–Interior walls sustained hairline cracks; there were cracks in the street; trees and bushes shook slightly.
Pleasanton–Interior walls sustained hairline cracks; standing vehicles rocked moderately; trees and bushes shook moderately; hanging objects swung violently.
Point Reyes Station.
Redwood City–Plaster walls sustained hairline cracks; a few items fell from shelves; standing vehicles rocked slightly; trees and bushes shook slightly; felt by everyone.
San Jose (Blossom Hill)–A few items were shaken off store shelves; standing vehicles rocked slightly; trees and bushes shook slightly.
San Mateo (press report)–A few items shook off of shelves (press report).
San Pablo–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; a few glassware items or dishes broke.
Stockton (press report)–Pictures were knocked off walls; water sloshed in a swimming pool; a few items were shaken off store shelves (press report).
Sunnyvale–Interior walls sustained hairline cracks.
Sunol–Hanging pictures fell.
Tracy–A few glassware items or dishes broke; windows, doors, and dishes rattled loudly.
Union City–Many items were shaken off store shelves; a few small appliances overturned; a few glassware items or dishes broke; buildings shook strongly.
Walnut Creek–A few items were shaken off store shelves.
Westley–A few items were shaken off store shelves.
Woodacre–Plaster walls sustained hairline cracks; windows, doors, and dishes rattled loudly; shaking was described as strong.

Intensity IV: Albany, Antioch, Arnold, Belmont, Berkeley, Big Oak Flat, Bolinas, Boulder Creek, Brisbane, Camino, Campbell, Capitola, Carmel, Castroville, Concord, Danville, Diablo, Dillon Beach, Dos Palos, El Cerrito, El Granada, Felton, Forest Knolls, Foster City (press report),

CALIFORNIA—Continued

Freedom, Georgetown, Glen Ellen, Greenfield, Hathaway Pines, Hayward, Hercules, Hickman, Hollister, Holt, Hughson, Inverness, Isleton, Keyes, La Grange, La Honda, Lathrop, Loma Mar, Los Banos, Manteca, Martinez, Millbrae, Moffett Field, Montara, Moraga, Moss Beach, Mount Hermon, Napa, New Almaden, Nicasio, Oakland, Oakley, Olema, Patterson, Pebble Beach, Pinecrest, Placerville, Port Costa, Redwood Estates, Rheem Valley, Rodeo, Ross, Ryde, Salida, Salinas, San Bruno, San Carlos, San Francisco International Airport, San Francisco, San Gregorio, San Juan Bautista, San Leandro, San Lorenzo, San Martin, Santa Clara, Santa Cruz, Seaside, Slough House, Sonoma, South Dos Palos, Stevinson, Stinson Beach, Thornton, Tres Pinos, Turlock, Walnut Grove, Waterford, Watsonville.
Intensity III: Alamo, Atascadero, Bethel Island, Big Sur, Bodega Bay, Chowchilla, Clements, Crockett, Delhi, Dutch Flat, Elk Grove, Fairfax, Foresthill, Gold Run, Jackson, Lockeford, Marina, Modesto, Moss Landing, Mountain Ranch, Planada, Pollock Pines, Rescue, Rio Vista, Ripon, Rocklin, Rohnert Park, Santa Rita Park, Santa Rosa, Sebastopol, Snelling, Sonoma, South San Francisco, Tahoe City, Travis Air Force Base, Tuolumne, Vallecito, Vallejo, Vineburg, Wilseyville.
Intensity II: Le Grand.
Felt: Ballico, Empire, Firebaugh, San Luis Obispo (press report).

5 April (PS) Southern California
Origin time: 00 30 50.6
Epicenter: 33.975N., 117.248W.
Depth: 13 km
Magnitude: 2.6M_L(PS)
Felt: Riverside (PS).

5 April (PS) Southern California
Origin time: 06 50 40.4
Epicenter: 33.730N., 118.010W.
Depth: 14 km
Magnitude: 3.6M_L(PS), 3.9M_L(GP)
Intensity V:
Huntington Beach–Plaster walls sustained hairline cracks; a few small objects overturned and fell; a few items were shaken off store shelves; buildings shook moderately; felt by many people.
Long Beach–Plaster walls sustained hairline cracks; a few small objects overturned and fell; a few glassware items or dishes broke; a few windows cracked; buildings shook strongly; felt by many people.
Santa Ana–A few small objects overturned and fell; buildings shook moderately; shaking was described as strong; felt by many people.
Intensity IV: Buena Park, Cerritos, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, La Mirada, Los

Alamitos, Paramount, Seal Beach, South Gate, Stanton, Sunset Beach, Torrance, Upland, Walnut, Westminster, Whittier, Yorba Linda.
Intensity III: Anaheim, Artesia, La Mirada, Norwalk, Palos Verdes, Santa Ana.
Intensity II: Glendora.
Felt: Orange (press report).

5 April (PS) Southern California
Origin time: 17 21 49.5
Epicenter: 33.336N., 115.709W.
Depth: 3 km
Magnitude: 3.8M_L(PS), 3.7M_L(GP)
Intensity IV: Bombay Beach (press report).
Intensity III: Niland.

15 April (BK) Central California
Origin time: 09 25 56.7
Epicenter: 36.677N., 121.347W.
Depth: 4 km
Magnitude: 3.6M_L(BK)
Moment: 3.6 x 10^{21} dyne-cm (BK)
Intensity II: San Juan Bautista (press report).

18 April (BK) Central California
Origin time: 11 00 21.7
Epicenter: 38.230N., 122.178W.
Depth: 3 km
Magnitude: 2.3M_L(BK)
Felt: Suisun Bay area (BK).

20 April (PS) Southern California
Origin time: 12 45 49.2
Epicenter: 34.224N., 117.469W.
Depth: 12 km
Magnitude: 2.7M_L(PS)
Felt: San Bernardino (PS).

21 April (PS) Southern California
Origin time: 09 12 17.1
Epicenter: 34.378N., 119.768W.
Depth: 11 km
Magnitude: 3.0M_L(PS)
Felt: Goleta (PS), Santa Barbara (PS).

23 April (BK) Central California
Origin time: 16 35 06.0
Epicenter: 37.428N., 121.800W.
Depth: 2 km
Magnitude: 2.2M_L(BK)
Felt: Milpitas (BK), San Jose (BK).

CALIFORNIA—Continued

28 April (BK) Central California
Origin time: 17 33 47.8
Epicenter: 37.478N., 121.693W.
Depth: 7 km
Magnitude: 3.5M_L(BK)
Moment: 3.9 x 10^{21} dyne-cm (BK)
Felt: Fremont (press report), Pleasanton (press report).

28 April (BK) Central California
Origin time: 22 18 40.6
Epicenter: 36.815N., 121.258W.
Depth: 8 km
Magnitude: 3.6M_L(BK)
Moment: 3.2 x 10^{21} dyne-cm (BK)
Intensity IV: Paicines, Tres Pinos.

30 April (BK) Northern California
Origin time: 22 37 30.4
Epicenter: 40.760N., 124.560W.
Depth: 19 km
Magnitude: 3.5m_b(GS), 3.9M_L(BK)
Moment: 1.3 x 10^{21} dyne-cm (BK)
Intensity III: Samoa.
Felt: Eureka (telephone report).

2 May (PS) Southern California
Origin time: 08 19 07.9
Epicenter: 33.677N., 116.826W.
Depth: 12 km
Magnitude: 2.6M_L(PS)
Felt: Epicentral area (PM).

10 May (BK) Central California
Origin time: 22 30 13.1
Epicenter: 37.348N., 122.288W.
Depth: 13 km
Magnitude: 2.7M_L(BK)
Moment: 1.2 x 10^{20} dyne-cm (BK)
Felt: Redwood City (BK).

12 May (BK) Central California
Origin time: 09 17 09.3
Epicenter: 37.462N., 121.693W.
Depth: 6 km
Magnitude: 3.1M_L(BK)
Moment: 7.2 x 10^{20} (BK)
Felt: San Jose (BK), Sunnyvale (BK).

12 May (BK) Central California
Origin time: 23 00 19.7
Epicenter: 36.848N., 121.297W.
Depth: 6 km
Magnitude: 3.2M_L(BK), 3.5M_L(GP)

Moment: 1.8 x 10^{21} dyne-cm (BK)
Felt: San Benito County (BK).

13 May (PS) Southern California
Origin time: 11 55 40.3
Epicenter: 33.793N., 118.312W.
Depth: 10 km
Magnitude: 2.7M_L(PS)
Felt: Carson (PS).

13 May (PS) Southern California
Origin time: 16 35 45.0
Epicenter: 33.791N., 118.302W.
Depth: 8 km
Magnitude: 2.7M_L(PS)
Felt: Epicentral area (PS).

14 May (BK) Central California
Origin time: 00 30 09.6
Epicenter: 37.363N., 122.262W.
Depth: 14 km
Magnitude: 3.2M_L(BK)
Moment: 7.8 x 10^{20} dyne-cm (BK)
Felt: Monterey (press report), Palo Alto (BK), Redwood City (BK).

15 May (BK) Central California
Origin time: 08 32 02.1
Epicenter: 37.477N., 121.695W.
Depth: 7 km
Magnitude: 3.3M_L(BK)
Moment: 9.5 x 10^{20} dyne-cm (BK)
Felt: Fremont (BK), San Jose (BK).

19 May (PS) Southern California
Origin time: 04 12 53.3
Epicenter: 33.892N., 118.387W.
Depth: 10 km
Magnitude: 3.0M_L(PS), 3.1M_L(GP)
Felt: Torrance (PS).

20 May (PS) Southern California
Origin time: 07 11 40.2
Epicenter: 33.940N., 118.668W.
Depth: 6 km
Magnitude: 2.8M_L(PS)
Felt: Santa Monica (PS).

23 May (PS) Central California
Origin time: 11 41 55.1
Epicenter: 35.806N., 118.019W.
Depth: 10 km

CALIFORNIA—Continued

Magnitude: 3.6m_b(GS), 4.1M_L(PS), 3.9M_L(GP), 4.0M_L(BK)
Intensity IV: Wofford Heights.
Intensity III: Bakersfield, Ducor, Edison, Lake Isabella, Tehachapi.
Intensity II: Onyx.

25 May (BK) Central California
Origin time: 09 51 03.1
Epicenter: 38.810N., 122.798W.
Depth: 4 km
Magnitude: 3.2M_L(BK)
Moment: 5.4 x 10^{21} dyne-cm (BK)
Felt: Lake Berryessa (BK).

31 May (BK) Central California
Origin time: 08 47 56.1
Epicenter: 36.618N., 121.255W.
Depth: 4 km
Magnitude: 4.6m_b(GS), 3.7M_S(GS), 4.7M_L(BK)
Moment: 8.0 x 10^{22} dyne-cm (BK)
Intensity IV: Hollister (3 mi south), Paicines, Salinas, Tres Pinos.
Intensity III: Big Sur, Carmel, Castroville, Freedom, Moss Landing, Seaside, Watsonville.

3 June (PS) Southern California
Origin time: 14 14 49.3
Epicenter: 33.788N., 116.344W.
Depth: 11 km
Magnitude: 3.7M_L(PS), 3.7M_L(GP)
Intensity IV: Palm Desert (press report).
Felt: Palm Springs (press report).

9 June (BK) Central California
Origin time: 04 48 05.8
Epicenter: 37.960N., 121.668W.
Depth: 1 km
Magnitude: 2.1M_L(BK)
Felt: Brentwood area (BK).

11 June (BK) Central California
Origin time: 13 03 01.8
Epicenter: 36.945N., 121.618W.
Depth: 6 km
Magnitude: 2.7M_L(BK)
Felt: Gilroy (BK).

11 June (BK) Central California
Origin time: 15 08 59.5
Epicenter: 36.620N., 121.277W.
Depth: 7 km
Magnitude: 3.5M_L(BK), 3.5M_L(PS)

Moment: 6.2 x 10^{21}(BK)
Felt: Hollister (BK), Salinas (BK).

13 June (GP) Central California
Origin time: 13 25 15.4
Epicenter: 36.060N., 119.938W.
Depth: 6 km
Magnitude: 3.6M_L(GP), 3.9M_L(PS)
Intensity II: Orosi.

18 June (PS) Southern California
Origin time: 14 13 26.4
Epicenter: 33.935N., 116.742W.
Depth: 17 km
Magnitude: 3.5M_L(PS), 3.4M_L(GP)
Felt: Palm Springs (PS).

23 June (PS) Baja California, Mexico
Origin time: 23 46 08.5
Epicenter: 32.174N., 115.160W.
Depth: 6 km
Magnitude: 4.4m_b(GS), 4.4M_L(PS)
Intensity IV: Arizona–San Luis.
Intensity II: California–Bard.
Felt: Arizona–Yuma (telephone report).

26 June (PS) Southern California
Origin time: 05 39 47.8
Epicenter: 33.869N., 118.450W.
Depth: 7 km
Magnitude: 3.2M_L(PS), 3.4M_L(GP)
Intensity IV: Compton, Manhattan Beach, Palos Verdes Estates, Santa Monica, Torrance, Venice.
Intensity III: Redondo Beach.
Felt: Hermosa Beach (press report), Lennox (press report), Long Beach (PS), Los Angeles (press report).

27 June (BK) Central California
Origin time: 04 06 43.4
Epicenter: 37.745N., 121.982W.
Depth: 4 km
Magnitude: 2.4M_L(BK)
Felt: Danville (BK), San Ramon (BK).

30 June (BK) Central California
Origin time: 11 00 05.9
Epicenter: 37.842N., 121.763W.
Depth: 11 km
Magnitude: 3.3M_L(BK)
Moment: 1.7 x 10^{21} dyne-cm (BK)
Felt: Alamo (BK), Berkeley (BK), Danville (BK), Richmond (BK).

CALIFORNIA—Continued

2 July Central California
Origin time 09 47
Epicenter: Not located.
Depth: None computed.
Magnitude 1.6M_L(BK)
Intensity IV: Willits.

7 July (GP) Southern California
Origin time: 09 13 22.7
Epicenter: 34.149N., 117.744W.
Depth: 5 km
Magnitude: 3.0M_L(PS)
Felt: Fontana (PS).

8 July (BK) Central California
Origin time: 00 40 23.4
Epicenter: 36.083N., 121.827W.
Depth: 19 km
Magnitude: 4.4m_b(GS), 4.4M_L(BK), 3.6M_L(PS)
Moment: 2.6 x 10^{22} dyne-cm (BK)
Intensity IV: Big Sur.
Intensity III: Monterey.
Intensity II: Lockwood.

8 July (GP) Southern California
Origin time: 09 20 44.5
Epicenter: 33.998N., 116.606W.
Depth: 12 km
Magnitude: 5.8m_b(GS), 6.0M_S(GS), 5.9M_L(PS), 5.6M_L(GP)
Moment: 2.3 x 10^{25} dyne-cm (GS)

This earthquake, known as the North Palm Springs, Calif., earthquake, caused minor injuries to 40 people and an estimated loss of $6 million to structures and their contents (press reports). It was felt over an area of about 130,500 km^2 of Arizona, California, and Nevada (fig. 11). Most of the damage occurred in Riverside County where 4 homes and 16 businesses were destroyed; 102 homes (many of the damaged homes were mobile homes) and 117 businesses were damaged (Earthquake Engineering Research Institute, 1986). There was also major damage to a highway bridge on Interstate 10 and to the Southern California Edison Devers Substation (fig. 12) near the intersection of Interstate 10 and State Highway 62. Minor landslides temporarily closed State Highways 62, 74, and 243. Jones and others (1986) suggested that this earthquake probably occurred on the Banning fault.

The most serious damage was located in the northern end of Coachella Valley and in the Whitewater Canyon area. The Whitewater bridge over Interstate 10 (about 9 mi northwest of Palm Springs) was displaced laterally, leaving a 6–in. gap between the deck and the abutment. In the

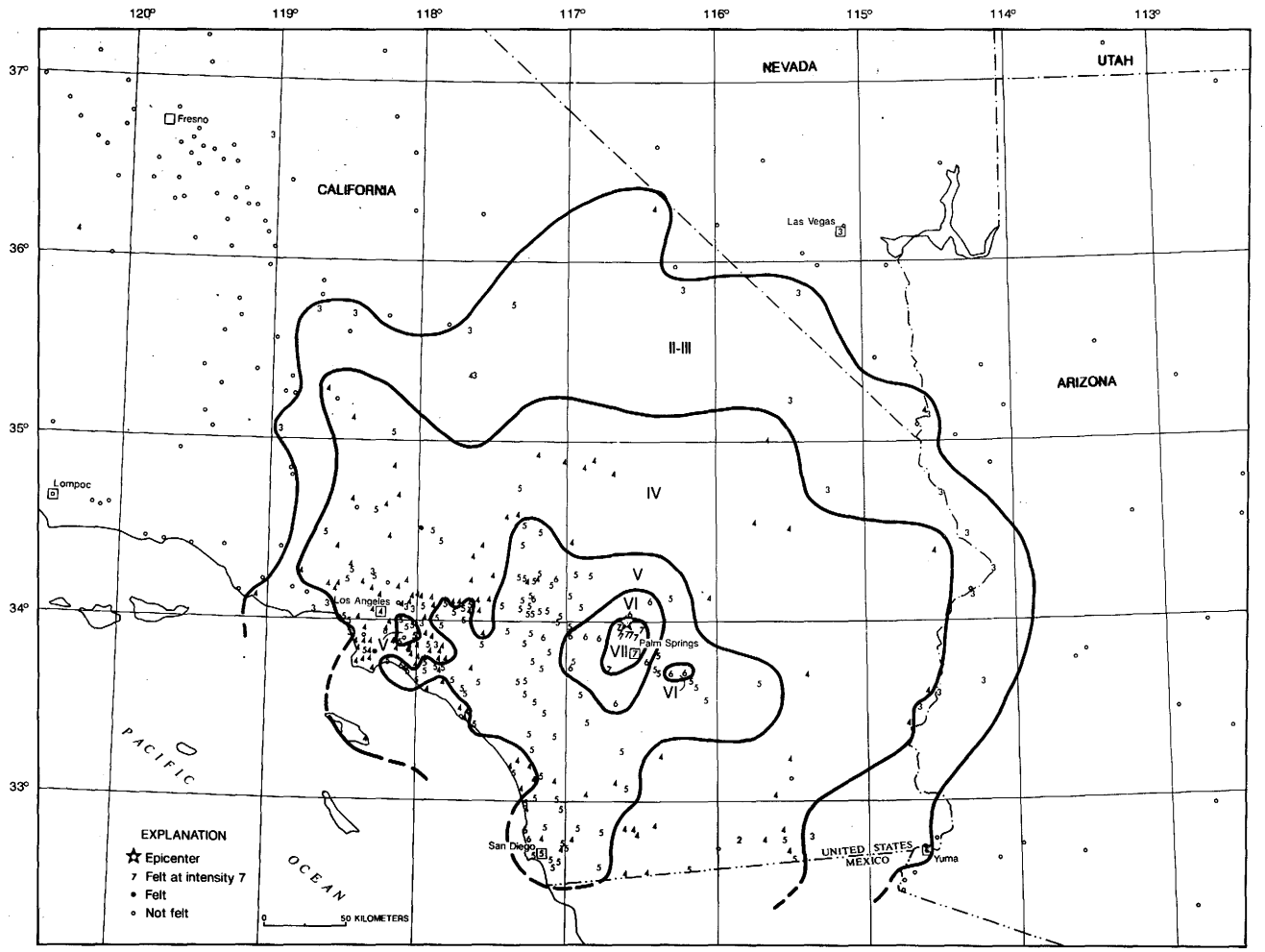


Figure 11. Isoseismal map for the North Palm Springs, California, earthquake of 8 July, 1986, 09 20 44.5 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed contour lines are inferred isoseismals, and small boxes show locations of towns and cities whose names are plotted.

CALIFORNIA—Continued

Whitewater Canyon area, three homes were destroyed when walls were severely cracked, with some partial collapse, and chimneys fell (figs. 13 and 14). In Coachella Valley, near the intersection of Interstate 10 and State Highway 62, the Southern California Edison substation was severely damaged when many ceramic columns were broken and when transformers sheared retaining bolts and moved as much as 10 in. (Earthquake Engineering Research Institute, 1986; Borchardt and Manson, 1986).

En echelon fractures formed along the Banning fault for about 9 km on both sides of State Highway 62 north of Palm Springs; the fractures had a tiny (< 1 mm) right-lateral offset (Sharp and others, 1986).

CALIFORNIA—Continued

The accelerations recorded on the four accelerographs nearest the epicenter were 0.44 *g* vertical and 0.66 *g* horizontal at the Whitewater Trout Farm 5 km northwest; 0.78 *g* vertical and 0.70 *g* horizontal at North Palm Springs 9 km southeast; 0.59 *g* vertical and 0.33 *g* horizontal at Desert Hot Springs 10 km east; and 0.35 *g* vertical and 0.23 *g* horizontal at Morongo Valley 10 km north (from Earthquake Engineering Research Institute, 1986; Borchardt and Manson, 1986).

This earthquake also caused failure of the electrical power, failure of the telephone systems, breaks in water and gas lines, and failure of two Metropolitan Water District pumping stations. The power failure affected

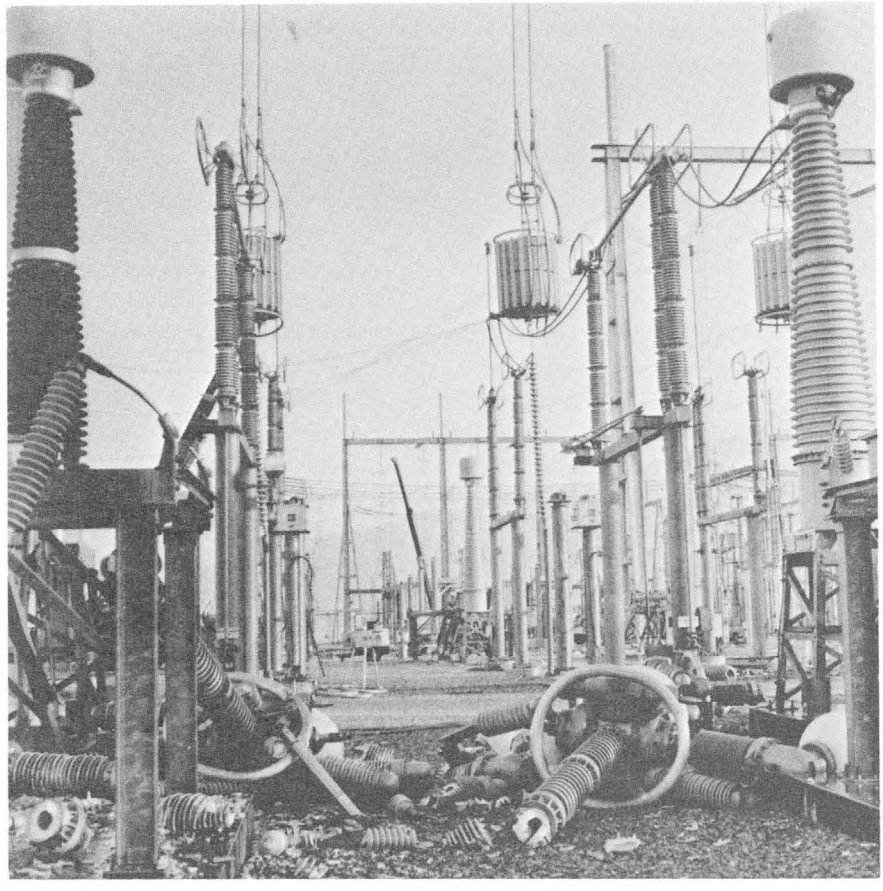


Figure 12. Devers electrical substation, Palm Springs, showing relatively tall porcelain-glass insulators on 10-ft perches. Insulators built in 1982 were destroyed by the July 8, 1986, earthquake (Borchardt and Manson, 1986).

100,000 people for several hours. Telephone failure was minimal; most problems were due to overloading the system. Most water- and gas-line failures occurred in private residences. The pumping-station failures on the Colorado River Aqueduct caused 977 million gallons of water to be dumped into the desert.

Intensity VII:
California—

Desert Hot Springs–Many plate-glass windows were broken in businesses; water lines were broken in many places; two condominiums at Mission Lake Country Club sustained large cracks in walls and broken water lines that flooded some units. Ceiling panels fell in many commercial buildings; many items shook off of shelves in stores; books were shaken off shelves in the library and some shelves were knocked over. At Von's

CALIFORNIA—Continued

Market a 5-in. water main was broken; a ceiling beam separated from the roof over the meat department; ceiling tiles fell; and much of the merchandise was thrown onto the floor. At City Hall, filing cabinets were tipped over (information from press and fire-department reports).

Devers substation (Southern California Edison) 2 mi northwest of North Palm Springs.– This substation is about 200 meters north of the Banning fault, which displayed minor cracks just south of the substation. Most damage was concentrated in ceramic columns in transformer lightning arrestors, bus taps, disconnect switches, and circuit breakers. Heaviest damage was in the 500-kV switchyard (fig. 12). About 75 percent of the ceramic members were destroyed. One 650,000-lb transformer moved 10 in., shearing the four 1-in.

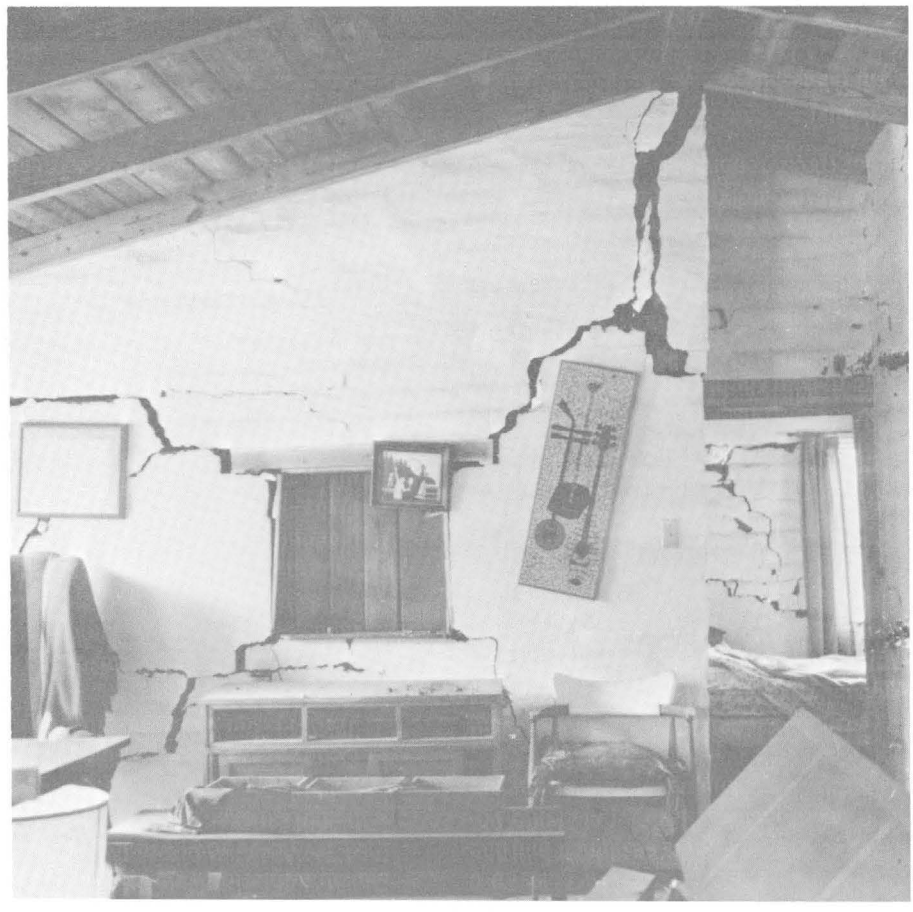


Figure 13. Cracks in adobe walls of the recently remodeled McKenzie house in Whitewater Canyon, Caliifornia (Borchardt and Manson, 1986).

retaining bolts. Another moved enough to bend the anchoring clamps. In the control building relays were tripped; batteries moved in their racks; ceiling tiles fell; and several storage cabinets fell (from Earthquake Engineering Research Instiute, 1986; Borchardt and Manson, 1986).

Idyllwild–Chimneys were broken at the roof line; one house shifted on its foundation; a back-porch roof fell, causing extensive damage; and a bedroom wall cracked. Many windows broke; small appliances were overturned; many small objects overturned and fell; many items were shaken off store shelves. The elementary school had minor cracking of interior walls in the kitchen and toilet rooms; an unanchored heater moved 1 in.; ceiling acoustical tiles fell; and book shelves pulled away from the wall; books fell to the floor (partially from Earthquake Engineering Research Institute, 1986, press report).

CALIFORNIA—Continued

McKenzie House–The house is about 4.5 mi north of White Water Post Office in Whitewater Canyon. Built about 1946, the house is one story and L-shaped with 12-in. unreinforced adobe walls and tile roof. Damage consisted of major diagonal cracking throughout the south part of the building and eastern wall and the southeast corner separating from the building (fig. 13). The adobe chimney collapsed completely (fig. 14). The house was virtually destroyed (Earthquake Engineering Research Institute, 1986).

North Palm Springs–Bridges were damaged; underground pipes broke; stone or brick fences broke; foundations cracked; trees and bushes shook strongly; small landslides occurred; heavy furniture or appliances overturned; many windows were broken out; many items were shaken off store shelves; many glassware items or dishes broke; many small objects overturned

Figure 14. A fallen chimney in Whitewater Canyon, Caliifornia (Borchardt and Manson, 1986).

and fell; hanging pictures fell; buildings shook strongly; felt by everyone.

Painted Hills (about 10 mi northwest of Palm Springs)–A house on Painted Hills Road sustained cracked walls and a cracked concrete foundation; a pot-bellied stove was moved 1 ft, breaking the chimney pipe; a dresser moved across the room until it hit the bed; every window broke or cracked; everything was shaken into the middle of the room; and the garage was totally destroyed. Another house on Estrellito Road was moved 2–3 in. from its original position; the hot-water heater was torn from the water lines and moved about 2 ft; a heavy storage shed on the patio was moved 1 ft across the concrete slab. Other homes had cracks in walls, broken dishes, smashed potted plants, toppled furniture, movement of heavy appliances across the floor, chimneys fallen, and drawers opened with contents dumped onto the floor. At one home an automobile (Cadillac) in a carport was moved several feet (press report). Twenty-four homes reported damage (Riverside County damage survey).

Palm Springs– There were many reports of minor damage throughout the city. Some of the most common types of damage were many instances of fallen acoustical ceiling tile, many broken plate-glass windows in downtown businesses, many cracked interior and exterior walls in both homes and businesses, floors being covered with items thrown from shelves in both homes and businesses, and fallen overhead light fixtures.

Some of the more serious effects in Palm Springs are listed in detail below:

Desert Spa Hotel–There was substantial glass breakage on the upper floors and cracked stucco on the end walls both inside and outside.

Maxim de Paris Hotel–There were some hairline cracks at floor-level joints; glass falling out of panels in two atrium elevators shut down service; and a large chunk of concrete fell from a third-story beam in the lobby.

Desert Inn Fashion Plaza–Plaster fell and numerous wall cracks occurred throughout the plaza.

Professional Building at 1301 North Palm Canyon Drive–An underground parking structure had most of the columns cracked.

Ramada Inn–There were some cracked columns in the parking structure, and the east-side facia was cracked.

671 North Riverside Drive–Veneer separated about 1 in. from the front of the building and was cracked throughout the entire width; there were numerous cracks in the west wall of the building; and a concrete block wall on the west side was cracked.

Bank of America–The north wall was cracked and a front panel pulled away from the building.

167 North Indian Avenue–Interior plaster walls cracked and the exterior wall sustained small cracks.

Security Pacific National Bank at 756 North Palm Canyon Drive–There were cracks around the beams at the front entry, cracks at the rear of the building, and cracks and splitting at the southwest corner.

Stroke Activity Center at 1776 North Palm Canyon Drive–There were three cracks in the wall that extends from the roof line to the ground.

Old Lucky's Center at 2500 North Palm Canyon Drive–There was severe cracking on the east end of the building; a wall at the rear of the building sustained severe cracking that extended upward into the mezzanine; and a wall and exterior column cracked near the receiving entrance.

Dansks at 2550 North Palm Canyon Drive–An interior east wall sustained cracking; a concrete slab in the hallway of the receiving area cracked; and there were exterior cracks between windows.

White Water (at the mouth of Whitewater Canyon)–The main building of the Bridgehaven alcohol and drug abuse recovery house collapsed; it was constructed of partly mortared stone. Walls were severely cracked; the kitchen was destroyed; and the building was uninhabitable (press report).

White Water overpass (near the White Water Post Office)–There was structural damage due to excessive movement at the south abutment. A lateral displacement left a 6-in. gap between a deck and an abutment. The displacement broke lateral restrainers and snapped restraining cables. Pounding damage was visible at joints. Concrete posts shattered, exposing the steel reinforcing rods.

CALIFORNIA—Continued

Intensity VI:

The most common effects at the places listed below were that: buildings shook moderately to strongly; small objects overturned and fell; glassware or dishes broke; many items were shaken off store shelves; standing and moving vehicles rocked slightly to moderately; shaking was described as strong; felt by everyone.

California—

Anza–A few windows cracked; interior walls sustained hairline cracks; trees and bushes shook moderately; hanging pictures fell; people had difficulty standing and walking.

Banning–A wall cracked at City Hall; a ceiling cracked in one home; a side porch separated from one house; a grocery store sustained minor roof and ceiling damage; plaster fell from a ceiling; windows broke (from press report).

Beaumont–Walls cracked at Valley View Hospital; a house shifted on its piers; plate-glass windows broke; plaster fell inside the church tower of San Gorgonio Parish (from press report).

Cabazon–Interior walls cracked; exterior stone wall cracked; a foundation cracked; hanging pictures fell.

Cathedral City–Fire Station 34 had minor damage. A fire caused by a gas leak damaged the Cathedral City Mirror and Glass store (press report). People had difficulty standing or walking; small appliances overturned.

Green Valley Lake–Bricks fell from chimneys; interior walls sustained hairline cracks; small landslides occurred.

Hemet–Walls cracked in the auditorium of Our Lady of the Valley school.

Indian Wells–Brick fences and streets cracked.

Indio–Walls cracked from the floor to the ceiling and a large decorative metal eagle fell off the front of the First Trust Bank (press report).

La Jolla–Windows broke (press report).

Moreno Valley–Chimneys cracked; interior walls sustained hairline cracks; a few windows cracked.

Morongo Valley–Chimneys cracked; concrete bridges sustained slight damage; small landslides occurred; elevated water tanks cracked; interior walls sustained hairline cracks; hanging pictures fell; furniture overturned; some windows were broken out.

Pacific Beach–Windows broke (press report).

Patton–Chimneys cracked; interior walls sustained hairline cracks; light furniture and (or) appliances overturned.

Seal Beach–Exterior concrete walls cracked.
Yucca Valley–At Hi-Desert Concrete Products plant, one of four legs of a 45-ft-high tower, used to mix concrete materials, collapsed causing the tower to fall, and plate-glass windows at Yucca Valley Ford dealership broke (press reports); chimneys cracked; a foundation cracked; sidewalks cracked; interior walls sustained hairline cracks; some windows were broken out; hanging pictures fell.

Intensity V:

The most common effects at the places listed below were that: a few small objects overturned and fell; buildings shook moderately to strongly; earthquake was felt by many people or all; shaking was described as moderate to strong.

California—
Aguanga–A few items were shaken off store shelves.
Alpine–Plaster walls sustained hairline cracks.
Angelus Oaks–Plaster walls sustained hairline cracks; a few items were shaken off store shelves; a few windows cracked; a few glassware items or dishes broke; small landslides occurred; trees and bushes shook slightly; standing vehicles rocked slightly.
Apple Valley–A few glassware items or dishes broke; hanging pictures swung out of place; trees and bushes shook slightly; standing vehicles rocked slightly.
Baldwin Park–A few windows cracked; a few glassware items or dishes broke; plaster walls sustained hairline cracks; trees and bushes shook slightly; standing vehicles were rocked slightly; hanging pictures swung out of place.
Bellflower–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place; trees and bushes shook moderately; standing and moving vehicles rocked slightly.
Big Bear City–A few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place.
Bonsall–A few items were shaken off store shelves; a few glassware items or dishes broke; plaster walls sustained hairline cracks; trees and bushes shook slightly; standing vehicles were rocked slightly.
Bryn Mawr–People had difficulty standing and walking.
Calexico–Trees and bushes shook slightly.
Calimesa–Plaster walls sustained hairline cracks; hanging pictures swung out of place; people had difficulty standing and walking. Items were shaken off store shelves, breaking glass jars. An outdoor sign fell into the street at C and H Liquor (press report).

CALIFORNIA—Continued

Canyon Lake–A few windows broke; streets cracked; hanging pictures swung out of place.
Carlsbad–A few items were shaken off store shelves.
Castaic–There was report of displaced tombstones.
Cedarpines Park.
Cherry Valley–Knickknacks shaken from shelves (press report).
Chino–People had difficulty standing and walking.
Chiriaco Summit–People had difficulty standing and walking.
Chula Vista–Plaster walls sustained hairline cracks; hanging pictures fell. There were minor cosmetic cracks in the County building (press report).
Coachella–A few windows cracked; a few items were shaken off store shelves; trees and bushes shook slightly; a few glassware items or dishes broke; small appliances were overturned.
Colton–Plaster walls sustained hairline cracks; a few glassware items or dishes broke; people had difficulty standing and walking; hanging pictures swung out of place.
Corona–A few glassware items or dishes broke; a few items were shaken off store shelves; people had difficulty standing and walking.
Crestline–A few windows cracked.
Del Rosa.
Diamond Bar–A few glassware items or dishes broke; a few items were shaken off store shelves; hanging pictures swung out of place.
Dulzura–Interior walls sustained hairline cracks.
East Irvine–A few windows cracked; a few glassware items or dishes broke; people had difficulty standing or walking.
El Centro– A few items were shaken off store shelves.
El Toro–Plaster walls sustained hairline cracks; trees and bushes shook slightly.
Fallbrook–Interior walls sustained hairline cracks; a few items were shaken off store shelves; a few windows cracked; a few glassware items or dishes broke.
Fawnskin–A few items were shaken off store shelves; hanging pictures swung out of place.
Fontana–A few windows broke; a few items were shaken off store shelves; a few glassware items or dishes broke; interior walls sustained hairline cracks; trees and bushes shook slightly.
Forest Falls–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; interior walls sustained hairline cracks; large landslides occurred; hanging pictures swung out of place.
Fountain Valley.
Fullerton.
Garden Grove–A few items were shaken off store shelves.

Helendale–Trees and bushes shook slightly.

Hesperia–A few windows cracked; trees and bushes shook moderately.

Highland–A few windows cracked; a few items were shaken off store shelves; trees and bushes shook slightly.

Huntington Beach–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke.

Jacumba–One wooden porch floor cracked.

Joshua Tree–Hanging pictures fell; a few glassware items or dishes broke; many items were shaken off store shelves.

Julian–Plaster walls sustained hairline cracks; trees and bushes shook moderately.

Lake Elsinore–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place.

La Mesa–Trees and bushes shook slightly.

La Mirada–Plaster walls sustained hairline cracks; hanging pictures swung out of place.

Lakeside–A few windows cracked; a few items were shaken off store shelves; plaster walls sustained hairline cracks.

Lakeview.

Leona Valley–A few small appliances overturned; trees and bushes shook slightly.

Loma Linda.

Long Beach–People had difficulty standing and walking; a pendulum and tubular bells of a grandfather clock clashed against each other and the glass case.

Los Nietos–A few windows cracked; a few glassware items or dishes broke; plaster walls sustained hairline cracks; trees and bushes shook slightly.

March Air Force Base.

Mecca.

Mentone–A few windows cracked; a few interior walls sustained hairline cracks; hanging pictures swung out of place.

Miramar Naval Air Station–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; a few glassware items or dishes broke; trees and bushes shook slightly.

Mission Viejo–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; interior walls sustained hairline cracks; trees and bushes shook slightly.

Mojave–A few glassware items or dishes broke.

Montclair–A few glassware items or dishes broke; trees and bushes shook slightly.

CALIFORNIA—Continued

Montebello–Interior walls sustained hairline cracks; trees and bushes shook slightly.

Murrieta–A few glassware items or dishes broke; a few items were shaken off store shelves; hanging pictures fell; people had difficulty standing or walking; trees and bushes shook strongly.

National City–A few items were shaken off store shelves; hanging pictures fell.

North Shore–Trees and bushes shook slightly.

Norton Air Force Base–People had difficulty standing and walking.

Pala–A few items were shaken off store shelves.

Palm Desert–There were small cracks in City Hall buildings (press report).

Palomar Mountain–A few items were shaken off store shelves; hanging pictures swung out of place.

Pearblossom–A few glassware items or dishes broke.

Perris–A 2,000-lb safe moved 2 in. at the post office; a few small parcels were knocked to the floor. People had difficulty standing or walking; a painting fell; and water beds shook strongly (press reports).

Pomona–A few glassware items or dishes broke.

Poway–Trees and bushes shook moderately.

Rancho Bernardo–A few dishes broke; a grandfather clock stopped (press report).

Rancho Mirage–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place; trees and bushes shook slightly. There were fine cracks in some bridges (press report).

Rancho Santa Fe–Trees and bushes shook slightly.

Redlands–Plaster walls sustained hairline cracks; hanging pictures swung out of place; water splashed over the sides of a swimming pool.

Rimforest–A few glassware items or dishes broke; a few items were shaken off store shelves; hanging pictures swung out of place.

Riverside–A few items were shaken off store shelves; plaster walls sustained hairline cracks; hanging pictures swung out of place.

Romoland–A few windows cracked; a few items were shaken off store shelves; hanging pictures swung out of place; trees and bushes shook slightly.

Running Springs–A few windows cracked; many items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place and some fell; one report of bricks fallen from chimneys.

San Bernardino–People had difficulty standing and walking. One report of broken dishes; a painting fell off a wall (press report).

San Clemente–A few items were shaken off store shelves; hanging pictures fell; people had difficulty standing and walking; there was a report of broken underground pipes.

San Diego–A few glassware items or dishes broke; small landslides occurred; small appliances overturned; windows cracked.

San Diego (North Island Naval Air Station)–Small appliances and (or) furniture moved.

San Diego (Paradise Hills)–Aisles in Victory Foods Grocery were littered with groceries, cans, and broken bottles (press report).

San Dimas–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures fell.

San Fernando–Trees and bushes shook moderately; standing and moving vehicles rocked moderately.

San Jacinto–People had difficulty standing or walking.

San Marcos.

Santa Ana–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; trees and bushes shook slightly.

Santa Monica–A few merchandise items were shaken off store shelves.

Sepulveda–Interior walls sustained hairline cracks; a few items were shaken off store shelves; a few glassware items and dishes broke; trees and bushes shook moderately.

Solana Beach.

Spring Valley–Interior walls sustained hairline cracks; hanging pictures swung out of place; people had difficulty standing and walking.

Sunnymead.

Sunset Beach–A few glassware items or dishes broke.

Temecula– A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; plaster walls sustained hairline cracks; hanging pictures swung out of place; trees and bushes shook slightly.

Thermal–A few items were shaken off store shelves; interior walls sustained hairline cracks; hanging pictures swung out of place; trees and bushes shook slightly.

Thousand Palms–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures fell; interior walls sustained hairline cracks; trees and bushes shook strongly.

Torrance–A few windows cracked; trees and bushes shook moderately.

Trabuco Canyon–A few windows cracked; a few items were shaken from store shelves; a few glassware items or dishes broke; trees and bushes shook slightly.

CALIFORNIA—Continued

Trona–A few windows cracked; a few items were shaken off store shelves; trees and bushes shook slightly.

Tujunga–Plaster walls sustained hairline cracks; trees and bushes shook slightly.

Tustin–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; people had difficulty standing and walking; trees and bushes shook slightly.

Upland–A few windows cracked; a few glassware items or dishes broke; hanging pictures swung out of place.

Valyermo–Interior walls sustained hairline cracks; hanging pictures swung out of place.

Venice–A few windows cracked; many items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place; trees and bushes shook moderately.

Victorville.

Walnut–People had difficulty standing and walking.

Warner Springs.

Whittier–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; plaster walls sustained hairline cracks; trees and bushes shook slightly.

Wildomar–Trees and bushes shook slightly.

Yucaipa–A few glassware items or dishes broke; plaster walls sustained hairline cracks; hanging pictures swung out of place.

Intensity IV:

Arizona—Mohave Valley.

California—Acton, Adelanto, Alta Loma, Altadena, Amboy, Anaheim (one report of a cracked driveway, press report), Arcadia, Arrowhead Highlands, Atwood, Avalon, Azusa, Barstow, Blue Jay, Blythe, Borrego Springs, Brea, Buena Park (press report), Burbank, Cadiz, Caliente, Campo, Canoga Park, Canyon Country, Capistrano Beach, Cerritos, Claremont, Coalinga, Covina, Crest Park, Culver City (press report), Cypress, Daggett, Death Valley Junction, Del Mar, Descanso, Desert Center, Duarte, El Cajon, El Modena, El Toro Marine Corps Air Station, Escondido, Etiwanda, Gardena, Glendale, Guasti, Guatay, Heber, Hermosa Beach, Hinkley, Imperial, Inglewood (press report), Irvine (press report), Kelso, La Habra, La Puente, La Verne, Laguna Niguel, Lake Hughes, Lake San Marcos, Lakewood, Lancaster, Lawndale, Lemon Grove, Leucadia, Lomita, Los Angeles, Lucerne Valley, Lytle Creek, Manhattan Beach, Maywood, Monrovia, Mount Baldy, Mount Laguna, Mount Wilson, Newberry Springs, Newport Beach, Niland, Norco, Oceanside, Olive, Ontario, Orange, Oro Grande, Palo Verde, Paramount, Phelan, Pine Valley, Point Mugu Pacific Missle Test Center, Potrero, Quartz Hill, Ramona, Rancho Palos Verdes (press report), Randsburg, Redondo Beach,

Reseda, Rolling Hills Estates, Rosamond, San Diego (Clairemont), San Gabriel, San Juan Capistrano, San Luis Rey, San Pedro (press report), Santa Ysabel, Seeley, Silverado, Simi Valley, South Gate, Stanton, Sun Valley, Surfside, Sylmar, Tarzana, Tecate, Tehachapi, Temple City, Twentynine Palms, Twin Peaks, Vista, Westminster, Westmorland, Wrightwood, Yermo.

Nevada—Laughlin.

Intensity III:

Arizona—Bullhead City, Ehrenberg, Lake Havasu City, Parker, Quartzsite, Topock.

California—Bell (press report), Castle Air Force Base, Cima, El Monte, Essex, Glennville, Hacienda Heights, Holtville, Johannesburg, Malibu, Mettler, Miramonte, Parker Dam, Placentia, Playa Del Rey, Ridgecrest, Ripley, Rosemead, Sunland, Tecopa, Topanga, Wofford Heights.

Nevada—Henderson, Jean, Las Vegas (press report).

Intensity II:

California—Plaster City.

Nevada—Pioche.

Felt:

Arizona—Yuma.

California—Carson (press report), El Segundo, La Palma (press report), Littlerock, Stanton (press report).

9 July (GP) Southern California
Origin time: 00 12 32.1
Epicenter: 33.987N., 116.569W.
Depth: 9 km
Magnitude: 4.2m_b(GS), 4.2M_L(PS), 4.2M_L(BK), 4.4M_L(GP)
Felt: Palm Spring area (PS), San Diego (PS).

9 July (RN) Central California
Origin time: 12 53 59.7
Epicenter: 37.565N., 118.435W.
Depth: 4 km
Magnitude: 3.4M_D(RN), 3.0M_L(PS)
Felt: Chalfant (press report).

10 July (PS) Southern California
Origin time: 12 02 50.9
Epicenter: 33.962N., 116.593W.
Depth: 12 km
Magnitude: 3.4M_L(PS)
Intensity V:

North Palm Springs–A few small objects overturned and fell; a few glassware items or dishes broke; a few merchandise items were shaken off store shelves; standing vehicles rocked slightly.

Palm Desert–A few small objects fell; a few items were shaken off store shelves; hanging pictures swung out of place; trees and bushes shook moderately; standing vehicles were rocked moderately; felt by many people.

Palm Springs–A few small objects overturned and fell; interior walls sustained hairline cracks; trees and bushes shook slightly; standing vehicles rocked slightly; awakened many people.

White Water–People had difficulty standing and walking; awakened people.

Intensity IV: Cabazon, Desert Hot Springs.

Intensity III: Idyllwild.

11 July (PS) Southern California
Origin time: 07 48 14.0
Epicenter: 33.997N., 116.572W.
Depth: 12 km
Magnitude: 3.1M_L(PS)
Intensity III: Palm Springs (press report).

11 July (PS) Southern California
Origin time: 08 51 28.7
Epicenter: 33.967N., 116.575W.
Depth: 7 km
Magnitude: 3.3M_L(PS)
Intensity III: Palm Springs (press report).

11 July (PS) Southern California
Origin time: 15 13 30.6
Epicenter: 34.020N., 116.653W.
Depth: 12 km
Magnitude: 3.2M_L(PS)
Intensity III: Palm Springs (press report).

11 July (PS) Southern California
Origin time: 21 28 52.5
Epicenter: 34.298N., 118.292W.
Depth: 8 km
Magnitude: 3.0M_L(PS)
Intensity IV: Pacoima, Sierra Madre.
Intensity III: Canyon Country.
Felt: Burbank (press report), Glendale (press report), Palm Springs (press report).

12 July (PS) Southern California
Origin time: 05 45 27.5
Epicenter: 33.986N., 116.652W.
Depth: 7 km
Magnitude: 4.0M_L(PS)
Intensity III: Palm Spring (press report).

13 July (PS) Southern California
Origin time: 01 41 38.2
Epicenter: 33.951N., 116.613W.
Depth: 12 km
Magnitude: 3.7M_L(PS)
Felt: Palm Springs (press report).

13 July (HJ) Off the coast of Southern California
Origin time: 13 47 08.2
Epicenter: 32.978N., 117.858W.
Depth: 9 km
Magnitude: 5.6m_b(GS), 5.8M_S(GS), 5.4M_L(PS), 5.3M_L(HJ)
Moment: 6.5 x 10^{24} dyne-cm (HR)

This earthquake was felt over a land area of about 48,500 km^2 of Arizona and California (fig. 15). It caused an estimated $700,000 damage in San Diego County and injured one man when piles of books fell on him (press report). Ninety-nine aftershocks of magnitude ≥3.0 occurred during the period 13 July 1986 and 30 April 1987 (Hauksson and Jones, 1988).

Intensity VI:
California—
Chula Vista–Plate-glass windows broke (press report); a few glassware items or dishes broke; interior walls sustained hairline cracks; many small objects fell; shaking was described as strong (press report).
Escondido–Plate-glass windows broke or cracked in four businesses; one chimney fell; the ceiling of a tire dealership collapsed (press report); a few items were shaken off store shelves; plaster walls sustained hairline cracks; a few small objects overturned and fell; felt by and awakened many people.
Imperial Beach–Two roof-support beams at Bayside Elementary School cracked, and Oneonta Elementary School reported minor damage (press report).
Lindbergh Field–Walls were cracked in both airline-ticket terminals; some windows were broken out (press report). A few items were shaken off store shelves; a few glassware items and dishes broke; a few small objects overturned and fell; underground pipes broke; felt by and awakened all.
National City–Display windows in stores were broken (press report).
Oceanside–Some windows were broken out; a few items were shaken off store shelves; a few small objects overturned and fell; plaster walls sustained hairline cracks; standing and moving vehicles rocked slightly; felt by everyone.
San Clemente–The top portion of an old (1920's) chimney fell, and a few residential walls were cracked (press report).
San Diego–The upper portion of a chimney collapsed; a 500-lb statue on a roof shook loose and fell onto a car at the Lincoln Hotel; County Administration Center had a little fallen plaster; in the Golden Hill area, several parked cars were damaged when a chimney collapsed onto them (press report).

CALIFORNIA—Continued

Spring Valley–Windows broke; a roof partially collapsed; a small landslide temporarily blocked Wildcat Canyon Road (press report). Interior walls sustained hairline cracks; shaking was described as strong; felt by everyone.

Intensity V:

The most common effects at the places listed below were that: a few small objects overturned and fell; buildings shook moderately; hanging pictures swung, leaving many out of place; the earthquake was felt by and awakened many people.

California—
Anaheim–A few small objects fell; there was a report of broken underground pipes; shaking was described as strong.
Artesia–A few windows cracked; interior walls sustained hairline cracks; a foundation cracked; hanging pictures fell; a few glassware items or dishes broke; shaking was described as strong.
Bellflower–A few items were shaken off store shelves; light furnishings overturned; many small objects overturned and fell; a few windows cracked; a few glassware items or dishes broke.
Bonita–Shaking was described as strong; buildings shook moderately.
Carlsbad–A few items were shaken off store shelves; a foundation cracked; plaster walls sustained hairline cracks; a few glassware items or dishes broke; many small objects overturned and fell.
Colton–Shaking was described as moderate.
Downey– A few windows cracked; interior dry wall was cracked; a few items were shaken off store shelves; a few glassware items or dishes broke.
East Irvine–Plaster walls sustained hairline cracks; standing vehicles rocked slightly; shaking was described as moderate.
El Cajon–A few windows cracked; interior walls sustained hairline cracks; a few items were shaken off store shelves; hanging pictures fell; buildings shook strongly.
El Segundo–A few windows cracked, a few glassware items or dishes broke; shaking was described as strong.
Encinitas–Everyone ran outside of a restaurant because of the strong shaking (press report).
Fallbrook–There was a report of broken windows; shaking was described as moderate.
Fullerton–Water splashed onto sides of swimming pools; shaking was described as strong; felt by and awakened everyone.
Huntington Park–A few items were shaken off store shelves; a few glassware items and dishes broke; standing vehicles were rocked slightly.

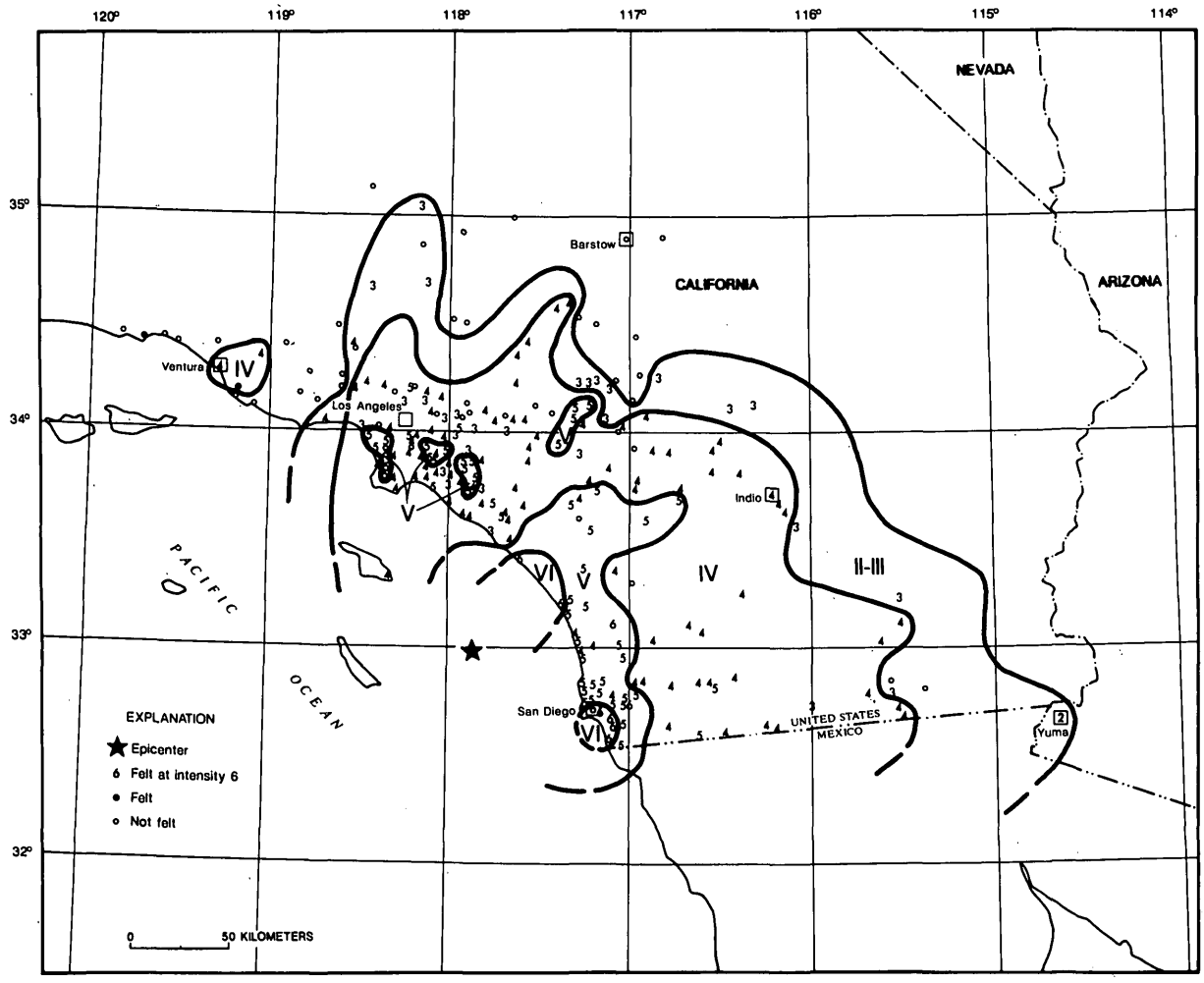


Figure 15. Isoseismal map for the earthquake of 13 July, 1986, 13 47 08.2 UTC off the coast of southern California. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed contour lines are inferred isoseismals, and small boxes show locations of towns and cities whose names are plotted.

CALIFORNIA—Continued

Inglewood–A few items were shaken off store shelves; standing and moving vehicles were rocked slightly; felt by everyone.

Laguna Hills–Standing vehicles were rocked slightly; shaking was described as moderate; felt by and awakened everyone.

La Jolla–There was $500–$600 damage to merchandise shaken off grocery-store shelves. Interior walls sustained minor cracks (press reports).

Lake Elsinore–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; a few glassware items or dishes broke; standing and moving vehicles were rocked slightly.

La Mesa–People had difficulty standing and walking; shaking was described as strong.

CALIFORNIA—Continued

La Mirada–Interior walls sustained hairline cracks; a few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; shaking was described as moderate.

La Puente–A few windows cracked; plaster walls sustained hairline cracks; a few glassware items or dishes broke; trees and bushes were strongly shaken; standing and moving vehicles rocked slightly.

Lemon Grove–A few glassware items or dishes broke; a few items were shaken off store shelves; interior dry wall cracked; standing vehicles rocked moderately.

Miramar Naval Air Station area–Plaster walls sustained hairline cracks; many items were shaken off store shelves; shaking was described as moderate.

Montrose–A few merchandise items were shaken off store shelves.

Mountain Center–It was felt by and awakened everyone.

Murrieta–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; standing vehicles rocked slightly.

Ocean Beach–A lot of liquor containers were shaken off shelves and broke; merchandise was shaken off every shelf in the store (press report).

Orange–Plaster walls sustained hairline cracks; standing vehicles rocked moderately; shaking was described as strong.

Palomar Mountain–Small landslides occurred along road cuts; many small objects overturned and fell; buildings shook strongly.

Patton–A few windows cracked; interior walls sustained hairline cracks; a cracked chimney was reported; a few glassware items or dishes broke; standing and moving vehicles were rocked slightly.

Pine Valley–Shaking was described as moderate.

Placentia–A few glassware items or dishes broke.

Potrero–Trees and bushes shook moderately; standing and moving vehicles were rocked moderately; felt by everyone.

Poway–Plaster walls sustained hairline cracks; a foundation cracked; sidewalks were cracked; there was a report of broken underground pipes; a few items were shaken off store shelves; standing vehicles rocked slightly.

Rancho Bernardo–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; plaster walls sustained hairline cracks.

Riverside–A few glassware items or dishes broke.

Romoland–Sidewalks cracked; plaster walls sustained hairline cracks; standing and moving vehicles rocked slightly; shaking was described as moderate.

San Bernardino–Streets and sidewalks were cracked; a few items were shaken off store shelves; trees and bushes shook slightly; shaking was described as moderate.

San Diego (City Heights)–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; interior walls sustained hairline cracks; standing and moving vehicles rocked slightly.

San Diego (Clairemont)–A few glassware items or dishes broke; a few items were shaken off store shelves; there was a report of windows broken out; standing vehicles were rocked slightly; shaking was described as strong.

San Diego (Del Mar)–Items were shaken off store shelves (press report).

CALIFORNIA—Continued

San Diego (Hillcrest)–A few windows cracked; a few glassware items or dishes broke; many items were shaken off store shelves; shaking was described as moderate.

San Diego (Ocean Beach)–Interior dry wall cracked; standing vehicles rocked slightly.

San Diego (Old Town)–Interior walls sustained hairline cracks.

San Diego (University City)–A few glassware items or dishes broke; interior walls sustained hairline cracks; a few items were shaken off store shelves; standing and moving vehicles shook slightly; shaking was described as strong.

San Luis Rey–Plaster walls sustained hairline cracks; trees and bushes shook moderately; buildings shook strongly.

San Ysidro–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; standing vehicles rocked slightly; interior wall was cracked.

Santa Ana–Plaster walls sustained hairline cracks.

Seal Beach–A few items were shaken off store shelves; standing and moving vehicles rocked slightly.

Torrance–Trees and bushes shook slightly; shaking was described as moderate.

Venice–A few glassware items or dishes broke; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Vista–A few items were shaken off store shelves; felt and awakened everyone.

Walteria–Interior walls sustained hairline cracks; a few items were shaken off store shelves; standing and moving vehicles rocked slightly; felt by and awakened everyone.

Intensity IV:

California—Adelanto, Alpine, Altadena, Atwood, Avalon, Balboa Island, Banning, Borrego Springs, Boulevard, Buena Park, Cabazon, Calexico, Calipatria, Campo, Canyon Country, Canyon Lake, Coachella, Compton, Corona, Descanso, Desert Hot Springs, Dulzura, El Toro, Forest Falls, Garden Grove, Gardena, Grantville, Guasti, Guatay, Hawaiian Gardens, Heber, Hemet, Huntington Beach, Idyllwild, Indio, Irvine, Jacumba, Julian, Lakeside, Lakeview, Lakewood, Leucadia, Loma Linda, Lomita, Long Beach, Los Alamitos, Los Angeles, Malibu (press report), Manhattan Beach, Maywood, Mira Loma, Mission Viejo, Montebello, Mount Baldy, Mount Laguna, Newport Beach (press report), Norco, North Island Naval Air Station, North Palm Springs, Norwalk, Ontario, Oro Grande, Pala, Palm Springs, Paramount, Perris, Phelan, Pomona, Ramona, Rancho Santa Fe, Redondo Beach, Reseda, San Dimas, San Gabriel, San Jacinto, San Juan Capistrano, San Pedro, Santa Paula, Santa Ysabel, Santee, Seeley, Sepulveda, Sierra Madre,

Silverado, Solana Beach, South Gate, Stanton, Sun Valley, Tecate, Thermal, Thousand Palms, Trabuco Canyon, Ventura, Westmorland, Whittier, Willow Brook, Wrightwood, Yorba Linda, Yucaipa.

Intensity III:

California—Baldwin Park, Big Bear City, Brea, Chino, Crestline, Cypress, El Centro, El Monte, Glendale, Hacienda Heights, Joshua Tree, Laguna Beach, Lake Arrowhead, Lake Hughes, Lancaster, Los Angeles, March Air Force Base, Mecca, Mentone, Mojave, Niland, Ocotillo, Pasadena, Running Springs, Santa Monica, Tustin, Twin Peaks, Walnut, Westminster, Yucca Valley.

Nevada—Las Vegas (press report).

Felt:

Arizona—Yuma (press report).

California—Oxnard (press report), Santa Barbara (press report).

16 July (HJ) Off the coast of Southern California

Origin time: 12 47 01.1
Epicenter: 32.972N., 117.805W.
Depth: 3 km
Magnitude: 3.8M_L(PS), 3.7M_L(HJ)

Intensity V:

Bonsall–Plaster walls sustained hairline cracks; a few glassware items or dishes broke; a few small objects overturned and fell; standing vehicles rocked slightly; buildings shook moderately; felt by and awakened many people.

El Cajon–A few items were shaken off store shelves; a few small objects overturned and fell; hanging pictures swung out of place; felt by many people.

Escondido–Interior walls sustained hairline cracks; a few glassware items or dishes broke; a few small objects overturned and fell; trees and bushes shook moderately; standing and moving vehicles rocked slightly; hanging pictures swung out of place; felt by and awakened many people.

Laguna Hills–People had difficulty standing and walking; shaking was described as moderate.

Poway–Plaster walls sustained hairline cracks; many items were shaken off store shelves; a few glassware items or dishes broke; many small objects fell; hanging pictures swung out of place; trees and bushes shook slightly; standing and moving vehicles rocked slightly; buildings shook strongly; felt by everyone and awakened many people.

San Diego (Lindbergh Field)–A few windows cracked; a few glassware items or dishes broke; interior walls sustained hairline cracks; a few small objects overturned and fell; trees and bushes shook slightly; standing vehicles rocked slightly.

CALIFORNIA—Continued

San Diego (South Park)–A few windows cracked; a few small objects overturned and fell; hanging pictures swung out of place; felt by many people.

San Marcos–Dry wall sustained hairline cracks; a few small objects overturned and fell; hanging pictures swung out of place; buildings shook moderately; felt by many people.

Vista–Dry wall was cracked; a foundation cracked; exterior walls were reported cracked; shaking was described as strong.

Intensity IV: Lemon Grove, Spring Valley, Valley Center.
Intensity III: Fallbrook, Huntington Beach.
Intensity II: Carlsbad.

16 July (BK) Central California

Origin time: 16 27 49.9
Epicenter: 37.747N., 121.972W.
Depth: 4 km
Magnitude: 2.4M_L(BK)
Felt: San Ramon (BK).

16 July (BK) Central California

Origin time: 20 59 03.8
Epicenter: 37.297N., 121.662W.
Depth: 6 km
Magnitude: 3.0M_L(BK)
Felt: Eastern San Jose (BK), San Felipe Valley (press report).

17 July (GP) Southern California

Origin time: 20 35 15.0
Epicenter: 33.989N., 116.649W.
Depth: 6 km
Magnitude: 4.4m_b(GS), 4.6M_L(PS), 4.6M_L(BK), 4.0M_L(GP)

This earthquake is an aftershock of the July 8 North Palm Springs earthquake.

Intensity VI :

California—

White Water–Chimneys broke at the roof line; tombstones fell; foundation cracked; interior walls cracked; there was slight damage to concrete bridges; there were broken underground pipes. Rockslides occurred on White Water Road.

Intensity V:

California—

Angelus Oaks–A few items were shaken off store shelves; trees and bushes shook slightly; standing vehicles rocked slightly; felt by many people.

Banning–There were hairline cracks in the floor of the basement and a wall of the County building (press report).

Coachella–A few small objects overturned and fell; people had difficulty standing and walking; felt by many people.
Highland–A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects fell; many small objects overturned; hanging pictures fell; standing and moving vehicles rocked slightly; buildings shook strongly.
Landers–A few small objects overturned; buildings shook moderately; felt by most people.
Yorba Linda–A few small objects overturned and fell; felt by many people.

Intensity IV:
California—Altadena, Anza, Cabazon, Cathedral City, Colton, Desert Hot Springs, Fawnskin, Forest Falls, Huntington Beach, Imperial, Indio, Joshua Tree, La Verne, Mead Valley, Morongo Valley, Mountain Center, Norton Air Force Base, Ontario, Palm Springs, Palomar Mountain, Riverside, San Pedro, Solana Beach, Torrance.

Intensity III:
California—Acton, Baker, Beaumont, Calexico, Calimesa, Carlsbad, Julian, La Quinta, Lemon Grove, Long Beach, Mecca, Midway City, Nuevo, Oro Grande, Palmdale, Palm Desert, Pico Rivera, Ramona, Rosemead, San Bernardino, San Diego (Lindbergh Field), Seeley, Spring Valley, Thermal, Vista, Westminster, Whittier, Winchester.
Nevada–Las Vegas.

Intensity II:
California—Crestline, Phelan, Westmorland.

Felt:
California—Alpine, Octillo, Pasadena (PS).

17 July (GP) Southern California
Origin time: 21 54 45.2
Epicenter: 33.991N., 116.641W.
Depth: 7 km
Magnitude: 4.1m_b(GS), 4.4M_L(PS)

This earthquake is an aftershock of the July 8 North Palm Springs earthquake.

Intensity IV: Palm Springs area (press report).
Intensity III: Yucaipa.

18 July (PS) Central California
Origin time: 15 58 34.1
Epicenter: 37.576N., 118.441W.
Depth: 6 km
Magnitude: 3.1M_L(PS), 3.2M_D(RN)
Felt: Chalfant Valley (RN).

18 July (BK) Central California
Origin time: 16 00 08.5
Epicenter: 37.570N., 118.443W.

CALIFORNIA—Continued

Depth: 4 km
Magnitude: 3.9M_L(BK), 4.0M_L(PS), 3.6M_L(RN)
Felt: Chalfant Valley (press report).

18 July (GP) Central California
Origin time: 17 00 36.8
Epicenter: 36.093N., 117.849W.
Depth: 2 km
Magnitude: 3.8M_L(PS), 3.8M_L(BK), 3.8M_L(RN), 3.7M_L(GP), 3.7M_L(GP)
Intensity IV: Camp Nelson, Cerro Gordo mine (7.5 mi northeast of Keeler), Keeler.
Intensity III: China Lake, Ridgecrest, Trona.
Felt: Wofford Heights.

18 July (PS) Southern California
Origin time: 19 58 01.8
Epicenter: 33.967N., 116.569W.
Depth: 7 km
Magnitude: 3.2M_L(PS)

This earthquake is an aftershock of the July 8 North Palm Springs earthquake.

Intensity IV: Angelus Oaks, Calimesa, Colton, Desert Hot Springs, Forest Falls, Indio, Joshua Tree, North Palm Springs, Palm Springs.
Intensity III: Aguanga, Idyllwild, Patton, Thousand Palms.
Intensity II: Loma Linda.
Felt: Perris, Winchester.

20 July (GM) Owens Valley area
Origin time: 14 29 45.5
Epicenter: 37.580N., 118.450W.
Depth: 8 km
Magnitude: 5.6m_b(GS), 5.6M_S(GS), 5.9M_L(BK), 5.9M_L(PS), 5.6M_L(RN)
Moment: 1.4 x 10^{24} dyne-cm (BK),

This earthquake was felt from Modesto to Bakersfield and eastward into Nevada (press report). No extensive questionnaire canvass of this earthquake was done; therefore information is available only for towns near the hypocenter. This earthquake was a foreshock to the July 21, 14 42 26.5 UTC earthquake.

Intensity V:
California—
Chalfant–Merchandise was knocked off shelves in the grocery store and minor damage to contents occurred in some homes (mostly mobile homes) (press report).
Benton–Hanging pictures fell; trees and bushes were moderately shaken; standing and moving vehicles rocked

moderately; people had difficulty standing and walking; shaking was described as strong; felt by everyone.

Big Pine–Many merchandise items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; hanging pictures fell; trees and bushes shook slightly; standing and moving vehicles rocked slightly; shaking was described as strong; felt by many people.

Bishop–A few windows were cracked; a few merchandise items were shaken off store shelves; a few small objects overturned and fell; shaking was described as moderate; felt by everyone. A few dirt roads were closed by boulders rolling onto the roadway (press report).

Nevada—

Dyer–Many merchandise items were shaken off store shelves; a few small objects overturned and fell; hanging pictures fell; people had difficulty standing and walking; buildings shook strongly; landslides occurred in the mountains; felt by everyone.

20 July (BK) Owens Valley area
Origin time: 18 36 54.1
Epicenter: 37.533N., 118.460W.
Depth: 5 km
Magnitude: 3.8M_L(BK), 3.7M_L(PS)
Intensity IV: Bishop.
Felt: Big Pine.

20 July (BK) Owens Valley area
Origin time: 18 38 52.9
Epicenter: 37.538N., 118.440W.
Depth: 9 km
Magnitude: 3.9m_b(GS), 4.7M_L(BK), 4.6M_L(PS), 4.7M_L(RN)
Moment: 3.3 x 10^{22} dyne-cm (BK)
Intensity IV:
California—Bishop.
Intensity III:
Nevada—Dyer.
Felt:
California—Big Pine.

21 July (BK) Owens Valley area
Origin time: 14 42 26.5
Epicenter: 37.537N., 118.450W.
Depth: 9 km
Magnitude: 6.0m_b(GS), 6.2M_S(GS), 6.4M_L(BK), 5.9M_L(PS), 6.6M_L(RN)
Moment: 3.5 x 10^{25} dyne-cm (BK), 2.8 x 10^{25} dyne-cm (GS)

This earthquake, named the Chalfant Valley, California, earthquake, caused minor damage in the Bishop area and moderate damage in Chalfant (about 15 km north of Bishop). Two people in Chalfant were hurt by falling objects. Most of the serious damage in Chalfant was to mobile homes being shaken off their supports, either jack stands or concrete-block piers, with resulting damage to the interior contents, and broken water and sewer lines. The building damage in Bishop consisted of a few cracked chimneys, a few cracked exterior walls, and broken windows. Total damage was estimated at $2.7 million. The earthquake was felt over a contiguous area of about 255,000 km^2 of California and Nevada (fig. 16). It was also felt in tall buildings as far away as Salt Lake City, Utah.

The Chalfant Valley earthquake was preceded (on 20 July, 14 29 45.5 UTC) by a foreshock of M_L=5.9(BK) and followed (on 31 July, 07 22 40.2 UTC) by an aftershock of M_L=5.8(BK). Cockerham and Corbett (1987) located 4,114 earthquakes occurring between 1 July and 30 September 1986 that outline an area 24 km long north-south by 6–8 km wide east-west, surrounding the epicenter of the main shock.

Surface ground fracturing occurred on the White Mountains frontal fault zone for a discontinuous length of 13.2 km, according to Lienkaemper and others (1987) or a length of 15.5 km, according to DePolo and Ramelli (1987). Numerous small landslides occurred in the epicentral area, temporarily blocking some secondary roads (Brewer, 1989). Spectacular rock falls occurred in Chidago Canyon (near the epicenter) and in canyons of the White Mountains (east of the epicentral area) (Smith, 1987). The peak accelerations recorded for this earthquake were 0.46 *g* horizontal and 0.35 *g* vertical at Zack Brothers Ranch about 14 km north of Chalfant and the epicenter (Earthquake Engineering Research Institute, 1986).

Intensity VI:
California—

Bishop–The brick facade cracked on the front of First Sierra Bank on Main Street. A plate-glass window of the Western Auto store, also on Main Street, broke. Walls cracked at Sears Roebuck Co., Joseph's Bi-Rite Market, and City Hall; windows broke or cracked in other businesses; ceiling tile fell in a few places; and plaster fell from the third-floor ceiling of the Masonic Temple. Many items were shaken off store shelves—especially grocery-store shelves. Streets cracked; water flow was disturbed in wells; buildings shook strongly; people had difficulty standing and walking; felt by everyone.

Chalfant–Most damage was to mobile homes; single family fixed structures were relatively undamaged (Earthquake Engineering Research Institute, 1986). The mobile homes (single and double width) were mounted on jack stands or concrete-block piers 2–3 ft long and 2 ft

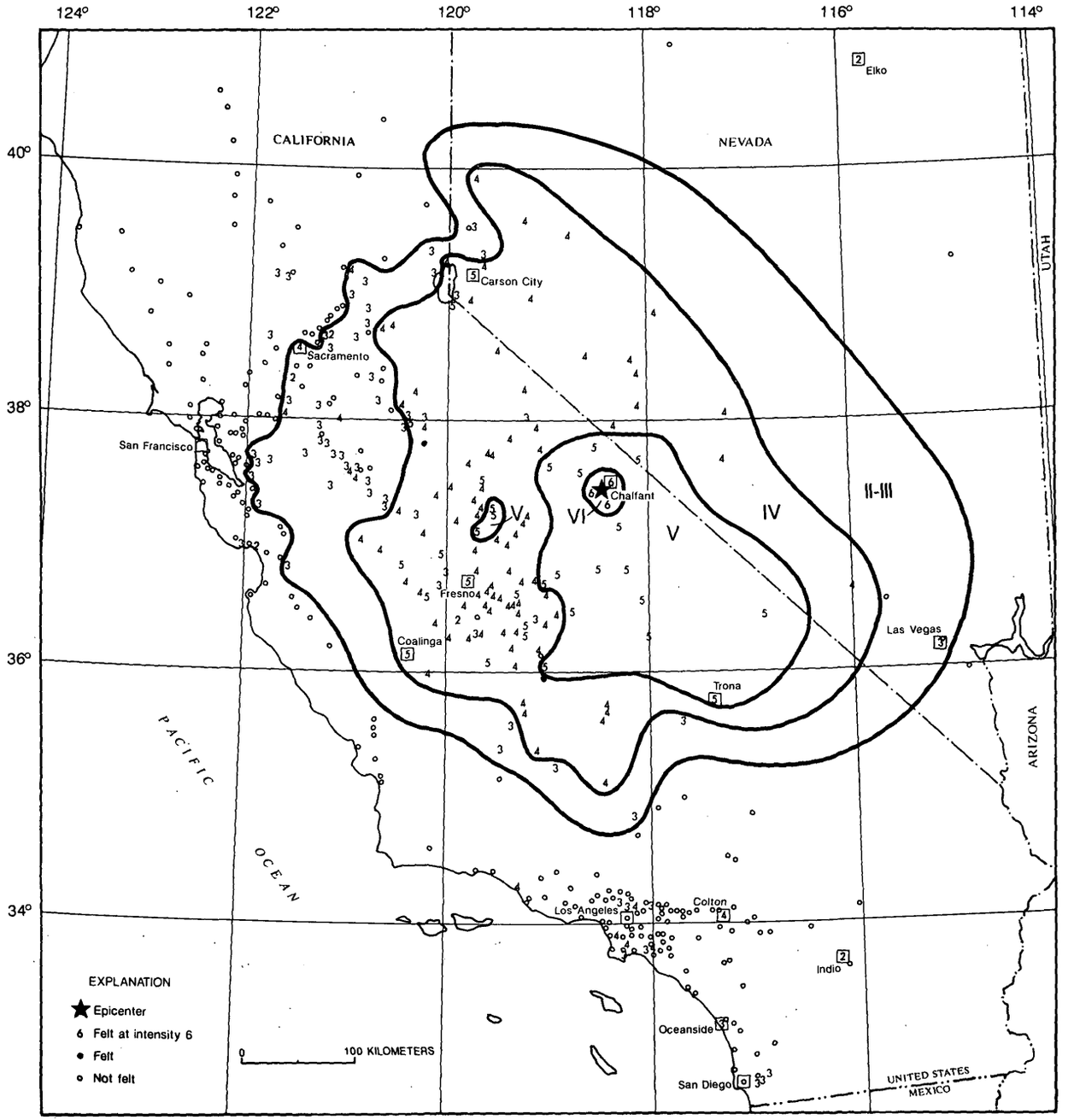


Figure 16. Isoseismal map for the Chalfant Valley, California, earthquake of 21 July, 1986, 14 42 26.5 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites, and small boxes show locations of towns and cities whose names are plotted.

high. The shaking moved the mobile homes as much as 18 in. laterally (Earthquake Engineering Research Institute, 1986). This lateral movement broke water and sewer connections and virtually destroyed one

CALIFORNIA—Continued

double-width mobile home when jacks penetrated the floor. The press reported 53 of the 72 mobile homes in Chalfant were displaced and damaged. Damage to other types of homes (other than mobile homes) consisted

of a few bricks off chimneys, broken windows, and cracked stucco. At Chalfant Mercantile store, much of its merchandise was knocked off shelves, breaking all glass jars or bottles. Across U.S. Highway 6, west of Chalfant, interior walls in a dome-shaped house sustained many cracks (some of the above information is from press reports).

Control Gorge power plant–A connection wire to a transformer was loosened, shutting off power; three bushing seals cracked and had to be replaced. An 8-ft-diameter penstock connects the three Gorge hydroelectric plants. This pipe is supported on concrete footings, some of which cracked and spalled and had anchor bolts pulled (from Earthquake Engineering Research Institute, 1986).

Intensity V:

The most common effects at the places listed below were that: a few small objects overturned and fell; pictures swung, leaving some out of place; buildings shook slightly to moderately; windows rattled; shaking was described as moderate to strong; the earthquake was felt by most people.

California—

Bass Lake–A few items were shaken off store shelves; trees and bushes shook slightly.

Benton–A few windows broke; hanging pictures fell; buildings shook strongly; trees and bushes shook strongly; standing vehicles rocked moderately; people had difficulty standing or walking.

Big Pine–A few items were shaken off store shelves.

Coalinga–A few items were shaken off store shelves; trees and bushes shook slightly.

Corcoran–A few items were shaken off store shelves; trees and bushes shook slightly; standing vehicles rocked slightly.

Crowley Lake–A few items were shaken off store shelves; a few glassware items or dishes broke; buildings shook strongly; people had difficulty standing or walking; trees and bushes shook moderately; standing vehicles rocked moderately.

Death Valley–Trees and bushes shook slightly; underground pipes were out of service.

Farmersville–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; people had difficulty standing and walking; interior walls sustained hairline cracks; trees and bushes shook moderately; standing and moving vehicles rocked slightly.

CALIFORNIA—Continued

Firebaugh–A few windows cracked; a few glassware items or dishes broke; trees and bushes shook slightly; standing vehicles rocked slightly.

Fresno–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; trees and bushes shook slightly; and standing vehicles rocked slightly.

Hume–Plaster walls sustained hairline cracks; buildings shook strongly; trees and bushes shook slightly.

Independence–A few windows cracked; a few glassware items or dishes broke; interior walls sustained hairline cracks; trees and bushes shook moderately; standing and moving vehicles rocked moderately.

Ivanhoe.

Kings Canyon National Park–Many items were shaken off store shelves; people had difficulty standing and walking; dry wall sustained hairline cracks; trees and bushes shook moderately; small landslides occurred.

Lone Pine–A few windows cracked; buildings shook strongly; dry wall sustained hairline cracks; trees and bushes shook slightly.

Madera–A few items were shaken off store shelves; plaster walls sustained hairline cracks; trees and bushes shook slightly; standing vehicles rocked slightly.

Mammoth Lakes–Trees and bushes shook moderately.

Miramonte–Trees and bushes shook moderately; standing vehicles rocked moderately.

North Fork–Plaster walls sustained hairline cracks; buildings shook strongly.

O'Neals–A moving car was shaken strongly; trees and bushes shook slightly.

Olancha.

Orange Cove–People had difficulty standing or walking.

Porterville–Plaster walls sustained hairline cracks; trees and bushes shook slightly; standing vehicles rocked slightly.

San Joaquin–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; dry wall sustained hairline cracks; sidewalks were reported cracked; trees and bushes shook slightly; standing vehicles rocked slightly.

Sequoia National Park–Trees and bushes shook slightly.

Sonora–Interior walls sustained hairline cracks.

South Lake Tahoe–A few glassware items or dishes broke; trees and bushes shook slightly; standing vehicles rocked slightly.

Toms Place–People had difficulty standing and walking.

Trona–Trees and bushes shook slightly; standing vehicles rocked slightly.

Wawona–A few items were shaken off store shelves; trees and bushes shook slightly.

Nevada—

Carson City–A few windows cracked.

Dyer.

Intensity IV:

California—Ahwahnee, Arnold, Auberry, Avenal, Badger, Bakersfield, Bethel Island, Big Creek, Bridgeport, Camino, Carson, Caruthers, Catheys Valley, Cedar Ridge, Ceres, Chowchilla, Clovis, Coarsegold, Coleville, Colton, Cutler, Del Rey, Delano, Dinuba, Dos Palos, Dunlap, East Fresno, El Portal, Fish Camp, Five Points, Fowler, Friant, Goshen, Hanford, Hawthorne, June Lake, Kaweah, Kernville, Keyes, Kings Beach, Kingsburg, Lake Isabella, Lakeshore, Lee Vining, Lemoncove, Lemoore, Lemoore Naval Air Station, Linden, Lindsay, Los Banos, Mariposa, McFarland, Mendota, Merced, Murphys, Oakhurst, Orosi, Parlier, Pasadena, Piedra, Pollock Pines, Prather, Raymond, Reedley, Sacramento, Selma, Shaver Lake, Squaw Valley, Stanton, Sultana, Sanger (press report), Tehachapi, Tipton, Tollhouse, Tranquillity, Tulare, Tuolumne, Tuolumne Meadows, Ventura, Visalia, Wofford Heights, Yettem, Yosemite Lodge, Yosemite National Park.

Nevada—Babbitt, Candelaria (press report), Fallon, Fernley, Gardnerville, Goldfield, Gabbs (press report), Hawthorne, Incline Village, Luning, Mercury, Mina, Minden, Montgomery Pass (press report), Tonopah, Yerington.

Intensity III:

California—Arcadia, Armona, Atwater, Biola, Burbank, Buttonwillow, Citrus Heights, Columbia, Delhi, Denair, Dublin (press report), Empire, Fremont, Georgetown, Glendale, Iowa Hill, Isleton, Jackson, Jamestown, Kelsey, Kerman, Lamont, Lathrop, Lemon Grove, Livermore, Lodi, Los Alamitos, Lundy Canyon (press report), Manteca, Mather Air Force Base, Meadow Vista, Modesto, Oceanside, Patterson, Planada, Pleasanton, Ridgecrest, Ripon, Rosamond, Salida, San Andreas, San Jose, San Juan Bautista, San Pedro, Santa Cruz, Santee, Shingle Springs, Spring Valley, Stockton, Sutter (press report), Tahoe City, Tracy, Truckee, Twain Harte, Wasco, Winton, Woodlake, Woodland, Yuba City.

Nevada—Las Vegas, Sparks, Virginia City, Zephyr Cove.

Intensity II:

California—Aptos, Courtland, Folsom, Indio, Riverdale.

Nevada—Elk.

Felt:

California—Groveland, Terra Bella.

21 July (BK) Owens Valley area
Origin time: 14 51 10.1
Epicenter: 37.570N., 118.525W.
Depth: 1 km

CALIFORNIA—Continued

Magnitude: 5.1m_b(GS), 5.7M_L(BK), 5.4M_L(PS), 5.8M_L(RN)
Moment: 4.3 x 10^{23} dyne-cm (BK)
Intensity V:

California—

Benton–Many small objects overturned; hanging pictures fell; trees and bushes shook strongly; people had difficulty standing; felt by everyone.

Big Pine–Many items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures fell; a few small objects overturned and fell; people had difficulty standing or walking; shaking was described as strong; trees and bushes shook moderately; standing and moving vehicles rocked moderately; felt by everyone.

Bishop–A few windows cracked; a few glassware items or dishes broke; many items were shaken off store shelves; a few small objects overturned and fell; trees and bushes shook slightly; standing vehicles rocked slightly; felt by everyone.

Nevada—

Dyer–People had difficulty standing, felt by everyone.

21 July (HJ) Off the coast of Southern California
Origin time: 18 29 30.8
Epicenter: 33.018N., 117.802W.
Depth: 8 km
Magnitude: 3.8M_L(PS), 3.8M_L(HJ)
Felt: Hawthorne (PS), Laguna Beach (PS), Long Beach (PS).

21 July (BK) Central California
Origin time: 22 07 17.0
Epicenter: 37.483N., 118.367W.
Depth: 6 km
Magnitude: 5.5m_b(GS), 5.0M_S(GS), 5.6M_L(BK), 5.4M_L(PS), 5.8M_L(RN)
Moment: 4.2 x 10^{23} dyne-cm (BK)
Felt: Bishop (press report).

22 July (BK) Owens Valley area
Origin time: 13 33 59.8
Epicenter: 37.517N., 118.477W.
Depth: 9 km
Magnitude: 4.2m_b(GS), 4.7M_L(BK), 4.6M_L(RN), 5.0M_L(PS)
Moment: 4.9 x 10^{22} dyne-cm (BK)
Intensity IV: Bishop (press report).

23 July (HJ) Off the coast of Southern California
Origin time: 02 57 58.2
Epicenter: 32.998N., 117.788W.
Depth: 4 km

Magnitude: 3.5M_L(PS), 3.5M_L(HJ)
Felt: Epicentral area (PS).

23 July (PS) Southern California
Origin time: 06 38 34.2
Epicenter: 34.103N., 117.314W.
Depth: 15 km
Magnitude: 2.7M_L(PS)
Felt: San Bernardino (PS).

23 July (HJ) Off the coast of Southern California
Origin time: 10 29 01.6
Epicenter: 33.013N., 117.817W.
Depth: 6 km
Magnitude: 3.4M_L(PS), 3.4M_L(HJ)
Felt: Epicentral area (PS).

24 July (PS) Southern California
Origin time: 01 58 23.1
Epicenter: 33.970N., 116.556W.
Depth: 9 km
Magnitude: 3.3M_L(PS)
Felt: Palm Springs area (PS).

25 July (PS) Southern California
Origin time: 05 44 03.7
Epicenter: 34.424N., 118.407W.
Depth: 11 km
Magnitude: 3.0M_L(PS)
Intensity III: Canyon Country.
Intensity II: Leona Valley.
Felt: San Fernando (press report).

25 July (PS) Southern California
Origin time: 11 39 09.7
Epicenter: 33.997N., 116.571W.
Depth: 8 km
Magnitude: 2.8M_L(PS)
Felt: Epicentral area (PS).

26 July (PS) Southern California
Origin time: 05 40 31.5
Epicenter: 34.001N., 116.574W.
Depth: 10 km
Magnitude: 2.9M_L(PS)
Felt: Long Beach (PS), South Bay Beaches area (PS).

28 July (HJ) Off the coast of Southern California
Origin time: 02 54 45.7
Epicenter: 32.953N., 117.812W.
Depth: 5 km
Magnitude: 3.6M_L(PS), 3.6M_L(HJ)
Felt: Epicentral area (PS).

CALIFORNIA—Continued

29 July (PS) Southern California
Origin time: 06 43 50.3
Epicenter: 33.965N., 116.590W.
Depth: 7 km
Magnitude: 3.2M_L(PS)
Felt: Epicentral area (PS).

29 July (BK) Central California
Origin time: 07 11 58.8
Epicenter: 37.543N., 118.445W.
Depth: 8 km
Magnitude: 4.2M_L(BK), 3.6M_L(PS), 4.3M_L(RN)
Moment: 1.4 x 10^{22} (BK)
Felt: Crowley Lake (press report).

29 July (HJ) Off the coast of Southern California
Origin time: 08 17 41.4
Epicenter: 32.945N., 117.828W.
Depth: 6 km
Magnitude: 3.9m_b(GS), 4.3M_L(PS), 4.3M_L(HJ)

Felt in Orange, Riverside, and San Diego Counties (press report).

Intensity V:
Oceanside–A few items were shaken off store shelves; a few small objects fell; awakened few people.
Rancho Bernardo–A few windows cracked; buildings shook moderately; felt by and awakened many people.
San Diego–A few windows cracked; interior walls sustained hairline cracks; a few glassware items or dishes broke; a few small objects overturned and fell; trees and bushes shook slightly; standing and moving vehicles rocked slightly; felt by many people.
San Diego (Golden Hill)–A few items were shaken off store shelves; hanging pictures fell; a few small objects overturned and fell.
Intensity IV: Capistrano Beach, Laguna Beach (press report), Poway, San Clemente (press report), San Diego (Lindberg Field), San Diego (Ocean Beach), San Diego (Paradise Hills), Vista.
Intensity III: Encinitas, Escondido, Lemon Grove, Leucadia, San Clemente, San Luis Rey, San Marcos, Santee, San Ysidro, Yucaipa.
Felt: El Cajon (press report), Lakeside (press report).

29 July (BK) Owens Valley area
Origin time: 09 57 57.2
Epicenter: 37.595N., 118.477W.
Depth: 7 km
Magnitude: 3.7m_b(GS), 4.6M_L(BK), 4.6M_L(PS), 4.7M_L(RN)
Moment: 3.8 x 10^{22} dyne-cm (BK)
Intensity IV: Bishop.

29 July (HJ) Off the coast of Southern California
Origin time: 11 22 22.4

Epicenter: 32.957N., 117.815W.
Depth: 5 km
Magnitude: 3.5M_L(PS), 3.5M_L(HJ)
Felt: Epicentral area (press report).

29 July (PS) Southern California
Origin time: 12 03 19.5
Epicenter: 33.966N., 116.568W.
Depth: 7 km
Magnitude: 3.0M_L(PS)
Felt: Epicentral area (PS).

30 July (PS) Southern California
Origin time: 01 14 01.1
Epicenter: 34.000N., 118.378W.
Depth: 4 km
Magnitude: 2.8M_L(PS)
Felt: Culver City (PS), West Hollywood (PS).

30 July (BK) Owens Valley area
Origin time: 06 41 52.9
Epicenter: 37.582N., 118.468W.
Depth: 7 km
Magnitude: 4.1m_b(GS), 4.8M_L(BK), 4.8M_L(PS)
Moment: 5.1 x 10^{22} dyne-cm (BK)
Intensity IV: Benton, Bishop.
Felt: Toms Place.

30 July (HJ) Off the coast of Southern California
Origin time: 22 51 13.0
Epicenter: 33.012N., 117.782W.
Depth: 7 km
Magnitude: 3.9M_L(PS), 3.9M_L(HJ)
Felt: Epicentral area (PS).

31 July (BK) Owens Valley area
Origin time: 07 22 40.2
Epicenter: 37.463N., 118.367W.
Depth: 7 km
Magnitude: 5.5m_b(GS), 5.2M_S(GS), 5.8M_L(BK), 5.9M_L(PS), 5.5M_L(RN)
Moment: 1.6 x 10^{24} dyne-cm (BK)

This earthquake was an aftershock of the 21 July 14 42 26.5 UTC earthquake.

Intensity VI:
California—
Bishop–A plate-glass window broke at the Safeway store; a few other windows broke; light fixtures fell at the U.S. National Weather Service office; people ran outside; items were shaken off store shelves (press report).
Intensity V:
California—

CALIFORNIA—Continued

Big Pine–A few items were shaken off store shelves; shaking was described as strong; felt by and awakened many people.
Sequoia National Park–Dry wall sustained hairline cracks; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; buildings shook strongly; felt by and awakened many people.
Sonora–Plaster walls sustained hairline cracks; trees and bushes shook slightly; hanging pictures swung out of place; felt by many people.
Nevada—
Dyer–Many items were shaken off store shelves; hanging pictures swung out of place; felt by everyone; awakened many people.
Intensity IV:
California—Armona, Auberry, Bass Lake, Benton, Big Creek, Bridgeport, Camp Nelson, China Lake, Grant Grove, Hume, Independence, June Lake, Kaweah, Kerman, Lindsay, Lone Pine, Mammoth Lakes, Miramonte, Orange Cove, Orosi, Ridgecrest, Tollhouse, Traver, Wawona.
Nevada—Goldfield.
Intensity III:
California—Ahwahnee, Badger, Biola, Coarsegold, Dinuba, El Portal, Firebaugh, Fish Camp, Fresno, Friant, Hanford, Kernville, Kinsburg, Mendota, North Fork, Oakhurst, O'Neals, Paso Robles, Piedra, Prather, Ripon, Riverdale, Shaver Lake, South Lake Tahoe, Tulare, Winton, Wofford Heights, Woodlake.
Nevada—Mina, Tonopah.
Intensity II:
California—Tipton.
Felt:
California—Bakersfield (press report), Chowchilla, Coalinga, Farmersville, Toms Place, Yosemite Lodge.

31 July (PS) Southern California
Origin time: 07 51 42.9
Epicenter: 33.966N., 116.574W.
Depth: 7 km
Magnitude: 3.3M_L(PS)
Felt: Palm Springs (PS).

31 July (PS) Southern California
Origin time: 19 16 45.9
Epicenter: 33.995N., 118.368W.
Depth: 4 km
Magnitude: 2.8M_L(PS)
Felt: Culver City (press report), West Hollywood (PS).

1 August (BK) Owens Valley area
Origin time: 14 27 16.4
Epicenter: 37.501N., 118.398W.

Depth: 6 km
Magnitude: 4.2m_b(GS), 4.8M_L(BK), 3.4M_L(PS), 4.1M_L(RN)
Felt: Bishop (press report).

1 August (BK) Owens Valley area
Origin time: 14 28 19.6
Epicenter: 37.468N., 118.448W.
Depth: 14 km
Magnitude: 4.9m_b(GS), 5.1M_L(BK), 5.2M_L(RN)
Moment: 2.1 x 10^{23} dyne-cm (BK)
Felt: Bishop (press report).

2 August (PS) Southern California
Origin time: 11 36 57.8
Epicenter: 34.036N., 116.696W.
Depth: 11 km
Magnitude: 3.4M_L(PS), 3.5M_L(PS)
Felt: Palm Springs area (press report).

3 August (BK) Central California
Origin time: 10 33 05.3
Epicenter: 37.615N., 118.455W.
Depth: 7 km
Magnitude: 3.6m_b(GS), 4.3M_L(BK), 4.0M_L(RN)
Moment: 2.3 x 10^{22} dyne-cm (BK)
Felt: Chalfant (PS).

4 August (BK) Central California
Origin time: 03 41 41.9
Epicenter: 37.432N., 121.773W.
Depth: 8 km
Magnitude: 3.4M_L(BK)
Moment: 1.7 x 10^{21} dyne-cm (BK)
Intensity IV: San Jose.
Intensity III: Santa Clara.

8 August (BK) Northern California
Origin time: 17 31 35.3
Epicenter: 40.862N., 123.725W.
Depth: 42 km
Magnitude: 3.8M_L(BK)
Felt: Eureka (BK).

9 August (PS) Off the coast of Southern California
Origin time: 00 52 29.3
Epicenter: 32.500N., 117.398W.
Depth: 6 km
Magnitude: 3.4M_L(PS)
Intensity III: Spring Valley.
Intensity II: San Diego.
Felt: Imperial Beach (PS), Pacific Beach (PS), Point Loma (PS).

CALIFORNIA—Continued

14 August (BK) Northern California
Origin time: 00 50 40.8
Epicenter: 40.377N., 124.328W.
Depth: 18 km
Magnitude: 3.7M_L(BK)
Moment: 3.6 x 10^{21} dyne-cm (BK)
Intensity III: Rio Dell, Scotia (BK).

15 August (HJ) Off the coast of Southern California
Origin time: 18 45 16.1
Epicenter: 32.948N., 117.797W.
Depth: 6 km
Magnitude: 3.7M_L(PS), 3.8M_L(GS)
Felt: Epicentral area (PS).

20 August (BK) Central California
Origin time: 07 02 16.8
Epicenter: 37.122N., 121.563W.
Depth: 6 km
Magnitude: 3.3M_L(BK), 3.1M_L(PS)
Intensity IV: Morgan Hill (press report).
Felt: Gilroy (BK).

20 August (BK) Central California
Origin time: 09 50 21.0
Epicenter: 37.120N., 121.562W.
Depth: 6 km
Magnitude: 2.8M_L(BK), 2.7M_L(PS)
Intensity III: Morgan Hill (press report).
Felt: Gilroy (BK).

20 August (BK) Central California
Origin time: 09 57 05.0
Epicenter: 37.118N., 121.565W.
Depth: 7 km
Magnitude: 3.3M_L(BK), 3.0M_L(PS)
Intensity III: Morgan Hill (press report).

23 August (BK) Central California
Origin time: 03 01 30.3
Epicenter: 37.493N., 118.383W.
Depth: 5 km
Magnitude: 3.9M_L(BK), 4.0M_L(RN)
Intensity III: Bishop.

25 August (BK) Central California
Origin time: 11 47 51.2
Epicenter: 37.747N., 121.968W.
Depth: 4 km
Magnitude: 2.6M_L(BK)
Felt: Danville (BK), San Ramon (BK).

28 August (PS) Off the coast of Southern California
Origin time: 10 14 16.3

Epicenter: 32.491N., 117.420W.
Depth: 6 km
Magnitude: 3.6M_L(PS)
Intensity V:
San Diego (Encanto)–A few windows cracked ; a few glassware items or dishes broke; a few small objects overturned and fell; felt by and awakened many people.
Solana Beach–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; awakened a few people.
Intensity IV: San Diego (Lindbergh Fields), San Diego (Sierra Mesa).
Intensity III: San Diego (Mission Gorge area), San Diego (Ocean Beach), San Marcos, Spring Valley.

28 August (PS) Southern California
Origin time: 16 32 14.6
Epicenter: 33.919N., 116.273W.
Depth: 8 km
Magnitude: 3.2M_L(PS)
Felt: Palm Springs (press report).

29 August (BK) Central California
Origin time: 06 44 42.5
Epicenter: 35.888N., 120.475W.
Depth: 5 km
Magnitude: 3.2M_L(BK), 3.6M_L(PS)
Intensity III: Paso Robles, San Ardo.
Felt: Parkfield (BK).

29 August (PS) Southern California
Origin time: 07 46 54.5
Epicenter: 33.956N., 116.599W.
Depth: 8 km
Magnitude: 3.7M_L(PS)
Intensity V:
Desert Hot Springs– A few items were shaken off store shelves; shaking was described as strong; felt by many people.
Hemet—A few items were shaken off store shelves; interior walls sustained hairline cracks; a few glassware items or dishes broke; small objects overturned and fell; buildings shook strongly; felt by everyone.
Intensity IV: Cathedral City, Palm Springs, Yucca Valley.
Intensity III: Beaumont, Cabazon, Forest Falls, Indio, North Palm Springs.

2 September (BK) Northern California
Origin time: 13 59 56.1
Epicenter: 41.128N., 123.755W.
Depth: 12 km
Magnitude: 3.4M_L(BK)

CALIFORNIA—Continued

Moment: 8.4 x 10^{20} dyne-cm (BK)
Felt: Epicentral area (BK).

3 September (BK) Central California
Origin time: 04 31 14.8
Epicenter: 37.295N., 121.667W.
Depth: 10 km
Magnitude: 4.0M_L(BK), 3.6M_L(PS)

The press reported that this earthquake was felt from Monterey County to Marin County.

Intensity V:
Soquel–A few glassware items or dishes broke; a few small objects overturned and fell; buildings shook moderately; standing and moving vehicles rocked slightly; felt by everyone.
Intensity IV: Brookdale, Fremont, Loma Mar, Mount Hamilton, Mount Hermon, New Almaden, Redwood Estates, San Jose, Santa Cruz.
Intensity III: Aptos, Felton, Gilroy, Ladera, Morgan Hill.
Felt: San Francisco (press report).

8 September (BK) Central California
Origin time: 16 22 44.8
Epicenter: 36.838N., 121.395W.
Depth: 7 km
Magnitude: 2.4M_L(BK), 2.5M_L(PS)
Felt: Hollister (BK).

9 September (PS) Southern California
Origin time: 16 22 50.6
Epicenter: 33.966N., 116.567W.
Depth: 6 km
Magnitude: 3.5M_L(PS)
Intensity IV: Cabazon, Desert Hot Springs, Morongo Valley, Mountain Center, North Palm Springs.
Intensity III: Joshua Tree, La Quinta, Palm Springs.
Intensity II: Thousand Palms.
Felt: Desert Hot Springs (PS).

10 September (PS) Southern California
Origin time: 15 51 52.4
Epicenter: 33.958N., 116.669W.
Depth: 9 km
Magnitude: 3.0M_L(PS)
Intensity III: Palm Springs (press report).

16 September (RN) Owens Valley area
Origin time: 13 14 25.8
Epicenter: 37.615N., 118.430W.
Depth: 8 km
Magnitude: 3.5M_L(BK), 3.8M_L(RN)
Intensity IV: Chalfant (press report).
Intensity III: Benton.

18 September (RN) Owens Valley area
Origin time: 07 59 47.7
Epicenter: 37.622N., 118.435W.
Depth: 8 km
Magnitude: 4.0M_L(BK), 4.2M_L(PS)
Felt: Bishop (PS).

18 September (PS) Southern California
Origin time: 09 05 10.9
Epicenter: 33.700N., 116.746W.
Depth: 17 km
Magnitude: 2.7M_L(PS)
Felt: Hemet (PS).

23 September (BK) Central California
Origin time: 14 41 15.1
Epicenter: 37.365N., 121.742W.
Depth: 6 km
Magnitude: 3.2M_L(BK), 2.7M_L(PS),
Moment: 3.4 x 10^{20} dyne-cm (BK)
Intensity II: Cupertino, Mount Hamilton.

23 September (BK) Central California
Origin time: 19 27 56.7
Epicenter: 36.073N., 121.792W.
Depth: 18 km
Magnitude: 3.7M_L(BK)
Moment: 1.8 x 10^{21} dyne-cm (BK)
Intensity II: Big Sur.
Felt: King City (BK).

24 September (PS) Southern California
Origin time: 10 46 30.1
Epicenter: 34.540N., 119.036W.
Depth: 18 km
Magnitude: 3.4M_L(PS)
Felt: Ventura (PS).

26 September (PS) Off the coast of Southern California
Origin time: 00 35 24.1
Epicenter: 32.685N., 117.152W.
Depth: 8 km
Magnitude: 2.8M_L(PS)

This earthquake was felt in scattered areas of San Diego County (press report).

Felt: San Diego (PS).

28 September (PS) Southern California
Origin time: 07 06 26.9
Epicenter: 34.010N., 116.577W.
Depth: 10 km

CALIFORNIA—Continued

Magnitude: 3.2M_L(PS)
Intensity IV: Morongo Valley.

29 September (PS) Southern California
Origin time: 14 00 26.6
Epicenter: 34.018N., 117.239W.
Depth: 16 km
Magnitude: 2.9M_L(PS)
Felt: San Bernardino (PS).

30 September (HJ) Off the coast of Southern California
Origin time: 09 52 11.2
Epicenter: 33.008N., 117.777W.
Depth: 0 km
Magnitude: 3.9M_L(PS), 3.9M_L(HJ)
Intensity IV: Lakeside, Pala, San Diego.
Intensity III: Avalon, El Toro, Escondido, Laguna Hills, Mission Viejo, San Luis Rey, San Marcos, Vista.
Intensity II: Spring Valley.

1 October (HJ) Off the coast of Southern California
Origin time: 20 12 18.3
Epicenter: 32.973N., 117.840W.
Depth: 8 km
Magnitude: 4.0M_L(PS), 4.0M_L(HJ)
Felt: Oceanside (press report), San Diego (press report), southern Orange County (press report).

2 October (PS) Southern California
Origin time: 04 55 42.0
Epicenter: 34.033N., 116.639W.
Depth: 11 km
Magnitude: 2.9M_L(PS)
Felt: Palm Springs (PS).

2 October (HJ) Southern California
Origin time: 15 23 28.6
Epicenter: 33.010N., 117.753W.
Depth: 0 km
Magnitude: 3.4M_L(PS), 3.4M_L(HJ)
Intensity III: Oceanside (press report).

9 October (RN) Owens Valley area
Origin time: 05 37 25.0
Epicenter: 37.348N., 118.370W.
Depth: 15 km
Magnitude: 4.4M_L(BK), 4.3M_L(PS), 3.8M_L(RN)
Moment: 1.7 x 10^{22} dyne-cm (BK)
Intensity III: Bishop (press report), Lone Pine.

10 October (PS) Southern California
Origin time: 15 23 02.6
Epicenter: 33.948N., 116.786W.
Depth: 2 km

Magnitude: 3.5M_L(PS)
Intensity IV: Angelus Oaks.
Intensity III: Anza, Desert Hot Springs, Forest Falls, North Palm Springs, Palm Springs, Rancho Mirage, Thousand Palms.

11 October (BK) Central California
Origin time: 05 17 36.4
Epicenter: 37.827N., 121.960W.
Depth: 6 km
Magnitude: 4.2M_L(BK)
Moment: 8.3 x 10^{21} dyne-cm (BK)
Intensity V:
Canyon–Hanging pictures fell; many books overturned; buildings shook strongly; felt by many people.
Intensity IV: Concord, Danville, Dublin, Lafayette, Oakland, Pleasanton, Pleasant Hill (press report), San Ramon (press report).
Intensity III: Clayton, Concord (press report), Hayward (press report), Martinez (press report), Richmond, Sunol, Union City, Walnut Creek (press report).
Felt: Berkeley (press report), Livermore (press report), San Francisco (press report).

11 October (BK) Central California
Origin time: 06 39 38.2
Epicenter: 37.827N., 121.952W.
Depth: 5 km
Magnitude: 3.2M_L(BK)
Moment: 1.9 x 10^{21} dyne-cm (BK)
Felt: Danville (press report).

12 October (BK) Central California
Origin time: 06 43 01.9
Epicenter: 38.718N., 123.500W.
Depth: 11 km
Magnitude: 4.2m_b(GS), 4.0M_L(BK)
Moment: 1.6 x 10^{22} dyne-cm (BK)
Intensity V:
Sea Ranch– A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; hanging pictures swung out of place; felt by everyone.
Intensity IV: Annapolis, Gualala, Point Arena.
Intensity III: Manchester, Ville Grande.

15 October (PS) Southern California
Origin time: 02 28 47.8
Epicenter: 33.953N., 116.572W.
Depth: 9 km
Magnitude: 4.3m_b(GS), 4.9M_L(PS), 4.5M_L(BK), 4.7M_L(GP)

Intensity V:
Desert Hot Springs–A few small objects overturned; buildings shook strongly; trees and bushes shook slightly; felt by many people.
La Quinta–A few glassware items or dishes broke; a few small objects overturned and fell; trees and bushes shook slightly; standing vehicles rocked slightly; felt by many people.
Palm Springs–A few small objects overturned; trees and bushes shook moderately; standing and moving vehicles rocked moderately; felt by everyone.
Rancho Mirage–A few small objects overturned and fell; trees and bushes shook slightly; standing vehicles rocked slightly; felt by many people.
Thousand Palms–Plaster walls sustained hairline cracks; a few small objects fell; trees and bushes shook slightly; standing vehicles rocked slightly; felt by everyone.
Intensity IV: Beaumont, Coachella, Forest Falls, Hemet, Indio, Joshua Tree, North Palm Springs, Palm Desert, Palm Springs, San Jacinto, Thermal, Twentynine Palms, White Water, Yucca Valley.
Intensity III: Anza, Banning, Fontana, Morongo Valley, Pala, Landers.
Felt: Cathedral City.

