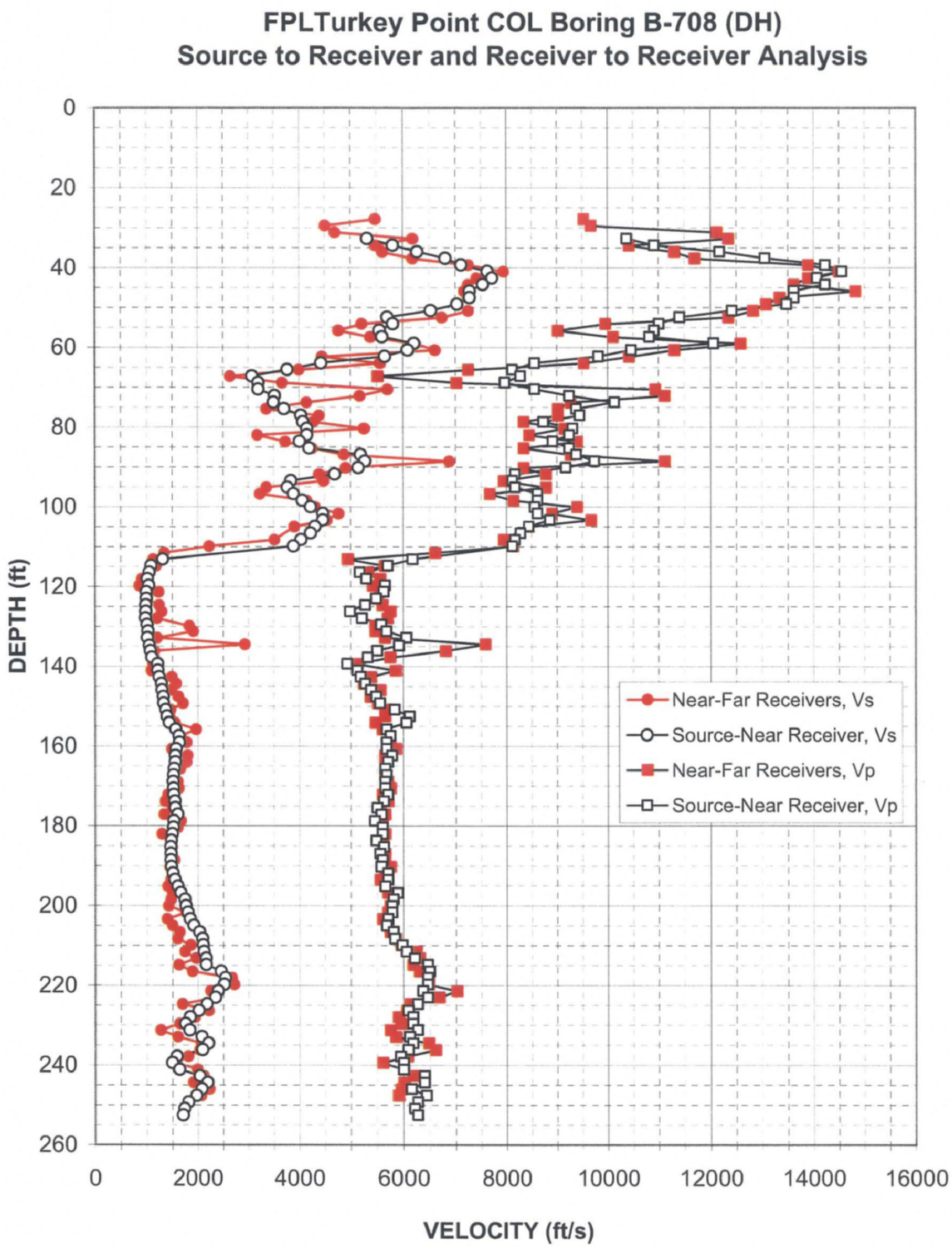

Figure A-8. Boring B-708 (DH), R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
32.7	5320	10380
34.4	5810	10910
36.0	6270	12170
37.6	6810	13050
39.3	7110	14220
40.9	7630	14550
42.6	7720	14070
44.2	7540	14220
45.8	7280	13610
47.5	7280	13610
49.1	7030	13470
50.8	6530	12410
52.4	5700	11410
54.0	5810	11010
55.7	5550	10910
57.3	5600	10820
59.0	6210	12060
60.6	6090	10460
62.2	5650	9810
63.9	4430	8550
65.5	3770	8120
67.2	3070	8270
68.8	3200	7960
70.5	3200	8550
72.1	3520	9240
73.7	3500	10130
75.4	3700	9380
77.0	4030	9450
78.7	4070	8730
80.3	4150	9310
81.9	4150	9240
83.6	4010	8920
85.2	4190	9240
86.9	5190	9380
88.5	5280	9740
90.1	5150	9170
91.8	4690	8170
93.4	3840	8120
95.1	3770	8170
96.7	3880	8610
98.3	4060	8610
100.0	4220	8550
101.6	4460	8610
103.3	4460	8850
104.9	4310	8440
106.5	4220	8270
108.2	4030	8170
109.8	3880	8120
113.1	1310	6180
114.7	1080	5700

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
116.4	1050	5170
118.0	1010	5300
119.7	1040	5650
121.3	990	5630
122.9	990	5480
124.6	980	5280
126.2	980	4980
127.9	980	5210
129.5	1010	5580
131.1	1020	5680
132.8	1010	6060
134.8	1050	5920
136.1	1070	5500
137.7	1100	5320
139.3	1210	4930
141.0	1210	5130
142.6	1240	5190
144.3	1280	5280
145.9	1290	5390
147.6	1320	5480
149.2	1330	5550
150.8	1370	5830
152.5	1390	6120
154.1	1440	6060
155.8	1560	5680
157.4	1630	5750
159.0	1640	5680
160.7	1570	5680
162.3	1560	5780
164.0	1560	5700
165.6	1530	5650
167.2	1520	5680
168.9	1510	5650
170.5	1520	5650
172.2	1530	5700
173.8	1550	5630
175.4	1560	5500
177.1	1600	5580
178.7	1530	5460
180.4	1520	5600
182.0	1500	5600
183.6	1480	5480
185.3	1470	5630
186.9	1470	5550
188.6	1470	5600
190.2	1480	5580
191.8	1510	5700
193.5	1550	5700
195.1	1600	5650
196.8	1660	5890

