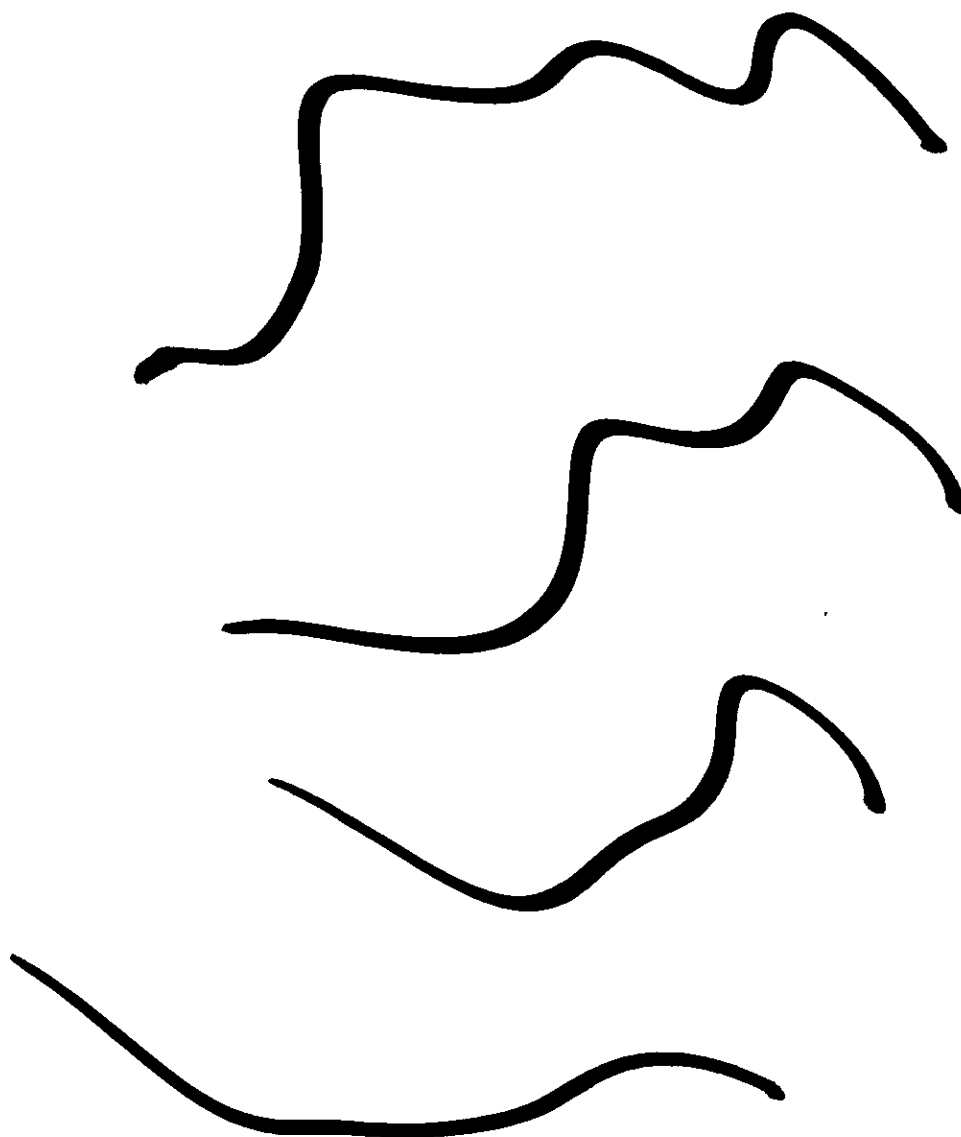


K-TRT-F-00001

REV. 0

PT 2

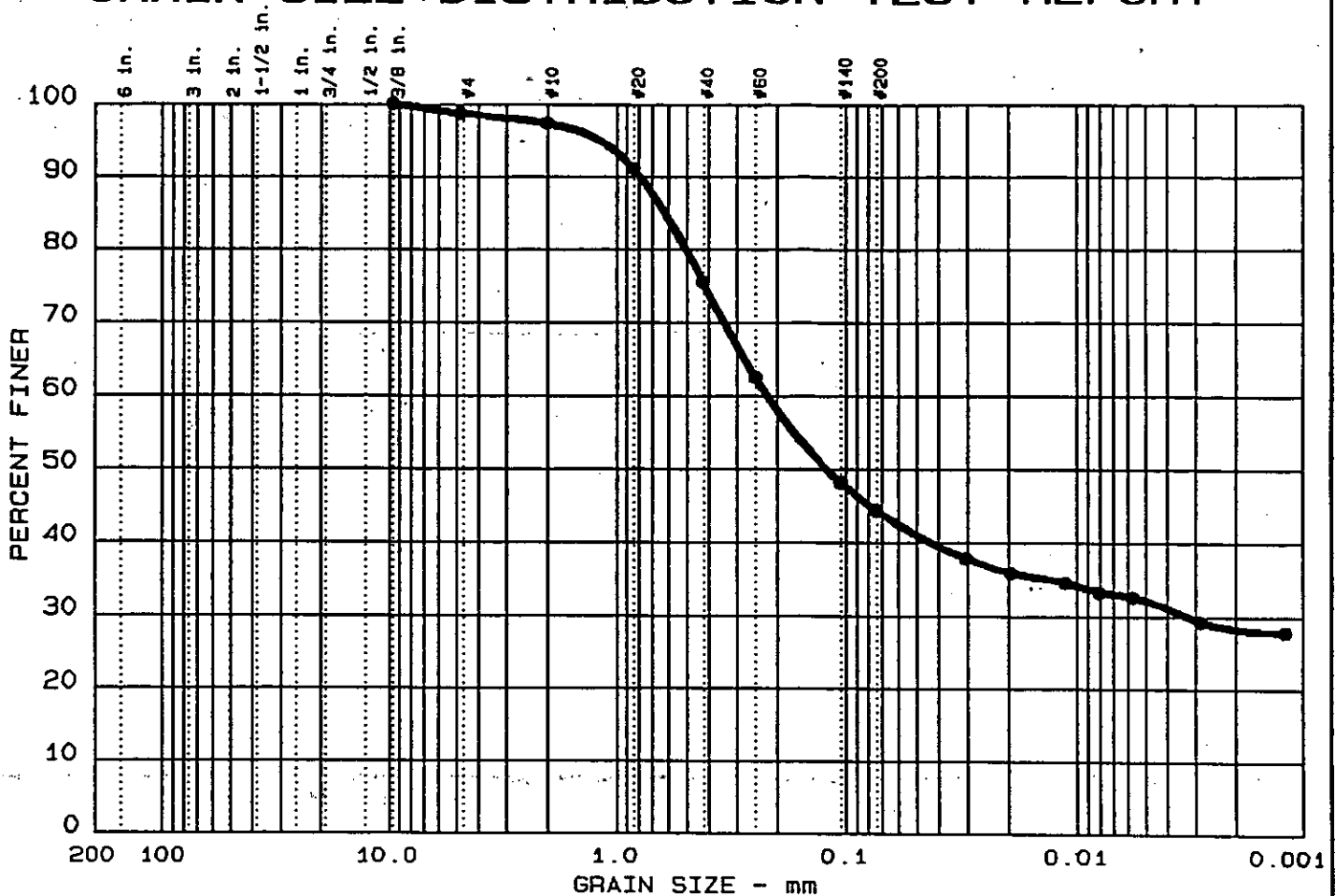


RECORDS ADMINISTRATION



R1029860

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	1.3	54.4	12.2	32.1

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 61	32	0.61	0.22	0.12	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Clayey Sand	SC	A-7-6 (9.1)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-3 @ 9.0 Ft.

Date: June 26, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC & TM*

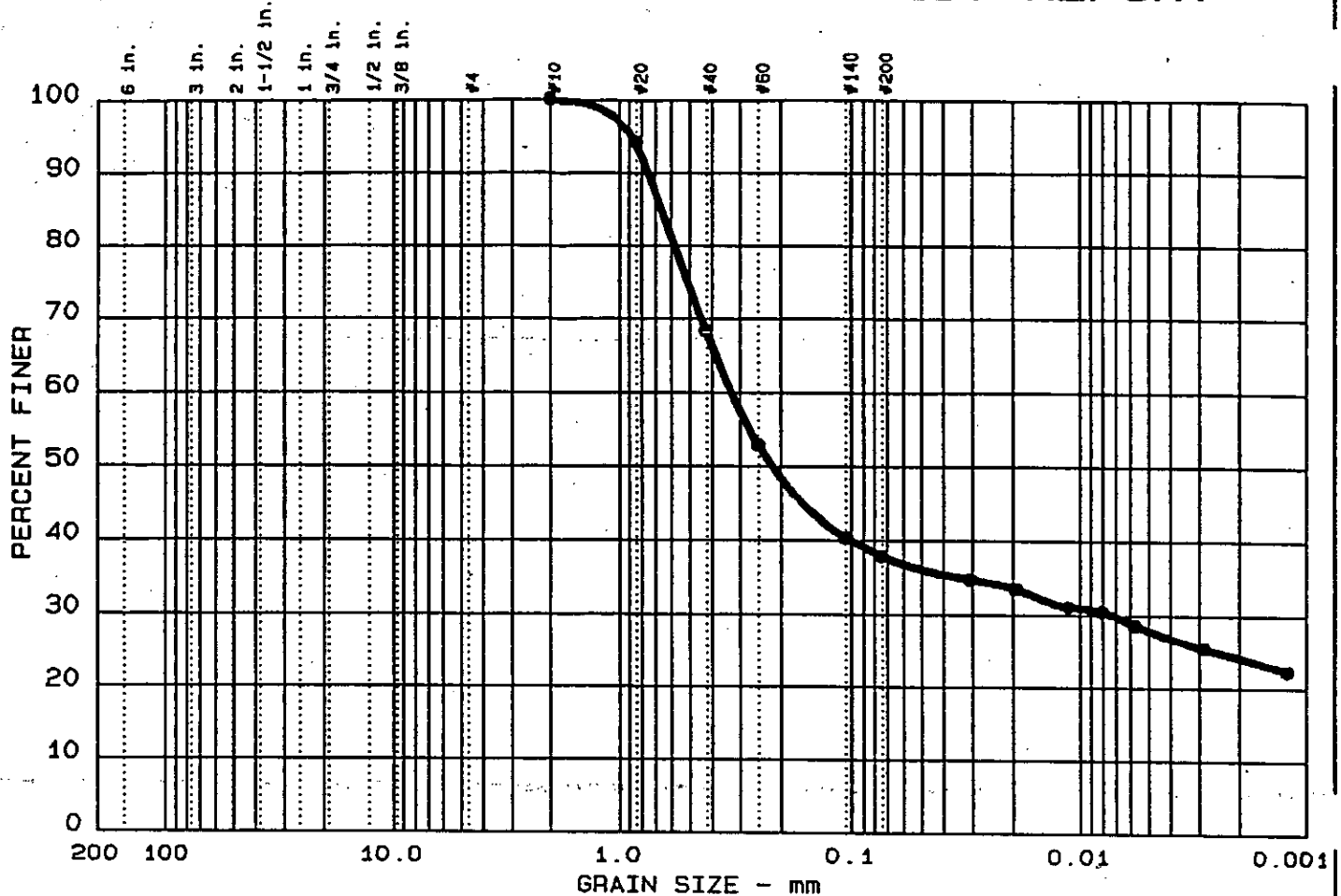
Reviewed by: *HB*

Moisture Content = 22.9%

ASTM D422, D4318 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
9	0.0	0.0	62.2	10.0	27.8

[illegible]

MATERIAL DESCRIPTION	USCS	AASHTO
● Red-Brown & Purple Clayey Sand	SC	A-7-6 (5.0)


Project No.: 50161-7-0108 Task 21  
Project: F-Area Northeast Expansion  
● Location: FB-20 SS-5 @ 12.0 Ft.

**Date:** June 26, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
LAW ENGINEERING, INC.

Remarks:

Tested by: SC + Sany

Reviewed by: 

Moisture Content = 18.8%

ASTM D422, D4318 & D2216

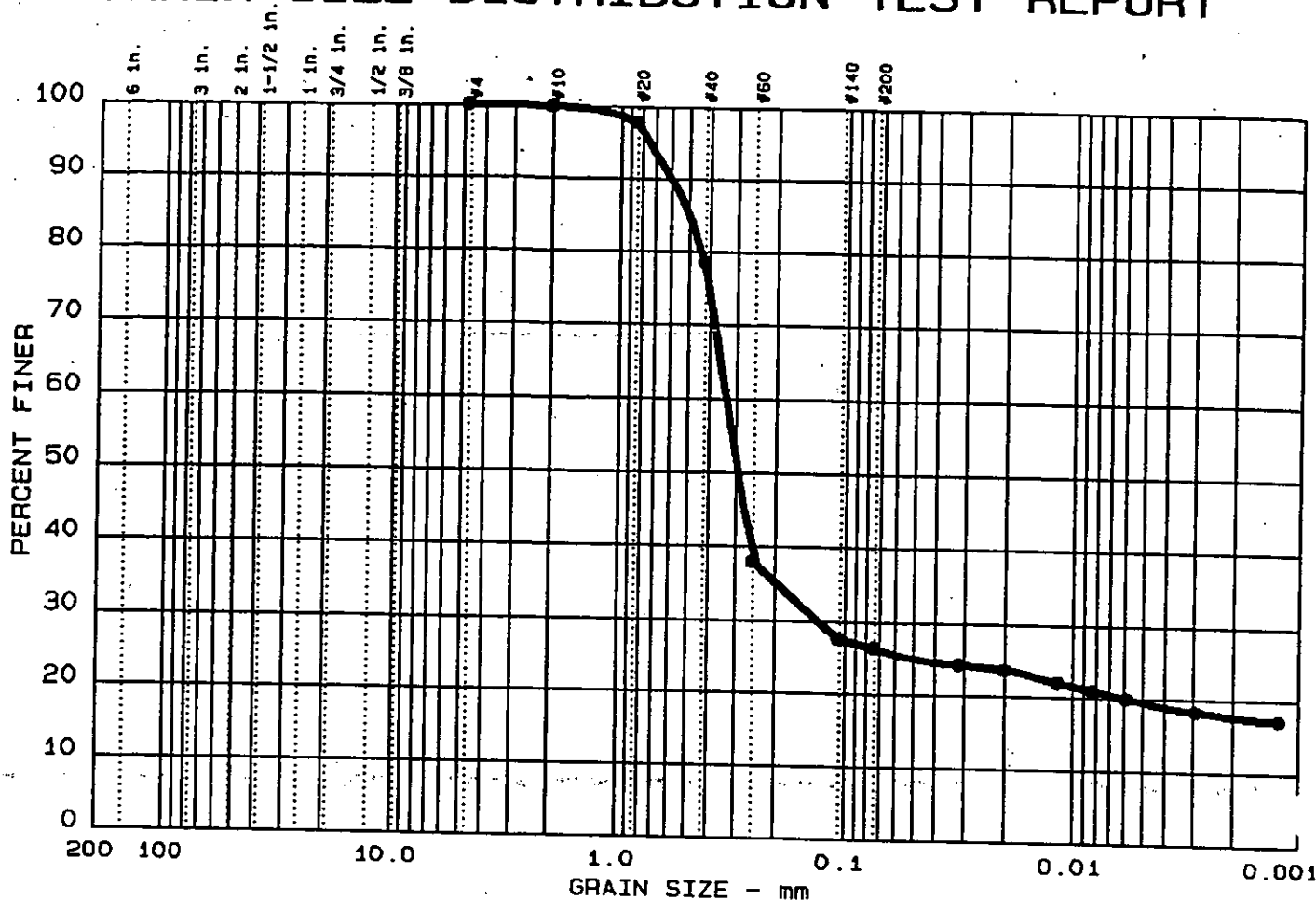
Figure No.

B-304





## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	73.6	6.9	19.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 49	28	0.49	0.33	0.29	0.129				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-2-7 (2.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-9 @ 18.0 Ft.

Date: June 26, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC/JS*

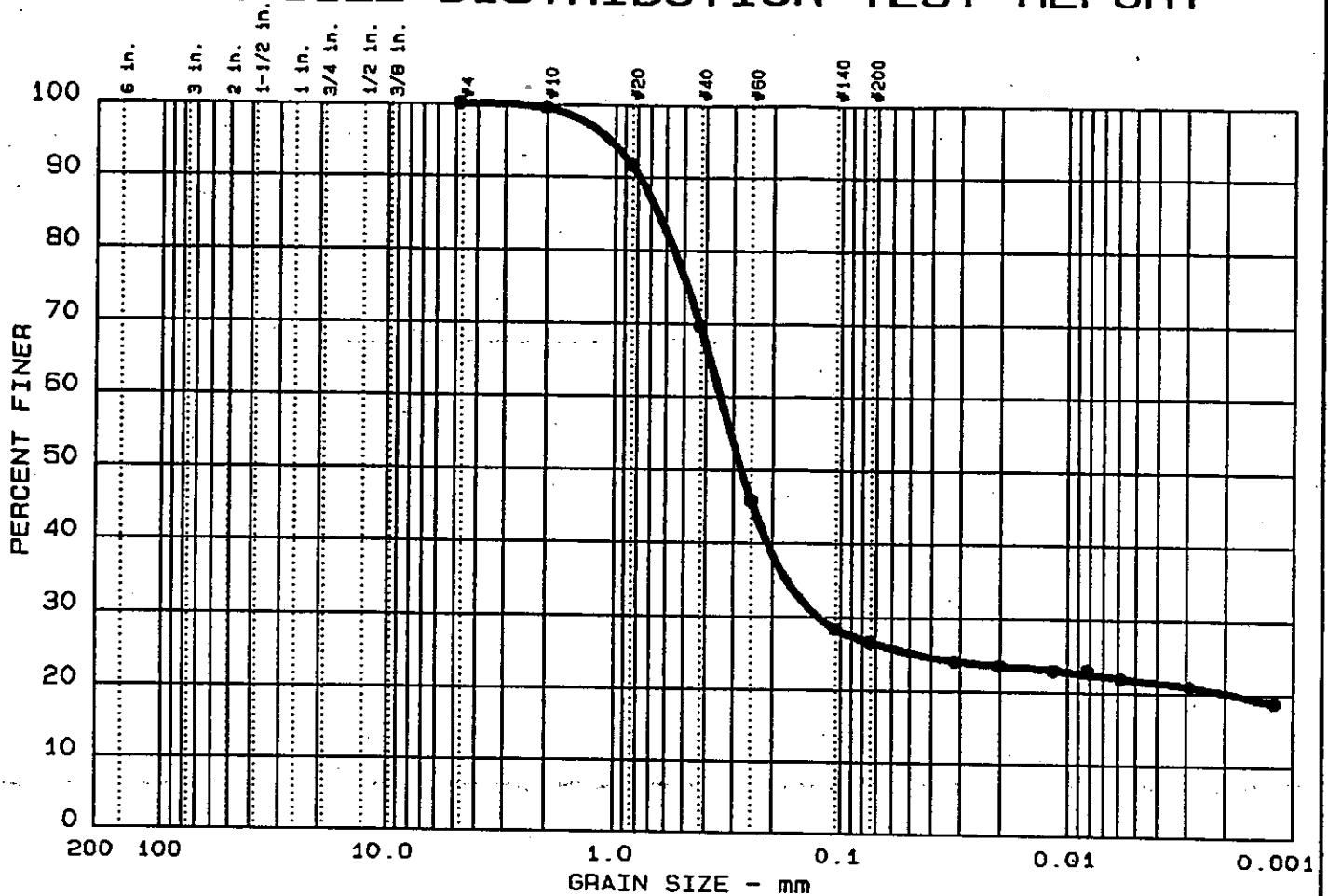
Reviewed by: *HJ*

Moisture Content = 18.0%

ASTM D422, D4318 & D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	73.4	4.8	21.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 42	22	0.64	0.34	0.28	0.126				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-7 (1.4)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-13 @ 24.0 Ft.

Date: June 26, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SG + STM*

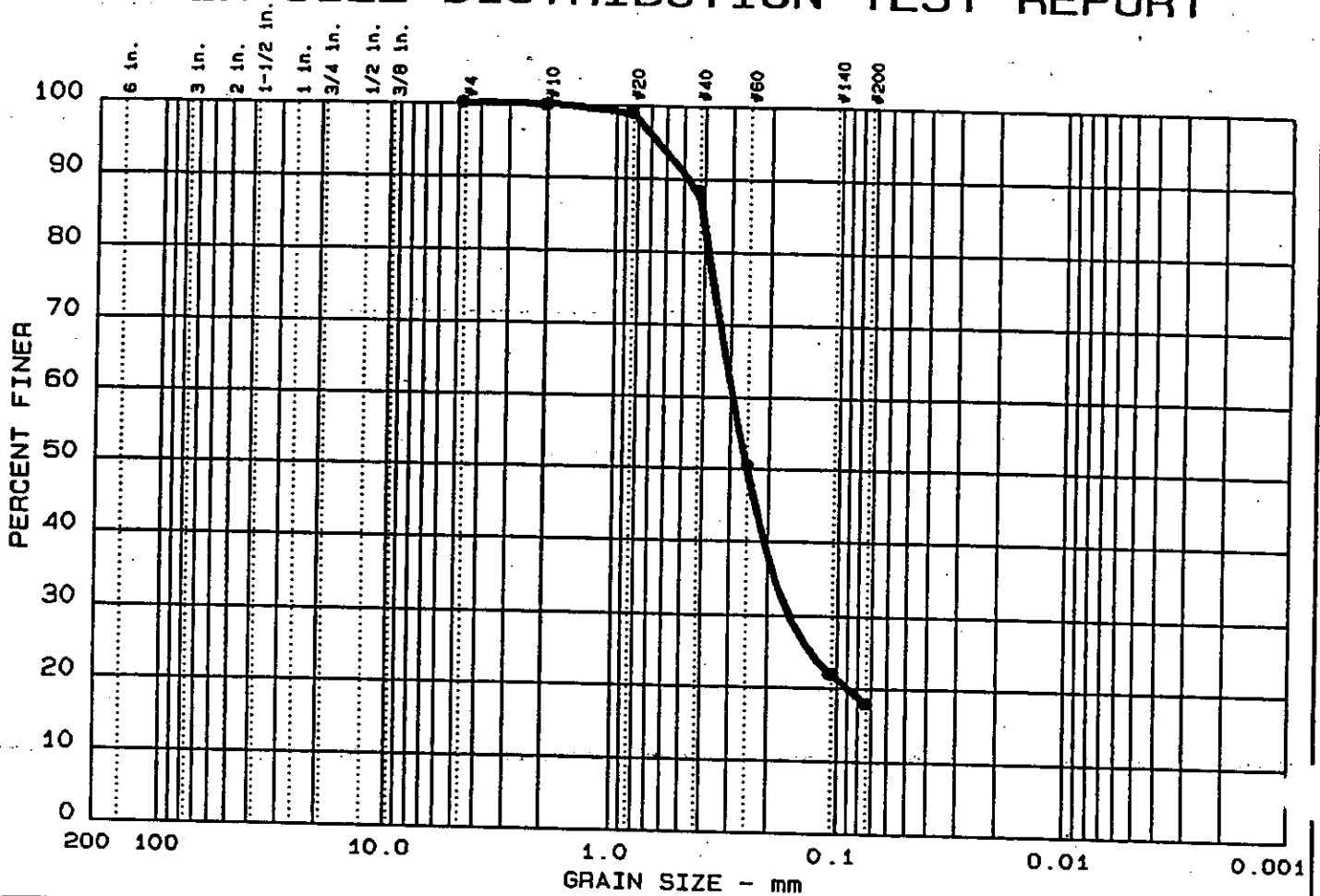
Reviewed by: *HJ*

Moisture Content = 20.8%

ASTM D422, D4318 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 3	0.0	0.0	82.0	18.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.40	0.29	0.25	0.160				

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20 SS-17 @ 30.0 Ft.

Date: June 23, 1998

Remarks:

Tested by: *SGJ/STm*

Reviewed by: *KB*

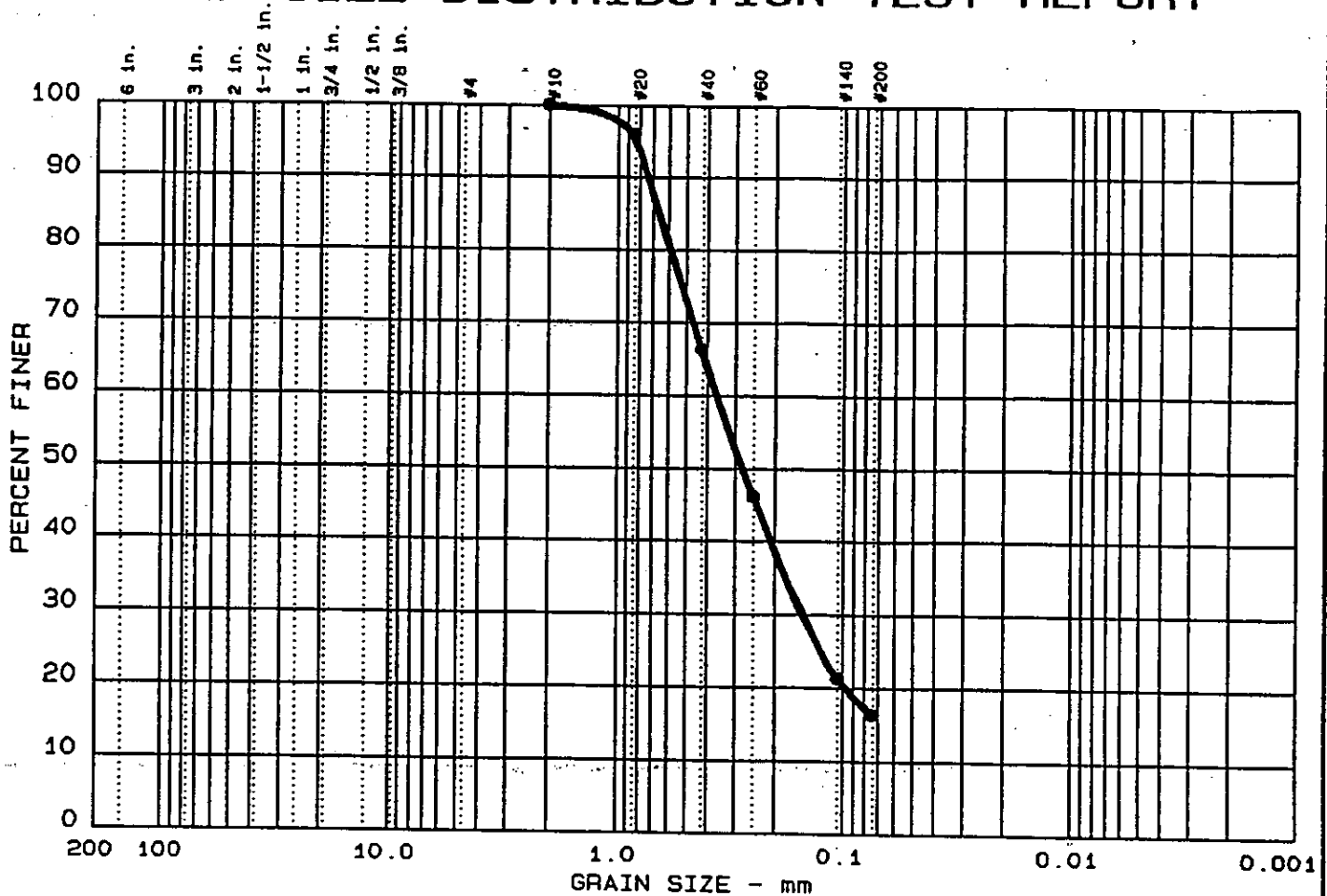
Moisture Content = 15.7%

ASTM D422 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	83.6	16.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.65	0.36	0.28	0.152				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-21 @ 36.0 Ft.

Date: June 23, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: SC

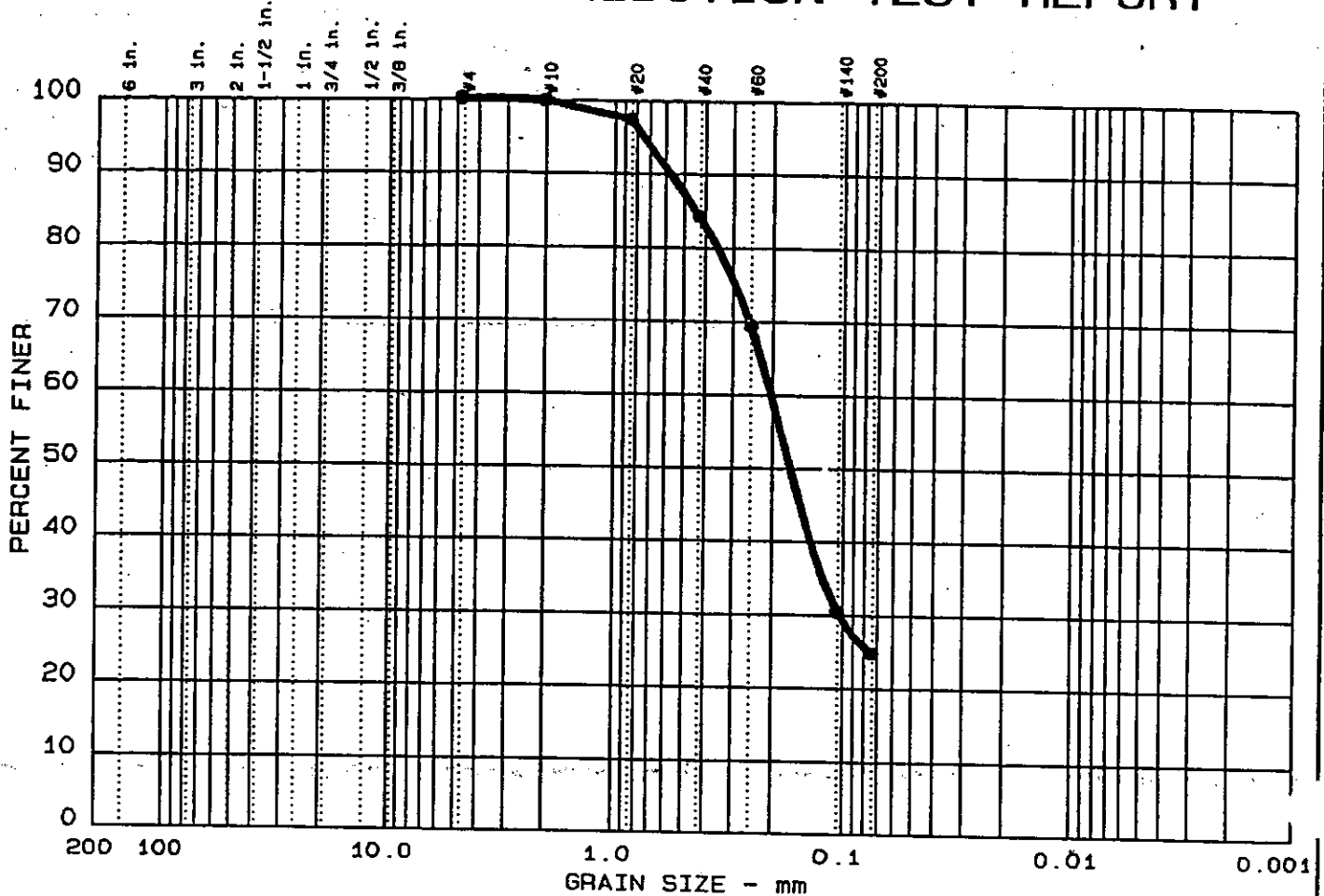
Reviewed by: HS

Moisture Content = 17.5%

ASTM D422 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	0.0	75.2	24.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.43	0.20	0.17	0.103				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-26 @ 43.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC+CS*

Reviewed by: *AD*

Moisture Content = 19.1%

ASTM D422 & D2216

Figure No.



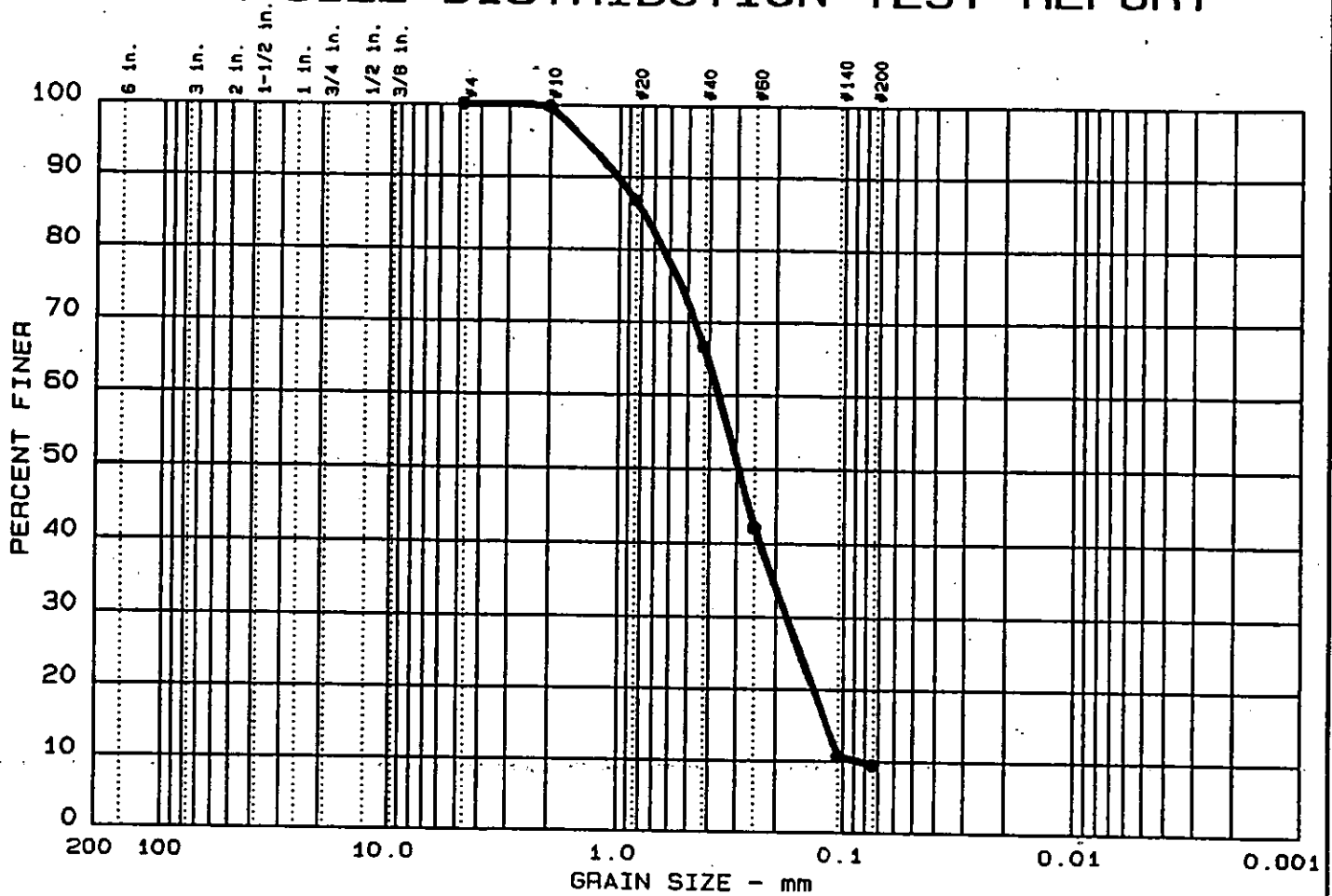
Grain size distribution curve showing Percent Finer versus Grain Size (mm). The curve indicates a sharp drop in percent finer between 1.0 mm and 0.1 mm, suggesting a well-graded material.

Grain Size (mm)	Percent Finer (%)
200	100
100	100
60	100
40	100
20	100
10	100
5	100
2.5	100
1.0	95
0.6	60
0.425	45
0.25	35
0.15	25
0.1	15
0.075	13
0.06	12
0.0425	11
0.03	10
0.025	9
0.02	8
0.015	7
0.01	6
0.0075	5
0.006	4
0.00425	3
0.003	2
0.0025	1
0.002	1

[illegible]

Project No.: 50161-7-0108 Task 21 Project: F-Area Northeast Expansion ● Location: FB-20 SS-32 @ 52.5 Ft.  Date: June 30, 1998	Remarks: Tested by: SC CS & STM Reviewed by: HJ Moisture Content = 17.2% ASTM D422, D4318 & D2216  Figure No.
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 13	0.0	0.0	90.5	9.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.77	0.36	0.29	0.179	0.1183	0.0828	1.08	4.3

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20SS-34 @ 55.5 Ft.  
 Date: June 23, 1998

## Remarks:

Tested by: SC

Reviewed by: HS

Moisture Content = 18.5%

ASTM D422 &amp; D2216

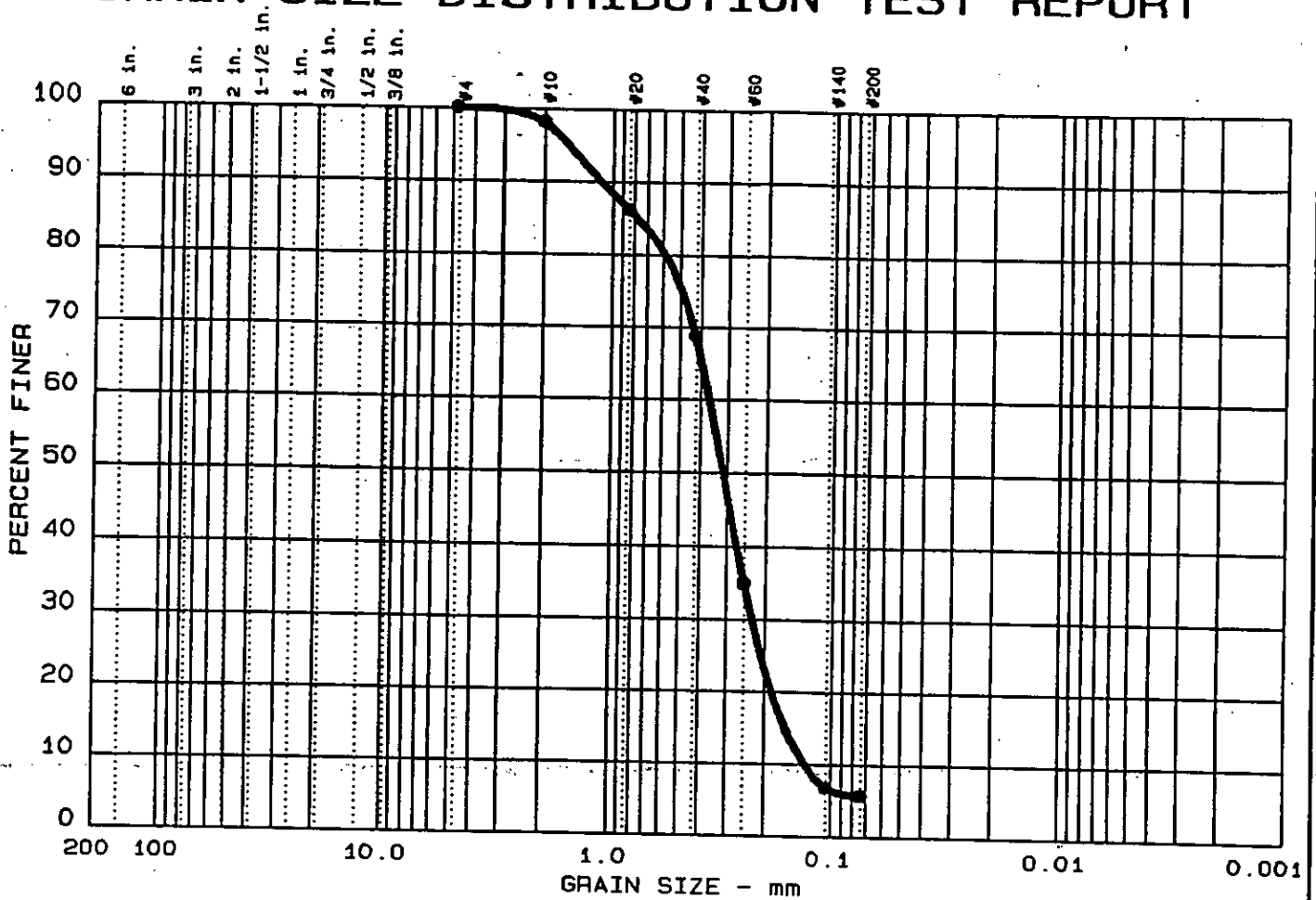
Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**





## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	94.4	5.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.76	0.36	0.31	0.230	0.1618	0.1315	1.11	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-38 @ 61.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: SC

Reviewed by: HB

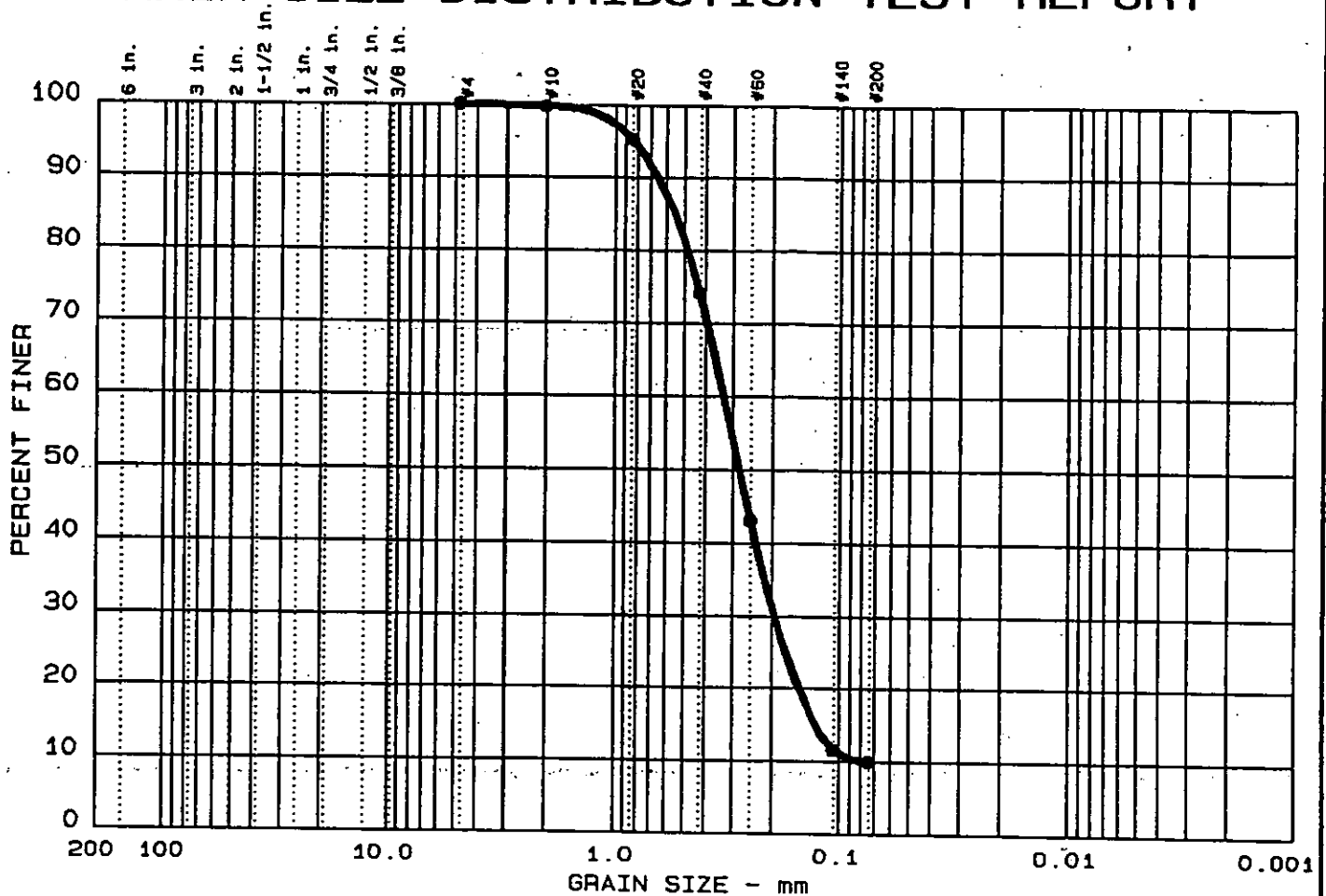
Moisture Content = 18.4%

ASTM D422 & D2216

Figure No.



## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	90.1	9.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.54	0.33	0.28	0.195	0.1274	0.0741	1.56	4.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-44 @ 70.5 Ft.  
 Date: June 25, 1998

## Remarks:

Tested by: SC

Reviewed by: H

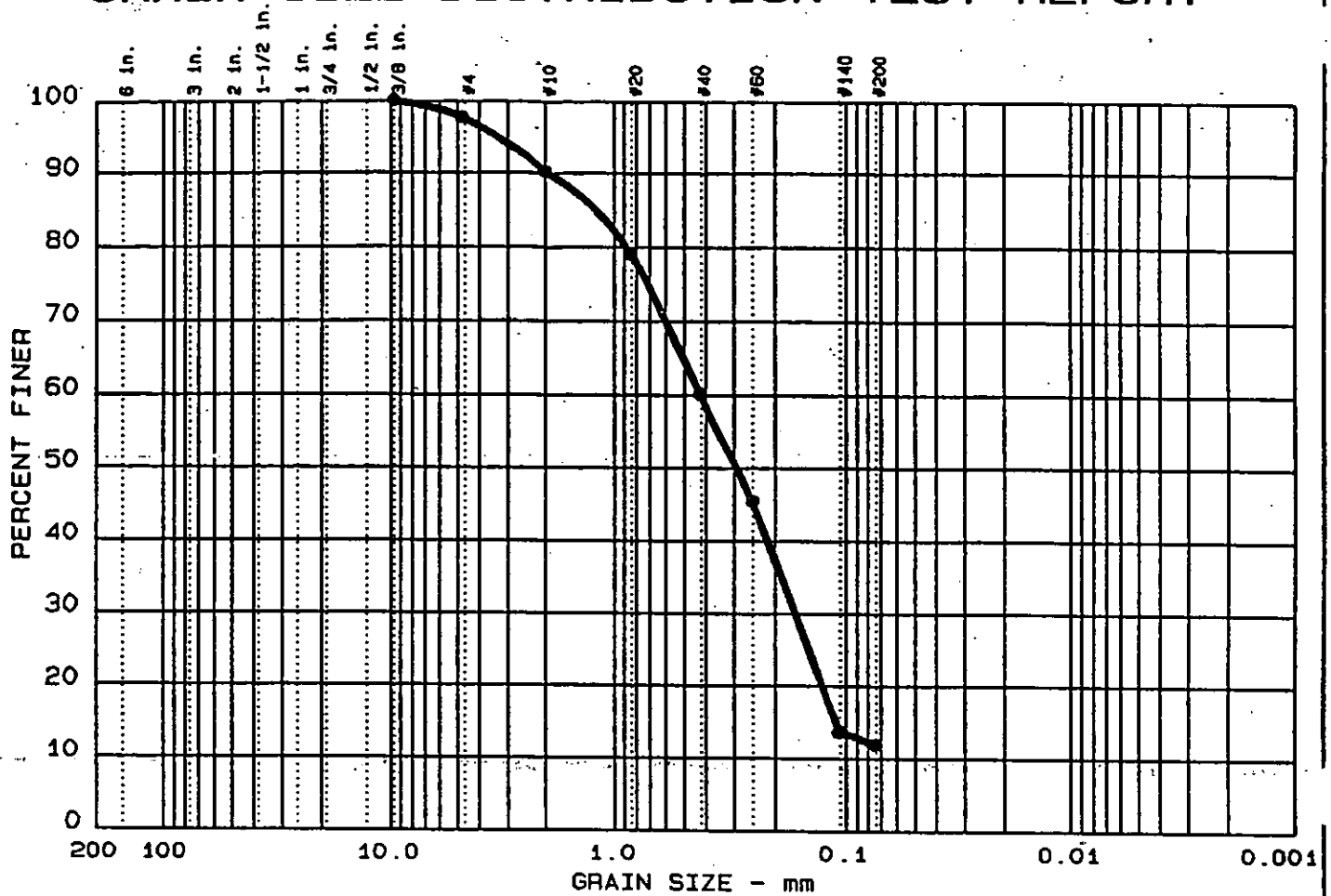
Moisture Content = 22.3%

ASTM D422 &amp; D2216

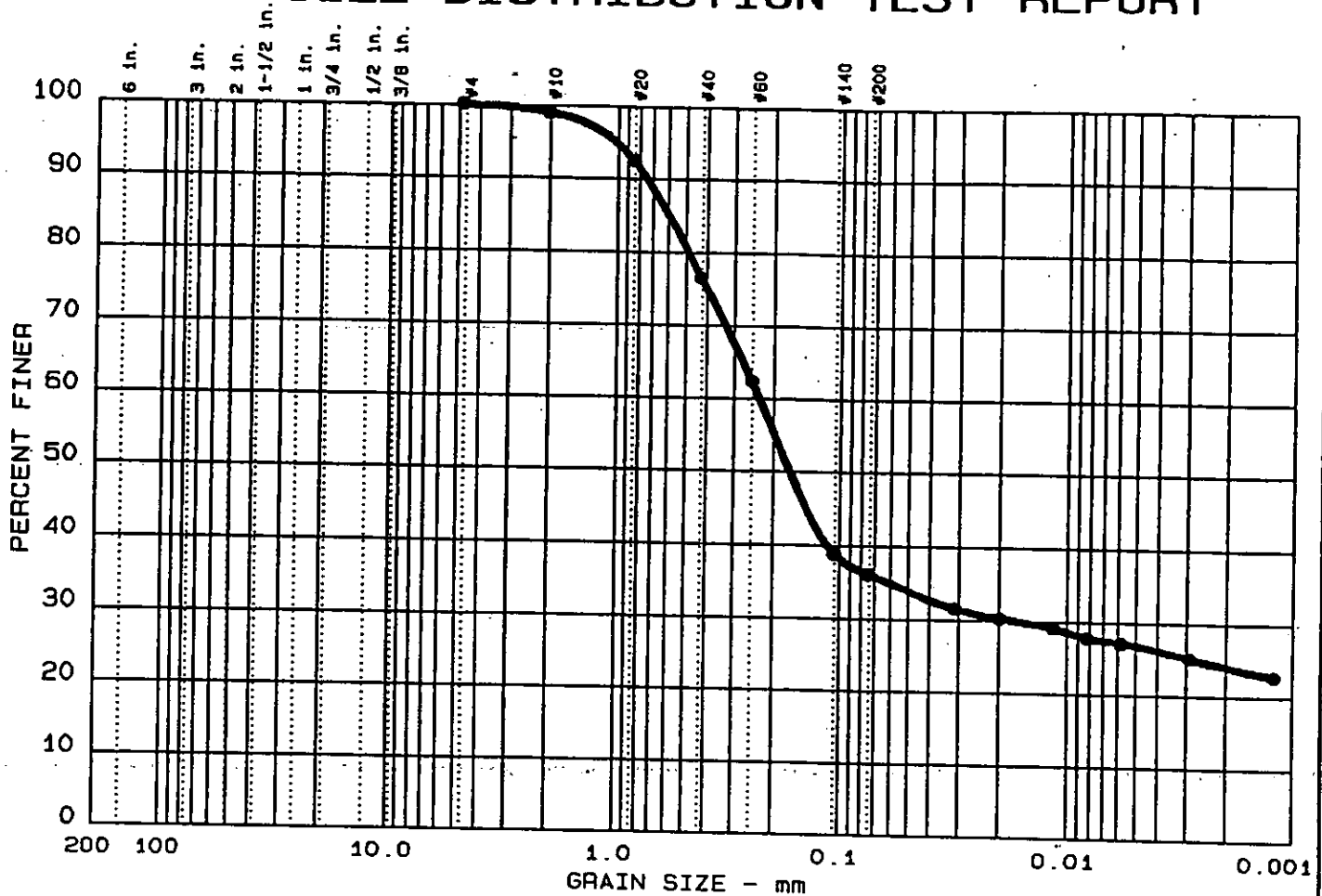
Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 2	0.0	0.0	64.0	9.2	26.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
• 47	21	0.58	0.23	0.17	0.017				

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown & Black Clayey Sand	SC	A-7-6 (2.5)

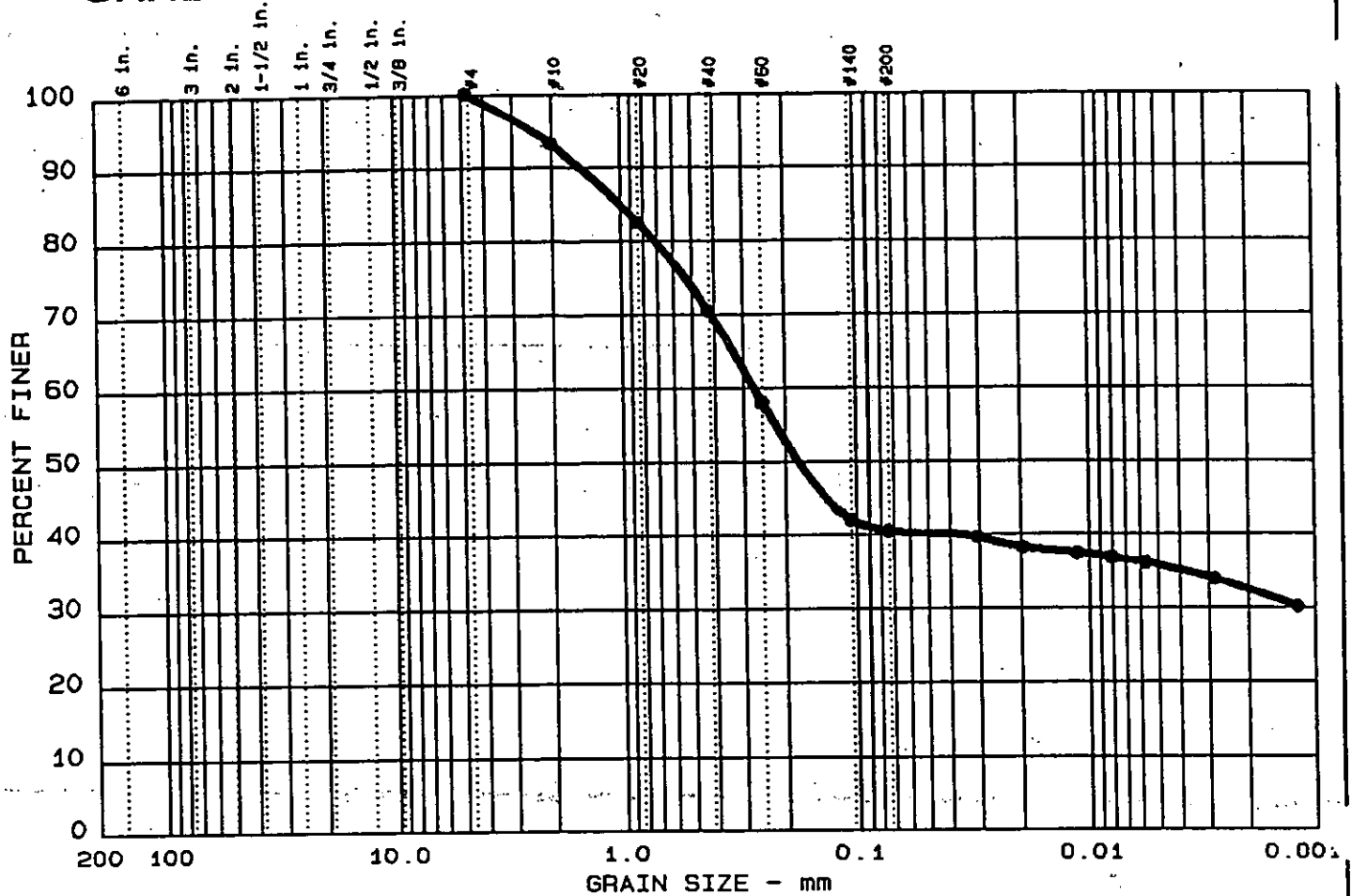
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20 SS-48 @ 76.5 Ft.  
 Date: June 30, 1998

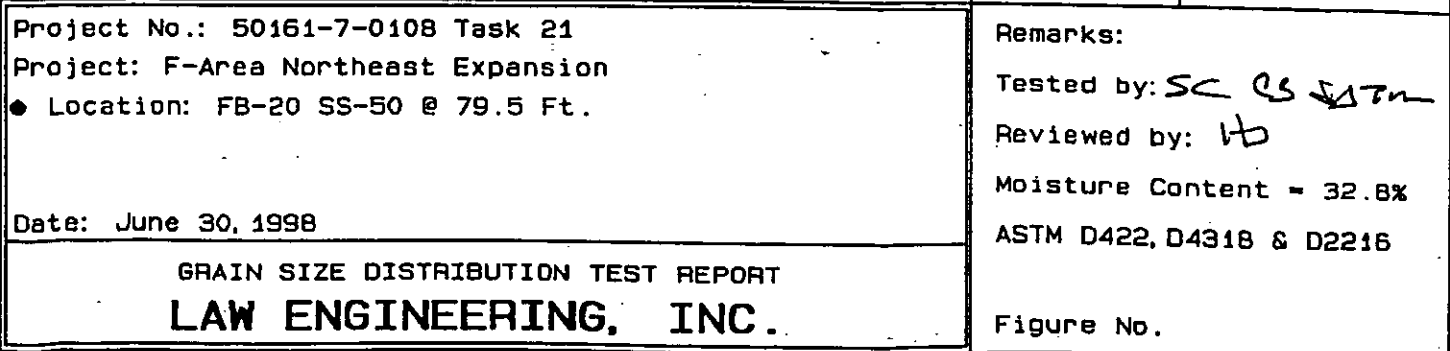
Remarks:  
 Tested by: *SC + JTM*  
 Reviewed by: *bb*  
 Moisture Content = 26.9%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

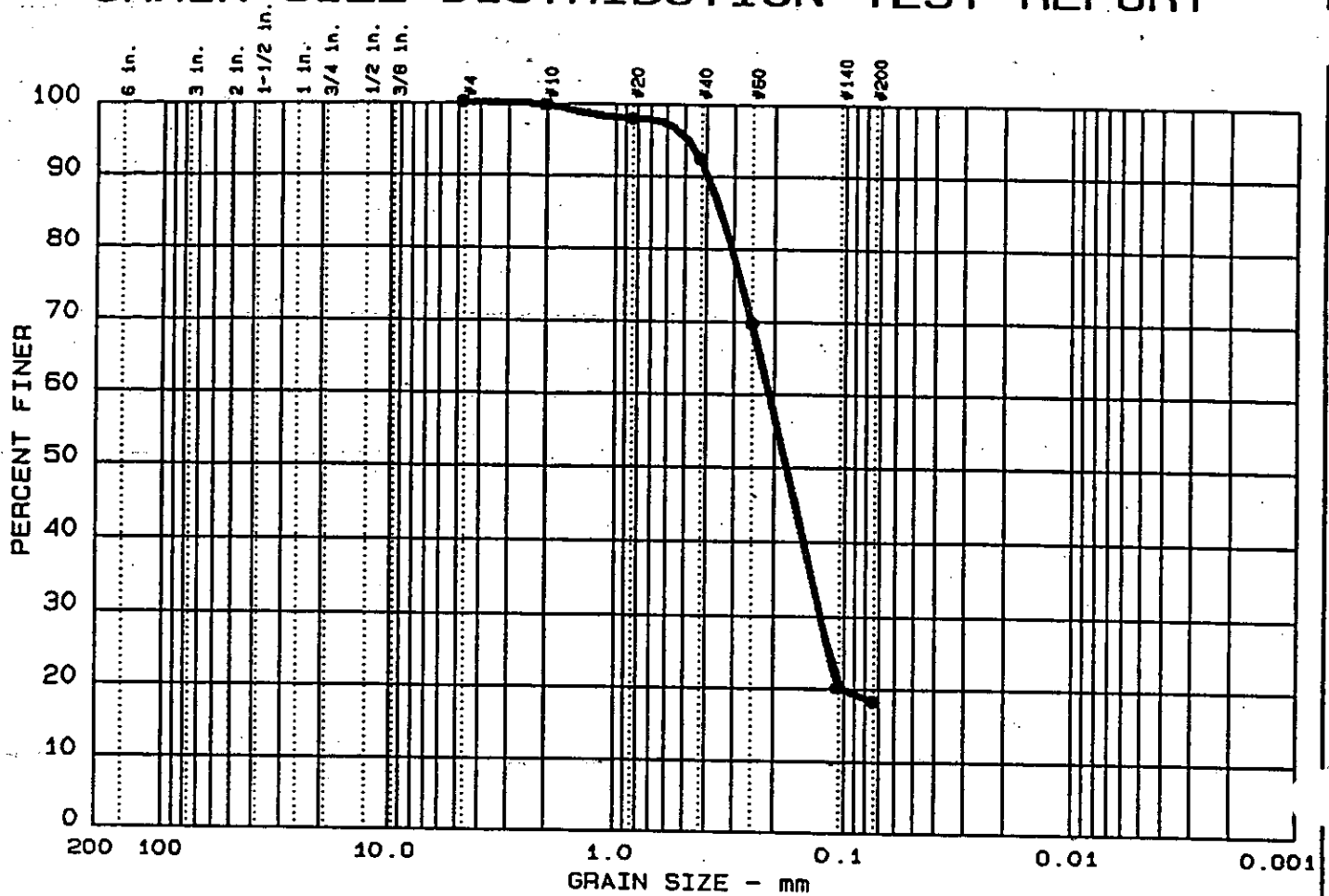
# GRAIN SIZE DISTRIBUTION TEST REPORT







## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 16	0.0	0.0	81.7	18.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.34	0.21	0.18	0.124				

MATERIAL DESCRIPTION	USCS	AASHTO
• Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20 SS-52 @ 82.5 Ft.

Date: June 23, 1998

Remarks:

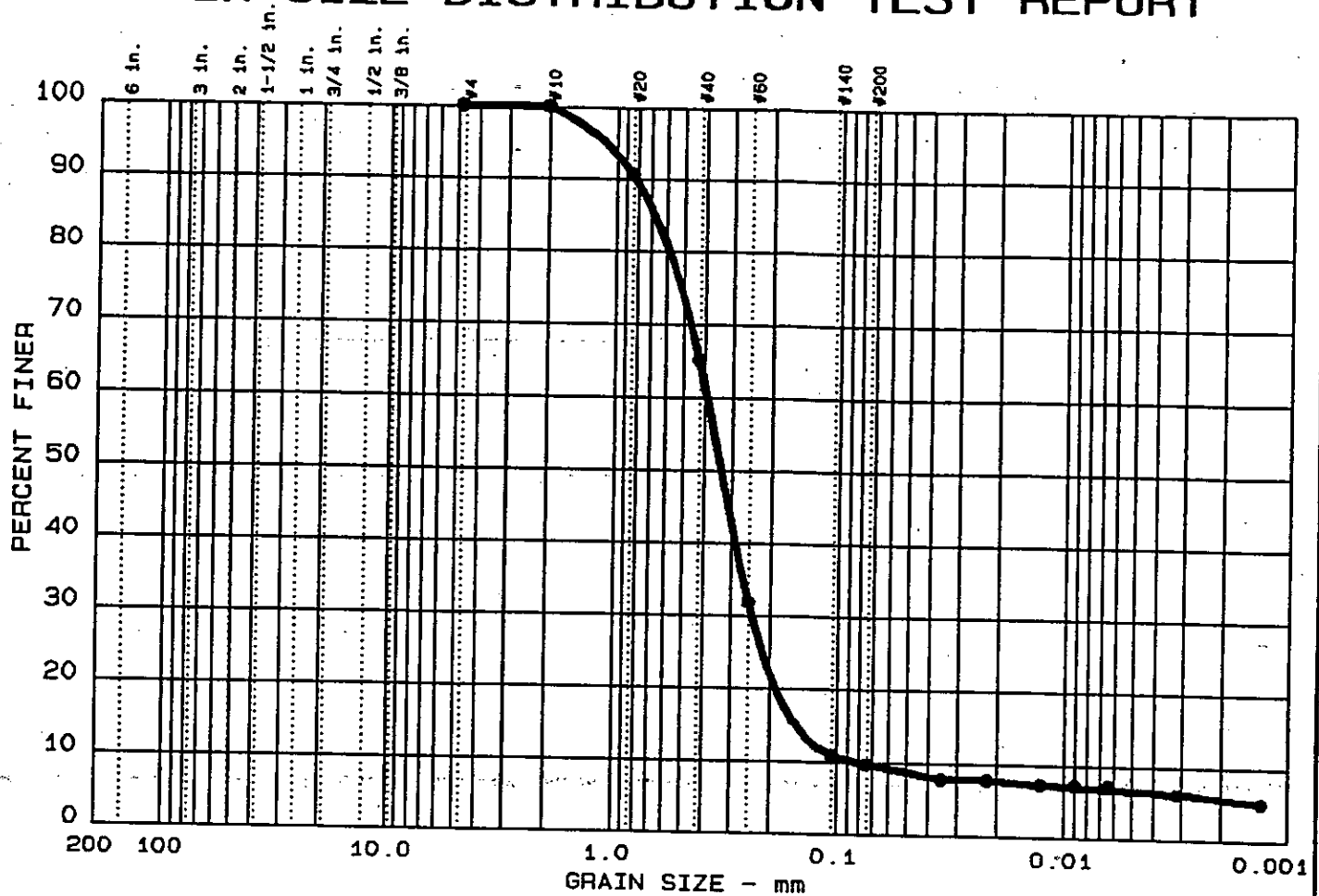
Tested by: SC  
 Reviewed by: HB

Moisture Content = 25.8%  
 ASTM D422 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	90.3	3.1	6.6

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.67	0.39	0.33	0.241	0.1521	0.0807	1.86	4.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-54 @ 85.5 Ft.

Date: June 26, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC + SM*

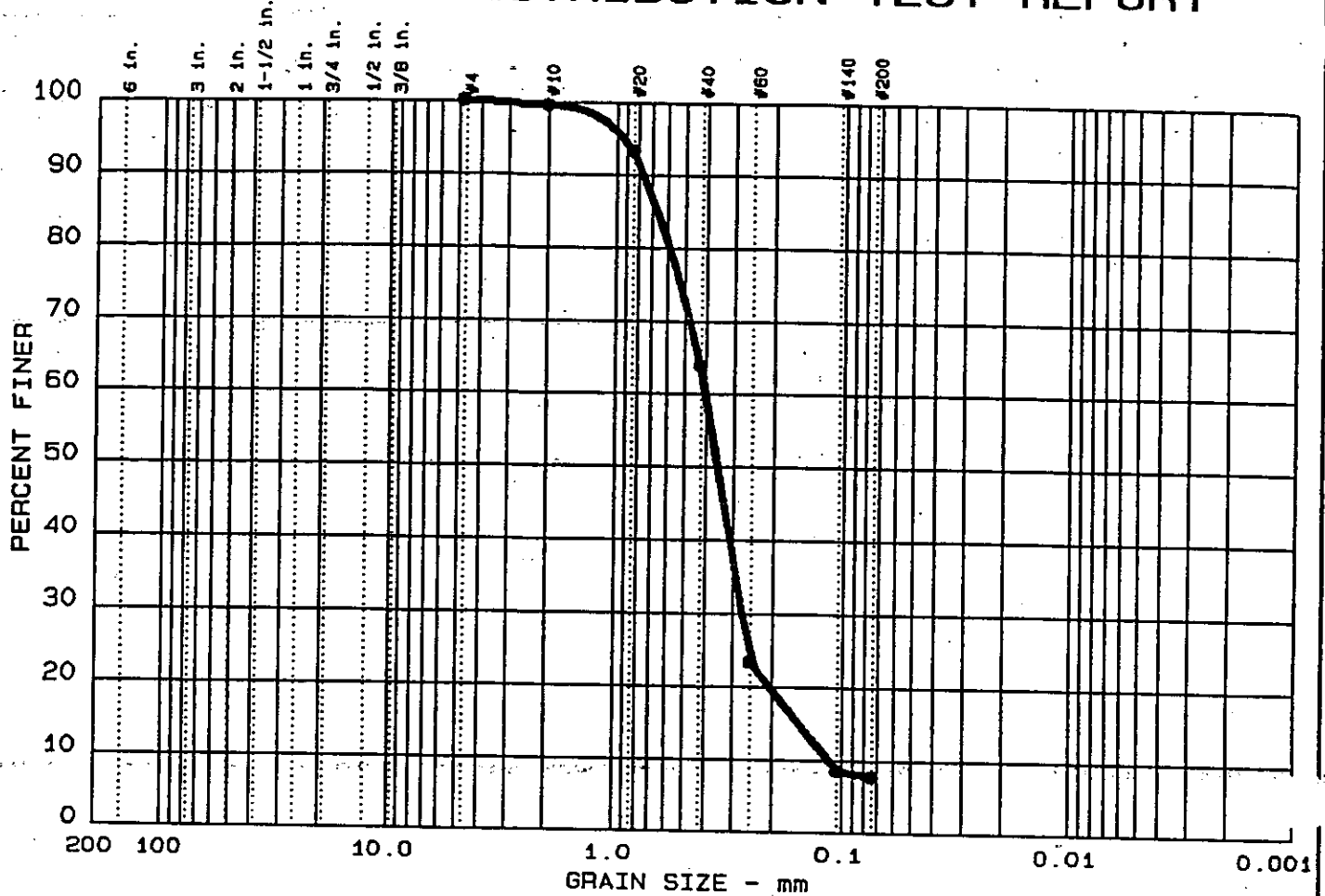
Reviewed by: *HS*

Moisture Content = 22.4%

ASTM D422, D431B & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
4	0.0	0.0	92.2	7.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.66	0.40	0.35	0.272	0.1512	0.1134	1.63	3.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-3

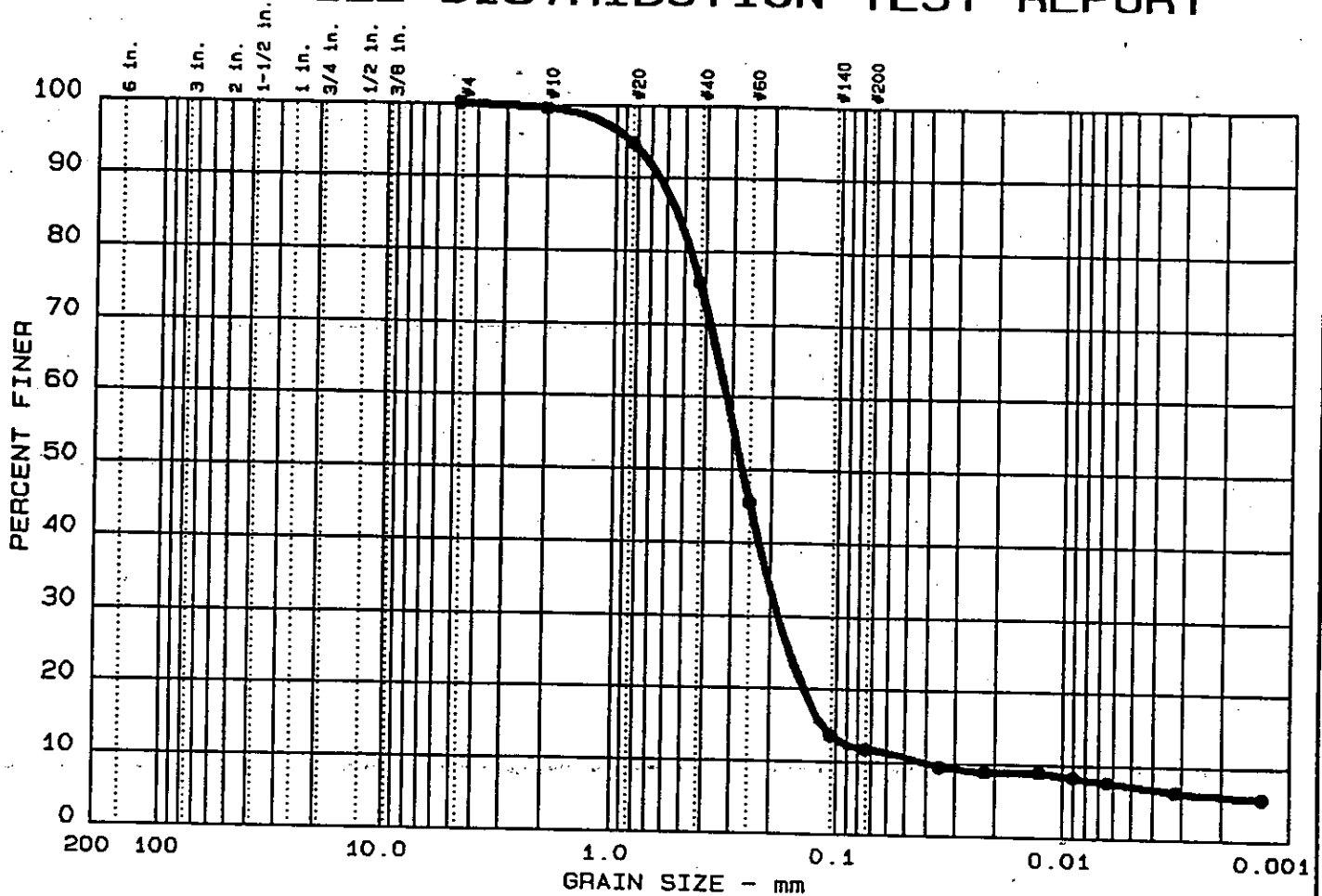
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-56 @ 88.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HT*  
 Moisture Content = 18.9%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	88.2	4.6	7.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.53	0.32	0.27	0.184	0.1149	0.0399	2.69	8.0

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Well Graded Sand with Silt	SW-SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Notheast Expansion  
 • Location: FB-20 SS-59 @ 93.0 Ft  
 Date: June 26, 1998

Remarks:  
 Tested by: *SCJ/Tm*  
 Reviewed by: *H*  
 Moisture Content = 20.4%  
 ASTM D422, D4318 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Grain size distribution curve for a soil sample. The graph plots Percent Finer (0 to 100) against Grain Size in mm (logarithmic scale from 200 to 0.001). The curve shows a well-graded soil with a peak at approximately 1.18 mm (No. 10 sieve) and a tail extending down to 0.001 mm.

Grain Size (mm)	Percent Finer (%)
200	100
100	100
60	100
40	100
30	100
25	100
20	100
15	100
12.5	100
10	100
7.5	100
6	100
4.75	100
3.75	100
3.0	100
2.5	100
2.0	100
1.5	100
1.18	95
0.85	85
0.6	62
0.425	32
0.3	20
0.25	15
0.2	10
0.15	8
0.125	7
0.106	6
0.085	5
0.075	4
0.063	4
0.053	4
0.045	4
0.037	4
0.03	4
0.025	4
0.02	4
0.016	4
0.013	4
0.0106	4
0.0085	4
0.0075	4
0.0063	4
0.0053	4
0.0045	4
0.0037	4
0.003	4
0.0025	4
0.002	4
0.0016	4
0.0013	4
0.00106	4
0.00085	4
0.00075	4
0.00063	4
0.00053	4
0.00045	4
0.00037	4
0.0003	4
0.00025	4
0.0002	4
0.00016	4
0.00013	4
0.000106	4
0.000085	4
0.000075	4
0.000063	4
0.000053	4
0.000045	4
0.000037	4
0.00003	4
0.000025	4
0.00002	4
0.000016	4
0.000013	4
0.0000106	4
0.0000085	4
0.0000075	4
0.0000063	4
0.0000053	4
0.0000045	4
0.0000037	4
0.000003	4
0.0000025	4
0.000002	4
0.0000016	4
0.0000013	4
0.00000106	4
0.00000085	4
0.00000075	4
0.00000063	4
0.00000053	4
0.00000045	4
0.00000037	4
0.0000003	4
0.00000025	4
0.0000002	4
0.00000016	4
0.00000013	4
0.000000106	4
0.000000085	4
0.000000075	4
0.000000063	4
0.000000053	4
0.000000045	4
0.000000037	4
0.00000003	4
0.000000025	4
0.00000002	4
0.000000016	4
0.000000013	4
0.0000000106	4
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0.0000000075	4
0.0000000063	4
0.0000000053	4
0.0000000045	4
0.0000000037	4
0.000000003	4
0.0000000025	4
0.000000002	4
0.0000000016	4
0.0000000013	4
0.00000000106	4
0.00000000085	4
0.00000000075	4
0.00000000063	4
0.00000000053	4
0.00000000045	4
0.00000000037	4
0.0000000003	4
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0.0000000002	4
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0.000000000106	4
0.000000000085	4
0.00000000007	

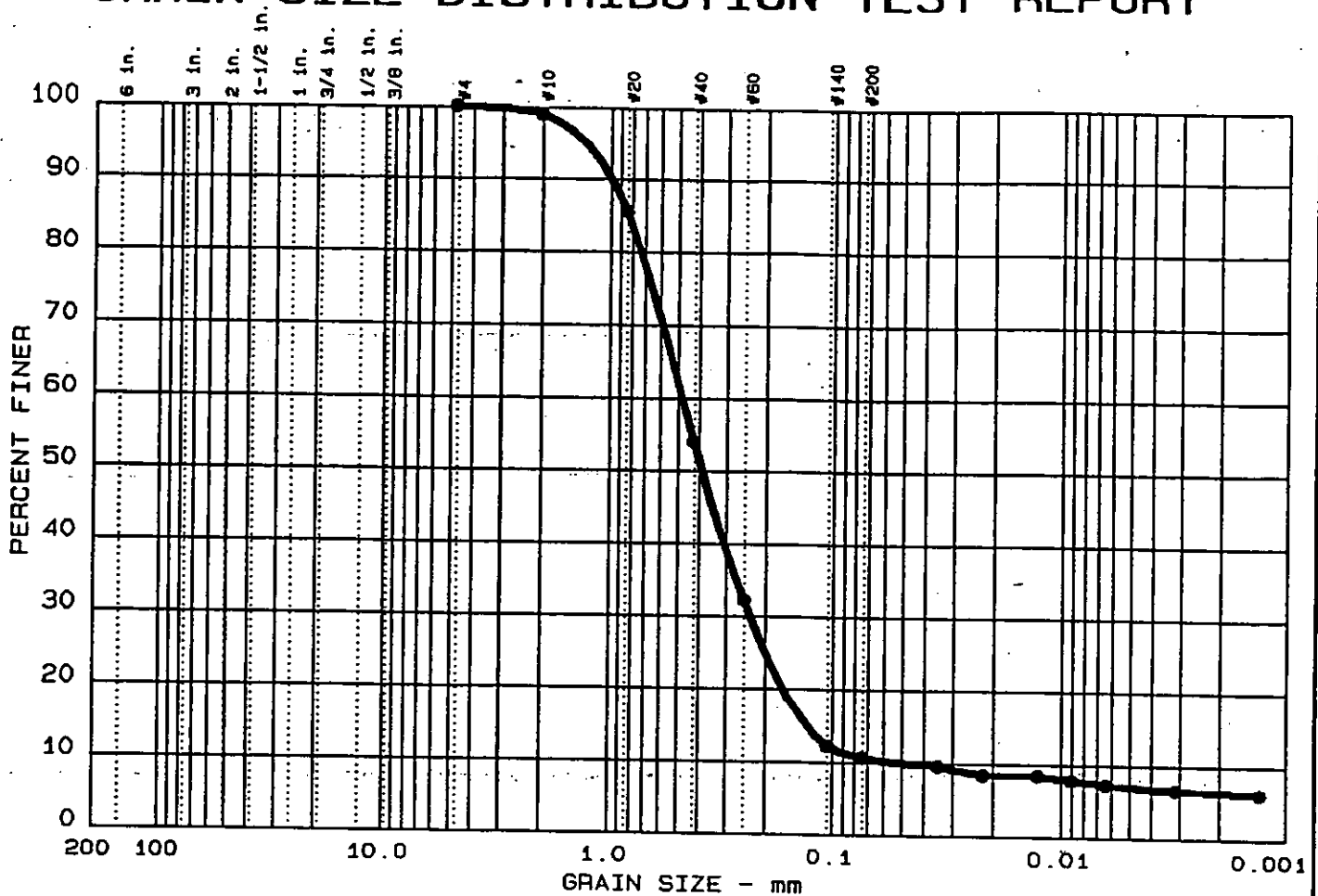
[illegible]

Project No.: 50161-7-0108 Task 21  
Project: F-Area Northeast Expansion  
● Location: FB-20 SS-61 @ 95.0 Ft.  
  
Date: June 26, 1998

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
LAW ENGINEERING, INC.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	89.3	3.7	7.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 31	8	0.83	0.47	0.39	0.235	0.1290	0.0463	2.51	10.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Well Graded Sand with Silt	SW-SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-63 @ 99.1-100.6 Ft.  
 Date: June 30, 1998

## Remarks:

Tested by: SC JmC8

Reviewed by: HJ

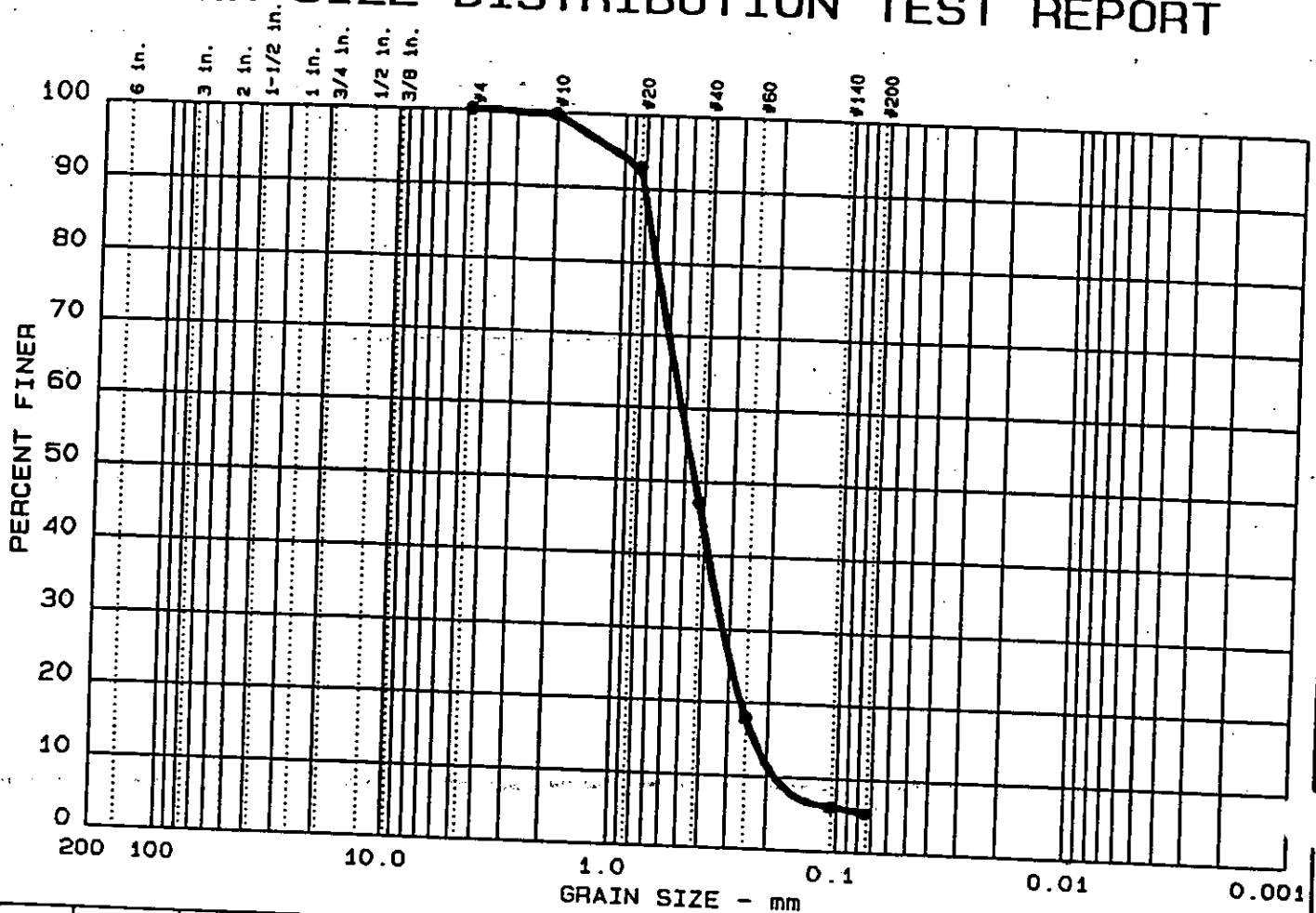
Moisture Content = 20.9%

ASTM D422, D4318 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 17	0.0	0.0	94.7	5.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.75	0.52	0.44	0.322	0.2294	0.1843	1.08	2.8

MATERIAL DESCRIPTION				USCS	AASHTO
• Brown Poorly Graded Sand with Silt				SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20 SS-66 @ 103.5-105.1 Ft.

Date: June 23, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: SC

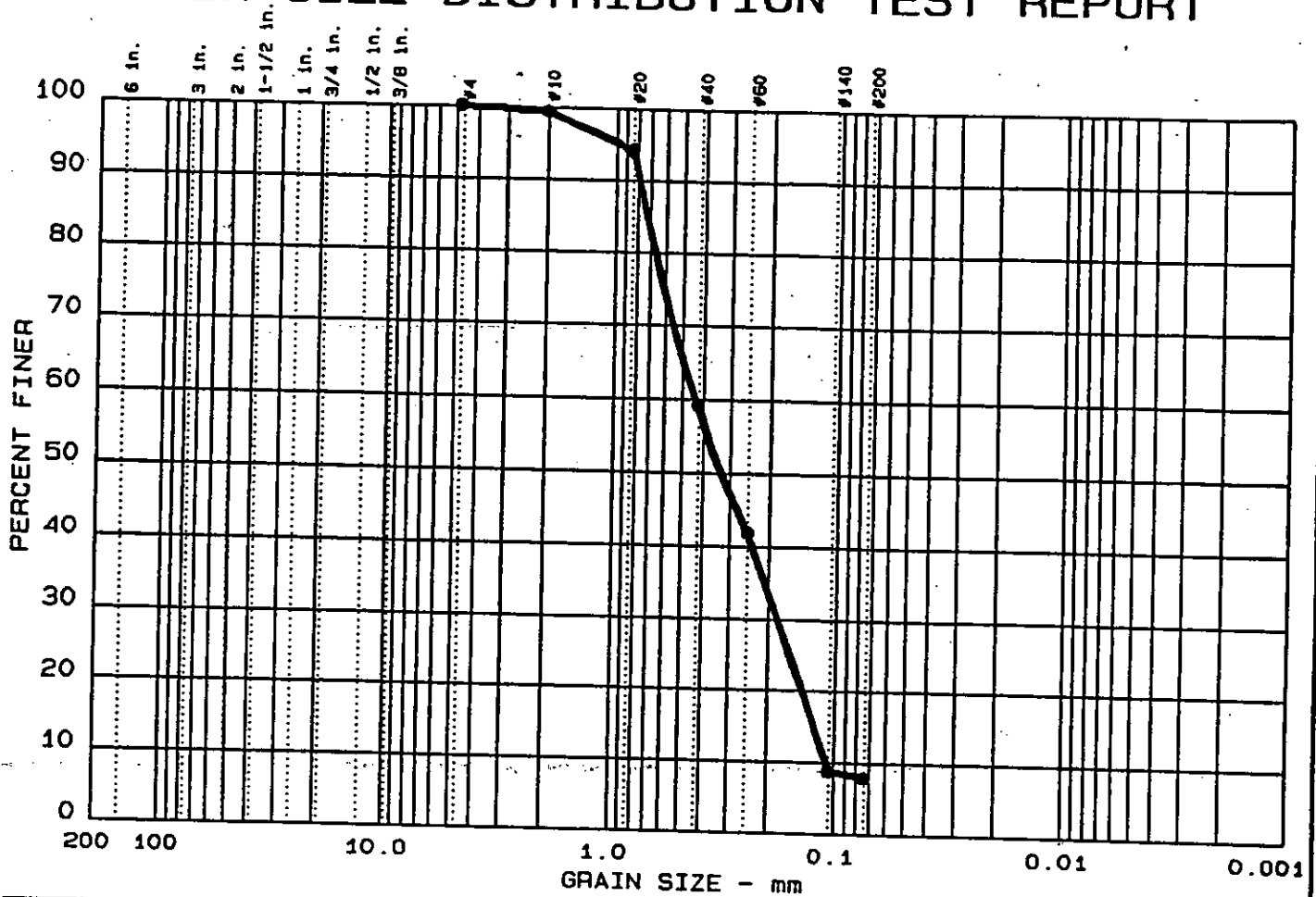
Reviewed by: HB

Moisture Content = 24.5%

ASTM D422 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 18	0.0	0.0	92.1	7.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.72	0.43	0.33	0.183	0.1236	0.1085	0.72	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
• Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20 SS-68 @ 106.6-108.1 Ft.

Date: June 23, 1998

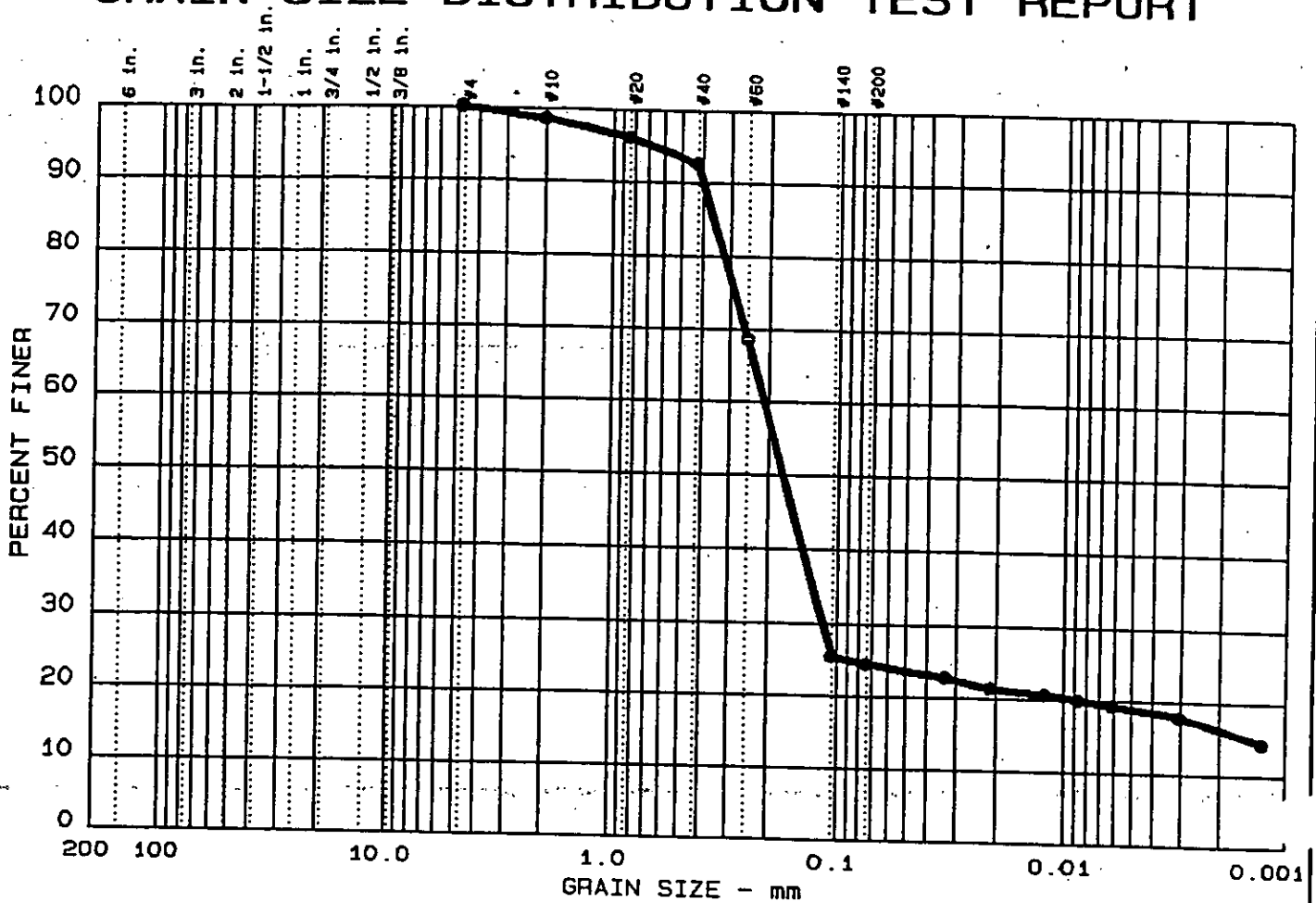
Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 Moisture Content = 26.2%  
 ASTM D422 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**



## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	75.5	5.6	18.9

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 44	19	0.35	0.21	0.17	0.115	0.0014			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (0.8)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-70 @ 109.6-112.7 Ft.

Date: June 30, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *CS SCDJm*

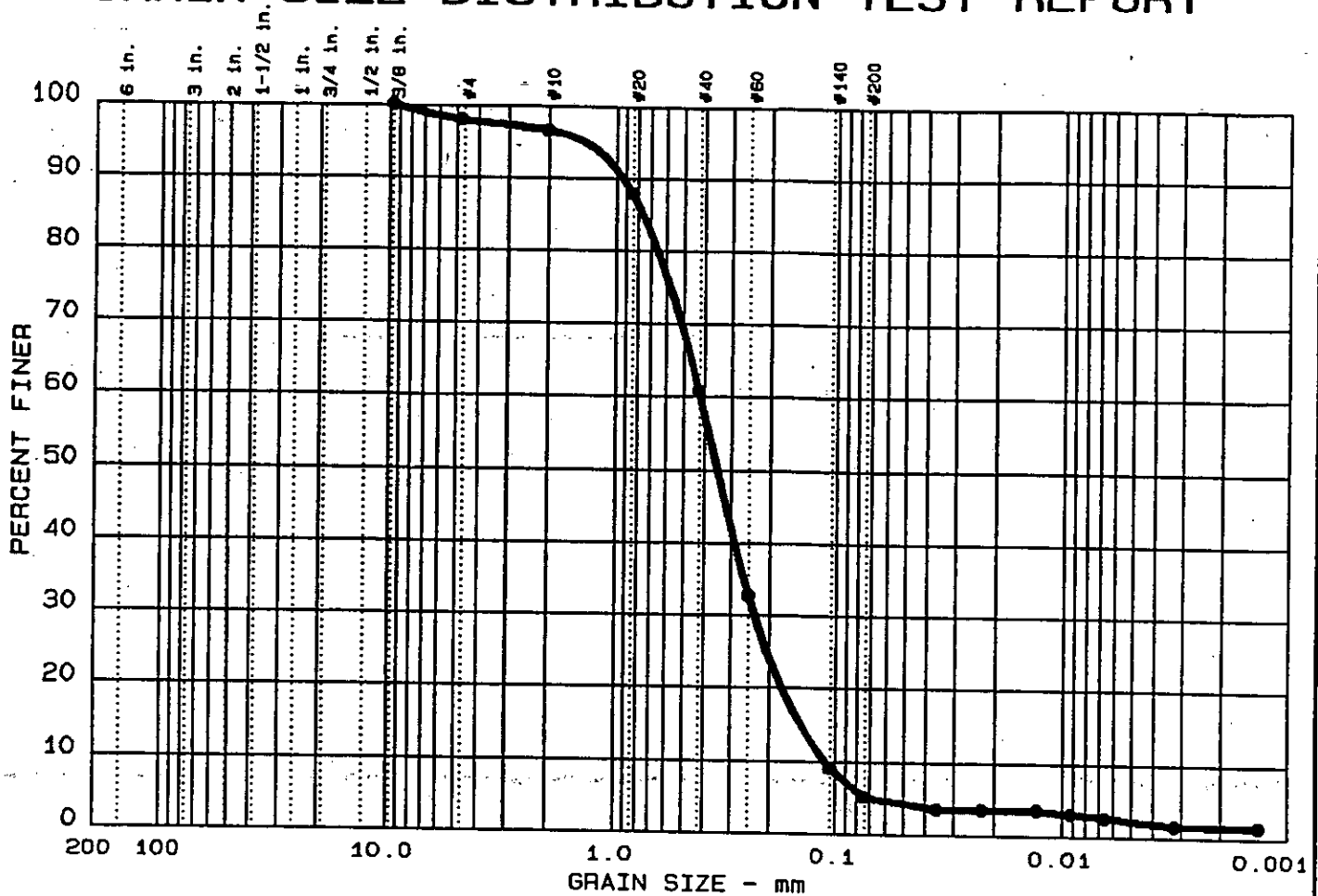
Reviewed by: *lt*

Moisture Content = 47.3%

ASTM D422, D4318 & D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	2.0	92.9	2.9	2.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.75	0.41	0.35	0.235	0.1432	0.1099	1.21	3.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-1 @ 7.0-8.5 Ft.

Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: J Tm & SC

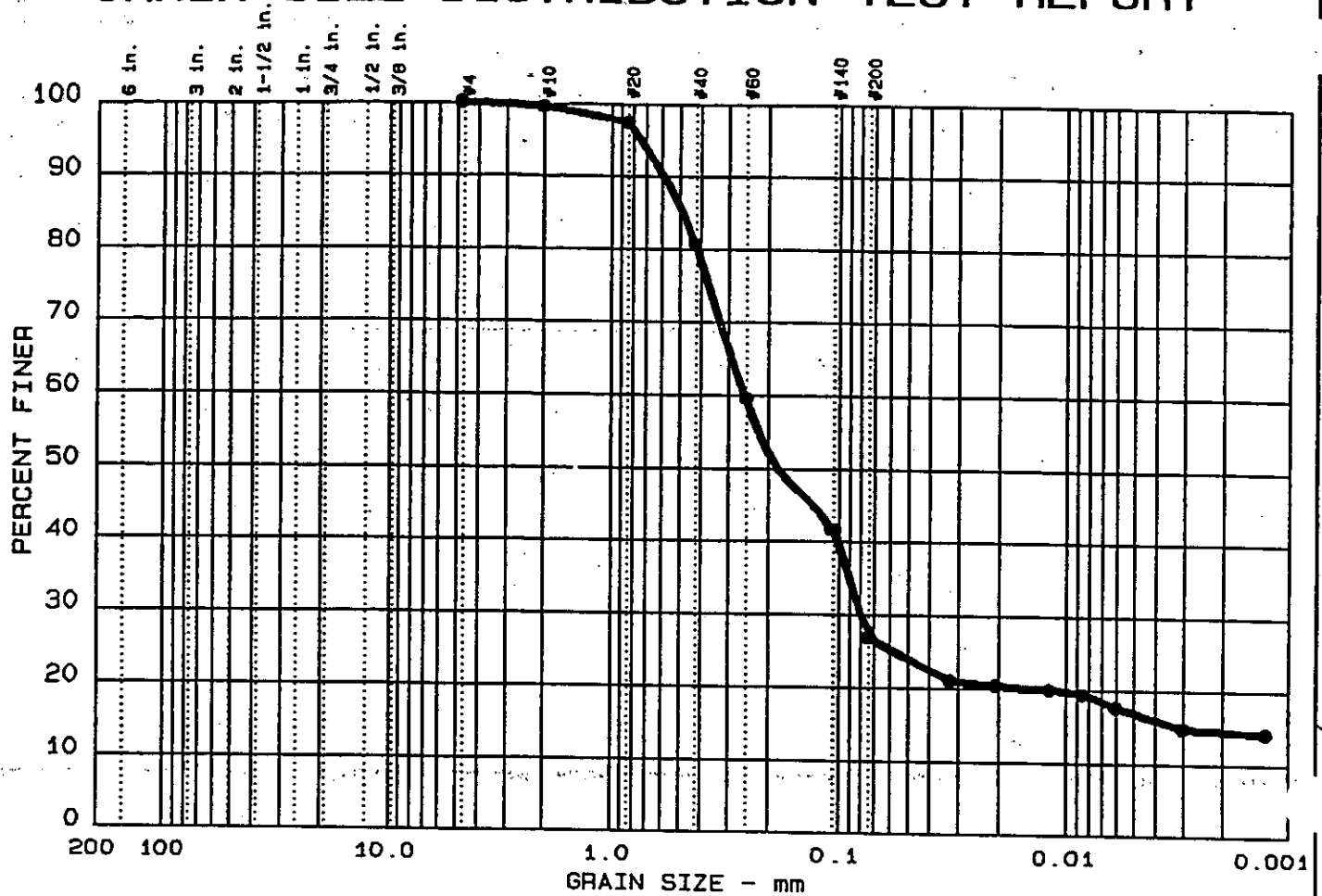
Reviewed by: HB

Moisture Content = 16.9%

ASTM D422, D4318 & D2216

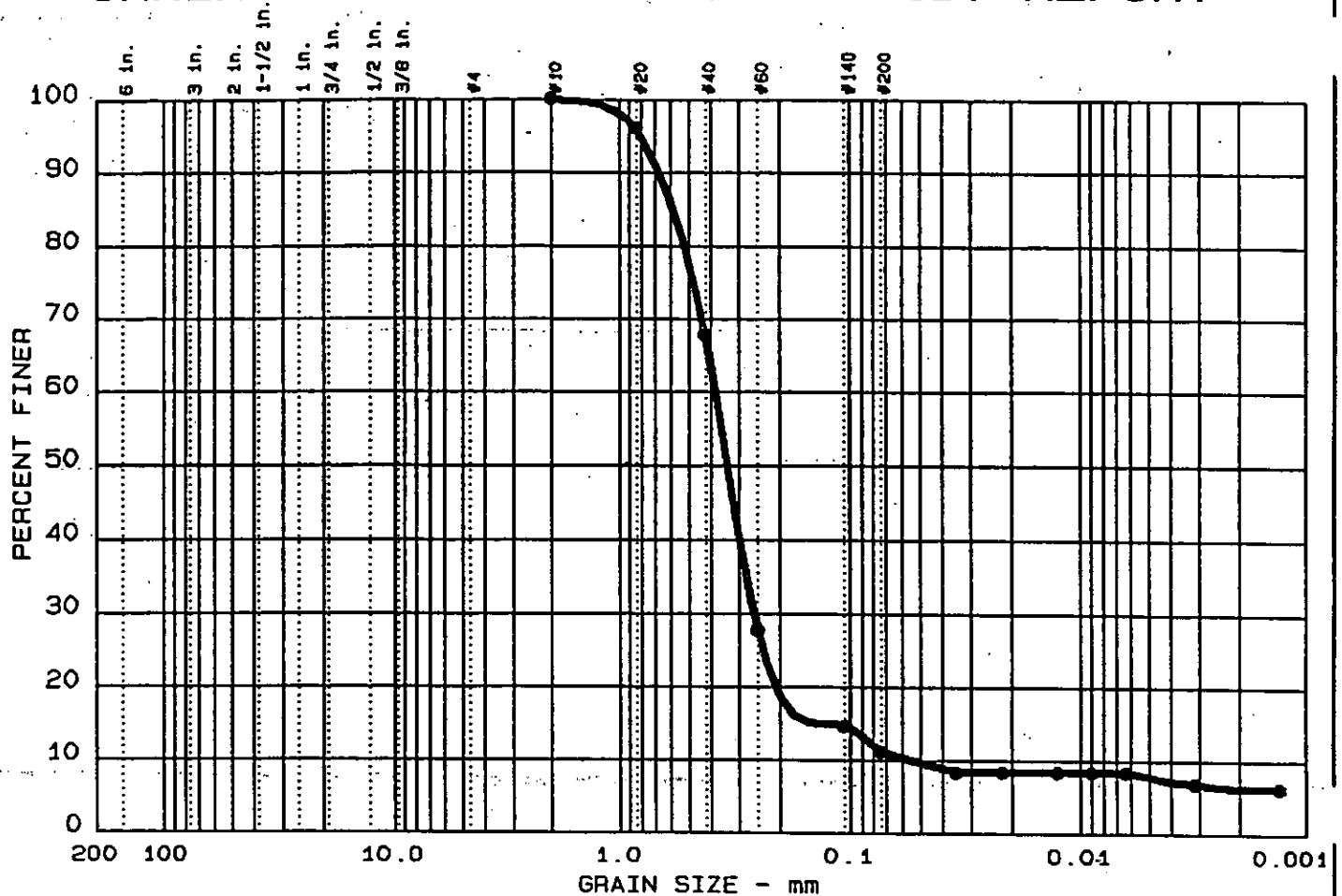
Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT





## GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	88.8	3.4	7.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.58	0.38	0.34	0.259	0.1242	0.0524	3.39	7.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-6 @ 14.5-16.0 Ft.

Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: JTM+SC

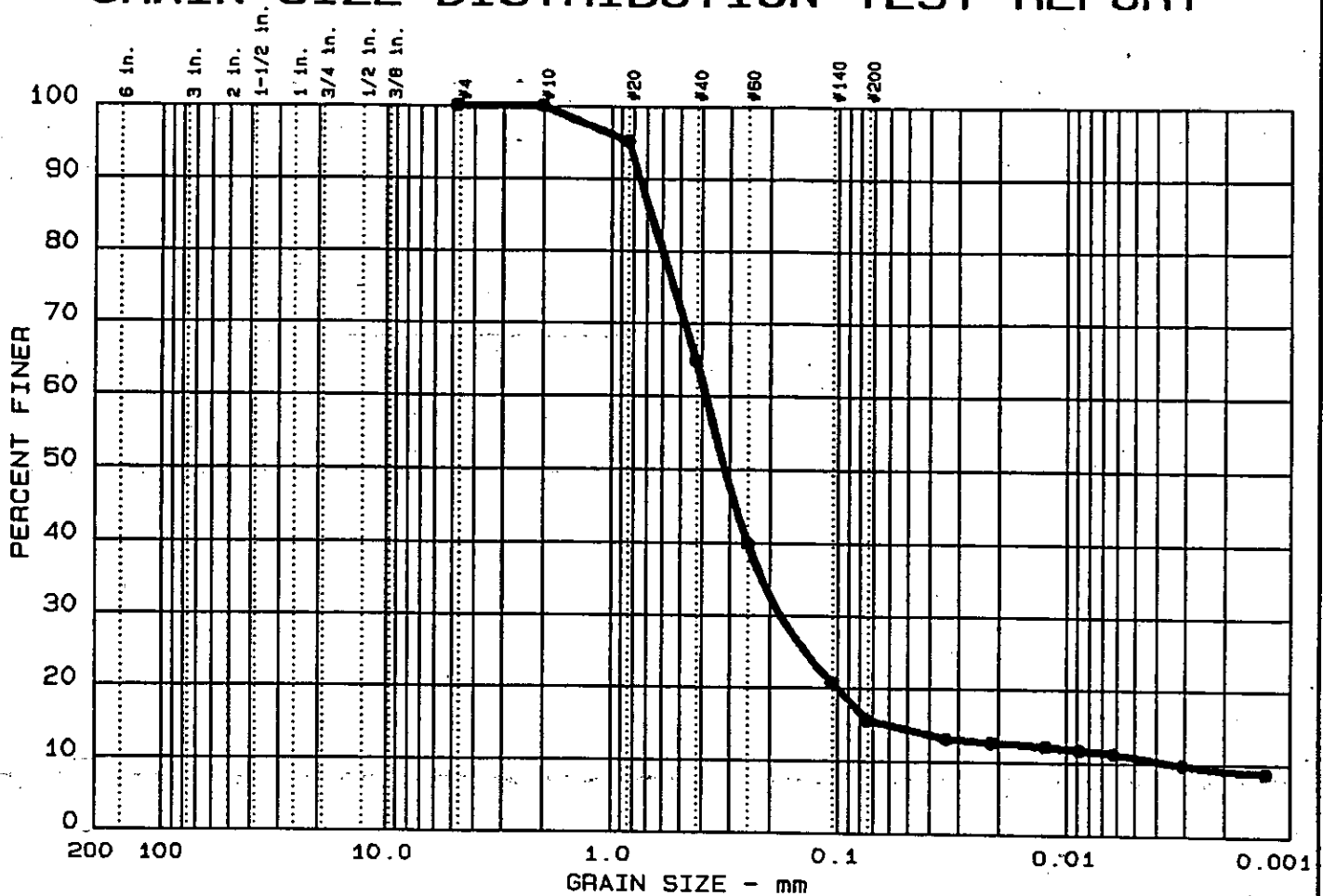
Reviewed by: LB

Moisture Content = 9.7%

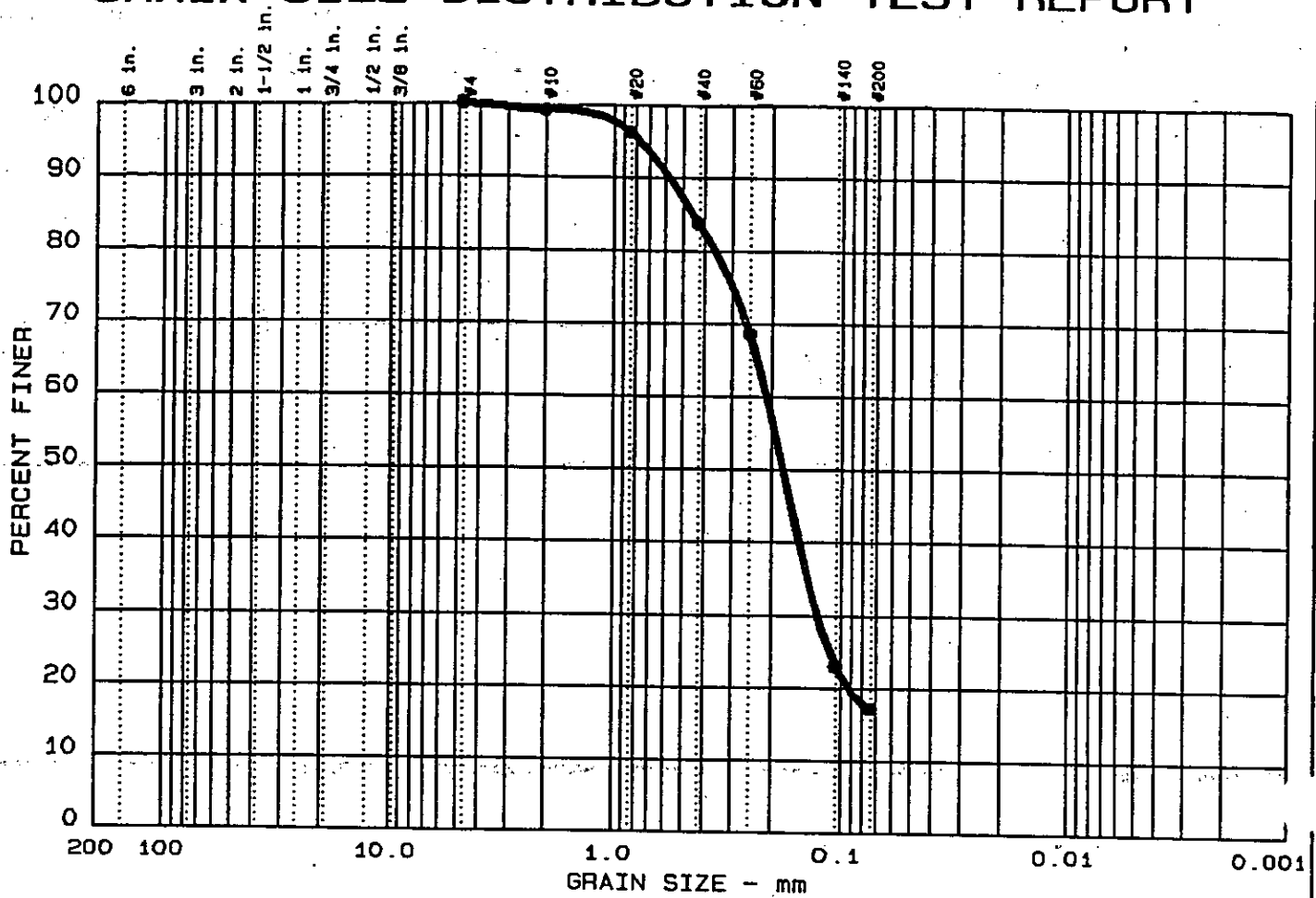
ASTM D422, D4318 & D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	82.7	17.3	

[illegible]

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
Project: F-Area Northeast Expansion  
● Location: FB-22 SS-10 @ 20.5-22.0 Ft.

**Date:** June 30, 1998

# GRAIN SIZE DISTRIBUTION TEST REPORT

**LAW ENGINEERING, INC.**

Remarks:

Tested by: SC + CS

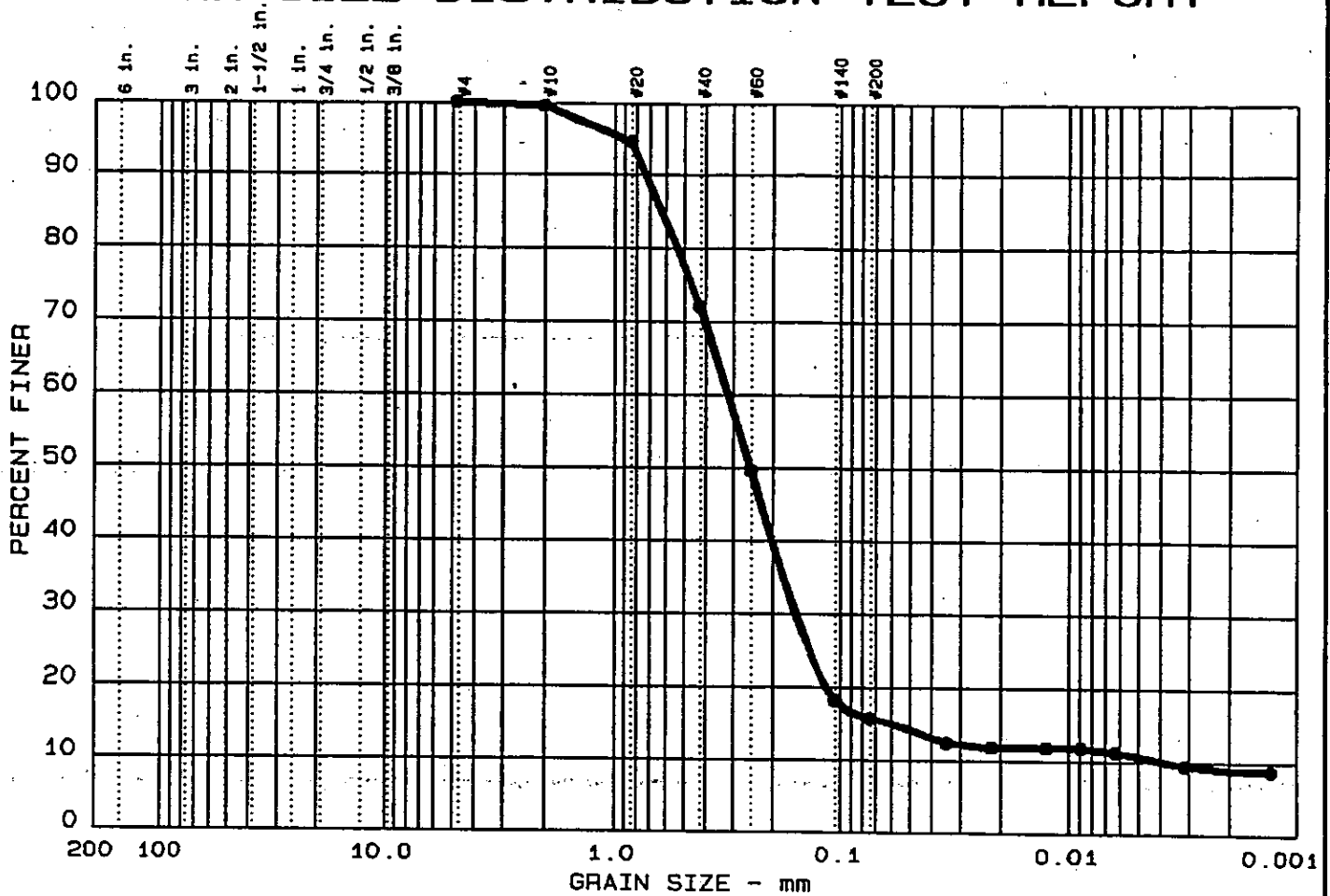
Reviewed by: HJ

Moisture Content = 16.5%

ASTM D422 &amp; D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	84.2	5.1	10.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
30	8	0.62	0.32	0.25	0.159	0.0583	0.0038	20.99	82.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-4 (0.0)

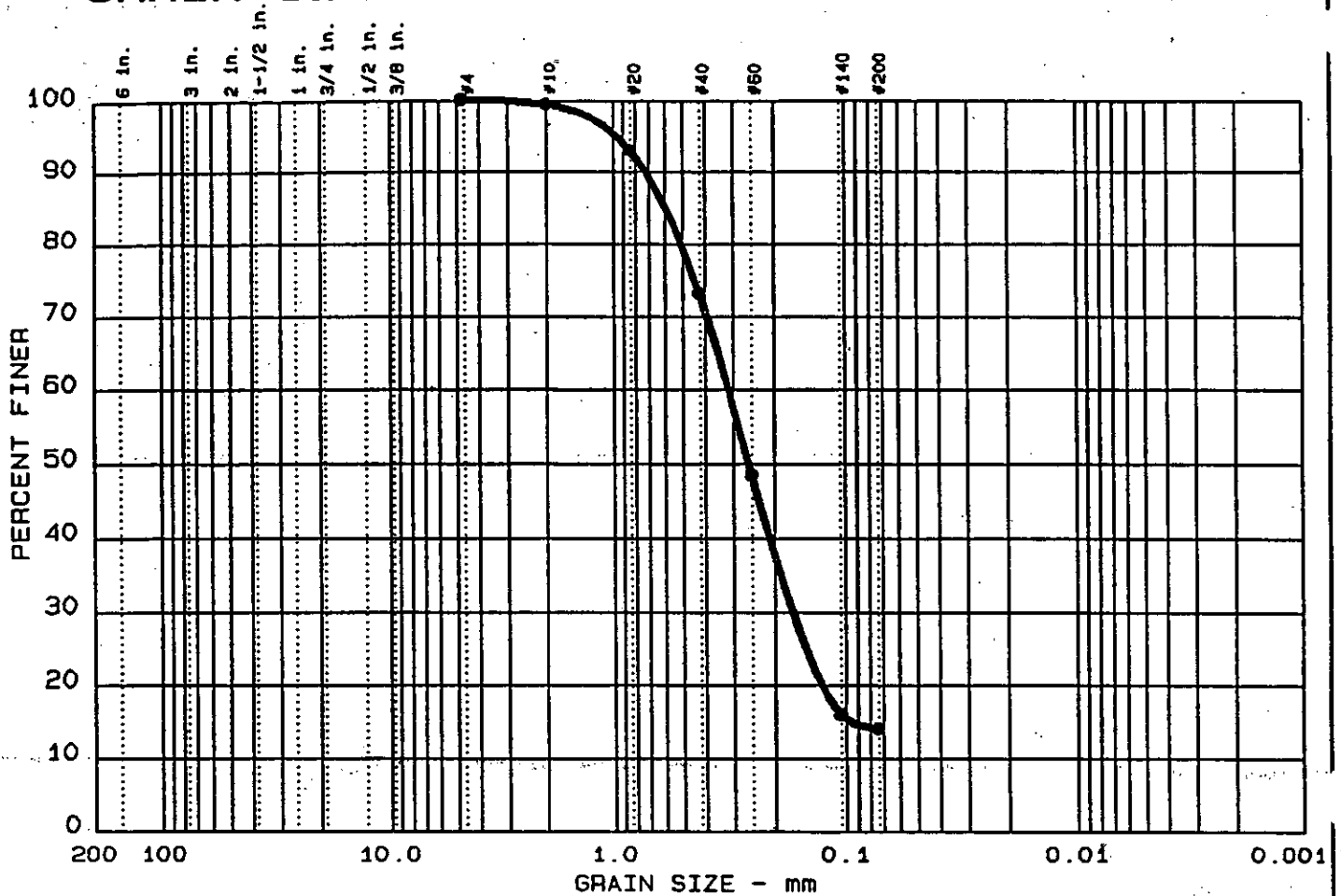
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-13 @ 25.0-26.5 Ft.  
 Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: *SCJ/STm*  
 Reviewed by: *HB*  
 Moisture Content = 18.6%  
 ASTM D422, D4318 & D2216  
 Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 19	0.0	0.0	85.9	14.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.59	0.31	0.26	0.168	0.0934			

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.1)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-22 SS-16 @ 29.5-31.0 Ft.

Date: June 23, 1998

Remarks:

Tested by: SC

Reviewed by: HJ

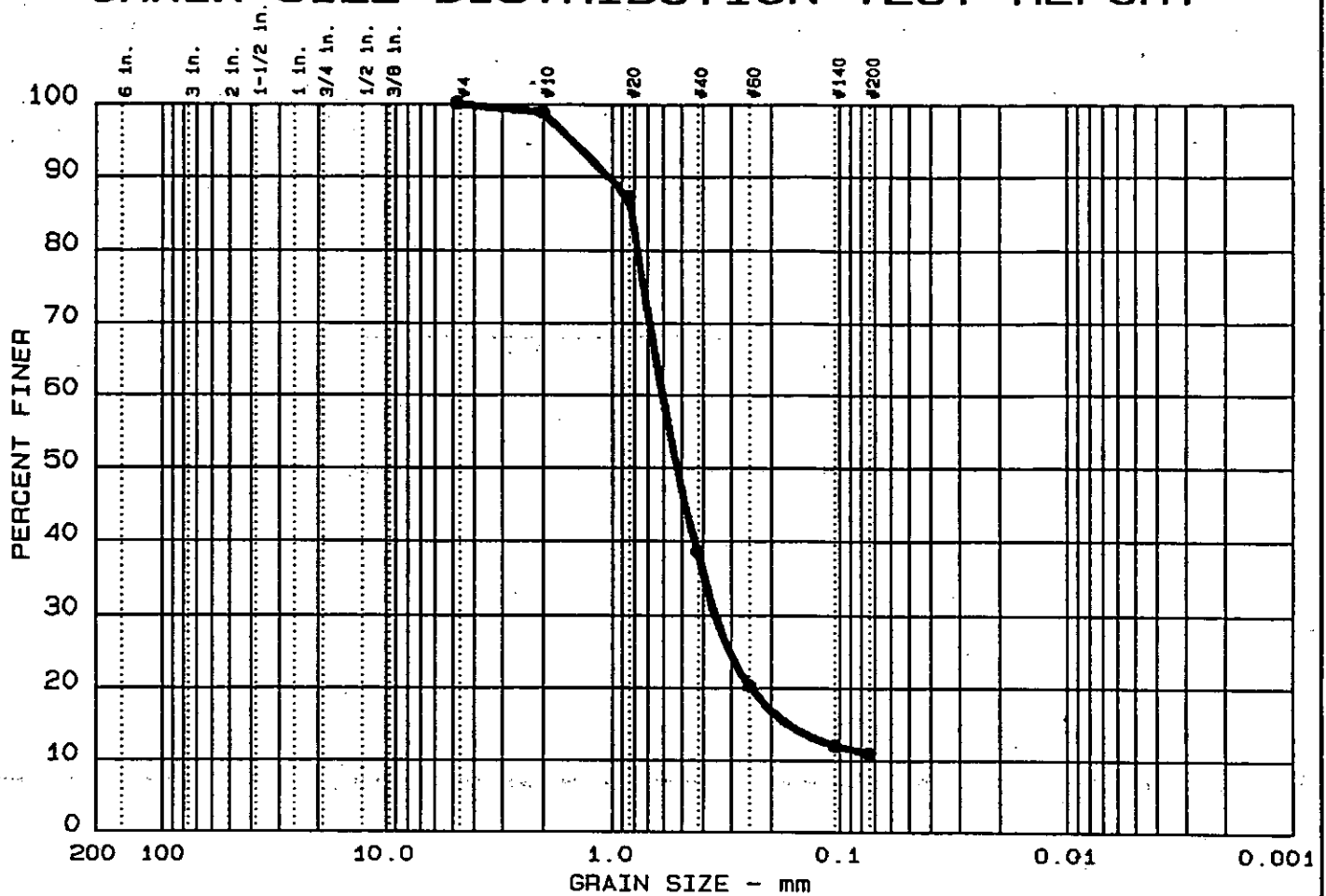
Moisture Content = 16.8%

ASTM D422 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	-0.0	0.0	89.0	11.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.82	0.60	0.52	0.353	0.1688			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-19 @ 34-35.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC & CS*

Reviewed by: *HB*

Moisture Content = 16.3%

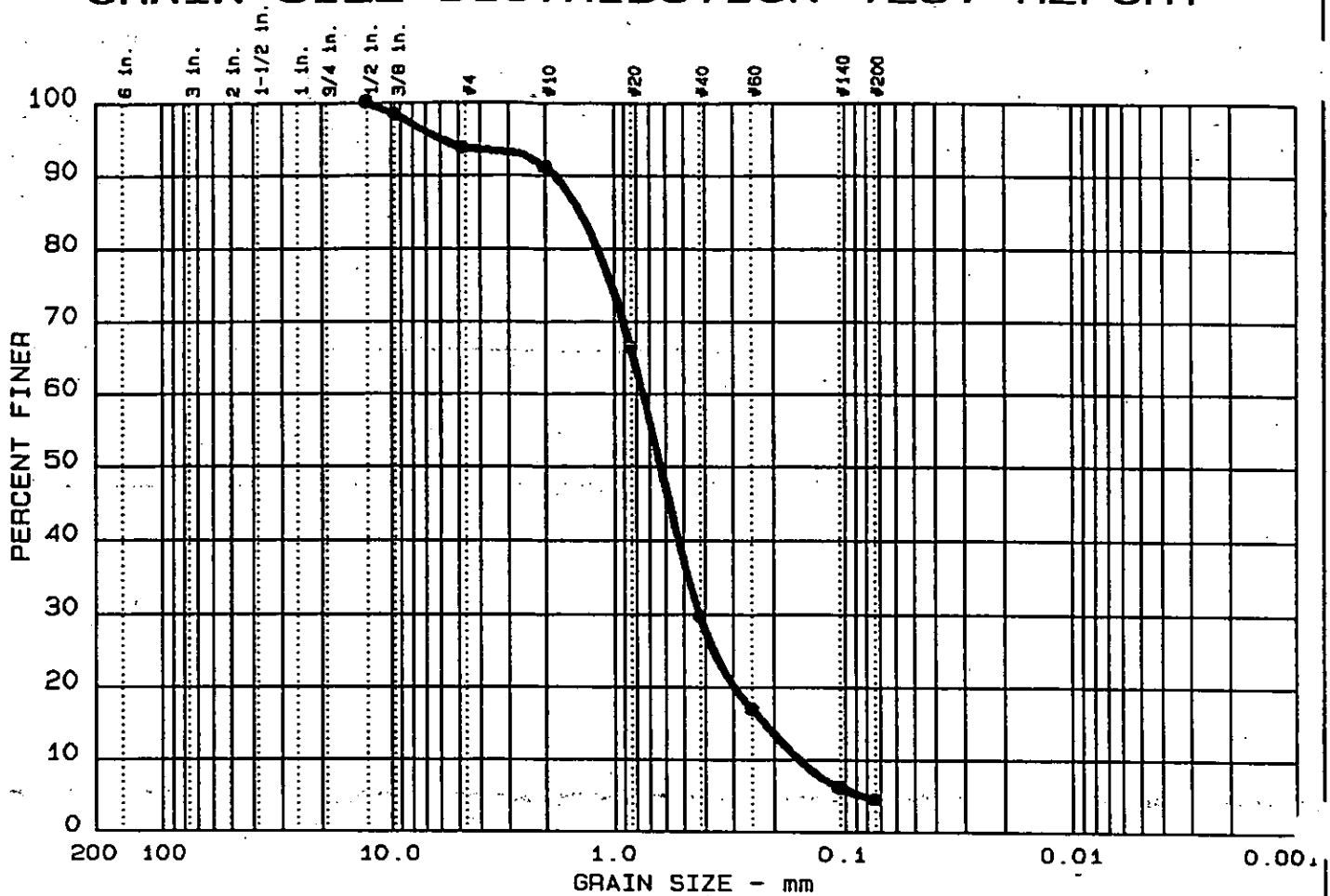
ASTM D422 & D2216

Figure No.





# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	6.2	89.2	4.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.39	0.74	0.62	0.422	0.2188	0.1549	1.55	4.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand	SP	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-27 @ 46.0-47.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *CSO-SS*

Reviewed by: *HT*

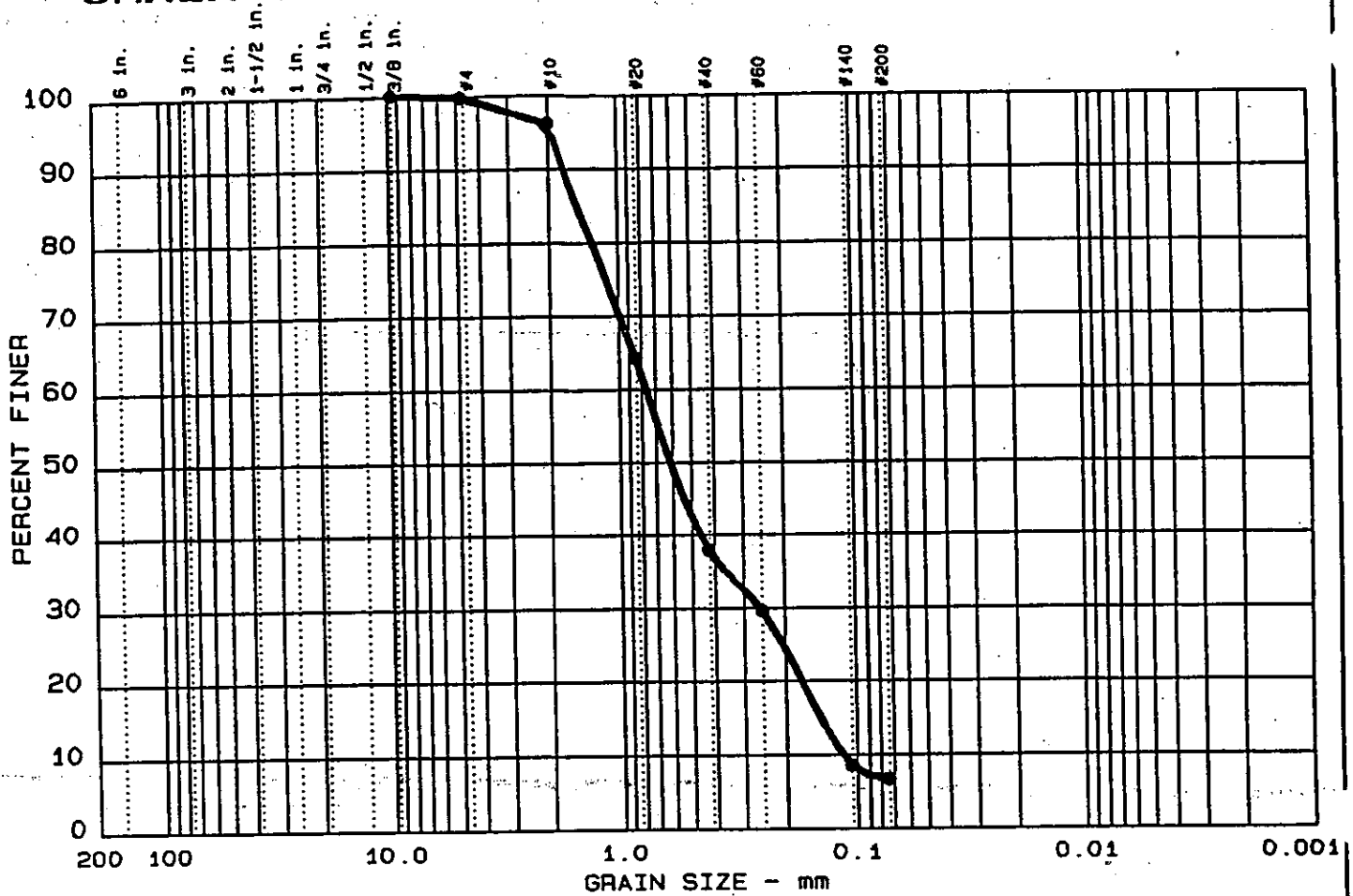
Moisture Content = 15.2%

ASTM D422 & D2216

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.3	92.9	6.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.48	0.76	0.61	0.256	0.1422	0.1143	0.75	6.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-35 @ 58.0-59.5 Ft.

Date: June 23, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

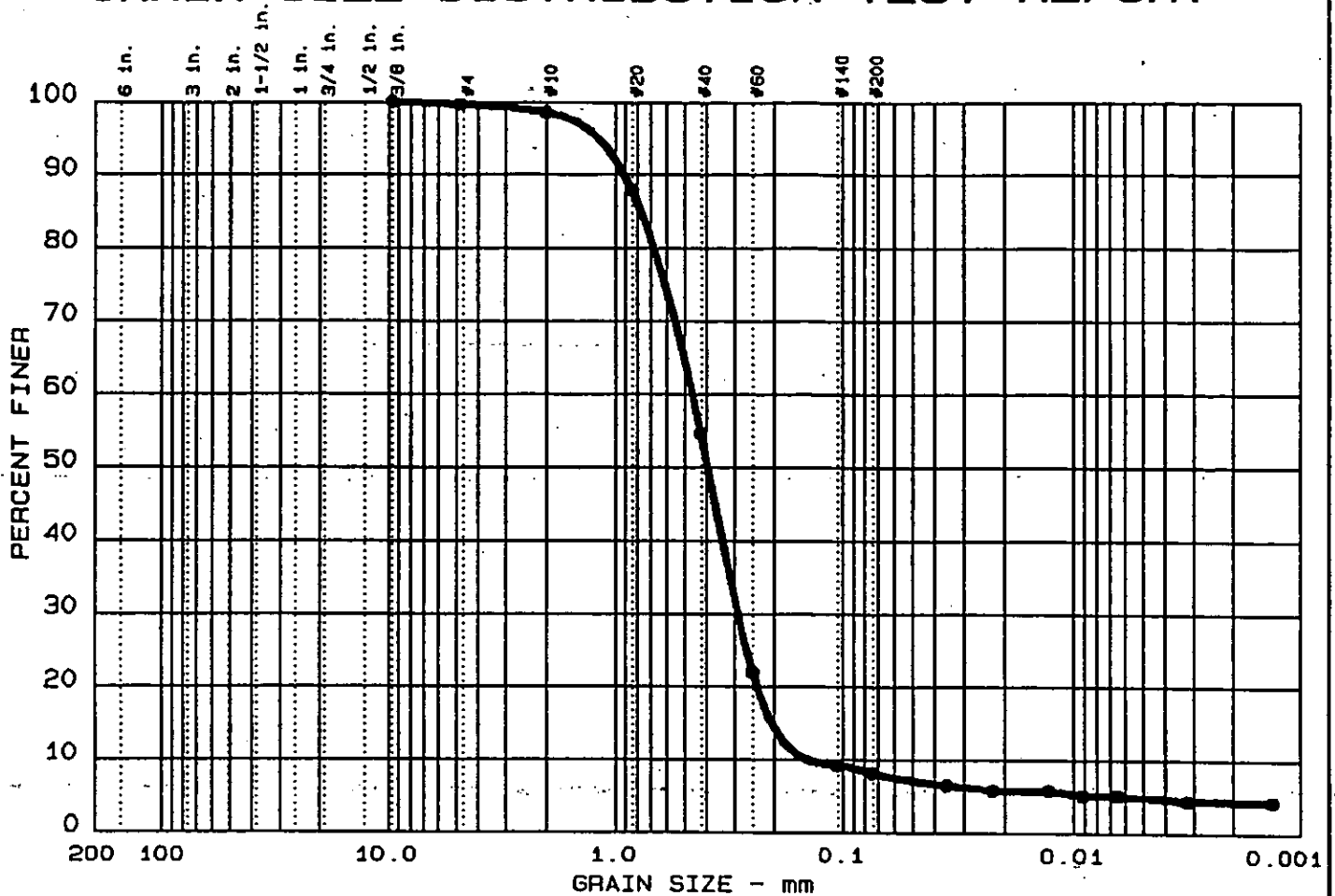
Tested by: SC

Reviewed by: *th*

Moisture Content = 12.5%

ASTM D422 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>

Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.4	91.5	3.2	4.9

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 29	3	0.77	0.46	0.39	0.290	0.2054	0.1454	1.26	3.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-38 @ 62.9-64.4 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: JTM & SC

Reviewed by: H

Moisture Content = 19.5%

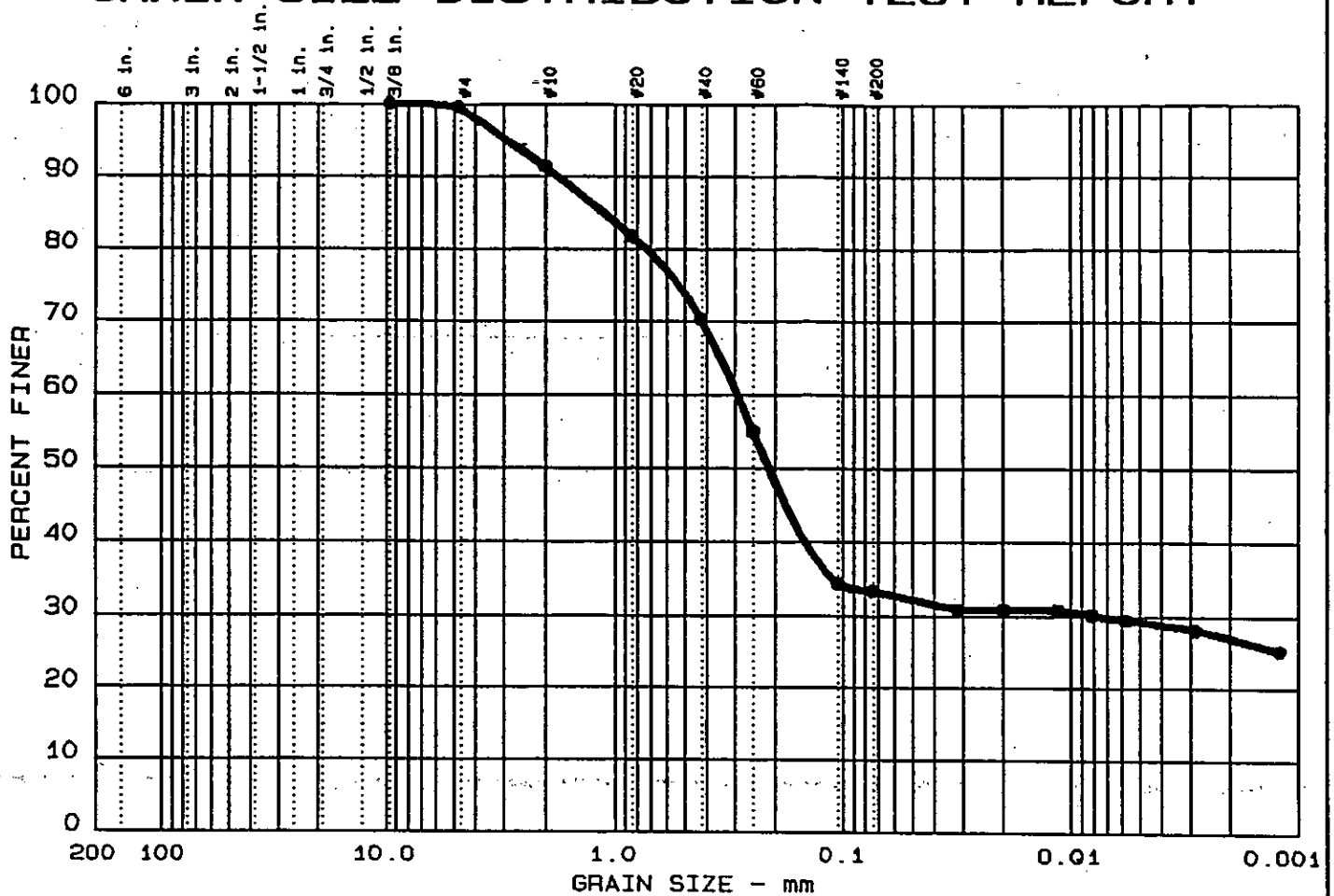
ASTM D422 & D4318

Figure No.

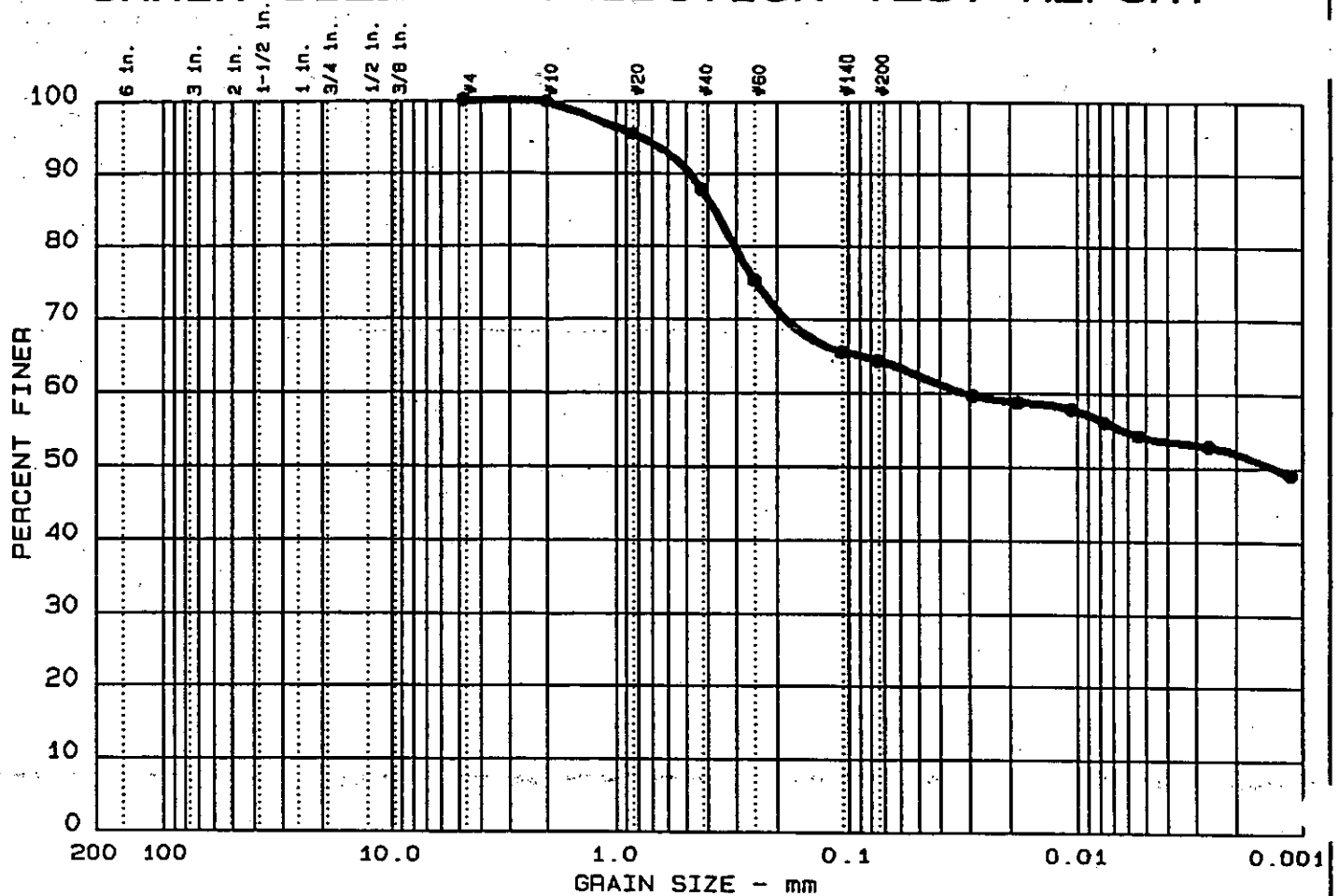




# GRAIN SIZE DISTRIBUTION TEST REPORT



## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
19	0.0	0.0	35.6	10.4	54.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
78	38	0.37		0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Sandy Elastic Silt	MH	A-7-5 (25.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-22 SS-43 @ 70.4-71.9 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: JTM + SC

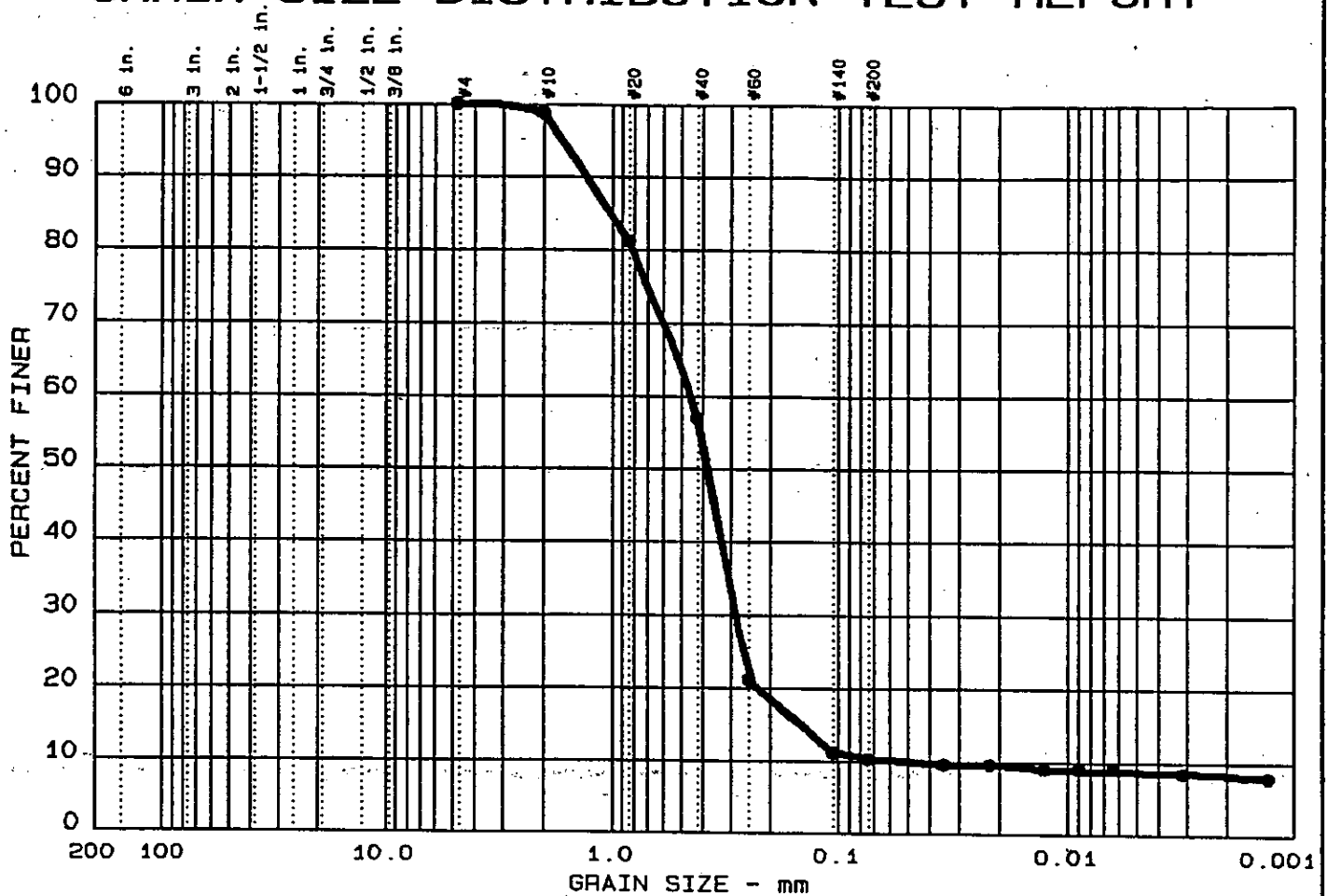
Reviewed by: HD

Moisture Content = 55.1%

ASTM D422 & D4318

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	89.6	1.7	8.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 47	24	1.01	0.45	0.38	0.284	0.1457	0.0466	3.86	9.6

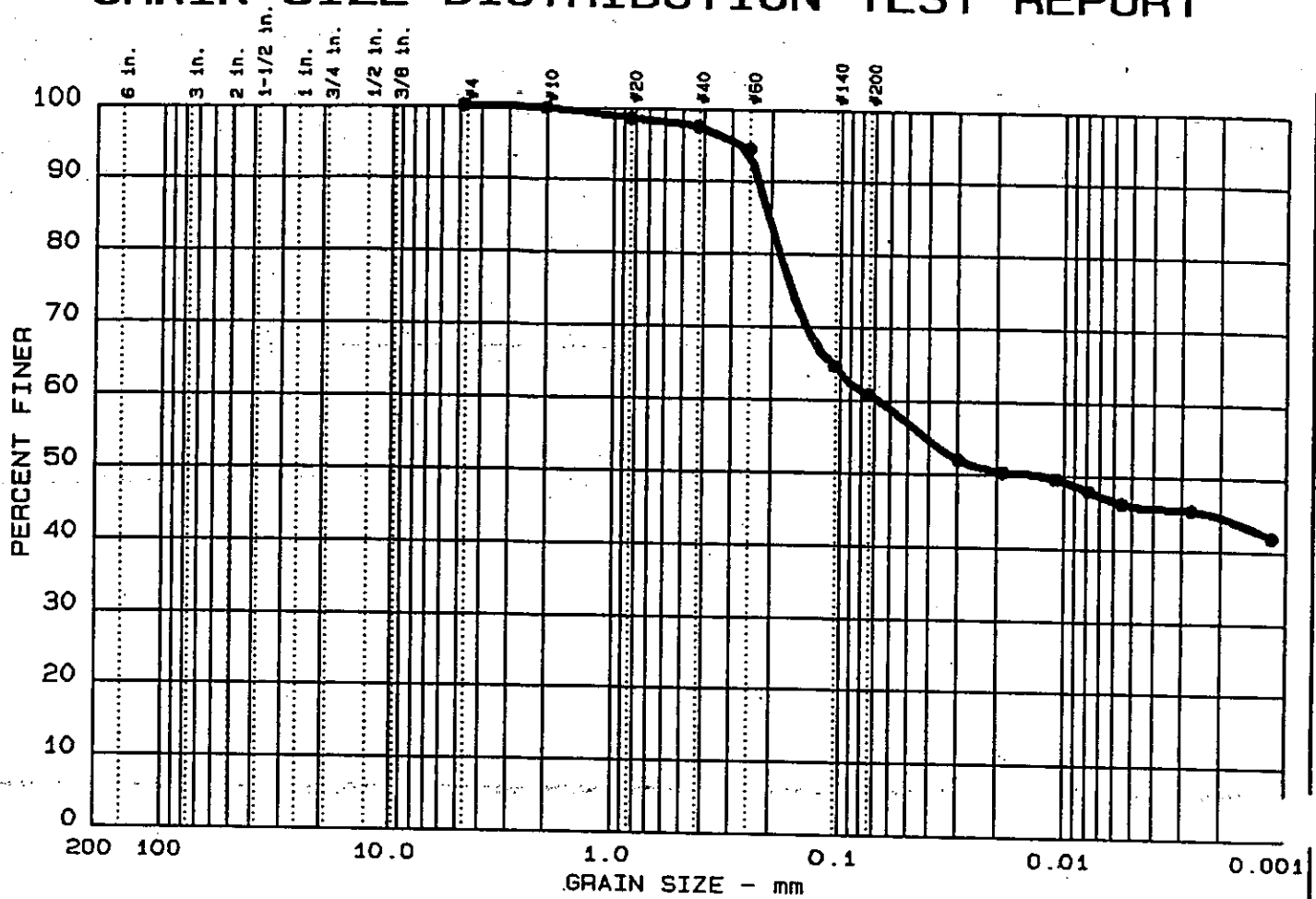
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Clay	SP-SC	A-2-7 (0.0)

Project No.: 50161-7-0108 Task 21 Project: F-Area Northeast Expansion ● Location: FB-22 SS-44 @ 71.9-73.4 Ft.  Date: July 9, 1998	Remarks: Tested by: <i>JTM/SC</i> Reviewed by: <i>HB</i> Moisture Content = 22.3% ASTM D422 & D4318  Figure No.
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	





# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	39.2	14.8	46.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 74	40	0.20		0.01					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Fat Clay	CH	A-7-5 (23.4)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-50 @ 80.9-82.4 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC/STW*

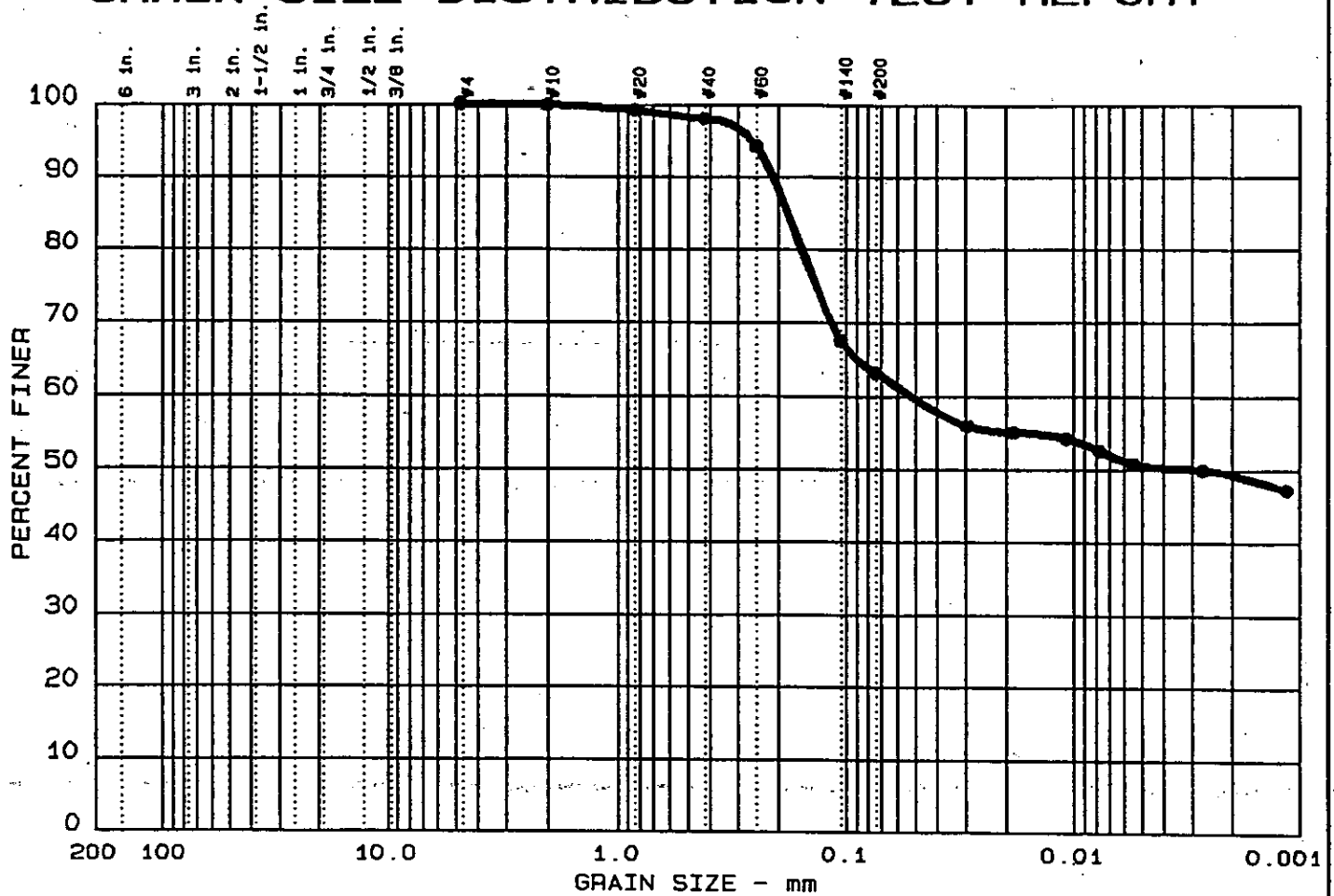
Reviewed by: *KB*

Moisture Content = 51.1%

ASTM D422 & D4318

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	36.8	12.7	50.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 86	50	0.18		0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Sandy Fat Clay	CH	A-7-5 (31.2)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-51 @ 82.8-84.3 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *JTmds*

Reviewed by: *H*

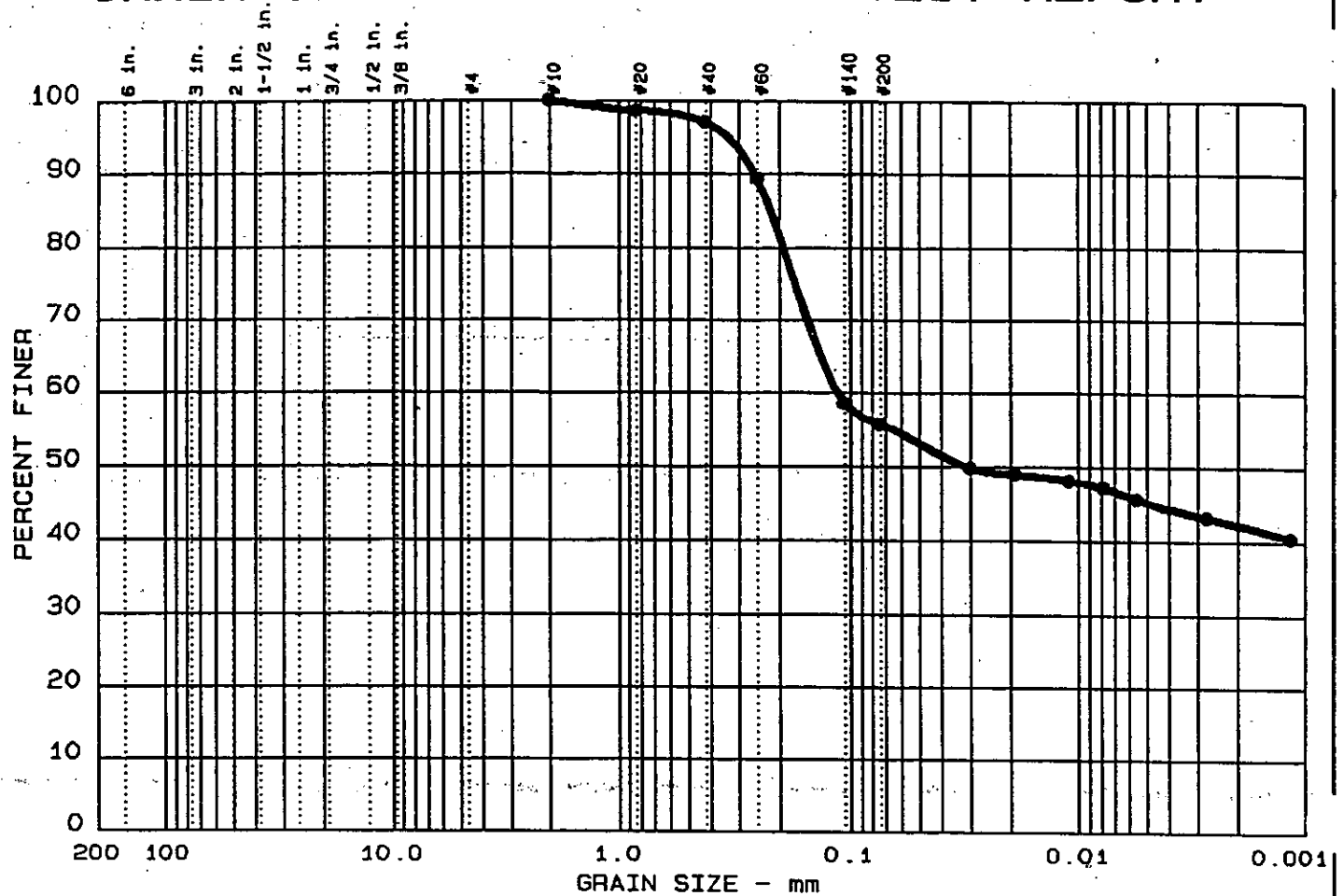
Moisture Content = 54.6%

ASTM D422, D4318 & D2216

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Grain size distribution plot for Test No. 100. The plot shows Percent Finer (0-100) versus Grain Size in mm (log scale, 200 to 0.001). The curve starts at 100% finer for 200 mm and decreases to approximately 30% finer for 0.075 mm. Key sieve sizes are marked at the top: 6 in., 3 in., 2 in., 1-1/2 in., 1 in., 3/4 in., 1/2 in., 3/8 in., #4, #10, #20, #40, #60, #140, #200.

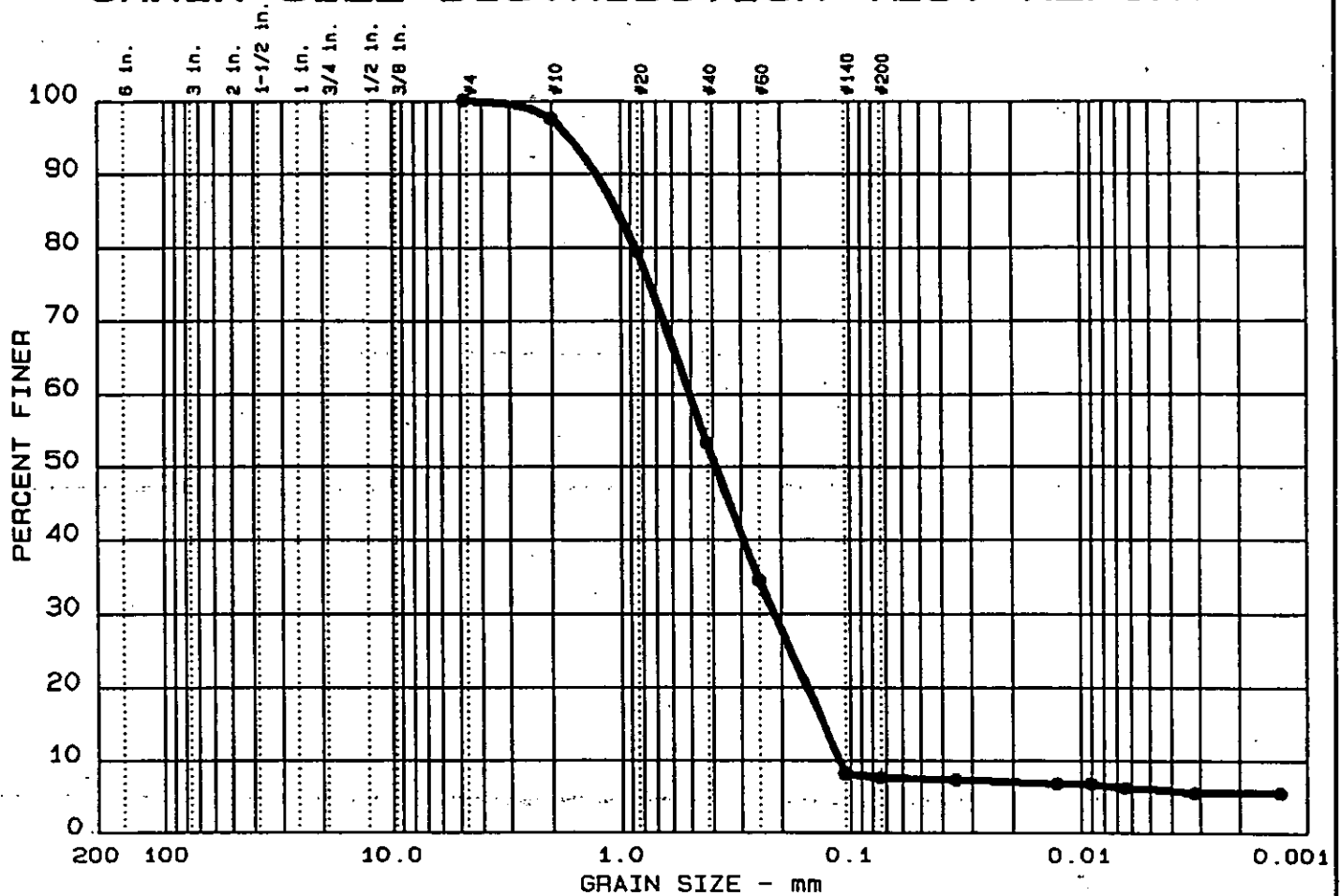
Grain Size (mm)	Percent Finer (%)
200	100
100	100
50	100
25	100
12.5	100
6.3	100
3.15	100
1.6	100
0.85	100
0.425	100
0.25	95
0.15	85
0.075	75
0.0475	65
0.025	50
0.015	45
0.0075	40
0.00425	38
0.0025	35
0.0015	32
0.00075	30

[illegible]

Project No.: 50161-7-0108 Task 21 Project: F-Area Northeast Expansion ● Location: FB-22 SS-53 @ 86.1-87.6 Ft.  Date: July 5, 1998	Remarks: Tested by: <i>SCJ/DM</i> Reviewed by: <i>[Signature]</i> Moisture Content = 67.7% ASTM D422, D4318 & D2216  Figure No.
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	



# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	92.4	1.6	6.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	1.02	0.50	0.38	0.216	0.1314	0.1114	0.83	4.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-55 @ 89.5-91.0 Ft.

Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SCJ/TM*

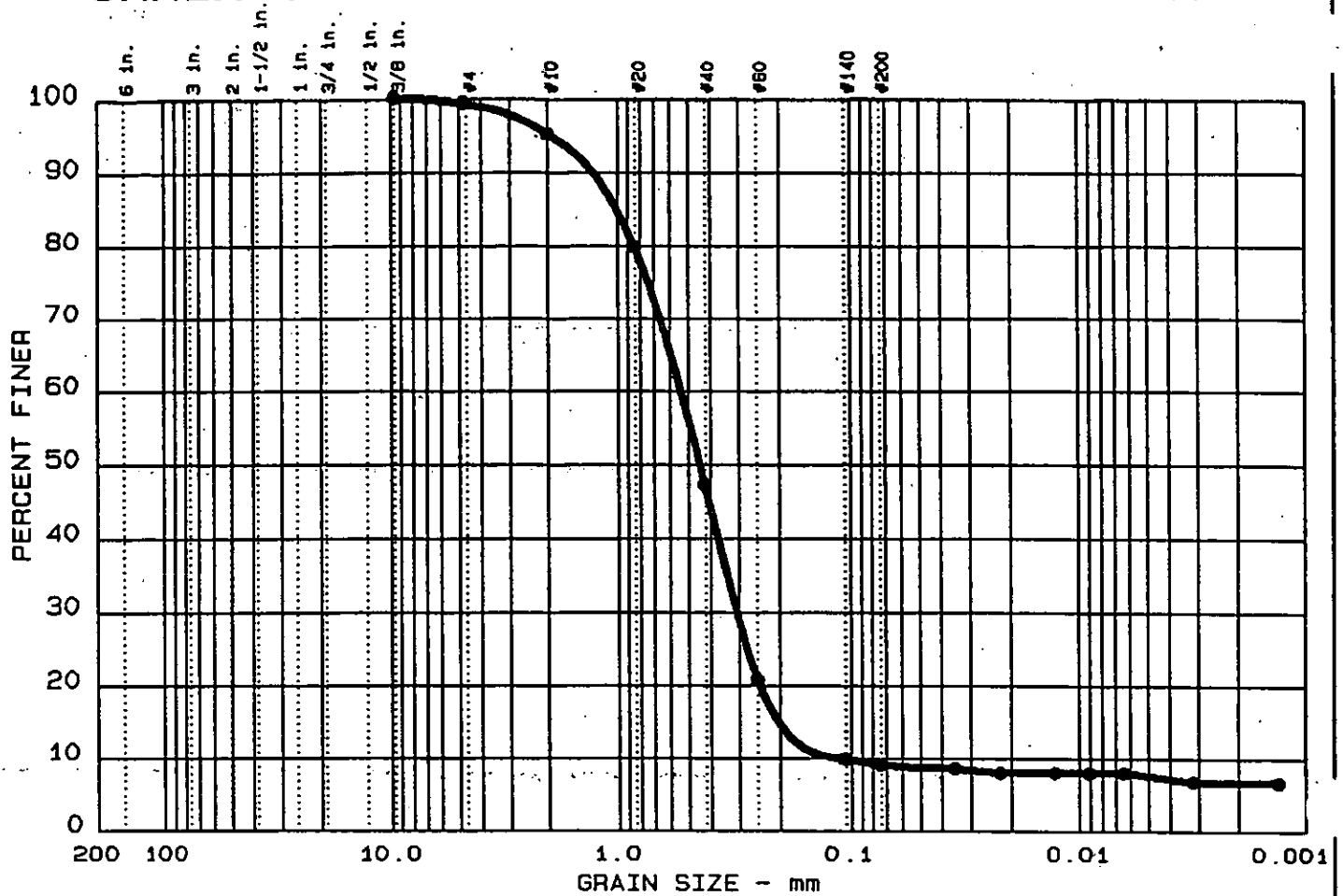
Reviewed by: *lt*

Moisture Content = 23.3%

ASTM D422, D4318 & D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.6	90.2	1.5	7.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
50	27	1.00	0.53	0.44	0.307	0.2028	0.1102	1.61	4.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Clay	SP-SC	A-2-7 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-58 @ 94.0-95.5 Ft.

Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

LAW ENGINEERING, INC.

Remarks:

Tested by: SC + Jm

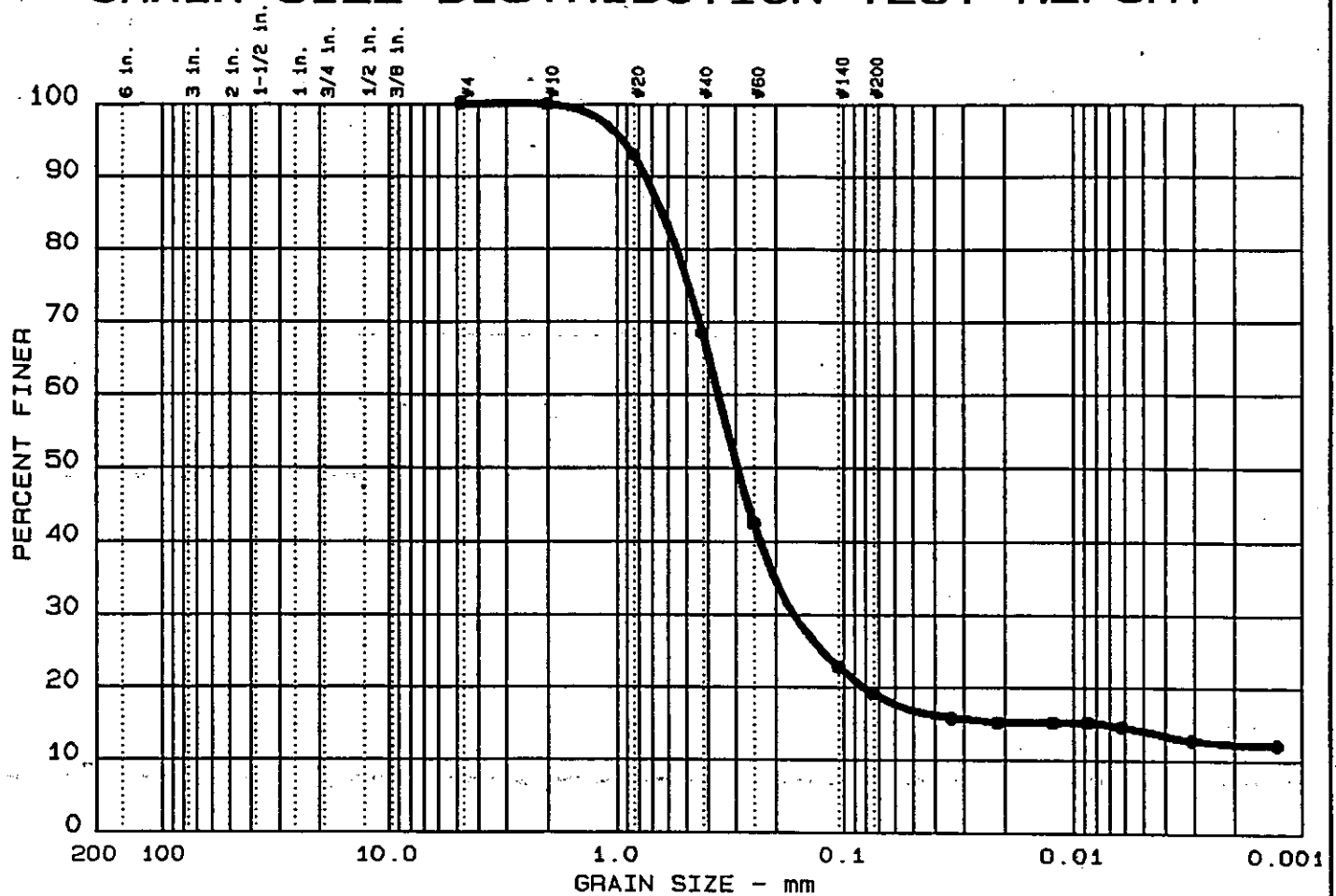
Reviewed by: HB

Moisture Content = 30.1%

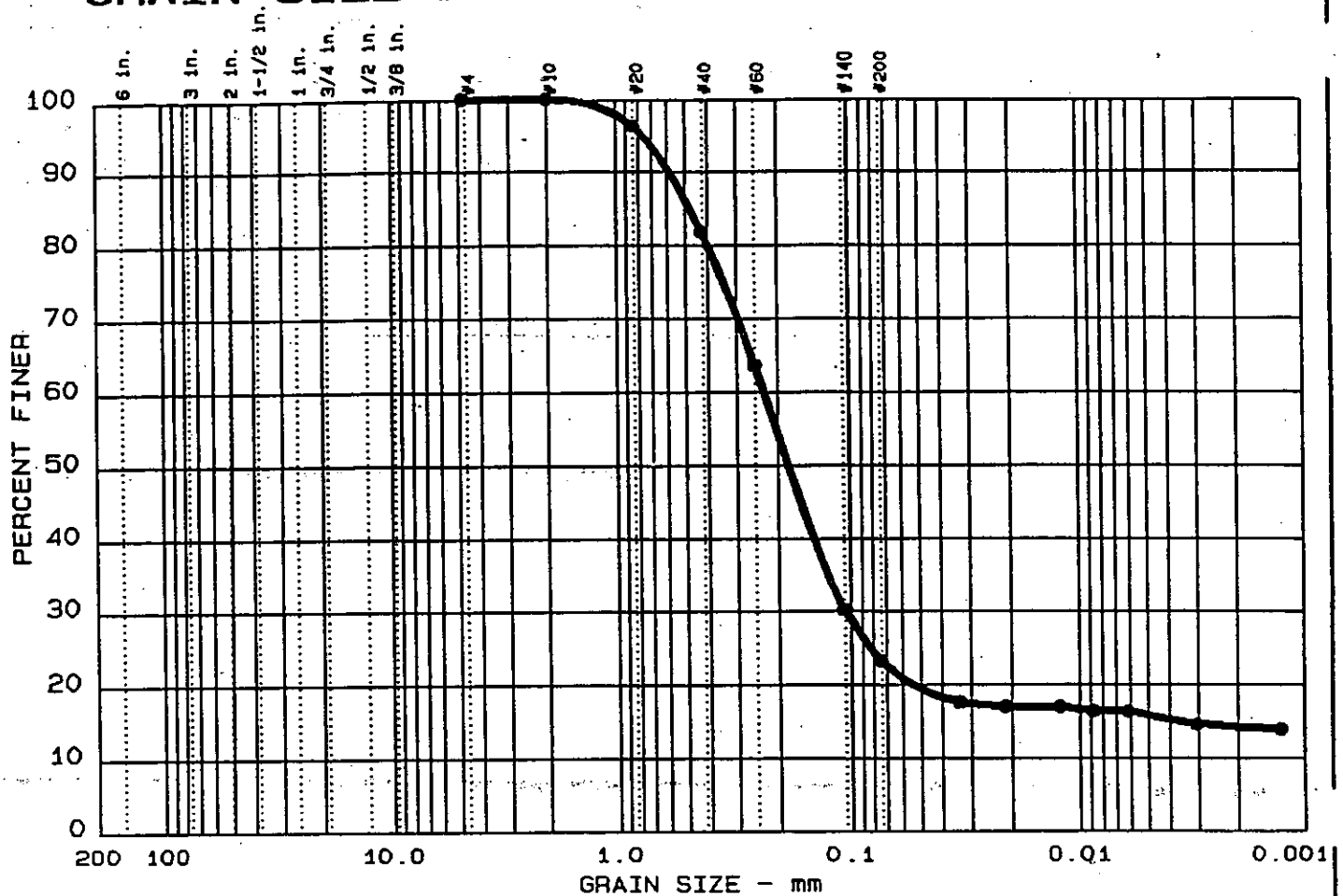
ASTM D422, D4318 & D2216

Figure No.

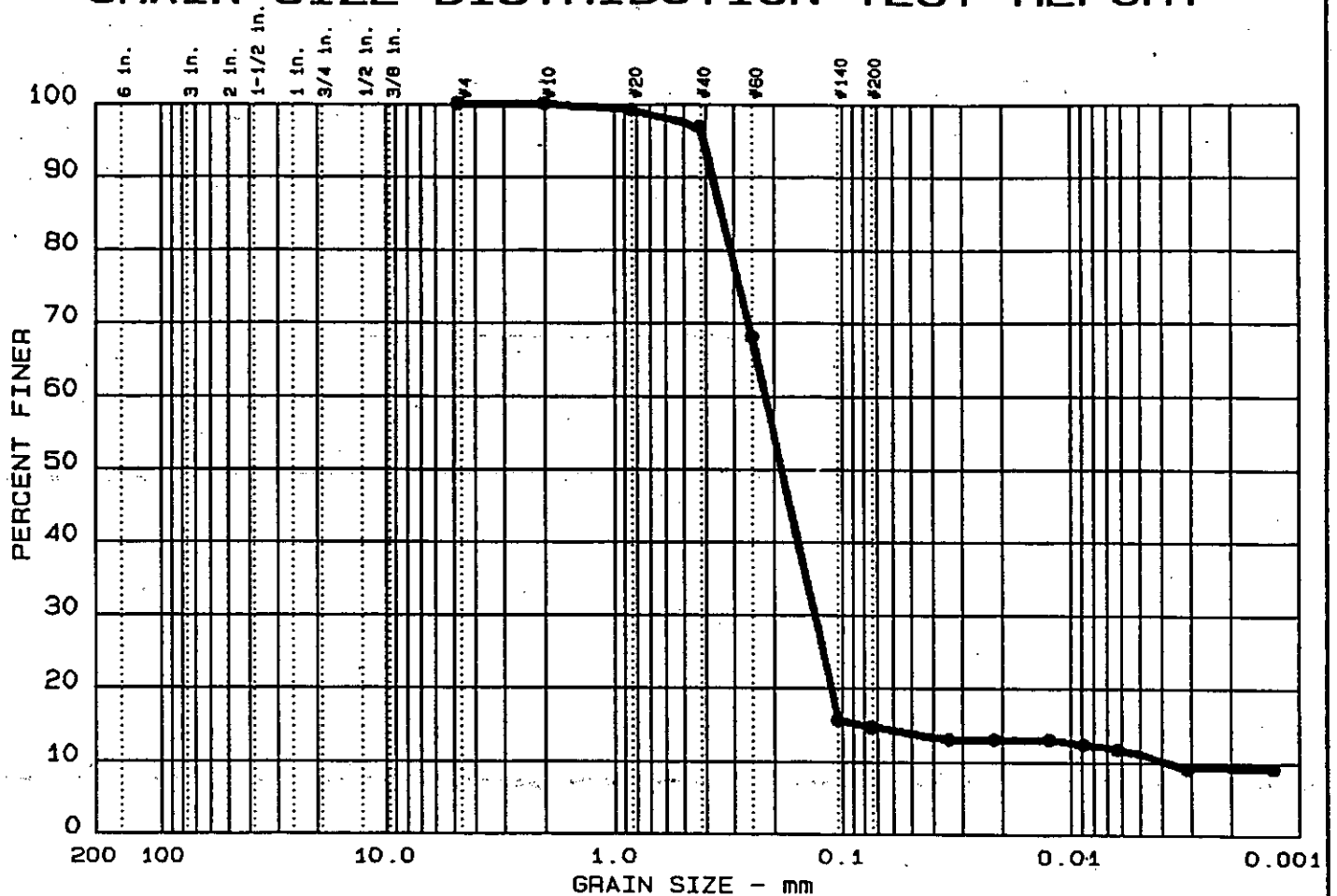
## GRAIN SIZE DISTRIBUTION TEST REPORT



## GRAIN SIZE DISTRIBUTION TEST REPORT



## GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	85.3	3.6	11.1

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.34	0.22	0.19	0.133	0.0811	0.0037	21.90	58.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-62 @ 100.0-101.5 Ft.

Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

## Remarks:

Tested by: *SCJ/TM*

Reviewed by: *HP*

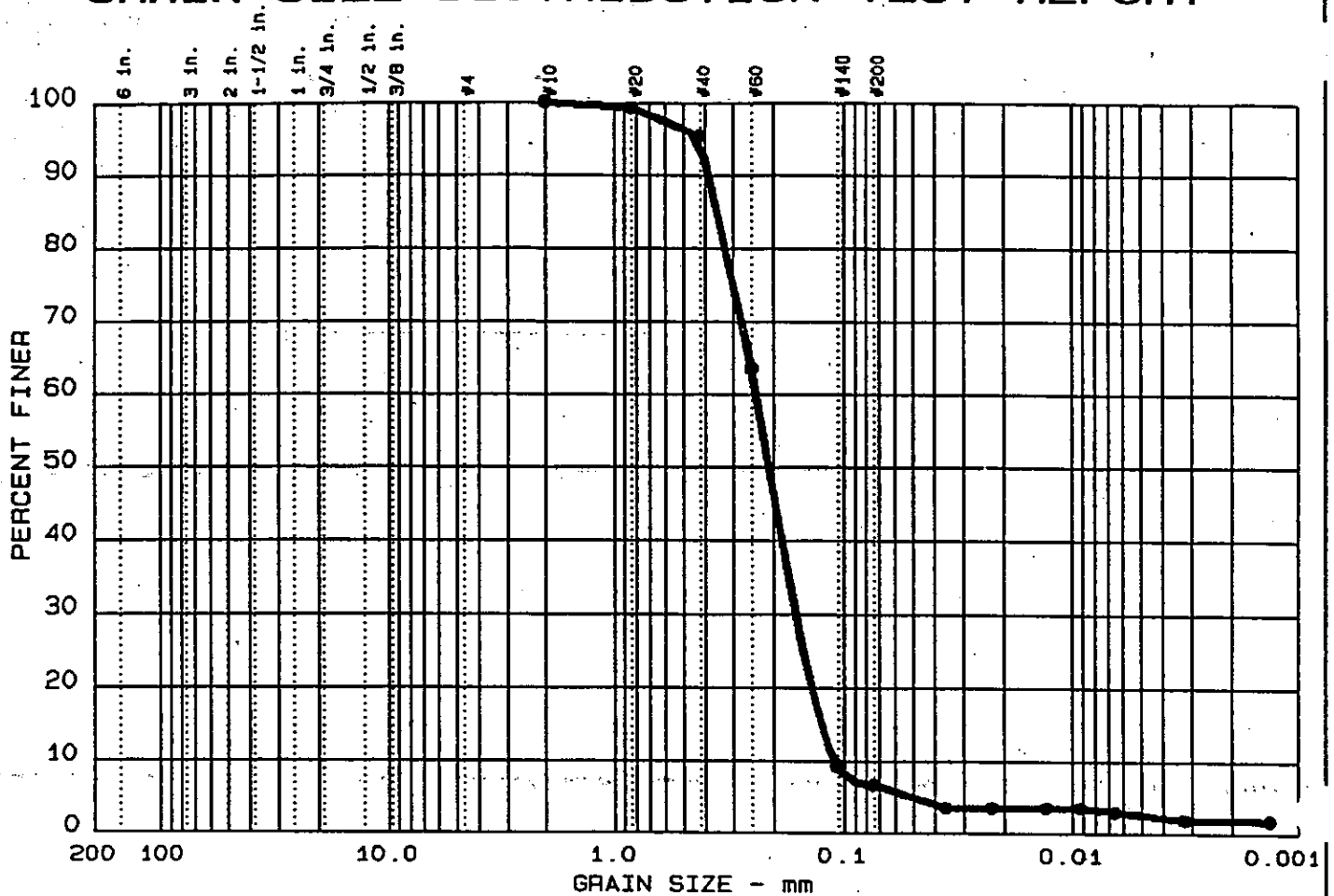
Moisture Content = 34.9%

ASTM D422, D4318 & D2216

Figure No.



## GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	93.3	4.2	2.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.35	0.24	0.21	0.161	0.1237	0.1078	1.00	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly-Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-22 SS-64 @ 103-104.5 Ft.

Date: July 5, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC + JM*

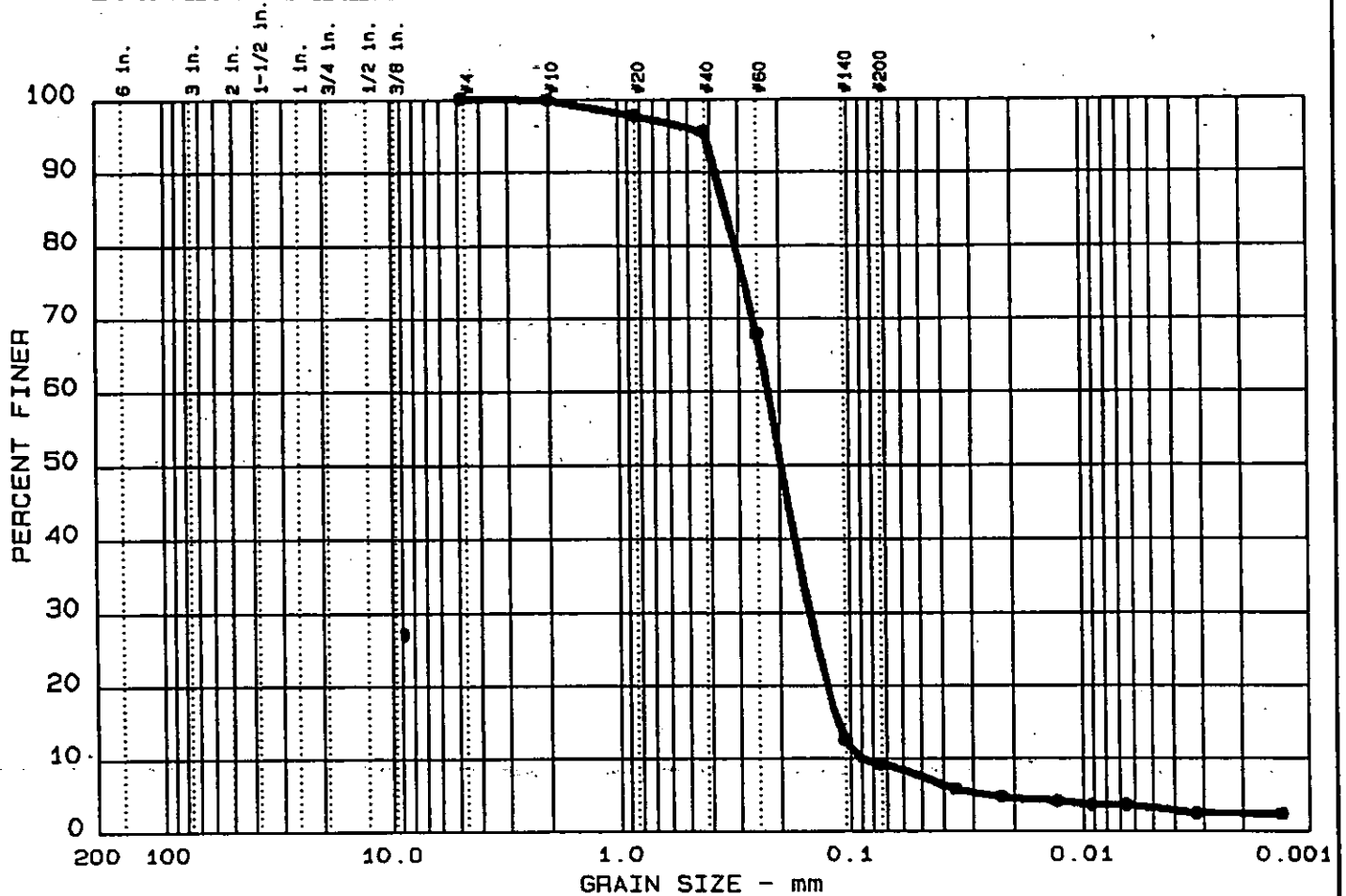
Reviewed by: *HB*

Moisture Content = 23.9%

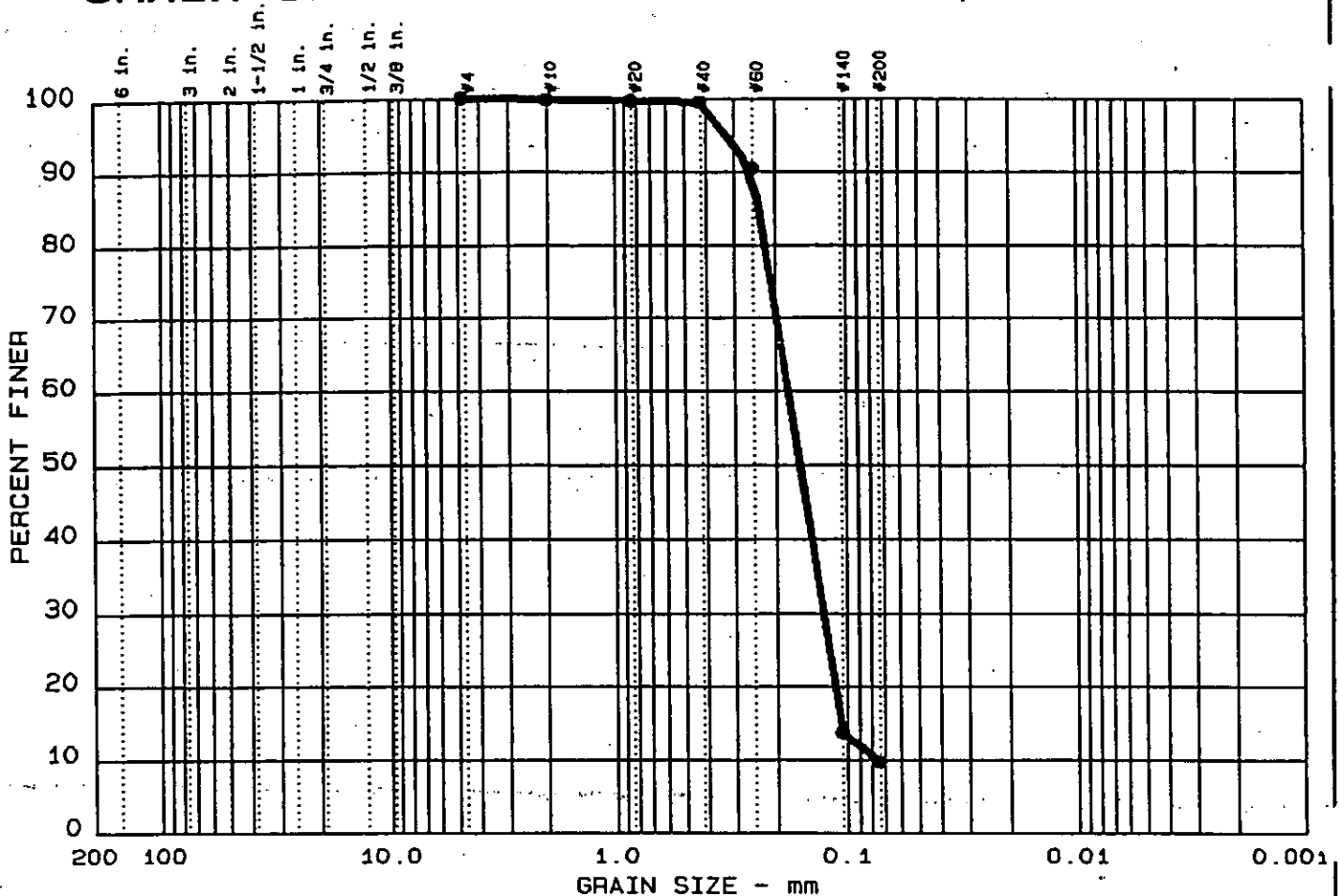
ASTM D422, D4318 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	90.3	9.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.23	0.18	0.16	0.126	0.1064	0.0753	1.19	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
Tan Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 Location: FB-22 SS-67 @ 107.5-109.0 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: SC

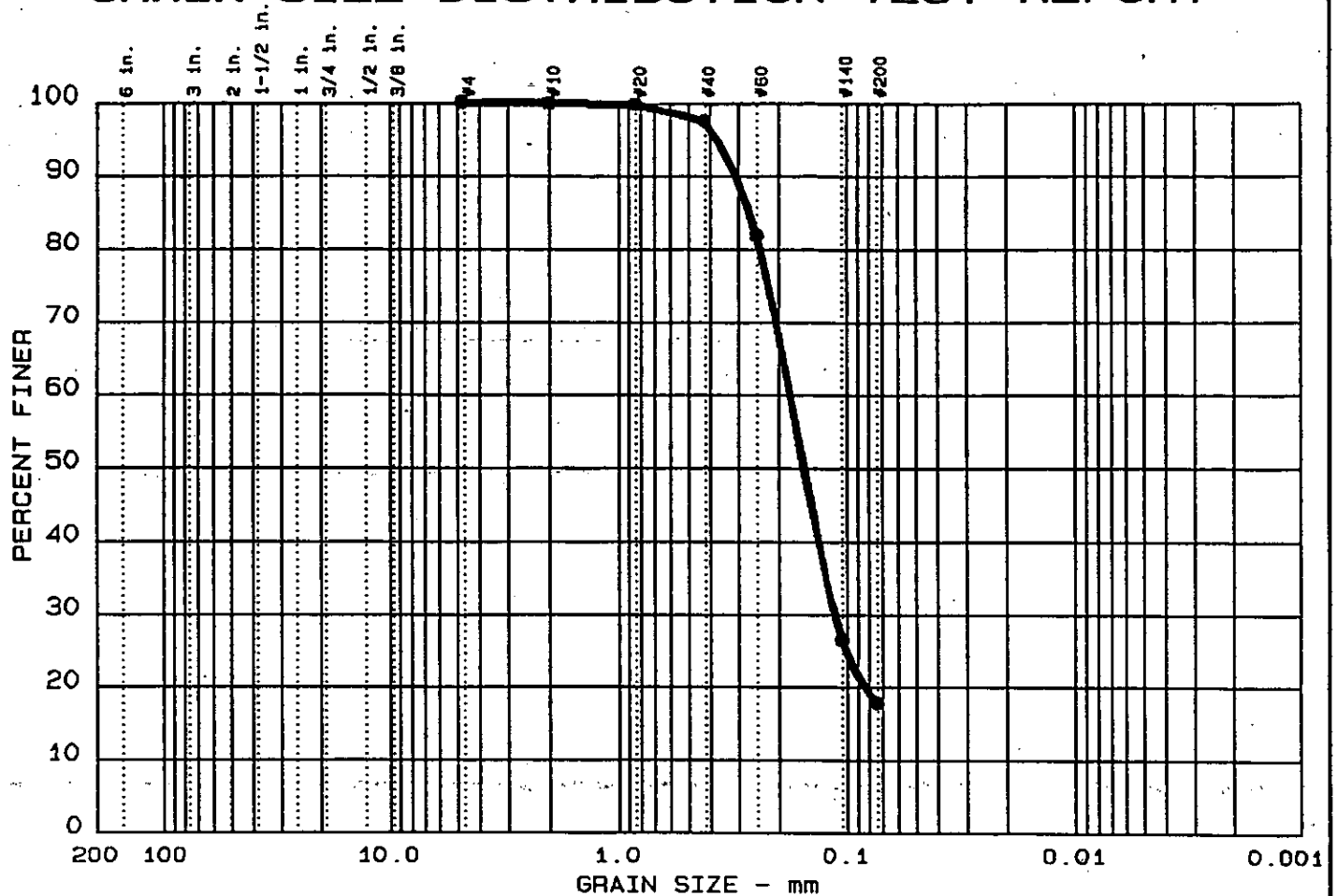
Reviewed by: H

Moisture Content = 24.9%

ASTM D422 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	82.2	17.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.27	0.18	0.16	0.114				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-70 @ 112.0-113.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC*

Reviewed by: *HD*

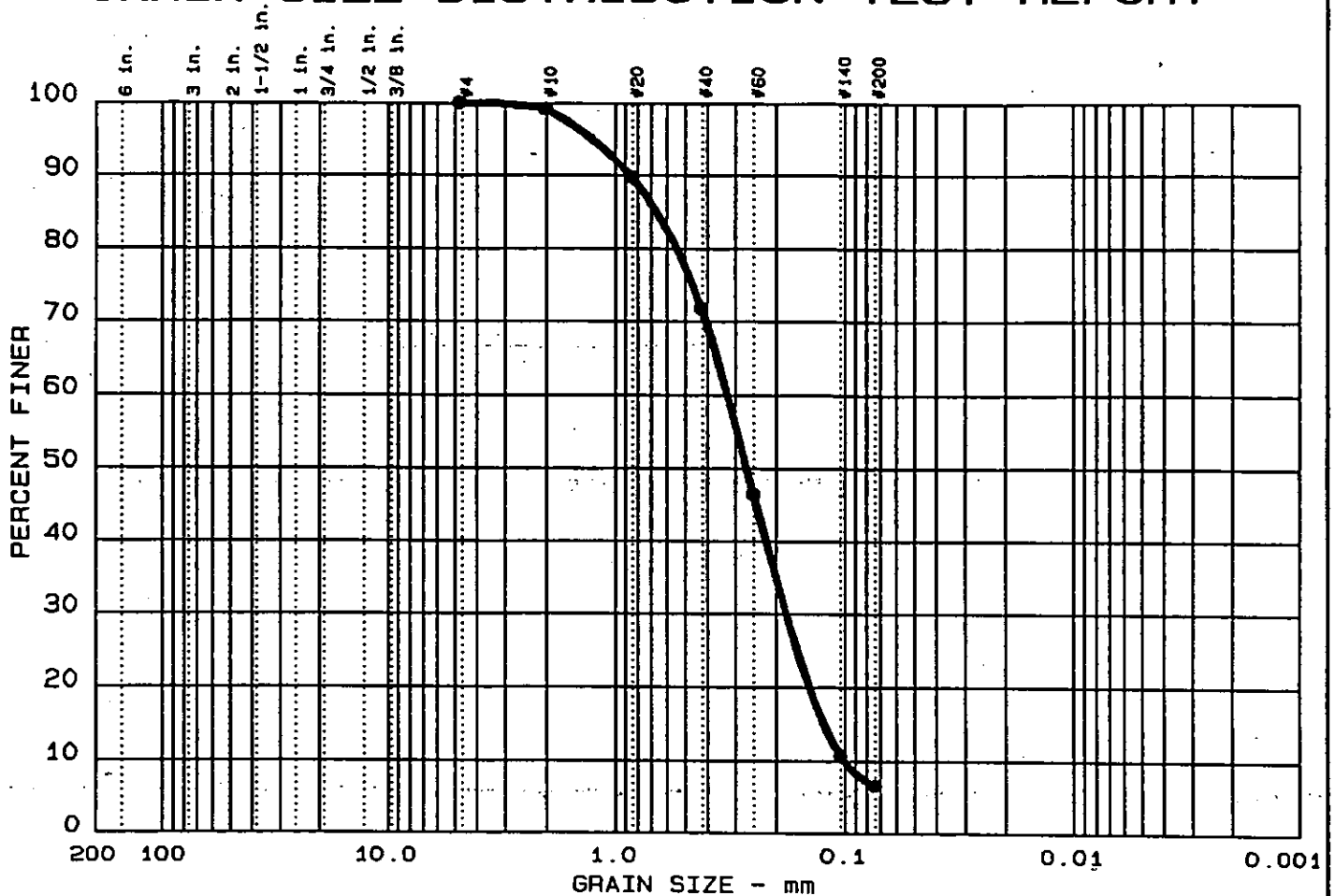
Moisture Content = 34.1%

ASTM D422 & D2216

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	93.4	6.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.65	0.32	0.27	0.181	0.1236	0.1005	1.00	3.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-75 @ 119.5-121.0 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC+CS*

Reviewed by: *HB*

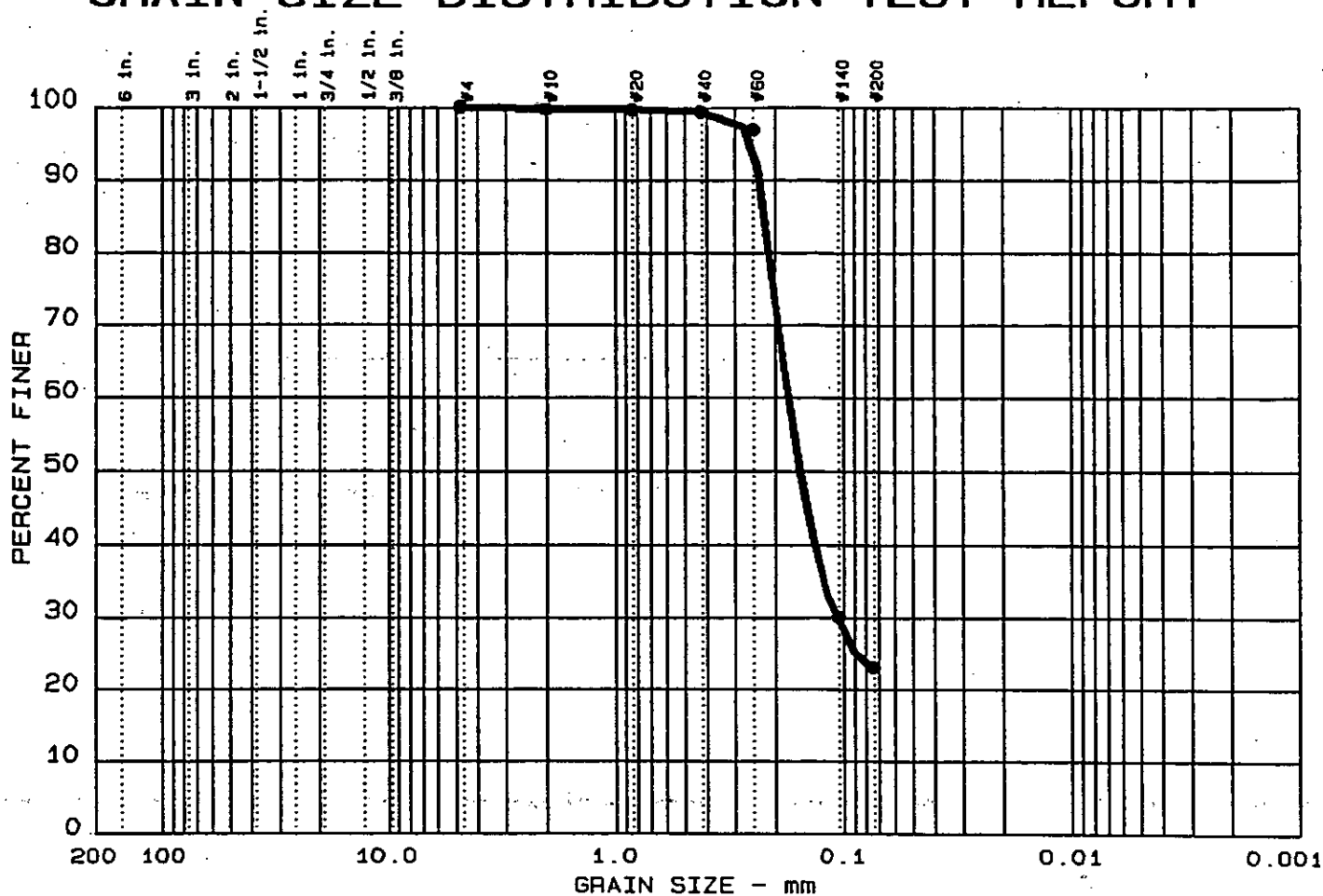
Moisture Content = 17.4%

ASTM D422 & D2216

Figure No.

B-368

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	76.9	23.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.22	0.18	0.16	0.105				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-78 @ 124.0-125.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *CS & SC*

Reviewed by: *HO*

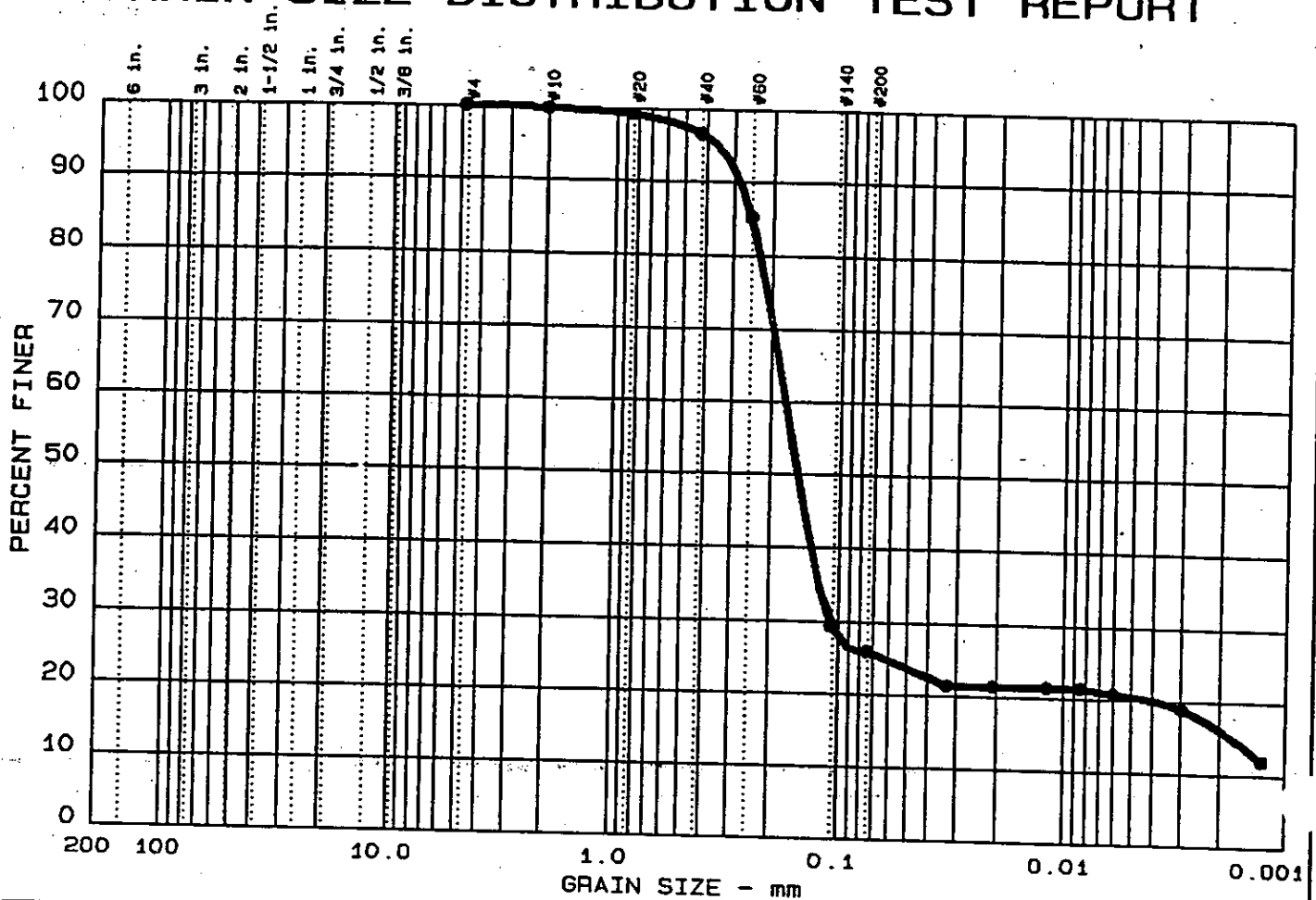
Moisture Content = 37.7%

ASTM D422 & D2216

Figure No.



## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	74.1	5.4	20.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 39	16	0.25	0.17	0.15	0.107	0.0017			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Clayey Sand	SC	A-2-6 (0.7)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-81 @ 128.5-130.0 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: JTMJSC

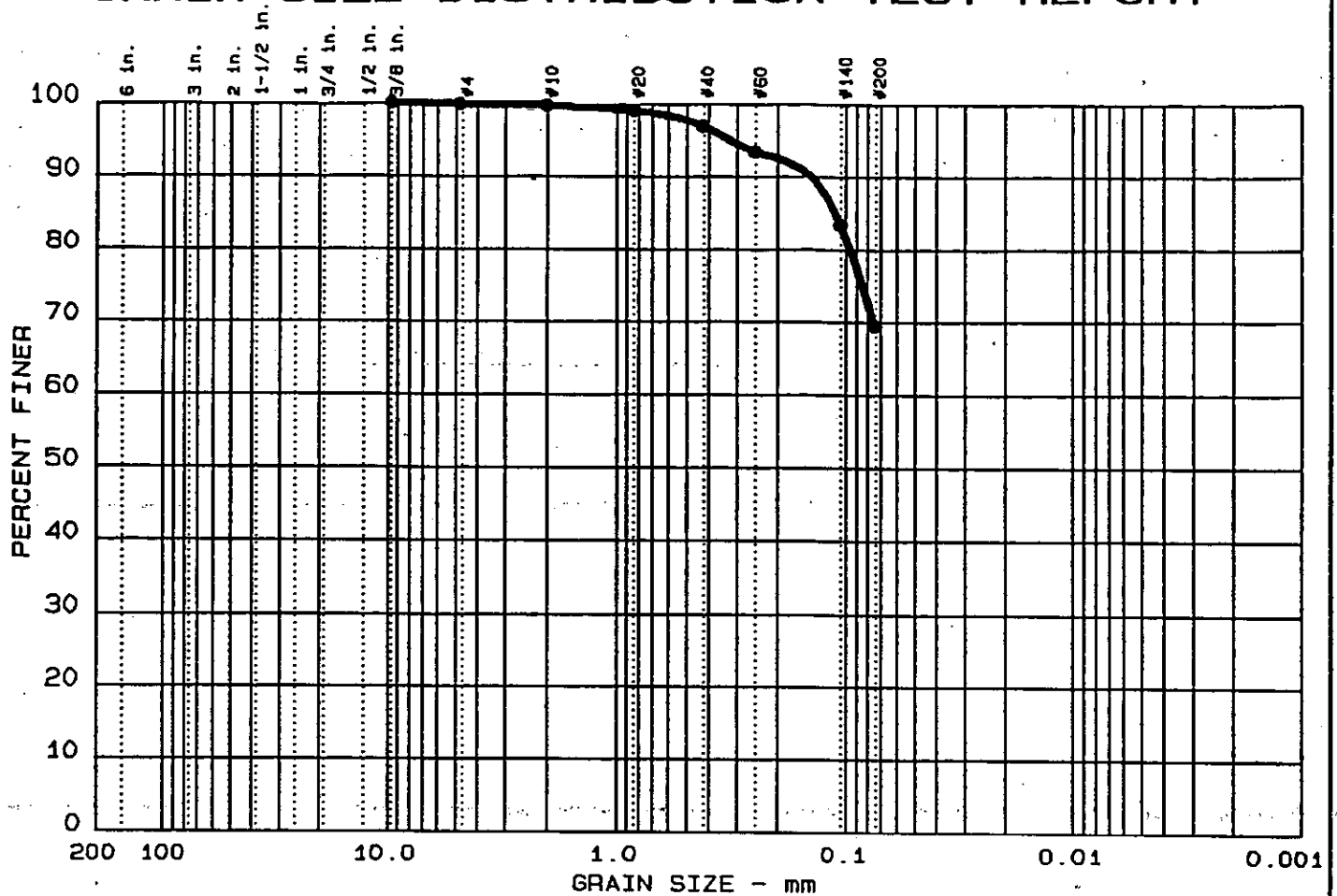
Reviewed by: H

Moisture Content = 27.1%

ASTM D422, D4318 & D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.1	30.4	69.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.11							

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Silt	ML	A-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-84 @ 133.0-134.5 Ft.

Date: June 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC & CS*

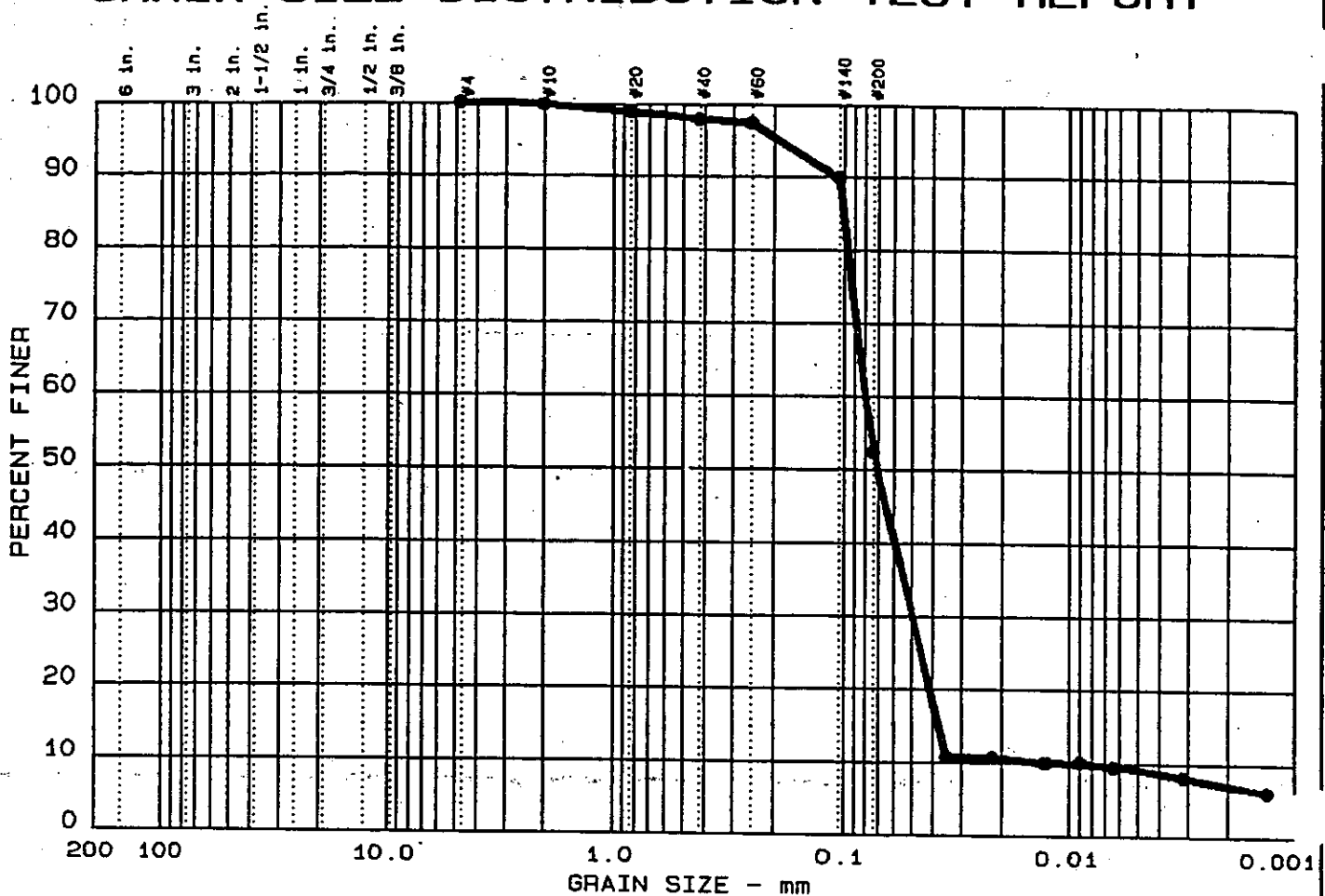
Reviewed by: *HB*

Moisture Content = 34.0%

ASTM D422 & D2216

Figure No.

## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.0	47.6	43.2	9.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.10	0.08	0.07	0.049	0.0374	0.0100	3.03	8.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown-Sandy-Silt	ML	A-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-85 @ 134.5-135.0 Ft.  
 Date: July 9, 1998

## Remarks:

Tested by: JTMJSC

Reviewed by: HJ

Moisture Content = 38.7%

ASTM D422 &amp; D4318

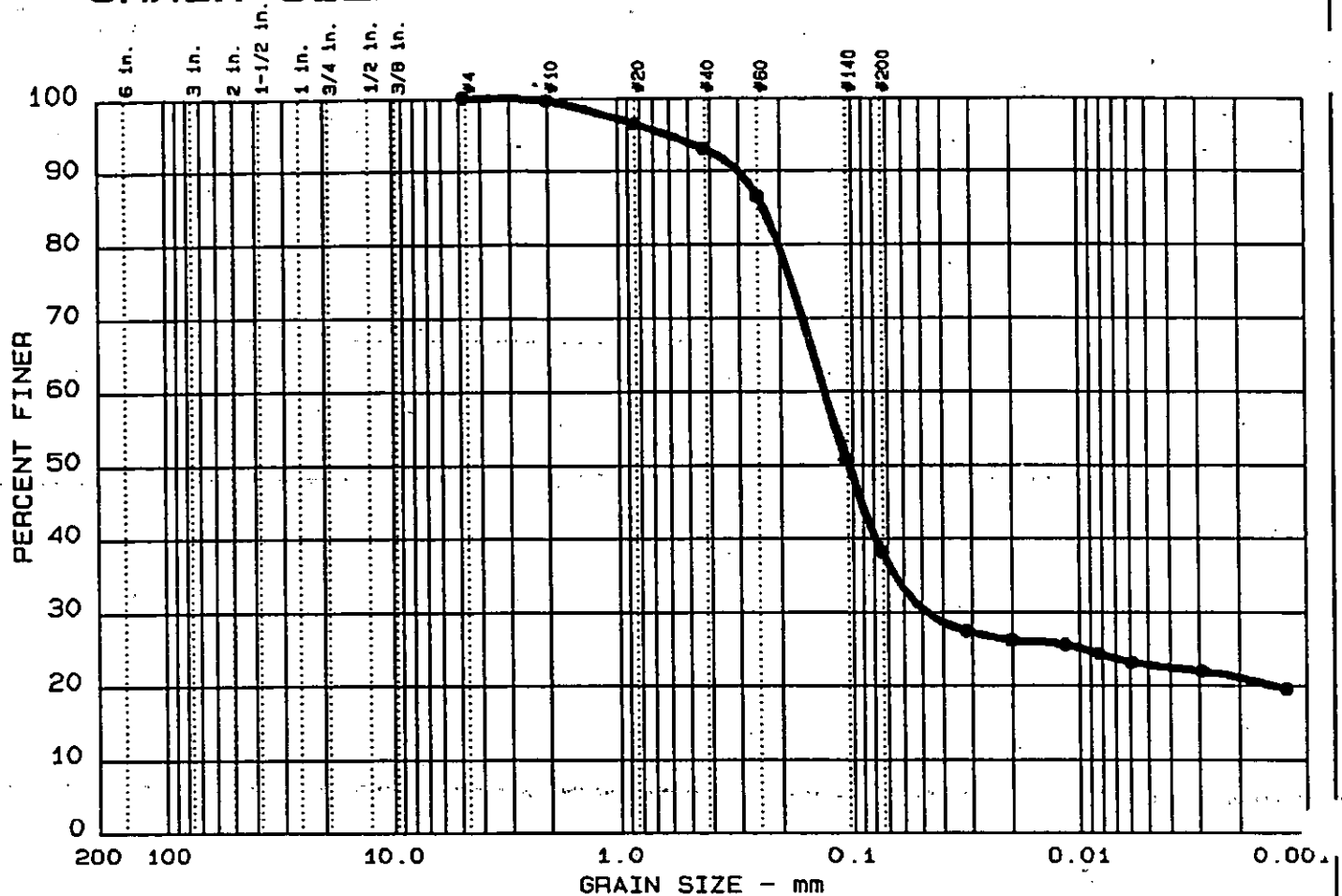
GRAIN SIZE DISTRIBUTION TEST REPORT

LAW ENGINEERING, INC.

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	62.0	15.2	22.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 41	19	0.24	0.13	0.10	0.047				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Gray Clayey Sand	SC	A-7-6 (2.7)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-88 @ 139-140.5 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC & JTM*

Reviewed by: *ND*

Moisture Content = 31.8%

ASTM D422 & D4318

Figure No.

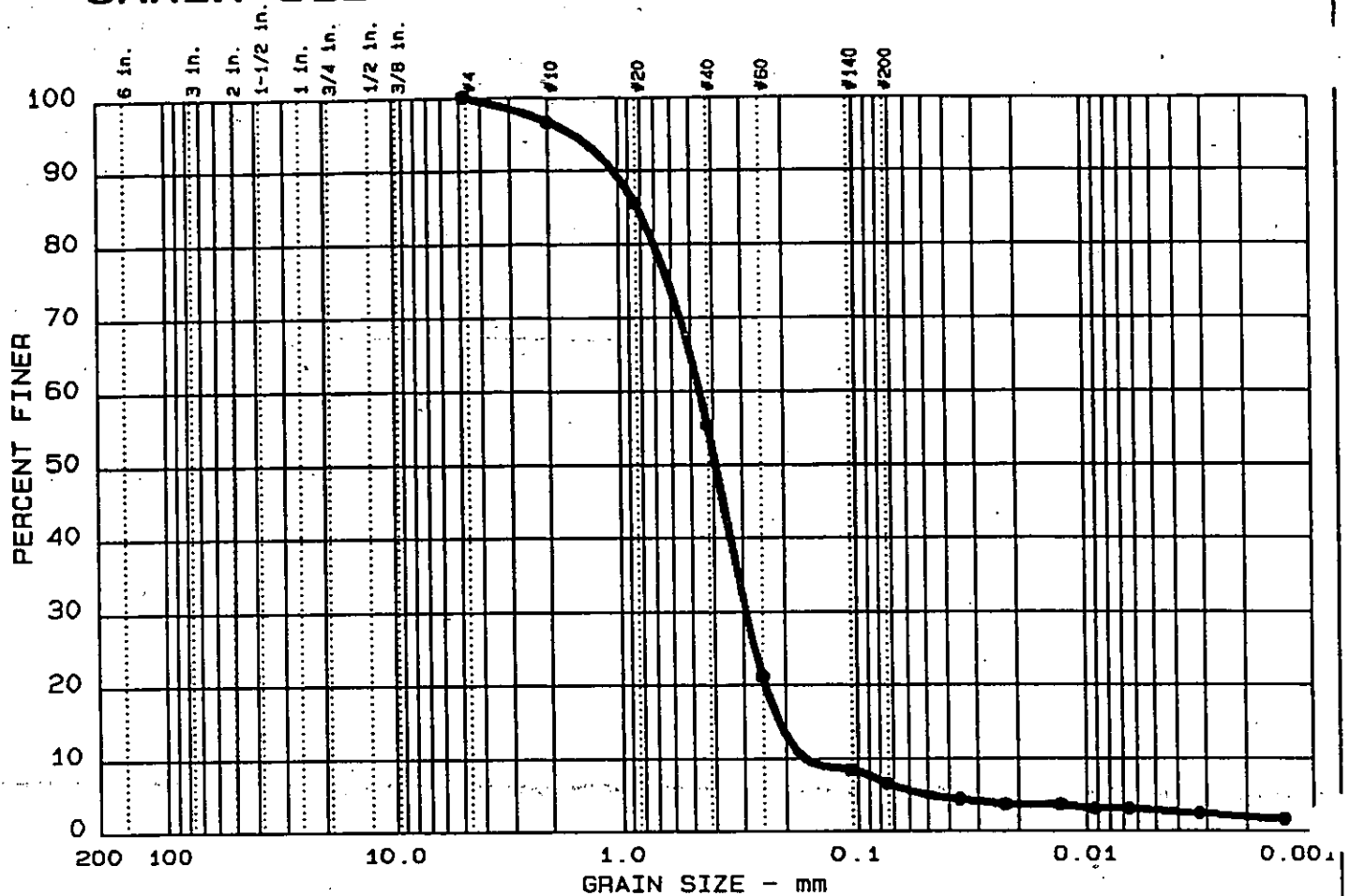
Grain size distribution curve for Test Report No. 1. The graph plots Percent Finer (0-100) against Grain Size in mm (200 to 0.001). The curve shows a sharp drop between 1.0 mm and 0.075 mm, indicating a well-graded material. The data points are plotted and connected by a smooth curve.

Grain Size (mm)	Percent Finer (%)
200	100
100	100
60	100
40	100
30	100
20	100
15	100
10	100
7.5	100
6	100
4.75	100
3.75	100
3.0	100
2.5	100
2.0	100
1.5	100
1.18	100
1.0	100
0.85	100
0.75	100
0.6	100
0.5	100
0.425	100
0.375	100
0.3	100
0.25	100
0.2	100
0.15	100
0.125	100
0.106	100
0.09	100
0.075	100
0.06	100
0.05	100
0.0425	100
0.0375	100
0.03	100
0.025	100
0.02	100
0.015	100
0.0125	100
0.0106	100
0.009	100
0.0075	100
0.006	100
0.005	100
0.00425	100
0.00375	100
0.003	100
0.0025	100
0.002	100
0.0015	100
0.00125	100
0.00106	100
0.0009	100
0.00075	100
0.0006	100
0.0005	100
0.000425	100
0.000375	100
0.0003	100
0.00025	100
0.0002	100
0.00015	100
0.000125	100
0.000106	100
0.00009	100
0.000075	100
0.00006	100
0.00005	100
0.0000425	100
0.0000375	100
0.00003	100
0.000025	100
0.00002	100
0.000015	100
0.0000125	100
0.0000106	100
0.000009	100
0.0000075	100
0.000006	100
0.000005	100
0.00000425	100
0.00000375	100
0.000003	100
0.0000025	100
0.000002	100
0.0000015	100
0.00000125	100
0.00000106	100
0.0000009	100
0.00000075	100
0.0000006	100
0.0000005	100
0.000000425	100
0.000000375	100
0.0000003	100
0.00000025	100
0.0000002	100
0.00000015	100
0.000000125	100
0.000000106	100
0.00000009	100
0.000000075	100
0.00000006	100
0.00000005	100
0.0000000425	100
0.0000000375	100
0.00000003	100
0.000000025	100
0.00000002	100
0.000000015	100
0.0000000125	100
0.0000000106	100
0.000000009	100
0.0000000075	100
0.000000006	100
0.000000005	100
0.00000000425	100
0.00000000375	100
0.000000003	100
0.0000000025	100
0.000000002	100
0.0000000015	100
0.00000000125	100
0.00000000106	100
0.0000000009	100
0.00000000075	100
0.0000000006	100
0.0000000005	100
0.000000000425	100
0.000000000375	1

[illegible]

<p>Project No.: 50161-7-0108 Task 21</p> <p>Project: F-Area Northeast Expansion</p> <p>● Location: FB-22 SS-90 @ 142-143.25 Ft.</p> <p>Date: July 9, 1998</p>	<p>Remarks:</p> <p>Tested by: JTM + EC</p> <p>Reviewed by: HB</p> <p>Moisture Content = 21.2%</p> <p>ASTM D422, D4318 &amp; D2216</p> <p>Figure No.</p>
<p>GRAIN SIZE DISTRIBUTION TEST REPORT</p> <p><b>LAW ENGINEERING, INC.</b></p>	

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	93.5	3.7	2.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.82	0.45	0.39	0.291	0.2133	0.1656	1.13	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly-Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-91 @ 143.5-144.33 Ft.

Date: July 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:

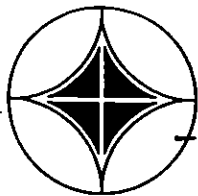
Tested by: *JTM+SC*

Reviewed by: *H*

Moisture Content = 19.8%

ASTM D422, D4318 & D2216

Figure No.



# APPLIED RESEARCH ASSOCIATES, INC.

Engineering and Applied Science

Appendix C

K-TRT-F-00001  
R/O

July 31, 1998

L. Bruce Triplett  
Westinghouse Savannah River Company  
Building 730-2B, Rm. 1086  
Aiken, SC 29808

Dear Mr. Triplett:

Attached is the cone penetrometer data from the 40 test locations conducted as part of the F-Area Expansion Investigation at the Savannah River Site, performed under WSRC subcontract AA82276N, task 10. The tests conducted under this task are summarized in table 1.1.

The information provided for each cone penetration test includes: corrected tip stress, sleeve stress, friction ratio, pore pressure, soil classification based on friction ratio and estimated blow counts. Information provided for the seismic tests include: the recorded compression and shear wave forms, the summary distance versus time of peak graphs for the shear waveforms, and the summary wavespeeds versus depth graphs for the compression and shear waveforms. The computer disks provides the ECP files which contain the plotted data in ASCII format and the seismic velocity files (\*.vel).

This data presented on the attached sheets was obtained and interpreted by qualified ARA personnel in accordance with the requirements of SRS Subcontract No. AA82276N and contained in Specification K-SP-G-00005, Rev. 0. Any special data considerations that should be brought to your attention are summarized in table 1.2. All information contained on the data sheets and computer disks shall be considered as final and correct.

Please feel free to call us if you have any questions regarding the enclosed information.

Sincerely,

David A. Timian, P.E.  
Principal Engineer

DAT:bef

d:\4569\Task reports\4569\_10\_ltr\_rpt2.doc



Table 1.1 Summary of Cone Penetrometer at the F Area, Task 10. *K-TRT-F-00001*  
*R/O*

Test Id.	Filename	Type of Test	Date of Test	Maximum Depth (ft)	Northing (ft)	Easting (ft)	Elevation (ft)	GWT Depth (ft)
CPT-53	404M801.DAT 404M802.DAT	P/S-CPT	3/4/98	149.9	79180.00	54845.00	289.9	66
CPT-103	423F801.DAT 423F802.DAT	P/S-CPT	2/23/98	156.0	79915.18	55260.95	271.7	80
CPT-104	420F802.DAT	P/S-CPT	2/20/98	131.4	79915.04	55385.03	274.2	80
CPT-113	519F801.DAT 519F802.DAT	P/S-CPT	2/19/98	145.7	79781.00	54825.10	276.7	80
CPT-114	519F804.DAT 519F805.DAT	P/S-CPT	2/19/98	145.5	79781.01	54975.05	273.6	80
CPT-115	520F801.DAT	P/S-CPT	2/20/98	144.0	79780.85	55125.05	272.0	80
CPT-116	520F803.DAT	P/S-CPT	2/20/98	132.6	79781.17	55261.01	270.1	80
CPT-126	524F805.DAT 524F806.DAT	P/S-CPT	2/24/98	153.0	79650.07	54825.03	278.9	80
CPT-127	524F802.DAT 524F803.DAT	P/S-CPT	2/24/98	164.7	79650.01	54975.00	279.3	80
CPT-128	523F804.DAT 523F805.DAT	P/S-CPT	2/23/98	147.4	79650.01	55124.95	279.3	80
CPT-129	523F801.DAT 523F802.DAT	P/S-CPT	2/23/98	148.2	79650.00	55261.00	277.2	80
CPT-143	525F804.DAT 525F805.DAT	P/S-CPT	2/25/98	156.1	79442.50	55195.00	286.1	80
CPT-147	424F801.DAT 424F802.DAT	P/S-CPT	2/24/98	157.5	79372.00	55261.00	284.8	61
CPT-148	427F801.DAT 427F802.DAT	P/S-CPT	2/27/98	157.5	79372.07	55385.00	284.1	80
CPT-149	404M804.DAT 405M803.DAT	P/S-CPT	3/4/98	143.3	79372.04	55517.96	274.8	80
CPT-151	424F804b.DAT 424F805b.DAT	P/S-CPT	2/24/98	156.1	79305.00	55195.00	290.1	80
CPT-155	518F801.DAT 518F802.DAT	P/S-CPT	2/18/98	162.0	79245.00	55261.00	289.1	80
CPT-156	518F804.DAT 518F805.DAT	P/S-CPT	2/18/98	161.0	79244.97	55384.98	289.2	80
CPT-157	405M804.DAT 405M805.DAT	P/S-CPT	3/5/98	152.4	79244.98	55517.98	283.1	80
CPT-159	417F801.DAT 417F802.DAT	P/S-CPT	2/17/98	164.8	79171.10	55195.00	293.7	80
CPT-163	525F801.DAT 525F802.DAT	P/S-CPT	2/25/98	165.0	79095.10	55261.00	293.9	80
CPT-167	411M801b.DAT	P/S-CPT	3/11/98	116.0	79029.91	55330.05	196.7	80
CPT-171	419M804.DAT 419M805.DAT	P/S-CPT	3/19/98	132.6	78900.00	55385.00	298.5	80
CPT-172	325M801.DAT 325M802.DAT	P/S-CPT	3/25/98	162.5	78900.00	55518.00	295.4	80

Table 1.1 Summary of Cone Penetrometer at the F Area, Task 16- TRT-F-0000/  
R/O

Test Id.	Filename	Type of Test	Date of Test	Maximum Depth (ft)	Northing (ft)	Easting (ft)	Elevation (ft)	GWT Depth (ft)
CPT-173	327M804.DAT 327M805.DAT	P/S-CPT	3/27/98	150.3	78900.00	55650.00	297.6	80
CPT-174	410M804b.DAT 410M805b.DAT	P/S-CPT	3/10/98	171.5	78770.00	55330.00	301.5	80
CPT-175	320M801.DAT 320M802.DAT	P/S-CPT	3/20/98	167.0	78770.00	55451.00	303.1	80
CPT-176	326M805.DAT 326M806.DAT	P/S-CPT	3/26/98	146.8	78770.00	55583.00	297.6	80
CPT-177	327M801.DAT 327M802.DAT	P/S-CPT	3/27/98	132.6	78770.00	55715.00	301.7	80
CPT-178	419M801.DAT 419M802.DAT	P/S-CPT	3/19/98	168.5	78640.00	55385.00	305.6	80
CPT-179	324M804.DAT 324M805.DAT	P/S-CPT	3/24/98	124.4	78640.00	55518.00	301.4	80
CPT-180	326M802.DAT 326M803.DAT	P/S-CPT	3/26/98	120.1	78640.00	55650.00	302.3	80
CPT-181	410M801.DAT 410M802.DAT	P/S-CPT	3/10/98	138.7	78510.00	55330.00	304.9	80
CPT-182	323M801.DAT 323M802.DAT	P/S-CPT	3/23/98	140.1	78510.00	55451.00	304.8	80
CPT-183	325M804.DAT 325M805.DAT	P/S-CPT	3/25/98	115.0	78510.00	55583.00	301.7	80
CPT-185	418M807.DAT 418M808.DAT	P/S-CPT	3/18/98	136.8	78380.00	55385.00	223.7	80
CPT-186	324M801.DAT 324M802.DAT	P/S-CPT	3/24/98	155.0	78380.00	55518.00	304.5	80
CPT-188	409M801.DAT 409M802.DAT	P/S-CPT	3/9/98	142.0	78250.00	55330.00	310.4	66
CPT-189	323M804.DAT 323M805.DAT	P/S-CPT	3/23/98	134.2	78250.00	55451.00	309.2	80
CPT-196	314A801.DAT 314A802.DAT	P/S-CPT	4/14/98	122.1	79330.00	55135.00	290.1	66

## Task 10 -

## Addendum to Cover Letter

## Special Analysis Considerations

Test Id.	Date	Special Analysis Considerations
CPT-53	3/4/98	The compression wave trace of this particular test displays shear wave noise. The compression wave "time of arrival" was chosen for analysis rather than the "time of peak".
CPT-103	2/23/98	Shear wave traces not reported due to broken source hammer. Due to the evolution of the compression wave form, the time of peak selection was changed between 18.3-24.4 ft (distance). Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.
CPT-104	2/20/98	One of the two opposing shear wave traces was omitted from the analysis. The source hammer was partially broken on one side causing unreliable data gathered on one of the traces. Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale.
CPT-113	2/19/98	Compression wave time histories contain background noise that could not be filtered. Note that the background noise has no effect on the resultant wavespeed.
CPT-114	2/19/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 110.3-113.2 ft (distance). Compression wave time histories contain background noise that could not be filtered. Note that the background noise has no effect on the resultant wavespeed.
CPT-115	2/20/98	Compression wave time histories contain background noise that could not be filtered. Note that the background noise has no effect on the resultant wavespeed.
CPT-116	2/20/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 65.4-68.4 ft (distance). Due to the evolution of the compression wave form, the time of peak selection was changed between 18.3-24.1 ft (distance).
CPT-126	2/24/98	Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.
CPT-127	2/24/98	Compression wave time histories contain background noise that could not be filtered. Note that the background noise has no effect on the resultant wavespeed.
CPT-128	2/23/98	Due to the evolution of the compression wave form, the time of peak selection was changed between 18.3-21.2 ft (distance).
CPT-129	2/23/98	Due to the evolution of the compression wave form, the time of peak selection was changed between 15.5-19.3 ft (distance).
CPT-143	2/25/98	Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.
CPT-147	2/24/98	Shear wave traces not reported due to broken source hammer. Due to the evolution of the compression wave form, the time of peak selection was changed between 21.2-24.0 ft (distance).

**Task 10 –**  
**Addendum to Cover Letter**  
**Special Analysis Considerations**

Test Id.	Date	Special Analysis Considerations
CPT-148	2/27/98	<p>Due to the evolution of the shear wave form, the time of peak selection was changed between 35.6-38.6 ft (distance).</p> <p>Due to the evolution of the compression wave form, the time of peak selection was changed between 18.3-21.1 ft (distance).</p> <p>Only one shear trace was saved at 41.5 ft (distance).</p>
CPT-149	3/4/98 3/5/98 3/30/98	<p>Due to the evolution of the shear wave form, the time of peak selection was changed between 77.4-80.4 ft (distance).</p> <p>Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.</p> <p>The shear traces and profile were recorded on two separate dates, combining the files at 77.4//80.4.</p> <p>The compression test was re-pushed on a later date.</p>
CPT-151	2/24/98	<p>Shear wave traces not reported due to broken source hammer.</p> <p>Due to the evolution of the compression wave form, the time of peak selection was changed between 18.3-21.2, 27.0-29.9 ft (distance).</p>
CPT-155	2/18/98	<p>Missing 2-3 sets of shear wave seismic traces due to full computer memory. (131-137 ft, distance)</p> <p>Only one shear trace was saved at 113.4 ft (distance).</p>
CPT-156	2/18/98	<p>Due to the evolution of the compression wave form, the time of peak selection was changed between 21.2-24.1 ft (distance).</p>
CPT-157	3/5/98	<p>Due to the evolution of the shear wave form, the time of peak selection was changed between 26.6-29.6, 68.6-71.7, 128.4-131.4 ft (distance).</p> <p>Only one shear trace was saved at 80.4, 146.4 ft (distance).</p> <p>A portion of the compression wave at 10.3 ft (distance) exhibits the recorded signal exceeding its maximum. The analysis is not effected.</p>
CPT-159	2/17/98	<p>Due to the evolution of the shear wave form, the time of peak selection was changed between 68.4-74.4 ft (distance).</p> <p>Due to the evolution of the compression wave form, the time of peak selection was changed between 24.1-27.0 ft (distance).</p> <p>One of the two shear wave traces was omitted at the following distances : 14.9 - 23.7, 56.5, 74.4, 158.3, 164.1 ft. Symptoms of a partially broken source hammer were evident on the traces that were omitted.</p>
CPT-163	2/25/98	<p>Due to the evolution of the compression wave form, the time of peak selection was changed between 15.5-18.3 ft (distance).</p> <p>Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.</p>
CPT-167	3/11/98	
CPT-171	3/19/98	<p>Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale.</p>

**Task 10-****Addendum to Cover Letter****Special Analysis Considerations**

Test Id.	Date	Special Analysis Considerations
CPT-172	3/25/98	Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale. Only one shear trace was saved at 110.4, 140.4 ft (distance).
CPT-173	3/27/98	Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale. Due to the evolution of the compression wave form, the time of peak selection was changed between 33.1-39.1 ft (distance).
CPT-174	3/10/98	Due to the evolution of the wave form, the shear wave time of peak selection was changed between 83.5-86.4, 140.4-143.4 ft (distance). Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale. Due to the evolution of the compression wave form, the time of peak selection was changed between 15.9-18.7 ft (distance).
CPT-175	3/20/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 143.3-146.4, 149.4-152.4 ft (distance). Due to the evolution of the wave form, the compression wave time of peak selection was changed between 18.7-21.6 ft (distance).
CPT-176	3/26/98	Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale. Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.
CPT-177	3/27/98	Due to the evolution of the compression wave form, the time of peak selection was changed between 18.8-21.5 ft (distance).
CPT-178	3/19/98	Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.
CPT-179	3/24/98	Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale. Due to the evolution of the shear wave form, the time of peak selection was changed between 110.4-113.4 ft (distance).
CPT-180	3/26/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 74.5-80.5 ft (distance). Due to the evolution of the compression wave form, the time of peak selection was changed between 16.0-18.8 ft (distance).
CPT-181	3/10/98	The compression wave trace of this particular test displays shear wave noise. The compression wave "time of arrival" was chosen for analysis rather than the "time of peak".
CPT-182	3/23/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 80.4-83.4, 107.4-110.4 ft (distance). Only one shear trace was saved at 128.4 ft. (distance). Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.

**Task 10 -**  
**Addendum to Cover Letter**  
**Special Analysis Considerations**

Test Id.	Date	Special Analysis Considerations
CPT-183	3/25/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 104.7-107.4 ft (distance). Due to the evolution of the compression wave form, the time of peak selection was changed between 18.8-21.5 ft (distance).
CPT-185	3/18/98	Only one shear trace was saved at 23.8, 122.5, 131.4 ft (distance). Compression wave speeds recorded above 5000 ft/s are not shown on the "Compression Wave Speed" plot due to the scale.
CPT-186	3/24/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 116.4-119.4, 128.4-131.4 ft (distance). Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale. Only one shear trace was saved at 140.4 ft. (distance).
CPT-188	3/9/98 3/26/98	The compression test was re-pushed on a later date.
CPT-189	3/23/98	Due to the evolution of the shear wave form, the time of peak selection was changed between 50.4-53.5, 65.5-68.5 ft (distance). Due to the evolution of the compression wave form, the time of peak selection was changed between 16.0-18.7 ft (distance).
CPT-196	4/14/98	Shear wave speeds recorded above 2000 ft/s are not shown on the "Shear Wave Speed" plot due to the scale.

CPT-53

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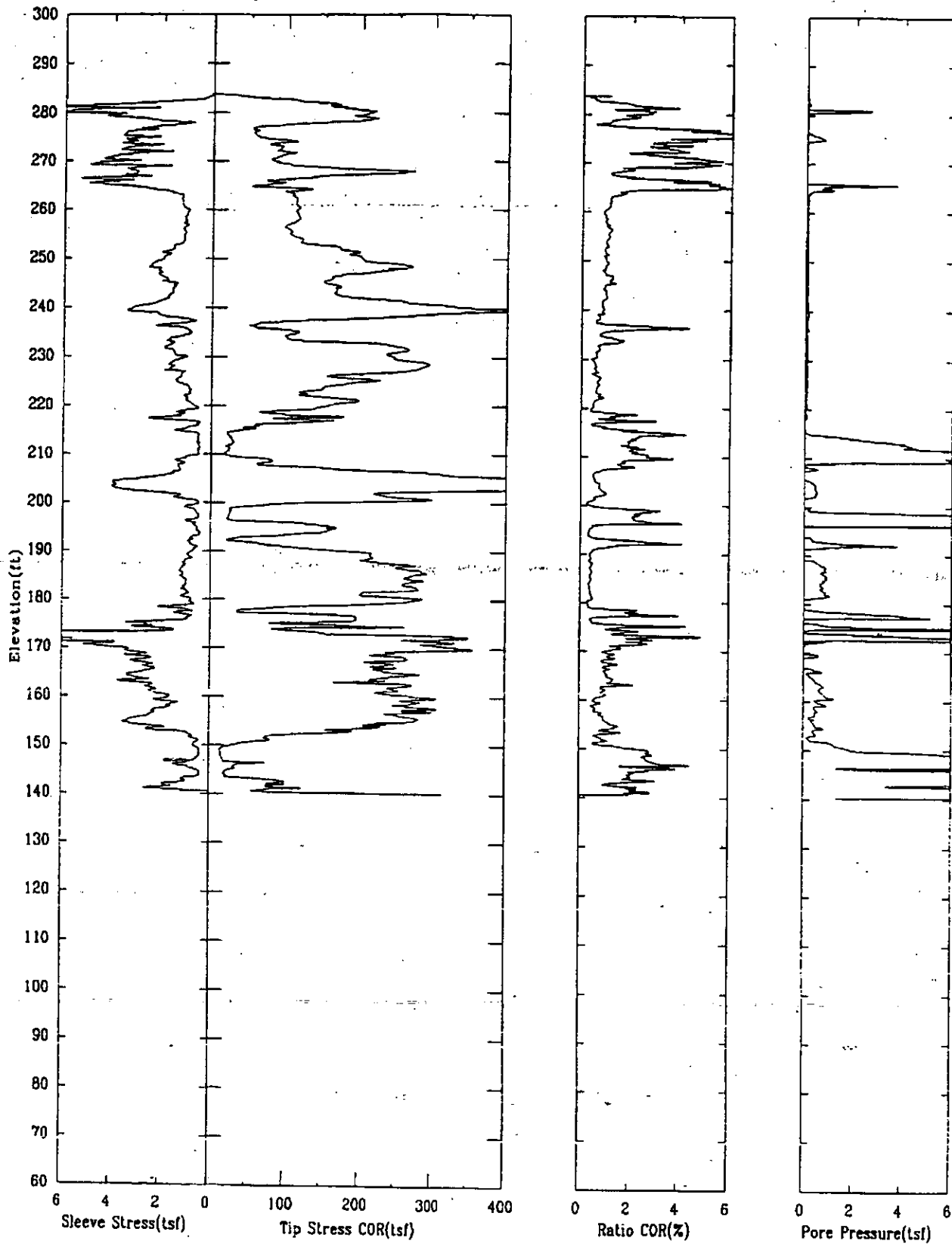
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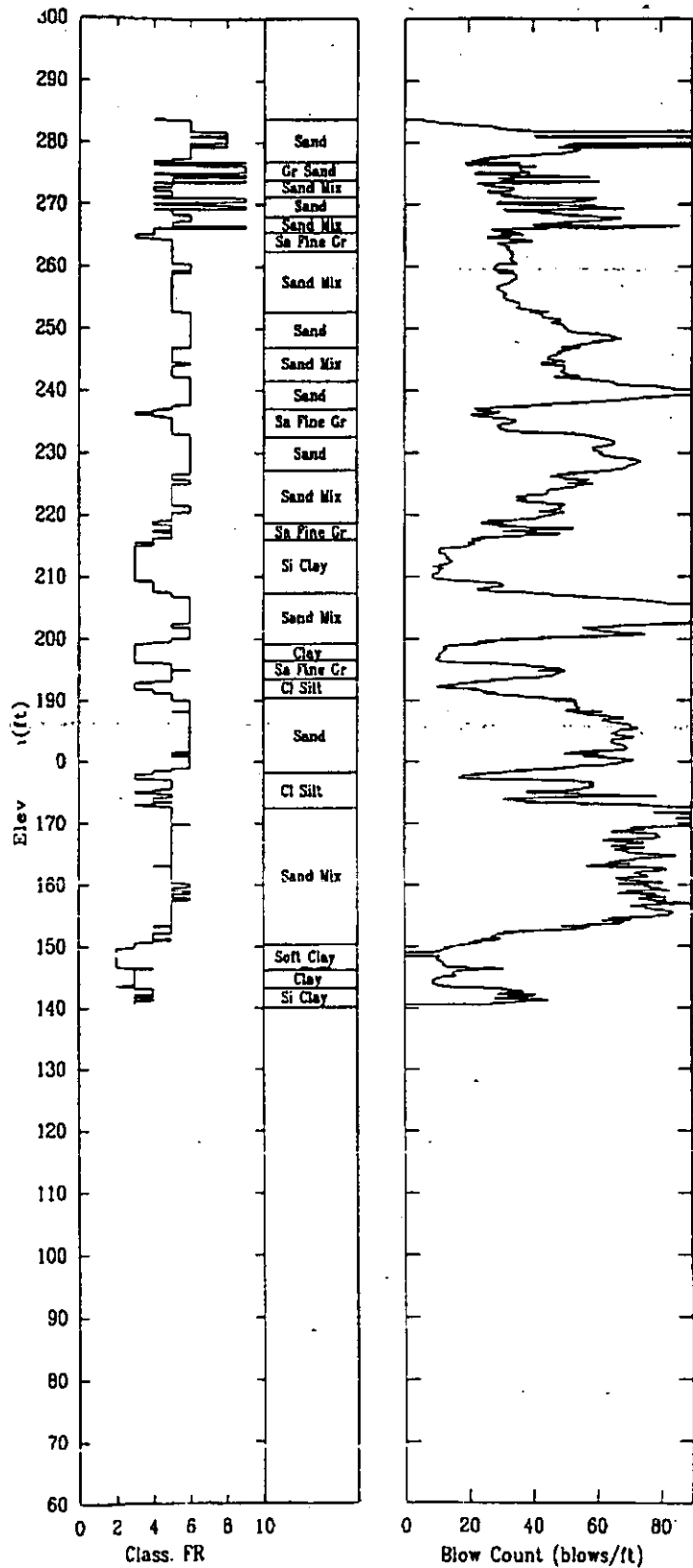
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North 79180.0

East 54845.0

Elevation 289.9





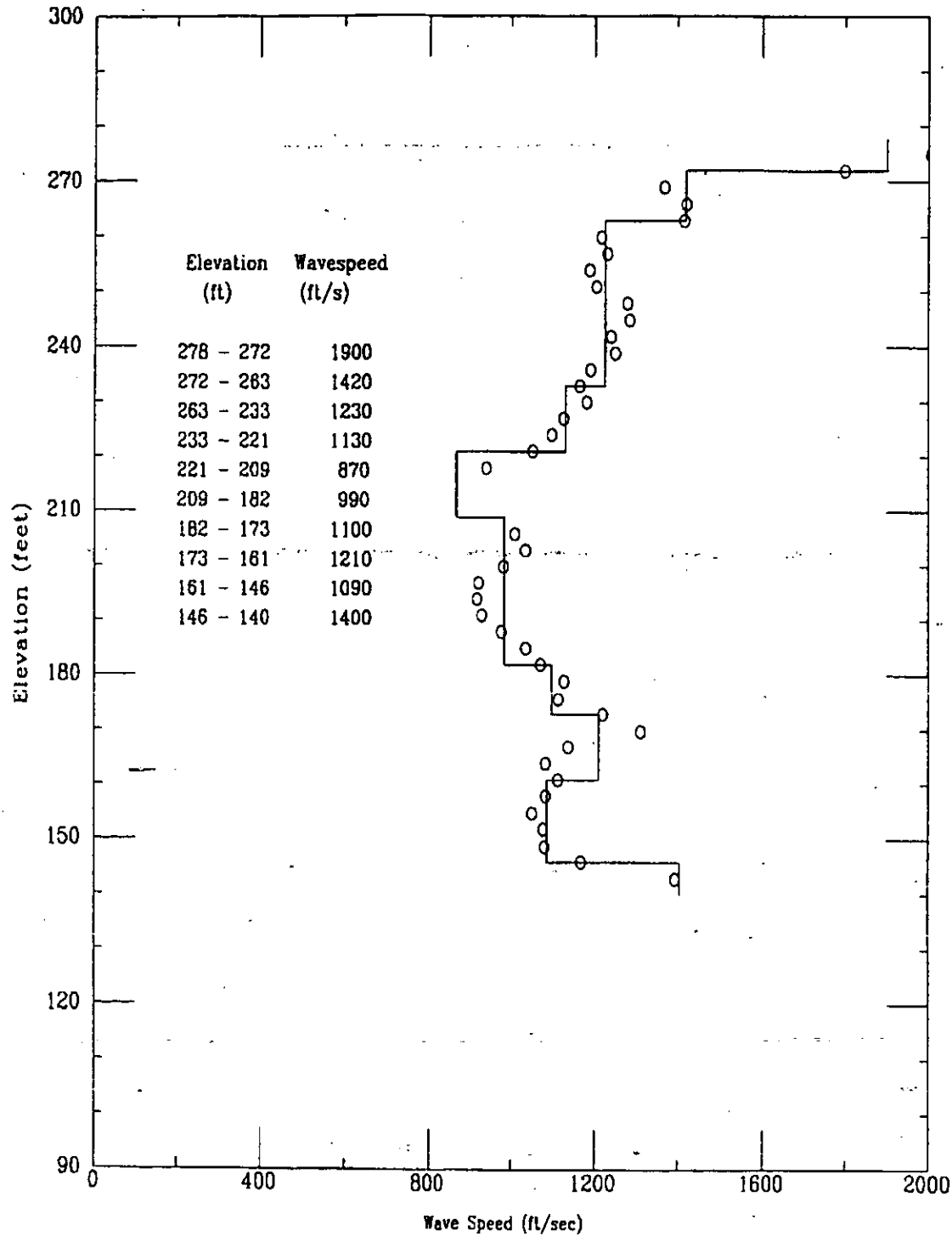


CPT-53

APPLIED RESEARCH ASSOCIATES, INC.

03/04/98

Shear Wave Speeds



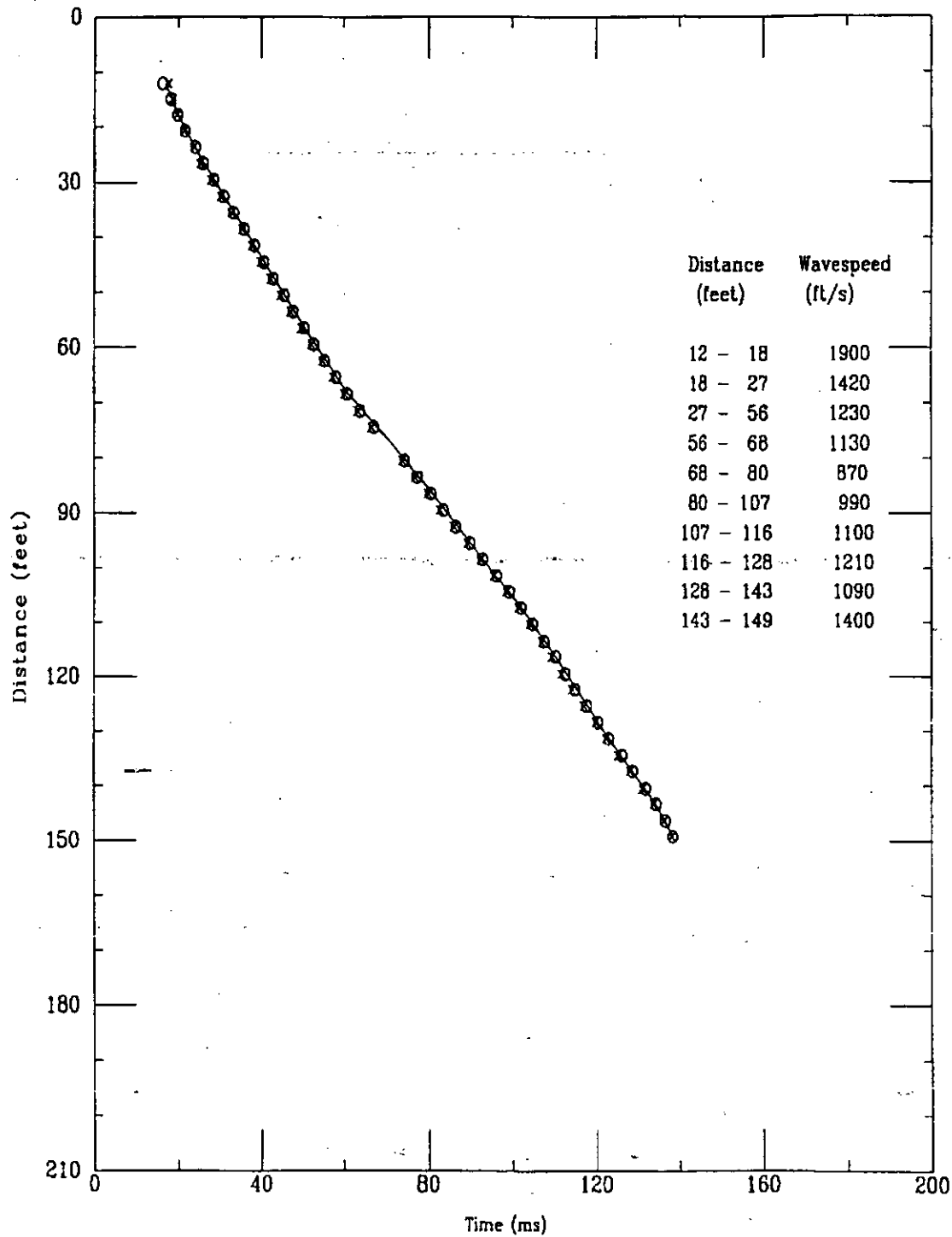
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CPT-53

APPLIED RESEARCH ASSOCIATES, INC.

03/04/98

Shear Wave Time of Peak



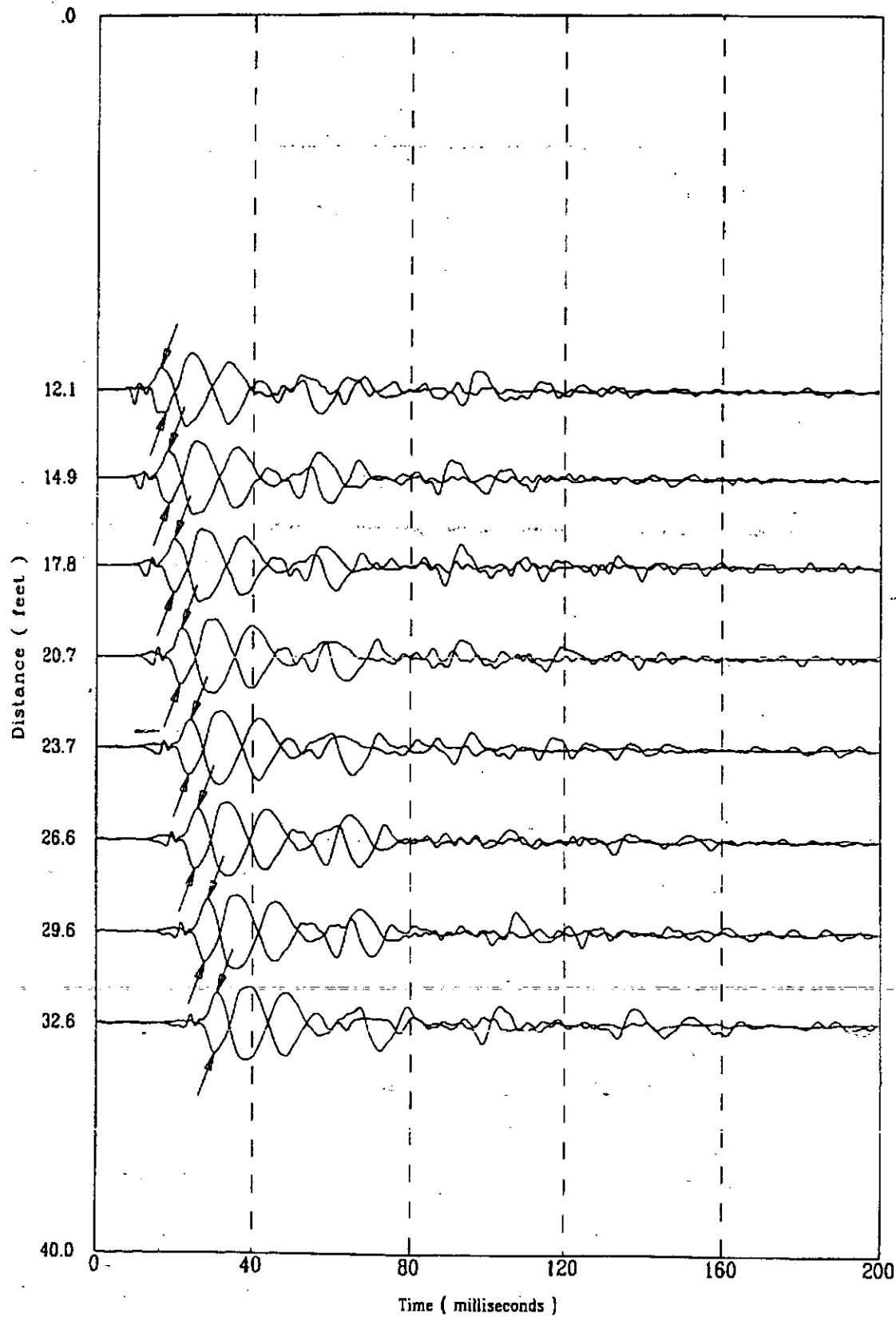
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R/O

Applied Research Associates, Inc.  
CPT-53

S Wave  
03/04/98

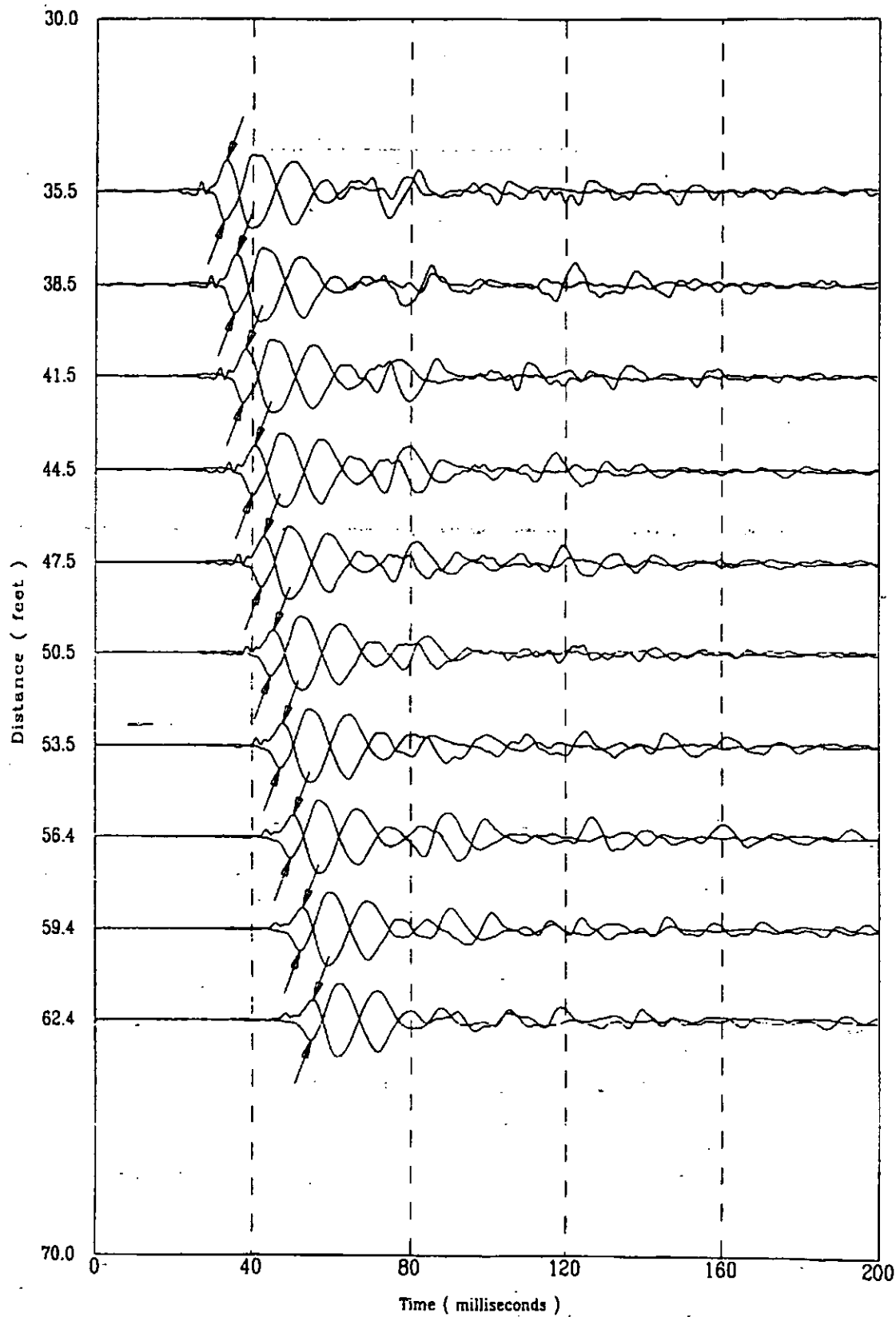


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Applied Research Associates, Inc.  
CPT-53

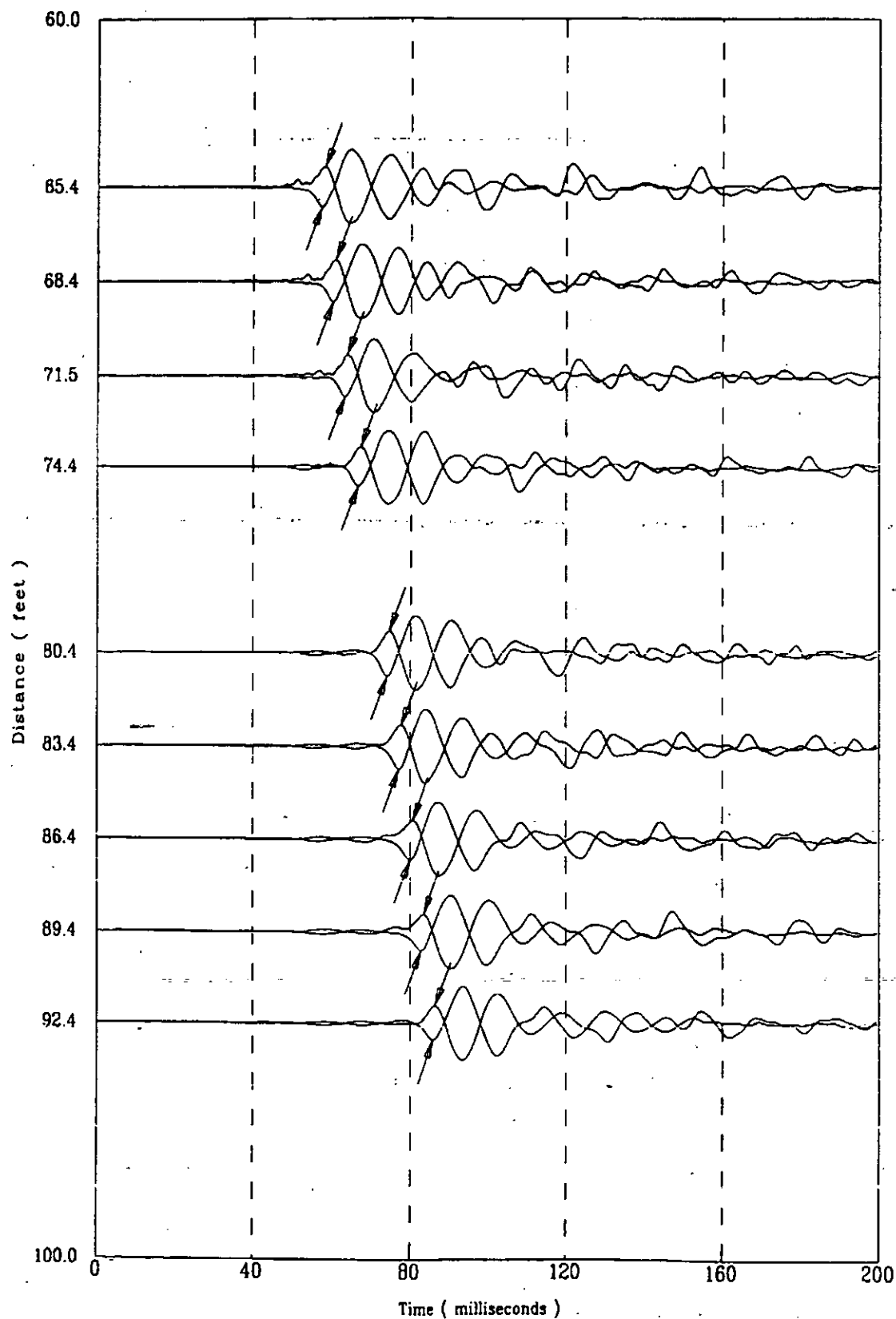
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K-TRT-F-00001  
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Applied Research Associates, Inc.  
CPT-53

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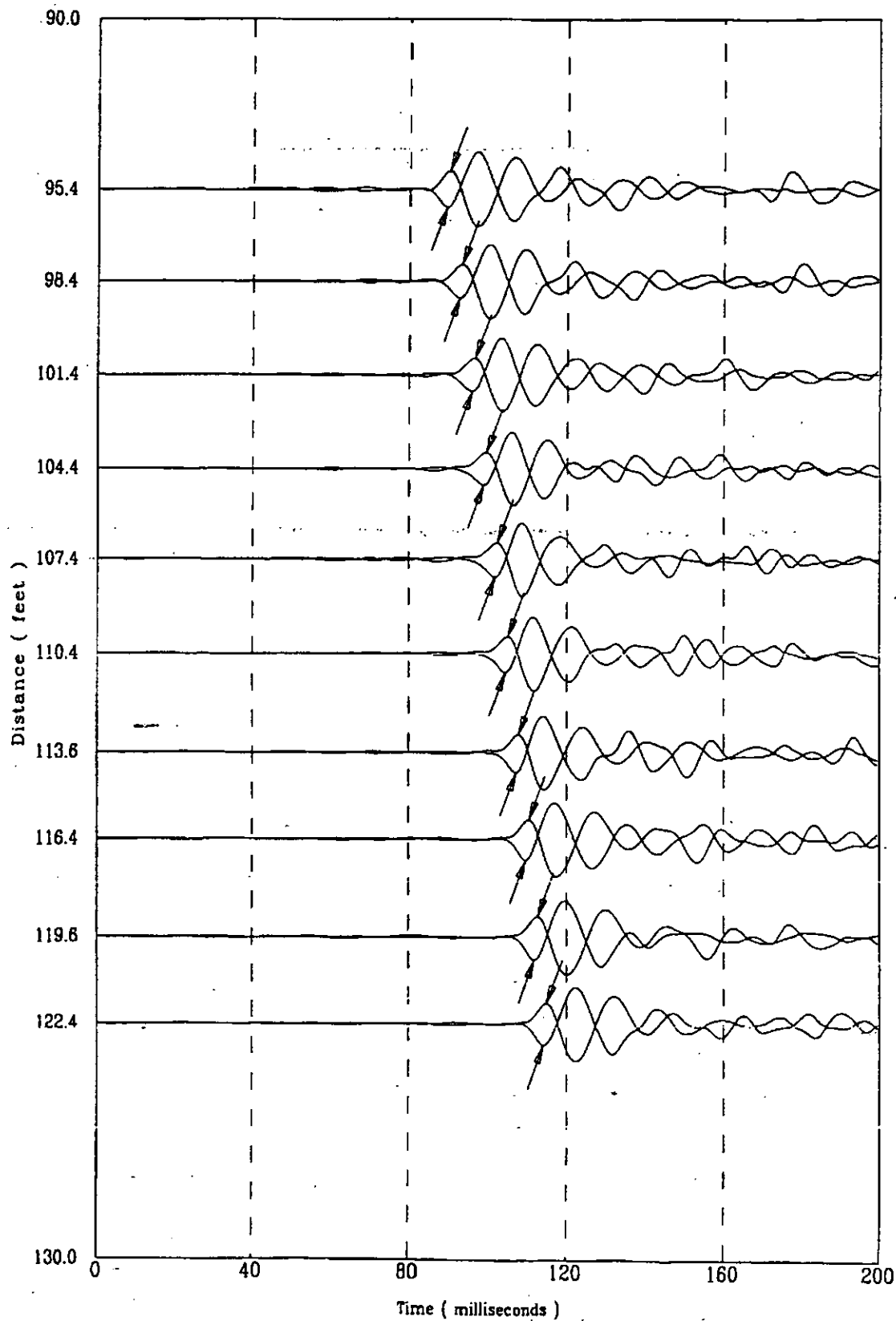


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Applied Research Associates, Inc.  
CPT-53

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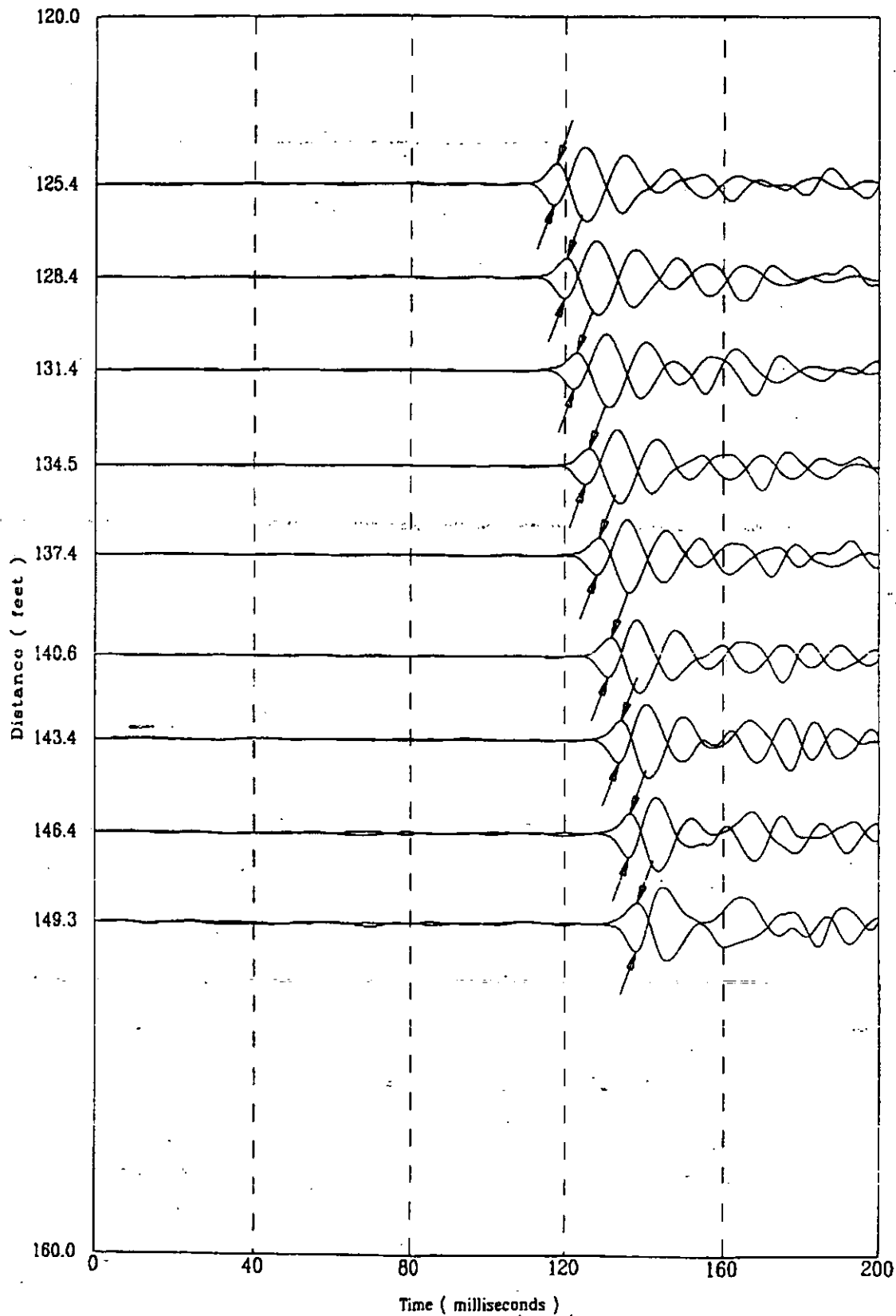


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R/O

Applied Research Associates, Inc.  
CPT-53

S Wave  
03/04/98



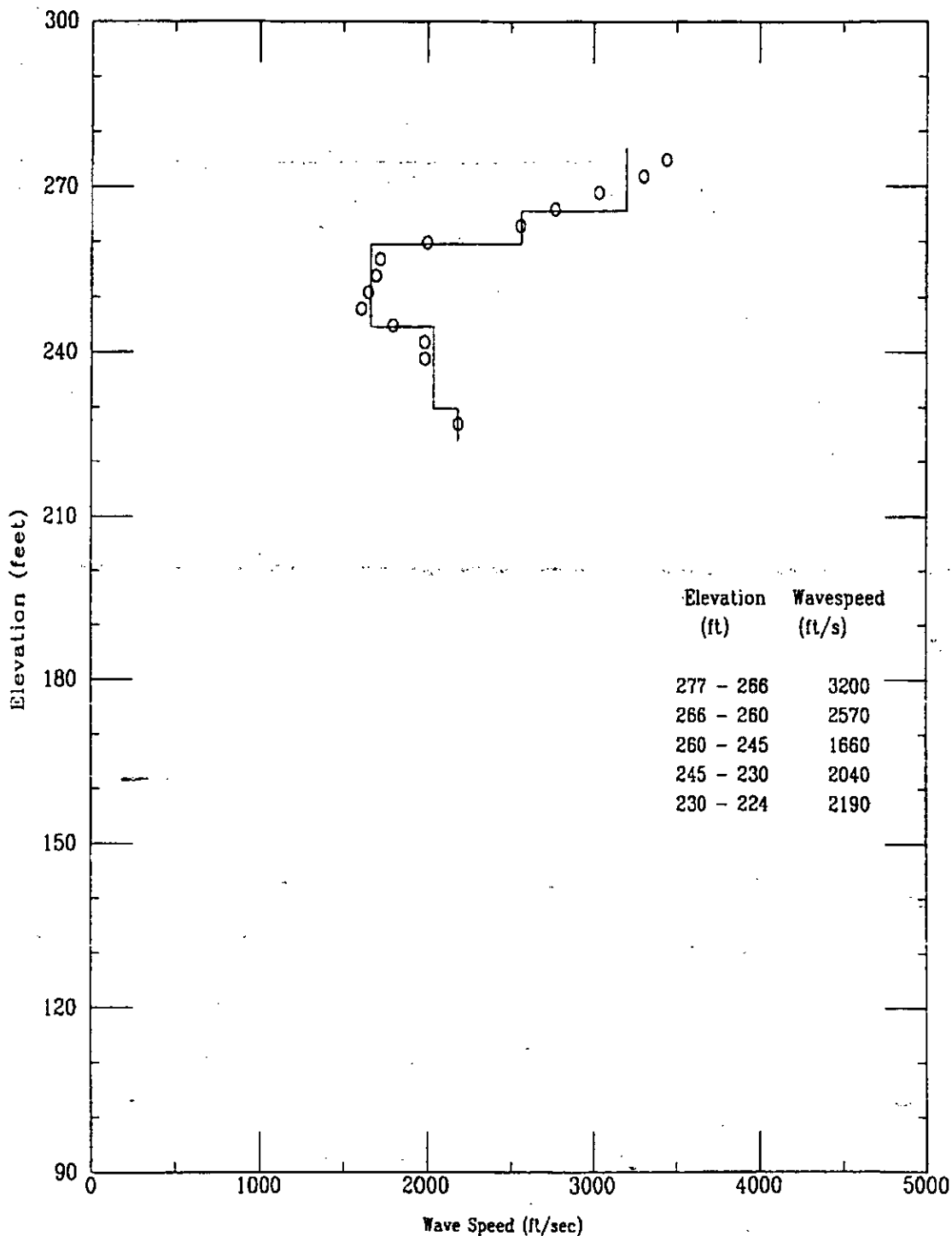
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CPT-53

APPLIED RESEARCH ASSOCIATES, INC.

03/04/98

Compression Wave Speeds

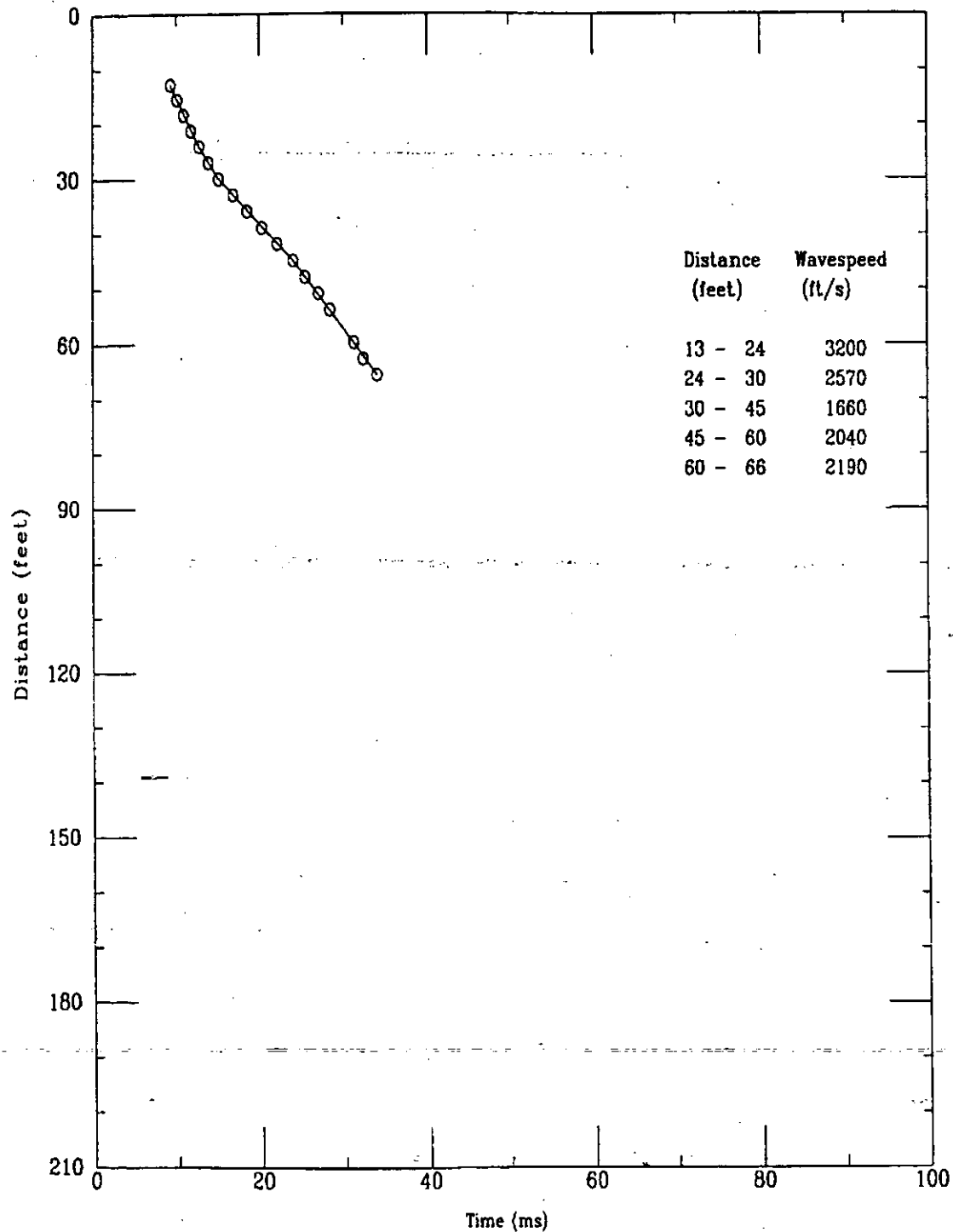




CPT-53

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Compression Wave Time of Peak

03/04/98



File 404m801S

CPT-103

APPLIED RESEARCH ASSOCIATES, INC.

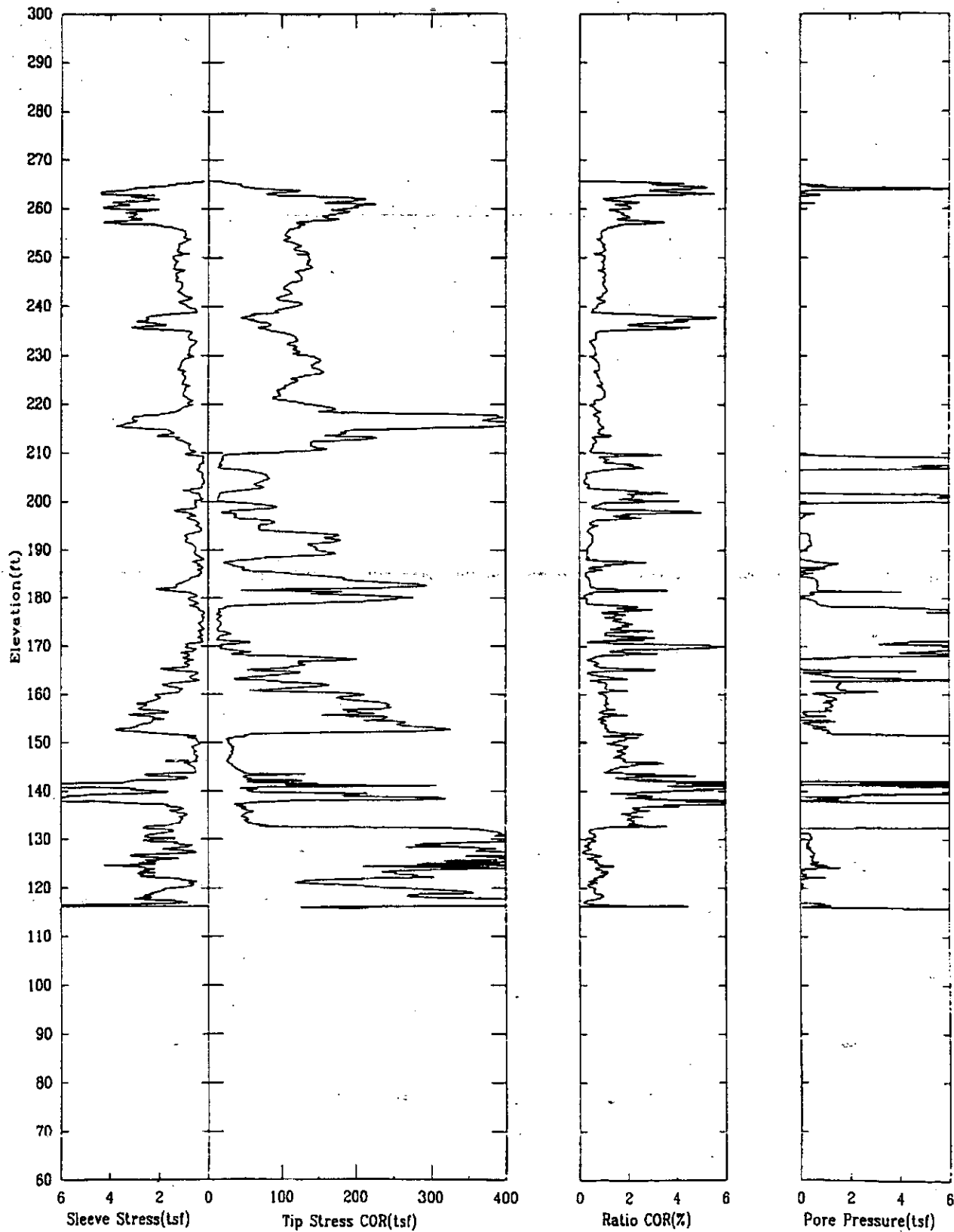
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02/23/98 / 0

North 79915.18

East 55260.95

Elevation 271.7



CPT-103

APPLIED RESEARCH ASSOCIATES, INC.

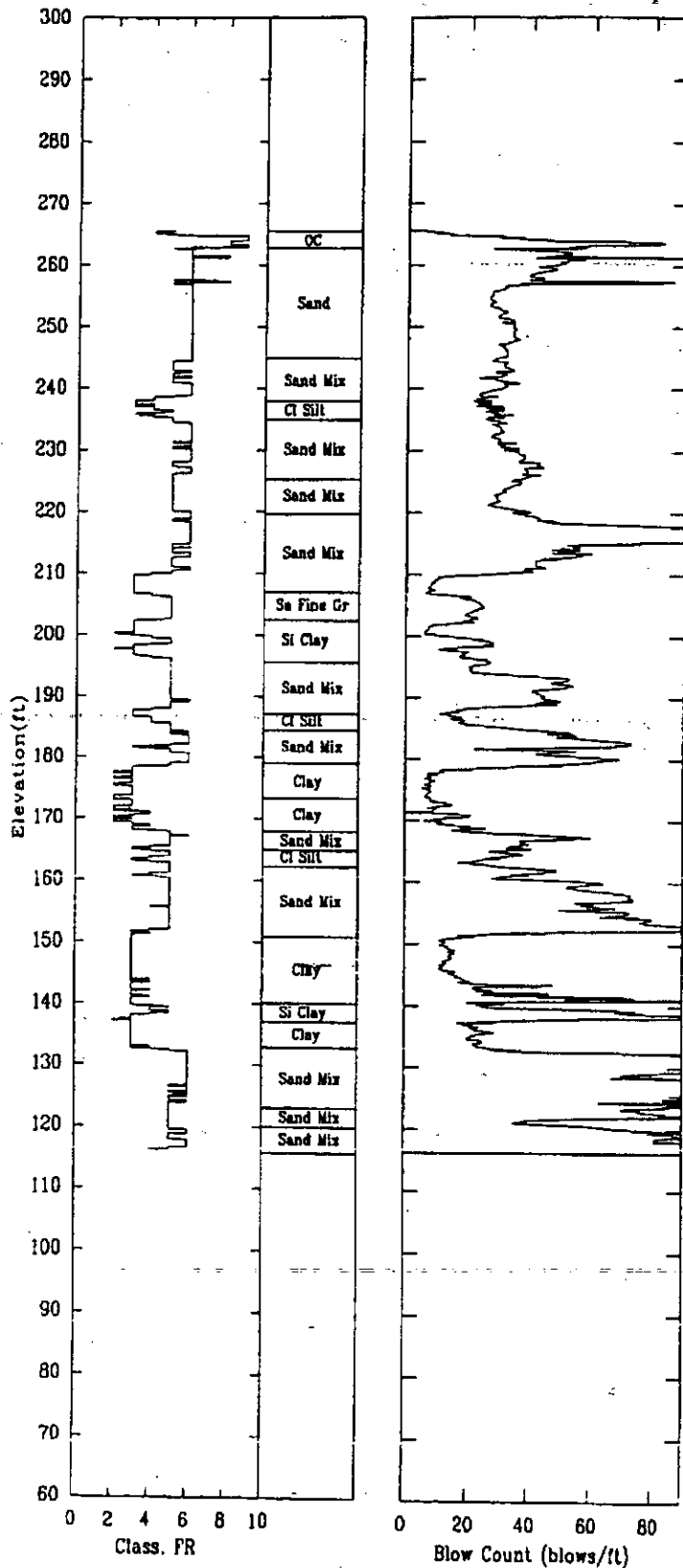
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02/23/98<sup>R/O</sup>

North 79915.18

East 55260.95

Elevation 271.7

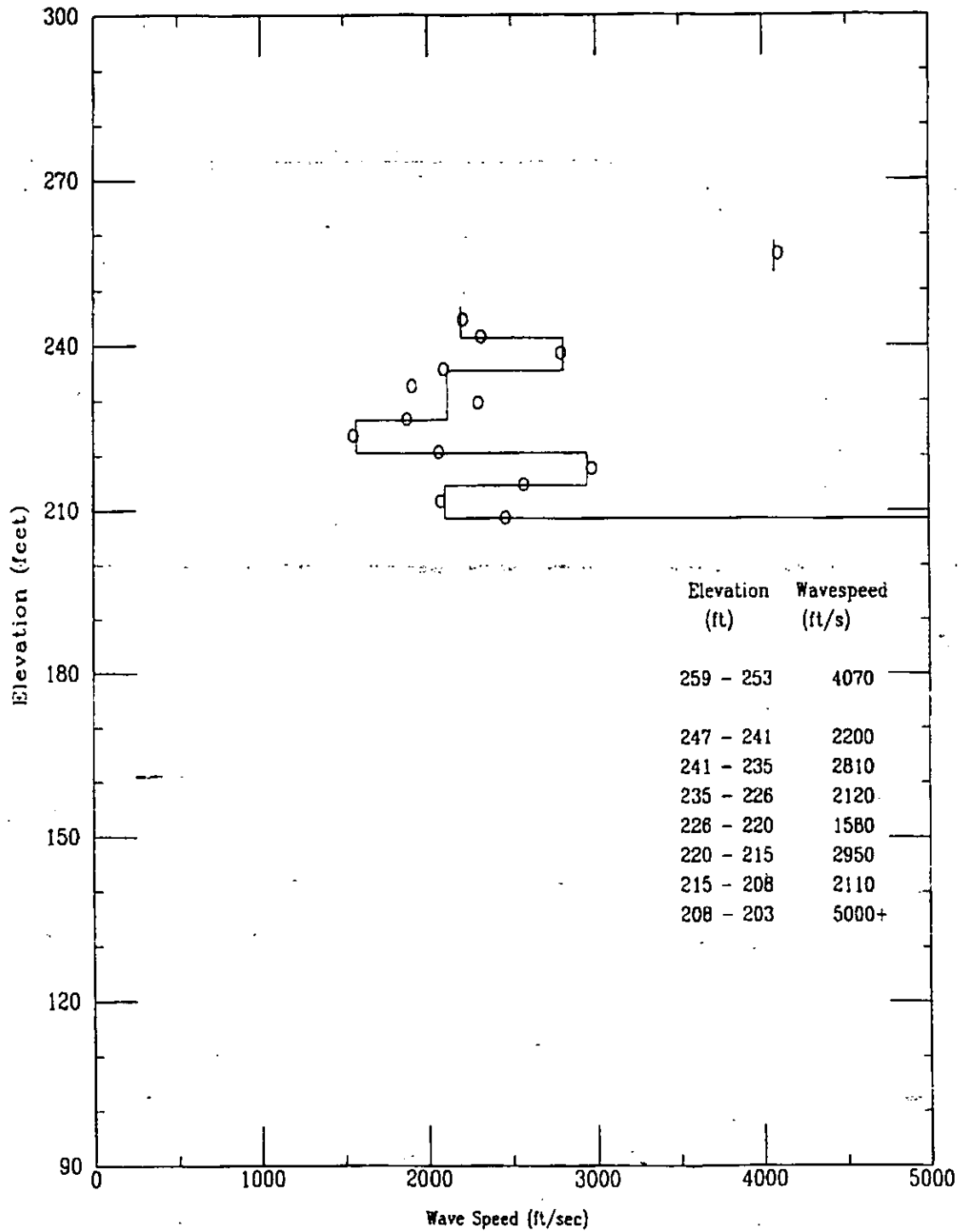


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02/23/98

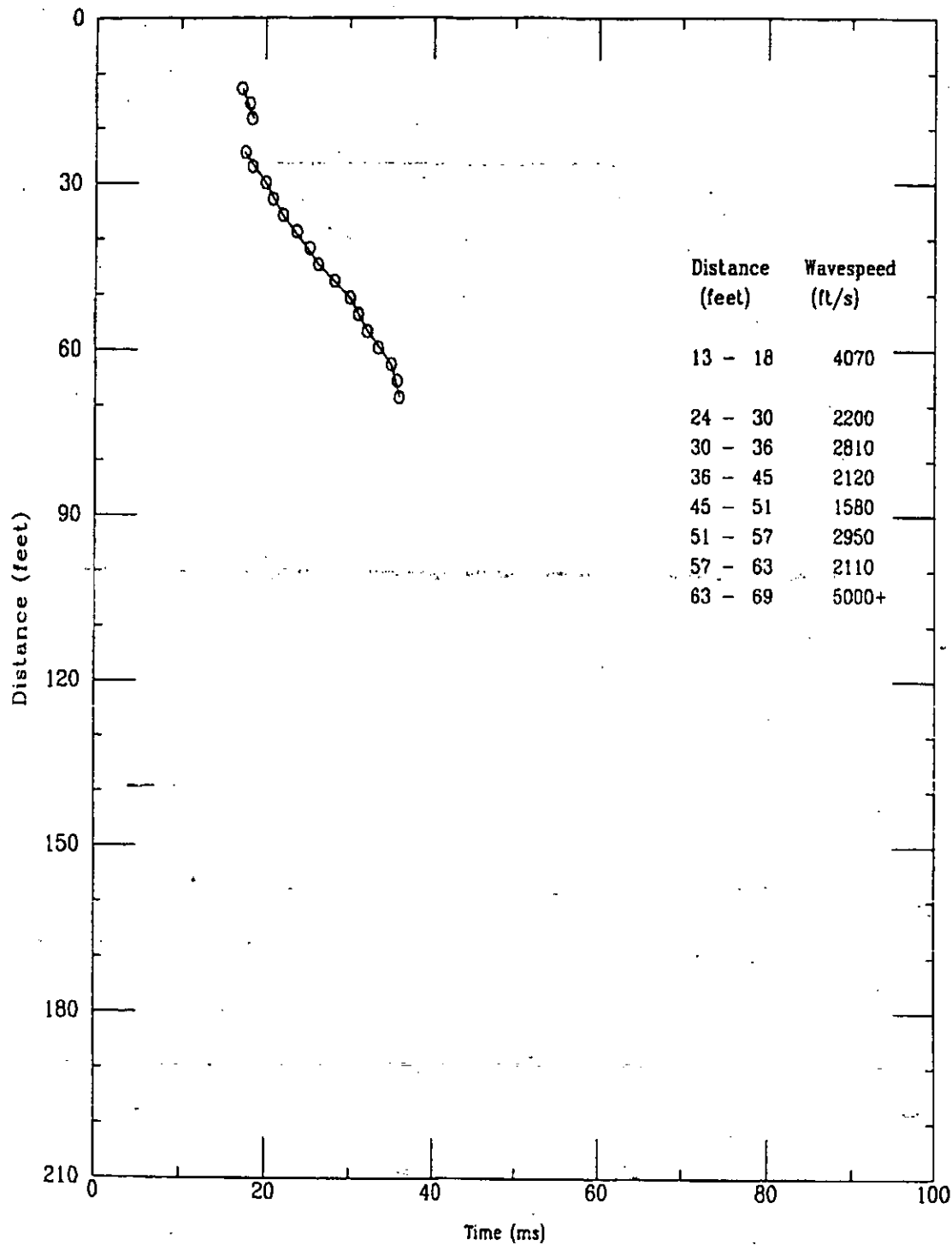
Compression Wave Speeds



cpt-103

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

02/23/98

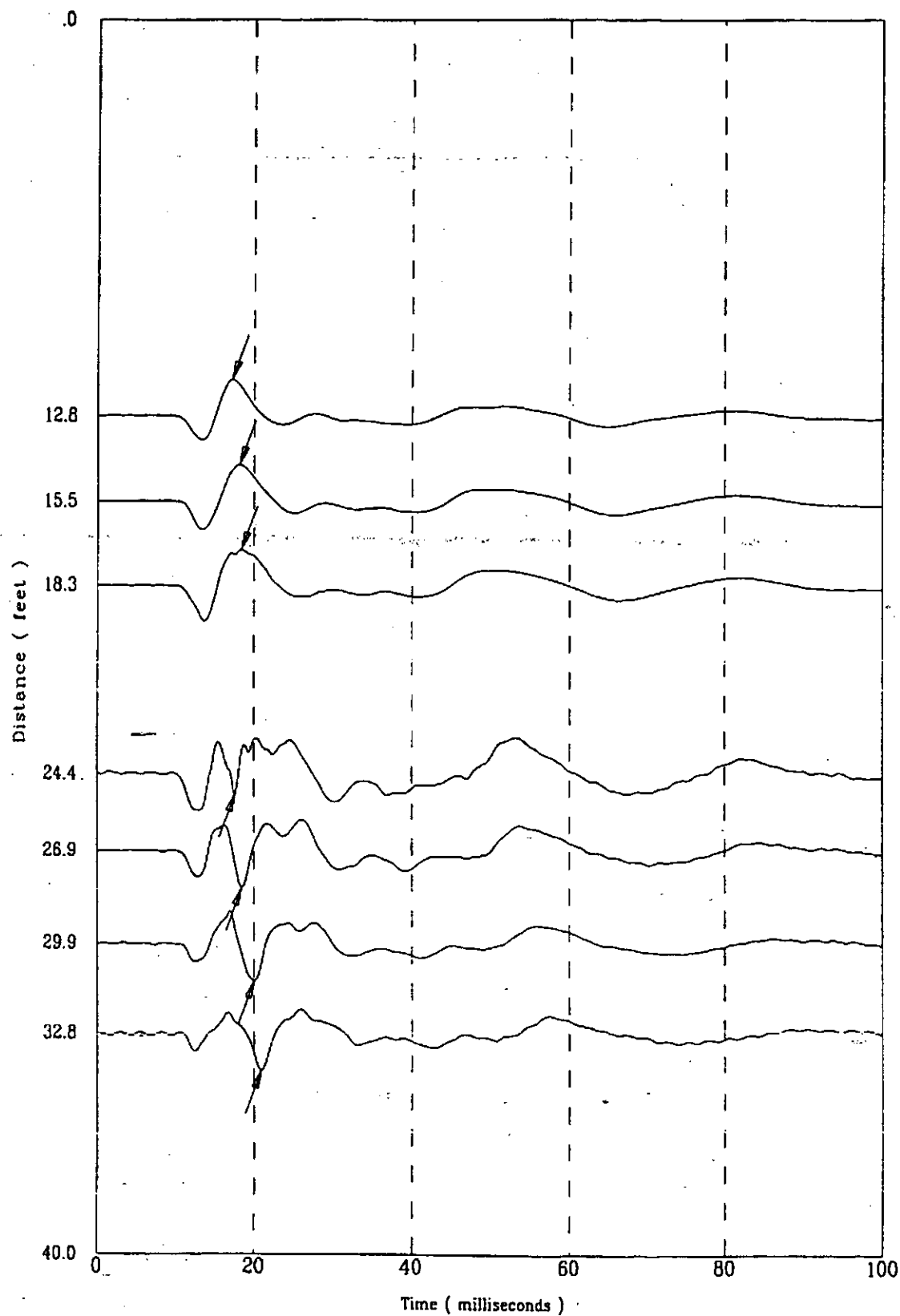


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Applied Research Associates, Inc.  
CPT-103

P Wave  
02/23/98

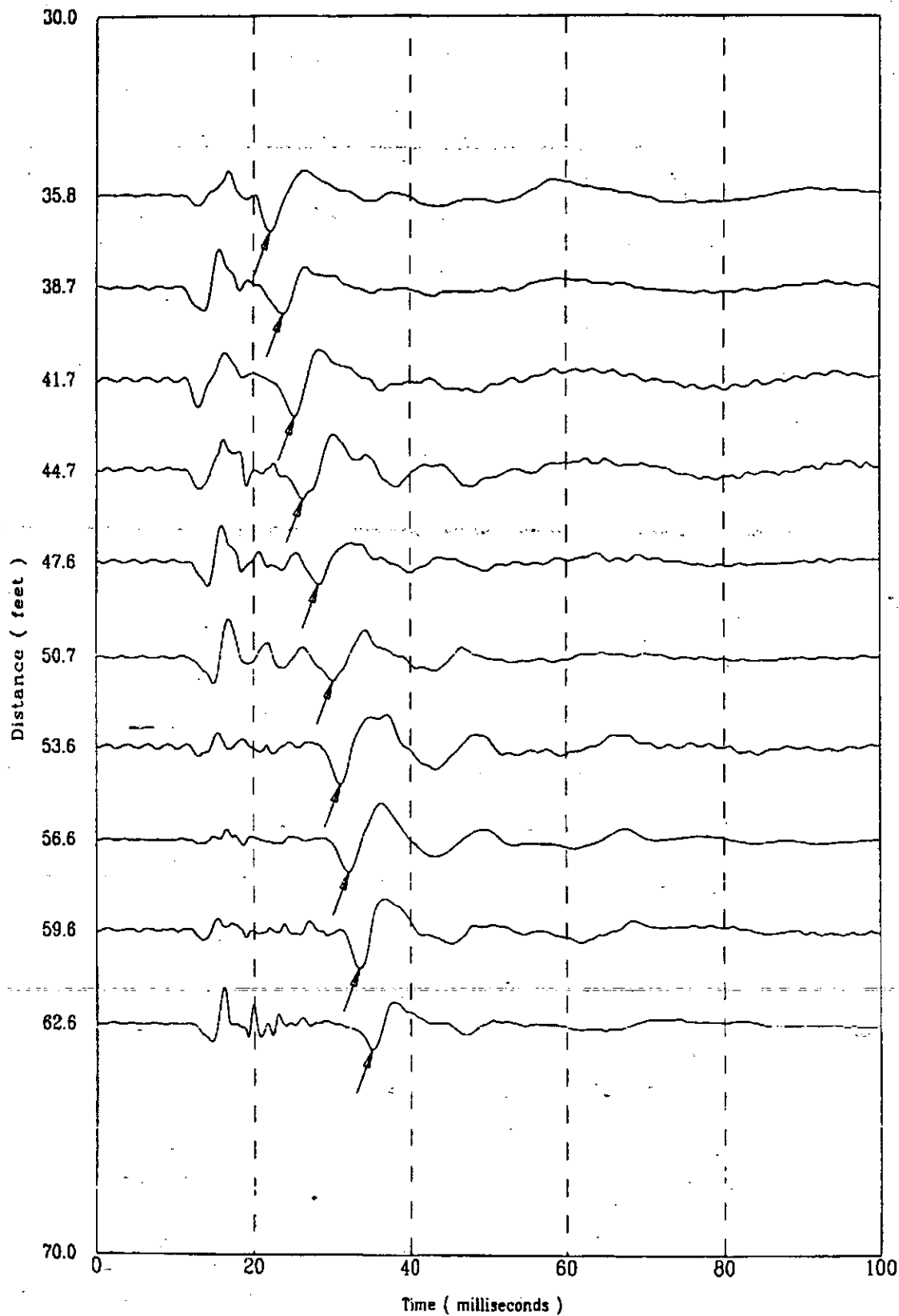


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CPT-103

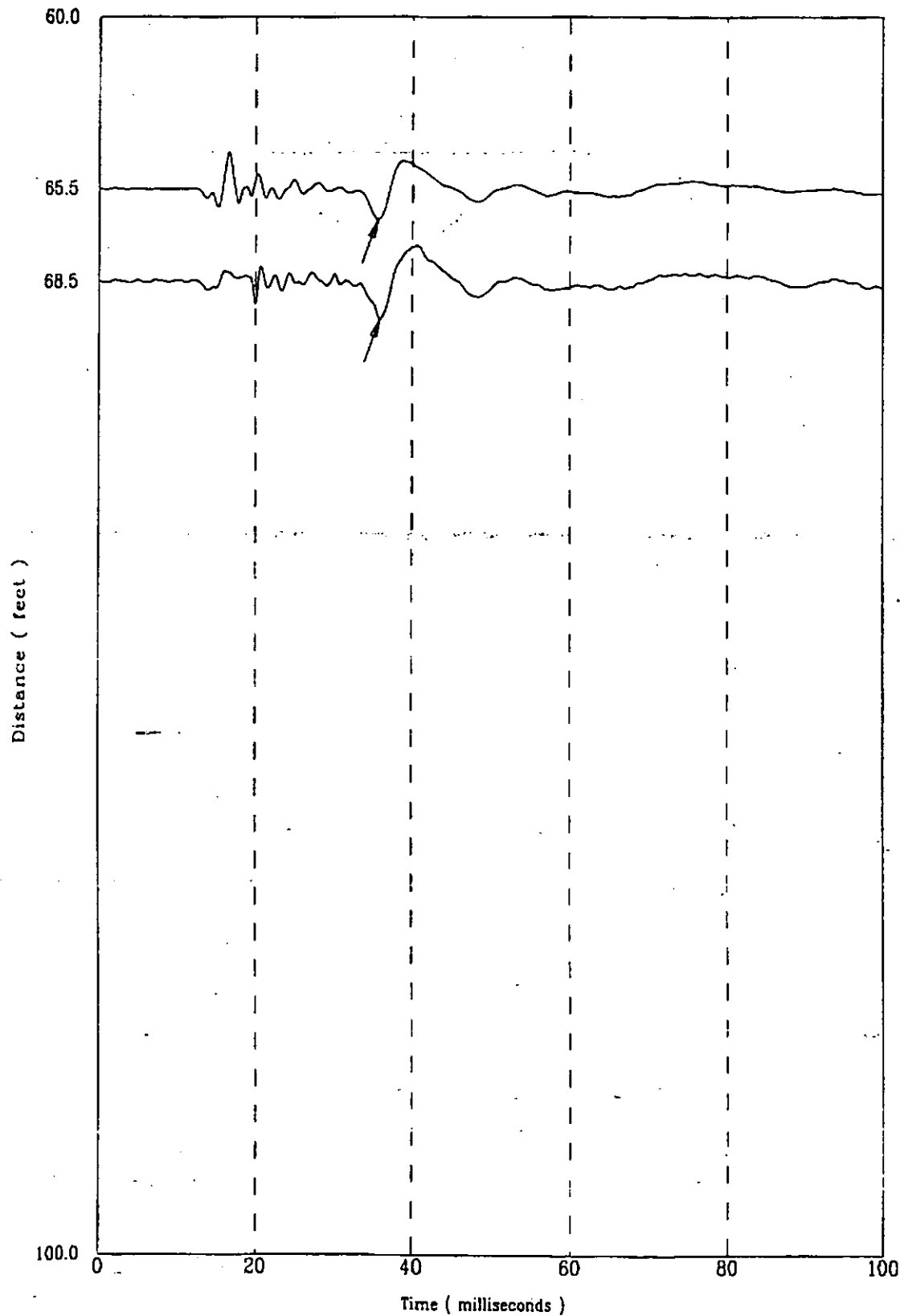
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Applied Research Associates, Inc.  
CPT-103

P Wave  
02/23/98



File 423/8015



CPT-104

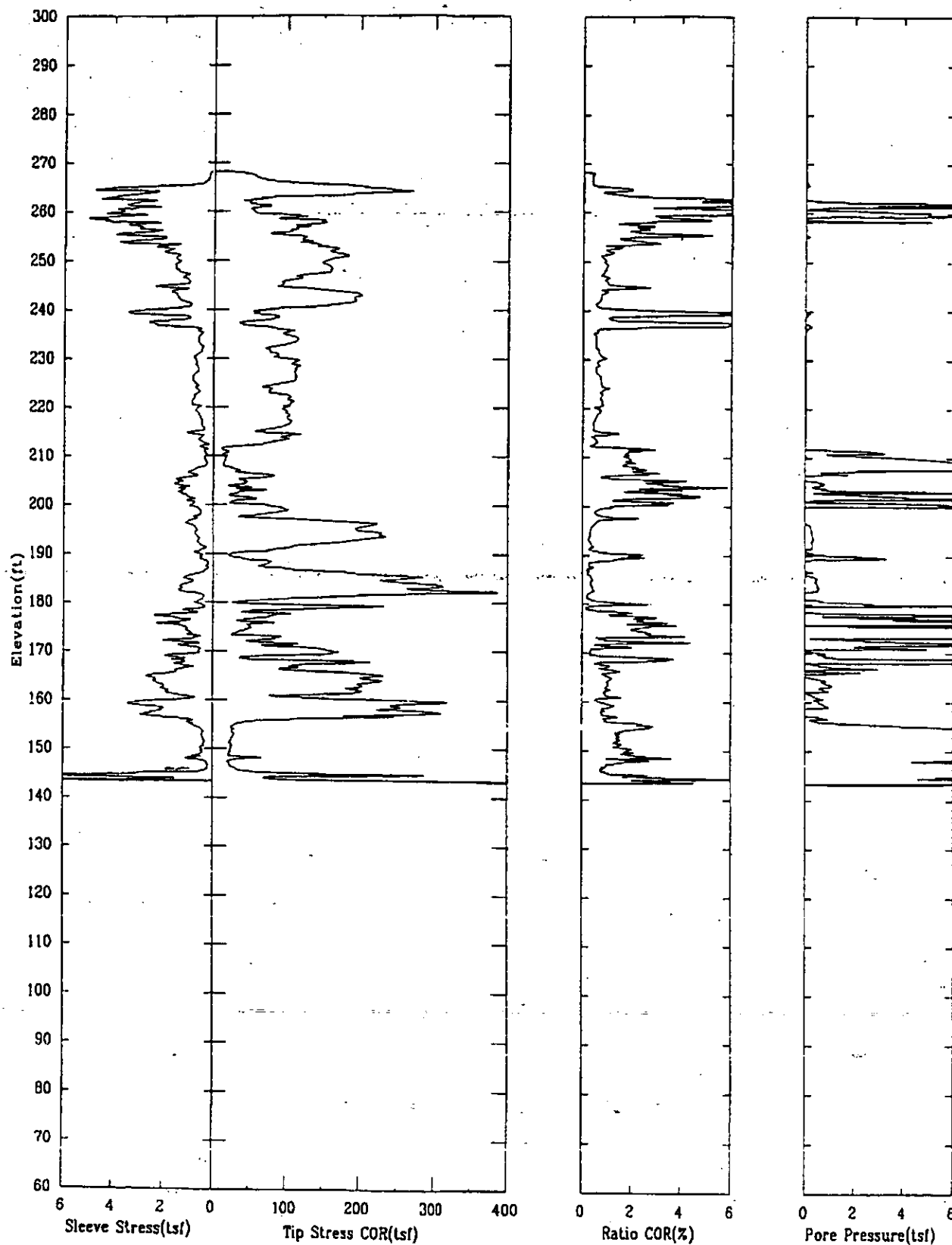
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North 79915.04

East 55385.03

Elevation 274.2

K-TRT-F-00001

02/20/98<sup>R/O</sup>

CPT-104

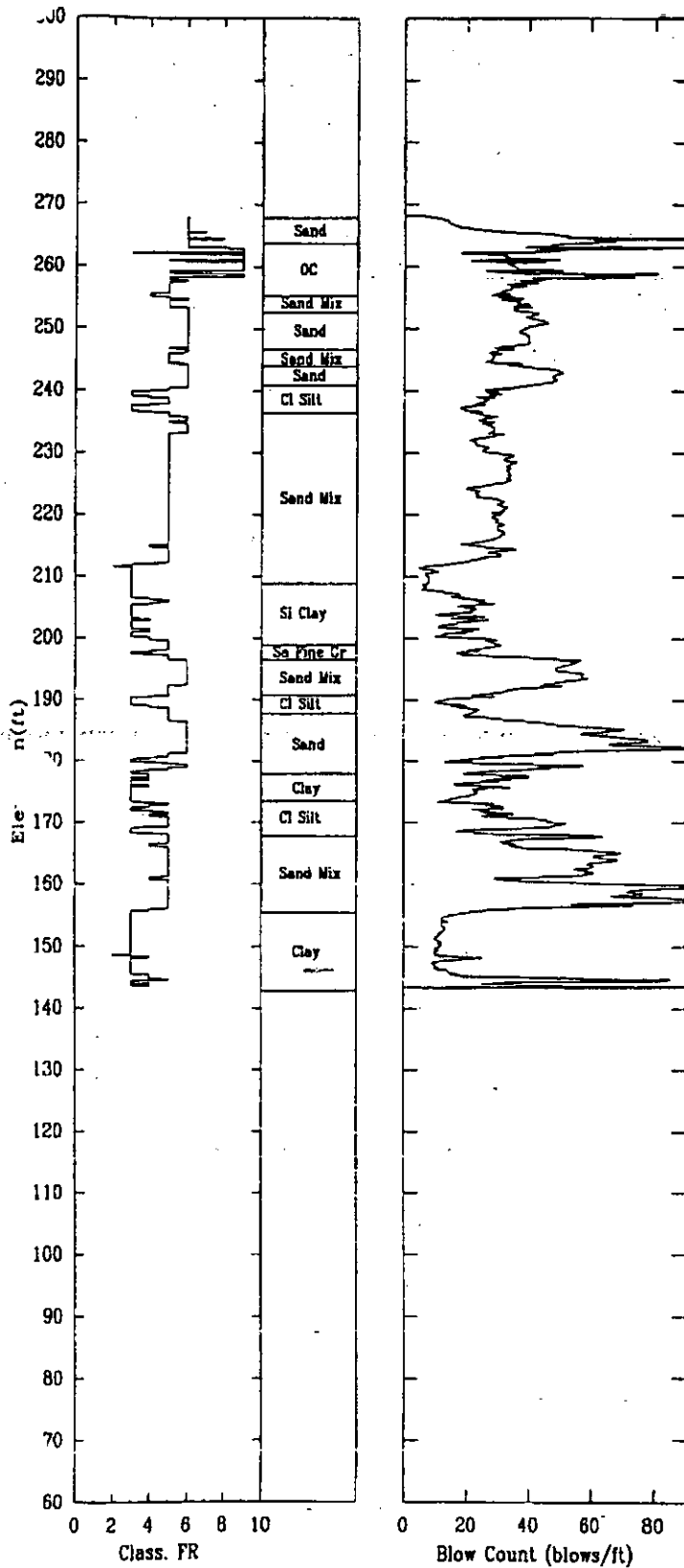
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North 79915.04

East 55385.03

Elevation 274.2

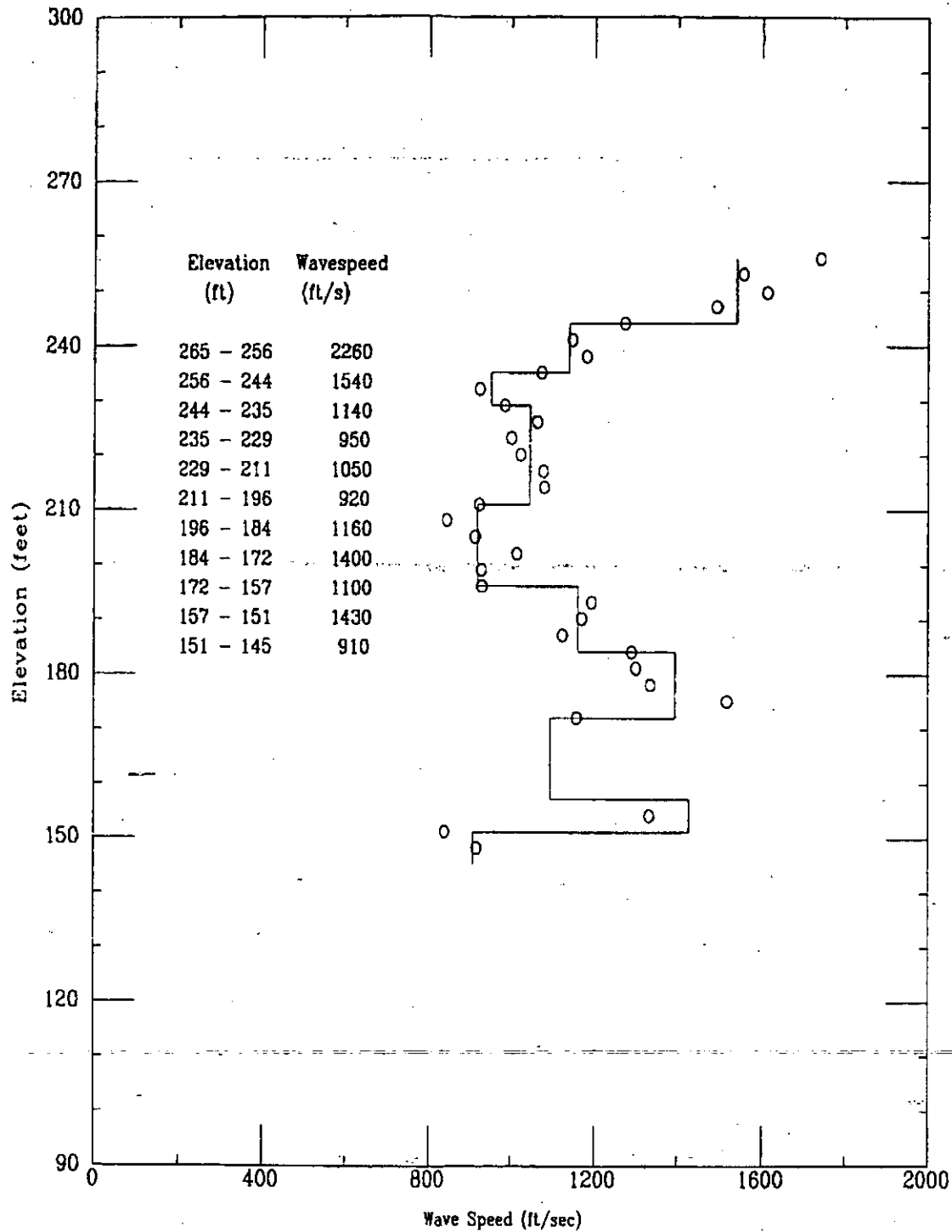


CPT-104

APPLIED RESEARCH ASSOCIATES, INC.

02/20/98

Shear Wave Speeds

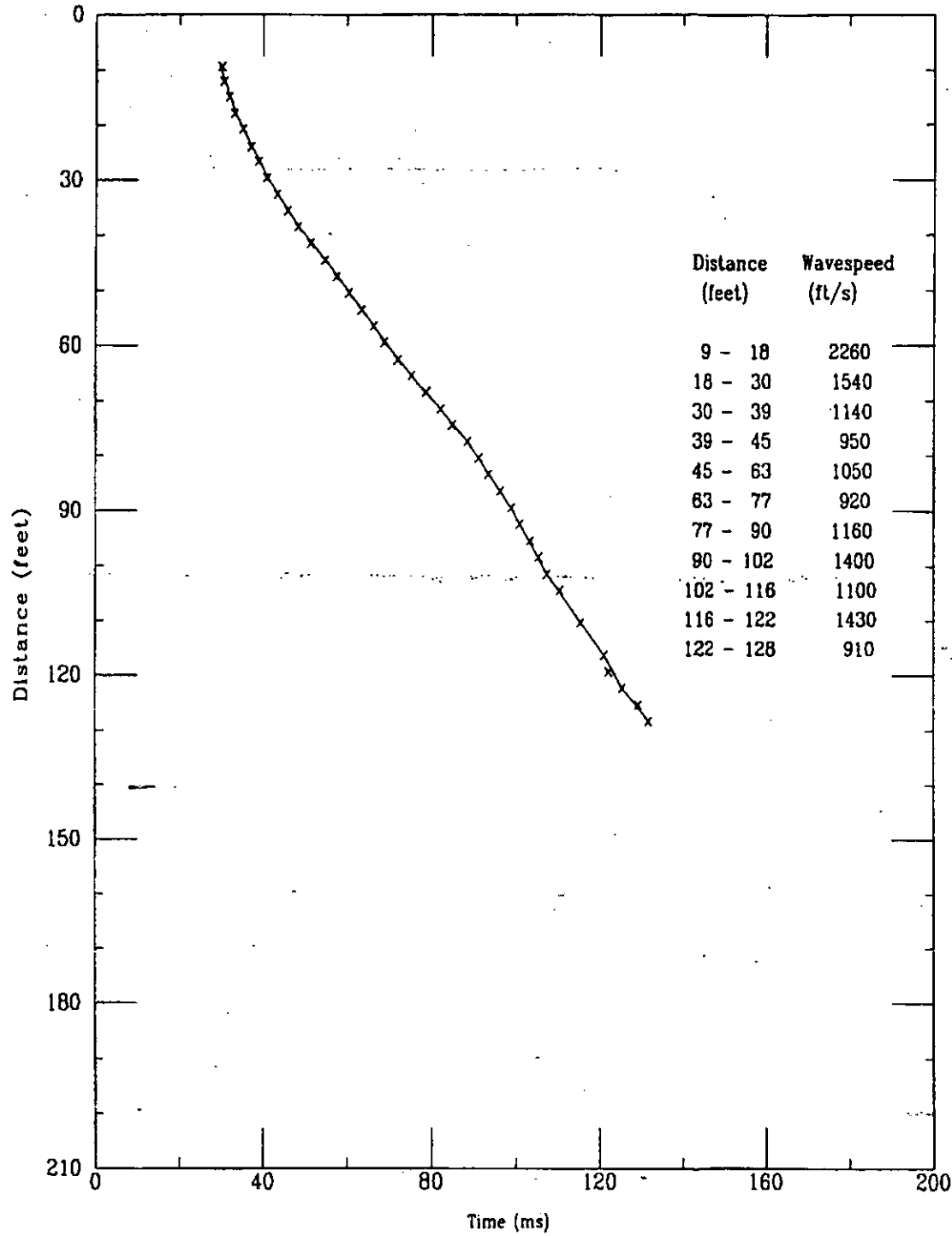


CPT-104

APPLIED RESEARCH ASSOCIATES, INC.

02/20/98

Shear Wave Time of Peak

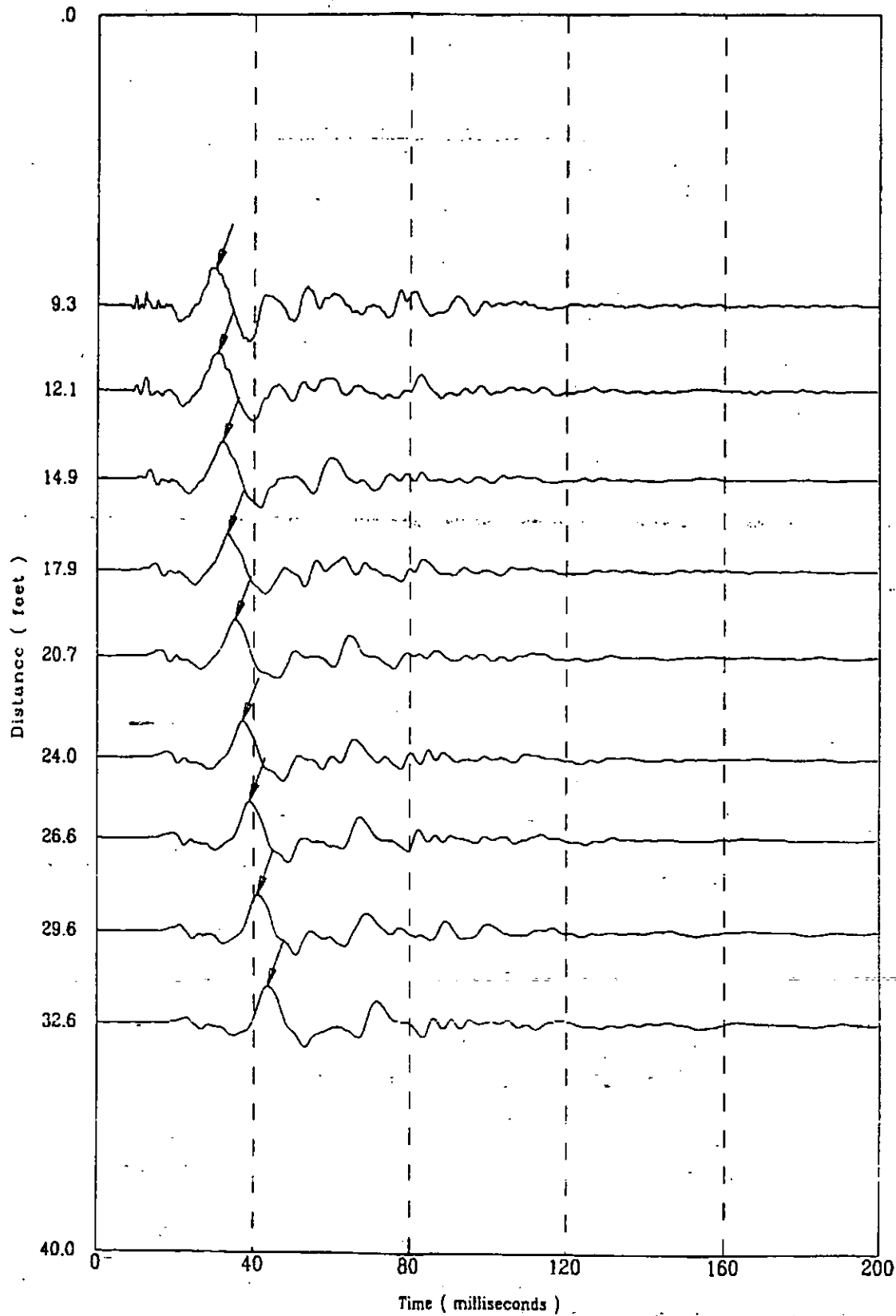


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K-TRT-F-00001  
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Applied Research Associates, Inc.  
CPT-104

S Wave  
02/20/98

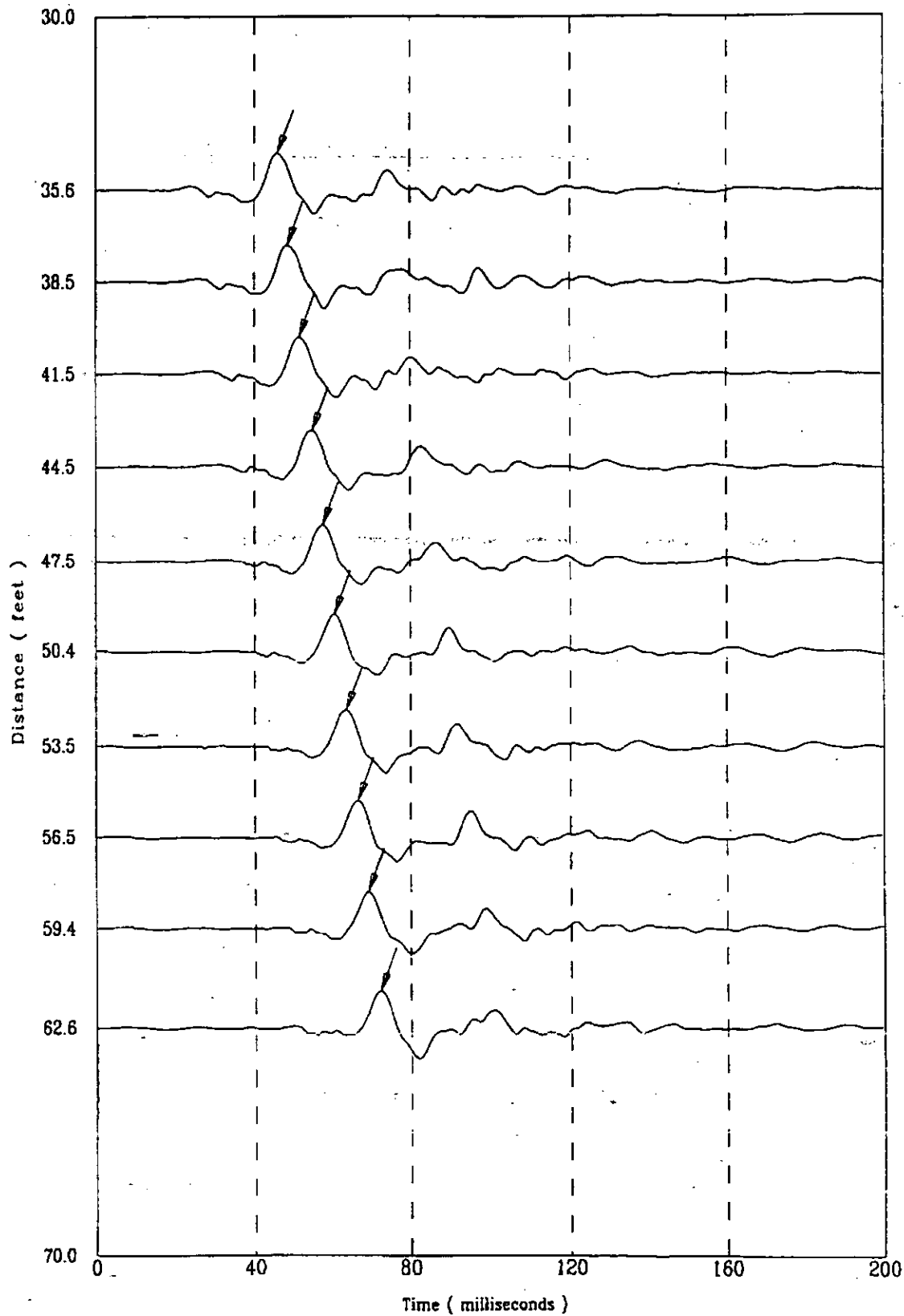


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Applied Research Associates, Inc.  
CPT-104

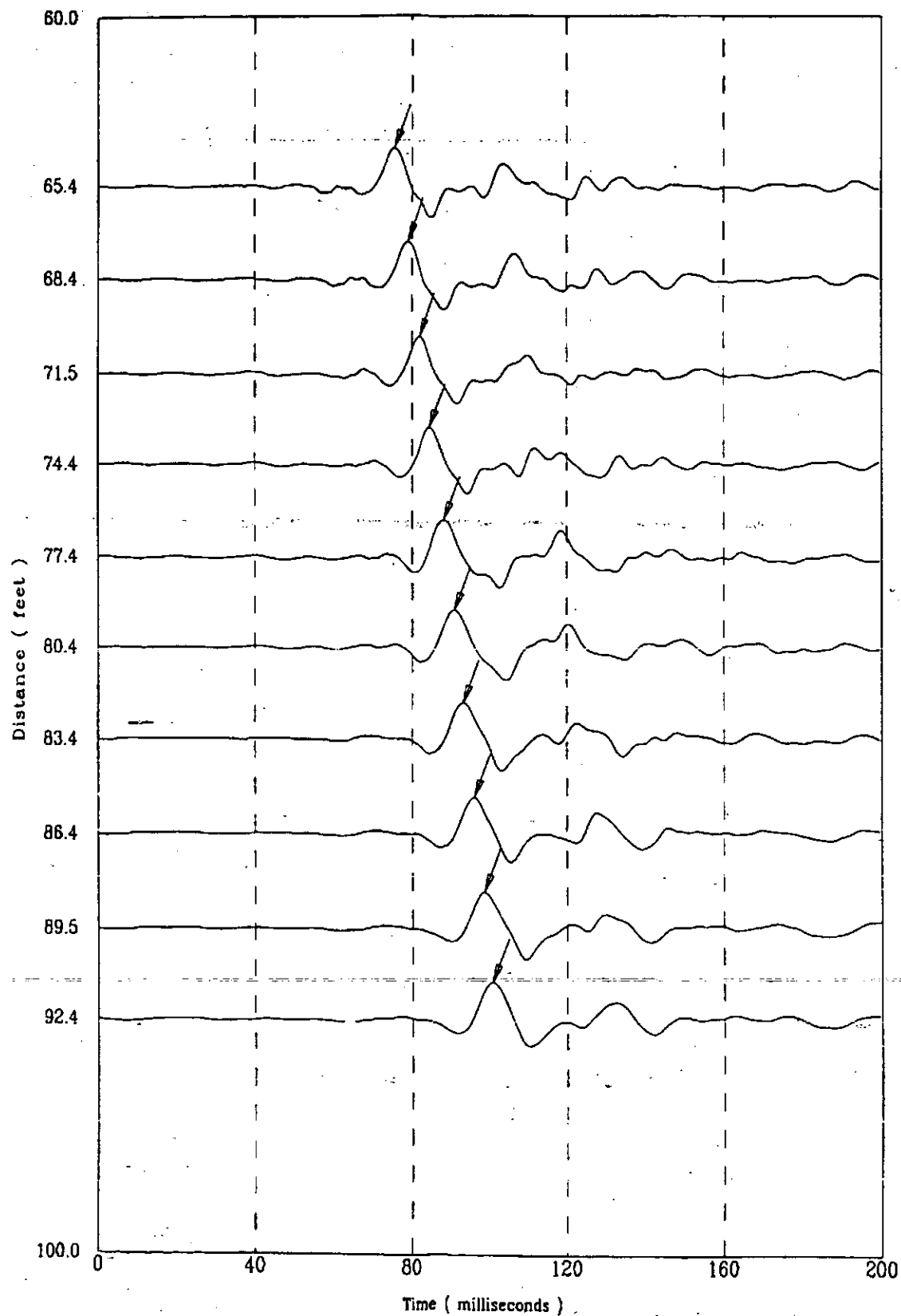
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-104

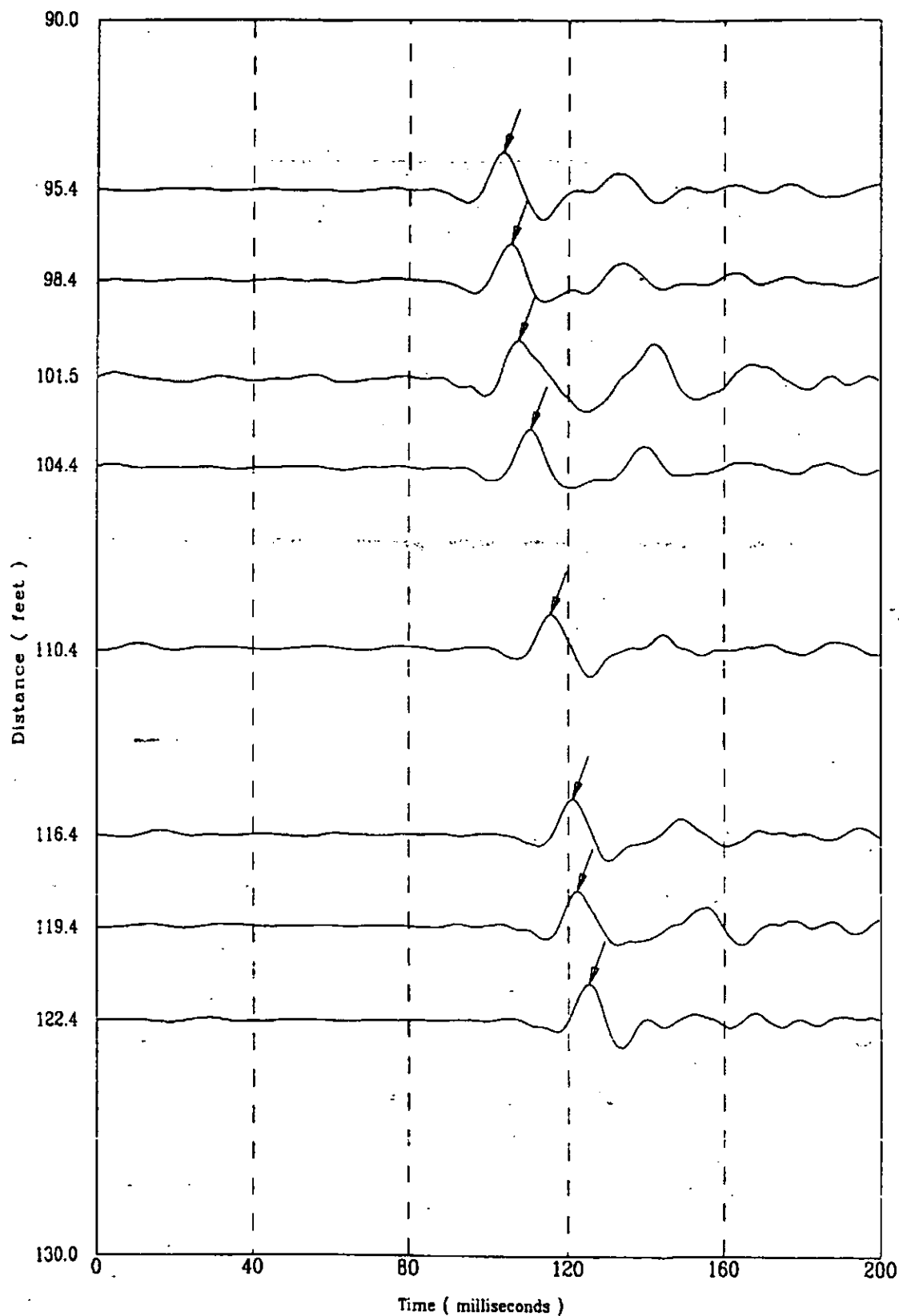
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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-104

S Wave  
02/20/98



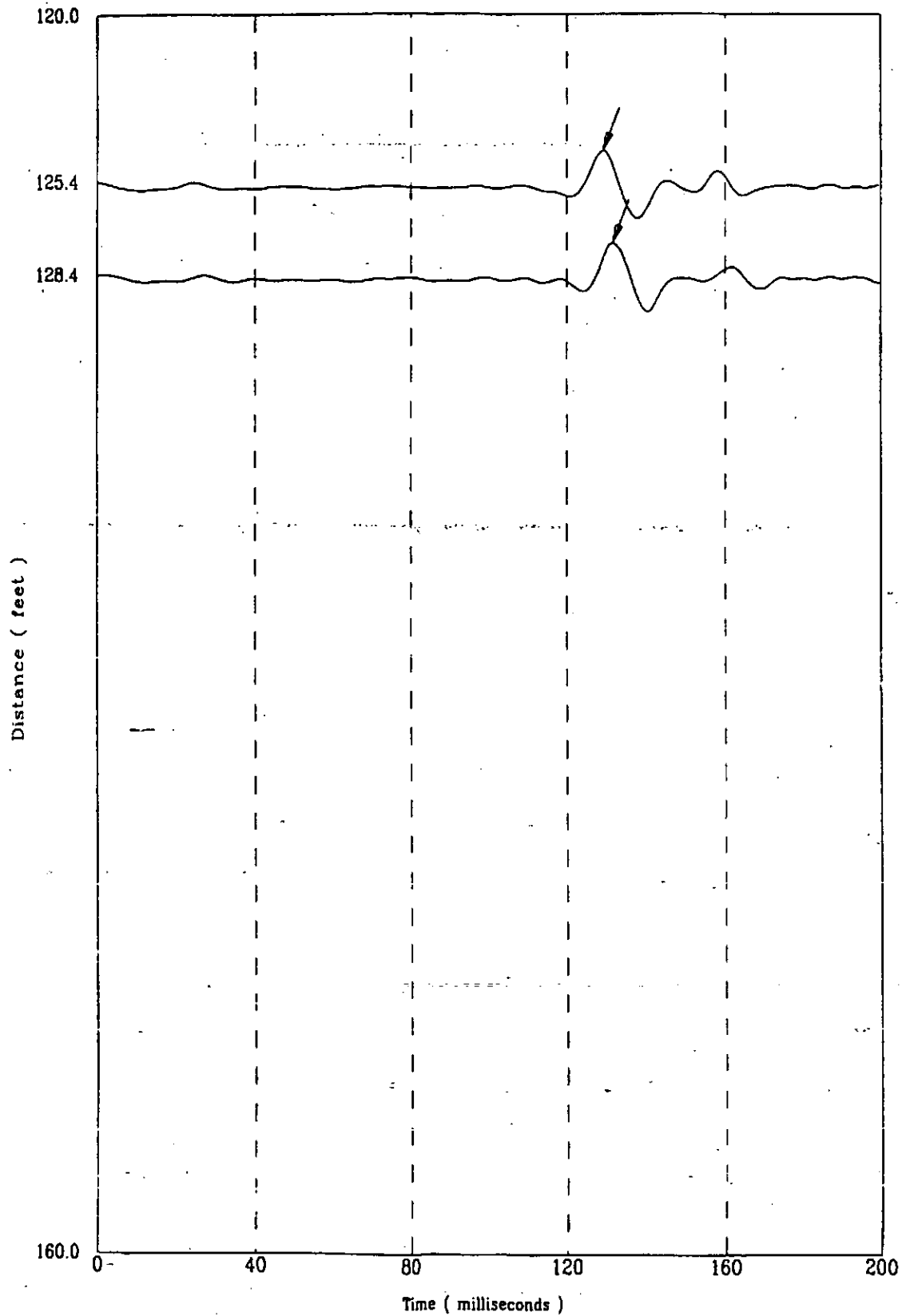
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R/O

Applied Research Associates, Inc.  
CPT-104

S Wave  
02/20/98



File 420FB02S

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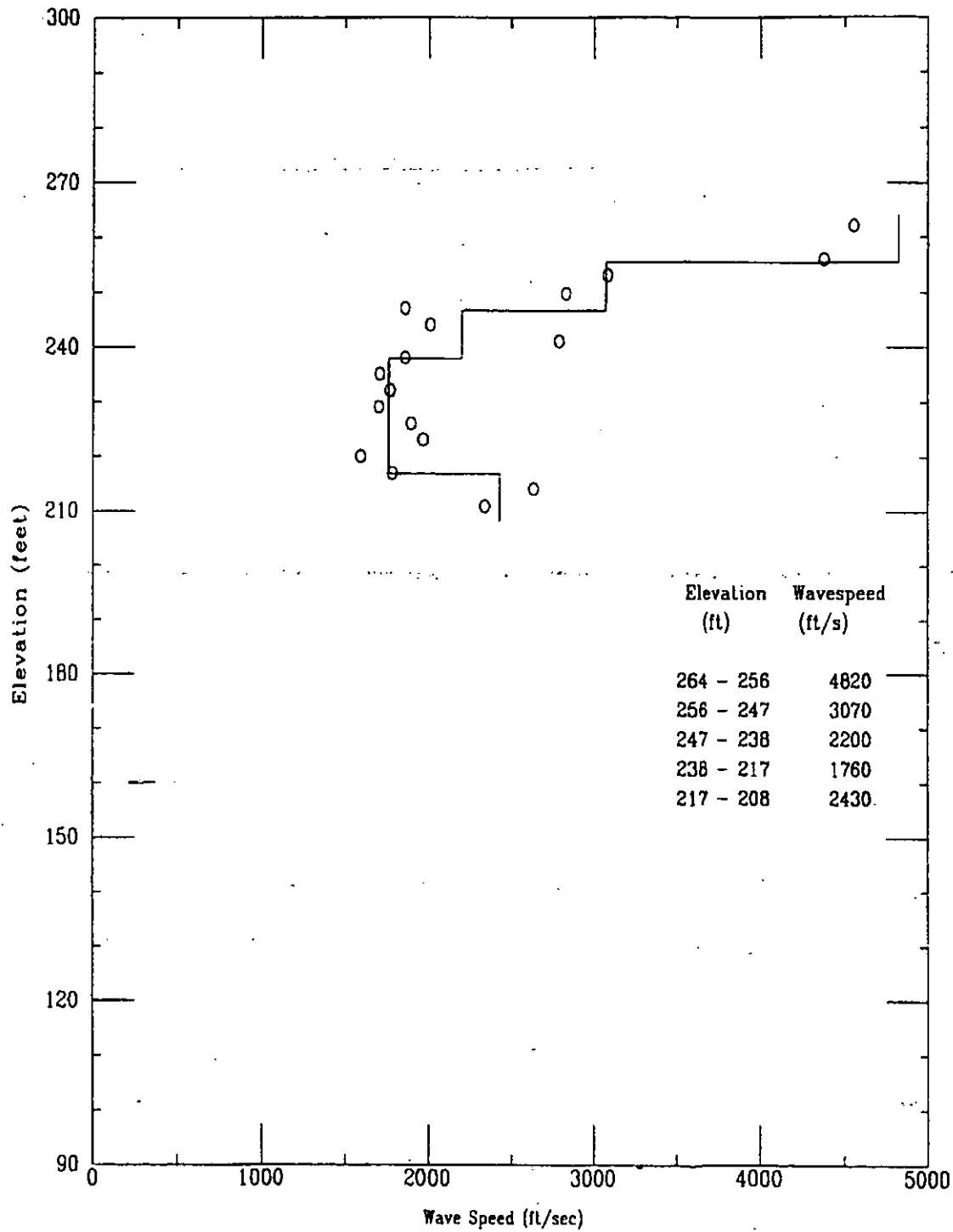
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CPT-104

APPLIED RESEARCH ASSOCIATES, INC.

02/20/98

### Compression Wave Speeds



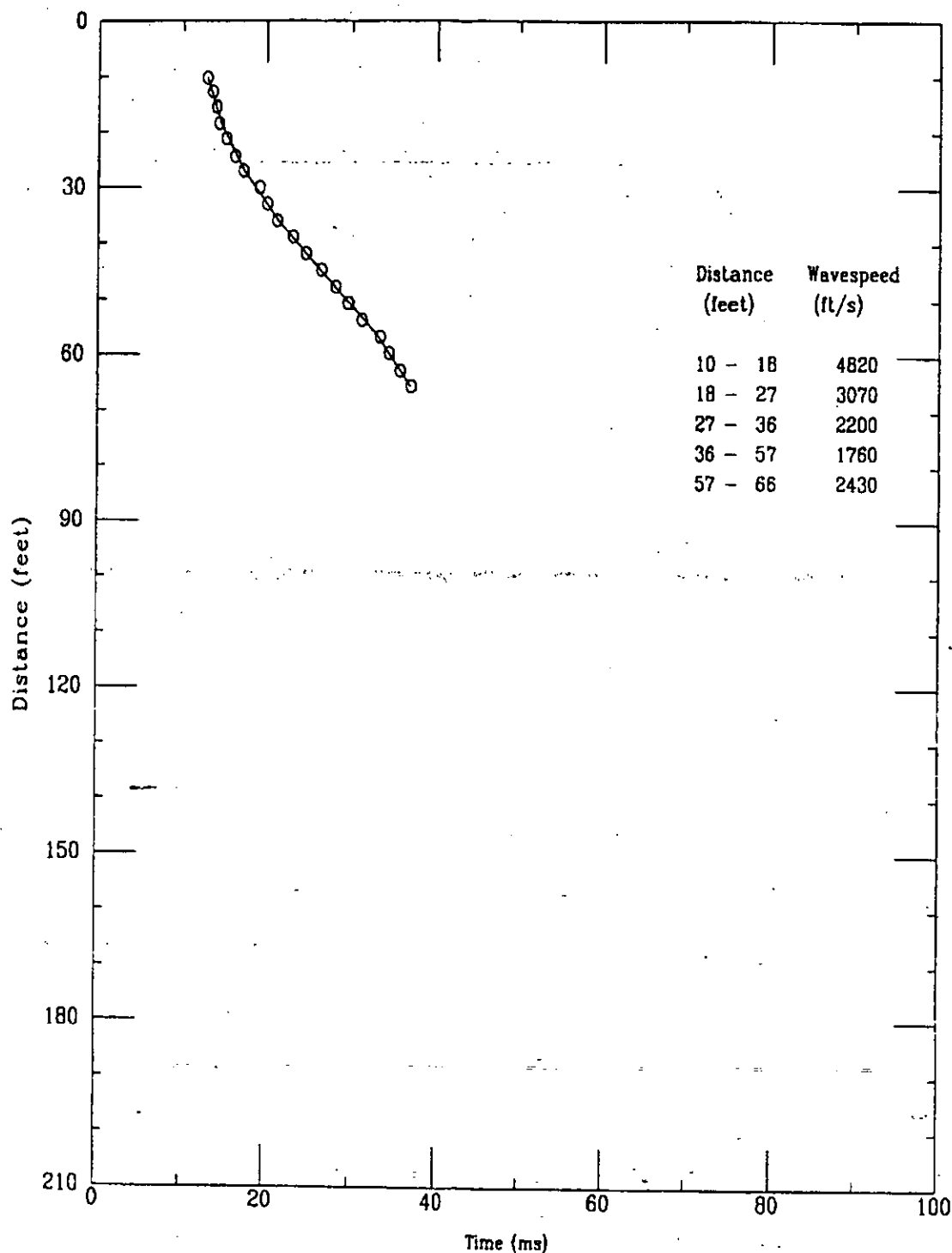
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35 of 522

CPT-104

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

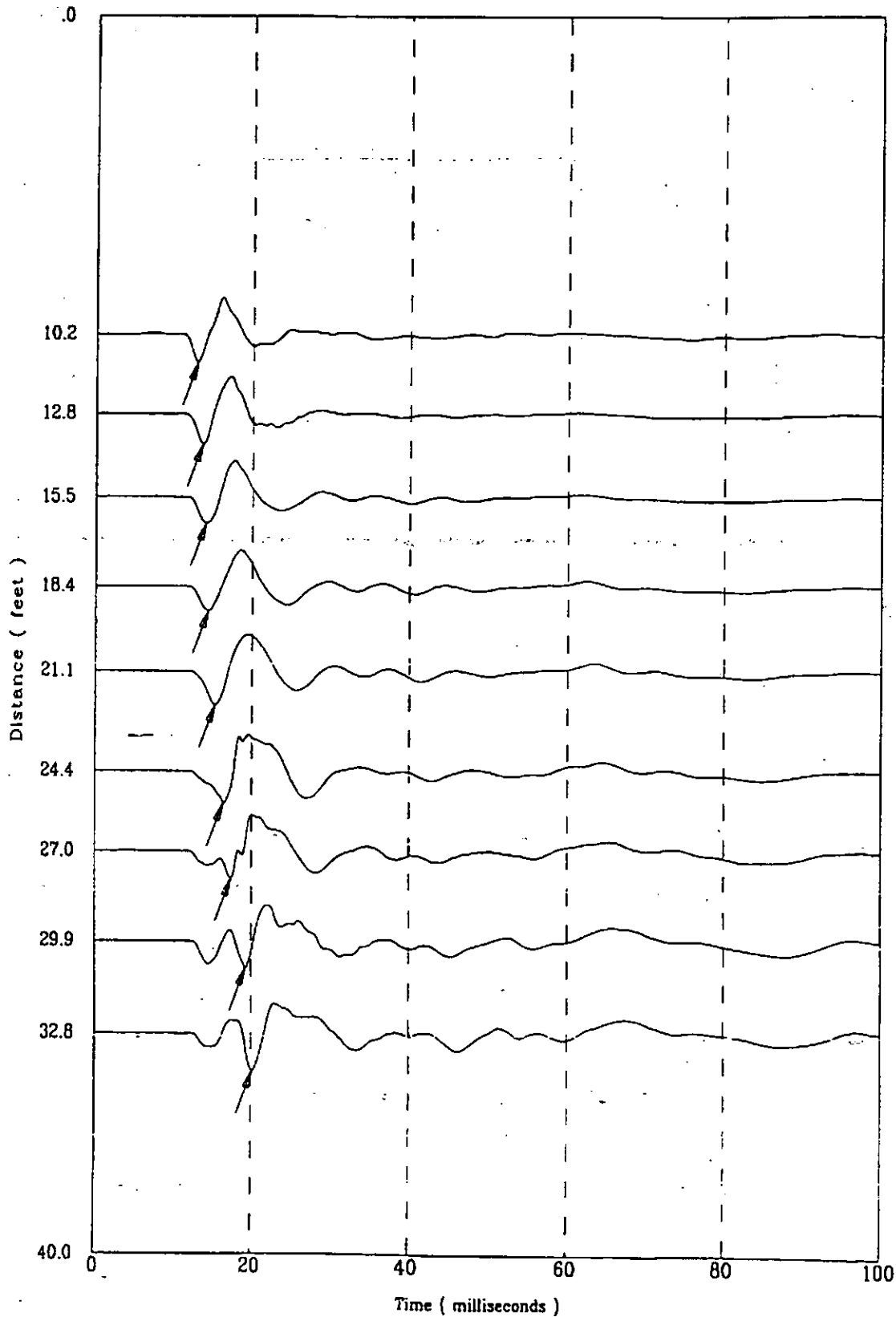
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-104

P Wave  
02/20/98

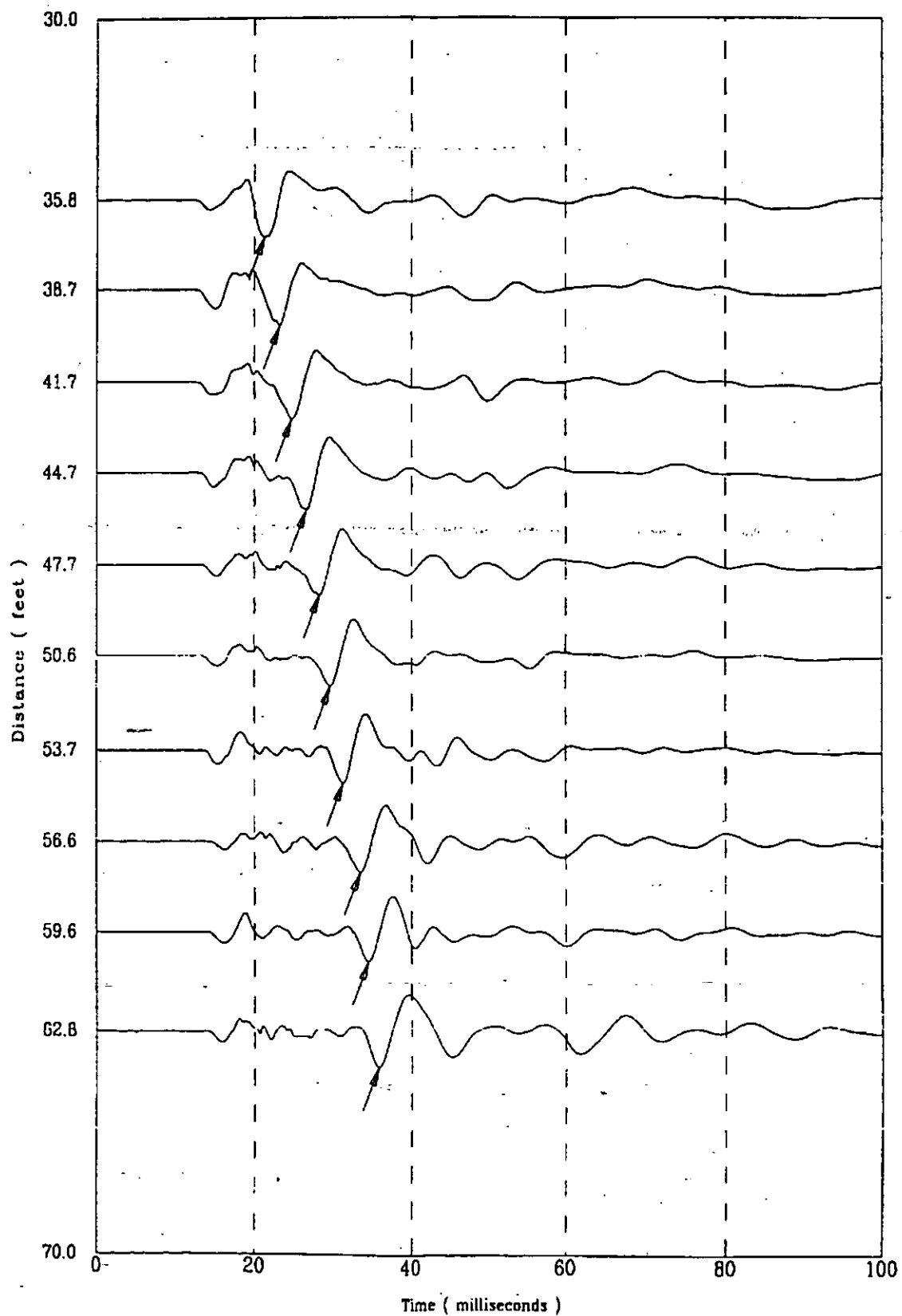


File #2018025

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-104.

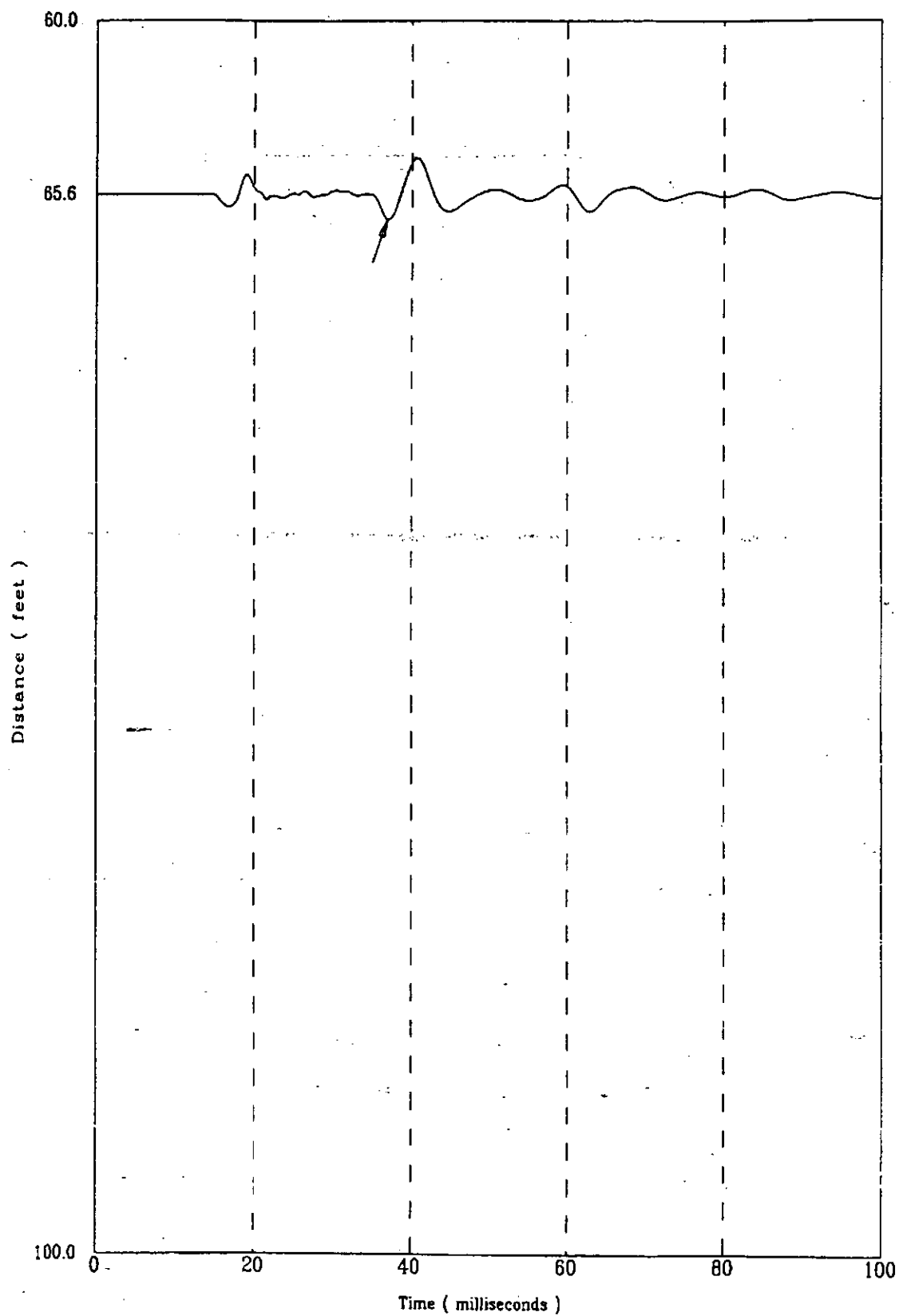
P Wave  
02/20/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-104

P Wave  
02/20/98



CPT-113

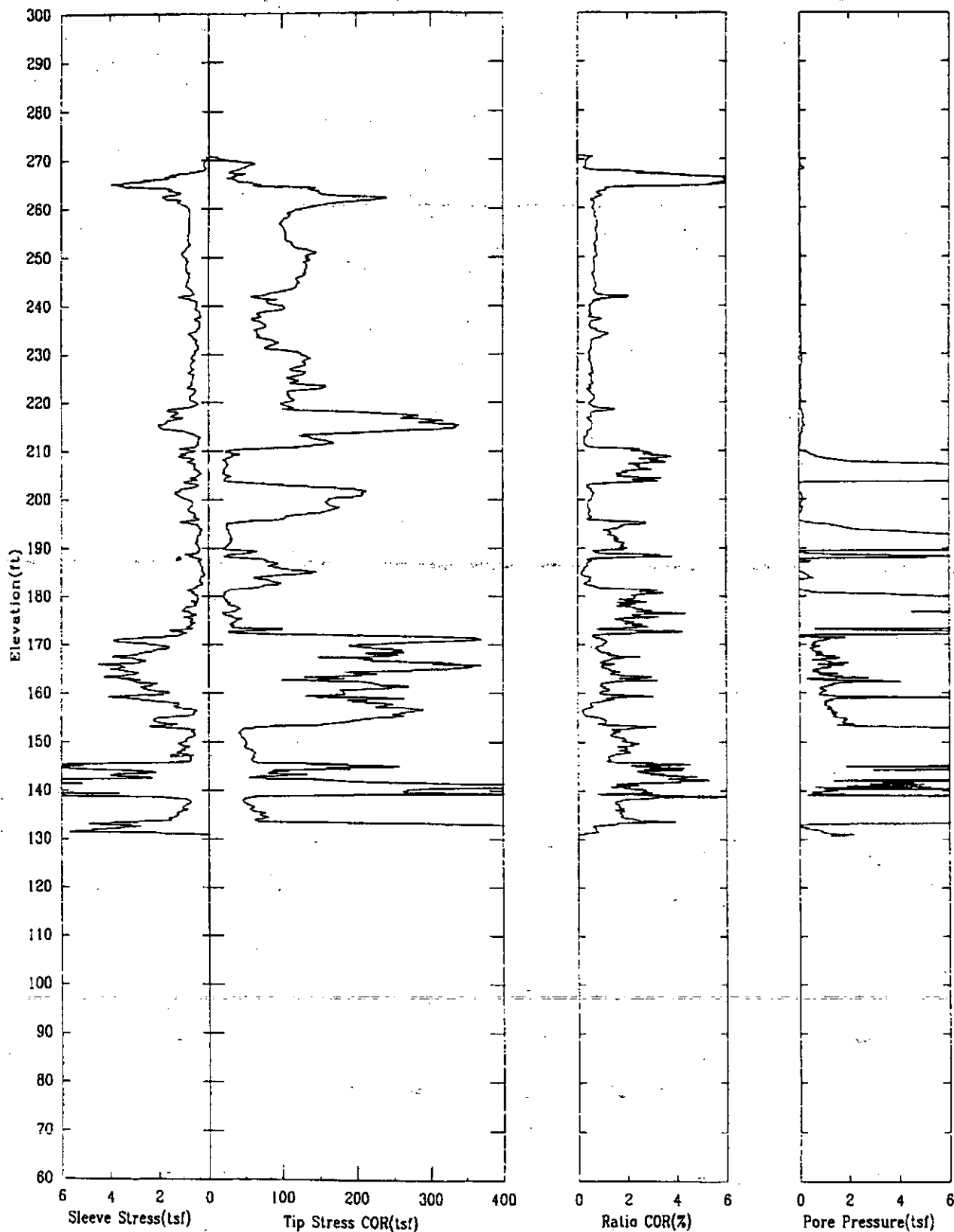
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-0000/  
02/19/98 R/O

North 79781.00

East 54825.10

Elevation 276.7



CPT-113

APPLIED RESEARCH ASSOCIATES, INC.

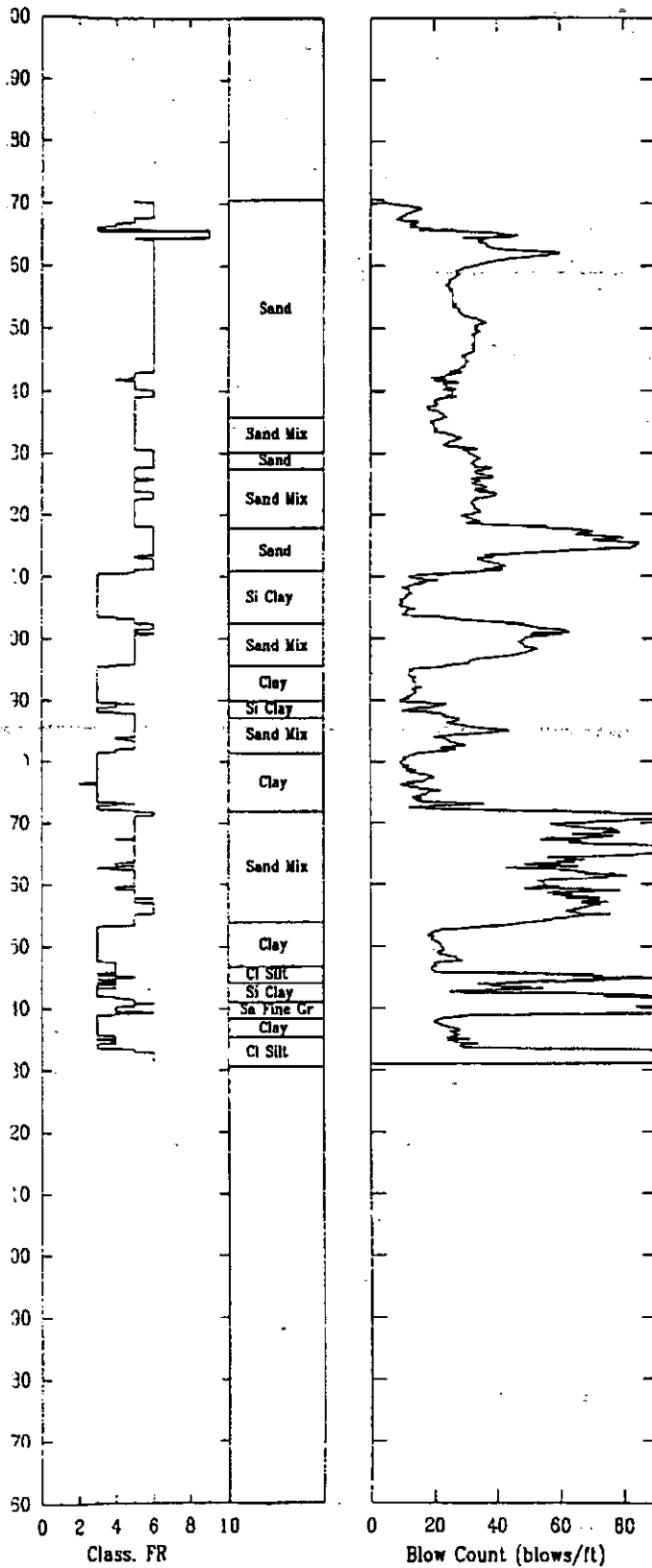
K-TRT-F-00001

02/19/98<sup>R</sup>/o

North 79781.00

East 54825.10

Elevation 276.7



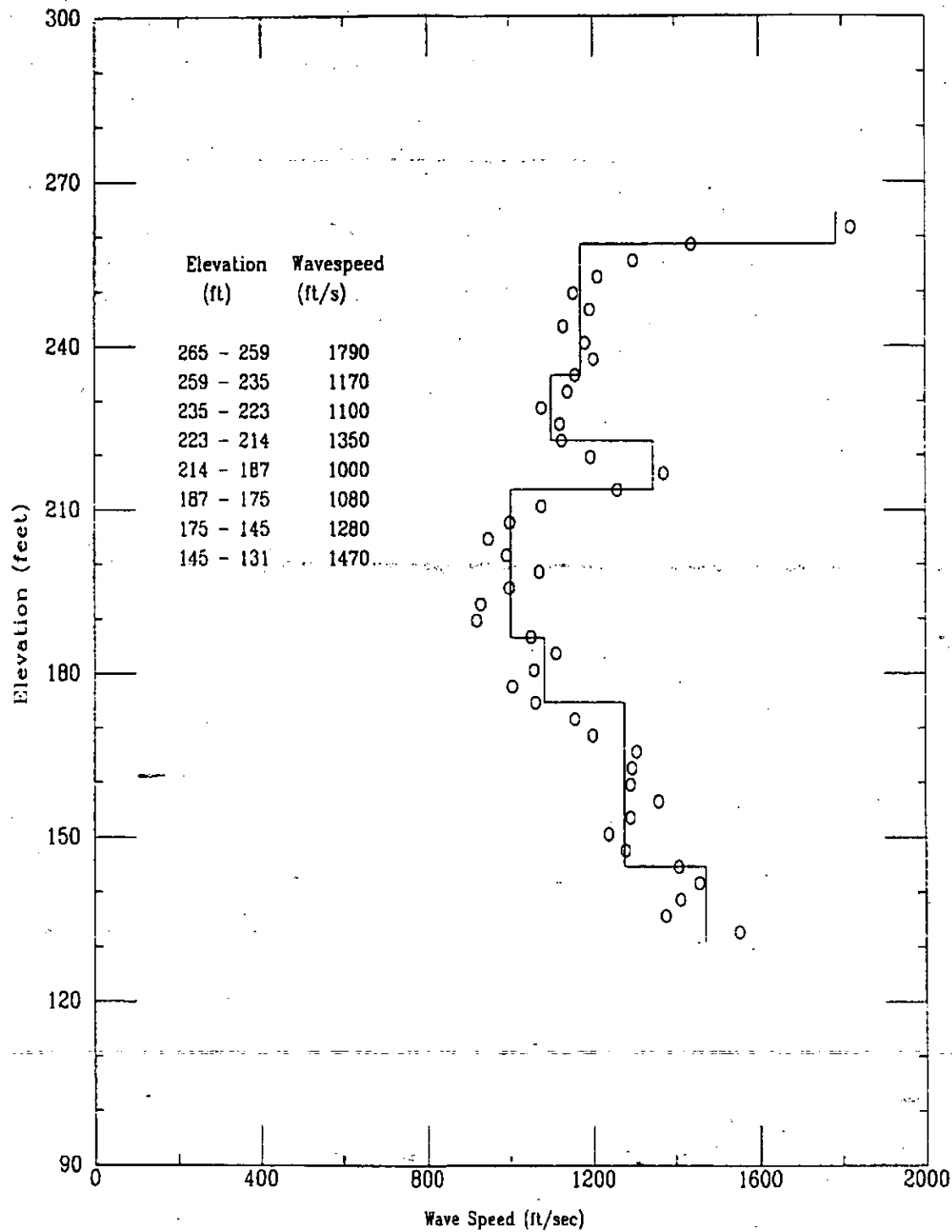


CPT-113

APPLIED RESEARCH ASSOCIATES, INC.

02/19/98

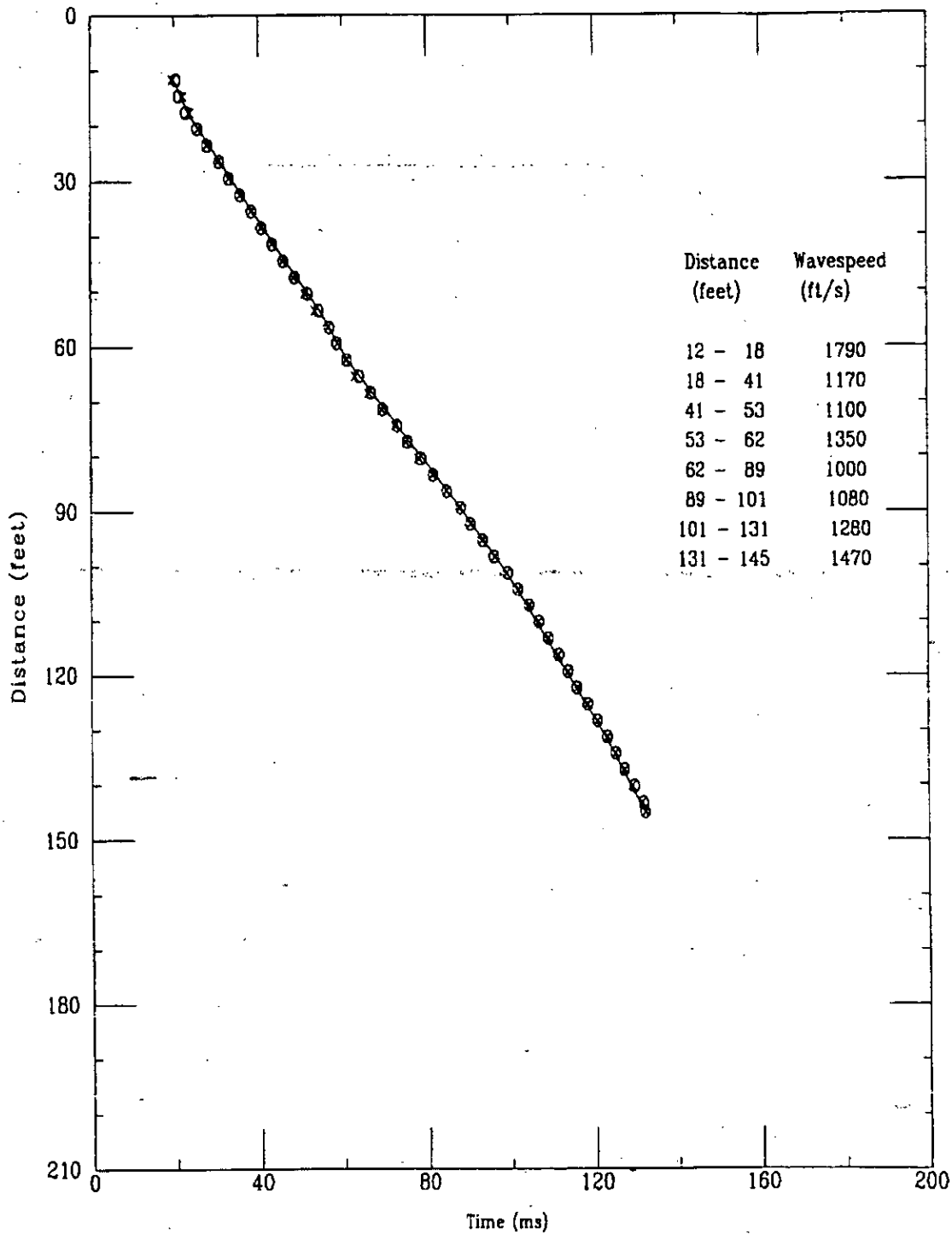
Shear Wave Speeds



CPT-113

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

02/19/98

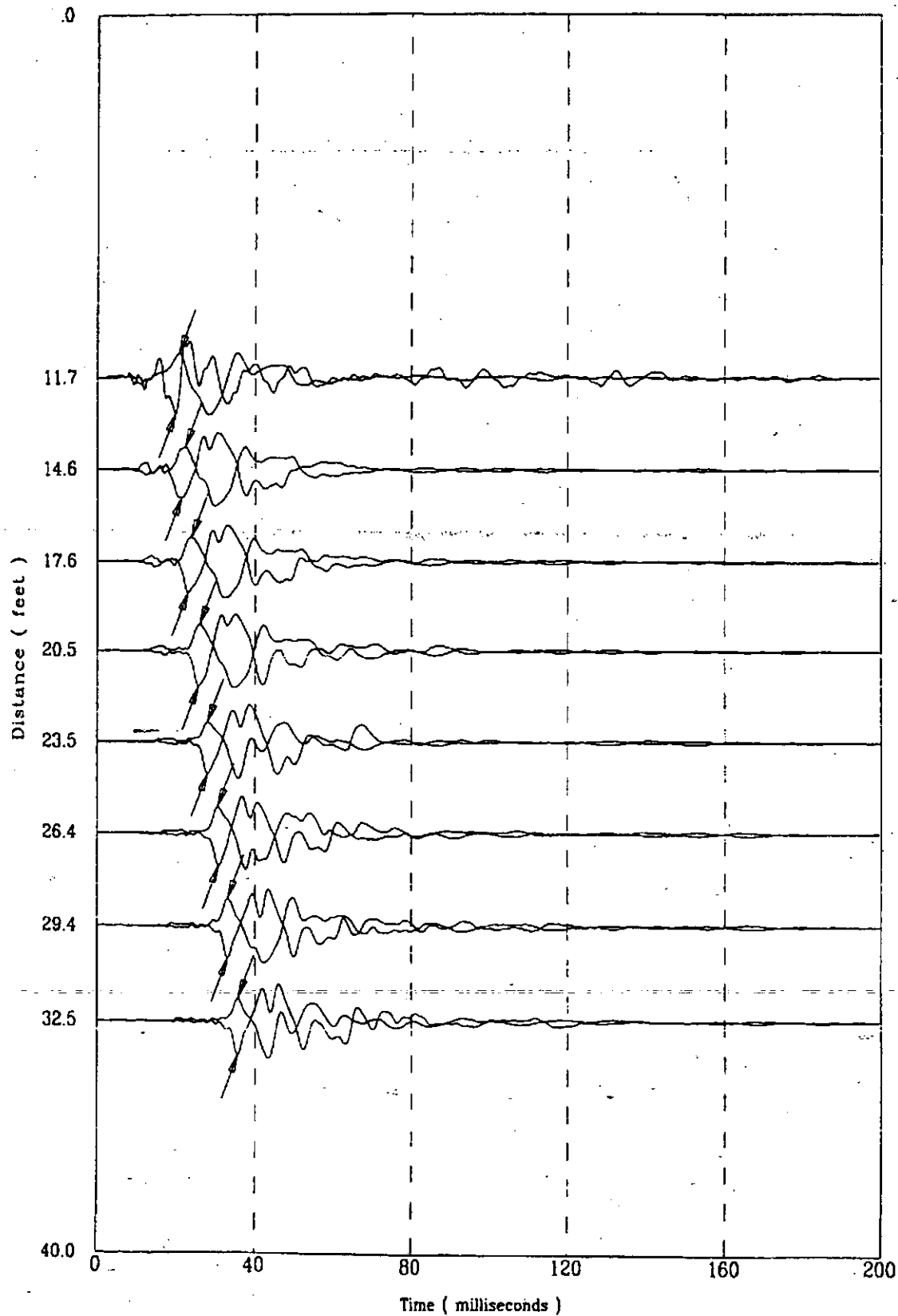


File 5197801S

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-113

S Wave  
02/19/98

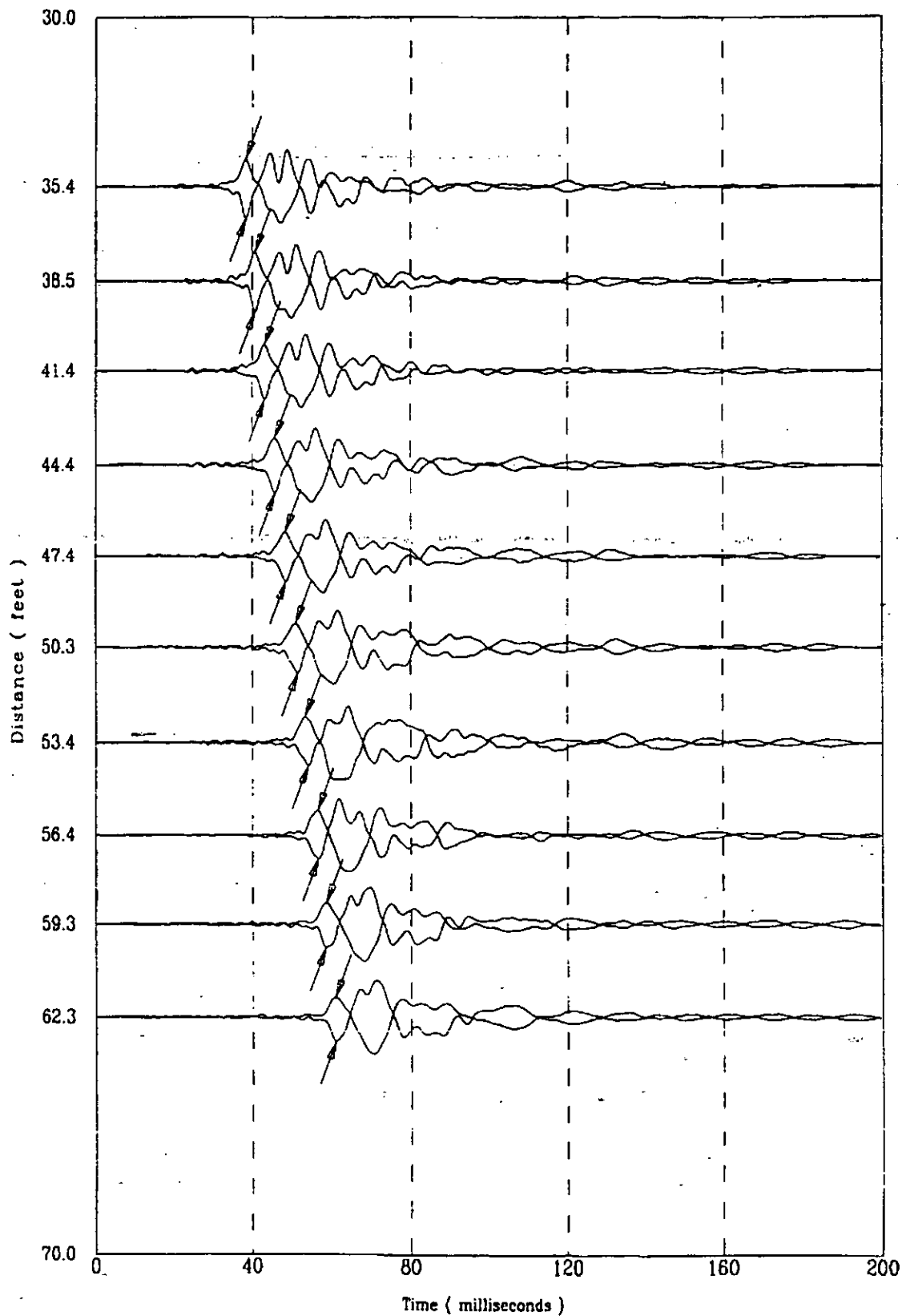


519/801S

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-113

S Wave  
02/19/98

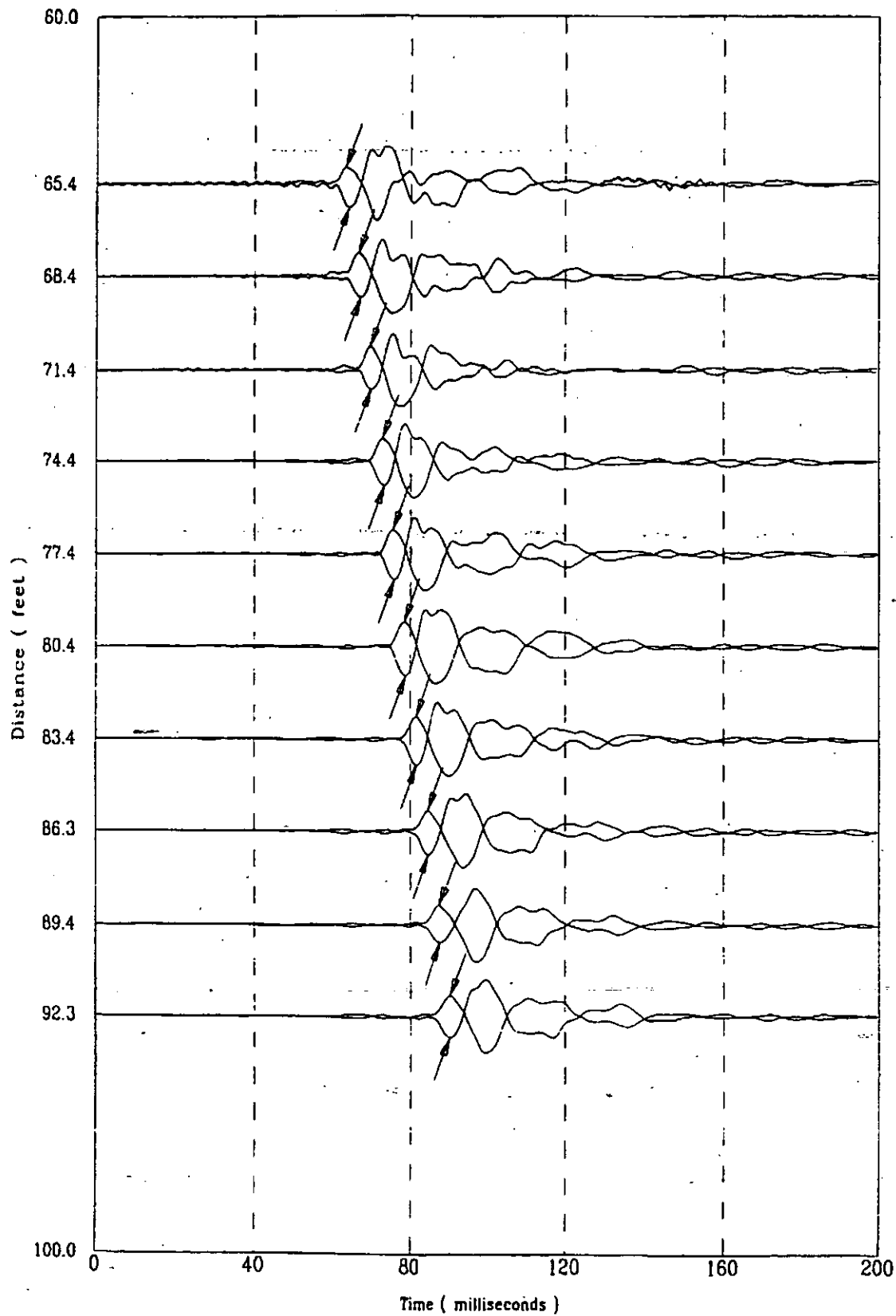


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K-TRT-F-0000/  
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Applied Research Associates, Inc.  
CPT-113

S Wave  
02/19/98



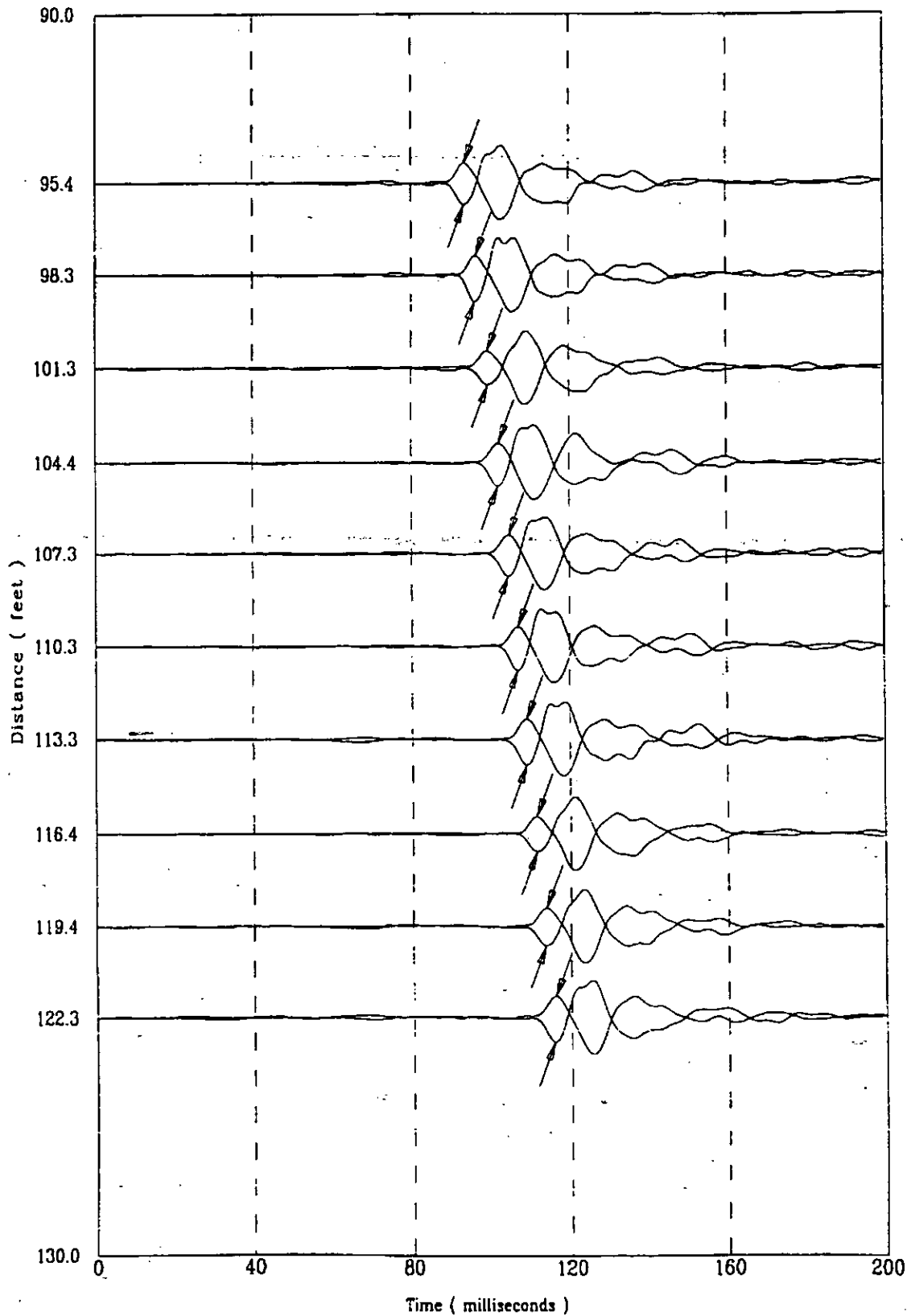
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46 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-113

S Wave  
02/19/98



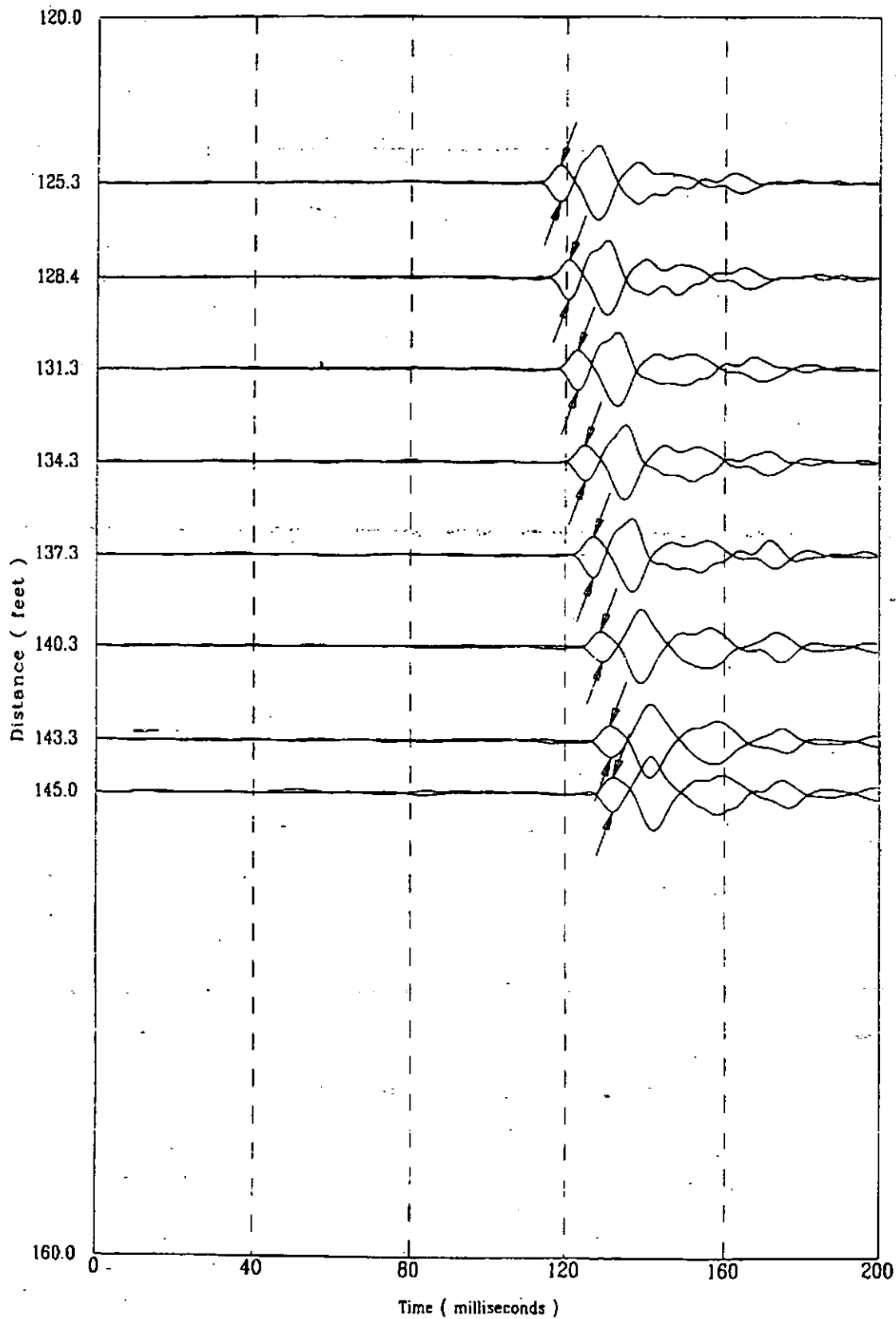
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47 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-113

S Wave  
02/19/98



519/801S

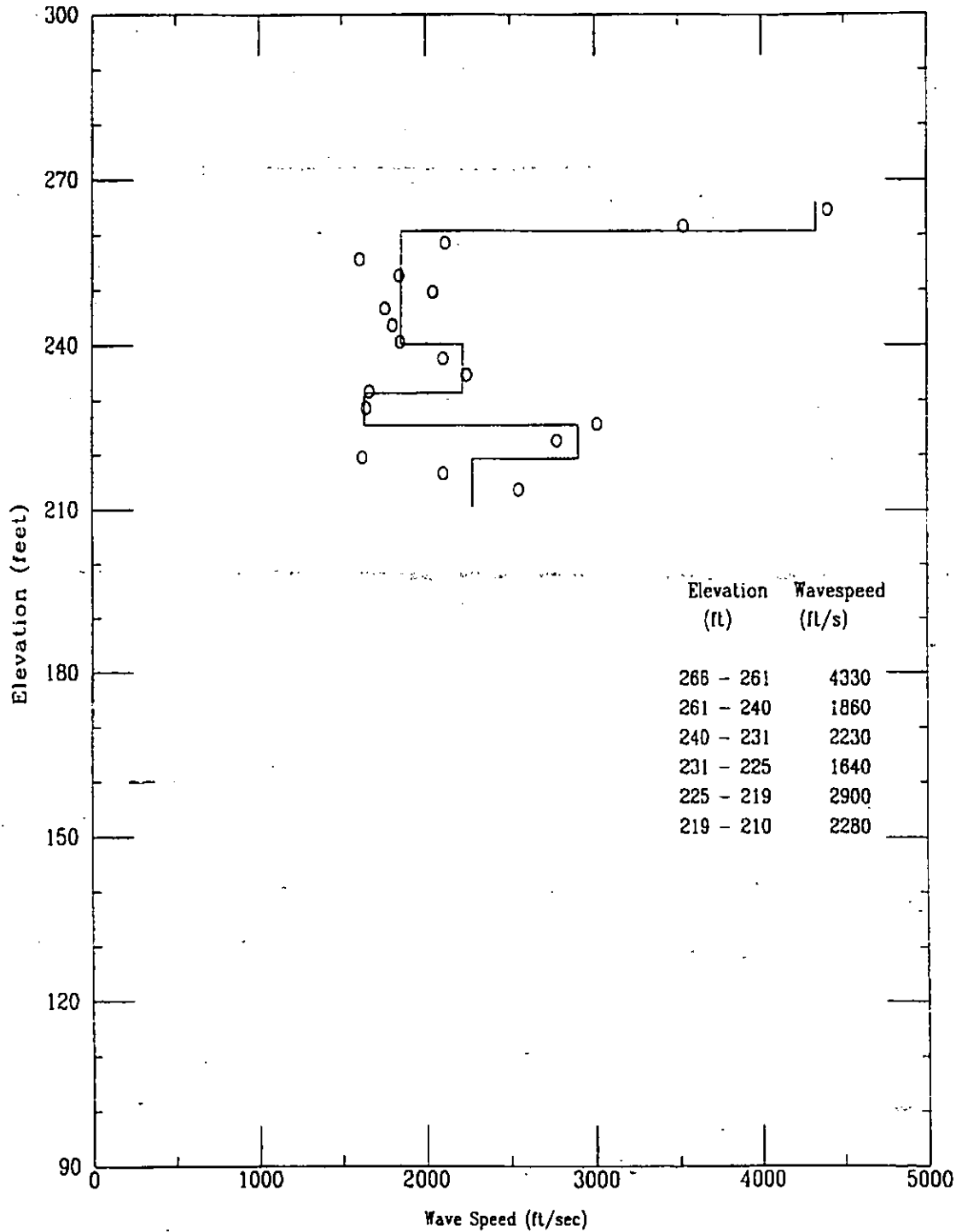
4/8 of 522

CPT-113

APPLIED RESEARCH ASSOCIATES, INC.

02/19/98

Compression Wave Speeds





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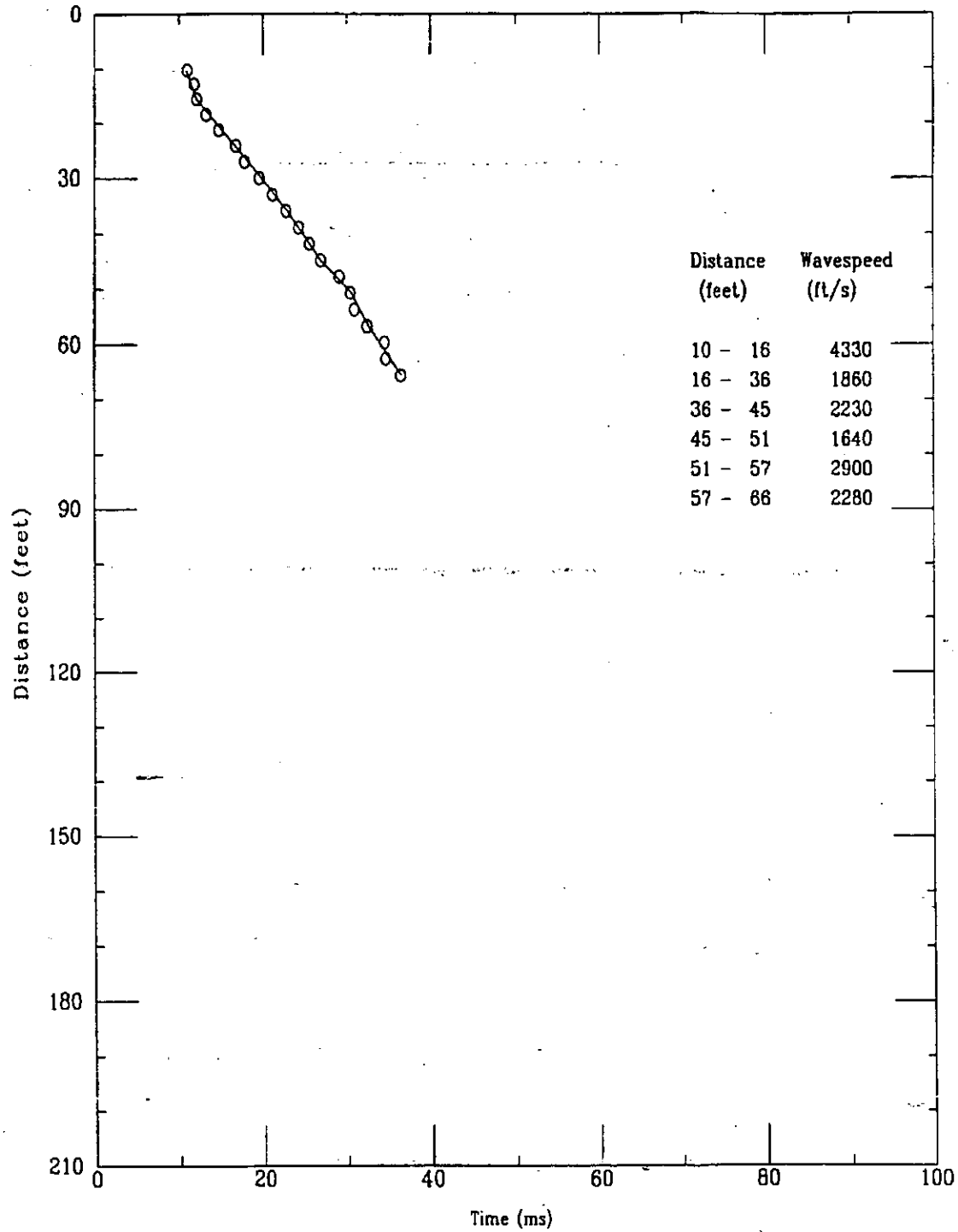
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CPT-113

APPLIED RESEARCH ASSOCIATES, INC.

02/19/98

Compression Wave Time of Peak

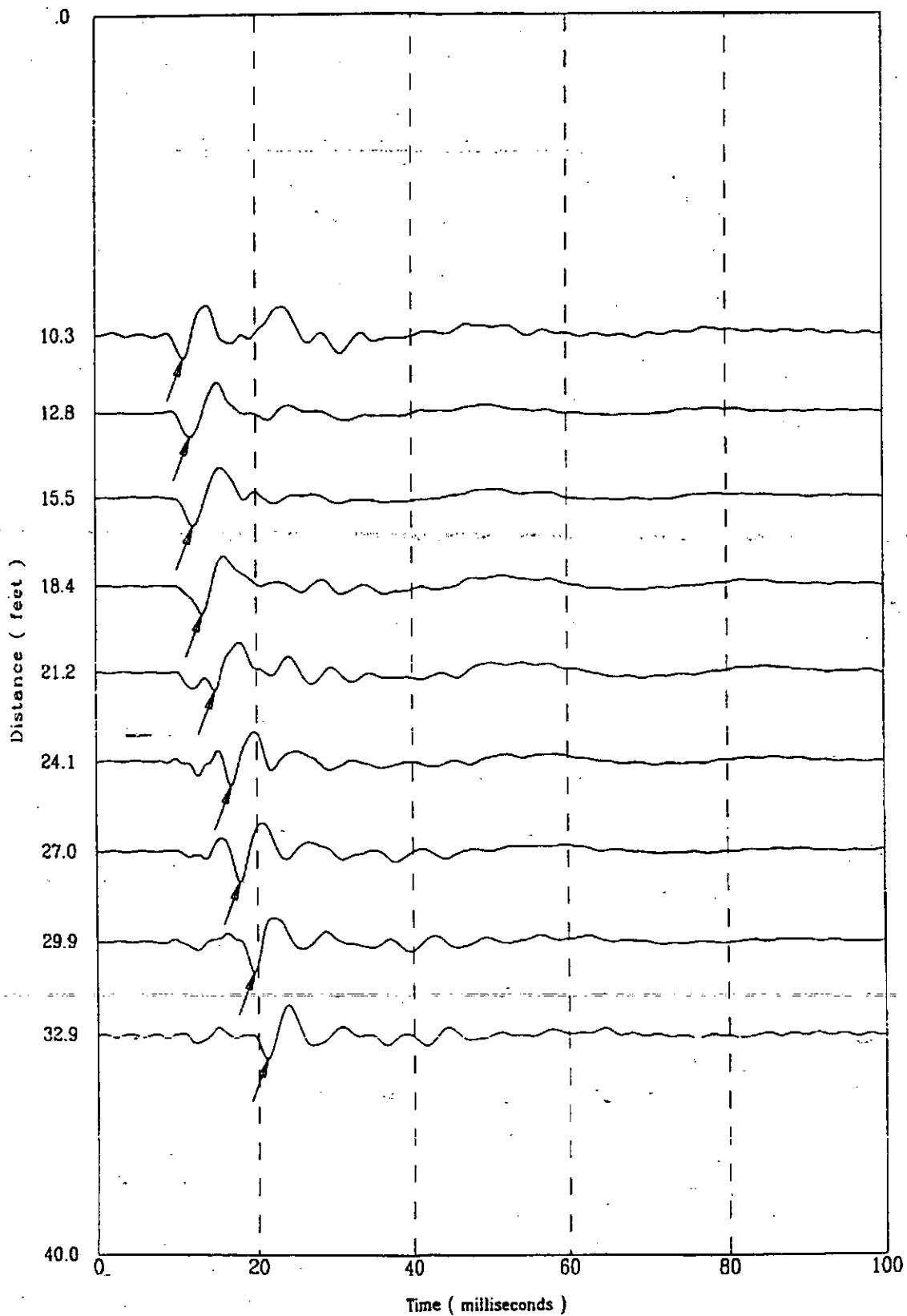


File 519/801S

K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-113

P Wave  
02/19/98

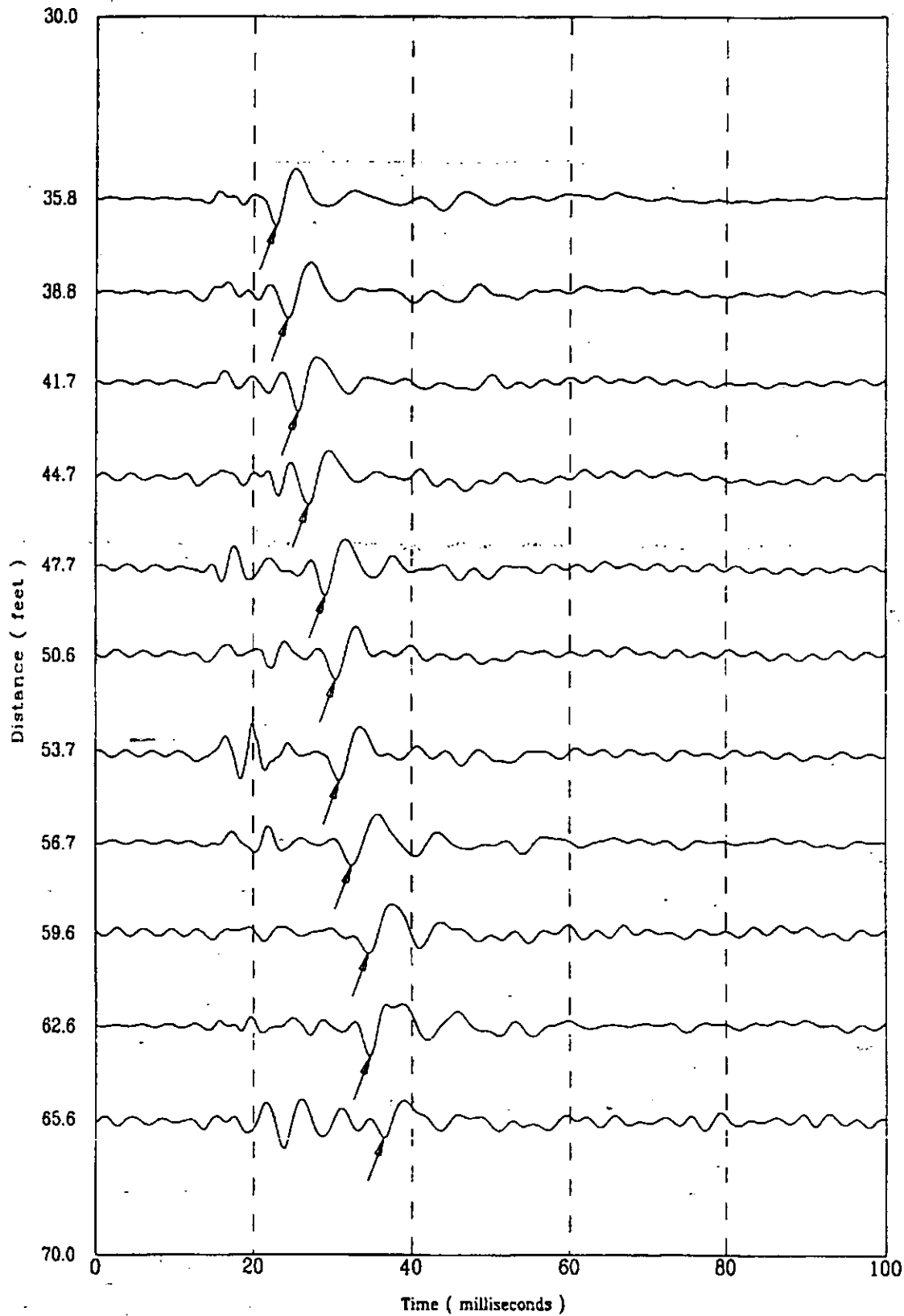


519/801S

K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-113

P Wave  
02/19/98



191801S

CPT-114

APPLIED RESEARCH ASSOCIATES, INC.

