FINAL DATA REPORT Rev 0
GEOTECHNICAL EXPLORATION AND TESTING

EXELON TEXAS COL PROJECT
VICTORIA COUNTY, TEXAS
POWER BLOCK

July 10, 2008

VOLUME 2
Appendix D – Geophysical Test Data

Prepared By:

MACTEC Engineering and Consulting, Inc.
Raleigh, North Carolina

MACTEC Project No. 6468-07-1777

Prepared For:

Bechtel Power Corporation
Subcontract No. 25352-102-HC4-CY00-00001

CONTENTS

Field Electrical Resistivity Data
Geovision Downhole and P-S Logging Report

FIELD ELECTRICAL RESISTIVITY DATA

MACTEC Engineering and Consulting, Inc.
Raleigh, NC

REPORT OF FIELD RESISTIVITY SOUNDINGS
EXELON TEXAS COL (Victoria) PROJECT
POWER BLOCK
MACTEC PROJECT NO. 6468-07-1777

Work Instruction No.: 216
Method: Wenner Four-Electrode (ASTM G 57-06)

Data Collected by: S. Criscenzo/K. Rudd, February 14, 2008
Equipment: Mini Res Resistivity Meter, SN # 023 - LRI
Calibration Date: January 17, 2008
Calibration Asset Number: 1464

Test Location R-2101 / R-2102 (Center of Lines):

As-Built Northing: N 13412470.72
As-Built Easting: E 2599460.82
Elevation at Center Point: 80.53 feet

Test Location R-2101 Compass Bearing 300 Degrees

Probe Spacing (feet)	Low Range Resistance (ohms)	Resistivity (ohms-feet)
3	1.690	971
5	0.750	718
7.5	0.450	646
10	0.330	632
15	0.210	603
30	0.090	517
50	0.050	479
100	0.030	575
200	0.020	766
300	0.015	862

Test Location R-2102 Compass Bearing 30 Degrees

Probe Spacing (feet)	Low Range Resistance (ohms)	Resistivity (ohms-feet)
3	1.860	1069
5	0.840	804
7.5	0.480	689
10	0.340	651
15	0.210	603
30	0.100	575
50	0.050	479
100	0.030	575
200	0.025	958
280	0.020	1072

(1) Probe spacing of 280 feet modification due to obstruction (ditch)

Prepared By: KAW Date: 3-17-08
Approved By: DSC Date: 3-17-08

REPORT OF FIELD RESISTIVITY SOUNDINGS
EXELON TEXAS COL (Victoria) PROJECT
POWER BLOCK
MACTEC PROJECT NO. 6468-07-1777

Test Location R-2201 / R-2202 (Center of Lines):

As-Built Northing: N 13413399.51
As-Built Easting: E 2600266.58
Elevation at Center Point: 80.66 feet

Test Location R-2201 Compass Bearing 300 Degrees

Probe Spacing (feet)	Low Range Resistance (ohms)	Resistivity (ohms-feet)
3	1.340	770
5	0.710	680
7.5	0.410	589
10	0.280	536
15	0.160	460
30	0.080	460
50	0.060	575
100	0.040	766
200	0.030	1149
300	0.020	1149

Test Location R-2202 Compass Bearing 210 Degrees

Probe Spacing (feet)	Low Range Resistance (ohms)	Resistivity (ohms-feet)
3	1.540	885
5	0.730	699
7.5	0.400	575
10	0.270	517
15	0.160	460
30	0.070	402
50	0.050	479
100	0.030	575
200	0.025	958
280	0.015	804

(1) Probe spacing of 280 feet modification due to obstruction (board in road)

Prepared By: KAW Date: 3·17·08
Approved By: DSC Date: 3-17-08

GEOVision
geophysical services

FINAL REPORT

BORING GEOPHYSICAL LOGGING
BORINGS B-11, B-12, B-2162A OFFSET, B-2174A OFFSET, B-2176A OFFSET, B-2182A OFFSET, B-2262A OFFSET, B-2274A OFFSET, B-2276A OFFSET, B-2282A OFFSET, B-2301, B-2302, B-2303, B-2304, B-2305, B-2306 AND B-2307

EXELON COL - VICTORIA COUNTY SITE

Report 7534-01 rev 0

April 29, 2008

FINAL REPORT

BORING GEOPHYSICAL LOGGING
BORINGS B-11, B-12, B-2162A OFFSET, B-2174A OFFSET, B-2176A OFFSET, B-2182A OFFSET, B-2262A OFFSET, B-2274A OFFSET, B-2276A OFFSET, B-2282A OFFSET, B-2301, B-2302, B-2303, B-2304, B-2305, B-2306 AND B-2307

EXELON COL - VICTORIA COUNTY SITE

Report 7534-01 rev 0

April 29, 2008

Prepared for:

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TABLE OF CONTENTS

Table of Figures

Table of Tables

APPENDICES

INTRODUCTION

Boring geophysical measurements were collected in seventeen uncased borings located at the Exelon Combined Operating License (COL) Application Project, located in Victoria County, Texas. Geophysical data acquisition was performed between October 23 and November 18, 2007 by Robert Steller and Charles Carter of **GEO***Vision*. Data analysis and report preparation was performed by Robert Steller and reviewed by John Diehl of GEOVision. The work was performed under subcontract with MACTEC Engineering and Consulting, Inc., (MACTEC) with Steven Crisenzo serving as the point of contact for MACTEC.

This report describes the field measurements, data analysis, and results of this work.

SCOPE OF WORK

This report presents the results of boring geophysical measurements collected between October 23 and November 18, 2007, in seventeen borings, as detailed in Table 1. The purpose of these studies was to supplement stratigraphic information obtained during MACTEC's soil sampling program and to acquire shear wave velocities and compressional wave velocities as a function of depth, as a component of the Exelon COL Project, located in Victoria County, Texas.

The B-2100A OFFSET and B-2200A OFFSET series borings were located within the proposed Power Block area. B-11, B-12 and the B-2300 series borings pertain to the proposed Cooling Water Basin and/or the area generally outside the Power Block area.

The OYO/Robertson Suspension PS Logging System (Suspension System) was used to obtain in-situ horizontal shear (S_H) and compressional (P) wave velocity measurements in all 17 borings at 1.6 foot intervals. The acquired data was analyzed and a profile of velocity versus depth was produced for both compressional and horizontally polarized shear waves.

The Robertson ELGX and 3ACS probes were used to collect long and short normal resistivity, single point resistance (SPR) Spontaneous Potential (SP), natural gamma and 3 arm mechanical caliper data at 0.05 foot intervals in all 17 borings to aid in identification of stratagraphic transitions.

The Robertson High Resolution Acoustic Televiewer (HiRAT) was used to collect deviation data at 0.04 foot intervals in 13 borings. Deviation logs of B-11 and B-12 were not requested by MACTEC, as they were part of the fatal flaw study, not the COL project. B-2274A OFFSET logging was ended at approximately 10:30 pm on November 7, 2007, and the GEOVision field staff (Charles Carter) offered to return the following morning and perform the deviation log. This offer was declined by the Bechtel Site Representative. Several days later, prior to abandonment of the boring, other GEOVision field staff (Robert Steller) again offered to perform a deviation log in B-2274A OFFSET before abandonment. Again, this offer was declined by the Bechtel Site Representative. B-2305 logging was ended at approximately 7:30 pm on November 18, 2007, with a substantial collapse of the boring. The GEOVision field staff, (Robert Steller) after consulting with MACTEC field staff and the Bechtel Site representative, declined to perform a deviation log the boring, citing risk of probe loss due to boring collapse.

A detailed reference for the velocity measurement techniques used in this study is:

> Guidelines for Determining Design Basis Ground Motions, Report TR-102293, Electric Power Research Institute, Palo Alto, California, November 1993, Sections 7 and 8.

INSTRUMENTATION

Suspension Instrumentation

Suspension soil velocity measurements were performed in seventeen borings using the suspension PS logging system, manufactured by OYO Corporation, and their subsidiary, Robertson Geologging. This system directly determines the average velocity of a 3.3 foot high segment of the soil column surrounding the boring of interest by measuring the elapsed time between arrivals of a wave propagating upward through the soil column. The receivers that detect the wave, and the source that generates the wave, are moved as a unit in the boring producing relatively constant amplitude signals at all depths.

The suspension system probe consists of a combined reversible polarity solenoid horizontal shear-wave source (S_H) and compressional-wave source (P), joined to two biaxial receivers by a flexible isolation cylinder, as shown in Figure 2. The separation of the two receivers is 3.3 feet, allowing average wave velocity in the region between the receivers to be determined by inversion of the wave travel time between the two receivers. The total length of the probe as used in these surveys is 19 feet, with the center point of the receiver pair 12.1 feet above the bottom end of the probe.

The probe receives control signals from, and sends the digitized receiver signals to, instrumentation on the surface via an armored 4 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured to provide probe depth data, using a 3.28 foot circumference sheave fitted with a digital rotary encoder.

The entire probe is suspended in the boring by the cable, therefore, source motion is not coupled directly to the boring walls; rather, the source motion creates a horizontally propagating impulsive pressure wave in the fluid filling the boring and surrounding the source. This pressure wave is converted to P and S_H-waves in the surrounding soil and rock as it passes through the casing and grout annulus and impinges upon the wall of the boring. These waves propagate through the soil and rock surrounding the boring, in turn causing a pressure wave to be generated in the fluid

surrounding the receivers as the soil waves pass their location. Separation of the P and S_H-waves at the receivers is performed using the following steps:

1. Orientation of the horizontal receivers is maintained parallel to the axis of the source, maximizing the amplitude of the recorded S_H -wave signals.
2. At each depth, S_H-wave signals are recorded with the source actuated in opposite directions, producing S_H-wave signals of opposite polarity, providing a characteristic S_H-wave signature distinct from the P-wave signal.
3. The 6.3 foot separation of source and receiver 1 permits the P-wave signal to pass and damp significantly before the slower S_H-wave signal arrives at the receiver. In faster soils or rock, the isolation cylinder is extended to allow greater separation of the P- and S_H-wave signals.
4. In saturated soils, the received P-wave signal is typically of much higher frequency than the received S_H-wave signal, permitting additional separation of the two signals by low pass filtering.
5. Direct arrival of the original pressure pulse in the fluid is not detected at the receivers because the wavelength of the pressure pulse in fluid is significantly greater than the dimension of the fluid annulus surrounding the probe (meter versus centimeter scale), preventing significant energy transmission through the fluid medium.

In operation, a distinct, repeatable pattern of impulses is generated at each depth as follows:

1. The source is fired in one direction producing dominantly horizontal shear with some vertical compression, and the signals from the horizontal receivers situated parallel to the axis of motion of the source are recorded.
2. The source is fired again in the opposite direction and the horizontal receiver signals are recorded.
3. The source is fired again and the vertical receiver signals are recorded. The repeated source pattern facilitates the picking of the P and S_H-wave arrivals; reversal of the source changes the polarity of the S_H-wave pattern but not the P-wave pattern.

The data from each receiver during each source activation is recorded as a different channel on the recording system. The Suspension PS system has six channels (two simultaneous recording channels), each with a 1024 sample record. The recorded data are displayed as six channels with a common time scale. Data are stored on disk for further processing. Up to 8 sampling sequences can be summed to improve the signal to noise ratio of the signals.

Review of the displayed data on the recorder or computer screen allows the operator to set the gains, filters, delay time, pulse length (energy), sample rate, and summing number to optimize the quality of the data before recording. Verification of the calibration of the Suspension PS digital recorder is performed every twelve months using a NIST traceable frequency source and counter, as outlined in Appendix C.

Caliper / Natural Gamma Instrumentation

Caliper and natural gamma data were collected using a Model 3ACS 3-leg caliper probe, serial number 5368, manufactured by Robertson Geologging, Ltd. With the short arm configuration used in these surveys, the probe permitted measurement of boring diameters between 1.6 and 16 inches. With this tool, caliper measurements were collected concurrent with measurement of natural gamma emission from the boring walls. The probe was 6.82 feet long, and 1.5 inches in diameter.

This probe is useful in the following studies:

- Measurement of boring diameter and volume
- Location of hard and soft formations
- Location of fissures, caving, pinching and casing damage
- Bed boundary identification
- Strata correlation between borings

The probe receives control signals from, and sends the digitized measurement values to, a Robertson Micrologger II on the surface via an armored 4 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured to provide probe depth data, using a 3.28 foot circumference sheave fitted with a digital rotary encoder. The probe and depth data are transmitted by USB link from the Micrologger unit to a laptop computer where it is displayed and stored on hard disk.

The caliper consists of three arms, each with a toothed quadrant at their base, pivoted in the lower probe body. A toothed rack engages with each quadrant, thus constraining the arms to move together. Linear movement of the rack is converted to opening and closing of the arms. Springs hold the arms open in the operating position. A motor drive is provided to retract the arms, allowing the probe to be lowered into the boring. The rack is coupled to a potentiometer which converts movement into a voltage sensed by the probe's microprocessor.

Natural gamma measurements rely upon small quantities of radioactive material contained in all soil and rocks to emit gamma radiation as they decay. Trace amounts of Uranium and Thorium are present in a few minerals, where potassium-bearing minerals such as feldspar, mica and clays will include traces of a radioactive isotope of Potassium. These emit gamma radiation as they decay with an extremely long half-life. This radiation is detected by scintillation - the production of a tiny flash of light when gamma rays strike a crystal of sodium iodide. The light is converted into an electrical pulse by a photomultiplier tube. Pulses above a threshold value of 60 thousand electron Volts (KeV) are counted by the probe's microprocessor. The measurement is useful because the radioactive elements are concentrated in certain soil and rock types e.g. clay or shale, and depleted in others e.g. sandstone or coal.

Resistivity / Spontaneous Potential / Natural Gamma Instrumentation

Resistivity, spontaneous potential and natural gamma data were collected using a Model ELXG electric log probe, S/N 5490, manufactured by Robertson Geologging, Ltd. This probe measures Single Point Resistance (SPR), short normal (16 inch) resistivity, long normal (64 inch) resistivity, Spontaneous Potential (SP) and natural gamma. The probe is 8.20 feet long, and 1.73 inches in diameter.

This probe is useful in the following studies:

- Bed boundary identification
- Strata correlation between borings
- Strata geometry and type (shale indication)

The probe receives control signals from, and sends the digitized measurement values to, a Robertson Micrologger II on the surface via an armored 4 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured to provide probe depth data, using a 3.28 foot circumference sheave fitted with a digital rotary encoder. The probe and depth data are transmitted by USB link from the Micrologger unit to a laptop computer where it is displayed and stored on hard disk.

The resistivity section of the probe operates by driving an alternating current into the formation from the central SPR/DRIVE electrode. The current returns via the logging cable armor. To ensure adequate penetration of the formation the logging cable is insulated for approximately 30 feet from the cablehead. Voltages are measured between the 16 inch and 64 inch electrodes and the remote earth connection at surface, as noted below:

- Single Point Resistance (SPR): The current flowing to the cable armor is measured along with the voltage at the SPR electrode. The voltage divided by current gives resistance.

- Spontaneous Potential (SP): This is the DC bias of the 16 inch electrode with respect to the voltage return at the surface (ground stake).

Data quality depends upon good grounding at the surface. This is achieved with a metal stake driven into the mud-pit.

Boring Deviation Instrumentation

Boring deviation data were collected in thirteen borings using a High Resolution Acoustic Televiewer probe (HiRAT), serial number 5174, manufactured by Robertson Geologging, Ltd.

In this application, this probe is useful in the following studies:

- Measurement of boring inclination and deviation from vertical
- Determination of need to correct soil and geophysical log depths to true vertical depths

The probe receives control signals from, and sends the digitized measurement values to a Robertson Micrologger II on the surface via an armored 4 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured to provide probe depth data, using a 3.28 foot circumference sheave fitted with a digital rotary encoder. The probe and depth data are transmitted by USB link from the Micrologger unit to a laptop computer where it is displayed and stored on hard disk.

The probe contains a fluxgate magnetometer to monitor magnetic north, and all raw televiewer data are referenced to magnetic north. A three-axis accelerometer is enclosed in the probe, providing boring dip data that, when processed with the orientation data, allows boring deviation data to be obtained.

The data are presented on a computer screen for operator review during the logging run, and stored on hard disk for later processing.

MEASUREMENT PROCEDURES

Suspension Measurement Procedures

All seventeen borings were logged uncased, filled with bentonite or polymer based drilling mud. Measurements followed the **GEO***Vision* Procedure for P-S Suspension Seismic Velocity Logging, revision 1.31, as presented in Appendix E. These procedures were supplied and approved in advance of the work. In each boring, the probe was positioned with the top of the probe at the top of the casing, and the electronic depth counter was set to 8.2 feet, the distance between the mid-point of the receiver and the top of the probe, minus the height of the casing stick-up, as verified with a tape measure, and recorded on the field logs. The probe was lowered to the bottom of the boring, and then returned to the surface, stopping at 1.6 foot intervals to collect data, as summarized in Table 3.

At each measurement depth the measurement sequence of two opposite horizontal records and one vertical record was performed, and the gains were adjusted as required. The data from each depth were viewed on the computer display, checked, and recorded on disk before moving to the next depth.

Upon completion of the measurements, the probe zero depth indication at the depth reference point was verified prior to removal from the boring, and the after survey depth error (ASDE) was calculated, as summarized in Table 4.

Caliper / Natural Gamma Measurement Procedures

All seventeen borings were logged uncased, filled with bentonite or polymer based drilling mud. Measurements followed ASTM D6167 Conducting Borehole Geophysical Logging – Mechanical Caliper.

Prior to and following each logging run, the caliper tool was verified, using the manufacturer's supplied three point calibration jig, and a PVC coupling provided by MACTEC with an inside diameter traceable to NIST. The three point jig is a circular plate with a series of holes in the top surface into which the tips of the caliper arms fit. This has circles of diameters from 2 to 12 inches. The calibration jig is placed over a bucket with the probe standing upright with its nose section passing through the jig's central hole. The caliper probe arms are opened under program control, and a log is recorded as the tips of the arms are placed in the holes on the calibration jig and inside the PVC coupling. The measured dimensions, as displayed on the recording computer screen was recorded on the field log sheet, as well as in the digital files, and compared with the calibration jig dimensions. These files are presented in LAS 2.0 format in the boring specific sub-directories of the data directory on the data disk (CD-R) labeled Report 7534-02 that accompanies this report. If the verification records did not fall within +/- 0.05 inches of the calibration jig values, the caliper tool was re-calibrated, using the three point calibration jig, and the log repeated. As with the verification, the tips of the caliper arms are placed in the holes marked with the required diameter. During calibration, the value of the current calibration point, as stamped on the jig, is entered via the control computer. The system counts for 15 seconds to make an average of the response. The procedure is repeated for the second and third required openings.

The computation and generation of the calibration coefficient file is entirely automatic. The calibration file is simply the set of coefficients of a quadratic curve which fits the three data points. Figure 1 shows the response of a caliper probe using data gathered during calibration.

Natural gamma was not calibrated in the field, as it is a qualitative measurement, not a quantitative value, and is used only to assist in picking transitions between stratigraphic units, as described in ASTM D6274, Conducting Borehole Geophysical Logging - Gamma.

In each boring, the probe was positioned with the top of the probe at the top of the mud box, and the electronic depth counter was set to 6.82 feet, the specified length of the probe, minus the height of the mud box, as verified with a tape measure, and recorded on the field logs. The probe was lowered to the bottom of the boring, where the caliper legs were opened, and data collection begun. The probe was then returned to the surface at 10 feet/minute, collecting data continuously at 0.05 foot spacing, as summarized in Table 3.

Upon completion of the measurements, the probe zero depth indication at the depth reference point was verified prior to removal from the boring, and the after survey depth error (ASDE) was calculated, as summarized in Table 4.

Resistivity / Spontaneous Potential / Natural Gamma Procedures

All seventeen borings were logged uncased, filled with bentonite or polymer based drilling mud. The probe was connected to the logging cable using a 32.8 foot long insulating cable section or "yoke". The probe head was insulated by wrapping all exposed metal of the cablehead and probe with self-amalgamating insulation tape. The 32.8 foot insulating yoke was checked for any damage, and repaired with self-amalgamating insulation tape as needed.

The reference ground stake was driven firmly into the mud pit, and connected to the ground socket on the winch switch box.

This sonde was not calibrated in the field, as it is used to provide qualitative measurements, not quantitative values, and is used only to assist in picking transitions between stratigraphic units, as described in ASTM D5753, Planning and Conducting Borehole Geophysical Surveys. A functional test is performed prior to each logging run by applying fixed resistance values across the probe electrodes, as well as a 100 millivolt signal across the SP electrodes, and recording the resultant output of the system. These functional checks are presented in LAS 2.0 format in the boring

specific sub-directories of the data directory on the data disk (CD-R) labeled Report 7534-02 that accompanies this report.

Natural gamma was not calibrated in the field, as it is a qualitative measurement, not a quantitative value, and is used only to assist in picking transitions between stratigraphic units, as described in ASTM D6274, Conducting Borehole Geophysical Logging - Gamma.

In each boring, the probe was positioned with the top of the probe at the top of the casing or mud box, and the electronic depth counter was set to 8.2 feet, the specified length of the probe, minus the height of the casing stick-up or mud box, as verified with a tape measure. When logging on smaller drill rigs, the depth was zeroed to the top of the yoke, and 32.8 feet was added to the zero depth, as recorded in the field logs. The probe was lowered to the bottom of the boring, where data collection was begun. The probe was then returned to the surface at 10 feet/minute, collecting data continuously at 0.05 foot spacing, as summarized in Table 3. The natural gamma data collected in these logs is redundant with the data collected in the caliper / natural gamma logs, and the caliper / natural data may be used to verify the natural gamma data collected in these logs.

Normally, when the un-insulated section of the logging cable leaves the boring fluid, the log is terminated, as the electrical measurements do not function under these conditions. However, in these surveys, the log was continued, in order to collect as much natural gamma data as possible before the yoke connector reached the measuring wheel.

Upon completion of the measurements, the probe zero depth indication at the depth reference point was verified prior to removal from the boring, and the after survey depth error (ASDE) was calculated, as summarized in Table 4.

Boring Deviation Measurement Procedures

Thirteen of the seventeen borings were logged for deviation as uncased borings, filled with bentonite or polymer based drilling mud. Although the televiewer is intended for use in cored hard rock borings where it is used to image jointing and bedding planes, and it cannot produce a useful image in the soils at this site, the logs were run in order to provide a deviation log for the borings. Measurements followed the **GEO***Vision* standard field procedures, as presented in Appendix E.

Prior to use, the televiewer probe tiltmeter and compass functions were checked by comparison with a Brunton surveyors' compass.

In each boring, the televiewer probe was positioned with the top of the probe at the top of the casing, and the electronic depth counter was set to the specified length of the probe, minus the height of the casing stick-up, as verified with a tape measure, and recorded on the field logs. The probe was lowered to the bottom of the boring, and data collection begun. The probe was then returned to the surface at 10.0 feet/minute, collecting data continuously at 0.04 foot intervals, as summarized in Table 3.

Upon completion of the measurements, the probe zero depth indication at grade was verified prior to removal from the boring and the after survey depth error (ASDE) was calculated, as summarized in Table 4.

DATA ANALYSIS

Suspension Analysis

Using the proprietary OYO program PSLOG.EXE version 1.0, included in the data disk (CD-R) labeled Report 7534-02 that accompanies this report, the recorded digital waveforms were analyzed to locate the most prominent first minima, first maxima, or first break on the vertical axis records, indicating the arrival of P-wave energy. The difference in travel time between receiver 1 and receiver 2 (R1-R2) arrivals was used to calculate the P-wave velocity for that 3.3 foot segment of the soil column. When observable, P-wave arrivals on the horizontal axis records were used to verify the velocities determined from the vertical axis data. The time picks were then transferred into an EXCEL template (EXCEL version 2003 SP2) to complete the velocity calculations based upon the arrival time picks made in PSLOG. The PSLOG pick files and the EXCEL analysis files are included in the boring specific directories on the data disk (CD-R) labeled Report 7534-02 that accompanies this report.

The P-wave velocity over the 6.3 foot interval from source to receiver 1 (S-R1) was also picked using PSLOG, and calculated and plotted in EXCEL, for quality assurance of the velocity derived from the travel time between receivers. In this analysis, the depth values as recorded were increased by 4.8 feet to correspond to the mid-point of the 6.3 foot S-R1 interval. Travel times were obtained by picking the first break of the P-wave signal at receiver 1 and subtracting 0.3 milliseconds, the calculated and experimentally verified delay from source trigger pulse (beginning of record) to source impact. This delay corresponds to the duration of acceleration of the solenoid before impact.

As with the P-wave records, the recorded digital waveforms were analyzed to locate clear S_H-wave pulses, as indicated by the presence of opposite polarity pulses on each pair of horizontal records. Ideally, the S_H-wave signals from the 'normal' and 'reverse' source pulses are very nearly inverted images of each other. Digital Fast Fourier Transform – Inverse Fast Fourier Transform (FFT – IFFT) lowpass filtering was used to remove the higher frequency P-wave signal from the S_H-wave

signal. Different filter cutoffs were used to separate P- and S_H-waves at different depths, ranging from 600 Hz in the slowest zones to 2000 Hz in the regions of highest velocity. At each depth, the filter frequency was selected to be at least twice the fundamental frequency of the S_H-wave signal being filtered.

Generally, the first maxima were picked for the 'normal' signals and the first minima for the 'reverse' signals, although other points on the waveform were used if the first pulse was distorted. The absolute arrival time of the 'normal' and 'reverse' signals may vary by +/- 0.2 milliseconds, due to differences in the actuation time of the solenoid source caused by constant mechanical bias in the source or by boring inclination. This variation does not affect the R1-R2 velocity determinations, as the differential time is measured between arrivals of waves created by the same source actuation. The final velocity value is the average of the values obtained from the 'normal' and 'reverse' source actuations.

As with the P-wave data, S_H-wave velocity calculated from the travel time over the 6.3 foot interval from source to receiver 1 was calculated and plotted for verification of the velocity derived from the travel time between receivers. In this analysis, the depth values were increased by 4.8 foot to correspond to the mid-point of the 6.3 foot S-R1 interval. Travel times were obtained by picking the first break of the S_H-wave signal at the near receiver and subtracting 0.3 milliseconds, the calculated and experimentally verified delay from the beginning of the record at the source trigger pulse to source impact.

These data and analysis were reviewed by John Diehl as a component of **GEO***Vision*'s in-house QA-QC program.

Figure 3 shows an example of R1 - R2 measurements on a sample filtered suspension record. In Figure 3, the time difference over the 3.3 foot interval of 1.88 milliseconds for the horizontal signals is equivalent to an S_H-wave velocity of 1745 feet/second. Whenever possible, time differences were determined from several phase points on the S_H-waveform records to verify the data obtained from the first arrival of the S_H-wave pulse. Figure 4 displays the same record before filtering of the S_H-waveform record with a 1400 Hz FFT - IFFT digital lowpass filter, illustrating

the presence of higher frequency P-wave energy at the beginning of the record, and distortion of the lower frequency S_H-wave by residual P-wave signal.

Caliper / Natural Gamma Analysis

No analysis is required with the caliper or natural gamma data; however depths to identifiable boring features were compared to verify compatible depth readings on all logs. Using Robertson Geologging Winlogger software version 1.5, build 401J, these data were combined with the resistivity, ELOG based natural gamma and spontaneous potential (SP) logs, and converted to LAS 2.0 and PDF formats for transmittal to the client.

Resistivity / Spontaneous Potential / Natural Gamma Analysis

No analysis is required with the resistivity, natural gamma or spontaneous potential data; however depths to identifiable boring features were compared to verify compatible depth readings on all logs. Using Robertson Geologging Winlogger software version 1.5, build 401J, these data were combined with the caliper and caliper-based natural gamma logs, and converted to LAS 2.0 and PDF formats for transmittal to the client.

Boring Deviation Analysis

The collected Acoustic Televiewer data were processed with Robertson Geologging's RGLDIP program, version 6.2, to extract the deviation data and produce an ASCII file and plots of deviation data as presented in the boring specific sub-directories in the data directory on the data disk (CD-R) labeled Report 7534-02 that accompanies this report, and summarized in Table 5.

RESULTS

Suspension Results

Suspension R1-R2 P- and S_H-wave velocities are plotted in Figures 5, 7, 9, 12, 15, 18, 21, 24, 26, 29, 32, 35, 38, 41, 44, 46 and 49. The suspension velocity data presented in these figures are presented in Tables 6 – 22. The PSLOG and EXCEL analysis files for each boring are included in the boring specific directories on the data disk (CD-R) labeled Report 7534-02 that accompanies this report, along with the raw and filtered waveforms.

P- and S_H-wave velocity data from R1-R2 analysis and quality assurance analysis of S-R1 data are plotted together in Figures A-1 through A-17 to aid in visual comparison. It should be noted that R1-R2 data are an average velocity over a 3.3 foot segment of the soil column; S-R1 data are an average over 6.3 feet, creating a significant smoothing relative to the R1-R2 plots. S-R1 data are presented in Tables A-1 through A-17, and included in the EXCEL analysis files for each boring on the data disk (CD-R) labeled Report 7534-02 that accompanies this report.

Calibration procedures and records for the suspension PS measurement system are presented in Appendix C, and **GEO***Vision* standard field log sheets for all borings are reproduced in Appendix D.

The **GEO***Vision* standard field procedures are reproduced in Appendix E.

Caliper/ Natural Gamma Results

Caliper and natural gamma data are presented in combined log plots with resistivity and spontaneous potential as single page logs in Figures 6, 8, 10, 13, 16, 19, 22, 25, 27, 30, 33, 36, 39, 42, 45, 47 and 50, as well as multi-page logs in Appendix B. On these plots, the following acronyms are used:

- NGAM: Natural gamma data collected with the ELOG probe.
- SP: Spontaneous (self) potential.

- CNGA: Natural gamma data collected with the caliper probe.
- CALP: Caliper (borehole diameter)
- SHN: Short normal resistivity (16 inch resistivity)
- LON: Long normal resistivity (64 inch resistivity)
- SPR: Single point resistance

LAS 2.0 data and Acrobat files of the plots for each boring are included in the boring specific sub-directories in the data directory on the data disk (CD-R) labeled Report 7534-02 that accompanies this report.

Resistivity / Spontaneous Potential / Natural Gamma Results

Resistivity and spontaneous potential data are presented in combined log plots with caliper and natural gamma data as single page logs in Figures 6, 8, 10, 13, 16, 19, 22, 25, 27, 30, 33, 36, 39, 42, 45, 47 and 50, as well as multi-page logs in Appendix B. LAS 2.0 data and Acrobat files for each boring are included in the boring specific sub-directories in the data directory on the data disk (CD-R) labeled Report 7534-02 that accompanies this report.

Boring Deviation Results

Boring deviation data are presented graphically in Figures 11, 14, 17, 20, 23, 28, 31, 34, 37, 40, 43, 48 and 51, and summarized in Table 5. Deviation data plots in Acrobat format and deviation data at 1.0 foot stations are presented in ASCII format in the boring specific sub-directories of the data directory on the data disk (CD-R) labeled Report 7534-02 that accompanies this report.

SUMMARY

Discussion of Suspension Results

Suspension PS velocity data are ideally collected in an uncased fluid filled boring, drilled with rotary mud (rotary wash) methods. The borings at this site were ideal for collection of suspension PS velocity data, as they were drilled specifically for geophysical logging immediately before the logs were performed. This approach provided clean borings with a minimum of slough, squeezing and washouts.

Suspension PS velocity data quality is judged based upon 5 criteria:

1. Consistent data between receiver to receiver (R1 – R2) and source to receiver (S – R1) data.
2. Consistent relationship between P-wave and S_H -wave (excluding transition to saturated soils)
3. Consistency between data from adjacent depth intervals.
4. Clarity of P-wave and S_H-wave onset, as well as damping of later oscillations.
5. Consistency of profile between adjacent borings, if available.

All of these data show excellent correlation between R1 – R2 and S – R1 data, as well as excellent correlation between P-wave and S_H-wave velocities. The upper 50 feet of B-2174A OFFSET did not provide interpretable P-wave data, due to washouts over 10 inches, as indicated on the caliper log, and high ambient noise from adjacent drill rigs operating at the time of the log. Below this zone, P-wave and S_H-wave onsets are very clear, and later oscillations are well damped. There is local variation between the profiles from all these borings, but the generally velocity trends are similar.