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
198.4	1740	5810
200.0	1760	5780
201.7	1800	5780
203.3	1850	5700
205.0	1920	5680
206.6	2030	5810
208.2	2090	5830
209.9	2100	5970
211.5	2120	6060
213.2	2160	6210
214.8	2160	6460
216.4	2450	6490
218.1	2540	6460
219.7	2520	6460
221.4	2400	6360
223.0	2340	6460
224.7	2180	6270
226.3	2020	6090
227.9	1850	6180
229.6	1750	6180
231.2	1830	6270
232.9	2080	6120
234.5	2210	6180
236.1	2090	6090
237.8	1590	5940
239.4	1500	6000
241.1	1640	6000
242.7	2040	6390
244.3	2190	6390
246.0	2080	6150
247.6	1970	6430
249.3	1810	6270
250.9	1730	6210
252.5	1710	6270

Table A-8. Boring B-708 (DH), S - R1 quality assurance analysis P- and S_H-wave data

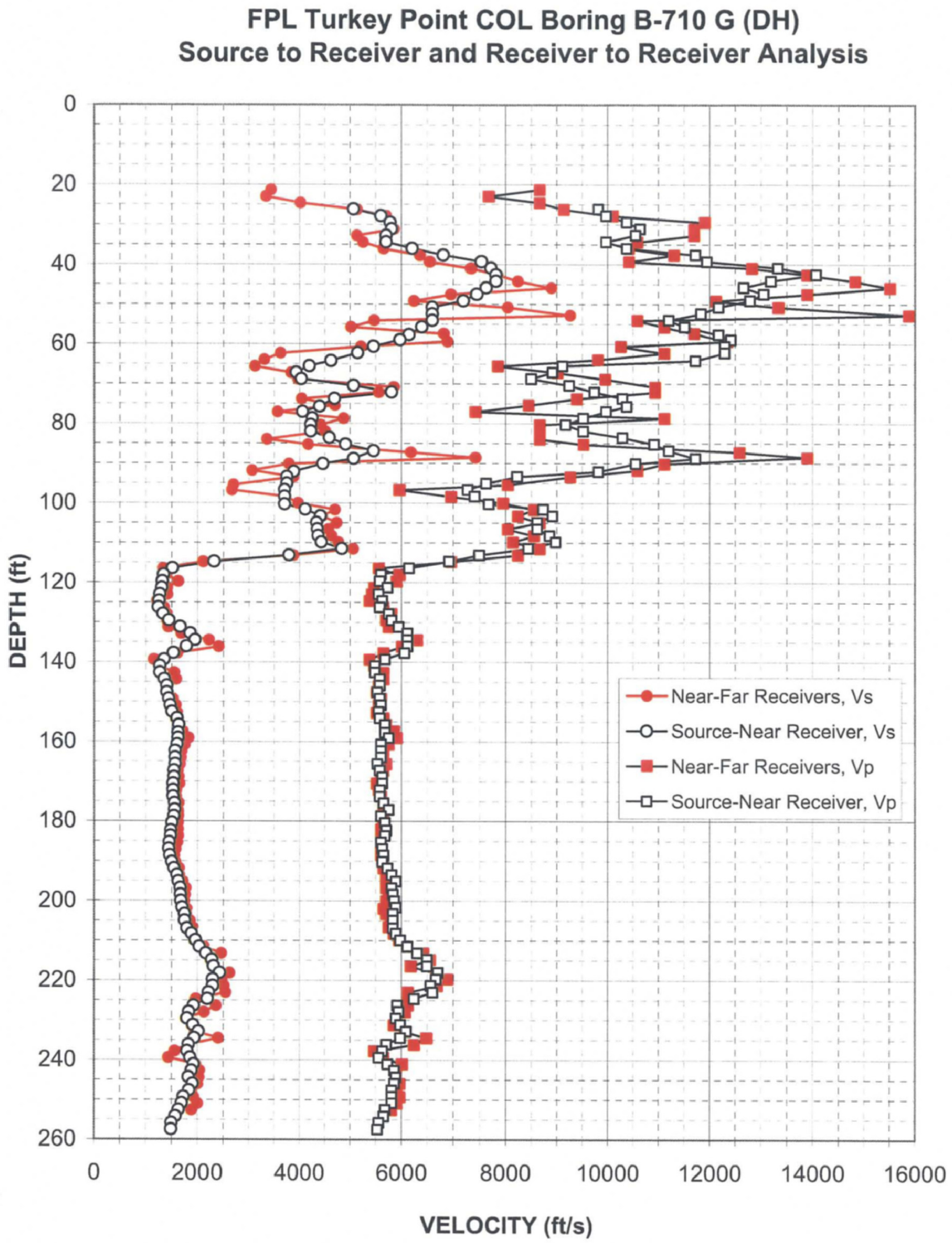

Figure A-9. Boring B-710 G (DH), R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
26.2	5060	9810
27.8	5600	9970
29.4	5780	10380
31.1	5810	10640
32.7	5700	10550
34.4	5700	9970
36.0	6210	10380
37.6	6810	11720
39.3	7540	11940
40.9	7720	13330
42.6	7810	14070
44.2	7810	13190
45.8	7630	12660
47.5	7450	13050
49.1	7190	12790
50.8	6590	12170
52.4	6590	11830
54.0	6590	11200
55.7	6390	11510
57.7	6150	12170
59.0	5970	12410
60.6	5460	12290
62.2	5150	12290
64.2	4620	11720
65.5	4190	9110
67.2	3930	8920
68.8	4030	8500
70.5	5060	9240
72.1	5810	9740
73.7	4690	10290
75.7	4400	10380
77.0	4060	9970
78.7	4250	9520
80.3	4220	9170
81.9	4220	9520
83.6	4590	10290
85.2	4910	10910
86.9	5460	11200
88.8	5060	11720
90.1	4460	10550
92.1	3880	9810
93.4	3750	8220
95.1	3750	7630
96.7	3700	7280
98.3	3700	7400
100.3	3700	7670
101.6	4110	8730
103.3	4410	8920
104.9	4340	8610
106.5	4350	8610

