

U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

DATA REPORT FOR THE 1993 LOS ANGELES REGION SEISMIC EXPERIMENT  
(LARSE93), SOUTHERN CALIFORNIA: A PASSIVE STUDY FROM SEAL BEACH  
NORTHEASTWARD THROUGH THE MOJAVE DESERT

By

Monica D. Kohler<sup>1</sup>, Paul M. Davis<sup>1</sup>, Hong Liu<sup>1</sup>, Mark Benthien<sup>2</sup>, Shangxing Gao<sup>1</sup>,  
Gary S. Fuis<sup>3</sup>, Robert W. Clayton<sup>2</sup>, David Okaya<sup>4</sup>, and James Mori<sup>5</sup>

Open-File Report 96-85

<sup>1</sup> Department of Earth and Space Sciences, University of California at Los Angeles, Los Angeles, CA 90095-1567

<sup>2</sup> Seismological Laboratory, California Institute of Technology, Pasadena, CA 91125

<sup>3</sup> U.S. Geological Survey, 345 Middlefield Road, M/S 977, Menlo Park, CA 94025

<sup>4</sup> Department of Geological Sciences, University of Southern California, Los Angeles, CA 90089-0740

<sup>5</sup> U.S. Geological Survey, 525 S. Wilson Ave., Pasadena, CA 91125

This report is preliminary and has not been reviewed for conformity with USGS editorial standards (or with the North American Stratigraphic Code). Opinions and conclusions expressed herein do not necessarily represent those of the USGS. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Menlo Park, California  
1996

## ABSTRACT

This report contains a description of the first part of the Los Angeles Region Seismic Experiment (LARSE). To date, LARSE has consisted of two experiments: passive, which took place in fall, 1993 (LARSE93), and active, which took place in fall, 1994 (LARSE94). The goal of the 1993 experiment was to collect waveform data from local and distant earthquakes to obtain three-dimensional images of lower crust and upper mantle structure in Southern California, particularly under the San Gabriel Mountains and across the San Andreas fault. During LARSE93, approximately 88 stations were deployed in a 175-km-long, linear array across the Los Angeles basin, San Gabriel Mountains, and Mojave Desert northeast of Los Angeles by scientists from the U.S. Geological Survey, University of California at Los Angeles, California Institute of Technology, and University of Southern California. Reftek recorders were deployed one km apart through the San Gabriel Mountains, and two km apart in the Mojave Desert. This data set has since been complemented by the results of LARSE94 comprising land refraction and deep-crustal seismic reflection profiles from offshore airgun and onshore explosion sources. These additional data sets will be useful in distinguishing crustal structures from adjacent upper mantle structures. During the four weeks of continuous recording, over 150 teleseismic and over 450 local ( $M_L \geq 2.0$ ) events were recorded at each site. Both teleseismic and local sources provided a wide range of raypath azimuths. The teleseismic events include a number of earthquakes with epicenters in the Aleutian Island, Kamchatka, Kuril Island, mid-Atlantic Ridge, Solomon Island, Japan, Fiji Island, Peru, and Chile regions. The local events include aftershocks of recent Southern California earthquakes. The final products of data processing are 1) half-hour files containing the continuous waveform data recorded at each station for each day of the experiment, 2) 150-second time-windowed waveform segments containing local, regional, and teleseismic event arrivals, and 3) one-hour time-windowed waveform segments containing regional and teleseismic event arrivals. Array instrumentation, recorded events, and data processing will be described in this report.

## CONTENTS

|                                    |    |
|------------------------------------|----|
| Abstract                           | 1  |
| Introduction                       | 3  |
| Array Instrumentation              | 4  |
| Data Processing                    | 6  |
| Timing Corrections                 | 7  |
| Data and Events Recorded           | 8  |
| Acknowledgments                    | 11 |
| References                         | 11 |
| Appendix A. Summary of Field Notes | 13 |

## TABLES

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| 1. Array station numbers, coordinates, and elevations                       | 17 |
| 2. Chart of equipment and data format distribution                          | 20 |
| 3. DAS number-timing device combinations for each week of station recording | 22 |
| 4. Description of data header entries and formats                           | 31 |
| 5. Teleseismic and regional event source information                        | 33 |
| 6. Local event source information                                           | 37 |
| 7. Free period, generator constant, and damping ratio values                | 49 |

## FIGURES

|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| 1. Map of station locations                                                           | 55 |
| 2. Sample station deployment and monitoring visit sheets                              | 56 |
| 3. Flow diagram of data processing events                                             | 59 |
| 4. Teleseismic and regional event locations                                           | 60 |
| 5. Local event locations                                                              | 61 |
| 6a-j. Vertical-component record sections for ten teleseismic events                   | 62 |
| 7a-j. Vertical-component record sections for nine local events and one regional event | 72 |
| 8. Teleseismic P-wave travel-time residuals                                           | 82 |

## INTRODUCTION

Crustal and upper mantle structure under Southern California has been investigated by a variety of techniques including P-wave travel-time tomography, surface wave analysis, and seismic reflection lines (e.g., Hadley and Kanamori, 1977; Hearn and Clayton, 1986ab; Humphreys and Clayton, 1990; Li *et al.*, 1992ab; Magistrale *et al.*, 1992; Sung and Jackson, 1992; Zhao and Kanamori, 1992; Zhou, 1994; Zhao *et al.*, 1996). The Southern California Seismic Network (SCSN) now comprises 300 stations with an average spacing of 20-30 km. In order to study in detail Moho depth, anisotropy, and fault structure at depth, much smaller station spacing is required. This was achieved in the 1993 phase of the Los Angeles Region Seismic Experiment (LARSE93). The travel times provided by LARSE93 data should improve the resolution of Los Angeles basin and Southern California tomographic models. Variations in Moho depth across the Los Angeles basin, San Gabriel Mountains, and Mojave Desert have important implications for velocity structure, depth of seismicity, as well as tectonic evolution and present tectonic setting of Southern California. Seismic anisotropy in Southern California also has a bearing on the present tectonic setting and upper mantle structure (Savage and Silver, 1993; Liu *et al.*, 1995). Changes in anisotropy characteristics between basin and mountain stations, or across the San Andreas fault, provide an opportunity to study the shear strain field related to mantle flow and plate motion variations across Southern California. In addition, the structure of the San Andreas fault is not well understood at depth. Data collected during LARSE93 have the potential of elucidating fault structure in the lower crust and upper mantle.

The seismograms collected during the passive phase of LARSE are complemented by the acquisition of deep-crustal multichannel seismic-reflection and refraction profiles using onshore and offshore sensors, and airgun and explosion sources (LARSE94, active phase; Brocher *et al.*,

1995; ten Brink, *et al.*, 1996; Okaya *et al.*, 1996ab; Murphy *et al.*, 1996). The reflection and refraction data are especially useful in resolving upper crustal structure in order to better understand and constrain lower crustal and mantle structures.

LARSE93 was a joint effort involving scientists from the University of California at Los Angeles (UCLA), the U.S. Geological Survey (USGS), the California Institute of Technology (Caltech), and the University of Southern California (USC). It took place between November 11, 1993 and December 16, 1993 and involved the installation and maintenance of approximately 88 digital seismometers along a southwest-northeast array in Southern California. The stations were deployed in a 175-km-long, linear array across the Los Angeles basin, San Gabriel Mountains, and Mojave Desert. For this survey, energy sources were local, regional, and teleseismic earthquakes. The seismometers were placed an average of 1 or 2 km apart along the part of the line from Azusa, in the southern foothills of the San Gabriel Mountains, to the northeastern Mojave Desert (Fig. 1; Table 1). Four stations were placed in the Los Angeles basin (two near Seal Beach and two near Whittier); the signals recorded at these stations contain relatively high noise levels. The denser part of the array was located in the San Gabriel Mountains with 1 km spacing; the sparser part, in the Mojave Desert, had 2 km spacing. A few stations were added to the array during the course of the experiment and, except for the first few and last few days of the experiment, most stations recorded data continuously during the four weeks. One station (#331) was located in the San Andreas fault.

## **ARRAY INSTRUMENTATION**

The array instruments consisted of one-component and three-component sensors, and the data recording units were Reftek Data Acquisition Systems (DAS's) with 16-bit and 32-bit digitizers (Table 2) which ran Reftek CPU Versions 2.45, 2.53, 2.53H, and 2.53J. The DAS's

recorded either 25 or 50 sps, depending on data storage space limitations. They were supplied by the Incorporated Research Institutes for Seismology - Program for Array Seismic Studies of the Crust and Lithosphere (IRIS/PASSCAL). The sensor types included Mark Products L4C3D 1Hz (3-component), L4C1D 2Hz (1-component), L4C3D 2Hz (3-component), and L22 2Hz (3-component), and the data were collected by exchanging recorders with internal disks or by copying internal disks to tape (see Tables 2 and 3 for instrument configurations). Each instrument recorded data in record lengths of 30 minutes and each 30-minute interval was automatically written to the internal or external disks. The sensors were borrowed from the collections of UCLA, Los Alamos National Lab, the USGS, the IRIS/PASSCAL instrument facility at the Lamont-Doherty Earth Observatory, the Southern California Earthquake Center (SCEC), and USC.

DAS's with external hard disks were either swapped each week or the data were copied to tapes in the field using field Exabyte and DAT tape drives. All instruments were powered by car batteries (provided by the USGS, IRIS/PASSCAL, and Princeton University) which had to be changed each week. The sensors were interspersed so that no segment of the array would have only one type; however, all stations near the San Andreas fault were three-component.

Every station was visited approximately once a week; the visit times correspond to the beginning time of DAS recording for each week given in Table 3. Events related to timing receivers, power, temperature, and data acquisition were automatically recorded in the log files for each DAS. Operators manually recorded the information requested on the forms shown in Fig. 2. Appendix A contains a summary of operator notes taken during the station visits which recorded any unusual occurrences that may be relevant to data analysis, not given by the log files (which were stored together with the data).

The timing of each instrument was controlled by GPS receivers (Reftek Version 2.2), Omega receivers, or by the Reftek internal clocks. GPS receivers were connected at each visit to calibrate the internal Reftek clock for some stations. Others had continuously connected GPS or Omega receivers (Table 3). A few stations did not receive external time calibration pulses or hookups and may not be reliable in timing as a result. Stations calibrated with Omega receivers contain an uncorrected time error of exactly 1 s due to incorrect leap second firmware input. In addition, a few stations have a 10-second error due to operator input of incorrect time pulses. The log files stored with the data contain detailed information about the type of timing device used with each instrument and the exact times at which calibrations were performed. Corrections made for other timing errors will be described in the section on data processing. The timing receivers were borrowed from IRIS/PASSCAL at Lamont.

## **DATA PROCESSING**

Initial data processing involved several steps, the final product of which was half-hour files containing the continuous waveform data for each station. The initial, uncompressed data set was recorded on approximately 150 Exabyte and DAT tapes, and comprised 87 Gbytes total, with the data from some stations recorded in Reftek internal format and from others in SEG-Y format. Data were converted to SEG-Y format (Table 4) at the IRIS Data Management Center (DMC) facilities in Seattle, WA, and stored on the IRIS DMC Metrum RSS-600 mass storage system.

Sorting earthquakes out of the data was accomplished in several steps. First, the trace start time in the SEG-Y headers of the continuous waveform half-hour files was changed using information from the log files recorded at each station, thereby removing clock drifts (Fig. 3). Next, processed waveforms were windowed into 150-second (local, regional, and teleseismic)

and one-hour (regional and teleseismic) segments containing arrivals from each event that was recorded during the experiment. The final products of data processing are 1) half-hour files containing the continuous waveform data recorded at each station for each day of the experiment, 2) 150-second time-windowed waveform segments containing the local, regional, and teleseismic event arrivals, and 3) one-hour time-windowed waveform segments containing the regional and teleseismic event arrivals. The data can be obtained from the IRIS DMC.

Almost every station has a log file associated with it and these are included in the final data product in storage. Log files were recorded for each week (see Table 3) and the log file filename corresponds to the DAS number of the station for that week.

## **TIMING CORRECTIONS**

The log files had to be edited in order to be used properly by the PASSCAL program, *refrate*, in order to make the appropriate timing corrections. Because every instrument had relatively old Reftek firmware, the required timing corrections were written incorrectly to the log files. *Refrate* reads the log files and pairs statements regarding timing events, such as ‘unlocked-phase error’ and ‘phase error-DSP clock set.’ (‘Unlocked-phase error’ defines the time interval between the last time the Reftek clock was unlocked or not synchronized to an external transmitter, and the report of the phase difference between the signal from the external clock and the Reftek’s internal clock after the internal clock was synchronized to an external transmitter. ‘Phase error-DSP clock set’ defines the time interval between the report of the phase difference after locking, and the resetting of the digital signal processing (DSP) chip clock when the phase error between external and internal clocks exceeds limits of -5 and +11 milliseconds.) These event pairs formed intervals in which time corrections were interpolated and used by *clockcor* to



correct the absolute start times in the header of each event. Some corrections were simple and straightforward; however, we will now address what was done for the more problematic cases.

In many cases, the log files had to be edited by hand to report correct event pairs in order to make the correct time change to the header. All of the log files have names of the form I.\*\* where \*\* is the DAS number of the Reftek at the sites. Specific lines in the log files containing 'phase error' or 'DSP clock set' event reports should have contained all essential timing correction information. Normally, the corrections contain a seconds and a milliseconds portion of time offset. However, for almost all of our cases, the milliseconds portion was not recorded in the log file. Moreover, if the offset was positive, a whole second was erroneously added. These errors were corrected by manually editing the log files so that they reported the correct phase error. The corrected phase errors were then used by *refrate* and *clockcor* to correct the start time in the event headers, as before. The modified and original log files have been stored together with the data set.

There still remain some problems with the absolute timing in the seismograms which have not been modified but should be easy to observe in the data. The one-second (leap second) and 10-second (time pulse) errors were not removed during the data processing from the stations with Omega timing receivers. See Table 1 for the stations where these timing errors can be expected.

## **DATA AND EVENTS RECORDED**

Most of the data were collected from November 13, 1993 to December 11, 1993. During the four weeks of continuous recording, stations recorded signals from several hundred teleseismic, regional, and local events. The Preliminary Determination of Epicenters (PDE) catalog produced by the USGS National Earthquake Information Center (NEIC) contains information for the approximately 150 teleseismic events that occurred during LARSE93 (Fig. 4;

Table 5). The regional and teleseismic events include the December 4, 1993 aftershock ( $M_w=5.4$ ) in Klamath Falls, Oregon as well as a number of intermediate magnitude earthquakes with epicenters in the Aleutian Island, Kamchatka, Kuril Island, mid-Atlantic Ridge, Solomon Island, Japan, Fiji Island, Peru, and Chile regions. According to catalog data supplied by the Southern California Earthquake Center Data Center (SCEC\_DC), approximately 450 local events with  $M_L \geq 2.0$  occurred during the same time window (Fig. 5; Table 6). The local events include aftershocks of recent Southern California earthquakes.

The sensors recorded velocity as voltage. Since the sensors were different, the instrument responses were also different. The software packages (e.g., SAC routines produced by PASSCAL) which translate the data into ground velocity require the input of three parameters that define velocity sensitivity: the free period of the sensor, the observed generator constant, and the observed damping ratio (Rodgers *et al.*, 1995). The values for these parameters were obtained by Aaron Martin at the Institute for Crustal Studies at the University of California at Santa Barbara, by calibrating each sensor after use in LARSE93. The resulting free period, generator constant, and damping ratio values for each sensor component are given in Table 7 (Table 7a: Vertical; 7b: North-South; 7c: East-West).

In general, stations in the San Gabriel Mountains and Mojave Desert display higher signal-to-noise ratios than stations in the Los Angeles basin (which includes the San Gabriel Valley). For most teleseismic events, the initial impulsive arrival is the direct P wave. Because all stations recorded the vertical component, the initial P wave is often the best recorded phase. Ten high-quality teleseismic record-section profiles are shown in Fig. 6. These plots contain the time-corrected, vertical-component velocity signals for events which occurred in the northwest Pacific, south Pacific, South America, and mid-Atlantic. Seismograms which contain high levels

of noise and severe, uncorrected timing problems were removed. The largest gaps in these plots correspond to regions in the Los Angeles basin where no stations were deployed. The seismograms have been bandpass filtered for frequencies between 0.1 and 1.0 Hz. In some teleseismic sections, the initial P wave is followed by the larger-amplitude pP and sP phases. The quiet mountain stations show subtle variations in crustal phase amplitudes. The noisier Los Angeles basin stations are usually too noisy to obtain arrival times.

Profiles of time-corrected, vertical-component record sections from local and regional events are shown in Fig. 7. These figures show velocity records for events which occurred in Southern California less than 200 km from the array. They include events which occurred in the Mojave Desert, Los Angeles basin, and the San Gabriel and San Bernardino Mountains. As before, seismograms which contain high levels of noise and severe timing problems were removed from these figures and the largest gaps in these plots correspond to regions in the Los Angeles basin. The seismograms have been bandpass filtered for frequencies between 0.1 and 10.0 Hz. The major arrivals are the crustal phases Pg, Sg, and other crustal reverberations. Data, such as those shown in Figs. 6 and 7, were corrected for timing errors wherever possible.

P-wave travel-time residual curves for stations along the array have been determined for 17 teleseismic events. These events fell into several distinct back-azimuth ranges with distances between sources and receivers ranging from 30°-90°. P-wave travel-time residuals were determined for each station by subtracting one-dimensional Earth model IASP91 travel times (Kennett and Engdahl, 1991). Within each back-azimuth range, the resulting demeaned travel-time residual curves display consistent patterns. Residuals increase from negative values in the northernmost San Gabriel Valley and southern San Gabriel Mountain foothills to positive values across most of the central and northern San Gabriel Mountains, including the San Andreas fault

(Fig. 8). The most drastic difference in residuals, occurring for raypaths from the northwest (Kamchatka, Unimak Island, and Alaska), is about one second. The residual curves display only small variations for different back azimuths and incidence angles, but show almost no spatial (parallax) shift of residual peaks and troughs, indicating that the source of the large residual difference is most likely shallow. The patterns of residuals suggest that a sharp gradient in shallow velocities is required between the Los Angeles basin and the San Gabriel Mountains over a horizontal distance of less than 50 km. A relatively shallow, low-velocity anomaly is required to explain the larger San Gabriel Mountain station residuals.

## ACKNOWLEDGMENTS

We wish to thank the dozens of scientists without whose help this experiment would have been nearly impossible. Our thanks go to Marcos Alvarez, Joyjeet Bhowmik, Armando Burciaga, Bob Busby, Cheryl Contopoulos, Ed Criley, H. Ekstrom, Jim Fowler, Doug Given, Katrin Hafner, Thomas Henyey, Craig Jones, Brian Laird, Aaron Martin, Steve Michnik, Janice Murphy, Julie Norris, Guang-yu Pei, Robert Phinney, Michelle Robertson, Craig Scrivner, and John Van Schaak. Many of these scientists, students, and volunteers spent their time in the field deploying and monitoring the array instruments, providing us with instruments and equipment, and providing follow-up maintenance. We thank Tim Ahern, Rick Braman, and the staff of the IRIS DMC for assistance and use of the DMC facilities. This work was supported by the Southern California Earthquake Center and the National Science Foundation.

## REFERENCES

- Brocher, T. M., R. W. Clayton, K. D. Klitgord, R. G. Bohannon, R. Sliter, J. K. McRaney, J. V. Gardner, and J. B. Keene, Multichannel seismic-reflection profiling on the R/V Maurice Ewing during the Los Angeles Region Seismic Experiment (LARSE), California, USGS Open-File Report 95-228, 1995.
- Hadley, D. and H. Kanamori, Seismic structure of the Transverse Ranges, *Geol. Soc. Am. Bull.*, **88**, 1469-1478, 1977.
- Hearn, T. M. and R. W. Clayton, Lateral velocity variations in Southern California. I. Results for the upper crust from Pg waves, *Bull. Seis. Soc. Am.*, **76**, 495-509, 1986a.
- Hearn, T. M. and R. W. Clayton, Lateral velocity variations in Southern California. II. Results for the lower crust from Pn waves, *Bull. Seis. Soc. Am.*, **76**, 511-520, 1986b.
- Humphreys, E. D. and R. W. Clayton, Tomographic image of the Southern California mantle, *J. Geophys. Res.*, **95**, 19725-19746, 1990.

- Kennett, B. L. N., and E. R. Engdahl, Traveltimes for global earthquake location and phase identification, *Geophys. J. Int.*, **105**, 429-465, 1992.
- Li, Y-G., T. L. Henyey, and L. T. Silver, Aspects of the crustal structure of the Western Mojave Desert, California, from seismic reflection and gravity data, *J. Geophys. Res.*, **97**, 8805-8816, 1992a.
- Li, Y-G., T. L. Henyey, and P. C. Leary, Seismic reflection constraints on the structure of the crust beneath the San Bernardino Mountains, Transverse Ranges, Southern California, *J. Geophys. Res.*, **97**, 8817-8830, 1992b.
- Liu, H., P. M. Davis, and S. Gao, SKS splitting beneath southern California, *Geophys. Res. Lett.*, **22**, 767-770, 1995.
- Magistrale, H., H. Kanamori, and C. Jones, Forward and inverse three-dimensional P wave velocity models of the Southern California crust, *J. Geophys. Res.*, **97**, 14115-14135, 1992.
- Murphy, J., G. Fuis, T. Ryberg, D. Okaya, M. Benthien, M. Alvarez, I. Asudeh, W. Kohler, G. Glassmoyer, M. Robertson, and J. Bhowmik, Report for the explosion data acquired in the Los Angeles Region Seismic Experiment (LARSE), Los Angeles, California, USGS Open-File Report, submitted, 1996.
- Okaya, D., J. Bhowmik, G. Fuis, J. Murphy, M. Robertson, A. Chakraborty, M. Benthien, K. Hafner, and J. Norris, Report for airgun data acquired at onshore stations during the Los Angeles Region Seismic Experiment (LARSE), California, USGS Open-File Report, submitted, 1996a.
- Okaya, D., J. Bhowmik, G. Fuis, J. Murphy, M. Robertson, A. Chakraborty, M. Benthien, K. Hafner, and J. Norris, Report for earthquake data acquired at onshore stations during the Los Angeles Region Seismic Experiment (LARSE), California, USGS Open-File Report, submitted, 1996b.
- Rodgers, P. W., A. J. Martin, M. C. Robertson, M. M. Hsu, and D. B. Harris, Signal-coil calibration of electromagnetic seismometers, *Bull. Seis. Soc. Am.*, **85**, 845-850, 1995.
- Savage, M. K. and P. G. Silver, Mantle deformation and tectonics: constraints from seismic anisotropy in the western United States, *Phys. Earth Plan. Int.*, **78**, 207-227, 1993.
- Sung, L-Y., and D. D. Jackson, Crustal and uppermost mantle structure under Southern California, *Bull. Seis. Soc. Am.*, **82**, 934-961, 1992.
- ten Brink, U. S., R. M. Drury, G. K. Miller, T. M. Brocher, and D. Okaya, Los Angeles Region Seismic Experiment (LARSE) - off-shore seismic refraction data, USGS Open-File Report 96-27, 1996.
- Zhao, D., and H. Kanamori, P-wave image of the crust and uppermost mantle in Southern California, *Geophys. Res. Lett.*, **19**, 2329-2332, 1992.
- Zhao, D., H. Kanamori, and E. Humphreys, Simultaneous inversion of local and teleseismic data for the crust and mantle structure of southern California, *Phys. Earth Plan. Int.*, **93**, 191-214, 1996.
- Zhou, H-W., Crustal P and S velocities in Southern California from a master station inversion using fresnel volume rays, *supplement to EOS Trans., AGU*, **74**, 483, 1994.

## Appendix A

This is a summary of notes taken by field volunteers during their weekly station visits. This summary only contains accounts of unusual occurrences at the station which may not be recorded in the log file for that week. It is organized sequentially by station number, then chronologically by station visit date. Time is given as GMT julian day:hour:minute.

| Station No. | Time<br>(day:hr:min) | Comments                                                                                                                                                |
|-------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 244         | 337:18:33            | Only 73 events recorded at DAS STATUS check.                                                                                                            |
| 216         | 330:17:06            | Seems DAS is not programmed to use Omega clock.                                                                                                         |
| 215         | 316:11:05            | Did monitor after START ACQ - seems OK.                                                                                                                 |
| 203         | 323:19:06            | Dead battery (3.6 volts).                                                                                                                               |
| 203         | 330:18:27            | Channel 2 looks out of level; ~ 3 cnts of bias (?)                                                                                                      |
| 002         | 330:19:32            | Seismometer not level?                                                                                                                                  |
| 004         | 316:22:57            | Background noise level only 5-10 counts. Deep knee-bend produced 80-100 counts. Tried swapping sensors (L22), swapped DAS but still get low amplitudes. |
| 004         | 330:20:49            | On attempt to MONITOR DAS said ACQ was on. Did STOP ACQ and continued with installation.                                                                |
| 004         | 337:20:08            | DOA. Hooked up to Reftek power supply and proceeded with step 4.                                                                                        |
| 007         | 323:22:45            | First 5 minutes on this recorder were erroneously recorded at site #008.                                                                                |
| 007         | 330:22:28            | Site had been uncovered and clock moved but nothing missing and site still operating. Decided to remove site.                                           |
| 006A        | 328:23:16            | After 5 minutes no UTC LOCK message on DAS STATE. Installed 0.9 miles from station # 006 (301) near mile marker #20.40.                                 |
| 010         | 317:19:24            | Changed gain 32 -> 512.                                                                                                                                 |
| 013         | 330:20:47            | Communication failure due to broken cord.<br>Disconnected from battery, then reconnected to battery.<br>Bad hand terminal cord.                         |
| 013         | 337:18:16            | Stopped because incorrect parameter. Started again.                                                                                                     |
| 014         | 317:16:42            | Gain 32 -> 512.                                                                                                                                         |
| 014         | 323:19:53            | Old DAS picked up at Forest Service Station.<br>Vandalized. CHP picked up.                                                                              |
| 015         | 331:02:52            | Battery cable knocked off. We reconnected to get DAS status.                                                                                            |
| 016         | 337:21:59            | System on when deployed. Stopped then restarted.                                                                                                        |

|     |           |                                                                                                                                                                         |
|-----|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 018 | 324:18:58 | Animal signs. Paw print at station. Station not disturbed.                                                                                                              |
| 018 | 337:20:55 | Animal tracks around site.                                                                                                                                              |
| 018 | 346       | Hand-held terminal broken.                                                                                                                                              |
| 019 | 323:22:00 | Using 2 different clocks this station always read year=1988. GPS has wrong year.                                                                                        |
| 019 | 337:20:33 | DAS on when deployed. Stopped then restarted.                                                                                                                           |
| 020 | 317:01:08 | Gain change 32 -> 512.                                                                                                                                                  |
| 022 | 331:00:16 | Channel 2 dead.                                                                                                                                                         |
| 023 | 316:23:32 | Gain change to 512. Bad GPS.                                                                                                                                            |
| 023 | 324:01:46 | Communication failure.                                                                                                                                                  |
| 023 | 330:23:31 | System on at deployment. Turned off and reset.                                                                                                                          |
| 024 | 316:22:43 | Gain change to 512.                                                                                                                                                     |
| 024 | 330:22:52 | System on when put out. Turned off. System reset. Had to relevel jug.                                                                                                   |
| 025 | 330:22:49 | DAS STATUS communication failure. Switched battery. Communication failure. Tried again.                                                                                 |
| 028 | 323:20:59 | For the sensor: connector cable is in the air and level bubble is visible (noisy?).                                                                                     |
| 028 | 330:22:11 | Signs of animal intrusion. No damage to instrument.                                                                                                                     |
| 028 | 337:21:21 | Water inside garbage bag. Changed battery to stop acquisition.                                                                                                          |
| 028 | 337:21:44 | Not proper box #. Should be 6024. 6004 was programmed for 029. Retrieved parameters from 6022 and used for 6004.                                                        |
| 030 | 323:20:13 | Accidentally unplugged hand terminal during STOP ACQ request. Resulting communication failures. Can't check DAS STATUS to see if ACQ STOP OFF. DAS problem with timing. |
| 030 | 330:21:30 | GPS board in DAS is bad.                                                                                                                                                |
| 030 | 337:20:46 | Battery dead. Had to change battery.                                                                                                                                    |
| 032 | 323:18:42 | Sensor partially uncovered. Instrument not completely covered. Human? Only 50 events.                                                                                   |
| 032 | 330:20:49 | No parameters entered into 6032 (receiving parameters from previous DAS unit 6033; sending parameters to new DAS 6032).                                                 |
| 032 | 337       | Signs of animal intrusion. Sensor cable chewed through. Pulled out broken sensor cable.                                                                                 |
| 033 | 323:18:21 | A little water around sensor. Nothing bad.                                                                                                                              |
| 331 | 330:19:03 | Battery died two days ago. Switched batteries right away.                                                                                                               |
| 331 | 337:19:05 | Had to use new battery to STOP ACQ.                                                                                                                                     |
| 331 | 337:19:20 | GPS sensor partially covered. Hasn't locked in over one week.                                                                                                           |
| 036 | 323:16:56 | Station bag had water from rain; some condensation in bag. DAS seems OK.                                                                                                |

|     |           |                                                                                                                                                                                                                                                                                                                                                 |
|-----|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 037 | 330:18:03 | Swapped batteries right away to check stat. Filled mem then shutdown; last mem stored upon STOP ACQ.                                                                                                                                                                                                                                            |
| 038 | 330:18:16 | Communication failure.                                                                                                                                                                                                                                                                                                                          |
| 039 | 317:18:32 | Low stomp test amplitude.                                                                                                                                                                                                                                                                                                                       |
| 039 | 337:17:41 | Used the battery for station 033 because the battery was leaking profusely.                                                                                                                                                                                                                                                                     |
| 042 | 330:16:53 | Battery too low.                                                                                                                                                                                                                                                                                                                                |
| 042 | 330:17:09 | Changed stat: station is 040, not 042; we will retrieve parameters from the old box (6064) and transfer to new box (6056).                                                                                                                                                                                                                      |
| 045 | 324:16:09 | Accidentally set 38 s ahead at first pulse; then set 38 s back.                                                                                                                                                                                                                                                                                 |
| 045 | 338:16:54 | Initially forgot to STOP ACQ before beginning copy to disk. Then in midst of that copy got auxiliary device failure. Stopped ACQ and dumped RAM to disk in DAS. Started copy to disk again. Auxiliary device failure again. Switched to new disk and switched SCSI cable and checked old SCSI cable. It seems OK. This disk copy is successful. |
| 046 | 324:16:50 | Signs of animal intrusion; bag chewed on.                                                                                                                                                                                                                                                                                                       |
| 046 | 331:17:25 | Low battery; only 76 Mbytes stored.                                                                                                                                                                                                                                                                                                             |
| 048 | 324:17:43 | Take-out connectors were dirty (dirt in bag). Cleaned, then OK.                                                                                                                                                                                                                                                                                 |
| 050 | 338:18:15 | Channels 2 and 3 possibly bad.                                                                                                                                                                                                                                                                                                                  |
| 050 | 345:15:52 | North and east polarities might be wrong.                                                                                                                                                                                                                                                                                                       |
| 052 | 345:16:19 | North and east polarities might be wrong.                                                                                                                                                                                                                                                                                                       |
| 054 | 324:21:21 | Problems with 2 DAS-hand terminal cables. Had a third cable. No problem with the DAS.                                                                                                                                                                                                                                                           |
| 054 | 331:21:27 | Signs of animal intrusion; Omega wire chewed on.                                                                                                                                                                                                                                                                                                |
| 054 | 338:19:45 | Dead battery. Connect Reftek battery for SCSI copy.                                                                                                                                                                                                                                                                                             |
| 056 | 324:22:22 | Condensation in bag above GPS antenna.                                                                                                                                                                                                                                                                                                          |
| 056 | 331:22:34 | Found new DAS with 166 events -> assumed last week's data copied but disk not cleared. So cleared RAM and format SCSI.                                                                                                                                                                                                                          |
| 056 | 338:20:32 | Low battery. Attached DAS to new battery for DAS.                                                                                                                                                                                                                                                                                               |
| 058 | 345:17:18 | North and east polarities might be wrong.                                                                                                                                                                                                                                                                                                       |
| 065 | 345:18:14 | North polarity might be wrong.                                                                                                                                                                                                                                                                                                                  |
| 066 | 325:22:40 | Channel 1 may be bad.                                                                                                                                                                                                                                                                                                                           |
| 066 | 338:23:11 | New DAS said NO UTC CLK but supposed to have Omega. Not room enough left to copy onto disk because needed for next 2 stations.                                                                                                                                                                                                                  |
| 070 | 315       | Partial communication failure.                                                                                                                                                                                                                                                                                                                  |
| 070 | 325:02:20 | DAS STATUS not possible (old version software) (communication failure).                                                                                                                                                                                                                                                                         |
| 070 | 339:19:41 | No DAS STATUS-old software version. Switched in an Omega from station 066. Forgot to send parameters to DAS. Erased first 7 events, sent parameters and                                                                                                                                                                                         |



|     |           |                                                                                                                                   |
|-----|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
|     |           | restarted. Auxiliary device drive error or timeout during disk copy. Communication failure. RAM dump doesn't work.                |
| 070 | 345:19:22 | North and east polarities might be wrong.                                                                                         |
| 072 | 339:20:51 | Omega wire broke off preamp.                                                                                                      |
| 074 | 339:22:05 | Omega wire was cut/chewed between preamp and Reftek. Put in new wire.                                                             |
| 074 | 345:19:54 | North and east polarities might be wrong.                                                                                         |
| 080 | 331:21:27 | Low voltage; swapped battery. This site may continue to have power problems due to the combination of low RAM and big hard drive. |
| 082 | 315       | Ex clock status causes Reftek to lose communication to hand terminal.                                                             |
| 082 | 324:18:33 | Switched DAS for Omega time problem. Switched with DAS 6045. Signs of animal intrusion.                                           |
| 084 | 324:20:08 | Omega line was broken by an animal.                                                                                               |
| 084 | 331:22:35 | Signs of animal intrusion; chewed bag. Cables look OK. Channel 3 may be weak.                                                     |
| 084 | 345:18:30 | Signs of intrusion; something tried to dig the DAS out and broke the Omega wire.                                                  |
| 086 | 318:00:37 | Possible problems with RAM.                                                                                                       |
| 098 | 324:18:21 | Omega wire broke (cut?) into three sections.                                                                                      |
| 098 | 331:19:01 | Animal broke the Omega wire.                                                                                                      |
| 102 | 324:16:10 | Something tried to dig out DAS.                                                                                                   |
| 112 | 322:20:49 | No DAS STATUS. Cable to antenna chewed in half. Spliced and taped.                                                                |
| 112 | 328:20:46 | Battery dead.                                                                                                                     |
| 112 | 335:20:49 | Battery dead.                                                                                                                     |

Table 1. Geographical coordinates and elevations of instruments in the LARSE93 array, given by station number. North latitude and east longitude are defined as positive. All coordinates in columns 2, 3, and 4 have been converted to values corresponding to the WGS-84 datum regardless of the location method used (column 5). Column 6 contains elevation values determined from topographical maps based on the NAD-27 datum.

