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# SEISMIC REFRACTION DATA ACROSS THE COAST RANGE AND WILLAMETTE BASIN IN CENTRAL OREGON: THE 1991 PACIFIC NORTHWEST EXPERIMENT

By

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Menlo Park, California
1993

CONTENTS



FIGURES



TABLES



APPENDIX

## ABSTRACT

In September, 1991, the U.S. Geological Survey (USGS), Oregon State University, the University of Texas at El Paso, the University of Wyoming, and the Canadian Lithoprobe program cooperated to conduct a series of large-aperture seismic profiles in the Pacific Northwest. The objectives of this program were to image the structure of the Cascadia subduction zone in order to better understand the seismic hazard associated with this subduction system. Specific targets included both the interface between the North American and Juan de Fuca plate and crustal sutures within the North American plate. Two north-south profiles and one east-west profile were shot (figure 1). The purpose of this report is to present data from the east-west profile, which represents an extension of an onshore/offshore seismic profile shot in 1989.

## INTRODUCTION

In September, 1989, investigators from Oregon State University (OSU), University of Texas at Austin, and the U.S. Geological Survey (USGS) collaborated to collect a marine seismic reflection profile (Lin and Trehu, 1991) and complementary onshore-offshore wide-angle seismic recordings (Brocher et al., 1993; Trehu and Nakamura, 1993) across the central Oregon continental margin and Coast Range. This study was followed in 1991 by an onshore seismic refraction program conducted by the USGS, OSU, the University of Texas at El Paso, the University of Wyoming, the University of British Columbia, and the Geological Survey of Canada. One of these refraction profiles, which was oriented east-west and extended the 1989 profile across the Willamette Valley and into the foothills of the Cascade Range, is discussed in this report. Results from an inversion of the travel times recorded during both experiments have been presented by Trehu and others (1992a, b).

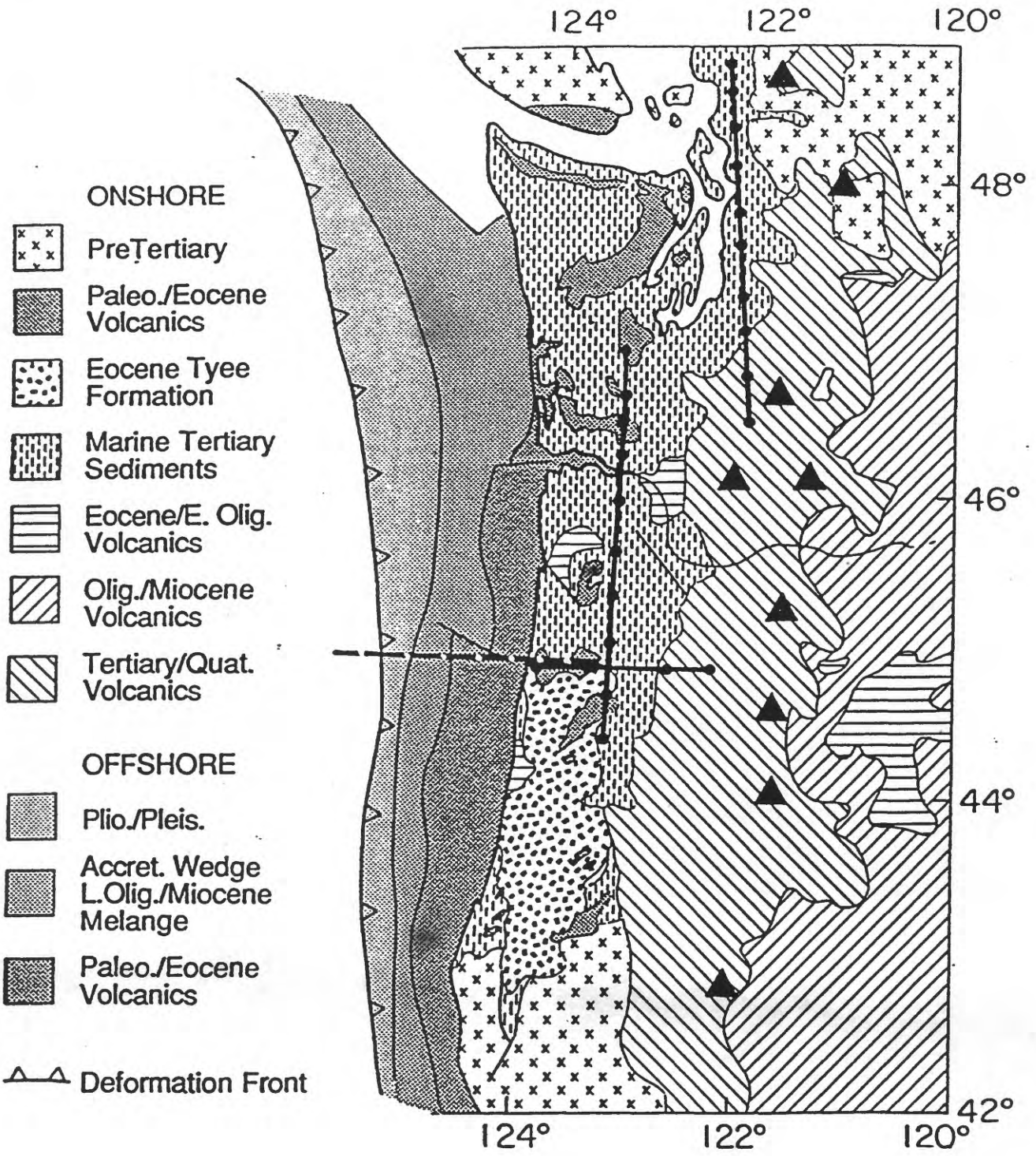


FIGURE 1. Simplified geologic map (onshore geology after Wells et al., 1984; offshore geology after Snavely, 1987) showing the location of the seismic reflection and refraction profiles collected in 1989 (heavy dashed line) and 1991 (heavy solid lines). Filled triangles show the locations of Cascade volcanoes. Dots along profiles show the locations of large explosive shots.

## DATA ACQUISITION

The seismic profile discussed here extends from near Lincoln City on the Oregon coast across the Coast Range and Willamette Valley and ends about four miles east of the town of Elkhorn in the foothills of the Central Oregon Cascades. In order to provide easy access and to avoid cultural noise, stations were primarily deployed along rural residential roads or logging roads, with a station spacing of approximately 350 m. A total of 420 stations, consisting of four different types of seismograph and two different types of sensors (table 1), was deployed. Figure 2a shows the locations of the stations. Figure 2b shows the locations of shots recorded by this array. Figure 3 shows the elevation and type of instrument deployed at each station. The eastern end of the profile was determined by three primary factors: 1) the number of available instruments; 2) the desired trace spacing; and 3) the boundary of the Bull of the Woods Wilderness, and consequently the end of the road.

TABLE 1: Seismometers and seismographs used.

| Seismograph | Station No. | Seismometer | Operator |
|---|---|---|---|
| PSR-4 | 3022 to 3042 | Three orthogonal 2-Hz geophones | Lithoprobe |
| REFTEK | 3042 to 3071 | Three orthogonal 2-Hz geophones | IRIS (OSU) |
| PSR-1 | 3001 to 3021<br>3072 to 3234 | 2-Hz vertical geophones | Lithoprobe |
| SGR | 3235 to 3419 | 6 8-Hz vertical geophones in series | USGS |

All station locations were originally determined from USGS 7.5 minute quadrangle maps by carefully plotting them relative to identifiable landmarks. All sites were revisited with GPS receivers to obtain refined site locations. To obtain the GPS solutions, two GPS receivers were run simultaneously, one at a control position near the center of the line and the other at each site; the data were then processed to correct for random noise added to the GPS system. High-quality, three-dimensional GPS locations were obtained at 13 percent of the sites in the Coast Range, 70

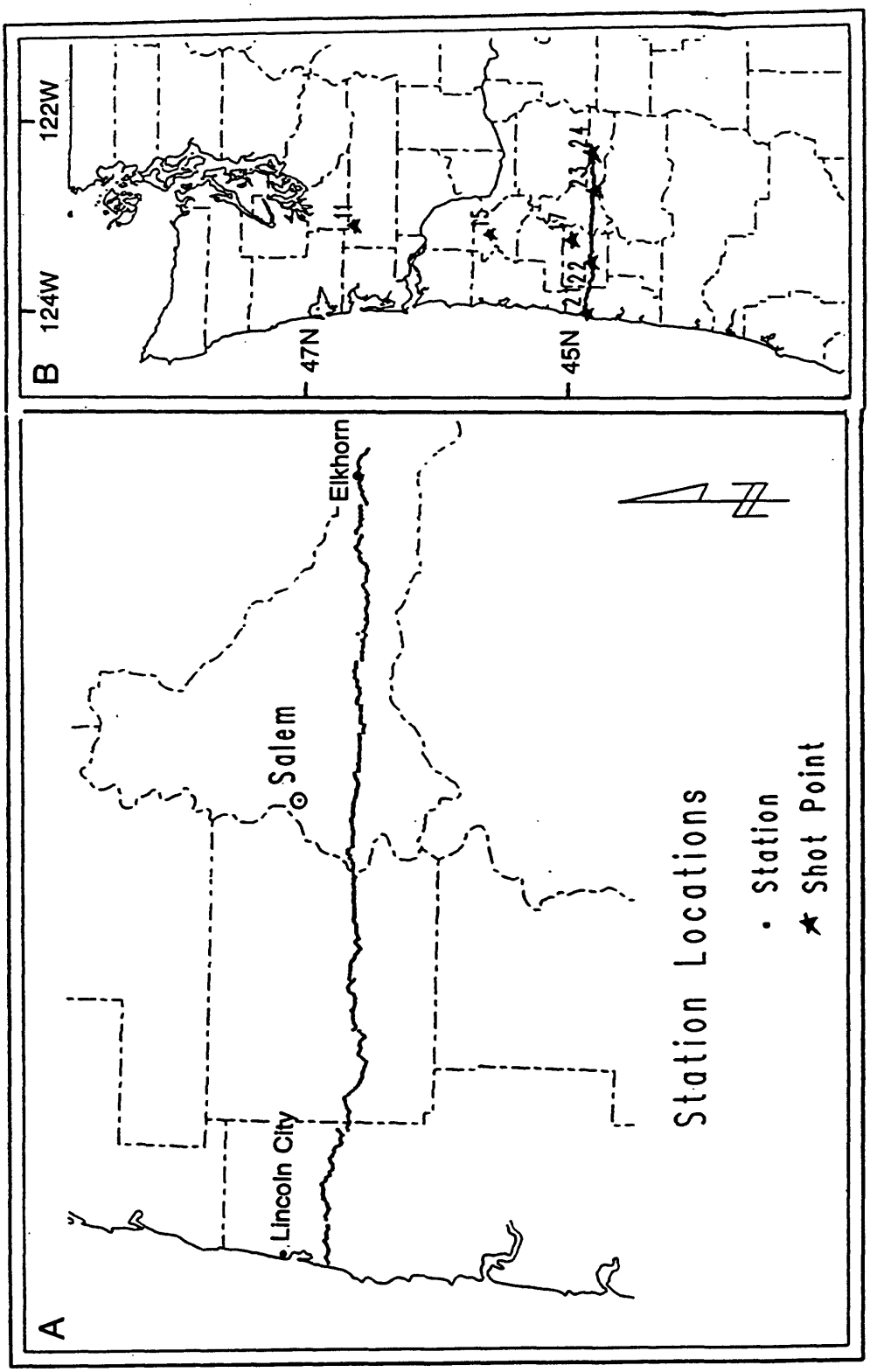


FIGURE 2. Location of the seismic profile discussed in this report. Dashed lines are county boundaries. A) Station locations; B) Shot and station locations.