Discussion of Caliper / Natural Gamma Results

Caliper and natural gamma data were collected for the entire depth of each boring, as natural gamma data can be collected through PVC casing without attenuation, and through steel casing with some attenuation. The caliper logs for these borings generally show diameter of less than 6 inches below 20 feet, with the exception of B-2174A OFFSET which was eroded out almost 12 inches. Natural gamma data were collected with this tool in all the borings, as well as with the ELOG probe, and the comparison between the two data sets provides an almost exact match, verifying the performance of the natural gamma measuring systems.

Discussion of Resistivity / Spontaneous Potential / Natural Gamma Results

These electrical methods provide fair demarcation of different lithologic units at this site, though there appears to be some influence of salt water intrusion. All three resistivity logs show similar structure, and match closely with the structure indicated by the natural gamma logs. The electrical data are not valid above 40 feet, as the upper yoke electrode moves out of the boring fluid at this depth. This natural gamma data agrees well with the natural gamma data collected with the caliper probe. The comparison between the two data sets provides an almost exact match, verifying the performance of the natural gamma measuring systems.

Discussion of Boring Deviation Results

The thirteen borings in which deviation data was collected were inclined at 1.8 degrees or less from vertical, and the maximum error in depth value was 0.2 feet in 303 ft, or 0.07 percent, as presented in Table 5. This error is less than depth errors from other causes, and no adjustment of log depth is indicated.

Quality Assurance

These boring geophysical measurements were performed using industry-standard or better methods for measurements and analyses. All work was performed under **GEO***Vision* quality assurance procedures, which include:

- Use of NIST-traceable calibrations, where applicable, for field and laboratory instrumentation
- Use of standard field data logs
- Use of independent verification of velocity data by comparison of receiver-to-receiver and source-to-receiver velocities
- Independent review of calculations and results by a registered professional engineer, geologist, or geophysicist.

Suspension Data Reliability

P- and S_H-wave velocity measurement using the Suspension Method gives average velocities over a 3.3 foot interval of depth. This high resolution results in the scatter of values shown in the graphs. Individual measurements are very reliable with estimated precision of +/- 5%. Standardized field procedures and quality assurance checks contribute to the reliability of these data.

BORING DESIGNATION	DATES LOGGED	COORDINATES (FEET) [1]		ELEVATION [1] (FEET)
		NORTHING	EASTING	
B-11	10/23/07	13,411,479.49	2,607,866.27	74.47
B-12	10/24/07	13,418,446.37	2,606,546.46	76.70
B-2162A OFFSET	11/14/07	13,412,378.65	2,599,792.16	80.05
B-2174A OFFSET	11/9-12/07	13,412,316.51	2,599,991.79	79.28
B-2176A OFFSET	11/13/07	13,412,522.55	2,600,178.10	79.99
B-2182A OFFSET	11/12/07	13,412,209.92	2,600,137.01	79.70
B-2262A OFFSET	11/13-14/07	13,413,146.80	2,600,433.53	80.57
B-2274A OFFSET	11/10/07	13,413,070.52	2,600,633.47	80.34
B-2276A OFFSET	11/10/07	13,413,289.36	2,600,817.99	80.63
B-2282A OFFSET	11/11/07	13,412,962.40	2,600,766.39	80.46
B-2301	11/17/07	13,414,414.60	2,596,251.62	80.79
B-2302	11/15/07	13,407,401.61	2,598,386.93	80.00
B-2303	11/17/07	13,402,314.55	2,600,497.11	75.56
B-2304	11/17/07	13,396,541.80	2,608,710.01	68.12
B-2305	11/18/07	13,406,649.21	2,621,680.51	65.58
B-2306	11/16/07	13,411,472.15	2,615,253.02	64.68
B-2307	11/18/07	13,420,917.89	2,603,184.91	76.38

[1] Survey data and elevation provided by MACTEC

Table 1. Boring locations and logging dates

Winch GEOVision 4-conductor
Sheave - Measuring wheel GEOVision S/N 101, S/N 102
Robertson Suspension PS telemetry unit M/N 3403 S/N 160023, 160024
Robertson Micrologger II S/N 5310
OYO Suspension PS Logging recorder M/N 170 S/N 19029
OYO Suspension PS Logger Borehole Probe, includes:
Receiver/Sensor S/N 30086, S/N 12008, S/N 20042, S/N 30086
Isolation tube, 1m M/N 3387B S/N 280068, S/N 24053
OYO PS 170 Source M/N 3304 S/N 19043, S/N 21050
Driver M/N 3386A S/N 27073, S/N 490157
Weight M/N 3302W S/N 12007, S/N 470150

Table 2. Suspension PS Logging Equipment

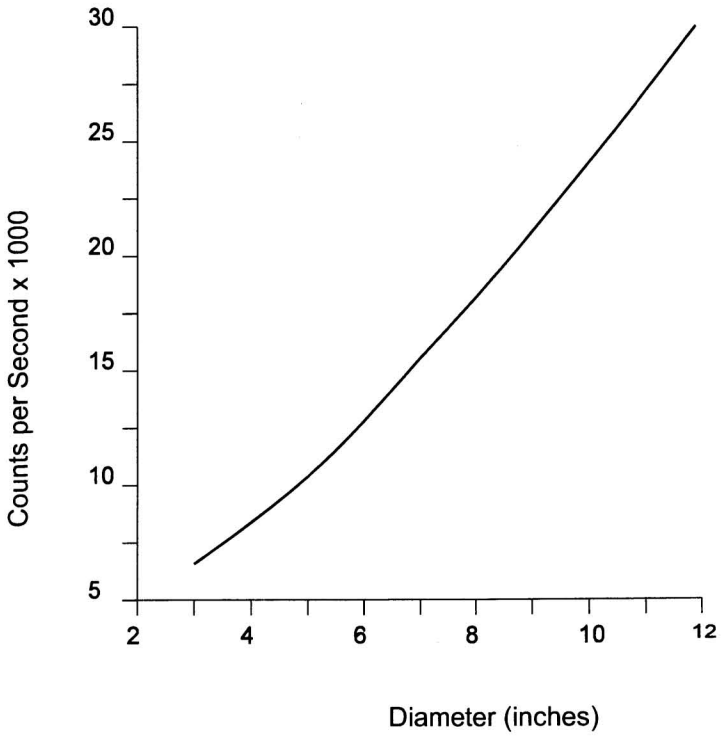

Figure 1. Example Calibration Curve for Caliper Probe

BORING NUMBER	TOOL AND RUN NUMBER	DEPTH RANGE (FEET)	OPEN HOLE (FEET)	DEPTH TO BOTTOM OF CASING (FEET)	SAMPLE INTERVAL (FEET)	DATE LOGGED
B-11	ELOG/GAMMA 1		-	NONE	0.05	10/23/07
B-11	SUSPENSION PS 1		-	NONE	1.6	10/23/07
B-11	CALIPER/GAMMA 1		-	NONE	0.05	10/23/07
B-12	ELOG/GAMMA 1		-	NONE	0.05	10/23/07
B-12	SUSPENSION PS 1		-	NONE	1.6	10/23/07
B-12	CALIPER/GAMMA 1		-	NONE	0.05	10/23/07
B-2162A OFFSET	ELOG/GAMMA 1	208.0 – 40.2	208.0	NONE	0.05	11/14/07
B-2162A OFFSET	SUSPENSION PS 1	8.5 – 195.2	-	NONE	1.6	11/14/07
B-2162A OFFSET	CALIPER/GAMMA 1	202.2 – 5.9	-	NONE	0.05	11/14/07
B-2162A OFFSET	DEVIATION 1	204.7 – 3.1	-	NONE	0.04	11/14/07
B-2174A OFFSET	ELOG/GAMMA 1	609.8 – 37.8	609.8	NONE	0.05	11/9/07
B-2174A OFFSET	SUSPENSION PS 1	8.5 – 305.1	-	NONE	1.6	11/9/07
B-2174A OFFSET	CALIPER/GAMMA 1	317.6 – 4.8	317.6	NONE	0.05	11/9/07
B-2174A OFFSET	DEVIATION 1	317.0 – 3.8	-	NONE	0.04	11/9/07
B-2174A OFFSET	SUSPENSION PS 2	295.3 – 600.4	612.5	NONE	1.6	11/12/07
B-2174A OFFSET	CALIPER/GAMMA 2	599.6 – 295.8	-	NONE	0.05	11/12/07
B-2174A OFFSET	DEVIATION 2	604.8 – 297.0	-	NONE	0.04	11/12/07
B-2176A OFFSET	SUSPENSION PS 1	8.2 – 195.2	-	NONE	1.6	11/13/07
B-2176A OFFSET	ELOG/GAMMA 1	209.0 – 37.0	209.0	NONE	0.05	11/13/07
B-2176A OFFSET	CALIPER/GAMMA 1	205.0 – 6.0	-	NONE	0.05	11/13/07
B-2176A OFFSET	DEVIATION 1	208.0 – 5.0	-	NONE	0.04	11/13/07
B-2182A OFFSET	ELOG/GAMMA 1	407.9 – 40.2	407.9	2.0 FT PVC	0.05	11/12/07
B-2182A OFFSET	SUSPENSION PS 1	8.5 – 398.9	-	2.0 FT PVC	1.6	11/12/07
B-2182A OFFSET	CALIPER/GAMMA 1	404.9 – 4.5	-	2.0 FT PVC	0.05	11/12/07
B-2182A OFFSET	DEVIATION 1	405.8 – 3.8	-	2.0 FT PVC	0.04	11/12/07
B-2262A OFFSET	ELOG/GAMMA 1	209.9 – 39.2	209.9	NONE	0.05	11/13/07
B-2262A OFFSET	CALIPER/GAMMA 1	207.6 – 5.6	-	NONE	0.05	11/13/07
B-2262A OFFSET	DEVIATION 1	201.2 – 3.2	-	NONE	0.04	11/13/07
B-2262A OFFSET	SUSPENSION PS 1	8.5 – 193.6	-	NONE	1.6	11/13/07
B-2274A OFFSET	ELOG/GAMMA 1	617.9 – 39.1	617.9	NONE	0.05	11/7/07
B-2274A OFFSET	SUSPENSION PS 1	8.5 – 600.4	-	NONE	1.6	11/7/07
B-2274A OFFSET	CALIPER/GAMMA 1	604.6 – 4.9	-	NONE	0.05	11/7/07
B-2276A OFFSET	ELOG/GAMMA 1	208.4 – 39.6	208.4	1.5 FT PVC	0.05	11/10/07
B-2276A OFFSET	SUSPENSION PS 1	6.9 – 196.9	-	1.5 FT PVC	1.6	11/10/07
B-2276A OFFSET	CALIPER/GAMMA 1	206.8 – 4.1	-	1.5 FT PVC	0.05	11/10/07
B-2276A OFFSET	DEVIATION 1	202.8 – 2.6	-	1.5 FT PVC	0.04	11/10/07

- PROBE DID NOT TOUCH BOTTOM OF BORING

Table 3. Logging dates and depth ranges

B-2282A OFFSET	ELOG/GAMMA 1	406.1 – 17.6	406.1	2.0 FT PVC	0.05	11/11/07
B-2282A OFFSET	SUSPENSION PS 1	8.5 – 395.3	-	2.0 FT PVC	1.6	11/11/07
B-2282A OFFSET	CALIPER/GAMMA 1	401.5 – 3.0	-	2.0 FT PVC	0.05	11/11/07
B-2282A OFFSET	DEVIATION 1	401.3 – 3.7	-	2.0 FT PVC	0.04	11/11/07
B-2301	ELOG/GAMMA 1	305.6 – 35.7	305.6	3.5 FT PVC	0.05	11/17/07
B-2301	SUSPENSION PS 1	6.6 – 295.3	-	3.5 FT PVC	1.6	11/17/07
B-2301	CALIPER/GAMMA 1	306.1 – 1.0	-	3.5 FT PVC	0.05	11/17/07
B-2301	DEVIATION 1	303.2 – 3.1	-	3.5 FT PVC	0.04	11/17/07
B-2302	ELOG/GAMMA 1	315.1 – 39.7	315.1	NONE	0.05	11/15/07
B-2302	SUSPENSION PS 1	8.5 – 300.2	-	NONE	1.6	11/15/07
B-2302	CALIPER/GAMMA 1	302.1 – 5.2	-	NONE	0.05	11/15/07
B-2302	DEVIATION 1	303.5 – 2.8	-	NONE	0.04	11/15/07
B-2303	ELOG/GAMMA 1	309.0 – 39.6	309.0	NONE	0.05	11/15/07
B-2303	SUSPENSION 1	6.6 – 293.6	-	NONE	1.6	11/15/07
B-2303	CALIPER/GAMMA 1	305.0 – 0	-	NONE	0.05	11/15/07
B-2303	DEVIATION 1	305.0 – 3.6	-	NONE	0.04	11/15/07
B-2304	DEVIATION 1	308.0 – 3.2	308.0	NONE	0.04	11/17/07
B-2304	SUSPENSION 1	8.2 – 295.3	-	NONE	1.6	11/17/07
B-2304	ELOG/GAMMA 1	309.0 – 37.0	309.0	NONE	0.05	11/17/07
B-2304	CALIPER/GAMMA 1	305.0 – 5.7	-	NONE	0.05	11/17/07
B-2305	ELOG/GAMMA 1	235.4 – 40.0	235.4	NONE	0.05	11/18/07
B-2305	SUSPENSION 1	6.6 – 219.8	-	NONE	1.6	11/18/07
B-2305	CALIPER/GAMMA 1	230.0 – 5.1	-	NONE	0.05	11/15/07
B-2306	ELOG/GAMMA 1	308.9 – 39.9	308.0	2.0 FT PVC	0.05	11/16/07
B-2306	SUSPENSION 1	6.9 – 296.9	-	2.0 FT PVC	1.6	11/16/07
B-2306	CALIPER/GAMMA 1	306.3 – 5.8	-	2.0 FT PVC	0.05	11/16/07
B-2306	DEVIATION 1	307.1 – 3.5	-	2.0 FT PVC	0.04	11/16/07
B-2307	ELOG/GAMMA 1	309.4 – 39.5	309.5	2.0 FT PVC	0.05	11/18/07
B-2307	CALIPER/GAMMA 1	304.2 – 5.6	-	2.0 FT PVC	0.05	11/18/07
B-2307	SUSPENSION 1	6.6 – 296.9	-	2.0 FT PVC	1.6	11/18/07
B-2307	DEVIATION 1	303.2 – 3.5	-	2.0 FT PVC	0.04	11/18/07

- PROBE DID NOT TOUCH BOTTOM OF BORING

Table 3, continued. Logging dates and depth ranges

BORING NUMBER	TOOL AND RUN NUMBER	TOOL HIT BOTTOM DEPTH (FEET)	DRILLER DEPTH (FEET)	STARTING DEPTH REF. (FEET)	ENDING DEPTH REF. (FEET)	ASDE (FEET)
B-11	ELOG/GAMMA 1					
B-11	SUSPENSION PS 1					
B-11	CALIPER/GAMMA 1					
B-12	ELOG/GAMMA 1					
B-12	SUSPENSION PS 1					
B-12	CALIPER/GAMMA 1					
B-2162A OFFSET	ELOG/GAMMA 1	208.0	210	41.0	41.0	0.0
B-2162A OFFSET	SUSPENSION PS 1	-	210	8.1	8.2	0.1
B-2162A OFFSET	CALIPER/GAMMA 1	-	210	6.8	6.8	0.0
B-2162A OFFSET	DEVIATION 1	-	210	4.7	4.7	0.0
B-2174A OFFSET	ELOG/GAMMA 1	609.8	617	41.0	41.0	0.0
B-2174A OFFSET	SUSPENSION PS 1	305.1	OBSTRUCTED	8.1	8.2	0.1
B-2174A OFFSET	CALIPER/GAMMA 1	317.6	OBSTRUCTED	6.8	6.9	0.1
B-2174A OFFSET	DEVIATION 1	317.0	OBSTRUCTED	4.7	4.6	-0.1
B-2174A OFFSET	SUSPENSION PS 2	612.5	617	8.1	8.3	0.2
B-2174A OFFSET	CALIPER/GAMMA 2	-	617	6.8	6.7	-0.1
B-2174A OFFSET	DEVIATION 2	-	617	4.7	5.1	0.4
B-2176A OFFSET	SUSPENSION PS 1	207.3	210	8.5	8.5	0.0
B-2176A OFFSET	ELOG/GAMMA 1	209.0	210	41.0	40.9	-0.1
B-2176A OFFSET	CALIPER/GAMMA 1	-	210	6.8	6.8	0.0
B-2176A OFFSET	DEVIATION 1	-	210	4.7	4.7	0.0
B-2182A OFFSET	ELOG/GAMMA 1	407.9	410	39.9	39.9	0.0
B-2182A OFFSET	SUSPENSION PS 1	409.1	410	7.0	7.2	0.2
B-2182A OFFSET	CALIPER/GAMMA 1	-	410	5.7	5.7	0.0
B-2182A OFFSET	DEVIATION 1	-	410	3.6	3.8	0.2
B-2262A OFFSET	ELOG/GAMMA 1	209.9	211	41.0	41.0	0.0
B-2262A OFFSET	CALIPER/GAMMA 1	-	211	6.8	6.8	0.0
B-2262A OFFSET	DEVIATION 1	-	211	4.7	4.7	0.0
B-2262A OFFSET	SUSPENSION PS 1	-	211	7.6	7.7	0.0
B-2274A OFFSET	ELOG/GAMMA 1	617.9	620	41.0	40.7	-0.3
B-2274A OFFSET	SUSPENSION PS 1	-	620	8.1	8.1	0.0
B-2274A OFFSET	CALIPER/GAMMA 1	-	620	6.8	6.5	-0.3

- PROBE DID NOT TOUCH BOTTOM OF BORING

Table 4. Boring Bottom Depths and After Survey Depth Error (ASDE)

B-2276A OFFSET	ELOG/GAMMA 1	208.6	210	39.7	39.6	-0.1
B-2276A OFFSET	SUSPENSION PS 1	208.9	210	6.8	6.8	0.0
B-2276A OFFSET	CALIPER/GAMMA 1	-	210	5.5	5.5	0.0
B-2276A OFFSET	DEVIATION 1	-	210	3.4	3.4	0.0
B-2282A OFFSET	ELOG/GAMMA 1	406.1	410	39.9	39.7	-0.2
B-2282A OFFSET	SUSPENSION PS 1	407.4	410	7.0	7.2	0.2
B-2282A OFFSET	CALIPER/GAMMA 1	-	410	5.7	5.7	0.0
B-2282A OFFSET	DEVIATION 1	-	410	3.6	3.6	0.0
B-2301	ELOG/GAMMA 1	305.6	310	39.3	39.4	0.1
B-2301	SUSPENSION PS 1	307.4	310	4.9	4.7	-0.2
B-2301	CALIPER/GAMMA 1	306.1	310	5.2	5.4	0.2
B-2301	DEVIATION 1	-	310	3.1	3.2	0.1
B-2302	ELOG/GAMMA 1	315.1	315	41.0	41.4	0.4
B-2302	SUSPENSION PS 1	-	315	8.1	8.6	0.5
B-2302	CALIPER/GAMMA 1	-	315	6.8	6.8	0.0
B-2302	DEVIATION 1	-	315	4.7	4.7	0.0
B-2303	ELOG/GAMMA 1	309.0	310	39.9	39.8	-0.1
B-2303	SUSPENSION 1	-	310	7.1	7.3	0.2
B-2303	CALIPER/GAMMA 1	-	310	5.7	5.7	0.0
B-2303	DEVIATION 1	-	310	3.6	3.8	0.2
B-2304	DEVIATION 1	308.0	310	3.7	3.5	-0.2
B-2304	SUSPENSION 1	-	310	7.1	6.9	-0.2
B-2304	ELOG/GAMMA 1	309.0	310	39.9	39.9	0.0
B-2304	CALIPER/GAMMA 1	-	310	5.7	5.7	0.0
B-2305	ELOG/GAMMA 1	235.4	305	39.3	39.2	-0.1
B-2305	SUSPENSION 1	231.9	OBSTRUCTED	6.6	6.3	-0.3
B-2305	CALIPER/GAMMA 1	230.0	OBSTRUCTED	5.1	5.1	0.0
B-2306	ELOG/GAMMA 1	308.9	310	39.8	39.9	0.1
B-2306	SUSPENSION 1	309.0	310	6.9	6.9	0.0
B-2306	CALIPER/GAMMA 1	-	310	5.6	5.7	0.1
B-2306	DEVIATION 1	-	310	3.5	3.5	0.0
B-2307	ELOG/GAMMA 1	309.4	310	39.8	39.8	0.0
B-2307	CALIPER/GAMMA 1	309.0	310	5.6	5.6	0.0
B-2307	SUSPENSION 1	-	310	5.4	5.3	-0.1
B-2307	DEVIATION 1	-	310	3.5	3.5	0.0

- PROBE DID NOT TOUCH BOTTOM OF BORING

Table 4, continued. Boring Bottom Depths and After Survey Depth Error (ASDE)

BORING NUMBER	MEAN DEVIATION AND AZIMUTH (DEGREES TN)	SURVEY DEPTH (FEET)	VERTICAL DEPTH (FEET)	DEPTH ERROR (FEET)	HORIZONTAL OFFSET (FEET)
B-2162A OFFSET	1.8 – N120.5	204.8	204.6	0.2	6.3
B-2174A OFFSET	0.5 – N112.1	604.8	604.6	0.2	4.7
B-2176A OFFSET	0.7 – N239.9	208.0	208.0	0.0	2.4
B-2182A OFFSET	1.2 – N43.2	405.8	405.6	0.2	8.7
B-2262A OFFSET	0.8 – N61.8	201.3	201.2	0.1	2.7
B-2276A OFFSET	0.5 – N242.5	202.8	202.7	0.1	1.9
B-2282A OFFSET	0.9 – N80.1	401.2	401.2	0.0	6.2
B-2301	0.7 – N20.8	303.2	303.0	0.2	3.7
B-2302	0.2 – N230.8	303.5	303.5	0.0	1.2
B-2303	0.5 – N85.4	304.9	304.9	0.0	2.4
B-2304	0.6 – N116.4	307.8	307.7	0.1	3.1
B-2306	0.7 – N155.1	307.6	307.6	0.0	3.6
B-2307	1.5 – N24.7	303.2	303.1	0.1	8.1