| Station No. | Latitude<br>(°N) | Longitude<br>(°E) | Elevation (m)<br>(WGS-84 datum) | Method | Elevation (m)<br>(map) |
|-------------|------------------|-------------------|---------------------------------|--------|------------------------|
| 245         | 34.7395          | -118.0637         | -30                             | GPS    | 2                      |
| 244         | 34.7635          | -118.0680         | -27                             | GPS    | 5                      |
| 216         | 34.0058          | -118.0087         | 197                             | GPS    | 229                    |
| 215         | 34.0170          | -118.0110         | 151                             | GPS    | 183                    |
| 203         | 34.1142          | -117.9507         | 114                             | GPS    | 146                    |
| 002         | 34.1545          | -117.9170         | 181                             | GPS    | 213                    |
| 004         | 34.1620          | -117.8960         | 224                             | GPS    | 256                    |
| 005         | 34.1703          | -117.8872         | 248                             | GPS    | 280                    |
| 301         | 34.1802          | -117.8810         | 358                             | GPS    | 390                    |
| 006         | 34.1875          | -117.8710         | 358                             | GPS    | 390                    |
| 601         | 34.1883          | -117.8784         | 358                             | map    | 390                    |
| 007         | 34.1883          | -117.8784         | 358                             | map    | 390                    |
| 008         | 34.1938          | -117.8647         | 346                             | GPS    | 378                    |
| 009         | 34.2037          | -117.8652         | 334                             | map    | 366                    |
| 010         | 34.2125          | -117.8669         | 480                             | map    | 512                    |
| 011         | 34.2183          | -117.8664         | 486                             | map    | 518                    |
| 012         | 34.2258          | -117.8639         | 425                             | map    | 457                    |
| 013         | 34.2458          | -117.8624         | 474                             | map    | 506                    |
| 014         | 34.2500          | -117.8609         | 504                             | map    | 536                    |
| 015         | 34.2608          | -117.8551         | 590                             | map    | 622                    |
| 016         | 34.2648          | -117.8476         | 675                             | map    | 707                    |
| 018         | 34.2833          | -117.8451         | 922                             | map    | 954                    |
| 019         | 34.2933          | -117.8409         | 989                             | map    | 1021                   |
| 020         | 34.3033          | -117.8422         | 1358                            | map    | 1390                   |
| 021         | 34.3125          | -117.8342         | 1477                            | map    | 1509                   |
| 022         | 34.3233          | -117.8392         | 1681                            | map    | 1713                   |
| 023         | 34.3283          | -117.8292         | 1812                            | map    | 1844                   |
| 024         | 34.3308          | -117.8242         | 1986                            | map    | 2018                   |
| 025         | 34.3452          | -117.8205         | 2211                            | GPS    | 2243                   |
| 026         | 34.3510          | -117.8090         | 2278                            | GPS    | 2310                   |
| 027         | 34.3588          | -117.7978         | 2315                            | GPS    | 2347                   |
| 028         | 34.3662          | -117.7892         | 2239                            | GPS    | 2271                   |
| 029         | 34.3720          | -117.7818         | 2187                            | GPS    | 2219                   |
| 030         | 34.3789          | -117.7701         | 1809                            | map    | 1841                   |
| 031         | 34.3847          | -117.7604         | 1986                            | GPS    | 2018                   |
| 032         | 34.3939          | -117.7533         | 1958                            | GPS    | 1990                   |
| 033         | 34.3932          | -117.7410         | 1858                            | GPS    | 1890                   |

Table 1 (continued)

| Station No. | Latitude<br>(°N) | Longitude<br>(°E) | Elevation (m)<br>(WGS-84 datum) | Method | Elevation (m)<br>(map) |
|-------------|------------------|-------------------|---------------------------------|--------|------------------------|
| 331         | 34.3948          | -117.7209         | 1846                            | map    | 1878                   |
| 034         | 34.3958          | -117.7178         | 1724                            | GPS    | 1756                   |
| 035         | 34.4073          | -117.7173         | 1577                            | GPS    | 1609                   |
| 036         | 34.4162          | -117.7170         | 1516                            | GPS    | 1548                   |
| 037         | 34.4247          | -117.7157         | 1516                            | GPS    | 1548                   |
| 038         | 34.4325          | -117.7120         | 1382                            | GPS    | 1414                   |
| 039         | 34.4435          | -117.7117         | 1297                            | GPS    | 1329                   |
| 040         | 34.4550          | -117.7167         | 1199                            | GPS    | 1231                   |
| 042         | 34.4749          | -117.7129         | 1090                            | GPS    | 1122                   |
| 045         | 34.4958          | -117.7043         | 1010                            | GPS    | 1042                   |
| 046         | 34.5103          | -117.6967         | 977                             | map    | 1009                   |
| 048         | 34.5278          | -117.6933         | 940                             | GPS    | 972                    |
| 050         | 34.5418          | -117.6812         | 916                             | GPS    | 948                    |
| 052         | 34.5542          | -117.6605         | 910                             | GPS    | 942                    |
| 054         | 34.5737          | -117.6508         | 885                             | GPS    | 917                    |
| 056         | 34.5913          | -117.6485         | 867                             | GPS    | 899                    |
| 058         | 34.6078          | -117.6402         | 855                             | GPS    | 887                    |
| 060         | 34.6225          | -117.6335         | 858                             | GPS    | 890                    |
| 062         | 34.6398          | -117.6190         | 832                             | GPS    | 864                    |
| 065         | 34.6653          | -117.6137         | 834                             | GPS    | 866                    |
| 066         | 34.6758          | -117.6145         | 837                             | GPS    | 869                    |
| 068         | 34.6902          | -117.5975         | 895                             | GPS    | 927                    |
| 070         | 34.7094          | -117.5968         | 980                             | GPS    | 1012                   |
| 072         | 34.7232          | -117.5810         | 1029                            | GPS    | 1061                   |
| 074         | 34.7375          | -117.5658         | 1224                            | GPS    | 1256                   |
| 077         | 34.7617          | -117.5433         | 907                             | GPS    | 939                    |
| 080         | 34.7848          | -117.5372         | 837                             | GPS    | 869                    |
| 082         | 34.7960          | -117.5176         | 821                             | GPS    | 853                    |
| 084         | 34.8170          | -117.5143         | 809                             | GPS    | 841                    |
| 086         | 34.8322          | -117.5005         | 803                             | GPS    | 835                    |
| 088         | 34.8518          | -117.5052         | 818                             | GPS    | 850                    |
| 090         | 34.8767          | -117.4967         | 840                             | map    | 872                    |
| 092         | 34.8887          | -117.4868         | 888                             | GPS    | 920                    |
| 094         | 34.9035          | -117.4855         | 867                             | GPS    | 899                    |
| 096         | 34.9177          | -117.4683         | 812                             | GPS    | 844                    |
| 098         | 34.9366          | -117.4541         | 742                             | GPS    | 774                    |
| 100         | 34.9482          | -117.4430         | 714                             | GPS    | 747                    |
| 102         | 34.9575          | -117.4192         | 699                             | map    | 732                    |
| 104         | 34.9750          | -117.4100         | 680                             | GPS    | 713                    |
| 106         | 34.9883          | -117.3907         | 659                             | GPS    | 692                    |
| 108         | 35.0072          | -117.3945         | 656                             | GPS    | 689                    |
| 110         | 35.0267          | -117.3850         | 607                             | GPS    | 640                    |
| 112         | 35.0433          | -117.3833         | 613                             | GPS    | 646                    |
| 114         | 35.0633          | -117.3817         | 610                             | GPS    | 643                    |

Table 1 (continued)

| Station No. | Latitude<br>(°N) | Longitude<br>(°E) | Elevation (m)<br>(WGS-84 datum) | Method | Elevation (m)<br>(map) |
|-------------|------------------|-------------------|---------------------------------|--------|------------------------|
| 116         | 35.0835          | -117.3835         | 619                             | GPS    | 652                    |
| 118         | 35.0945          | -117.3830         | 638                             | GPS    | 671                    |
| 120         | 35.1133          | -117.3423         | 683                             | map    | 716                    |
| 122         | 35.1200          | -117.3667         | 674                             | GPS    | 707                    |
| 124         | 35.1380          | -117.3592         | 723                             | map    | 756                    |
| 126         | 35.1513          | -117.3342         | 796                             | map    | 829                    |
| 128         | 35.1858          | -117.3117         | 869                             | map    | 902                    |
| 130         | 35.2125          | -117.2942         | 955                             | map    | 988                    |

Table 2. Sensor type and data format. Sample rate is in samples/s and “Service style” refers to whether the data were collected by swapping DAS units or by copying to tape.

| Station No. | Sensor type    | Sample rate | Data format | Pre-amp gain | Service style |
|-------------|----------------|-------------|-------------|--------------|---------------|
| 245         | L4C3D 1Hz      | 25          | 32-bit      | 32           | swap DAS      |
| 244         | L22            | 25          | 32-bit      | 32           | swap DAS      |
| 216         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 215         | L4C3D 1Hz      | 25          | 32-bit      | 32           | swap DAS      |
| 203         | L22            | 25          | 32-bit      | 32           | swap DAS      |
| 002         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 004         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 005         | L22            | 25          | 32-bit      | 32           | swap DAS      |
| 601         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 007         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 008         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 009         | L4C3D 1Hz      | 25          | 32-bit      | 32           | swap DAS      |
| 010         | L22            | 25          | 32-bit      | 32           | swap DAS      |
| 011         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 012         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 013         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 014         | L22            | 25          | 32-bit      | 32           | swap DAS      |
| 015         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 016         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 018         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 019         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 020         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 021         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 022         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 023         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 024         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 025         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 026         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 027         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 028         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 029         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 030         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 031         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 032         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 033         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 331         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 034         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 035         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 036         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 037         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 038         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 039         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 040         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 042         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |

Table 2 (continued)

| Station No. | Sensor type    | Sample rate | Data format | Pre-amp gain | Service style |
|-------------|----------------|-------------|-------------|--------------|---------------|
| 045         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 046         | L4C3D 1Hz      | 50          | 16-bit      | 512          | copy to tape  |
| 048         | L4C1D Vertical | 50          | 16-bit      | 512          | copy to tape  |
| 050         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 052         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 054         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 056         | L4C1D Vertical | 50          | 32-bit      | 32           | copy to tape  |
| 058         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 060         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 062         | L4C1D Vertical | 50          | 32-bit      | 32           | copy to tape  |
| 065         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 066         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 068         | L4C1D Vertical | 50          | 16-bit      | 512          | copy to tape  |
| 070         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 072         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 074         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 077         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 080         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 082         | L4C1D Vertical | 50          | 16-bit      | 512          | copy to tape  |
| 084         | L4C3D 1Hz      | 50          | 16-bit      | 512          | copy to tape  |
| 086         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 088         | L4C1D Vertical | 50          | 32-bit      | 32           | copy to tape  |
| 090         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 092         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 094         | L4C1D Vertical | 50          | 32-bit      | 512          | copy to tape  |
| 096         | L4C3D 1Hz UCLA | 50          | 16-bit      | 512          | copy to tape  |
| 098         | L22            | 50          | 16-bit      | 512          | copy to tape  |
| 100         | L4C1D Vertical | 50          | 32-bit      | 32           | copy to tape  |
| 102         | L4C3D 1Hz      | 50          | 16-bit      | 512          | copy to tape  |
| 104         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 106         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 108         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 110         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 112         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 114         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 116         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 118         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 120         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 122         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 124         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |
| 126         | L4C3D 1Hz      | 50          | 16-bit      | 512          | swap DAS      |
| 128         | L22            | 50          | 16-bit      | 512          | swap DAS      |
| 130         | L4C1D Vertical | 50          | 32-bit      | 32           | swap DAS      |

Table 3. DAS number-external timing device combination for each week of recording. Station times are given as GMT julian day:hour:minute. The timing method abbreviations in column 3 are defined as follows:

gps=had a GPS receiver hookup the entire week.  
 omega=had an Omega receiver hookup the entire week.  
 nclk=had no permanent external time receiver hookup.  
 n/gbe=had no permanent external time receiver hookup; received a GPS receiver hookup at beginning and end of week.  
 n/gb=had no permanent external time receiver hookup; received a GPS receiver hookup at beginning of week only.  
 n/pbe=had no permanent external time receiver hookup; received a GPS receiver time calibration pulse at beginning and end of week.  
 n/pb=had no permanent external time receiver hookup; received a GPS receiver time calibration pulse at beginning of week only.  
 n/pe=had no permanent external time receiver hookup; received a GPS receiver time calibration pulse at end of week only.  
 o/p=had an Omega receiver hookup the entire week; received a GPS receiver time calibration pulse at some point during week.  
 o/pb=had an Omega receiver hookup the entire week; received a GPS receiver time calibration pulse at end of week.  
 o/n=had an Omega receiver hookup part of the week; had no permanent external time device hookup part of the week.  
 nclk/oe=had no permanent external time receiver hookup; received an Omega receiver time calibration pulse at end of week only.  
 n/gps=had no permanent external time device hookup part of the week; had a GPS receiver hookup part of the week.

Table3a (week 1)

| DAS No. | Station No. | Timing | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|--------|----------------------------|--------------------------|
| 7063    | 245         | gps    | 316:19:36                  | 323:17:48                |
| 7089    | 244         | gps    | 316:20:30                  | 323:18:23                |
| 6071    | 216         | nclk   | 316:20:27                  | 323:17:49                |
| 7068    | 215         | gps    | 316:18:54                  | 323:17:15                |
| 7067    | 203         | gps    | 316:22:05                  | 321:09:30                |
| 7064    | 002         | n/gbe  | 317:00:00                  | 323:20:29                |
| 7060    | 004         | n/gb   | 316:22:55                  | 318.05.39                |
| 7058    | 005         | n/gbe  | 316:00:17                  | 323:21:29                |
| 7056    | 301         | gps    | 317:01:07                  | 323:23:02                |
| 7053    | 007         | gps    | 317:02:25                  | 323:16:51                |
| 7051    | 008         | n/gbe  | 317:02:03                  | 323:22:01                |
| 7049    | 009         | gps    | 316:17:19                  | 324:16:51                |
| 7048    | 010         | gps    | 317:19:24                  | 323:15:24                |
| 7045    | 011         | n/gbe  | 317:19:02                  | 323:16:28                |
| 6047    | 012         | n/gbe  | 317:18:39                  | 324:17:54                |
| 7041    | 013         | gps    | 317:18:12                  | 323:17:15                |
| 7093    | 014         | gps    | 317:16:42                  | 317:18:05                |
| 6049    | 015         | n/gbe  | 317:17:09                  | 323:18:12                |
| 7090    | 016         | gps    | 317:17:34                  | 323:20:49                |
| 6051    | 018         | gps    | 317:03:27                  | 324:18:58                |
| 7084    | 019         | n/gbe  | 317:02:51                  | 323:21:33                |
| 7082    | 020         | n/gbe  | 317:01:08                  | 323:22:39                |
| 6057    | 021         | n/gbe  | 317:01:58                  | 323:23:47                |
| 6060    | 022         | gps    | 317:00:17                  | 324:00:31                |
| 7081    | 023         | gps    | 316:23:32                  | 321:17:00                |
| 6062    | 024         | n/gbe  | 316:22:43                  | 324:02:27                |
| 6135    | 025         | gps    | 316:16:18                  | 323:21:52                |
| 7039    | 026         | gps    | 316:16:55                  | 323:21:35                |
| 6020    | 027         | gps    | 316:18:18                  | 323:21:22                |
| 6022    | 028         | gps    | 316:19:04                  | 323:21:08                |
| 6025    | 029         | gps    | 316:19:33                  | 323:20:47                |
| 6027    | 030         | nclk   | 316:20:22                  | 323:20:10                |
| 6029    | 031         | gps    | 316:21:18                  | 323:19:11                |
| 6032    | 032         | gps    | 316:21:48                  | 317:22:03                |
| 6034    | 033         | gps    | 316:22:17                  | 323:18:22                |
| 6066    | 331         | gps    | 320:22:24                  | 323:18:00                |
| 6038    | 034         | gps    | 317:00:01                  | 323:17:23                |
| 6040    | 035         | gps    | 317:00:21                  | 323:17:18                |
| 6042    | 036         | gps    | 317:00:45                  | 323:16:56                |
| 6046    | 037         | gps    | 317:01:14                  | 323:16:47                |
| 6053    | 038         | gps    | 317:17:39                  | 323:16:35                |
| 7116    | 039         | gps    | 317:18:32                  | 323:16:21                |
| 6095    | 040         | omega  | 317:19:20                  | 323:16:04                |



Table 3a (continued)

| DAS No. | Station No. | Timing   | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|----------|----------------------------|--------------------------|
| 6056    | 042         | gps      | 317:19:43                  | 323:15:28                |
| 6119    | 045         | omega    | 321:00:33                  | 324:15:23                |
| 6065    | 046         | gps      | 319:00:04                  | 324:16:50                |
| 6134    | 048         | gps      | 321:01:11                  | 324:17:44                |
| 6131    | 050         | omega    | 319:00:14                  | 324:18:29                |
| 6132    | 052         | omega    | 318:23:14                  | 324:19:46                |
| 6129    | 054         | o/pb     | 318:22:41                  | 324:21:21                |
| 7076    | 056         | gps      | 318:21:58                  | 322:05:15                |
| 6121    | 058         | omega    | 318:21:51                  | 324:22:58                |
| 6125    | 060         | n/pb     | 318:21:13                  | 325:23:48                |
| 7107    | 062         | gps      | 318:21:11                  | 325:23:28                |
| 6122    | 065         | o/n      | 318:19:35                  | 325:22:31                |
| 6127    | 066         | omega    | 319:19:40                  | 322:09:18                |
| 6111    | 068         | omega    | 318:20:18                  | 325:21:41                |
| 0499    | 070         | omega    | 318:17:52                  | 325:13:01                |
| 0504    | 072         | omega    | 318:16:00                  | 325:20:35                |
| 6126    | 074         | omega    | 318:19:29                  | 325:20:18                |
| 0489    | 077         | omega    | 318:16:53                  | 324:16:17                |
| 0615    | 080         | gps      | 318:17:27                  | 324:17:32                |
| 6124    | 082         | n/pb(o?) | 318:01:00                  | 324:18:33                |
| 0503    | 084         | omega    | 318:15:30                  | 324:19:28                |
| 0501    | 086         | omega    | 318:00:37                  | 320:10:42                |
| 7095    | 088         | n/pb     | 317:22:29                  | 323:20:59                |
| 0500    | 090         | omega    | 318:00:05                  | 324:23:21                |
| 0506    | 092         | omega    | 317:23:38                  | 324:21:53                |
| 0592    | 094         | gps      | 317:21:46                  | 323:14:46                |
| 0507    | 096         | omega    | 317:22:21                  | 324:19:49                |
| 0502    | 098         | omega    | 317:21:24                  | 324:18:24                |
| 7098    | 100         | n/pb     | 317:20:01                  | 324:17:12                |
| 0593    | 102         | gps      | 317:19:23                  | 323:14:38                |
| 7071    | 104         | n/gb     | 315:19:31                  | 322:17:24                |
| 6088    | 106         | nclk     | 315:20:30                  | 322:16:57                |
| 6004    | 108         | gps      | 315:21:14                  | 322:21:34                |
| 7073    | 110         | n/gb     | 315:22:36                  | 322:21:07                |
| 6112    | 112         | nclk     | 315:22:01                  | 318:11:07                |
| 6085    | 114         | gps      | 316:00:25                  | 322:18:58                |
| 7110    | 116         | n/gb     | 315:23:20                  | 322:19:25                |
| 6110    | 118         | nclk     | 315:23:48                  | 322:19:55                |
| 6083    | 120         | gps      | 316:01:09                  | 322:20:56                |
| 7106    | 122         | nclk     | 316:00:09                  | 322:21:03                |
| 7104    | 124         | nclk     | 315:23:19                  | 322:20:19                |
| 6115    | 126         | nclk     | 315:22:41                  | 322:19:47                |
| 6118    | 128         | nclk     | 315:21:00                  | 322:18:43                |
| 7101    | 130         | gps      | 315:19:21                  | 322:17:42                |

Table 3b (week 2)

| DAS No. | Station No. | Timing | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|--------|----------------------------|--------------------------|
| 7062    | 245         | gps    | 323:18:01                  | 330:17:25                |
| 7088    | 244         | gps    | 323:18:34                  | 330:18:05                |
| 6080    | 216         | nclk   | 323:18:03                  | 330:16:55                |
| 7069    | 215         | gps    | 323:17:34                  | 330:01:21                |
| 7066    | 203         | gps    | 323:19:06                  | 330:18:12                |
| 7065    | 002         | n/gbe  | 323:20:49                  | 330:19:20                |
| 7061    | 004         | n/gbe  | 323:21:11                  | 330:20:34                |
| 7059    | 005         | n/gbe  | 323:21:42                  | 329:10:25                |
| 7057    | 301         | gps    | 323:23:09                  | 330:22:48                |
| 7054    | 007         | gps    | 323:22:45                  | 330:22:29                |
| 7052    | 008         | n/gbe  | 323:22:22                  | 330:22:53                |
| 7050    | 009         | gps    | 324:17:10                  | 331:17:55                |
| 7047    | 010         | gps    | 323:15:50                  | 330:17:23                |
| 7046    | 011         | n/pbe  | 323:16:51                  | 330:20:21                |
| 6048    | 012         | gps    | 324:18:07                  | 331:17:15                |
| 7042    | 013         | gps    | 323:17:26                  | 330:18:26                |
| 7092    | 014         | gps    | 323:19:53                  | 330:18:09                |
| 6050    | 015         | n/pbe  | 323:18:25                  | 325:18:00                |
| 7091    | 016         | gps    | 323:21:04                  | 331:16:09                |
| 6052    | 018         | gps    | 324:19:15                  | 331:15:37                |
| 7087    | 019         | n/gbe  | 323:21:52                  | 331:14:50                |
| 7083    | 020         | gps    | 323:22:52                  | 331:01:18                |
| 6058    | 021         | n/gbe  | 324:00:01                  | 331:00:45                |
| 6061    | 022         | gps    | 324:00:48                  | 330:23:53                |
| 7080    | 023         | gps    | 324:01:46                  | 330:23:19                |
| 6063    | 024         | n/gbe  | 324:03:11                  | 330:22:25                |
| 6018    | 025         | gps    | 323:22:02                  | 330:22:19                |
| 7040    | 026         | gps    | 323:21:43                  | 330:22:34                |
| 6021    | 027         | gps    | 323:21:29                  | 330:22:23                |
| 6024    | 028         | gps    | 323:21:00                  | 330:22:12                |
| 6026    | 029         | gps    | 323:20:54                  | 330:22:00                |
| 6028    | 030         | gps    | 323:20:24                  | 330:21:20                |
| 6030    | 031         | gps    | 323:19:18                  | 330:20:42                |
| 6033    | 032         | gps    | 323:18:52                  | 330:20:07                |
| 6035    | 033         | gps    | 323:18:29                  | 330:20:09                |
| 6069    | 331         | gps    | 323:18:09                  | 328:19:20                |
| 6039    | 034         | gps    | 323:17:41                  | 330:18:51                |
| 6041    | 035         | gps    | 323:17:27                  | 330:18:41                |
| 6043    | 036         | gps    | 323:17:05                  | 330:18:14                |
| 6044    | 037         | gps    | 323:16:53                  | 330:18:03                |
| 6055    | 038         | gps    | 323:16:43                  | 330:17:52                |
| 7114    | 039         | gps    | 323:16:31                  | 330:17:40                |
| 6093    | 040         | omega  | 323:16:16                  | 330:17:27                |
| 6064    | 042         | gps    | 323:15:49                  | 330:16:54                |

Table 3b (continued)

| DAS No. | Station No. | Timing | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|--------|----------------------------|--------------------------|
| 6119    | 045         | omega  | 324:16:10                  | 331:15:41                |
| 6065    | 046         | gps    | 324:17:23                  | 327:15:00                |
| 6134    | 048         | gps    | 324:18:05                  | 331:17:53                |
| 6131    | 050         | omega  | 324:19:21                  | 331:18:54                |
| 6132    | 052         | omega  | 324:20:22                  | 331:20:14                |
| 6129    | 054         | omega  | 324:21:25                  | 331:21:27                |
| 7112    | 056         | gps    | 324:22:31                  | 330:20:01                |
| 6121    | 058         | o/pb   | 324:23:55                  | 331:23:13                |
| 6125    | 060         | n/pbe  | 326:00:37                  | 332:00:13                |
| 7108    | 062         | gps    | 325:23:39                  | 332:03:24                |
| 6122    | 065         | o/n    | 325:23:05                  | 332:04:18                |
| 6114    | 066         | o/p    | 325:23:03                  | 332:01:41                |
| 6111    | 068         | omega  | 325:22:03                  | 332:01:00                |
| 0499    | 070         | omega  | 325:22:20                  | 325:22:21                |
| 0504    | 072         | omega  | 325:21:12                  | 331:17:41                |
| 6126    | 074         | omega  | 325:21:26                  | 331:34:46                |
| 0489    | 077         | omega  | 324:17:00                  | 331:20:11                |
| 0615    | 080         | gps    | 324:18:07                  | 331:21:26                |
| 6045    | 082         | gps    | 324:18:54                  | 332:01:45                |
| 0503    | 084         | omega  | 324:20:08                  | 331:22:36                |
| 0501    | 086         | omega  | 324:20:54                  | 329:02:20                |
| 7095    | 088         | n/pb   | 324:21:50                  | 331:23:42                |
| 0500    | 090         | omega  | 325:00:04                  | 331:22:37                |
| 0506    | 092         | omega  | 324:22:43                  | 331:21:37                |
| 0592    | 094         | gps    | 324:21:30                  | 331:20:53                |
| 0507    | 096         | omega  | 324:20:35                  | 331:19:59                |
| 0502    | 098         | omega  | 324:19:27                  | 331:19:03                |
| 7098    | 100         | n/pb   | 324:17:57                  | 331:18:21                |
| 0593    | 102         | gps    | 324:16:50                  | 331:16:24                |
| 7070    | 104         | n/gb   | 322:17:40                  | 328:17:13                |
| 6098    | 106         | omega  | 322:17:51                  | 328:16:48                |
| 6087    | 108         | gps    | 322:21:42                  | 328:21:08                |
| 7072    | 110         | n/gb   | 322:21:17                  | 328:18:06                |
| 6113    | 112         | omega  | 322:20:49                  | 326:00:10                |
| 6086    | 114         | gps    | 322:19:06                  | 328:18:56                |
| 7111    | 116         | n/gb   | 322:19:38                  | 328:19:19                |
| 6107    | 118         | omega  | 322:20:26                  | 328:19:45                |
| 6081    | 120         | gps    | 322:21:38                  | 328:19:12                |
| 7109    | 122         | n/gb   | 322:21:10                  | 328:18:44                |
| 6120    | 126         | omega  | 322:19:59                  | 328:18:08                |
| 6116    | 128         | omega  | 322:18:56                  | 328:17:40                |
| 7103    | 130         | gps    | 322:18:17                  | 328:17:06                |

Table 3c (week 3)

| DAS No. | Station No. | Timing   | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|----------|----------------------------|--------------------------|
| 7063    | 245         | gps      | 330:17:44                  | 337:17:40                |
| 7089    | 244         | gps      | 330:18:15                  | 332:05:48                |
| 6071    | 216         | nclk     | 330:17:07                  | 337:16:47                |
| 7068    | 215         | gps      | 330:17:34                  | 337:17:17                |
| 7067    | 203         | gps      | 330:18:27                  | 337:18:09                |
| 7064    | 002         | n/p(be?) | 330:19:32                  | 337:18:59                |
| 7060    | 004         | n/pbe    | 330:20:49                  | 332:12:51                |
| 7038    | 005         | n/pbe    | 330:21:28                  | 337:20:24                |
| 7056    | 301         | gps      | 330:22:59                  | 337:20:49                |
| 7077    | 601         | n/pe     | 328:23:17                  | 337:22:02                |
| 7051    | 008         | n/pbe    | 330:22:04                  | 337:21:24                |
| 7049    | 009         | gps      | 331:18:24                  | 338:16:51                |
| 7048    | 010         | gps      | 330:17:39                  | 337:14:55                |
| 7045    | 011         | n/pbe    | 330:20:32                  | 337:17:19                |
| 6047    | 012         | gps      | 331:17:28                  | 338:17:29                |
| 7041    | 013         | gps      | 330:20:47                  | 337:17:54                |
| 7093    | 014         | gps      | 330:18:31                  | 337:16:38                |
| 6049    | 015         | n/pbe    | 331:03:14                  | 337:18:29                |
| 7090    | 016         | gps      | 331:16:31                  | 337:21:44                |
| 6051    | 018         | gps      | 331:15:51                  | 337:20:55                |
| 7084    | 019         | n/pbe    | 331:14:59                  | 337:20:19                |
| 7082    | 020         | gps      | 331:01:29                  | 338:18:44                |
| 6057    | 021         | n/pbe    | 331:00:56                  | 338:01:12                |
| 6060    | 022         | gps      | 331:00:16                  | 338:00:36                |
| 7081    | 023         | gps      | 330:23:31                  | 337:23:54                |
| 6062    | 024         | n/pbe    | 330:22:53                  | 337:23:20                |
| 6135    | 025         | gps      | 330:23:25                  | 337:22:12                |
| 7039    | 026         | gps      | 330:23:42                  | 337:21:57                |
| 6020    | 027         | gps      | 330:22:30                  | 337:21:34                |
| 6022    | 028         | gps      | 330:22:19                  | 337:21:21                |
| 6025    | 029         | gps      | 330:22:38                  | 337:21:11                |
| 6027    | 030         | nclk     | 330:21:31                  | 337:00:44                |
| 6029    | 031         | gps      | 330:21:33                  | 337:20:05                |
| 6032    | 032         | gps      | 330:21:20                  | 337:19:50                |
| 6034    | 033         | gps      | 330:20:29                  | 337:19:35                |
| 6066    | 331         | gps      | 330:19:55                  | 337:14:16                |
| 6038    | 034         | gps      | 330:18:59                  | 337:18:54                |
| 6040    | 035         | gps      | 330:19:17                  | 337:18:44                |
| 6042    | 036         | gps      | 330:18:36                  | 337:18:30                |
| 6046    | 037         | gps      | 330:18:25                  | 337:18:20                |
| 6053    | 038         | gps      | 330:18:47                  | 337:17:59                |
| 7116    | 039         | gps      | 330:17:52                  | 337:17:42                |
| 6056    | 040         | gps      | 330:17:10                  | 337:16:36                |
| 6095    | 042         | omega    | 330:17:38                  | 337:17:20                |

Table 3c (continued)

| DAS No. | Station No. | Timing  | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|---------|----------------------------|--------------------------|
| 6119    | 045         | o/pb    | 331:16:23                  | 338:15:42                |
| 6065    | 046         | gps     | 331:17:25                  | 338:17:14                |
| 6134    | 048         | gps     | 331:18:12                  | 338:17:42                |
| 6131    | 050         | omega   | 331:19:46                  | 338:18:15                |
| 6132    | 052         | omega   | 331:20:54                  | 338:19:05                |
| 6129    | 054         | omega   | 331:22:08                  | 337:00:50                |
| 7076    | 056         | gps     | 331:22:48                  | 335:08:06                |
| 6121    | 058         | omega   | 331:23:48                  | 338:20:58                |
| 6125    | 060         | n/pb    | 332:00:43                  | 337:22:27                |
| 7107    | 062         | gps     | 332:03:37                  | 338:22:18                |
| 6124    | 065         | nclk    | 332:04:37                  | 338:22:46                |
| 6114    | 066         | omega   | 332:04:16                  | 338:23:12                |
| 6111    | 068         | omega   | 332:01:19                  | 339:02:48                |
| 0499    | 070         | omega   | 331:19:21                  | 339:01:07                |
| 0504    | 072         | omega   | 331:18:12                  | 339:16:59                |
| 6126    | 074         | omega   | 331:17:15                  | 339:21:17                |
| 0489    | 077         | omega   | 331:20:48                  | 339:23:14                |
| 0615    | 080         | gps     | 331:22:03                  | 338:06:12                |
| 6045    | 082         | gps     | 332:02:11                  | 339:23:29                |
| 0503    | 084         | nclk    | 331:23:51                  | 339:20:24                |
| 0501    | 086         | omega   | 332:01:10                  | 339:19:16                |
| 7095    | 088         | n/pb    | 332:00:05                  | 339:00:51                |
| 0500    | 090         | omega   | 331:23:12                  | 338:23:55                |
| 0506    | 092         | omega   | 331:22:12                  | 338:22:37                |
| 0592    | 094         | gps     | 331:21:16                  | 338:21:46                |
| 0507    | 096         | omega   | 331:20:38                  | 338:19:48                |
| 0502    | 098         | omega   | 331:19:39                  | 338:18:44                |
| 7098    | 100         | n/pb    | 331:18:47                  | 338:17:59                |
| 0593    | 102         | gps     | 331:17:59                  | 338:11:16                |
| 7071    | 104         | n/gb    | 328:17:28                  | 335:17:53                |
| 6088    | 106         | omega   | 328:17:41                  | 335:17:34                |
| 6004    | 108         | gps     | 328:21:48                  | 335:21:09                |
| 7073    | 110         | n/gb    | 328:18:18                  | 335:18:34                |
| 6112    | 112         | omega   | 328:20:47                  | 331:21:50                |
| 6085    | 114         | gps     | 328:19:05                  | 335:19:18                |
| 7110    | 116         | n/gb    | 328:19:30                  | 335:19:38                |
| 6110    | 118         | omega   | 328:20:22                  | 335:19:59                |
| 6083    | 120         | gps     | 328:19:21                  | 335:20:55                |
| 7106    | 122         | gps     | 328:18:52                  | 335:20:22                |
| 6115    | 126         | nclk/oe | 328:18:17                  | 332:03:40                |
| 6118    | 128         | nclk    | 328:17:49                  | 335:18:47                |
| 7101    | 130         | gps     | 328:17:18                  | 335:18:17                |