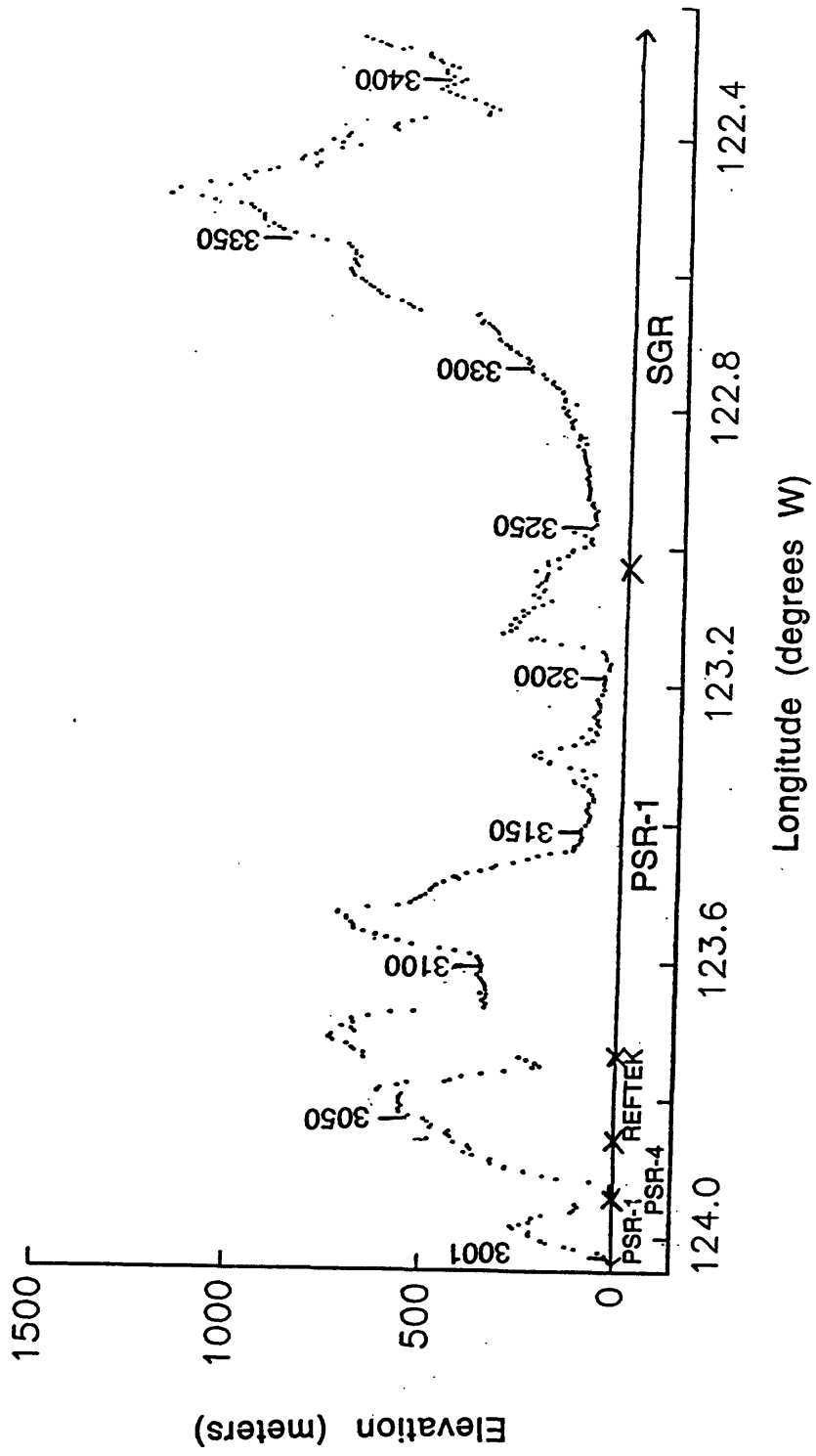


FIGURE 3. Elevation along the profile. Each station is shown as a dot. The type of seismograph deployed at each station is also shown. Every 50th station is labeled.

percent of the sites in the Willamette valley, and 33 percent of the sites in the Cascades. Locations of these sites are accurate to within a few tens of meters. Dense foliage and considerable topography probably interfered with GPS reception at many of the Coast Range and Cascade sites.

Station locations were digitized from the field maps (referred to as "map" locations), and these locations and elevations were compared to locations and elevations from the 2-station GPS solutions, when available. Map locations are within 80 meters of the GPS locations with no detectable systematic offset, providing an estimate of the error of the map locations. An average elevation offset of 28 ±7 meters was detected between the mapped elevations and GPS elevations, probably due to differences in the reference geoid. The final site locations and elevations presented in figures 2 and 3 and in the Appendix represent the GPS location and the GPS elevation minus 28 meters when a reliable GPS fix was available, and the map location and elevation at sites for which reliable GPS solutions were not obtained.

Seven large (2000 lb each) explosive shots located at seven different shot points were detonated and recorded by this array (figure 2). The locations of all shot points were determined using GPS receivers operated in the 2-station differential positioning mode (table 2). Four of the shots (21–24) were located along the profile and three were fan shots (11, 15, 17) detonated in holes that had previously been drilled and shot during acquisition of the north-south profile. The three fan shots reused shot holes from the north-south profile. In addition, shot point 22 was reoccupied by a 1000 lb shot and the REFTEKs were redeployed several days later to fill a gap in the profile resulting from an instrument malfunction during the initial firing of this shotpoint.

TABLE 2: Shot point locations and origin times (all on October 2, 1991).

| Shotpoint No. | Latitude (°N) | Longitude (°W) | Elevation (m) | Origin Time |
|---|---|---|---|---|
| 11 | 46.71530 | -123.11958 | 122 | 0912 |
| 15 | 45.64276 | -123.18259 | 276 | 0910 |
| 17 | 44.99615 | -123.21643 | 58 | 0904 |
| 21 | 44.86978 | -124.00471 | 189 | 0900 |
| 22 | 44.83978 | -123.46821 | 354 | 0902 |
| 23 | 44.83692 | -122.67084 | 363 | 0906 |
| 24 | 44.84742 | -122.27847 | 536 | 0908 |

## INSTRUMENTATION

Four types of seismographs were used to collect the data along this profile (Table 1). The seismic Group Recorders (SGR's) were designed by Amoco Production Company, built by Globe Universal Sciences, Inc., and modified by the USGS. They are single channel, digital seismic recorders with a theoretical dynamic range of 156 dB. Data are sampled at 500 samples per second by a 12 bit A/D with gain ranging from 0–90 dB in 6 dB steps. These SGR's have been modified to turn on at preset times instead of using the standard radio turn on. Each SGR was connected to a single string of 6 modified Marks Products L-10B vertical component geophones connected in series. The theoretical velocity response for this seismograph/seismometer system is shown in figure 4a (Murphy, et al., 1992).

The PSR-1 seismographs are digitally recording instruments with a total dynamic range of 126 dB and a sample rate of 125 samples/s. Sensors were Mark Products L4A 2-Hz vertical-component geophones. The PSR-4 seismographs are similar to the PSR-1s, except that they record 3 orthogonal geophone components. Only the vertical component data are presented in this report. The theoretical velocity response is shown in figure 4b (Luetgert et al., 1990).

The REFTEK seismpgraphs are 6-component instruments that can be operated in both pre-programmed and event-detect modes. A wide range of sampling rates is possible. For this experiment, the instruments were programmed to record for 110 s during each shot window and the data were sampled at 100 Hz. The sensors used for this experiment were three-component Mark Products L-22 2 Hz seismometers. The theoretical velocity response is shown in figure 4c (PASSCAL training center manual, unpublished manuscript).

Timing for each recording unit is provided by a temperature-compensated oscillator that is synchronized relative to a GOES satellite clock prior to deployment. Each unit was then deployed with programmable timers to initiate recording over the expected shot time window. After each deployment the GOES time signal was compared to the internal clocks to measure clock drifts.

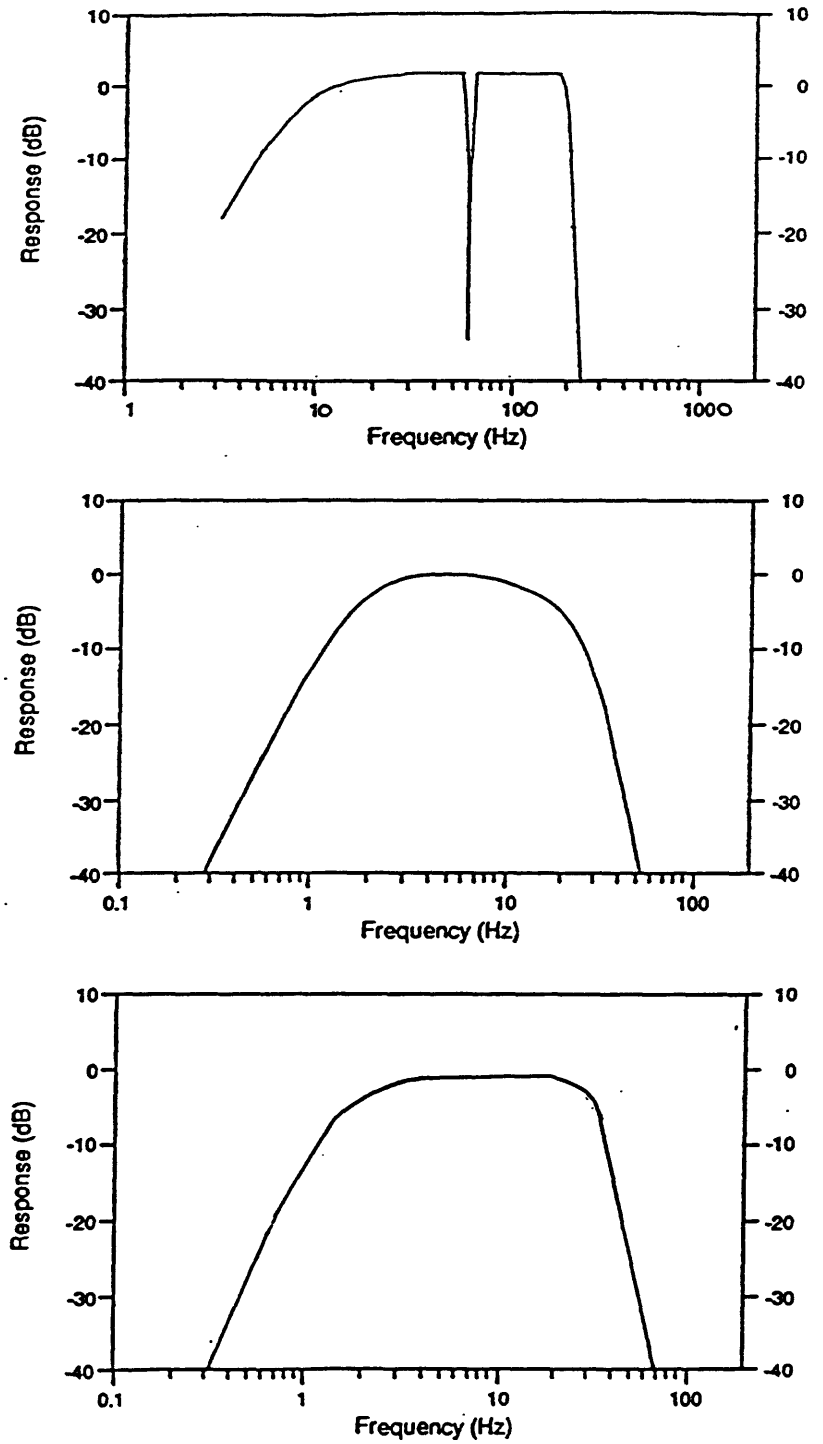


FIGURE 4. Approximate velocity responses for the seismograph/seismometer combinations used for this experiment.

## DATA PROCESSING

Shot-receiver offsets were calculated using shot and receiver positions provided in Table 2 and the Appendix. Offsets for stations to the west of a shot point were defined to be negative. Data from the several different instrument types were processed as described below and then merged into a single SEGY disk file (as interpreted by the processing program SIOSEIS) for each shot and each component.

PSR:

-- DC offset was removed from the data.

-- Final corrected source-receiver ranges (in meters) were inserted into the SEGY trace headers in bytes 37–40.