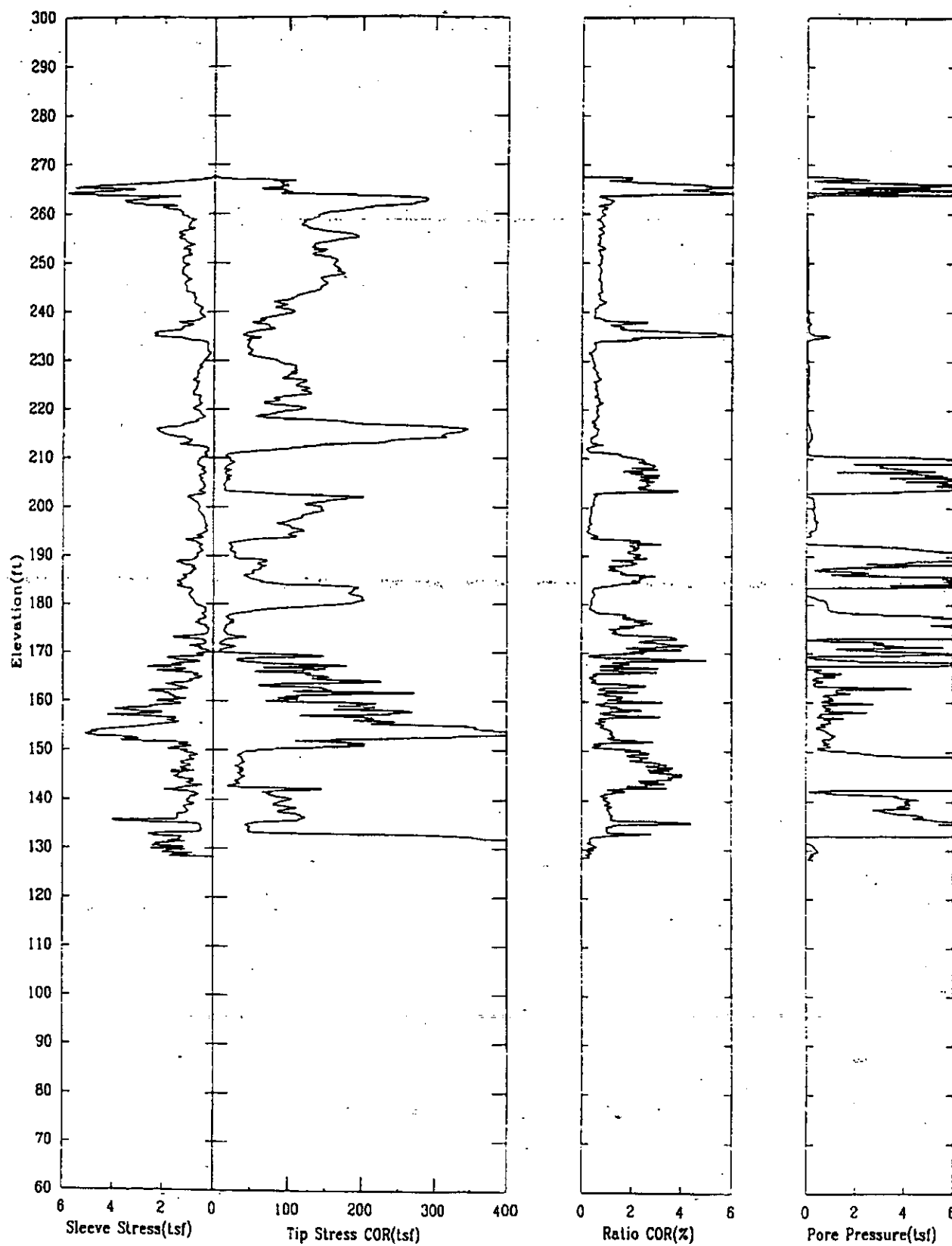
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02/19/98<sup>R/O</sup>

North 79781.01

East 54975.05

Elevation 273.6



CPT-114

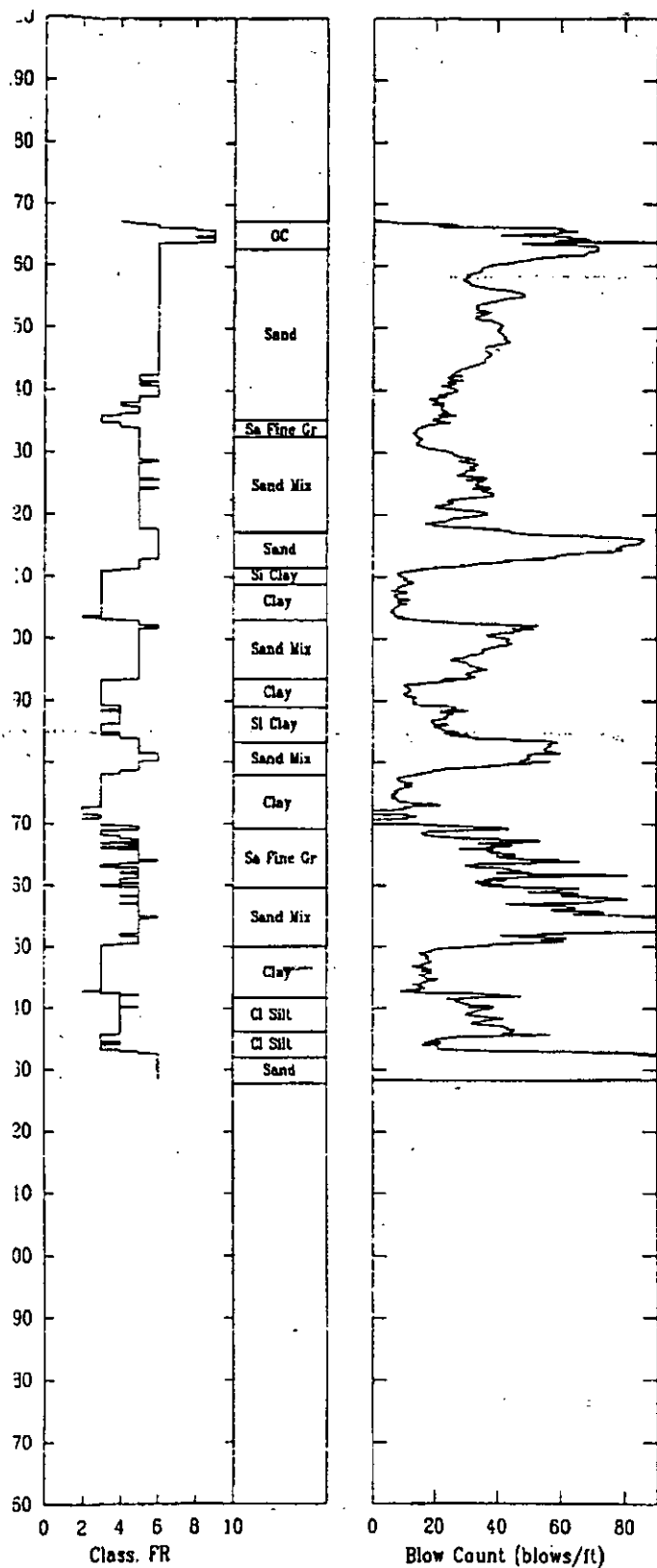
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North 79781.01

East 54975.05

Elevation 273.6

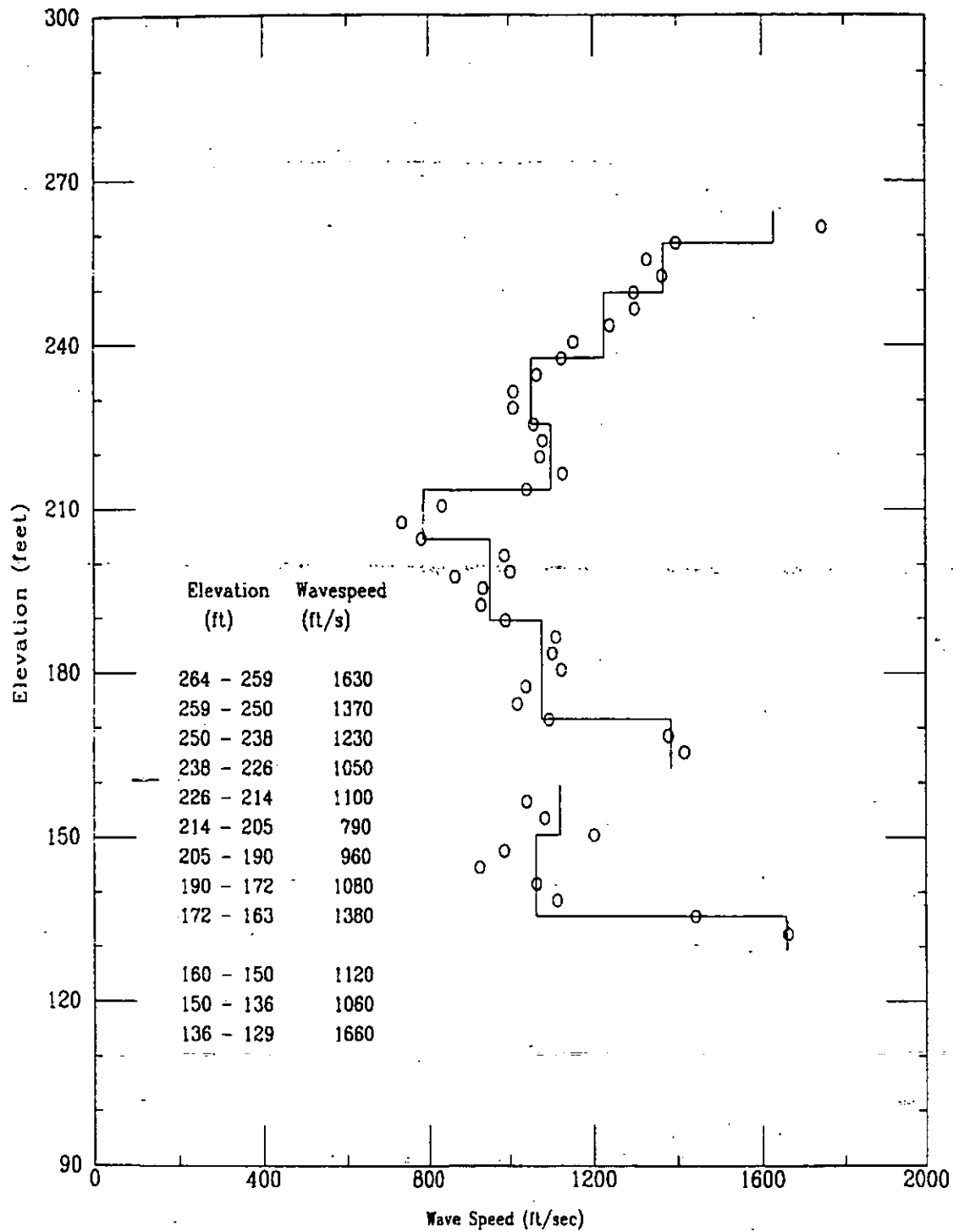


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02/19/98

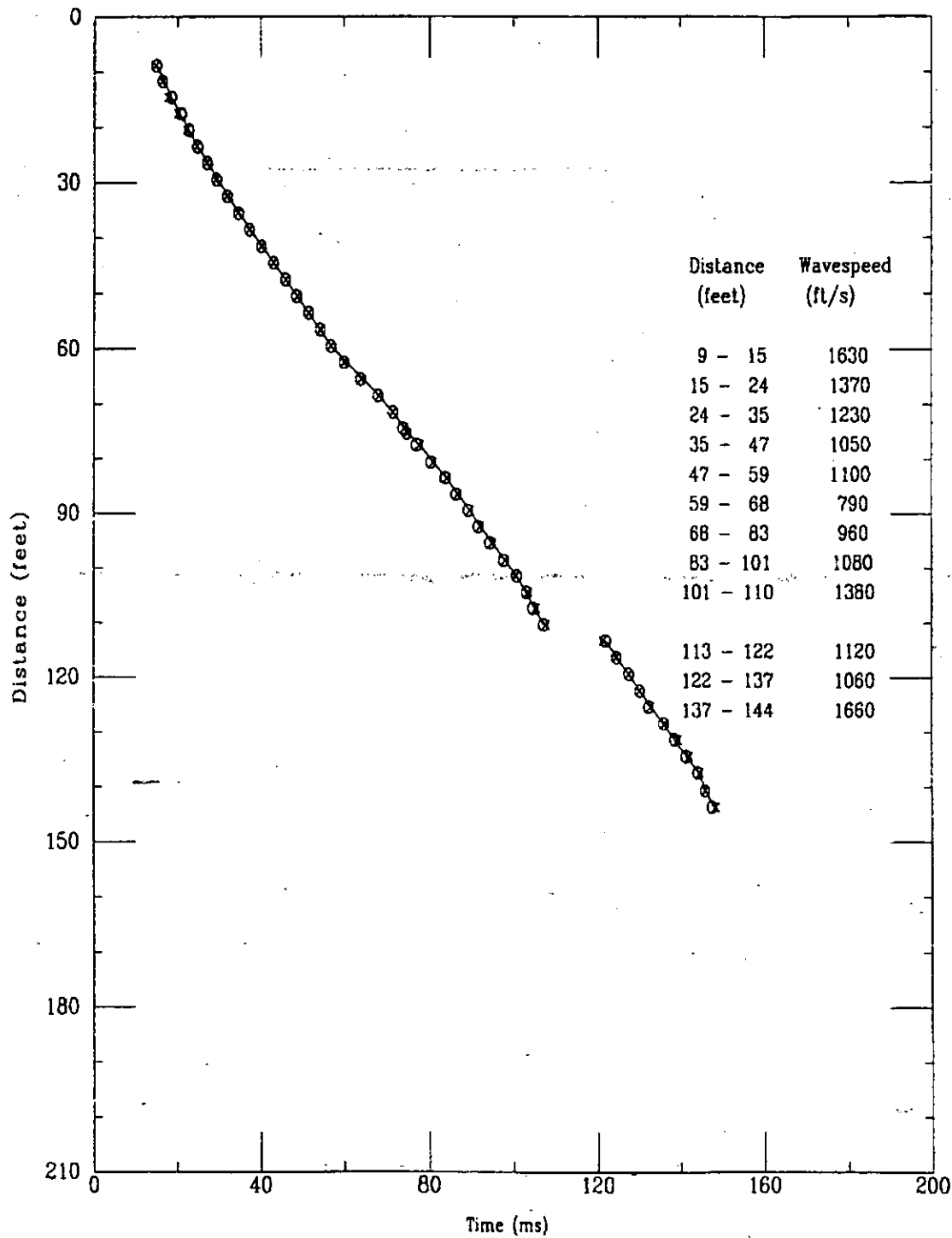
Shear Wave Speeds



CPT-114

APPLIED-RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

02/19/98



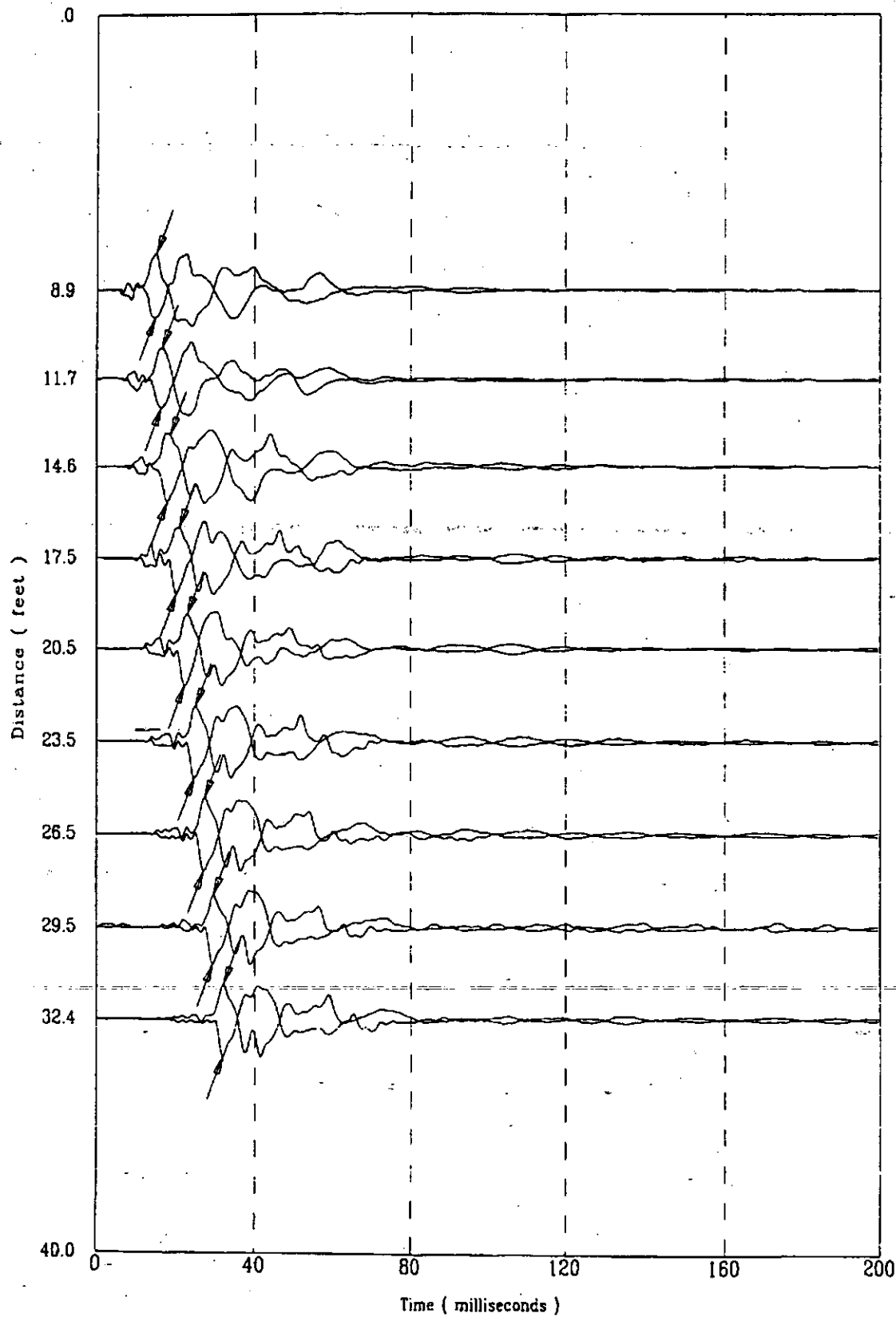
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-114

S Wave  
02/19/98

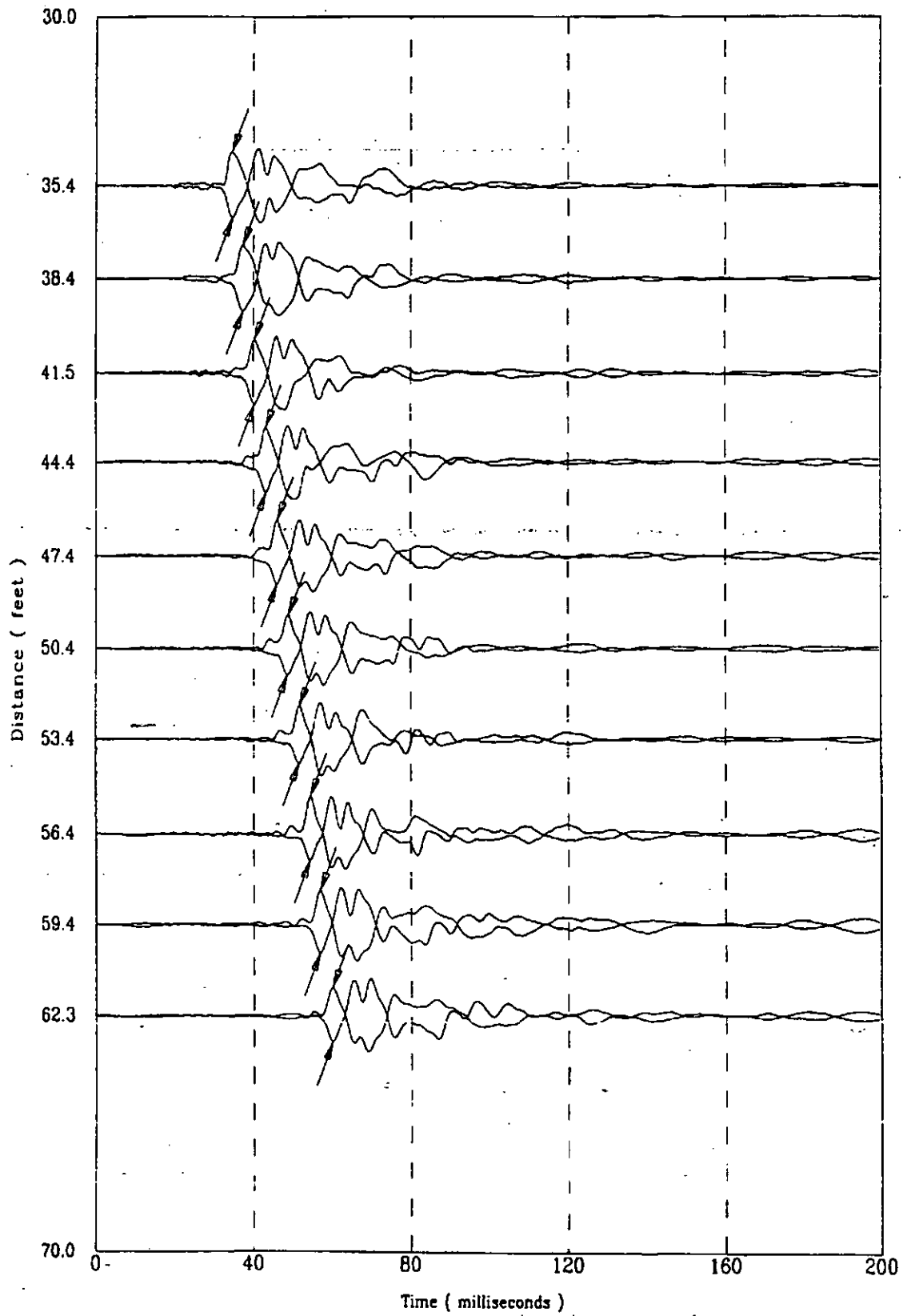


519/804S

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-114

S Wave  
02/19/98

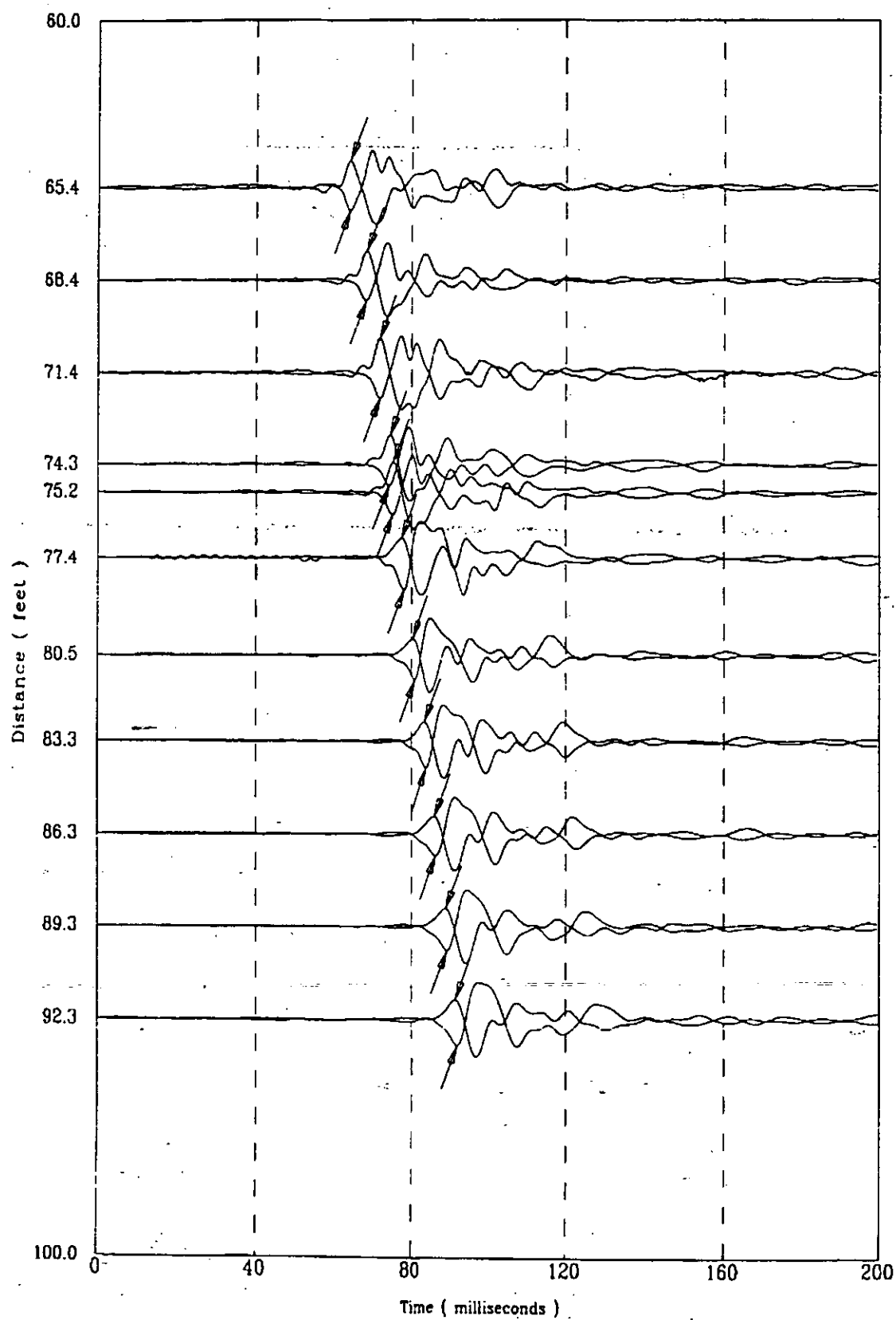


3197804S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-114

S Wave  
02/19/98

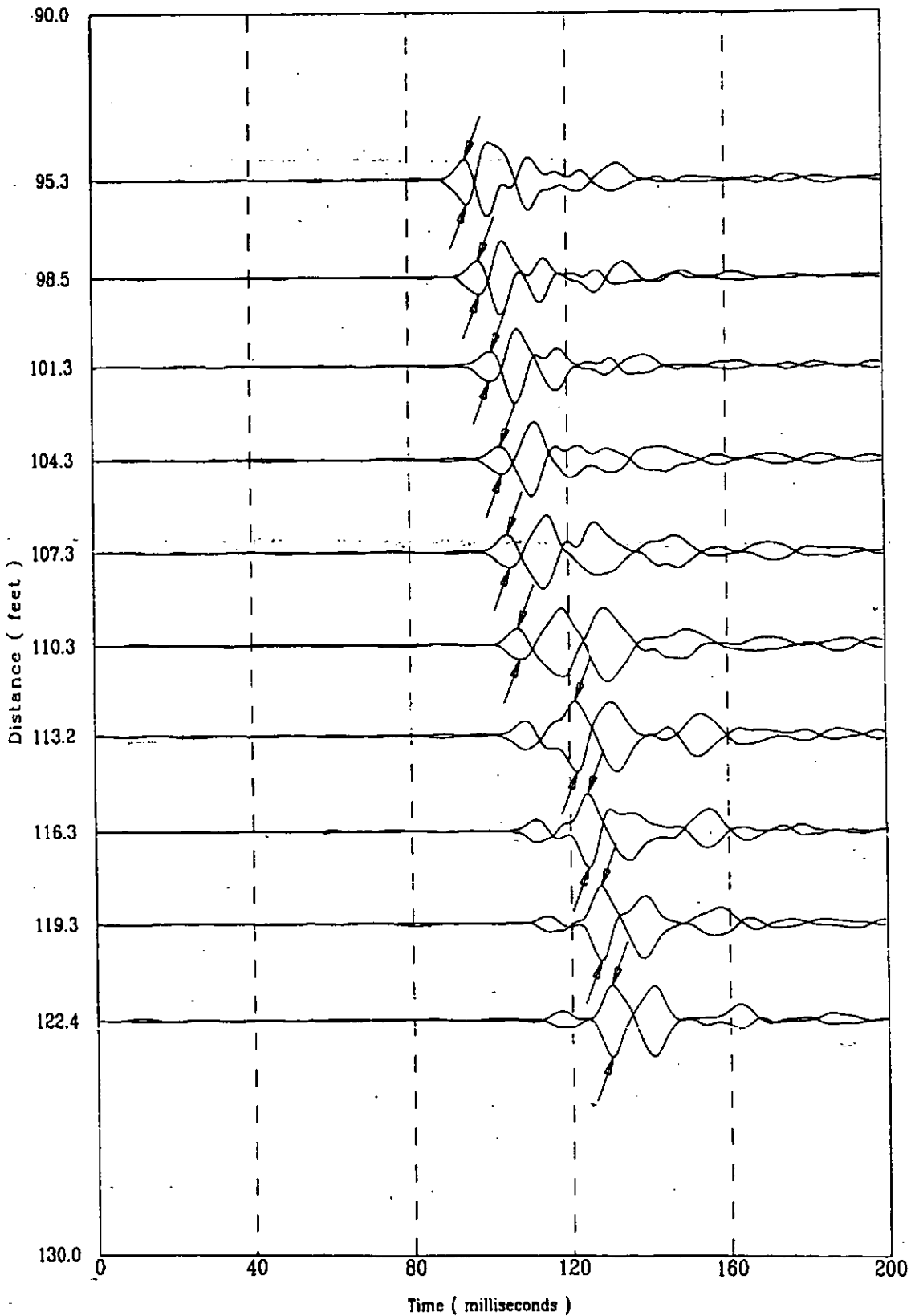


519(804S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-114

S Wave  
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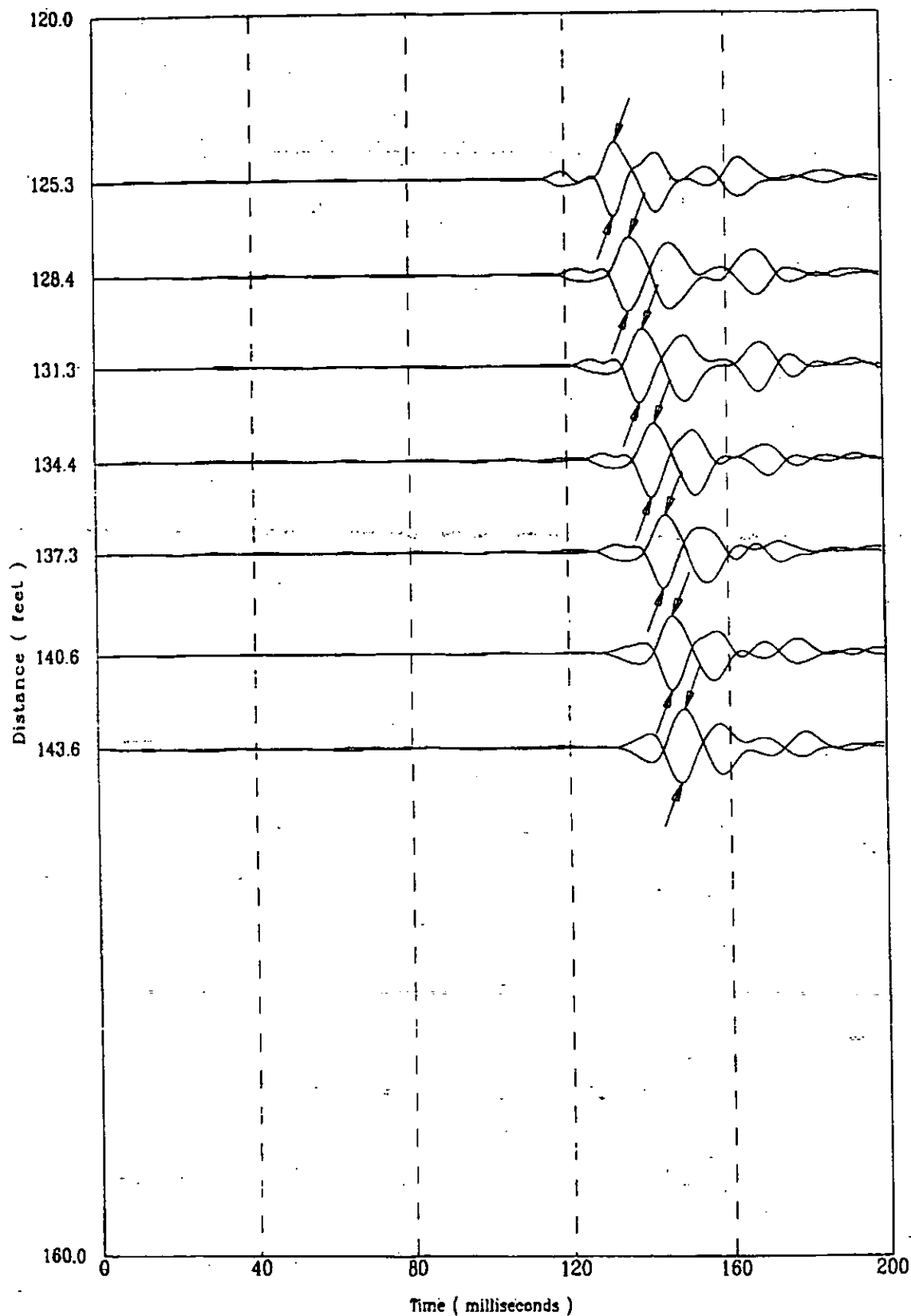


191804S

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-114

S Wave  
02/19/98



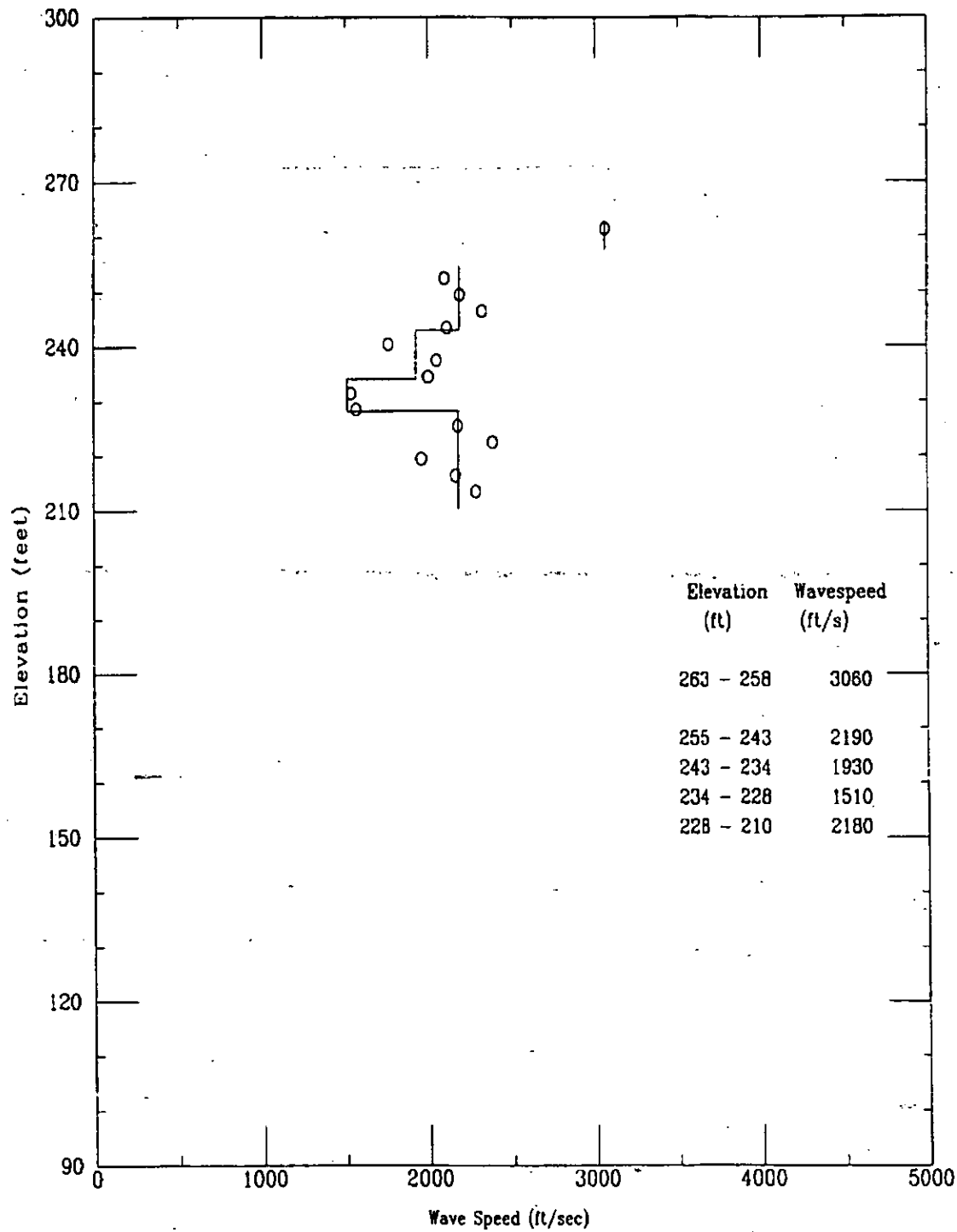
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APPLIED RESEARCH ASSOCIATES, INC.

02/19/98

Compression Wave Speeds

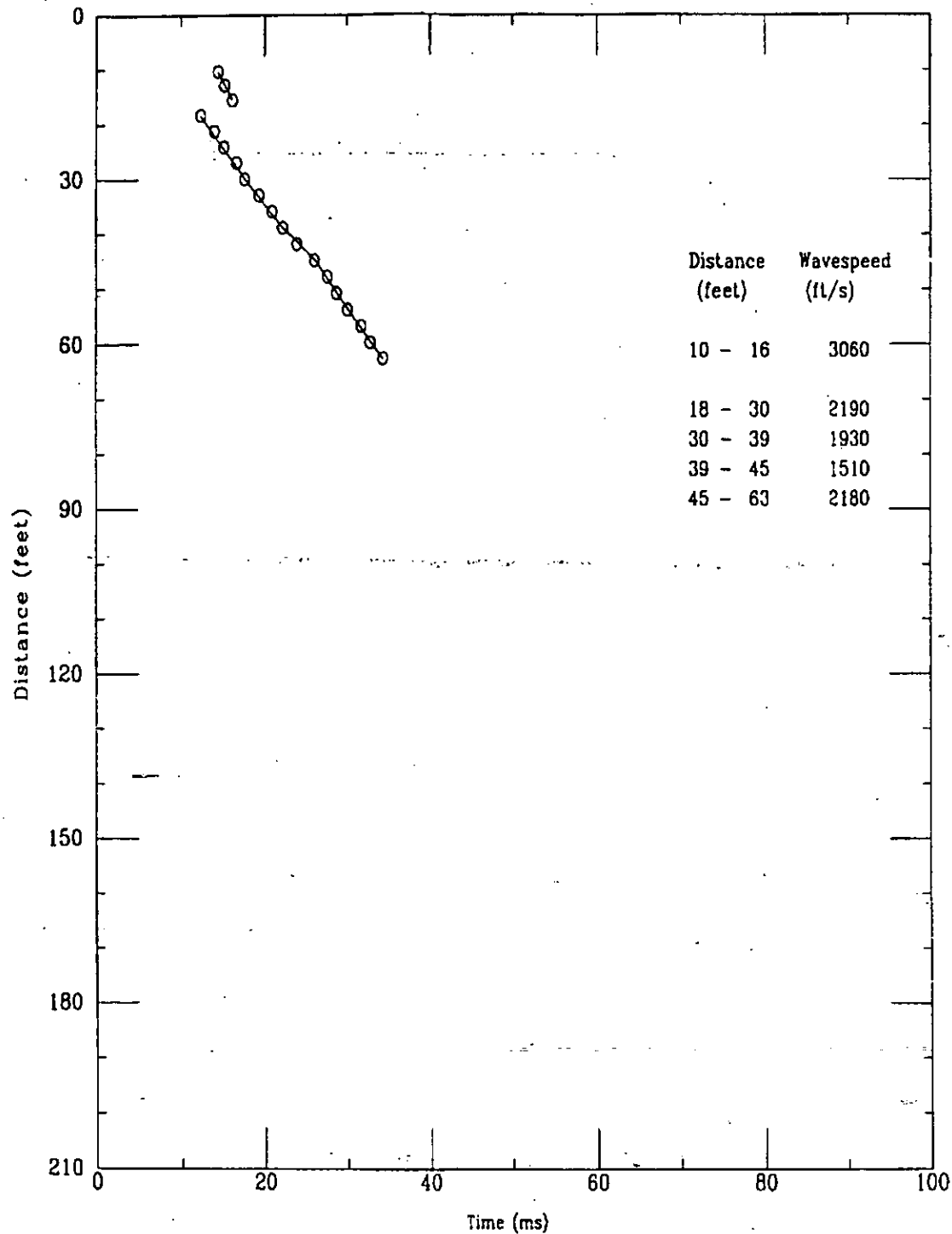


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Compression Wave Time of Peak

02/19/98

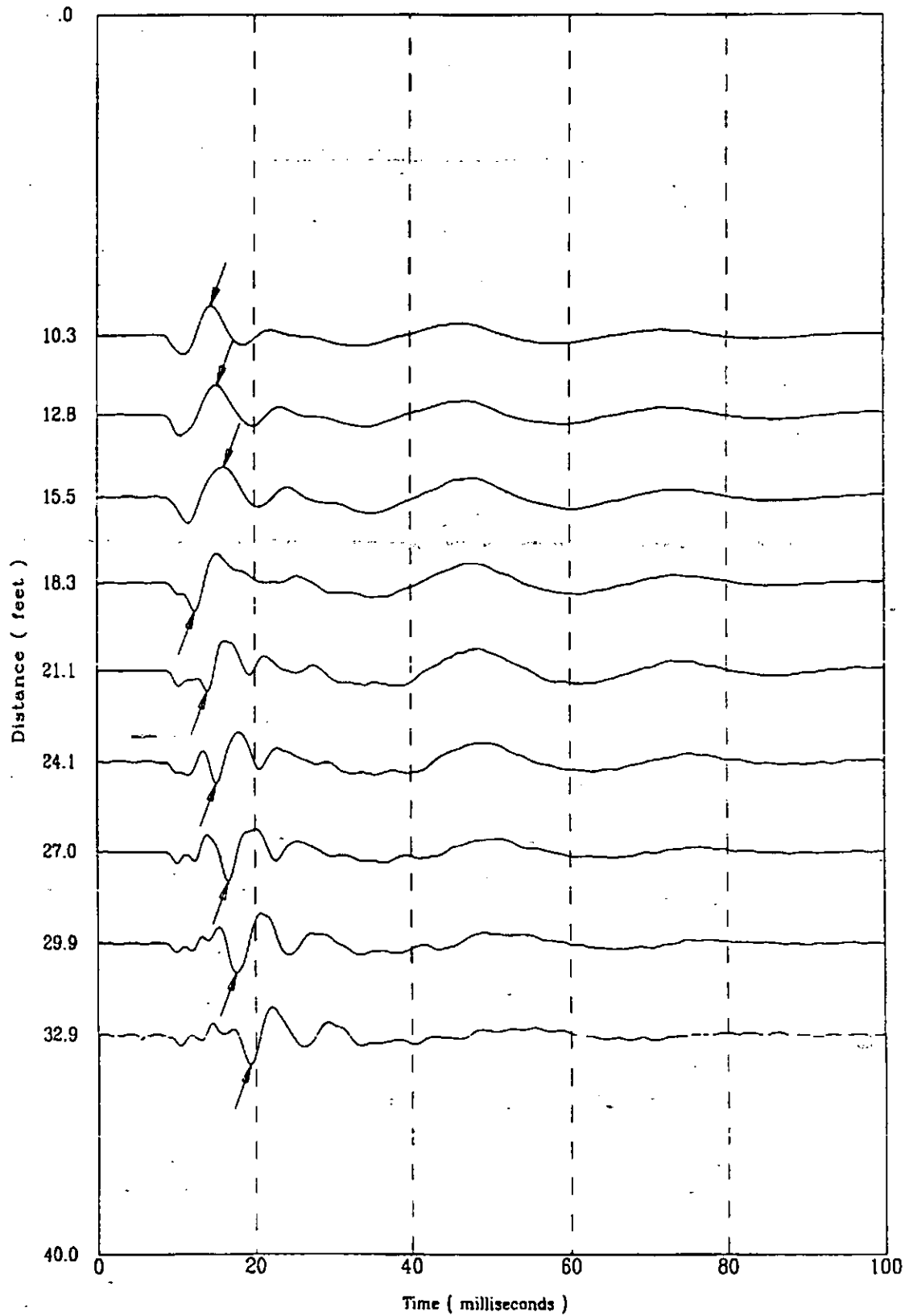


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Applied Research Associates  
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P Wave  
02/19/98



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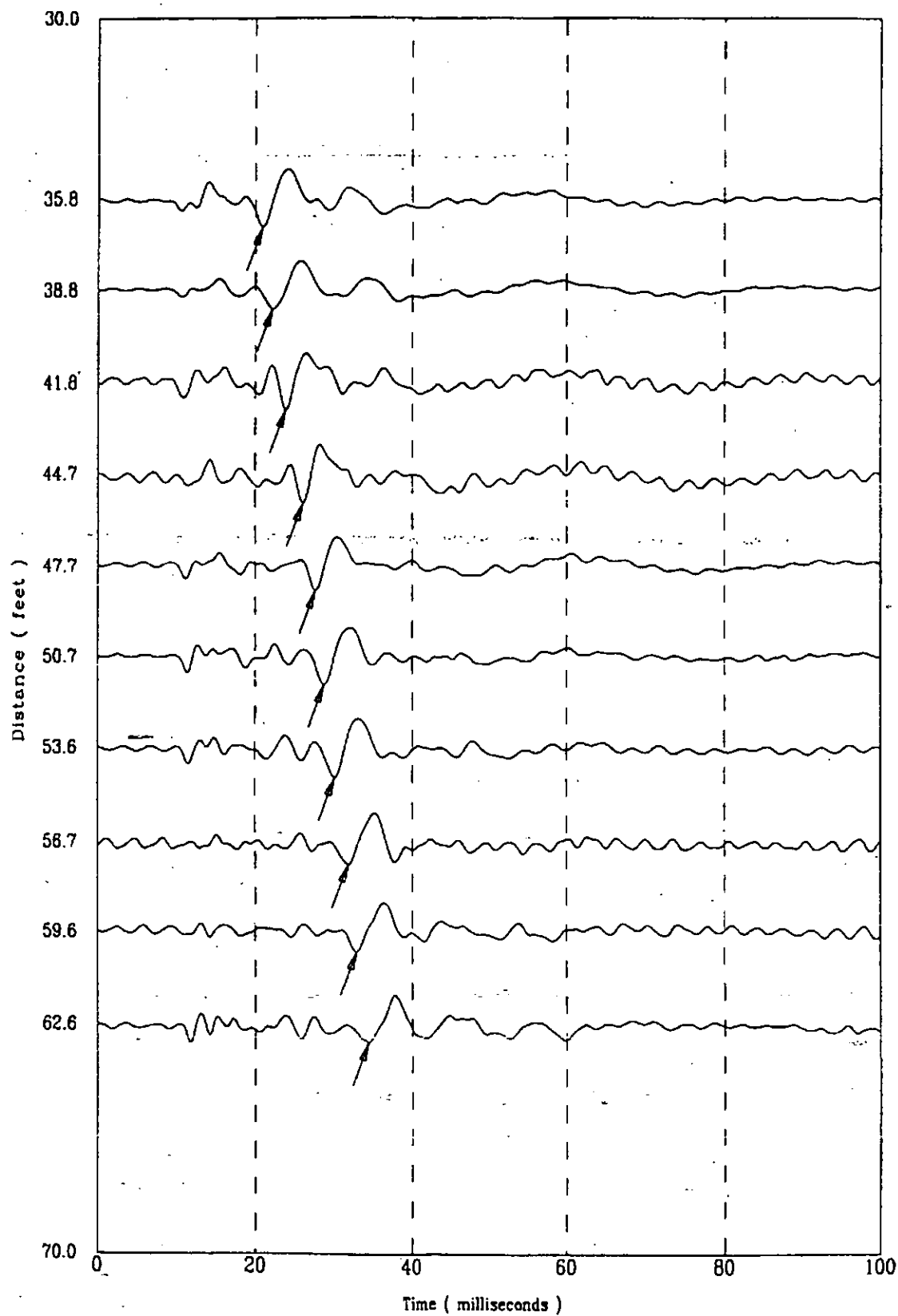
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K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-114

P Wave  
02/19/98



5197804S

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CPT-115

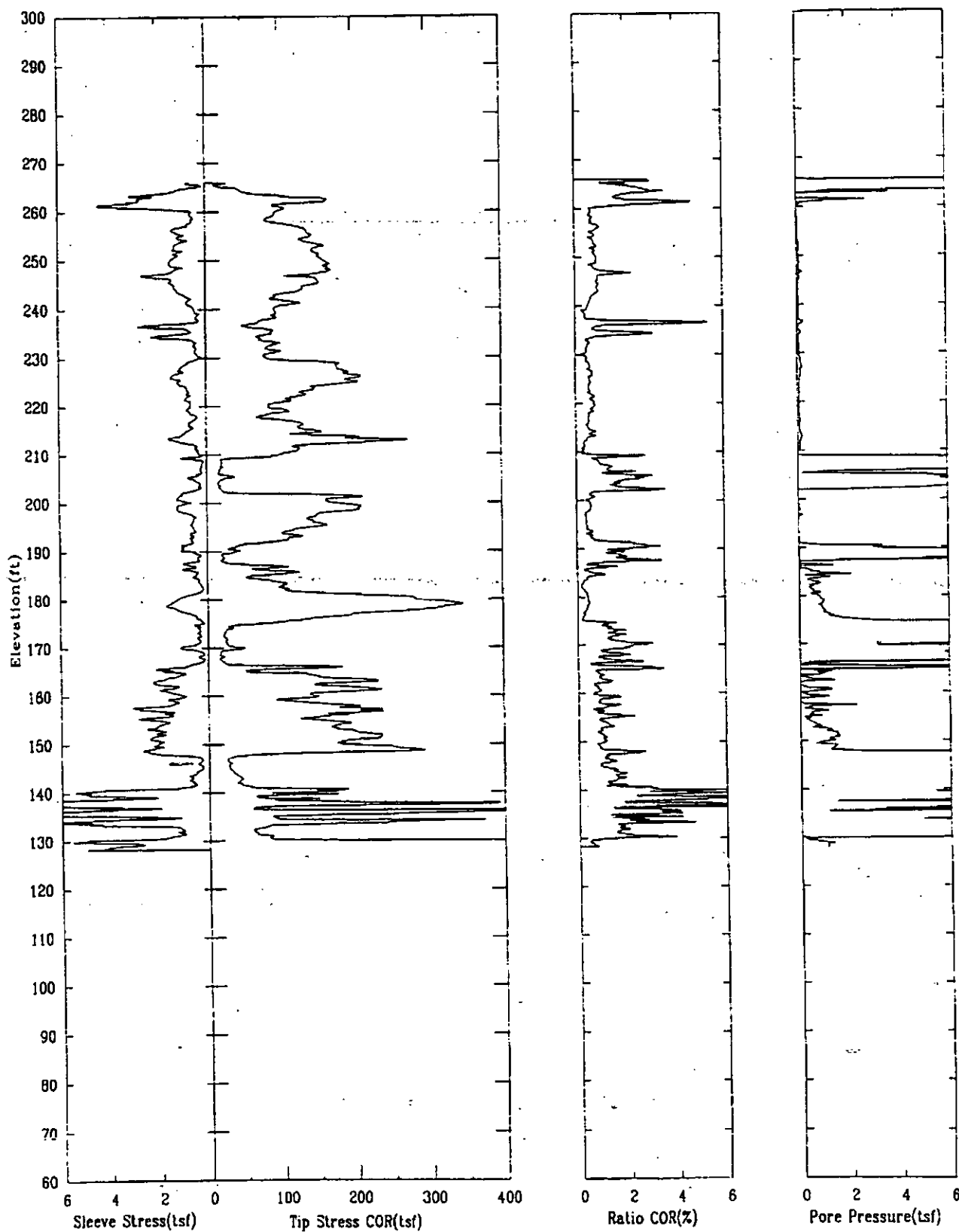
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02/20/98R/o

North 79780.85

East 55125.05

Elevation 272.0



CPT-115

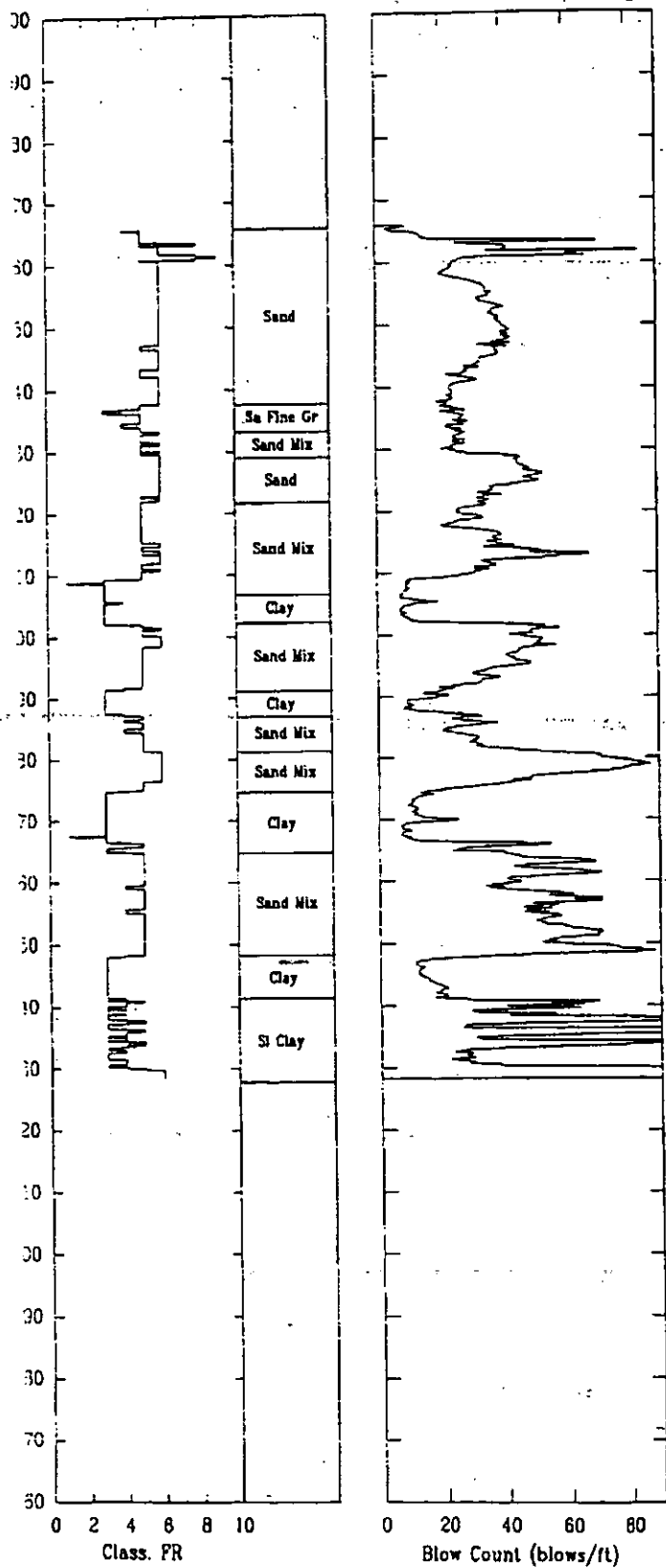
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K-TRT-F-00001  
02/20/98 R/o

North 79780.85

East 55125.05

Elevation 272.0



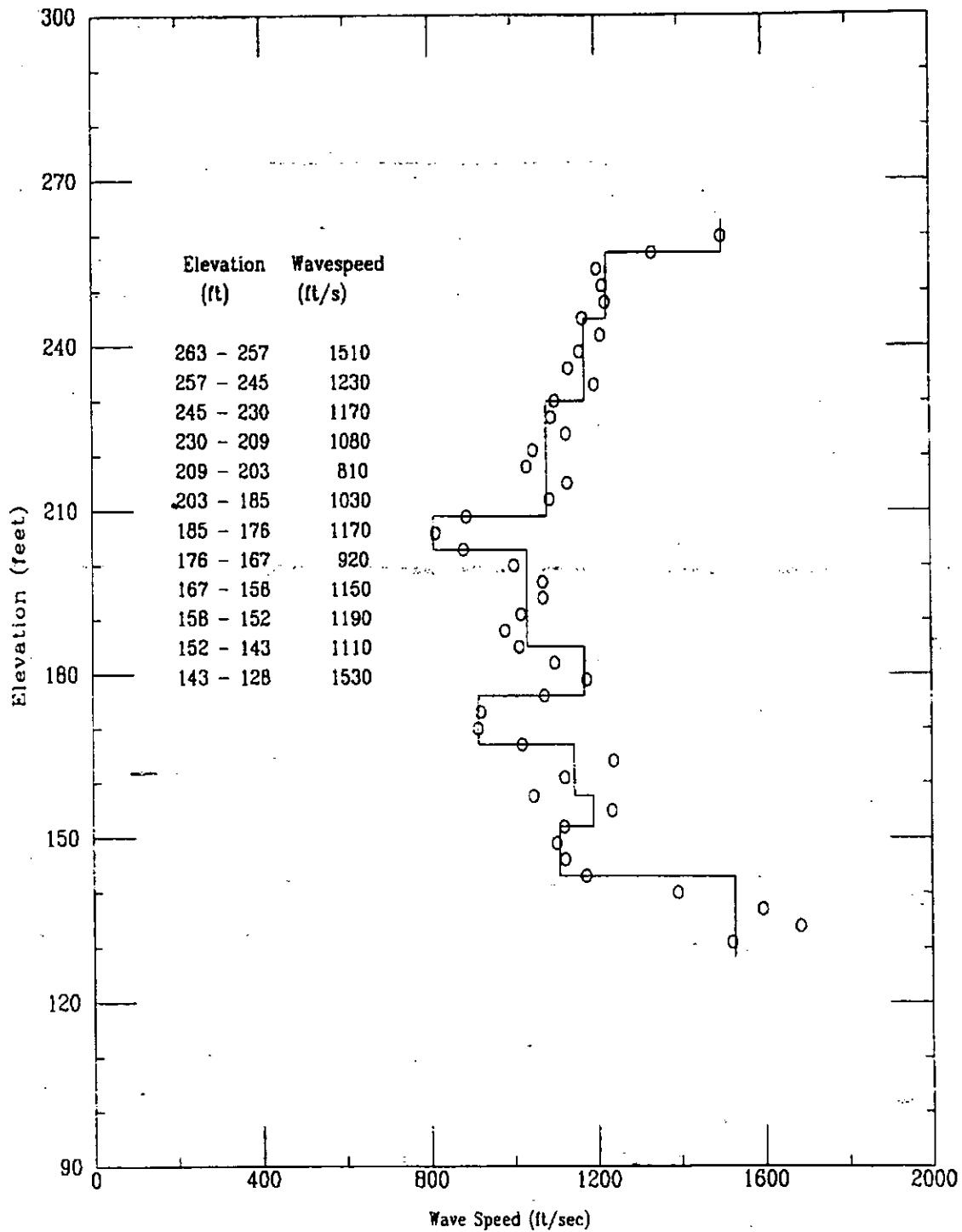
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CPT-115

APPLIED RESEARCH ASSOCIATES, INC.

02/20/98

Shear Wave Speeds



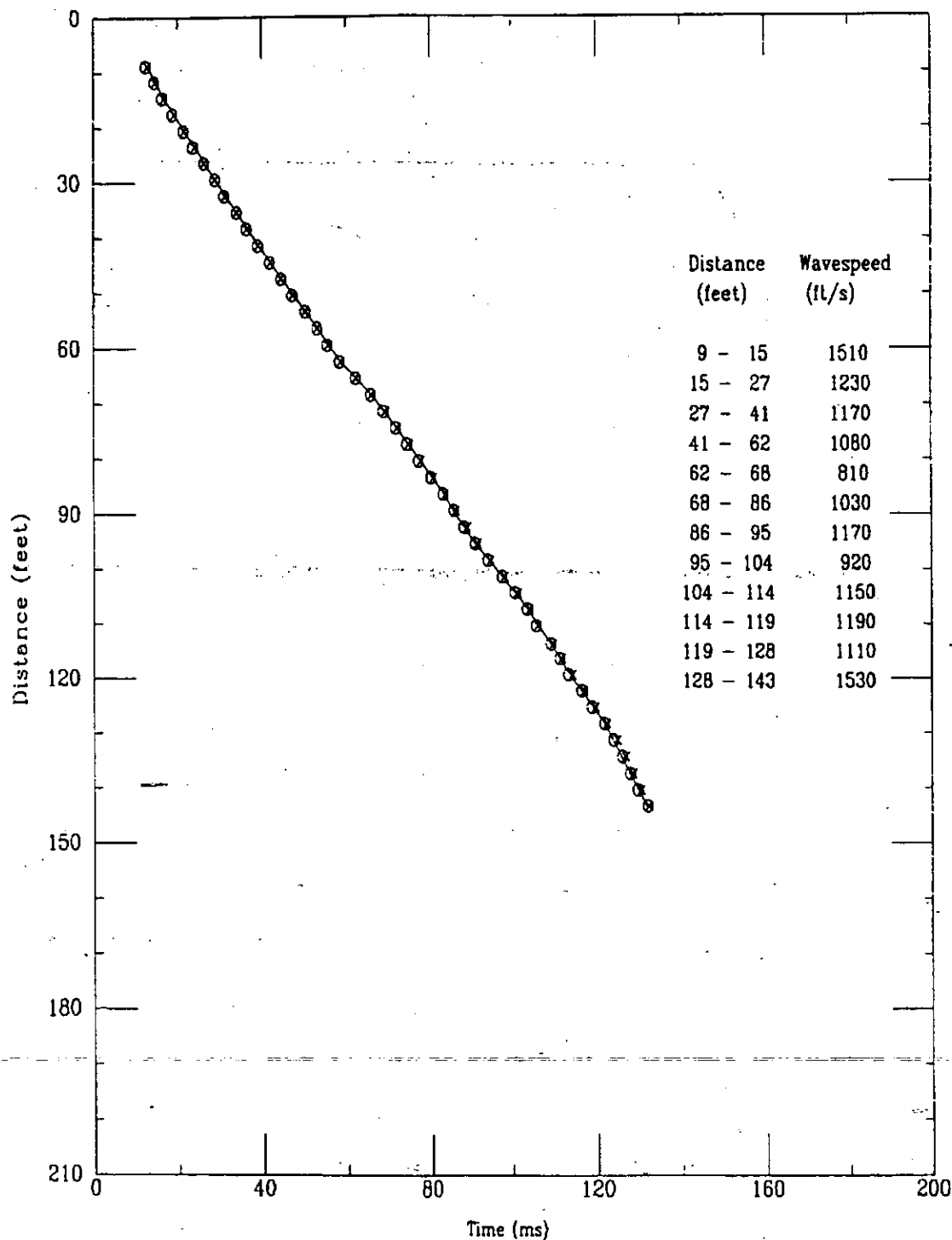
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CPT-115

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

02/20/98

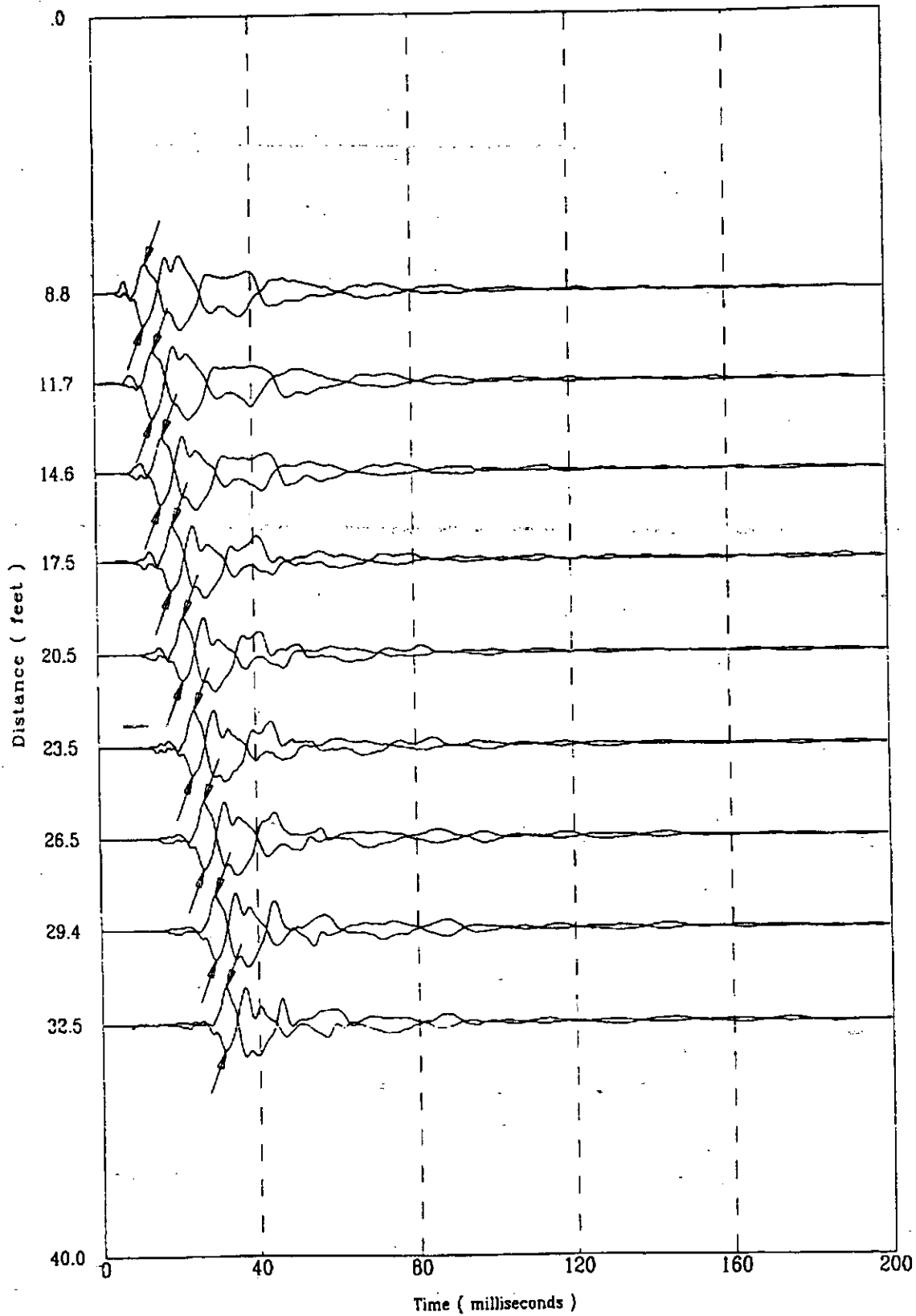


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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-115

S Wave  
02/20/98

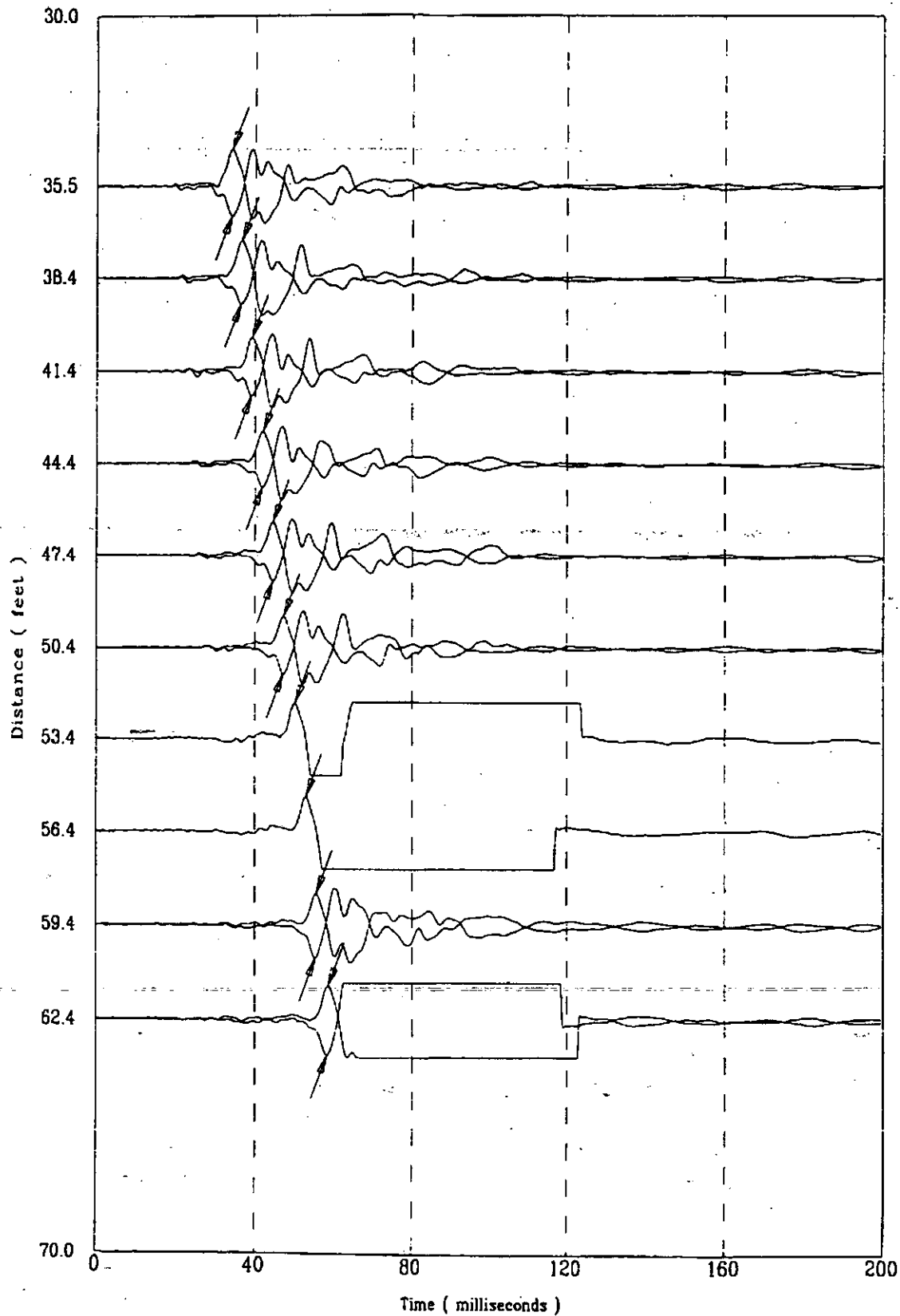


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Applied Research Associates, Inc.  
CPT-115

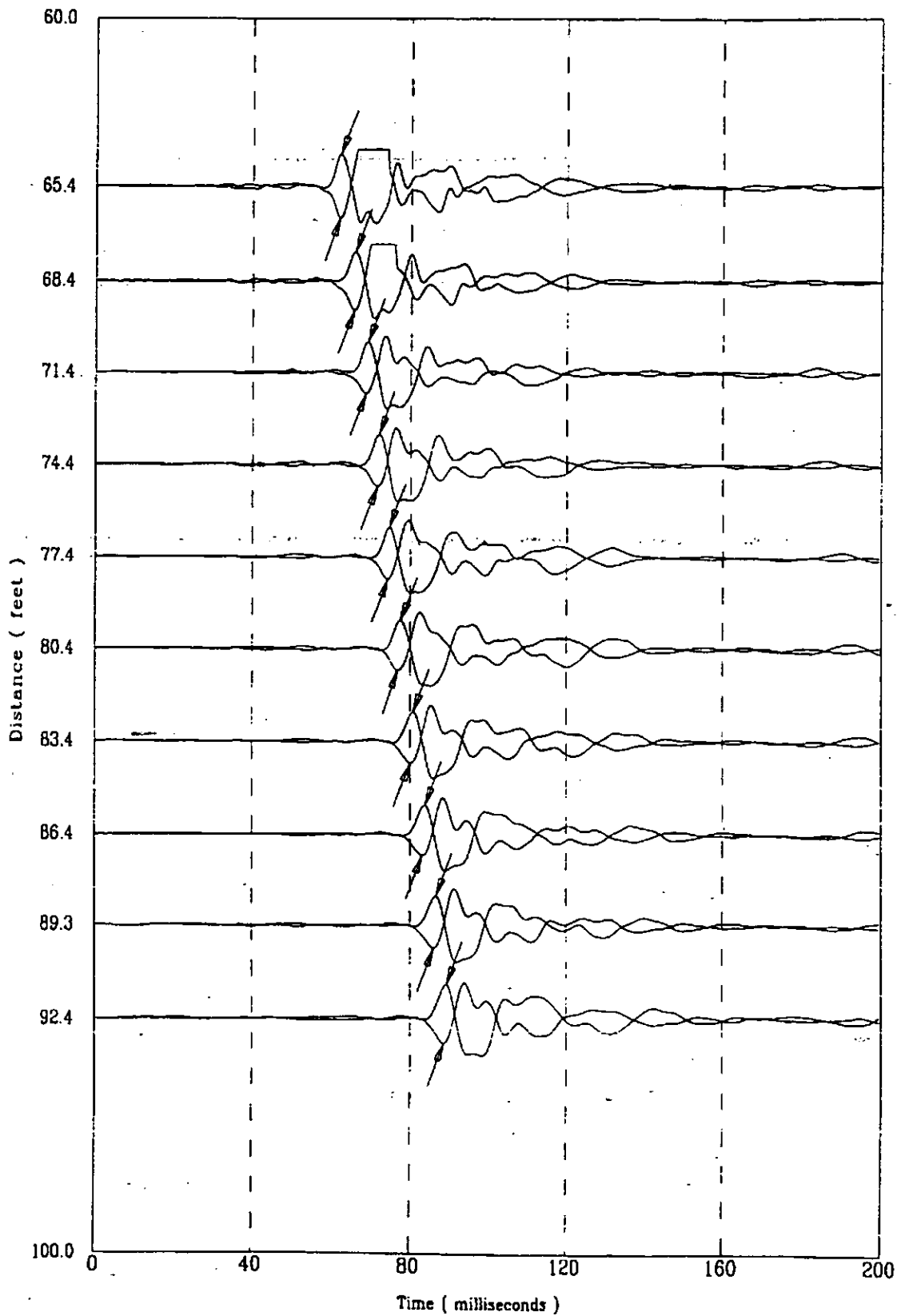
S Wave  
02/20/98



K-TRT-F-0000/  
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Applied Research Associates, Inc.  
CPT-115

S Wave  
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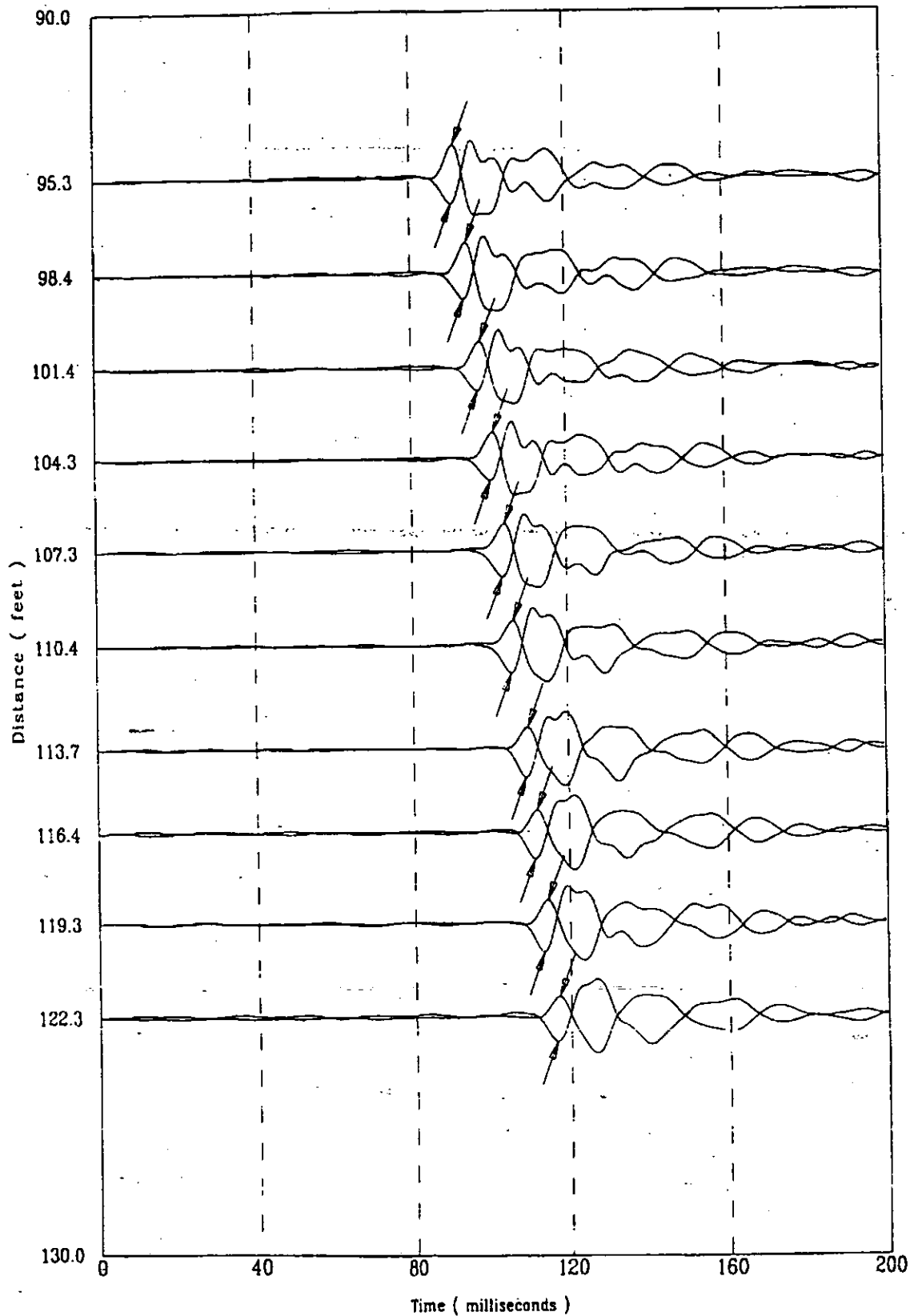
201801S



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R/O

Applied Research Associates, Inc.  
CPT-115

S Wave  
02/20/98



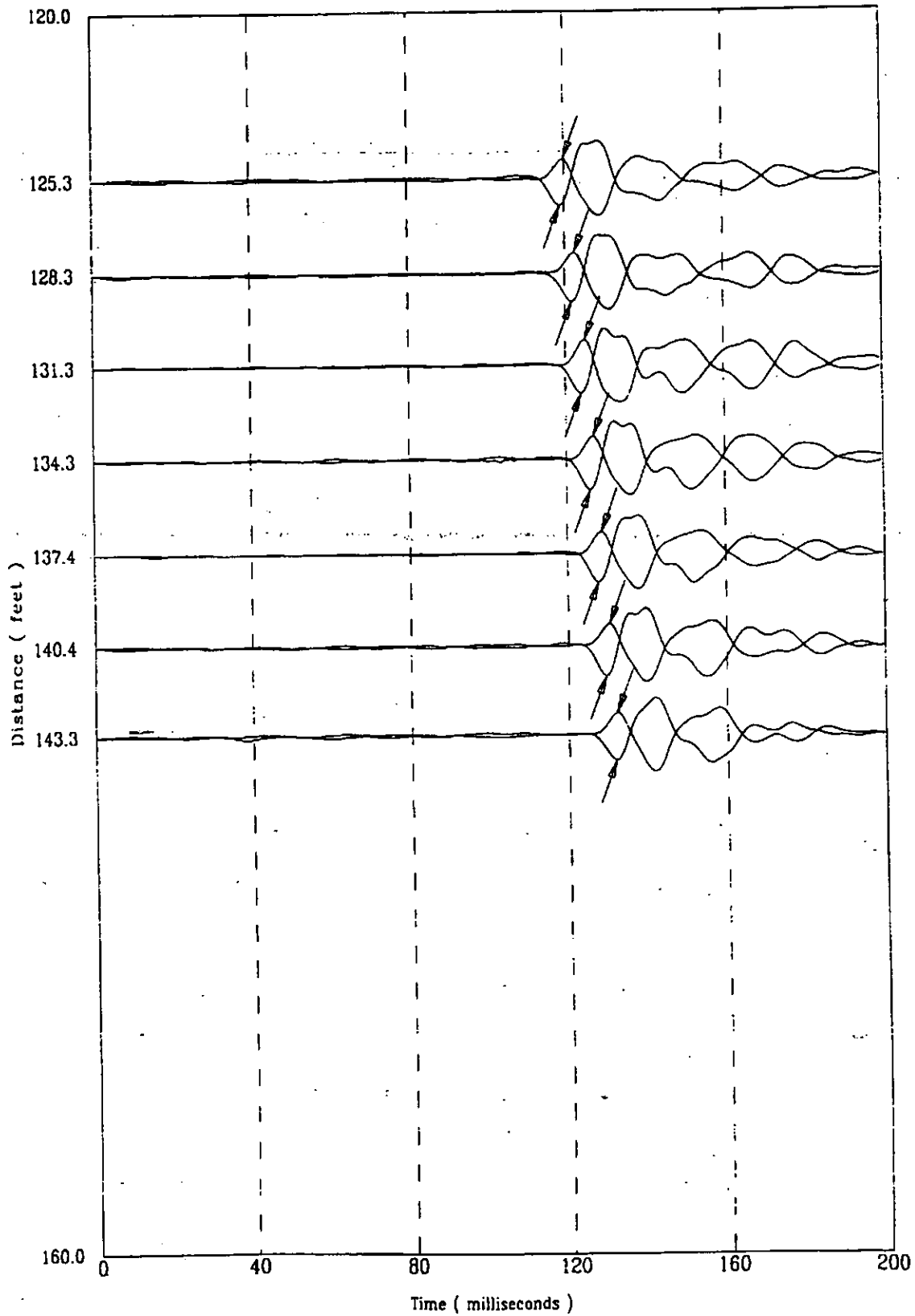
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-115

S Wave  
02/20/98



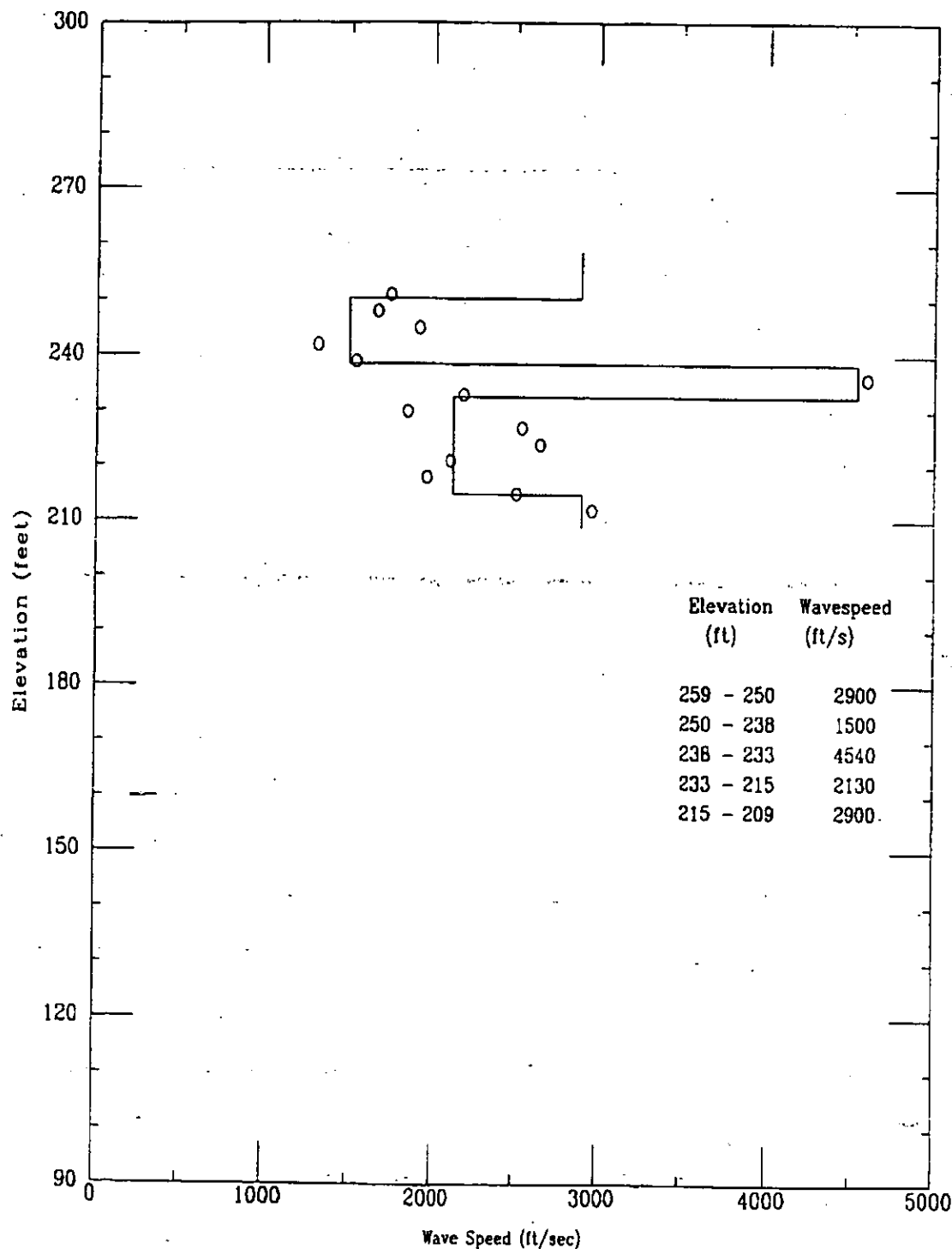
520/801S

CPT-115

APPLIED RESEARCH ASSOCIATES, INC.

02/20/98

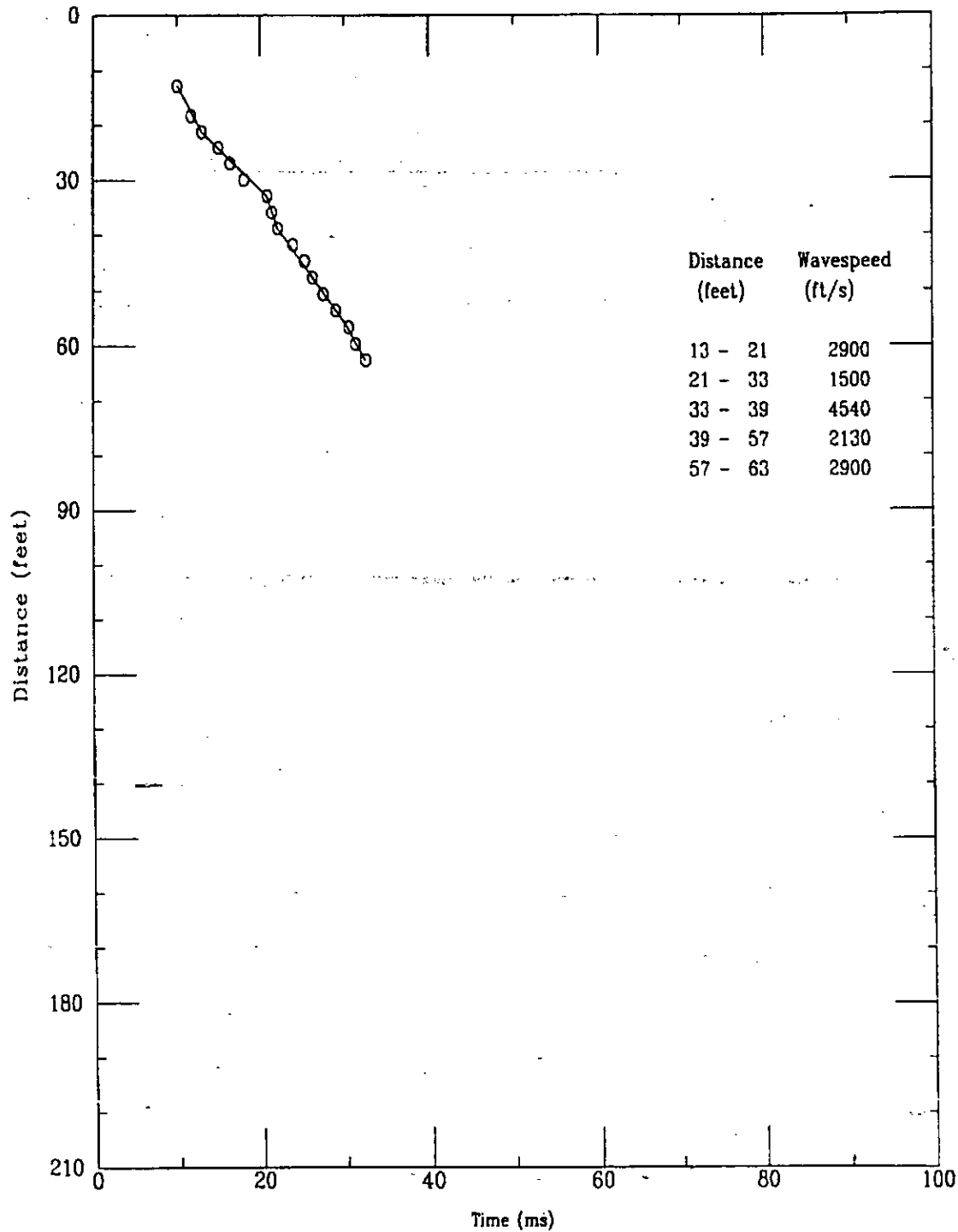
Compression Wave Speeds



CPT-115

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

02/20/98

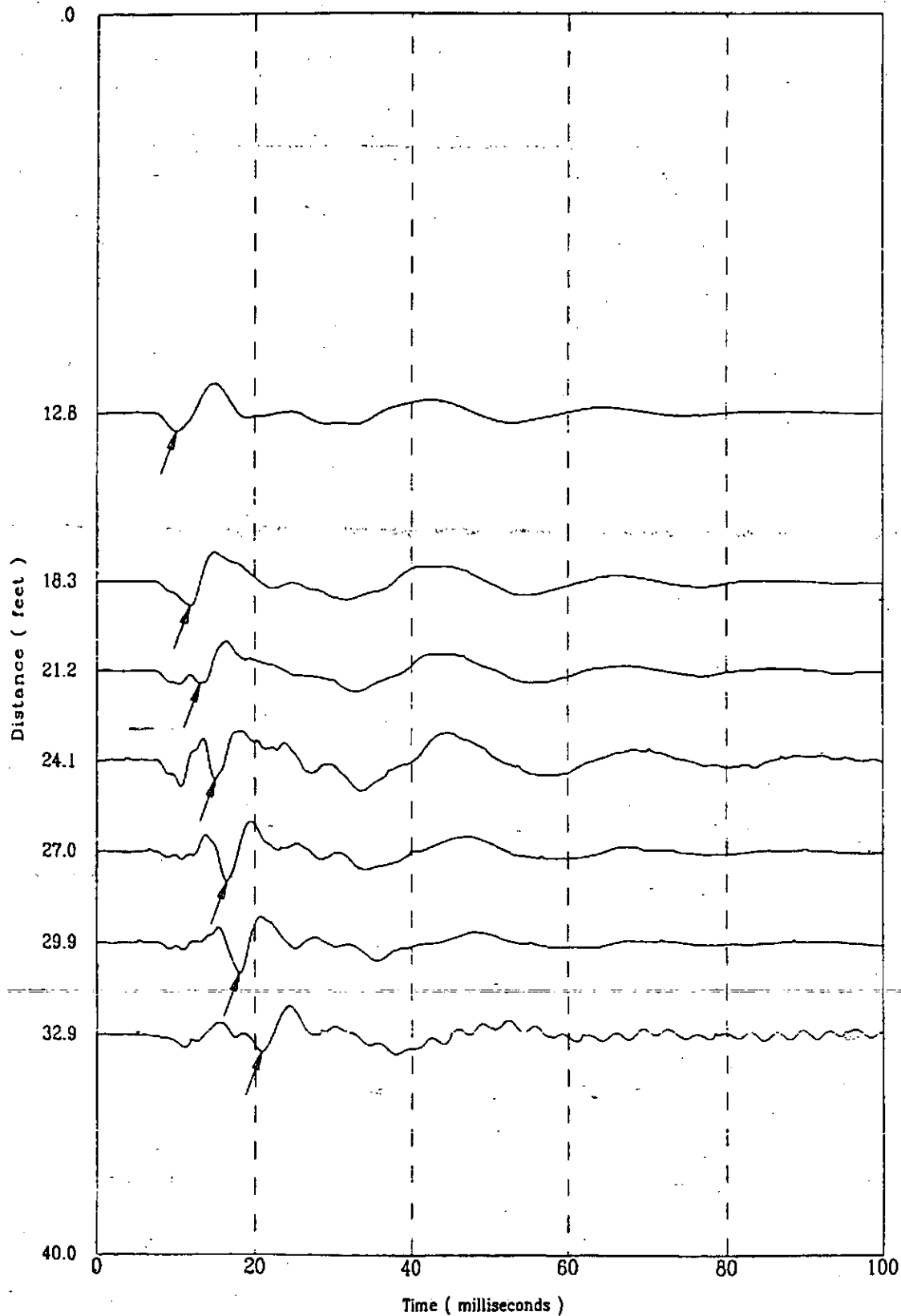


File 52078013

K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-115

P Wave  
02/20/98



5201801S

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CPT-116

APPLIED RESEARCH ASSOCIATES, INC.

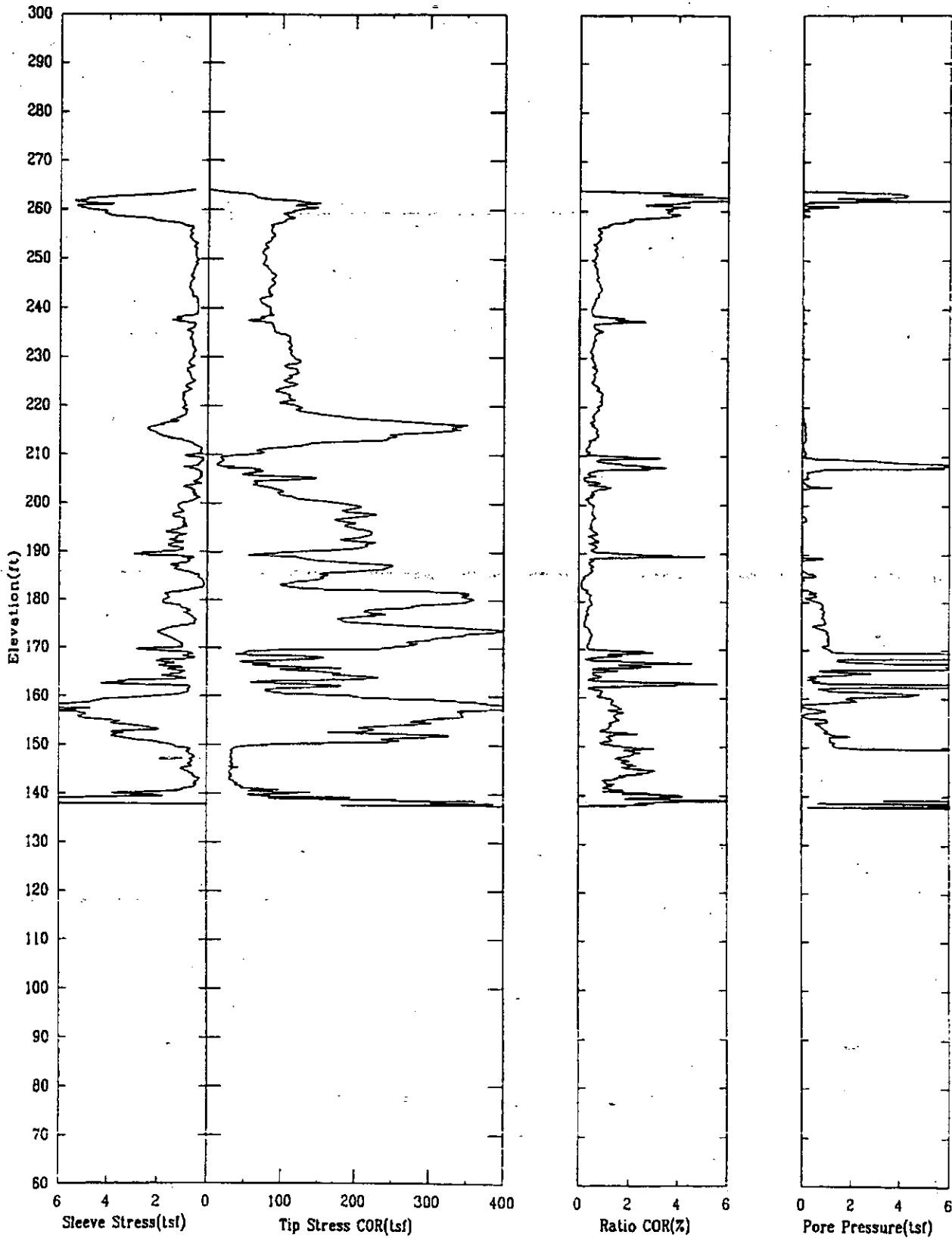
K-TRT-F-00001

02/20/98 R/O

North 79781.17

East 55261.01

Elevation 270.1



CPT-116

APPLIED RESEARCH ASSOCIATES, INC.

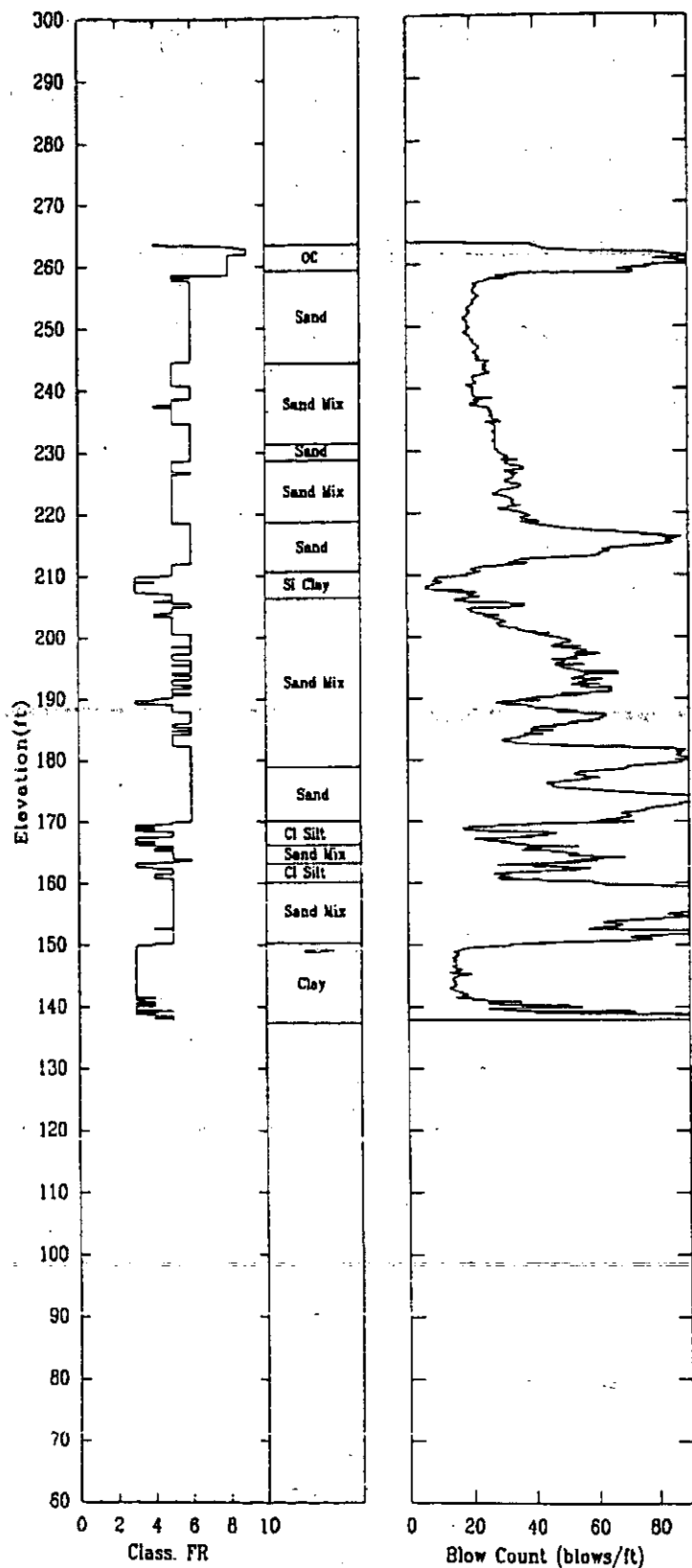
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02/20/98<sup>R/O</sup>

North 79781.17

East 55261.01

Elevation 270.1

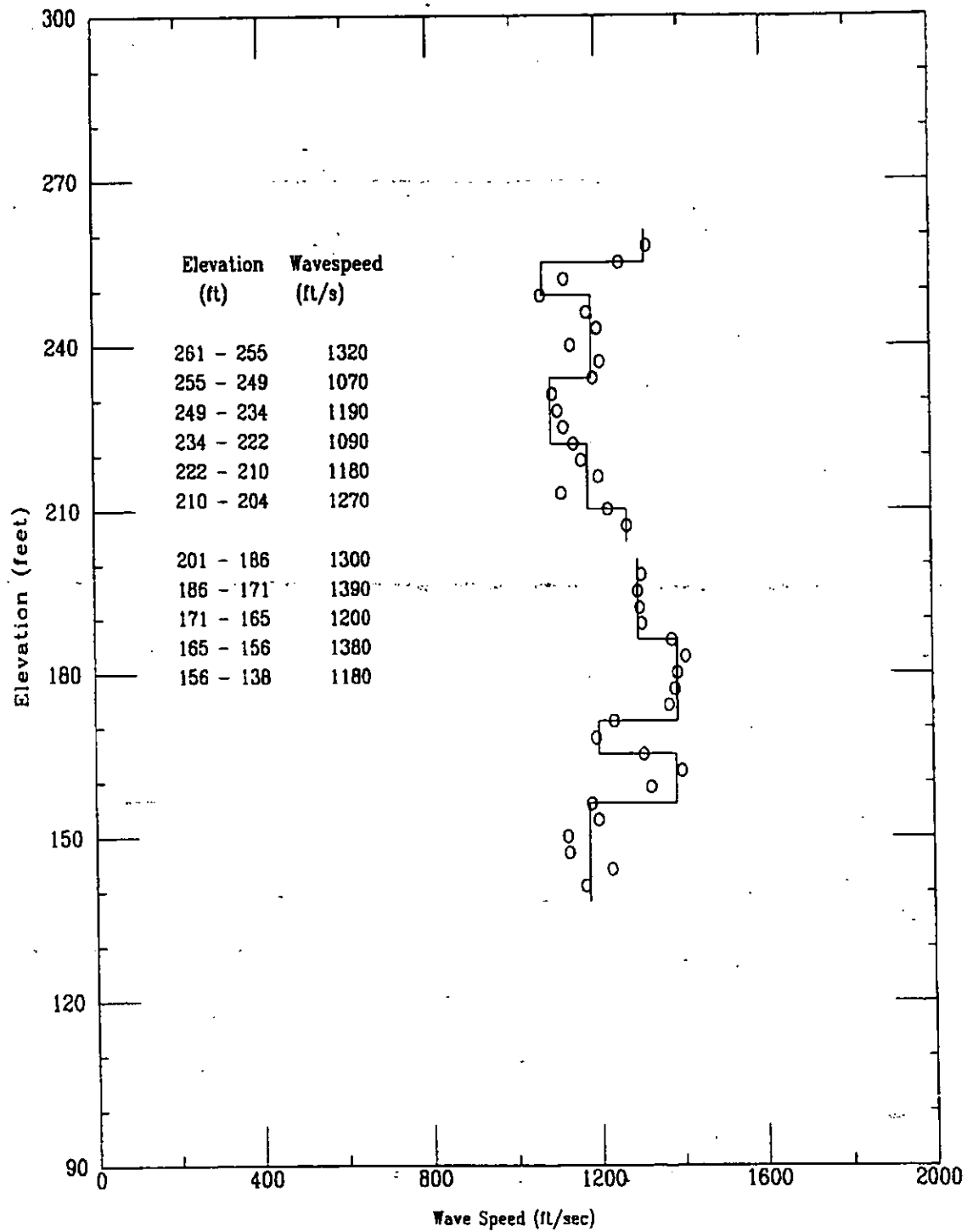


CPT-116

APPLIED RESEARCH ASSOCIATES, INC.

02/20/98

Shear Wave Speeds



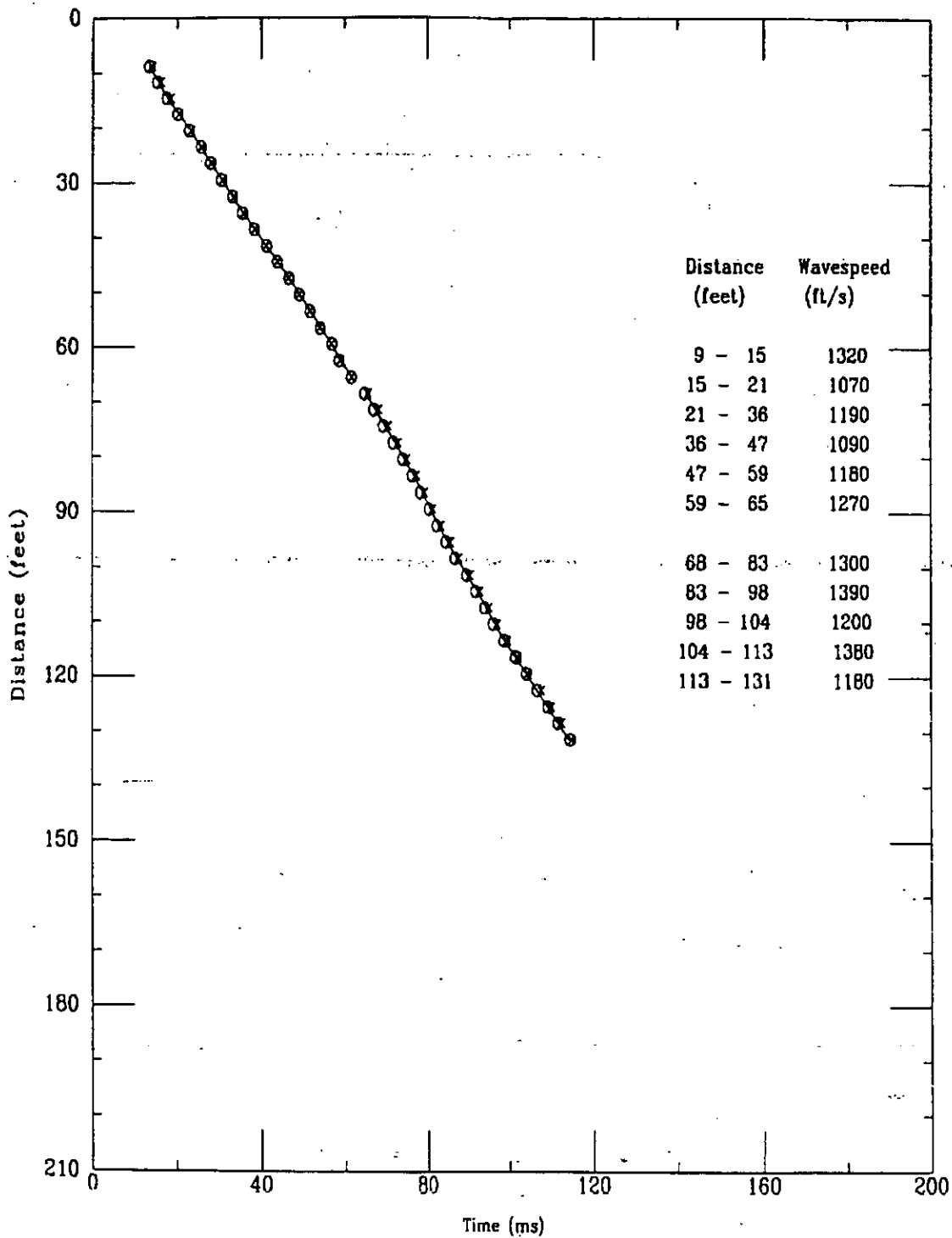
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CPT-116

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

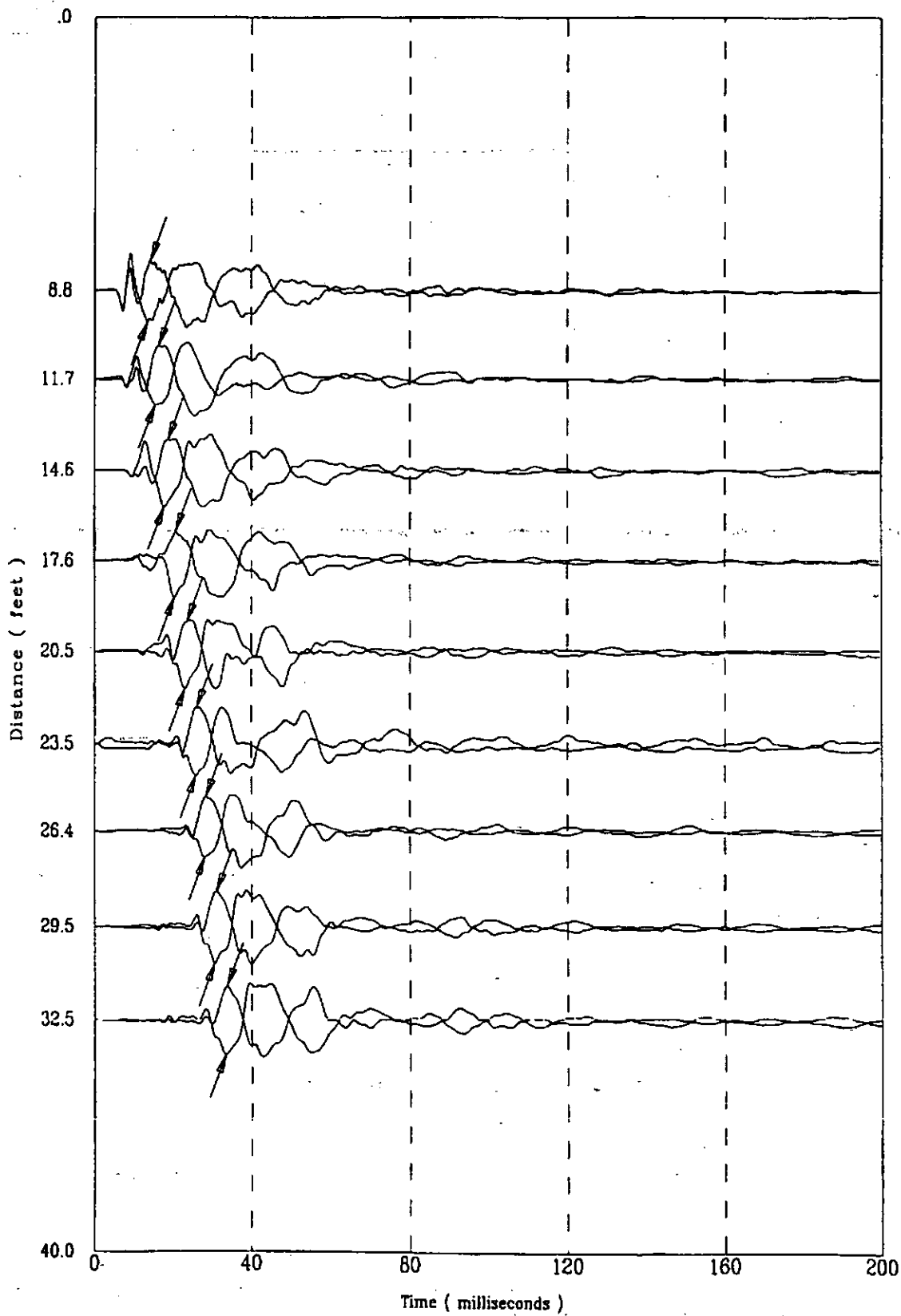
02/20/98



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-116

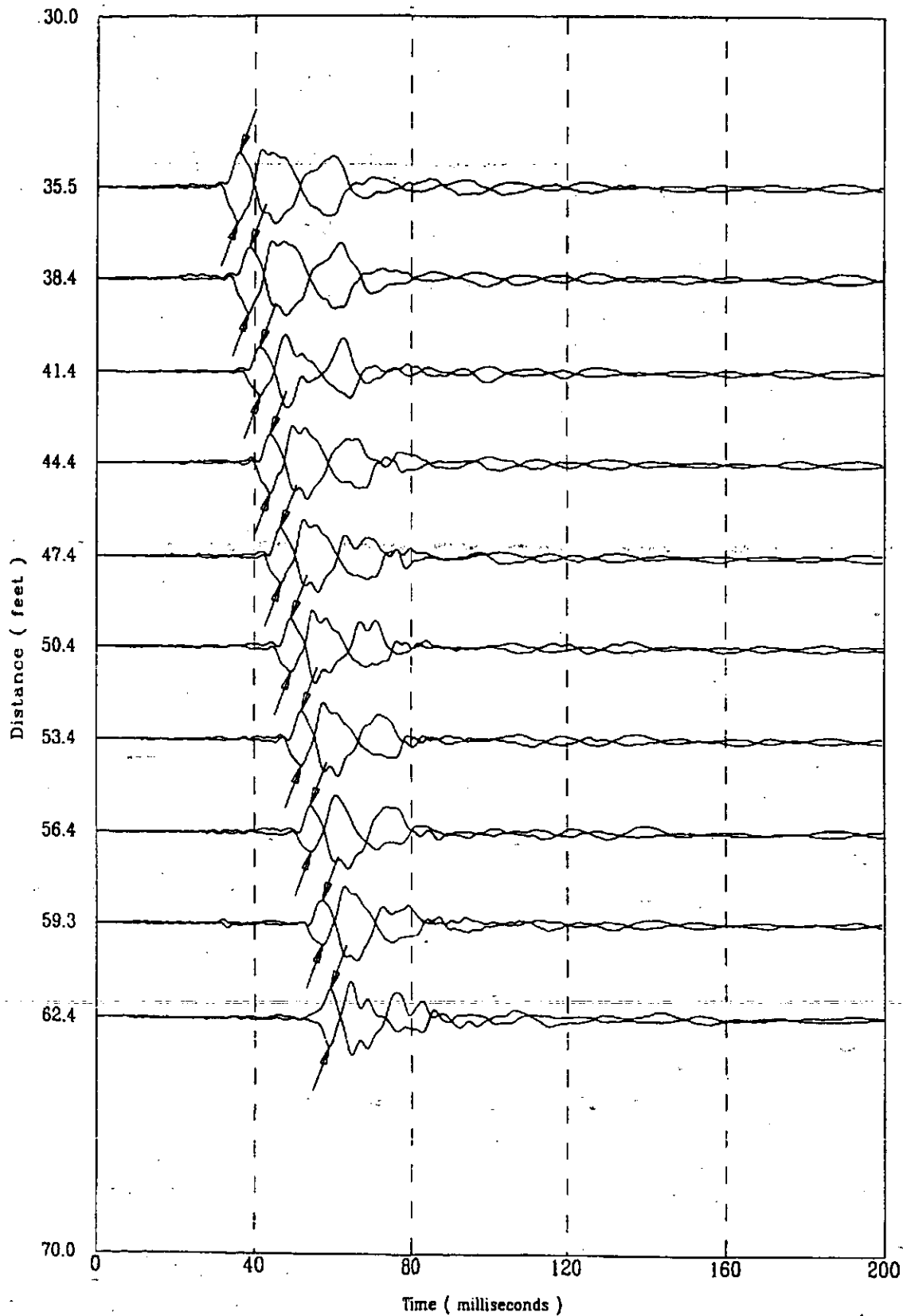
S Wave  
02/20/98



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-116

S Wave  
02/20/98



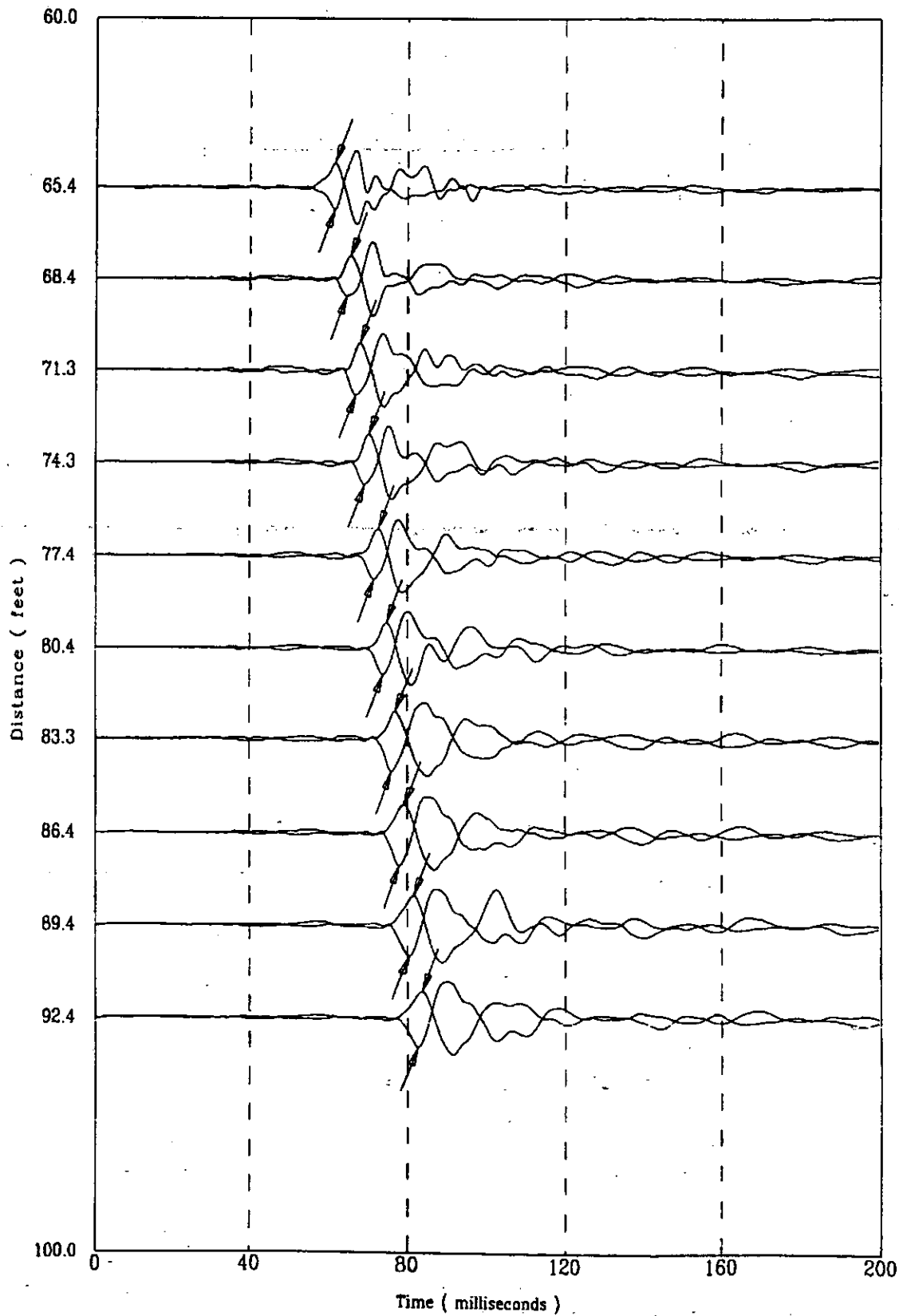
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-116

S Wave  
02/20/98



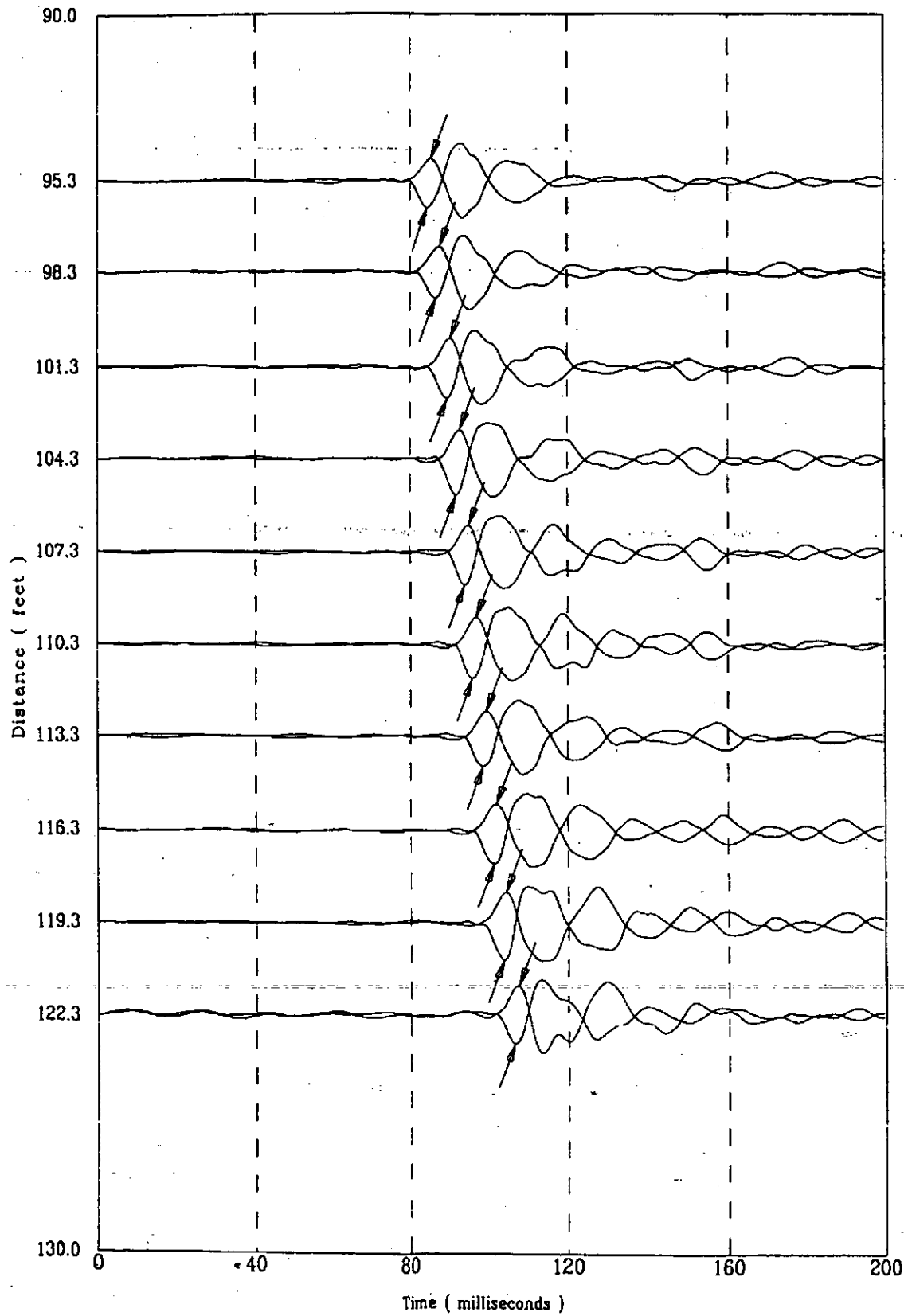
File 5201803S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-116

S Wave  
02/20/98



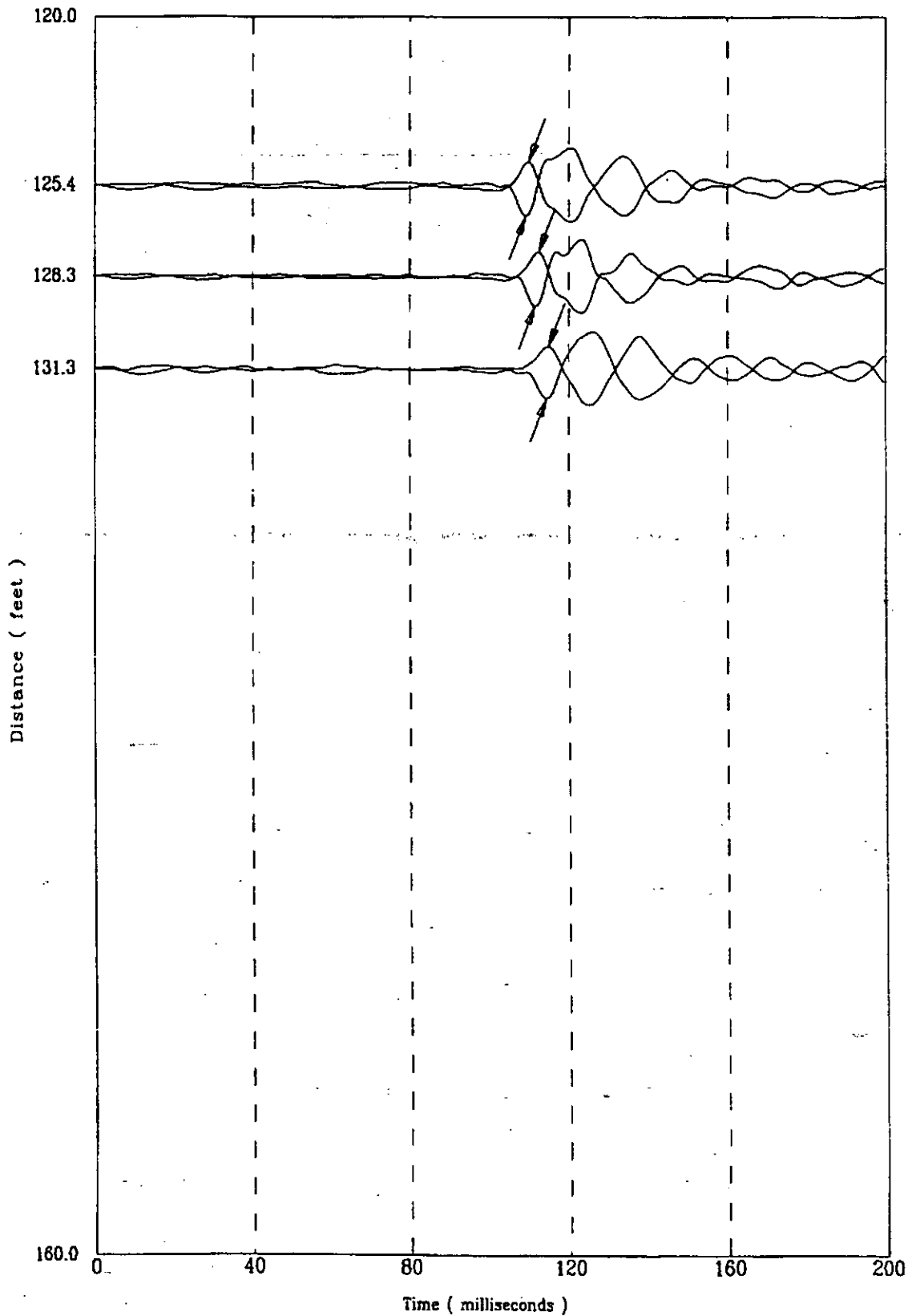
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-116

S Wave  
02/20/98

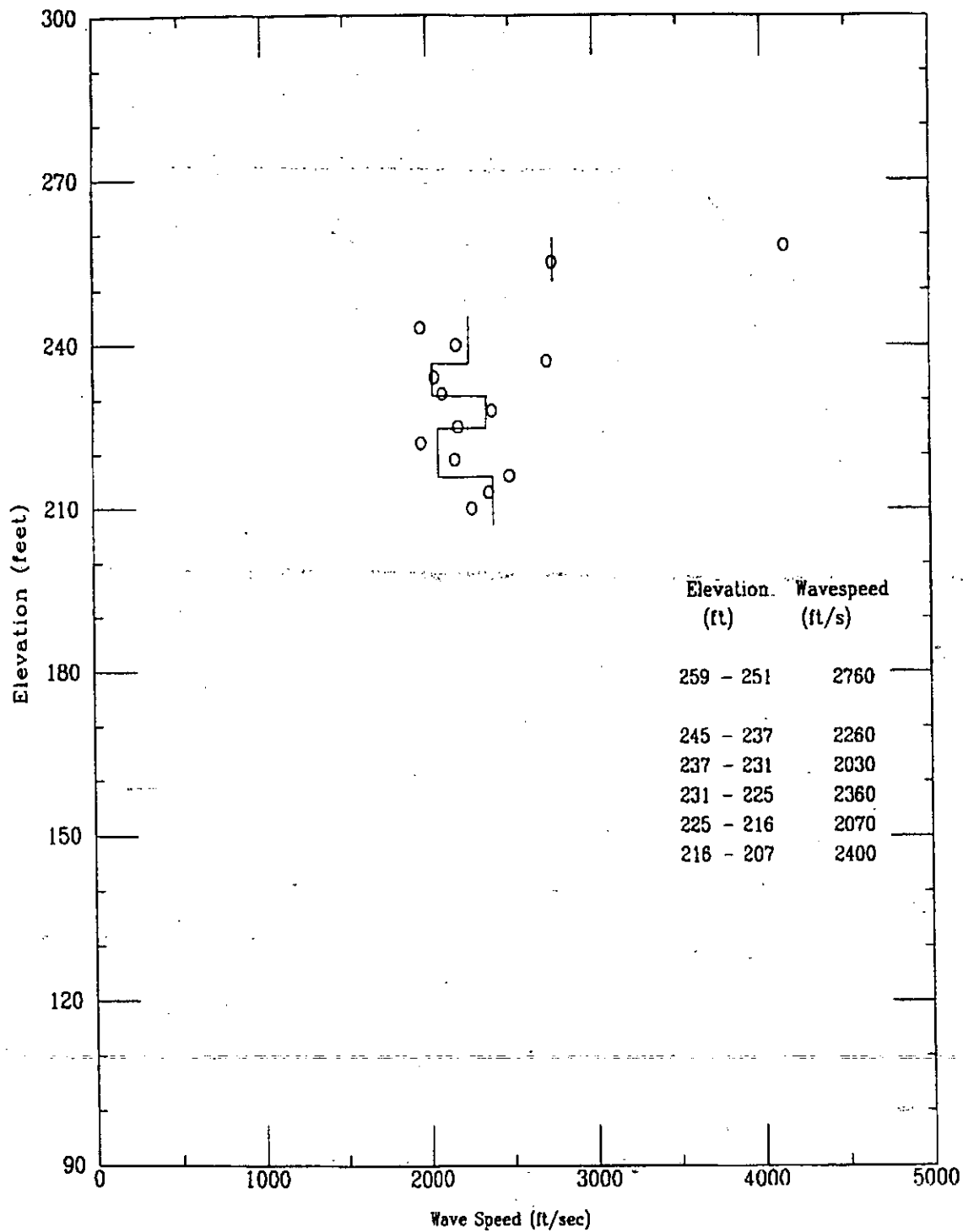


File 5201803S

CPT-116

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

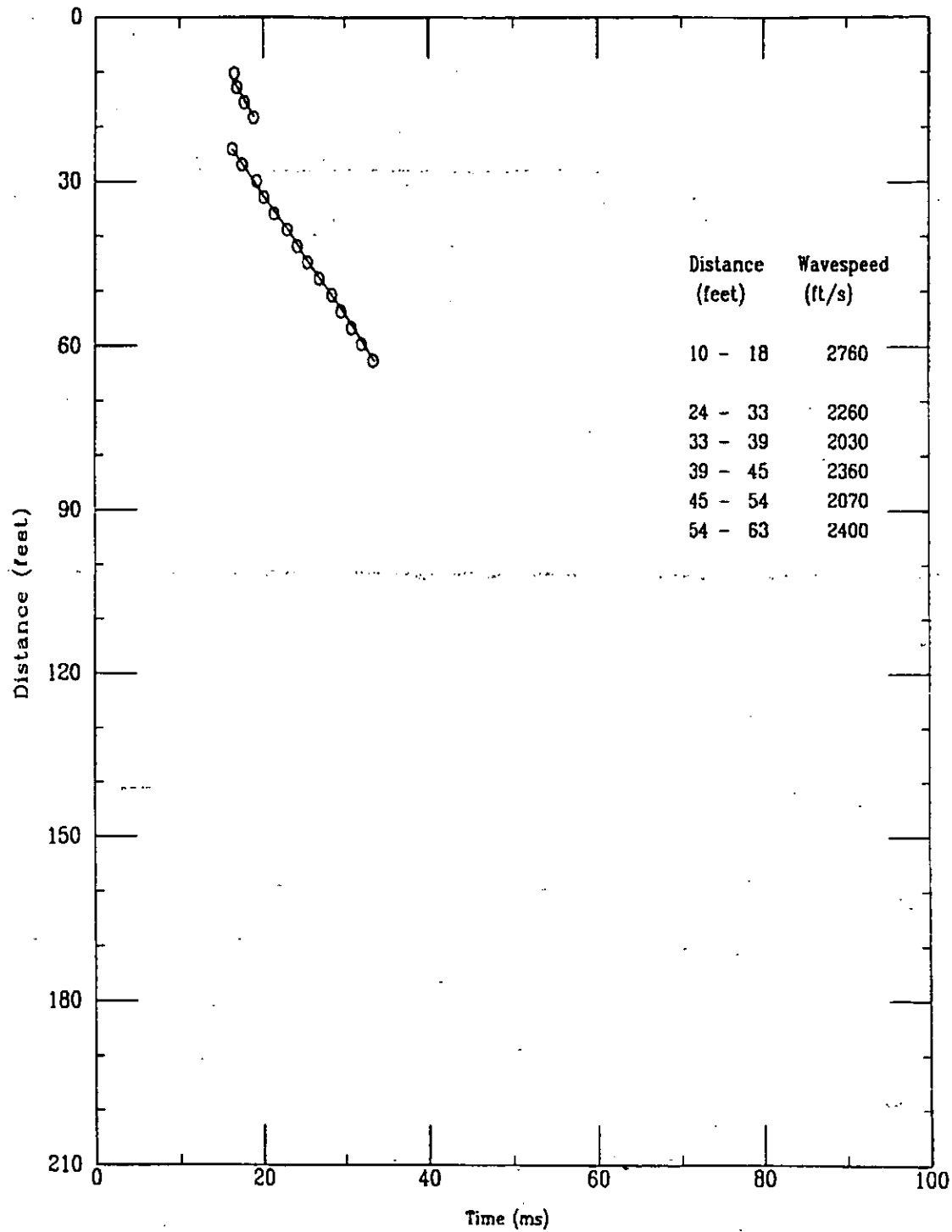
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CPT-116

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

02/20/98

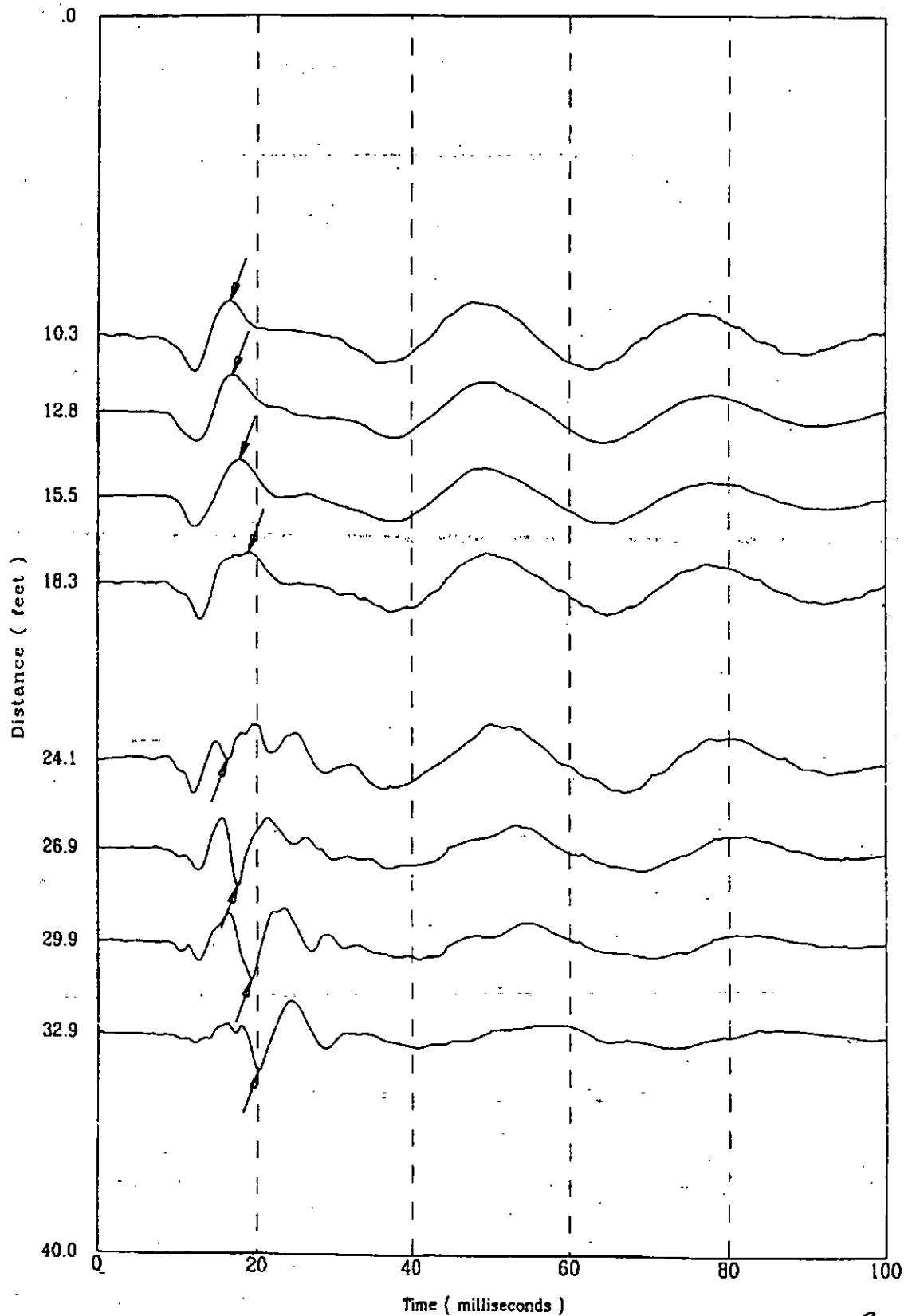




K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-116

P Wave  
02/20/98



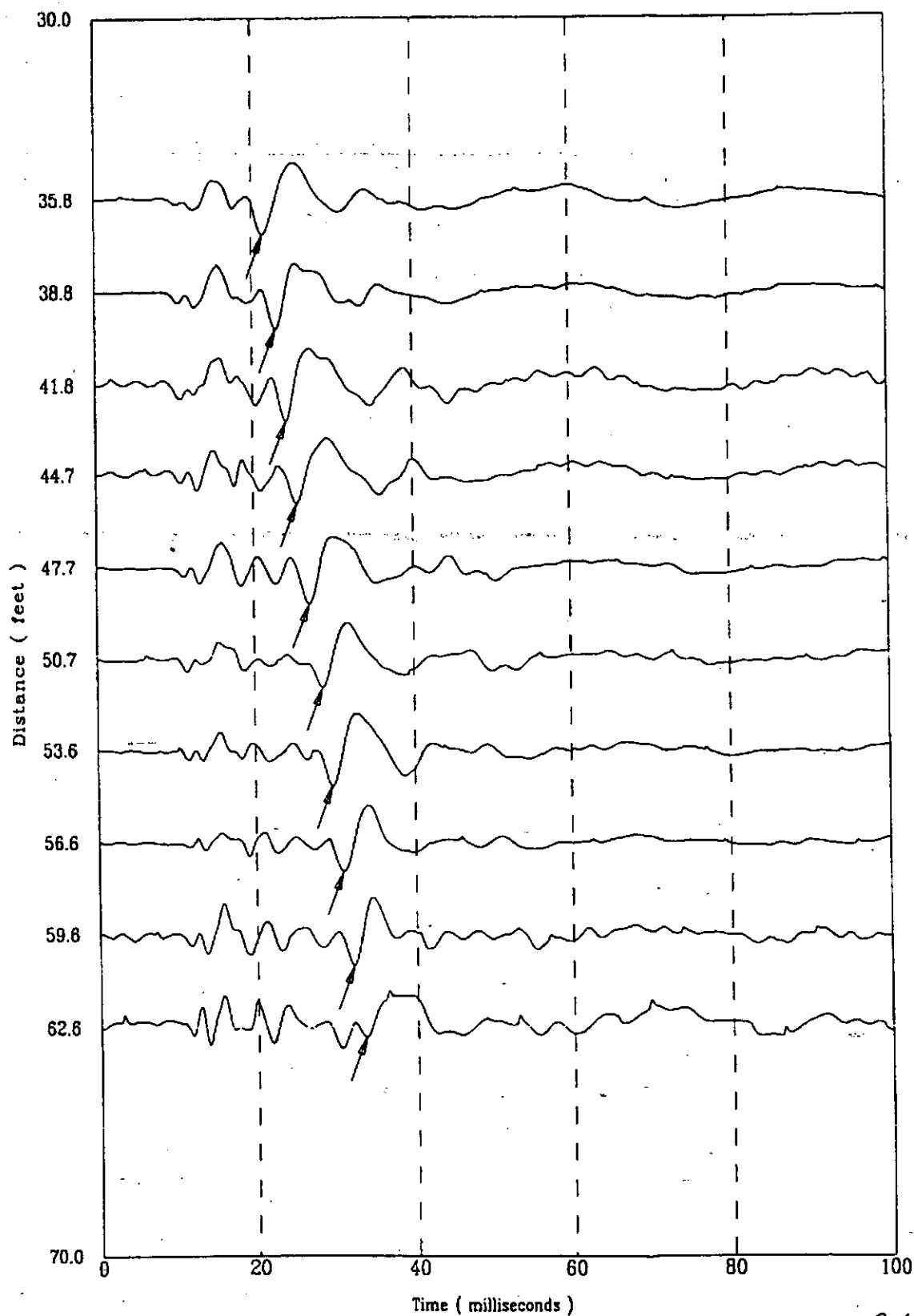
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-116

P Wave  
02/20/98



CPT-126

APPLIED RESEARCH ASSOCIATES, INC.

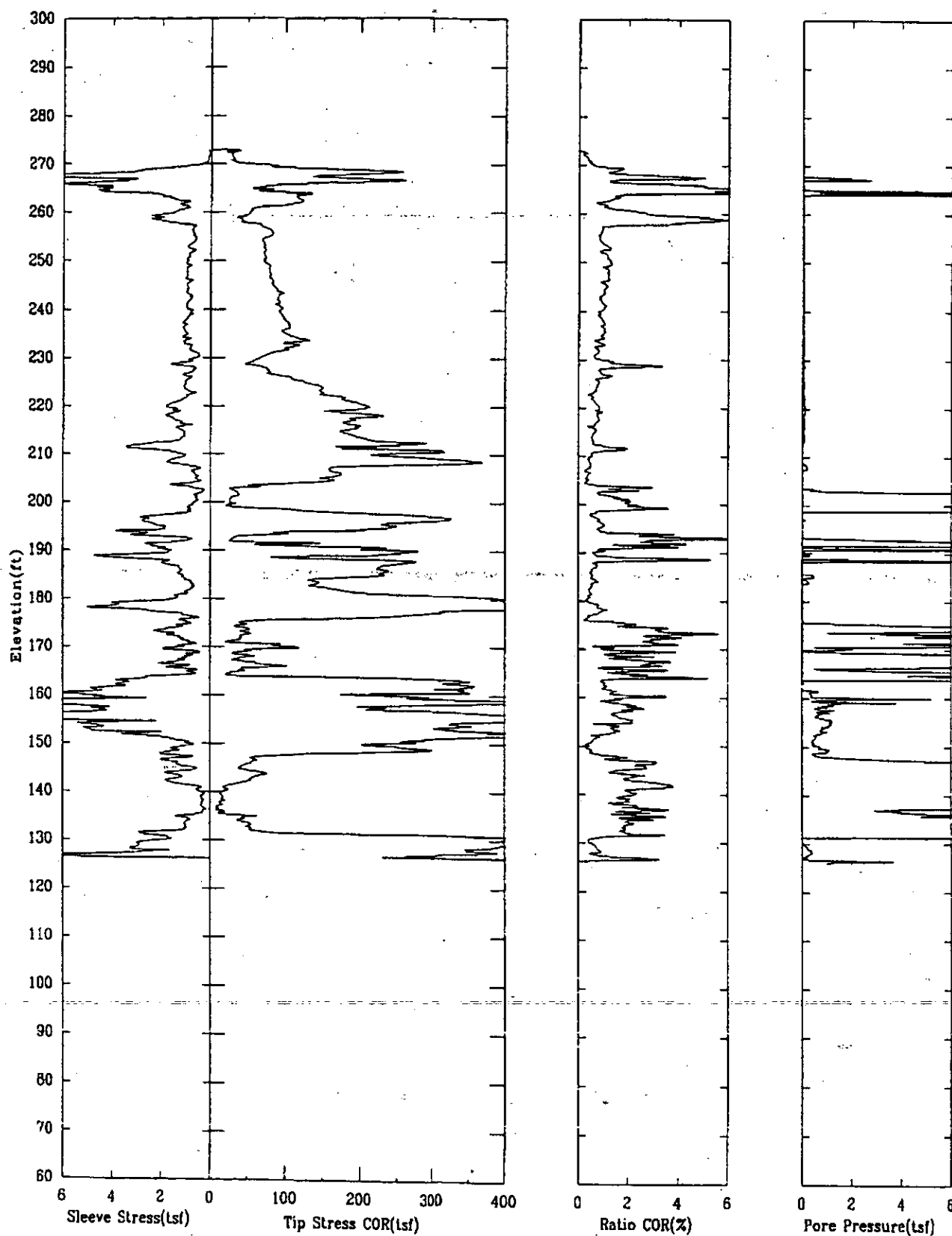
K-TRT-F-00001

02/24/98 8/0

North 79650.07

East 54825.03

Elevation 278.9



CPT-126

APPLIED RESEARCH ASSOCIATES, INC.

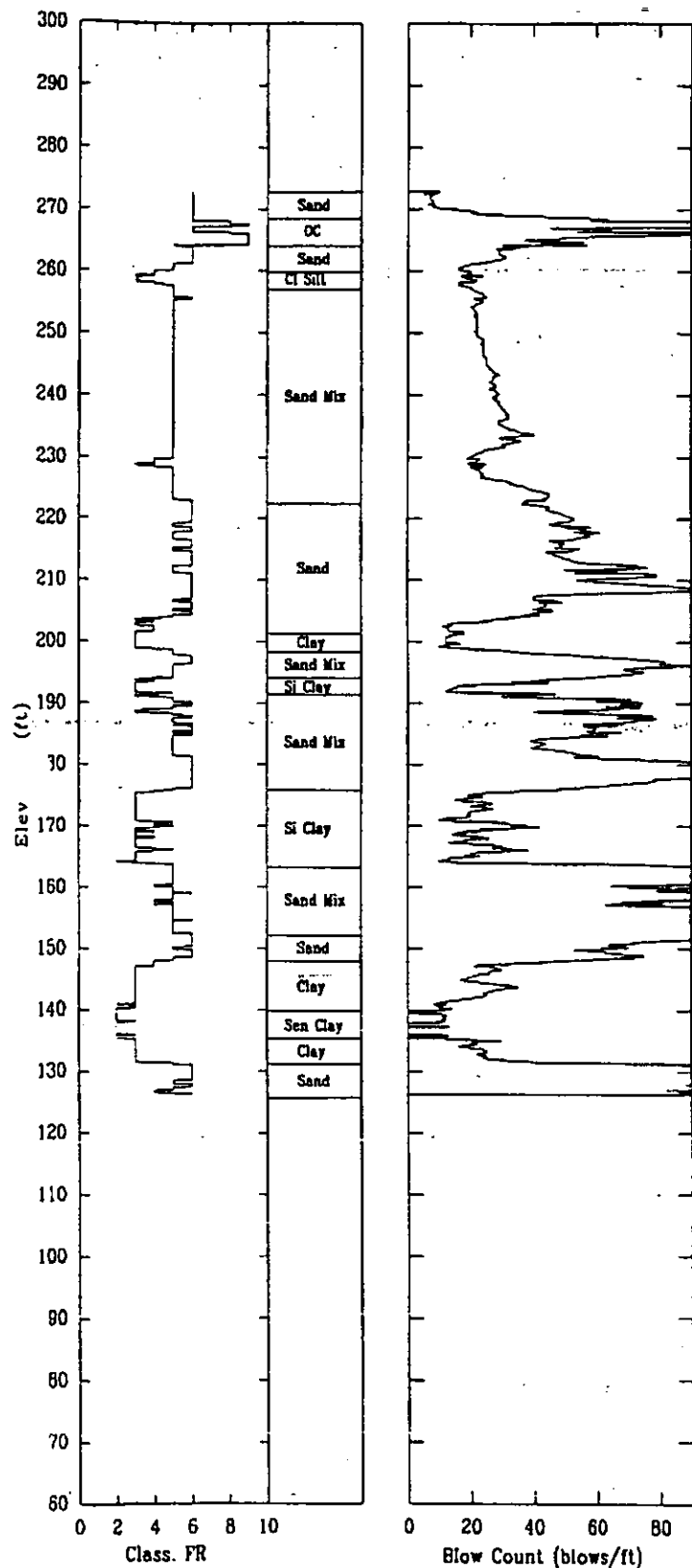
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02/24/98<sup>8/0</sup>

North 79650.07

East 54825.03

Elevation 278.9

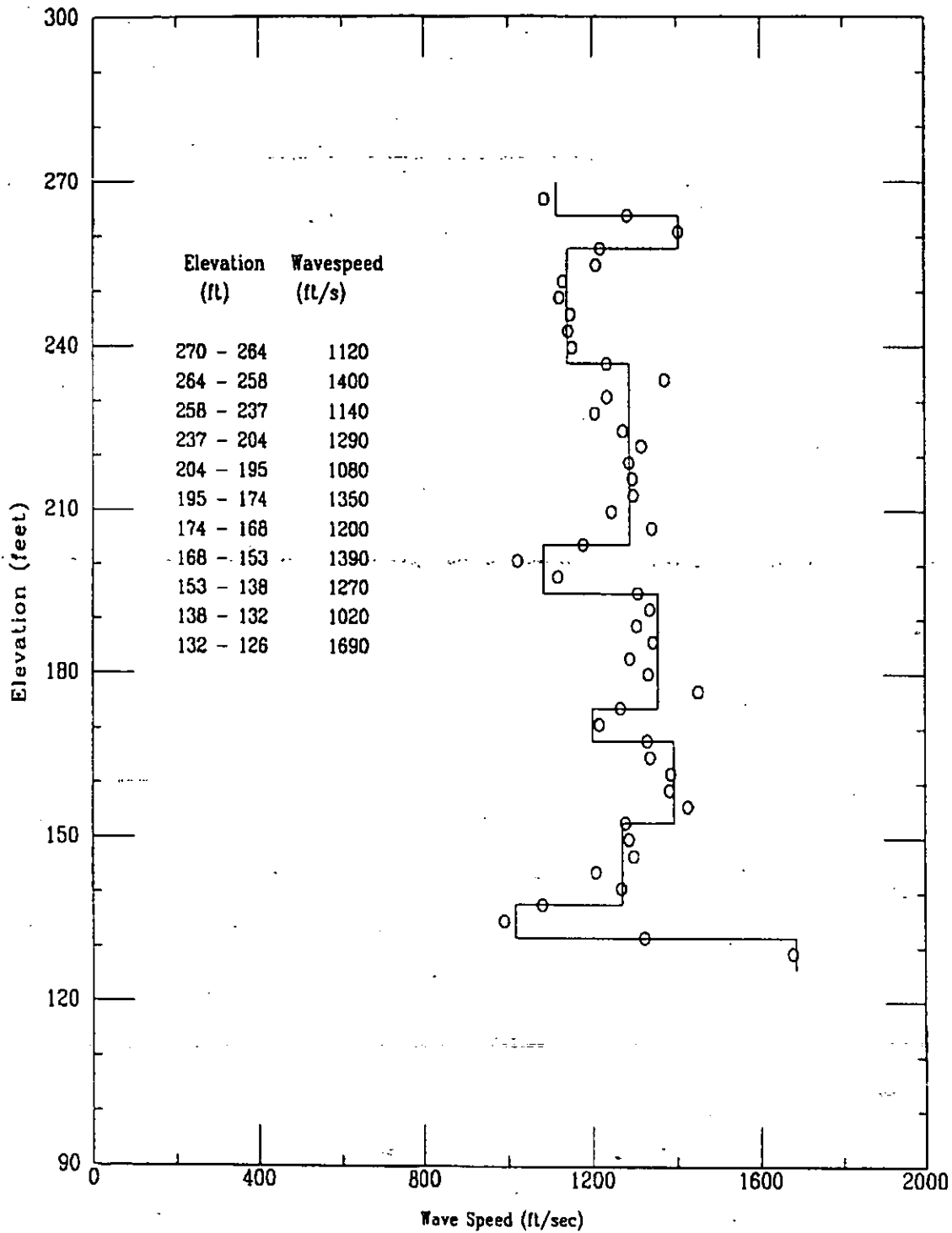


CPT-126

APPLIED RESEARCH ASSOCIATES, INC.

02/24/98

Shear Wave Speeds

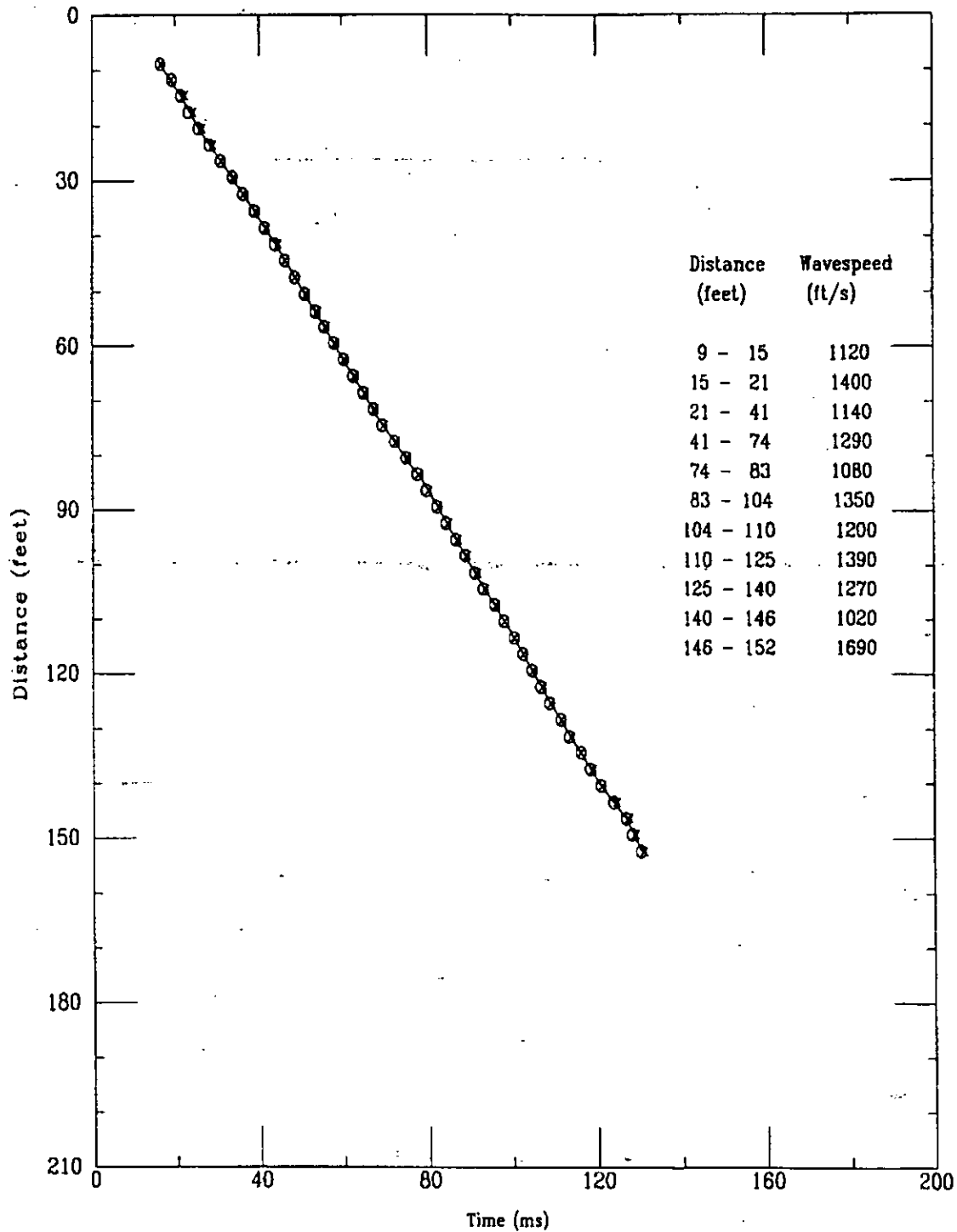


CPT-126

APPLIED-RESEARCH ASSOCIATES, INC.

02/24/98

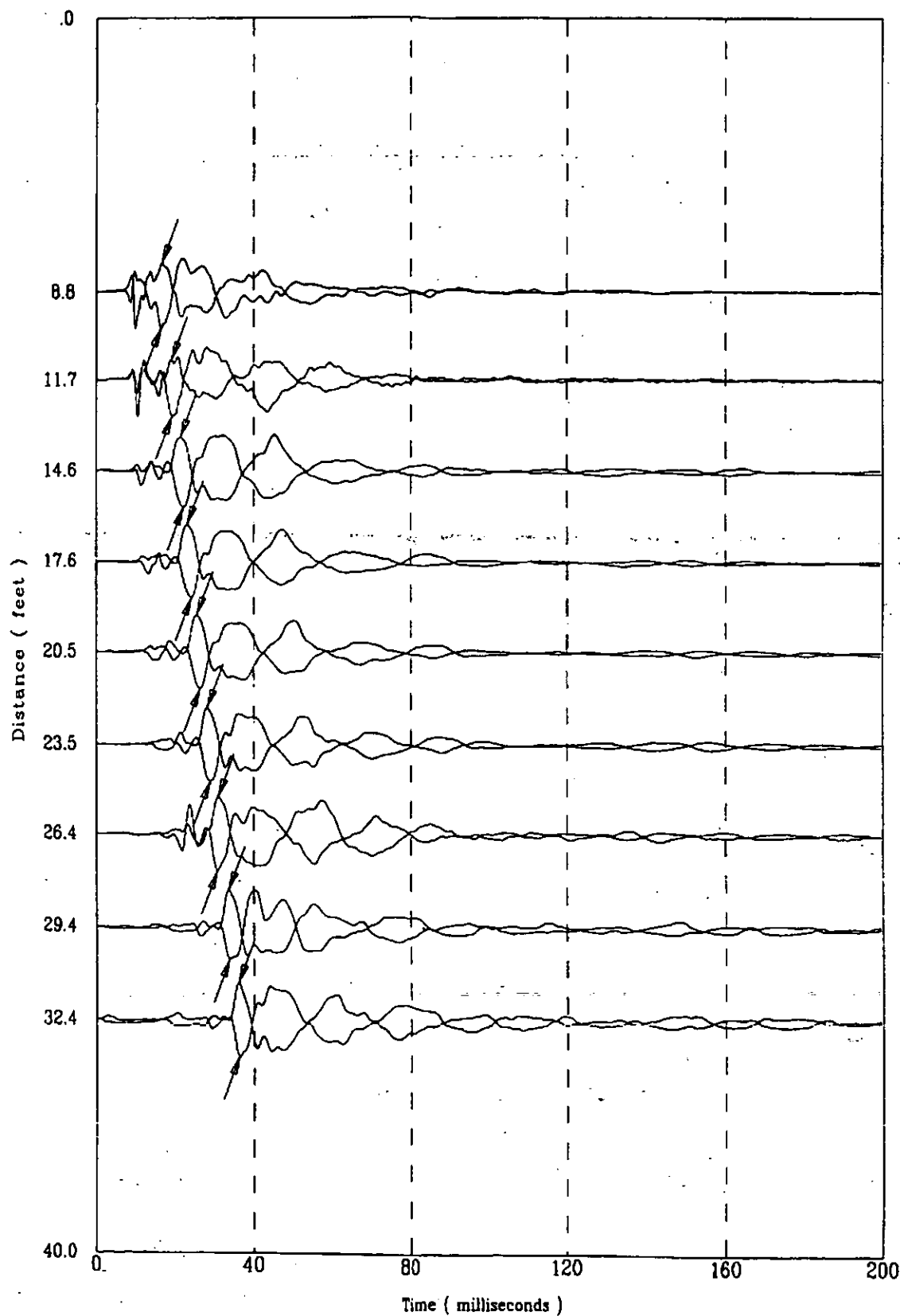
Shear Wave Time of Peak



K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-126

S Wave  
02/24/98



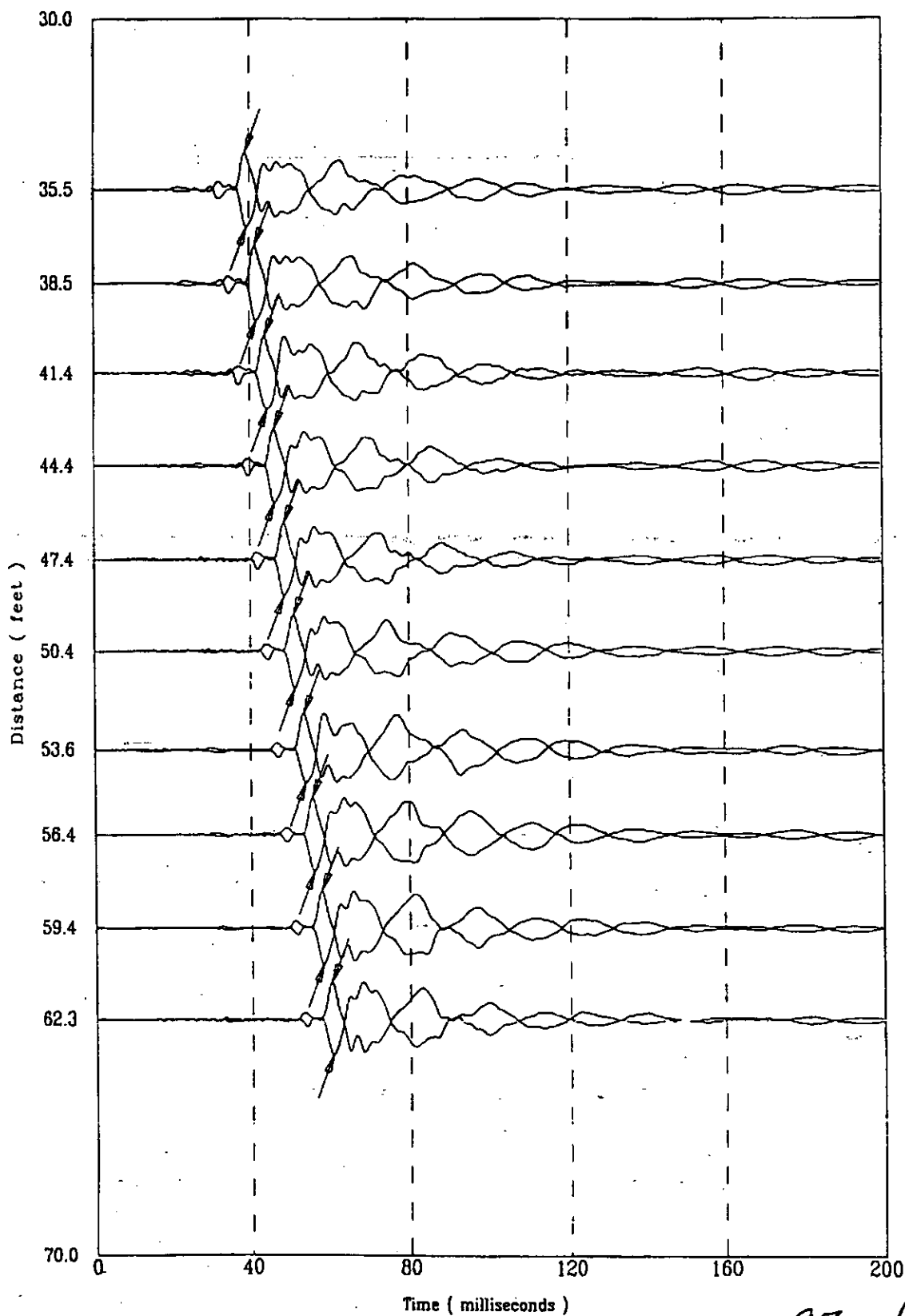
File 5247805S

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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-126

S Wave  
02/24/98

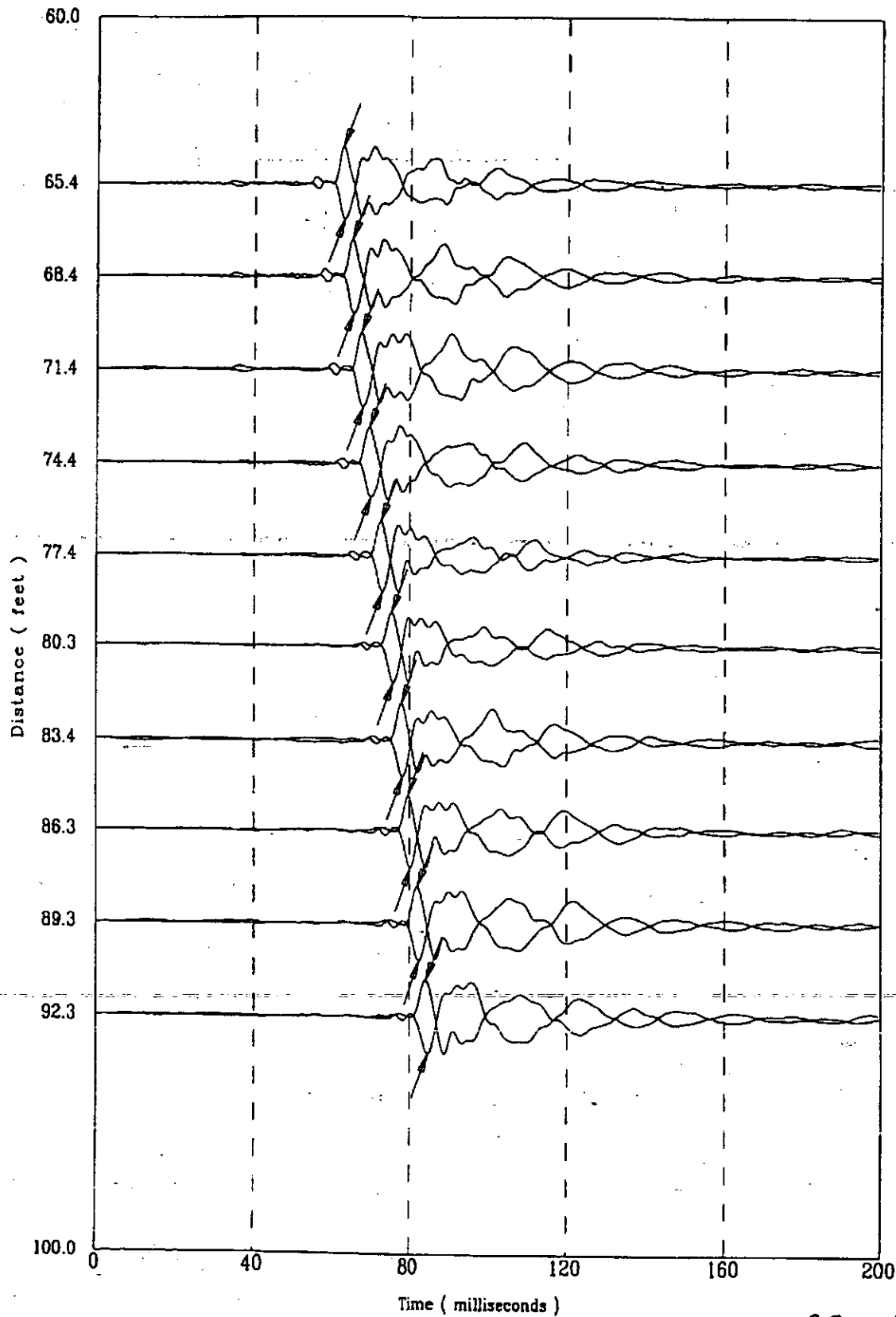




K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-126

S Wave  
02/24/98



File 52418053

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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-126

S Wave  
02/24/98

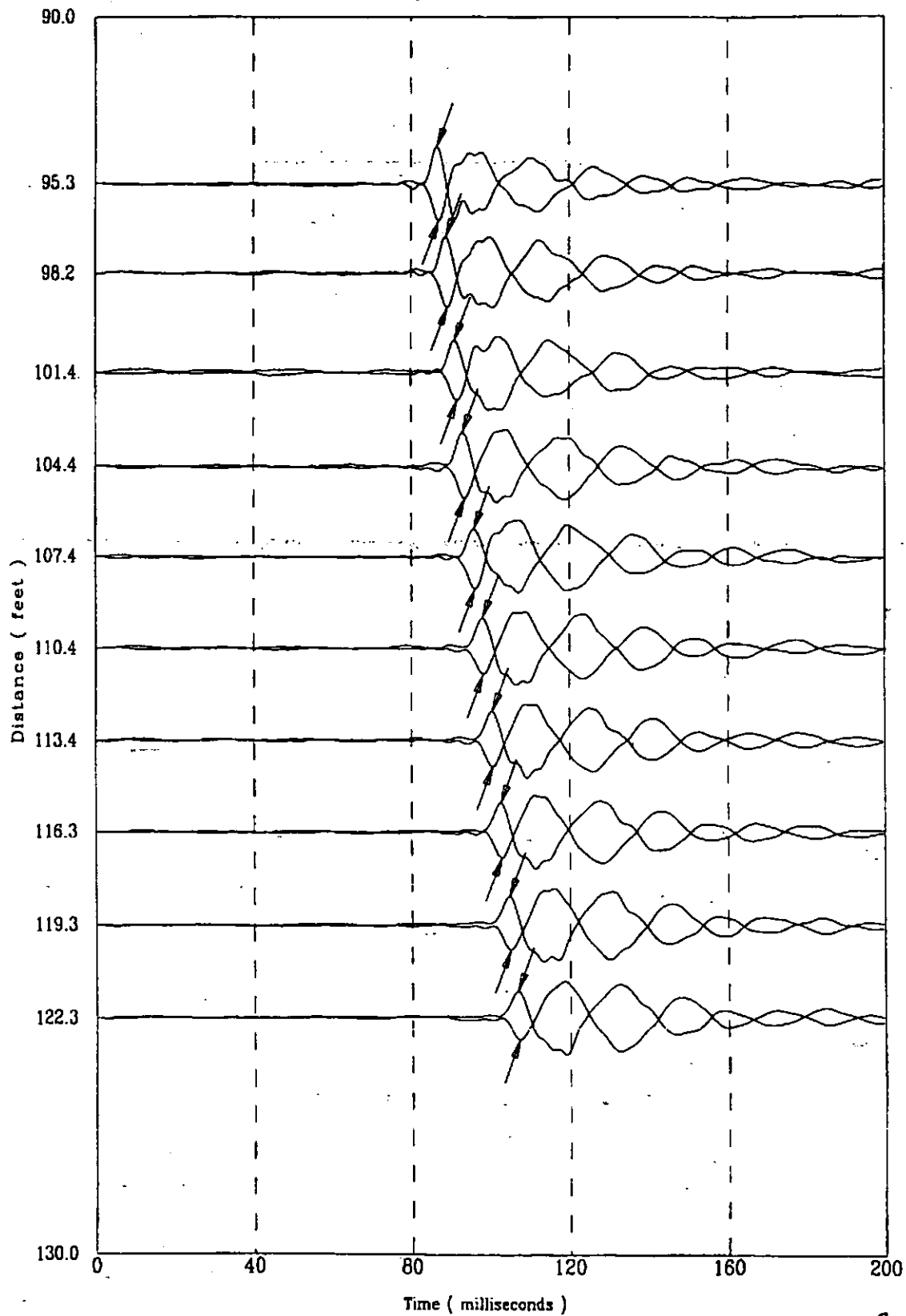


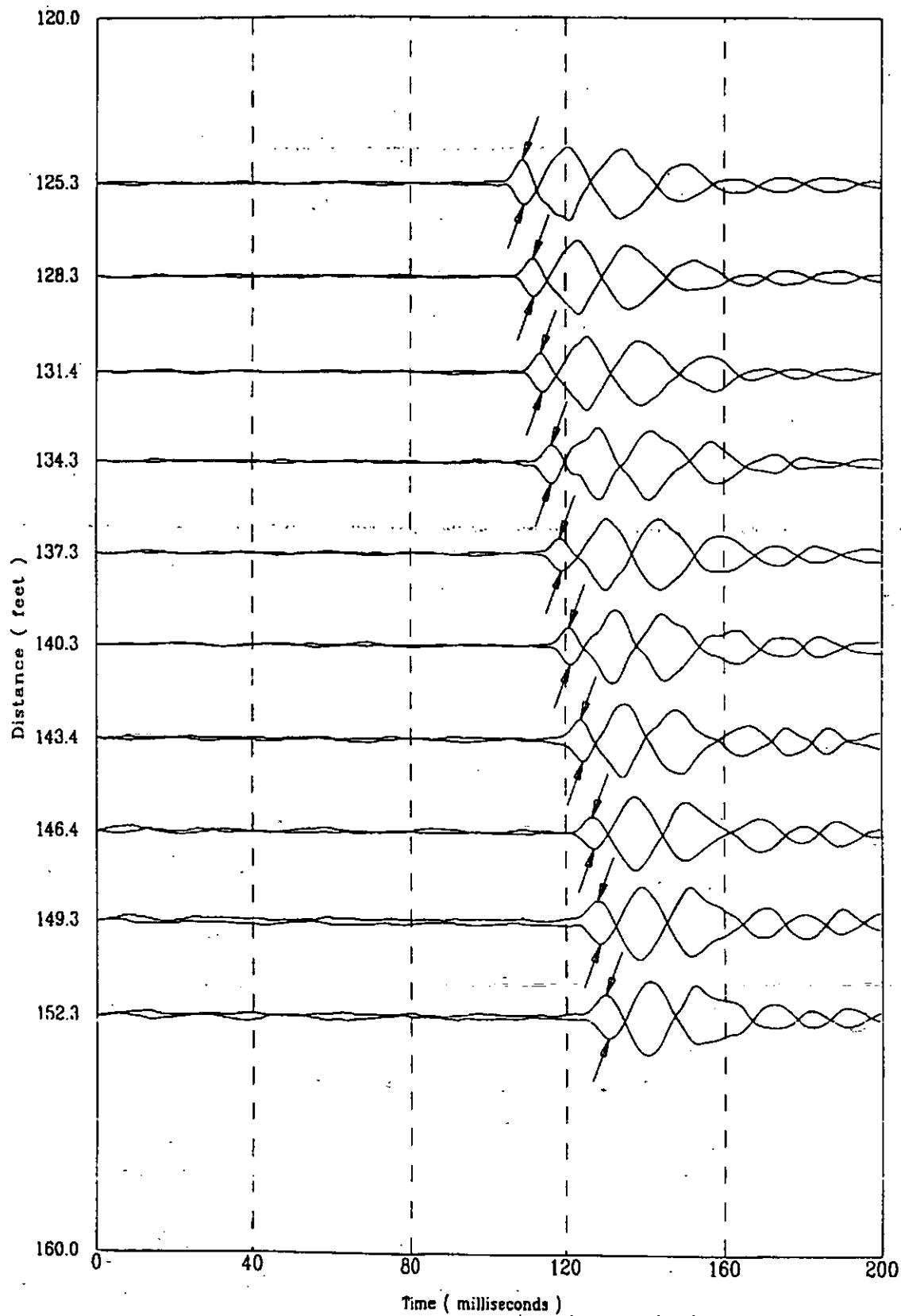
FIG. 5247805S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-126

S Wave  
02/24/98

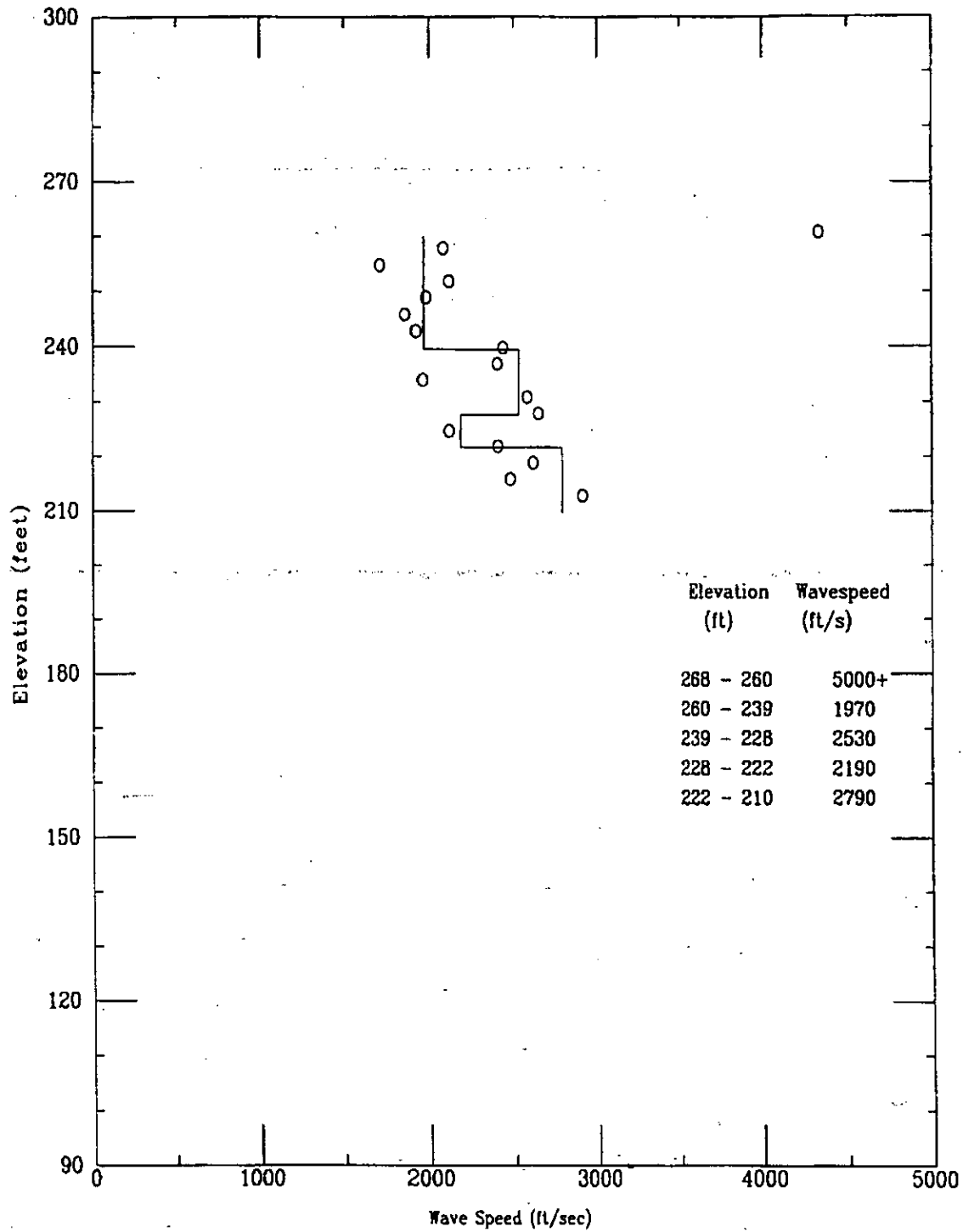


CPT-126

APPLIED RESEARCH ASSOCIATES, INC.

02/24/98

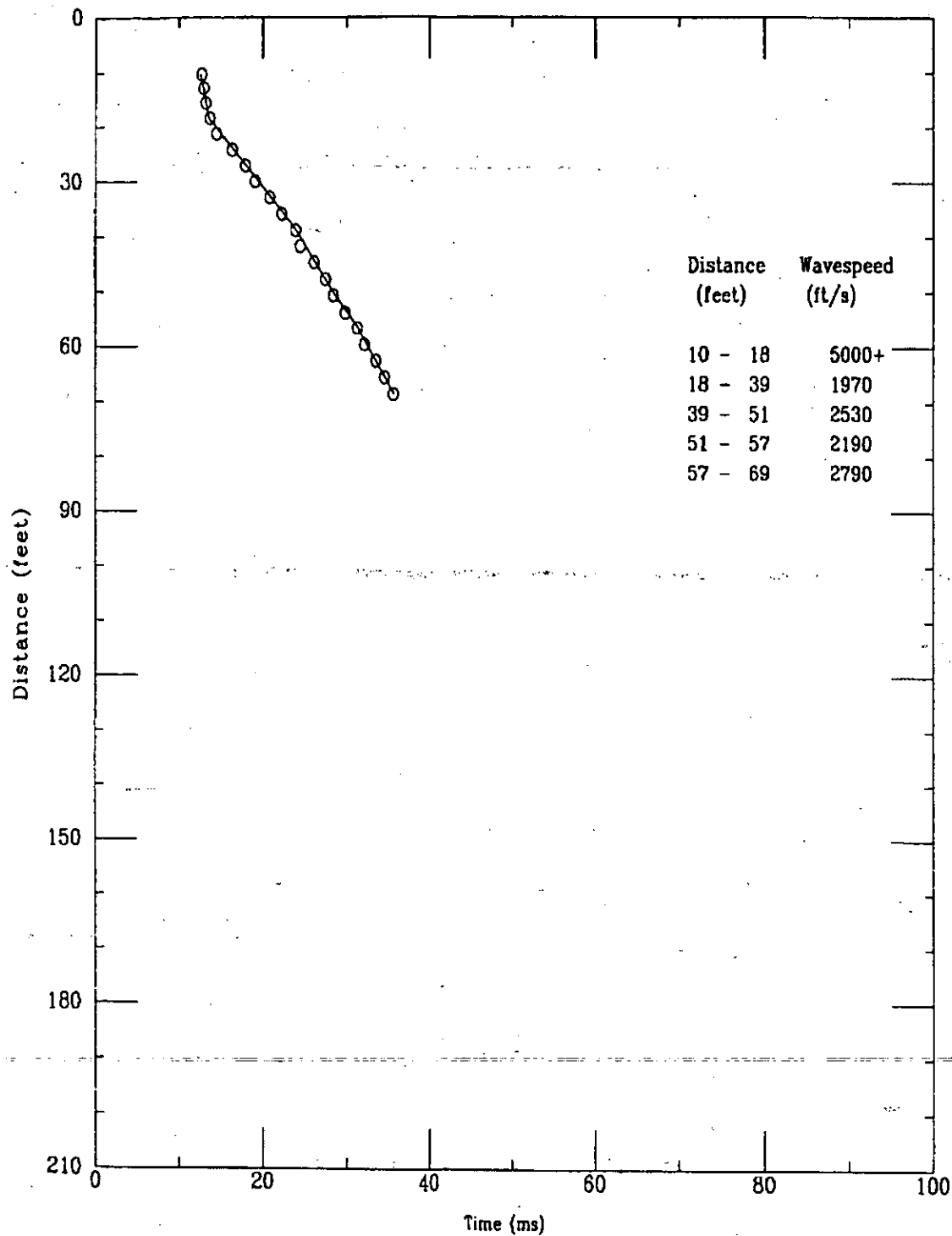
Compression Wave Speeds



CPT-126

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

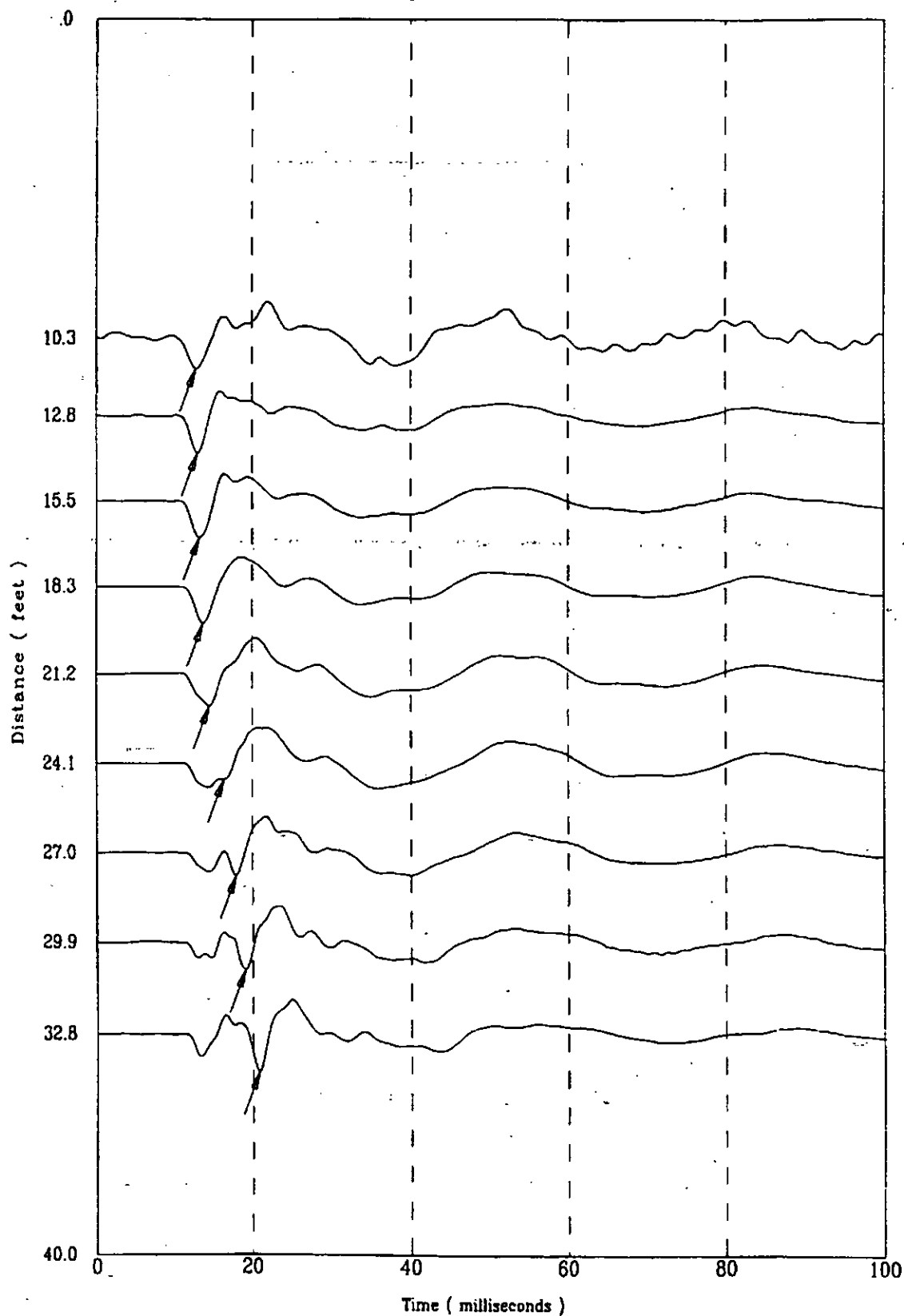
02/24/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-126

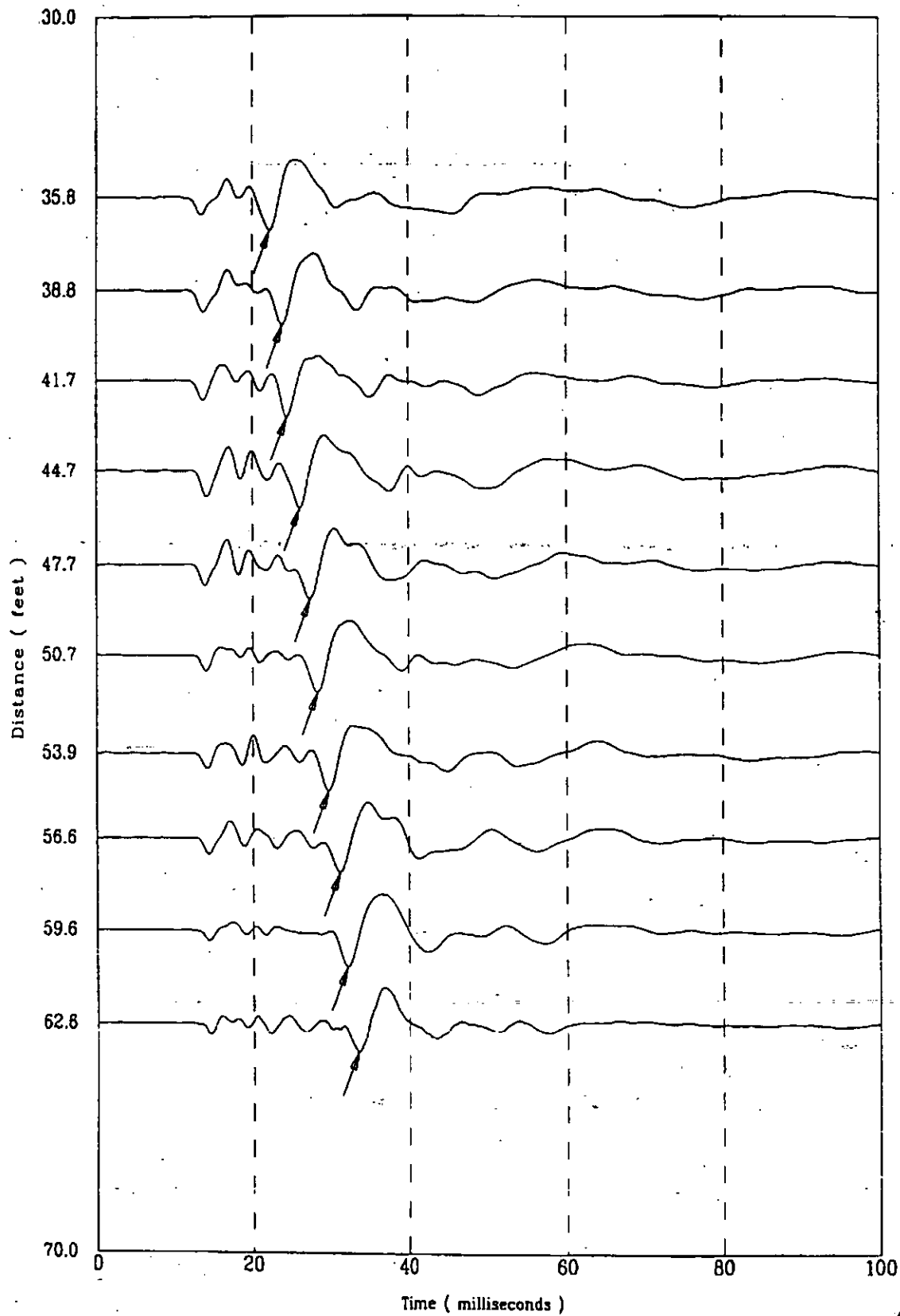
P Wave  
02/24/98



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-126

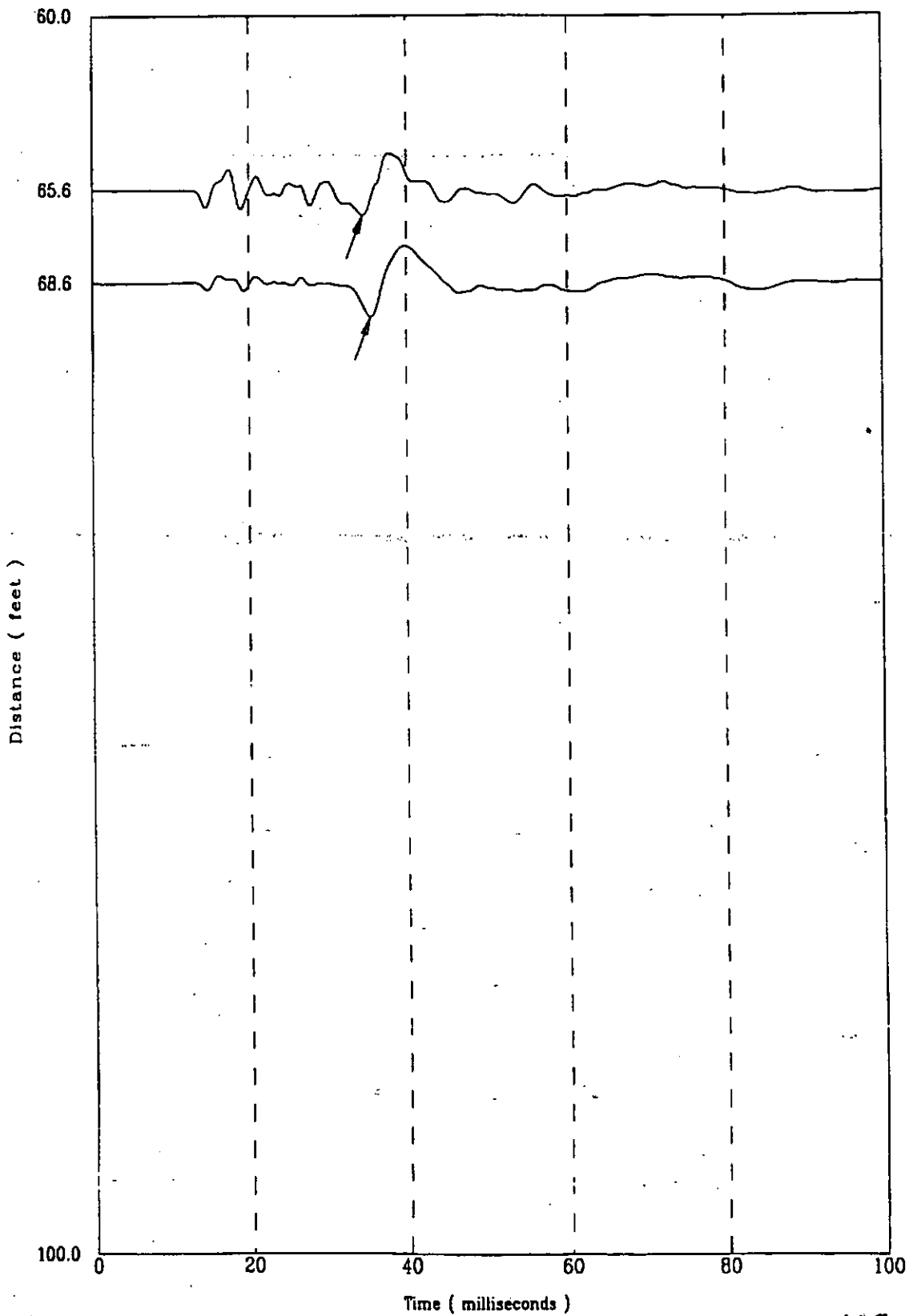
P Wave  
02/24/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-126

P Wave  
02/24/98





CPT-127

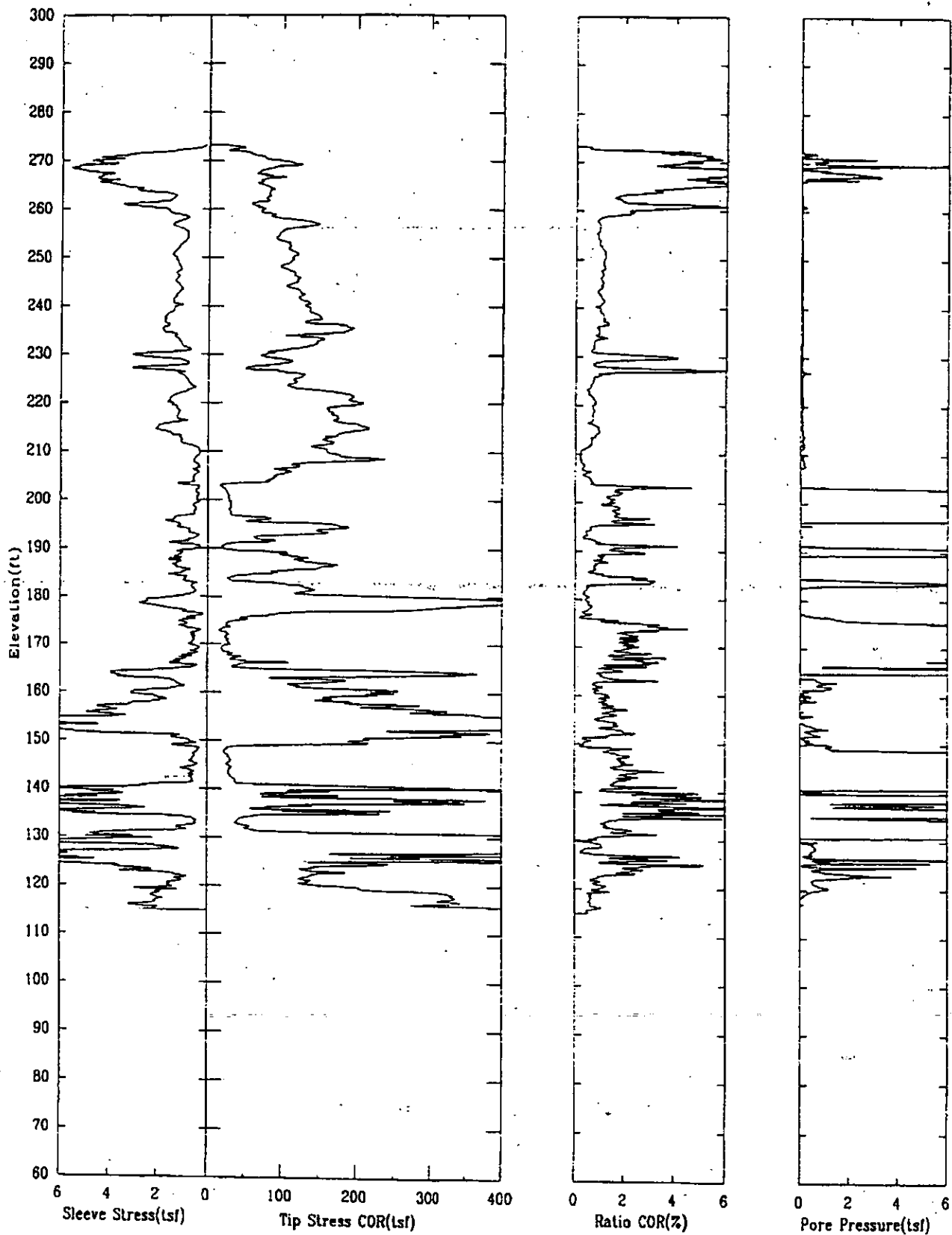
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-0000/  
02/24/98 / 0

North 79650.01

East 54975.00

Elevation 279.3



CPT-127

APPLIED RESEARCH ASSOCIATES, INC.

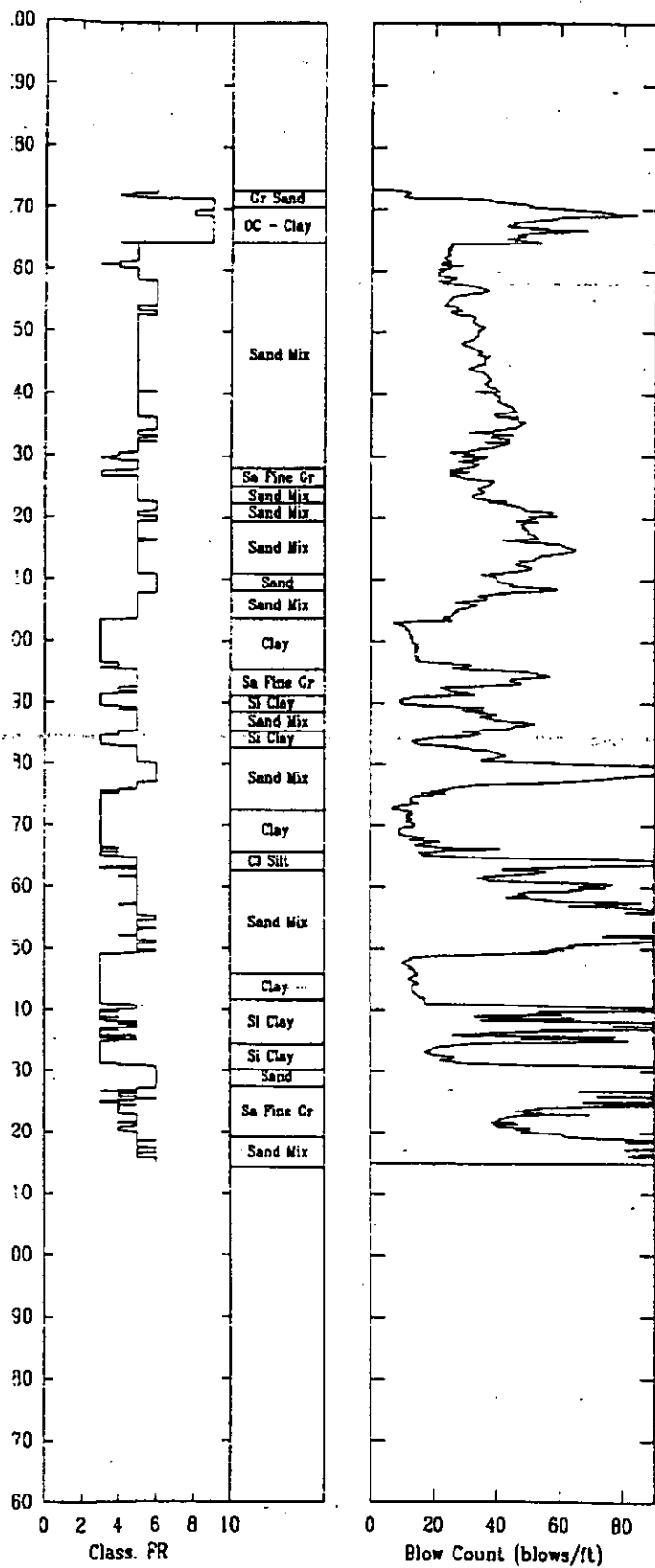
K-TRT-F-00001

02/24/98/0

North 79650.01

East 54975.00

Elevation 279.3

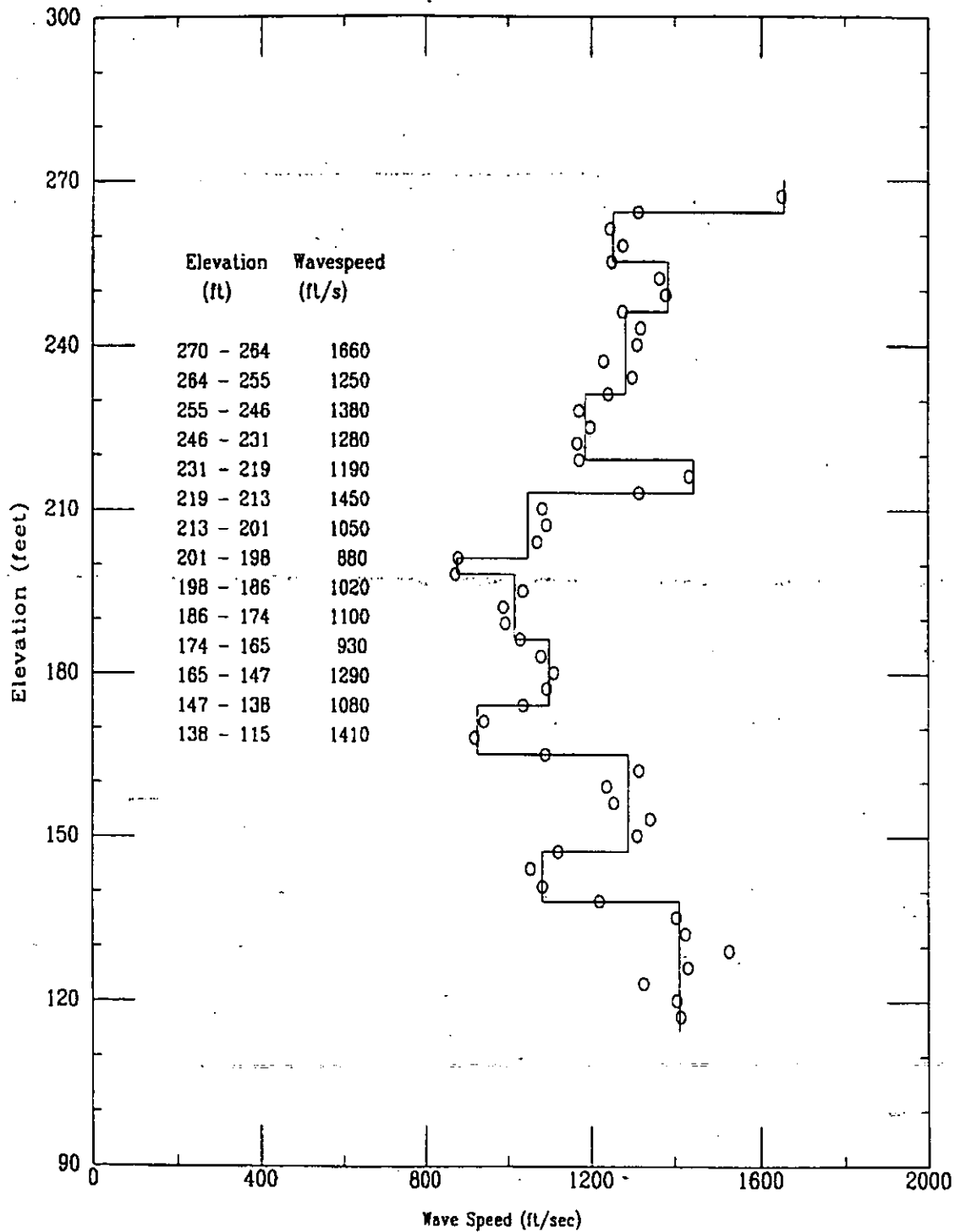


CPT-127

APPLIED RESEARCH ASSOCIATES, INC.

02/24/98

Shear Wave Speeds



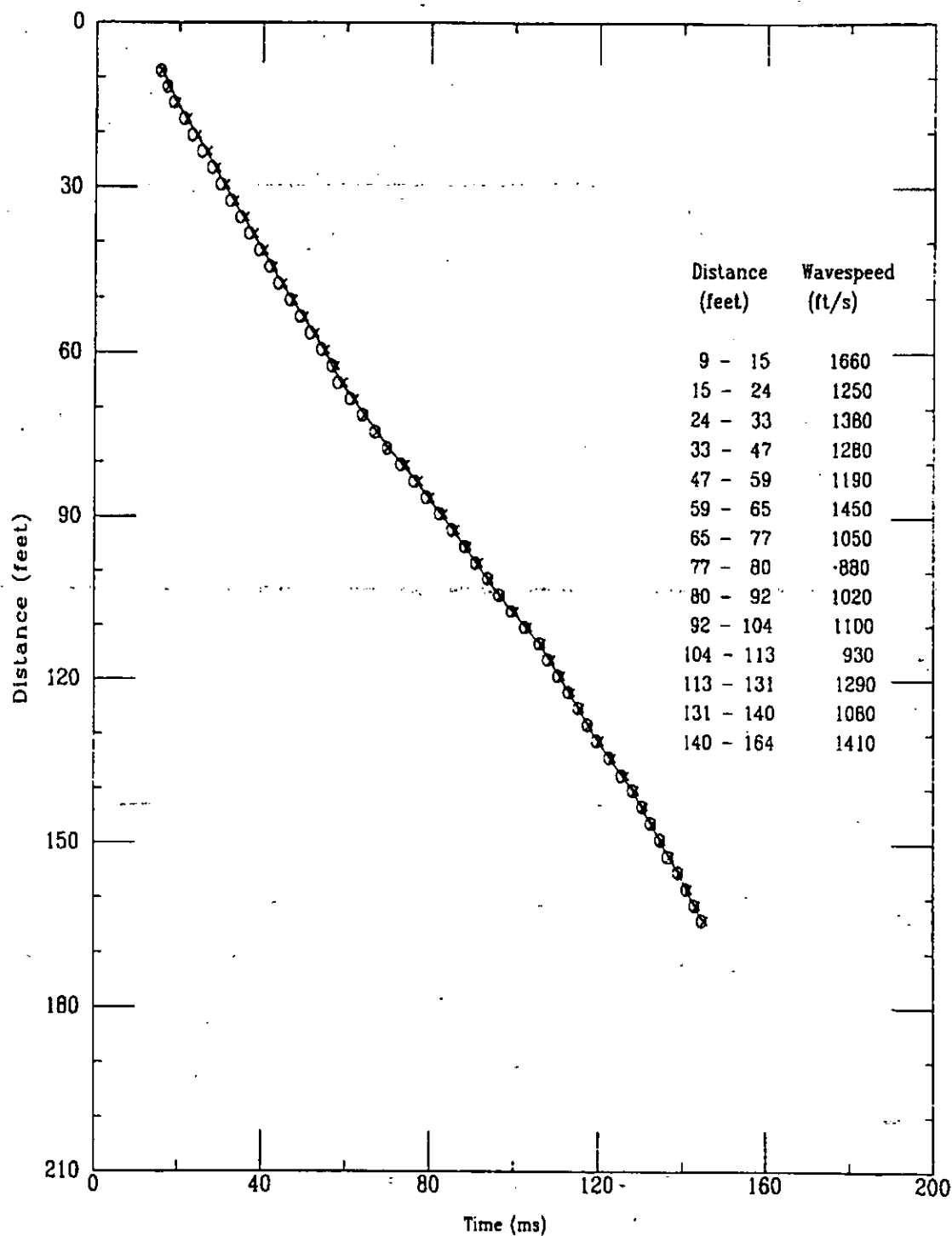
File 52418025

CPT-127

APPLIED RESEARCH ASSOCIATES, INC.