Table 3d (week 4)

| DAS No. | Station No. | Timing | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|--------|----------------------------|--------------------------|
| 7062    | 245         | gps    | 337:17:57                  | 344:16:29                |
| 7088    | 244         | gps    | 337:18:32                  | 344:15:53                |
| 6080    | 216         | nclk   | 337:17:01                  | 344:17:55                |
| 7069    | 215         | gps    | 337:17:27                  | 344:17:31                |
| 7066    | 203         | gps    | 337:18:24                  | 342:14:38                |
| 7065    | 002         | n/gbe  | 337:19:09                  | 344:20:03                |
| 7061    | 004         | n/gbe  | 337:20:08                  | 344:20:18                |
| 7059    | 005         | n/gbe  | 337:20:35                  | 344:20:45                |
| 7057    | 301         | gps    | 337:21:32                  | 344:21:01                |
| 7053    | 601         | gps    | 337:22:13                  | 344:21:15                |
| 7052    | 008         | n/gbe  | 337:22:15                  | 344:21:27                |
| 7050    | 009         | gps    | 338:17:07                  | 345:21:58                |
| 7047    | 010         | gps    | 337:15:27                  | 345:22:27                |
| 7046    | 011         | n/gbe  | 337:18:00                  | 345:22:54                |
| 6048    | 012         | gps    | 338:17:39                  | 345:23:04                |
| 7042    | 013         | gps    | 337:18:16                  | 345:23:33                |
| 7092    | 014         | gps    | 337:16:47                  | 345:23:55                |
| 6050    | 015         | n/gb   | 337:18:59                  | 346:00:19                |
| 7091    | 016         | gps    | 337:21:59                  | 346:00:45                |
| 6052    | 018         | gps    | 337:21:42                  | 346:17:50                |
| 7087    | 019         | n/gb   | 337:20:33                  | 346:18:15                |
| 7083    | 020         | gps    | 338:18:56                  | 346:18:50                |
| 6058    | 021         | n/gb   | 338:01:26                  | 346:09:23                |
| 6061    | 022         | gps    | 338:00:49                  | 346:18:38                |
| 7080    | 023         | gps    | 338:00:39                  | 346:20:30                |
| 6063    | 024         | n/gb   | 337:23:33                  | 346:17:22                |
| 6018    | 025         | gps    | 337:22:26                  | 346:16:17                |
| 7040    | 026         | gps    | 337:22:14                  | 351:01:45                |
| 6021    | 027         | gps    | 337:21:58                  | 346:15:49                |
| 6004    | 028         | n/gps  | 337:21:45                  | 339:19:22                |
| 6026    | 029         | gps    | 337:22:23                  | 346:14:42                |
| 6028    | 030         | gps    | 337:21:25                  | 346:14:47                |
| 6030    | 031         | gps    | 337:21:00                  | 345:03:16                |
| 6035    | 033         | gps    | 337:20:13                  | 346:13:34                |
| 6069    | 331         | gps    | 337:19:50                  | 345:23:52                |
| 6039    | 034         | gps    | 337:19:35                  | 346:12:57                |
| 6041    | 035         | gps    | 337:18:53                  | 346:12:44                |
| 6043    | 036         | gps    | 337:18:42                  | 338:09:43                |
| 6044    | 037         | gps    | 337:19:01                  | 345:05:22                |
| 6055    | 038         | gps    | 337:18:45                  | 346:12:05                |
| 7114    | 039         | gps    | 337:18:01                  | 350:21:33                |
| 6093    | 040         | omega  | 337:18:14                  | 346:11:33                |
| 6064    | 042         | gps    | 337:17:13                  | 346:10:32                |
| 6119    | 045         | o/n    | 338:16:53                  | 345:14:56                |

Table 3d (continued)

| DAS No. | Station No. | Timing | Start Time<br>(day:hr:min) | End Time<br>(day:hr:min) |
|---------|-------------|--------|----------------------------|--------------------------|
| 6085    | 046         | gps    | 338:17:25                  | 345:15:15                |
| 6134    | 048         | gps    | 338:17:59                  | 345:15:39                |
| 6131    | 050         | omega  | 338:18:44                  | 345:15:53                |
| 6110    | 052         | omega  | 338:19:44                  | 345:16:20                |
| 6129    | 054         | omega  | 339:20:11                  | 345:16:46                |
| 7112    | 056         | gps    | 338:20:44                  | 345:17:02                |
| 6088    | 058         | o/n    | 338:21:09                  | 345:17:18                |
| 6125    | 060         | nclk   | 338:21:56                  | 345:17:42                |
| 7108    | 062         | gps    | 338:22:57                  | 344:18:03                |
| 6122    | 065         | nclk?  | 338:22:56                  | 345:18:14                |
| 6118    | 066         | n/pbe  | 338:23:40                  | 345:18:30                |
| 6111    | 068         | omega  | 339:00:19                  | 345:18:54                |
| 6114    | 070         | omega  | 339:19:41                  | 345:19:22                |
| 0504    | 072         | omega  | 339:20:51                  | 345:19:38                |
| 6115    | 074         | omega  | 339:22:36                  | 345:19:56                |
| 0489    | 077         | omega  | 339:23:54                  | 345:19:55                |
| 0615    | 080         | gps    | 339:23:04                  | 345:19:29                |
| 6083    | 082         | gps    | 339:23:45                  | 345:19:02                |
| 0503    | 084         | o/n    | 340:00:31                  | 345:18:31                |
| 0501    | 086         | omega  | 339:20:01                  | 341:12:30                |
| 7101    | 088         | nclk   | 339:01:00                  | 345:18:01                |
| 0500    | 090         | omega  | 339:00:33                  | 345:17:32                |
| 0506    | 092         | omega  | 338:22:30                  | 345:17:11                |
| 0592    | 094         | gps    | 338:22:20                  | 345:16:55                |
| 0507    | 096         | omega  | 338:21:26                  | 345:16:34                |
| 0502    | 098         | omega  | 338:19:23                  | 345:16:17                |
| 7110    | 100         | gps    | 338:18:12                  | 345:16:05                |
| 0593    | 102         | gps    | 338:17:40                  | 344:12:02                |
| 7070    | 104         | n/gb   | 335:18:01                  | 348:16:29                |
| 6098    | 106         | omega  | 335:18:12                  | 344:12:01                |
| 6087    | 108         | gps    | 335:21:17                  | 344:15:06                |
| 7072    | 110         | n/gb   | 335:18:41                  | 337:00:21                |
| 6113    | 112         | omega  | 335:20:50                  | 338:14:29                |
| 6086    | 114         | gps    | 335:19:25                  | 345:13:14                |
| 7111    | 116         | n/gb   | 335:19:46                  | 348:17:46                |
| 6107    | 118         | omega  | 335:20:19                  | 344:14:09                |
| 6081    | 120         | gps    | 335:21:03                  | 344:14:52                |
| 7109    | 122         | gps    | 335:20:38                  | 348:18:59                |
| 7104    | 124         | nclk   | 335:19:49                  | 348:18:37                |
| 6120    | 126         | nclk   | 335:19:18                  | 344:13:08                |
| 6116    | 128         | omega  | 335:18:55                  | 344:12:44                |
| 7103    | 130         | gps    | 335:18:27                  | 348:17:10                |

Table 4. Entries in the PASSCAL SEG-Y trace headers; range of byte numbers in header is given for each entry. This PASSCAL header format is a modified version of the standard SEG-Y format and the entries marked with an asterisk are header values not specified in the standard SEG-Y format.

| Byte Numbers | Description                                                                        |
|--------------|------------------------------------------------------------------------------------|
| 1-4          | Trace sequence number within data stream                                           |
| 5-8          | Trace sequence number within reel (same as above)                                  |
| 9-12         | Event number                                                                       |
| 13-16        | Channel number                                                                     |
|              |                                                                                    |
| 29-30        | Trace identification code (= 1 for seismic data)                                   |
|              |                                                                                    |
| 69-70        | Elevation scale constant (= 1)                                                     |
| 71-72        | Coordinate scale constant (= 1)                                                    |
|              |                                                                                    |
| 89-90        | Coordinate units (= 2 for latitude/longitude)                                      |
|              |                                                                                    |
| 103-104      | Low 2 bytes of the total shift in milliseconds                                     |
|              |                                                                                    |
| 115-116      | Number of samples in this trace (note if equal to 32767 see bytes 229-232)         |
| 117-118      | Sample interval in microsecs for this trace (note if equal to 1 see bytes 201-204) |
| 119-120      | Fixed gain flag (= 1)                                                              |
| 121-122      | Gain of amplifier                                                                  |
|              |                                                                                    |
| 157-158      | Year data recorded                                                                 |
| 159-160      | Day of year                                                                        |
| 161-162      | Hour of day (24 hour clock)                                                        |
| 163-164      | Minute of hour                                                                     |
| 165-166      | Second of minute                                                                   |
| 167-168      | Time basis code (1 = local; 2 = GMT; 3 = other)                                    |
|              |                                                                                    |
| 181-186*     | Station name code (5 chars + 1 for termination)                                    |
| 187-194*     | Sensor serial code (7 chars + 1 for termination)                                   |
| 195-198*     | Channel name code (3 chars + 1 for termination)                                    |
| 199-200*     | High 2 bytes of the total shift in milliseconds                                    |
| 201-204*     | Sample interval in microsecs as a 32-bit integer                                   |
| 205-206*     | Data format flag (0 = 16-bit integer; 1 = 32-bit integer)                          |
| 207-208*     | Milliseconds of second for first sample                                            |
| 209-210*     | Trigger time year                                                                  |
| 211-212*     | Trigger time julian day                                                            |



Table 4 (continued)

| Byte Numbers | Description |
|--------------|-------------|
|--------------|-------------|

---

|          |                                                                                         |
|----------|-----------------------------------------------------------------------------------------|
| 213-214* | Trigger time hour                                                                       |
| 215-216* | Trigger time minutes                                                                    |
| 217-218* | Trigger time seconds                                                                    |
| 219-220* | Trigger time milliseconds                                                               |
| 221-224* | Scale factor (IEEE 32 -bit float);<br>true amplitude = (data value)*(scale factor)/gain |
| 225-226* | Instrument serial number                                                                |
|          |                                                                                         |
| 229-232* | Number of samples as a 32-bit integer                                                   |
| 233-236* | Max value in counts                                                                     |
| 237-240* | Min value in counts                                                                     |

---

Table 5. Teleseismic and regional events that occurred during LARSE93. Source information is from the Preliminary Determination of Epicenters (PDE) catalog published by the USGS National Earthquake Information Center (NEIC).

| <u>Time (GMT)</u> |    |     |    |     |      | <u>Location coordinates</u> |                   | <u>Depth</u> | <u>Magnitude</u> |
|-------------------|----|-----|----|-----|------|-----------------------------|-------------------|--------------|------------------|
| yr                | mo | day | hr | min | sec  | latitude<br>(°N)            | longitude<br>(°E) | (km)         |                  |
| 93                | 11 | 11  | 00 | 06  | 07.5 | 38.993                      | 142.363           | 32           | 5.2              |
| 93                | 11 | 11  | 00 | 28  | 34.3 | 50.225                      | -177.432          | 23           | 6.3              |
| 93                | 11 | 11  | 10 | 13  | 59.1 | -4.569                      | 153.082           | 80           | 5.7              |
| 93                | 11 | 11  | 13 | 59  | 58.2 | -30.783                     | -178.160          | 120          | 5.1              |
| 93                | 11 | 11  | 16 | 46  | 42.9 | 13.785                      | -90.641           | 71           | 5.8              |
| 93                | 11 | 12  | 10 | 11  | 37.4 | 54.813                      | -160.256          | 33           | 4.8              |
| 93                | 11 | 12  | 11 | 16  | 33.7 | 51.342                      | -177.925          | 33           | 5.1              |
| 93                | 11 | 12  | 14 | 16  | 30.1 | 21.988                      | 121.965           | 182          | 5.3              |
| 93                | 11 | 12  | 19 | 19  | 07.5 | 4.777                       | 127.537           | 109          | 5.1              |
| 93                | 11 | 13  | 00 | 16  | 48.7 | 16.281                      | -98.606           | 19           | 5.8              |
| 93                | 11 | 13  | 01 | 18  | 04.2 | 51.919                      | 158.704           | 34           | 6.5              |
| 93                | 11 | 13  | 02 | 08  | 25.2 | 52.127                      | 158.835           | 46           | 5.1              |
| 93                | 11 | 13  | 06 | 52  | 13.3 | 50.200                      | 179.763           | 33           | 4.5              |
| 93                | 11 | 13  | 10 | 31  | 30.7 | -22.426                     | 169.742           | 36           | 5.5              |
| 93                | 11 | 13  | 12 | 30  | 55.0 | -16.383                     | -70.877           | 125          | 5.5              |
| 93                | 11 | 13  | 22 | 42  | 12.0 | -7.686                      | 127.666           | 33           | 5.1              |
| 93                | 11 | 13  | 23 | 44  | 22.7 | 3.225                       | 128.100           | 33           | 5.2              |
| 93                | 11 | 14  | 01 | 59  | 19.9 | -22.657                     | -68.620           | 110          | 5.8              |
| 93                | 11 | 14  | 07 | 10  | 25.1 | -11.625                     | 116.886           | 33           | 5.0              |
| 93                | 11 | 14  | 09 | 22  | 07.3 | 53.371                      | -172.626          | 33           | 4.5              |
| 93                | 11 | 14  | 19 | 49  | 31.2 | -5.963                      | 104.194           | 83           | 5.0              |
| 93                | 11 | 15  | 01 | 02  | 57.8 | -21.852                     | 170.714           | 19           | 5.2              |
| 93                | 11 | 15  | 22 | 45  | 21.1 | -18.519                     | 167.439           | 53           | 5.2              |
| 93                | 11 | 16  | 00 | 53  | 09.5 | -24.168                     | -176.008          | 33           | 5.1              |
| 93                | 11 | 16  | 15 | 52  | 49.2 | 30.755                      | 67.220            | 33           | 5.4              |
| 93                | 11 | 17  | 00 | 19  | 40.0 | 52.694                      | -168.044          | 33           | 5.2              |
| 93                | 11 | 17  | 02 | 42  | 30.4 | 1.567                       | 124.022           | 246          | 5.5              |
| 93                | 11 | 17  | 11 | 18  | 52.9 | 51.805                      | 158.700           | 44           | 6.0              |
| 93                | 11 | 18  | 13 | 07  | 48.3 | 2.426                       | 126.668           | 33           | 5.0              |
| 93                | 11 | 18  | 14 | 55  | 13.7 | 6.778                       | -74.611           | 90           | 4.6              |
| 93                | 11 | 19  | 01 | 43  | 23.8 | 54.276                      | -164.187          | 31           | 6.2              |
| 93                | 11 | 19  | 02 | 25  | 08.9 | 14.809                      | -93.981           | 25           | 5.5              |
| 93                | 11 | 19  | 03 | 02  | 48.1 | 14.627                      | -94.137           | 22           | 4.5              |
| 93                | 11 | 19  | 03 | 22  | 30.5 | 54.292                      | -164.267          | 33           | 5.0              |
| 93                | 11 | 19  | 03 | 58  | 53.2 | 54.275                      | -164.162          | 33           | 5.5              |
| 93                | 11 | 19  | 04 | 37  | 49.1 | -22.063                     | -179.586          | 491          | 5.3              |
| 93                | 11 | 19  | 04 | 53  | 39.2 | -17.121                     | -173.893          | 33           | 5.0              |

Table 5 (continued)

| <u>Time</u> |    |    |    |    |      | <u>Location coordinates</u> |          | <u>Depth</u> | <u>Magnitude</u> |
|-------------|----|----|----|----|------|-----------------------------|----------|--------------|------------------|
| 93          | 11 | 19 | 05 | 55 | 12.4 | 7.955                       | 127.013  | 34           | 5.0              |
| 93          | 11 | 19 | 08 | 53 | 41.8 | 54.286                      | -164.250 | 33           | 4.6              |
| 93          | 11 | 19 | 09 | 05 | 39.3 | 7.317                       | -34.695  | 10           | 5.7              |
| 93          | 11 | 19 | 10 | 19 | 13.4 | 54.328                      | -164.226 | 33           | 4.8              |
| 93          | 11 | 19 | 10 | 55 | 44.1 | 10.210                      | 126.301  | 41           | 5.2              |
| 93          | 11 | 19 | 14 | 40 | 39.2 | 54.335                      | -164.322 | 33           | 4.8              |
| 93          | 11 | 20 | 01 | 14 | 28.2 | 54.344                      | -164.213 | 33           | 4.6              |
| 93          | 11 | 20 | 11 | 54 | 02.1 | 54.337                      | -164.229 | 33           | 5.4              |
| 93          | 11 | 20 | 11 | 58 | 40.2 | 51.911                      | 158.437  | 33           | 5.2              |
| 93          | 11 | 20 | 19 | 24 | 53.4 | 60.031                      | -153.078 | 120          | 5.5              |
| 93          | 11 | 21 | 00 | 16 | 00.9 | -35.909                     | -102.912 | 10           | 5.3              |
| 93          | 11 | 21 | 08 | 57 | 46.5 | 52.889                      | -175.762 | 218          | 4.6              |
| 93          | 11 | 21 | 17 | 29 | 55.7 | -22.813                     | 171.445  | 33           | 5.2              |
| 93          | 11 | 22 | 03 | 00 | 55.3 | 5.872                       | 126.315  | 33           | 5.8              |
| 93          | 11 | 22 | 04 | 16 | 45.7 | 50.770                      | 156.555  | 33           | 5.3              |
| 93          | 11 | 22 | 22 | 34 | 03.8 | 10.441                      | 126.448  | 69           | 5.0              |
| 93          | 11 | 22 | 22 | 43 | 26.4 | 11.725                      | -86.179  | 108          | 5.5              |
| 93          | 11 | 23 | 15 | 02 | 12.7 | 6.411                       | 125.833  | 154          | 5.2              |
| 93          | 11 | 23 | 20 | 07 | 39.2 | 41.257                      | 142.755  | 46           | 5.2              |
| 93          | 11 | 24 | 02 | 40 | 17.5 | -2.401                      | 141.144  | 33           | 5.2              |
| 93          | 11 | 24 | 05 | 49 | 53.0 | -27.206                     | -176.562 | 33           | 5.3              |
| 93          | 11 | 24 | 06 | 19 | 50.4 | 15.316                      | -105.090 | 10           | 4.7              |
| 93          | 11 | 24 | 11 | 27 | 20.6 | -21.310                     | -174.344 | 35           | 5.3              |
| 93          | 11 | 25 | 08 | 31 | 14.9 | -21.991                     | 170.078  | 33           | 5.7              |
| 93          | 11 | 25 | 20 | 24 | 00.8 | -0.935                      | -13.254  | 10           | 5.7              |
| 93          | 11 | 25 | 21 | 45 | 25.3 | 12.198                      | 125.690  | 33           | 5.2              |
| 93          | 11 | 26 | 09 | 03 | 49.7 | 12.390                      | -86.612  | 149          | 4.7              |
| 93          | 11 | 26 | 10 | 53 | 36.2 | 2.207                       | 126.972  | 68           | 5.1              |
| 93          | 11 | 26 | 21 | 12 | 31.0 | -3.417                      | 129.783  | 33           | 5.0              |
| 93          | 11 | 26 | 22 | 20 | 38.0 | 6.794                       | -73.079  | 148          | 4.6              |
| 93          | 11 | 26 | 23 | 20 | 05.2 | -9.590                      | 158.142  | 23           | 5.8              |
| 93          | 11 | 27 | 06 | 11 | 23.1 | 38.606                      | 141.188  | 108          | 6.0              |
| 93          | 11 | 27 | 22 | 25 | 15.8 | -25.161                     | 179.987  | 523          | 5.3              |
| 93          | 11 | 28 | 10 | 50 | 26.9 | -5.608                      | 110.250  | 565          | 5.6              |
| 93          | 11 | 28 | 12 | 40 | 48.5 | -3.828                      | 128.715  | 129          | 5.2              |
| 93          | 11 | 28 | 20 | 59 | 27.1 | 36.472                      | 71.339   | 108          | 5.1              |
| 93          | 11 | 29 | 06 | 35 | 24.3 | -20.814                     | -174.139 | 35           | 5.2              |
| 93          | 11 | 29 | 07 | 32 | 05.5 | -0.095                      | 122.994  | 145          | 5.2              |
| 93          | 11 | 29 | 20 | 28 | 43.4 | 10.250                      | 126.506  | 33           | 5.6              |
| 93          | 11 | 30 | 04 | 34 | 45.6 | -22.398                     | 172.711  | 33           | 5.1              |
| 93          | 11 | 30 | 04 | 59 | 26.1 | -59.138                     | -18.138  | 33           | 5.2              |
| 93          | 11 | 30 | 15 | 40 | 47.8 | 51.489                      | -172.662 | 33           | 4.6              |
| 93          | 11 | 30 | 20 | 37 | 12.9 | 39.283                      | 75.593   | 19           | 5.2              |
| 93          | 11 | 30 | 20 | 44 | 13.0 | -16.961                     | -177.059 | 412          | 5.2              |

Table 5 (continued)

| <u>Time</u> |    |    |    |    |      | <u>Location coordinates</u> |          | <u>Depth</u> | <u>Magnitude</u> |
|-------------|----|----|----|----|------|-----------------------------|----------|--------------|------------------|
| 93          | 12 | 01 | 00 | 59 | 01.5 | -57.506                     | -25.894  | 33           | 5.4              |
| 93          | 12 | 01 | 01 | 51 | 06.5 | -2.502                      | 139.790  | 33           | 5.0              |
| 93          | 12 | 01 | 08 | 21 | 54.4 | -6.259                      | 127.974  | 362          | 5.1              |
| 93          | 12 | 01 | 13 | 23 | 56.9 | -23.151                     | -71.068  | 33           | 5.1              |
| 93          | 12 | 01 | 13 | 42 | 15.8 | -17.415                     | 168.188  | 80           | 5.0              |
| 93          | 12 | 01 | 15 | 55 | 05.6 | 10.261                      | 126.581  | 33           | 5.2              |
| 93          | 12 | 01 | 17 | 24 | 27.0 | 12.100                      | -86.502  | 126          | 4.7              |
| 93          | 12 | 01 | 22 | 04 | 22.0 | -12.829                     | 44.765   | 10           | 5.1              |
| 93          | 12 | 01 | 22 | 18 | 27.5 | 1.406                       | 66.504   | 10           | 5.0              |
| 93          | 12 | 03 | 05 | 01 | 24.5 | 51.106                      | 179.331  | 33           | 4.6              |
| 93          | 12 | 03 | 05 | 41 | 08.1 | 51.223                      | 179.266  | 33           | 5.2              |
| 93          | 12 | 03 | 10 | 16 | 19.0 | -49.918                     | 114.176  | 10           | 5.1              |
| 93          | 12 | 03 | 12 | 22 | 17.4 | -15.758                     | -171.743 | 10           | 5.0              |
| 93          | 12 | 03 | 12 | 36 | 28.9 | -60.320                     | -20.438  | 33           | 5.4              |
| 93          | 12 | 03 | 13 | 16 | 15.7 | 4.875                       | -75.640  | 145          | 4.6              |
| 93          | 12 | 04 | 09 | 30 | 14.4 | 41.735                      | 141.975  | 84           | 5.2              |
| 93          | 12 | 04 | 14 | 11 | 28.5 | 69.731                      | -146.758 | 10           | 4.8              |
| 93          | 12 | 04 | 17 | 21 | 23.3 | -3.599                      | 131.230  | 33           | 5.2              |
| 93          | 12 | 04 | 18 | 12 | 56.7 | 11.169                      | -86.189  | 33           | 4.7              |
| 93          | 12 | 04 | 22 | 15 | 19.6 | 42.258                      | -121.977 | 5            | 5.2              |
| 93          | 12 | 04 | 23 | 16 | 52.8 | -33.834                     | -71.863  | 53           | 5.3              |
| 93          | 12 | 05 | 02 | 36 | 10.0 | 52.109                      | -173.956 | 29           | 5.0              |
| 93          | 12 | 05 | 06 | 36 | 24.6 | 19.829                      | 121.207  | 33           | 5.0              |
| 93          | 12 | 05 | 19 | 37 | 02.0 | -6.462                      | 130.324  | 143          | 5.7              |
| 93          | 12 | 05 | 20 | 33 | 31.4 | 11.849                      | -86.837  | 66           | 5.1              |
| 93          | 12 | 06 | 02 | 25 | 03.2 | -28.489                     | -176.906 | 79           | 5.1              |
| 93          | 12 | 06 | 04 | 59 | 13.3 | -4.741                      | 138.302  | 33           | 5.3              |
| 93          | 12 | 06 | 10 | 42 | 03.8 | -6.379                      | 154.937  | 48           | 5.6              |
| 93          | 12 | 06 | 15 | 37 | 54.4 | 41.490                      | 142.001  | 69           | 5.2              |
| 93          | 12 | 06 | 20 | 54 | 45.5 | 6.864                       | 78.325   | 10           | 5.4              |
| 93          | 12 | 06 | 23 | 00 | 17.8 | 21.775                      | 121.013  | 33           | 5.2              |
| 93          | 12 | 07 | 11 | 50 | 14.3 | -2.423                      | 139.871  | 10           | 5.0              |
| 93          | 12 | 07 | 14 | 39 | 28.2 | 5.221                       | -82.514  | 10           | 4.5              |
| 93          | 12 | 07 | 16 | 27 | 25.5 | 0.749                       | 122.677  | 79           | 5.5              |
| 93          | 12 | 08 | 00 | 22 | 11.7 | -20.938                     | -175.022 | 45           | 5.1              |
| 93          | 12 | 08 | 02 | 21 | 02.7 | -12.473                     | 166.509  | 33           | 5.2              |
| 93          | 12 | 08 | 23 | 37 | 13.9 | -6.544                      | 129.938  | 106          | 5.1              |
| 93          | 12 | 09 | 04 | 32 | 22.2 | 0.479                       | 125.982  | 33           | 6.3              |
| 93          | 12 | 09 | 08 | 27 | 16.1 | 0.493                       | 125.853  | 33           | 5.2              |
| 93          | 12 | 09 | 11 | 38 | 30.8 | 0.426                       | 125.890  | 33           | 6.1              |
| 93          | 12 | 09 | 11 | 44 | 00.4 | 0.055                       | 125.562  | 33           | 5.2              |
| 93          | 12 | 09 | 11 | 50 | 52.8 | 0.344                       | 125.768  | 33           | 5.1              |
| 93          | 12 | 09 | 12 | 05 | 25.5 | 0.235                       | 125.789  | 33           | 5.0              |
| 93          | 12 | 09 | 12 | 07 | 36.1 | 0.404                       | 125.829  | 33           | 5.1              |

Table 5 (continued)

| <u>Time</u> |    |    |    |    |      | <u>Location coordinates</u> |          | <u>Depth</u> | <u>Magnitude</u> |
|-------------|----|----|----|----|------|-----------------------------|----------|--------------|------------------|
| 93          | 12 | 09 | 12 | 40 | 30.4 | 0.341                       | 125.760  | 33           | 5.0              |
| 93          | 12 | 09 | 14 | 11 | 53.3 | 0.241                       | 125.708  | 33           | 5.1              |
| 93          | 12 | 09 | 14 | 46 | 58.3 | -28.158                     | -70.470  | 60           | 5.1              |
| 93          | 12 | 09 | 19 | 14 | 22.5 | -26.059                     | 178.377  | 600          | 5.1              |
| 93          | 12 | 10 | 01 | 52 | 54.0 | -10.193                     | 161.921  | 33           | 5.2              |
| 93          | 12 | 10 | 06 | 31 | 54.4 | -22.063                     | -179.670 | 606          | 5.6              |
| 93          | 12 | 10 | 08 | 59 | 36.7 | 20.846                      | 121.278  | 19           | 5.8              |
| 93          | 12 | 10 | 11 | 52 | 15.7 | -19.652                     | -178.178 | 613          | 5.0              |
| 93          | 12 | 10 | 22 | 21 | 17.3 | 0.500                       | 125.859  | 33           | 5.2              |
| 93          | 12 | 11 | 00 | 01 | 30.5 | 41.931                      | 142.461  | 72           | 5.0              |
| 93          | 12 | 11 | 00 | 07 | 20.6 | 59.528                      | -152.410 | 90           | 4.8              |
| 93          | 12 | 11 | 13 | 04 | 52.9 | 49.668                      | 157.186  | 33           | 5.1              |
| 93          | 12 | 11 | 14 | 45 | 38.7 | 0.596                       | 126.312  | 33           | 5.1              |
| 93          | 12 | 11 | 16 | 00 | 44.3 | -19.878                     | -178.146 | 583          | 5.1              |
| 93          | 12 | 11 | 23 | 47 | 30.3 | -21.986                     | -176.502 | 164          | 5.3              |
| 93          | 12 | 11 | 23 | 57 | 56.9 | 19.236                      | -64.799  | 33           | 4.6              |
| 93          | 12 | 12 | 04 | 28 | 03.5 | -19.749                     | -174.412 | 33           | 5.3              |
| 93          | 12 | 12 | 05 | 12 | 23.3 | 50.951                      | 160.891  | 33           | 5.0              |
| 93          | 12 | 12 | 05 | 55 | 13.6 | 53.185                      | -162.872 | 33           | 4.6              |
| 93          | 12 | 12 | 17 | 03 | 20.6 | 0.305                       | 125.959  | 33           | 5.8              |
| 93          | 12 | 12 | 18 | 26 | 28.5 | 0.330                       | 125.956  | 33           | 5.7              |
| 93          | 12 | 12 | 20 | 41 | 30.2 | 36.402                      | 141.063  | 43           | 5.3              |
| 93          | 12 | 12 | 23 | 34 | 18.4 | 27.289                      | 92.049   | 33           | 5.1              |
| 93          | 12 | 13 | 11 | 43 | 43.6 | -20.546                     | -173.762 | 33           | 5.6              |
| 93          | 12 | 13 | 16 | 27 | 47.2 | 0.525                       | 126.079  | 33           | 5.1              |
| 93          | 12 | 13 | 16 | 34 | 34.3 | 5.439                       | -82.452  | 33           | 4.8              |
| 93          | 12 | 13 | 17 | 13 | 42.9 | 0.536                       | 126.291  | 33           | 5.2              |
| 93          | 12 | 13 | 22 | 25 | 41.2 | -55.756                     | -27.934  | 33           | 5.0              |
| 93          | 12 | 14 | 06 | 07 | 16.0 | -9.347                      | -79.037  | 64           | 5.1              |
| 93          | 12 | 14 | 06 | 31 | 19.4 | -20.765                     | -173.446 | 33           | 5.4              |
| 93          | 12 | 14 | 06 | 47 | 45.6 | -20.629                     | -173.609 | 37           | 5.1              |
| 93          | 12 | 14 | 07 | 12 | 14.8 | 37.960                      | 72.739   | 134          | 5.0              |
| 93          | 12 | 14 | 07 | 21 | 56.2 | 9.872                       | 126.341  | 33           | 5.0              |
| 93          | 12 | 14 | 07 | 49 | 59.7 | -13.697                     | 168.963  | 21           | 5.4              |
| 93          | 12 | 14 | 21 | 41 | 50.9 | 0.514                       | 126.387  | 33           | 5.0              |
| 93          | 12 | 15 | 20 | 17 | 41.9 | 0.518                       | 126.066  | 33           | 5.2              |
| 93          | 12 | 15 | 21 | 49 | 42.2 | 23.110                      | 120.635  | 17           | 5.6              |
| 93          | 12 | 16 | 03 | 12 | 16.8 | -9.988                      | 128.251  | 150          | 5.0              |
| 93          | 12 | 16 | 12 | 17 | 15.4 | 3.777                       | 127.817  | 33           | 5.1              |
| 93          | 12 | 16 | 13 | 04 | 34.6 | 13.394                      | 145.920  | 52           | 5.0              |
| 93          | 12 | 16 | 20 | 11 | 25.1 | 53.762                      | 171.488  | 30           | 5.8              |
| 93          | 12 | 16 | 23 | 41 | 20.7 | -15.368                     | -173.464 | 114          | 5.0              |

Table 6. Local events with  $M_L \geq 2.0$  that occurred during LARSE93. Source information is from the Southern California Earthquake Center Data Center (SCEC\_DC) catalog.