15 October (PS) Southern California
Origin time: 05 46 18.8
Epicenter: 34.165N., 118.274W.
Depth: 3 km
Magnitude: 2.5M_L(PS)
Felt: Burbank (PS), Glendale (PS).

16 October (BK) Northern California
Origin time: 06 16 40.7
Epicenter: 40.327N., 123.927W.
Depth: 6 km
Magnitude: 2.4M_L(BK)
Intensity III: Rio Dell.
Felt: Scotia (BK).

16 October (PS) Southern California
Origin time: 10 16 17.0
Epicenter: 33.977N., 116.565W.
Depth: 8 km
Magnitude: 2.9M_L(PS)
Felt: Palm Springs (PS).

16 October (BK) Central California
Origin time: 11 20 37.6
Epicenter: 37.755N., 122.138W.
Depth: 7 km
Magnitude: 2.2M_L(BK)
Felt: San Leandro (BK).

19 October (PS) Southern California
Origin time: 14 50 26.1
Epicenter: 34.015N., 116.687W.
Depth: 8 km
Magnitude: 2.9M_L(PS)
Felt: Epicentral area (PS).

21 October (BK) Central California
Origin time: 13 14 58.6
Epicenter: 36.760N., 121.367W.
Depth: 11 km
Magnitude: 3.3M_L(BK),
Moment: 7.8 x 10^{20} dyne-cm (BK)
Felt: Hollister (BK), Santa Cruz (BK).

27 October (BK) Central California
Origin time: 02 06 45.5
Epicenter: 37.175N., 121.583W.
Depth: 8 km
Magnitude: 3.6M_L(BK)
Moment: 5.8 x 10^{21} dyne-cm (BK)
Intensity II: Morgan Hill.
Felt: Near Anderson Reservoir (BK).

29 October (PS) Southern California
Origin time: 02 38 15.3
Epicenter: 32.615N., 117.152W.
Depth: 15 km
Magnitude: 3.9m_b(GS), 4.1M_L(PS), 4.4M_L(BK)

This earthquake was felt with a Modified Mercalli intensity V at Tijuana, Mexico, and Modified Mercalli intensity IV at Tecate, Mexico.

Intensity V:
Chula Vista–A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; standing and moving vehicles rocked slightly; people had difficulty standing; felt by many people.
Coronado–Stucco walls sustained hairline cracks; buildings shook moderately; felt by many people.
Dulzura–A few small objects overturned and fell; shaking was described as strong; felt by many people.
El Cajon–A few small objects overturned; trees and bushes shook slightly; shaking was described as strong; felt by many people.
Encinitas–A few windows cracked; standing and moving vehicles rocked slightly; shaking was described as strong; felt by everyone.
Imperial Beach–A few glassware items or dishes broke; a few small objects overturned and fell; shaking was described as moderate; trees and bushes shook slightly; felt by several people. The press reported a broken water line.
San Diego–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; hanging pictures swung out of place; shaking was described as moderate; felt by many people.
San Diego (Clairemont)–A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; shaking was described as moderate; felt by everyone.
San Diego (Encanto)–A few items were shaken off store shelves; a few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; standing and moving vehicles rocked slightly; trees and bushes shook slightly; shaking was described as moderate; felt by many people.
San Diego (Ocean Beach)–A few small objects overturned and fell; hanging pictures swung out of place; standing vehicles rocked slightly; trees and bushes shook slightly; shaking was described as strong; felt by many people.
Spring Valley–A few small objects overturned and fell; buildings shook strongly; trees and bushes shook slightly; standing vehicles rocked slightly; felt by many people.
Intensity IV: Bonita, Campo, Descanso, Julian, La Jolla, Lakeside, La Mesa, Lemon Grove, Murrieta, National City, North Island Naval Air Station, Palomar Mountain, Pine Valley, Poway, Potrero, Rancho Penasquitos, Ramona, San Diego (City Heights), San Diego (College Heights), San Diego (Logan Heights), San Diego (Serra Mesa), San Diego (Shelter Island–press report), San Diego (University City), San Luis Rey, Santee, Santa Ysabel.
Intensity III: Alhambra, Boulevard, Guatay, Indio, Jacumba, Miramar Naval Air Station, Mount Laguna, Oceanside, Pala, Pauma Valley, Perris, San Diego (Mission Beach), Vista.
Intensity II: Leucadia.

30 October (BK) Central California
Origin time: 18 12 08.3
Epicenter: 36.827N., 121.578W.
Depth: 4 km
Magnitude: 3.1M_L(BK)
Intensity IV: San Martin (press report).
Intensity III: Aptos.

31 October (BK) California-Nevada border area
Origin time: 03 57 28.9
Epicenter: 38.420N., 119.323W.
Depth: 1 km
Magnitude: 4.6M_L(BK), 4.4M_L(RN)
Moment: 4.7 x 10^{22} dyne-cm (BK)

Intensity IV:
California—Bridgeport, Topaz.
Nevada– Schurz, Wellington.
Intensity III:
California—Angels Camp, Avery, Bear Valley, Kyburz, Pine Grove.
Felt: Seven miles north of Lee Vining, Coleville (BK), South Lake Tahoe (BK), Walker (BK).

31 October (PS) Central California
Origin time: 14 27 05.2
Epicenter: 35.578N., 117.178W.
Depth: 6 km
Magnitude: 3.8M_L(PS)
Intensity III: China Lake, Ridgecrest.

31 October (BK) Central California
Origin time: 18 46 14.2
Epicenter: 36.947N., 121.572W.
Depth: 7 km
Magnitude: 3.5M_L(BK)
Moment: 7.6 x 10^{21} dyne-cm (BK)
Intensity V:
Aromas–A few small objects overturned and fell; trees and bushes shook slightly; felt by many people.
Intensity IV: Gavilan College (press report).
Intensity III: Morgan Hill, Moss Landing, Santa Cruz.
Intensity II: San Juan Bautista.
Felt: Gilroy (press report), Hollister (BK), Oakland (BK), Salinas (BK), San Jose (BK), Watsonville (BK).

1 November (BK) Central California
Origin time: 14 50 57.4
Epicenter: 37.347N., 121.730W.
Depth: 6 km
Magnitude: 3.4M_L(BK)
Moment: 2.1 x 10^{21} dyne-cm (BK)
Intensity IV: Tres Pinos.
Intensity III: San Jose, Los Gatos.
Felt: Santa Cruz.

1 November (BK) Western Nevada
Origin time: 19 23 38.3

See Nevada listing.

2 November (BK) Central California
Origin time: 03 46 14.4
Epicenter: 37.630N., 122.483W.
Depth: 10 km
Magnitude: 3.0M_L(BK)
Moment: 4.1 x 10^{20} dyne-cm (BK)
Felt: San Francisco (BK).

3 November (PS) Southern California
Origin time: 18 40 40.4
Epicenter: 33.689N., 116.813W.
Depth: 18 km
Magnitude: 2.9M_L(PS)
Intensity III: Palm Springs (press report).

3 November (GP) Southern California
Origin time: 21 04 01.4
Epicenter: 33.874N., 116.859W.
Depth: 11 km
Magnitude: 3.1M_L(PS)
Intensity III: Palm Springs (press report).

6 November (PS) Southern California
Origin time: 09 19 58.3
Epicenter: 34.735N., 120.147W.
Depth: 0 km
Magnitude: 4.0m_b(GS), 4.0M_L(PS)
Intensity V:
Los Alamos–A few glassware items or dishes broke; a few small objects overturned and fell; hanging pictures fell; felt by many people.
Los Olivos–People had difficulty standing and walking; buildings shook strongly; felt by many people.
Intensity IV: Santa Ynez, Solvang.
Intensity III: Buellton.
Intensity II: Casmalia.
Felt: Lompoc (PS), Santa Maria (press report).

12 November (PS) Southern California
Origin time: 23 26 47.9
Epicenter: 34.528N., 118.488W.
Depth: 2 km
Magnitude: 2.7M_L(PS)
Felt: Epicentral area (PS).

13 November (PS) Southern California
Origin time: 05 12 28.0
Epicenter: 33.959N., 116.734W.
Depth: 10 km
Magnitude: 3.2M_L(PS)
Intensity IV: Palm Springs.
Intensity III: North Palm Springs.

13 November (RN) Owens Valley area
Origin time: 16 55 38.3
Epicenter: 37.479N., 118.510W.
Depth: 3 km
Magnitude: 3.9M_L(BK), 3.6M_L(PS), 4.1M_L(RN)
Felt: Bishop.

14 November (BK) Central California
Origin time: 04 26 20.4

Epicenter: 38.528N., 122.977W.
Depth: 2 km
Magnitude: 2.6M_L(BK)
Felt: Forestville to Guerneville (BK).

19 November (BK) Off the coast of Northern California
Origin time: 16 19 06.0
Epicenter: 40.375N., 125.060W.
Depth: 8 km
Magnitude: 4.2m_b(GS), 3.9M_L(BK)
Moment: 3.4 x 10^{21} dyne-cm (BK)
Intensity IV: Ferndale.
Intensity II: Rio Dell.

21 November (BK) Northern California
Origin time: 23 33 01.7
Epicenter: 40.372N., 124.443W.
Depth: 15 km
Magnitude: 5.3m_b(GS), 5.1M_S(GS), 5.1M_L(BK)
Moment: 6.1 x 10^{23} dyne-cm (BK)

This earthquake was felt over about 12,000 km^2 of northern California (fig. 17). Two people were injured.

Intensity VII:

Petrolia–Shelves in the Petrolia General Store almost emptied from shaking that broke most glass bottles and jars. An old teacherage at Mattole Union Elementary School was knocked off its cinder-block foundation. A 64-year-old man was injured when thrown to the ground and a wood pile fell on him. A home was reported to have sustained split walls. A water well ceased to pump water (from press reports). Chimneys were cracked and twisted; small appliances were overturned; many glassware items or dishes broke; a few windows cracked; hanging pictures fell; buildings shook strongly; small landslides occurred; felt by everyone.

Intensity VI:

Carlotta–Chimneys cracked; a few items were shaken off store shelves; many glassware items or dishes broke; many small objects overturned and fell; hanging pictures fell; trees and bushes shook strongly; standing vehicles rocked moderately; moving vehicles rocked slightly; buildings were shaken strongly; felt by everyone.

Ferndale–Two plate-glass windows broke; a few items shaken off of shelves (press report).

Fortuna–Many windows broke out; many items were shaken off store shelves; many glassware items or dishes broke; many small objects overturned and fell; ceiling tiles fell in the post office; standing vehicles rocked moderately; trees and bushes shook moderately; buildings shook strongly; felt by everyone.

CALIFORNIA—Continued

Honeydew–A chimney was thrown down; one person was injured by a falling bookcase; a pressure cooker was almost thrown off a stove. A few items were shaken off store shelves; a few windows cracked; many glassware items or dishes broke; many small objects overturned and fell; hanging pictures fell; trees and bushes shook strongly; standing vehicles rocked moderately; buildings shook strongly; people had difficulty standing; felt by many people.

Hydesville–Chimneys were cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; standing and moving vehicles rocked slightly; shaking was described as strong; felt by everyone.

Rio Dell–Some windows were broken out; interior plaster walls sustained cracks; many items were shaken off store shelves; small appliances overturned; some glassware items or dishes broke; some small objects overturned and fell; trees and bushes shook moderately; standing and moving vehicles rocked moderately; felt by everyone.

Scotia–Windows broke (press report). Many items were shaken off store shelves; small appliances overturned; a few glassware items and dishes broke; a few small objects overturned and fell; shaking was described as strong; felt by many people.

Intensity V:

Alderpoint–A few small objects overturned and fell; buildings shook moderately; trees and bushes shook slightly; standing vehicles rocked slightly; felt by many people.

Arcata–A few small objects overturned and fell; shaking was described as moderate; pictures swung out of place; felt by many people.

Blocksburg–A few items were shaken off store shelves; trees and bushes shook slightly; standing vehicles rocked slightly; shaking was described as moderate; felt by many people.

Cutten–A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; shaking was described as moderate; felt by many people.

Fields Landing–People had difficulty standing and walking; hanging pictures swung out of place; trees and bushes shook moderately; standing vehicles rocked slightly; buildings shook strongly; felt by everyone.

Loleta–A few items were shaken off store shelves; a few glassware items or dishes broke; many small objects fell; buildings shook strongly; standing vehicles rocked moderately; felt by everyone.

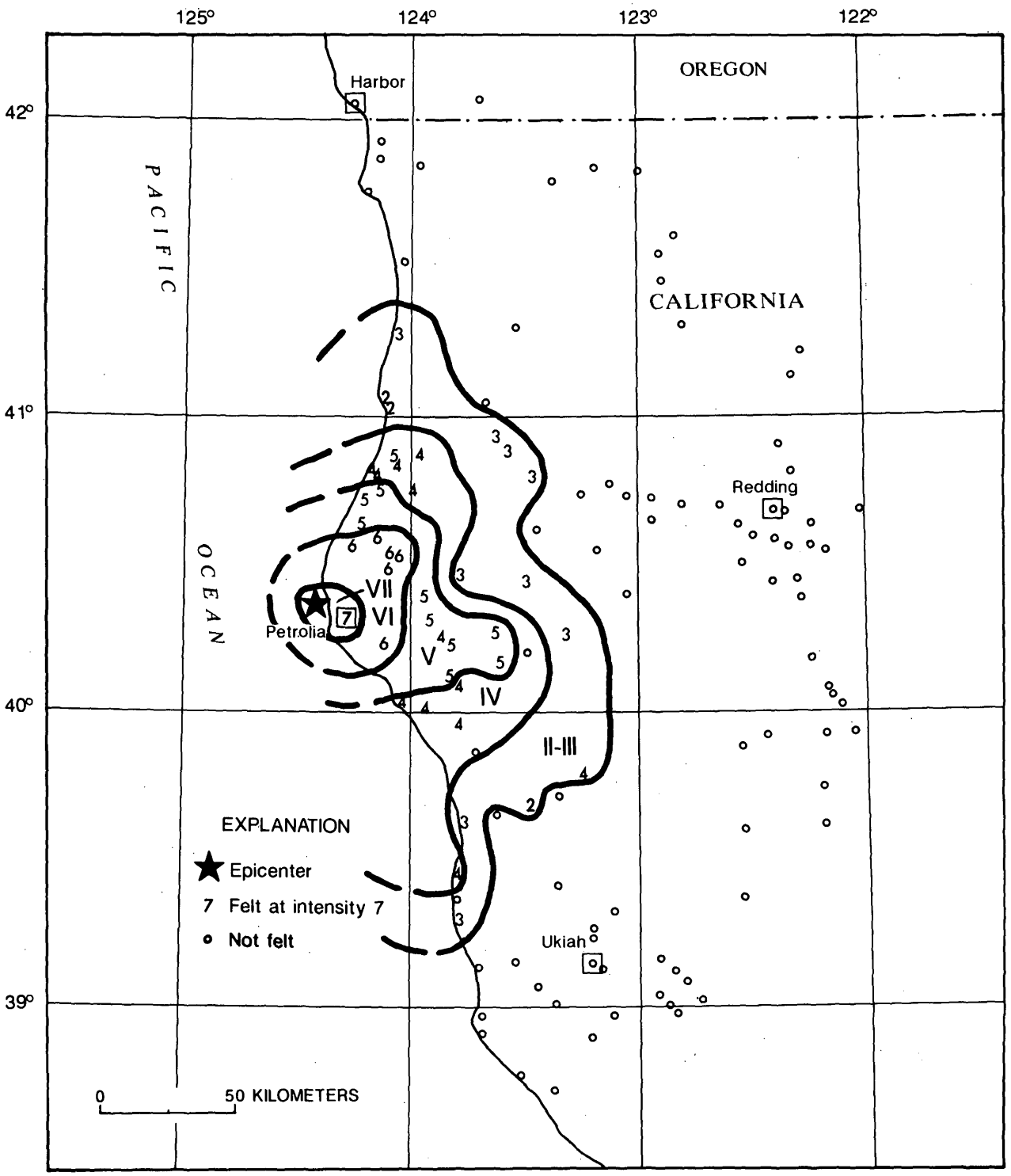


Figure 17. Isoseismal map for the northern California earthquake of 21 November, 1986, 23 33 01.7 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed contour lines are inferred isoseismals, and small boxes show locations of towns and cities whose names are plotted.

Miranda–A few small objects overturned and fell; people had difficulty standing and walking; shaking was described as strong; trees and bushes shook moderately; standing vehicles rocked moderately; felt by many people.

Phillipsburg–A few items were shaken off store shelves; a few small objects fell; many small objects overturned; hanging pictures fell; buildings shook strongly; standing vehicles rocked slightly; felt by many people.

Redcrest–A few items were shaken off store shelves; a few small objects fell; standing and moving vehicles rocked slightly; buildings shook moderately; felt by everyone.

Redway–A few merchandise were shaken off store shelves; a few small objects overturned and fell; hanging pictures swung out of place; buildings shook moderately; felt by everyone.

Weott–A few glassware items or dishes broke; a few small objects overturned and fell; hanging pictures swung out of place; trees and bushes shook moderately; standing vehicles rocked moderately; moving vehicles rocked slightly; buildings shook moderately; felt by everyone.

Intensity IV: Bayside, Blue Lake, Covelo, Eureka, Fort Bragg (press report), Garberville, Kneeland, Korbel, Myers Flat, Piercy, Samoa, Shelter Cove, Whitethorn.
Intensity III: Bridgeville, Burnt Ranch, Mad River, Mendocino, Orick, Ruth, Salyer, Westport, Willow Creek.
Intensity II: Laytonville, Trinidad, Westhaven.

21 November (BK) Northern California
Origin time: 23 34 18.0
Epicenter: 40.367N., 124.450W.
Depth: 15 km
Magnitude: 5.1m_b(GS), 5.1M_L(BK)
Moment: 4.6 x 10^{23} dyne-cm (BK)

This earthquake was felt over about the same area and with the same intensity as the 21 November 23 33 01.7 UTC earthquake. The shaking effects could not be differentiated from the first earthquake; therefore, all the intensity values were assigned to the first earthquake.

23 November (BK) Northern California
Origin time: 05 41 06.3
Epicenter: 40.360N., 124.528W.
Depth: 20 km
Magnitude: 4.0m_b(GS), 4.0M_L(BK)
Moment: 2.9 x 10^{22} dyne-cm (BK)
Intensity III: Rio Dell.
Felt: Fortuna (press report).

4 December (PS) Southern California
Origin time: 10 55 19.6
Epicenter: 33.713N., 116.836W.
Depth: 16 km
Magnitude: 2.6M_L(PS)
Felt: Epicentral area (PS).

7 December (BK) Central California
Origin time: 12 33 08.8
Epicenter: 35.352N., 120.980W.
Depth: 6 km
Magnitude: 3.3M_L(BK), 3.3M_L(PS)
Intensity IV: Morro Bay (press report).
Intensity III: Chorro Valley (press report), Los Osos (press report).
Felt: Cayucos (BK), San Luis Obispo (BK).

11 December (BK) Central California
Origin time: 14 18 05.3
Epicenter: 37.568N., 121.665W.
Depth: 4 km
Magnitude: 4.1M_L(BK)
Moment: 2.6 x 10^{22} dyne-cm (BK)
Intensity IV: Fremont (press report), Livermore, San Jose (Cambrian Park).
Intensity III: Aromas, Banta, Port Costa, San Jose, San Pablo, San Ramon.
Intensity II: Oakley, San Leandro.
Felt: Santa Rosa (press report).

13 December (BK) Central California
Origin time: 01 47 06.5
Epicenter: 38.298N., 122.153W.
Depth: 7 km
Magnitude: 2.9M_L(BK),
Moment: 2.5 x 10^{21} dyne-cm (BK)
Intensity III: Fairfield (press report)
Felt: Vacaville (BK).

20 December (BK) Central California
Origin time: 02 19 41.8
Epicenter: 37.453N., 121.802W.
Depth: 6 km
Magnitude: 3.6M_L(BK), 3.2M_L(PS)
Moment: 6.9 x 10^{21} dyne-cm (BK)
Intensity IV: Fremont (press report).
Intensity III: Milpitas, San Jose, Santa Clara (Agnew).
Felt: Monta Vista.

20 December (BK) Northern California
Origin time: 19 45 32.9
Epicenter: 40.363N., 124.590W.
Depth: 13 km
Magnitude: 3.7M_L(BK)
Moment: 8.7 x 10^{21} dyne-cm (BK)
Intensity III: Rio Dell.

25 December (BK) Northern California
Origin time: 02 25 15.7
Epicenter: 40.313N., 124.565W.
Depth: 22 km
Magnitude: 3.4M_L(BK)
Moment: 1.2 x 10^{21} dyne-cm (BK)
Intensity III: Honeydew.

25 December (BK) Central California
Origin time: 13 28 28.1
Epicenter: 37.745N., 122.570W.
Depth: 9 km
Magnitude: 2.7M_L(BK)
Moment: 3.6 x 10^{20} dyne-cm (BK)
Felt: San Francisco (BK).

25 December (PS) Southern California
Origin time: 17 35 22.9
Epicenter: 32.984N., 116.286W.
Depth: 8 km
Magnitude: 3.4M_L(PS)
Intensity III: Dulzura, Jamul.
Intensity II: Calipatria, San Diego (Ocean Beach).

26 December (RN) Owens Valley area
Origin time: 09 56 27.4
Epicenter: 37.572N., 118.402W.
Depth: 5 km
Magnitude: 4.0M_L(BK), 4.0M_D(RN), 3.5M_L(PS)
Felt: Bishop (RN), Chalfant Valley (RN).

27 December (PS) Southern California
Origin time: 19 13 03.9
Epicenter: 33.506N., 116.551W.
Depth: 12 km
Magnitude: 3.2M_L(PS)
Felt: Palm Springs (PS).

29 December (BK) Central California
Origin time: 15 28 04.9
Epicenter: 37.458N., 121.800W.
Depth: 6 km
Magnitude: 3.8m_b(GS), 4.0M_L(BK)
Intensity IV: Boulder Creek, Burlingame, Campbell, Cupertino, Fremont, Milpitas, Moffett Field, Mountain View, Pleasanton (press report), Redwood City, San Bruno, San Carlos, San Jose, San Jose (Cambrian Park), San Lorenzo, Santa Clara.
Intensity III: Belmont, Bolinas, Brisbane, Byron, Dublin, Forest Knolls, French Camp, Hayward (press report), Livermore, Loma Mar, Los Altos, Moss Landing, New Almaden, Palo Alto, Port Costa, Santa Cruz, Scotts Valley, Stinson Beach, Stockton, Sunol, Sunnyvale.

CALIFORNIA—Continued

Intensity II: Half Moon Bay.
Felt: Monterey (press report), Salinas (press report), San Rafael (press report).

29 December (PS) Southern California
Origin time: 16 05 14.0
Epicenter: 33.020N., 115.769W.
Depth: 4 km
Magnitude: 3.4M_L(PS)
Intensity IV: Calipatria.
Intensity III: Imperial.
Felt: Brawley (PS).

30 December (BK) Northern California
Origin time: 06 29 06.6
Epicenter: 40.380N., 124.273W.
Depth: 18 km
Magnitude: 3.2M_L(BK)
Moment: 1.4 x 10^{21} dyne-cm (BK)
Intensity III: Rio Dell.

COLORADO

11 April (GS) Western Colorado
Origin time: 06 17 14.7
Epicenter: 38.982N., 106.940W.
Depth: 5 km
Magnitude: 2.9M_L(GS)
Intensity III: Basalt, Snowmass Village.

9 May (GS) Western Colorado
Origin time: 21 55 26.7
Epicenter: 38.887N., 106.884W.
Depth: 5 km
Magnitude: 2.7M_L(GS)
Intensity II: Snowmass Village.

13 August (GS) Western Colorado
Origin time: 02 42 55.6
Epicenter: 38.814N., 106.996W.
Depth: 5 km
Magnitude: 2.6M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

13 August (GS) Western Colorado
Origin time: 12 13 43.9
Epicenter: 38.879N., 107.039W.
Depth: 5 km
Magnitude: 2.4M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

14 August (GS) Western Colorado
Origin time: 17 39 25.9
Epicenter: 38.908N., 107.082W.
Depth: 5 km
Magnitude: 2.6M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

17 August (GS) Western Colorado
Origin time: 22 10 28.3
Epicenter: 38.897N., 107.076W.
Depth: 5 km
Magnitude: 2.4M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

18 August (GS) Western Colorado
Origin time: 01 15 15.0
Epicenter: 38.914N., 107.087W.
Depth: 5 km
Magnitude: 3.0M_L(GS)
Intensity III: Aspen, Carbondale.
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte), Snowmass Village (press report).

20 August (GS) Western Colorado
Origin time: 04 43 40.1
Epicenter: 38.892N., 107.077W.
Depth: 5 km
Magnitude: 2.3M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

20 August (GS) Western Colorado
Origin time: 20 21 32.9
Epicenter: 38.892N., 107.068W.
Depth: 5 km
Magnitude: 2.7M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

21 August (GS) Western Colorado
Origin time: 14 11 31.6
Epicenter: 38.903N., 107.063W.
Depth: 5 km
Magnitude: 1.9M_L(GS)
Felt: Crested Butte, Meridian Park (4.5 mi north of Crested Butte).

23 August (GS) Western Colorado
Origin time: 05 13 03.0
Epicenter: 38.905N., 107.095W.
Depth: 5 km
Magnitude: 2.4M_L(GS)
Felt: Crested Butte.

COLORADO—Continued

24 August (GS) Western Colorado
Origin time: 03 59 17.5
Epicenter: 38.967N., 107.141W.
Depth: 5 km
Magnitude: 2.1M_L(GS)
Felt: Crested Butte.

26 August (GS) Western Colorado
Origin time: 02 06 02.6
Epicenter: 38.900N., 107.041W.
Depth: 5 km
Magnitude: 3.1M_L(GS)
Intensity IV: Meridian Park (4.5 mi north of Crested Butte).
Intensity III: Carbondale, Crested Butte.
Intensity II: Mount Crested Butte.

3 September (GS) Western Colorado
Origin time: 06 20 50.9
Epicenter: 38.912N., 107.090W.
Depth: 5 km
Magnitude: 3.5M_L(GS)
Intensity V:
Crested Butte–A few glassware items or dishes broke; a few small objects overturned and fell; shaking was described as strong; felt by and awakened many people.
Intensity III: Aspen.
Intensity II: Gunnison.

18 September (GS) Western Colorado
Origin time: 04 53 21.6
Epicenter: 38.937N., 107.116W.
Depth: 5 km
Magnitude: 3.2M_L(GS)
Felt: Crested Butte.

18 September (GS) Western Colorado
Origin time: 09 26 38.1
Epicenter: 38.925N., 107.086W.
Depth: 5 km
Magnitude: 3.4M_L(GS)
Intensity III: Aspen, Snowmass Village.

21 September (GS) Central Colorado
Origin time: 09 20 46.6
Epicenter: 39.597N., 105.285W.
Depth: 5 km
Magnitude: 2.5M_L(GS)
Felt: Conifer, Tiny Town.

7 October (GS) Western Colorado
Origin time: 12 35 03.2

COLORADO—Continued

Epicenter: 38.947N., 107.090W.
Depth: 5 km
Magnitude: 1.8M_L(GS)
Felt: Crested Butte.

CONNECTICUT

25 October (GS) Central New Hampshire
Origin time: 17 16 38.4

See New Hampshire listing.

DELAWARE

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

DISTRICT OF COLUMBIA

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

GEORGIA

13 February (TC) Northwestern South Carolina
Origin time: 11 35 45.3

See South Carolina listing.

GEORGIA—Continued

28 February (GT) Central Georgia
Origin time: 04 12 57.9
Epicenter: 33.296N., 83.245W.
Depth: 1 km
Magnitude: 1.7M_D(GT), 2.4M_D(TC)
Intensity IV: Lake Sinclair area (press report).

13 March (GT) Central Georgia
Origin time: 02 29 31.0
Epicenter: 33.356N., 83.394W.
Depth: 1 km
Magnitude: 2.2M_D(GT), 2.5M_D(TC)
Intensity IV: Epicentral area near Lake Sinclair (press report), Milledgeville.
Intensity III: Eatonton, Haddock.

11 July (TC) Georgia–Tennessee Border
Origin time: 14 26 14.8
Epicenter: 34.937N., 84.987W.
Depth: 13 km
Magnitude: 3.7m_b(GS), 3.8M_n(GS), 3.8M_D(GT)

This earthquake was felt over a contiguous area of about 13,800 km^2 of Georgia, North Carolina, and Tennessee (fig. 18).

Intensity VI:
Georgia—
Cohutta–A house foundation cracked (press report); chimneys cracked; exterior brick walls cracked; hanging pictures fell; buildings shook moderately; felt by everyone.
Intensity V:
Georgia—
Dalton–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; trees and bushes shook slightly; hanging pictures swung out of place; shaking was described as moderate.
Tunnel Hill–A few windows cracked; standing vehicles rocked slightly; buildings shook moderately; felt by many people.
Tennessee—
Chattanooga–A few small objects overturned and fell; a few glassware items or dishes broke; hanging pictures fell; felt by many people.
Turtletown–A few glassware items or dishes broke; a few small objects overturned and fell; interior dry wall was cracked; trees and bushes shook slightly; shaking was described as moderate.
Intensity IV:
Georgia—Blue Ridge, Crandall, Dawsonville, Eton, Ringgold, Rocky Face, Tennga, Varnell.
Tennessee—Apison, Benton, Charleston, Collegedale, East Ridge, Ocoee, Ooltewah.

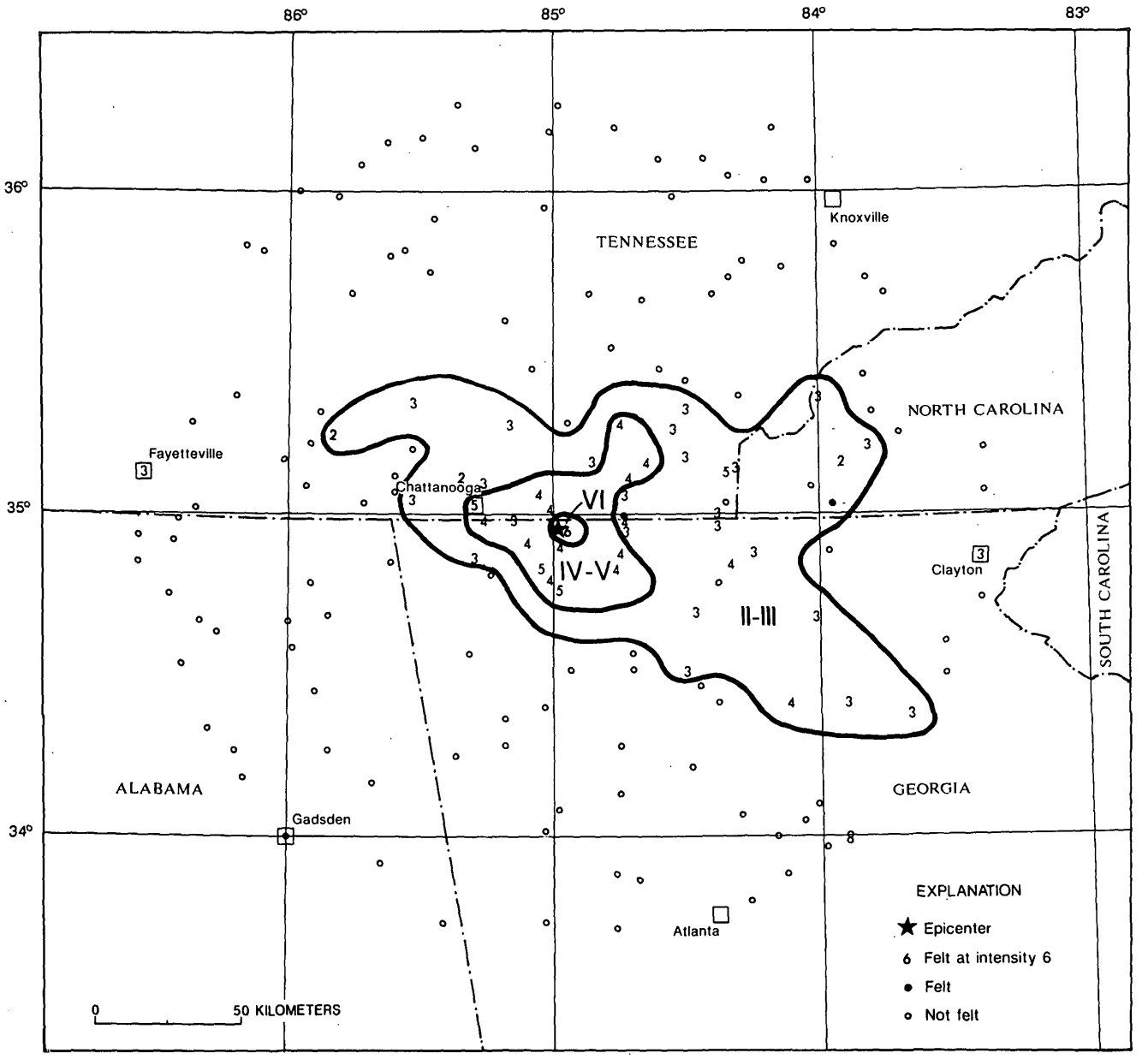


Figure 18. Isoseismal map for the Georgia-Tennessee-border earthquake of 11 July, 1986, at 14 26 14.8 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites, and small boxes show locations of towns and cities whose names are plotted.

GEORGIA—Continued

Intensity III:

Georgia—Chickamauga, Cisco, Clayton, East Ellijay, Ellijay, Epworth, Graysville, Lula, McCaysville, Morganton, Murrayville, Suches, Talking Rock.

North Carolina—Andrews.

GEORGIA—Continued

Tennessee—Birchwood, Calhoun, Cleveland, Copperhill, Delano, Etowah, Farner, Fayetteville, Guild, Lupton City, Oldfort, Palmer, Reliance, Soddy-Daisy.

Intensity II:

North Carolina—Marble.

Tennessee—East Chattanooga, Monteagle, Signal Mountain.
Felt:
North Carolina—Brasstown.
Tennessee—Conasauga, Knoxville (press report).

HAWAII

17 January (HV) Hawaii Island
Origin time: 23 48 31.6
Epicenter: 19.359N., 155.063W.
Depth: 10 km
Magnitude: 3.6M_L(HV)
Intensity II: Hilo.

23 January (HV) Hawaii Island
Origin time: 22 35 57.9
Epicenter: 19.340N., 155.199W.
Depth: 8 km
Magnitude: 3.7M_L(HV)
Intensity III: Hilo, Keaau.
Intensity II: Volcano.

27 January (HV) Hawaii Island
Origin time: 23 36 28.1
Epicenter: 19.315N., 155.228W.
Depth: 6 km
Magnitude: 4.0M_L(HV)
Intensity III: Hilo, Volcano.
Intensity II: Hawaiian Beaches, Pahala.

3 February (HV) Hawaii Island
Origin time: 21 01 22.2
Epicenter: 19.353N., 155.021W.
Depth: 7 km
Magnitude: 3.7M_L(HV)
Intensity II: Hilo.

4 February (HV) Hawaii Island
Origin time: 20 56 33.0
Epicenter: 19.553N., 155.234W.
Depth: 25 km
Magnitude: 3.3M_L(HV)
Intensity II: Hilo, Papaikou, Pepeekeo, Puna areas, Volcano.

20 February (HV) Hawaii Island
Origin time: 07 17 47.7
Epicenter: 19.320N., 155.191W.
Depth: 1 km
Magnitude: 3.5M_L(HV)
Intensity III: Volcano.

28 February (HV) Hawaii Island
Origin time: 07 21 14.3
Epicenter: 19.317N., 155.192W.
Depth: 1 km
Magnitude: 3.7M_L(HV)
Intensity III: Mountain View.
Intensity II: Papaikou.

1 March (HV) Hawaii Island
Origin time: 21 10 34.2
Epicenter: 19.410N., 155.292W.
Depth: 16 km
Magnitude: 3.3M_L(HV)
Intensity II: Volcano.

12 March (HV) Hawaii Island
Origin time: 22 29 34.6
Epicenter: 19.302N., 155.219W.
Depth: 11 km
Magnitude: 3.8M_L(HV)
Intensity III: Hilo.
Intensity II: Puna areas, Volcano.

16 March (HV) Hawaii Island
Origin time: 20 58 34.8
Epicenter: 19.768N., 156.175W.
Depth: 42 km
Magnitude: 4.2M_L(HV)
Intensity II: Hilo.

30 March (HV) Hawaii Island
Origin time: 19 48 03.1
Epicenter: 19.327N., 155.038W.
Depth: 5 km
Magnitude: 3.9M_L(HV)
Intensity III: Hilo.

7 April (HV) Hawaii Island
Origin time: 08 37 49.7
Epicenter: 19.199N., 155.620W.
Depth: 11 km
Magnitude: 4.2m_b(GS), 4.3M_L(HV)
Intensity IV: Discovery Harbour, Hawaiian Ocean View Estates, Waiohinu.
Intensity III: Ahualoa, Captain Cook, Hilo, Papaikou, Volcano, Volcano Golf Course.

23 April (HV) Hawaii Island
Origin time: 04 43 51.3
Epicenter: 19.305N., 155.271W.
Depth: 31 km
Magnitude: 4.5M_L(HV)
Intensity IV: Hilo, Mountain View, Pahala, Volcano.

Intensity III: Honokaa, Kohala area, Papaikou.
Intensity II: Discovery Harbour, Makiki (Oahu Island), Aiea (Oahu Island).

23 April (HV) Hawaii Island
Origin time: 11 49 51.9
Epicenter: 19.309N., 155.263W.
Depth: 31 km
Magnitude: 3.0M_L(HV)
Intensity III: Hilo.

26 April (GS) Maui Island area
Origin time: 17 19 46.5
Epicenter: 20.811N., 155.749W.
Depth: Normal
Magnitude: 5.1m_b(GS), 4.9M_L(HV)
Intensity V:
Molokai Island—
Kalaupapa–A few windows cracked; interior walls sustained hairline cracks; buildings shook strongly.
Intensity IV:
Hawaii Island—Ahualoa, Hawi, Honokaa, Kamuela, Mountain View, Paauhau, Pahala.
Kauai Island—Waimea.
Lanai Island—Lanai City.
Maui Island—Hana, Kihei, Kula, Pukalani, Wailuku.
Molokai Island—Maunaloa.
Oahu Island—Aina Haina, Honolulu, Kaneohe.
Intensity III:
Hawaii Island—Glenwood, Hilo, Kailua, Kapaau, Kealakekua, Papaaloa, Pepeekeo, Volcano.
Maui Island—Haleakala, Lualapuu, Paia, Weilea (press report).
Oahu Island—Ewa, Hawaii Kai (press report), Kailua (press report), Makiki (press report), Mililani, Waialae-Kahala, Waialua, Waimanalo, Waipio (press report).
Intensity II:
Oahu Island—Waianae.
Kauai Island—Hanalei (press report), Kilauea (press report).

8 May (HV) Hawaii Island
Origin time: 01 45 26.3
Epicenter: 19.292N., 155.235W.
Depth: 10 km
Magnitude: 3.2M_L(HV)
Intensity II: Papaikou.

13 May (HV) Hawaii Island
Origin time: 17 08 39.1
Epicenter: 19.412N., 155.270W.
Depth: 17 km
Magnitude: 3.4M_L(HV)
Intensity II: Glenwood, Mountain View, Volcano.

HAWAII—Continued

21 May (HV) Hawaii Island
Origin time: 18 37 16.6
Epicenter: 19.379N., 155.302W.
Depth: 30 km
Magnitude: 3.1M_L(HV)
Intensity II: Ahualoa.

27 May (HV) Hawaii Island
Origin time: 11 02 18.1
Epicenter: 19.399N., 155.259W.
Depth: 4 km
Magnitude: 3.0M_L(HV)
Intensity III: Hawaii Volcanoes National Park.

8 June (HV) Hawaii Island
Origin time: 21 33 09.7
Epicenter: 19.321N., 155.009W.
Depth: 10 km
Magnitude: 3.2M_L(HV)
Intensity II: Kalapana.

25 June (HV) Hawaii Island
Origin time: 12 13 59.7
Epicenter: 19.419N., 155.312W.
Depth: 4 km
Magnitude: 3.2M_L(HV)
Intensity III: Namakani, Paio, Volcano.

9 July (HV) Hawaii Island
Origin time: 12 28 09.1
Epicenter: 19.552N., 155.999W.
Depth: 20 km
Magnitude: 4.2m_b(GS), 4.2M_L(HV)
Intensity IV: Captain Cook, Holualoa, Honalo, Kealakekua, Napoopoo, Pahala.
Intensity III: Discovery Harbour, Seaview, Volcano.

28 July (HV) Hawaii Island
Origin time: 12 45 25.4
Epicenter: 19.537N., 155.970W.
Depth: 11 km
Magnitude: 3.1M_L(HV)
Intensity II: Kaawaloa.

11 August (HV) Hawaii Island
Origin time: 03 16 12.2
Epicenter: 19.372N., 155.079W.
Depth: 10 km
Magnitude: 3.7M_L(HV)
Intensity II: Hilo, Pu'u O'o

8 September (HV) Molokai Island area
Origin time: 14 16 21.0
Epicenter: 21.284N., 156.782W.

Depth: 1 km
Magnitude: 3.3M_L(HV)
Intensity II: Kalaupapa.

19 September (HV) Hawaii Island
Origin time: 14 44 42.5
Epicenter: 19.333N., 155.349W.
Depth: 31 km
Magnitude: 4.2M_L(HV)
Intensity IV: Hawaiian Ocean View Estates, Homestead, Kiolaka'a, Pahala.
Intensity III: Discovery Harbour, Hilo.
Intensity II: Honomu, Papaikou.

21 September (HV) Hawaii Island
Origin time: 09 30 33.6
Epicenter: 18.795N., 155.268W.
Depth: 12 km
Magnitude: 3.7M_L(HV)
Intensity IV: Pahala.

23 September (HV) Hawaii Island
Origin time: 17 16 02.0
Epicenter: 19.979N., 155.502W.
Depth: 37 km
Magnitude: 3.9M_L(HV)
Intensity IV: Ahualoa, Mauna Kea Observatory (Summit).
Intensity III: Hilo, Honokaa.
Intensity II: Hawaiian Volcano Observatory, Volcano.

1 October (HV) Hawaii Island
Origin time: 08 02 16.0
Epicenter: 19.702N., 155.224W.
Depth: 36 km
Magnitude: 3.7M_L(HV)
Intensity IV: Hilo.
Intensity III: Glenwood, Hale Pohaku-Mauna Kea, Kurtistown.
Intensity II: Hawaiian Volcano Observatory, Honomu, Keahou Bay-Kona, Kohala area, Papaikou, Pepeekeo, Volcano.

15 November (HV) Hawaii Island
Origin time: 20 58 54.3
Epicenter: 19.344N., 155.218W.
Depth: 8 km
Magnitude: 4.0M_L(HV)
Intensity III: Volcano.
Intensity II: Hamakua area, Hilo.

18 November (HV) Hawaii Island
Origin time: 02 40 22.6
Epicenter: 20.189N., 155.774W.

Depth: 37 km
Magnitude: 3.7M_L(HV)
Intensity III: Ahualoa.

6 December (HV) Hawaii Island
Origin time: 22 10 40.6
Epicenter: 19.360N., 155.038W.
Depth: 1 km
Magnitude: 3.8M_L(HV)
Intensity IV: Wahaula.
Intensity III: Kalapana, Hilo.
Intensity II: Hamakua area.

7 December (HV) Maui Island
Origin time: 02 45 30.1
Epicenter: 20.864N., 156.036W.
Depth: 38 km
Magnitude: 4.2M_L(HV)
Intensity IV: Kamuela-Hawaii Island, eastern Maui Island.

11 December (HV) Hawaii Island
Origin time: 00 47 42.9
Epicenter: 19.335N., 155.036W.
Depth: 4 km
Magnitude: 3.2M_L(HV)
Intensity III: Wahaula.

IDAHO

28 January (GS) Central Idaho
Origin time: 05 45 01.5
Epicenter: 44.153N., 113.946W.
Depth: 5 km
Magnitude: 4.0M_L(GS), 4.3M_L(BU)
Intensity IV: Chilly (five earthquakes were felt–press report).
Intensity III: Challis.

17 February (GS) Southeastern Idaho
Origin time: 08 53 38.6
Epicenter: 42.596N., 111.301W.
Depth: 5 km
Magnitude: 3.0M_L(GS)
Intensity III: Montpelier, Georgetown.

24 February (GS) Southeastern Idaho
Origin time: 03 13 33.0
Epicenter: 43.081N., 111.224W.
Depth: 5 km
Magnitude: 2.8M_L(GS)

Intensity III:
Wyoming—Alpine.
Intensity II:
Idaho—Wayan.
Wyoming—Thayne.

12 March (BU) Northern Idaho
Origin time: 16 32 56.7
Epicenter: 47.460N., 115.802W.
Depth: 0 km
Magnitude: 2.6M_L(BU), 2.0M_L(GS)

Rockburst in the Lucky Friday Mine near Mullan, Idaho. One person was killed and two were injured.

Felt: Lucky Friday mine.

7 April (GS) Central Idaho
Origin time: 14 07 25.8
Epicenter: 44.337N., 114.177W.
Depth: 5 km
Magnitude: 4.1M_L(GS), 4.5M_L(BU)
Intensity III: Thompson Creek (7 mi from Clayton).

21 June (GS) Idaho-Wyoming border area
Origin time: 20 30 53.5
Epicenter: 42.793N., 111.153W.
Depth: 5 km
Magnitude: 3.5M_L(GS)
Intensity III:
Wyoming—Auburn.

29 August (UU) Southeastern Idaho
Origin time: 09 37 34.7
Epicenter: 42.096N., 111.650W.
Depth: 1 km
Magnitude: 2.4M_L(UU)
Intensity III: Preston.

3 September (GS) Central Idaho
Origin time: 18 53 49.1
Epicenter: 44.039N., 114.764W.
Depth: 5 km
Magnitude: 3.9M_L(GS), 4.2M_L(BU)
Intensity III: Clayton.

24 September (GS) Central Idaho
Origin time: 15 32 26.7
Epicenter: 44.003N., 114.755W.
Depth: 5 km
Magnitude: 3.7M_L(GS), 3.9M_L(BU)
Felt: Clayton.

26 September (GS) Central Idaho
Origin time: 21 28 08.5
Epicenter: 44.016N., 114.750W.
Depth: 5 km
Magnitude: 4.3M_L(GS), 4.4M_L(BU)
Intensity IV: Clayton.
Intensity III: Stanley.

26 September (GS) Central Idaho
Origin time: 22 48 57.9
Epicenter: 44.043N., 114.756W.
Depth: 5 km
Magnitude: 4.6m_b(GS), 4.5M_L(GS), 4.6M_L(BU)
Intensity IV: Clayton.

14 October (GS) Central Idaho
Origin time: 12 17 53.3
Epicenter: 44.023N., 114.674W.
Depth: 5 km
Magnitude: 3.9M_L(GS), 4.1M_L(BU)
Intensity IV: Clayton.

18 October (GS) Idaho-Utah border area
Origin time: 21 21 29.0
Epicenter: 42.014N., 111.448W.
Depth: 7 km
Magnitude: 3.5M_L(UU)
Intensity IV:
Idaho– Saint Charles.
Intensity III:
Idaho—Fish Haven.
Utah—Garden City, Laketown.

15 November (GS) southeastern Idaho
Origin time: 09 00 13.2
Epicenter: 42.706N., 111.667W.
Depth: 5 km
Magnitude: 3.3M_L(GS)
Intensity IV: Soda Springs.

17 November (GS) Western Wyoming
Origin time: 08 34 13.3

See Wyoming list.

ILLINOIS

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

ILLINOIS—Continued

26 August (SL) Southern Illinois
Origin time: 16 41 24.8
Epicenter: 38.320N., 89.790W.
Depth: 5 km
Magnitude: 3.7M_n(GS), 3.6M_n(SL)

Intensity V:

Illinois—

Belleville–A few small objects overturned and fell; buildings shook moderately; felt by several people.

Lenzburg–A few small objects overturned and fell; plaster walls sustained hairline cracks; standing vehicles rocked slightly; hanging pictures swung out of place; felt by everyone.

Marissa–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; standing and moving vehicles rocked slightly; hanging pictures swung out of place; felt by many people.

Intensity IV:

Illinois—Alhambra, Baldwin, Coulterville, Hecker, Lebanon, Modoc, New Athens, New Memphis, Prairie du Rocher, Smithton, Summerfield, Troy.

Intensity III:

Illinois—Evansville, Carterville, Freeburg, Highland (press report), Mascoutah, Nashville, New Baden, Oakdale, Okawville, Red Bud, Saint Jacob, Saint Libory, Tilden, Trenton, Venedy.

Missouri—Pevely, Richmond Heights, Valles Mines.

Intensity II:

Illinois—DuBois, Fieldon, Menard.

Missouri—Florissant, Hillsboro.

Felt:
Missouri—South Saint Louis (press report).

29 October (SL) Southern Illinois
Origin time: 05 03 41.3
Epicenter: 38.440N., 89.040W.
Depth: 5 km
Magnitude: 2.7M_n(GS), 3.0M_n(SL)
Intensity III: Salem.
Felt: Northern Jefferson County (press report).

30 December (SL) Southeastern Missouri
Origin time: 07 15 19.1

See Missouri listing.

INDIANA

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

12 July (GS) Western Ohio
Origin time: 08 19 37.9

See Ohio listing.

KANSAS

2 June (GS) Northern Kansas
Origin time: 04 04 05.2
Epicenter: 39.344N., 99.781W.
Depth: 5 km
Magnitude: 3.0M_n(GS), 3.0M_D(KS)
Intensity IV: Nicodemus (press report).
Intensity III: Bogue, Damar, Hill City, Lenora, New Almelo, Penokee, Stockton.

20 October (GS) Southwestern Kansas
Origin time: 04 32 49.0
Epicenter: 37.918N., 101.372W.
Depth: 5 km
Magnitude: 3.0M_n(GS), 2.9M_n(TU), 3.0M_D(KS)
Intensity IV: Lakin.
Intensity III: Friend.

KENTUCKY

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

12 July (GS) Western Ohio
Origin time: 08 19 37.9

See Ohio listing.

30 December (SL) Southeastern Missouri
Origin time: 07 15 19.1

See Missouri listing.

MAINE

24 June (WO) Central Maine
Origin time: 02 40 15.7
Epicenter: 45.203N., 69.177W.
Depth: 2 km
Magnitude: 2.5M_n(WO), 2.5M_D(WO)
Felt: Dover-Foxcroft (WO).

12 July (WO) Eastern Maine
Origin time: 20 32 48.4
Epicenter: 46.170N., 68.198W.
Depth: 9 km
Magnitude: 3.4M_n(WO), 3.5M_D(WO)
Felt: Houlton (WO), Island Falls (WO), Ludlow (WO), Sherman (WO), Smyrna Mills (WO).

25 October (GS) Central New Hampshire
Origin time: 17 16 38.4

See New Hampshire listing.

MARYLAND

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

MASSACHUSETTS

16 April (WO) Northeastern Massachusetts
Origin time: 04 21 42.7
Epicenter: 42.847N., 70.982W.
Depth: 5 km
Magnitude: 2.6M_D(WO)
Intensity III: Amesbury (press report), Groveland (press report), Merrimac (press report), West Newbury (press report).

25 October (GS) Central New Hampshire
Origin time: 17 16 38.4

See New Hampshire listing.

MICHIGAN

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

12 July (GS) Western Ohio
Origin time: 08 19 37.9

See Ohio listing.

MISSOURI

24 May (SL) Southeastern Missouri
Origin time: 12 48 13.5
Epicenter: 36.580N., 89.880W.
Depth: 10 km
Magnitude: 3.4M_n(SL), 3.4M_n(GS), 3.1M_D(TC), 3.4M_n(TU)
Intensity IV:
Missouri—Bernie, Caruthersville, Malden, Parma, Portageville, Risco.
Intensity III:
Arkansas—Pollard.
Missouri—Brosley, Campbell, Canalou, Catron, Dudley, Fisk, Kewanee, New Madrid, Steele, Tallapoosa.
Tennessee—Tiptonville.
Intensity II:
Missouri—Graybridge.
Felt:
Missouri—Conran, East Prairie (SL), Sikeston (SL).

26 August (SL) Southern Illinois
Origin time: 16 41 24.8

See Illinois listing.

24 October (SL) Southeastern Missouri
Origin time: 05 57 45.8
Epicenter: 36.170N., 89.660W.
Depth: 9 km
Magnitude: 2.9M_n(SL), 2.6M_D(TC)
Intensity IV: Caruthersville (SL).

6 November (SL) Missouri
Origin time: 19 21 47.2
Epicenter: 38.110N., 90.420W.
Depth: 9 km
Magnitude: 2.7M_n(SL)
Intensity III: Crystal City (SL).

30 December (SL) Southeastern Missouri
Origin time: 07 15 19.1
Epicenter: 36.420N., 89.580W.
Depth: 14 km
Magnitude: 3.5M_n(GS), 3.4M_n(SL)
Intensity IV:
Missouri—Portageville.
Intensity III:
Illinois—Tamms.
Missouri—Blodgett, Dexter, Gideon, Harviell, Hayti, Sikeston.
Tennessee—Finley, Tigrett.
Intensity II:
Kentucky—Clinton.
Missouri—Tallapoosa.
Tennessee—Tiptonville.
Felt:
Missouri—Point Pleasant (SL).

MONTANA

8 January (UU) Yellowstone National Park
Origin time: 07 32 25.7

See Wyoming listing.

8 January (UU) Yellowstone National Park
Origin time: 11 08 15.7

See Wyoming listing.

8 January (UU) Yellowstone National Park
Origin time: 13 36 28.5

See Wyoming listing.

14 January (UU) Yellowstone National Park
Origin time: 01 50 37.8

See Wyoming listing.

14 January (UU) Yellowstone National Park
Origin time: 16 46 29.9

See Wyoming listing.

15 January (UU) Yellowstone National Park
Origin time: 21 10 18.0

See Wyoming listing.

2 March (UU) Yellowstone National Park
Origin time: 10 55 25.4

See Wyoming listing.

2 March (UU) Yellowstone National Park
Origin time: 12 59 36.5

See Wyoming listing.

18 April (UU) Yellowstone National Park
Origin time: 14 17 55.6

See Wyoming listing.

24 August (BU) Western Montana
Origin time: 18 04 25.5
Epicenter: 45.802N., 111.594W.
Depth: 13 km
Magnitude: 3.9M_L(GS), 3.9M_D(BU)
Intensity IV: Willow Creek.
Intensity III: Manhattan, Three Forks.

2 October Yellowstone National Park
Origin time: 06 45

See Wyoming listing.

18 October (BU) Southwestern Montana
Origin time: 14 20 46.9
Epicenter: 46.304N., 112.060W.
Depth: 3 km
Magnitude: 3.1M_L(BU), 3.2M_L(GS)
Intensity IV: Jefferson City.
Felt: Boulder (BU).

18 October (BU) Southwestern Montana
Origin time: 18 55 38.7
Epicenter: 46.293N., 112.026W.
Depth: 0 km
Magnitude: 3.4M_L(BU), 3.5M_L(GS)
Intensity IV: Jefferson City.
Felt: Boulder (BU).

19 October (BU) Southwestern Montana
Origin time: 10 01 43.4
Epicenter: 46.292N., 112.025W.
Depth: 0 km
Magnitude: 3.3M_L(BU), 3.3M_L(GS)
Intensity IV: Jefferson City.
Felt: Boulder (BU).

24 October (BU) Southwestern Montana
Origin time: 04 54 47.7

Epicenter: 46.305N., 112.046W.
Depth: 3 km
Magnitude: 3.2M_L(BU), 3.5M_L(GS)
Felt: Boulder (BU).

9 November (BU) Southwestern Montana
Origin time: 12 06 35.3
Epicenter: 46.205N., 112.112W.
Depth: 10 km
Magnitude: 3.2M_L(BU), 3.3M_L(GS)
Felt: Boulder (BU).

15 November (UU) Yellowstone National Park
Origin time: 00 56 57.0

See Wyoming listing.

24 November (UU) Yellowstone National Park
Origin time: 02 10 58.7

See Wyoming listing.

24 November (UU) Yellowstone National Park
Origin time: 06 31 50.4

See Wyoming listing.

25 November (UU) Yellowstone National Park
Origin time: 20 45 25.4

See Wyoming listing.

NEVADA

12 January (RN) Western Nevada
Origin time: 04 07 43.3
Epicenter: 39.626N., 119.380W.
Depth: None computed.
Magnitude: 3.1M_D(RN)
Felt: Fallon (RN), near Gooseberry mine (RN), Painted Rock (RN).

22 March (EN) Southern Nevada
Origin time: 16 15 00.076
Epicenter: 37.083N., 116.066W.
Depth: 0 km
Magnitude: 5.1m_b(GS), 5.1M_L(BK)

Nevada Test Site explosion "GLENCOE" at 37°04′58.81″N., 116°03′57.81″W., surface elevation 1,260 m., depth of burial 600 m.

10 April (EN) Southern Nevada
Origin time: 14 08 30.095
Epicenter: 37.218N., 116.183W.
Depth: 0 km
Magnitude: 4.9m_b(GS), 4.8M_L(BK)

Nevada Test Site explosion "MIGHTY OAK" at 37°13′05.97″N., 116°10′59.20″W., surface elevation 2,111 m., depth of burial 400 m, tunnel shot.

22 April (EN) Southern Nevada
Origin time: 14 30 00.086
Epicenter: 37.264N., 116.440W.
Depth: 0 km
Magnitude: 5.3m_b(GS), 4.2M_S(GS), 5.4M_L(BK)

Nevada Test Site explosion "JEFFERSON" at 37°15′50.82″N., 116°26′24.73″W., surface elevation 1,982 m., depth of burial 600 m.

21 May (EN) Southern Nevada
Origin time: 13 59 00.083
Epicenter: 37.125N., 116.060W.
Depth: 0 km
Magnitude: 4.1M_L(BK)

Nevada Test Site explosion "PANAMINT" at 37°07′30.12″W., 116°03′37.40″ surface elevation 1,286 m, depth of burial 500 m.

5 June (EN) Southern Nevada
Origin time: 15 04 00.064
Epicenter: 37.098N., 116.016W.
Depth: 0 km
Magnitude: 5.3m_b(GS), 4.2M_S(GS), 5.2M_L(BK)

Nevada Test Site explosion "TAJO" at 37°05′53.84″N., 116°00′55.84″W., surface elevation 1,314 m., depth of burial 500 m.

15 June (RN) Western Nevada
Origin time: 14 00 51.3
Epicenter: 38.766N., 119.402W.
Depth: 5 km
Magnitude: 3.2M_D(RN)
Intensity IV: Smith (RN), Wellington (RN).

25 June (EN) Southern Nevada
Origin time: 20 27 45.1
Epicenter: 37.265N., 116.499W.
Depth: 0 km
Magnitude: 5.5m_b(GS), 4.2M_S(GS), 5.4M_L(BK)

Nevada Test Site explosion "DARWIN" at 37°15′52.51″N., 116°29′57.51″W., surface elevation 1,876 m., depth of burial 500 m.

28 June (RN) Western Nevada
Origin time: 02 06 29.6
Epicenter: 39.518N., 119.761W.
Depth: None computed.
Magnitude: 3.7M_L(BK), 3.9M_L(RN)
Intensity V:
Reno–A few glassware items or dishes broke; a few small objects overturned and fell; buildings shook strongly; felt by many people.
Sparks–A few small objects fell; felt by and frightened many people.
Intensity III: Fernley.
Felt: Sun Valley.

8 July (PS) Southern California
Origin time: 09 20 44.5

See California listing.

13 July (HJ) Off the coast of Southern California
Origin time: 13 47 08.2

See California listing.

17 July (GP) Southern California
Origin time: 20 35 15.0

See California listing.

17 July (EN) Southern Nevada
Origin time: 21 00 00.055
Epicenter: 37.279N., 116.356W.
Depth: 0 km
Magnitude: 5.7m_b(GS), 5.6M_L(BK)

Nevada Test Site explosion "CYBAR" at 37°16′43.22″N., 116°21′20.19″W., surface elevation 2,044 m, depth of burial 600 m.

20 July (GM) Owens Valley area
Origin time: 14 29 45.5

See California listing.

20 July (BK) Owens Valley area
Origin time: 18 38 52.9

See California listing.

NEVADA—Continued

21 July (BK) Owens Valley area
Origin time: 14 42 26.5

See California listing.

21 July (BK) Owens Valley area
Origin time: 14 51 10.1

See California listing.

24 July (EN) Southern Nevada
Origin time: 15 05 00.086
Epicenter: 37.143N., 116.071W.
Depth: 0 km
Magnitude: 4.4m_b(GS), 4.5M_L(BK)

Nevada Test Site explosion "CORNUCOPIA" at 37°08′33.89″N., 116°04′16.02″W., surface elevation 1,314 m., depth of burial 400 m.

31 July (BK) Owens Valley area
Origin time: 07 22 40.2

See California listing.

8 August (RN) Western Nevada
Origin time: 14 06 10.4
Epicenter: 39.521N., 119.753W.
Depth: None computed.
Magnitude: 2.7M_L(GS), 2.5M_D(RN)
Felt: Sparks (press report), Reno (RN).

25 August (RN) Western Nevada
Origin time: 17 06 36.9
Epicenter: 39.638N., 119.803W.
Depth: 5 km
Magnitude: 2.8M_L(GS), 2.9M_L(BK), 3.2M_L(RN)
Intensity III: Sparks.
Felt: Reno (press report).

25 August (RN) Western Nevada
Origin time: 17 57 42.1
Epicenter: 39.638N., 119.803W.
Depth: 5 km
Magnitude: 2.5M_L(GS), 3.2M_L(RN)
Felt: Reno (press report), Sparks (press report).

11 September (EN) Southern Nevada
Origin time: 14 57 00.107
Epicenter: 37.069N., 116.050W.
Depth: 0 km
Magnitude: 3.2M_L(GS)

Nevada Test Site explosion "ALEMAN" at 37°04′08.68″N., 116°02′58.89″W., surface elevation 1,244 m., depth of burial 500 m.

30 September (EN) Southern Nevada
Origin time: 22 30 00.102
Epicenter: 37.300N., 116.307W.
Depth: 0 km
Magnitude: 5.5m_b(GS), 4.5M_S(GS), 5.3M_L(BK)

Nevada Test Site explosion "LABQUARK" at 37°18′00.29″N., 116°18′26.74″W., surface elevation 2,127 m., depth of burial 600 m.

16 October (EN) Southern Nevada
Origin time: 19 25 00.089
Epicenter: 37.220N., 116.462W.
Depth: 0 km
Magnitude: 5.6m_b(GS), 5.4M_L(BK)

Nevada Test Site explosion "BELMONT" at 37°13′12.77″N., 116°27′41.89″W., surface elevation 1,898 m., depth of burial 600 m.

31 October (BK) California-Nevada border area
Origin time: 03 57 28.9

See California listing.

1 November (BK) Western Nevada
Origin time: 19 23 38.3
Epicenter: 38.712N., 119.540W.
Depth: 17 km
Magnitude: 4.6M_L(BK), 4.3M_L(RN)
Moment: 4.2 x 10^{22} dyne-cm (BK)
Intensity V:
California—
Topaz– A few small objects fell; shaking was described as moderate; felt by many people.
White Pines– People had difficulty standing; shaking was described as strong.
Intensity IV:
California— Avery, Pioneer, Twain Harte.
Nevada— Wellington.
Intensity III:
California— Coleville, Pine Grove, Standard.
Nevada— Schurz, Smith.
Intensity II:
California— Arnold, Bridgeport.

14 November (EN) Southern Nevada
Origin time: 16 00 00.066
Epicenter: 37.100N., 116.048W.
Depth: 0 km
Magnitude: 5.8m_b(GS), 4.5M_S(GS), 5.5M_L(BK)

NEVADA—Continued

Nevada Test Site explosion "GASCON" at 37°06′01.54″W., 116°02′53.05″W., surface elevation 1,263 m., depth of burial 600 m.

Intensity III: Las Vegas (press report).

14 November (GS) Southern Nevada
Origin time: 20 02 38.7
Epicenter: 37.081N., 116.014W.
Depth: 0 km
Magnitude: 4.0m_b(GS)

Nevada Test Site collapse from explosion "GASCON".

13 December (EN) Southern Nevada
Origin time: 17 50 05.093
Epicenter: 37.263N., 116.412W.
Depth: 0 km
Magnitude: 5.5m_b(GS), 5.4M_L(BK)

Nevada Test Site explosion "BODIE" at 37°15′46.64″N., 116°24′42.06″W., surface elevation 2,018 m., depth of burial 600 m.

NEW HAMPSHIRE

23 January (WO) Central New Hampshire
Origin time: 14 33 57.5
Epicenter: 43.500N., 71.568W.
Depth: 5 km
Magnitude: 2.6M_L(WO), 2.5M_D(WO)
Intensity III: Gaza.

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

25 October (GS) Central New Hampshire
Origin time: 17 16 38.4
Epicenter: 43.399N., 71.590W.
Depth: 5 km
Magnitude: 3.9M_n(GS)

This earthquake was felt over a contiguous area of about 9,500 km^2 of Maine, Massachusetts, and New Hampshire (fig. 19).

Intensity V:
New Hampshire—

Boscawen–A few small objects fell; kitchen cabinet doors with magnetic catches opened; shaking was described as strong; felt by everyone.

Canterbury–A few items were shaken off store shelves; a few small objects overturned; underground pipes broke; buildings were shaken moderately; felt by many people.

Chesterfield–A few small objects overturned and fell; felt by several people.

Henniker–A few small objects overturned and fell; shaking was described as moderate; felt by many people.

Jaffrey–A few small objects overturned and fell; felt by many people.

Lakeport–A few small objects overturned and fell; felt by several people.

Walpole–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; felt by several people.

Intensity IV:

Massachusetts—East Templeton, Gardner, Woburn (press report).

New Hampshire—Andover, Auburn, Barnstead, Belmont, Brookline (press report), Center Barnstead, Concord, Contoocook, Elkins, Epsom, Franklin, Gilmanton, Greenfield, Hill, Hillsboro, Keene, Loudon, Milford, New Durham, New Hampton, New Ipswich, Northfield (press report), Peterborough, Pittsfield, Rindge, Sanbornton, South Newbury, Strafford, Tilton, Warner, Washington, Westmoreland, Winchester.

Vermont—Hartland.

Intensity III:

Maine—Scarborough.

Massachusetts—Ashburnham, Ashby, Athol, Baldwinville, Billerica (press report), Boxford, East Longmeadow, Fitchburg, Framingham (press report), Greenfield (press report), Holliston (press report), Lancaster, Lawrence (press report), Lowell (press report), Natick, Shrewsbury (press report), Townsend, Ware, Wilbraham, Winchendon, Worcester (press report).

New Hampshire—Amherst, Antrim, Ashland, Bennington, Bradford, East Derry, Fitzwilliam, Goshen, Hancock, Harrisville, Laconia, Marlborough, Marlow, Munsonville, North Sutton, Potter Place, Salisbury, South Sutton, Troy, Wilmot Flat.

Intensity II:

Connecticut—Torrington (press report).

Massachusetts—Holden, West Springfield.

Maine—Brunswick.

New Hampshire—Dublin, Ossipee.

Rhode Island—Greenville.

Felt:

Maine—North Waterboro.

New Hampshire—Greenville (press report), Temple (press report).

NEW JERSEY

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

23 November (LD) New Jersey
Origin time: 21 29 38.8
Epicenter: 40.956N., 74.820W.
Depth: 7 km
Magnitude: 2.8M_D(LD)
Intensity IV: Allamuchy, Byram, Lake Tranquility area.
Intensity III: Waterloo Village.

NEW MEXICO

17 April (GS) Southern New Mexico
Origin time: 21 04 30.3
Epicenter: 32.587N., 106.912W.
Depth: 5 km
Magnitude: 2.7M_D(GS)
Felt: Leasburg.

28 April (GS) Central New Mexico
Origin time: 13 00 16.0
Epicenter: 34.009N., 106.821W.
Depth: 5 km
Magnitude: 2.6M_D(GS)
Felt: Luis Lopez.

27 August (GS) Central New Mexico
Origin time: 18 06 56.3
Epicenter: 35.160N., 105.094W.
Depth: 5 km
Magnitude: 3.2M_L(GS), 3.0M_L(TU)
Felt: Anton Chico, Las Vegas.

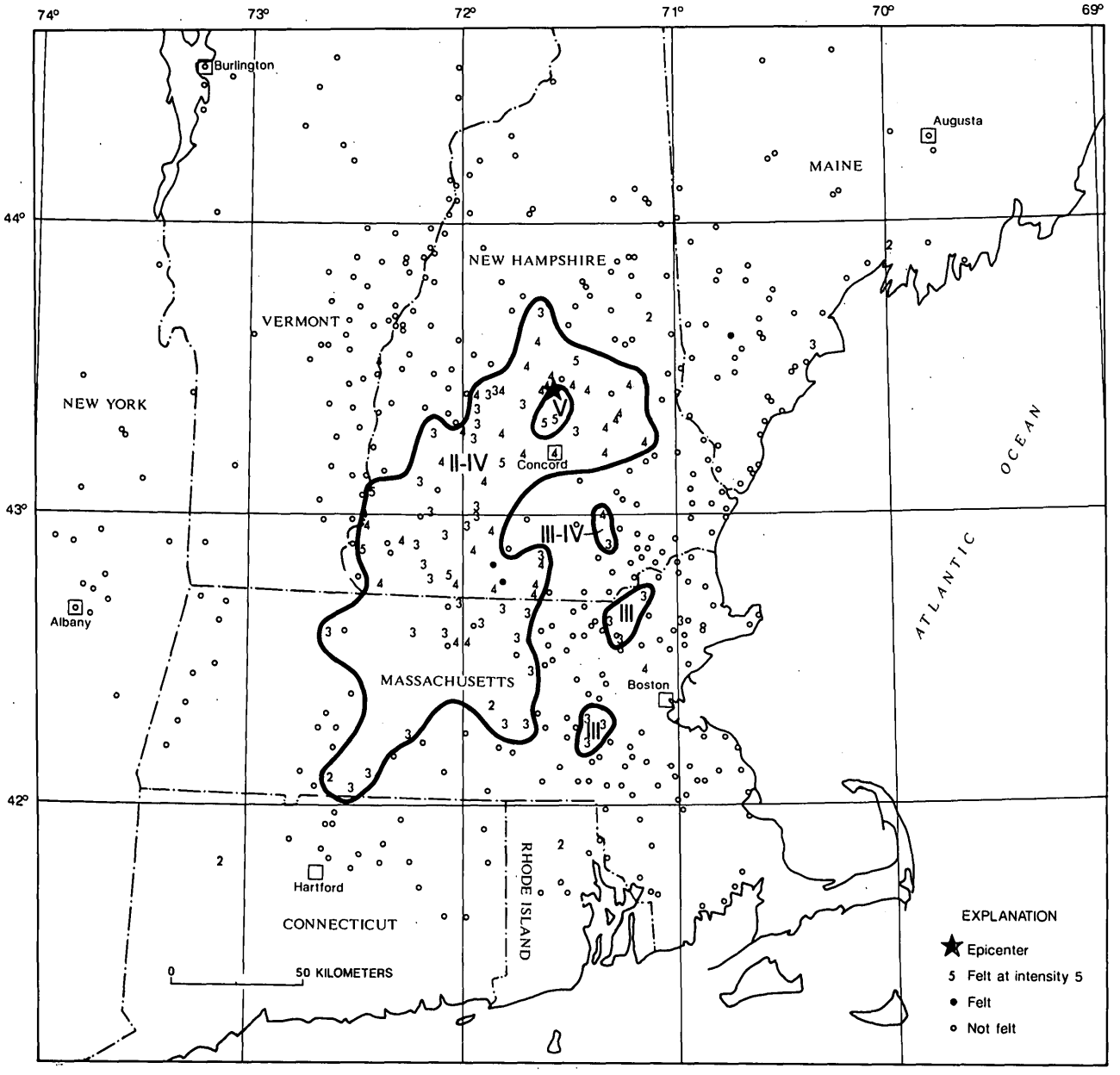


Figure 19. Isoseismal map for the central New Hampshire earthquake of 25 October, 1986, 17 16 38.4 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites, and small boxes show locations of towns and cities whose names are plotted.

NEW YORK

5 January (LD) Southeastern New York
Origin time: 03 35 56.2
Epicenter: 40.996N., 73.833W.
Depth: 6 km
Magnitude: 2.5M_n(LD)

NEW YORK—Continued

Felt throughout southern Westchester County (press report).
Intensity IV: Ardsley (press report), Dobbs Ferry (press report), Hastings-On-Hudson, Tuckahoe, White Plains, Yonkers.

Intensity III: Eastchester, Irvington, Mamaroneck, New Rochelle, Scarsdale, Tarrytown.

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

22 April (LD) Southeastern New York
Origin time: 07 28 23.7
Epicenter: 40.980N., 73.834W.
Depth: 6 km
Magnitude: 2.7M_D(LD)
Intensity IV: Ardsley (press report), Eastchester (press report), Harrison (press report), Mount Vernon, Rye, Scarsdale, Tuckahoe (press report), Yonkers.
Intensity III: Ardsley-On-Hudson, Bronxville (press report), Dobbs Ferry (press report), Elmsford (press report), Greenburgh (press report), Hastings-On-Hudson (press report), Irvington (press report), Mamaronek, New Rochelle (press report), Pelham, White Plains (press report).

13 August (LD) Southwestern Quebec, Canada
Origin time: 04 55 18.4
Epicenter: 45.131N., 74.246W.
Depth: 24 km
Magnitude: 3.4M_D(LD), 3.3M_n(EP)
Felt:
New York–Hogansburg, Malone, Massena, Moira, Potsdam, Trout River, Westville (all from press reports).

20 December (LD) Southeastern New York
Origin time: 13 15 31.0
Epicenter: 40.999N., 73.831W.
Depth: 5 km
Magnitude: 1.9M_D(LD)
Felt: Ardsley (press report).

NORTH CAROLINA

13 February (TC) Northwestern South Carolina
Origin time: 11 35 45.3

See South Carolina listing.

11 July (TC) Georgia-Tennessee border
Origin time: 14 26 14.8

See Georgia listing.

OHIO

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3
Epicenter: 41.650N., 81.162W.
Depth: 2 km
Magnitude: 5.0m_b(GS), 4.9M_n(SL), 5.3M_n(EP)
Moment: 3.4 x 10^{23} dyne-cm (GS)

This earthquake injured 17 people and produced minor damage in the epicentral area. The maximum intensity is assigned a MM VI. However, a few isolated reports of damage indicated a possible intensity of MM VII. Also, well water changed in level or was muddied, indicating a possible intensity of MM VII. Because of the few instances of marginal MM VII effects, the overall intensity is rated as a high MM VI.

The injuries resulted from falls during the evacuation of buildings, cuts from flying broken glass, bruises from falling objects, and exposure due to extended periods in the cold weather while buildings were being examined for damage. The damage to homes and commercial buildings consisted mostly of cracked chimneys, brick walls, and plastered walls; falling of suspended ceiling tiles; and cracked and broken windows. Other types of damage consisted primarily of broken glassware, either from glass items thrown off store shelves or chinaware that broke in china cabinets.

The earthquake affected more than a dozen water wells in Lake and George Counties. The effects varied from sediment in the water to variations of water flow (from too much to not enough), and in one place, water appeared where there had been none. There was one report of an old artesian water well that suddenly started filling an old water trough with water. In Leroy Township, a small pond formed from the flow of a new artesian well.

The earthquake was felt over a contiguous area of approximately 305,000 km^2 (fig. 20) in all or parts of eight states and Ontario, Canada (Stover, 1986). These states were Illinois, Indiana, Kentucky, Michigan, Ohio, New York, Pennsylvania, and West Virginia. Isolated felt reports were received from Delaware, Maryland, New Jersey, Virginia, and Wisconsin as well as Washington, D.C. (District of Columbia). These isolated reports generally originated from people on the upper floors of multistory buildings.

Thirteen aftershocks were detected, following the main shock, until April 15, 1986, and 13 more were detected from April 15, 1986, to April 15, 1987. Magnitudes ranged from about 0.5 to 2.5 for the first 13 and about 1.0 for the second 13 (Nicholson and others, 1988).

The peak ground acceleration at the Perry Nuclear Power Station (about 10 mi north of the epicenter) was 0.18 *g* in the north-south direction and 0.10 *g* in the east-west direction (Monroe and Stevenson, 1986; Wesson and Nicholson, 1986).

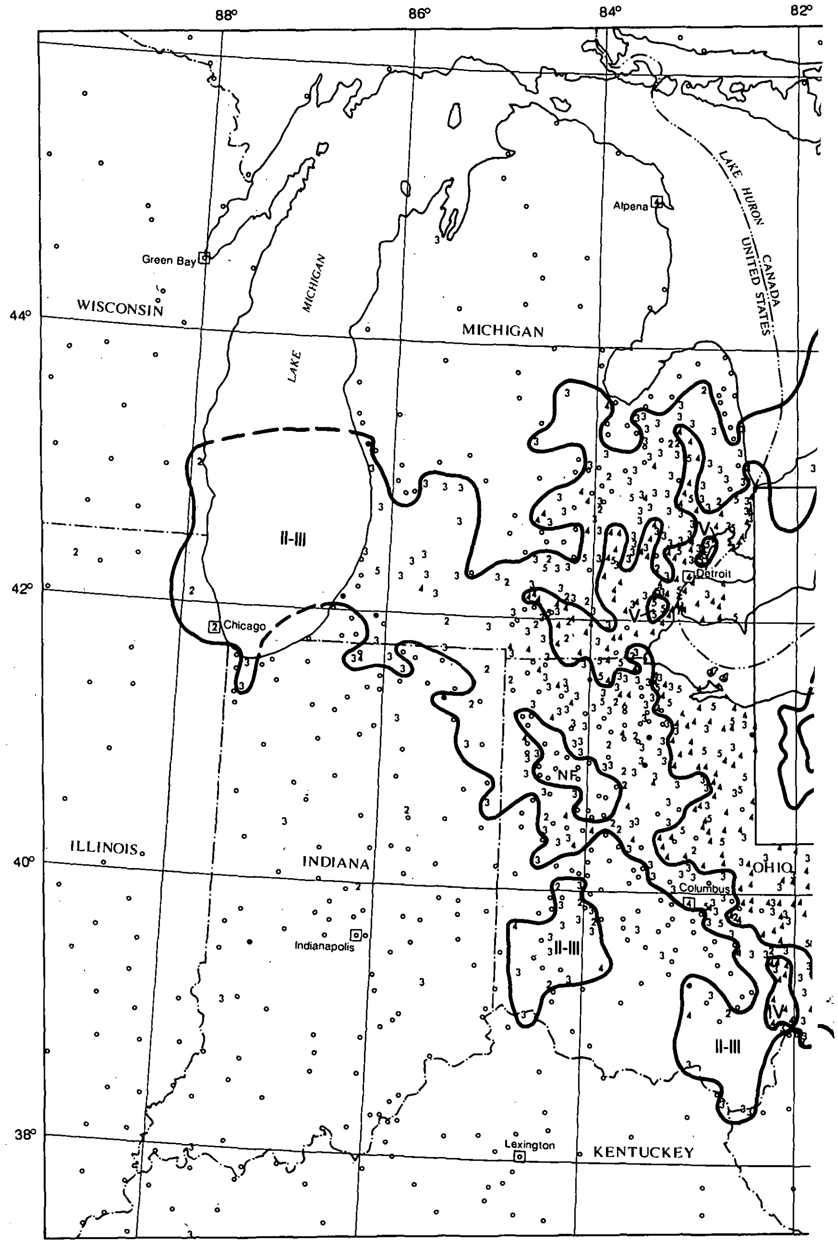
The intensities in the United States (figs. 20 and 21) were evaluated from data collected by the U.S. Geological Survey/National Earthquake Information Center, supplemented by a canvass of the epicentral region by Weston Geophysical Corp., Westboro, Mass. and by numerous press reports. The intensity data in Canada were furnished by R.J. Wetmiller, Geophysics Division, Geological Survey of Canada, Ottawa, supplemented by press reports.

Intensity VI:
United States—
Ohio—
Bainbridge Center (press report)–At Kenston Intermediate School a chimney shifted, and several walls of each building were cracked. Ceiling tile fell at Bainbridge Town hall (press report).
Bowling Green (press reports)–
At Wood County Office building, marble cracked in the front entrance; damage occurred to the Law Library ceiling; plaster cracked and fell in the Sheriff's entry to the parking garage; tiles in front of several parking garage spaces were damaged; ceramic wall tiles cracked in four restrooms on the first, second, and fifth floors (cracks about 10 ft long); there was a 0.5-inch-wide crack between the floor and the wall of the main restrooms on the first floor; some mortar joints split in the stairwell on the first, second, and fifth floors.
Wood County Courthouse–Hairline cracks opened on all three of its floors; cracks occurred in the ceiling of the Probate Court and above the door in another courtroom, and cracks opened in the walls and ceiling of the prosecutor's office.
Chardon.
Geneva.
Grand River.
Huntsburg.
Kirtland–Chimneys, basement floors, and cement-block basement walls were cracked, several pieces of plaster fell from the walls and ceiling of the Kirtland Temple Visitor Center, a suspended ceiling fell on the third floor of Lakeland Community College, and a mirror broke and lamps were knocked over.
Leroy–Several chimneys and one fireplace cracked. At Leroy Elementary School walls cracked; chimneys cracked; bricks fell off one chimney; four windows broke; and light bulbs broke.

OHIO—Continued

Madison–At Madison High School cement-block walls cracked; ceiling tiles fell; and 1,300 students were dismissed because of a chemical spill. Effects at other locations in Madison included: cracked chimneys with fallen brick, cracks in exterior brick walls, hairline cracks in interior walls, cracked windows, broken glassware, a few small objects overturned and fallen, pictures fallen; felt by and frightened many people.
Mentor–Walls cracked at Center Street Elementary School, Garfield Elementary School, and Memorial Junior High School. At Heinen's Supermarket several ceiling tiles fell and much merchandise was thrown off shelves. Ceiling tiles fell at the Great Lakes Mall. One window broke and six cracked at St. Bede's Catholic Church. The press reported 15 buildings damaged. Much merchandise was shaken off store shelves, and there were some gas leaks at homes and businesses. Shaking was described as strong; felt by everyone.
Metals Park (west of Newburg)–Stairs of the American Society of Metals building cracked. Other effects in Metals Park were cracked chimneys, small sidewalk cracks, and hairline plaster cracks. Shaking was described as strong; a few glassware items broke; a few small objects overturned and fell; felt by everyone.
Middlefield–Chimneys cracked; a reinforced concrete wall cracked; plaster walls sustained hairline cracks; windows cracked; there was a report of visible waves on the ground; well water was muddied; a few items were thrown from store shelves; pictures fell; a few small objects overturned and fell; felt by many people to all.
Painesville–At Lake Erie College, 19 windows cracked or broke, and a large crack opened in the stairwell of the Commons (dining facility). The walls and ceilings of Thomas W. Harvey High School cracked, and a 2.5-ton machine was moved 3/16 in. at a sheet-metal shop. Tiles fell from the ceiling at Lake East Hospital. Other damage in Painesville included damaged chimneys, cracked plaster, cracked basement walls, and a cracked fireplace front.
Perry–At one home a garage ceiling cracked, the crack extending part way down the wall; baseboards separated from the wall in several rooms; bathroom walls separated from the ceiling, leaving a 3/16-in. crack; dishes broke in a china closet; windows broke; and a basement floor cracked.
Perry Nuclear Power Plant–There were hairline floor cracks, hairline wall cracks, and several minor leaks in nonsafety pipes.
Thompson–There were cracks in a gymnasium wall of the Lodgemont Elementary and Junior High School. Other damage in Thompson included: cracks in walls and basement floors, cracked chimneys, broken glassware, cracked windows, muddied well water, a few objects

Figure 20. Isoseismal map for the northeast Ohio earthquake of 31 January, 1986, 16 46 42.3 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed contour lines are inferred isoseismals, and small boxes show locations of towns and cities whose names are plotted.



OHIO—Continued

overturned and fallen, a few items were shaken off store shelves; shaking was described as strong, felt by everyone.

Warren–Warren Western Reserve High School had some cracked walls (press report).

OHIO—Continued

Willoughby–Some windows broke; plaster-board walls cracked; a cement-block foundation cracked; a few glassware items broke; much merchandise was thrown off store shelves; streets were cracked; hanging pictures fell; shaking described as moderate; felt by everyone.

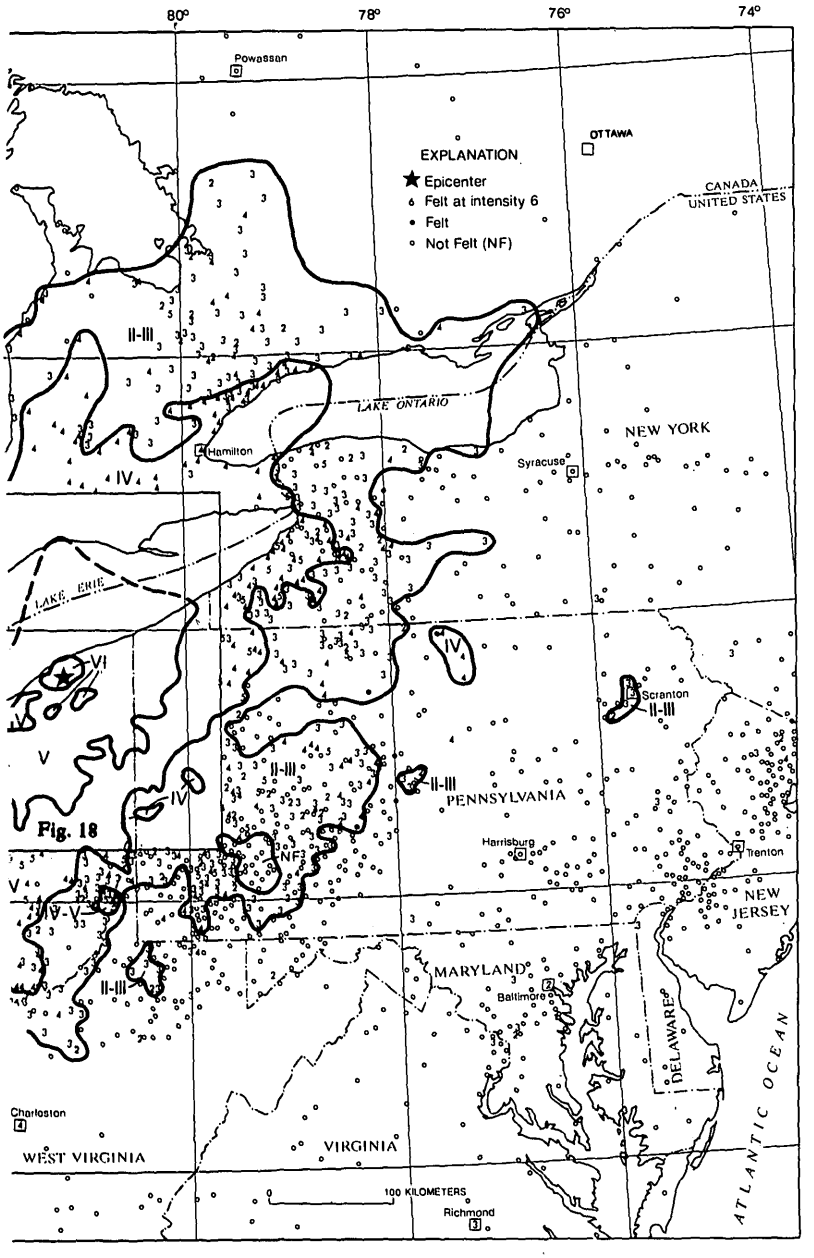


Fig. 18

OHIO—Continued

Windsor–Interior and exterior brick walls were damaged; water level in wells changed; many items were shaken off store shelves; light furniture overturned; a few windows cracked; a few small objects overturned and fell; shaking was described as strong; felt by many people.

OHIO—Continued

Pennsylvania—

Albion–Chimneys, foundations, exterior brick walls, and interior plaster walls cracked; a few windows cracked; a few glassware items broke; a few small objects overturned and fell; buildings shook moderately; felt by and frightened many people.

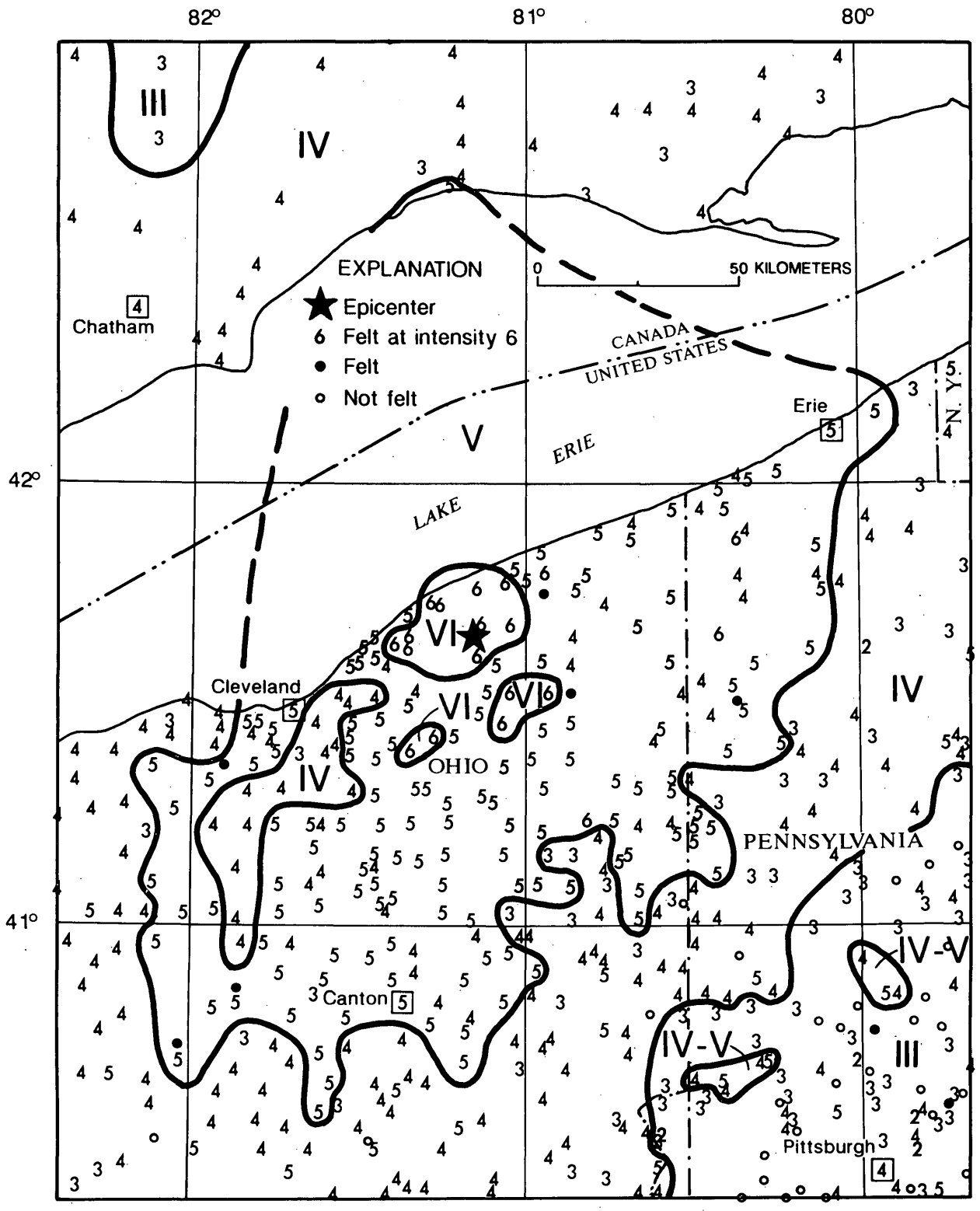


Figure 21. Isoseismal map for the epicentral area of the northeast Ohio earthquake of 31 January, 1986, 16 46 42.3 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites; dashed lines are inferred isoseismals, and boxes represent towns and cities whose names are plotted.

Linesville–Chimneys, foundations, and windows cracked; a few glassware items broke; a few items were shaken off store shelves; a few small objects overturned and fell; hanging pictures fell; shaking was described as strong, felt by everyone.

Intensity V:

The most common effects at the places listed below were that a few small objects overturned and fell; a few glassware items and dishes broke; trees and bushes shook slightly; hanging pictures swung, leaving some out of place; buildings shook slightly to moderately; windows, doors, and dishes rattled; standing and moving vehicles shook slightly; the shaking was described as moderate to strong; felt by many people.

Canada—

Ontario—

Creemore.

Leamington.

Port Stanley.

United States—

Michigan—

Almont–A few items were shaken off store shelves.

Bangor–A few windows cracked.

Burnside–A few bottles broke and ceiling tiles sustained minor damage at Dick's Place at the intersection of State Highways M-90 and M-53 (press report).

Carleton–A few items were shaken off store shelves.

Clawson–A few windows cracked.

Detroit Metro Airport– A few items were shaken off store shelves; a few windows cracked; interior walls sustained hairline cracks.

East Detroit.

Fair Haven.

Flat Rock–A few merchandise items were shaken off store shelves.

Grand Blanc–A few merchandise items were shaken off store shelves.

Gregory.

Hamburg–A few windows cracked.

Lincoln Park–A few windows cracked.

Mount Clemens–A refrigerator moved 15 in.; a chair with a woman sitting in it moved on a kitchen floor (press report).

New Boston–A few windows cracked; interior walls sustained hairline cracks.

Rives Junction.

OHIO—Continued

Roseville–An above-ground, backyard swimming pool ruptured, causing all the water to drain out (press report).

Saint Clair Shores–Concrete cell walls of the city jail cracked; water splashed out of a bathtub (press report).

Smiths Creek– Hanging pictures fell; a few items were shaken off store shelves.

Somerset Center–A few items were shaken off store shelves.

New York—

Collins Center.

Conewango Valley–Ripples were observed (from east to west) in the snow.

Dewittville–Interior walls sustained hairline cracks.

Farnham–A few windows cracked; hanging pictures fell; a few items were shaken off store shelves; plaster-board walls sustained hairline cracks; there was a report of a cracked chimney.

Forestville–A few windows cracked.

Gasport.

Grand Island–A few windows cracked; interior walls sustained hairline cracks.

Maple Springs–A few items were shaken off store shelves.

Ripley–A few items were shaken off store shelves; interior walls sustained hairline cracks.

Ohio—

Akron–A few items were shaken off store shelves; interior walls sustained hairline cracks.

Akron (North Hill)–A few items were shaken off store shelves; interior walls sustained hairline cracks.

Alliance–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; stone fences cracked.

Alliance (Mount Union)–A few windows cracked.

Andover–Interior walls sustained cracks.

Ashtabula–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Attica–A few merchandise items were shaken off store shelves.

Atwater–Standing vehicles rocked moderately.

Aurora–A few windows cracked; interior walls sustained hairline cracks; standing vehicles rocked moderately; there was a report of broken underground pipes and cracked sidewalks.

Austinburg.

Baltic–A few items shook off store shelves.

Bartlett.

Bath–There was a report of cracked chimneys.

Bay Village–A few windows cracked; many small objects overturned and fell.

Beach City–There was a report of bricks falling from chimneys.

Beachwood–A few items were shaken off store shelves.

Bedford–Windows cracked; it was felt in a moving vehicle; everyone ran out of the newspaper office to find out the cause of the shaking; coffee splashed out of cups; windows rattled (press report).

Berea.

Boardman–A few windows cracked; a few items were shaken off store shelves; light furniture overturned.

Brady Lake–A few items were shaken off store shelves.

Brewster–There was a report of broken underground pipes.

Brice–A few items were thrown from store shelves; plaster walls sustained hairline cracks.

Bristolville–The Post Office and safe inside swayed "like jello" from east to west.

Brooklyn–A few windows cracked; many small objects overturned and fell; many merchandise items fell off store shelves.

Burghill–There was a report of cracked chimneys.

Burton–Many items were shaken off store shelves.

Cambridge–There was minor damage to water pipes and plumbing; a mobile home was shaken off its supports; buildings shook (press report).

Canal Fulton–A few windows cracked; a few items were shaken off store shelves.

Canton–A 2-in.-wide crack formed in the street in front of 2135 Sandwich Avenue; the couch moved; chairs jumped up and down; two jars fell from store shelves and broke (press report).

Carroll–Existing cracks in a stairwell at Malvern Elementary School widened, and the stairwell shifted about 0.75 in. at the bottom (press report).

Castalia–A few windows cracked; interior walls cracked.

Chagrin Falls–Cans, bottles of beer, bottles of wine, jars of jelly, and jars of mustard fell off store shelves; people ran out of buildings (press report). A few windows cracked; interior walls sustained hairline cracks.

Chesterland–A few windows cracked; a few items were shaken off store shelves.

Cleveland–In Severance Hall, doors and chandeliers swung; panels over the Cleveland Orchestra moved; and the audience and orchestra left the hall. There was a small crack in a wall of the State Office building. The Standard Oil building and the Terminal Tower shook strongly (press report). A few items were shaken off store shelves; buildings shook strongly.

Cleveland (Noble)–Interior walls damaged.

Cleveland (Midpark).

OHIO—Continued

Columbia Station–Interior walls sustained hairline cracks.

Conneaut–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Cortland.

Cuyahoga Falls–Interior walls sustained hairline cracks; a foundation cracked.

Dalton.

Damascus–Many small objects overturned and fell.

Dellroy–Many small objects overturned and fell; a few items were shaken off store shelves; a street cracked.

Diamond–Plaster walls sustained hairline cracks.

Dorset–Interior walls sustained hairline cracks; a foundation cracked.

Dundee–A few windows cracked; plaster walls sustained hairline cracks.

East Canton–A few windows cracked; a few items were shaken off store shelves.

East Claridon–A few windows cracked; light furniture overturned; plaster walls sustained hairline cracks.

Eastlake–Glass objects fell and broke; a lamp broke; a few dishes and glasses fell out of cupboards; video tapes fell; everyone left a building.

Ellet.

Elyria–A few items were shaken off store shelves; plaster walls sustained hairline cracks.

Euclid–Hanging objects swung violently; pictures fell.

Fairport Harbor–Two stress fractures developed in the 50-year-old high-school building (press report). A few windows cracked; standing and moving vehicles rocked moderately; knickknacks overturned.

Fowler–Well-water levels changed and water in wells was muddied.

Garrettsville.

Geneva-On-The-Lake–Plaster walls sustained hairline cracks; items fell from window sills; cabinet doors opened and some of the contents fell out onto the floor; knickknacks shook off of shelves; a garage foundation cracked.

Genoa.

Girard–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Grafton.

Grand Rapids–A few windows cracked.

Greensburg.

Hambden–Ceiling tiles fell; furniture moved; a few instances of fallen plaster (press report).

Hartford–A few items were shaken off store shelves.

Hartsgrove–People ran outside; walls moved at least 2 in.

Hinckley–A few windows cracked; a few items were shaken off store shelves.

Hiram–A few windows cracked; interior walls sustained hairline cracks; a foundation cracked.

Homeworth–A few windows cracked; a few items were shaken off store shelves; dry wall sustained hairline cracks.

Howland Corners–A 500-lb wood stove moved (press report).

Hudson.

Kent–Knickknacks fell, and people ran outside at Kent State University. Elsewhere, a few windows cracked.

Killbuck–Light furniture overturned.

Kingsville–A few items were shaken off store shelves; a foundation cracked.

Kinsman.

Lake Milton–A few windows cracked; a few items were shaken off store shelves.

Lakewood.

Lindsey–A few windows cracked.

Lisbon–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Lodi.

Loudonville.

Lyndhurst.

Mayfield.

Malta–Trees and bushes shook moderately.

Malvern–The inside stairway at the sewer plant cracked (press report).

Mansfield–A few windows cracked; a few items were shaken off store shelves.

Mantua–A few merchandise items were shaken off store shelves.

Marshallville.

Massillon–Potted plants on a window moved; fire trucks moved back and forth; and a water heater leaked (press report). A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Masury–A few items were shaken off store shelves.

Maximo–A few items were shaken off store shelves; dry wall sustained hairline cracks; water flow in wells was disturbed.

McDonald–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Mentor-On-The-Lake–Ceiling tiles fell in two department stores located in the Great Lakes Mall. Ceiling tiles also fell in the Heinen Supermarket at 8850 Mentor Avenue. Some small items fell off shelves at Gray's Drug Store. A false ceiling fell in the science classroom of the junior high school; walls of two elementary schools cracked.

OHIO—Continued

St. Bede's Catholic Church had one broken window and six cracked windows (press report).

Mesopotamia–Plaster walls sustained hairline cracks; a few merchandise items shook off store shelves.

Metamora.

Middleburg Heights–One window and an interior wall cracked. Buildings shook strongly.

Milan–A few windows cracked.

Mingo Junction–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; some light furniture overturned.

Mogadore–Small items fell off shelves (press report).

Montville–Plaster walls cracked; small objects fell.

Mount Gilead–A few items were shaken off store shelves.

Munroe Falls–A few items were shaken off store shelves.

Munson–Plaster cracked in a few instances; small objects overturned.

Neffs.

New Philadelphia–A few windows cracked; a few items were shaken off store shelves.

Newbury–Many items were shaken off store shelves.

Newcomerstown–Interior wall board sustained hairline cracks.

Newton Falls–Plaster walls sustained hairline cracks; a few items were thrown from store shelves.

Nimisila–There was a report of a cracked chimney.

North Bloomfield–Plaster walls sustained hairline cracks.

North Canton–A few windows cracked; a few items were shaken off store shelves.

North Jackson–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; a foundation cracked.

North Madison–Dishes and other objects fell out of cupboards and off shelves; pictures fell off walls; a basement foundation cracked.

Northfield–A few items were shaken off store shelves.

Norton.

Nova.

Novelty–Plaster walls sustained hairline cracks; well water was muddied.

Oak Harbor–Interior walls sustained hairline cracks.

Orrville–A few windows cracked.

Parkman–Trees and bushes shook moderately.

Parma–Interior walls sustained hairline cracks; a few items were shaken off store shelves; hanging pictures fell.

Peninsula.

Pepper Pike.

Pierpont–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline

cracks; and there was an unconfirmed report of cracked chimneys.

Port Washington–A few windows cracked; interior walls sustained hairline cracks.

Randolph–A few windows cracked; dry wall sustained hairline cracks.

Ravenna–There was a report of broken underground pipes.

Richfield–Interior walls sustained hairline cracks; a few windows cracked; a few items were shaken off store shelves; small landslides occurred in an area of road fill; there was an unconfirmed report of cracked chimneys.

Richmond Heights–People had difficulty in standing and walking.

Rittman–Interior walls sustained hairline cracks; a few windows cracked; a few items were shaken off store shelves.

Robertsville–Interior walls sustained hairline cracks.

Rocky River–Buildings shook strongly; trees and bushes shook strongly; standing and moving vehicles shook moderately; felt by everyone.

Rootstown–On a farm, a full tank moved across a floor. People had difficulty standing.

Sandyville.

Sardis–A few windows cracked.

Sebring–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Shaker Heights–Trees and bushes shook moderately; standing and moving vehicles rocked moderately.

Shalersville–A few knickknacks fell; an anchored mobile home moved (press report).

Sharon Center.

Shelby.

Shreve–A few windows cracked.

Solon–People had difficulty standing and walking; a few windows cracked; buildings shook strongly; small landslides occurred; felt by everyone.

Southington–Crystal fell off a kitchen chandelier (press report). A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.

Sparta–A few items were shaken off store shelves; a few light furniture pieces overturned.

Spencer–A few windows cracked; a few merchandise items were shaken off store shelves.

Streetsboro–People ran out of city offices thinking the building was going to fall (press report).

Swanton–A few windows cracked; a few merchandise items were shaken off store shelves.

Sylvania.

OHIO—Continued

Tallmadge–A few windows cracked; trees and bushes shook moderately.

Toronto–A few items were shaken off store shelves.

Twinsburg– A few windows cracked; a few merchandise items were shaken off store shelves.

Uniontown.

Unionville–A few windows cracked; a few items were shaken off store shelves; plaster walls sustained hairline cracks.

Wadsworth.

Waldo.

Warrensville Heights–Walls cracked; a few items fell off store shelves.

Washingtonville– Pictures were knocked off a wall in one home (press report).

Wayland–A large earthen dam sustained slight damage; people had difficulty standing.

West Farmington–Interior walls sustained hairline cracks.

West Salem.

Westfield Center–Interior walls sustained hairline cracks; cracks in an exterior brick wall were reported.

Wickliffe–Well water muddied; trees and bushes shook moderately. People ran out of their homes (press report); people had difficulty standing.

Willard–The press reported cracks in the walls of Central Elementary School and cracks in the walls and floor tile at the junior high school. Plaster walls sustained hairline cracks; standing vehicles rocked moderately.

Willowick–Buildings shook strongly; damage of an unknown type was reported by the postmaster; felt by everyone.

Windham–A few windows cracked; a few items were shaken off store shelves; many small objects overturned and fell.

Wooster–A few items were shaken off store shelves.

Youngstown (West Side)–A few windows cracked; interior walls sustained hairline cracks.

Youngstown (South Side)–A foundation cracked.

Youngstown (Fosterville)–Hanging pictures fell.

Youngstown–Stress cracks opened in the walls of the Department of Human Services building on West Federal Street (press report). A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; a foundation cracked.

Pennsylvania—

Atlantic.

Avonmore–A few windows cracked; a few items were shaken off store shelves; some light furniture overturned.

Charleroi–Many items were shaken off store shelves; some light furniture overturned.

Conneaut Lake–A few windows cracked.

Corry–A few windows cracked; plaster walls sustained hairline cracks; foundations cracked.
Dayton–A few windows cracked; hanging pictures fell; plaster walls sustained hairline cracks.
East Springfield.
Edinboro–Interior walls sustained hairline cracks.
Erie–Interior walls sustained hairline cracks.
Fairview–Hanging pictures fell; trees and bushes shook moderately.
Farrell–Plaster walls sustained hairline cracks; a few items were shaken off store shelves.
Girard–Plaster walls sustained hairline cracks; a few items shook from store shelves.
Greenville–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks; foundations cracked; there was a report of broken underground pipes.
Hadley–A few merchandise items were shaken from store shelves.
Harborcreek–A few items were shaken off store shelves.
Hartstown–Plaster walls sustained hairline cracks; a few items shook from store shelves.
Hermitage.
Industry.
Ingomar–Dry wall sustained hairline cracks.
Lyndora–A few windows cracked; a few items were shaken off store shelves.
Meadville–Interior walls sustained hairline cracks; a few windows cracked; a few items shook from store shelves; light furniture and small appliances overturned.
Monongahela.
North Springfield.
Pittsfield–A few windows cracked.
Pulaski–Dry wall sustained hairline cracks.
Reno–Interior walls sustained hairline cracks; a foundation cracked; a few windows cracked; a few items were shaken off store shelves.
Rochester.
Rockton.
Sharon–An 8 x 20-ft wood and metal marquee, on the front of an empty store on West State Street, fell onto the sidewalk when the support cables snapped. Two windows were reportedly broken (press reports). A few windows cracked; interior walls sustained hairline cracks; a foundation cracked.
Sharpsville–A few windows cracked; a few items were shaken off store shelves; plaster walls sustained hairline cracks.
Smethport–A few windows cracked; dry wall sustained hairline cracks.

OHIO—Continued

Tionesta–Hanging pictures fell.
Titusville–A few windows cracked.
Venango–A few windows cracked; a few merchandise items were shaken off store shelves.
Wampum–A few windows cracked; a few items were shaken off store shelves; interior walls sustained hairline cracks.
West Newton–A few items were shaken off store shelves.
Wilmerding–Many small objects overturned and fell.
Yatesboro–Some windows were reportedly broken.

West Virginia—
Benwood–A few items were shaken off store shelves.
Glen Dale–A few windows cracked.
Washington–Interior walls sustained hairline cracks.
Wellsburg.

Intensity IV:
Canada—
Ontario—Amherstburg, Ancaster, Aurora, Aylmer, Baden, Barrie, Belle River, Belleville, Blenheim, Bolton, Bracebridge, Brampton, Brantford, Brooklin, Burford (press report), Burlington, Chatham, Clarkson, Clinton, Coburg, Coldwater, Cottam, Courtland, Courtright, Cultus (press report), Delhi, Don Mills, Downsville, Dresden, Dublin, Erieau, Essex, Etobicoke, Exeter, Fort Erie, Georgetown, Glanworth, Grand Valley, Grimsby, Guilds, Hagersville, Hamilton, Hanover, Harrow, Highgate, Highland Creek, Ingersoll, Kincardine, Kingsville, La Salle, Listowel, London, Malton, McGregor, Mississauga, Mitchell, Mount Pleasant (press report), Niagara-On-The-Lake, Oakville, Oro Station, Oshawa, Owen Sound, Pefferlaw, Pickering, Port Darlington, Port Dover, Port Elgin, Port Rowan, Richmond Hill, Ridgetown, Rockwood, Rosemont, Saint Catherines (press report), Saint Mary's, Saint Thomas, Sarnia, Scarborough, Sebringville, Simcoe, South Woodslee, Strathroy, Streetsville, Tavistock, Thamesford, Thornbury, Thorndale, Tillsonburg, Toronto, Union, Wallaceburg, Wardsville, Wartburg, Waterford, Waterloo, Welland, West Hill, Willowdale, Windsor, Woodstock, Wroxeter, Zephyr.

United States—
Indiana—Mishawaka.
Michigan—Adrian, Algonac, Alpena, Ann Arbor, Bancroft, Bay City (press report), Birmingham, Blissfield, Brighton, Brooklyn, Brown City, Chesterfield (press report), Clarklake (press report), Clarkston, Columbiaville, Concord, Corunna, Dearborn, Deerfield, Detroit, Dexter, Dryden, East Lansing, Fowlerville, Frontier, Gibralter (press report), Goodrich, Grosse Ile, Harsens Island, Hartland, Hazel Park, Horton, Hudson, Ida, Imlay City (press report), Inkster, Kingston, Lake Orion, Lakeland, Lansing (press report), Leonard, Manitou Beach, Marine City, Marlette, Milan, Monroe, Morenci, New Haven, Newport

(press report), North Lakeport (press report), Novi, Onsted, Pearl Beach, Petersburg, Port Huron, Portage, Reading, Richmond, Riga, Rockwood (press report), Romeo, Romulus, Royal Oak, Saline, South Rockwood, Southfield, Spring Arbor, Sterling Heights, Taylor, Tecumseh, Trenton, Union Lake, Warren, Waterford, Wayne (press report), Weston, Willis, Wixom, Wyandotte.