Table 5. Boring Deviation Data Summary

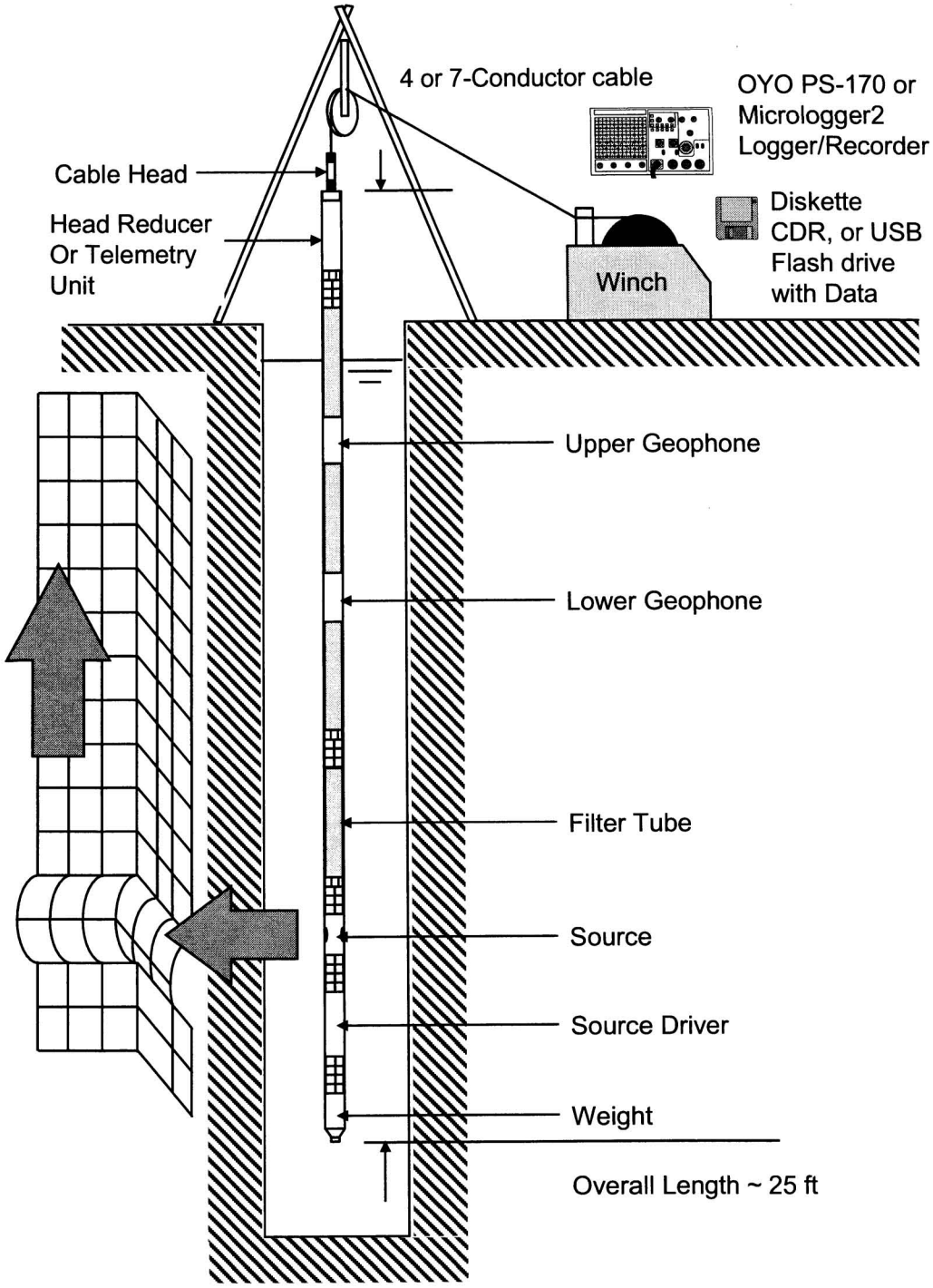

Figure 2: Concept illustration of P-S logging system

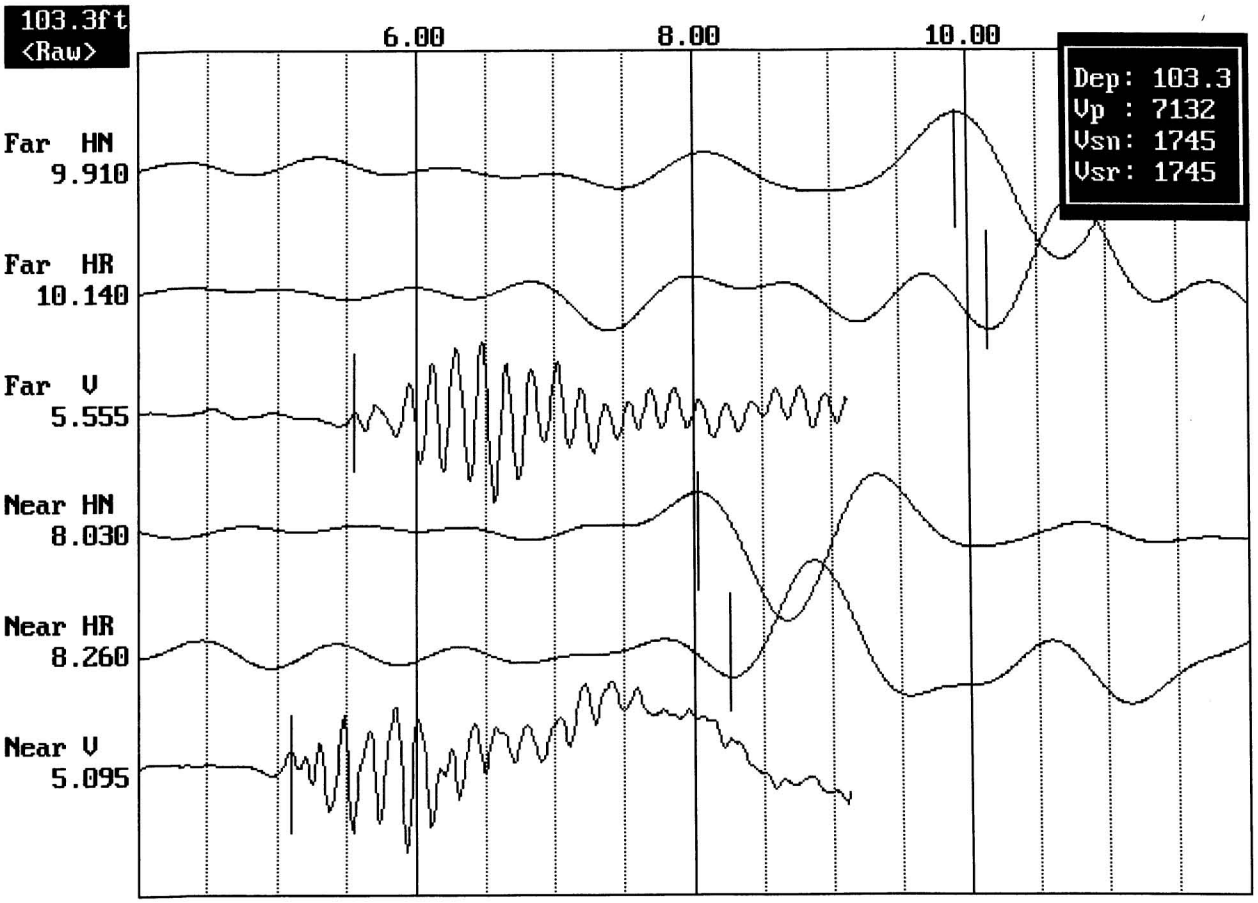

Figure 3: Example of filtered (1400 Hz lowpass) record

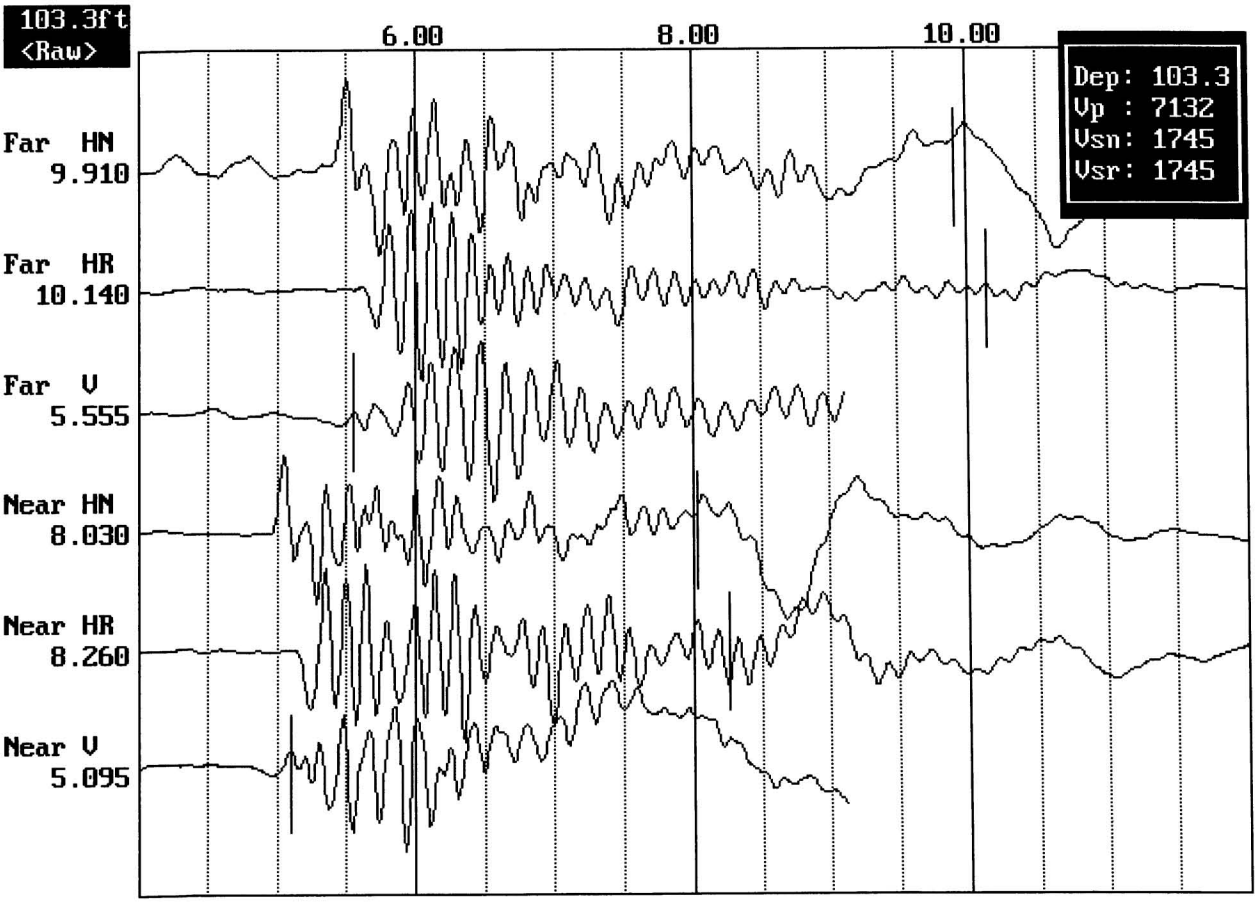

Figure 4. Example of unfiltered record

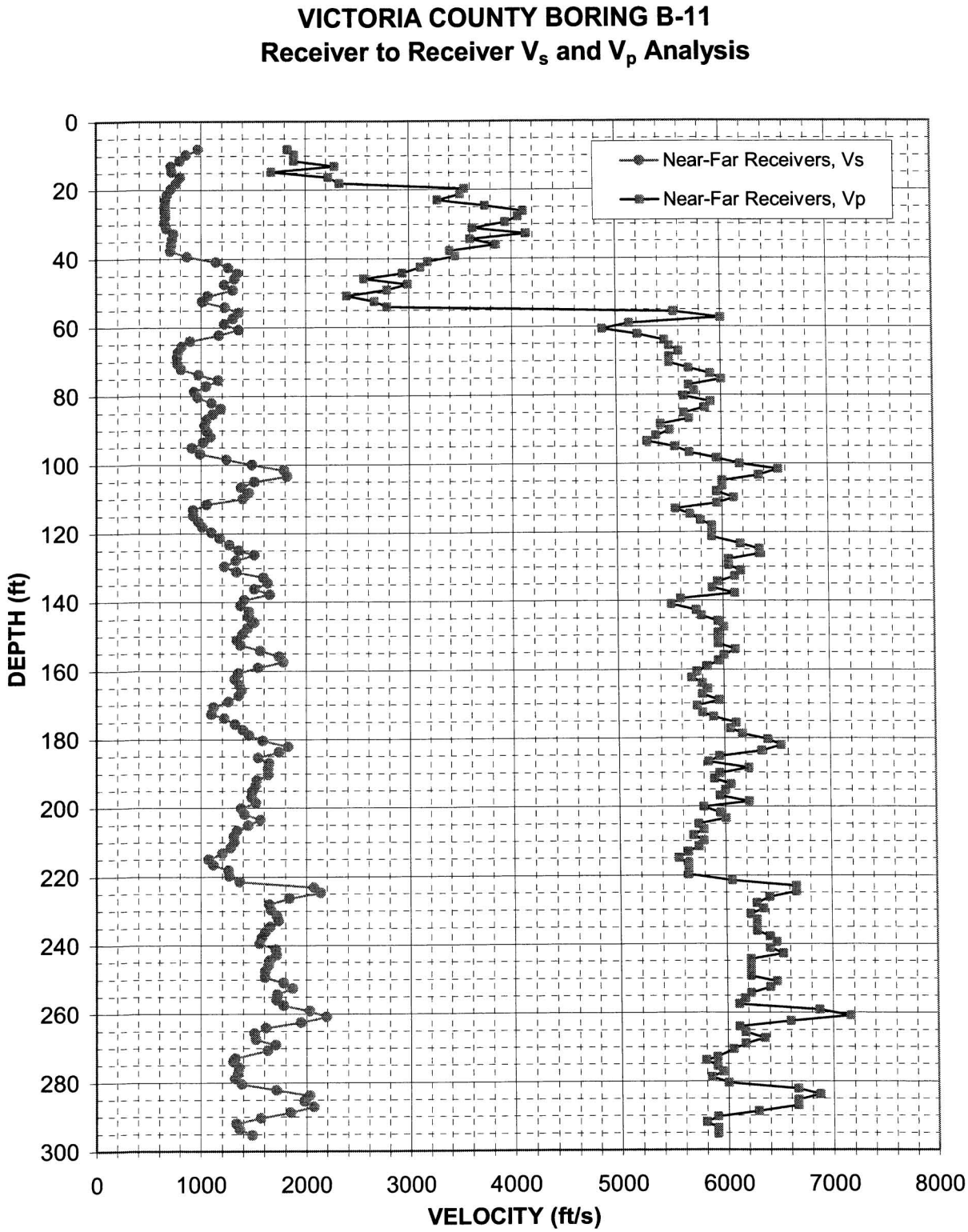

Figure 5: Boring B-11, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	970	1830
9.8	850	1890
11.5	790	1890
13.1	710	2280
14.8	720	1680
16.4	800	2220
18.0	760	2330
19.7	710	3550
21.3	670	3510
23.0	650	3280
24.6	650	3750
26.3	650	4120
27.9	650	4070
29.5	650	3940
31.2	660	3620
32.8	730	4140
34.5	720	3600
36.1	710	3850
37.7	700	3400
39.4	860	3450
41.0	1140	3190
42.7	1260	3120
44.3	1350	2940
45.9	1320	2560
47.6	1220	2990
49.2	1300	2790
50.9	1060	2400
52.5	1010	2670
54.1	1230	2790
55.8	1360	5560
57.4	1300	6010
59.1	1220	5130
60.7	1360	4870
62.3	1170	5210
64.0	900	5460
65.6	810	5510
67.3	780	5600
68.9	770	5510
70.5	770	5510
72.2	810	5700
73.8	980	5900
75.5	1170	6010
77.1	1040	5700
78.7	930	5750
80.4	970	5650
82.0	1100	5900
83.7	1190	5850
85.3	1110	5650
86.9	1050	5700
88.6	1030	5420
90.2	1050	5510
91.9	1090	5380
93.5	1020	5290
95.1	910	5560
96.8	990	5700
98.4	1240	5950
100.1	1490	6170
101.7	1790	6540
103.4	1820	6350
105.0	1510	6010
106.6	1380	6010
108.3	1460	5950
109.9	1400	6120
111.6	1050	5950
113.2	920	5560
114.8	930	5700
116.5	970	5800
118.1	1010	5900
119.8	1100	5900
121.4	1180	5900
123.4	1270	6170
125.0	1360	6350
126.3	1510	6350
128.0	1330	6060
129.6	1220	6060
131.2	1340	6170
132.9	1590	6120
134.5	1630	5950
136.2	1510	5900
137.8	1660	6120
139.4	1410	5600
141.1	1380	5510
142.7	1460	5750
144.4	1460	5800
146.0	1510	5950
147.6	1440	6010
149.3	1390	5950
151.3	1340	5950
152.6	1380	5950
154.2	1560	6120
155.8	1750	6010
157.5	1780	5950
159.1	1540	5850
160.8	1360	5750
162.4	1320	5700
164.0	1370	5800
165.7	1390	5850
167.3	1360	5800
169.0	1260	5950
170.6	1120	5750
172.6	1100	5800
173.9	1220	5900
175.5	1330	6120
177.2	1400	6060
178.8	1460	6170
180.5	1590	6410
182.1	1830	6540
183.7	1750	6350
185.4	1540	5950
187.0	1650	5850
188.7	1640	6230
190.3	1640	5950
191.9	1530	5900
193.6	1520	6060
195.2	1490	6010
196.9	1480	5950
198.5	1520	6230
200.1	1380	5800
201.8	1410	5950
203.4	1560	6010
205.1	1450	5750
206.7	1340	5800
208.3	1310	5700
210.0	1320	5800
211.6	1280	5750
213.3	1200	5650
214.9	1070	5560
216.5	1120	5650
218.2	1260	5650
219.8	1270	5650
221.5	1370	6060
223.1	2070	6670
224.7	2140	6670
226.4	1840	6410
228.0	1650	6290
229.7	1670	6350
231.3	1720	6230
232.9	1740	6290
234.6	1660	6290
236.2	1610	6290
237.9	1580	6410
239.5	1560	6470
241.1	1710	6410
242.8	1720	6540
244.4	1660	6230
246.1	1640	6230
247.7	1610	6230
249.3	1610	6230
251.0	1780	6470
252.6	1870	6410

Table 6. Boring B-11, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	1730	6230
255.9	1720	6170
257.6	1780	6120
259.2	2030	6870
260.8	2190	7170
262.5	1950	6600
264.1	1620	6120
265.8	1510	6170
267.4	1520	6350
269.0	1710	6170
270.7	1630	6060
273.0	1330	5900
274.0	1310	5800
275.6	1370	5900
277.2	1360	5950
278.9	1330	5850
280.5	1390	6010
282.2	1720	6670
283.8	2030	6870
285.4	1980	6670
287.1	2070	6670
288.7	1850	6290
290.4	1570	5900
292.0	1340	5800
293.6	1370	5900
295.3	1490	5900

Table 6, continued. Boring B-11, Suspension R1-R2 depths and P- and S_H-wave velocities

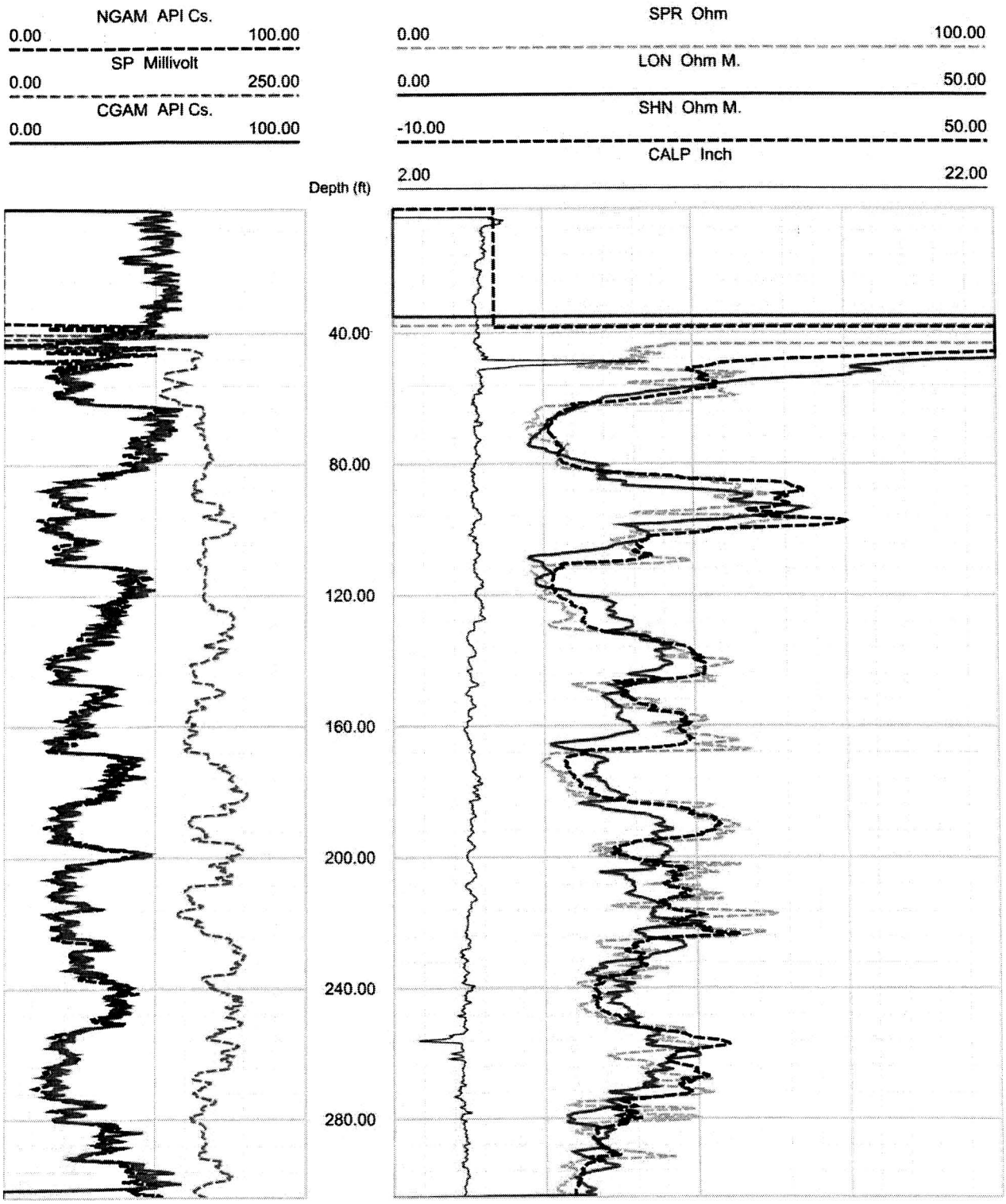

Figure 6. Boring B-11, Caliper, Natural gamma, Resistivity and SP logs

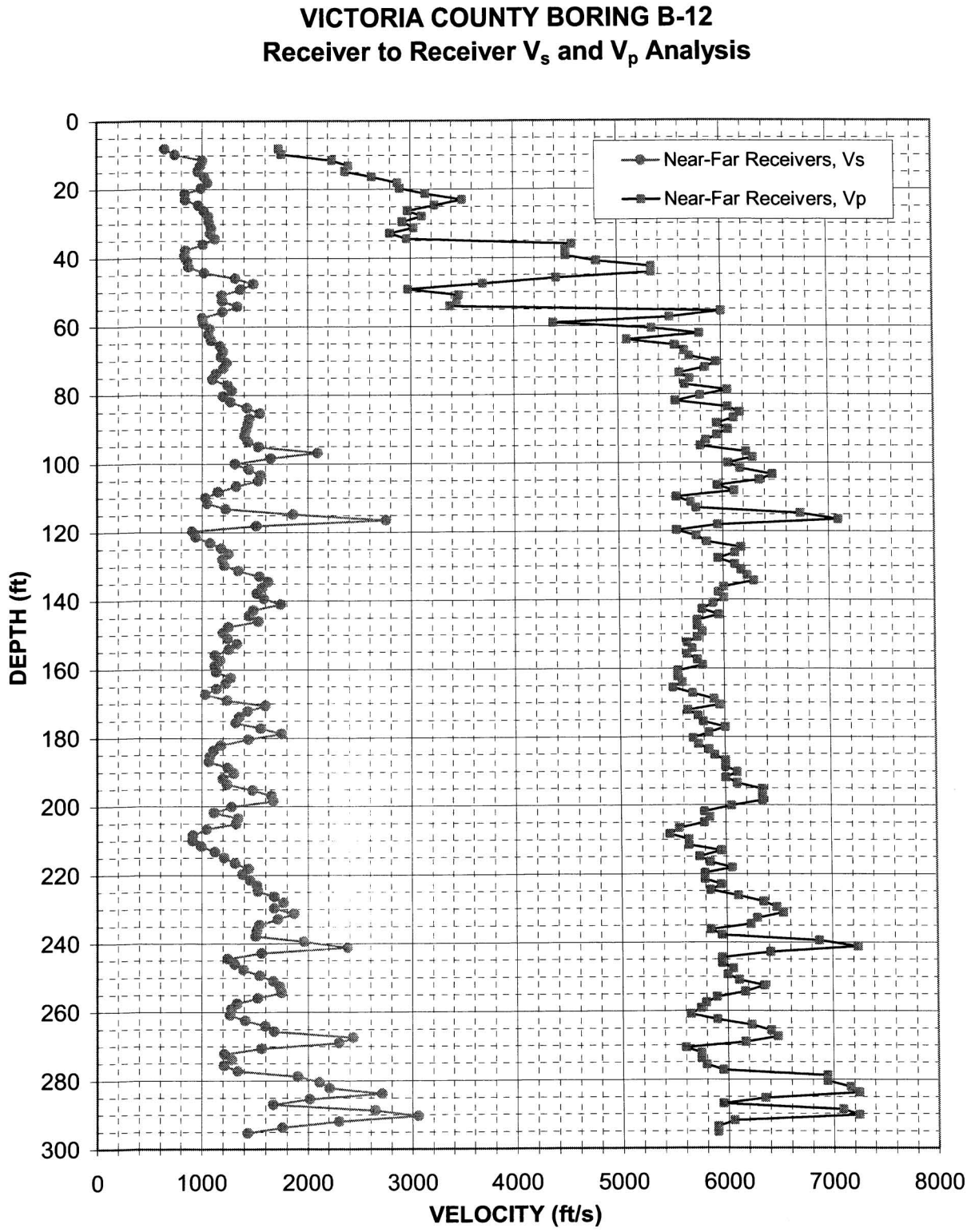

Figure 7: Boring B-12, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	640	1730
9.8	740	1750
11.5	1000	2240
13.1	980	2400
14.8	960	2360
16.4	1020	2620
18.0	1050	2870
19.7	990	2900
21.3	830	3140
23.0	840	3510
24.6	970	3240
26.3	1020	2980
27.9	1060	3120
29.5	1060	2920
31.2	1090	3030
32.8	1080	2800
34.5	1120	2960
36.1	1010	4570
37.7	840	4500
39.4	830	4500
41.0	860	4800
42.7	870	5330
44.3	1020	5330
45.9	1320	4420
47.6	1490	3700
49.2	1370	2980
50.9	1190	3470
52.5	1190	3450
54.1	1330	3380
55.8	1190	6010
57.4	1000	5510
59.1	1010	4390
60.7	1070	5330
62.3	1060	5800
64.0	1090	5090
65.6	1170	5560
67.3	1200	5650
68.9	1180	5700
70.5	1230	5950
72.2	1200	5850
73.8	1130	5600
75.5	1100	5700
77.1	1240	5650
78.7	1280	6060
80.4	1200	5800
82.0	1270	5560
83.7	1420	6060
85.3	1550	6170
86.9	1450	6120
88.6	1440	5950
90.2	1420	6060
91.9	1410	5950
93.5	1440	5850
95.1	1540	5800
96.8	2100	6230
98.4	1650	6290
100.1	1310	6060
101.7	1440	6170
103.4	1560	6470
105.0	1530	6350
106.6	1330	5950
108.3	1150	6120
109.9	1030	5560
111.6	1050	5700
113.2	1230	5750
114.8	1860	6730
116.5	2750	7090
118.1	1520	5950
119.8	910	5560
121.4	940	5750
123.0	1080	5850
124.7	1180	6170
126.3	1250	6120
128.0	1190	5950
129.6	1210	6120
131.2	1350	6170
132.9	1540	6230
134.5	1630	6290
136.2	1570	6010
137.8	1520	5950
139.4	1590	6010
141.1	1750	5900
142.7	1490	5800
144.4	1450	5950
146.0	1540	5750
147.6	1250	5750
149.3	1200	5800
150.9	1240	5750
152.6	1330	5650
154.2	1260	5700
155.8	1130	5650
157.5	1170	5750
159.1	1130	5800
160.8	1140	5560
162.4	1270	5560
164.0	1230	5600
165.7	1140	5510
167.3	1030	5700
169.0	1240	5900
170.6	1600	5950
172.2	1440	5650
173.9	1360	5750
175.5	1320	5800
177.2	1560	6010
178.8	1750	5850
180.5	1440	5700
182.1	1180	5750
183.7	1110	5850
185.4	1080	5900
187.0	1070	6010
188.7	1250	6010
190.3	1300	6120
191.9	1200	6010
193.6	1240	6120
195.2	1480	6350
196.9	1660	6350
198.5	1680	6350
200.1	1280	6060
201.8	1110	5800
203.4	1340	5850
205.1	1330	5800
206.7	1040	5560
208.3	920	5460
210.0	910	5650
211.6	1000	5650
213.3	1130	5950
214.9	1210	5750
216.5	1320	5850
218.2	1440	6060
219.8	1390	5800
221.5	1460	5800
223.1	1520	5950
224.7	1530	5850
226.4	1680	6120
228.0	1770	6350
229.7	1680	6470
231.3	1870	6540
232.9	1720	6290
234.6	1540	6230
236.2	1520	5850
237.9	1510	5950
239.5	1960	6870
241.1	2380	7250
242.8	1560	6410
244.4	1250	5950
246.1	1310	5950
247.7	1390	6060
249.3	1550	6010
251.0	1680	6120
252.6	1740	6350

Table 7. Boring B-12, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	1750	6170
255.9	1530	5900
257.6	1330	5800
259.2	1280	5750
260.8	1270	5650
262.5	1410	5900
264.1	1600	6230
265.8	1680	6410
267.4	2430	6470
269.0	2300	6170
270.7	1560	5600
272.3	1220	5750
274.0	1290	5750
275.6	1210	5800
277.2	1340	5950
278.9	1900	6940
280.5	2110	6940
282.2	2210	7170
283.8	2710	7250
285.4	2020	6350
287.1	1680	5950
288.7	2650	7090
290.4	3060	7250
292.0	2300	6060
293.6	1760	5900
295.3	1440	5900

Table 7, continued. Boring B-12, Suspension R1-R2 depths and P- and S_H-wave velocities

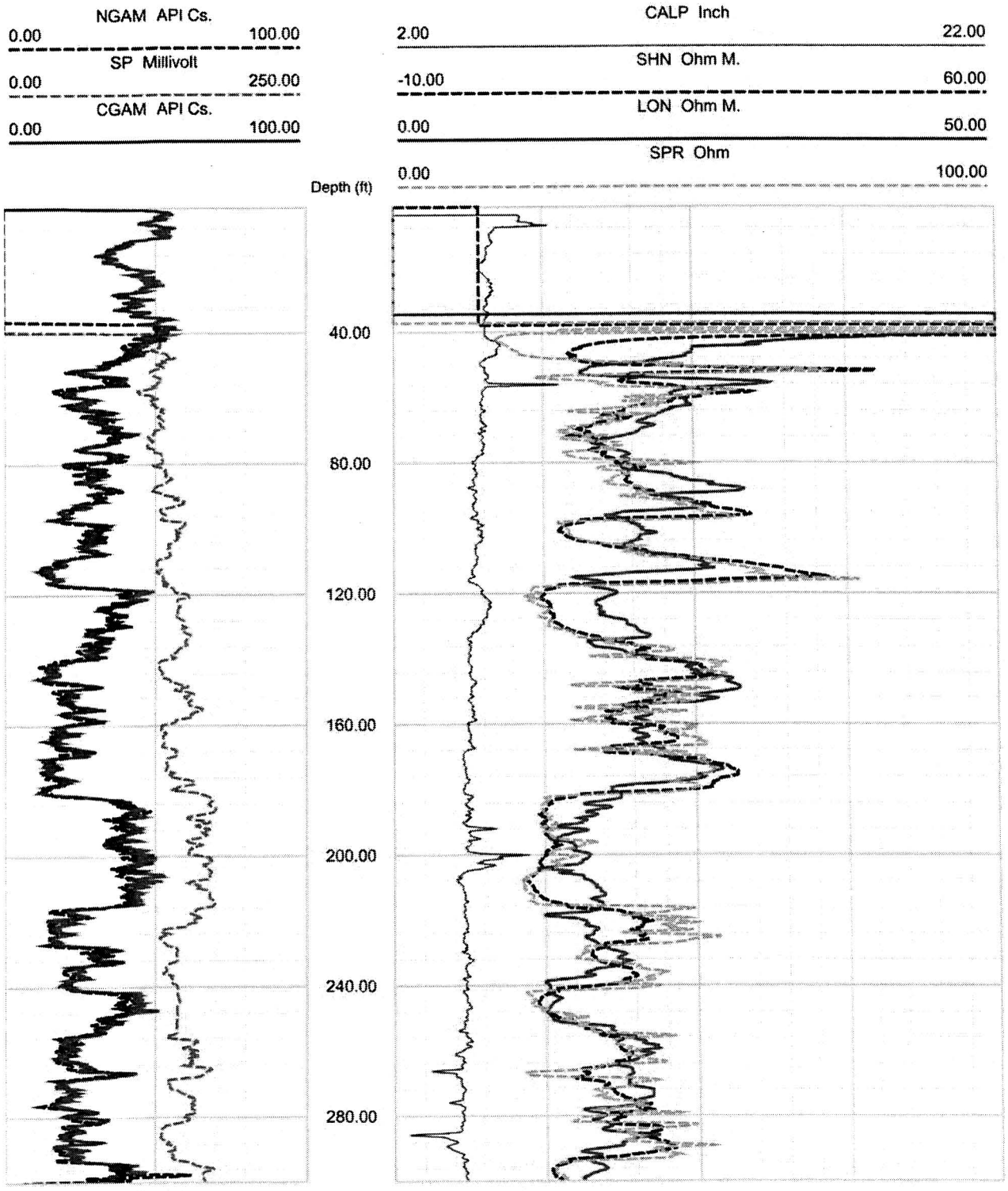

Figure 8. Boring B-12, Caliper, Natural gamma, Resistivity and SP logs

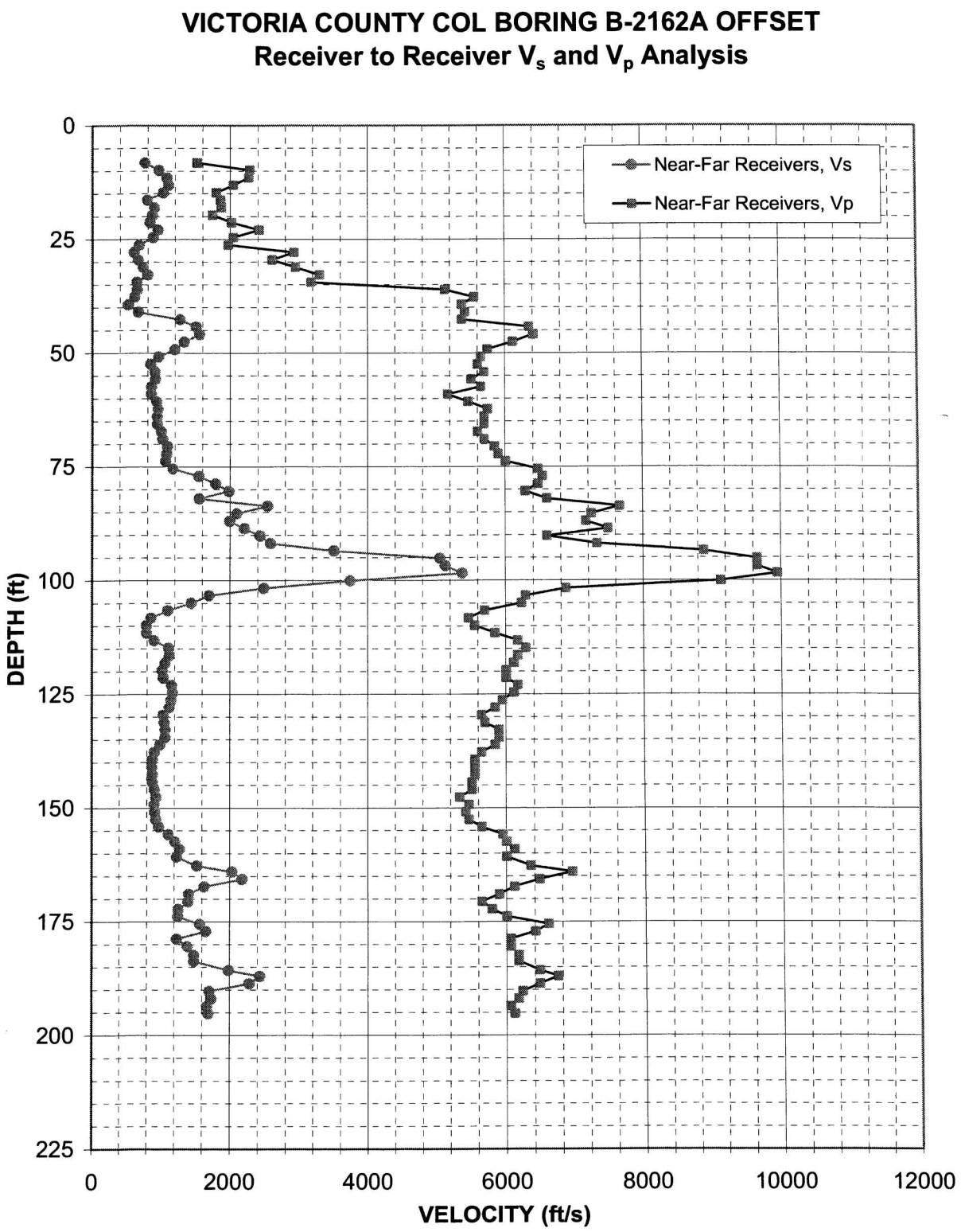

Figure 9: Boring B-2162A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	760	1520
9.8	960	2280
11.5	1080	2270
13.1	1100	2040
14.8	1030	1800
16.4	790	1860
18.0	890	1870
19.7	870	1750
21.3	830	2020
23.0	950	2420
24.6	880	2040
26.3	670	1970
27.9	600	2920
29.5	660	2600
31.2	730	2950
32.8	800	3300
34.5	640	3170
36.1	640	5130
37.7	610	5560
39.4	520	5380
41.0	660	5420
42.7	1270	5380
44.3	1510	6350
45.9	1560	6410
47.6	1330	6120
49.2	1190	5750
50.9	960	5650
52.5	840	5600
54.1	900	5700
55.8	910	5510
57.4	850	5650
59.1	850	5170
60.7	930	5460
62.3	950	5750
64.0	940	5700
65.6	940	5700
67.3	1000	5600
68.9	1020	5700
70.5	1090	5850
72.2	1080	5900
73.8	1060	6010
75.5	1170	6470
77.1	1550	6540
78.7	1790	6470
80.4	1980	6290
82.0	1560	6600
83.7	2540	7660
85.3	2100	7250
86.9	2000	7170
88.6	2210	7490
90.2	2430	6600
91.9	2580	7330
93.5	3510	8890
95.1	5050	9660
96.8	5130	9660
98.4	5380	9950
100.1	3750	9130
101.7	2490	6870
103.4	1700	6290
105.0	1440	6230
106.6	1100	5700
108.3	850	5460
109.9	790	5560
111.6	790	5850
113.2	900	6170
114.8	1110	6290
116.5	1120	6170
118.1	1060	6120
119.8	1020	6010
121.4	1040	6010
123.0	1160	6170
124.7	1170	6120
126.3	1150	5950
128.0	1120	5850
129.6	1040	5650
131.2	1050	5700
132.9	1060	5900
134.5	1060	5900
136.2	990	5850
137.8	910	5650
139.4	870	5560
141.1	870	5560
142.7	880	5560
144.4	880	5510
146.0	910	5510
147.6	930	5330
149.3	910	5460
150.9	920	5420
152.6	930	5460
154.2	970	5650
155.8	1110	5950
157.5	1210	6010
159.1	1280	6120
160.8	1230	6010
162.7	1530	6350
164.0	2030	6940
165.7	2180	6470
167.3	1630	6120
169.0	1410	5900
170.6	1400	5650
172.2	1260	5800
173.9	1250	6010
175.5	1570	6600
177.2	1660	6410
178.8	1230	6060
180.5	1390	6060
182.4	1490	6170
183.7	1490	6170
185.7	1980	6470
187.0	2430	6730
188.7	2280	6470
190.3	1710	6230
191.9	1740	6170
193.6	1680	6060
195.2	1690	6120