| <u>Time (GMT)</u> |    |     |    |     |       | <u>Location coordinates</u> |                   | <u>Magnitude</u> | <u>Depth</u> |
|-------------------|----|-----|----|-----|-------|-----------------------------|-------------------|------------------|--------------|
| yr                | mo | day | hr | min | sec   | latitude<br>(°N)            | longitude<br>(°E) |                  | (km)         |
| 93                | 11 | 11  | 04 | 28  | 16.09 | 32.3623                     | -115.3728         | 2.1              | 5.51         |
| 93                | 11 | 11  | 06 | 20  | 49.57 | 37.4218                     | -118.6325         | 2.5              | 6.00         |
| 93                | 11 | 11  | 07 | 02  | 09.75 | 0.0000                      | 0.0000            | 3.0              | 6.00         |
| 93                | 11 | 11  | 10 | 31  | 18.87 | 37.1365                     | -117.8403         | 2.5              | 6.00         |
| 93                | 11 | 11  | 12 | 33  | 12.43 | 33.3607                     | -116.9498         | 2.3              | 4.84         |
| 93                | 11 | 11  | 13 | 07  | 17.68 | 32.3220                     | -115.1303         | 2.2              | 6.00         |
| 93                | 11 | 11  | 15 | 16  | 09.69 | 37.4743                     | -118.7935         | 3.2              | 6.00         |
| 93                | 11 | 11  | 15 | 56  | 46.29 | 37.6445                     | -118.8720         | 2.6              | 4.19         |
| 93                | 11 | 11  | 16 | 54  | 05.15 | 37.1182                     | -117.8440         | 2.1              | 6.00         |
| 93                | 11 | 11  | 18 | 02  | 00.09 | 35.9773                     | -117.6530         | 2.3              | 5.03         |
| 93                | 11 | 11  | 19 | 57  | 25.44 | 33.1967                     | -115.5675         | 2.4              | 3.55         |
| 93                | 11 | 11  | 23 | 31  | 05.39 | 34.4953                     | -116.5085         | 2.9              | 2.68         |
| 93                | 11 | 12  | 05 | 31  | 09.56 | 35.6768                     | -118.3242         | 3.5              | 10.82        |
| 93                | 11 | 12  | 08 | 49  | 06.40 | 34.9032                     | -116.6985         | 2.3              | 2.20         |
| 93                | 11 | 12  | 14 | 45  | 10.75 | 37.6410                     | -118.8818         | 2.5              | 6.00         |
| 93                | 11 | 12  | 19 | 32  | 38.26 | 33.9737                     | -117.0798         | 2.2              | 6.00         |
| 93                | 11 | 12  | 20 | 00  | 31.61 | 34.9503                     | -117.0162         | 2.1              | 2.40         |
| 93                | 11 | 13  | 01 | 17  | 15.81 | 32.7527                     | -115.4340         | 2.1              | 15.89        |
| 93                | 11 | 13  | 01 | 20  | 42.99 | 32.7442                     | -115.4288         | 2.2              | 16.11        |
| 93                | 11 | 13  | 01 | 27  | 42.44 | 0.0000                      | 0.0000            | 3.7              | 0.00         |
| 93                | 11 | 13  | 08 | 09  | 20.82 | 33.9920                     | 116.9742          | 2.1              | 11.03        |
| 93                | 11 | 13  | 10 | 53  | 33.12 | 32.8880                     | -115.7853         | 2.5              | 12.30        |
| 93                | 11 | 13  | 21 | 14  | 06.69 | 35.9527                     | -120.4750         | 3.0              | 6.00         |
| 93                | 11 | 13  | 21 | 48  | 08.38 | 33.9895                     | -116.8390         | 2.1              | 19.46        |
| 93                | 11 | 13  | 23 | 01  | 37.41 | 34.3070                     | -116.4482         | 2.2              | 5.51         |
| 93                | 11 | 14  | 00 | 11  | 13.81 | 35.9510                     | -120.5068         | 2.5              | 12.06        |
| 93                | 11 | 14  | 02 | 04  | 54.15 | 32.7893                     | -115.4368         | 2.1              | 12.18        |
| 93                | 11 | 14  | 03 | 44  | 21.00 | 33.8397                     | -120.1303         | 2.1              | 6.00         |
| 93                | 11 | 14  | 04 | 41  | 00.87 | 35.9545                     | -120.5143         | 2.3              | 12.56        |
| 93                | 11 | 14  | 04 | 48  | 28.21 | 35.9518                     | -120.5143         | 2.3              | 9.50         |
| 93                | 11 | 14  | 06 | 10  | 34.46 | 33.8345                     | -117.7302         | 2.2              | 4.40         |
| 93                | 11 | 14  | 07 | 34  | 53.13 | 33.7090                     | -116.7765         | 2.2              | 15.28        |
| 93                | 11 | 14  | 12 | 25  | 35.40 | 35.9648                     | -120.5072         | 4.6              | 18.00        |
| 93                | 11 | 14  | 12 | 29  | 15.31 | 35.9477                     | -120.5062         | 2.7              | 10.00        |
| 93                | 11 | 14  | 12 | 34  | 54.56 | 35.9855                     | -120.5118         | 2.9              | 17.45        |
| 93                | 11 | 14  | 12 | 53  | 00.24 | 35.9475                     | -120.4675         | 2.8              | 6.00         |
| 93                | 11 | 14  | 14 | 55  | 37.58 | 35.9692                     | -120.4837         | 2.2              | 6.00         |
| 93                | 11 | 14  | 20 | 17  | 33.30 | 34.3648                     | -116.4730         | 2.2              | 0.85         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 11 | 15 | 03 | 05 | 05.57 | 35.9858                     | -120.5432 | 2.6              | 15.14        |
| 93          | 11 | 15 | 11 | 01 | 01.86 | 36.0083                     | -120.5562 | 2.3              | 11.82        |
| 93          | 11 | 15 | 14 | 17 | 38.67 | 37.1197                     | -117.9277 | 2.3              | 6.00         |
| 93          | 11 | 15 | 17 | 31 | 35.44 | 37.5665                     | -118.7912 | 2.3              | 6.00         |
| 93          | 11 | 15 | 22 | 32 | 21.69 | 35.8075                     | -119.2695 | 2.1              | 6.00         |
| 93          | 11 | 16 | 04 | 14 | 21.46 | 34.3503                     | -116.4658 | 2.4              | 7.68         |
| 93          | 11 | 16 | 04 | 21 | 01.10 | 34.4207                     | -116.4772 | 2.4              | 1.44         |
| 93          | 11 | 16 | 05 | 02 | 05.98 | 34.9145                     | -116.7747 | 2.3              | 3.66         |
| 93          | 11 | 16 | 06 | 47 | 31.18 | 33.1648                     | -115.6517 | 2.2              | 3.10         |
| 93          | 11 | 16 | 08 | 35 | 39.55 | 37.6262                     | -118.9373 | 2.4              | 6.00         |
| 93          | 11 | 16 | 08 | 47 | 23.75 | 37.6410                     | -118.9427 | 2.6              | 6.00         |
| 93          | 11 | 16 | 09 | 13 | 52.89 | 37.6405                     | -118.9417 | 2.4              | 6.00         |
| 93          | 11 | 16 | 09 | 40 | 46.67 | 37.6398                     | -118.9403 | 2.3              | 6.00         |
| 93          | 11 | 16 | 12 | 40 | 57.33 | 33.1660                     | -115.6488 | 2.4              | 1.94         |
| 93          | 11 | 16 | 14 | 47 | 01.71 | 33.8473                     | -116.8813 | 2.6              | 16.30        |
| 93          | 11 | 16 | 16 | 39 | 51.59 | 37.6638                     | -118.8507 | 2.7              | 6.00         |
| 93          | 11 | 16 | 18 | 25 | 26.72 | 37.5253                     | -118.7878 | 2.3              | 6.00         |
| 93          | 11 | 17 | 00 | 47 | 35.06 | 36.7947                     | -118.1650 | 2.4              | 6.00         |
| 93          | 11 | 17 | 01 | 40 | 28.69 | 35.6888                     | -121.1110 | 2.3              | 6.00         |
| 93          | 11 | 17 | 06 | 56 | 31.68 | 34.4748                     | -116.5247 | 2.1              | 0.01         |
| 93          | 11 | 17 | 11 | 30 | 02.43 | 32.9473                     | -115.7383 | 2.2              | 11.76        |
| 93          | 11 | 17 | 15 | 35 | 46.25 | 35.9502                     | -120.5323 | 2.1              | 6.00         |
| 93          | 11 | 17 | 19 | 12 | 59.20 | 33.0378                     | -114.9433 | 2.5              | 0.00         |
| 93          | 11 | 17 | 22 | 56 | 08.91 | 34.5867                     | -116.6480 | 2.1              | 4.61         |
| 93          | 11 | 17 | 23 | 35 | 34.33 | 34.3893                     | -116.4668 | 2.1              | 3.27         |
| 93          | 11 | 18 | 00 | 45 | 28.75 | 31.8633                     | -115.7180 | 2.4              | 6.00         |
| 93          | 11 | 18 | 02 | 07 | 09.32 | 36.0038                     | -120.5662 | 2.1              | 12.99        |
| 93          | 11 | 18 | 05 | 22 | 31.73 | 35.5475                     | -117.3710 | 2.1              | 8.97         |
| 93          | 11 | 18 | 05 | 58 | 54.48 | 36.3967                     | -116.9695 | 2.1              | 6.00         |
| 93          | 11 | 18 | 07 | 00 | 41.33 | 34.1475                     | -116.4297 | 2.3              | 4.25         |
| 93          | 11 | 18 | 08 | 07 | 12.99 | 31.7500                     | -116.5000 | 2.3              | 6.00         |
| 93          | 11 | 18 | 11 | 29 | 15.61 | 33.7398                     | -117.5098 | 2.1              | 9.56         |
| 93          | 11 | 18 | 11 | 29 | 18.87 | 34.2472                     | -116.8623 | 2.1              | 12.67        |
| 93          | 11 | 18 | 12 | 24 | 38.16 | 35.9623                     | -120.5150 | 2.2              | 12.27        |
| 93          | 11 | 18 | 17 | 41 | 01.99 | 37.4393                     | -119.0353 | 2.6              | 6.00         |
| 93          | 11 | 18 | 19 | 16 | 30.49 | 34.0337                     | -116.3258 | 2.7              | 5.45         |
| 93          | 11 | 18 | 20 | 37 | 33.50 | 34.1682                     | -116.4265 | 3.5              | 11.52        |
| 93          | 11 | 18 | 21 | 18 | 21.95 | 34.1570                     | -116.4325 | 2.3              | 8.44         |
| 93          | 11 | 18 | 21 | 29 | 51.57 | 36.3423                     | -120.4527 | 2.5              | 6.00         |
| 93          | 11 | 18 | 22 | 41 | 08.46 | 34.1425                     | -117.5898 | 2.3              | 10.85        |
| 93          | 11 | 18 | 23 | 50 | 24.83 | 34.4265                     | -116.5370 | 2.1              | 3.15         |
| 93          | 11 | 19 | 01 | 12 | 15.90 | 33.7658                     | -116.9933 | 2.9              | 17.29        |
| 93          | 11 | 19 | 01 | 49 | 57.99 | 0.0000                      | 0.0000    | 3.4              | 0.00         |
| 93          | 11 | 19 | 01 | 52 | 27.25 | 36.0807                     | -120.5977 | 2.4              | 7.78         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 11 | 19 | 02 | 32 | 06.25 | 36.0697                     | -119.7652 | 2.3              | 6.00         |
| 93          | 11 | 19 | 02 | 37 | 17.05 | 36.0692                     | -119.7877 | 2.8              | 6.00         |
| 93          | 11 | 19 | 04 | 05 | 37.14 | 0.0000                      | 0.0000    | 2.1              | 0.00         |
| 93          | 11 | 19 | 08 | 59 | 54.82 | 34.1263                     | -117.0057 | 2.4              | 5.34         |
| 93          | 11 | 19 | 16 | 21 | 59.77 | 34.2065                     | -116.4342 | 2.1              | 4.29         |
| 93          | 11 | 19 | 16 | 27 | 42.95 | 35.4002                     | -119.4828 | 2.1              | 26.88        |
| 93          | 11 | 19 | 18 | 18 | 07.18 | 34.2125                     | -116.4320 | 2.1              | 4.29         |
| 93          | 11 | 19 | 19 | 40 | 26.49 | 36.3027                     | -120.8800 | 2.2              | 6.00         |
| 93          | 11 | 20 | 03 | 27 | 44.10 | 33.9497                     | -116.3132 | 2.8              | 8.52         |
| 93          | 11 | 20 | 03 | 42 | 32.71 | 34.3830                     | -116.4527 | 2.2              | 6.00         |
| 93          | 11 | 20 | 03 | 57 | 16.79 | 37.6033                     | -118.8633 | 2.2              | 6.00         |
| 93          | 11 | 20 | 05 | 58 | 03.21 | 37.6235                     | -118.8683 | 2.6              | 4.63         |
| 93          | 11 | 20 | 06 | 15 | 00.33 | 34.3235                     | -116.4613 | 3.5              | 6.17         |
| 93          | 11 | 20 | 10 | 47 | 31.68 | 37.6265                     | -118.8690 | 2.4              | 5.50         |
| 93          | 11 | 20 | 10 | 52 | 18.73 | 37.6158                     | -118.8615 | 2.3              | 8.42         |
| 93          | 11 | 20 | 11 | 27 | 40.68 | 37.6160                     | -118.8593 | 2.4              | 6.00         |
| 93          | 11 | 20 | 11 | 47 | 01.69 | 34.3903                     | -116.4640 | 2.3              | 1.27         |
| 93          | 11 | 20 | 12 | 00 | 59.84 | 0.0000                      | 0.0000    | 2.2              | 6.00         |
| 93          | 11 | 20 | 12 | 06 | 55.58 | 36.2787                     | -119.6718 | 2.1              | 6.00         |
| 93          | 11 | 20 | 12 | 22 | 57.01 | 34.4760                     | -116.7518 | 2.1              | 5.29         |
| 93          | 11 | 20 | 12 | 26 | 30.70 | 37.6120                     | -118.8610 | 2.5              | 7.48         |
| 93          | 11 | 20 | 13 | 29 | 37.42 | 37.6163                     | -118.8738 | 2.5              | 9.06         |
| 93          | 11 | 20 | 14 | 32 | 45.20 | 37.6117                     | -118.8613 | 2.4              | 7.67         |
| 93          | 11 | 20 | 14 | 41 | 44.19 | 37.6378                     | -118.8575 | 2.5              | 4.75         |
| 93          | 11 | 20 | 17 | 59 | 05.08 | 34.0747                     | -116.8643 | 2.4              | 11.75        |
| 93          | 11 | 20 | 18 | 26 | 00.55 | 35.3072                     | -118.5988 | 2.1              | 1.21         |
| 93          | 11 | 21 | 01 | 12 | 24.11 | 34.0470                     | -118.9122 | 2.2              | 0.01         |
| 93          | 11 | 21 | 07 | 46 | 50.77 | 33.4972                     | -116.4658 | 2.2              | 9.48         |
| 93          | 11 | 21 | 08 | 50 | 49.18 | 34.0675                     | -116.3595 | 2.1              | 2.73         |
| 93          | 11 | 21 | 22 | 01 | 17.75 | 34.3222                     | -116.4778 | 2.2              | 1.30         |
| 93          | 11 | 22 | 02 | 09 | 57.72 | 35.9573                     | -115.6178 | 2.3              | 6.00         |
| 93          | 11 | 22 | 02 | 20 | 42.36 | 34.9817                     | -116.9760 | 2.1              | 5.19         |
| 93          | 11 | 22 | 03 | 23 | 45.89 | 32.6685                     | -115.9115 | 2.2              | 3.59         |
| 93          | 11 | 22 | 04 | 28 | 42.95 | 34.5537                     | -116.5542 | 2.1              | 4.26         |
| 93          | 11 | 22 | 08 | 54 | 11.80 | 34.2722                     | -116.9015 | 2.2              | 10.25        |
| 93          | 11 | 22 | 15 | 36 | 36.33 | 34.1757                     | -116.4363 | 2.5              | 4.85         |
| 93          | 11 | 22 | 15 | 58 | 23.81 | 34.1702                     | -116.4368 | 2.4              | 4.30         |
| 93          | 11 | 22 | 22 | 04 | 12.24 | 34.2645                     | -116.3950 | 2.2              | 3.04         |
| 93          | 11 | 22 | 22 | 55 | 40.79 | 37.6217                     | -118.8367 | 2.7              | 6.00         |
| 93          | 11 | 22 | 23 | 08 | 21.64 | 37.5762                     | -118.8432 | 3.0              | 6.00         |
| 93          | 11 | 22 | 23 | 10 | 21.23 | 37.5675                     | -118.8367 | 2.7              | 3.59         |
| 93          | 11 | 22 | 23 | 42 | 04.86 | 32.9633                     | -114.6285 | 2.3              | 0.00         |
| 93          | 11 | 23 | 03 | 44 | 47.28 | 31.9060                     | -115.7797 | 2.3              | 6.00         |
| 93          | 11 | 23 | 04 | 09 | 55.98 | 34.2408                     | -116.4243 | 2.7              | 3.15         |



Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 11 | 23 | 11 | 00 | 46.81 | 33.3472                     | -116.3627 | 2.7              | 11.47        |
| 93          | 11 | 23 | 19 | 55 | 04.50 | 33.0682                     | -114.9723 | 2.5              | 0.00         |
| 93          | 11 | 24 | 05 | 46 | 16.79 | 34.1858                     | -116.8242 | 2.1              | 8.90         |
| 93          | 11 | 24 | 12 | 22 | 25.89 | 37.6577                     | -118.9497 | 2.5              | 7.43         |
| 93          | 11 | 24 | 18 | 08 | 48.60 | 35.3003                     | -117.6685 | 2.7              | 7.05         |
| 93          | 11 | 24 | 19 | 20 | 30.88 | 34.1227                     | -116.9947 | 2.1              | 4.40         |
| 93          | 11 | 24 | 22 | 13 | 13.48 | 32.1057                     | -114.9723 | 2.2              | 6.00         |
| 93          | 11 | 25 | 01 | 12 | 55.29 | 32.0728                     | -114.9418 | 2.3              | 6.00         |
| 93          | 11 | 25 | 01 | 27 | 23.12 | 34.6345                     | -116.5188 | 2.3              | 3.68         |
| 93          | 11 | 25 | 02 | 46 | 35.00 | 35.9575                     | -115.7000 | 3.6              | 6.00         |
| 93          | 11 | 25 | 02 | 54 | 54.21 | 32.0817                     | -114.9563 | 2.2              | 6.00         |
| 93          | 11 | 25 | 04 | 02 | 54.73 | 37.6288                     | -118.9600 | 2.3              | 1.76         |
| 93          | 11 | 25 | 04 | 09 | 50.76 | 37.5860                     | -118.9133 | 2.4              | 6.00         |
| 93          | 11 | 25 | 08 | 06 | 47.01 | 0.0000                      | 0.0000    | 2.7              | 6.00         |
| 93          | 11 | 25 | 10 | 24 | 04.82 | 37.6270                     | -118.9317 | 2.2              | 8.34         |
| 93          | 11 | 25 | 10 | 26 | 03.55 | 37.6340                     | -118.9350 | 2.4              | 8.61         |
| 93          | 11 | 25 | 10 | 34 | 23.20 | 37.6355                     | -118.9335 | 2.3              | 8.08         |
| 93          | 11 | 25 | 13 | 27 | 51.75 | 32.0680                     | -114.9435 | 2.2              | 6.00         |
| 93          | 11 | 25 | 13 | 31 | 49.70 | 32.0460                     | -114.9397 | 2.2              | 6.00         |
| 93          | 11 | 25 | 14 | 45 | 57.36 | 0.0000                      | 0.0000    | 2.7              | 6.00         |
| 93          | 11 | 25 | 17 | 20 | 32.31 | 36.0833                     | -117.7222 | 2.3              | 0.01         |
| 93          | 11 | 25 | 18 | 26 | 01.98 | 35.8918                     | -115.7278 | 2.1              | 6.00         |
| 93          | 11 | 25 | 20 | 27 | 06.85 | 34.0862                     | -116.4238 | 3.1              | 9.38         |
| 93          | 11 | 26 | 01 | 56 | 40.63 | 37.6448                     | -118.8572 | 2.6              | 5.00         |
| 93          | 11 | 26 | 03 | 54 | 12.30 | 35.6488                     | -117.6350 | 2.1              | 6.00         |
| 93          | 11 | 26 | 06 | 14 | 28.11 | 35.7495                     | -118.0173 | 2.1              | 3.50         |
| 93          | 11 | 26 | 08 | 46 | 00.35 | 34.4710                     | -116.4765 | 2.1              | 2.94         |
| 93          | 11 | 26 | 09 | 14 | 41.83 | 32.8573                     | -115.6770 | 2.2              | 8.88         |
| 93          | 11 | 26 | 19 | 49 | 52.28 | 37.6438                     | -118.8618 | 3.0              | 4.73         |
| 93          | 11 | 26 | 20 | 05 | 29.97 | 34.0092                     | -116.3178 | 2.3              | 5.35         |
| 93          | 11 | 26 | 20 | 18 | 56.02 | 32.8620                     | -115.6772 | 3.0              | 10.79        |
| 93          | 11 | 26 | 20 | 38 | 14.80 | 36.3042                     | -120.1523 | 2.4              | 6.00         |
| 93          | 11 | 27 | 01 | 15 | 34.77 | 34.0013                     | -116.3078 | 2.6              | 5.41         |
| 93          | 11 | 27 | 03 | 23 | 23.64 | 37.6395                     | -118.8623 | 2.2              | 1.42         |
| 93          | 11 | 27 | 04 | 48 | 55.17 | 34.8272                     | -120.4318 | 2.7              | 1.24         |
| 93          | 11 | 27 | 11 | 07 | 22.42 | 37.5033                     | -118.6483 | 2.4              | 6.00         |
| 93          | 11 | 27 | 13 | 20 | 56.50 | 36.4122                     | -117.8623 | 2.1              | 0.00         |
| 93          | 11 | 27 | 13 | 56 | 42.95 | 34.0055                     | -116.3222 | 2.7              | 6.52         |
| 93          | 11 | 27 | 17 | 41 | 49.38 | 34.0140                     | -116.3232 | 2.1              | 5.84         |
| 93          | 11 | 27 | 19 | 55 | 21.41 | 34.6283                     | -116.5567 | 2.6              | 7.90         |
| 93          | 11 | 27 | 21 | 55 | 00.87 | 37.9305                     | -118.5398 | 2.6              | 6.00         |
| 93          | 11 | 28 | 00 | 32 | 47.95 | 37.6197                     | -118.9407 | 3.5              | 6.00         |
| 93          | 11 | 28 | 00 | 34 | 12.02 | 37.6248                     | -118.9480 | 3.2              | 6.00         |
| 93          | 11 | 28 | 00 | 35 | 35.42 | 37.6245                     | -118.9353 | 2.2              | 6.00         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 11 | 28 | 00 | 35 | 54.14 | 37.6847                     | -118.9685 | 2.9              | 6.00         |
| 93          | 11 | 28 | 00 | 36 | 37.40 | 37.6555                     | -118.9613 | 3.3              | 6.00         |
| 93          | 11 | 28 | 00 | 41 | 43.47 | 37.6363                     | -118.9482 | 3.2              | 6.00         |
| 93          | 11 | 28 | 00 | 50 | 19.30 | 37.5655                     | -118.9818 | 3.0              | 6.00         |
| 93          | 11 | 28 | 00 | 50 | 43.42 | 37.6307                     | -118.9377 | 3.2              | 6.00         |
| 93          | 11 | 28 | 00 | 55 | 14.06 | 37.6343                     | -118.9393 | 2.8              | 6.00         |
| 93          | 11 | 28 | 00 | 56 | 11.99 | 37.6370                     | -118.9443 | 3.2              | 6.00         |
| 93          | 11 | 28 | 01 | 01 | 52.71 | 37.6318                     | -118.9475 | 3.2              | 6.00         |
| 93          | 11 | 28 | 01 | 09 | 14.37 | 37.6350                     | -118.9260 | 3.0              | 5.51         |
| 93          | 11 | 28 | 01 | 09 | 42.19 | 37.6245                     | -118.9228 | 2.8              | 5.94         |
| 93          | 11 | 28 | 01 | 10 | 18.89 | 37.6255                     | -118.9313 | 3.0              | 7.05         |
| 93          | 11 | 28 | 01 | 14 | 12.66 | 37.6130                     | -118.9075 | 2.9              | 6.00         |
| 93          | 11 | 28 | 01 | 14 | 22.13 | 37.6267                     | -118.9295 | 3.2              | 6.00         |
| 93          | 11 | 28 | 01 | 15 | 50.78 | 37.6253                     | -118.9382 | 3.2              | 6.46         |
| 93          | 11 | 28 | 01 | 18 | 35.01 | 37.6302                     | -118.9212 | 2.4              | 6.00         |
| 93          | 11 | 28 | 01 | 19 | 10.97 | 37.6222                     | -118.9235 | 3.1              | 6.00         |
| 93          | 11 | 28 | 01 | 31 | 58.95 | 37.6320                     | -118.9220 | 3.1              | 6.00         |
| 93          | 11 | 28 | 01 | 35 | 37.46 | 37.6268                     | -118.9267 | 2.7              | 6.00         |
| 93          | 11 | 28 | 02 | 06 | 16.14 | 37.6348                     | -118.9278 | 3.1              | 6.00         |
| 93          | 11 | 28 | 02 | 08 | 03.60 | 37.6265                     | -118.9357 | 2.4              | 6.00         |
| 93          | 11 | 28 | 02 | 19 | 15.84 | 37.6327                     | -118.9313 | 2.7              | 6.00         |
| 93          | 11 | 28 | 02 | 27 | 44.29 | 37.6270                     | -118.9377 | 2.8              | 6.00         |
| 93          | 11 | 28 | 02 | 32 | 44.12 | 37.6237                     | -118.9305 | 2.8              | 6.00         |
| 93          | 11 | 28 | 02 | 46 | 40.51 | 37.6368                     | -118.9405 | 2.9              | 6.00         |
| 93          | 11 | 28 | 02 | 58 | 27.54 | 37.6140                     | -118.9350 | 2.4              | 6.00         |
| 93          | 11 | 28 | 03 | 19 | 30.67 | 37.6257                     | -118.9412 | 2.8              | 6.00         |
| 93          | 11 | 28 | 03 | 30 | 27.14 | 37.6378                     | -118.9463 | 2.6              | 5.58         |
| 93          | 11 | 28 | 05 | 34 | 45.30 | 37.6400                     | -118.8573 | 2.2              | 6.00         |
| 93          | 11 | 28 | 06 | 01 | 25.36 | 37.6232                     | -118.9293 | 2.6              | 6.00         |
| 93          | 11 | 28 | 06 | 53 | 53.16 | 36.2943                     | -120.8860 | 2.4              | 6.00         |
| 93          | 11 | 28 | 08 | 21 | 22.96 | 37.6293                     | -118.9355 | 5.1              | 6.00         |
| 93          | 11 | 28 | 08 | 22 | 11.45 | 37.6330                     | -118.9337 | 2.8              | 6.00         |
| 93          | 11 | 28 | 09 | 40 | 16.40 | 37.6362                     | -118.9447 | 2.5              | 5.85         |
| 93          | 11 | 28 | 11 | 09 | 36.19 | 0.0000                      | 0.0000    | 2.8              | 6.00         |
| 93          | 11 | 28 | 11 | 23 | 20.53 | 34.3238                     | -116.9173 | 2.9              | 7.35         |
| 93          | 11 | 28 | 11 | 27 | 20.58 | 37.6392                     | -118.8592 | 2.9              | 4.73         |
| 93          | 11 | 28 | 11 | 34 | 38.56 | 37.6342                     | -118.8502 | 2.6              | 4.20         |
| 93          | 11 | 28 | 15 | 05 | 59.50 | 37.6407                     | -118.8635 | 2.7              | 6.00         |
| 93          | 11 | 28 | 19 | 39 | 25.62 | 37.6387                     | -118.8640 | 2.8              | 6.00         |
| 93          | 11 | 28 | 19 | 50 | 39.12 | 37.6358                     | -118.8612 | 2.1              | 6.00         |
| 93          | 11 | 28 | 19 | 51 | 43.66 | 34.3712                     | -116.4482 | 2.6              | 0.96         |
| 93          | 11 | 28 | 20 | 01 | 50.36 | 37.6338                     | -118.8610 | 2.3              | 6.00         |
| 93          | 11 | 28 | 22 | 32 | 47.77 | 37.6187                     | -118.9390 | 3.0              | 6.00         |
| 93          | 11 | 28 | 22 | 48 | 34.08 | 37.4295                     | -118.5268 | 3.0              | 6.00         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 11 | 29 | 01 | 30 | 13.28 | 37.6105                     | -118.8540 | 2.3              | 0.01         |
| 93          | 11 | 29 | 04 | 58 | 14.10 | 37.6373                     | -118.8560 | 2.4              | 1.12         |
| 93          | 11 | 29 | 05 | 01 | 06.13 | 37.6330                     | -118.8632 | 2.9              | 5.51         |
| 93          | 11 | 29 | 05 | 07 | 59.33 | 37.6235                     | -118.8700 | 2.9              | 6.00         |
| 93          | 11 | 29 | 07 | 21 | 26.38 | 34.6355                     | -116.6527 | 2.2              | 4.94         |
| 93          | 11 | 29 | 11 | 07 | 00.32 | 33.7113                     | -116.8470 | 2.7              | 16.30        |
| 93          | 11 | 29 | 12 | 13 | 54.60 | 31.6418                     | -116.0162 | 3.0              | 6.00         |
| 93          | 11 | 29 | 15 | 11 | 58.73 | 37.6302                     | -118.9520 | 2.5              | 6.00         |
| 93          | 11 | 29 | 17 | 55 | 27.37 | 34.3188                     | -116.7633 | 2.5              | 3.15         |
| 93          | 11 | 29 | 18 | 16 | 47.35 | 34.4430                     | -119.0073 | 2.2              | 11.00        |
| 93          | 11 | 29 | 18 | 17 | 09.90 | 34.3928                     | -116.4622 | 2.1              | 2.78         |
| 93          | 11 | 29 | 20 | 06 | 45.47 | 33.0543                     | -114.9535 | 2.5              | 0.00         |
| 93          | 11 | 29 | 23 | 40 | 18.22 | 37.6317                     | -118.9525 | 2.7              | 5.52         |
| 93          | 11 | 30 | 04 | 37 | 25.07 | 35.8657                     | -116.7240 | 2.5              | 8.09         |
| 93          | 11 | 30 | 06 | 37 | 56.17 | 37.5645                     | -118.8440 | 2.9              | 5.40         |
| 93          | 11 | 30 | 07 | 44 | 01.57 | 37.5623                     | -118.8452 | 2.2              | 6.00         |
| 93          | 11 | 30 | 14 | 33 | 50.16 | 34.1593                     | -116.4217 | 2.4              | 1.91         |
| 93          | 11 | 30 | 15 | 34 | 17.85 | 37.5745                     | -118.8497 | 2.5              | 6.00         |
| 93          | 11 | 30 | 15 | 35 | 46.00 | 37.6343                     | -118.9532 | 2.3              | 6.00         |
| 93          | 11 | 30 | 16 | 52 | 02.62 | 37.6472                     | -118.9668 | 2.8              | 6.00         |
| 93          | 11 | 30 | 21 | 00 | 32.15 | 33.0737                     | -114.9760 | 2.5              | 0.00         |
| 93          | 11 | 30 | 21 | 08 | 15.45 | 35.2748                     | -117.6803 | 2.4              | 3.67         |
| 93          | 11 | 30 | 23 | 09 | 35.46 | 37.6293                     | -118.9537 | 2.2              | 6.00         |
| 93          | 12 | 01 | 06 | 01 | 05.54 | 34.5995                     | -116.6328 | 2.3              | 3.85         |
| 93          | 12 | 01 | 07 | 10 | 04.01 | 37.6185                     | -118.9400 | 2.6              | 6.00         |
| 93          | 12 | 01 | 07 | 41 | 03.36 | 37.4532                     | -118.3878 | 2.7              | 6.00         |
| 93          | 12 | 01 | 10 | 33 | 30.89 | 37.6162                     | -118.9503 | 2.1              | 6.00         |
| 93          | 12 | 01 | 12 | 30 | 12.78 | 37.6230                     | -118.9517 | 2.2              | 6.00         |
| 93          | 12 | 01 | 12 | 39 | 11.26 | 34.1542                     | -117.4670 | 2.1              | 16.25        |
| 93          | 12 | 01 | 16 | 35 | 21.06 | 37.5113                     | -118.6408 | 3.2              | 6.00         |
| 93          | 12 | 01 | 20 | 10 | 55.65 | 33.0715                     | -114.9905 | 2.4              | 0.00         |
| 93          | 12 | 01 | 20 | 21 | 03.40 | 32.6997                     | -117.5763 | 2.3              | 6.00         |
| 93          | 12 | 01 | 23 | 38 | 08.87 | 34.6185                     | -116.6568 | 2.9              | 4.24         |
| 93          | 12 | 01 | 23 | 58 | 40.89 | 37.6278                     | -118.9447 | 2.7              | 6.00         |
| 93          | 12 | 02 | 00 | 18 | 03.31 | 0.0000                      | 0.0000    | 2.6              | 6.00         |
| 93          | 12 | 02 | 00 | 52 | 32.69 | 37.0658                     | -117.8167 | 2.6              | 6.00         |
| 93          | 12 | 02 | 02 | 22 | 05.08 | 34.6335                     | -116.5078 | 2.1              | 7.04         |
| 93          | 12 | 02 | 03 | 07 | 05.61 | 37.6300                     | -118.9548 | 3.0              | 6.00         |
| 93          | 12 | 02 | 07 | 10 | 59.22 | 32.0045                     | -116.2662 | 2.4              | 6.00         |
| 93          | 12 | 02 | 10 | 16 | 02.63 | 37.2407                     | -117.9027 | 2.2              | 6.00         |
| 93          | 12 | 02 | 12 | 10 | 24.42 | 37.6307                     | -118.9502 | 2.9              | 6.00         |
| 93          | 12 | 02 | 14 | 52 | 49.17 | 32.2397                     | -115.7398 | 2.6              | 6.00         |
| 93          | 12 | 02 | 19 | 31 | 53.17 | 35.9112                     | -117.7280 | 2.7              | 7.28         |
| 93          | 12 | 02 | 19 | 53 | 37.60 | 35.9100                     | -117.7275 | 2.6              | 7.10         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 12 | 02 | 20 | 17 | 01.64 | 35.9108                     | -117.7287 | 2.2              | 7.96         |
| 93          | 12 | 02 | 22 | 32 | 46.39 | 34.3782                     | -116.4657 | 2.1              | 3.63         |
| 93          | 12 | 02 | 22 | 38 | 25.44 | 33.0655                     | -114.9605 | 2.1              | 0.00         |
| 93          | 12 | 03 | 00 | 17 | 00.47 | 34.4897                     | -116.5085 | 2.2              | 0.90         |
| 93          | 12 | 03 | 00 | 18 | 52.13 | 34.3358                     | -116.4630 | 2.4              | 3.00         |
| 93          | 12 | 03 | 00 | 34 | 08.18 | 34.8278                     | -120.4253 | 2.7              | 0.75         |
| 93          | 12 | 03 | 01 | 51 | 24.75 | 34.2593                     | -116.7210 | 3.8              | 1.61         |
| 93          | 12 | 03 | 12 | 31 | 58.59 | 33.9617                     | -118.3190 | 2.1              | 8.94         |
| 93          | 12 | 03 | 13 | 42 | 51.86 | 37.6297                     | -118.9598 | 2.4              | 6.00         |
| 93          | 12 | 03 | 14 | 11 | 09.03 | 37.6298                     | -118.9558 | 2.6              | 4.73         |
| 93          | 12 | 03 | 17 | 44 | 20.27 | 34.4045                     | -118.4015 | 2.9              | 7.25         |
| 93          | 12 | 03 | 18 | 42 | 03.76 | 37.6248                     | -118.9473 | 2.8              | 6.00         |
| 93          | 12 | 03 | 19 | 31 | 15.04 | 37.6360                     | -118.9448 | 2.8              | 5.51         |
| 93          | 12 | 03 | 20 | 00 | 37.58 | 37.6308                     | -118.9505 | 2.7              | 5.44         |
| 93          | 12 | 03 | 20 | 27 | 00.55 | 33.0452                     | -114.9493 | 2.1              | 0.00         |
| 93          | 12 | 03 | 21 | 41 | 01.60 | 34.6358                     | -116.5425 | 2.3              | 3.99         |
| 93          | 12 | 03 | 22 | 00 | 20.10 | 34.3943                     | -116.4655 | 2.1              | 3.16         |
| 93          | 12 | 03 | 23 | 11 | 44.14 | 35.3092                     | -116.8607 | 2.8              | 4.01         |
| 93          | 12 | 04 | 01 | 36 | 44.86 | 34.3357                     | -116.4743 | 2.1              | 8.98         |
| 93          | 12 | 04 | 02 | 13 | 37.90 | 34.0000                     | -116.3228 | 2.3              | 9.23         |
| 93          | 12 | 04 | 03 | 08 | 23.05 | 32.9350                     | -117.6268 | 2.2              | 6.00         |
| 93          | 12 | 04 | 04 | 41 | 28.64 | 34.6290                     | -116.5877 | 2.4              | 7.24         |
| 93          | 12 | 04 | 05 | 46 | 31.43 | 37.6285                     | -118.9523 | 2.7              | 6.11         |
| 93          | 12 | 04 | 16 | 27 | 59.51 | 34.4895                     | -116.5093 | 2.1              | 12.06        |
| 93          | 12 | 04 | 18 | 59 | 23.59 | 35.0110                     | -116.9650 | 2.6              | 6.00         |
| 93          | 12 | 04 | 20 | 27 | 07.43 | 36.0078                     | -120.5483 | 2.5              | 13.51        |
| 93          | 12 | 04 | 22 | 15 | 19.60 | 42.2580                     | -121.9770 | 5.1              | 5.00         |
| 93          | 12 | 05 | 04 | 51 | 49.10 | 34.6192                     | -116.6642 | 2.2              | 4.54         |
| 93          | 12 | 05 | 06 | 25 | 06.20 | 37.2640                     | -121.6430 | 3.4              | 7.00         |
| 93          | 12 | 05 | 17 | 14 | 24.98 | 34.5613                     | -116.5567 | 2.1              | 6.00         |
| 93          | 12 | 05 | 17 | 15 | 04.60 | 37.9880                     | -121.8680 | 3.2              | 17.00        |
| 93          | 12 | 05 | 18 | 55 | 00.60 | 38.7970                     | -120.0310 | 3.0              | 14.00        |
| 93          | 12 | 05 | 19 | 51 | 44.19 | 35.2817                     | -116.8525 | 2.6              | 0.01         |
| 93          | 12 | 05 | 22 | 55 | 47.05 | 34.9845                     | -116.9487 | 2.1              | 5.51         |
| 93          | 12 | 06 | 00 | 45 | 56.97 | 34.1720                     | -116.4395 | 2.1              | 3.22         |
| 93          | 12 | 06 | 03 | 18 | 55.76 | 36.0532                     | -117.9687 | 2.4              | 2.22         |
| 93          | 12 | 06 | 06 | 35 | 43.96 | 37.5232                     | -118.7652 | 2.6              | 6.00         |
| 93          | 12 | 06 | 07 | 03 | 35.14 | 35.2873                     | -116.8542 | 2.9              | 6.00         |
| 93          | 12 | 06 | 09 | 27 | 20.52 | 35.0698                     | -116.6567 | 2.5              | 6.00         |
| 93          | 12 | 06 | 10 | 53 | 33.40 | 34.9808                     | -116.9467 | 2.3              | 6.00         |
| 93          | 12 | 06 | 12 | 36 | 48.88 | 36.0540                     | -120.4442 | 2.2              | 6.00         |
| 93          | 12 | 06 | 13 | 45 | 07.36 | 34.1475                     | -116.7237 | 2.2              | 5.50         |
| 93          | 12 | 06 | 20 | 50 | 07.69 | 33.3293                     | -115.7417 | 2.6              | 3.53         |
| 93          | 12 | 06 | 20 | 52 | 50.59 | 33.3217                     | -115.7410 | 2.1              | 3.29         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 12 | 07 | 03 | 38 | 47.68 | 33.3885                     | -116.8960 | 2.2              | 5.71         |
| 93          | 12 | 07 | 04 | 03 | 06.50 | 33.8020                     | -118.3240 | 2.1              | 6.27         |
| 93          | 12 | 07 | 04 | 17 | 28.87 | 37.0112                     | -117.9315 | 2.9              | 6.00         |
| 93          | 12 | 07 | 05 | 10 | 10.48 | 37.6623                     | -118.8478 | 2.6              | 6.00         |
| 93          | 12 | 07 | 05 | 32 | 14.03 | 35.2915                     | -116.8525 | 2.5              | 6.00         |
| 93          | 12 | 07 | 08 | 37 | 24.34 | 37.6572                     | -118.8292 | 2.5              | 4.27         |
| 93          | 12 | 07 | 18 | 57 | 30.14 | 34.1212                     | -116.3843 | 2.3              | 2.71         |
| 93          | 12 | 07 | 20 | 07 | 27.73 | 34.1402                     | -116.9713 | 2.8              | 11.62        |
| 93          | 12 | 07 | 21 | 10 | 26.63 | 0.0000                      | 0.0000    | 2.6              | 6.00         |
| 93          | 12 | 07 | 22 | 22 | 47.59 | 32.7290                     | -118.1455 | 2.5              | 6.00         |
| 93          | 12 | 07 | 23 | 05 | 04.18 | 37.0183                     | -117.9195 | 2.1              | 6.00         |
| 93          | 12 | 08 | 01 | 56 | 42.71 | 37.6627                     | -118.8377 | 2.6              | 6.00         |
| 93          | 12 | 08 | 02 | 49 | 38.98 | 32.3565                     | -115.3538 | 3.9              | 6.00         |
| 93          | 12 | 08 | 02 | 52 | 28.74 | 32.3530                     | -115.3487 | 2.9              | 6.00         |
| 93          | 12 | 08 | 02 | 54 | 55.26 | 32.3442                     | -115.3483 | 2.6              | 6.00         |
| 93          | 12 | 08 | 03 | 02 | 50.10 | 32.3588                     | -115.3555 | 3.2              | 6.00         |
| 93          | 12 | 08 | 03 | 06 | 17.38 | 32.3042                     | -115.3585 | 3.2              | 6.00         |
| 93          | 12 | 08 | 03 | 10 | 14.35 | 32.3408                     | -115.3482 | 3.0              | 6.00         |
| 93          | 12 | 08 | 03 | 10 | 44.95 | 32.3025                     | -115.3538 | 3.3              | 6.00         |
| 93          | 12 | 08 | 03 | 17 | 09.93 | 32.3275                     | -115.3605 | 2.9              | 6.00         |
| 93          | 12 | 08 | 03 | 25 | 56.21 | 32.3522                     | -115.3457 | 3.0              | 6.00         |
| 93          | 12 | 08 | 04 | 20 | 27.78 | 32.3528                     | -115.3572 | 2.2              | 6.00         |
| 93          | 12 | 08 | 04 | 21 | 00.75 | 32.3147                     | -115.3500 | 2.3              | 6.00         |
| 93          | 12 | 08 | 04 | 27 | 16.42 | 32.3362                     | -115.3490 | 2.5              | 6.00         |
| 93          | 12 | 08 | 04 | 31 | 30.17 | 32.3257                     | -115.3477 | 2.8              | 6.00         |
| 93          | 12 | 08 | 04 | 32 | 37.13 | 32.3202                     | -115.3500 | 3.0              | 6.00         |
| 93          | 12 | 08 | 04 | 37 | 18.68 | 32.3478                     | -115.3452 | 2.5              | 6.00         |
| 93          | 12 | 08 | 04 | 53 | 01.77 | 32.3563                     | -115.3572 | 2.2              | 6.00         |
| 93          | 12 | 08 | 05 | 00 | 30.24 | 32.3417                     | -115.3598 | 3.0              | 6.00         |
| 93          | 12 | 08 | 05 | 45 | 03.53 | 33.5932                     | -118.2970 | 2.2              | 0.00         |
| 93          | 12 | 08 | 06 | 06 | 35.80 | 32.3263                     | -115.3518 | 2.3              | 6.00         |
| 93          | 12 | 08 | 06 | 11 | 32.89 | 32.2958                     | -115.3393 | 2.5              | 6.00         |
| 93          | 12 | 08 | 07 | 16 | 47.19 | 37.6090                     | -118.9712 | 2.7              | 5.51         |
| 93          | 12 | 08 | 07 | 23 | 47.01 | 32.3558                     | -115.3643 | 2.1              | 6.00         |
| 93          | 12 | 08 | 07 | 31 | 19.82 | 32.3372                     | -115.3523 | 2.2              | 6.00         |
| 93          | 12 | 08 | 07 | 31 | 34.65 | 32.2443                     | -115.3227 | 2.9              | 6.00         |
| 93          | 12 | 08 | 07 | 58 | 45.83 | 32.3627                     | -115.3373 | 2.1              | 6.00         |
| 93          | 12 | 08 | 08 | 23 | 42.11 | 32.3467                     | -115.3373 | 2.3              | 6.00         |
| 93          | 12 | 08 | 08 | 47 | 30.10 | 32.3362                     | -115.3573 | 3.3              | 6.00         |
| 93          | 12 | 08 | 09 | 06 | 28.81 | 35.0085                     | -116.9658 | 3.7              | 2.33         |
| 93          | 12 | 08 | 09 | 47 | 52.74 | 32.3402                     | -115.3512 | 2.8              | 6.00         |
| 93          | 12 | 08 | 10 | 30 | 42.38 | 32.3303                     | -115.2488 | 2.8              | 6.00         |
| 93          | 12 | 08 | 11 | 58 | 34.45 | 35.0012                     | -116.9525 | 2.1              | 0.01         |
| 93          | 12 | 08 | 13 | 09 | 47.84 | 34.9865                     | -116.9477 | 2.7              | 5.50         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 12 | 08 | 13 | 25 | 50.92 | 32.3582                     | -115.3543 | 2.6              | 6.00         |
| 93          | 12 | 08 | 14 | 56 | 51.66 | 34.1953                     | -116.7983 | 2.3              | 4.88         |
| 93          | 12 | 08 | 15 | 02 | 38.92 | 36.6943                     | -116.3335 | 2.4              | 6.00         |
| 93          | 12 | 08 | 16 | 36 | 34.51 | 32.3510                     | -115.3560 | 2.1              | 6.00         |
| 93          | 12 | 08 | 19 | 25 | 21.31 | 37.6255                     | -118.9385 | 2.2              | 6.00         |
| 93          | 12 | 08 | 20 | 02 | 58.73 | 32.3442                     | -115.3503 | 2.8              | 6.00         |
| 93          | 12 | 08 | 21 | 10 | 22.72 | 33.5663                     | -118.2725 | 2.6              | 0.01         |
| 93          | 12 | 08 | 21 | 39 | 26.96 | 32.3652                     | -115.3402 | 2.1              | 6.00         |
| 93          | 12 | 08 | 22 | 44 | 28.94 | 37.3750                     | -118.5923 | 2.1              | 6.00         |
| 93          | 12 | 08 | 23 | 30 | 20.73 | 32.3278                     | -115.3535 | 2.2              | 6.00         |
| 93          | 12 | 08 | 23 | 59 | 50.33 | 32.3415                     | -115.3478 | 2.4              | 6.00         |
| 93          | 12 | 09 | 00 | 07 | 00.63 | 32.3600                     | -115.3478 | 3.1              | 6.00         |
| 93          | 12 | 09 | 00 | 07 | 32.64 | 32.3672                     | -115.3500 | 3.6              | 6.00         |
| 93          | 12 | 09 | 00 | 12 | 51.09 | 32.3723                     | -115.3733 | 2.4              | 6.00         |
| 93          | 12 | 09 | 03 | 01 | 48.20 | 32.3578                     | -115.3495 | 2.3              | 6.00         |
| 93          | 12 | 09 | 03 | 16 | 43.63 | 34.1585                     | -116.4207 | 2.3              | 5.50         |
| 93          | 12 | 09 | 03 | 25 | 51.47 | 34.1595                     | -116.4212 | 2.5              | 5.39         |
| 93          | 12 | 09 | 04 | 10 | 46.57 | 37.4927                     | -118.8893 | 2.4              | 6.00         |
| 93          | 12 | 09 | 04 | 18 | 10.10 | 32.3675                     | -115.3560 | 3.1              | 6.00         |
| 93          | 12 | 09 | 05 | 11 | 40.98 | 32.3578                     | -115.3427 | 2.2              | 6.00         |
| 93          | 12 | 09 | 06 | 31 | 54.02 | 32.4110                     | -115.3445 | 2.2              | 6.00         |
| 93          | 12 | 09 | 08 | 08 | 20.53 | 32.3357                     | -115.3520 | 2.2              | 6.00         |
| 93          | 12 | 09 | 08 | 28 | 00.28 | 32.3397                     | -115.3442 | 2.2              | 6.00         |
| 93          | 12 | 09 | 09 | 03 | 29.67 | 32.3570                     | -115.3507 | 2.3              | 6.00         |
| 93          | 12 | 09 | 09 | 11 | 33.71 | 32.3557                     | -115.3495 | 2.9              | 6.00         |
| 93          | 12 | 09 | 12 | 24 | 11.51 | 37.2150                     | -117.8602 | 2.1              | 6.00         |
| 93          | 12 | 09 | 12 | 25 | 02.29 | 37.4327                     | -118.6717 | 2.3              | 6.00         |
| 93          | 12 | 09 | 13 | 23 | 38.61 | 34.4908                     | -118.6827 | 2.4              | 15.01        |
| 93          | 12 | 09 | 13 | 59 | 25.10 | 36.2558                     | -120.3667 | 2.5              | 6.00         |
| 93          | 12 | 09 | 15 | 40 | 18.29 | 34.5023                     | -116.5228 | 2.1              | 1.05         |
| 93          | 12 | 09 | 16 | 07 | 49.33 | 34.0115                     | -116.3187 | 2.1              | 4.92         |
| 93          | 12 | 09 | 16 | 08 | 05.32 | 34.9883                     | -116.9607 | 2.1              | 5.28         |
| 93          | 12 | 09 | 20 | 21 | 19.26 | 34.2232                     | -116.4357 | 2.1              | 4.29         |
| 93          | 12 | 09 | 20 | 21 | 51.23 | 34.2218                     | -116.4378 | 2.1              | 4.13         |
| 93          | 12 | 09 | 21 | 37 | 24.11 | 32.3675                     | -115.3548 | 2.1              | 6.00         |
| 93          | 12 | 09 | 22 | 09 | 04.56 | 32.3648                     | -115.3367 | 3.0              | 6.00         |
| 93          | 12 | 09 | 23 | 15 | 18.65 | 0.0000                      | 0.0000    | 2.5              | 6.00         |
| 93          | 12 | 09 | 23 | 25 | 15.97 | 37.1447                     | -117.8117 | 2.2              | 6.00         |
| 93          | 12 | 10 | 00 | 27 | 18.99 | 37.0168                     | -117.9150 | 3.3              | 6.00         |
| 93          | 12 | 10 | 02 | 45 | 37.59 | 32.3402                     | -115.3477 | 2.1              | 6.00         |
| 93          | 12 | 10 | 03 | 37 | 44.32 | 36.1342                     | -118.0695 | 2.2              | 0.00         |
| 93          | 12 | 10 | 03 | 37 | 59.69 | 32.5725                     | -117.6818 | 2.5              | 6.00         |
| 93          | 12 | 10 | 06 | 43 | 05.73 | 37.5497                     | -118.8745 | 2.6              | 6.00         |
| 93          | 12 | 10 | 10 | 06 | 08.93 | 35.6483                     | -117.6365 | 2.9              | 5.08         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 12 | 10 | 10 | 10 | 10.50 | 34.0177                     | -117.1083 | 3.2              | 8.17         |
| 93          | 12 | 10 | 10 | 14 | 40.30 | 35.6457                     | -117.6363 | 2.1              | 5.48         |
| 93          | 12 | 10 | 10 | 28 | 20.61 | 34.2710                     | -116.7225 | 2.3              | 0.68         |
| 93          | 12 | 10 | 13 | 51 | 07.48 | 34.2370                     | -119.4990 | 2.4              | 13.76        |
| 93          | 12 | 10 | 15 | 06 | 37.11 | 35.6480                     | -117.6377 | 3.0              | 5.50         |
| 93          | 12 | 10 | 15 | 44 | 21.91 | 32.3950                     | -115.3245 | 2.8              | 6.00         |
| 93          | 12 | 10 | 16 | 08 | 15.30 | 37.6192                     | -118.8625 | 2.3              | 0.67         |
| 93          | 12 | 10 | 16 | 58 | 40.55 | 35.0163                     | -116.9643 | 2.2              | 0.21         |
| 93          | 12 | 10 | 18 | 40 | 10.24 | 34.6215                     | -116.5503 | 2.1              | 6.00         |
| 93          | 12 | 10 | 21 | 18 | 47.40 | 33.0648                     | -114.9618 | 2.2              | 0.00         |
| 93          | 12 | 10 | 22 | 00 | 59.06 | 34.6057                     | -116.6175 | 2.2              | 3.95         |
| 93          | 12 | 10 | 23 | 51 | 22.30 | 33.8043                     | -118.1518 | 2.1              | 10.59        |
| 93          | 12 | 11 | 00 | 07 | 06.70 | 33.9843                     | -116.7978 | 2.2              | 19.16        |
| 93          | 12 | 11 | 00 | 19 | 33.92 | 34.5718                     | -116.6932 | 2.2              | 5.28         |
| 93          | 12 | 11 | 01 | 06 | 07.76 | 37.0197                     | -117.9338 | 2.6              | 6.00         |
| 93          | 12 | 11 | 01 | 35 | 56.97 | 32.2998                     | -115.3377 | 2.1              | 6.00         |
| 93          | 12 | 11 | 06 | 47 | 55.20 | 37.6293                     | -118.9362 | 2.7              | 7.99         |
| 93          | 12 | 11 | 06 | 57 | 54.36 | 37.6392                     | -118.8735 | 2.2              | 6.00         |
| 93          | 12 | 11 | 07 | 01 | 20.48 | 32.4160                     | -115.3228 | 2.2              | 6.00         |
| 93          | 12 | 11 | 09 | 14 | 33.10 | 32.4077                     | -115.3285 | 2.3              | 6.00         |
| 93          | 12 | 11 | 14 | 05 | 27.80 | 36.1722                     | -118.0225 | 2.2              | 6.00         |
| 93          | 12 | 11 | 14 | 17 | 35.16 | 32.3992                     | -115.3317 | 2.1              | 6.00         |
| 93          | 12 | 11 | 15 | 59 | 18.85 | 36.1535                     | -118.0292 | 2.8              | 0.01         |
| 93          | 12 | 11 | 15 | 59 | 52.78 | 37.0208                     | -117.9320 | 2.8              | 6.00         |
| 93          | 12 | 11 | 16 | 14 | 13.41 | 32.4230                     | -115.3282 | 2.1              | 6.00         |
| 93          | 12 | 11 | 18 | 57 | 55.97 | 32.3703                     | -115.3477 | 2.7              | 6.00         |
| 93          | 12 | 11 | 19 | 12 | 54.76 | 37.6393                     | -118.8700 | 2.8              | 6.00         |
| 93          | 12 | 11 | 19 | 54 | 34.77 | 32.4100                     | -115.3332 | 2.6              | 6.00         |
| 93          | 12 | 11 | 21 | 52 | 52.66 | 37.4765                     | -118.8272 | 2.2              | 6.00         |
| 93          | 12 | 12 | 00 | 45 | 09.07 | 35.4695                     | -119.9802 | 2.6              | 9.66         |
| 93          | 12 | 12 | 01 | 39 | 01.96 | 37.0260                     | -117.9125 | 2.3              | 6.00         |
| 93          | 12 | 12 | 02 | 25 | 29.83 | 34.3793                     | -116.4570 | 2.1              | 2.65         |
| 93          | 12 | 12 | 05 | 32 | 55.38 | 36.3252                     | -120.3530 | 2.3              | 6.00         |
| 93          | 12 | 12 | 07 | 24 | 45.63 | 0.0000                      | 0.0000    | 2.9              | 6.00         |
| 93          | 12 | 12 | 11 | 12 | 58.67 | 37.0132                     | -117.9240 | 3.0              | 6.00         |
| 93          | 12 | 12 | 12 | 56 | 09.05 | 37.0040                     | -117.9258 | 3.1              | 6.00         |
| 93          | 12 | 12 | 13 | 58 | 38.37 | 37.6668                     | -118.9210 | 2.9              | 6.00         |
| 93          | 12 | 12 | 14 | 55 | 13.52 | 35.6508                     | -117.6332 | 2.6              | 5.68         |
| 93          | 12 | 12 | 15 | 45 | 33.69 | 33.9487                     | -116.3413 | 2.4              | 6.37         |
| 93          | 12 | 12 | 19 | 05 | 02.84 | 32.4137                     | -115.3305 | 2.3              | 6.00         |
| 93          | 12 | 12 | 19 | 45 | 58.42 | 32.3878                     | -115.3262 | 2.3              | 6.00         |
| 93          | 12 | 12 | 23 | 00 | 15.59 | 32.4435                     | -115.3292 | 2.8              | 6.00         |
| 93          | 12 | 13 | 03 | 25 | 28.00 | 34.4802                     | -116.5095 | 2.1              | 1.13         |
| 93          | 12 | 13 | 09 | 32 | 08.57 | 37.6515                     | -118.8312 | 2.6              | 6.00         |

Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 12 | 13 | 10 | 46 | 22.31 | 35.3413                     | -118.5525 | 2.2              | 1.89         |
| 93          | 12 | 13 | 11 | 00 | 15.62 | 35.6495                     | -117.6328 | 2.2              | 5.89         |
| 93          | 12 | 13 | 14 | 00 | 57.02 | 34.3065                     | -117.0100 | 2.9              | 5.48         |
| 93          | 12 | 13 | 14 | 30 | 48.51 | 34.3507                     | -116.4690 | 2.1              | 8.02         |
| 93          | 12 | 13 | 19 | 49 | 17.14 | 32.4175                     | -115.3338 | 2.2              | 6.00         |
| 93          | 12 | 13 | 20 | 54 | 09.89 | 37.6427                     | -118.8223 | 2.7              | 6.00         |
| 93          | 12 | 13 | 22 | 17 | 41.80 | 0.0000                      | 0.0000    | 2.6              | 6.00         |
| 93          | 12 | 13 | 22 | 46 | 53.79 | 37.6403                     | -118.8267 | 2.7              | 6.00         |
| 93          | 12 | 13 | 23 | 25 | 58.06 | 36.9362                     | -118.1382 | 2.1              | 6.00         |
| 93          | 12 | 13 | 23 | 35 | 43.32 | 36.9243                     | -118.1642 | 2.2              | 6.00         |
| 93          | 12 | 14 | 00 | 21 | 24.36 | 36.9333                     | -118.1543 | 2.3              | 6.00         |
| 93          | 12 | 14 | 00 | 40 | 20.96 | 37.6498                     | -118.8817 | 2.4              | 12.77        |
| 93          | 12 | 14 | 01 | 32 | 11.19 | 37.6377                     | -118.8265 | 2.4              | 6.00         |
| 93          | 12 | 14 | 01 | 42 | 35.94 | 34.0728                     | -117.0927 | 2.1              | 0.00         |
| 93          | 12 | 14 | 03 | 52 | 15.53 | 37.6620                     | -118.9060 | 2.4              | 6.00         |
| 93          | 12 | 14 | 04 | 00 | 44.17 | 37.6527                     | -118.8920 | 2.3              | 6.00         |
| 93          | 12 | 14 | 04 | 04 | 27.07 | 37.6443                     | -118.8908 | 2.8              | 6.00         |
| 93          | 12 | 14 | 05 | 46 | 28.49 | 34.3357                     | -116.4720 | 2.1              | 4.81         |
| 93          | 12 | 14 | 06 | 07 | 23.15 | 37.6262                     | -118.9623 | 2.4              | 5.41         |
| 93          | 12 | 14 | 06 | 52 | 37.29 | 36.4207                     | -117.8777 | 2.8              | 6.00         |
| 93          | 12 | 14 | 10 | 03 | 5.40  | 37.5553                     | -118.8300 | 2.6              | 6.00         |
| 93          | 12 | 14 | 11 | 39 | 33.89 | 34.6312                     | -116.6675 | 2.3              | 4.37         |
| 93          | 12 | 14 | 15 | 56 | 53.02 | 35.9913                     | -117.6917 | 2.2              | 2.53         |
| 93          | 12 | 14 | 17 | 48 | 07.29 | 37.5520                     | -118.8460 | 2.7              | 6.00         |
| 93          | 12 | 14 | 18 | 04 | 44.24 | 36.0770                     | -117.7195 | 3.2              | 1.26         |
| 93          | 12 | 14 | 18 | 50 | 05.27 | 37.6433                     | -118.8467 | 2.3              | 6.00         |
| 93          | 12 | 15 | 01 | 11 | 30.53 | 37.6507                     | -118.8265 | 2.3              | 6.00         |
| 93          | 12 | 15 | 09 | 23 | 43.19 | 34.4413                     | -116.5062 | 2.4              | 1.35         |
| 93          | 12 | 15 | 09 | 55 | 48.64 | 34.3130                     | -116.4377 | 2.1              | 6.62         |
| 93          | 12 | 15 | 10 | 26 | 22.88 | 36.1898                     | -120.1805 | 3.0              | 6.00         |
| 93          | 12 | 15 | 13 | 37 | 44.15 | 32.3460                     | -115.3498 | 2.1              | 6.00         |
| 93          | 12 | 15 | 20 | 11 | 34.56 | 37.6302                     | -118.9590 | 2.7              | 5.51         |
| 93          | 12 | 15 | 20 | 15 | 50.52 | 33.0677                     | -114.9593 | 2.3              | 0.00         |
| 93          | 12 | 15 | 21 | 24 | 04.43 | 34.0568                     | -116.4388 | 2.5              | 5.32         |
| 93          | 12 | 15 | 21 | 48 | 50.14 | 32.9610                     | -114.6035 | 2.2              | 0.00         |
| 93          | 12 | 15 | 22 | 47 | 08.33 | 34.6280                     | -116.6665 | 2.1              | 4.43         |
| 93          | 12 | 16 | 00 | 23 | 02.22 | 34.9423                     | -120.8397 | 2.6              | 6.00         |
| 93          | 12 | 16 | 00 | 43 | 57.60 | 38.6030                     | -119.4590 | 3.8              | 5.00         |
| 93          | 12 | 16 | 03 | 03 | 56.52 | 0.0000                      | 0.0000    | 2.3              | 0.00         |
| 93          | 12 | 16 | 03 | 52 | 29.09 | 32.4343                     | -115.3275 | 2.2              | 6.00         |
| 93          | 12 | 16 | 06 | 54 | 16.57 | 34.1187                     | -116.6405 | 2.2              | 8.56         |
| 93          | 12 | 16 | 09 | 55 | 50.42 | 37.0183                     | -117.9460 | 2.6              | 6.00         |
| 93          | 12 | 16 | 10 | 23 | 45.29 | 37.6222                     | -118.8253 | 3.0              | 6.00         |
| 93          | 12 | 16 | 10 | 35 | 06.57 | 37.6165                     | -118.8280 | 2.9              | 6.00         |



Table 6 (continued)

| <u>Time</u> |    |    |    |    |       | <u>Location coordinates</u> |           | <u>Magnitude</u> | <u>Depth</u> |
|-------------|----|----|----|----|-------|-----------------------------|-----------|------------------|--------------|
| 93          | 12 | 16 | 15 | 49 | 29.99 | 33.4717                     | -118.2962 | 2.1              | 1.52         |
| 93          | 12 | 16 | 17 | 01 | 39.60 | 37.2850                     | -121.6520 | 3.7              | 10.00        |
| 93          | 12 | 16 | 17 | 43 | 01.33 | 37.0083                     | -117.9478 | 2.1              | 6.00         |
| 93          | 12 | 16 | 20 | 11 | 25.10 | 53.7620                     | 171.4880  | 5.7              | 30.00        |
| 93          | 12 | 16 | 21 | 20 | 37.95 | 33.0245                     | -117.7735 | 2.4              | 6.00         |
| 93          | 12 | 16 | 23 | 10 | 54.44 | 33.4522                     | -118.2653 | 2.5              | 0.01         |
| 93          | 12 | 16 | 23 | 11 | 38.15 | 33.4618                     | -118.2840 | 2.3              | 0.00         |
| 93          | 12 | 16 | 23 | 23 | 01.91 | 33.4153                     | -118.2745 | 2.1              | 11.27        |

Table 7. Values for the free period, generator constant, and damping ratio for each sensor. Channel 1 (7a) refers to Vertical component, channel 2 (7b) refers to North-South, and channel 3 (7c) refers to East-West. Note that these factors can be different for different channels of the same station.

Table 7a (channel 1-Vertical component)

| Station No. | Free Period<br>(s) | Generator Constant<br>(volts/m/s) | Damping Ratio |
|-------------|--------------------|-----------------------------------|---------------|
| 245         | 0.890              | 406.0040                          | 0.729         |
| 244         | 0.501              | 87.2854                           | 0.666         |
| 216         | 0.502              | 87.6997                           | 0.668         |
| 203         | 0.514              | 89.3370                           | 0.678         |
| 002         | 0.493              | 134.3400                          | 0.765         |
| 004         | 0.475              | 133.5020                          | 0.768         |
| 005         | 0.481              | 91.9350                           | 0.758         |
| 301         | 1.059              | 169.3540                          | 0.850         |
| 601         | 1.379              | 8.4729                            | 1.204         |
| 007         | 0.488              | 140.2260                          | 0.776         |
| 008         | 0.482              | 144.9560                          | 0.820         |
| 009         | 0.982              | 166.1000                          | 0.695         |
| 010         | 0.454              | 97.7360                           | 0.768         |
| 011         | 0.226              | 135.2730                          | 1.011         |
| 012         | 1.045              | 165.5860                          | 0.719         |
| 013         | 0.479              | 143.4410                          | 0.789         |
| 014         | 0.467              | 88.1217                           | 0.714         |
| 016         | 0.484              | 138.2270                          | 0.765         |
| 018         | 1.050              | 164.5890                          | 0.691         |
| 019         | 0.507              | 226.0150                          | 0.464         |
| 020         | 0.499              | 141.2140                          | 0.815         |
| 021         | 0.838              | 418.4450                          | 0.666         |
| 022         | 0.479              | 90.5298                           | 0.746         |
| 024         | 0.871              | 413.6210                          | 0.690         |
| 025         | 0.468              | 88.1379                           | 0.635         |
| 027         | 0.796              | 290.5990                          | 0.215         |
| 028         | 0.834              | 250.3250                          | 0.215         |
| 029         | 0.476              | 95.3678                           | 0.727         |
| 030         | 0.843              | 399.9580                          | 0.643         |
| 031         | 0.493              | 93.0692                           | 0.767         |
| 032         | 1.035              | 166.6320                          | 0.709         |
| 033         | 1.015              | 169.8990                          | 0.732         |
| 331         | 1.029              | 168.3770                          | 0.727         |
| 034         | 1.004              | 164.8790                          | 0.708         |
| 035         | 1.022              | 166.0710                          | 0.674         |
| 036         | 0.478              | 239.1550                          | 0.688         |
| 037         | 0.458              | 89.6289                           | 0.621         |
| 038         | 0.480              | 242.5190                          | 0.701         |

Table 7a (continued)

| Station No. | Free Period<br>(s) | Generator Constant<br>(volts/m/s) | Damping Ratio |
|-------------|--------------------|-----------------------------------|---------------|
| 039         | 0.500              | 164.2720                          | 0.774         |
| 040         | 0.475              | 81.8028                           | 0.952         |
| 042         | 0.490              | 241.9440                          | 0.708         |
| 045         | 0.472              | 91.3397                           | 0.751         |
| 046         | 0.845              | 425.3440                          | 0.690         |
| 048         | 0.482              | 143.3370                          | 0.811         |
| 050         | 0.984              | 134.0840                          | 0.671         |
| 052         | 1.002              | 133.5230                          | 0.696         |
| 054         | 0.451              | 91.2792                           | 0.683         |
| 058         | 0.997              | 134.4250                          | 0.706         |
| 060         | 0.494              | 87.9469                           | 0.674         |
| 062         | 0.500              | 146.9290                          | 0.906         |
| 065         | 0.916              | 133.9100                          | 0.693         |
| 066         | 0.474              | 93.1866                           | 0.708         |
| 068         | 1.656              | 25.7642                           | 1.171         |
| 070         | 0.772              | 126.8140                          | 0.681         |
| 072         | 0.515              | 88.9155                           | 0.706         |
| 074         | 0.934              | 134.3800                          | 0.676         |
| 077         | 0.956              | 131.5420                          | 0.771         |
| 080         | 0.440              | 100.4210                          | 0.737         |
| 082         | 0.531              | 234.7470                          | 0.457         |
| 084         | 0.898              | 415.7270                          | 0.702         |
| 086         | 0.499              | 86.8729                           | 0.717         |
| 088         | 0.458              | 142.8290                          | 0.802         |
| 090         | 0.987              | 132.3600                          | 0.709         |
| 092         | 0.493              | 86.2785                           | 0.660         |
| 094         | 0.503              | 327.6280                          | 0.429         |
| 096         | 0.989              | 137.9430                          | 0.725         |
| 098         | 0.449              | 91.2586                           | 0.726         |
| 100         | 0.480              | 133.5780                          | 0.807         |
| 102         | 0.935              | 262.2360                          | 0.275         |
| 104         | 0.468              | 145.8230                          | 0.791         |
| 106         | 0.486              | 85.9718                           | 0.724         |
| 108         | 0.840              | 409.1350                          | 0.646         |
| 110         | 0.474              | 140.9180                          | 0.776         |
| 112         | 0.482              | 93.3643                           | 0.755         |
| 114         | 0.902              | 420.9600                          | 0.743         |
| 116         | 0.486              | 140.4370                          | 0.797         |
| 118         | 0.444              | 93.4577                           | 0.702         |
| 122         | 0.461              | 137.6020                          | 0.753         |
| 128         | 0.431              | 86.5354                           | 0.750         |
| 130         | 0.489              | 143.5630                          | 0.769         |

Table 7b (channel 2-North-South component)

| Station No. | Free Period<br>(s) | Generator Constant<br>(volts/m/s) | Damping Ratio |
|-------------|--------------------|-----------------------------------|---------------|
| 245         | 1.022              | 410.2190                          | 0.762         |
| 244         | 0.499              | 93.3271                           | 1.003         |
| 216         | 0.600              | 87.7659                           | 0.701         |
| 203         | 0.582              | 89.2091                           | 0.826         |
| 005         | 0.439              | 87.0482                           | 0.586         |
| 301         | 0.986              | 167.6180                          | 0.720         |
| 009         | 1.007              | 166.3110                          | 0.659         |
| 010         | 0.483              | 94.0344                           | 0.729         |
| 012         | 1.002              | 164.7410                          | 0.669         |
| 014         | 0.513              | 86.1178                           | 0.745         |
| 018         | 1.000              | 163.3540                          | 0.674         |
| 021         | 0.879              | 406.9780                          | 0.712         |
| 022         | 0.528              | 94.2723                           | 1.010         |
| 024         | 0.950              | 408.2470                          | 0.721         |
| 025         | 0.464              | 90.1702                           | 0.768         |
| 027         | 0.849              | 260.3330                          | 0.246         |
| 028         | 0.951              | 253.9320                          | 0.250         |
| 029         | 0.416              | 95.9912                           | 0.733         |
| 030         | 0.974              | 419.3300                          | 0.734         |
| 031         | 0.332              | 91.5438                           | 0.516         |
| 032         | 0.990              | 169.3480                          | 0.737         |
| 033         | 0.963              | 161.5950                          | 0.656         |
| 331         | 1.099              | 165.7040                          | 0.700         |
| 034         | 0.951              | 158.6720                          | 0.695         |
| 035         | 0.975              | 169.0560                          | 0.741         |
| 036         | 0.514              | 233.3490                          | 0.694         |
| 037         | 0.482              | 86.8858                           | 0.727         |
| 038         | 0.481              | 236.4410                          | 0.656         |
| 040         | 0.479              | 93.2249                           | 0.839         |
| 042         | 0.490              | 237.5750                          | 0.671         |
| 045         | 0.469              | 84.0182                           | 0.689         |
| 046         | 0.953              | 411.1730                          | 0.764         |
| 050         | 0.903              | 88.6862                           | 0.544         |
| 052         | 0.683              | 133.2130                          | 0.466         |
| 054         | 0.510              | 86.5998                           | 0.611         |
| 058         | 0.730              | 129.6610                          | 0.562         |
| 060         | 0.539              | 88.7479                           | 1.019         |
| 065         | 0.780              | 130.5380                          | 0.585         |
| 066         | 0.492              | 94.3758                           | 0.762         |
| 070         | 0.824              | 6.3543                            | 0.143         |
| 072         | 0.632              | 81.4488                           | 0.669         |
| 074         | 0.785              | 123.2950                          | 0.554         |
| 077         | 0.672              | 111.9660                          | 0.409         |
| 080         | 0.442              | 91.3685                           | 0.733         |

Table 7b (continued)

| Station No. | Free Period<br>(s) | Generator Constant<br>(volts/m/s) | Damping Ratio |
|-------------|--------------------|-----------------------------------|---------------|
| 084         | 0.991              | 417.6540                          | 0.775         |
| 086         | 0.558              | 88.3731                           | 0.715         |
| 090         | 0.841              | 124.1250                          | 0.599         |
| 092         | 0.662              | 82.3437                           | 0.833         |
| 096         | 0.751              | 122.4540                          | 0.511         |
| 098         | 0.509              | 89.9133                           | 0.696         |
| 102         | 1.013              | 267.5990                          | 0.296         |
| 106         | 0.456              | 94.1082                           | 0.755         |
| 108         | 0.885              | 410.7640                          | 0.699         |
| 112         | 0.456              | 98.3155                           | 0.816         |
| 114         | 0.956              | 425.1430                          | 0.724         |
| 118         | 0.535              | 91.4339                           | 0.915         |
| 128         | 0.538              | 84.3302                           | 0.712         |