New Jersey—Cedar Grove.

New York—Angola, Arcade, Attica, Bemus Point, Blasdell (press report), Brant, Brockport, Cattaraugus, Cherry Creek, Colden, Collins, Cuba, Derby, East Aurora, Ellicottville, Ellington, Findley Lake, Fredonia, Holland, Irving, Java Center, Kennedy, Mayville, Newfane, Nunda, Otto, Portageville, Salamanca, Sandusky, Sherman, Silver Creek, South Dayton, Springville, Stockton, Stow, Wyoming, Yorkshire.

Ohio—Adamsville, Akron (Maple Valley), Albany, Amherst, Amsterdam, Archbold (press report), Ashland, Ashtabula (west end), Athens (press report), Avon, Avon Lake, Baltimore, Barberton, Barton, Bay Village (press report), Bellevue, Beloit, Bergholz, Berkey, Berlin, Berlin Heights, Bethesda, Birmingham, Bloomingdale, Bloomville, Bolivar, Bowerston, Brecksville, Bridgeport, Brilliant, Brinkhaven, Brook Park (press report), Brookfield, Brownsville, Brunswick, Buckeye Lake, Bucyrus (press report), Burbank, Butler, Byesville, Caledonia, Canfield, Cardington (press report), Carrollton, Centerburg, Charm, Chatfield, Chesterville, Clay Center, Cleveland (beachland), Cleveland Heights, Cleveland (Puritas Parks), Cleveland (Willow), Cleveland (Newburg), Clyde, Columbiana, Columbus, Conesville, Copley, Crestline, Crooksville, Croton, Cumberland, Curtice, Defiance (press report), Delaware, Dennison, Derwent, Dillonvale, Dover, Doylestown, Dresden, Dunbridge, Duncan Falls, East Cleveland, East Fultonham, East Palestine, East Rochester, East Sparta, Eaton (press report), Edison, Elkton, Elmore, Fairlawn, Fairview Park, Farmdale, Fleming, Frazeysburg, Fredericksburg, Fredericktown, Fremont, Fulton, Galena, Galion, Garfield Heights, Gates Mills, Gibsonburg, Glouster, Gnadenhutten, Granville, Graytown, Green Springs, Greenford, Greenwich, Hammondsville, Hanoverton, Hartville, Haskins, Hayesville, Hebron, Holloway, Holmesville, Homerville, Hopewell, Hubbard, Huron, Independence (press report), Jacksontown, Jacksonville, Jacobsburg, Jefferson, Jeromesville, Junction City, Kelleys Island, Kensington, Kenton (press report), Kidron, Kimbolton, Kipton, Kunkle, Lafferty, Lakemore, Lakeside-Marblehead, Lakeview, Lakeville, Langsville, Leetonia, Limaville, Lorain, Louisville (press report), Lucas, Lyndhurst, Macedonia, Macksburg, Magnetic Springs, Magnolia, Maple Heights, Marengo, Marietta, Martel, Martins Ferry, Mayfield Heights (press report), McConnelsville, Mechanicstown, Medina (press report), Melmore, Middlebranch, Midvale, Millersburg, Millfield, Mineral City, Mineral Ridge, Minerva, Monroeville, Mount Eaton, Mount Hope, Moxahala, Murray City, Nankin, Napoleon, Nashville, Navarre, Nelsonville, New Lexington, New London, New Springfield, New Washington, Newark (press report), Niles, North Baltimore (press report), North Benton, North Georgetown, North Industry, North Kingsville, North Olmsted, North Royalton, Norwalk (press report), Oberlin, Old Fort, Old Washington, Orangeville, Ostrander, Paris, Paulding, Perrysville, Petersburg, Philo, Piedmont, Pleasant City, Pleasant Grove (press report), Pleasantville, Plymouth, Polk, Pomeroy, Port Clinton, Prospect, Put-In-Bay, Republic, Richwood, Rock Creek, Rockbridge, Rome, Saint Louisville, Salem (press report), Savannah, Scio, Senecaville, Seville, Shauck, Sherrodsville, Shiloh, Sidney, Springfield (press report), Sterling, Steubenville, Stone Creek, Stow, Stratton, Strongsville, Struthers, Sugarcreek, Sullivan, Summitville, Sunbury, Sycamore, Thornville, Tiffin, Tiro, Toledo (a couple of items fell from store shelves), Toledo Express Airport, Trimble, Tuppers Plains, Tuscarawas, Uhrichsville, University Heights, Upper Sandusky, Utica, Valley City, Vermilion, Vickery, Vienna, Vincent, Wakeman, Walhonding, Walnut Creek, Wapakoneta, Warsaw, Waterford, Waverly, Wellington, West Akron, West Mansfield, West Point, Westlake (press report), Whipple, Williamsfield, Willoughby Heights, Wilmington (press report), Youngstown (east side), Zanesville (press report), Zoar, Zoarville.

Pennsylvania—Barnesboro, Beaver, Bellwood, Bessemer, Bridgeville, Brookville (press report), Bruin, Butler, Cambridge Springs, Carlton, Carnegie, Center Hill (press report), Centerville, Clarks Mills, Clearfield (press report), Coalport (press report), Conneautville, Cowanesque (press report), Cranesville, Curwensville (press report), Dickerson Run, Du Bois, East Brady, East Vandergrift, Edinburg, Elderton, Eldred, Ellwood City, Enon Valley, Falls Creek (press report), Fenelton, Freeport, Georgetown, Grand Valley, Greensboro, Grove City, Harmony, Hilliards, Hillsville, Homestead, Irvine, Irvona (press report), Jackson Center, Jamestown, Jerome, Johnsonburg, Kennerdell, Kylertown (press report), Lake City, Leechburg, Leetsdale, Lock Haven (press report), Mahoningtown (press report), Mather, McGrann, McKeesport, Mercer, Mill Village, Morris (press report), Mount Jewett, New Bedford, New Castle, New Galilee, Oakmont, Oil City, Osceola Mills, Pittsburgh, Pleasantville, Polk, Pricedale, Reynoldsville (press report), Rogersville, Rural Ridge, Saegertown, Sandy Lake, Seneca, Shippingport, Slickville, South Heights, Spring Creek, Springboro, Sugargrove, Sutersville, Swede Hill (press

report), Tidioute, Tiona, Union City, Villa Maria, Waterford, Wellsboro, West Springfield, Westford, Wilcox, Youngsville.

West Virginia—Charleston (Yeager Airport), Morgantown, Petroleum, Weirton (press report), Williamstown.

Intensity III:

Canada—

Ontario—Agincourt, Ajax, Alliston, Arthur, Bayfield, Baysville, Beaverton, Beeton, Bethany, Blackstock, Borden, Bradford, Bramalea, Brougham, Brunner, Caledon East, Cambridge, Clark Point, Clarksburg, Columbus, Downsview, East York, Elmvale, Everett, Fesserton, Fingal, Gads Hill, Gamebridge, Goderich, Gravenhurst, Guelph, Hastings, Huntsville, Inglewood, Islington, Jarvis, Kingston (press report), Kitchener, Kleinburg, La Salette, Lambton Generating Station, Langton, Leaksdale, Maidstone, Mansfield, Maple, Markham, Milton, Mount Hope, Newmarket, North York, Oil Springs, Orangeville, Orillia, Orono, Orton, Penetanguishene, Peterborough, Port Burwell, Port Carling, Port Hope, Rexdale, Rostock, Shelburne, Southampton, Stayner, Stouffville, Stratford, Stroud, Sutton, Thedford, Thornhill, Tottenham, Unionville, Uxbridge, Wasaga Beach, Washago, Weston, Whitby, Wingham, Woodbridge, Wyoming.

United States—

Delaware—Newark.

Illinois—Galesburg.

Indiana—Berne, Crown Point, Elkhart, Evansville, Fort Wayne, Gary, Goshen, Greensburg, Lafayette, South Bend, Sullivan, Warsaw.

Kentucky—Ashland, Madisonville.

Maryland—College Park, Sykesville.

Michigan—Ada, Allenton, Anchorville, Armada, Atlas, Avoca, Belleville, Bloomfield Hills, Britton, Burt, Camden, Capac, Caro, Cass City, Cement City, Center Line, Clinton, Coldwater (press report), Croswell, Davisburg, Davison, Dearborn Heights, Decker, Deford, Drayton Plains, Durand, Edwardsburg, Fairgrove, Flint, Fostoria, Fraser, Galesburg, Garden City, Genesee, Gilford, Grand Haven (press report), Grand Rapids, Grandville, Hadley (press report), Hastings, Highland, Hillsdale, Holland, Holly, Howell, Ithaca, Jerome, Kalamazoo, Keego Harbor, Laingsburg, Lakeville, Lambertville, Lapeer, Lexington, Litchfield, Lowell, Marshall, Marysville, Melvin, Metamora, Michigan Center, Midland, Milford, Munith, New Hudson, North Branch, North Street, Norvell, Okemos, Onondaga, Ortonville, Otter Lake, Oxford, Palmyra, Parma, Paw Paw, Pinckney, Pittsford, Plainwell, Pleasant Lake, Pontiac, Port Sanilac, Saginaw (press report), Saint-Clair, Sandusky, Shaftsburg, Shields (press report), South Haven Highlands (press report), South Lyon, Sturgis, Sunfield, Tekonsha, Temperance, Traverse City, Troy, Utica, Vicksburg, Waldron, Walled Lake, Washington, Whitmore Lake, Whittaker, Yale.

New Jersey—Rockaway.

New York—Albion, Alden, Alfred, Alfred Station, Allegany, Ashville, Athol Springs, Batavia, Belfast, Belmont, Boston, Brocton, Buffalo, Canaseraga, Cassadaga, Celoron, Ceres, Chaffee, Chautauqua, Cheektowaga, Clarence Center, Corfu, Cowlesville, Crittenden, Dale, Dalton, Dayton, Depew, East Amherst, East Otto, East Randolph, Elba, Falconer, Farmersville Station, Fillmore, Frewsburg, Gerry, Gowanda, Greenhurst, Jamestown, Java Village, Johnson City, Kenmore, Kill Buck, Leon, Lewiston, Lily Dale, Little Genesee, Little Valley, Machias, Marilla, Monticello, Niagara Falls, North Boston, North Java, Penn Yan, Portland, Randolph, Rochester, Sanborn, Scio, Sinclairville, Sodus, Strykersville, Swormville, Tonawanda, Varysburg, Versailles, Warsaw, Wayland, West Valley, Westfield, Youngstown.

Ohio—Adena, Amesville, Anna (press report), Apple Creek, Augusta, Austintown, Bannock, Barlow, Barnesville, Bascom, Beallsville, Bellaire, Belle Valley, Belpre, Beverly, Bladensburg, Blue Rock, Buchtel, Burgoon, Cadiz, Campbell, Chandlersville, Chesapeake, Chester, Chesterhill, Christiansburg, Cincinnati, Clarington, Collins, Corning, Coshocton, Danville, Dayton, Deerfield, Dexter City, East Liberty, East Liverpool (press report), East Springfield, Ellsworth, Empire, Enon, Fairborn, Findlay, Flat Rock, Flushing, Fort Seneca, Franklin (press report), Fresno, Glandorf, Gratiot, Green Camp, Greentown, Grover Hill, Guysville, Hamilton, Hamler, Harbor View, Harrisville, Hilliard, Holgate, Holland, Homer, Howard, Iberia, Irondale, Jerusalem, Jewell, Jewett, Johnstown, Kettlersville, Lagrange, Lancaster, Lansing, Lewis Center, Liberty Center, Lima, Lithopolis, Little Hocking, Lloydsville (press report), Logan, Londonderry, Lordstown (press report), Lore City, Lowell, Lower Salem, Lyons, Martin, Marysville, Maumee, Maynard, McClure, McCutchenville, Miamisburg, Millbury, Miller City, Monclova, Morral, Morristown, Morrow (press report), Mount Blanchard, Mount Cory, Mount Perry, Mount Pleasant, Mount Vernon, Mount Victory, Nashport, Neapolis, Negley, Nevada, New Athens, New Bremen, New Concord, New Holland, New Riegel, New Straitsville, Newport, Ney, North Fairfield, North Lawrence, North Lima, North Robinson, Okolona, Ontario (press report), Ottawa, Pataskala, Pemberville, Pettisville, Pickerington, Piney Fork, Portsmouth, Powell, Powhatan Point, Quaker City, Racine, Rawson, Reedsville, Reno, Reynoldsburg, Richmond, Ridgeway, Rocky Ridge, Roseville, Russells Point, Rutland, Scott, Sedalia, Seven Hills, Sheffield Lake, Stewart, Strasburg, Stryker, Sulphur Springs, Summerfield, Tiltonsville, Trinway, Unionville Center, Van Wert (press report), Vandalia,

Vanlue, Venedocia, Versailles, Walbridge, Waterville, Wauseon, Wayne, West Lafayette, West Unity, Westerville, Weston, Wharton, White Cottage, Williston, Winona, Woodville, Zenia (press report).

Pennsylvania—Allenport, Allentown, Anita, Apollo, Austin, Avoca, Baden, Bakerstown, Bear Lake, Beaver Falls, Belle Vernon, Bigler, Black Lick, Bolivar, Brackenridge, Bradford, Brisbin, Brockport, Buena Vista, Byrnedale, Callensburg, Callery, Cassandra, Cheswick, Clairton, Clarendon, Clark, Clarks Summit, Columbus, Commodore, Confluence, Coudersport, Coulters, Cranberry, Creekside, Cuddy, Darlington, Distant, Dravosburg, Duke Center, Dunlevy, Duquesne, Dysart, East Pittsburgh, East Smethport, Elmora, Emeigh, Finleyville, Flinton, Fombell, Ford City, Forestville, Foxburg, Fredonia, Freedom, Gibsonia, Glasgow, Glenshaw, Glenwillard, Grampian, Grapeville, Harrisville, Hawk Run, Herminie, Hickory, Home, Hookstown, Hydetown, Indian Head, Jacobs Creek, Jefferson, Johnstown, Julian, Kane (press report), Kittanning, Koppel, Larimer, Lecontes Mills (press report), Lewis Run, Ludlow, Manorville, McConnellstown, McKean, Mercersburg, Midland, Mill Run, Millsboro, Nanty Glo, New Bethlehem, New Brighton, New Kensington, New Stanton, New Wilmington, North Apollo, North East, North Versailles, North Washington, Parker, Penn Run, Perryopolis, Petrolia, Point Marion, Port Allegany, Republic, Rew, Rices Landing, Rixford, Robinson, Rockwood, Roscoe, Rossiter, Rouseville, Russell, Saint Petersburg, Sarver, Scranton (press report), Seward, Shawville, Sheakleyville, Sheffield, Shinglehouse, Sipesville, Slippery Rock, Smithton, Somerset, South Fork, Spangler, Spartansburg, State College, Stoneboro, Stoystown, Sturgeon, Summerville, Tarrs, Taylorstown, Townville, Turtlepoint, University Park, Utica, Volant, Warren, Washington, Wattsburg, Webster, West Middlesex, West Sunbury, Wildwood, Windber, Woodland (press report), Wrights Corners (press report), Yukon.

Virginia—Falls Church, Richmond.

West Virginia—Beech Bottom, Belleville, Belmont, Bigbend, Burton, Cairo, Charleston, Chester, Colliers, Elizabeth, Follansbee, Grafton, Gypsy, Harrisville, Huntington, Mannington, Mason, Mineralwells, Moundsville, Newell, Osage, Paden City, Palestine, Parkersburg, Proctor, Rachel, Saint Marys, Sistersville, Smithfield, Waverly, Wheeling, Windsor Heights.

Intensity II:

Canada—

Ontario—Angus, Duntroon, Glen Williams, Midland, Rosseau, Schomberg, Seagrave, Sharon, Waubaushene.

United States—

Illinois—Chicago, Des Plaines, Rockford.

Indiana—Angola, Carmel, Garrett, Marion.

Kentucky—Glasgow.

OHIO—Continued

Maryland—Baltimore, Brentwood, Swanton.

Michigan—Albion, Byron, Clayton, Clifford, Flushing, Leslie, Livonia, Manchester, Memphis, Napoleon, North Adams, Owosso, Silverwood, Three Rivers, Ubly.

New Jersey—Pompton Lakes.

New York—Barker, Bliss, Castile, Hilton, Knowlesville, Olcott, Olean (press report), West Falls.

Ohio—Arlington, Belle Center, Belmont, Bloomdale, Dunkirk, Edon, Freeport, Kilbourne, Long Bottom, Mason, McComb, New Carlisle, Rushsylvania, Saint Marys, Sarahsville, Shawnee, Thurston, Tontogany, Troy, Wellston, Yellow Springs.

Pennsylvania—Ashville, Bellefonte, Bulger, Dixonville, Elco, Everson, Genesee, Greensburg, Guys Mills, Heilwood, Hyde Park, Indianola, Mars, Sagamore, Saint Benedict, Templeton, Venus, Verona, West Elizabeth, Westover, Wilkes-Barre (press report), Worthington.

Wisconsin—Milwaukee (press report).

West Virginia—Grantsville, Lumberport, New Manchester, Weston.

Felt:

Delaware—New Castle.

Indiana—Brazil, Syracuse.

Michigan—Benton Harber (press report), Dowagiac (press report), Harrison (press report), Muskegon (press report), New Baltimore (press report), Snover (press report),

Ohio—Carey, Chillicothe (press report), Clarksfield (press report), Coolville (press report), Devola (press report), Fostoria (press report), Harmer (press report), Harpersfield, Olmstead Falls (press report), Orwell, Rayland (press report), Smithville (press report), Springville (press report), Williamstown (press report).

Pennsylvania—Adamsville, Altoona (press report), Clymer, Emporium (press report), Graham (press report), Oak Grove (press report), Renfrew, Springdale, Westfield (press report).

7 February (GS) Northeastern Ohio

Origin time: 18 36 22.3

Epicenter: 41.645N., 81.157W.

Depth: 6 km

Magnitude: 2.5M_n(GS)

Intensity IV: Concord (press report), Leroy (press report), Thompson (press report).

Intensity III: Painesville (press report).

Felt: Chardon (press report), Hambden (press report), Kirtland (press report), Mentor (press report).

12 July (GS) Western Ohio

Origin time: 08 19 37.9

Epicenter: 40.537N., 84.371W.

Depth: 10 km

Magnitude: 4.5m_b(GS), 4.6M_n(SL), 4.9M_n(EP)

Moment: 4.5 x 10^{22} dyne-cm (SZ)

This earthquake was felt over a contiguous area of about 85,500 km^2 (fig. 22) of Indiana, Kentucky, Michigan and Ohio. It was also felt in a few places in West Virginia.

Intensity VI:

Ohio—

Anna–A fireplace cracked; chimneys cracked; interior walls sustained hairline cracks; a few small objects overturned and fell; hanging pictures swung out of place; shaking was described as strong; felt by and awakened many people.

Minster–Bricks fell from chimneys; plaster walls sustained hairline cracks; a few small objects overturned; hanging pictures fell; shaking was described as strong; felt by and awakened many people.

New Bremen–Chimneys cracked; a few glassware items or dishes broke; a few windows cracked; a few small objects overturned and fell; buildings shook moderately.

Saint Marys–Walls cracked at Joint Township District Memorial Hospital, and a few bricks fell from the top of the chimney at the Goodyear Tire and Rubber Co. plant (press report). A few items were shaken off store shelves; a few small objects overturned and fell; hanging pictures swung out of place; buildings shook moderately; felt by and awakened many people.

Intensity V:

The most common effects at the places listed below were that a few small objects overturned and fell; buildings shook slightly; windows, doors, and dishes rattled slightly; felt by many people.

Kentucky—

Botkins–Some windows broke; hanging pictures fell; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; felt by and awakened many people.

Mount Olivet–Tombstones were displaced; trees and bushes shook slightly; awakened several people.

Silver Grove– Interior walls cracked.

Ohio—

Batavia–Plaster walls sustained hairline cracks; trees and bushes shook moderately; standing and moving vehicles were rocked moderately; hanging pictures swung out of place.

Bloomdale.

Botkins–Some windows broke; hanging pictures fell; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; felt by and awakened many people.

Broadway–Awakened many people.

Cherry Fork.

Chillicothe–A few glassware items or dishes broke; hanging pictures swung out of place.

OHIO—Continued

Croton–Many small objects overturned; hanging pictures swung out of place; awakened many people.

Danville–A few glassware items or dishes broke; standing vehicles rocked slightly.

Fort Jennings.

Gomer–Awakened many people.

Grelton–Hanging pictures fell.

Harrod–A few merchandise items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures fell; awakened many people.

Houston–Hanging pictures swung out of place; buildings shook moderately, awakened many people.

Kettlersville–A few items were shaken off store shelves; hanging pictures swung out of place; awakened many people.

Lafayette–A few items were shaken off store shelves; trees and bushes shook slightly; awakened several people.

Lakeview–Hanging pictures swung out of place; awakened many people.

Lima– A window cracked, and bricks fell off an old building (press report).

Manchester–Interior walls sustained hairline cracks.

Maplewood–People had difficulty standing and walking; buildings shook moderately; standing and moving vehicles rocked slightly.

Maria Stein–Plaster walls sustained hairline cracks.

McComb–Awakened several people.

Mendon–Interior walls sustained hairline cracks; hanging pictures swung out of place; buildings shook moderately; awakened many people.

Montezuma–A few glassware items or dishes broke; hanging pictures swung out of place; trees and bushes shook slightly; awakened many people.

Mount Sterling–Awakened several people.

Napoleon–A few items were shaken off store shelves; a few glassware items or dishes broke; shaking was described as moderate.

New Knoxville–People had difficulty standing and walking; awakened many people.

New London.

Newtonsville–A few windows cracked; a few glassware items or dishes broke; plaster walls sustained hairline cracks; awakened several people.

Owensville–A few items were shaken off store shelves; hanging pictures swung out of place; awakened many people.

Pickerington–A few glassware items or dishes broke; trees and bushes shook slightly; standing and moving vehicles rocked slightly.

Quincy–Plaster walls sustained hairline cracks; awakened many people.

Richwood–Hanging pictures swung out of place; awakened several people.

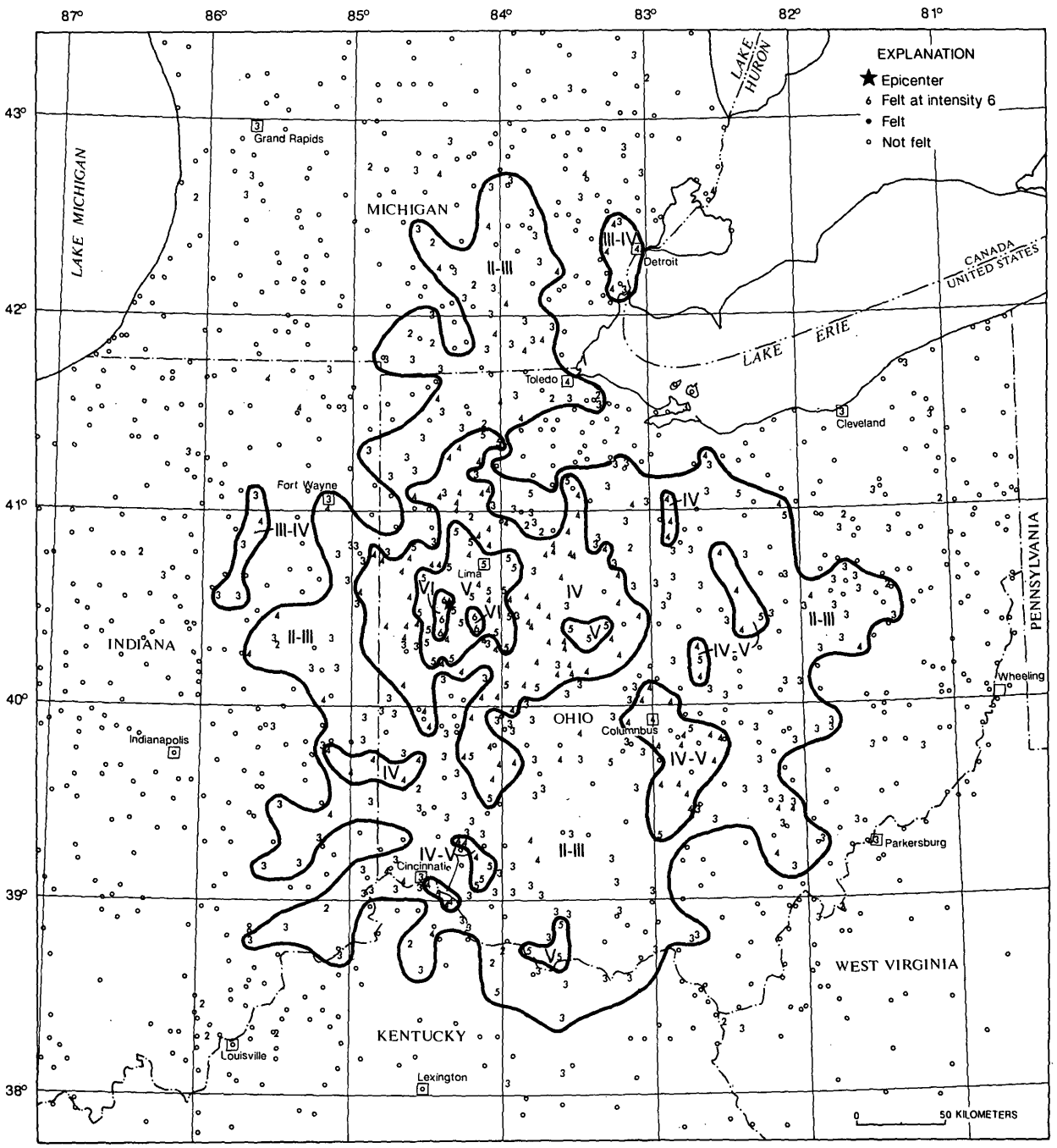


Figure 22. Isoseismal map for the western Ohio earthquake of 12 July 1986, 08 19 37.9 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals represent intensities at specific sites, and small boxes show locations of towns and cities whose names are plotted.

OHIO—Continued

Ripley–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; awakened several people.

OHIO—Continued

Roosevelt–A few items were shaken off store shelves; a few windows cracked; a few glassware items or dishes broke; hanging pictures swung out of place.

Saint Paris–Awakened several.

Spencerville–A few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures fell; awakened everyone.

Uniopolis–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; hanging pictures swung out of place; awakened many people.

Urbana–A few windows cracked; a few glassware items or dishes broke; awakened several people.

Van Wert–Hanging pictures fell; shaking was described as moderate.

Versailles–Interior walls sustained hairline cracks; a few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; hanging pictures swung out of place; awakened several people.

Wapakoneta–A few items were shaken off store shelves; a few glassware items or dishes broke; interior walls sustained hairline cracks; awakened many people.

Waynesfield–Hanging pictures swung out of place; buildings shook moderately; awakened many people.

Waynesville–A few windows cracked; a few glassware items or dishes broke; trees and bushes shook slightly; standing and moving vehicles rocked slightly.

West Mansfield–A few items were shaken off store shelves; dry wall cracked; awakened many people.

West Salem–Plaster walls were cracked; shaking was described as moderate; awakened a few people.

Yorkshire–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; plaster walls sustained hairline cracks; trees and bushes shook slightly; standing and moving vehicles rocked slightly; awakened many people.

Intensity IV:

Indiana—Alexandria, Bippus, Boston, Brownsville, Geneva, Losantville, Metamora, Milton, Pleasant Mills, Shipshewana, Upland, Waynedale, Wolcottville.

Kentucky—Alexandria, Newport.

Michigan—Adrian, Algonac (press report), Blissfield, Clarkston, Clinton, Dearborn Heights, Detroit (press report), East Lansing (press report), Gregory, Jackson, Petersburg, Redford (press report), Southfield (press report), Woodhaven (press report).

Ohio—Adelphi, Albany, Alpha, Attica, Baltimore, Bellbrook, Belle Center, Bellefontaine, Buchtel, Burkettsville, Butler, Cable, Cairo, Camden, Canal Winchester, Carthagena, Casstown, Celina, Centerburg, Christiansburg, Circleville, Cloverdale, Columbus (press report), Columbus Grove, Continental, Cridersville, Defiance, Delta, Dola, Dunkirk, Dupont, East Liberty, Elgin, Elida, Findlay, Forest, Fort Loramie, Fort Recovery, Gahanna (press report), Galloway, Gambier, Glandorf, Goshen, Green

OHIO—Continued

Camp, Greenville, Homerville, Huber Heights, Huntsville, Jacksonville, Jewell, Johnstown, Kenton, Kirby, Lancaster, Latty, Laura, Lithopolis, Lockbourne, London, Lynchburg, Magnetic Springs, Maineville, Mansfield (press report), Martinsville, Mason, Melmore, Melrose, Mid City, Middleburg, Milan, Milford Center, Miller City, Millersburg, Morning View, Morral, Mount Blanchard, Mount Saint Joseph, Neapolis, New Hampshire, New Washington, Newcomerstown, North Bend, North Hampton, North Lewisburg, Ohio City, Osgood, Ostrander, Ottoville, Pandora, Patterson, Pemberton, Piqua, Pitsburg, Rockford, Rosewood, Roundhead, Rushsylvania, Russia, Saint Henry, Saint Johns, Sidney, South Solon, Stoutsville, Sulphur Springs, Tarlton, Thurston, Tipp City, Toledo, Upper Arlington (press report), Vanlue, Vaughnsville, Venedocia, Verona, Waldo, West Alexandria, West Carrollton, West Liberty, West Unity, Westville, Williamstown, Willshire, Woodstock, Worthington, Wright Patterson Air Force Base, Xenia, Zanesfield.

Intensity III:

Indiana—Ashley, Aurora, Bath, Bourbon, Bryant, Cambridge City, Canaan, Converse, Craigville, Deputy, Earlham, Farmland, Fort Wayne (press report), Fountain City, Guilford, Kennard, Lagro, Linn Grove, Milroy, Monroe, Napoleon, Oldenburg, Orland, Preble, Redkey, Selma, South Whitley, Spencerville, Summitville, Sweetser, Walton, Westport.

Kentucky—California, Covington (press report), Garrison, Ghent, Hebron, Mount Sterling, Petersburg, Salt Lick, South Portsmouth, Tollesboro, Vanceburg, Wallingford, Williamstown.

Michigan—Ann Arbor (press report), Brighton, Britton, Brooklyn, Deerfield, Dorr, Dundee, Fowlerville, Frontier, Grand Rapids, Grosse Ile, Hopkins, Jerome, Laingsburg, Lansing, Leonard, Manchester, Marlette, Michigan Center, Oak Grove, Onondaga, Otisville, Palmyra, Reading, Royal Oak, Sand Creek, Tipton, Union Lake, Waldron, Washington, Whitmore Lake.

Ohio—Aberdeen, Akron (press report), Alexandria, Amelia, Antwerp, Athens, Bainbridge, Baltic, Barlow, Bascom, Beaverdam, Belle Valley, Benton Ridge, Bettsville, Big Prairie, Bloomville, Blue Rock, Bowersville, Brinkhaven, Caledonia, Cardington, Cecil, Cedarville, Chandlersville, Charm, Cincinnati (press report), Clayton, Cleveland (press report), Commercial Point, Coshocton, Covington, Crestline, Decatur, Donnelsville, Dresden, Dublin, Dundee, Eaton, Enon, Fayetteville, Fletcher, Forest Park, Frazeysburg, Fresno, Gilboa, Glenford, Glouster, Granville, Harpster, Harrisburg, Hilliard, Holgate, Hollansburg, Iberia, Irwin, Junction City, Killbuck, Kings Mills, Lakeside-Marblehead, Latham, Laurelville, Lebanon, Leesburg, Lewisville, Logan, Marathon, Marion, Mark Center, Marshallville, Martin,

McGuffey, Mechanicsburg, Miamisburg, Miamitown, Middle Point, Middlefield, Midvale, Mifflin (press report), Mingo, Monroe, Morrow, Moscow, Mount Eaton, Mount Gilead (press report), Mount Hope, Mount Orab, Mount Vernon (press report), Mowrystown, Murray City, New Bavaria, New Carlisle, New Lebanon, New Madison, New Straitsville, New Weston, Ney, North Canton, North Fairfield, North Robinson, North Star, Northridge, Norwalk (press report), Oakwood, Old Fort, Ottawa, Painesville, Palestine, Peebles, Philo, Piketon, Port Jefferson, Port William, Rawson, Ridgeville Corners, Ridgeway, Roseville, Russells Point, Sardinia, Scioto Furnace, Seaman, Sedalia, Seven Mile, Shauck, South Bloomingville, South Lebanon, South Webster, Springboro, Springfield, Stewart, Stryker, Sunbury, Swanton, Sycamore, Tremont City, Trimble, Upper Sandusky, Walbridge, West Jefferson, Wharton, Williamsburg, Williamsport, Wilmot, Winchester, Wren.

West Virginia—Lavalette, Letart, Morgantown, Parkersburg (press report).

Intensity II:

Indiana—Borden, Friendship, Gaston, Jeffersonville, Logansport.

Kentucky—Augusta, Brooksville, Crestwood, Crittenden, Pikeville.

Michigan—Brown City, Fennville, Hillsdale, Mulliken, Norvell, Pittsford, Rives Junction.

Ohio—Deerfield, Doylestown, Jenera, Kalida, Liberty Center, Lindsey, Maumee, Mineral City, Mount Cory, Nevada, West Elkton, Williston.

West Virginia—Kenova, Ravenswood.

PENNSYLVANIA

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

2 May (GS) Southeastern Pennsylvania
Origin time: 13 53 52.6
Epicenter: 39.925N., 76.293W.
Depth: 5 km
Magnitude: 2.5M_D(DE)
Intensity IV: Conestoga.
Intensity III: Craley, Millersville (press report), Pequea, Refton, Washington Boro, West Willow.
Intensity II: Brogue, Holtwood, New Providence.
Felt: Marticville (press report), Rawlinsville (press report), Safe Harbor (press report).

13 February (GS) Northeast of Puerto Rico
Origin time: 13 00 55.2
Epicenter: 19.193N., 65.286W.
Depth: Normal.
Magnitude: 4.4m_b(GS)
Felt: San Juan area.

18 February (GS) Southern Puerto Rico
Origin time: 02 58 44.5
Epicenter: 17.918N., 66.474W.
Depth: 21 km
Magnitude: 4.7m_b(GS)
Intensity V:

Barranquitas–A few items were shaken off store shelves; felt by many people.

Cayey–A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned, standing and moving vehicles rocked slightly; felt by many people.

Cidra–A few windows cracked; a few glassware items or dishes broke; a few items were shaken off store shelves; a few small objects overturned and fell; standing and moving vehicles rocked slightly; buildings shook strongly; felt by many people.

Coama–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; interior walls sustained hairline cracks; standing and moving vehicles rocked slightly; shaking was described as strong; felt by many people.

Comerio–Standing vehicles rocked moderately; a few items were shaken off store shelves; a few small objects overturned; shaking was described as strong; felt by everyone.

Humacao–A few small objects overturned and fell; felt by many people.

Maricao–Plaster walls sustained hairline cracks.

San Lorenzo–Interior walls sustained hairline cracks; a few small objects overturned and fell.

San Isabel–Light furniture or small appliances overturned; a few small objects overturned and fell; buildings shook strongly; people had difficulty standing or walking; standing vehicles rocked slightly; felt by many people.

Villalba–Hanging pictures fell; small objects overturned and fell; felt by many people.

Intensity IV: Adjuntas, Aibonito, Aguirre, Angeles, Arecibo, Caguas, Ceiba, Ciales, Corozal, Coto Laurel, Fajardo, Gurabo, LaPlata, Loiza, Moca, Ponce, Puerto Real, San Sebastian, Utuado, Yabucoa.

Intensity III: Aguas Buenas, Isabela, Lajas, Luquillo, Morovis, Naguabo, Yauco.

Intensity II: Lares, San Juan.

Felt: Bayamon (press report), Caguas (press report), Canovanas, Guaynabo (press report), Ponce (press report).

5 June (GS) Southwestern Puerto Rico
Origin time: 18 30 58.2
Epicenter: 18.075N., 66.860W.
Depth: 19 km
Magnitude: 4.1m_b(GS)

This earthquake was felt over most of Puerto Rico, strongly in Ponce (press report).

Felt: Caguas (press report), Mayaguez (press report), Ponce (press report).

31 August (GS) Virgin Islands
Origin time: 23 27 56.4
Epicenter: 18.337N., 65.076W.
Depth: Normal
Magnitude: None computed.
Felt: Aguas Buenas, Bayamon.

RHODE ISLAND

25 October (GS) Central New Hampshire
Origin time: 17 16 38.4

See New Hampshire listing.

SOUTH CAROLINA

13 February (TC) Northwestern South Carolina
Origin time: 11 35 45.3
Epicenter: 34.793N., 82.907W.
Depth: 5 km
Magnitude: 3.5M_n(GS), 3.5M_D(TC)
Intensity V:
South Carolina—
Central–A few glassware items or dishes broke; a few small objects overturned and fell; felt by many people.
Long Creek–A few windows cracked; a few glassware items or dishes broke; a few small objects overturned and fell; people had difficulty standing; felt by many people.
Walhalla–A few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; trees and bushes shook slightly; standing and moving vehicles rocked slightly; felt by many people.

Westminster–A few windows cracked; a few items were shaken off store shelves; a few glassware items or dishes broke; a few small objects overturned and fell; people had difficulty standing; felt by everyone.
Intensity IV:
Georgia—Bowersville, Lavonia, Martin, Toccoa (press report).
South Carolina—Fair Play, Liberty, Newry, Richland, Salem, Six Mile, Seneca, Tamassee, West Union.
Intensity III:
Georgia—Canon, Franklin Springs, Rabun Gap.
North Carolina—Cedar Mountain, Hendersonville, Highlands, Sylva.
South Carolina—Mountain Rest, Williamston.
Intensity II:
Georgia—Athens.
Felt:
South Carolina–Pickens, Townville.
South Carolina–Greenville (press report), Oconee Nuclear Power Station (press report).

9 March (GS) Charleston area
Origin time: 23 49 15.3
Epicenter: 32.968N., 80.169W.
Depth: 6 km
Magnitude: 2.2M_D(GS)
Intensity III: Summerville.

17 September (GS) Charleston area
Origin time: 09 33 49.4
Epicenter: 32.928N., 80.152W.
Depth: 8 km
Magnitude: 2.6M_D(GS)
Intensity IV: Summerville.
Intensity III: Middleton Place (press report).

18 October (TC) North Carolina border area
Origin time: 08 31 38.8
Epicenter: 34.946N., 81.172W.
Depth: 23 km
Magnitude: 2.9M_D(TC)
Felt: Rock Hill (TC).

11 December (TC) Northwestern South Carolina
Origin time: 14 05 50.2
Epicenter: 34.889N., 82.887W.
Depth: 9 km
Magnitude: 2.9M_D(TC), 2.0M_D(GT)
Felt: Salem (TC).

11 December (TC) Northwestern South Carolina
Origin time: 14 07 11.5
Epicenter: 34.898N., 82.880W.
Depth: 9 km

SOUTH CAROLINA—Continued

Magnitude: 3.0M_D(TC), 2.6M_D(SC)
Felt: Salem (TC).

SOUTH DAKOTA

25 May (GS) Southeastern South Dakota
Origin time: 07 13 22.1
Epicenter: 43.937N., 98.289W.
Depth: 5 km
Magnitude: 3.4M_n(GS), 3.6M_n(TU)
Intensity IV: Letcher, Mount Vernon, Plankinton, Stickney.
Intensity III: Woonsocket.

TENNESSEE

7 January (TC) Eastern Tennessee
Origin time: 01 26 43.3
Epicenter: 35.609N., 84.762W.
Depth: 22 km
Magnitude: 3.2M_D(TC), 3.1M_D(GT)

This earthquake was felt in parts of Rhea County (press report).

Intensity V:
Watts Bar area–Glass broke and windows rattled (press report).
Intensity IV: Decatur (TC).

24 May (SL) Southeastern Missouri
Origin 12 48 13.5

See Missouri listing.

11 July (TC) Georgia-Tennessee border
Origin time: 14 26 14.8

See Georgia listing.

19 August (TC) Northern Tennessee
Origin time: 20 51 26.0
Epicenter: 36.291N., 85.020W.
Depth: 30 km
Magnitude: 2.9M_D(TC), 2.9M_D(GT)
Felt: Jamestown (TC).

TENNESSEE—Continued

30 December (SL) Southeastern Missouri
Origin time: 07 15 19.1

See Missouri listing.

TEXAS

30 January (GS) West Texas
Origin time: 22 26 37.0
Epicenter: 32.066N., 100.693W.
Depth: 5 km
Magnitude: 3.3M_n(GS), 3.1M_n(TU)
Intensity III: Robert Lee, Silver.

UTAH

13 January (UU) Northern Utah
Origin time: 12 32 04.6
Epicenter: 41.715N., 111.665W.
Depth: 7 km
Magnitude: 3.3M_L(UU)
Intensity IV: Logan (River Heights).
Intensity II: Riverside.

24 March (UU) Central Utah
Origin time: 22 40 23.4
Epicenter: 39.234N., 112.062W.
Depth: 1 km
Magnitude: 4.7m_b(GS), 4.4M_L(UU)
Intensity V:
Scipio–A few items were shaken off store shelves; a few small objects overturned and fell; trees and bushes shook slightly; people had difficulty standing or walking; windows, doors, and dishes rattled loudly; felt by many people.
Intensity IV: Axtell, Fayette, Gunnison, Redmond.
Intensity III: Centerfield, Ephraim, Fountain Green, Mountain Home, Oak City, Salina.

25 March (UU) Central Utah
Origin time: 02 53 01.3
Epicenter: 39.225N., 112.013W.
Depth: 1 km
Magnitude: 4.5m_b(GS), 3.9M_L(UU)
Intensity V:
Scipio–A few items were shaken off store shelves; a few small objects overturned and fell; trees and bushes

shook slightly; shaking was described as strong; windows, doors, and dishes rattled loudly; felt by many people.

Redmond–A few small objects overturned and fell; a brick fell from one chimney; standing vehicles rocked slightly; trees and bushes shook slightly; felt by many people.

Intensity IV: Axtell, Fayette, Gunnison, Salina.
Intensity III: Centerfield, Ephraim, Oak City.
Intensity II: Aurora.

5 June (UU) Northeastern Utah
Origin time: 08 05 41.7
Epicenter: 41.266N., 111.684W.
Depth: 10 km
Magnitude: 3.6M_L(UU)
Felt: Epicentral area (UU).

22 August (GS) Southern Utah
Origin time: 13 26 33.3
Epicenter: 37.420N., 110.574W.
Depth: 5 km
Magnitude: 4.0M_L(UU), 3.8M_L(GS)
Intensity V:

Oljeto–Dry wall cracked; a few small objects fell; standing vehicles rocked slightly; buildings shook moderately; felt by many people.

Intensity III: Monument Valley area.

19 September (UU) Northeastern Utah
Origin time: 10 41 28.2
Epicenter: 41.466N., 111.702W.
Depth: 7 km
Magnitude: 3.4M_L(UU)
Intensity III: Hyrum, Millville, Paradise, Wellsville, Willard.

1 October (UU) Northern Utah
Origin time: 11 51 46.7
Epicenter: 40.818N., 111.821W.
Depth: 5 km
Magnitude: 2.7M_D(UU)
Intensity III: Salt Lake Valley (press report).

5 October (UU) Central Utah
Origin time: 15 47 33.4
Epicenter: 38.631N., 112.558W.
Depth: 0 km
Magnitude: 3.3M_L(UU)
Intensity III: Elsinore.

18 October (GS) Idaho–Utah border area
Origin time: 21 21 28.7

See Idaho listing.

29 October (UU) Northern Utah
Origin time: 22 13 14.5
Epicenter: 41.821N., 112.318W.
Depth: 5 km
Magnitude: 3.6M_L(UU)
Intensity IV: Garland, Howell.
Intensity III: Plymouth, Portage, Riverside, Snowville, Tremonton (press report).

31 October (UU) Northern Utah
Origin time: 11 58 28.2
Epicenter: 41.823N., 112.316W.
Depth: 4 km
Magnitude: 3.5M_L(UU)
Intensity IV: Howell (plaster walls sustained hairline cracks).
Intensity III: Garland, Portage.
Intensity II: Plymouth, Riverside.
Felt: Tremonton (press report).

13 November Northern Utah
Origin time: 23 28
Epicenter: Not located.
Depth: None computed.
Magnitude: 2.6M_D(UU)
Felt: Salt Lake Valley (press report).

31 December (UU) Utah
Origin time: 11 21 56.5
Epicenter: 41.822N., 112.316W.
Depth: 5 km
Magnitude: 3.3M_L(UU)
Intensity IV: Howell.
Intensity III: Garland, Ogden, Plymouth, Portage, Riverside, Willard.

VERMONT

25 October (GS) Central New Hampshire
Origin time: 17 16 38.4

See New Hampshire listing.

VIRGINIA

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

26 March (VP) Western Virginia
Origin time: 16 36 23.9
Epicenter: 37.245N., 80.494W.
Depth: 12 km
Magnitude: 2.9M_D(VP), 3.0M_D(TC)

Maximum intensity IV effects occurred in the epicentral area along the Giles-Montgomery County line and in the northern part of Blacksburg (Virginia Polytechnic Institute and State University, 1986). Felt in southern Giles County and northern Montgomery County.

Intensity IV: Blacksburg.
Intensity III: Eggleston, Newport.

3 December (VP) Eastern Virginia
Origin time: 09 44 21.1
Epicenter: 37.580N., 77.458W.
Depth: 1 km
Magnitude: 1.5M_D(VP)
Intensity IV: Richmond.

10 December (VP) Eastern Virginia
Origin time: 11 30 06.1
Epicenter: 37.584N., 77.468W.
Depth: 1 km
Magnitude: 2.2M_D(VP)

At least 11 earthquakes were felt in Richmond between December 1 and 28, 1986 (Davison and Bode', 1987). Most of them were felt at an intensity III–IV level in the central part of the city. The larger earthquakes that were located were felt throughout the city. A report on this series was published by Virginia Polytechnic Institute and State University, Virginia Tech. Seismological Observatory (VTSO), VTSO Special Study Series 87–1, 11 February 1987.

Intensity V:
Richmond (near the epicenter)–A few small objects fell; pendulum clocks stopped; felt by people driving cars on Interstate 95; felt by many people.
Intensity IV: Richmond (north side), Richmond (south side).

24 December (VP) Eastern Virginia
Origin time: 17 58 38.2
Epicenter: 37.583N., 77.458W.
Depth: 1 km
Magnitude: 1.5M_D(VP)
Intensity IV: Richmond.

10 February (WA) Northwestern Washington
Origin time: 17 12 07.4
Epicenter: 48.395N., 121.955W.
Depth: 4 km
Magnitude: 3.1M_D(WA), 2.5M_L(EP)
Intensity IV: Day Creek (press report).

10 February (WA) Northwestern Washington
Origin time: 18 05 08.0
Epicenter: 48.397N., 121.941W.
Depth: 0 km
Magnitude: 3.7M_L(GS), 3.9M_D(WA)
Intensity V:
Day Creek–Pans fell off the wall in a home (press report).
Lyman–A few small objects overturned and fell; a building shook strongly; shaking was described as strong; felt by many people.
Sedro-Wooley–A few dishes or glassware items broke; a few small objects overturned and fell; standing vehicles rocked slightly; windows, doors, and dishes rattled loudly; walls creaked loudly; felt by many people.
Intensity IV: Cape Horn (press report), Cedargrove (press report), Clearlake, Concrete, Rockport (press report).
Intensity III: Darlington, Hamilton, Marblemount, Silvana, Stanwood.
Felt: Day Lake (WA), Mount Vernon (press report).

11 March (WA) Puget Sound, Washington
Origin time: 07 23 21.0
Epicenter: 47.335N., 122.488W.
Depth: 7 km
Magnitude: 2.9M_D(WA), 2.3M_L(EP)
Intensity III: Dockton, Lakebay.
Intensity II: Tacoma.

11 March (WA) Southwestern Washington
Origin time: 10 48 10.4
Epicenter: 45.941N., 122.411W.
Depth: 15 km
Magnitude: 3.1M_D(WA)
Intensity V:
Ariel–A few large cracks opened in plaster walls; buildings shook moderately; windows, doors, and dishes rattled loudly; shaking was described as strong.
Intensity IV: Cougar, Vancouver.
Intensity III: Amboy, LaCenter.

21 March (PG) Eastern British Columbia
Origin time: 23 56 19.0
Epicenter: 53.24N., 122.00W.
Depth: 10 km
Magnitude: 5.4m_b(GS), 5.2M_s(GS), 5.4M_n(PG)

Maximum intensity was VI in the epicentral area (PG).

Intensity III:
Washington–Mount Vernon.

27 March (WA) Northwestern Washington
Origin time: 12 10 12.8
Epicenter: 48.265N., 121.732W.
Depth: 2 km
Magnitude: 2.8M_L(GS), 2.9M_L(WA)
Intensity IV: Fortson.
Intensity III: Darrington (press report).

28 March (WA) Northwestern Washington
Origin time: 03 48 34.7
Epicenter: 48.256N., 121.736W.
Depth: 2 km
Magnitude: 3.1M_L(GS), 3.1M_L(WA)
Intensity IV: Darrington (press report).

28 March (WA) Northwestern Washington
Origin time: 04 12 46.7
Epicenter: 48.260N., 121.734W.
Depth: 2 km
Magnitude: 3.6M_L(GS), 3.6M_L(WA)
Intensity V:
Arlington–Some things were knocked off walls and shelves (WA).
Intensity IV: Carnation Farms, Concrete, Darrington.
Intensity II: Index.
Felt: Duvall (WA).

28 March (WA) Northwestern Washington
Origin time: 05 40 55.3
Epicenter: 48.254N., 121.740W.
Depth: 3 km
Magnitude: 2.4M_D(WA)
Felt: Darrington (WA).

28 March (WA) Washington
Origin time: 12 11 14.9
Epicenter: 48.258N., 121.732W.
Depth: 2 km
Magnitude: 2.1M_D(WA)
Intensity III: Darrington (WA), Whitehorse (WA).

29 March (WA) Northwestern Washington
Origin time: 13 09 24.0
Epicenter: 48.258N., 121.732W.
Depth: 2 km
Magnitude: 3.1M_L(GS), 3.3M_L(WA)
Felt: Darrington (press report), Whitehorse (WA).

31 March (WA) Northwestern Washington
Origin time: 07 11 27.2

WASHINGTON—Continued

Epicenter: 48.260N., 121.736W.
Depth: 2 km
Magnitude: 2.3M_D(WA)
Felt: Power plant near Darrington (WA).

8 April (WA) Central Washington
Origin time: 10 57 35.6
Epicenter: 47.770N., 120.230W.
Depth: 14 km
Magnitude: 2.9M_L(GS), 3.3M_D(WA)
Felt: Staymen Flats area south of Chelan (press report).

20 April (WA) Northwestern Washington
Origin time: 16 40 33.1
Epicenter: 48.840N., 122.526W.
Depth: 18 km
Magnitude: 2.8M_L(GS), 3.0M_D(WA)
Intensity III: Lynden.
Intensity II: Bellingham, Deming, Nugents Corner, Sumas.

11 June (WA) Puget Sound, Washington
Origin time: 06 12 42.3
Epicenter: 47.776N., 120.168W.
Depth: 9 km
Magnitude: 2.7M_D(WA), 2.4M_L(GS)
Intensity III: Chelan, Chelan Falls, Entiat.
Intensity II: Ardenvois.

16 June (PG) Vancouver Island region
Origin time: 15 54 37.0
Epicenter: 49.431N., 127.017W.
Depth: 35 km
Magnitude: 4.9m_b(GS), 5.0M_s(GS), 5.2M_L(PG)
Felt: Northwest Washington (press report).

8 July (WA) Puget Sound, Washington
Origin time: 05 16 32.4
Epicenter: 48.264N., 122.512W.
Depth: 63 km
Magnitude: 3.5M_D(WA), 3.4M_L(EP)
Intensity IV: Freeland, Greenbank (press report), Lyman, Oak Harbor, Silvana.
Intensity III: Burlington, Coupeville, Hamilton, LaConner, Marysville, Mount Vernon, Mukilteo, Shaw Island.
Intensity II: Lake Stevens.
Felt: Alger, Concrete (press report), Greenbank Beach (press report), Ledgewood Beach (press report).

28 August (WA) Southern Washington
Origin time: 04 34 13.5
Epicenter: 45.835N., 121.923W.
Depth: 9 km
Magnitude: 2.7M_D(WA)
Felt: Near Carson Valley (WA).

WASHINGTON—Continued

16 September (WA) Northwestern Washington
Origin time: 23 19 49.5
Epicenter: 48.221N., 121.643W.
Depth: 2 km
Magnitude: 1.6M_D(WA)
Felt: Near Darrington (WA).

16 September (WA) Northwestern Washington
Origin time: 23 38 57.8
Epicenter: 48.065N., 121.523W.
Depth: 6 km
Magnitude: 2.8M_D(WA), 3.0M_L(EP)
Felt: Near Darrington (WA).

16 September (WA) Northwestern Washington
Origin time: 23 49 37.1
Epicenter: 48.067N., 121.542W.
Depth: 8 km
Magnitude: 2.4M_D(WA), 2.4M_L(EP)
Felt: Near Darrington (WA).

26 September (WA) Northwestern Washington
Origin time: 23 34 54.7
Epicenter: 48.552N., 121.989W.
Depth: 0 km
Magnitude: 2.4M_D(WA)
Felt: Hamilton (press report), Lyman (press report), Sedro-Woolley (press report).

29 September (WA) Northwestern Washington
Origin time: 19 37 06.9
Epicenter: 48.551N., 121.983W.
Depth: 0 km
Magnitude: 2.2M_D(WA)
Felt: Epicentral area (WA).

7 November (EP) Northwestern Washington
Origin time: 10 35 54.0
Epicenter: 48.120N., 123.317W.
Depth: 38 km
Magnitude: 3.9M_L(EP)
Felt: James Bay area of Victoria, B.C., Canada (EP).

WEST VIRGINIA

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

WEST VIRGINIA—Continued

12 July (GS) Western Ohio
Origin time: 08 19 37.9

See Ohio listing.

WISCONSIN

31 January (NI) Northeastern Ohio
Origin time: 16 46 42.3

See Ohio listing.

WYOMING

2 January (UU) Yellowstone National Park
Origin time: 15 53 40.9
Epicenter: 44.620N., 110.997W.
Depth: 6 km
Magnitude: 3.0M_L(GS), 3.4M_L(BU)
Intensity II: Madison Junction.

8 January (UU) Yellowstone National Park
Origin time: 07 32 25.7
Epicenter: 44.620N., 111.003W.
Depth: 8 km
Magnitude: 2.8M_L(GS), 3.2M_L(BU)
Intensity II:
Montana–West Yellowstone.

8 January (UU) Yellowstone National Park
Origin time: 11 08 15.7
Epicenter: 44.621N., 110.998W.
Depth: 7 km
Magnitude: 3.0M_L(GS), 3.3M_L(BU)
Intensity III:
Montana–West Yellowstone.

8 January (UU) Yellowstone National Park
Origin time: 13 36 28.5
Epicenter: 44.635N., 110.999W.
Depth: 7 km
Magnitude: 2.9M_L(GS), 3.4M_L(BU)
Intensity III:
Montana–West Yellowstone.

14 January (UU) Yellowstone National Park
Origin time: 01 50 37.8

Epicenter: 44.637N., 111.002W.
Depth: 6 km
Magnitude: 2.9M_L(GS), 3.2M_L(BU)
Intensity II:
Montana–West Yellowstone.

14 January (UU) Yellowstone National Park
Origin time: 16 46 29.9
Epicenter: 44.659N., 111.018W.
Depth: 7 km
Magnitude: 3.2M_L(GS), 3.5M_L(BU)
Intensity II:
Montana–West Yellowstone.

15 January (UU) Yellowstone National Park
Origin time: 21 10 18.0
Epicenter: 44.633N., 111.002W.
Depth: 7 km
Magnitude: 2.8M_L(GS), 3.1M_L(BU)
Intensity III:
Montana– West Yellowstone.

16 January (UU) Yellowstone National Park
Origin time: 10 29 47.7
Epicenter: 44.621N., 111.001W.
Depth: 6 km
Magnitude: 3.4M_L(GS), 3.7M_L(BU)
Intensity III: Madison Junction.

1 February (UU) Yellowstone National Park
Origin time: 06 09 54.8
Epicenter: 44.626N., 110.996W.
Depth: 7 km
Magnitude: 3.1M_L(BU), 2.8M_L(GS)
Intensity III: Madison Junction.

5 February (UU) Yellowstone National Park
Origin time: 14 26 19.3
Epicenter: 44.644N., 111.016W.
Depth: 4 km
Magnitude: 3.4M_L(GS), 3.9M_L(BU)
Felt: Epicentral area (BU).

5 February (UU) Yellowstone National Park
Origin time: 14 37 01.7
Epicenter: 44.640N., 111.014W.
Depth: 3 km
Magnitude: 3.3M_L(BU), 2.9M_L(GS)
Felt: Epicentral area (BU).

11 February (UU) Yellowstone National Park
Origin time: 22 26 55.6
Epicenter: 44.647N., 111.016W.

WYOMING—Continued

Depth: 7 km
Magnitude: 4.2M_L(GS), 4.3M_L(BU)
Felt: Epicentral area (BU).

24 February (GS) Southeastern Idaho
Origin time: 03 13 33.0

See Idaho listing.

2 March (UU) Yellowstone National Park
Origin time: 10 55 25.4
Epicenter: 44.652N., 111.018W.
Depth: 7 km
Magnitude: 3.2M_L(GS), 3.6M_L(BU)
Intensity II:
Montana–West Yellowstone.

2 March (UU) Yellowstone National Park
Origin time: 12 59 36.5
Epicenter: 44.653N., 111.022W.
Depth: 7 km
Magnitude: 3.0M_L(GS), 3.4M_L(BU)
Intensity II:
Montana–West Yellowstone.

12 April (UU) Yellowstone National Park
Origin time: 23 05 47.8
Epicenter: 44.644N., 111.006W.
Depth: 8 km
Magnitude: 3.0M_L(GS), 3.3M_L(BU)
Intensity II: Epicentral area (BU).

18 April (UU) Yellowstone National Park
Origin time: 14 17 55.6
Epicenter: 44.642N., 111.004W.
Depth: 6 km
Magnitude: 3.2M_L(GS), 3.6M_L(BU)
Intensity II:
Montana–West Yellowstone.
Wyoming–Old Faithful.

21 June (GS) Idaho-Wyoming border area
Origin time: 20 30 53.5

See Idaho listing.

5 July (UU) Yellowstone National Park
Origin time: 02 18 05.6
Epicenter: 44.666N., 111.024W.
Depth: 9 km
Magnitude: 3.6M_L(GS), 4.0M_L(BU)
Intensity II: Epicentral area (BU).

2 October Yellowstone National Park area
Origin time: 06 45
Epicenter: Not located.
Depth: None computed.
Magnitude: None computed.
Intensity III:
Montana–West Yellowstone.
Wyoming–Old Faithful.

3 November (GS) Southwestern Wyoming
Origin time: 00 23 45.0
Epicenter: 41.922N., 108.896W.
Depth: 5 km
Magnitude: 3.3M_L(GS)

Possible mine explosion.

Intensity IV:
Wyoming—Superior.
Intensity III:
Wyoming—Farson.

15 November (UU) Yellowstone National Park
Origin time: 00 56 57.0
Epicenter: 44.676N., 111.030W.
Depth: 7 km
Magnitude: 3.4M_L(GS), 3.4M_L(BU)
Intensity IV:
Montana–West Yellowstone.
Intensity III:
Wyoming–Madison Junction.

17 November (GS) Western Wyoming
Origin time: 08 34 13.3
Epicenter: 43.156N., 110.812W.
Depth: 5 km
Magnitude: 3.9M_L(GS), 4.2M_L(BU)

WYOMING—Continued

Intensity III:
Idaho–Driggs, Palisades.
Wyoming–Alpine.

24 November (UU) Yellowstone National Park
Origin time: 02 10 58.7
Epicenter: 44.674N., 111.021W.
Depth: 7 km
Magnitude: 2.6M_L(BU), 2.7M_D(BU)
Intensity II:
Montana–West Yellowstone.

24 November (UU) Yellowstone National Park
Origin time: 06 31 50.4
Epicenter: 44.670N., 111.029W.
Depth: 7 km
Magnitude: 3.2M_L(GS), 3.4M_L(BU)
Intensity IV:
Wyoming–Madison Junction.
Intensity III:
Montana–West Yellowstone.
Intensity II:
Wyoming–Old Faithful.

25 November (UU) Yellowstone National Park
Origin time: 20 45 25.4
Epicenter: 44.671N., 111.027W.
Depth: 7 km
Magnitude: 3.5M_L(GS), 3.4M_L(BU)
Intensity IV:
Montana–West Yellowstone.
Intensity III:
Wyoming–Madison Junction.
Felt:
Montana–Bozeman (press report).

Table 1. Summary of United States earthquakes for 1986

[The following codes are used to indicate sources of hypocenters and (or) magnitudes and local times:

BK University of California, Berkeley
BU Montana Bureau of Mines and Geology, Butte
DE Delaware Geological Survey, Newark
EE Engdahl, E. R., Billington, S., and Kisslinger, C., 1989, Journal of Geophysical Research, v. 94, no. B11, p. 15,481–15,498
EN Department of Energy, Washington, D.C.
EP Geophysics Division, Geological Survey of Canada, Ottawa, Ontario
GM U.S. Geological Survey, Menlo Park, Calif.
GP U.S. Geological Survey, Pasadena, Calif.
GS U.S. Geological Survey, Golden, Colo.
GT Georgia Institute of Technology, Atlanta
HJ Hauksson, Egill, and Jones, L.M., 1988, Seismological Society of America Bulletin, v. 78, no. 6, p. 1885–1906
HV Hawaiian Volcano Observatory, U.S. Geological Survey, Hawaii National Park
LD Lamont–Doherty Geological Observatory, Palisades, N.Y.
NI Nicholson and others, 1988, Seismological Society of America Bulletin, v. 78, no, 1, p. 188–217
PM Alaska Palmer Observatory, National Oceanic and Atmospheric Administration, Palmer, Alaska
PS California Institute of Technology, Pasadena
RN University of Nevada, Reno
SC University of South Carolina, Columbia
SL St. Louis University, St. Louis, Mo.
TC Tennessee Earthquake Information Center, Memphis
TU University of Oklahoma, Leonard
UU University of Utah, Salt Lake City
VP Virginia Polytechnic Institute and State University, Blacksburg
WA University of Washington, Seattle
WO Weston Observatory, Weston, Mass.
AST Alaska Standard Time
CST Central Standard Time
EST Eastern Standard Time
HST Hawaii Standard Time
MST Mountain Standard Time
PST Pacific Standard Time
UTC Coordinated Universal Time
FELT Not enough data available to assign an intensity
— Information not available; hr, hours; min, minutes; sec, seconds; km, kilometers; m_b, M_S, M_L, and m_x magnitudes, see p. 2–3; Max., maximum]