-- The elevation of the station (in meters) was inserted in the SEGY trace headers in bytes 41–44.

-- The Z, N, and E components were grouped into separate files for sites 3001 through 3042.

-- A timing correction of -0.045 seconds was added to the "deep water delay" (SIOSEIS-SEGY trace header locations 109-110 and 181-184) to account for a systematic delay caused by the PSR acquisition system. This time correction was derived by comparing data from co-located REFTEK/PSR and PSR/SGR pairs.

-- The polarity was reversed for the vertical component so that upward motion is positive.

REFTEK:

-- The data were converted from IRIS SEGY (one trace per file) format to SIOSEIS SEGY format.

-- Each component was put in a separate file.

-- DC offset was removed from the data.

-- Final corrected source-receiver ranges (in meters) were inserted into the trace headers at SIOSEIS SEGY header location 37-40.

-- The elevation of the station was inserted in the trace header in bytes 41-44.

-- The data were resampled from 100 Hz to 125 Hz.

-- A timing correction of 0.625 seconds was added to the deep water delay, (SIOSEIS SEGY trace header locations 109-110 and 181-184) for REFTEK data for shot point 22 to account for a timing error in the data.[1]

SGR:

-- DC offset was removed from the data.

-- A low pass filter of 60 Hz was applied.

-- The data were decimated from 250 Hz to 125 Hz.

The data from different instruments were then merged into a single SEGY file for each shot and each component, and the following processing sequence was followed:

-- A reduction velocity of 6500 m/s was applied to the data to decrease the amount of data stored.

-- The data were band pass filtered between 2 and 40 Hz.

-- Noisy traces were edited manually.

The data processed as described above can be obtained from the IRIS Data Management Center. For the sections displayed here, a second bandpass filter with a passband of 5–25 Hz was applied, the traces were normalized to the same maximum amplitude, and the data were corrected for topographic variations by projecting each receiver and shot to sealevel assuming a velocity of 4.5

[1]This time difference was introduced because the REFTEK data for this shot were not properly recorded when shot point 22 was originally shot. We reshot SP-22 for the REFTEK deployment. The clock in the shot box failed for the reshoot. The shot instant for SP-22 was determined by comparing PSR and REFTEK data from the same point.

km/s for the material between sea level and the surface and an apparent velocity of 6.5 km/s. Figure 5 illustrates the effect of this correction..

## DESCRIPTION OF THE DATA

The vertical component data are displayed in figures 6–12. Pg arrivals are observed as first arrivals to the maximum offset recorded from all shotpoints, including shotpoint 11, a fan shot which provided offsets of 207-217 km. This result is consistent with observations from the perpendicular N-S oriented profile shot along the western edge of the Willamette Valley, which indicates a thick, high-velocity crust in this region (e.g., Trehu et al., 1992). Strong Sg arrivals are also observed from shotpoints 22–24.

Numerous coherent secondary arrivals that follow the first arrivals within 1-2 s and are only observed over distances of 10-30 km are also observed on shots 21-24. These arrivals probably represent reflections from structures within the crust beneath the Coast Range, reflections from the base of the Willamette Valley, multipathing around high velocity near-surface rocks that overlie lower velocity valley sediments, and possibly other sources.

Weak wide angle reflections tentatively interpreted to be from the lower crust and Moho are observed at offsets greater than 100 km on shots 21 and 24. Secondary arrivals are also observed on fan shots 11 and 15, and suggest lateral variations in the lower crust.

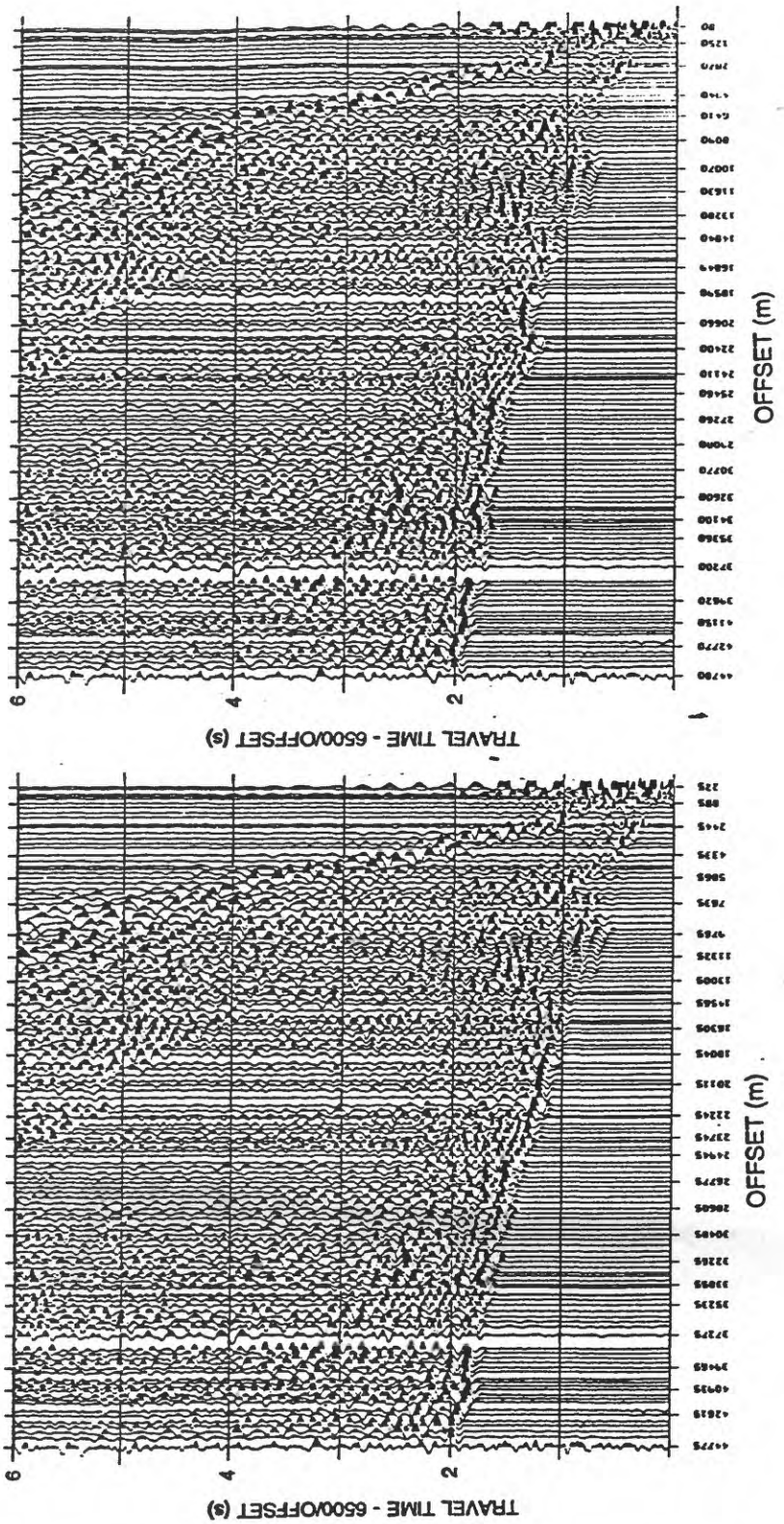


FIGURE 5. Comparison of data from shot point 22 with (A) and without (B) topographic correction.

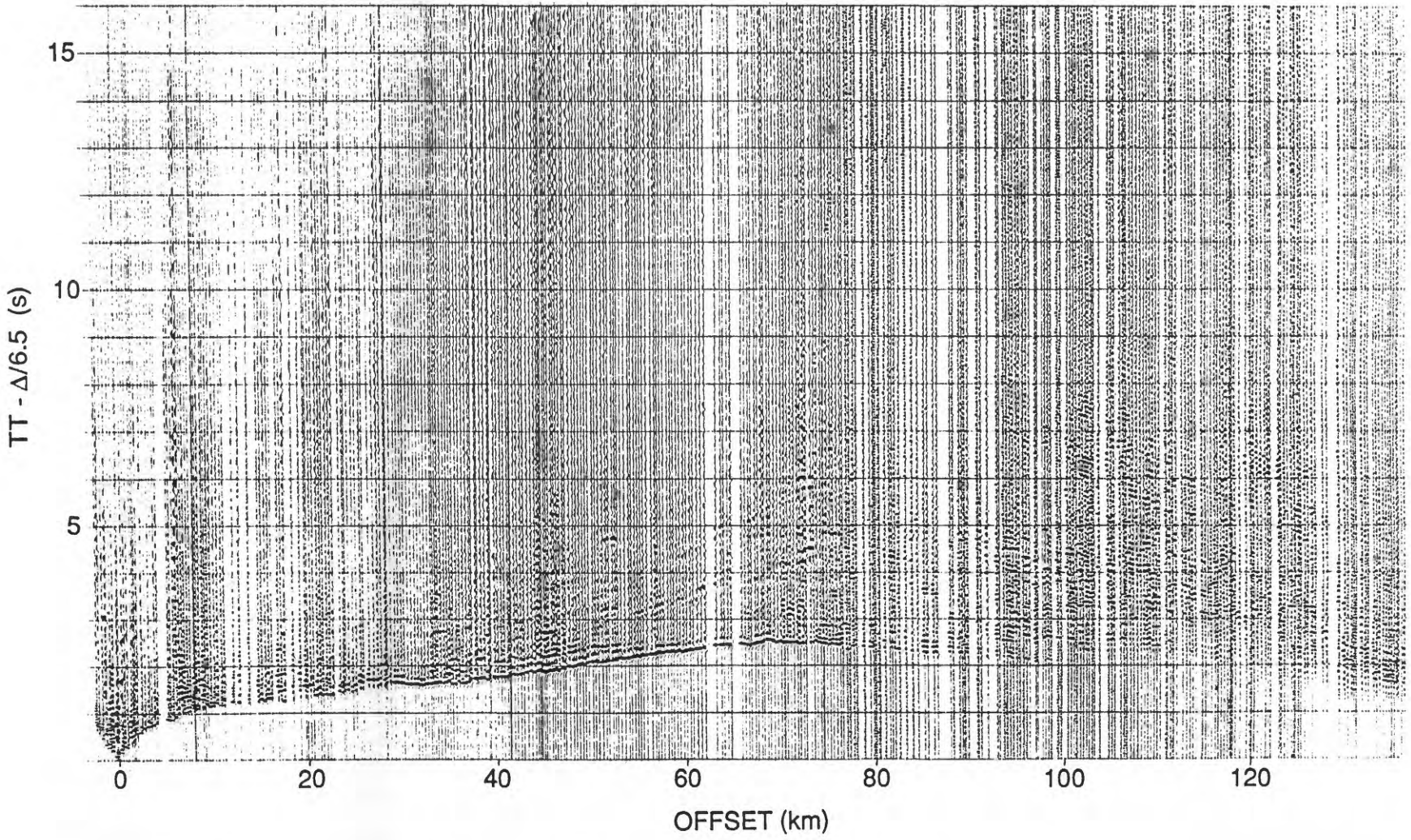


FIGURE 6. Record section from shotpoint 21. Plotting parameters are described in the text.