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
108.2	4370	8850
109.8	4430	8980
111.5	4830	8440
113.1	3790	7490
114.7	2320	6920
116.4	1510	6150
118.0	1340	5600
119.7	1320	5580
121.3	1310	5730
122.9	1270	5550
124.6	1250	5630
126.2	1240	5580
127.9	1330	5750
129.5	1440	5810
131.1	1660	5940
132.8	1860	6120
134.4	1950	6120
136.1	1780	6120
137.7	1530	6060
139.3	1350	5680
141.0	1270	5480
142.6	1270	5480
144.3	1350	5580
145.9	1400	5580
147.6	1400	5530
149.2	1440	5580
150.8	1470	5600
152.5	1500	5550
154.1	1600	5580
155.8	1640	5680
157.7	1620	5680
159.0	1620	5750
160.7	1600	5600
162.3	1560	5600
164.0	1560	5600
165.6	1560	5530
167.2	1540	5580
168.9	1540	5630
170.5	1530	5630
172.2	1530	5580
173.8	1530	5580
175.4	1550	5650
177.1	1560	5750
178.7	1540	5600
180.4	1500	5680
182.3	1480	5700
183.6	1480	5680
185.3	1450	5600
186.9	1440	5630
188.6	1460	5650

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
190.2	1500	5630
191.8	1540	5730
193.5	1600	5810
195.1	1630	5890
196.8	1670	5810
198.4	1670	5830
200.0	1680	5860
201.7	1700	5890
203.3	1750	5830
205.0	1750	5830
206.9	1790	5830
208.2	1880	5890
209.9	1960	5970
211.5	2040	6120
213.2	2160	6300
214.8	2280	6490
216.4	2310	6490
218.1	2430	6700
219.7	2290	6660
221.4	2290	6560
223.0	2210	6590
224.7	2190	6240
226.3	1920	5920
227.9	1830	5940
229.6	1800	5890
231.2	1910	5970
232.9	2020	6090
234.5	1940	5970
236.1	1820	5700
237.8	1800	5630
239.4	1860	5550
241.1	1920	5730
242.7	1880	5860
244.3	1820	5890
246.0	1910	5860
247.6	1830	5810
249.3	1720	5810
250.9	1690	5810
252.5	1630	5680
254.2	1570	5650
255.8	1490	5550
257.5	1490	5530

Table A-9. Boring B-710 G (DH), S - R1 quality assurance analysis P- and S_H-wave data

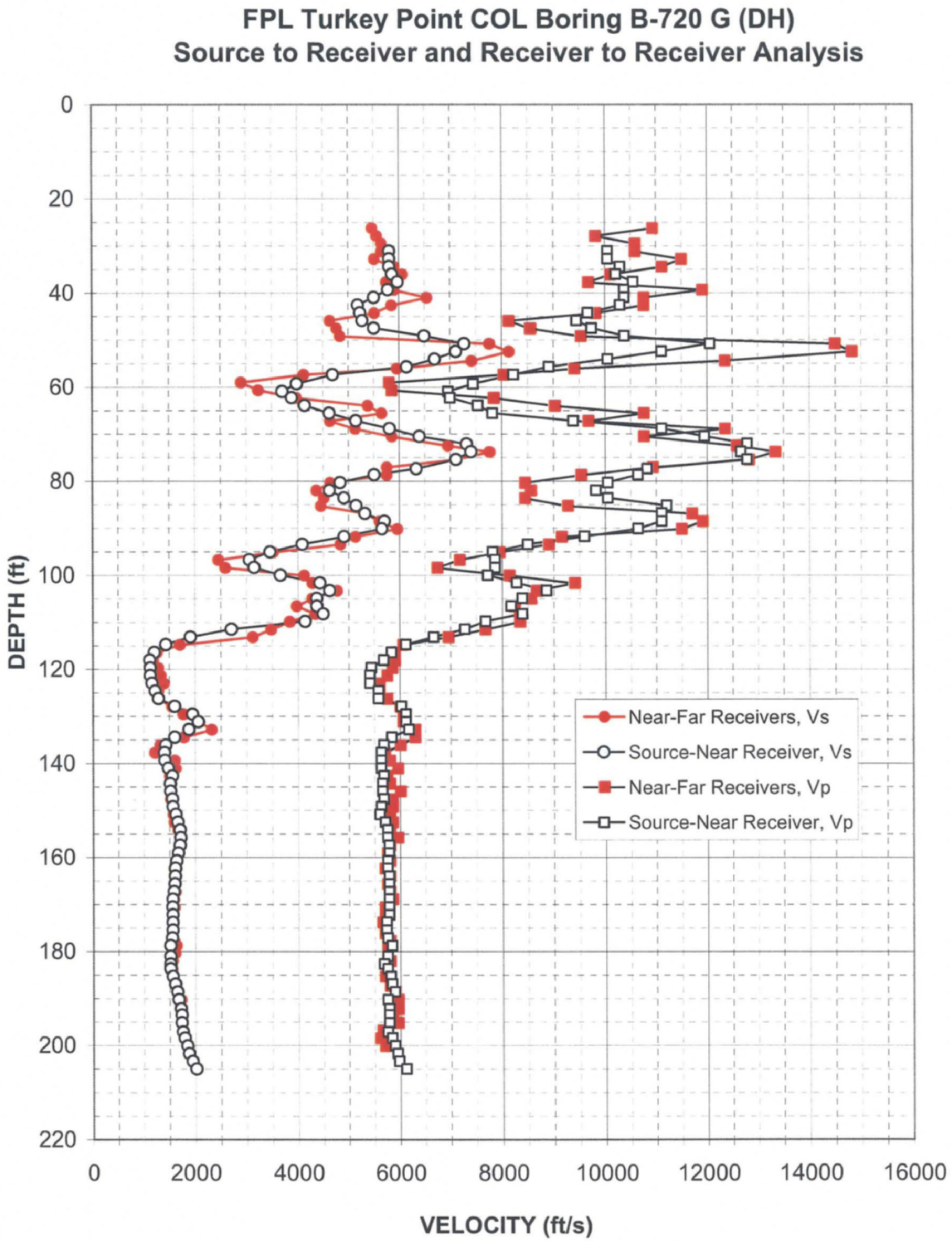

Figure A-10. Boring B-720 G (DH), R1 - R2 high resolution analysis and S - R1 quality assurance analysis P- and S_H-wave data