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr	Local time zone
ALABAMA												
MAY 7	02 27 00.4	33.335N.	87.347W.	1	GT	4.2	—	4.5Mn(GS)	FELT	MAY 6	20:27	CST
ALASKA												
JAN. 1	16 33 41.5	60.717N.	147.680W.	20	GM	—	—	—	—	JAN. 1	07:33	AST
JAN. 1	18 59 37.9	60.285N.	151.531W.	59	GM	—	—	—	—	JAN. 1	09:59	AST
JAN. 2	05 23 40.0	66.039N.	150.132W.	10	GS	—	—	3.4M_L(PM)	—	JAN. 1	20:23	AST
JAN. 3	09 57 59.2	53.391N.	164.857W.	33	LD	—	—	3.1m_X(LD)	—	JAN. 3	00:57	AST
JAN. 3	11 34 55.4	60.072N.	153.328W.	124	GM	—	—	—	—	JAN. 3	02:34	AST
JAN. 5	04 34 34.3	57.748N.	153.194W.	62	GM	—	—	—	—	JAN. 4	19:34	AST
JAN. 5	19 41 33.0	64.330N.	150.678W.	33	GS	—	—	3.9M_L(PM)	—	JAN. 5	10:41	AST
JAN. 5	23 02 14.9	53.580N.	166.011W.	20	LD	—	—	3.5m_X(LD)	—	JAN. 5	14:02	AST
JAN. 6	05 53 40.0	61.705N.	150.706W.	71	GM	—	—	3.6M_L(PM)	—	JAN. 5	20:53	AST
JAN. 6	08 54 16.0	60.166N.	153.072W.	122	GM	—	—	—	—	JAN. 5	23:54	AST
JAN. 6	16 09 13.2	54.697N.	159.965W.	28	LD	4.6	—	3.9m_X(LD)	—	JAN. 6	07:09	AST
JAN. 6	16 38 07.8	62.380N.	152.449W.	153	GM	—	—	—	—	JAN. 6	07:38	AST
JAN. 7	17 05 13.0	52.574N.	168.379W.	33	GS	4.0	—	—	—	JAN. 7	08:05	AST
JAN. 7	22 41 41.8	54.644N.	159.560W.	29	LD	—	—	3.1m_X(LD)	—	JAN. 7	13:41	AST
JAN. 8	22 34 06.5	59.746N.	152.828W.	76	GM	4.3	—	3.9M_L(PM)	—	JAN. 8	13:34	AST
JAN. 9	09 26 18.3	54.353N.	161.468W.	5	LD	—	—	3.1m_X(LD)	—	JAN. 9	00:26	AST
JAN. 9	09 28 12.7	62.497N.	151.275W.	97	GM	—	—	—	—	JAN. 9	00:28	AST
JAN. 10	10 19 38.3	61.382N.	150.658W.	60	GM	—	—	—	—	JAN. 10	01:19	AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr	Local time zone
ALASKA—Continued												
JAN. 11	02 23 15.9	54.606N.	159.584W.	25	LD	—	—	3.4m_X(LD)	—	JAN. 10	17:23	AST
JAN. 11	08 02 25.5	60.108N.	153.405W.	149	GM	—	—	—	—	JAN. 10	23:02	AST
JAN. 11	09 56 23.3	59.405N.	151.949W.	50	GM	—	—	—	—	JAN. 11	00:56	AST
JAN. 12	04 00 26.7	68.323N.	163.258W.	15	GS	—	—	—	—	JAN. 11	19:00	AST
JAN. 13	02 59 57.0	60.784N.	152.401W.	115	GM	—	—	—	—	JAN. 12	17:59	AST
JAN. 13	08 12 59.1	62.352N.	151.168W.	85	GM	—	—	—	—	JAN. 12	23:12	AST
JAN. 13	21 07 28.5	67.308N.	161.240W.	15	GS	—	—	3.1M_L(PM)	—	JAN. 13	12:07	AST
JAN. 14	07 48 40.9	58.258N.	152.980W.	73	GM	—	—	—	—	JAN. 13	22:48	AST
JAN. 14	08 20 13.9	60.222N.	152.294W.	81	GM	—	—	3.7M_L(PM)	II	JAN. 13	23:20	AST
JAN. 14	18 12 58.1	60.710N.	143.155W.	22	GM	—	—	—	—	JAN. 14	09:12	AST
JAN. 14	19 41 06.6	52.631N.	175.023W.	147	EE	4.8	—	—	—	JAN. 14	09:41	HST
JAN. 15	01 08 33.3	66.505N.	149.889W.	10	GS	—	—	3.3M_L(PM)	—	JAN. 14	16:08	AST
JAN. 15	01 21 02.3	66.200N.	150.105W.	10	GS	—	—	3.3M_L(PM)	—	JAN. 14	16:21	AST
JAN. 15	04 29 53.2	59.538N.	152.907W.	91	GM	—	—	3.7M_L(PM)	II	JAN. 14	19:29	AST
JAN. 15	06 28 05.0	66.312N.	149.712W.	10	GS	—	—	3.4M_L(PM)	—	JAN. 14	21:28	AST
JAN. 15	07 25 39.6	66.574N.	149.876W.	10	GS	—	—	3.2M_L(PM)	—	JAN. 14	22:25	AST
JAN. 16	14 03 14.0	55.500N.	157.496W.	34	LD	—	—	3.5m_X(LD)	—	JAN. 16	05:03	AST
JAN. 16	14 36 36.1	61.489N.	146.537W.	28	GM	—	—	4.0M_L(PM)	IV	JAN. 16	05:36	AST
JAN. 16	15 43 46.4	61.689N.	150.762W.	63	GM	—	—	—	—	JAN. 16	06:43	AST
JAN. 17	01 03 15.3	61.494N.	146.518W.	30	GM	—	—	—	—	JAN. 16	16:03	AST
JAN. 17	05 59 05.3	67.874N.	156.247W.	33	GS	—	—	3.4M_L(PM)	—	JAN. 16	20:59	AST
JAN. 17	15 45 55.1	66.441N.	149.621W.	10	GS	—	—	3.1M_L(PM)	—	JAN. 17	06:45	AST
JAN. 18	00 26 28.0	60.068N.	141.368W.	7	GM	—	—	3.5M_L(EP)	—	JAN. 17	15:26	AST
JAN. 18	01 10 10.1	60.291N.	153.043W.	128	GM	—	—	—	—	JAN. 17	16:10	AST
JAN. 18	01 59 00.9	51.387N.	173.055W.	16	EE	5.8	5.3	5.0M_L(PM)	—	JAN. 17	15:59	HST
JAN. 18	04 36 29.3	61.542N.	150.996W.	75	GM	—	—	3.0M_L(PM)	FELT	JAN. 17	19:36	AST
JAN. 18	05 05 35.5	61.545N.	151.023W.	75	GM	—	—	—	—	JAN. 17	20:05	AST
JAN. 18	10 24 31.9	60.154N.	153.289W.	137	GM	—	—	—	—	JAN. 18	01:24	AST
JAN. 19	04 15 12.8	61.053N.	152.205W.	107	GM	—	—	—	—	JAN. 18	19:15	AST
JAN. 19	08 18 57.9	54.458N.	162.412W.	3	LD	—	—	3.5m_X(LD)	—	JAN. 18	23:18	AST
JAN. 19	09 24 33.9	61.710N.	149.565W.	40	GM	—	—	3.0M_L(PM)	—	JAN. 19	00:24	AST
JAN. 19	10 11 47.1	59.729N.	152.308W.	63	GM	—	—	4.2M_L(PM)	FELT	JAN. 19	01:11	AST
JAN. 20	16 29 23.6	57.983N.	153.853W.	34	GM	—	—	—	—	JAN. 20	07:29	AST
JAN. 21	15 12 41.6	61.526N.	152.403W.	130	GM	—	—	—	—	JAN. 21	06:12	AST
JAN. 21	18 31 23.2	61.277N.	151.471W.	78	GM	—	—	—	—	JAN. 21	09:31	AST
JAN. 22	13 11 47.3	59.830N.	150.905W.	26	GM	—	—	—	—	JAN. 22	04:11	AST
JAN. 22	15 09 49.1	62.869N.	148.347W.	59	GM	—	—	—	—	JAN. 22	06:09	AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JAN. 22	21 21 32.9	59.875N.	153.484W.	127	GM	—	—	—	—	JAN. 22	12:21 AST
JAN. 23	09 39 30.8	62.403N.	151.493W.	104	GM	—	—	—	—	JAN. 23	00:39 AST
JAN. 23	12 59 15.8	62.026N.	150.660W.	56	GM	—	—	—	—	JAN. 23	03:59 AST
JAN. 23	13 15 29.1	62.266N.	148.301W.	64	GM	—	—	—	—	JAN. 23	04:15 AST
JAN. 24	09 40 27.5	59.314N.	153.173W.	82	GM	—	—	—	—	JAN. 24	00:40 AST
JAN. 25	10 32 58.0	59.870N.	146.066W.	40	GM	—	—	3.3M_L(PM)	—	JAN. 25	01:32 AST
JAN. 25	11 03 55.5	59.917N.	146.091W.	27	GM	—	—	—	—	JAN. 25	02:03 AST
JAN. 25	14 35 41.7	59.931N.	146.081W.	25	GM	—	—	—	—	JAN. 25	05:35 AST
JAN. 25	15 04 21.1	59.907N.	146.144W.	33	GM	—	—	—	—	JAN. 25	06:04 AST
JAN. 26	23 11 54.1	61.869N.	148.738W.	38	GM	4.1	—	3.6M_L(PM)	II	JAN. 26	14:11 AST
JAN. 27	03 49 43.1	50.701N.	176.062E.	33	GS	4.9	—	—	—	JAN. 26	17:49 HST
JAN. 27	05 04 34.8	59.684N.	153.014W.	82	GM	—	—	—	—	JAN. 26	20:04 AST
JAN. 27	11 29 59.1	57.966N.	157.980W.	146	GS	4.1	—	—	—	JAN. 27	02:29 AST
JAN. 28	07 12 29.0	61.428N.	151.553W.	88	GM	—	—	—	—	JAN. 27	22:12 AST
JAN. 28	18 37 55.2	59.589N.	153.612W.	117	GM	—	—	—	—	JAN. 28	09:37 AST
JAN. 29	10 19 01.9	52.631N.	162.820W.	5	LD	4.8	—	4.6m_X(LD)	—	JAN. 29	01:19 AST
JAN. 29	14 39 15.7	61.213N.	147.426W.	17	GM	—	—	3.0M_L(PM)	—	JAN. 29	05:39 AST
JAN. 29	20 39 13.5	66.157N.	149.760W.	10	GS	—	—	3.0M_L(PM)	—	JAN. 29	11:39 AST
JAN. 30	10 37 20.9	53.666N.	166.254W.	43	LD	—	—	3.9m_X(LD)	—	JAN. 30	01:37 AST
FEB. 1	04 11 21.4	66.244N.	149.962W.	10	GS	—	—	3.4M_L(PM)	—	JAN. 31	19:11 AST
FEB. 2	20 39 45.1	51.424N.	179.289E.	33	GS	4.5	—	—	—	FEB. 2	10:39 HST
FEB. 3	17 03 08.4	59.007N.	153.964W.	105	GM	—	—	—	—	FEB. 3	08:03 AST
FEB. 4	07 52 26.2	62.385N.	150.912W.	76	GM	—	—	—	—	FEB. 3	22:52 AST
FEB. 4	12 27 38.3	60.512N.	151.816W.	73	GM	—	—	—	—	FEB. 4	03:27 AST
FEB. 4	19 57 43.3	57.470N.	151.436W.	56	GM	—	—	—	—	FEB. 4	10:57 AST
FEB. 5	07 15 07.6	67.883N.	156.503W.	10	GS	4.0	—	—	—	FEB. 4	22:15 AST
FEB. 5	10 18 56.4	61.664N.	150.693W.	59	GM	—	—	—	—	FEB. 5	01:18 AST
FEB. 5	15 45 34.1	67.901N.	156.160W.	33	GS	4.5	—	—	—	FEB. 5	06:45 AST
FEB. 6	08 49 59.5	68.152N.	156.689W.	33	GS	—	—	3.3M_L(PM)	—	FEB. 5	23:49 AST
FEB. 6	15 14 58.3	67.898N.	155.994W.	33	GS	5.1	5.0	—	—	FEB. 6	06:14 AST
FEB. 7	06 57 59.8	52.459N.	166.284W.	11	LD	—	—	3.9m_X(LD)	—	FEB. 6	21:57 AST
FEB. 7	19 37 35.2	60.296N.	153.498W.	172	PS	—	—	—	—	FEB. 7	10:37 AST
FEB. 8	04 57 04.5	54.941N.	156.779W.	22	LD	—	—	3.0m_X(LD)	—	FEB. 7	19:57 AST
FEB. 8	09 39 00.2	52.015N.	172.814E.	33	GS	4.7	—	—	—	FEB. 7	23:39 HST
FEB. 8	13 22 23.4	60.007N.	152.899W.	94	GM	—	—	—	—	FEB. 8	04:22 AST
FEB. 8	13 54 23.0	61.622N.	151.514W.	82	GM	—	—	—	—	FEB. 8	04:54 AST
FEB. 8	23 50 05.0	51.918N.	172.673E.	33	GS	4.1	—	—	—	FEB. 8	13:50 HST
FEB. 9	12 13 55.9	52.523N.	168.397W.	33	GS	4.4	—	—	—	FEB. 9	03:13 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
FEB. 9	21 01 58.9	50.999N.	171.762W.	33	GS	4.4	—	—	—	FEB. 9	11:01 HST
FEB. 10	04 49 34.8	62.127N.	150.870W.	72	GM	—	—	—	—	FEB. 9	19:49 AST
FEB. 10	05 02 11.9	59.659N.	152.528W.	67	GM	—	—	—	—	FEB. 9	20:02 AST
FEB. 10	12 38 29.4	60.266N.	152.802W.	115	GM	—	—	—	—	FEB. 10	03:38 AST
FEB. 10	13 29 40.1	50.188N.	179.648W.	33	GS	4.2	—	—	—	FEB. 10	03:29 HST
FEB. 12	23 44 31.2	53.493N.	165.580W.	16	LD	—	—	$3.5m_X$(LD)	—	FEB. 12	14:44 AST
FEB. 13	05 53 30.0	60.218N.	153.207W.	129	GM	—	—	—	—	FEB. 12	20:53 AST
FEB. 13	08 43 09.3	54.655N.	159.998W.	5	LD	5.0	4.6	$4.6M_L$(PM)	IV	FEB. 12	23:43 AST
FEB. 13	16 46 26.5	53.743N.	163.598W.	33	GS	4.4	—	—	—	FEB. 13	07:46 AST
FEB. 14	12 46 33.9	63.069N.	150.835W.	97	GS	—	—	—	FELT	FEB. 14	03:46 AST
FEB. 14	19 01 29.5	64.967N.	147.248W.	10	GS	—	—	$3.2M_L$(PM)	FELT	FEB. 14	10:01 AST
FEB. 15	13 51 52.6	62.693N.	151.002W.	78	GM	—	—	—	—	FEB. 15	04:51 AST
FEB. 15	15 16 08.8	60.110N.	152.877W.	107	GM	—	—	—	—	FEB. 15	06:16 AST
FEB. 16	07 26 48.6	54.664N.	159.936W.	30	LD	4.1	—	$3.4m_X$(LD)	—	FEB. 15	22:26 AST
FEB. 16	08 51 52.8	59.768N.	152.295W.	54	GM	—	—	—	—	FEB. 15	23:51 AST
FEB. 16	21 31 06.1	61.495N.	150.711W.	63	GM	—	—	$3.7M_L$(PM)	FELT	FEB. 16	12:31 AST
FEB. 18	14 53 11.3	58.780N.	143.348W.	30	GM	—	—	$2.9M_L$(EP)	—	FEB. 18	05:53 AST
FEB. 20	03 56 23.7	60.463N.	152.918W.	145	GM	—	—	—	—	FEB. 19	18:56 AST
FEB. 20	04 09 04.7	52.925N.	167.982W.	33	GS	4.7	—	—	—	FEB. 19	19:09 AST
FEB. 21	00 14 17.8	56.128N.	155.109W.	33	GS	4.8	—	$4.6M_L$(PM)	—	FEB. 20	15:14 AST
FEB. 21	18 30 48.9	59.998N.	153.179W.	121	GM	—	—	—	—	FEB. 21	09:30 AST
FEB. 22	18 17 39.3	51.437N.	175.169W.	33	GS	4.3	—	$3.9M_L$(PM)	—	FEB. 22	08:17 HST
FEB. 23	04 27 43.9	52.819N.	168.261W.	33	GS	4.0	—	—	—	FEB. 22	19:27 AST
FEB. 23	15 30 12.5	60.307N.	141.069W.	16	GM	—	—	$3.5M_L$(EP)	—	FEB. 23	06:30 AST
FEB. 23	17 06 12.5	63.404N.	150.077W.	33	GS	—	—	—	—	FEB. 23	08:06 AST
FEB. 24	07 44 13.8	66.225N.	150.007W.	10	GS	—	—	$3.7M_L$(PM)	—	FEB. 23	22:44 AST
FEB. 24	18 55 14.8	63.075N.	150.383W.	112	GS	4.6	—	—	II	FEB. 24	09:55 AST
FEB. 24	19 39 38.6	62.071N.	149.771W.	55	GM	—	—	—	—	FEB. 24	10:39 AST
FEB. 24	19 59 25.4	59.497N.	152.718W.	70	GM	—	—	—	—	FEB. 24	10:59 AST
FEB. 25	17 02 02.6	66.332N.	149.935W.	10	GS	—	—	$3.8M_L$(PM)	—	FEB. 25	08:02 AST
FEB. 25	21 18 34.3	59.949N.	153.509W.	141	GM	—	—	—	—	FEB. 25	12:18 AST
FEB. 27	06 00 18.9	62.401N.	150.635W.	73	GM	—	—	—	—	FEB. 26	21:00 AST
FEB. 28	06 33 49.2	60.267N.	141.036W.	13	GM	—	—	$3.2M_L$(EP)	—	FEB. 27	21:33 AST
FEB. 28	15 12 24.1	57.474N.	156.696W.	33	GS	4.1	—	$4.1M_L$(PM)	FELT	FEB. 28	06:12 AST
FEB. 28	15 15 28.9	57.755N.	156.411W.	33	GS	—	—	$3.9M_L$(PM)	—	FEB. 28	06:15 AST
FEB. 28	17 01 45.3	60.345N.	152.966W.	125	GS	4.7	—	—	III	FEB. 28	08:01 AST
FEB. 28	17 01 52.0	51.395N.	170.191W.	33	GS	4.6	—	—	—	FEB. 28	07:01 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
FEB. 28	22 38 37.5	61.083N.	152.173W.	109	GM	—	—	—	—	FEB. 28	13:38 AST
MAR. 1	08 58 20.5	58.819N.	153.176W.	96	GM	—	—	—	—	FEB. 28	23:58 AST
MAR. 2	04 55 54.2	54.779N.	163.423W.	104	LD	—	—	$3.1m_X$(LD)	—	MAR. 1	19:55 AST
MAR. 2	05 40 12.1	50.789N.	179.176E.	33	GS	5.4	5.3	$5.3M_L$(PM)	—	MAR. 1	19:40 HST
MAR. 2	14 28 46.5	59.817N.	147.855W.	34	GM	—	—	—	—	MAR. 2	05:28 AST
MAR. 2	19 23 18.3	61.556N.	149.982W.	47	GM	—	—	—	—	MAR. 2	10:23 AST
MAR. 2	20 42 29.1	51.373N.	176.714W.	36	EE	5.1	4.4	$5.2M_L$(PM)	FELT	MAR. 2	10:42 HST
MAR. 3	06 06 02.7	60.752N.	151.743W.	77	GM	—	—	—	—	MAR. 2	21:06 AST
MAR. 3	08 49 29.3	57.348N.	151.240W.	37	GM	—	—	—	—	MAR. 2	23:49 AST
MAR. 3	19 32 40.8	60.434N.	153.119W.	136	GM	—	—	—	—	MAR. 3	10:32 AST
MAR. 4	08 29 43.6	51.252N.	178.524E.	33	GS	4.5	—	$5.1M_L$(PM)	—	MAR. 3	22:29 HST
MAR. 4	08 47 14.6	51.553N.	166.943W.	33	GS	5.6	4.6	$5.6M_L$(PM)	—	MAR. 3	23:47 AST
MAR. 4	08 50 33.8	51.817N.	166.952W.	33	GS	4.8	—	—	—	MAR. 3	23:50 AST
MAR. 4	09 12 26.5	60.832N.	152.378W.	100	GM	—	—	—	—	MAR. 4	00:12 AST
MAR. 4	10 30 25.3	51.649N.	166.883W.	33	GS	4.9	—	$5.1M_L$(PM)	—	MAR. 4	01:30 AST
MAR. 4	12 52 44.0	59.954N.	153.356W.	131	GM	—	—	—	—	MAR. 4	03:52 AST
MAR. 4	15 35 33.0	59.597N.	152.787W.	99	GM	—	—	—	—	MAR. 4	06:35 AST
MAR. 5	01 05 04.1	58.702N.	149.988W.	22	GM	—	—	$3.4M_L$(PM)	—	MAR. 4	16:05 AST
MAR. 5	18 42 04.0	61.929N.	151.203W.	79	GM	—	—	$3.0M_L$(PM)	—	MAR. 5	09:42 AST
MAR. 5	18 46 16.3	61.139N.	152.084W.	97	GM	—	—	—	—	MAR. 5	09:46 AST
MAR. 5	21 10 34.8	59.922N.	152.837W.	87	GM	—	—	—	—	MAR. 5	12:10 AST
MAR. 6	03 39 01.2	56.354N.	153.694W.	33	GS	4.3	—	$4.4M_L$(PM)	—	MAR. 5	18:39 AST
MAR. 6	03 41 36.3	56.315N.	153.460W.	33	GS	5.1	4.8	$4.7M_L$(PM)	—	MAR. 5	18:41 AST
MAR. 6	04 08 18.8	56.286N.	153.524W.	33	GS	5.3	5.0	$5.1M_L$(PM)	—	MAR. 5	19:08 AST
MAR. 6	10 16 00.2	67.455N.	164.299W.	33	GS	—	—	$3.4M_L$(PM)	—	MAR. 6	01:16 AST
MAR. 6	19 14 14.4	56.357N.	153.846W.	33	GS	4.5	—	$3.3M_L$(PM)	—	MAR. 6	10:14 AST
MAR. 6	20 50 02.9	58.884N.	154.734W.	130	GM	—	—	—	—	MAR. 6	11:50 AST
MAR. 7	00 08 11.1	61.746N.	151.037W.	69	GM	—	—	—	—	MAR. 6	15:08 AST
MAR. 7	16 55 59.4	58.292N.	154.078W.	72	GM	—	—	$4.0M_L$(PM)	—	MAR. 7	07:55 AST
MAR. 7	18 21 46.5	55.708N.	160.992W.	147	LD	—	—	$3.1m_X$(LD)	—	MAR. 7	09:21 AST
MAR. 8	02 58 12.0	59.698N.	153.108W.	104	GM	—	—	—	—	MAR. 7	17:58 AST
MAR. 8	05 37 51.3	60.673N.	151.843W.	83	GS	4.3	—	—	FELT	MAR. 7	20:37 AST
MAR. 8	17 33 14.5	61.038N.	146.566W.	9	GM	—	—	$4.0M_L$(PM)	FELT	MAR. 8	08:33 AST
MAR. 9	01 55 24.9	52.220N.	169.428W.	33	GS	4.6	—	—	—	MAR. 8	16:55 AST
MAR. 9	02 41 04.0	59.901N.	153.107W.	106	GM	—	—	—	—	MAR. 8	17:41 AST
MAR. 9	02 56 08.4	55.194N.	159.339W.	3	LD	—	—	$3.2m_X$(LD)	—	MAR. 8	17:56 AST
MAR. 9	11 50 05.9	60.098N.	153.066W.	130	GM	—	—	—	—	MAR. 9	02:50 AST
MAR. 9	13 27 41.8	54.088N.	168.127W.	33	GS	4.4	—	$4.3M_L$(PM)	—	MAR. 9	04:27 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAR. 9	13 49 28.2	54.256N.	167.864W.	33	GS	5.2	5.5	—	FELT	MAR. 9	04:49 AST
MAR. 9	14 09 00.9	54.225N.	168.160W.	33	GS	4.6	—	4.3M_L(PM)	—	MAR. 9	05:09 AST
MAR. 9	16 54 34.0	54.240N.	169.409W.	160	GS	4.3	—	—	—	MAR. 9	07:54 AST
MAR. 10	03 05 39.0	54.101N.	168.379W.	33	GS	4.3	—	—	—	MAR. 9	18:05 AST
MAR. 10	08 56 03.7	60.184N.	153.101W.	145	GM	—	—	—	—	MAR. 9	23:56 AST
MAR. 11	05 38 46.5	63.934N.	152.483W.	33	GS	—	—	3.3M_L(PM)	—	MAR. 10	20:38 AST
MAR. 11	15 20 21.6	54.841N.	160.220W.	35	LD	—	—	3.0m_X(LD)	—	MAR. 11	06:20 AST
MAR. 11	17 21 16.6	54.257N.	168.112W.	33	GS	4.7	—	—	—	MAR. 11	08:21 AST
MAR. 11	22 24 43.5	60.253N.	144.370W.	30	GM	—	—	3.4M_L(EP)	—	MAR. 11	13:24 AST
MAR. 11	23 18 28.4	59.545N.	152.762W.	77	GM	—	—	—	—	MAR. 11	14:18 AST
MAR. 12	02 48 03.9	64.882N.	149.197W.	33	GS	—	—	3.7M_L(PM)	III	MAR. 11	17:48 AST
MAR. 12	04 09 42.1	54.112N.	168.340W.	33	GS	4.7	—	—	—	MAR. 11	19:09 AST
MAR. 12	13 15 01.2	61.685N.	151.072W.	75	GM	—	—	—	—	MAR. 12	04:15 AST
MAR. 12	23 17 21.8	54.038N.	162.421W.	4	LD	—	—	3.6m_X(LD)	—	MAR. 12	14:17 AST
MAR. 13	13 16 38.6	51.649N.	172.648W.	33	GS	4.2	—	—	—	MAR. 13	03:16 HST
MAR. 13	13 25 12.7	58.999N.	153.930W.	122	GM	—	—	—	—	MAR. 13	04:25 AST
MAR. 13	18 55 28.8	59.987N.	153.025W.	111	GM	—	—	—	—	MAR. 13	09:55 AST
MAR. 13	21 34 10.7	67.515N.	161.887W.	33	GS	—	—	3.2M_L(PM)	—	MAR. 13	12:34 AST
MAR. 14	03 20 27.9	67.425N.	161.738W.	33	GS	—	—	3.1M_L(PM)	—	MAR. 13	18:20 AST
MAR. 14	09 43 12.6	61.710N.	151.452W.	80	GM	—	—	—	—	MAR. 14	00:43 AST
MAR. 14	11 27 09.6	52.579N.	179.129W.	219	EE	4.8	—	—	—	MAR. 14	01:27 HST
MAR. 14	12 20 50.9	60.355N.	152.046W.	76	GM	3.7	—	3.6M_L(PM)	—	MAR. 14	03:20 AST
MAR. 14	17 36 37.8	60.177N.	151.147W.	65	GM	—	—	—	—	MAR. 14	08:36 AST
MAR. 15	02 34 12.8	62.613N.	151.232W.	87	GM	3.9	—	4.4M_L(PM)	—	MAR. 14	17:34 AST
MAR. 15	07 15 07.6	54.027N.	168.305W.	33	GS	4.3	—	—	—	MAR. 14	22:15 AST
MAR. 15	07 34 29.8	59.052N.	150.871W.	62	GM	—	—	—	—	MAR. 14	22:34 AST
MAR. 15	20 48 07.5	67.350N.	161.696W.	33	GS	—	—	3.7M_L(PM)	—	MAR. 15	11:48 AST
MAR. 17	12 29 33.7	60.299N.	140.678W.	4	GM	—	—	3.6M_L(EP)	—	MAR. 17	03:29 AST
MAR. 17	13 54 39.5	61.693N.	151.834W.	103	GM	—	—	—	—	MAR. 17	04:54 AST
MAR. 18	07 11 57.5	56.351N.	157.171W.	66	LD	—	—	3.4m_X(LD)	—	MAR. 17	22:11 AST
MAR. 18	15 48 50.2	66.788N.	159.157W.	33	GS	—	—	3.2M_L(PM)	—	MAR. 18	06:48 AST
MAR. 18	16 12 30.2	54.028N.	168.070W.	33	GS	4.7	—	4.5M_L(PM)	III	MAR. 18	07:12 AST
MAR. 18	18 45 01.1	54.086N.	168.075W.	33	GS	4.6	—	4.3M_L(PM)	—	MAR. 18	09:45 AST
MAR. 18	23 25 16.6	56.974N.	154.295W.	86	GM	4.7	—	—	—	MAR. 18	14:25 AST
MAR. 19	09 29 08.9	63.205N.	150.693W.	143	GS	—	—	—	—	MAR. 19	00:29 AST
MAR. 19	18 28 50.3	52.168N.	174.060E.	33	GS	4.8	—	—	—	MAR. 19	08:28 HST
MAR. 19	21 20 58.4	59.814N.	152.502W.	87	GM	—	—	—	—	MAR. 19	12:20 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAR. 20	03 47 35.5	62.793N.	149.782W.	59	GM	—	—	—	—	MAR. 19	18:47 AST
MAR. 20	16 17 35.5	60.118N.	153.281W.	143	GM	—	—	—	—	MAR. 20	07:17 AST
MAR. 20	19 40 08.8	54.202N.	168.187W.	33	GS	4.8	4.3	5.0M_L(PM)	FELT	MAR. 20	10:40 AST
MAR. 21	19 57 37.7	61.512N.	146.759W.	28	GM	—	—	—	—	MAR. 21	10:57 AST
MAR. 22	05 30 01.9	60.348N.	153.297W.	165	GM	4.4	—	—	FELT	MAR. 21	20:30 AST
MAR. 22	21 45 48.9	61.217N.	150.382W.	16	GM	—	—	3.5M_L(PM)	FELT	MAR. 22	12:45 AST
MAR. 24	17 11 28.5	62.388N.	151.396W.	88	GM	—	—	3.5M_L(PM)	—	MAR. 24	08:11 AST
MAR. 24	23 20 01.4	59.544N.	152.242W.	65	GM	—	—	—	—	MAR. 24	14:20 AST
MAR. 25	05 49 39.8	62.517N.	151.178W.	90	GM	—	—	—	—	MAR. 24	20:49 AST
MAR. 25	11 40 10.9	62.796N.	150.498W.	90	GM	—	—	3.6M_L(PM)	—	MAR. 25	02:40 AST
MAR. 25	21 22 52.5	52.279N.	178.632W.	250	GS	4.2	—	—	—	MAR. 25	11:22 HST
MAR. 26	05 30 53.6	54.152N.	168.232W.	33	GS	4.6	—	—	—	MAR. 25	20:30 AST
MAR. 26	06 00 16.0	59.956N.	152.222W.	62	GM	—	—	3.3M_L(PM)	—	MAR. 25	21:00 AST
MAR. 27	22 42 36.6	53.780N.	148.483W.	33	GS	4.5	—	—	—	MAR. 27	13:42 AST
MAR. 28	21 40 48.9	57.923N.	153.976W.	105	GM	—	—	—	—	MAR. 28	12:40 AST
MAR. 29	04 14 30.3	61.791N.	150.407W.	65	GM	—	—	—	—	MAR. 28	19:14 AST
MAR. 29	07 28 52.6	59.961N.	150.333W.	55	GM	—	—	—	—	MAR. 28	22:28 AST
MAR. 29	21 15 07.0	59.103N.	152.486W.	83	GM	—	—	—	—	MAR. 29	12:15 AST
MAR. 30	08 17 57.2	60.599N.	151.855W.	67	GM	—	—	—	—	MAR. 29	23:17 AST
MAR. 30	18 13 29.3	51.537N.	179.940W.	33	GS	4.8	—	3.9M_L(PM)	FELT	MAR. 30	08:13 HST
MAR. 31	04 14 13.3	58.307N.	154.185W.	74	GM	—	—	—	—	MAR. 30	19:14 AST
MAR. 31	04 23 34.6	59.143N.	152.572W.	64	GM	—	—	—	—	MAR. 30	19:23 AST
MAR. 31	09 31 58.9	61.751N.	151.954W.	111	GM	—	—	—	—	MAR. 31	00:31 AST
APR. 1	06 01 29.8	56.901N.	153.553W.	33	GS	4.2	—	4.0M_L(PM)	—	MAR. 31	21:01 AST
APR. 1	07 06 19.4	53 516N.	164.136W.	42	LD	4.1	—	3.5m_X(LD)	—	MAR. 31	22:06 AST
APR. 1	14 08 25.7	61.741N.	150.912W.	65	GM	—	—	—	—	APR. 1	05:08 AST
APR. 1	20 26 34.4	61.558N.	149.984W.	46	GM	—	—	3.6M_L(PM)	II	APR. 1	11:26 AST
APR. 1	23 46 51.4	61.886N.	150.937W.	72	GM	3.9	—	4.0M_L(PM)	II	APR. 1	14:46 AST
APR. 2	13 37 07.1	58.075N.	154.085W.	64	GM	3.9	—	—	—	APR. 2	04:37 AST
APR. 2	20 59 07.5	59.996N.	152.998W.	114	GM	—	—	—	—	APR. 2	11:59 AST
APR. 2	22 57 40.9	59.879N.	153.396W.	130	GM	4.0	—	—	—	APR. 2	13:57 AST
APR. 3	02 11 10.6	60.110N.	153.215W.	130	GM	—	—	—	—	APR. 2	17:11 AST
APR. 3	02 43 25.9	56.410N.	153.436W.	33	GS	4.6	—	4.4M_L(PM)	—	APR. 2	17:43 AST
APR. 3	02 57 11.1	56.257N.	153.473W.	33	GS	4.7	4.8	5.1M_L(PM)	—	APR. 2	17:57 AST
APR. 3	03 43 50.5	51.525N.	173.603W.	33	GS	4.7	—	—	—	APR. 2	17:43 HST
APR. 3	10 02 36.8	61.449N.	150.039W.	45	GS	—	—	3.0M_L(PM)	FELT	APR. 3	01:02 AST
APR. 3	12 20 27.9	51.285N.	177.046W.	36	EE	4.6	—	4.0M_L(PM)	—	APR. 3	02:20 HST
APR. 3	21 11 47.7	63.634N.	145.435W.	33	GS	—	—	3.7M_L(PM)	FELT	APR. 3	12:11 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
APR. 3	21 14 49.4	63.550N.	145.411W.	33	GS	—	—	2.8M_L(PM)	FELT	APR. 3	12:14 AST
APR. 3	21 16 55.0	63.444N.	145.564W.	33	GS	—	—	3.2M_L(PM)	FELT	APR. 3	12:16 AST
APR. 4	02 52 47.6	59.993N.	147.393W.	23	GM	—	—	—	—	APR. 3	17:52 AST
APR. 5	12 16 59.6	59.980N.	152.491W.	70	GM	—	—	4.1M_L(PM)	—	APR. 5	03:16 AST
APR. 5	12 42 31.3	61.528N.	151.563W.	80	GM	—	—	—	—	APR. 5	03:42 AST
APR. 5	13 34 33.1	59.473N.	146.262W.	35	GM	—	—	—	—	APR. 5	04:34 AST
APR. 5	17 41 50.7	54.055N.	161.961W.	33	GS	5.0	—	5.0m_X(LD)	—	APR. 5	08:41 AST
APR. 7	11 55 54.1	62.378N.	148.786W.	54	GM	—	—	3.0M_L(PM)	—	APR. 7	02:55 AST
APR. 7	16 06 56.0	59.697N.	153.080W.	101	GM	—	—	—	—	APR. 7	07:06 AST
APR. 7	17 07 46.8	54.058N.	167.343W.	33	GS	4.0	—	4.4M_L(PM)	II	APR. 7	08:07 AST
APR. 8	06 36 48.0	54.048N.	168.156W.	33	GS	4.4	—	4.6M_L(PM)	III	APR. 7	21:36 AST
APR. 8	18 12 26.7	59.199N.	152.561W.	71	GM	—	—	4.1M_L(PM)	—	APR. 8	09:12 AST
APR. 9	10 41 01.5	63.193N.	150.535W.	142	GS	—	—	—	—	APR. 9	01:41 AST
APR. 9	14 32 00.3	50.982N.	173.376E.	33	GS	5.4	—	—	—	APR. 9	04:32 HST
APR. 9	20 20 10.8	60.207N.	152.879W.	99	GM	4.3	—	—	—	APR. 9	11:20 AST
APR. 10	01 50 37.9	51.070N.	178.893W.	33	GS	4.6	—	—	—	APR. 9	15:50 HST
APR. 10	05 09 54.6	50.700N.	179.128W.	33	GS	4.7	—	4.6M_L(PM)	—	APR. 9	19:09 HST
APR. 11	05 32 09.3	60.639N.	151.672W.	68	GM	—	—	—	—	APR. 10	20:32 AST
APR. 11	17 22 20.8	54.164N.	167.883W.	33	GS	5.3	5.9	—	IV	APR. 11	08:22 AST
APR. 12	05 27 32.1	61.836N.	151.980W.	113	GM	—	—	—	—	APR. 11	20:27 AST
APR. 12	22 02 32.9	67.263N.	161.691W.	33	GS	—	—	3.5M_L(PM)	—	APR. 12	13:02 AST
APR. 13	10 25 39.9	54.124N.	167.776W.	33	GS	4.3	—	3.8M_L(PM)	—	APR. 13	01:25 AST
APR. 13	16 05 07.0	59.787N.	152.698W.	90	GM	—	—	—	—	APR. 13	07:05 AST
APR. 13	20 59 08.6	60.967N.	151.907W.	88	GM	—	—	3.3M_L(PM)	—	APR. 13	11:59 AST
APR. 14	00 16 27.1	61.417N.	146.598W.	26	GM	—	—	—	—	APR. 13	15:16 AST
APR. 14	00 34 02.4	60.106N.	152.817W.	105	GM	—	—	—	—	APR. 13	15:34 AST
APR. 14	18 17 09.4	58.942N.	154.384W.	119	GM	—	—	—	—	APR. 14	09:17 AST
APR. 15	18 12 45.2	59.439N.	153.253W.	95	GM	—	—	—	—	APR. 15	09:12 AST
APR. 16	14 22 50.8	60.159N.	152.251W.	65	GM	—	—	3.1M_L(PM)	—	APR. 16	05:22 AST
APR. 16	15 24 52.7	58.518N.	155.364W.	133	GM	—	—	—	—	APR. 16	06:24 AST
APR. 16	22 13 22.8	60.974N.	151.448W.	88	GM	—	—	—	—	APR. 16	13:13 AST
APR. 18	00 06 38.2	57.759N.	152.964W.	60	GM	—	—	—	—	APR. 17	15:06 AST
APR. 18	05 51 22.0	61.681N.	150.899W.	60	GM	—	—	—	—	APR. 17	20:51 AST
APR. 18	09 22 39.5	61.938N.	151.513W.	91	GM	—	—	—	—	APR. 18	00:22 AST
APR. 19	07 57 04.8	55.872N.	160.697W.	149	LD	4.2	—	4.2m_X(LD)	—	APR. 18	22:57 AST
APR. 19	19 42 25.8	59.004N.	152.293W.	72	GM	—	—	—	—	APR. 19	10:42 AST
APR. 20	12 54 00.9	61.488N.	150.632W.	58	GM	—	—	—	—	APR. 20	03:54 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
APR. 20	13 14 16.7	64.902N.	148.678W.	33	GS	—	—	4.1M_L(PM)	—	APR. 20	04:14 AST
APR. 20	14 14 11.3	53.363N.	157.137W.	16	LD	—	—	3.3m_X(LD)	—	APR. 20	05:14 AST
APR. 21	17 20 25.5	62.545N.	150.884W.	79	GM	—	—	—	—	APR. 21	08:20 AST
APR. 22	10 26 51.4	53.659N.	170.802W.	33	GS	4.5	—	—	—	APR. 22	00:26 HST
APR. 23	03 37 00.9	58.855N.	153.079W.	64	GM	—	—	—	—	APR. 22	18:37 AST
APR. 25	03 45 19.5	62.124N.	150.304W.	56	GM	—	—	3.2M_L(PM)	—	APR. 24	18:45 AST
APR. 25	23 57 42.3	63.090N.	150.537W.	133	GS	—	—	—	—	APR. 25	14:57 AST
APR. 26	03 51 26.7	57.954N.	151.473W.	109	GM	3.9	—	—	—	APR. 25	18:51 AST
APR. 26	12 13 34.0	66.179N.	150.157W.	10	GS	—	—	3.7M_L(PM)	—	APR. 26	03:13 AST
APR. 26	23 59 45.7	59.997N.	151.708W.	49	GM	—	—	3.4M_L(PM)	—	APR. 26	14:59 AST
APR. 27	06 08 31.8	60.393N.	152.162W.	85	GM	—	—	—	—	APR. 26	21:08 AST
APR. 27	10 55 41.2	59.723N.	152.918W.	96	GM	4.0	—	4.0M_L(PM)	FELT	APR. 27	01:55 AST
APR. 27	13 35 27.9	62.182N.	150.250W.	65	GM	—	—	—	—	APR. 27	04:35 AST
APR. 27	19 51 33.3	53.145N.	165.028W.	10	LD	—	—	3.3m_X(LD)	—	APR. 27	10:51 AST
APR. 27	22 00 31.2	52.775N.	168.593W.	33	GS	4.8	—	—	—	APR. 27	13:00 AST
APR. 28	00 22 22.4	63.080N.	149.866W.	161	GM	—	—	—	—	APR. 27	15:22 AST
APR. 28	07 32 56.1	61.498N.	149.893W.	59	GM	—	—	3.5M_L(PM)	III	APR. 27	22:32 AST
APR. 29	10 33 04.4	60.307N.	143.184W.	25	GM	—	—	3.1M_L(EP)	—	APR. 29	01:33 AST
APR. 29	15 30 07.6	64.738N.	153.171W.	33	GS	—	—	3.6M_L(PM)	—	APR. 29	06:30 AST
APR. 30	01 51 26.2	58.496N.	154.817W.	20	GM	—	—	—	—	APR. 29	16:51 AST
MAY 1	09 00 57.4	65.823N.	155.169W.	33	GS	—	—	3.9M_L(PM)	—	MAY 1	00:00 AST
MAY 2	00 51 57.7	61.238N.	149.410W.	35	GM	—	—	2.1M_L(PM)	FELT	MAY 1	15:51 AST
MAY 2	13 00 55.6	64.820N.	148.848W.	33	GS	—	—	3.2M_L(PM)	—	MAY 2	04:00 AST
MAY 3	06 05 22.5	59.998N.	152.775W.	91	GM	—	—	—	—	MAY 2	21:05 AST
MAY 3	10 11 13.6	61.426N.	149.859W.	46	GM	—	—	3.2M_L(PM)	FELT	MAY 3	01:11 AST
MAY 3	15 05 57.3	53.733N.	170.932W.	237	GS	4.3	—	—	—	MAY 3	05:05 HST
MAY 3	15 35 18.6	66.326N.	141.662W.	33	GS	—	—	4.3M_L(PM)	—	MAY 3	06:35 AST
MAY 3	16 56 09.5	51.589N.	175.441E.	33	GS	5.0	—	4.1M_L(PM)	—	MAY 3	06:56 HST
MAY 4	01 51 18.3	57.772N.	156.542W.	142	GS	4.4	—	—	—	MAY 3	16:51 AST
MAY 4	09 07 19.4	57.805N.	156.609W.	142	GS	4.4	—	—	—	MAY 4	00:07 AST
MAY 5	11 52 38.6	61.208N.	151.756W.	88	GM	—	—	3.5M_L(PM)	—	MAY 5	02:52 AST
MAY 6	15 44 58.3	59.970N.	152.633W.	89	GM	—	—	—	—	MAY 6	06:44 AST
MAY 7	16 41 02.7	54.866N.	156.980W.	19	LD	—	—	3.2m_X(LD)	—	MAY 7	07:41 AST
MAY 7	18 10 13.8	55.149N.	157.574W.	33	GS	4.7	—	4.0M_L(PM)	—	MAY 7	09:10 AST
MAY 7	18 12 59.5	54.835N.	157.136W.	21	LD	—	—	3.5m_X(LD)	—	MAY 7	09:12 AST
MAY 7	20 43 11.0	51.190N.	174.726W.	20	EE	5.0	—	—	—	MAY 7	10:43 HST
MAY 7	20 43 33.3	51.234N.	174.741W.	25	EE	6.1	6.0	6.1M_L(PM)	FELT	MAY 7	10:43 HST
MAY 7	21 23 13.6	51.212N.	174.921W.	20	EE	5.0	—	4.4M_L(PM)	—	MAY 7	11:23 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 7	21 30 42.4	51.385N.	174.498W.	33	GS	4.2	—	—	—	MAY 7	11:30 HST
MAY 7	21 39 06.2	52.066N.	174.911W.	33	GS	4.4	—	—	—	MAY 7	11:39 HST
MAY 7	21 42 29.3	51.148N.	174.796W.	20	EE	4.5	—	—	—	MAY 7	11:42 HST
MAY 7	22 22 14.3	51.962N.	174.721W.	33	GS	4.1	—	—	—	MAY 7	12:22 HST
MAY 7	22 47 12.3	51.325N.	174.751W.	31	EE	6.4	7.7	—	VII	MAY 7	12:47 HST
MAY 7	22 55 05.0	51.500N.	174.800W.	33	GS	5.6	—	—	—	MAY 7	12:55 HST
MAY 7	22 57 47.6	51.575N.	174.219W.	15	EE	5.7	—	—	—	MAY 7	12:57 HST
MAY 7	23 00 41.0	51.500N.	174.800W.	33	GS	5.2	—	—	—	MAY 7	13:00 HST
MAY 7	23 04 09.0	51.500N.	174.800W.	33	GS	4.9	—	—	—	MAY 7	13:04 HST
MAY 7	23 04 52.0	51.500N.	174.800W.	33	GS	5.3	—	—	—	MAY 7	13:04 HST
MAY 7	23 06 38.0	51.500N.	174.800W.	33	GS	5.0	—	—	—	MAY 7	13:06 HST
MAY 7	23 07 45.0	51.317N.	174.598W.	20	EE	5.5	—	—	—	MAY 7	13:07 HST
MAY 7	23 12 35.0	51.500N.	174.800W.	33	GS	5.0	—	—	—	MAY 7	13:12 HST
MAY 7	23 12 48.7	51.158N.	174.005W.	20	EE	5.3	—	—	—	MAY 7	13:12 HST
MAY 7	23 13 16.0	51.500N.	174.800W.	33	GS	5.2	—	—	—	MAY 7	13:13 HST
MAY 7	23 15 05.1	51.234N.	175.334W.	20	EE	5.4	—	—	—	MAY 7	13:15 HST
MAY 7	23 17 16.0	51.500N.	174.800W.	33	GS	5.3	—	—	—	MAY 7	13:17 HST
MAY 7	23 18 23.0	51.500N.	174.800W.	33	GS	4.9	—	—	—	MAY 7	13:18 HST
MAY 7	23 20 17.0	51.500N.	174.800W.	33	GS	5.2	—	—	—	MAY 7	13:20 HST
MAY 7	23 24 06.0	51.500N.	174.800W.	33	GS	5.2	—	—	—	MAY 7	13:24 HST
MAY 7	23 26 57.2	51.078N.	174.028W.	20	EE	5.4	—	—	—	MAY 7	13:26 HST
MAY 7	23 29 36.5	51.701N.	176.439W.	33	GS	4.9	—	—	—	MAY 7	13:29 HST
MAY 7	23 33 17.5	50.648N.	174.879W.	17	EE	4.7	—	—	—	MAY 7	13:33 HST
MAY 7	23 36 18.3	51.297N.	174.132W.	20	EE	5.7	—	—	—	MAY 7	13:36 HST
MAY 7	23 41 21.0	51.500N.	174.800W.	33	GS	5.1	—	—	—	MAY 7	13:41 HST
MAY 7	23 48 07.4	51.228N.	175.366W.	20	EE	5.0	—	—	—	MAY 7	13:48 HST
MAY 7	23 51 01.9	51.273N.	174.836W.	20	EE	5.8	—	—	—	MAY 7	13:51 HST
MAY 7	23 52 20.5	52.300N.	174.423W.	15	EE	5.7	—	—	—	MAY 7	13:52 HST
MAY 7	23 59 35.2	51.465N.	178.858E.	33	GS	4.7	—	—	—	MAY 7	13:59 HST
MAY 8	00 00 40.0	51.500N.	174.800W.	33	GS	4.7	—	—	—	MAY 7	14:00 HST
MAY 8	00 10 58.8	51.313N.	175.294W.	25	EE	5.0	—	—	—	MAY 7	14:10 HST
MAY 8	00 18 27.7	51.910N.	174.630W.	33	GS	4.5	—	—	—	MAY 7	14:18 HST
MAY 8	00 20 42.0	51.500N.	174.800W.	33	GS	4.4	—	—	—	MAY 7	14:20 HST
MAY 8	00 30 59.3	51.562N.	176.107W.	33	GS	4.8	—	—	—	MAY 7	14:30 HST
MAY 8	00 35 15.4	51.409N.	175.490W.	33	GS	4.2	—	—	—	MAY 7	14:35 HST
MAY 8	00 42 23.3	51.012N.	176.233W.	33	GS	4.5	—	—	—	MAY 7	14:42 HST
MAY 8	00 45 47.1	51.226N.	175.900W.	33	GS	4.6	—	—	—	MAY 7	14:45 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 8	00 55 18.9	51.268N.	174.371W.	20	EE	5.2	—	—	—	MAY 7	14:55 HST
MAY 8	00 59 11.9	52.204N.	174.249W.	15	EE	4.7	—	—	—	MAY 7	14:59 HST
MAY 8	01 02 39.0	51.792N.	174.630W.	33	GS	4.6	—	—	—	MAY 7	15:02 HST
MAY 8	01 05 50.4	51.199N.	175.739W.	33	GS	4.8	—	—	—	MAY 7	15:05 HST
MAY 8	01 06 16.5	51.400N.	174.604W.	25	EE	5.3	—	—	—	MAY 7	15:06 HST
MAY 8	01 11 02.1	50.960N.	176.655W.	20	EE	5.9	—	5.9M_L(PM)	—	MAY 7	15:11 HST
MAY 8	01 15 14.9	51.028N.	176.778W.	20	EE	5.6	—	—	—	MAY 7	15:15 HST
MAY 8	01 18 00.8	51.004N.	176.573W.	20	EE	5.4	—	—	—	MAY 7	15:18 HST
MAY 8	01 20 56.9	51.003N.	176.849W.	20	EE	5.1	—	—	—	MAY 7	15:20 HST
MAY 8	01 22 46.9	51.037N.	176.858W.	20	EE	5.2	—	—	—	MAY 7	15:22 HST
MAY 8	01 30 55.2	51.063N.	176.882W.	20	EE	5.1	—	5.2M_L(PM)	—	MAY 7	15:30 HST
MAY 8	01 40 11.8	51.381N.	173.981W.	33	GS	4.2	—	—	—	MAY 7	15:40 HST
MAY 8	01 45 19.3	51.002N.	176.954W.	33	GS	4.7	—	5.0M_L(PM)	—	MAY 7	15:45 HST
MAY 8	01 54 13.1	51.090N.	176.075W.	20	EE	5.1	—	4.5M_L(PM)	—	MAY 7	15:54 HST
MAY 8	02 04 00.2	51.002N.	176.886W.	20	EE	5.5	—	5.5M_L(PM)	—	MAY 7	16:04 HST
MAY 8	02 16 34.4	51.293N.	174.741W.	20	EE	4.8	—	—	—	MAY 7	16:16 HST
MAY 8	02 27 41.1	51.040N.	176.762W.	33	GS	4.4	—	4.4M_L(PM)	—	MAY 7	16:27 HST
MAY 8	02 32 54.6	51.145N.	174.752W.	20	EE	5.1	—	—	—	MAY 7	16:32 HST
MAY 8	02 42 30.8	51.149N.	175.950W.	33	GS	3.9	—	—	—	MAY 7	16:42 HST
MAY 8	02 44 35.0	51.257N.	176.324W.	33	GS	4.4	—	—	—	MAY 7	16:44 HST
MAY 8	02 59 40.4	51.217N.	175.858W.	20	EE	5.0	—	4.7M_L(PM)	—	MAY 7	16:59 HST
MAY 8	03 08 25.7	50.967N.	176.252W.	33	GS	4.6	—	4.6M_L(PM)	—	MAY 7	17:08 HST
MAY 8	03 14 27.4	51.220N.	174.526W.	20	EE	4.8	—	—	—	MAY 7	17:14 HST
MAY 8	03 20 14.2	51.032N.	175.520W.	20	EE	4.8	—	—	—	MAY 7	17:20 HST
MAY 8	03 23 40.5	51.005N.	176.632W.	20	EE	5.0	—	4.6M_L(PM)	—	MAY 7	17:23 HST
MAY 8	03 44 06.5	51.130N.	175.233W.	20	EE	5.1	—	4.7M_L(PM)	—	MAY 7	17:44 HST
MAY 8	03 52 51.2	50.975N.	176.676W.	20	EE	5.2	—	—	—	MAY 7	17:52 HST
MAY 8	04 03 49.7	50.971N.	176.449W.	20	EE	5.8	5.5	5.7M_L(PM)	—	MAY 7	18:03 HST
MAY 8	04 19 59.2	51.214N.	175.840W.	33	GS	4.6	—	—	—	MAY 7	18:19 HST
MAY 8	04 27 57.9	50.893N.	176.160W.	20	EE	5.1	—	—	—	MAY 7	18:27 HST
MAY 8	04 31 45.6	51.135N.	176.424W.	33	GS	4.3	—	—	—	MAY 7	18:31 HST
MAY 8	04 32 21.5	51.357N.	174.642W.	25	EE	5.0	—	—	—	MAY 7	18:32 HST
MAY 8	04 45 17.6	51.217N.	174.154W.	20	EE	5.4	—	—	—	MAY 7	18:45 HST
MAY 8	05 20 23.5	51.333N.	175.200W.	33	GS	4.0	—	4.1M_L(PM)	—	MAY 7	19:20 HST
MAY 8	05 32 08.5	51.212N.	174.878W.	20	EE	4.9	—	4.7M_L(PM)	—	MAY 7	19:32 HST
MAY 8	05 37 21.6	51.166N.	175.329W.	15	EE	6.0	6.2	6.2M_L(PM)	—	MAY 7	19:37 HST
MAY 8	06 04 18.7	50.985N.	176.122W.	20	EE	5.2	—	5.1M_L(PM)	—	MAY 7	20:04 HST
MAY 8	06 21 28.7	51.162N.	175.275W.	20	EE	4.8	—	4.2M_L(PM)	—	MAY 7	20:21 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 8	06 26 56.2	51.469N.	174.378W.	30	EE	4.9	—	—	—	MAY 7	20:26 HST
MAY 8	06 42 00.9	51.243N.	176.159W.	22	EE	5.1	—	5.2M_L(PM)	—	MAY 7	20:41 HST
MAY 8	06 48 44.0	51.281N.	174.991W.	20	EE	4.8	—	4.2M_L(PM)	—	MAY 7	20:48 HST
MAY 8	06 50 09.8	51.331N.	176.397W.	35	EE	5.2	—	—	—	MAY 7	20:50 HST
MAY 8	07 28 48.2	51.088N.	175.278W.	20	EE	4.8	—	4.6M_L(PM)	—	MAY 7	21:28 HST
MAY 8	07 33 51.2	50.968N.	175.361W.	33	GS	4.7	—	—	—	MAY 7	21:33 HST
MAY 8	07 49 41.5	51.229N.	174.801W.	33	GS	4.3	—	—	—	MAY 7	21:49 HST
MAY 8	07 54 29.7	51.667N.	174.738W.	33	GS	4.0	—	—	—	MAY 7	21:54 HST
MAY 8	08 12 00.7	51.368N.	174.556W.	25	EE	4.8	—	4.6M_L(PM)	—	MAY 7	22:12 HST
MAY 8	08 49 50.6	50.871N.	176.491W.	20	EE	4.6	—	4.2M_L(PM)	—	MAY 7	22:49 HST
MAY 8	09 05 17.3	51.415N.	174.515W.	25	EE	4.9	5.0	4.4M_L(PM)	—	MAY 7	23:05 HST
MAY 8	09 19 31.1	51.296N.	174.677W.	20	EE	4.5	—	4.1M_L(PM)	—	MAY 7	23:19 HST
MAY 8	10 10 21.7	51.036N.	175.453W.	20	EE	4.8	—	4.2M_L(PM)	—	MAY 8	00:10 HST
MAY 8	10 52 22.9	51.391N.	175.702W.	38	EE	4.9	—	4.6M_L(PM)	—	MAY 8	00:52 HST
MAY 8	11 23 56.0	51.200N.	174.528W.	20	EE	4.9	—	4.4M_L(PM)	—	MAY 8	01:23 HST
MAY 8	11 35 59.8	51.153N.	175.899W.	33	GS	4.4	—	—	—	MAY 8	01:35 HST
MAY 8	11 58 16.6	51.009N.	176.213W.	20	EE	4.8	—	—	—	MAY 8	01:58 HST
MAY 8	12 05 59.3	51.028N.	176.120W.	33	GS	4.0	—	4.1M_L(PM)	—	MAY 8	02:05 HST
MAY 8	12 11 41.3	51.740N.	175.368W.	33	GS	4.7	—	4.1M_L(PM)	—	MAY 8	02:11 HST
MAY 8	12 22 30.6	51.391N.	174.437W.	25	EE	5.1	4.6	4.6M_L(PM)	—	MAY 8	02:22 HST
MAY 8	12 34 50.9	51.408N.	175.234W.	35	EE	5.1	4.5	5.0M_L(PM)	—	MAY 8	02:34 HST
MAY 8	12 52 10.7	51.086N.	176.607W.	33	GS	4.8	—	4.1M_L(PM)	—	MAY 8	02:52 HST
MAY 8	13 07 35.1	51.454N.	175.066W.	33	GS	4.5	—	4.2M_L(PM)	—	MAY 8	03:07 HST
MAY 8	13 22 39.2	51.106N.	175.468W.	20	EE	4.7	—	4.1M_L(PM)	—	MAY 8	03:22 HST
MAY 8	13 29 02.1	51.134N.	175.307W.	20	EE	4.7	—	4.2M_L(PM)	—	MAY 8	03:29 HST
MAY 8	13 39 00.4	51.304N.	174.167W.	20	EE	4.6	—	—	—	MAY 8	03:39 HST
MAY 8	13 56 40.1	51.412N.	175.497W.	33	GS	4.9	—	—	—	MAY 8	03:56 HST
MAY 8	14 01 58.8	51.321N.	174.857W.	33	GS	4.2	—	3.9M_L(PM)	—	MAY 8	04:01 HST
MAY 8	15 21 52.7	62.210N.	150.972W.	67	GM	—	—	3.5M_L(PM)	—	MAY 8	06:21 AST
MAY 8	15 24 40.7	50.922N.	176.164W.	20	EE	4.8	—	4.6M_L(PM)	—	MAY 8	05:24 HST
MAY 8	15 31 29.1	51.287N.	175.613W.	33	GS	4.6	—	4.4M_L(PM)	—	MAY 8	05:31 HST
MAY 8	15 47 28.2	51.159N.	176.065W.	33	GS	5.2	—	—	—	MAY 8	05:47 HST
MAY 8	16 05 49.8	51.190N.	175.464W.	20	EE	4.9	—	4.5M_L(PM)	—	MAY 8	06:05 HST
MAY 8	16 36 01.8	51.305N.	173.863W.	20	EE	5.4	5.1	—	—	MAY 8	06:36 HST
MAY 8	18 43 02.8	51.545N.	175.166W.	33	GS	4.8	—	—	—	MAY 8	08:43 HST
MAY 8	19 19 30.5	51.395N.	175.194W.	30	EE	4.7	—	—	—	MAY 8	09:19 HST
MAY 8	21 40 42.4	51.188N.	175.849W.	19	EE	4.6	—	—	—	MAY 8	11:40 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr	Local time zone
ALASKA—Continued												
MAY 8	22 01 17.2	51.468N.	174.969W.	33	GS	4.8	—	—	—	MAY 8	12:01	HST
MAY 8	22 36 01.9	51.140N.	176.101W.	33	GS	4.5	—	—	—	MAY 8	12:36	HST
MAY 8	22 45 22.9	51.687N.	175.257W.	33	GS	4.4	—	—	—	MAY 8	12:45	HST
MAY 8	22 50 53.9	51.753N.	174.565W.	33	GS	4.8	—	—	—	MAY 8	12:50	HST
MAY 8	23 11 11.9	51.322N.	173.902W.	20	EE	5.1	—	—	—	MAY 8	13:11	HST
MAY 8	23 29 49.4	51.391N.	173.975W.	25	EE	5.1	—	—	—	MAY 8	13:29	HST
MAY 8	23 58 35.4	50.912N.	176.204W.	20	EE	4.8	—	—	—	MAY 8	13:58	HST
MAY 9	00 08 24.5	60.056N.	153.194W.	118	GM	—	—	—	—	MAY 8	15:08	AST
MAY 9	00 13 10.6	53.549N.	163.962W.	12	LD	—	—	$3.5m_X$(LD)	—	MAY 8	15:13	AST
MAY 9	01 05 31.2	51.061N.	176.902W.	23	EE	5.5	5.6	$5.4M_L$(PM)	III	MAY 8	15:05	HST
MAY 9	01 08 10.5	51.062N.	176.856W.	18	EE	5.6	5.5	$5.5M_L$(PM)	IV	MAY 8	15:08	HST
MAY 9	01 18 53.9	62.894N.	149.770W.	58	GM	—	—	$3.3M_L$(PM)	—	MAY 8	16:18	AST
MAY 9	01 32 41.6	51.036N.	174.131W.	20	EE	4.5	—	—	—	MAY 8	15:32	HST
MAY 9	02 25 12.4	51.088N.	176.990W.	33	GS	4.8	—	—	—	MAY 8	16:25	HST
MAY 9	05 58 15.2	62.624N.	148.746W.	56	GM	—	—	$3.5M_L$(PM)	—	MAY 8	20:58	AST
MAY 9	06 04 54.3	51.247N.	174.301W.	20	EE	5.0	—	—	—	MAY 8	20:04	HST
MAY 9	06 49 34.8	51.500N.	175.484W.	33	GS	4.4	—	—	—	MAY 8	20:49	HST
MAY 9	07 31 58.8	51.711N.	173.564W.	33	GS	4.3	—	—	—	MAY 8	21:31	HST
MAY 9	09 13 25.5	51.336N.	173.484W.	20	EE	4.7	4.0	—	—	MAY 8	23:13	HST
MAY 9	09 41 31.0	51.097N.	175.435W.	20	EE	4.8	—	—	—	MAY 8	23:41	HST
MAY 9	10 17 30.2	51.765N.	175.074W.	33	GS	3.9	—	—	—	MAY 9	00:17	HST
MAY 9	11 25 39.7	51.642N.	175.850W.	33	GS	4.5	—	—	—	MAY 9	01:25	HST
MAY 9	12 48 52.8	51.241N.	175.888W.	33	GS	4.5	—	—	—	MAY 9	02:48	HST
MAY 9	13 23 52.1	51.179N.	176.168W.	33	GS	4.8	—	—	—	MAY 9	03:23	HST
MAY 9	13 31 32.7	51.961N.	174.131W.	33	GS	4.7	—	—	—	MAY 9	03:31	HST
MAY 9	13 34 03.8	52.110N.	174.716W.	33	GS	4.2	—	—	—	MAY 9	03:34	HST
MAY 9	13 54 47.3	51.416N.	176.166W.	33	EE	5.1	—	—	—	MAY 9	03:54	HST
MAY 9	14 39 13.1	51.061N.	176.308W.	33	GS	4.4	—	—	—	MAY 9	04:39	HST
MAY 9	15 25 52.4	50.874N.	176.369W.	20	EE	4.8	—	—	—	MAY 9	05:25	HST
MAY 9	16 58 31.5	51.478N.	173.954W.	33	GS	4.9	—	—	—	MAY 9	06:58	HST
MAY 9	18 22 49.8	54.324N.	165.372W.	101	GS	4.6	—	—	FELT	MAY 9	09:22	AST
MAY 9	19 04 28.4	51.283N.	174.200W.	21	EE	5.8	5.6	—	—	MAY 9	09:04	HST
MAY 9	19 24 42.0	51.268N.	174.036W.	20	EE	5.3	5.8	—	—	MAY 9	09:24	HST
MAY 9	20 32 08.8	51.035N.	176.236W.	33	GS	5.0	—	—	—	MAY 9	10:32	HST
MAY 9	20 42 37.5	51.044N.	176.237W.	21	EE	5.2	4.3	—	—	MAY 9	10:42	HST
MAY 9	21 52 08.9	50.991N.	175.503W.	20	EE	5.0	4.3	—	—	MAY 9	11:52	HST
MAY 10	00 48 09.4	51.392N.	175.242W.	33	GS	4.4	—	—	—	MAY 9	14:48	HST
MAY 10	01 33 47.6	51.279N.	174.362W.	20	EE	4.8	—	—	—	MAY 9	15:33	HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 10	04 03 45.9	50.990N.	176.453W.	33	GS	4.0	—	—	—	MAY 9	18:03 HST
MAY 10	07 26 56.3	51.178N.	176.167W.	33	GS	4.3	—	—	—	MAY 9	21:26 HST
MAY 10	09 12 09.4	51.016N.	175.831W.	20	EE	4.8	—	4.3M_L(PM)	—	MAY 9	23:12 HST
MAY 10	09 13 31.1	51.556N.	174.978W.	29	EE	5.0	4.9	4.9M_L(PM)	—	MAY 9	23:13 HST
MAY 10	09 29 34.7	62.017N.	151.777W.	107	GM	—	—	—	—	MAY 10	00:29 AST
MAY 10	11 13 37.6	51.100N.	174.689W.	20	EE	4.7	—	—	—	MAY 10	01:13 HST
MAY 10	14 49 51.1	51.749N.	173.480W.	33	GS	4.5	—	—	—	MAY 10	04:49 HST
MAY 10	15 01 50.4	51.270N.	175.830W.	24	EE	4.9	—	4.4M_L(PM)	—	MAY 10	05:01 HST
MAY 10	18 00 43.2	50.873N.	176.655W.	20	EE	4.8	—	4.5M_L(PM)	—	MAY 10	08:00 HST
MAY 10	19 49 07.5	51.846N.	174.059W.	33	GS	4.8	—	—	—	MAY 10	09:49 HST
MAY 10	20 32 03.0	52.201N.	175.030W.	33	GS	4.0	—	—	—	MAY 10	10:32 HST
MAY 10	21 37 06.9	51.232N.	174.738W.	20	EE	4.7	—	—	—	MAY 10	11:37 HST
MAY 10	22 50 30.3	51.599N.	174.815W.	33	GS	4.1	—	—	—	MAY 10	12:50 HST
MAY 10	23 56 44.5	51.692N.	173.480W.	33	GS	4.4	—	—	—	MAY 10	13:56 HST
MAY 11	01 34 17.0	58.656N.	134.667W.	18	EP	—	—	3.1M_L(EP)	—	MAY 10	16:34 AST
MAY 11	02 49 23.2	51.347N.	175.379W.	33	GS	4.6	—	—	—	MAY 10	16:49 HST
MAY 11	03 14 54.6	51.707N.	175.082W.	33	GS	4.4	—	—	—	MAY 10	17:14 HST
MAY 11	04 09 08.3	55.283N.	157.747W.	33	GS	4.7	—	4.5M_L(PM)	—	MAY 10	19:09 AST
MAY 11	04 10 50.6	50.914N.	178.294W.	20	EE	4.8	—	—	—	MAY 10	18:10 HST
MAY 11	05 35 56.0	54.901N.	156.870W.	31	LD	—	—	3.5m_X(LD)	—	MAY 10	20:35 AST
MAY 11	06 15 13.8	60.228N.	151.681W.	49	GM	3.9	—	—	—	MAY 10	21:15 AST
MAY 11	10 46 21.8	50.970N.	176.095W.	16	EE	5.0	4.7	4.9M_L(PM)	II	MAY 11	00:46 HST
MAY 11	13 40 36.9	51.309N.	173.643W.	20	EE	5.3	4.8	—	—	MAY 11	03:40 HST
MAY 11	13 43 51.3	51.341N.	173.638W.	20	EE	5.3	4.6	—	—	MAY 11	03:43 HST
MAY 11	14 35 56.8	51.706N.	176.430W.	33	GS	4.5	—	—	—	MAY 11	04:35 HST
MAY 11	19 03 51.9	63.085N.	150.798W.	111	GM	—	—	—	—	MAY 11	10:03 AST
MAY 11	19 32 21.0	51.057N.	176.536W.	20	EE	4.9	—	—	—	MAY 11	09:32 HST
MAY 11	19 40 30.7	51.359N.	173.696W.	18	EE	5.6	5.2	4.9M_L(PM)	—	MAY 11	09:40 HST
MAY 11	20 02 22.3	51.230N.	174.232W.	20	EE	4.8	—	—	—	MAY 11	10:02 HST
MAY 11	20 10 18.3	51.307N.	173.422W.	20	EE	4.8	—	—	—	MAY 11	10:10 HST
MAY 11	22 37 44.1	59.892N.	153.152W.	106	GM	—	—	—	—	MAY 11	13:37 AST
MAY 11	22 48 47.2	51.371N.	174.616W.	29	EE	5.5	5.2	5.7M_L(PM)	IV	MAY 11	12:48 HST
MAY 11	23 22 04.0	51.560N.	173.416W.	33	GS	4.5	—	—	—	MAY 11	13:22 HST
MAY 12	00 22 33.9	51.689N.	176.012W.	33	GS	4.6	—	—	—	MAY 11	14:22 HST
MAY 12	03 26 02.0	51.137N.	176.199W.	33	GS	4.2	—	—	—	MAY 11	17:26 HST
MAY 12	03 47 39.2	51.293N.	174.692W.	28	EE	5.3	4.8	5.4M_L(PM)	—	MAY 11	17:47 HST
MAY 12	04 07 24.8	51.996N.	174.701W.	33	GS	4.9	—	—	—	MAY 11	18:07 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 12	05 14 09.6	51.239N.	176.266W.	25	EE	4.4	—	—	—	MAY 11	19:14 HST
MAY 12	06 59 50.3	57.601N.	145.890W.	15	GM	—	—	—	—	MAY 11	21:59 AST
MAY 12	08 10 15.1	50.979N.	176.085W.	20	EE	4.8	—	$4.4M_L$(PM)	—	MAY 11	22:10 HST
MAY 12	09 29 54.6	51.456N.	176.340W.	39	EE	4.7	—	$4.7M_L$(PM)	—	MAY 11	23:29 HST
MAY 12	10 48 34.8	51.161N.	175.983W.	33	GS	4.2	—	$4.5M_L$(PM)	—	MAY 12	00:48 HST
MAY 12	11 37 45.5	51.154N.	175.444W.	20	EE	4.7	—	$4.2M_L$(PM)	—	MAY 12	01:37 HST
MAY 12	14 18 35.0	51.155N.	176.084W.	33	GS	3.8	—	—	—	MAY 12	04:18 HST
MAY 12	17 06 44.7	51.215N.	174.794W.	20	EE	4.7	—	—	—	MAY 12	07:06 HST
MAY 12	20 16 45.8	52.700N.	172.432E.	33	GS	4.9	5.1	—	III	MAY 12	10:16 HST
MAY 12	20 23 05.6	51.169N.	174.550W.	20	EE	5.0	—	$5.0M_L$(PM)	—	MAY 12	10:23 HST
MAY 12	23 08 39.4	57.685N.	137.965W.	5	GM	—	—	$3.8M_L$(EP)	—	MAY 12	14:08 AST
MAY 13	01 51 37.8	59.282N.	153.776W.	116	GM	—	—	—	—	MAY 12	16:51 AST
MAY 13	03 33 37.0	51.741N.	175.116W.	33	GS	4.3	—	—	—	MAY 12	17:33 HST
MAY 13	05 56 24.0	51.246N.	174.709W.	20	EE	4.7	—	—	—	MAY 12	19:56 HST
MAY 13	12 17 42.3	53.543N.	165.268W.	40	LD	—	—	$3.3m_X$(LD)	—	MAY 13	03:17 AST
MAY 13	14 14 56.1	51.390N.	173.457W.	20	EE	4.8	4.3	—	—	MAY 13	04:14 HST
MAY 13	17 15 20.8	50.957N.	176.183W.	20	EE	4.9	4.3	—	—	MAY 13	07:15 HST
MAY 14	01 56 18.1	51.347N.	173.401W.	20	EE	4.8	—	$5.0M_L$(PM)	—	MAY 13	15:56 HST
MAY 14	01 58 30.9	51.364N.	173.437W.	21	EE	5.5	4.7	—	—	MAY 13	15:58 HST
MAY 14	03 28 44.4	51.506N.	175.771W.	41	EE	4.8	—	$4.2M_L$(PM)	—	MAY 13	17:28 HST
MAY 14	03 54 24.9	51.350N.	173.385W.	20	EE	5.0	—	$5.1M_L$(PM)	—	MAY 13	17:54 HST
MAY 14	04 02 34.0	51.242N.	178.405W.	33	EE	5.4	4.6	$4.9M_L$(PM)	—	MAY 13	18:02 HST
MAY 14	04 49 10.9	51.321N.	173.299W.	20	EE	4.8	—	$4.8M_L$(PM)	—	MAY 13	18:49 HST
MAY 14	07 59 49.2	51.359N.	173.442W.	20	EE	4.8	4.1	$5.0M_L$(PM)	—	MAY 13	21:59 HST
MAY 14	09 49 00.7	56.127N.	156.211W.	99	GS	4.5	—	—	—	MAY 14	00:49 AST
MAY 14	13 28 32.8	51.149N.	176.252W.	33	GS	4.9	—	—	—	MAY 14	03:28 HST
MAY 14	14 58 25.8	51.334N.	174.177W.	20	EE	4.7	—	—	—	MAY 14	04:58 HST
MAY 14	20 17 58.8	61.134N.	152.027W.	104	GM	—	—	—	—	MAY 14	11:17 AST
MAY 14	20 19 17.5	51.400N.	175.934W.	35	EE	4.7	—	—	—	MAY 14	10:19 HST
MAY 14	22 58 53.3	51.340N.	175.812W.	33	GS	4.8	—	—	—	MAY 14	12:58 HST
MAY 15	03 30 09.8	51.172N.	175.465W.	20	EE	4.9	—	$4.8M_L$(PM)	—	MAY 14	17:30 HST
MAY 15	06 38 37.9	52.432N.	174.719W.	15	EE	5.7	6.4	$5.5M_L$(PM)	VI	MAY 14	20:38 HST
MAY 15	06 42 32.1	51.248N.	174.552W.	20	EE	5.1	—	$4.9M_L$(PM)	—	MAY 14	20:42 HST
MAY 15	07 01 25.6	52.373N.	174.587W.	15	EE	4.7	—	—	—	MAY 14	21:01 HST
MAY 15	07 06 15.8	52.045N.	174.671W.	33	GS	4.4	—	—	—	MAY 14	21:06 HST
MAY 15	07 08 04.3	51.873N.	174.383W.	33	GS	4.3	—	—	—	MAY 14	21:08 HST
MAY 15	07 10 20.6	52.335N.	174.828W.	33	GS	3.8	—	—	—	MAY 14	21:10 HST
MAY 15	07 11 07.8	52.372N.	174.702W.	15	EE	4.8	—	—	—	MAY 14	21:11 HST
MAY 15	08 12 15.0	52.049N.	174.778W.	33	GS	4.0	—	—	—	MAY 14	22:12 HST
MAY 15	08 13 18.3	52.152N.	174.473W.	33	GS	4.2	—	—	—	MAY 14	22:13 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 15	08 18 11.1	52.247N.	174.517W.	33	GS	4.1	—	—	—	MAY 14	22:18 HST
MAY 15	08 18 47.9	52.473N.	174.560W.	15	EE	5.1	5.3	5.2M_L(PM)	—	MAY 14	22:18 HST
MAY 15	09 34 06.0	52.328N.	174.502W.	15	EE	5.2	5.3	5.2M_L(PM)	—	MAY 14	23:34 HST
MAY 15	12 47 13.7	52.074N.	174.460W.	33	GS	3.8	—	—	—	MAY 15	02:47 HST
MAY 15	14 19 43.3	63.283N.	150.326W.	112	GM	—	—	—	—	MAY 15	05:19 AST
MAY 15	16 09 47.7	51.259N.	175.129W.	33	GS	4.0	—	—	—	MAY 15	06:09 HST
MAY 15	23 21 13.2	54.693N.	163.089W.	3	LD	4.5	—	4.4m_X(LD)	FELT	MAY 15	14:21 AST
MAY 16	02 26 08.3	54.709N.	163.083W.	3	LD	—	—	3.0m_X(LD)	—	MAY 15	17:26 AST
MAY 16	07 10 11.1	51.524N.	175.137W.	33	GS	4.0	—	—	—	MAY 15	21:10 HST
MAY 16	07 42 14.5	62.537N.	151.287W.	93	GM	—	—	—	—	MAY 15	22:42 AST
MAY 16	12 20 56.0	51.277N.	175.286W.	33	GS	4.3	—	—	—	MAY 16	02:20 HST
MAY 16	15 59 53.1	51.563N.	175.183W.	36	EE	5.0	4.3	4.7M_L(PM)	—	MAY 16	05:59 HST
MAY 16	17 31 32.8	51.485N.	175.134W.	35	EE	4.6	—	4.3M_L(PM)	—	MAY 16	07:31 HST
MAY 16	22 12 27.5	51.530N.	175.233W.	38	EE	4.8	—	4.2M_L(PM)	—	MAY 16	12:12 HST
MAY 17	03 24 29.5	58.889N.	152.952W.	75	GM	4.7	—	4.0M_L(PM)	—	MAY 16	18:24 AST
MAY 17	06 31 14.2	62.038N.	149.730W.	51	GM	—	—	2.6M_L(PM)	FELT	MAY 16	21:31 AST
MAY 17	08 00 10.1	50.848N.	176.104W.	20	EE	4.7	—	—	—	MAY 16	22:00 HST
MAY 17	08 26 50.0	51.409N.	175.743W.	33	GS	3.8	—	—	—	MAY 16	22:26 HST
MAY 17	13 11 13.8	51.047N.	175.248W.	33	GS	4.5	—	—	—	MAY 17	03:11 HST
MAY 17	16 20 24.3	52.443N.	174.271W.	15	EE	5.8	6.6	—	VI	MAY 17	06:20 HST
MAY 17	16 31 57.9	52.360N.	174.595W.	15	EE	4.9	—	—	—	MAY 17	06:31 HST
MAY 17	22 16 27.2	50.923N.	176.045W.	20	EE	4.6	—	—	—	MAY 17	12:16 HST
MAY 18	00 36 26.4	54.628N.	161.386W.	14	LD	—	—	3.1m_X(LD)	—	MAY 17	15:36 AST
MAY 18	03 30 01.4	59.252N.	139.137W.	18	GM	—	—	3.1M_L(EP)	—	MAY 17	18:30 AST
MAY 18	06 15 00.9	51.398N.	175.058W.	33	GS	4.4	—	3.9M_L(PM)	—	MAY 17	20:15 HST
MAY 18	08 01 18.0	51.407N.	176.770W.	36	EE	4.5	—	4.5M_L(PM)	—	MAY 17	22:01 HST
MAY 18	14 22 38.4	51.228N.	174.722W.	20	EE	5.1	4.4	4.4M_L(PM)	—	MAY 18	04:22 HST
MAY 18	15 26 43.4	51.502N.	175.148W.	35	EE	4.9	4.5	4.2M_L(PM)	—	MAY 18	05:26 HST
MAY 18	16 34 49.3	59.577N.	152.957W.	88	GM	—	—	—	—	MAY 18	07:34 AST
MAY 18	19 14 00.9	51.367N.	174.678W.	25	EE	4.7	—	4.7M_L(PM)	—	MAY 18	09:14 HST
MAY 18	20 24 26.7	51.350N.	175.899W.	33	GS	4.0	—	—	—	MAY 18	10:24 HST
MAY 18	22 19 07.7	52.252N.	175.035W.	33	GS	4.6	—	—	—	MAY 18	12:19 HST
MAY 19	02 37 34.7	52.359N.	174.955W.	15	EE	5.1	5.2	4.9M_L(PM)	II	MAY 18	16:37 HST
MAY 19	03 19 05.9	52.397N.	174.916W.	15	EE	5.0	—	4.5M_L(PM)	—	MAY 18	17:19 HST
MAY 19	05 49 30.2	51.214N.	175.527W.	33	GS	4.8	—	—	—	MAY 18	19:49 HST
MAY 19	06 03 59.7	60.216N.	141.034W.	5	GM	—	—	—	—	MAY 18	21:03 AST
MAY 19	06 52 35.4	52.072N.	174.434W.	33	GS	4.0	—	—	—	MAY 18	20:52 HST
MAY 19	11 04 34.4	61.964N.	150.757W.	67	GM	—	—	—	—	MAY 19	02:04 AST
MAY 19	11 35 48.8	52.122N.	174.947W.	33	GS	3.8	—	—	—	MAY 19	01:35 HST
MAY 19	20 21 52.1	51.230N.	179.348W.	33	GS	4.7	—	—	—	MAY 19	10:21 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 19	20 52 50.1	51.232N.	174.849W.	20	EE	4.9	—	—	—	MAY 19	10:52 HST
MAY 19	23 26 46.2	51.801N.	179.712W.	33	GS	5.2	—	—	—	MAY 19	13:26 HST
MAY 20	02 01 57.0	51.378N.	175.080W.	33	GS	4.0	—	—	—	MAY 19	16:01 HST
MAY 20	10 12 27.8	51.596N.	175.070W.	33	GS	4.3	—	—	—	MAY 20	00:12 HST
MAY 20	10 53 20.3	51.196N.	175.198W.	20	EE	4.9	—	—	—	MAY 20	00:53 HST
MAY 20	11 08 31.1	51.003N.	176.351W.	33	GS	4.8	—	—	—	MAY 20	01:08 HST
MAY 20	11 49 59.9	51.346N.	175.024W.	33	GS	4.0	—	—	—	MAY 20	01:49 HST
MAY 20	11 50 17.2	51.146N.	175.082W.	20	EE	4.6	—	—	—	MAY 20	01:50 HST
MAY 20	13 48 34.4	50.889N.	176.448W.	20	EE	4.8	—	—	—	MAY 20	03:48 HST
MAY 20	14 15 29.2	63.010N.	150.480W.	122	GS	—	—	—	—	MAY 20	05:15 AST
MAY 20	14 40 17.7	51.025N.	176.391W.	33	GS	4.7	—	—	—	MAY 20	04:40 HST
MAY 20	18 10 06.8	51.360N.	175.912W.	33	GS	3.8	—	—	—	MAY 20	08:10 HST
MAY 20	20 41 36.7	51.703N.	179.564W.	33	GS	4.2	—	—	—	MAY 20	10:41 HST
MAY 21	02 14 09.2	65.483N.	141.302W.	33	GS	3.7	—	$3.5M_L$(PM)	—	MAY 20	17:14 AST
MAY 21	04 11 14.3	59.171N.	153.635W.	107	GM	—	—	—	—	MAY 20	19:11 AST
MAY 21	07 05 15.7	51.351N.	176.214W.	33	EE	4.6	—	$4.4M_L$(PM)	III	MAY 20	21:05 HST
MAY 21	09 14 13.0	52.669N.	161.203W.	4	LD	—	—	$3.4m_X$(LD)	—	MAY 21	00:14 AST
MAY 21	12 38 53.4	59.780N.	153.635W.	135	GM	—	—	—	—	MAY 21	03:38 AST
MAY 21	17 30 07.0	51.423N.	175.988W.	35	EE	4.8	4.7	—	—	MAY 21	07:30 HST
MAY 21	22 12 20.9	51.647N.	175.325W.	46	EE	4.8	—	$4.6M_L$(PM)	II	MAY 21	12:12 HST
MAY 22	07 24 35.9	61.889N.	147.357W.	30	GM	3.5	—	$3.8M_L$(PM)	—	MAY 21	22:24 AST
MAY 22	11 48 13.5	51.580N.	175.683W.	33	GS	4.5	—	—	—	MAY 22	01:48 HST
MAY 22	14 49 29.0	53.526N.	164.698W.	40	LD	4.5	—	$4.0M_L$(PM)	—	MAY 22	05:49 AST
MAY 22	14 55 57.5	62.204N.	148.887W.	46	GM	—	—	—	—	MAY 22	05:55 AST
MAY 22	16 18 00.2	50.394N.	174.985W.	33	GS	4.8	—	—	—	MAY 22	06:18 HST
MAY 22	16 24 52.3	51.201N.	175.582W.	33	GS	4.5	—	—	—	MAY 22	06:24 HST
MAY 22	22 32 55.2	54.799N.	163.644W.	118	LD	—	—	$3.2m_X$(LD)	—	MAY 22	13:32 AST
MAY 23	07 19 06.4	51.139N.	176.126W.	33	GS	4.9	—	—	—	MAY 22	21:19 HST
MAY 23	08 45 26.0	62.988N.	150.456W.	115	GS	3.6	—	—	—	MAY 22	23:45 AST
MAY 23	23 18 42.2	58.906N.	153.377W.	80	GS	5.0	—	—	III	MAY 23	14:18 AST
MAY 23	23 40 00.3	51.257N.	178.993E.	33	GS	4.6	—	$4.1M_L$(PM)	—	MAY 23	13:40 HST
MAY 24	08 07 53.3	63.096N.	150.911W.	129	GS	4.2	—	—	—	MAY 23	23:07 AST
MAY 24	13 27 42.4	58.701N.	155.325W.	4	GM	—	—	—	—	MAY 24	04:27 AST
MAY 24	13 45 47.7	61.179N.	152.060W.	93	GM	—	—	—	—	MAY 24	04:45 AST
MAY 24	16 44 58.3	50.909N.	176.202W.	20	EE	4.6	—	—	—	MAY 24	06:44 HST
MAY 24	18 40 49.4	52.183N.	174.795W.	15	EE	4.6	—	$3.5M_L$(PM)	—	MAY 24	08:40 HST
MAY 25	00 33 04.6	51.341N.	175.188W.	25	EE	5.0	4.3	—	—	MAY 24	14:33 HST
MAY 25	07 16 58.9	50.884N.	176.015W.	20	EE	4.8	—	$3.8M_L$(PM)	—	MAY 24	21:16 HST
MAY 25	12 56 27.9	54.661N.	161.706W.	22	LD	—	—	$3.2m_X$(LD)	—	MAY 25	03:56 AST
MAY 25	19 23 10.4	51.148N.	176.142W.	20	EE	4.7	—	$4.0M_L$(PM)	—	MAY 25	09:23 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
MAY 25	20 18 15.0	61.952N.	148.865W.	11	GM	—	—	3.0M_L(PM)	—	MAY 25	11:18 AST
MAY 25	23 32 08.2	51.215N.	174.774W.	20	EE	4.8	—	3.8M_L(PM)	—	MAY 25	13:32 HST
MAY 26	14 31 41.0	61.364N.	150.946W.	65	GM	—	—	—	—	MAY 26	05:31 AST
MAY 26	23 00 20.6	51.781N.	174.550W.	33	GS	4.7	—	—	—	MAY 26	13:00 HST
MAY 26	23 09 58.3	50.547N.	174.640W.	33	GS	4.8	—	—	—	MAY 26	13:09 HST
MAY 27	02 24 40.0	50.693N.	174.708W.	33	GS	4.3	—	—	—	MAY 26	16:24 HST
MAY 27	09 36 54.1	51.397N.	175.750W.	33	GS	4.2	—	—	—	MAY 26	23:36 HST
MAY 27	14 16 24.2	51.636N.	174.306W.	33	GS	4.9	—	—	—	MAY 27	04:16 HST
MAY 27	17 48 50.2	59.970N.	152.742W.	92	GM	—	—	—	—	MAY 27	08:48 AST
MAY 28	05 25 10.7	61.449N.	151.345W.	72	GM	—	—	—	—	MAY 27	20:25 AST
MAY 28	10 03 26.7	59.516N.	153.581W.	117	GM	—	—	—	—	MAY 28	01:03 AST
MAY 28	12 01 21.0	60.315N.	152.246W.	81	GM	—	—	—	—	MAY 28	03:01 AST
MAY 28	13 20 08.4	51.234N.	176.076W.	33	GS	4.8	—	4.1M_L(PM)	—	MAY 28	03:20 HST
MAY 28	20 58 07.5	54.881N.	159.723W.	30	LD	—	—	3.0m_X(LD)	—	MAY 28	11:58 AST
MAY 29	02 40 11.2	59.119N.	152.163W.	61	GS	4.5	—	4.2M_L(PM)	FELT	MAY 28	17:40 AST
MAY 29	03 56 13.6	59.046N.	152.111W.	57	GM	—	—	—	—	MAY 28	18:56 AST
MAY 29	06 09 09.8	62.468N.	152.292W.	120	GM	—	—	—	—	MAY 28	21:09 AST
MAY 29	19 18 46.3	51.464N.	175.289W.	35	EE	4.9	—	4.7M_L(PM)	FELT	MAY 29	09:18 HST
MAY 30	00 52 11.8	51.060N.	175.299W.	20	EE	4.8	—	—	—	MAY 29	14:52 HST
MAY 30	03 59 21.8	51.652N.	173.143W.	33	GS	4.5	—	—	—	MAY 29	17:59 HST
MAY 30	05 39 25.1	60.253N.	152.648W.	105	GM	—	—	—	—	MAY 29	20:39 AST
MAY 31	10 34 46.3	62.137N.	149.422W.	53	GM	—	—	—	—	MAY 31	01:34 AST
MAY 31	21 53 55.9	51.343N.	175.727W.	33	GS	4.3	—	—	—	MAY 31	11:53 HST
JUNE 1	11 18 48.1	60.512N.	151.877W.	74	GM	—	—	—	—	JUNE 1	02:18 AST
JUNE 1	21 12 41.0	52.093N.	176.033W.	33	GS	4.2	—	—	—	JUNE 1	11:12 HST
JUNE 2	00 42 21.4	51.197N.	174.656W.	20	EE	4.5	—	—	—	JUNE 1	14:42 HST
JUNE 2	02 35 57.2	51.404N.	175.043W.	33	GS	4.4	—	—	—	JUNE 1	16:35 HST
JUNE 2	09 41 41.6	51.185N.	176.224W.	33	GS	4.1	—	—	—	JUNE 1	23:41 HST
JUNE 3	23 05 22.4	51.178N.	174.597W.	20	EE	5.2	—	—	—	JUNE 3	13:05 HST
JUNE 3	23 05 28.8	51.256N.	174.631W.	20	EE	5.4	5.1	5.8M_L(PM)	II	JUNE 3	13:05 HST
JUNE 3	23 41 48.9	51.945N.	174.577W.	33	GS	4.3	5.0	—	—	JUNE 3	13:41 HST
JUNE 4	05 12 57.8	58.074N.	151.494W.	46	GM	4.0	—	—	—	JUNE 3	20:12 AST
JUNE 4	15 48 20.8	65.636N.	152.604W.	10	GS	5.2	4.7	5.7M_L(PM)	V	JUNE 4	06:48 AST
JUNE 4	17 34 02.3	62.133N.	148.596W.	46	GM	—	—	—	—	JUNE 4	08:34 AST
JUNE 4	19 25 43.3	51.287N.	174.580W.	20	EE	4.9	—	4.0M_L(PM)	II	JUNE 4	09:25 HST
JUNE 4	20 49 49.2	59.264N.	151.970W.	66	GM	—	—	—	—	JUNE 4	11:49 AST
JUNE 4	21 15 18.7	62.354N.	151.184W.	84	GM	—	—	—	—	JUNE 4	12:15 AST
JUNE 4	22 31 35.7	56.085N.	161.986W.	233	LD	—	—	3.5m_X(LD)	—	JUNE 4	13:31 AST
JUNE 5	03 19 03.1	55.811N.	156.911W.	0	LD	—	—	3.5m_X(LD)	—	JUNE 4	18:19 AST
JUNE 5	14 22 04.7	51.093N.	174.341W.	33	GS	4.5	—	4.1M_L(PM)	FELT	JUNE 5	04:22 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JUNE 5	15 24 53.7	51.138N.	174.177W.	20	EE	4.7	—	4.2M_L(PM)	FELT	JUNE 5	05:24 HST
JUNE 5	15 39 19.1	61.775N.	151.970W.	108	GM	—	—	—	—	JUNE 5	06:39 AST
JUNE 5	17 32 40.6	51.094N.	175.350W.	20	EE	5.1	—	4.5M_L(PM)	FELT	JUNE 5	07:32 HST
JUNE 5	19 16 16.1	59.980N.	152.302W.	60	GM	—	—	—	—	JUNE 5	10:16 AST
JUNE 5	20 27 03.2	51.296N.	174.210W.	22	EE	5.4	4.8	4.5M_L(PM)	FELT	JUNE 5	10:27 HST
JUNE 5	22 35 03.7	56.090N.	160.351W.	163	LD	—	—	3.1m_X(LD)	—	JUNE 5	13:35 AST
JUNE 5	23 13 09.7	58.772N.	152.521W.	60	GM	—	—	—	—	JUNE 5	14:13 AST
JUNE 5	23 33 08.6	53.541N.	164.096W.	9	LD	—	—	3.2m_X(LD)	—	JUNE 5	14:33 AST
JUNE 6	03 46 46.4	59.736N.	153.398W.	146	GS	4.3	—	—	—	JUNE 5	18:46 AST
JUNE 6	07 11 01.9	63.252N.	149.250W.	87	GS	—	—	3.6M_L(PM)	—	JUNE 5	22:11 AST
JUNE 6	16 27 37.6	61.852N.	150.815W.	64	GM	—	—	3.0M_L(PM)	—	JUNE 6	07:27 AST
JUNE 6	20 47 13.1	51.750N.	174.724W.	33	GS	4.4	—	—	—	JUNE 6	10:47 HST
JUNE 7	15 59 00.8	51.334N.	174.843W.	25	EE	4.8	4.6	4.6M_L(PM)	—	JUNE 7	05:59 HST
JUNE 7	18 54 20.7	58.012N.	151.565W.	91	GM	—	—	—	—	JUNE 7	09:54 AST
JUNE 7	19 50 56.2	52.518N.	162.864W.	6	LD	—	—	3.2m_X(LD)	—	JUNE 7	10:50 AST
JUNE 7	21 06 41.7	51.221N.	179.992E.	33	GS	5.0	4.1	4.6M_L(PM)	—	JUNE 7	11:06 HST
JUNE 8	05 17 59.1	51.299N.	174.768W.	20	EE	4.8	—	—	—	JUNE 7	19:17 HST
JUNE 8	11 35 51.3	60.964N.	152.488W.	122	GM	—	—	—	—	JUNE 8	02:35 AST
JUNE 8	12 45 13.7	62.191N.	150.199W.	15	GM	—	—	3.2M_L(PM)	—	JUNE 8	03:45 AST
JUNE 8	16 43 07.0	50.858N.	177.466W.	20	EE	4.7	—	—	—	JUNE 8	06:43 HST
JUNE 8	17 02 47.1	59.454N.	153.662W.	114	GM	—	—	—	—	JUNE 8	08:02 AST
JUNE 9	02 17 38.2	54.142N.	168.132W.	33	GS	5.0	4.7	5.6M_L(PM)	—	JUNE 8	17:17 AST
JUNE 9	13 56 57.6	60.035N.	153.528W.	147	GM	—	—	—	—	JUNE 9	04:56 AST
JUNE 10	03 17 24.5	55.889N.	161.765W.	192	LD	—	—	3.5m_X(LD)	—	JUNE 9	18:17 AST
JUNE 10	05 33 09.0	51.277N.	176.001W.	33	GS	4.3	—	—	—	JUNE 9	19:33 HST
JUNE 10	09 58 46.0	61.005N.	147.230W.	16	GM	—	—	—	—	JUNE 10	00:58 AST
JUNE 10	12 08 42.9	60.636N.	150.406W.	42	GM	—	—	3.4M_L(PM)	—	JUNE 10	03:08 AST
JUNE 10	15 15 46.0	51.572N.	176.016W.	44	EE	4.5	—	4.4M_L(PM)	—	JUNE 10	05:15 HST
JUNE 10	17 57 23.6	51.357N.	175.776W.	33	GS	4.6	—	4.5M_L(PM)	—	JUNE 10	07:57 HST
JUNE 11	07 53 03.6	60.544N.	145.090W.	12	GM	—	—	—	—	JUNE 10	22:53 AST
JUNE 11	10 19 09.9	62.219N.	149.962W.	65	GM	—	—	—	—	JUNE 11	01:19 AST
JUNE 12	00 09 37.8	52.534N.	176.220W.	33	GS	4.4	—	—	—	JUNE 11	14:09 HST
JUNE 12	01 32 48.6	54.859N.	160.284W.	33	LD	—	—	3.2m_X(LD)	—	JUNE 11	16:32 AST
JUNE 12	17 57 55.0	62.379N.	151.781W.	108	GM	—	—	—	—	JUNE 12	08:57 AST
JUNE 13	08 28 47.4	53.325N.	163.534W.	19	LD	4.7	—	3.1m_X(LD)	—	JUNE 12	23:28 AST
JUNE 13	09 25 50.0	53.289N.	163.375W.	13	LD	4.8	—	4.4m_X(LD)	—	JUNE 13	00:25 AST
JUNE 13	13 25 36.4	61.069N.	151.057W.	69	GM	—	—	—	—	JUNE 13	04:25 AST
JUNE 13	14 03 54.7	54.149N.	164.355W.	33	GS	4.7	—	—	—	JUNE 13	05:03 AST
JUNE 13	20 08 05.7	52.069N.	178.038E.	106	GS	4.6	—	—	—	JUNE 13	10:08 HST
JUNE 14	03 26 51.4	56.033N.	161.567W.	202	LD	4.4	—	4.1m_X(LD)	—	JUNE 13	18:26 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JUNE 14	14 54 56.7	60.626N.	150.527W.	54	GM	—	—	—	—	JUNE 14	05:54 AST
JUNE 14	22 12 38.7	66.430N.	149.756W.	10	GS	—	—	3.2M_L(PM)	—	JUNE 14	13:12 AST
JUNE 15	02 22 52.9	51.396N.	174.760W.	33	GS	4.3	—	4.3M_L(PM)	III	JUNE 14	16:22 HST
JUNE 15	23 54 16.8	51.587N.	175.359W.	33	GS	4.4	—	—	—	JUNE 15	13:54 HST
JUNE 16	01 00 04.3	60.185N.	152.532W.	104	GM	—	—	—	—	JUNE 15	16:00 AST
JUNE 16	21 54 02.0	61.838N.	149.433W.	43	GM	—	—	3.8M_L(PM)	III	JUNE 16	12:54 AST
JUNE 17	14 10 39.2	59.791N.	153.392W.	118	GM	—	—	—	—	JUNE 17	05:10 AST
JUNE 17	16 03 07.5	51.480N.	175.186W.	33	GS	4.5	—	4.5M_L(PM)	—	JUNE 17	06:03 HST
JUNE 17	17 45 43.8	61.601N.	151.008W.	72	GM	—	—	3.0M_L(PM)	—	JUNE 17	08:45 AST
JUNE 17	17 59 47.9	61.282N.	146.868W.	32	GM	—	—	—	—	JUNE 17	08:59 AST
JUNE 18	03 30 07.5	51.163N.	173.793W.	20	EE	4.6	4.9	—	—	JUNE 17	17:30 HST
JUNE 18	04 30 16.4	59.884N.	153.180W.	110	GM	—	—	—	—	JUNE 17	19:30 AST
JUNE 18	08 05 16.4	51.465N.	176.833W.	41	EE	5.8	6.3	6.0M_L(PM)	IV	JUNE 17	22:05 HST
JUNE 18	10 32 35.6	51.169N.	176.015W.	33	GS	4.5	—	—	—	JUNE 18	00:32 HST
JUNE 18	14 46 20.8	50.945N.	176.106W.	20	EE	4.8	—	—	—	JUNE 18	04:46 HST
JUNE 18	18 28 40.1	51.390N.	175.950W.	33	GS	4.2	—	—	—	JUNE 18	08:28 HST
JUNE 18	21 47 49.8	51.613N.	176.945W.	33	GS	4.5	—	—	—	JUNE 18	11:47 HST
JUNE 18	23 17 58.2	52.317N.	179.615E.	171	GS	5.1	—	—	—	JUNE 18	13:17 HST
JUNE 18	23 43 04.4	63.067N.	150.911W.	131	GS	—	—	—	FELT	JUNE 18	14:43 AST
JUNE 19	02 39 33.4	61.401N.	150.664W.	72	GM	—	—	—	—	JUNE 18	17:39 AST
JUNE 19	05 40 56.8	53.253N.	163.178W.	21	LD	4.4	—	3.2m_X(LD)	—	JUNE 18	20:41 AST
JUNE 19	09 09 09.2	56.331N.	152.914W.	17	GS	6.0	6.3	5.4M_L(PM)	IV	JUNE 19	00:09 AST
JUNE 19	11 08 37.3	56.303N.	153.107W.	33	GS	4.7	—	4.3M_L(PM)	—	JUNE 19	02:08 AST
JUNE 19	19 25 58.4	50.251N.	179.681E.	33	GS	4.4	—	—	—	JUNE 19	09:25 HST
JUNE 19	22 28 38.8	54.644N.	161.096W.	15	LD	4.3	—	3.4m_X(LD)	FELT	JUNE 19	13:28 AST
JUNE 20	04 36 29.8	56.482N.	152.711W.	33	GS	4.7	4.3	4.7M_L(PM)	—	JUNE 19	19:36 AST
JUNE 20	07 39 32.8	60.676N.	152.107W.	82	GM	—	—	4.0M_L(PM)	FELT	JUNE 19	22:39 AST
JUNE 20	22 13 49.6	62.248N.	150.234W.	10	GM	—	—	3.8M_L(PM)	FELT	JUNE 20	13:13 AST
JUNE 21	01 32 28.2	50.828N.	178.689W.	20	EE	4.9	4.5	4.8M_L(PM)	—	JUNE 20	15:32 HST
JUNE 21	12 07 30.2	59.947N.	152.851W.	101	GS	4.9	—	—	FELT	JUNE 21	03:07 AST
JUNE 21	13 03 47.2	51.365N.	175.881W.	33	GS	4.5	—	—	—	JUNE 21	03:03 HST
JUNE 21	14 54 57.5	55.698N.	159.693W.	80	LD	—	—	3.5m_X(LD)	—	JUNE 21	05:54 AST
JUNE 21	15 38 53.8	51.237N.	174.735W.	20	EE	4.7	4.6	4.0M_L(PM)	—	JUNE 21	05:38 HST
JUNE 21	17 58 23.1	59.313N.	153.844W.	121	GM	—	—	—	—	JUNE 21	08:58 AST
JUNE 21	19 24 23.9	62.459N.	151.744W.	102	GM	—	—	—	—	JUNE 21	10:24 AST
JUNE 21	21 58 25.9	66.113N.	150.300W.	10	GS	—	—	3.1M_L(PM)	—	JUNE 21	12:58 AST
JUNE 22	05 28 52.4	51.108N.	175.170W.	16	EE	4.9	4.9	4.3M_L(PM)	FELT	JUNE 21	19:28 HST
JUNE 22	05 33 53.1	51.082N.	175.152W.	33	GS	4.4	—	—	—	JUNE 21	19:33 HST
JUNE 22	05 37 07.0	51.288N.	175.259W.	25	EE	4.8	—	—	—	JUNE 21	19:37 HST
JUNE 22	06 03 37.2	52.077N.	175.135W.	33	GS	4.6	—	—	—	JUNE 21	20:03 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JUNE 22	07 38 14.0	51.301N.	175.138W.	33	GS	4.2	—	—	—	JUNE 21	21:38 HST
JUNE 22	10 38 56.3	54.838N.	159.240W.	37	LD	—	—	3.0m_X(LD)	—	JUNE 22	01:38 AST
JUNE 22	14 40 19.4	51.463N.	177.264W.	33	GS	4.2	—	—	—	JUNE 22	04:40 HST
JUNE 22	15 35 21.7	51.154N.	175.213W.	20	EE	4.4	—	3.9M_L(PM)	—	JUNE 22	05:35 HST
JUNE 22	17 51 05.6	51.590N.	172.153W.	33	GS	4.2	—	—	—	JUNE 22	07:51 HST
JUNE 22	18 01 54.8	51.206N.	175.633W.	33	GS	4.6	4.1	—	—	JUNE 22	08:01 HST
JUNE 22	22 37 03.3	55.142N.	156.870W.	33	GS	4.5	4.3	—	—	JUNE 22	13:37 AST
JUNE 22	23 35 21.5	62.258N.	149.344W.	55	GM	—	—	—	—	JUNE 22	14:35 AST
JUNE 23	02 47 41.6	61.740N.	149.765W.	47	GM	—	—	3.1M_L(PM)	FELT	JUNE 22	17:47 AST
JUNE 23	09 39 56.5	51.461N.	177.187W.	33	GS	4.3	—	—	—	JUNE 22	23:39 HST
JUNE 23	12 43 03.9	51.712N.	175.124W.	33	GS	4.3	—	—	—	JUNE 23	02:43 HST
JUNE 23	16 34 09.5	58.814N.	153.022W.	72	GM	—	—	3.8M_L(PM)	—	JUNE 23	07:34 AST
JUNE 24	09 35 23.4	58.529N.	155.219W.	140	GM	—	—	—	FELT	JUNE 24	00:35 AST
JUNE 24	12 19 28.9	53.334N.	163.078W.	5	LD	—	—	3.0m_X(LD)	—	JUNE 24	03:19 AST
JUNE 24	13 38 25.6	65.905N.	156.564W.	33	GS	—	—	3.6M_L(PM)	FELT	JUNE 24	04:38 AST
JUNE 24	13 57 04.4	63.092N.	149.880W.	130	GS	—	—	—	—	JUNE 24	04:57 AST
JUNE 24	20 46 02.7	66.133N.	149.639W.	10	GS	4.9	—	5.2M_L(PM)	III	JUNE 24	11:46 AST
JUNE 25	04 04 12.7	59.879N.	152.446W.	82	GM	—	—	—	—	JUNE 24	19:04 AST
JUNE 26	13 55 43.6	59.730N.	152.182W.	23	GM	—	—	3.6M_L(PM)	FELT	JUNE 26	04:55 AST
JUNE 26	16 34 19.0	62.228N.	150.180W.	12	GM	—	—	3.3M_L(PM)	FELT	JUNE 26	07:34 AST
JUNE 27	02 16 52.8	66.228N.	150.050W.	10	GS	—	—	3.3M_L(PM)	—	JUNE 26	17:16 AST
JUNE 27	07 22 33.0	59.016N.	152.505W.	71	GM	4.0	—	3.6M_L(PM)	—	JUNE 26	22:22 AST
JUNE 27	14 09 33.1	59.915N.	153.409W.	122	GM	—	—	—	—	JUNE 27	05:09 AST
JUNE 28	07 53 53.8	59.850N.	153.110W.	103	GM	—	—	—	—	JUNE 27	22:53 AST
JUNE 28	16 01 19.7	55.116N.	160.029W.	52	LD	4.3	—	4.4m_X(LD)	FELT	JUNE 28	07:01 AST
JUNE 29	02 25 41.8	53.730N.	164.000W.	15	LD	4.6	—	3.8m_X(LD)	—	JUNE 28	17:25 AST
JUNE 29	04 30 04.0	52.539N.	174.792W.	15	EE	4.9	5.2	4.6M_L(PM)	FELT	JUNE 28	18:30 HST
JUNE 29	04 32 10.8	52.255N.	174.836W.	33	GS	4.7	—	4.3M_L(PM)	FELT	JUNE 28	18:32 HST
JUNE 29	08 36 00.7	60.102N.	152.052W.	64	GM	—	—	3.3M_L(PM)	—	JUNE 28	23:36 AST
JUNE 29	20 56 33.6	60.476N.	152.025W.	86	GM	—	—	—	—	JUNE 29	11:56 AST
JUNE 30	00 59 56.6	68.092N.	163.780W.	33	GS	—	—	—	—	JUNE 29	15:59 AST
JUNE 30	01 21 30.0	51.414N.	176.655W.	39	EE	4.8	4.1	4.5M_L(PM)	III	JUNE 29	15:21 HST
JUNE 30	04 39 08.8	51.338N.	176.643W.	33	EE	4.5	—	—	II	JUNE 29	18:39 HST
JUNE 30	05 49 01.2	51.600N.	175.970W.	33	GS	4.4	—	—	—	JUNE 29	19:49 HST
JUNE 30	06 23 47.1	51.089N.	176.139W.	21	EE	5.1	4.7	4.9M_L(PM)	III	JUNE 29	20:23 HST
JUNE 30	06 28 01.9	51.543N.	176.596W.	33	GS	4.2	—	4.3M_L(PM)	II	JUNE 29	20:28 HST
JUNE 30	06 33 54.5	51.096N.	176.115W.	33	GS	4.0	—	—	—	JUNE 29	20:33 HST
JUNE 30	06 55 09.4	51.117N.	176.124W.	33	GS	4.2	—	4.7M_L(PM)	II	JUNE 29	20:55 HST
JUNE 30	06 58 37.8	51.180N.	176.155W.	33	GS	4.4	—	4.3M_L(PM)	—	JUNE 29	20:58 HST
JUNE 30	23 44 39.3	51.416N.	177.092W.	44	EE	4.7	—	—	—	JUNE 30	13:44 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JULY 1	00 58 46.0	63.318N.	149.736W.	118	GS	—	—	—	—	JUNE 30	15:58 AST
JULY 1	05 37 06.4	60.135N.	152.586W.	93	GM	—	—	—	—	JUNE 30	20:37 AST
JULY 1	19 26 42.6	61.597N.	149.704W.	43	GM	—	—	3.7M_L(PM)	III	JULY 1	10:26 AST
JULY 3	03 17 42.7	59.300N.	151.878W.	53	GM	—	—	—	—	JULY 2	18:17 AST
JULY 3	05 44 47.2	62.200N.	152.093W.	112	GM	—	—	—	—	JULY 2	20:44 AST
JULY 3	11 41 20.0	60.954N.	152.685W.	142	GM	—	—	—	—	JULY 3	02:41 AST
JULY 3	14 11 11.0	65.728N.	152.313W.	33	GS	—	—	3.4M_L(PM)	—	JULY 3	05:11 AST
JULY 3	17 33 31.8	51.204N.	175.589W.	20	EE	5.0	—	4.8M_L(PM)	FELT	JULY 3	07:33 HST
JULY 4	01 20 38.4	60.488N.	147.364W.	19	GM	—	—	—	—	JULY 3	16:20 AST
JULY 4	05 58 51.9	51.602N.	175.827W.	42	EE	4.9	—	4.7M_L(PM)	FELT	JULY 3	19:58 HST
JULY 4	07 45 00.6	61.071N.	151.357W.	63	GM	—	—	3.6M_L(PM)	—	JULY 3	22:45 AST
JULY 4	15 23 46.9	64.022N.	149.080W.	33	GS	—	—	3.1M_L(PM)	—	JULY 4	06:23 AST
JULY 5	00 32 35.5	53.121N.	164.220W.	19	LD	—	—	3.0m_X(LD)	—	JULY 4	15:32 AST
JULY 5	03 01 32.6	51.248N.	179.746W.	33	GS	5.6	5.2	5.2M_L(PM)	—	JULY 4	17:01 HST
JULY 5	03 15 37.2	51.473N.	179.964E.	33	GS	4.2	—	4.6M_L(PM)	—	JULY 4	17:15 HST
JULY 5	06 53 52.2	63.053N.	150.426W.	119	GS	—	—	—	—	JULY 4	21:53 AST
JULY 5	11 57 17.5	57.134N.	154.892W.	93	GM	4.4	—	—	—	JULY 5	02:57 AST
JULY 5	12 27 19.6	54.731N.	164.388W.	143	LD	—	—	3.0m_X(LD)	—	JULY 5	03:27 AST
JULY 5	22 31 49.2	59.967N.	141.844W.	16	GM	—	—	4.1M_L(PM)	—	JULY 5	13:31 AST
JULY 6	07 34 35.4	56.176N.	149.990W.	39	GM	4.1	—	—	—	JULY 5	22:34 AST
JULY 6	11 57 38.0	60.970N.	147.191W.	14	GM	—	—	—	—	JULY 6	02:57 AST
JULY 7	07 12 26.1	58.794N.	153.281W.	83	GM	4.3	—	—	—	JULY 6	22:12 AST
JULY 7	09 31 44.1	51.546N.	176.107W.	45	EE	4.5	—	4.1M_L(PM)	—	JULY 6	23:31 HST
JULY 7	11 29 58.3	56.416N.	153.402W.	33	GS	4.4	—	—	—	JULY 7	02:29 AST
JULY 7	11 47 02.6	63.704N.	152.470W.	33	GS	—	—	3.1M_L(PM)	—	JULY 7	02:47 AST
JULY 7	21 08 34.5	60.038N.	152.991W.	107	GM	—	—	—	—	JULY 7	12:08 AST
JULY 8	18 47 27.3	59.744N.	153.414W.	128	GM	—	—	—	—	JULY 8	09:47 AST
JULY 9	00 26 22.4	53.186N.	160.742W.	23	LD	—	—	3.5m_X(LD)	—	JULY 8	15:26 AST
JULY 9	03 53 42.6	51.479N.	175.359W.	40	EE	4.5	—	3.8M_L(PM)	—	JULY 8	17:53 HST
JULY 9	08 38 20.4	55.909N.	159.284W.	111	LD	—	—	3.0m_X(LD)	—	JULY 8	23:38 AST
JULY 9	17 10 24.6	51.545N.	176.083W.	42	EE	5.2	4.9	4.9M_L(PM)	IV	JULY 9	07:10 HST
JULY 9	20 24 52.7	51.433N.	176.815W.	41	EE	4.9	—	5.1M_L(PM)	FELT	JULY 9	10:24 HST
JULY 10	07 49 25.4	67.284N.	160.731W.	33	GS	—	—	3.1M_L(PM)	—	JULY 9	22:49 AST
JULY 10	09 43 16.3	67.269N.	160.733W.	33	GS	—	—	3.0M_L(PM)	—	JULY 10	00:43 AST
JULY 10	22 37 03.0	58.412N.	133.493W.	18	EP	—	—	3.1M_L(EP)	—	JULY 10	13:37 AST
JULY 11	01 28 53.5	62.322N.	150.254W.	68	GM	—	—	3.1M_L(PM)	—	JULY 10	16:28 AST
JULY 11	10 17 20.0	58.347N.	133.521W.	18	EP	—	—	3.3M_L(EP)	—	JULY 11	01:17 AST
JULY 11	18 24 01.0	60.975N.	151.594W.	77	GM	—	—	—	—	JULY 11	09:24 AST
JULY 11	18 42 18.0	58.394N.	133.514W.	18	EP	—	—	3.0M_L(EP)	—	JULY 11	09:42 AST
JULY 12	01 15 50.8	62.184N.	151.107W.	72	GM	—	—	—	—	JULY 11	16:15 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JULY 13	01 13 14.9	65.721N.	152.274W.	33	GS	—	—	3.0M_L(PM)	—	JULY 12	16:13 AST
JULY 13	03 54 40.5	62.254N.	150.228W.	11	GM	—	—	3.9M_L(PM)	FELT	JULY 12	18:54 AST
JULY 13	03 58 02.5	62.216N.	150.286W.	10	GS	—	—	3.0M_L(PM)	FELT	JULY 12	18:58 AST
JULY 14	04 29 09.1	60.633N.	151.879W.	69	GM	—	—	—	—	JULY 13	19:29 AST
JULY 14	06 37 15.8	59.872N.	152.661W.	77	GM	—	—	—	—	JULY 13	21:37 AST
JULY 16	00 38 16.6	60.062N.	153.127W.	106	GM	—	—	—	—	JULY 15	15:38 AST
JULY 17	01 00 41.2	60.052N.	153.448W.	135	GM	—	—	—	—	JULY 16	16:00 AST
JULY 17	05 12 11.0	58.173N.	151.281W.	45	GM	—	—	—	—	JULY 16	20:12 AST
JULY 17	16 40 10.8	59.058N.	152.689W.	81	GM	—	—	—	—	JULY 17	07:40 AST
JULY 17	18 37 20.0	51.180N.	174.494W.	20	EE	4.8	—	—	FELT	JULY 17	08:37 HST
JULY 18	02 44 48.6	62.081N.	149.840W.	52	GM	—	—	—	—	JULY 17	17:44 AST
JULY 18	18 29 33.0	58.339N.	133.563W.	18	EP	—	—	3.2M_L(EP)	—	JULY 18	09:29 AST
JULY 18	22 07 05.8	56.160N.	152.762W.	33	GS	4.2	—	3.3M_L(PM)	—	JULY 18	13:07 AST
JULY 19	01 49 19.3	53.603N.	167.273W.	33	GS	4.6	—	4.6M_L(PM)	—	JULY 18	16:49 AST
JULY 19	02 20 56.4	53.602N.	167.291W.	33	GS	4.4	—	4.4M_L(PM)	—	JULY 18	17:20 AST
JULY 19	04 31 55.9	53.352N.	165.882W.	33	GS	5.5	5.1	5.9M_L(PM)	IV	JULY 18	19:31 AST
JULY 19	05 04 08.2	53.339N.	165.859W.	33	GS	5.1	4.5	5.6M_L(PM)	IV	JULY 18	20:04 AST
JULY 19	05 18 33.3	60.136N.	152.552W.	87	GM	—	—	—	—	JULY 18	20:18 YST
JULY 19	06 53 17.8	53.600N.	167.171W.	33	GS	5.5	5.7	5.8M_L(PM)	IV	JULY 18	21:53 AST
JULY 19	07 16 10.6	53.403N.	167.087W.	33	GS	4.5	—	4.6M_L(PM)	—	JULY 18	22:16 AST
JULY 19	07 57 28.0	53.507N.	167.242W.	33	GS	4.8	—	4.4M_L(PM)	—	JULY 18	22:57 AST
JULY 19	08 20 24.4	53.527N.	167.170W.	33	GS	4.2	—	4.7M_L(PM)	—	JULY 18	23:20 AST
JULY 19	11 12 19.5	53.325N.	164.915W.	20	LD	—	—	4.2m_X(LD)	—	JULY 19	02:12 AST
JULY 19	11 31 07.5	53.617N.	167.408W.	33	GS	5.0	4.6	5.1M_L(PM)	FELT	JULY 19	02:31 AST
JULY 19	13 42 55.5	51.499N.	175.158W.	33	GS	4.0	—	—	—	JULY 19	03:42 HST
JULY 19	14 35 59.2	62.114N.	148.884W.	40	GM	—	—	—	—	JULY 19	05:35 AST
JULY 19	17 32 17.7	53.496N.	167.248W.	33	GS	4.4	—	—	—	JULY 19	08:32 AST
JULY 19	20 52 09.6	53.662N.	167.184W.	33	GS	4.9	—	—	III	JULY 19	11:52 AST
JULY 19	21 08 04.6	52.713N.	166.721W.	24	LD	—	—	3.9m_X(LD)	—	JULY 19	12:08 AST
JULY 19	22 09 16.8	61.672N.	152.019W.	114	GM	—	—	—	—	JULY 19	13:09 AST
JULY 19	22 32 36.0	53.521N.	167.301W.	33	GS	5.6	5.6	—	V	JULY 19	13:32 AST
JULY 20	01 59 08.2	53.530N.	167.344W.	33	GS	4.9	4.5	5.2M_L(PM)	FELT	JULY 19	16:59 AST
JULY 20	05 09 20.6	53.434N.	167.155W.	33	GS	4.4	—	—	—	JULY 19	20:09 AST
JULY 20	05 35 09.8	53.661N.	169.367W.	33	GS	4.5	—	—	—	JULY 19	20:35 AST
JULY 20	08 48 24.2	53.494N.	166.951W.	33	GS	4.3	—	—	—	JULY 19	23:48 AST
JULY 20	15 40 23.6	58.752N.	152.721W.	80	GM	—	—	—	—	JULY 20	06:40 AST
JULY 20	16 19 46.8	52.130N.	174.708W.	15	EE	4.6	—	—	—	JULY 20	06:19 HST
JULY 20	16 27 52.6	58.862N.	154.614W.	141	GM	—	—	—	—	JULY 20	07:27 AST
JULY 20	19 37 47.4	61.996N.	151.033W.	71	GM	—	—	—	—	JULY 20	10:37 AST
JULY 20	19 44 29.7	57.042N.	154.533W.	92	GM	4.6	—	—	—	JULY 20	10:44 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JULY 20	21 27 23.7	55.802N.	157.203W.	33	GS	4.7	—	4.7M_L(PM)	—	JULY 20	12:27 AST
JULY 21	00 27 47.8	61.336N.	151.518W.	70	GM	—	—	—	—	JULY 20	15:27 AST
JULY 21	08 32 32.0	62.888N.	149.622W.	82	GM	—	—	—	—	JULY 20	23:32 AST
JULY 21	15 24 45.9	56.592N.	153.361W.	33	GS	5.0	—	5.1M_L(PM)	—	JULY 21	06:24 AST
JULY 22	00 11 07.6	59.874N.	153.386W.	126	GM	—	—	—	—	JULY 21	15:11 AST
JULY 22	02 00 09.4	51.466N.	175.784W.	35	EE	4.8	—	—	—	JULY 21	16:00 HST
JULY 22	04 09 22.4	53.203N.	167.650W.	33	GS	4.5	—	—	—	JULY 21	19:09 AST
JULY 23	00 08 40.7	51.022N.	176.075W.	20	EE	5.2	—	—	—	JULY 22	14:08 HST
JULY 23	03 47 40.1	50.994N.	176.148W.	20	EE	4.9	4.3	—	—	JULY 22	17:47 HST
JULY 23	12 59 32.7	60.344N.	152.283W.	75	GM	—	—	—	—	JULY 23	03:59 AST
JULY 24	00 42 00.8	51.012N.	176.639W.	20	EE	4.9	4.5	5.3M_L(PM)	FELT	JULY 23	14:42 HST
JULY 24	03 05 32.1	56.487N.	153.067W.	33	GS	4.3	—	3.6M_L(PM)	—	JULY 23	18:05 AST
JULY 24	05 13 54.6	59.896N.	153.277W.	115	GM	—	—	—	—	JULY 23	20:13 AST
JULY 24	11 16 09.0	53.330N.	167.730W.	33	GS	4.3	—	—	—	JULY 24	02:16 AST
JULY 24	14 03 30.0	51.492N.	175.173W.	40	EE	4.9	4.5	4.3M_L(PM)	FELT	JULY 24	04:03 HST
JULY 24	16 37 42.2	62.450N.	148.196W.	43	GM	—	—	—	—	JULY 24	07:37 AST
JULY 24	21 30 15.3	58.425N.	152.128W.	55	GM	—	—	—	—	JULY 24	12:30 AST
JULY 25	09 01 32.6	51.079N.	176.137W.	21	EE	5.3	5.6	5.3M_L(PM)	IV	JULY 24	23:01 HST
JULY 25	09 04 16.3	51.056N.	175.996W.	20	EE	5.4	5.6	—	FELT	JULY 24	23:04 HST
JULY 25	10 06 33.0	51.754N.	175.648W.	33	GS	4.6	—	—	—	JULY 25	00:06 HST
JULY 25	17 21 18.5	63.121N.	151.123W.	33	GS	—	—	3.3M_L(PM)	—	JULY 25	08:21 AST
JULY 25	23 27 21.5	50.940N.	175.968W.	20	EE	4.7	—	—	—	JULY 25	13:27 HST
JULY 26	02 52 50.9	52.805N.	166.539W.	6	LD	—	—	4.0m_X(LD)	—	JULY 25	17:52 AST
JULY 26	03 22 54.1	61.843N.	150.671W.	53	GM	—	—	—	—	JULY 25	18:22 AST
JULY 26	06 15 37.1	60.004N.	152.823W.	92	GM	—	—	3.7M_L(PM)	—	JULY 25	21:15 AST
JULY 26	09 15 25.4	60.424N.	151.724W.	61	GM	—	—	—	—	JULY 26	00:15 AST
JULY 26	18 38 10.7	60.446N.	148.846W.	33	GS	—	—	3.5M_L(PM)	—	JULY 26	09:38 AST
JULY 26	18 52 44.8	53.280N.	167.191W.	33	GS	4.7	4.4	4.8M_L(PM)	—	JULY 26	09:52 AST
JULY 26	22 13 04.8	59.159N.	136.084W.	30	GM	—	—	—	—	JULY 26	13:13 AST
JULY 27	00 01 55.3	59.826N.	152.946W.	113	GM	—	—	—	—	JULY 26	15:01 AST
JULY 27	03 18 14.9	51.054N.	176.132W.	33	GS	4.4	—	—	—	JULY 26	17:18 HST
JULY 27	04 55 30.7	52.779N.	169.725W.	33	GS	4.4	—	—	—	JULY 26	19:55 AST
JULY 27	07 31 07.2	60.581N.	153.034W.	139	GM	—	—	—	—	JULY 26	22:31 AST
JULY 27	10 04 42.7	61.987N.	149.680W.	44	GM	—	—	—	—	JULY 27	01:04 AST
JULY 27	17 50 31.2	60.411N.	152.973W.	118	GM	—	—	—	—	JULY 27	08:50 AST
JULY 28	00 23 16.9	62.790N.	151.286W.	46	GM	—	—	—	—	JULY 27	15:23 AST
JULY 28	04 06 50.5	51.404N.	174.016W.	21	EE	5.4	4.8	4.5M_L(PM)	III	JULY 27	18:06 HST
JULY 28	04 54 19.3	51.533N.	175.842W.	40	EE	4.8	4.6	—	—	JULY 27	18:54 HST
JULY 28	05 01 59.6	52.862N.	166.590W.	33	GS	5.0	4.6	4.7M_L(PM)	FELT	JULY 27	20:01 AST
JULY 28	07 00 54.0	58.342N.	133.546W.	18	EP	—	—	3.1M_L(EP)	—	JULY 27	22:00 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
JULY 28	08 28 20.8	62.135N.	149.778W.	50	GM	—	—	3.0M_L(PM)	—	JULY 27	23:28 AST
JULY 28	13 58 55.3	59.848N.	153.400W.	124	GM	—	—	—	—	JULY 28	04:58 AST
JULY 28	14 31 14.1	60.577N.	150.386W.	47	GM	4.4	—	4.6M_L(PM)	IV	JULY 28	05:31 AST
JULY 28	21 57 16.6	51.573N.	175.221W.	42	EE	5.4	4.9	4.9M_L(PM)	III	JULY 28	11:57 HST
JULY 28	23 29 20.7	51.512N.	175.073W.	35	EE	4.7	4.3	—	—	JULY 28	13:29 HST
JULY 29	03 16 55.1	51.905N.	175.097W.	33	GS	4.4	—	—	—	JULY 28	17:16 HST
JULY 30	00 29 50.8	62.549N.	151.412W.	95	GM	—	—	—	—	JULY 29	15:29 AST
JULY 30	13 26 20.9	63.072N.	151.021W.	112	GS	—	—	—	—	JULY 30	04:26 AST
JULY 30	14 03 53.6	62.439N.	148.182W.	42	GM	—	—	—	—	JULY 30	05:03 AST
JULY 30	18 35 54.3	60.314N.	153.466W.	174	GM	—	—	—	—	JULY 30	09:35 AST
JULY 31	01 17 26.4	62.346N.	151.030W.	76	GM	—	—	3.0M_L(PM)	—	JULY 30	16:17 AST
JULY 31	09 16 32.4	60.717N.	151.044W.	50	GM	—	—	—	—	JULY 31	00:16 AST
JULY 31	09 33 14.3	61.767N.	149.567W.	41	GM	—	—	3.2M_L(PM)	FELT	JULY 31	00:33 AST
JULY 31	14 04 34.5	60.797N.	149.614W.	45	GM	—	—	3.7M_L(PM)	FELT	JULY 31	05:04 AST
JULY 31	17 21 01.2	60.048N.	140.718W.	7	GM	—	—	3.2M_L(EP)	—	JULY 31	08:21 AST
JULY 31	19 13 31.1	53.443N.	167.171W.	33	GS	4.7	—	—	—	JULY 31	10:13 AST
AUG. 1	13 27 01.7	62.634N.	148.558W.	24	GM	—	—	—	—	AUG. 1	04:27 AST
AUG. 1	16 43 06.4	53.495N.	167.236W.	33	GS	4.6	—	4.5M_L(PM)	FELT	AUG. 1	07:43 AST
AUG. 1	19 46 34.1	50.872N.	176.139W.	20	EE	4.8	—	4.3M_L(PM)	—	AUG. 1	09:46 HST
AUG. 1	20 24 59.3	50.954N.	176.185W.	20	EE	4.8	4.9	4.9M_L(PM)	FELT	AUG. 1	10:24 HST
AUG. 1	21 05 40.1	51.262N.	174.224W.	22	EE	5.5	5.0	4.6M_L(PM)	IV	AUG. 1	11:05 HST
AUG. 1	21 41 23.0	51.199N.	174.177W.	20	EE	4.8	—	—	—	AUG. 1	11:41 HST
AUG. 1	21 48 40.9	51.284N.	174.171W.	20	EE	4.9	—	—	—	AUG. 1	11:48 HST
AUG. 1	21 49 18.9	51.442N.	176.267W.	33	GS	4.3	—	—	—	AUG. 1	11:49 HST
AUG. 1	22 09 26.5	51.550N.	174.150W.	33	GS	4.5	—	—	—	AUG. 1	12:09 HST
AUG. 2	06 37 06.4	51.314N.	175.992W.	33	GS	5.0	—	—	—	AUG. 1	20:37 HST
AUG. 2	13 18 49.3	59.740N.	153.464W.	114	GM	—	—	—	—	AUG. 2	04:18 AST
AUG. 2	14 01 01.9	52.802N.	168.198W.	33	GS	4.3	—	—	—	AUG. 2	05:01 AST
AUG. 2	19 58 16.0	51.408N.	174.757W.	33	GS	4.7	—	—	—	AUG. 2	09:58 HST
AUG. 3	02 39 28.7	51.244N.	174.125W.	20	EE	5.0	—	4.0M_L(PM)	FELT	AUG. 2	16:39 HST
AUG. 3	06 30 17.2	56.602N.	142.717W.	31	GM	—	—	3.5M_L(EP)	—	AUG. 2	21:30 AST
AUG. 3	13 29 10.4	51.026N.	176.749W.	22	EE	5.4	5.6	5.6M_L(PM)	IV	AUG. 3	03:29 HST
AUG. 3	13 44 54.2	50.808N.	176.671W.	20	EE	4.7	—	5.1M_L(PM)	FELT	AUG. 3	03:44 HST
AUG. 3	20 08 20.5	50.918N.	176.638W.	20	EE	4.8	4.9	4.2M_L(PM)	FELT	AUG. 3	10:08 HST
AUG. 3	20 48 36.6	62.543N.	149.775W.	70	GM	—	—	—	—	AUG. 3	11:48 AST
AUG. 3	21 36 21.5	51.147N.	176.688W.	33	GS	4.7	—	—	—	AUG. 3	11:36 HST
AUG. 4	04 48 36.5	60.484N.	147.247W.	19	GM	—	—	3.6M_L(PM)	—	AUG. 3	19:48 AST
AUG. 4	19 32 35.1	60.486N.	151.967W.	84	GM	—	—	—	—	AUG. 4	10:32 AST
AUG. 5	00 17 33.0	51.221N.	176.206W.	33	GS	—	—	—	—	AUG. 4	14:17 HST
AUG. 5	04 56 32.6	53.110N.	163.969W.	19	LD	4.5	—	4.3M_L(PM)	—	AUG. 4	19:56 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
AUG. 5	08 01 35.6	59.781N.	153.319W.	112	GM	—	—	—	—	AUG. 4	23:01 AST
AUG. 5	08 48 13.2	52.929N.	166.713W.	33	GS	4.6	—	—	—	AUG. 4	23:48 AST
AUG. 5	13 12 43.8	60.323N.	152.450W.	99	GM	—	—	—	—	AUG. 5	04:12 AST
AUG. 5	23 27 44.3	61.783N.	151.968W.	116	GM	—	—	—	—	AUG. 5	14:27 AST
AUG. 6	01 37 49.0	60.676N.	147.091W.	15	GM	—	—	—	—	AUG. 5	16:37 AST
AUG. 6	08 25 33.8	60.112N.	153.467W.	150	GM	—	—	—	—	AUG. 5	23:25 AST
AUG. 6	12 41 17.2	61.976N.	148.188W.	38	GM	—	—	—	—	AUG. 6	03:41 AST
AUG. 6	13 34 09.3	51.204N.	179.387E.	33	GS	4.6	—	—	—	AUG. 6	03:34 HST
AUG. 6	18 07 19.4	61.469N.	152.072W.	105	GM	—	—	—	—	AUG. 6	09:07 AST
AUG. 6	23 11 43.8	61.755N.	151.978W.	110	GM	—	—	—	—	AUG. 6	14:11 AST
AUG. 7	09 07 44.6	61.207N.	151.718W.	85	GM	—	—	—	—	AUG. 7	00:07 AST
AUG. 7	23 12 13.0	51.909N.	178.174W.	93	EE	4.5	—	—	—	AUG. 7	13:12 HST
AUG. 8	01 10 41.6	60.179N.	151.473W.	71	GM	—	—	—	—	AUG. 7	16:10 AST
AUG. 8	02 06 44.0	58.369N.	133.514W.	18	EP	—	—	3.1M_L(EP)	—	AUG. 7	17:06 AST
AUG. 8	04 31 21.3	53.594N.	167.320W.	33	GS	4.5	4.3	5.0M_L(PM)	FELT	AUG. 7	19:31 AST
AUG. 8	05 40 35.3	59.956N.	153.369W.	114	GM	—	—	—	—	AUG. 7	20:40 AST
AUG. 8	13 41 22.7	56.450N.	153.308W.	33	GS	4.3	—	3.5M_L(PM)	—	AUG. 8	04:41 AST
AUG. 8	15 29 10.0	53.450N.	164.592W.	22	LD	—	—	3.1m_X(LD)	—	AUG. 8	06:29 AST
AUG. 8	21 43 49.5	50.320N.	173.542W.	33	GS	4.7	—	—	—	AUG. 8	11:43 HST
AUG. 9	04 28 37.1	60.716N.	151.672W.	70	GM	—	—	3.1M_L(PM)	—	AUG. 8	19:28 AST
AUG. 9	14 26 21.8	53.213N.	161.549W.	11	LD	4.7	—	3.6m_X(LD)	—	AUG. 9	05:26 AST
AUG. 9	16 57 38.7	51.331N.	174.738W.	33	GS	4.3	—	4.0M_L(PM)	—	AUG. 9	06:57 HST
AUG. 9	17 47 14.6	63.400N.	147.315W.	92	GS	—	—	3.4M_L(PM)	—	AUG. 9	08:47 AST
AUG. 10	19 07 56.3	60.092N.	152.732W.	96	GM	—	—	3.3M_L(PM)	—	AUG. 10	10:07 AST
AUG. 11	13 34 54.0	60.399N.	153.354W.	148	GM	—	—	—	—	AUG. 11	04:34 AST
AUG. 11	19 34 47.3	62.048N.	151.308W.	81	GM	—	—	—	—	AUG. 11	10:34 AST
AUG. 11	23 22 37.6	60.575N.	150.617W.	43	GM	—	—	—	—	AUG. 11	14:22 AST
AUG. 12	04 08 43.3	61.811N.	151.608W.	83	GM	—	—	—	—	AUG. 11	19:08 AST
AUG. 12	11 46 29.5	63.124N.	150.616W.	33	GS	—	—	3.4M_L(PM)	—	AUG. 12	02:46 AST
AUG. 12	19 47 17.5	61.882N.	151.011W.	65	GM	—	—	—	—	AUG. 12	10:47 AST
AUG. 13	13 44 31.8	59.575N.	152.971W.	89	GM	—	—	—	—	AUG. 13	04:44 AST
AUG. 13	21 09 57.3	62.466N.	149.662W.	64	GM	—	—	—	—	AUG. 13	12:09 AST
AUG. 14	01 54 28.2	59.559N.	153.258W.	97	GM	—	—	—	—	AUG. 13	16:54 AST
AUG. 14	02 13 44.3	55.460N.	163.425W.	248	LD	4.6	—	3.7m_X(LD)	—	AUG. 13	17:13 AST
AUG. 14	03 25 36.0	58.358N.	133.501W.	18	EP	—	—	3.4M_L(EP)	—	AUG. 13	18:25 AST
AUG. 14	04 13 28.1	59.502N.	149.771W.	43	GM	—	—	3.2M_L(PM)	—	AUG. 13	19:13 AST
AUG. 14	14 28 54.5	51.449N.	175.106W.	35	EE	4.8	—	—	—	AUG. 14	04:28 HST
AUG. 14	20 15 29.3	60.103N.	151.528W.	61	GM	—	—	—	—	AUG. 14	11:15 AST
AUG. 15	14 02 41.0	58.356N.	133.512W.	18	EP	—	—	3.2M_L(EP)	—	AUG. 15	05:02 AST
AUG. 17	21 02 58.9	60.685N.	153.083W.	163	GM	—	—	—	—	AUG. 17	12:02 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
AUG. 19	02 34 07.3	51.838N.	176.095W.	33	GS	4.2	—	—	—	AUG. 18	16:34 HST
AUG. 19	03 19 34.9	62.131N.	150.821W.	65	GM	—	—	—	—	AUG. 18	18:19 AST
AUG. 19	17 55 55.8	60.089N.	153.234W.	128	GM	—	—	—	—	AUG. 19	08:55 AST
AUG. 20	04 48 34.5	53.526N.	162.940W.	2	LD	4.6	—	$4.1m_X$(LD)	—	AUG. 19	19:48 AST
AUG. 20	08 39 21.7	61.544N.	146.420W.	30	GM	—	—	—	—	AUG. 19	23:39 AST
AUG. 20	17 18 39.8	62.120N.	151.191W.	88	GM	—	—	—	—	AUG. 20	08:18 AST
AUG. 20	18 55 11.1	59.126N.	153.782W.	97	GM	—	—	—	—	AUG. 20	09:55 AST
AUG. 20	22 47 29.4	60.253N.	141.122W.	12	GM	—	—	$4.1M_L$(EP)	—	AUG. 20	13:47 AST
AUG. 20	23 44 19.7	65.896N.	155.430W.	33	GS	—	—	$3.9M_L$(PM)	—	AUG. 20	14:44 AST
AUG. 21	04 18 31.4	66.116N.	155.746W.	33	GS	—	—	$4.0M_L$(PM)	—	AUG. 20	19:18 AST
AUG. 21	08 09 45.3	62.298N.	151.148W.	81	GM	—	—	—	—	AUG. 20	23:09 AST
AUG. 21	10 00 47.1	60.134N.	140.994W.	13	GM	—	—	$2.8M_L$(EP)	—	AUG. 21	01:00 AST
AUG. 21	12 24 31.7	51.689N.	175.745W.	33	GS	4.3	—	—	—	AUG. 21	02:24 HST
AUG. 21	19 19 35.3	60.408N.	151.150W.	51	GM	—	—	—	—	AUG. 21	10:19 AST
AUG. 22	09 01 22.9	60.398N.	153.017W.	120	GM	—	—	—	—	AUG. 22	00:01 AST
AUG. 22	14 31 52.6	52.081N.	170.687W.	33	GS	4.2	—	—	—	AUG. 22	04:31 HST
AUG. 23	11 40 43.8	60.061N.	152.924W.	99	GM	—	—	—	—	AUG. 23	02:40 AST
AUG. 23	11 55 12.0	53.547N.	165.855W.	33	GS	4.8	—	$4.2M_L$(PM)	—	AUG. 23	02:55 AST
AUG. 24	10 49 43.0	61.765N.	150.035W.	45	GM	—	—	—	—	AUG. 24	01:49 AST
AUG. 24	14 36 55.3	61.611N.	146.416W.	30	GM	—	—	—	—	AUG. 24	05:36 AST
AUG. 24	21 35 56.1	59.810N.	153.408W.	117	GM	—	—	—	—	AUG. 24	12:35 AST
AUG. 24	21 37 10.2	59.819N.	153.415W.	119	GM	—	—	—	—	AUG. 24	12:37 AST
AUG. 25	06 21 30.1	62.711N.	148.768W.	75	GM	—	—	$3.4M_L$(PM)	—	AUG. 24	21:21 AST
AUG. 25	23 27 54.3	61.352N.	150.333W.	47	GM	4.5	—	$4.4M_L$(PM)	III	AUG. 25	14:27 AST
AUG. 26	21 58 02.6	62.187N.	148.503W.	35	GM	—	—	—	—	AUG. 26	12:58 AST
AUG. 27	03 54 40.4	60.071N.	153.073W.	116	GM	—	—	—	—	AUG. 26	18:54 AST
AUG. 27	14 12 10.4	59.025N.	142.758W.	30	GM	4.5	—	$4.3M_L$(PM)	—	AUG. 27	05:12 AST
AUG. 29	05 13 56.3	51.949N.	171.413W.	33	GS	4.3	—	—	—	AUG. 28	19:13 HST
AUG. 29	08 09 01.6	51.700N.	171.797W.	33	GS	4.4	—	—	—	AUG. 28	22:09 HST
AUG. 29	14 00 59.3	63.064N.	150.793W.	119	GS	4.4	—	—	—	AUG. 29	05:00 AST
AUG. 29	14 42 28.2	59.175N.	153.620W.	107	GM	—	—	—	—	AUG. 29	05:42 AST
SEPT. 1	18 30 03.0	58.382N.	133.517W.	18	EP	—	—	$3.2M_L$(EP)	—	SEPT. 1	09:30 AST
SEPT. 1	18 46 53.2	51.670N.	175.167W.	33	GS	4.4	—	—	—	SEPT. 1	08:46 HST
SEPT. 2	06 58 56.0	58.355N.	133.518W.	18	EP	—	—	$3.2M_L$(EP)	—	SEPT. 1	21:58 AST
SEPT. 3	06 39 30.0	58.352N.	133.522W.	18	EP	—	—	$3.2M_L$(EP)	—	SEPT. 2	21:39 AST
SEPT. 3	10 41 38.8	52.529N.	168.322W.	33	GS	4.7	—	—	—	SEPT. 3	01:41 AST
SEPT. 3	11 51 06.4	51.106N.	178.224W.	30	EE	5.0	—	$5.0M_L$(PM)	III	SEPT. 3	01:51 HST
SEPT. 3	13 28 01.0	58.363N.	133.503W.	18	EP	—	—	$3.1M_L$(EP)	—	SEPT. 3	04:28 AST
SEPT. 3	13 29 01.3	54.700N.	164.024W.	122	LD	—	—	$3.0m_X$(LD)	—	SEPT. 3	04:29 AST
SEPT. 3	16 28 41.4	53.154N.	163.543W.	25	LD	—	—	$3.3m_X$(LD)	—	SEPT. 3	07:28 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
SEPT. 3	17 21 51.5	53.468N.	167.138W.	33	GS	4.5	—	4.6M_L(PM)	—	SEPT. 3	08:21 AST
SEPT. 4	11 00 07.6	51.783N.	173.280W.	33	GS	—	—	—	—	SEPT. 4	01:00 HST
SEPT. 4	20 08 16.7	59.726N.	154.022W.	154	GM	—	—	—	—	SEPT. 4	11:08 AST
SEPT. 4	21 54 01.0	61.476N.	151.430W.	79	GM	—	—	—	—	SEPT. 4	12:54 AST
SEPT. 5	05 48 01.7	62.994N.	148.484W.	102	GS	—	—	—	—	SEPT. 4	20:48 AST
SEPT. 5	15 42 26.0	60.000N.	152.286W.	72	GM	—	—	3.6M_L(PM)	—	SEPT. 5	06:42 AST
SEPT. 6	11 38 11.9	60.700N.	152.120W.	79	GM	—	—	—,	—	SEPT. 6	02:38 AST
SEPT. 7	00 22 32.5	60.244N.	143.445W.	18	GM	—	—	3.8M_L(PM)	—	SEPT. 6	15:22 AST
SEPT. 7	09 29 57.0	60.027N.	152.696W.	89	GM	—	—	3.1M_L(PM)	—	SEPT. 7	00:29 AST
SEPT. 9	08 34 31.5	53.884N.	163.232W.	4	LD	—	—	3.6m_X(LD)	—	SEPT. 8	23:34 AST
SEPT. 9	09 36 59.6	55.013N.	159.677W.	0	LD	—	—	3.1m_X(LD)	—	SEPT. 9	00:36 AST
SEPT. 9	15 16 34.2	62.635N.	151.145W.	110	GS	—	—	—	—	SEPT. 9	06:16 AST
SEPT. 10	21 58 58.5	60.706N.	151.198W.	58	GM	—	—	—	—	SEPT. 10	12:58 AST
SEPT. 10	23 16 51.3	51.006N.	171.882W.	33	GS	4.6	—	—	—	SEPT. 10	13:16 HST
SEPT. 11	02 27 37.4	60.074N.	153.144W.	115	GM	—	—	—	—	SEPT. 10	17:27 AST
SEPT. 11	22 20 55.9	50.908N.	178.995E.	33	GS	4.4	—	—	—	SEPT. 11	12:20 HST
SEPT. 12	20 07 08.0	51.773N.	178.490W.	15	EE	4.3	—	—	—	SEPT. 12	10:07 HST
SEPT. 12	20 13 24.3	61.814N.	149.935W.	43	GM	—	—	3.4M_L(PM)	—	SEPT. 12	11:13 AST
SEPT. 12	23 57 15.6	56.201N.	153.405W.	31	GS	6.1	6.3	—	IV	SEPT. 12	14:57 AST
SEPT. 13	00 41 36.5	56.167N.	153.804W.	33	GS	4.6	—	3.4M_L(PM)	—	SEPT. 12	15:41 AST
SEPT. 13	03 05 41.5	56.252N.	153.594W.	33	GS	—	—	3.8M_L(PM)	—	SEPT. 12	18:05 AST
SEPT. 13	03 11 19.1	56.138N.	153.639W.	33	GS	4.8	—	4.8M_L(PM)	—	SEPT. 12	18:11 AST
SEPT. 13	03 38 10.2	56.523N.	152.793W.	33	GS	—	—	3.4M_L(PM)	—	SEPT. 12	18:38 AST
SEPT. 13	04 19 59.7	56.102N.	153.310W.	33	GS	4.0	—	3.9M_L(PM)	—	SEPT. 12	19:19 AST
SEPT. 13	05 08 25.3	59.976N.	152.824W.	88	GM	—	—	—	—	SEPT. 12	20:08 AST
SEPT. 13	12 30 40.7	61.245N.	146.939W.	42	GM	—	—	3.8M_L(PM)	FELT	SEPT. 13	03:30 AST
SEPT. 13	15 16 15.0	54.984N.	150.967W.	33	GS	—	—	3.8M_L(PM)	—	SEPT. 13	06:16 AST
SEPT. 13	16 29 53.6	54.791N.	161.838W.	63	LD	—	—	3.8M_L(PM)	—	SEPT. 13	07:29 AST
SEPT. 14	01 11 29.5	56.319N.	153.501W.	33	GS	4.5	—	—	—	SEPT. 13	16:11 AST
SEPT. 14	02 58 38.1	61.015N.	151.272W.	70	GM	—	—	—	—	SEPT. 13	17:58 AST
SEPT. 14	11 33 39.5	63.186N.	147.191W.	33	GS	—	—	3.1M_L(PM)	—	SEPT. 14	02:33 AST
SEPT. 14	11 38 53.6	61.703N.	149.682W.	47	GM	—	—	3.4M_L(PM)	FELT	SEPT. 14	02:38 AST
SEPT. 14	17 41 27.5	58.825N.	137.022W.	6	GM	—	—	3.7M_L(EP)	—	SEPT. 14	08:41 AST
SEPT. 14	23 33 16.0	61.228N.	146.846W.	16	GM	—	—	—	—	SEPT. 14	14:33 AST
SEPT. 15	06 29 38.6	51.368N.	177.011W.	35	EE	4.9	4.0	4.8M_L(PM)	FELT	SEPT. 14	20:29 HST
SEPT. 15	14 48 22.1	61.528N.	143.800W.	52	GM	4.5	—	4.7M_L(PM)	IV	SEPT. 15	05:48 AST
SEPT. 16	12 53 19.7	59.892N.	140.652W.	4	GM	—	—	3.4M_L(EP)	—	SEPT. 16	03:53 AST
SEPT. 16	20 57 21.9	56.222N.	153.600W.	33	GS	5.3	5.5	5.1M_L(PM)	III	SEPT. 16	11:57 AST
SEPT. 17	03 37 07.8	65.900N.	152.962W.	33	GS	—	—	3.9M_L(PM)	—	SEPT. 16	18:37 AST
SEPT. 17	07 30 57.6	62.216N.	150.649W.	72	GM	—	—	—	—	SEPT. 16	22:30 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC)	Latitude	Longitude	Depth	Hypo-center	Magnitude			Max. inten-	Local time	
	hr min sec	(°)	(°)	(km)	Source	m_b	M_S	Local	sity	Date	hr zone
ALASKA—Continued											
SEPT. 17	14 04 50.6	60.184N.	152.777W.	109	GM	—	—	—	—	SEPT. 17	05:04 AST
SEPT. 17	18 41 10.3	62.527N.	149.519W.	91	GM	—	—	—	—	SEPT. 17	09:41 AST
SEPT. 18	01 54 18.8	51.046N.	176.960W.	33	GS	4.5	—	—	—	SEPT. 17	15:54 HST
SEPT. 18	15 48 44.3	61.999N.	151.986W.	120	GM	—	—	—	—	SEPT. 18	06:48 AST
SEPT. 18	17 41 31.6	60.516N.	153.025W.	139	GM	—	—	—	—	SEPT. 18	08:41 AST
SEPT. 18	20 56 05.8	61.798N.	149.721W.	57	GS	4.6	—	4.6M_L(PM)	IV	SEPT. 18	11:56 AST
SEPT. 18	23 13 47.0	53.167N.	165.085W.	16	LD	—	—	3.8m_X(LD)	—	SEPT. 18	14:13 AST
SEPT. 19	04 33 31.0	60.219N.	153.199W.	131	GM	—	—	—	—	SEPT. 18	19:33 AST
SEPT. 20	02 17 32.0	53.578N.	167.249W.	33	GS	4.6	—	4.2M_L(PM)	—	SEPT. 19	17:17 AST
SEPT. 20	02 25 59.6	53.948N.	162.854W.	1	LD	4.8	—	4.0m_X(LD)	—	SEPT. 19	17:26 AST
SEPT. 20	04 27 59.0	60.790N.	151.790W.	78	GM	—	—	—	—	SEPT. 19	19:27 AST
SEPT. 20	15 08 39.7	60.312N.	152.094W.	69	GM	—	—	—	—	SEPT. 20	06:08 AST
SEPT. 20	18 40 12.3	62.098N.	150.217W.	59	GM	—	—	—	—	SEPT. 20	09:40 AST
SEPT. 20	21 33 08.7	60.378N.	152.908W.	125	GM	—	—	—	—	SEPT. 20	12:33 AST
SEPT. 21	16 26 23.0	66.314N.	149.521W.	10	GS	—	—	—	—	SEPT. 21	07:26 AST
SEPT. 21	22 10 44.5	62.604N.	149.146W.	55	GM	—	—	—	—	SEPT. 21	13:10 AST
SEPT. 22	08 07 08.7	56.028N.	153.562W.	33	GS	4.3	—	3.9M_L(PM)	—	SEPT. 21	23:07 AST
SEPT. 23	00 24 29.5	56.287N.	153.537W.	33	GS	4.5	—	4.2M_L(PM)	—	SEPT. 22	15:24 AST
SEPT. 24	03 08 25.5	53.493N.	164.168W.	21	LD	—	—	3.2m_X(LD)	—	SEPT. 23	18:08 AST
SEPT. 24	11 39 56.9	57.595N.	149.229W.	11	GM	—	—	—	—	SEPT. 24	02:39 AST
SEPT. 25	00 08 05.5	59.883N.	153.234W.	118	GM	—	—	—	—	SEPT. 24	15:08 AST
SEPT. 25	20 07 20.0	63.464N.	151.189W.	33	GS	4.4	—	3.8M_L(PM)	—	SEPT. 25	11:07 AST
SEPT. 26	04 09 18.2	53.835N.	164.459W.	37	LD	5.0	4.1	4.7m_X(LD)	—	SEPT. 25	19:09 AST
SEPT. 26	14 27 07.2	59.953N.	153.424W.	130	GM	—	—	—	—	SEPT. 26	05:27 AST
SEPT. 27	12 25 03.5	52.242N.	170.973W.	33	GS	4.5	—	—	—	SEPT. 27	02:25 HST
SEPT. 27	12 47 35.3	67.835N.	161.808W.	33	GS	—	—	3.0M_L(PM)	—	SEPT. 27	03:47 AST
SEPT. 28	00 00 01.7	51.282N.	175.387W.	33	GS	4.1	—	—	—	SEPT. 27	14:00 HST
SEPT. 28	08 50 24.7	54.337N.	164.798W.	118	LD	4.7	—	4.1m_X(LD)	—	SEPT. 27	23:50 AST
SEPT. 28	10 41 48.8	59.782N.	152.320W.	61	GM	—	—	4.1M_L(PM)	III	SEPT. 28	01:41 AST
SEPT. 28	11 23 43.8	51.532N.	175.175W.	33	GS	4.1	—	—	—	SEPT. 28	01:23 HST
SEPT. 29	03 01 36.8	58.808N.	151.742W.	65	GM	—	—	—	—	SEPT. 28	18:01 AST
SEPT. 29	12 20 43.9	51.118N.	174.957W.	20	EE	5.0	4.5	5.2M_L(PM)	III	SEPT. 29	02:20 HST
SEPT. 29	17 13 34.1	58.805N.	156.056W.	217	GM	—	—	—	—	SEPT. 29	08:13 AST
SEPT. 30	04 11 39.6	66.402N.	149.772W.	10	GS	—	—	3.6M_L(PM)	—	SEPT. 29	19:11 AST
SEPT. 30	09 42 48.4	62.453N.	150.670W.	74	GM	—	—	—	—	SEPT. 30	00:42 AST
SEPT. 30	11 54 51.1	65.700N.	152.435W.	33	GS	4.4	—	3.6M_L(PM)	—	SEPT. 30	02:54 AST
SEPT. 30	12 00 04.2	65.739N.	152.273W.	33	GS	—	—	3.0M_L(PM)	—	SEPT. 30	03:00 AST
OCT. 1	10 43 24.2	57.438N.	152.220W.	44	GM	3.7	—	—	—	OCT. 1	01:43 AST
OCT. 1	15 56 06.4	51.623N.	175.901W.	45	EE	5.3	4.5	4.8M_L(PM)	III	OCT. 1	05:56 HST
OCT. 2	10 10 05.9	59.910N.	153.128W.	109	GM	—	—	—	—	OCT. 2	01:10 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
OCT. 3	14 52 04.1	54.479N.	161.182W.	4	LD	—	—	$3.0m_X$(LD)	—	OCT. 3	05:52 AST
OCT. 3	15 21 05.3	51.851N.	178.587W.	15	EE	5.0	—	—	—	OCT. 3	05:21 HST
OCT. 5	03 25 57.7	51.078N.	176.179W.	20	EE	4.9	—	$4.5M_L$(PM)	II	OCT. 4	17:25 HST
OCT. 5	05 02 03.7	59.851N.	152.964W.	96	GM	—	—	—	—	OCT. 4	20:02 AST
OCT. 5	15 41 58.9	60.194N.	153.284W.	134	GM	—	—	—	—	OCT. 5	06:41 AST
OCT. 5	21 28 36.6	60.204N.	152.729W.	105	GM	—	—	—	—	OCT. 5	12:28 AST
OCT. 6	04 21 48.9	51.513N.	176.089W.	48	EE	5.1	4.2	$4.9M_L$(PM)	III	OCT. 5	18:21 HST
OCT. 6	12 13 26.1	51.397N.	175.771W.	33	GS	4.5	—	—	—	OCT. 6	02:13 HST
OCT. 7	14 26 24.1	60.052N.	153.401W.	134	GM	—	—	—	—	OCT. 7	05:26 AST
OCT. 7	14 40 15.5	51.573N.	175.839W.	45	EE	4.7	—	—	—	OCT. 7	04:40 HST
OCT. 7	22 27 29.3	59.814N.	153.588W.	135	GM	—	—	—	—	OCT. 7	13:27 AST
OCT. 7	23 05 12.4	61.377N.	147.206W.	35	GM	—	—	—	—	OCT. 7	14:05 AST
OCT. 8	00 44 26.8	50.276N.	176.383W.	33	GS	4.4	—	—	—	OCT. 7	14:44 HST
OCT. 8	14 58 07.9	57.208N.	149.677W.	44	GM	—	—	—	—	OCT. 8	05:58 AST
OCT. 8	19 00 50.0	61.561N.	146.465W.	37	GM	—	—	—	—	OCT. 8	10:00 AST
OCT. 8	19 20 10.2	54.679N.	164.020W.	132	LD	—	—	$3.3m_X$(LD)	—	OCT. 8	10:20 AST
OCT. 8	19 29 38.0	59.545N.	136.636W.	18	EP	—	—	$3.0M_L$(EP)	—	OCT. 8	10:29 AST
OCT. 8	20 43 01.0	58.323N.	153.408W.	67	GM	—	—	—	—	OCT. 8	11:43 AST
OCT. 9	00 59 50.9	50.806N.	172.814W.	17	EE	4.7	—	—	—	OCT. 8	14:59 HST
OCT. 9	01 21 06.1	62.129N.	149.544W.	58	GM	4.5	—	$4.3M_L$(PM)	III	OCT. 8	16:21 AST
OCT. 9	10 50 41.3	53.076N.	166.126W.	25	LD	—	—	$3.9m_X$(LD)	—	OCT. 9	01:50 AST
OCT. 9	13 37 08.7	61.689N.	147.685W.	26	GM	—	—	—	—	OCT. 9	04:37 AST
OCT. 10	01 06 05.0	58.369N.	133.515W.	18	EP	—	—	$3.1M_L$(EP)	—	OCT. 9	16:06 AST
OCT. 10	09 02 16.4	59.764N.	138.394W.	1	GM	3.8	—	$3.6M_L$(EP)	—	OCT. 10	00:02 AST
OCT. 10	11 48 54.1	60.332N.	152.211W.	73	GM	—	—	—	—	OCT. 10	02:48 AST
OCT. 12	00 15 25.3	60.455N.	150.890W.	61	GM	—	—	—	—	OCT. 11	15:15 AST
OCT. 12	07 15 46.5	60.250N.	152.714W.	97	GM	—	—	—	—	OCT. 11	22:15 AST
OCT. 12	10 17 56.9	57.251N.	155.244W.	63	GM	—	—	—	—	OCT. 12	01:17 AST
OCT. 12	14 48 52.0	58.372N.	133.532W.	18	EP	—	—	$3.1M_L$(EP)	—	OCT. 12	05:48 AST
OCT. 12	16 27 32.8	61.558N.	146.570W.	25	GM	—	—	—	—	OCT. 12	07:27 AST
OCT. 12	18 50 54.9	60.110N.	147.074W.	28	GM	—	—	—	—	OCT. 12	09:50 AST
OCT. 12	19 05 41.9	60.102N.	147.070W.	30	GM	—	—	—	—	OCT. 12	10:05 AST
OCT. 13	02 26 03.0	62.753N.	143.388W.	26	GM	—	—	$3.6M_L$(PM)	—	OCT. 12	17:26 AST
OCT. 13	12 05 30.0	62.148N.	149.493W.	48	GM	—	—	—	—	OCT. 13	03:05 AST
OCT. 14	03 07 10.0	58.345N.	133.541W.	18	EP	—	—	$3.1M_L$(EP)	—	OCT. 13	18:07 AST
OCT. 14	04 53 10.8	52.116N.	168.762W.	33	GS	4.9	—	$4.7M_L$(PM)	—	OCT. 13	19:53 AST
OCT. 14	08 36 21.8	63.302N.	149.375W.	11	GS	—	—	$3.0M_L$(PM)	—	OCT. 13	23:36 AST
OCT. 14	10 48 26.0	63.288N.	149.439W.	22	GS	—	—	$3.8M_L$(PM)	—	OCT. 14	01:48 AST
OCT. 14	10 57 01.7	63.300N.	149.436W.	29	GS	—	—	$3.7M_L$(PM)	—	OCT. 14	01:57 AST
OCT. 15	04 49 08.7	62.510N.	147.057W.	10	GM	—	—	$3.1M_L$(PM)	—	OCT. 14	19:49 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
OCT. 15	16 50 29.4	53.220N.	166.069W.	25	LD	—	—	3.4m_X(LD)	—	OCT. 15	07:50 AST
OCT. 15	18 23 06.0	59.990N.	152.841W.	100	GM	—	—	—	—	OCT. 15	09:23 AST
OCT. 15	23 35 51.2	59.705N.	153.072W.	121	GS	4.6	—	—	III	OCT. 15	14:35 AST
OCT. 16	02 28 16.0	58.394N.	133.500W.	18	EP	—	—	3.2M_L(EP)	—	OCT. 15	17:28 AST
OCT. 17	01 20 05.1	60.146N.	152.600W.	74	GM	—	—	—	—	OCT. 16	16:20 AST
OCT. 17	23 33 44.0	58.377N.	133.503W.	18	EP	—	—	3.2M_L(EP)	—	OCT. 17	14:33 AST
OCT. 18	01 02 55.3	51.528N.	175.213W.	39	EE	5.4	4.9	5.3M_L(PM)	—	OCT. 17	15:02 HST
OCT. 18	04 51 09.1	51.005N.	175.252W.	33	GS	4.4	—	—	—	OCT. 17	18:51 HST
OCT. 18	19 22 10.1	63.153N.	150.443W.	119	GS	—	—	—	FELT	OCT. 18	10:22 AST
OCT. 19	06 28 11.4	52.630N.	170.667W.	33	GS	4.7	—	—	—	OCT. 18	20:28 HST
OCT. 19	18 30 57.2	63.887N.	178.727W.	10	GS	5.4	4.9	—	—	OCT. 19	08:30 HST
OCT. 19	21 53 34.0	59.509N.	152.682W.	81	GM	—	—	4.0M_L(PM)	II	OCT. 19	12:53 AST
OCT. 20	07 25 53.8	52.165N.	175.100W.	15	EE	4.6	—	—	—	OCT. 19	21:25 HST
OCT. 20	09 24 52.0	59.046N.	136.751W.	18	EP	—	—	3.0M_L(EP)	—	OCT. 20	00:24 AST
OCT. 20	10 51 56.4	62.117N.	149.539W.	51	GM	—	—	—	—	OCT. 20	01:51 AST
OCT. 20	12 57 42.2	51.164N.	174.732W.	33	GS	4.8	—	—	—	OCT. 20	02:57 HST
OCT. 20	12 57 43.1	59.615N.	151.012W.	56	GM	—	—	—	—	OCT. 20	03:57 AST
OCT. 20	19 45 26.2	53.039N.	166.782W.	33	GS	4.8	—	—	—	OCT. 20	10:45 AST
OCT. 21	10 57 46.2	60.055N.	152.684W.	83	GM	—	—	—	—	OCT. 21	01:57 AST
OCT. 22	01 59 10.5	60.333N.	150.488W.	44	GM	—	—	—	—	OCT. 21	16:59 AST
OCT. 22	15 28 25.7	61.592N.	151.500W.	79	GM	—	—	—	—	OCT. 22	06:28 AST
OCT. 22	18 31 34.1	61.339N.	146.849W.	38	GM	—	—	4.0M_L(PM)	III	OCT. 22	09:31 AST
OCT. 22	20 14 27.2	59.529N.	152.492W.	75	GM	—	—	—	—	OCT. 22	11:14 AST
OCT. 23	00 43 11.4	59.436N.	152.324W.	74	GM	—	—	—	—	OCT. 22	15:43 AST
OCT. 23	00 48 25.8	59.335N.	138.802W.	12	GM	—	—	3.6M_L(EP)	—	OCT. 22	15:48 AST
OCT. 23	01 42 31.5	52.514N.	168.161W.	33	GS	5.0	—	—	—	OCT. 22	16:42 AST
OCT. 23	12 40 36.5	56.027N.	153.949W.	33	GS	4.3	—	—	—	OCT. 23	03:40 AST
OCT. 23	15 33 27.3	60.183N.	152.913W.	116	GM	—	—	—	—	OCT. 23	06:33 AST
OCT. 23	17 24 42.3	62.656N.	150.870W.	100	GM	—	—	—	—	OCT. 23	08:24 AST
OCT. 24	07 50 31.0	59.080N.	154.406W.	129	GM	—	—	—	—	OCT. 23	22:50 AST
OCT. 24	11 00 50.3	51.384N.	176.750W.	37	EE	5.2	4.3	4.7M_L(PM)	III	OCT. 24	01:00 HST
OCT. 24	11 51 48.4	56.059N.	153.198W.	33	GS	4.3	—	—	—	OCT. 24	02:51 AST
OCT. 24	14 34 53.8	60.946N.	151.486W.	69	GM	—	—	3.2M_L(PM)	FELT	OCT. 24	05:34 AST
OCT. 25	02 51 45.3	51.092N.	175.924W.	20	EE	4.7	—	—	—	OCT. 24	16:51 HST
OCT. 25	10 40 48.5	64.194N.	154.191W.	33	GS	—	—	3.7M_L(PM)	—	OCT. 25	01:40 AST
OCT. 25	14 23 26.2	60.228N.	152.918W.	109	GM	—	—	—	—	OCT. 25	05:23 AST
OCT. 25	20 07 14.2	60.715N.	152.112W.	89	GM	—	—	3.0M_L(PM)	—	OCT. 25	11:07 AST
OCT. 26	03 33 53.0	53.484N.	163.215W.	18	LD	4.7	—	3.8m_X(LD)	—	OCT. 25	18:33 AST
OCT. 26	03 34 04.9	53.266N.	163.442W.	20	LD	5.1	5.0	5.1M_L(PM)	—	OCT. 25	18:34 AST
OCT. 26	04 43 27.4	53.758N.	170.049W.	214	GS	5.4	—	—	—	OCT. 25	18:43 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
OCT. 26	05 57 50.3	61.568N.	146.357W.	34	GM	—	—	3.5M_L(PM)	—	OCT. 25	20:57 AST
OCT. 26	08 27 35.6	60.033N.	152.676W.	96	GM	—	—	—	—	OCT. 25	23:27 AST
OCT. 26	16 09 40.2	59.803N.	153.843W.	145	GM	—	—	—	—	OCT. 26	07:09 AST
OCT. 26	22 19 41.6	57.716N.	156.290W.	165	GS	—	—	—	—	OCT. 26	13:19 AST
OCT. 27	15 27 15.4	52.332N.	173.922W.	15	EE	4.8	—	—	—	OCT. 27	05:27 HST
OCT. 27	18 48 23.6	59.526N.	153.411W.	118	GM	—	—	—	—	OCT. 27	09:48 AST
OCT. 27	19 39 36.5	60.928N.	149.464W.	39	GM	—	—	3.6M_L(PM)	IV	OCT. 27	10:39 AST
OCT. 27	23 31 56.6	60.559N.	151.396W.	49	GM	—	—	—	—	OCT. 27	14:31 AST
OCT. 28	03 11 48.1	56.488N.	154.113W.	33	GS	4.3	—	3.3M_L(PM)	—	OCT. 27	18:11 AST
OCT. 28	06 13 33.3	52.787N.	165.874W.	6	LD	—	—	3.6m_X(LD)	—	OCT. 27	21:13 AST
OCT. 28	08 15 17.0	56.721N.	153.698W.	33	GS	3.6	—	3.0M_L(PM)	—	OCT. 27	23:15 AST
OCT. 28	08 29 15.7	60.888N.	147.146W.	23	GM	—	—	—	—	OCT. 27	23:29 AST
OCT. 28	19 19 42.0	63.552N.	150.877W.	33	GS	—	—	3.4M_L(PM)	—	OCT. 28	10:19 AST
OCT. 29	16 35 21.6	52.491N.	173.993W.	33	GS	4.5	—	—	—	OCT. 29	06:35 HST
OCT. 29	19 14 26.0	63.148N.	150.630W.	33	GS	—	—	3.0M_L(PM)	—	OCT. 29	10:14 AST
OCT. 30	08 23 12.3	59.884N.	152.423W.	72	GM	—	—	—	—	OCT. 29	23:23 AST
OCT. 30	11 05 02.3	54.436N.	162.960W.	24	LD	—	—	3.2m_X(LD)	—	OCT. 30	02:05 AST
OCT. 30	22 46 41.1	60.226N.	153.039W.	121	GM	—	—	—	—	OCT. 30	13:46 AST
OCT. 31	04 07 23.3	51.439N.	175.845W.	35	EE	4.8	3.8	4.2M_L(PM)	—	OCT. 30	18:07 HST
NOV. 1	08 18 15.1	61.504N.	147.450W.	19	GM	—	—	3.6M_L(PM)	—	OCT. 31	23:18 AST
NOV. 1	14 25 29.3	61.384N.	151.854W.	89	GM	—	—	—	—	NOV. 1	05:25 AST
NOV. 1	16 23 44.5	59.760N.	153.349W.	122	GM	—	—	—	—	NOV. 1	07:23 AST
NOV. 1	22 17 01.8	62.009N.	150.647W.	63	GM	—	—	—	—	NOV. 1	13:17 AST
NOV. 1	22 22 34.7	51.245N.	179.755W.	33	GS	5.0	—	4.9M_L(PM)	—	NOV. 1	12:22 HST
NOV. 2	10 38 30.9	53.905N.	162.990W.	3	LD	—	—	3.7m_X(LD)	—	NOV. 2	01:38 AST
NOV. 3	06 35 56.6	53.726N.	162.096W.	14	LD	—	—	3.0m_X(LD)	—	NOV. 2	21:35 AST
NOV. 4	06 14 18.7	61.341N.	151.900W.	98	GM	4.7	—	—	III	NOV. 3	21:14 AST
NOV. 4	06 55 55.0	61.317N.	150.642W.	47	GM	4.3	—	3.9M_L(PM)	—	NOV. 3	21:55 AST
NOV. 4	07 06 06.6	61.329N.	150.660W.	51	GM	—	—	—	—	NOV. 3	22:06 AST
NOV. 4	18 18 39.2	54.726N.	160.534W.	28	LD	—	—	3.3m_X(LD)	—	NOV. 4	09:18 AST
NOV. 5	00 26 38.7	60.059N.	152.419W.	89	GM	—	—	3.1M_L(PM)	—	NOV. 4	15:26 AST
NOV. 5	03 18 36.4	62.877N.	148.802W.	66	GM	—	—	3.5M_L(PM)	—	NOV. 4	18:18 AST
NOV. 5	06 42 07.4	59.296N.	153.542W.	100	GM	—	—	—	—	NOV. 4	21:42 AST
NOV. 5	09 58 09.3	60.223N.	153.193W.	135	GM	—	—	—	—	NOV. 5	00:58 AST
NOV. 5	17 48 51.8	63.343N.	151.507W.	33	GS	—	—	4.0M_L(PM)	—	NOV. 5	08:48 AST
NOV. 5	22 52 09.5	62.097N.	151.096W.	69	GM	—	—	—	—	NOV. 5	13:52 AST
NOV. 6	05 21 08.1	61.656N.	151.857W.	102	GM	—	—	—	—	NOV. 5	20:21 AST
NOV. 6	06 43 08.0	50.565N.	175.256W.	33	GS	4.7	—	—	—	NOV. 5	20:43 HST
NOV. 6	10 08 20.0	59.406N.	152.664W.	71	GM	—	—	3.2M_L(PM)	—	NOV. 6	01:08 AST
NOV. 6	10 13 02.5	59.907N.	153.479W.	130	GM	—	—	—	—	NOV. 6	01:13 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
NOV. 6	18 27 02.9	51.242N.	176.631W.	39	EE	5.1	5.5	5.2M_L(PM)	IV	NOV. 6	08:27 HST
NOV. 6	18 36 24.9	62.842N.	149.681W.	100	GS	—	—	—	—	NOV. 6	09:36 AST
NOV. 6	19 45 40.5	51.072N.	176.516W.	20	EE	4.8	—	—	IV	NOV. 6	09:45 HST
NOV. 6	22 08 20.8	61.997N.	151.334W.	89	GM	—	—	—	—	NOV. 6	13:08 AST
NOV. 7	01 16 12.4	62.661N.	149.764W.	119	GS	—	—	—	—	NOV. 6	16:16 AST
NOV. 8	02 09 44.4	60.438N.	151.878W.	74	GM	—	—	—	—	NOV. 7	17:09 AST
NOV. 8	04 08 33.9	60.052N.	140.794W.	4	GM	—	—	—	—	NOV. 7	19:08 AST
NOV. 8	06 03 11.2	60.064N.	140.778W.	2	GM	—	—	—	—	NOV. 7	21:03 AST
NOV. 8	06 54 58.6	60.760N.	152.595W.	138	GM	—	—	—	—	NOV. 7	21:54 AST
NOV. 8	07 48 43.8	62.000N.	152.028W.	113	GM	—	—	—	—	NOV. 7	22:48 AST
NOV. 8	09 40 01.0	52.233N.	169.617W.	33	GS	4.9	4.4	—	—	NOV. 7	23:40 HST
NOV. 9	02 17 00.5	60.145N.	141.026W.	12	GM	4.1	—	4.2M_L(PM)	—	NOV. 8	17:17 AST
NOV. 9	10 15 45.3	61.679N.	151.761W.	89	GM	—	—	—	—	NOV. 9	01:15 AST
NOV. 9	12 16 24.4	52.263N.	168.363W.	33	GS	5.3	4.7	—	—	NOV. 9	03:16 AST
NOV. 9	12 42 02.4	52.500N.	168.467W.	33	GS	4.8	—	—	—	NOV. 9	03:42 AST
NOV. 9	21 09 40.8	67.848N.	165.552W.	33	GS	4.2	—	4.1M_L(PM)	—	NOV. 9	12:09 AST
NOV. 10	04 13 55.3	50.831N.	176.421W.	20	EE	4.7	—	—	—	NOV. 9	18:13 HST
NOV. 10	21 45 40.7	52.536N.	169.503W.	33	GS	4.8	—	—	—	NOV. 10	12:45 AST
NOV. 11	01 38 26.9	59.953N.	151.336W.	44	GM	—	—	—	—	NOV. 10	16:38 AST
NOV. 11	04 22 09.5	54.580N.	165.286W.	206	LD	—	—	3.6m_X(LD)	—	NOV. 10	19:22 AST
NOV. 11	08 18 58.7	63.387N.	150.241W.	33	GS	—	—	3.5M_L(PM)	—	NOV. 10	23:18 AST
NOV. 11	14 05 16.8	51.246N.	174.710W.	20	EE	4.9	—	4.6M_L(PM)	—	NOV. 11	04:05 HST
NOV. 11	18 46 51.2	62.240N.	149.681W.	56	GM	—	—	3.0M_L(PM)	—	NOV. 11	09:46 AST
NOV. 11	21 19 03.6	61.975N.	149.857W.	23	GS	—	—	3.1M_L(PM)	—	NOV. 11	12:19 AST
NOV. 12	02 01 37.6	51.114N.	174.340W.	20	EE	4.6	—	—	—	NOV. 11	16:01 HST
NOV. 12	04 39 46.1	65.917N.	156.440W.	10	GS	—	—	3.4M_L(PM)	—	NOV. 11	19:39 AST
NOV. 12	12 44 03.2	51.192N.	179.412E.	33	GS	4.8	—	4.6M_L(PM)	—	NOV. 12	02:44 HST
NOV. 13	04 31 01.1	63.091N.	150.799W.	147	GS	—	—	—	—	NOV. 12	19:31 AST
NOV. 13	10 59 44.3	61.987N.	150.745W.	62	GM	—	—	3.0M_L(PM)	—	NOV. 13	01:59 AST
NOV. 13	14 10 04.1	59.509N.	152.399W.	71	GM	—	—	—	—	NOV. 13	05:10 AST
NOV. 13	14 58 28.9	57.629N.	156.549W.	171	GS	—	—	—	—	NOV. 13	05:58 AST
NOV. 13	15 27 18.0	59.867N.	152.359W.	72	GM	—	—	—	—	NOV. 13	06:27 AST
NOV. 14	21 42 45.9	51.442N.	173.845W.	25	EE	5.5	—	4.9M_L(PM)	—	NOV. 14	11:42 HST
NOV. 14	21 49 03.8	60.405N.	149.305W.	38	GM	—	—	—	—	NOV. 14	12:49 AST
NOV. 15	07 02 14.0	61.468N.	146.441W.	23	GM	—	—	3.8M_L(PM)	—	NOV. 14	22:02 AST
NOV. 16	02 48 00.7	61.898N.	150.862W.	70	GM	—	—	3.0M_L(PM)	—	NOV. 15	17:48 AST
NOV. 17	01 05 34.9	60.581N.	150.448W.	47	GM	—	—	—	—	NOV. 16	16:05 AST
NOV. 17	02 52 06.5	61.598N.	151.820W.	93	GM	—	—	—	—	NOV. 16	17:52 AST
NOV. 17	05 50 51.1	58.927N.	152.986W.	75	GM	—	—	—	—	NOV. 16	20:50 AST
NOV. 18	06 27 51.7	63.191N.	150.440W.	141	GS	—	—	—	—	NOV. 17	21:27 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
NOV. 19	02 42 22.2	52.370N.	170.727W.	33	GS	—	—	4.3M_L(PM)	—	NOV. 18	16:42 HST
NOV. 19	06 00 43.7	60.659N.	151.910W.	92	GM	—	—	—	—	NOV. 18	21:00 AST
NOV. 19	15 32 40.2	55.716N.	159.508W.	95	LD	—	—	3.3m_X(LD)	—	NOV. 19	06:32 AST
NOV. 19	15 38 42.5	57.561N.	150.529W.	33	GS	—	—	3.6M_L(PM)	—	NOV. 19	06:38 AST
NOV. 19	19 00 11.4	51.036N.	176.001W.	33	GS	—	—	4.5M_L(PM)	III	NOV. 19	09:00 HST
NOV. 19	20 42 30.1	62.008N.	150.910W.	65	GM	—	—	—	—	NOV. 19	11:42 AST
NOV. 20	01 52 16.5	52.971N.	165.134W.	21	LD	—	—	3.4m_X(LD)	—	NOV. 19	16:52 AST
NOV. 20	07 38 36.2	62.108N.	150.848W.	65	GM	—	—	—	—	NOV. 19	22:38 AST
NOV. 20	12 47 43.9	58.658N.	136.282W.	15	GM	—	—	3.8M_L(EP)	—	NOV. 20	03:47 AST
NOV. 22	17 41 50.1	62.988N.	151.359W.	33	GS	—	—	3.3M_L(PM)	—	NOV. 22	08:41 AST
NOV. 22	22 11 23.8	60.227N.	153.230W.	133	GM	—	—	—	—	NOV. 22	13:11 AST
NOV. 22	22 17 14.4	60.131N.	153.106W.	115	GM	—	—	—	—	NOV. 22	13:17 AST
NOV. 23	19 34 03.4	61.394N.	150.374W.	47	GM	—	—	—	—	NOV. 23	10:34 AST
NOV. 24	11 29 27.3	51.734N.	178.349E.	78	GS	5.0	—	4.8M_L(PM)	—	NOV. 24	01:29 HST
NOV. 25	02 47 40.4	59.138N.	153.965W.	119	GM	—	—	—	—	NOV. 24	17:47 AST
NOV. 25	11 37 58.8	60.110N.	152.851W.	91	GM	—	—	—	—	NOV. 25	02:37 AST
NOV. 25	16 44 19.2	61.408N.	150.371W.	16	GM	—	—	3.5M_L(PM)	—	NOV. 25	07:44 AST
NOV. 25	16 54 59.2	59.926N.	152.854W.	88	GM	—	—	—	—	NOV. 25	07:54 AST
NOV. 26	21 04 43.4	61.774N.	150.887W.	62	GM	—	—	3.6M_L(PM)	III	NOV. 26	12:04 AST
NOV. 27	10 32 17.1	61.200N.	149.867W.	42	GM	—	—	—	—	NOV. 27	01:32 AST
NOV. 29	17 05 56.9	59.047N.	152.290W.	78	GM	—	—	—	—	NOV. 29	08:05 AST
DEC. 1	04 00 37.2	63.582N.	151.018W.	33	GS	—	—	3.4M_L(PM)	—	NOV. 30	19:00 AST
DEC. 1	23 07 10.5	51.264N.	174.338W.	20	EE	4.9	—	—	—	DEC. 1	13:07 HST
DEC. 2	13 39 51.4	61.426N.	151.270W.	66	GM	—	—	—	—	DEC. 2	04:39 AST
DEC. 3	05 05 36.7	51.352N.	176.465W.	36	EE	4.6	—	—	III	DEC. 2	19:05 HST
DEC. 3	17 51 02.0	54.636N.	162.371W.	96	LD	—	—	3.0m_X(LD)	—	DEC. 3	08:51 AST
DEC. 4	08 19 24.1	61.594N.	151.077W.	68	GM	—	—	—	—	DEC. 3	23:19 AST
DEC. 4	17 33 06.0	63.111N.	148.778W.	44	GM	—	—	—	—	DEC. 4	08:33 AST
DEC. 4	18 22 47.5	54.696N.	159.593W.	30	LD	—	—	3.3m_X(LD)	—	DEC. 4	09:22 AST
DEC. 5	01 59 58.2	59.664N.	154.276W.	178	GM	—	—	—	—	DEC. 4	16:59 AST
DEC. 5	02 47 04.7	63.013N.	149.945W.	33	GS	—	—	3.4M_L(PM)	—	DEC. 4	17:47 AST
DEC. 6	17 36 29.3	59.975N.	151.548W.	59	GM	—	—	—	—	DEC. 6	08:36 AST
DEC. 6	19 56 19.0	52.687N.	172.949E.	33	GS	4.7	—	—	—	DEC. 6	09:56 HST
DEC. 7	01 37 00.8	61.496N.	151.692W.	86	GM	—	—	—	—	DEC. 6	16:37 AST
DEC. 7	01 43 47.3	60.323N.	153.738W.	177	GM	—	—	—	—	DEC. 6	16:43 AST
DEC. 7	05 18 33.2	62.032N.	152.044W.	124	GM	—	—	—	—	DEC. 6	20:18 AST
DEC. 8	06 10 58.0	53.325N.	166.835W.	78	GS	—	—	4.6M_L(PM)	—	DEC. 7	21:10 AST
DEC. 9	12 56 09.0	57.890N.	137.526W.	18	EP	—	—	3.5M_L(EP)	—	DEC. 9	03:56 AST
DEC. 9	19 30 43.8	54.005N.	165.059W.	6	LD	—	—	3.4m_X(LD)	—	DEC. 9	10:30 AST
DEC. 12	18 10 43.0	61.901N.	149.915W.	49	GM	—	—	3.2M_L(PM)	—	DEC. 12	09:10 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
DEC. 12	18 44 17.0	62.681N.	150.626W.	96	GM	—	—	—	—	DEC. 12	09:44 AST
DEC. 12	23 51 47.4	61.893N.	150.123W.	56	GM	—	—	—	—	DEC. 12	14:51 AST
DEC. 14	00 41 45.3	60.233N.	153.156W.	133	GM	—	—	—	—	DEC. 13	15:41 AST