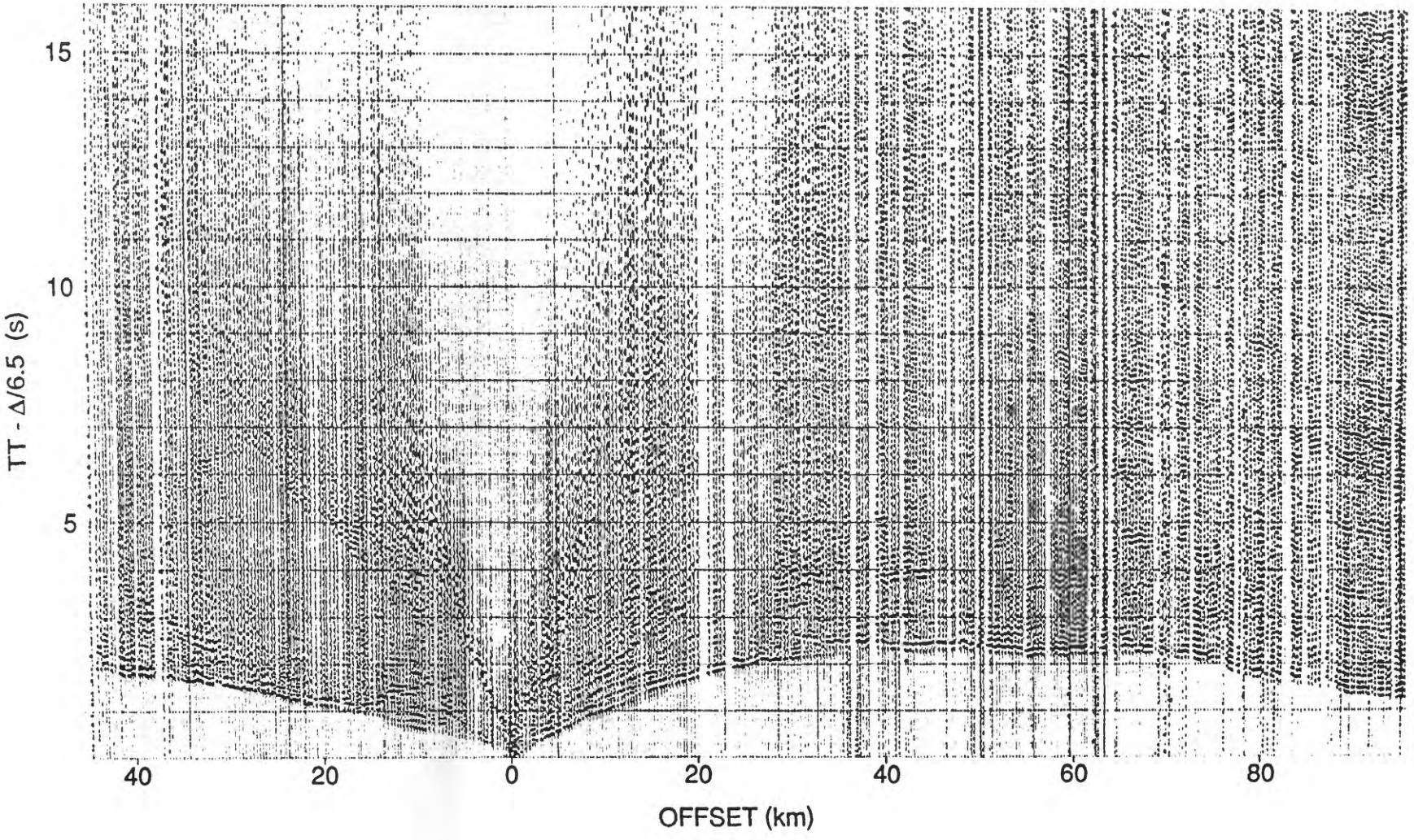


FIGURE 7. Record section from shotpoint 22. Plotting parameters are described in the text.

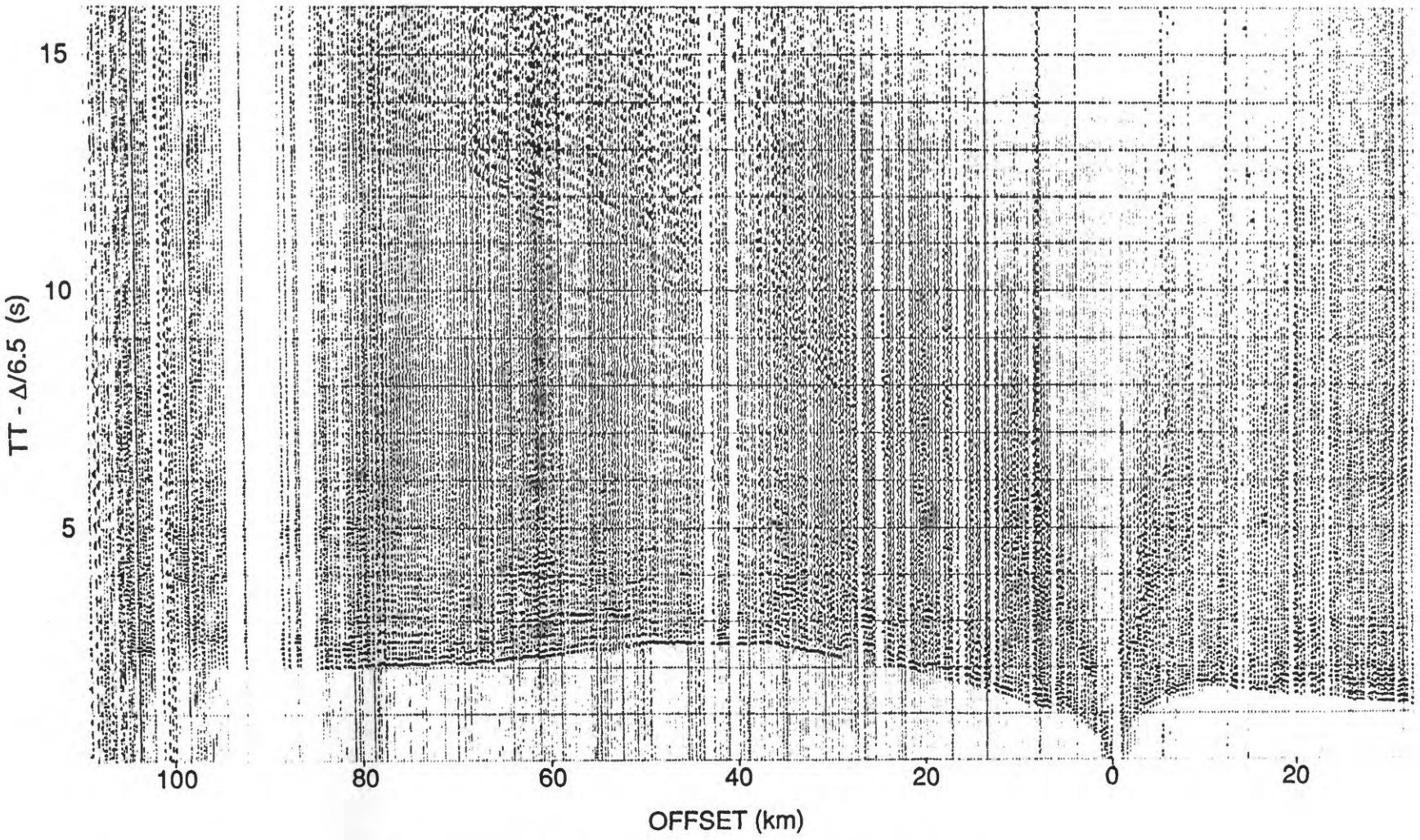


FIGURE 8. Record section from shotpoint 23. Plotting parameters are described in the text.

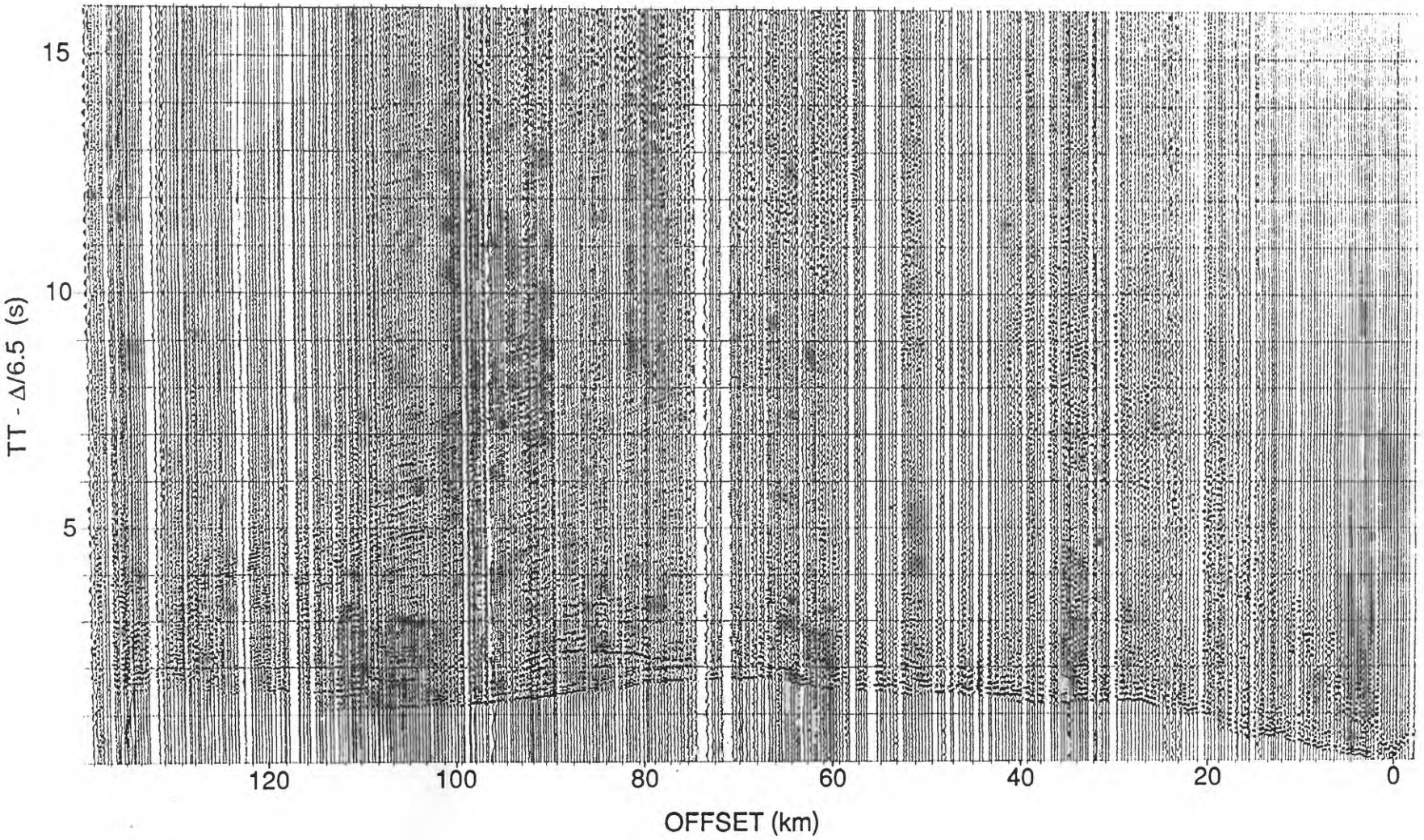


FIGURE 9. Record section from shotpoint 24. Plotting parameters are described in the text.