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
31.1	5810	10050
32.7	5810	10050
34.4	5810	10290
36.0	5860	10210
37.6	5970	10550
39.3	5780	10380
40.9	5500	10380
42.6	5190	10290
44.2	5230	9660
45.8	5280	9450
47.5	5500	9740
49.1	6490	10380
50.8	7280	12060
52.4	7110	11110
54.0	6700	10050
55.7	6150	8920
57.3	4690	8220
59.3	3980	7450
60.9	3700	6960
62.2	3880	6990
63.9	4140	7540
65.5	4620	7810
67.2	5150	9380
68.8	5810	11110
70.5	6390	11940
72.1	7320	12790
73.7	7400	12660
75.4	7110	12790
77.3	6330	10820
78.7	5500	10640
80.3	4830	10050
81.9	4620	9810
83.6	4910	10050
85.2	5150	11200
86.9	5320	11110
88.5	5700	11110
90.1	5650	10640
91.8	4910	9590
93.4	4080	8500
95.1	3460	7810
96.7	3060	7860
98.3	3150	7860
100.0	3660	7720
101.6	4430	8270
103.3	4620	8850
104.9	4370	8380
106.5	4370	8170
108.2	4490	8380
109.8	4140	7670
111.5	2710	7280

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
113.1	1910	6660
114.7	1440	6120
116.4	1210	5830
118.0	1120	5680
119.7	1130	5430
121.3	1130	5410
122.9	1160	5410
124.6	1220	5580
126.2	1290	5580
127.9	1600	6030
129.5	1950	6120
131.1	2060	6120
132.8	1880	6180
134.4	1600	5830
136.1	1430	5680
137.7	1400	5630
139.3	1410	5630
141.0	1480	5630
142.6	1560	5680
144.3	1510	5650
145.9	1520	5650
147.6	1560	5680
149.2	1560	5630
150.8	1620	5600
152.5	1660	5700
154.1	1700	5750
155.8	1720	5750
157.4	1700	5780
159.0	1670	5780
160.7	1640	5750
162.3	1610	5750
164.0	1610	5780
165.6	1600	5780
167.2	1580	5780
168.9	1560	5780
170.5	1560	5780
172.2	1560	5780
173.8	1560	5730
175.4	1560	5730
177.1	1550	5750
178.7	1510	5830
181.0	1510	5750
182.7	1510	5680
183.6	1510	5750
185.3	1560	5810
186.9	1610	5830
188.6	1650	5890
190.2	1670	5750
192.2	1720	5780
193.5	1730	5780

Depth (feet)	V_s (feet/sec)	V_p (feet/sec)
195.1	1730	5780
197.1	1750	5750
198.4	1790	5830
200.0	1840	5890
201.7	1870	5940
203.3	1940	5970
205.0	2020	6120

Table A-10. Boring B-720 G (DH), S - R1 quality assurance analysis P- and S_H-wave data

APPENDIX B

DOWNHOLE VELOCITY MEASUREMENT RESULTS

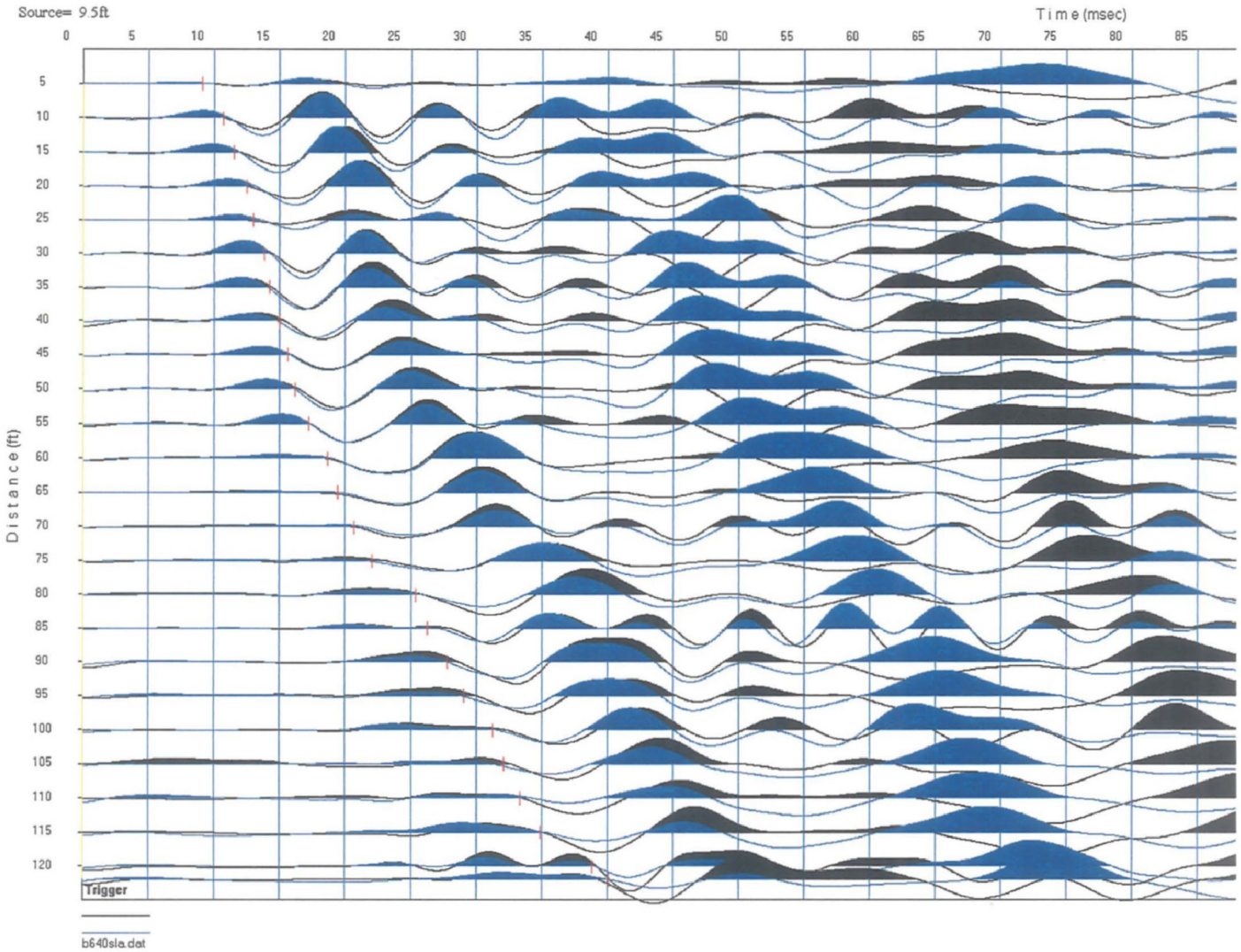

Figure B-1: Boring B-640 (DHT), Downhole Vs 100 Hz filtered waveforms and first arrival picks
NOTE: Shear wave arrivals are in-phase – see report for discussion