Table 8. Boring B-2162A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

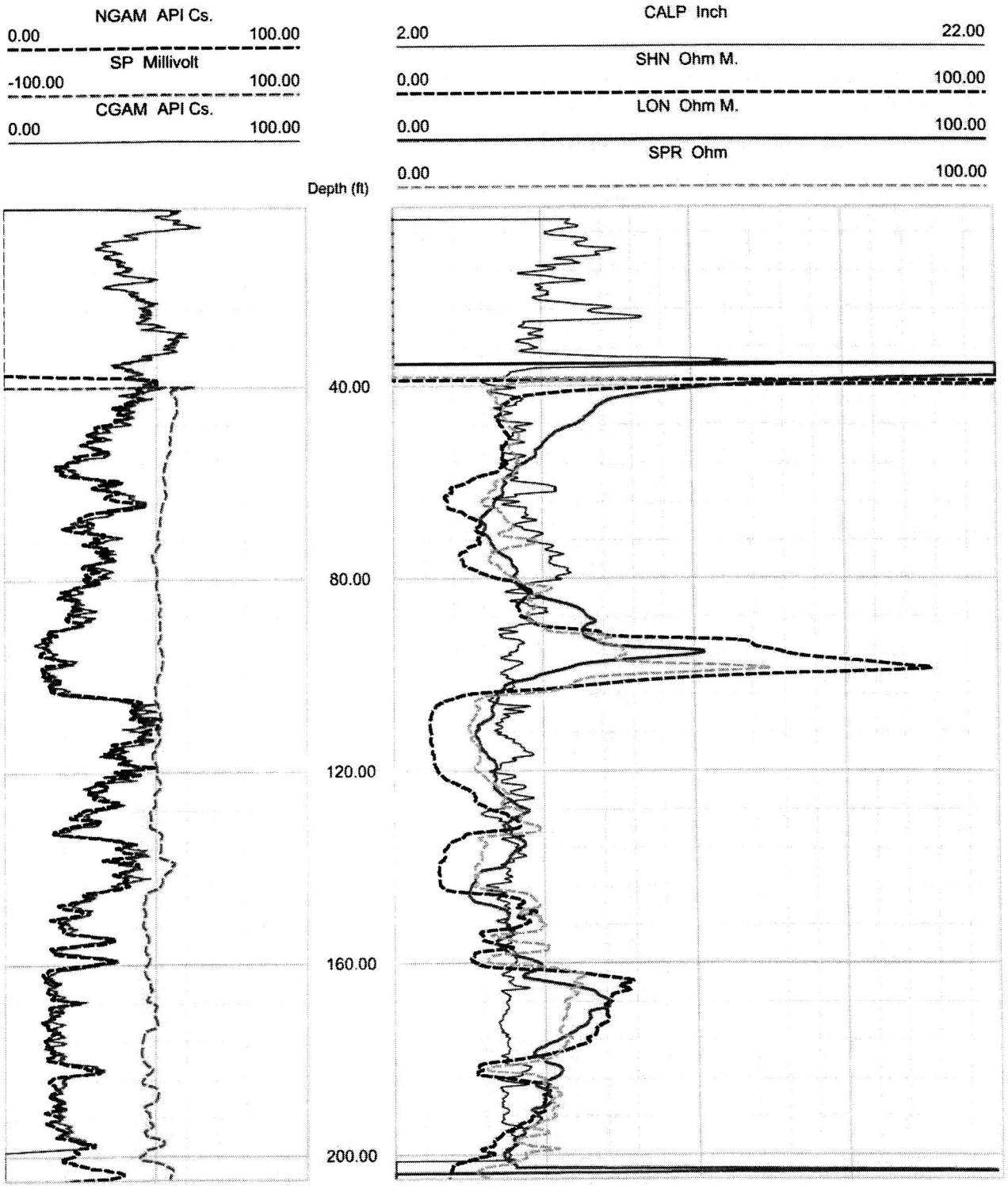

Figure 10. Boring B-2162A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

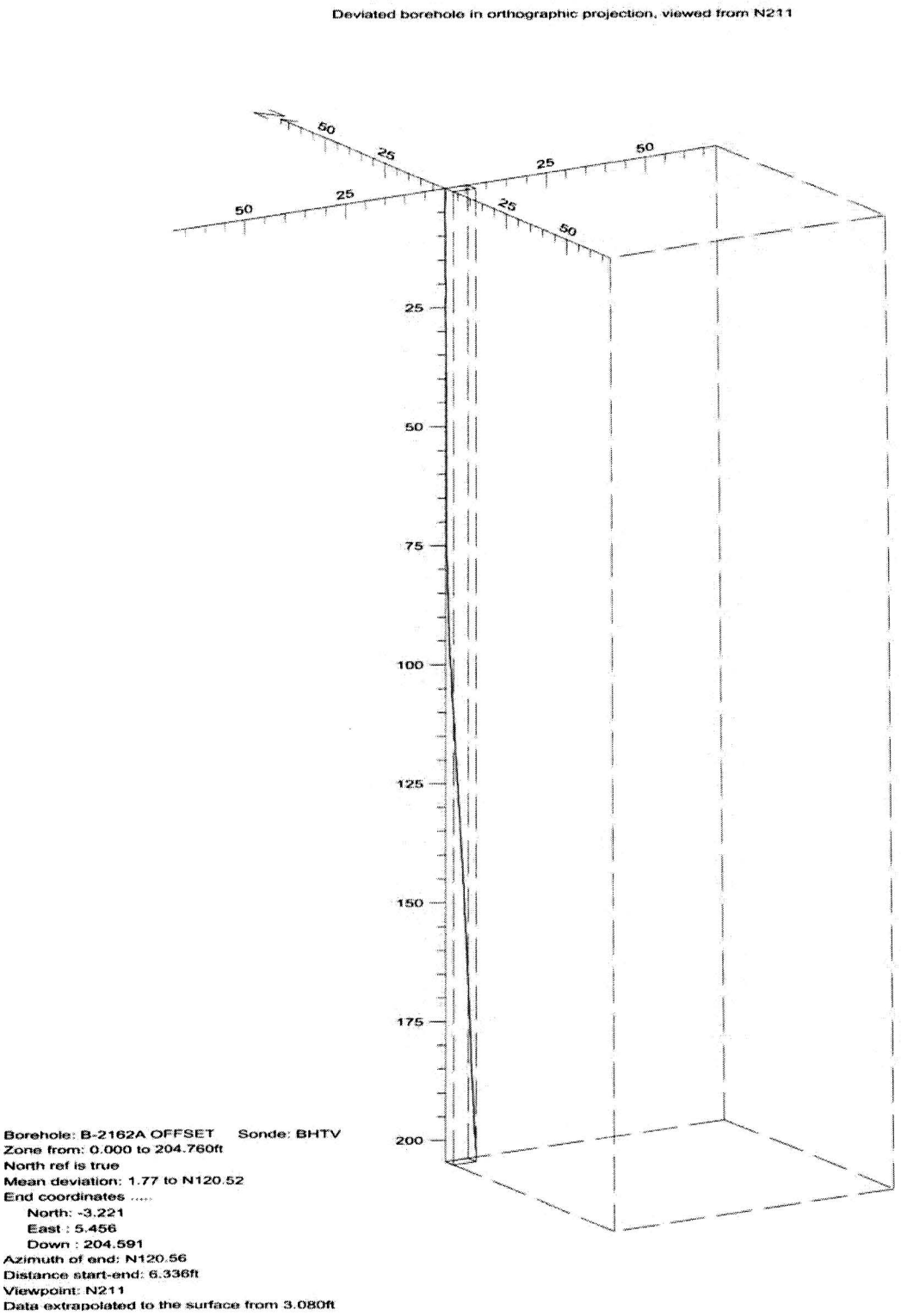

Figure 11. Boring B-2162A OFFSET, Deviation Projection (dimensions in feet)

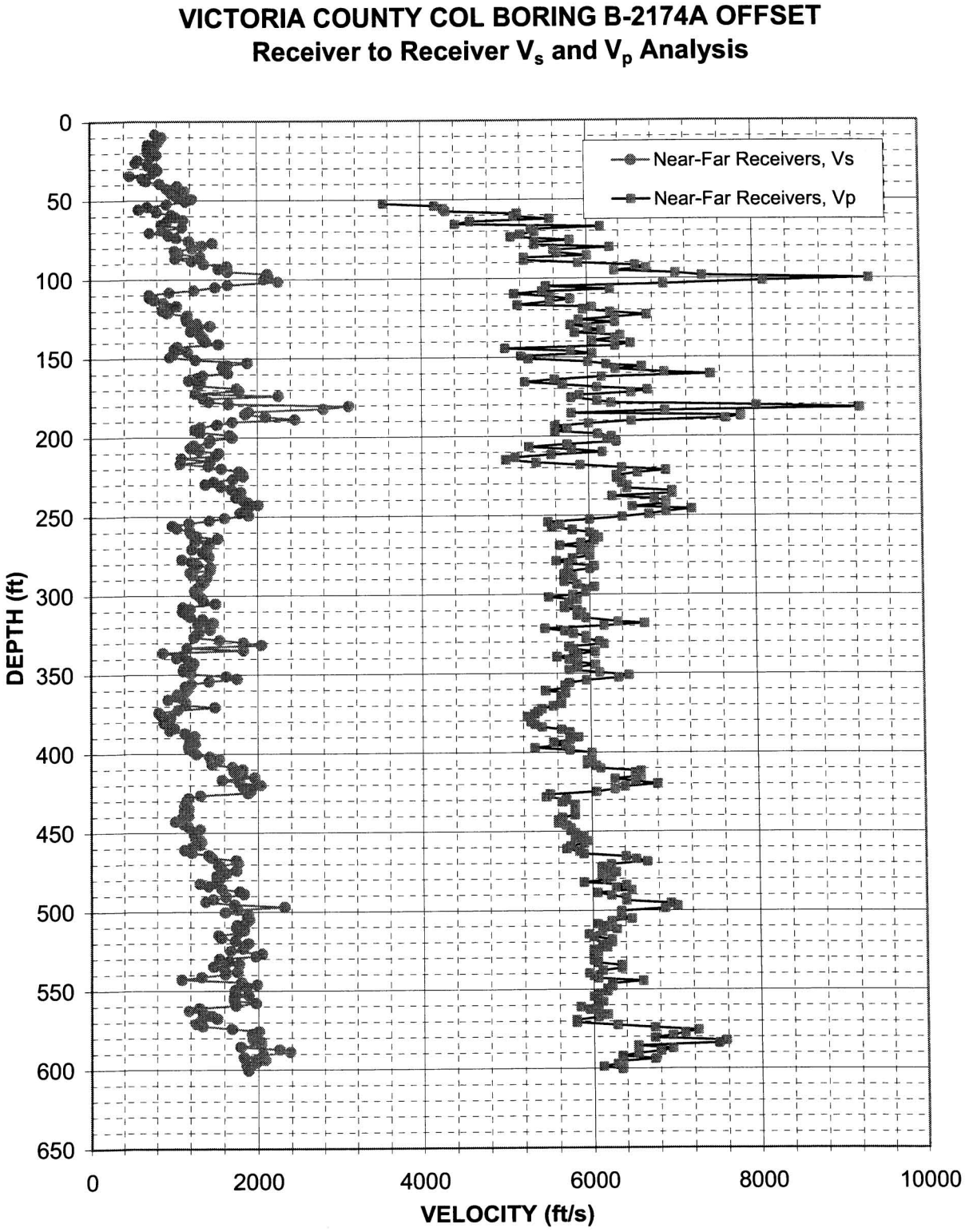

Figure 12: Boring B-2174A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	780	-
9.8	860	-
11.5	840	-
13.1	810	-
14.8	690	-
16.4	770	-
18.0	680	-
19.7	690	-
21.3	800	-
23.0	720	-
24.6	560	-
26.3	540	-
27.9	690	-
29.5	790	-
31.2	810	-
32.8	750	-
34.5	470	-
36.1	620	-
37.7	670	-
39.4	830	-
41.0	1050	-
42.7	920	-
44.3	1140	-
45.9	980	-
47.6	1040	-
49.2	1220	-
50.9	1150	-
52.5	920	3550
54.1	680	4170
55.8	570	4270
57.4	800	4300
59.1	980	5170
60.7	1030	5130
62.3	1120	5560
64.0	920	4600
65.6	850	4420
67.3	1100	6170
68.9	860	5330
70.5	710	5380
72.2	940	5210
73.8	1040	5090
75.8	1190	5800
77.1	1470	5380
78.7	1340	5380
80.4	1230	6290
82.0	1020	5600
83.7	1060	5650
85.6	1320	6010
86.9	1020	5250
88.6	1220	5250
90.2	1370	5900
91.9	1640	6600
93.5	1540	6730
95.1	1650	6350
96.8	2120	7090
98.4	2140	7410
100.1	2080	9390
101.7	2250	8130
103.7	1650	6940
105.0	1500	5510
107.0	1250	6290
108.3	950	5460
109.9	700	5130
111.6	700	5560
113.2	770	5800
114.8	880	5560
116.8	1040	5170
118.1	970	6060
119.8	870	5950
121.4	930	6290
123.0	1170	6730
124.7	1150	6350
126.3	1170	5900
128.0	1280	6350
129.6	1440	5800
131.2	1300	6010
132.9	1210	6170
134.5	1320	5850
136.2	1360	6410
137.8	1360	6350
139.4	1390	6060
141.1	1540	6540
142.7	1050	6350
144.4	1010	5010
146.0	1170	5800
147.6	1000	6060
149.3	960	5210
150.9	1270	5290
152.9	1880	6010
154.5	1640	6230
155.8	1590	6670
157.5	1600	6350
159.5	1650	6940
160.8	1360	7490
162.4	1290	6170
164.0	1180	5600
165.7	1330	5250
167.3	1300	5700
169.0	1750	6120
170.6	1780	6730
172.2	1270	6540
173.9	2250	5900
175.5	1360	5800
177.5	1420	6120
178.8	1660	6290
180.5	3120	8030
182.1	2800	9260
183.7	1890	6940
185.4	1850	5800
187.0	2100	7840
188.7	2450	7660
190.3	1700	6540
191.9	1520	6010
193.6	1320	5600
195.2	1260	5750
196.9	1320	5600
198.5	1670	6120
200.1	1700	6290
201.8	1440	6230
203.4	1420	6350
205.1	1240	5750
206.7	1200	5290
208.3	1310	5800
210.0	1540	6170
211.6	1510	5560
213.3	1100	5130
214.9	1440	5010
216.5	1080	5380
218.2	1420	5900
219.8	1570	6410
221.5	1780	6940
223.1	1820	6600
224.7	1830	6350
226.4	1710	6350
228.0	1480	6410
229.7	1380	6410
231.3	1560	6470
232.9	1690	6470
234.6	1800	7020
236.2	1790	7020
237.9	1750	6290
239.5	1820	6800
241.1	1880	6940
242.8	2010	6940
244.4	1890	6540
246.1	1850	7250
247.7	1790	6940
249.3	1890	6730
251.0	1610	6410
252.6	1430	6010

Table 9. Boring B-2174A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	1190	5510
255.9	980	5650
257.6	1040	5560
259.2	1190	5800
260.8	1210	6010
262.5	1280	6060
264.1	1530	6120
265.8	1260	6060
267.4	1430	5900
269.0	1410	5650
270.7	1220	6010
272.3	1350	5900
274.0	1410	6010
275.6	1420	6010
277.2	1100	5800
278.9	1220	5600
280.5	1290	5750
282.2	1440	6060
283.8	1440	6010
285.4	1200	5750
287.1	1230	5700
288.7	1400	5800
290.4	1330	5700
292.0	1370	5700
293.6	1320	5850
295.3	1290	6060
296.9	1250	5950
298.6	1260	5950
300.2	1310	5800
301.8	1340	5510
303.5	1360	5850
305.1	1500	5750
307.4	1110	5700
308.4	1200	5700
310.0	1110	5850
311.7	1160	5900
313.3	1200	5850
315.0	1350	5950
317.3	1470	6350
318.2	1290	6670
319.9	1430	6170
321.5	1440	5460
323.2	1310	5700
324.8	1270	5800
326.4	1240	5950
328.1	1550	5950
329.7	1830	6120
331.4	2040	6170
333.0	1160	5750
334.7	1830	5800
336.3	870	6060
337.9	1110	5850
339.6	1040	5600
341.2	1170	5750
342.9	1240	5850
344.5	1220	6060
346.1	1130	5850
347.8	1110	5750
349.4	1210	6120
351.1	1630	6470
352.7	1750	6350
354.3	1420	5950
356.0	1210	5750
357.6	1140	5700
359.3	1170	5700
360.9	1150	5460
362.5	1040	5700
364.8	1100	5650
365.8	930	5650
367.5	1150	5650
369.1	1150	5650
370.7	1490	5560
372.4	1050	5420
374.0	820	5380
375.7	850	5330
377.3	960	5250
378.9	920	5290
380.6	880	5290
382.2	940	5330
383.9	1010	5420
385.5	950	5650
387.1	1130	5750
388.8	1250	5750
390.4	1190	5850
392.1	1190	5750
393.7	1260	5560
395.3	1180	5700
397.0	1180	5330
398.6	1240	5750
400.3	1270	6010
401.9	1430	6010
403.5	1540	6010
405.2	1460	5950
406.8	1460	5950
408.5	1700	6060
410.1	1820	6120
411.8	1720	6600
413.4	1810	6540
415.0	1960	6600
416.7	1580	6290
418.3	1780	6540
420.0	2030	6800
421.6	1830	6410
423.2	1920	6290
424.9	1880	6060
426.5	1320	5510
428.2	1180	5460
429.8	1160	5700
431.4	1140	5650
433.1	1130	5800
434.7	1180	5800
436.4	1130	5800
438.0	1170	5800
439.6	1180	5800
441.3	1100	5650
442.9	1020	5600
444.6	1120	5600
446.2	1170	5700
447.8	1320	5750
449.5	1270	5750
451.1	1240	5800
452.8	1260	5900
454.4	1320	5800
456.0	1330	5950
457.7	1310	5900
459.3	1220	5750
461.0	1130	5700
462.6	1220	5850
464.2	1420	5900
465.9	1460	6410
467.5	1750	6540
469.2	1760	6670
470.8	1540	6230
472.4	1560	6120
474.1	1750	6230
475.7	1630	6290
477.4	1520	6120
479.0	1550	6230
480.6	1520	6170
482.3	1310	5900
483.9	1420	6410
485.6	1570	6290
487.2	1780	6470
488.9	1830	6060
490.5	1620	6230
492.1	1470	6410
493.8	1380	6410
495.4	1720	6940
497.1	2310	7020
498.7	1750	6870

Table 9, continued. Boring B-2174A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
500.3	1610	6350
502.0	1880	6350
503.6	1870	6350
505.3	1890	6470
506.9	1860	6230
508.5	1750	6060
510.2	1750	6170
511.8	1830	6290
513.5	1760	6120
515.1	1540	5950
516.7	1560	6010
518.4	1730	6230
520.0	1880	6230
521.7	1830	6120
523.3	1820	6170
524.9	1680	6010
526.6	2040	6060
528.2	1970	6010
529.9	1540	6010
531.5	1650	6010
533.1	1770	6060
534.8	1470	6350
536.4	1600	6350
538.1	1750	6120
539.7	1610	5950
541.3	1330	6010
543.0	1100	6060
544.6	1800	6600
546.3	1980	6230
547.9	1860	6230
549.5	1730	6170
551.2	1730	6170
552.8	1880	6060
554.5	1720	6010
556.1	1720	6060
557.7	1970	6120
559.4	1740	6060
561.0	1310	5850
562.7	1180	5950
564.3	1350	6060
565.9	1450	6170
567.6	1520	6060
569.2	1320	5800
570.9	1270	5800
572.5	1340	6290
574.2	1690	6730
575.8	2010	7250
577.4	1930	7090
579.1	1950	6940
580.7	1940	6730
582.4	2030	7580
584.0	2030	7490
585.6	1790	6540
587.3	2250	6940
588.9	2380	6800
590.6	2060	6540
592.2	1830	6350
593.8	2080	6730
595.5	1970	6350
597.1	1860	6290
598.8	1890	6120
600.4	1880	6350

Table 9, continued. Boring B-2174A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

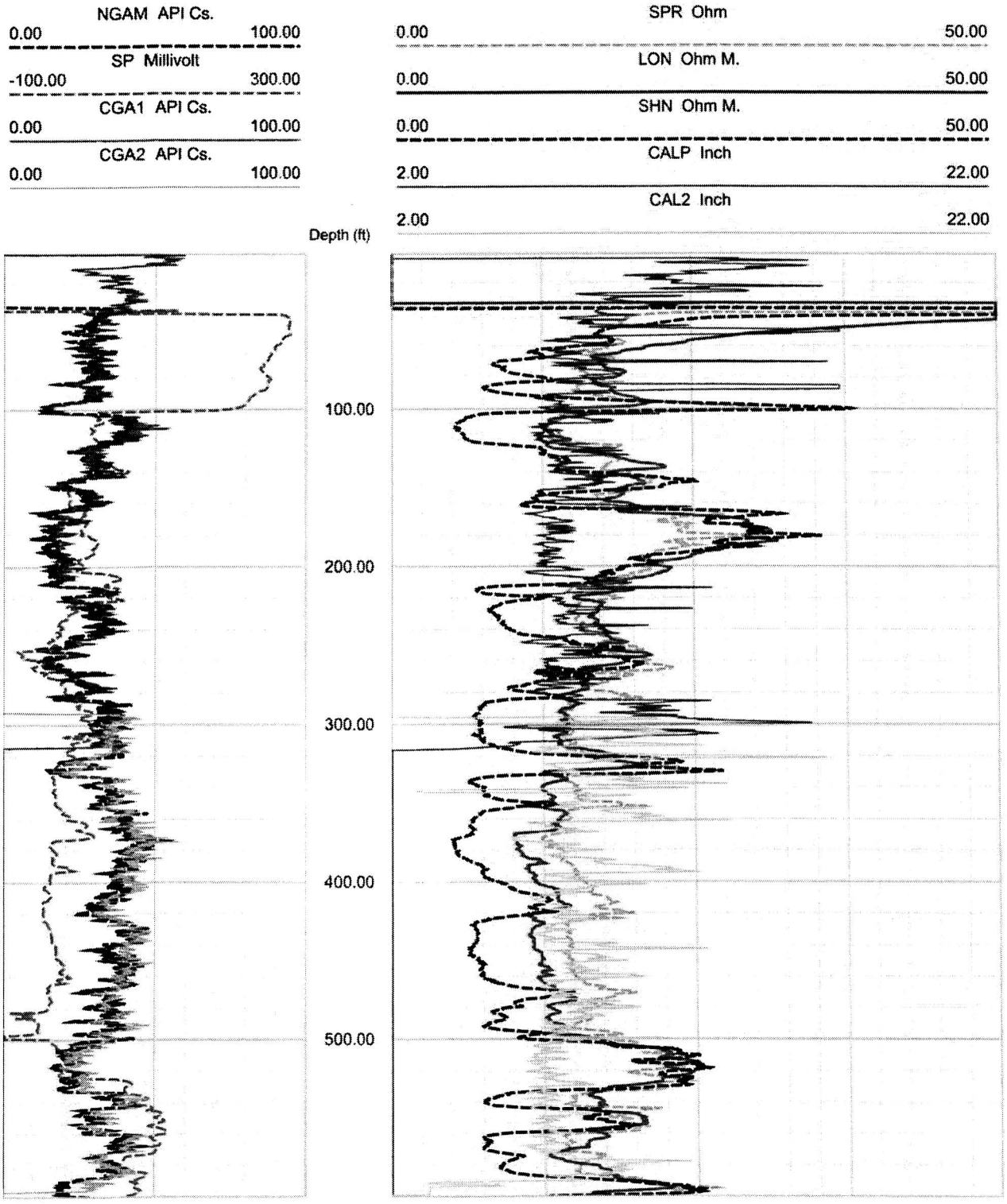

Figure 13. Boring B-2174A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

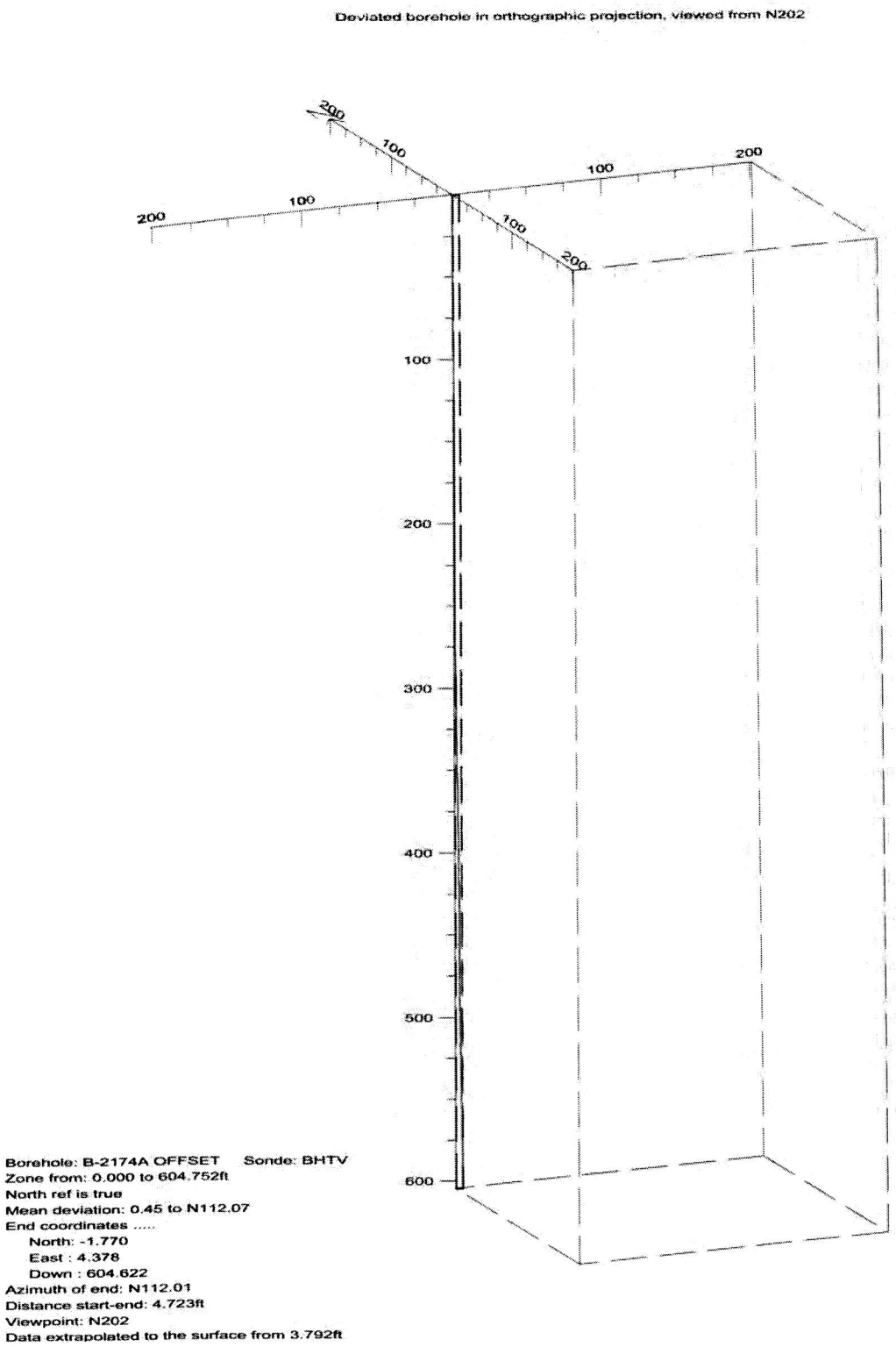

Figure 14. Boring B-2174A OFFSET, Deviation Projection (dimensions in feet)

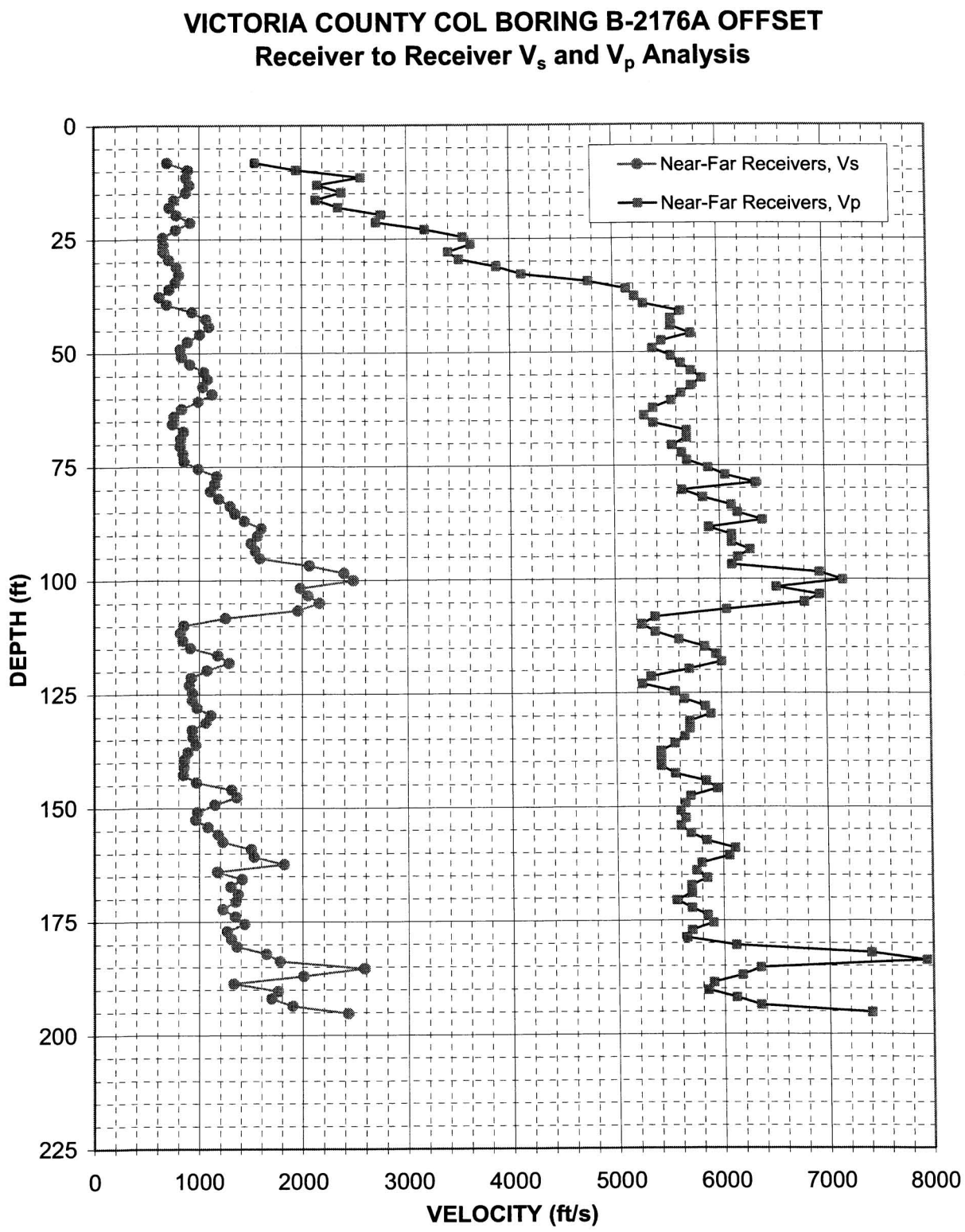

Figure 15: Boring B-2176A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	690	1540
9.8	890	1950
11.5	870	2560
13.1	900	2150
14.8	870	2380
16.4	760	2140
18.0	710	2350
19.7	780	2750
21.3	910	2710
23.0	770	3170
24.6	650	3550
26.3	650	3620
27.9	660	3400
29.5	710	3510
31.2	780	3880
32.8	800	4120
34.5	770	4760
36.1	710	5130
37.7	610	5210
39.4	680	5290
41.0	930	5650
42.7	1060	5560
44.3	1090	5560
45.9	1000	5750
47.6	880	5460
49.2	810	5380
50.9	830	5560
52.5	910	5650
54.1	1040	5750
55.8	1080	5850
57.4	1030	5750
59.1	1120	5650
60.7	990	5560
62.3	830	5380
64.0	750	5290
65.6	740	5380
67.3	850	5700
68.9	820	5700
70.5	810	5560
72.2	840	5650
73.8	850	5700
75.5	990	5900
77.1	1170	6060
78.7	1150	6350
80.4	1110	5650
82.0	1190	5850
83.7	1300	6120
85.3	1340	6170
86.9	1440	6410
88.6	1600	5900
90.2	1560	6120
91.9	1500	6120
93.5	1540	6290
95.1	1590	6170
96.8	2070	6120
98.4	2400	6940
100.1	2490	7170
101.7	1980	6540
103.4	2060	6940
105.0	2160	6800
106.6	1960	6060
108.3	1250	5380
109.9	850	5250
111.6	820	5380
113.2	840	5600
114.8	910	5850
116.5	1180	5950
118.1	1290	6010
119.8	1080	5700
121.4	920	5330
123.0	900	5250
124.7	930	5560
126.3	930	5650
128.0	980	5850
129.6	1110	5900
131.2	1060	5700
132.9	930	5700
134.5	940	5650
136.2	970	5560
137.8	890	5420
139.4	850	5420
141.1	850	5420
142.7	850	5560
144.4	970	5850
146.0	1310	5950
147.6	1360	5700
149.3	1150	5650
150.9	980	5600
152.6	960	5650
154.2	1080	5600
155.8	1180	5700
157.5	1230	5850
159.1	1500	6120
160.8	1530	6060
162.4	1820	5800
164.0	1170	5750
165.7	1410	5850
167.3	1300	5700
169.0	1370	5700
170.6	1350	5560
172.2	1230	5700
173.9	1340	5850
175.5	1440	5900
177.2	1270	5700
178.8	1310	5650
180.5	1360	6120
182.1	1650	7410
183.7	1780	7940
185.4	2580	6350
187.0	2010	6170
188.7	1330	5900
190.3	1760	5850
191.9	1700	6120
193.6	1900	6350
195.2	2430	7410