02/24/98

Shear Wave Time of Peak

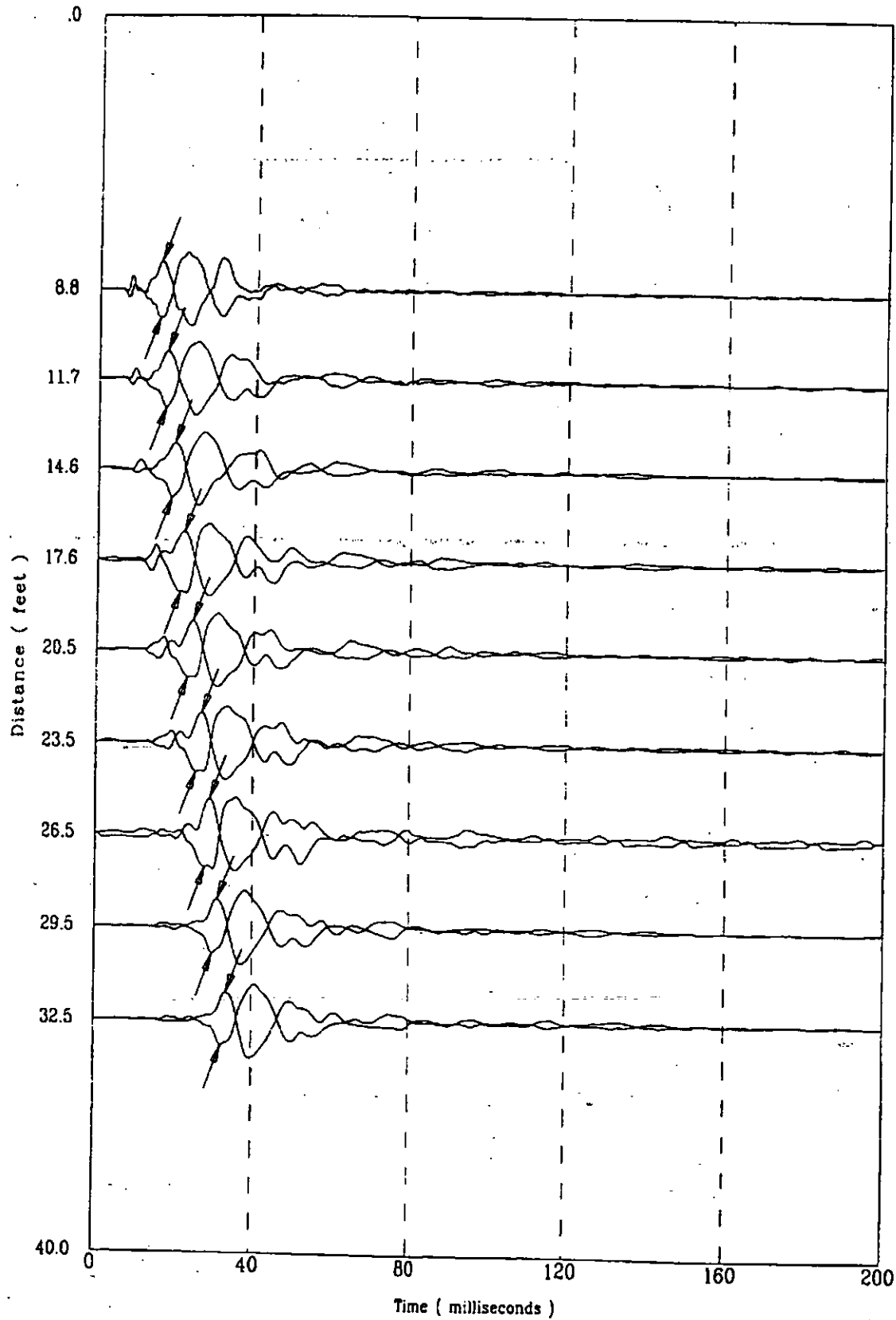


File 5247802S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-127

S Wave  
02/24/98



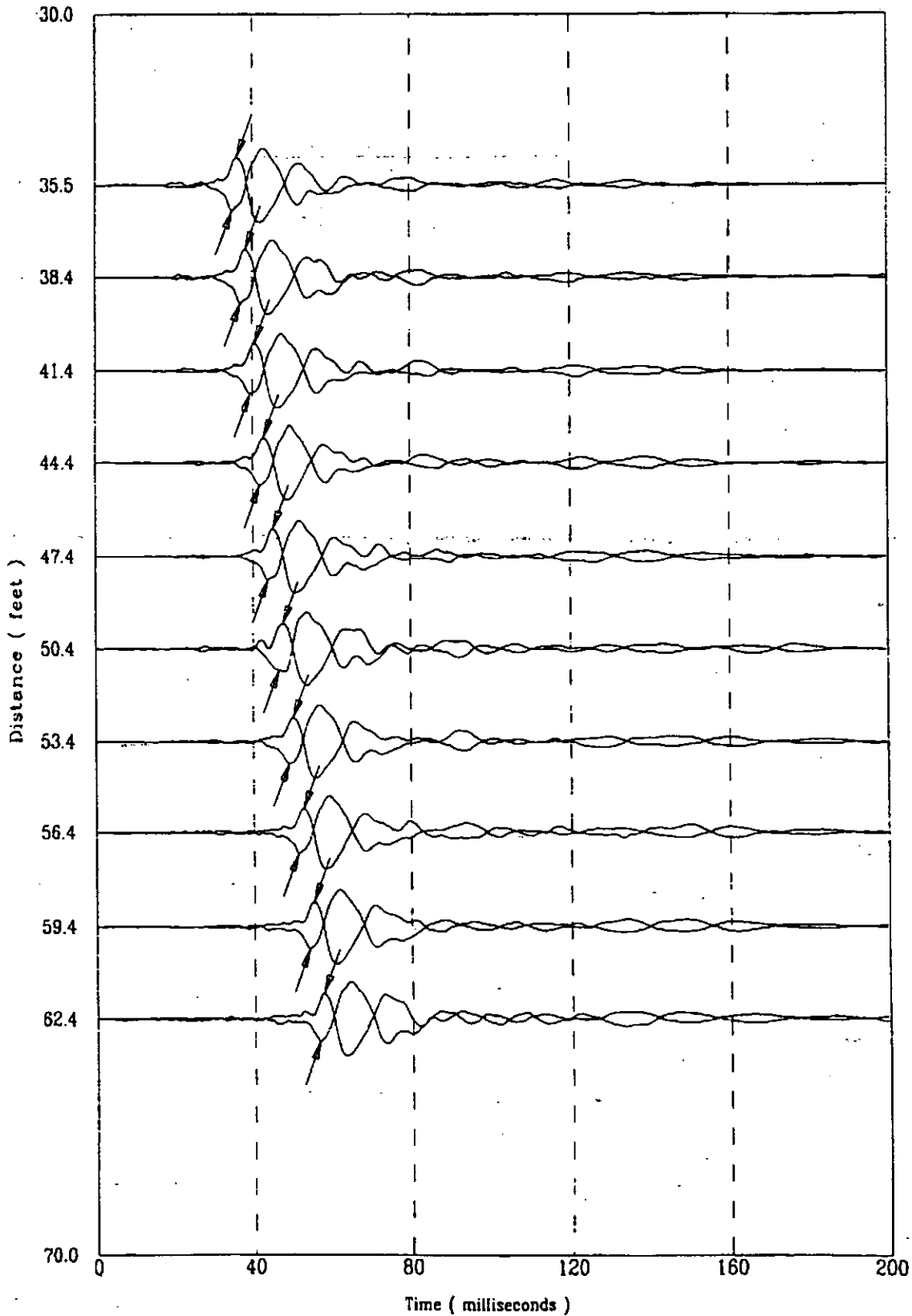
3247802S

110 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-127

S Wave  
02/24/98



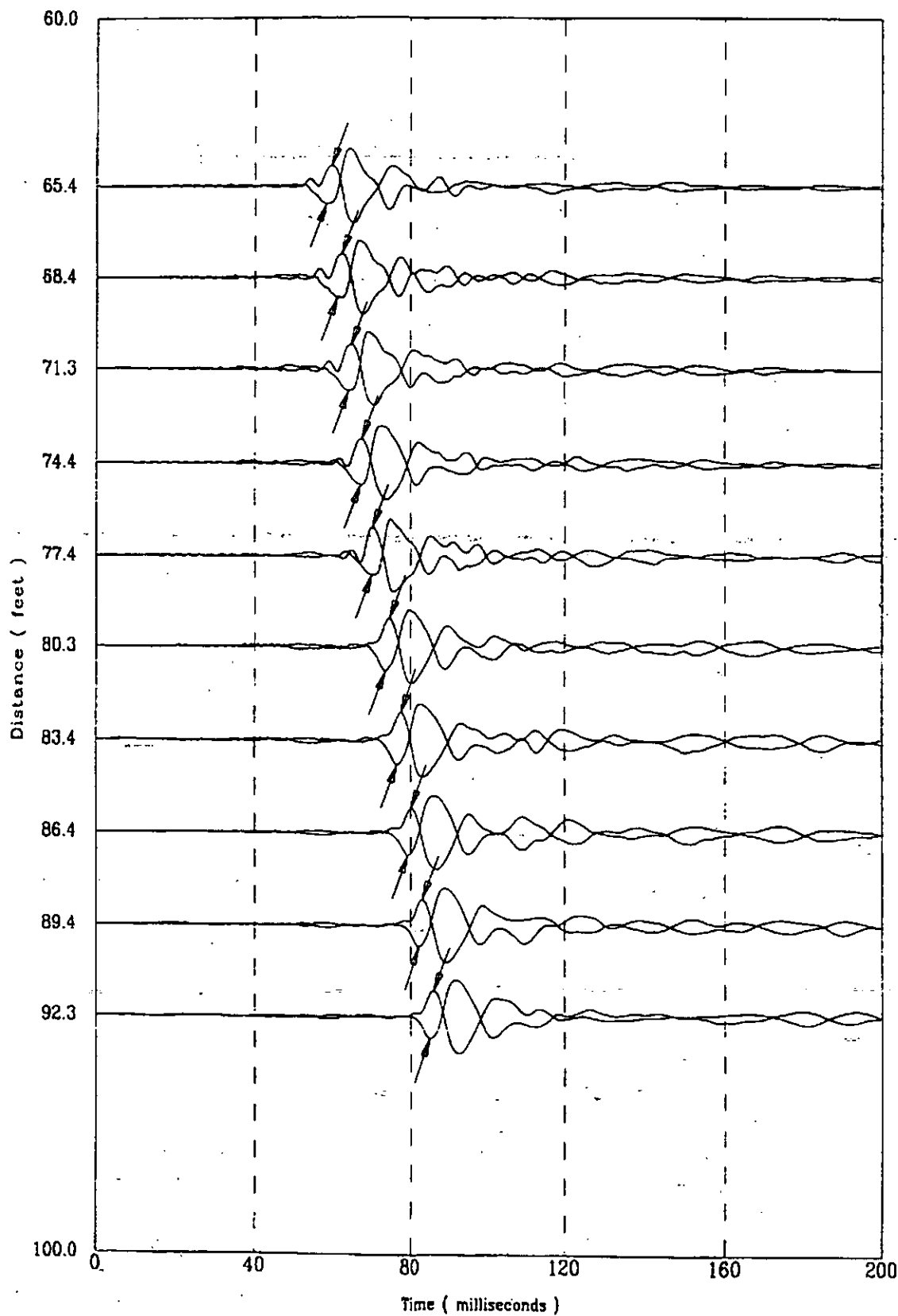
5241802S

111 of 522

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-127

S Wave  
02/24/98



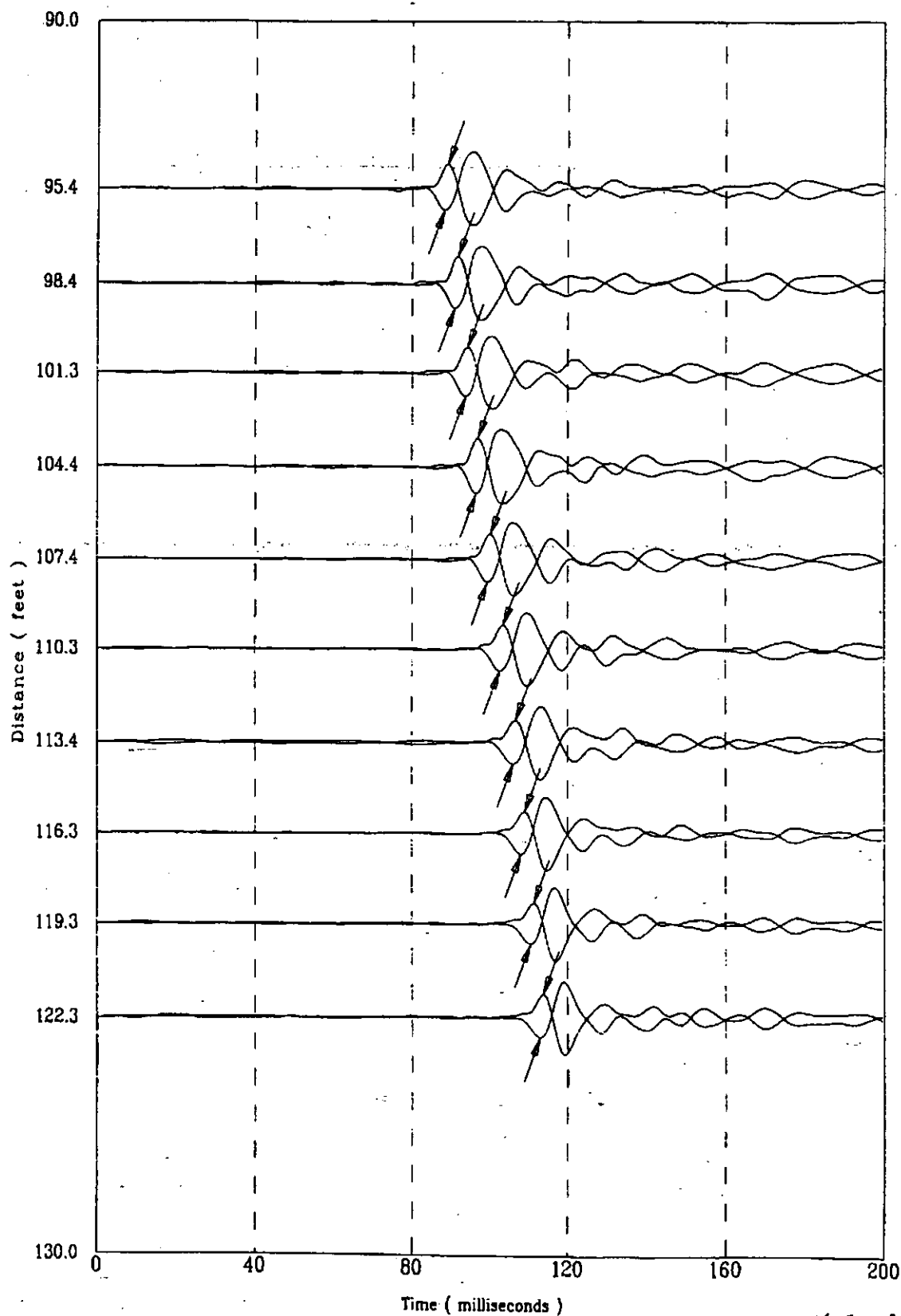
5247802S

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K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-127

S Wave  
02/24/98



5247802S

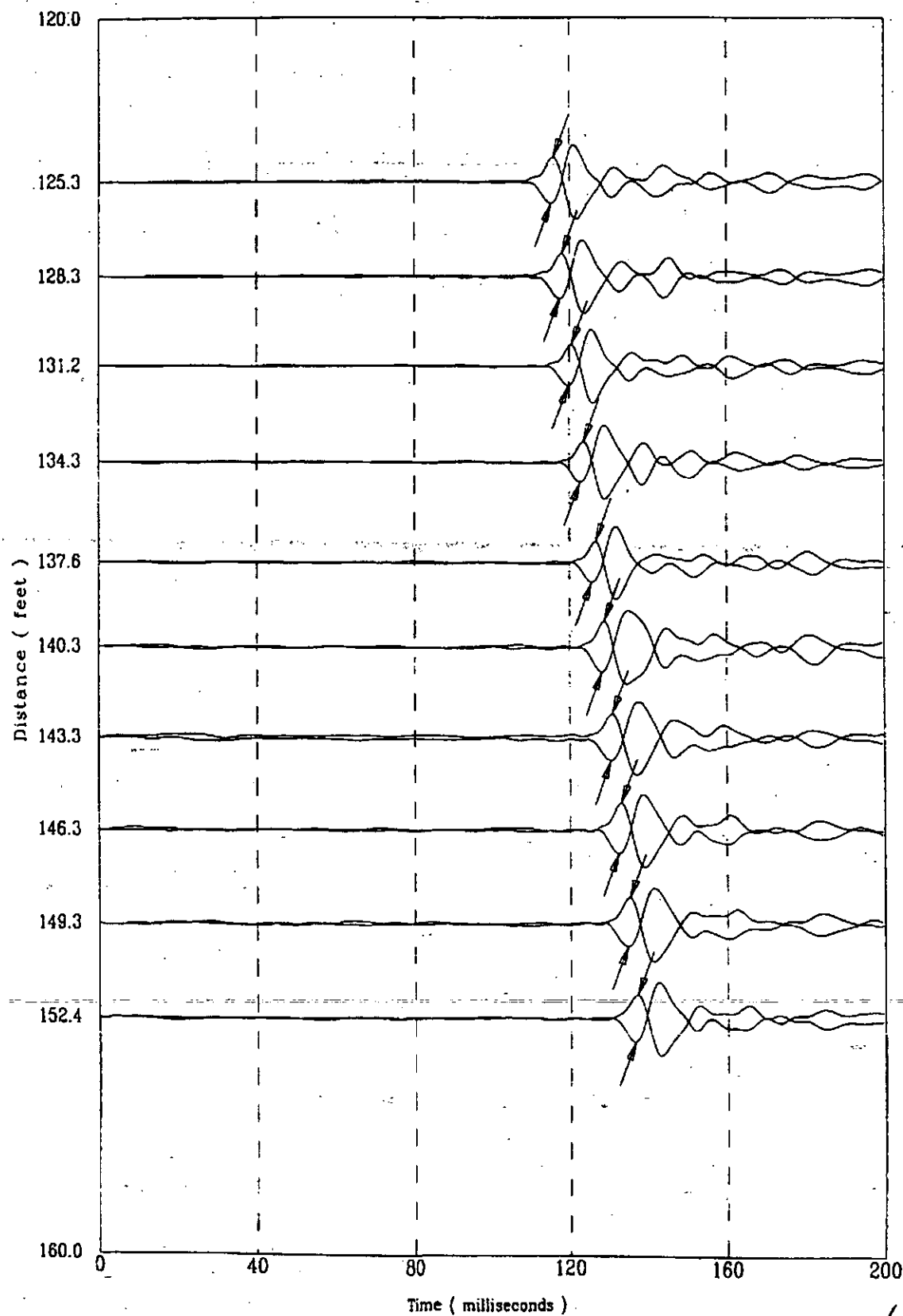
113 of 522



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-127

S Wave  
02/24/98



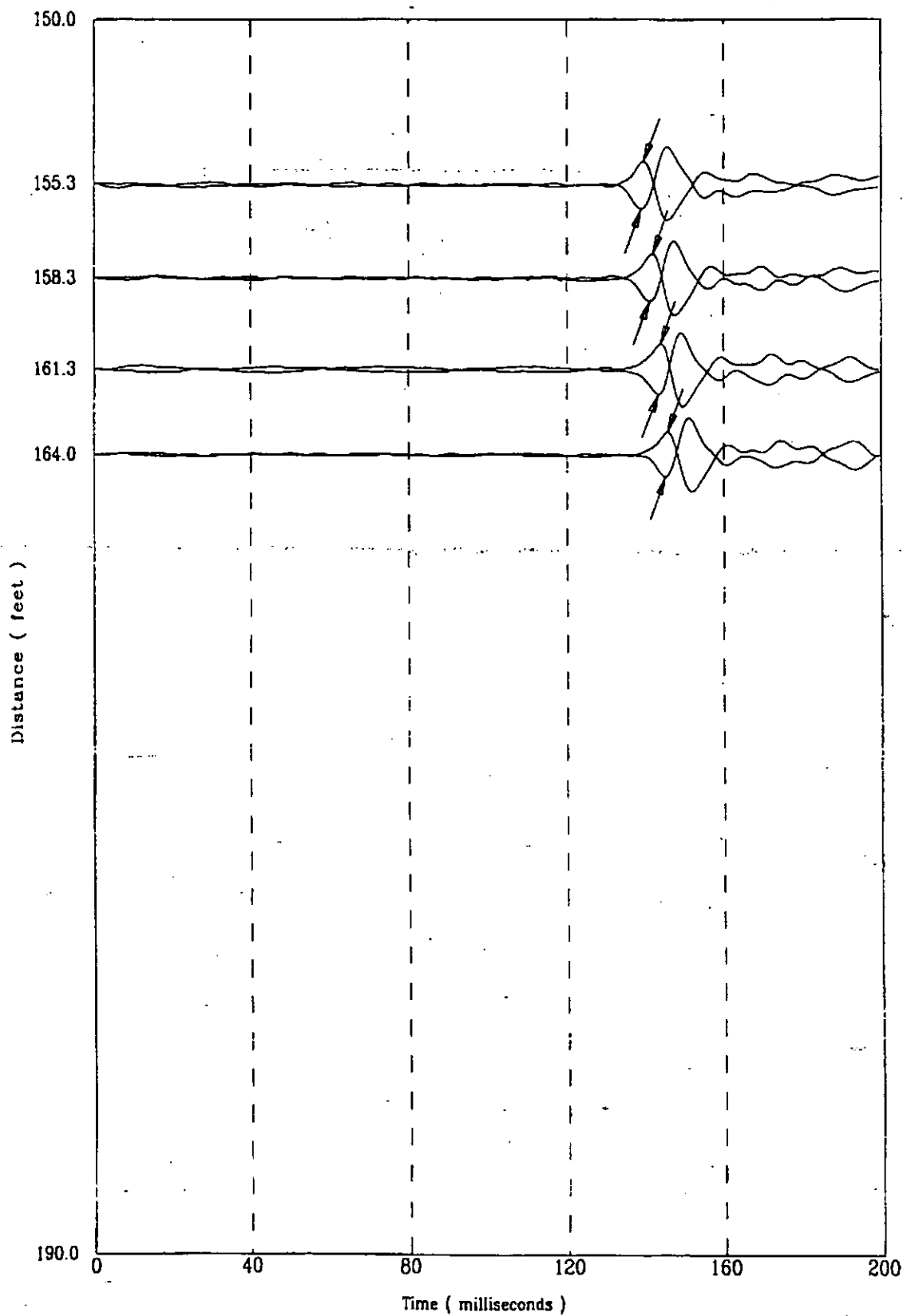
524f802S

114 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-127

S Wave  
02/24/98



247802S

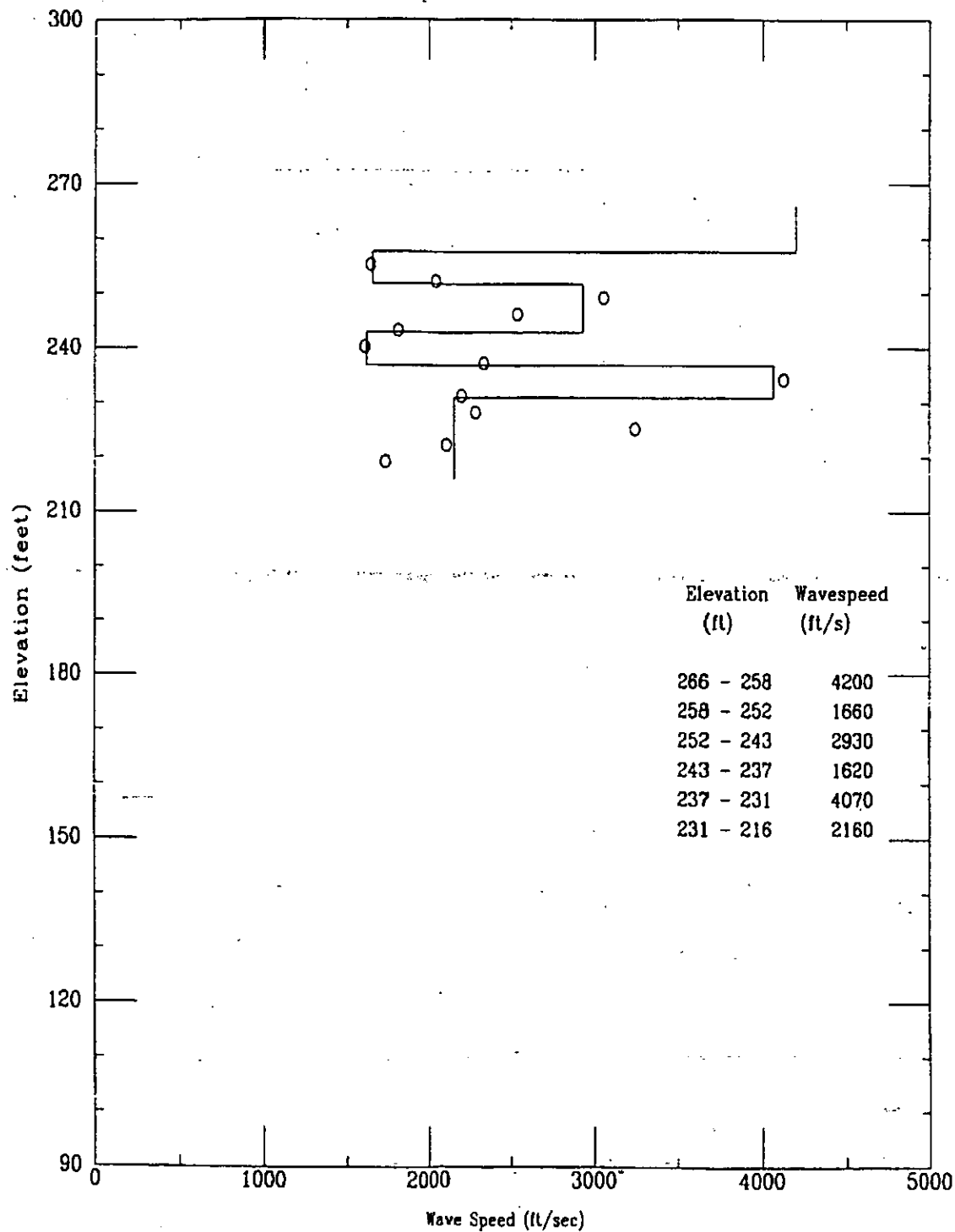
115 of 522

CPT-127

APPLIED RESEARCH ASSOCIATES, INC.

02/24/98

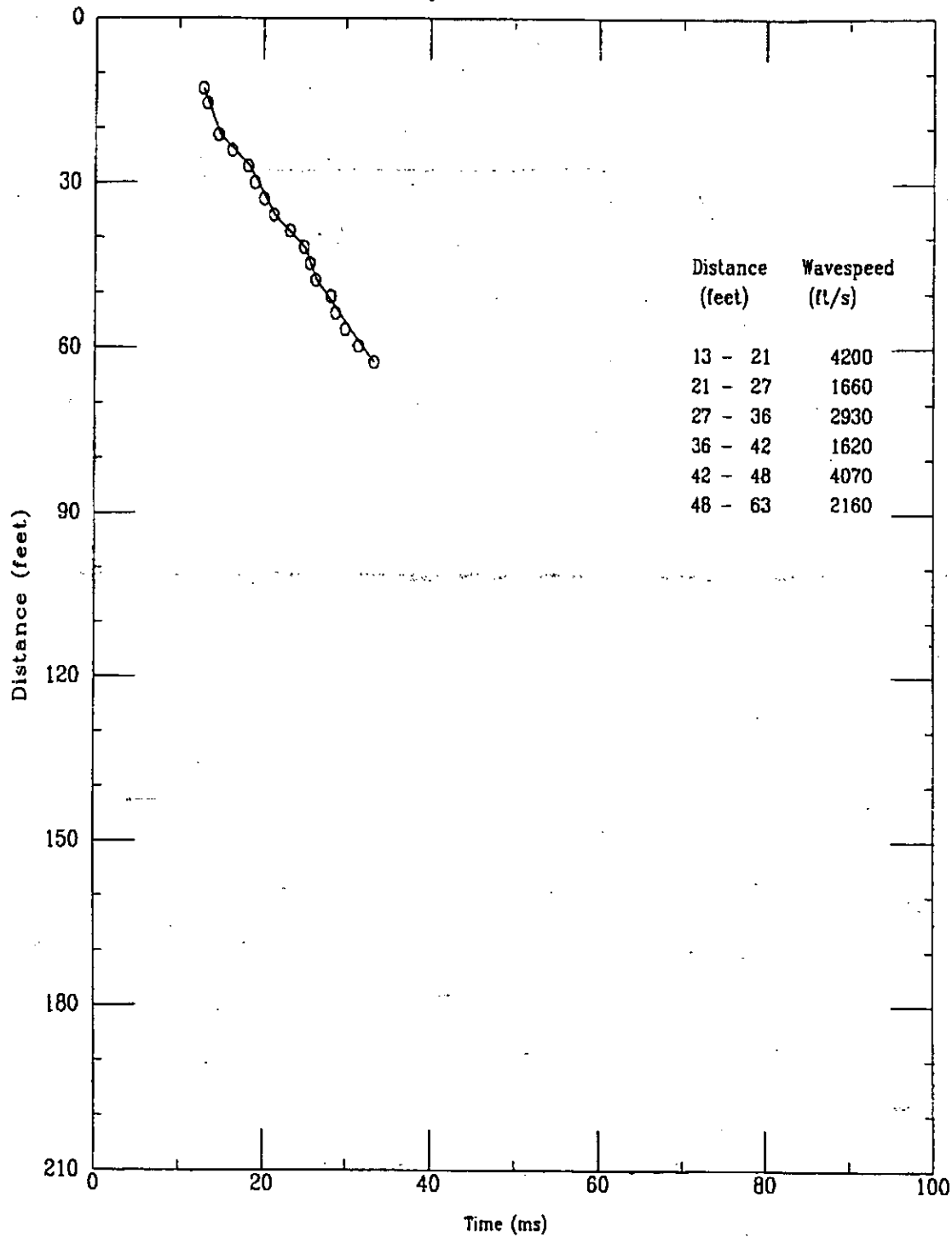
Compression Wave Speeds



CPT-127

APPLIED-RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

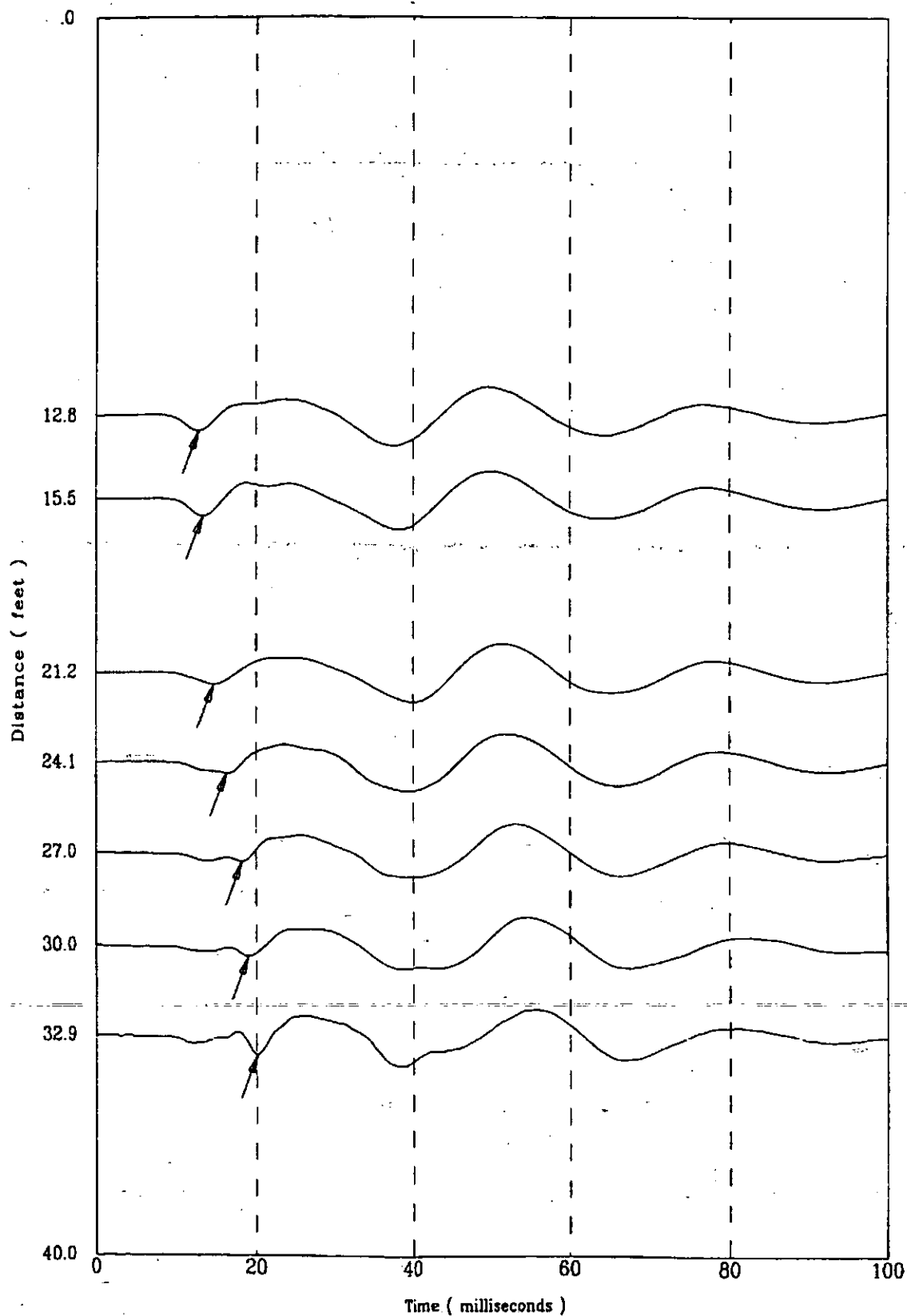
02/24/98



K-TRT-F-0000/  
R/o

Applied Research Associates  
CPT-127

P Wave  
02/24/98



5247802S

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CPT-128

APPLIED RESEARCH ASSOCIATES, INC.

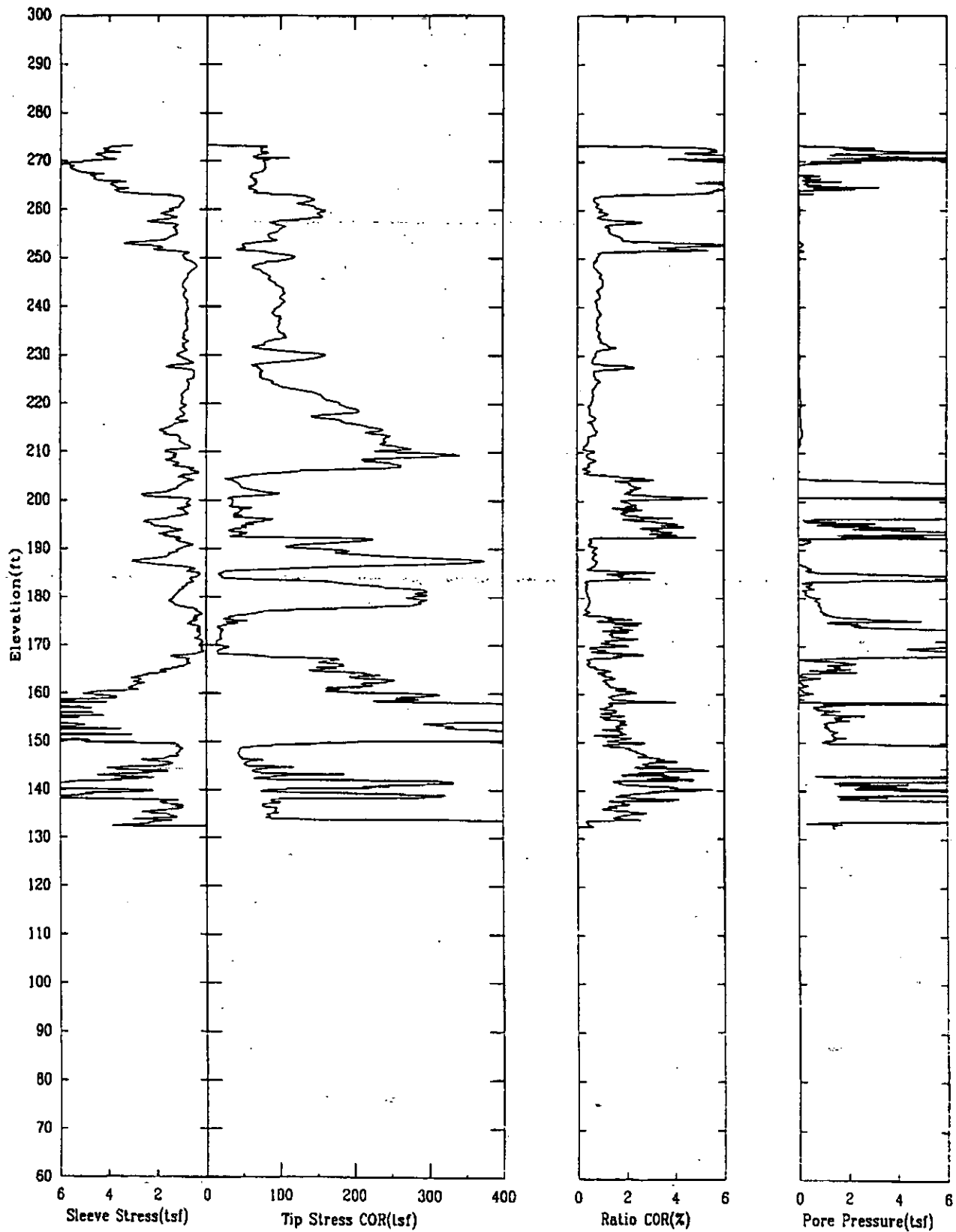
K-TRT-F-00001

02/23/98/0

North 79650.01

East 55124.95

Elevation 279.3



CPT-128

APPLIED RESEARCH ASSOCIATES, INC.

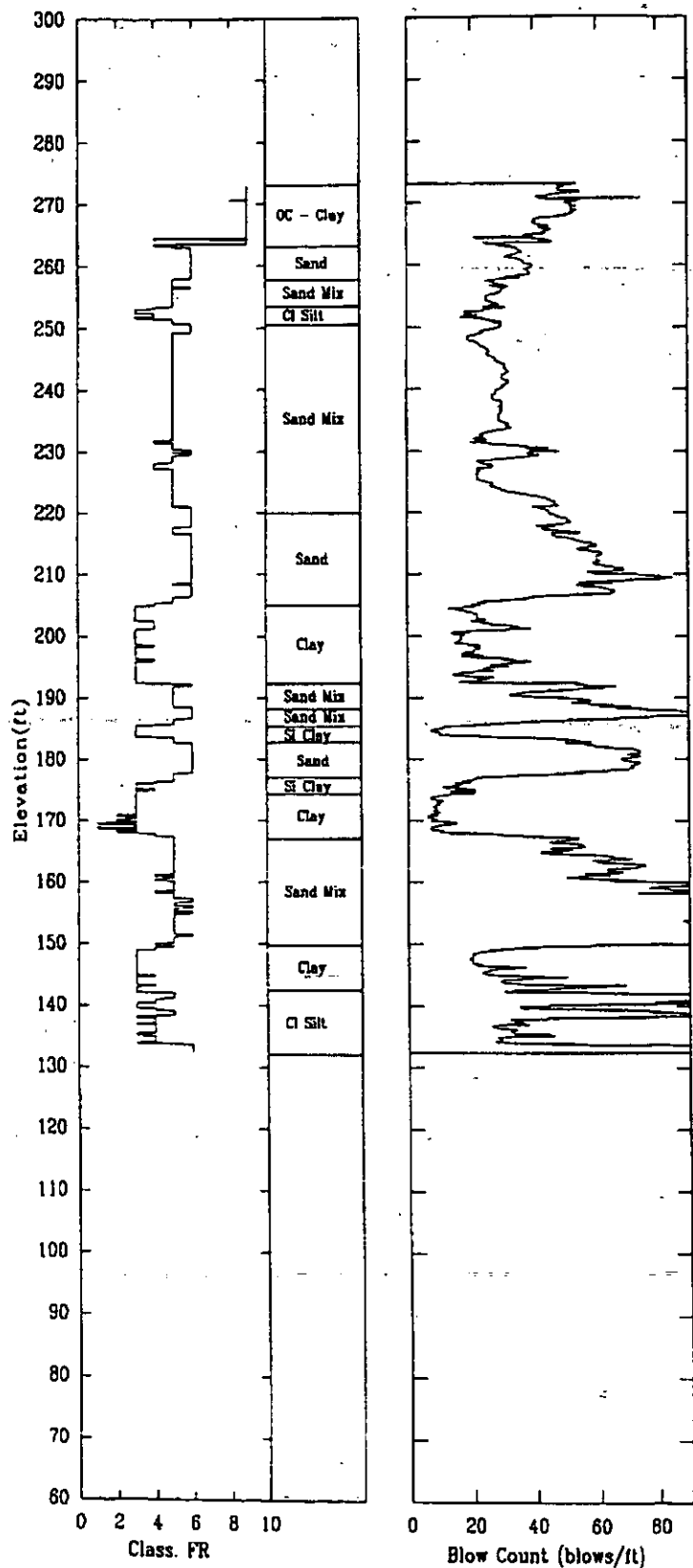
K-TRT-F-00001

02/23/98 R/O

North 79650.01

East 55124.95

Elevation 279.3



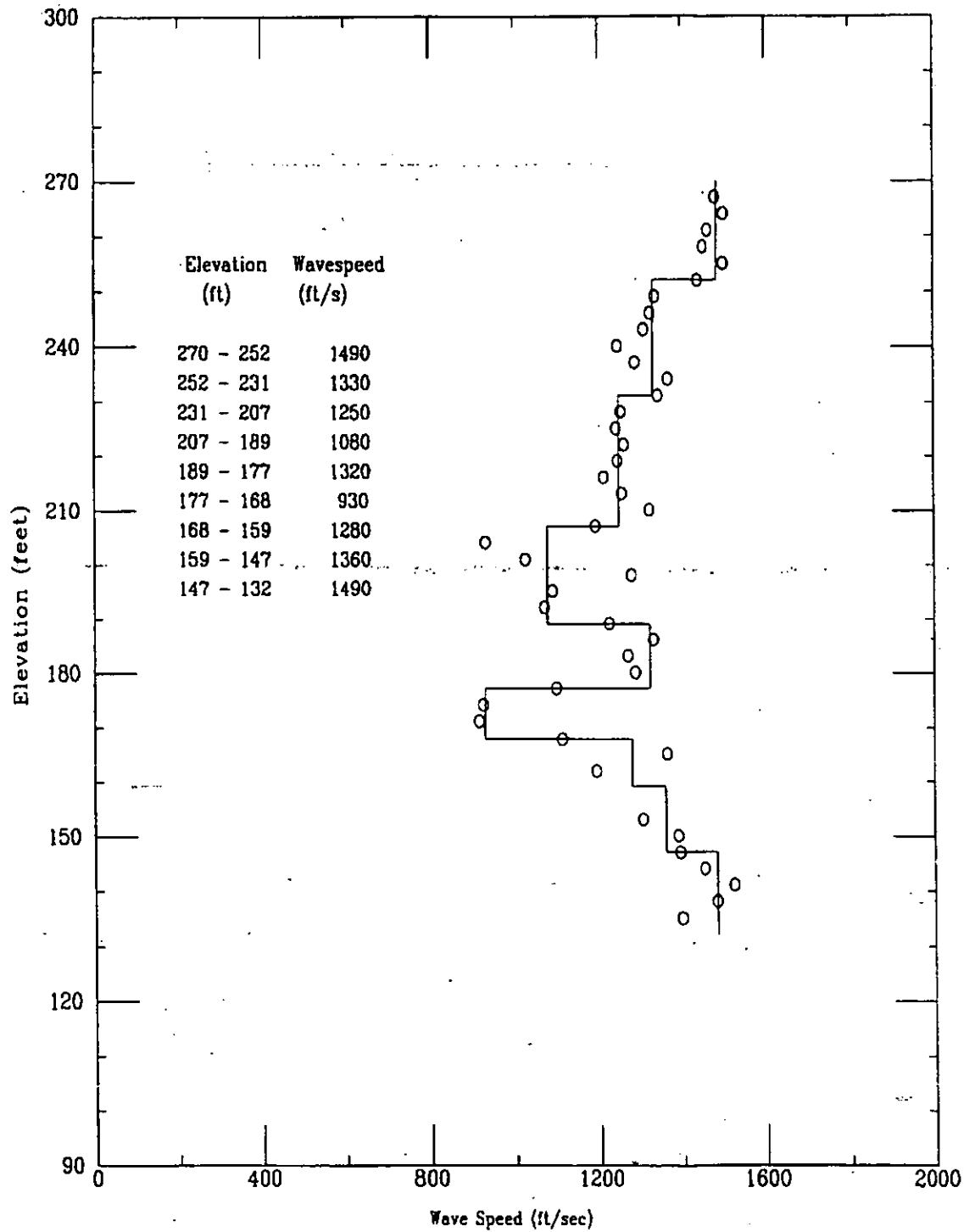
120 of 522

CPT-128

APPLIED RESEARCH ASSOCIATES, INC.

02/23/98

Shear Wave Speeds

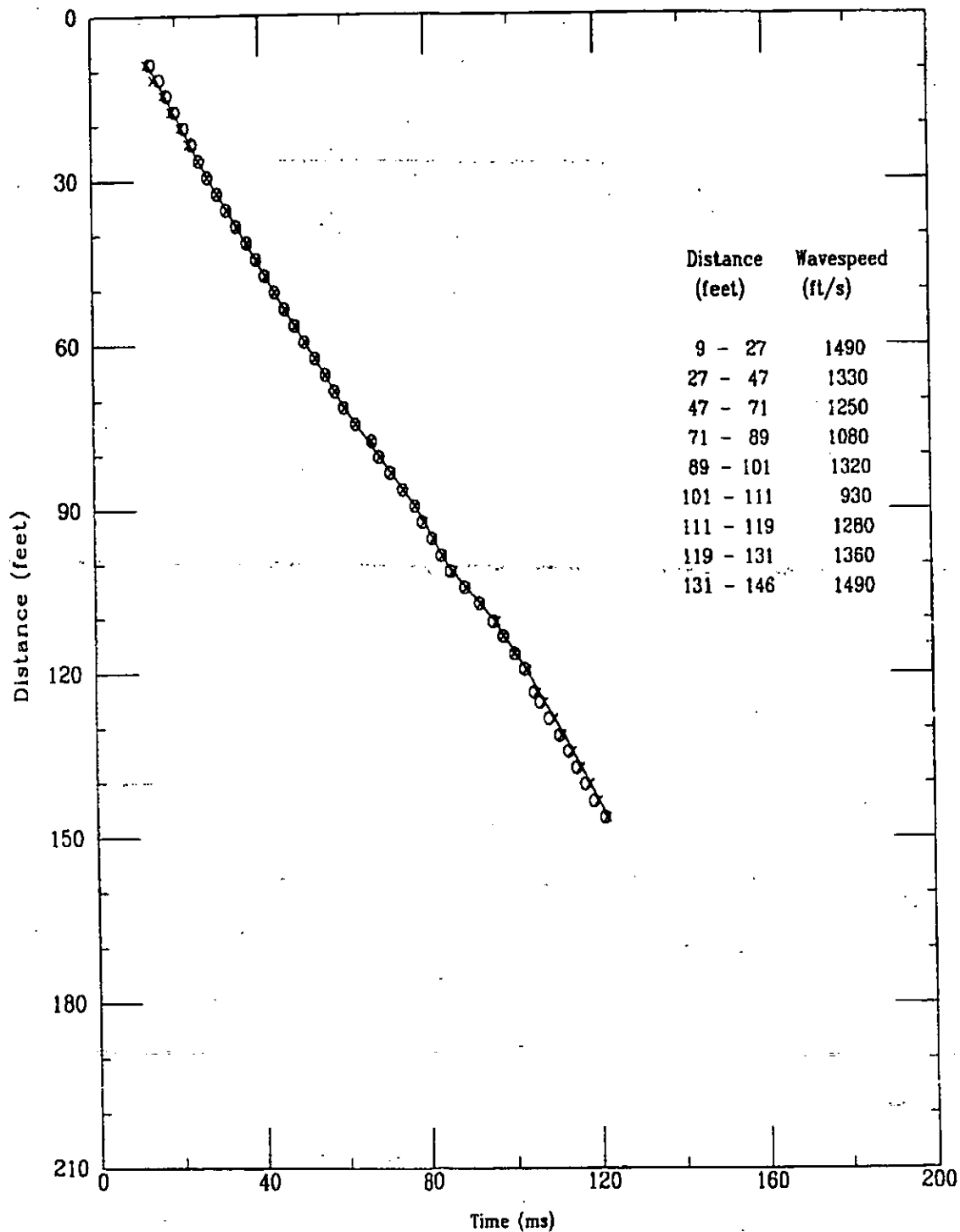




CPT-128

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

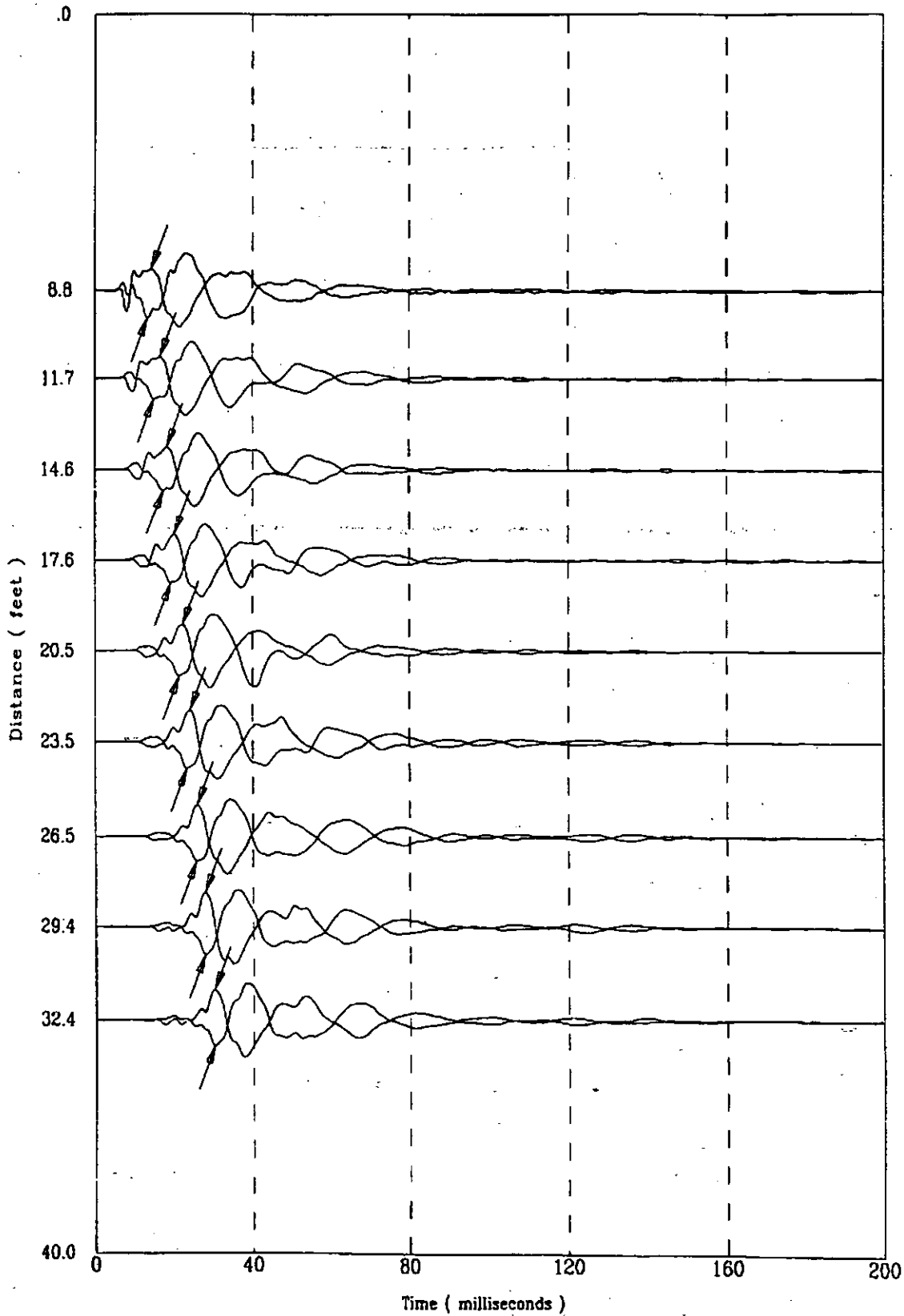
02/23/98



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-128

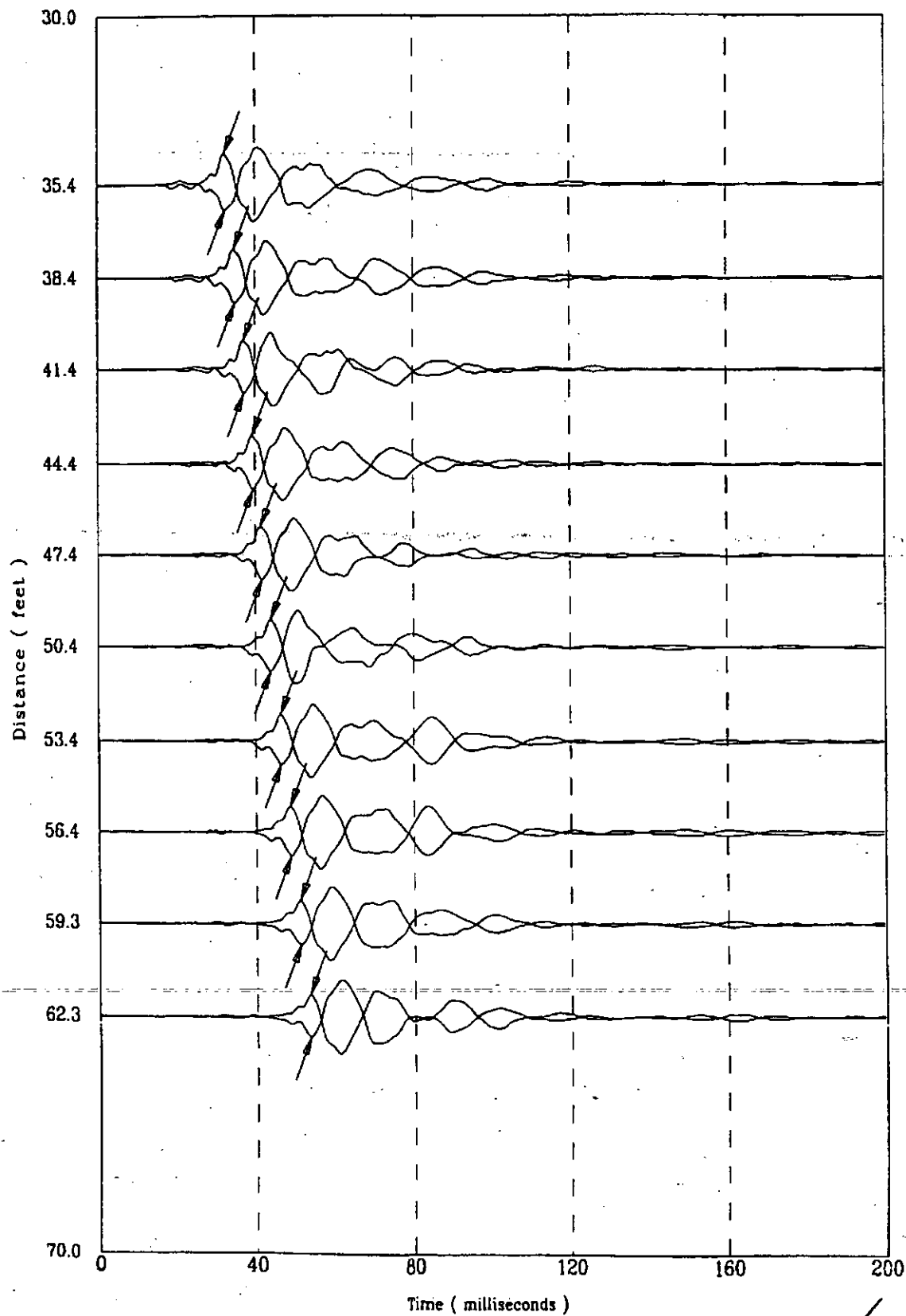
S Wave  
02/23/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-128

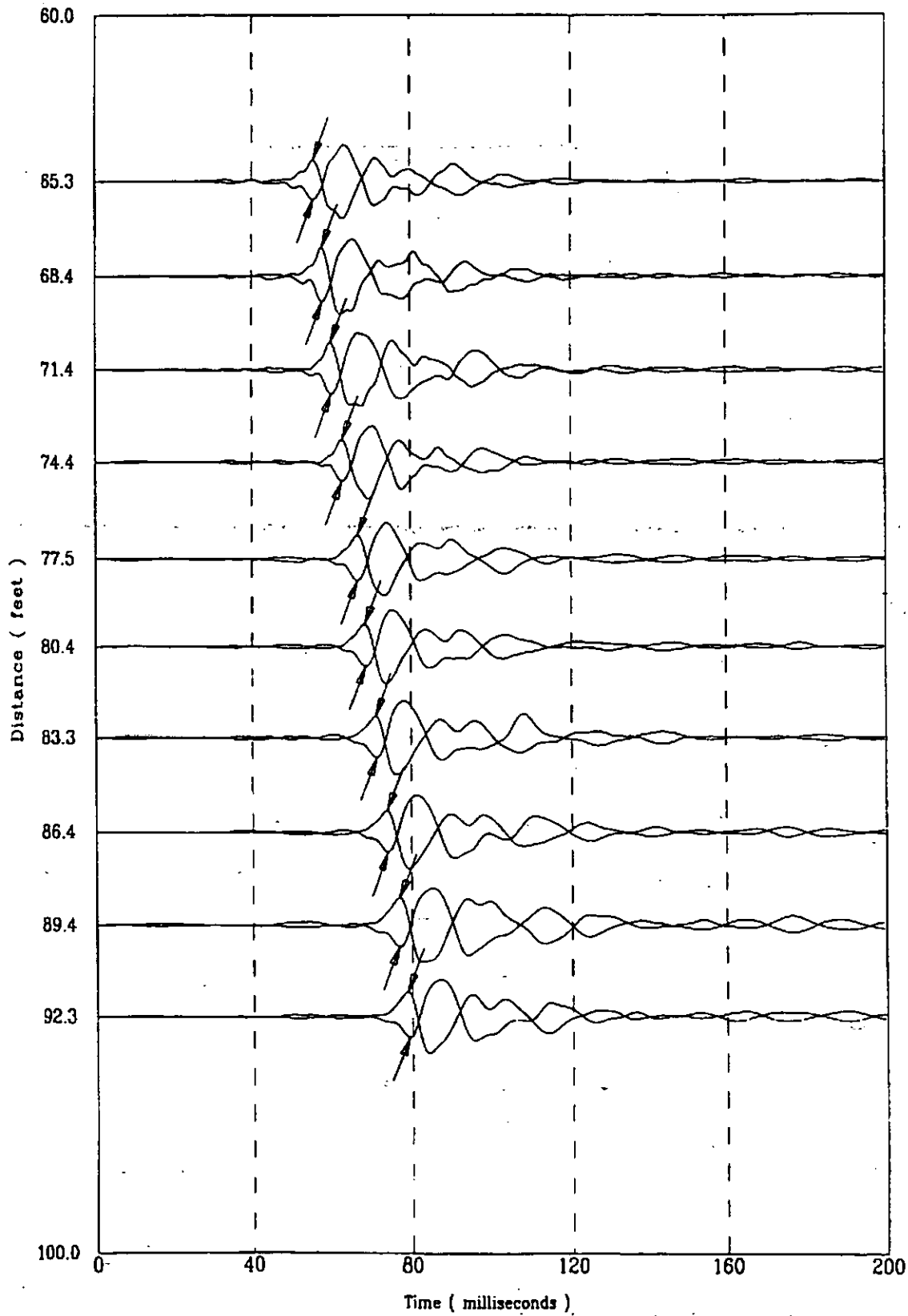
S Wave  
02/23/98



K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-128

S Wave  
02/23/98



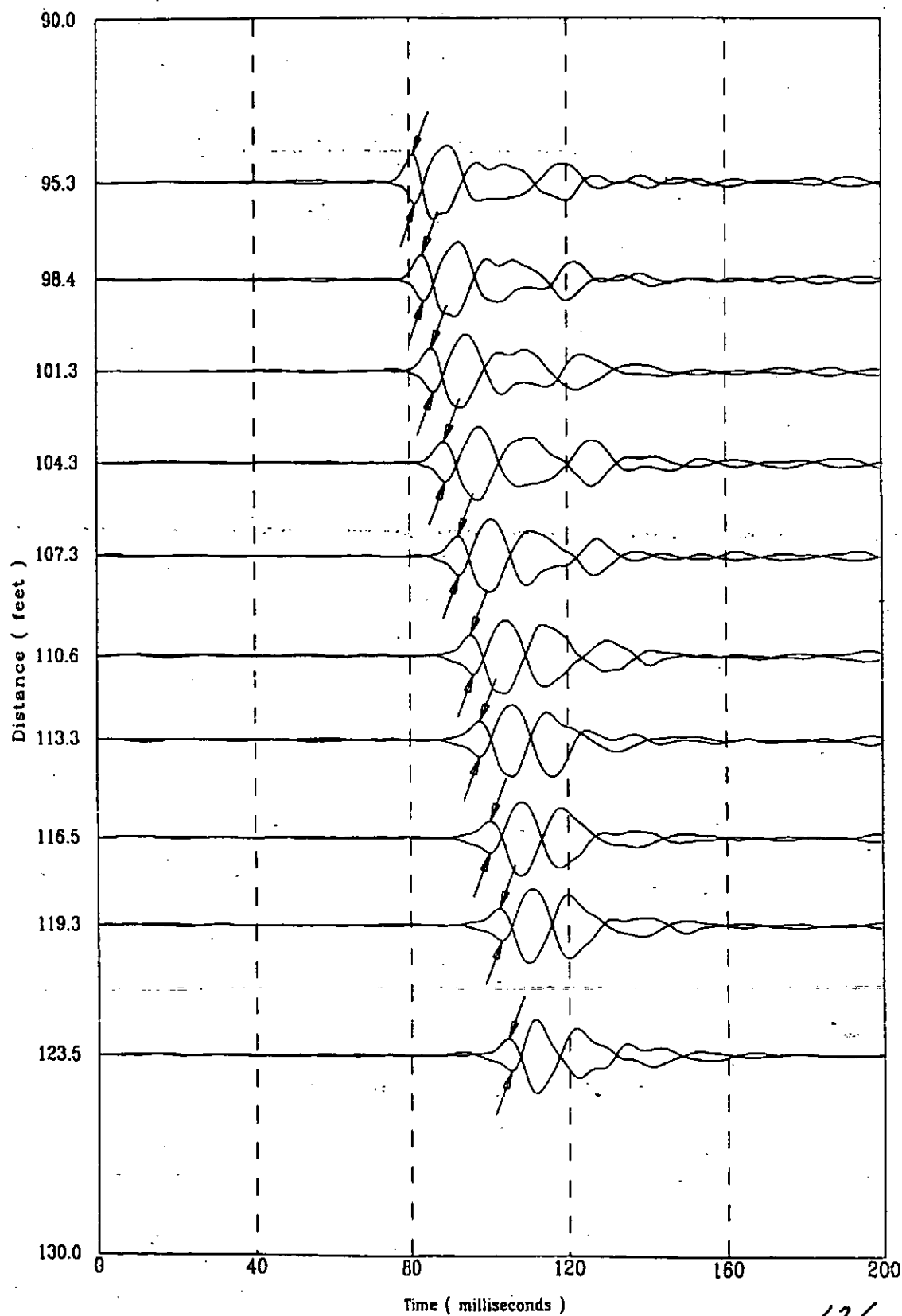
File 523F804S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-128

S Wave  
02/23/98



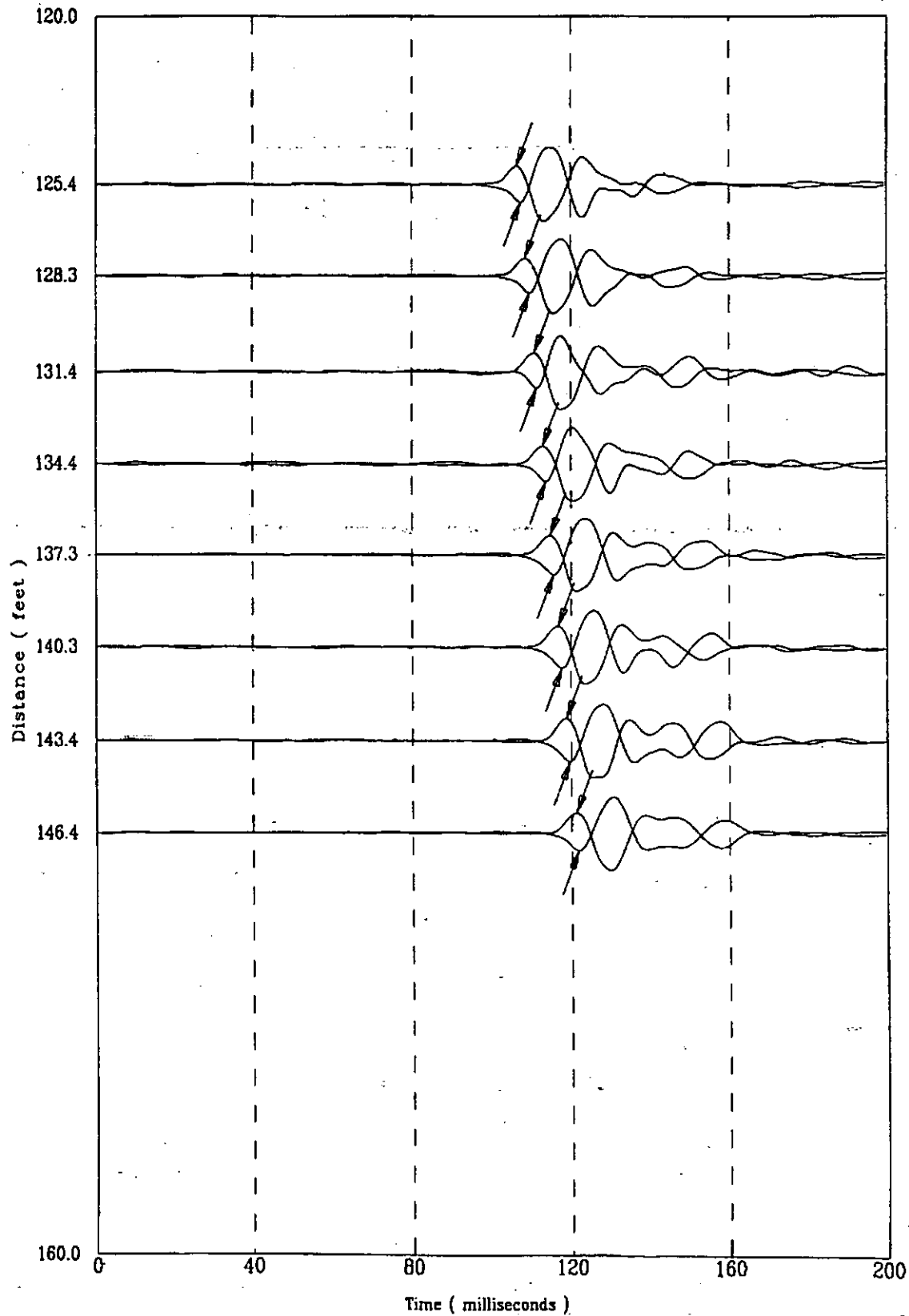
File 523F804S

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K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-128

S Wave  
02/23/98

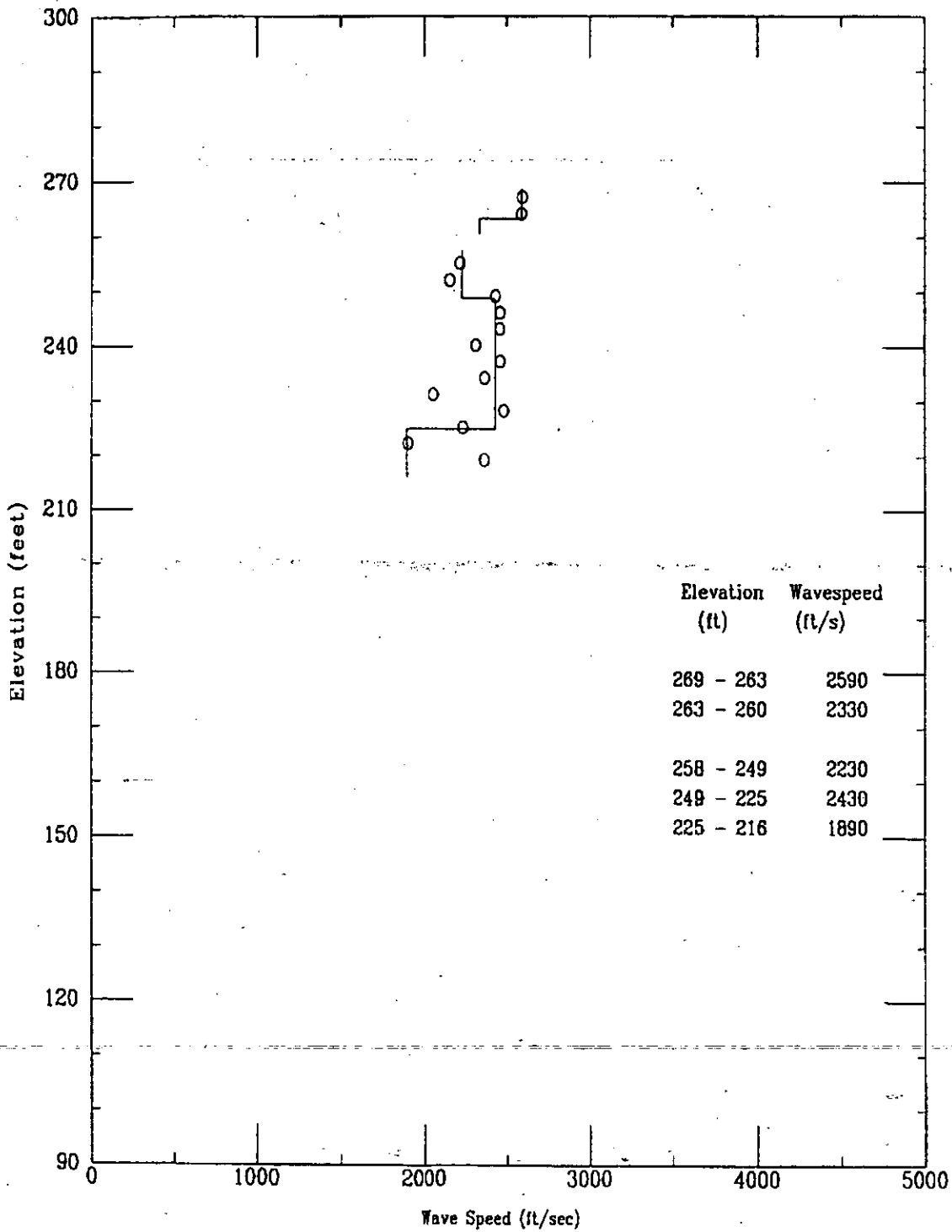


CPT-128

APPLIED RESEARCH ASSOCIATES, INC.

02/23/98

Compression Wave Speeds



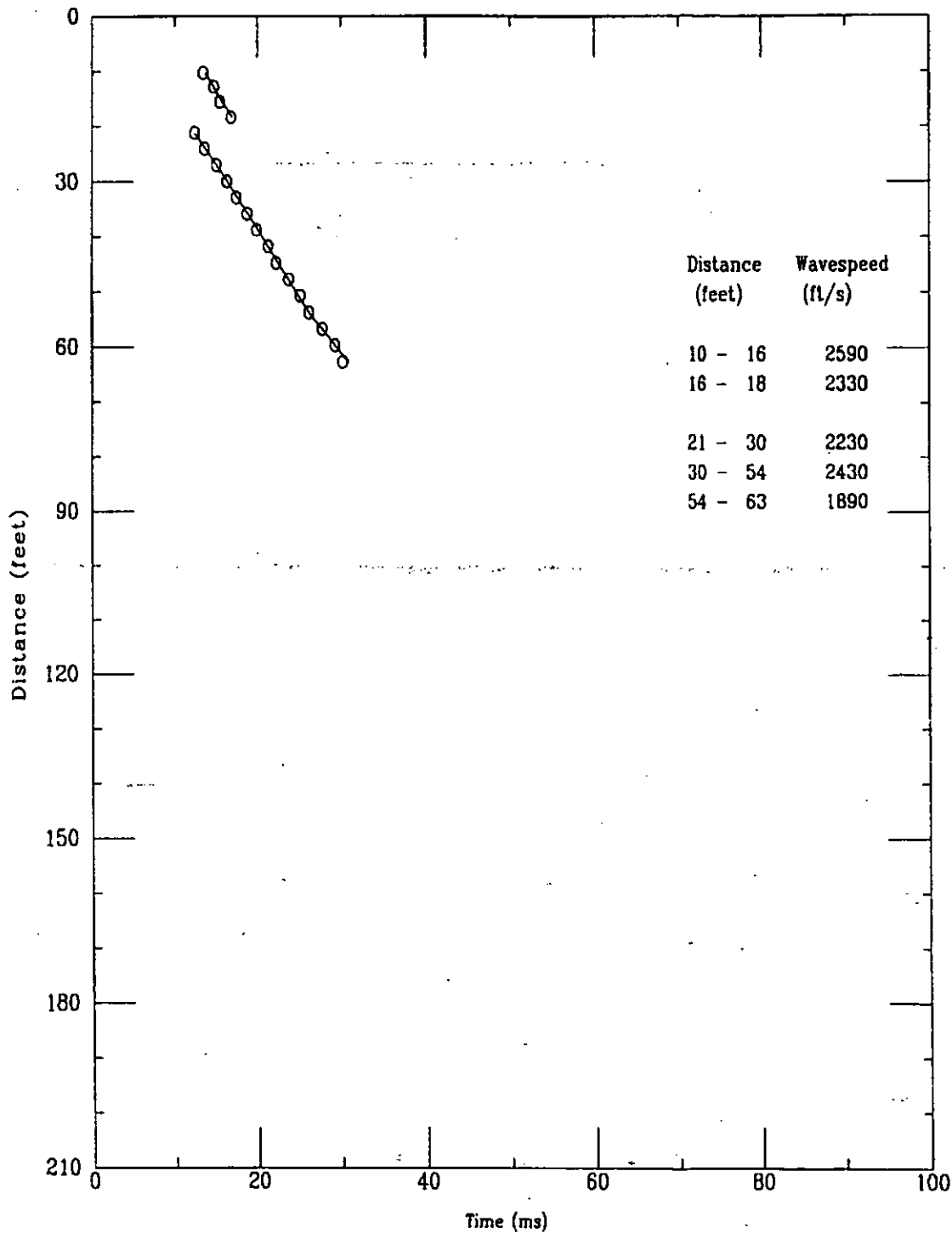
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R/O

CPT-128

APPLIED RESEARCH ASSOCIATES, INC.

02/23/98

Compression Wave Time of Peak



File 523/B04S

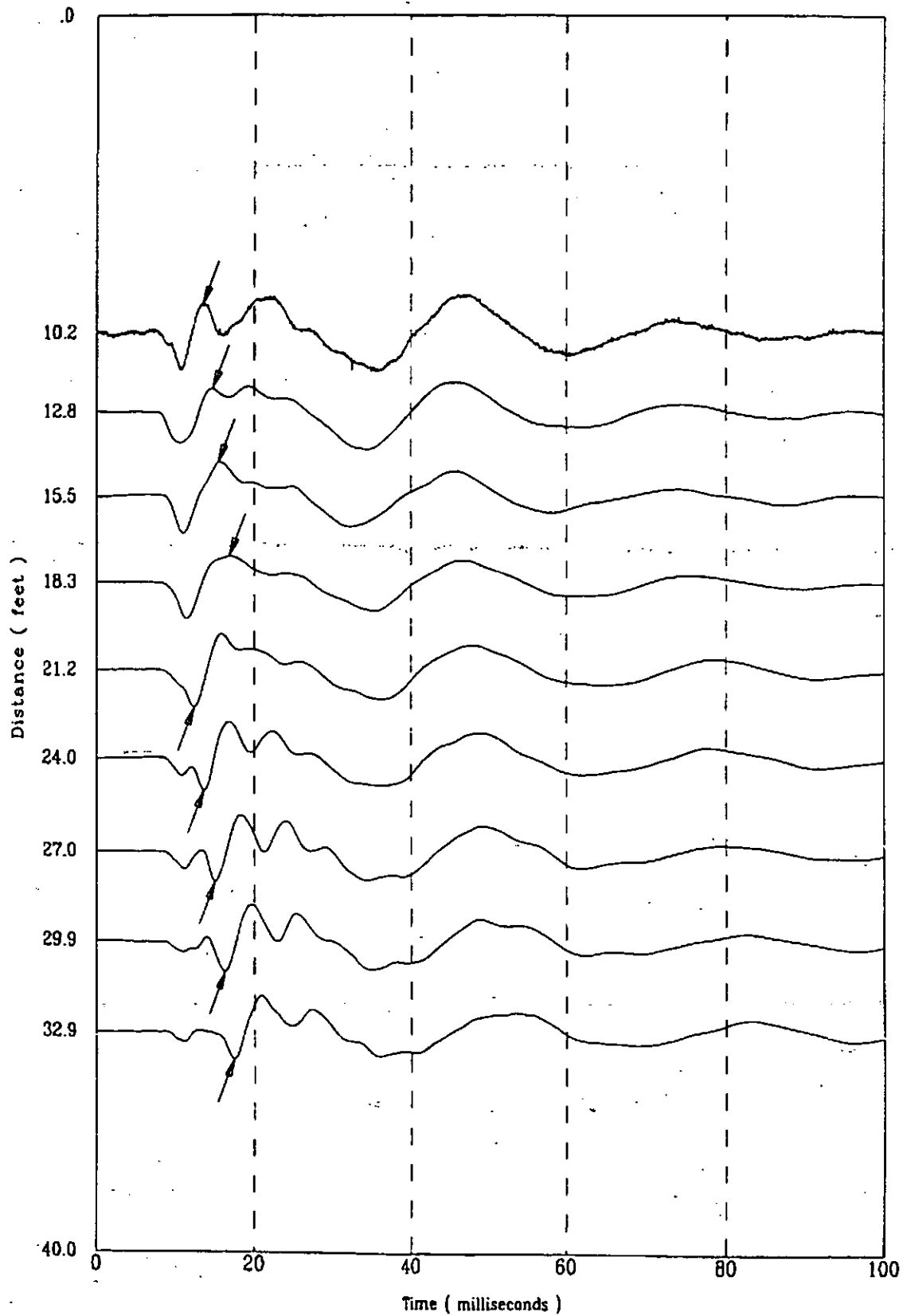
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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-128

P Wave  
02/23/98



File 5231804S

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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-128

P Wave  
02/23/98

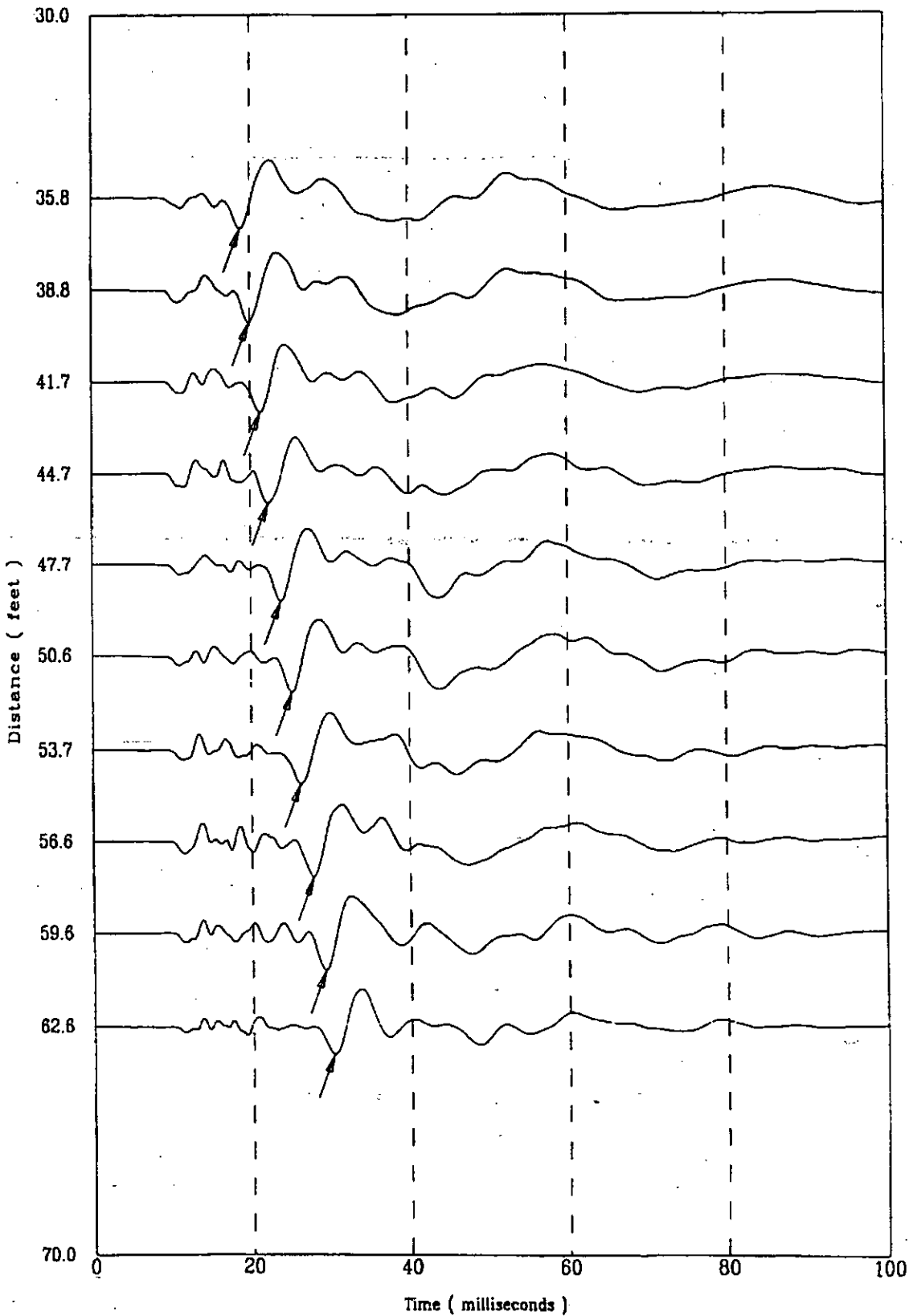


Fig 523f804S

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CPT-129

APPLIED RESEARCH ASSOCIATES, INC.

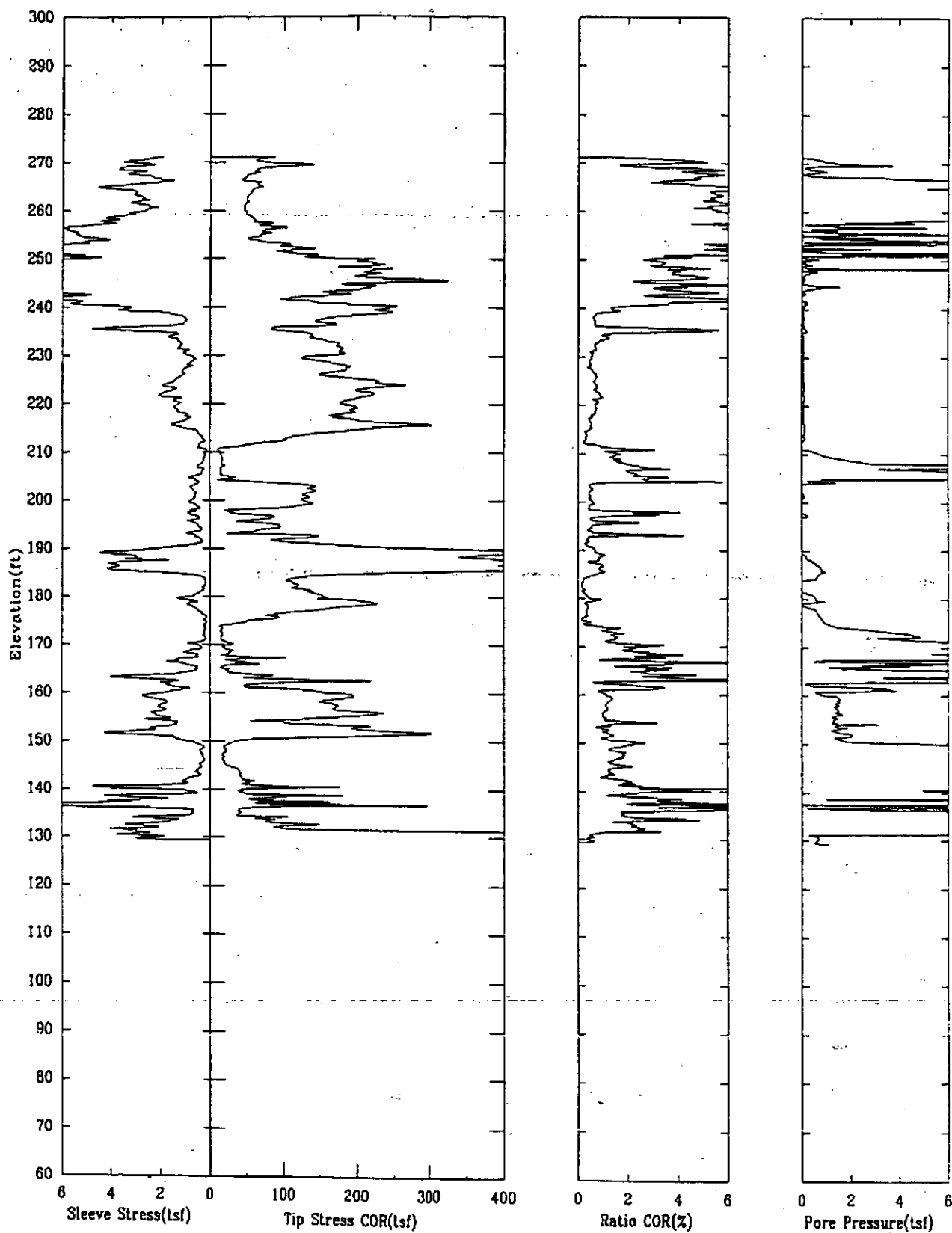
K-TRT-F-00001

02/23/98 / 0

North 79650.00

East 55261.00

Elevation 277.2



CPT-129

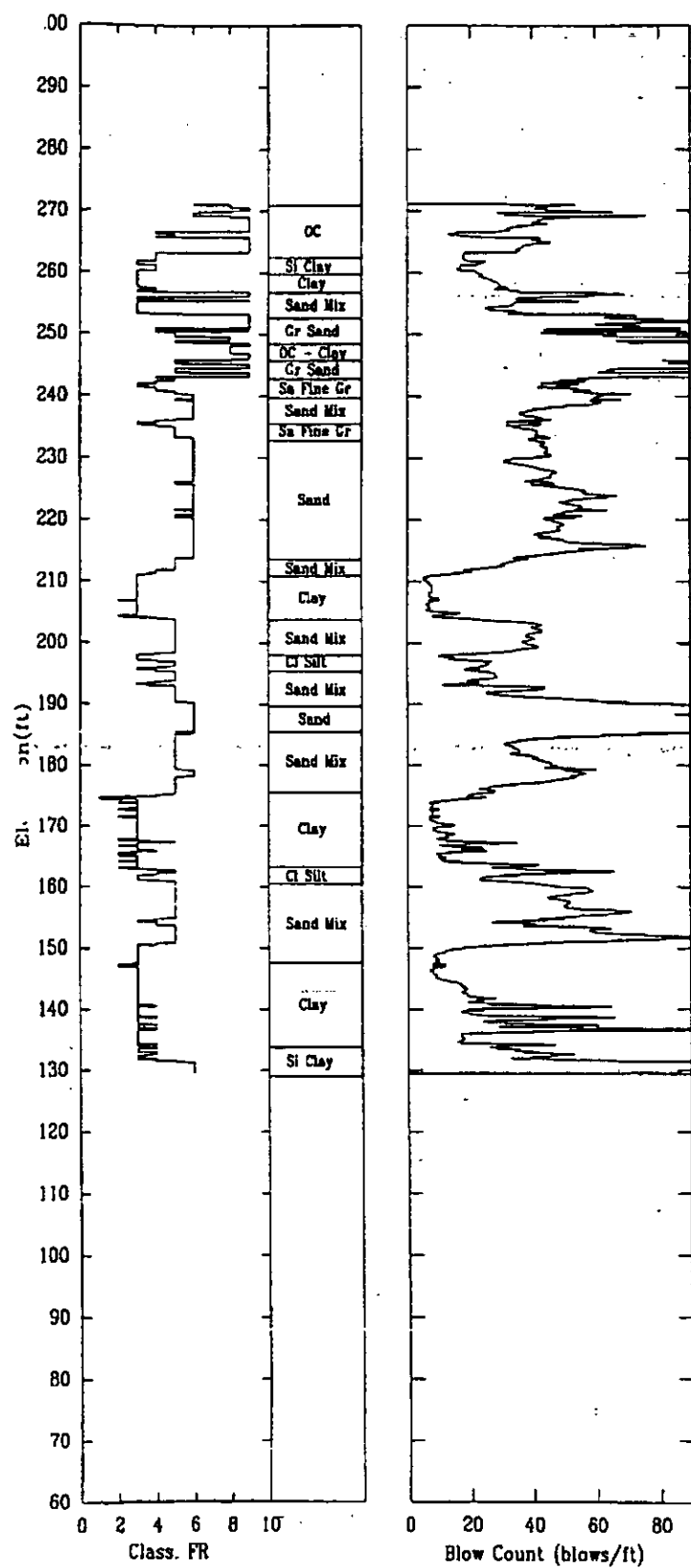
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
02/23/88/0

North 79650.00

East 55261.00

Elevation 277.2

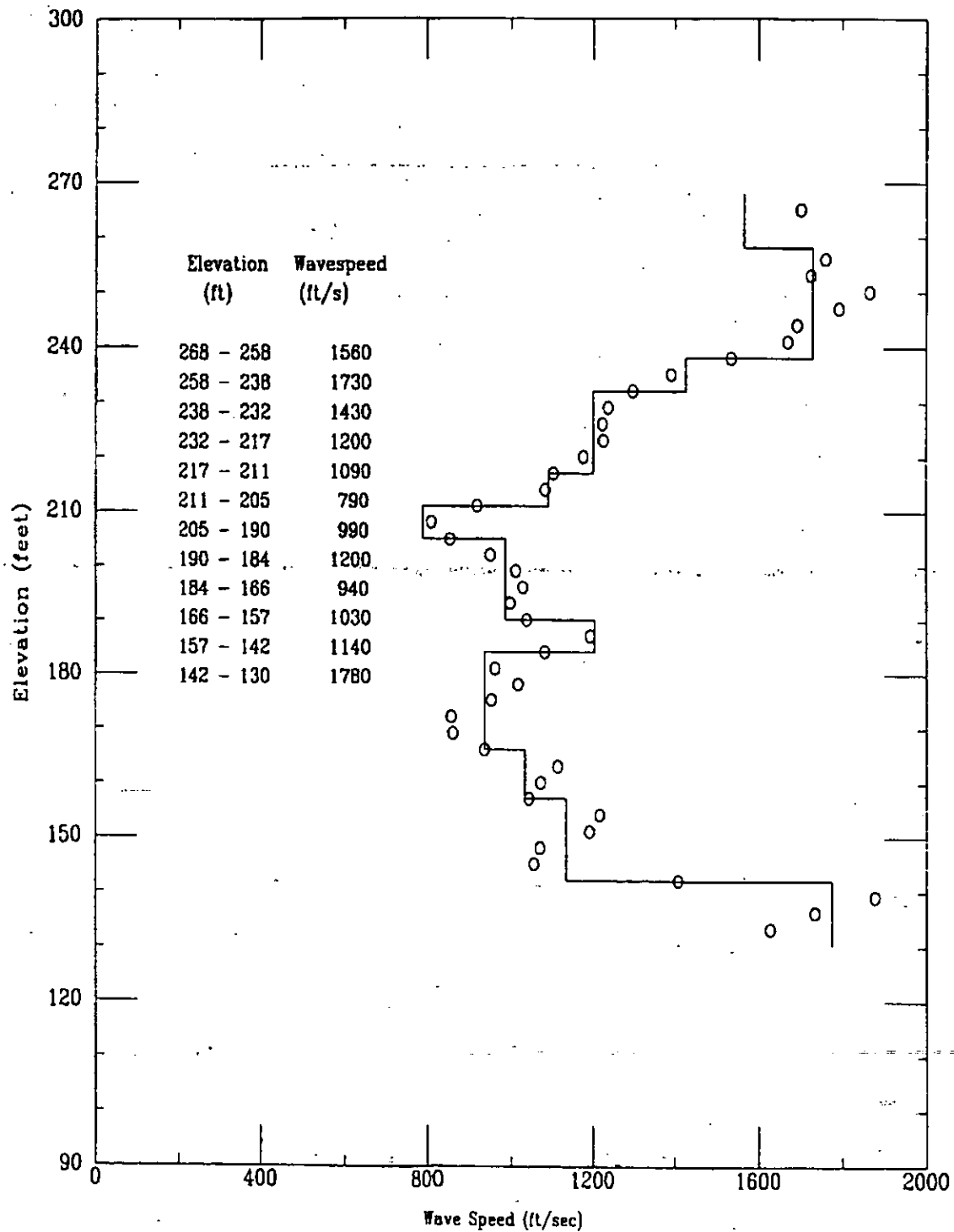


CPT-129

APPLIED RESEARCH ASSOCIATES, INC.

02/23/98

Shear Wave Speeds

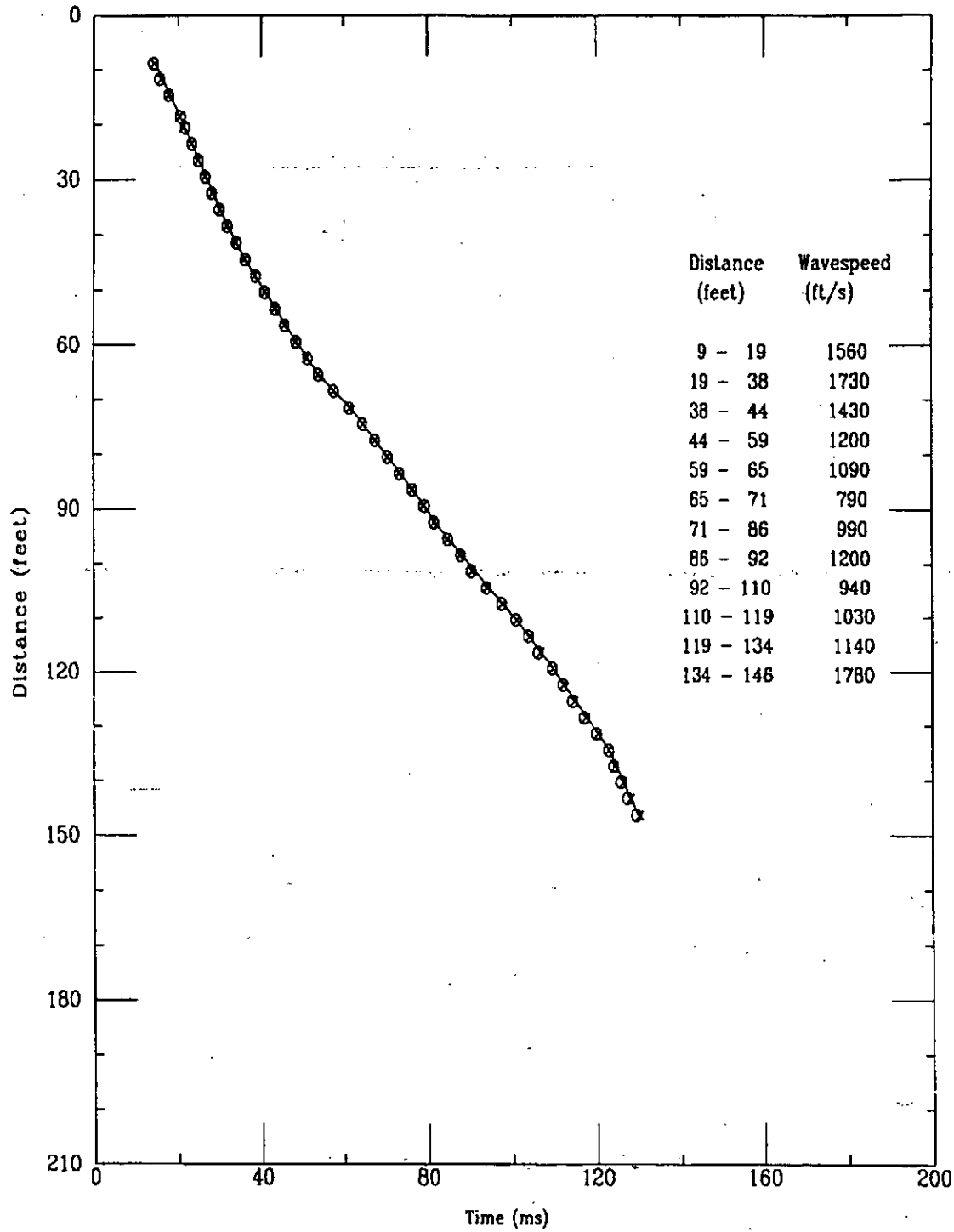


CPT-129

APPLIED RESEARCH ASSOCIATES, INC.

02/23/98

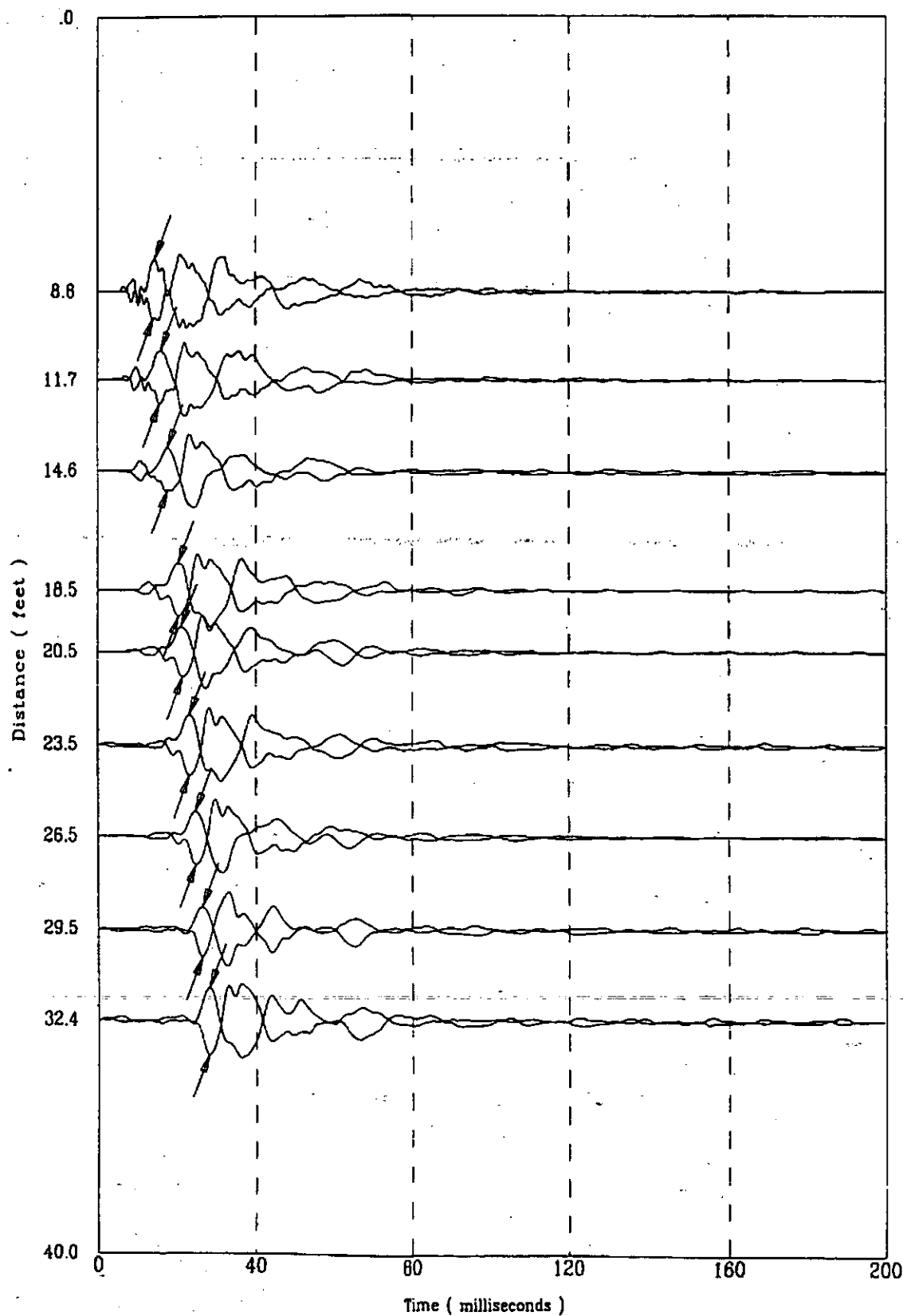
Shear Wave Time of Peak



K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-129

S Wave  
02/23/98



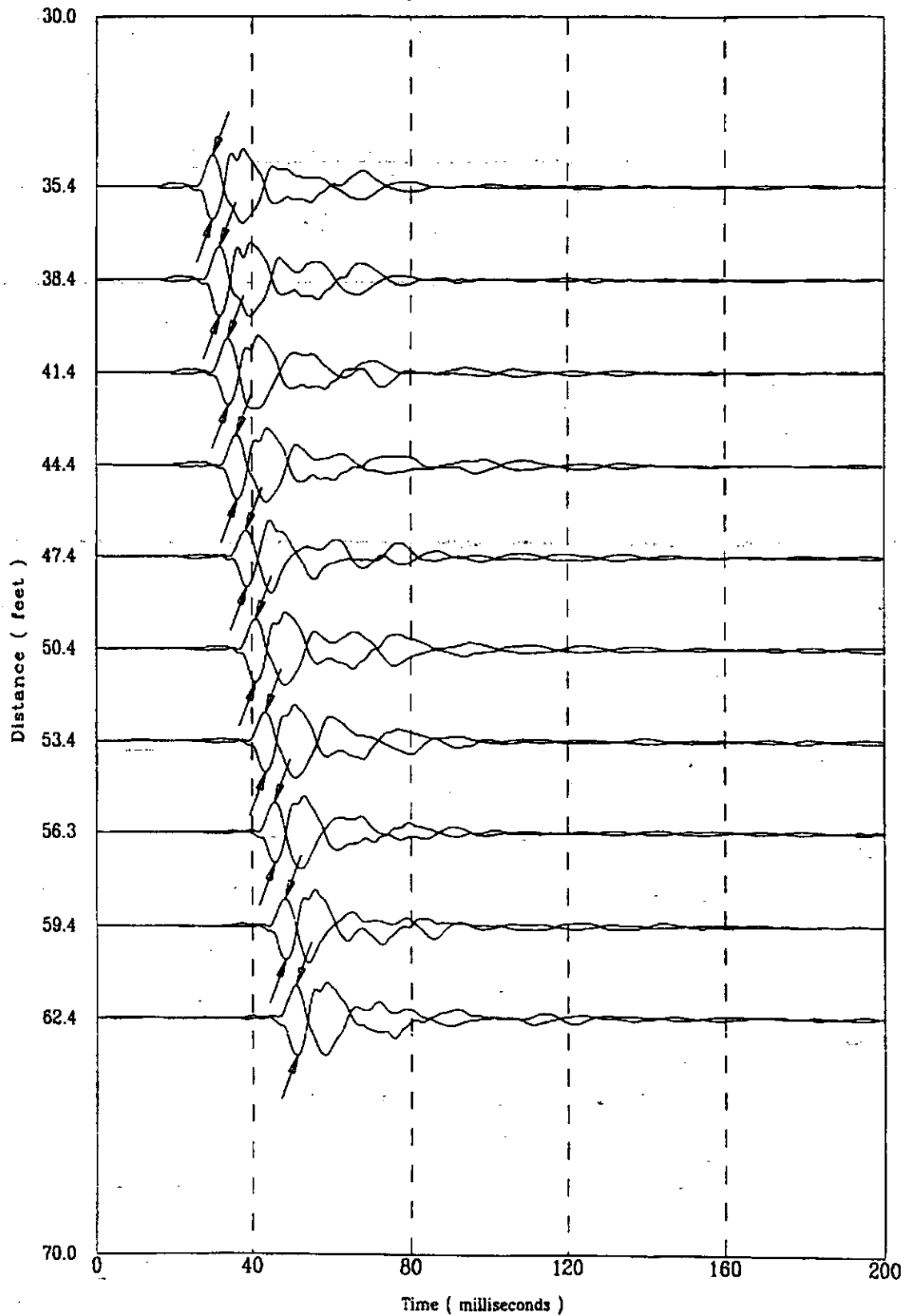
File 5237801S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-129

S Wave  
02/23/98



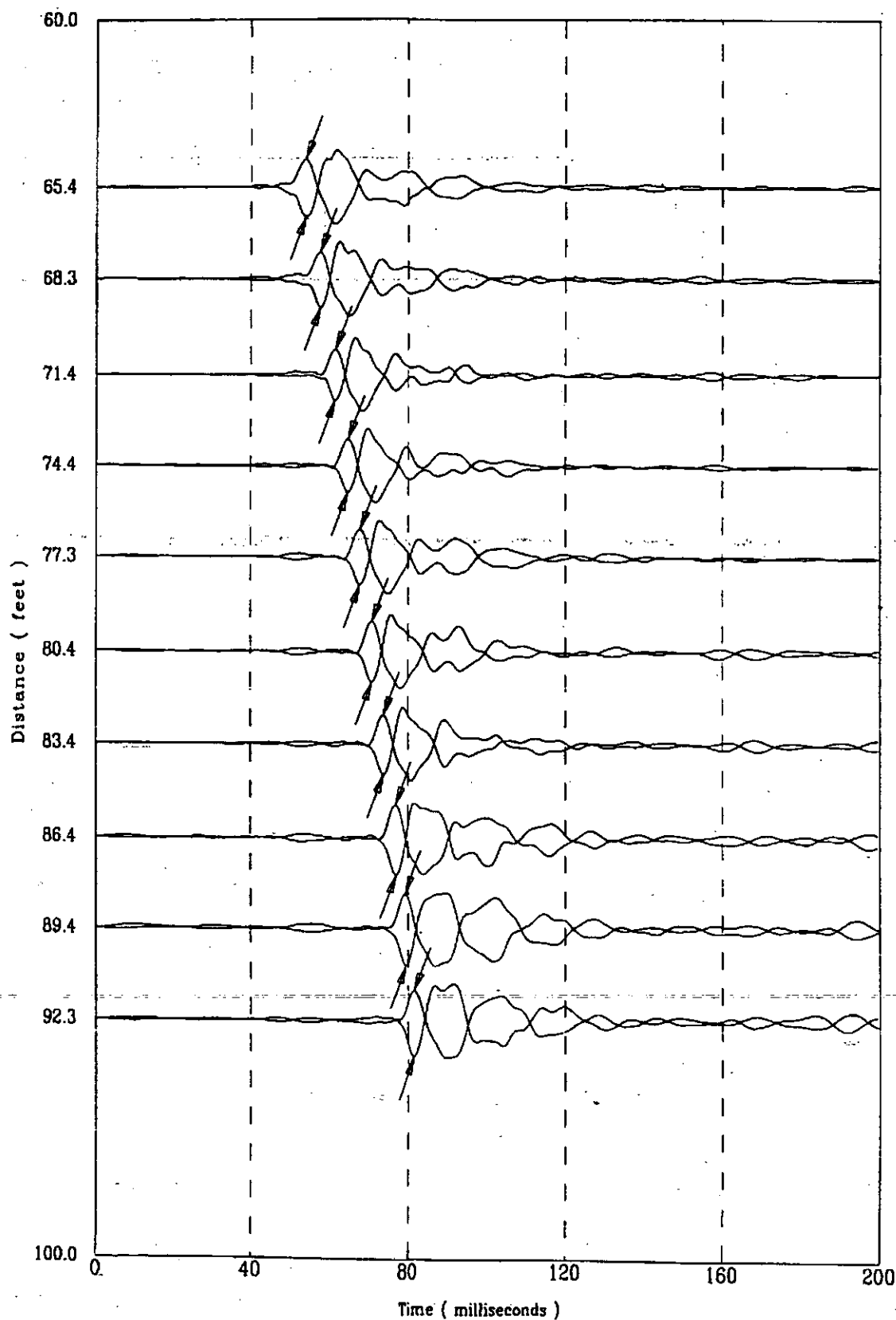
1... 5237801S



K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-129

S Wave  
02/23/98



File 523F801S

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K-TRT-F-00001  
R/0

Applied Research Associates, Inc.  
CPT-129

S Wave  
02/23/98

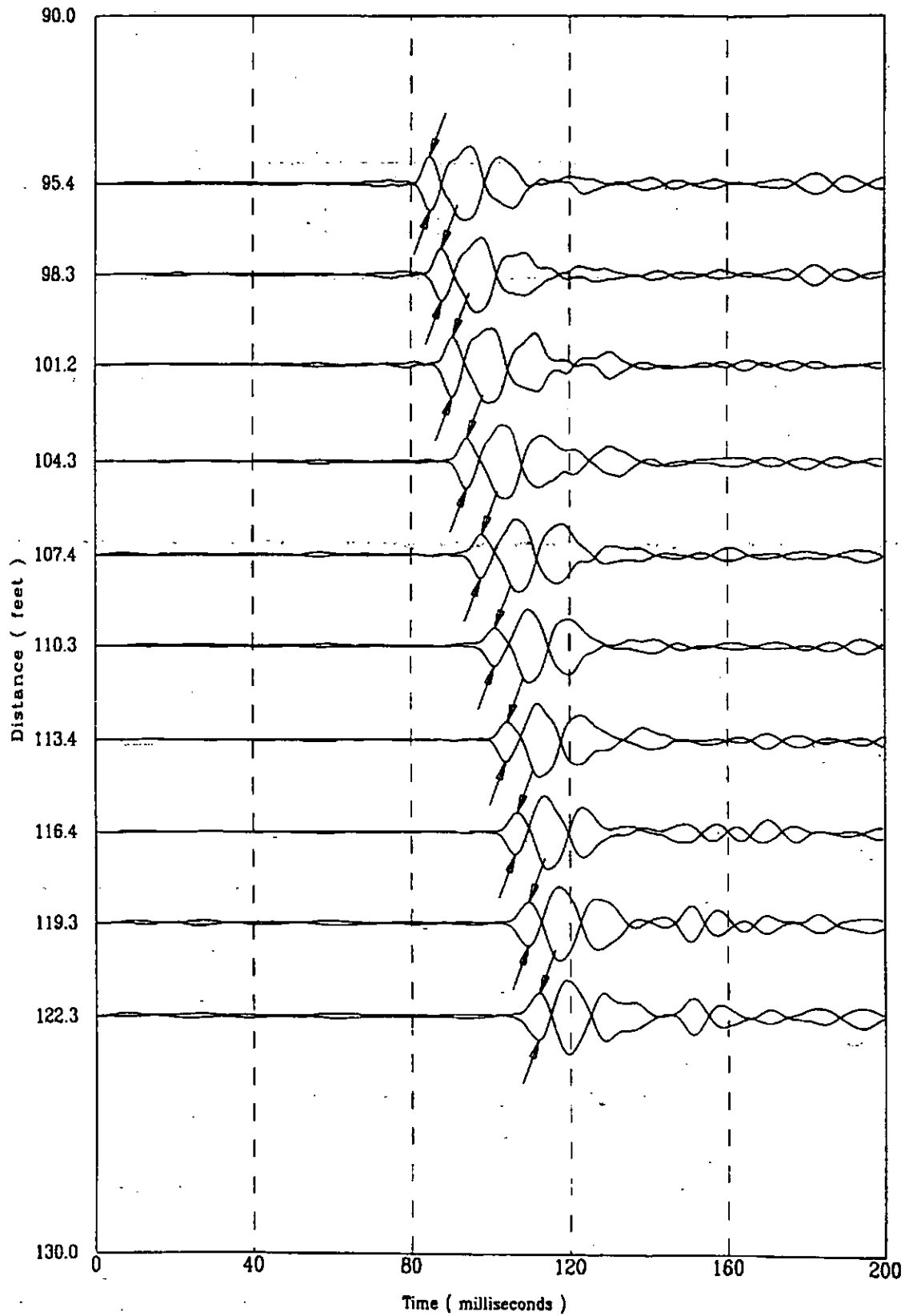
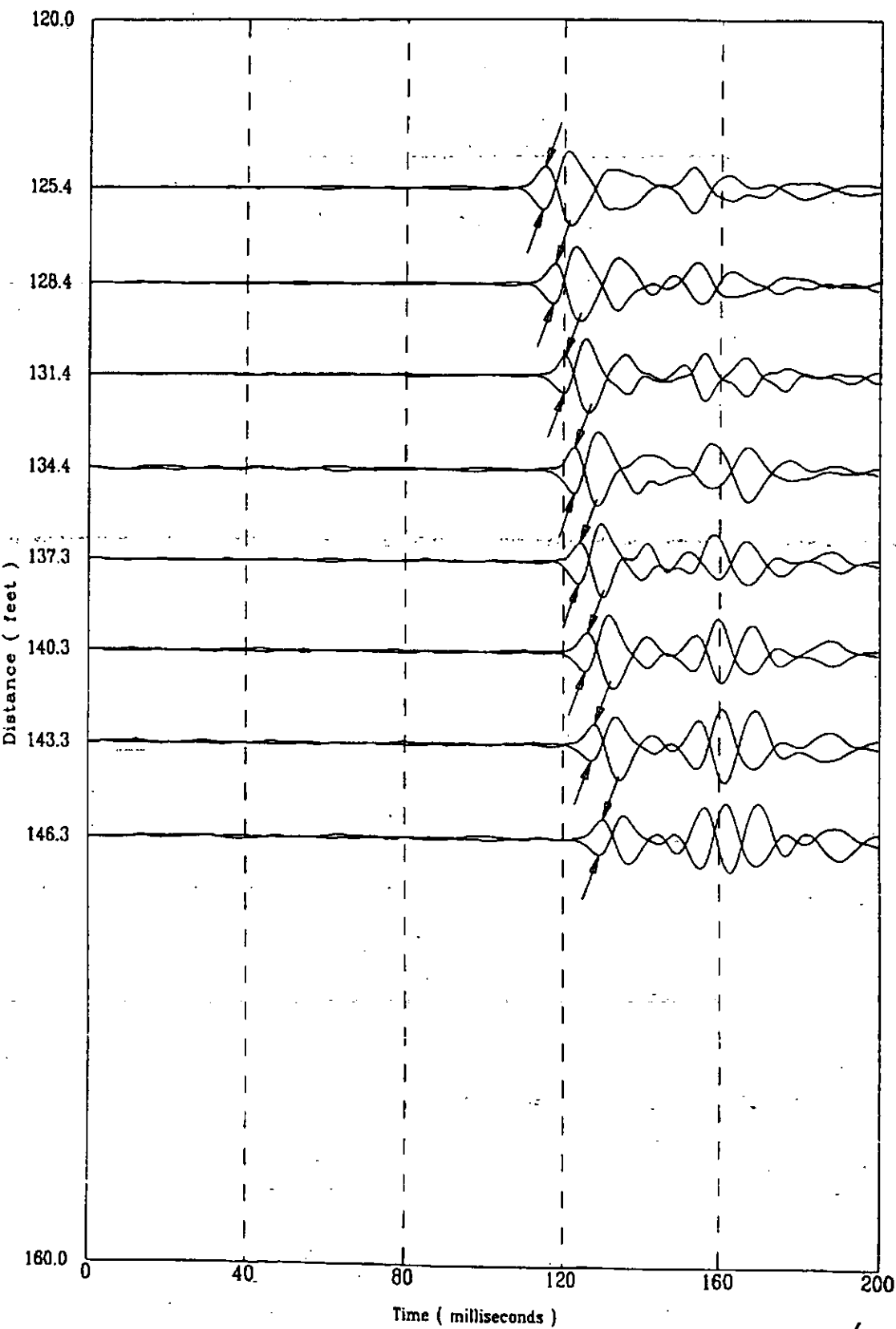


FIG. 3237801S

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-129

S Wave  
02/23/98



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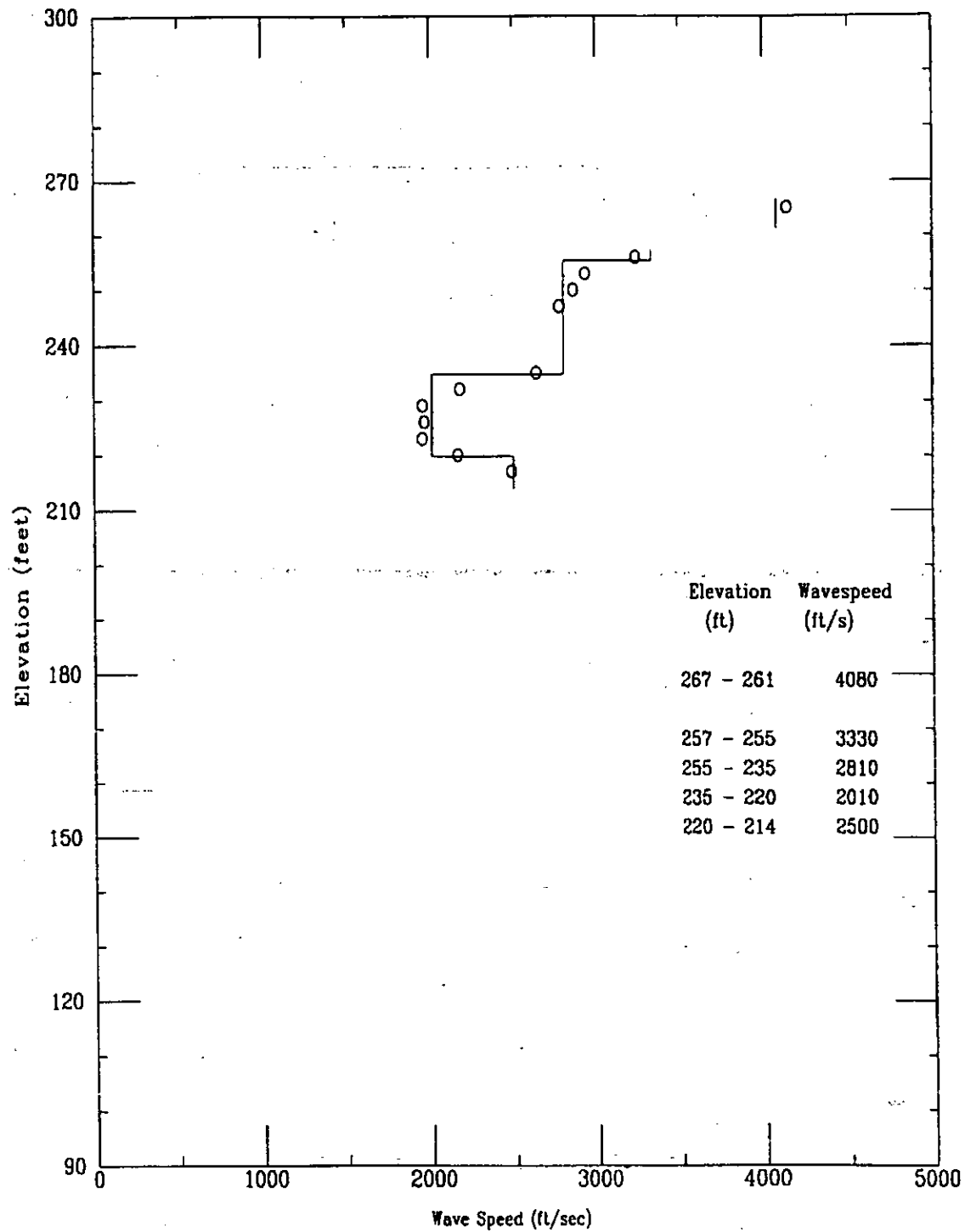
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R/O

CPT-129

APPLIED RESEARCH ASSOCIATES, INC.

02/23/98

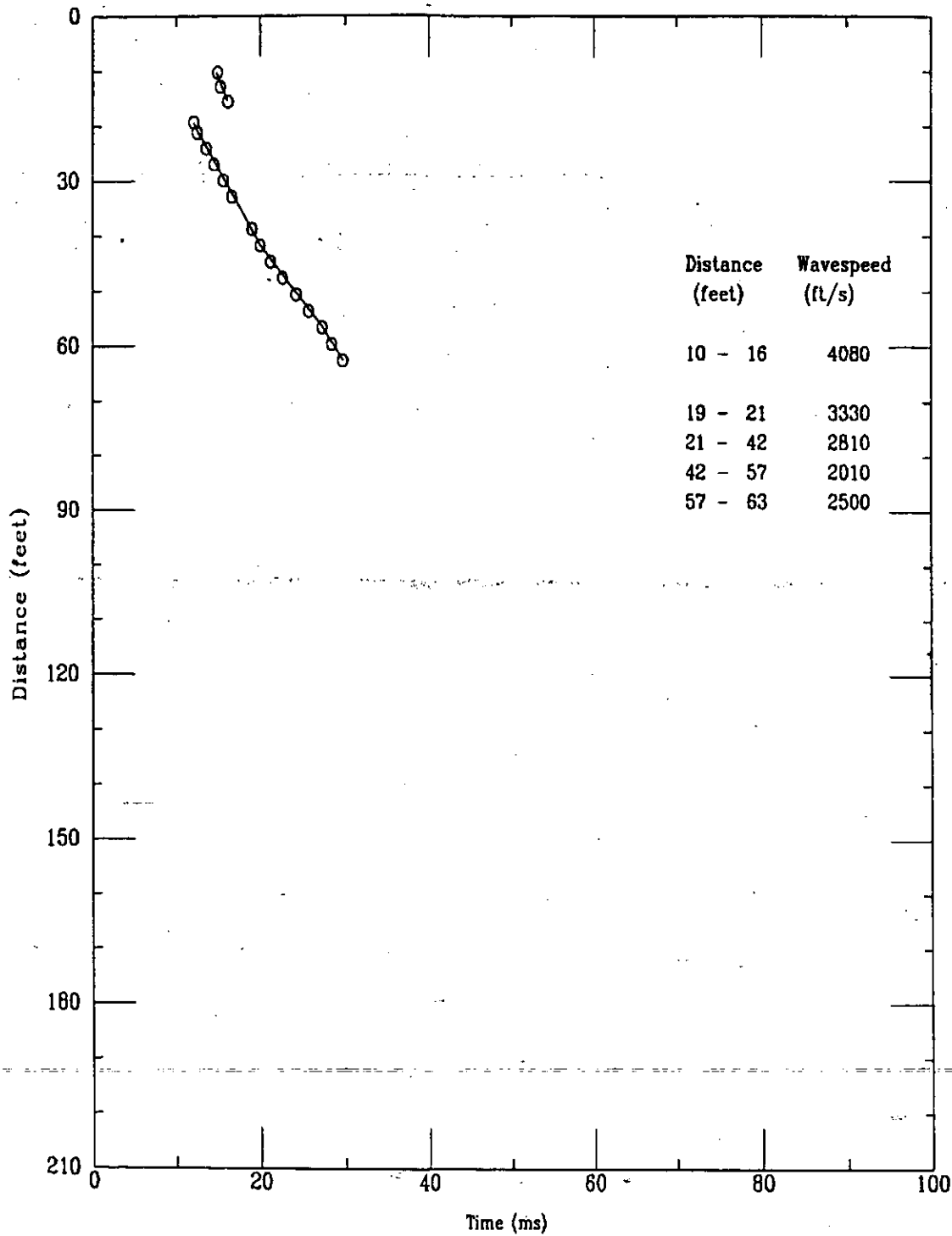
Compression Wave Speeds



CPT-129

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

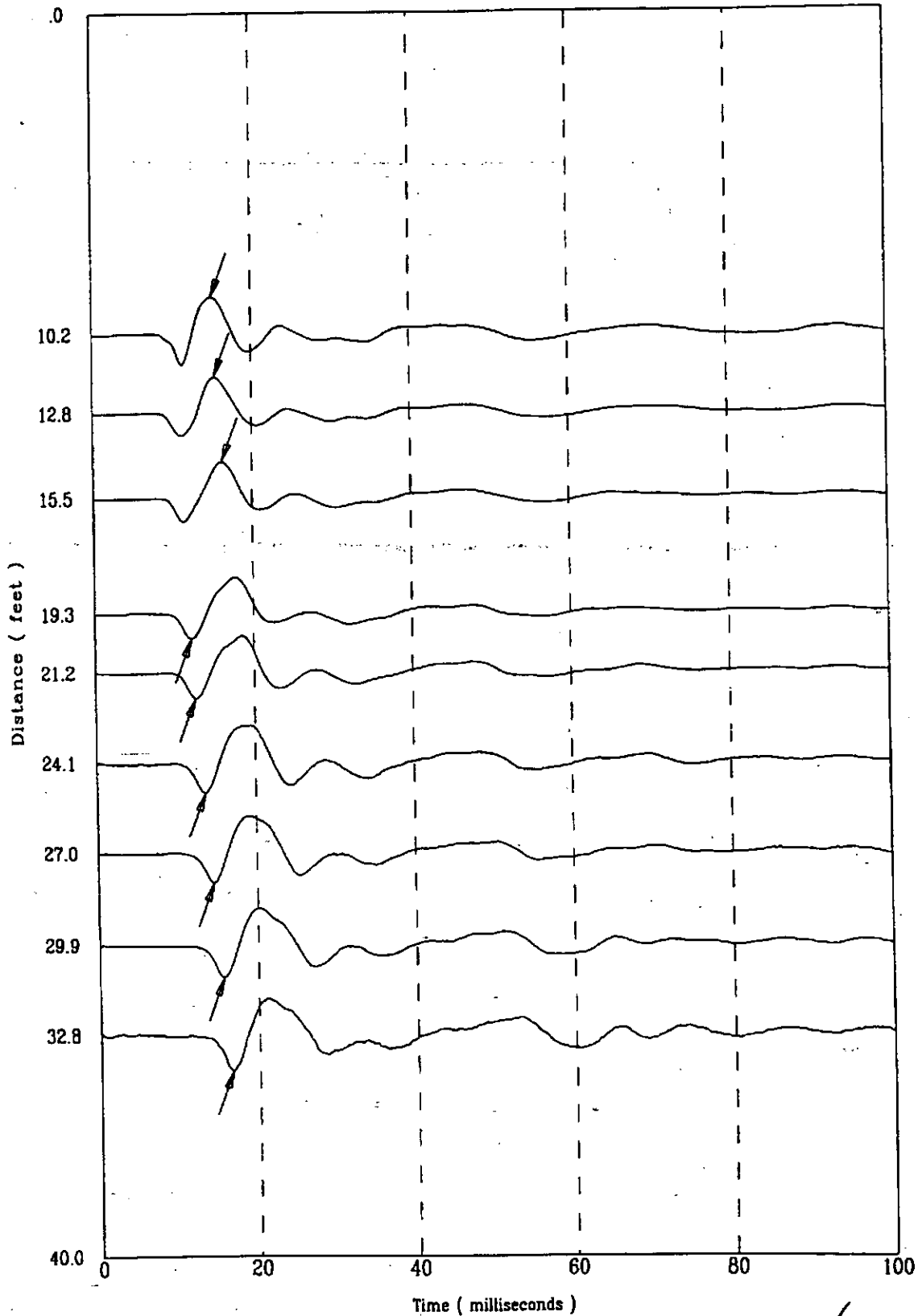
02/23/98



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-129

P Wave  
02/23/98



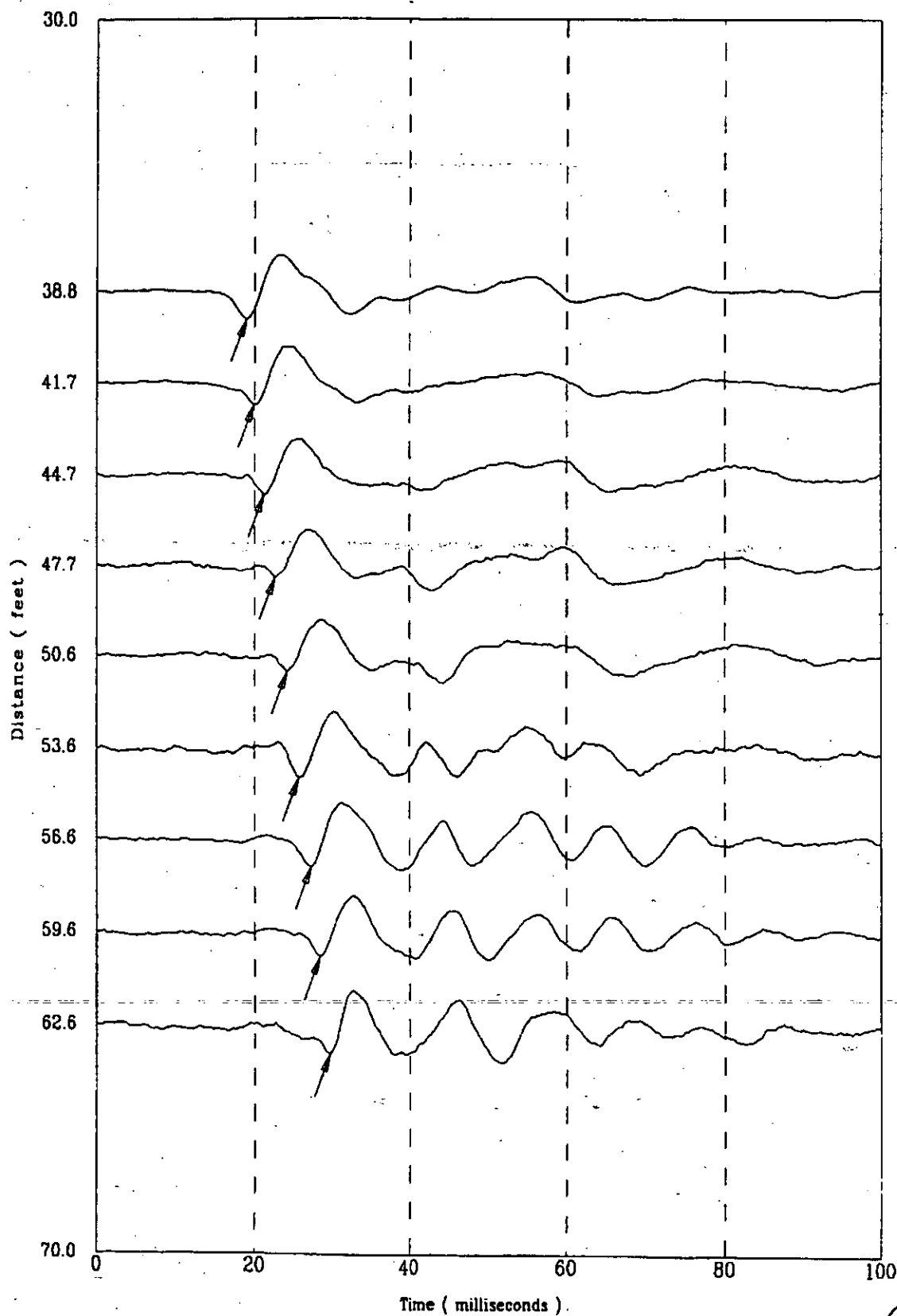
523/801S

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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-129

P Wave  
02/23/98



File 523F801S

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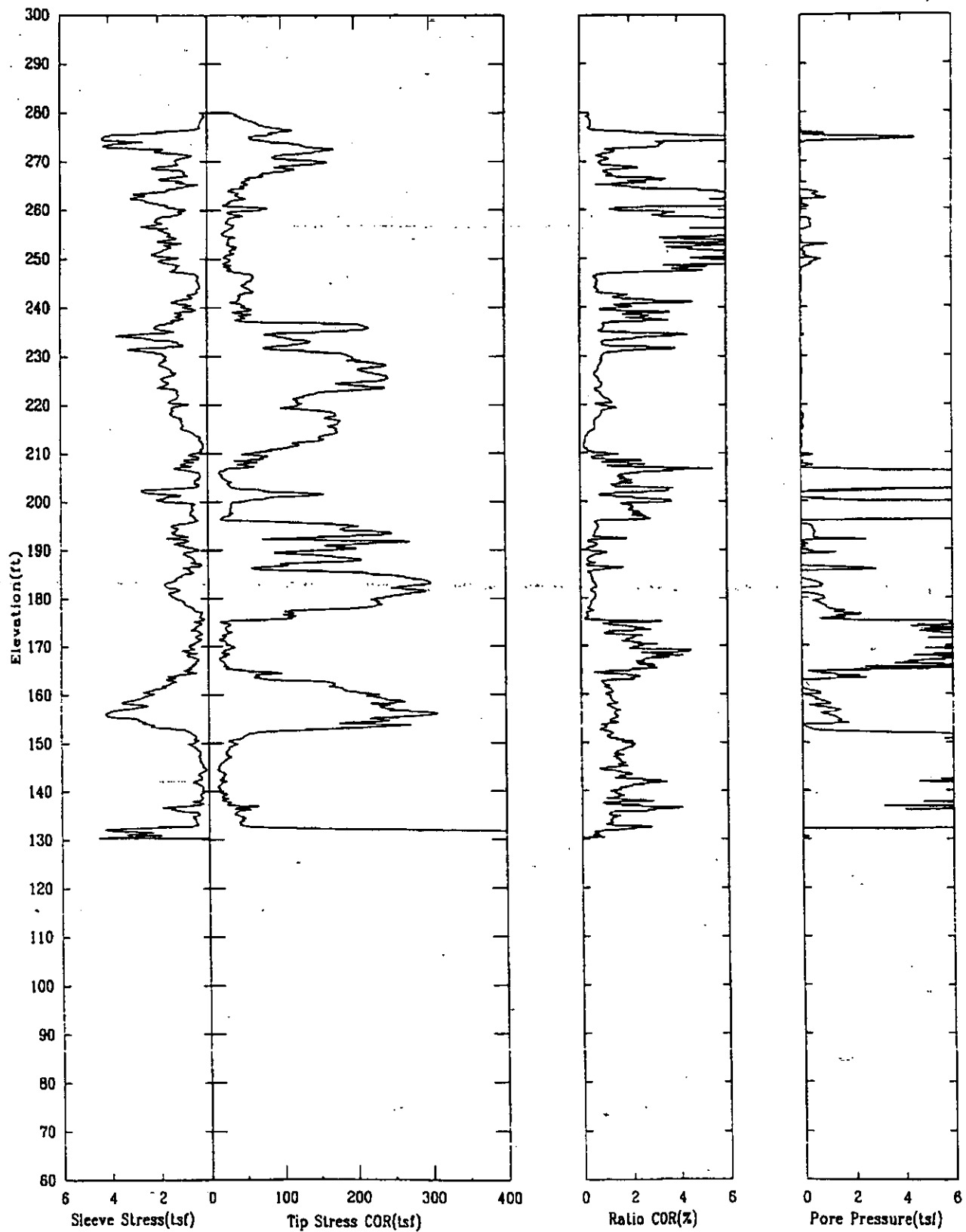
CPT-143

APPLIED RESEARCH ASSOCIATES, INC.

North 79442.5

East 55195

Elevation 286.1

K-TRT-F-0000/  
02/25/98 / o



CPT-143

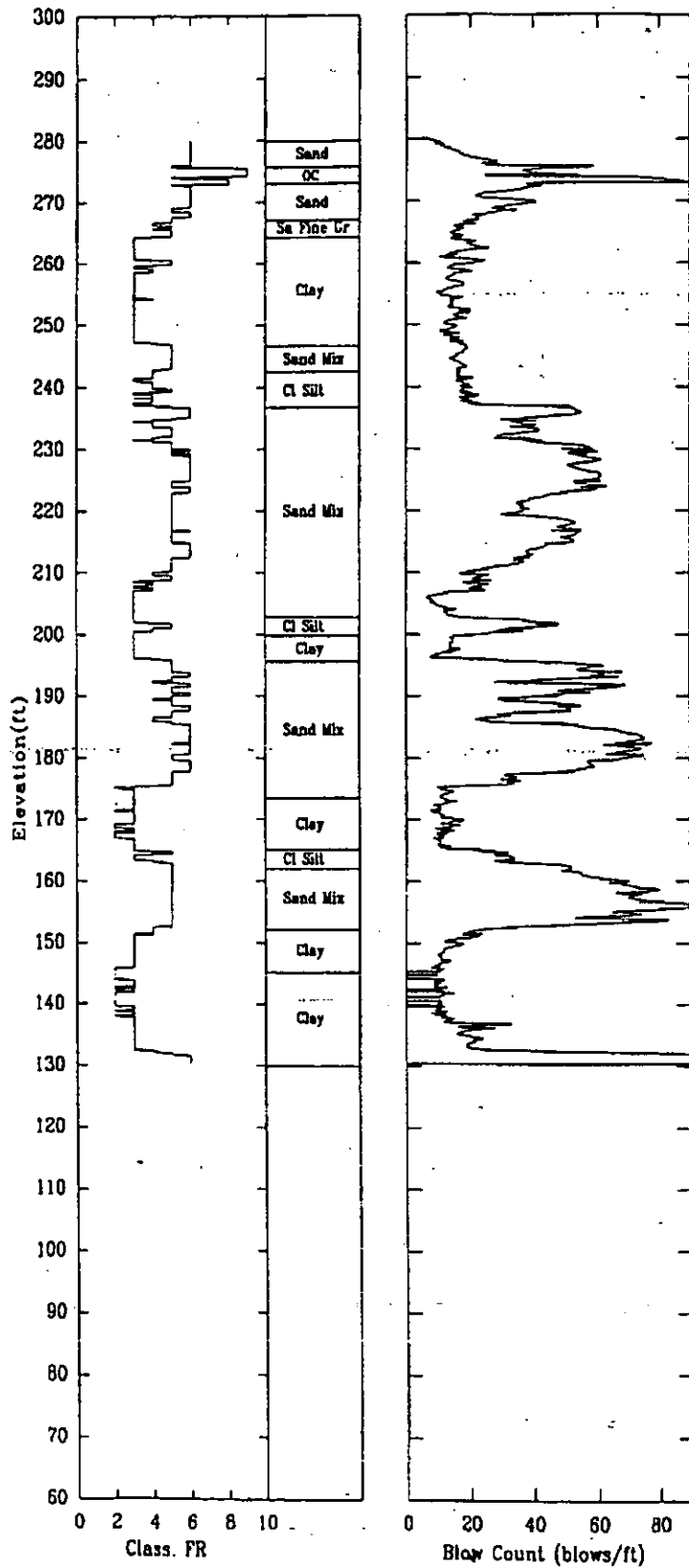
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
02/25/98 R/O

North 79442.5

East 55195

Elevation 286.1

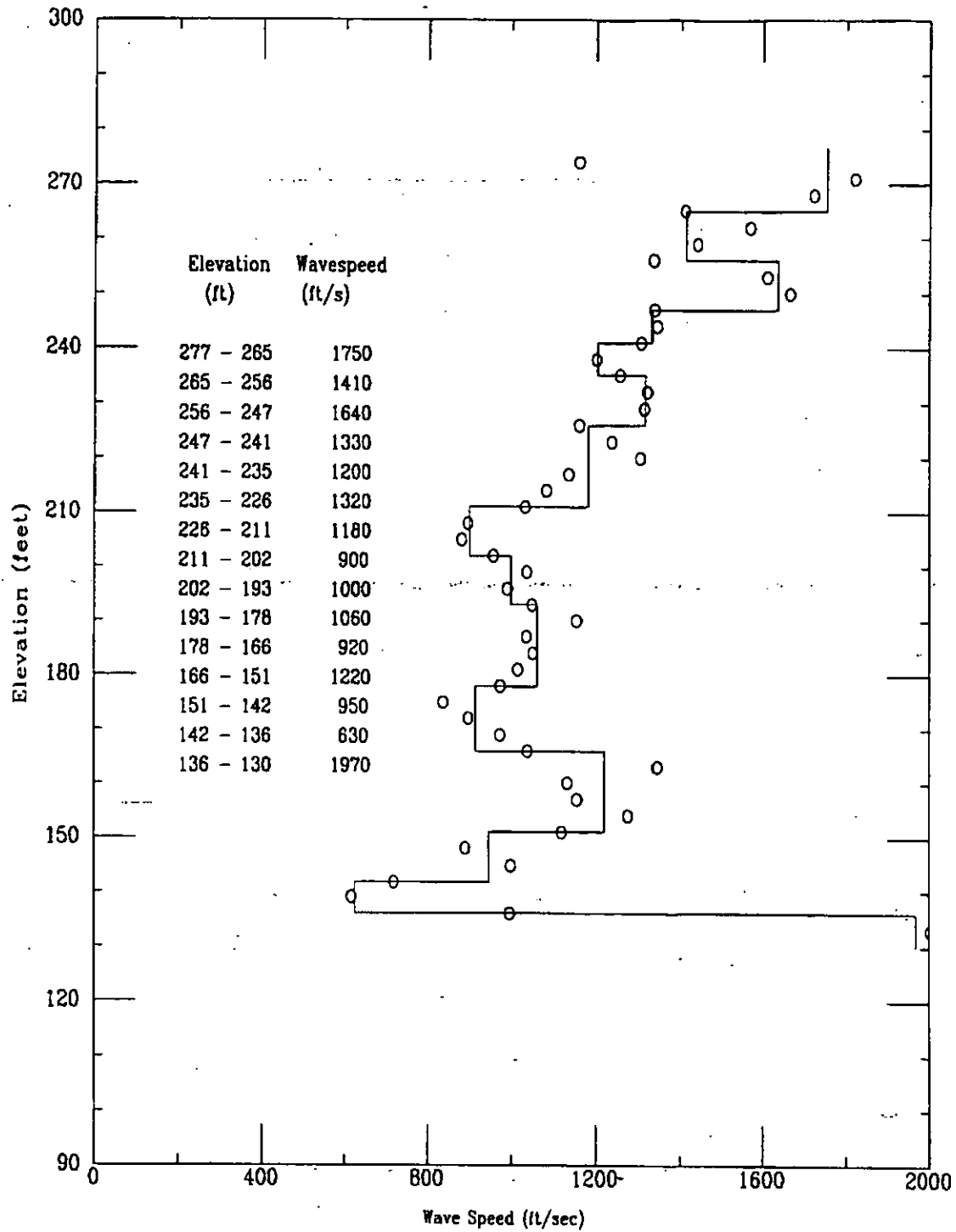


CPT-143

APPLIED RESEARCH ASSOCIATES, INC.

02/25/98

Shear Wave Speeds

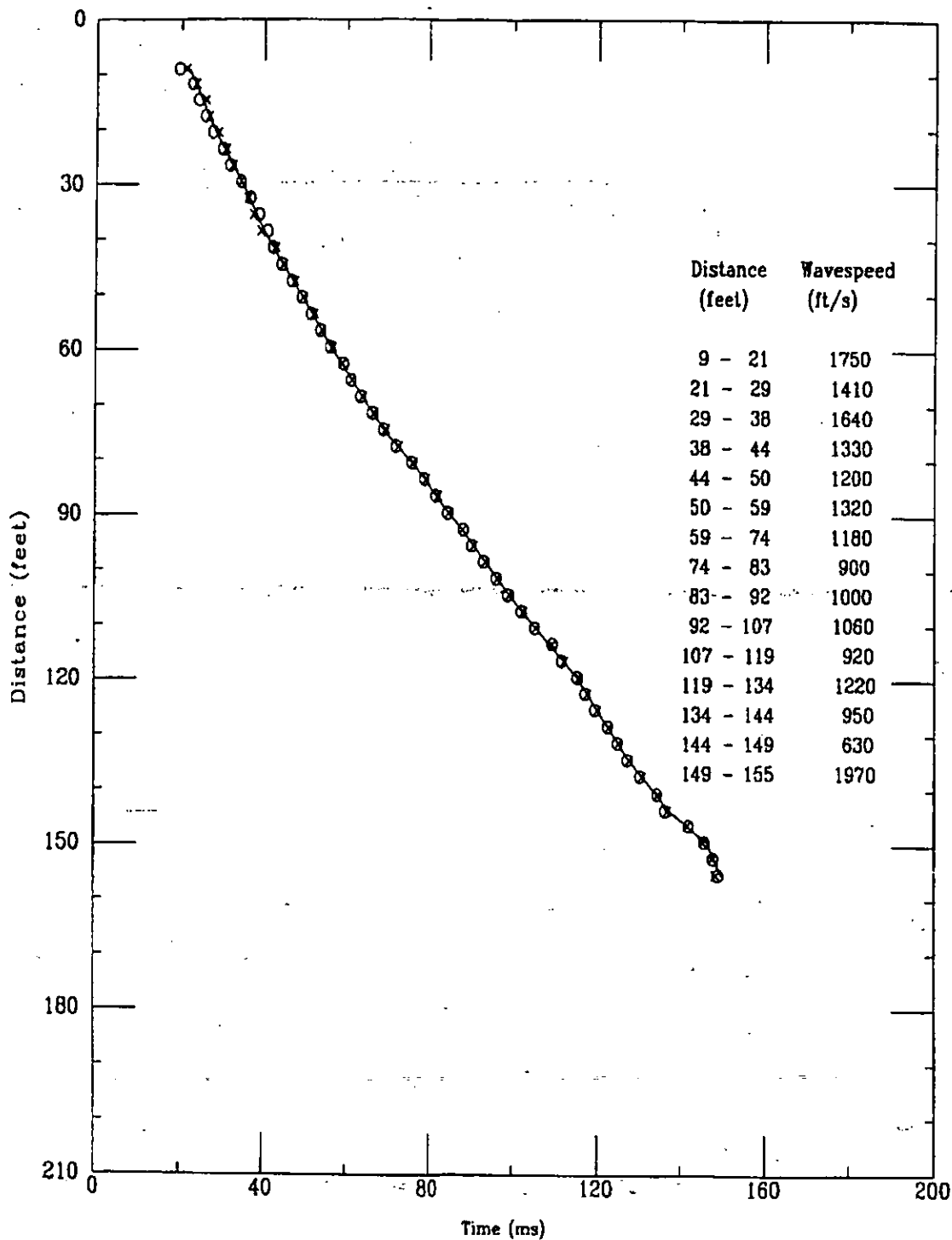


CPT-143

APPLIED RESEARCH ASSOCIATES, INC.

02/25/98

Shear Wave Time of Peak

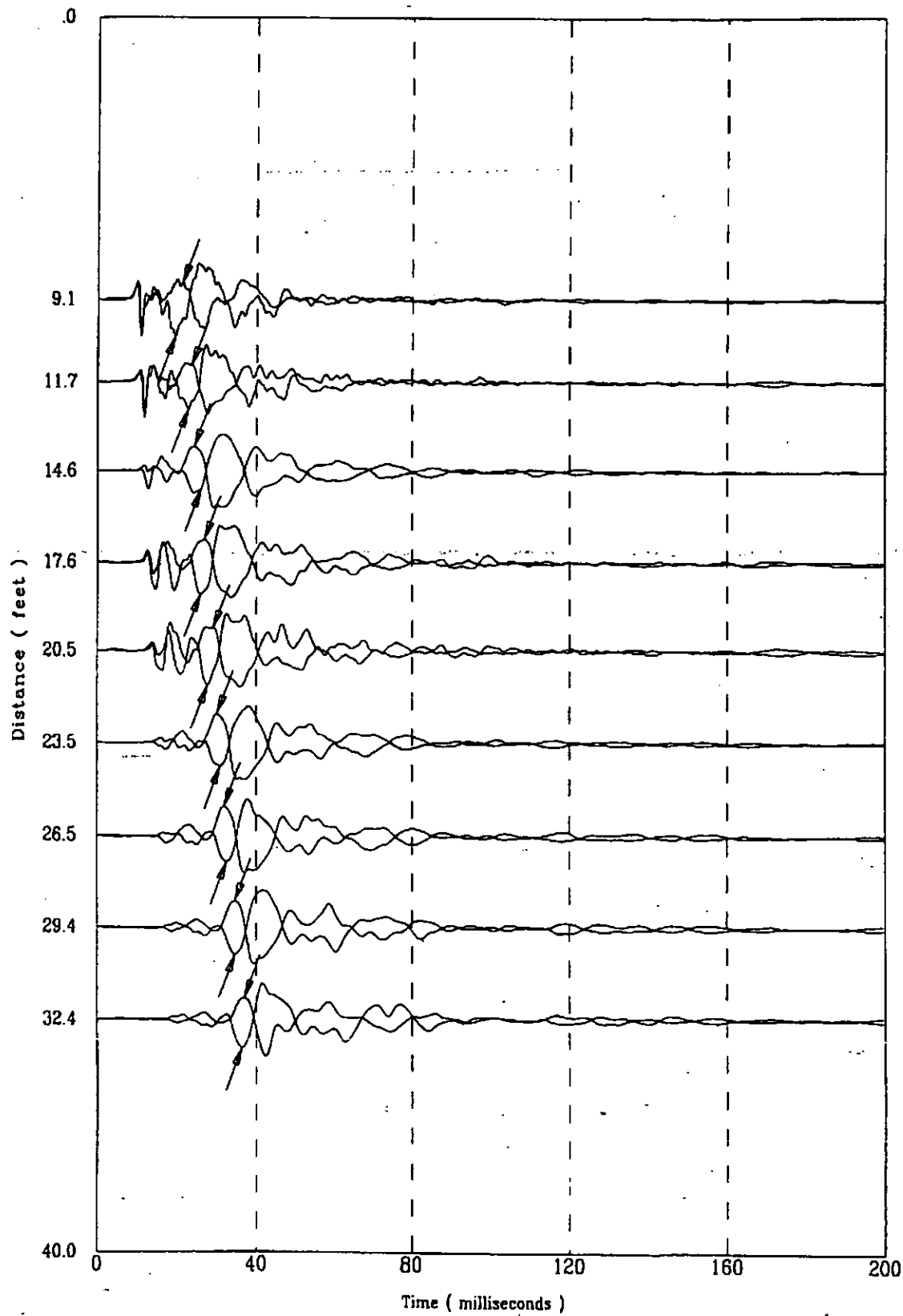


File 52518045

K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-143

S Wave  
02/25/98



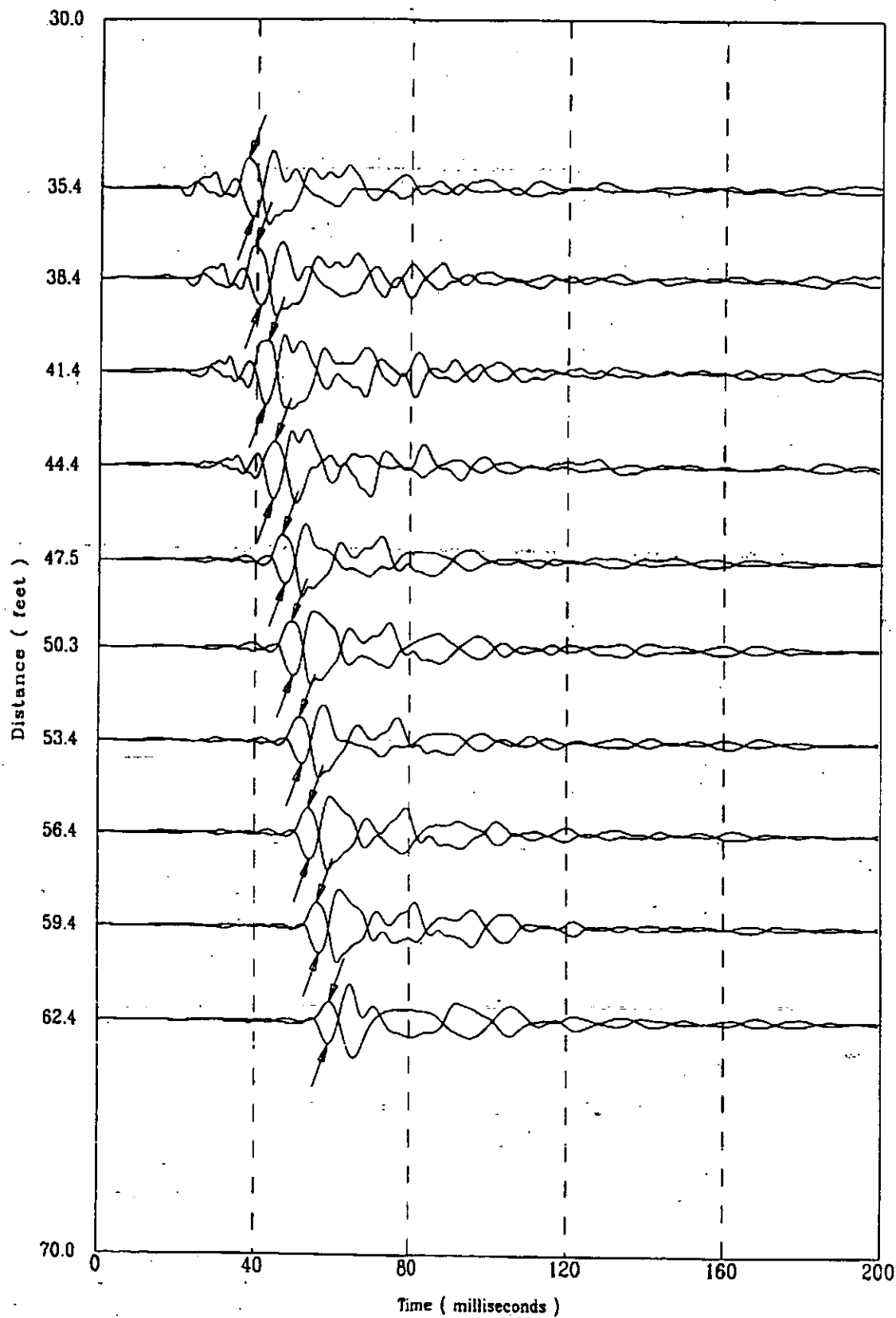
57804S

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K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-143

S Wave  
02/25/98



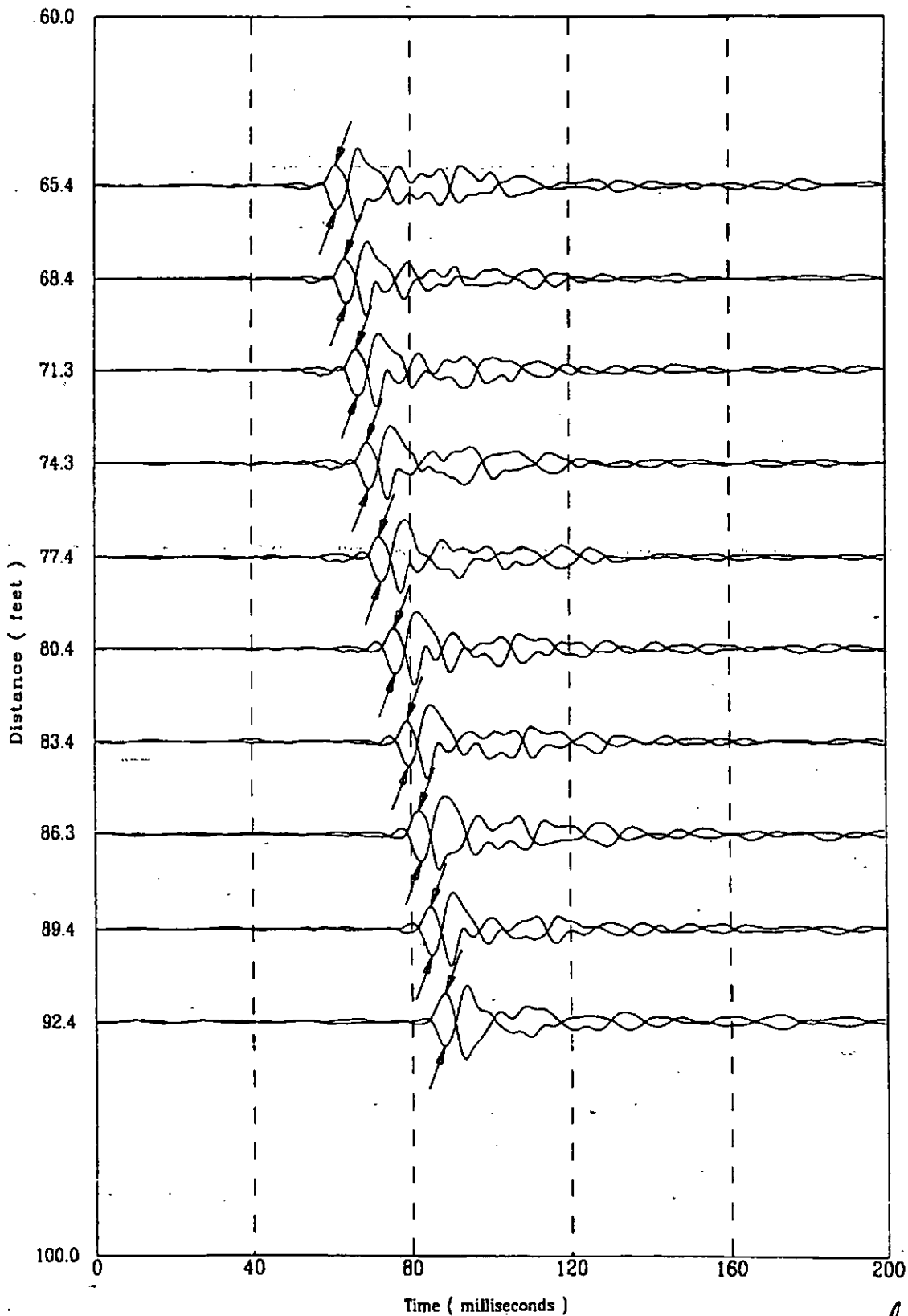
File 52518043

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K-TRT-F-00001  
R/o

Applied Research Associates  
CPT-143

S Wave  
02/25/98



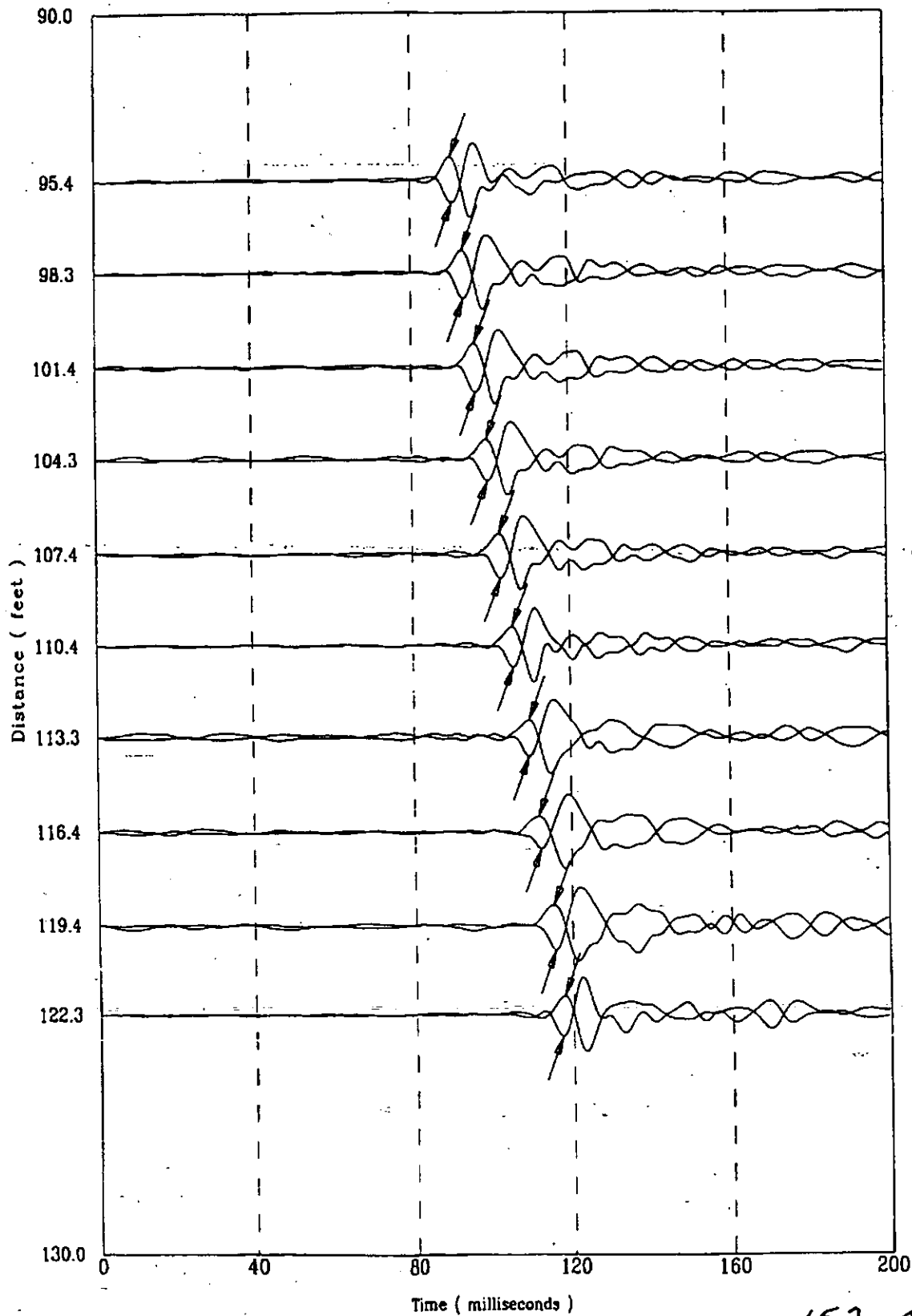
J251804S

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K-TRT-F-0000/  
R/o

Applied Research Associates  
CPT-143

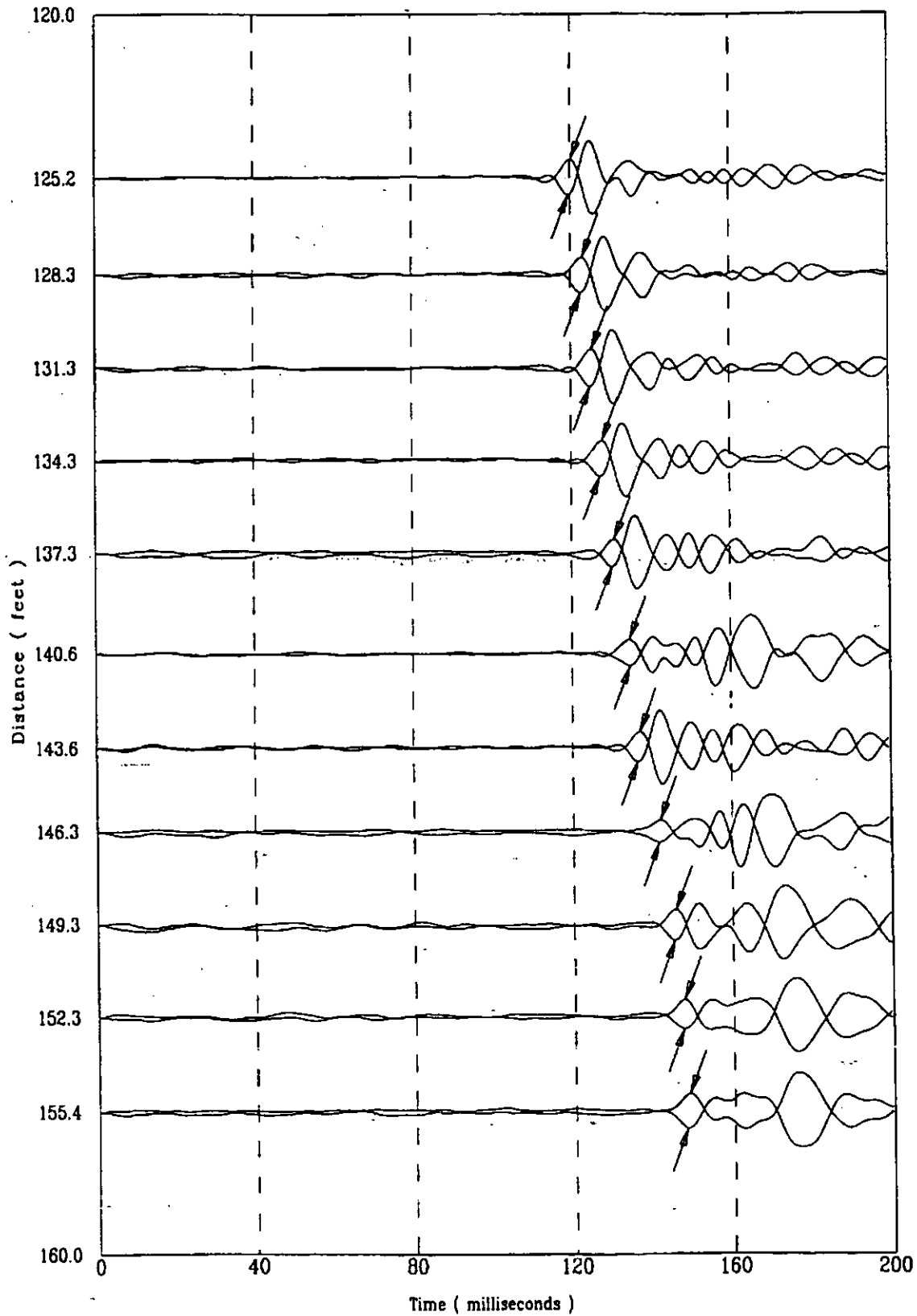
S Wave  
02/25/98



K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-143

S Wave  
02/25/98



52518045

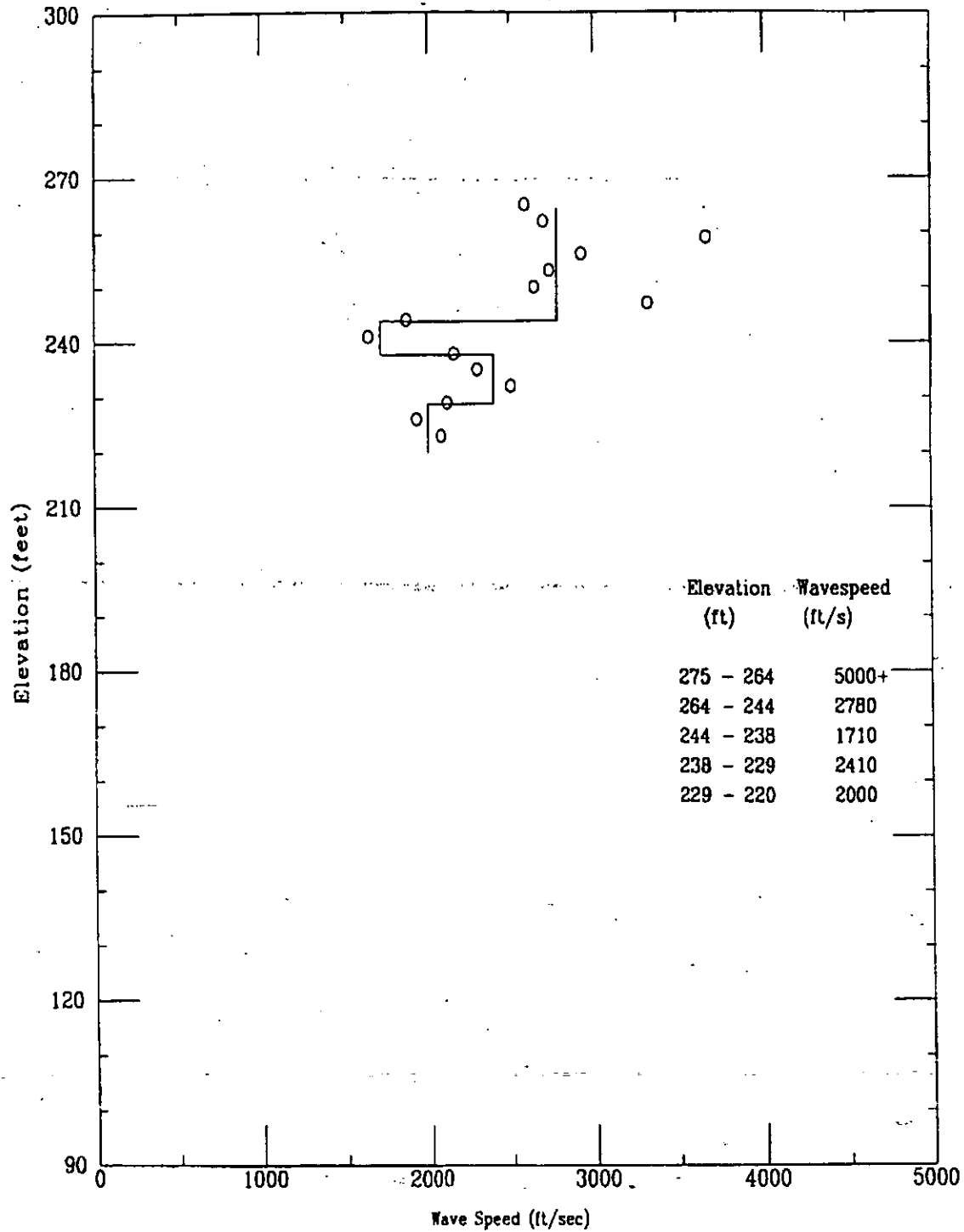


CPT-143

APPLIED RESEARCH ASSOCIATES, INC.

02/25/98

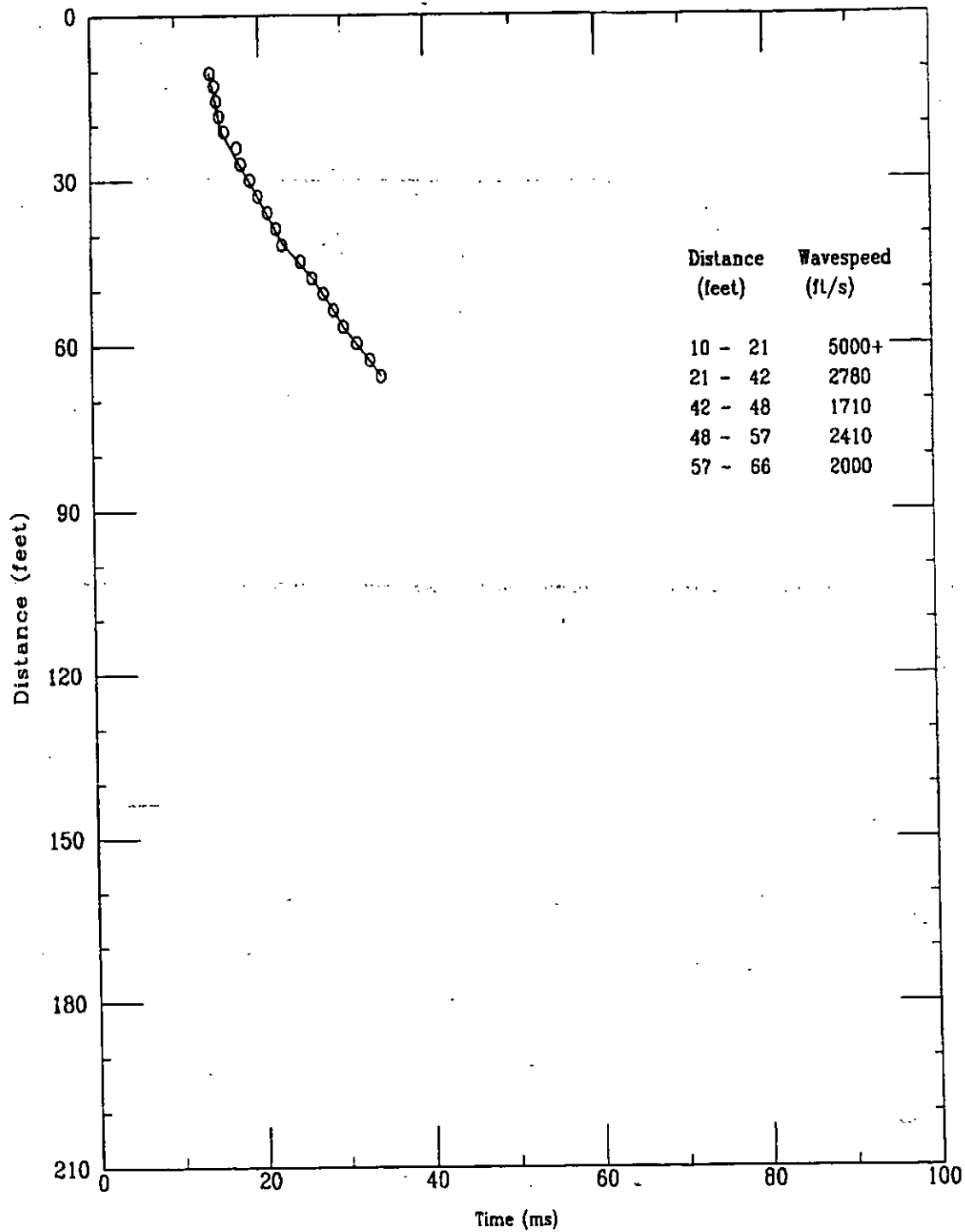
Compression Wave Speeds



CPT-143

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

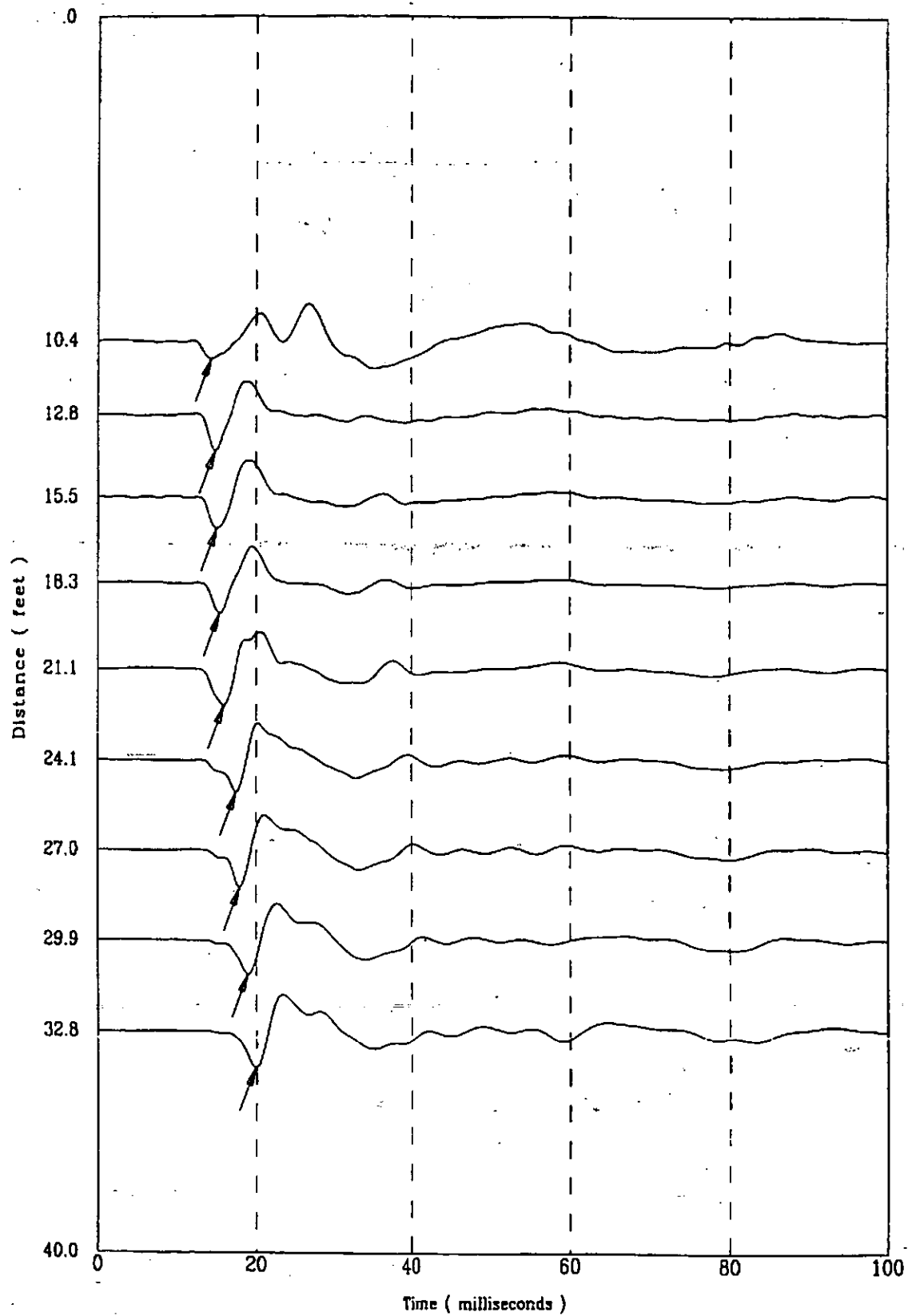
02/25/98



K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-143

P Wave  
02/25/98



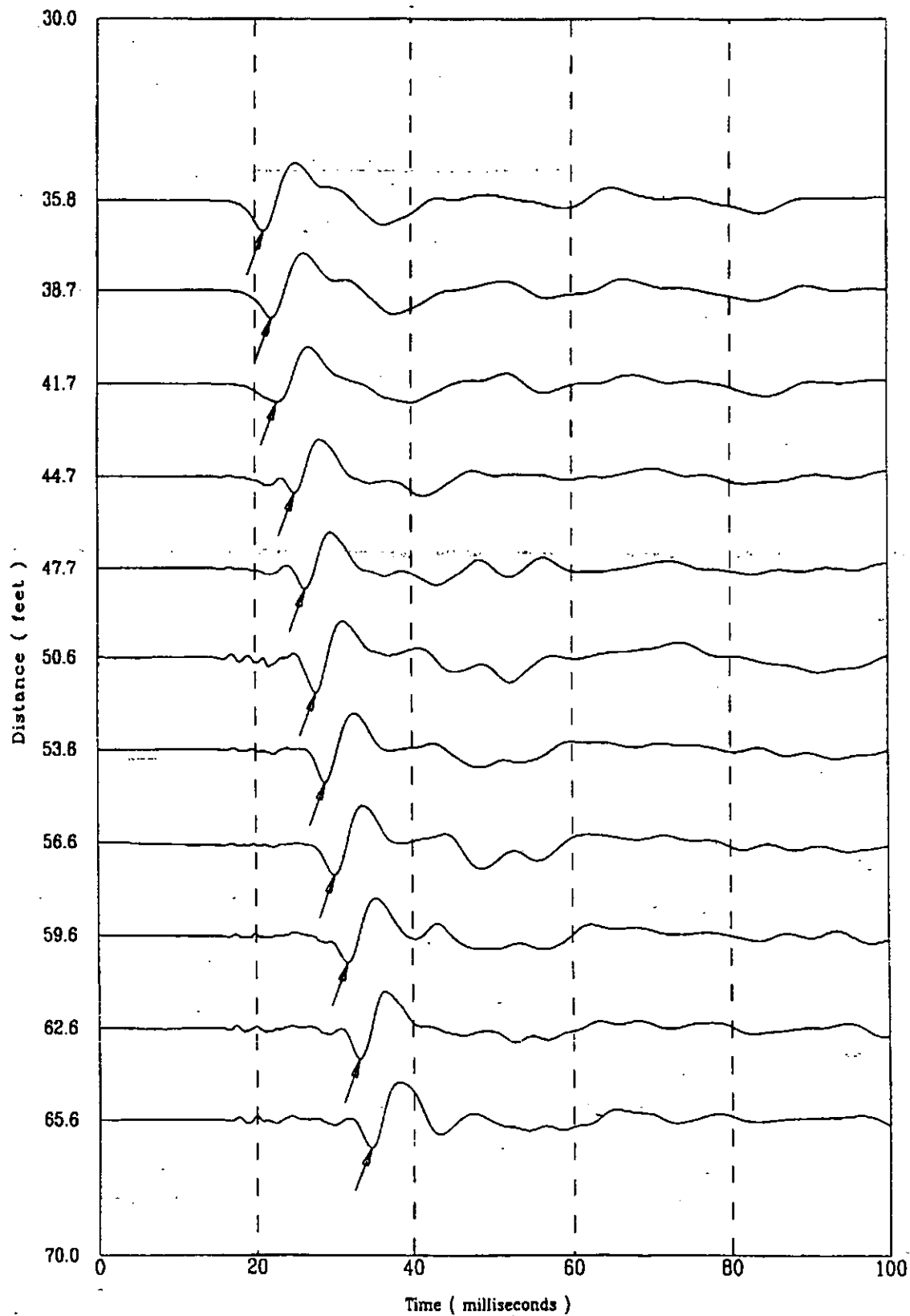
File 5251804S

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K-TRT-F-0000/  
R/o

Applied Research Associates  
CPT-143

P Wave  
02/25/98



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CPT-147

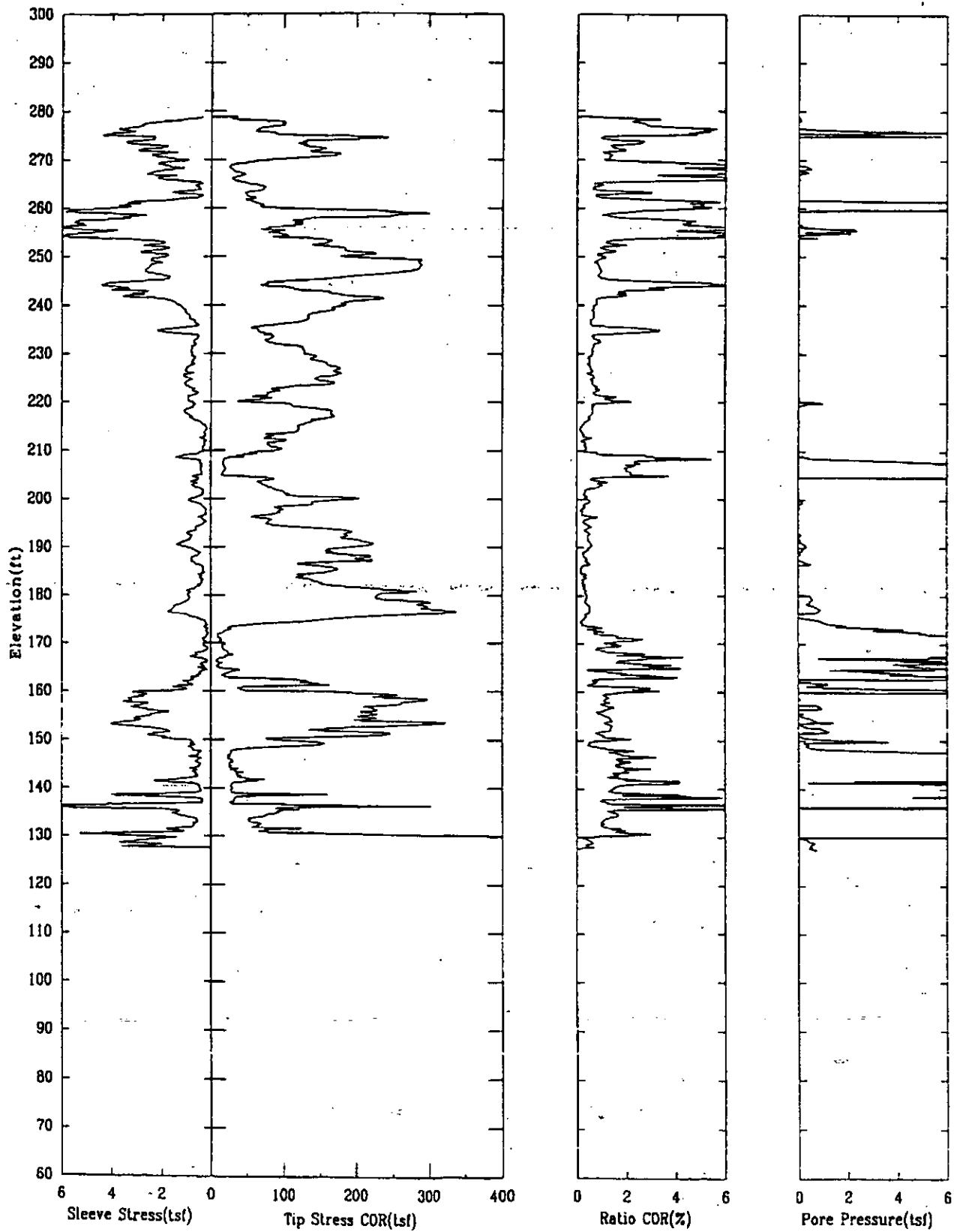
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
02/24/98 / 0

North 79372

East 55261

Elevation 284.8



CPT-147

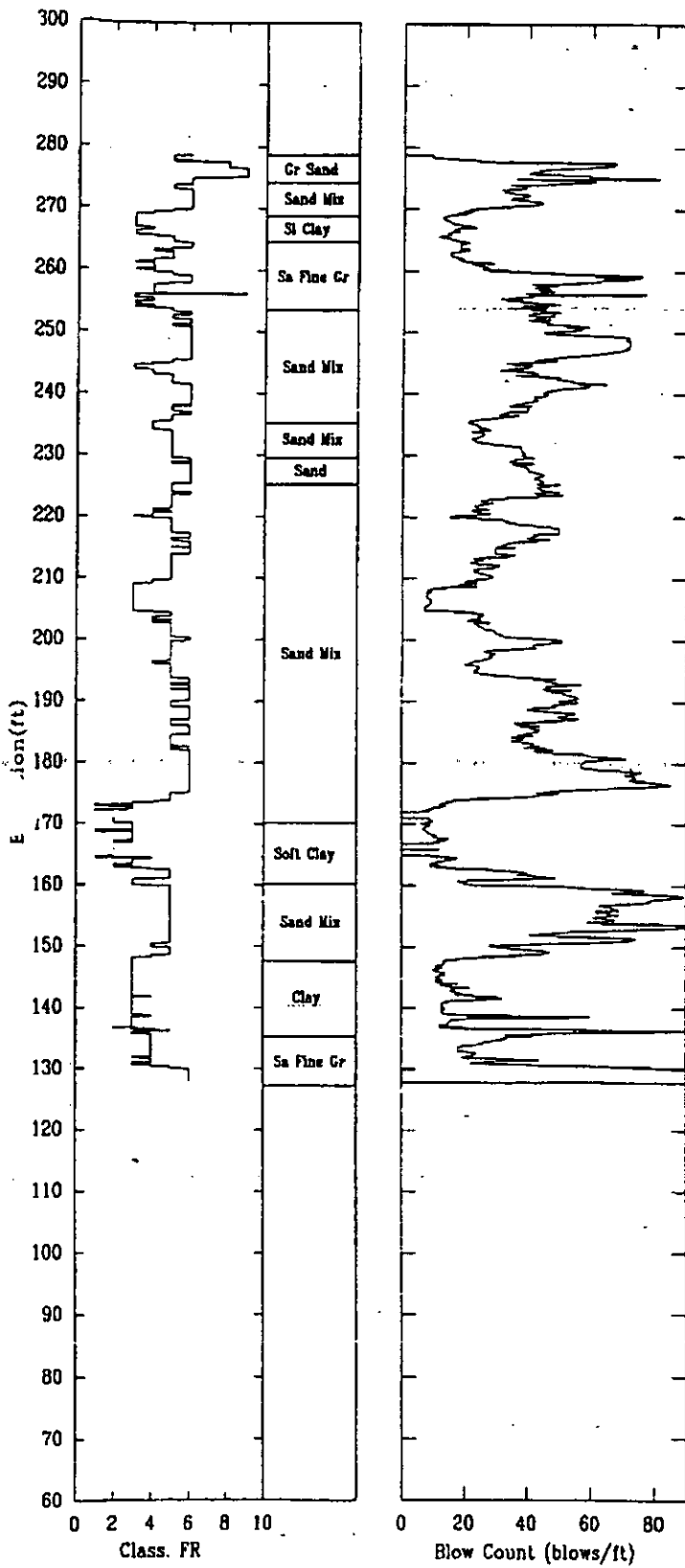
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
02/24/98 R/O

North 79372

East 55261

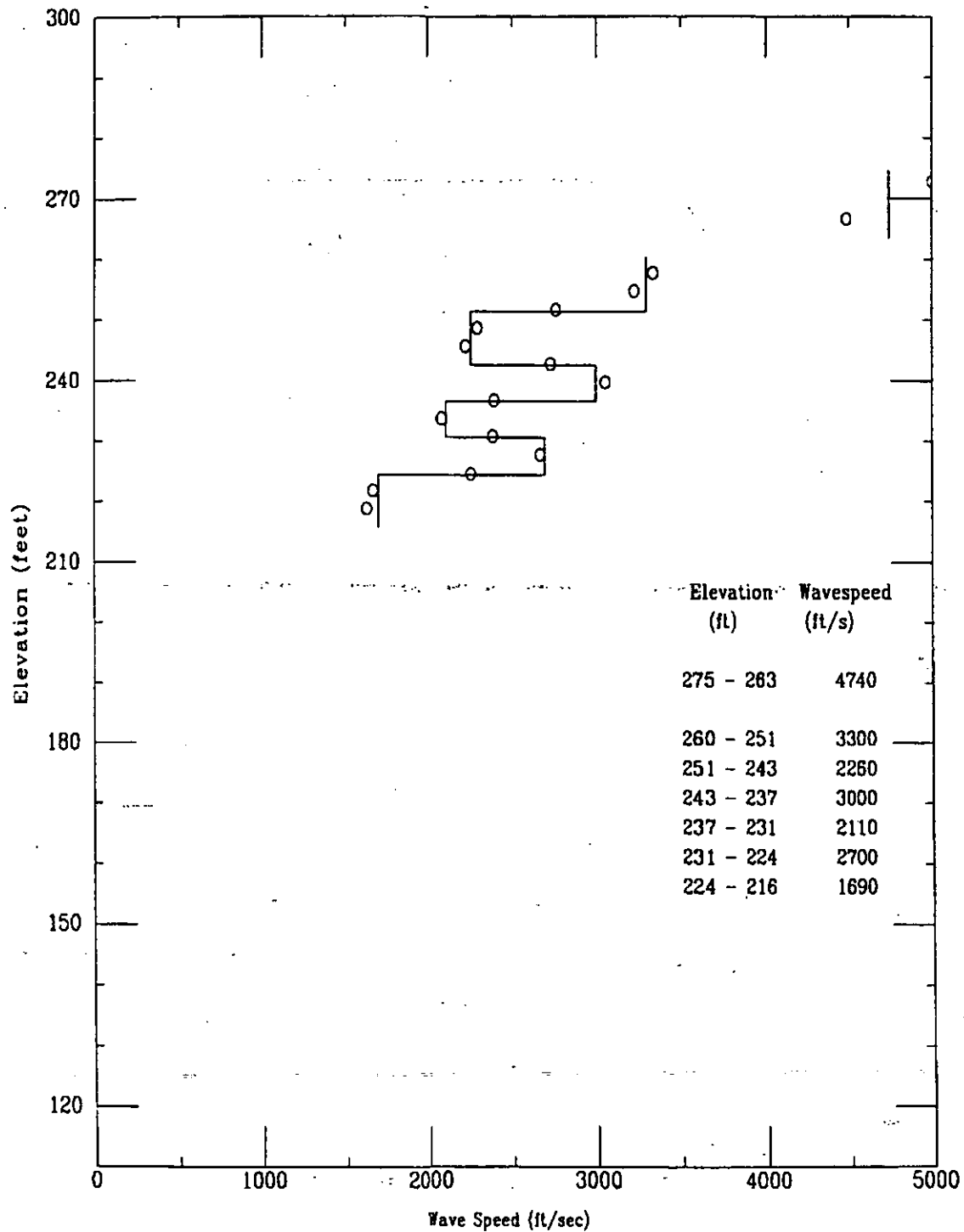
Elevation 284.8



CPT-147

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

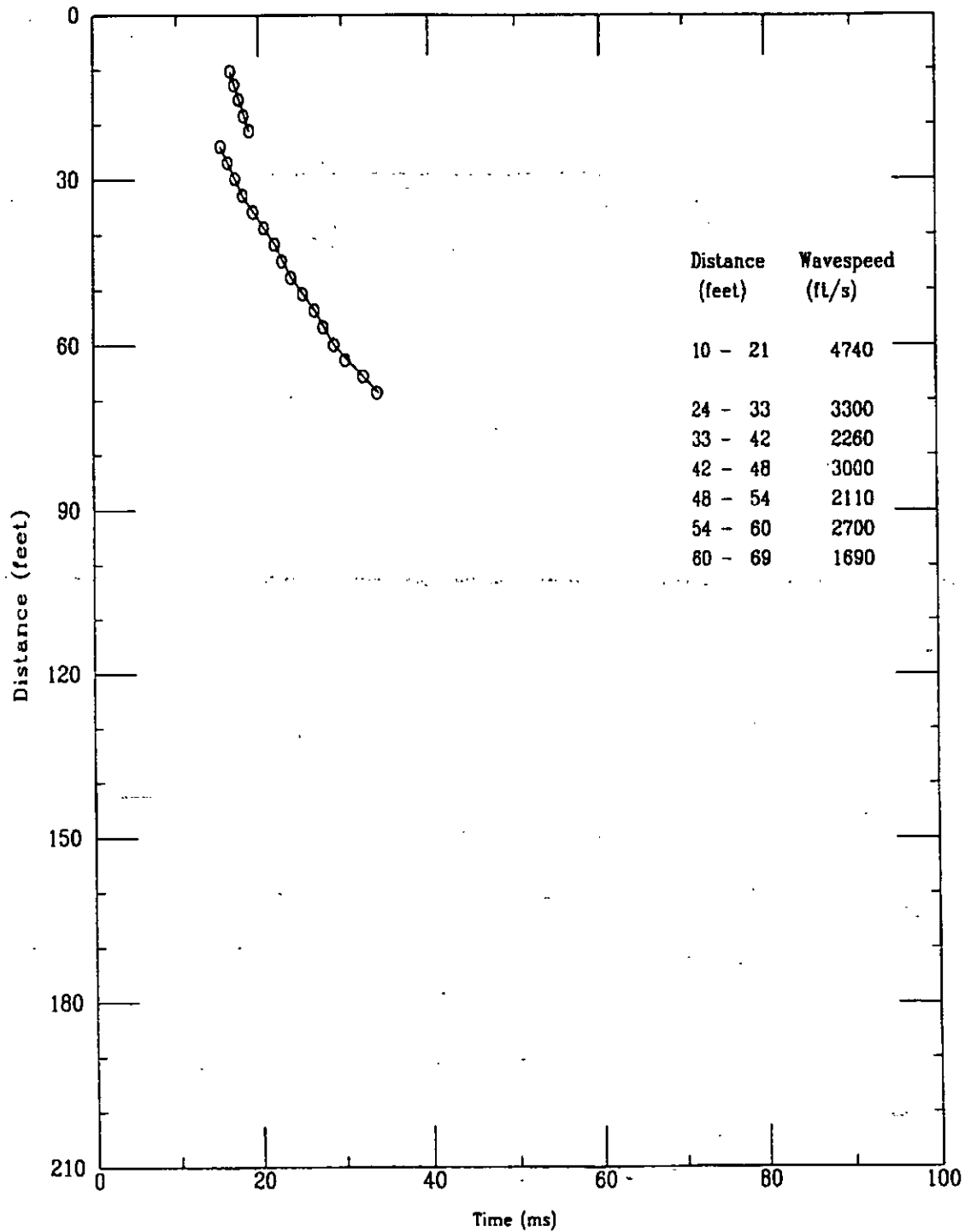
02/24/98



CPT-147

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

02/24/98

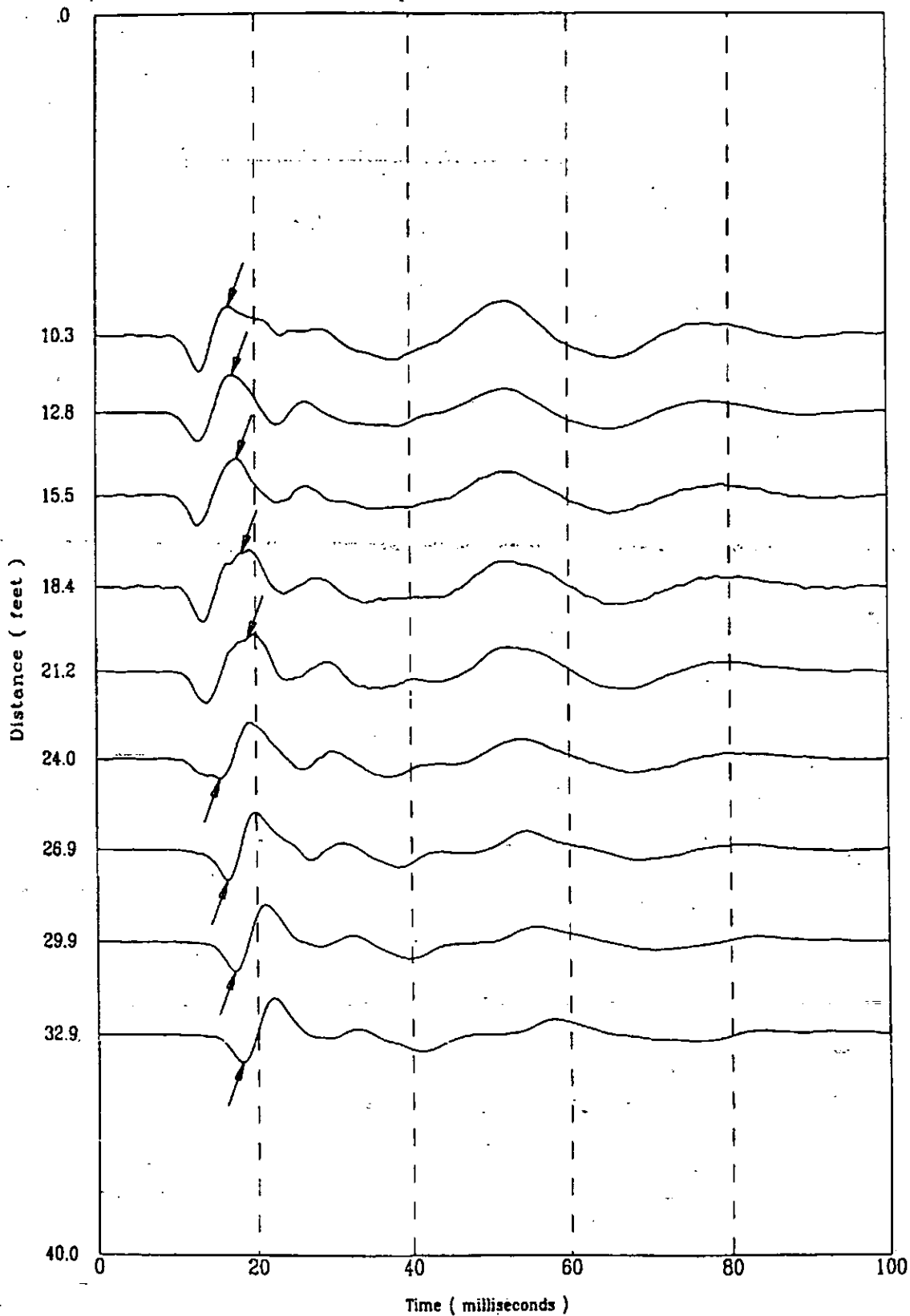




K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-147

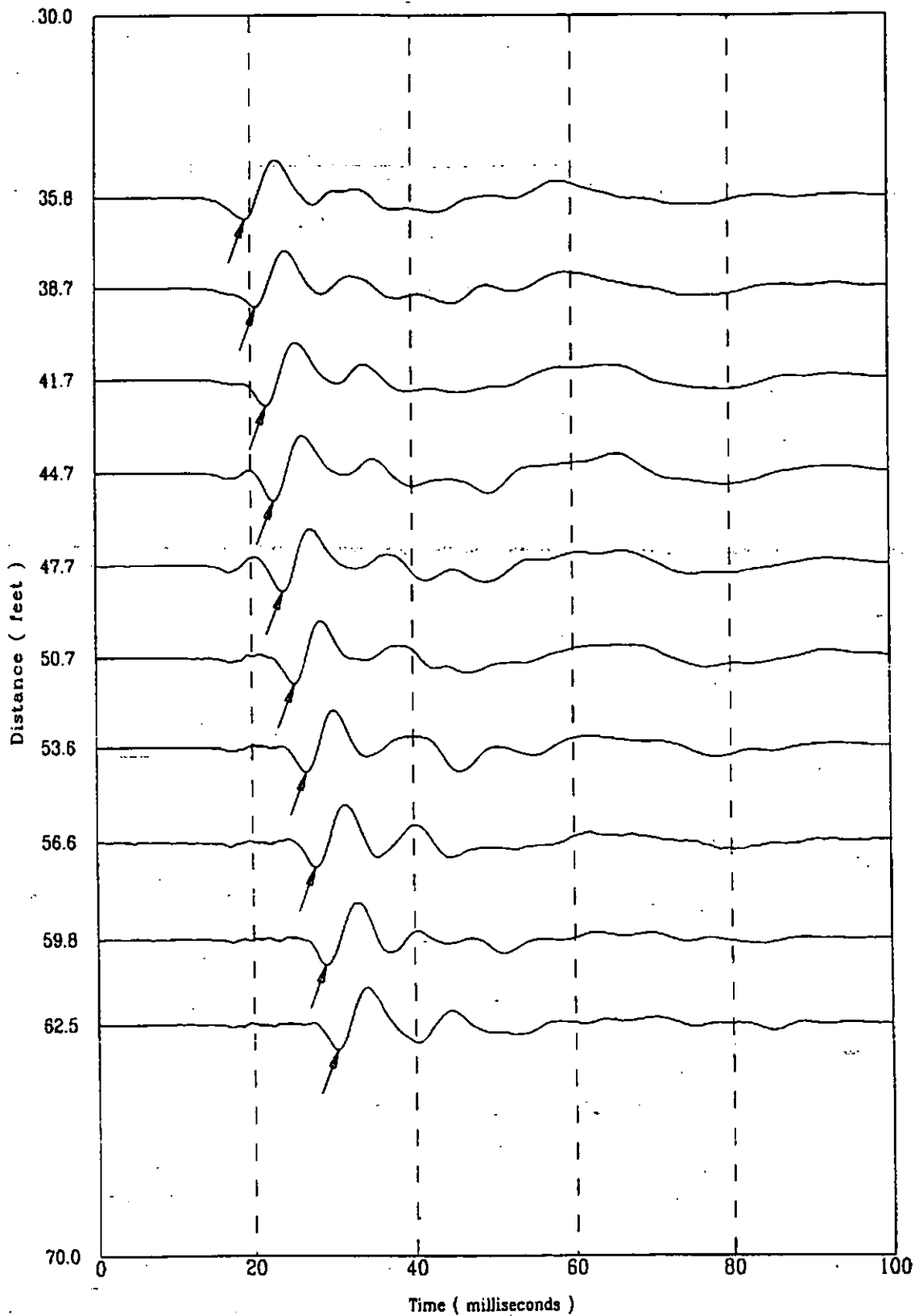
P Wave  
02/24/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-147

P Wave  
02/24/98



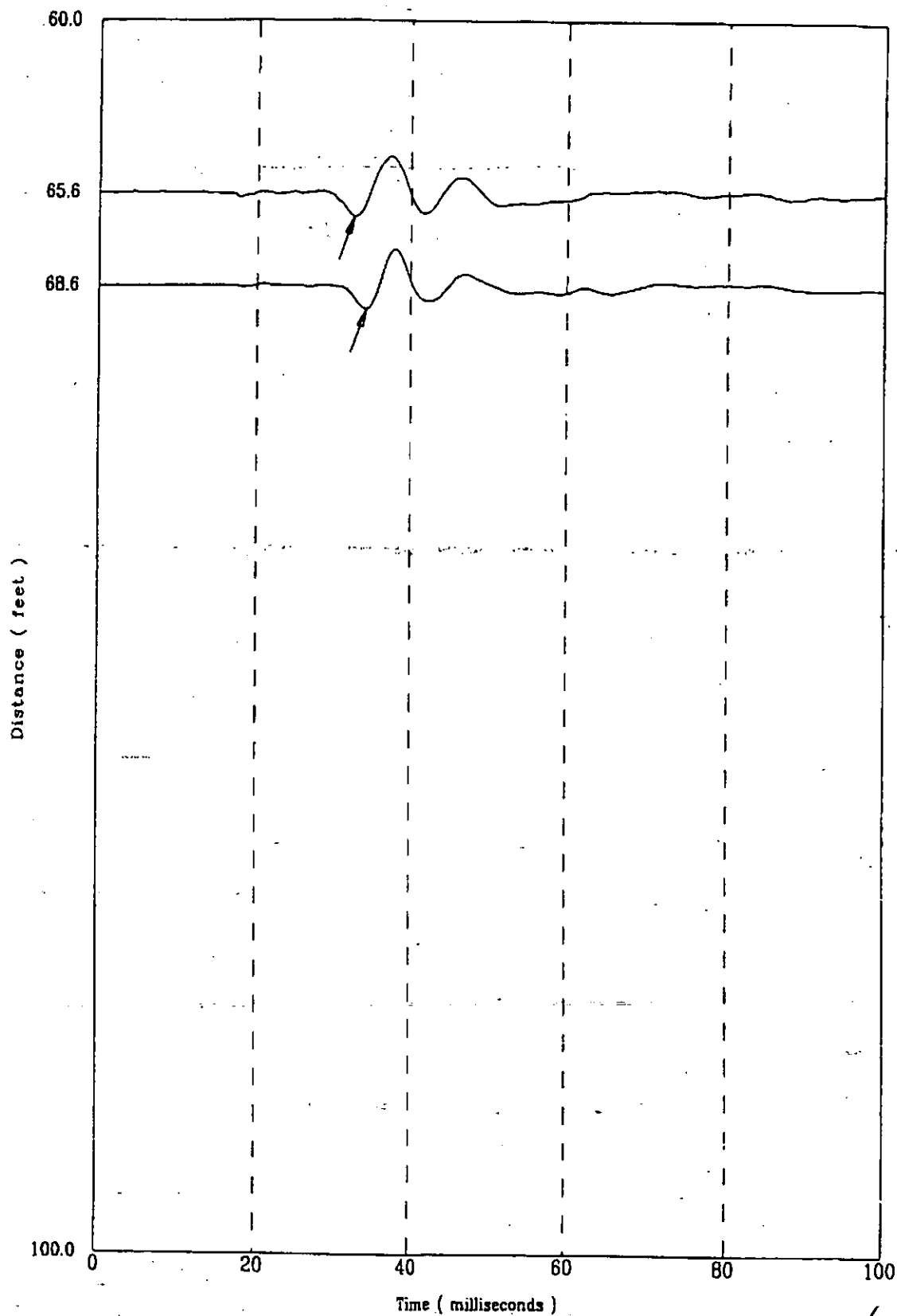
42478015

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K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-147

P Wave  
02/24/98



File 4241801S

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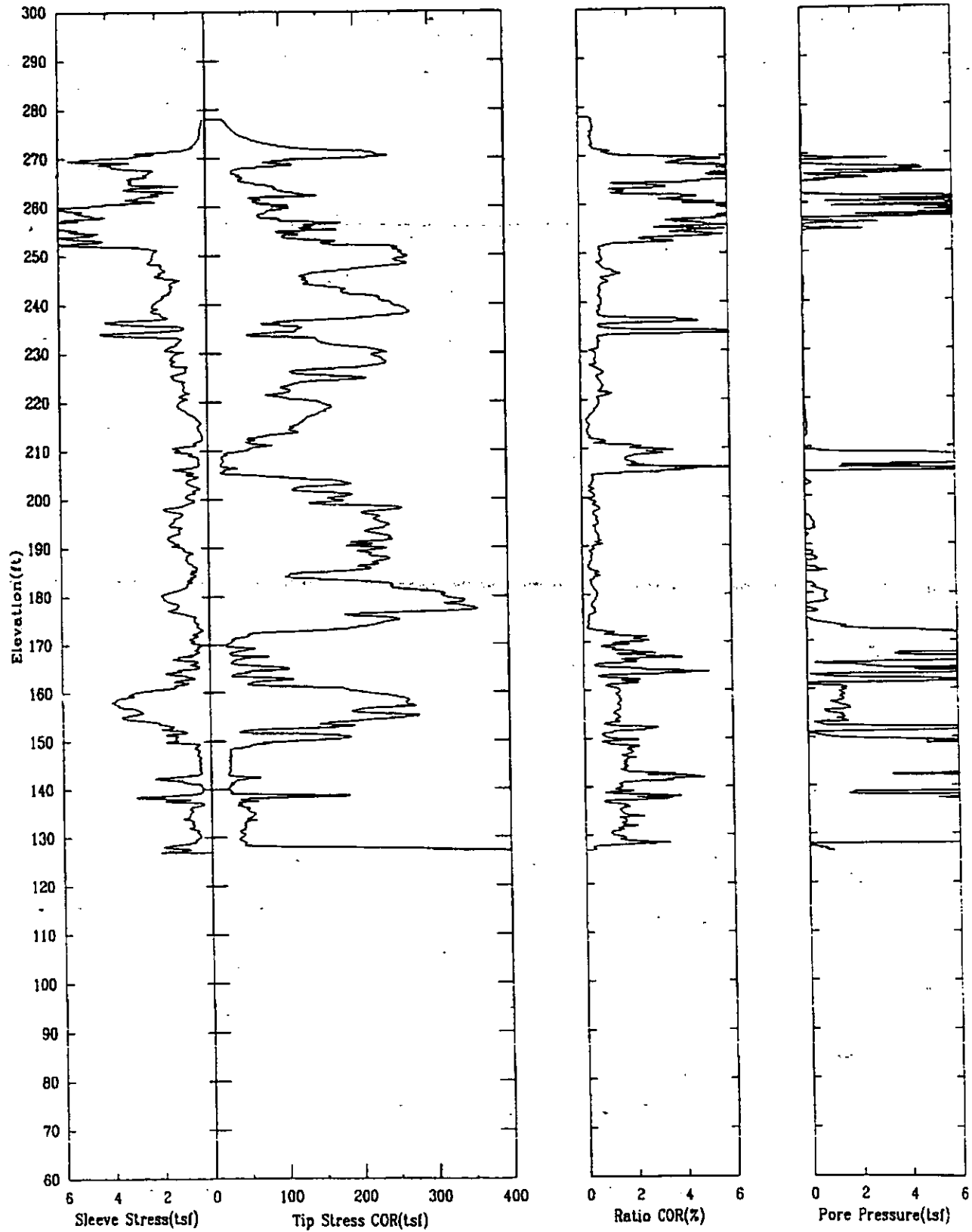
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
02/27/98 R/O

North 79372.07

East 55385.00

Elevation 284.1



CPT-148

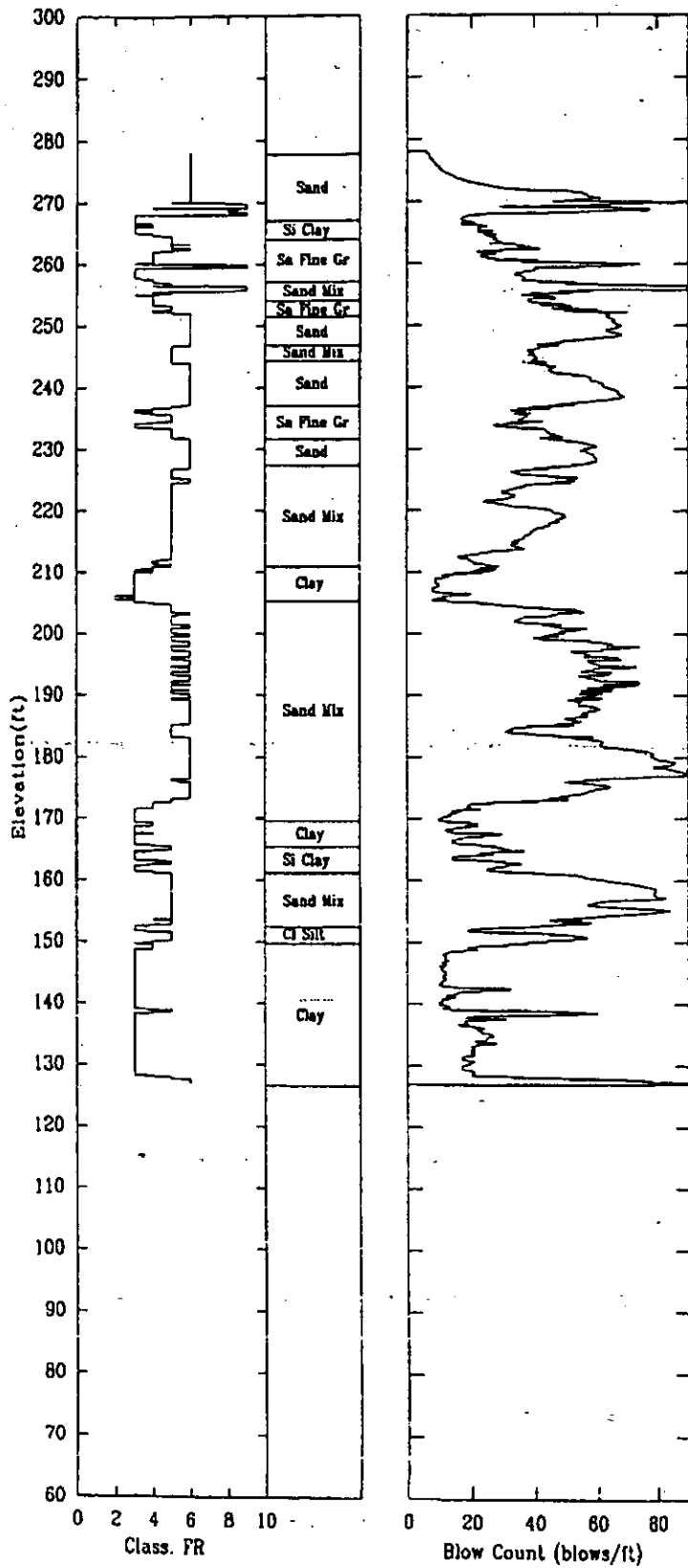
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K-TRT-F-00001  
02/27/98 R/O

North 79372.07

East 55385.00

Elevation 284.1

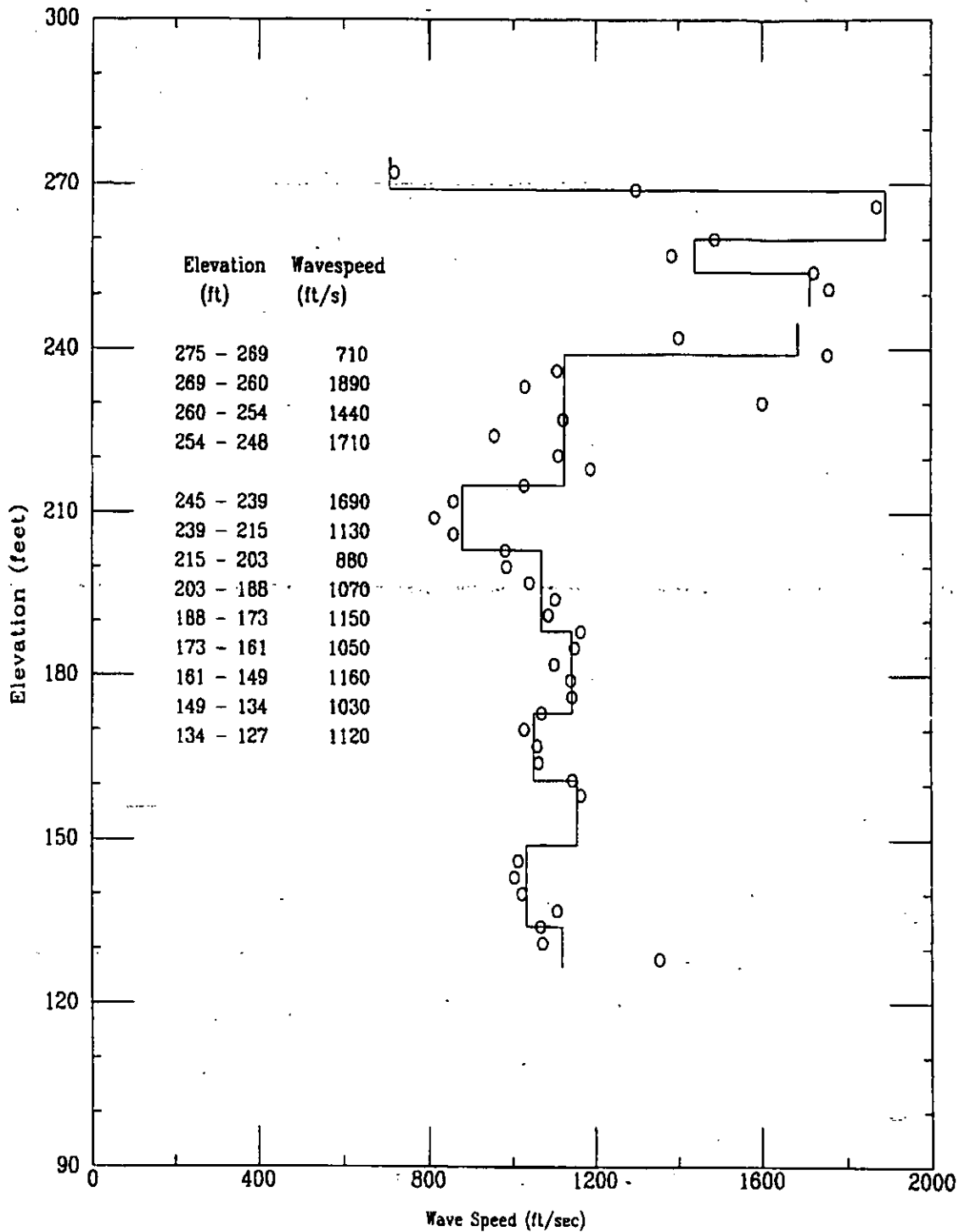


CPT-148

APPLIED RESEARCH ASSOCIATES, INC.