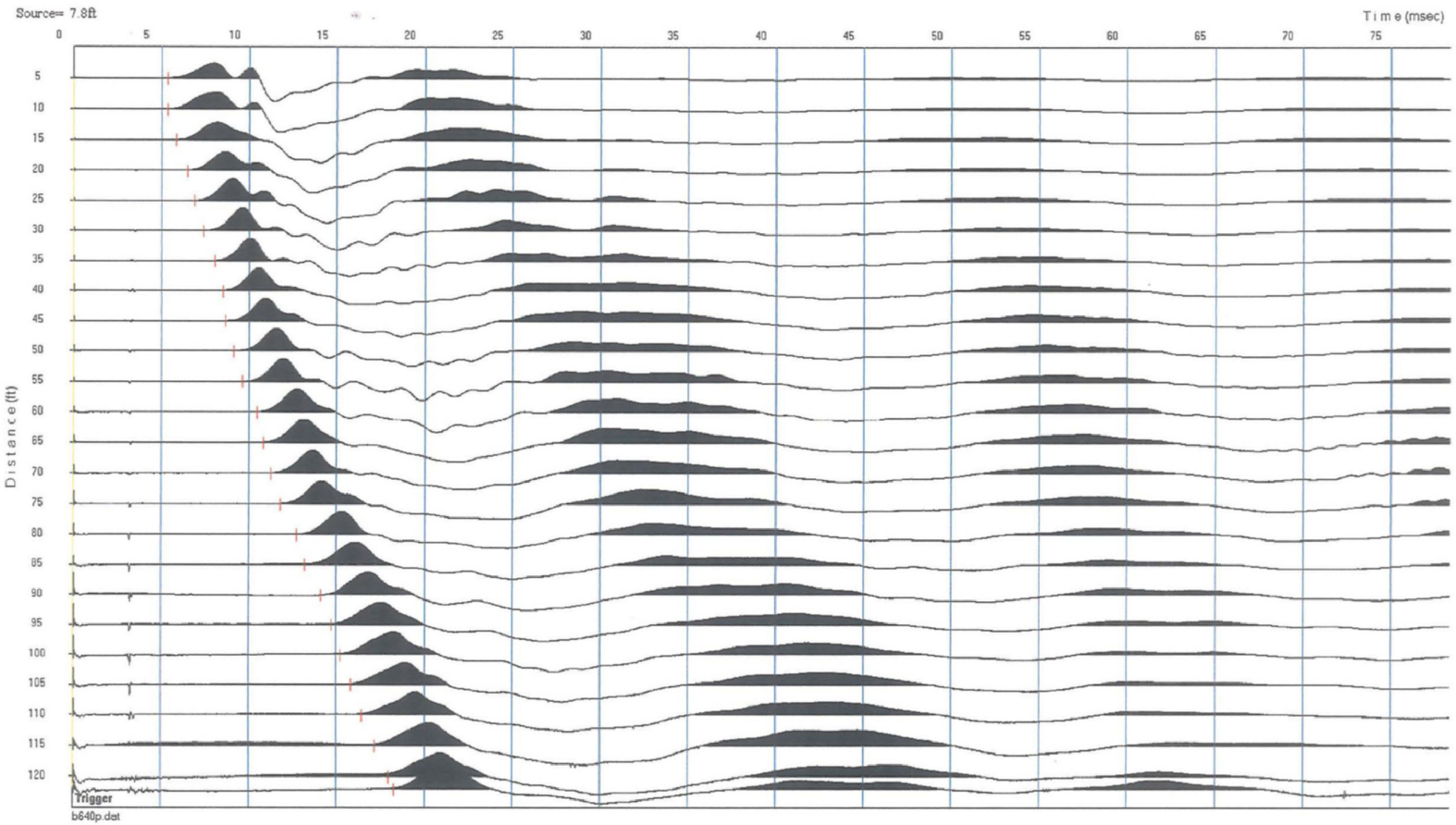

Figure B-2: Boring B-640 (DHT), Downhole Vp un-filtered waveforms and picks

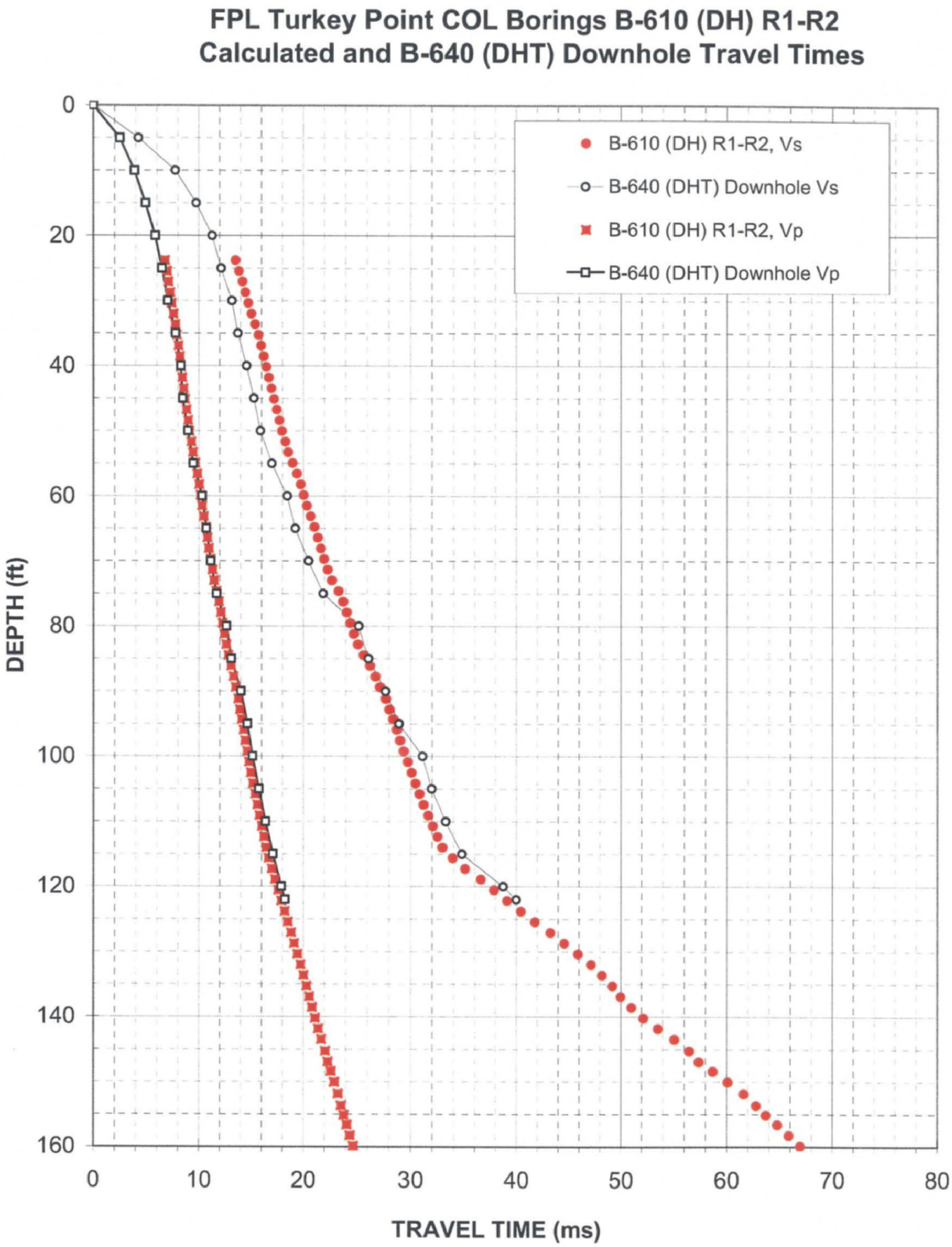

Figure B-3: Borings B-610 (DH) Suspension R1-R2 Calculated and B-640 (DHT) Measured Downhole Travel Times

Table B-1. Boring B-640 (DHT) Downhole Layer P- and S_H-wave velocities

Layered Velocity Model for Vs and Vp
Based on Downhole Travel Time Data - Borehole B-640 (DHT)

American Units					
	Layer Depth			Layer Velocity	
Layer Number	Top	Bottom	Thickness	V_s	V_p
	(ft)	(ft)	(ft)	(ft/s)	(ft/s)
1	0.0	10.0	10.0	1430	3620
2	10.0	15.0	5.0	2490	4860
3	15.0	25.0	10.0	4080	6350
4	25.0	55.0	30.0	6470	10170