Table 7c (channel 3- East-West component)

| Station No. | Free Period<br>(s) | Generator Constant<br>(volts/m/s) | Damping Ratio |
|-------------|--------------------|-----------------------------------|---------------|
| 245         | 0.947              | 417.0490                          | 0.786         |
| 244         | 0.503              | 92.8504                           | 0.804         |
| 216         | 0.586              | 83.3077                           | 0.819         |
| 203         | 0.475              | 90.5604                           | 0.594         |
| 005         | 0.458              | 87.2550                           | 0.696         |
| 301         | 1.042              | 161.8670                          | 0.697         |
| 009         | 1.124              | 163.9360                          | 0.738         |
| 010         | 0.410              | 89.9278                           | 0.679         |
| 012         | 0.956              | 172.3430                          | 0.751         |
| 014         | 0.455              | 92.3174                           | 0.621         |
| 018         | 1.047              | 165.5810                          | 0.740         |
| 021         | 0.988              | 411.8190                          | 0.706         |
| 022         | 0.510              | 96.2127                           | 0.923         |
| 024         | 0.952              | 430.9310                          | 0.751         |
| 025         | 0.490              | 90.6195                           | 0.655         |
| 027         | 0.955              | 282.1770                          | 0.252         |
| 028         | 0.865              | 281.1540                          | 0.225         |
| 029         | 0.404              | 88.8648                           | 0.662         |
| 030         | 0.952              | 412.4670                          | 0.726         |
| 031         | 0.596              | 85.6349                           | 0.735         |
| 032         | 0.998              | 162.3400                          | 0.684         |
| 033         | 1.011              | 161.8760                          | 0.644         |
| 331         | 0.913              | 165.2220                          | 0.680         |
| 034         | 1.031              | 167.5240                          | 0.652         |
| 035         | 0.949              | 165.5610                          | 0.706         |
| 036         | 0.520              | 239.9450                          | 0.724         |
| 037         | 0.452              | 94.7209                           | 0.762         |
| 038         | 0.487              | 240.5810                          | 0.669         |
| 040         | 0.489              | 97.0072                           | 0.758         |
| 042         | 0.460              | 235.3980                          | 0.632         |
| 045         | 0.462              | 90.7180                           | 0.762         |
| 046         | 0.931              | 415.6860                          | 0.773         |
| 050         | 0.661              | 94.0997                           | 0.371         |
| 052         | 0.668              | 85.8947                           | 0.412         |
| 054         | 0.547              | 87.8557                           | 0.683         |
| 058         | 0.639              | 121.8360                          | 0.426         |
| 060         | 0.687              | 81.7821                           | 0.695         |
| 065         | 0.674              | 118.2020                          | 0.431         |
| 066         | 0.513              | 92.5487                           | 0.702         |
| 070         | 0.828              | 119.5480                          | 0.606         |
| 072         | 0.541              | 86.8392                           | 0.720         |
| 074         | 0.736              | 103.5310                          | 0.503         |
| 077         | 0.768              | 118.9410                          | 0.512         |
| 080         | 0.514              | 92.3221                           | 0.705         |

Table 7c (continued)

| Station No. | Free Period<br>(s) | Generator Constant<br>(volts/m/s) | Damping Ratio |
|-------------|--------------------|-----------------------------------|---------------|
| 084         | 0.991              | 417.6540                          | 0.775         |
| 086         | 0.559              | 82.4251                           | 0.625         |
| 090         | 0.722              | 120.4680                          | 0.508         |
| 092         | 0.499              | 90.0341                           | 0.683         |
| 096         | 0.797              | 126.5840                          | 0.641         |
| 098         | 0.572              | 95.5717                           | 1.203         |
| 102         | 0.990              | 277.0230                          | 0.288         |
| 106         | 0.501              | 86.9918                           | 0.743         |
| 108         | 0.975              | 408.3360                          | 0.727         |
| 112         | 0.428              | 94.3864                           | 0.780         |
| 114         | 0.941              | 433.0480                          | 0.79          |
| 118         | 0.493              | 94.0574                           | 0.941         |
| 128         | 0.454              | 92.5953                           | 0.787         |

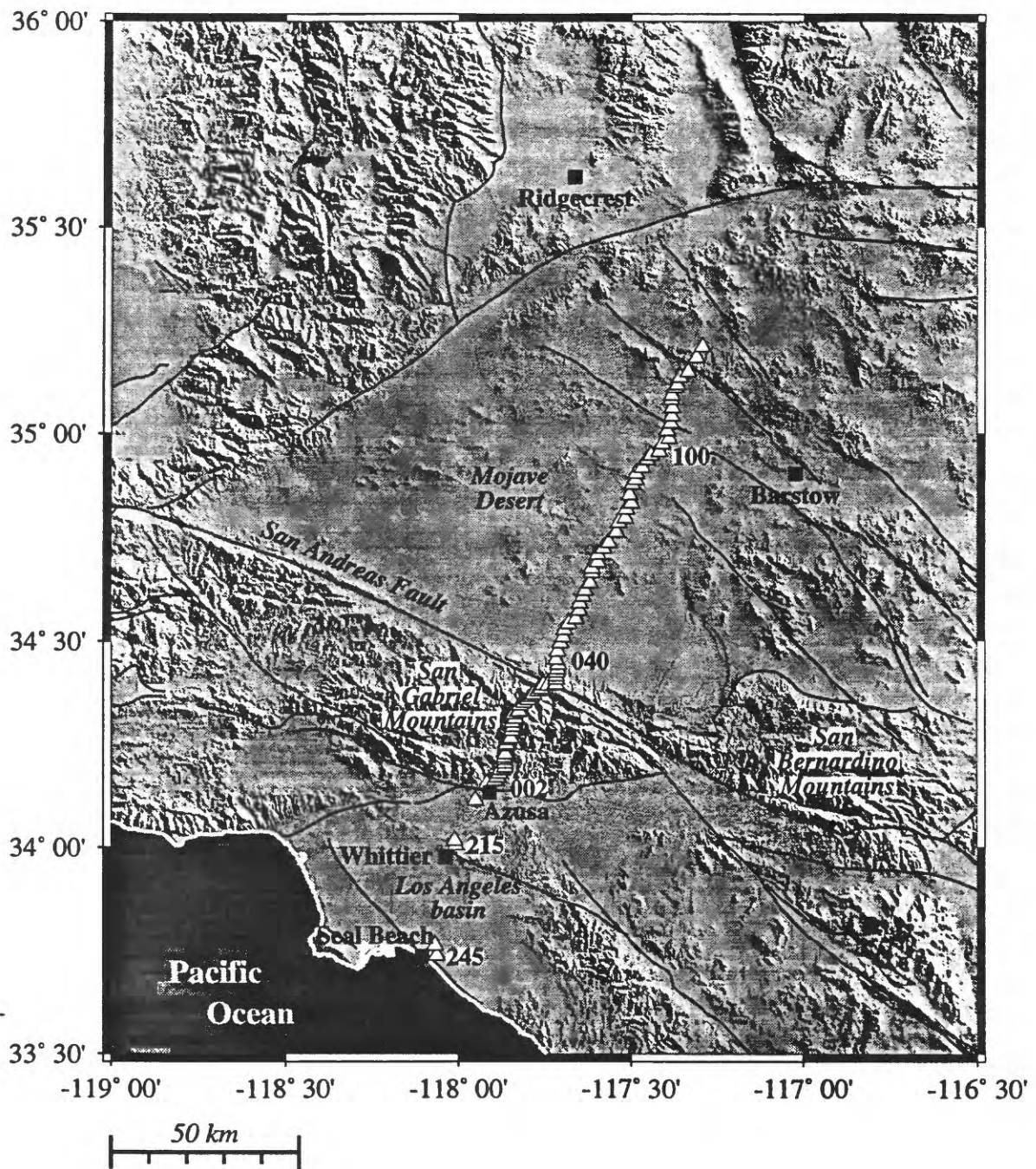


Fig. 1. Shaded relief and fault map of Southern California showing station locations (triangles). Several station numbers are given for reference.



## Station Installation Instructions (LARSE-1993)

Station#: \_\_\_\_\_ Date (MM/DD/YY) \_\_\_\_\_/\_\_\_\_/\_\_\_\_

Time of arrival (local time) \_\_\_\_\_ Operator \_\_\_\_\_

DAS number \_\_\_\_\_ Clock type \_\_\_\_\_

Sensor type \_\_\_\_\_ Sensor number \_\_\_\_\_

### 1. Install REFTEK and sensors

- a. Dig a 2 ft. deep and 2 ft. diameter hole (or less) for seismometers.

Level the sensors carefully. Orientation: channel 1 -> Vertical,  
channel 2 -> magnetic north and channel 3 -> magnetic east.

- b. Dig a 2.5 ft. by 2.5 ft by 1.5 ft hole (less than 5 ft. away from the sensor hole for environment purpose) for DAS, car battery and timing device. Put battery in a trash bag, then put all in thick plastic bag (4mm thick) to protect the equipment from dirt and water.

### 2. Check battery voltage \_\_\_\_\_(volts) (Must be 12V or high).

### 3. Connect battery — DAS, DAS — Sensor, DAS — GPS(or Omega) and DAS — Hand terminal. (Set up antenna for stations using OMEGA)

### 4. (optional)Receive parameters from DAS. Press COMMNCTNS/RECV PRMS.

Check if parameters are correct. Send parameters back if you have modified them (Press COMMNCTNS/SEND PRMS).

### 5. (optional)Monitor. Press MONITOR. (to see if all the channels are Okay)

### 6. Bury the seismometer hole carefully. Do step 5 again.

### 7. System reset. Press UTILITIES/SYS RESET.

### 8. Start acquisition. Press COMMNCTNS/START ACQ. Zero delay time.

### 9. Look at DAS status and record below

TIME \_\_\_\_\_

KIN OMGA \_\_\_\_\_ ACQ \_\_\_\_\_ (e.g. STAT ON)

EVENTS \_\_\_\_\_

BLKS US \_\_\_\_\_ BLKS AV \_\_\_\_\_

### 10. Quit DAS status and Unplug HT or AT.

### 11. Bury the DAS hole carefully.

Time of Departure (local time) \_\_\_\_\_

PLEASE NOTE ANY SPECIAL PROBLEMS ON THE BACK SIDE OF THIS SHEET.

Fig. 2. Sample station deployment and monitoring visiting sheets from which the information in Appendix A was obtained

## Station Visit Instructions (LARSE-1993)

Station#: \_\_\_\_\_ Date (DD/MM/YY) \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Time of arrival (local time) \_\_\_\_\_ Operator \_\_\_\_\_

DAS# \_\_\_\_\_ Clock type \_\_\_\_\_

1. Look for:

Signs of water pooling in sensor hole. YES \_\_\_\_; NO \_\_\_\_.

Signs of animal intrusion. YES \_\_\_\_; NO \_\_\_\_.

2. Check battery voltage \_\_\_\_\_(volts).

3. Connect hand terminal (or field computer) and turn it on (Don't disturb the sensor).

(If voltage is low and communication failure when press TIME, go to Step 6)

4. Check DAS status. Press UTILITIES/DAS STATE and record below

JULIAN DAY \_\_\_\_\_ TIME \_\_\_\_\_

CLOCK \_\_\_\_\_(e.g. UTC LK PLL)

ACQ \_\_\_\_\_(e.g. STRT ON) EVENTS \_\_\_\_\_

BLKS US \_\_\_\_\_ BLKS AV \_\_\_\_\_

5. Stop acquisition. Press COMMNCTNS/STOP ACQ and wait for FINISHED.

6. Swap DAS and battery. Connect battery-DAS, DAS-Sensor, DAS-GPS(or

Omega) and DAS-Hand terminal. (Set up antenna for stations using OMEGA)

Be careful of battery polarity. Red ( + ); Black ( - ).

Label old DAS immediately with: Station #, DAS #, Year, Day #, and Operator

7. Check battery voltage \_\_\_\_\_(volts) (Must be 12V or high).

8. New DAS# \_\_\_\_\_

9. Monitor. Press MONITOR. (to see if all the channels are okay)

10. System reset. Press UTILITIES/SYS RESET.

11. Start acquisition. Press COMMNCTNS/STRT ACQ. Zero delay time.

12. Look at DAS status and record below

JULIAN DAY \_\_\_\_\_ TIME \_\_\_\_\_

CLOCK \_\_\_\_\_(e.g. UTC LK PLL)

ACQ \_\_\_\_\_(Must be STRT ON) EVENTS \_\_\_\_\_

BLKS US \_\_\_\_\_ BLKS AV \_\_\_\_\_

13. Quit DAS status and Unplug HT or AT.

14. Bury the DAS hole carefully.

Time of Departure (local time) \_\_\_\_\_.

PLEASE NOTE ANY SPECIAL PROBLEMS ON THE BACK SIDE OF THIS SHEET.

## Station Pick-up Instructions (LARSE-1993)

Station#: \_\_\_\_\_ Date (DD/MM/YY) \_\_\_\_/\_\_\_\_/\_\_\_\_

Time of arrival (local time) \_\_\_\_\_ Operator \_\_\_\_\_

DAS# \_\_\_\_\_ Clock type \_\_\_\_\_

1. Look for:

Signs of water pooling in sensor hole. YES \_\_\_\_; NO \_\_\_\_.

Signs of animal intrusion. YES \_\_\_\_; NO \_\_\_\_.

2. Connect hand terminal (or field computer) and turn it on.

(If voltage is low and communication failure when press TIME, go to Step 6)

3. Check DAS status. Press UTILITIES/DAS STATE and record below

JULIAN DAY \_\_\_\_\_ TIME \_\_\_\_\_

CLOCK \_\_\_\_\_(e.g. UTC LK PLL)

ACQ \_\_\_\_\_(e.g. STRT ON) EVENTS \_\_\_\_\_

BLKS US \_\_\_\_\_ BLKS AV \_\_\_\_\_

4. Stop acquisition. Press COMMNECTNS/STOP ACQ and wait for FINISHED.

Label DAS immediately with: Station #, DAS #, Year, Day #, and Operator

5. Quit DAS status and Unplug HT or AT.

6. Pack up DAS (and disk) and battery.

7. Dig out sensors. Write down the sensor # \_\_\_\_\_

Be sure to lock the sensors:

a). L4C-3D: place it 45° with handle at bottom.

b). UCLA L4C: place it vertically with connection plug at bottom.

c). Others: no special locking position.

Note: all the sensors should be protected by soft filling materials  
when travelling.

8. Bury the holes carefully, clean up the surrounding. The original environment  
should be recovered completely.

Time of Departure (local time) \_\_\_\_\_.

PLEASE NOTE ANY SPECIAL PROBLEMS ON THE BACK SIDE OF THIS SHEET.

Fig. 2 (continued)

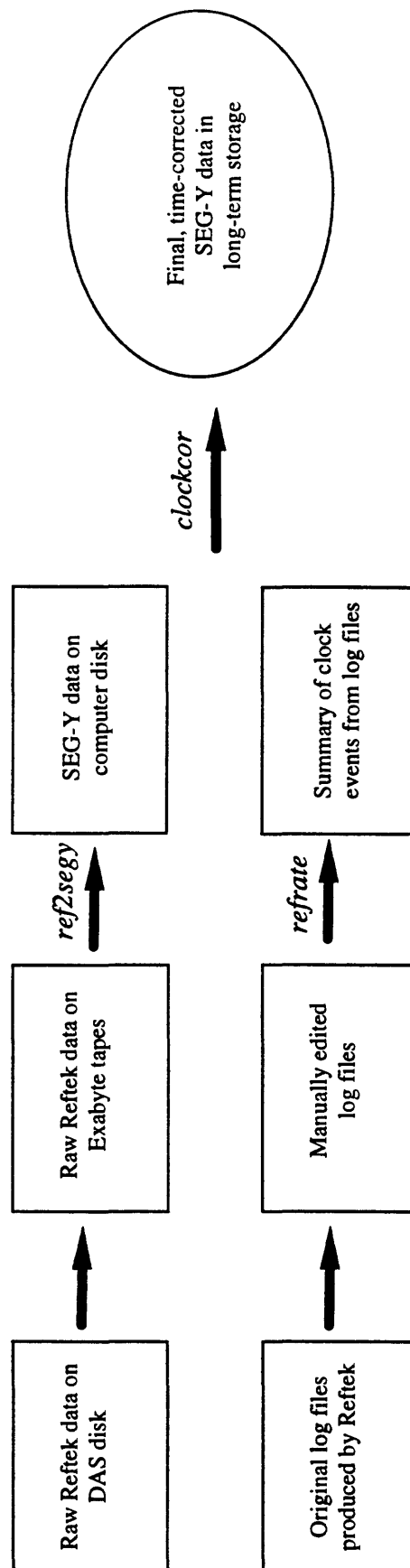


Fig. 3. Flow diagram for data processing. Names in italics refer to PASSCAL routines used in processing.

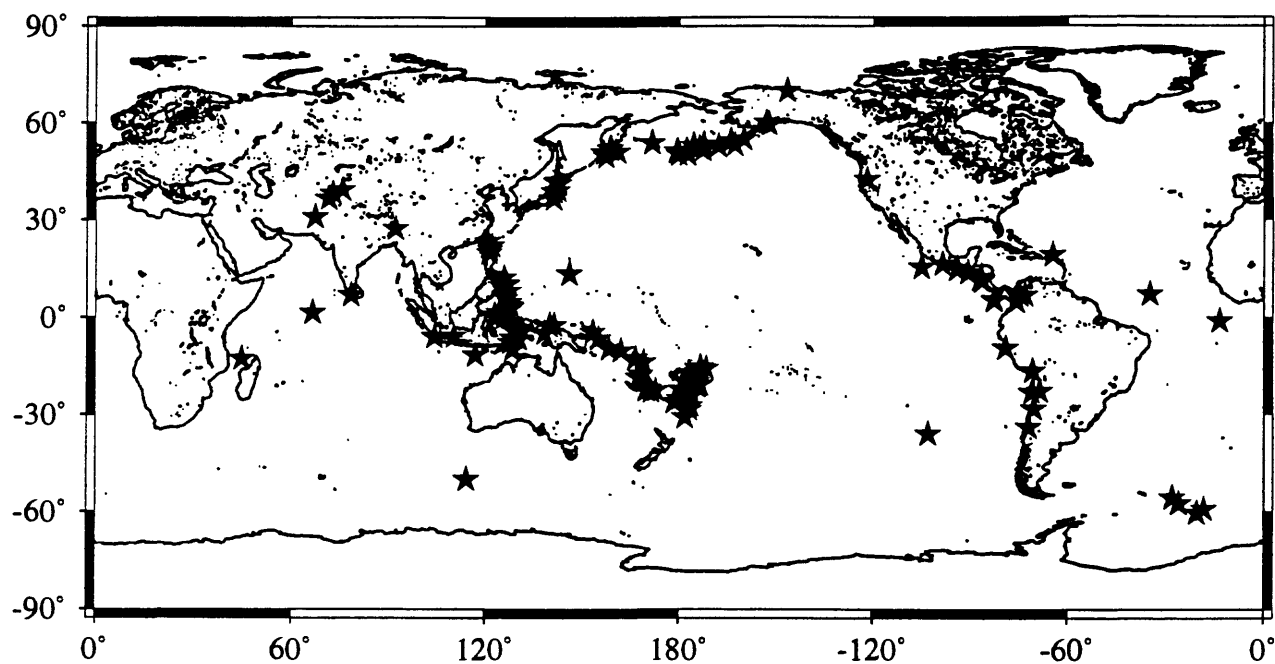


Fig. 4. Teleseismic event locations (stars).

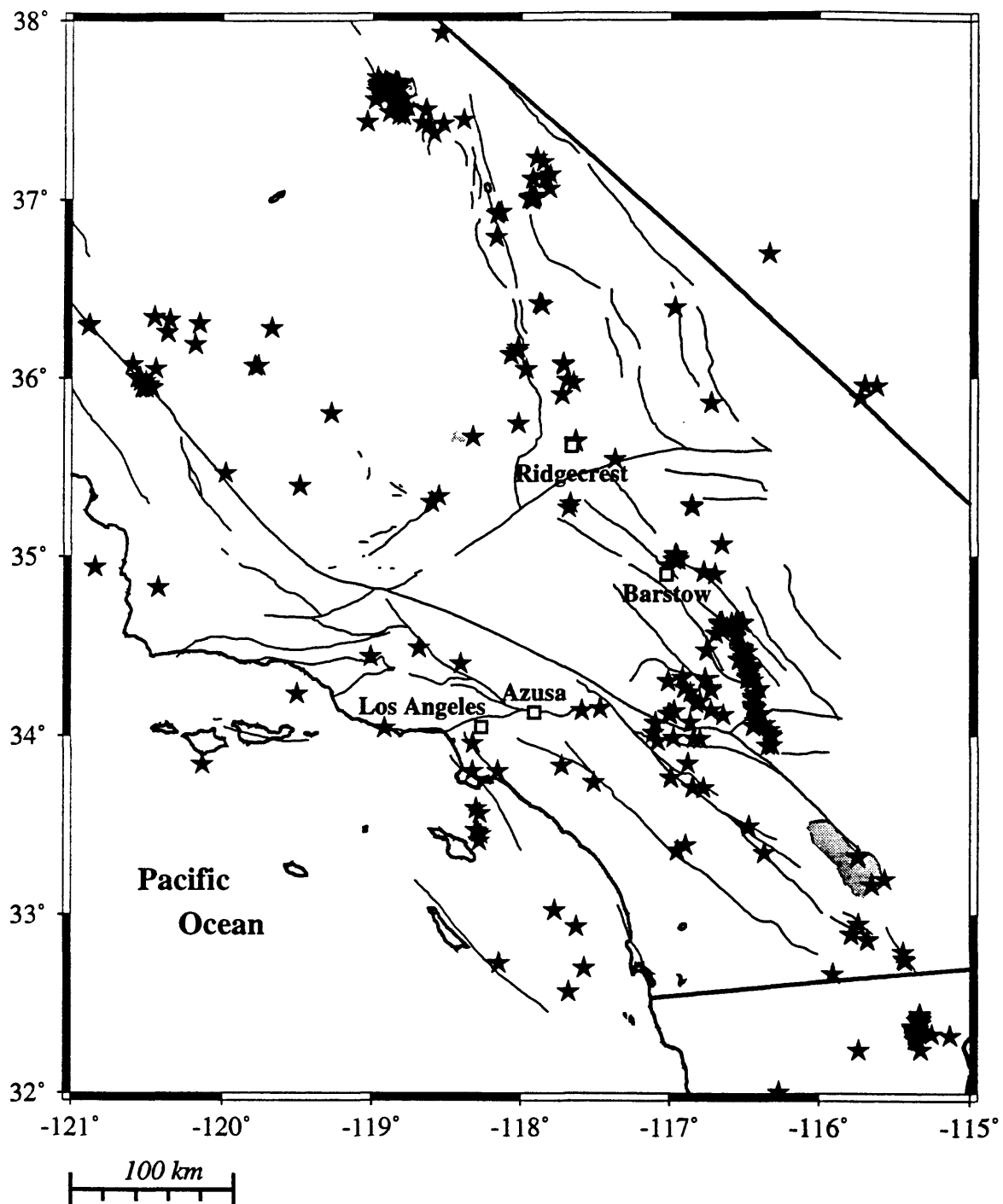


Fig. 5. Local event ( $M_L \geq 2.0$ ) locations (stars) in Southern California. Faults (lighter solid lines), political boundaries (darker solid lines), and cities (open squares) are given for reference.

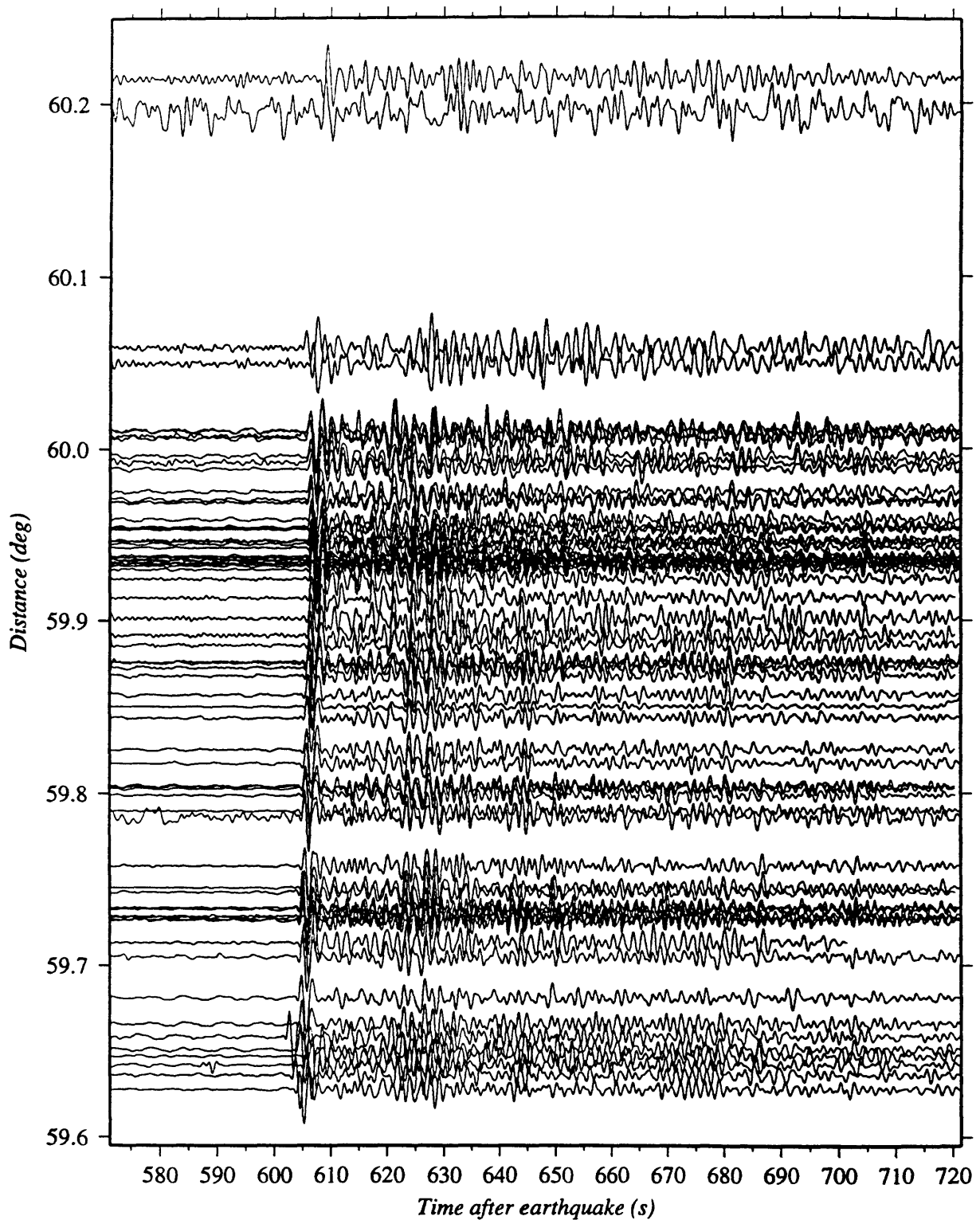


Fig. 6a. Vertical-component record section for teleseismic event which occurred on Nov. 17, 1993 near the east coast of Kamchatka ( $M_w=5.8$ ). Travel time (unreduced) after earthquake is shown. See text for details.

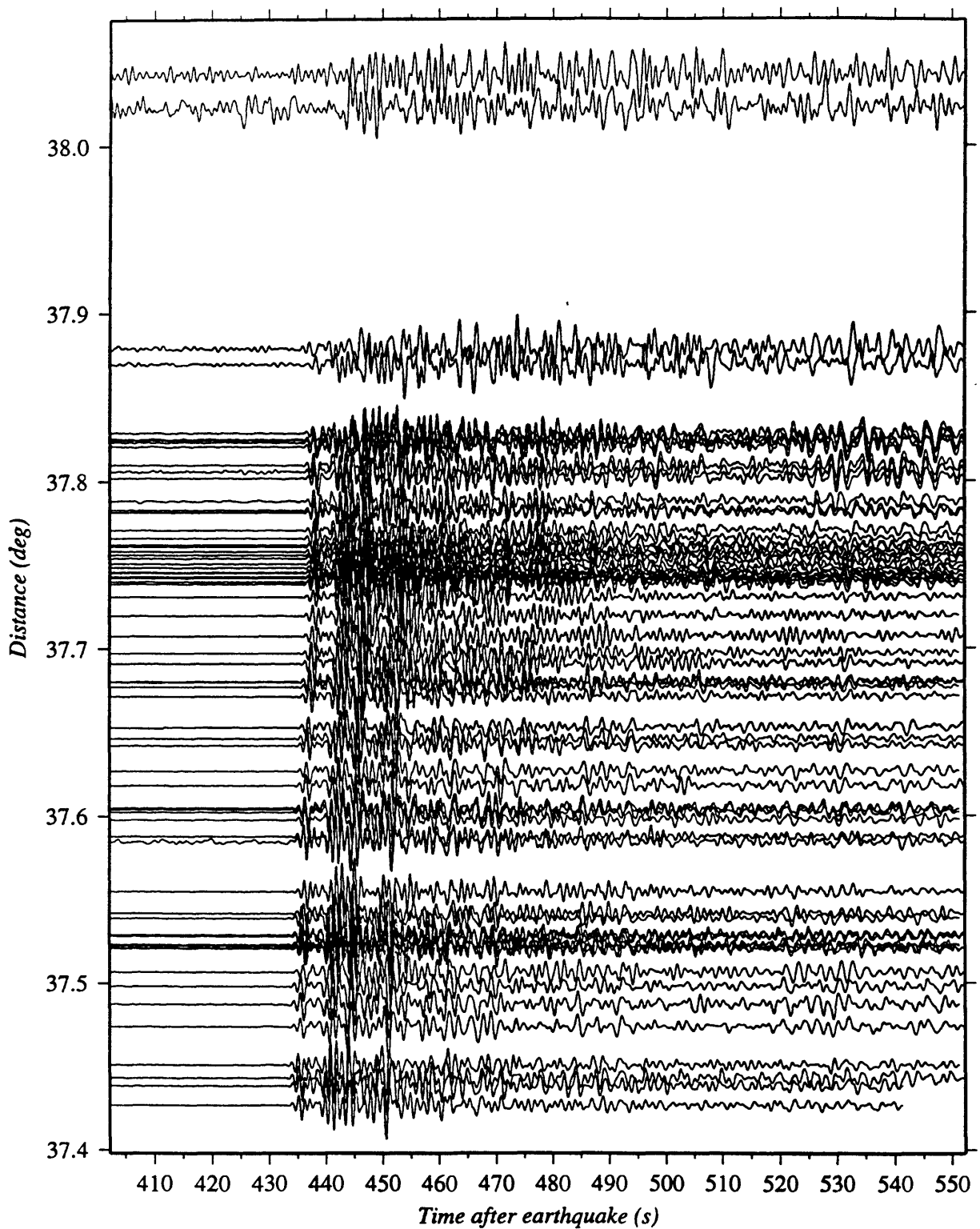


Fig. 6b. Vertical-component record section for teleseismic event which occurred on Nov. 19, 1993 in the Unimak Island Region ( $M_w=6.5$ ). Travel time (unreduced) after earthquake is shown. See text for details.



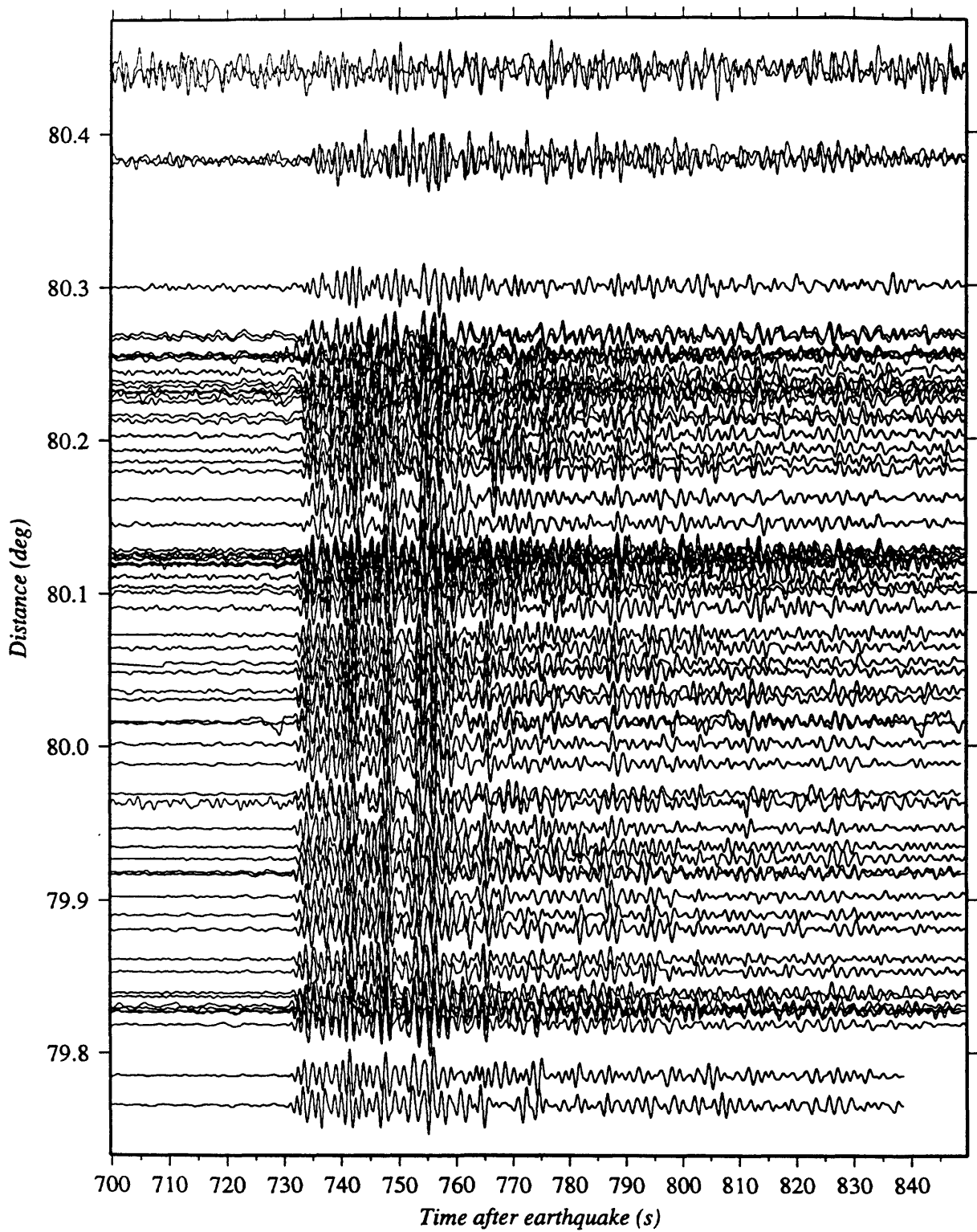


Fig. 6c. Vertical-component record section for teleseismic event which occurred on Nov. 19, 1993 near the central mid-Atlantic Ridge ( $M_w=5.8$ ). Travel time (unreduced) after earthquake is shown. See text for details.