02/27/98

## Shear Wave Speeds



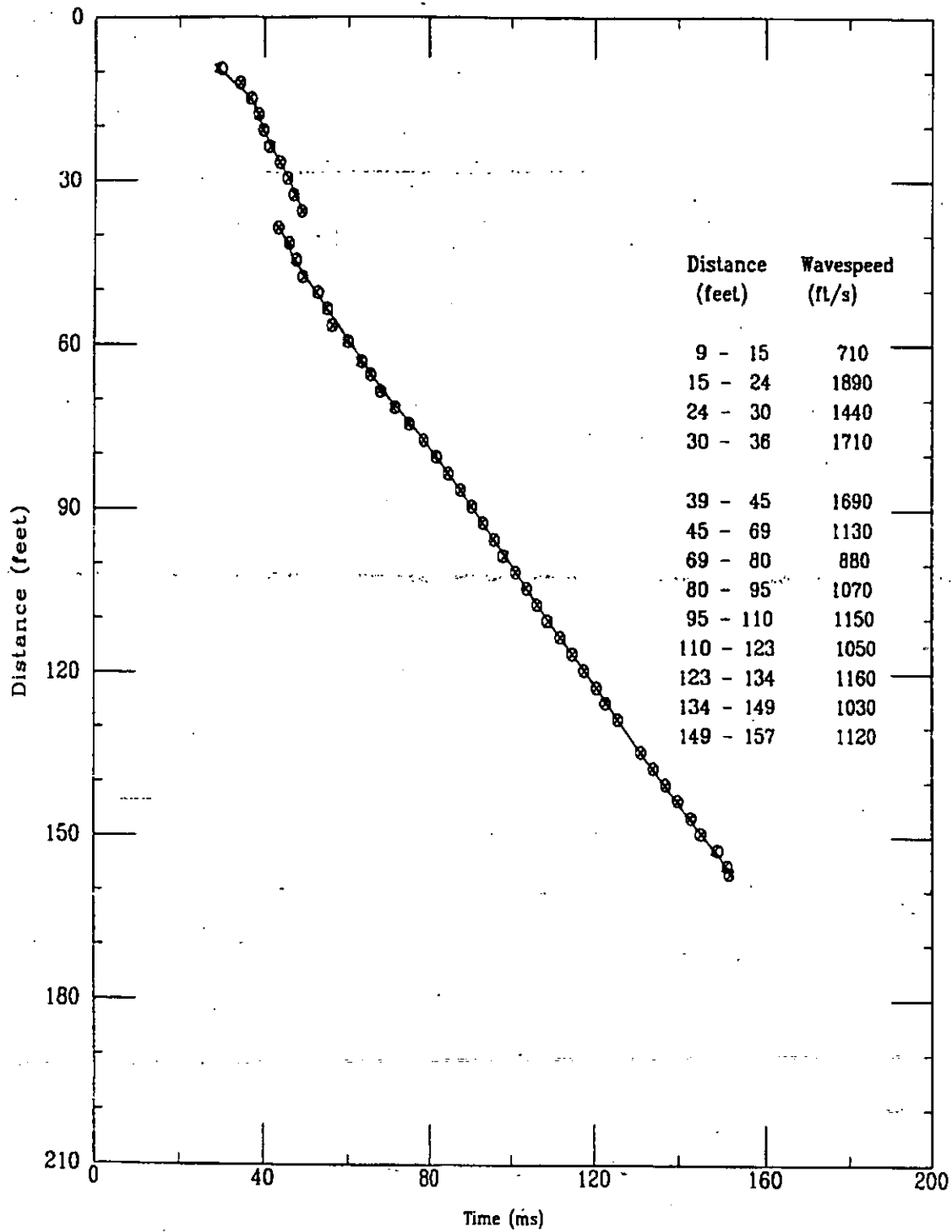
File 4271801S

CPT-148

APPLIED RESEARCH ASSOCIATES, INC.

02/27/98

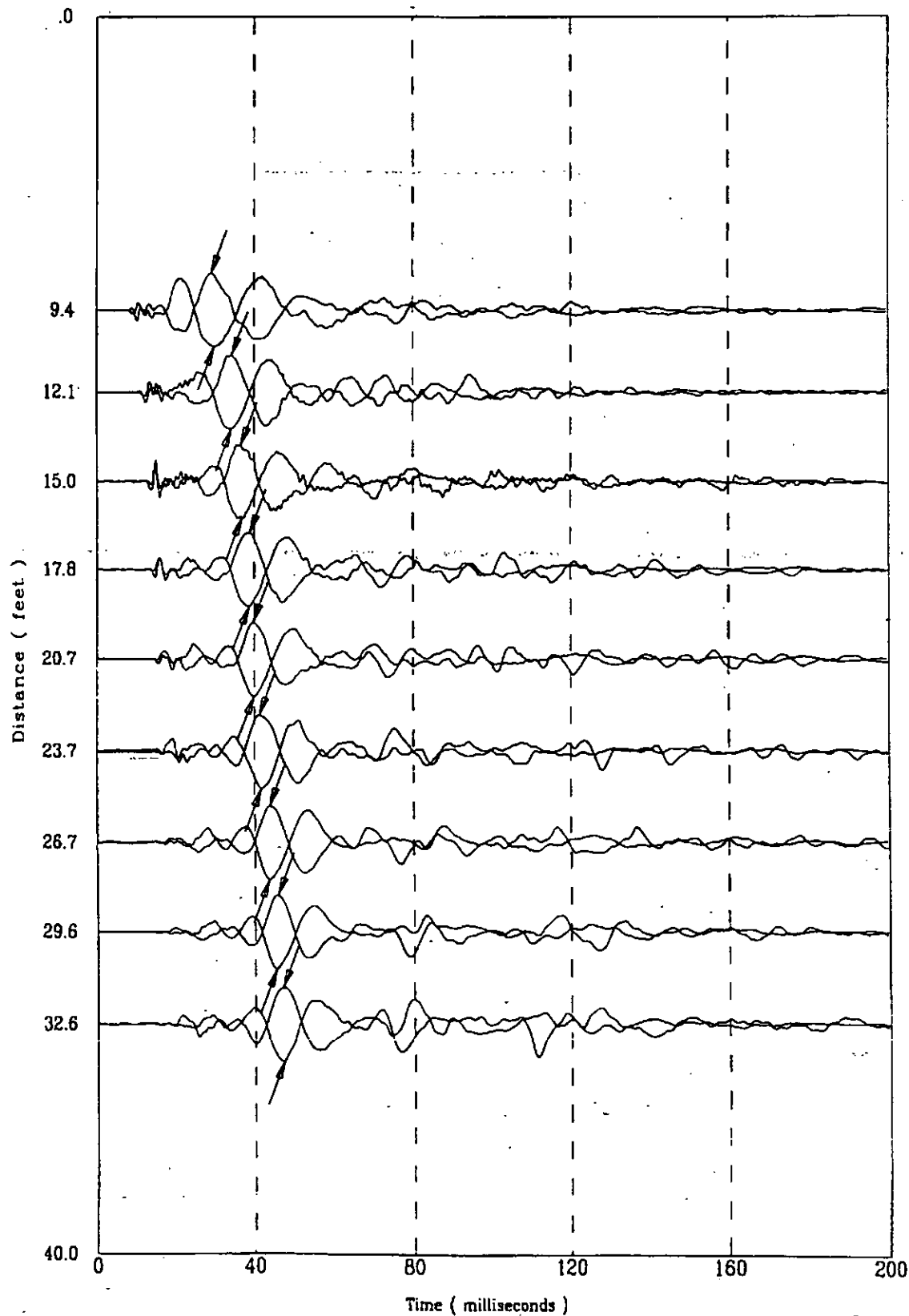
Shear Wave Time of Peak



K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-148

S Wave  
02/27/98



.778013

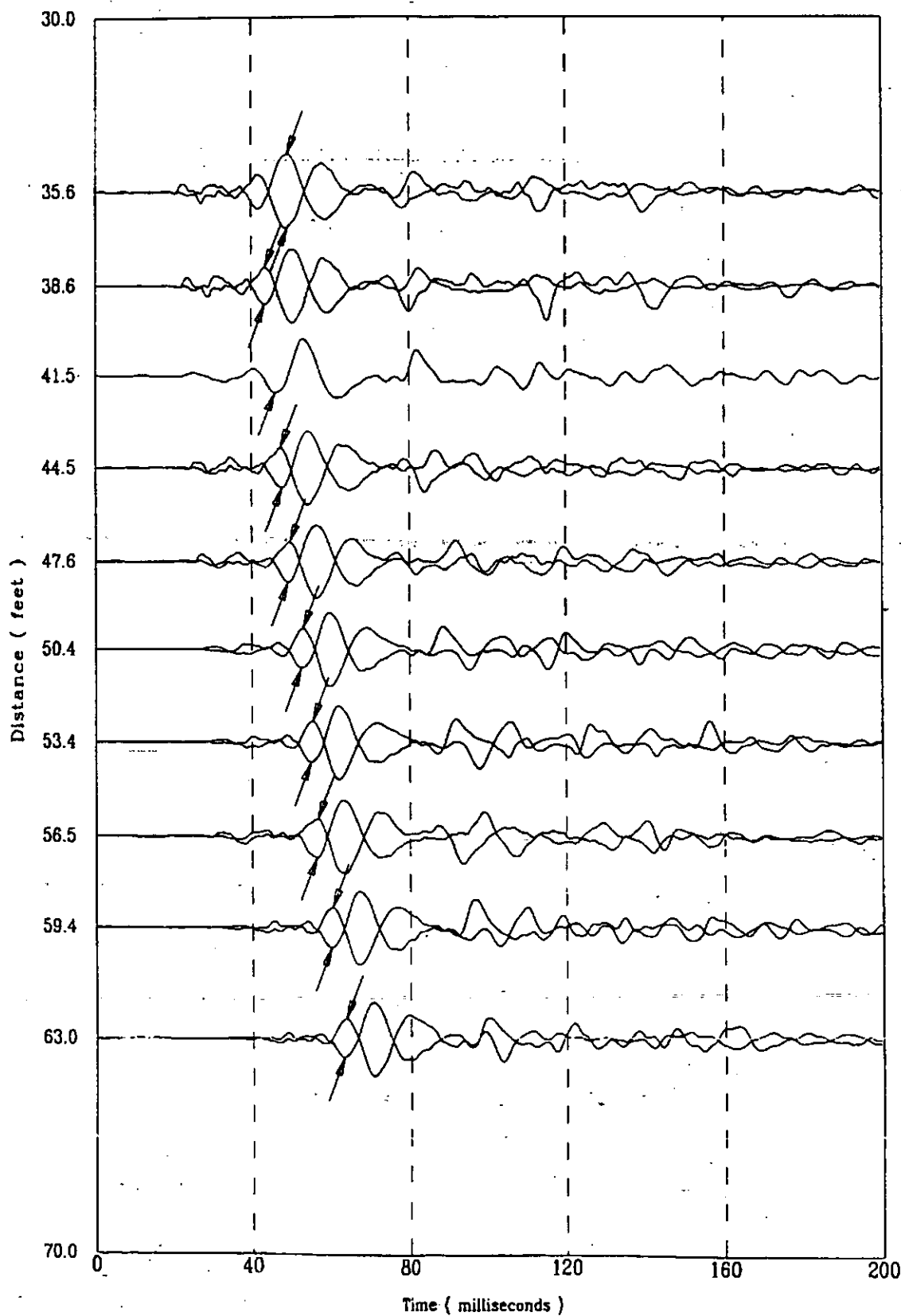
169 of 522



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-148

S Wave  
02/27/98



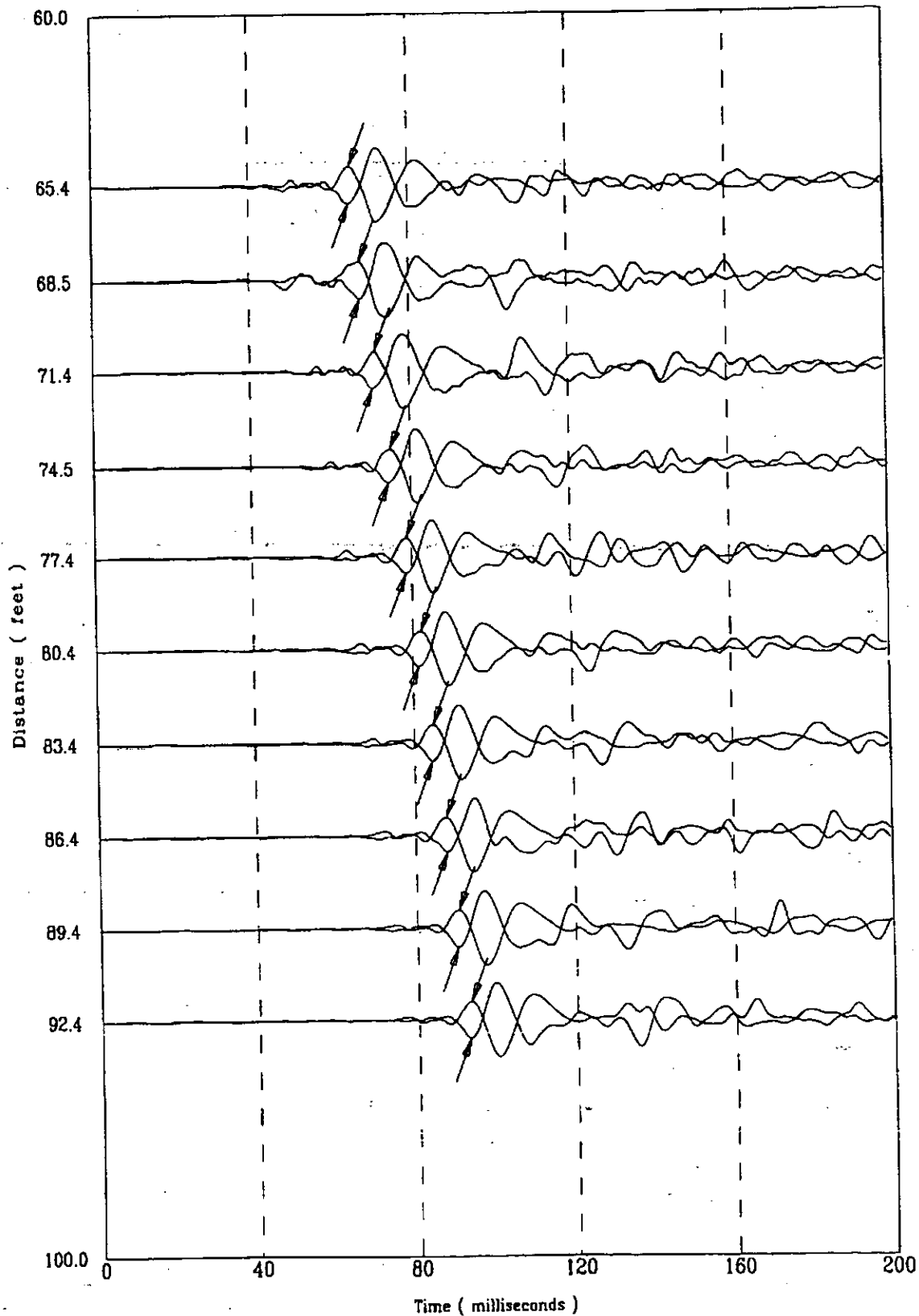
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-148

S Wave  
02/27/98



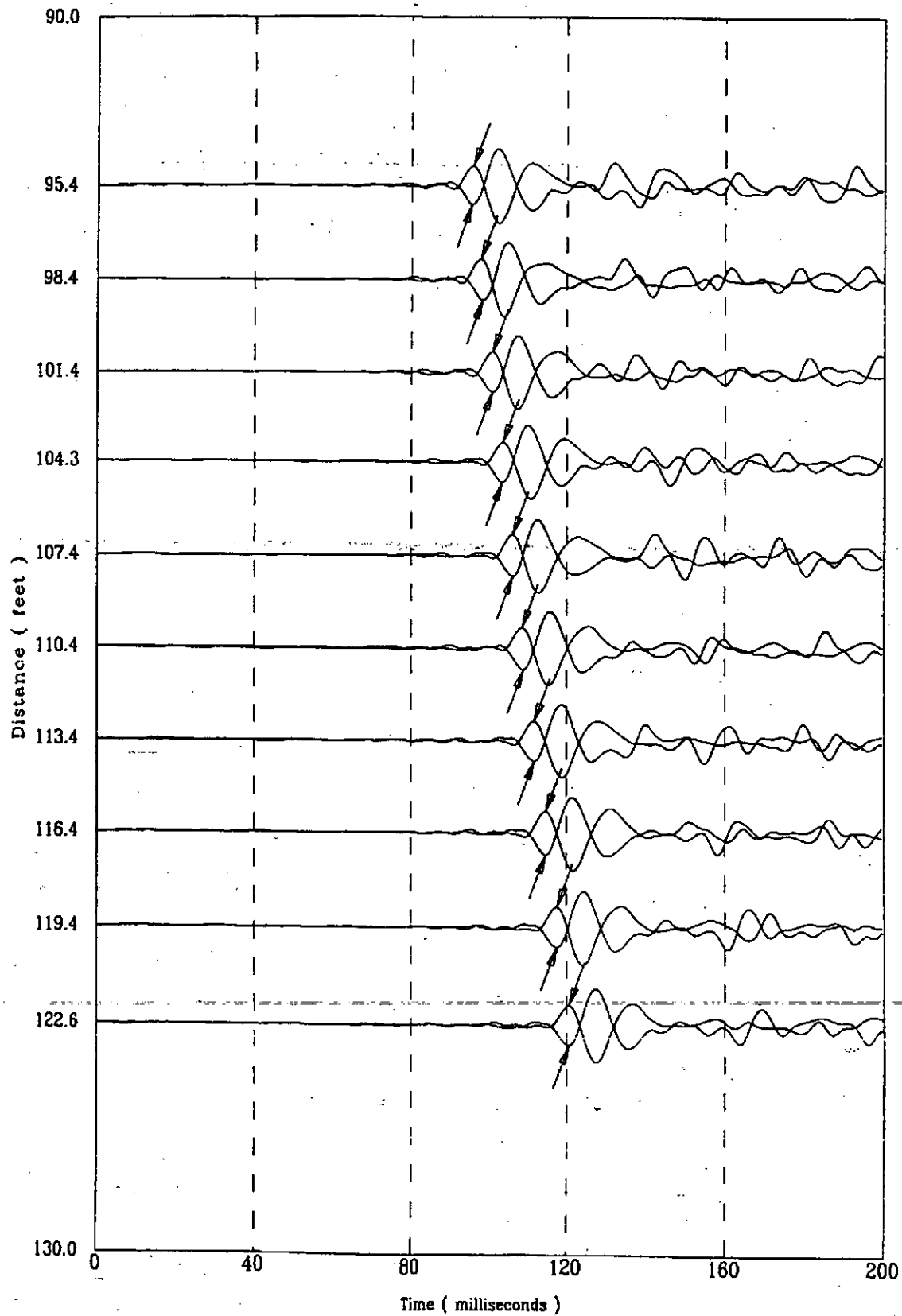
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-148

S Wave  
02/27/98



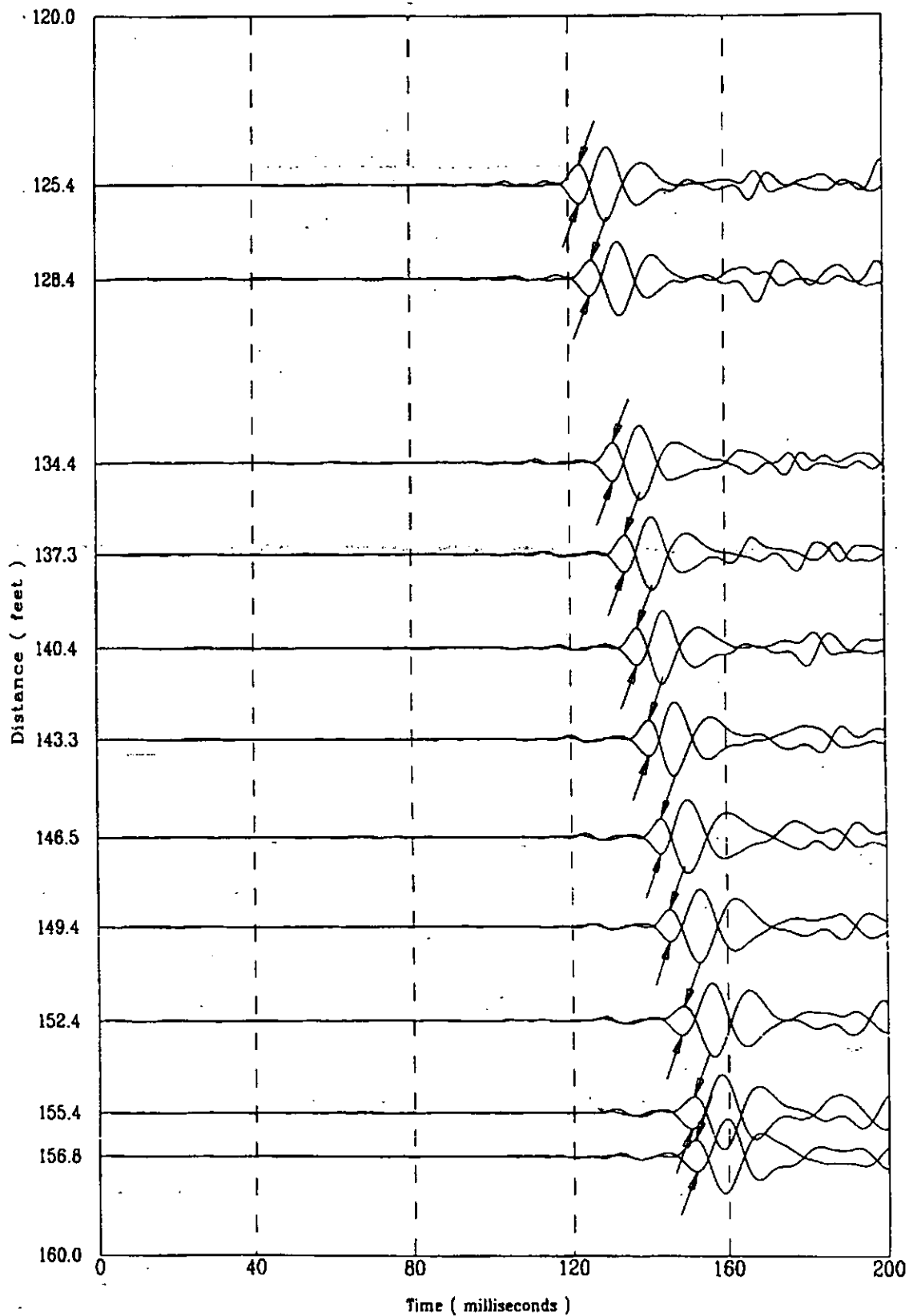
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-148

S Wave  
02/27/98



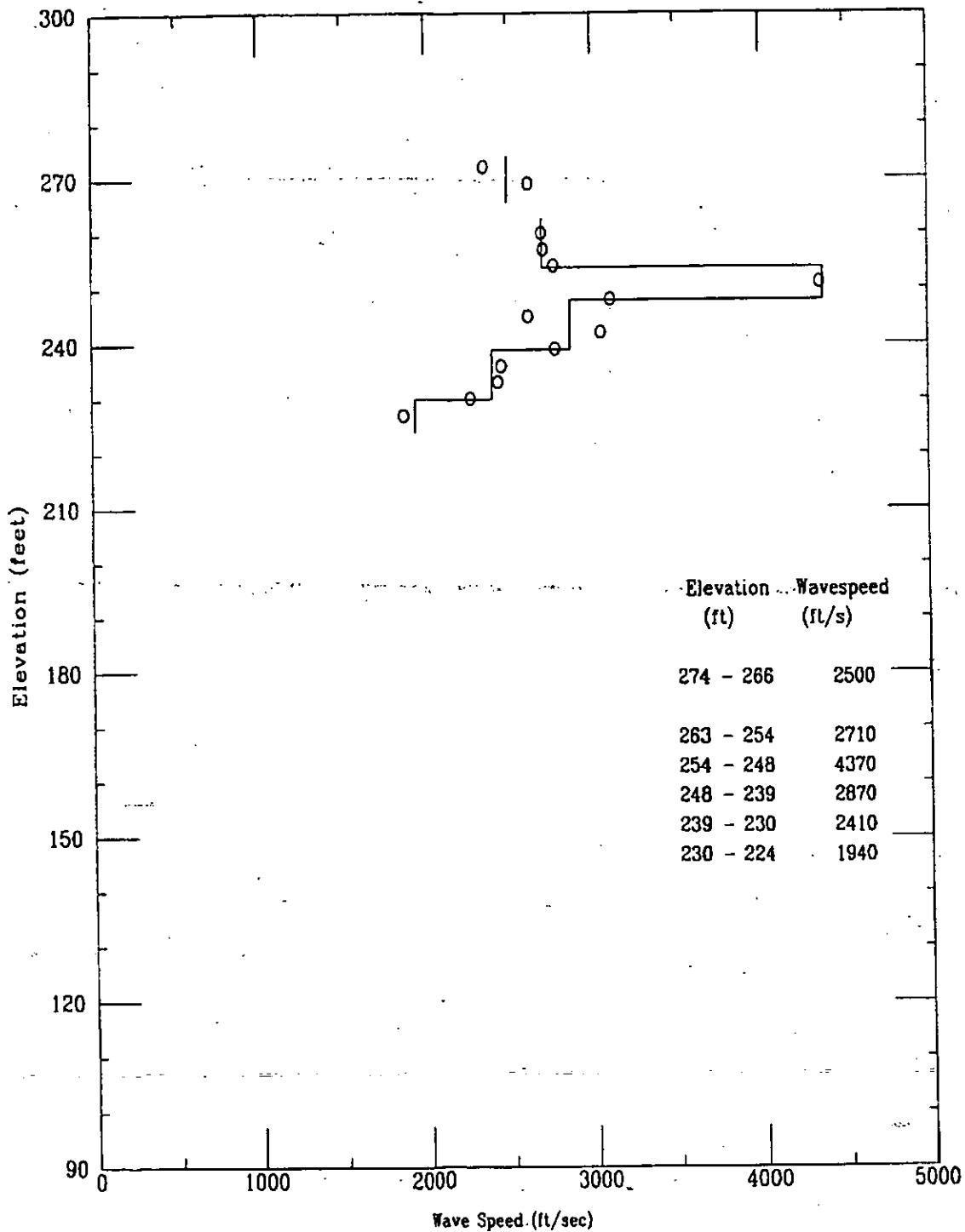
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CPT-148

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

02/27/98



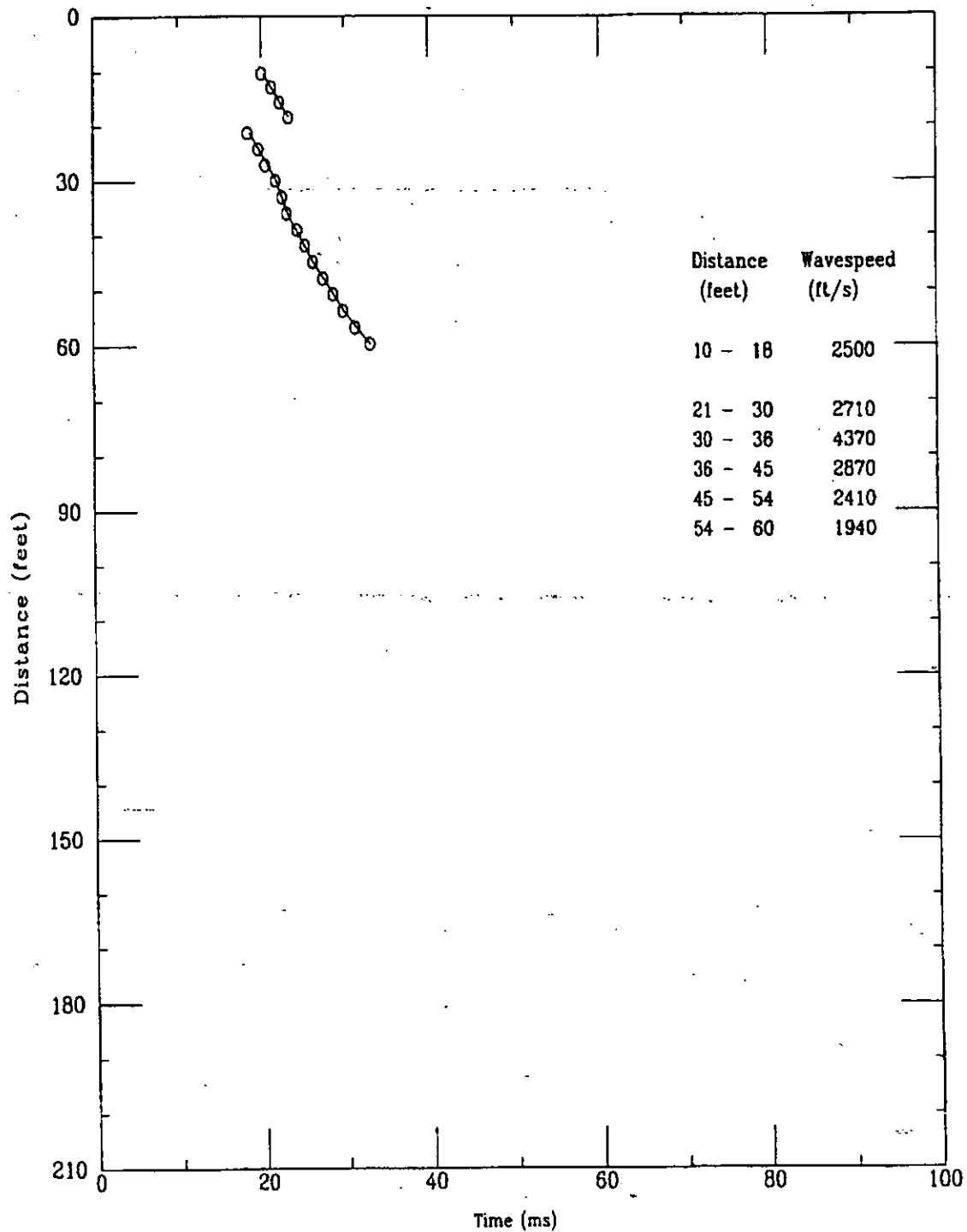
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R/O

CPT-148

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Compression Wave Time of Peak

02/27/98



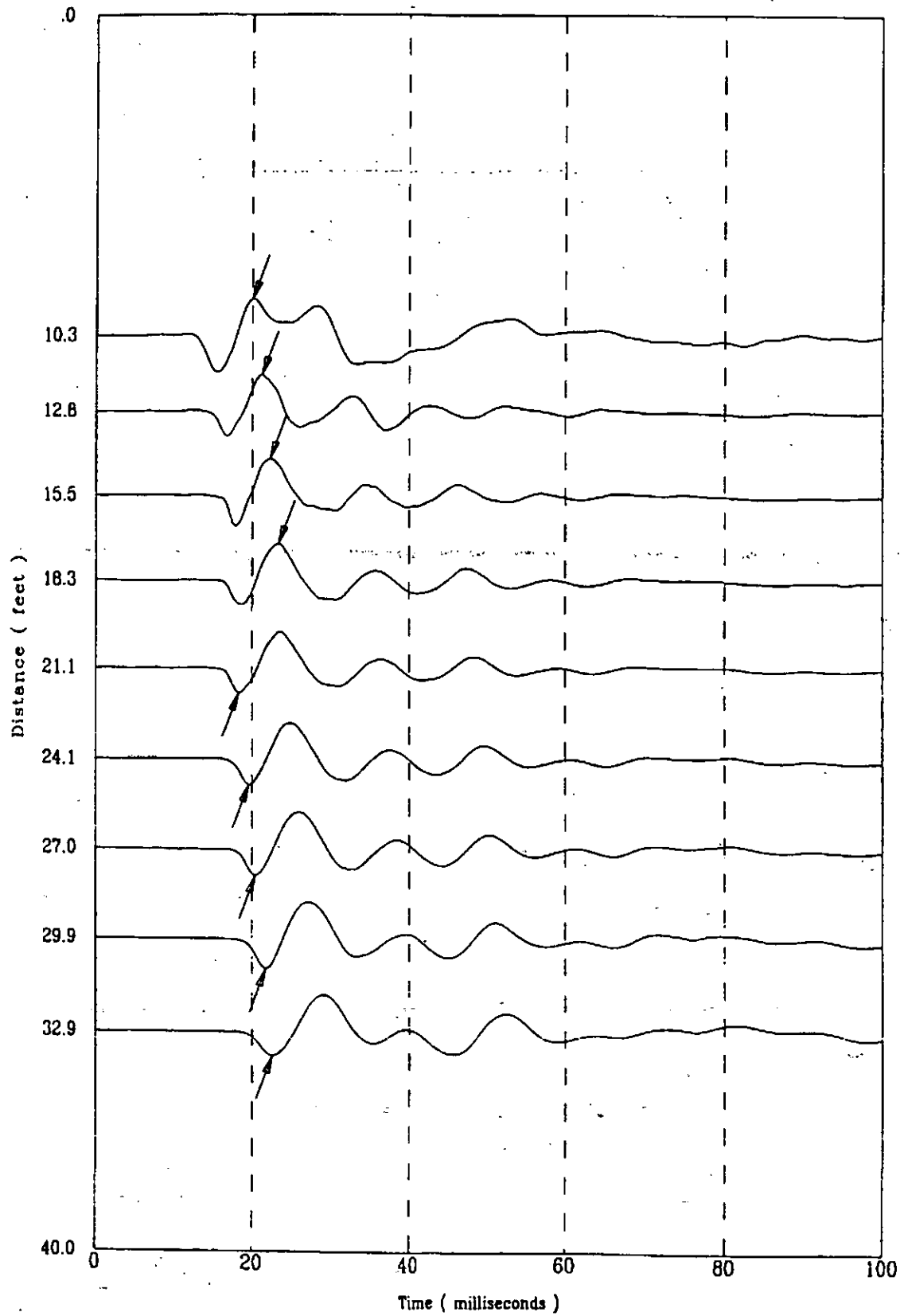
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175 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-148

P Wave  
02/27/98



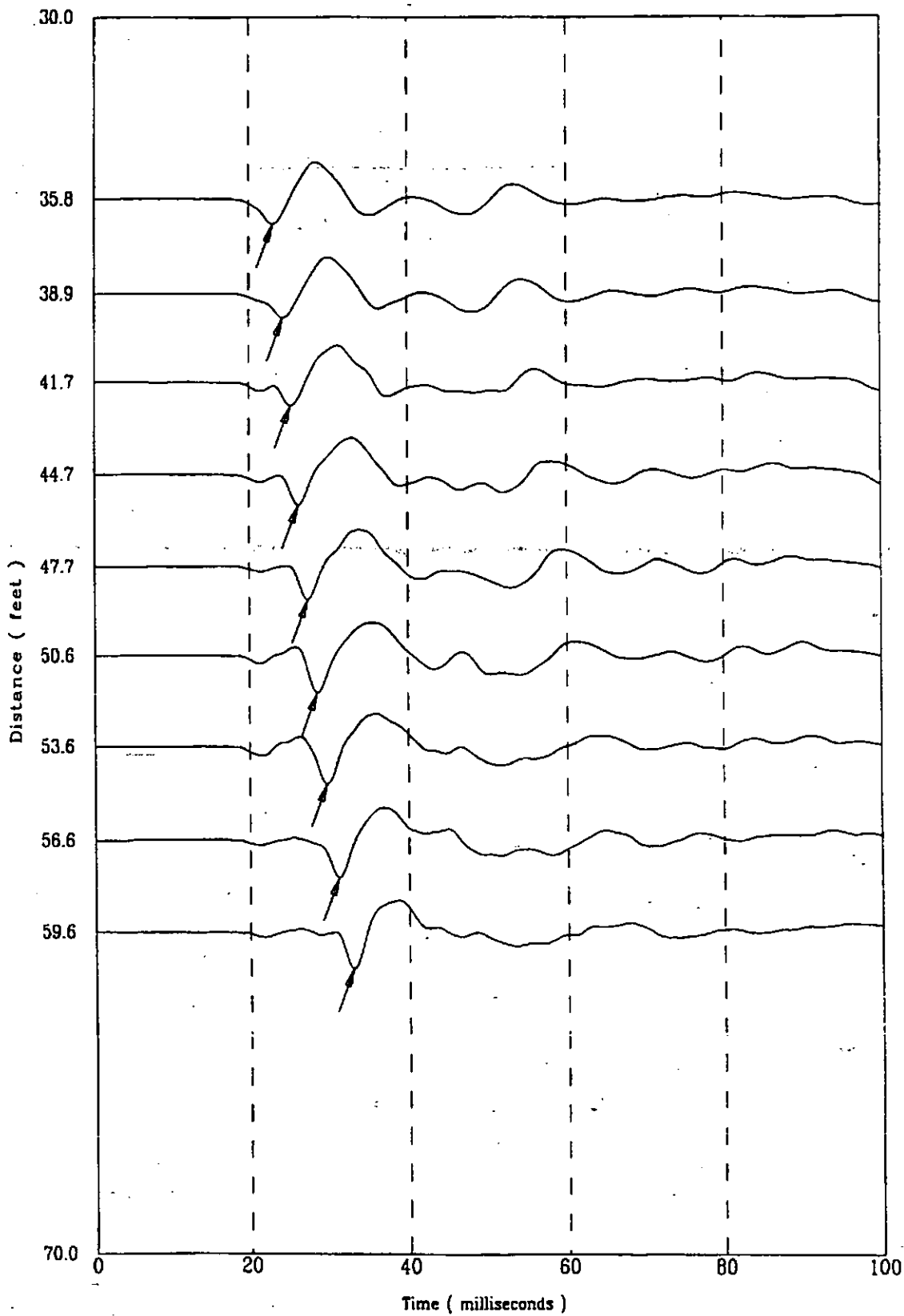
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-148

P Wave  
02/27/98



4271801S



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APPLIED RESEARCH ASSOCIATES, INC.

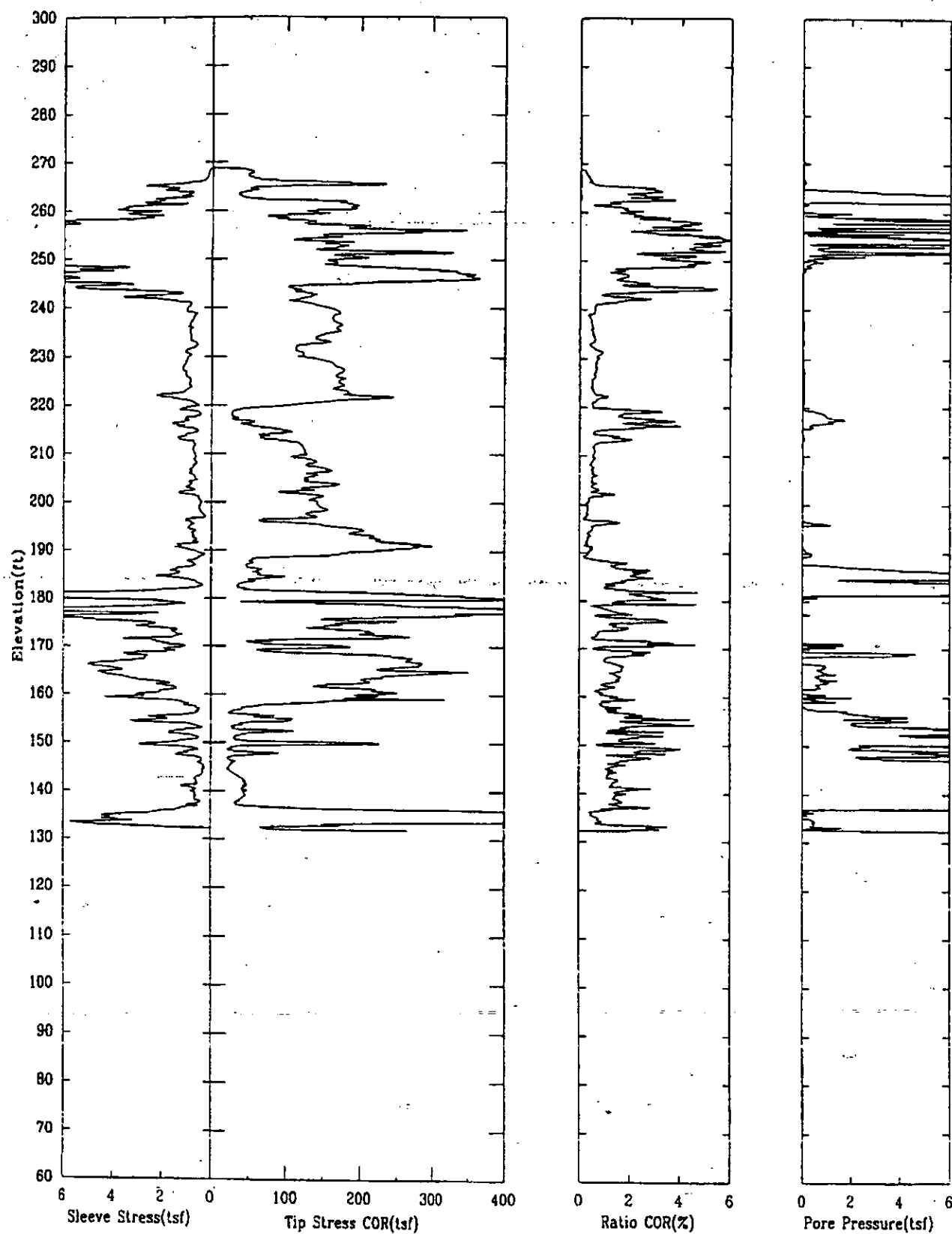
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03/04/98 R/O

North 79372.04

East 55517.96

Elevation 274.8



CPT-149

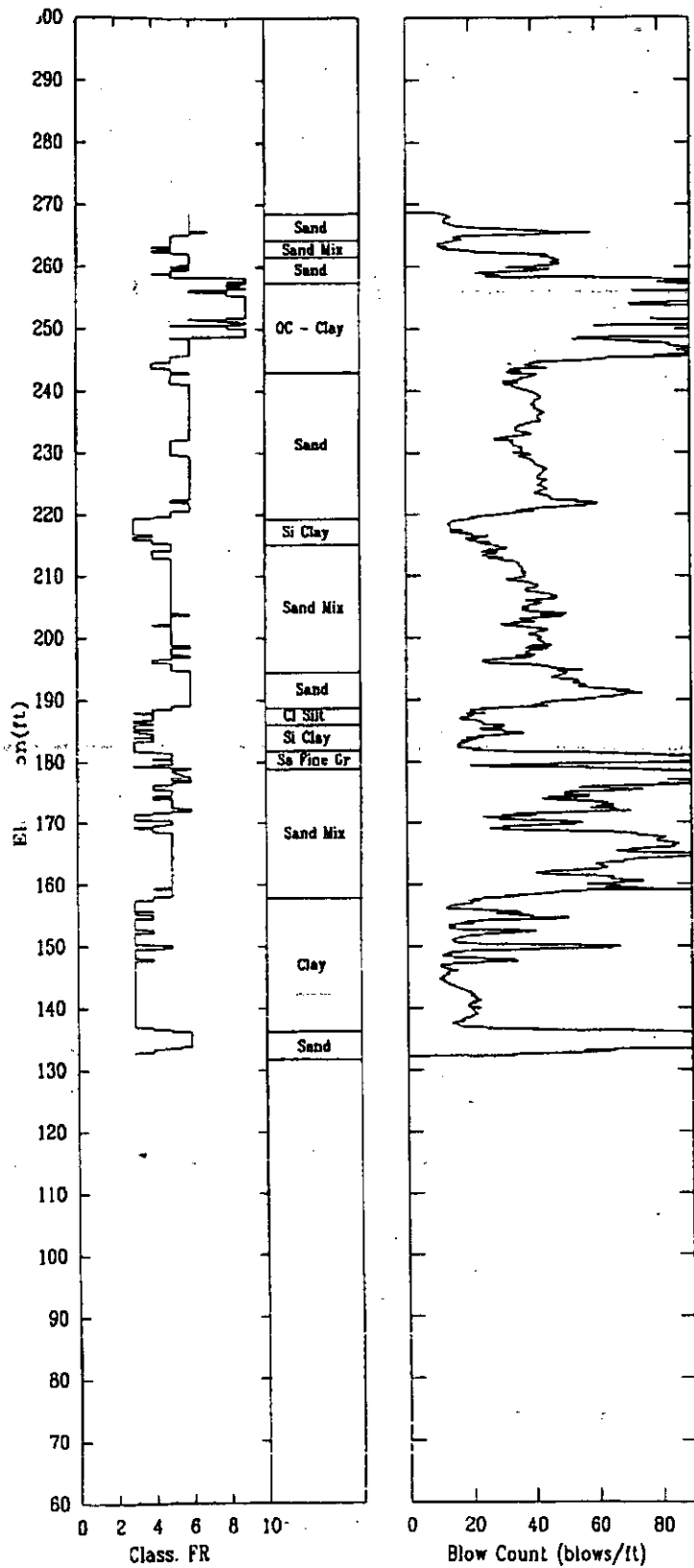
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03/04/98

North 79372.04

East 55517.96

Elevation 274.8

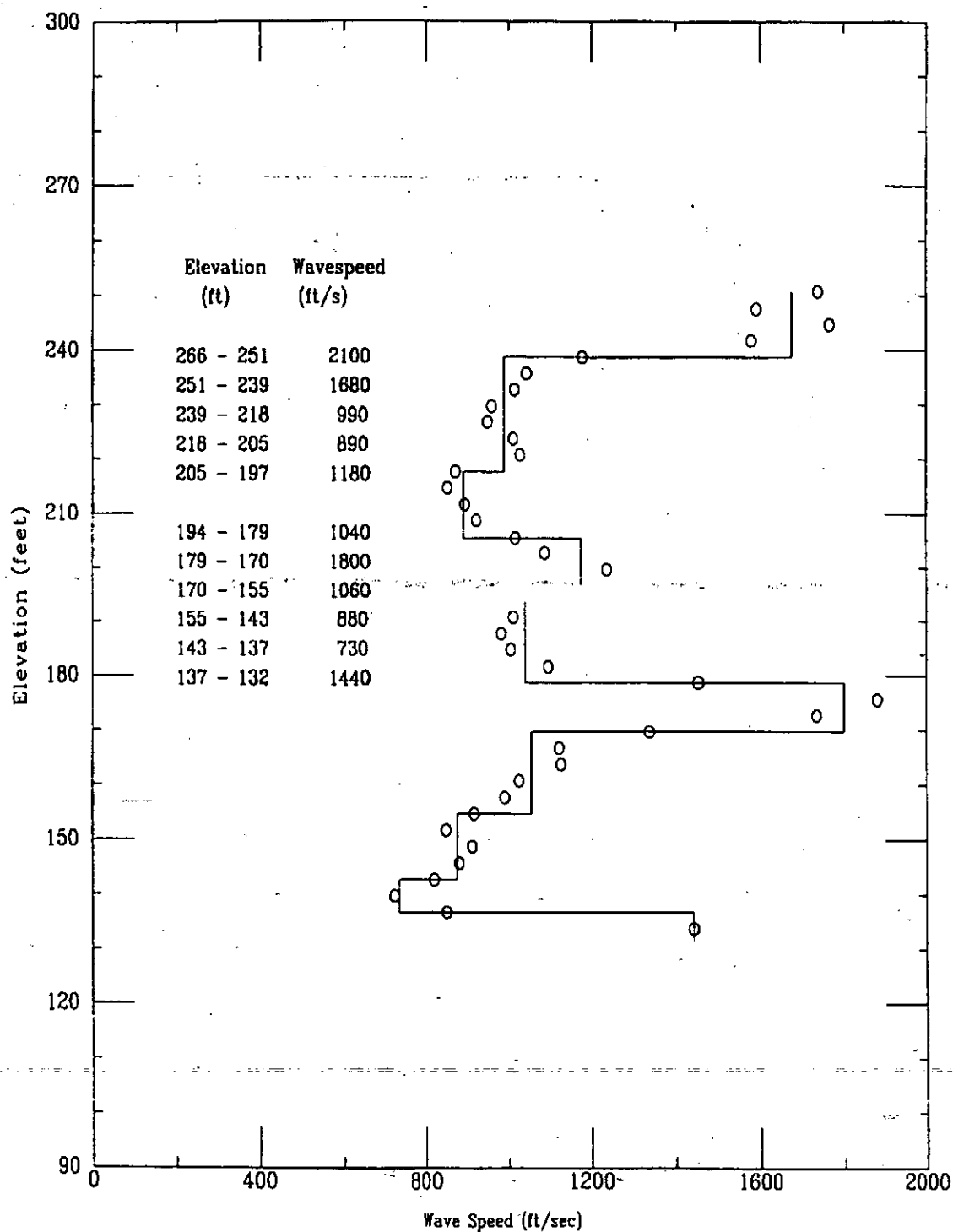


CPT-149

APPLIED RESEARCH ASSOCIATES, INC.

03/04/98

Shear Wave Speeds



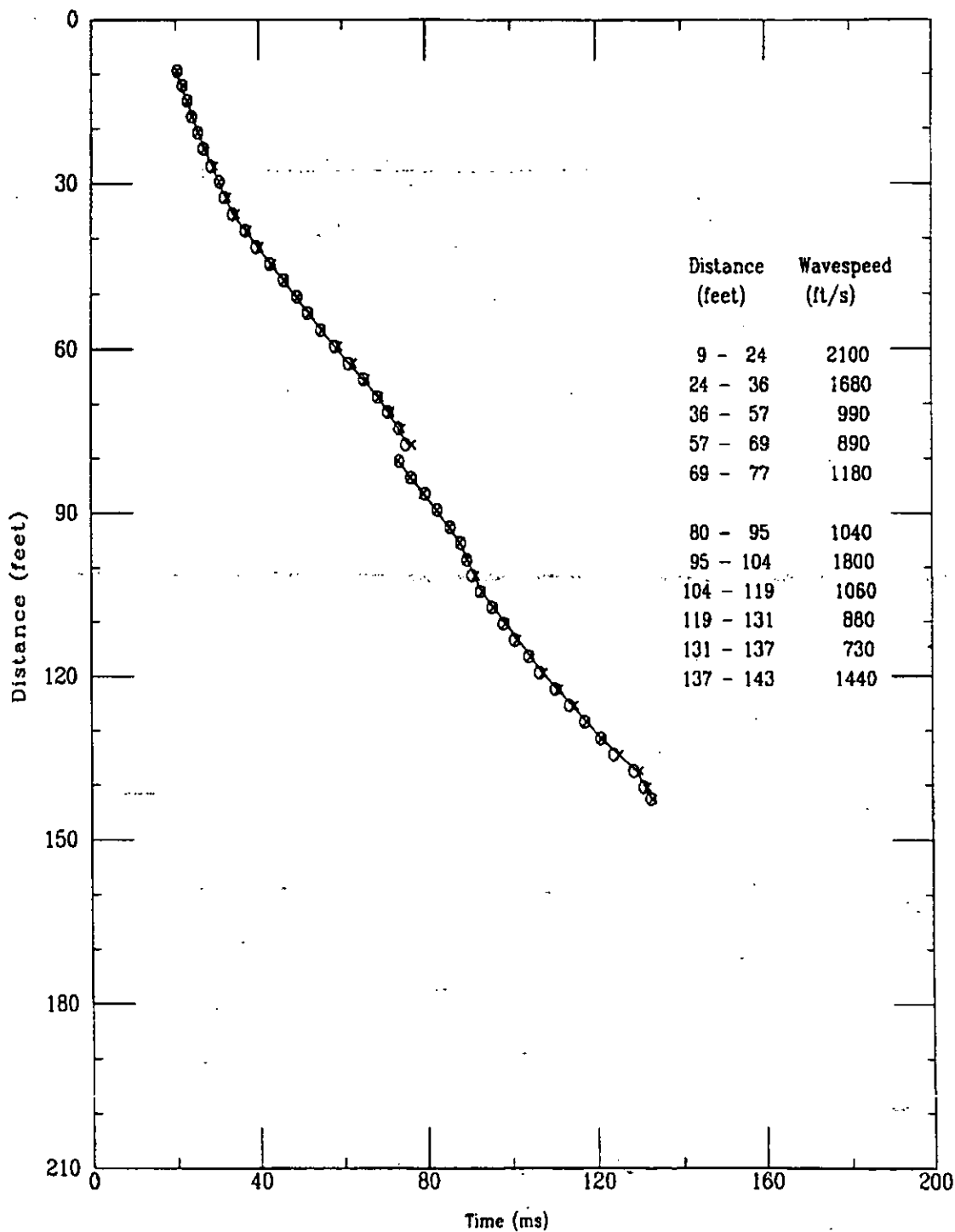
K-TRT-F-00001  
R/O

CPT-149

APPLIED-RESEARCH ASSOCIATES, INC.

03/04/98

Shear Wave Time of Peak



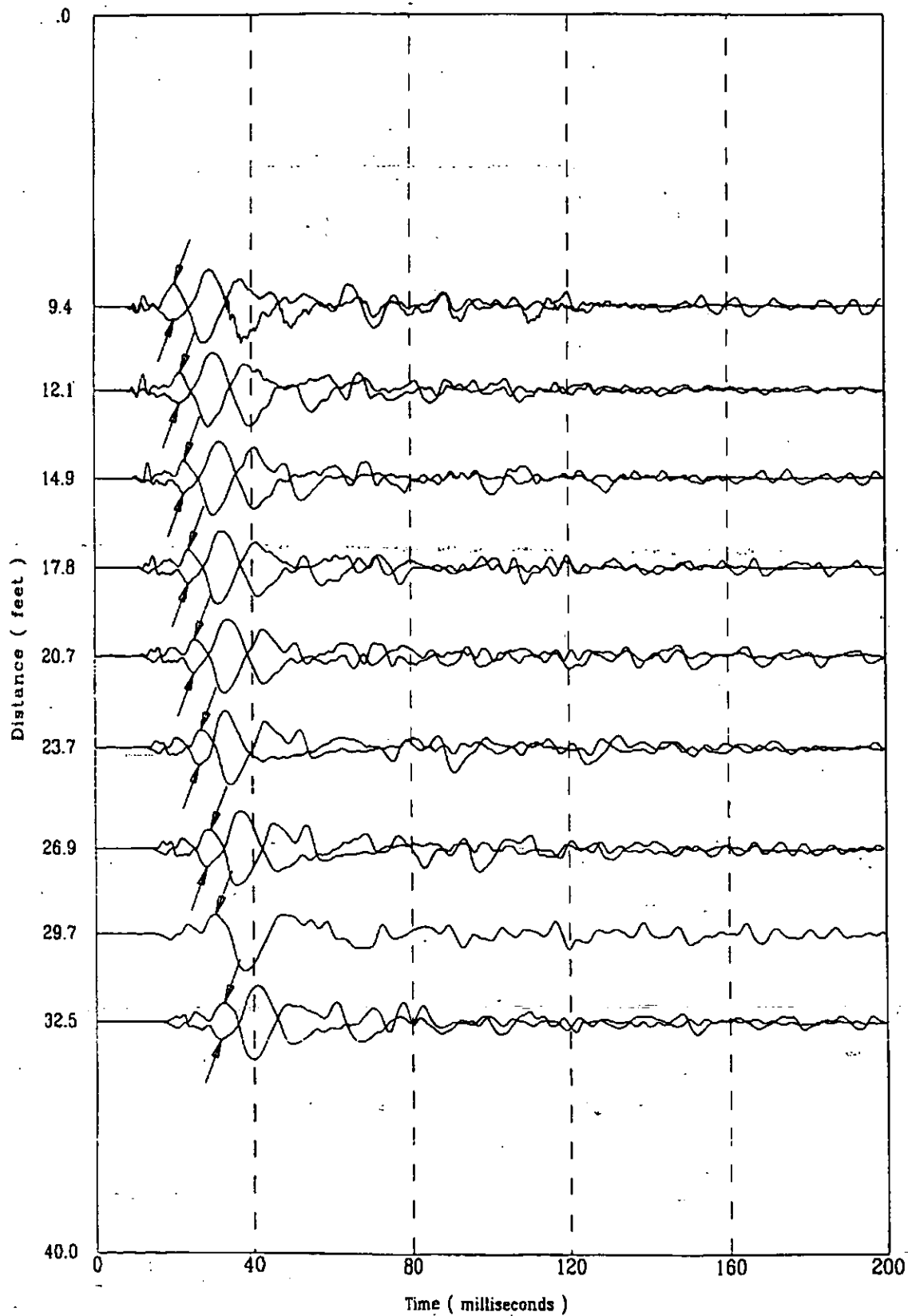
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-149

S Wave  
03/04/98



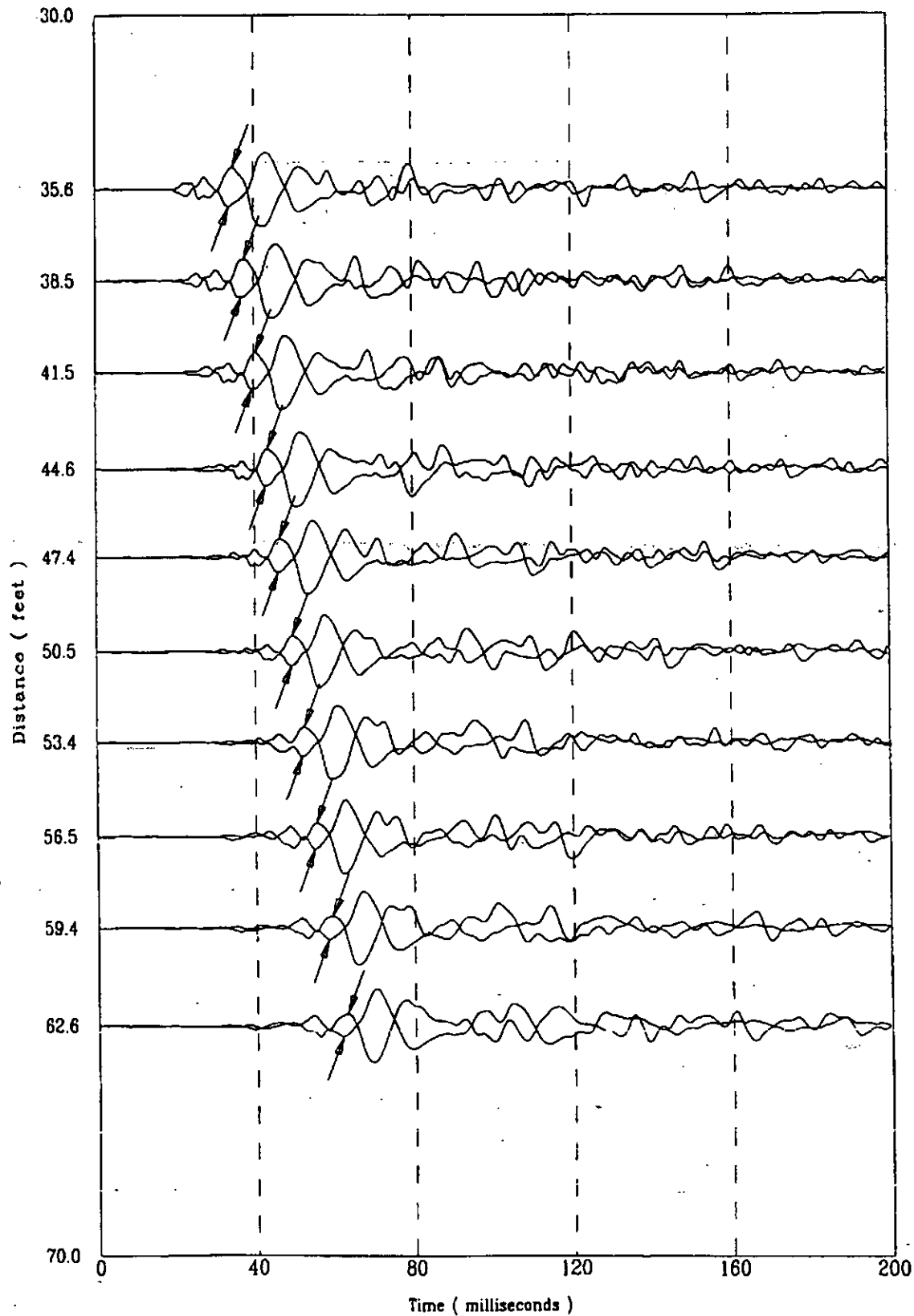
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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-149

S Wave  
03/04/98



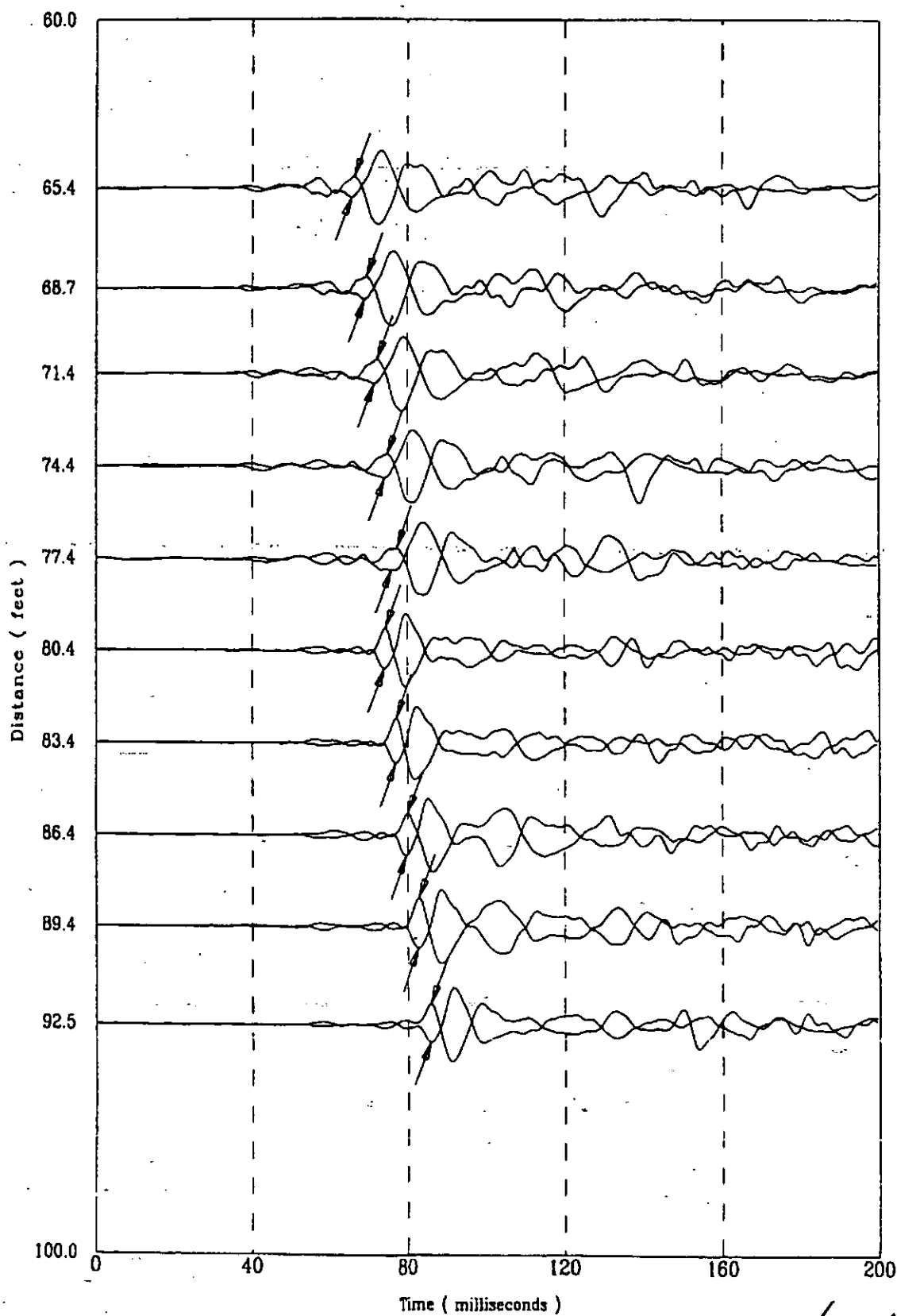
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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-149

S Wave  
03/04/98



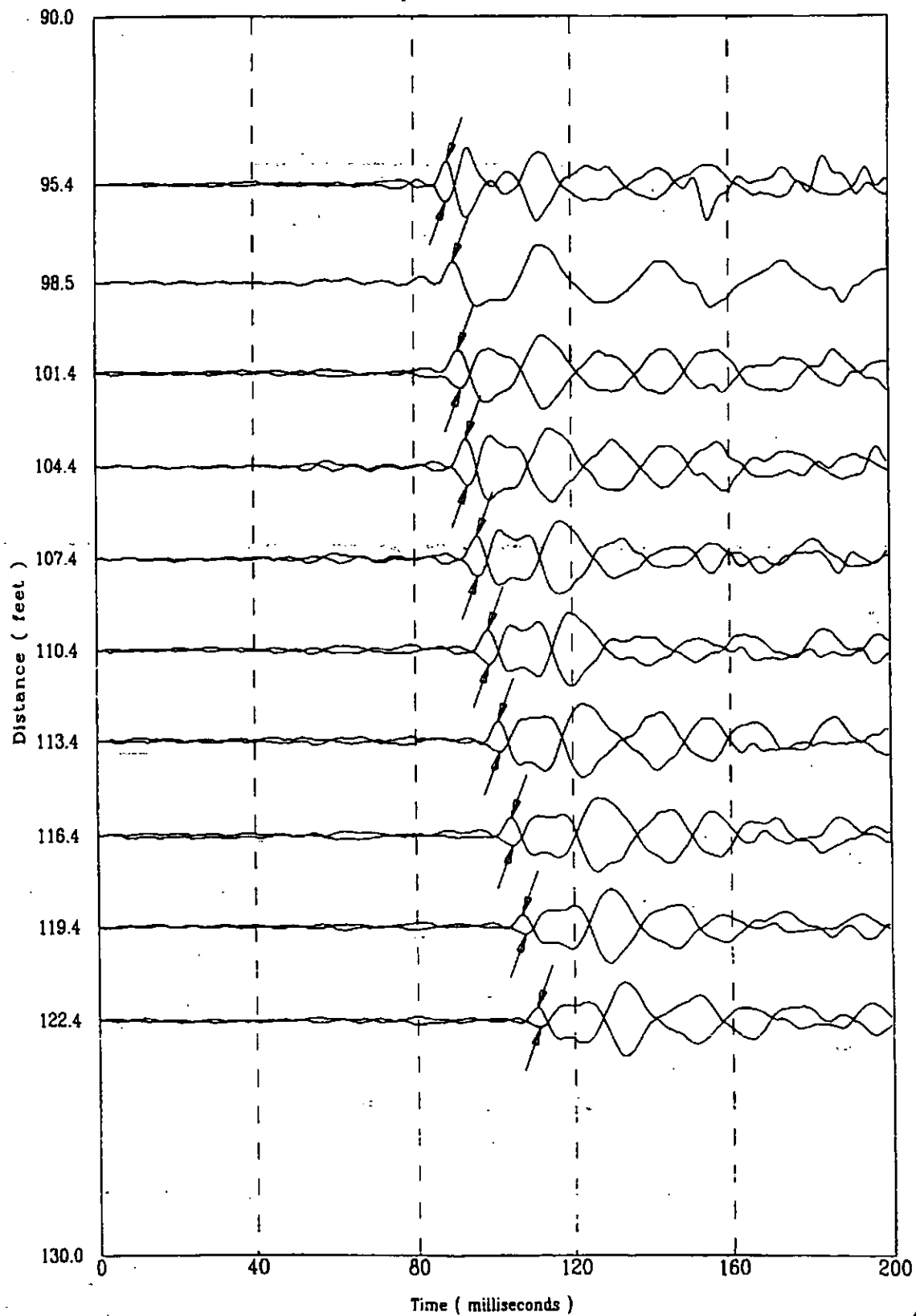
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-149

S Wave  
03/05/98



404m804S

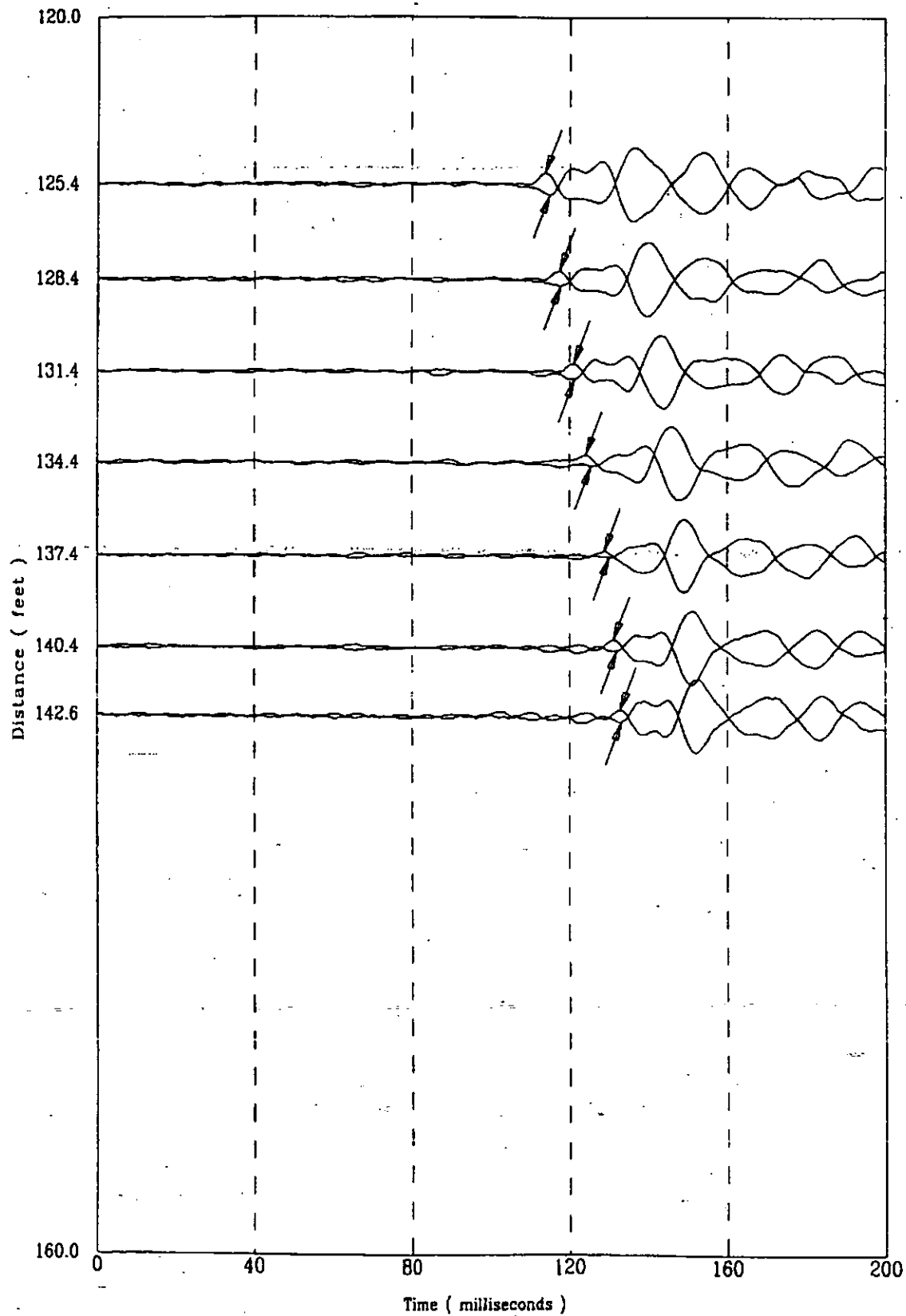
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-149

S Wave  
03/05/98



File 404m804S

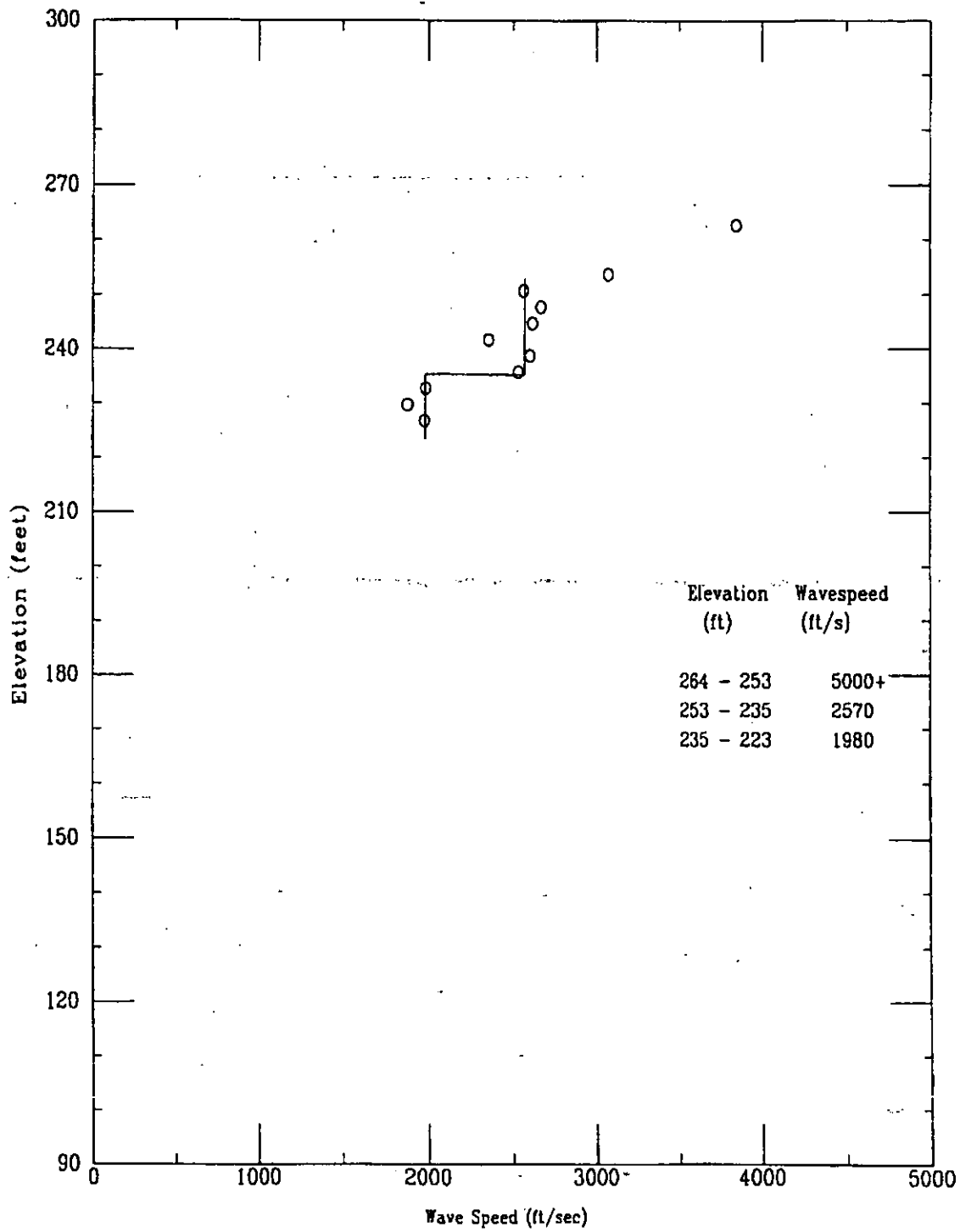
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CPT-149

APPLIED RESEARCH ASSOCIATES, INC.

03/30/98

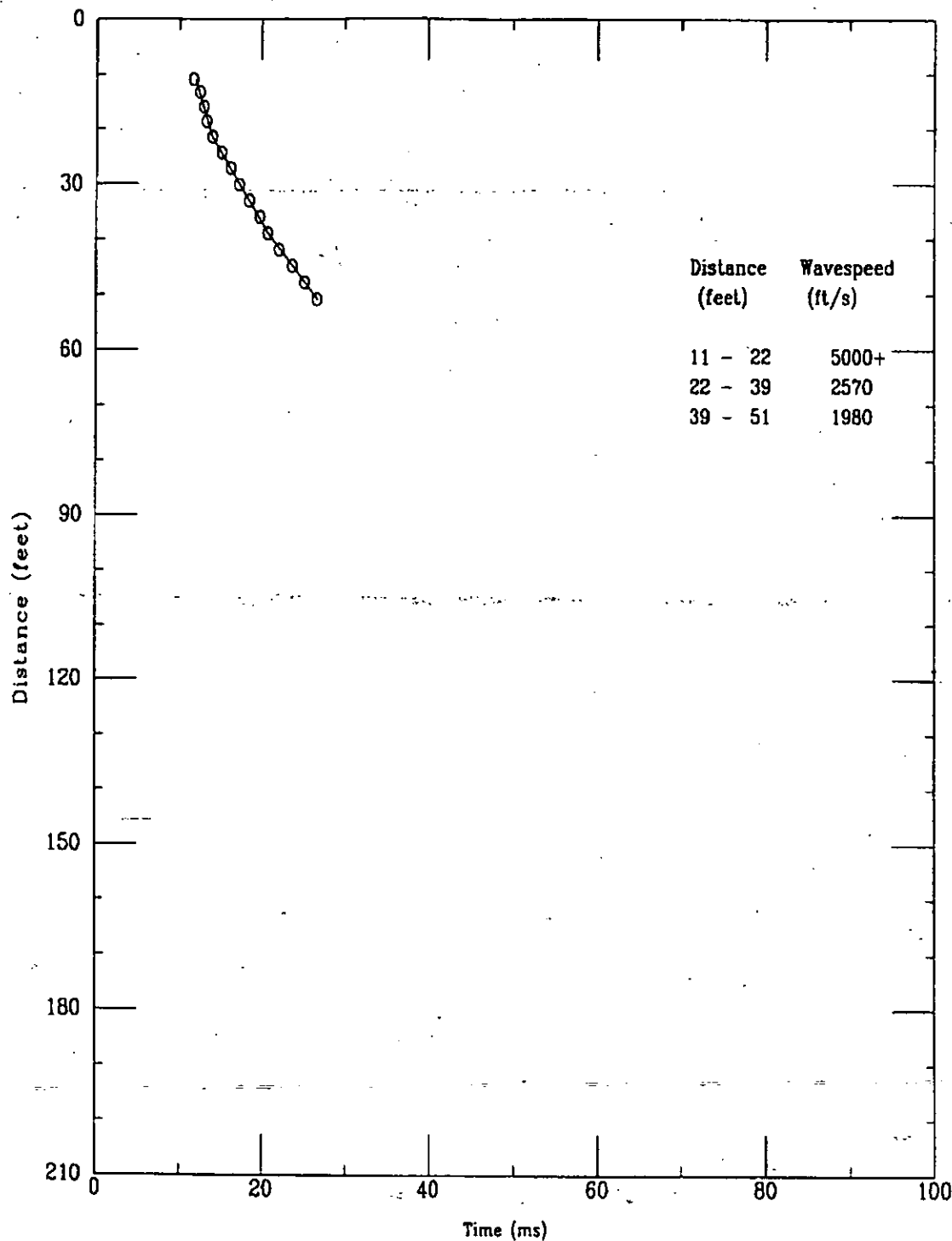
Compression Wave Speeds



CPT-149

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/30/98

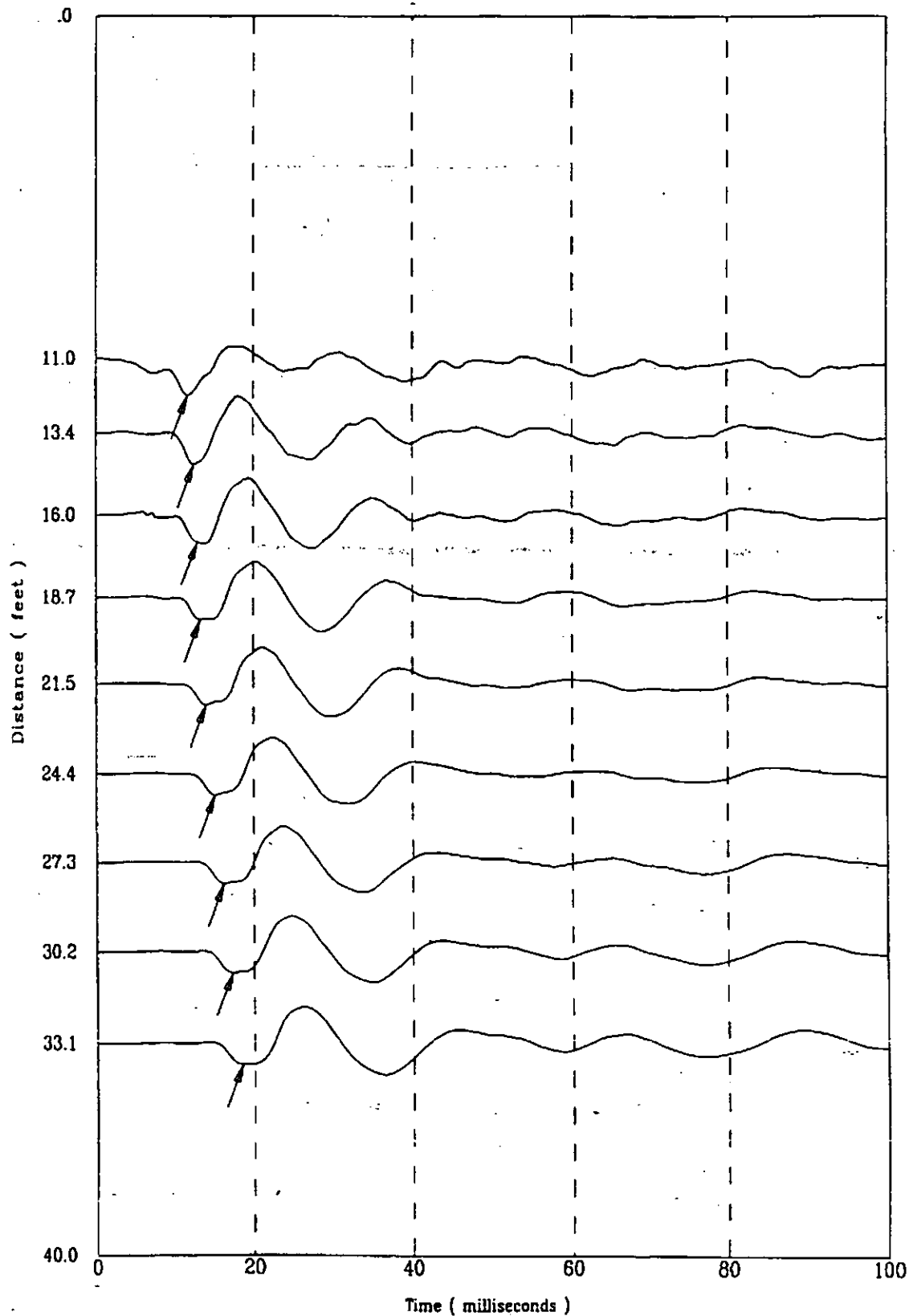


File 330m802S

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-149

P Wave  
03/30/98



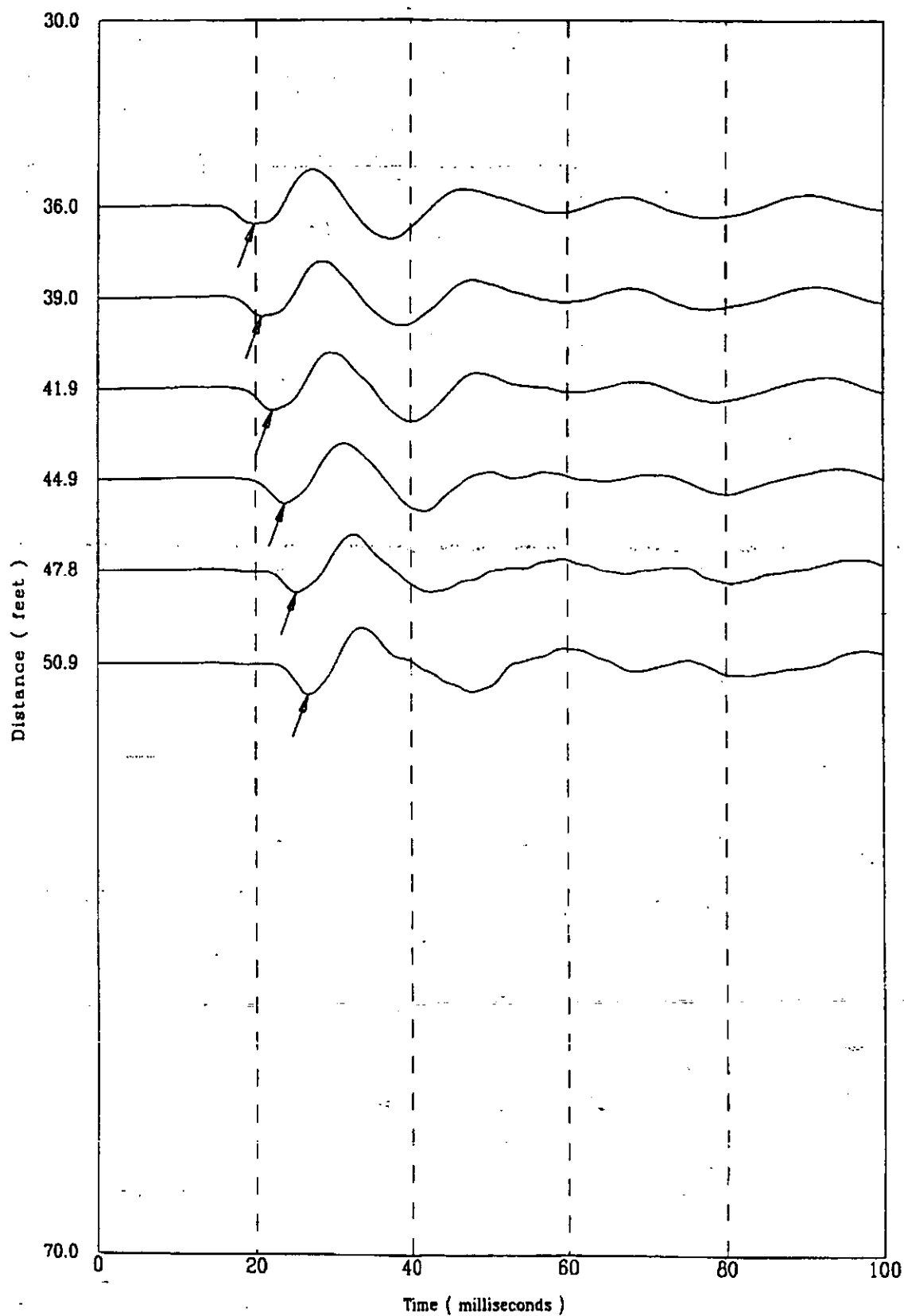
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-149

P Wave  
03/30/98



File 330m802S

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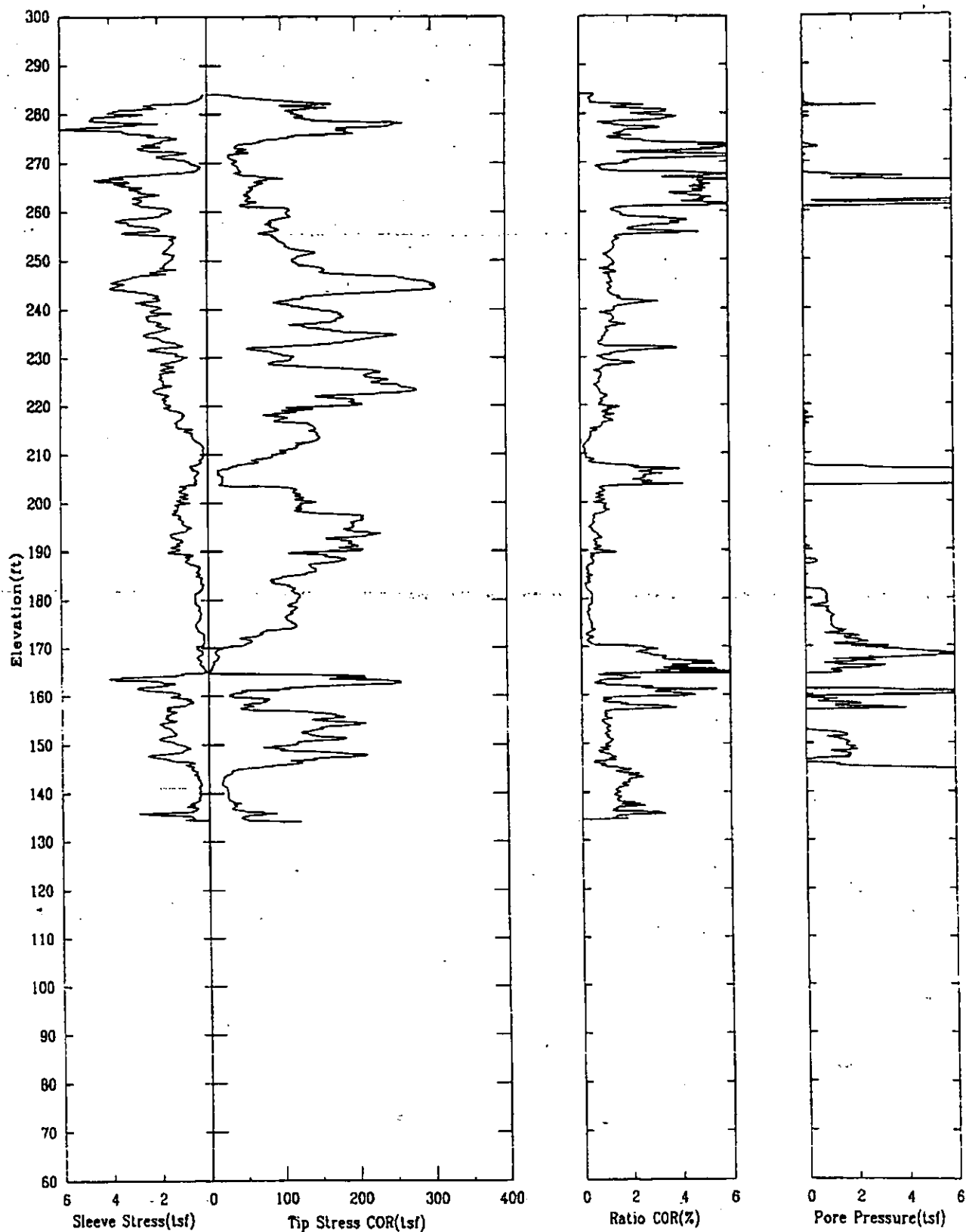
APPLIED RESEARCH ASSOCIATES, INC.

North 79305

East 55195

Elevation 290.1

K<sub>2</sub>TRT-F-00001  
02/24/98



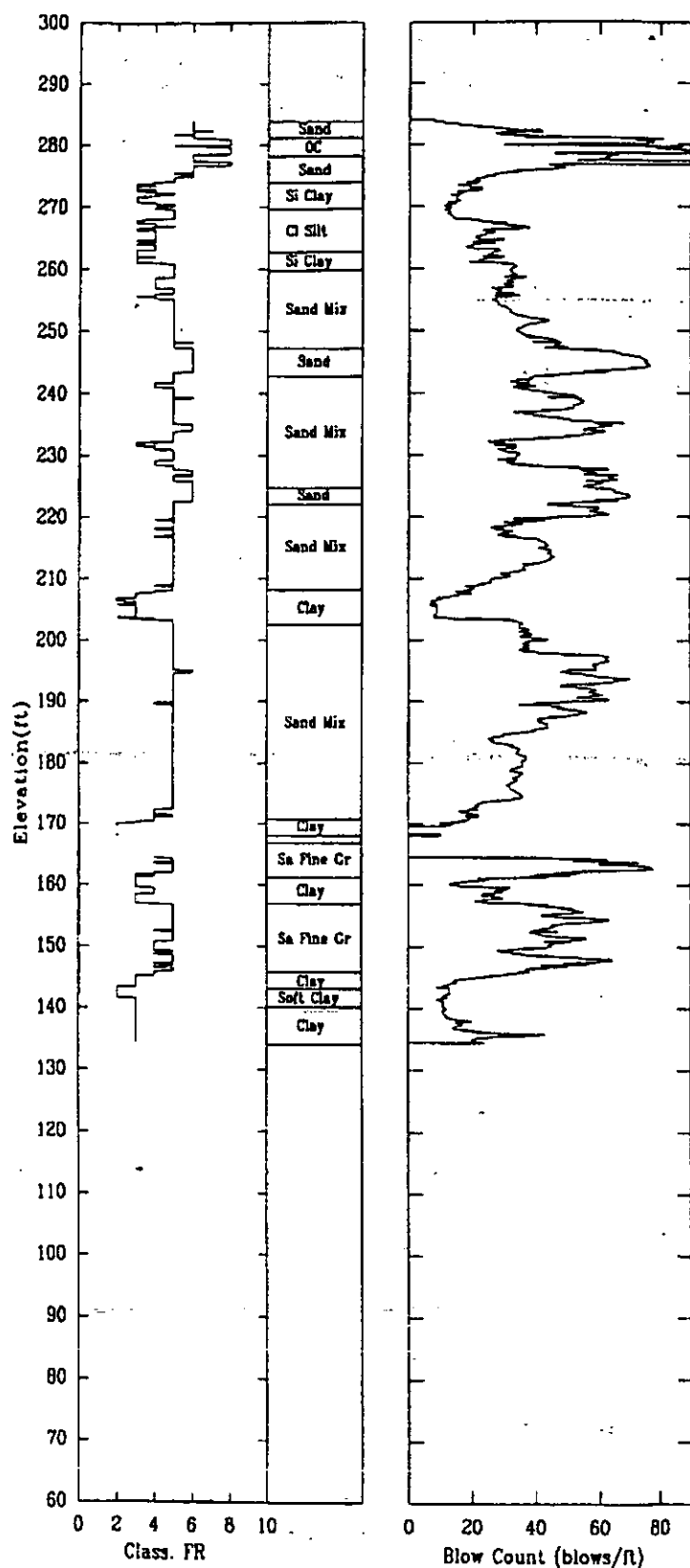
CPT-151

APPLIED RESEARCH ASSOCIATES, INC.

North 79305

East 55195

Elevation 290.1

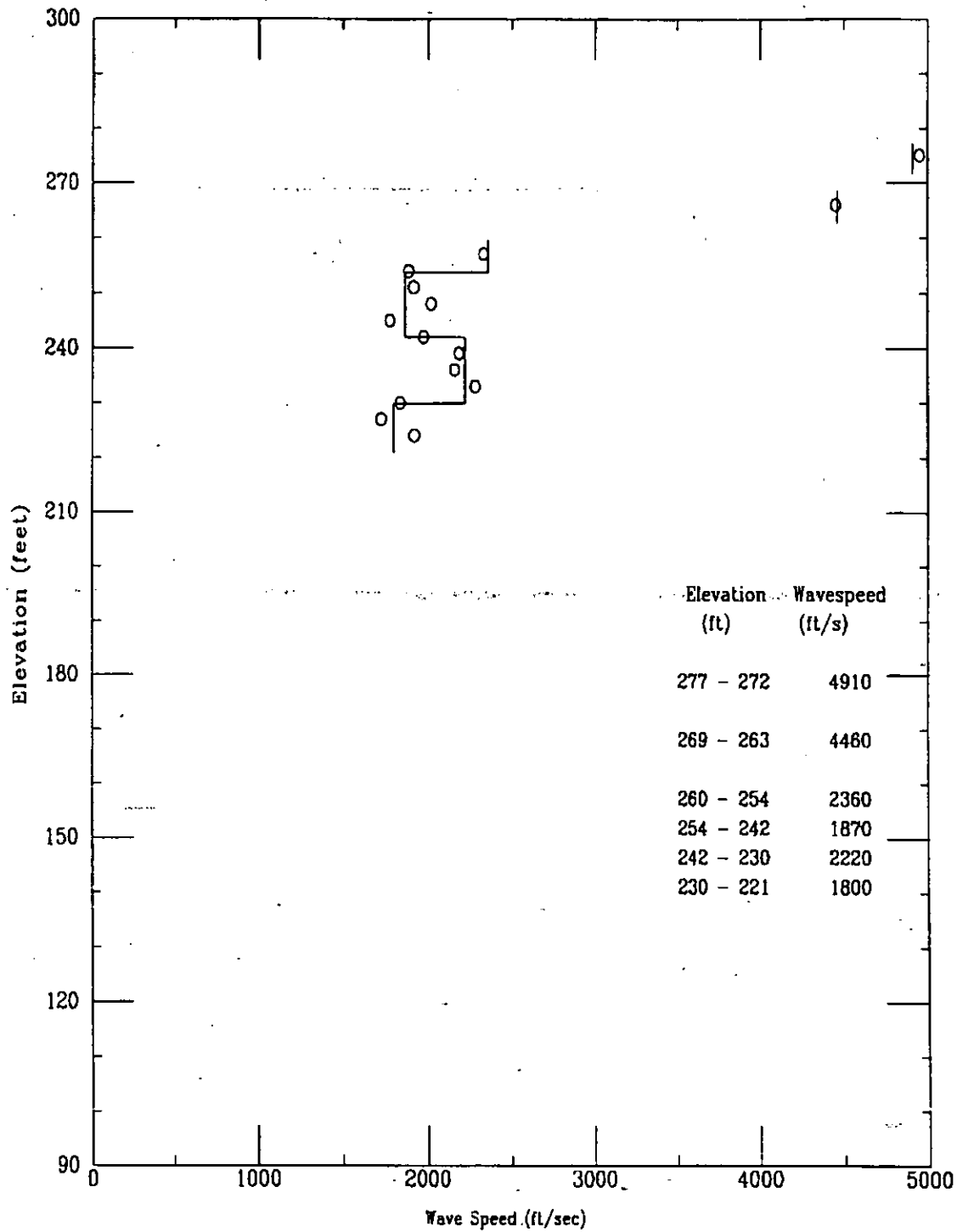
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02/24/98 R/O

CPT-151

APPLIED RESEARCH ASSOCIATES, INC.

02/24/98

Compression Wave Speeds

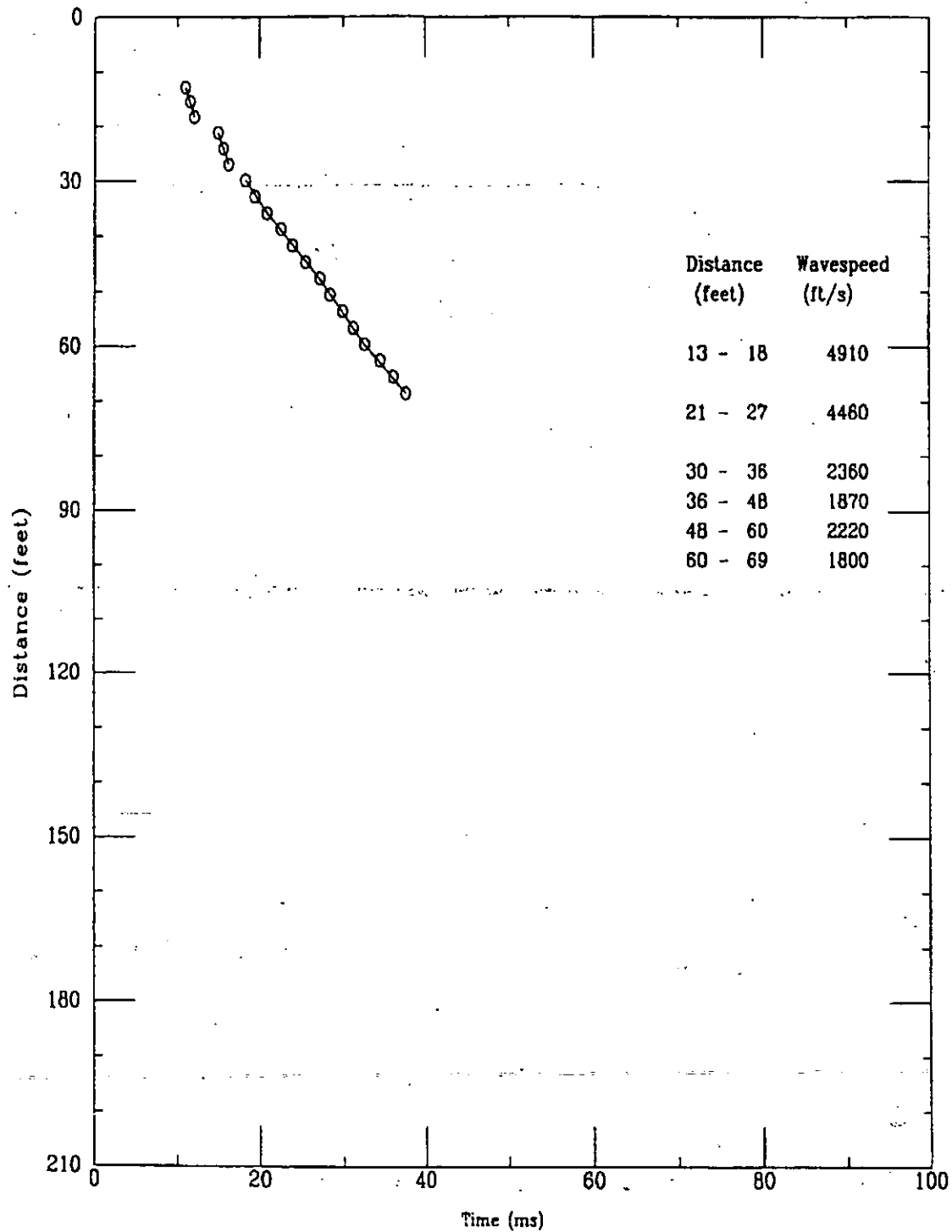




CPT-151

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

02/24/98

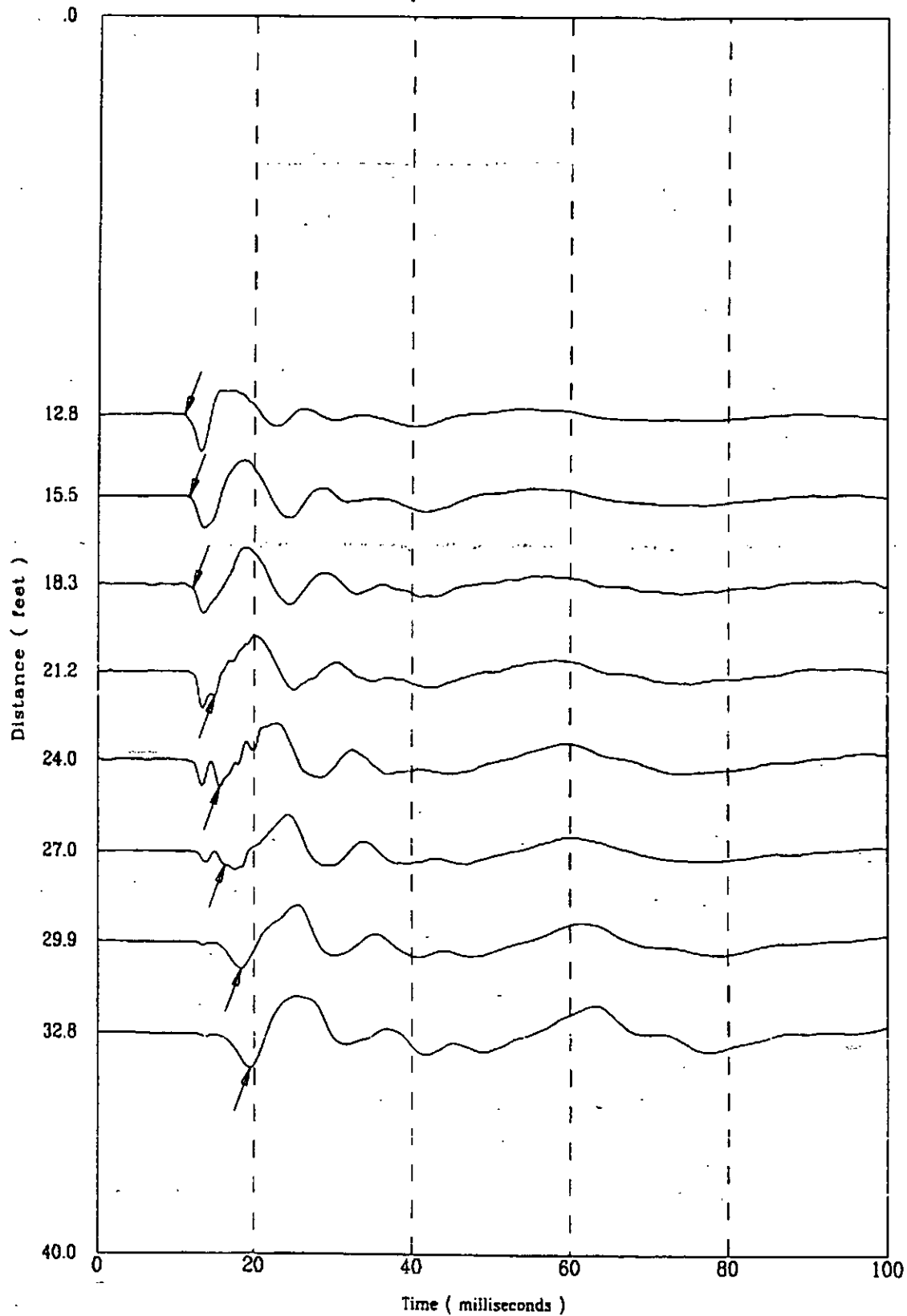


File 424f804S

K-TRT-F-00001  
R/o

Applied Research Associates  
CPT-151

P Wave  
02/24/98



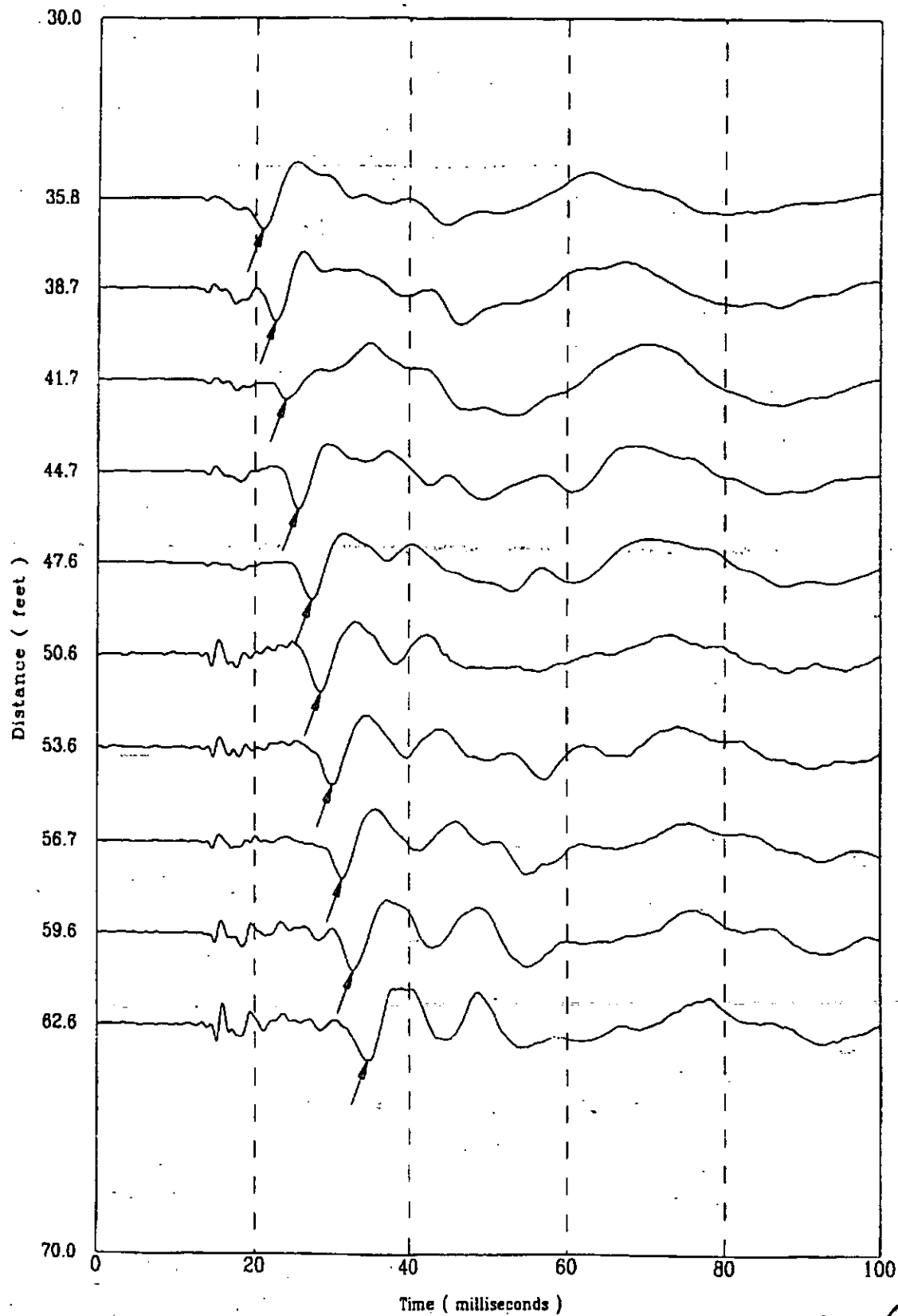
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K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-151

P Wave  
02/24/98



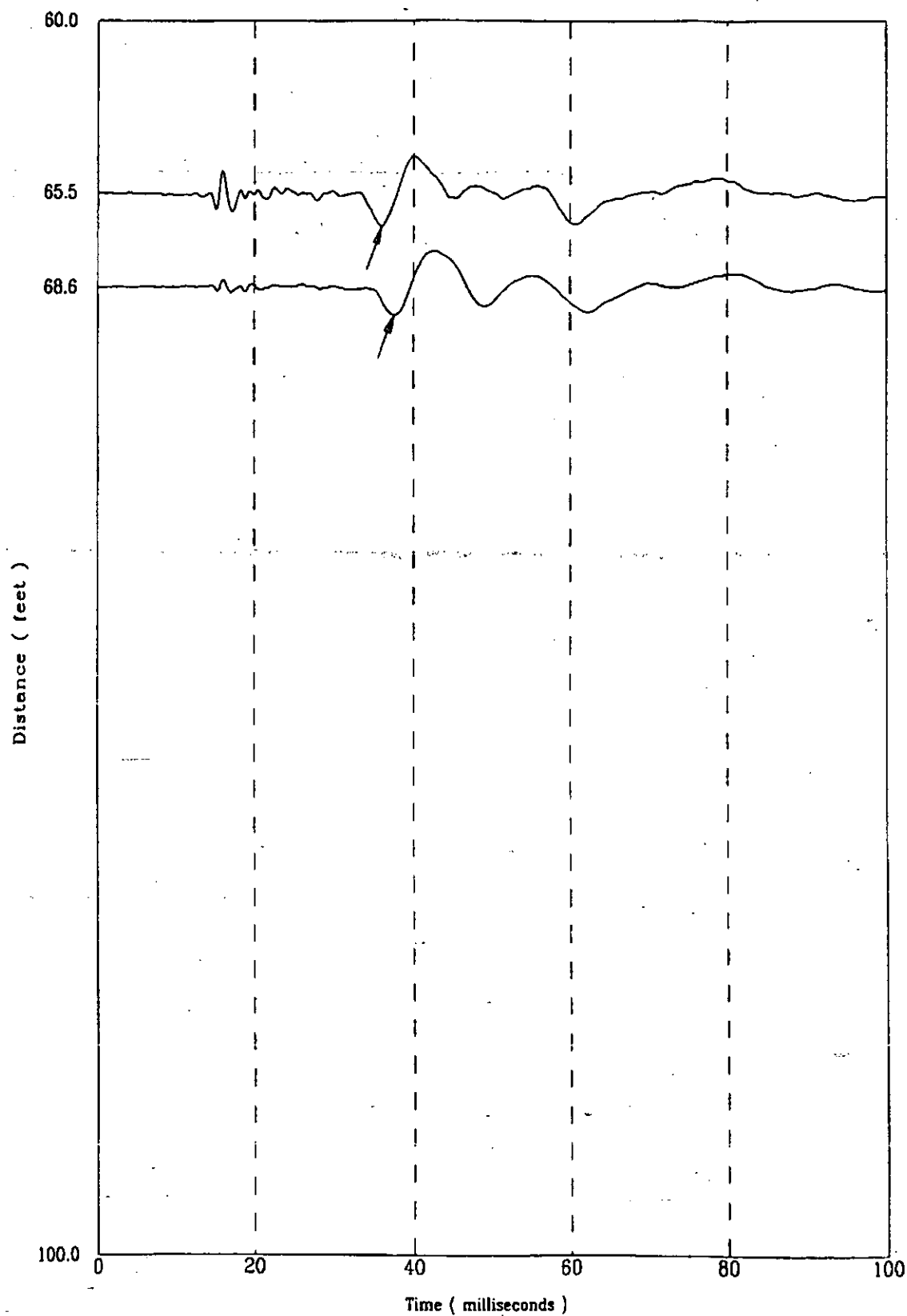
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K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-151

P Wave  
02/24/98



4241804S

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CPT-155

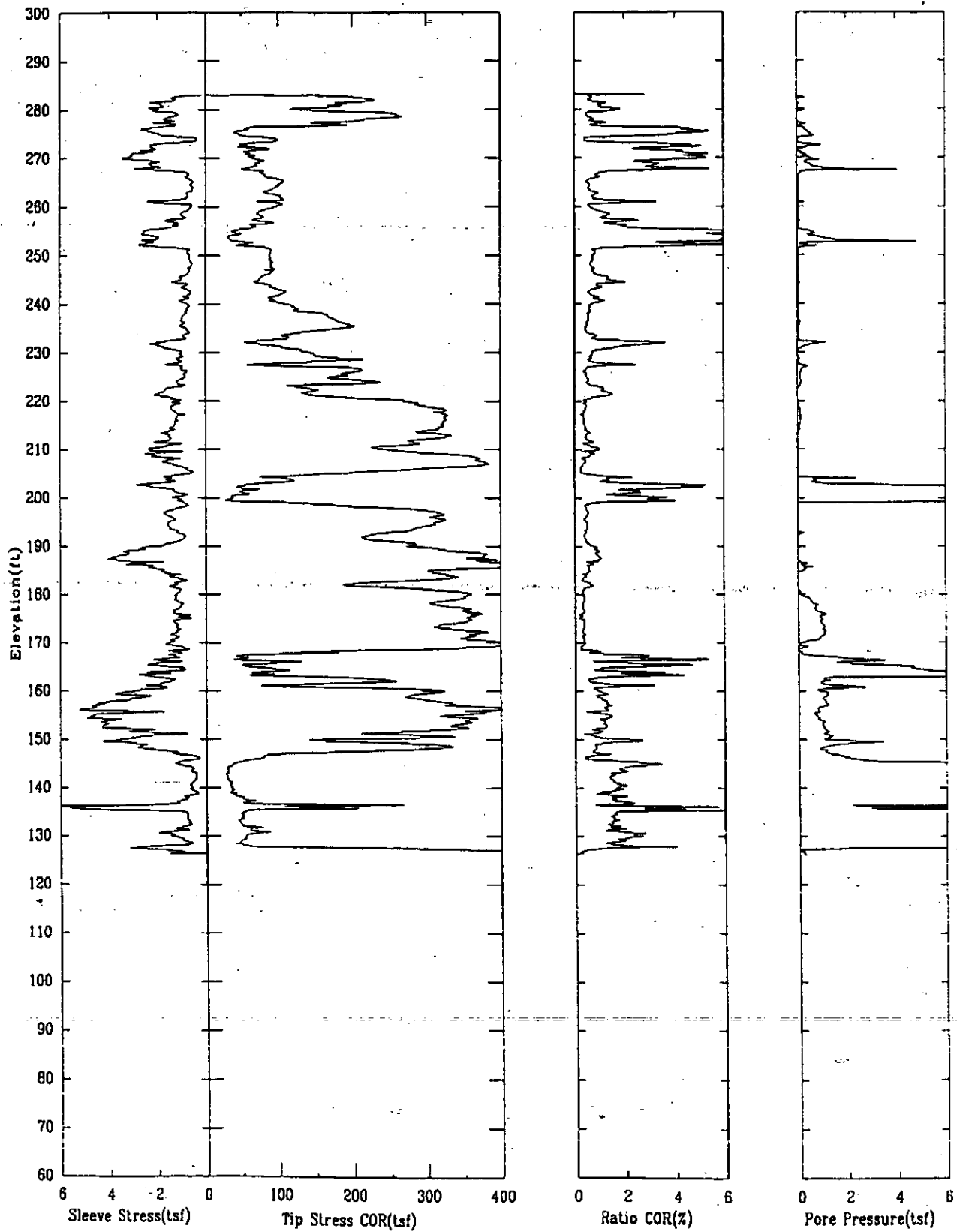
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K-TRT-F-00001  
02/18/98 R/O

North 79245.0

East 55261.0

Elevation 289.1



CPT-155

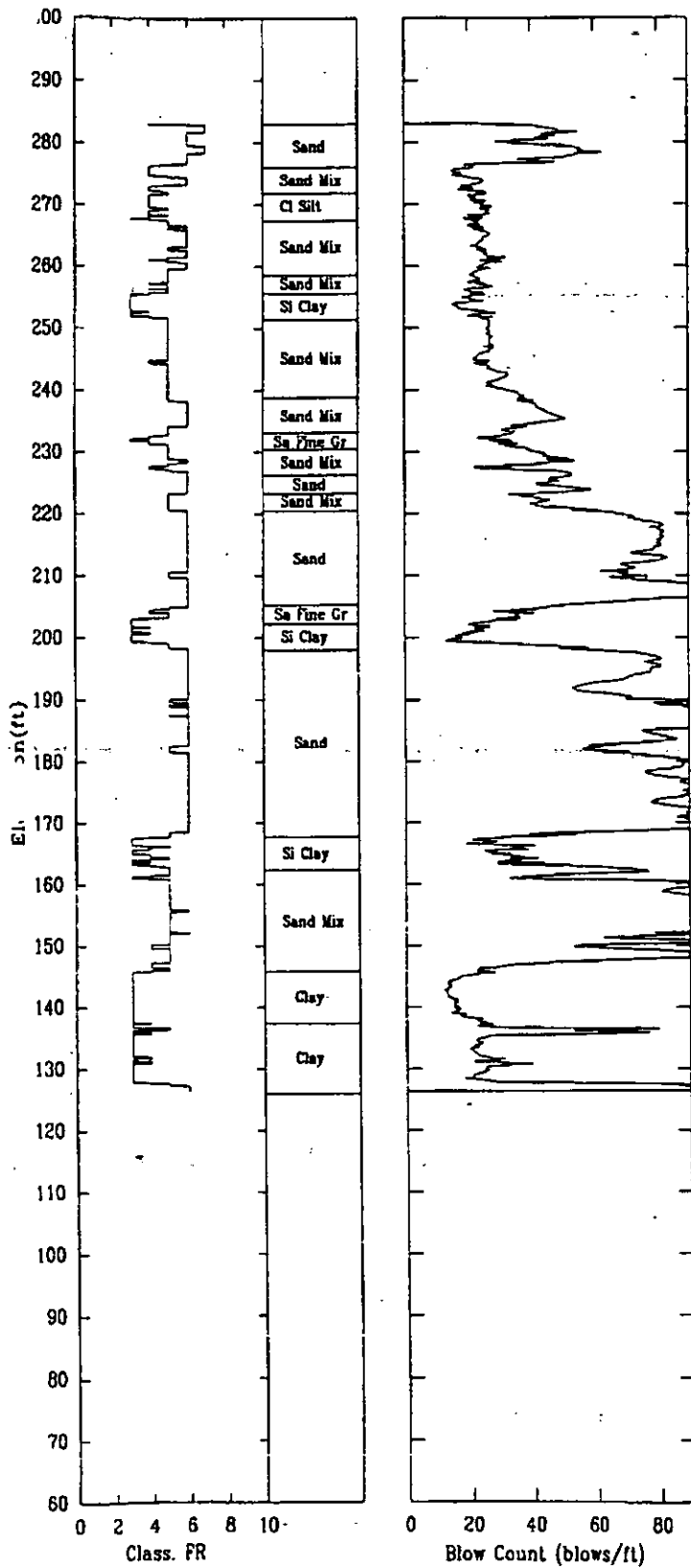
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K<sub>02</sub>TRTF-00001  
02/18/98 R/o

North 79245.0

East 55261.0

Elevation 289.1

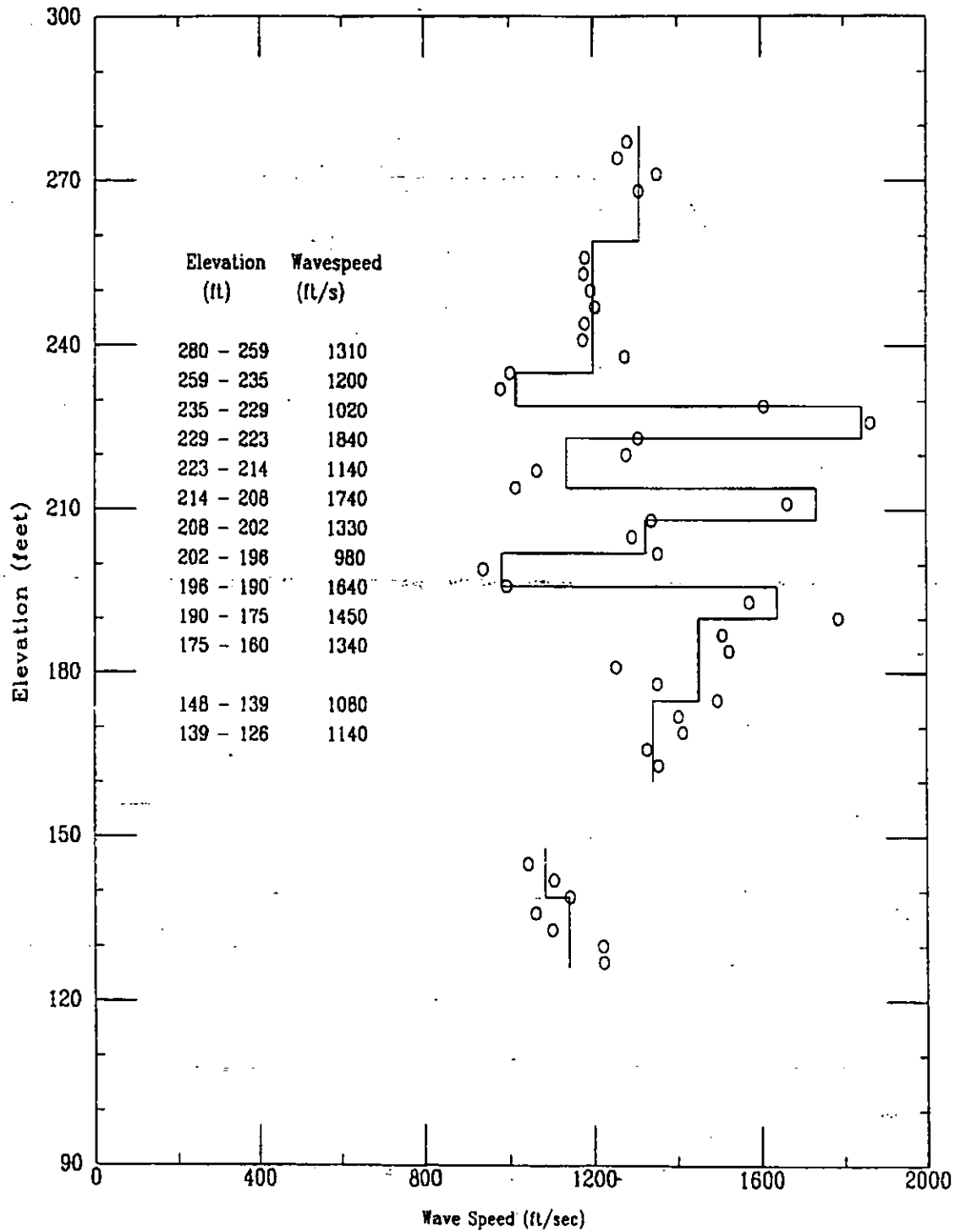


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APPLIED RESEARCH ASSOCIATES, INC.

02/18/98

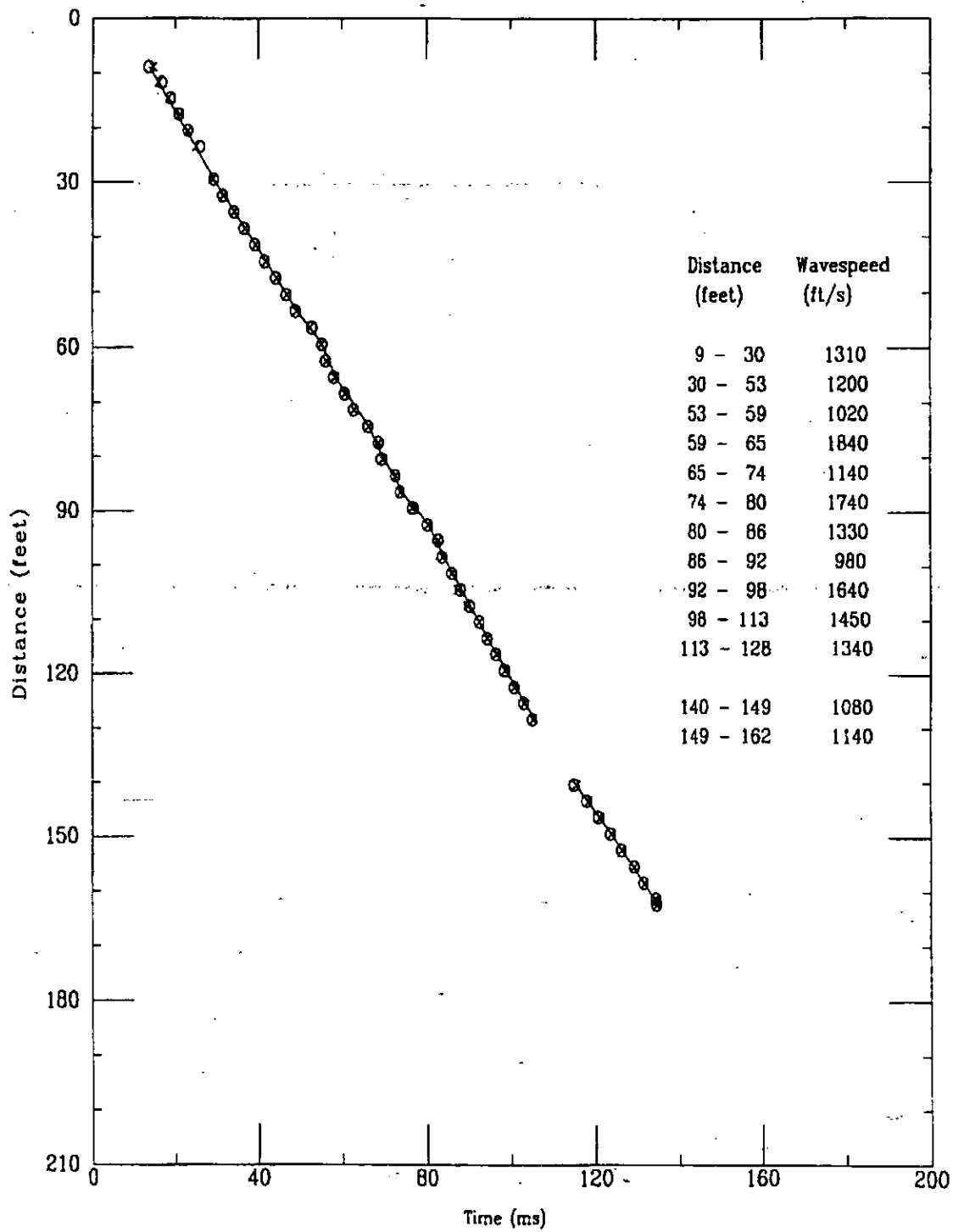
Shear Wave Speeds



CPT-155

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

02/18/98



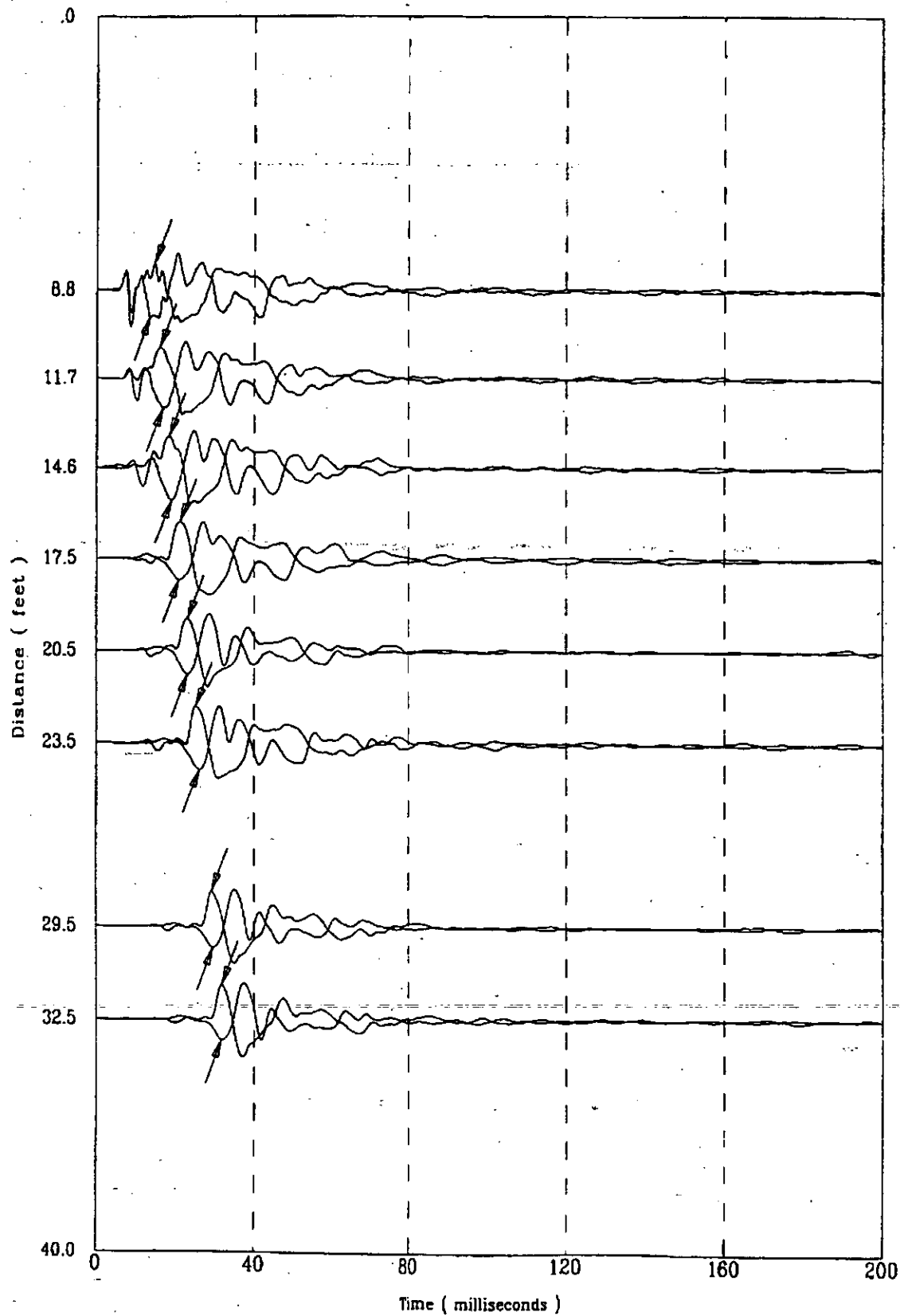
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-155

S Wave  
02/18/98



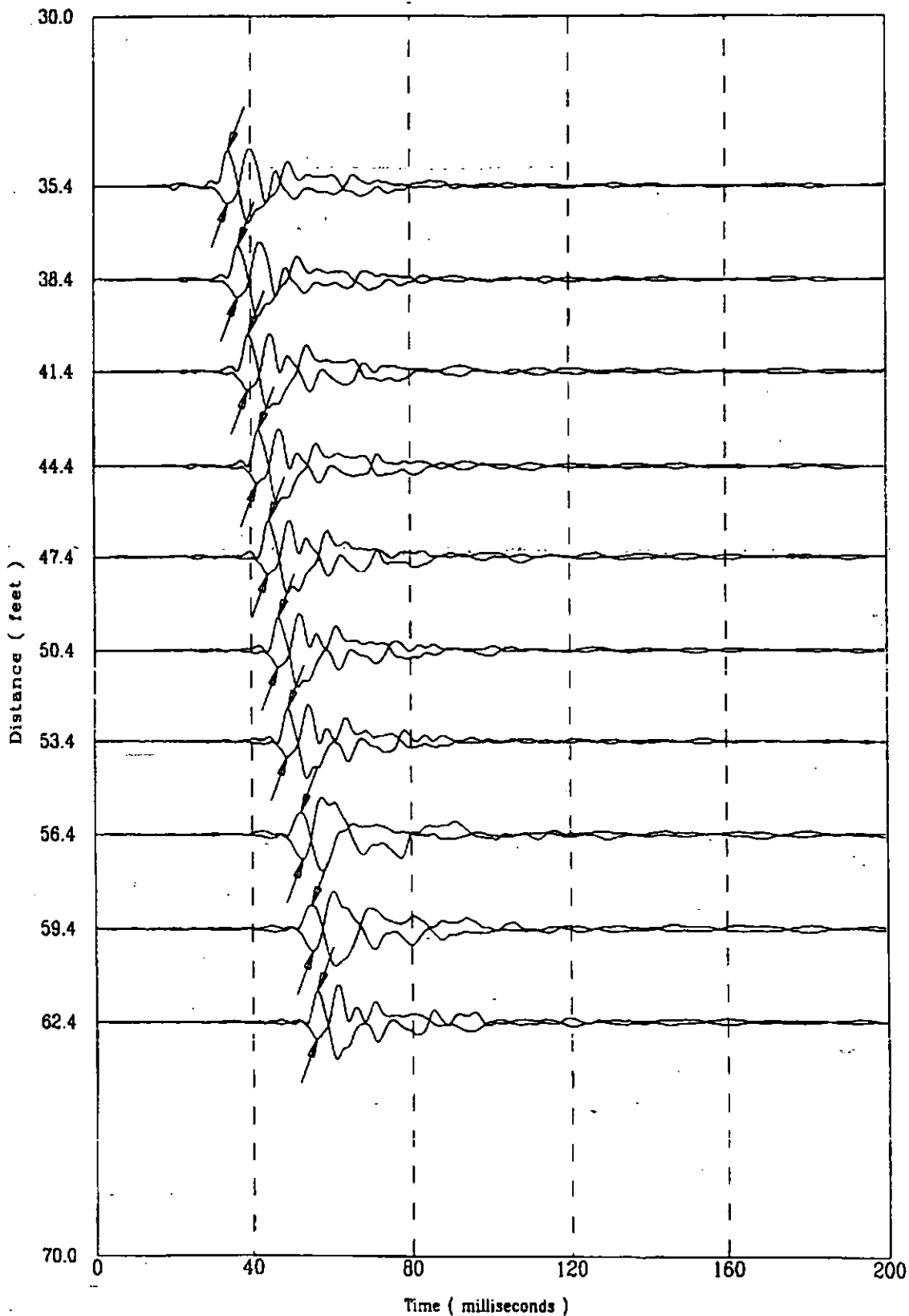
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-155

S Wave  
02/18/98



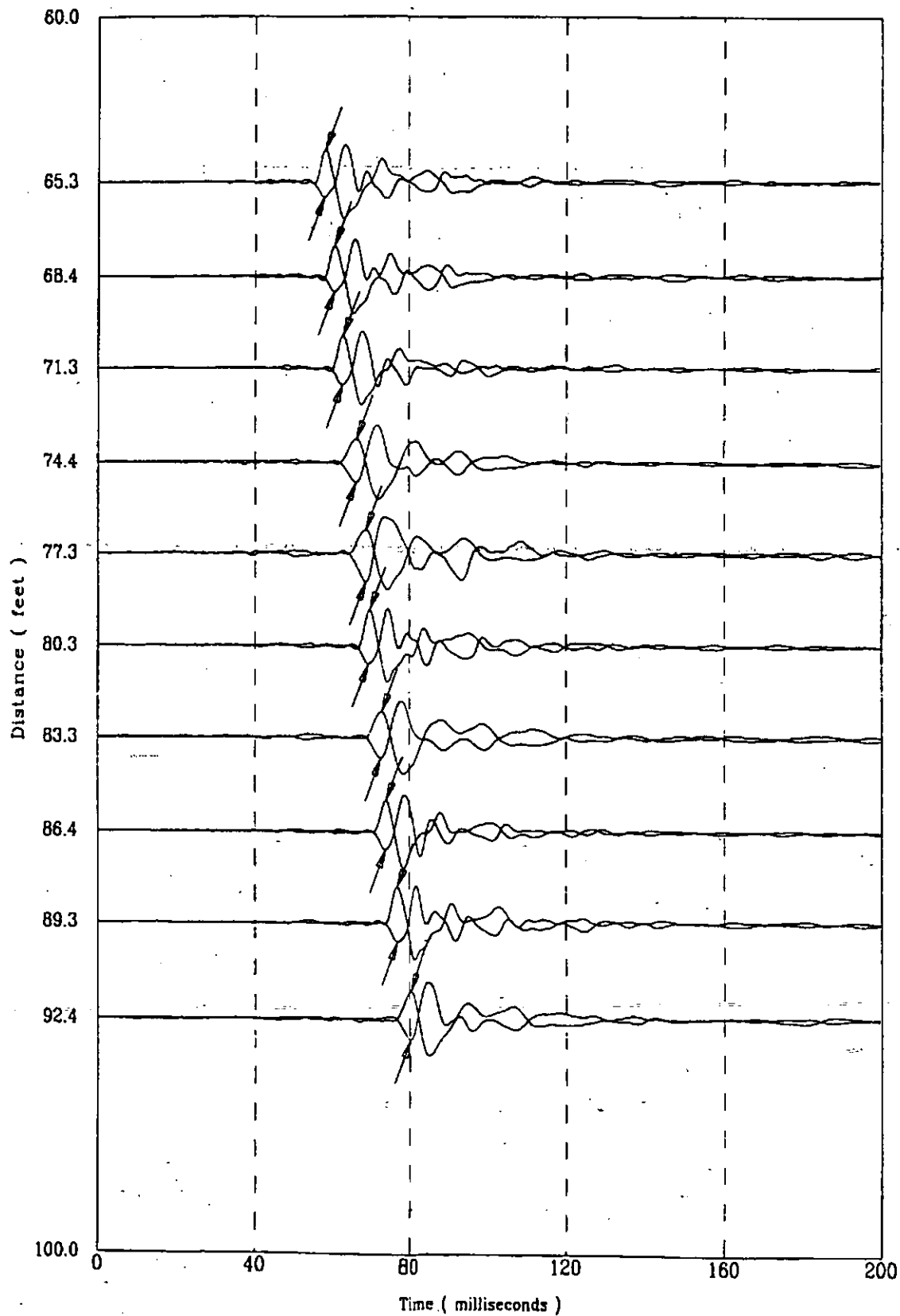
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K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-155

S Wave  
02/18/98



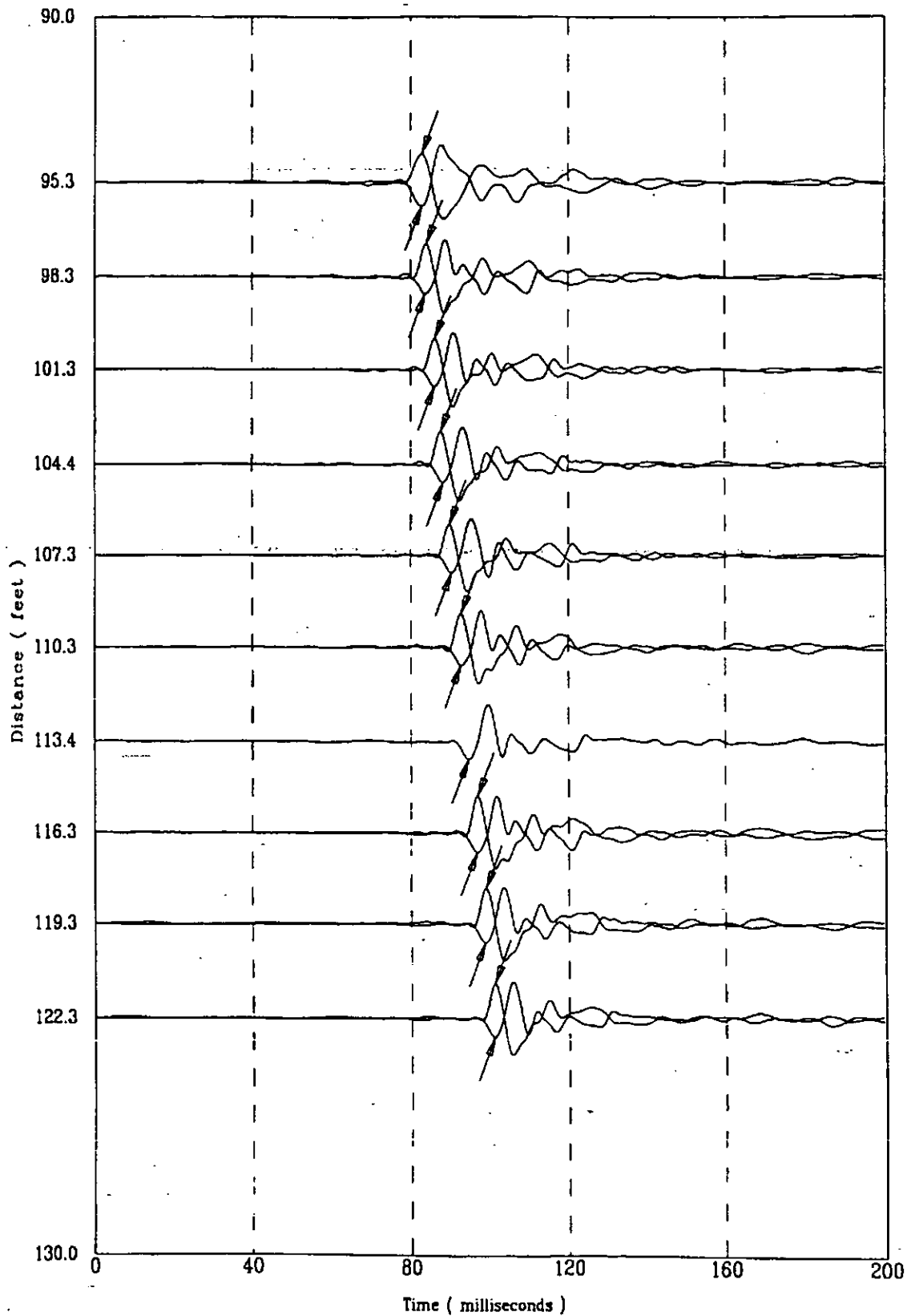
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204 of 52:

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R/o

Applied Research Associates, Inc.  
CPT-155

S Wave  
02/18/98



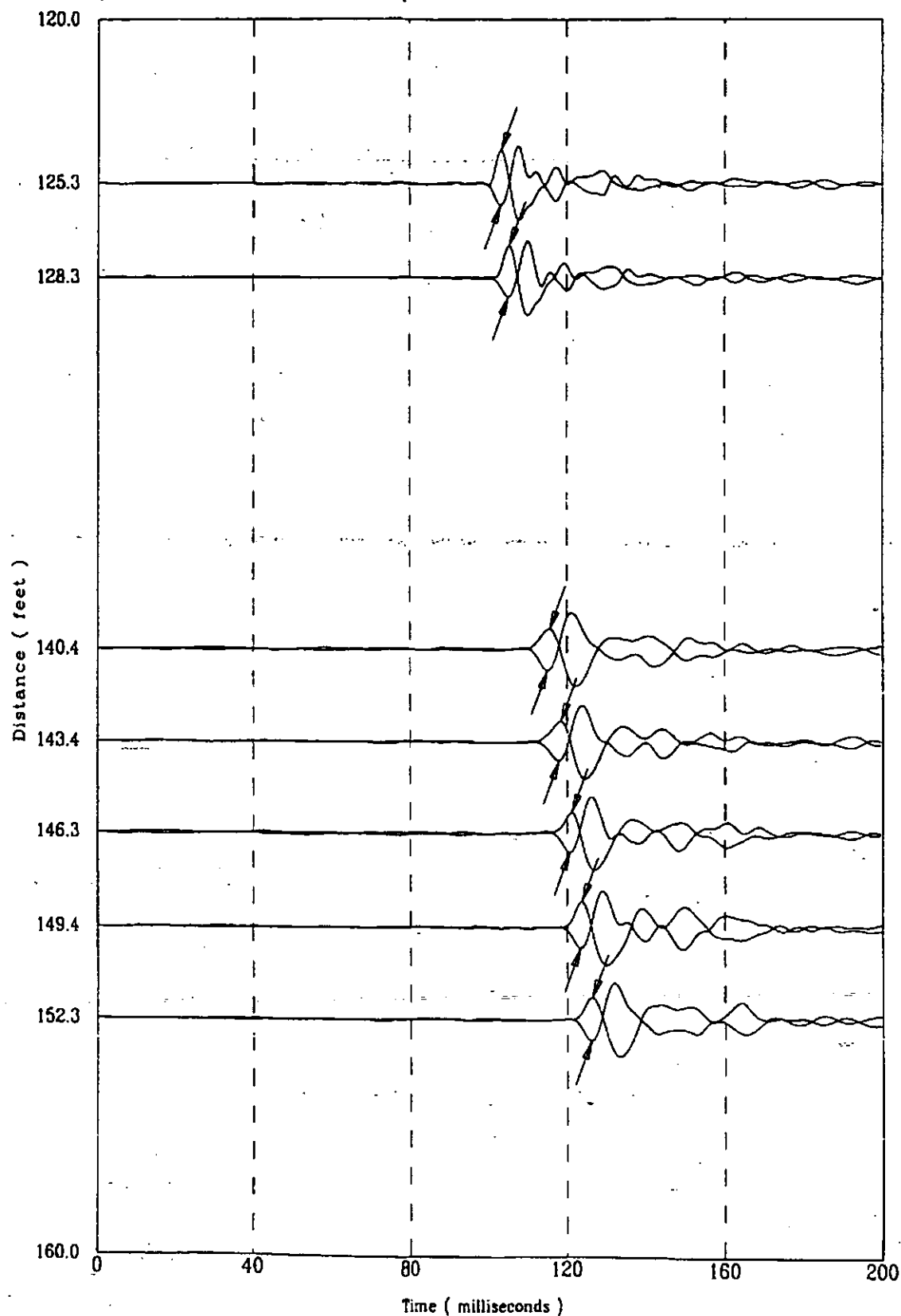
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205 of 522

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R/O

Applied Research Associates, Inc.  
CPT-155

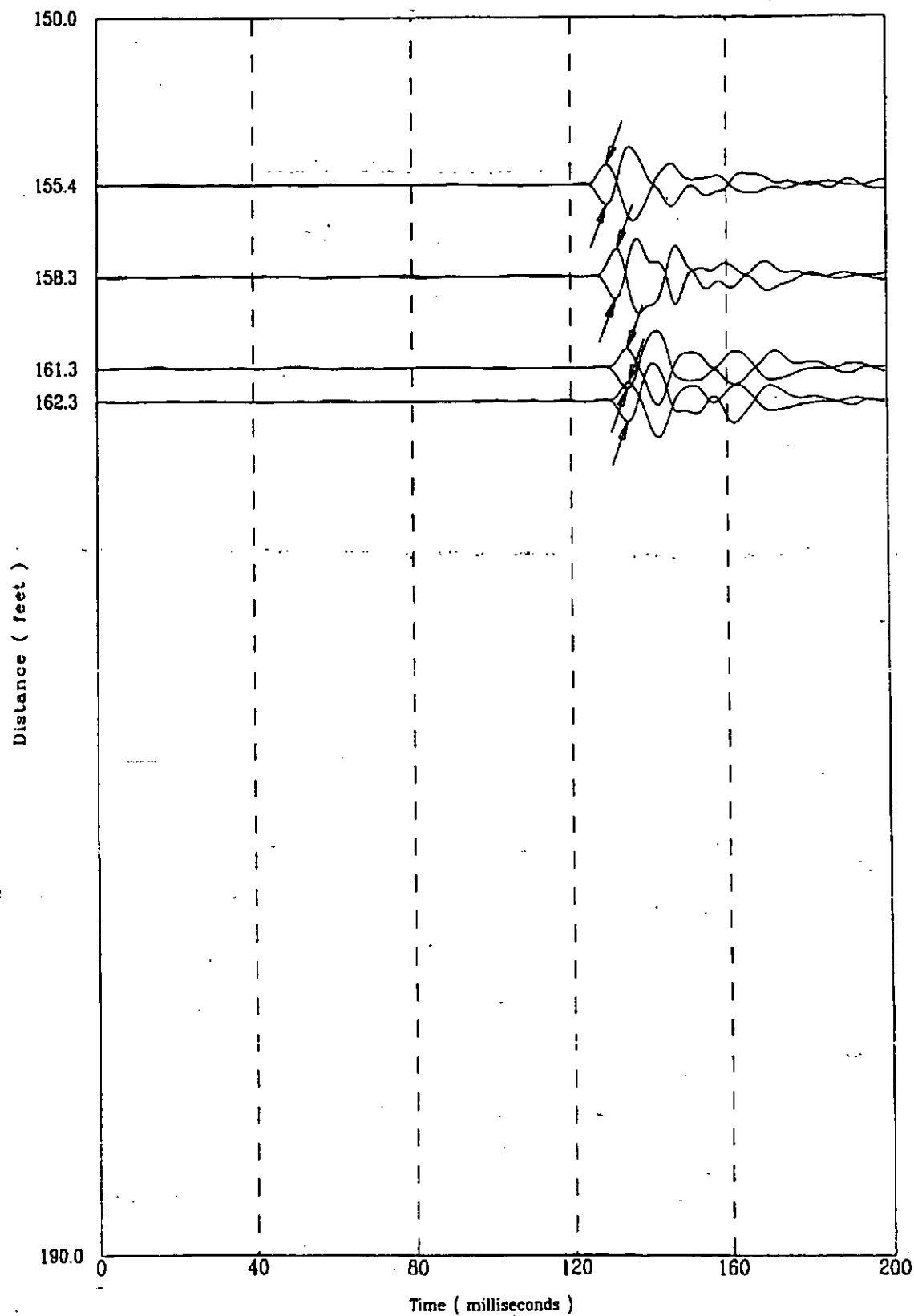
S Wave  
02/18/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-155

S Wave  
02/18/98



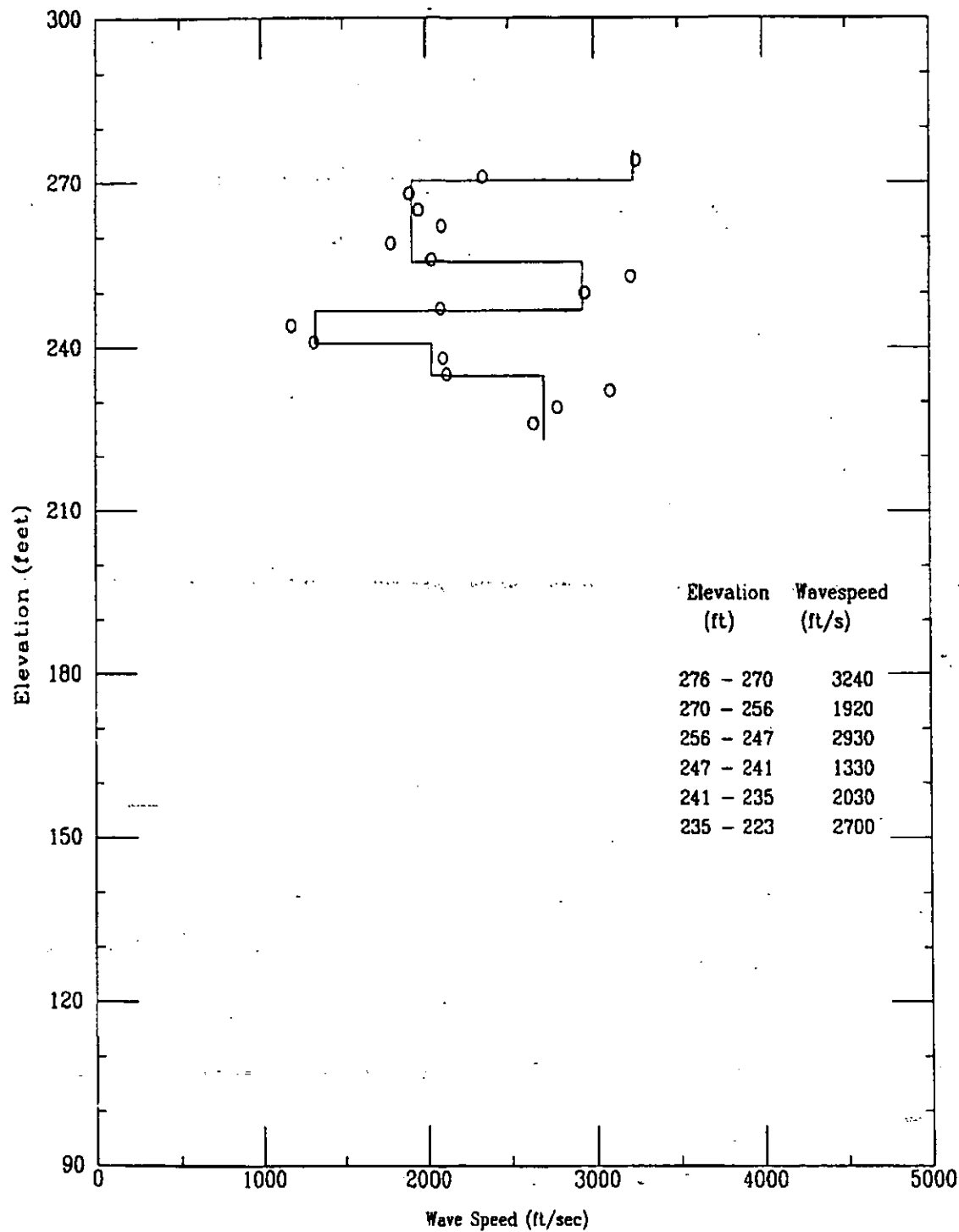
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CPT-155

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

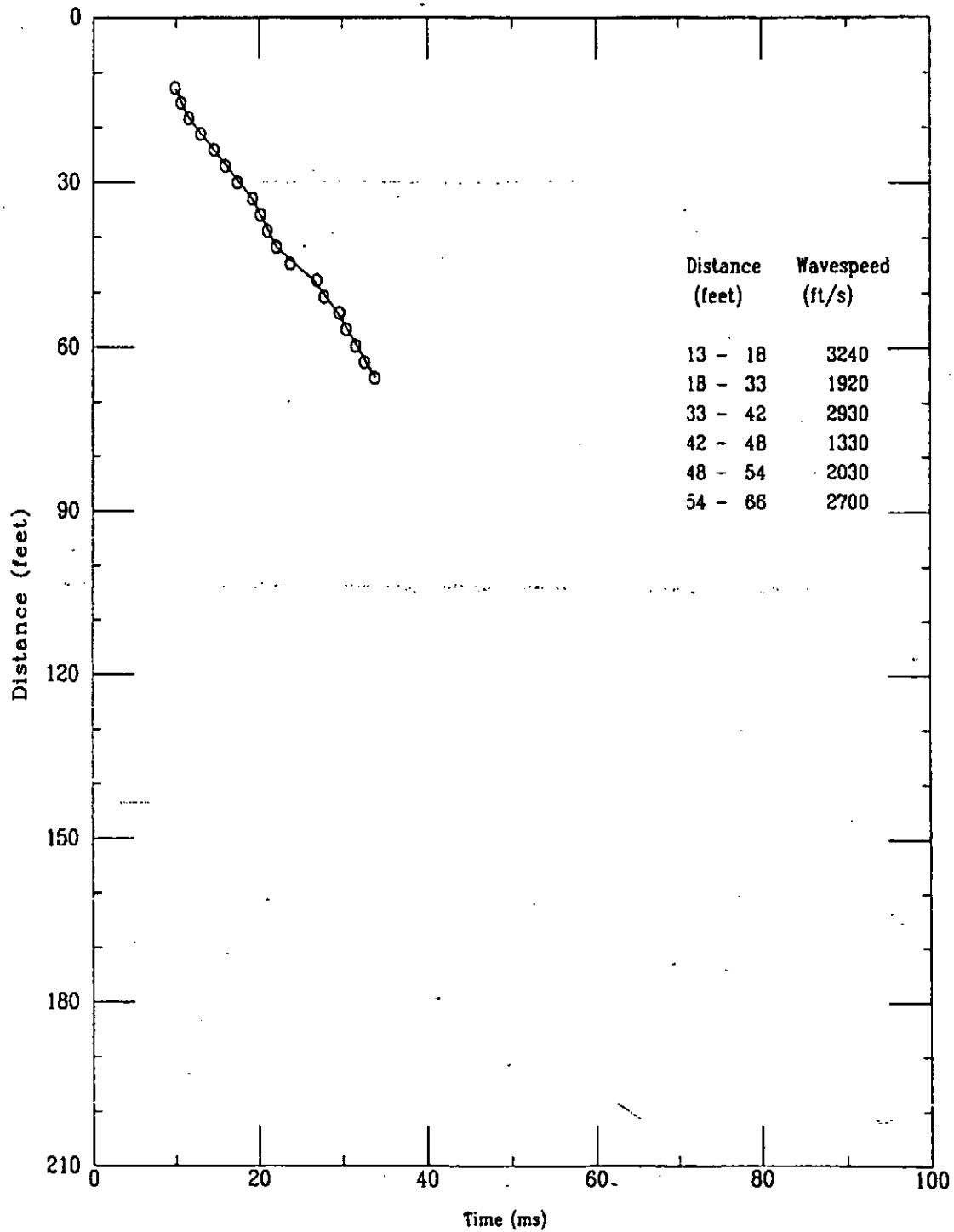
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CPT-155

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

02/18/98



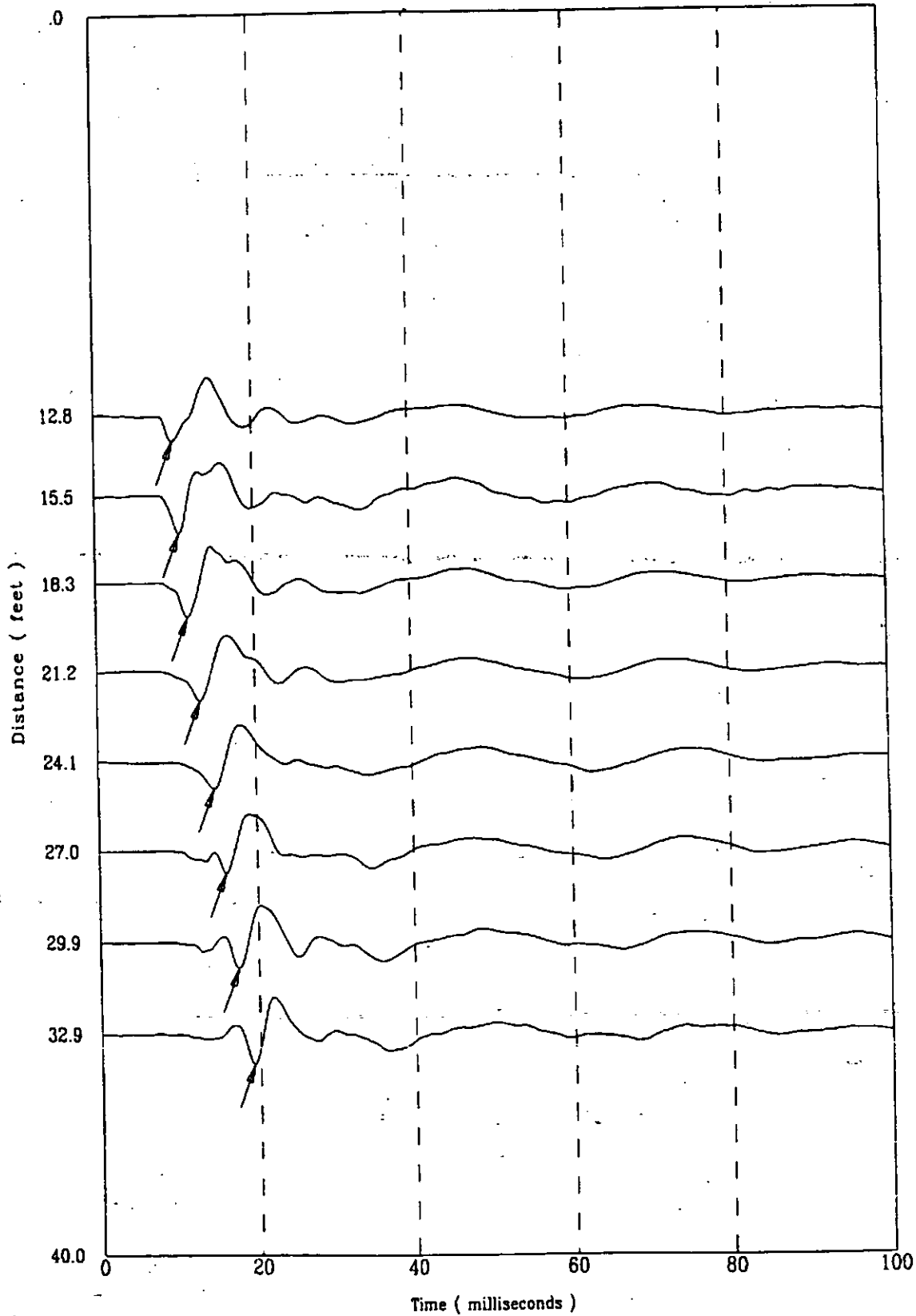
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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-155

P Wave  
02/18/98



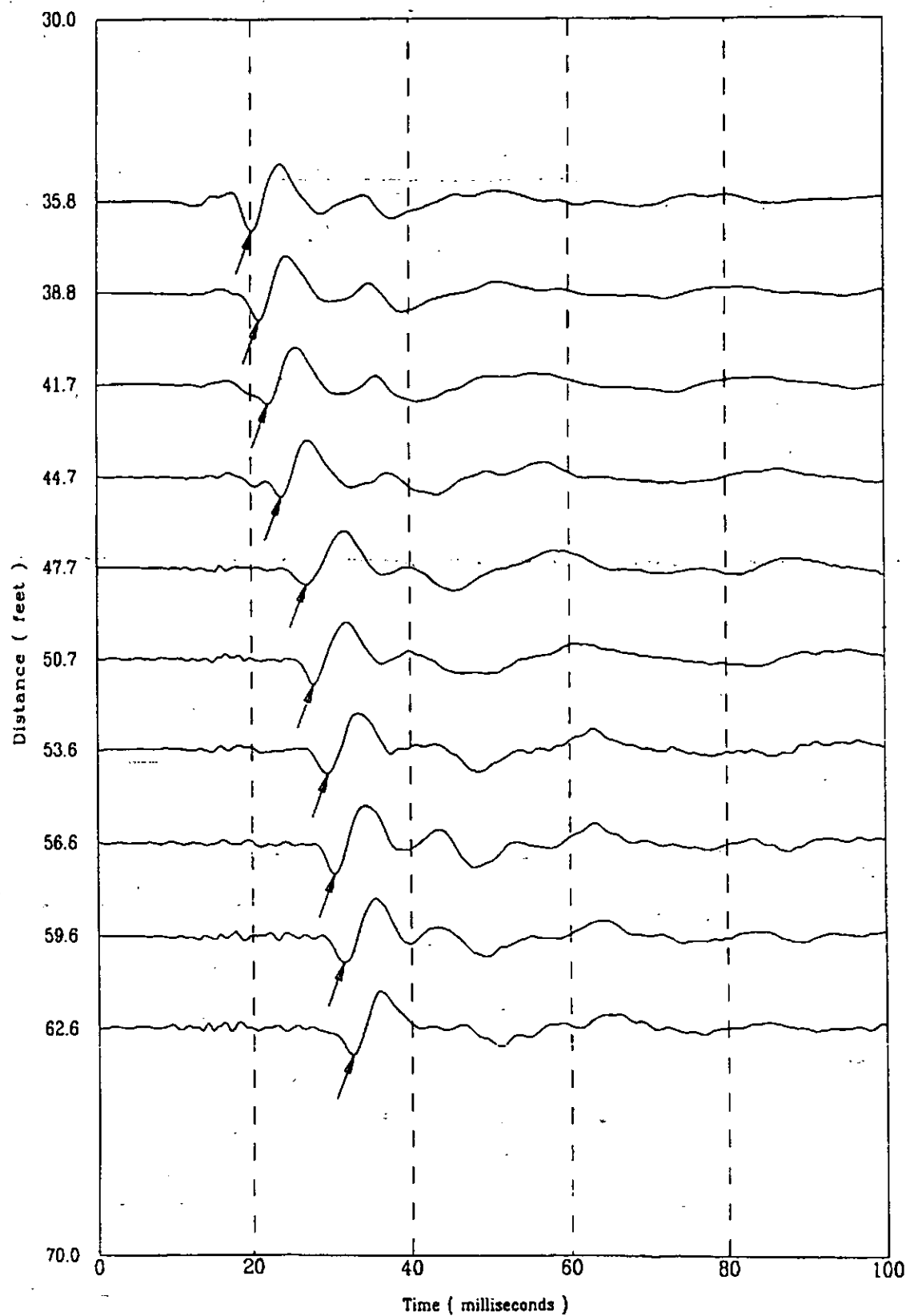
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K-TRT-F-0000/  
R/O

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CPT-155

P Wave  
02/18/98



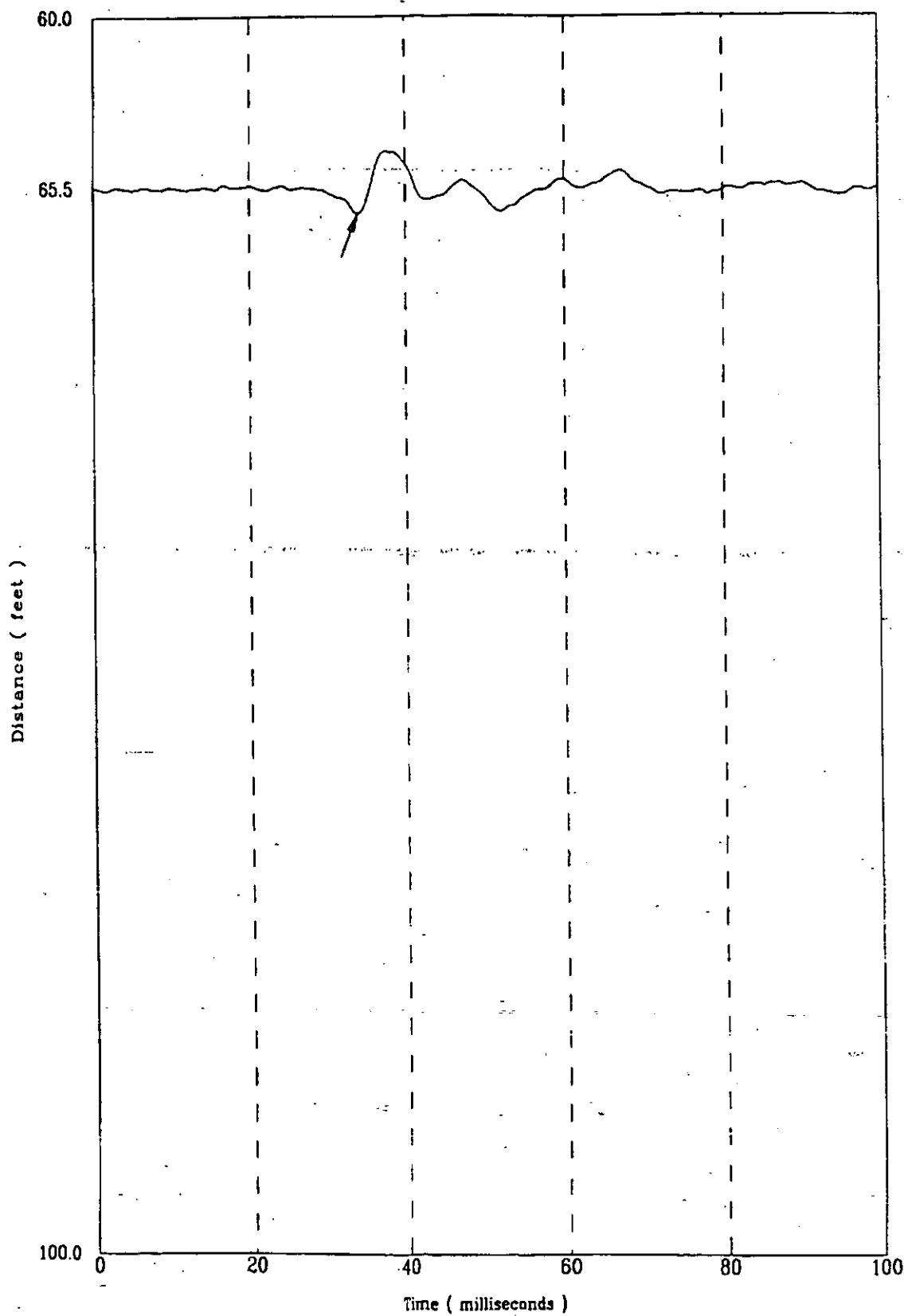
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K-TRT-F-0000/  
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Applied Research Associates, Inc.  
CPT-155

P Wave  
02/18/98



File 5187801S

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CPT-156

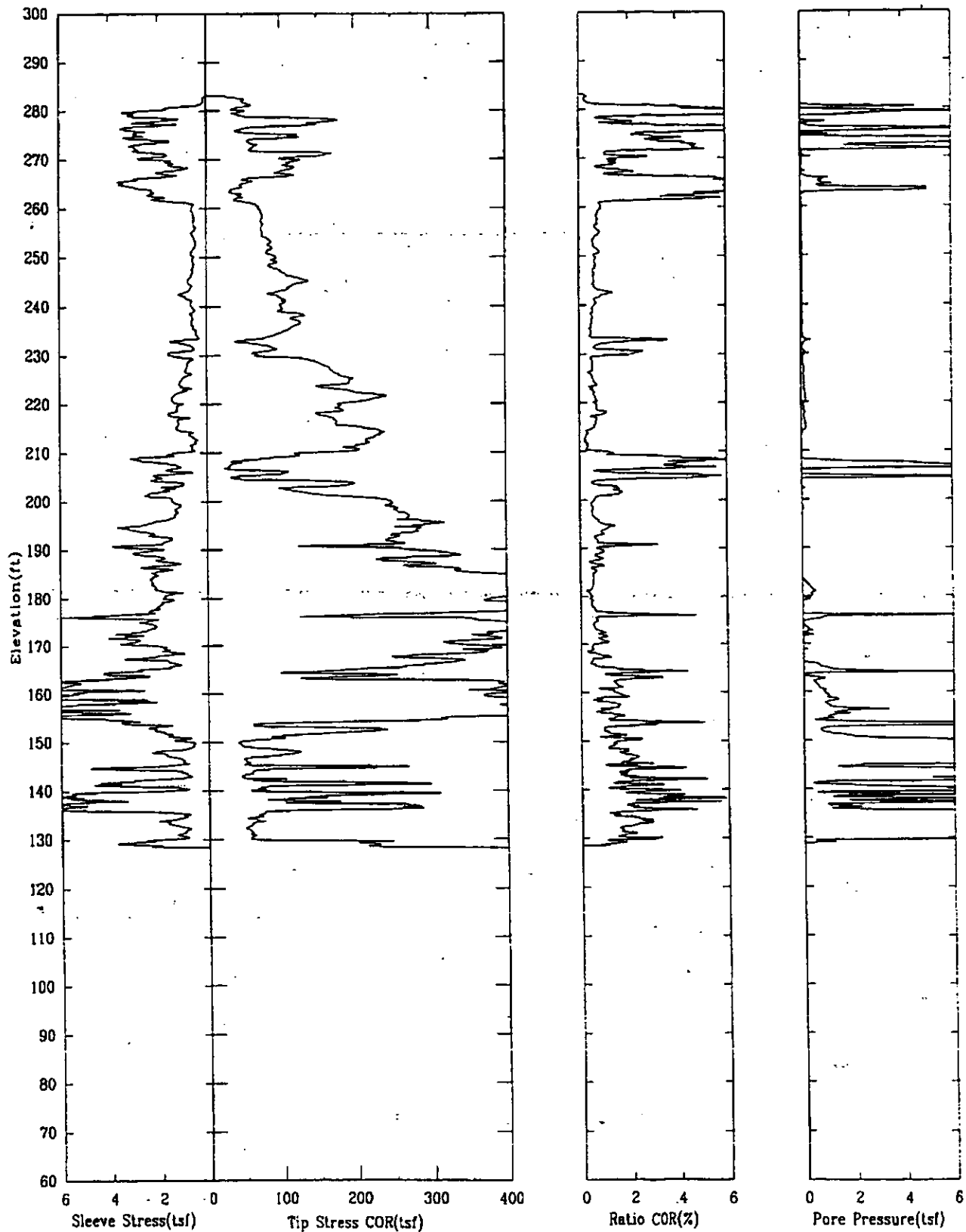
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K<sub>2</sub>TRT-F-00001  
02/18/98 R/o

North 79244.97

East 55384.98

Elevation 289.2



CPT-156

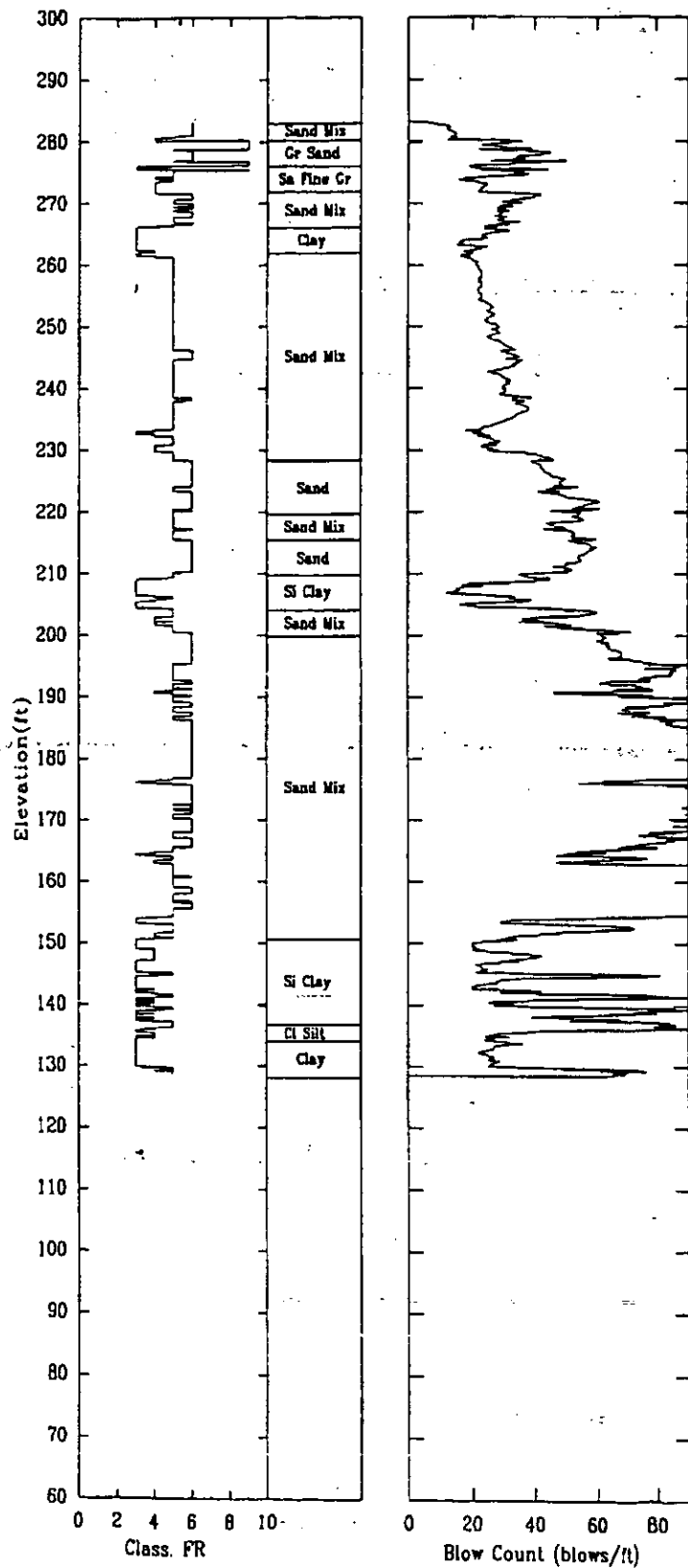
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K-TRT-F-00001  
02/18/98 R/O

North 79244.97

East 55384.98

Elevation 289.2

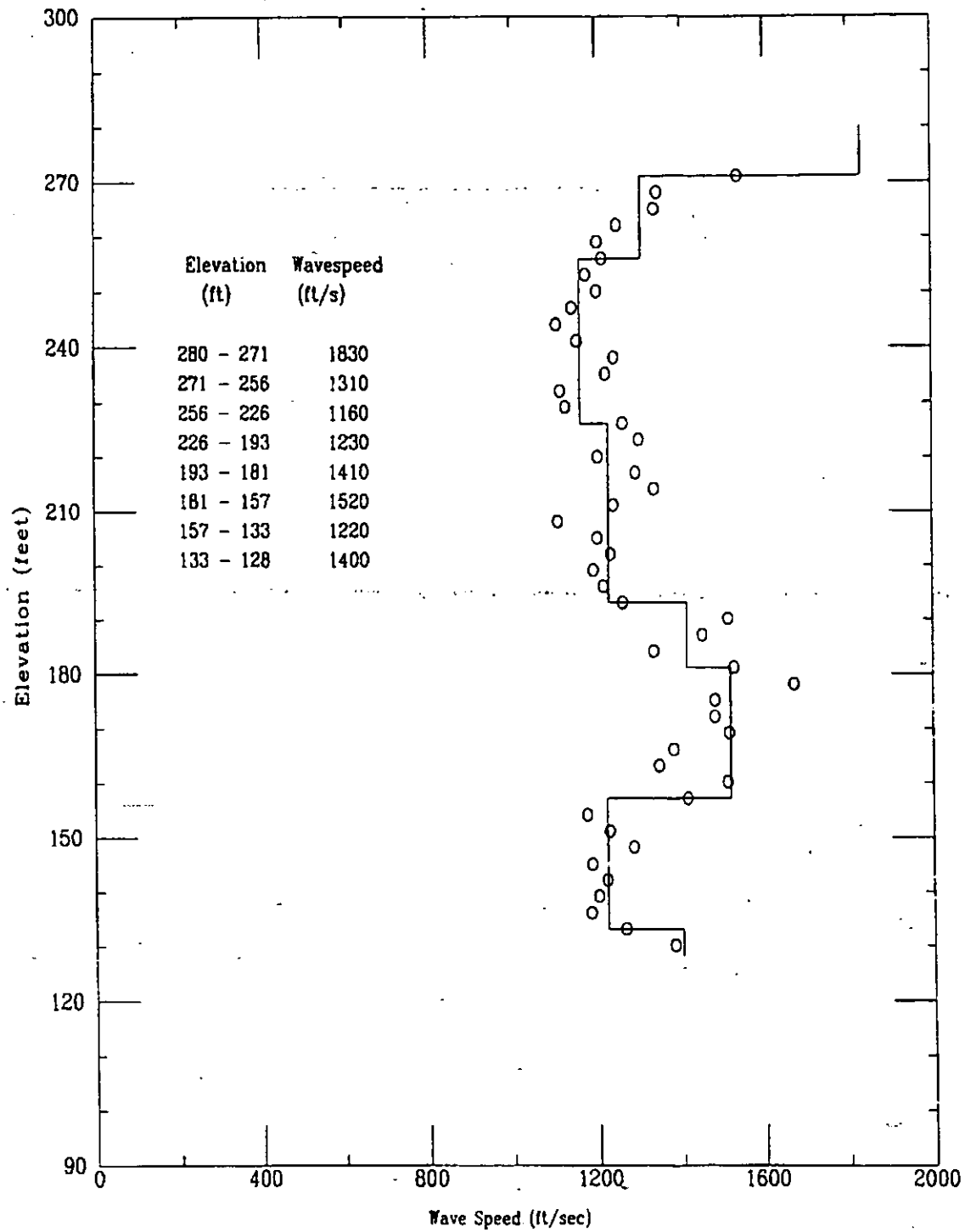


CPT-156

APPLIED RESEARCH ASSOCIATES, INC.

02/18/98

Shear Wave Speeds



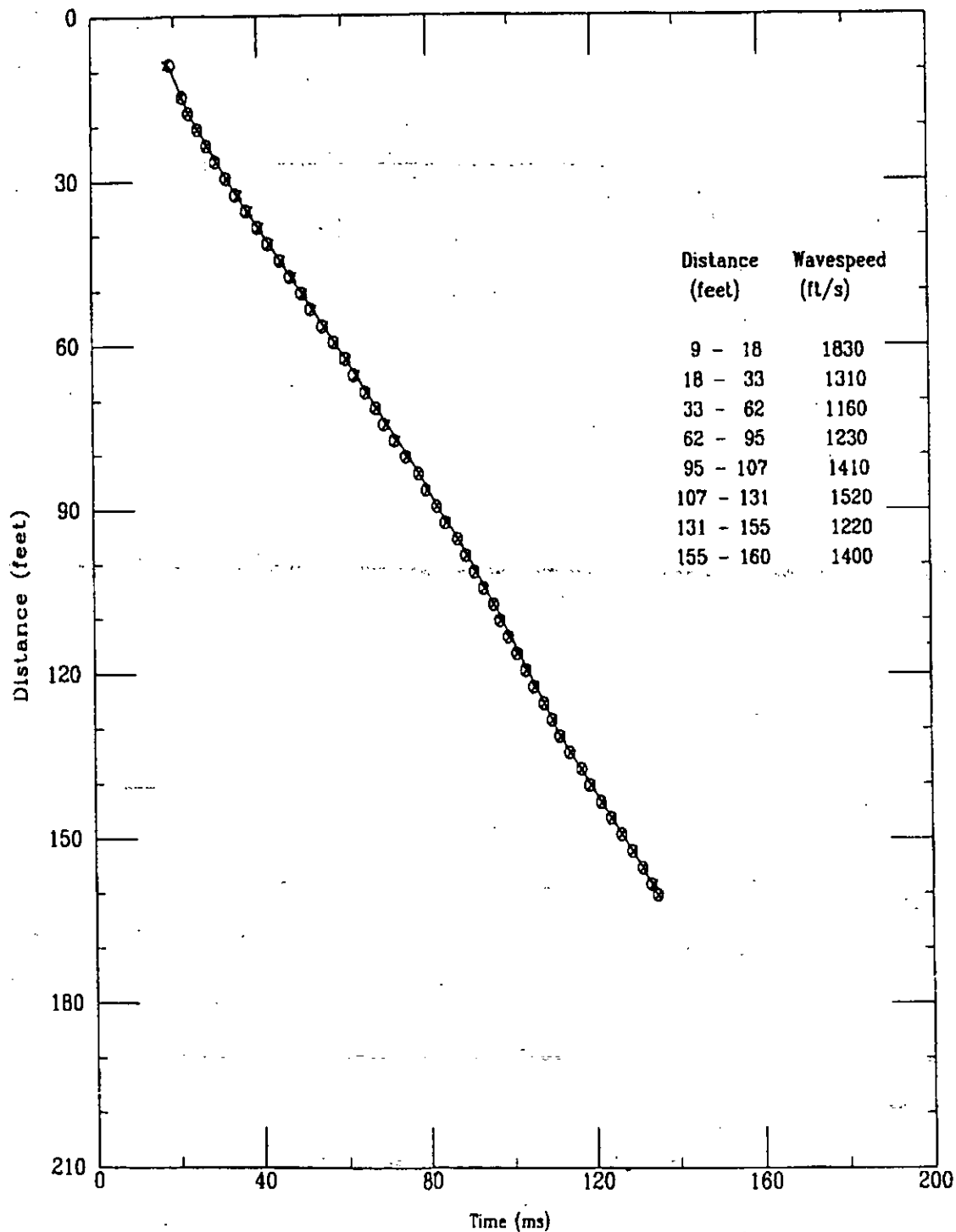
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K-TRT-F-00001  
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CPT-156

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

02/18/98



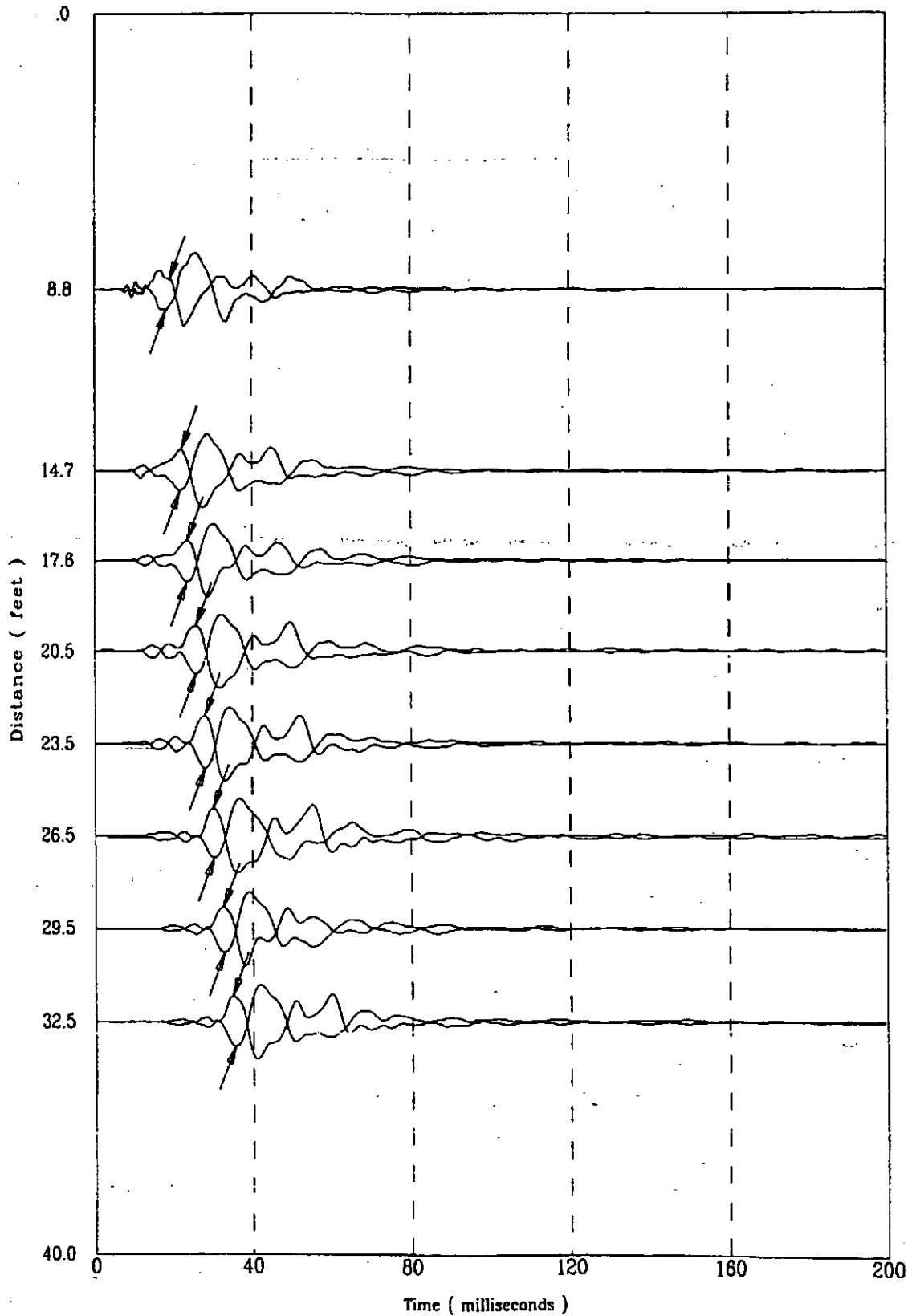
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-156

S Wave  
02/18/98

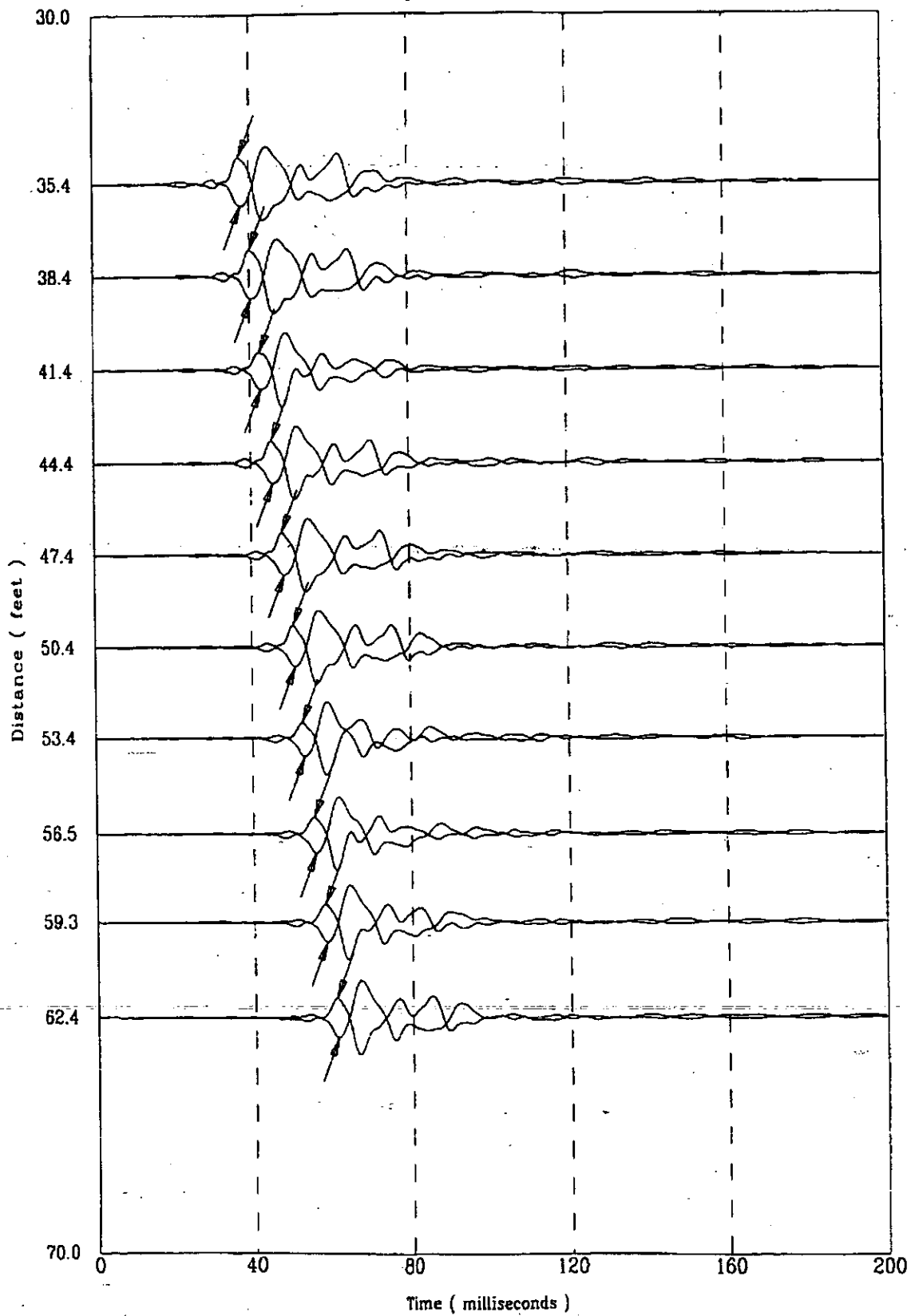




K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-156

S Wave  
02/18/98



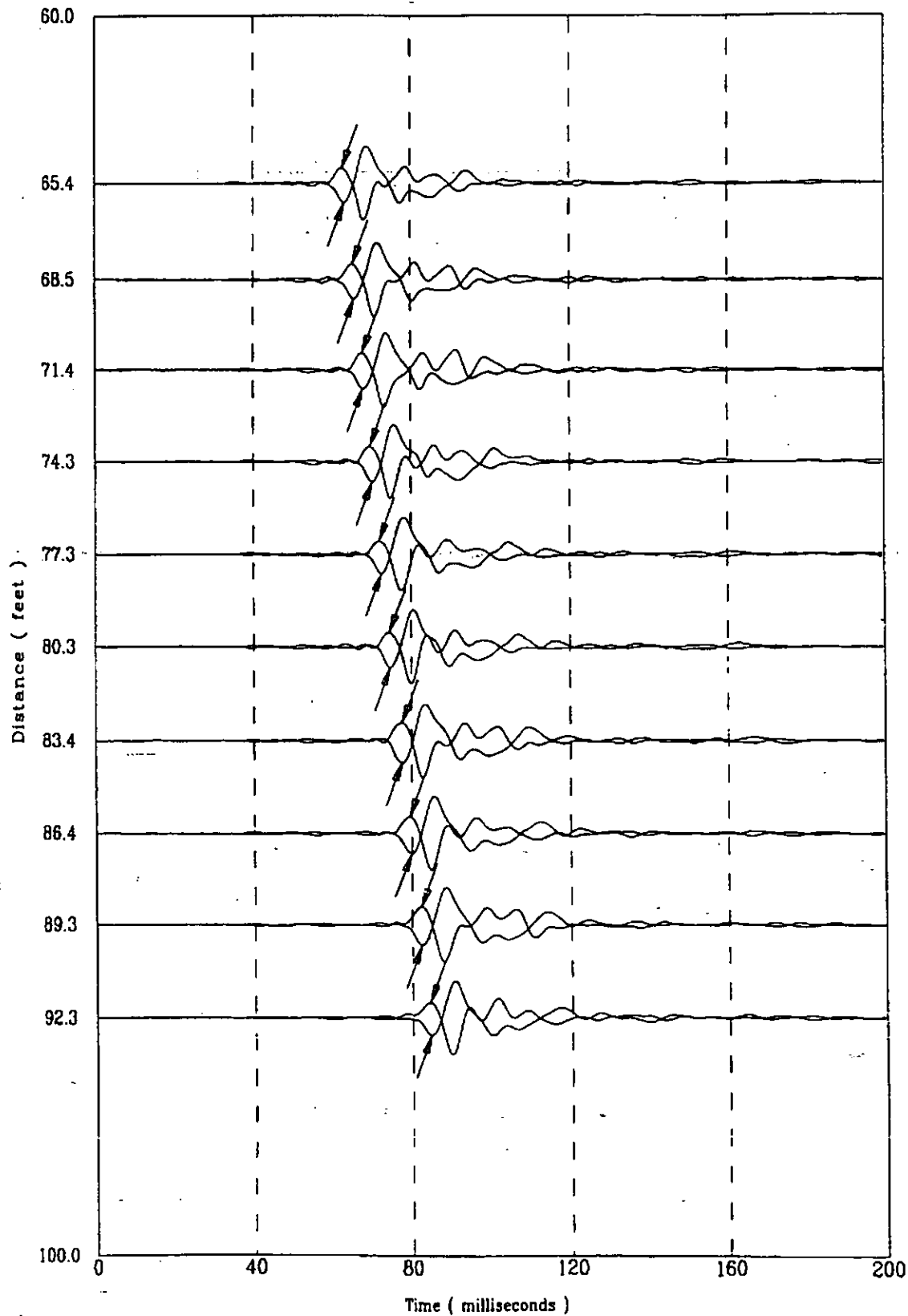
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-156

S Wave  
02/18/98



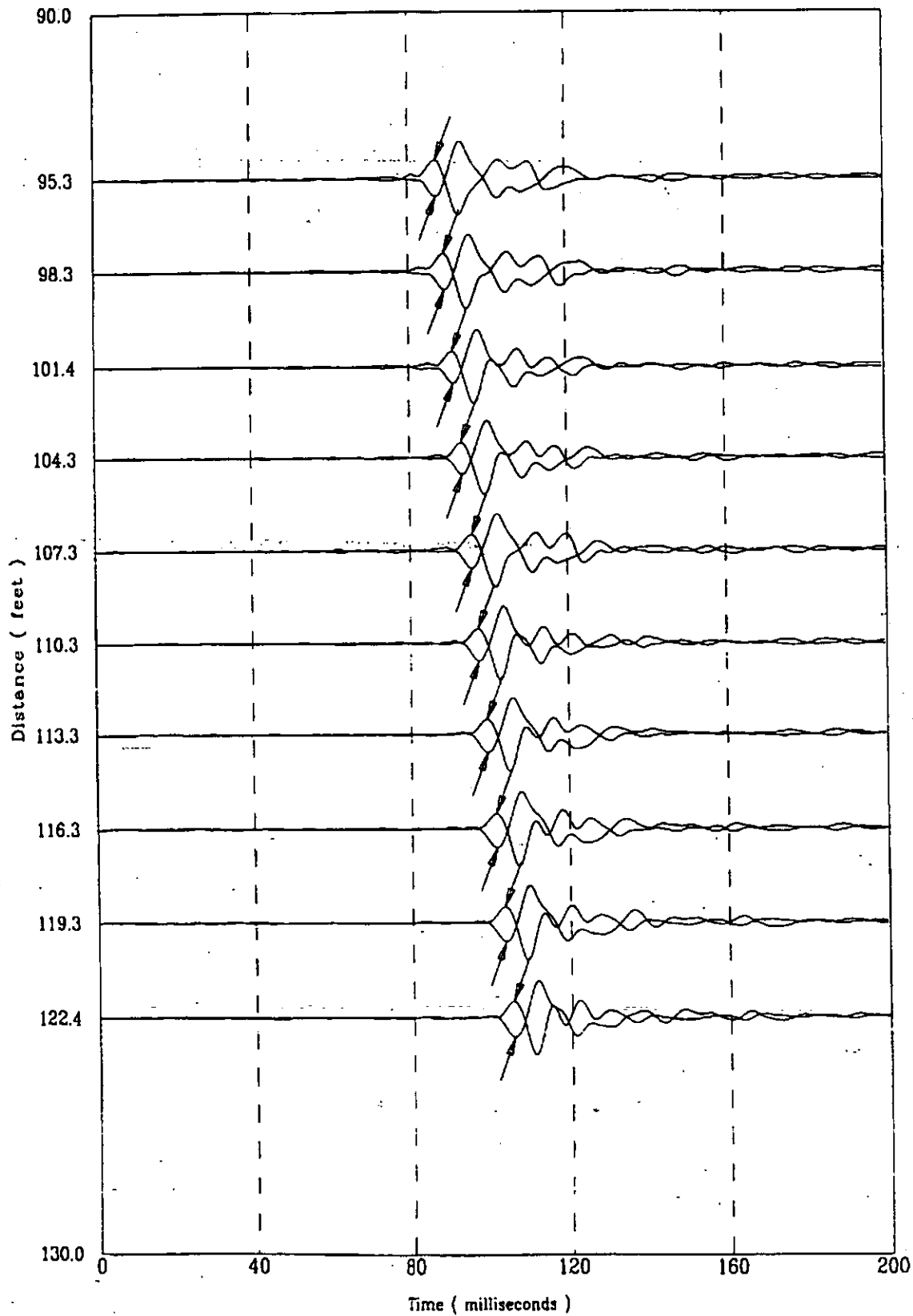
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-156

S Wave  
02/18/98



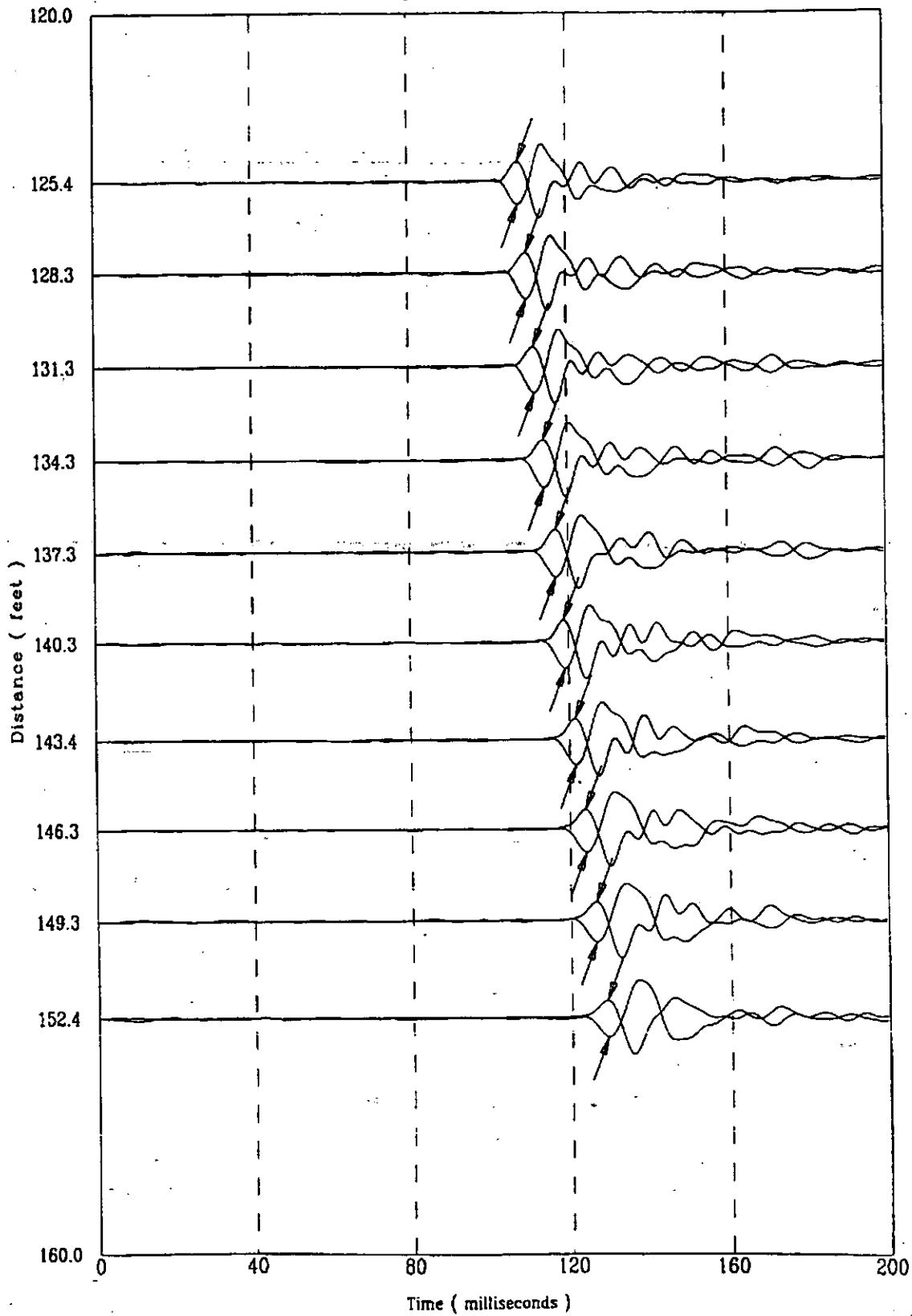
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-156

S Wave  
02/18/98



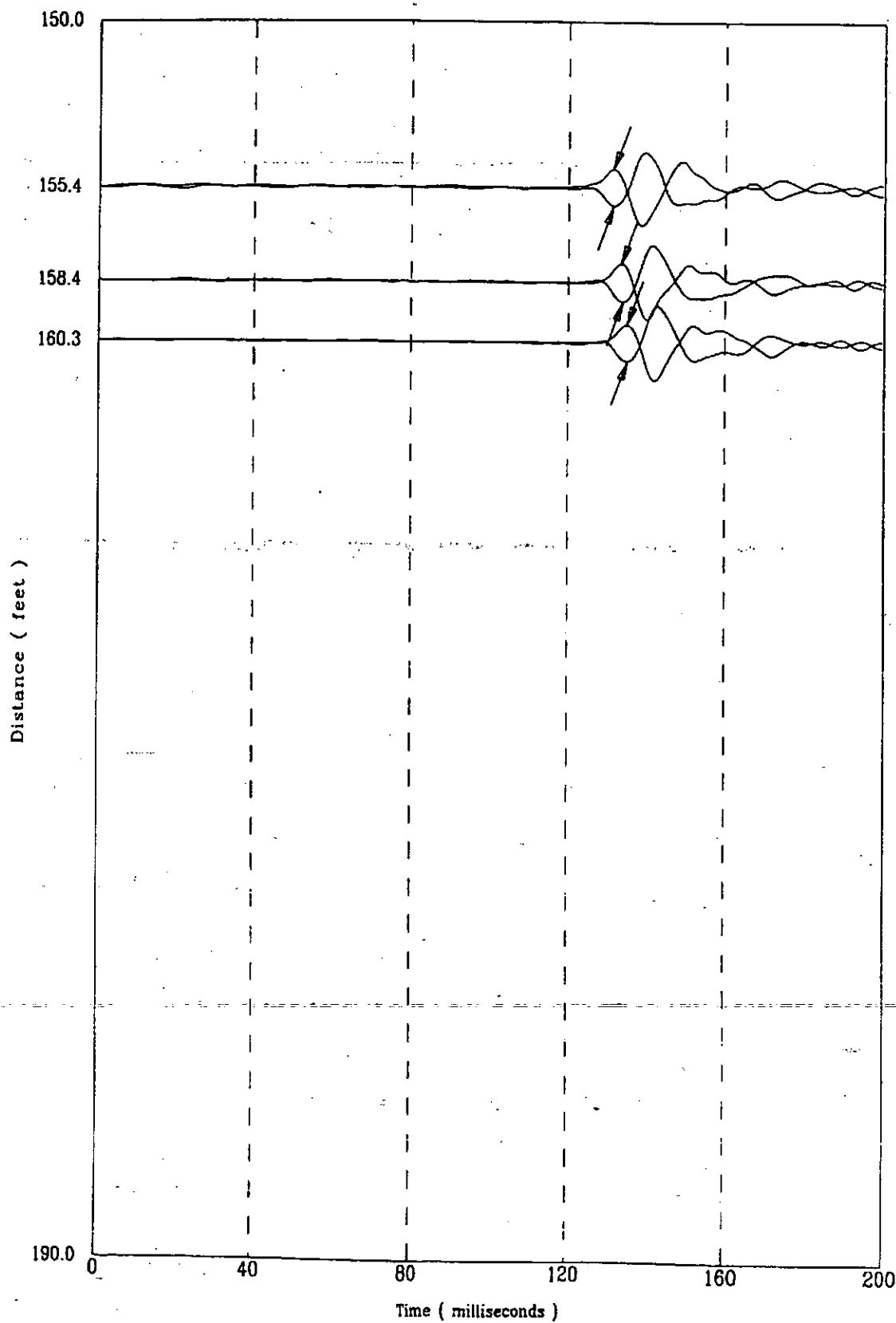
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-156

S Wave  
02/18/98



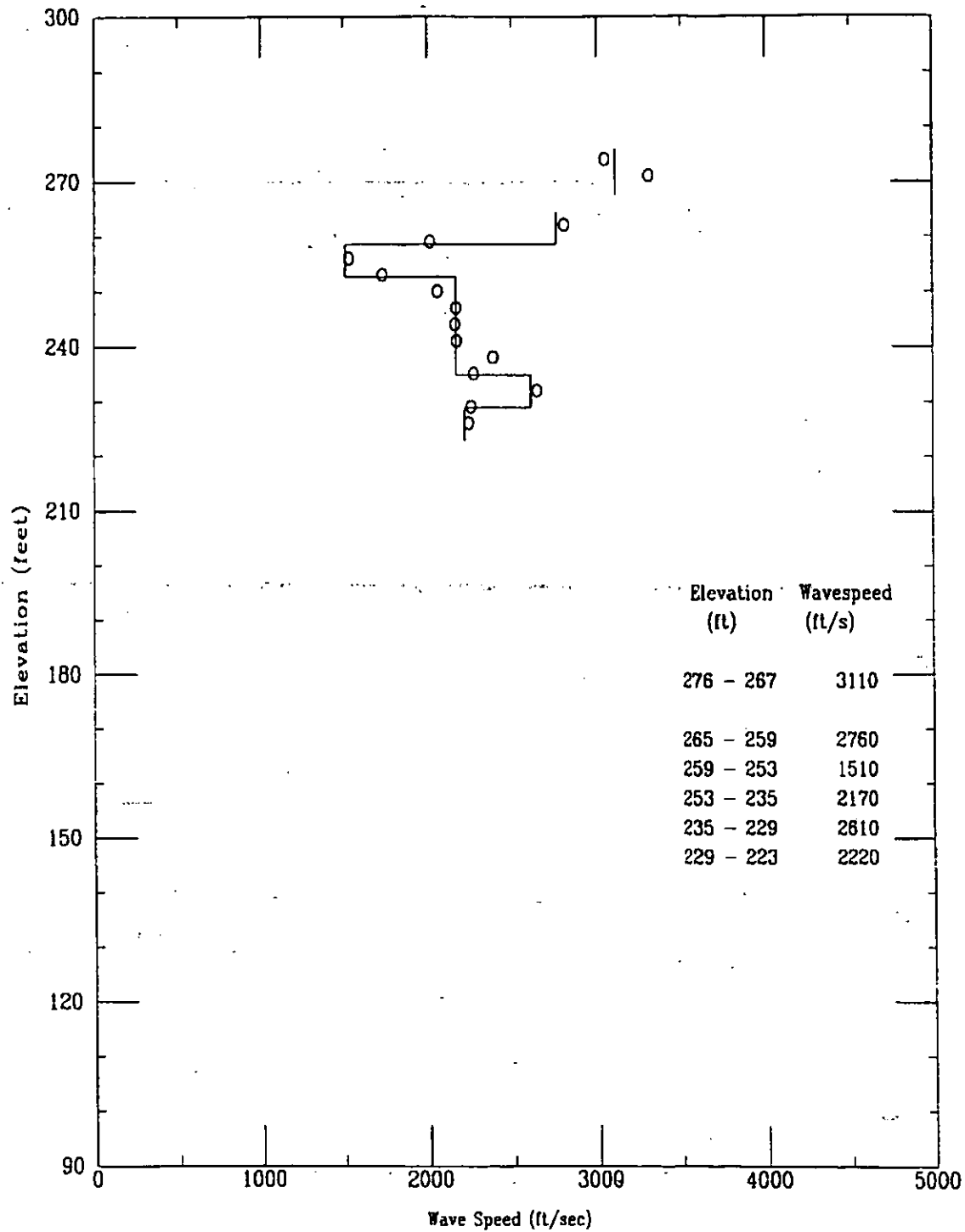
File 5181804S

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CPT-156

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

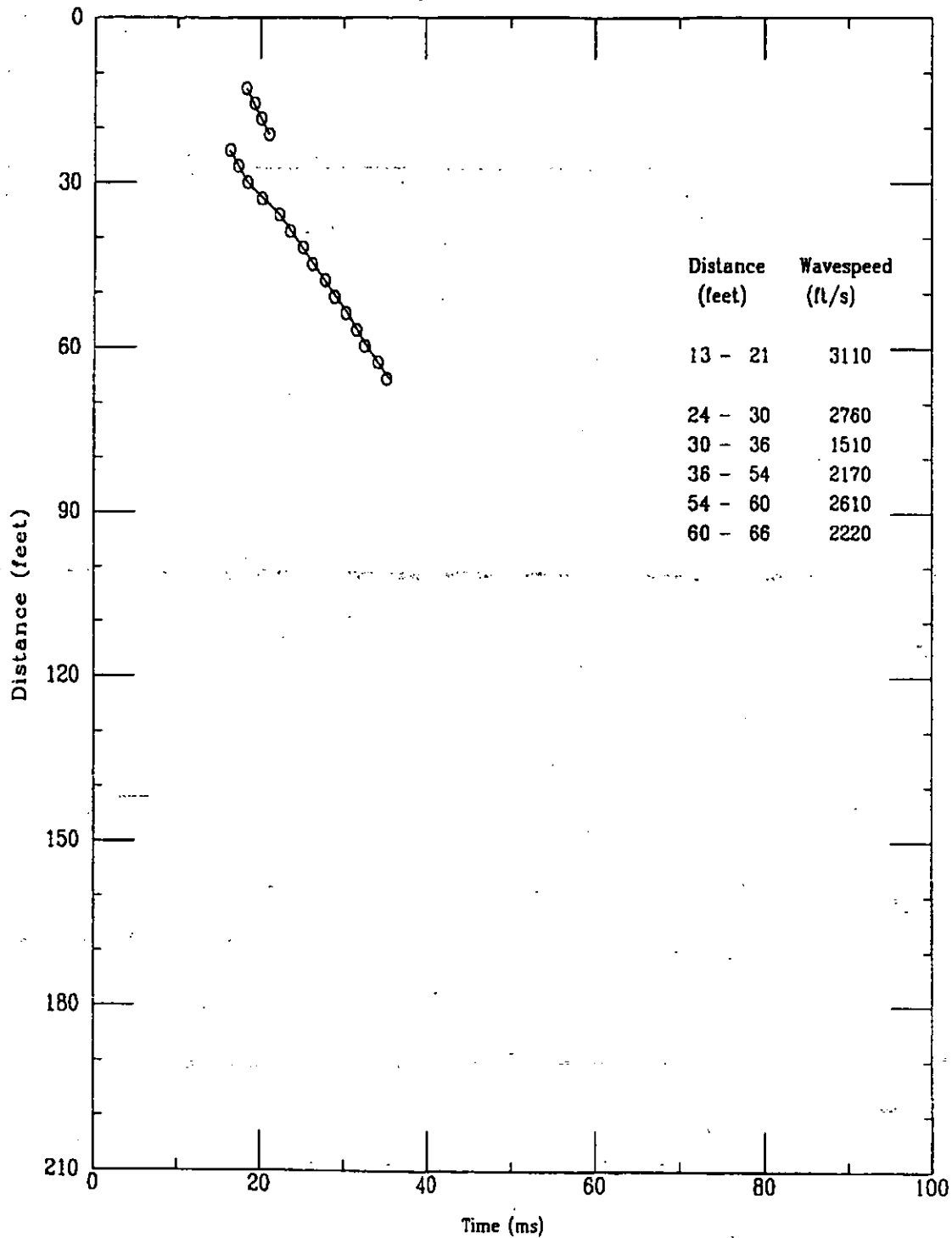
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CPT-156

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

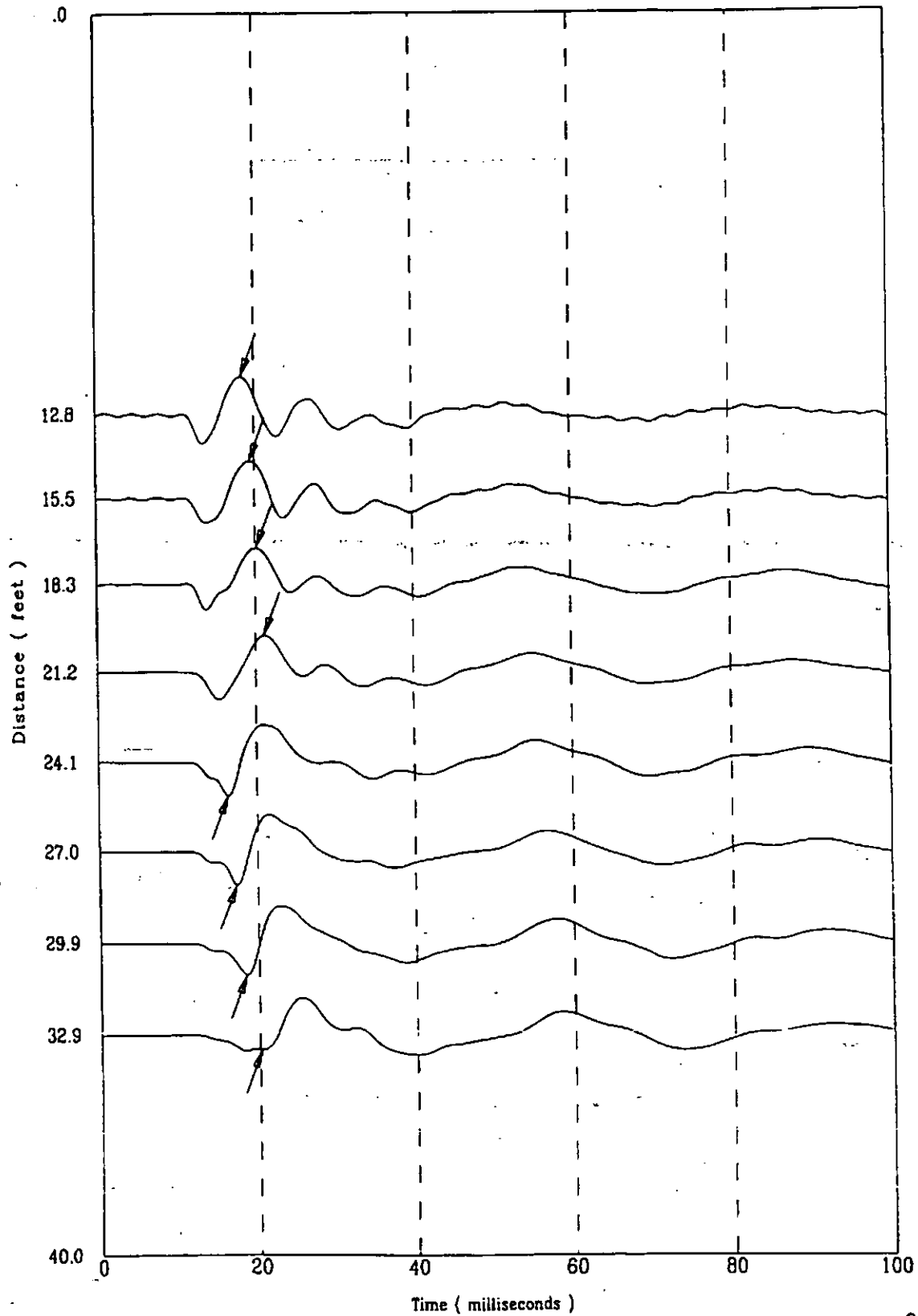
02/18/98



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-156

P Wave  
02/18/98



file 51818043

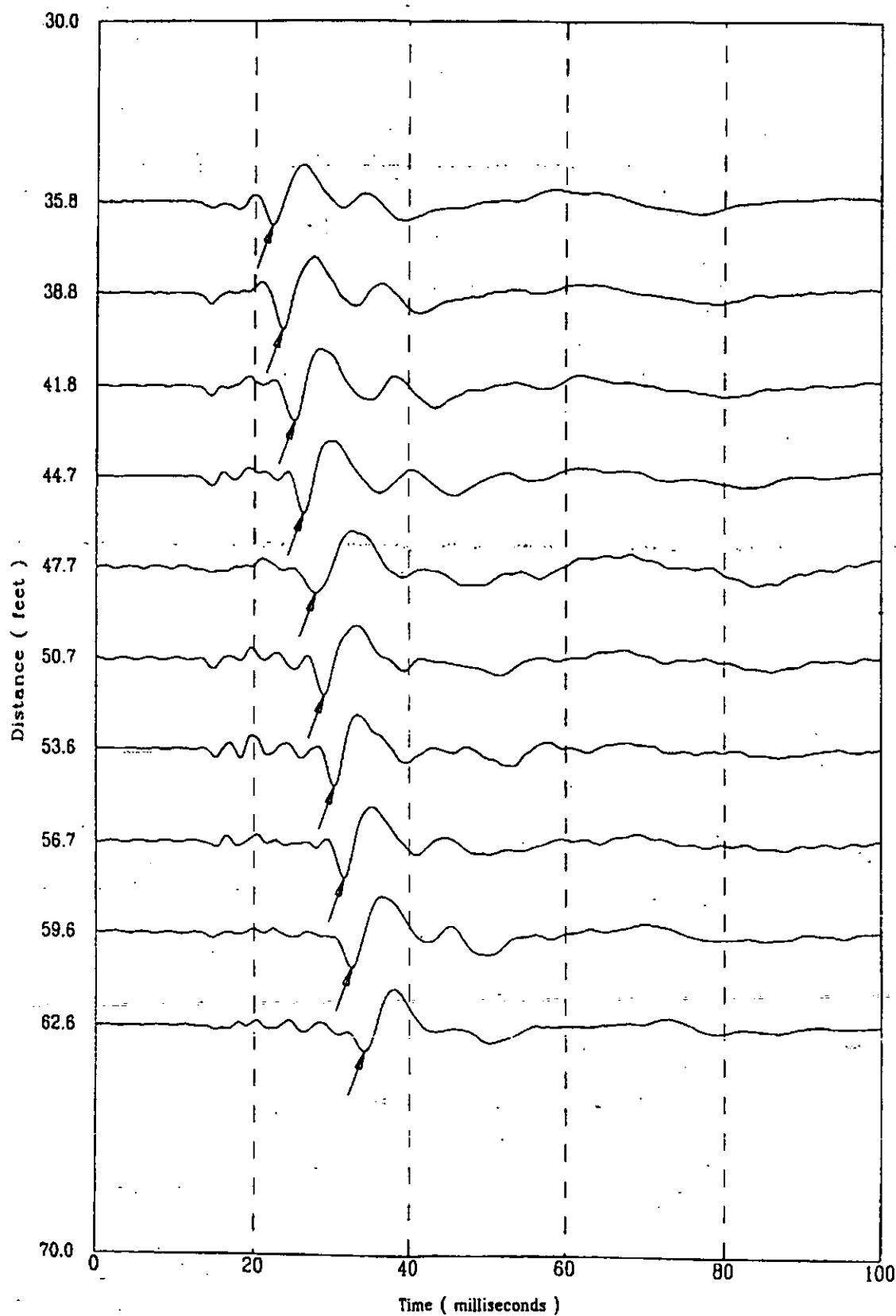
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R/O

Applied Research Associates, Inc.  
CPT-156

P Wave  
02/18/98



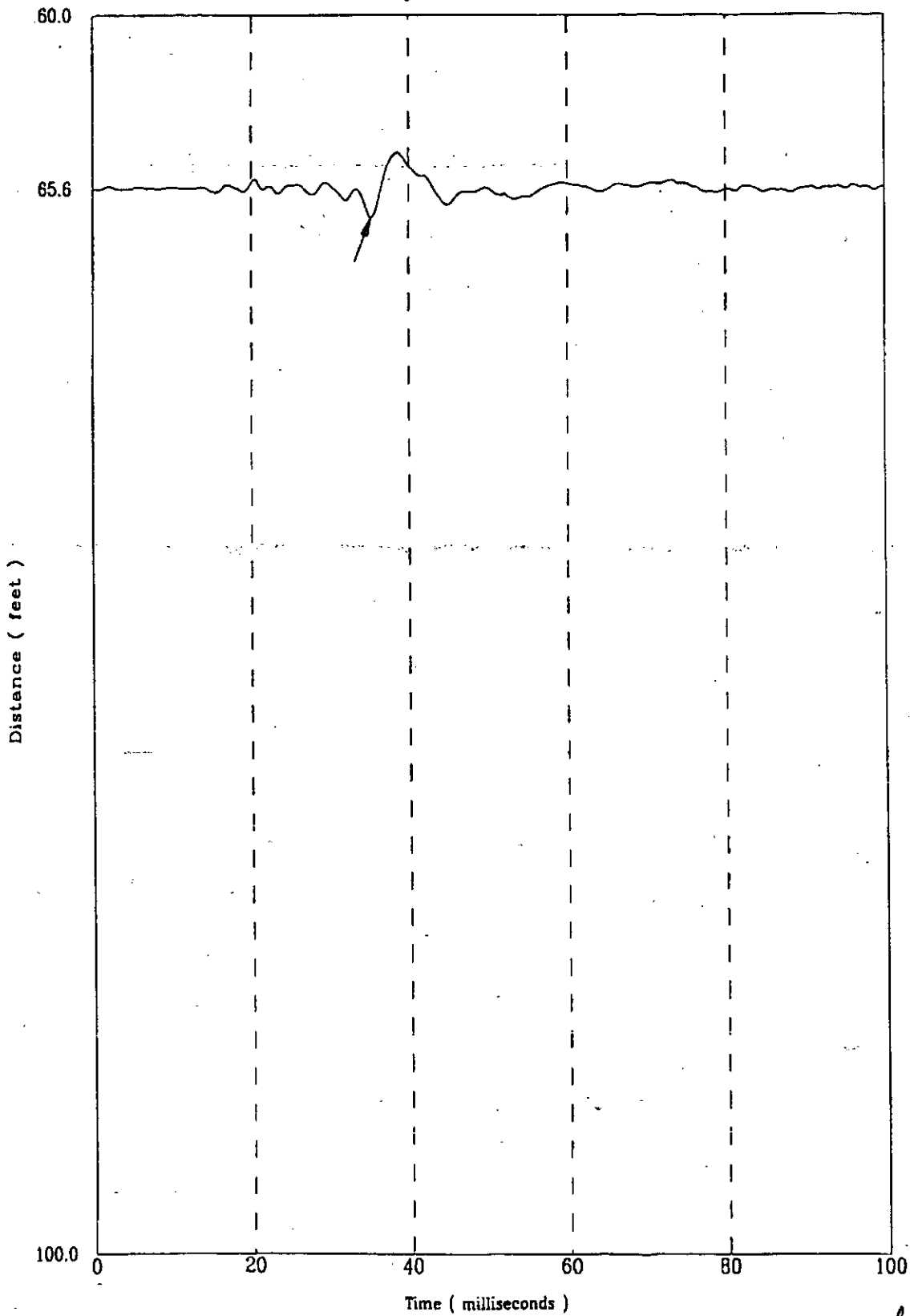
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-156

P Wave  
02/18/98



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CPT-157

APPLIED RESEARCH ASSOCIATES, INC.