Table 10. Boring B-2176A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

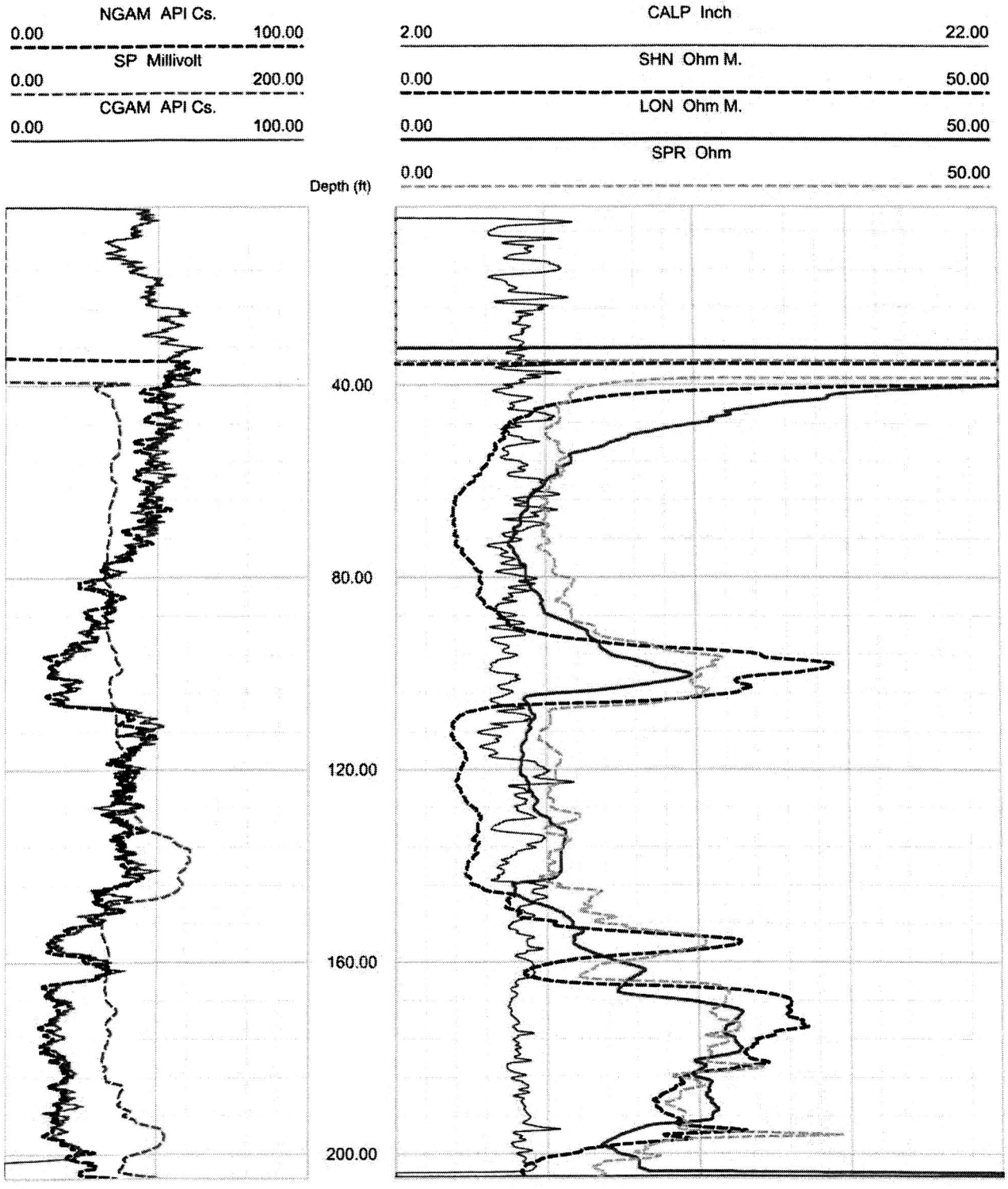

Figure 16. Boring B-2176A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

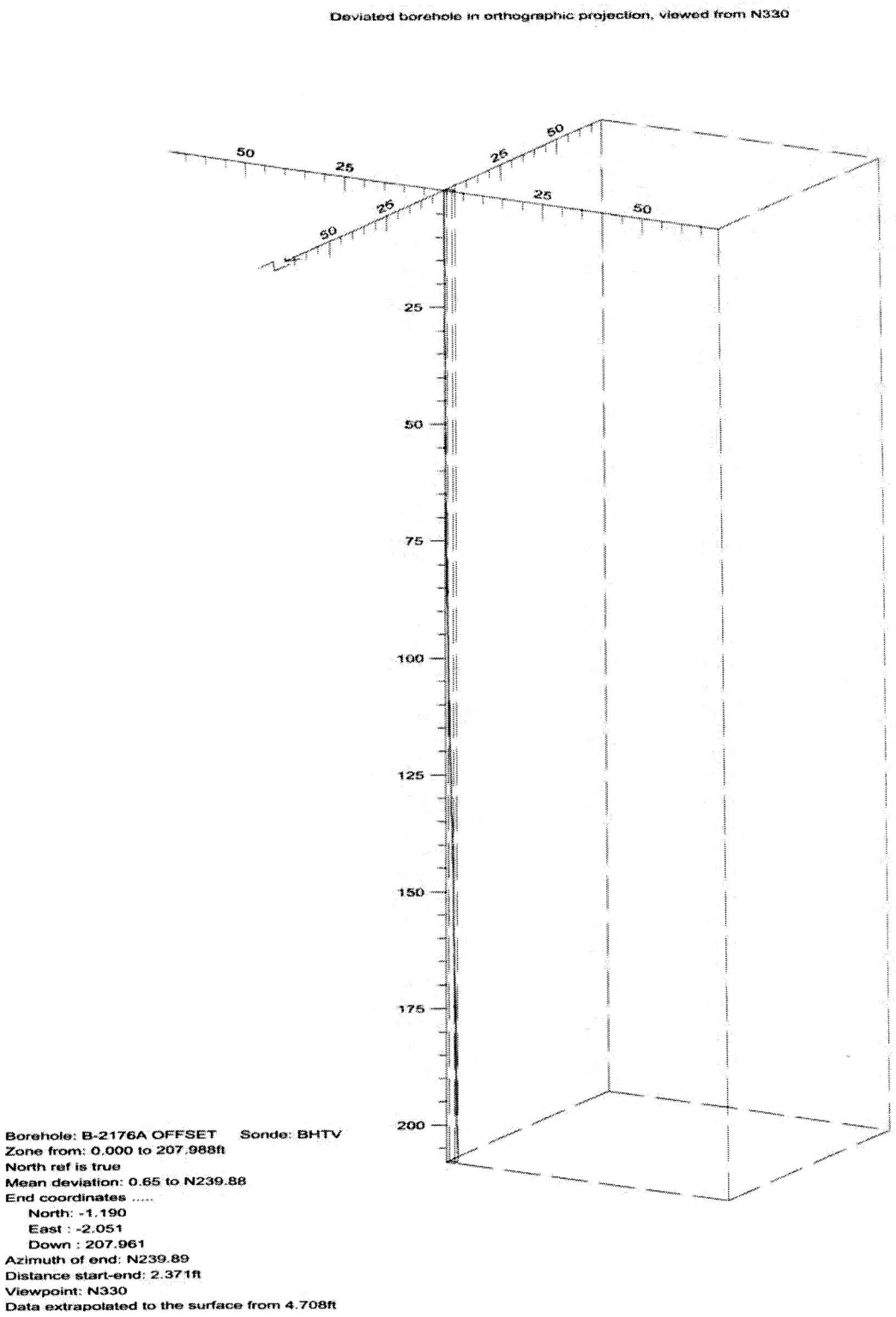

Figure 17. Boring B-2176A OFFSET, Deviation Projection (dimensions in feet)

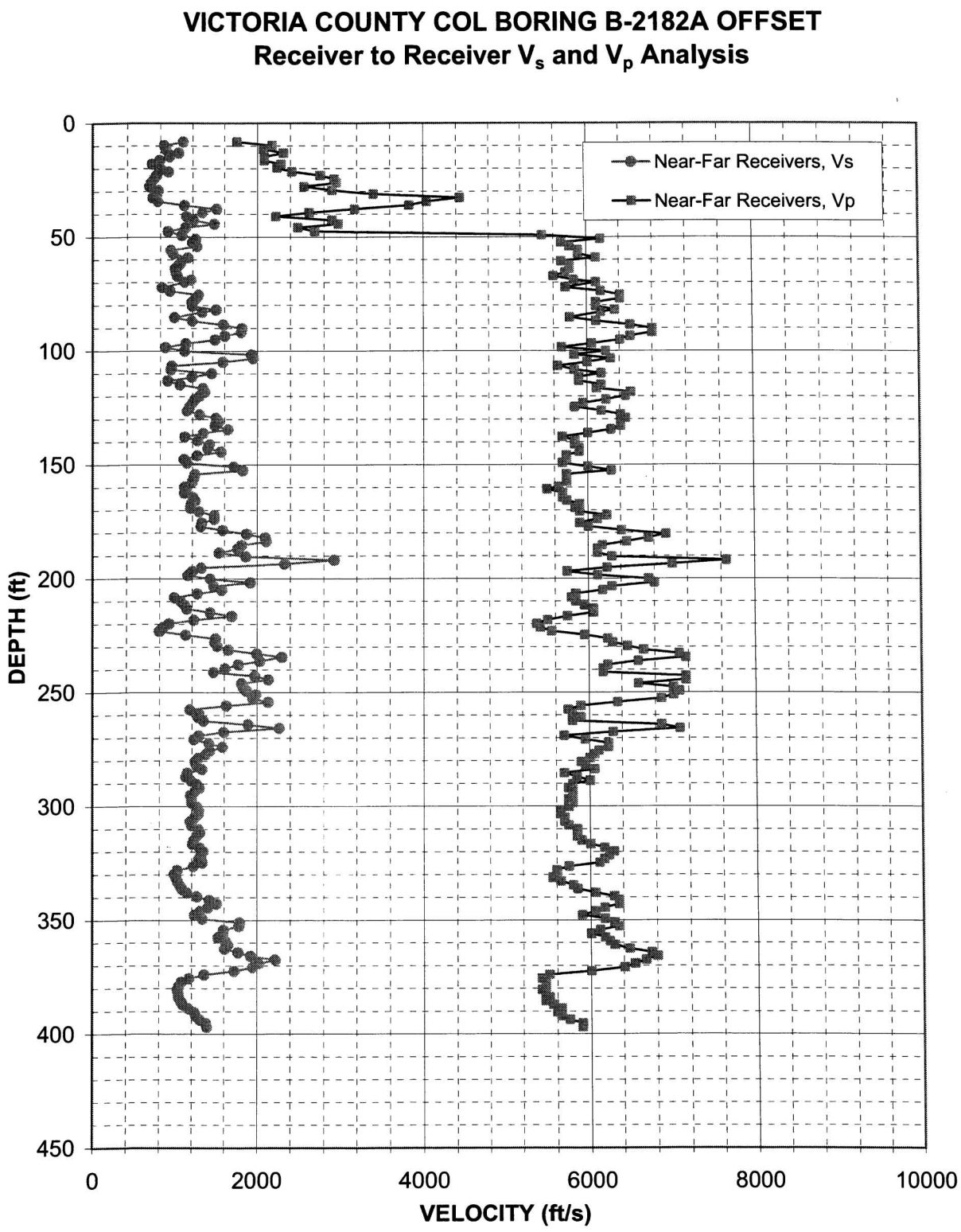

Figure 18: Boring B-2182A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	1080	1750
9.8	850	2180
11.5	870	2070
13.1	1030	2310
14.8	910	2080
16.4	790	2080
18.0	700	2280
19.7	790	2240
21.3	900	2420
23.0	750	2750
24.6	720	2920
26.3	680	2950
27.9	670	2560
29.5	770	2900
31.2	760	3400
32.8	710	4440
34.5	770	4040
36.1	1100	3830
37.7	1500	3170
39.4	1320	2620
41.0	1120	2220
42.7	1210	2900
44.3	1470	2980
45.9	1110	2490
47.6	890	2690
49.2	1060	5460
50.9	1240	6170
52.5	1190	5700
54.1	1250	5800
55.8	930	5900
57.4	960	5900
59.1	1140	6120
60.7	1060	5700
62.3	1030	5800
64.0	980	5800
65.6	990	5750
67.3	1010	5600
68.9	1180	5850
69.9	1100	6120
72.2	820	5750
73.8	920	6170
75.5	1270	6410
77.1	1240	6410
78.7	1190	6120
80.4	1190	6120
82.0	1490	6350
83.0	1320	6170
85.3	970	5800
86.9	1190	6120
88.6	1590	6540
90.2	1810	6800
91.9	1800	6800
93.5	1600	6540
95.1	1480	6410
96.8	1110	6060
98.4	860	5700
100.1	1100	6230
101.7	1930	5850
103.4	1950	6290
105.0	1580	6010
106.6	940	5650
108.3	930	5850
109.9	1440	6170
111.6	1190	5900
113.2	890	5900
114.8	1040	6170
116.5	1330	6120
118.1	1360	6540
119.8	1290	6470
121.4	1230	6230
123.0	1190	5950
124.7	1160	5850
126.3	1130	6170
128.0	1290	6410
129.6	1490	6470
131.2	1530	6410
132.9	1480	6410
134.5	1640	6290
136.2	1330	6010
137.8	1100	5700
139.4	1260	5850
141.1	1410	5850
142.7	1390	5900
144.4	1560	5900
146.0	1260	5750
147.6	1090	5750
149.3	1130	5700
150.9	1720	6010
152.6	1820	6290
154.2	1230	5750
155.8	1220	5750
157.5	1200	5750
159.8	1100	5650
160.8	1130	5510
162.4	1100	5700
164.4	1210	5700
165.7	1230	5750
167.3	1180	5900
169.0	1170	5850
170.6	1280	5900
172.2	1470	6230
173.9	1470	6120
175.5	1320	5900
177.2	1310	6010
178.8	1580	6410
180.5	1870	6940
182.1	2100	6730
183.7	2110	6470
185.4	1810	6170
187.0	1760	6120
188.7	1540	6120
190.3	1860	6290
191.9	2920	7660
193.6	2330	7020
195.2	1310	6230
196.9	1200	5750
198.5	1150	6120
200.1	1420	6730
201.8	1920	6800
203.4	1470	6290
205.1	1570	6170
206.7	1260	5850
208.3	980	5800
210.0	1060	5850
211.6	1100	5950
213.3	1130	6060
214.9	1420	6060
216.5	1690	5750
218.2	1220	5510
219.8	920	5380
221.5	840	5420
223.1	800	5560
224.7	1120	5950
226.4	1490	6230
228.0	1480	6290
229.7	1520	6470
231.3	1650	6670
232.9	2000	7090
234.6	2300	7170
236.2	2030	6600
237.9	1770	6230
239.5	1610	6170
241.1	1470	6170
242.8	1970	7170
244.4	2140	7170
246.1	1810	6600
247.7	1830	7020
249.3	1870	7090
251.0	1980	7020
252.6	1950	6870

Table 11. Boring B-2182A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	2140	6350
255.9	1630	5900
257.6	1170	5750
259.2	1290	5800
260.8	1270	5900
262.5	1340	5800
264.1	1890	6870
265.8	2270	7090
267.4	1590	6290
269.0	1290	5700
270.7	1230	5950
272.3	1410	6230
274.0	1580	6230
275.6	1420	6120
277.2	1370	6060
278.9	1280	6010
280.5	1240	5900
282.2	1260	5950
283.8	1330	6060
285.4	1140	5700
287.1	1130	5850
288.7	1190	6010
290.4	1260	5800
292.0	1290	5750
293.6	1230	5800
295.3	1180	5800
296.9	1190	5750
298.6	1200	5800
300.2	1260	5750
301.8	1290	5650
303.5	1280	5650
305.1	1230	5700
306.8	1180	5700
308.4	1190	5750
310.0	1280	5850
311.7	1300	5850
313.3	1260	5850
315.0	1230	5900
316.6	1210	6010
318.2	1300	6170
319.9	1340	6290
321.5	1320	6230
323.2	1290	6170
324.8	1330	6120
326.4	1220	5750
328.1	1020	5600
329.7	990	5600
331.4	1010	5560
333.0	1030	5650
334.7	1050	5800

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
336.3	1080	5850
337.9	1140	6060
339.6	1260	6290
341.2	1420	6350
342.9	1510	6350
344.5	1400	6170
346.1	1300	6060
347.8	1230	5900
349.4	1330	6170
351.1	1790	6290
352.7	1780	6350
354.3	1590	6120
356.0	1590	6010
357.6	1530	6170
359.3	1620	6230
360.9	1650	6290
362.5	1610	6470
364.2	1770	6730
365.8	1930	6800
367.5	2220	6670
369.1	2020	6540
370.7	1950	6410
372.4	1730	6010
374.0	1360	5510
375.7	1170	5420
377.3	1080	5460
378.9	1040	5460
380.6	1030	5420
382.2	1040	5460
383.9	1040	5510
385.5	1070	5460
387.1	1090	5560
388.8	1160	5650
390.4	1230	5600
392.1	1250	5650
393.7	1300	5750
395.3	1380	5900
397.0	1390	5900

Table 11, continued. Boring B-2182A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

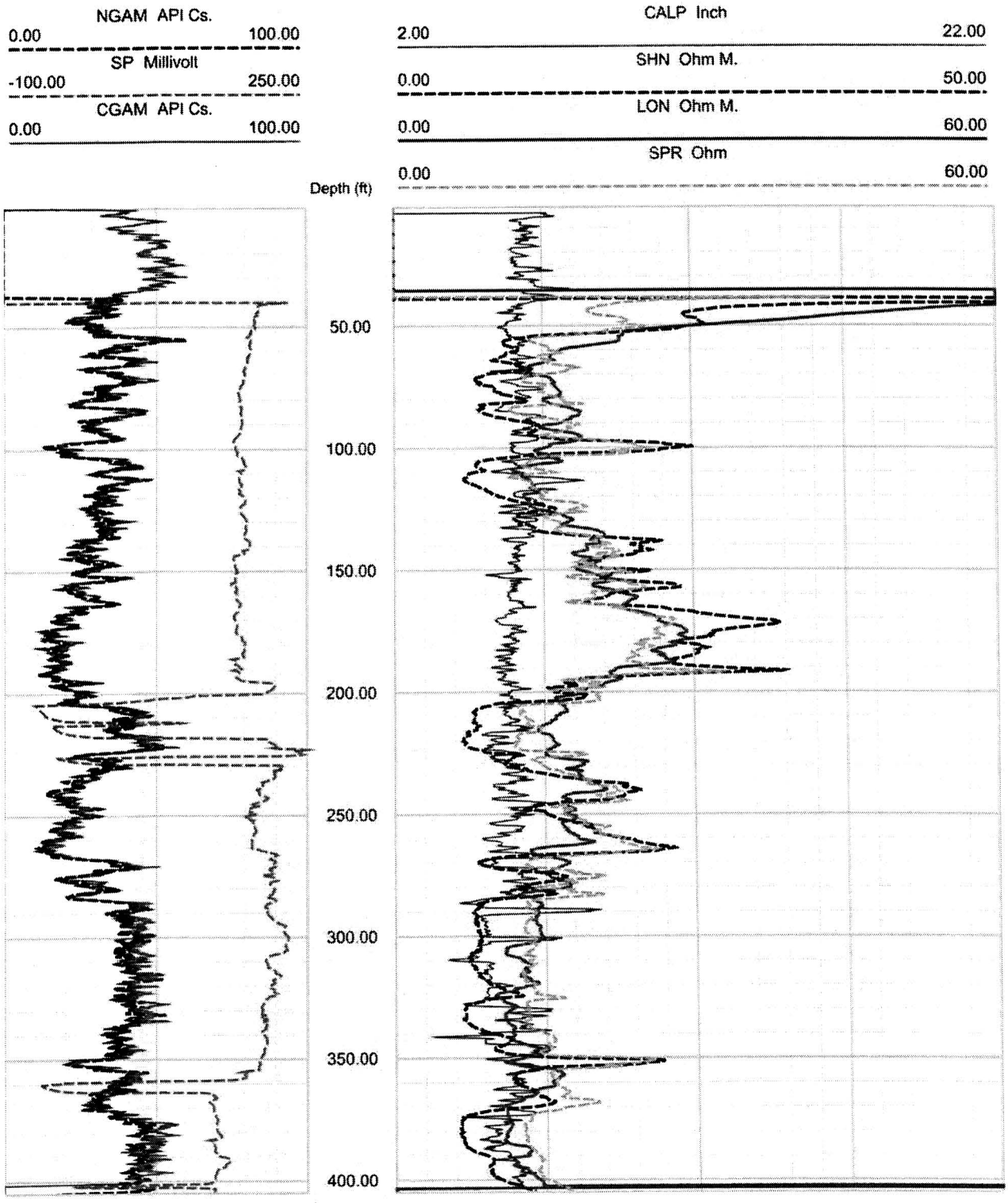

Figure 19. Boring B-2182A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

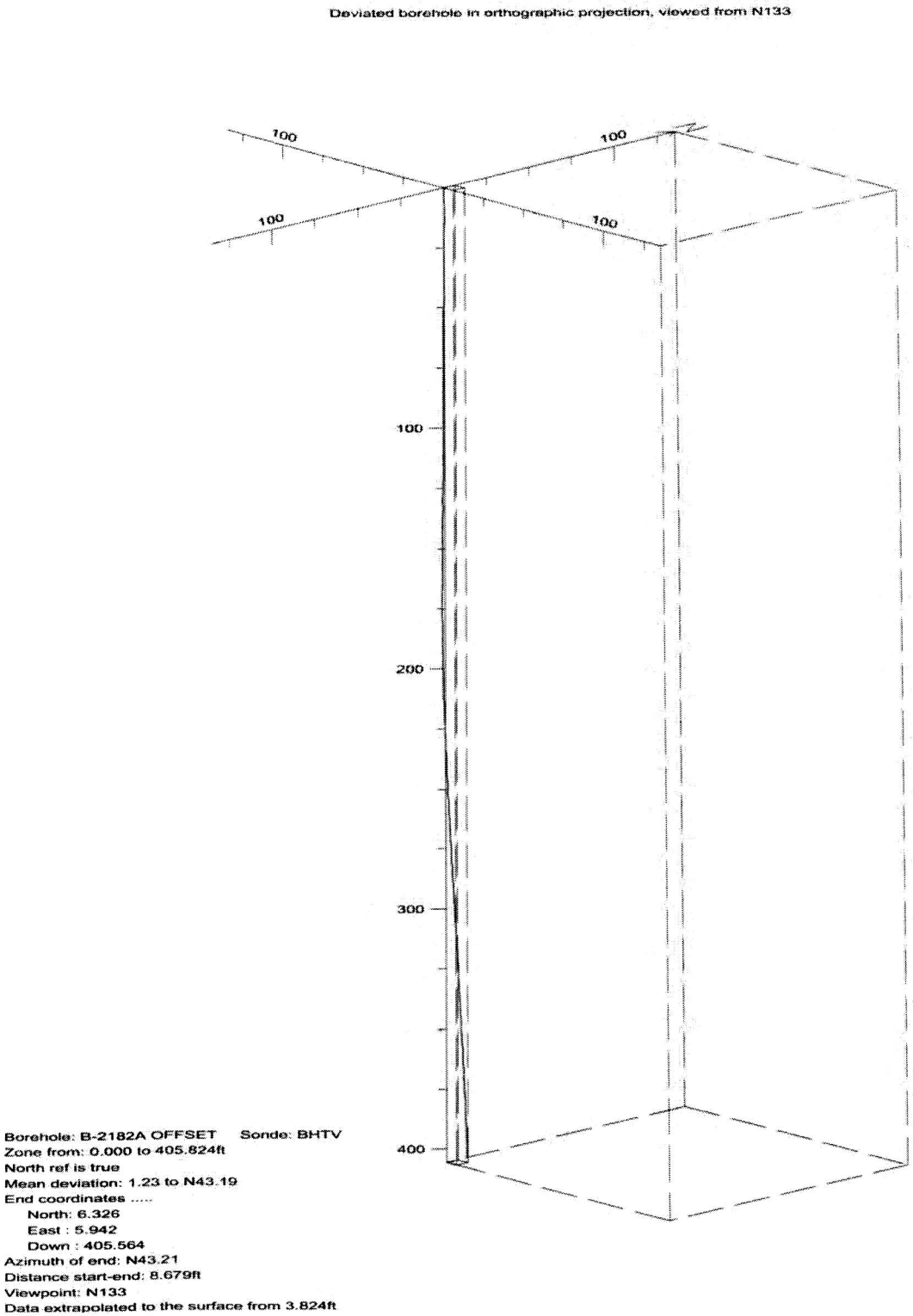

Figure 20. Boring B-2182A OFFSET, Deviation Projection (dimensions in feet)

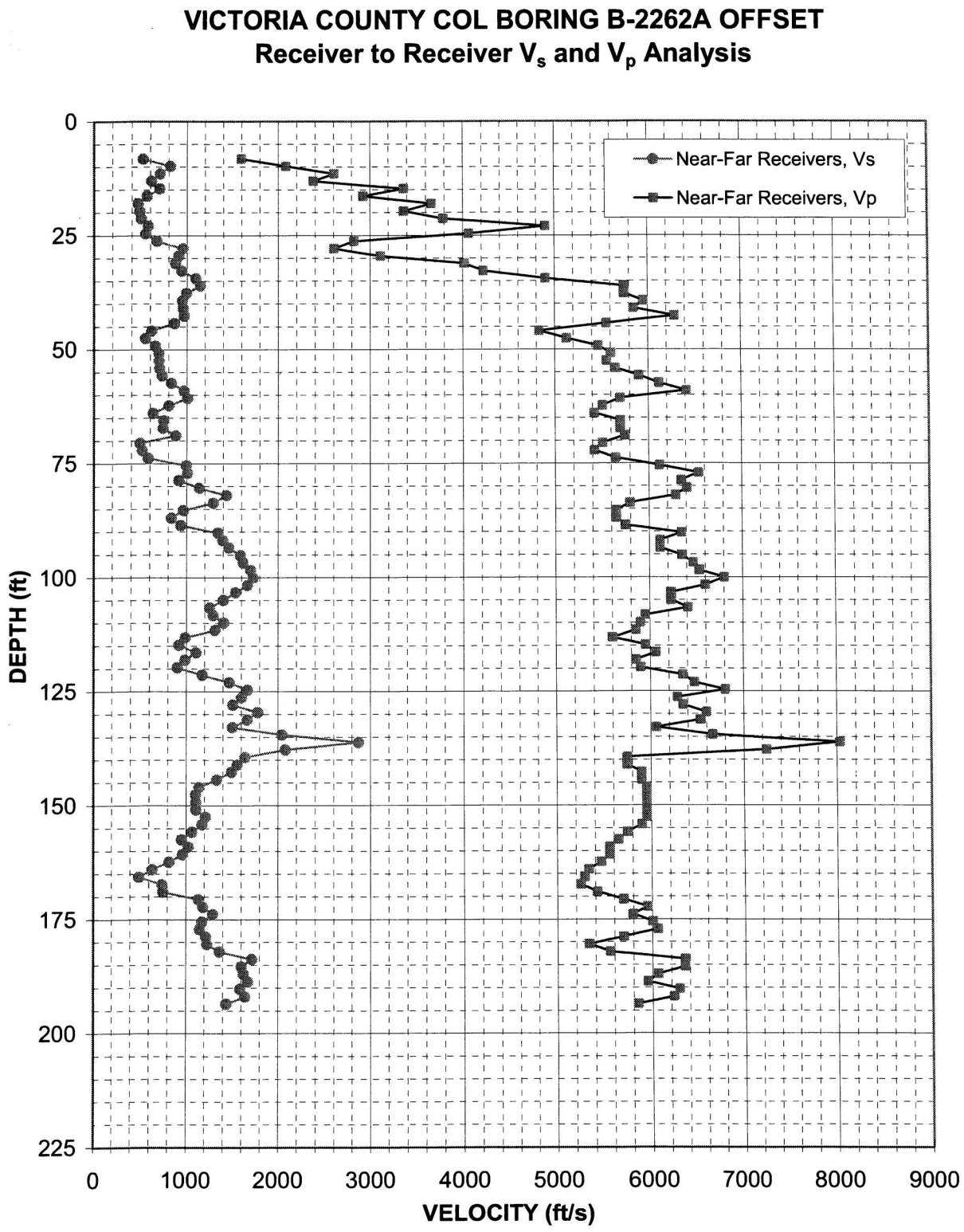

Figure 21: Boring B-2262A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	520	1590
9.8	820	2080
11.5	710	2600
13.1	610	2380
14.8	700	3370
16.4	560	2920
18.0	470	3660
19.7	480	3370
21.3	500	3790
23.0	580	4900
24.6	550	4070
26.3	670	2820
27.9	960	2600
29.5	910	3120
31.2	870	4020
32.8	940	4220
34.5	1100	4900
36.1	1150	5750
37.7	1000	5750
39.4	950	5950
41.0	960	5850
42.7	970	6290
44.3	860	5560
45.9	620	4830
47.6	550	5130
49.2	660	5460
50.9	690	5600
52.5	700	5560
54.1	700	5650
55.8	730	5900
57.4	830	6120
59.1	970	6410
60.7	1010	5700
62.3	810	5510
64.0	630	5420
65.6	750	5700
67.3	740	5700
68.9	880	5750
70.5	490	5510
72.2	520	5420
73.8	580	5650
75.5	1000	6120
77.1	1010	6540
78.7	920	6350
80.4	1140	6410
82.0	1440	6290
83.7	1290	5800
85.3	960	5650
86.9	830	5650
88.6	940	5750
90.2	1340	6350
91.9	1390	6120
93.5	1460	6120
95.1	1590	6350
96.8	1620	6470
98.4	1700	6540
100.1	1730	6800
101.7	1670	6600
103.4	1540	6230
105.0	1400	6230
106.6	1250	6410
108.3	1290	5950
109.9	1410	5900
111.6	1310	5850
113.2	990	5600
114.8	920	5950
116.5	1110	6060
118.1	990	5850
119.8	900	5900
121.4	1170	6350
123.0	1470	6470
124.7	1670	6800
126.3	1600	6290
128.0	1510	6350
129.6	1780	6600
131.2	1670	6540
132.9	1500	6060
134.5	2040	6670
136.2	2870	8030
137.8	2080	7250
139.4	1640	5750
141.1	1560	5750
142.7	1490	5900
144.4	1330	5900
146.0	1140	5950
147.6	1100	5950
149.3	1110	5950
150.9	1110	5950
152.6	1210	5950
154.2	1170	5900
155.8	1060	5750
157.5	950	5650
159.1	1030	5560
160.8	960	5560
162.4	820	5460
164.0	640	5330
165.7	490	5290
167.3	740	5250
169.0	750	5420
170.6	1140	5700
172.2	1180	5950
173.9	1290	5800
175.5	1170	6010
177.2	1150	6060
178.8	1220	5700
180.5	1230	5330
182.1	1370	5560
183.7	1720	6350
185.4	1600	6350
187.0	1630	6060
188.7	1680	5950
190.3	1590	6290
191.9	1640	6230
193.6	1440	5850