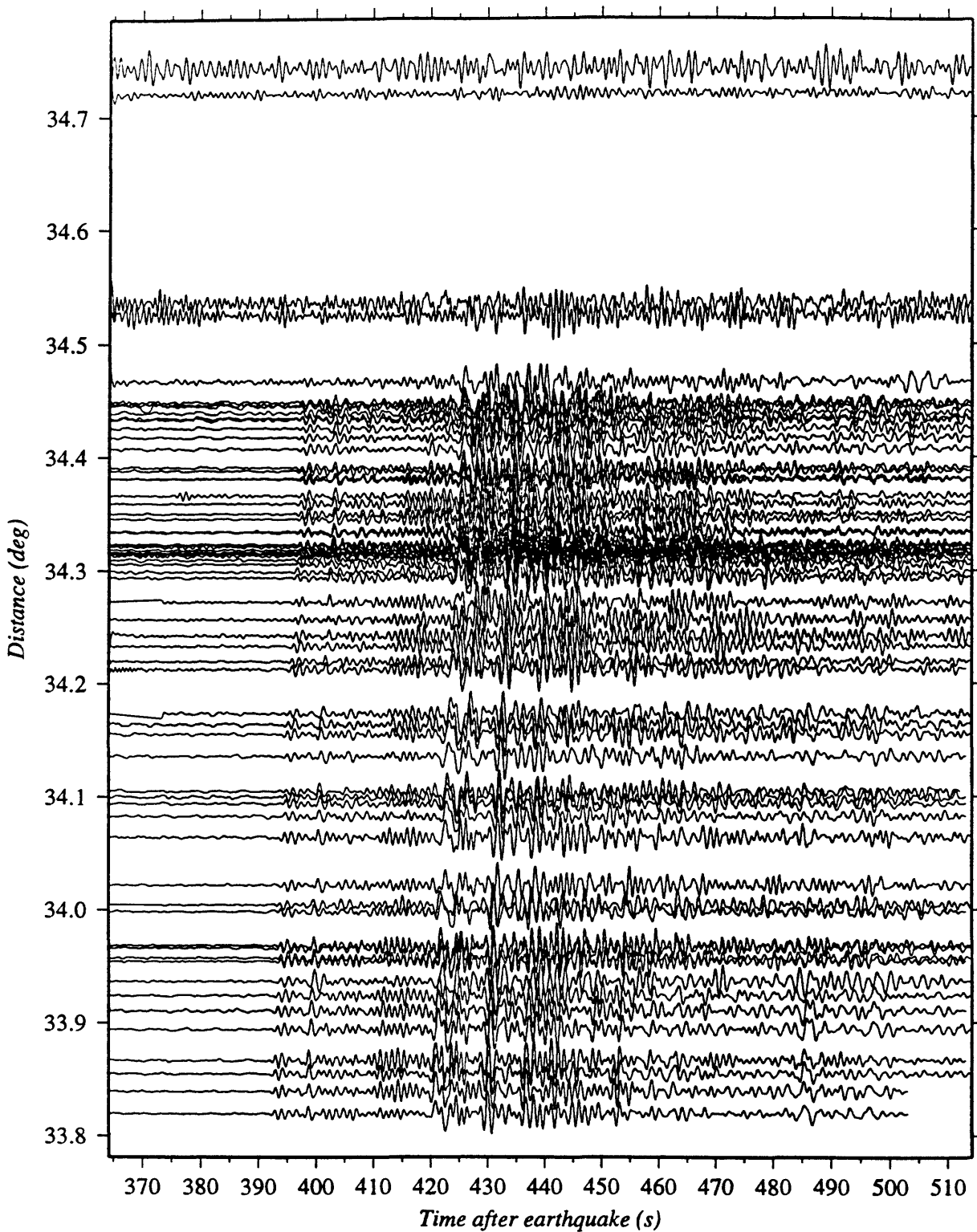


Fig. 6d. Vertical-component record section for teleseismic event which occurred on Nov. 20, 1993 in southern Alaska ( $M_w=5.9$ ). Travel time (unreduced) after earthquake is shown. See text for details.

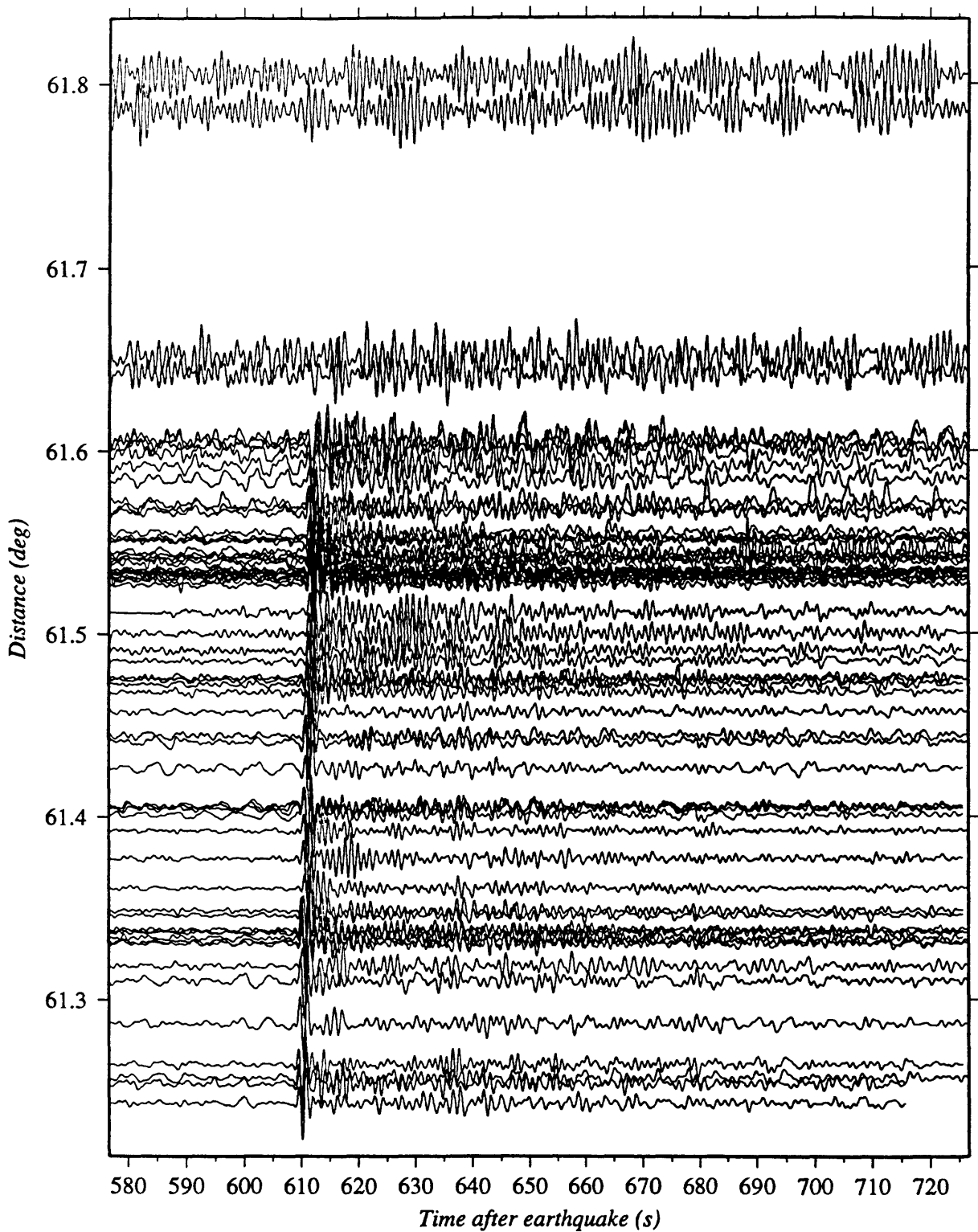


Fig. 6e. Vertical-component record section for teleseismic event which occurred on Nov. 22, 1993 in the Kuril Islands ( $m_b=5.1$ ). Travel time (unreduced) after earthquake is shown. See text for details.

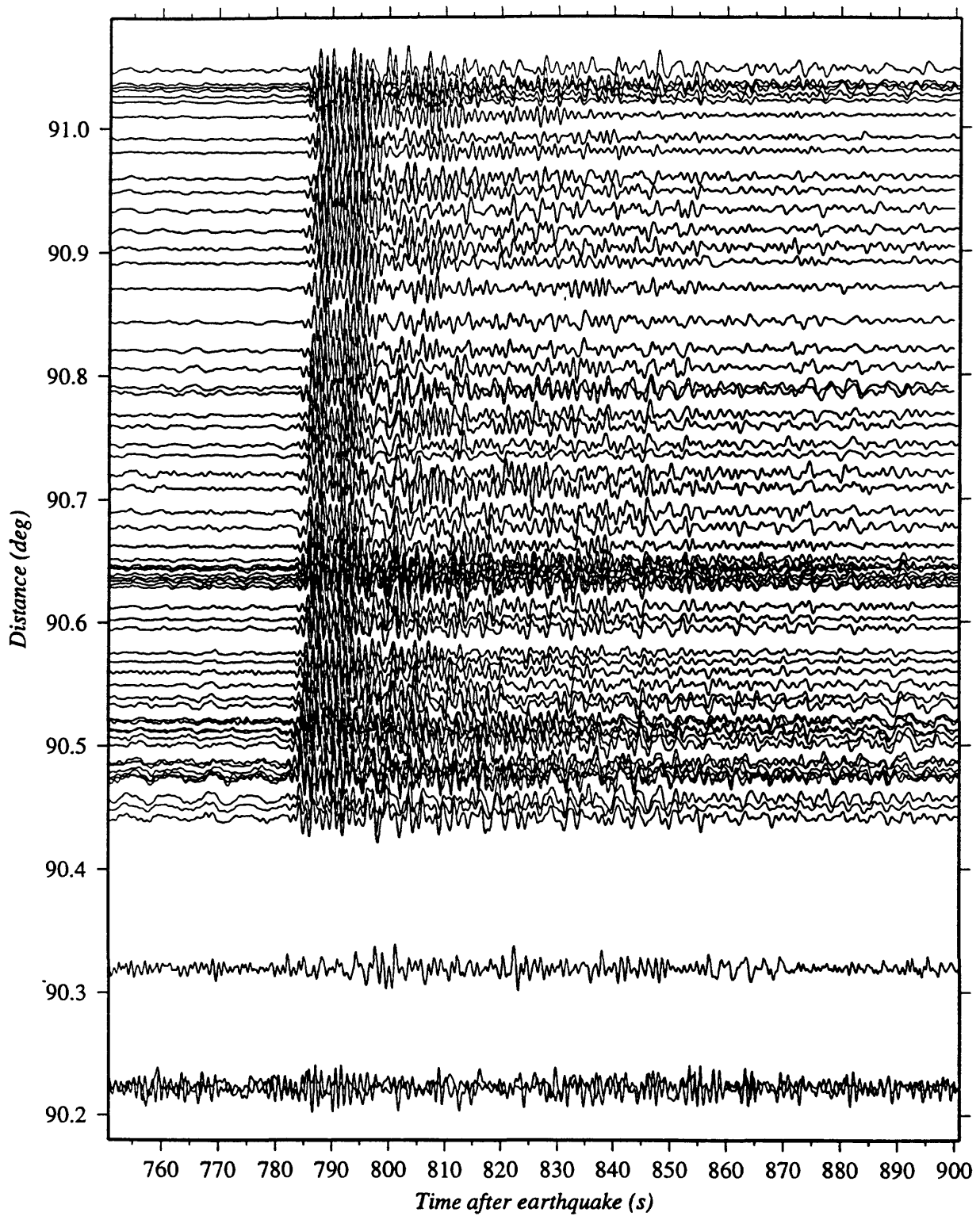


Fig. 6f. Vertical-component record section for teleseismic event which occurred on Nov. 26, 1993 in the Solomon Islands ( $M_w=6.2$ ). Travel time (unreduced) after earthquake is shown. See text for details.

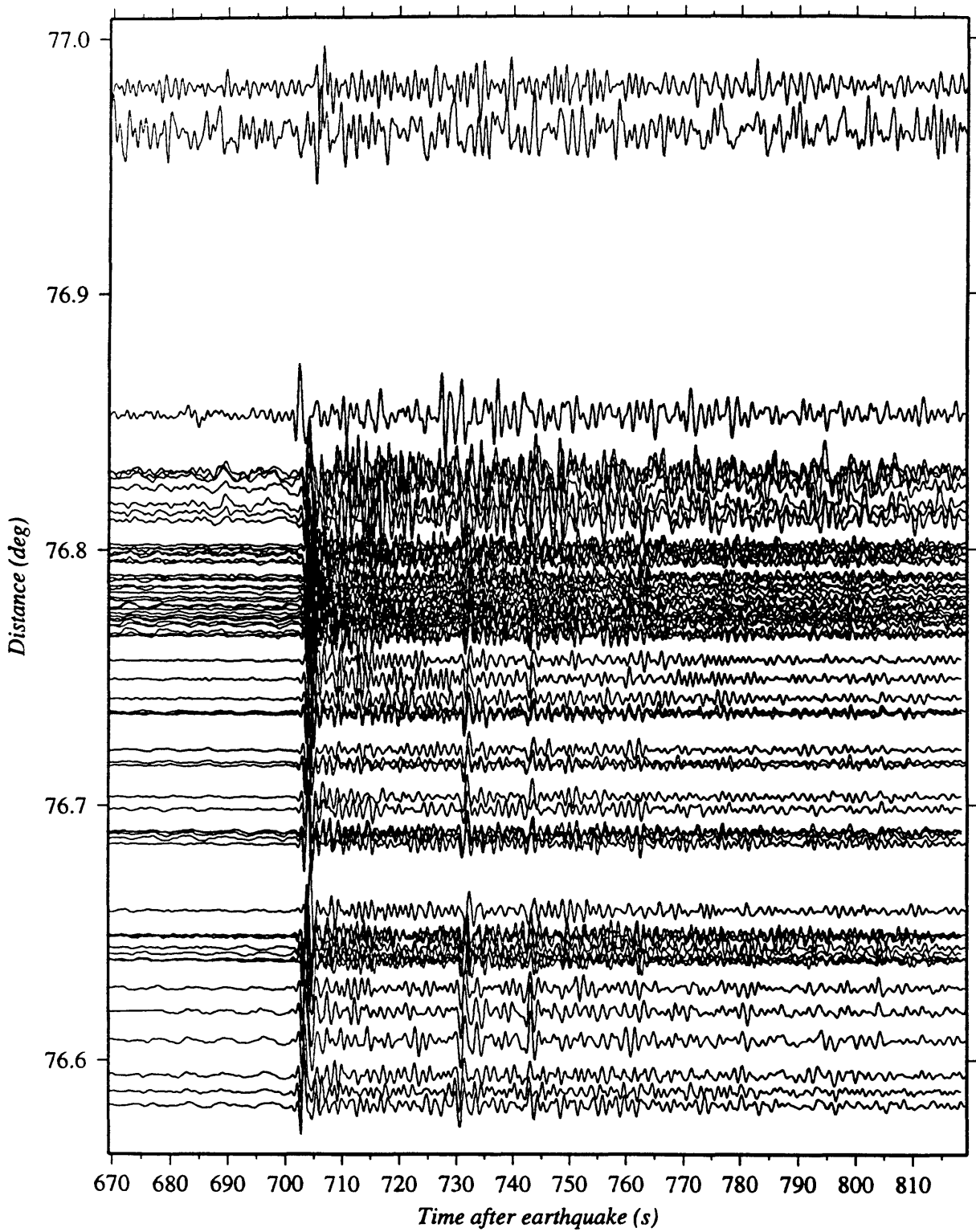


Fig. 6g. Vertical-component record section for teleseismic event which occurred on Nov. 27, 1993 near the east coast of Honshu, Japan ( $M_w=5.8$ ). Travel time (unreduced) after earthquake is shown. See text for details.

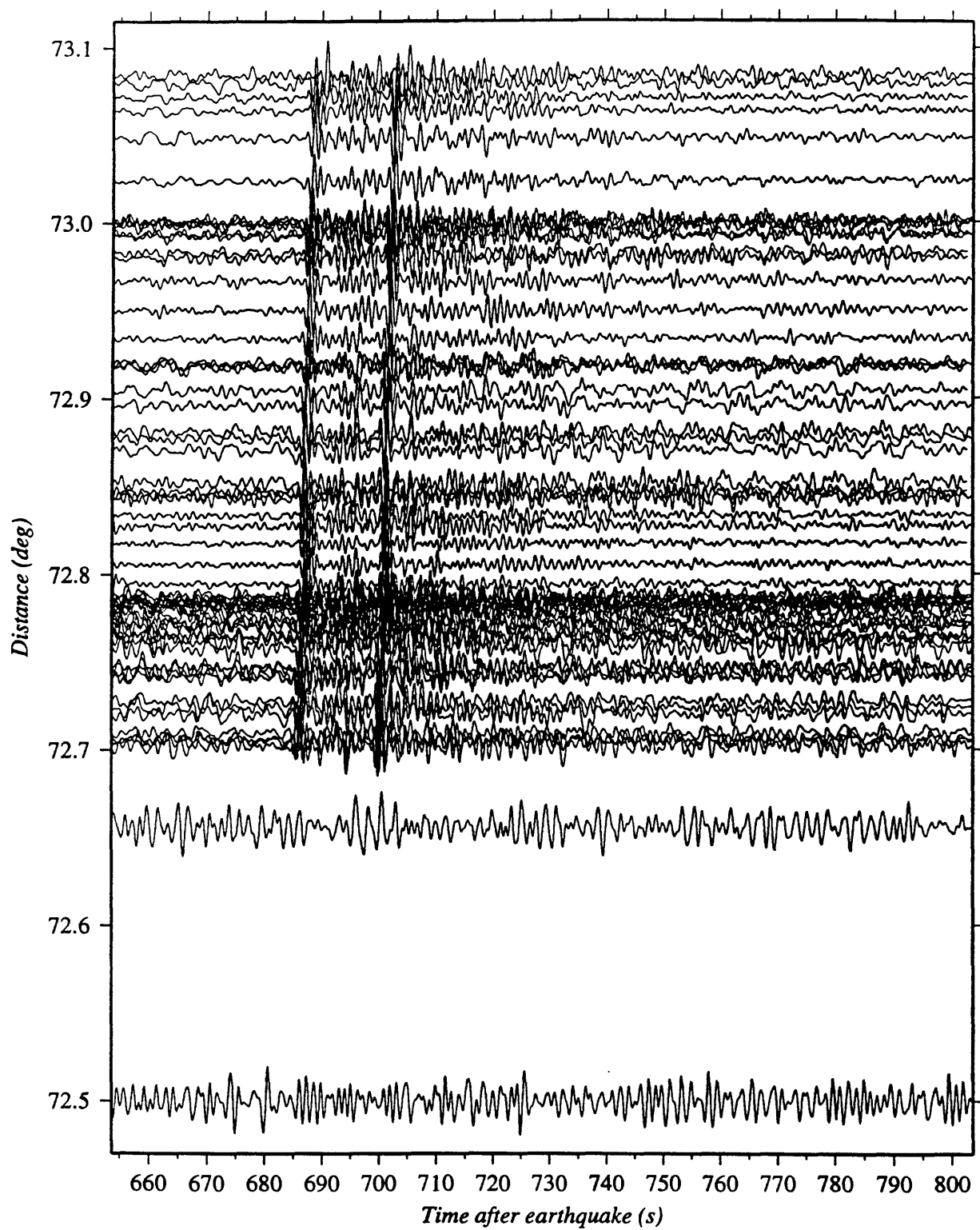


Fig. 6h. Vertical-component record section for teleseismic event which occurred on Dec. 1, 1993 near the coast of Northern Chile ( $m_b=5.3$ ). Travel time (unreduced) after earthquake is shown. See text for details.

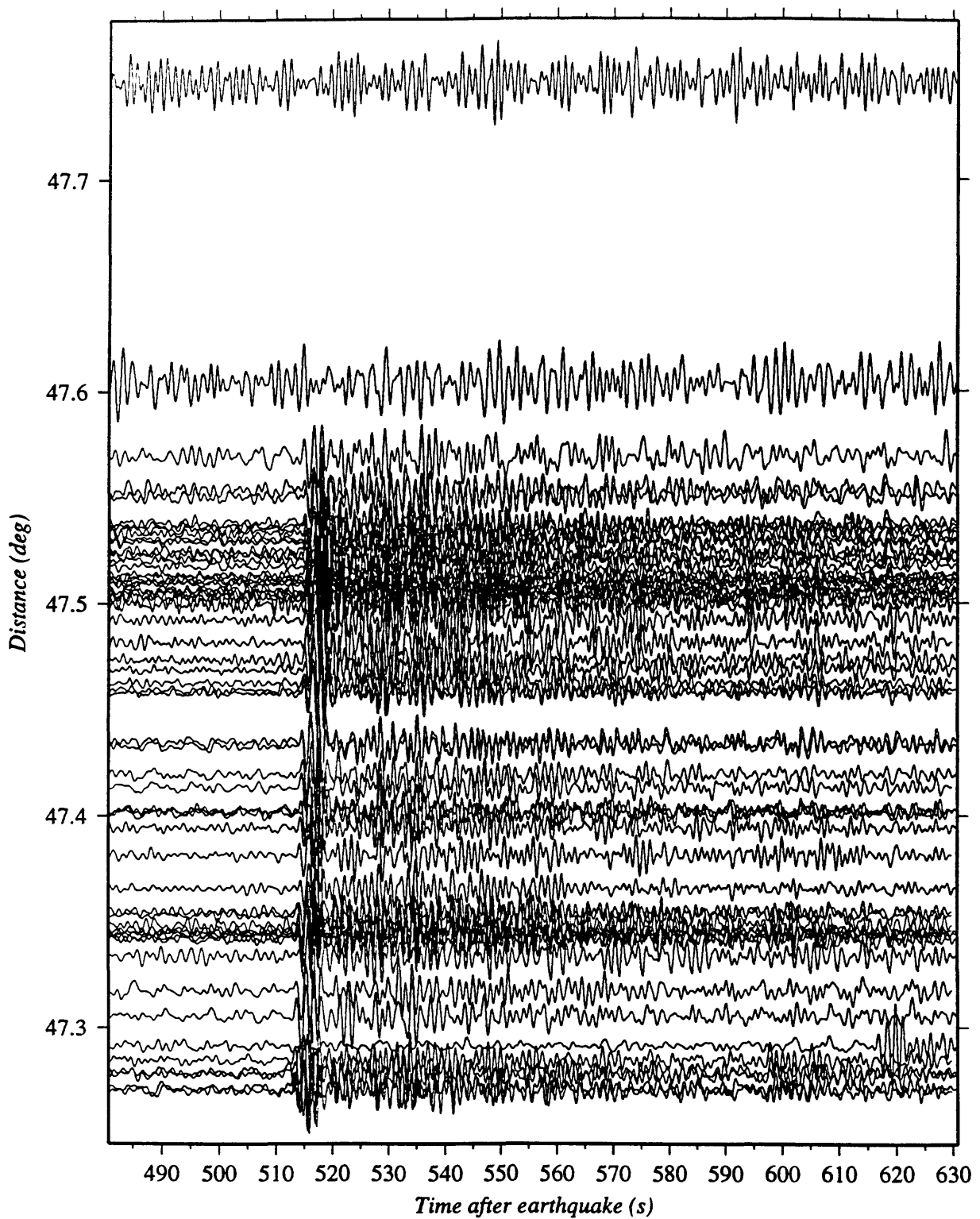


Fig. 6i. Vertical-component record section for teleseismic event which occurred on Dec. 3, 1993 in the Aleutian Islands ( $M_w=5.6$ ). Travel time (unreduced) after earthquake is shown. See text for details.

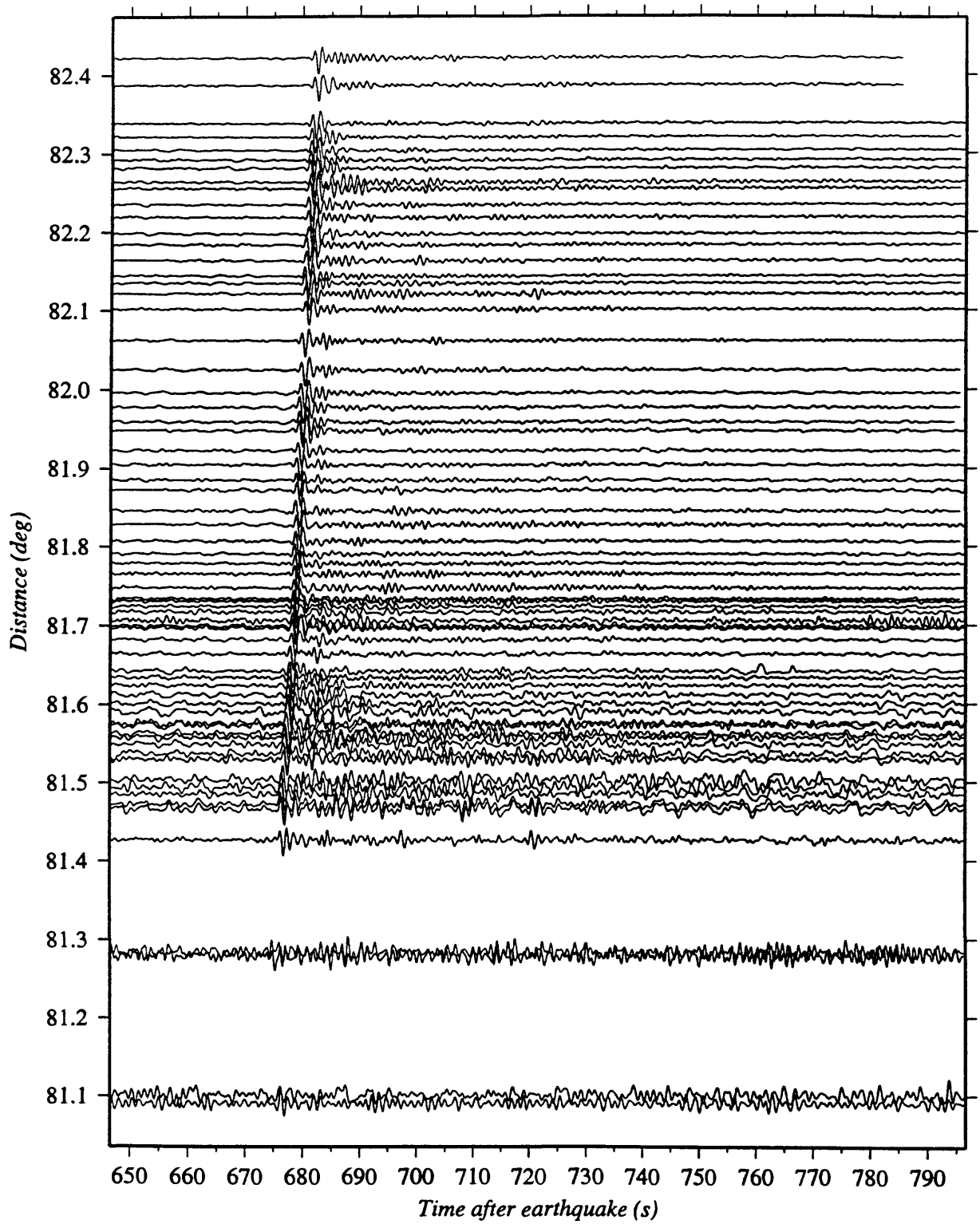


Fig. 6j. Vertical-component record section for teleseismic event which occurred on Dec. 10, 1993 south of the Fiji Islands ( $M_w=5.7$ ). Travel time (unreduced) after earthquake is shown. See text for details.



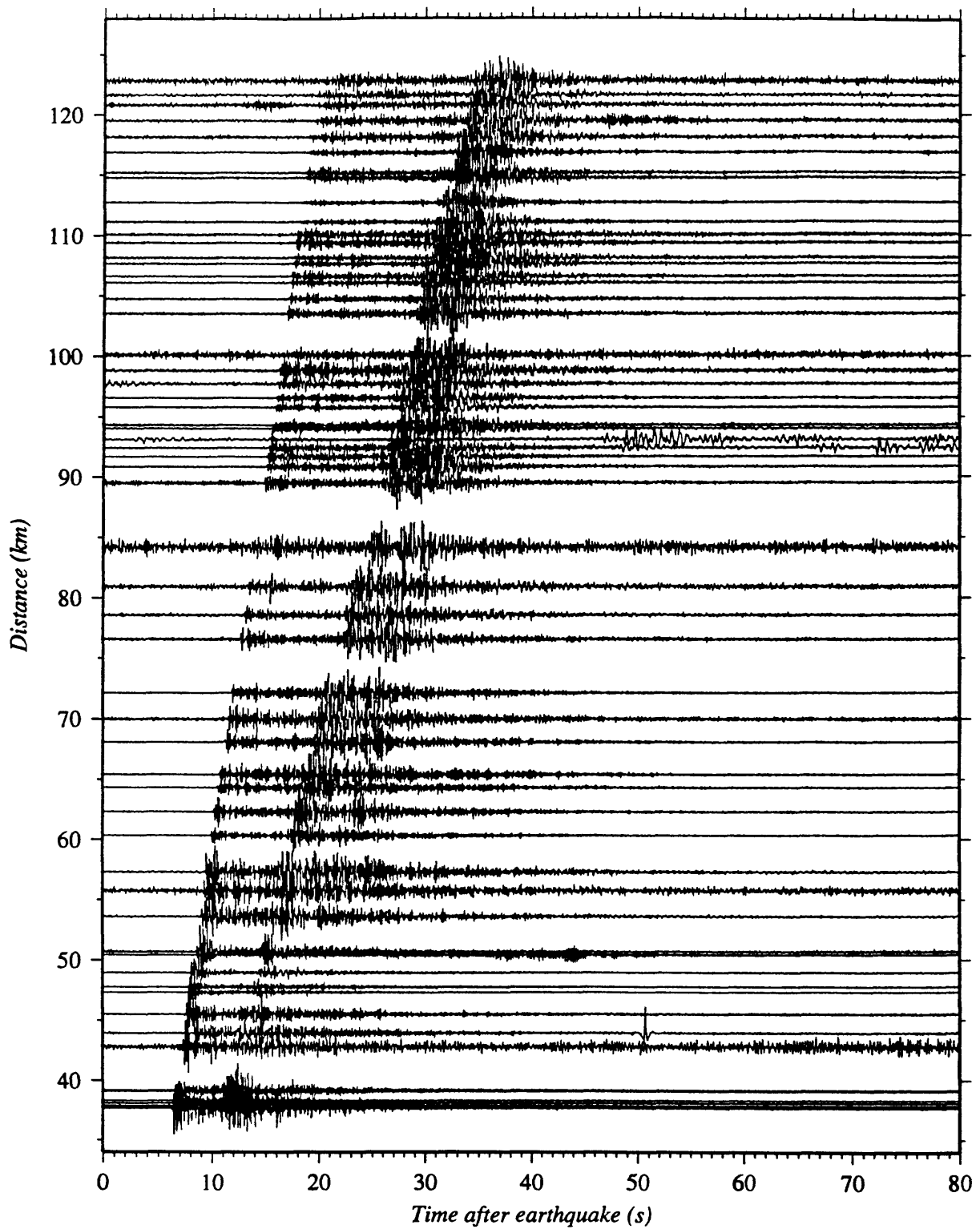


Fig. 7a. Vertical-component record section for local event which occurred on Nov. 22, 1993, 10 km north-northeast of Barstow ( $M_L=2.1$ ). Travel time (unreduced) after earthquake is shown. See text for details.

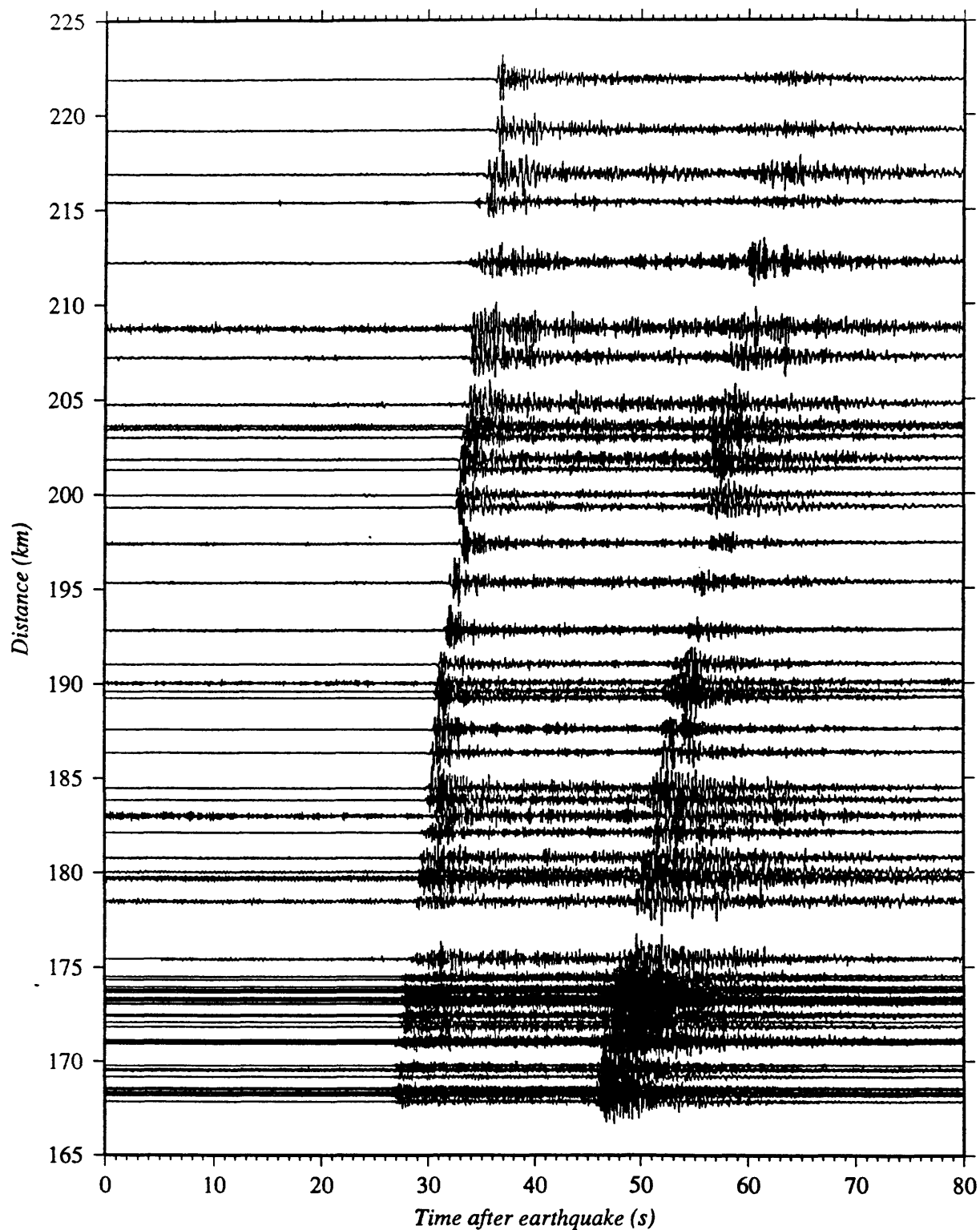


Fig. 7b. Vertical-component record section for local event which occurred on Nov. 23, 1993, 11 km north of Borrego Springs ( $M_L=2.7$ ). Travel time (unreduced) after earthquake is shown. See text for details.