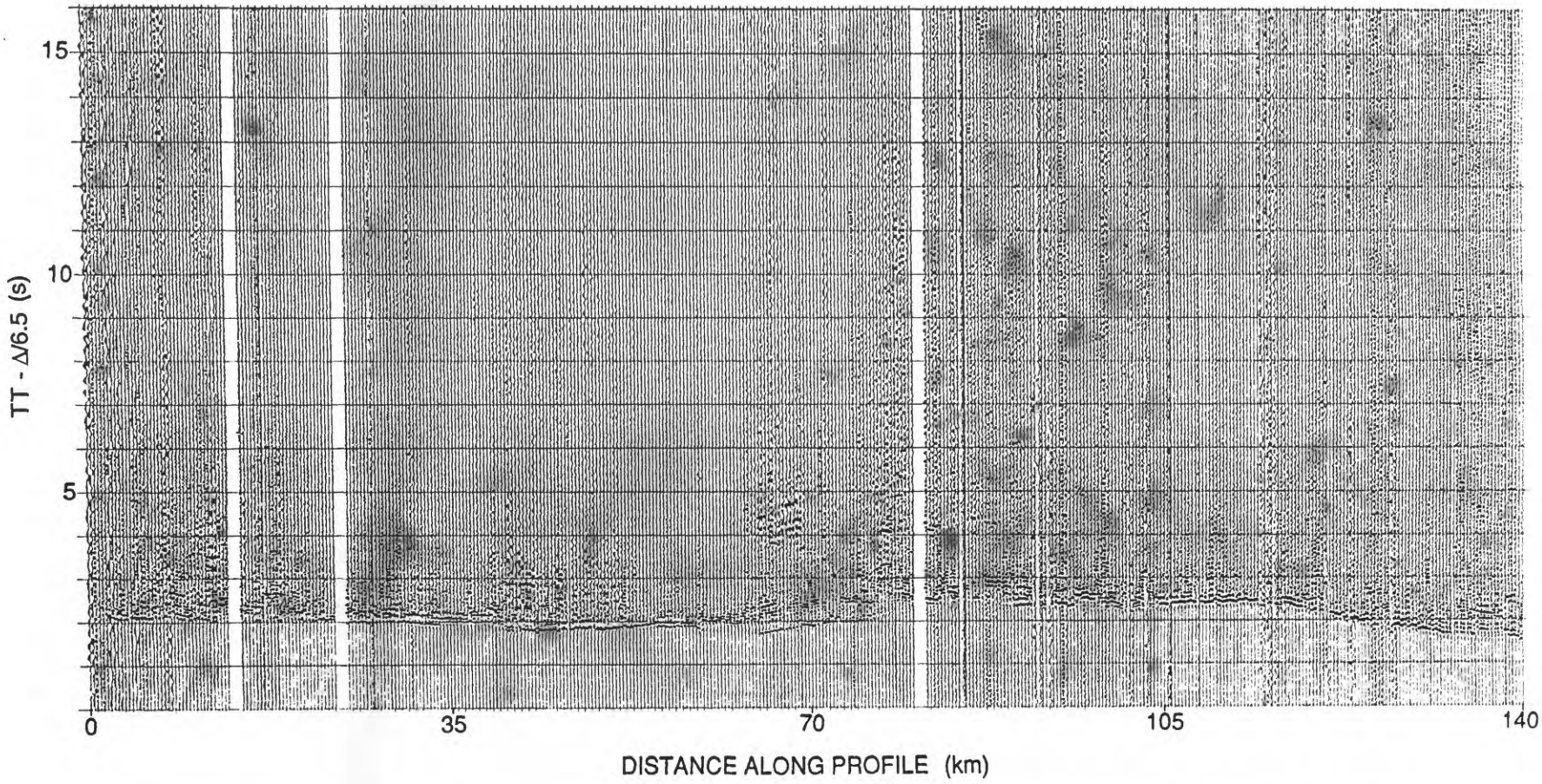


FIGURE 10. Record section from shotpoint 17. Plotting parameters are described in the text. Source-receiver offset is 66 km at a distance along the profile of 0 km; offset is 17 km at distance 70 km; and offset is 77 km at distance 140 km.

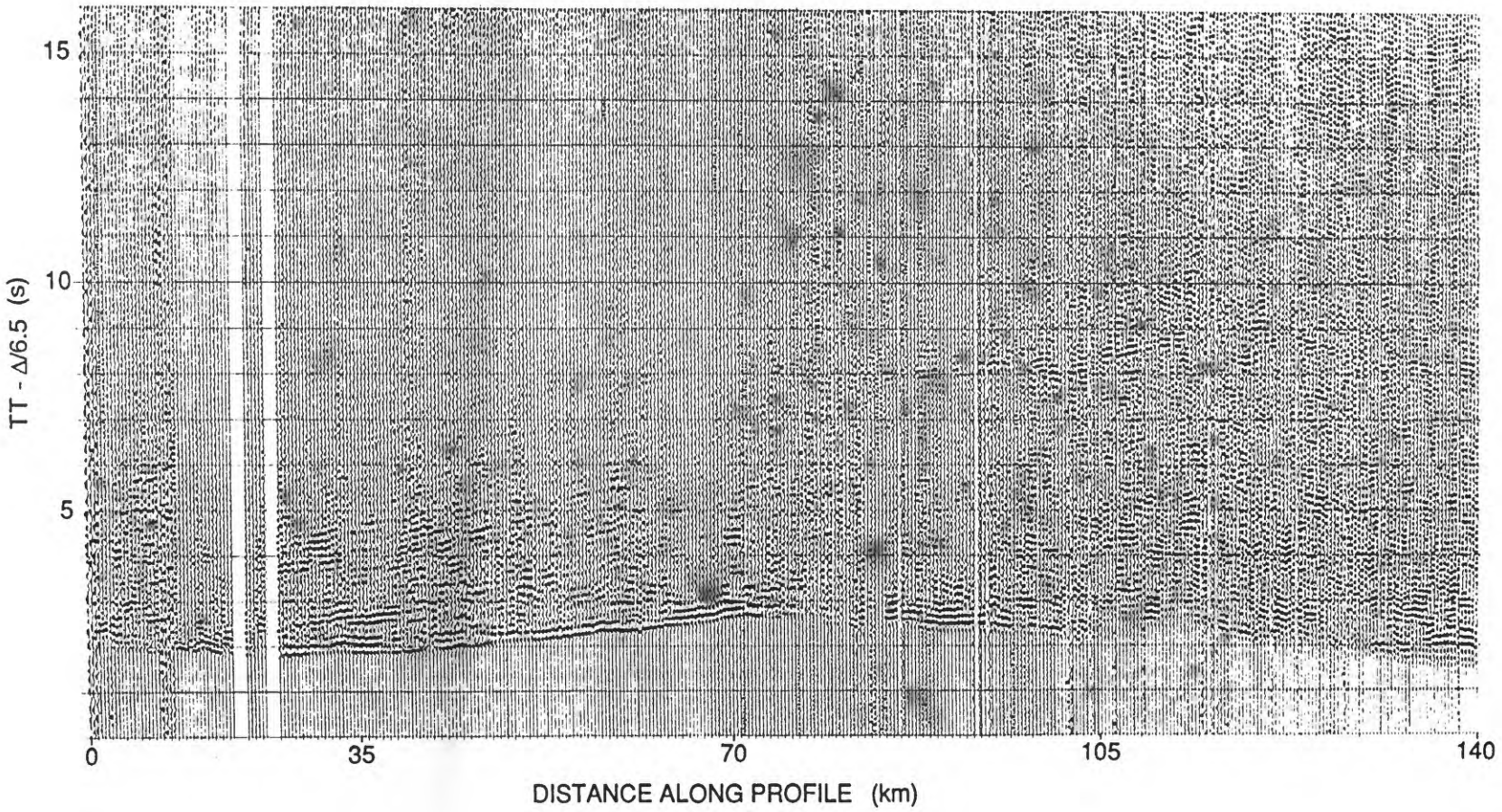


FIGURE 11. Record section from shotpoint 15. Plotting parameters are described in the text. Source-receiver offset is 108 km at a distance along the profile of 0 km; offset is 88 km at distance 70 km; and offset is 115 km at distance 140 km.

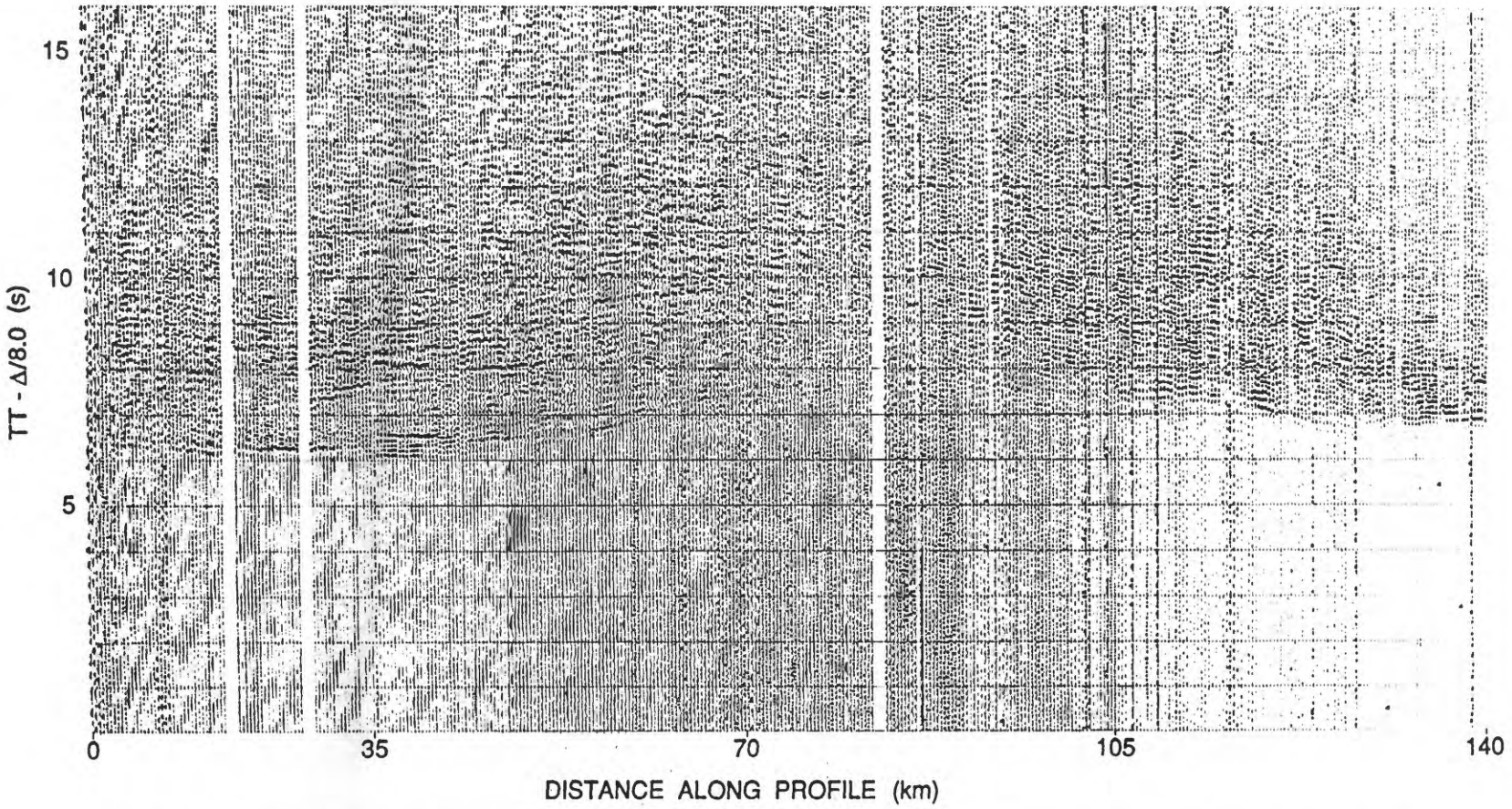


FIGURE 12. Record section from shotpoint 11. Plotting parameters are described in the text. Source-receiver offset is 217 km at a distance along the profile of 0 km; offset is 208 km at distance 70 km; and offset is 219 km at distance 140 km.

## ACKNOWLEDGEMENTS

Many thanks to Mike Moses (USGS) and Maureen Enochs (OSU), who helped to site and survey the profile; to Ed Criley (USGS), for his help with choosing and permitting shot points; to the many landowners who gave permission to place stations and shots on their land and permitted us access after the roads had been closed to the public because of fire hazard (particularly Longview Fiber Co., Boise-Cascade Co., Georgia-Pacific Co., and the Siuslaw and Willamette National Forests); and to the many people who helped to deploy the 420 instruments. Tom Brocher and H.M. Iyer reviewed the manuscript. This work was supported by the USGS NEHRP program through grant 14-08-0001-G2072 to A.M.T.