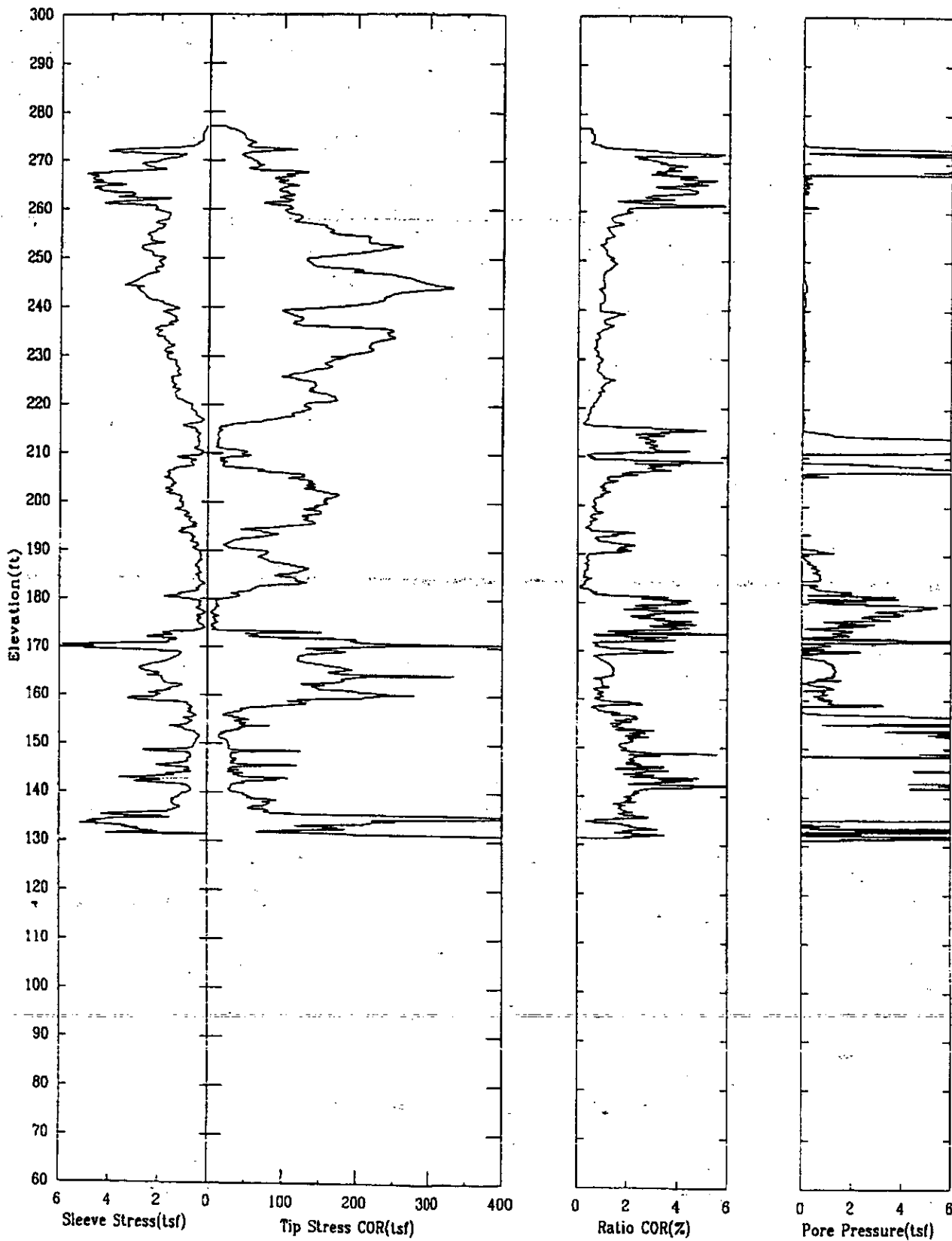
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03/05/98 / 0

North 79244.98

East 55517.98

Elevation 283.1



CPT-157

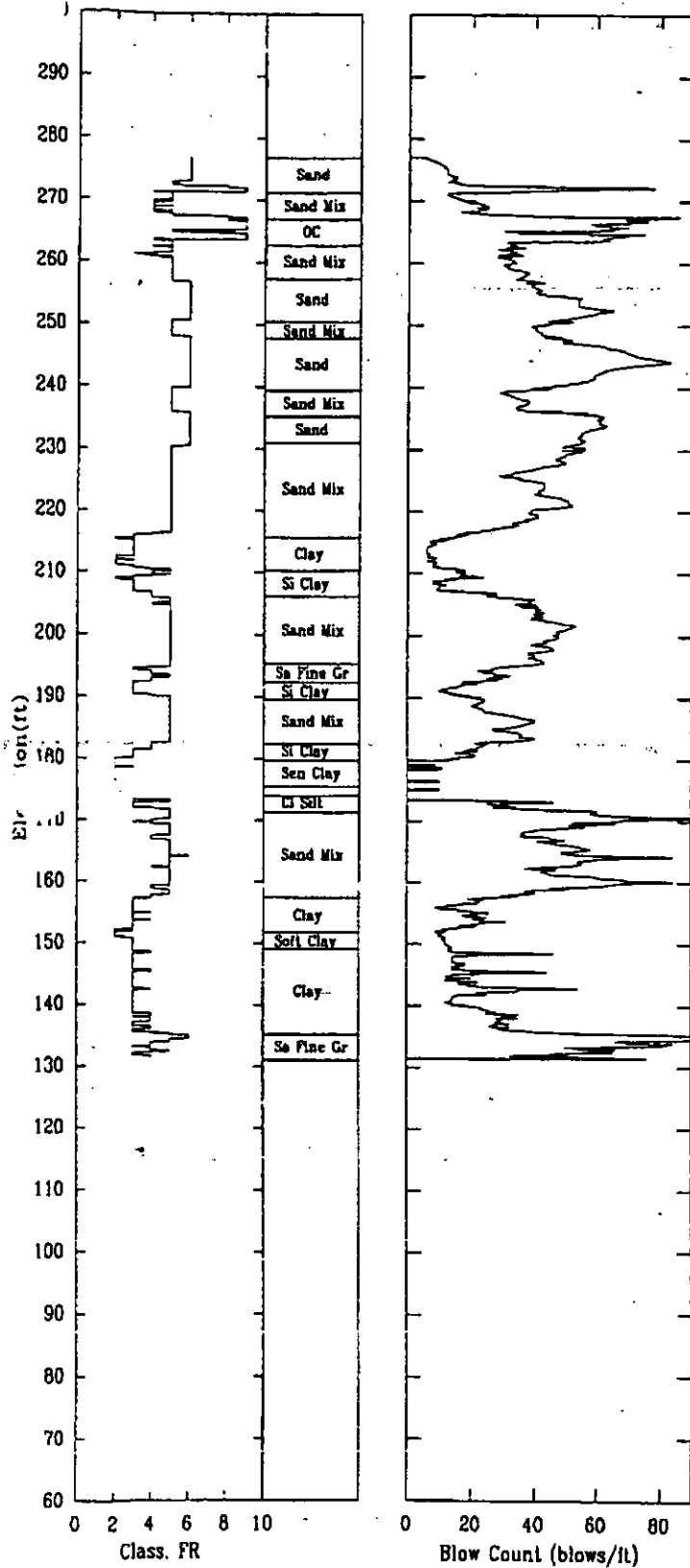
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East 55517.98

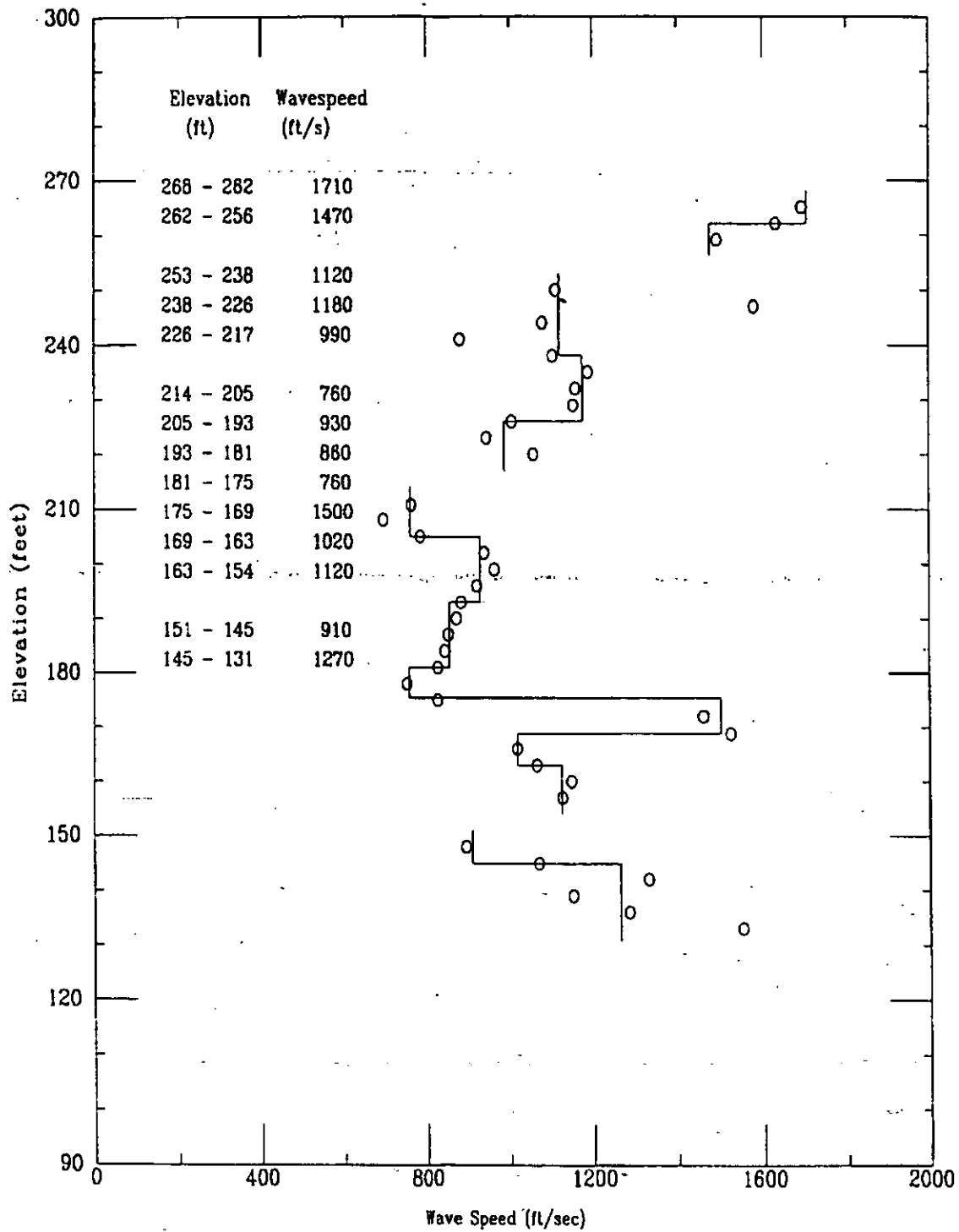
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CPT-157

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Speeds

03/05/98



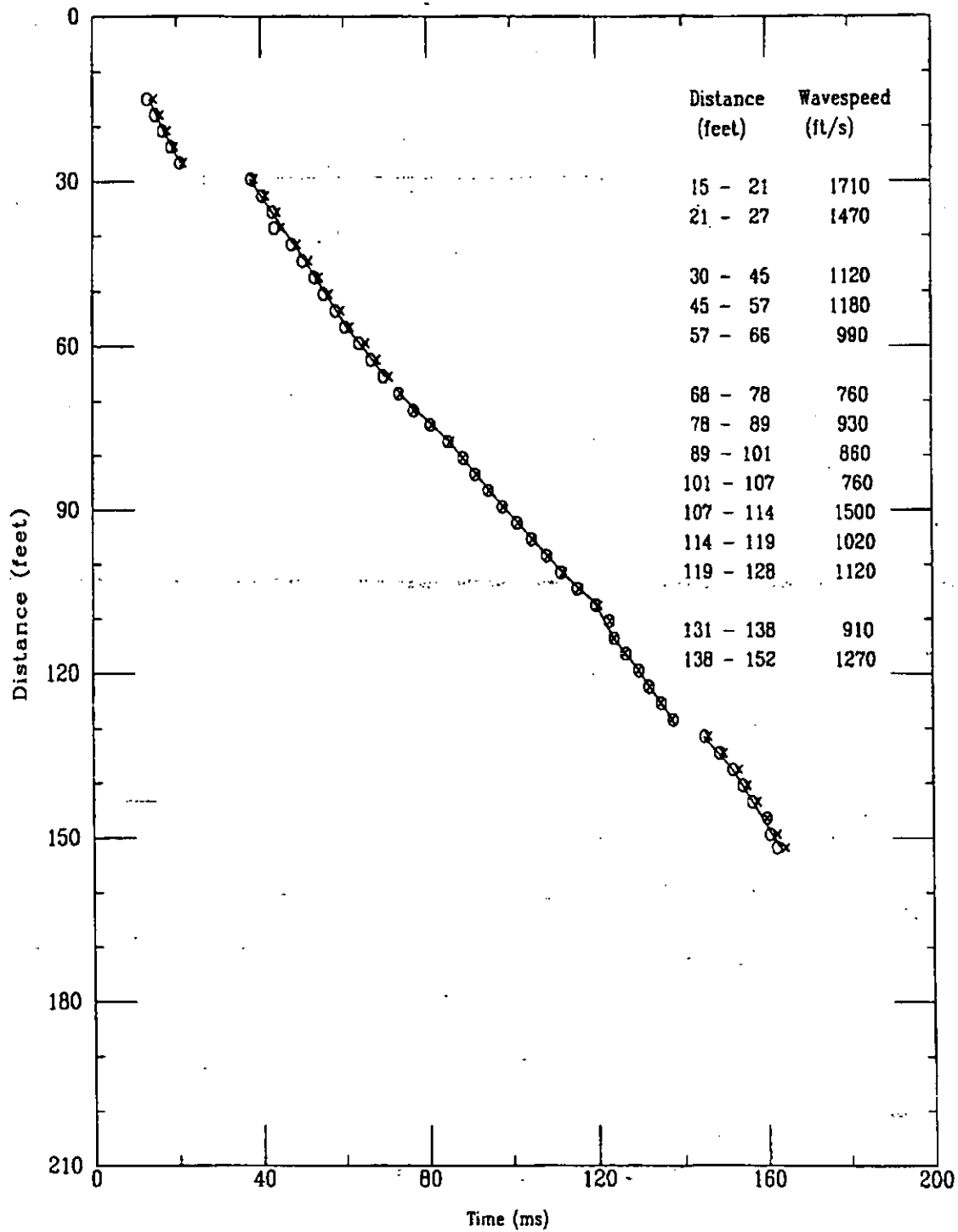
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APPLIED RESEARCH ASSOCIATES, INC.

03/05/98

Shear Wave Time of Peak

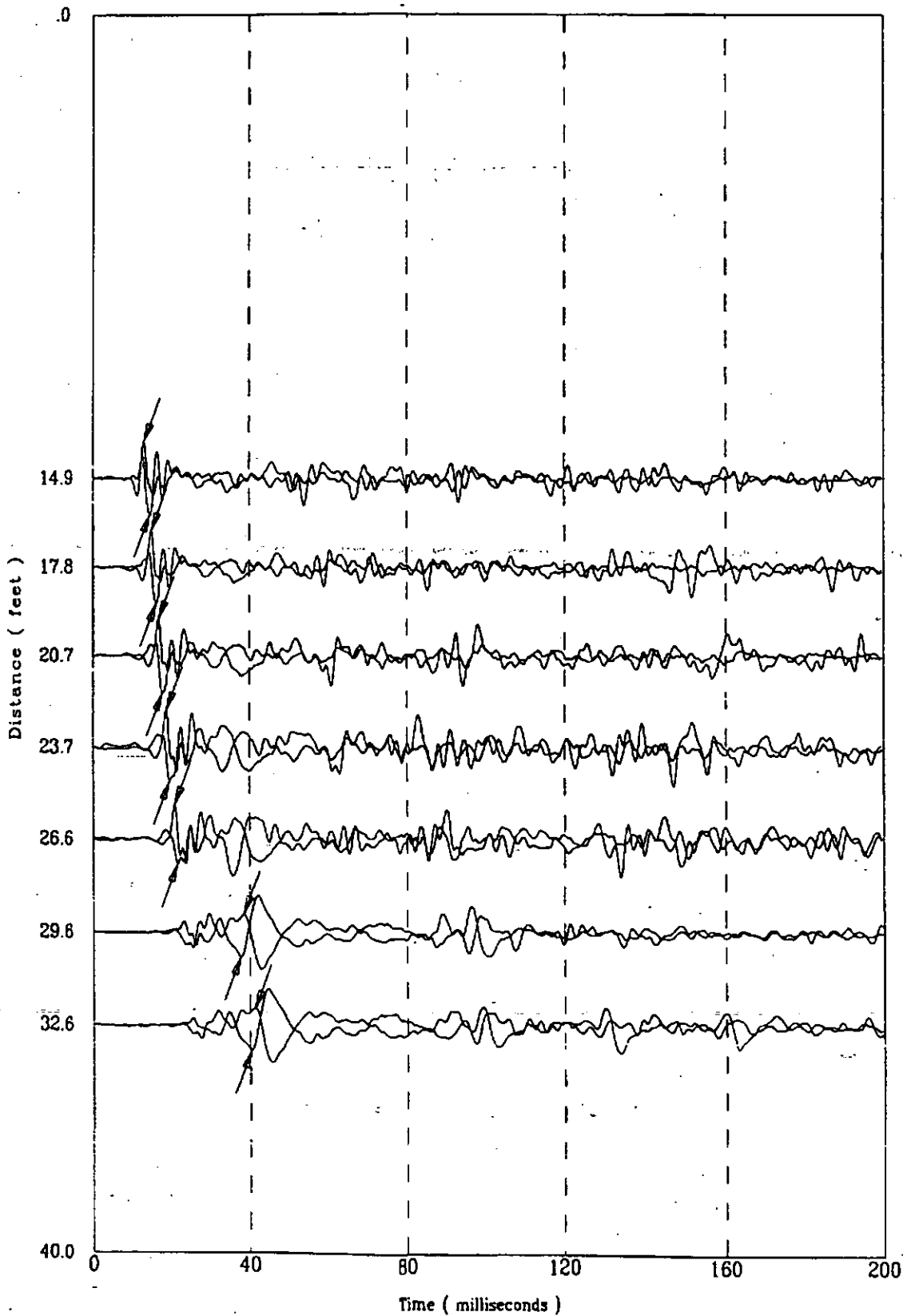


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R/O

Applied Research Associates, Inc.  
CPT-157

S Wave  
03/05/98

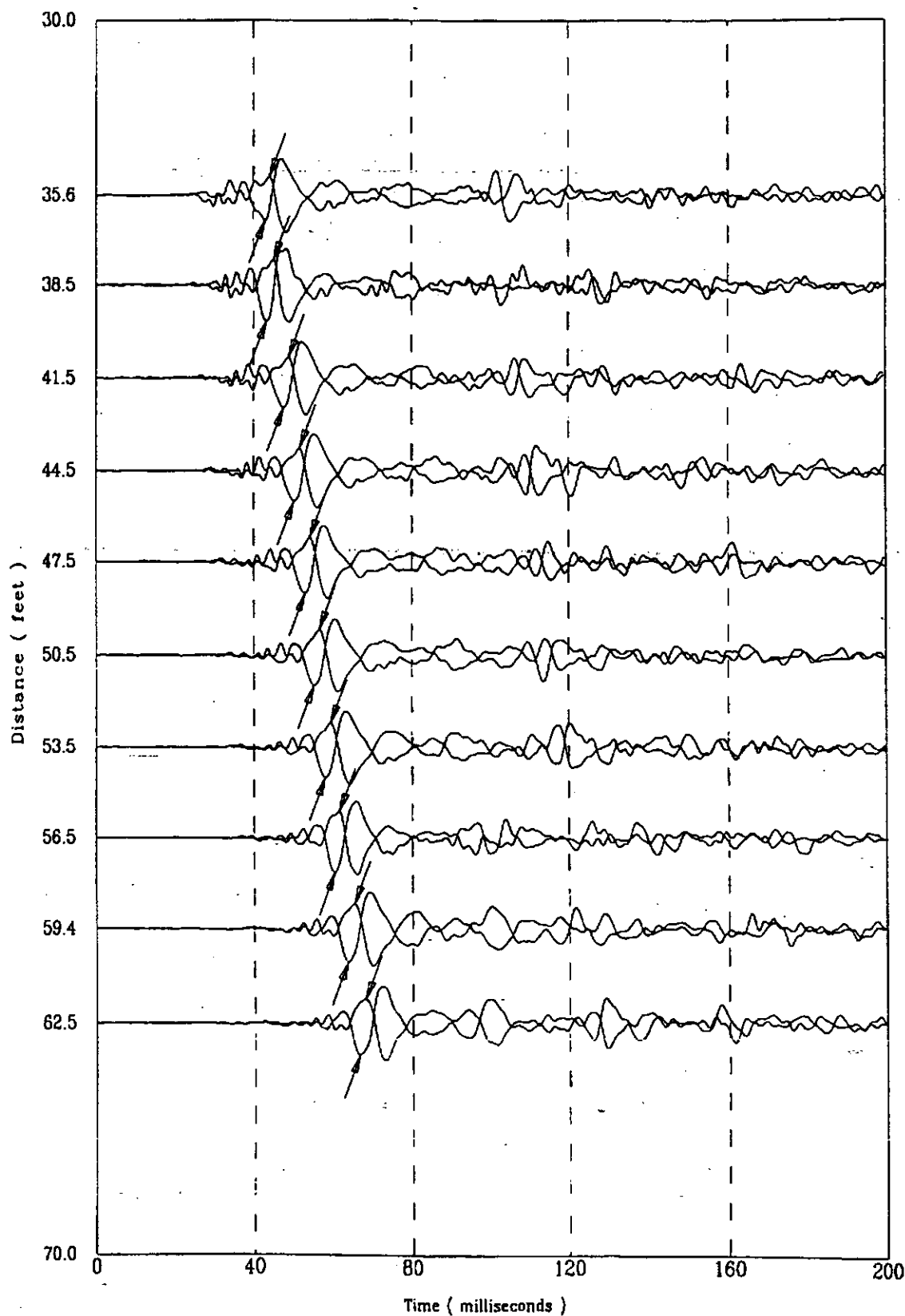


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S Wave  
03/05/98



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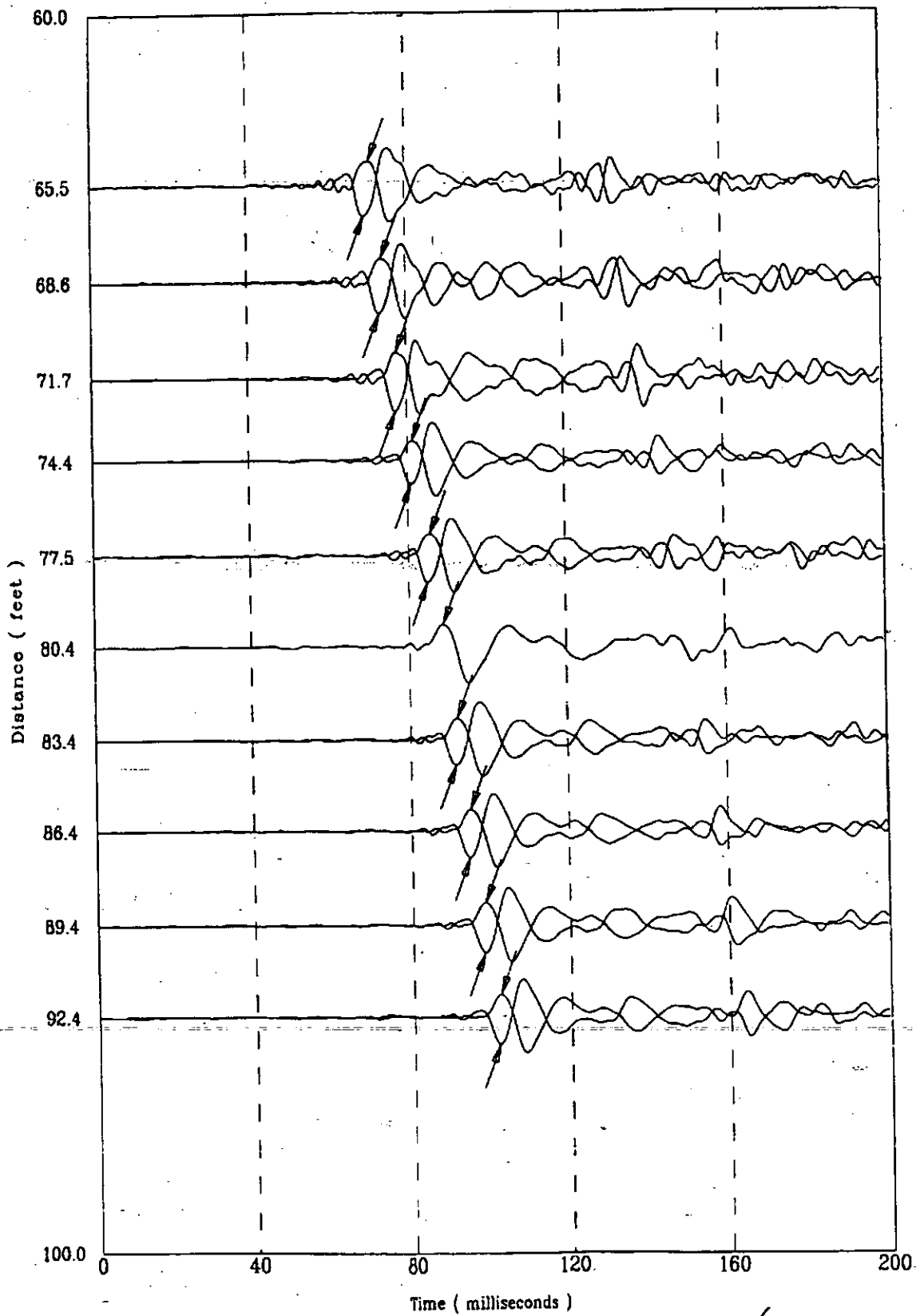
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R/o

Applied Research Associates, Inc.  
CPT-157

S Wave  
03/05/98



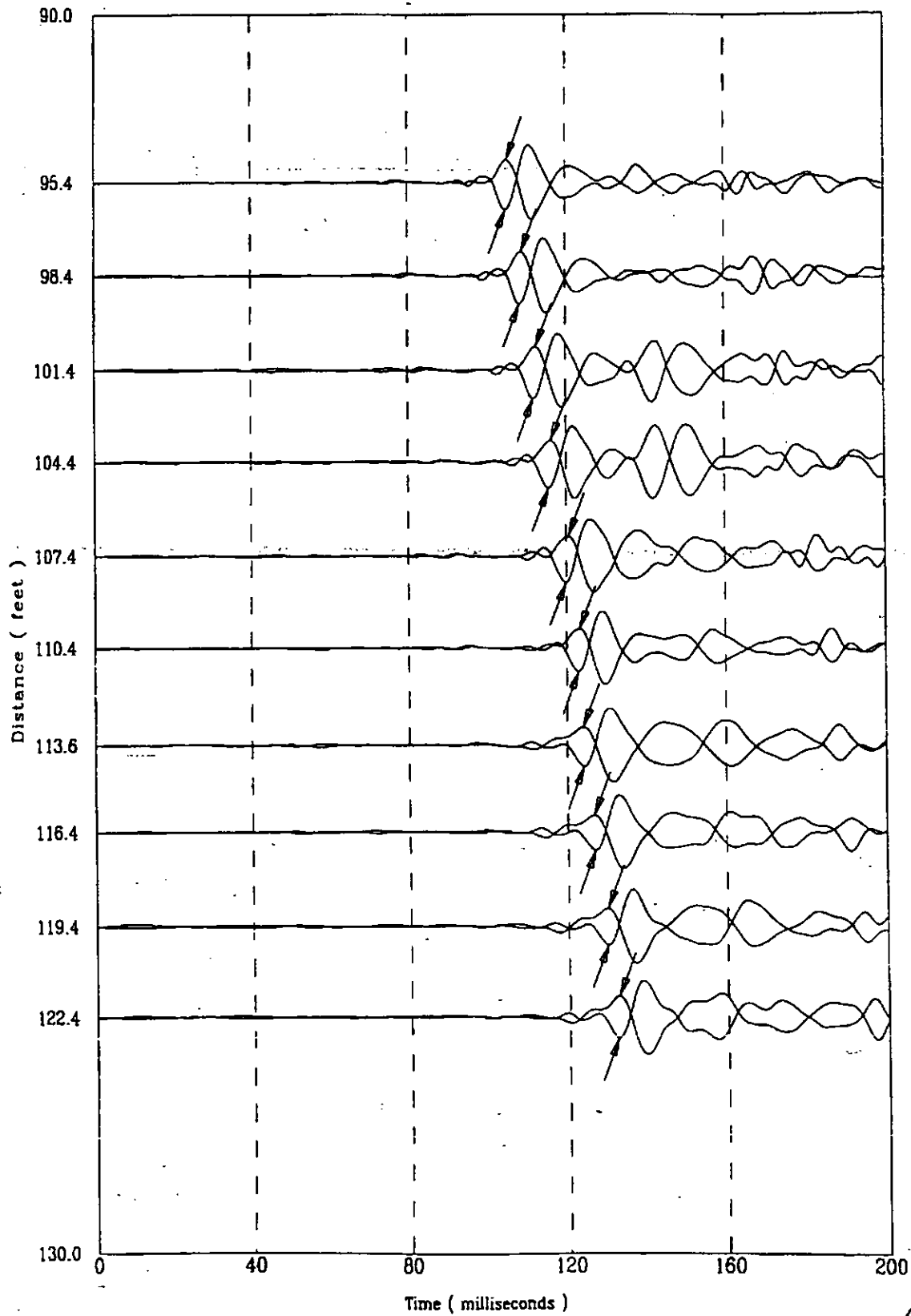
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CPT-157

S Wave  
03/05/98



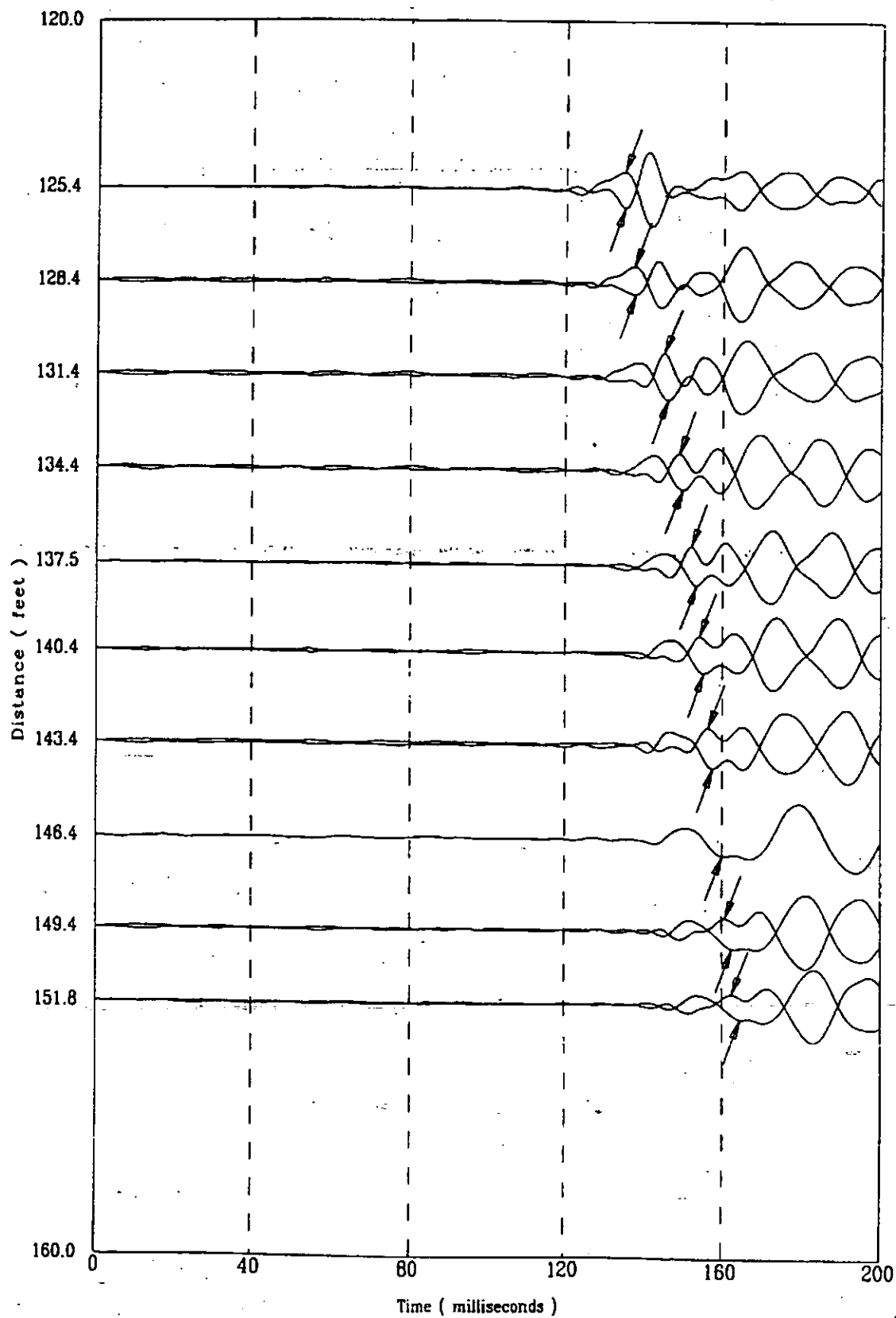
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S Wave  
03/05/98



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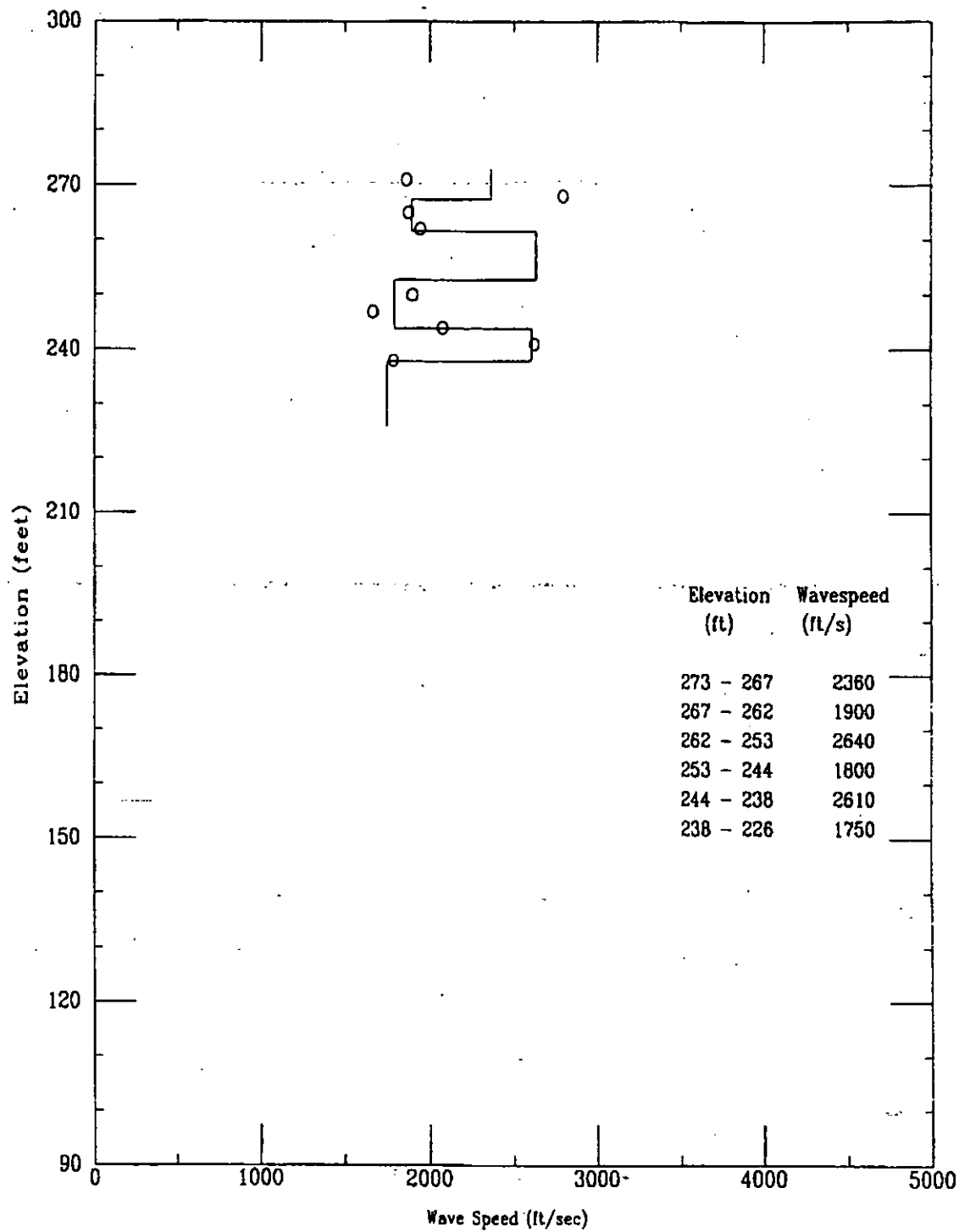
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APPLIED RESEARCH ASSOCIATES, INC.

03/05/98

Compression Wave Speeds

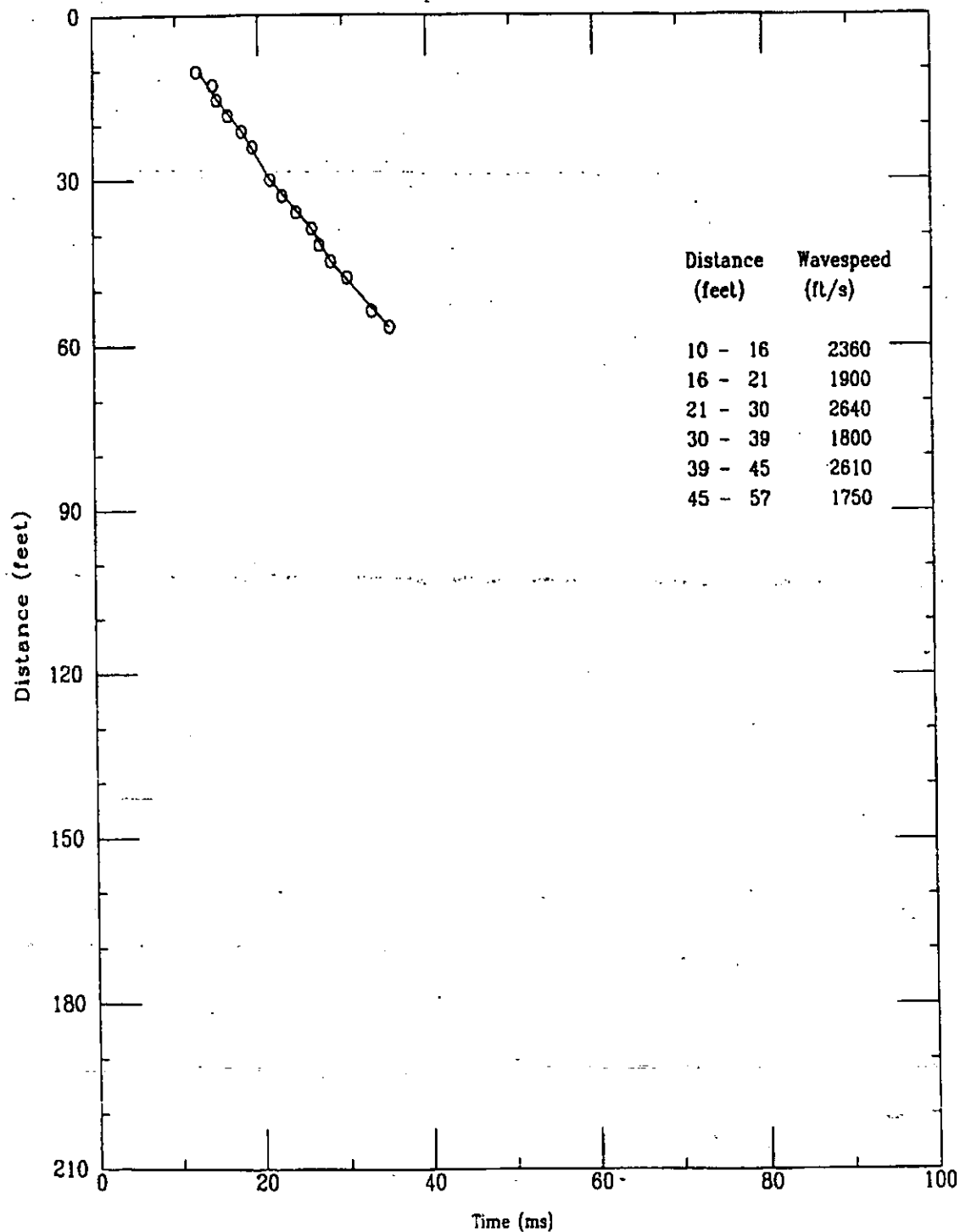


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Compression Wave Time of Peak

03/05/98

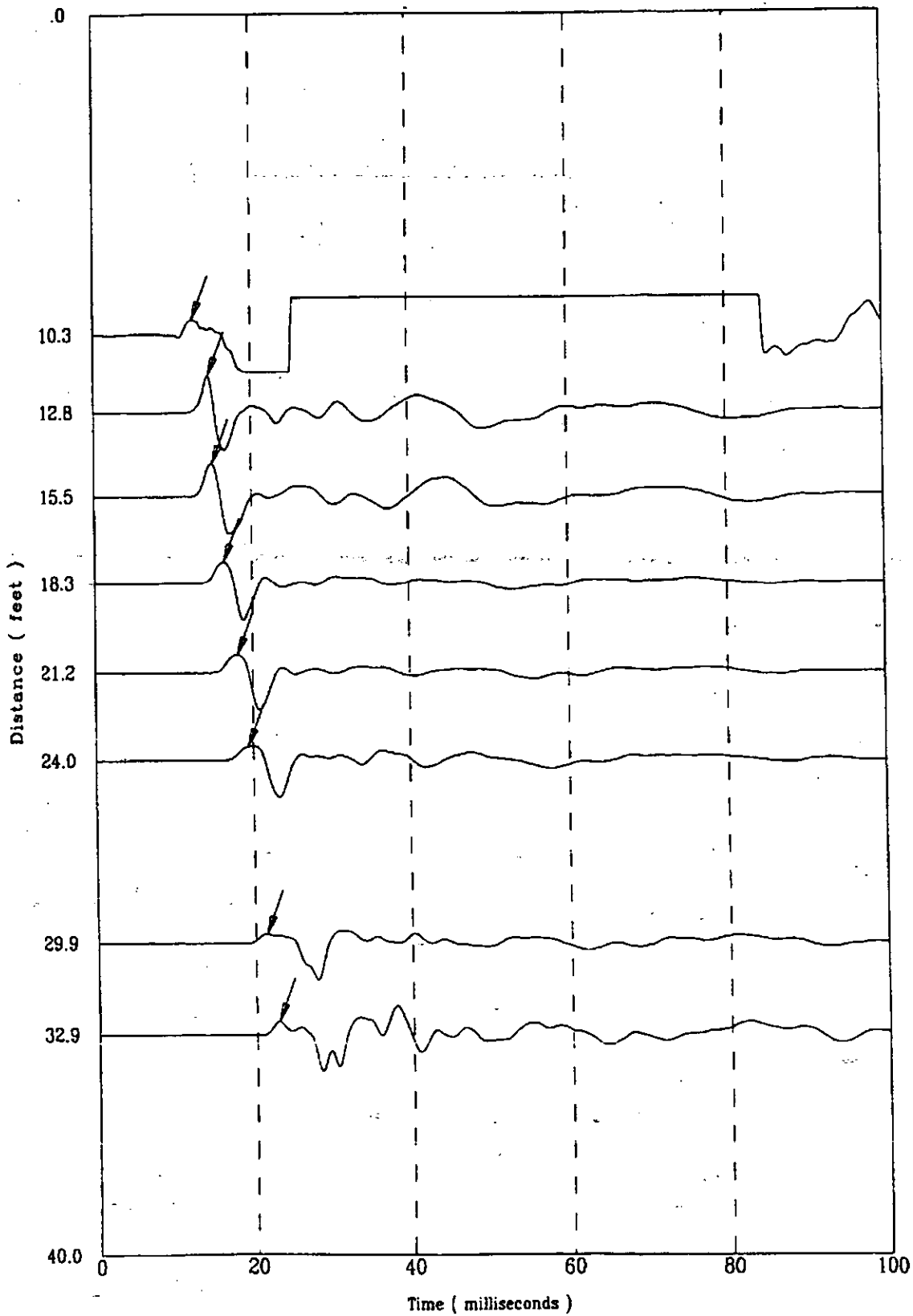


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CPT-157

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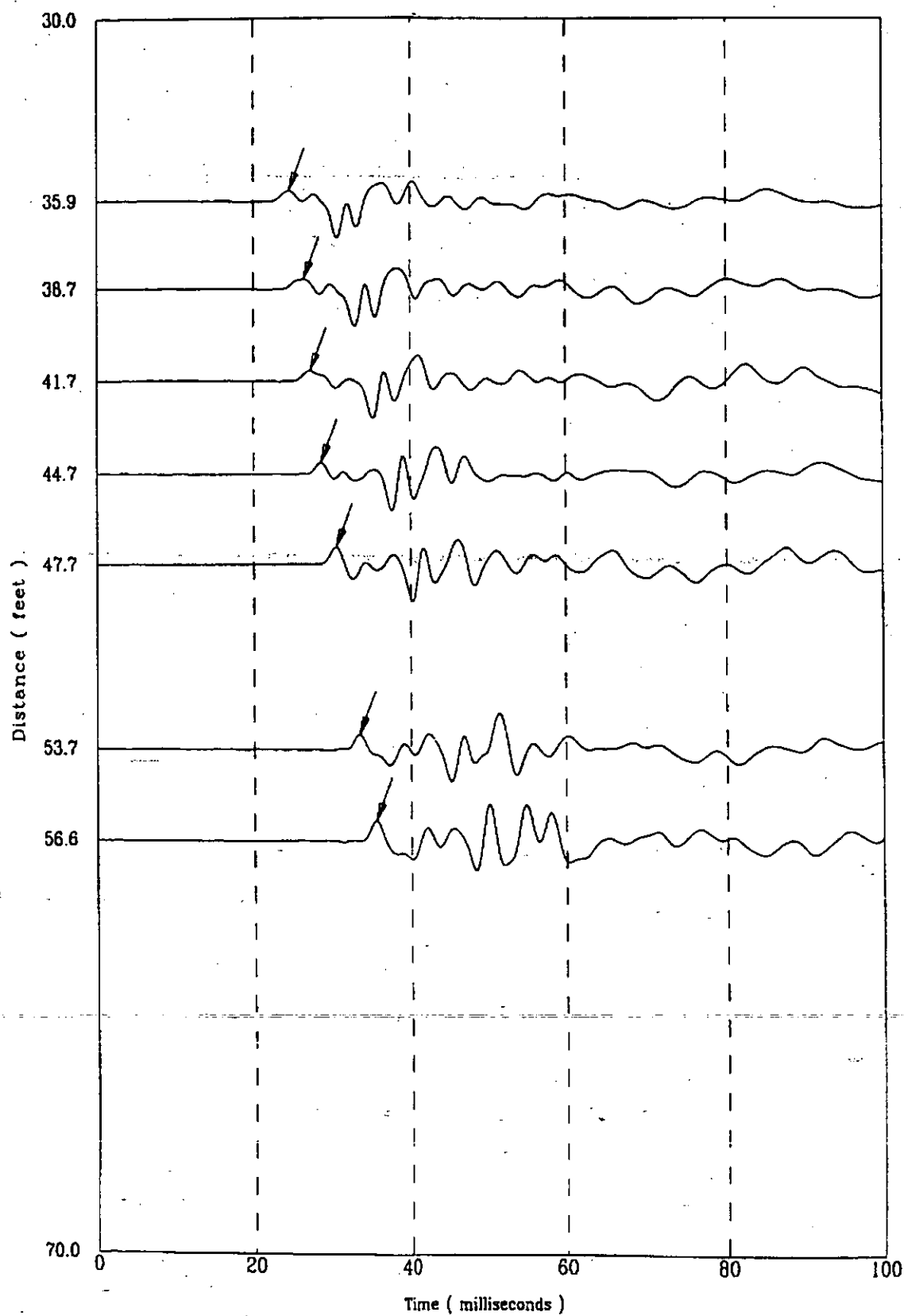


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R/O

Applied Research Associates, Inc.  
CPT-157

P Wave  
03/05/98



File 405M804S

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CPT-159

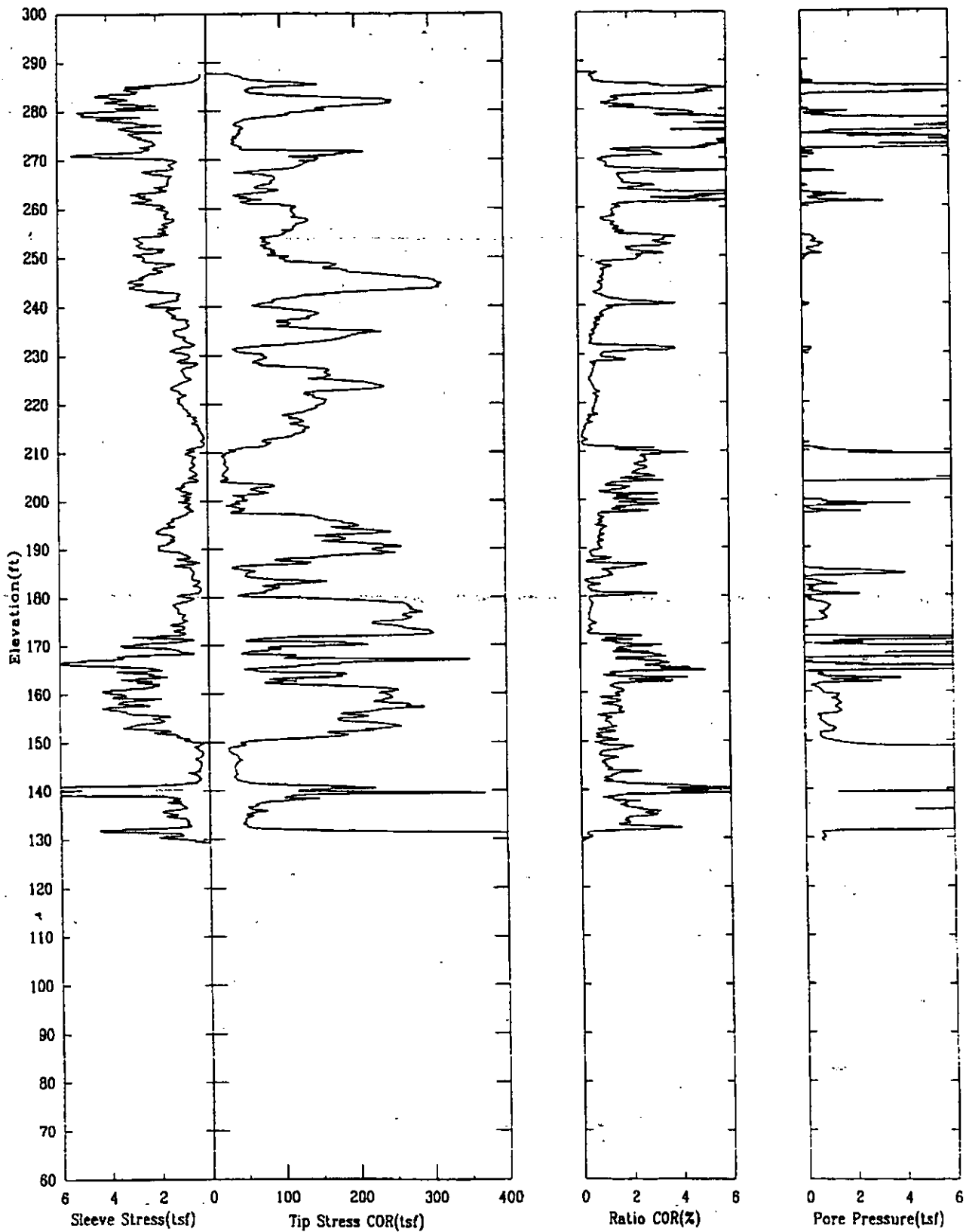
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K02TRT F-00001  
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North 79171.1

East 55195.0

Elevation 293.7





CPT-159

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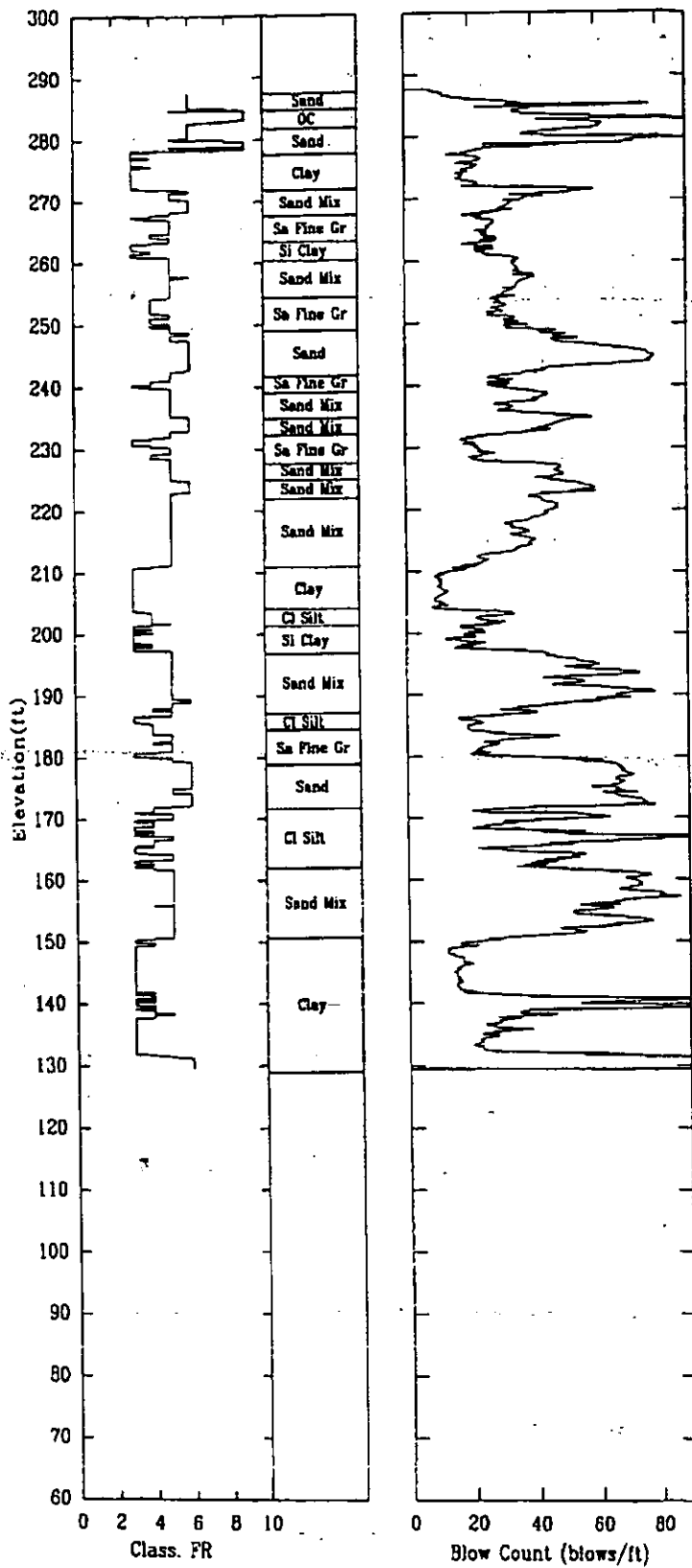
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North 79171.1

East 55195.0

Elevation 293.7

R/O

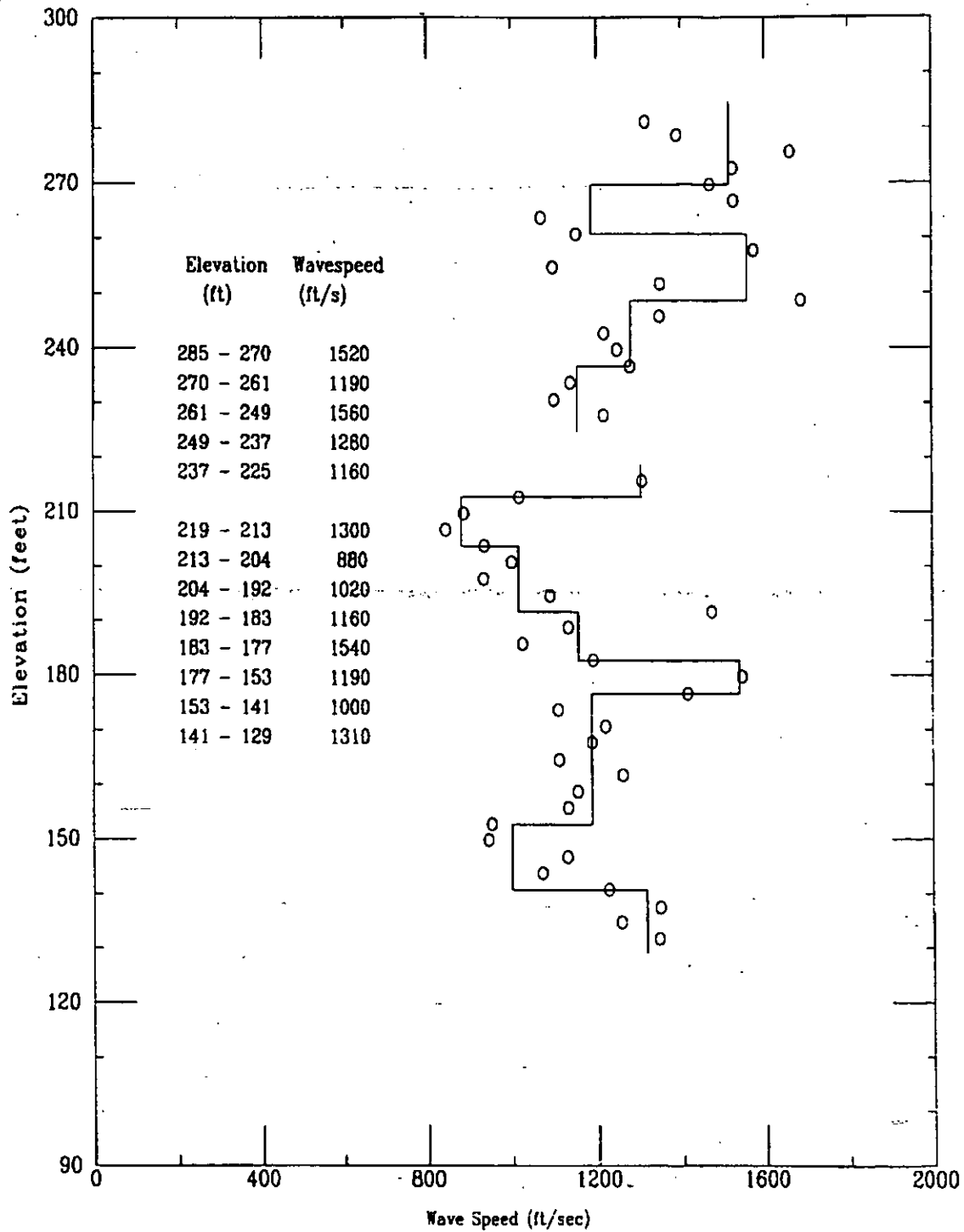


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APPLIED RESEARCH ASSOCIATES, INC.

02/17/98

Shear Wave Speeds

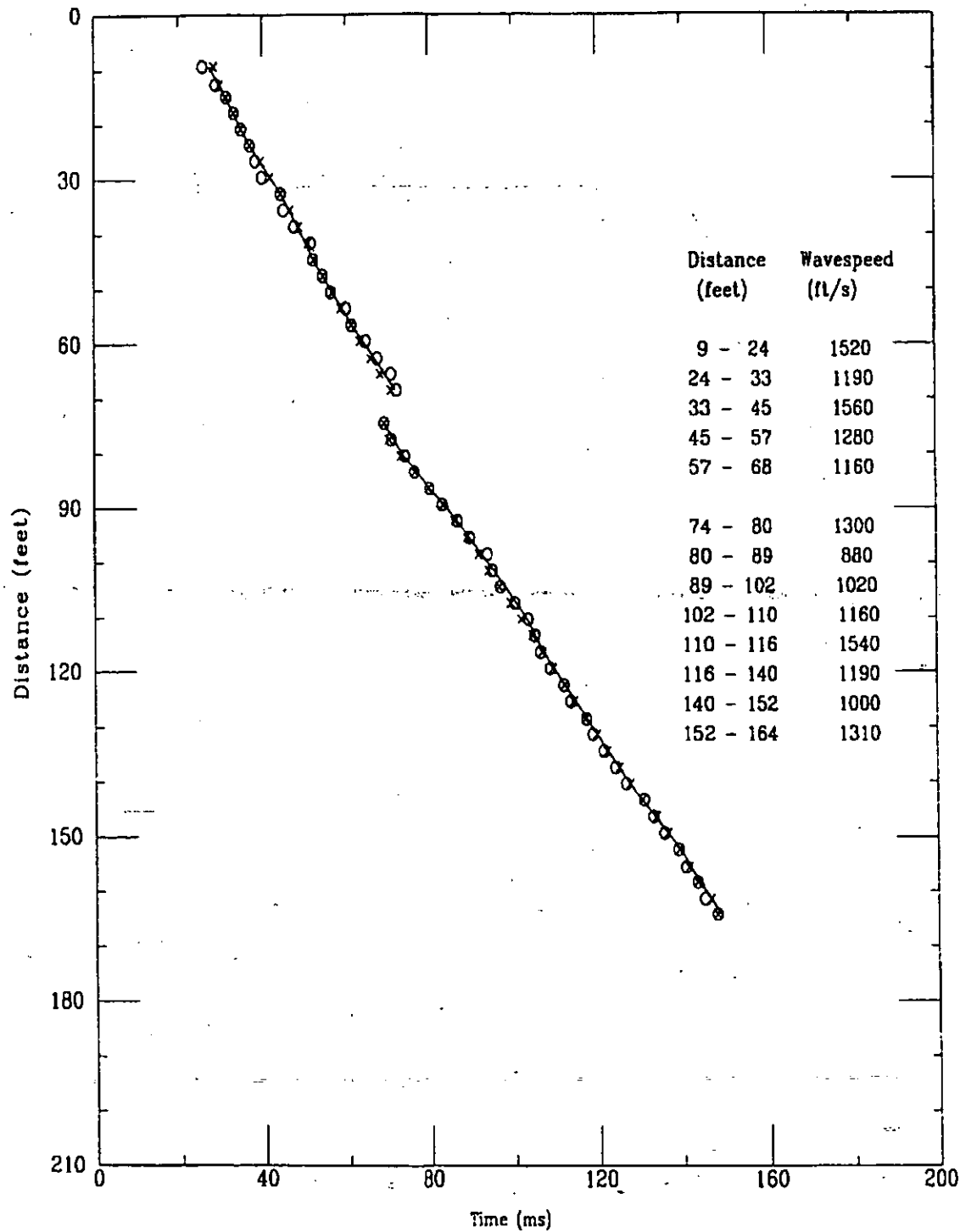


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Shear Wave Time of Peak

02/17/98

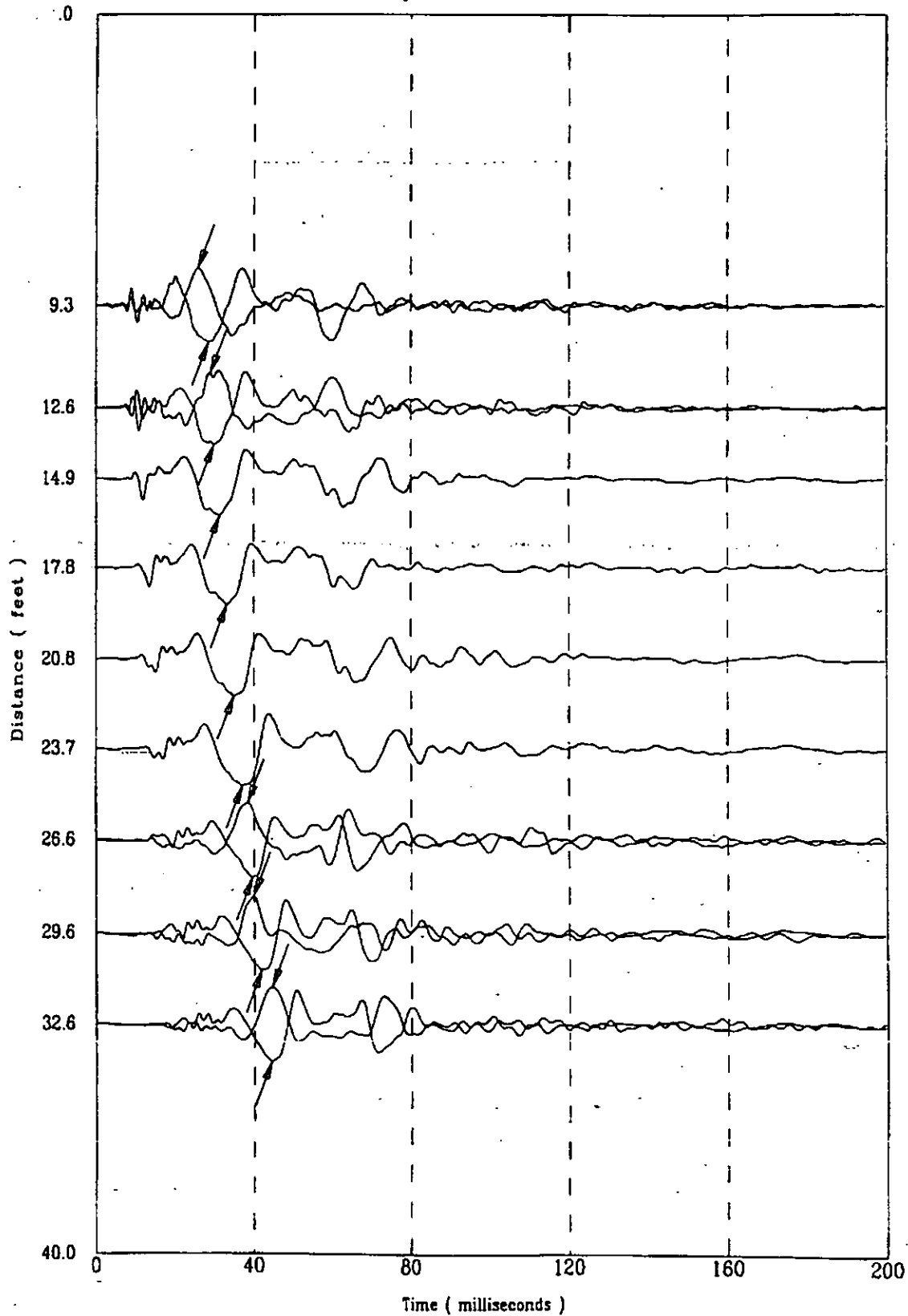


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Applied Research Associates, Inc.  
CPT-159

S Wave  
02/17/98



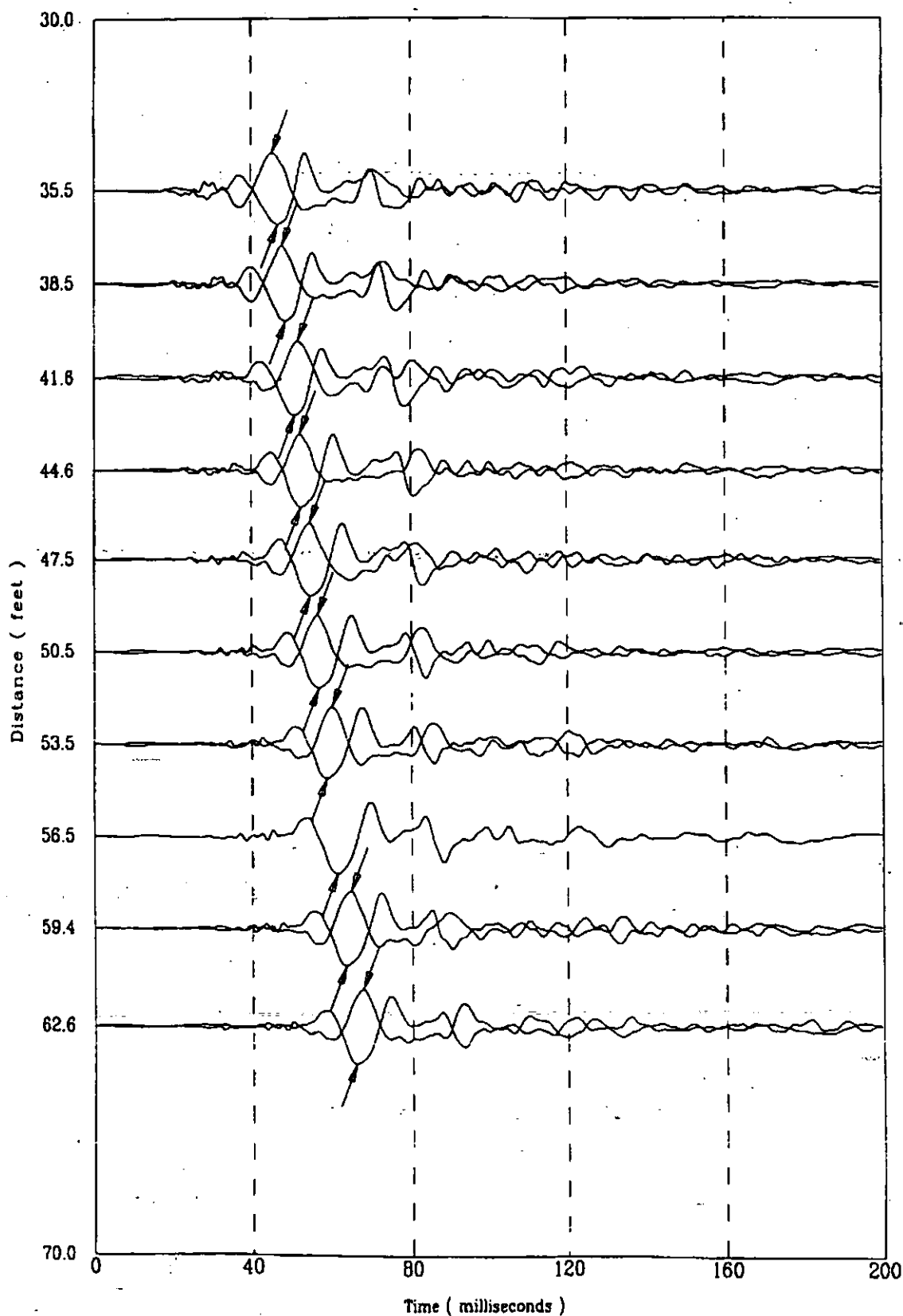
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S Wave  
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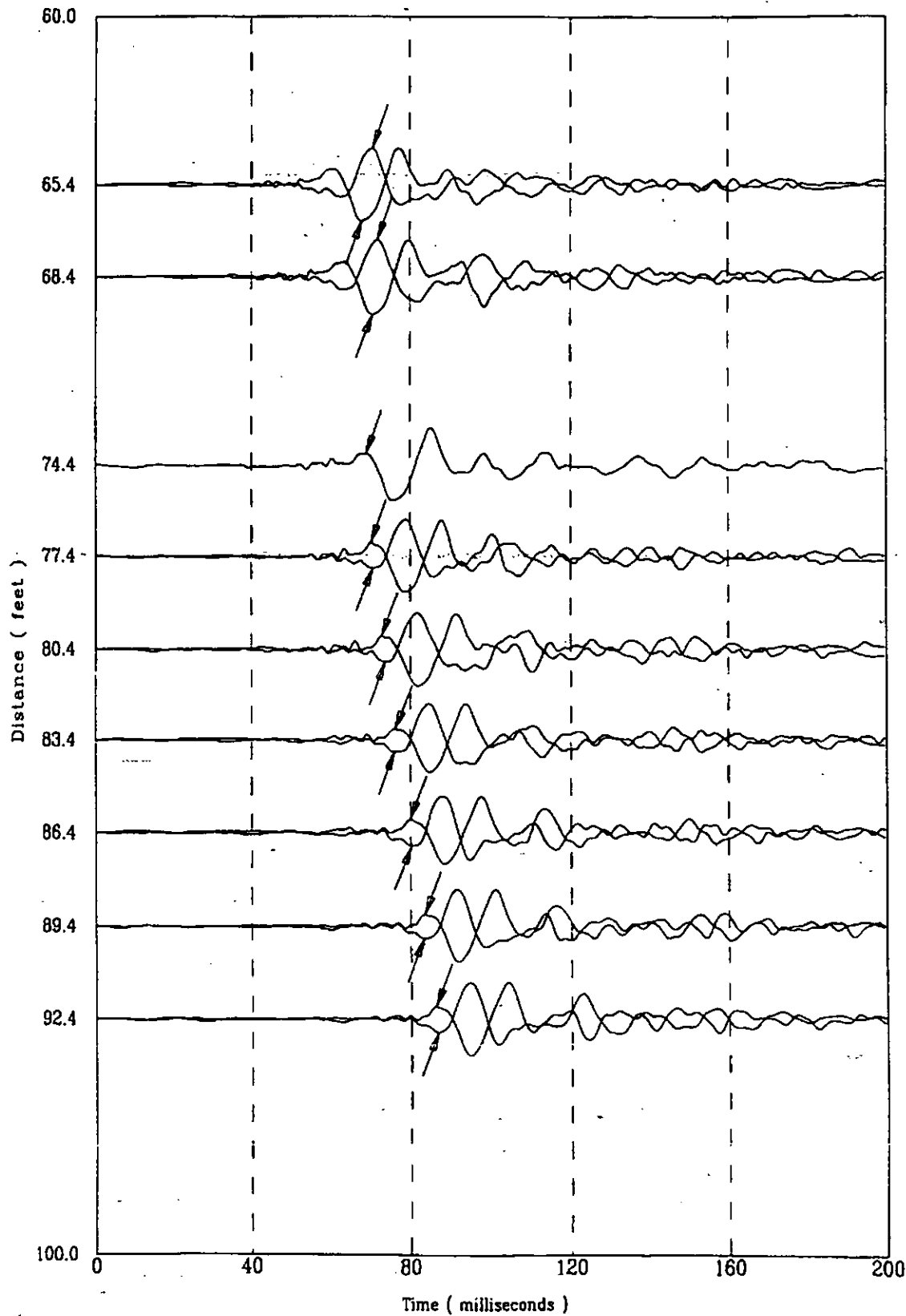
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S Wave  
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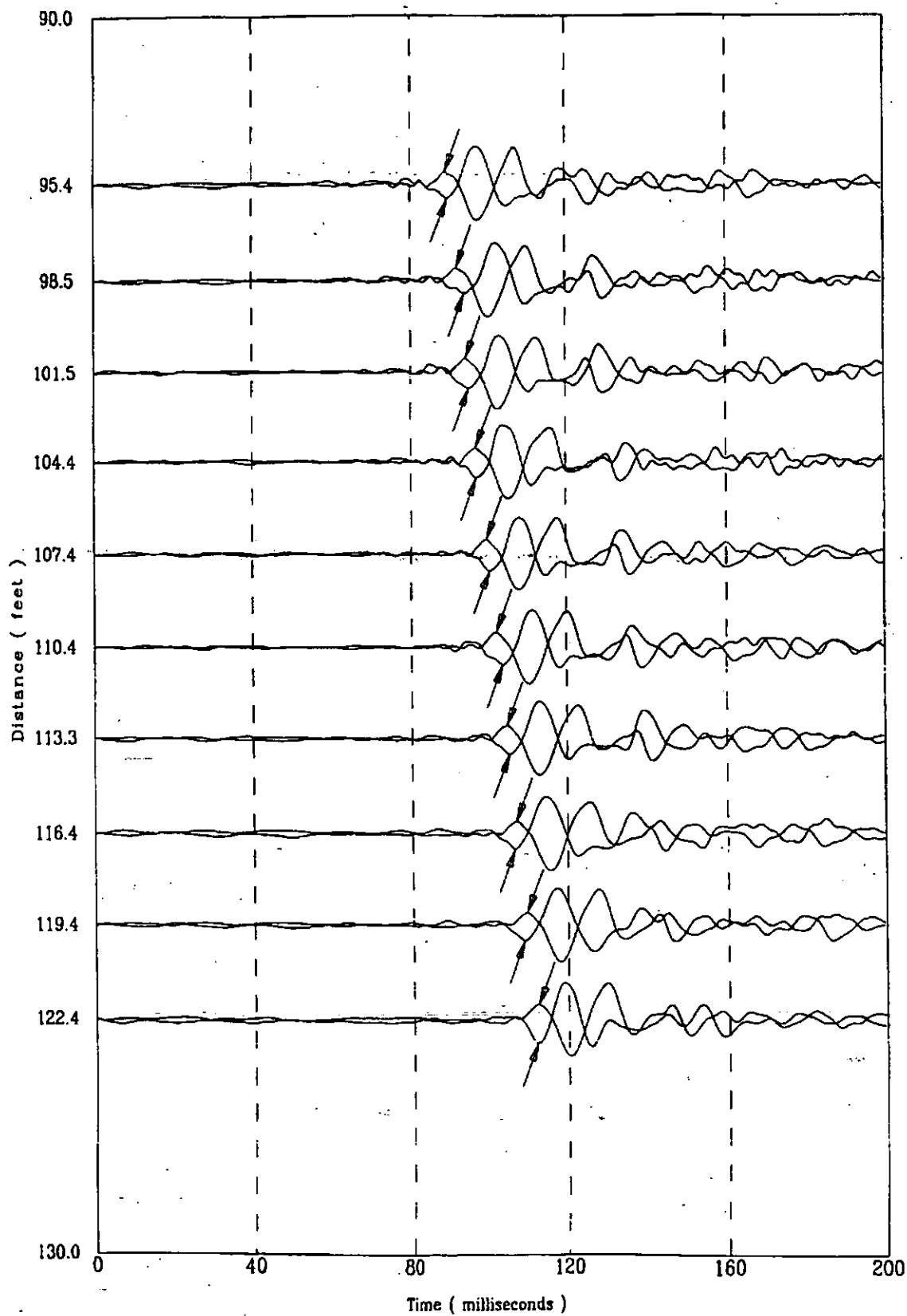
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Applied Research Associates, Inc.  
CPT-159

S Wave  
02/17/98



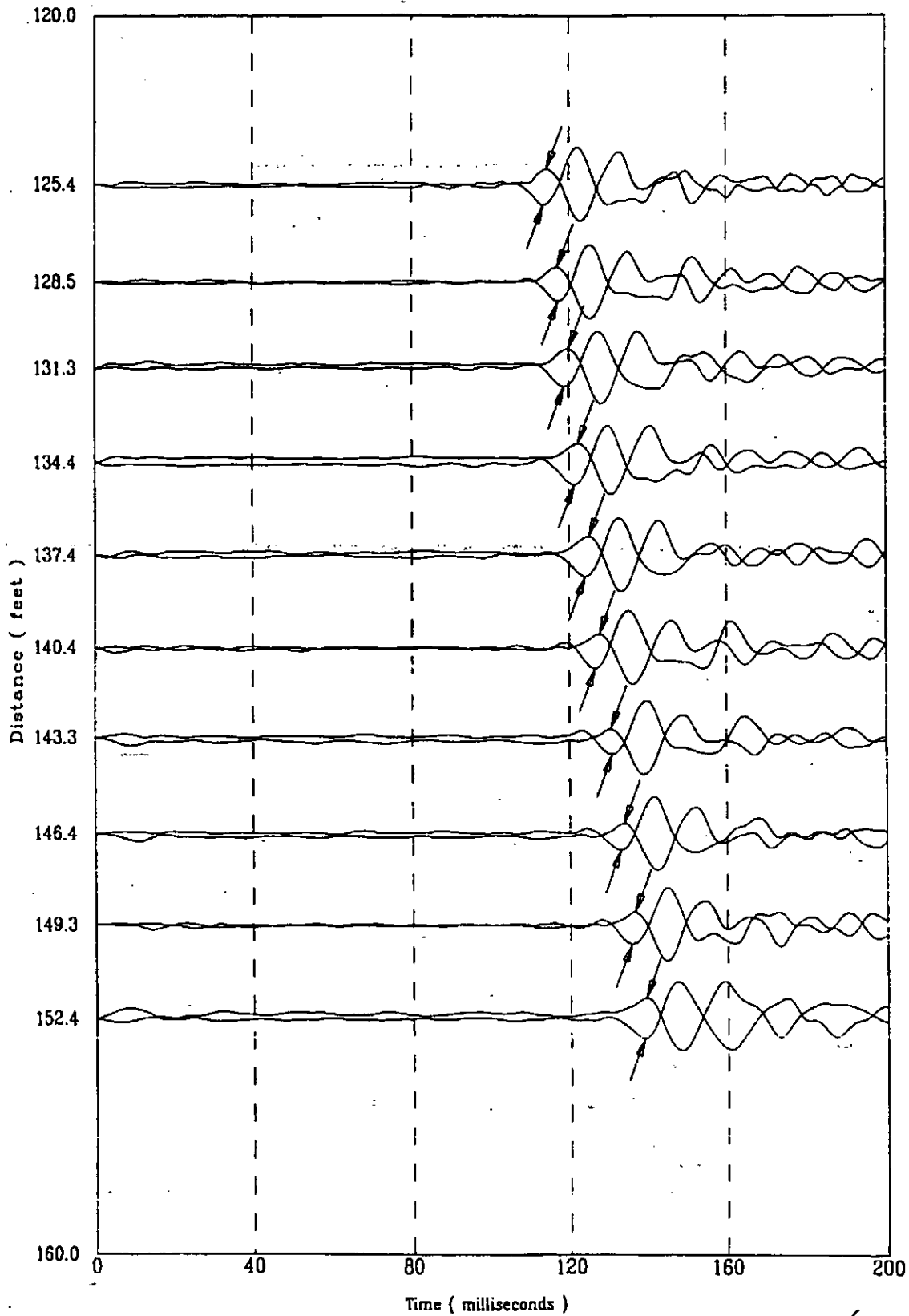
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S Wave  
02/17/98



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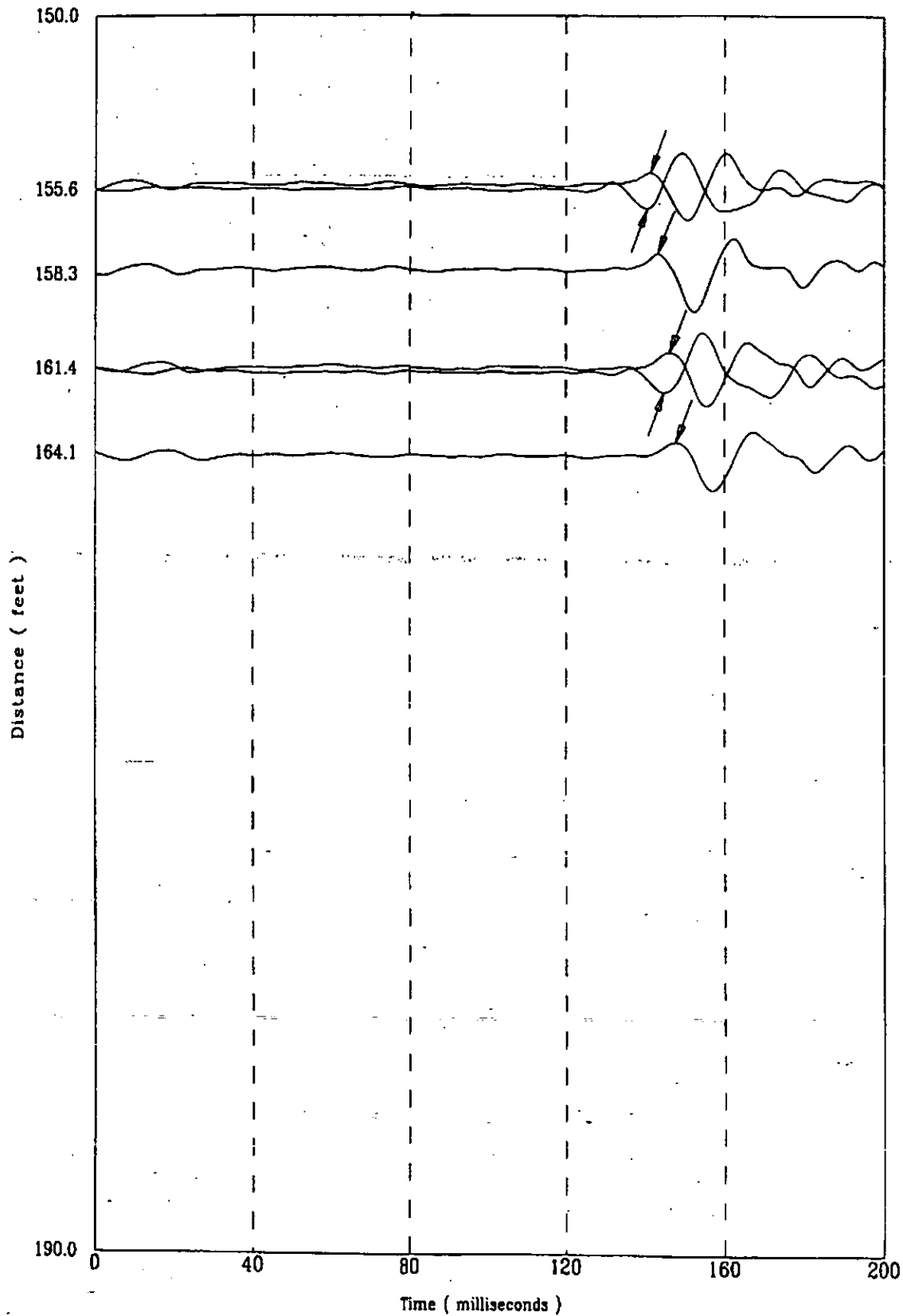
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CPT-159

S Wave  
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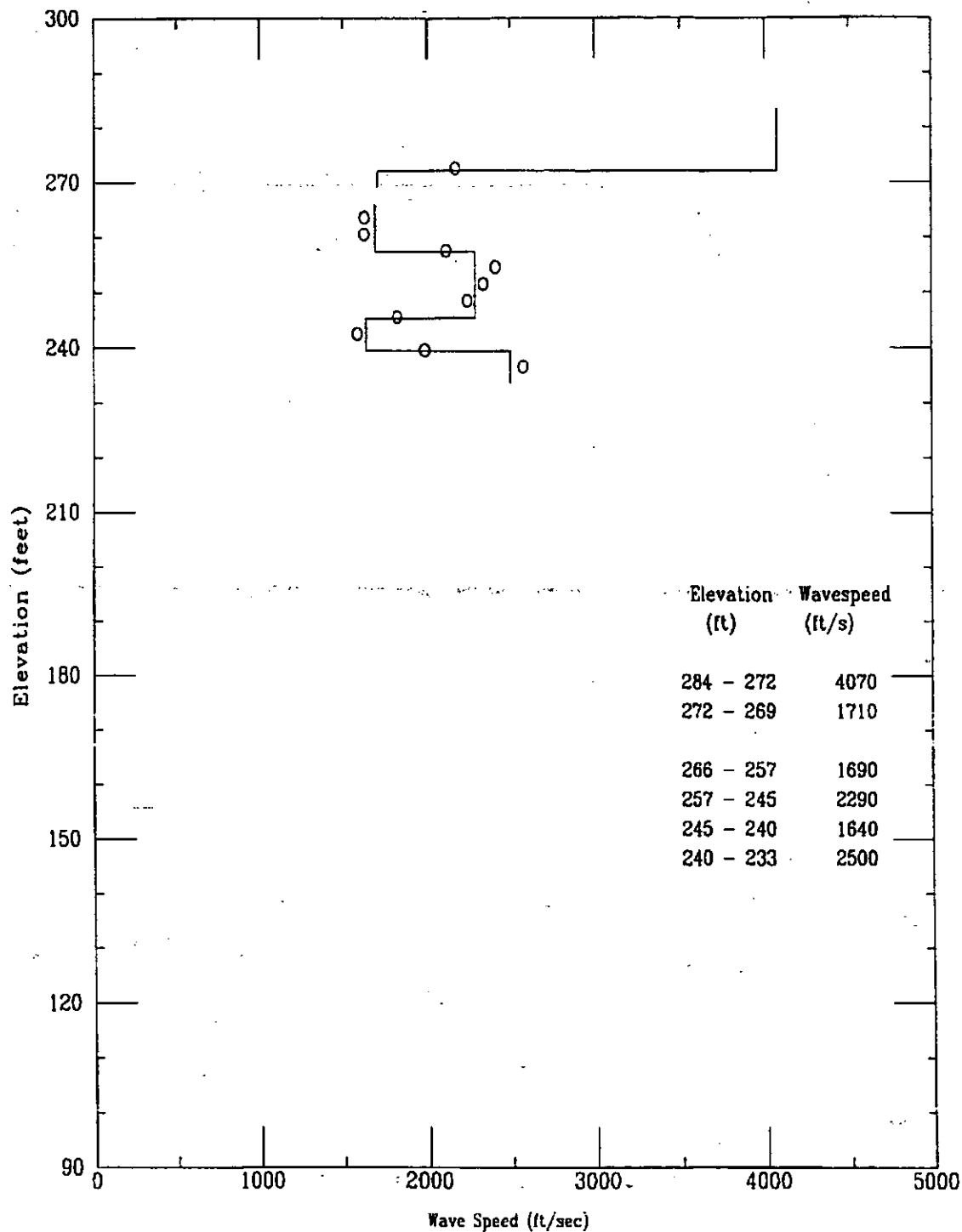


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CPT-159

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

02/17/98

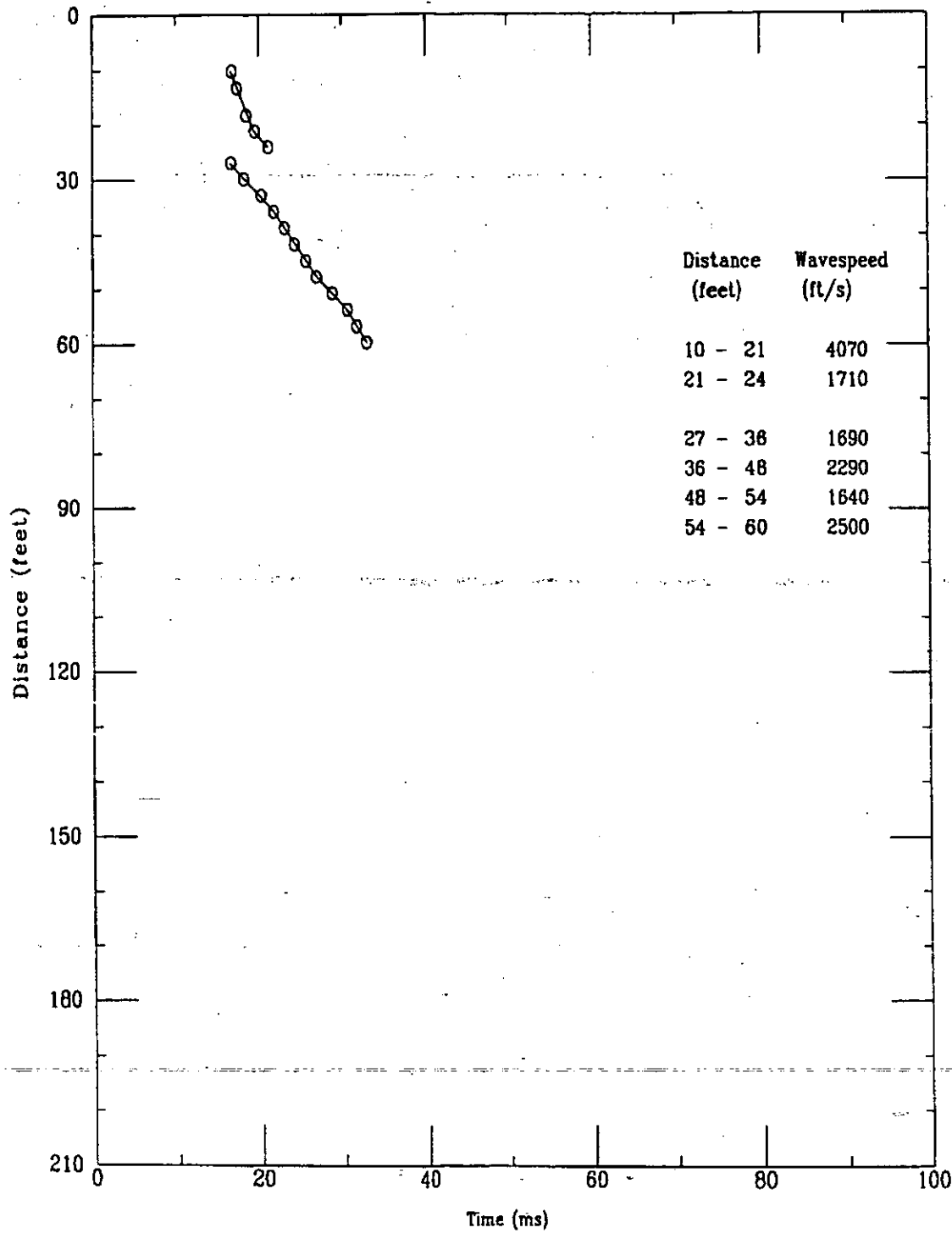


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Compression Wave Time of Peak

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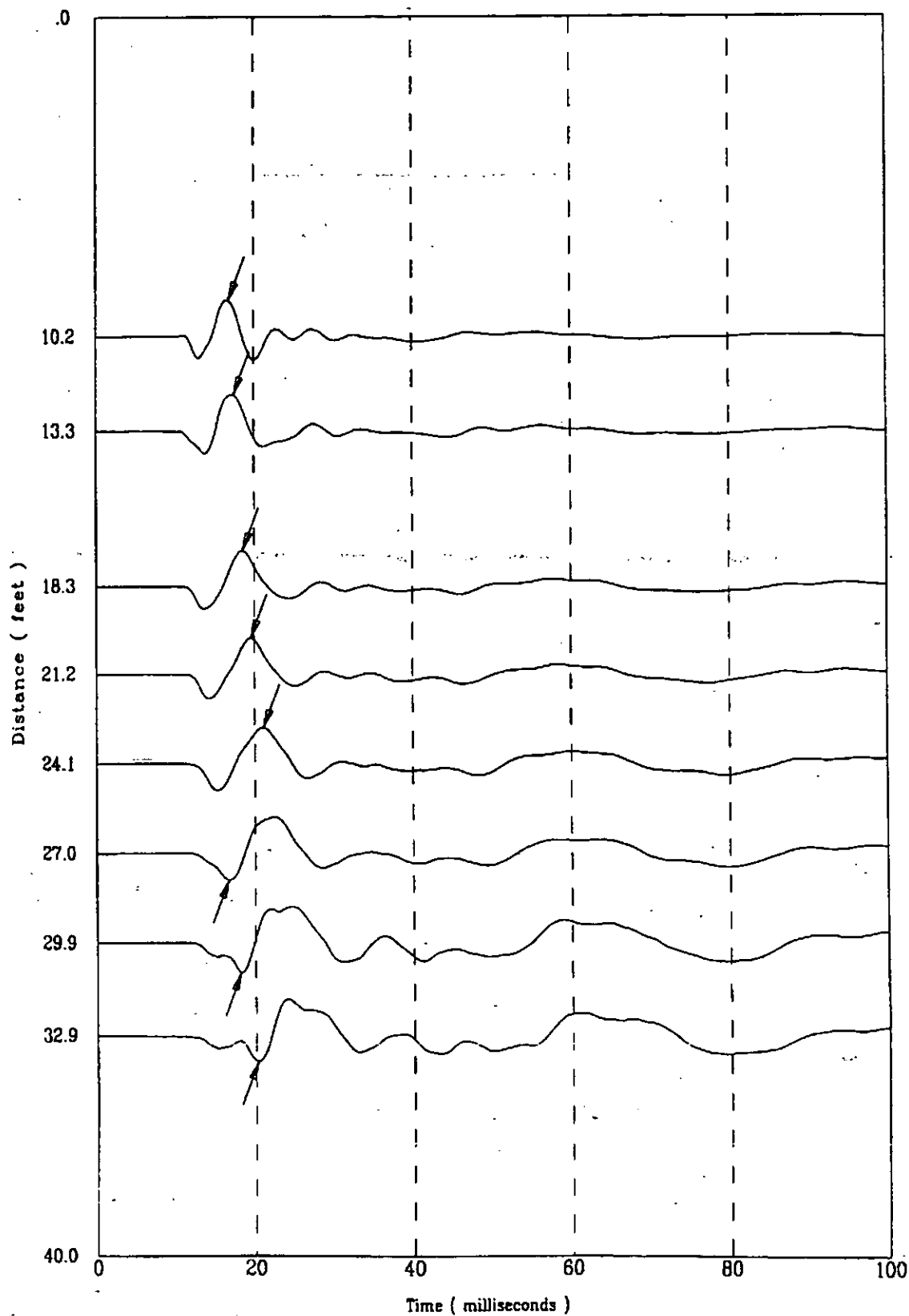


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P Wave  
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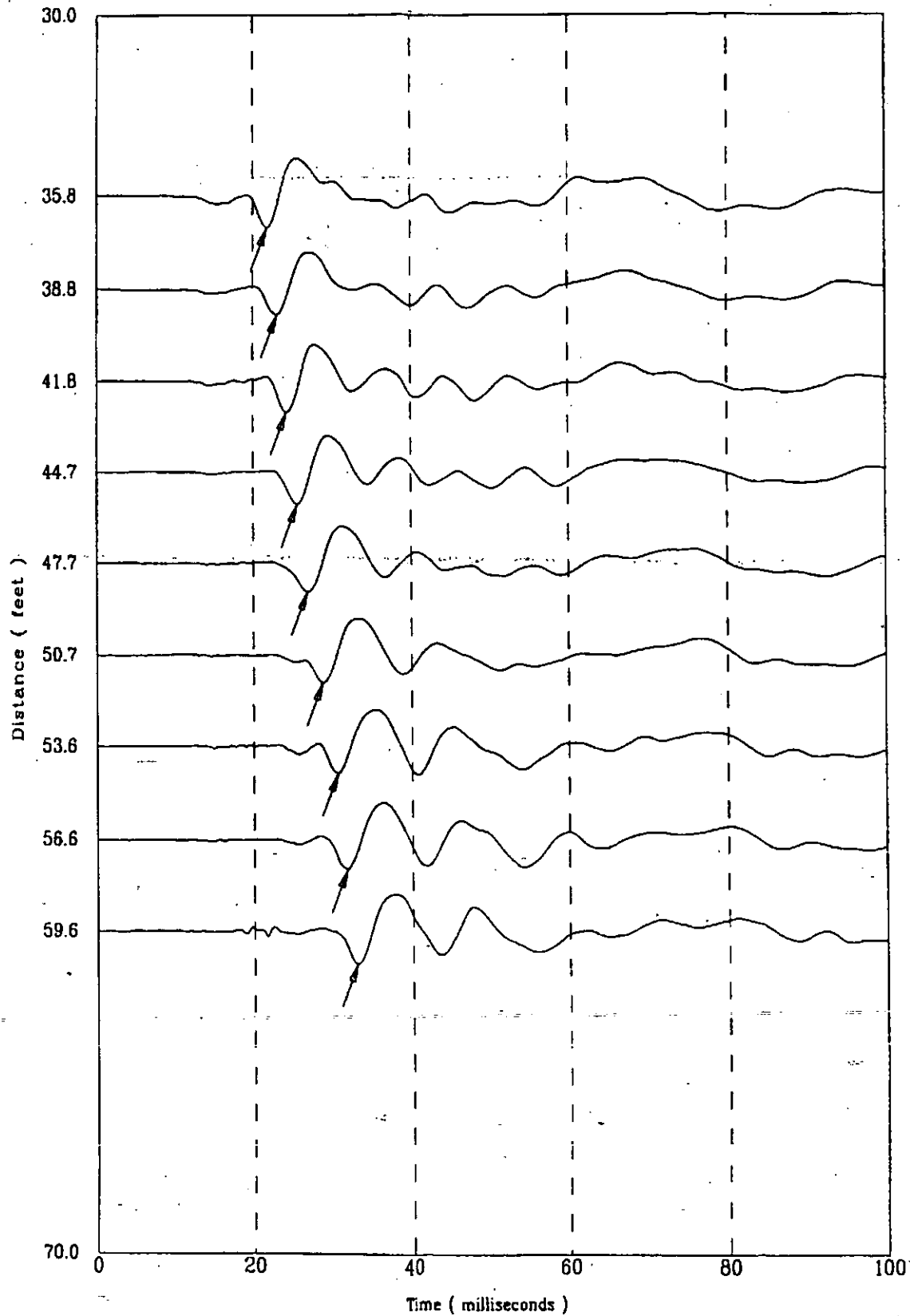
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File 4171801S

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CPT-163

APPLIED RESEARCH ASSOCIATES, INC.

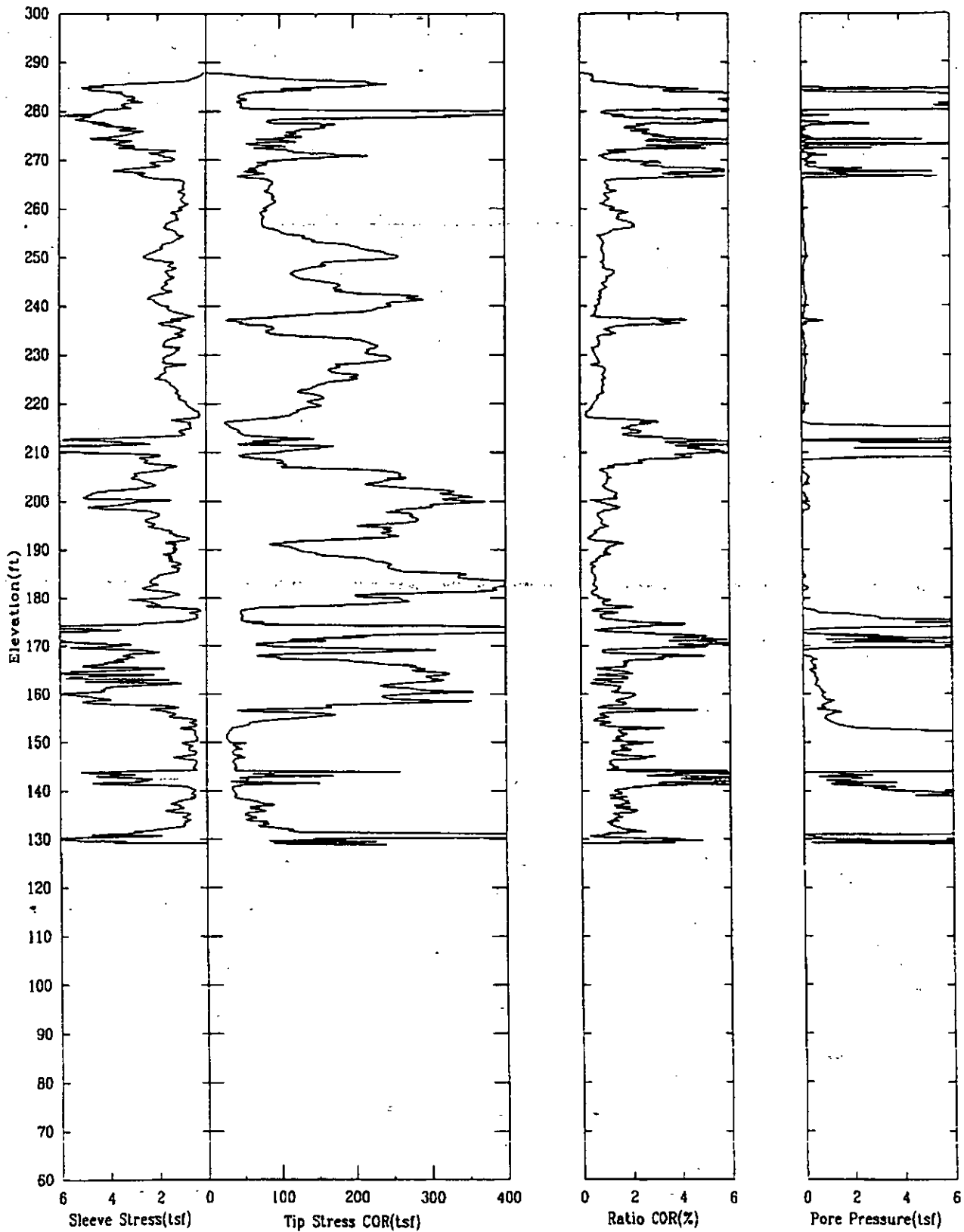
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North 79095.1

East 55261

Elevation 293.9



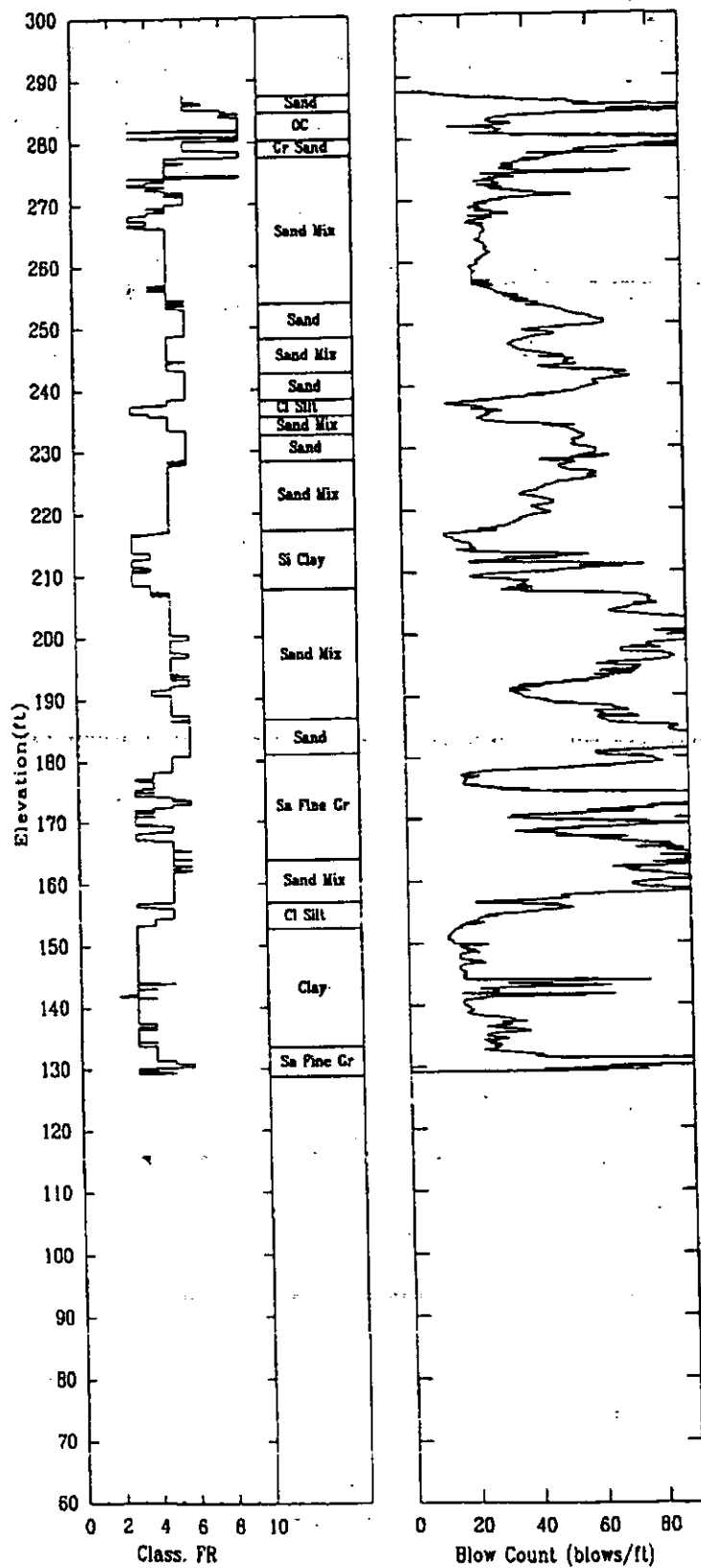
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North 79095.1

East 55261

Elevation 293.9

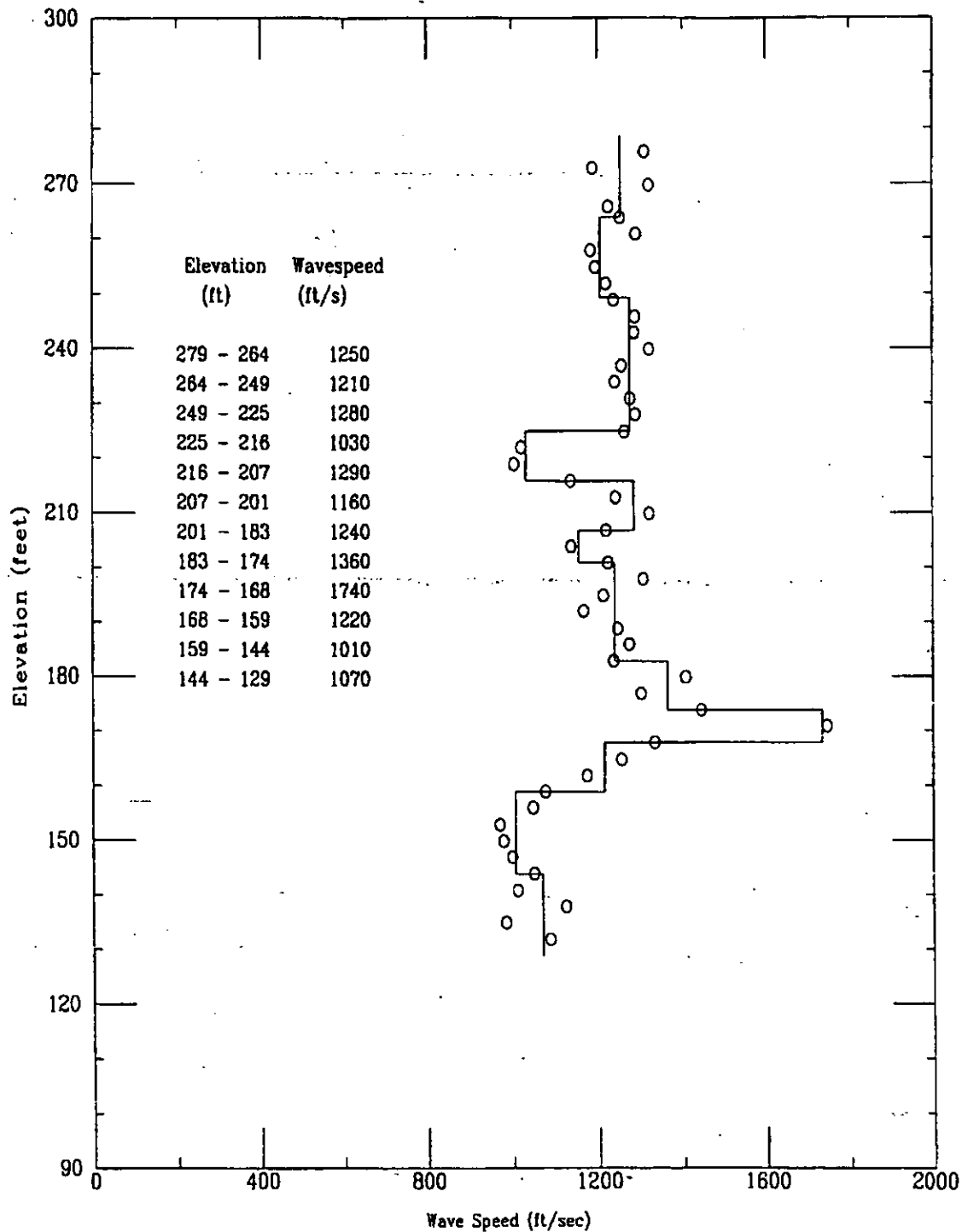
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APPLIED RESEARCH ASSOCIATES, INC.

02/25/98

Shear Wave Speeds





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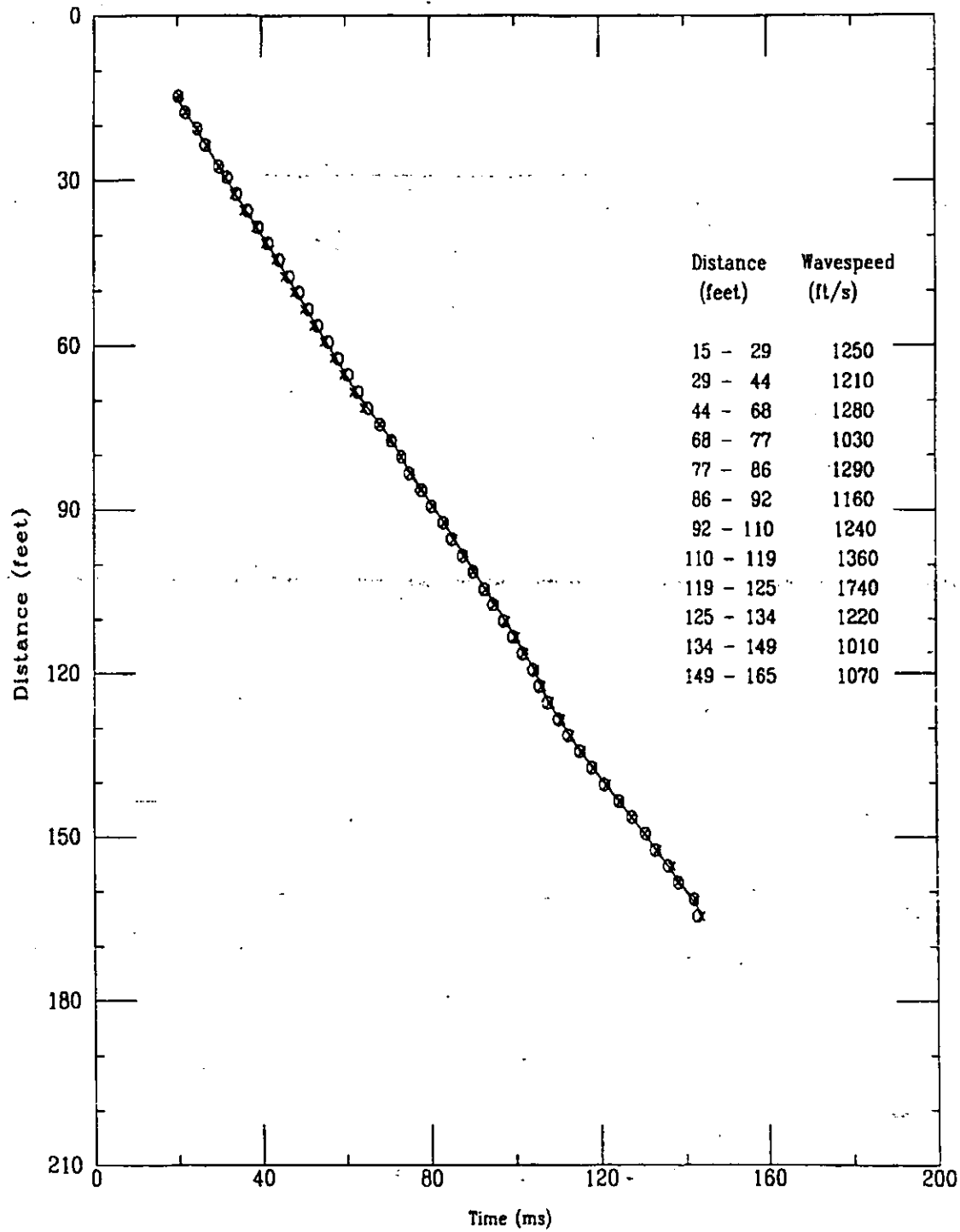
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02/25/98

Shear Wave Time of Peak



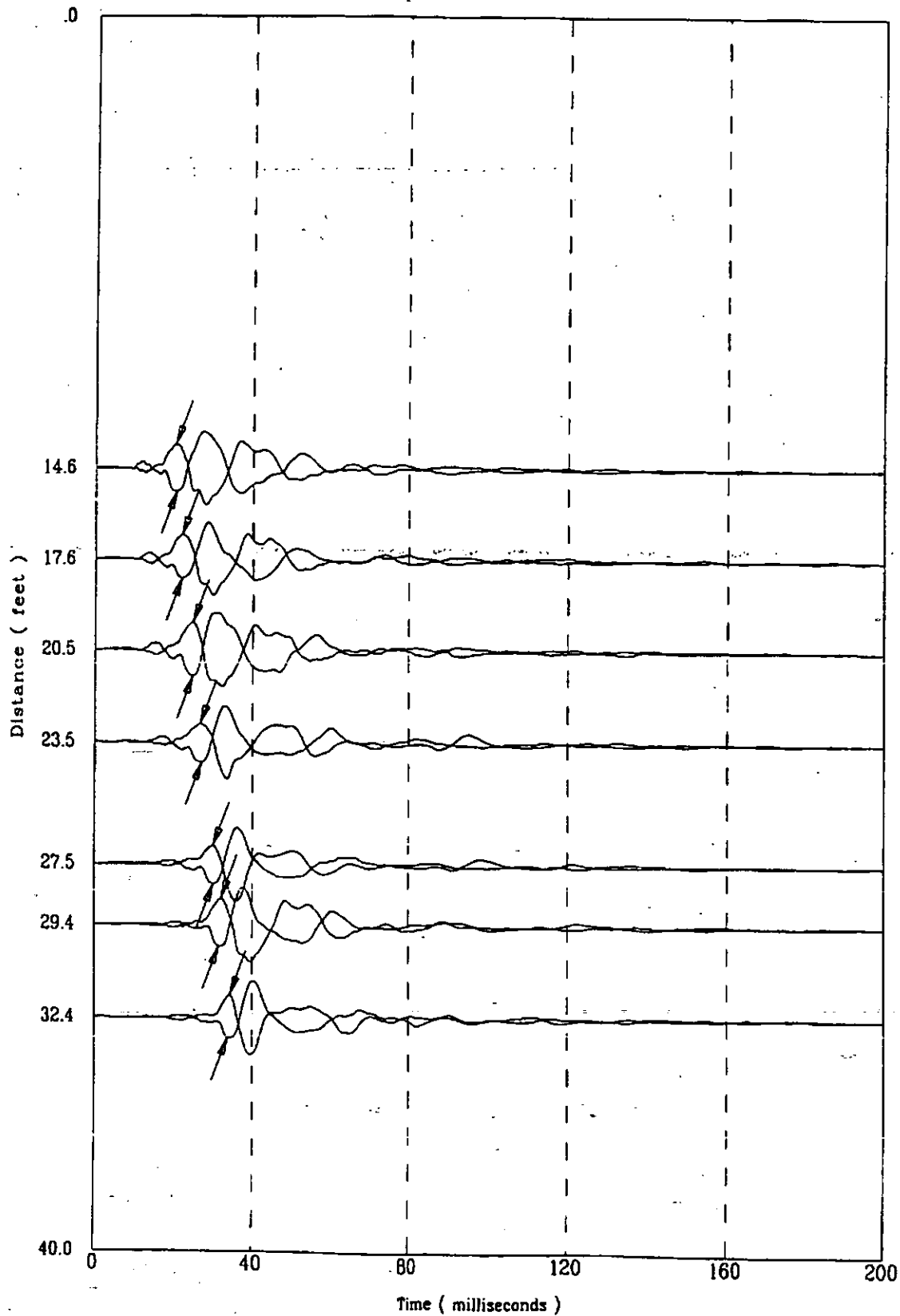
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CPT-163

S Wave  
02/25/98



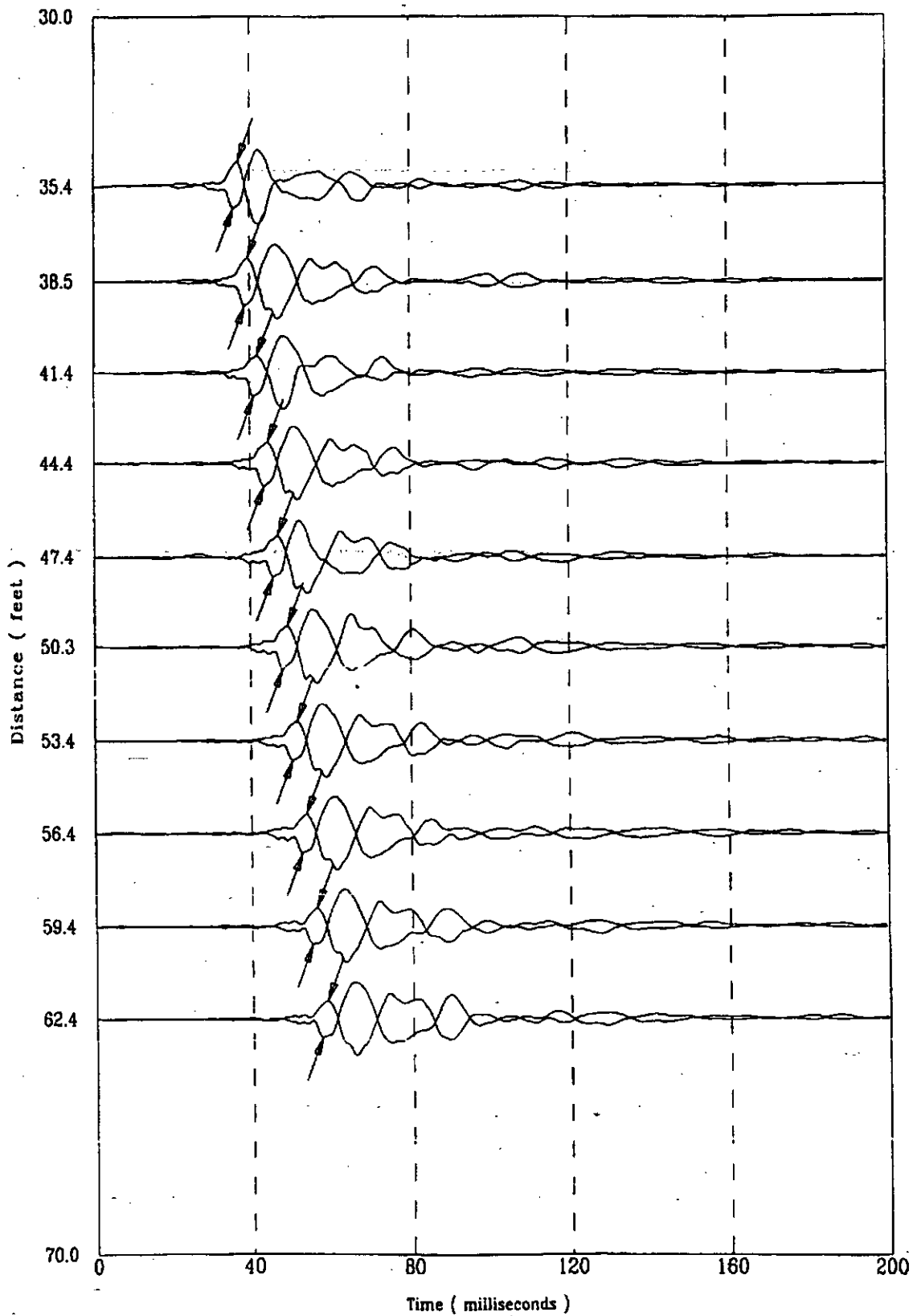
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CPT-163

S Wave  
02/25/98



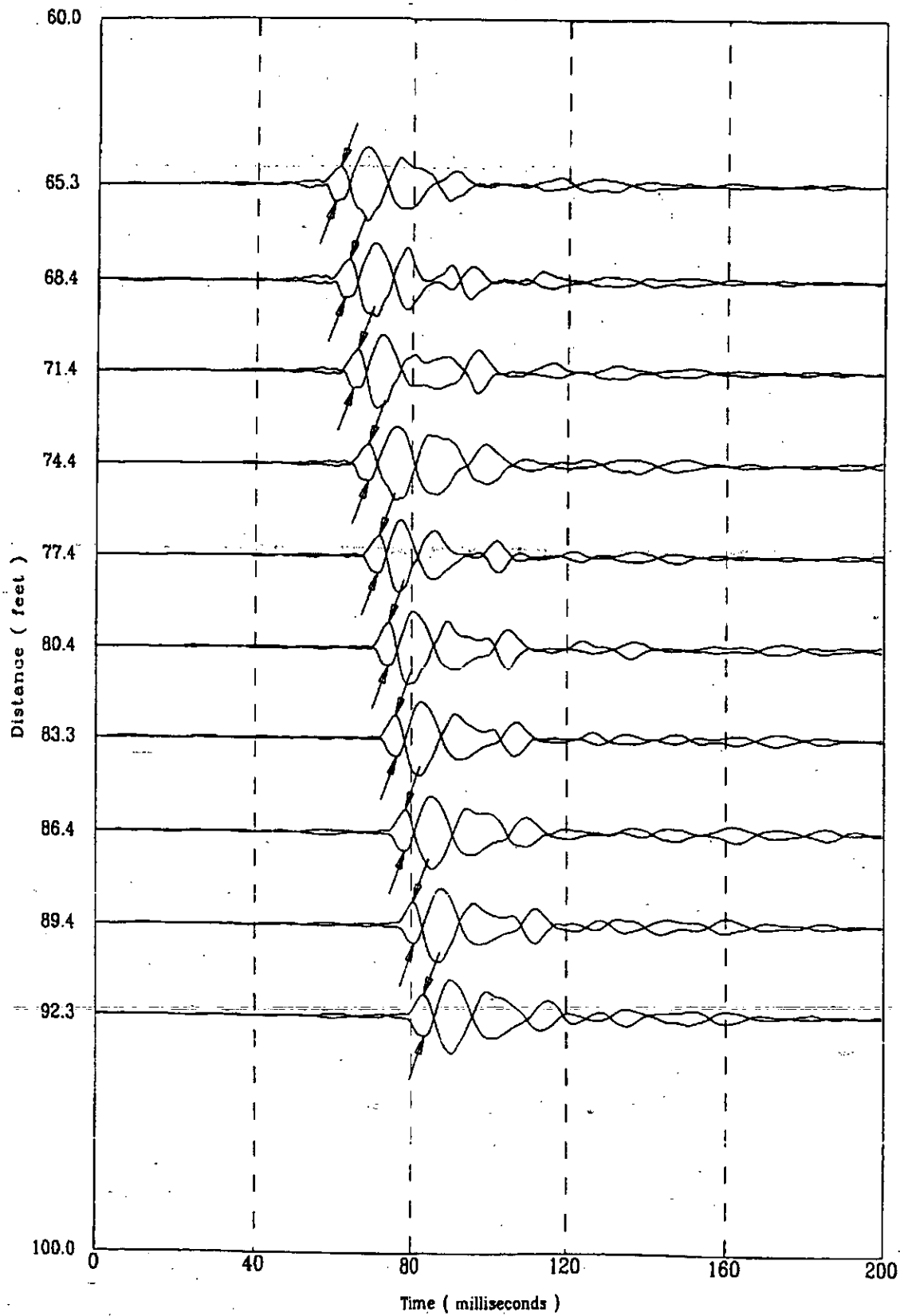
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CPT-163

S Wave  
02/25/98



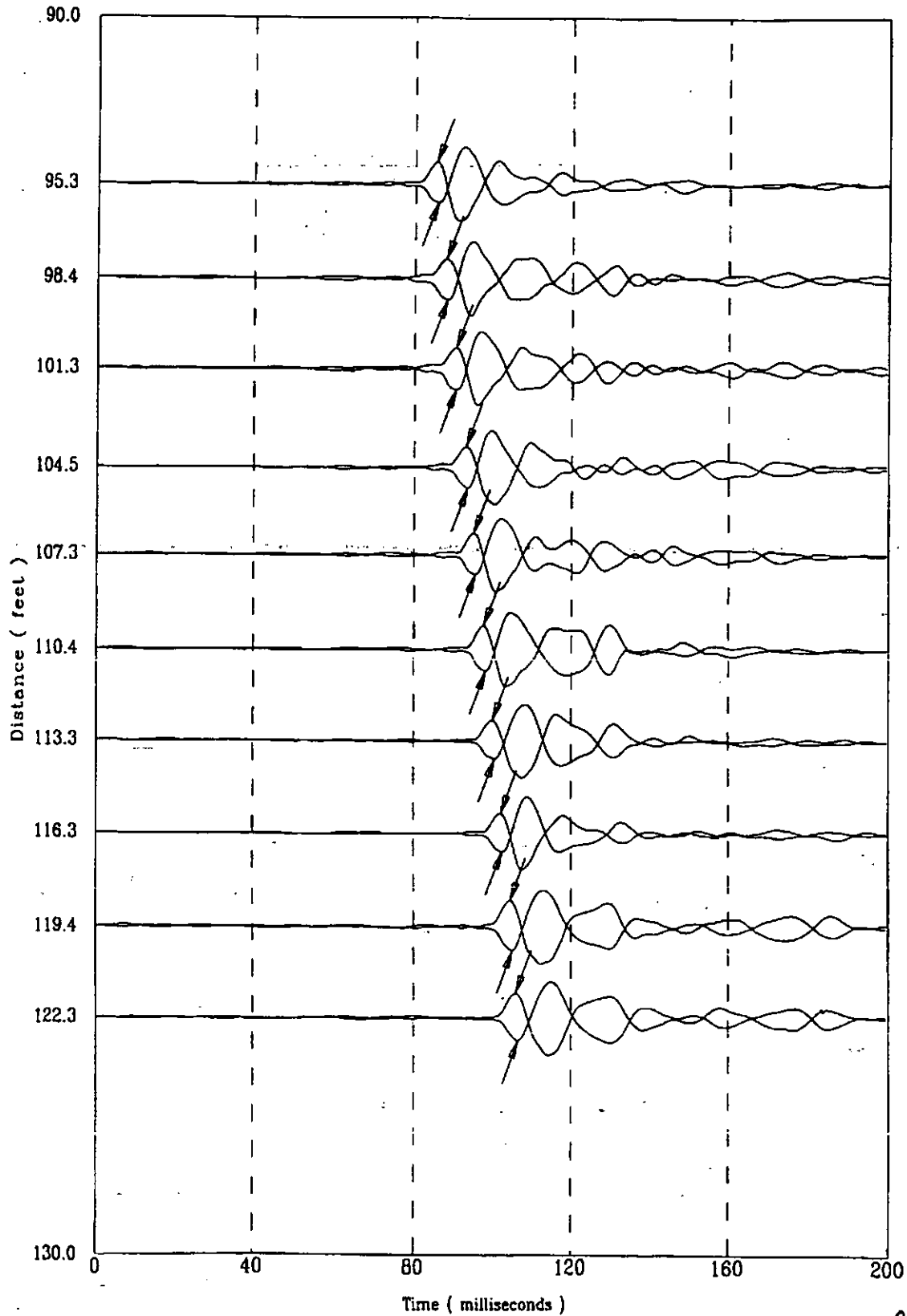
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S Wave  
02/25/98



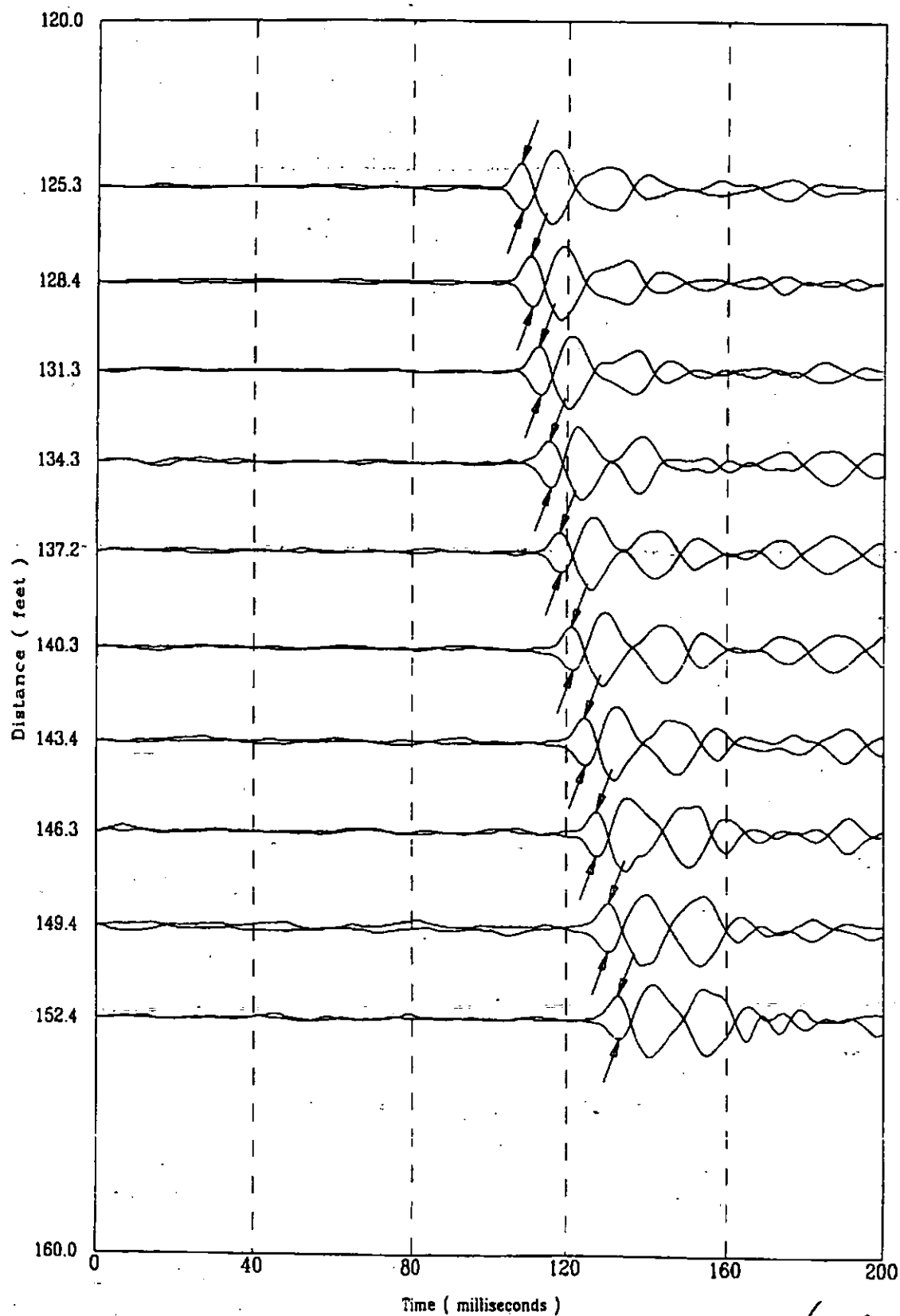
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CPT-163

S Wave  
02/25/98



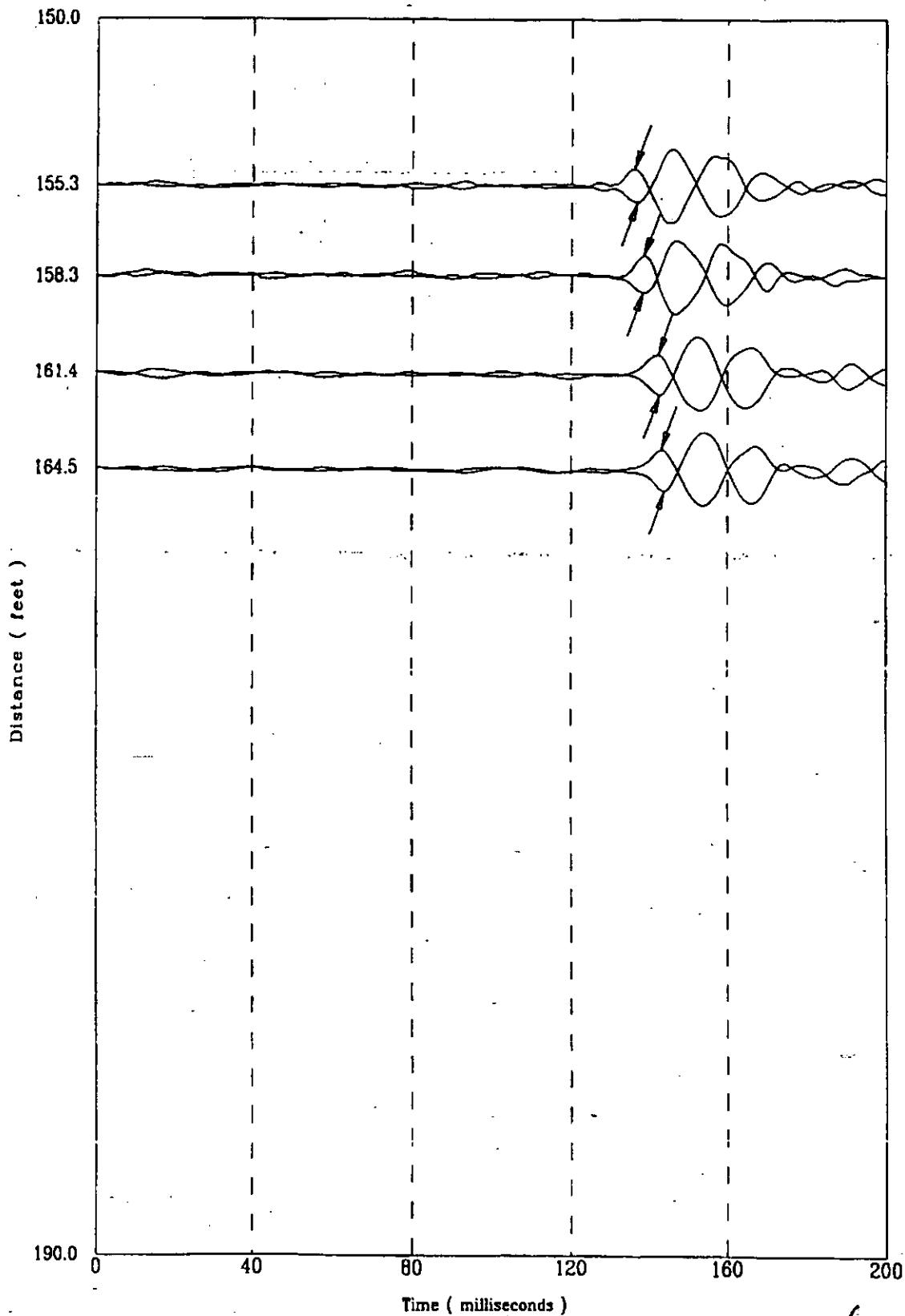
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S Wave  
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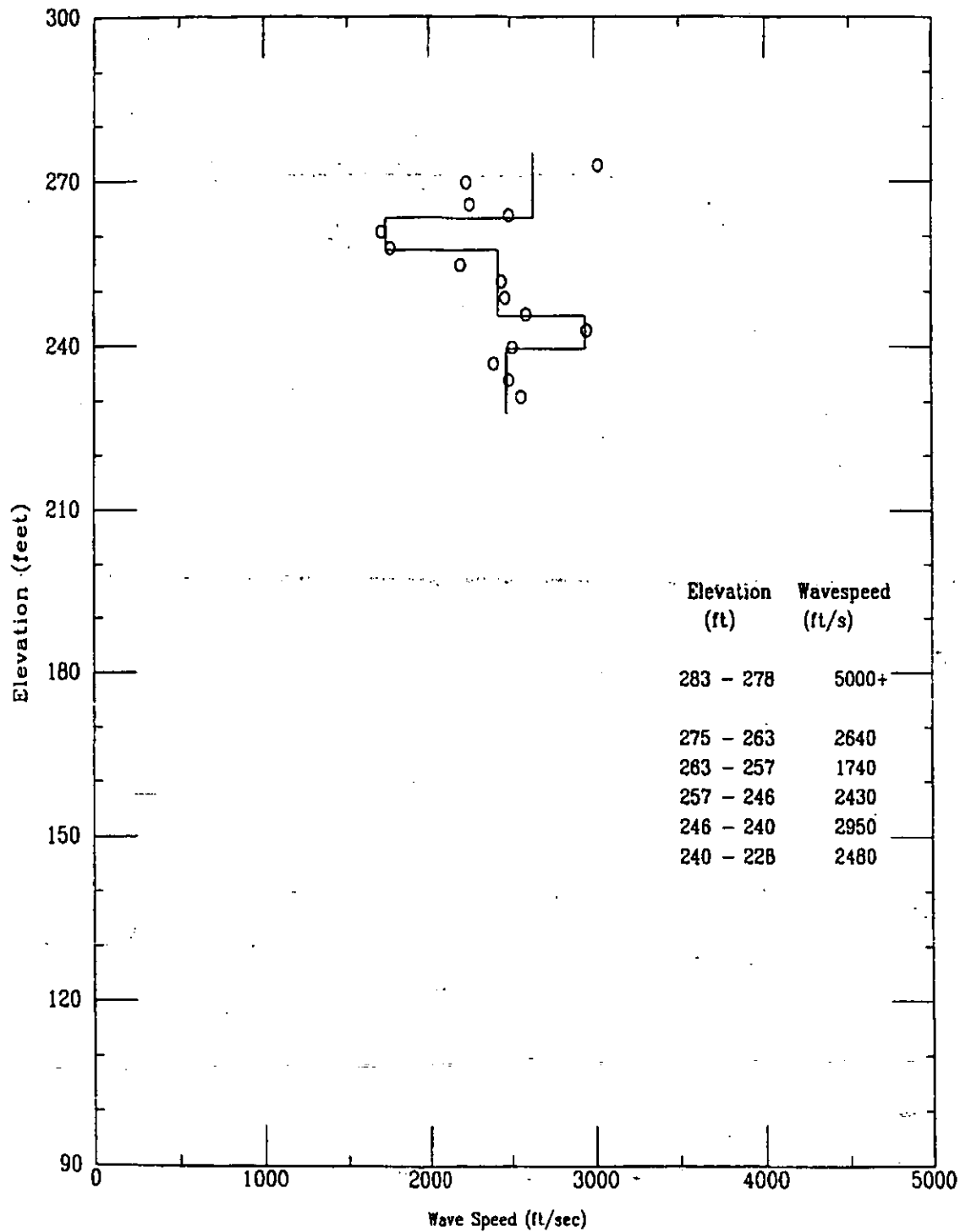


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APPLIED RESEARCH ASSOCIATES, INC.

02/25/98

Compression Wave Speeds



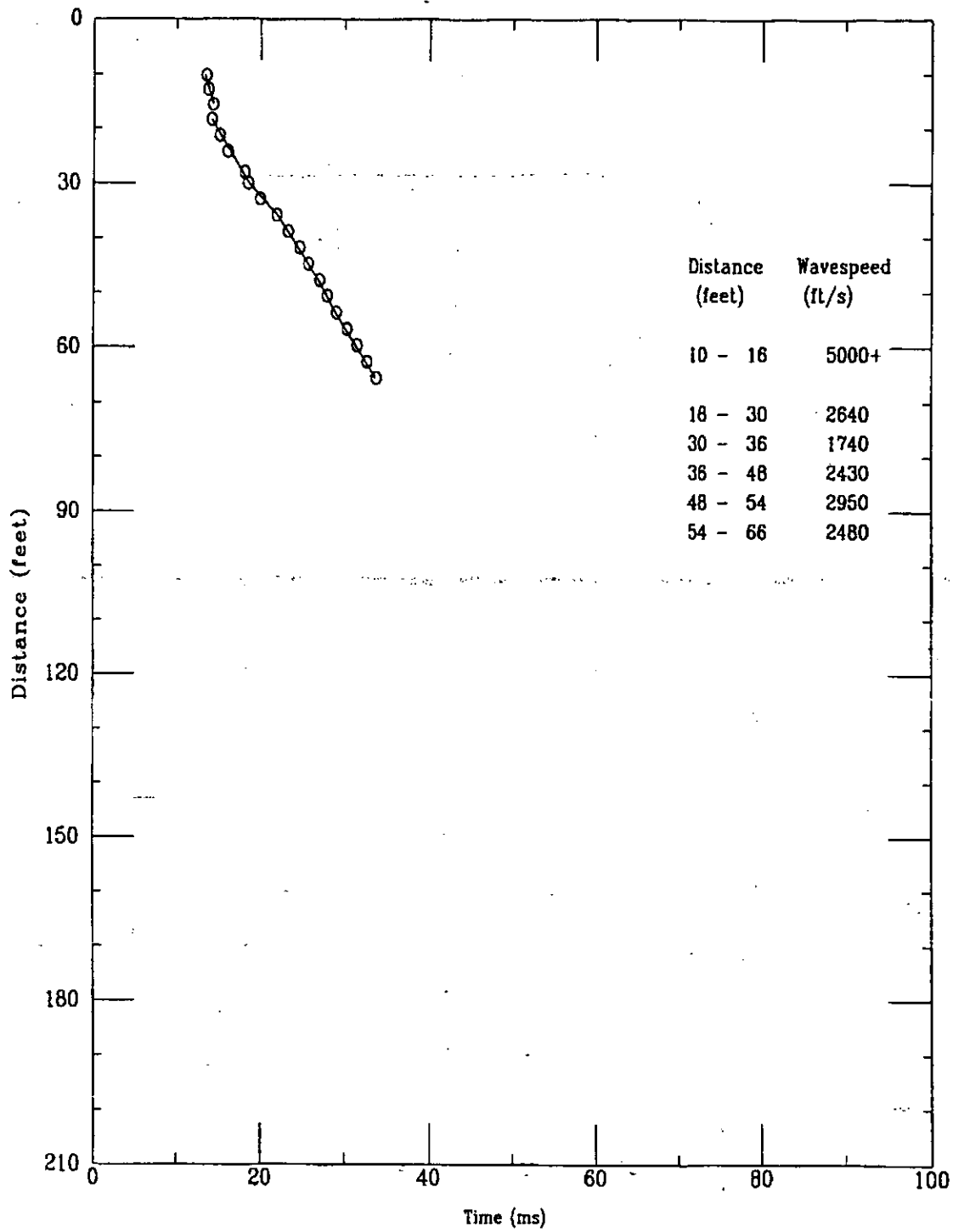
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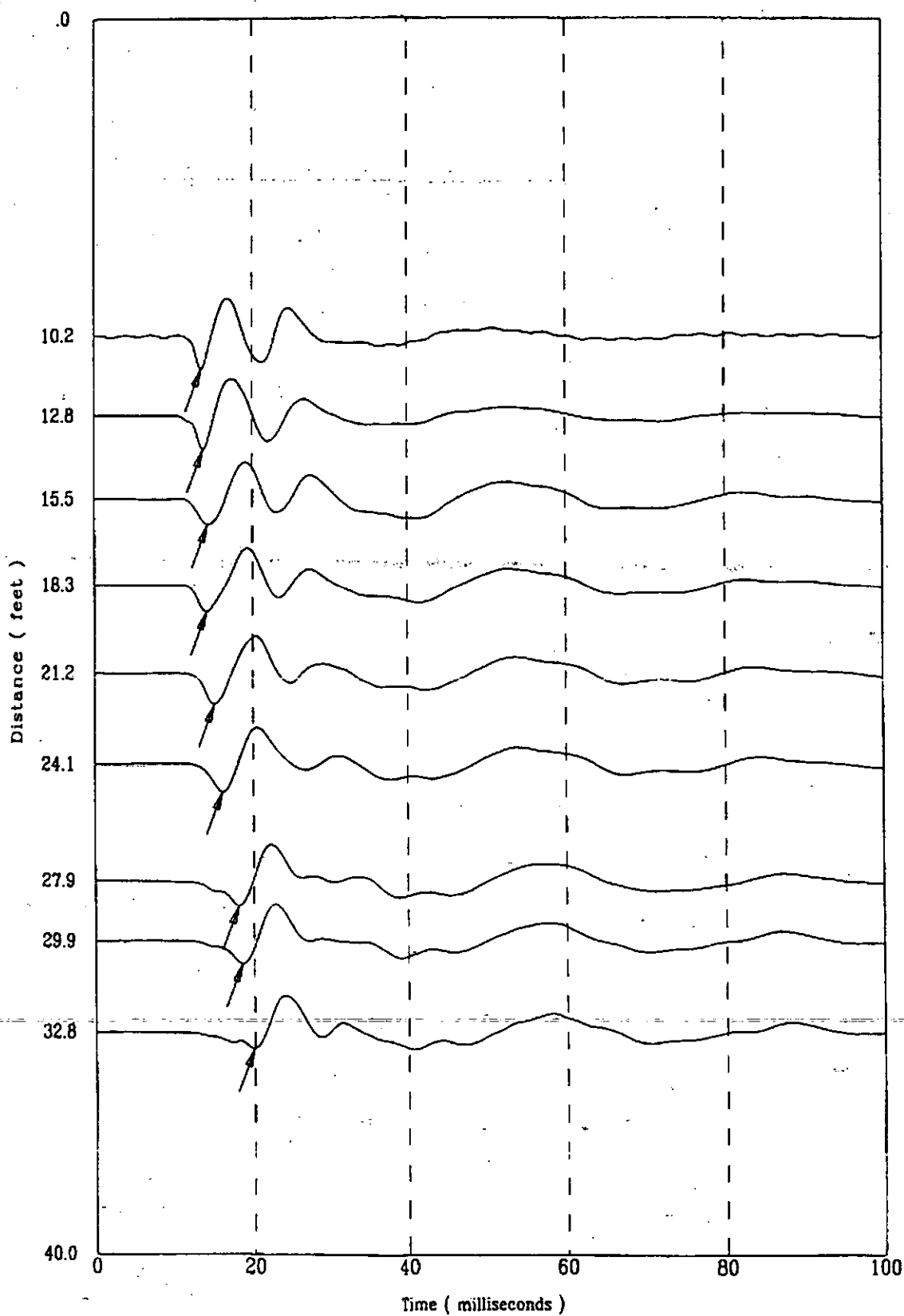
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P Wave  
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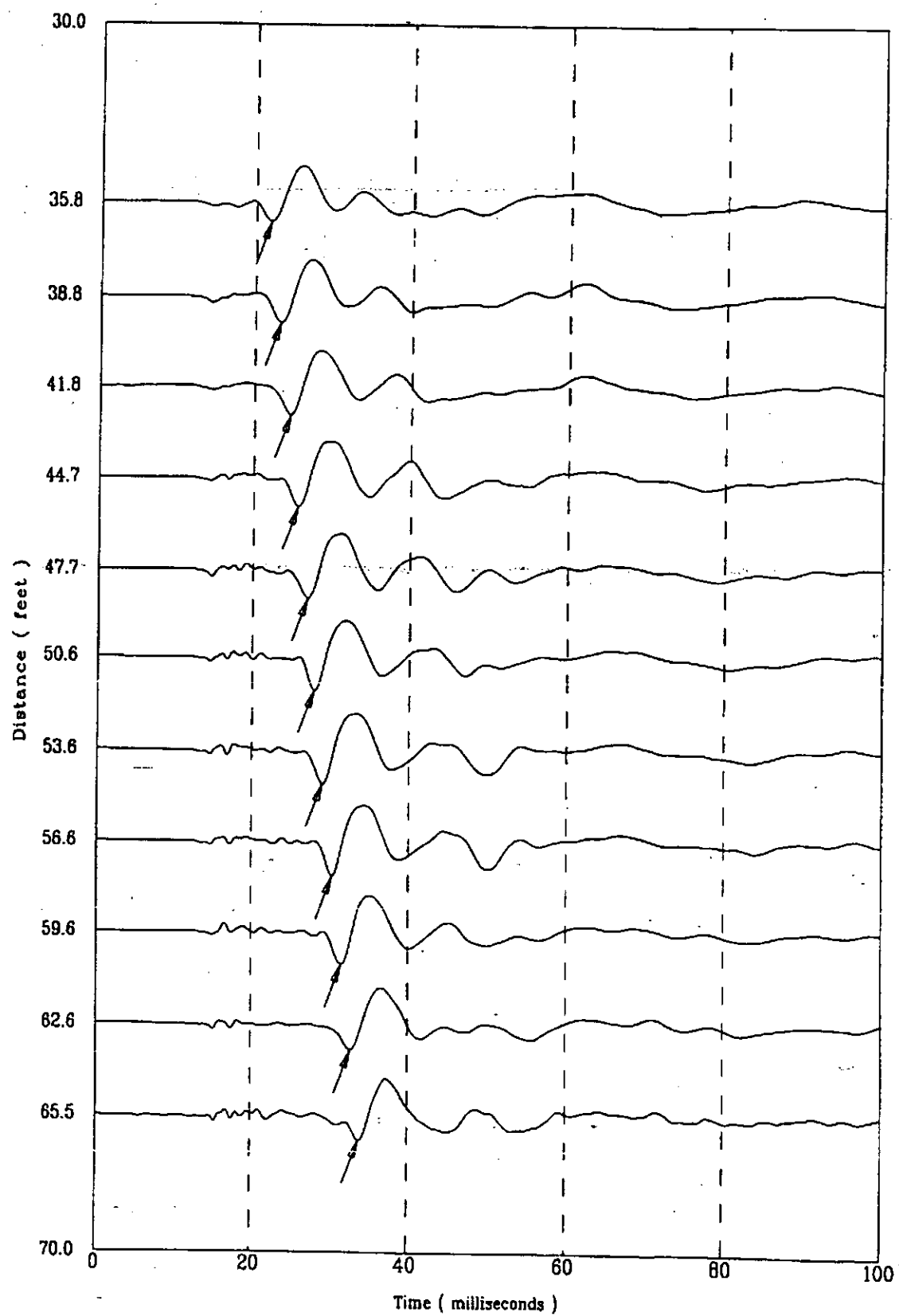
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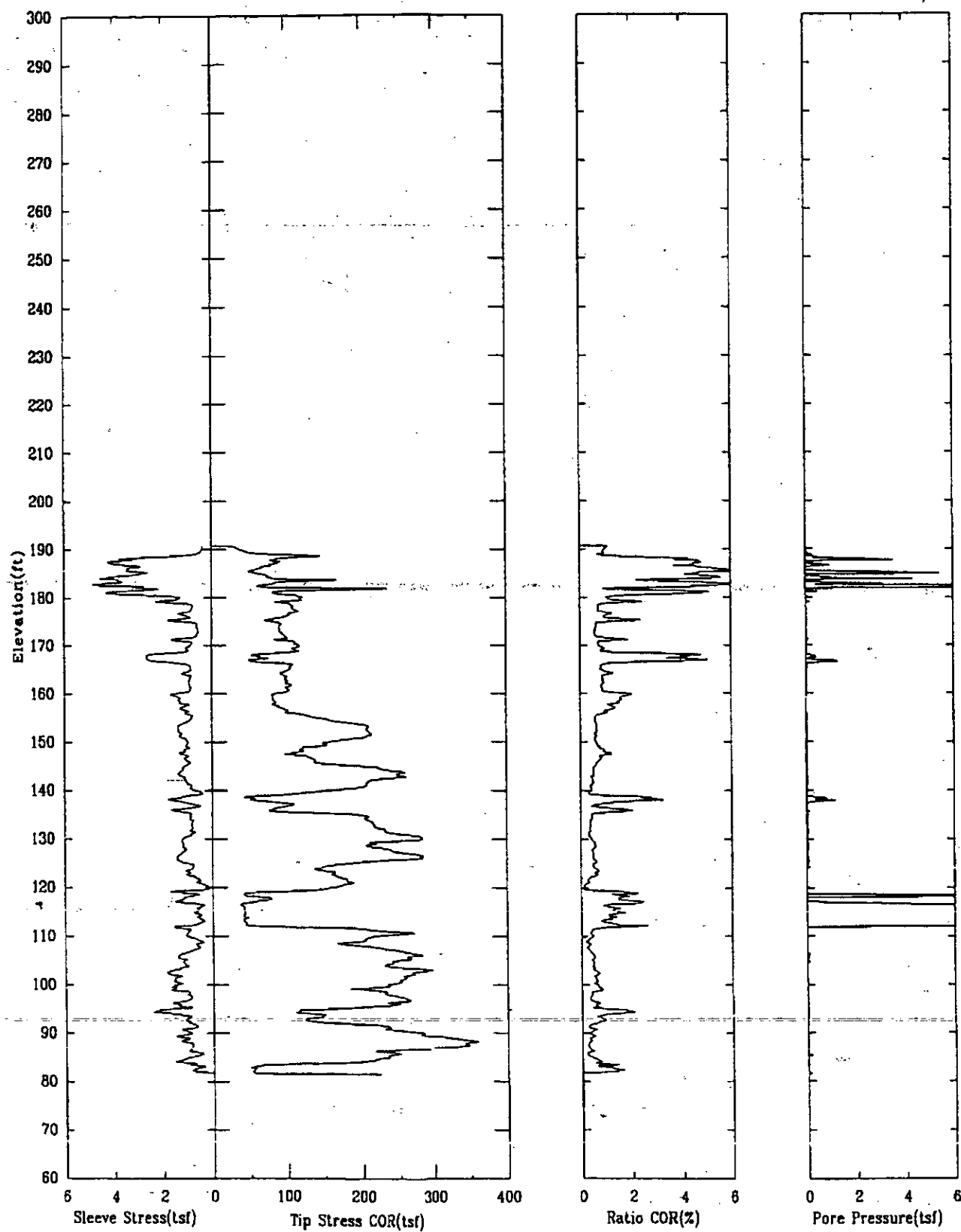
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03/11/98 / 0

North 79029.91

East 55330.05

Elevation 196.7



CPT-167

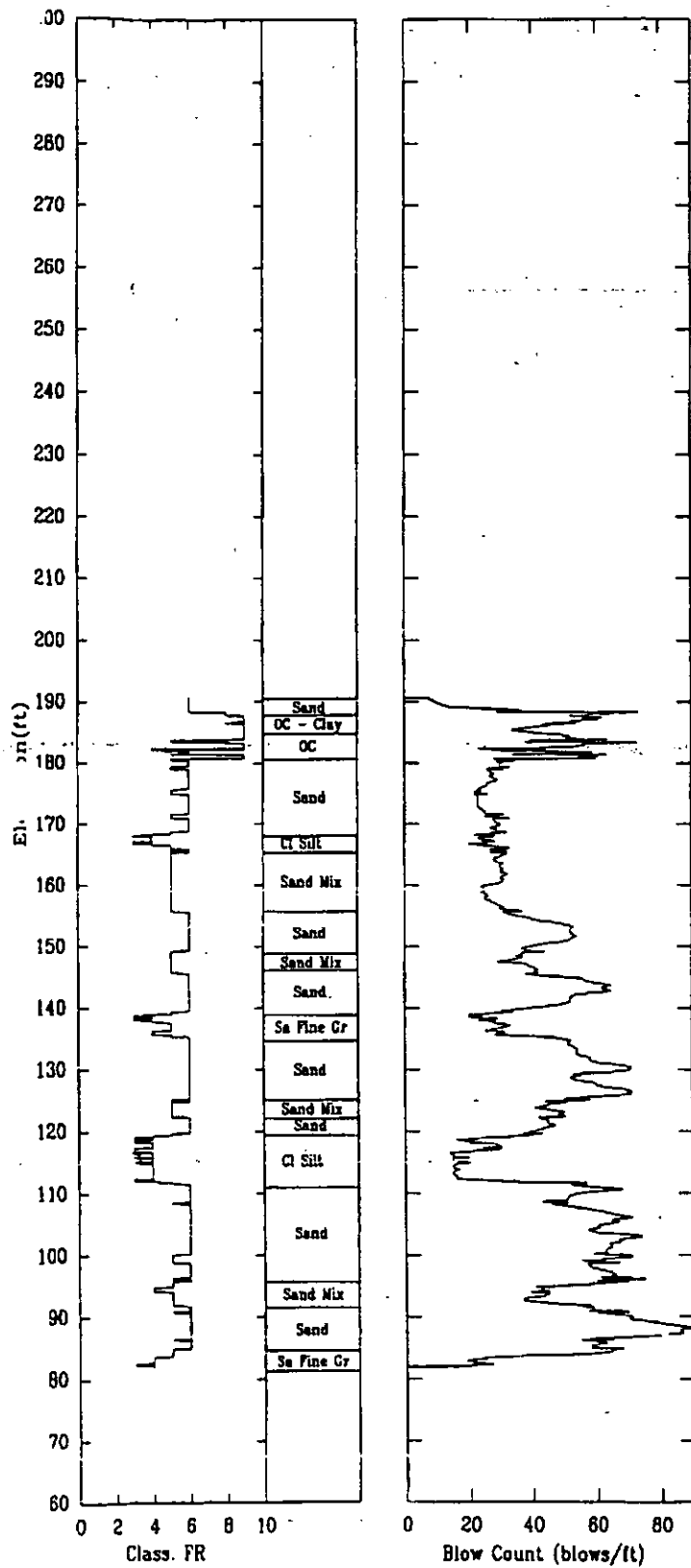
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East 55330.05

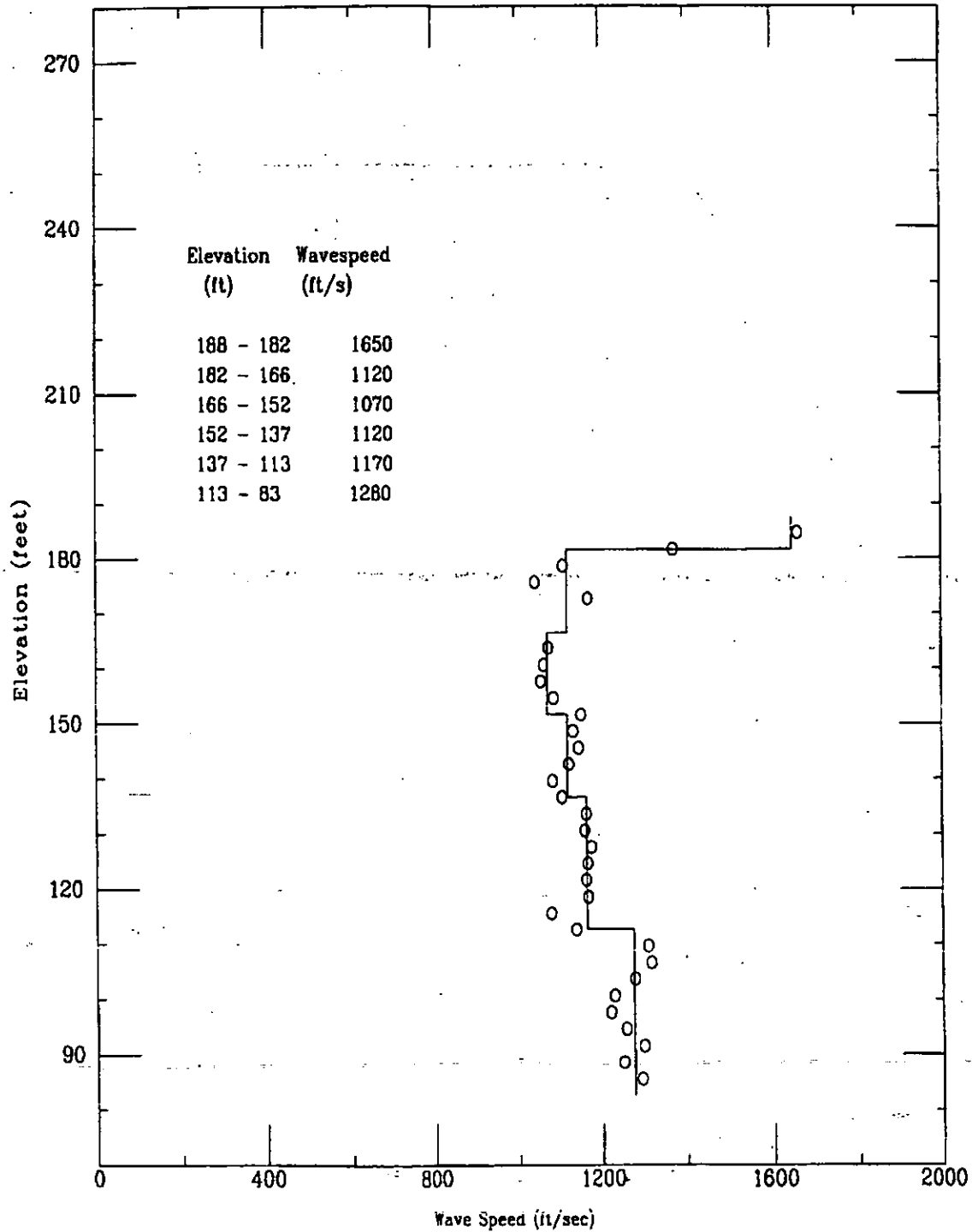
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APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Speeds

03/11/98



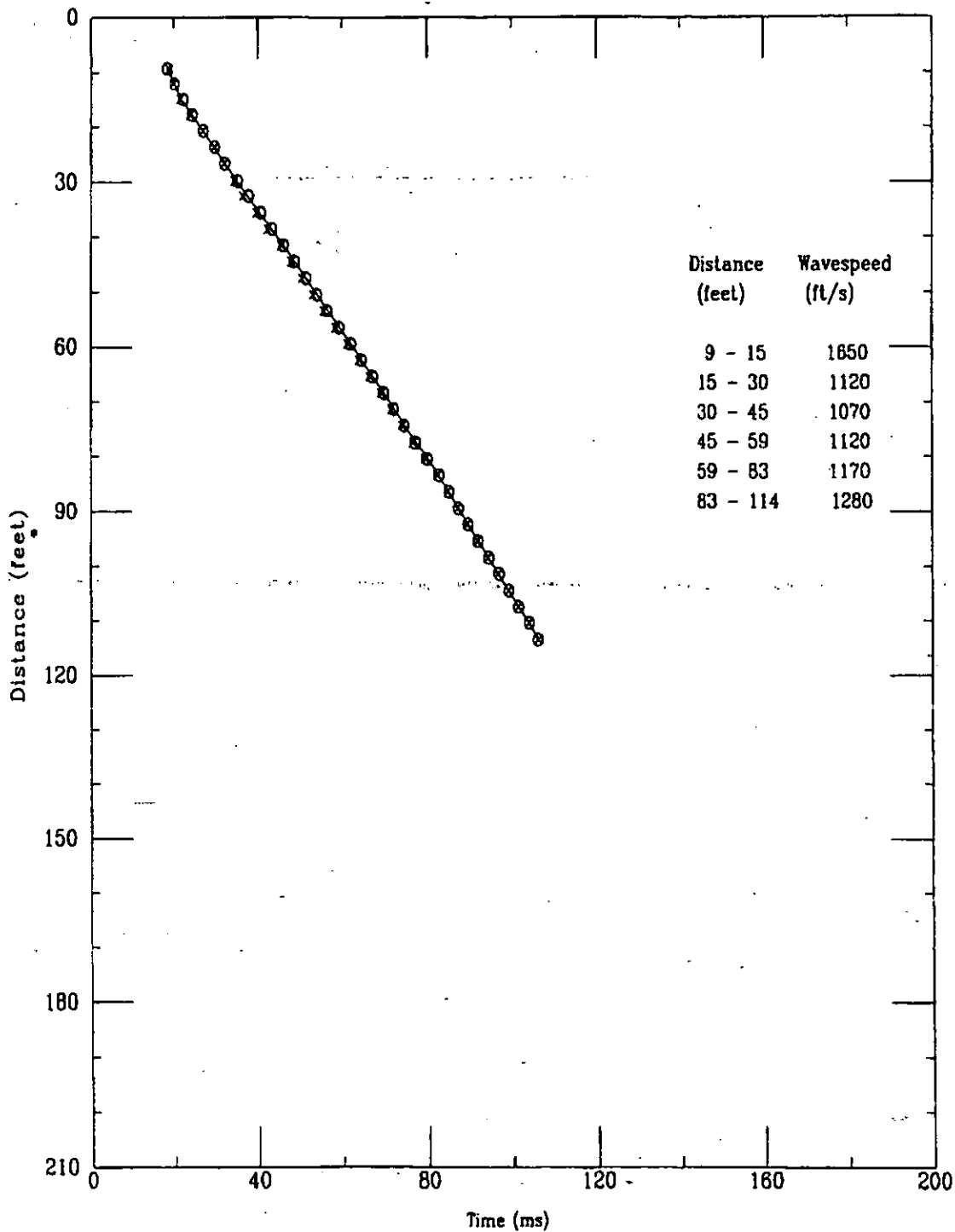
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03/11/98

Shear Wave Time of Peak



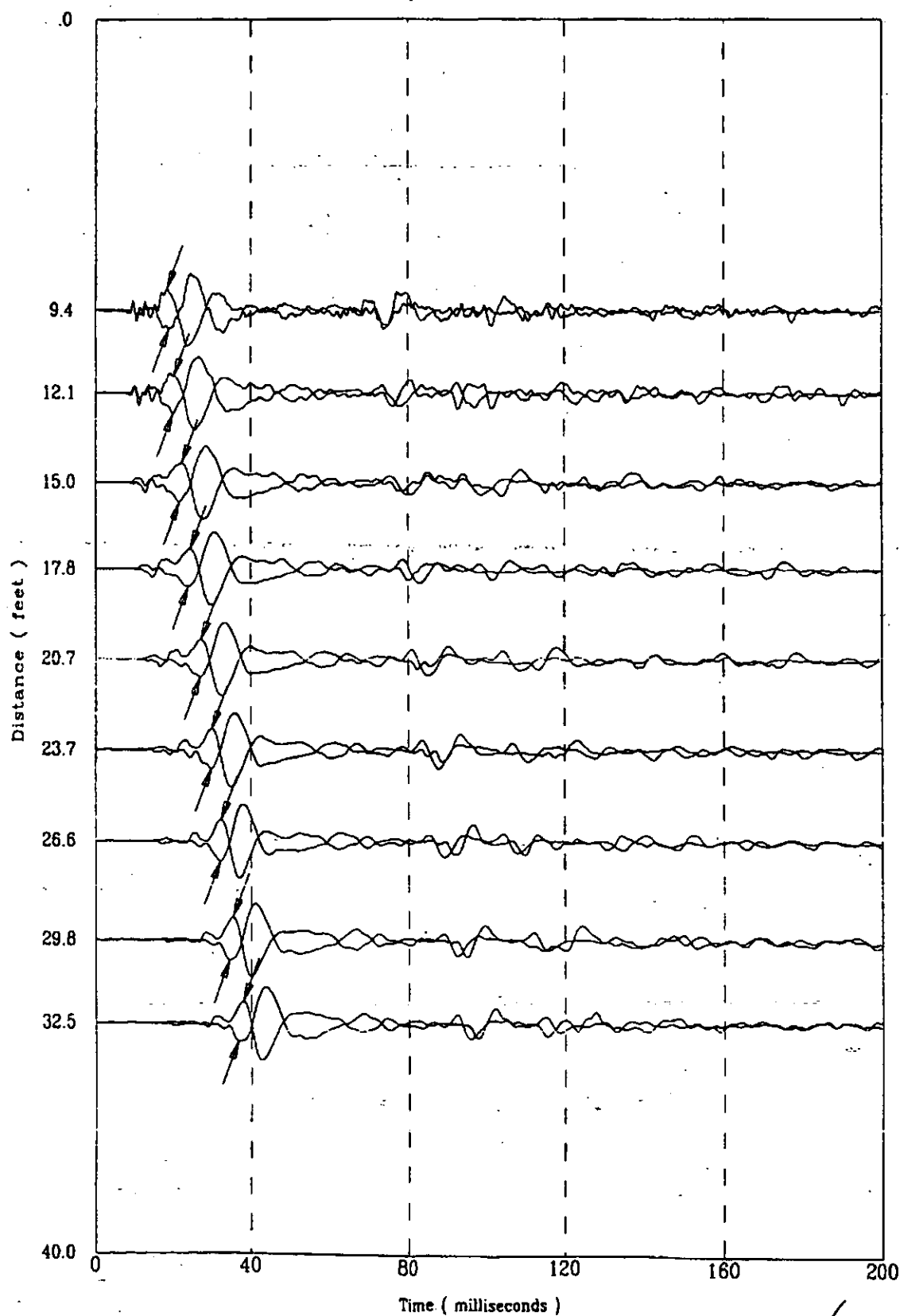
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-167

S Wave  
03/11/98



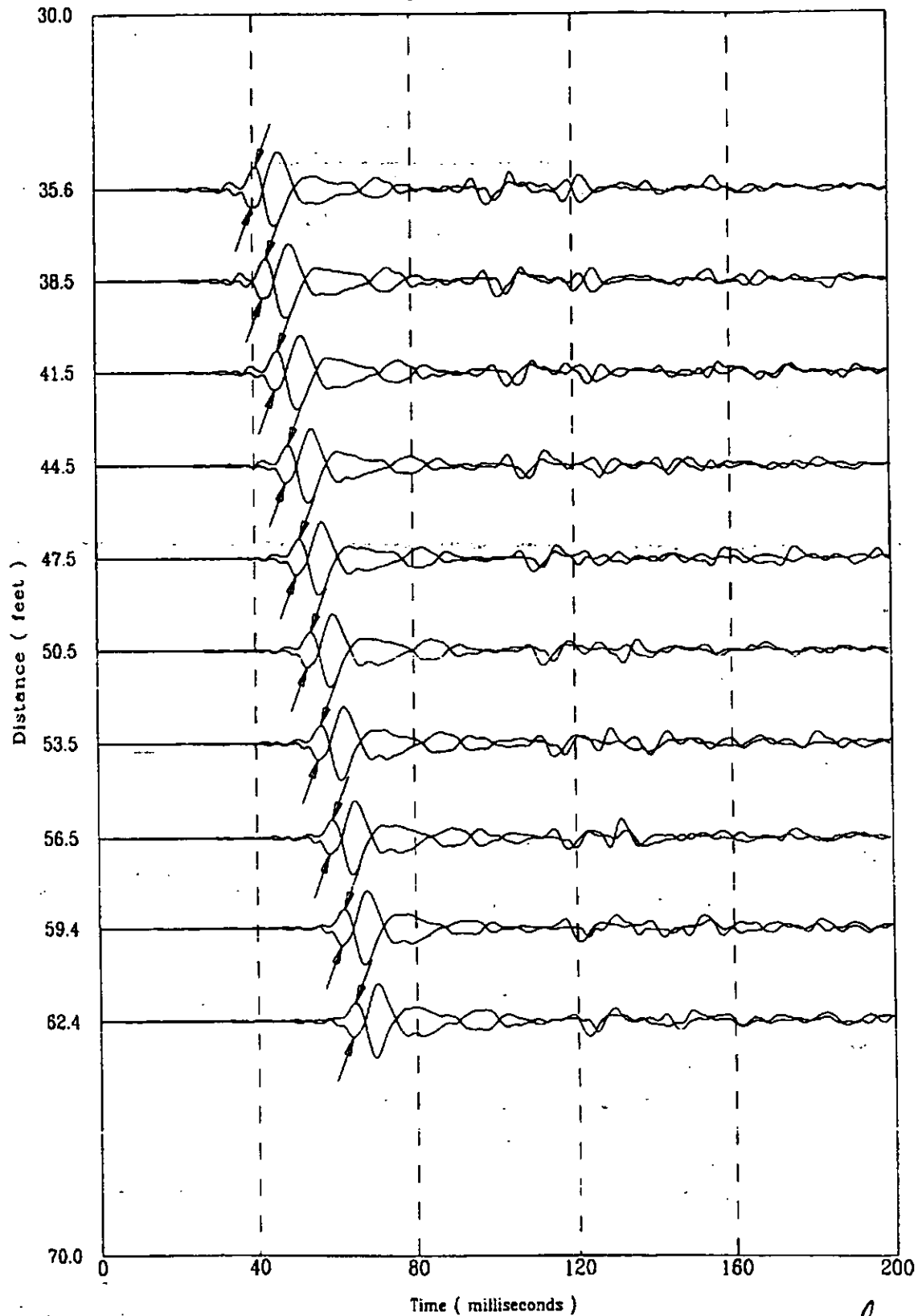
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K-TRT-F-00001  
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CPT-167

S Wave  
03/11/98



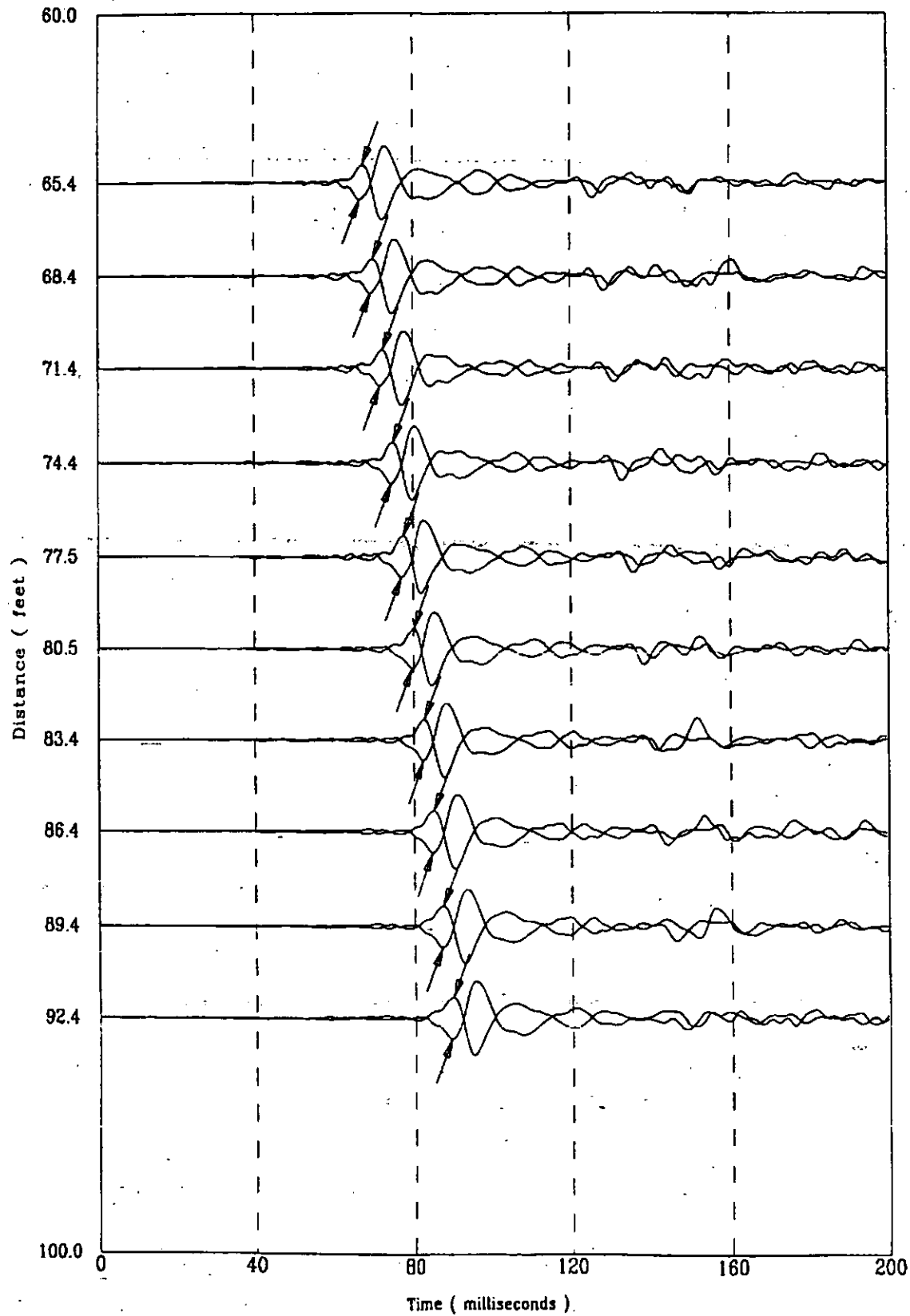
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CPT-167

S Wave  
03/11/98



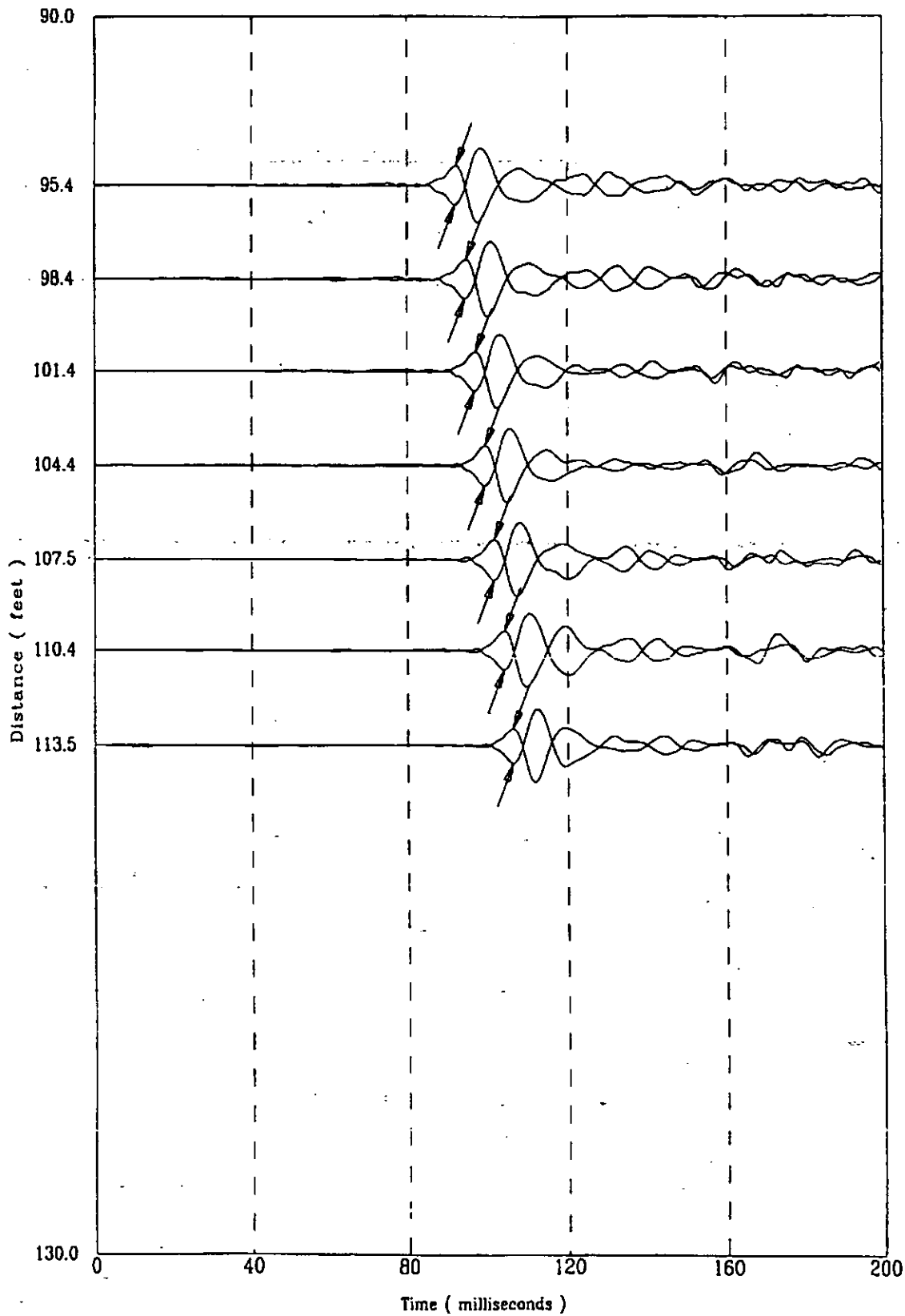
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Applied Research Associates, Inc.  
CPT-167

S Wave  
03/11/98



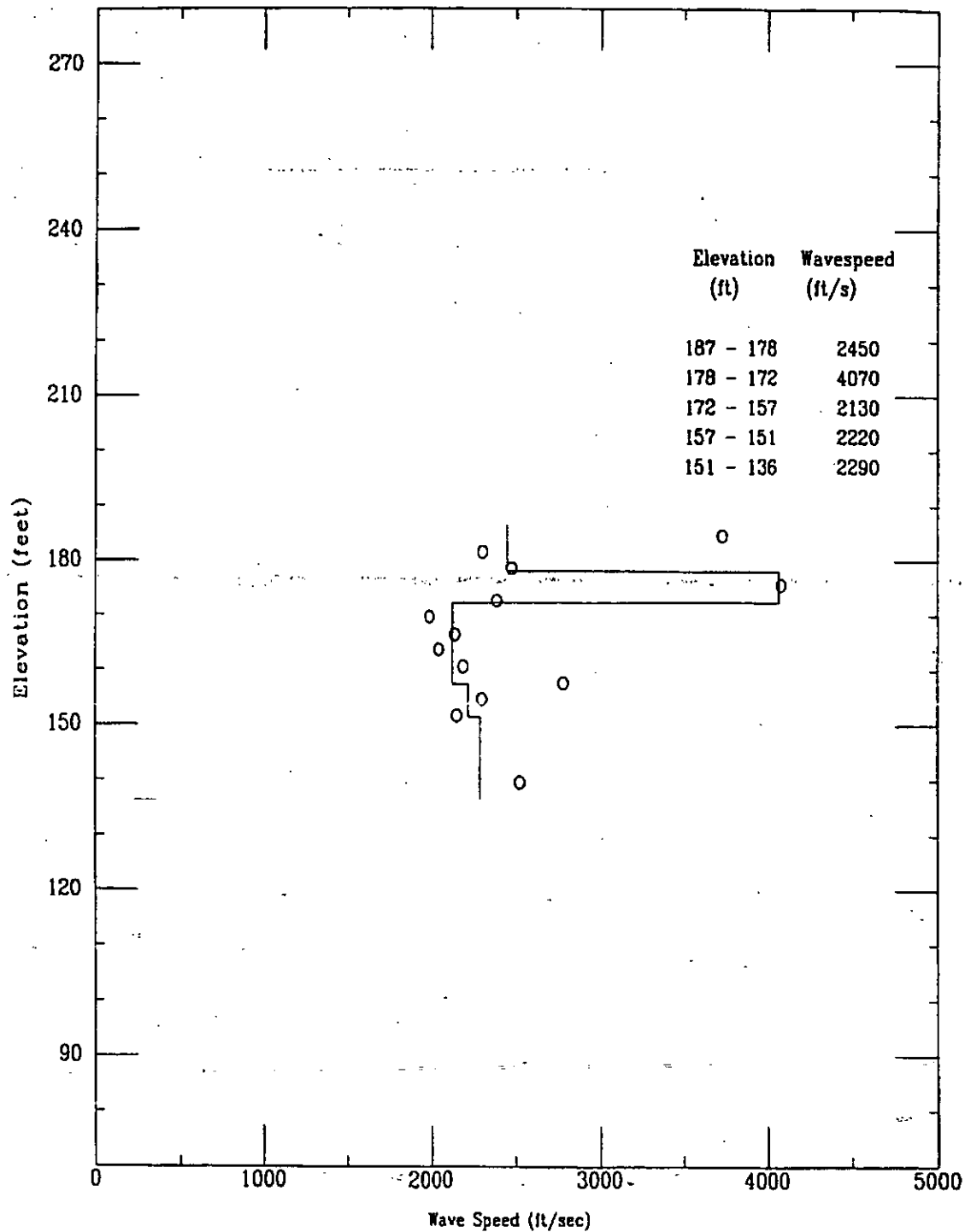
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APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/11/98



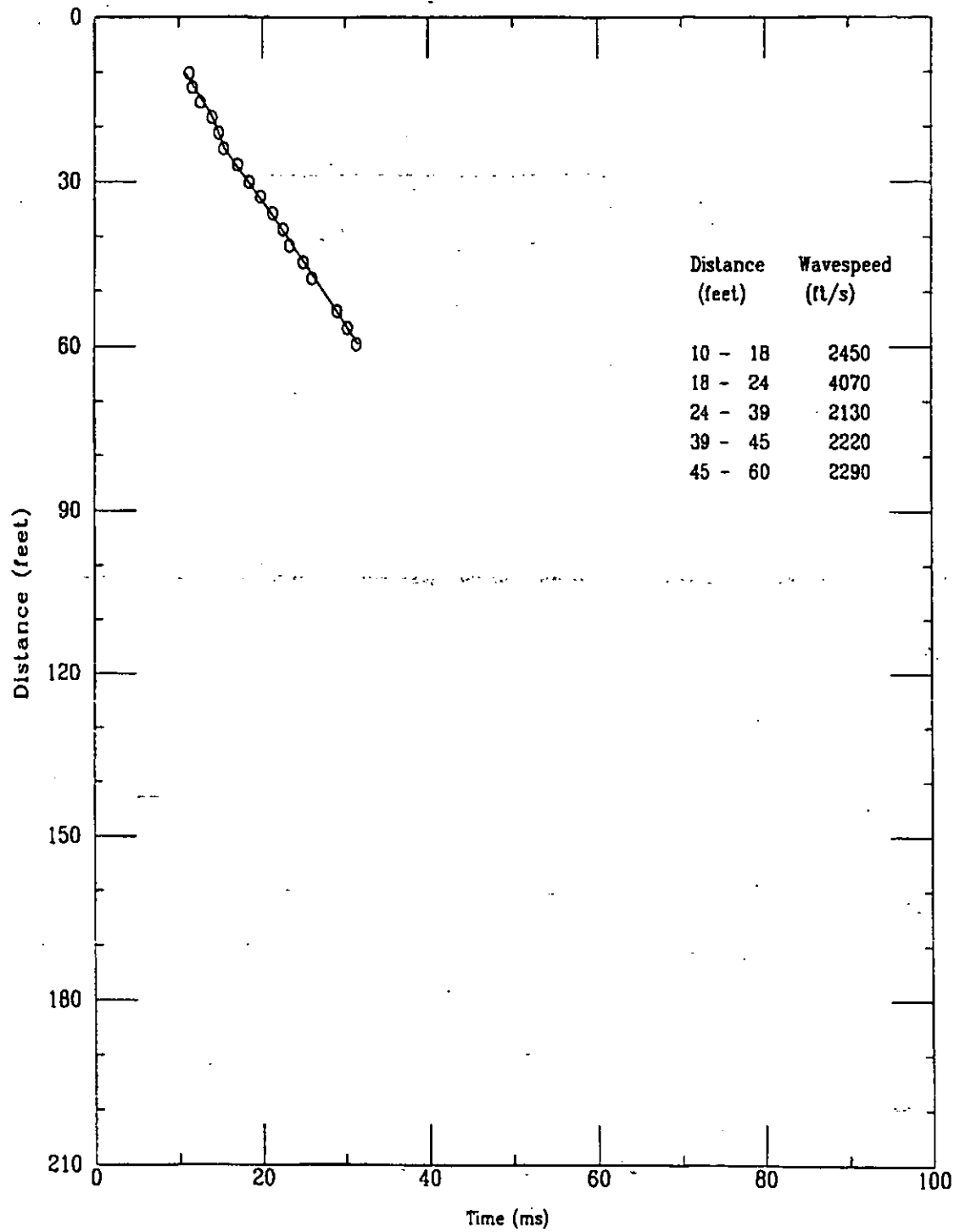
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Compression Wave Time of Peak

03/11/98



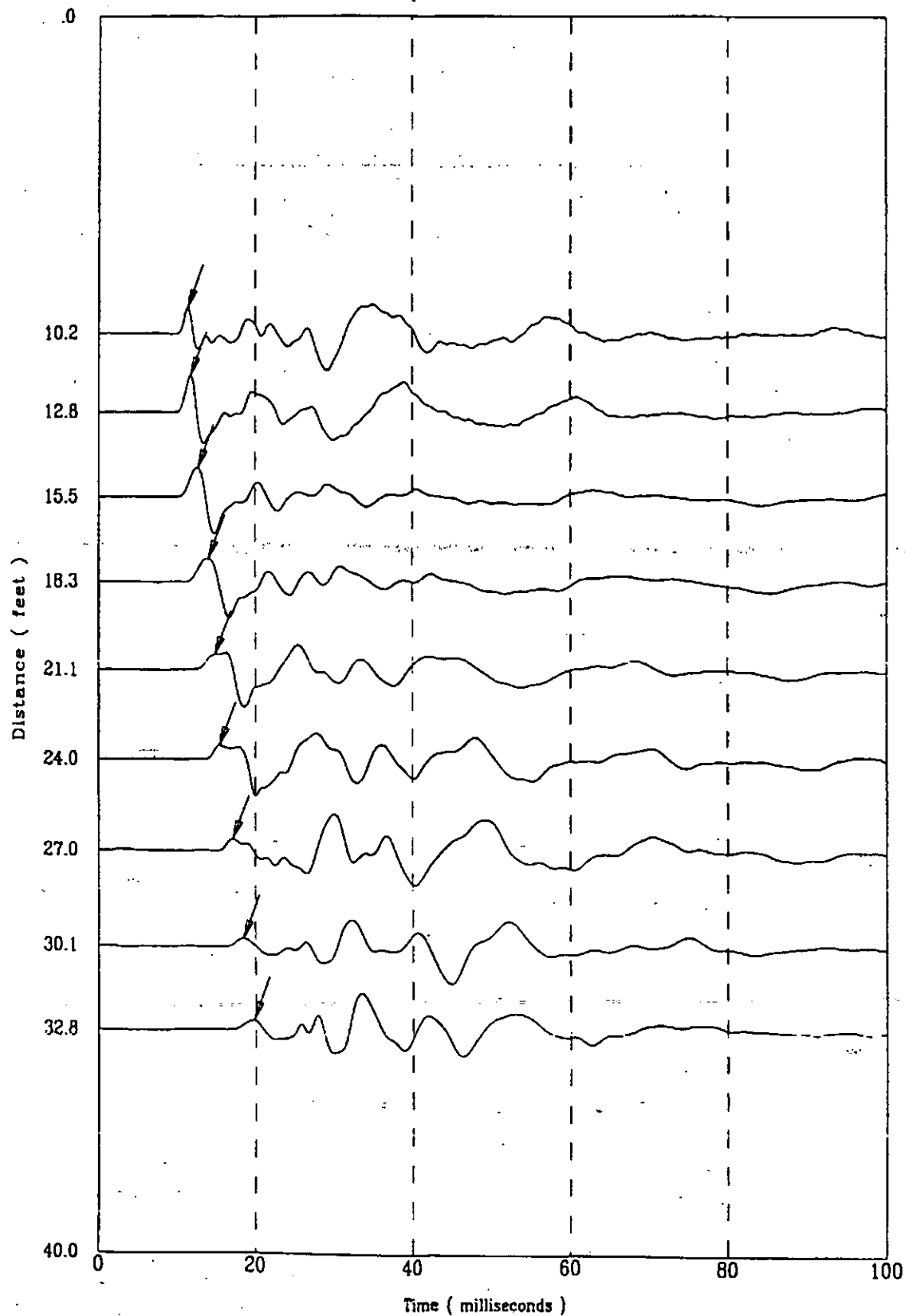
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P Wave  
03/11/98



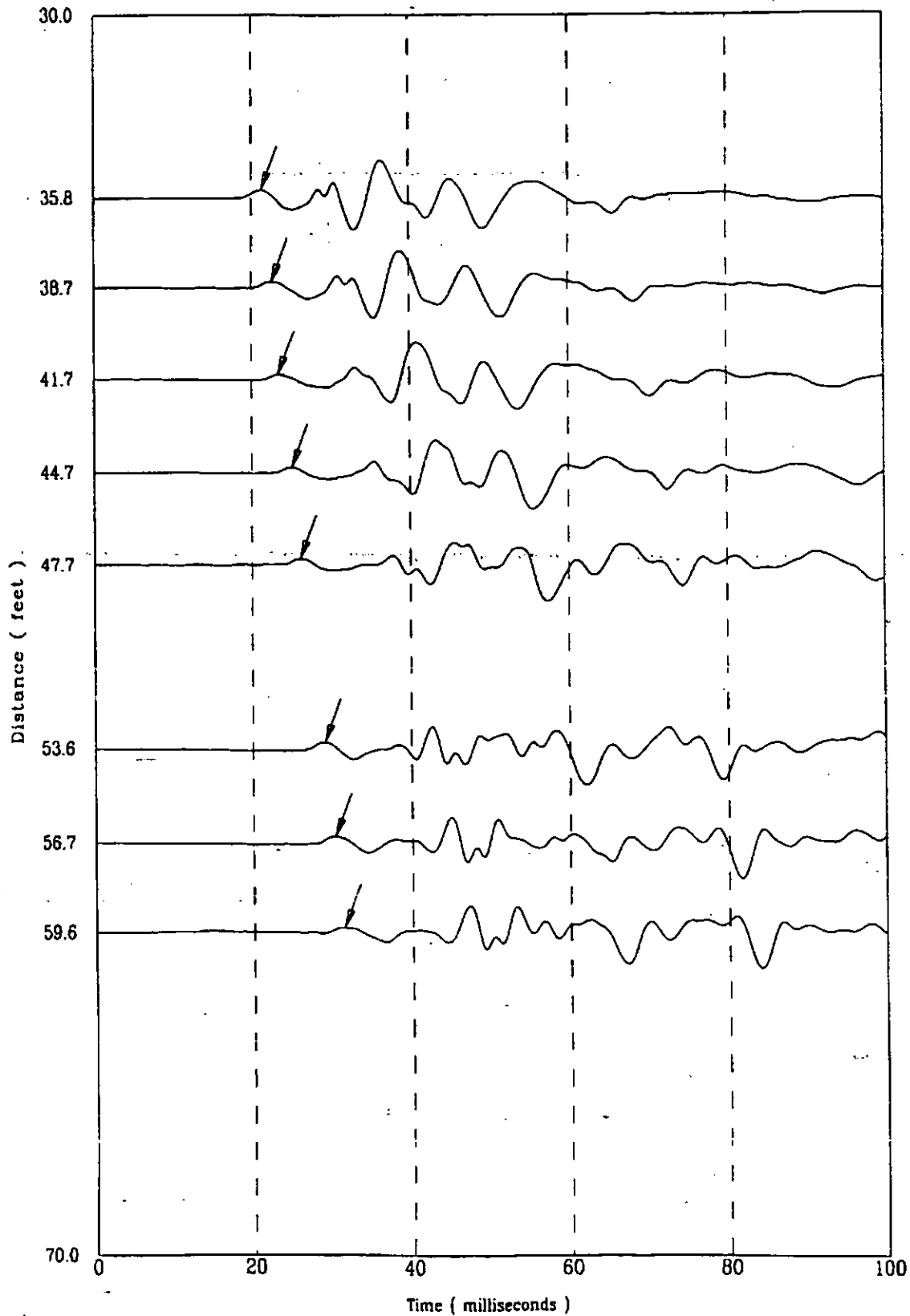
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P Wave  
03/11/98



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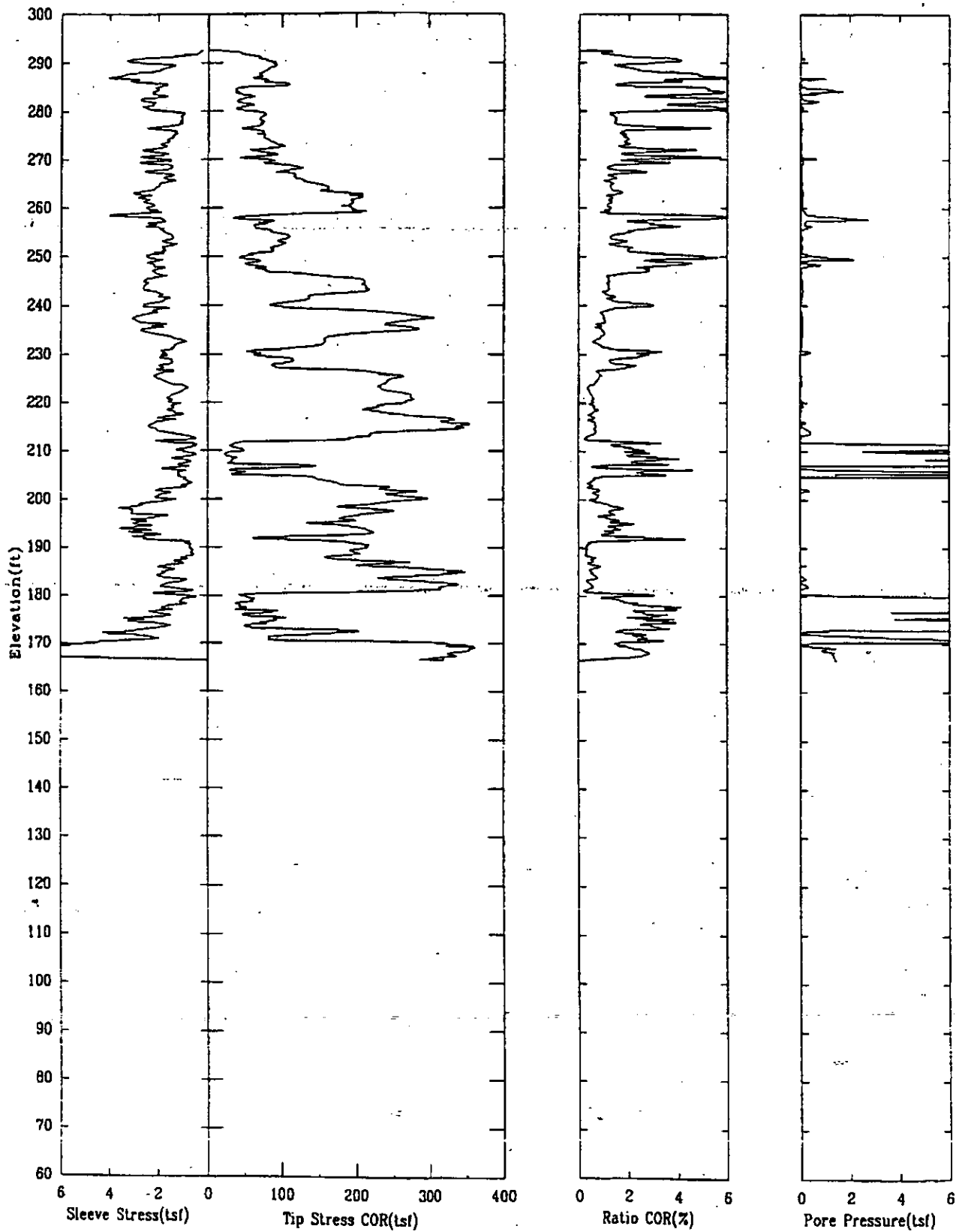
CPT-171

APPLIED RESEARCH ASSOCIATES, INC.