DEC. 14	12 17 34.9	65.699N.	168.831W.	33	GS	—	—	—	—	DEC. 14	03:17 AST
DEC. 15	04 49 41.5	59.831N.	152.922W.	86	GM	—	—	—	—	DEC. 14	19:49 AST
DEC. 15	20 42 13.2	61.494N.	146.730W.	33	GS	—	—	3.0M_L(PM)	—	DEC. 15	11:42 AST
DEC. 16	05 35 39.4	63.653N.	147.458W.	107	GS	—	—	—	—	DEC. 15	20:35 AST
DEC. 16	07 58 24.2	61.903N.	150.945W.	68	GM	—	—	—	—	DEC. 15	22:58 AST
DEC. 16	10 27 24.4	51.492N.	175.319W.	35	EE	5.1	4.4	5.0M_L(PM)	IV	DEC. 16	00:27 HST
DEC. 16	17 26 29.8	60.958N.	146.995W.	14	GM	—	—	3.7M_L(PM)	—	DEC. 16	08:26 AST
DEC. 17	03 59 32.3	59.688N.	153.231W.	104	GM	—	—	—	—	DEC. 16	18:59 AST
DEC. 17	11 32 03.8	66.299N.	150.133W.	10	GS	—	—	3.3M_L(PM)	—	DEC. 17	02:32 AST
DEC. 17	21 53 43.7	53.685N.	165.261W.	83	LD	—	—	3.2m_X(LD)	—	DEC. 17	12:53 AST
DEC. 18	00 08 45.0	61.445N.	151.439W.	72	GM	—	—	—	—	DEC. 17	15:08 AST
DEC. 18	01 54 09.9	51.088N.	174.492W.	20	EE	4.8	—	—	—	DEC. 17	15:54 HST
DEC. 18	03 46 30.6	51.708N.	179.033E.	68	GS	5.4	—	—	—	DEC. 17	17:46 HST
DEC. 18	09 43 24.6	62.356N.	151.208W.	84	GM	—	—	—	—	DEC. 18	00:43 AST
DEC. 18	20 17 15.2	58.890N.	152.275W.	69	GM	—	—	—	—	DEC. 18	11:17 AST
DEC. 19	03 47 46.9	59.207N.	153.572W.	99	GM	—	—	—	—	DEC. 18	18:47 AST
DEC. 19	13 50 13.3	51.391N.	176.903W.	37	EE	5.3	—	—	V	DEC. 19	03:50 HST
DEC. 20	00 01 42.0	59.975N.	152.358W.	87	GM	—	—	—	—	DEC. 19	15:01 AST
DEC. 20	07 23 36.4	53.288N.	164.341W.	17	LD	—	—	3.2m_X(LD)	—	DEC. 19	22:23 AST
DEC. 20	16 10 21.4	60.582N.	151.759W.	92	GM	—	—	—	—	DEC. 20	07:10 AST
DEC. 21	17 45 20.8	60.088N.	140.980W.	11	GM	4.6	—	4.3M_L(PM)	—	DEC. 21	08:45 AST
DEC. 22	06 28 21.3	56.608N.	157.043W.	107	LD	—	—	3.2m_X(LD)	—	DEC. 21	21:28 AST
DEC. 22	14 42 15.5	59.683N.	153.075W.	102	GM	—	—	—	—	DEC. 22	05:42 AST
DEC. 23	03 40 28.2	60.433N.	150.501W.	44	GM	—	—	3.3M_L(PM)	—	DEC. 22	18:40 AST
DEC. 23	13 19 22.2	60.149N.	153.159W.	124	GM	—	—	—	—	DEC. 23	04:19 AST
DEC. 23	17 14 20.9	51.751N.	171.602W.	33	GS	4.6	—	5.0M_L(PM)	—	DEC. 23	07:14 HST
DEC. 23	23 14 29.9	58.474N.	148.174W.	68	GM	—	—	3.5M_L(PM)	—	DEC. 23	14:14 AST
DEC. 24	08 48 46.1	51.859N.	178.229W.	15	EE	4.9	4.6	—	—	DEC. 23	22:48 HST
DEC. 26	00 55 40.5	62.520N.	151.290W.	141	GM	—	—	—	—	DEC. 25	15:55 AST
DEC. 27	03 35 41.4	61.828N.	148.954W.	15	GM	—	—	3.1M_L(PM)	II	DEC. 26	18:35 AST
DEC. 27	06 36 26.2	61.406N.	151.324W.	71	GM	—	—	3.3M_L(PM)	—	DEC. 26	21:36 AST
DEC. 27	08 04 08.1	60.205N.	151.052W.	76	GM	—	—	3.3M_L(PM)	—	DEC. 26	23:04 AST
DEC. 27	13 07 00.8	64.745N.	150.975W.	33	GS	—	—	3.5M_L(PM)	—	DEC. 27	04:07 AST
DEC. 27	17 38 41.4	61.427N.	149.966W.	52	GM	—	—	—	—	DEC. 27	08:38 AST
DEC. 28	04 54 00.2	53.853N.	161.748W.	2	LD	—	—	3.4m_X(LD)	—	DEC. 27	19:54 AST
DEC. 28	20 21 51.7	54.008N.	162.816W.	4	LD	—	—	3.2m_X(LD)	—	DEC. 28	11:21 AST
DEC. 29	04 14 16.6	53.779N.	163.879W.	2	LD	—	—	3.1m_X(LD)	—	DEC. 28	19:14 AST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
ALASKA—Continued											
DEC. 29	14 17 44.0	63.206N.	150.497W.	125	GS	—	—	—	—	DEC. 29	05:17 AST
DEC. 29	15 02 26.0	66.466N.	149.908W.	10	GS	—	—	—	—	DEC. 29	06:02 AST
DEC. 29	20 05 54.6	60.227N.	153.128W.	132	GM	—	—	—	—	DEC. 29	11:05 AST
DEC. 29	22 31 39.5	60.176N.	153.254W.	142	GM	—	—	—	—	DEC. 29	13:31 AST
DEC. 29	23 05 43.0	61.585N.	150.894W.	73	GM	—	—	—	—	DEC. 29	14:05 AST
DEC. 30	12 20 00.8	51.254N.	175.847W.	33	GS	4.6	—	—	—	DEC. 30	02:20 HST
DEC. 31	12 56 32.0	62.854N.	143.331W.	33	GS	—	—	$3.1M_L$(PM)	—	DEC. 31	03:56 AST
ARIZONA											
JAN. 19	19 35 00.1	32.550N.	114.100W.	0	PS	—	—	$3.1M_L$(PS)	—	JAN. 19	11:35 PST
MAR. 24	17 29 57.4	32.476N.	114.077W.	0	GS	—	—	$3.4M_L$(PS)	—	MAR. 24	09:29 PST
APR. 5	18 00 02.9	32.390N.	113.800W.	6	PS	—	—	$3.1M_L$(PS)	—	APR. 5	11:00 MST
JULY 17	21 13 49.6	34.702N.	111.149W.	5	GS	—	—	$2.6M_L$(GS)	—	JULY 17	14:13 MST
AUG. 15	19 15 06.2	34.620N.	113.150W.	0	GP	—	—	$3.0M_L$(GP)	—	AUG. 15	12:15 MST
AUG. 21	17 42 39.7	34.620N.	113.150W.	0	GP	—	—	$3.1M_L$(GP)	—	AUG. 21	10:42 MST
AUG. 27	18 28 29.5	34.620N.	113.150W.	0	GP	—	—	$3.1M_L$(GP)	—	AUG. 27	11:28 MST
ARKANSAS											
JAN. 1	14 13 22.5	35.87 N.	89.99 W.	1	SL	—	—	$2.6M_n$(SL)	—	JAN. 1	08:13 CST
FEB. 5	13 36 18.2	35.259N.	92.273W.	6	TC	—	—	$2.5M_n$(TC)	—	FEB. 5	07:36 CST
MAY 24	08 16 01.5	35.178N.	92.217W.	5	TC	—	—	$3.0M_n$(TU)	—	MAY 24	02:16 CST
SEPT. 25	08 56 35.5	35.88 N.	89.98 W.	10	SL	—	—	$2.8M_n$(SL)	—	SEPT. 25	02:56 CST
CALIFORNIA											
JAN. 2	21 41 26.3	36.303N.	120.335W.	6	GP	—	—	$3.0M_L$(GP)	—	JAN. 2	13:41 PST
JAN. 3	12 33 03.6	40.472N.	124.578W.	8	BK	—	—	$3.1M_L$(BK)	—	JAN. 3	04:33 PST
JAN. 5	05 18 49.1	37.262N.	121.665W.	6	BK	—	—	$2.7M_L$(BK)	FELT	JAN. 4	21:18 PST
JAN. 6	19 52 42.7	37.010N.	121.483W.	9	BK	—	—	$3.7M_L$(BK)	III	JAN. 6	11:52 PST
JAN. 8	04 16 03.8	37.619N.	118.854W.	5	GS	—	—	$3.0M_L$(PS)	—	JAN. 7	20:16 PST
JAN. 10	12 13 58.6	37.468N.	118.916W.	6	PS	—	—	$3.1M_L$(PS)	—	JAN. 10	04:13 PST
JAN. 11	09 52 05.3	38.788N.	122.767W.	3	BK	—	—	$3.2M_L$(BK)	—	JAN. 11	01:52 PST
JAN. 12	09 41 48.5	35.326N.	118.524W.	3	PS	—	—	$3.2M_L$(GP)	—	JAN. 12	01:41 PST
JAN. 14	03 07 54.9	36.563N.	121.203W.	7	BK	—	—	$3.4M_L$(BK)	FELT	JAN. 13	19:07 PST
JAN. 14	03 09 36.3	36.572N.	121.205W.	7	BK	5.0	—	$4.8M_L$(BK)	IV	JAN. 13	19:09 PST
JAN. 14	05 35 47.9	36.568N.	121.202W.	6	BK	—	—	$3.0M_L$(BK)	—	JAN. 13	21:35 PST
JAN. 14	13 12 14.0	33.914N.	116.697W.	13	PS	—	—	$3.4M_L$(GP)	FELT	JAN. 14	05:12 PST
JAN. 16	09 38 47.4	38.428N.	122.645W.	5	BK	—	—	$2.5M_L$(BK)	IV	JAN. 16	01:38 PST
JAN. 16	19 05 22.0	40.447N.	124.588W.	18	BK	—	—	$3.0M_L$(BK)	—	JAN. 16	11:05 PST
JAN. 17	17 52 00.8	36.203N.	120.162W.	6	GP	—	—	$3.3M_L$(BK)	—	JAN. 17	09:52 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JAN. 17	21 58 38.0	37.522N.	118.634W.	5	GS	—	—	3.1M_L(PS)	—	JAN. 17	13:58 PST
JAN. 18	06 57 29.2	37.415N.	118.647W.	6	PS	—	—	3.4M_L(PS)	—	JAN. 17	22:57 PST
JAN. 18	20 38 42.4	36.264N.	120.241W.	6	GP	—	—	3.0M_L(PS)	—	JAN. 18	12:38 PST
JAN. 21	00 54 19.9	32.050N.	116.368W.	6	GP	—	—	3.0M_L(PS)	—	JAN. 20	16:54 PST
JAN. 21	11 57 31.3	40.437N.	125.265W.	10	BK	—	—	3.5M_L(BK)	—	JAN. 21	03:57 PST
JAN. 21	20 07 30.8	38.543N.	122.995W.	1	BK	—	—	2.3M_L(BK)	IV	JAN. 21	12:07 PST
JAN. 22	16 26 54.0	33.686N.	119.134W.	6	PS	—	—	3.6M_L(PS)	—	JAN. 22	08:26 PST
JAN. 26	19 20 51.2	36.810N.	121.275W.	7	BK	5.3	5.3	5.5M_L(BK)	VII	JAN. 26	11:20 PST
JAN. 26	21 44 34.2	36.817N.	121.265W.	9	BK	—	—	3.2M_L(BK)	—	JAN. 26	13:44 PST
JAN. 26	23 46 54.9	36.828N.	121.290W.	6	BK	—	—	4.0M_L(BK)	—	JAN. 26	15:46 PST
JAN. 27	02 02 01.1	37.638N.	118.950W.	6	PS	—	—	3.2M_L(PS)	—	JAN. 26	18:02 PST
JAN. 27	10 07 37.1	36.810N.	121.263W.	7	BK	—	—	3.4M_L(BK)	—	JAN. 27	02:07 PST
JAN. 27	14 26 06.4	36.835N.	121.278W.	5	BK	—	—	3.3M_L(BK)	—	JAN. 27	06:26 PST
JAN. 27	19 51 34.1	36.813N.	121.255W.	8	BK	—	—	3.4M_L(BK)	—	JAN. 27	11:51 PST
JAN. 28	02 53 50.5	34.480N.	120.609W.	11	PS	—	—	3.1M_L(PS)	—	JAN. 27	18:53 PST
JAN. 30	17 47 07.5	37.645N.	121.837W.	4	BK	—	—	2.9M_L(BK)	FELT	JAN. 30	09:47 PST
JAN. 31	16 37 49.8	37.645N.	121.837W.	5	BK	—	—	3.1M_L(BK)	—	JAN. 31	08:37 PST
FEB. 1	02 32 46 6	37.427N.	118.472W.	6	PS	—	—	3.4M_L(PS)	—	JAN. 31	18:32 PST
FEB. 1	08 51 25.8	37.460N.	118.840W.	11	BK	—	—	3.0M_L(BK)	—	FEB. 1	00:51 PST
FEB. 2	19 31 22.8	40.802N.	124.063W.	25	BK	—	—	3.2M_L(BK)	FELT	FEB. 2	11:31 PST
FEB. 5	12 00 10.4	40.608N.	124.727W.	16	BK	—	—	3.5M_L(BK)	—	FEB. 5	04:00 PST
FEB. 10	16 42 14.0	36.171N.	120.174W.	6	GP	—	—	3.2M_L(GP)	—	FEB. 10	08:42 PST
FEB. 11	01 15 57.2	41.634N.	125.353W.	10	GS	5.0	5.0	4.9M_L(BK)	—	FEB. 10	17:15 PST
FEB. 11	04 38 39.5	37.461N.	118.904W.	6	PS	—	—	3.1M_L(PS)	—	FEB. 10	20:38 PST
FEB. 14	22 21 31.8	36.767N.	121.265W.	9	BK	—	—	3.1M_L(BK)	—	FEB. 14	14:21 PST
FEB. 15	22 27 01.0	39.630N.	122.072W.	22	BK	—	—	3.1M_L(BK)	III	FEB. 15	14:27 PST
FEB. 17	02 12 33.5	34.116N.	116.030W.	11	PS	—	—	3.8M_L(GP)	FELT	FEB. 16	18:12 PST
FEB. 17	10 58 38.6	32.966N.	115.553W.	8	PS	—	—	3.4M_L(GP)	IV	FEB. 17	02:58 PST
FEB. 17	12 28 05.7	40.329N.	127.303W.	10	GS	4.3	—	4.3M_L(BK)	—	FEB. 17	04:28 PST
FEB. 17	13 46 42.4	33.554N.	116.806W.	0	GP	—	—	3.2M_L(GP)	—	FEB. 17	05:46 PST
FEB. 18	01 25 29.0	32.962N.	115.543W.	5	PS	—	—	3.0M_L(PS)	FELT	FEB. 17	17:25 PST
FEB. 18	01 26 29.0	32.957N.	115.554W.	5	PS	—	—	3.1M_L(PS)	FELT	FEB. 17	17:26 PST
FEB. 19	00 25 40.1	40.730N.	124.855W.	8	BK	—	—	4.0M_L(BK)	—	FEB. 18	16:25 PST
FEB. 19	00 47 24.5	32.485N.	117.567W.	6	GP	—	—	3.8M_L(GP)	III	FEB. 18	16:47 PST
FEB. 19	03 01 09.1	36.827N.	121.277W.	9	BK	—	—	3.1M_L(BK)	FELT	FEB. 18	19:01 PST
FEB. 19	23 49 07.7	36.848N.	121.297W.	9	BK	—	—	3.1M_L(BK)	FELT	FEB. 19	15:49 PST
FEB. 28	10 31 35.8	40.597N.	124.728W.	14	BK	—	—	3.5M_L(BK)	—	FEB. 28	02:31 PST
MAR. 2	23 03 01.1	35.910N.	118.352W.	5	GP	—	—	3.1M_L(PS)	—	MAR. 2	15:03 PST
MAR. 3	13 18 20.3	33.746N.	117.525W.	6	PS	—	—	3.3M_L(GP)	IV	MAR. 3	05:18 PST
MAR. 3	14 45 20.0	36.835N.	121.268W.	6	BK	—	—	2.7M_L(BK)	FELT	MAR. 3	06:45 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
MAR. 3	17 56 18.5	40.613N.	127.210W.	5	BK	—	—	3.8M_L(BK)	—	MAR. 3	09:56 PST
MAR. 3	17 56 24.1	40.390N.	127.348W.	5	BK	—	—	3.8M_L(BK)	—	MAR. 3	09:56 PST
MAR. 7	22 26 33.7	40.303N.	124.501W.	2	BK	—	—	3.8M_L(BK)	—	MAR. 7	14:26 PST
MAR. 9	01 28 13.0	37.672N.	122.498W.	7	BK	—	—	3.0M_L(BK)	FELT	MAR. 8	17:28 PST
MAR. 9	22 41 42.6	34.113N.	117.769W.	5	PS	—	—	3.5M_L(GP)	IV	MAR. 9	14:41 PST
MAR. 10	15 33 16.0	34.403N.	119.813W.	24	GP	4.4	—	4.0M_L(GP)	V	MAR. 10	07:33 PST
MAR. 11	00 05 09.9	40.307N.	124.388W.	22	BK	—	—	3.6M_L(BK)	—	MAR. 10	16:05 PST
MAR. 11	07 14 59.5	41.711N.	127.258W.	10	GS	4.0	—	—	—	MAR. 10	23:14 PST
MAR. 11	15 34 38.3	40.412N.	125.433W.	12	BK	—	—	3.9M_L(BK)	—	MAR. 11	07:34 PST
MAR. 13	03 30 33.1	37.383N.	118.699W.	5	PS	—	—	3.1M_L(PS)	—	MAR. 12	19:30 PST
MAR. 13	08 37 00.7	36.288N.	120.321W.	6	PS	—	—	3.2M_L(GP)	—	MAR. 13	00:37 PST
MAR. 14	17 35 16.8	37.613N.	118.927W.	5	BK	—	—	3.0M_L(BK)	—	MAR. 14	09:35 PST
MAR. 16	01 45 45.3	34.150N.	117.313W.	5	PS	—	—	3.0M_L(GP)	FELT	MAR. 15	17:45 PST
MAR. 17	00 43 24.6	33.619N.	116.974W.	14	PS	—	—	3.1M_L(PS)	—	MAR. 16	16:43 PST
MAR. 19	09 27 39.2	37.468N.	118.611W.	5	GS	—	—	3.4M_L(PS)	III	MAR. 19	01:27 PST
MAR. 20	06 49 40.3	33.794N.	118.310W.	10	PS	—	—	3.3M_L(GP)	FELT	MAR. 19	22:49 PST
MAR. 20	22 41 38.0	40.948N.	123.685W.	6	BK	—	—	3.8M_L(BK)	—	MAR. 20	14:41 PST
MAR. 20	22 42 59.8	40.972N.	123.688W.	5	BK	—	—	3.4M_L(BK)	—	MAR. 20	14:42 PST
MAR. 20	22 43 12.7	40.972N.	123.688W.	16	BK	—	—	3.3M_L(BK)	—	MAR. 20	14:43 PST
MAR. 21	01 23 47.5	36.940N.	120.998W.	4	BK	—	—	3.0M_L(BK)	—	MAR. 20	17:23 PST
MAR. 21	06 37 26.9	41.067N.	125.220W.	5	BK	—	—	3.7M_L(BK)	—	MAR. 20	22:37 PST
MAR. 23	04 58 01.4	38.845N.	122.887W.	2	BK	3.7	—	3.7M_L(BK)	V	MAR. 22	20:58 PST
MAR. 24	05 14 40.0	33.785N.	118.305W.	8	PS	—	—	2.8M_L(PS)	IV	MAR. 23	21:14 PST
MAR. 24	22 55 34.0	36.557N.	121.183W.	4	BK	—	—	3.0M_L(BK)	—	MAR. 24	14:55 PST
MAR. 29	16 24 04.2	37.872N.	122.201W.	9	BK	—	—	4.1M_L(BK)	V	MAR. 29	08:24 PST
MAR. 31	11 55 40.1	37.488N.	121.693W.	8	BK	5.5	5.5	5.7M_L(BK)	VI	MAR. 31	03:55 PST
MAR. 31	11 58 39.0	37.483N.	121.683W.	8	BK	—	—	3.2M_L(BK)	—	MAR. 31	03:58 PST
MAR. 31	12 17 48.4	37.507N.	121.688W.	8	BK	—	—	3.0M_L(BK)	—	MAR. 31	04:17 PST
MAR. 31	12 39 24.0	37.465N.	121.700W.	8	BK	—	—	3.1M_L(BK)	—	MAR. 31	04:39 PST
MAR. 31	13 05 38.2	37.513N.	121.688W.	7	BK	—	—	3.9M_L(BK)	—	MAR. 31	05:05 PST
MAR. 31	14 20 14.6	37.470N.	121.697W.	8	BK	—	—	3.2M_L(BK)	—	MAR. 31	06:20 PST
APR. 2	02 50 37.3	37.465N.	121.697W.	7	BK	—	—	3.3M_L(BK)	—	APR. 1	18:50 PST
APR. 3	06 40 37.5	41.212N.	124.550W.	12	BK	4.1	—	3.6M_L(BK)	—	APR. 2	22:40 PST
APR. 3	16 33 35.9	37.515N.	121.690W.	7	BK	—	—	3.0M_L(BK)	—	APR. 3	08:33 PST
APR. 4	10 16 41.3	37.292N.	121.685W.	6	BK	—	—	3.2M_L(BK)	—	APR. 4	02:16 PST
APR. 5	00 30 50.6	33.975N.	117.248W.	13	PS	—	—	2.6M_L(PS)	FELT	APR. 4	16:30 PST
APR. 5	06 50 40.4	33.730N.	118.010W.	14	PS	—	—	3.9M_L(GP)	V	APR. 4	22:50 PST
APR. 5	17 21 49.5	33.336N.	115.709W.	3	PS	—	—	3.7M_L(GP)	IV	APR. 5	09:21 PST
APR. 5	18 43 37.0	37.518N.	121.692W.	7	BK	—	—	3.4M_L(BK)	—	APR. 5	10:43 PST
APR. 9	08 34 53.7	37.480N.	121.627W.	9	BK	—	—	3.0M_L(BK)	—	APR. 9	00:34 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
APR. 10	22 12 59.8	37.518N.	121.690W.	8	BK	—	—	3.0M_L(BK)	—	APR. 10	14:12 PST
APR. 15	00 13 16.9	40.450N.	125.320W.	5	BK	4.3	—	4.4M_L(BK)	—	APR. 14	16:13 PST
APR. 15	09 25 56.7	36.677N.	121.347W.	4	BK	—	—	3.6M_L(BK)	II	APR. 15	01:25 PST
APR. 15	14 04 44.0	40.593N.	125.223W.	5	BK	—	—	3.5M_L(BK)	—	APR. 15	06:04 PST
APR. 18	09 35 44.5	41.140N.	123.367W.	39	BK	—	—	3.0M_L(BK)	—	APR. 18	01:35 PST
APR. 18	11 00 21.7	38.230N.	122.178W.	3	BK	—	—	2.3M_L(BK)	FELT	APR. 18	03:00 PST
APR. 20	12 45 49.2	34.224N.	117.469W.	12	PS	—	—	2.7M_L(PS)	FELT	APR. 20	04:45 PST
APR. 21	06 35 59.4	35.834N.	117.766W.	4	PS	—	—	3.3M_L(GP)	—	APR. 20	22:35 PST
APR. 21	08 54 04.6	35.835N.	117.766W.	4	PS	—	—	3.0M_L(PS)	—	APR. 21	00:54 PST
APR. 21	09 12 17.1	34.378N.	119.768W.	11	PS	—	—	3.0M_L(PS)	FELT	APR. 21	01:12 PST
APR. 22	17 47 50.2	36.755N.	121.495W.	3	BK	—	—	3.0M_L(BK)	—	APR. 22	09:47 PST
APR. 22	23 42 26.5	37.470N.	118.807W.	6	PS	—	—	3.0M_L(PS)	—	APR. 22	15:42 PST
APR. 23	01 10 44.9	36.178N.	120.236W.	6	PS	—	—	3.2M_L(PS)	—	APR. 22	17:10 PST
APR. 23	16 35 06.0	37.428N.	121.800W.	2	BK	—	—	2.2M_L(BK)	FELT	APR. 23	08:35 PST
APR. 25	19 09 27.0	33.478N.	115.649W.	1	GP	—	—	3.0M_L(GP)	—	APR. 25	11:09 PST
APR. 26	00 43 55.0	36.145N.	117.876W.	7	PS	—	—	3.4M_L(PS)	—	APR. 25	16:43 PST
APR. 28	17 33 47.8	37.478N.	121.693W.	7	BK	—	—	3.5M_L(BK)	FELT	APR. 28	09:33 PST
APR. 28	22 18 40.6	36.815N.	121.258W.	8	BK	—	—	3.6M_L(BK)	IV	APR. 28	14:18 PST
APR. 30	22 37 30.4	40.760N.	124.560W.	19	BK	3.5	—	3.9M_L(BK)	III	APR. 30	14:37 PST
MAY 1	01 08 49.7	35.911N.	117.264W.	0	GP	—	—	3.0M_L(GP)	—	APR 30	17:08 PST
MAY 2	08 19 07.9	33.677N.	116.826W.	12	PS	—	—	2.6M_L(PS)	FELT	MAY 2	00:19 PST
MAY 5	15 51 44.4	35.047N.	118.948W.	6	PS	—	—	3.2M_L(GP)	—	MAY 5	07:51 PST
MAY 6	22 38 35.4	40.375N.	124.620W.	22	BK	—	—	3.0M_L(BK)	—	MAY 6	14:38 PST
MAY 7	06 08 41.9	40.240N.	127.273W.	5	BK	4.0	—	4.3M_L(BK)	—	MAY 6	22:08 PST
MAY 7	12 34 09.0	34.196N.	117.061W.	12	PS	—	—	3.0M_L(PS)	—	MAY 7	04:34 PST
MAY 9	02 29 42.9	36.885N.	121.290W.	7	BK	—	—	3.0M_L(BK)	—	MAY 8	18:29 PST
MAY 9	23 16 46.1	32.410N.	118.221W.	6	GP	—	—	3.2M_L(PS)	—	MAY 9	15:16 PST
MAY 10	22 30 13.1	37.348N.	122.288W.	13	BK	—	—	2.7M_L(BK)	FELT	MAY 10	14:30 PST
MAY 12	09 17 09.3	37.462N.	121.693W.	6	BK	—	—	3.1M_L(BK)	FELT	MAY 12	01:17 PST
MAY 12	23 00 19.7	36.848N.	121.297W.	6	BK	—	—	3.5M_L(GP)	FELT	MAY 12	15:00 PST
MAY 13	11 29 31.2	35.251N.	117.332W.	6	PS	—	—	3.3M_L(PS)	—	MAY 13	03:29 PST
MAY 13	11 55 40.3	33.793N.	118.312W.	10	PS	—	—	2.7M_L(PS)	FELT	MAY 13	03:55 PST
MAY 13	16 35 45.0	33.791N.	118.302W.	8	PS	—	—	2.7M_L(PS)	FELT	MAY 13	08:35 PST
MAY 14	00 30 09.6	37.363N.	122.262W.	14	BK	—	—	3.2M_L(BK)	FELT	MAY 13	16:30 PST
MAY 15	08 32 02.1	37.477N.	121.695W.	7	BK	—	—	3.3M_L(BK)	FELT	MAY 15	00:32 PST
MAY 16	17 21 30.1	40.370N.	125.268W.	21	BK	—	—	3.9M_L(BK)	—	MAY 16	09:21 PST
MAY 19	04 12 53.3	33.892N.	118.387W.	10	PS	—	—	3.1M_L(GP)	FELT	MAY 18	20:12 PST
MAY 20	07 11 40.2	33.940N.	118.668W.	6	PS	—	—	2.8M_L(PS)	FELT	MAY 19	23:11 PST
MAY 23	11 41 55.1	35.806N.	118.019W.	10	PS	3.6	—	3.9M_L(GP)	IV	MAY 23	03:41 PST
MAY 24	08 56 29.5	35.260N.	118.585W.	6	PS	—	—	3.2M_L(GP)	—	MAY 24	00:56 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
MAY 25	03 46 02.8	36.767N.	121.247W.	11	BK	—	—	3.0M_L(BK)	—	MAY 24	19:46 PST
MAY 25	09 51 03.1	38.810N.	122.798W.	4	BK	—	—	3.2M_L(BK)	FELT	MAY 25	01:51 PST
MAY 31	01 42 40.1	34.105N.	116.611W.	10	PS	—	—	3.5M_L(PS)	—	MAY 30	17:42 PST
MAY 31	08 47 07.2	36.627N.	121.273W.	6	BK	—	—	3.7M_L(BK)	—	MAY 31	00:47 PST
MAY 31	08 47 56.1	36.618N.	121.255W.	4	BK	4.6	3.7	4.7M_L(BK)	IV	MAY 31	00:47 PST
JUNE 1	06 10 43.5	37.446N.	118.840W.	5	PS	—	—	3.1M_L(PS)	—	MAY 31	22:10 PST
JUNE 1	06 49 35.0	36.607N.	121.252W.	7	BK	—	—	3.5M_L(BK)	—	MAY 31	22:49 PST
JUNE 3	14 14 49.3	33.788N.	116.344W.	11	PS	—	—	3.7M_L(PS)	IV	JUNE 3	06:14 PST
JUNE 5	00 15 56.0	36.665N.	121.340W.	4	BK	—	—	3.1M_L(BK)	—	JUNE 4	16:15 PST
JUNE 9	04 48 05.8	37.960N.	121.668W.	1	BK	—	—	2.1M_L(BK)	FELT	JUNE 8	20:48 PST
JUNE 10	01 32 58.4	36.628N.	121.300W.	8	BK	—	—	3.3M_L(BK)	—	JUNE 9	17:32 PST
JUNE 10	10 30 00.2	36.435N.	120.454W.	6	PS	—	—	3.0M_L(PS)	—	JUNE 10	02:29 PST
JUNE 11	13 03 01.8	36.945N.	121.618W.	6	BK	—	—	2.7M_L(BK)	FELT	JUNE 11	05:03 PST
JUNE 11	15 08 59.5	36.620N.	121.277W.	7	BK	—	—	3.5M_L(BK)	FELT	JUNE 11	07:08 PST
JUNE 13	13 25 15.4	36.060N.	119.938W.	6	GP	—	—	3.6M_L(GP)	II	JUNE 13	05:25 PST
JUNE 14	09 53 29.2	41.703N.	126.543W.	10	GS	3.7	4.1	—	—	JUNE 14	01:53 PST
JUNE 18	00 10 59.3	37.475N.	118.577W.	5	GS	—	—	2.8M_L(BK)	—	JUNE 17	16:10 PST
JUNE 18	14 13 26.4	33.935N.	116.742W.	17	PS	—	—	3.4M_L(PS)	FELT	JUNE 18	06:13 PST
JUNE 20	02 28 13.9	40.415N.	124.467W.	20	BK	—	—	3.2M_L(BK)	—	JUNE 19	18:28 PST
JUNE 22	20 34 51.9	40.692N.	124.673W.	16	BK	4.1	—	4.0M_L(BK)	—	JUNE 22	12:34 PST
JUNE 22	23 57 06.1	40.597N.	123.450W.	12	BK	—	—	3.5M_L(BK)	—	JUNE 22	15:57 PST
JUNE 26	05 39 47.8	33.869N.	118.450W.	7	PS	—	—	3.4M_L(GP)	IV	JUNE 25	21:39 PST
JUNE 27	04 06 43.4	37.745N.	121.982W.	4	BK	—	—	2.4M_L(BK)	FELT	JUNE 26	20:06 PST
JUNE 30	02 21 20.4	37.437N.	118.617W.	6	PS	—	—	3.0M_L(PS)	—	JUNE 29	18:21 PST
JUNE 30	11 00 05.9	37.842N.	121.763W.	11	BK	—	—	3.3M_L(BK)	FELT	JUNE 30	03:00 PST
JULY 1	08 42 14.0	40.385N.	127.440W.	5	BK	—	—	3.9M_L(BK)	—	JULY 1	00:42 PST
JULY 2	08 10 21.2	36.624N.	116.322W.	6	PS	—	—	3.0M_L(PS)	—	JULY 2	00:10 PST
JULY 2	08 11 03.2	33.989N.	117.229W.	6	GP	—	—	3.1M_L(GP)	—	JULY 2	00:11 PST
JULY 4	19 55 35.7	41.052N.	124.603W.	9	BK	—	—	3.7M_L(BK)	—	JULY 4	11:55 PST
JULY 5	03 24 23.0	35.080N.	119.091W.	18	GP	—	—	3.1M_L(GP)	—	JULY 4	19:24 PST
JULY 5	14 11 59.9	35.698N.	117.645W.	7	GP	—	—	3.1M_L(PS)	—	JULY 5	06:11 PST
JULY 7	03 49 16.8	38.788N.	122.780W.	2	BK	—	—	3.2M_L(BK)	—	JULY 6	19:49 PST
JULY 7	09 13 22.7	34.149N.	117.744W.	5	GP	—	—	3.0M_L(PS)	FELT	JULY 7	01:13 PST
JULY 8	00 40 23.4	36.083N.	121.827W.	19	BK	4.4	—	4.4M_L(BK)	IV	JULY 7	16:40 PST
JULY 8	09 20 44.5	33.998N.	116.606W.	12	GP	5.8	6.0	5.6M_L(GP)	VII	JULY 8	01:20 PST
JULY 8	09 24 12.8	34.031N.	116.657W.	6	GP	—	—	4.4M_L(PS)	—	JULY 8	01:24 PST
JULY 8	09 26 25.8	33.967N.	116.617W.	6	PS	—	—	3.2M_L(PS)	—	JULY 8	01:26 PST
JULY 8	09 26 34.7	33.967N.	116.617W.	6	PS	—	—	3.1M_L(PS)	—	JULY 8	01:26 PST
JULY 8	09 27 10.8	33.967N.	116.617W.	6	PS	—	—	3.5M_L(PS)	—	JULY 8	01:27 PST
JULY 8	09 28 13.7	33.967N.	116.617W.	18	PS	—	—	4.0M_L(PS)	—	JULY 8	01:28 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr	Local time zone
CALIFORNIA—Continued												
JULY 8	09 28 44.8	33.967N.	116.617W.	6	PS	—	—	3.0M_L(PS)	—	JULY 8	01:28	PST
JULY 8	09 29 41.1	34.000N.	116.615W.	11	PS	—	—	3.1M_L(PS)	—	JULY 8	01:29	PST
JULY 8	09 29 53.9	33.983N.	116.617W.	6	PS	—	—	3.3M_L(PS)	—	JULY 8	01:29	PST
JULY 8	09 30 00.8	33.983N.	116.617W.	6	PS	—	—	3.4M_L(PS)	—	JULY 8	01:30	PST
JULY 8	09 30 23.7	33.983N.	116.617W.	6	PS	—	—	3.6M_L(PS)	—	JULY 8	01:30	PST
JULY 8	09 30 43.4	33.983N.	116.617W.	6	PS	—	—	3.3M_L(PS)	—	JULY 8	01:30	PST
JULY 8	09 34 16.2	33.967N.	116.617W.	6	PS	—	—	3.0M_L(PS)	—	JULY 8	01:34	PST
JULY 8	09 42 56.5	33.987N.	116.639W.	6	PS	—	—	3.4M_L(PS)	—	JULY 8	01:42	PST
JULY 8	09 44 18.8	33.967N.	116.617W.	6	PS	—	—	3.0M_L(PS)	—	JULY 8	01:44	PST
JULY 8	09 46 15.3	34.034N.	116.641W.	10	PS	—	—	3.4M_L(PS)	—	JULY 8	01:46	PST
JULY 8	09 49 49.7	33.999N.	116.561W.	9	PS	—	—	3.6M_L(PS)	—	JULY 8	01:49	PST
JULY 8	09 50 55.3	34.025N.	116.690W.	6	PS	—	—	3.1M_L(PS)	—	JULY 8	01:50	PST
JULY 8	09 51 34.3	33.982N.	116.575W.	2	PS	—	—	3.4M_L(PS)	—	JULY 8	01:51	PST
JULY 8	09 53 23.8	33.987N.	116.568W.	12	PS	—	—	3.4M_L(PS)	—	JULY 8	01:53	PST
JULY 8	10 04 52.9	33.959N.	116.581W.	5	PS	—	—	3.6M_L(PS)	—	JULY 8	02:04	PST
JULY 8	10 07 45.5	34.025N.	116.669W.	10	PS	—	—	3.0M_L(PS)	—	JULY 8	02:07	PST
JULY 8	10 09 02.9	33.977N.	116.579W.	8	PS	4.3	—	4.4M_L(PS)	—	JULY 8	02:09	PST
JULY 8	10 11 00.2	34.023N.	116.670W.	4	PS	—	—	4.1M_L(PS)	—	JULY 8	02:11	PST
JULY 8	10 12 33.5	33.967N.	116.617W.	6	PS	—	—	3.1M_L(PS)	—	JULY 8	02:12	PST
JULY 8	10 14 41.8	34.035N.	116.644W.	11	PS	—	—	3.2M_L(PS)	—	JULY 8	02:14	PST
JULY 8	10 22 40.6	33.967N.	116.617W.	6	GP	4.2	—	4.4M_L(PS)	—	JULY 8	02:22	PST
JULY 8	10 27 43.7	34.030N.	116.678W.	10	PS	—	—	3.0M_L(PS)	—	JULY 8	02:27	PST
JULY 8	10 34 14.5	34.025N.	116.674W.	11	PS	—	—	3.6M_L(PS)	—	JULY 8	02:34	PST
JULY 8	10 39 00.9	33.981N.	116.570W.	9	PS	—	—	3.0M_L(PS)	—	JULY 8	02:39	PST
JULY 8	11 24 58.4	34.020N.	116.618W.	11	PS	—	—	3.5M_L(PS)	—	JULY 8	03:24	PST
JULY 8	11 49 05.7	33.977N.	116.570W.	8	PS	—	—	3.0M_L(PS)	—	JULY 8	03:49	PST
JULY 8	11 50 41.2	33.996N.	116.673W.	6	PS	—	—	3.2M_L(PS)	—	JULY 8	03:50	PST
JULY 8	12 03 38.3	33.963N.	116.570W.	7	PS	—	—	3.2M_L(PS)	—	JULY 8	04:03	PST
JULY 8	12 12 42.6	34.024N.	116.647W.	11	PS	—	—	3.0M_L(PS)	—	JULY 8	04:12	PST
JULY 8	13 42 15.9	33.985N.	116.595W.	9	PS	—	—	3.0M_L(PS)	—	JULY 8	05:42	PST
JULY 8	13 52 53.2	33.999N.	116.611W.	11	PS	—	—	3.0M_L(PS)	—	JULY 8	05:52	PST
JULY 8	13 55 34.5	34.036N.	116.623W.	13	PS	—	—	3.0M_L(PS)	—	JULY 8	05:55	PST
JULY 8	14 48 32.4	34.018N.	116.601W.	6	PS	—	—	3.5M_L(PS)	—	JULY 8	06:48	PST
JULY 8	15 42 22.3	34.006N.	116.603W.	11	PS	—	—	3.4M_L(PS)	—	JULY 8	07:42	PST
JULY 8	15 55 19.8	34.038N.	116.685W.	11	PS	—	—	3.7M_L(PS)	—	JULY 8	07:55	PST
JULY 8	15 55 26.2	33.967N.	116.617W.	6	GP	—	—	4.0M_L(GP)	—	JULY 8	07:55	PST
JULY 8	16 39 44.1	33.993N.	116.583W.	12	PS	—	—	3.7M_L(PS)	—	JULY 8	08:39	PST
JULY 8	18 04 14.5	33.968N.	116.556W.	9	PS	—	—	3.5M_L(PS)	—	JULY 8	10:04	PST
JULY 8	18 55 56.6	33.970N.	116.571W.	8	PS	—	—	3.3M_L(PS)	—	JULY 8	10:55	PST
JULY 8	19 36 20.1	34.016N.	116.614W.	12	PS	—	—	4.0M_L(PS)	—	JULY 8	11:36	PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 8	21 53 03.1	34.013N.	116.588W.	11	PS	—	—	3.1M_L(PS)	—	JULY 8	13:53 PST
JULY 9	00 12 32.1	33.987N.	116.569W.	6	GP	4.2	—	4.4M_L(GP)	FELT	JULY 8	16:12 PST
JULY 9	00 33 32.6	33.982N.	116.557W.	11	PS	—	—	3.1M_L(PS)	—	JULY 8	16:33 PST
JULY 9	09 36 36.6	34.001N.	116.573W.	11	PS	—	—	3.2M_L(PS)	—	JULY 9	01:36 PST
JULY 9	09 41 21.0	33.972N.	116.574W.	8	PS	—	—	3.7M_L(PS)	—	JULY 9	01:41 PST
JULY 9	11 32 21.1	33.975N.	116.565W.	9	PS	—	—	3.6M_L(PS)	—	JULY 9	03:32 PST
JULY 9	12 53 59.7	37.565N.	118.435W.	4	RN	—	—	3.4M_D(RN)	FELT	JULY 9	04:53 PST
JULY 9	14 13 26.6	34.010N.	116.615W.	12	PS	—	—	3.0M_L(PS)	—	JULY 9	06:13 PST
JULY 10	04 24 42.8	40.678N.	124.753W.	6	BK	—	—	3.2M_L(BK)	—	JULY 9	20:24 PST
JULY 10	09 42 10.7	33.984N.	116.636W.	2	PS	—	—	3.0M_L(PS)	—	JULY 10	01:42 PST
JULY 10	12 02 50.9	33.962N.	116.593W.	12	PS	—	—	3.4M_L(PS)	V	JULY 10	04:02 PST
JULY 10	20 52 43.4	40.488N.	124.705W.	15	BK	—	—	3.7M_L(BK)	—	JULY 10	12:52 PST
JULY 10	23 47 22.1	33.970N.	116.550W.	9	PS	—	—	3.1M_L(PS)	—	JULY 10	15:47 PST
JULY 11	00 18 52.2	34.029N.	116.642W.	12	PS	—	—	3.0M_L(PS)	—	JULY 10	16:18 PST
JULY 11	07 48 14.0	33.997N.	116.572W.	12	PS	—	—	3.1M_L(PS)	III	JULY 10	23:48 PST
JULY 11	08 51 28.7	33.967N.	116.575W.	7	PS	—	—	3.3M_L(PS)	III	JULY 11	00:51 PST
JULY 11	15 13 30.6	34.020N.	116.653W.	12	PS	—	—	3.2M_L(PS)	III	JULY 11	07:13 PST
JULY 11	15 59 51.9	34.012N.	116.617W.	11	PS	—	—	3.1M_L(PS)	—	JULY 11	07:59 PST
JULY 11	18 12 31.5	34.025N.	116.670W.	10	PS	—	—	3.0M_L(PS)	—	JULY 11	10:12 PST
JULY 11	21 28 52.5	34.298N.	118.292W.	8	PS	—	—	3.0M_L(PS)	IV	JULY 11	13:28 PST
JULY 12	03 50 54.7	37.755N.	119.010W.	6	PS	—	—	3.4M_L(PS)	—	JULY 11	19:50 PST
JULY 12	05 45 27.5	33.986N.	116.652W.	7	PS	—	—	4.0M_L(PS)	III	JULY 11	21:45 PST
JULY 12	17 28 30.6	34.032N.	116.673W.	11	PS	—	—	3.4M_L(PS)	—	JULY 12	09:28 PST
JULY 13	01 41 38.2	33.951N.	116.613W.	12	PS	—	—	3.7M_L(PS)	FELT	JULY 12	17:41 PST
JULY 13	11 25 35.0	32.646N.	117.138W.	10	GP	—	—	3.0M_L(GP)	—	JULY 13	03:25 PST
JULY 13	13 47 08.2	32.978N.	117.858W.	9	HJ	5.6	5.8	5.3M_L(GP)	VI	JULY 13	05:47 PST
JULY 13	13 53 27.9	32.963N.	117.828W.	6	PS	—	—	3.9M_L(PS)	—	JULY 13	05:53 PST
JULY 13	13 58 50.4	32.990N.	117.785W.	7	HJ	—	—	3.2M_L(PS)	—	JULY 13	05:58 PST
JULY 13	14 01 32.8	33.003N.	117.833W.	7	HJ	4.8	—	4.6M_L(GP)	—	JULY 13	06:01 PST
JULY 13	14 02 52.1	33.062N.	117.841W.	6	PS	—	—	3.4M_L(PS)	—	JULY 13	06:02 PST
JULY 13	14 11 00.5	32.977N.	117.790W.	5	HJ	—	—	3.7M_L(PS)	—	JULY 13	06:11 PST
JULY 13	14 12 04.7	32.881N.	117.059W.	6	PS	—	—	3.1M_L(PS)	—	JULY 13	06:12 PST
JULY 13	14 26 01.3	32.977N.	117.760W.	5	HJ	—	—	3.5M_L(PS)	—	JULY 13	06:26 PST
JULY 13	15 27 07.4	32.977N.	117.725W.	2	HJ	—	—	3.4M_L(PS)	—	JULY 13	07:27 PST
JULY 13	15 50 05.3	32.886N.	117.746W.	6	PS	—	—	3.6M_L(PS)	—	JULY 13	07:50 PST
JULY 13	15 52 09.2	32.970N.	117.773W.	4	HJ	—	—	3.3M_L(PS)	—	JULY 13	07:52 PST
JULY 13	16 10 17.8	32.957N.	117.785W.	9	HJ	—	—	3.2M_L(PS)	—	JULY 13	08:10 PST
JULY 13	16 37 01.6	32.965N.	117.782W.	6	PS	—	—	3.0M_L(PS)	—	JULY 13	08:37 PST
JULY 13	17 39 35.7	33.972N.	116.569W.	8	PS	—	—	3.1M_L(PS)	—	JULY 13	09:39 PST
JULY 13	23 25 13.3	32.973N.	117.733W.	6	HJ	—	—	3.2M_L(PS)	—	JULY 13	15:25 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 13	23 53 42.6	32.990N.	117.750W.	2	HJ	—	—	3.6M_L(PS)	—	JULY 13	15:53 PST
JULY 14	00 32 46.0	32.995N.	117.787W.	5	HJ	4.0	—	4.0M_L(GP)	—	JULY 13	16:32 PST
JULY 14	01 11 10.3	32.965N.	117.820W.	8	HJ	—	—	3.7M_L(PS)	—	JULY 13	17:11 PST
JULY 14	01 43 30.6	34.001N.	116.589W.	11	PS	—	—	3.1M_L(PS)	—	JULY 13	17:43 PST
JULY 14	05 36 44.6	32.963N.	117.837W.	9	HJ	—	—	3.3M_L(PS)	—	JULY 13	21:36 PST
JULY 14	07 17 34.7	32.993N.	117.788W.	0	HJ	—	—	3.7M_L(PS)	—	JULY 13	23:17 PST
JULY 14	09 07 53.8	32.993N.	117.795W.	5	HJ	—	—	3.7M_L(PS)	—	JULY 14	01:07 PST
JULY 14	14 44 08.4	32.995N.	117.817W.	9	HJ	—	—	3.7M_L(PS)	—	JULY 14	06:44 PST
JULY 14	16 20 09.6	32.988N.	117.827W.	7	HJ	—	—	3.3M_L(PS)	—	JULY 14	08:20 PST
JULY 14	17 14 42.8	33.000N.	117.752W.	5	HJ	—	—	3.7M_L(PS)	—	JULY 14	09:14 PST
JULY 14	21 23 09.4	32.977N.	117.738W.	0	HJ	—	—	3.0M_L(PS)	—	JULY 14	13:23 PST
JULY 14	22 58 49.8	32.953N.	117.795W.	8	HJ	—	—	3.0M_L(PS)	—	JULY 14	14:58 PST
JULY 15	03 17 40.4	34.005N.	116.899W.	11	GP	—	—	3.1M_L(PS)	—	JULY 14	19:17 PST
JULY 15	03 48 36.3	37.501N.	118.633W.	11	BK	—	—	3.3M_L(BK)	—	JULY 14	19:48 PST
JULY 15	15 02 45.2	32.982N.	117.727W.	5	HJ	—	—	3.1M_L(PS)	—	JULY 15	07:02 PST
JULY 15	18 32 14.5	33.980N.	116.638W.	7	PS	—	—	3.1M_L(PS)	—	JULY 15	10:32 PST
JULY 15	21 10 38.0	32.962N.	117.823W.	6	PS	—	—	3.1M_L(PS)	—	JULY 15	13:10 PST
JULY 16	00 32 32.8	33.003N.	117.835W.	6	HJ	—	—	3.0M_L(PS)	—	JULY 15	16:32 PST
JULY 16	05 20 50.7	33.013N.	117.760W.	4	HJ	—	—	3.4M_L(PS)	—	JULY 15	21:20 PST
JULY 16	12 47 01.1	32.972N.	117.805W.	3	HJ	—	—	3.8M_L(PS)	V	JULY 16	04:47 PST
JULY 16	16 27 49.9	37.747N.	121.972W.	4	BK	—	—	2.4M_L(BK)	FELT	JULY 16	08:27 PST
JULY 16	20 59 03.8	37.297N.	121.662W.	6	BK	—	—	3.0M_L(BK)	FELT	JULY 16	12:59 PST
JULY 17	03 22 45.3	33.998N.	116.624W.	10	PS	—	—	3.2M_L(PS)	—	JULY 16	19:22 PST
JULY 17	20 35 15.0	33.989N.	116.649W.	6	GP	4.4	—	4.0M_L(GP)	VI	JULY 17	12:35 PST
JULY 17	21 54 45.2	33.991N.	116.641W.	7	GP	4.1	—	4.4M_L(PS)	IV	JULY 17	13:54 PST
JULY 17	23 51 11.4	33.994N.	116.647W.	7	PS	—	—	3.2M_L(PS)	—	JULY 17	15:51 PST
JULY 18	03 38 40.4	33.030N.	117.713W.	0	HJ	—	—	3.3M_L(PS)	—	JULY 17	19:37 PST
JULY 18	07 18 05.5	37.557N.	118.887W.	3	BK	—	—	3.2M_L(BK)	—	JULY 17	23:18 PST
JULY 18	15 58 34.1	37.576N.	118.441W.	6	PS	—	—	3.1M_L(PS)	FELT	JULY 18	07:58 PST
JULY 18	16 00 08.5	37.570N.	118.443W.	4	BK	—	—	3.9M_L(BK)	FELT	JULY 18	08:00 PST
JULY 18	17 00 36.8	36.093N.	117.849W.	2	GP	—	—	3.7M_L(GP)	IV	JULY 18	09:00 PST
JULY 18	17 02 27.8	36.112N.	117.872W.	6	PS	—	—	3.1M_L(PS)	—	JULY 18	09:02 PST
JULY 18	17 02 50.6	36.098N.	117.849W.	3	GP	—	—	3.4M_L(GP)	—	JULY 18	09:02 PST
JULY 18	17 25 47.5	37.675N.	118.431W.	6	PS	—	—	3.2M_L(PS)	—	JULY 18	09:25 PST
JULY 18	18 55 43.0	36.090N.	117.855W.	2	GP	—	—	3.1M_L(GP)	—	JULY 18	10:55 PST
JULY 18	19 58 01.8	33.967N.	116.569W.	7	PS	—	—	3.2M_L(PS)	IV	JULY 18	11:58 PST
JULY 19	02 24 43.9	36.314N.	120.364W.	14	GP	—	—	3.1M_L(GP)	—	JULY 18	18:24 PST
JULY 19	03 01 21.2	33.020N.	117.737W.	4	HJ	—	—	3.1M_L(PS)	—	JULY 18	19:01 PST
JULY 19	08 27 52.8	35.915N.	117.716W.	6	GP	—	—	3.0M_L(GP)	—	JULY 19	00:27 PST
JULY 19	10 23 38.6	32.970N.	117.805W.	1	HJ	—	—	3.2M_L(PS)	—	JULY 19	02:23 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 19	13 21 00.5	36.091N.	117.847W.	3	GP	—	—	3.2M_L(GP)	—	JULY 19	05:21 PST
JULY 19	13 45 26.4	32.962N.	117.815W.	7	HJ	—	—	3.2M_L(PS)	—	JULY 19	05:45 PST
JULY 19	19 18 19.1	36.090N.	117.851W.	2	GP	—	—	3.3M_L(GP)	—	JULY 19	11:18 PST
JULY 19	21 54 58.1	37.640N.	118.933W.	6	PS	—	—	3.0M_L(PS)	—	JULY 19	13:54 PST
JULY 20	13 02 23.0	32.957N.	117.753W.	3	HJ	—	—	3.3M_L(PS)	—	JULY 20	05:02 PST
JULY 20	14 29 45.5	37.580N.	118.450W.	8	GM	5.6	5.6	5.9M_L(BK)	V	JULY 20	06:29 PST
JULY 20	14 35 34.7	37.583N.	118.450W.	6	PS	—	—	3.5M_L(PS)	—	JULY 20	06:35 PST
JULY 20	14 36 20.2	37.583N.	118.450W.	6	PS	—	—	3.5M_L(PS)	—	JULY 20	06:36 PST
JULY 20	14 36 55.2	37.583N.	118.450W.	6	PS	—	—	3.3M_L(PS)	—	JULY 20	06:36 PST
JULY 20	14 46 07.8	37.573N.	118.443W.	8	BK	—	—	4.1M_L(BK)	—	JULY 20	06:46 PST
JULY 20	14 50 53.2	37.583N.	118.450W.	6	PS	—	—	3.1M_L(PS)	—	JULY 20	06:50 PST
JULY 20	14 52 15.8	37.583N.	118.450W.	6	PS	—	—	3.4M_L(PS)	—	JULY 20	06:52 PST
JULY 20	14 55 02.0	37.583N.	118.450W.	6	PS	—	—	3.2M_L(PS)	—	JULY 20	06:55 PST
JULY 20	15 26 44.4	37.512N.	118.502W.	6	PS	—	—	3.2M_L(PS)	—	JULY 20	07:26 PST
JULY 20	15 29 28.2	37.552N.	118.467W.	7	BK	—	—	3.5M_L(BK)	—	JULY 20	07:29 PST
JULY 20	15 34 34.9	37.567N.	118.472W.	6	PS	—	—	3.1M_L(PS)	—	JULY 20	07:34 PST
JULY 20	16 13 13.7	37.553N.	118.504W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	08:13 PST
JULY 20	16 16 18.3	37.544N.	118.494W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	08:16 PST
JULY 20	16 23 01.7	37.542N.	118.467W.	6	BK	—	—	3.5M_L(BK)	—	JULY 20	08:23 PST
JULY 20	16 32 34.1	37.558N.	118.401W.	5	BK	—	—	3.9M_L(BK)	—	JULY 20	08:32 PST
JULY 20	16 37 25.1	37.551N.	118.485W.	10	BK	—	—	3.7M_L(BK)	—	JULY 20	08:37 PST
JULY 20	16 43 03.0	37.553N.	118.421W.	6	PS	—	—	3.7M_L(PS)	—	JULY 20	08:43 PST
JULY 20	17 40 12.9	37.555N.	118.462W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	09:40 PST
JULY 20	17 41 55.8	37.550N.	118.470W.	7	BK	—	—	3.5M_L(BK)	—	JULY 20	09:41 PST
JULY 20	17 45 43.5	37.549N.	118.461W.	6	PS	—	—	3.2M_L(PS)	—	JULY 20	09:45 PST
JULY 20	18 36 54.1	37.533N.	118.460W.	5	BK	—	—	3.8M_L(BK)	IV	JULY 20	10:36 PST
JULY 20	18 38 52.9	37.538N.	118.440W.	9	BK	3.9	—	4.7M_L(BK)	IV	JULY 20	10:38 PST
JULY 20	18 40 51.0	37.533N.	118.433W.	9	BK	—	—	3.8M_L(BK)	—	JULY 20	10:40 PST
JULY 20	18 49 41.1	37.528N.	118.546W.	6	PS	—	—	3.3M_L(PS)	—	JULY 20	10:49 PST
JULY 20	18 51 25.2	37.583N.	118.450W.	6	PS	—	—	3.1M_L(PS)	—	JULY 20	10:51 PST
JULY 20	18 53 20.0	37.558N.	118.464W.	6	PS	—	—	3.5M_L(PS)	—	JULY 20	10:53 PST
JULY 20	18 55 43.9	37.497N.	118.510W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	10:55 PST
JULY 20	18 59 37.1	37.498N.	118.509W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	10:59 PST
JULY 20	19 25 53.0	37.554N.	118.481W.	6	PS	—	—	3.1M_L(PS)	—	JULY 20	11:25 PST
JULY 20	19 27 39.9	37.557N.	118.469W.	6	PS	—	—	3.2M_L(PS)	—	JULY 20	11:27 PST
JULY 20	21 18 13.1	37.596N.	118.416W.	6	PS	—	—	3.4M_L(PS)	—	JULY 20	13:18 PST
JULY 21	00 08 12.6	37.541N.	118.414W.	6	PS	—	—	3.6M_L(PS)	—	JULY 20	16:08 PST
JULY 21	00 36 58.9	37.538N.	118.443W.	6	PS	—	—	3.2M_L(PS)	—	JULY 20	16:36 PST
JULY 21	01 08 52.0	37.548N.	118.429W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	17:08 PST
JULY 21	01 37 37.8	37.498N.	118.533W.	6	PS	—	—	3.3M_L(PS)	—	JULY 20	17:37 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 21	01 54 26.1	37.605N.	118.456W.	6	PS	—	—	3.1M_L(PS)	—	JULY 20	17:54 PST
JULY 21	02 27 54.3	37.533N.	118.432W.	8	BK	—	—	3.7M_L(BK)	—	JULY 20	18:27 PST
JULY 21	03 01 42.2	37.530N.	118.516W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	19:01 PST
JULY 21	03 12 11.3	37.557N.	118.473W.	8	BK	—	—	4.4M_L(BK)	—	JULY 20	19:12 PST
JULY 21	05 39 21.8	37.516N.	118.450W.	6	PS	—	—	3.2M_L(PS)	—	JULY 20	21:39 PST
JULY 21	06 01 15.9	37.652N.	118.412W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	22:01 PST
JULY 21	06 50 42.0	37.609N.	118.504W.	6	PS	—	—	3.3M_L(PS)	—	JULY 20	22:50 PST
JULY 21	07 24 47.4	37.565N.	118.447W.	6	PS	—	—	3.0M_L(PS)	—	JULY 20	23:24 PST
JULY 21	08 10 31.1	37.530N.	118.460W.	5	BK	—	—	4.1M_L(BK)	—	JULY 21	00:10 PST
JULY 21	08 20 44.2	37.568N.	118.450W.	7	BK	—	—	3.6M_L(BK)	—	JULY 21	00:20 PST
JULY 21	09 02 42.0	37.571N.	118.480W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	01:02 PST
JULY 21	11 15 21.8	37.570N.	118.463W.	10	BK	—	—	4.3M_L(BK)	—	JULY 21	03:15 PST
JULY 21	13 28 49.3	37.616N.	118.357W.	10	GS	—	—	3.4M_L(BK)	—	JULY 21	05:28 PST
JULY 21	14 42 26.5	37.537N.	118.450W.	9	BK	6.0	6.2	6.4M_L(BK)	VI	JULY 21	06:42 PST
JULY 21	14 45 21.0	37.583N.	118.417W.	6	PS	—	—	4.6M_L(PS)	—	JULY 21	06:45 PST
JULY 21	14 46 52.7	37.583N.	118.417W.	6	PS	—	—	3.8M_L(PS)	—	JULY 21	06:46 PST
JULY 21	14 47 57.7	37.583N.	118.417W.	6	PS	—	—	3.9M_L(PS)	—	JULY 21	06:47 PST
JULY 21	14 51 10.1	37.570N.	118.525W.	1	BK	5.1	—	5.7M_L(BK)	V	JULY 21	06:51 PST
JULY 21	14 53 58.1	37.583N.	118.583W.	6	PS	—	—	4.9M_L(PS)	—	JULY 21	06:53 PST
JULY 21	14 54 39.2	37.583N.	118.417W.	6	PS	—	—	4.5M_L(PS)	—	JULY 21	06:54 PST
JULY 21	14 56 21.6	37.583N.	118.417W.	6	PS	—	—	3.4M_L(PS)	—	JULY 21	06:56 PST
JULY 21	14 57 50.9	37.527N.	118.357W.	7	BK	4.7	—	4.8M_L(BK)	—	JULY 21	06:57 PST
JULY 21	14 58 58.2	37.583N.	118.417W.	6	PS	—	—	4.0M_L(PS)	—	JULY 21	06:58 PST
JULY 21	15 00 42.7	37.575N.	118.420W.	4	BK	—	—	3.9M_L(PS)	—	JULY 21	07:00 PST
JULY 21	15 03 02.4	37.632N.	118.500W.	8	BK	—	—	3.5M_L(BK)	—	JULY 21	07:03 PST
JULY 21	15 05 41.1	37.533N.	118.482W.	4	BK	—	—	4.1M_L(BK)	—	JULY 21	07:05 PST
JULY 21	15 10 15.0	37.547N.	118.428W.	6	PS	—	—	3.8M_L(BK)	—	JULY 21	07:10 PST
JULY 21	15 11 30.9	37.538N.	118.473W.	9	BK	—	—	4.4M_L(BK)	—	JULY 21	07:11 PST
JULY 21	15 14 33.5	37.583N.	118.417W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	07:14 PST
JULY 21	15 15 29.5	37.600N.	118.455W.	3	BK	—	—	3.5M_L(BK)	—	JULY 21	07:15 PST
JULY 21	15 19 34.9	37.488N.	118.370W.	16	BK	—	—	4.7M_L(BK)	—	JULY 21	07:19 PST
JULY 21	15 22 39.7	37.583N.	118.417W.	6	PS	—	—	3.4M_L(PS)	—	JULY 21	07:22 PST
JULY 21	15 26 49.2	37.533N.	118.425W.	18	BK	—	—	4.6M_L(BK)	—	JULY 21	07:26 PST
JULY 21	15 29 10.4	37.563N.	118.467W.	1	BK	—	—	3.7M_L(BK)	—	JULY 21	07:29 PST
JULY 21	15 31 04.8	37.597N.	118.453W.	4	BK	—	—	3.6M_L(BK)	—	JULY 21	07:31 PST
JULY 21	15 36 49.9	37.553N.	118.433W.	5	BK	—	—	4.0M_L(BK)	—	JULY 21	07:36 PST
JULY 21	15 41 22.0	37.542N.	118.405W.	5	BK	—	—	4.2M_L(BK)	—	JULY 21	07:41 PST
JULY 21	15 46 23.0	37.551N.	118.420W.	1	BK	—	—	4.5M_L(BK)	—	JULY 21	07:46 PST
JULY 21	15 50 22.6	37.647N.	118.401W.	20	BK	—	—	3.8M_L(BK)	—	JULY 21	07:50 PST
JULY 21	16 04 01.5	37.688N.	118.317W.	6	PS	—	—	3.3M_L(PS)	—	JULY 21	08:04 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 21	16 08 49.8	37.639N.	118.316W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	08:08 PST
JULY 21	16 19 04.7	37.583N.	118.391W.	6	PS	—	—	3.4M_L(PS)	—	JULY 21	08:19 PST
JULY 21	16 26 44.7	37.487N.	118.393W.	8	BK	—	—	4.6M_L(BK)	—	JULY 21	08:26 PST
JULY 21	16 36 43.8	37.533N.	118.465W.	10	GS	—	—	3.6M_L(PS)	—	JULY 21	08:36 PST
JULY 21	17 05 33.4	37.532N.	118.462W.	9	BK	3.6	—	4.5M_L(BK)	—	JULY 21	09:05 PST
JULY 21	17 08 32.9	37.547N.	118.420W.	6	BK	—	—	3.5M_L(BK)	—	JULY 21	09:08 PST
JULY 21	17 20 00.4	37.447N.	118.367W.	11	BK	—	—	4.5M_L(BK)	—	JULY 21	09:20 PST
JULY 21	17 30 30.1	37.547N.	118.405W.	6	BK	—	—	3.9M_L(BK)	—	JULY 21	09:30 PST
JULY 21	17 43 21.3	37.585N.	118.442W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	09:43 PST
JULY 21	17 48 55.8	37.598N.	118.448W.	3	BK	—	—	4.3M_L(BK)	—	JULY 21	09:48 PST
JULY 21	17 53 03.0	37.572N.	118.482W.	11	BK	—	—	3.5M_L(BK)	—	JULY 21	09:53 PST
JULY 21	18 02 27.4	37.564N.	118.498W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	10:02 PST
JULY 21	18 13 24.1	37.580N.	118.439W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	10:13 PST
JULY 21	18 13 57.6	37.623N.	118.472W.	3	BK	—	—	4.0M_L(BK)	—	JULY 21	10:13 PST
JULY 21	18 14 01.3	37.424N.	118.639W.	6	PS	—	—	3.4M_L(PS)	—	JULY 21	10:14 PST
JULY 21	18 18 33.2	37.525N.	118.427W.	7	BK	—	—	3.5M_L(BK)	—	JULY 21	10:18 PST
JULY 21	18 20 08.5	37.583N.	118.417W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	10:20 PST
JULY 21	18 29 30.8	33.018N.	117.802W.	8	HJ	—	—	3.8M_L(PS)	FELT	JULY 21	10:29 PST
JULY 21	18 37 05.5	37.533N.	118.524W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	10:37 PST
JULY 21	19 51 22.6	37.513N.	118.395W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	11:51 PST
JULY 21	20 20 19.7	37.497N.	118.341W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	12:20 PST
JULY 21	20 26 24.6	37.521N.	118.432W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	12:26 PST
JULY 21	20 36 05.2	37.523N.	118.455W.	9	BK	—	—	4.0M_L(BK)	—	JULY 21	12:36 PST
JULY 21	20 37 08.7	37.538N.	118.457W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	12:37 PST
JULY 21	20 40 24.8	37.442N.	118.372W.	4	BK	—	—	3.6M_L(BK)	—	JULY 21	12:40 PST
JULY 21	20 40 44.2	37.473N.	118.444W.	6	PS	—	—	3.5M_L(PS)	—	JULY 21	12:40 PST
JULY 21	20 57 49.2	37.505N.	118.425W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	12:57 PST
JULY 21	20 58 00.6	37.597N.	118.431W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	12:58 PST
JULY 21	21 03 43.5	37.500N.	118.642W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	13:03 PST
JULY 21	21 07 18.1	37.541N.	118.429W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	13:07 PST
JULY 21	21 08 41.8	37.585N.	118.453W.	5	BK	—	—	3.6M_L(BK)	—	JULY 21	13:08 PST
JULY 21	21 10 12.0	37.498N.	118.438W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	13:10 PST
JULY 21	21 39 37.0	37.520N.	118.366W.	6	PS	—	—	3.3M_L(PS)	—	JULY 21	13:39 PST
JULY 21	21 51 44.9	37.603N.	118.438W.	3	BK	—	—	3.7M_L(BK)	—	JULY 21	13:51 PST
JULY 21	22 07 01.2	37.480N.	118.373W.	6	BK	—	—	3.1M_L(BK)	—	JULY 21	14:07 PST
JULY 21	22 07 17.0	37.483N.	118.367W.	6	BK	5.5	5.0	5.6M_L(BK)	FELT	JULY 21	14:07 PST
JULY 21	22 09 22.1	37.613N.	118.569W.	6	PS	—	—	4.7M_L(PS)	—	JULY 21	14:09 PST
JULY 21	22 28 31.1	37.625N.	118.501W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	14:28 PST
JULY 21	22 39 17.2	37.603N.	118.447W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	14:39 PST
JULY 21	22 44 01.9	37.503N.	118.369W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	14:44 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 21	22 52 01.4	37.599N.	118.454W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	14:52 PST
JULY 21	23 41 44.1	37.707N.	118.424W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	15:41 PST
JULY 21	23 42 21.5	37.775N.	118.345W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	15:42 PST
JULY 21	23 43 06.7	37.601N.	118.490W.	7	BK	—	—	4.2M_L(BK)	—	JULY 21	15:43 PST
JULY 22	00 09 53.8	37.610N.	118.430W.	4	BK	4.0	—	4.5M_L(BK)	—	JULY 21	16:09 PST
JULY 22	00 25 19.0	36.077N.	117.862W.	3	PS	—	—	3.3M_L(PS)	—	JULY 21	16:25 PST
JULY 22	01 00 54.9	37.527N.	118.418W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	17:00 PST
JULY 22	01 49 07.3	37.585N.	118.451W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	17:49 PST
JULY 22	02 03 14.6	37.465N.	118.369W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	18:03 PST
JULY 22	02 17 05.9	37.602N.	118.490W.	7	BK	—	—	3.6M_L(BK)	—	JULY 21	18:17 PST
JULY 22	02 21 31.5	37.640N.	118.417W.	10	GS	—	—	3.6M_L(BK)	—	JULY 21	18:21 PST
JULY 22	02 48 43.8	37.559N.	118.432W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	18:48 PST
JULY 22	03 02 10.7	37.580N.	118.483W.	7	BK	—	—	3.8M_L(BK)	—	JULY 21	19:02 PST
JULY 22	03 08 41.9	37.538N.	118.380W.	6	PS	—	—	3.3M_L(PS)	—	JULY 21	19:08 PST
JULY 22	03 17 45.4	37.454N.	118.674W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	19:17 PST
JULY 22	03 18 48.1	37.528N.	118.445W.	10	BK	—	—	3.9M_L(BK)	—	JULY 21	19:18 PST
JULY 22	03 26 04.5	37.670N.	118.293W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	19:26 PST
JULY 22	03 29 12.8	37.468N.	118.384W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	19:29 PST
JULY 22	03 42 45.2	37.540N.	118.421W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	19:42 PST
JULY 22	03 47 10.2	37.616N.	118.459W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	19:47 PST
JULY 22	03 51 05.4	37.499N.	118.395W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	19:51 PST
JULY 22	03 59 20.0	37.527N.	118.415W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	19:59 PST
JULY 22	04 09 27.4	37.562N.	118.393W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	20:09 PST
JULY 22	04 11 35.9	37.614N.	118.528W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	20:11 PST
JULY 22	04 22 49.6	37.657N.	118.382W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	20:22 PST
JULY 22	05 05 21.6	37.647N.	118.428W.	6	PS	—	—	3.3M_L(PS)	—	JULY 21	21:05 PST
JULY 22	05 17 32.1	37.433N.	118.510W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	21:17 PST
JULY 22	05 24 08.0	37.550N.	118.427W.	6	BK	—	—	3.6M_L(BK)	—	JULY 21	21:24 PST
JULY 22	05 40 43.9	37.525N.	118.580W.	6	BK	—	—	4.1M_L(BK)	—	JULY 21	21:40 PST
JULY 22	05 51 35.9	37.523N.	118.396W.	6	PS	—	—	3.2M_L(PS)	—	JULY 21	21:51 PST
JULY 22	06 18 23.3	37.646N.	118.513W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	22:18 PST
JULY 22	06 21 52.8	37.442N.	118.388W.	12	BK	—	—	4.2M_L(BK)	—	JULY 21	22:21 PST
JULY 22	06 33 39.2	37.528N.	118.440W.	9	BK	—	—	3.5M_L(BK)	—	JULY 21	22:33 PST
JULY 22	06 43 29.5	37.404N.	118.629W.	6	PS	—	—	3.1M_L(PS)	—	JULY 21	22:43 PST
JULY 22	06 58 11.2	37.601N.	118.482W.	3	BK	—	—	3.6M_L(BK)	—	JULY 21	22:58 PST
JULY 22	07 55 29.9	37.618N.	118.492W.	6	PS	—	—	3.0M_L(PS)	—	JULY 21	23:55 PST
JULY 22	08 29 16.3	37.527N.	118.450W.	3	BK	—	—	4.0M_L(BK)	—	JULY 22	00:29 PST
JULY 22	08 38 10.7	37.576N.	118.423W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	00:38 PST
JULY 22	08 48 04.2	37.549N.	118.423W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	00:48 PST
JULY 22	09 34 16.1	37.440N.	118.377W.	9	BK	—	—	3.5M_L(BK)	—	JULY 22	01:34 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 22	10 09 41.1	37.574N.	118.453W.	6	PS	—	—	3.2M_L(PS)	—	JULY 22	02:09 PST
JULY 22	10 13 27.4	37.505N.	118.487W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	02:13 PST
JULY 22	10 26 13.4	37.473N.	118.378W.	6	PS	—	—	3.3M_L(PS)	—	JULY 22	02:26 PST
JULY 22	11 01 00.3	37.521N.	118.401W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	03:01 PST
JULY 22	11 12 41.1	37.556N.	118.451W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	03:12 PST
JULY 22	12 02 51.2	37.640N.	118.476W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	04:02 PST
JULY 22	12 15 48.2	37.652N.	118.486W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	04:15 PST
JULY 22	12 24 50.2	37.522N.	118.482W.	9	BK	3.7	—	4.4M_L(BK)	—	JULY 22	04:24 PST
JULY 22	12 26 15.5	37.583N.	118.417W.	6	PS	—	—	4.0M_L(PS)	—	JULY 22	04:26 PST
JULY 22	12 31 35.6	37.545N.	118.504W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	04:31 PST
JULY 22	12 33 29.2	37.536N.	118.428W.	6	PS	—	—	3.3M_L(PS)	—	JULY 22	04:33 PST
JULY 22	12 39 37.8	37.496N.	118.410W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	04:39 PST
JULY 22	13 28 35.2	37.538N.	118.565W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	05:28 PST
JULY 22	13 33 59.8	37.517N.	118.477W.	9	BK	4.2	—	4.7M_L(BK)	IV	JULY 22	05:33 PST
JULY 22	13 44 04.8	37.549N.	118.493W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	05:44 PST
JULY 22	13 49 00.3	37.498N.	118.520W.	19	BK	4.5	—	5.0M_L(BK)	—	JULY 22	05:49 PST
JULY 22	13 57 34.9	37.533N.	118.483W.	9	BK	—	—	3.6M_L(BK)	—	JULY 22	05:57 PST
JULY 22	14 40 46.1	37.641N.	118.478W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	06:40 PST
JULY 22	16 28 39.0	37.511N.	118.414W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	08:28 PST
JULY 22	16 38 10.9	37.623N.	118.532W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	08:38 PST
JULY 22	17 12 01.7	37.536N.	118.507W.	6	PS	—	—	3.2M_L(PS)	—	JULY 22	09:12 PST
JULY 22	17 17 21.5	37.510N.	118.440W.	10	BK	—	—	3.7M_L(BK)	—	JULY 22	09:17 PST
JULY 22	17 39 18.5	37.567N.	118.485W.	9	BK	—	—	3.6M_L(BK)	—	JULY 22	09:39 PST
JULY 22	18 16 53.1	37.578N.	118.483W.	8	BK	—	—	3.5M_L(BK)	—	JULY 22	10:16 PST
JULY 22	18 19 36.3	37.483N.	118.377W.	7	BK	—	—	4.2M_L(BK)	—	JULY 22	10:19 PST
JULY 22	18 29 43.8	37.493N.	118.382W.	7	BK	3.7	—	4.7M_L(BK)	—	JULY 22	10:29 PST
JULY 22	19 05 42.1	37.574N.	118.554W.	6	PS	—	—	3.1M_L(PS)	—	JULY 22	11:05 PST
JULY 22	20 11 34.2	37.636N.	118.477W.	6	PS	—	—	3.4M_L(PS)	—	JULY 22	12:11 PST
JULY 22	20 16 59.6	37.607N.	118.463W.	9	BK	3.7	—	4.2M_L(BK)	—	JULY 22	12:16 PST
JULY 22	20 22 26.3	37.607N.	118.473W.	8	BK	—	—	4.3M_L(BK)	—	JULY 22	12:22 PST
JULY 22	20 49 14.9	37.483N.	118.378W.	7	BK	—	—	3.5M_L(BK)	—	JULY 22	12:49 PST
JULY 22	22 06 41.7	37.493N.	118.375W.	7	BK	—	—	4.2M_L(BK)	—	JULY 22	14:06 PST
JULY 22	22 15 52.3	37.500N.	118.365W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	14:15 PST
JULY 22	22 38 08.5	37.450N.	118.514W.	6	PS	—	—	3.2M_L(PS)	—	JULY 22	14:38 PST
JULY 22	23 38 16.8	37.503N.	118.362W.	6	PS	—	—	3.4M_L(PS)	—	JULY 22	15:38 PST
JULY 23	01 19 26.8	37.493N.	118.387W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	17:19 PST
JULY 23	01 45 22.3	37.560N.	118.458W.	6	PS	—	—	3.0M_L(PS)	—	JULY 22	17:45 PST
JULY 23	02 12 14.0	37.502N.	118.482W.	17	BK	—	—	3.6M_L(BK)	—	JULY 22	18:12 PST
JULY 23	02 41 21.5	37.521N.	118.455W.	6	PS	—	—	3.3M_L(PS)	—	JULY 22	18:41 PST
JULY 23	02 57 58.2	32.998N.	117.788W.	4	HJ	—	—	3.5M_L(PS)	FELT	JULY 22	18:57 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 23	02 58 20.5	37.533N.	118.422W.	10	BK	—	—	3.8M_L(BK)	——	JULY 22	18:58 PST
JULY 23	03 01 02.4	37.598N.	118.490W.	6	BK	—	—	3.7M_L(BK)	——	JULY 22	19:01 PST
JULY 23	04 29 42.1	37.599N.	118.463W.	6	PS	—	—	3.1M_L(PS)	——	JULY 22	20:29 PST
JULY 23	05 08 03.4	37.559N.	118.414W.	6	PS	—	—	3.1M_L(PS)	——	JULY 22	21:08 PST
JULY 23	05 24 35.8	37.553N.	118.429W.	6	PS	—	—	3.1M_L(PS)	——	JULY 22	21:24 PST
JULY 23	05 30 07.7	37.612N.	118.482W.	6	PS	—	—	3.0M_L(PS)	——	JULY 22	21:30 PST
JULY 23	05 30 29.8	37.573N.	118.571W.	6	PS	—	—	3.0M_L(PS)	——	JULY 22	21:30 PST
JULY 23	05 37 10.8	37.522N.	118.593W.	6	PS	—	—	3.1M_L(PS)	——	JULY 22	21:37 PST
JULY 23	06 17 54.9	37.481N.	118.505W.	6	PS	—	—	3.1M_L(PS)	——	JULY 22	22:17 PST
JULY 23	06 38 34.2	34.103N.	117.314W.	15	PS	—	—	2.7M_L(PS)	FELT	JULY 22	22:38 PST
JULY 23	07 39 10.5	38.660N.	119.542W.	21	BK	—	—	4.3M_L(BK)	——	JULY 22	23:39 PST
JULY 23	08 56 28.1	37.550N.	118.411W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	00:56 PST
JULY 23	09 26 37.7	37.587N.	118.446W.	6	PS	—	—	3.2M_L(PS)	——	JULY 23	01:26 PST
JULY 23	10 03 05.9	37.594N.	118.515W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	02:03 PST
JULY 23	10 29 01.6	33.013N.	117.817W.	6	HJ	—	—	3.4M_L(PS)	FELT	JULY 23	02:29 PST
JULY 23	15 24 43.6	37.601N.	118.466W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	07:24 PST
JULY 23	15 39 11.7	37.538N.	118.463W.	6	BK	4.1	—	4.7M_L(BK)	——	JULY 23	07:39 PST
JULY 23	15 48 22.4	37.591N.	118.464W.	6	PS	—	—	3.2M_L(PS)	——	JULY 23	07:48 PST
JULY 23	16 27 41.3	37.577N.	118.483W.	11	BK	—	—	3.5M_L(BK)	——	JULY 23	08:27 PST
JULY 23	17 13 29.8	37.530N.	118.473W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	09:13 PST
JULY 23	17 22 16.5	33.023N.	117.730W.	4	HJ	—	—	3.3M_L(PS)	——	JULY 23	09:22 PST
JULY 23	19 36 13.0	37.646N.	118.478W.	6	PS	—	—	3.0M_L(PS)	——	JULY 23	11:36 PST
JULY 23	20 02 48.1	37.513N.	118.400W.	6	PS	—	—	3.0M_L(PS)	——	JULY 23	12:02 PST
JULY 23	20 27 20.3	37.512N.	118.399W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	12:27 PST
JULY 23	20 48 21.1	37.548N.	118.449W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	12:48 PST
JULY 23	22 01 41.5	37.508N.	118.397W.	6	PS	—	—	3.3M_L(PS)	——	JULY 23	14:01 PST
JULY 23	22 08 00.7	37.566N.	118.552W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	14:08 PST
JULY 23	22 34 34.1	37.540N.	118.447W.	6	PS	—	—	3.2M_L(GS)	——	JULY 23	14:34 PST
JULY 23	23 05 09.0	37.520N.	118.488W.	6	PS	—	—	3.1M_L(PS)	——	JULY 23	15:05 PST
JULY 24	01 17 09.8	37.573N.	118.480W.	8	BK	—	—	3.5M_L(BK)	——	JULY 23	17:17 PST
JULY 24	01 34 01.3	34.521N.	118.388W.	6	PS	—	—	3.2M_L(PS)	——	JULY 23	17:34 PST
JULY 24	01 58 23.1	33.970N.	116.556W.	9	PS	—	—	3.3M_L(PS)	FELT	JULY 23	17:58 PST
JULY 24	02 43 11.0	37.605N.	118.475W.	4	BK	—	—	4.1M_L(BK)	——	JULY 23	18:43 PST
JULY 24	03 07 30.1	37.617N.	118.499W.	6	PS	—	—	3.0M_L(PS)	——	JULY 23	19:07 PST
JULY 24	03 26 02.0	37.512N.	118.400W.	6	PS	—	—	3.0M_L(PS)	——	JULY 23	19:26 PST
JULY 24	06 10 05.3	37.460N.	118.367W.	7	BK	—	—	4.2M_L(BK)	——	JULY 23	22:10 PST
JULY 24	09 22 30.4	37.547N.	118.405W.	2	BK	—	—	3.6M_L(BK)	——	JULY 24	01:22 PST
JULY 24	10 00 09.1	37.683N.	118.452W.	6	PS	—	—	3.0M_L(PS)	——	JULY 24	02:00 PST
JULY 24	11 34 53.4	37.465N.	118.546W.	6	PS	—	—	3.2M_L(PS)	——	JULY 24	03:34 PST
JULY 24	13 08 32.2	37.593N.	118.552W.	6	PS	—	—	3.1M_L(PS)	——	JULY 24	05:08 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 24	13 44 56.0	37.475N.	118.385W.	6	PS	—	—	3.0M_L(PS)	—	JULY 24	05:44 PST
JULY 24	13 49 05.1	37.531N.	118.443W.	6	PS	—	—	3.0M_L(PS)	—	JULY 24	05:49 PST
JULY 24	14 25 17.1	37.622N.	118.507W.	6	PS	—	—	3.0M_L(PS)	—	JULY 24	06:25 PST
JULY 24	14 58 44.9	37.483N.	118.382W.	7	BK	—	—	3.7M_L(BK)	—	JULY 24	06:58 PST
JULY 24	16 44 40.8	37.540N.	118.450W.	8	BK	—	—	3.5M_L(BK)	—	JULY 24	08:44 PST
JULY 24	17 54 55.5	37.464N.	118.390W.	6	PS	—	—	3.2M_L(PS)	—	JULY 24	09:54 PST
JULY 24	19 03 25.9	37.465N.	118.370W.	6	BK	—	—	4.3M_L(BK)	—	JULY 24	11:03 PST
JULY 24	19 50 51.7	37.497N.	118.400W.	6	PS	—	—	3.1M_L(PS)	—	JULY 24	11:50 PST
JULY 24	20 36 10.4	37.626N.	118.512W.	6	PS	—	—	3.1M_L(PS)	—	JULY 24	12:36 PST
JULY 24	21 42 24.5	37.616N.	118.481W.	6	PS	—	—	3.1M_L(PS)	—	JULY 24	13:42 PST
JULY 24	22 57 55.2	37.516N.	118.486W.	6	PS	—	—	3.1M_L(PS)	—	JULY 24	14:57 PST
JULY 24	23 39 45.9	37.658N.	118.467W.	6	PS	—	—	3.1M_L(PS)	—	JULY 24	15:39 PST
JULY 25	03 50 07.6	32.982N.	117.803W.	0	HJ	—	—	3.0M_L(PS)	—	JULY 24	19:50 PST
JULY 25	05 44 03.7	34.424N.	118.407W.	11	PS	—	—	3.0M_L(PS)	III	JULY 24	21:44 PST
JULY 25	06 10 31.3	37.525N.	118.483W.	6	PS	—	—	3.2M_L(PS)	—	JULY 24	22:10 PST
JULY 25	09 31 40.2	37.498N.	118.490W.	6	PS	—	—	3.1M_L(PS)	—	JULY 25	01:31 PST
JULY 25	10 11 04.5	37.578N.	118.485W.	8	BK	—	—	3.6M_L(BK)	—	JULY 25	02:11 PST
JULY 25	11 02 07.3	37.609N.	118.538W.	6	PS	—	—	3.0M_L(PS)	—	JULY 25	03:02 PST
JULY 25	11 39 09.7	33.997N.	116.571W.	8	PS	—	—	2.8M_L(PS)	FELT	JULY 25	03:39 PST
JULY 25	20 40 03.8	37.526N.	118.761W.	6	PS	—	—	3.0M_L(PS)	—	JULY 25	12:40 PST
JULY 25	21 11 16.5	37.550N.	118.507W.	6	PS	—	—	3.0M_L(PS)	—	JULY 25	13:11 PST
JULY 26	00 01 55.9	37.630N.	118.506W.	6	PS	—	—	3.0M_L(PS)	—	JULY 25	16:01 PST
JULY 26	01 11 49.5	32.967N.	117.820W.	8	HJ	—	—	3.0M_L(PS)	—	JULY 25	17:11 PST
JULY 26	02 43 37.8	33.985N.	116.652W.	6	PS	—	—	3.0M_L(PS)	—	JULY 25	18:43 PST
JULY 26	03 37 15.1	37.606N.	118.491W.	6	PS	—	—	3.1M_L(PS)	—	JULY 25	19:37 PST
JULY 26	05 01 55.0	37.544N.	118.416W.	6	PS	—	—	3.0M_L(PS)	—	JULY 25	21:01 PST
JULY 26	05 40 31.5	34.001N.	116.574W.	10	PS	—	—	2.9M_L(PS)	FELT	JULY 25	21:40 PST
JULY 26	07 12 16.9	37.520N.	121.690W.	8	BK	—	—	3.3M_L(BK)	—	JULY 25	23:12 PST
JULY 26	08 46 22.9	37.608N.	118.518W.	6	PS	—	—	3.1M_L(PS)	—	JULY 26	00:46 PST
JULY 26	10 21 19.2	37.534N.	118.437W.	6	PS	—	—	3.2M_L(PS)	—	JULY 26	02:21 PST
JULY 26	14 39 41.0	37.528N.	118.480W.	7	BK	—	—	4.2M_L(BK)	—	JULY 26	06:39 PST
JULY 26	21 17 07.9	36.562N.	118.491W.	6	PS	—	—	3.1M_L(PS)	—	JULY 26	13:17 PST
JULY 26	21 58 47.3	37.585N.	118.460W.	8	BK	—	—	3.6M_L(BK)	—	JULY 26	13:58 PST
JULY 27	00 56 34.3	37.462N.	118.593W.	6	PS	—	—	3.0M_L(PS)	—	JULY 26	16:56 PST
JULY 27	01 55 26.0	37.568N.	118.538W.	6	PS	—	—	3.3M_L(PS)	—	JULY 26	17:55 PST
JULY 27	03 36 10.1	37.686N.	118.486W.	6	PS	—	—	3.1M_L(PS)	—	JULY 26	19:36 PST
JULY 27	03 49 40.6	37.372N.	118.290W.	2	BK	—	—	4.2M_L(BK)	—	JULY 26	19:49 PST
JULY 27	07 18 49.8	37.540N.	118.391W.	6	PS	—	—	3.2M_L(PS)	—	JULY 26	23:18 PST
JULY 27	07 53 07.4	37.518N.	118.402W.	6	PS	—	—	3.2M_L(PS)	—	JULY 26	23:53 PST
JULY 27	08 47 30.5	37.601N.	118.428W.	6	PS	—	—	3.0M_L(PS)	—	JULY 27	00:47 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 27	08 48 51.4	37.671N.	118.515W.	6	PS	—	—	3.3M_L(PS)	—	JULY 27	00:48 PST
JULY 27	10 08 02.2	37.505N.	118.398W.	7	BK	—	—	3.9M_L(BK)	—	JULY 27	02:08 PST
JULY 28	02 26 02.0	37.513N.	118.461W.	6	PS	—	—	3.0M_L(PS)	—	JULY 27	18:26 PST
JULY 28	02 54 45.7	32.953N.	117.812W.	5	HJ	—	—	3.6M_L(PS)	FELT	JULY 27	18:54 PST
JULY 28	08 03 31.3	37.622N.	118.605W.	6	PS	—	—	3.0M_L(PS)	—	JULY 28	00:03 PST
JULY 28	10 33 09.2	32.972N.	117.812W.	4	HJ	—	—	3.2M_L(PS)	—	JULY 28	02:33 PST
JULY 28	10 48 42.6	37.597N.	118.419W.	6	PS	—	—	3.2M_L(PS)	—	JULY 28	02:48 PST
JULY 28	13 00 12.9	36.169N.	120.204W.	6	PS	—	—	3.0M_L(PS)	—	JULY 28	05:00 PST
JULY 28	20 50 42.8	37.501N.	118.396W.	6	PS	—	—	3.1M_L(PS)	—	JULY 28	12:50 PST
JULY 28	21 14 58.0	37.452N.	118.384W.	6	PS	—	—	3.2M_L(PS)	—	JULY 28	13:14 PST
JULY 29	06 43 50.3	33.965N.	116.590W.	7	PS	—	—	3.2M_L(PS)	FELT	JULY 28	22:43 PST
JULY 29	07 11 58.8	37.543N.	118.445W.	8	BK	—	—	4.2M_L(BK)	FELT	JULY 28	23:11 PST
JULY 29	08 17 41.4	32.945N.	117.828W.	6	HJ	3.9	—	4.3M_L(PS)	V	JULY 29	00:17 PST
JULY 29	09 57 57.2	37.595N.	118.477W.	7	BK	3.7	—	4.6M_L(BK)	IV	JULY 29	01:57 PST
JULY 29	11 22 22.4	32.957N.	117.815W.	5	HJ	—	—	3.5M_L(PS)	FELT	JULY 29	03:22 PST
JULY 29	12 03 19.5	33.966N.	116.568W.	7	PS	—	—	3.0M_L(PS)	FELT	JULY 29	04:03 PST
JULY 29	13 32 05.9	32.970N.	117.810W.	10	PS	—	—	3.2M_L(PS)	—	JULY 29	05:32 PST
JULY 29	15 14 25.4	37.452N.	118.375W.	8	BK	—	—	4.2M_L(BK)	—	JULY 29	07:14 PST
JULY 30	00 26 29.7	32.963N.	117.807W.	2	HJ	—	—	3.4M_L(PS)	—	JULY 29	16:26 PST
JULY 30	00 46 50.7	37.528N.	118.515W.	11	BK	—	—	3.6M_L(BK)	—	JULY 29	16:46 PST
JULY 30	01 14 01.1	34.000N.	118.378W.	4	PS	—	—	2.8M_L(PS)	FELT	JULY 29	17:14 PST
JULY 30	06 03 32.2	37.605N.	118.480W.	8	BK	—	—	4.0M_L(BK)	—	JULY 29	22:03 PST
JULY 30	06 41 52.9	37.582N.	118.468W.	7	BK	4.1	—	4.8M_L(BK)	IV	JULY 29	22:41 PST
JULY 30	17 29 07.5	37.582N.	118.487W.	6	PS	—	—	3.0M_L(PS)	—	JULY 30	09:29 PST
JULY 30	22 51 13.0	33.012N.	117.782W.	7	HJ	—	—	3.9M_L(PS)	FELT	JULY 30	14:51 PST
JULY 31	00 32 24.7	37.590N.	118.490W.	6	PS	—	—	3.2M_L(PS)	—	JULY 30	16:32 PST
JULY 31	03 53 08.9	37.594N.	118.488W.	6	PS	—	—	3.0M_L(PS)	—	JULY 30	19:53 PST
JULY 31	04 50 14.3	34.098N.	116.631W.	10	PS	—	—	3.1M_L(PS)	—	JULY 30	20:50 PST
JULY 31	07 22 40.2	37.463N.	118.367W.	7	BK	5.5	5.2	5.8M_L(BK)	VI	JULY 30	23:22 PST
JULY 31	07 28 04.7	37.445N.	118.377W.	11	BK	—	—	4.5M_L(BK)	—	JULY 30	23:28 PST
JULY 31	07 34 18.8	37.494N.	118.400W.	6	PS	—	—	3.4M_L(PS)	—	JULY 30	23:34 PST
JULY 31	07 36 02.4	37.470N.	118.375W.	8	BK	—	—	4.0M_L(BK)	—	JULY 30	23:36 PST
JULY 31	07 41 48.7	37.455N.	118.370W.	6	PS	—	—	3.0M_L(PS)	—	JULY 30	23:41 PST
JULY 31	07 50 46.2	37.488N.	118.372W.	6	BK	—	—	3.8M_L(BK)	—	JULY 30	23:50 PST
JULY 31	07 51 42.9	33.966N.	116.574W.	7	PS	—	—	3.3M_L(PS)	FELT	JULY 30	23:51 PST
JULY 31	07 53 52.8	37.460N.	118.399W.	6	PS	—	—	3.2M_L(PS)	—	JULY 30	23:53 PST
JULY 31	07 58 18.6	37.504N.	118.404W.	6	PS	—	—	3.0M_L(PS)	—	JULY 30	23:58 PST
JULY 31	08 10 42.8	37.433N.	118.355W.	9	BK	—	—	3.9M_L(BK)	—	JULY 31	00:10 PST
JULY 31	08 15 39.3	37.478N.	118.373W.	7	BK	—	—	4.0M_L(BK)	—	JULY 31	00:15 PST
JULY 31	11 25 50.6	37.595N.	118.456W.	6	PS	—	—	3.2M_L(PS)	—	JULY 31	03:25 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
JULY 31	11 59 11.8	37.456N.	118.373W.	6	PS	—	—	3.0M_L(PS)	—	JULY 31	03:59 PST
JULY 31	15 19 25.3	40.325N.	124.742W.	10	BK	—	—	3.4M_L(BK)	—	JULY 31	07:19 PST
JULY 31	18 13 39.7	32.962N.	117.810W.	8	HJ	—	—	3.0M_L(PS)	—	JULY 31	10:13 PST
JULY 31	19 16 45.9	33.995N.	118.368W.	4	PS	—	—	2.8M_L(PS)	FELT	JULY 31	11:16 PST
JULY 31	22 03 53.4	37.560N.	118.478W.	6	PS	—	—	3.1M_L(PS)	—	JULY 31	14:03 PST
AUG. 1	05 04 41.7	37.539N.	118.405W.	6	PS	—	—	3.0M_L(GS)	—	JULY 31	21:04 PST
AUG. 1	06 09 55.8	37.645N.	118.536W.	6	PS	—	—	3.0M_L(PS)	—	JULY 31	22:09 PST
AUG. 1	06 34 43.3	37.555N.	118.458W.	11	BK	—	—	3.9M_L(BK)	—	JULY 31	22:34 PST
AUG. 1	14 27 16.4	37.501N.	118.398W.	6	BK	4.2	—	4.8M_L(BK)	FELT	AUG. 1	06:27 PST
AUG. 1	14 28 19.6	37.468N.	118.448W.	14	BK	4.9	—	5.1M_L(BK)	FELT	AUG. 1	06:28 PST
AUG. 1	15 10 44.2	37.505N.	118.392W.	6	BK	—	—	3.8M_L(BK)	—	AUG. 1	07:10 PST
AUG. 2	05 05 02.1	34.025N.	116.677W.	3	PS	—	—	3.1M_L(PS)	—	AUG. 1	21:05 PST
AUG. 2	11 36 57.8	34.036N.	116.696W.	11	PS	—	—	3.4M_L(PS)	FELT	AUG. 2	03:36 PST
AUG. 2	12 31 26.2	37.622N.	118.503W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 2	04:31 PST
AUG. 2	14 08 03.9	37.526N.	118.455W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 2	06:08 PST
AUG. 2	14 51 37.0	37.615N.	118.433W.	7	BK	—	—	3.6M_L(BK)	—	AUG. 2	06:51 PST
AUG. 3	01 37 32.1	37.551N.	118.423W.	6	PS	—	—	3.2M_L(PS)	—	AUG. 2	17:37 PST
AUG. 3	07 39 31.4	37.622N.	118.466W.	6	PS	—	—	3.2M_L(PS)	—	AUG. 2	23:39 PST
AUG. 3	09 00 14.2	36.585N.	121.260W.	7	BK	—	—	3.4M_L(BK)	—	AUG. 3	01:00 PST
AUG. 3	10 33 05.3	37.615N.	118.455W.	7	BK	3.6	—	4.3M_L(BK)	FELT	AUG. 3	02:33 PST
AUG. 3	10 37 21.1	37.437N.	119.530W.	6	PS	—	—	3.5M_L(PS)	—	AUG. 3	02:37 PST
AUG. 3	12 05 39.4	37.506N.	118.398W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 3	04:05 PST
AUG. 3	16 15 30.4	40.430N.	125.365W.	7	BK	4.0	—	4.3M_L(BK)	—	AUG. 3	08:15 PST
AUG. 4	03 41 41.9	37.432N.	121.773W.	8	BK	—	—	3.4M_L(BK)	IV	AUG. 3	19:41 PST
AUG. 4	12 31 08.1	37.548N.	118.447W.	6	PS	—	—	3.2M_L(PS)	—	AUG. 4	04:31 PST
AUG. 5	01 00 41.8	37.421N.	118.335W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 4	17:00 PST
AUG. 5	02 32 08.1	37.428N.	118.348W.	6	BK	—	—	3.7M_L(BK)	—	AUG. 4	18:32 PST
AUG. 5	02 35 56.7	37.487N.	118.389W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 4	18:35 PST
AUG. 5	08 35 19.0	32.912N.	117.840W.	6	PS	—	—	3.3M_L(PS)	—	AUG. 5	00:35 PST
AUG. 5	13 50 35.3	37.533N.	118.436W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 5	05:50 PST
AUG. 6	09 09 39.7	37.604N.	118.435W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 6	01:09 PST
AUG. 7	05 51 40.6	37.596N.	118.441W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 6	21:51 PST
AUG. 7	20 04 32.0	37.542N.	118.437W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 7	12:04 PST
AUG. 8	14 30 38.4	37.584N.	118.427W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 8	06:30 PST
AUG. 8	17 31 35.3	40.862N.	123.725W.	42	BK	—	—	3.8M_L(BK)	FELT	AUG. 8	09:31 PST
AUG. 8	20 51 47.1	32.545N.	117.338W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 8	12:51 PST
AUG. 9	00 52 29.3	32.500N.	117.398W.	6	PS	—	—	3.4M_L(PS)	III	AUG. 8	16:52 PST
AUG. 9	13 20 44.6	37.560N.	118.403W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 9	05:20 PST
AUG. 11	00 19 41.9	32.536N.	117.346W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 10	16:19 PST
AUG. 11	00 26 41.0	32.553N.	117.332W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 10	16:26 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
AUG. 11	04 26 48.2	37.502N.	118.392W.	0	PS	—	—	3.0M_L(PS)	—	AUG. 10	20:26 PST
AUG. 12	09 29 48.3	37.492N.	118.382W.	5	BK	—	—	3.7M_L(BK)	—	AUG. 12	01:29 PST
AUG. 12	15 37 28.1	37.502N.	118.487W.	3	BK	—	—	3.8M_L(BK)	—	AUG. 12	07:37 PST
AUG. 13	02 37 36.6	37.203N.	118.378W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 12	18:37 PST
AUG. 13	17 32 23.2	37.590N.	118.445W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 13	09:32 PST
AUG. 14	00 50 40.8	40.377N.	124.328W.	18	BK	—	—	3.7M_L(BK)	III	AUG. 13	16:50 PST
AUG. 14	04 31 22.8	37.511N.	118.389W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 13	20:31 PST
AUG. 14	07 53 38.9	37.491N.	118.413W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 13	23:53 PST
AUG. 14	08 01 46.2	33.003N.	117.799W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 14	00:01 PST
AUG. 14	08 36 02.8	37.501N.	118.432W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 14	00:36 PST
AUG. 15	13 09 46.9	33.012N.	117.782W.	5	HJ	—	—	3.4M_L(PS)	—	AUG. 15	05:09 PST
AUG. 15	18 45 16.1	32.948N.	117.797W.	6	HJ	—	—	3.7M_L(PS)	FELT	AUG. 15	10:45 PST
AUG. 16	09 48 56.2	37.503N.	118.342W.	0	PS	—	—	3.1M_L(PS)	—	AUG. 16	01:48 PST
AUG. 16	19 31 43.7	37.552N.	118.408W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 16	11:31 PST
AUG. 16	21 19 17.8	33.572N.	118.954W.	10	PS	—	—	3.0M_L(PS)	—	AUG. 16	13:19 PST
AUG. 17	13 35 36.6	37.552N.	118.455W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 17	05:35 PST
AUG. 18	10 49 39.0	37.540N.	118.453W.	10	BK	—	—	3.9M_L(BK)	—	AUG. 18	02:49 PST
AUG. 19	20 38 46.9	37.460N.	118.364W.	0	PS	—	—	3.1M_L(PS)	—	AUG. 19	12:38 PST
AUG. 19	23 53 40.0	37.489N.	118.397W.	6	PS	—	—	3.3M_L(PS)	—	AUG. 19	15:53 PST
AUG. 20	03 49 46.3	37.243N.	118.192W.	7	BK	—	—	3.3M_L(BK)	—	AUG. 19	19:49 PST
AUG. 20	07 02 16.8	37.122N.	121.563W.	6	BK	—	—	3.3M_L(BK)	IV	AUG. 19	23:02 PST
AUG. 20	09 50 21.0	37.120N.	121.562W.	6	BK	—	—	2.8M_L(BK)	III	AUG. 20	01:50 PST
AUG. 20	09 57 05.0	37.118N.	121.565W.	7	BK	—	—	3.3M_L(BK)	III	AUG. 20	01:57 PST
AUG. 20	14 46 55.7	32.950N.	117.834W.	10	PS	—	—	3.1M_L(PS)	—	AUG. 20	06:46 PST
AUG. 20	14 49 29.2	32.971N.	117.788W.	10	PS	—	—	3.1M_L(PS)	—	AUG. 20	06:49 PST
AUG. 20	15 16 55.4	32.936N.	117.842W.	10	PS	—	—	3.2M_L(PS)	—	AUG. 20	07:16 PST
AUG. 21	01 04 29.3	37.527N.	121.685W.	6	BK	—	—	3.2M_L(BK)	—	AUG. 20	17:04 PST
AUG. 21	11 28 32.1	32.922N.	117.749W.	10	PS	—	—	3.0M_L(PS)	—	AUG. 21	03:28 PST
AUG. 23	03 01 30.3	37.493N.	118.383W.	5	BK	—	—	3.9M_L(BK)	III	AUG. 22	19:01 PST
AUG. 23	14 46 49.6	37.457N.	118.410W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 23	06:46 PST
AUG. 23	16 52 01.3	32.944N.	117.847W.	10	PS	—	—	3.0M_L(PS)	—	AUG. 23	08:52 PST
AUG. 24	12 48 09.2	32.979N.	115.879W.	13	PS	—	—	3.2M_L(PS)	—	AUG. 24	04:48 PST
AUG. 24	16 46 09.5	32.926N.	117.751W.	10	PS	—	—	3.0M_L(PS)	—	AUG. 24	08:46 PST
AUG. 24	17 29 43.2	37.580N.	118.413W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 24	09:29 PST
AUG. 24	20 53 53.4	37.616N.	118.445W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 24	12:53 PST
AUG. 25	08 13 28.4	37.624N.	118.430W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 25	00:13 PST
AUG. 25	08 20 58.7	37.618N.	118.430W.	6	PS	—	—	3.1M_L(PS)	—	AUG. 25	00:20 PST
AUG. 25	11 42 24.5	32.971N.	117.784W.	10	PS	—	—	3.1M_L(PS)	—	AUG. 25	03:42 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
AUG. 25	11 47 51.2	37.747N.	121.968W.	4	BK	—	—	2.6M_L(BK)	FELT	AUG. 25	03:47 PST
AUG. 26	12 24 44.1	40.278N.	127.247W.	5	BK	—	—	4.0M_L(BK)	—	AUG. 26	04:24 PST
AUG. 26	19 07 21.1	37.525N.	118.442W.	11	BK	—	—	3.6M_L(BK)	—	AUG. 26	11:07 PST
AUG. 26	19 11 49.9	32.935N.	117.825W.	5	HJ	—	—	3.5M_L(PS)	—	AUG. 26	11:11 PST
AUG. 26	21 48 26.7	32.941N.	117.847W.	10	PS	—	—	3.2M_L(PS)	—	AUG. 26	13:48 PST
AUG. 27	06 10 35.3	37.572N.	118.490W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 26	22:10 PST
AUG. 27	09 20 40.8	37.610N.	118.467W.	5	BK	—	—	3.5M_L(BK)	—	AUG. 27	01:20 PST
AUG. 28	10 14 16.3	32.491N.	117.420W.	6	PS	—	—	3.6M_L(PS)	V	AUG. 28	02:14 PST
AUG. 28	16 32 14.6	33.919N.	116.273W.	8	PS	—	—	3.2M_L(PS)	FELT	AUG. 28	08:32 PST
AUG. 29	06 44 42.5	35.888N.	120.475W.	5	BK	—	—	3.2M_L(BK)	III	AUG. 28	22:44 PST
AUG. 29	07 46 54.5	33.956N.	116.599W.	8	PS	—	—	3.7M_L(PS)	V	AUG. 28	23:46 PST
AUG. 29	23 03 09.9	40.607N.	124.782W.	11	BK	—	—	3.3M_L(BK)	—	AUG. 29	15:03 PST
AUG. 30	20 58 23.2	34.212N.	119.525W.	11	PS	—	—	3.0M_L(PS)	—	AUG. 30	12:58 PST
AUG. 31	04 36 19.6	37.401N.	118.426W.	6	PS	—	—	3.2M_L(PS)	—	AUG. 30	20:36 PST
AUG. 31	17 57 07.0	37.538N.	118.871W.	6	PS	—	—	3.0M_L(PS)	—	AUG. 31	09:57 PST
AUG. 31	23 29 33.9	41.832N.	126.501W.	5	BK	4.4	4.1	4.3M_L(BK)	—	AUG. 31	15:29 PST
SEPT. 1	11 55 52.4	37.442N.	118.358W.	11	RN	—	—	3.0M_L(PS)	—	SEPT. 1	03:55 PST
SEPT. 1	19 43 03.9	35.801N.	120.375W.	9	PS	—	—	3.0M_L(PS)	—	SEPT. 1	11:43 PST
SEPT. 2	00 49 49.1	37.611N.	118.463W.	4	RN	—	—	3.5M_L(BK)	—	SEPT. 1	16:49 PST
SEPT. 2	13 59 56.1	41.128N.	123.755W.	12	BK	—	—	3.4M_L(BK)	FELT	SEPT. 2	05:59 PST
SEPT. 2	21 24 03.9	37.511N.	118.671W.	12	RN	—	—	3.4M_D(RN)	—	SEPT. 2	13:24 PST
SEPT. 3	04 31 14.8	37.295N.	121.667W.	10	BK	—	—	4.0M_L(BK)	V	SEPT. 2	20:31 PST
SEPT. 3	12 35 16.2	37.539N.	118.404W.	6	RN	—	—	3.5M_D(RN)	—	SEPT. 3	04:35 PST
SEPT. 4	00 42 36.6	37.539N.	118.442W.	5	RN	—	—	3.1M_L(PS)	—	SEPT. 3	16:42 PST
SEPT. 4	01 31 45.2	37.510N.	118.427W.	11	RN	—	—	3.3M_D(RN)	—	SEPT. 3	17:31 PST
SEPT. 4	10 29 16.6	37.522N.	118.420W.	9	RN	—	—	3.0M_L(PS)	—	SEPT. 4	02:29 PST
SEPT. 4	21 54 46.2	37.574N.	118.876W.	6	PS	—	—	3.0M_L(PS)	—	SEPT. 4	13:54 PST
SEPT. 5	18 13 41.4	38.828N.	122.802W.	2	BK	—	—	3.1M_L(BK)	—	SEPT. 5	10:13 PST
SEPT. 6	01 30 59.7	37.613N.	118.465W.	7	RN	—	—	3.6M_D(RN)	—	SEPT. 5	17:30 PST
SEPT. 8	03 37 41.3	40.407N.	124.380W.	18	BK	—	—	3.2M_L(BK)	—	SEPT. 7	19:37 PST
SEPT. 8	11 07 29.3	32.943N.	117.765W.	10	PS	—	—	3.0M_L(PS)	—	SEPT. 8	03:07 PST
SEPT. 8	16 22 44.8	36.838N.	121.395W.	7	BK	—	—	2.4M_L(BK)	FELT	SEPT. 8	08:22 PST
SEPT. 9	07 30 08.3	37.622N.	118.436W.	7	RN	—	—	3.0M_L(PS)	—	SEPT. 8	23:30 PST
SEPT. 9	13 29 40.4	37.457N.	118.458W.	6	PS	—	—	3.0M_L(PS)	—	SEPT. 9	05:29 PST
SEPT. 9	16 22 50.6	33.966N.	116.567W.	6	PS	—	—	3.5M_L(PS)	IV	SEPT. 9	08:22 PST
SEPT. 9	22 29 39.4	37.465N.	118.581W.	10	RN	—	—	3.1M_L(PS)	—	SEPT. 9	14:29 PST
SEPT. 10	15 51 52.4	33.958N.	116.669W.	9	PS	—	—	3.0M_L(PS)	III	SEPT. 10	07:51 PST
SEPT. 11	13 26 26.8	37.577N.	118.476W.	7	RN	—	—	3.0M_L(PS)	—	SEPT. 11	05:26 PST
SEPT. 12	23 38 11.2	36.243N.	120.485W.	8	BK	—	—	3.4M_L(BK)	—	SEPT. 12	15:38 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
SEPT. 14	08 15 55.4	36.875N.	121.338W.	6	BK	—	—	3.4M_L(BK)	—	SEPT. 14	00:15 PST
SEPT. 15	11 09 15.1	33.070N.	117.772W.	10	PS	—	—	3.0M_L(PS)	—	SEPT. 15	03:09 PST
SEPT. 15	20 17 50.3	37.300N.	121.687W.	4	BK	—	—	3.1M_L(BK)	—	SEPT. 15	12:17 PST
SEPT. 16	00 07 41.8	37.600N.	118.488W.	9	RN	—	—	3.2M_L(PS)	—	SEPT. 15	16:07 PST
SEPT. 16	05 01 43.9	37.619N.	118.434W.	7	RN	—	—	3.1M_L(PS)	—	SEPT. 15	21:01 PST
SEPT. 16	05 54 23.4	37.620N.	118.433W.	8	RN	—	—	3.1M_L(PS)	—	SEPT. 15	21:54 PST
SEPT. 16	06 36 57.4	37.620N.	118.435W.	8	RN	—	—	3.5M_L(BK)	—	SEPT. 15	22:36 PST
SEPT. 16	13 11 33.2	37.617N.	118.433W.	8	RN	—	—	3.2M_D(RN)	—	SEPT. 16	05:11 PST
SEPT. 16	13 14 25.8	37.615N.	118.430W.	8	RN	—	—	3.5M_L(BK)	IV	SEPT. 16	05:14 PST
SEPT. 16	15 35 05.2	37.617N.	118.430W.	8	RN	—	—	3.1M_L(PS)	—	SEPT. 16	07:35 PST
SEPT. 16	20 21 54.6	37.618N.	118.433W.	8	RN	—	—	3.2M_D(RN)	—	SEPT. 16	12:21 PST
SEPT. 17	05 58 23.9	37.615N.	118.433W.	8	RN	—	—	3.5M_L(BK)	—	SEPT. 16	21:58 PST
SEPT. 17	12 17 21.1	37.621N.	118.432W.	8	RN	—	—	3.5M_D(RN)	—	SEPT. 17	04:17 PST
SEPT. 18	02 37 36.8	40.337N.	124.583W.	15	BK	—	—	3.3M_L(BK)	—	SEPT. 17	18:37 PST
SEPT. 18	07 59 47.7	37.622N.	118.435W.	8	RN	—	—	4.0M_L(BK)	FELT	SEPT. 17	23:59 PST
SEPT. 18	09 05 10.9	33.700N.	116.746W.	17	PS	—	—	2.7M_L(PS)	FELT	SEPT. 18	01:05 PST
SEPT. 18	13 41 22.8	37.529N.	118.428W.	10	RN	—	—	3.6M_D(RN)	—	SEPT. 18	05:41 PST
SEPT. 19	01 56 25.8	37.609N.	118.443W.	7	RN	—	—	3.0M_L(PS)	—	SEPT. 18	17:56 PST
SEPT. 19	06 26 34.0	36.312N.	120.324W.	6	PS	—	—	3.1M_L(PS)	—	SEPT. 18	22:26 PST
SEPT. 21	02 59 15.8	40.438N.	125.903W.	21	BK	—	—	3.5M_L(BK)	—	SEPT. 20	18:59 PST
SEPT. 21	15 57 10.9	37.572N.	118.440W.	7	RN	—	—	3.1M_L(PS)	—	SEPT. 21	07:57 PST
SEPT. 23	14 41 15.1	37.365N.	121.742W.	6	BK	—	—	3.2M_L(BK)	II	SEPT. 23	06:41 PST
SEPT. 23	19 27 56.7	36.073N.	121.792W.	18	BK	—	—	3.7M_L(BK)	II	SEPT. 23	11:27 PST
SEPT. 24	06 10 00.8	33.078N.	117.776W.	10	PS	—	—	3.0M_L(PS)	—	SEPT. 23	22:10 PST
SEPT. 24	10 46 30.1	34.540N.	119.036W.	18	PS	—	—	3.4M_L(PS)	FELT	SEPT. 24	02:46 PST
SEPT. 26	00 35 24.1	32.685N.	117.152W.	8	PS	—	—	2.8M_L(PS)	FELT	SEPT. 25	16:35 PST
SEPT. 27	07 06 30.5	40.527N.	126.000W.	5	BK	—	—	3.8M_L(BK)	—	SEPT. 26	23:06 PST
SEPT. 27	20 28 09.9	32.955N.	117.789W.	10	PS	—	—	3.0M_L(PS)	—	SEPT. 27	12:28 PST
SEPT. 28	07 06 26.9	34.010N.	116.577W.	10	PS	—	—	3.2M_L(PS)	IV	SEPT. 27	23:06 PST
SEPT. 29	06 17 32.3	37.504N.	118.429W.	3	PS	—	—	3.1M_L(PS)	—	SEPT. 28	22:17 PST
SEPT. 29	14 00 26.6	34.018N.	117.239W.	16	PS	—	—	2.9M_L(PS)	FELT	SEPT. 29	06:00 PST
SEPT. 29	15 20 18.9	37.606N.	118.466W.	7	RN	—	—	3.2M_L(PS)	—	SEPT. 29	07:20 PST
SEPT. 30	09 18 13.4	37.608N.	118.468W.	4	RN	—	—	3.9M_D(RN)	—	SEPT. 30	01:18 PST
SEPT. 30	09 52 11.2	33.008N.	117.777W.	0	HJ	—	—	3.9M_L(PS)	IV	SEPT. 30	01:52 PST
SEPT. 30	17 01 54.1	37.483N.	118.370W.	10	RN	—	—	3.7M_D(RN)	—	SEPT. 30	09:01 PST
OCT. 1	20 12 18.3	32.973N.	117.840W.	8	HJ	—	—	4.0M_L(PS)	FELT	OCT. 1	12:12 PST
OCT. 1	23 47 01.6	37.597N.	118.493W.	10	RN	—	—	3.0M_L(PS)	—	OCT. 1	15:47 PST
OCT. 2	04 55 42.0	34.033N.	116.639W.	11	PS	—	—	2.9M_L(PS)	FELT	OCT. 1	20:55 PST
OCT. 2	07 48 38.8	37.477N.	118.812W.	6	PS	—	—	3.1M_L(PS)	—	OCT. 1	23:48 PST
OCT. 2	15 23 28.6	33.010N.	117.753W.	0	HJ	—	—	3.4M_L(PS)	III	OCT. 2	07:23 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
OCT. 2	22 56 43.9	37.527N.	118.439W.	12	RN	—	—	3.2M_L(PS)	—	OCT. 2	14:56 PST
OCT. 3	13 33 51.9	40.293N.	125.122W.	4	BK	—	—	3.0M_L(BK)	—	OCT. 3	05:33 PST
OCT. 3	21 49 31.2	37.622N.	118.475W.	10	RN	—	—	3.4M_D(RN)	—	OCT. 3	13:49 PST
OCT. 3	23 53 27.7	37.521N.	118.431W.	12	RN	—	—	3.4M_D(RN)	—	OCT. 3	15:53 PST
OCT. 6	03 46 48.7	37.555N.	118.465W.	11	RN	—	—	3.4M_D(RN)	—	OCT. 5	19:46 PST
OCT. 6	13 42 47.1	37.605N.	118.911W.	4	RN	—	—	3.2M_D(RN)	—	OCT. 6	05:42 PST
OCT. 6	18 14 40.7	37.590N.	118.460W.	9	RN	—	—	3.2M_D(RN)	—	OCT. 6	10:14 PST
OCT. 6	23 32 37.9	37.596N.	118.467W.	9	RN	—	—	3.2M_L(PS)	—	OCT. 6	15:32 PST
OCT. 9	02 06 23.0	37.297N.	121.688W.	5	BK	—	—	3.0M_L(BK)	—	OCT. 8	18:06 PST
OCT. 9	05 37 25.0	37.348N.	118.370W.	15	RN	—	—	4.4M_L(BK)	III	OCT. 8	21:37 PST
OCT. 10	15 23 02.6	33.948N.	116.786W.	2	PS	—	—	3.5M_L(PS)	IV	OCT. 10	07:23 PST
OCT. 11	05 17 36.4	37.827N.	121.960W.	6	BK	—	—	4.2M_L(BK)	V	OCT. 10	21:17 PST
OCT. 11	06 39 38.2	37.827N.	121.952W.	5	BK	—	—	3.2M_L(BK)	FELT	OCT. 10	22:39 PST
OCT. 12	06 43 01.9	38.718N.	123.500W.	11	BK	4.2	—	4.0M_L(BK)	V	OCT. 11	22:43 PST
OCT. 12	16 37 02.8	37.523N.	118.423W.	10	RN	—	—	3.1M_L(PS)	—	OCT. 12	08:37 PST
OCT. 15	02 28 47.8	33.953N.	116.572W.	9	PS	4.3	—	4.7M_L(GP)	V	OCT. 14	18:28 PST
OCT. 15	05 46 18.8	34.165N.	118.274W.	3	PS	—	—	2.5M_L(PS)	FELT	OCT. 14	21:46 PST
OCT. 15	08 19 17.9	34.986N.	119.207W.	1	GP	—	—	3.2M_L(PS)	—	OCT. 15	00:19 PST
OCT. 16	06 16 40.7	40.327N.	123.927W.	6	BK	—	—	2.4M_L(BK)	III	OCT. 15	22:16 PST
OCT. 16	10 16 17.0	33.977N.	116.565W.	8	PS	—	—	2.9M_L(PS)	FELT	OCT. 16	02:16 PST
OCT. 16	11 20 37.6	37.755N.	122.138W.	7	BK	—	—	2.2M_L(BK)	FELT	OCT. 16	03:20 PST
OCT. 17	13 06 05.4	41.700N.	126.988W.	10	GS	4.3	3.9	—	—	OCT. 17	05:06 PST
OCT. 17	18 56 16.6	34.370N.	116.385W.	7	PS	—	—	3.5M_L(PS)	—	OCT. 17	10:56 PST
OCT. 19	00 42 40.3	38.418N.	119.312W.	5	BK	—	—	3.7M_L(BK)	—	OCT. 18	16:42 PST
OCT. 19	14 50 26.1	34.015N.	116.687W.	8	PS	—	—	2.9M_L(PS)	FELT	OCT. 19	06:50 PST
OCT. 19	18 09 56.6	36.098N.	117.845W.	4	PS	—	—	3.2M_L(PS)	—	OCT. 19	10:09 PST
OCT. 19	20 51 31.2	37.470N.	118.506W.	6	RN	—	—	3.1M_D(RN)	—	OCT. 19	12:51 PST
OCT. 20	22 35 30.0	32.955N.	117.786W.	6	PS	—	—	3.2M_L(PS)	—	OCT. 20	14:35 PST
OCT. 21	05 26 26.9	37.537N.	118.464W.	7	RN	—	—	3.0M_L(PS)	—	OCT. 20	21:26 PST
OCT. 21	08 36 25.0	37.489N.	118.363W.	7	RN	—	—	3.1M_L(PS)	—	OCT. 21	00:36 PST
OCT. 21	09 30 04.6	37.591N.	118.457W.	9	RN	—	—	3.2M_L(PS)	—	OCT. 21	01:30 PST
OCT. 21	13 14 58.6	36.760N.	121.367W.	11	BK	—	—	3.3M_L(BK)	FELT	OCT. 21	05:14 PST
OCT. 21	20 51 19.9	37.468N.	118.503W.	4	RN	—	—	3.2M_L(PS)	—	OCT. 21	12:51 PST
OCT. 22	08 07 12.3	35.061N.	119.087W.	16	PS	—	—	3.0M_L(PS)	—	OCT. 22	00:07 PST
OCT. 22	15 03 21.8	37.476N.	118.511W.	4	RN	—	—	3.0M_L(PS)	—	OCT. 22	07:03 PST
OCT. 22	22 58 35.3	37.471N.	118.512W.	5	RN	—	—	3.1M_D(RN)	—	OCT. 22	14:58 PST
OCT. 23	16 23 33.8	37.594N.	118.488W.	9	RN	—	—	3.2M_D(RN)	—	OCT. 23	08:23 PST
OCT. 24	19 42 57.2	32.964N.	117.821W.	10	PS	—	—	3.1M_L(PS)	—	OCT. 24	11:42 PST
OCT. 25	00 35 26.1	37.413N.	116.868W.	6	PS	—	—	3.1M_L(PS)	—	OCT. 24	16:35 PST
OCT. 25	16 40 28.5	36.095N.	117.848W.	4	PS	—	—	3.1M_L(PS)	—	OCT. 25	08:40 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
OCT. 26	01 11 47.1	37.598N.	118.923W.	3	RN	—	—	3.1M_D(RN)	—	OCT. 25	17:11 PST
OCT. 26	05 17 33.2	37.293N.	116.151W.	6	PS	—	—	3.1M_L(PS)	—	OCT. 25	21:17 PST
OCT. 26	05 17 56.2	35.575N.	117.229W.	6	PS	—	—	3.0M_L(PS)	—	OCT. 25	21:17 PST
OCT. 26	10 20 13.8	37.472N.	118.384W.	10	RN	—	—	3.2M_L(PS)	—	OCT. 26	02:20 PST
OCT. 27	02 06 45.5	37.175N.	121.583W.	8	BK	—	—	3.6M_L(BK)	II	OCT. 26	18:06 PST
OCT. 28	11 47 23.8	37.531N.	118.450W.	6	RN	—	—	3.2M_L(BK)	—	OCT. 28	03:47 PST
OCT. 28	21 29 00.8	38.772N.	122.790W.	2	BK	—	—	3.2M_L(BK)	—	OCT. 28	13:29 PST
OCT. 29	02 38 15.3	32.615N.	117.152W.	15	PS	3.9	—	4.1M_L(PS)	V	OCT. 28	18:38 PST
OCT. 29	07 10 19.2	32.967N.	117.821W.	6	PS	—	—	3.0M_L(PS)	—	OCT. 28	23:10 PST
OCT. 29	08 15 34.5	34.734N.	120.144W.	0	PS	—	—	3.1M_L(PS)	—	OCT. 29	00:15 PST
OCT. 30	04 01 53.2	38.093N.	119.268W.	4	BK	—	—	3.6M_L(BK)	—	OCT. 29	20:01 PST
OCT. 30	18 12 08.3	36.827N.	121.578W.	4	BK	—	—	3.1M_L(BK)	IV	OCT. 30	10:12 PST
OCT. 31	03 57 28.9	38.420N.	119.323W.	1	BK	—	—	4.6M_L(BK)	IV	OCT. 30	19:57 PST
OCT. 31	14 27 05.2	35.578N.	117.178W.	6	PS	—	—	3.8M_L(PS)	III	OCT. 31	06:27 PST
OCT. 31	18 46 14.2	36.947N.	121.572W.	7	BK	—	—	3.5M_L(BK)	V	OCT. 31	10:46 PST
NOV. 1	08 40 12.7	38.767N.	122.732W.	3	BK	—	—	3.0M_L(BK)	—	NOV. 1	00:40 PST
NOV. 1	14 50 57.4	37.347N.	121.730W.	6	BK	—	—	3.4M_L(BK)	IV	NOV. 1	06:50 PST
NOV. 2	03 46 14.4	37.630N.	122.483W.	10	BK	—	—	3.0M_L(BK)	FELT	NOV. 1	19:46 PST
NOV. 3	00 27 07.8	37.554N.	118.486W.	6	PS	—	—	3.1M_L(PS)	—	NOV. 2	16:27 PST
NOV. 3	18 40 40.4	33.689N.	116.813W.	18	PS	—	—	2.9M_L(PS)	III	NOV. 3	10:40 PST
NOV. 3	21 04 01.4	33.874N.	116.859W.	11	GP	—	—	3.1M_L(PS)	III	NOV. 3	13:04 PST
NOV. 6	09 19 58.3	34.735N.	120.147W.	0	PS	4.0	—	4.0M_L(PS)	V	NOV. 6	01:19 PST
NOV. 6	23 02 50.5	34.366N.	116.383W.	2	PS	—	—	3.1M_L(PS)	—	NOV. 6	15:02 PST
NOV. 7	01 04 03.1	40.597N.	124.555W.	9	BK	—	—	3.3M_L(BK)	—	NOV. 6	17:04 PST
NOV. 7	02 08 00.8	32.983N.	117.825W.	6	PS	—	—	3.1M_L(PS)	—	NOV. 6	18:08 PST
NOV. 10	01 35 12.5	32.976N.	117.791W.	6	PS	—	—	3.2M_L(PS)	—	NOV. 9	17:35 PST
NOV. 10	15 22 34.4	38.805N.	122.822W.	2	BK	—	—	3.3M_L(BK)	—	NOV. 10	07:22 PST
NOV. 12	22 07 17.2	36.112N.	120.162W.	3	BK	—	—	3.1M_L(BK)	—	NOV. 12	14:07 PST
NOV. 12	23 26 47.9	34.528N.	118.488W.	2	PS	—	—	2.7M_L(PS)	FELT	NOV. 12	15:26 PST
NOV. 13	05 12 28.0	33.959N.	116.734W.	10	PS	—	—	3.2M_L(PS)	IV	NOV. 12	21:12 PST
NOV. 13	15 00 35.5	37.486N.	118.374W.	9	RN	—	—	3.2M_D(RN)	—	NOV. 13	07:00 PST
NOV. 13	16 55 38.3	37.479N.	118.510W.	3	RN	—	—	3.9M_L(BK)	FELT	NOV. 13	08:55 PST
NOV. 13	18 45 22.3	37.476N.	118.511W.	4	RN	—	—	3.5M_L(BK)	—	NOV. 13	10:45 PST
NOV. 14	04 26 20.4	38.528N.	122.977W.	2	BK	—	—	2.6M_L(BK)	FELT	NOV. 13	20:26 PST
NOV. 15	01 39 58.1	37.581N.	118.451W.	2	RN	—	—	3.6M_D(RN)	—	NOV. 14	17:39 PST
NOV. 16	20 51 48.0	39.197N.	120.414W.	11	RN	—	—	3.0M_D(RN)	—	NOV. 16	12:51 PST
NOV. 17	12 40 22.7	37.577N.	118.433W.	7	RN	—	—	3.7M_D(RN)	—	NOV. 17	04:40 PST
NOV. 17	14 43 22.8	37.579N.	118.439W.	5	RN	—	—	3.2M_D(RN)	—	NOV. 17	06:43 PST
NOV. 19	04 56 00.5	32.964N.	117.811W.	6	PS	—	—	3.1M_L(PS)	—	NOV. 18	20:56 PST
NOV. 19	16 19 06.0	40.375N.	125.060W.	8	BK	4.2	—	3.9M_L(BK)	IV	NOV. 19	08:19 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
NOV. 19	17 40 37.9	37.530N.	118.454W.	7	RN	—	—	3.1M_L(PS)	—	NOV. 19	09:40 PST
NOV. 21	02 13 50.4	32.486N.	119.527W.	6	PS	—	—	3.3M_L(PS)	—	NOV. 20	18:13 PST
NOV. 21	23 33 01.7	40.372N.	124.443W.	15	BK	5.3	5.1	5.1M_L(BK)	VII	NOV. 21	15:33 PST
NOV. 21	23 34 18.0	40.367N.	124.450W.	15	BK	5.1	—	5.1M_L(BK)	FELT	NOV. 21	15:34 PST
NOV. 22	00 05 24.7	40.480N.	124.477W.	23	BK	—	—	3.5M_L(BK)	—	NOV. 21	16:05 PST
NOV. 22	00 57 52.4	40.447N.	124.482W.	24	BK	—	—	3.2M_L(BK)	—	NOV. 21	16:57 PST
NOV. 22	01 29 55.9	40.378N.	124.575W.	19	BK	—	—	3.2M_L(BK)	—	NOV. 21	17:29 PST
NOV. 22	03 17 58.4	40.370N.	124.493W.	18	BK	—	—	3.8M_L(BK)	—	NOV. 21	19:17 PST
NOV. 22	17 14 22.2	37.516N.	118.395W.	7	RN	—	—	3.4M_D(RN)	—	NOV. 22	09:14 PST
NOV. 22	18 36 58.2	36.087N.	120.050W.	6	BK	—	—	3.2M_L(BK)	—	NOV. 22	10:36 PST
NOV. 22	22 31 27.4	36.098N.	119.987W.	6	PS	—	—	3.0M_L(PS)	—	NOV. 22	14:31 PST
NOV. 23	01 21 48.3	40.367N.	124.515W.	19	BK	—	—	3.5M_L(BK)	—	NOV. 22	17:21 PST
NOV. 23	02 08 55.9	34.096N.	120.848W.	6	PS	—	—	3.2M_L(PS)	—	NOV. 22	18:08 PST
NOV. 23	05 41 06.3	40.360N.	124.528W.	20	BK	4.0	—	4.0M_L(BK)	III	NOV. 22	21:41 PST
NOV. 23	09 13 37.7	40.408N.	124.310W.	17	BK	—	—	3.2M_L(BK)	—	NOV. 23	01:13 PST
NOV. 23	16 00 45.0	40.378N.	124.383W.	18	BK	—	—	3.0M_L(BK)	—	NOV. 23	08:00 PST
NOV. 24	04 31 49.5	36.113N.	120.015W.	7	BK	—	—	3.1M_L(BK)	—	NOV. 23	20:31 PST
NOV. 24	15 08 01.3	36.602N.	121.240W.	4	BK	—	—	3.1M_L(BK)	—	NOV. 24	07:08 PST
NOV. 24	18 15 25.2	34.369N.	116.384W.	3	PS	—	—	3.0M_L(PS)	—	NOV. 24	10:15 PST
NOV. 26	08 22 15.4	40.357N.	124.475W.	18	BK	—	—	3.5M_L(BK)	—	NOV. 26	00:22 PST
NOV. 28	03 45 57.0	38.842N.	122.790W.	2	BK	—	—	3.0M_L(BK)	—	NOV. 27	19:45 PST
NOV. 29	13 10 26.1	37.584N.	118.438W.	5	RN	—	—	3.6M_D(RN)	—	NOV. 29	05:10 PST
NOV. 29	13 10 51.6	37.582N.	118.481W.	6	PS	—	—	3.2M_L(PS)	—	NOV. 29	05:10 PST
DEC. 2	23 09 01.2	36.143N.	120.043W.	6	PS	—	—	3.1M_L(PS)	—	DEC. 2	15:09 PST
DEC. 4	10 55 19.6	33.713N.	116.836W.	16	PS	—	—	2.6M_L(PS)	FELT	DEC. 4	02:55 PST
DEC. 4	19 56 16.0	37.478N.	118.365W.	7	RN	—	—	3.0M_D(RN)	—	DEC. 4	11:56 PST
DEC. 6	04 27 32.2	37.514N.	118.438W.	10	RN	—	—	3.0M_L(PS)	—	DEC. 5	20:27 PST
DEC. 6	05 24 16.0	32.962N.	117.802W.	6	PS	—	—	3.1M_L(PS)	—	DEC. 5	21:24 PST
DEC. 6	05 24 36.5	32.930N.	117.771W.	6	PS	—	—	3.1M_L(PS)	—	DEC. 5	21:24 PST
DEC. 7	12 33 08.8	35.352N.	120.980W.	6	BK	—	—	3.3M_L(BK)	IV	DEC. 7	04:33 PST
DEC. 8	06 29 03.8	38.113N.	118.947W.	10	RN	—	—	3.0M_D(RN)	—	DEC. 5	22:29 PST
DEC. 8	07 43 52.2	38.107N.	118.941W.	9	RN	—	—	3.3M_D(RN)	—	DEC. 7	23:43 PST
DEC. 9	04 16 12.9	38.111N.	118.947W.	10	RN	—	—	3.4M_L(BK)	—	DEC. 8	20:16 PST
DEC. 10	15 03 52.4	36.748N.	116.320W.	6	PS	—	—	3.0M_L(PS)	—	DEC. 10	07:03 PST
DEC. 11	14 18 05.3	37.568N.	121.665W.	4	BK	—	—	4.1M_L(BK)	IV	DEC. 11	06:18 PST
DEC. 11	16 52 47.7	38.110N.	118.945W.	6	RN	—	—	3.3M_D(RN)	—	DEC. 11	08:52 PST
DEC. 11	16 58 32.3	38.110N.	118.945W.	7	RN	—	—	3.0M_D(RN)	—	DEC. 11	08:58 PST
DEC. 11	23 07 23.9	37.570N.	121.655W.	6	BK	—	—	3.3M_L(BK)	—	DEC. 11	15:07 PST
DEC. 12	02 19 40.4	37.480N.	118.512W.	4	RN	—	—	3.8M_L(BK)	—	DEC. 11	18:19 PST
DEC. 13	01 47 06.5	38.298N.	122.153W.	7	BK	—	—	2.9M_L(BK)	III	DEC. 12	17:47 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
CALIFORNIA—Continued											
DEC. 13	10 20 17.5	37.563N.	121.668W.	4	BK	—	—	3.1M_L(BK)	—	DEC. 13	02:20 PST
DEC. 14	22 58 51.9	38.857N.	122.415W.	10	BK	—	—	3.2M_L(BK)	—	DEC. 14	14:58 PST
DEC. 14	23 00 23.5	38.815N.	122.445W.	15	BK	—	—	3.3M_L(BK)	—	DEC. 14	15:00 PST
DEC. 16	17 48 42.9	40.350N.	124.415W.	17	BK	—	—	3.1M_L(BK)	—	DEC. 16	09:48 PST
DEC. 18	17 04 37.2	35.923N.	118.355W.	6	PS	—	—	3.0M_L(PS)	—	DEC. 18	09:04 PST
DEC. 18	17 30 17.6	35.918N.	118.355W.	6	PS	—	—	3.0M_L(PS)	—	DEC. 18	09:30 PST
DEC. 18	18 40 27.4	38.402N.	119.322W.	10	BK	—	—	3.2M_L(BK)	—	DEC. 18	10:40 PST
DEC. 19	09 01 04.6	32.968N.	117.828W.	10	PS	—	—	3.1M_L(PS)	—	DEC. 19	01:01 PST
DEC. 20	02 19 41.8	37.453N.	121.802W.	6	BK	—	—	3.6M_L(BK)	IV	DEC. 19	18:19 PST
DEC. 20	19 45 32.9	40.363N.	124.590W.	13	BK	—	—	3.7M_L(BK)	III	DEC. 20	11:45 PST
DEC. 25	00 02 53.8	37.595N.	118.462W.	9	RN	—	—	3.0M_L(PS)	—	DEC. 24	16:02 PST
DEC. 25	02 25 15.7	40.313N.	124.565W.	22	BK	—	—	3.4M_L(BK)	III	DEC. 24	18:25 PST
DEC. 25	06 08 54.2	37.573N.	118.401W.	5	RN	—	—	3.5M_D(RN)	—	DEC. 24	22:08 PST
DEC. 25	13 28 28.1	37.745N.	122.570W.	9	BK	—	—	2.7M_L(BK)	FELT	DEC. 25	05:28 PST
DEC. 25	17 35 22.9	32.984N.	116.286W.	8	PS	—	—	3.4M_L(PS)	III	DEC. 25	09:35 PST
DEC. 26	09 56 27.4	37.572N.	118.402W.	5	RN	—	—	4.0M_L(BK)	FELT	DEC. 26	01:56 PST
DEC. 26	10 29 18.2	38.823N.	122.792W.	4	BK	—	—	3.1M_L(BK)	—	DEC. 26	02:29 PST
DEC. 26	17 07 24.9	32.841N.	118.210W.	6	PS	—	—	3.0M_L(PS)	—	DEC. 26	09:07 PST
DEC. 27	19 13 03.9	33.506N.	116.551W.	12	PS	—	—	3.2M_L(PS)	FELT	DEC. 27	11:13 PST
DEC. 29	08 21 03.9	34.538N.	118.912W.	18	PS	—	—	3.2M_L(PS)	—	DEC. 29	00:21 PST
DEC. 29	15 28 04.9	37.458N.	121.800W.	6	BK	3.8	—	4.0M_L(BK)	IV	DEC. 29	07:28 PST
DEC. 29	16 05 14.0	33.020N.	115.769W.	4	PS	—	—	3.4M_L(PS)	IV	DEC. 29	08:05 PST
DEC. 29	18 35 33.4	33.001N.	117.764W.	6	PS	—	—	3.1M_L(PS)	—	DEC. 29	10:35 PST
DEC. 30	06 29 06.6	40.380N.	124.273W.	18	BK	—	—	3.2M_L(BK)	III	DEC. 29	22:29 PST
DEC. 30	21 48 52.1	32.955N.	117.785W.	10	PS	—	—	3.1M_L(PS)	—	DEC. 30	13:48 PST
DEC. 31	14 26 56.0	40.383N.	124.687W.	11	BK	—	—	3.1M_L(BK)	—	DEC. 31	06:26 PST
DEC. 31	17 05 50.5	37.422N.	121.672W.	5	BK	—	—	3.0M_L(BK)	—	DEC. 31	09:05 PST
DEC. 31	18 33 48.6	38.817N.	122.813W.	5	BK	—	—	3.1M_L(BK)	—	DEC. 31	10:33 PST
COLORADO											
APR. 11	06 17 14.7	38.982N.	106.940W.	5	GS	—	—	2.9M_L(GS)	III	APR. 10	23:17 MST
MAY 9	21 55 26.7	38.887N.	106.884W.	5	GS	—	—	2.7M_L(GS)	II	MAY 9	14:55 MST
AUG. 13	02 42 55.6	38.814N.	106.996W.	5	GS	—	—	2.6M_L(GS)	FELT	AUG. 12	19:42 MST
AUG. 13	12 08 31.4	38.858N.	107.035W.	5	GS	—	—	2.1M_L(GS)	—	AUG. 13	05:08 MST
AUG. 13	12 13 43.9	38.879N.	107.039W.	5	GS	—	—	2.4M_L(GS)	FELT	AUG. 13	05:13 MST
AUG. 14	17 39 25.9	38.908N.	107.082W.	5	GS	—	—	2.6M_L(GS)	FELT	AUG. 14	10:39 MST
AUG. 17	22 10 28.3	38.897N.	107.076W.	5	GS	—	—	2.4M_L(GS)	FELT	AUG. 17	15:10 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
COLORADO—Continued											
AUG. 18	01 15 15.0	38.914N.	107.087W.	5	GS	—	—	3.0M_L(GS)	III	AUG. 17	18:15 MST
AUG. 20	04 43 40.1	38.892N.	107.077W.	5	GS	—	—	2.3M_L(GS)	FELT	AUG. 19	21:43 MST
AUG. 20	20 21 32.9	38.892N.	107.068W.	5	GS	—	—	2.7M_L(GS)	FELT	AUG. 20	13:21 MST
AUG. 21	14 11 31.6	38.903N.	107.063W.	5	GS	—	—	1.9M_L(GS)	FELT	AUG. 21	07:11 MST
AUG. 23	05 13 03.0	38.905N.	107.095W.	5	GS	—	—	2.4M_L(GS)	FELT	AUG. 22	22:13 MST
AUG. 24	03 59 17.5	38.967N.	107.141W.	5	GS	—	—	2.1M_L(GS)	FELT	AUG. 23	20:59 MST
AUG. 26	02 06 02.6	38.900N.	107.041W.	5	GS	—	—	3.1M_L(GS)	IV	AUG. 25	19:06 MST
AUG. 30	11 42 28.6	38.881N.	107.053W.	5	GS	—	—	2.5M_L(GS)	—	AUG. 30	04:42 MST
SEPT. 3	06 20 50.9	38.912N.	107.090W.	5	GS	—	—	3.5M_L(GS)	V	SEPT. 2	23:20 MST
SEPT. 18	04 53 21.6	38.937N.	107.116W.	5	GS	—	—	3.2M_L(GS)	FELT	SEPT. 17	21:53 MST
SEPT. 18	09 26 38.1	38.925N.	107.086W.	5	GS	—	—	3.4M_L(GS)	III	SEPT. 18	02:26 MST
SEPT. 21	09 20 46.6	39.597N.	105.285W.	5	GS	—	—	2.5M_L(GS)	FELT	SEPT. 21	02:20 MST
SEPT. 22	06 20 16.9	38.930N.	107.097W.	5	GS	—	—	2.5M_L(GS)	—	SEPT. 21	23:20 MST
OCT. 7	12 35 03.2	38.947N.	107.090W.	5	GS	—	—	1.8M_L(GS)	FELT	OCT. 7	05:35 MST
DELAWARE											
MAY 2	13 54 02.2	39.744N.	75.660W.	0	LD	—	—	2.5M_D(LD)	—	MAY 2	08:54 EST
GEORGIA											
FEB. 28	04 12 57.9	33.296N.	83.245W.	1	GT	—	—	1.7M_D(GT)	IV	FEB. 27	23:12 EST
MAR. 13	02 29 31.0	33.356N.	83.394W.	1	GT	—	—	2.2M_D(GT)	IV	MAR. 12	21:29 EST
JULY 11	14 26 14.8	34.937N.	84.987W.	13	TC	3.7	—	3.8M_n(GS)	VI	JULY 11	09:26 EST
HAWAII											
JAN. 17	23 48 31.6	19.359N.	155.063W.	10	HV	—	—	3.6M_L(HV)	II	JAN. 17	13:48 HST
JAN. 17	23 52 15.1	19.363N.	155.057W.	0	HV	—	—	3.0M_L(HV)	—	JAN. 17	13:52 HST
JAN. 23	22 35 57.9	19.340N.	155.199W.	8	HV	—	—	3.7M_L(HV)	III	JAN. 23	12:35 HST
JAN. 27	06 38 42.0	18.814N.	155.239W.	11	HV	—	—	3.3M_L(HV)	—	JAN. 26	20:38 HST
JAN. 27	23 36 28.1	19.315N.	155.228W.	6	HV	—	—	4.0M_L(HV)	III	JAN. 27	13:36 HST
JAN. 27	23 37 57.0	19.311N.	155.227W.	7	HV	—	—	3.0M_L(HV)	—	JAN. 27	13:37 HST
JAN. 30	15 10 08.5	19.313N.	155.223W.	0	HV	—	—	3.1M_L(HV)	—	JAN. 30	05:10 HST
FEB. 3	21 01 22.2	19.353N.	155.021W.	7	HV	—	—	3.7M_L(HV)	II	FEB. 3	11:01 HST
FEB. 4	20 56 33.0	19.553N.	155.234W.	25	HV	—	—	3.3M_L(HV)	II	FEB. 4	10:56 HST
FEB. 6	23 03 53.1	19.397N.	155.611W.	28	HV	—	—	3.0M_L(HV)	—	FEB. 6	13:03 HST
FEB. 8	12 07 06.9	19.338N.	155.186W.	6	HV	—	—	3.0M_L(HV)	—	FEB. 8	02:07 HST
FEB. 14	14 25 27.3	19.327N.	155.194W.	3	HV	—	—	3.5M_L(HV)	—	FEB. 14	04:25 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
HAWAII—Continued											
FEB. 20	07 17 47.7	19.320N.	155.191W.	1	HV	—	—	3.5M_L(HV)	III	FEB. 19	21:17 HST
FEB. 26	03 39 59.2	19.325N.	155.210W.	0	HV	—	—	3.0M_L(HV)	—	FEB. 25	17:39 HST
FEB. 28	07 21 14.3	19.317N.	155.192W.	1	HV	—	—	3.7M_L(HV)	III	FEB. 27	21:21 HST
MAR. 1	12 27 19.0	19.345N.	155.096W.	5	HV	—	—	3.0M_L(HV)	—	MAR. 1	02:27 HST
MAR. 1	14 39 50.9	20.063N.	155.529W.	28	HV	—	—	3.3M_L(HV)	—	MAR. 1	04:39 HST
MAR. 1	21 10 34.2	19.410N.	155.292W.	16	HV	—	—	3.3M_L(HV)	II	MAR. 1	11:10 HST
MAR. 12	22 29 34.6	19.302N.	155.219W.	11	HV	—	—	3.8M_L(HV)	III	MAR. 12	12:29 HST
MAR. 12	22 33 52.1	19.290N.	155.210W.	6	HV	—	—	3.0M_L(HV)	—	MAR. 12	12:33 HST
MAR. 16	20 58 34.8	19.768N.	156.175W.	42	HV	—	—	4.2M_L(HV)	II	MAR. 16	10:58 HST
MAR. 24	14 26 44.1	19.354N.	155.051W.	6	HV	—	—	3.0M_L(HV)	—	MAR. 24	04:26 HST
MAR. 27	17 34 15.7	19.310N.	155.133W.	10	HV	—	—	3.1M_L(HV)	—	MAR. 27	07:34 HST
MAR. 30	19 48 03.1	19.327N.	155.038W.	5	HV	—	—	3.9M_L(HV)	III	MAR. 30	09:48 HST
MAR. 30	23 37 06.3	19.426N.	155.360W.	11	HV	—	—	3.5M_L(HV)	—	MAR. 30	13:37 HST
APR. 7	08 37 49.7	19.199N.	155.620W.	11	HV	4.2	—	4.3M_L(HV)	IV	APR. 6	22:37 HST
APR. 14	09 41 16.8	19.615N.	156.523W.	45	HV	—	—	3.2M_L(HV)	—	APR. 13	23:41 HST
APR. 23	04 43 51.3	19.305N.	155.271W.	31	HV	—	—	4.5M_L(HV)	IV	APR. 22	18:43 HST
APR. 23	11 49 51.9	19.309N.	155.263W.	31	HV	—	—	3.0M_L(HV)	III	APR. 23	01:49 HST
APR. 26	17 19 46.5	20.811N.	155.749W.	33	GS	5.1	—	4.9M_L(HV)	V	APR. 26	07:19 HST
MAY 7	01 10 02.2	19.323N.	155.216W.	2	HV	—	—	3.9M_L(HV)	—	MAY 6	15:10 HST
MAY 8	01 45 26.3	19.292N.	155.235W.	10	HV	—	—	3.2M_L(HV)	II	MAY 7	15:45 HST
MAY 13	17 08 39.1	19.412N.	155.270W.	17	HV	—	—	3.4M_L(HV)	II	MAY 13	07:08 HST
MAY 21	18 37 16.6	19.379N.	155.302W.	30	HV	—	—	3.1M_L(HV)	II	MAY 21	08:37 HST
MAY 23	06 04 50.8	19.326N.	155.190W.	6	HV	—	—	3.1M_L(HV)	—	MAY 22	20:04 HST
MAY 27	11 02 18.1	19.399N.	155.259W.	4	HV	—	—	3.0M_L(HV)	III	MAY 27	01:02 HST
MAY 30	05 30 43.8	19.333N.	155.103W.	4	HV	—	—	3.1M_L(HV)	—	MAY 29	19:03 HST
MAY 31	06 33 11.3	19.785N.	156.204W.	40	HV	—	—	3.2M_L(HV)	—	MAY 30	20:33 HST
JUNE 5	01 27 14.9	19.482N.	155.459W.	1	HV	—	—	3.2M_L(HV)	—	JUNE 4	15:27 HST
JUNE 8	21 33 09.7	19.321N.	155.009W.	10	HV	—	—	3.2M_L(HV)	II	JUNE 8	11:33 HST
JUNE 10	23 14 40.2	19.074N.	156.290W.	40	HV	—	—	3.3M_L(HV)	—	JUNE 10	13:14 HST
JUNE 11	15 28 08.8	19.367N.	155.437W.	10	HV	—	—	3.0M_L(HV)	—	JUNE 11	05:28 HST
JUNE 22	23 05 38.4	19.286N.	154.978W.	47	HV	—	—	3.2M_L(HV)	—	JUNE 22	13:05 HST
JUNE 25	12 13 59.7	19.419N.	155.312W.	4	HV	—	—	3.2M_L(HV)	III	JUNE 25	02:13 HST
JUNE 26	13 31 57.5	19.334N.	155.191W.	8	HV	—	—	3.0M_L(HV)	—	JUNE 26	03:31 HST
JULY 2	23 50 30.0	19.496N.	155.462W.	7	HV	—	—	3.3M_L(HV)	—	JULY 2	13:50 HST
JULY 3	00 51 19.3	19.330N.	155.219W.	0	HV	—	—	3.1M_L(HV)	—	JULY 2	14:51 HST
JULY 9	12 28 09.1	19.552N.	155.999W.	20	HV	4.2	—	4.2M_L(HV)	IV	JULY 9	02:28 HST
JULY 20	09 51 38.6	18.932N.	155.220W.	17	HV	—	—	3.0M_L(HV)	—	JULY 19	23:51 HST
JULY 20	17 40 54.8	18.849N.	155.168W.	11	HV	—	—	3.1M_L(HV)	—	JULY 20	07:40 HST
JULY 22	04 59 03.9	19.336N.	155.193W.	6	HV	—	—	3.2M_L(HV)	—	JULY 21	18:59 HST
JULY 22	20 16 22.0	19.192N.	155.641W.	1	HV	—	—	3.0M_L(HV)	—	JULT 22	10:16 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
HAWAII—Continued											
JULY 28	12 45 25.4	19.537N.	155.970W.	11	HV	—	—	3.1M_L(HV)	II	JULY 28	02:45 HST
JULY 30	08 04 26.0	19.344N.	155.102W.	8	HV	—	—	3.3M_L(HV)	—	JULY 29	22:04 HST
AUG. 11	03 16 12.2	19.372N.	155.079W.	10	HV	—	—	3.7M_L(HV)	II	AUG. 10	17:16 HST
AUG. 11	16 11 13.5	19.339N.	155.041W.	9	HV	—	—	3.8M_L(HV)	—	AUG. 11	06:11 HST
AUG. 21	23 14 51.9	19.634N.	155.155W.	15	HV	—	—	3.1M_L(HV)	—	AUG. 21	13:14 HST
SEPT. 4	02 55 11.2	19.352N.	155.503W.	10	HV	—	—	3.6M_L(HV)	—	SEPT. 3	16:55 HST
SEPT. 5	21 12 06.1	19.306N.	155.309W.	32	HV	—	—	3.1M_L(HV)	—	SEPT. 5	11:12 HST
SEPT. 8	14 16 21.0	21.284N.	156.782W.	1	HV	—	—	3.3M_L(HV)	II	SEPT. 8	04:16 HST
SEPT. 9	06 12 55.2	19.305N.	155.197W.	8	HV	—	—	3.2M_L(HV)	—	SEPT. 8	20:12 HST
SEPT. 13	22 06 37.7	19.430N.	155.324W.	6	HV	—	—	3.1M_L(HV)	—	SEPT. 13	12:06 HST
SEPT. 15	04 39 16.8	18.789N.	155.235W.	43	HV	—	—	3.0M_L(HV)	—	SEPT. 14	18:39 HST
SEPT. 19	14 44 42.5	19.333N.	155.349W.	31	HV	—	—	4.2M_L(HV)	IV	SEPT. 19	04:44 HST
SEPT. 21	05 31 37.1	17.696N.	154.839W.	40	HV	—	—	3.7M_L(HV)	—	SEPT. 20	19:31 HST
SEPT. 21	06 35 01.7	18.844N.	155.237W.	12	HV	—	—	3.4M_L(HV)	—	SEPT. 20	20:35 HST
SEPT. 21	06 57 22.2	18.766N.	155.228W.	12	HV	—	—	3.6M_L(HV)	—	SEPT. 20	20:57 HST
SEPT. 21	07 02 46.0	18.823N.	155.263W.	12	HV	—	—	3.3M_L(HV)	—	SEPT. 20	21:02 HST
SEPT. 21	07 15 04.8	18.793N.	155.273W.	12	HV	—	—	3.6M_L(HV)	—	SEPT. 20	21:15 HST
SEPT. 21	07 28 06.5	18.787N.	155.265W.	12	HV	—	—	3.2M_L(HV)	—	SEPT. 20	21:28 HST
SEPT. 21	08 10 16.5	18.843N.	155.268W.	12	HV	—	—	3.3M_L(HV)	—	SEPT. 20	22:10 HST
SEPT. 21	09 30 33.6	18.795N.	155.268W.	12	HV	—	—	3.7M_L(HV)	IV	SEPT. 20	23:30 HST
SEPT. 21	14 58 45.9	18.829N.	155.352W.	25	HV	—	—	3.1M_L(HV)	—	SEPT. 21	04:58 HST
SEPT. 21	17 49 26.6	18.813N.	155.324W.	35	HV	—	—	3.4M_L(HV)	—	SEPT. 21	07:49 HST
SEPT. 22	11 10 47.6	19.301N.	155.257W.	6	HV	—	—	3.3M_L(HV)	—	SEPT. 22	01:10 HST
SEPT. 23	17 16 02.0	19.979N.	155.502W.	37	HV	—	—	3.9M_L(HV)	IV	SEPT. 23	07:16 HST
OCT. 1	08 02 16.0	19.702N.	155.224W.	36	HV	—	—	3.7M_L(HV)	IV	SEPT. 30	22:02 HST
OCT. 7	09 17 45.3	19.368N.	155.487W.	11	HV	—	—	3.0M_L(HV)	—	OCT. 6	23:17 HST
OCT. 15	16 15 18.2	19.367N.	155.481W.	10	HV	—	—	3.0M_L(HV)	—	OCT. 15	06:15 HST
OCT. 20	19 53 04.3	19.330N.	155.139W.	0	HV	—	—	3.0M_L(HV)	—	OCT. 20	09:53 HST
OCT. 27	02 41 51.0	19.329N.	155.020W.	6	HV	—	—	3.0M_L(HV)	—	OCT. 26	16:41 HST
NOV. 2	03 08 18.2	19.380N.	155.247W.	31	HV	—	—	3.0M_L(HV)	—	NOV. 1	17:08 HST
NOV. 6	09 25 18.2	19.319N.	155.213W.	11	HV	—	—	3.7M_L(HV)	—	NOV. 5	23:25 HST
NOV. 6	22 02 44.1	19.177N.	155.694W.	0	HV	—	—	3.1M_L(HV)	—	NOV. 6	12:02 HST
NOV. 15	20 58 54.3	19.344N.	155.218W.	8	HV	—	—	4.0M_L(HV)	III	NOV. 15	10:58 HST
NOV. 18	02 40 22.6	20.189N.	155.774W.	37	HV	—	—	3.7M_L(HV)	III	NOV. 17	16:40 HST
NOV. 19	19 13 41.7	19.307N.	155.137W.	9	HV	—	—	3.2M_L(HV)	—	NOV. 19	09:13 HST
DEC. 5	15 53 34.9	19.325N.	155.198W.	6	HV	—	—	3.1M_L(HV)	—	DEC. 5	05:53 HST
DEC. 6	22 10 40.6	19.360N.	155.038W.	1	HV	—	—	3.8M_L(HV)	IV	DEC. 6	12:10 HST
DEC. 7	02 45 30.1	20.864N.	156.036W.	38	HV	—	—	4.2M_L(HV)	IV	DEC. 6	16:45 HST
DEC. 8	17 07 53.5	19.315N.	155.225W.	0	HV	—	—	3.1M_L(HV)	—	DEC. 8	07:07 HST
DEC. 11	00 47 42.9	19.335N.	155.036W.	4	HV	—	—	3.2M_L(HV)	III	DEC. 10	14:47 HST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
IDAHO											
JAN. 5	01 54 33.0	44.305N.	114.138W.	13	BU	—	—	2.8M_L(BU)	—	JAN. 4	18:54 MST
JAN. 6	04 52 04.6	44.092N.	113.941W.	24	BU	—	—	2.5M_L(BU)	—	JAN. 5	21:52 MST
JAN. 10	03 12 15.1	44.623N.	116.001W.	10	BU	—	—	2.9M_D(BU)	—	JAN. 9	20:12 MST
JAN. 11	19 24 55.5	44.654N.	113.902W.	1	BU	—	—	2.7M_L(BU)	—	JAN. 11	12:24 MST
JAN. 15	16 05 04.9	44.813N.	114.489W.	10	BU	—	—	2.8M_L(BU)	—	JAN. 15	09:16 MST
JAN. 16	02 01 58.4	44.447N.	114.232W.	5	GS	—	—	3.1M_L(GS)	—	JAN. 15	19:01 MST
JAN. 16	11 27 54.0	44.476N.	114.108W.	13	BU	—	—	2.8M_L(BU)	—	JAN. 16	04:27 MST
JAN. 18	14 39 50.3	44.412N.	113.802W.	28	BU	—	—	2.7M_L(BU)	—	JAN. 18	07:39 MST
JAN. 28	05 45 01.5	44.153N.	113.946W.	5	GS	—	—	4.0M_L(GS)	IV	JAN. 27	22:45 MST
JAN. 28	07 15 32.8	44.184N.	113.955W.	5	GS	—	—	3.7M_L(GS)	—	JAN. 28	00:15 MST
JAN. 28	07 26 57.5	44.111N.	113.901W.	24	BU	—	—	3.3M_L(GS)	—	JAN. 27	00:26 MST
JAN. 30	11 47 55.3	44.780N.	111.491W.	20	BU	—	—	2.5M_L(BU)	—	JAN. 30	04:47 MST
FEB. 1	12 12 44.0	44.278N.	114.036W.	21	BU	—	—	2.9M_L(BU)	—	FEB. 1	05:12 MST
FEB. 5	15 25 28.1	44.234N.	114.006W.	18	BU	—	—	3.3M_L(BU)	—	FEB. 5	08:25 MST
FEB. 9	07 03 51.3	44.363N.	113.930W.	29	BU	—	—	3.1M_L(BU)	—	FEB. 8	00:03 MST
FEB. 10	00 17 43.7	44.644N.	114.712W.	21	BU	—	—	2.6M_L(BU)	—	FEB. 9	17:17 MST
FEB. 16	12 54 44.0	44.627N.	114.088W.	13	BU	—	—	2.8M_L(BU)	—	FEB. 16	05:54 MST
FEB. 17	08 53 38.6	42.596N.	111.301W.	5	GS	—	—	3.0M_L(GS)	III	FEB. 17	01:53 MST
FEB. 22	18 07 18.7	44.578N.	114.232W.	10	BU	—	—	2.7M_L(BU)	—	FEB. 22	11:07 MST
FEB. 24	03 13 33.0	43.081N.	111.224W.	5	GS	—	—	2.8M_L(GS)	III	FEB. 23	20:13 MST
FEB. 26	15 05 49.3	44.627N.	114.192W.	5	GS	—	—	3.7M_L(GS)	—	FEB. 26	08:05 MST
FEB. 28	22 09 10.1	44.328N.	114.080W.	22	BU	—	—	2.6M_L(BU)	—	FEB. 28	15:09 MST
MAR. 8	20 58 35.2	44.397N.	113.999W.	4	BU	—	—	2.8M_L(BU)	—	MAR. 8	13:58 MST
MAR. 11	22 57 04.9	44.485N.	114.146W.	19	BU	—	—	3.2M_L(BU)	—	MAR. 11	15:57 MST
MAR. 12	12 42 35.1	44.771N.	112.812W.	5	GS	—	—	2.6M_L(GS)	—	MAR. 12	05:42 MST
MAR. 12	16 32 56.0	47.470N.	115.800W.	1	GS	—	—	2.6M_L(BU)	FELT	MAR. 12	08:32 PST
MAR. 23	14 26 11.8	44.407N.	114.213W.	5	GS	—	—	3.1M_L(GS)	—	MAR. 23	07:26 MST
MAR. 31	18 13 51.3	44.251N.	114.668W.	34	BU	—	—	2.7M_L(BU)	—	MAR. 31	11:13 MST
APR. 7	14 07 25.8	44.337N.	114.177W.	5	GS	—	—	4.1M_L(GS)	III	APR. 7	07:07 MST
APR. 11	09 31 29.1	44.240N.	114.004W.	22	BU	—	—	2.7M_L(BU)	—	APR. 11	02:31 MST
APR. 11	10 13 58.7	44.572N.	114.294W.	18	BU	—	—	2.8M_L(BU)	—	APR. 11	03:13 MST
APR. 13	05 02 50.1	44.283N.	114.153W.	5	GS	—	—	3.0M_L(GS)	—	APR. 12	22:02 MST
APR. 14	10 02 55.5	44.619N.	113.992W.	23	BU	—	—	3.0M_L(BU)	—	APR. 14	03:02 MST
APR. 15	06 05 50.4	44.310N.	114.172W.	17	BU	—	—	3.7M_L(BU)	—	APR. 14	23:05 MST
APR. 16	06 25 27.6	44.271N.	114.099W.	5	GS	—	—	3.5M_L(GS)	—	APR. 15	23:25 MST
APR. 16	17 54 47.2	44.613N.	114.423W.	17	BU	—	—	2.5M_L(BU)	—	APR. 16	10:54 MST
APR. 17	03 10 38.9	44.323N.	114.119W.	5	GS	—	—	3.0M_L(GS)	—	APR. 16	20:10 MST
APR. 20	02 31 55.3	44.136N.	114.925W.	5	GS	—	—	2.8M_L(GS)	—	APR. 19	19:31 MST
APR. 20	17 12 25.4	44.105N.	113.823W.	21	BU	—	—	2.6M_L(BU)	—	APR. 20	10:12 MST
APR. 26	01 30 16.5	44.665N.	112.869W.	1	BU	—	—	2.6M_L(GS)	—	APR. 25	18:30 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
IDAHO—Continued											
APR. 28	12 00 23.8	44.492N.	114.843W.	8	BU	—	—	2.8M_L(BU)	—	APR. 28	05:00 MST
APR. 28	12 51 08.3	44.573N.	114.879W.	5	GS	—	—	2.5M_L(GS)	—	APR. 28	05:51 MST
MAY 15	15 06 26.3	44.687N.	114.444W.	5	BU	—	—	2.6M_L(BU)	—	MAY 15	08:06 MST
MAY 17	04 07 48.7	44.187N.	113.947W.	12	BU	—	—	3.4M_L(BU)	—	MAY 16	21:07 MST
MAY 19	02 17 10.0	44.583N.	115.180W.	32	BU	—	—	2.9M_L(BU)	—	MAY 18	19:17 MST
MAY 21	03 04 57.6	44.658N.	113.984W.	6	BU	—	—	2.6M_L(BU)	—	MAY 20	20:04 MST
JUNE 2	22 56 38.8	44.259N.	114.061W.	18	BU	—	—	2.7M_L(BU)	—	JUNE 2	15:56 MST
JUNE 21	20 30 53.5	42.793N.	111.153W.	5	GS	—	—	3.5M_L(GS)	III	JUNE 21	13:30 MST
JUNE 22	02 02 47.1	44.950N.	112.784W.	5	GS	—	—	2.7M_L(GS)	—	JUNE 21	19:02 MST
JULY 7	11 53 17.2	43.248N.	111.090W.	5	GS	—	—	3.3M_L(GS)	—	JULY 7	04:53 MST
JULY 20	02 29 20.3	44.415N.	116.002W.	5	GS	—	—	3.2M_L(GS)	—	JULY 19	19:29 MST
JULY 20	19 05 32.6	44.455N.	116.033W.	5	GS	—	—	3.6M_L(GS)	—	JULY 20	12:05 MST
JULY 29	19 04 18.9	44.247N.	114.136W.	5	GS	—	—	3.5M_L(GS)	—	JULY 29	12:04 MST
JULY 30	08 19 07.8	42.437N.	111.242W.	7	UU	—	—	3.5M_L(GS)	—	JULY 30	01:19 MST
AUG. 3	04 48 16.4	44.469N.	114.150W.	14	BU	—	—	2.9M_L(BU)	—	AUG. 2	21:48 MST
AUG. 6	09 37 42.1	44.152N.	114.612W.	23	BU	—	—	2.9M_L(BU)	—	AUG. 6	02:37 MST
AUG. 10	10 05 58.1	44.512N.	114.261W.	20	BU	—	—	3.0M_L(BU)	—	AUG. 10	03:05 MST
AUG. 17	08 59 20.7	44.118N.	113.967W.	16	BU	—	—	2.6M_L(BU)	—	AUG. 17	01:59 MST
AUG. 18	20 30 21.7	44.460N.	114.190W.	18	BU	—	—	2.8M_L(BU)	—	AUG. 18	13:30 MST
AUG. 28	15 12 58.9	44.215N.	114.260W.	19	BU	—	—	2.8M_L(BU)	—	AUG. 28	08:12 MST
AUG. 29	08 26 24.3	42.095N.	111.649W.	4	UU	—	—	3.2M_L(UU)	—	AUG. 29	01:26 MST
AUG. 29	09 37 34.7	42.096N.	111.650W.	1	UU	—	—	2.4M_L(UU)	III	AUG. 29	02:37 MST
SEPT. 1	02 03 24.6	44.460N.	114.280W.	21	BU	—	—	2.7M_L(BU)	—	AUG. 31	19:03 MST
SEPT. 3	06 11 11.3	44.010N.	114.792W.	5	GS	—	—	3.2M_L(GS)	—	SEPT. 2	23:11 MST
SEPT. 3	18 53 49.1	44.039N.	114.764W.	5	GS	—	—	3.9M_L(GS)	III	SEPT. 3	11:53 MST
SEPT. 4	00 14 58.3	43.970N.	114.658W.	24	BU	—	—	2.9M_L(BU)	—	SEPT. 3	17:14 MST
SEPT. 4	04 15 55.8	43.993N.	114.803W.	5	GS	—	—	3.4M_L(GS)	—	SEPT. 3	21:15 MST
SEPT. 4	04 38 20.0	44.066N.	114.745W.	5	GS	—	—	4.0M_L(GS)	—	SEPT. 3	21:38 MST
SEPT. 4	12 43 47.6	44.036N.	114.719W.	5	GS	—	—	3.3M_L(GS)	—	SEPT. 4	05:43 MST
SEPT. 5	16 05 05.5	43.989N.	114.656W.	19	BU	—	—	3.7M_L(BU)	—	SEPT. 5	09:05 MST
SEPT. 5	19 15 05.2	43.984N.	114.645W.	21	BU	—	—	3.2M_L(BU)	—	SEPT. 5	12:15 MST
SEPT. 5	19 20 51.0	44.008N.	114.752W.	5	GS	—	—	4.0M_L(GS)	—	SEPT. 5	12:20 MST
SEPT. 5	19 23 51.3	44.017N.	114.693W.	19	BU	—	—	3.4M_L(GS)	—	SEPT. 5	12:23 MST
SEPT. 5	19 40 05.3	43.986N.	114.673W.	19	BU	—	—	3.3M_L(BU)	—	SEPT. 5	12:40 MST
SEPT. 6	02 31 34.9	43.974N.	114.649W.	21	BU	—	—	3.0M_L(BU)	—	SEPT. 5	19:31 MST
SEPT. 6	17 55 22.7	44.012N.	114.659W.	19	BU	—	—	3.5M_L(GS)	—	SEPT. 6	10:55 MST
SEPT. 6	21 40 27.5	43.984N.	114.656W.	20	BU	—	—	3.2M_L(BU)	—	SEPT. 6	14:40 MST
SEPT. 7	10 35 53.7	43.960N.	114.647W.	22	BU	—	—	3.2M_L(BU)	—	SEPT. 7	03:35 MST
SEPT. 7	11 07 47.8	43.984N.	114.657W.	20	BU	—	—	3.1M_L(BU)	—	SEPT. 7	04:07 MST
SEPT. 11	02 07 28.4	44.053N.	114.705W.	5	GS	—	—	3.5M_L(GS)	—	SEPT. 10	19:07 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
IDAHO—Continued											
SEPT. 11	02 12 34.2	44.057N.	114.757W.	10	BU	—	—	3.3M_L(BU)	—	SEPT. 10	19:12 MST
SEPT. 11	03 49 11.6	43.960N.	114.660W.	20	BU	—	—	3.4M_L(GS)	—	SEPT. 10	20:49 MST
SEPT. 11	03 55 12.7	44.067N.	114.701W.	5	GS	—	—	4.0M_L(GS)	—	SEPT. 10	20:55 MST
SEPT. 11	07 09 25.6	43.990N.	114.665W.	19	BU	—	—	3.3M_L(BU)	—	SEPT. 11	00:09 MST
SEPT. 11	08 35 32.1	43.968N.	114.647W.	21	BU	—	—	3.1M_L(BU)	—	SEPT. 11	01:35 MST
SEPT. 14	16 01 49.4	43.968N.	114.751W.	5	GS	—	—	3.1M_L(GS)	—	SEPT. 14	09:01 MST
SEPT. 14	21 52 04.5	43.979N.	114.679W.	19	BU	—	—	3.1M_L(BU)	—	SEPT. 14	14:52 MST
SEPT. 16	21 00 21.0	43.978N.	114.672W.	20	BU	—	—	3.5M_L(GS)	—	SEPT. 16	14:00 MST
SEPT. 22	05 38 51.9	44.040N.	114.756W.	5	GS	—	—	3.4M_L(GS)	—	SEPT. 21	22:38 MST
SEPT. 24	15 32 26.7	44.003N.	114.755W.	5	GS	—	—	3.7M_L(GS)	FELT	SEPT. 24	08:32 MST
SEPT. 24	15 50 47.8	43.992N.	114.677W.	20	BU	—	—	3.2M_L(BU)	—	SEPT. 24	08:50 MST
SEPT. 26	21 28 08.5	44.016N.	114.750W.	5	GS	—	—	4.3M_L(GS)	IV	SEPT. 26	14:28 MST
SEPT. 26	22 09 48.3	43.959N.	114.780W.	5	GS	—	—	3.6M_L(BU)	—	SEPT. 26	15:09 MST
SEPT. 26	22 48 57.9	44.043N.	114.756W.	5	GS	4.6	—	4.5M_L(GS)	IV	SEPT. 26	15:48 MST
SEPT. 26	22 56 12.1	43.975N.	114.668W.	20	BU	—	—	3.2M_L(BU)	—	SEPT. 26	15:56 MST
SEPT. 27	13 02 01.7	44.017N.	114.780W.	5	GS	—	—	3.3M_L(GS)	—	SEPT. 27	06:02 MST
SEPT. 27	18 56 17.7	44.055N.	114.781W.	5	GS	—	—	3.3M_L(GS)	—	SEPT. 27	11:56 MST
SEPT. 27	18 59 12.5	43.996N.	114.680W.	19	BU	—	—	3.8M_L(GS)	—	SEPT. 27	11:59 MST
SEPT. 30	11 33 33.8	44.380N.	114.222W.	12	BU	—	—	3.0M_L(BU)	—	SEPT. 30	04:33 MST
SEPT. 30	16 11 53.5	43.996N.	113.942W.	5	GS	—	—	3.6M_L(GS)	—	SEPT. 30	09:11 MST
OCT. 1	07 20 29.6	43.978N.	114.780W.	5	GS	—	—	3.0M_L(GS)	—	SEPT. 30	00:20 MST
OCT. 2	09 02 24.6	44.405N.	114.054W.	22	BU	—	—	3.4M_L(BU)	—	OCT. 2	02:02 MST
OCT. 9	09 42 41.5	43.961N.	114.756W.	5	GS	—	—	3.1M_L(GS)	—	OCT. 9	02:42 MST
OCT. 10	23 45 04.9	43.976N.	114.675W.	20	BU	—	—	2.9M_L(BU)	—	OCT. 10	16:45 MST
OCT. 14	12 17 53.3	44.023N.	114.674W.	5	GS	—	—	3.9M_L(GS)	IV	OCT. 14	05:17 MST
OCT. 14	13 10 09.8	44.058N.	114.712W.	5	GS	—	—	3.9M_L(GS)	—	OCT. 14	06:10 MST
OCT. 14	13 43 47.5	44.066N.	114.684W.	5	GS	—	—	3.6M_L(GS)	—	OCT. 14	06:43 MST
OCT. 18	21 21 29.0	42.014N.	111.448W.	7	UU	—	—	3.5M_L(GS)	IV	OCT. 18	14:21 MST
OCT. 25	20 27 25.4	43.985N.	114.673W.	20	BU	—	—	2.9M_L(BU)	—	OCT. 25	13:27 MST
NOV. 1	01 39 12.6	44.399N.	114.049W.	27	BU	—	—	2.9M_L(BU)	—	OCT. 31	18:39 MST
NOV. 3	17 08 19.5	44.010N.	114.579W.	15	BU	—	—	3.4M_L(BU)	—	NOV. 3	10:08 MST
NOV. 4	08 46 01.7	44.187N.	114.065W.	5	GS	—	—	3.5M_L(GS)	—	NOV. 4	01:46 MST
NOV. 7	12 44 14.2	44.073N.	114.482W.	5	GS	—	—	3.0M_L(GS)	—	NOV. 7	**05:44 PST**
NOV. 9	14 02 26.4	43.979N.	114.740W.	5	GS	—	—	3.8M_L(GS)	—	NOV. 9	**07:02 MST**
NOV. 9	14 15 37.8	44.024N.	114.723W.	5	GS	—	—	3.3M_L(GS)	—	NOV. 9	**07:15 MST**
NOV. 9	17 16 42.0	43.979N.	114.640W.	17	BU	—	—	2.9M_L(BU)	—	NOV. 9	10:16 MST
NOV. 12	07 12 47.5	44.004N.	114.715W.	5	GS	—	—	3.0M_L(GS)	—	NOV. 11	00:12 MST
NOV. 15	09 00 13.2	42.706N.	111.667W.	5	GS	—	—	3.3M_L(GS)	IV	NOV. 15	**02:00 MST**
NOV. 18	16 09 40.3	43.976N.	114.754W.	18	BU	—	—	3.6M_D(BU)	—	NOV. 18	**09:09 MST**
NOV. 21	08 07 55.0	44.523N.	114.025W.	6	BU	—	—	2.6M_L(BU)	—	NOV. 21	**01:07 MST**