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## APPENDIX: STATION LOCATIONS AND ELEVATIONS

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3001 | DP-00 | 44.86891 | -124.03323 | 0006 | map |
| 3002 | DP-01 | 44.86881 | -124.03018 | 0012 | map |
| 3003 | DP-02 | 44.87068 | -124.02501 | 0018 | map |
| 3004 | DP-03 | 44.87256 | -124.02002 | 0037 | map |
| 3005 | DP-04 | 44.87080 | -124.01586 | 0098 | map |
| 3006 | DP-05 | 44.87081 | -124.01224 | 0122 | map |
| 3007 | DP-06 | 44.86961 | -124.00746 | 0171 | map |
| 3008 | DP-07 | 44.86905 | -124.00384 | 0183 | map |
| 3009 | ML-01 | 44.87097 | -123.99678 | 0213 | map |
| 3010 | ML-02 | 44.87204 | -123.99390 | 0213 | map |
| 3011 | ML-03 | 44.87320 | -123.99063 | 0213 | map |
| 3012 | DL-01 | 44.87577 | -123.98604 | 0256 | map |
| 3013 | DL-02 | 44.87571 | -123.98312 | 0262 | map |
| 3014 | ML-04 | 44.87293 | -123.98036 | 0238 | map |
| 3015 | ML-05 | 44.87304 | -123.97717 | 0213 | map |
| 3016 | ML-06 | 44.87314 | -123.97087 | 0207 | map |
| 3017 | ML-07 | 44.87342 | -123.96685 | 0183 | map |
| 3018 | ML-08 | 44.87271 | -123.96217 | 0107 | map |
| 3019 | ML-09 | 44.87062 | -123.95865 | 0101 | map |
| 3020 | ML-10 | 44.87089 | -123.95410 | 0091 | map |
| 3021 | ML-11 | 44.87098 | -123.95045 | 0098 | map |
| 3022 | ML-12 | 44.87412 | -123.93705 | 0009 | map |
| 3023 | DL-03 | 44.87489 | -123.93408 | 0009 | map |
| 3024 | DL-04 | 44.87533 | -123.92981 | 0009 | map |
| 3025 | ML-13 | 44.87418 | -123.92570 | 0009 | map |
| 3026 | ML-14 | 44.87236 | -123.92194 | 0009 | map |
| 3027 | ML-15 | 44.87134 | -123.91752 | 0061 | map |
| 3028 | ML-16 | 44.86971 | -123.91325 | 0146 | map |
| 3029 | ML-17 | 44.87187 | -123.90898 | 0188 | gps |
| 3030 | ML-18 | 44.87250 | -123.90513 | 0216 | gps |
| 3031 | ML-18A | 44.87308 | -123.90219 | 0232 | map |
| 3032 | ML-19 | 44.87446 | -123.89887 | 0280 | map |
| 3033 | DL-06 | 44.87579 | -123.89629 | 0280 | map |
| 3034 | DL-07 | 44.87738 | -123.89253 | 0317 | map |
| 3035 | DL-08 | 44.87988 | -123.88786 | 0320 | map |
| 3036 | DL-09 | 44.88052 | -123.88524 | 0317 | map |
| 3037 | DL-10 | 44.88064 | -123.88070 | 0366 | map |
| 3038 | DL-11 | 44.88049 | -123.87654 | 0387 | map |
| 3039 | ST-01 | 44.88028 | -123.87185 | 0372 | map |
| 3040 | ST-02 | 44.88010 | -123.86696 | 0378 | map |
| 3041 | ST-03 | 44.88207 | -123.86191 | 0421 | gps |
| 3042 | ST-04 | 44.88208 | -123.85755 | 0482 | map |
| 3043 | ST-05 | 44.87725 | -123.85360 | 0424 | map |
| 3044 | ST-06 | 44.87674 | -123.84897 | 0426 | gps |
| 3045 | ST-07 | 44.87623 | -123.84526 | 0440 | gps |
| 3046 | EM-01 | 44.87122 | -123.84070 | 0463 | gps |
| 3047 | EM-02 | 44.87107 | -123.83637 | 0469 | map |
| 3048 | EM-03 | 44.87134 | -123.83214 | 0482 | map |
| 3049 | EM-04 | 44.86676 | -123.82779 | 0492 | map |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3050 | EM-05 | 44.86608 | -123.82340 | 0530 | map |
| 3051 | EM-06 | 44.86605 | -123.81913 | 0555 | map |
| 3052 | EM-07 | 44.86680 | -123.81457 | 0555 | map |
| 3053 | EM-08 | 44.86920 | -123.81078 | 0550 | gps |
| 3054 | EM-09 | 44.87022 | -123.80627 | 0555 | map |
| 3055 | EM-10 | 44.87100 | -123.80150 | 0555 | map |
| 3056 | EM-11 | 44.86769 | -123.79715 | 0555 | map |
| 3057 | EM-12 | 44.86695 | -123.79337 | 0549 | map |
| 3058 | EM-13 | 44.86413 | -123.78814 | 0610 | map |
| 3059 | EM-14 | 44.86493 | -123.78402 | 0604 | map |
| 3060 | EM-15 | 44.86405 | -123.78060 | 0561 | map |
| 3061 | EM-16 | 44.86231 | -123.77613 | 0536 | map |
| 3062 | EM-16A | 44.85813 | -123.77467 | 0439 | map |
| 3063 | EM-17 | 44.85505 | -123.77211 | 0427 | map |
| 3064 | EM-18 | 44.85330 | -123.76732 | 0396 | map |
| 3065 | EM-19 | 44.85590 | -123.76307 | 0344 | map |
| 3066 | EM-20 | 44.85589 | -123.75862 | 0287 | map |
| 3067 | EM-21 | 44.85480 | -123.75257 | 0213 | map |
| 3068 | EM-22 | 44.85257 | -123.75086 | 0195 | map |
| 3069 | VZ-01 | 44.85606 | -123.74600 | 0207 | map |
| 3070 | VZ-02 | 44.85867 | -123.74151 | 0232 | map |
| 3071 | VZ-03 | 44.86029 | -123.73807 | 0250 | map |
| 3072 | VZ-04 | 44.84472 | -123.74035 | 0646 | map |
| 3073 | VZ-05 | 44.84592 | -123.73360 | 0646 | map |
| 3074 | VZ-06 | 44.84422 | -123.72944 | 0671 | map |
| 3075 | VZ-07 | 44.84292 | -123.72604 | 0677 | map |
| 3076 | VZ-08 | 44.84198 | -123.72096 | 0689 | map |
| 3077 | VZ-09 | 44.84359 | -123.71590 | 0725 | map |
| 3078 | VZ-10 | 44.84441 | -123.71141 | 0735 | map |
| 3079 | VZ-11 | 44.84585 | -123.70743 | 0729 | map |
| 3080 | VZ-12 | 44.84328 | -123.70324 | 0671 | map |
| 3081 | VZ-13 | 44.84246 | -123.69866 | 0677 | map |
| 3082 | VZ-14 | 44.84421 | -123.69563 | 0701 | gps |
| 3083 | VZ-15 | 44.84646 | -123.69081 | 0673 | gps |
| 3084 | VZ-16 | 44.84817 | -123.68493 | 0677 | map |
| 3085 | VZ-17 | 44.84950 | -123.68070 | 0634 | map |
| 3086 | VZ-18 | 44.84971 | -123.67528 | 0579 | gps |
| 3087 | VZ-19 | 44.85073 | -123.67248 | 0523 | gps |
| 3088 | VZ-20 | 44.85013 | -123.66676 | 0343 | gps |
| 3089 | VZ-21 | 44.84461 | -123.66123 | 0338 | map |
| 3090 | VZ-22 | 44.84164 | -123.65579 | 0348 | map |
| 3091 | VZ-23 | 44.83769 | -123.65222 | 0340 | map |
| 3092 | VZ-24 | 44.83463 | -123.64715 | 0338 | map |
| 3093 | VZ-25 | 44.83358 | -123.64568 | 0354 | gps |
| 3094 | VZ-26 | 44.83074 | -123.64077 | 0341 | gps |
| 3095 | VZ-27 | 44.82843 | -123.63525 | 0341 | gps |
| 3096 | VZ-28 | 44.82736 | -123.63134 | 0345 | gps |
| 3097 | VZ-29 | 44.82622 | -123.62712 | 0350 | gps |
| 3098 | FR-01 | 44.82513 | -123.62347 | 0354 | gps |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3099 | FR-02 | 44.82476 | -123.61855 | 0363 | map |
| 3100 | FR-03 | 44.82481 | -123.61366 | 0354 | map |
| 3101 | FR-04 | 44.82392 | -123.60913 | 0352 | map |
| 3102 | FR-05 | 44.82274 | -123.60492 | 0351 | map |
| 3103 | FR-06 | 44.82162 | -123.60090 | 0354 | map |
| 3104 | FR-07 | 44.82053 | -123.59679 | 0357 | map |
| 3105 | FR-08 | 44.81987 | -123.59218 | 0363 | map |
| 3106 | FR-09 | 44.81856 | -123.58763 | 0381 | map |
| 3107 | FR-10 | 44.82318 | -123.58362 | 0421 | map |
| 3108 | FR-11 | 44.82677 | -123.57926 | 0459 | map |
| 3109 | FR-12 | 44.83139 | -123.57432 | 0530 | map |
| 3110 | FR-13 | 44.83079 | -123.56972 | 0567 | map |
| 3111 | FR-14 | 44.82934 | -123.56514 | 0594 | map |
| 3112 | FR-15 | 44.82856 | -123.56114 | 0622 | map |
| 3113 | FR-16 | 44.82774 | -123.55713 | 0652 | map |
| 3114 | FR-17 | 44.82982 | -123.55274 | 0677 | map |
| 3115 | FR-18 | 44.82972 | -123.54798 | 0677 | map |
| 3116 | FR-19 | 44.82839 | -123.54362 | 0683 | map |
| 3117 | FR-20 | 44.82576 | -123.53924 | 0695 | map |
| 3118 | FR-21 | 44.82198 | -123.53530 | 0695 | map |
| 3119 | FR-22 | 44.82250 | -123.53090 | 0716 | map |
| 3120 | FR-23 | 44.82631 | -123.52753 | 0715 | map |
| 3121 | FR-24 | 44.83070 | -123.52155 | 0642 | map |
| 3122 | FR-25 | 44.84008 | -123.51891 | 0567 | map |
| 3123 | FR-26 | 44.83702 | -123.51443 | 0536 | map |
| 3124 | FR-27 | 44.83711 | -123.50982 | 0524 | map |
| 3125 | FR-28 | 44.83908 | -123.50423 | 0496 | gps |
| 3126 | FR-29 | 44.84019 | -123.50218 | 0500 | map |
| 3127 | FC-01 | 44.84119 | -123.49611 | 0488 | map |
| 3128 | FC-02 | 44.84158 | -123.49222 | 0482 | map |
| 3129 | FC-03 | 44.84095 | -123.48770 | 0472 | map |
| 3130 | FC-04 | 44.84152 | -123.48376 | 0453 | map |
| 3131 | FC-05 | 44.84197 | -123.47939 | 0415 | map |
| 3132 | FC-06 | 44.84405 | -123.47602 | 0427 | map |
| 3133 | FC-6A | 44.84068 | -123.47590 | 0421 | map |
| 3134 | FC-07 | 44.84108 | -123.47089 | 0395 | map |
| 3135 | FC-7A | 44.83955 | -123.46739 | 0360 | map |
| 3136 | FC-08 | 44.83870 | -123.46299 | 0329 | map |
| 3137 | FC-09 | 44.83814 | -123.45937 | 0320 | map |
| 3138 | FC-10 | 44.83886 | -123.45435 | 0274 | map |
| 3139 | FC-11 | 44.83850 | -123.44965 | 0238 | map |
| 3140 | FC-12 | 44.83979 | -123.44501 | 0212 | map |
| 3141 | FC-12A | 44.84045 | -123.44145 | 0180 | map |
| 3142 | FC-13 | 44.84321 | -123.43899 | 0142 | map |
| 3143 | FC-13A | 44.84633 | -123.43695 | 0122 | map |
| 3144 | FC-14 | 44.84821 | -123.43306 | 0117 | map |
| 3145 | FC-14A | 44.84850 | -123.43028 | 0119 | map |
| 3146 | FC-15 | 44.84992 | -123.42717 | 0110 | map |
| 3147 | FC-16 | 44.84881 | -123.42258 | 0104 | map |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3148 | FC-16A | 44.84702 | -123.41966 | 0104 | map |
| 3149 | FC-17 | 44.84521 | -123.41668 | 0101 | map |
| 3150 | FC-18 | 44.84186 | -123.41314 | 0102 | map |
| 3151 | FC-19 | 44.84021 | -123.40862 | 0104 | map |
| 3152 | FC-20 | 44.84792 | -123.40851 | 0102 | map |
| 3153 | FC-21 | 44.84748 | -123.40513 | 0102 | map |
| 3154 | FC-22 | 44.84712 | -123.39932 | 0091 | map |
| 3155 | FC-23 | 44.84777 | -123.39434 | 0084 | map |
| 3156 | FC-24 | 44.84729 | -123.39059 | 0082 | map |
| 3157 | FC-25 | 44.84707 | -123.38626 | 0079 | map |
| 3158 | FC-26 | 44.84657 | -123.38196 | 0087 | map |
| 3159 | FC-27 | 44.84676 | -123.37814 | 0090 | map |
| 3160 | AN-01 | 44.84630 | -123.37404 | 0085 | gps |
| 3161 | AN-02 | 44.84434 | -123.36859 | 0085 | gps |
| 3162 | AN-03 | 44.84161 | -123.36536 | 0074 | gps |
| 3163 | AN-04 | 44.84023 | -123.36105 | 0074 | gps |
| 3164 | AN-05 | 44.83932 | -123.35596 | 0076 | gps |
| 3165 | AN-06 | 44.83794 | -123.35146 | 0084 | gps |
| 3166 | AN-07 | 44.83534 | -123.34807 | 0084 | gps |
| 3167 | AN-08 | 44.83213 | -123.34296 | 0100 | gps |
| 3168 | AN-09 | 44.83365 | -123.33887 | 0122 | gps |
| 3169 | AN-10 | 44.83542 | -123.33569 | 0124 | gps |
| 3170 | AN-11 | 44.83852 | -123.33121 | 0093 | gps |
| 3171 | AN-12 | 44.83862 | -123.32644 | 0071 | gps |
| 3172 | AN-13 | 44.83517 | -123.32083 | 0101 | gps |
| 3173 | AN-14 | 44.83545 | -123.31718 | 0134 | gps |
| 3174 | AN-15 | 44.83727 | -123.31167 | 0186 | gps |
| 3175 | AN-16 | 44.83805 | -123.30783 | 0185 | gps |
| 3176 | AN-17 | 44.83863 | -123.30396 | 0209 | gps |
| 3177 | AN-18 | 44.83841 | -123.30001 | 0224 | gps |
| 3178 | AN-19 | 44.83892 | -123.29524 | 0209 | gps |
| 3179 | AN-20 | 44.83900 | -123.28906 | 0160 | gps |
| 3180 | AN-21 | 44.84163 | -123.28443 | 0125 | gps |
| 3181 | AN-22 | 44.84224 | -123.28159 | 0091 | gps |
| 3182 | AN-23 | 44.84267 | -123.27805 | 0077 | gps |
| 3183 | AN-24 | 44.84247 | -123.27349 | 0106 | gps |
| 3184 | AN-25 | 44.84255 | -123.26822 | 0067 | gps |
| 3185 | AN-26 | 44.84256 | -123.26419 | 0069 | gps |
| 3186 | AN-27 | 44.84226 | -123.26052 | 0083 | gps |
| 3187 | AN-28 | 44.84236 | -123.25622 | 0061 | gps |
| 3188 | AN-29 | 44.84241 | -123.25198 | 0065 | gps |
| 3189 | MO-01 | 44.84235 | -123.24708 | 0063 | gps |
| 3190 | MO-02 | 44.84392 | -123.24295 | 0075 | gps |
| 3191 | MO-03 | 44.84359 | -123.23804 | 0068 | gps |
| 3192 | MO-04 | 44.84348 | -123.23433 | 0062 | gps |
| 3193 | MO-05 | 44.84375 | -123.22846 | 0061 | gps |
| 3194 | MO-06 | 44.84349 | -123.22345 | 0063 | gps |
| 3195 | MO-07 | 44.84347 | -123.21781 | 0067 | gps |