North 78900

East 55385

Elevation 298.5

K-TRT-F-00001  
03/19/98 / 0

CPT-171

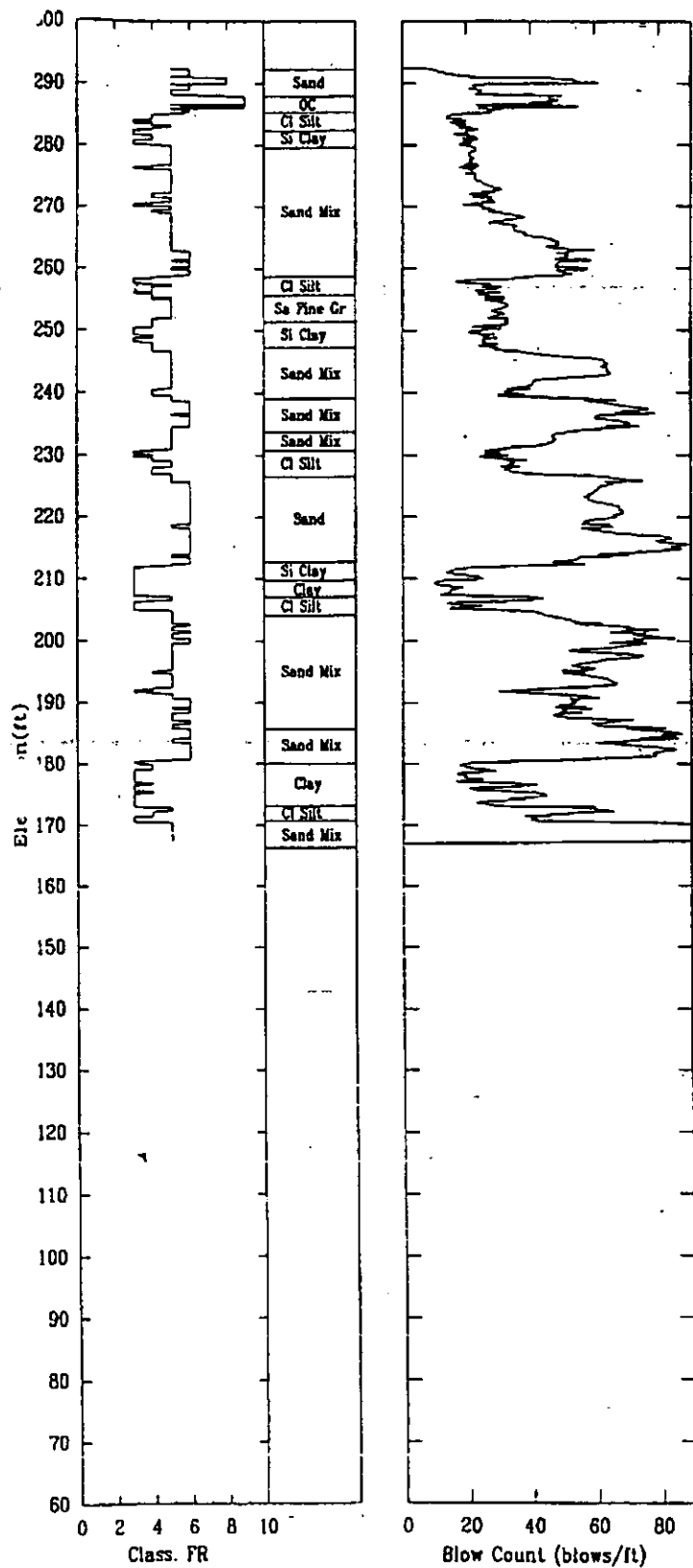
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North 78900

East 55385

Elevation 298.5

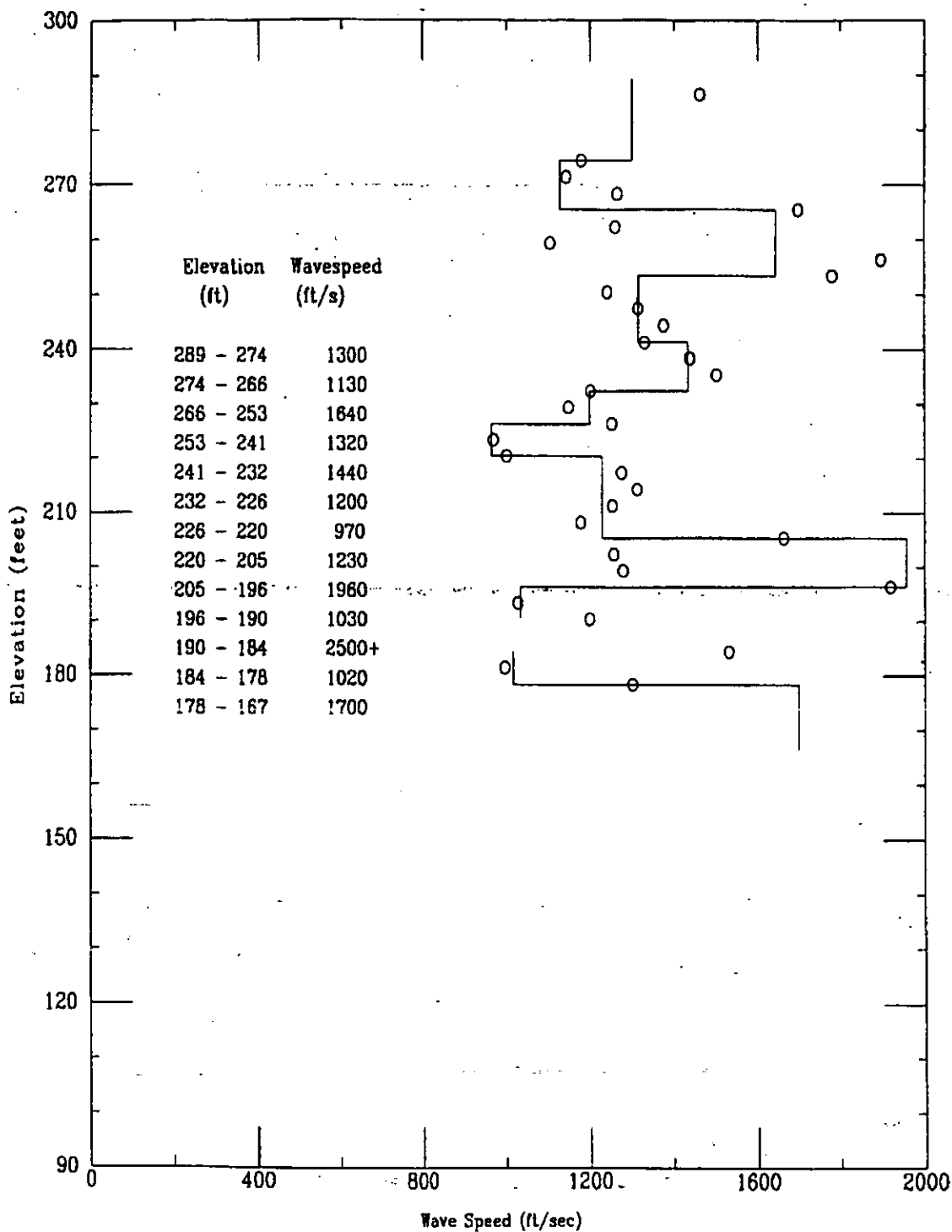


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APPLIED RESEARCH ASSOCIATES, INC.

03/19/98

Shear Wave Speeds

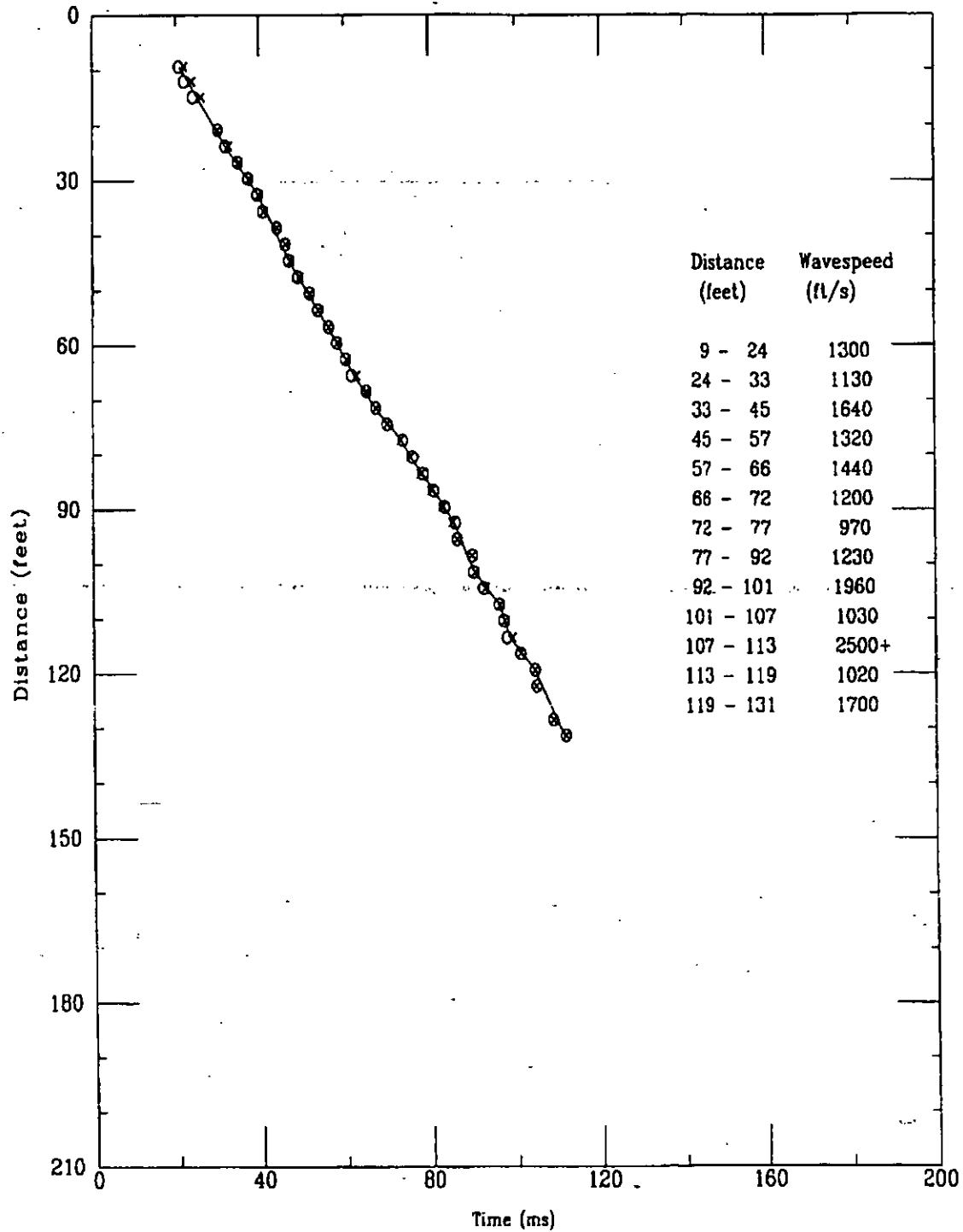


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APPLIED RESEARCH ASSOCIATES, INC.

03/19/98

Shear Wave Time of Peak

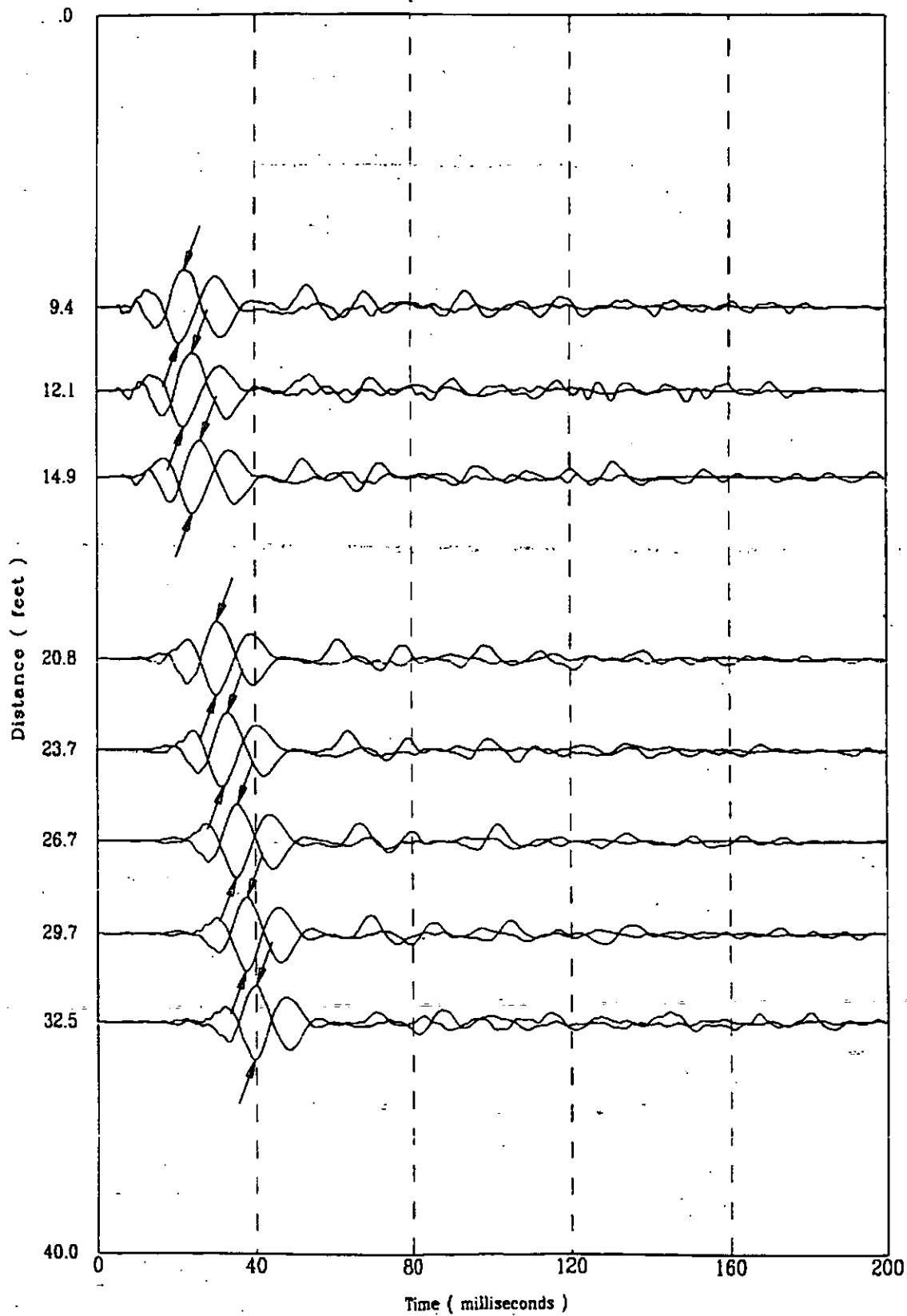


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Applied Research Associates  
CPT-171

S Wave  
03/19/98



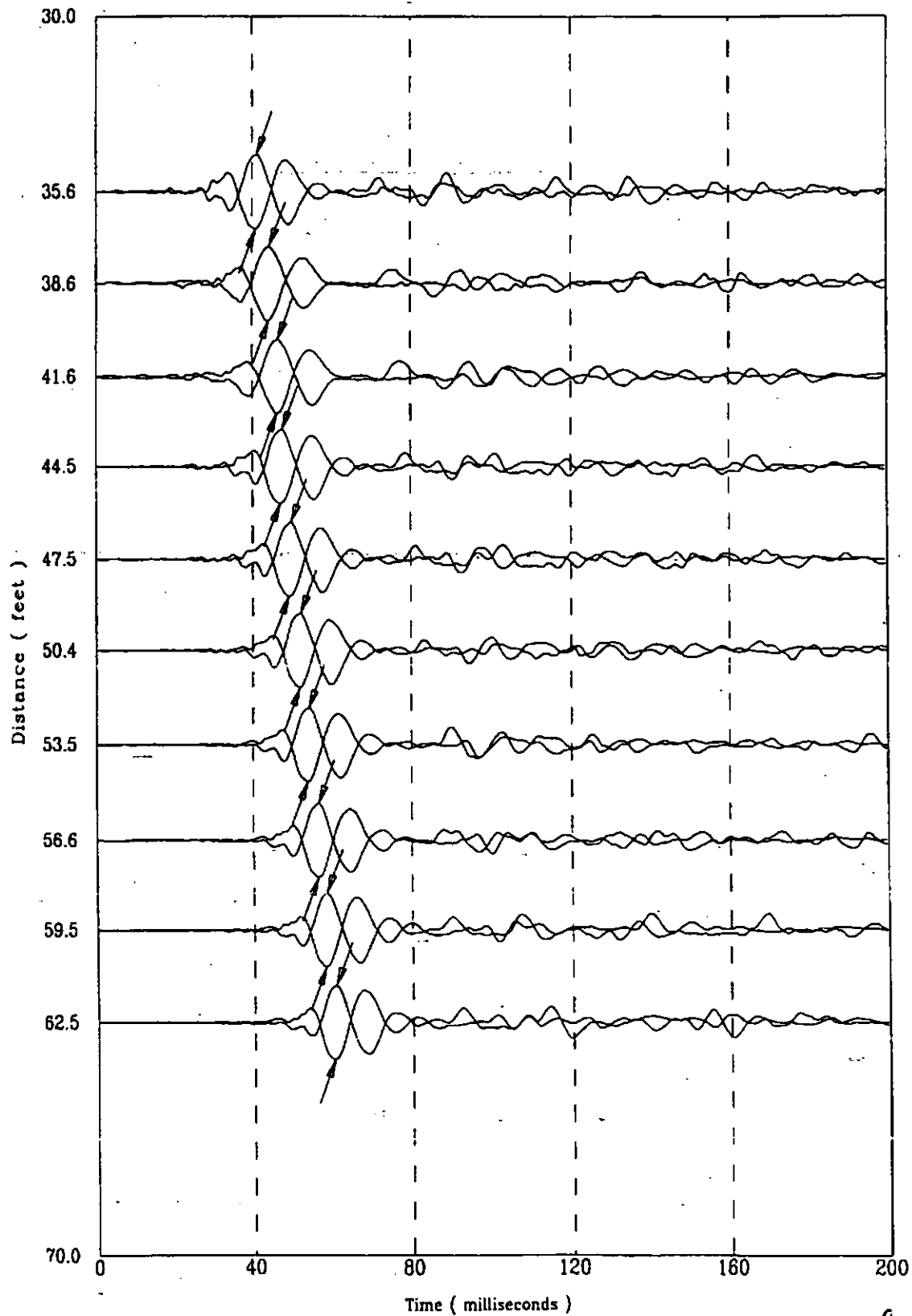
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CPT-171

S Wave  
03/19/98



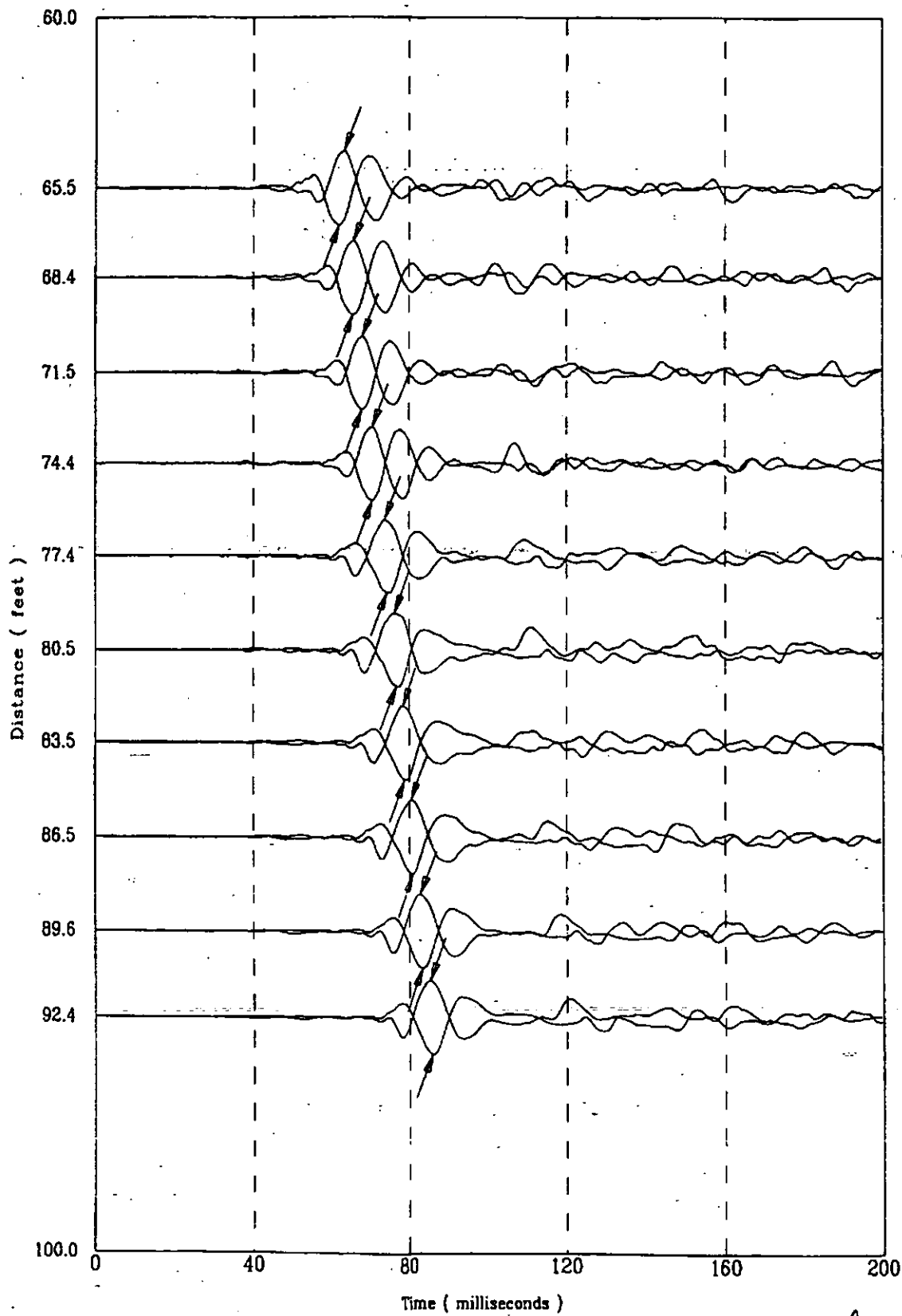
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K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-171

S Wave  
03/19/98



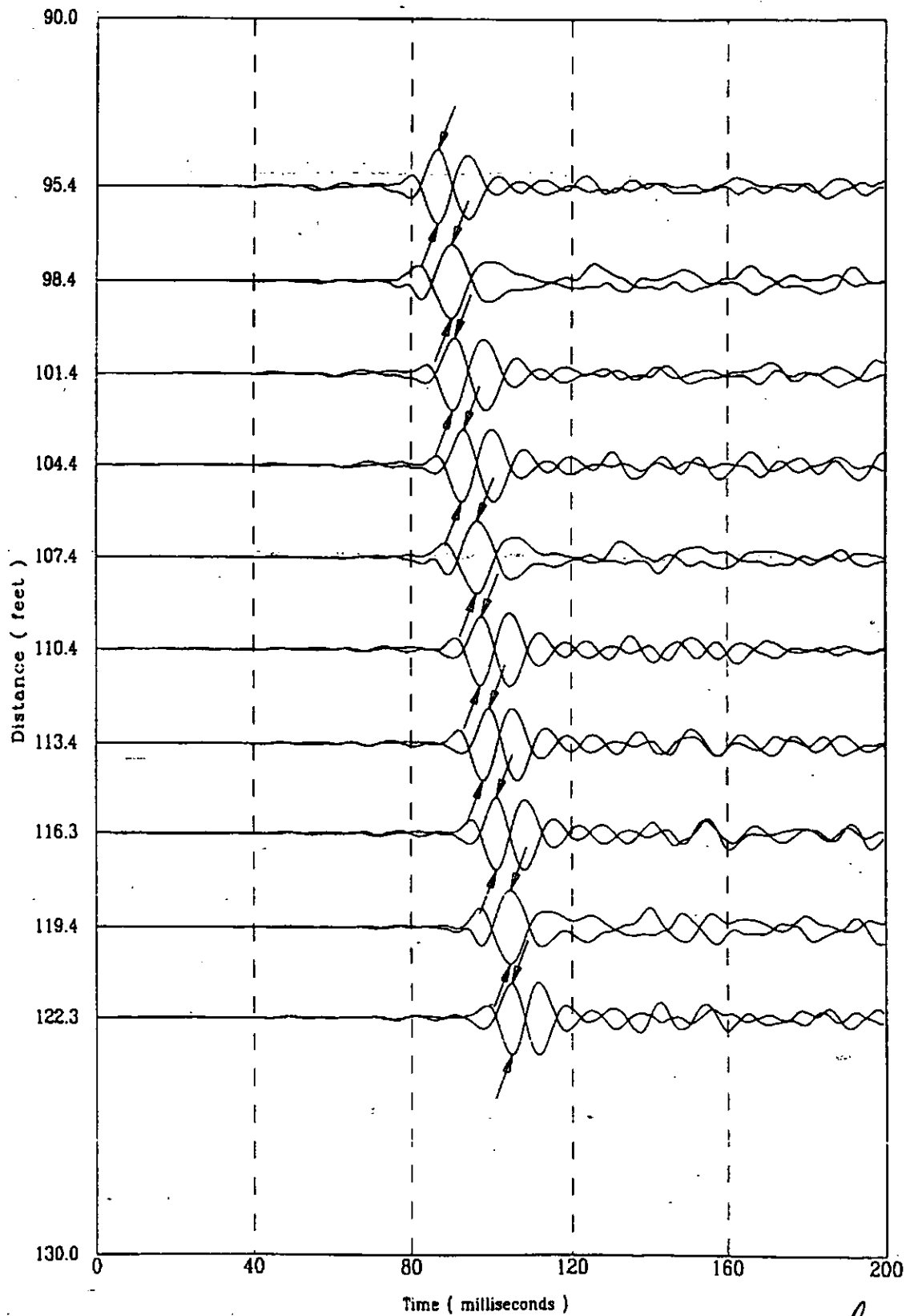
File 419m804S

288 of 522

K-TRT-F-0000/  
R/o

Applied Research Associates  
CPT-171

S Wave  
03/19/98



419m804S

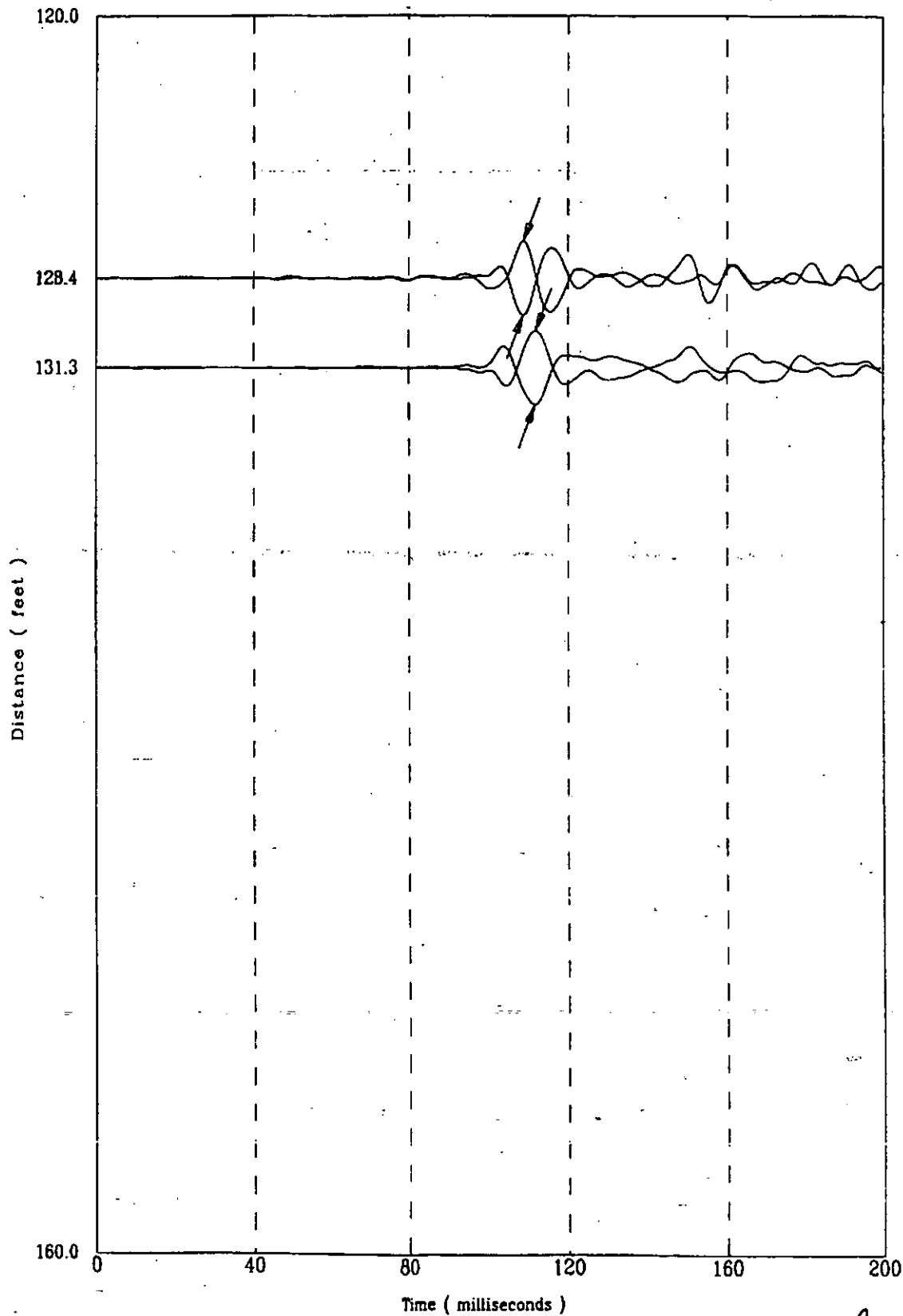
289 of 522



K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-171

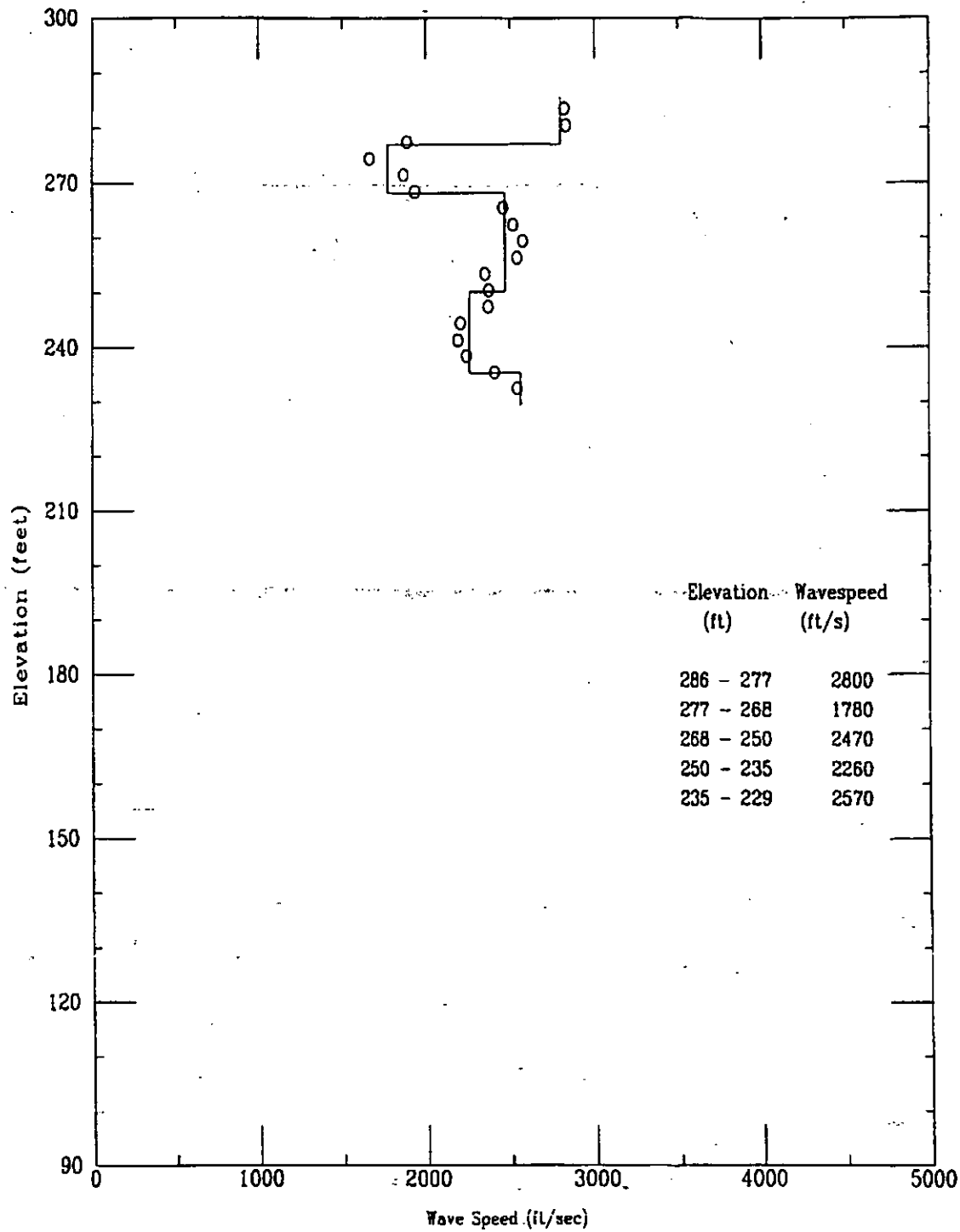
S Wave  
03/19/98



CPT-171

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

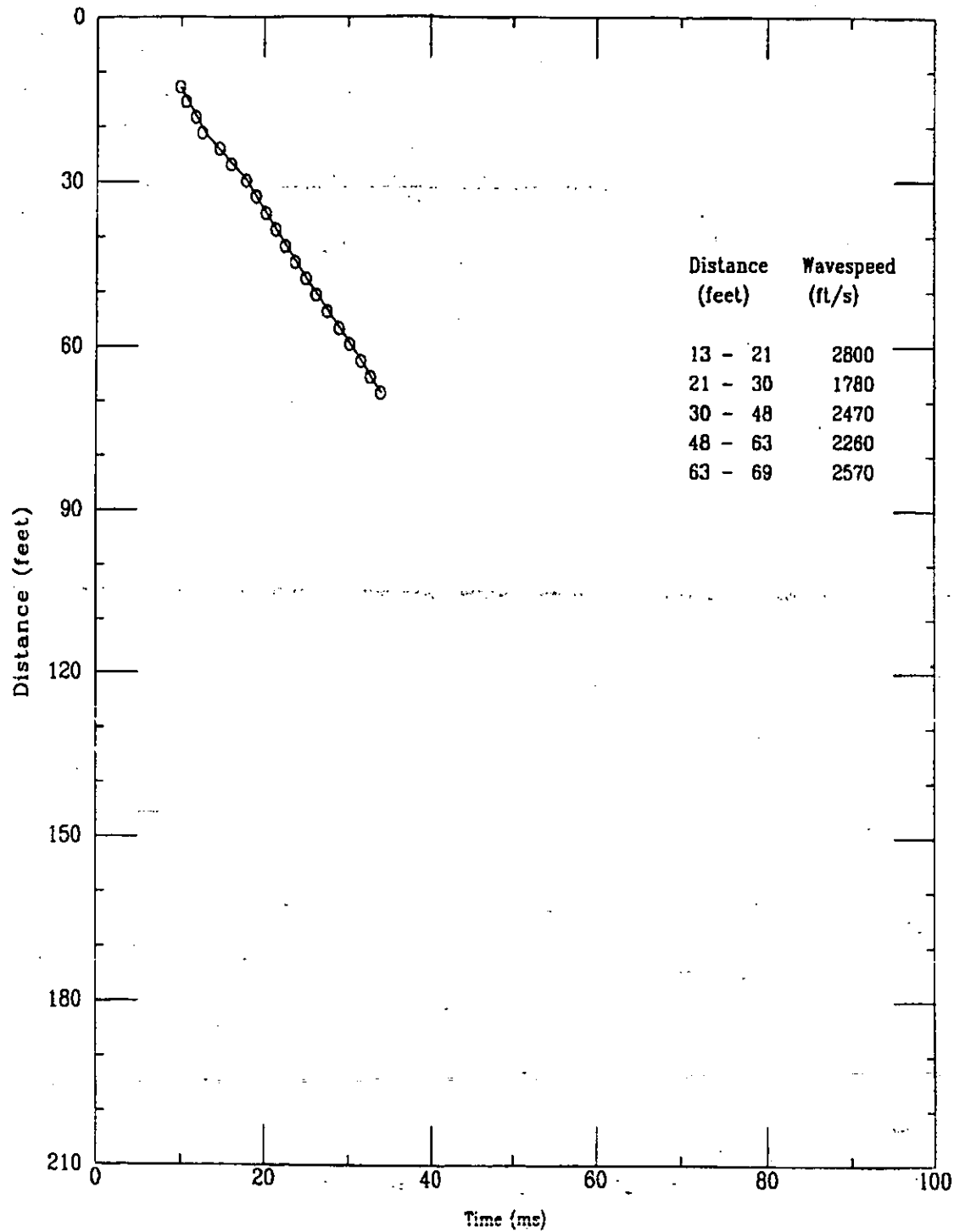
03/19/98



CPT-171

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/19/98

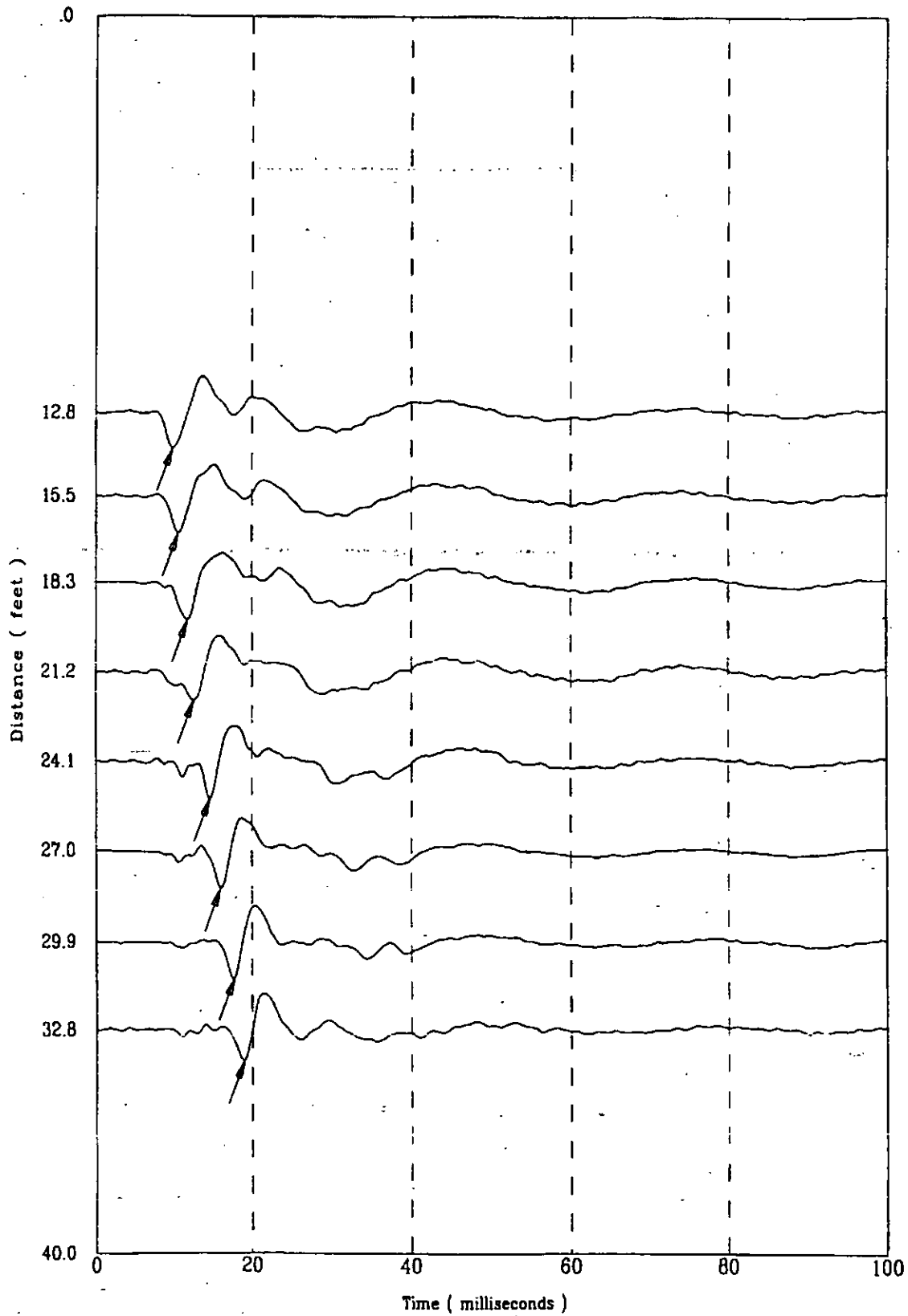


File 419m804S

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-171

P Wave  
03/19/98



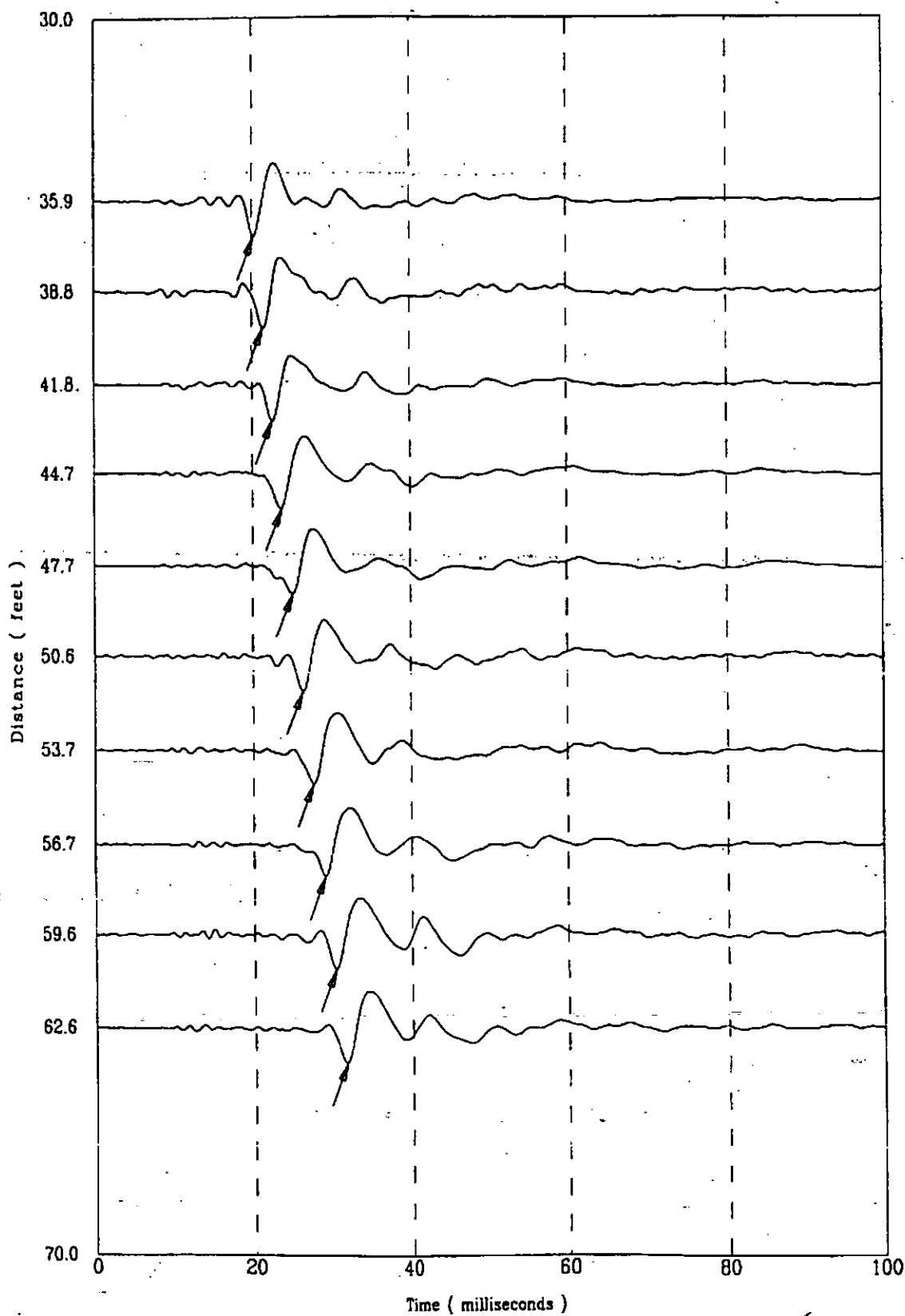
19m804S

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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-171

P Wave  
03/19/98



File 419m8045

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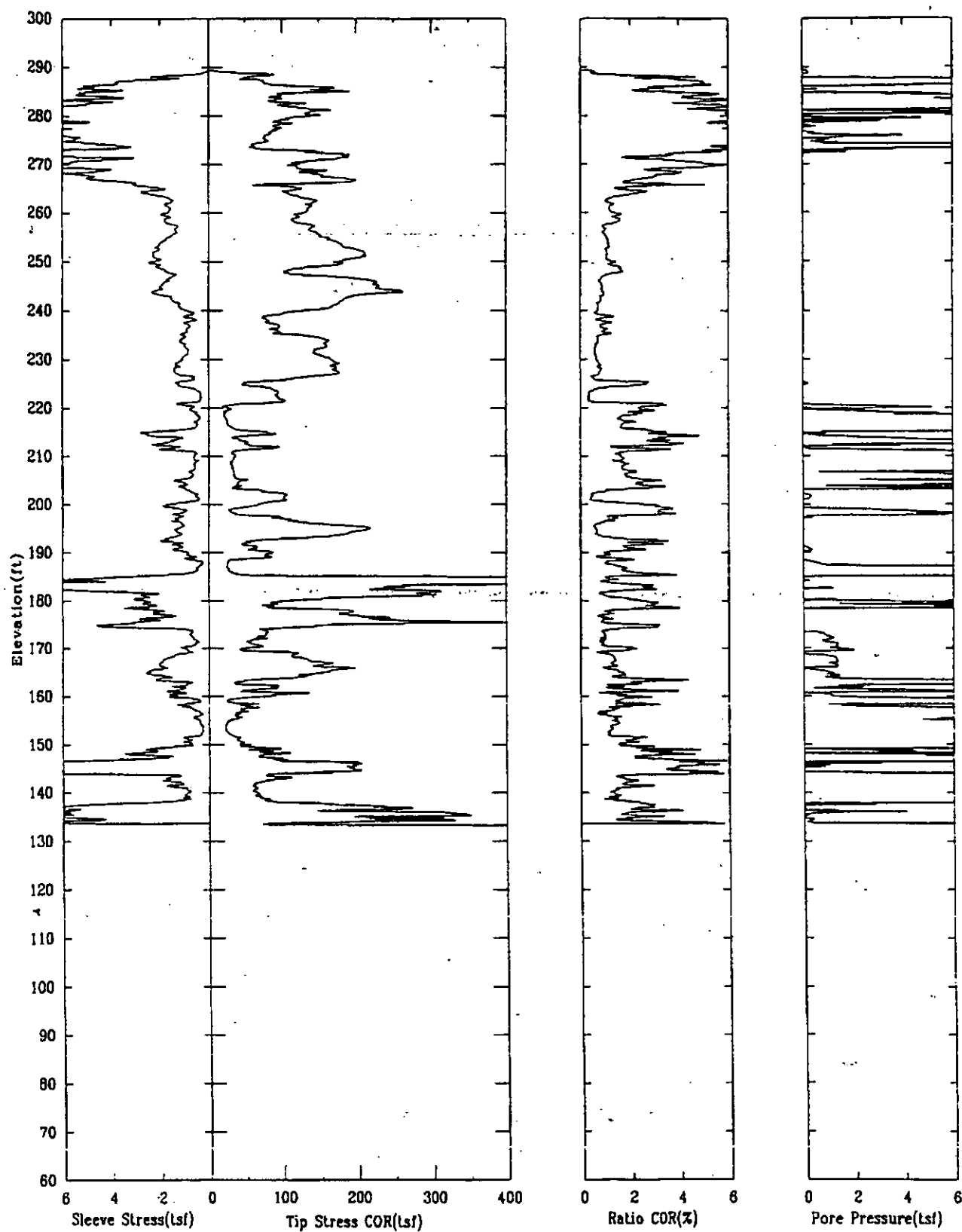
CPT-172

APPLIED RESEARCH ASSOCIATES, INC.

North 78900

East 55518

Elevation 295.4

K-TRT-F-00001  
03/25/98 R/O

CPT-172

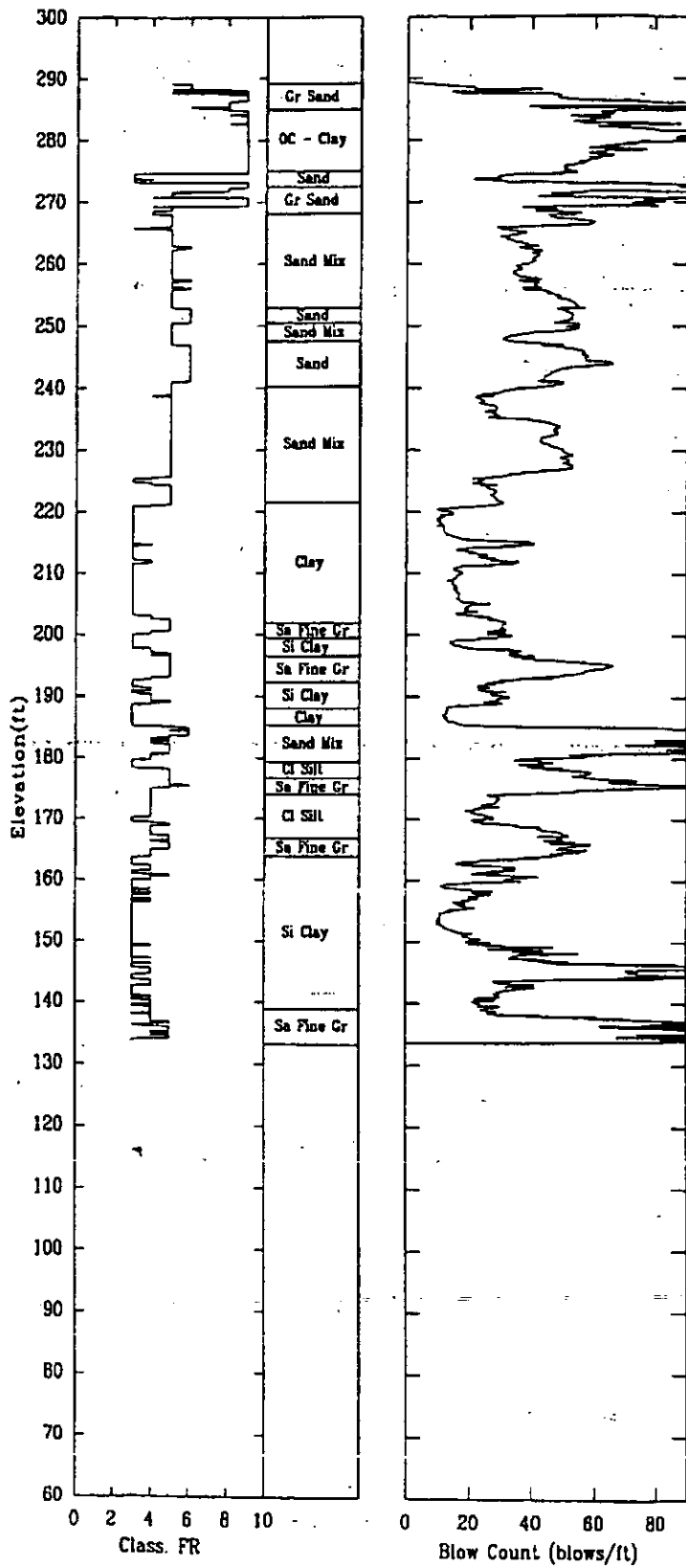
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K-TRT-F-00001  
03/25/98R/O

North 78900

East 55518

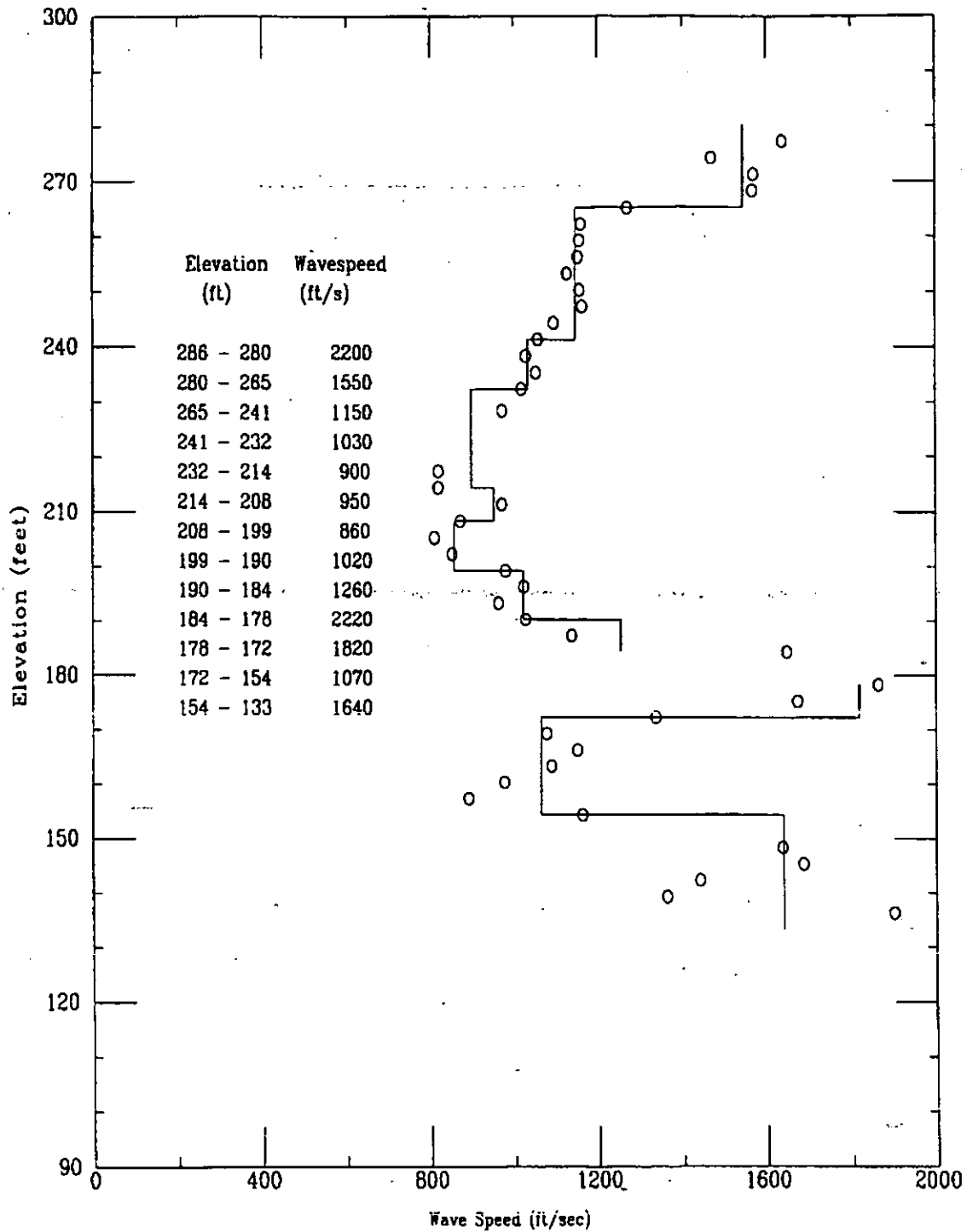
Elevation 295.4



CPT-172

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Speeds

03/25/98

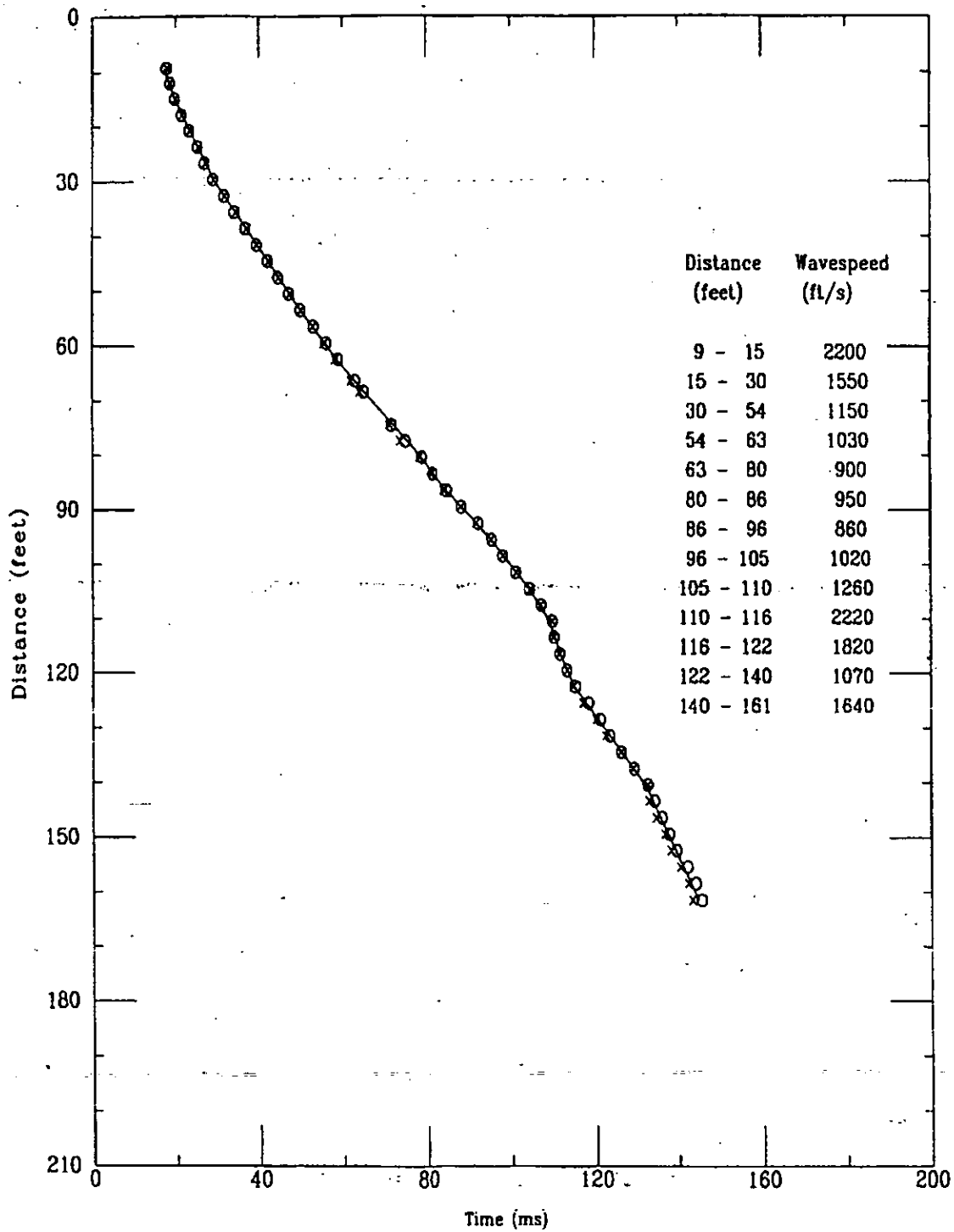




CPT-172

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/25/98

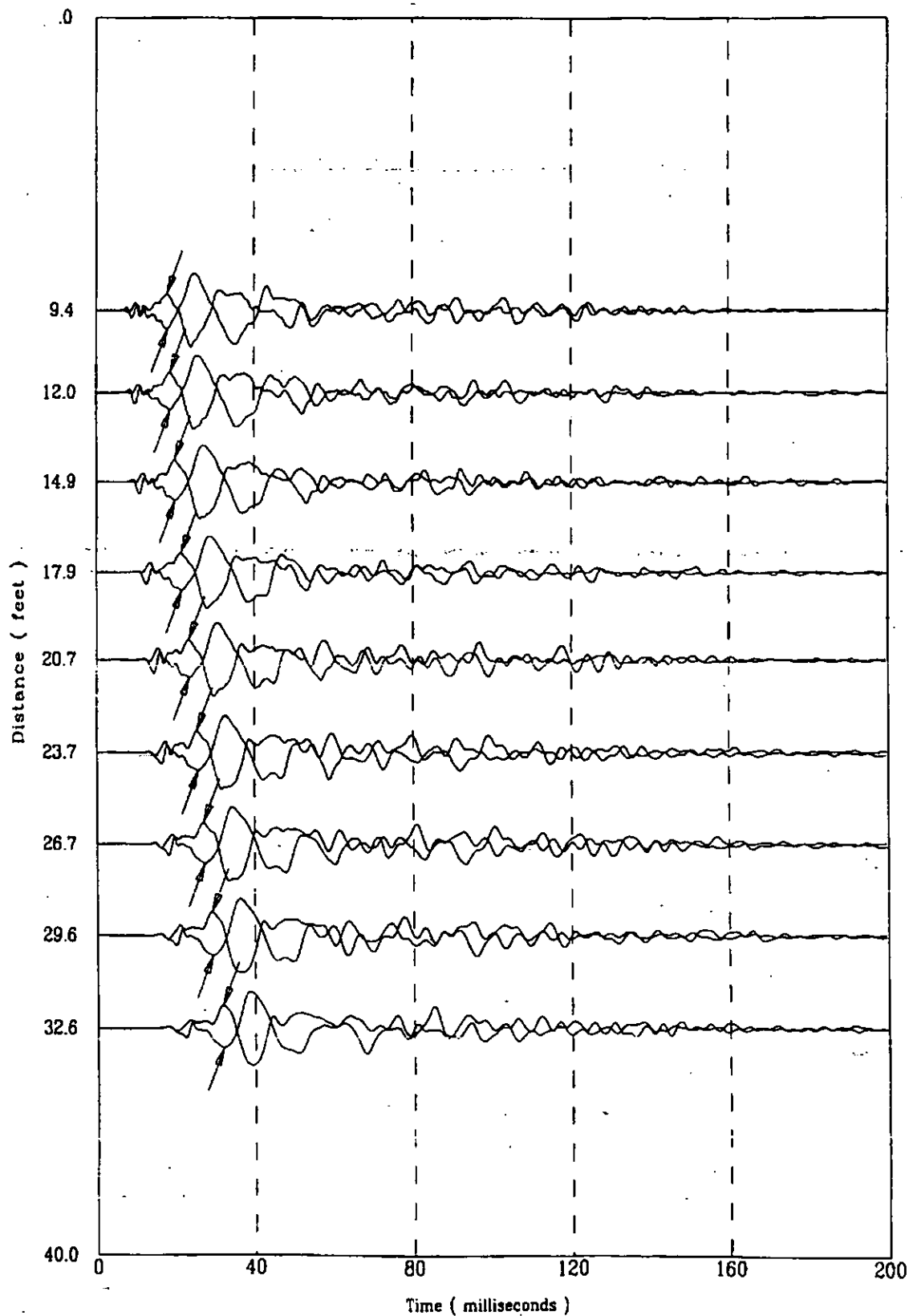


File 325m801S

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-172

S Wave  
03/25/98



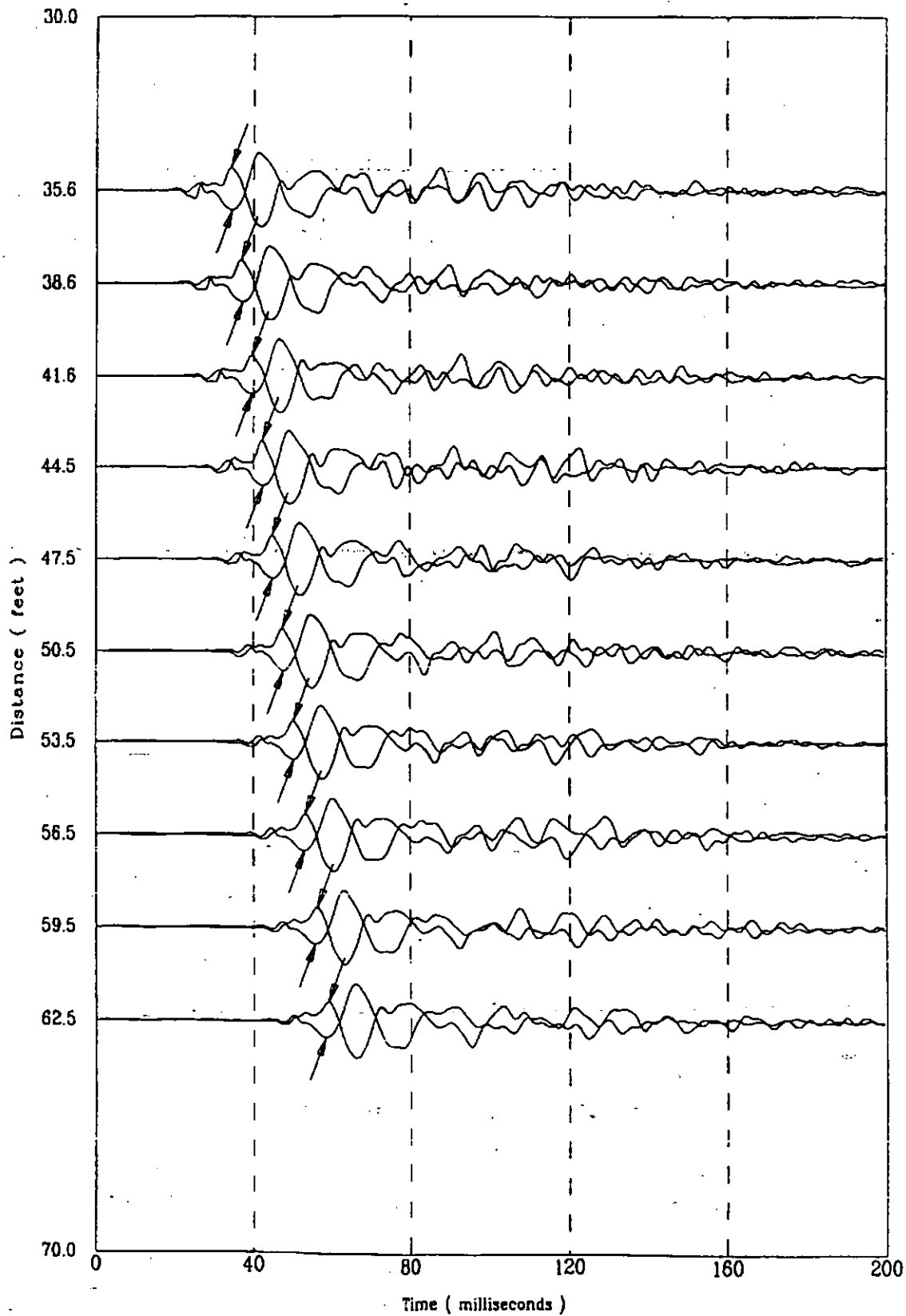
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299 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-172

S Wave  
03/25/98



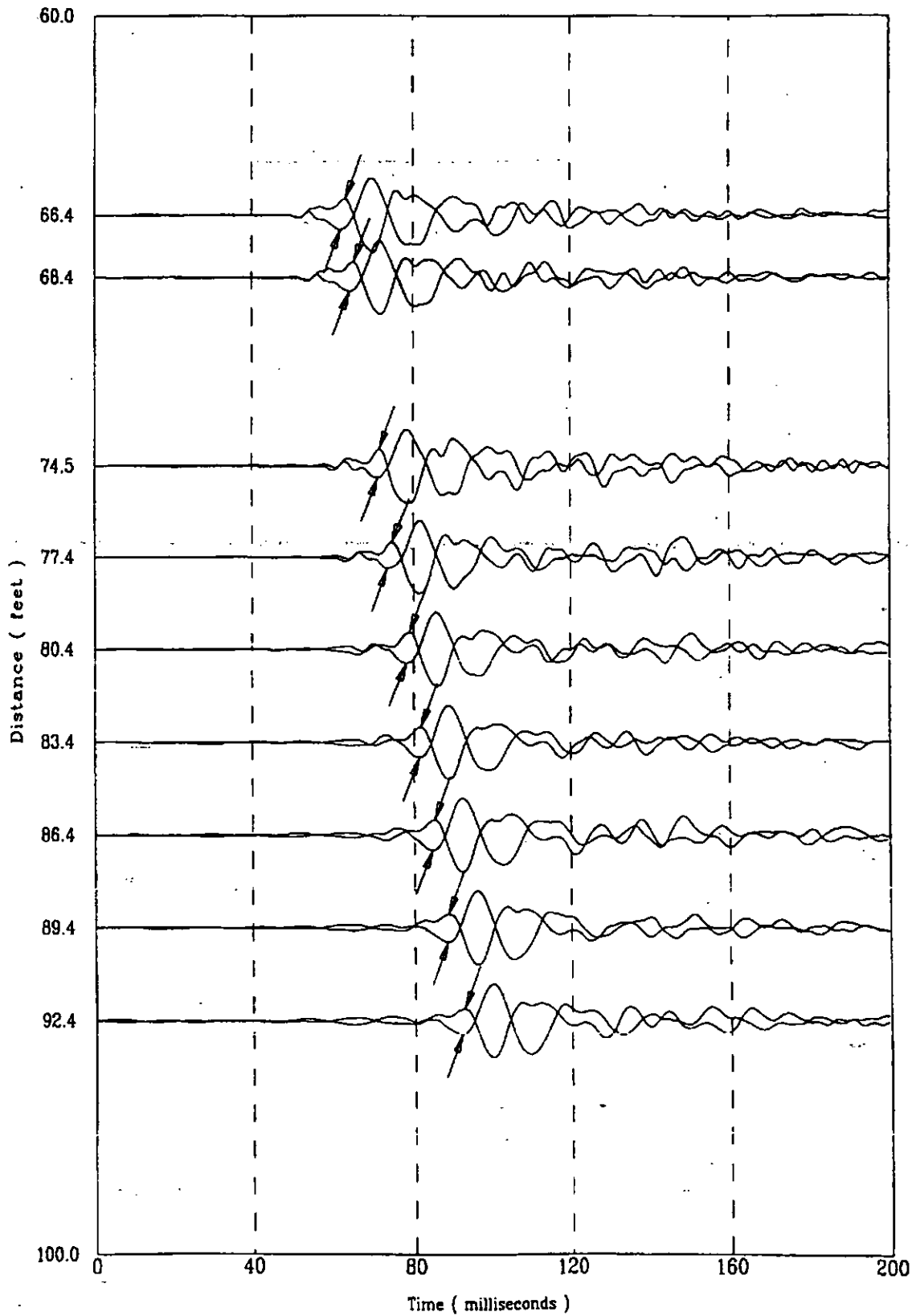
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300 of 522

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-172

S Wave  
03/25/98



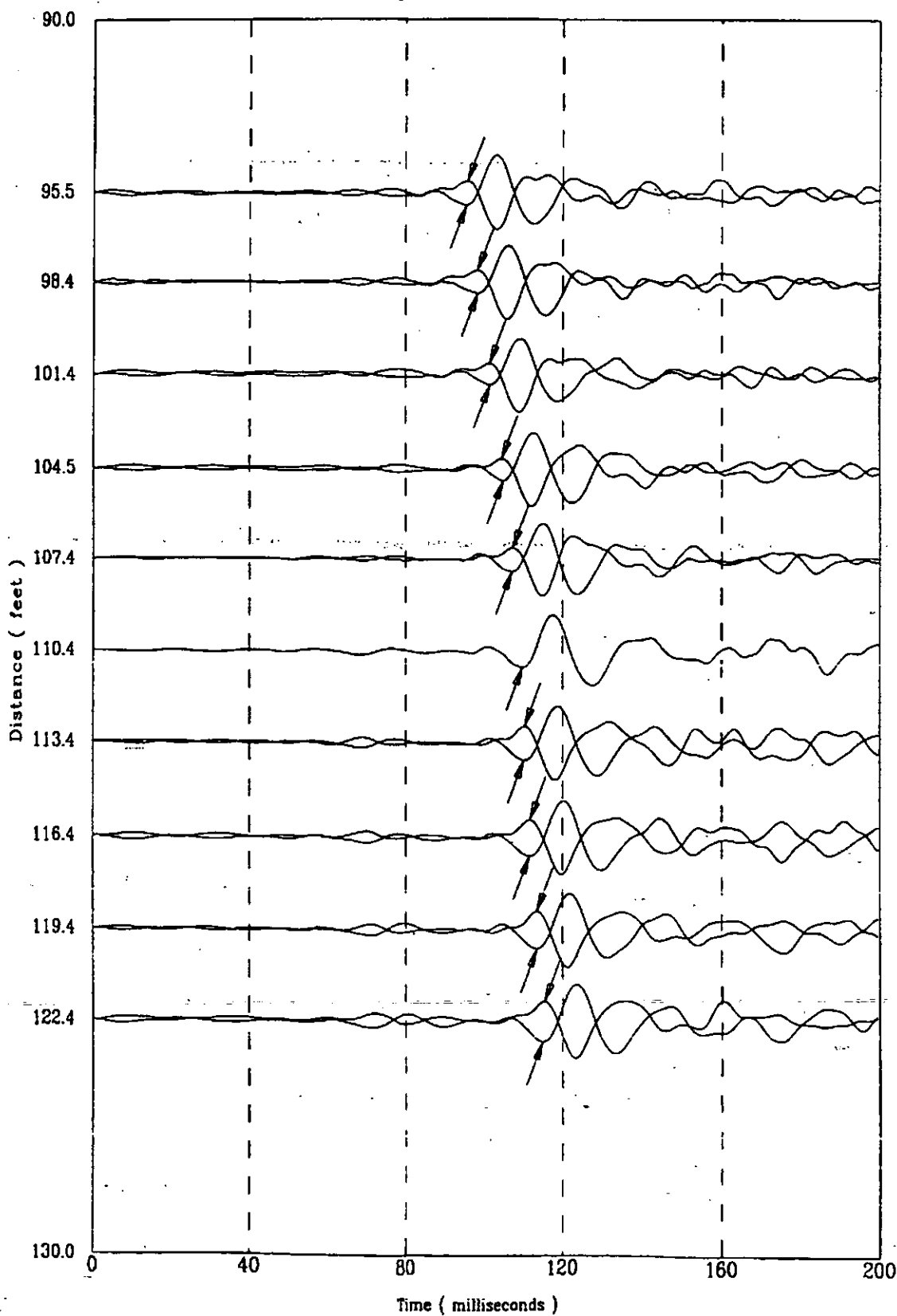
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301 of 522

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-172

S Wave  
03/25/98



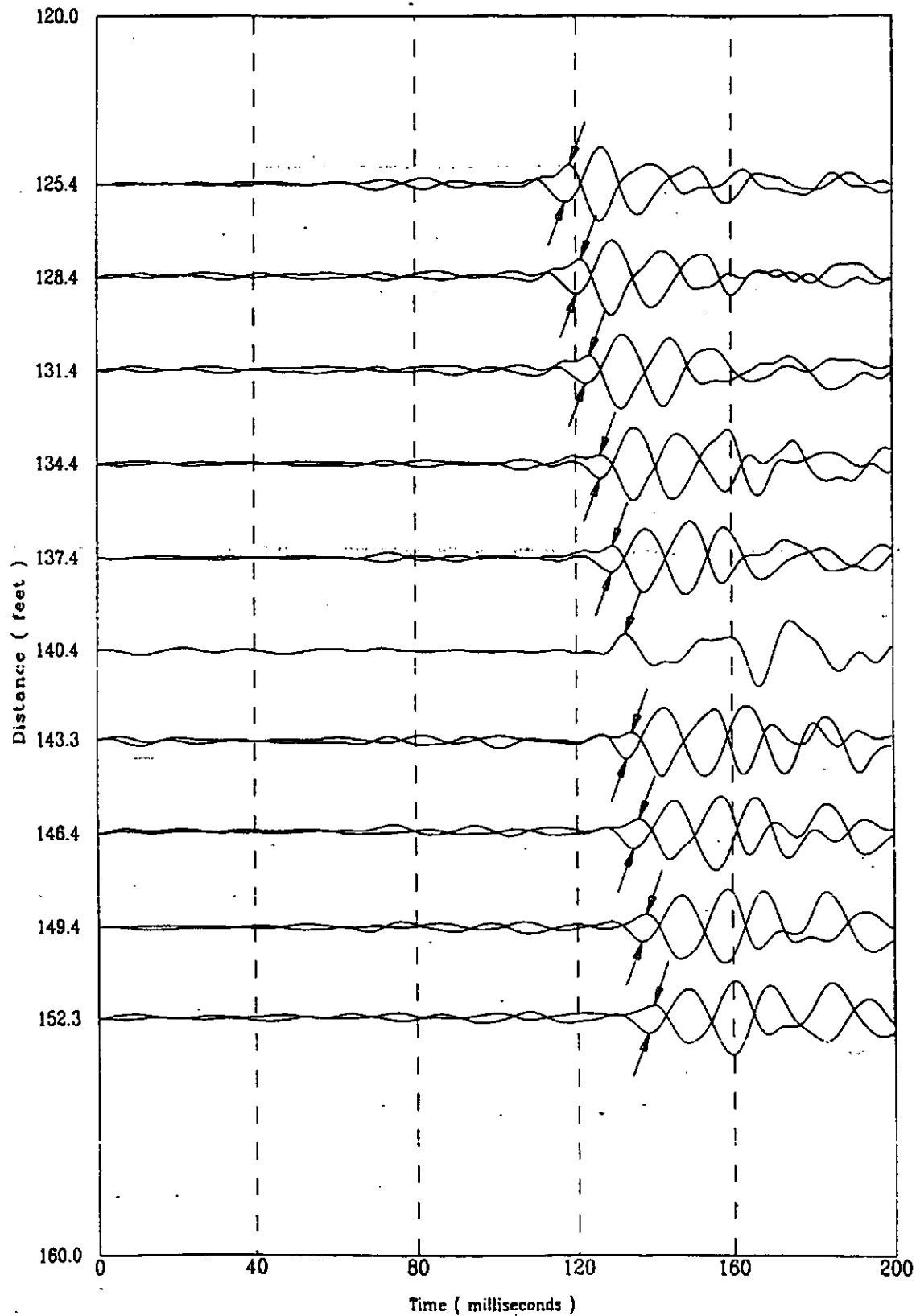
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302 of 522

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-172

S Wave  
03/25/98



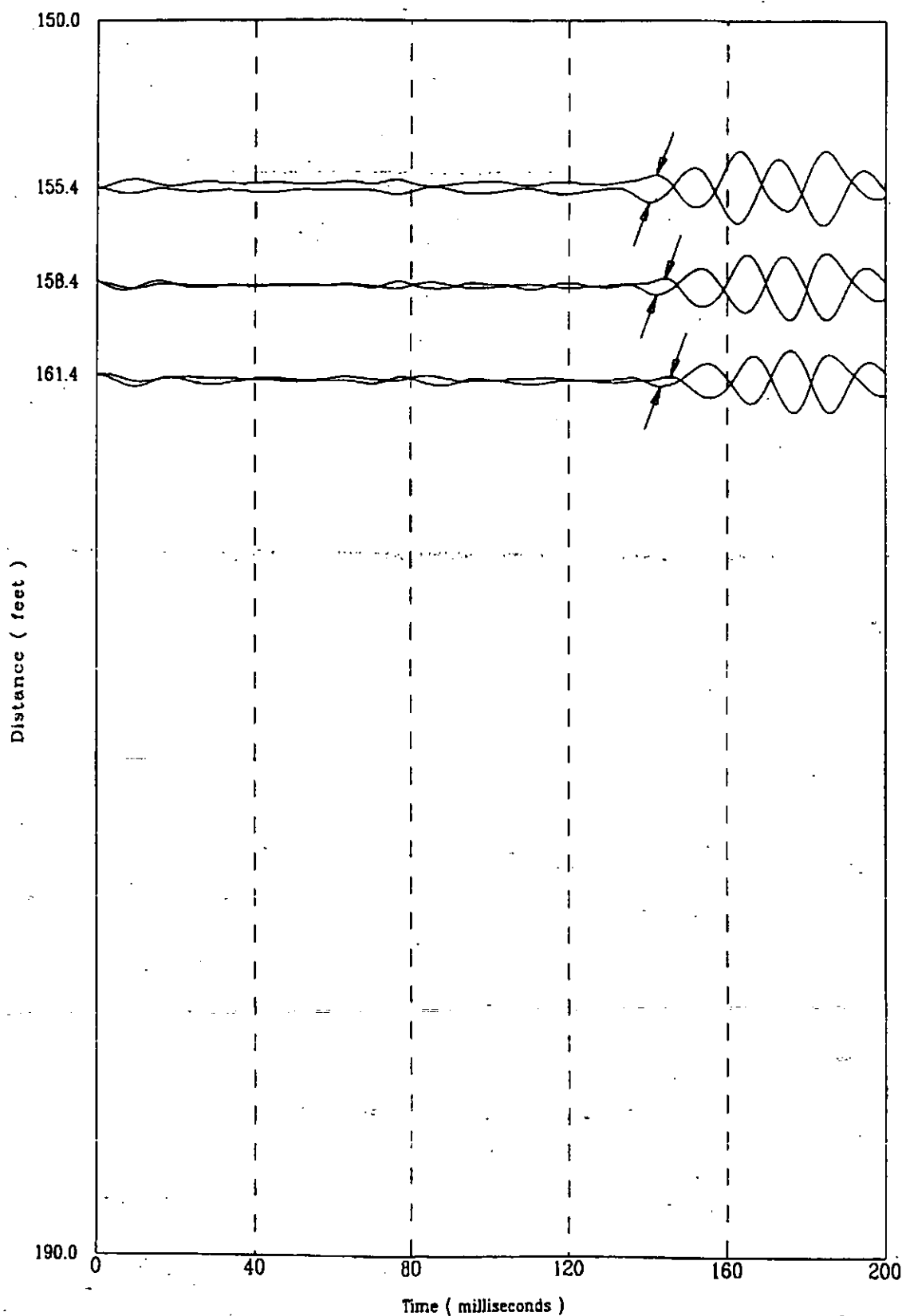
25m801S

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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-172

S Wave  
03/25/98



File 325m801S

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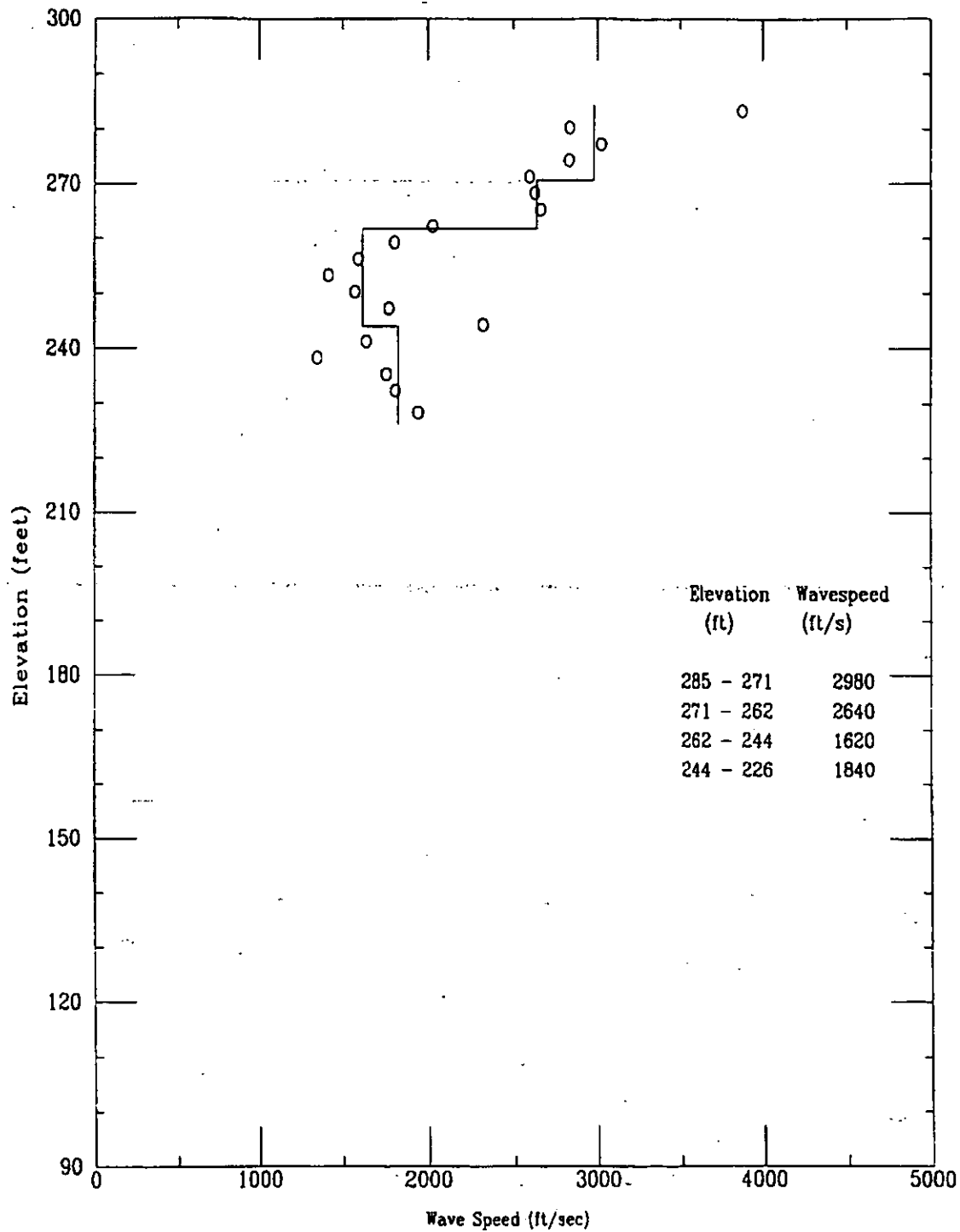
K-TRT-F-00001  
R/O

CPT-172

APPLIED RESEARCH ASSOCIATES, INC.

03/25/98

### Compression Wave Speeds



File 325m801S

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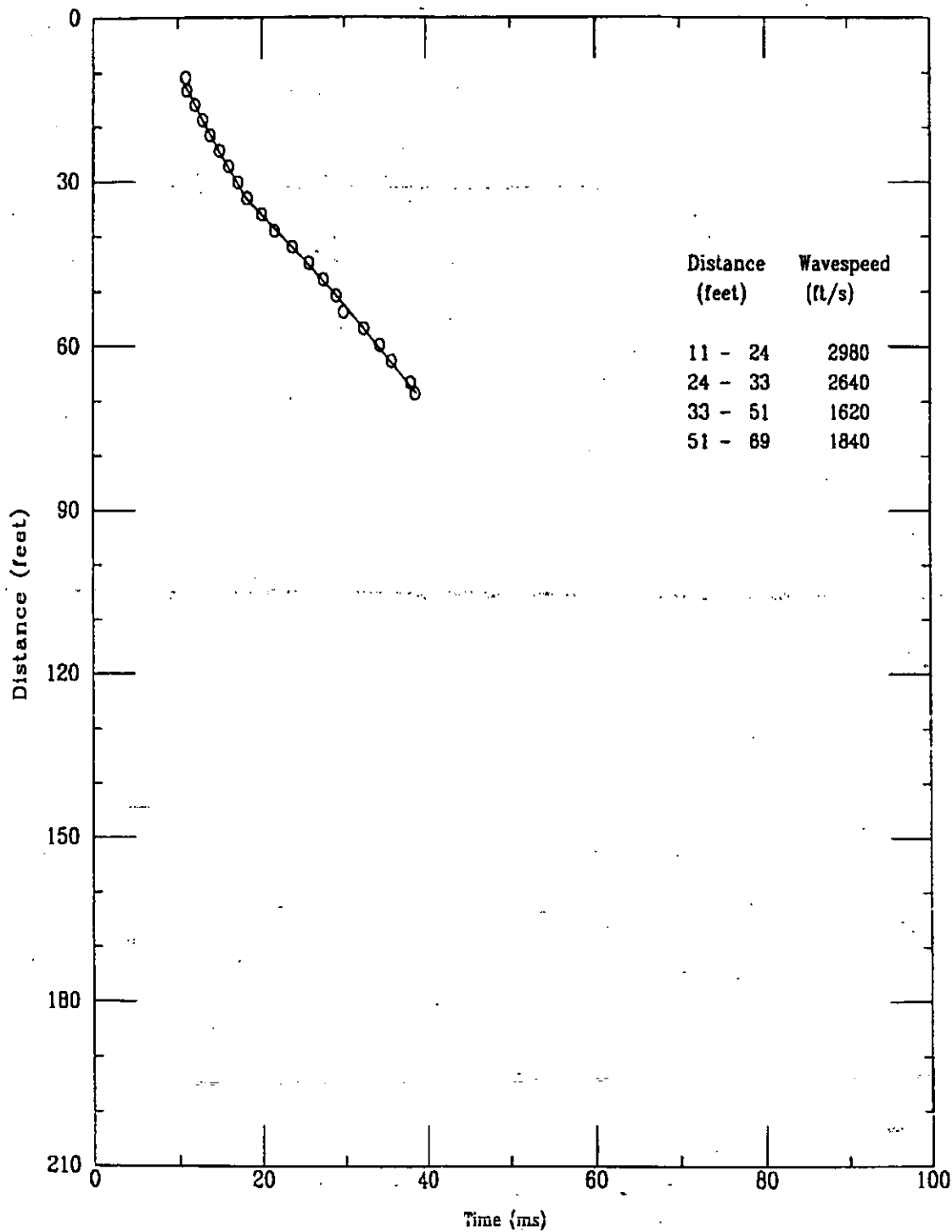


K-TRT-F-00001  
R/O

CPT-172

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/25/98



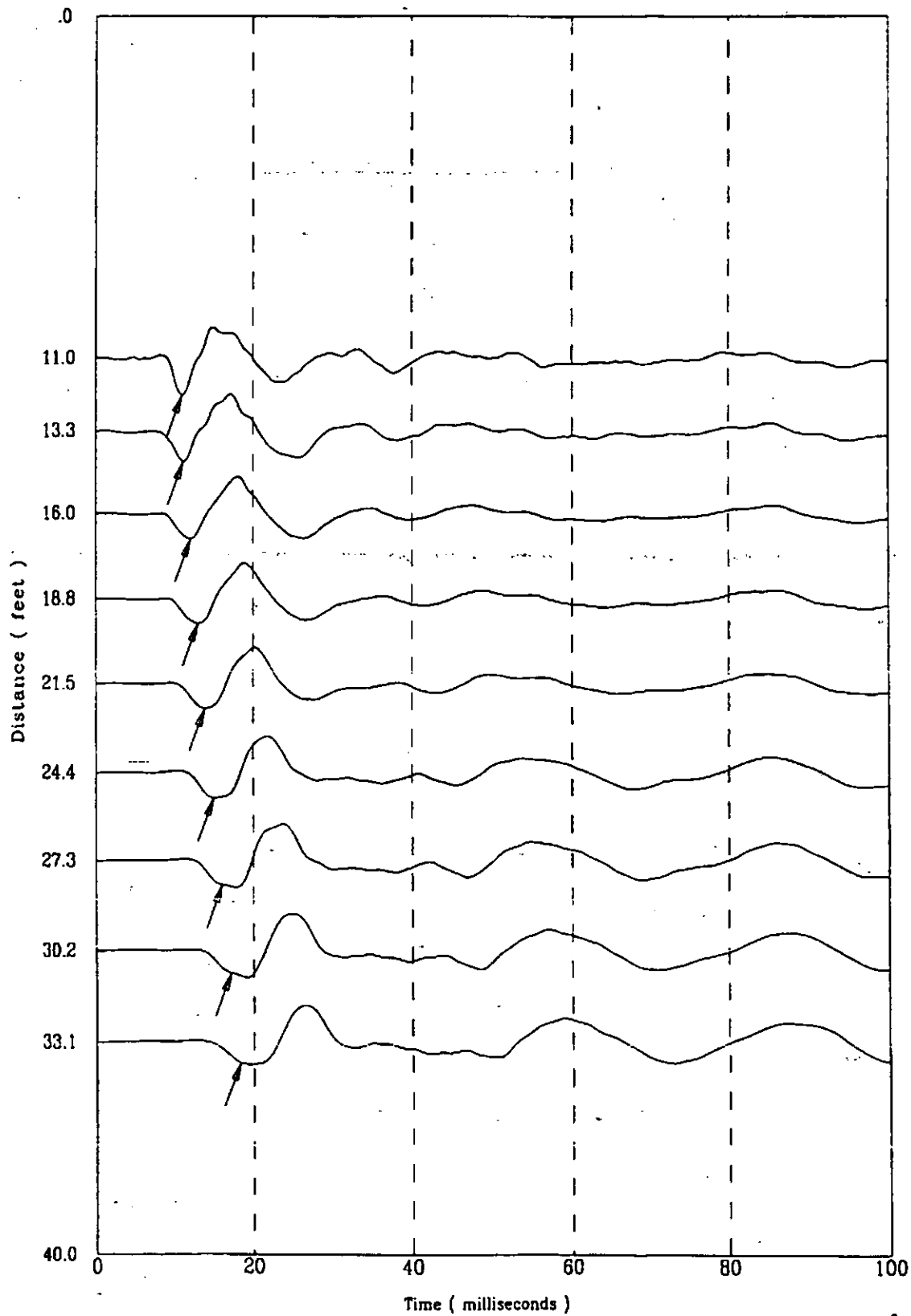
File 325m801S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-172

P Wave  
03/25/98



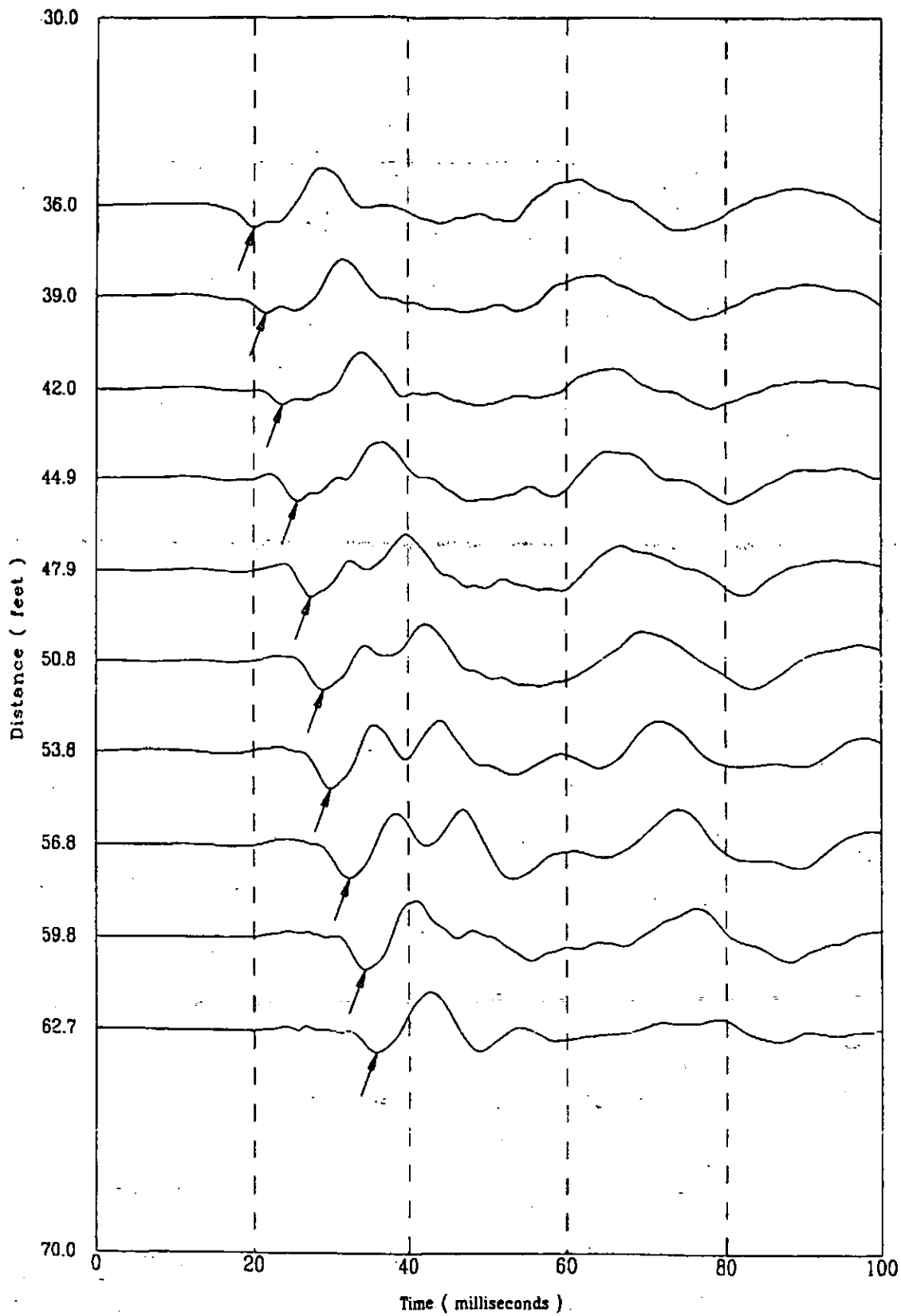
025m801S

307 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-172

P Wave  
03/25/98



File 325m801S

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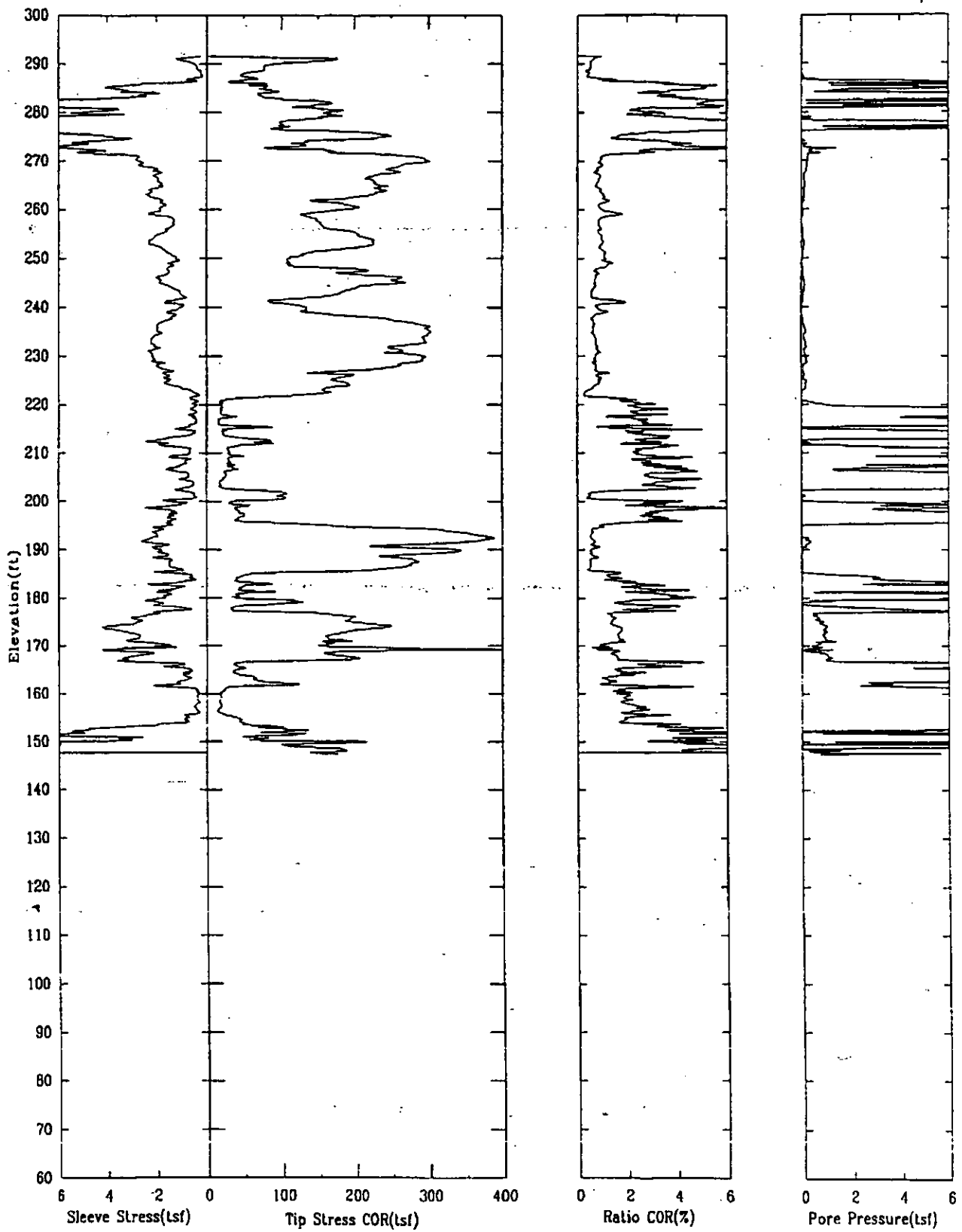
CPT-173

APPLIED RESEARCH ASSOCIATES, INC.

North 78900

East 55650

Elevation 297.6

K-TRT-F-00001  
03/27/98 / 0

CPT-173

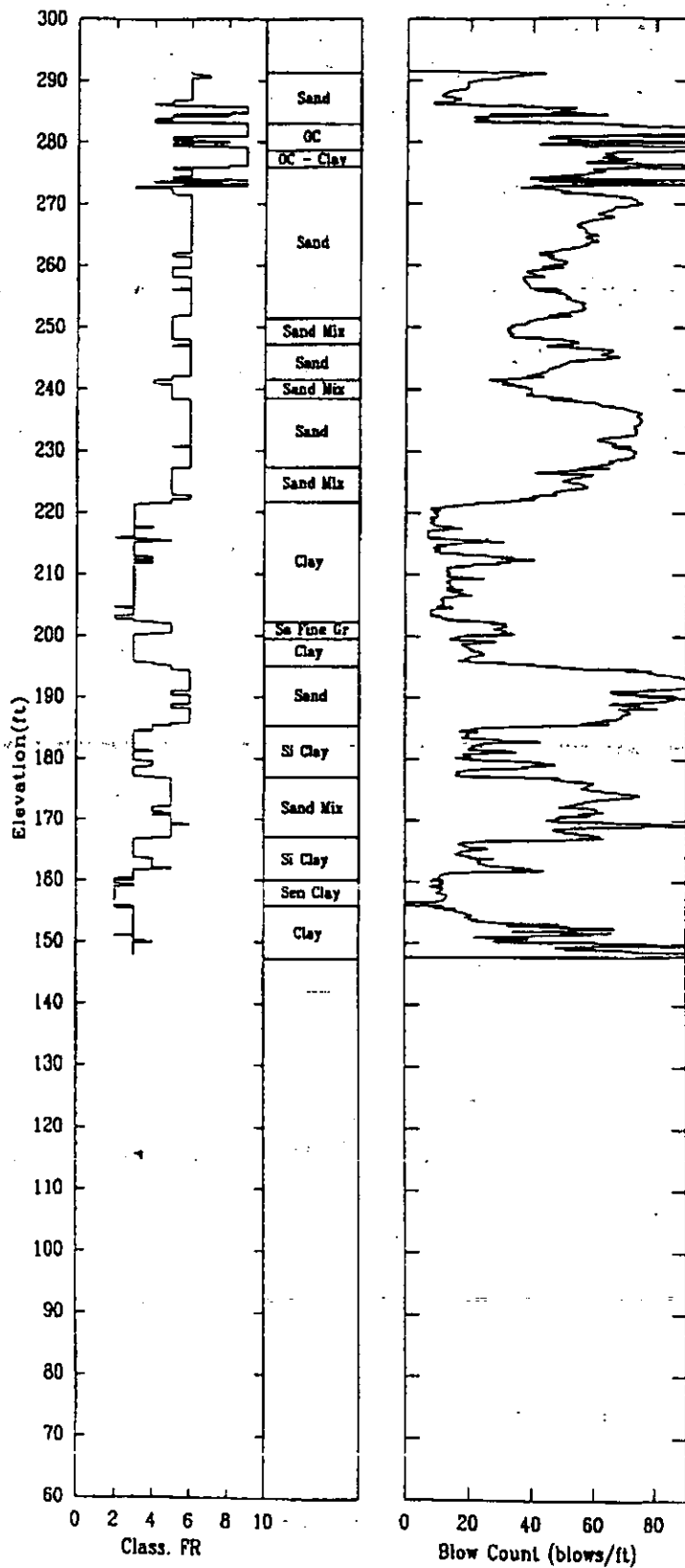
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K-TRT-F-0000/  
03/27/98 / 0

North 78900

East 55650

Elevation 297.6

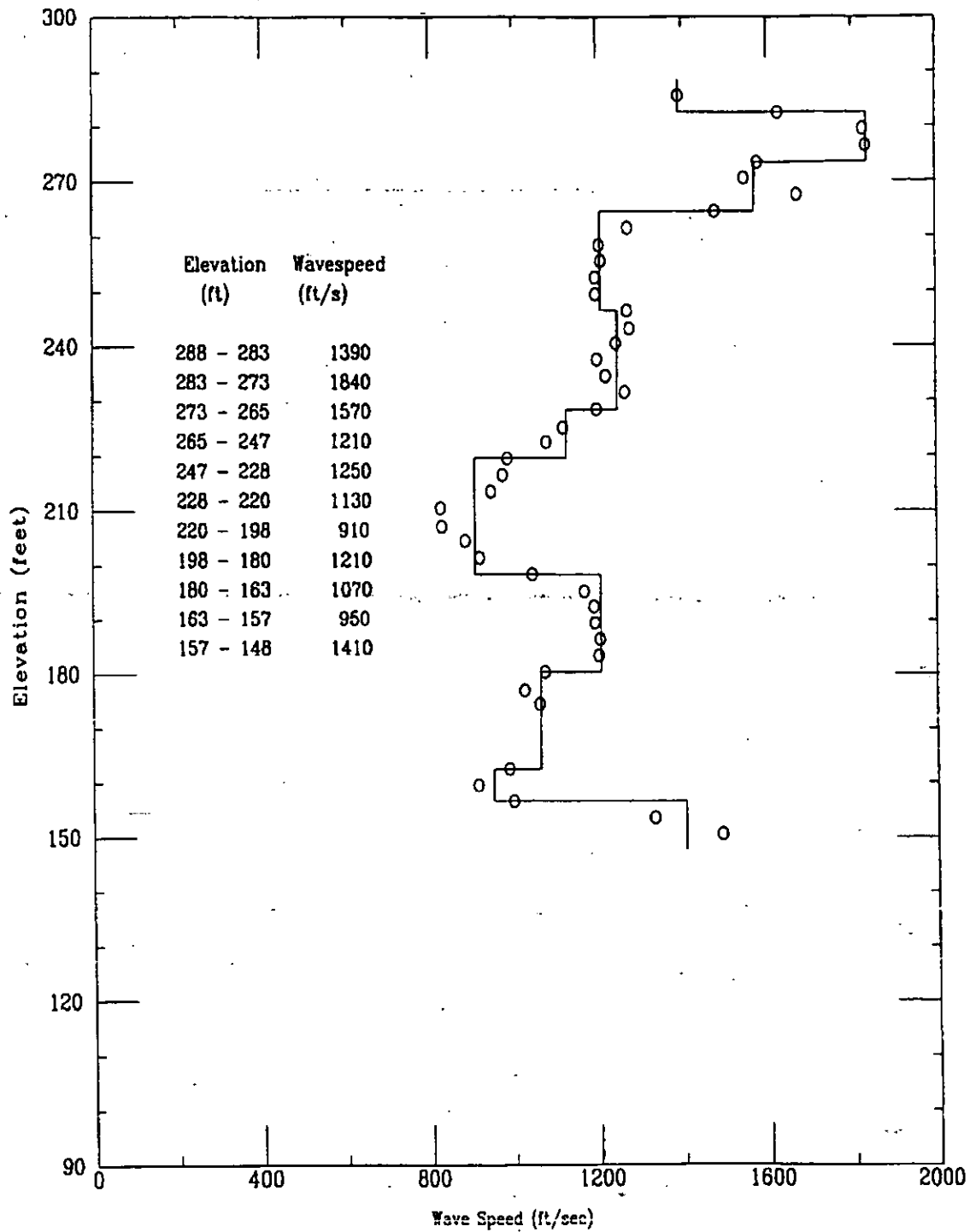


CPT-173

APPLIED RESEARCH ASSOCIATES, INC.

03/27/98

Shear Wave Speeds



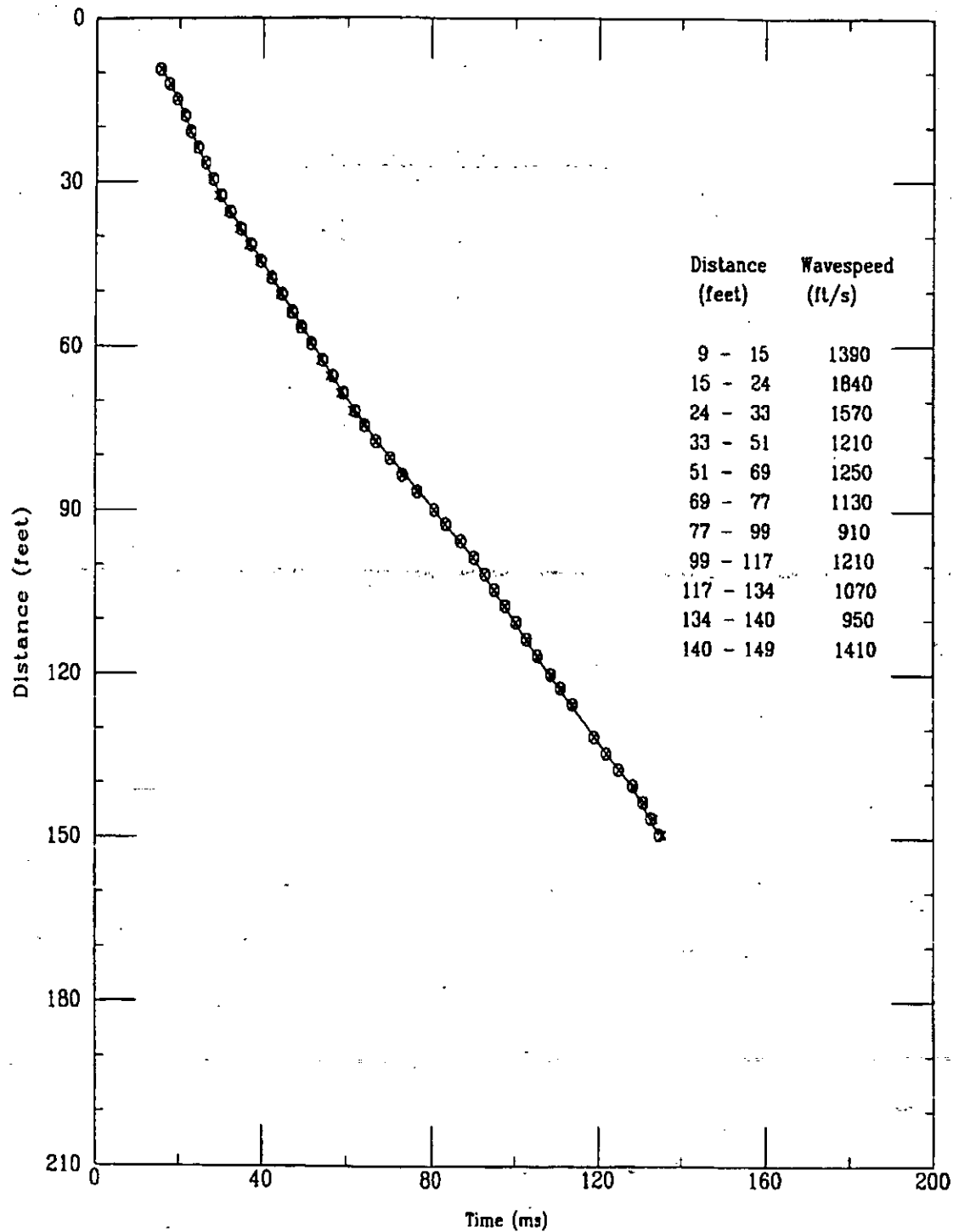
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K-TRT-F-00001  
R/O

CPT-173

APPLIED-RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/27/98



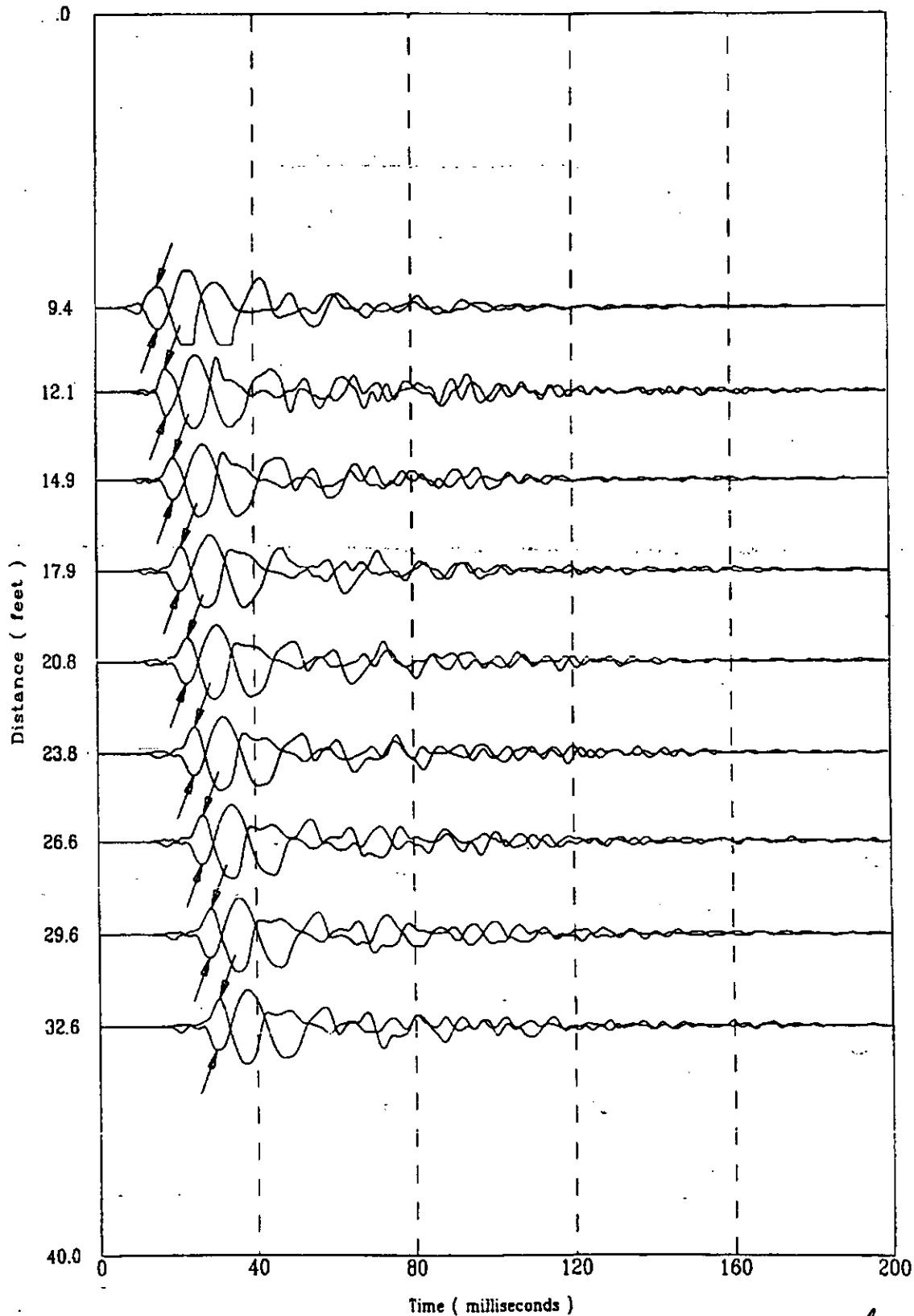
File 327m804S

3/2 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-173

S Wave  
03/27/98



J27m804S

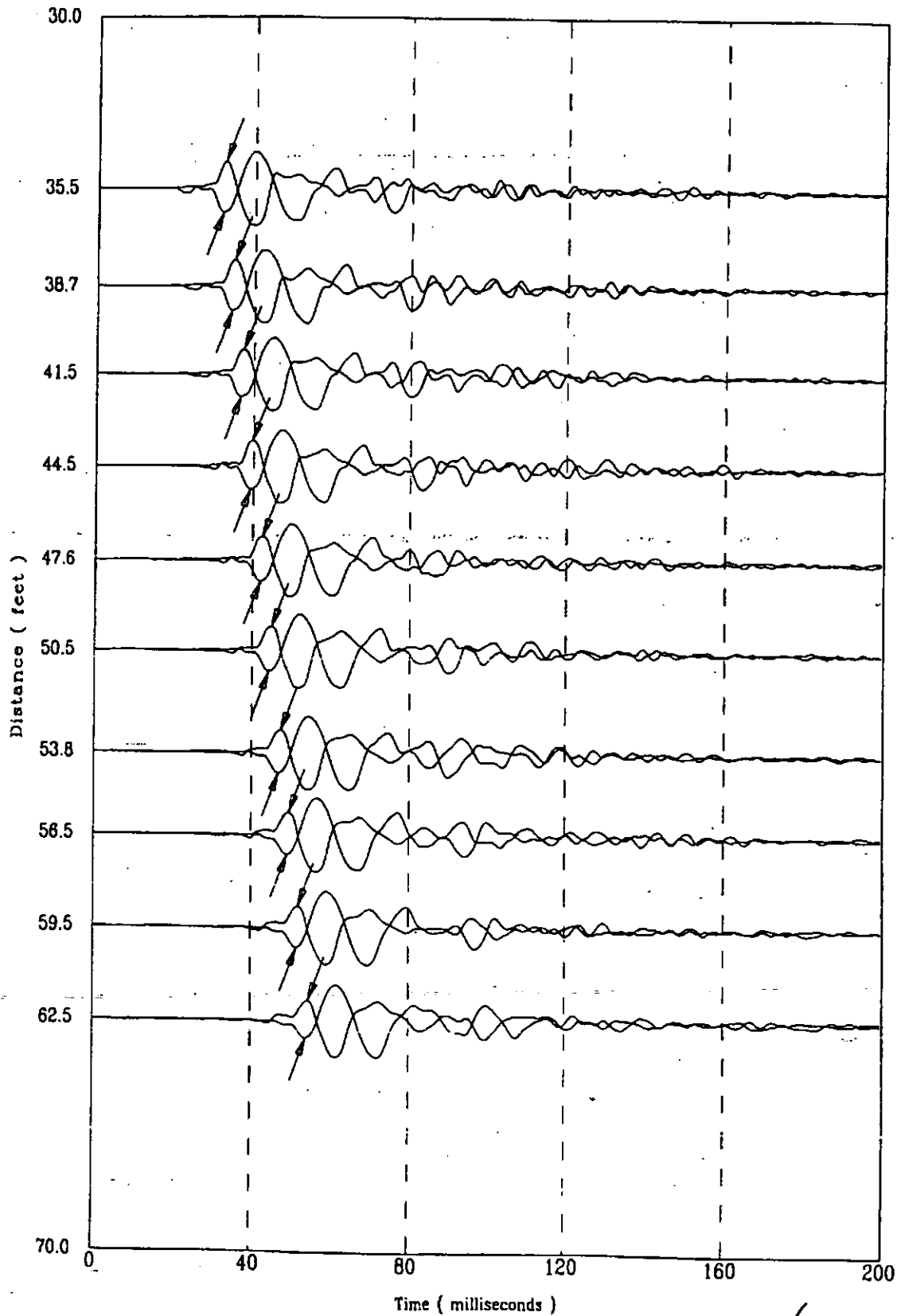
3/3 of 522



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-173

S Wave  
03/27/98



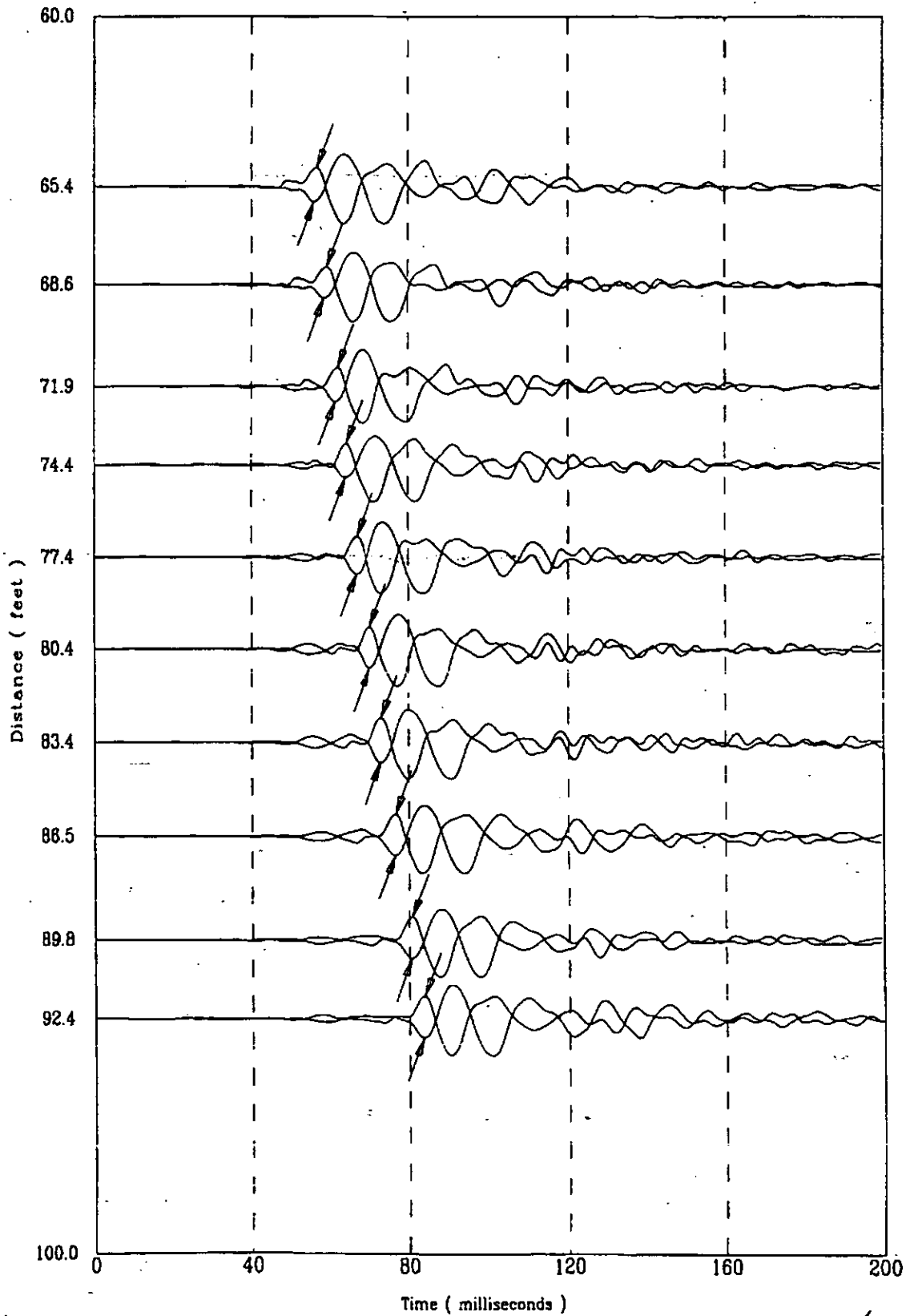
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314 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-173

S Wave  
03/27/98



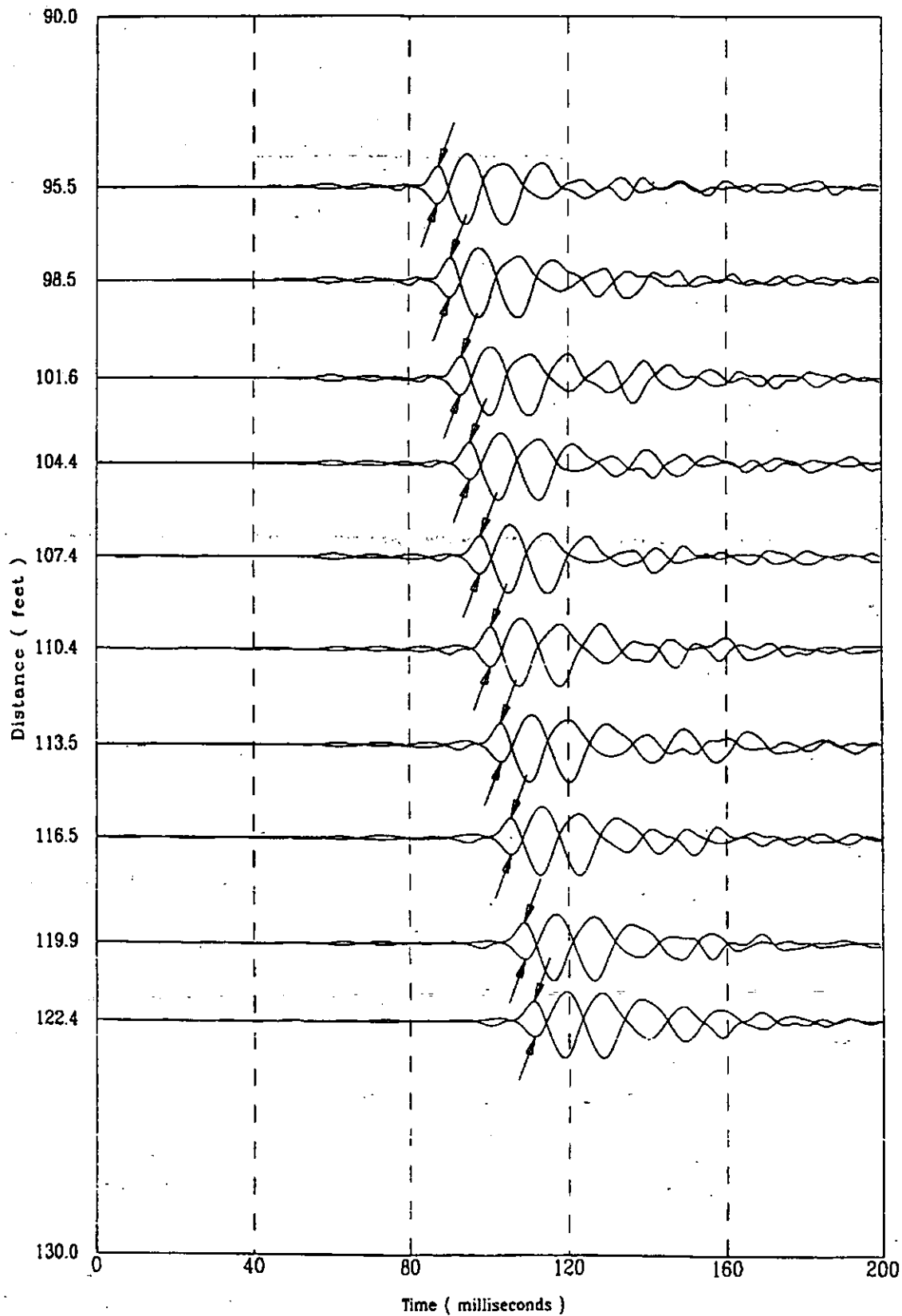
J27m804S

315 of 522

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-173

S Wave  
03/27/98



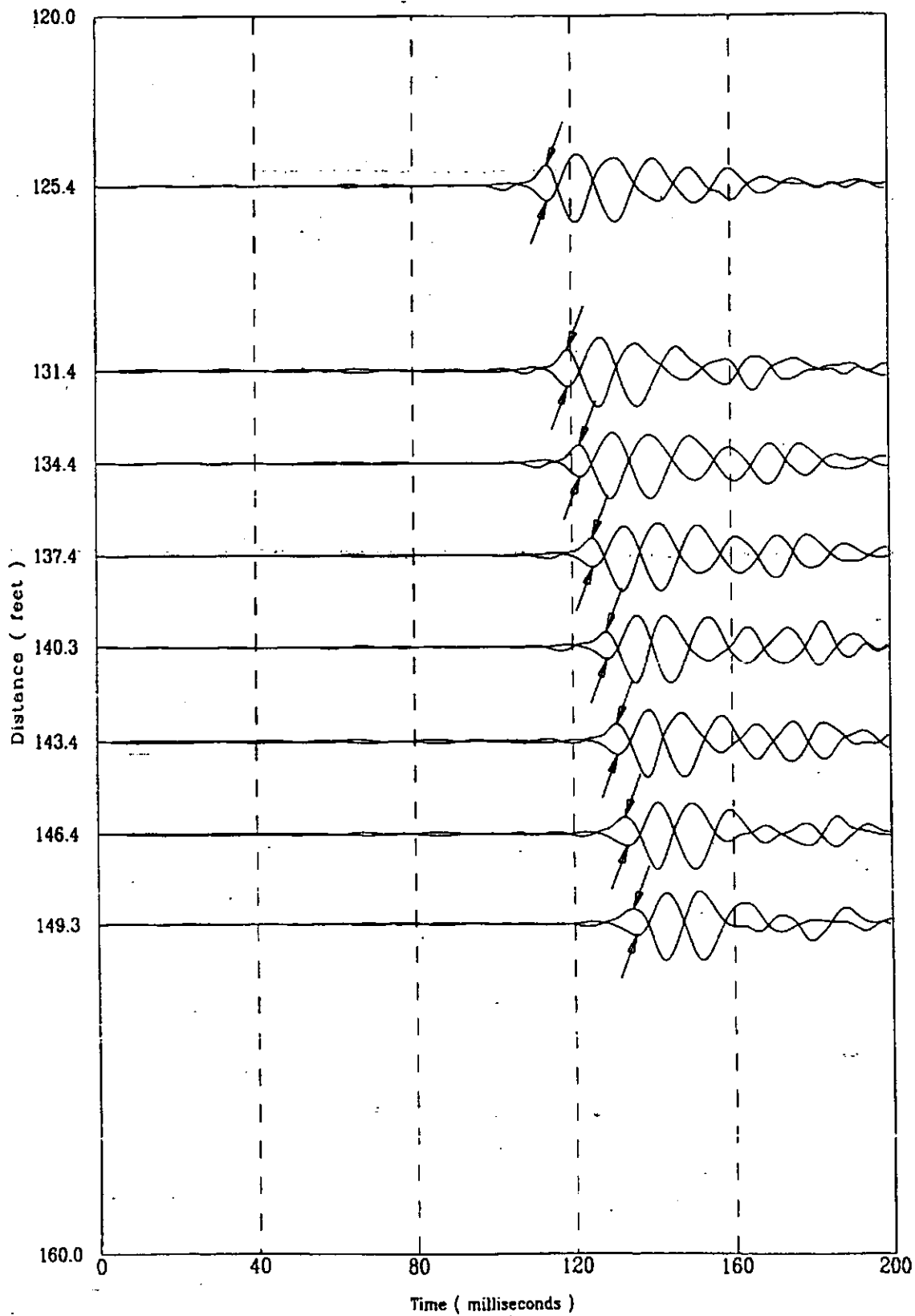
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316 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-173

S Wave  
03/27/98



J27m804S

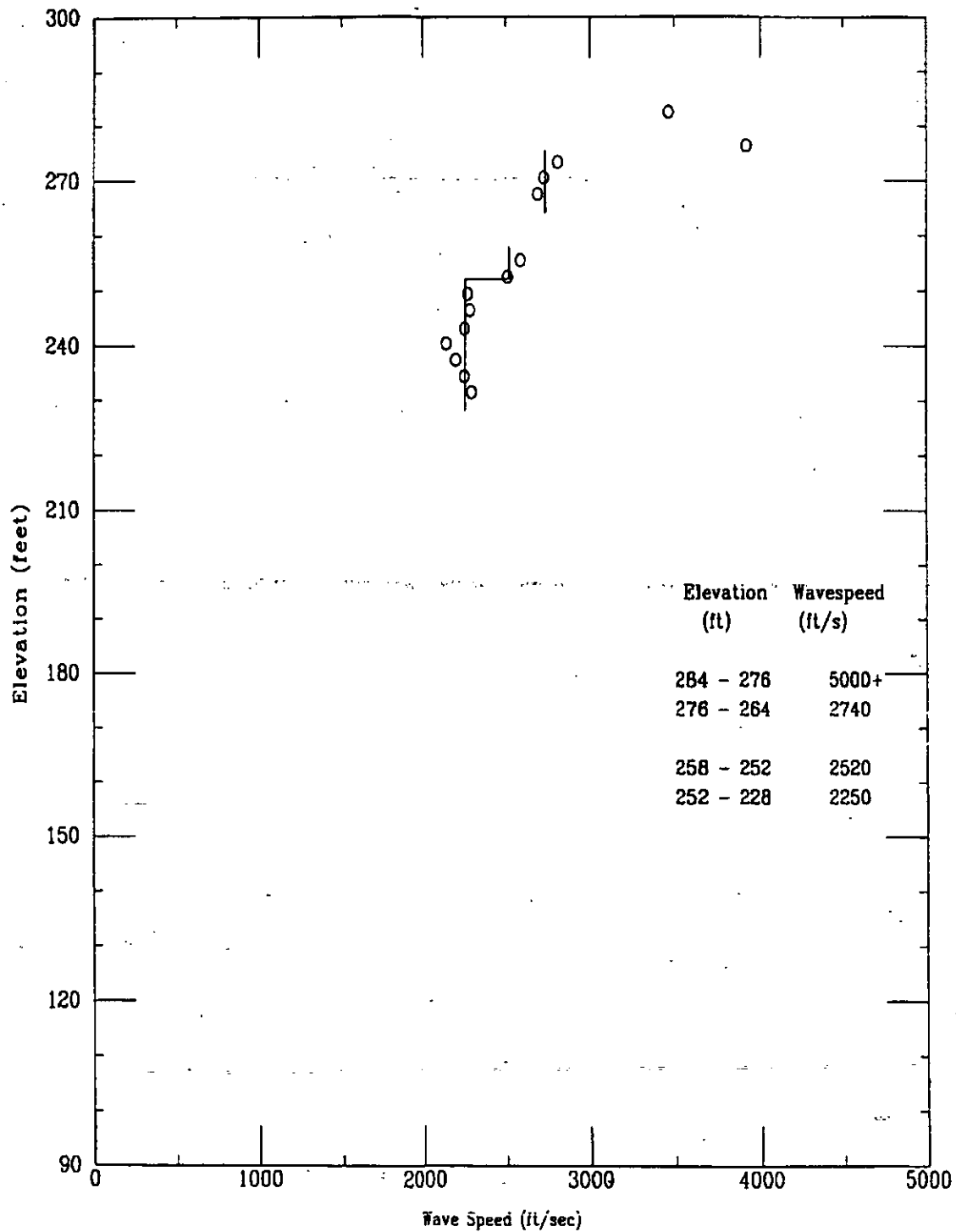
317 of 522

K-TRT-F-00001  
R/O

CPT-173

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/27/98



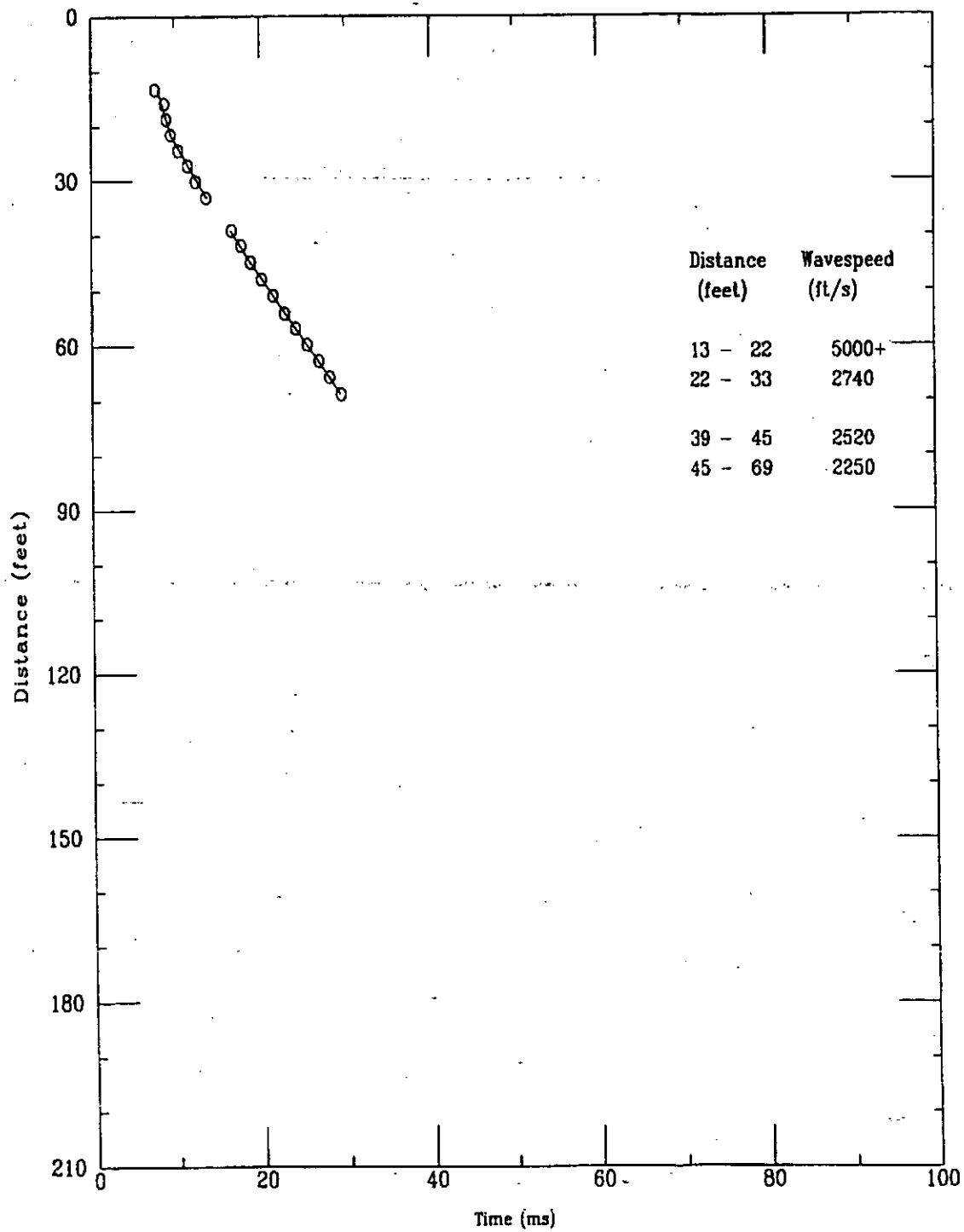
File 327m804S

318 of 522

CPT-173

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/27/98

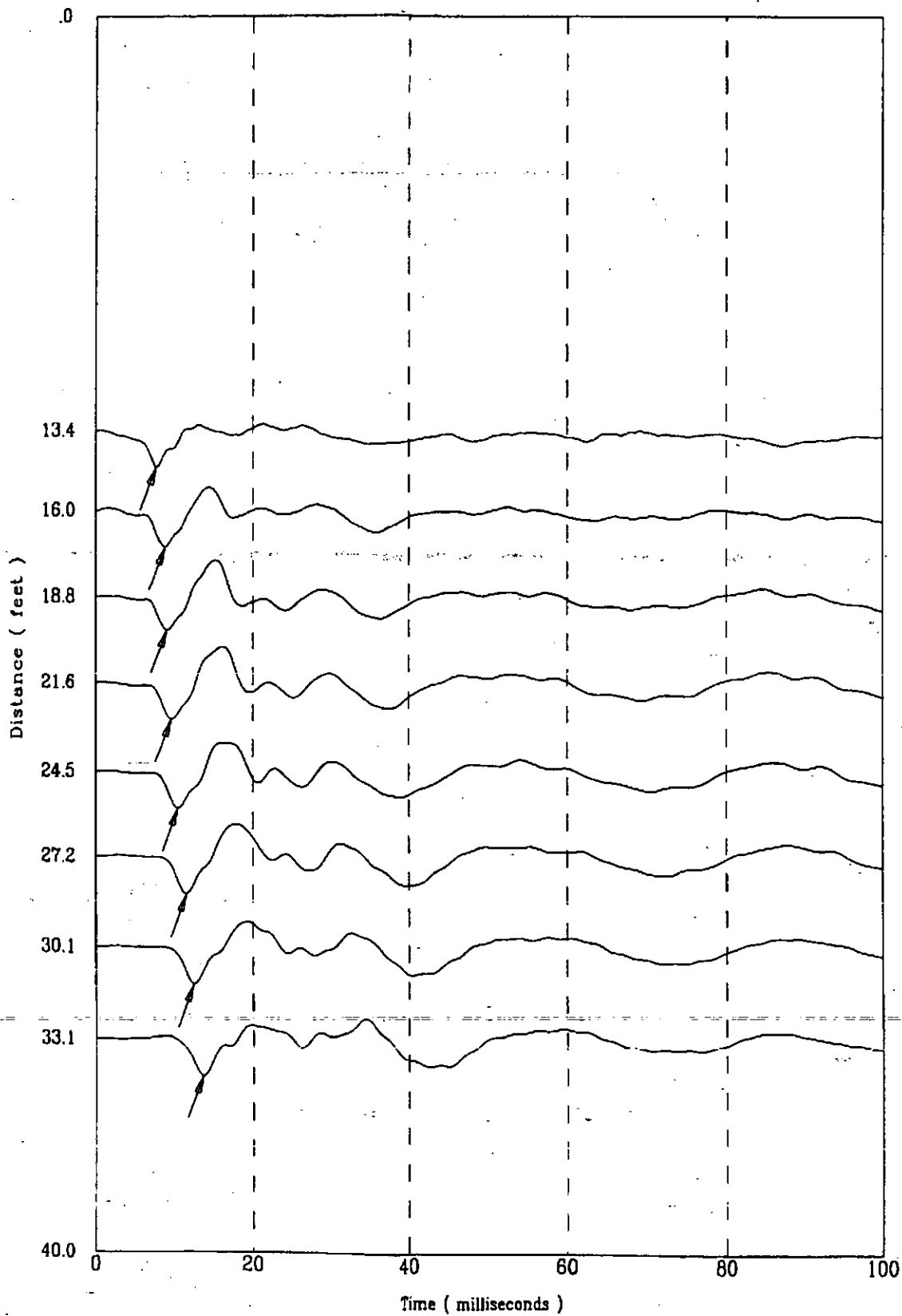


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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-173

P Wave  
03/27/98



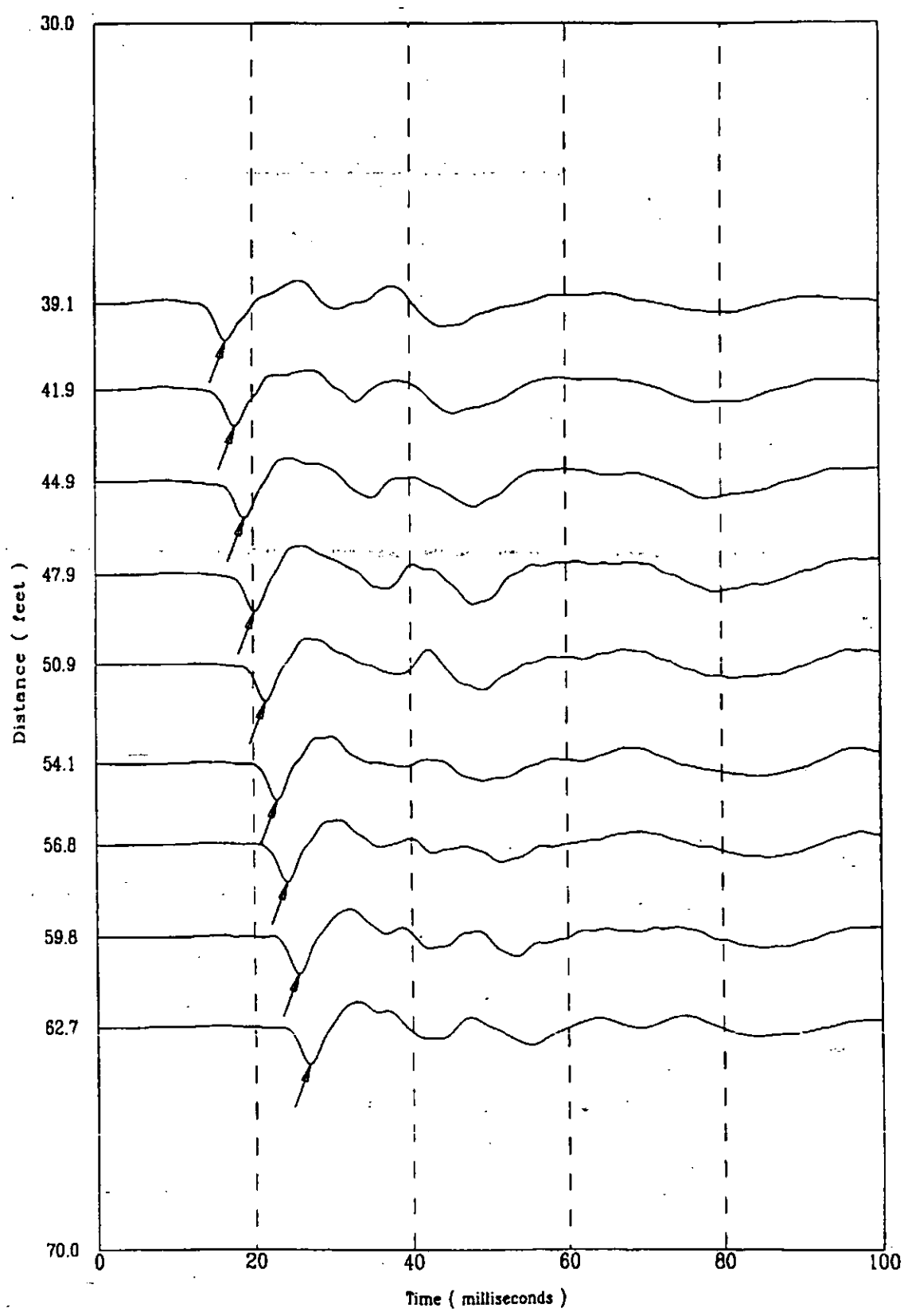
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-173

P Wave  
03/27/98



J27m804S

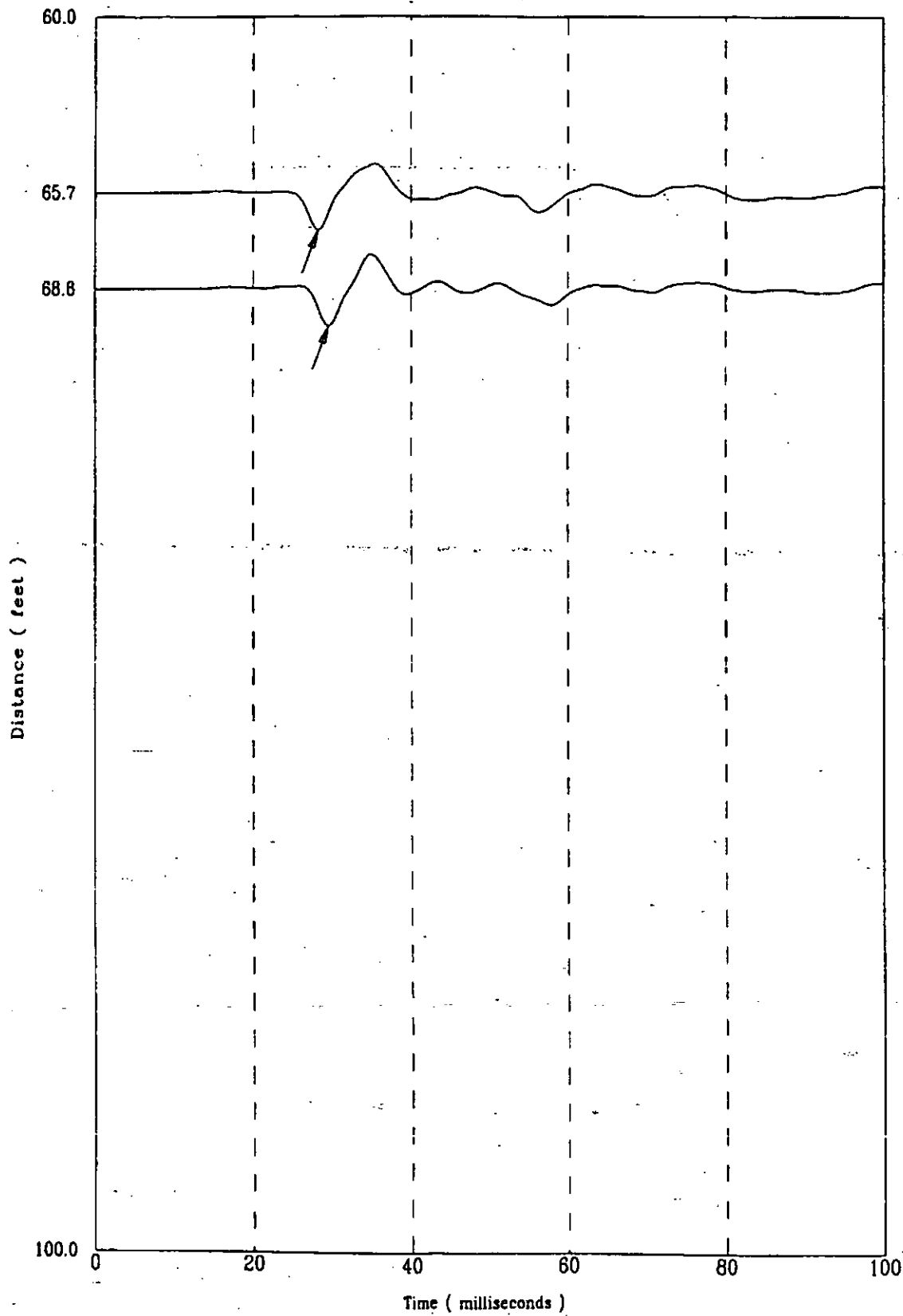
321 of 522



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-173

P Wave  
03/27/98



File 327m8043

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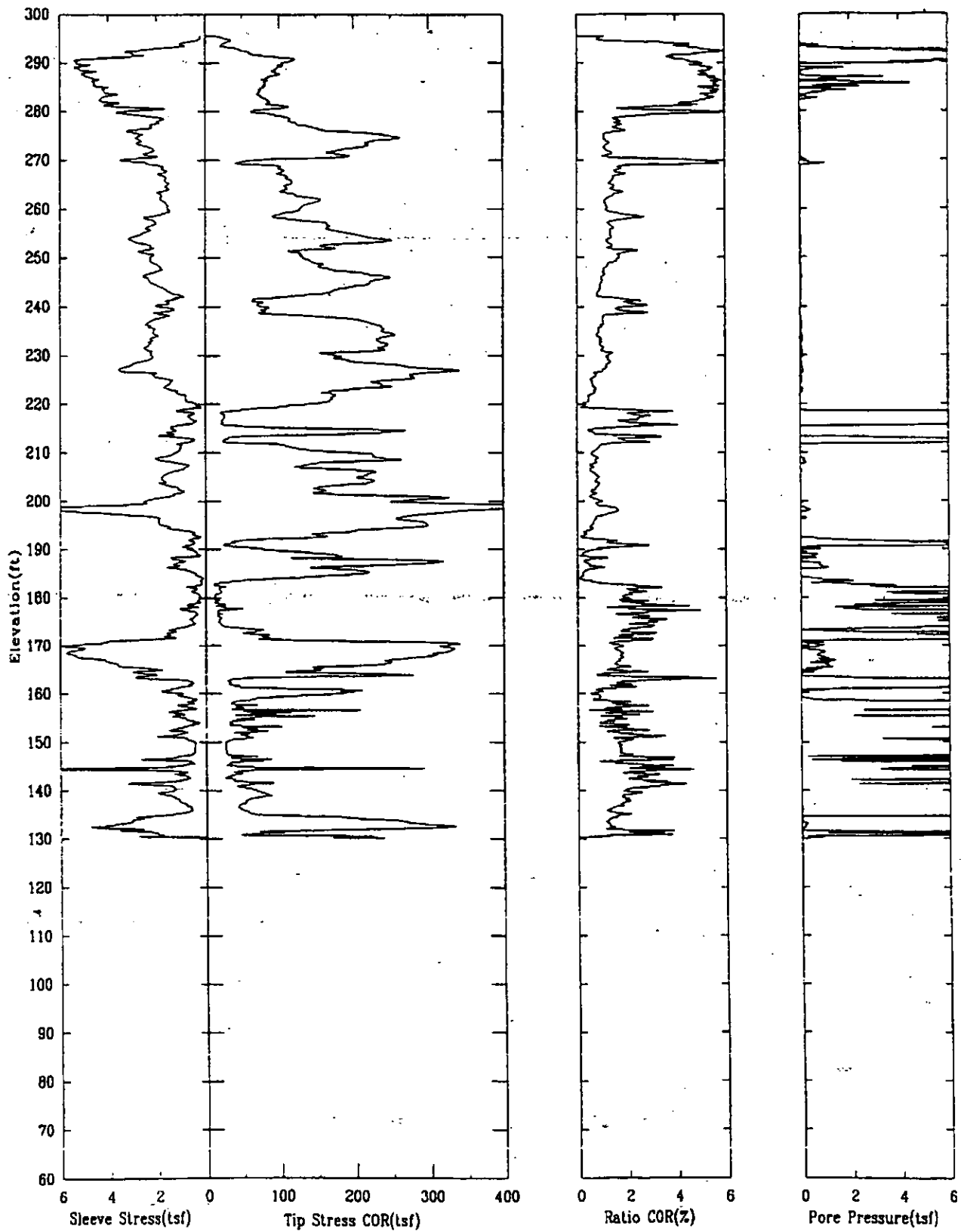
CPT-174

APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55330

Elevation 301.5

163/10/98 R/F-00001  
R/O

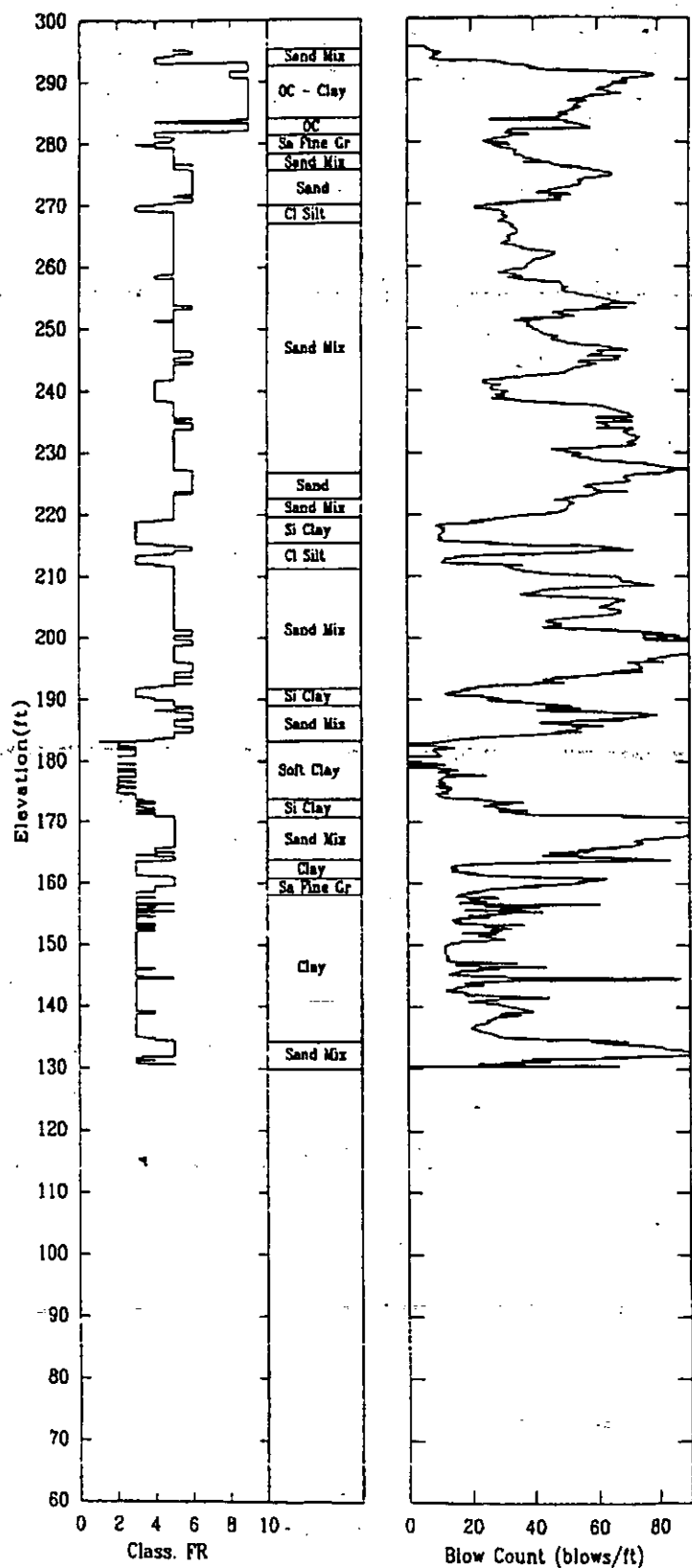
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APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55330

Elevation 301.5

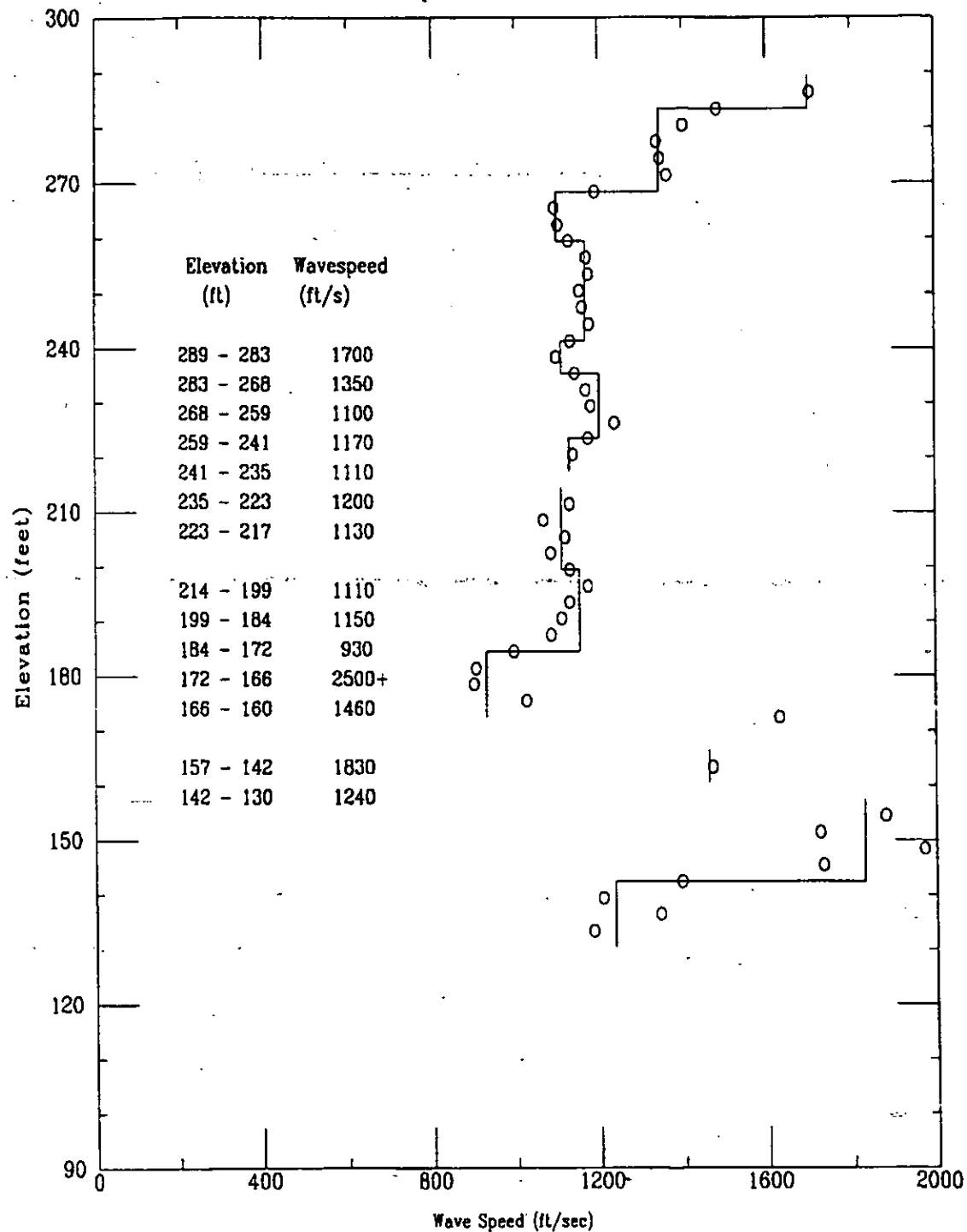
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CPT-174

APPLIED RESEARCH ASSOCIATES, INC.

03/10/98

Shear Wave Speeds



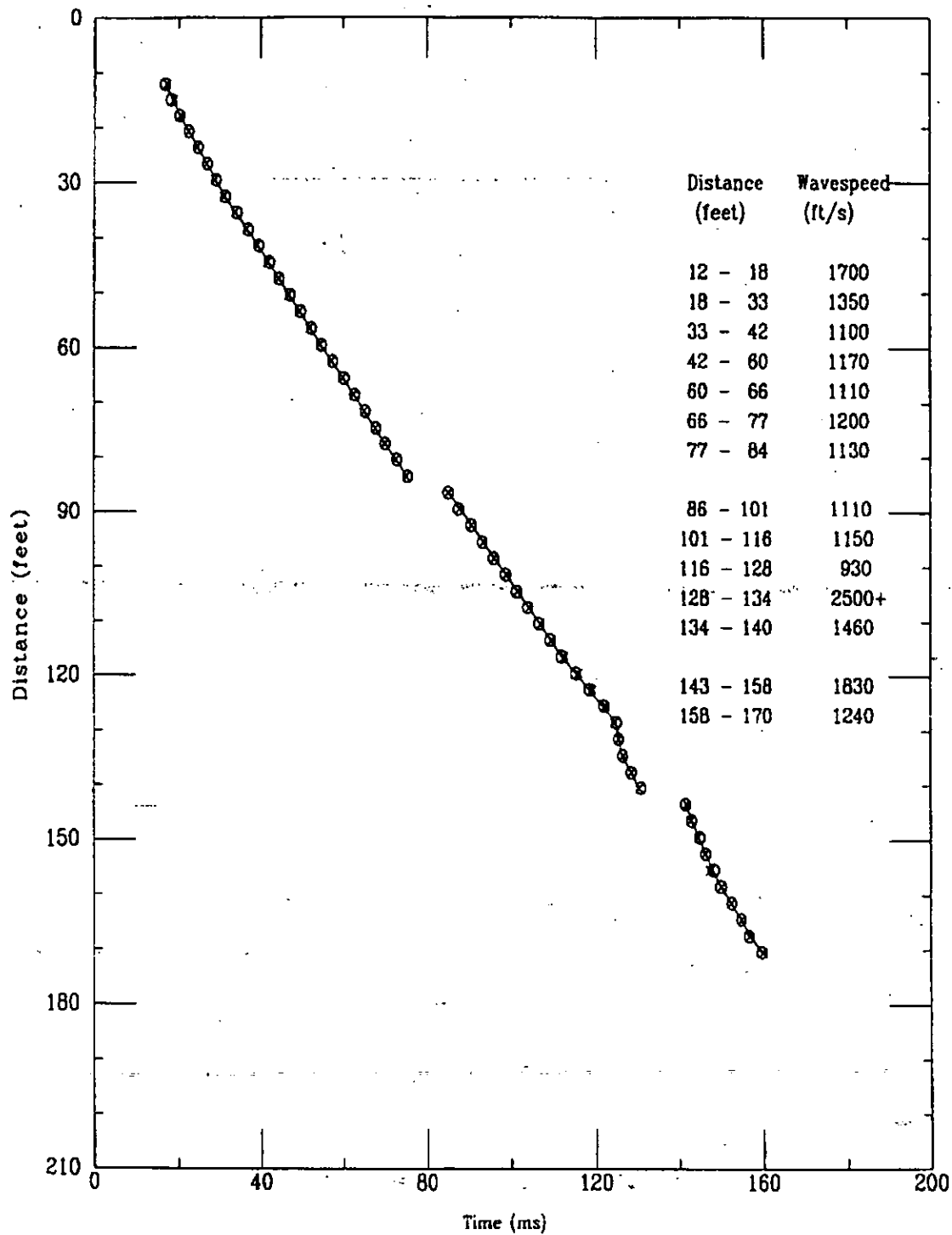
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K-TRT-F-0000/  
R/O

CPT-174

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/10/98



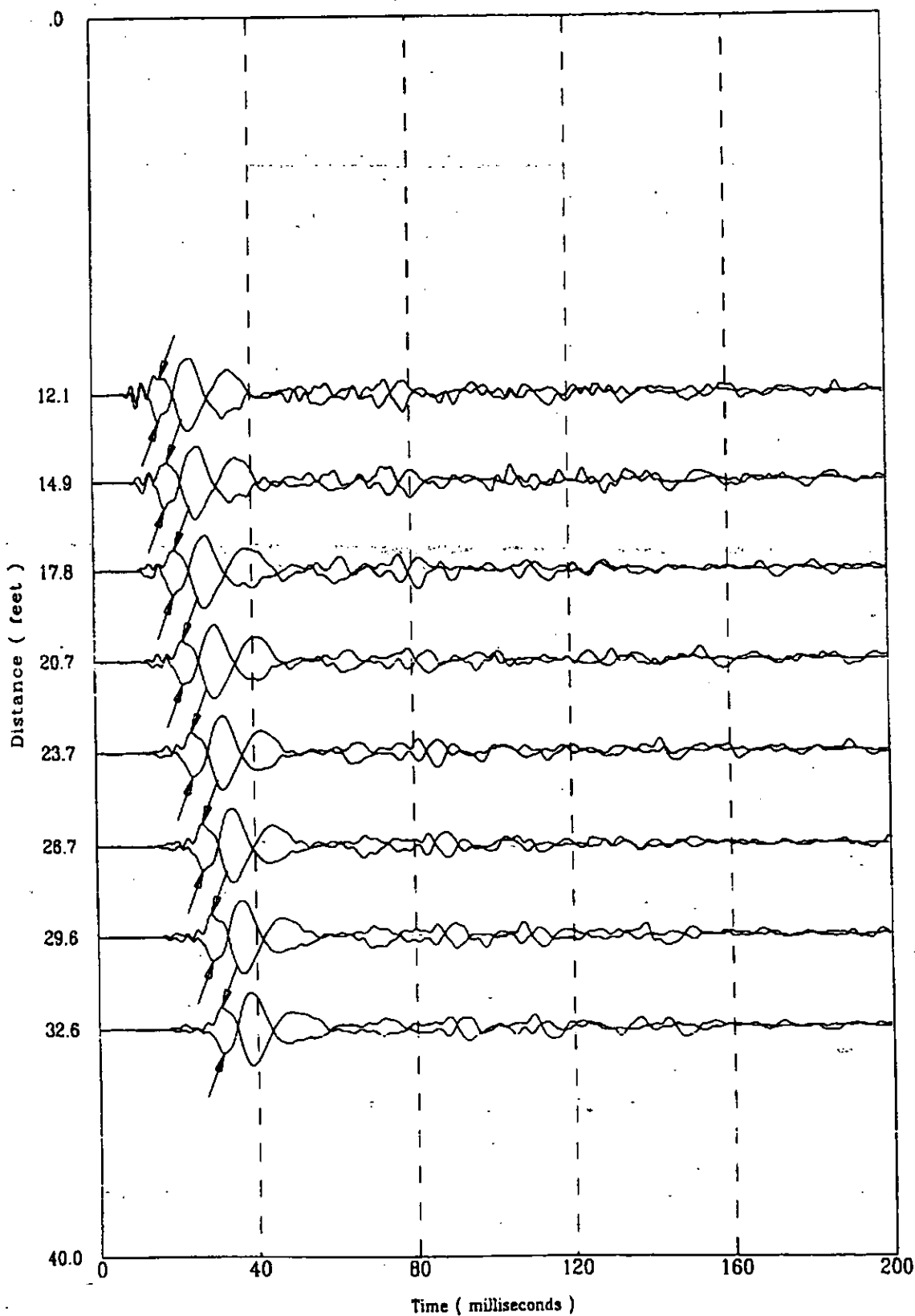
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326 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-174

S Wave  
03/10/98



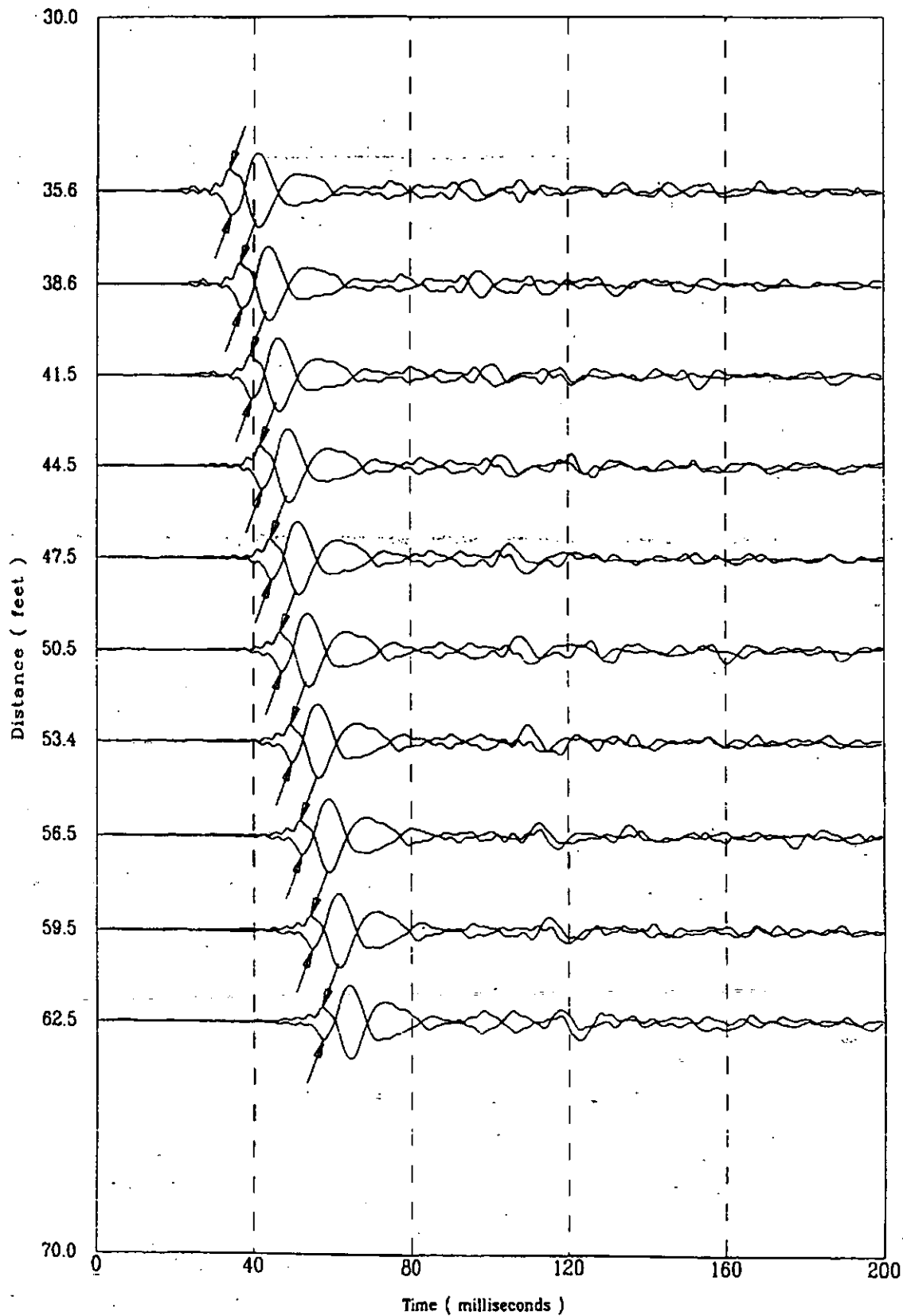
FILE 410m804S

327 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-174

S Wave  
03/10/98



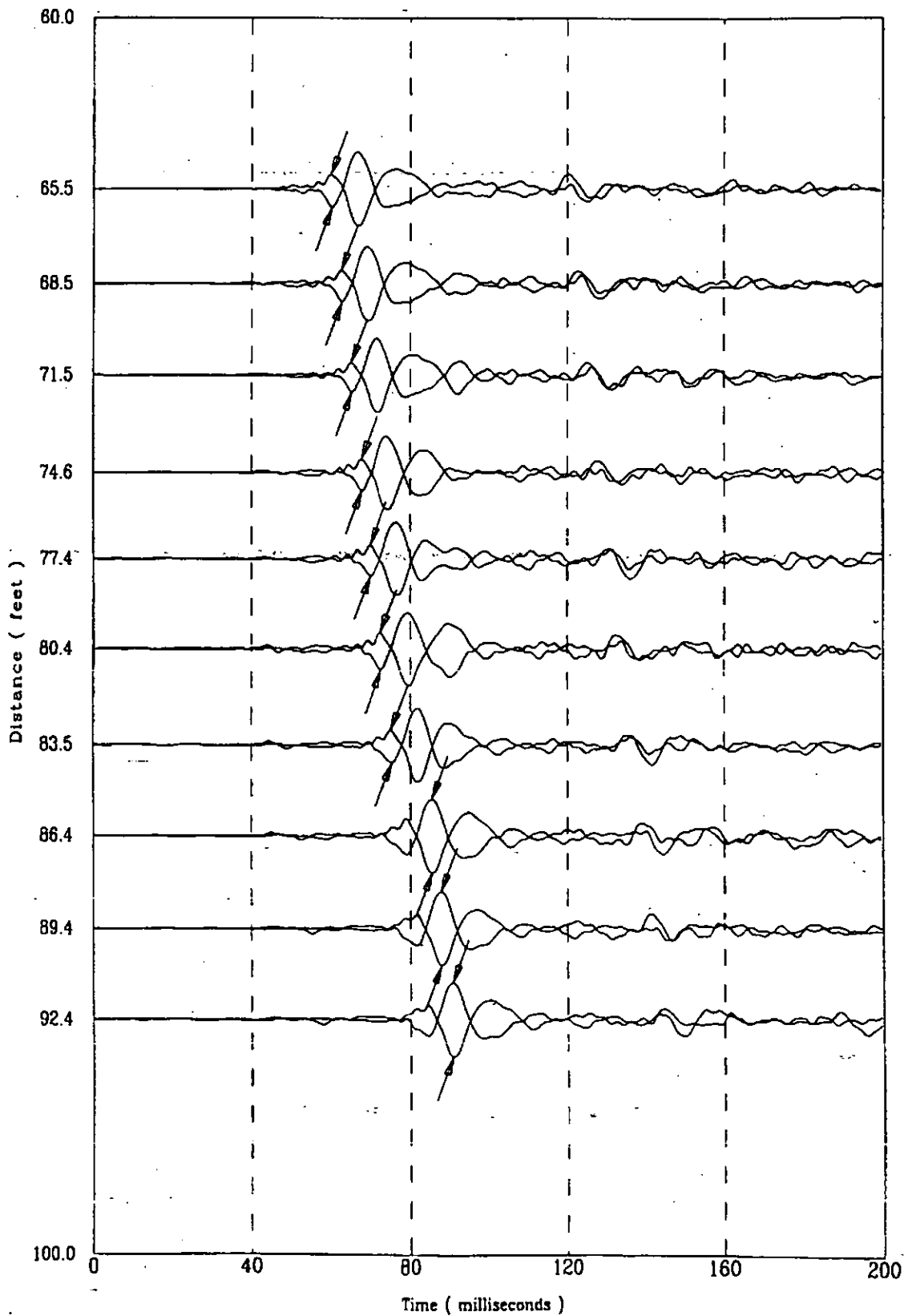
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328 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-174

S Wave  
03/10/98



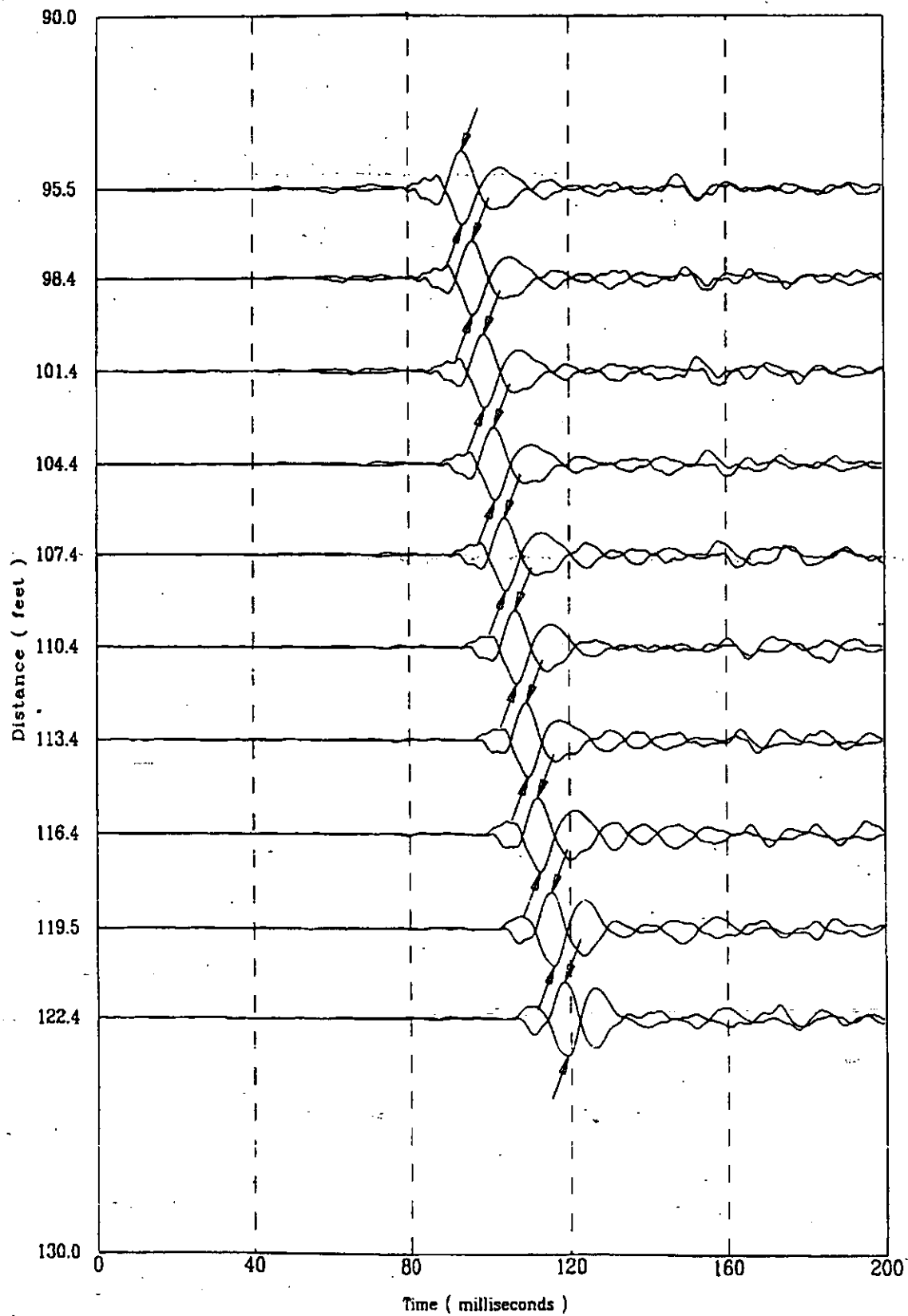
329 of 522



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-174

S Wave  
03/10/98



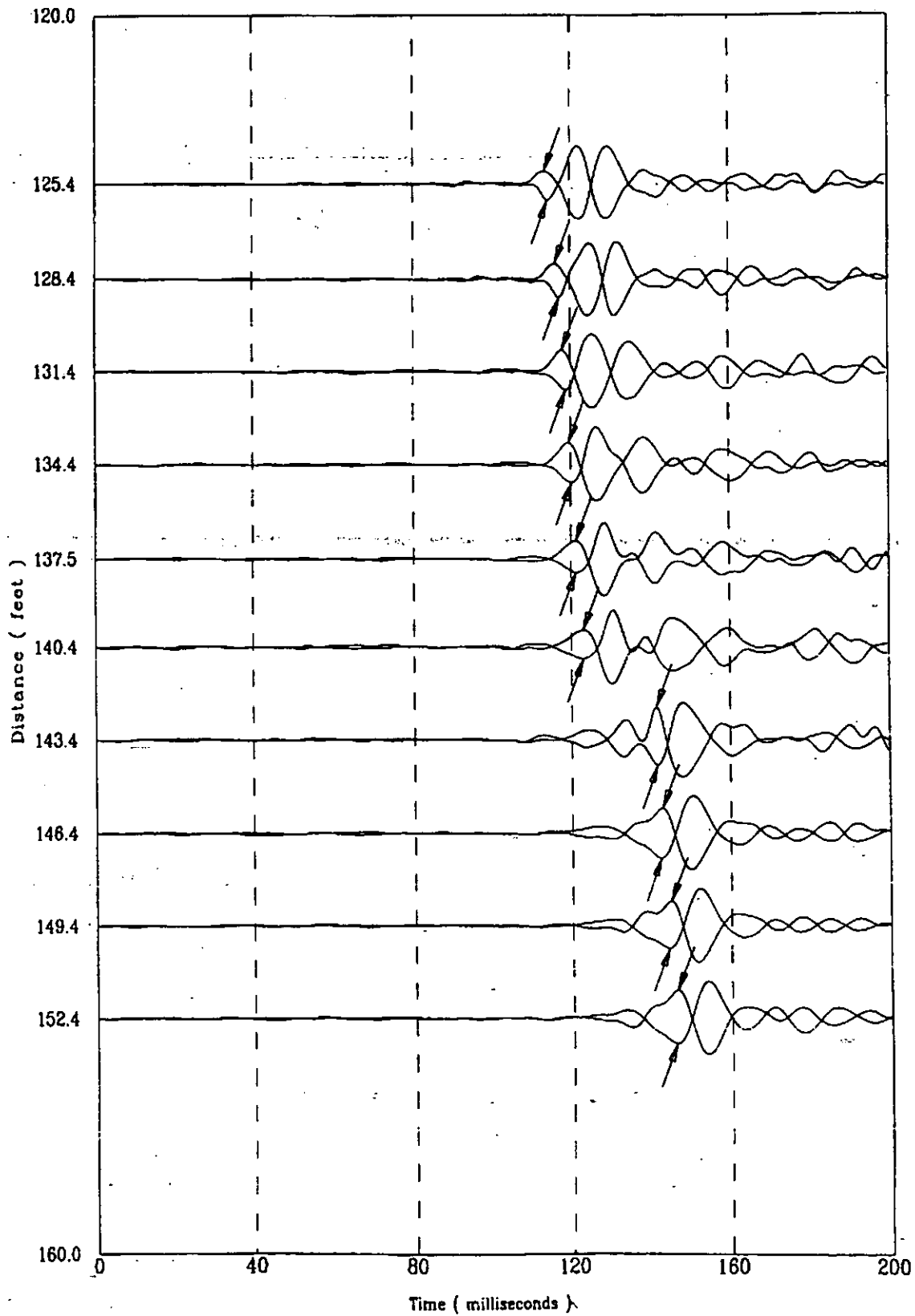
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330 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-174

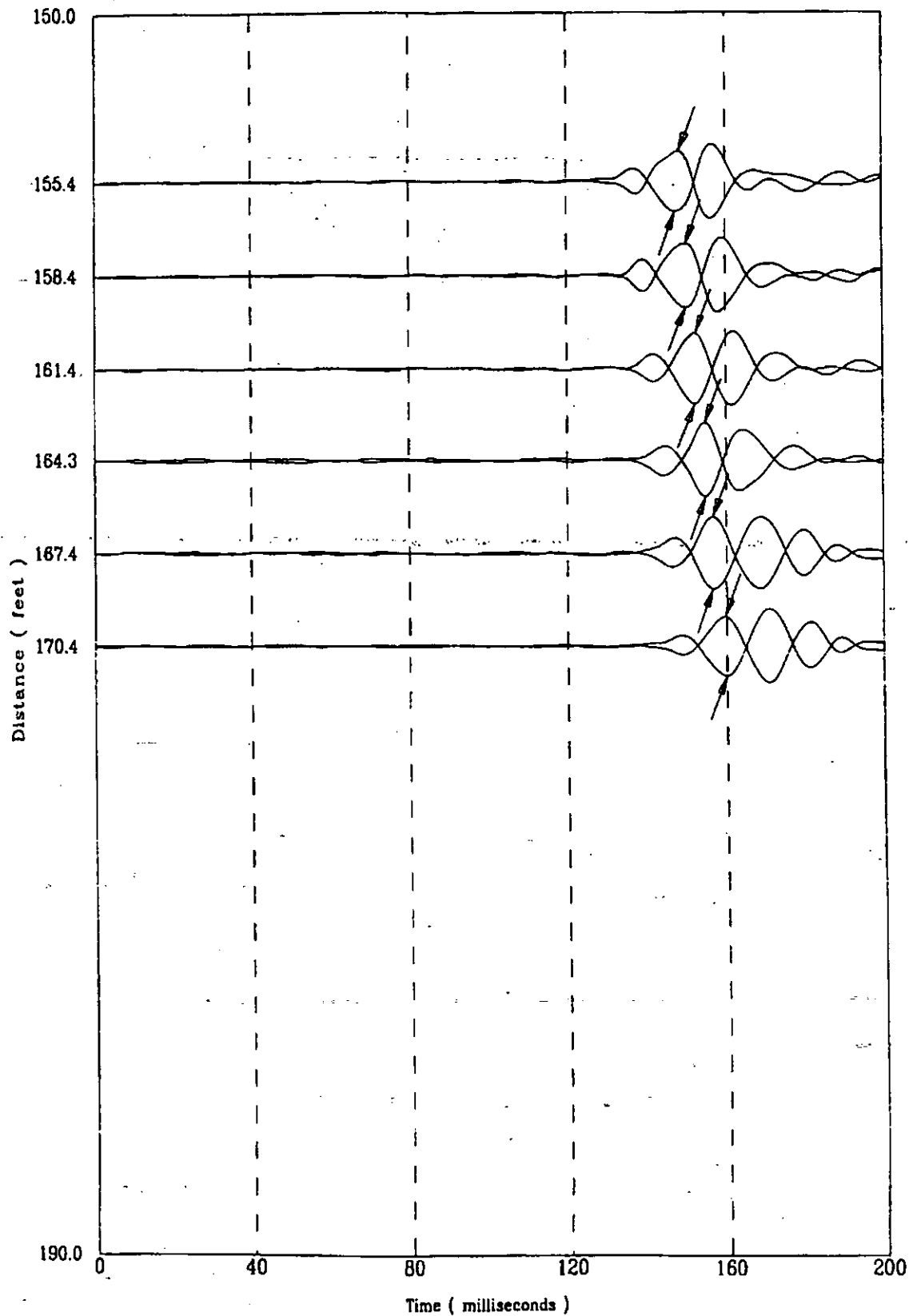
S Wave  
03/10/98



K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-174

S Wave  
03/10/98



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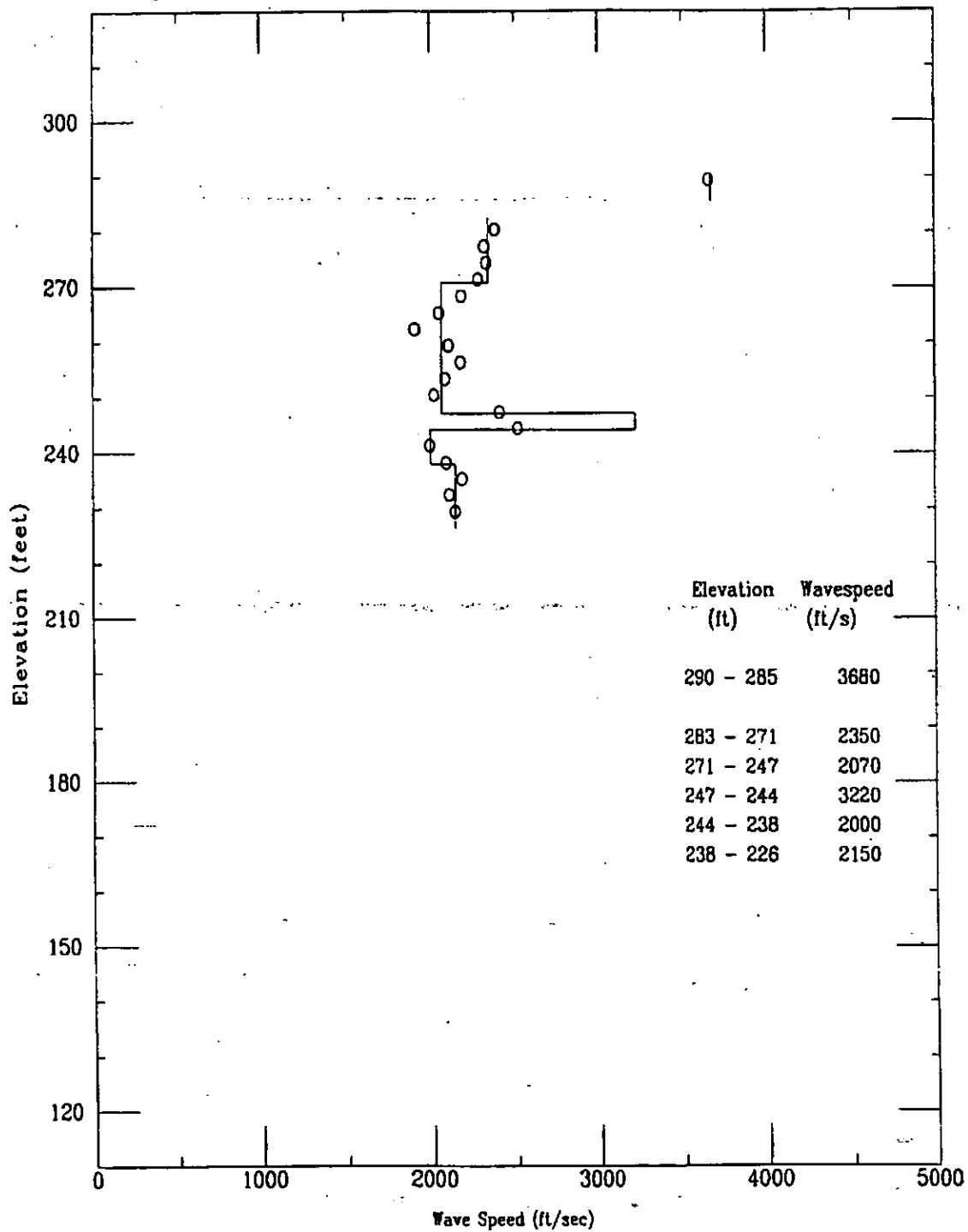
332 of 522

K-TRT-F-00001  
R/O

CPT-174

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/30/98



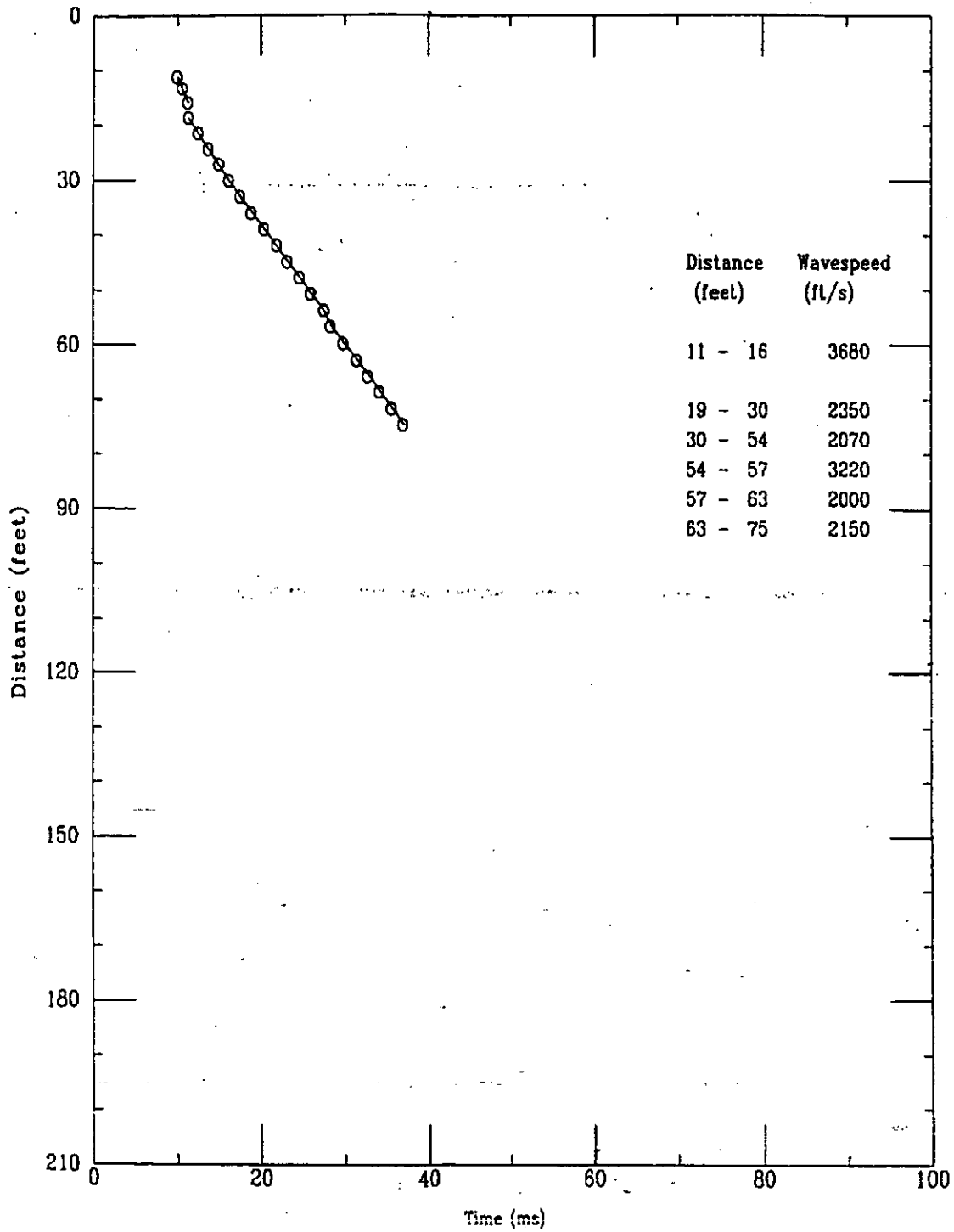
File 330m801S

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CPT-174

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/30/98

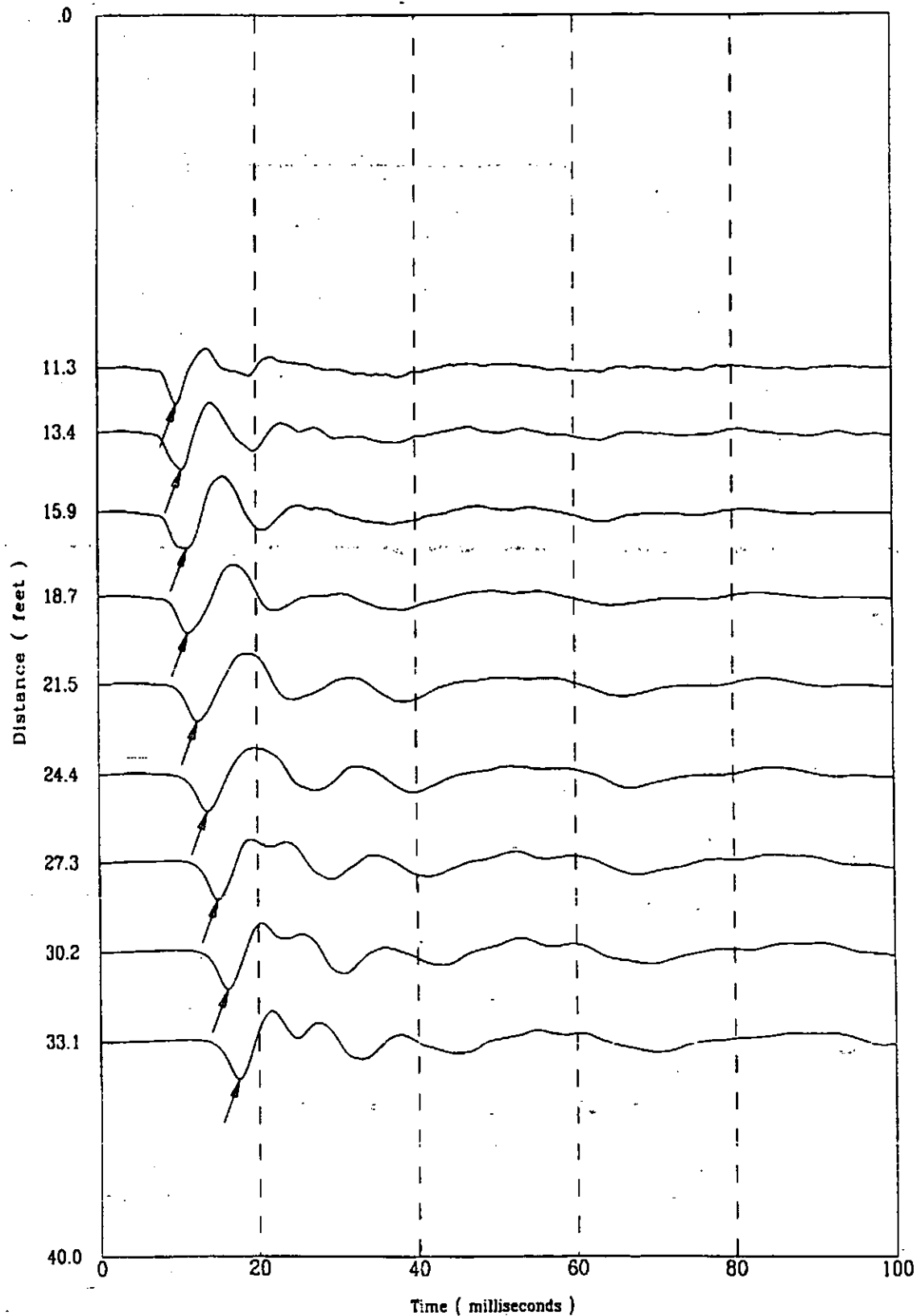


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R/O

Applied Research Associates, Inc.  
CPT-174

P Wave  
03/30/98



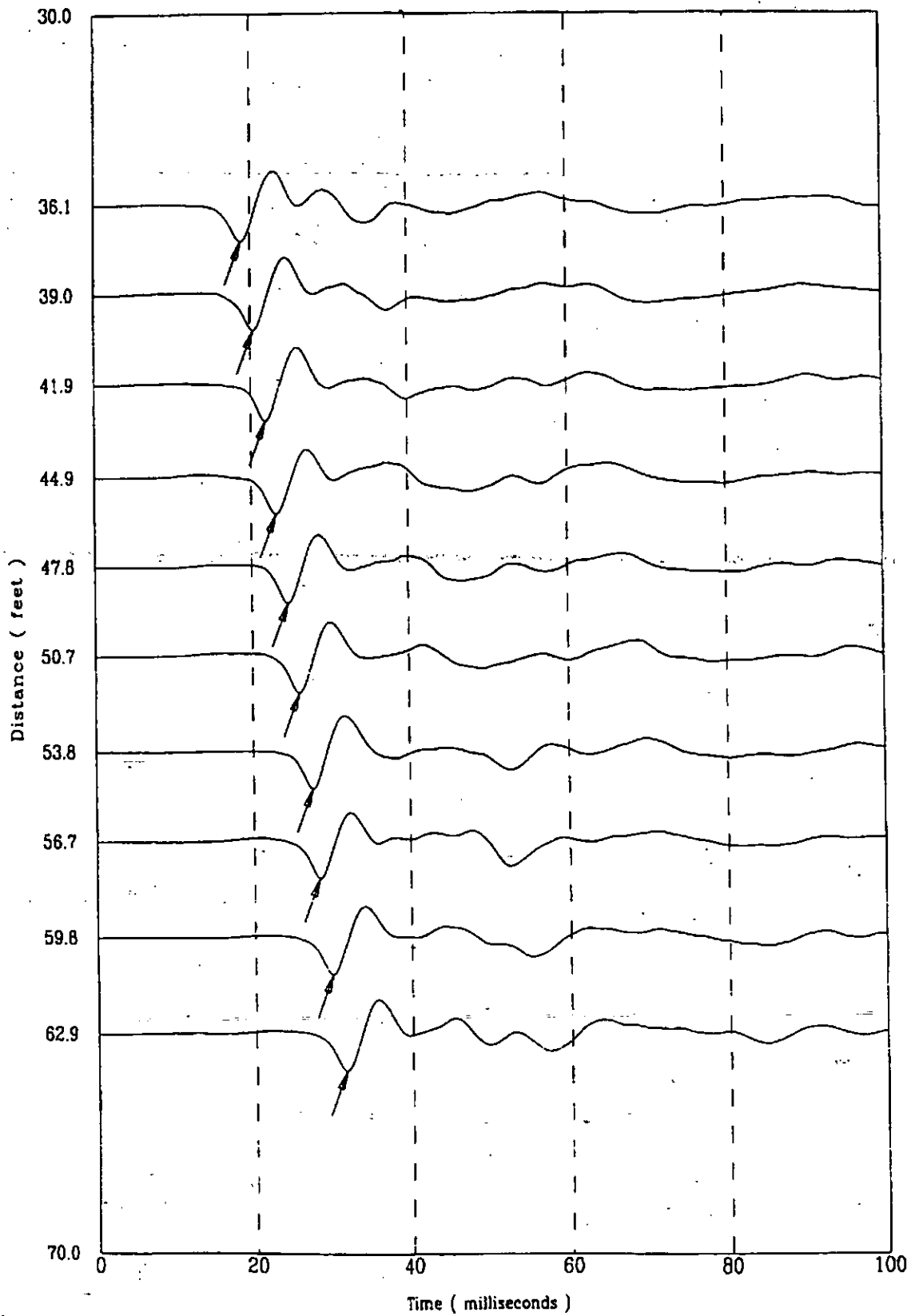
330m801S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-174

P Wave  
03/30/98



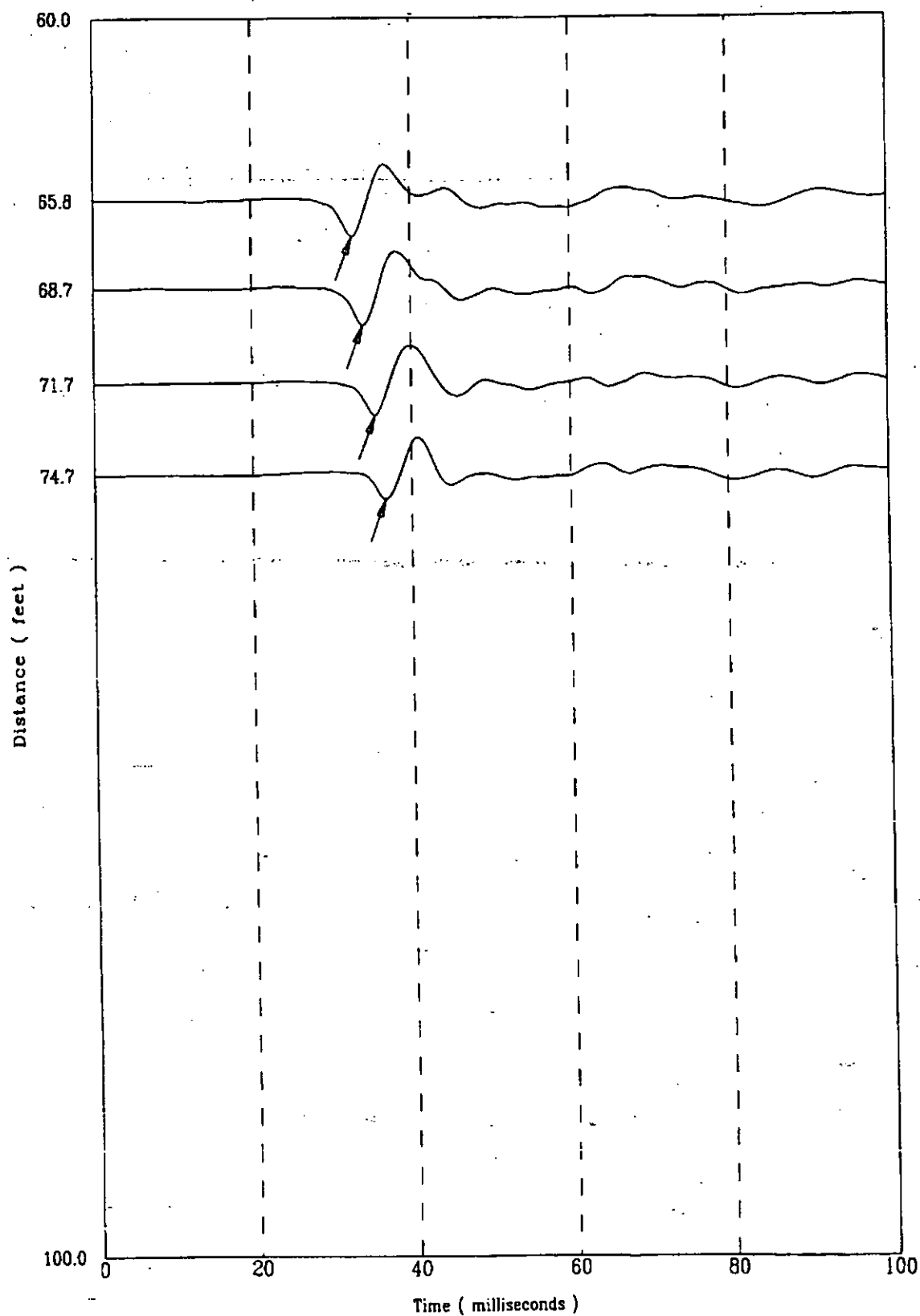
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336 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-174

P Wave  
03/30/98



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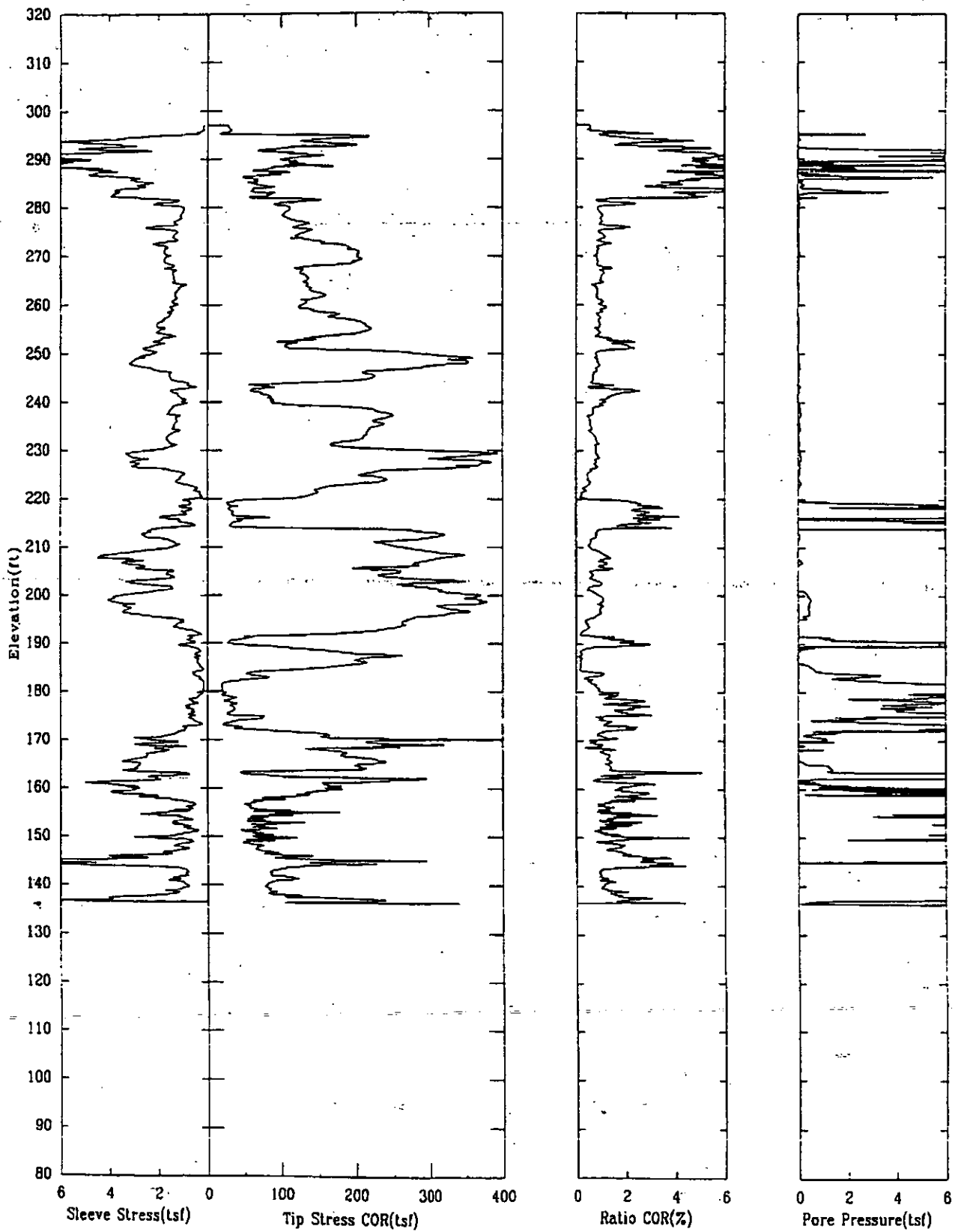
CPT-175

APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55451

Elevation 303.1

K-TRT-F-0000/  
03/20/98 / 0

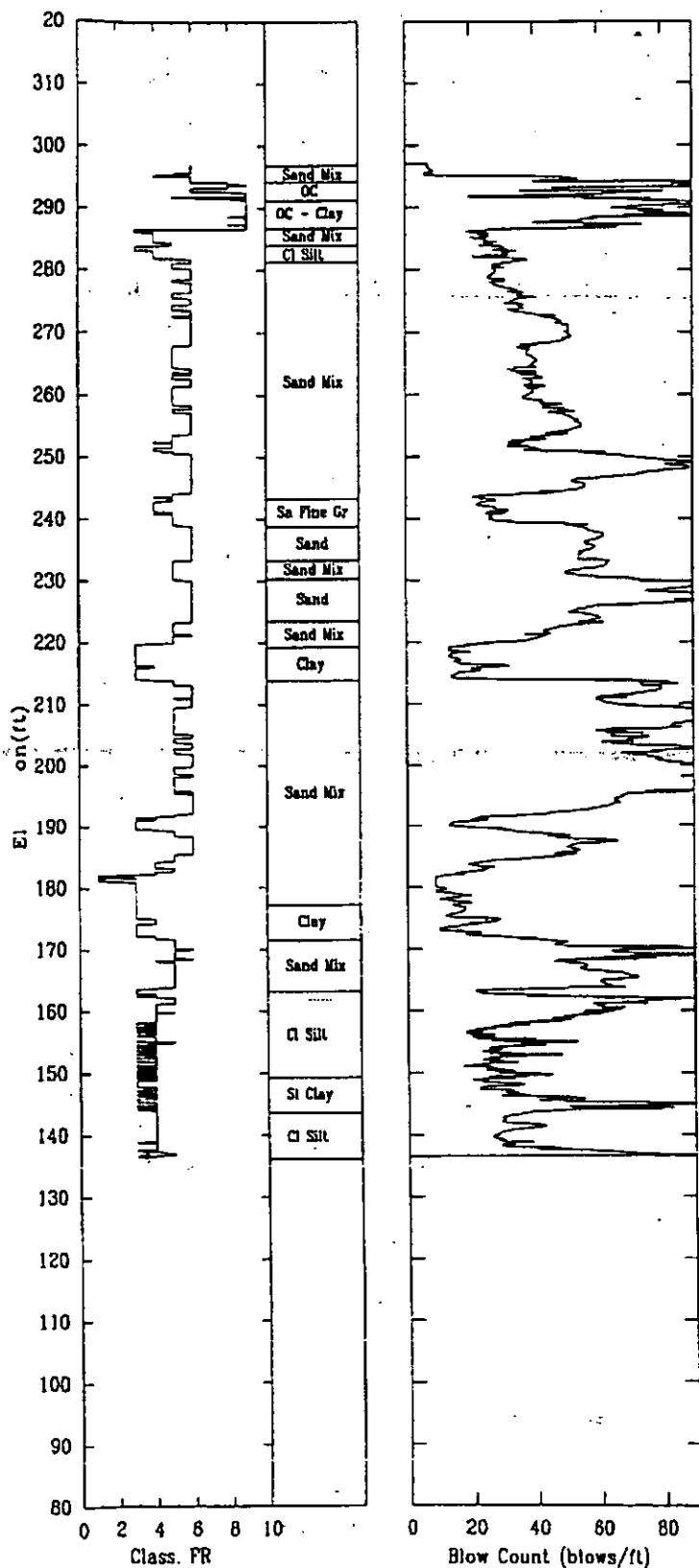
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APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55451

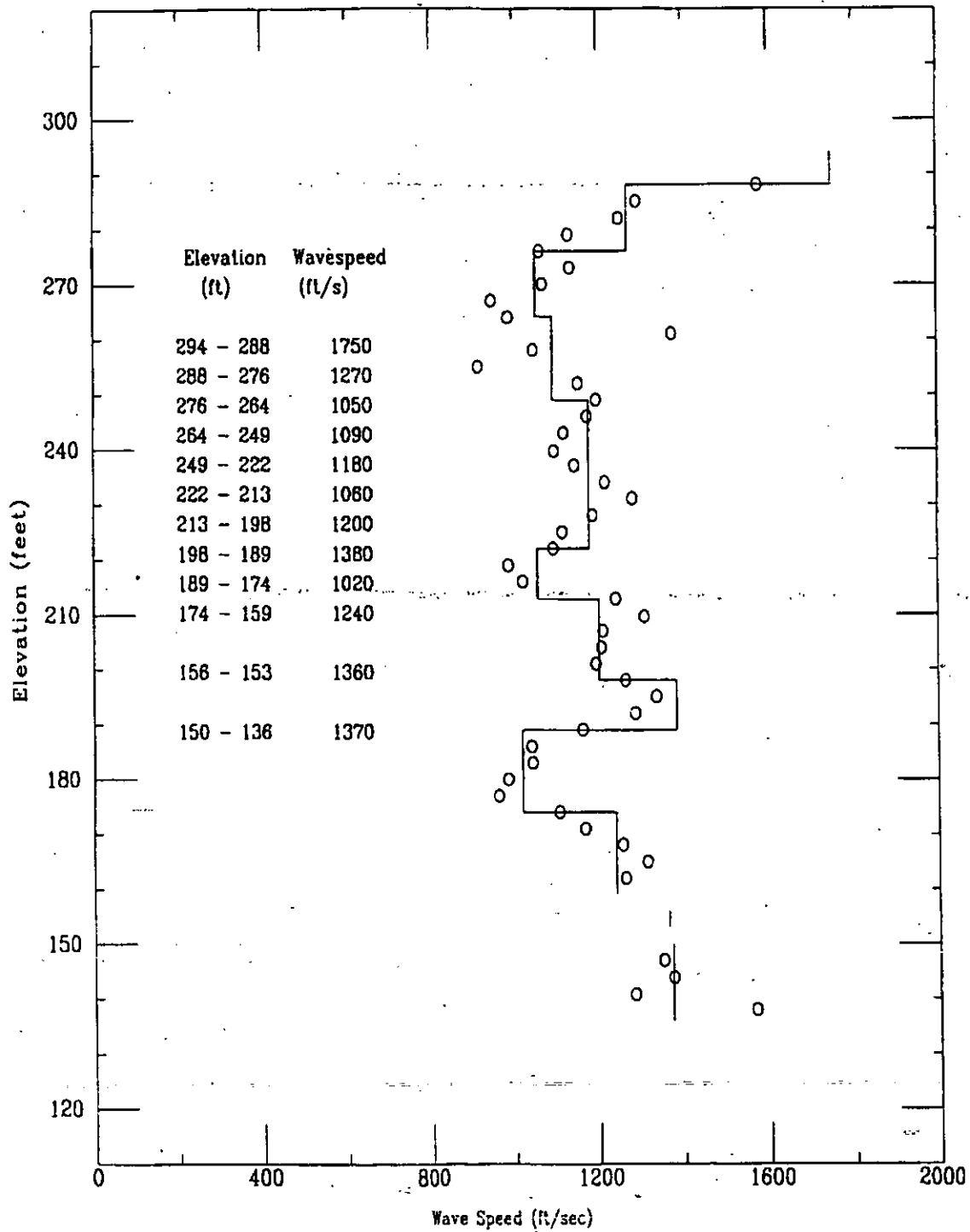
Elevation 303.1

K-TRT-F-00001  
03/20/98/0

CPT-175

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Speeds

03/20/98



File 320m801S

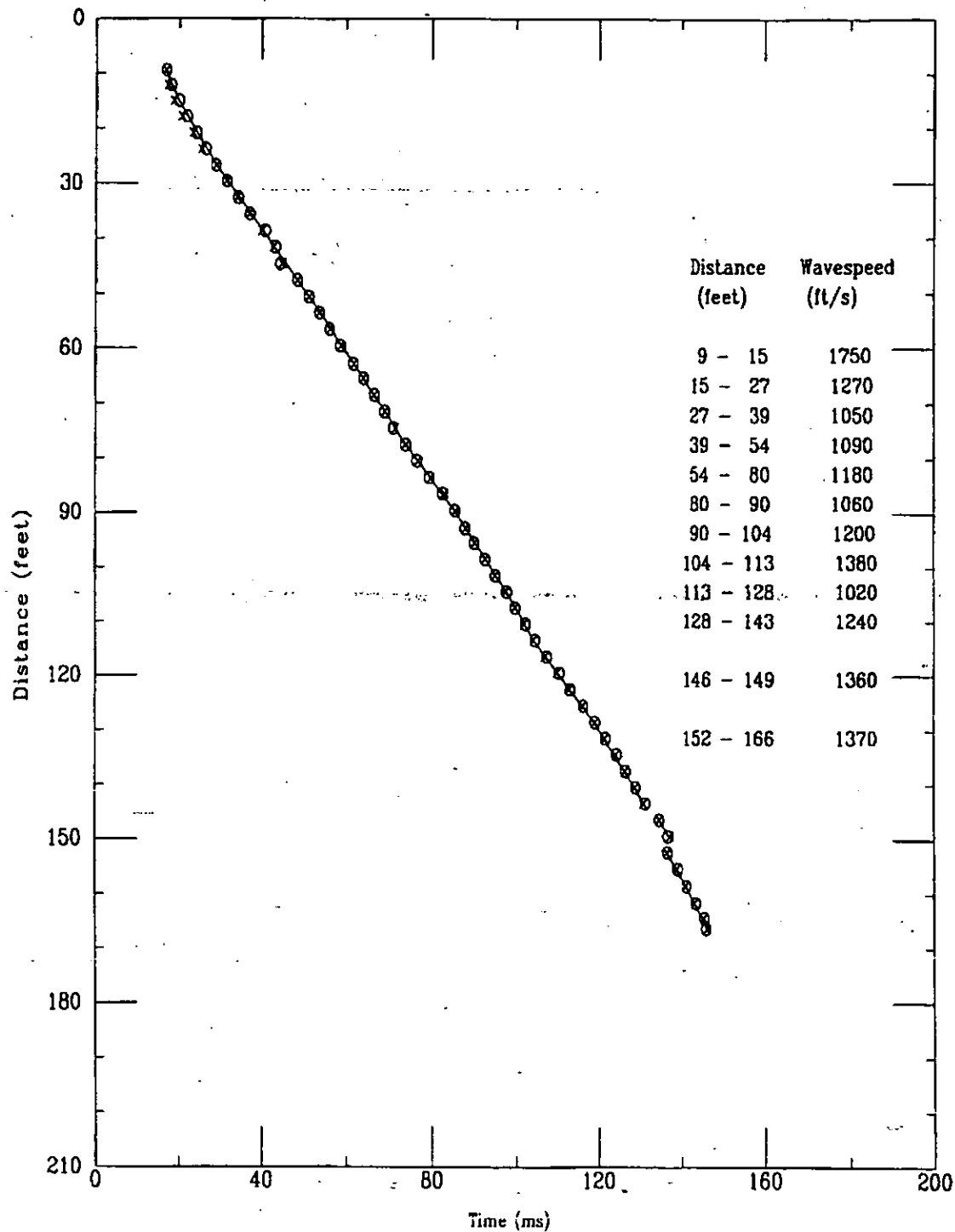
K-TRT-F-00001  
R/O

CPT-175

APPLIED RESEARCH ASSOCIATES, INC.