5	55.0	60.0	5.0	3420	5800
6	60.0	115.0	55.0	3180	7840
7	115.0	122.0	7.0	1600	5680

Metric						
	Layer Depth			Layer Velocity		
Layer Number	Top	Bottom	Thickness	V_s	V_p	Poisson's Ratio
	(m)	(m)	(m)	(m/s)	(m/s)	
1	0.0	3.0	3.0	436	1100	0.41
2	3.0	4.6	1.5	760	1480	0.32
3	4.6	7.6	3.0	1240	1940	0.15
4	7.6	16.8	9.1	1970	3100	0.16
5	16.8	18.3	1.5	1040	1770	0.23
6	18.3	35.1	16.8	970	2390	0.40
7	35.1	37.2	2.1	406	1890	0.48

(velocity rounded to the nearest 10fps, three significant digits)

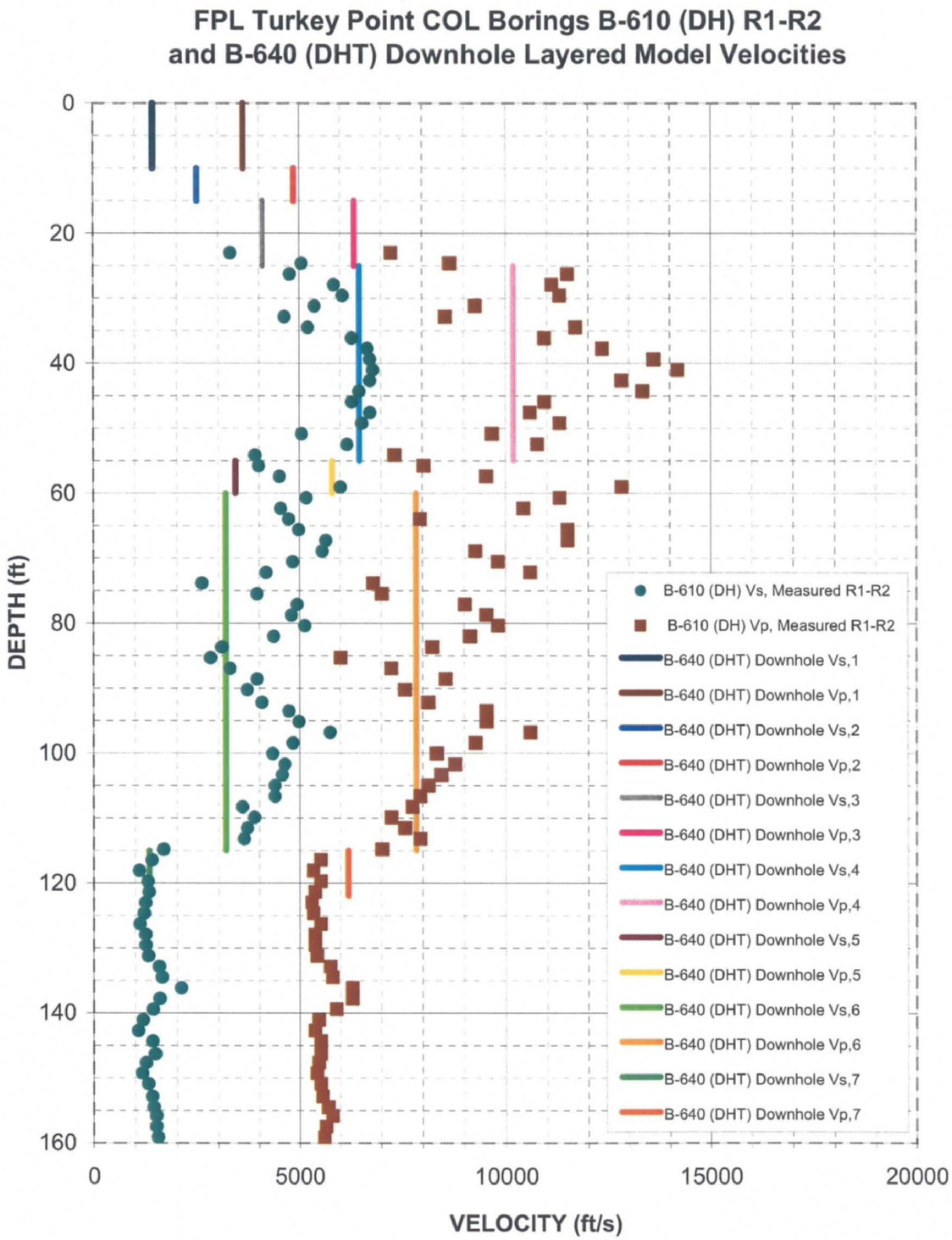

Figure B-4: Comparison of Borings B-610 (DH) Suspension R1-R2 Results and B-640 (DHT) Downhole Layered Model Velocities