Table 12. Boring B-2262A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

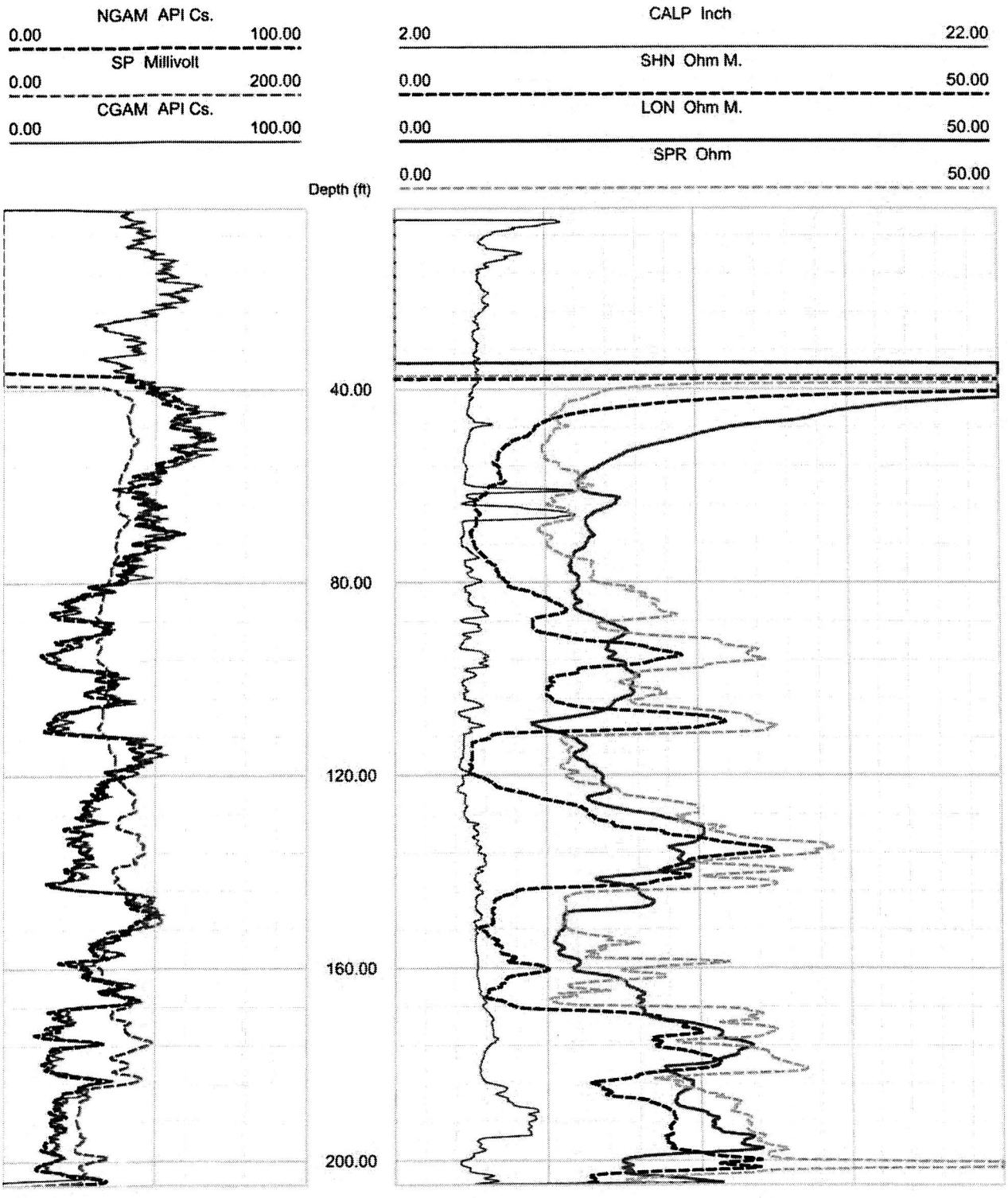

Figure 22. Boring B-2262A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

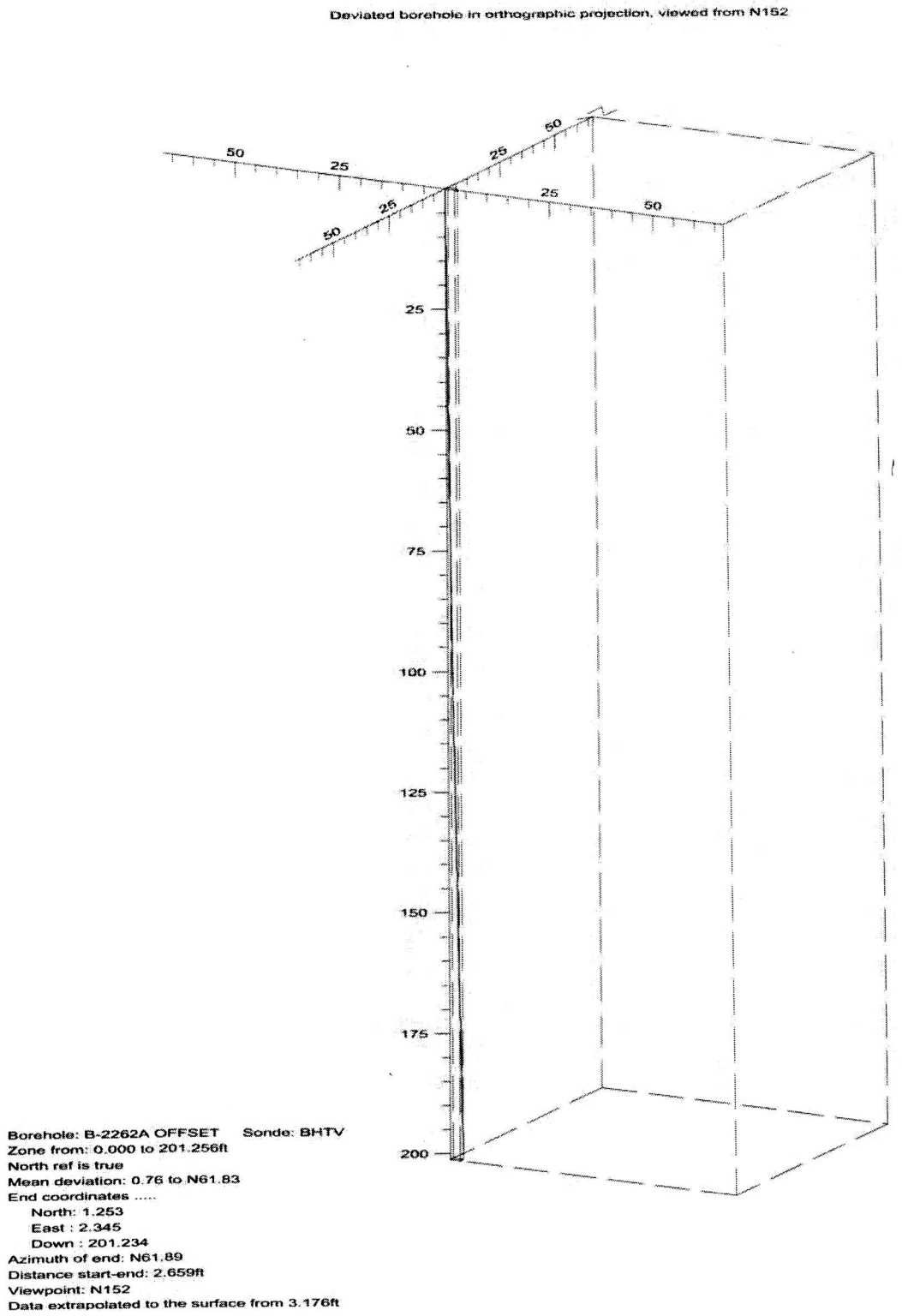

Figure 23. Boring B-2262A OFFSET, Deviation Projection (dimensions in feet)

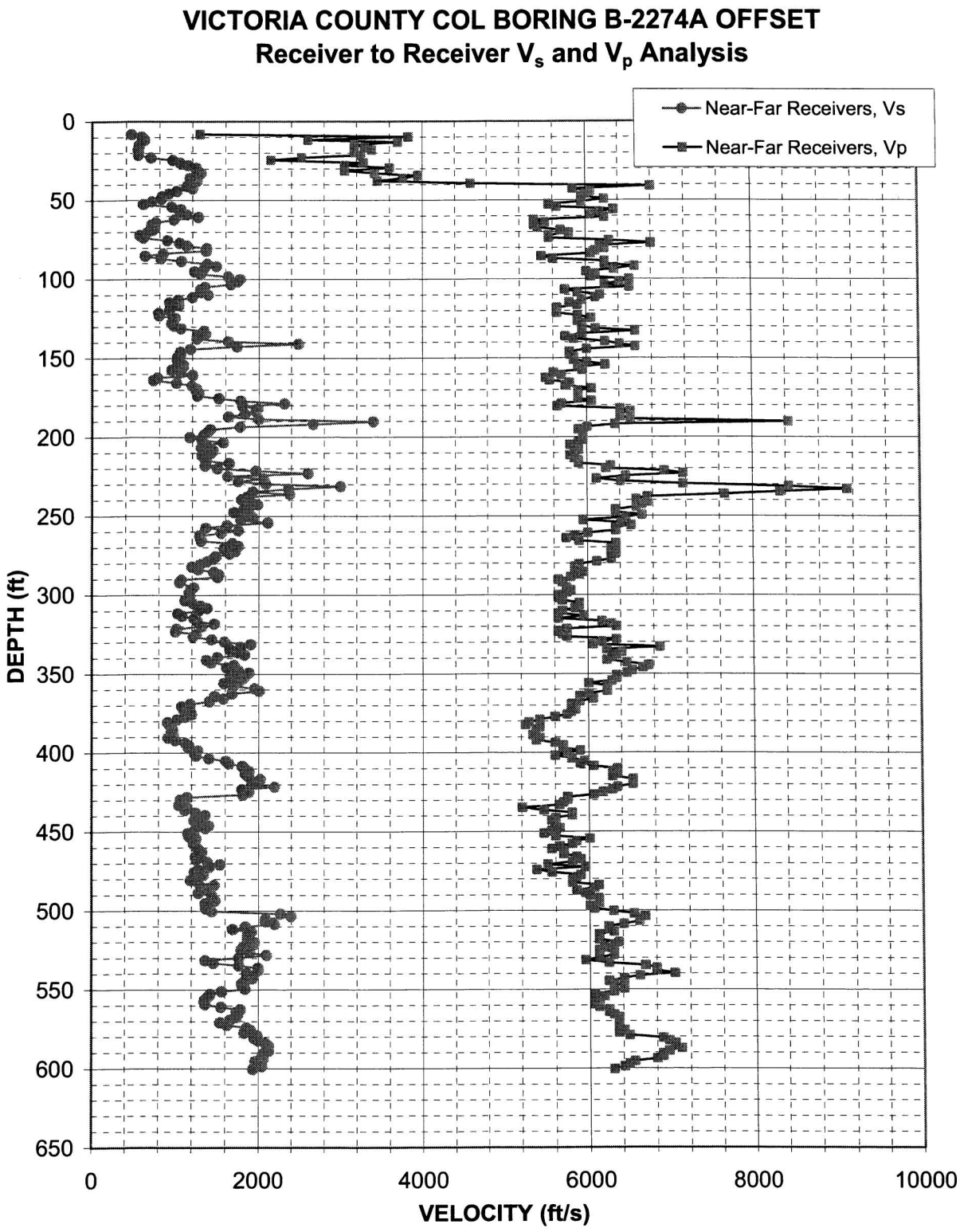

Figure 24: Boring B-2274A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	460	1290
9.8	580	3830
11.8	620	2600
13.1	580	3700
14.8	550	3170
16.4	550	3300
18.0	540	3380
19.7	540	3170
21.3	540	3250
23.0	690	2530
24.6	960	2140
26.3	1050	3280
27.9	1150	3060
29.5	1240	3600
31.2	1250	3060
32.8	1300	3420
34.5	1260	3940
36.1	1170	3770
37.7	1250	3450
39.4	1210	4600
41.0	1130	6800
42.7	1200	5850
44.3	1010	6060
45.9	910	6010
47.6	830	5950
49.2	820	6230
50.9	700	5950
52.5	600	5560
54.1	950	5650
55.8	1060	6350
57.4	1040	6170
59.1	1130	6060
60.7	1270	6230
62.3	970	5380
64.0	750	5510
65.6	700	5380
67.3	740	5420
68.9	720	5700
70.5	650	5800
72.2	560	5560
73.8	610	5560
75.5	890	6290
77.1	1040	6800
78.7	1130	6170
80.4	1370	6230
82.0	1370	6120
83.7	840	6060
85.3	630	5460
86.9	810	5600
88.6	1060	6230
90.2	1380	6230
91.9	1490	6600
93.5	1340	6350
95.1	1230	6010
96.8	1300	6120
98.4	1630	6060
100.1	1770	6540
101.7	1750	6410
103.4	1670	6230
105.0	1350	6540
106.6	1300	5750
108.3	1300	5900
109.9	1390	6170
111.6	1200	6120
113.2	1030	5950
114.8	920	5800
116.5	1040	5900
118.1	940	5650
119.8	920	5650
121.4	790	5650
123.0	800	5900
124.7	990	6060
126.3	960	5900
128.0	950	5950
129.6	970	5950
131.2	1060	6120
132.9	1340	6600
134.5	1360	5950
136.2	1260	5750
137.8	1250	5850
139.4	1630	6230
141.1	2490	6410
142.7	1740	6600
144.4	1180	6010
146.0	1050	5800
147.6	1050	5800
149.3	1020	5850
150.9	1010	5850
152.6	1020	6010
154.2	1090	6230
155.8	1090	5900
157.5	950	5950
159.1	1060	5600
160.8	1200	5700
162.4	780	5510
164.0	730	5560
165.7	1010	5800
167.3	1190	5750
169.3	1250	6060
170.6	1240	5900
172.2	1280	5900
173.9	1260	5900
175.5	1520	5900
177.2	1780	6060
178.8	2310	5700
180.5	1800	5650
182.1	1980	6410
183.7	1960	6540
185.4	1830	6410
187.0	1630	6410
188.7	2000	6540
190.3	3400	8440
191.9	2670	6350
193.6	1770	6010
195.2	1420	5900
196.9	1390	5950
198.5	1340	5950
200.1	1170	5950
201.8	1310	5950
203.4	1570	5900
205.1	1370	5800
206.7	1310	5850
208.3	1450	5900
210.0	1430	5850
211.6	1320	5800
213.3	1350	5850
214.9	1370	5900
216.5	1640	5900
218.2	1360	6290
219.8	1500	6230
221.5	1960	6940
223.1	2600	7170
224.7	1630	6470
226.4	2060	6120
228.0	1750	6410
229.7	2080	7170
231.3	3000	8440
232.9	2360	9130
234.6	1930	8330
236.2	2380	7660
237.9	1860	6730
239.5	1790	6600
241.1	1900	6730
242.8	1980	6670
244.4	1880	6600
246.1	1810	6350
247.7	1700	6350
249.3	1890	6670
251.0	1930	6470
252.6	1780	5950

Table 13. Boring B-2274A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	2110	6410
255.9	1620	6540
257.6	1370	6350
259.2	1750	6350
260.8	1550	6010
262.5	1290	5850
264.1	1300	5750
265.8	1310	5900
267.4	1680	6350
269.0	1750	6350
270.7	1590	6290
272.3	1720	6290
274.0	1650	6350
275.6	1490	6290
277.2	1460	6290
278.9	1380	6120
280.5	1300	5900
282.2	1200	5850
283.8	1270	5850
285.4	1460	5950
287.1	1520	5900
288.7	1510	5800
290.4	1070	5650
292.0	1050	5700
295.3	1220	5750
296.9	1180	5800
298.6	1170	5750
300.2	1170	5650
301.8	1150	5650
303.5	1110	5700
305.1	1210	5900
306.8	1300	5900
308.4	1380	5850
310.0	1280	5700
311.7	1030	5650
313.3	1080	5950
315.0	1230	5650
316.6	1260	6170
318.2	1470	6290
319.9	1320	6350
321.5	1020	5750
323.2	1000	5650
324.8	1250	5700
326.4	1220	5750
328.1	1440	6350
329.7	1590	6170
331.4	1900	6060
333.0	1780	6870
334.7	1660	6230
336.3	1750	6410
337.9	1830	6350
339.6	1510	6290
341.2	1380	6230
342.9	1430	6470
344.5	1710	6730
346.1	1620	6670
347.8	1750	6540
349.4	1880	6470
351.1	1660	6350
352.7	1820	6350
354.3	1770	6290
356.0	1590	6010
357.6	1690	6230
359.3	1950	6230
360.9	2010	6230
362.5	1680	6010
364.2	1470	5900
365.8	1580	6060
367.5	1410	5900
369.1	1180	5800
370.7	1080	5800
372.4	1100	5850
374.0	1190	5800
375.7	1200	5750
377.3	1120	5600
378.9	1030	5420
380.6	910	5290
382.2	930	5250
383.9	960	5420
385.5	970	5380
387.1	960	5380
388.8	970	5330
390.4	910	5420
392.1	1000	5380
393.7	1120	5600
395.3	1170	5700
397.0	1160	5700
398.6	1270	5900
400.3	1230	5750
401.9	1250	5600
403.5	1410	5800
405.2	1610	5950
406.8	1640	5900
408.5	1800	6060
410.1	1840	6350
411.8	1880	6290
413.4	1840	6350
415.0	1880	6290
416.7	2020	6540
418.3	2010	6540
420.0	1920	6540
421.6	2190	6350
423.2	1800	6290
424.9	1880	6170
426.5	1810	6060
428.2	1150	5750
429.8	1060	5750
431.4	1060	5700
433.1	1050	5650
434.7	1150	5210
436.4	1120	5460
438.0	1250	5800
439.6	1360	5800
441.3	1310	5600
442.9	1230	5560
444.6	1270	5600
446.2	1410	5600
447.8	1370	5650
449.5	1230	5560
451.1	1160	5460
452.8	1170	5600
454.4	1250	6010
456.0	1220	5850
457.7	1230	5800
459.3	1250	5650
461.0	1280	5560
462.6	1320	5700
464.2	1310	5700
465.9	1250	5850
467.5	1260	5900
469.2	1390	5800
470.8	1540	5510
472.4	1410	5950
474.1	1280	5380
475.7	1230	5560
477.4	1340	5900
479.0	1290	5850
480.6	1190	5800
482.3	1280	5800
483.9	1470	6120
485.6	1390	6060
487.2	1320	5850
488.9	1280	5950
490.5	1440	6010
492.1	1460	6120
493.8	1480	6120
495.4	1370	6120
497.1	1380	6010
498.7	1370	6060
500.3	1440	6290

Table 13, continued. Boring B-2274A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
502.0	2270	6540
503.6	2400	6670
505.3	2080	6600
506.9	2080	6600
508.5	2190	6410
510.2	1840	6230
511.8	1690	6230
513.5	1920	6290
515.1	1870	6120
516.7	1870	6120
518.4	1870	6120
520.0	1950	6350
521.7	1940	6290
523.3	1810	6170
524.9	1790	6120
526.6	1890	6290
528.2	2100	6290
529.9	1760	6120
531.5	1370	5950
533.1	1460	6230
534.8	1760	6670
536.4	2000	6800
538.1	2000	6800
539.7	1860	7020
541.3	1940	6600
543.0	1930	6410
544.6	1840	6230
546.3	1800	6290
547.9	1810	6410
549.5	1840	6410
551.2	1560	6290
552.8	1420	6060
554.5	1410	6170
556.1	1370	6120
557.7	1360	6060
559.4	1370	6060
561.0	1560	6120
562.7	1780	6230
564.3	1740	6230
565.9	1750	6290
567.6	1740	6350
569.2	1670	6350
570.9	1540	6350
572.5	1630	6350
574.2	1860	6350
575.8	1900	6410
577.4	1830	6350
579.1	1980	6470
580.7	1950	6870
582.4	2000	6940
584.0	2080	7020
585.6	2120	7020
587.3	2110	7090
588.9	2120	6940
590.6	2060	6870
592.2	2040	6870
593.8	2060	6800
595.5	1960	6540
597.1	2000	6470
598.8	2040	6410
600.4	1940	6290

Table 13, continued. Boring B-2274A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

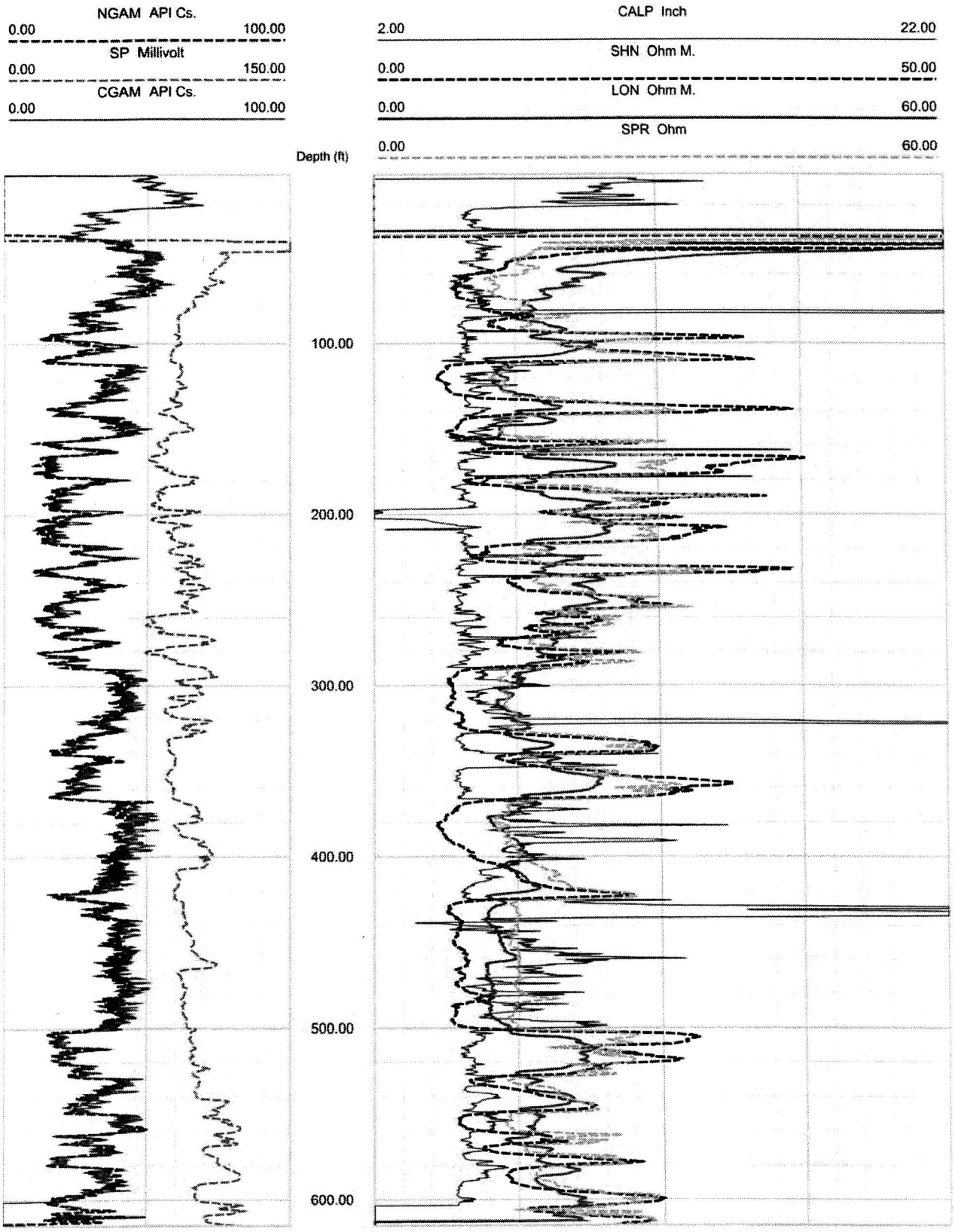

Figure 25. Boring B-2274A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

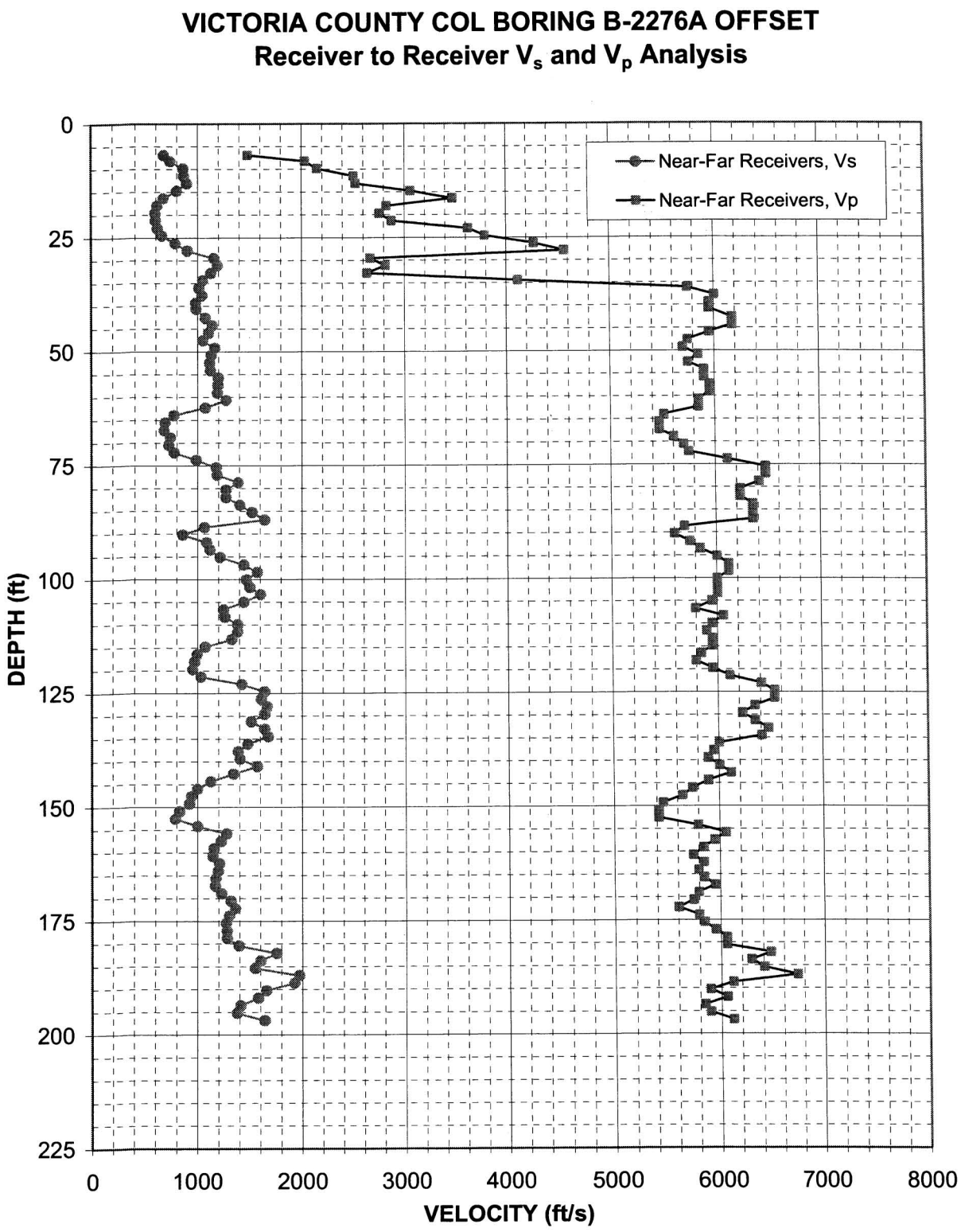

Figure 26: Boring B-2276A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
6.9	670	1480
8.2	740	2030
9.8	860	2150
11.5	870	2510
13.1	890	2530
14.8	800	3060
16.4	670	3470
18.0	610	2820
19.7	590	2750
21.3	600	2870
23.0	610	3620
24.6	660	3790
26.3	780	4270
27.9	900	4570
29.5	1160	2670
31.2	1190	2810
32.8	1130	2640
34.5	1050	4120
36.1	1010	5750
37.7	1040	6010
39.4	980	5950
40.7	980	5950
42.7	1080	6170
44.3	1140	6170
45.9	1100	5950
47.6	1050	5750
49.2	1170	5700
50.9	1130	5850
52.5	1110	5750
54.1	1120	5900
55.8	1200	5900
57.4	1190	5950
59.1	1190	5950
60.7	1270	5850
62.3	1070	5850
64.0	770	5510
65.6	690	5460
67.3	680	5460
68.9	740	5600
70.5	720	5700
72.2	780	5750
73.8	990	6120
75.5	1180	6470
77.1	1190	6470
78.7	1390	6410
80.4	1270	6230
82.0	1270	6230
83.7	1410	6350
85.3	1520	6350
86.9	1640	6350
88.6	1060	5700
90.2	860	5600
91.9	1090	5750
93.5	1120	5850
95.1	1220	6010
96.8	1440	6120
98.4	1570	6120
100.1	1470	6010
101.7	1500	6010
103.4	1600	6010
105.0	1440	5950
106.6	1250	5800
108.3	1260	6060
109.9	1380	5950
111.6	1380	5900
113.2	1330	5950
114.8	1070	5950
116.5	1000	5850
118.1	970	5800
119.8	950	5950
121.4	1030	6120
123.0	1420	6410
124.7	1640	6540
126.3	1610	6540
128.0	1670	6350
129.6	1640	6230
131.2	1520	6350
132.9	1640	6470
134.5	1680	6410
136.2	1480	6010
137.8	1390	5950
139.4	1410	5900
141.1	1570	6010
142.7	1340	6120
144.4	1130	5900
146.0	1000	5750
147.6	940	5650
149.3	920	5460
150.9	830	5420
152.6	790	5420
154.2	1000	5800
155.8	1280	6060
157.5	1230	5950
159.1	1160	5850
160.8	1150	5750
162.4	1210	5850
164.0	1200	5800
165.7	1170	5850
167.3	1170	5950
169.0	1230	5800
170.6	1320	5750
172.2	1360	5600
173.9	1300	5800
175.5	1270	5850
177.2	1280	5950
178.8	1280	6060
180.5	1390	6060
182.1	1750	6470
183.7	1600	6290
185.4	1550	6410
187.0	1970	6730
188.7	1930	6120
190.3	1660	5900
191.9	1580	6060
193.6	1410	5850
195.2	1380	5900
196.9	1640	6120