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
IDAHO—Continued											
NOV. 23	06 03 09.9	44.758N.	114.387W.	16	BU	—	—	2.5M_L(BU)	—	NOV. 22	23:03 MST
NOV. 26	00 13 09.9	42.476N.	111.204W.	6	UU	—	—	3.5M_L(UU)	—	NOV. 25	17:13 MST
DEC. 2	15 24 56.9	43.982N.	114.756W.	16	BU	—	—	2.8M_L(BU)	—	DEC. 2	08:24 MST
DEC. 2	23 58 09.8	43.965N.	114.627W.	26	BU	—	—	3.0M_L(BU)	—	DEC. 2	16:58 MST
DEC. 11	12 35 53.1	44.638N.	114.093W.	10	BU	—	—	2.6M_L(BU)	—	DEC. 11	05:35 MST
DEC. 13	18 12 06.3	44.213N.	114.010W.	5	GS	—	—	3.2M_L(GS)	—	DEC. 13	11:12 MST
DEC. 15	20 50 27.6	44.377N.	114.152W.	5	GS	—	—	2.8M_L(GS)	—	DEC. 15	13:50 MST
DEC. 20	07 18 47.5	44.335N.	114.454W.	5	GS	—	—	3.0M_L(GS)	—	DEC. 19	00:18 MST
DEC. 24	07 28 58.4	43.878N.	114.848W.	5	GS	—	—	3.0M_L(GS)	—	DEC. 23	00:28 MST
DEC. 30	09 51 28.3	42.720N.	111.275W.	5	GS	—	—	3.2M_L(GS)	—	DEC. 30	02:51 MST
ILLINOIS											
FEB. 8	19 44 48.3	37.46 N.	89.19 W.	20	SL	—	—	2.5M_n(SL)	—	FEB. 8	13:44 CST
FEB. 15	11 01 12.8	38.25 N.	89.77 W.	5	SL	—	—	2.7M_n(SL)	—	FEB. 15	03:01 CST
FEB. 26	15 03 00.5	38.39 N.	89.10 W.	5	SL	—	—	2.7M_n(SL)	—	FEB. 26	09:03 CST
MAY 20	06 44 59.0	38.00 N.	89.90 W.	5	SL	—	—	2.5M_n(SL)	—	MAY 20	00:44 CST
AUG. 26	16 41 24.8	38.32 N.	89.79 W.	5	SL	—	—	3.7M_n(GS)	V	AUG. 26	10:41 CST
OCT. 29	05 03 41.3	38.44 N.	89.04 W.	5	SL	—	—	2.7M_n(GS)	III	OCT. 28	23:03 CST
INDIANA											
JAN. 10	19 54 51.9	38.15 N.	87.58 W.	10	SL	—	—	2.5M_n(SL)	—	JAN. 10	13:54 CST
KANSAS											
JUNE 2	04 04 05.2	39.344N.	99.781W.	5	GS	—	—	3.0M_n(GS)	IV	JUNE 1	22:04 CST
OCT. 20	04 32 49.0	37.918N.	101.372W.	5	GS	—	—	3.0M_n(GS)	IV	OCT. 19	22:32 CST
KENTUCKY											
DEC. 5	18 45 03.8	37.95 N.	85.92 W.	8	SL	—	—	2.6M_n(SL)	—	DEC. 5	12:45 CST
MAINE											
MAR. 19	02 09 33.0	45.158N.	69.059W.	13	WO	—	—	2.5M_n(WO)	—	MAR. 18	21:09 EST
APR. 29	09 39 24.4	45.359N.	70.166W.	5	WO	—	—	2.5M_n(WO)	—	APR. 29	04:39 EST
JUNE 24	02 40 15.7	45.203N.	69.177W.	2	WO	—	—	2.5M_n(WO)	FELT	JUNE 23	21:40 EST
JULY 12	20 32 48.4	46.170N.	68.198W.	9	WO	—	—	3.4M_n(WO)	FELT	JULY 12	15:32 EST
AUG. 15	20 02 36.4	45.083N.	69.437W.	3	WO	—	—	2.5M_n(WO)	—	AUG. 15	16:01 EST
AUG. 22	00 56 11.6	45.175N.	68.415W.	1	WO	—	—	2.6M_n(WO)	—	AUG. 21	19:56 EST
AUG. 31	04 01 56.9	44.618N.	68.970W.	6	WO	—	—	2.6M_n(WO)	—	AUG. 30	23:01 EST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
MARYLAND											
MAY 23	17 48 12.2	38.689N.	77.038W.	0	VP	—	—	2.5M_D(VP)	—	MAY 23	12:48 EST
MASSACHUSETTS											
APR. 16	04 21 42.7	42.847N.	70.982W.	5	WO	—	—	2.6M_D(WO)	III	APR. 15	23:21 EST
MISSOURI											
JAN. 21	18 20 34.4	36.57 N.	89.60 W.	7	SL	—	—	2.8M_n(SL)	—	JAN. 21	12:20 CST
FEB. 17	19 13 06.7	37.94 N.	90.40 W.	4	SL	—	—	2.8M_n(SL)	—	FEB. 17	13:13 CST
MAY 11	23 59 14.3	36.17 N.	89.65 W.	5	SL	—	—	2.7M_n(SL)	—	MAY 11	17:59 CST
MAY 20	05 00 29.6	36.66 N.	89.56 W.	16	SL	—	—	2.5M_n(SL)	—	MAY 19	23:00 CST
MAY 24	12 48 13.5	36.58 N.	89.88 W.	10	SL	—	—	3.4M_n(SL)	IV	MAY 24	06:48 CST
JULY 8	06 29 47.4	36.78 N.	89.92 W.	5	SL	—	—	2.8M_n(SL)	—	JULY 8	00:29 CST
JULY 18	14 42 53.6	36.01 N.	89.88 W.	9	SL	—	—	2.6M_n(SL)	—	JULY 18	08:42 CST
AUG. 21	19 25 06.0	36.78 N.	89.35 W.	5	SL	—	—	2.8M_n(SL)	—	AUG. 21	13:25 CST
OCT. 8	08 13 46.4	36.52 N.	89.56 W.	7	SL	—	—	2.5M_n(SL)	—	OCT. 8	02:13 CST
OCT. 24	05 57 45.8	36.17 N.	89.66 W.	9	SL	—	—	2.9M_n(SL)	IV	OCT. 23	23:57 CST
NOV. 6	19 21 47.2	38.11 N.	90.42 W.	9	SL	—	—	2.7M_n(SL)	III	NOV. 6	13:21 CST
DEC. 12	23 51 48.5	36.84 N.	89.22 W.	5	SL	—	—	2.5M_n(SL)	—	DEC. 12	17:51 CST
DEC. 16	00 02 13.3	36.73 N.	89.52 W.	5	SL	—	—	2.5M_n(SL)	—	DEC. 15	18:02 CST
DEC. 30	07 15 19.1	36.42 N.	89.58 W.	14	SL	—	—	3.5M_n(GS)	IV	DEC. 30	01:15 CST
MONTANA											
JAN. 9	06 34 53.8	47.477N.	115.771W.	6	BU	—	—	2.5M_L(BU)	—	JAN. 8	23:34 MST
JAN. 24	11 48 15.2	47.632N.	114.320W.	5	BU	—	—	2.6M_D(BU)	—	JAN. 24	04:48 MST
JAN. 28	13 24 00.3	47.486N.	115.722W.	7	BU	—	—	2.6M_L(BU)	—	JAN. 28	06:24 MST
FEB. 6	02 24 19.5	47.642N.	115.647W.	1	BU	—	—	2.6M_L(BU)	—	FEB. 5	19:24 MST
MAR. 6	15 11 54.5	44.697N.	112.500W.	9	BU	—	—	2.9M_L(BU)	—	MAR. 6	08:11 MST
APR. 12	05 07 37.8	46.068N.	111.484W.	7	BU	—	—	2.5M_L(BU)	—	APR. 11	22:07 MST
APR. 21	11 35 52.3	47.792N.	114.036W.	32	BU	—	—	3.0M_L(BU)	—	APR. 21	04:35 MST
MAY 2	02 17 45.6	44.638N.	112.079W.	13	BU	—	—	2.7M_L(BU)	—	MAY 1	19:17 MST
MAY 11	10 04 56.4	44.648N.	111.994W.	5	GS	—	—	3.1M_L(GS)	—	MAY 11	03:04 MST
MAY 12	09 58 28.2	45.348N.	112.415W.	11	BU	—	—	3.2M_L(GS)	—	MAY 12	02:58 MST
JUNE 13	20 16 26.8	44.837N.	111.527W.	5	GS	—	—	3.1M_L(GS)	—	JUNE 13	13:16 MST
JUNE 27	04 09 30.5	44.648N.	111.076W.	5	GS	—	—	2.8M_L(GS)	—	JUNE 26	21:09 MST
JUNE 28	16 26 57.1	44.660N.	111.055W.	27	BU	—	—	2.9M_L(BU)	—	JUNE 28	09:26 MST
JULY 9	10 48 22.3	47.434N.	114.806W.	1	BU	—	—	3.0M_L(BU)	—	JULY 9	03:48 MST
JULY 16	22 14 02.5	46.297N.	112.044W.	5	BU	—	—	3.6M_L(GS)	—	JULY 16	15:14 MST
JULY 16	22 37 11.8	46.292N.	112.038W.	9	BU	—	—	3.6M_L(GS)	—	JULY 16	15:37 MST
JULY 16	23 12 00.2	46.300N.	112.050W.	6	BU	—	—	2.5M_L(BU)	—	JULY 16	16:12 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
MONTANA—Continued											
JULY 17	02 16 24.1	46.300N.	112.045W.	1	BU	—	—	2.5M_L(BU)	—	JULY 16	19:16 MST
AUG. 3	18 07 40.5	47.754N.	113.204W.	12	BU	—	—	3.1M_L(BU)	—	AUG. 3	11:07 MST
AUG. 11	05 14 46.2	48.275N.	114.582W.	33	BU	—	—	3.4M_L(BU)	—	AUG. 10	22:14 MST
AUG. 12	00 23 52.5	44.786N.	111.391W.	21	BU	—	—	2.8M_L(BU)	—	AUG. 11	17:23 MST
AUG. 22	05 03 41.3	47.376N.	114.095W.	36	BU	—	—	2.6M_L(BU)	—	AUG. 21	22:03 MST
AUG. 24	18 04 25.5	45.802N.	111.594W.	13	BU	—	—	3.9M_L(GS)	IV	AUG. 24	11:04 MST
SEPT. 4	23 47 34.8	47.740N.	113.756W.	20	BU	—	—	2.7M_D(BU)	—	SEPT. 4	16:47 MST
SEPT. 12	13 17 01.4	45.140N.	111.882W.	8	BU	—	—	2.9M_L(BU)	—	SEPT. 12	06:17 MST
OCT. 3	18 58 35.2	44.358N.	112.596W.	16	BU	—	—	2.5M_L(BU)	—	OCT. 3	11:58 MST
OCT. 18	14 20 46.9	46.304N.	112.060W.	3	BU	—	—	3.1M_L(BU)	IV	OCT. 18	07:20 MST
OCT. 18	18 55 38.7	46.293N.	112.026W.	0	BU	—	—	3.4M_L(BU)	IV	OCT. 18	11:55 MST
OCT. 19	10 01 43.4	46.292N.	112.025W.	0	BU	—	—	3.3M_L(BU)	IV	OCT. 19	03:01 MST
OCT. 24	04 54 47.7	46.305N.	112.046W.	3	BU	—	—	3.2M_L(BU)	FELT	OCT. 23	21:54 MST
OCT. 27	14 14 29.6	46.729N.	111.981W.	9	BU	—	—	2.8M_L(BU)	—	OCT. 27	07:14 MST
NOV. 9	12 06 35.3	46.205N.	112.112W.	10	BU	—	—	3.2M_L(BU)	FELT	NOV. 9	05:06 MST
NOV. 17	15 22 20.5	44.657N.	111.095W.	18	BU	—	—	2.5M_L(BU)	—	NOV. 17	08:22 MST
NOV. 30	16 29 15.1	47.882N.	114.306W.	17	BU	—	—	2.7M_L(BU)	—	NOV. 30	09:29 MST
DEC. 3	23 46 57.8	46.442N.	112.199W.	0	GS	—	—	3.1M_L(GS)	—	DEC. 3	16:46 MST
DEC. 19	01 13 46.4	46.722N.	111.908W.	5	BU	—	—	2.7M_L(BU)	—	DEC. 18	18:13 MST
NEVADA											
JAN. 12	04 07 43.3	39.626N.	119.380W.	–	RN	—	—	3.1M_D(RN)	FELT	JAN. 11	20:07 PST
FEB. 6	10 04 06.9	39.240N.	119.417W.	5	GS	—	—	2.8M_L(BK)	—	FEB. 6	02:04 PST
MAR. 6	20 16 52.4	37.173N.	117.306W.	5	GS	—	—	3.9M_L(BK)	—	MAR. 6	12:16 PST
MAR. 22	16 15 00.0	37.083N.	116.066W.	0	EN	5.1	—	5.1M_L(BK)	—	MAR. 22	08:15 PST
APR. 3	05 41 07.4	40.142N.	115.946W.	5	GS	—	—	3.5M_L(GS)	—	APR. 2	21:41 PST
APR. 8	12 26 40.2	38.263N.	118.618W.	3	BK	—	—	3.6M_L(BK)	—	APR. 8	04:26 PST
APR. 10	14 08 30.1	37.218N.	116.183W.	0	EN	4.9	—	4.8M_L(BK)	—	APR. 10	06:08 PST
APR. 20	23 12 29.9	37.010N.	116.027W.	5	GS	4.0	—	4.0M_L(BK)	—	APR. 20	15:12 PST
APR. 21	00 03 24.0	37.023N.	115.940W.	5	GS	—	—	2.8M_L(GS)	—	APR. 20	16:03 PST
APR. 22	14 30 00.0	37.264N.	116.440W.	0	EN	5.3	4.2	5.4M_L(BK)	—	APR. 22	06:30 PST
MAY 21	13 59 00.0	37.125N.	116.060W.	0	EN	—	—	4.1M_L(BK)	—	MAY 21	05:59 PST
JUNE 4	15 07 38.4	37.326N.	117.187W.	5	GS	—	—	3.5M_L(BK)	—	JUNE 4	07:07 PST
JUNE 5	15 04 00.0	37.098N.	116.016W.	0	EN	5.3	4.2	5.2M_L(BK)	—	JUNE 5	07:04 PST
JUNE 5	15 24 11.2	37.137N.	115.998W.	1	GS	4.2	—	—	—	JUNE 5	07:24 PST
JUNE 15	14 00 51.3	38.766N.	119.402W.	5	RN	—	—	3.2M_D(RN)	IV	JUNE 15	06:00 PST
JUNE 25	20 27 45.1	37.265N.	116.499W.	0	EN	5.5	4.2	5.4M_L(BK)	—	JUNE 25	12:27 PST
JUNE 28	02 06 29.6	39.518N.	119.761W.	–	RN	—	—	3.7M_L(BK)	V	JUNE 27	18:06 PST
JULY 17	21 00 00.0	37.279N.	116.356W.	0	EN	5.7	—	5.6M_L(BK)	—	JULY 17	13:00 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
NEVADA—Continued											
JULY 24	15 05 00.0	37.143N.	116.071W.	0	EN	4.4	—	4.5M_L(BK)	—	JULY 24	07:05 PST
AUG. 4	04 00 30.6	37.979N.	117.877W.	6	PS	—	—	3.2M_L(PS)	—	AUG. 3	20:00 PST
AUG. 8	14 06 10.4	39.521N.	119.753W.		RN	—	—	2.7M_L(GS)	FELT	AUG. 8	06:06 PST
AUG. 22	14 44 17.0	36.611N.	116.366W.	5	GS	—	—	3.0M_L(PS)	—	AUG. 22	06:44 PST
AUG. 25	17 06 36.9	39.638N.	119.803W.	5	RN	—	—	2.8M_L(GS)	III	AUG. 25	09:06 PST
AUG. 25	17 57 42.1	39.638N.	119.803W.	5	RN	—	—	2.5M_L(GS)	FELT	AUG. 25	09:57 PST
SEPT. 4	16 09 00.1	37.236N.	116.352W.	5	GS	—	—	3.5M_L(GS)	—	SEPT. 4	08:09 PST
SEPT. 7	12 55 12.4	37.394N.	117.070W.	6	PS	—	—	3.1M_L(PS)	—	SEPT. 7	04:55 PST
SEPT. 11	14 57 00.1	37.069N.	116.050W.	0	EN	—	—	3.2M_L(GS)	—	SEPT. 11	06:57 PST
SEPT. 11	23 40 08.7	38.528N.	117.055W.	0	RN	—	—	3.7M_D(RN)	—	SEPT. 11	15:40 PST
SEPT. 24	14 20 33.6	37.374N.	117.199W.	5	GS	—	—	4.3M_L(BK)	—	SEPT. 24	06:20 PST
SEPT. 24	14 35 55.9	37.351N.	117.206W.	5	GS	—	—	4.1M_L(BK)	—	SEPT. 24	06:35 PST
SEPT. 30	22 30 00.1	37.300N.	116.307W.	0	EN	5.5	4.5	5.3M_L(BK)	—	SEPT. 30	14:30 PST
OCT. 1	15 34 23.8	40.721N.	116.370W.	5	GS	—	—	3.7M_L(GS)	—	OCT. 1	07:34 PST
OCT. 5	05 55 09.8	40.431N.	116.804W.	0	RN	—	—	3.2M_D(RN)	—	OCT. 4	21:55 PST
OCT. 16	19 25 00.0	37.220N.	116.462W.	0	EN	5.6	—	5.4M_L(BK)	—	OCT. 16	11:25 PST
OCT. 23	13 36 57.5	39.160N.	118.046W.	8	RN	—	—	3.0M_D(RN)	—	OCT. 23	05:36 PST
OCT. 26	05 17 35.3	37.224N.	116.448W.	5	GS	—	—	3.1M_L(PS)	—	OCT. 25	21:17 PST
NOV. 1	19 23 38.3	38.712N.	119.540W.	17	BK	—	—	4.6M_L(BK)	V	NOV. 1	11:23 PST
NOV. 14	16 00 00.0	37.100N.	116.048W.	0	EN	5.8	4.5	5.5M_L(BK)	III	NOV. 14	08:00 PST
NOV. 14	20 02 38.7	37.081N.	116.014W.	0	GS	4.0	—	—	—	NOV. 14	12:02 PST
NOV. 26	03 39 22.8	39.097N.	115.621W.	5	GS	—	—	3.2M_L(GS)	—	NOV. 25	19:39 PST
NOV. 26	05 24 03.1	40.065N.	117.956W.	6	RN	—	—	3.3M_D(RN)	—	NOV. 25	21:24 PST
DEC. 13	17 50 05.0	37.263N.	116.412W.	0	EN	5.5	—	5.4M_L(BK)	—	DEC. 13	09:50 PST
NEW HAMPSHIRE											
JAN. 23	14 33 57.5	43.500N.	71.568W.	5	WO	—	—	2.6M_L(WO)	III	JAN. 23	09:33 EST
MAR. 14	13 44 07.0	43.460N.	71.591W.	3	WO	—	—	2.5M_n(WO)	—	MAR. 14	08:44 EST
OCT. 25	17 16 38.4	43.399N.	71.590W.	5	GS	—	—	3.9M_n(GS)	V	OCT. 25	12:16 EST
OCT. 25	18 21 14.4	43.420N.	71.588W.	9	WO	—	—	2.8M_D(WO)	—	OCT. 25	13:21 EST
NEW JERSEY											
NOV. 23	21 29 38.8	40.956N.	74.820W.	7	LD	—	—	2.8M_D(LD)	IV	NOV. 23	16:29 EST
NEW MEXICO											
APR. 17	21 04 30.3	32.587N.	106.912W.	5	GS	—	—	2.7M_D(GS)	FELT	APR. 17	14:04 MST
APR. 28	13 00 16.0	34.009N.	106.821W.	5	GS	—	—	2.6M_D(GS)	FELT	APR. 28	06:00 MST
AUG. 27	18 06 56.3	35.160N.	105.094W.	5	GS	—	—	3.2M_L(GS)	FELT	AUG. 27	11:06 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
NEW YORK											
JAN. 5	03 35 56.2	40.996N.	73.833W.	6	LD	—	—	2.5M_n(LD)	IV	JAN. 4	22:35 EST
JAN. 31	23 16 25.3	43.775N.	73.427W.	19	WO	—	—	2.6M_n(WO)	—	JAN. 31	18:16 EST
APR. 18	12 50 16.7	43.981N.	74.240W.	11	WO	—	—	2.5M_n(WO)	—	APR. 18	07:50 EST
APR. 22	07 28 23.7	40.980N.	73.834W.	6	LD	—	—	2.7M_D(LD)	IV	APR. 22	02:28 EST
NOV. 17	12 54 32.1	44.746N.	73.914W.	6	LD	—	—	2.8M_D(LD)	—	NOV. 17	07:54 EST
DEC. 20	13 15 31.0	40.999N.	73.831W.	5	LD	—	—	1.9M_D(LD)	FELT	DEC. 20	08:15 EST
NORTH CAROLINA											
OCT. 3	10 21 49.4	35.805N.	80.456W.	0	TC	—	—	2.5M_D(TC)	—	OCT. 3	05:21 EST
OHIO											
JAN. 31	16 46 42.3	41.650N.	81.162W.	2	NI	5.0	—	4.9M_n(SL)	VI	JAN. 31	11:46 EST
FEB. 7	18 36 22.3	41.645N.	81.157W.	6	GS	—	—	2.5M_n(GS)	IV	FEB. 7	13:36 EST
JULY 12	08 19 37.9	40.537N.	84.371W.	10	GS	4.5	—	4.6M_n(SL)	VI	JULY 12	03:19 EST
OKLAHOMA											
JAN. 26	02 03 40.6	34.728N.	97.456W.	5	TU	—	—	2.5M_n(TU)	—	JAN. 25	20:03 CST
SEPT. 4	17 33 17.4	34.477N.	96.503W.	5	TU	—	—	2.6M_n(TU)	—	SEPT. 4	11:33 CST
OCT. 7	12 06 39.1	35.257N.	96.580W.	5	TU	—	—	2.5M_D(TU)	—	OCT. 7	06:06 CST
DEC. 21	17 32 58.1	35.142N.	96.676W.	5	TU	—	—	2.8M_n(TU)	—	DEC. 21	11:32 CST
OREGON											
JAN. 22	11 50 24.5	44.642N.	130.872W.	10	GS	4.5	—	—	—	JAN. 22	02:50 YST
JAN. 30	07 15 33.5	43.601N.	127.339W.	10	GS	5.2	—	—	—	JAN. 29	23:15 PST
MAR. 19	08 50 07.7	43.938N.	128.422W.	10	GS	4.8	4.7	—	—	MAR. 19	00:50 PST
MAR. 26	20 03 33.9	43.390N.	126.878W.	10	GS	4.5	—	—	—	MAR. 26	12:03 PST
MAR. 31	18 15 18.9	44.079N.	128.319W.	10	GS	3.9	—	—	—	MAR. 31	10:15 PST
MAY 4	15 16 04.1	44.219N.	129.218W.	10	GS	4.6	—	—	—	MAY 4	07:16 PST
MAY 4	15 42 07.5	44.206N.	129.299W.	10	GS	4.5	4.2	—	—	MAY 4	07:42 PST
MAY 20	10 22 57.6	42.093N.	126.741W.	10	GS	4.6	4.3	—	—	MAY 20	02:22 PST
JUNE 13	18 37 04.2	43.628N.	127.380W.	10	GS	4.4	—	—	—	JUNE 13	10:37 PST
JUNE 29	09 38 52.5	44.251N.	129.128W.	10	GS	4.0	—	—	—	JUNE 29	01:38 PST
JULY 18	20 42 39.7	44.207N.	128.240W.	10	GS	4.0	—	—	—	JULY 18	12:42 PST
JULY 19	09 25 48.5	42.564N.	127.355W.	10	GS	4.1	—	—	—	JULY 19	01:25 PST
JULY 21	14 25 23.9	43.682N.	127.411W.	10	GS	4.1	—	—	—	JULY 21	06:25 PST
SEPT. 12	01 19 12.3	43.991N.	128.921W.	10	GS	4.3	4.5	—	—	SEPT. 11	17:19 PST
SEPT. 23	21 43 05.0	44.580N.	129.685W.	10	GS	4.1	—	—	—	SEPT. 23	13:43 PST
OCT. 5	21 57 20.5	43.493N.	127.252W.	10	GS	5.1	5.1	—	—	OCT. 5	13:57 PST
OCT. 6	07 03 20.7	44.229N.	129.524W.	10	GS	4.5	—	—	—	OCT. 5	23:03 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
OREGON—Continued											
OCT. 8	08 55 21.9	44.452N.	129.850W.	10	GS	4.0	—	—	—	OCT. 8	00:55 PST
OCT. 21	11 37 38.5	43.989N.	128.489W.	10	GS	5.0	—	—	—	OCT. 21	03:37 PST
OCT. 21	11 43 20.9	43.958N.	128.548W.	10	GS	5.0	—	—	—	OCT. 21	03:43 PST
OCT. 21	11 48 28.0	44.107N.	128.000W.	10	GS	4.4	—	—	—	OCT. 21	03:48 PST
OCT. 21	12 08 37.3	43.847N.	128.613W.	10	GS	4.6	—	—	—	OCT. 21	04:08 PST
OCT. 21	19 08 32.6	44.030N.	128.127W.	10	GS	4.3	—	—	—	OCT. 21	11:08 PST
OCT. 26	05 19 23.4	44.076N.	129.371W.	10	GS	4.9	—	—	—	OCT. 25	21:19 PST
DEC. 3	02 49 47.0	44.131N.	130.080W.	10	GS	—	—	—	—	DEC. 2	17:49 YST
DEC. 3	02 52 05.1	43.642N.	127.068W.	10	GS	4.3	—	—	—	DEC. 2	18:52 PST
DEC. 31	12 17 00.1	43.613N.	127.429W.	10	GS	4.9	4.4	—	—	DEC. 31	04:17 PST
PENNSYLVANIA											
MAY 2	13 53 52.6	39.925N.	76.293W.	5	GS	—	—	$2.5M_D$(DE)	IV	MAY 2	08:53 EST
SOUTH CAROLINA											
FEB. 13	11 35 45.3	34.793N.	82.907W.	5	TC	—	—	$3.5M_n$(GS)	V	FEB. 13	06:35 EST
MAR. 9	23 49 15.3	32.968N.	80.169W.	6	GS	—	—	$2.2M_D$(GS)	III	MAR. 9	18:49 EST
JUNE 11	16 12 00.5	34.777N.	82.916W.	4	SC	—	—	$2.8M_D$(SC)	—	JUNE 11	11:12 EST
JULY 14	22 31 21.1	34.760N.	82.936W.	4	SC	—	—	$2.6M_D$(SC)	—	JULY 14	17:31 EST
SEPT. 17	09 33 49.4	32.928N.	80.152W.	8	GS	—	—	$2.6M_D$(GS)	IV	SEPT. 17	04:33 EST
OCT. 18	08 31 38.8	34.946N.	81.172W.	23	TC	—	—	$2.9M_D$(TC)	FELT	OCT. 18	03:31 EST
DEC. 11	14 05 50.2	34.889N.	82.887W.	9	TC	—	—	$2.9M_D$(TC)	FELT	DEC. 11	09:05 EST
DEC. 11	14 07 11.5	34.898N.	82.880W.	9	TC	—	—	$3.0M_D$(TC)	FELT	DEC. 11	09:07 EST
SOUTH DAKOTA											
MAY 25	07 13 22.1	43.937N.	98.289W.	5	GS	—	—	$3.4M_n$(GS)	IV	MAY 25	01:13 CST
TENNESSEE											
JAN. 7	01 26 43.3	35.609N.	84.762W.	22	TC	—	—	$3.2M_D$(TC)	V	JAN. 6	20:26 EST
JAN. 27	06 44 26.8	35.926N.	83.636W.	20	TC	—	—	$2.7M_D$(TC)	—	JAN. 27	01:44 EST
APR. 19	07 40 53.0	35.187N.	85.510W.	27	TC	—	—	$3.0M_D$(TC)	—	APR. 19	02:40 EST
MAY 19	23 46 47.0	35.516N.	84.529W.	11	TC	—	—	$2.8M_D$(TC)	—	MAY 19	18:46 EST
JUNE 2	07 46 12.4	35.441N.	84.498W.	19	TC	—	—	$2.5M_D$(TC)	—	JUNE 2	02:46 EST
JUNE 24	19 22 42.0	35.990N.	83.931W.	24	TC	—	—	$2.9M_D$(TC)	—	JUNE 24	14:22 EST
AUG. 7	12 36 46.0	35.506N.	84.561W.	20	TC	—	—	$2.7M_D$(TC)	—	AUG. 7	07:36 EST
AUG. 19	20 51 26.0	36.291N.	85.020W.	30	TC	—	—	$2.9M_D$(TC)	FELT	AUG. 19	15:51 EST
SEPT. 12	17 41 56.0	35.65 N.	89.66 W.	9	SL	—	—	$2.9M_n$(SL)	—	SEPT. 12	11:41 CST
OCT. 18	22 53 29.2	36.24 N.	89.51 W.	5	SL	—	—	$2.5M_n$(SL)	—	OCT. 18	16:53 CST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
TEXAS											
JAN. 25	22 50 24.9	32.064N.	100.733W.	5	GS	—	—	2.9M_n(GS)	—	JAN. 25	16:50 CST
JAN. 30	22 26 37.0	32.066N.	100.693W.	5	GS	—	—	3.3M_n(GS)	III	JAN. 30	16:26 CST
MAR. 3	11 45 17.4	35.308N.	102.514W.	5	GS	—	—	3.1M_n(TU)	—	MAR. 3	05:45 CST
DEC. 11	01 23 00.6	35.090N.	101.605W.	5	TU	—	—	2.5M_n(TU)	—	DEC. 10	19:23 CST
UTAH											
JAN. 13	12 32 04.6	41.715N.	111.665W.	7	UU	—	—	3.3M_L(UU)	IV	JAN. 13	05:32 MST
JAN. 23	19 29 01.1	41.351N.	111.626W.	9	UU	—	—	2.7M_L(UU)	—	JAN. 23	12:29 MST
JAN. 24	04 56 28.1	41.919N.	112.535W.	6	UU	—	—	2.5M_L(UU)	—	JAN. 23	21:56 MST
JAN. 30	09 50 52.8	42.345N.	111.359W.	1	UU	—	—	2.5M_L(UU)	—	JAN. 30	02:50 MST
FEB. 11	23 09 13.1	39.703N.	110.565W.	0	UU	—	—	2.7M_D(UU)	—	FEB. 11	16:09 MST
FEB. 14	00 56 21.3	39.686N.	110.525W.	0	UU	—	—	3.2M_D(UU)	—	FEB. 13	17:56 MST
FEB. 21	23 20 12.5	41.745N.	112.852W.	7	UU	—	—	3.6M_L(UU)	—	FEB. 21	16:20 MST
MAR. 4	20 02 34.9	40.768N.	110.557W.	0	UU	—	—	2.7M_L(UU)	—	MAR. 4	13:02 MST
MAR. 9	20 48 06.3	40.682N.	109.567W.	3	UU	—	—	2.5M_D(UU)	—	MAR. 9	13:48 MST
MAR. 12	06 17 24.7	39.326N.	111.094W.	0	UU	—	—	2.6ML(UU)	—	MAR. 11	23:17 MST
MAR. 24	22 33 41.2	39.221N.	111.998W.	0	UU	—	—	3.3M_L(UU)	—	MAR. 24	15:33 MST
MAR. 24	22 40 23.4	39.234N.	112.062W.	1	UU	4.7	—	4.4M_L(UU)	V	MAR. 24	15:40 MST
MAR. 25	02 49 06.5	39.228N.	112.062W.	1	UU	—	—	2.8M_L(UU)	—	MAR. 24	19:49 MST
MAR. 25	02 53 01.3	39.225N.	112.013W.	1	UU	4.5	—	3.9M_L(UU)	V	MAR. 24	19:53 MST
MAY 14	15 02 55.7	37.294N.	110.319W.	8	UU	—	—	3.2M_L(GS)	—	MAY 14	08:02 MST
MAY 28	00 17 54.3	39.773N.	112.791W.	3	UU	—	—	2.8M_L(UU)	—	MAY 27	17:17 MST
JUNE 5	07 41 21.0	41.266N.	111.679W.	12	UU	—	—	2.8M_L(UU)	—	JUNE 5	00:41 MST
JUNE 5	08 05 41.7	41.266N.	111.684W.	10	UU	—	—	3.6M_L(UU)	FELT	JUNE 5	01:05 MST
JUNE 5	19 34 02.6	41.382N.	109.677W.	7	UU	—	—	2.7M_D(UU)	—	JUNE 5	12:34 MST
JUNE 28	21 16 24.0	40.325N.	111.379W.	7	UU	—	—	2.5M_L(UU)	—	JUNE 28	14:16 MST
JULY 31	03 33 28.2	38.225N.	112.556W.	1	UU	—	—	2.6M_D(UU)	—	JULY 30	20:33 MST
AUG. 7	22 31 22.9	39.697N.	110.736W.	0	UU	—	—	2.5M_L(UU)	—	AUG. 7	15:31 MST
AUG. 22	13 26 33.3	37.420N.	110.574W.	5	GS	—	—	4.0M_L(UU)	V	AUG. 22	06:26 MST
AUG. 25	05 29 25.7	41.490N.	111.945W.	18	UU	—	—	2.5M_D(UU)	—	AUG. 24	22:29 MST
AUG. 31	04 47 01.3	38.966N.	111.419W.	2	UU	—	—	2.5M_D(UU)	—	AUG. 30	21:47 MST
SEPT. 14	03 40 25.6	41.295N.	111.474W.	9	UU	—	—	2.8M_D(UU)	—	SEPT. 13	20:40 MST
SEPT. 19	10 41 28.2	41.466N.	111.702W.	7	UU	—	—	3.4M_L(UU)	III	SEPT. 19	03:41 MST
SEPT. 24	02 38 36.0	38.585N.	112.562W.	0	UU	—	—	2.5M_D(UU)	—	SEPT. 23	19:38 MST
SEPT. 24	17 28 08.3	40.703N.	109.447W.	7	UU	—	—	2.6M_D(UU)	—	SEPT. 24	10:28 MST
SEPT. 25	12 45 31.3	38.614N.	112.553W.	1	UU	—	—	2.8M_L(GS)	—	SEPT. 25	05:45 MST
SEPT. 25	22 31 15.0	38.602N.	112.555W.	0	UU	—	—	3.1M_D(UU)	—	SEPT. 25	15:31 MST
SEPT. 26	07 41 20.6	41.848N.	112.320W.	20	UU	—	—	2.5M_D(UU)	—	SEPT. 26	00:41 MST
SEPT. 27	07 34 14.8	39.561N.	110.403W.	0	UU	—	—	2.6M_L(UU)	—	SEPT. 27	00:34 MST
OCT. 1	11 51 46.7	40.818N.	111.821W.	5	UU	—	—	2.7M_L(UU)	III	OCT. 1	04:51 MST
OCT. 5	15 47 33.4	38.631N.	112.558W.	0	UU	—	—	3.3M_L(UU)	III	OCT. 5	08:47 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
UTAH—Continued											
OCT. 5	15 59 48.5	38.622N.	112.557W.	1	UU	—	—	2.9M_L(UU)	——	OCT. 5	08:59 MST
OCT. 25	10 03 25.1	41.825N.	112.317W.	5	UU	—	—	2.6M_L(UU)	——	OCT. 25	03:03 MST
OCT. 26	12 38 57.7	41.825N.	112.321W.	4	UU	—	—	2.5M_D(UU)	——	OCT. 26	05:38 MST
OCT. 26	14 31 56.7	41.824N.	112.316W	4	UU	—	—	3.0M_L(UU)	——	OCT. 26	07.31 MST
OCT. 27	08 34 48.3	41.825N.	112.318W.	2	UU	—	—	2.5M_D(UU)	——	OCT. 27	01:34 MST
OCT. 29	22 13 14.5	41.821N.	112.318W.	5	UU	—	—	3.6M_L(UU)	IV	OCT. 29	15:13 MST
OCT. 30	00 05 42.8	39.735N.	110.965W.	6	UU	—	—	2.8M_L(UU)	——	OCT. 29	17:05 MST
OCT. 31	11 58 28.2	41.823N.	112.316W.	4	UU	—	—	3.5M_L(UU)	IV	OCT. 31	04:58 MST
NOV. 7	01 31 53.7	37.430N.	110.297W.	1	UU	—	—	3.0M_D(UU)	——	NOV. 6	18:31 MST
NOV. 8	04 48 29.4	41.828N.	112.316W.	4	UU	—	—	2.7M_L(UU)	——	NOV. 7	21:48 MST
NOV. 13	23 28 05.3	40.711N.	112.085W.	13	UU	—	—	2.6M_L(UU)	——	NOV. 13	16:28 MST
DEC. 31	11 21 56.5	41.822N.	112.316W.	5	UU	—	—	3.3M_L(UU)	IV	DEC. 31	04:21 MST
VIRGINIA											
MAR. 26	16 36 23.9	37.245N.	80.494W.	12	VP	—	—	2.9M_D(VP)	IV	MAR. 26	11:36 EST
DEC. 3	09 44 21.1	37.580N.	77.458W.	1	VP	—	—	1.5M_D(VP)	IV	DEC. 3	04:44 EST
DEC. 10	11 30 06.1	37.584N.	77.468W.	1	VP	—	—	2.2M_D(VP)	V	DEC. 10	06:30 EST
DEC. 24	17 58 38.2	37.583N.	77.458W.	1	VP	—	—	1.5M_D(VP)	IV	DEC. 24	12:58 EST
WASHINGTON											
JAN. 3	16 11 04.6	46.932N.	121.924W.	11	WA	—	—	3.0M_D(WA)	——	JAN. 3	08:11 PST
JAN. 12	20 30 13.6	48.074N.	121.674W.	2	WA	—	—	2.8M_D(WA)	——	JAN. 12	12:30 PST
FEB. 4	01 59 07.2	46.044N.	118.810W.	8	WA	—	—	3.2M_D(WA)	——	FEB. 3	17:59 PST
FEB. 10	17 12 07.4	48.395N.	121.955W.	4	WA	—	—	3.1M_D(WA)	IV	FEB. 10	09:12 PST
FEB. 10	18 05 08.0	48.397N.	121.941W.	0	WA	—	—	3.7M_L(GS)	V	FEB. 10	10:05 PST
MAR. 2	04 58 36.0	48.747N.	124.907W.	40	WA	—	—	2.7M_D(WA)	——	MAR. 1	20:58 PST
MAR. 11	07 23 21.0	47.335N.	122.488W.	7	WA	—	—	2.9M_D(WA)	III	MAR. 10	23:23 PST
MAR. 11	10 48 10.4	45.941N.	122.411W.	15	WA	—	—	3.1M_D(WA)	V	MAR. 11	02:48 PST
MAR. 27	12 10 12.8	48.265N.	121.732W.	2	WA	—	—	2.8M_L(GS)	IV	MAR. 27	04:10 PST
MAR. 28	03 48 34.7	48.256N.	121.736W.	2	WA	—	—	3.1M_L(GS)	IV	MAR. 27	19:48 PST
MAR. 28	04 12 46.7	48.260N.	121.734W.	2	WA	—	—	3.6M_L(GS)	V	MAR. 27	20:12 PST
MAR. 28	05 40 55.3	48.254N.	121.740W.	3	WA	—	—	2.4M_D(WA)	FELT	MAR. 27	21:40 PST
MAR. 28	12 11 14.9	48.258N.	121.732W.	2	WA	—	—	2.1M_D(WA)	III	MAR. 28	04:11 PST
MAR. 29	13 09 24.0	48.258N.	121.732W.	2	WA	—	—	3.1M_L(GS)	FELT	MAR. 29	05:09 PST
MAR. 31	07 11 27.2	48.260N.	121.736W.	2	WA	—	—	2.3M_D(WA)	FELT	MAR. 30	23:11 PST
APR. 8	10 57 35.6	47.770N.	120.230W.	14	WA	—	—	2.9M_L(GS)	FELT	APR. 8	02:57 PST
APR. 15	11 43 27.5	46.211N.	122.187W.	0	WA	—	—	2.7M_D(WA)	——	APR. 15	03:43 PST
APR. 20	16 40 33.1	48.840N.	122.526W.	18	WA	—	—	2.8M_L(GS)	III	APR. 20	08:40 PST
APR. 27	00 29 14.5	46.208N.	122.188W.	0	WA	—	—	2.8M_D(WA)	——	APR. 26	16:29 PST
MAY 4	21 24 56.6	46.201N.	122.188W.	1	WA	—	—	2.7M_D(WA)	——	MAY 4	13:24 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
WASHINGTON—Continued											
MAY 7	04 00 43.6	46.200N.	122.187W.	2	WA	—	—	2.7M_D(WA)	—	MAY 6	20:00 PST
MAY 7	15 47 07.8	46.199N.	122.190W.	1	WA	—	—	2.7M_D(WA)	—	MAY 7	07:47 PST
MAY 7	21 43 20.9	46.199N.	122.188W.	1	WA	—	—	3.0M_D(WA)	—	MAY 7	13:43 PST
MAY 8	14 03 53.9	46.200N.	122.191W.	1	WA	—	—	3.2M_D(WA)	—	MAY 8	06:03 PST
MAY 8	17 48 17.7	46.200N.	122.189W.	2	WA	—	—	2.7M_D(WA)	—	MAY 8	09:48 PST
MAY 8	20 27 15.5	46.200N.	122.190W.	2	WA	—	—	2.9M_D(WA)	—	MAY 8	12:27 PST
MAY 9	08 31 46.7	46.203N.	122.185W.	2	WA	—	—	2.8M_D(WA)	—	MAY 9	00:31 PST
MAY 10	04 11 33.1	46.196N.	122.193W.	0	WA	—	—	2.7M_D(WA)	—	MAY 9	20:11 PST
JUNE 11	06 12 42.3	47.776N.	120.168W.	9	WA	—	—	2.7M_D(WA)	III	JUNE 10	22:12 PST
JUNE 20	16 55 50.9	46.470N.	120.913W.	3	WA	—	—	2.8M_D(WA)	—	JUNE 20	08:55 PST
JUNE 29	23 40 25.3	47.407N.	123.155W.	15	WA	—	—	2.7M_D(WA)	—	JUNE 29	15:40 PST
JUNE 30	01 03 27.2	47.842N.	122.577W.	20	WA	—	—	2.7M_D(WA)	—	JUNE 29	17:03 PST
JULY 8	05 16 32.4	48.264N.	122.512W.	63	WA	—	—	3.5M_D(WA)	IV	JULY 7	21:16 PST
AUG. 6	10 59 46.9	45.837N.	121.916W.	10	WA	—	—	2.7M_D(WA)	—	AUG. 6	02:59 PST
AUG. 28	03 21 11.3	46.832N.	121.938W.	12	WA	—	—	2.8M_D(WA)	—	AUG. 27	19:21 PST
AUG. 28	04 34 13.5	45.835N.	121.923W.	9	WA	—	—	2.7M_D(WA)	FELT	AUG. 27	20:34 PST
AUG. 31	11 14 51.0	47.281N.	123.447W.	41	WA	—	—	2.8M_D(WA)	—	AUG. 31	03:14 PST
AUG. 31	18 31 59.1	47.374N.	122.810W.	27	WA	—	—	2.9M_D(WA)	—	AUG. 31	10:31 PST
SEPT. 1	21 32 44.0	46.718N.	119.285W.	14	WA	—	—	3.4M_D(WA)	—	SEPT. 1	13:32 PST
SEPT. 16	23 19 49.5	48.221N.	121.643W.	2	WA	—	—	1.6M_D(WA)	FELT	SEPT. 16	15:19 PST
SEPT. 16	23 38 57.8	48.065N.	121.523W.	6	WA	—	—	2.8M_D(WA)	FELT	SEPT. 16	15:38 PST
SEPT. 16	23 49 37.1	48.067N.	121.542W.	8	WA	—	—	2.4M_D(WA)	FELT	SEPT. 16	15:49 PST
SEPT. 26	23 34 54.7	48.552N.	121.989W.	0	WA	—	—	2.4M_D(WA)	FELT	SEPT. 26	15:34 PST
SEPT. 29	19 37 06.9	48.551N.	121.983W.	0	WA	—	—	2.2M_D(WA)	FELT	SEPT. 29	11:37 PST
OCT. 12	18 58 51.0	46.357N.	122.655W.	67	WA	—	—	3.2M_D(WA)	—	OCT. 12	10:58 PST
OCT. 19	05 29 47.0	46.201N.	122.187W.	1	WA	—	—	2.7M_D(WA)	—	OCT. 18	21:29 PST
OCT. 19	16 31 37.3	46.204N.	122.185W.	1	WA	—	—	2.9M_D(WA)	—	OCT. 19	08:31 PST
OCT. 20	13 17 49.3	46.200N.	122.186W.	1	WA	—	—	2.7M_D(WA)	—	OCT. 20	05:17 PST
OCT. 20	16 33 50.1	46.202N.	122.184W.	1	WA	—	—	2.9M_D(WA)	—	OCT. 20	08:33 PST
OCT. 20	21 21 20.8	46.199N.	122.180W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 20	13:21 PST
OCT. 21	00 45 22.8	46.201N.	122.186W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 20	16:45 PST
OCT. 21	03 11 29.0	46.201N.	122.188W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 20	19:11 PST
OCT. 21	03 45 50.6	46.200N.	122.188W.	1	WA	—	—	2.8M_D(WA)	—	OCT. 20	19:45 PST
OCT. 21	05 42 02.0	46.200N.	122.187W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 20	21:42 PST
OCT. 21	08 29 55.6	46.199N.	122.188W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 21	00:29 PST
OCT. 21	08 43 13.8	46.200N.	122.188W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 21	00:43 PST
OCT. 21	09 49 38.1	46.200N.	122.187W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 21	01:49 PST
OCT. 21	11 09 35.2	46.200N.	122.187W.	1	WA	—	—	3.2M_D(WA)	—	OCT. 21	03:09 PST
OCT. 21	13 34 52.8	46.200N.	122.187W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 21	05:34 PST
OCT. 21	14 32 56.8	46.200N.	122.186W.	1	WA	—	—	3.2M_D(WA)	—	OCT. 21	06:32 PST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
WASHINGTON—Continued											
OCT. 21	15 11 56.6	46.200N.	122.186W.	1	WA	—	—	2.8M_D(WA)	—	OCT. 21	07:11 PST
OCT. 21	15 42 03.5	46.201N.	122.189W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 21	07:42 PST
OCT. 21	17 15 41.4	46.199N.	122.187W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 21	09:15 PST
OCT. 21	17 32 23.0	46.200N.	122.188W.	2	WA	—	—	2.8M_D(WA)	—	OCT. 21	09:32 PST
OCT. 21	18 13 48.9	46.200N.	122.187W.	2	WA	—	—	2.8M_D(WA)	—	OCT. 21	10:13 PST
OCT. 21	18 21 13.7	46.200N.	122.187W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 21	10:21 PST
OCT. 21	19 03 02.6	46.200N.	122.186W.	1	WA	—	—	2.7M_D(WA)	—	OCT. 21	11:03 PST
OCT. 21	19 21 12.7	46.201N.	122.189W.	2	WA	—	—	2.7M_D(WA)	—	OCT. 21	11:21 PST
OCT. 21	19 35 24.0	46.198N.	122.189W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 21	11:35 PST
OCT. 21	19 56 20.4	46.200N.	122.187W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 21	11:56 PST
OCT. 21	20 42 37.0	46.202N.	122.188W.	1	WA	—	—	3.2M_D(WA)	—	OCT. 21	12:42 PST
OCT. 21	21 47 04.1	46.201N.	122.188W.	1	WA	—	—	3.1M_D(WA)	—	OCT. 21	13:47 PST
OCT. 21	22 40 41.2	46.203N.	122.191W.	1	WA	—	—	3.0M_D(WA)	—	OCT. 21	14:40 PST
OCT. 22	00 01 35.4	46.203N.	122.192W.	2	WA	—	—	3.0M_D(WA)	—	OCT. 21	16:01 PST
OCT. 22	12 35 04.5	46.204N.	122.200W.	2	WA	—	—	2.8M_D(WA)	—	OCT. 22	04:35 PST
OCT. 24	07 20 58.2	46.200N.	122.193W.	0	WA	—	—	2.8M_D(WA)	—	OCT. 23	23:20 PST
NOV. 7	10 35 54.0	48.120N.	123.317W.	38	EP	—	—	3.9M_L(EP)	FELT	NOV. 7	02:35 PST
NOV. 8	14 54 13.1	46.859N.	120.580W.	8	WA	—	—	2.9M_L(GS)	—	NOV. 8	06:54 PST
NOV. 11	13 12 56.0	47.816N.	128.542W.	10	GS	4.3	—	—	—	NOV. 11	05:12 PST
WYOMING											
JAN. 2	15 53 40.9	44.620N.	110.997W.	6	UU	—	—	3.0M_L(GS)	II	JAN. 2	08:53 MST
JAN. 2	20 04 05.6	44.639N.	110.982W.	10	UU	—	—	2.9M_L(BU)	—	JAN. 2	13:04 MST
JAN. 4	03 14 41.7	44.640N.	110.990W.	12	UU	—	—	2.7M_L(BU)	—	JAN. 3	20:14 MST
JAN. 8	07 32 25.7	44.620N.	111.003W.	8	UU	—	—	2.8M_L(GS)	II	JAN. 8	00:32 MST
JAN. 8	11 08 15.7	44.621N.	110.998W.	7	UU	—	—	3.0M_L(GS)	III	JAN. 8	04:08 MST
JAN. 8	13 36 28.5	44.635N.	110.999W.	7	UU	—	—	2.9M_L(GS)	III	JAN. 8	06:36 MST
JAN. 9	19 16 47.6	44.654N.	111.008W.	7	UU	—	—	2.6M_L(BU)	—	JAN. 9	12:16 MST
JAN. 9	20 46 40.5	44.647N.	111.007W.	7	UU	—	—	2.9M_L(BU)	—	JAN. 9	13:46 MST
JAN. 14	01 50 37.8	44.637N.	111.002W.	6	UU	—	—	2.9M_L(GS)	II	JAN. 13	18:50 MST
JAN. 14	16 46 29.9	44.659N.	111.018W.	7	UU	—	—	3.2M_L(GS)	II	JAN. 14	09:46 MST
JAN. 15	21 10 18.0	44.633N.	111.002W.	7	UU	—	—	2.8M_L(GS)	III	JAN. 15	14:10 MST
JAN. 16	10 29 47.7	44.621N.	111.001W.	6	UU	—	—	3.4M_L(GS)	III	JAN. 16	03:29 MST
JAN. 18	05 27 21.4	44.628N.	110.997W.	7	UU	—	—	2.8M_L(BU)	—	JAN. 17	22:27 MST
JAN. 18	22 51 41.5	44.625N.	110.993W.	7	UU	—	—	2.8M_L(BU)	—	JAN. 18	15:51 MST
JAN. 25	12 51 04.5	44.660N.	110.995W.	11	UU	—	—	2.8M_L(BU)	—	JAN. 25	05:51 MST
JAN. 25	20 01 56.0	44.657N.	110.998W.	9	UU	—	—	2.7M_L(BU)	—	JAN. 25	13:01 MST
FEB. 1	06 09 54.8	44.626N.	110.996W.	7	UU	—	—	3.1M_L(BU)	III	JAN. 31	23:09 MST
FEB. 4	05 41 45.3	44.665N.	111.012W.	5	UU	—	—	2.7M_L(BU)	—	FEB. 3	22:41 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr zone
WYOMING–Continued											
FEB. 5	14 26 19.3	44.644N.	111.016W.	4	UU	—	—	3.4M_L(GS)	FELT	FEB. 5	07:26 MST
FEB. 5	14 37 01.7	44.640N.	111.014W.	3	UU	—	—	3.3M_L(BU)	FELT	FEB. 5	07:37 MST
FEB. 6	13 22 02.9	44.622N.	111.038W.	1	UU	—	—	3.4M_L(GS)	—	FEB. 6	06:22 MST
FEB. 7	14 29 11.2	44.653N.	111.013W.	7	UU	—	—	2.8M_L(BU)	—	FEB. 7	07:29 MST
FEB. 11	22 26 09.1	44.645N.	111.015W.	9	UU	—	—	3.2M_L(BU)	—	FEB. 11	15:26 MST
FEB. 11	22 26 55.6	44.647N.	111.016W.	7	UU	—	—	4.2M_L(GS)	FELT	FEB. 11	15:26 MST
FEB. 11	22 27 56.7	44.623N.	111.012W.	8	UU	—	—	4.0M_L(BU)	—	FEB. 11	15:27 MST
FEB. 11	22 34 07.0	44.659N.	111.002W.	4	UU	—	—	2.9M_L(BU)	—	FEB. 11	15:34 MST
FEB. 16	02 11 10.0	44.648N.	111.012W.	7	UU	—	—	2.9M_L(BU)	—	FEB. 15	19:11 MST
MAR. 2	10 55 25.4	44.652N.	111.018W.	7	UU	—	—	3.2M_L(GS)	II	MAR. 2	03:55 MST
MAR. 2	11 23 26.5	44.646N.	111.019W.	6	UU	—	—	2.9M_L(BU)	—	MAR. 2	04:23 MST
MAR. 2	12 59 36.5	44.653N.	111.022W.	7	UU	—	—	3.0M_L(GS)	II	MAR. 2	05:59 MST
MAR. 7	19 32 09.3	44.647N.	111.027W.	7	UU	—	—	3.4M_L(BU)	—	MAR. 7	12:32 MST
MAR. 18	23 53 37.0	44.638N.	111.007W.	7	UU	—	—	3.1M_L(GS)	—	MAR. 18	16:53 MST
MAR. 21	02 06 56.5	44.227N.	110.691W.	0	UU	—	—	3.1M_D(BU)	—	MAR. 20	19:06 MST
MAR. 22	07 33 40.3	44.729N.	111.042W.	9	BU	—	—	2.5M_L(BU)	—	MAR. 22	00:33 MST
MAR. 26	04 15 43.3	44.640N.	111.004W.	8	UU	—	—	2.8M_L(BU)	—	MAR. 25	21:15 MST
APR. 4	14 16 35.8	44.627N.	110.996W.	4	UU	—	—	3.0M_L(GS)	—	APR. 4	07:16 MST
APR. 6	11 05 31.8	44.717N.	110.967W.	19	BU	—	—	2.8M_L(BU)	—	APR. 6	04:05 MST
APR. 6	11 06 23.6	44.632N.	110.966W.	3	UU	—	—	3.2M_L(BU)	—	APR. 6	04:06 MST
APR. 8	18 54 27.2	44.646N.	111.004W.	8	UU	—	—	2.8M_L(BU)	—	APR. 8	11:54 MST
APR. 8	18 55 25.6	44.647N.	110.989W.	11	UU	—	—	2.7M_L(BU)	—	APR. 8	11:55 MST
APR. 12	23 05 47.8	44.644N.	111.006W.	8	UU	—	—	3.0M_L(GS)	II	APR. 12	16:05 MST
APR. 17	01 15 26.8	44.647N.	111.009W.	8	UU	—	—	2.8M_L(BU)	—	APR. 16	18:15 MST
APR. 18	14 17 55.6	44.642N.	111.004W.	6	UU	—	—	3.2M_L(GS)	II	APR. 18	07:17 MST
APR. 26	02 51 34.7	44.640N.	110.996W.	8	UU	—	—	3.0M_L(BU)	—	APR. 25	19:51 MST
APR. 29	07 55 44.3	41.047N.	108.928W.	5	GS	—	—	2.5M_L(GS)	—	APR. 29	00:55 MST
JUNE 12	15 14 34.0	42.397N.	105.694W.	20	GS	—	—	3.0M_L(GS)	—	JUNE 12	08:14 MST
JUNE 20	20 55 48.0	44.787N.	111.000W.	5	UU	—	—	3.4M_L(GS)	—	JUNE 20	13:55 MST
JULY 5	02 18 05.6	44.666N.	111.024W.	9	UU	—	—	3.6M_L(GS)	II	JULY 4	19:18 MST
NOV. 3	00 23 45.0	41.922N.	108.896W.	5	GS	—	—	3.3M_L(GS)	IV	NOV. 2	17:23 MST
NOV. 5	02 26 15.4	44.547N.	110.937W.	9	UU	—	—	2.5M_L(BU)	—	NOV. 4	19:26 MST
NOV. 9	19 11 48.0	44.644N.	110.238W.	0	UU	—	—	3.0M_L(BU)	—	NOV. 9	12:11 MST
NOV. 15	00 56 57.0	44.676N.	111.030W.	7	UU	—	—	3.4M_L(GS)	IV	NOV. 14	17:56 MST
NOV. 17	08 34 13.3	43.156N.	110.812W.	5	GS	—	—	3.9M_L(GS)	III	NOV. 17	01:34 MST
NOV. 17	09 06 27.3	43.157N.	110.798W.	5	GS	—	—	3.7M_L(GS)	—	NOV. 17	02:06 MST
NOV. 21	16 11 00.0	44.678N.	111.024W.	7	UU	—	—	2.7M_L(BU)	—	NOV. 21	09:11 MST
NOV. 24	02 10 58.7	44.674N.	111.021W.	7	UU	—	—	2.6M_L(BU)	II	NOV. 23	19:10 MST
NOV. 24	06 31 50.4	44.670N.	111.029W.	7	UU	—	—	3.2M_L(GS)	IV	NOV. 23	23:31 MST
NOV. 25	20 45 25.4	44.671N.	111.027W.	7	UU	—	—	3.5M_L(GS)	IV	NOV. 25	13:45 MST