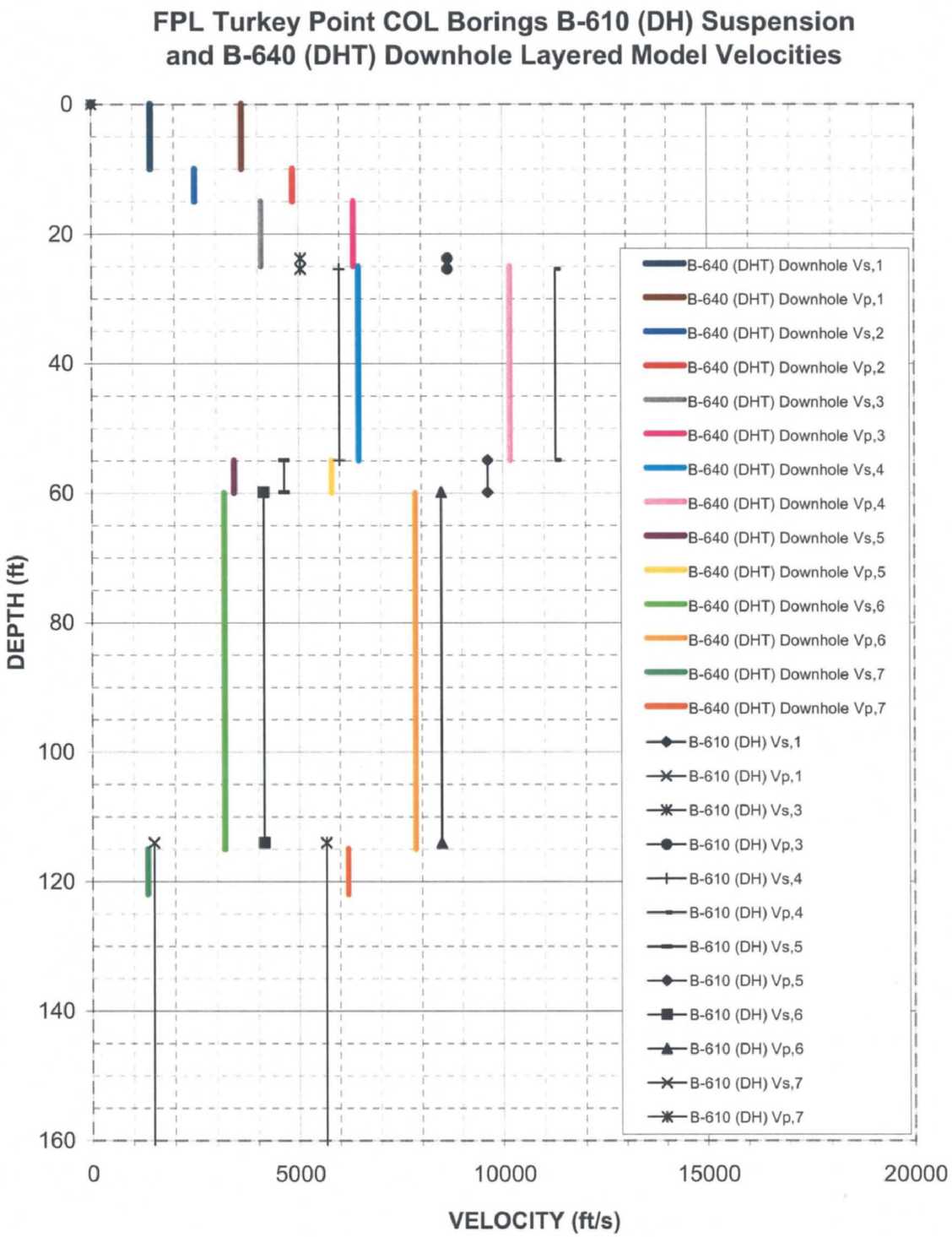

Figure B-5: Comparison of Borings B-610 (DH) Suspension and Boring B-640 (DHT) Downhole Layered Model Velocities