Table 14. Boring B-2276A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

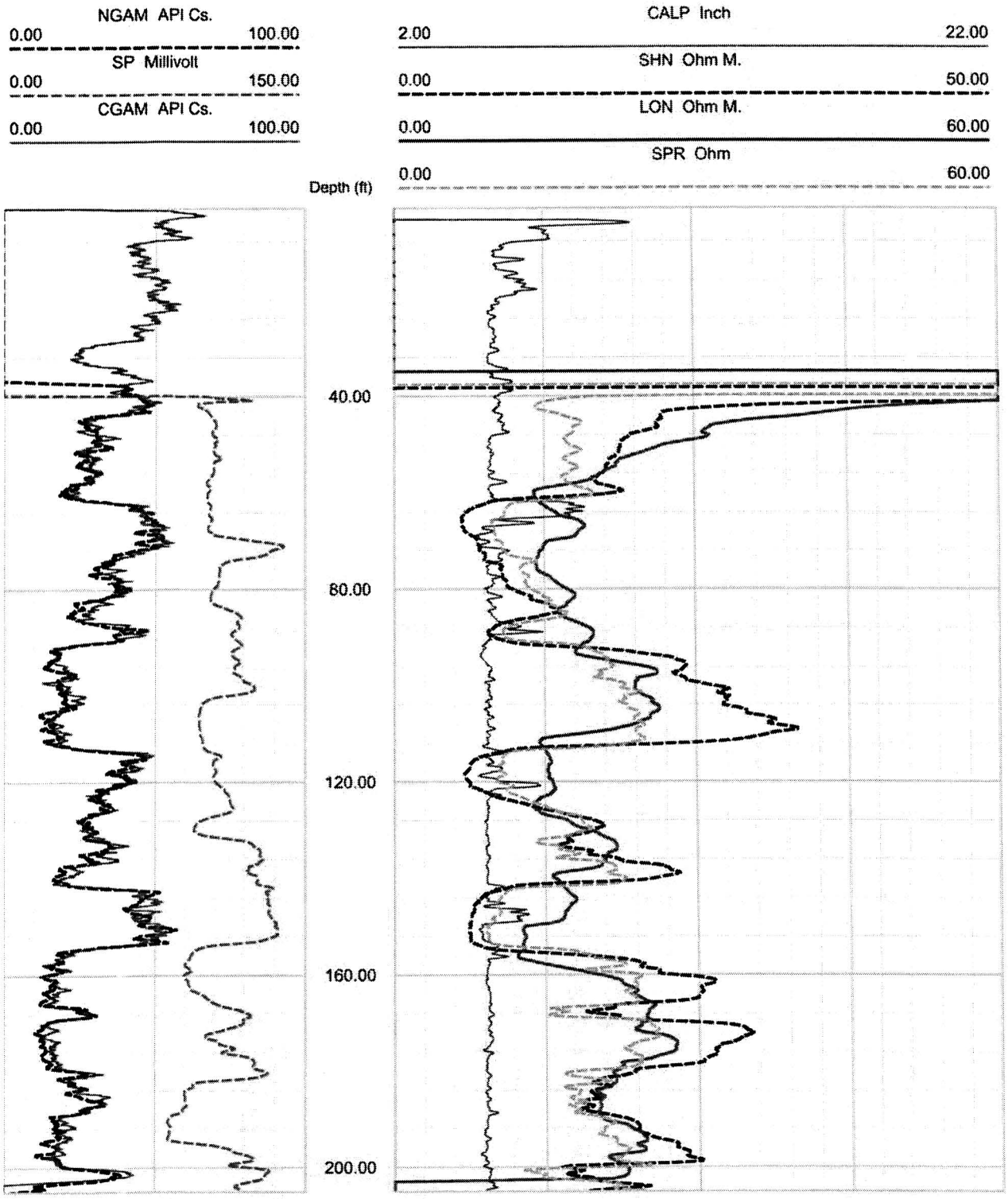

Figure 27. Boring B-2276A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

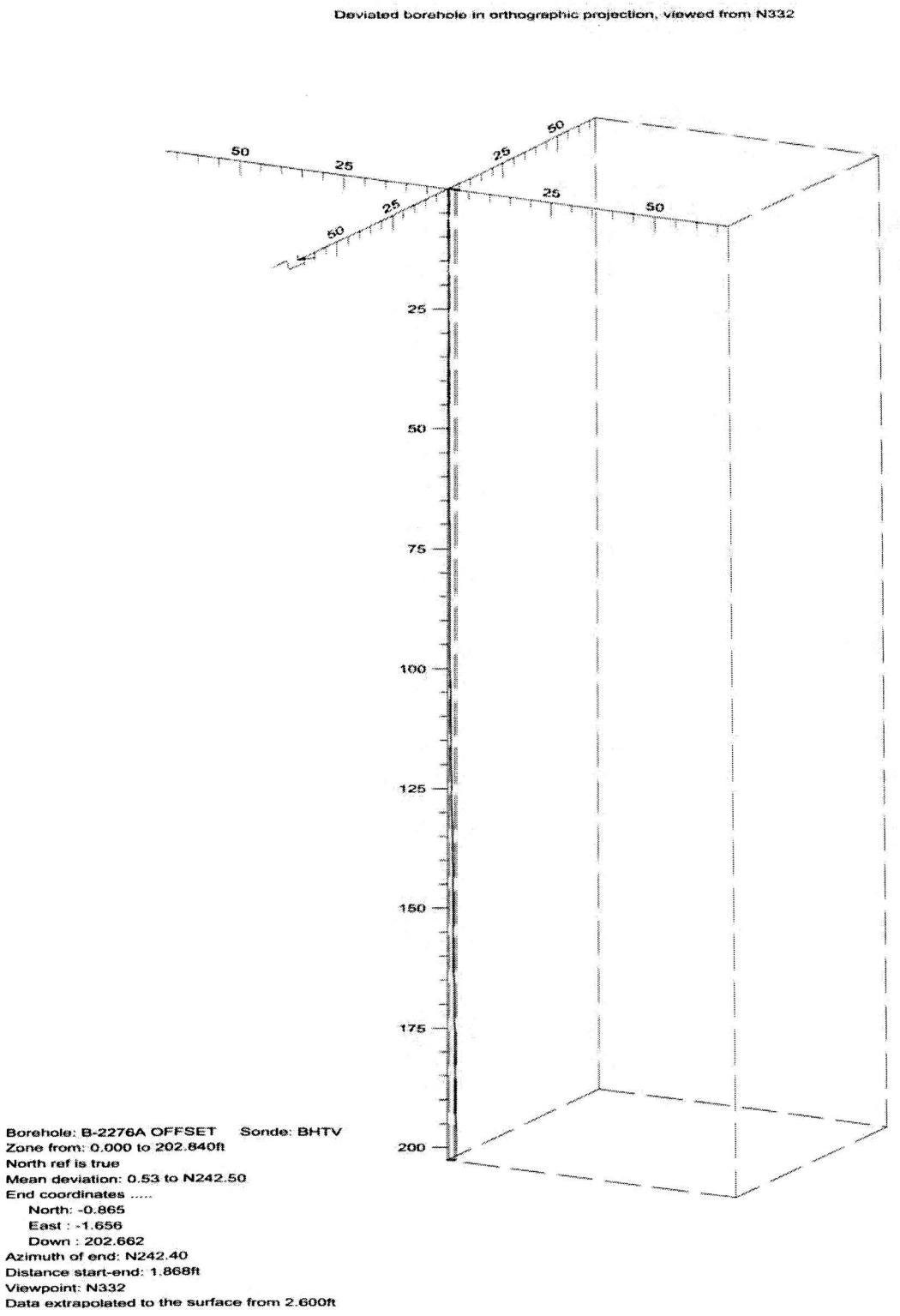

Figure 28. Boring B-2276A OFFSET, Deviation Projection (dimensions in feet)

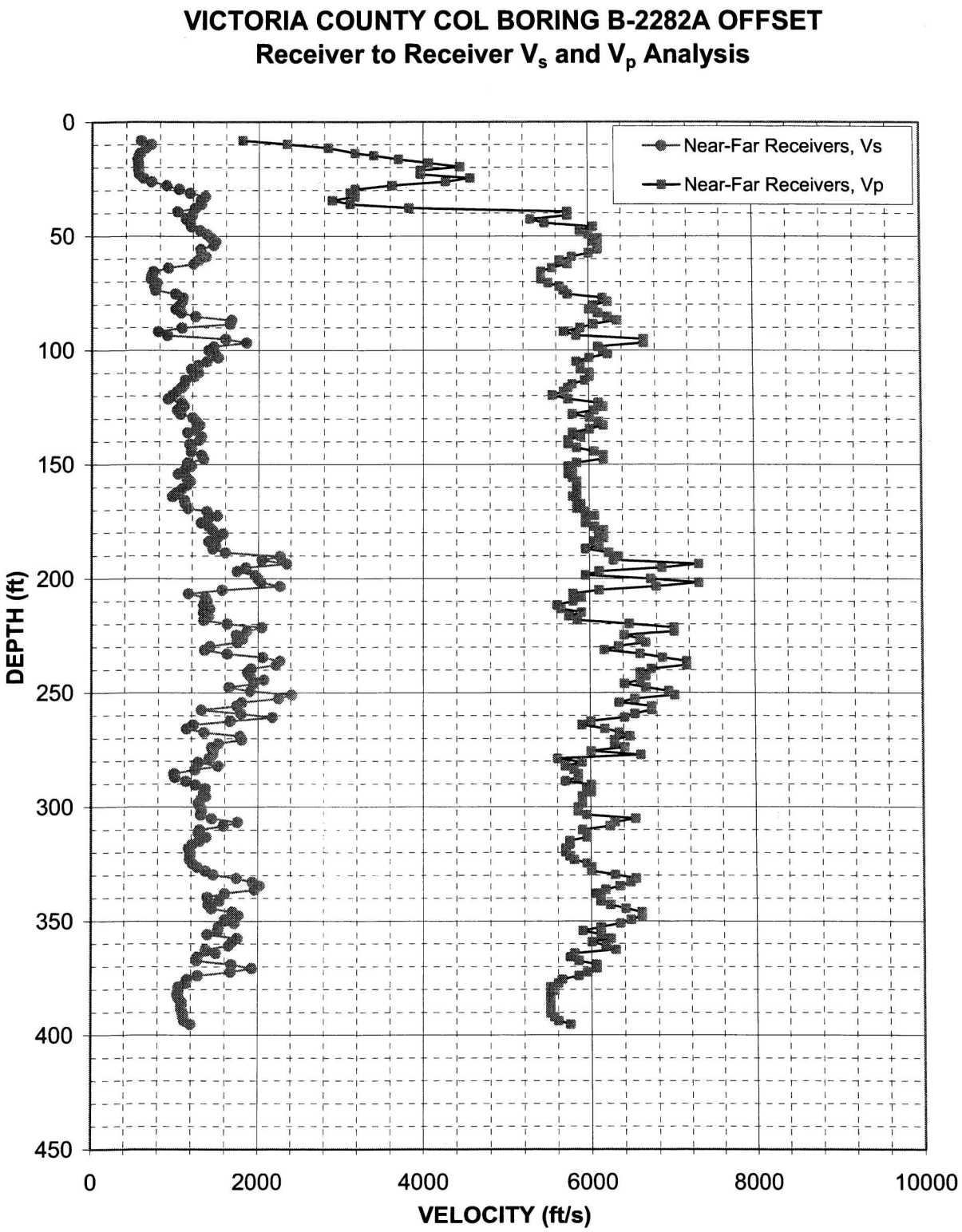

Figure 29: Boring B-2282A OFFSET, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	570	1800
9.8	690	2350
11.5	630	2850
13.8	560	3170
14.8	540	3400
16.4	530	3700
18.0	540	4070
19.7	540	4440
21.3	540	3970
23.0	550	3970
24.6	600	4570
26.3	700	4270
27.9	880	3620
29.5	1030	3170
31.2	1160	3120
32.8	1350	3170
34.5	1300	2900
36.1	1300	3120
37.7	1230	3830
39.4	1010	5750
41.0	1190	5750
42.7	1110	5290
44.3	1170	5460
45.9	1180	6060
47.6	1290	5900
49.2	1370	6010
50.9	1420	6120
52.5	1470	6060
54.1	1450	6120
55.8	1290	6120
57.4	1300	6010
59.1	1360	5800
60.7	1260	5650
62.3	1210	5750
64.0	900	5560
65.6	720	5420
67.3	700	5420
68.9	700	5420
70.5	770	5510
72.2	740	5650
73.8	750	5700
75.5	990	5750
77.1	1080	6170
78.7	1070	6230
80.4	1040	6060
82.0	1000	6010
83.7	1060	6120
85.3	1230	6230
86.9	1670	6350
88.6	1650	6060
90.2	1070	5900
91.9	790	5700
93.5	900	5850
95.1	1590	6670
96.8	1850	6670
98.4	1460	6120
100.1	1390	6170
101.7	1470	6230
103.4	1510	6010
105.0	1370	5850
106.6	1270	5900
108.3	1180	5900
109.9	1270	6010
111.6	1220	6010
113.2	1110	5950
114.8	1100	5800
116.5	1060	5750
118.1	1010	5700
119.8	960	5560
121.4	900	5750
123.0	1070	6120
124.7	1100	6170
126.3	1020	6060
128.0	1050	5800
129.6	1200	6010
131.2	1240	6120
132.9	1290	6170
134.5	1240	6010
136.2	1140	5800
137.8	1310	5900
139.4	1280	5750
141.1	1170	5750
142.7	1190	5850
144.4	1180	6060
146.0	1310	6170
147.6	1330	6170
149.3	1140	5850
150.9	1190	5750
152.6	1110	5800
154.2	1030	5750
155.8	1130	5800
157.5	1170	5850
159.1	1140	5850
160.8	1070	5850
162.4	1010	5850
164.0	960	5800
165.7	1100	5850
167.3	1110	5900
169.3	1150	5850
170.6	1380	5950
172.6	1500	6060
173.9	1390	5950
175.5	1310	5950
177.2	1400	6060
178.8	1440	6170
180.5	1570	6120
182.1	1500	6170
183.7	1400	6060
185.7	1480	6120
187.0	1450	5950
188.7	1600	6230
190.3	2270	6350
191.9	2040	6290
193.6	2350	7330
195.2	1850	6870
196.9	1750	6120
198.5	1960	5950
200.1	2000	6730
201.8	2030	7330
203.4	2270	6800
205.1	1560	6120
206.7	1160	5800
208.3	1360	5900
210.0	1380	5800
211.6	1340	5600
213.3	1410	5650
214.9	1340	5900
216.5	1400	5750
218.2	1340	5850
219.8	1630	6470
221.5	2040	7020
223.1	1860	7020
224.7	1740	6410
226.4	1810	6600
228.0	1750	6670
229.7	1420	6350
231.3	1360	6170
232.9	1630	6600
234.6	2060	6870
236.2	2270	7170
237.9	2220	7170
239.5	1920	6730
241.1	1870	6600
242.8	1900	6670
244.4	2070	6600
246.1	1950	6410
247.7	1650	6670
249.3	1900	6940
251.0	2420	7020
252.6	2250	6540

Table 15. Boring B-2282A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	1800	6350
255.9	1750	6730
257.6	1320	6730
259.2	1790	6540
260.8	2180	6410
262.5	1670	6010
264.1	1220	5900
265.8	1140	6170
267.4	1350	6350
269.0	1780	6470
270.7	1800	6290
272.3	1520	6290
274.0	1440	6410
275.6	1460	6010
277.2	1460	6600
278.9	1410	5600
280.5	1280	5900
282.2	1520	5700
283.8	1240	5800
285.4	990	5850
287.1	1000	5850
288.7	1140	5700
290.4	1250	6010
292.0	1370	5950
293.6	1350	6010
295.3	1370	5900
296.9	1310	5900
298.6	1290	5900
300.2	1310	5850
301.8	1320	5850
303.5	1310	5950
305.1	1440	6540
306.8	1750	6290
308.4	1590	6230
310.0	1300	5900
311.7	1290	5950
313.3	1380	5950
315.0	1300	5750
316.6	1210	5750
318.2	1170	5700
319.9	1190	5700
321.5	1190	5750
323.2	1180	5800
324.8	1220	5950
326.4	1270	6010
328.1	1370	6010
329.7	1460	6290
331.4	1750	6540
333.0	1940	6470
334.7	2020	6350
336.3	1960	6170
337.9	1600	6060
339.6	1390	6120
341.2	1540	6120
342.9	1410	6230
344.5	1440	6410
346.1	1690	6600
347.8	1760	6600
349.4	1600	6470
351.1	1720	6350
352.7	1530	6120
354.3	1520	5900
356.0	1390	6120
357.6	1750	6230
359.3	1690	6010
360.9	1650	6170
362.5	1380	6290
364.2	1490	5800
365.8	1280	5750
367.5	1270	5850
369.1	1680	6060
370.7	1930	6060
372.4	1680	5950
374.0	1280	5850
375.7	1150	5650
377.3	1140	5600
378.9	1050	5510
380.6	1050	5560
382.2	1040	5510
383.9	1050	5510
385.5	1090	5510
387.1	1090	5510
388.8	1090	5510
390.4	1100	5510
392.1	1110	5560
393.7	1120	5600
395.3	1190	5750

Table 15, continued. Boring B-2282A OFFSET, Suspension R1-R2 depths and P- and S_H-wave velocities

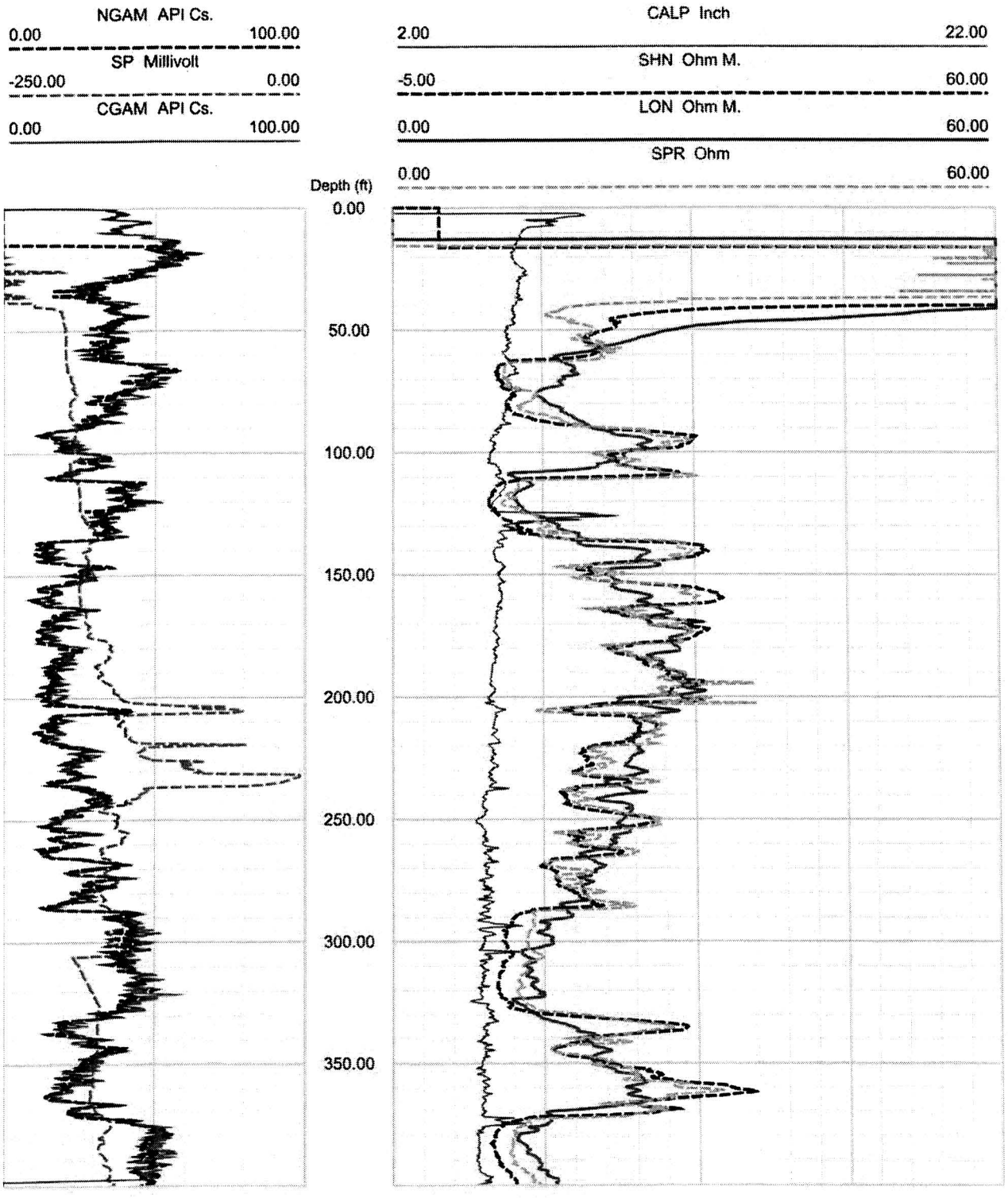

Figure 30. Boring B-2282A OFFSET, Caliper, Natural gamma, Resistivity and SP logs

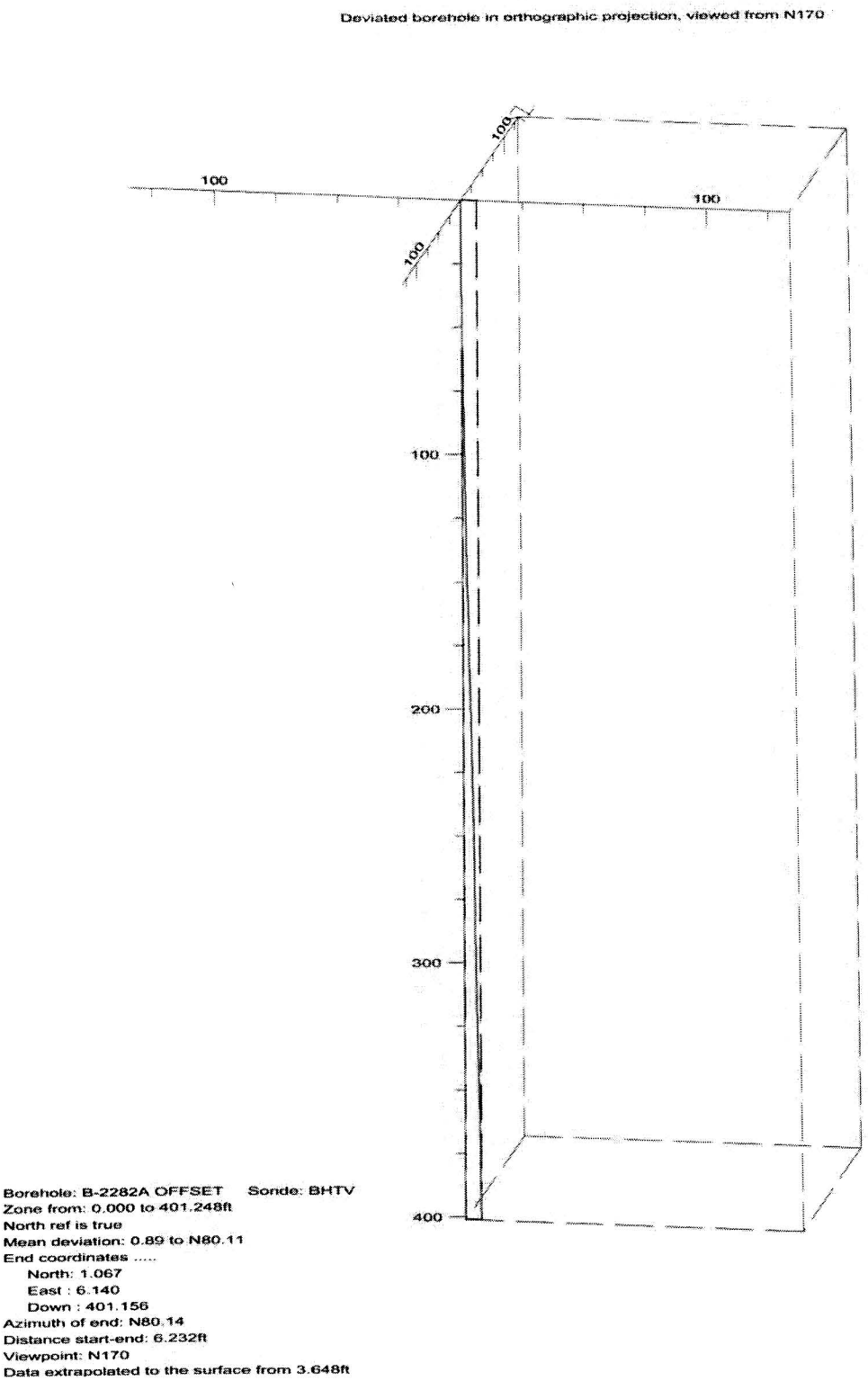

Figure 31. Boring B-2282A OFFSET, Deviation Projection (dimensions in feet)

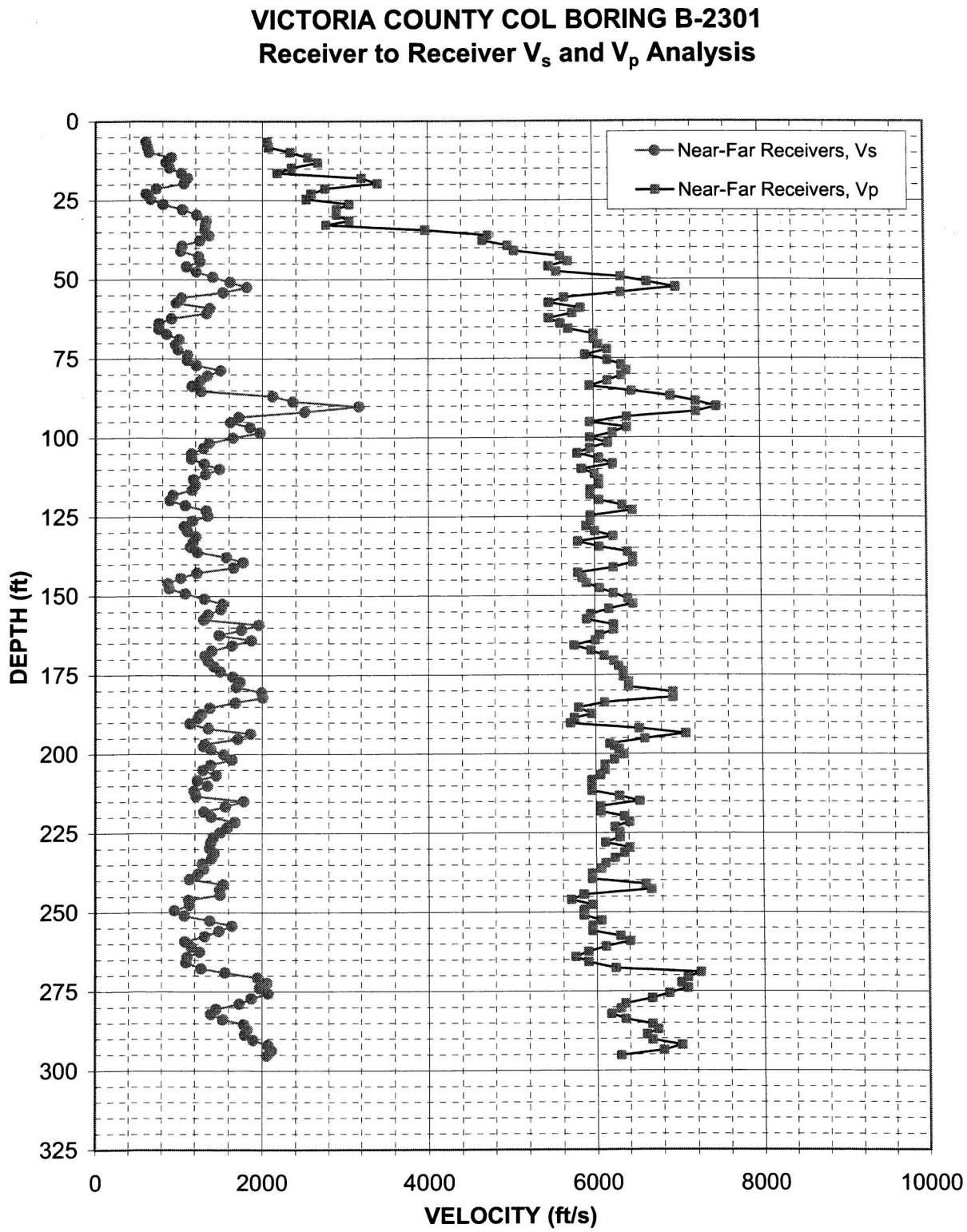

Figure 32: Boring B-2301, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
6.6	590	2060
8.2	610	2070
9.8	630	2330
11.5	910	2540
13.1	840	2670
14.8	880	2350
16.4	1030	2180
18.0	1100	3210
19.7	1060	3400
21.3	720	2750
23.0	600	2580
24.6	650	2530
26.3	800	3060
27.9	1040	2900
29.5	1210	2900
31.5	1330	3060
32.8	1320	2770
34.5	1310	3970
36.1	1360	4730
37.7	1250	4660
39.4	1040	4980
41.0	1020	5050
42.7	1230	5600
44.3	1250	5700
45.9	1090	5460
47.6	1210	5560
49.2	1410	6350
50.9	1610	6670
52.5	1810	7020
54.1	1530	6350
55.8	1030	5650
57.4	970	5460
59.1	1370	5850
60.7	1330	5750
62.3	910	5460
64.0	750	5600
65.6	750	5700
67.3	850	6010
68.9	1000	6010
70.5	960	6060
72.2	990	6170
73.8	1100	5900
75.5	1100	6170
77.1	1210	6350
78.7	1500	6410
80.4	1340	6350
82.0	1260	6170
83.7	1160	5950
85.3	1270	6470
86.9	2120	6940
88.6	2360	7250
90.2	3170	7490
91.9	2510	7250
93.5	1720	6410
95.1	1620	5950
96.8	1850	6410
98.4	1970	6230
100.1	1650	5950
101.7	1370	6170
103.4	1300	5950
105.0	1150	5800
106.6	1150	6060
108.3	1310	6230
109.9	1490	5850
111.6	1320	6010
113.2	1180	6060
114.8	1200	6060
116.5	1160	5950
118.1	930	5950
119.8	890	6060
121.4	1080	6350
123.0	1330	6470
124.7	1350	5950
126.3	1170	5950
128.0	1060	5900
129.6	1110	6010
131.2	1210	6230
132.9	1170	5800
134.5	1140	6060
136.2	1230	6410
137.8	1570	6470
139.4	1770	6470
141.1	1660	6230
142.7	1220	5800
144.4	1030	5850
146.0	870	5900
147.6	890	6060
149.3	1080	6230
150.9	1310	6410
152.6	1530	6470
154.2	1510	6170
155.8	1360	5950
157.5	1300	5900
159.1	1960	6230
160.8	1750	6230
162.4	1490	6060
164.0	1870	6010
165.7	1640	5750
167.3	1400	5950
169.0	1320	6120
170.6	1360	6230
172.2	1420	6290
173.9	1500	6350
175.5	1650	6350
177.2	1740	6410
178.8	1690	6410
180.5	2000	6940
182.1	2010	6940
183.7	1680	6120
185.4	1380	5800
187.3	1280	5950
188.7	1240	5750
190.3	1140	5700
191.9	1360	6540
193.6	1860	7090
195.2	1710	6600
196.9	1320	6170
197.5	1300	6230
198.5	1390	6290
200.1	1540	6350
201.8	1640	6230
203.4	1390	6120
205.1	1300	6120
206.7	1460	6060
208.3	1230	5950
210.0	1350	5950
211.6	1190	5950
213.3	1210	6290
214.9	1780	6540
216.5	1560	6060
218.2	1310	6060
219.8	1390	6350
221.5	1680	6410
223.1	1590	6230
224.7	1500	6290
226.4	1420	6290
228.0	1390	6120
229.7	1380	6410
231.3	1430	6350
232.9	1400	6230
234.6	1290	6120
236.2	1310	6060
237.9	1240	5950
239.5	1140	5950
241.1	1540	6600
242.8	1490	6670
244.4	1500	5850
246.1	1130	5700
247.7	1140	5950
249.3	960	5850

Table 16. Boring B-2301, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
251.0	1080	5850
252.6	1380	6060
254.3	1640	5950
255.9	1490	5950
257.6	1320	6290
259.2	1080	6410
260.8	1160	6120
262.5	1260	5900
264.1	1110	5750
265.8	1100	5900
267.7	1280	6230
269.0	1560	7250
270.7	1950	7090
272.3	2060	7020
274.0	1970	7090
275.6	2070	6870
277.2	1870	6670
278.9	1730	6350
280.5	1460	6290
282.2	1390	6170
283.8	1540	6350
285.4	1780	6670
287.1	1820	6730
288.7	1790	6600
290.4	1890	6670
292.0	2070	7020
293.6	2110	6800
295.3	2060	6290

Table 16, continued. Boring B-2301, Suspension R1-R2 depths and P- and S_H-wave velocities