| 3196 | MO-08 | 44.84341 | -123.21052 | 0056 | gps |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3197 | MO-09 | 44.84439 | -123.20311 | 0051 | gps |
| 3198 | MO-10 | 44.84381 | -123.19622 | 0053 | gps |
| 3199 | MO-11 | 44.84442 | -123.19266 | 0050 | gps |
| 3200 | MO-12 | 44.84214 | -123.18794 | 0048 | gps |
| 3201 | MO-13 | 44.84541 | -123.18310 | 0050 | map |
| 3202 | MO-14 | 44.84570 | -123.17314 | 0039 | gps |
| 3203 | MO-15 | 44.84565 | -123.16867 | 0037 | gps |
| 3204 | MO-16 | 44.84560 | -123.16417 | 0036 | gps |
| 3205 | MO-17 | 44.84536 | -123.15960 | 0046 | map |
| 3206 | MO-18 | 44.84715 | -123.15607 | 0046 | map |
| 3207 | MO-19 | 44.84860 | -123.15061 | 0049 | map |
| 3208 | MO-20 | 44.85231 | -123.14663 | 0055 | map |
| 3209 | MO-21 | 44.85067 | -123.14111 | 0107 | map |
| 3210 | MO-22 | 44.85426 | -123.13748 | 0162 | gps |
| 3211 | MO-22A | 44.85368 | -123.13189 | 0207 | gps |
| 3212 | MO-23 | 44.85300 | -123.12810 | 0224 | gps |
| 3213 | MO-24 | 44.85450 | -123.13087 | 0268 | map |
| 3214 | SID-01 | 44.84754 | -123.12239 | 0312 | map |
| 3215 | SID-02 | 44.84732 | -123.11804 | 0293 | map |
| 3216 | SID-03 | 44.84709 | -123.11358 | 0279 | map |
| 3217 | SID-04 | 44.84684 | -123.10884 | 0293 | map |
| 3218 | SID-05 | 44.84684 | -123.10531 | 0270 | map |
| 3219 | SID-06 | 44.84707 | -123.10043 | 0282 | map |
| 3220 | SID-07 | 44.84679 | -123.09636 | 0259 | map |
| 3221 | SID-08 | 44.84666 | -123.09174 | 0250 | map |
| 3222 | SID-09 | 44.84673 | -123.08803 | 0262 | map |
| 3223 | SID-10 | 44.84725 | -123.08382 | 0235 | gps |
| 3224 | SID-11 | 44.84725 | -123.08036 | 0212 | gps |
| 3225 | SID-12 | 44.84873 | -123.07431 | 0189 | map |
| 3226 | SID-13 | 44.84858 | -123.06991 | 0221 | map |
| 3227 | SID-14 | 44.84914 | -123.06557 | 0234 | gps |
| 3228 | SID-15 | 44.84924 | -123.06100 | 0210 | gps |
| 3229 | SID-16 | 44.84714 | -123.05698 | 0207 | gps |
| 3230 | SID-17 | 44.84705 | -123.05266 | 0225 | gps |
| 3231 | SID-18 | 44.84702 | -123.04824 | 0216 | gps |
| 3232 | SID-19 | 44.84704 | -123.04435 | 0205 | gps |
| 3233 | SID-20 | 44.84706 | -123.03942 | 0203 | gps |
| 3234 | SID-21 | 44.84640 | -123.03481 | 0200 | map |
| 3235 | SID-22 | 44.84698 | -123.03121 | 0229 | gps |
| 3236 | SID-23 | 44.84684 | -123.02612 | 0172 | gps |
| 3237 | SID-24 | 44.84569 | -123.02232 | 0199 | gps |
| 3238 | SID-25 | 44.84559 | -123.01678 | 0201 | map |
| 3239 | SID-26 | 44.84425 | -123.01328 | 0174 | gps |
| 3240 | SID-27 | 44.84321 | -123.00879 | 0150 | gps |
| 3241 | SID-28 | 44.84244 | -123.00332 | 0139 | map |
| 3242 | SID-29 | 44.84290 | -122.99981 | 0137 | gps |
| 3243 | TR-01 | 44.84173 | -122.99613 | 0107 | gps |
| 3244 | TR-02 | 44.84153 | -122.99211 | 0087 | gps |
| 3245 | TR-03 | 44.84052 | -122.98876 | 0092 | gps |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3246 | TR-04 | 44.84014 | -122.98358 | 0089 | gps |
| 3247 | TR-05 | 44.84101 | -122.98009 | 0107 | gps |
| 3248 | TR-07 | 44.84277 | -122.97517 | 0136 | gps |
| 3249 | TR-08 | 44.84430 | -122.97000 | 0092 | gps |
| 3250 | TR-09 | 44.84509 | -122.96683 | 0086 | gps |
| 3251 | TR-10 | 44.84657 | -122.96275 | 0078 | gps |
| 3252 | TR-11 | 44.83995 | -122.95696 | 0079 | gps |
| 3253 | TR-12 | 44.84008 | -122.95282 | 0082 | gps |
| 3254 | TR-13 | 44.83961 | -122.94818 | 0081 | gps |
| 3255 | TR-14 | 44.84027 | -122.94390 | 0075 | gps |
| 3256 | TR-15 | 44.84011 | -122.93928 | 0086 | gps |
| 3257 | TR-16 | 44.83874 | -122.93599 | 0090 | map |
| 3258 | TR-17 | 44.83924 | -122.93208 | 0088 | gps |
| 3259 | TR-18 | 44.83908 | -122.92790 | 0100 | gps |
| 3260 | TR-19 | 44.83916 | -122.92335 | 0099 | gps |
| 3261 | TR-20 | 44.83906 | -122.91899 | 0097 | gps |
| 3262 | TR-21 | 44.83904 | -122.91465 | 0097 | gps |
| 3263 | TR-22 | 44.83861 | -122.91065 | 0096 | map |
| 3264 | TR-23 | 44.83904 | -122.90578 | 0101 | gps |
| 3265 | TR-24 | 44.83896 | -122.90125 | 0099 | gps |
| 3266 | TR-25 | 44.83892 | -122.89757 | 0105 | gps |
| 3267 | TR-26 | 44.83900 | -122.89351 | 0098 | gps |
| 3268 | TR-27 | 44.83892 | -122.88857 | 0101 | gps |
| 3269 | TR-28 | 44.83892 | -122.88448 | 0103 | gps |
| 3270 | TR-29 | 44.83916 | -122.88032 | 0100 | gps |
| 3271 | TR-30 | 44.84038 | -122.87602 | 0107 | map |
| 3272 | SA-01 | 44.83337 | -122.87290 | 0108 | map |
| 3273 | SA-02 | 44.83355 | -122.86899 | 0110 | map |
| 3274 | SA-03 | 44.83344 | -122.86463 | 0111 | map |
| 3275 | SA-04 | 44.83322 | -122.85989 | 0113 | map |
| 3276 | SA-05 | 44.83244 | -122.85584 | 0114 | map |
| 3277 | SA-06 | 44.83800 | -122.85058 | 0128 | gps |
| 3278 | SA-07 | 44.83799 | -122.84682 | 0108 | gps |
| 3279 | SA-08 | 44.83791 | -122.83821 | 0111 | gps |
| 3280 | SA-09 | 44.83747 | -122.83789 | 0122 | map |
| 3281 | SA-10 | 44.83786 | -122.84080 | 0124 | gps |
| 3282 | SA-11 | 44.83780 | -122.83420 | 0124 | gps |
| 3283 | SA-12 | 44.83767 | -122.82501 | 0144 | gps |
| 3284 | SA-13 | 44.83767 | -122.82220 | 0145 | gps |
| 3285 | SA-14 | 44.83771 | -122.81615 | 0147 | gps |
| 3286 | SA-15 | 44.83768 | -122.81230 | 0141 | gps |
| 3287 | SA-16 | 44.84416 | -122.80766 | 0156 | gps |
| 3288 | SA-17 | 44.84413 | -122.80342 | 0162 | gps |
| 3289 | SA-18 | 44.84210 | -122.79880 | 0158 | gps |
| 3290 | SA-19 | 44.84294 | -122.79475 | 0170 | gps |
| 3291 | SA-20 | 44.84039 | -122.79012 | 0136 | map |
| 3292 | SA-21 | 44.84018 | -122.78573 | 0165 | map |
| 3293 | SA-22 | 44.84085 | -122.78163 | 0165 | gps |
| 3294 | SA-23 | 44.84092 | -122.77351 | 0172 | gps |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3295 | SA-24 | 44.84459 | -122.77066 | 0170 | gps |
| 3296 | SA-24A | 44.84415 | -122.77133 | 0169 | map |
| 3297 | SA-25 | 44.84418 | -122.76658 | 0181 | map |
| 3298 | SA-26 | 44.84418 | -122.76379 | 0188 | map |
| 3299 | SA-27 | 44.84463 | -122.75976 | 0197 | gps |
| 3300 | SA-28 | 44.84461 | -122.75566 | 0195 | gps |
| 3301 | SA-29 | 44.84813 | -122.75157 | 0213 | gps |
| 3302 | SM-01 | 44.84809 | -122.74539 | 0221 | gps |
| 3303 | SM-02 | 44.84810 | -122.74192 | 0250 | gps |
| 3304 | SM-03 | 44.84864 | -122.73764 | 0252 | gps |
| 3305 | SM-04 | 44.84873 | -122.73380 | 0250 | gps |
| 3306 | SM-05 | 44.84628 | -122.72867 | 0258 | gps |
| 3307 | SM-06 | 44.84633 | -122.72451 | 0255 | gps |
| 3308 | SM-07 | 44.84635 | -122.72040 | 0263 | gps |
| 3309 | SM-08 | 44.84625 | -122.71622 | 0281 | gps |
| 3310 | SM-09 | 44.83711 | -122.71191 | 0289 | gps |
| 3311 | SM-10 | 44.83713 | -122.70776 | 0307 | gps |
| 3312 | SM-11 | 44.83721 | -122.70350 | 0306 | gps |
| 3313 | SM-12 | 44.83715 | -122.70010 | 0318 | gps |
| 3314 | SM-13 | 44.83695 | -122.69600 | 0332 | gps |
| 3315 | SM-14 | 44.83659 | -122.69290 | 0336 | gps |
| 3316 | SM-15 | 44.83627 | -122.68533 | 0338 | map |
| 3317 | SM-16 | 44.83550 | -122.68114 | 0340 | gps |
| 3318 | SM-17 | 44.83510 | -122.67718 | 0351 | map |
| 3319 | SM-18 | 44.83542 | -122.67342 | 0355 | gps |
| 3320 | SM-18A | 44.83747 | -122.66958 | 0381 | map |
| 3321 | SM-19 | 44.83537 | -122.66908 | 0364 | map |
| 3322 | SM-20 | 44.83452 | -122.66530 | 0378 | map |
| 3323 | SM-21 | 44.83219 | -122.65750 | 0393 | gps |
| 3324 | SM-22 | 44.84519 | -122.65482 | 0540 | map |
| 3325 | SM-23 | 44.83636 | -122.65013 | 0578 | gps |
| 3326 | SM-24 | 44.83454 | -122.64654 | 0606 | gps |
| 3327 | SM-25 | 44.83253 | -122.64170 | 0585 | map |
| 3328 | SM-26 | 44.83241 | -122.63732 | 0622 | map |
| 3329 | SM-27 | 44.83028 | -122.63223 | 0637 | map |
| 3330 | SM-28 | 44.82964 | -122.62740 | 0643 | map |
| 3331 | LY-01 | 44.83058 | -122.62259 | 0655 | map |
| 3332 | LY-02 | 44.83106 | -122.61808 | 0665 | map |
| 3333 | LY-03 | 44.83082 | -122.61407 | 0675 | map |
| 3334 | LY-04 | 44.83205 | -122.60946 | 0686 | map |
| 3335 | LY-05 | 44.83258 | -122.60521 | 0704 | map |
| 3336 | LY-06 | 44.83254 | -122.60075 | 0707 | map |
| 3337 | LY-07 | 44.83177 | -122.59622 | 0715 | gps |
| 3338 | LY-08 | 44.82921 | -122.59166 | 0689 | map |
| 3339 | LY-09 | 44.82894 | -122.58671 | 0695 | gps |
| 3340 | LY-10 | 44.82945 | -122.58283 | 0699 | gps |
| 3341 | LY-11 | 44.83049 | -122.57790 | 0705 | gps |
| 3342 | LY-12 | 44.83129 | -122.57464 | 0701 | gps |
| 3343 | LY-13 | 44.82886 | -122.57012 | 0704 | gps |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3344 | LY-14 | 44.83127 | -122.56455 | 0709 | gps |
| 3345 | LY-15 | 44.83208 | -122.55968 | 0719 | map |
| 3346 | LY-16 | 44.83544 | -122.55483 | 0774 | map |
| 3347 | LY-17 | 44.83728 | -122.55010 | 0809 | map |
| 3348 | LY-18 | 44.83718 | -122.54566 | 0853 | map |
| 3349 | LY-19 | 44.83267 | -122.54083 | 0884 | map |
| 3350 | LY-20 | 44.83296 | -122.53630 | 0895 | map |
| 3351 | LY-21 | 44.83212 | -122.53275 | 0908 | map |
| 3352 | LY-22 | 44.83217 | -122.52796 | 0933 | map |
| 3353 | LY-23 | 44.83203 | -122.52280 | 0933 | map |
| 3354 | LY-24 | 44.83081 | -122.51910 | 0941 | gps |
| 3355 | LY-25 | 44.82959 | -122.51480 | 0946 | map |
| 3356 | LY-26 | 44.83144 | -122.51023 | 0960 | map |
| 3357 | LY-27 | 44.83196 | -122.50580 | 0967 | map |
| 3358 | LY-28 | 44.83345 | -122.50081 | 0982 | map |
| 3359 | MC-01 | 44.83690 | -122.49850 | 0994 | gps |
| 3360 | MC-02 | 44.84126 | -122.49368 | 1062 | gps |
| 3361 | MC-03 | 44.84171 | -122.48947 | 1096 | gps |
| 3362 | MC-04 | 44.84319 | -122.48571 | 1172 | gps |
| 3363 | MC-05 | 44.84315 | -122.48572 | 1175 | gps |
| 3364 | MC-06 | 44.84252 | -122.47707 | 1151 | gps |
| 3365 | MC-07 | 44.84490 | -122.47206 | 1023 | gps |
| 3366 | MC-08 | 44.84797 | -122.46792 | 1073 | gps |
| 3367 | MC-09 | 44.84849 | -122.46382 | 0975 | gps |
| 3368 | MC-10 | 44.84498 | -122.45857 | 0985 | gps |
| 3369 | MC-11 | 44.84439 | -122.45378 | 0921 | map |
| 3370 | MC-12 | 44.84361 | -122.45066 | 0890 | map |
| 3371 | MC-13 | 44.84388 | -122.44743 | 0900 | gps |
| 3372 | MC-14 | 44.84078 | -122.44240 | 0801 | gps |
| 3373 | MC-15 | 44.84008 | -122.43742 | 0756 | map |
| 3374 | MC-16 | 44.84850 | -122.43330 | 0841 | gps |
| 3375 | MC-17 | 44.84872 | -122.42873 | 0833 | gps |
| 3376 | MC-18 | 44.84599 | -122.42514 | 0793 | map |
| 3377 | MC-19 | 44.84488 | -122.42027 | 0741 | map |
| 3378 | MC-20 | 44.84120 | -122.41619 | 0695 | map |
| 3379 | MC-21 | 44.84310 | -122.41096 | 0738 | map |
| 3380 | MC-22 | 44.84308 | -122.40760 | 0762 | map |
| 3381 | MC-23 | 44.83998 | -122.40265 | 0725 | map |
| 3382 | MC-24 | 44.84243 | -122.39858 | 0719 | map |
| 3383 | MC-25 | 44.84062 | -122.39361 | 0602 | map |
| 3384 | MC-26 | 44.84316 | -122.38910 | 0610 | map |
| 3385 | MC-27 | 44.84120 | -122.38457 | 0604 | map |
| 3386 | MC-28 | 44.84306 | -122.37956 | 0569 | map |
| 3387 | ELK-01 | 44.84276 | -122.37428 | 0536 | map |
| 3388 | ELK-02 | 44.83322 | -122.36991 | 0373 | map |
| 3389 | ELK-03 | 44.83377 | -122.36530 | 0370 | map |
| 3390 | ELK-04 | 44.83563 | -122.36024 | 0348 | map |
| 3391 | ELK-05 | 44.83717 | -122.35632 | 0366 | map |
| 3392 | ELK-06 | 44.83884 | -122.35246 | 0383 | map |