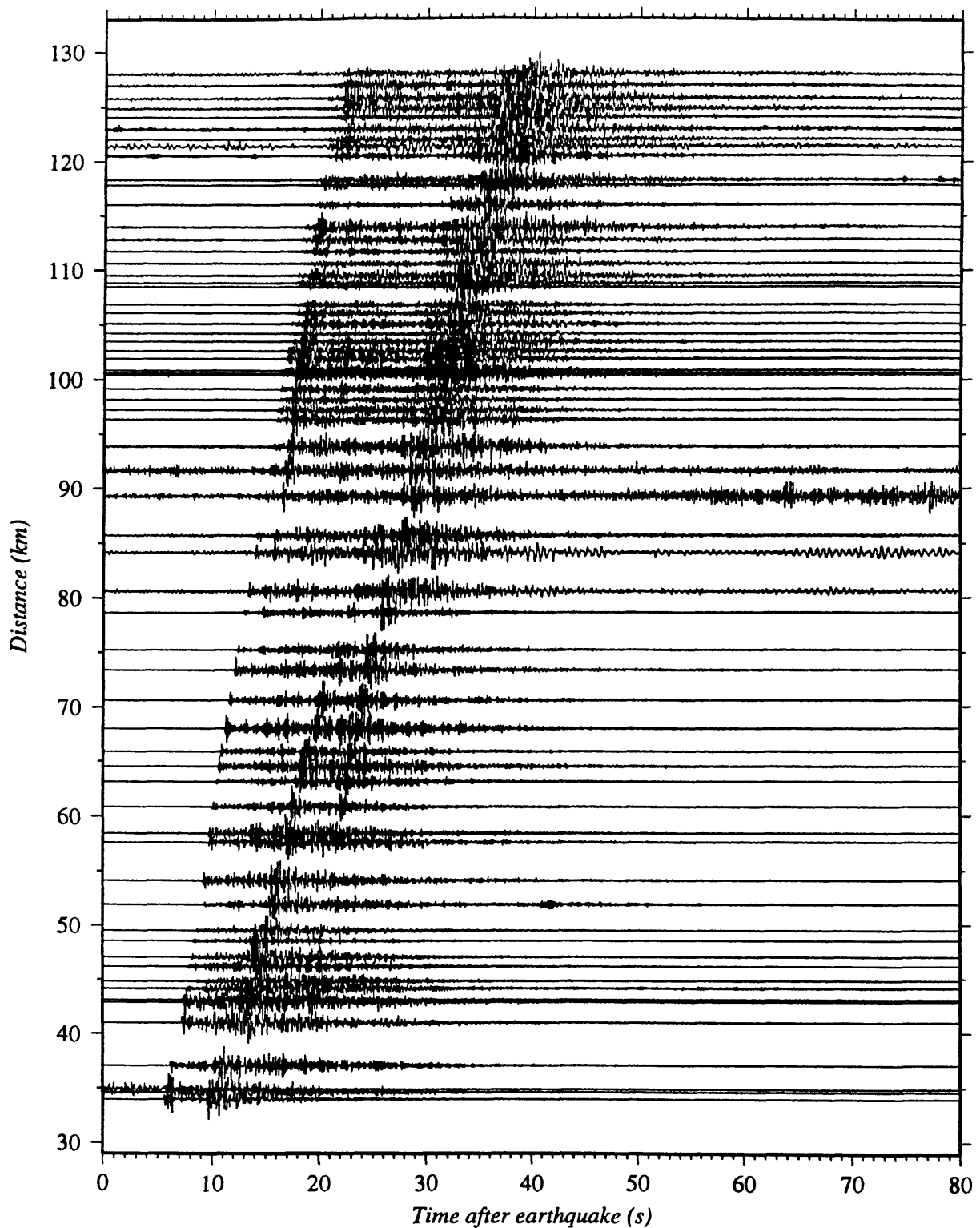


Fig. 7c. Vertical-component record section for local event which occurred on Nov. 24, 1993, 36 km south of Ridgecrest ( $M_L=2.7$ ). Travel time (unreduced) after earthquake is shown. See text for details.

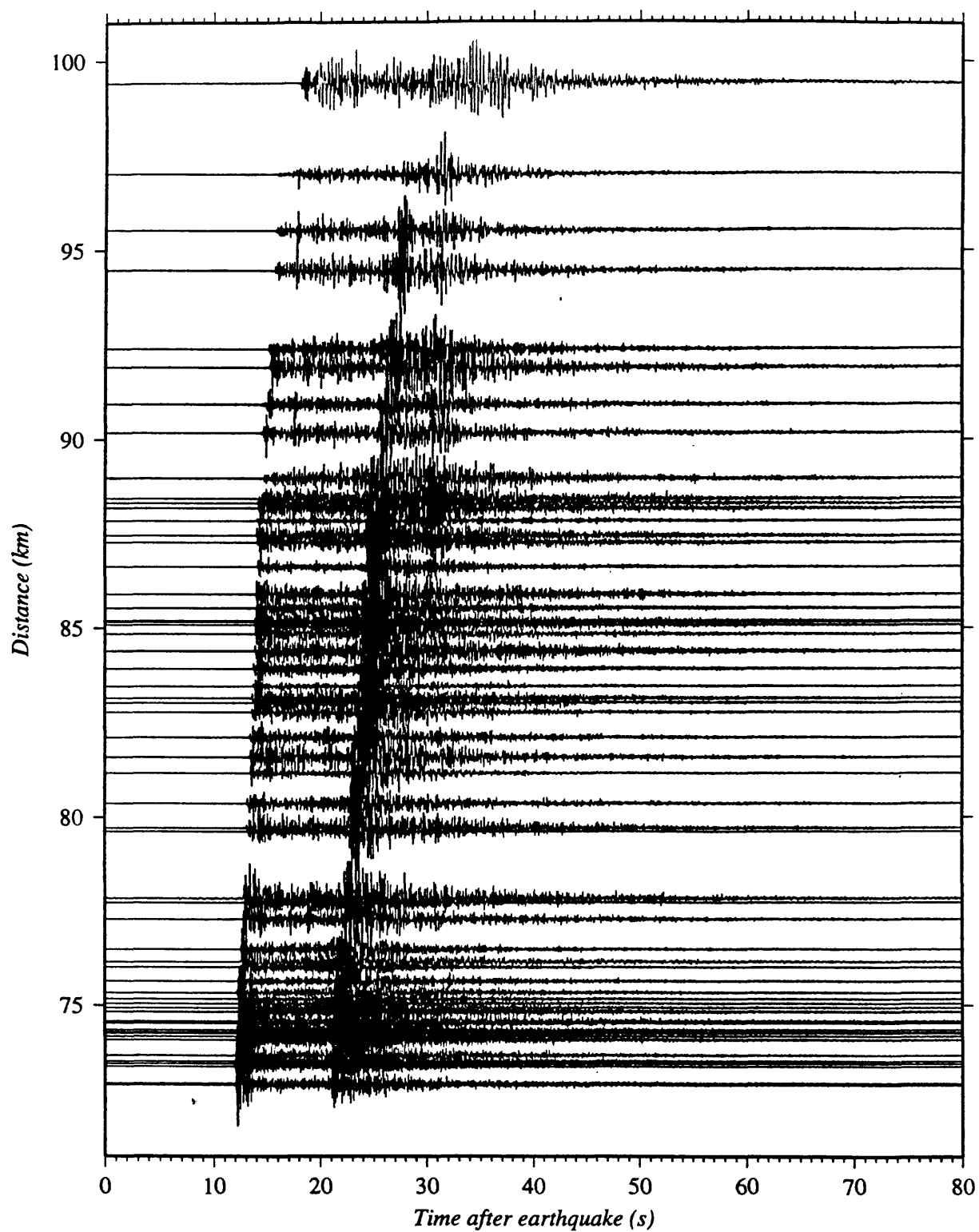


Fig. 7d. Vertical-component record section for local event which occurred on Nov. 28, 1993, 8 km north of Big Bear Lake ( $M_L=2.9$ ). Travel time (unreduced) after earthquake is shown. See text for details.

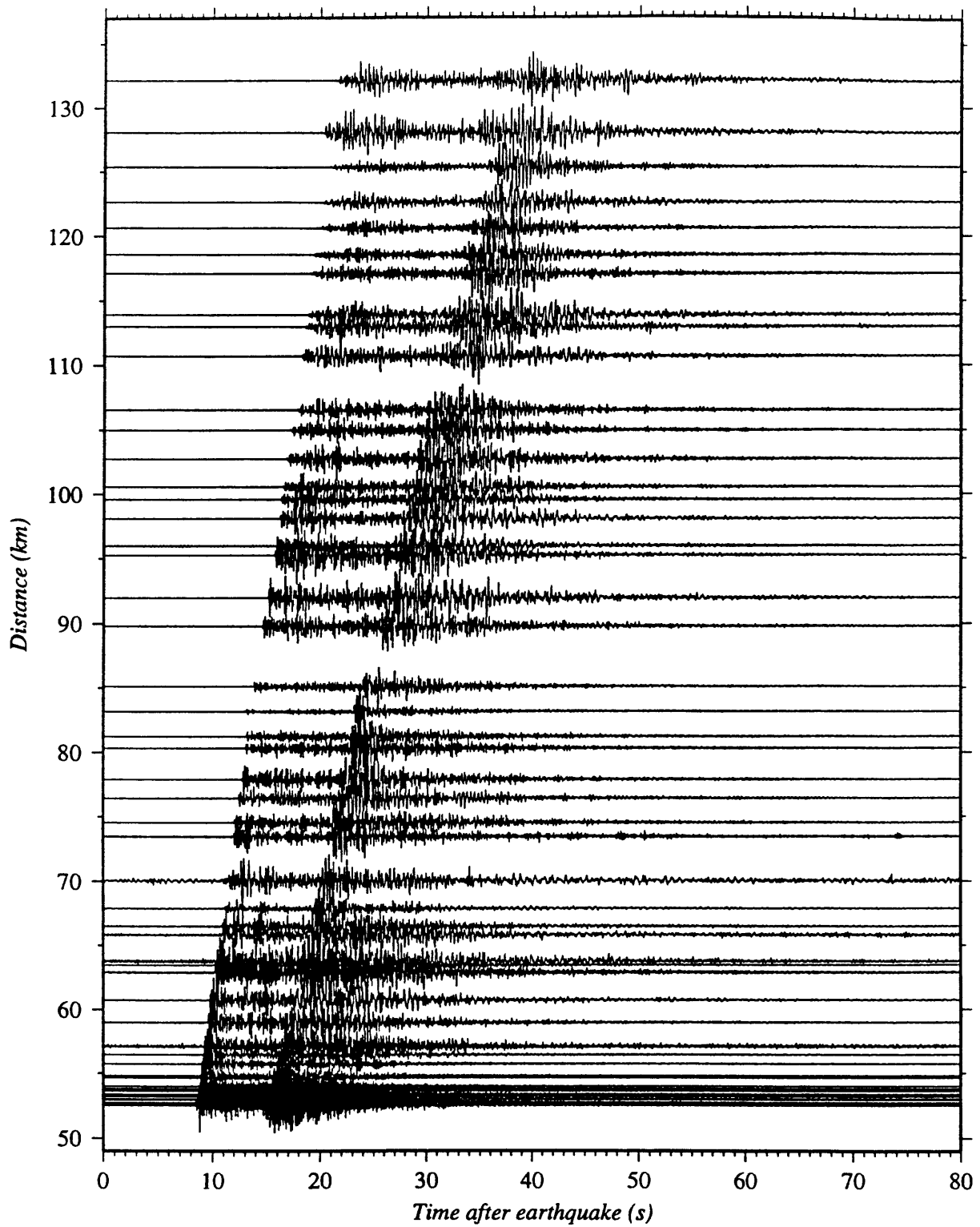


Fig. 7e. Vertical-component record section for local event which occurred on Dec. 3, 1993, 14 km north-northeast of San Fernando ( $M_L=2.9$ ). Travel time (unreduced) after earthquake is shown. See text for details.

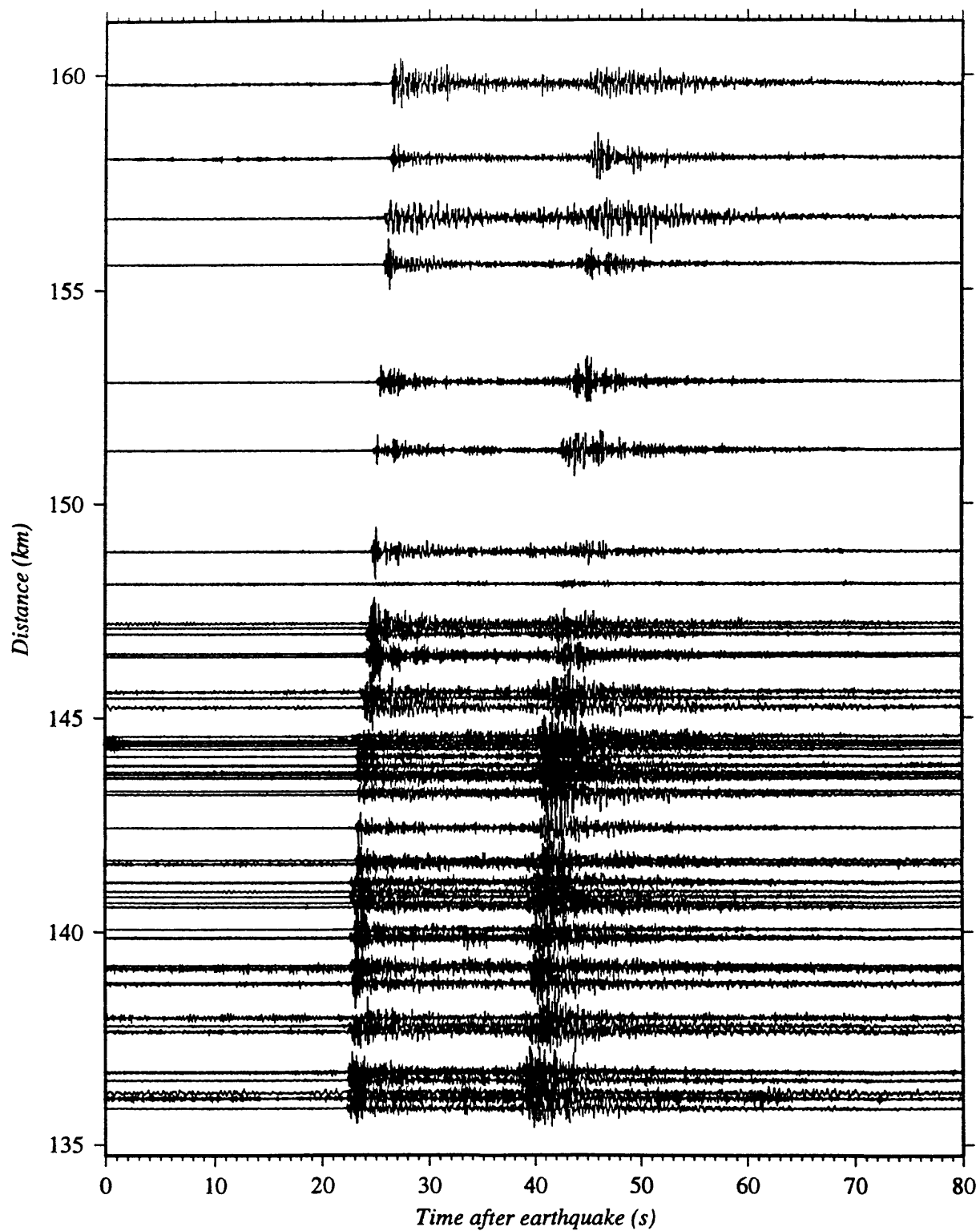


Fig. 7f. Vertical-component record section for local event which occurred on Dec. 4, 1993, 17 km southeast of Yucca Valley ( $M_L=2.3$ ). Travel time (unreduced) after earthquake is shown. See text for details.

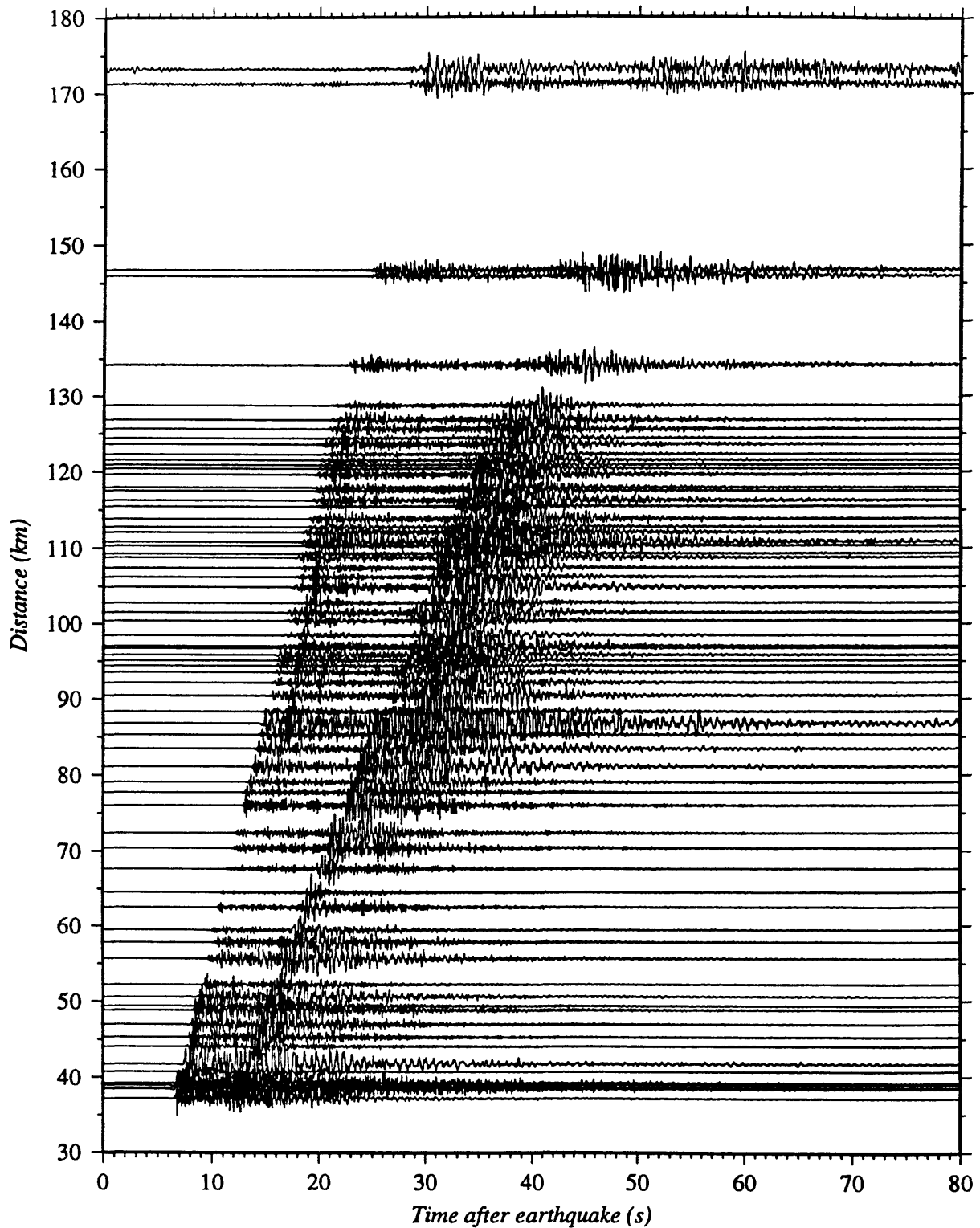


Fig. 7g. Vertical-component record section for local event which occurred on Dec. 8, 1993, 13 km north-northeast of Barstow ( $M_L=3.7$ ). Travel time (unreduced) after earthquake is shown. See text for details.

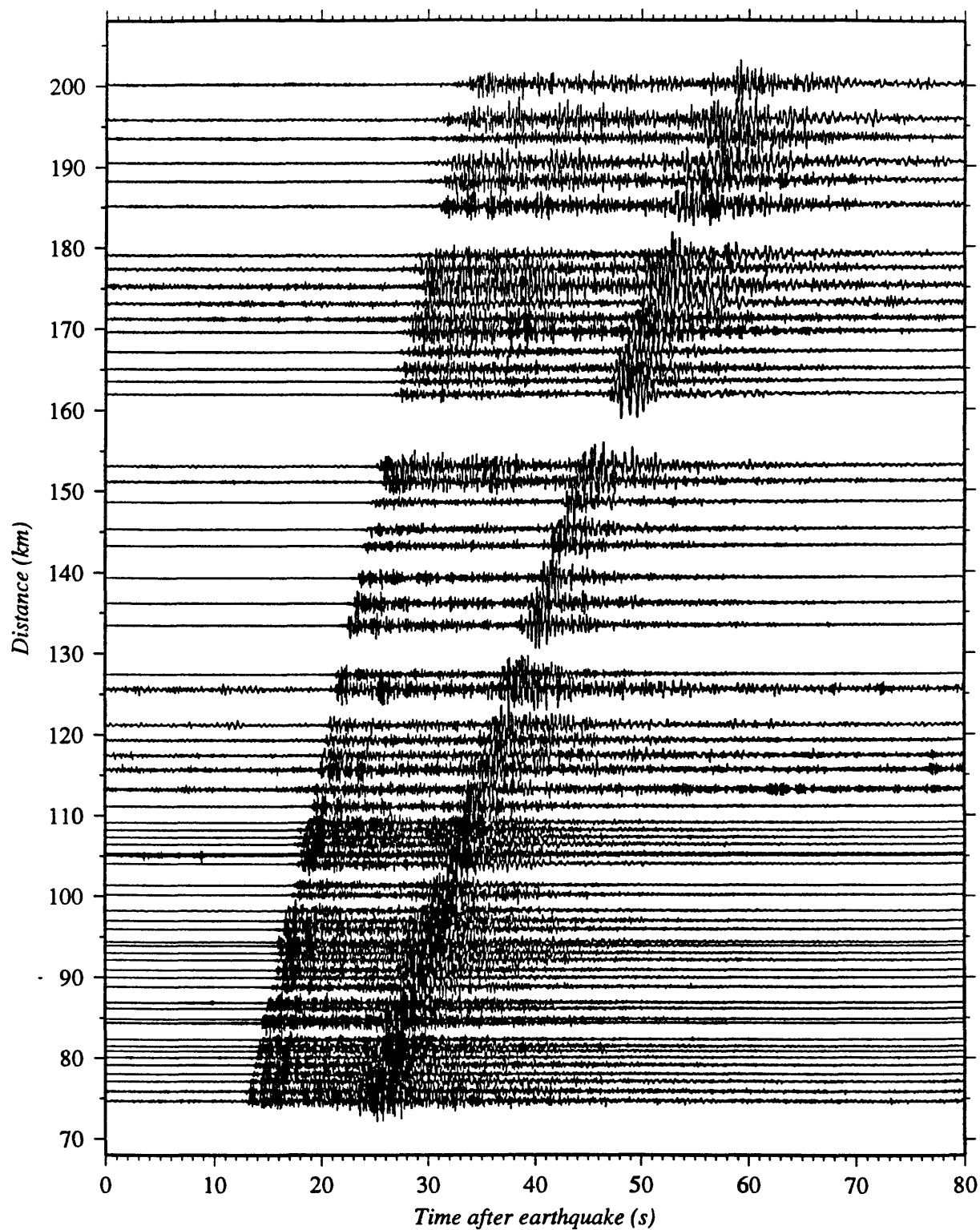


Fig. 7h. Vertical-component record section for local event which occurred on Dec. 8, 1993, 19 km south of San Pedro ( $M_L=2.6$ ). Travel time (unreduced) after earthquake is shown. See text for details.



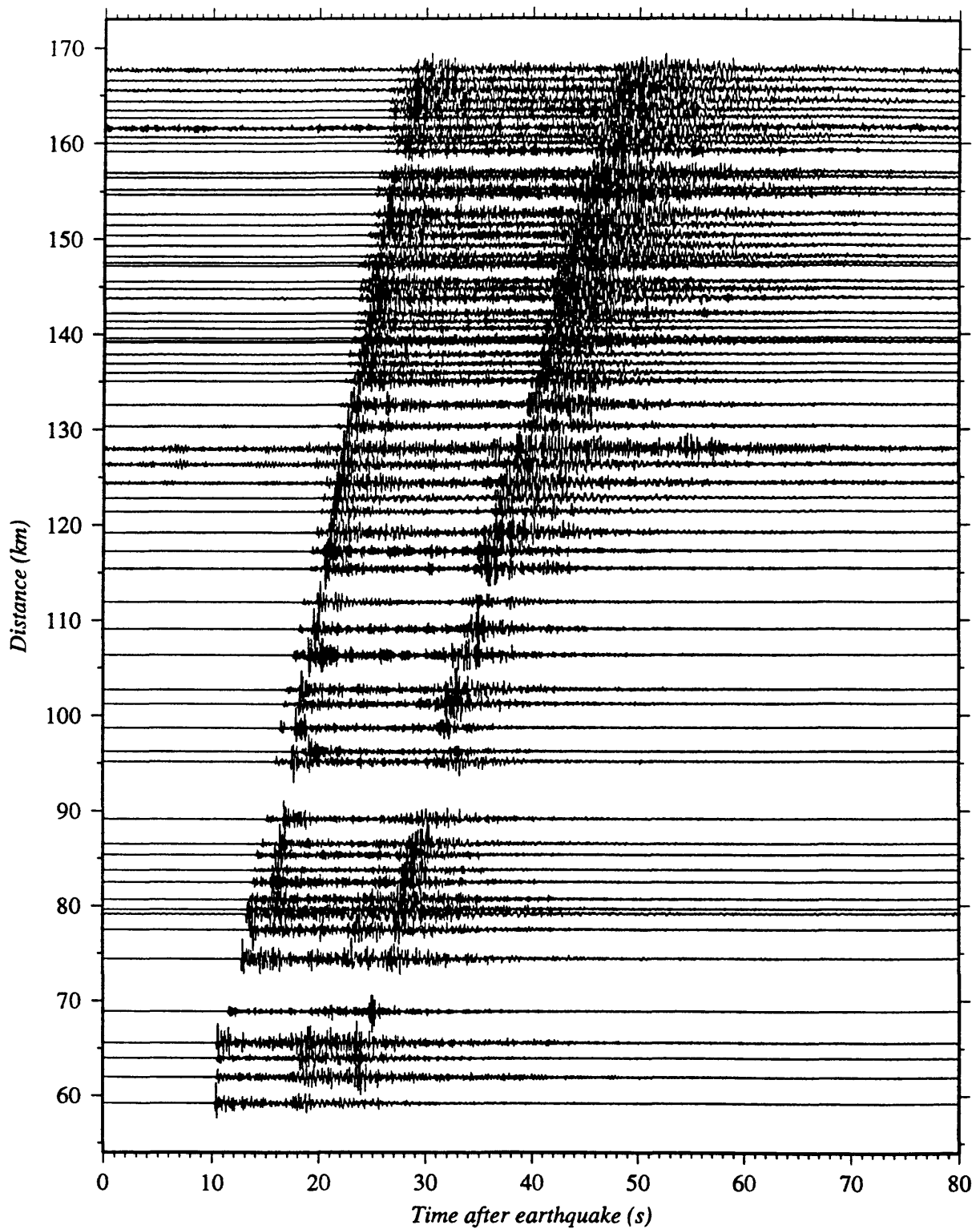


Fig. 7i. Vertical-component record section for local event which occurred on Dec. 10, 1993, 4 km northeast of Ridgecrest ( $M_L=2.9$ ). Travel time (unreduced) after earthquake is shown. See text for details.

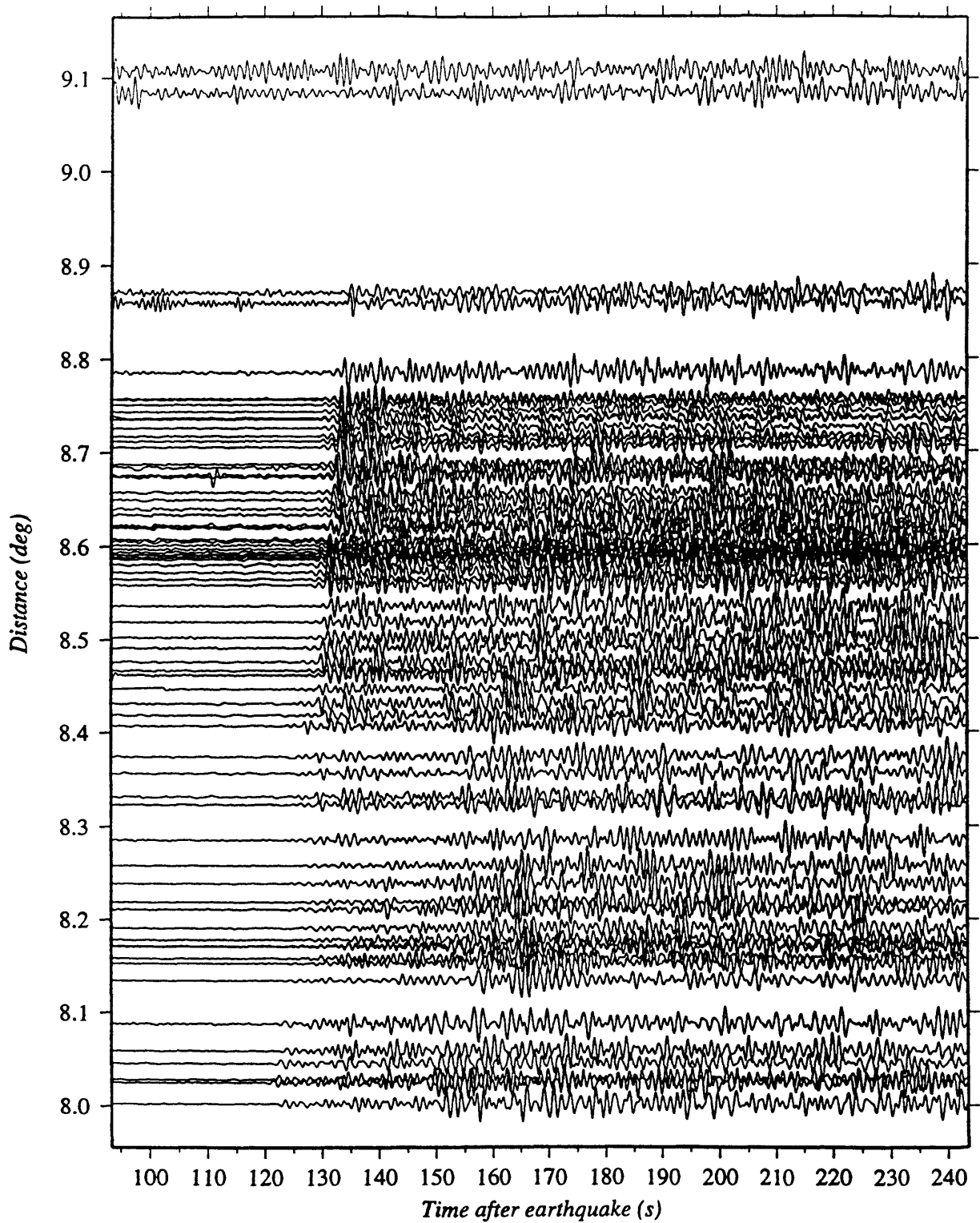


Fig. 7j. Vertical-component record section for regional event which occurred on Dec. 4, 1993, in Klamath Falls, Oregon ( $M_w=5.4$ ). Travel time (unreduced) after earthquake is shown. See text for details.

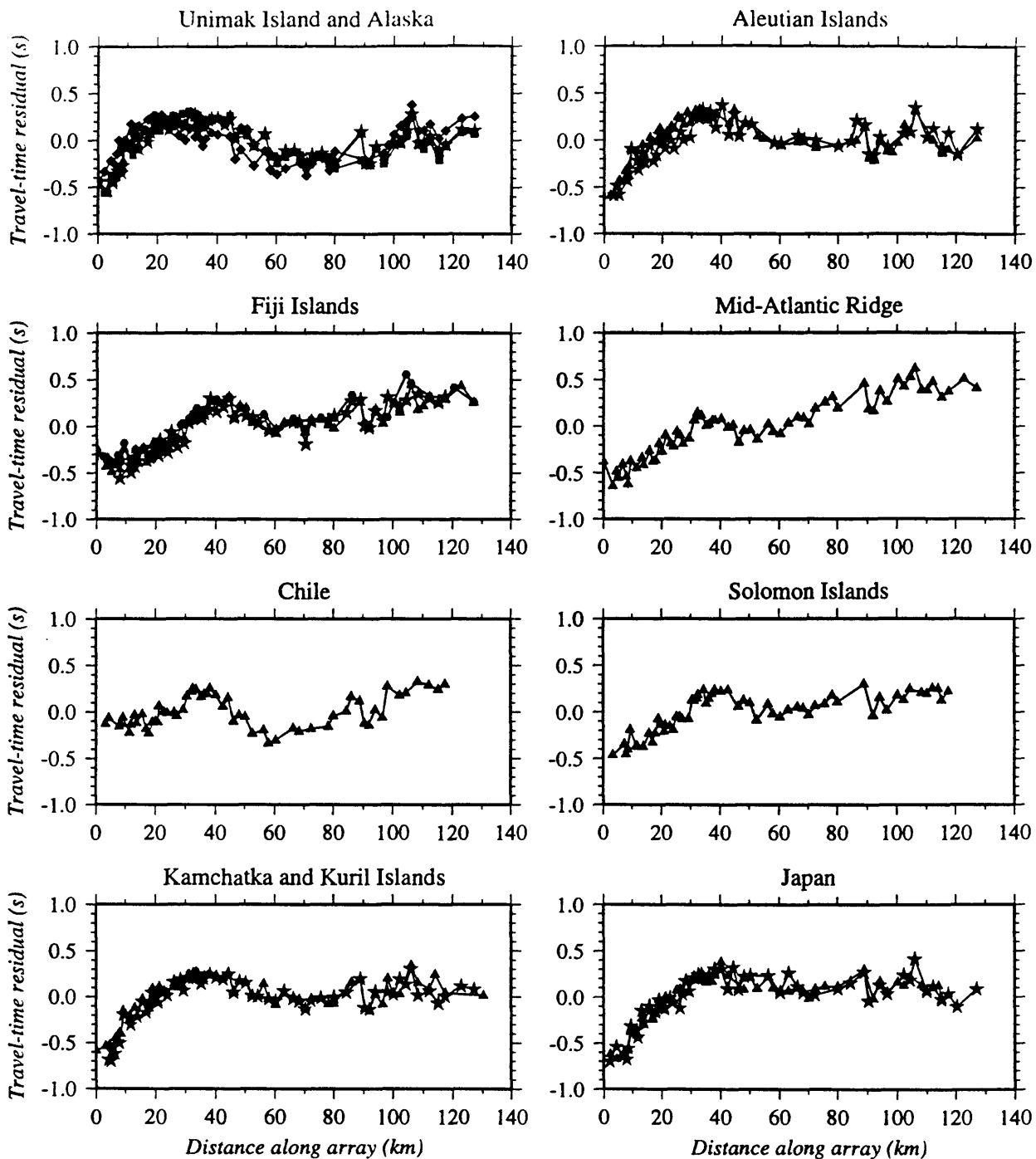


Fig. 8. P-wave travel-time residual curves for 17 teleseismic events which fall into 8 back-azimuth categories. Distance begins with station 002 (Azusa) at 0 km and increases northeast along the array. The travel times have been corrected for one-dimensional Earth model (IASP91) and for topography variations across the array. Note that for most arrivals, especially those from the northwest, residuals are relatively low at the southern end of the array (0-20 km) and relatively high under the San Gabriel Mountains (20-45 km). Residuals remain high in the Mojave Desert with more scatter due to errors in instrument clock timing. Mean residuals have been removed individually from each curve.