Table 1. Summary of United States earthquakes for 1986—Continued

Date	Origin time (UTC) hr min sec	Latitude (°)	Longitude (°)	Depth (km)	Hypo-center Source	Magnitude m_b	Magnitude M_S	Magnitude Local	Max. inten-sity	Local time Date	Local time hr	Local time zone
WYOMING–Continued												
NOV. 30	14 03 04.4	44.668N.	111.028W.	7	UU	—	—	2.7M_L(BU)	—	NOV. 30	07:03	MST
NOV. 30	20 07 27.3	44.666N.	111.032W.	8	UU	—	—	3.1M_L(BU)	—	NOV. 30	13:07	MST
NOV 30	22 16 52.8	44.669N.	111.038W.	7	UU	—	—	2.5M_L(BU)	—	NOV. 30	15:16	MST
DEC. 1	16 09 38.0	44.673N.	111.022W.	6	UU	—	—	3.1M_L(GS)	—	DEC. 1	09:09	MST
DEC. 1	19 42 26.1	44.652N.	111.032W.	2	UU	—	—	2.7M_L(BU)	—	DEC. 1	12:42	MST
DEC. 1	22 45 20.2	44.670N.	111.020W.	7	UU	—	—	2.8M_L(BU)	—	DEC. 1	15:45	MST
DEC. 4	14 40 08.6	42.234N.	109.646W.	10	UU	—	—	2.9M_L(UU)	—	DEC. 4	07:40	MST
DEC. 14	15 46 07.7	44.668N.	111.020W.	8	UU	—	—	2.7M_L(BU)	—	DEC. 14	08:46	MST

NETWORK OPERATIONS

Eastern Aleutians Seismicity

By J.J. Taber, M.A. Luckman, and S. Rosen
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The Shumagin seismic network in the eastern Aleutians, Alaska, was used to locate 611 earthquakes in 1986. The seismicity of the region for this time period is shown in map view and cross section in figures 23 and 24. Most of the seismicity is related to the subduction of the Pacific plate beneath the North American plate.

The largest earthquake in this time period within the network had a local magnitude of 4.5 (m_b5.0) and was located over the main thrust zone at a depth of 4.5 km. A magnitude 4.1 (m_b4.4) earthquake occurred at a depth of 201 km. This was the first deep event larger than magnitude 4.0 since 1981.

Otherwise, the overall pattern during this time period is similar to the long-term seismicity. Concentrations of events occur at the base of the main thrust zone and in the shallow crust directly above it. The continuation of the thrust zone towards the trench is poorly defined. West of the network (which ends at 163°) the seismicity is more diffuse in map view and extends closer to the trench. Nine of the 13 located events larger than magnitude 4.0 occurred in this western region. Below the base of the main thrust zone (about 45 km), the dip of the Benioff zone steepens. A double Wadati-Benioff zone is evident near 100-km depth. The base of the seismogenic part of the subducting Pacific plate lies near 250-km depth.

Network Configuration

The Shumagin seismic network consists of short-period, high-gain seismic stations, a few low-gain stations, and strong-motion accelerographs. The data from the different sets of instruments are being applied to ground motion, seismic source, earthquake prediction, tectonic, and volcanological studies. The network includes 13 remote stations plus three stations in the Pavlof volcano subarray, four repeater stations, and the local station at Sand Point (SAN). Each remote station has a single, short-period vertical seismometer except San Diego Bay (SGB), Chernabura (CNB), Pavlof Volcano (PVV), and Black Hills (BLH), which are three-component stations. Station SQF uses a three-component force-balanced accelerometer (FBA) sensor. The analog signals from the high-gain remote stations have a dynamic range of approximately 42–60 dB and are transmitted via radio links to a central recording site at Sand Point.

Sensors local to the recording center at Sand Point consist of a three-component set of short-period seismometers (f_0=1 Hz) and a triaxial, force-balanced accelerometer (FBA)(f_0=50 Hz). The seismometers are recorded on the digital system with a 72-dB dynamic range at both medium and high gains, whereas the FBA is recorded independently on a digital strong-motion recorder (PDR-1).

Within the region of the Shumagin network there are 11 analog strong-motion accelerographs (SMA's) (Kinemetrics SMA-1, 1*g* or 1/2 *g*), nine of which are located with remote stations of the network. These nine SMA's are connected to the telemetry system, and a 400-Hz trigger signal is sent to the central recording site indicating the exact time at which the SMA began recording a given earthquake. This start time is combined with an internal time code to determine absolute timing within an earthquake.

This range of instrumentation permits the digital recording and locating of events as small as M_L 0.4, with uniform coverage at M_L 2.0, and onscale recording to about M_S 6.5. Larger events are recorded digitally by the PDR-1 and on photographic film by the 11 SMA's.

Northern and Central California Earthquakes, 1986

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The year 1986 was very productive in terms of upgrading the University of California seismographic

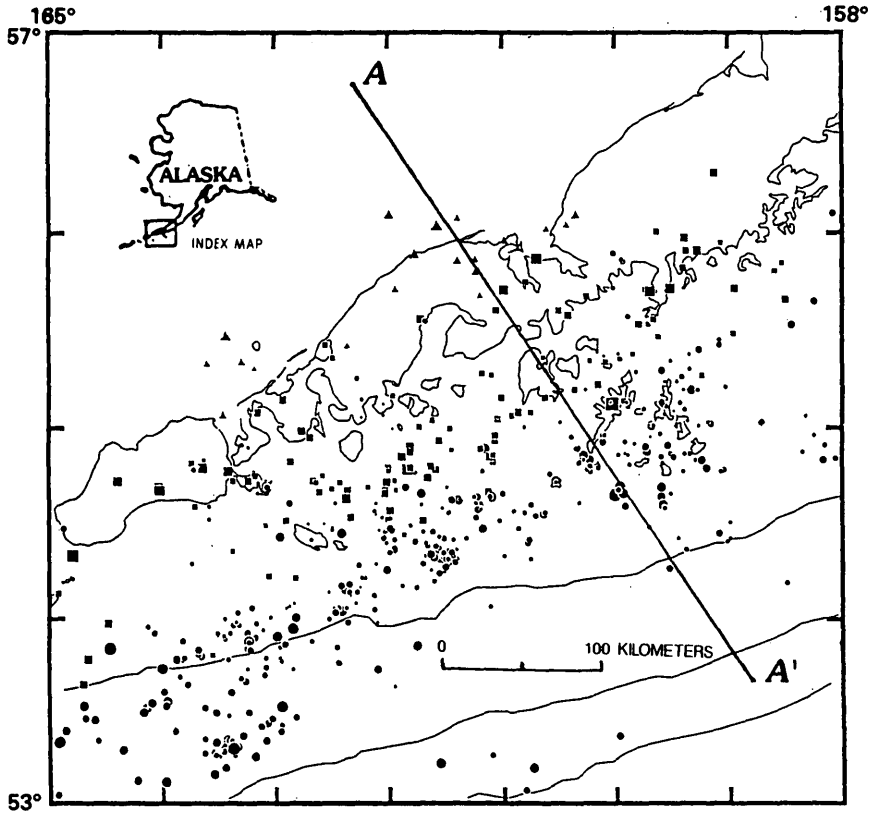

Figure 23. Seismicity located by the Shumagin, Alaska, seismic network from January 1 to December 30, 1986. Earthquakes are represented by filled symbols with white borders. Depth is shown by symbol type and magnitude by symbol size. Dots show earthquakes less than 50 km. Squares show earthquakes between 50 and 150 km; triangles show earthquakes below 150 km. Northeast-southwest trending lines across the bottom of the map indicate increasing depth of the Aleutian trench toward the northwest.

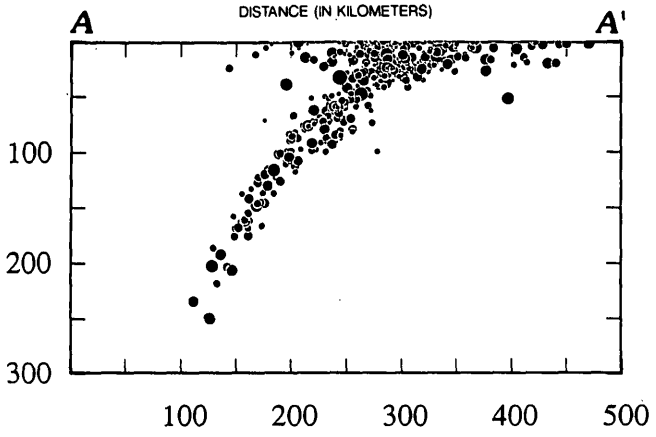

Figure 24. Cross section of Shumagin, Alaska, network seismicity along line *A-A'* in figure 23. Symbol size shows earthquake size.

stations' instrumentation and facilities. New broadband seismometers (Streckeisen STS-1) were installed at the Oroville (ORV) and San Andreas Observatory (SAO) stations (fig. 25). The Berkeley network now has three-component broadband seismographs at five stations (BKS, CMB, MHC, ORV, and SAO) and a broadband vertical seismograph at station WDC. The instruments in the Byerly seismographic vault (BKS, at Berkeley) were temporarily removed from service (starting on July 10) to facilitate renovation and waterproofing of the vault. The instruments were reinstalled, calibrated, and returned to service by October 3. A microcomputer-based digital data-acquisition and telemetry system was installed at Mount Hamilton (station MHC) on September 10 as the first step in setting up the newly developed Berkeley Digital Seismograph Network (BDSN) (Bolt, Friday, and Uhrhammer, 1988). A new vault was constructed at Columbia College (150 km east of Berkeley) to house the seismometers and digital recording system originally installed at the Jamestown station (JAS), which was closed. The Columbia College seismographic station (CMB) began operation on November 6. CMB is sited on hard rock (crystallized limestone) and is an excellent location with a very low ambient noise level (about 0.3 nm root-mean-square in the 1-10Hz band). The CMB short-period vertical component is recorded with a magnification of 300k at 1Hz.

During 1986, the occurrences of approximately 6,300 seismic events were catalogued on summary sheets, and 1,100 teleseisms and 623 local earthquakes were

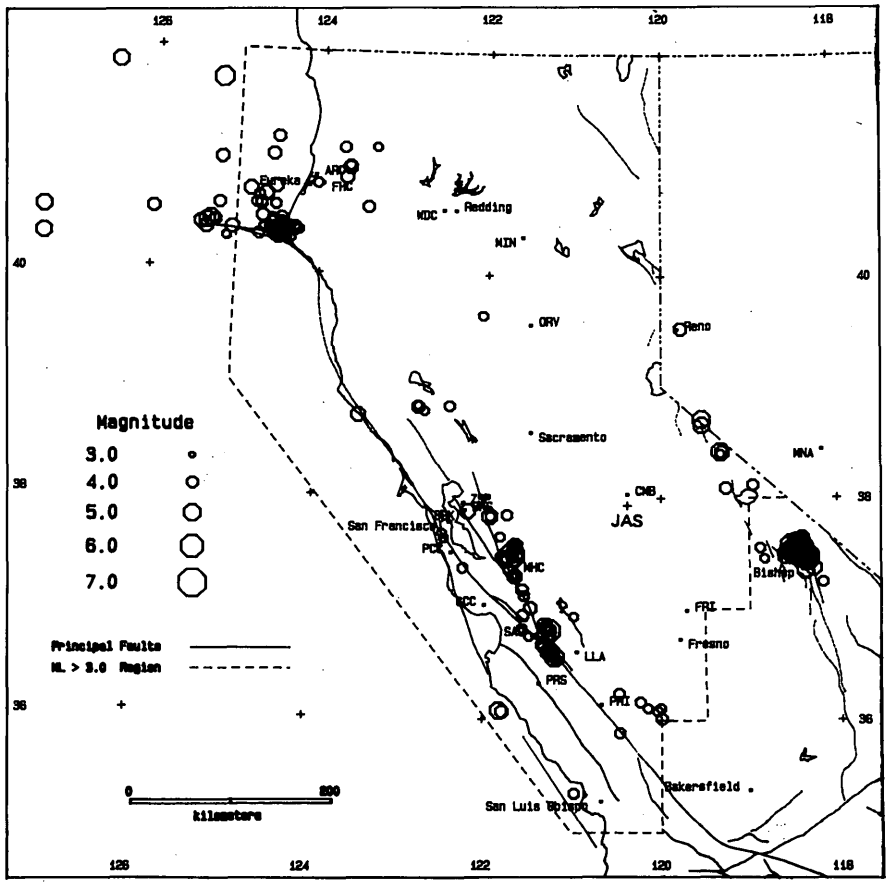

Figure 25. University of California seismographic station network and northern and central California seismicity during 1986. Plotted are 289 earthquakes ($3.0 \leq M_L \leq 6.4$). Squares show stations. Station abbreviations are defined in text.

analyzed. The "Bulletin of the University of California Seismographic Stations", v. 56 (McKenzie and Uhrhammer, 1988), contains location and magnitude information for 289 earthquakes ($3.0 \leq M_L \leq 6.4$) located in northern and central California and adjoining regions. The epicentral locations are plotted in figure 25.

Four earthquake sequences during the year contained a total of eleven shocks of M_L 5.0 or larger; most notable were a M_L-5.5 shock near Hollister on January 26, and a M_L-5.7 shock at Mount Lewis on March 31, both in the central coast ranges; a M_L-6.4 shock on the east side of the Sierra Nevada mountains in Chalfant Valley on July 21; and a M_L-5.1 shock off the coast of northern California along the Mendocino Escarpment on November 21.

The most significant earthquake (M_L 6.4) in northern and central California during the year occurred on July 21 in Chalfant Valley 20 km north-northwest of Bishop. Several buildings were damaged in Bishop (MMI VI), and the earthquake was felt throughout a large area of California and Nevada from San Francisco to Reno and south to Los Angeles and Las Vegas. The sequence began on July 18 with the occurrence of a M_L-3.9 earthquake and 16 foreshocks ($3.5 \leq M_L \leq 5.9$) in the three days prior to the mainshock. One-hundred and ten aftershocks ($3.5 \leq M_L \leq 5.8$) occurred by the end of the year. The sequence contained seven earthquakes with $M_L \geq 5.0$.

Seismicity and Volcanic Activity in Hawaii, 1986

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The U.S. Geological Survey's Hawaiian Volcano Observatory (HVO) operated an island-wide network (fig. 26) of short-period seismograph stations consisting of 12 three-component and 34 single-component vertical FM systems, radio-telemetered to HVO, and monitored continuously on 13 revolving drum recorders, two develocorders, and a magnetic-tape recorder. The discriminated signals were also transmitted to an analog-to-digital converter and VAX 750 computer for event detection and digitization.

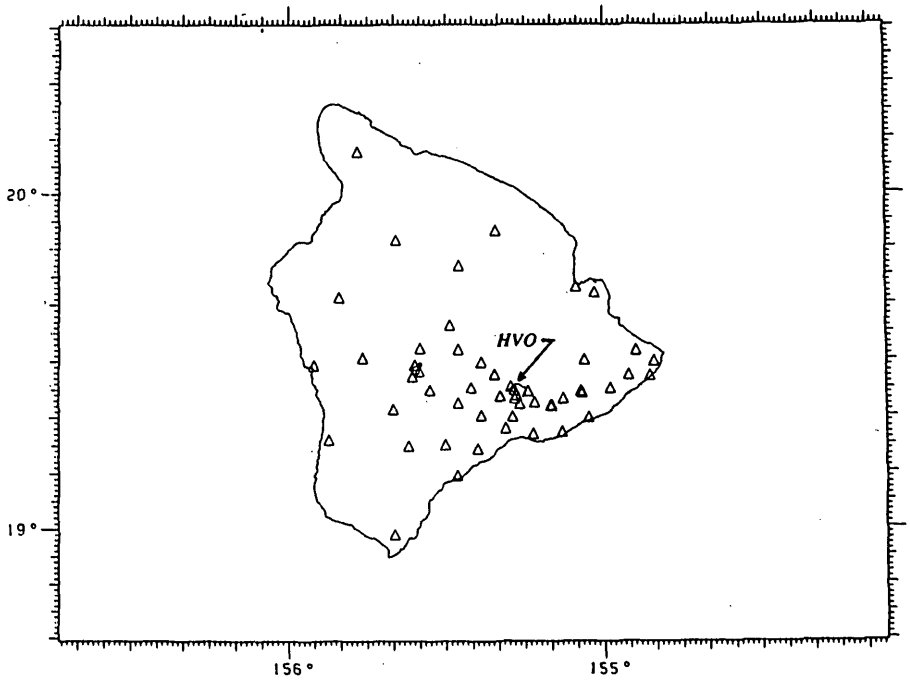

Figure 26. Seismograph stations (triangles) on the island of Hawaii during 1986.

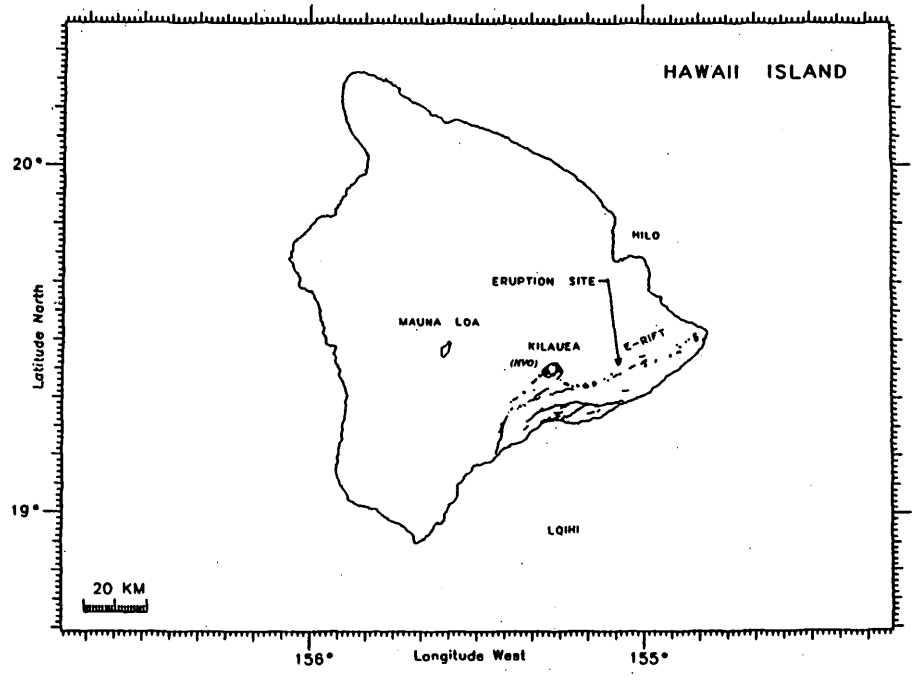

Figure 27. Map of the island of Hawaii showing locations of the active volcanoes Mauna Loa, Kilauea, and Loihi (submarine). The active vent associated with the continuing eruption of Kilauea is in the middle east rift zone.

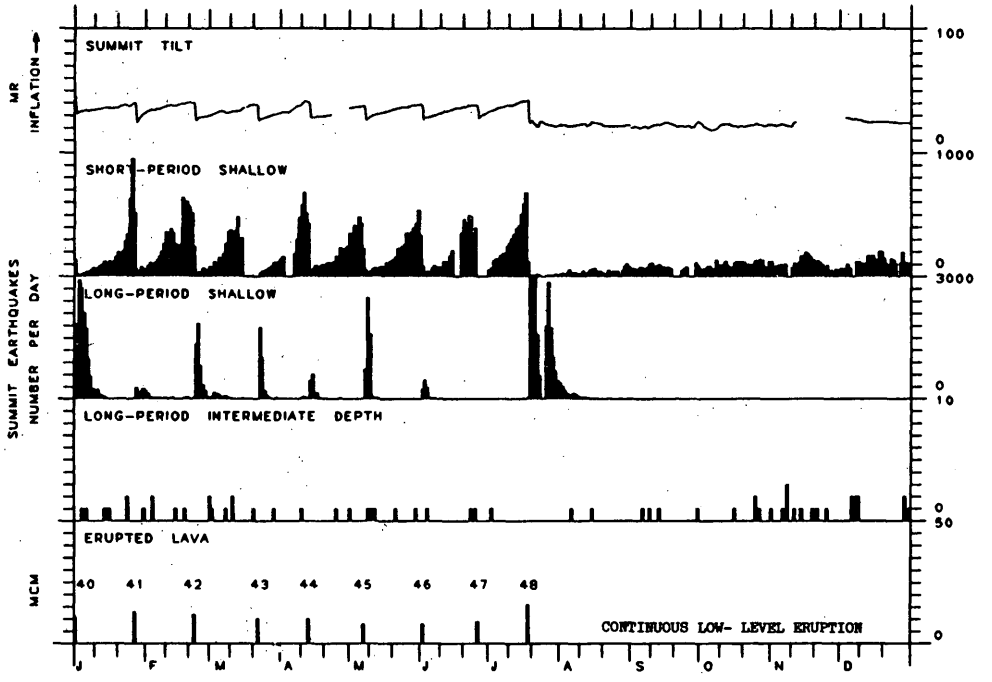

Figure 28. Ground tilt, number of earthquakes, and lava volume associated with the eruption of Kilauea in 1986. Summit tilt is in microradians (MR, west-east) derived from hourly readings of a continuously recording tiltmeter near the observatory. Daily number of short-period and long-period earthquakes at the summit includes instrumentally detected events of 0.1 magnitude or greater. Volume of lava shown in millions of cubic meters (MCM) produced during the major episodes of eruption numerically identified from 40 to 48 and extended from the continuing sequence since 1983. Since the eruption site migrated 3 km downrift of Pu' u O'o in July 1986, the new vent (Kupaianaha) has produced approximately 0.5 MCM of lava per day.

Optical-drum seismographs were also operated independently on Hawaii, Maui, and Oahu. These included one three-component, short-period and one three-component, long-period systems at HVO, two short-period systems, each with one high-gain vertical component and two Wood-Anderson horizontal components at Hilo on Hawaii and Haleakala on Maui, and one short-period vertical component at Kipapa on Oahu.

In 1986, Kilauea Volcano (fig. 27) began its fourth year of eruption with eight more episodes of lava erupting in fountains followed by a marked change in behavior during the second half of the year (fig. 28). The episodic pattern of eruption during the first half year was accompanied by changes in tremor amplitude near the eruptive vent in the east rift zone and the number of small earthquakes near the inflation center at the summit. The episodes of high lava output with fountains reaching several hundreds of meters in height were instrumentally characterized by high-amplitude tremor near the eruptive vent, and shallow, long-period microshocks and low-amplitude tremor at the summit.

The vigorous output of lava from the east-rift vent was accompanied by rapid deflation of the summit. The longer repose periods between episodes were marked by weak tremor near the eruptive vent, and a gradually increasing number of shallow microearthquakes and inflation at the summit.

Seismometers near the eruptive area also detected a variety of seismic signals associated with explosive degassing and rockfalls at the vent, microfracturing of cooling and contracting lava flows, and explosive combustion of organic gases at forested boundaries of active lava flows.

The changed mode of eruption from July 20 through the end of the year was marked by relatively steady production of lava, low-level tremor from the eruptive vent in the east rift zone, and small, irregular changes in the number of shallow microearthquakes and amount of ground tilting at the summit.

Intermittent bursts of long-period earthquakes and volcanic tremor occurred at intermediate depths of about 5 to 15 km beneath the summit of Kilauea and in the upper mantle at about 40 to 60 km beneath south Hawaii. Intermediate-depth sequences beneath Kilauea generally lasted several days, and individual bursts of deeper tremor beneath south Hawaii were limited to a few hours in duration.

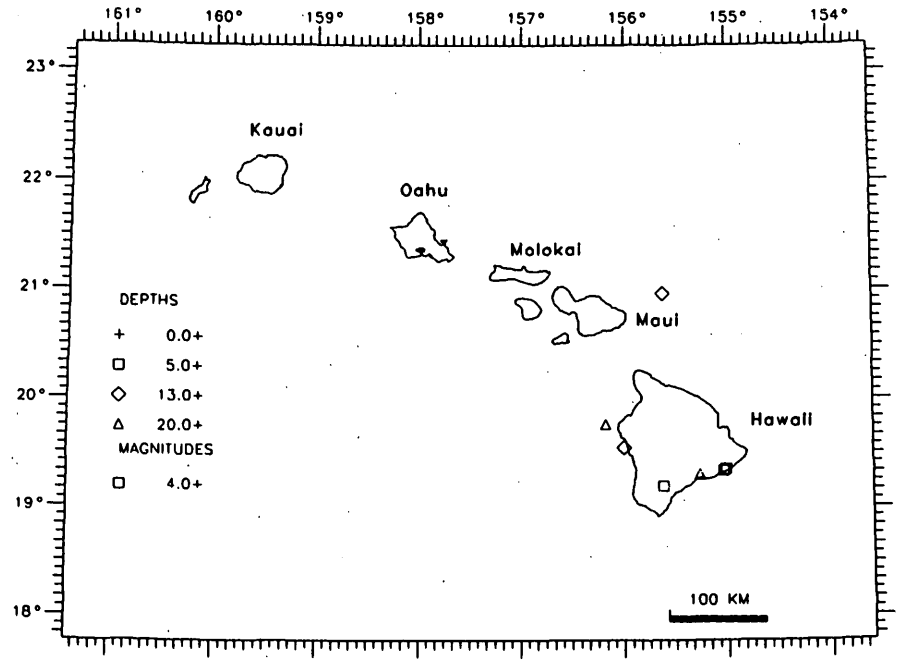

Figure 29. Earthquakes in Hawaii during 1986 (0–20 km depths; M≥4.0). Depth is shown by symbol type and magnitude by symbol size.

Regional seismicity of Hawaii consisted of several thousands of earthquakes of magnitude 1.5–4.9; eight of the largest ones were 4.0 or higher in magnitude (fig. 29). The stresses induced locally by volcanic and related tectonic processes in Hawaii were more definitively outlined by concentrations of smaller earthquakes beneath Kilauea, Mauna Loa, and Loihi (fig. 30). Most of the earthquakes were located at 5–10 km beneath the south flank of Kilauea and the southeast flank of Mauna Loa (fig. 31). These earthquakes were generally dispersed throughout the year and were attributed to strain release, induced tectonically by the gradual accumulation of stresses along the flanks of the active volcanoes, in contrast to swarms of shallower earthquakes that occur in eruptive zones immediately before renewed eruptions.

Kansas and Nebraska Earthquakes, 1986

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During 1986 the Kansas Geological Survey (KGS) operated a network consisting of 15 stations in the eastern half of Kansas and Nebraska. All stations from which signals were received at any time in 1986 are shown in figure 32. The data from the network were transmitted via telephone lines to the KGS where they were recorded in both drum analog and triggered digital form. In the digital system the stations in the network were grouped by threes so that storage of data took place when the short-term average amplitudes at three stations exceeded the long-term average amplitude by some preset threshold. The sampling rate established for all stations was 100 samples per second per station.

The KGS network located 18 events in 1986 using the HYPO71 algorithm of Lee and Lahr (1975) (table 2, fig. 33). These events are presented in table 2 and figure 33. The magnitudes in figure 33 range from a low of 1.0 (M_D) in Pottawatomie County, Kans., to a high of 3.0 (M_D) in Graham and Kearny Counties, Kans.

Of 18 events, 7 seismic events were astride the Nemaha ridge (fig. 33), a buried Precambrian uplift that extends roughly from Omaha, Neb., southward across Kansas to near Oklahoma City, Okla. These seven events can be genetically related to the faults associated with or bounding this ridge (Humboldt fault zone, fig. 33) (Hildebrand and others, 1988). This geologic structure has been the site

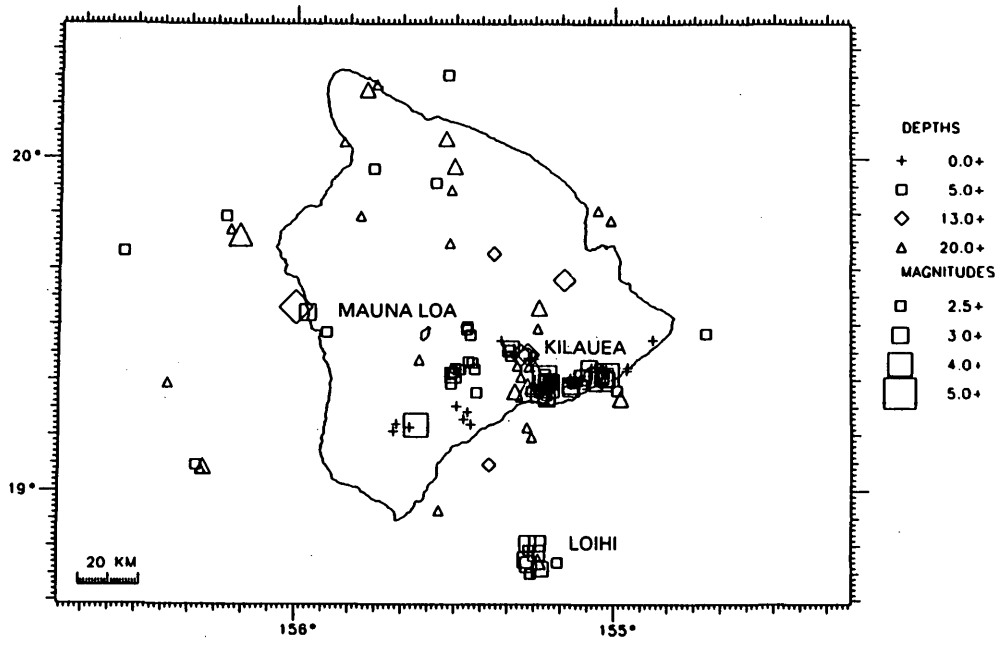

Figure 30. Locations of earthquakes of magnitude 2.5 or greater beneath the island of Hawaii region in 1986. Depth is shown by symbol type and magnitude by symbol size.

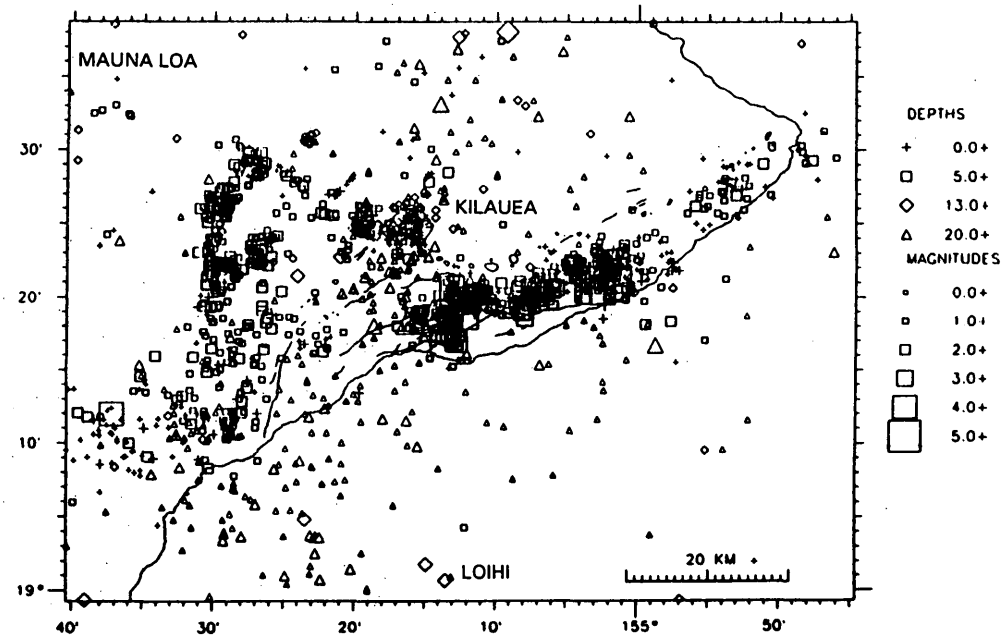

Figure 31. Locations of earthquakes of magnitude 1.5 or greater and standard errors of 2.0 km or less beneath Kilauea and Mauna Loa volcanoes in the southeastern region of the island of Hawaii for 1986. Depth is shown by symbol type and magnitude by symbol size.

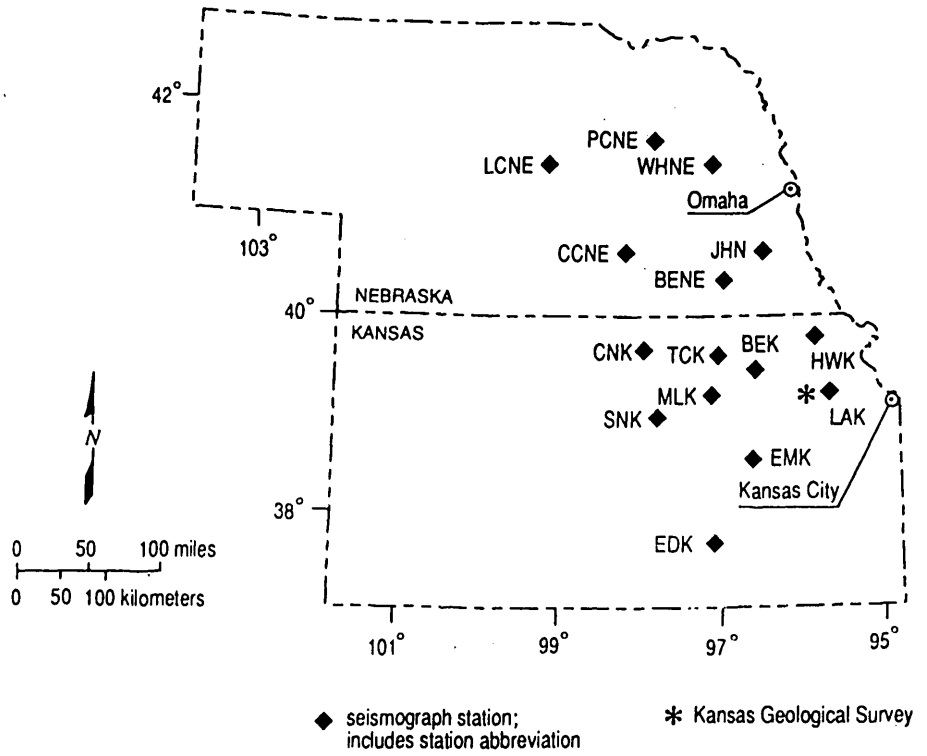

Figure 32. Active seismograph stations in the Kansas-Nebraska network during 1986.

of several earthquakes of Modified Mercalli Intensity VII-VIII (p. 5) over the past 123 years.

Another seven events occurred along the central Kansas uplift, which is a buried anticline similar in age to the Nemaha ridge, and are related to the faults flanking it (Hildebrand and others, 1988). Recently, a marked increase in earthquake activity along this uplift has been observed; during the first 5–6 years of network operation (1977–83) it had only sparse activity. The period from October through about mid-December was especially active, when five events occurred with epicenters clustered in an area of roughly 20 km by 20 km, northwest of Russell, Kans.

Table 2. Kansas and Nebraska earthquakes for 1986.

[UTC, Coordinated Universal Time ; N, north; W, west, (MD)–Duration or coda-length magnitude, (km), kilometers.]

Date (1986)	Origin Time (UTC)	County	Latitude (N)	Longitude (W)	Magnitude (M_{DUR})	Depth (km)
FEB 2	110445.87	Greeley, NE	41-24.76	98-32.62	1.9	9.90
MAR 4	075103.19	Buchanan, MO	39-33.37	94-55.50	1.9	5.0
MAR 13	202136.29	Miami, KS	38-26.39	95- .47	2.1	5.0
JUN 2	040406.46	Graham, KS	39-22.85	99-42.05	3.0	16.0
JUN 4	223721.99	Butler, KS	37-35.32	96-35.14	2.1	5.0
JUL 28	221507.04	Jackson, KS	39-15.89	95-54.82	1.4	5.0
SEP 1	022402.64	Pottawatomie, KS	39-17.84	96-10.89	1.6	8.8
SEP 24	073458.52	Otoe, NE	40-37.80	95-54.09	2.0	5.0
SEP 27	093402.24	Norton, KS	39-55.29	99-54.64	2.2	0.1
OCT 8	111031.74	Rooks, KS	39-11.54	99- 6.82	1.9	12.4
OCT 9	154129.10	Osborne, KS	39-10.96	99- 1.99	1.9	0.01
OCT 11	081735.40	Rooks, KS	39- 8.91	99-11.48	1.9	5.0
OCT 20	043249.57	Kearny, KS	37-55.86	101-21.81	3.0	0.4
NOV 5	054148.44	Morris, KS	38-39.76	96-32.99	1.4	5.0
NOV 9	090507.24	Pottawatomie, KS	39-26.44	96- 5.53	1.0	7.5
NOV 25	063926.53	Rooks, KS	39- 6.53	99- 8.60	2.3	12.8
DEC 9	111145.53	Osborne, KS	39- 8.79	99- 1.53	2.1	5.0
DEC 31	215704.95	Harper, KS	37- .97	98- 1.00	2.0	5.0

One event occurred in central Nebraska, near a pair of normal faults that are oriented northeast-southwest (fig. 33) (Hildebrand and others, 1988). A single event recorded on October 20, 1986, with an epicenter near Lakin, Kans., was of sufficient size (M_D 3.0) to be felt by people in a relatively small area.

The seismicity in 1986 was not particularly strong in terms of energy release; only nine earthquakes with local magnitude greater than 2.0 occurred. The two largest earthquakes had magnitudes of 3.0.

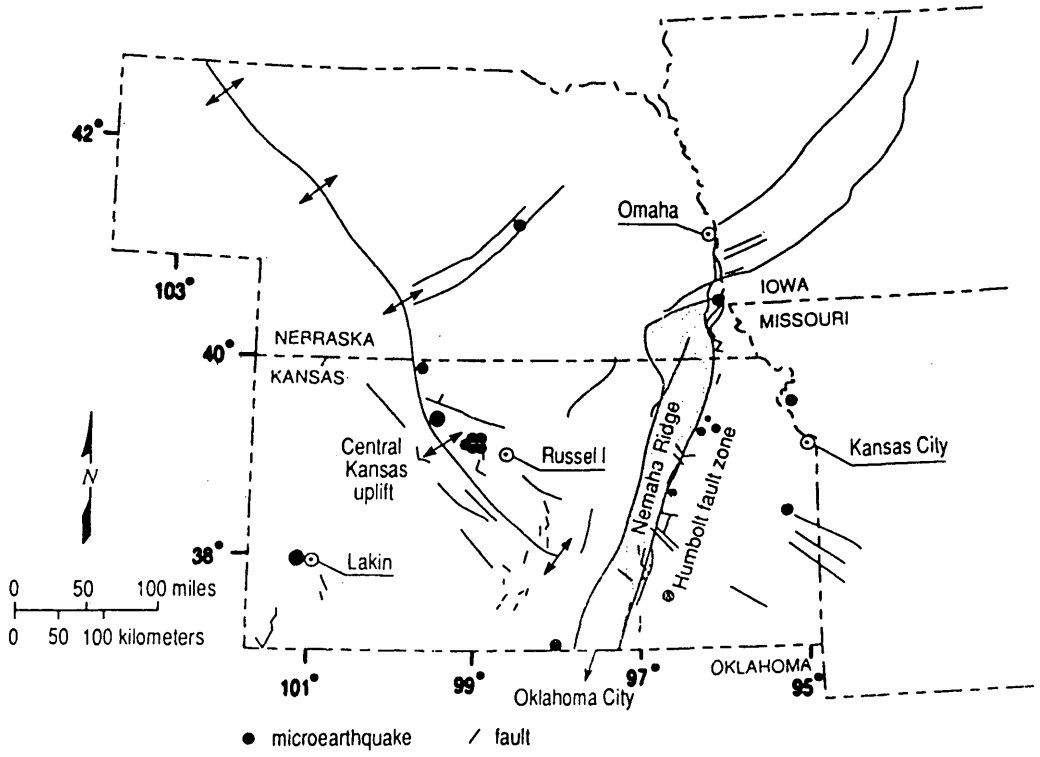

Figure 33. Size-coded microearthquakes recorded by the Kansas Geological Survey during 1986 and major regional tectonic features that are apparently related to earthquake activity. Magnitudes (table 2) are shown by the size of the blackened epicenter symbols. Open circles with dots represent cities and towns.

Mississippi Valley Earthquakes, 1986

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In 1986, 262 earthquakes were located and 78 other nonlocatable earthquakes were detected by the 40-station network (a regional telemetered microearthquake network) operated by Saint Louis University under contract with the U.S. Geological Survey and the U.S. Nuclear Regulatory Commission. The location and station readings for these seismic events are published in the quarterly "Central Mississippi Valley Earthquake Bulletin," nos. 47–50.

The locations of 245 of these events within a 4° by 5° region of southeast Missouri and Southern Illinois are shown on figure 34.

The locations of 203 earthquakes located within the 1.5° by 1.5° area of the immediate New Madrid region are shown on figure 35.

In addition to local earthquakes, 183 teleseisms were recorded by the network's microcomputer (PDP 11/34) during 1986. The apparent velocity of the *P*-wave propagating across the network was used to determine the azimuth of approach and distance and hence the epicentral coordinates of these events. The arrival times for teleseismic *P* and *PKP* phases and a map comparing epicenter locations by this method with those determined by the National Earthquake Information Service (NEIS) are published in the "Central Mississippi Valley Earthquake Bulletin."

The earthquake of January 31, 1986, 16:46 UTC, 41.46 N., 81.25 W., was large enough (m_b 5.0, NEIS) to warrant an aftershock study. Four smoked-paper (MEQ-800) recorders were deployed within 12 hours after the main shock and operated for 60 hours.

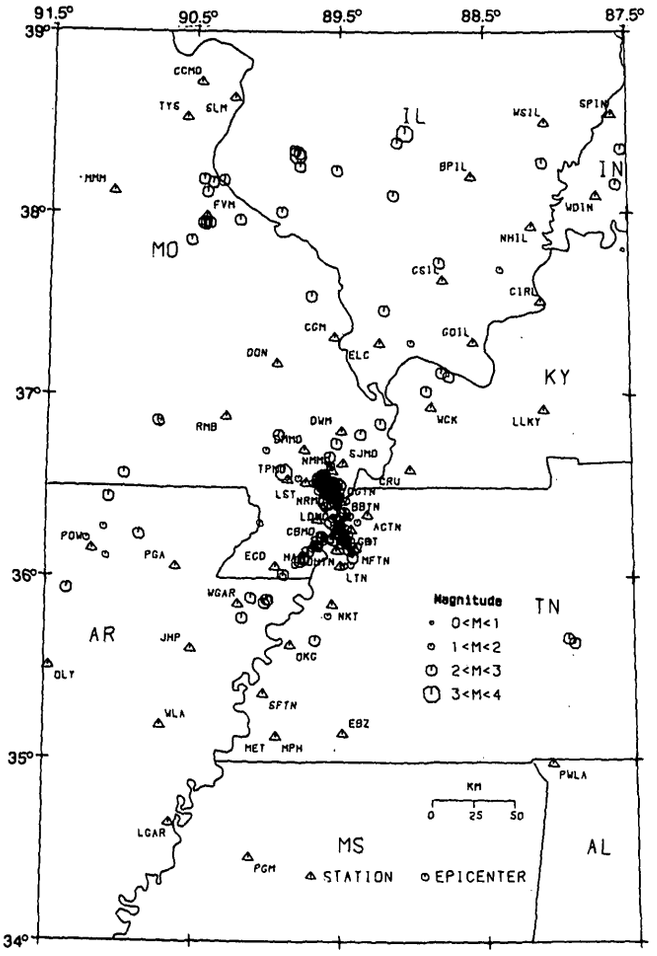

Figure 34. Central Mississippi Valley earthquakes during 1986 within a 4° by 5° region centered at 36.55°N. and 89.55°W. The locations of seismograph stations are shown by triangles and are labeled by the station code. Magnitudes are shown by the size of the epicenter symbols.

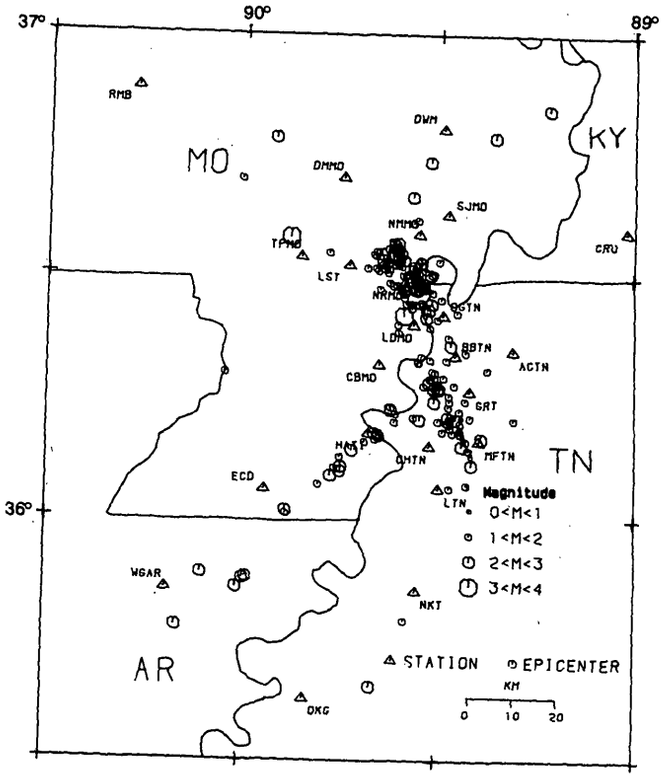

Figure 35. Central Mississippi Valley earthquakes during 1986 within a 1.5° by 1.5° area of the immediate New Madrid region. The locations of seismograph stations are shown by triangles and are labeled by the station code. Magnitudes are shown by the size of the epicenter symbols.

Montana and adjacent area earthquakes, 1986

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The Earthquake Studies Office (ESO) of the Montana Bureau of Mines and Geology (MBMG) operated a nine-station seismograph network in southwestern Montana during 1986 (fig. 36). Eight stations were short-period, vertical components at remote locations with data radio-telemetered to the ESO in Butte and recorded on helicorders. The Butte station (BUT) consists of two short-period horizontal components that are electronically filtered to emulate the frequency response of a Wood-Anderson seismograph.

These Wood-Anderson equivalent components are recorded with pen and ink on paper at a magnification of 25,000 and are used to calculate Richter magnitudes for most seismic events in the region with magnitudes of 2.0 or greater. Coda-duration measurements from the short-period vertical seismographs were also used to estimate Richter magnitudes. Seismograms from nine stations in northwestern Montana and northern Idaho operated by other agencies were analyzed at the ESO. Phase picks from these nine stations and readings from 26 additional stations operated by other agencies in southeast Idaho and northwest Wyoming were combined with ESO data and used to locate regional seismicity.

During 1986, the ESO reported hypocenter locations for 792 earthquakes (Stickney, 1988) in Montana and adjacent parts of Idaho and Wyoming (fig. 37) within the Intermountain seismic belt and the Centennial tectonic belt (Stickney and Bartholomew, 1987). Of these, 88 events were located in the Yellowstone Park-Hebgen Lake region by the University of Utah. Earthquake magnitudes ranged

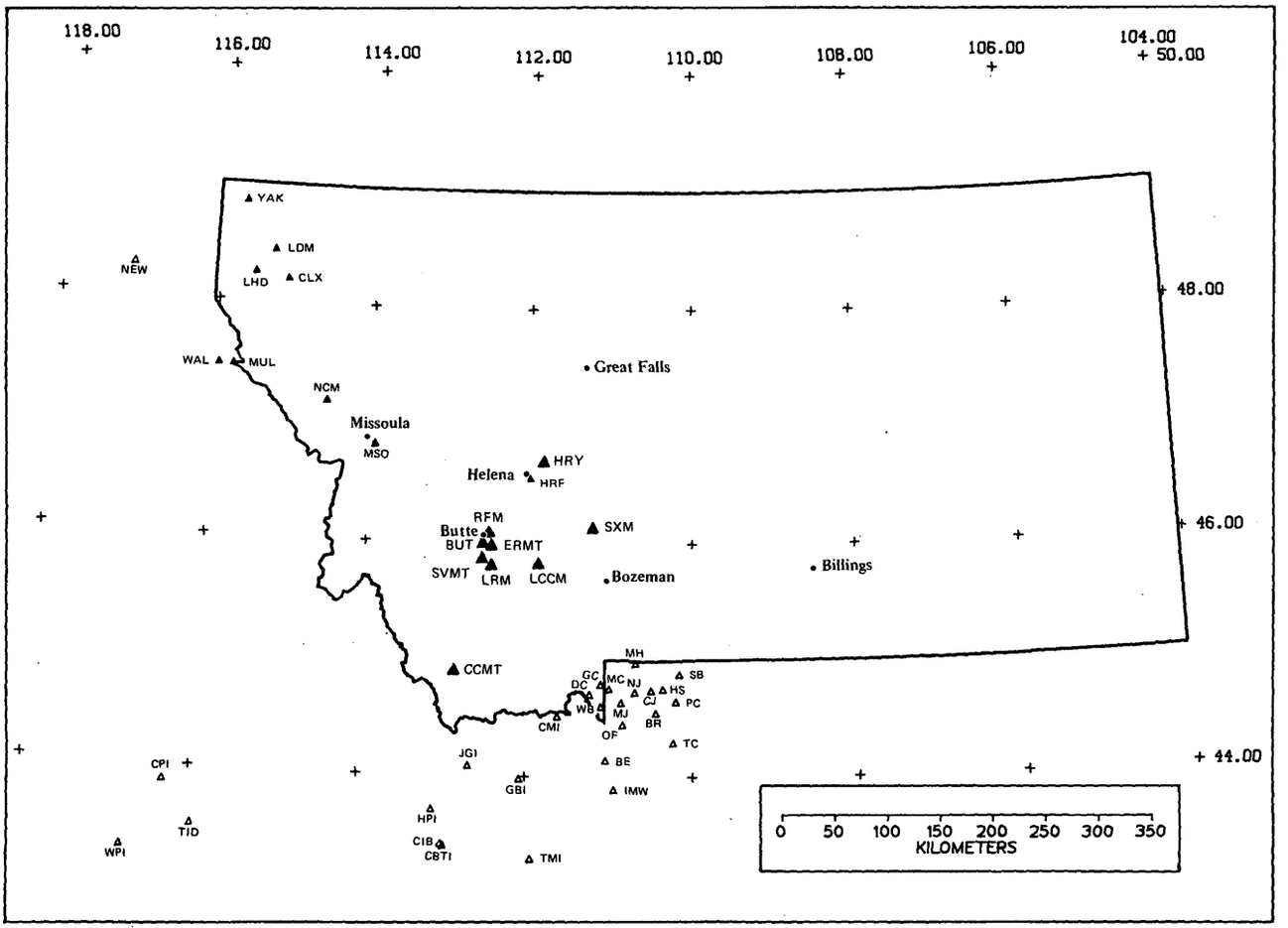

Figure 36. Permanent seismograph stations used to locate 1986 seismicity in Montana, parts of Idaho, and part of Wyoming. Large solid triangles show seismograph stations operated by the Earthquake Studies Office (ESO). Small solid triangles show stations operated by other institutions which contributed seismograms to the ESO for analysis. Small open triangles show stations operated by other institutions which contributed arrival-time data to the ESO.

from about 0.5 to 4.6, with 146 events of magnitude ≥3.0 and 15 events with magnitudes ≥4.0 (fig. 38). A total of 25 earthquakes were reported as felt. Regions with significant seismicity during 1986 are listed below.

Seismicity continued in western Yellowstone Park 10 km east of West Yellowstone, Mont., after an intense earthquake swarm beginning October 10, 1985. Between January 1 and April 30, 1986, 25 earthquakes with magnitudes ≥3.0 (12 reported felt) occurred in the epicentral region of the swarm. The largest of these was a M_L-4.3 (BUT) event on February 11.

On March 12, 1986, a M_D-2.6 rockburst in the Lucky Friday Mine near Wallace, Idaho, killed one miner and injured two others.

Late aftershock activity of the 1983 Borah Peak, Idaho, earthquake (M_S 7.3) continued through 1986 with 30 events of magnitude 3.0 or greater. Three aftershocks had magnitudes of 4.0 or greater; the largest occurred April 7 with M_L 4.5 (BUT).

On August 24, an M_D-3.9 earthquake occurred 10 km southwest of Three Forks, Mont. The entire aftershock sequence of this event consisted of one M_L-1.6 event the following day.

A swarm of earthquakes occurred near Boulder, Mont., beginning July 16. A total of 75 locatable events occurred, with two peak periods of activity. The first on July 16–17 included two events of M_L 3.3. The second peak of activity occurred from October 18 to 24 and included four events of M_L 3.1–3.4. Sixteen days later on November 9, a M_L-3.2 event occurred 5 km south of the swarm epicenter at an active hot spring.

A swarm of earthquakes in the White Cloud Range of east-central Idaho began in early September and continued through late December. The White Cloud

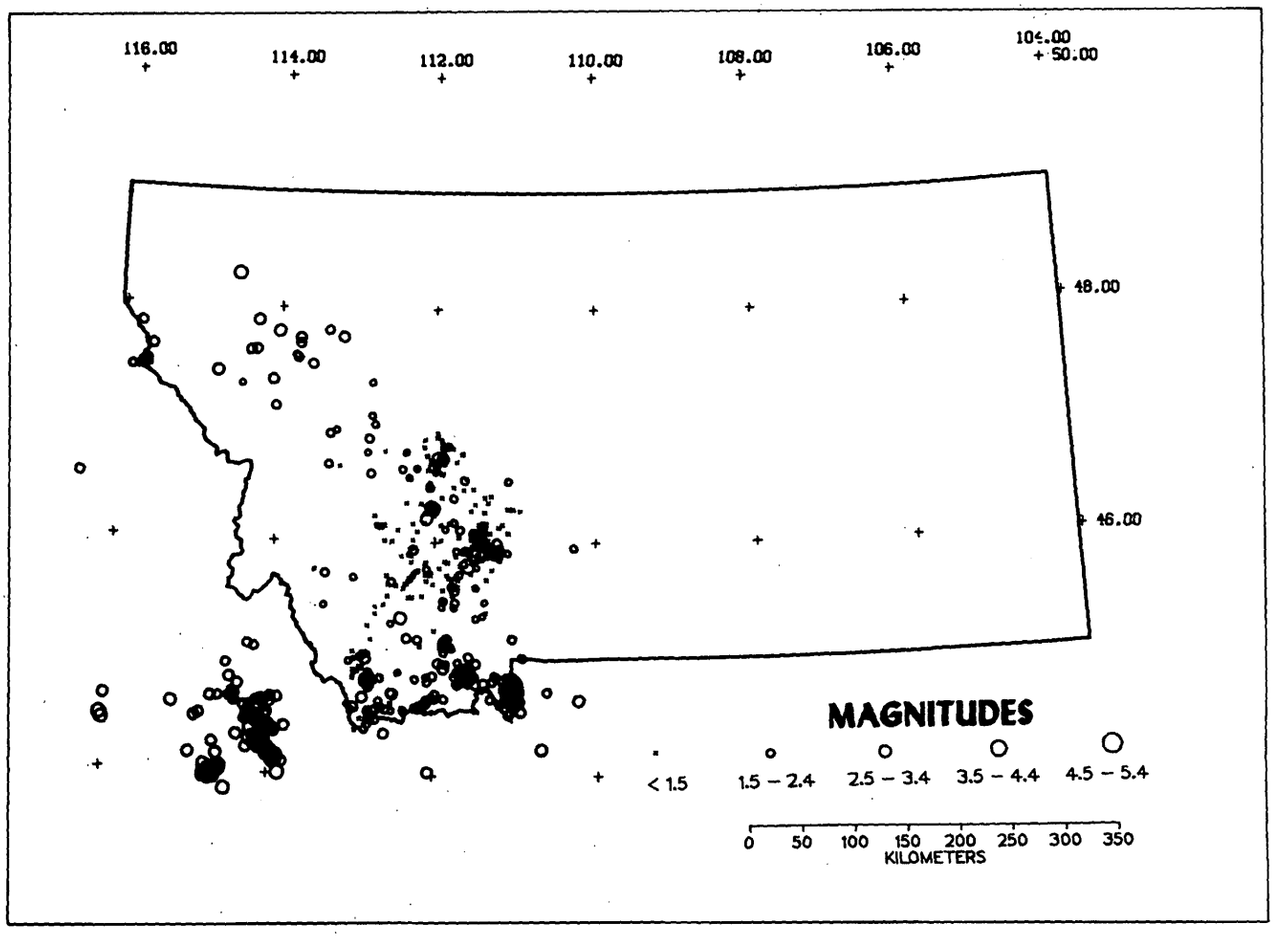

Figure 37. Seismicity of Montana and adjacent regions during 1986. Magnitudes are shown by the size of the epicenter symbols.

swarm included 51 events with magnitudes of ≥3.0 and seven events of magnitude ≥4.0. The largest event occurred September 26 with M_L 4.6 (BUT). Only five events were reported felt.

Western Nevada and Eastern California Earthquakes, 1986

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This section contains notes on significant earthquake activity from January to December, 1986. It includes all earthquakes with magnitude ≥4.0 and all earthquakes that were reported felt (fig. 39). It is interesting that some of the stronger earthquakes with magnitude ≥4.0 were not reported felt, probably because of the sparse population density in many parts of Nevada. Forty earthquakes had magnitudes of ≥M_L 4.0, the two largest had magnitudes of M_L 6.6 (mainshock) and M_L 5.6. This sequence was located in the northern part of the White Mountain seismic gap.

New England Earthquakes, 1986

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During 1986 Weston Observatory operated a total of 30 stations in New England. Twenty-nine stations were remote, telemetering their signals to the home station, Weston.

The data were recorded on develocorders as well as in digital computer form at Weston Observatory. The digital system sampled the signals from each station and computed the long-term average (LTA) and the short-term average (STA) of the signal amplitudes. When the STA/LTA ratio exceeded some threshold value at two different

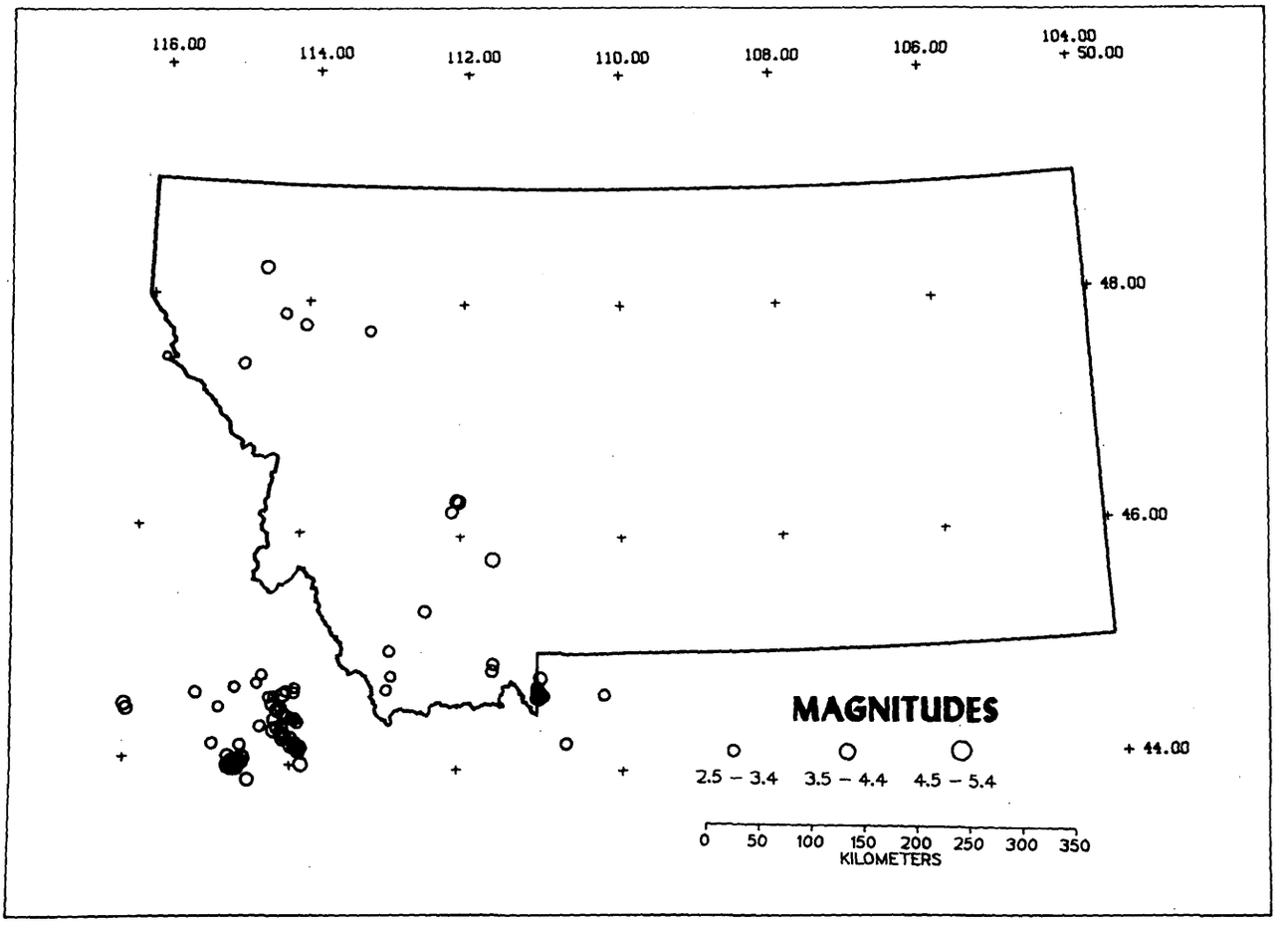

Figure 38. Earthquakes in Montana and adjacent regions that had magnitudes greater than or equal to 3.0, or reported felt if the magnitude was less than 3.0. Magnitudes are shown by the size of the epicenter symbols.

stations, a seismic event was declared by the computer, and 2.5 minutes of the signal were recorded. In order to analyze the data accurately, step-function and calibration signals from some of the stations were taken.

During the year 67 earthquakes were detected and located in the northeastern United States. In addition, 110 earthquakes that have epicenters in Canada were recorded and located. Of the latter, 50 earthquakes had epicenters within 100 km of the Canadian-United States border. An additional 184 microearthquakes, foreshocks, and aftershocks were recorded. The magnitudes of these earthquakes ranged from 1.0 to 5.3, and the magnitude range of the foreshocks, aftershocks, and microearthquakes was from –1.9 to 3.4 (fig. 40).

Research at Weston Observatory included study of the *Rg* waves produced by quarry blasts in southeastern New England, an analysis of the signals recorded by the network from the 1984 Maine Seismic Refraction Experiment, and estimations of the return times of earthquakes of various magnitudes in the northeastern United States.

Socorro, New Mexico, Area Earthquakes, 1986

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New Mexico Institute of Mining and Technology
Socorro, NM 87801

The Socorro, New Mexico, network is a collaborative project of New Mexico Institute of Mining and Technology and the U.S. Geological Survey. For 1986, the network usually consisted of 11 stations; all are shown in figure 41 except one outside the map area to the north (MLM) and another one just west of Socorro (WTX). Station BMT was substituted for MAG in 1987. Earthquakes recorded by the Socorro network were located using the algorithm HYPO71 Revised (Lee and Lahr, 1975) with a

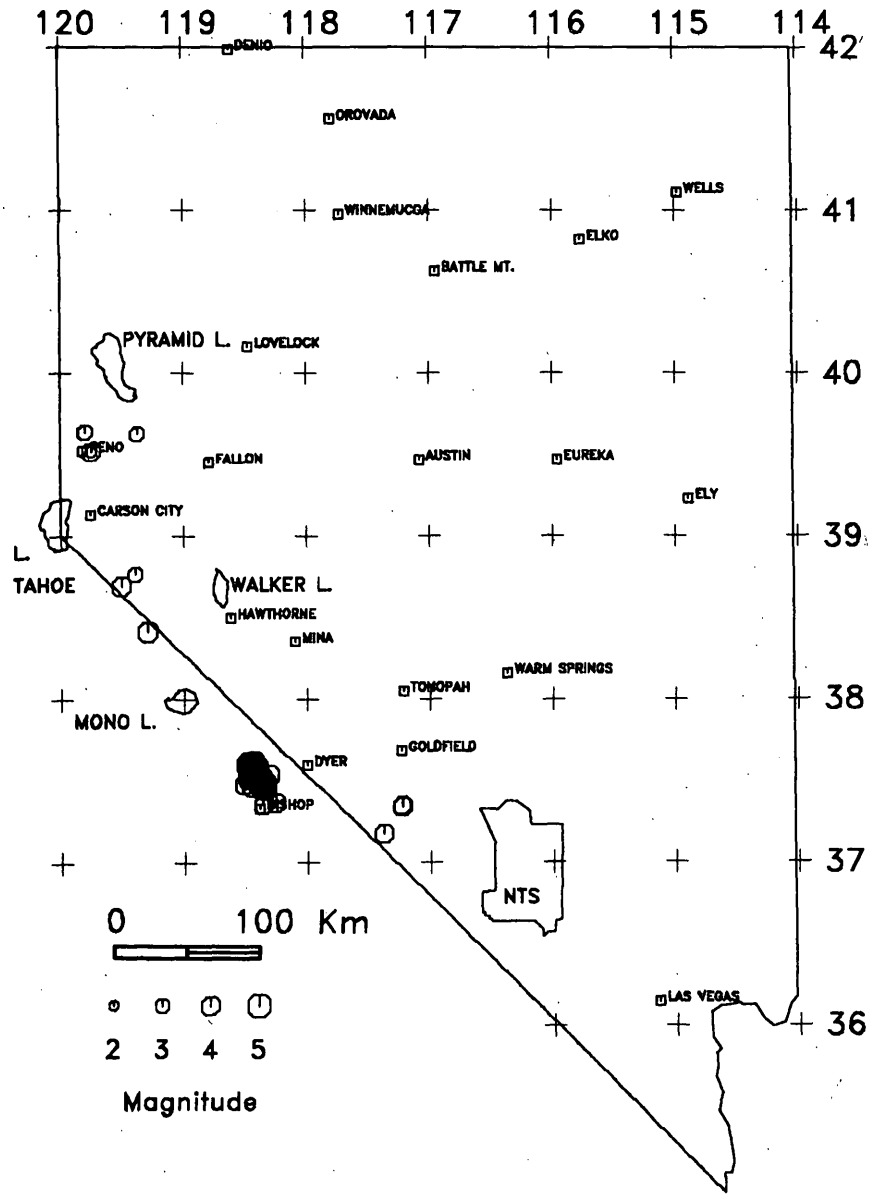

Figure 39. Earthquakes in western Nevada and eastern California during 1986 with magnitudes greater than or equal to 4.0 or reported felt if less than magnitude 4.0. Magnitudes are shown by the size of the epicenter symbols.

half-space velocity model of 5.85 km/s and a Poisson's ratio of 0.25 (Ward and others, 1981). Station corrections ranging from –0.33 to 0.28 seconds were used to account for differences in near-surface geology and elevation within the network (Ward, 1980; and Ake, 1984).

Magnitudes of the earthquakes were calculated from durations of recorded signals using an empirical equation based on northern New Mexico earthquakes (Newton and others, 1976). The same equation was found to be applicable to earthquakes in the Socorro area in the magnitude range 1.0 to 4.0 (Ake and others, 1983).

Epicenters for 301 earthquakes are plotted in figure 41. In general, the location quality is best for epicenters towards the center of the instument array. Duration magnitudes for these 301 events range from –0.5 to 2.8. During 1986, the Socorro area had 17 earthquakes with magnitudes $\geq$1.5; 7 of these exceeded or equaled magnitude 2.0.

The total number of earthquakes recorded by the Socorro network in 1986 was far greater than the 301 events shown in figure 41. A characteristic of seismic activity in the Socorro area is that the majority of earthquakes occur in swarms. On figure 41, these swarm sequences appear as

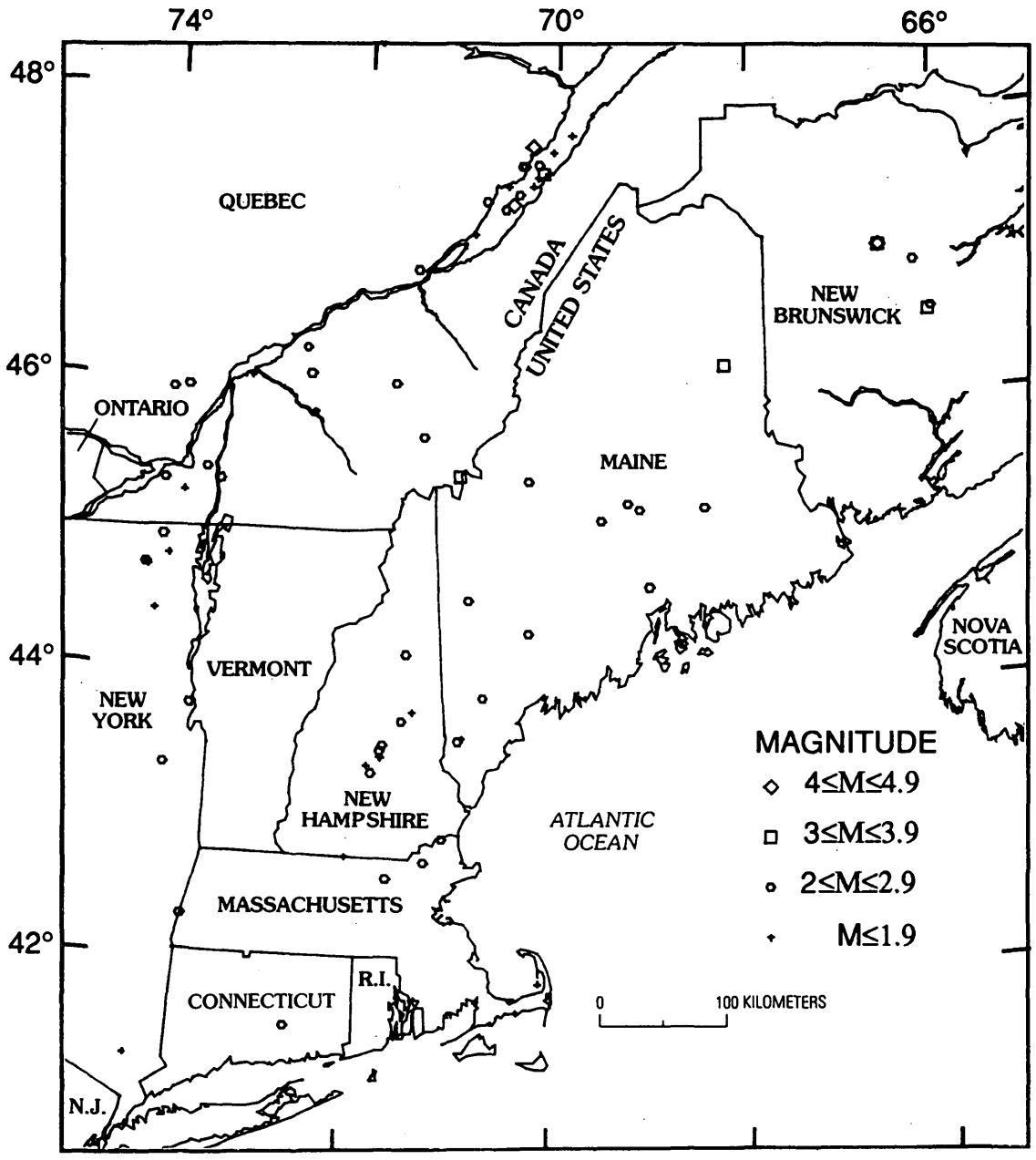

Figure 40. Northeastern United States earthquakes during 1986. Magnitudes are shown by the type of epicenter symbol.

tight clusters of epicenters; an example is the cluster centered at 34.02°N., 106.83°W. Activity in this area appears to have commenced on April 19 but was most vigorous from April 27 through May 1. In routine analysis of swarms, we usually make no effort to locate all events, only the strongest. Thus, the April-May swarm (fig. 41) is represented by about a dozen closely spaced epicenters. In a detailed study of this swarm, Petrillo (1987) was able to obtain HYPO71 quality B or better locations for 51 earthquakes.