APPENDIX: STATION LOCATIONS AND ELEVATIONS (cont.)

| Station Number | Station Name* | Latitude (N) Degrees | Longitude (W) Degrees | Elevation Meters | Source |
|---|---|---|---|---|---|
| 3393 | ELK-07 | 44.84013 | -122.34764 | 0408 | map |
| 3394 | ELK-08 | 44.83953 | -122.34238 | 0439 | map |
| 3395 | ELK-09 | 44.84174 | -122.33904 | 0457 | map |
| 3396 | ELK-10 | 44.84303 | -122.33542 | 0476 | map |
| 3397 | ELK-11 | 44.84211 | -122.33097 | 0494 | map |
| 3398 | ELK-12 | 44.84521 | -122.32722 | 0482 | map |
| 3399 | ELK-13 | 44.84518 | -122.32258 | 0463 | map |
| 3400 | ELK-14 | 44.84271 | -122.31933 | 0445 | map |
| 3401 | ELK-15 | 44.84089 | -122.31536 | 0433 | map |
| 3402 | ELK-16 | 44.84073 | -122.31145 | 0463 | map |
| 3403 | ELK-17 | 44.83980 | -122.30722 | 0482 | map |
| 3404 | ELK-18 | 44.84390 | -122.30262 | 0482 | map |
| 3405 | ELK-19 | 44.84615 | -122.29821 | 0452 | map |
| 3406 | ELK-20 | 44.84487 | -122.29406 | 0469 | map |
| 3407 | ELK-21 | 44.84467 | -122.29027 | 0494 | map |
| 3408 | ELK-22 | 44.84594 | -122.28686 | 0500 | map |
| 3409 | ELK-23 | 44.84705 | -122.28257 | 0518 | map |
| 3410 | ELK-23A | 44.84701 | -122.27874 | 0521 | map |
| 3411 | ELK-24 | 44.84694 | -122.27693 | 0524 | map |
| 3412 | ELK-25 | 44.84551 | -122.27244 | 0543 | map |
| 3413 | ELK-26 | 44.84294 | -122.26756 | 0595 | gps |
| 3414 | ELK-27 | 44.84154 | -122.26397 | 0577 | gps |
| 3415 | ELK-28 | 44.83881 | -122.26222 | 0626 | gps |
| 3416 | ELK-29 | 44.83622 | -122.26006 | 0636 | gps |
| 3417 | ELK-30 | 44.83444 | -122.25617 | 0650 | gps |
| 3418 | ELK-31 | 44.83288 | -122.25248 | 0669 | gps |
| 3419 | ELK-32 | 44.83150 | -122.24866 | 0686 | gps |
| 3601 | SM-20A | 44.83330 | -122.62260 | 0381 | map |

*The first two letters of each station name refer to the name of the USGS 7.5 minute series topographic map on which the station is located. DP-Depoe Bay; ML-Mowrey Landing; DL-Devils Lake; ST-Stott Mountain; EM-Euchre Mountain; VZ-Valsetz; FR-Fanno Ridge; FC-Falls City; AN-Airlie North; MO-Monmouth; SID-Sidney; TR-Turner; SA-Stayton; SM-Stout Mountain; LY-Lyons; MC-Mill City North; ELK-Elkhorn.