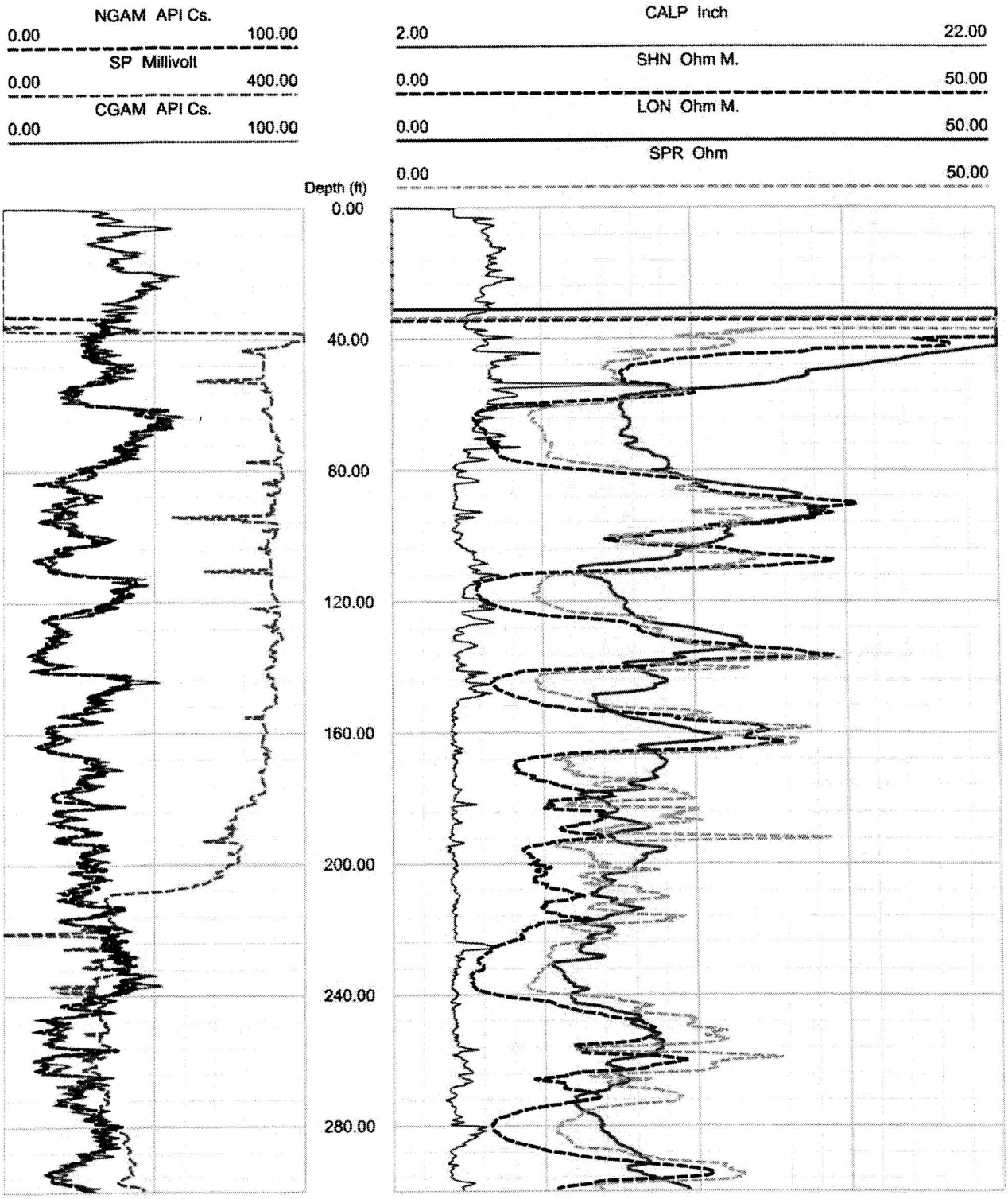

Figure 33. Boring B-2301, Caliper, Natural gamma, Resistivity and SP logs

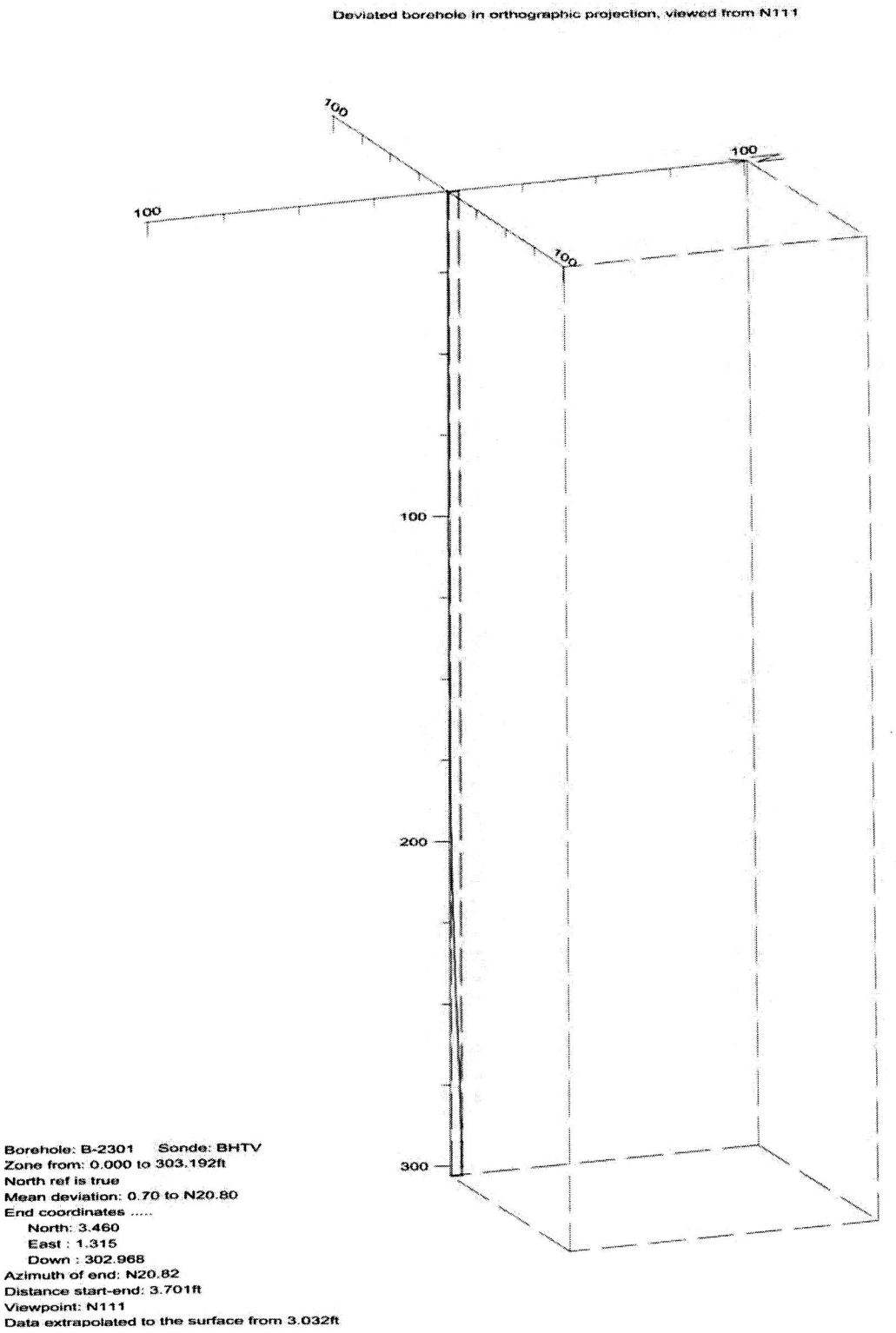

Figure 34. Boring B-2301, Deviation Projection (dimensions in feet)

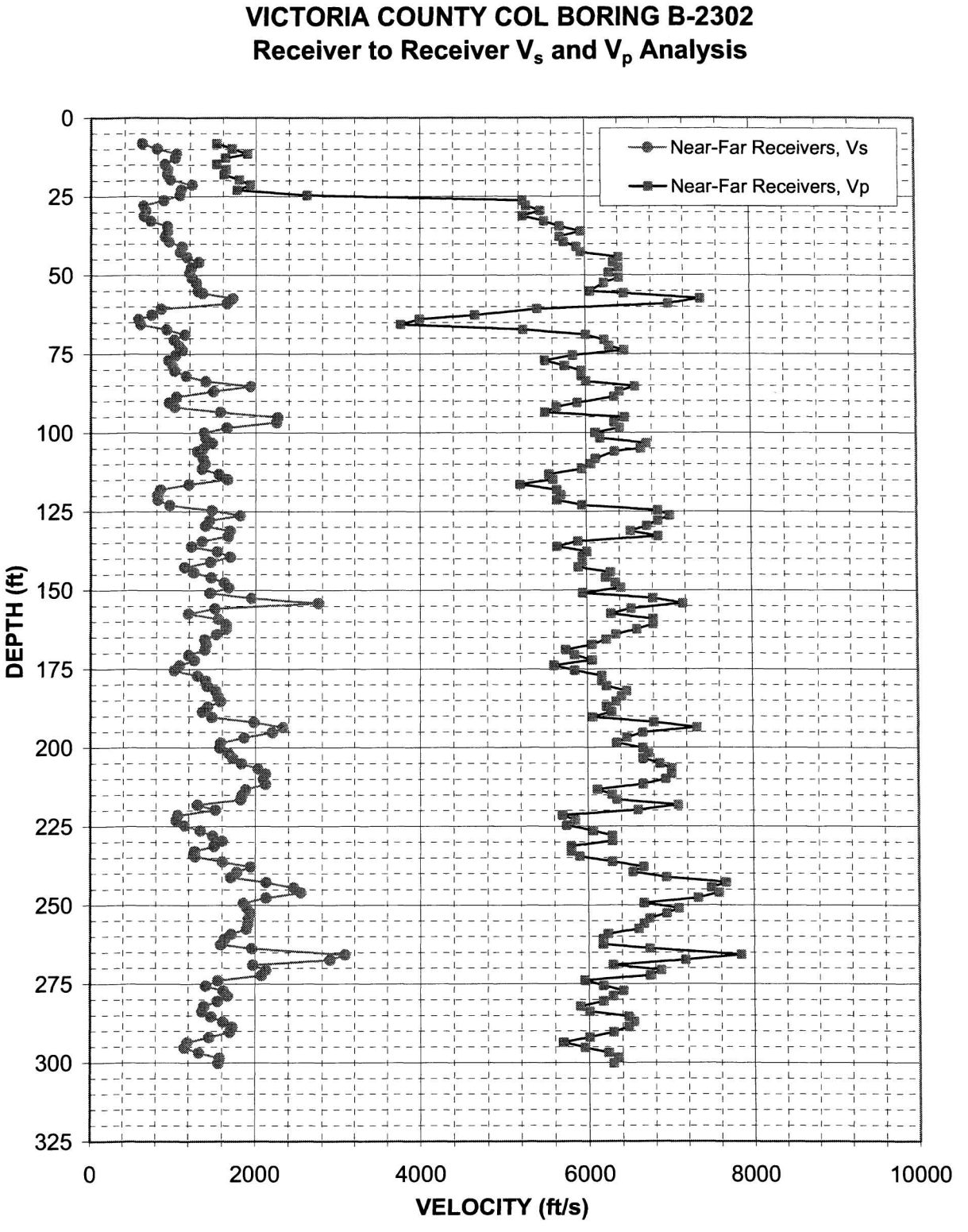

Figure 35: Boring B-2302, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
8.2	610	1520
9.8	790	1710
11.5	1030	1890
12.8	1020	1630
14.8	890	1520
16.4	930	1630
18.0	920	1610
19.7	960	1790
21.3	1220	1930
23.0	1090	1770
24.6	1080	2610
26.3	880	5250
27.9	630	5290
29.5	660	5460
31.2	630	5250
32.8	720	5510
34.5	920	5700
36.1	920	5950
37.7	890	5700
39.4	940	5750
41.0	1110	5900
42.7	1080	5950
44.3	1160	6410
45.9	1310	6350
47.6	1220	6410
49.2	1190	6290
50.9	1230	6410
52.5	1280	6230
55.1	1300	6060
55.8	1360	6470
57.4	1720	7410
59.1	1650	7020
60.7	850	5420
62.7	730	4660
64.0	570	3990
65.6	590	3770
67.3	920	5250
68.9	1140	6010
70.5	1010	6230
72.5	1070	6290
73.8	1110	6470
75.5	1030	5850
77.1	940	5510
78.7	990	5750
80.4	1020	5950
82.0	1160	5950
83.7	1390	6010
85.3	1940	6600
86.9	1490	6410
88.6	1040	6350
90.6	950	5900
91.9	1020	5650
93.5	1570	5510
95.1	2270	6470
96.8	2250	6350
98.4	1650	6410
100.1	1380	6120
101.7	1390	6170
103.4	1470	6730
105.0	1370	6670
106.0	1300	6350
108.3	1370	6120
109.9	1390	6060
111.6	1360	5950
113.2	1560	5560
114.8	1660	5600
116.5	1190	5210
118.1	840	5650
119.8	810	5700
121.4	810	5650
123.0	960	5950
124.7	1470	6870
126.3	1810	7020
128.0	1440	6870
129.6	1390	6730
131.2	1690	6540
132.9	1670	6870
134.5	1360	5900
136.2	1230	5650
137.8	1540	6010
139.4	1690	5950
141.1	1460	5950
142.7	1140	5900
144.4	1250	6290
146.0	1460	6230
147.6	1620	6350
149.3	1680	6410
150.9	1450	5950
152.6	1950	6800
154.2	2750	7170
155.8	1510	6540
157.5	1190	6290
159.1	1550	6800
160.8	1640	6800
162.4	1640	6600
164.0	1530	6350
165.7	1390	6230
167.3	1410	6060
169.0	1390	5750
170.6	1190	5850
172.2	1260	6060
173.9	1090	5600
175.5	1020	5850
177.2	1300	6170
178.8	1400	6170
180.5	1420	6230
182.1	1520	6470
183.7	1550	6410
185.4	1580	6350
187.0	1420	6230
188.7	1360	6290
190.3	1470	6060
191.9	1980	6800
193.6	2330	7330
195.2	2210	6670
196.9	1860	6470
198.5	1580	6350
200.1	1570	6670
201.8	1680	6730
203.4	1730	6670
205.1	1830	6870
206.7	2030	7020
208.3	2120	7020
210.0	2100	6940
211.6	2120	6670
213.3	1880	6120
214.9	1840	6290
216.5	1820	6350
218.2	1300	7090
219.8	1520	6600
221.5	1070	5700
223.1	1050	5850
224.7	1150	5750
226.4	1340	6060
228.0	1490	6290
229.7	1600	6290
231.3	1500	5800
232.9	1270	5800
234.6	1280	5900
236.2	1610	6290
237.9	1940	6670
239.5	1780	6540
241.1	1710	6940
242.8	2130	7660
244.4	2460	7490
246.1	2540	7580
247.7	2130	7330
249.3	1860	6670
251.0	1900	7090
252.6	1940	6940

Table 17. Boring B-2302, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
254.3	1920	6730
255.9	1910	6670
257.6	1890	6600
259.2	1710	6230
260.8	1630	6170
262.5	1590	6170
263.8	1960	6730
265.8	3090	7840
267.4	2900	7170
269.0	1970	6290
270.7	2130	6870
272.3	2080	6730
274.0	1550	5950
275.6	1410	6170
277.2	1620	6410
278.9	1670	6290
280.5	1550	6170
282.2	1390	5900
283.8	1360	6010
285.4	1470	6470
287.1	1610	6540
288.7	1720	6470
290.4	1700	6290
292.0	1450	6010
293.6	1190	5700
295.3	1150	5950
296.9	1330	6230
298.6	1570	6350
300.2	1560	6290

Table 17, continued. Boring B-2302, Suspension R1-R2 depths and P- and S_H-wave velocities

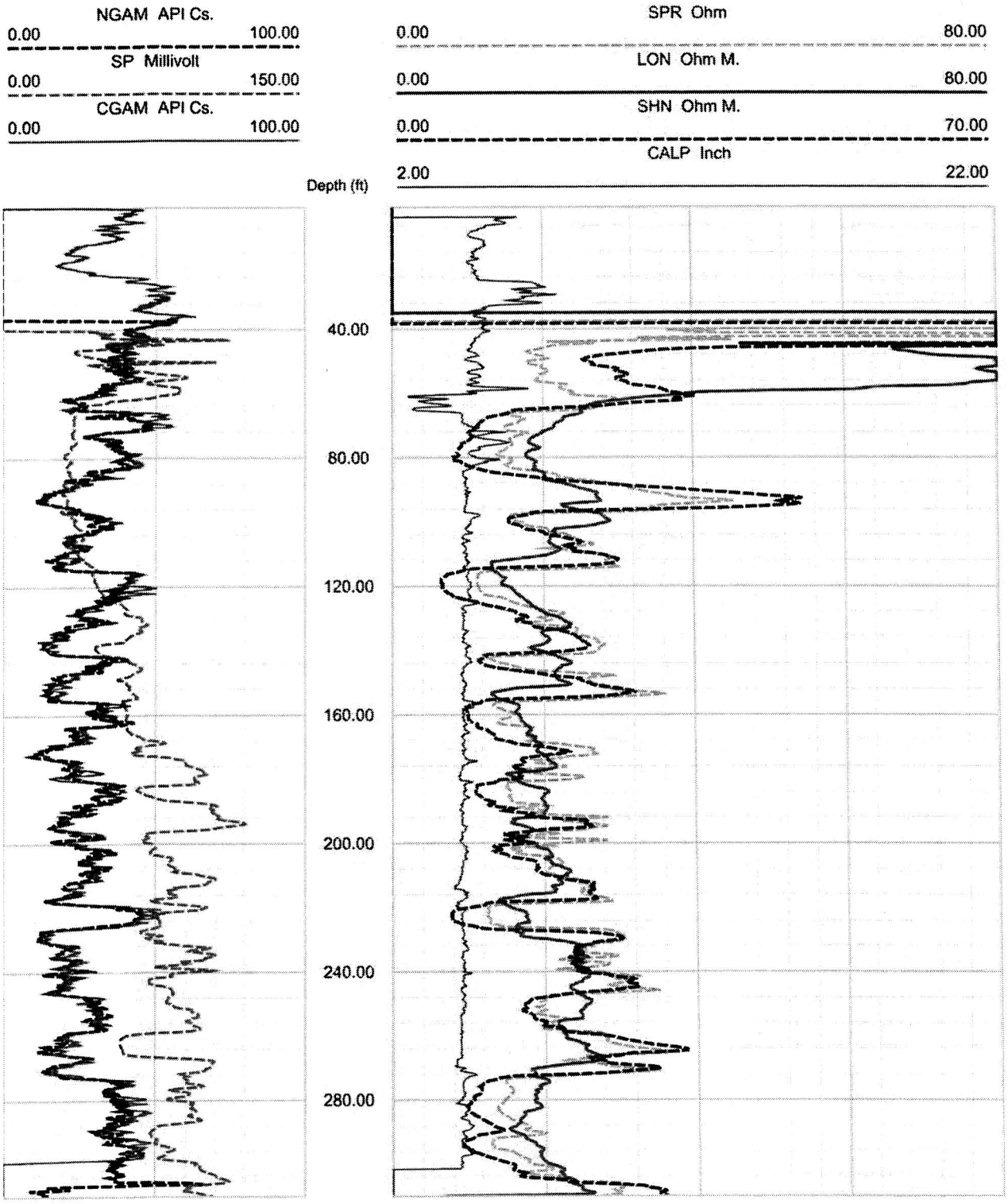

Figure 36. Boring B-2302, Caliper, Natural gamma, Resistivity and SP logs

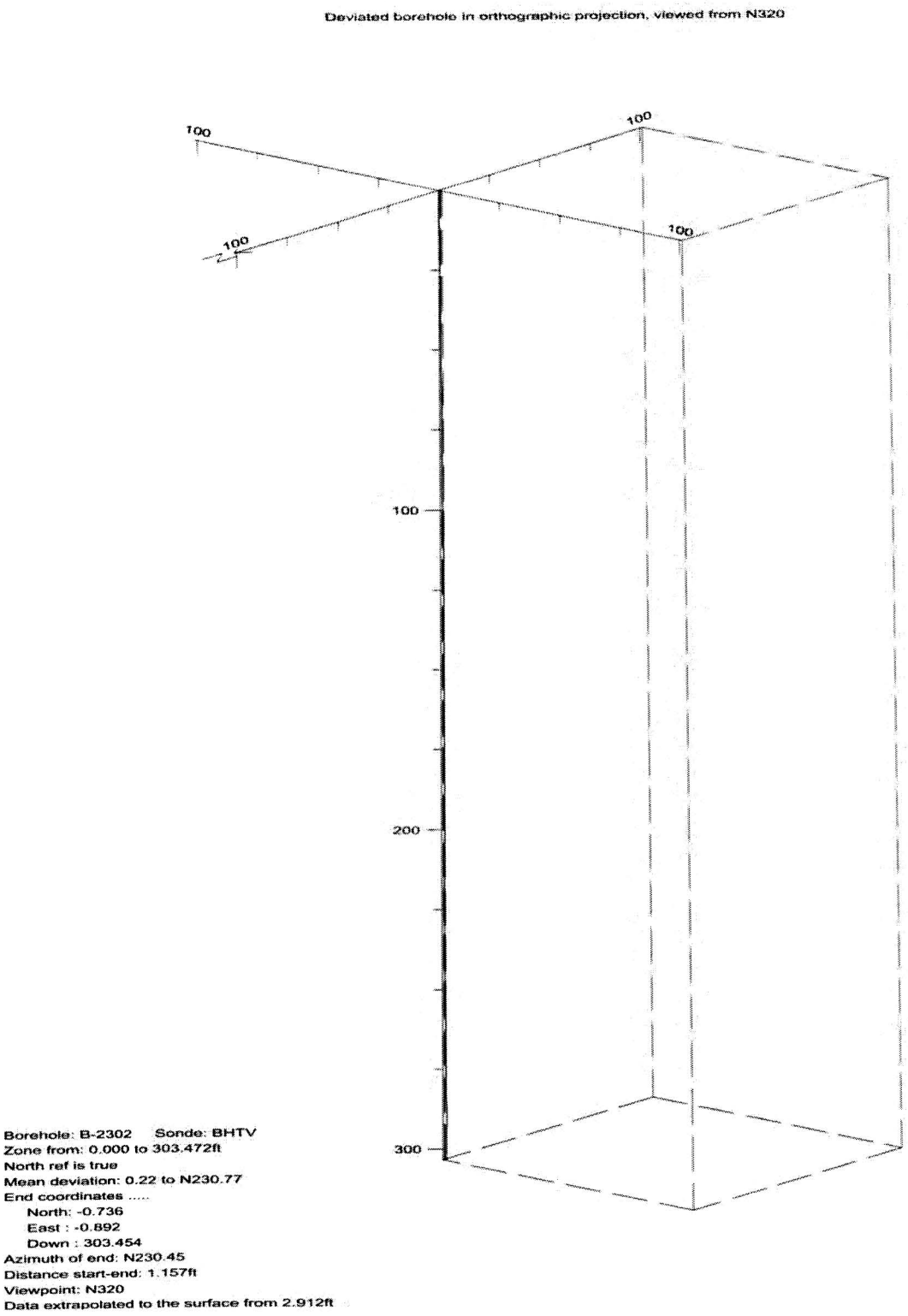

Figure 37. Boring B-2302, Deviation Projection (dimensions in feet)

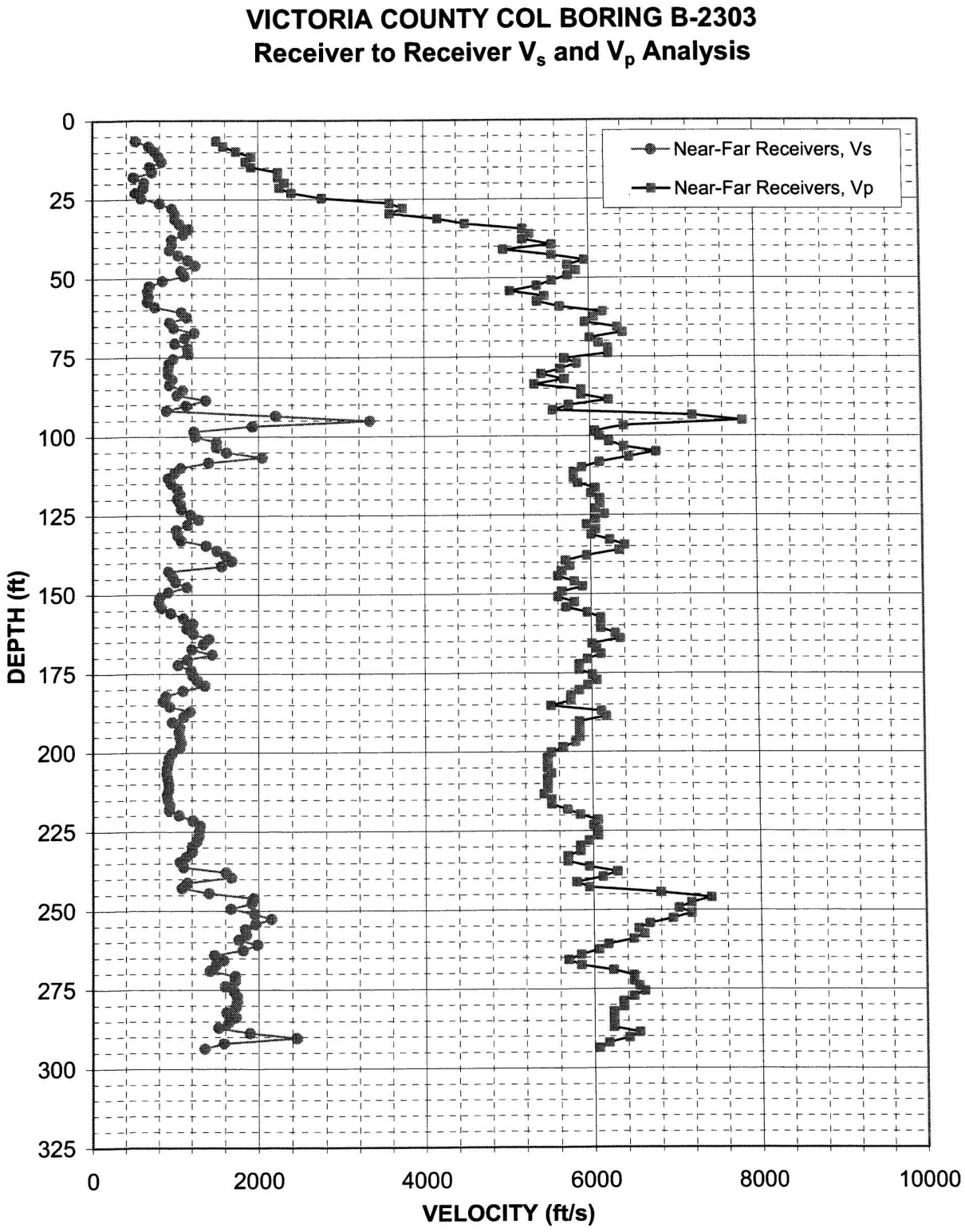

Figure 38: Boring B-2303, Suspension R1-R2 P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
6.6	510	1490
8.2	670	1580
9.8	740	1740
11.5	780	1920
13.1	820	1850
14.8	680	1920
16.4	700	2240
18.0	480	2240
19.7	610	2310
21.3	600	2250
23.0	510	2400
24.6	570	2750
26.3	800	3580
27.9	950	3750
29.5	990	3580
31.2	990	4170
32.8	1040	4500
34.5	1160	5210
36.1	1090	5290
37.7	950	5210
39.4	950	5560
41.0	920	4980
42.7	1030	5560
44.3	1150	5950
45.9	1240	5750
47.6	1060	5850
49.2	1100	5750
50.9	840	5560
52.5	670	5380
54.1	650	5050
55.8	660	5460
57.4	650	5380
59.1	740	5650
60.7	1070	6170
62.3	1140	6060
64.0	920	5950
65.6	970	6350
67.3	1230	6410
68.9	1110	6010
70.5	990	6120
72.2	1150	6230
73.8	1150	6230
75.5	970	5700
77.1	910	5850
78.7	910	5650
80.4	910	5420
82.0	960	5700
83.7	920	5330
85.3	1090	5900
86.9	1020	5900
88.6	1370	6230
90.2	1130	5750
91.9	880	5560
93.5	2210	7250
95.1	3330	7840
96.8	1930	6410
98.4	1220	6060
100.1	1240	6120
101.7	1490	6230
103.4	1490	6410
105.0	1620	6800
106.6	2040	6470
108.3	1400	6120
109.9	1060	5900
111.6	990	5800
113.2	900	5800
114.8	940	5850
116.5	1020	6060
118.1	1050	6010
119.8	1020	6120
121.4	1060	6120
123.0	1070	6060
124.7	1180	6170
126.3	1280	6060
128.0	1150	5950
129.6	1010	6060
131.2	1020	6010
132.9	1070	6230
134.5	1370	6410
136.2	1500	6350
137.8	1610	5950
139.4	1680	5700
141.1	1560	5750
142.7	910	5650
144.4	970	5600
146.0	1000	5800
147.6	1140	5900
149.3	910	5650
150.9	800	5600
152.6	790	5800
154.2	830	5700
155.8	940	5950
157.5	1100	6120
159.1	1210	6120
160.8	1140	6120
162.4	1220	6290
164.0	1410	6350
165.7	1340	6010
167.3	1200	6060
169.0	1440	6120
170.6	1150	5950
172.2	1030	5850
173.9	1190	5850
175.5	1210	6010
177.2	1260	6060
178.8	1360	5950
180.5	1090	5850
182.1	880	5750
183.7	840	5750
185.4	930	5510
187.0	1180	6120
188.7	1100	6170
190.3	960	5850
191.9	1050	5850
193.6	1040	5850
195.2	1050	5850
196.9	1070	5800
198.5	1050	5650
200.1	960	5510
201.8	920	5460
203.4	910	5460
205.1	890	5460
206.7	890	5510
208.3	900	5460
210.0	920	5460
211.6	920	5460
213.3	900	5420
214.9	910	5510
216.5	930	5510
218.2	920	5700
219.8	1040	5850
221.5	1210	6060
223.1	1300	6010
224.7	1290	6060
226.4	1280	6060
228.0	1260	5950
229.7	1200	5850
231.3	1200	5850
232.9	1130	5700
234.6	1050	5700
236.2	1100	5950
237.9	1610	6290
239.5	1680	6120
241.1	1150	5800
242.8	1080	5950
244.4	1410	6800
246.1	1940	7410
247.7	1920	7170
249.3	1670	7020
251.0	1950	7170

Table 18. Boring B-2303, Suspension R1-R2 depths and P- and S_H-wave velocities

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
252.6	2150	6940
254.3	1960	6670
255.9	1840	6540
257.6	1850	6600
259.2	1760	6470
260.8	1980	6170
262.5	1810	6060
264.1	1470	5850
265.8	1580	5700
267.4	1490	5850
269.0	1420	6230
270.7	1720	6470
272.3	1720	6470
274.0	1600	6540
275.6	1710	6600
277.2	1750	6470
278.9	1750	6350
280.5	1730	6350
282.2	1620	6230
283.8	1730	6230
285.4	1640	6230
287.1	1520	6230
288.7	1890	6540
290.4	2450	6410
292.0	1590	6170
293.6	1360	6060

Table 18, continued. Boring B-2303, Suspension R1-R2 depths and P- and S_H-wave velocities

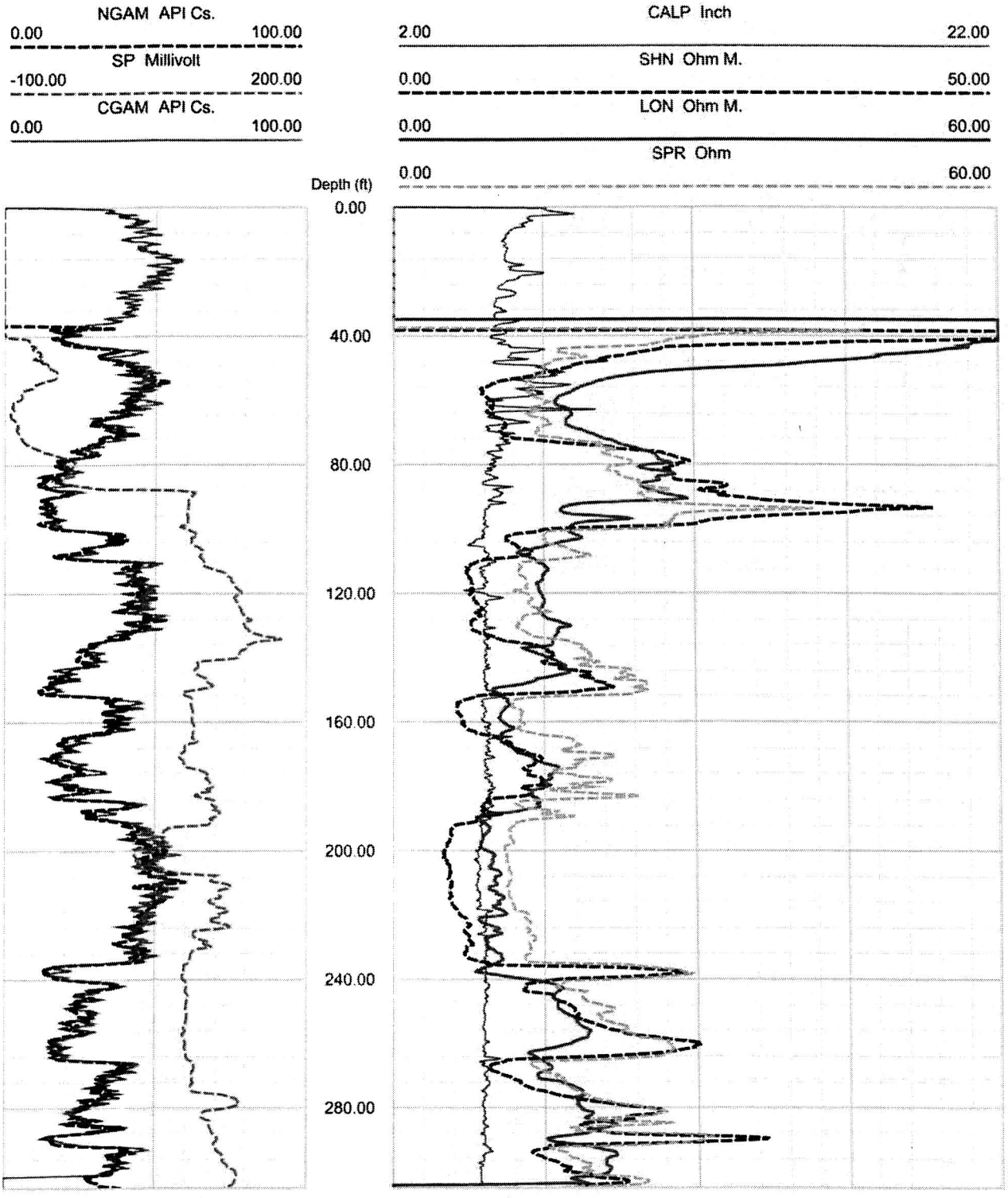

Figure 39. Boring B-2303, Caliper, Natural gamma, Resistivity and SP logs