The tight cluster of epicenters centered at 34.15°N., 106.73°W shows for a swarm that started on September 24 and continued into the early part of December. This swarm produced the strongest earthquake within the Rio Grande rift in 1986, a magnitude-2.8 event at 15:55 UTC on Octo-

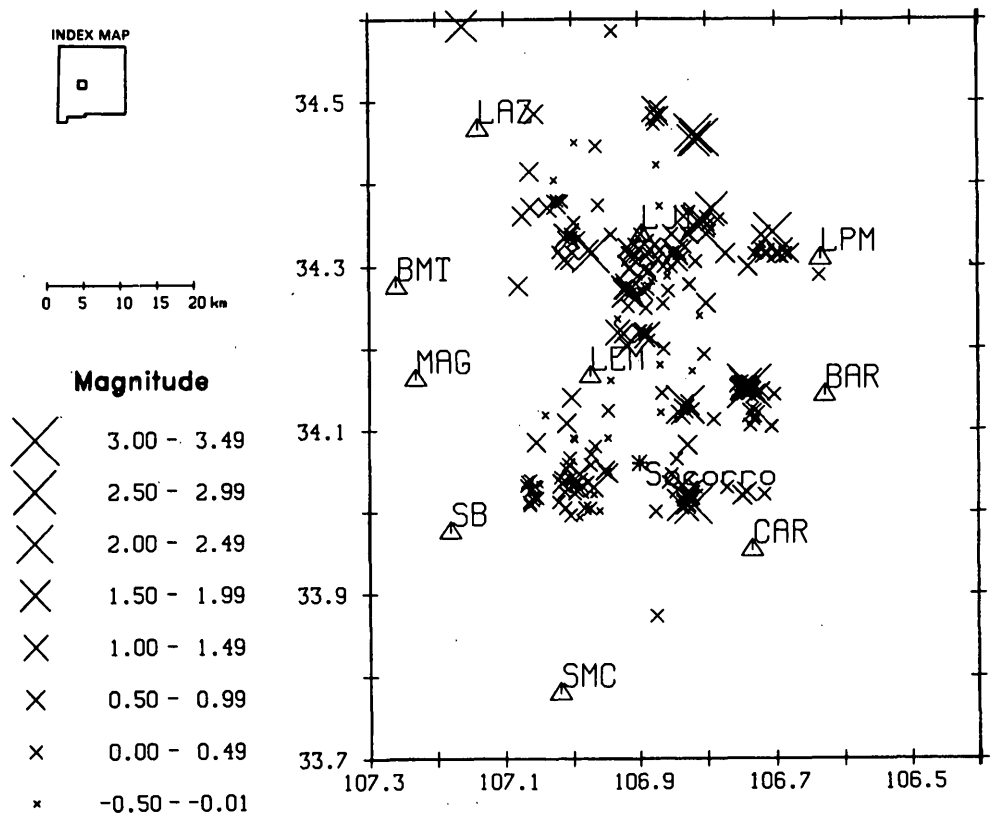

Figure 41. Seismicity of the Socorro, New Mexico, area for 1986. Stations are shown by triangles and abbreviations, and epicenters are shown by x symbols. Magnitudes are shown by the size of the epicenter symbols.

ber 5. All locatable shocks (41) of this swarm are included in the 301 epicenters plotted on figure 41.

Seismicity of New Mexico, 1986

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The distribution of earthquakes in New Mexico during 1986 is shown in figure 42. Epicenters for 40 shocks were plotted whose duration magnitudes were ≥1.5. Data are primarily from networks of seismic stations operated by New Mexico Institute of Mining and Technology (NMIMT) in collaboration with the U. S. Geological Survey (USGS) and Los Alamos National Laboratory (LANL). The LANL network is centered near 36.00°N., 106.30°W., on the Rio Grande rift in north-central New Mexico; the NMIMT/USGS network centered near 34.10°N., 106.90°W., is also on the rift but near the middle of the state. An additional small network of stations in southeastern New Mexico, centered near 32.40°N., 103.9°W., is operated by NMIMT.

Although the recording stations are concentrated in the central regions of the State, the geographical distribution of earthquake activity (fig. 42) is believed to be nearly free of station-location bias. Earthquakes with magnitudes of 1.5 in the farthest regions of the state are well within the detection capabilities of all stations in the two principal networks. However, because the azimuthal distribution of

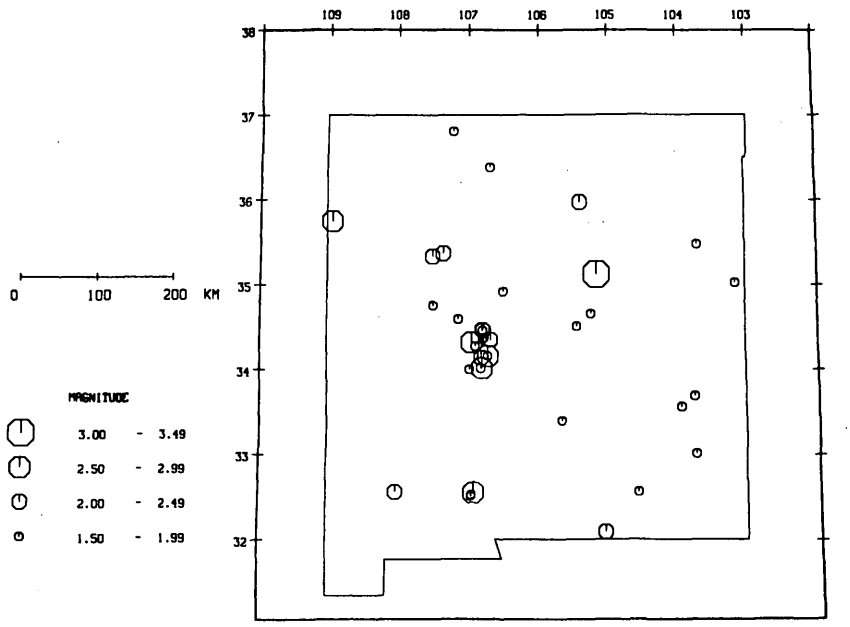

Figure 42. Earthquakes in New Mexico during 1986 with magnitudes greater than or equal to 1.5. Epicenters are shown by octagon symbols. Magnitudes are shown by the size of the epicenter symbols.

stations narrows as distance from the networks increases, the accuracy of earthquake locations diminishes progressively towards the State boundaries.

For the most part, the distribution of the 40 earthquakes in 1986 was similar to what has been observed since instrumental studies began in New Mexico (Sanford, 1965; Sanford and Cash, 1969; Toppozada and Sanford, 1972; Sanford and others, 1981). More than half the seismic events were within or near the Rio Grande rift, a major extensional structure extending north-south through the center of the state between longitudes 105.5°W. and 107.3°W.

However, as in the previous 24 years of recording, relatively strong earthquakes occurred in the presumably stable physiographic provinces bordering the rift. Two examples are a magnitude-2.6 earthquake on the Colorado Plateau at 35.75°N., 108.96°W., on May 22 and a magnitude-3.1 earthquake on the western edge of the Great Plains at 35.12°N., 105.18°W., on August 21. The latter earthquake was the strongest in New Mexico during 1986. The strongest earthquake in the Rio Grande rift occurred 20 km northeast of Socorro on October 5. The shock, which had a magnitude of 2.8, was the strongest of a swarm that commenced September 24 and continued into early December. A separate discussion of the 1986 seismic activity in the Socorro area, which accounts for over 40 percent of the earthquake epicenters (fig. 42), appears elsewhere in this report (p. 192).

Oklahoma Earthquakes, 1986

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In 1986, 52 earthquakes recorded on seismograms from three or more stations were located (fig. 43, table 3, and fig. 44) (see Stover and Brewer, 1991, United States Earthquakes, 1985, p. 143 for a description of the seismic network). No earthquakes were reported felt. Garvin and McClain Counties continued to be among the most active in the state, as they have been since 1979. For the third

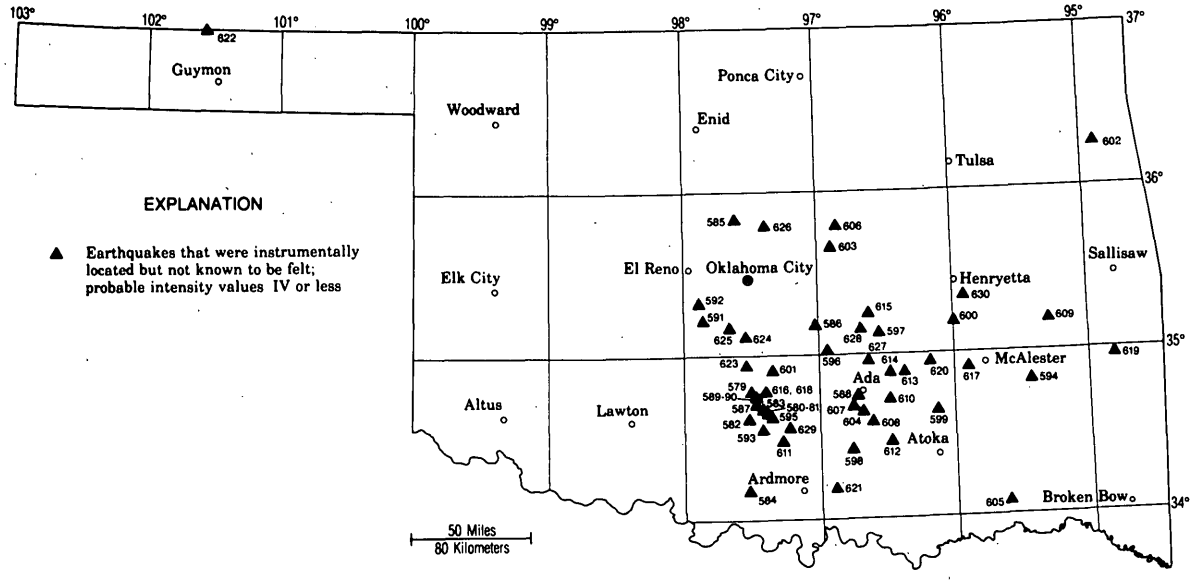

Figure 43. Distribution of Oklahoma earthquakes for 1986. Numbers correspond to event numbers in table 3.

Table 3. Oklahoma earthquakes for 1986.

Event Number	Date and Origin Time (UTC)[1]		County	Intensity MM[2]	Magnitudes 3Hz	bLg	DUR	Latitude deg N	Longitude deg W	Depth (km)[3]
579	JAN 1	013407.41	GARVIN		2.2	1.9	2.3	34.764	97.473	5.0R
580	JAN 1	022046.17	GARVIN		1.9	1.9	2.0	34.656	97.436	5.0R
581	JAN 1	064044.52	GARVIN		1.6		1.8	34.683	97.451	5.0R
582	JAN 1	080807.63	GARVIN		1.7		2.1	34.625	97.537	5.0R
583	JAN 1	094638.73	GARVIN		1.5		2.1	34.703	97.459	5.0R
584	JAN 3	061213.41	CARTER				2.2	34.197	97.554	5.0R
585	JAN 3	192434.00	LOGAN				2.2	35.851	97.646	5.0R
586	JAN 7	122510.81	POTTAWATOMIE		1.8		1.6	35.274	96.987	5.0R
587	JAN 9	034926.82	GARVIN		1.8		2.2	34.726	97.464	5.0R
588	JAN 25	223307.40	PONTOTOC		2.0		2.0	34.753	96.720	5.0R
589	JAN 26	020340.65	GARVIN		2.5	2.5	2.4	34.728	97.456	5.0R
590	JAN 26	121212.62	GARVIN				2.2	34.748	97.472	5.0R
591	JAN 27	023723.85	GRADY		2.2	2.1	2.3	35.238	97.858	5.0R
592	JAN 27	050350.38	GRADY		2.5	2.4	2.4	35.348	97.878	5.0R
593	FEB 6	105013.75	GARVIN		1.6		1.8	34.560	97.446	5.0R
594	FEB 14	060905.41	LATIMER		2.5	1.8	2.4	34.821	95.442	5.0R
595	FEB 24	235222.43	GARVIN		2.6	2.3	2.1	34.626	97.417	5.0R
596	FEB 25	052620.33	POTTAWATOMIE		1.7		1.6	35.023	96.923	5.0R
597	MAR 13	094626.55	SEMINOLE		1.6		1.6	35.117	96.546	5.0R
598	APR 5	145453.00	JOHNSTON		1.6	1.6	1.9	34.446	96.749	5.0R
599	APR 16	195208.80	COAL		2.3	2.0	2.1	34.631	96.149	5.0R
600	APR 29	235718.65	HUGHES		1.9		1.6	35.165	96.003	5.0R
601	APR 30	033610.71	McCLAIN		2.0		2.2	34.931	97.360	5.0R
602	MAY 25	102744.82	DELAWARE		2.1	1.4	2.2	36.230	94.877	5.0R
603	JUN 1	195238.19	LINCOLN		2.1	1.6	2.0	35.656	96.897	5.0R
604	JUN 2	070811.21	PONTOTOC		1.3		1.1	34.652	96.651	5.0R
605	JUN 10	074801.66	CHOCTAW		2.0	1.5	1.9	34.056	95.592	5.0R
606	JUN 15	220054.27	LINCOLN		1.3		1.6	35.767	96.859	5.0R
607	JUN 30	195551.16	PONTOTOC		2.7	2.1	2.3	34.706	96.752	5.0R
608	JUL 26	041723.83	PONTOTOC		2.6	2.3	2.3	34.591	96.620	5.0R
609	AUG 4	233606.82	HASKELL		1.2		1.7	35.165	95.296	5.0R
610	SEP 2	131959.04	PONTOTOC		2.1		2.1	34.684	96.483	5.0R
611	SEP 2	153709.90	MURRAY		1.9		1.7	34.489	97.270	5.0R
612	SEP 4	173317.41	COAL		2.9	2.6	2.5	34.477	96.503	5.0R
613	SEP 16	010516.94	HUGHES		2.5		2.3	34.884	96.370	5.0R
614	SEP 23	054927.96	PONTOTOC		2.0		1.8	34.903	96.468	5.0R
615	OCT 7	120639.12	SEMINOLE		2.2		2.5	35.257	96.580	5.0R
616	OCT 13	174244.71	GARVIN		2.6	2.3	2.0	34.750	97.421	5.0R
617	OCT 18	211216.49	PITTSBURG				1.1	34.915	95.909	5.0R
618	OCT 30	012434.80	GARVIN		2.0		1.8	34.759	97.409	5.0R
619	NOV 1	013035.93	LE FLORE		1.6		1.5	34.962	94.747	5.0R
620	NOV 2	012403.59	HUGHES		1.5		1.4	34.940	96.179	5.0R
621	NOV 2	040011.97	JOHNSTON		1.9		1.7	34.192	96.855	5.0R
622	NOV 5	133446.18	TEXAS		2.8		2.4	36.993	101.561	5.0R
623	NOV 26	205338.63	McCLAIN		2.2	1.8	1.8	34.957	97.526	5.0R
624	NOV 26	221656.53	McCLAIN		2.0	1.9	2.0	35.125	97.541	5.0R
625	NOV 27	061215.90	GRADY		1.6	1.8	2.0	35.158	97.671	5.0R
626	DEC 4	175011.83	LOGAN		2.7	2.4	2.2	35.766	97.328	5.0R
627	DEC 14	115618.54	SEMINOLE		1.7		1.6	34.959	96.642	5.0R
628	DEC 21	173258.13	SEMINOLE		2.8	2.8	2.6	35.142	96.676	5.0R
629	DEC 23	211047.62	GARVIN				1.6	34.572	97.204	5.0R
630	DEC 25	084617.38	McINTOSH		1.9	1.4	1.7	35.399	95.839	5.0R

[1]UTC refers to Coordinated Universal Time, formerly Greenwich Mean Time. The first two digits refer to the hour on a 24-hour clock. The next two digits refer to the minute, and the remaining digits are the second. To covert the local Central Standard Time, subtract 6 hours.
[2]Modified Mercalli (MM) earthquake-intensity scale.
[3]The hypocenter is restrained (R) at an arbitrary depth of 5.0 km, except where indicated, for purposes of computing latitude, longitude, and origin time.

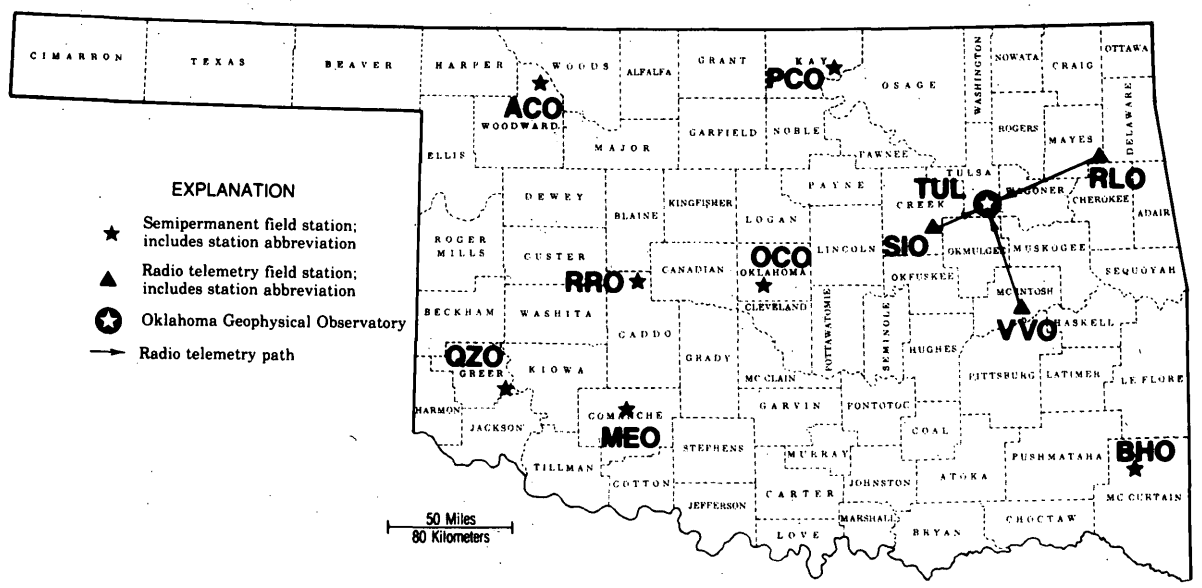

Figure 44. Active seismographs in Oklahoma for 1986.

year in a row, the Canadian County area contained no locatable earthquakes. The Arkoma basin, which includes all or parts of Pontotoc, Coal, Hughes, McIntosh, Pittsburg, Latimer, and Le Flore Counties, had many low-magnitude earthquakes. The first known earthquakes in Texas and Delaware Counties were recorded in 1986. Except for the Texas County earthquake, western Oklahoma was conspicuously quiet in 1986.

Earthquake detection and location accuracy have greatly improved since the installation of the statewide network of seismograph stations (fig. 44). The frequency of earthquakes and the possible correlation of earthquakes to specific tectonic elements in Oklahoma are being studied. It is hoped that this information will provide a more complete data base that can be used to develop numerical estimates of earthquake risk, giving the approximate frequency of the earthquakes of any given size for various regions of Oklahoma. Numerical-risk estimates could be used for better design of large-scale structures, such as dams, high-rise buildings, and powerplants, as well as to provide the necessary information to evaluate insurance rates.

Southeastern United States Earthquakes, 1986

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Ninety-three earthquakes ($0.0 \leq M \leq 3.8$) were detected and located in the southeastern United States during 1986 (fig. 45). Of those, 12 were either felt and (or) had magnitudes greater than 3.0 (table 4). The largest shock in the

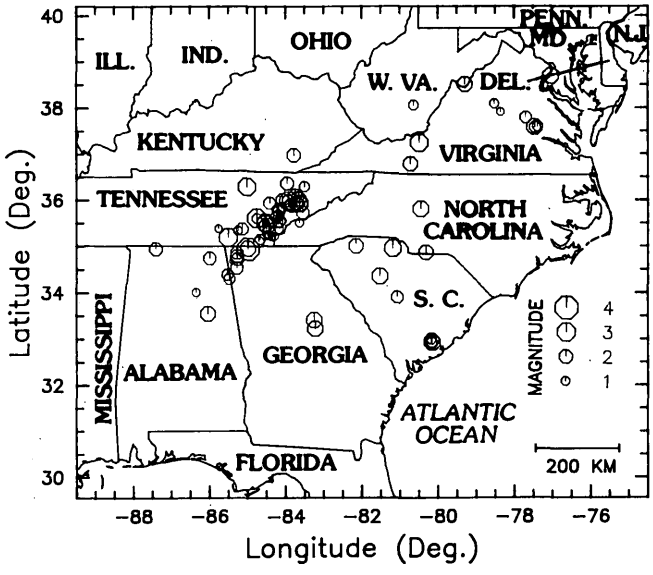

Figure 45. Southeastern United States earthquakes during 1986. Epicenters are octogons. Magnitudes are shown by the size of the epicenter symbols.

region during the year was a magnitude-3.8 event that was felt (MMI VI) in Cohutta, Ga. The area having the largest number of earthquakes was southeastern Tennessee. Additionally, 43 reservoir-associated earthquakes ($0.0 \leq M \leq 3.5$) were detected and located within the region. Most of those earthquakes were in South Carolina and Georgia. The largest reservoir-associated event was near Lake Keowee, S. C. on January 13 (M 3.5; MMI V; table 4). Data listings of 1986 earthquakes (including earthquake locations, magnitudes, arrival times, and earthquake statistics) are presented in Seismicity of the Southeastern United States, Bulletins 18 and 19 by Sibol and others (1987a,b). A printed and (or) magnetic

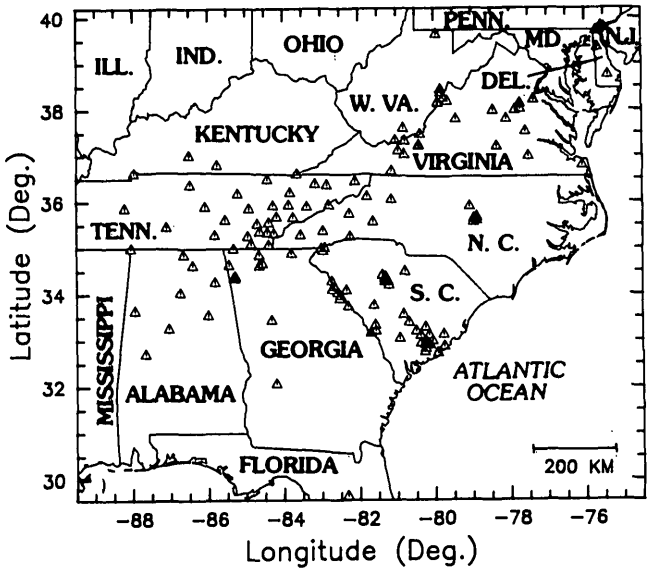

Figure 46. Southeastern United States Seismic Network (SEUSSN) stations (triangles) operating at the end of 1986.

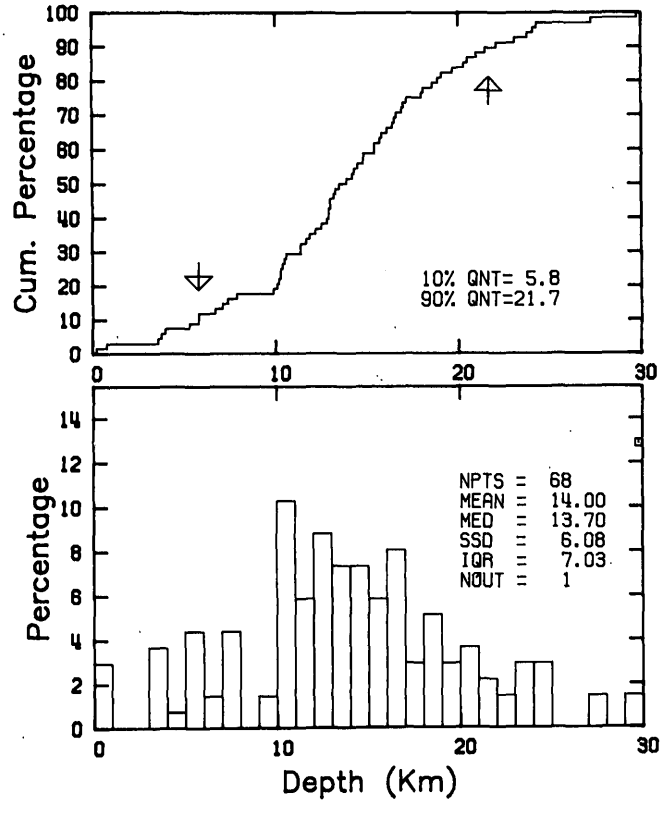

Figure 47. Distribution of focal depths of 1986 earthquakes in the southeastern United States for which standard errors of epicenter and depth were 5 km or less. The arrows mark the 10 percent and 90 percent quantile of the cumulative distribution.

tape listing of earthquakes from Seismicity of the Southeastern United States, Bulletins 1 through 19 (July 1977 through December 1986) is available from the authors of this Network Operations report.

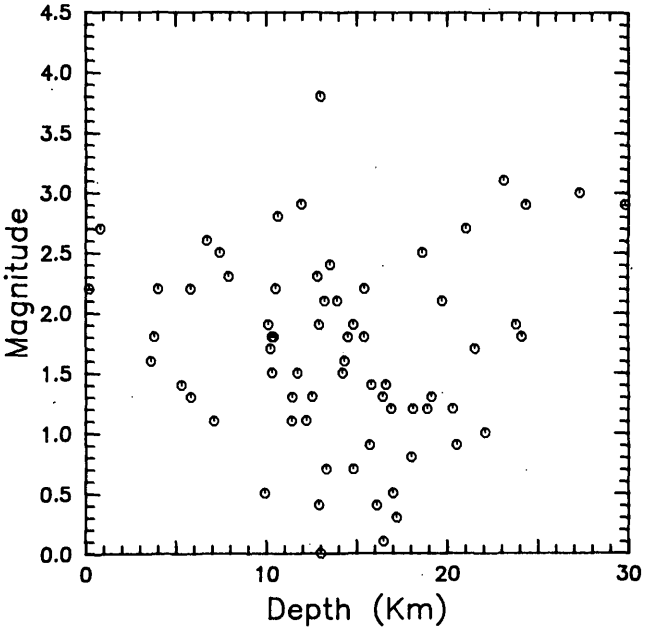

Figure 48. A plot of magnitude versus depth for 1986 earthquakes in the southeastern United States for which standard errors of epicenter and depth were 5 km or less.

A total of 140 seismograph stations operated in the region at the end of 1986 (fig. 46, table 5). Figure 47 shows the distribution of 1986 earthquake focal depths for events with ERH (standard error of epicenter, in kilometers) and ERZ (standard error of depth in kilometers) of 5 km or less. Figure 48 shows the distribution of magnitude versus depth for those same events.

Washington Earthquakes, 1986

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During 1986, the University of Washington operated more than 100 telemetered seismic stations in Washington and northern Oregon (fig. 49). The eastern part of the network was reconfigured in 1985 and 1986 to take advantage of low-cost telemetry provided by the Bonneville Power Administration microwave network. Station coordinates and a description of data-acquisition and data-processing procedures are given in Qamar and others (1987).

No damaging earthquakes occurred in Washington or Oregon during 1986. The largest earthquake within our network was a very shallow M_D-3.9 (M_D=coda-length magnitude) event near Darrington in the northern Cascade Range on February 10 at 18:05 UTC.

During 1986, 1,587 earthquakes were located within Washington and northern Oregon. Epicenters of

Table 4. Southeastern United States earthquakes for 1986.

[UT, Universal Time; (°N.), degrees latitude north; (°W.), degrees longitude west; (km), kilometers; (mb(Lg)) magnitude, see page 3; (M_D), duration magnitude; I_0, epicentral; (MM), Modified Mercalli Intensity. Magnitudes are greater than 3.0 or reported felt]

Date (1986)	Origin (UT)	Lat. (°N.)	Long. (°W.)	Depth (Km)	Magnitude ($m_b(L_g)/M_d$)	I_o (MM)	State
7 Jan.	01:26	35.61	84.76	23.1	3.1d	F	TN
13 Jan.*	11:35	34.79	82.94	1.2	3.5b/3.2d	V	SC
9 Mar.	23:49	32.97	80.17	5.8	2.2d	III	SC
13 Mar.	02:29	33.23	83.23	5.0F	2.4d	IV	GA
26 Mar.	16:36	37.25	80.49	11.9	2.9d	IV	VA
19 Apr.	07:40	35.19	85.51	27.3	3.0d	-	TN
11 Jul.	14:26	34.94	84.99	13.0	3.8b/3.7d	VI	GA
22 Jul.	22:49	32.93	80.17	5.8	1.3d	F	SC
17 Aug.	20:36	32.91	80.18	10.2	1.7d	F	SC
19 Aug.	20:51	36.29	85.02	29.8	2.9d	F	TN
17 Sep.	09:33	32.93	80.16	6.7	2.6d	IV	SC
3 Dec.	09:44	37.58	77.46	1.6F	1.5d	IV	VA
10 Dec.	11:30	37.59	77.47	1.2F	2.5b/2.2d	V	VA

*Event is reservoir related.

Table 5. Southeastern United States Seismic Network earthquake statistics, 1986.

[M, magnitude; ERH, standard error of epicenter; ERZ, standard error of depth; km, kilometers; (mb(Lg)) magnitude, see page 3; M_D, duration magnitude; MMI, Modified Mercalli Intensity]

	1986		Jul 1977 - Dec 1986	
Number of earthquakes with...	Tectonic	Reservoir	Tectonic	Reservoir
M ≥ 0.0	93	43	567	620
(implied rate per year)	93	43	59.7	65.3
M ≥ 2.0	31	11	255	165
(implied rate per year)	31	11	26.8	17.4
M ≥ 3.0	3	1	45	4
(implied rate per year)	3	1	4.7	0.4
M ≥ 4.0	1	0	3	0
(implied rate per year)	1	0	0.3	0.0
felt reports	12	1	82	4
(implied rate per year)	12	1	8.6	0.04
known Dmin ≤ 10 km	23	24	112	72
known ERH ≤ 5 km	90	42	446	120
known ERZ ≤ 5 km	69	19	391	91
Maximum magnitude	3.8	3.5	5.2	3.7
Mean magnitude	1.7	1.6	1.8	1.4

Number of seismographs operating in 1986: 140

Largest earthquake in 1986: 11 July 1986; 14:26 - Cohutta, GA
$m_b(L_g)$ = 3.8, M_d = 3.7, MMI = VI

Largest earthquake for Jul 1977 - Dec 1986: 20 July 1980; 18:52 - Sharpsburg, KY
$m_b(L_g)$ = 5.2, MMI = VII

earthquakes which were reported felt or had magnitudes (M_D) ≥2.7 are shown in figure 50. During 1986, 21 felt earthquakes were located in the area of figure 50, and 55 additional events had magnitudes ≥M_D 2.7. Forty-two of these unfelt earthquakes of magnitude ≥2.7 were located at Mount St. Helens during the two nonviolent eruptive episodes in April-May and October. Of all earthquakes located by the University of Washington network in 1986, 59 percent were near Mount St. Helens, reflecting both a greater station density and a higher level of activity there. In 1986, 19 percent of the earthquakes were located west of the Cascade Range outside of the Mount St. Helens area, 12 percent occurred within the Cascade Range and the remaining 11 percent occurred east of the Cascade Range.

A small earthquake swarm began on February 10 about 15 km south of Concrete, Wash., and included two felt earthquakes of M_D 3.1 and 3.9. The larger one was felt at Concrete, Mount Vernon, Sedro-Woolley, Cape Horn, Clear Lake, and Day Creek. Eight additional unfelt earthquakes >1.0 were located nearby during February, and all the earthquakes were located at depths <5 km.

Seven of the earthquakes felt in 1986 occurred in a swarm about 10 km west of Darrington, Wash., between March 27 and 31. The magnitudes ranged from 2.1 to 3.6, and depths were shallower than 4 km. The M_D-3.6 earthquake occurred on March 28 and was felt in Darrington, Concrete, and Duvall. During March and April, 18 additional unfelt earthquakes larger than magnitude 1.0 were located in this swarm. In 1985, a single felt earthquake was located in the same area. Seismicity in the vicinity of Darrington is described in more detail by Zollweg and Johnson (1989).

Several more felt earthquakes were located in northwestern Washington. An M_D-3.0 earthquake was located at a depth of about 18 km near Bellingham on April 20 and was reported felt. On July 8, a deep earthquake (depth ~63 km) of M_D 3.5 occurred beneath the Saratoga passage between Whidbey and Camano Islands in the Puget basin. It was felt on both Camano and Whidbey Islands, and in Mount Vernon and Marysville. Three earthquakes at depths less than 10 km were felt on September 16, one near the site of the March activity and the other two about 25 km southeast of Darrington. These earthquakes had M_D 1.6, 2.8, and 2.4, respectively. On September 26 and 29 two very shallow (depths <1 km) earthquakes of magnitudes 2.4 and 2.2 were reported felt at Sedro-Woolley.

In southwestern Washington, a M_D-3.1 earthquake was felt in Cougar and Vancouver, Wash., on March 11. It was located at a depth of about 15 km. Earlier on the same day, a smaller earthquake of M_D 2.9 was reported felt in the Puget basin at Gig Harbor near Tacoma and located at a depth of less than 10 km. Earthquakes of M_D 3.3 (~14-km depth) and 2.7 (depth ~9 km) were located near Lake Chelan on April 8 and June 11, respectively. On August 28 a shallow earthquake (depth <10 km) of M_D 2.7 was felt in southwestern Washington.

Mount St. Helens had an eruptive phase during April and May of 1986. Degassing events, both steam emissions and ash plumes, began on April 17 and continued almost daily into May. Seismic activity increased rapidly from a background level prior to May 3 to a high level of activity on May 7 and 8, then began to decrease, again reaching background level on May 19th. Eleven earthquakes of magnitude ≥2.7 were located at very shallow depths (less than 2 km) beneath the crater during April and May. The largest earthquake in this sequence was a M_D- 3.2 event of May 8th.

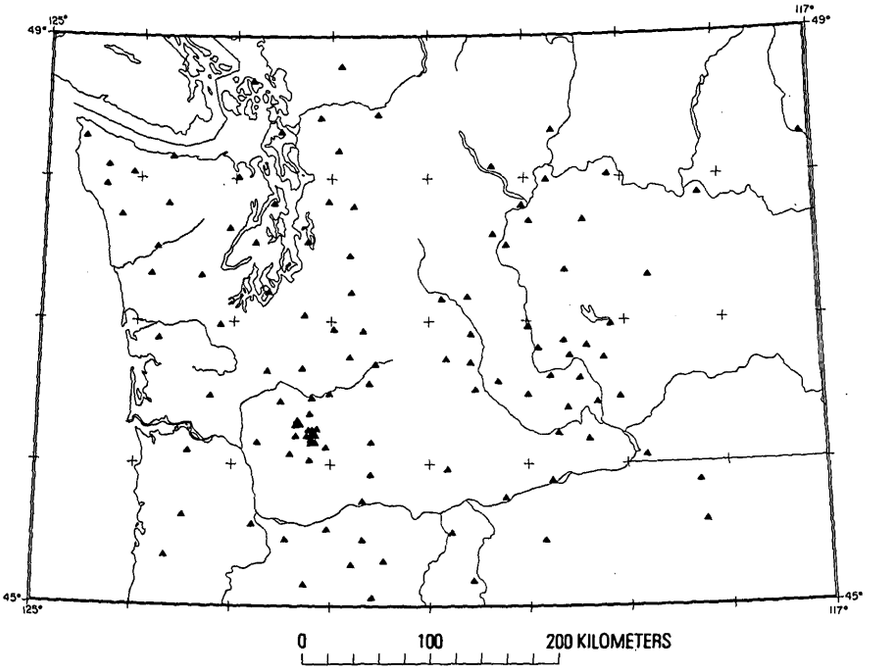

Figure 49. Seismograph stations (triangles) in Washington and Oregon operated by the University of Washington during 1986.

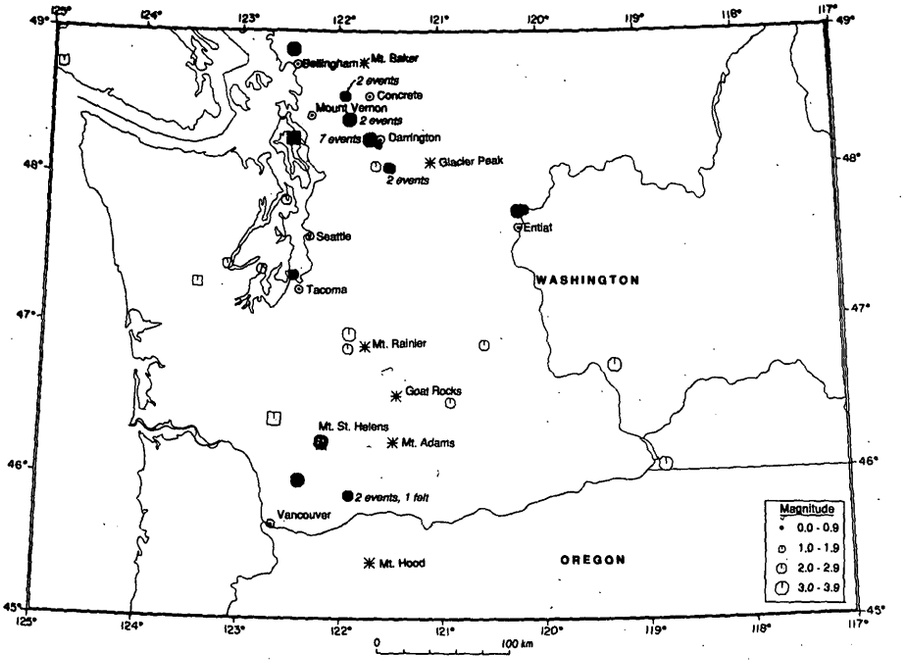

Figure 50. Felt earthquakes in Washington and northern Oregon during 1986, plus earthquakes with coda-length magnitudes greater than or equal to 2.7 which were not felt. Earthquakes reported felt in Washington and northern Oregon during 1986 are shown as solid symbols. Open symbols show all other earthquakes having magnitudes greater than or equal to 2.7. Octagon symbols represent events with depths shallower than 30 km, and square symbols indicate event depths of 30 km or more.

The second eruption of Mount St. Helens took place during October. Seismicity began to rise above background levels during the weekend of Oct. 4–5 but fell to a background level by Oct. 7. During the weekend of Oct. 11–12, the seismicity began to increase again, and by Oct. 19, seismicity was at a high level. This eruption was accompanied by the greatest release of seismic energy since the eruption of May 18, 1980. Thirty-one earthquakes $\geq M_D$ 2.7 were located at depths <2 km directly beneath the crater. The three largest earthquakes of this sequence (M_D 3.2) occurred on Oct. 21. A discussion of the magnitude and distribution of earthquakes during eruptive episodes at Mount St. Helens since 1980 is given in Qamar and others (1987). During the afternoon (PST, Pacific Standard Time) of Oct. 21, seismicity decreased and tremor began, which continued for several hours. At first, tremor amplitude increased and then decreased until, shortly after midnight (PST), only large, low-frequency earthquakes were occurring. The U.S. Geological Survey confirmed the extrusion of a new lobe of lava at the top of the lava dome early in the morning (PST) of Oct. 22. Seismicity returned to background levels by Oct. 27.

PRINCIPAL EARTHQUAKES OF THE WORLD

Table 6. Principal earthquakes of the World during 1986

This table includes all earthquakes of magnitude 6.8 or larger, those of smaller magnitude that caused loss of lives and significant damages, and events of unusual interest. The primary source for this table is the National Earthquake Information Center publication *Preliminary Determination of Epicenters, Monthly Listing.*

[(UTC), Coordinated Universal Time; (KM), kilometers; (m_b), body-wave magnitude; (M_L), local magnitude; (M_S), surface-wave magnitude; (AT), Athens Observatory, Greece; (BK), University of California, Berkeley; (GS), U.S. Geological Survey, Golden, Colo.; (PS), California Institute of Technology, Pasadena; (TG), Titograd Observatory, Yugoslavia]

DATE	ORIGIN TIME (UTC)	LAT-ITUDE (°)	LONG-ITUDE (°)	DEPTH (KM)	MAGNITUDE	REGION	REMARKS
Jan. 11	19 42 21.9	9.505S.	77.512W.	39	5.3m_b(GS)	Central Peru.	One killed, about 20 homes destroyed, and 60 homes damaged in the Huarmey area.
Mar. 24	19 31 39.3	2.488S.	138.696E.	29	5.8m_b (GS) 6.8M_S(GS) 6.6M_S(BK) 6.4M_S(PS)	West Irian.	None.
Apr. 5	20 14 28.7	13.410S.	71.785W.	51	5.3m_b(GS) 4.6M_S(GS)	Southern Peru.	Sixteen killed, 170 injured, and 2,000 homes destroyed in the Cuzco area.
Apr. 26	07 35 16.1	32.128N.	76.374E.	33	5.5m_b(GS) 5.3M_S(GS)	Northern India.	Six killed, about 30 injured, and 85 percent of the homes were damaged in Dhurmsala. Felt in Pakistan.
Apr. 30	07 07 18.1	18.404N.	102.973W.	27	6.2m_b(GS) 7.0M_S(GS) 6.9M_S(BK) 6.8M_S(PS)	Michoacan, Mexico.	Some minor damage at Ciudad Guzman, Guadalajara, and Mexico City.
May 5	03 35 38.8	37.993N.	37.806E.	10	5.9m_b((GS) 5.9M_S(GS)	Southern Turkey.	Fifteen killed, 100 injured, and about 4,000 homes damaged in the Dogansehir-Golbasi area. Damage was also reported at Adiyaman, Elbiston, and Kapidere. Surgu Dam was cracked.
May 7	22 47 10.8	51.520N.	174.766W.	33	6.4m_b(GS) 7.7M_S(GS) 7.9M_S(BK) 7.8M_S(PS)	Andreanof Islands, Aleutian Islands, Alaska.	Damage on Adak and Atka Islands. A tsunami was generated and recorded in the Aleutian Islands and Hawaii, on the west coast of the United States, in Chile, in Japan, New Zealand, and Samoa, and on Wake Island.
May 13	08 44 02.1	41.431N.	43.737E.	10	5.7m_b(GS) 5.4M_S(GS)	Georgian SSR, USSR.	Two killed and about 1,500 buildings destroyed in the Akhalkalaki area. Slight damage in the Susuz area, Turkey.
May 20	05 25 46.9	24.125N.	121.619E.	19	6.1m_b(GS) 6.4M_S(GS) 6.0M_S(BK) 5.8M_S(PS)	Off the east coast of Taiwan.	One killed and five injured in the Hua-Lien area. Felt throughout Taiwan.
June 6	10 39 46.9	38.001N.	37.917E.	10	5.6m_b(GS) 5.6M_S(GS) 5.8M_S(PS)	Southern Turkey.	One killed, 20 injured, and damage in the Surgu area. Additional cracks in Surgu Dam (see May 5 above).
June 11	13 48 01.3	10.597N.	62.928W.	19	6.0m_b(GS) 6.2M_S(GS) 5.9M_S(BK) 6.1M_S(PS) 6.3m_b(BK)	Near the coast of Venezuela.	Two killed, 45 injured, and many people left homeless in the Cariaco area. Damage occurred at Corupano, El Pilar, and Rio Caribe. Felt in Colombia and on Trinidad.

Table 6. Principal earthquakes of the World during 1986—Continued

DATE	ORIGIN TIME (UTC)	LAT-ITUDE (°)	LONG-ITUDE (°)	DEPTH (KM)	MAGNITUDE	REGION	REMARKS
June 24	03 11 30.9	4.448S.	143.943E.	102	6.6m_b(GS) 7.1M_S(GS) 6.9m_b(PS) 7.4M_S(BK)	Papua, New Guinea.	Damage and landslides occurred throughout the Papua, New Guinea, highlands. Submarine cables from Madang to Guam and Cairns, Australia, were damaged. Damage was estimated at U.S. $500,000.
July 12	07 54 26.8	29.962N.	51.582E.	10	5.7m_b(GS) 5.6M_S(GS)	Southern Iran.	One killed, 4 injured, and about 300 homes damaged in the Mamasani area.
July 18	17 22 38.2	10.770N.	69.428W.	7	5.9m_b(GS) 4.9M_S(GS)	Northwestern Venezuela.	One person died from a heart attack, and 30 homes were damaged in the Churuguara area.
Aug. 14	19 39 13.6	1.795N.	126.519E.	33	6.6m_b(GS) 7.2M_S(GS) 7.4M_S(BK)	Molucca Passage.	Felt in northern Sulawesi and on Mindanao, Phillippine Islands.
Aug. 30	21 28 35.4	45.547N.	26.316E	132	6.4m_b(GS) 6.9M_S(GS) 5.8m_b(BK)	Eastern Romania.	Two killed, 558 injured, and about 55,000 homes damaged in the Kishinev and Kagul areas, USSR. Substantial damage in the Focsani-Birlad and Bucharest areas, Romania. Felt in Bulgaria, Greece, Hungary, Italy, Poland, and Turkey.
Sept. 13	17 24 31.4	37.014N.	22.176E.	11	6.0m_b(GS) 5.8M_S(GS) 5.7M_S(BK) 5.7M_L(AT)	Peloponnesus, Greece.	Twenty killed, about 300 injured, and 1,500 buildings were damaged or destroyed in the Kalamai area.
Sept. 16	18 20 17.7	19.376N.	146.301E.	48	6.5m_b(GS) 6.7M_S(GS) 6.8M_S(BK)	Mariana Islands region.	None.
Oct. 10	17 49 24.1	13.827N.	89.118W.	7	5.0m_b(GS) 5.4M_S(GS) 5.5M_S(BK)	El Salvador.	At least 1,000 killed, 10,000 injured, 200,000 homeless, and severe damage in the San Salvador area. Some damage occurred at Tegucigalpa, Honduras. Felt strongly in Guatemala.
Oct. 20	06 46 09.9	28.117S.	176.367W.	29	6.6m_b(GS) 8.1M_S(GS) 8.3M_S(BK)	Northern Kermadec Islands.	Felt on Raoul Island and North Island, New Zealand. A small tsunami was recorded in the Hawaiian Islands, Papeete, Tahiti, and Samoa Islands.
Oct. 30	01 28 54.5	21.702S.	176.616W.	188	6.4m_b(GS) 6.4m_b(BK) 6.8m_b(PS)	Tonga Islands.	May be two events 5 seconds apart.
Nov. 14	21 20 10.5	23.901N.	121.574E.	34	6.3m_b(GS) 7.8M_S(GS) 7.5M_S(BK)	Off the east coast of Taiwan.	Fifteen killed, 44 injured, and damage in the Taipei area. Undersea cables from Taiwan to Guam and Okinawa were damaged. Felt in the Ryukyu Islands and on Luzon, Phillippine Islands.
Dec. 7	14 17 09.5	43.274N.	25.912E.	21	5.2m_b(GS) 5.6M_S(GS) 5.5M_L(TG)	Northern Bulgaria.	Three killed, 60 injured, and damage in the Turyovishte–Veliko Turnovo area. Felt in Turkey and Yugoslovia.

STRONG-MOTION ACCELEROGRAPH DATA

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Introduction

The current United States strong-motion instrumentation program is administered by the U.S. Geological Survey (USGS) in cooperation with both private industry and educational institutions, as well as numerous Federal, State, and local agencies and organizations including: the Army Corps of Engineers, the Veterans Administration, the Metropolitan Water District of Southern California, and others. The objectives of the program are to record strong ground motions and the response of representative types of engineered structures during potentially damaging earthquakes, and to disseminate processed data and information about the records, sites, and structures to external users in earthquake engineering research and design practice and engineering seismology. The dissemination of this information and data is achieved in various ways.

Preliminary earthquake reports are published after all earthquakes that produce significant strong-motion recordings, and a summary of recent accelerograph records is presented on an annual basis in the *Catalogue of U.S. Geological Survey Strong Motion Records*, a USGS Circular. These preliminary reports include a brief description of the earthquake and strong-motion recording station, the results of routine scalings of those records that contain peak accelerations greater than 0.05 *g* (gravity), and photographic reproductions of the more significant accelerograms. The catalogue contains a table of all USGS strong-motion recordings recovered during the calendar year, and includes earthquake, station, and record information.

Strong-motion event and strong-motion data reports are periodically published as USGS open-file reports and include the results of digitization and routine analyses of strong-motion accelerograms that contain peak accelerations of significant amplitude or that are related to a specific event, particular strong-motion station, or geographic group of stations. Although maximum acceleration is not directly related to frequency content or duration of strong motion, the peak acceleration can be readily obtained from an accelerogram, and thus the value is commonly used as a general indicator of the potential significance of the record.

The "Strong-Motion Accelerograph Station List" is periodically published as a USGS open-file report and includes information on all the accelerograph stations in the Western Hemisphere known to the USGS. Because of the ever-changing nature of this information, it is impossible to have a complete list of all of the stations in existence at any one time. Rather, the list is intended to provide that community of persons interested in strong-motion programs with a reasonably complete indication of the current status of the various strong-motion networks. Information presented in this list includes the station name and geographic coordinates, site characteristics, type and size of structure, location of instruments, and the primary sources of data. The current list contains information on about 1,350 stations in the United States, Canada, the Caribbean, and throughout Central and South America (Switzer and others, 1981).

Table 7 is a summary of United States accelerograph records recovered during 1986.

Table 7. Summary of United States accelerograph records recovered during 1986

[Station owners: ACOE, U.S. Army Corps of Engineers; BECH, Bechtel Power Corporation; CDOT, California Department of Transportation; CDWR, California Department of Water Resources; CLA, City of Los Angeles; MWD, Metropolitan Water District of Southern California; SDGE, San Diego Gas and Electric Company; UCB, University of California at Berkeley; USBR, U.S. Bureau of Reclamation; USGS, U.S. Geological Survey; VA, Veterans Administration. Instrument trigger time in seconds after the minute (or the following minute) listed in earthquake column. S-minus trigger denotes *S*-wave-arrival-minus-*t*rigger-time (*S-t*) or *S*-wave-minus-*P*-wave-arrival time 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 horizontal (orthogonal) components unless otherwise noted. Duration is interval between first and last peaks of acceleration greater than 0.10 *g*. G.m.t., Greenwich Mean time, is equivalent to UTC, Coordinated Universal time; (°), degrees; N, north; W, west; (s), seconds; (az), azimuth; (g), local acceleration of gravity; Dashes (---), indicate acceleration is less than 0.10 *g*. Footnotes are at end of table.]

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
4 December 1985- 14 January 1986 Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	(*2*)	0.9		(*1*)	
14 January 1986 0307:54.9 G.m.t. Central Calif. 36.563N, 121.203W Magnitude 3.3 ML	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	56.7	1.4		(*1*)	
14 January 1986 0309:36.3 G.m.t. Central Calif. 36.572N, 121.205W Magnitude 4.7 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	38.1	0.8	310 Up 220	.27 .05 .19	0.1 --- 0.2
	Bear Valley Station 2 Stone Canyon West (USGS)	36.636N 121.234W	39.3	(*2*)		(*1*)	
	Bear Valley Station 5 Callens Ranch (USGS)	36.673N 121.195W	39.7	2.7	310 Up 220	.06 .04 .10	--- --- 1 peak
	Bear Valley Station 6 James Ranch (USGS)	36.504N 121.101W	41.3	(*2*)		(*1*)	
	Bear Valley Station 7 Pinnacles (USGS)	36.483N 121.184W	38.8	1.6	310 Up 220	.05 .05 .08	--- --- ---
	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	38.2	2.0	310 Up 220	.22 .12 .22	1 peak 0.4 0.5
	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	39.7	2.1	310 Up 220	.09 .05 .14	--- --- ---
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569N 121.043W	40.1	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
14 January 1986 0535:47.9 G.m.t. Central Calif. 36.568N, 121.202W Magnitude 2.9 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	50.3	(*2*)		(*1*)	
	Bear Valley Station 7 Pinnacles (USGS)	36.483N 121.184W	49.9	(*2*)		(*1*)	
	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	49.7	(*2*)		(*1*)	
14 January 1986 0550 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	24.4	(*2*)			
15 January 1986-26 January 1986 Central Calif. Epicenters and magnitudes unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	(*2*)	(*2*)		(*1*)	
	Note: One additional record[1] recovered at Webb Residence.						
26 January 1986 1920:51.2 G.m.t. Central Calif. 36.810N, 121.275W Magnitude 5.5 ML	Bear Valley Station 1 Fire Station (USGS)	36.573N 121.184W	57.8	(*2*)		(*1*)	
	Bear Valley Station 2 Stone Canyon West (USGS)	36.636N 121.234W	56.4	(*2*)		(*1*)	
	Bear Valley Station 5 Callens Ranch (USGS)	36.673N 121.195W	54.7	(*2*)		(*1*)	
	Bear Valley Station 6 James Ranch (USGS)	36.504N 121.101W	03.1	(*2*)		(*1*)	
	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	(*3*)	(*2*)		(*1*)	
	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	(*3*)	3.4	310 Up 220	.12 .01 .12	0.6 --- 1 peak
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569N 121.043W	58.3	(*2*)	310 Up 220	.03 .02 .06	--- --- ---
	Hollister City Hall Basement Annex (USGS)	36.851N 121.402W	54.8	2.8	180 Up 090	.10 .29 .12	1 peak 1.5 0.5
	Hollister Damler Residence (USGS)	36.807N 121.408W	54.5[4]	2.4	360 Up 270	.17 .09 .14	3.3 --- 0.8

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Hollister SAGO Vault (USGS)	36.765N 121.446W	57.7[4]	(*2*)		(*1*)	
	Hollister Diff. Array (SMA) (USGS)	36.888N 121.413W	54.7	(*2*)	255 Up 165	.09 .15 .10	--- 0.3 2 peaks
	San Justo Damsite (USBR)						
	Left Abutment	36.815N 121.447W	55.4	3.1	360 Up 270	.16 .07 .14	0.5 --- 0.4
	Right Abutment (Dike)	36.827N 121.445W	55.2	2.5	360 Up 270	.09 .04 .08	--- --- ---
26 January 1986 2346:54.9 G.m.t. Central Calif. 36.828N, 121.290W Magnitude 3.8 ML	Hollister City Hall Basement Annex (USGS)	36.851N 121.402W	57.4	2.4		(*1*)	
	Note: One additional record[1] recovered at Hollister City Hall Annex.						
10 February 1986 0340 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	48.5	1.4		(*1*)	
9 March 1986 2241:42.5 G.m.t. Southern Calif. 34.110N, 117.770W Magnitude 3.5 ML	Live Oak Reservoir (MWD)	34.134N 117.753W	(*3*)				
	Abutment			0.6	180 Up 090	.10 .03 .05	1 peak --- ---
	Structure Array						
	Ch. 1-Center crest			0.8	155	.09	---
	Ch. 2-Center crest			(*2*)	Up	.04	---
	Ch. 3-Center crest			0.7	245	.13	0.1
	Ch. 4-Left crest			0.7	155	.09	---
	Ch. 5-Left crest			0.6	245	.14	0.1
	Ch. 6-Left slope			0.7	245	.10	1 peak
	Ch. 7-Center slope			0.6	155	.09	---
	Ch. 8-Center slope			(*2*)	Up	.02	---
	Ch. 9-Center slope			0.7	245	.09	---
	Ch. 10-Center toe			0.6	155	.07	---
	Ch. 11-Center toe			(*2*)	Up	.02	---
	Ch. 12-Center toe			0.6	245	.05	---
	San Antonio Dam (ACOE)	34.166N 117.680W	(*3*)	(*2*)			
	Crest					(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Weymouth Filter Plant (MWD)	34.114N 117.778W	(*3*)				
	Ground			0.7		(*1*)	
	Tank top					(*1*)	
10 March 1986 1533:16.2 G.m.t. Southern Calif. 34.400N, 119.800W Magnitude 4.0 ML	Santa Barbara Courthouse (USGS)	34.42 N 119.70 W	(*3*)	2.3		(*1*)	
13 March 1986 0836:59.4 G.m.t. Central Calif. 36.309N, 120.312W Magnitude 2.7 ML	Coalinga Oil City (USGS)	36.229N 120.360W	03.4	0.6	360 Up 270	.05 .01 .03	--- --- ---
24 March 1986 2255:34.0 G.m.t. Central Calif. 36.557N, 121.183W Magnitude 3.0 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	34.8	0.7		(*1*)	
29 March 1986 1624:04.2 G.m.t. Central Calif. 37.877N, 122.203W Magnitude 4.0 ML	Emeryville 6363 Christie Ave. (USGS)	37.844N 122.295W	(*3*)	(*2*)		(*1*)	
	U.C. Berkeley Strawberry Canyon (UCB)	37.87 N 122.24 W	07.5	(*2*)		(*1*)	
31 March 1986 1155:40.0 G.m.t. Central Calif. 37.483N, 121.690W Magnitude 5.7 ML	Anderson Dam (USGS)(SMA)	37.166N 121.628W					
	Crest		49.2	3.8		(*1*)	
	CR-1 (12-channel)		49.2	(*2*)		(*1*)	
	Del Valle Dam (CDWR)	37.615N 121.745W	(*3*)	2.5			
	Crest				065 Up 335	.15 .08 .10	1.4 --- 1 peak
	Livermore VA Hospital, Bldg. 62 (VA)	37.625N 121.762W	(*3*)	2.8			
	Basement				125 Up 035	.07 .05 .09	--- --- ---
	Roof (7th level)				125 Up 035	.15 .10 .39	0.7 3 peaks 1.4

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Palo Alto VA Hospital, Bldg. 1 (VA)	37.40 N 122.14 W	(3)	(2)			
	Basement					(1)	
	Roof (7th level)					(1)	
	San Jose, 101/280/680 Freeway Interchange (USGS/CDOT)	37.340N 121.851W	49.4[4]	4.6	322 Up 232	.07 .05 .04	--- --- ---
	Stanford Univ. Quad. Palm Dr. & Serra St. (USGS)	37.429N 122.169W	(3)	(2)		(1)	
	Stanford University SLAC Test Laboratory (USGS)	37.419N 122.205W	08.2[4]	(2)		(1)	
15 April 1986 0925:56.7 G.m.t. Central Calif. 36.677N, 121.347W Magnitude 3.6 ML	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	59.3	(2)		(1)	
26 April 1986 1719:46.5 G.m.t. Hawaii 20.811N, 155.749W Magnitude 5.0 ML	Kapaau, Hawaii Kohala Police Station (USGS)	20.230N 155.801W	(3)	(2)		(1)	
28 April 1986 2218:40.6 G.m.t. Central Calif. 36.815N, 121.258W Magnitude 3.5 ML	Hollister Differential Array (USGS)	36.888N 121.413W	44.4	(2)		(1)	
6 August 1985-31 May 1986 Central Calif. Epicenters and magnitudes unknown	McGee Creek, SMA (USGS)	37.550N 118.811W	(2)	(2)		(1)	
	Note: Two additional records[1] recovered at McGee Creek SMA station.						
	McGee Creek, CRA (USGS)	37.550N 118.811W	(2)	(2)			
	166 m downhole					(1)	
	35 m downhole					(1)	
	Surface					(1)	
	Note: Two additional records[1] recovered at McGee Creek CRA station.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
31 May 1986 0847:56.1 G.m.t. Central Calif. 36.570N, 121.327W Magnitude 4.8 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	58.4	1.0	310 Up 220	.05 .03 .08	--- --- ---
	Bear Valley Station 2 Stone Canyon West (USGS)	36.636N 121.234W	58.9	(*2*)		(*1*)	
	Bear Valley Station 5 Callens Ranch (USGS)	36.673N 121.195W	59.3	1.7	310 Up 220	.05 .03 .04	--- --- ---
	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	00.3	1.2		(*1*)	
	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	58.2	2.4	310 Up 220	.32 .13 .25	1.8 0.3 1.3
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569N 121.043W	04.7	(*2*)	310 Up 220	.02 .02 .05	--- --- ---
	Hollister Damler Residence (USGS)	36.807N 121.408W	07.8[4]	(*2*)		(*1*)	
31 May 1986 1451:27.9 G.m.t. Central Calif. 36.635N, 121.261W Magnitude 2.6 ML	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	30.3	1.9		(*1*)	
1 June 1986 0649:34.1 G.m.t. Central Calif. 36.612N, 121.267W Magnitude 3.6 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	36.8	1.3	310 Up 220	.07 .02 .10	--- --- 1 peak
	Bear Valley Station 5 Callens Ranch (USGS)	36.673N 121.195W	38.0	(*2*)		(*1*)	
	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	37.0	1.9	310 Up 220	.05 .05 .05	--- --- ---
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569N 121.043W	43.0	(*2*)		(*1*)	
1 June 1986 1934:44.6 G.m.t. Central Calif. 36.619N, 121.252W Magnitude 2.5 ML	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	47.25	1.9		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
3 June 1986 1414:49.2 G.m.t. Southern Calif. 33.790N, 116.340W Magnitude 3.7 ML	Fun Valley Reservoir 261 (USGS)	33.925N 116.389W	52.6	(*2*)		(*1*)	
	Indio,Southern Calif. Gas Company (USGS)	33.747N 116.214W	52.6	3.1	315 Up 225	.05 .01 .02	--- --- ---
	Thousand Palms Post Office (USGS)	33.82 N 116.40 W	(*3*)	0.5	135 Up 045	.05 .02 .05	--- --- ---
11 June 1986 1508:59.6 G.m.t. Central Calif. 36.622N, 121.282W Magnitude 3.1 ML	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	01.7	2.0	310 Up 220	.10 .04 .06	1 peak --- ---
9 December 1985- 13 June 1986 Southern Calif. Epicenter and magnitude unknown	Brea Dam (ACOE)	33.890N 117.930W	(*3*)	3.6			
	Left abutment					(*1*)	
	Downstream					(*1*)	
	Long Beach VA Hospital (VA)	33.78 N 118.12 W	(*3*)	2.1			
	Basement					(*1*)	
	6th floor					(*1*)	
	11th floor					(*1*)	
30 June 1986 Time unknown Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	19.5	0.8		(*1*)	
8 July 1986 0920:44.5 G.m.t. N. Palm Springs 34.000N, 116.610W Magnitude 6.0 ML	Anza Fire Station ANZA Array (USGS)	33.556N 116.673W	54.36	5.1	315 Up 225	.07 .06 .11	--- --- .02
	Big Pines Station (USGS)	34.38 N 117.69 W	16.73	(*2*)		(*1*)	
	Borrego Springs Scripps Clinic (USGS)	33.210N 116.330W	02.5	9.3		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Brea Dam: (ACOE)	33.889N 117.926W					
	Left abutment		(*3*)	(*2*)		(*1*)	
	Downstream		(*3*)	14.1		(*1*)	
	Crest		(*3*)	14.0	130 Up 040	.04 .03 .07	--- --- ---
	Note: One additional record[1] recovered at Brea Dam crest.						
	Cabazon Post Office (USGS)	33.918N 116.782W	49.50	2.4	270 Up 180	.21 .38 .22	3.3 3.2 2.7
	Note: One additional record[1] recovered at Cabazon.						
	Carbon Canyon Dam (ACOE)	33.92 N 117.84 W	(*3*)	(*2*)			
	Crest					(*1*)	
	Note: One additional record[1] recovered at Carbon Canyon Dam crest.						
	Cherry Valley (USGS)	33.98 N 116.99 W	51.48	5.2	295 Up 205	.10 .06 .10	1 peak --- 1 peak
	Chihuahua Valley ANZA Array (USGS)	33.38 N 116.68 W	(*3*)	7.9	270 Up 180	.05 .04 .07	--- --- ---
	Note: One additional record[1] recovered at Chihuahua Valley.						
	Coachella Canal Station 1 (USGS)	33.64 N 116.08 W	56.8	9.8	315 Up 225	.09 .05 .14	--- --- 2 peaks
	Coachella Canal Station 2 (USGS)	33.56 N 115.95 W	(*3*)	9.0		(*1*)	
	Collins Valley (USGS)	33.405N 116.467W	56.3	(*2*)		(*1*)	
	Colton Interchange (CDOT)	34.06 N 117.30 W	(*3*)	6.4			
	Bridge cell				082 Up 352	.12 .05 .10	1.7 --- 1 peak
	Vault		(*3*)	5.9	082 Up 352	.06 .02 .06	--- --- ---
	Note: One each additional record[1] recovered at Colton Interchange bridge cell and vault.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Cranston Forest Station, ANZA Array (USGS)	33.74 N 116.84 W	51.40	4.6	315 Up 225	.19 .13 .14	1.5 0.4 1.7
	Note: Two additional records[1] recovered at Cranston Forest Station.						
	Diemer Filter Plant (MWD)	33.91 N 117.82 W	(3)	11.2			
	Basement					(1)	
	Reservoir roof					(1)	
	Note: One each additional record[1] recovered at Diemer Filter Plant basement and reservoir roof.						
	Forest Falls Post Office (USGS)	34.09 N 116.92 W	50.0	4.0	300 Up 210	.07 .05 .08	--- --- ---
	Fun Valley Reservoir 261 (USGS)	33.925N 116.389W	48.95	2.8	135 Up 045	.14 .09 .13	0.6 --- 0.6
	Note: One additional record[1] recovered at Fun Valley.						
	Highland Fire Station (USGS)	34.136N 117.213W	54.86	7.0	315 Up 225	.04 .04 .05	--- --- ---
	Hurkey Creek Park ANZA Array (USGS)	33.67 N 116.68 W	51.34	4.3	135 Up 045	.18 .08 .24	1.0 --- 0.3
	Note: Two additional records[1] recovered at Hurkey Creek Park.						
	Indio, Southern Calif. Gas Company (USGS)	33.747N 116.214W	53.20	6.2	315 Up 225	.12 .09 .06	0.4 --- ---
	Note: One additional record[1] recovered at Indio.						
	Jensen Filter Plant (MWD)	34.309 N 118.499W	(3)	18.5			
	Basement Admin. bldg.					(1)	
	Generator room Basement					(1)	
	Reservoir roof					(1)	
	Note: One each additional records[1] recovered at Jensen Filter Plant administration building basement and generator room basement.						
	Keenwild Forest Station Anza Array (USGS)	33.71 N 116.71 W	50.85	3.9	180 Up 090	.33 .18 .21	4.7 8.1 2.9

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Mathews Dam Dike Toe (USGS)	33.852N 117.451W	(*3*)	6.8	252 Up 162	.05 .04 .07	--- --- ---
	Loma Linda University Medical Center (USGS)	34.05 N 117.26 W	(*3*)	6.0			
	Basement					(*1*)	
	Loma Linda VA Hospital (VA)						
	South FF	34.049N 117.250W	(*3*)	6.0		(*1*)	
	North FF	34.051N 117.248W	56.6	(*2*)	360 Up 270	.05 .03 .04	--- --- ---
	Structure Array, 9 Channel CRA-1:	34.049N 117.248W	(*3*)	6.3			
	1-1st floor center				Down	.02	---
	2-1st floor center				180	.04	---
	3-1st floor center				270	.04	---
	4-4th floor center				270	.10	1 peak
	5-1st floor north				270	.04	---
	6-4th floor center				180	.08	---
	7-4th floor north				270	.09	---
	8-1st floor south				180	.04	---
	9-4th floor south				270	.11	1 peak
	Lone Pine Canyon (USGS)	34.32 N 117.57 W	03.65	8.7		(*1*)	
	Los Angeles Bulk Mail Center (USGS)	33.99 N 118.16 W	(*3*)	16.5		(*1*)	
	Lytle Creek Mann Residence (USGS)	34.26 N 117.50 W	11.98	(*2*)		(*1*)	
	Mentone Fire Station (USGS)	34.067N 117.117W	53.02	6.2	315 Up 225	.06 .04 .04	--- --- ---
	Morongo Valley Fire Station (USGS)	34.048N 116.577W	47.0	1.9	135 Up 045	.22 .35 .23	4.7 4.2 4.8
	Note: Two additional records[1] recovered at Morongo Valley Fire Station.						
	North Palm Springs Post Office (USGS)	33.924N 116.543W	47.55	2.0	300 Up 210	.68 .78 .70	6.0 5.6 5.3
	Note: One additional record[1] recovered at N. Palm Springs Post Office.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Norwalk, 12400 Imperial Highway: (BECH)	33.92 N 118.07 W					
	Basement		(*3*)	16.8		(*1*)	
	4th floor		(*3*)	16.8		(*1*)	
	8th floor(roof)		(*3*)	16.9		(*1*)	
	North freefield		(*3*)	16.8		(*1*)	
	South freefield		(*3*)	16.6		(*1*)	
	Norwalk, 12440 Imperial Highway: (BECH)	33.92 N 118.07 W					
	Basement		(*3*)	16.8		(*1*)	
	North freefield		(*3*)	16.8		(*1*)	
	South freefield		(*3*)	16.8		(*1*)	
	Norwalk, 12440 Imperial Highway: Bechtel Bldg. 43 (USGS/BECH)	33.92 N 118.07 W	08.15	16.8			
	Structure Array, 12 channel CRA-1						
	1-6th floor ceiling center				090	.06	---
	2-4th floor ceiling center				090	.05	---
	3-1st floor ceiling center				090	.05	---
	4-Basement ceiling center				090	.04	---
	5-Basement floor east				360	.03	---
	6-4th floor ceiling 3/4 to west				360	.05	---
	7-Basement floor ceiling				090	.01	---
	8-Basement floor center				Up	.03	---
	9-Basement floor center				360	.04	---
	10-30 ft deep at base of caisson bldg center				090	.01	---
	11-30 ft deep at base of caisson bldg center				Up	.02	---
	12-30 ft deep at base of caisson bldg center				360	.03	---
	Ocotillo Wells Burro Bend Cafe (USGS)	33.14 N 116.13 W	03.7	(*2*)		(*1*)	
	Palos Verdes Reservoir (MWD)	34.774N 118.321W	(*3*)	(*2*)			
	Abutment					(*1*)	
	Pine Meadow ANZA Array (USGS)	33.578N 116.589W	52.91	5.6	360	.08	---
					Up	.08	---
					270	.10	1 peak

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (*s*)	Direction (az)	Maximum amplitude (*g*)	Duration (*s*)
	Pinyon Flat Observatory ANZA Array (USGS)	33.61 N 116.46 W	52.0	5.4	135 Up 045	.07 .06 .05	--- --- ---
	Note: One additional record[1] recovered at Pinyon Flat Observatory.						
	Prado Dam (ACOE)	33.89 N 117.64 W					
	Left abutment		(*3*)	(*2*)		(*1*)	
	Downstream		(*3*)	11.0	090 Up 360	.05 .04 .05	--- --- ---
	Crest		(*3*)	(*2*)		(*1*)	
	Rancho de Anza (USGS)	33.35 N 116.40 W	(*3*)	8.2	135 Up 045	.04 .03 .05	--- --- ---
	Note: One additional record[1] recovered at Rancho de Anza.						
	Reche Canyon Olive Dell Ranch (USGS)	34.01 N 117.22 W	56.78	5.5		(*1*)	
	Red Mountain ANZA Array (USGS)	33.64 N 116.86 W	(*3*)	(*2*)	360 Up 270	.14 .08 .10	0.4 --- 1 peak
	San Antonio Dam (ACOE)	34.16 N 117.68 W	(*3*)	(*2*)			
	Right Abutment					(*1*)	
	Crest					(*1*)	
	Santa Rosa Mountain ANZA Array (USGS)	33.57 N 116.52 W	53.25	5.9	360 Up 270	.09 .06 .12	--- --- 1 peak
	Skinner Dam (MWD)	33.58 N 117.07 W					
	Abutment		(*3*)	4.9	178 Up 088	.08 .04 .08	--- --- ---

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Structure Array, 12 Channel CRA-1		(*3*)	(*2*)			
	1) Center crest				180	.09	---
	2) Center crest				Up	.05	---
	3) Center crest				270	.12	1 peak
	4) Left crest				180	.07	---
	5) Left crest				270	.07	---
	6) Left slope				270	.06	---
	7) Center slope				180	.07	---
	8) Center slope				Up	.06	---
	9) Center slope				270	.08	---
	10) Center toe				180	.10	1 peak
	11) Center toe				Up	.05	---
	12) Center toe				270	.09	---
	Sunnymead	33.95 N	53.54	6.2	315	.13	0.2
	Randa Ranch	117.15 W			Up	.06	---
	(USGS)				225	.11	1 peak
	Note: Two additional records[1] recovered at Sunnymead.						
	Terwilliger Valley	33.48 N	(*3*)	6.5	135	.03	---
	ANZA Array	116.59 W			Up	.04	---
	(USGS)				045	.07	---
	Tripp Flats	33.60 N	53.98	4.5	360	.05	---
	ANZA Array	116.74 W			Up	.05	---
	(USGS)				270	.08	---
	Tule Canyon	33.47 N	(*3*)	6.9	360	.10	1 peak
	ANZA Array	116.64 W			Up	.04	---
	(USGS)				270	.11	1 peak
	Note: One additional record[1] recovered at Tule Canyon.						
	Weymouth Filter Plant	34.506 N					
	(MWD)	117.778 W					
	Ground		(*3*)	9.7		(*1*)	
	Tank		(*3*)	9.7		(*1*)	
	Whitewater Trout Farm	33.989N	(*3*)	1.6	270	.66	4.5
	(USGS)	116.655W			Up	.44	4.9
					180	.50	4.5
	Note: 20 additional records[1] recovered at Whitewater Trout Farm.						
	Whittier	33.977N	(*3*)	(*2*)			
	7215 Bright Ave.	118.036W					
	(USGS)						
	Basement					(*1*)	
	5th floor					(*1*)	
	10th floor					(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
8 July 1986	Morongo Valley	34.048N	15.2	2.2	135	.03	---
0924 G.m.t.	Fire Station	116.577W			Up	.08	---
Southern Calif.	(USGS)				045	.05	---
Epicenters and magnitudes unknown	Note: One additional record[1] recovered at Morongo Valley Fire Station.						
	North Palm Springs	33.924N	16.5	2.8	300	.05	---
	Post Office	116.543W			Up	.03	---
	(USGS)				210	.06	---
	Note: One additional record[1] recovered at North Palm Springs Post Office.						
8 July 1986	North Palm Springs	33.924N	17.0	2.1		(*1*)	
0928 G.m.t.	Post Office	116.543W					
Southern Calif.	(USGS)						
Epicenters and magnitudes unknown	Note: Two additional records[1] recovered at North Palm Springs Post Office.						
8 July 1986	Cabazon Post Office	33.918N	27.7	0.2		(*1*)	
0930:23.6 G.m.t.	(USGS)	116.782W					
Southern Calif.							
33.980N, 116.620W	Note: One additional record[1] recovered at Cabazon.						
Magnitude 3.6 ML							
	Fun Valley	33.925N	29.4	(*2*)	135	.04	---
	Reservoir 261	116.389W			Up	.02	---
	(USGS)				045	.05	---
	Note: One additional record[1] recovered at Fun Valley.						
8 July 1986	North Palm Springs	33.924N	23.0	1.8		(*1*)	
0932:20.8 G.m.t.	Post Office	116.543W					
Southern Calif.	(USGS)						
33.980N, 116.620W							
Magnitude 3.1 ML	Note: One additional record[1] recovered at North Palm Springs Post Office.						
8 July 1986	North Palm Springs	33.924N	52.4	2.1		(*1*)	
0949:49.7 G.m.t.	Post Office	116.543W					
Southern Calif.	(USGS)						
33.990N, 116.560W							
Magnitude 3.5 ML	Note: One additional record[1] recovered at North Palm Springs Post Office.						
8 July 1986	North Palm Springs	33.924N	55.0	1.7		(*1*)	
1004:52.9 G.m.t.	Post Office	116.543W					
Southern Calif.	(USGS)						
33.960N, 116.580W							
Magnitude 3.4 ML							
8 July 1986	Morongo Valley	34.048N				(*1*)	
1009:02.9 G.m.t.	Fire Station	116.577W					
Southern Calif.	(USGS)						
33.970N, 116.580W							
Magnitude 3.9 ML	North Palm Springs	33.924N	05.1	1.7	300	.17	0.1
	Post Office	116.543W			Up	.06	---
	(USGS)				210	.14	0.3
	Cabazon Post Office	33.918N	09.3	0.3		(*1*)	
	(USGS)	116.782W					

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
8 July 1986 1011:00.0 G.m.t. Southern Calif. 34.020N, 116.670W Magnitude 3.3 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	02.8	1.9		(*1*)	
	North Palm Springs Post Office (USGS)	33.924N 116.543W	06.3	0.3	300 Up 210	.03 .02 .06	--- --- ---
8 July 1986 1022:38.0 G.m.t. Southern Calif. 34.051N, 116.665W Magnitude 4.4 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	41.7	1.9		(*1*)	
	Note: Two additional records[1] recovered at Morongo Valley Fire Station.						
	North Palm Springs Post Office (USGS)	33.924N 116.543W	43.0	2.4		(*1*)	
8 July 1986 1311 G.m.t. Southern Calif. Epicenter and magnitude unknown	North Palm Springs Post Office (USGS)	33.924N 116.543W	44.9	(*2*)		(*1*)	
8 July 1986 1639:44.1 G.m.t. Southern Calif. 34.000N, 116.590W Magnitude 3.6 ML	North Palm Springs Post Office (USGS)	33.924N 116.543W	47.0	2.2	300 Up 210	.07 .01 .03	--- --- ---
8 July 1986 1936:20.1 G.m.t. Southern Calif. 34.010N, 116.620W Magnitude 3.9 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	22.4	2.2		(*1*)	
	North Palm Springs Post Office (USGS)	33.924N 116.543W	23.3	2.6		(*1*)	
9 July 1986 0012:32.1 G.m.t. Southern Calif. 33.990N, 116.570W Magnitude 4.4 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	34.4	1.8		(*1*)	
	North Palm Springs Post Office (USGS)	33.924N 116.543W	34.4	1.8	300 Up 210	.11 .06 .10	1 peak --- 1 peak
	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	34.2	1.6	360 Up 270	.09 .05 .08	--- --- ---
9 July 1986 0941:21.0 G.m.t. Southern Calif. 33.970N, 116.570W Magnitude 3.5 ML	North Palm Springs Post Office (USGS)	33.924N 116.543W	23.2	1.8		(*1*)	
	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	23.0	1.6		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
9 July 1986 1228:09.1 G.m.t. Hawaii 19.552N, 155.999W Magnitude 4.6 ML	Kealakekua, Hawaii Kona Hospital (USGS)	19.523N 155.879W	10.5	1.2	346 Up 256	.07 .05 .14	--- --- 0.2
9 July 1986 2010 G.m.t. Southern Calif. Epicenter and magnitude unknown	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	36.9	1.6		(*1*)	
11 July 1986 0851:28.7 G.m.t. Southern Calif. 33.970N, 116.580W Magnitude 3.1 ML	Whitewater Trout Farm (USGS)	33.989N 116.655W	33.1	(*2*)		(*1*)	
	Note: Four additional records[1] recovered at Whitewater Trout Farm.						
12 July 1986 0545:27.5 G.m.t. Southern Calif. 33.990N, 116.650W Magnitude 3.9 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	30.9	0.9		(*1*)	
12 July 1986 1728:30.7 G.m.t. Southern Calif. 34.030N, 116.680W Magnitude 3.4 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	33.2	2.0		(*1*)	
13 July 1986 0141:38.2 G.m.t. Southern Calif. 33.950N, 116.620W Magnitude 3.5 ML	North Palm Springs Post Office (USGS)	33.924N 116.543W	41.0	2.1		(*1*)	
	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	41.0	2.2		(*1*)	
	Escondido Power Plant (SDGE)	33.125N 117.117W	(*3*)	(*2*)	030 Up 300	.04 .02 .07	--- --- ---
13 July 1986 1347:08.2 G.m.t. Southern Calif. 32.970N, 117.870W Magnitude 5.3 ML	Escondido Power Plant (SDGE)	33.125N 117.117W	(*3*)	(*2*)	030 Up 300	.11 .03 .11	1 peak --- 0.2
	Los Angeles 1880 Century Park East (CLA)	34.06 N 118.41 W	(*3*)	(*2*)			
	17th floor					(*1*)	
	Note: One additional record[1] recovered at 1880 Century Park East, 17th floor.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Los Angeles 2029 Century Park East (CLA)	34.060N 118.413W	(*3*)	(*2*)			
	30th floor					(*1*)	
	Note: One additional record[1] recovered at 2029 Century Park East, 30th floor.						
	Los Angeles 2049 Century Park East (CLA)	34.06N 118.41W	(*3*)	(*2*)			
	30th floor					(*1*)	
	43th floor					(*1*)	
	Note: Two each additional records[1] recovered at 2049 Century Park East, 30th floor and 43th floor.						
	Mission Power Station (SDGE)	32.788N 117.138W	(*3*)	(*2*)	150 Up 060	.05 .06 .07	--- --- ---
	San Diego VA Hospital La Jolla, Bldg 1 (VA)	32.87 N 117.23 W	(*3*)	6.4			
	Basement				180 Up 090	.05 .05 .07	--- --- ---
17 July 1986 2035:15.0 G.m.t. Southern Calif. 33.990N, 116.650W Magnitude 4.0 ML	Morongo Valley Fire Station (USGS)	34.048N 116.577W	17.3	1.5	135 Up 045	.04 .04 .07	--- --- ---
	North Palm Springs Post Office (USGS)	33.924N 116.543W	17.8	2.2	300 Up 210	.04 .03 .08	--- --- ---
	Whitewater Trout Farm (USGS)	33.989N 116.655	16.3	1.2	270 Up 180	.14 .08 .11	1 peak --- .05
	Keenwild Forest Station ANZA Array (USGS)	33.71 N 116.71 W	20.6	4.0		(*1*)	
	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	35.2	1.9	360 Up 270	.05 .04 .13	--- --- 0.2
	W. Palm Springs Village St. John's School (USGS)	33.925N 116.680W	16.6	1.3	360 Up 270	.08 .04 .05	--- --- ---
	Morongo Valley Canyon House (USGS)	34.347N 116.604W	17.3	(*2*)	360 Up 270	.08 .07 .08	--- --- ---

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
17 July 1986 2154:45.1 G.m.t. Southern Calif. 33.990N, 116.650W Magnitude 4.4 ML	Cabazon Post Office (USGS)	33.918N 116.782W	50.3	0.2		(*1*)	
	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	48.0	1.8	360 Up 270	.06 .02 .07	--- --- ---
	Millard Canyon (USGS)	33.98 N 116.78 W	50.6	(*2*)		(*1*)	
	Note: One additional record[1] recovered at Millard Canyon.						
	Morongo Valley Fire Station (USGS)	34.048N 116.577W	47.4	1.7		(*1*)	
	North Palm Springs Post Office (USGS)	33.924N 116.543W	48.8	2.2	300 Up 210	.03 .03 .05	--- --- ---
	W. Palm Springs Village St. John's School (USGS)	33.925N 116.680W	46.9	1.3	360 Up 270	.08 .04 .07	--- --- ---
	Whitewater Trout Farm (USGS)	33.989N 116.655W	46.6	1.1	270 Up 180	.16 .08 .16	.55 --- .35
18 July 1986 0718:05.4 G.m.t. Eastern Calif. 37.575N, 118.827W Magnitude 3.0 ML	McGee Creek, SMA (USGS)	37.550N 118.811W	07.4	(*2*)		(*1*)	
	McGee Creek, CRA (USGS)	37.550N 118.811W	07.5	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
18 July 1986 1958:01.8 G.m.t. Southern Calif. 33.970N, 116.570W Magnitude 3.2 ML	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	04.0	2.2		(*1*)	
20 July 1986 1429:45.5 G.m.t. Eastern Calif. 37.580N, 118.450W Magnitude 5.9 ML	Long Valley Dam Lake Crowley (USGS)	37.588N 118.705W					
	Left abutment		(*3*)	3.3	275 Up 185	.07 .07 .15	--- --- 1.0
	Note: One additional record[1] recovered at Long Valley Dam left abutment.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	McGee Creek (USGS) (SMA-1)	37.550N 118.811W	55.5	1.1		(*1*)	
	McGee Creek (USGS) (CRA-1)	37.550N 118.811W	55.5	1.1			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
	Montgomery Pass Basalt, Nevada (USGS)	37.977N 118.318W	01.9	(*2*)		(*1*)	
	Terminus Dam Main Dam (ACOE)	36.420N 119.000W	(*3*)	(*2*)			
	Right crest					(*1*)	
	Upper tower					(*1*)	
	Terminus Dam Auxiliary Dam (ACOE)	36.404N 119.001W	24.6[4]	(*2*)			
	Center crest					(*1*)	
	Lake Success Dam (ACOE)	36.061N 118.920W	(*3*)	(*2*)			
	Slope					(*1*)	
	Right crest					(*1*)	
21 July 1986 1442:26.6 G.m.t. Eastern Calif. 37.537N, 118.447W Magnitude 6.5 ML	Buchanan Dam (ACOE)	37.22 N 119.98 W	55.2	11.4			
	Left crest					(*1*)	
	Hidden Dam (ACOE)	37.112N 119.883W	55.5	10.3			
	Left crest					(*1*)	
	Lake Success Dam (ACOE)	36.061N 118.920W					
	Right abutment		(*3*)	(*2*)		(*1*)	
	Downstream		(*3*)	(*2*)		(*1*)	
	Slope		(*3*)	(*2*)		(*1*)	
	Right crest		16.5[4]			(*1*)	
	Note: One each additional record[1] recovered at slope and right crest at Lake Success Dam.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
	Long Valley Fire Station (USGS)	37.567N 118.757W	32.0[4]	3.0		(*1*)	
	Long Valley Dam Lake Crowley (USGS)	37.588N 118.705W	(*3*)	(*2*)			
	Left abutment				275	.15	3.8
					Up	.11	2.6
					185	.36	4.5
	Note: One additional record[1] recovered at Long Valley Dam left abutment.						
	McGee Creek, SMA (USGS)	37.550N 118.811W	32.0	3.7	180	.09	---
					Up	.06	---
					090	.07	---
	McGee Creek,CRA (USGS)	37.550N 118.811W	55.5	1.1			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface				360	.09	---
					Up	.06	---
					270	.08	---
	1 m downhole				180	.06	---
					Up	.08	---
					270	inoperative	
	Montgomery Pass Basalt, Nevada (USGS)	37.977N 118.318W	37.8[4]	4.8	360	.11	1.5
					Up	.07	---
					270	.11	1.7
	Pine Flat Dam (ACOE)	36.83 N 119.33 W	(*3*)	(*2*)			
	Right abutment west (Downstream)					(*1*)	
	Terminus Dam Main Dam	36.420N 119.000W					
	Right crest		(*3*)	(*2*)		(*1*)	
	Upper tower		(*3*)	(*2*)		(*1*)	
	Terminus dam Auxiliary Dam (ACOE)	36.404N 119.001W					
	Center crest		50.2[4]	(*2*)	320	.06	---
					Up	.06	---
					230	.05	---
	Right abutment		(*3*)	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
21 July 1986 1451:11.0 G.m.t. Eastern Calif. 37.520N, 118.412W Magnitude 5.7 ML	McGee Creek, SMA (USGS)	37.550N 118.811W	(*3*)	(*2*)		(*1*)	
	McGee Creek, CRA (USGS)	37.550N 118.811W	(*3*)	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
	Montgomery Pass Basalt, Nevada (USGS)	37.977N 118.318W	29.3[4]	(*2*)		(*1*)	
	Terminus Dam Auxiliary Dam (ACOE)	36.404N 119.001W	46.5[4]	(*2*)			
	Center crest					(*1*)	
21 July 1986 2207:18.0 G.m.t. Eastern Calif. 37.498N, 118.397W Magnitude 5.6 ML	Long Valley Dam Lake Crowley (USGS)	37.588N 118.705W					
	Left abutment		(*3*)	3.7	275 Up 185	.09 .04 .19	--- --- 0.7
	Note: Six additional records[1] recovered at Long Valley Dam left abutment.						
	McGee Creek, SMA (USGS)	37.550N 118.811W	(*3*)	(*2*)		(*1*)	
	McGee Creek, CRA (USGS)	37.550N 118.811W	(*3*)	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
	Montgomery Pass Basalt, Nevada (USGS)	37.977N 118.318W	31.5[4]	(*2*)		(*1*)	
	TerminusDam Auxiliary Dam (ACOE)	36.404N 119.001W	16.1[4]	(*2*)			
	Center crest					(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
22 July 1986 2017:00.1 G.m.t. Eastern Calif. 37.554N, 118.359W Magnitude 4.2 ML	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	(*3*)	(*2*)		(*1*)	
22 July 1986 2206:41.8 G.m.t. Eastern Calif. 37.513N, 118.294W Magnitude 4.2 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	45.4[4]	1.6	360 Up 270	.06 .05 .08	--- --- ---
	Note: 12 additional records[1] recovered at Chalfant Valley Fire Station.						
23 July 1986 0508 G.m.t. Eastern Calif. Epicenters and magnitudes unknown	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	06.1[4]	1.3	360 Up 270	.07 .04 .05	--- --- ---
	Note: 3 additional records[1] recovered at Chalfant Valley Fire Station.						
23 July 1986 1539:11:6 G.m.t. Eastern Calif. 37.517N, 118.409W Magnitude 4.7 MB	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	16.5[4]	2.1	360 Up 270	.24 .08 .12	0.5 --- 0.5
	Note: 11 additional records[1] recovered at Chalfant Valley Fire Station.						
	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	17.0[4]	2.4		(*1*)	
24 July 1986 1134:51.5 G.m.t. Eastern Calif. 37.530N, 118.367W Magnitude 3.3 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	57.4[4]	0.6	360 Up 270	.07 .01 .03	--- --- ---
	Note: 2 additional records[1] recovered at Chalfant Valley Fire Station.						
24 July 1986 1458:45.2 G.m.t. Eastern Calif. 37.514N, 118.289W Magnitude 3.7 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	48.6[4]	1.7	360 Up 270	.09 .07 .05	--- --- ---
24 July 1986 1644:40.7 G.m.t. Eastern Calif. 37.529N, 118.398W Magnitude 3.5 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	44.9[4]	2.0	360 Up 270	.18 .07 .10	0.3 --- 1 peak
24 July 1986 1903:25.9 G.m.t. Eastern Calif. 37.467N, 118.297W Magnitude 4.3 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	30.0[4]	1.9	360 Up 270	.19 .06 .16	0.2 --- 0.1
	Note: 11 additional records[1] recovered at Chalfant Valley Fire Station.						
28 July 1986 2113 G.m.t. Southern California Epicenter and magnitude unknown	Salton Sea Wildlife Refuge	33.18 N 115.62 W (USGS)	24.8	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
29 July 1986 0643:50.2 G.m.t. Southern Calif. 33.970N, 116.590W Magnitude 3.2 ML	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	52.3	1.5		(*1*)	
	North Palm Springs Post Office (USGS)	33.924N 116.543W	52.5	2.0		(*1*)	
	Whitewater Canyon Trout Farm (USGS)	33.989N 116.655W	53.7	(*2*)		(*1*)	
29 July 1986 0957:57.0 G.m.t. Eastern Calif. 37.593N, 118.447W Magnitude 4.6 ML	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	01.2[4]	2.1		(*1*)	
30 July 1986 0603:32.1 G.m.t. Eastern Calif. 37.633N, 118.403W Magnitude 4.0 ML	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	36.2[4]	2.2		(*1*)	
30 July 1986 0641:52.7 G.m.t. Eastern Calif. 37.562N, 118.424W Magnitude 4.8 ML	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	58.8[4]	0.5		(*1*)	
22 July 1986- 31 July 1986 Eastern Calif. Epicenters and magnitudes unknown	Moran Spring (USGS)	37.654N 118.594W	(*3*)	(*2*)	360 Up 270	.06 .04 .03	--- --- ---
	Note: Five additional records[1] recovered at Moran Spring.						
	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	(*3*)	2.1	360 Up 270	.09 .04 .05	--- --- ---
			(*3*)	1.6	360 Up 270	.04 .07 .05	--- --- ---
			(*3*)	0.7	360 Up 270	.07 .06 .06	--- --- ---
	Note: Four additional records[1] recovered at White Mountain Ranch.						

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
31 July 1986 0722:40.2 G.m.t. Eastern Calif. 37.463N, 118.374W Magnitude 5.8 ML	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	47.6[4]	1.3		(*1*)	
	McGee Creek, SMA (USGS)	37.550N 118.811W	47.3[4]	(*2*)		(*1*)	
	McGee Creek, CRA (USGS)	37.550N 118.811W	47.3[4]	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
	Moran Spring, Calif. (USGS)	37.654N 118.594W	46.2[4]	(*2*)		(*1*)	
	Montgomery Pass Basalt, Nevada (USGS)	37.977N 118.318W	01.5[4]	(*2*)		(*1*)	
	Terminus Dam Main Dam (ACOE)	36.420N 119.000W	(*3*)	(*2*)			
	Right crest					(*1*)	
	Upper tower					(*1*)	
	Terminus Dam Auxiliary Dam (ACOE)	36.404N 119.001W	16.1[4]	(*2*)			
	Center crest					(*1*)	
31 July 1986 0751:42.9 G.m.t. Southern Calif. 33.970N, 116.570W Magnitude 3.3 ML	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	44.8	(*2*)		(*1*)	
	Whitewater Canyon Trout Farm (USGS)	33.989N 116.655W	47.2	(*2*)		(*1*)	
1 August 1986 0634:42.9 G.m.t. Eastern Calif. 37.561N, 118.394W Magnitude 3.2 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	45.6	2.1	360 Up 270	.06 .01 .04	--- --- ---
	Note: Four additional records[1] recovered at Chalfant Valley Fire Station.						
	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	50.5[4]	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
1 August 1986	Chalfant Valley	37.53 N	17.8	0.5	360	.25	0.9
1427:16.0 G.m.t.	Fire Station	118.37 W			Up	.25	0.4
Eastern Calif.	(USGS)				270	.23	0.8
37.501N, 118.352W							
Magnitude 4.3 ML	Hammil, Calif.	37.68 N	20.3[4]	3.2		(*1*)	
	Cinnamon Ranch	118.39 W					
	(USGS)						
	Laws, Calif.	37.402N	20.55[4]	(*2*)		(*1*)	
	Northeast Bishop	118.346W					
	(USGS)						
	South Hammil Valley	37.62 N	18.9[4]	1.9		(*1*)	
	White Mountain Ranch	118.39 W					
	(USGS)						
1 August 1986	Chalfant Valley	37.53 N	20.0	0.5	360	.40	1.4
1428:18.0 G.m.t.	Fire Station	118.37 W			Up	.30	3.0
Eastern Calif.	(USGS)				270	.29	1.5
37.375N, 118.442W							
Magnitude 4.7 ML	Note: Six additional records[1] recovered at Chalfant Valley Fire Station.						
	Laws, Calif.	37.402N	21.1[4]	0.8	360	.11	0.2
	Northeast Bishop	118.346W			Up	.09	---
	(USGS)				270	.07	---
	South Hammil Valley	37.62 N	21.4[4]	1.7		(*1*)	
	White Mountain Ranch	118.39 W					
	(USGS)						
2 August 1986	Whitewater Canyon	33.989N	05.3	(*2*)		(*1*)	
0505 G.m.t.	Trout Farm	116.655W					
Southern Calif.	(USGS)						
Epicenter and							
magnitude unknown							
2 August 1986	South Hammil Valley	37.62 N	38.5[4]	1.4	360	.04	---
1451:36.2 G.m.t.	White Mountain Ranch	118.39 W			Up	.05	---
Eastern Calif.	(USGS)				270	.05	---
37.594N, 118.368W							
Magnitude 3.7 ML	Hammil, Calif.	37.68 N	40.4[4]	(*2*)		(*1*)	
	Cinnamon Ranch	118.39 W					
	(USGS)						
3 August 1986	Chalfant Valley	37.53 N	32.3	1.2	360	.09	---
0137 G.m.t.	Fire Station	118.37 W			Up	.06	---
Eastern Calif.	(USGS)				270	.09	---
Epicenters and							
magnitudes unknown	Note: 15 additional records[1] recovered at Chalfant Valley Fire Station.						
3 August 1986	Bear Valley Station 1	36.573N	16.9	(*2*)		(*1*)	
0900:13.6 G.m.t.	CDF Fire Station	121.184W					
Central Calif.	(USGS)						
36.592N, 121.233W							
Magnitude 2.9 ML	Bear Valley Station 10	36.532N	16.6	1.7	310	.05	---
	Webb Residence	121.143W			Up	.01	---
	(USGS)				220	.05	---

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
3 August 1986 1033:04.5 G.m.t. Eastern Calif. 37.615N, 118.410W Magnitude 4.0 ML	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	12.9[4]	0.6		(*1*)	
	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	06.8		360 Up 270	.04 .06 .04	--- --- ---
	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	08.65[4]	0.5		(*1*)	
4 August 1986 1231:06.4 G.m.t. Eastern Calif. 37.521N, 118.415W Magnitude 3.3 ML	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	12.35[4]	0.5		(*1*)	
6 August 1986 0452 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	50.0	1.8		(*1*)	
6 August 1986 1116 G.m.t. Southern Calif. Epicenter and magnitude unknown	Whitewater Canyon Trout Farm (USGS)	33.989N 116.655W	32.7	(*2*)		(*1*)	
10 August 1986 2014 G.m.t. Eastern Calif. Epicenter and magnitude unknown	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	43.45[4]	0.6		(*1*)	
11 August 1986 0426 G.m.t. Eastern Calif. Epicenter and magnitude unknown	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	52.78[4]	(*2*)		(*1*)	
12 August 1986 0929:48.0 G.m.t. Eastern Calif. 37.487N, 118.377W Magnitude 3.5 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	49.5[4]	1.3	360 Up 270	.11 .06 .07	1 peak --- ---
	Note: One additional record[1] recovered at Chalfant Valley Fire Station.						
12 August 1986 1537:27.9 G.m.t. Eastern Calif. 37.503N, 118.477W Magnitude 3.5 ML	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	33.0[4]	0.6		(*1*)	
14 August 1986 0836 G.m.t. Eastern Calif. Epicenter and magnitude unknown	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	07.4[4]	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
16 August 1986 0948:56.1 G.m.t. Eastern Calif. 37.480N, 118.311W Magnitude 3.3 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	58.1[4]	1.4	360 Up 270	.13 .04 .09	1 peak --- ---
18 August 1986 1049:38.9 G.m.t. Eastern Calif. 37.537N, 118.452W Magnitude 3.4 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	43.4[4]	0.6		(*1*)	
19 August 1986 2353:39.6 G.m.t. Eastern Calif. 37.482N, 118.372W Magnitude 3.4 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	41.4[4]	1.5	360 Up 270	.11 .06 .07	0.1 --- ---
	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	42.8[4]	(*2*)		(*1*)	
21 August 1986 1846 G.m.t. Eastern Calif. Epicenter and magnitude unknown	McGee Creek, SMA (USGS)	37.550N 118.811W	25.6	(*2*)		(*1*)	
	McGee Creek, CRA (USGS)	37.550N 118.811W	25.6	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
23 August 1986 0301:29.9 G.m.t. Eastern Calif. 37.528N, 118.331W Magnitude 3.5 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	32.0[4]	1.4	360 Up 270	.09 .05 .08	--- --- ---
	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	33.7[4]	1.2		(*1*)	
25 August 1986 0820:58.0 Eastern Calif. 37.642N, 118.394W Magnitude 3.2 ML	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	02.5[4]	0.3		(*1*)	
27 August 1986 0610 G.m.t. Eastern Calif. Epicenter and magnitude unknown	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	37.2[4]	1.5		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
29 August 1986 0746:53.3 G.m.t. Southern Calif. 33.953N, 116.623W Magnitude 4.0 ML	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	56.6	1.5	360 Up 270	.13 .08 .12	1 peak --- 1 peak
	North Palm Springs Post Office (USGS)	33.924N 116.543W	56.5	1.7	300 Up 210	.14 .04 .10	0.1 --- 1 peak
	Whitewater Canyon Trout Farm (USGS)	33.989N 116.655W	57.9	(*2*)		(*1*)	
	Note: One additional record[1] recovered at Whitewater Canyon Trout Farm.						
9 September 1986 1622:50.6 G.m.t. Southern Calif. 33.970N, 116.570W Magnitude 3.5 ML	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	52.7	1.5		(*1*)	
	North Palm Springs Post Office (USGS)	33.924N 116.543W	52.7	1.5	300 Up 210	.05 .02 .05	--- --- ---
16 September 1986 0007:41.2 G.m.t. Eastern Calif. 37.625N, 118.455W Magnitude 3.3 ML	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	45.1[4]	(*2*)		(*1*)	
16 September 1986 0501:43.5 G.m.t. Eastern Calif. 37.642N, 118.398W Magnitude 3.3 ML	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	47.2[4]	0.5		(*1*)	
	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	48.1[4]	0.5		(*1*)	
16 September 1986 0636:57.8 G.m.t. Eastern Calif. 37.610N, 118.445W Magnitude 3.3 ML	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	01.5[4]	0.4		(*1*)	
16 September 1986 1314:25.9 G.m.t. Eastern Calif. 37.595N, 118.413W Magnitude 3.5 ML	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	29.2[4]	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
18 September 1986 0759:47.5 G.m.t. Eastern Calif. 37.632N, 118.392W Magnitude 4.1 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	52.7[4]	0.8	360 Up 270	.05 .03 .06	--- --- ---
	Hammil, Calif. Cinnamon Ranch (USGS)	37.68 N 118.39 W	51.7[4]	0.5		(*1*)	
	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	55.7[4]	(*2*)		(*1*)	
	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	50.8[4]	0.6	360 Up 270	.06 .05 .06	--- --- ---
23 September 1986 0619:46.2 G.m.t. Central Calif. 36.635N, 121.292W Magnitude 2.5 ML	Bear Valley Station 12 Williams Ranch (USGS)	36.658N 121.249W	47.7	1.5	310 Up 220	.05 .01 .02	--- --- ---
28 September 1986 0706:26.8 G.m.t. Southern Calif. 34.010N, 116.580W Magnitude 3.2 ML	Desert Hot Springs Mission Lakes C.C. (USGS)	33.986N 116.535W	31.7	(*2*)		(*1*)	
29 September 1986 0617:32.0 G.m.t. Eastern Calif. 37.514N, 118.398W Magnitude 3.4 ML	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	37.2[4]	0.4		(*1*)	
1 October 1986 0802 G.m.t. Hawaii Epicenter and magnitude unknown	Honokaa, Hawaii Police Station (USGS)	20.080N 155.465W	30.7[4]	(*2*)		(*1*)	
	Hilo, Hawaii U.S. Fish & Wildlife (USGS)	19.731N 155.100W	17.9[4]	4.4		(*1*)	
11 July 1986- 7 October 1986 Southern Calif. Epicenter and magnitude unknown	Loma Linda VA Hospital (VA/USGS)	34.05 N 117.26 W	(*3*)	(*2*)			
	Structure Array					(*1*)	
9 October 1986 0537:25.2 G.m.t. Eastern Calif. 37.358N, 118.335W Magnitude 4.2 ML	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	27.4[4]	1.9		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
15 October 1986	Desert Hot Springs	33.986N	50.0	1.5	360	.11	0.2
0228:47.7 G.m.t.	Mission Lakes C.C.	116.535W			Up	.05	---
Southern Calif.	(USGS)				270	.09	---
33.950N, 116.570W							
Magnitude 4.7 ML	Morongo Valley	34.048N	50.1	2.1	135	.03	---
	Fire Station	116.577W			Up	.08	---
	(USGS)				045	.03	---
	North Palm Springs	33.924N	49.7	1.3	300	.15	0.3
	Post Office	116.543W			Up	.09	---
	(USGS)				210	.07	---
21 October 1986	Chalfant Valley	37.53 N	27.6[4]	1.6		(*1*)	
0836:25.1 G.m.t.	Fire Station	118.37 W					
Eastern Calif.	(USGS)						
37.510N, 118.338W							
Magnitude 3.1 ML							
29 August 1986-	Whitewater Canyon	33.989N	(*3*)	0.5		(*1*)	
23 October 1986	Trout Farm	116.655W					
Southern Calif.	(USGS)						
Epicenter and							
magnitude unknown							
26 October 1986	Laws, Calif.	37.402N	17.0[4]	(*2*)		(*1*)	
1020:13.8 G.m.t.	Northeast Bishop	118.346W					
Eastern Calif.	(USGS)						
37.473N, 118.371W							
Magnitude 3.2 ML							
12 July 1986-	Colton, Calif.	34.06 N	(*3*)	(*2*)			
30 October 1986	I-10/15 Interchange	117.30 W					
Southern Calif.	(CDOT)						
Epicenter and							
magnitude unknown	Vault					(*1*)	
17 November 1985 or		Hawaii National Park			19.329N	25.6[4]	1.3
(*1*)							
1986; 0247 G.m.t.	Wahaula Maint. Center	155.031W					
Hawaii	(USGS)						
Epicenter and							
magnitude unknown							
17 November 1986	South Hammil Valley	37.62 N	25.9[4]	1.4		(*1*)	
1240:22.4 G.m.t.	White Mountain Ranch	118.39 W					
Eastern Calif.	(USGS)						
37.571N, 118.415W							
Magnitude 3.5 ML							

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
21 November 1986 2333:01.7 G.m.t. Northern Calif. 40.372N, 124.443W Magnitude 5.1 ML	Eel River Valley Array Bunker Hill (USGS)	40.498N 124.294W	11.6	(*2*)	360 Up 270	.05 .01 .05	--- --- ---
	Eel River Valley Array Centerville Beach (USGS)	40.563N 124.348W	08.9	4.1	360 Up 270	.14 .03 .16	0.3 --- 1 peak
	Eel River Valley Array College of the Redwoods (USGS)	40.699N 124.200W	(*3*)	(*2*)		(*1*)	
	Eel River Valley Array Ferndale Fire Station (USGS)	40.576N 124.262W	(*3*)	5.0	360 Up 270	.19 .03 .19	1 peak --- 0.6
	Eel River Valley Array Fortuna Fire Station (USGS)	40.599N 124.154W	(*3*)	1.4	360 Up 270	.13 .03 .28	0.3 --- 0.5
	Eel River Valley Array Loleta Fire Station (USGS)	40.644N 124.219W	(*3*)	5.9	360 Up 270	.06 .03 .08	--- --- ---
	Eel River Valley Array South Bay Union School (USGS)	40.735N 124.207W	(*3*)	(*2*)		(*1*)	
21 November 1986 2334:18.0 G.m.t. Northern Calif. 40.367N, 124.450W Magnitude 5.1 ML	Eel River Valley Array Bunker Hill (USGS)	40.498N 124.294W	28.3	(*2*)		(*1*)	
	Eel River Valley Array Centerville Beach (USGS)	40.563N 124.348W	24.6	4.8	360 Up 270	.21 .05 .10	0.3 --- 0.1
	Eel River Valley Array College of the Redwoods (USGS)	40.699N 124.200W	(*3*)	6.8		(*1*)	
	Eel River Valley Array Ferndale Fire Station (USGS)	40.576N 124.262W	(*3*)	5.5	360 Up 270	.17 .04 .11	1 peak --- 0.1
	Eel River Valley Array Fortuna Fire Station (USGS)	40.599N 124.154W	(*3*)	6.2	360 Up 270	.16 .03 .17	0.3 --- 0.3
	Eel River Valley Array Loleta Fire Station (USGS)	40.644N 124.219W	(*3*)	6.5	360 Up 270	.04 .05 .04	--- --- ---
	Eel River Valley Array South Bay Union School (USGS)	40.735N 124.207W	(*3*)	(*2*)		(*1*)	

See footnotes at end of table

Table 7. Summary of United States accelerograph records recovered during 1986—Continued

Earthquake	Station name (Owner)	Station location (*)	Trigger time	*S*-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)	Duration (s)
24 November 1986 1508:01.3 G.m.t. Central Calif. 36.597N, 121.242W Magnitude 3.1 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	04.5	(*2*)		(*1*)	
8 December 1986 1727 G.m.t. Nevada Epicenter and magnitude unknown	Stillwater, Nevada Wildlife Refuge (USGS)	39.518N 118.510W	08.4[4]	(*2*)		(*1*)	
17 November 1985-11 December 1986 Hawaii Epicenters and magnitudes unknown	Waimea, Hawaii Fire Station (USGS)	20.03 N 155.66 W	(*3*)	(*2*)		(*1*)	
	Note: Two additional records[1] recovered at Waimea Fire Station.						
25 December 1986 0608:54.4 G.m.t. Eastern Calif. 37.570N, 118.407W Magnitude 3.5 ML	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	58.0[4]	1.4		(*1*)	
26 December 1986 0956:27.4 G.m.t. Eastern Calif. 37.557N, 118.371W Magnitude 3.9 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	30.9[4]	1.4		(*1*)	
	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	31.1[4]	(*2*)		(*1*)	
29 December 1986 1528:04.9 G.m.t. Central Calif. 37.458N, 121.800W Magnitude 4.5 ML	San Jose, 101/280/680 Freeway Interchange (USGS/CDOT)	37.340N 121.851W	08.8	2.3		(*1*)	

[1] Less than 0.05 *g* at ground level or less than 0.10 *g* at nonground level stations.

[2] Questionable or undeterminable.

[3] WWVB radio time code illegible or instrument not equipped with a radio receiver; correlation of accelerogram with earthquake may be questionable.

[4] Internal clock time; accuracy is variable.

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