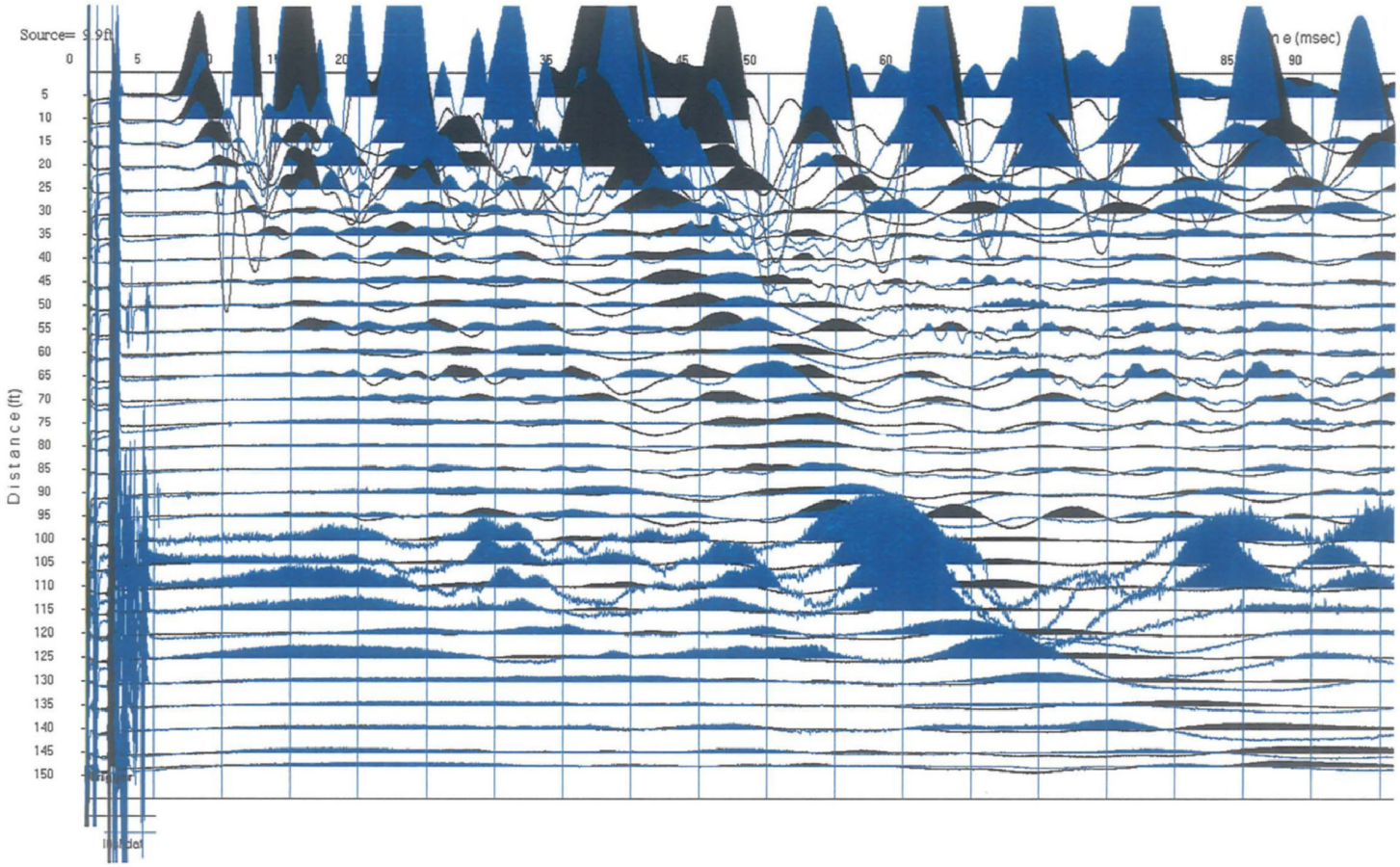

Figure B-6: Boring B-740 (DHT), Downhole Vs un-filtered waveforms, showing poor data quality

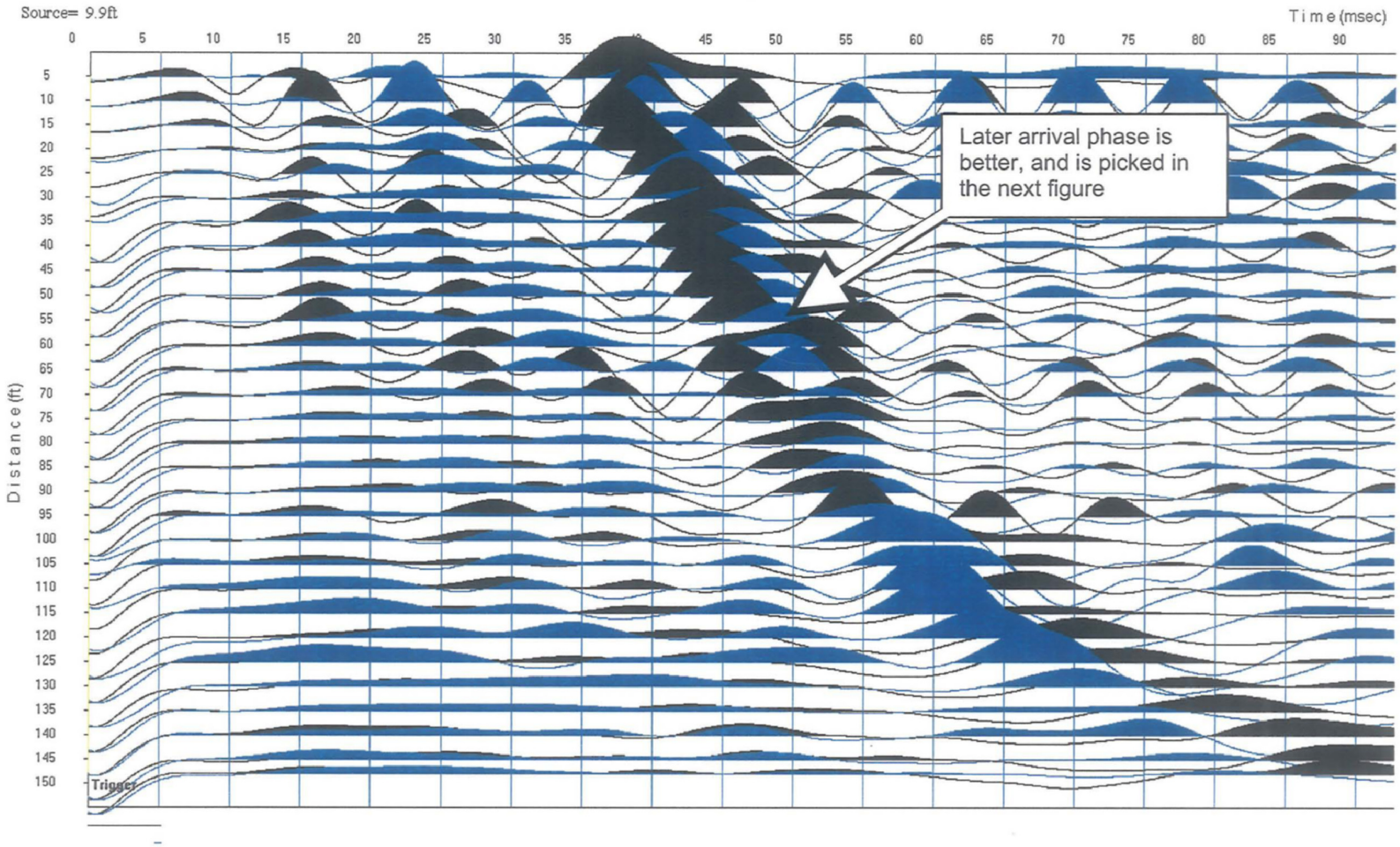

Figure B-7: Boring B-740 (DHT), Downhole Vs 100 Hz filtered waveforms, showing lack of clean first arrivals