03/20/98

Shear Wave Time of Peak



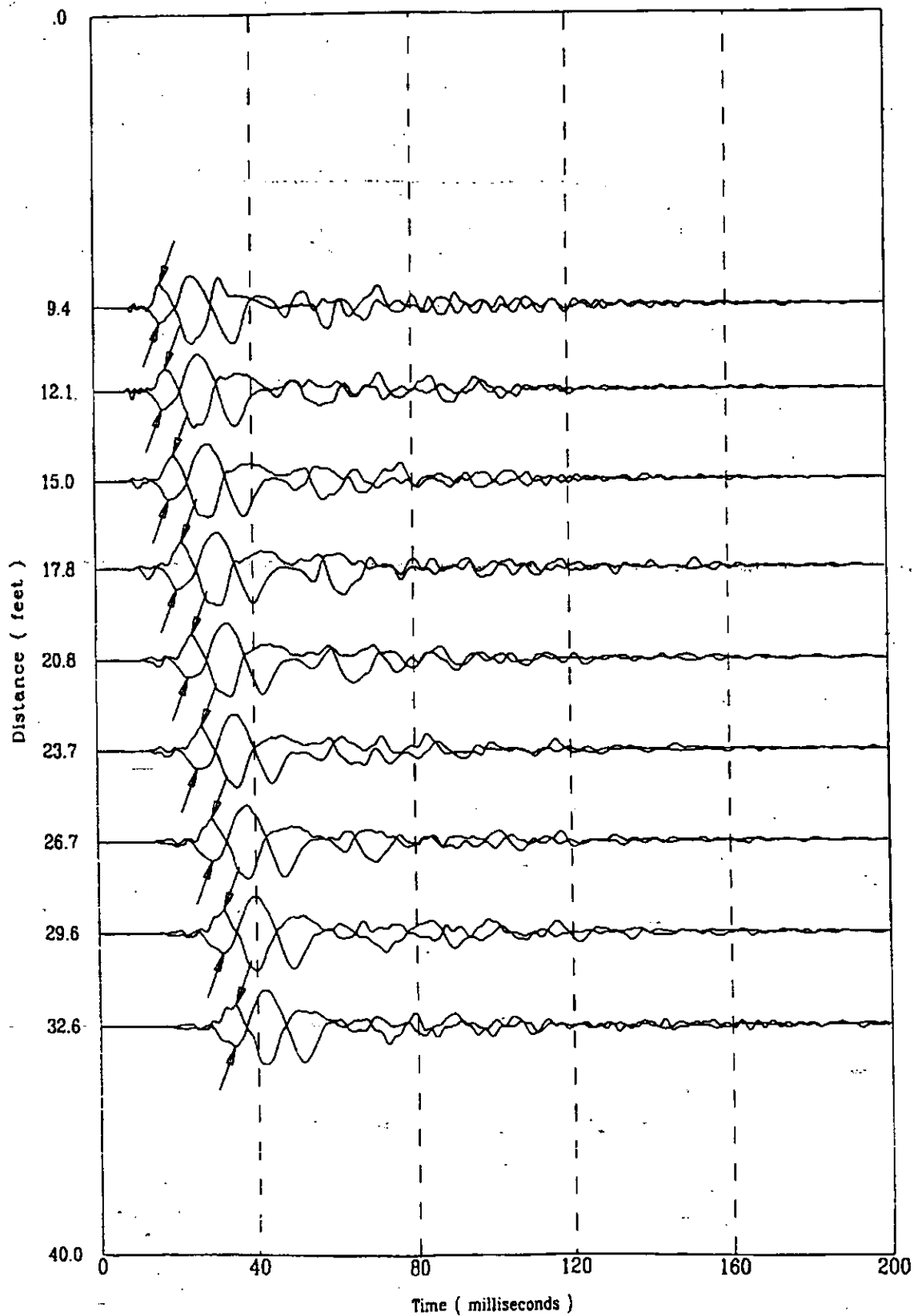
File 320m801S

341 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-175

S Wave  
03/20/98



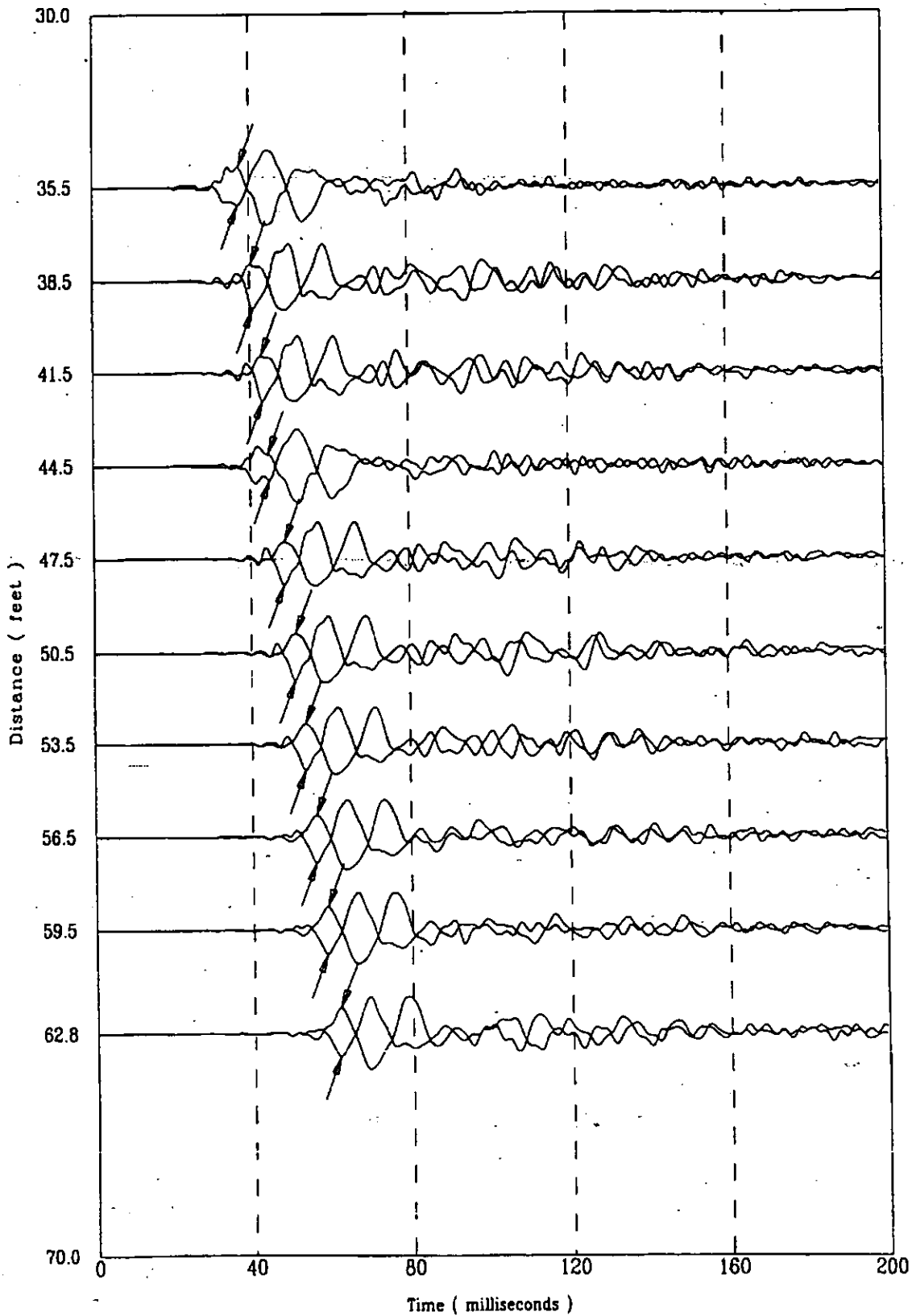
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342 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-175

S Wave  
03/20/98



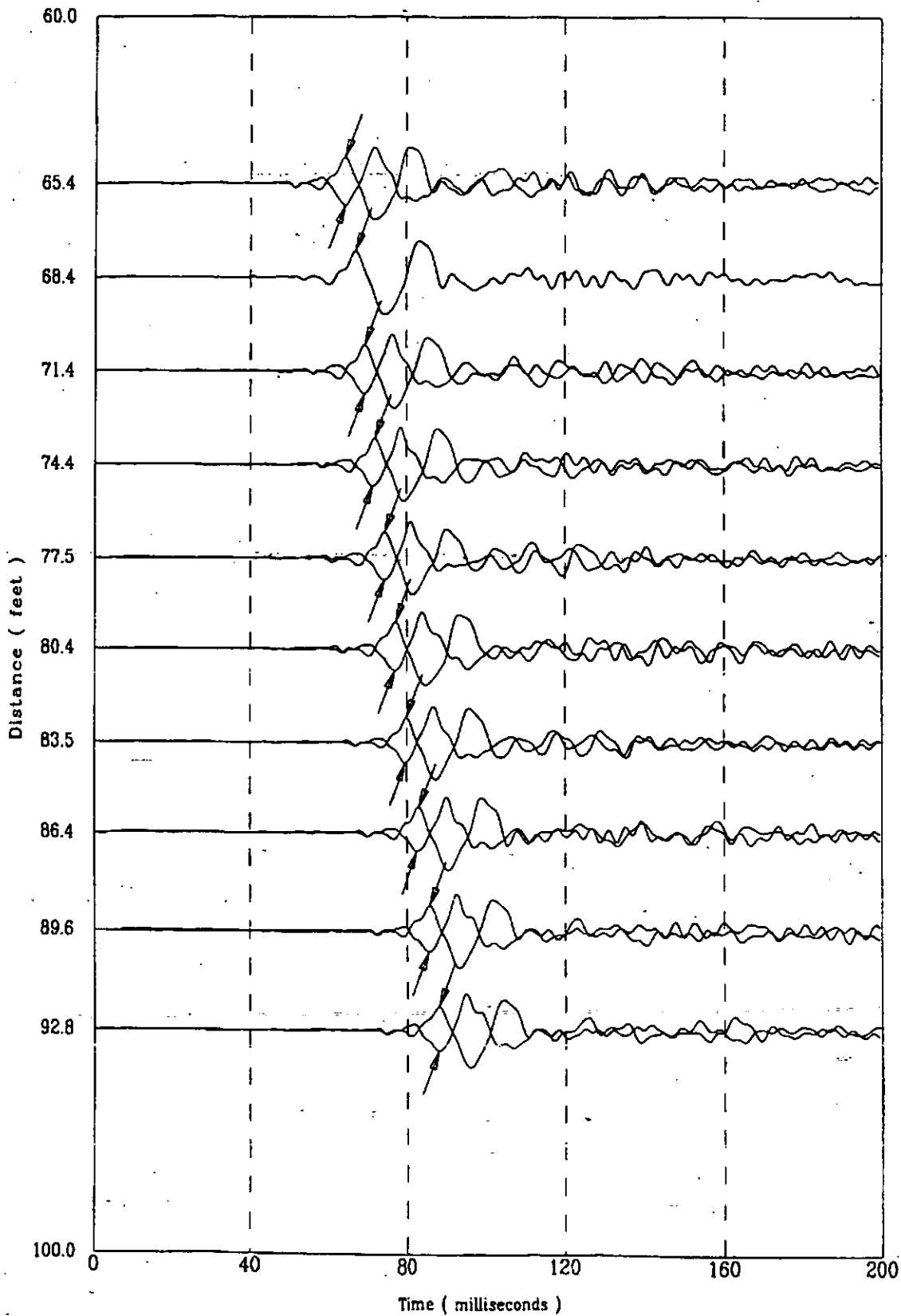
J20m8015

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-175

S Wave  
03/20/98



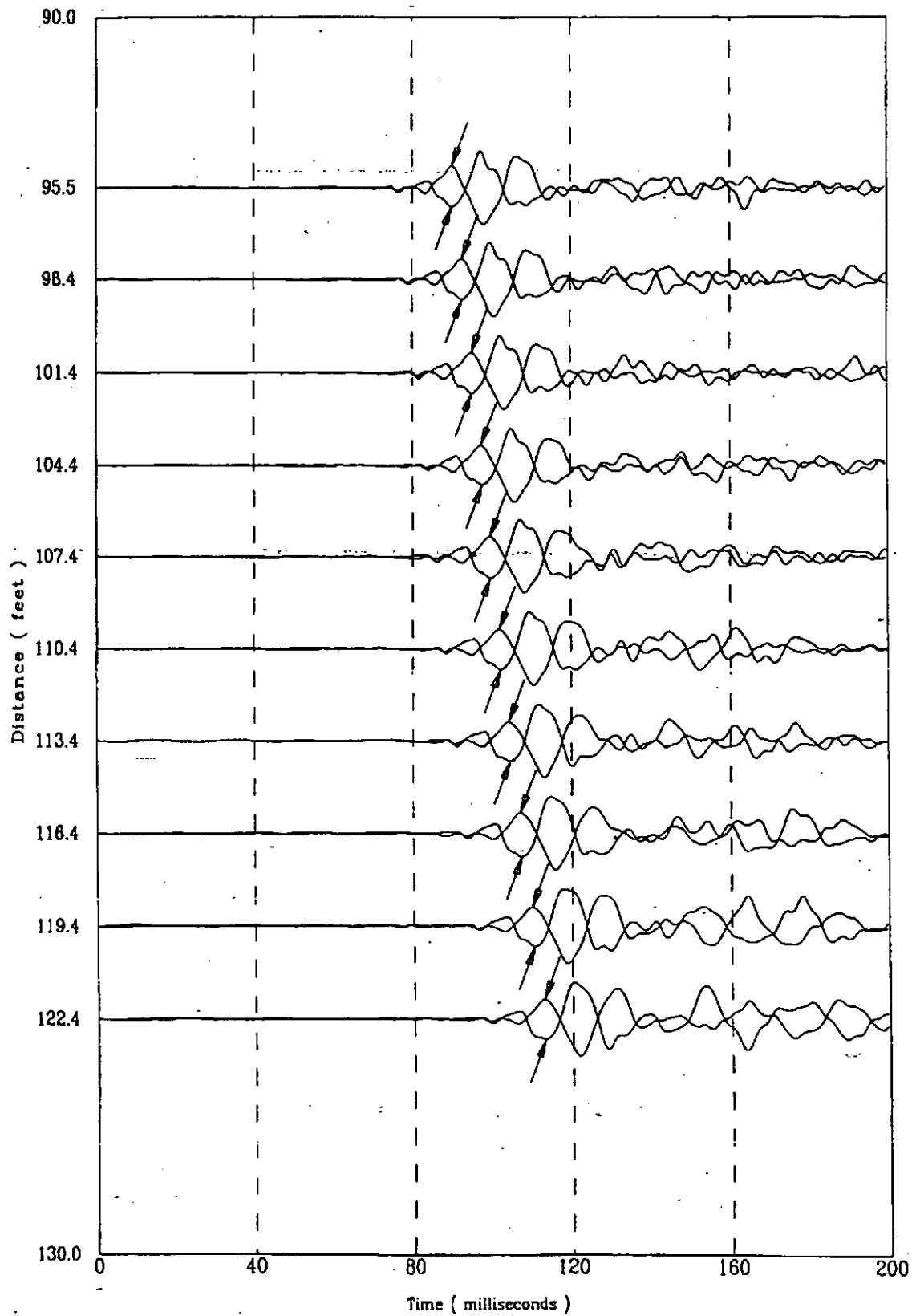
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344 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-175

S Wave  
03/20/98



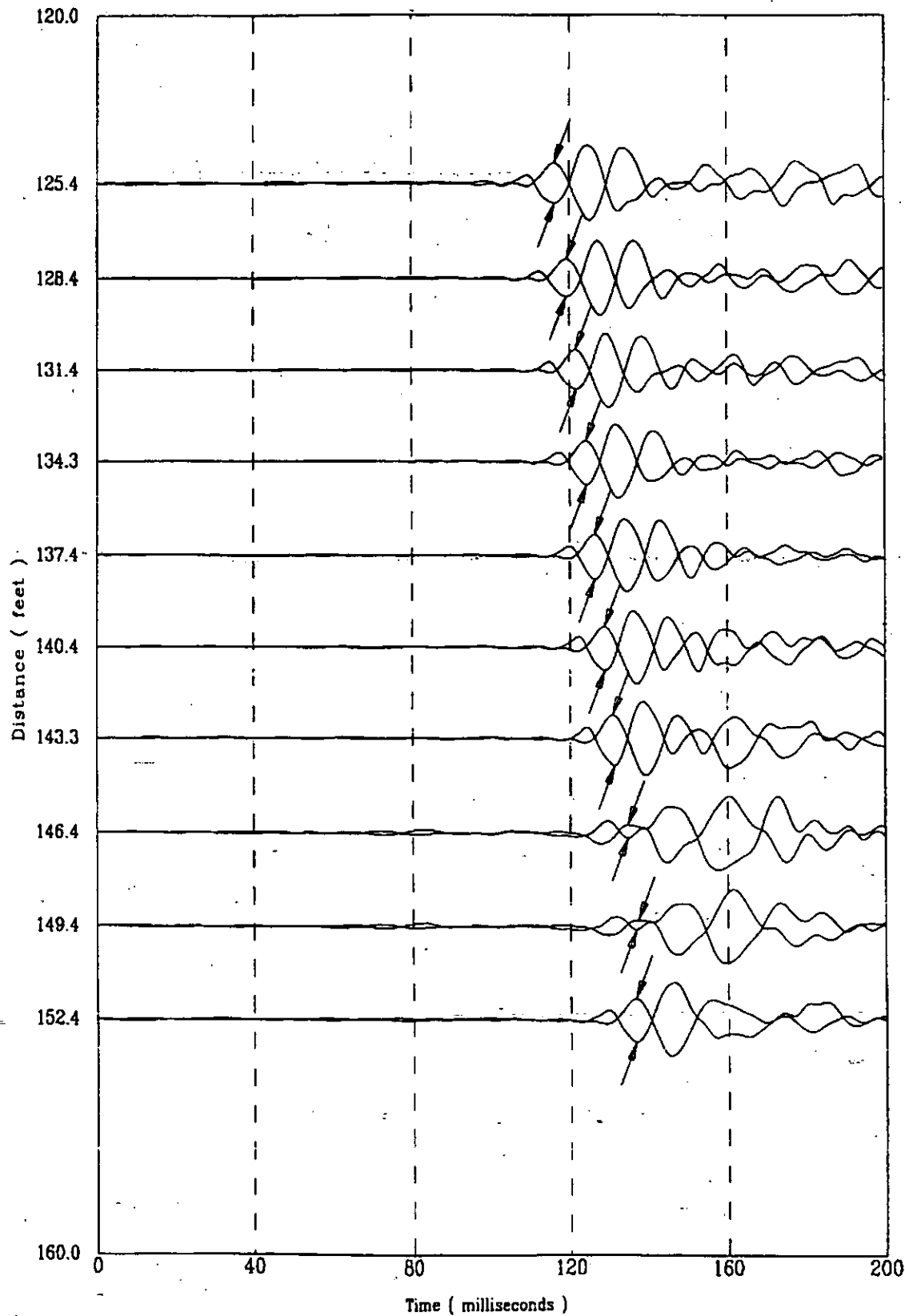
345 of 522



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-175

S Wave  
03/20/98



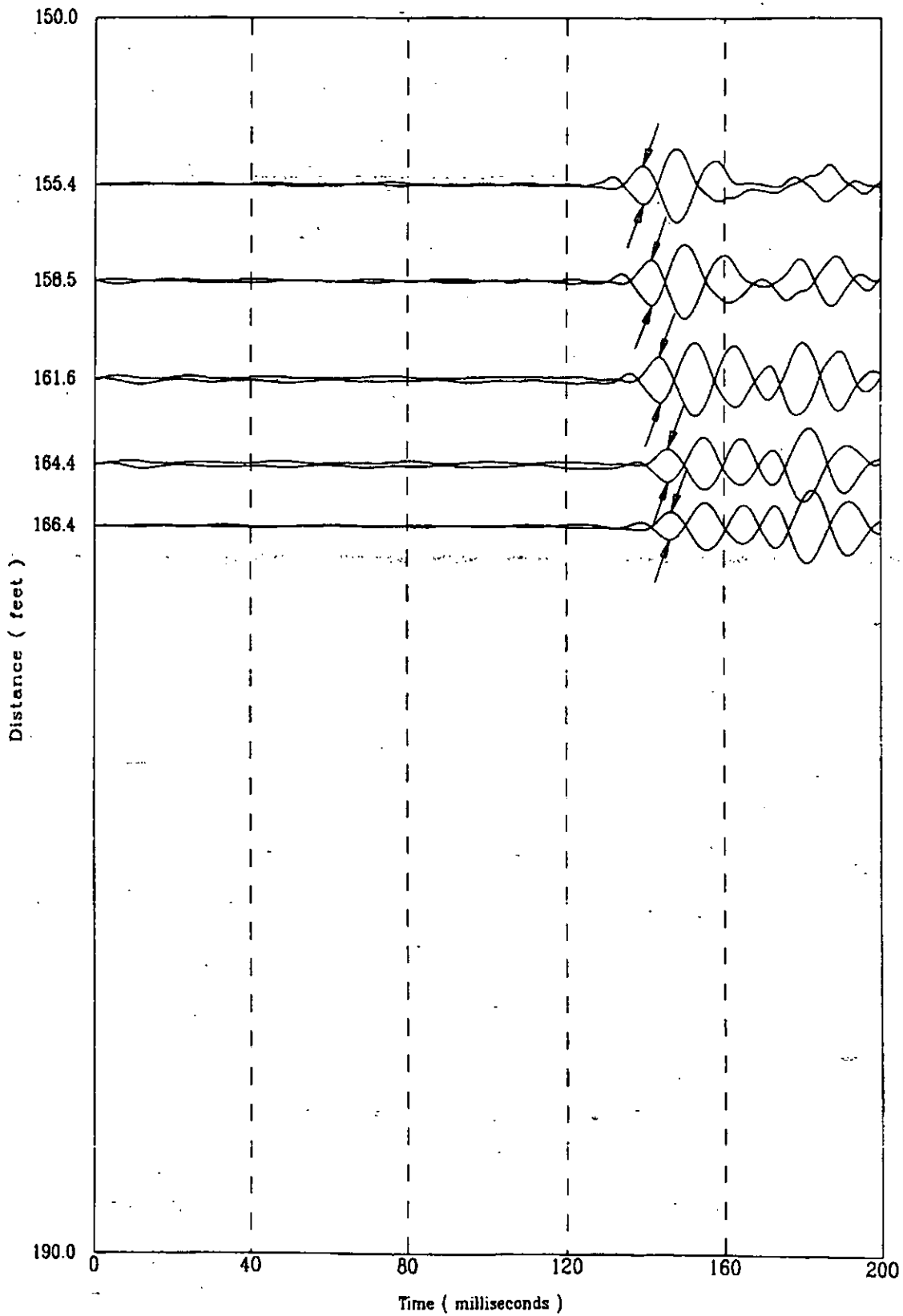
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346 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-175

S Wave  
03/20/98



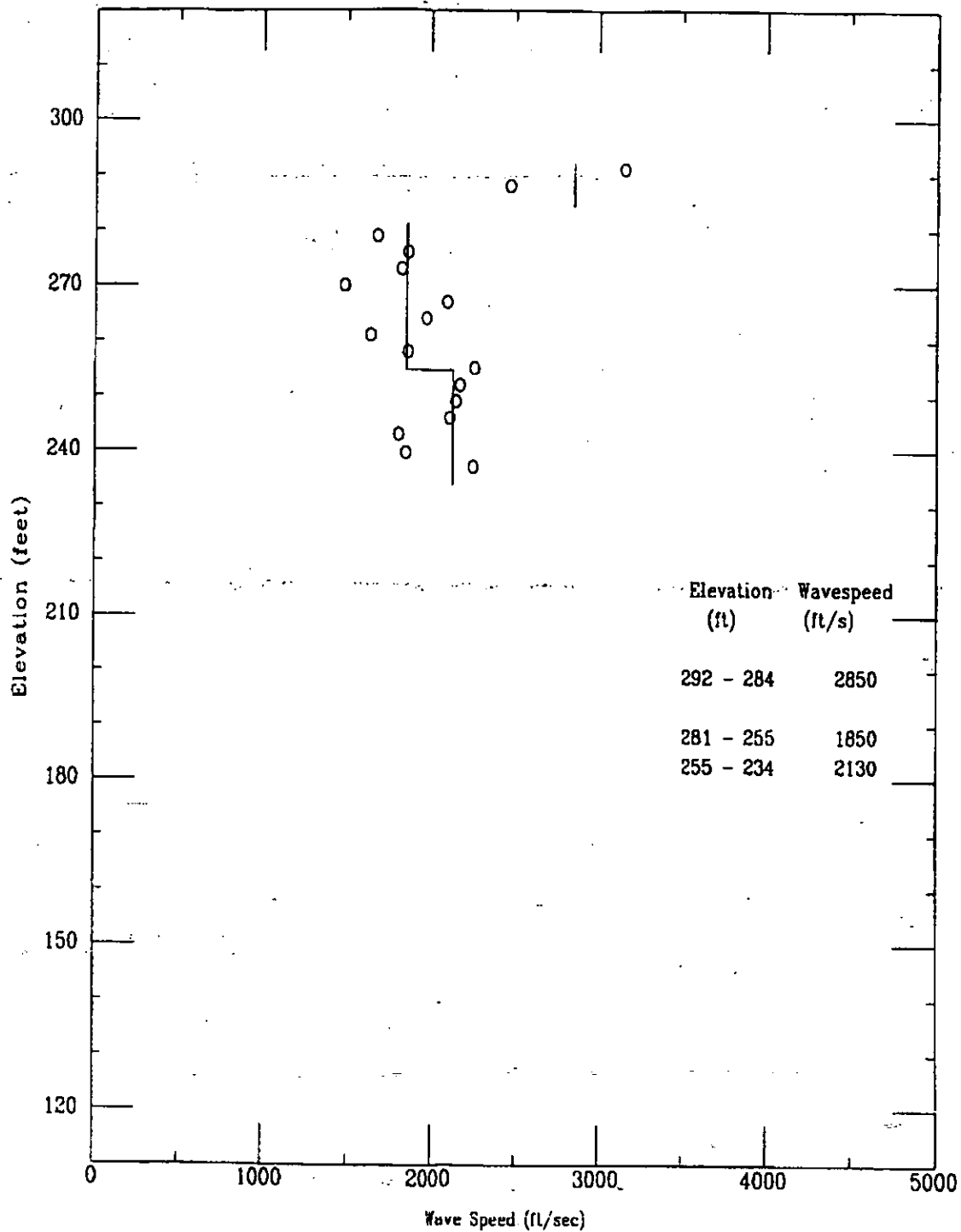
347 of 522

K-TRT-F-00001  
R/O

CPT-175

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/20/98



File 320m801S

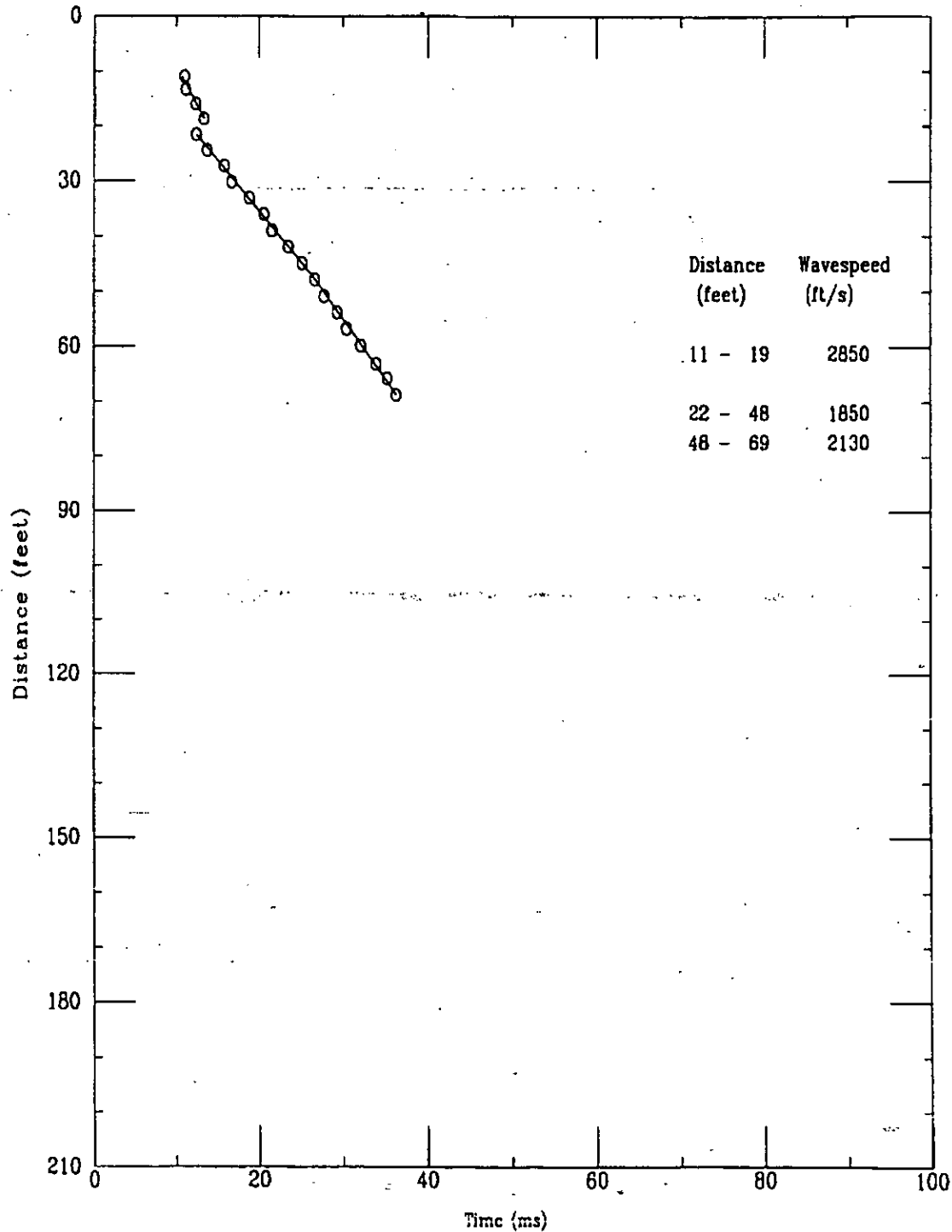
348 of 522

CPT-175

APPLIED RESEARCH ASSOCIATES, INC.

03/20/98

Compression Wave Time of Peak

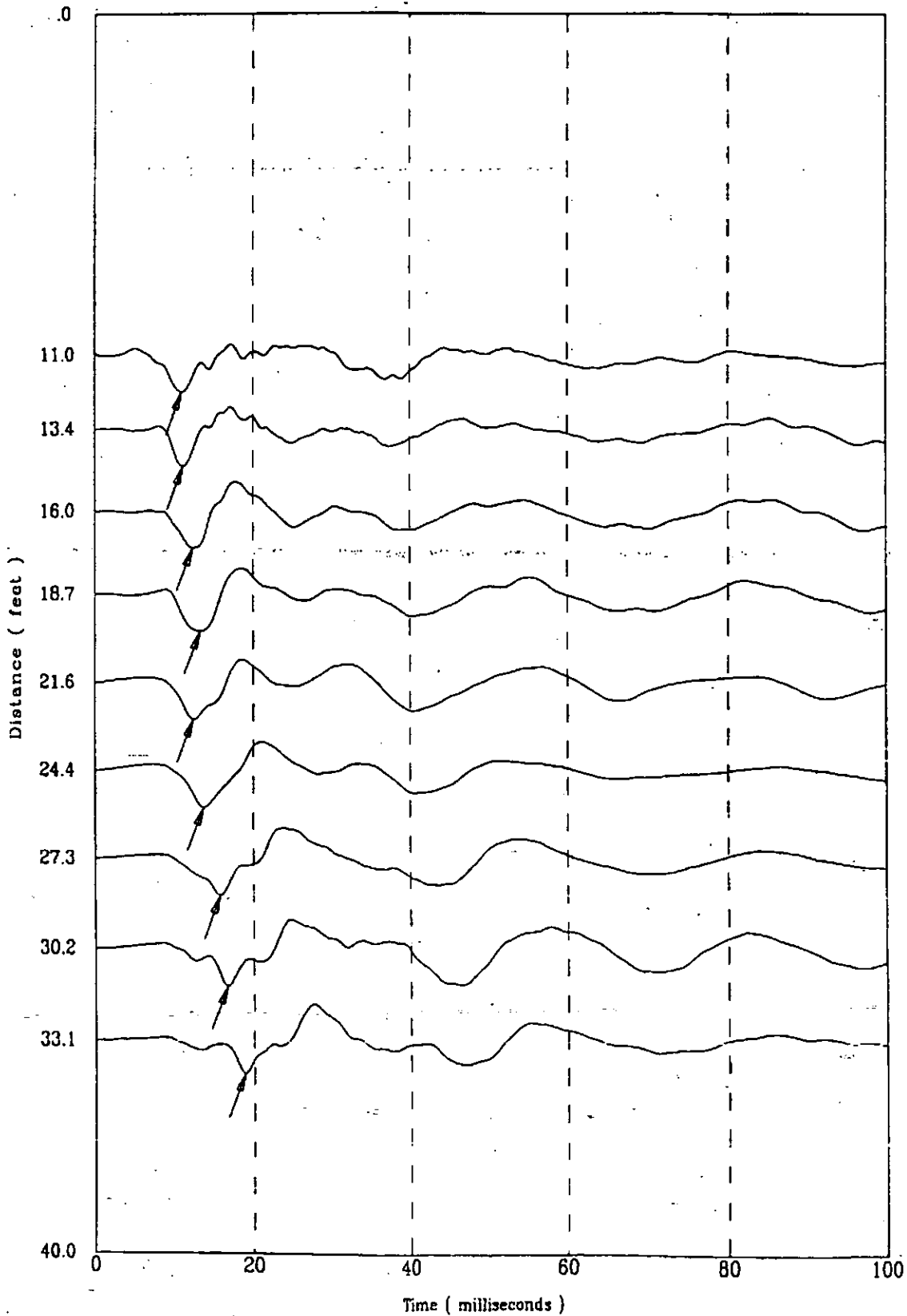


File 320m8015

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-175

P Wave  
03/20/98



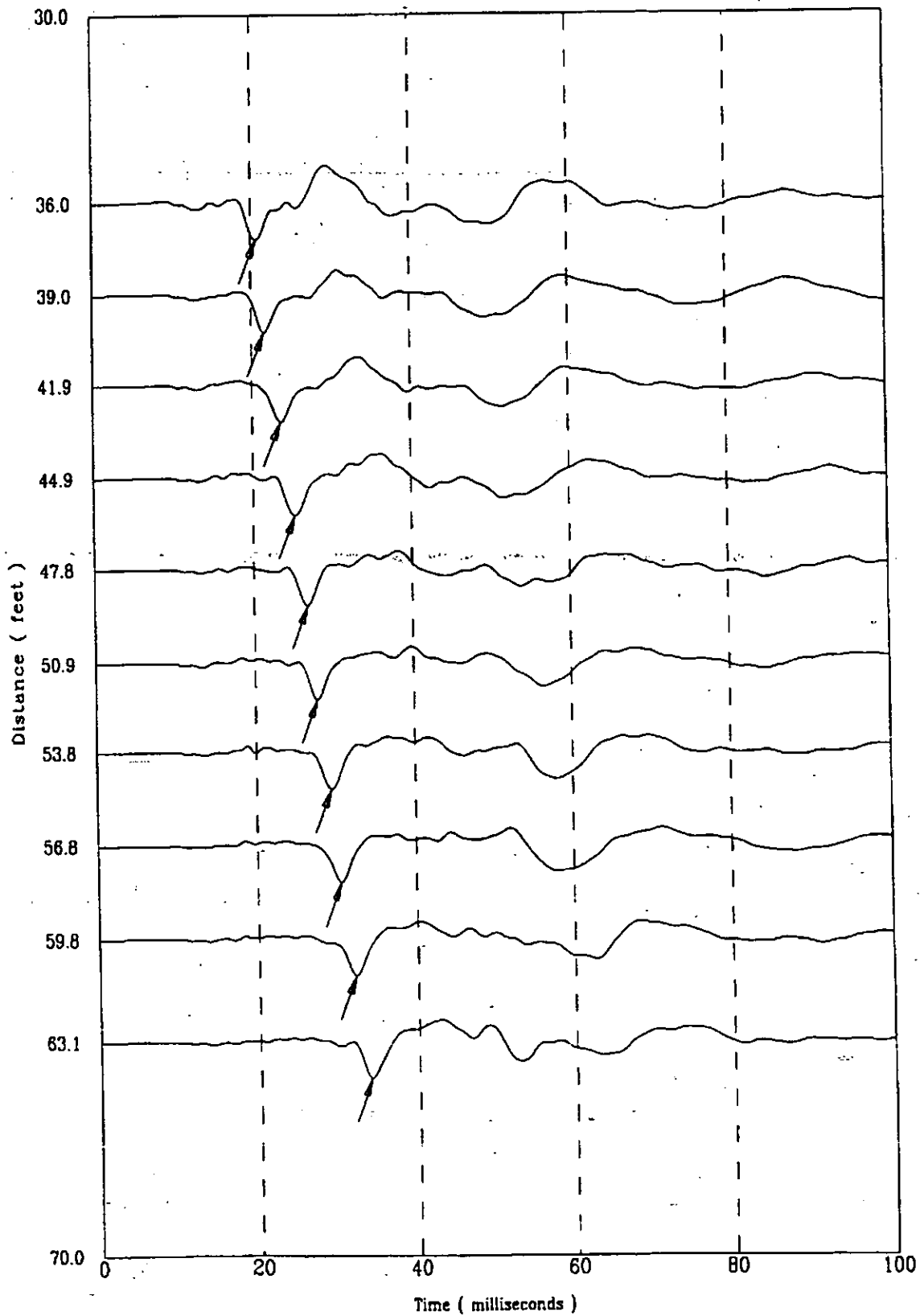
File 320m801S

350 of 52-

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-175

P Wave  
03/20/98

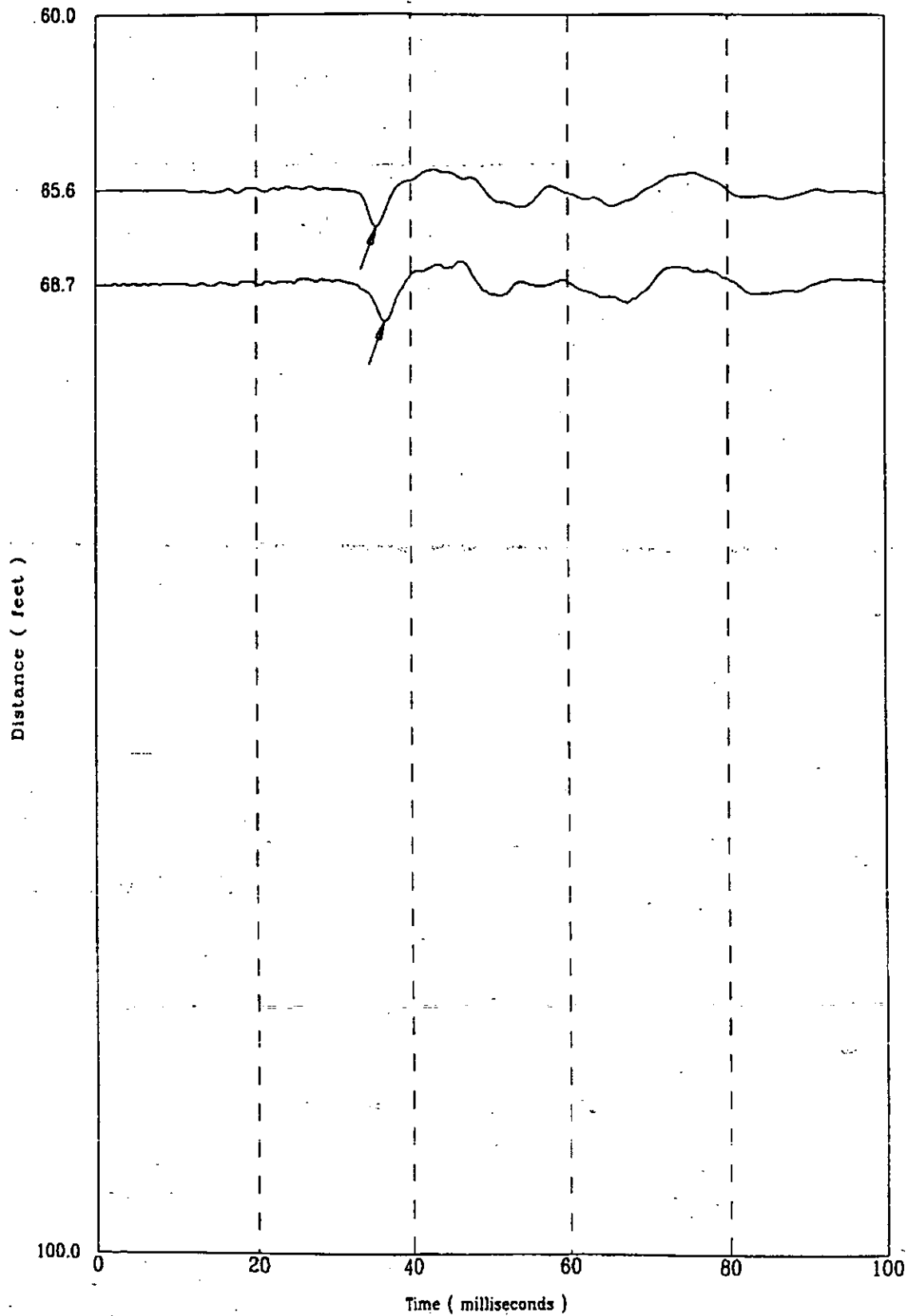


320m001S

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-175

P Wave  
03/20/98



File 320m801S

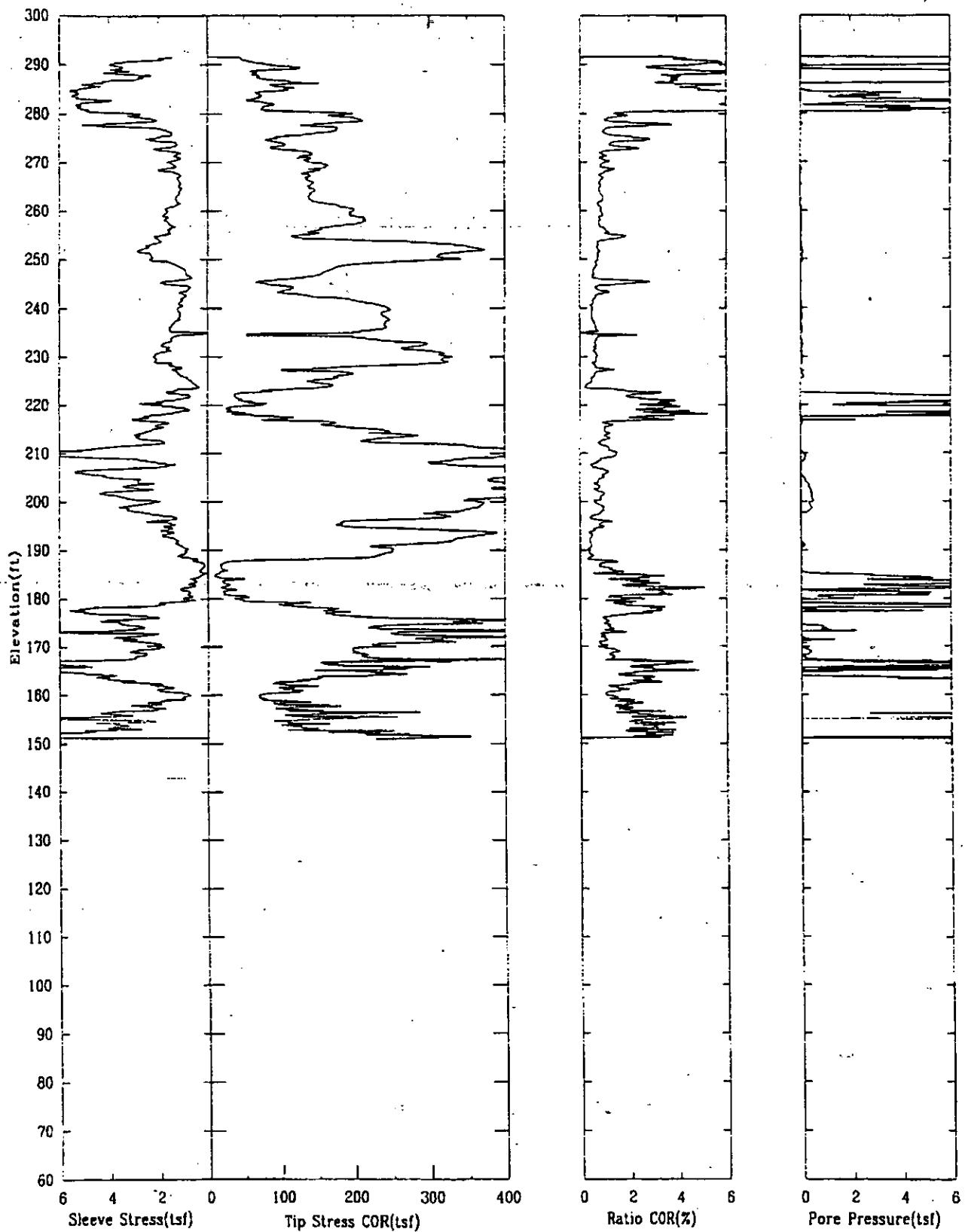
CPT-176

APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55583

Elevation 297.6

K-TRT-F-00001  
03/26/98 / 0



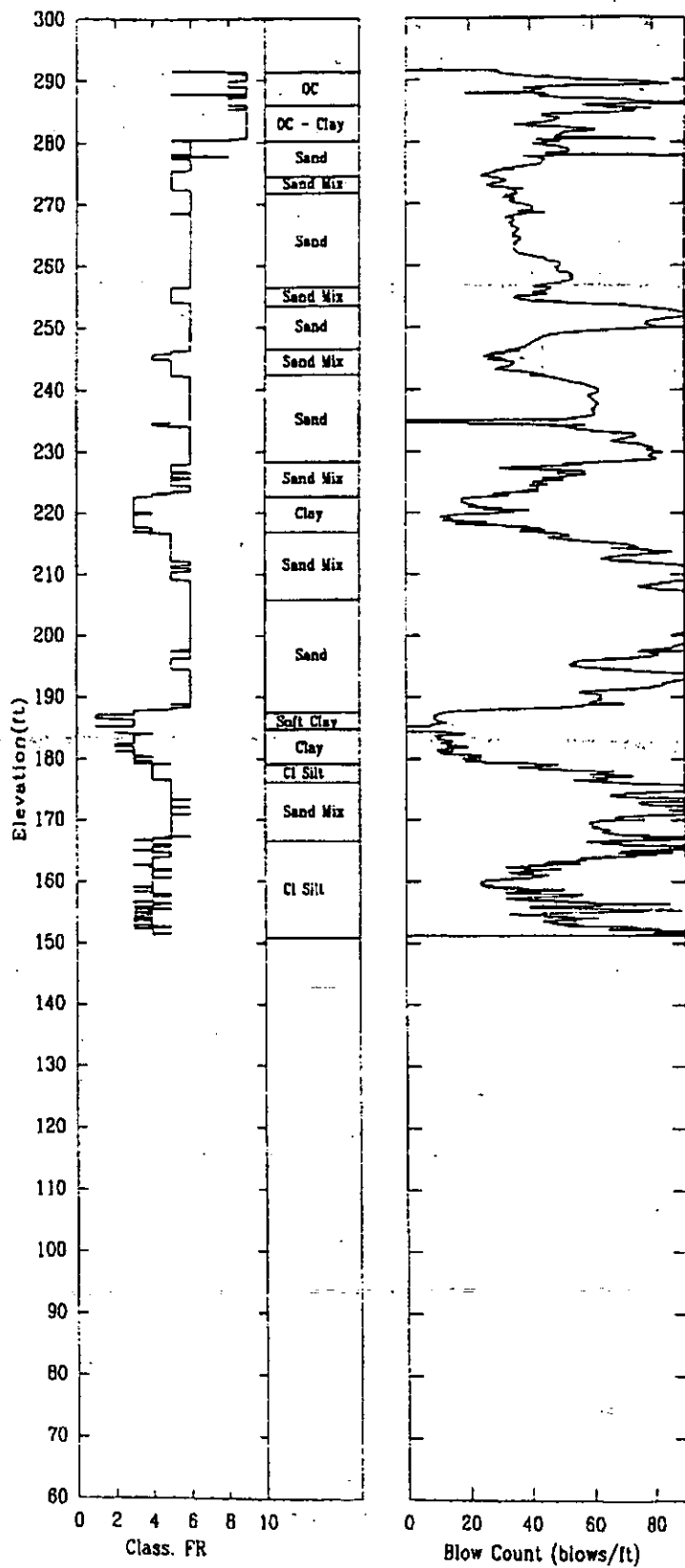
CPT-176

APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55583

Elevation 297.6

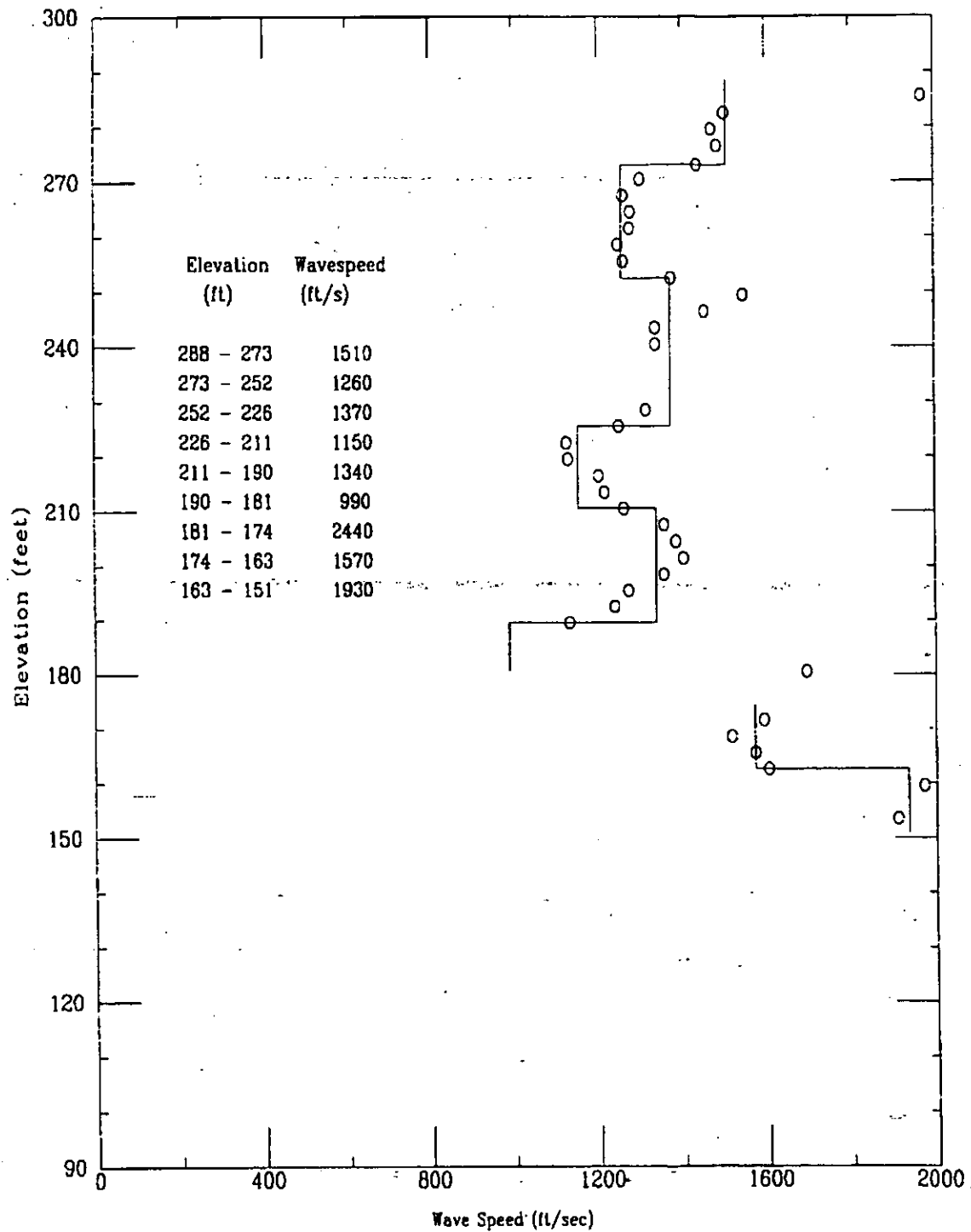
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03/26/98R/o

CPT-176

APPLIED RESEARCH ASSOCIATES, INC.

03/26/98

Shear Wave Speeds

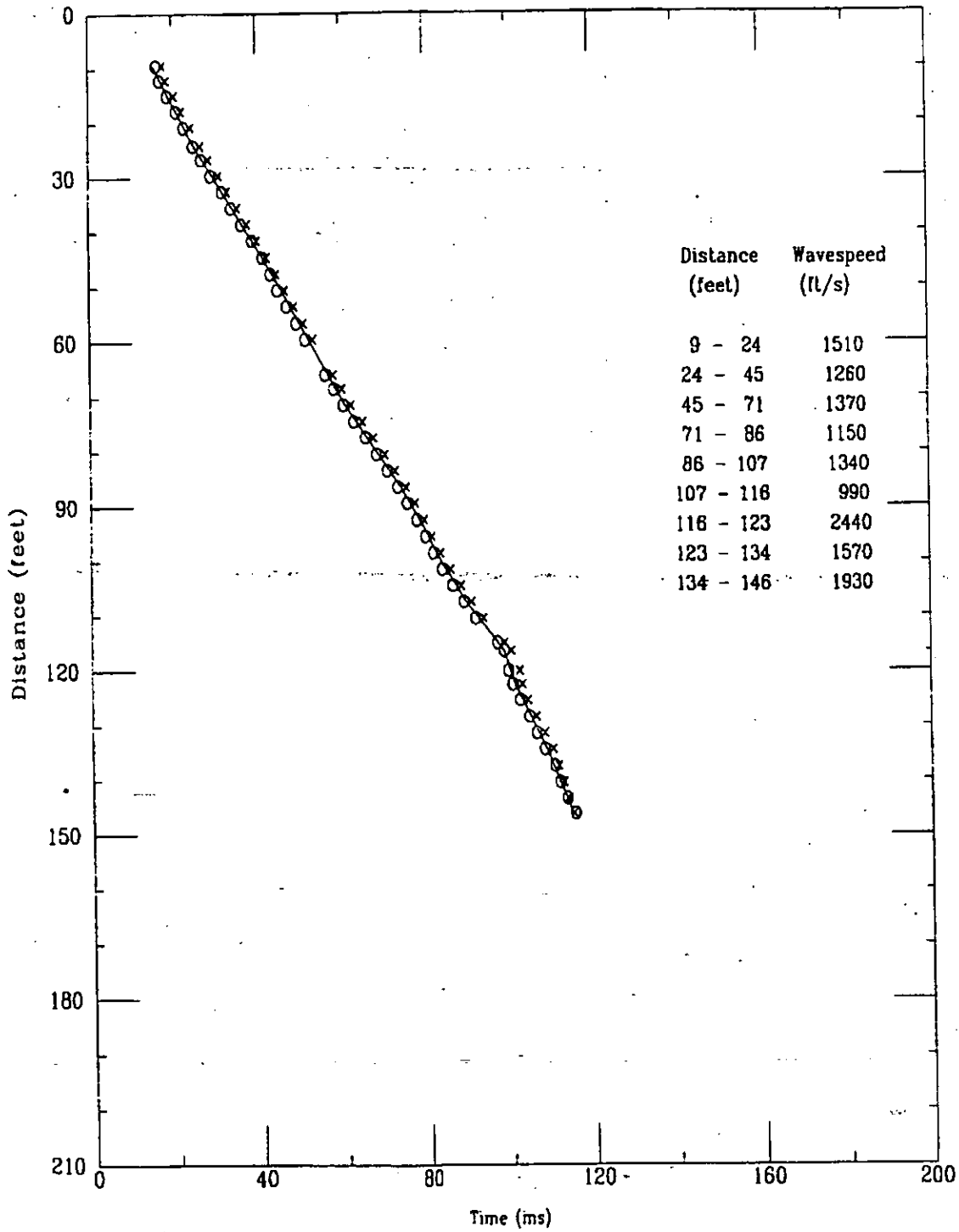


File 328m805S

CPT-176

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/26/98



File 326m805S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-176

S Wave  
03/26/98

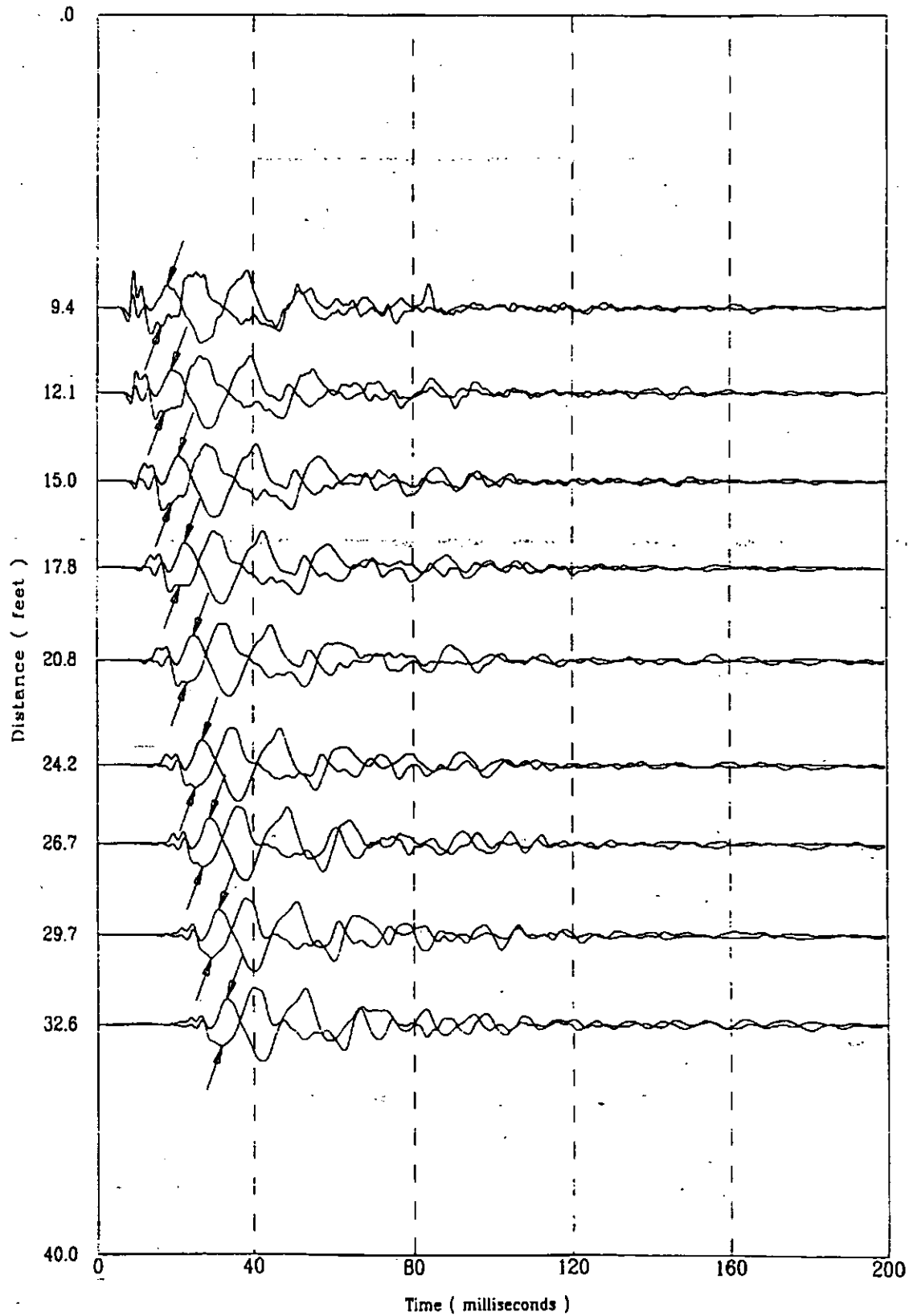
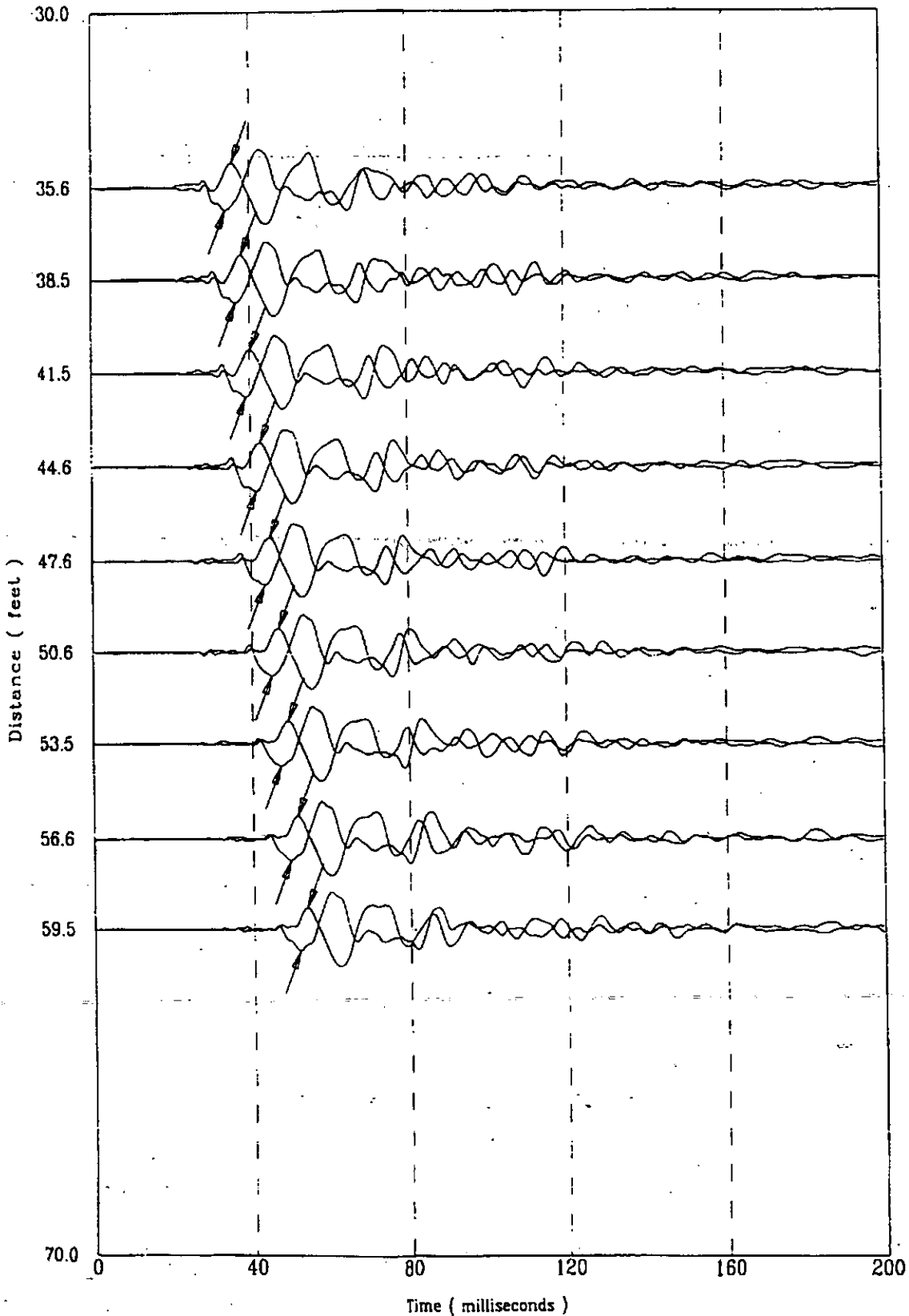


FIG. J26m805S

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-176

S Wave  
03/26/98

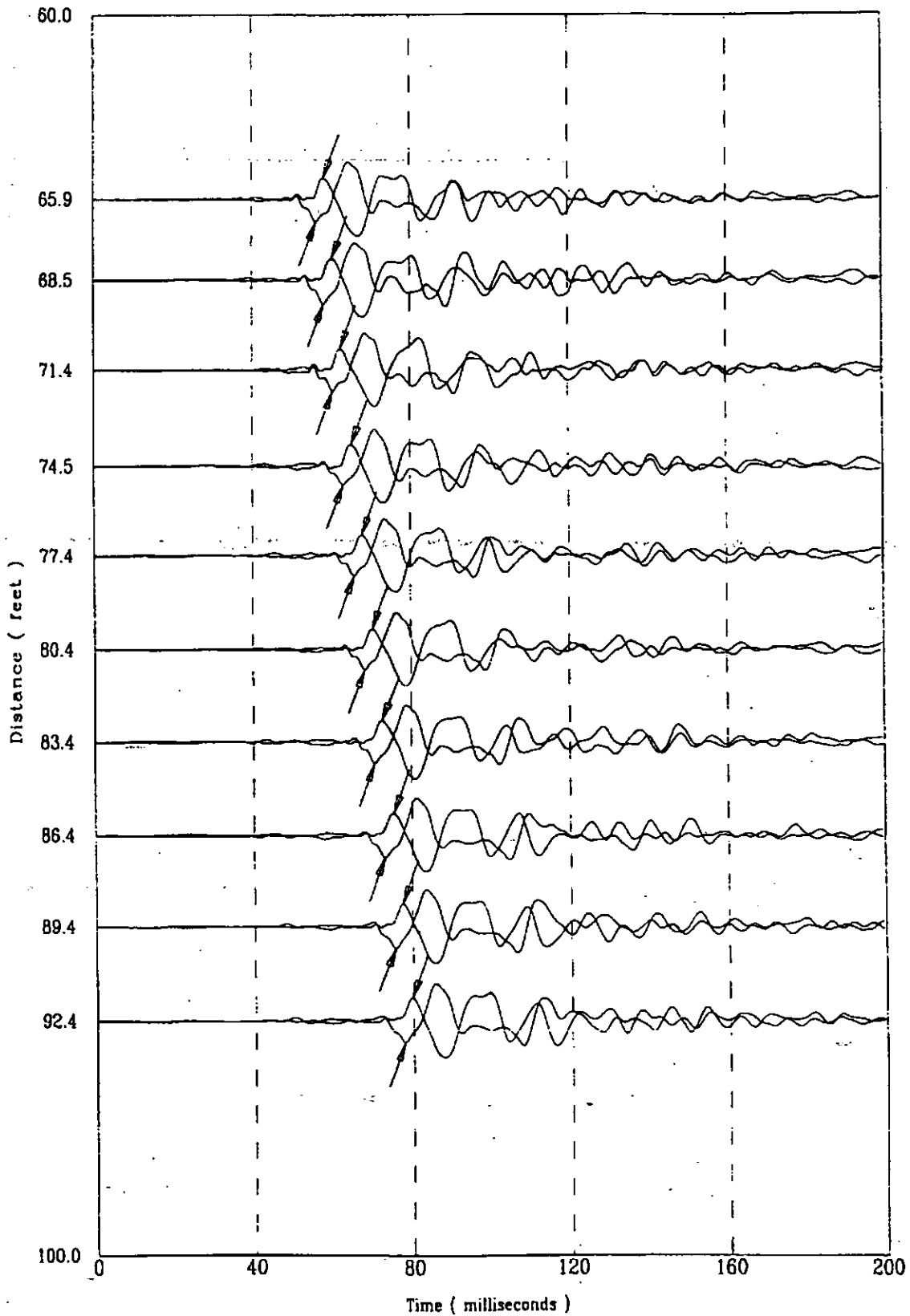


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R/o

Applied Research Associates, Inc.  
CPT-176

S Wave  
03/26/98

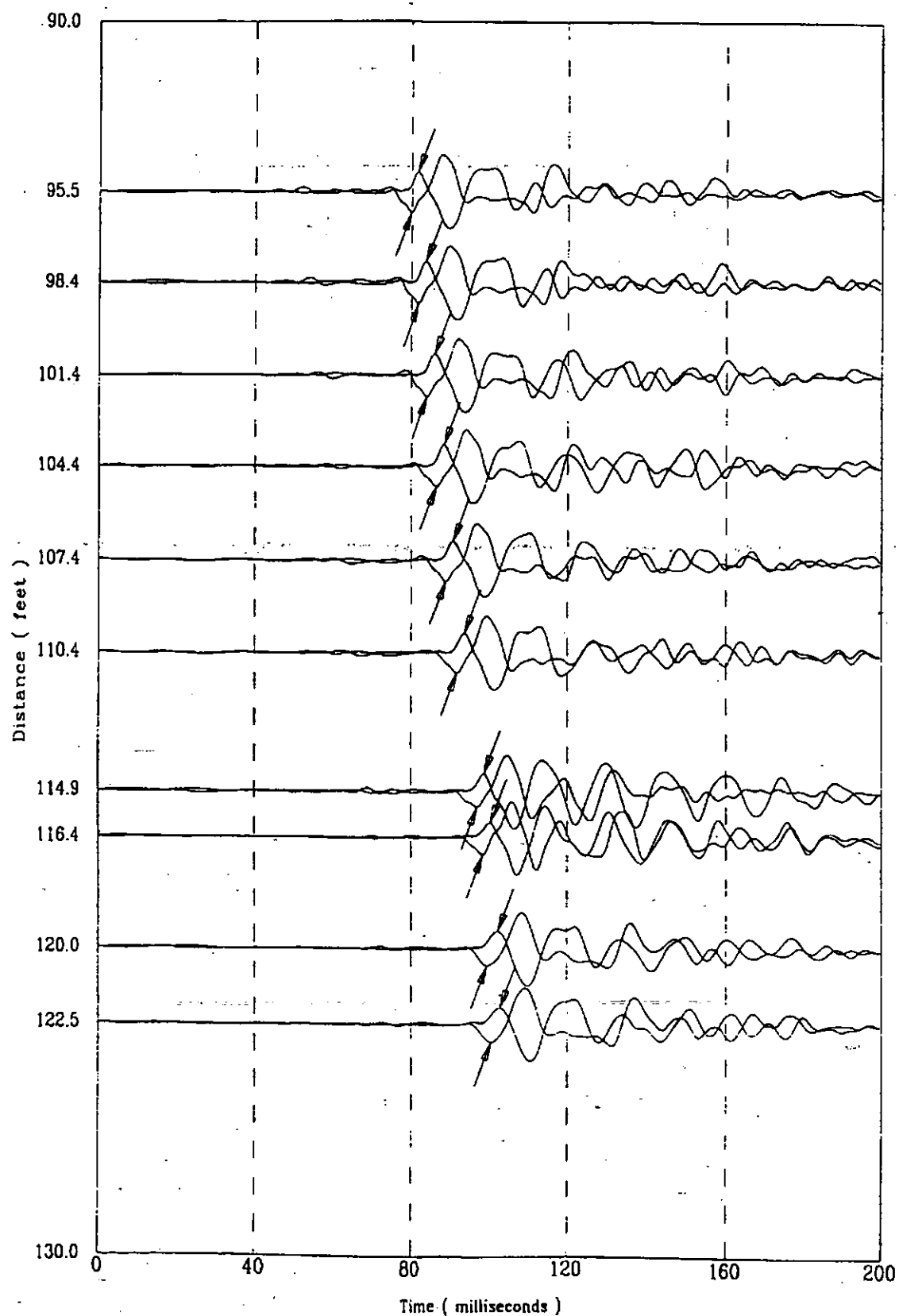


file 326m8055

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R/O

Applied Research Associates, Inc.  
CPT-176

S Wave  
03/26/98



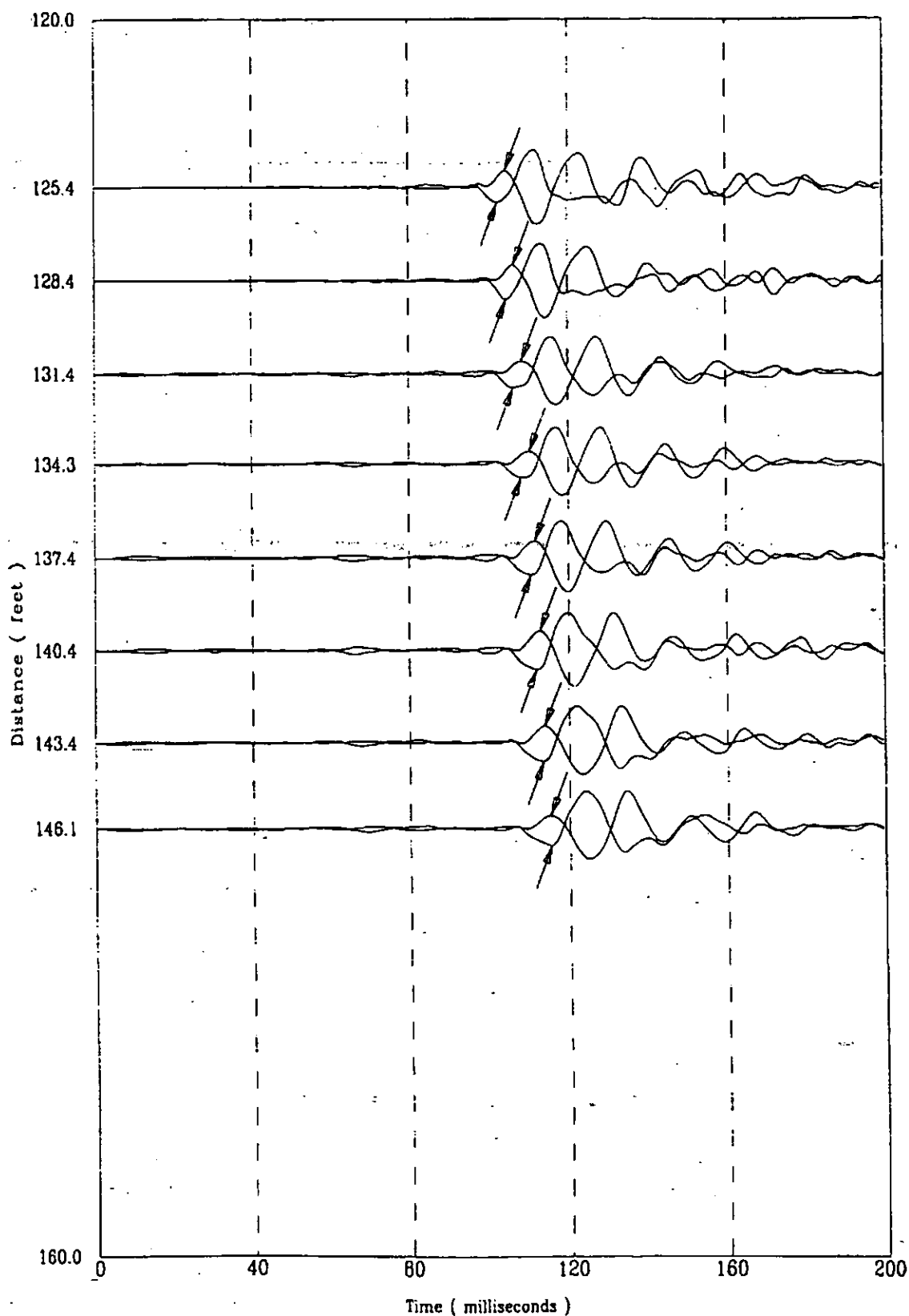
File 326m805S

360 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-176

S Wave  
03/26/98



File 326m8055

361 of 522

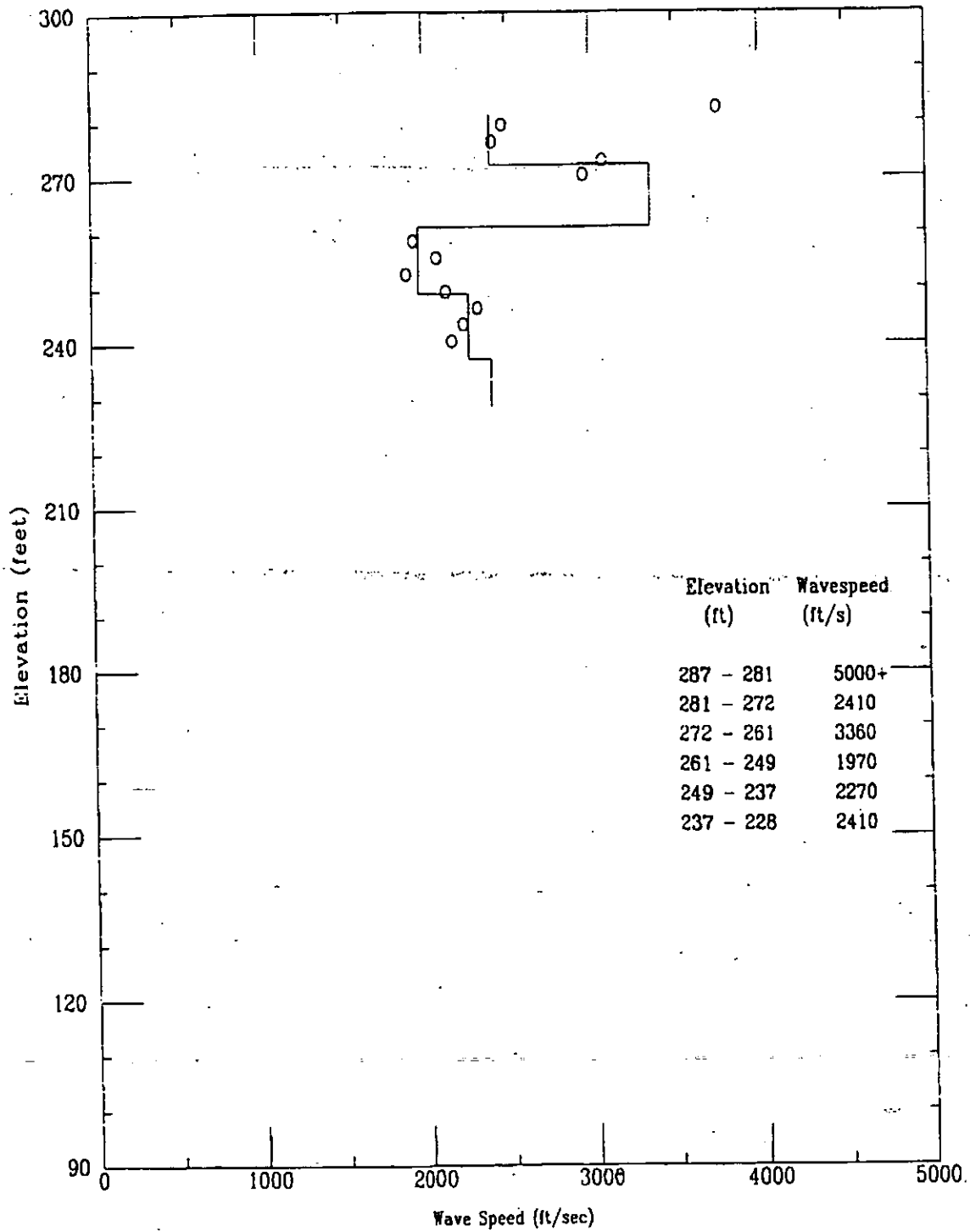


K-TRT-F-00001  
R/O

CPT-176

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/26/98



File 326m805S

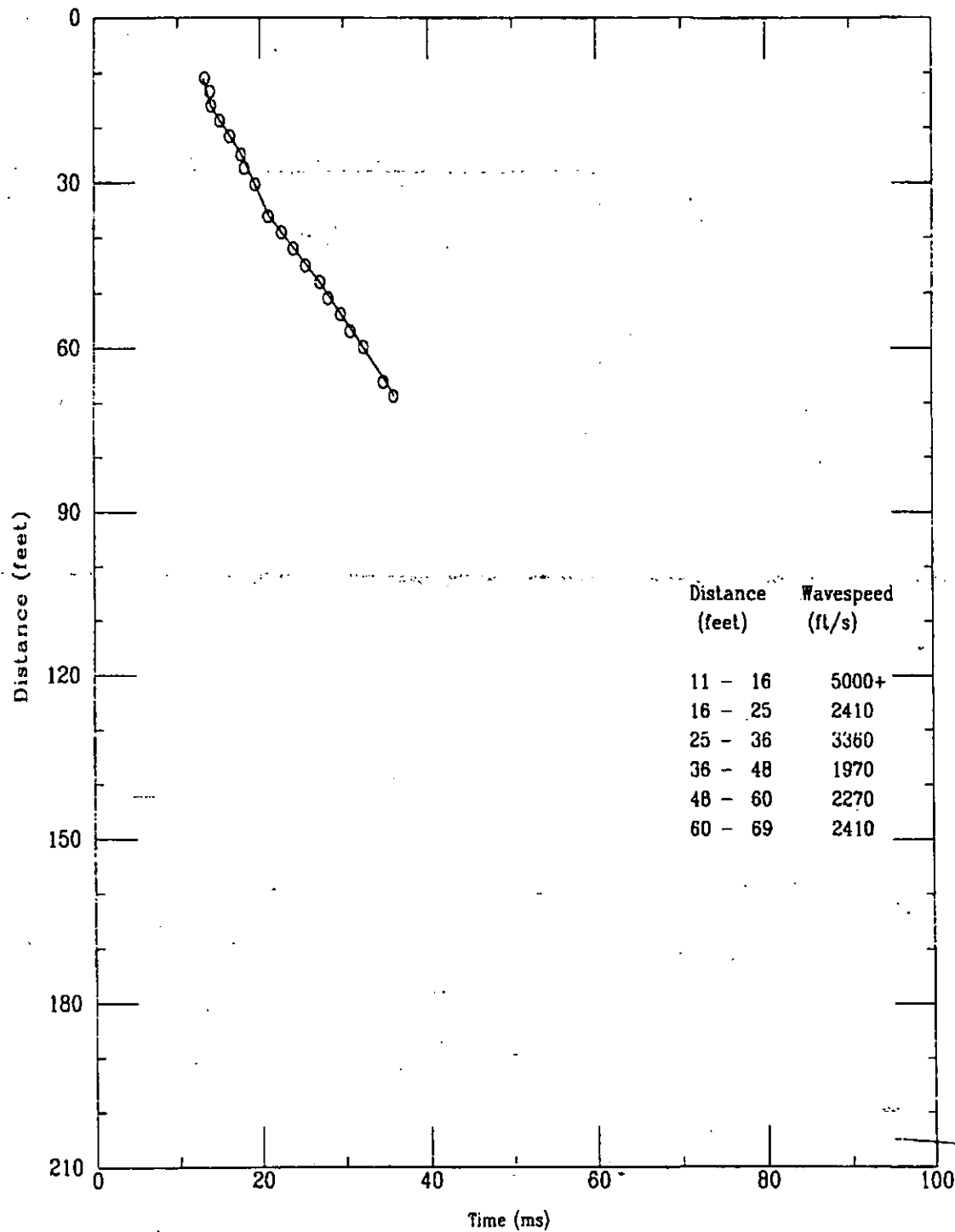
362 of 522

K-TRT-F-00001  
R/O

CPT-176

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/26/98



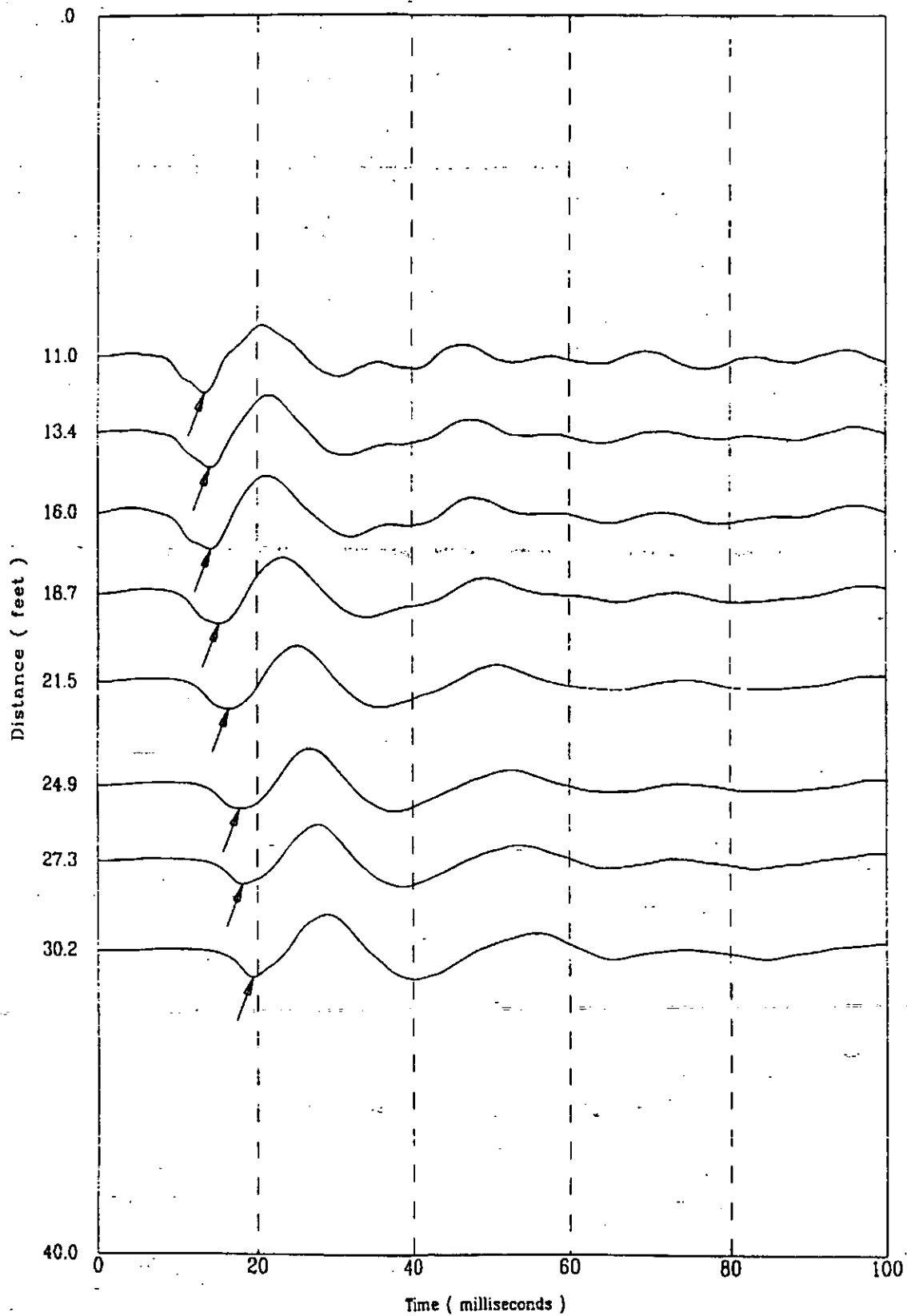
File 326m805S

363 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-176

P Wave  
03/26/98



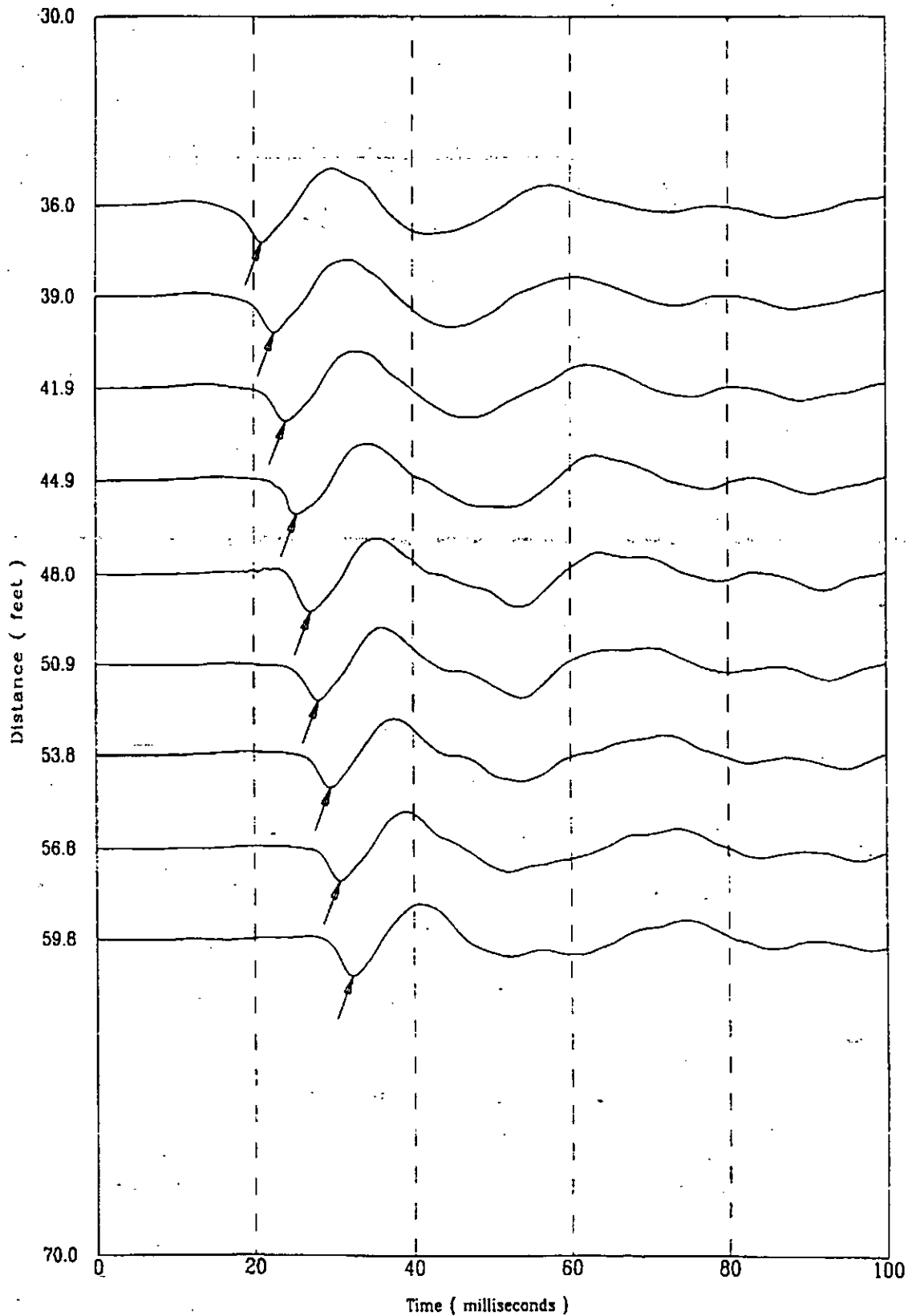
File 326m805S

364 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-176

P Wave  
03/26/98



File 326m805S

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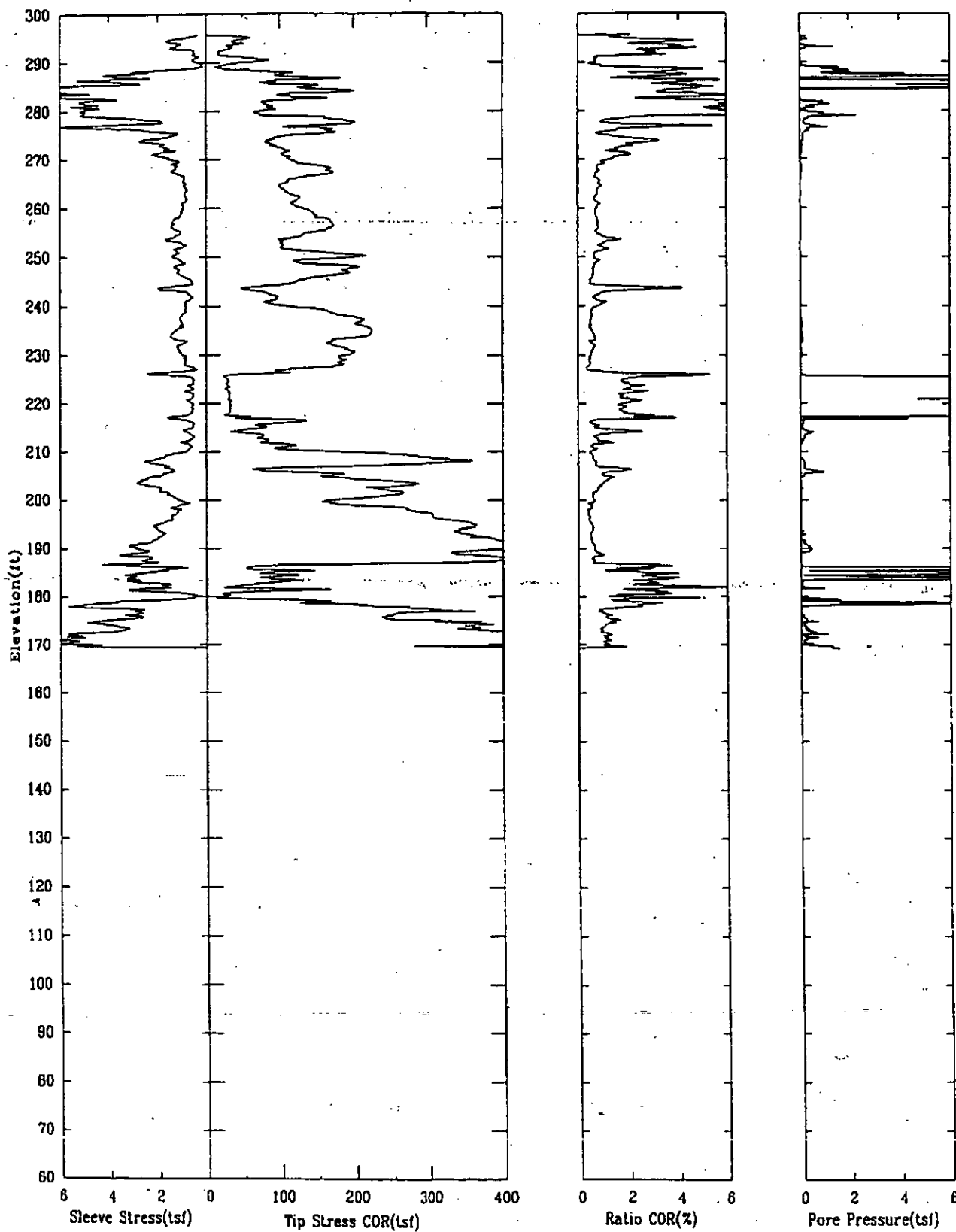
CPT-177

APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55715

Elevation 301.7

K-TRT-F-0000/  
03/27/98 / 0

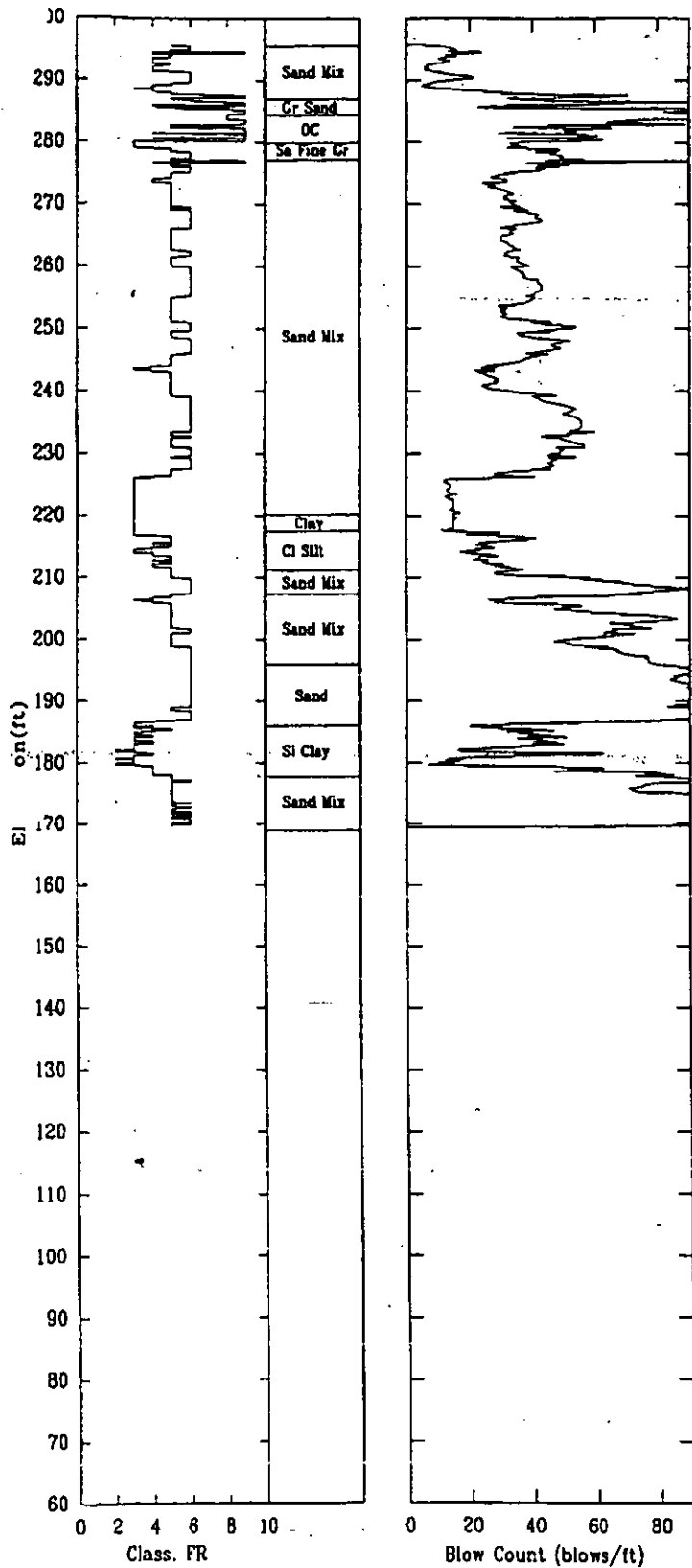
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APPLIED RESEARCH ASSOCIATES, INC.

North 78770

East 55715

Elevation 301.7

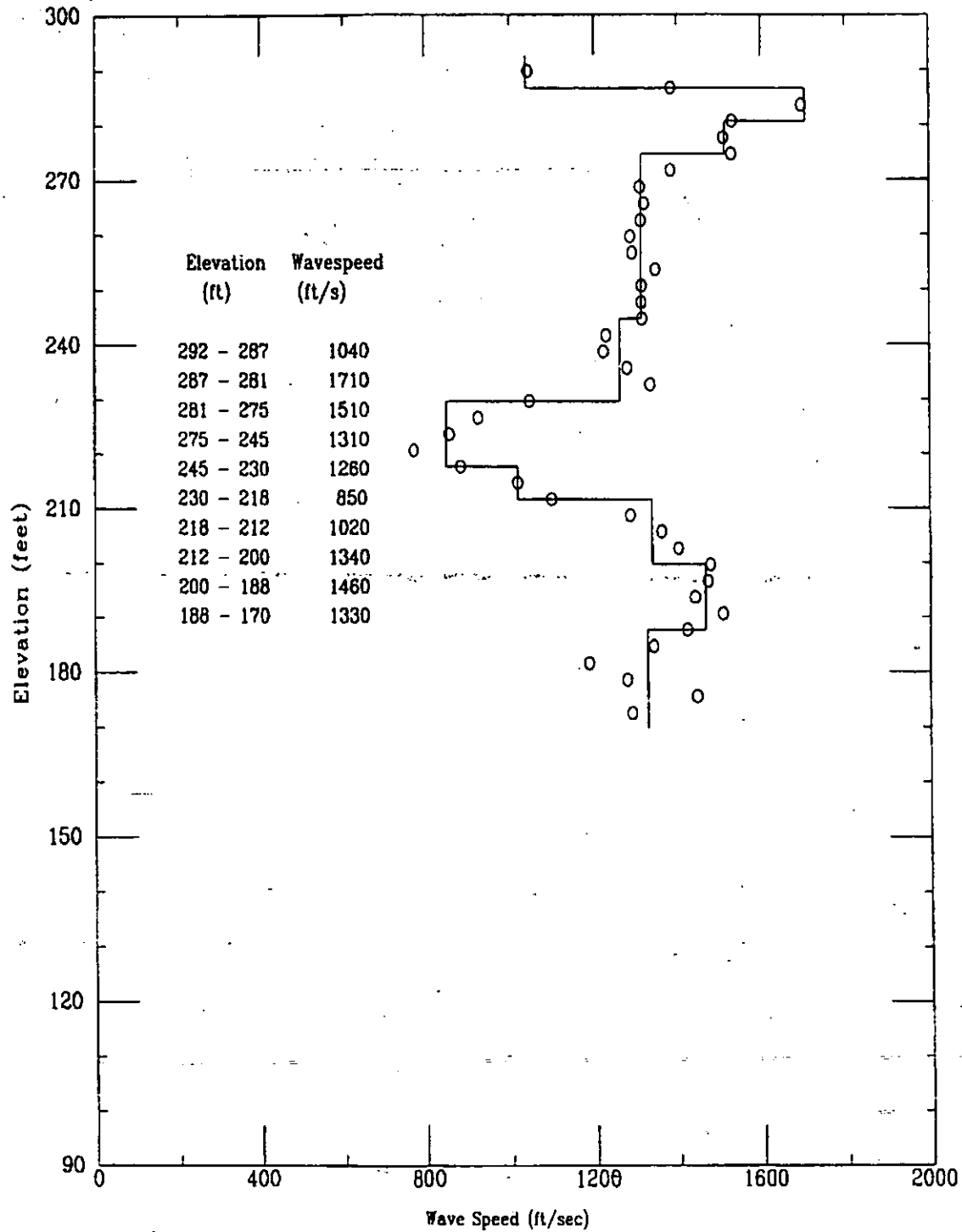
K, TRT-F-00001  
03/27/98 R/O

CPT-177

APPLIED-RESEARCH ASSOCIATES, INC.

03/27/98

Shear Wave Speeds



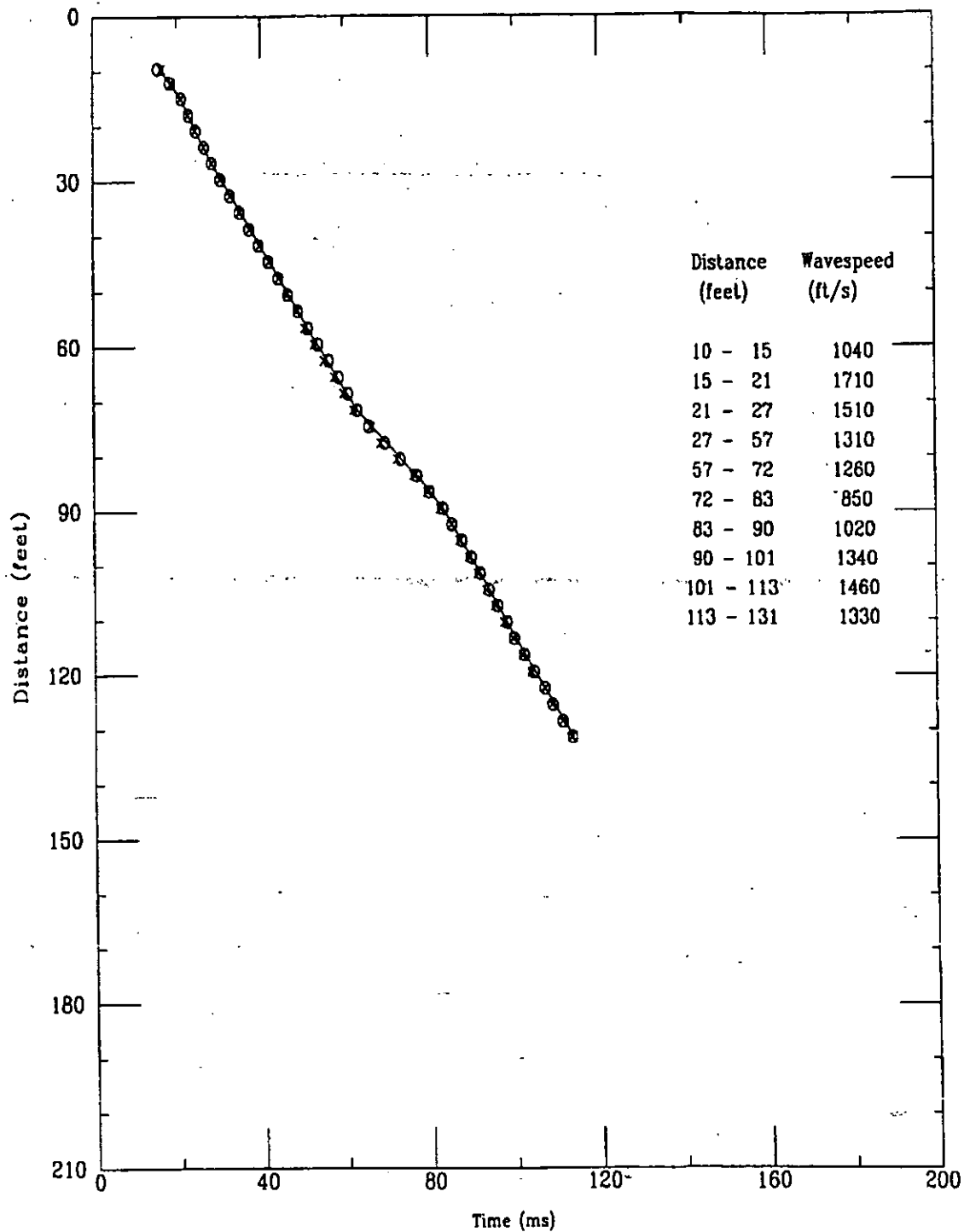
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CPT-177

APPLIED RESEARCH ASSOCIATES, INC.

03/27/98

Shear Wave Time of Peak



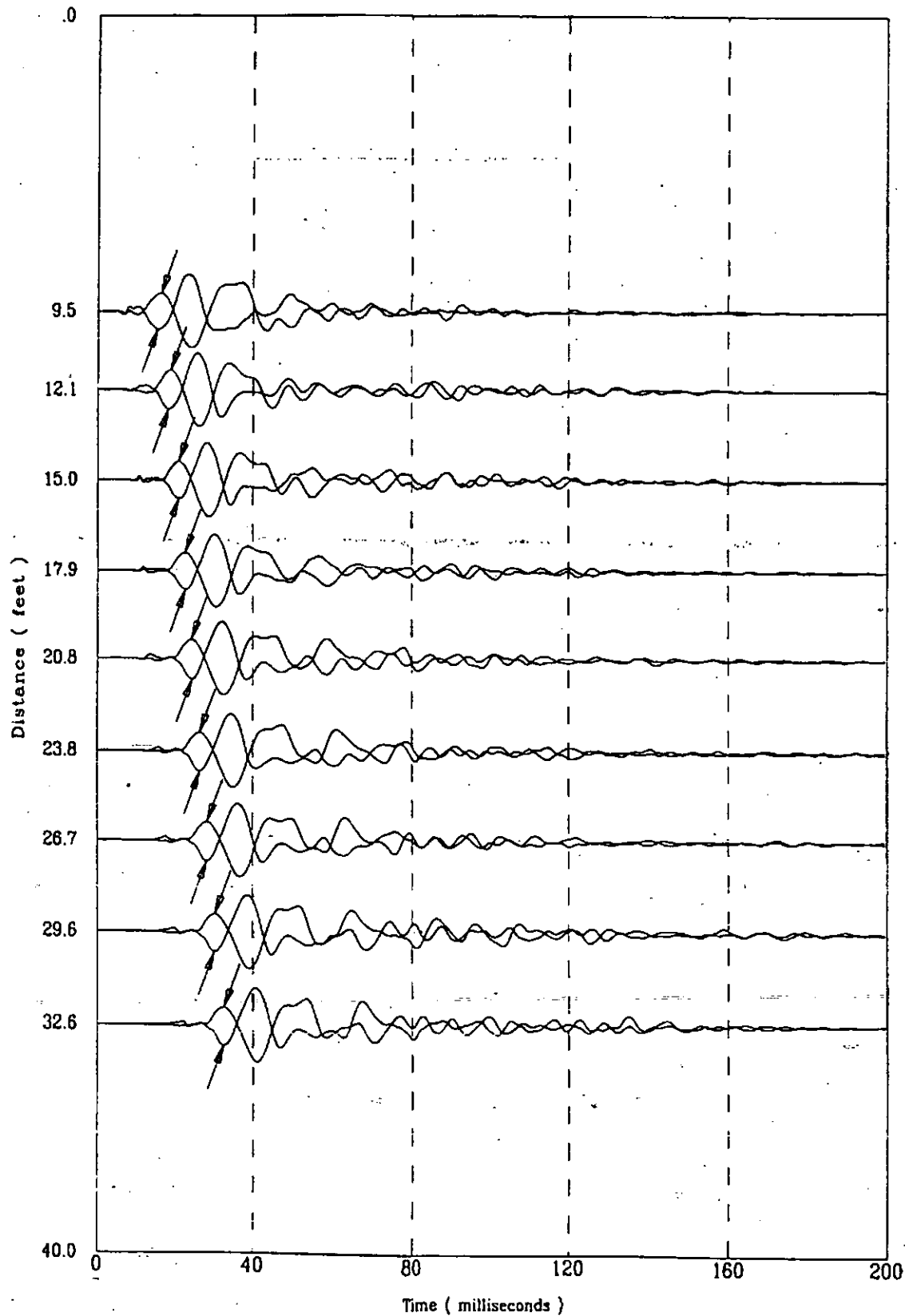
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-177

S Wave  
03/27/98



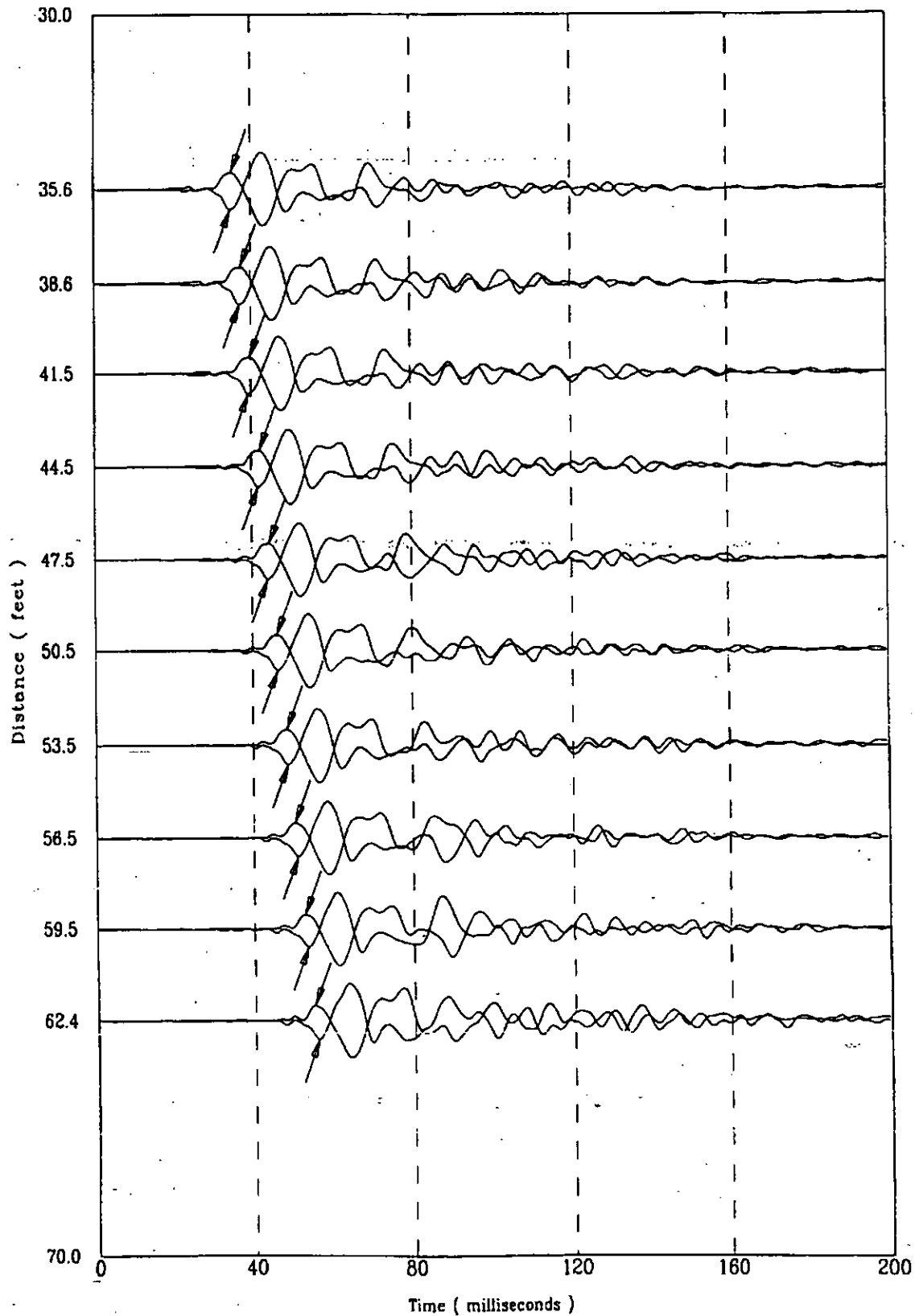
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370 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-177

S Wave  
03/27/98



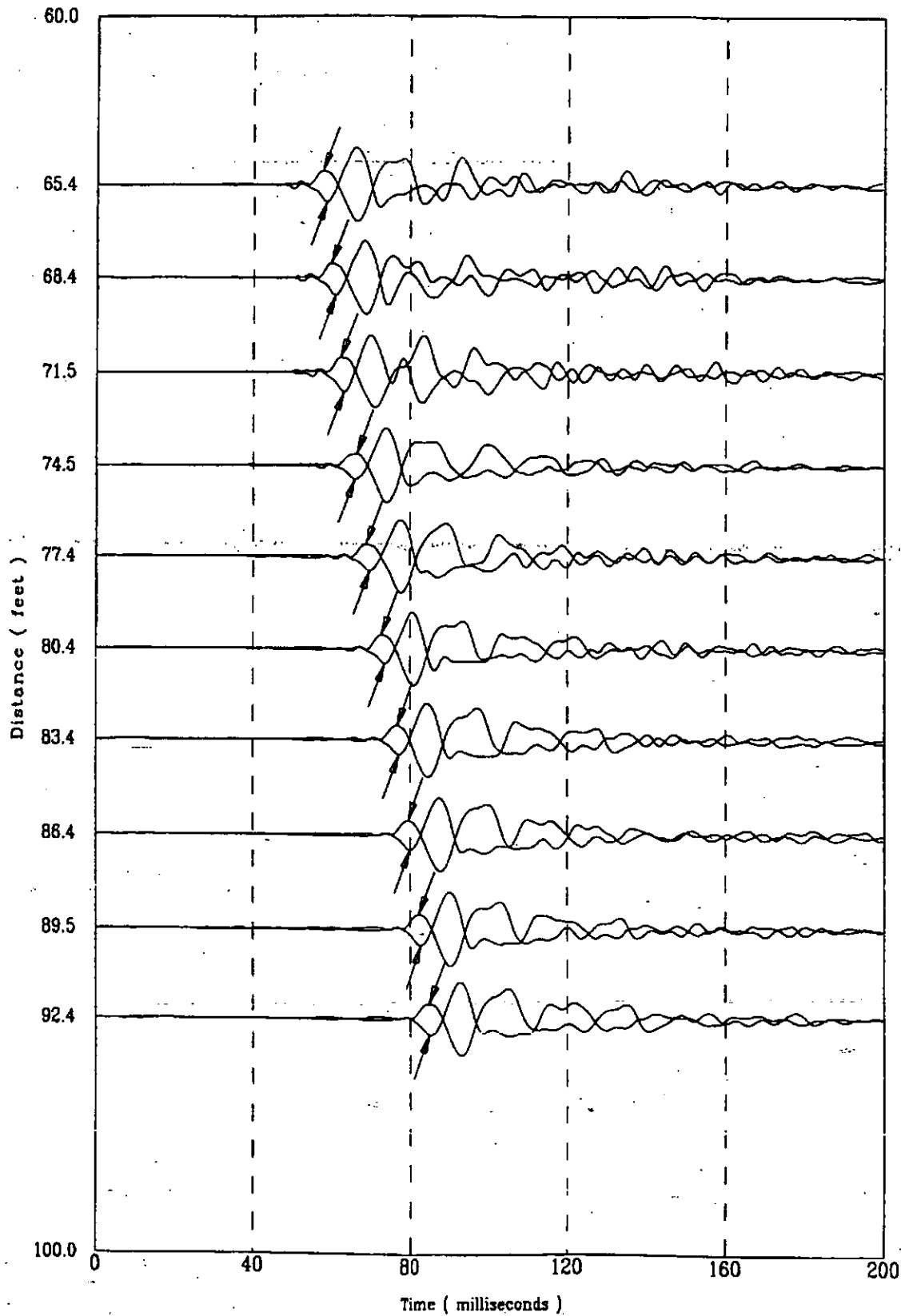
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371 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-177

S Wave  
03/27/98



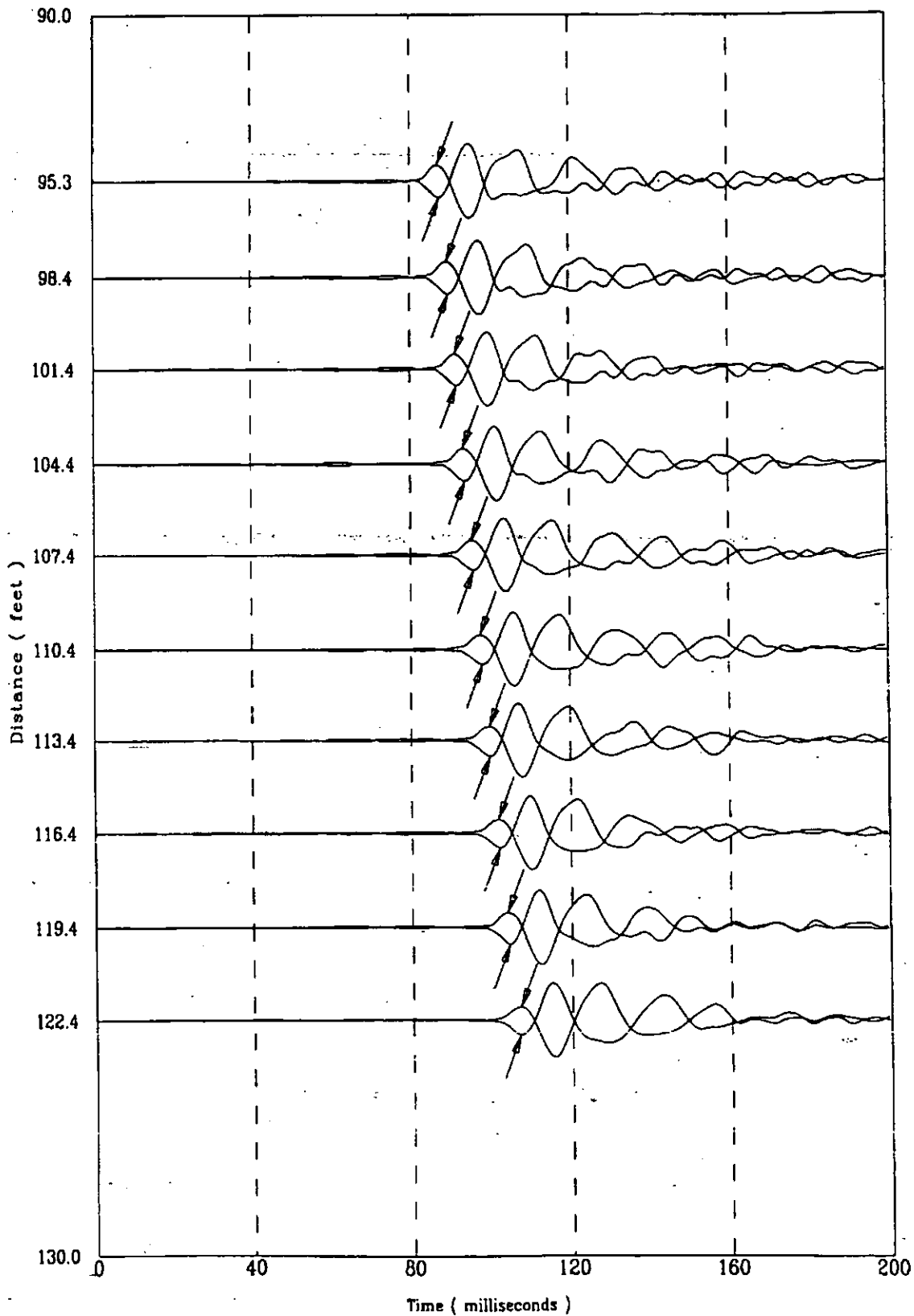
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372 of 522

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-177

S Wave  
03/27/98



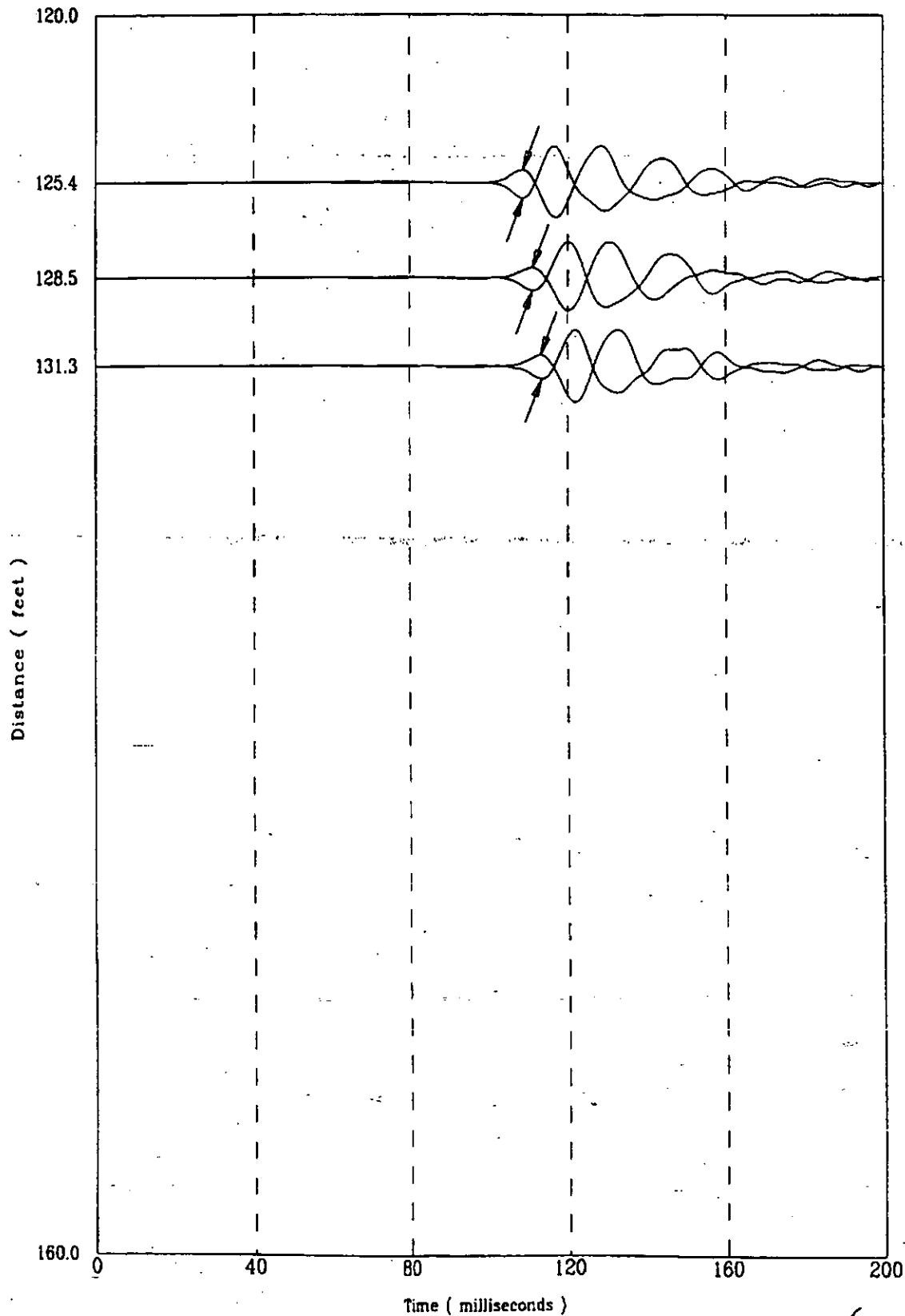
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373 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-177

S Wave  
03/27/98



File 327m801S

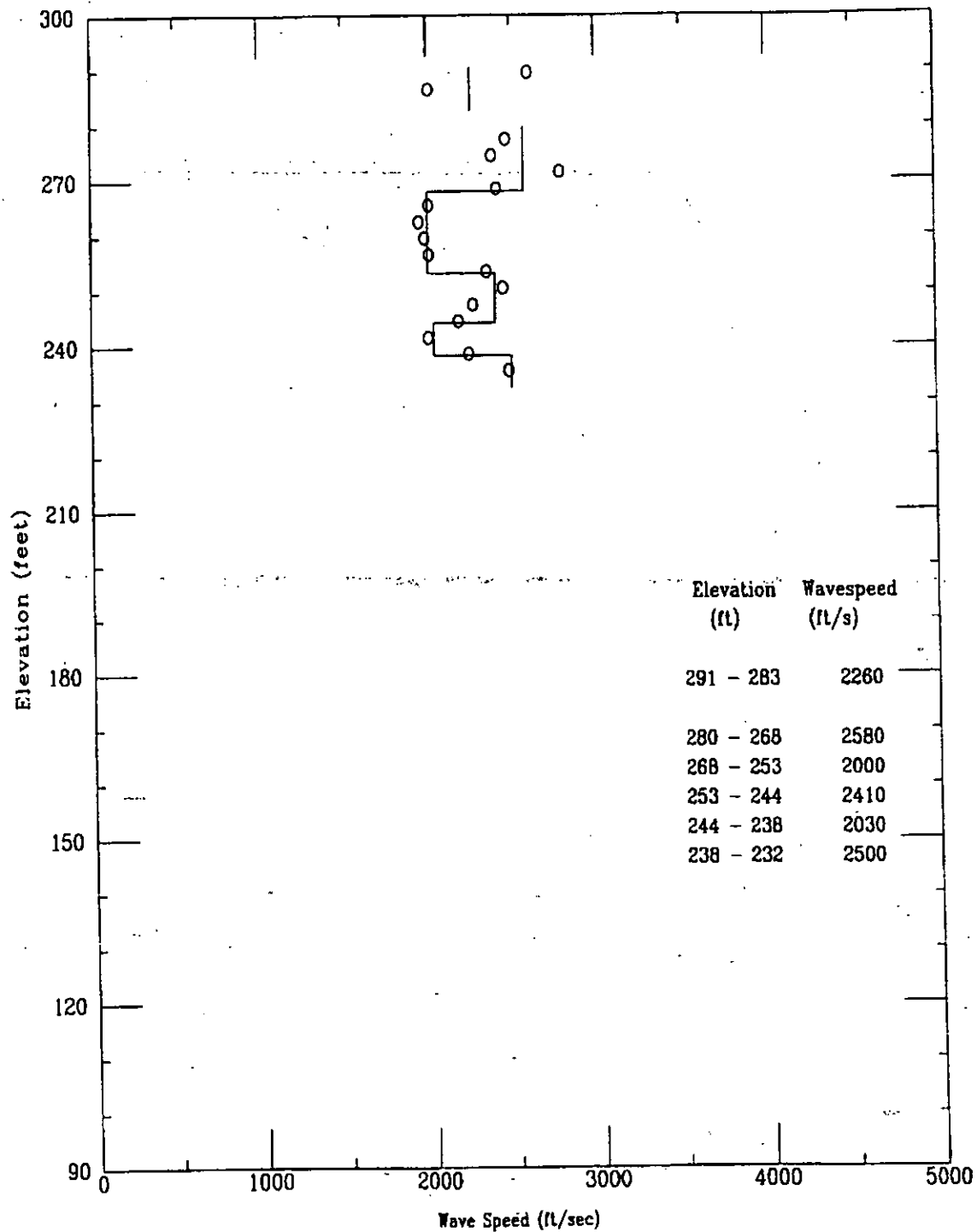
374 of 522

K-TRT-F-00001  
R/O

CPT-177

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/27/98



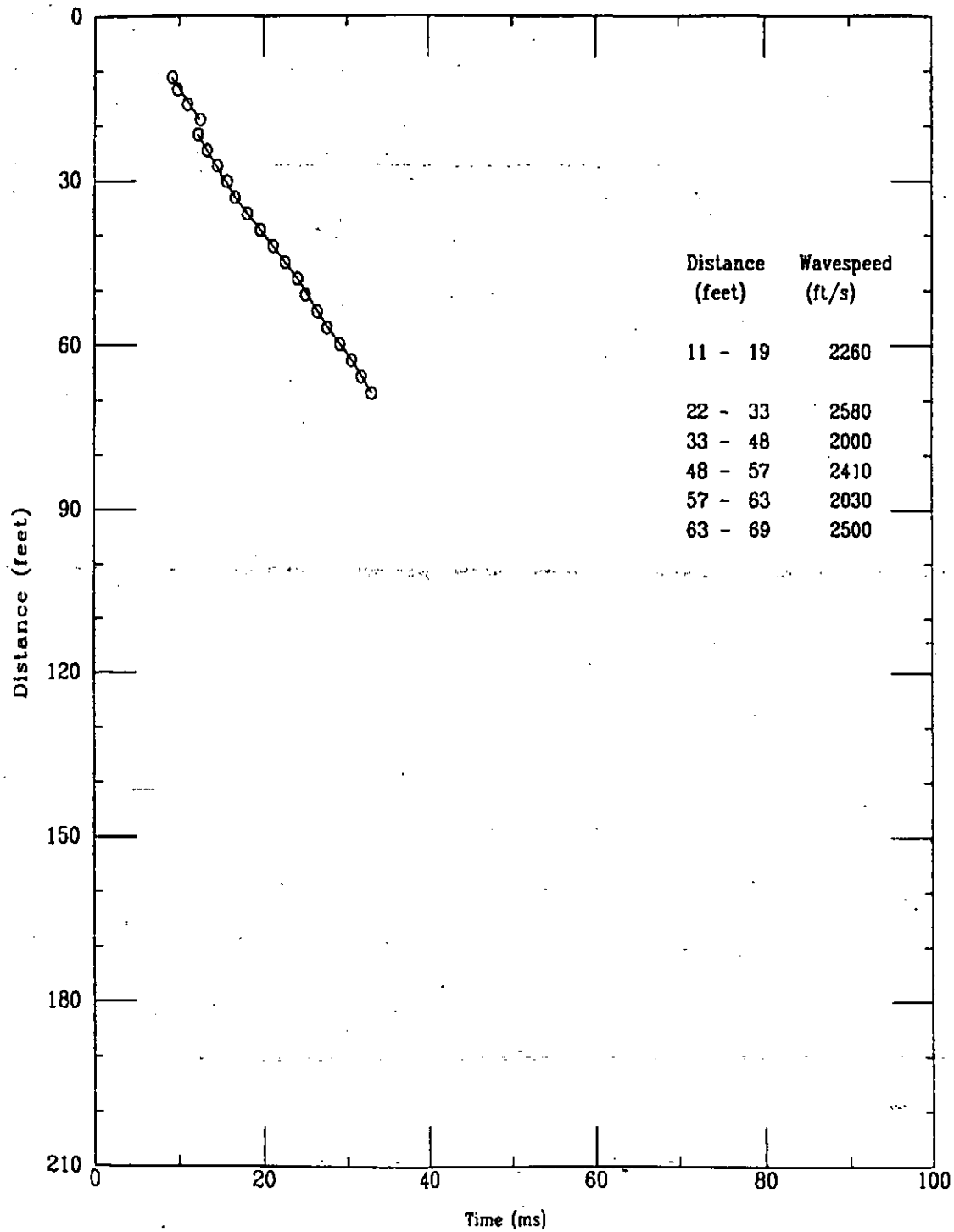
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375 of 522

CPT-177

APPLIED-RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/27/98

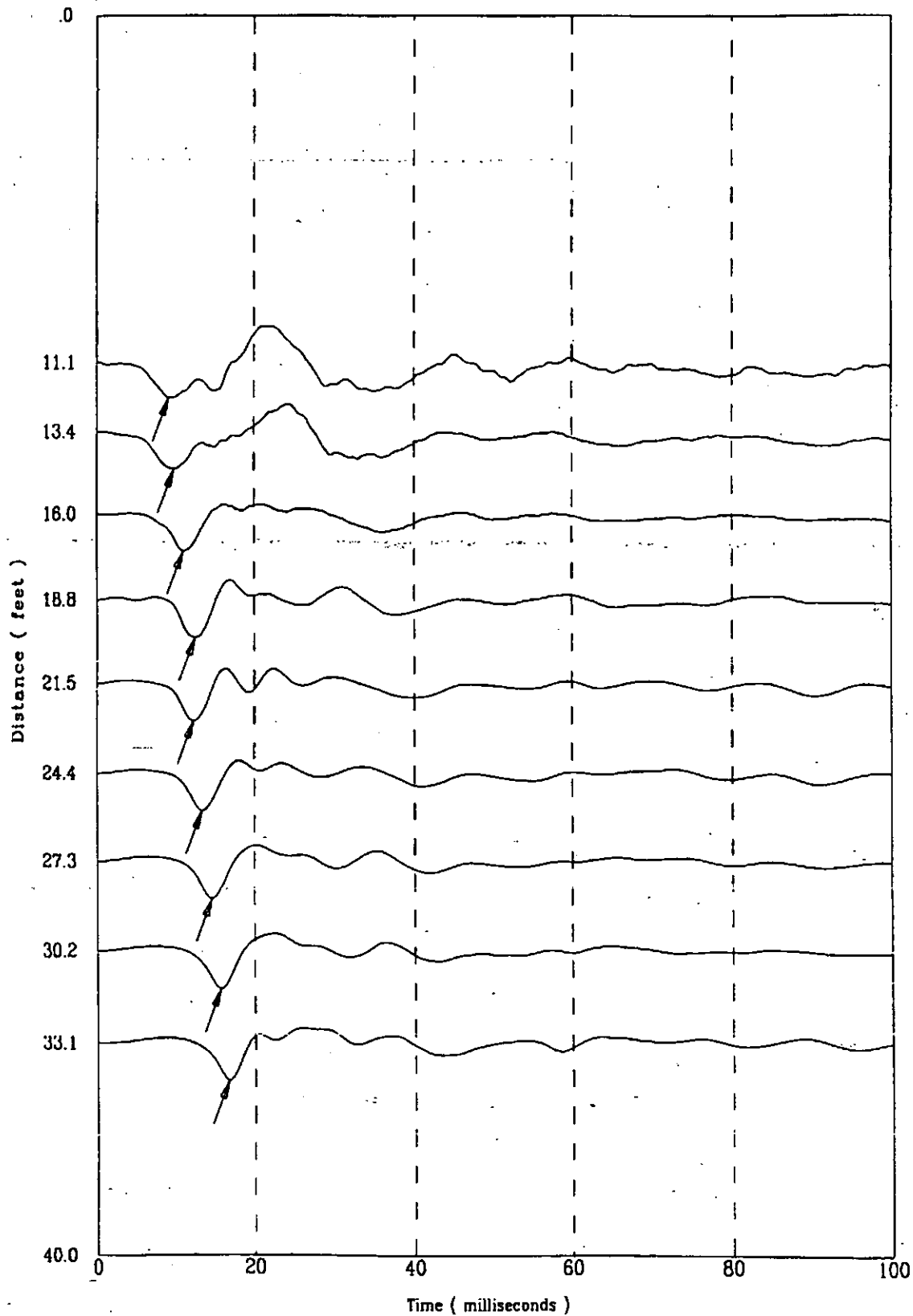


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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-177

P Wave  
03/27/98



1.00 327m801S

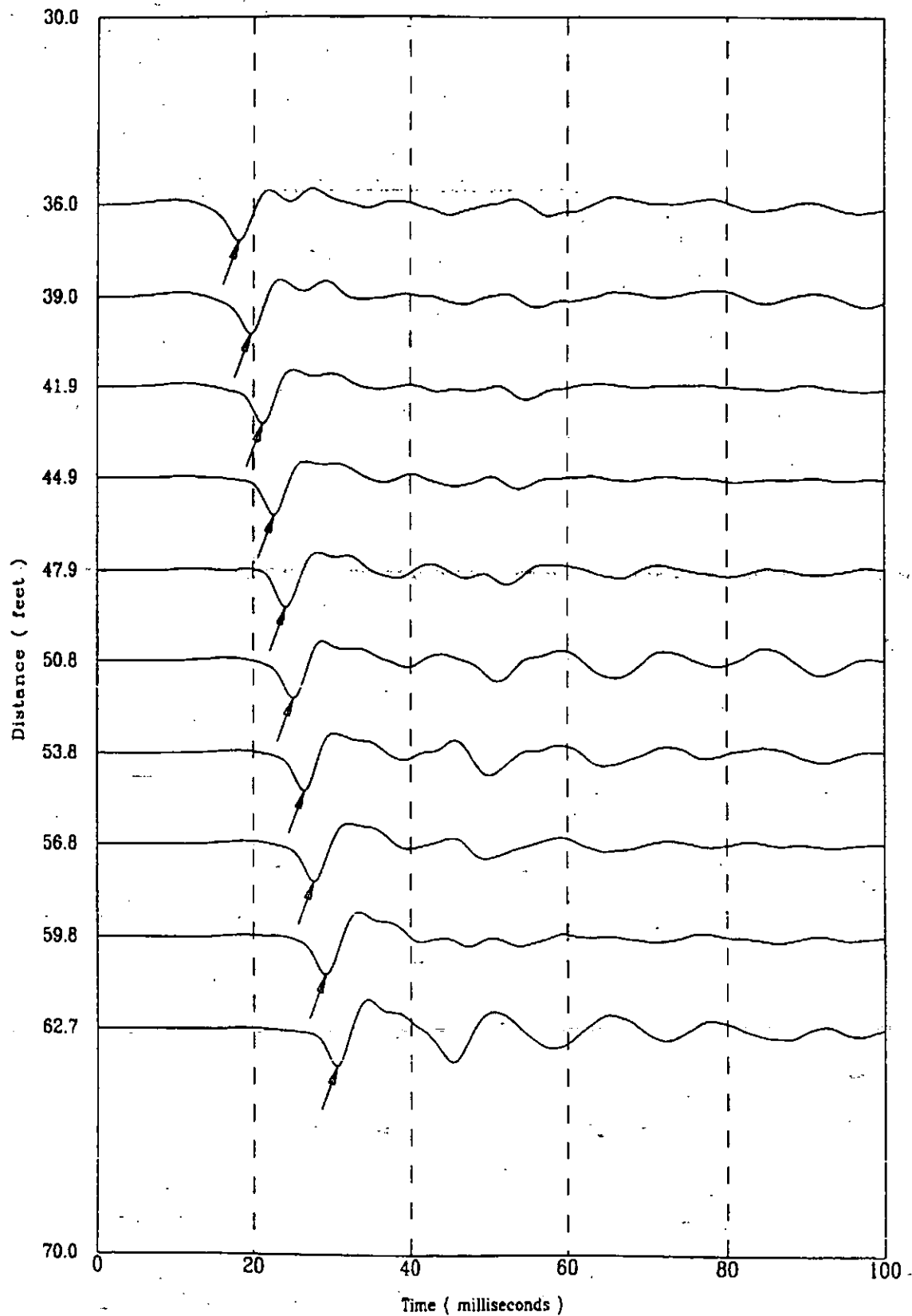
377 of 522



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-177

P Wave  
03/27/98



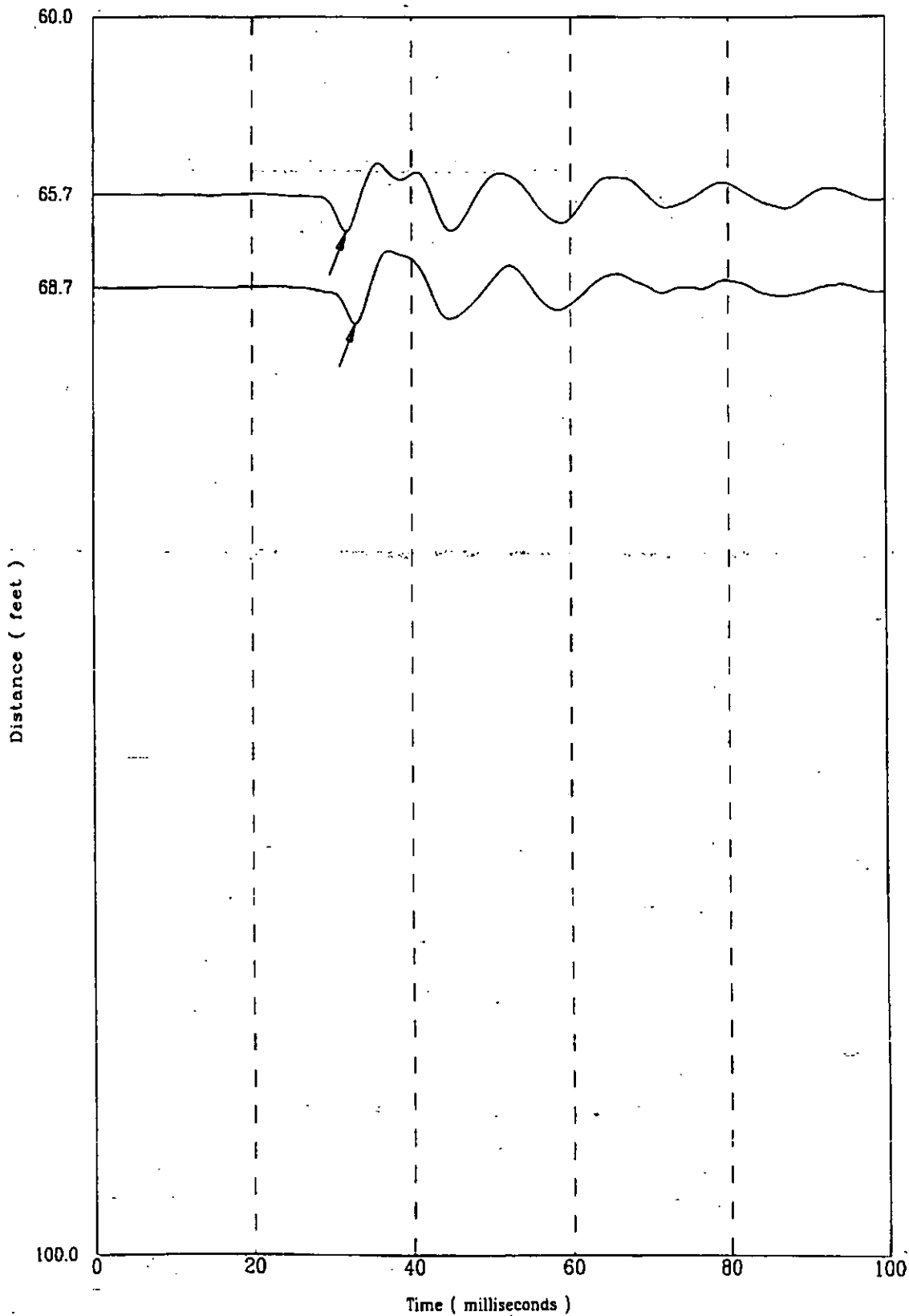
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378 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-177

P Wave  
03/27/98



J27m801S

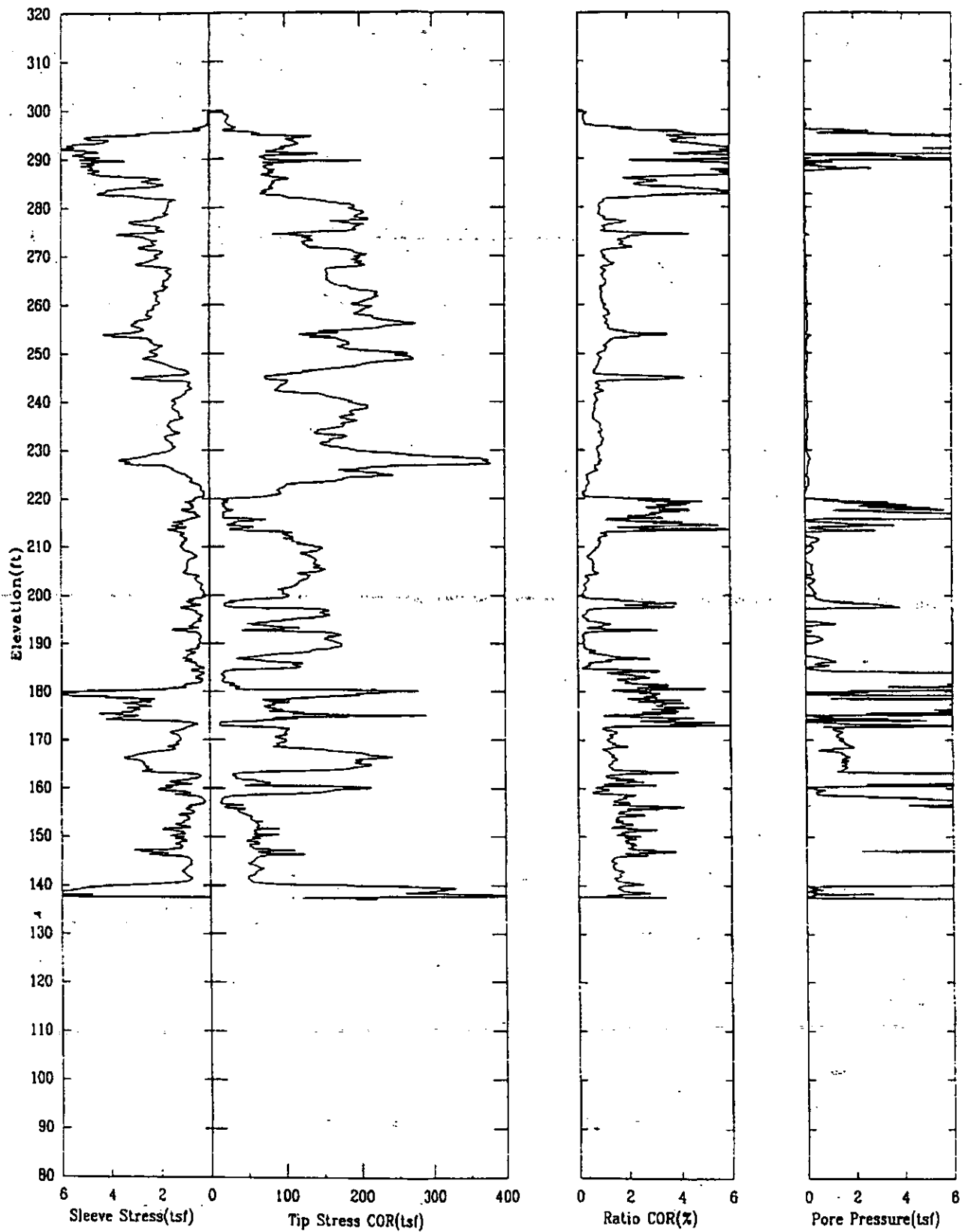
CPT-178

APPLIED RESEARCH ASSOCIATES, INC.

North 78640

East 55385

Elevation 305.6

K03TBT-F-00001  
R/O

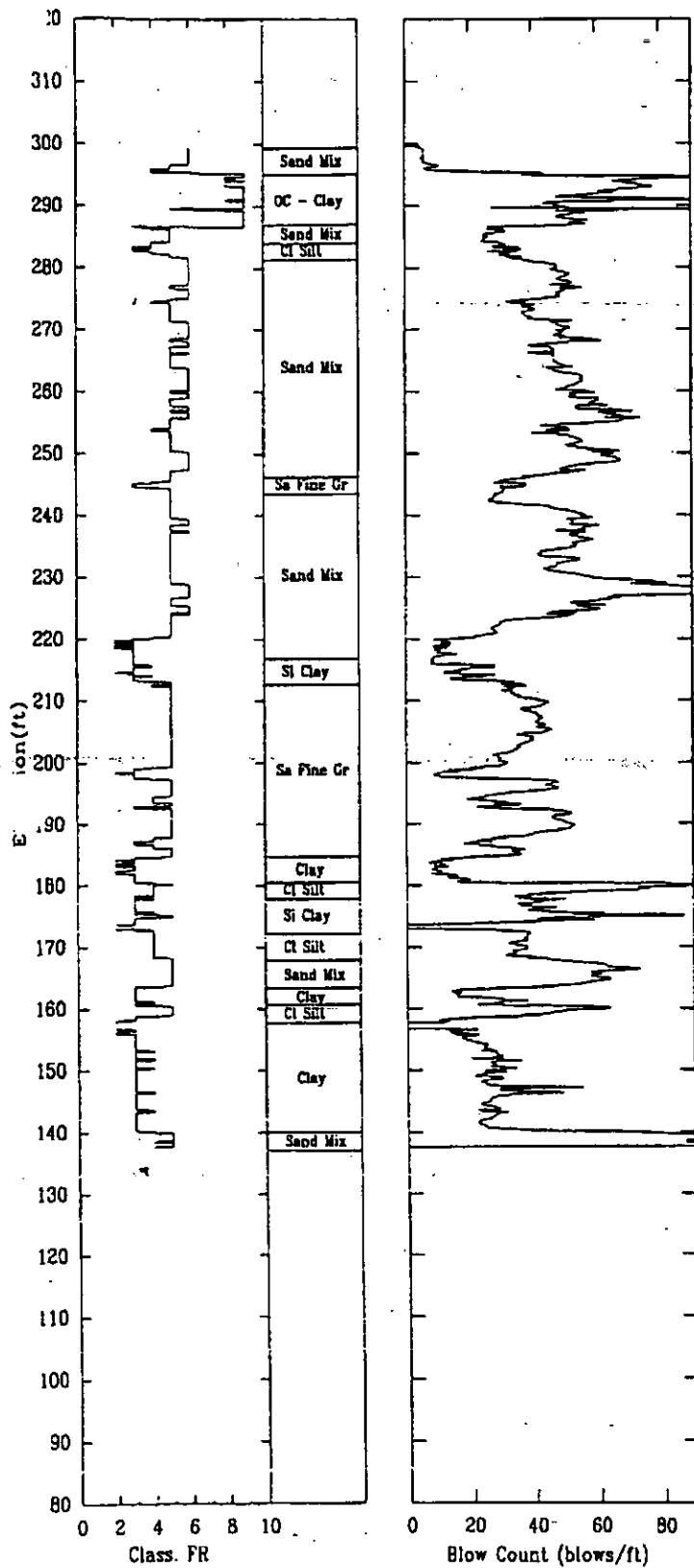
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APPLIED RESEARCH ASSOCIATES, INC.

North 78640

East 55385

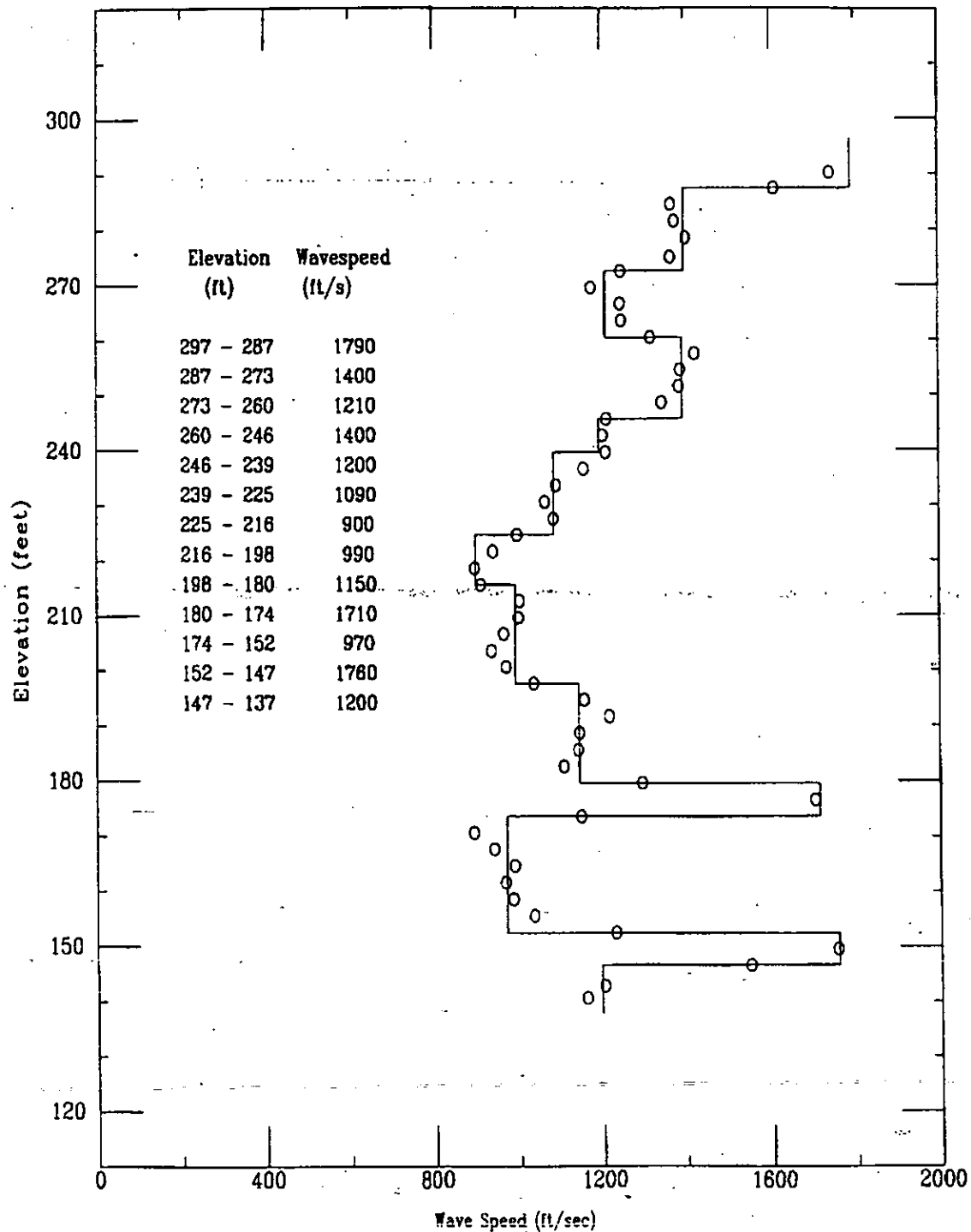
Elevation 305.6

163/19/98 RPT-F-00001  
R/O

CPT-178

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Speeds

03/19/98



File 419m801S

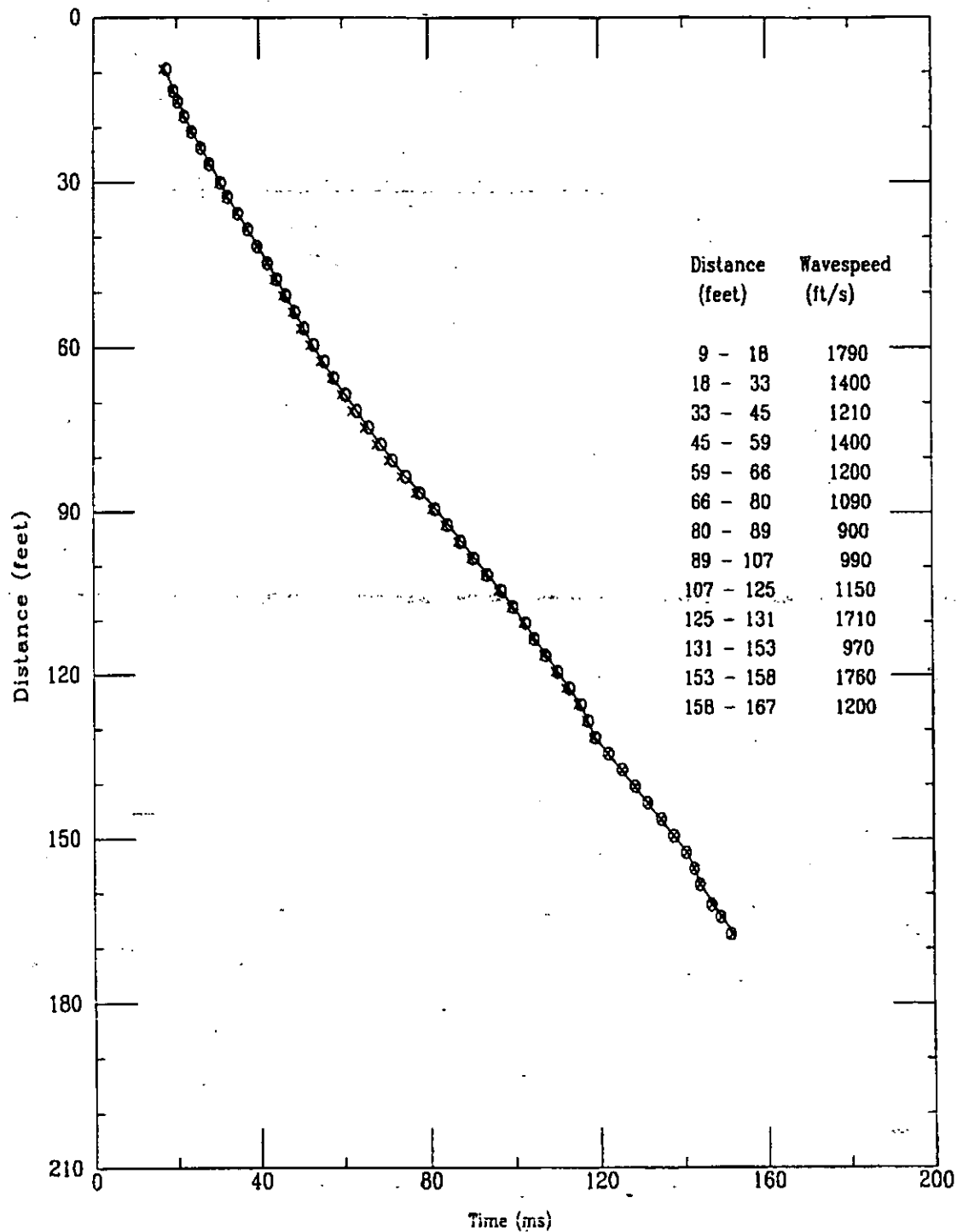
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R/O

CPT-178

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/19/98



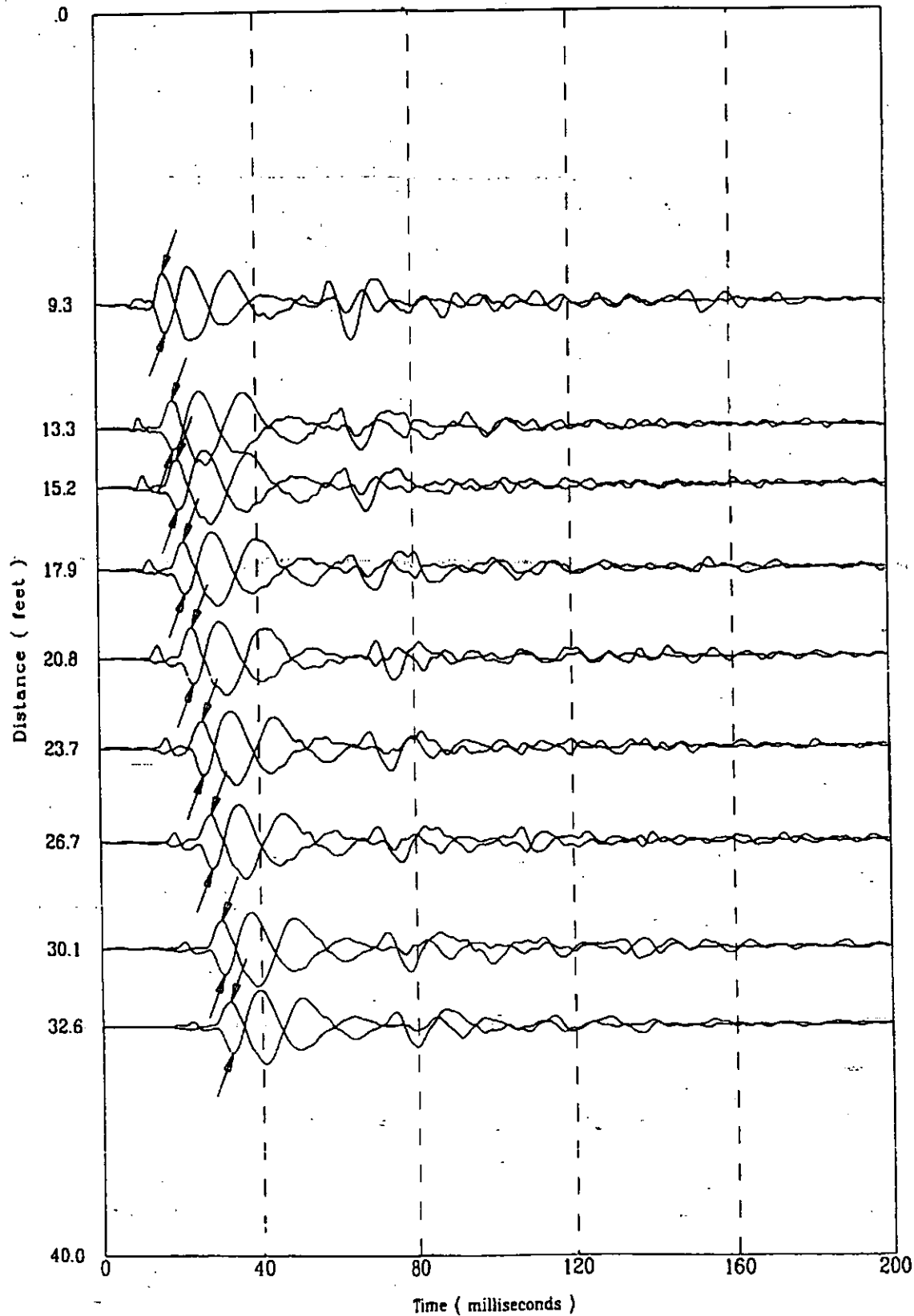
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383 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-178

S Wave  
03/19/98



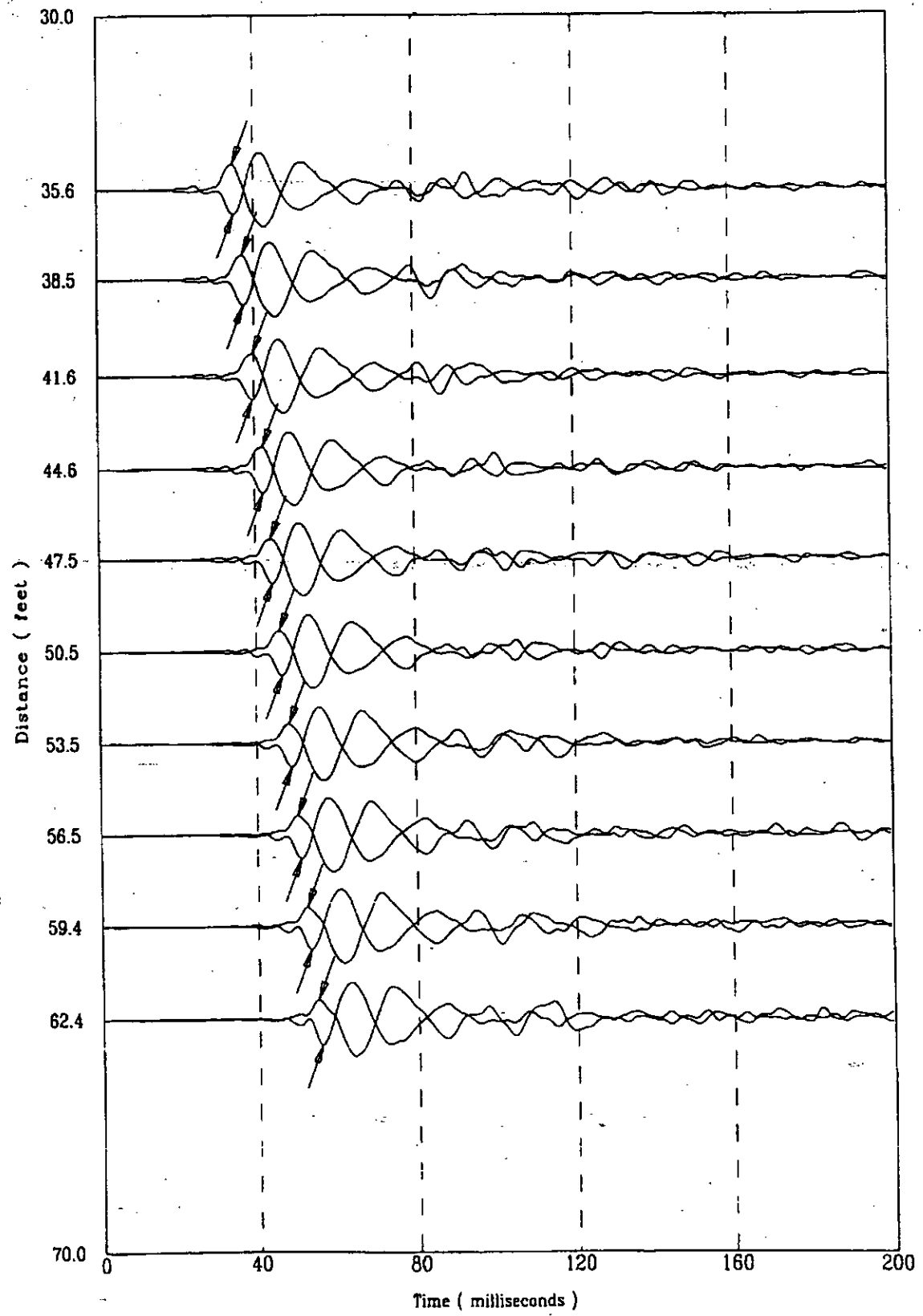
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384 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-178

S Wave  
03/19/98



19m801S

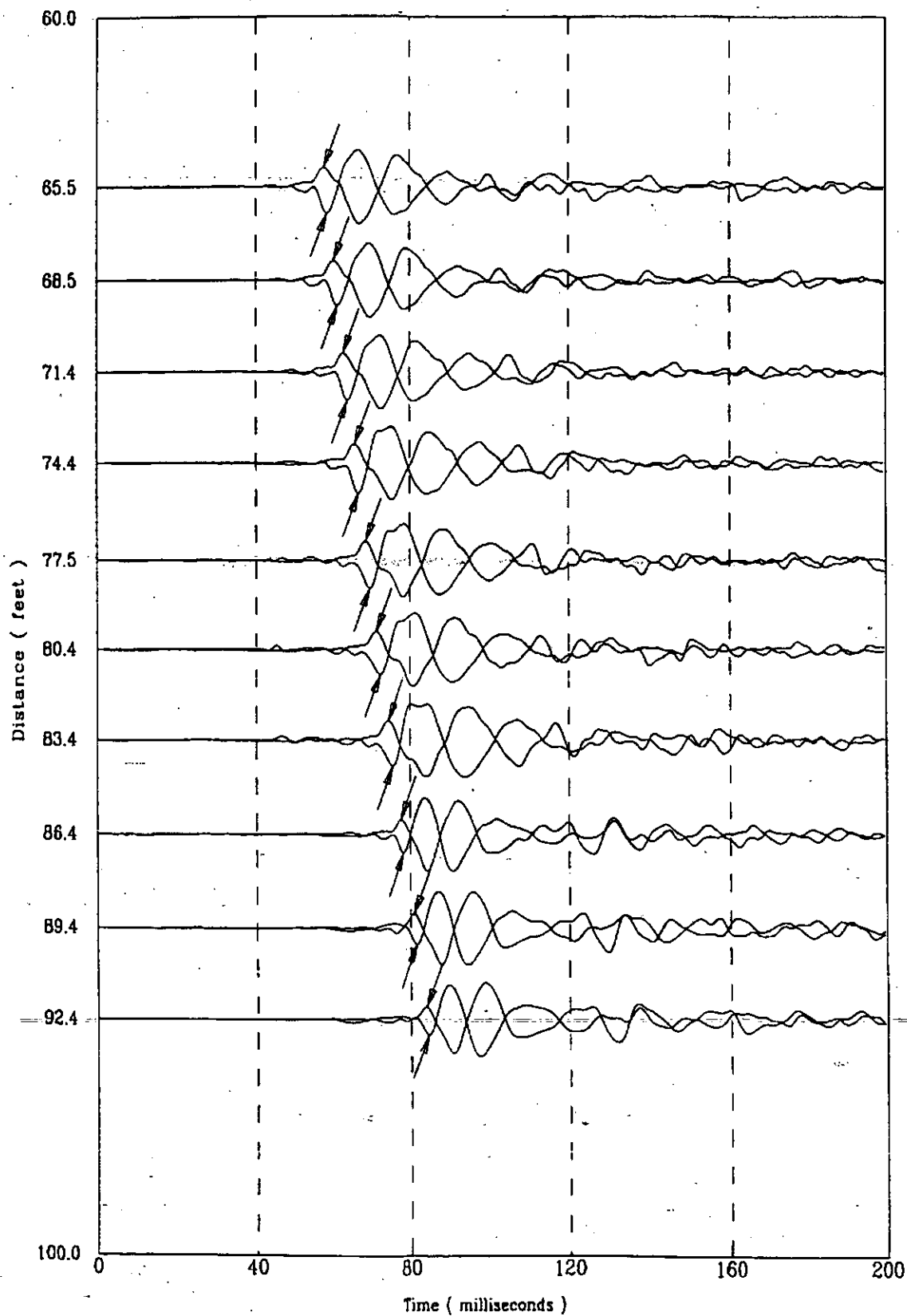
385 of 522



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-178

S Wave  
03/19/98



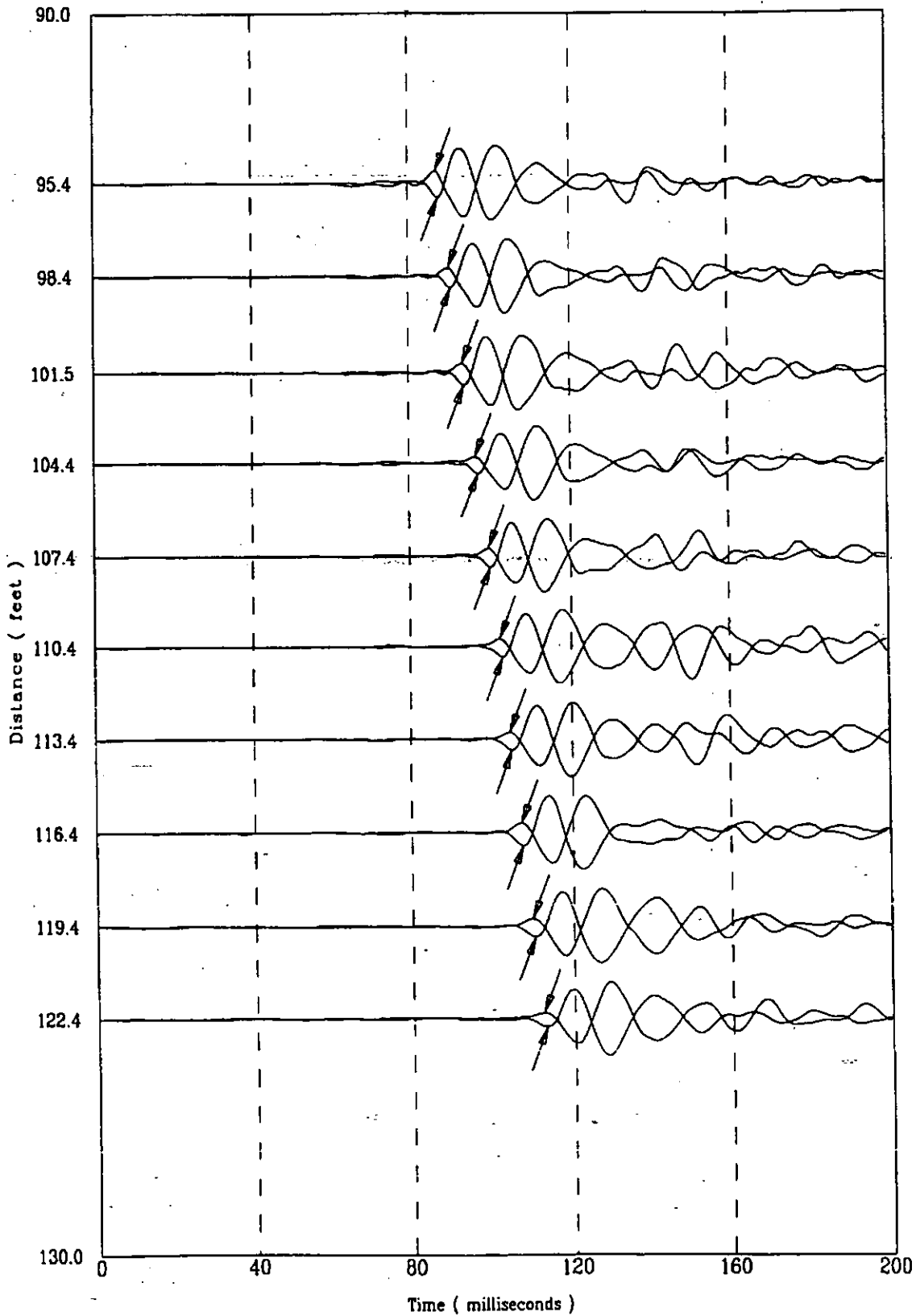
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386 of 522

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-178

S Wave  
03/19/98



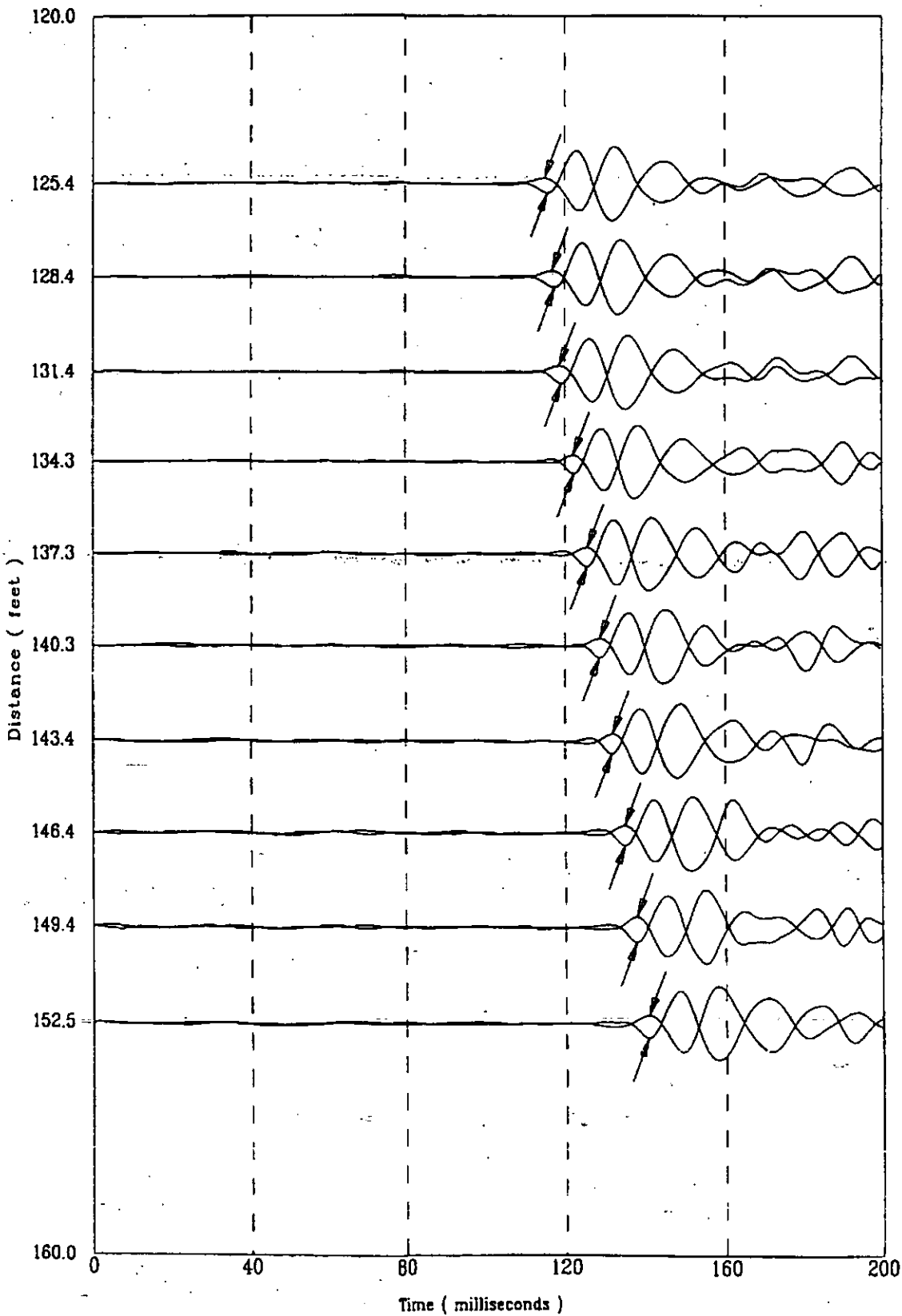
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387 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-178

S Wave  
03/19/98



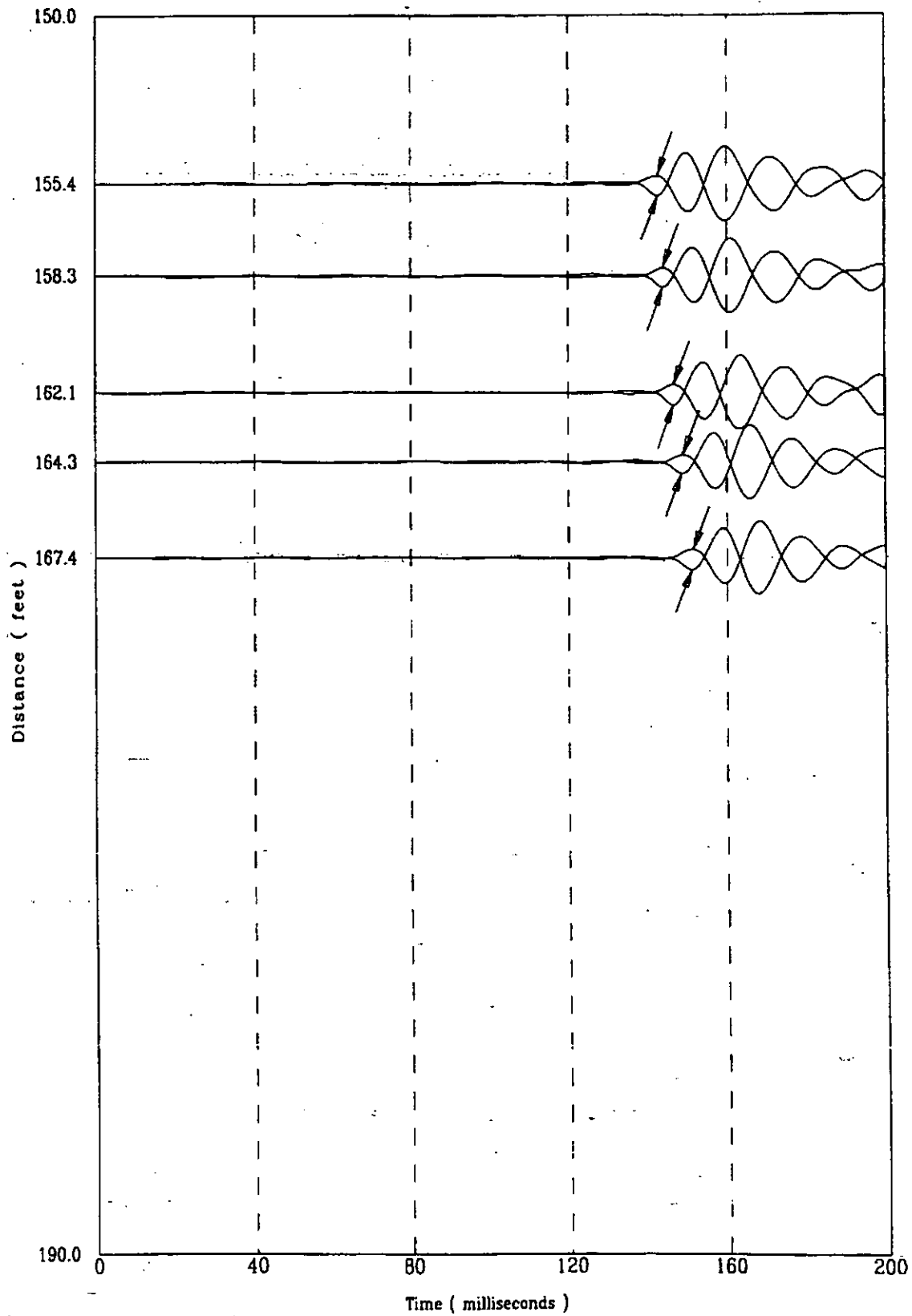
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388 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-178

S Wave  
03/19/98



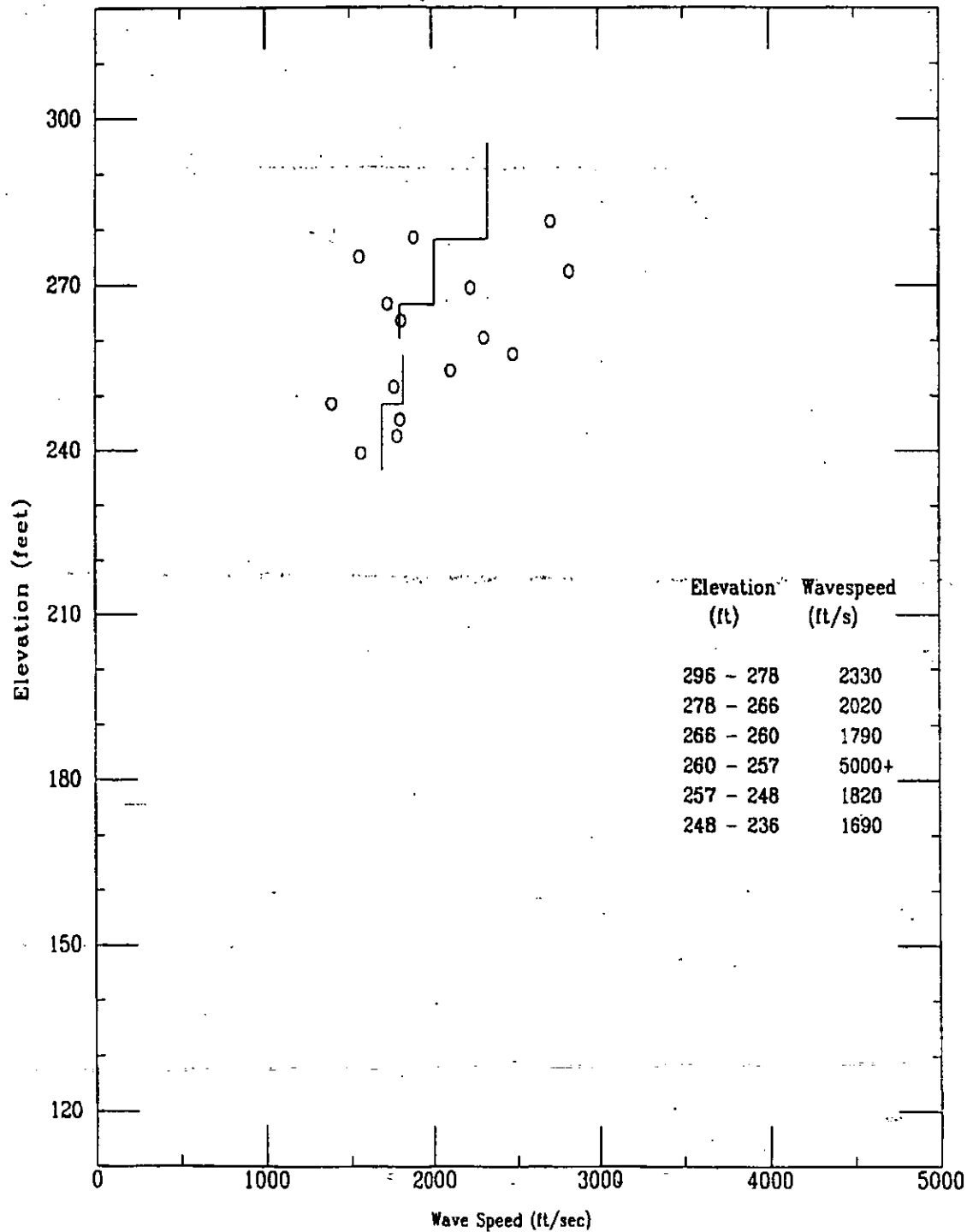
419m801S

389 of 522

CPT-178

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/19/98

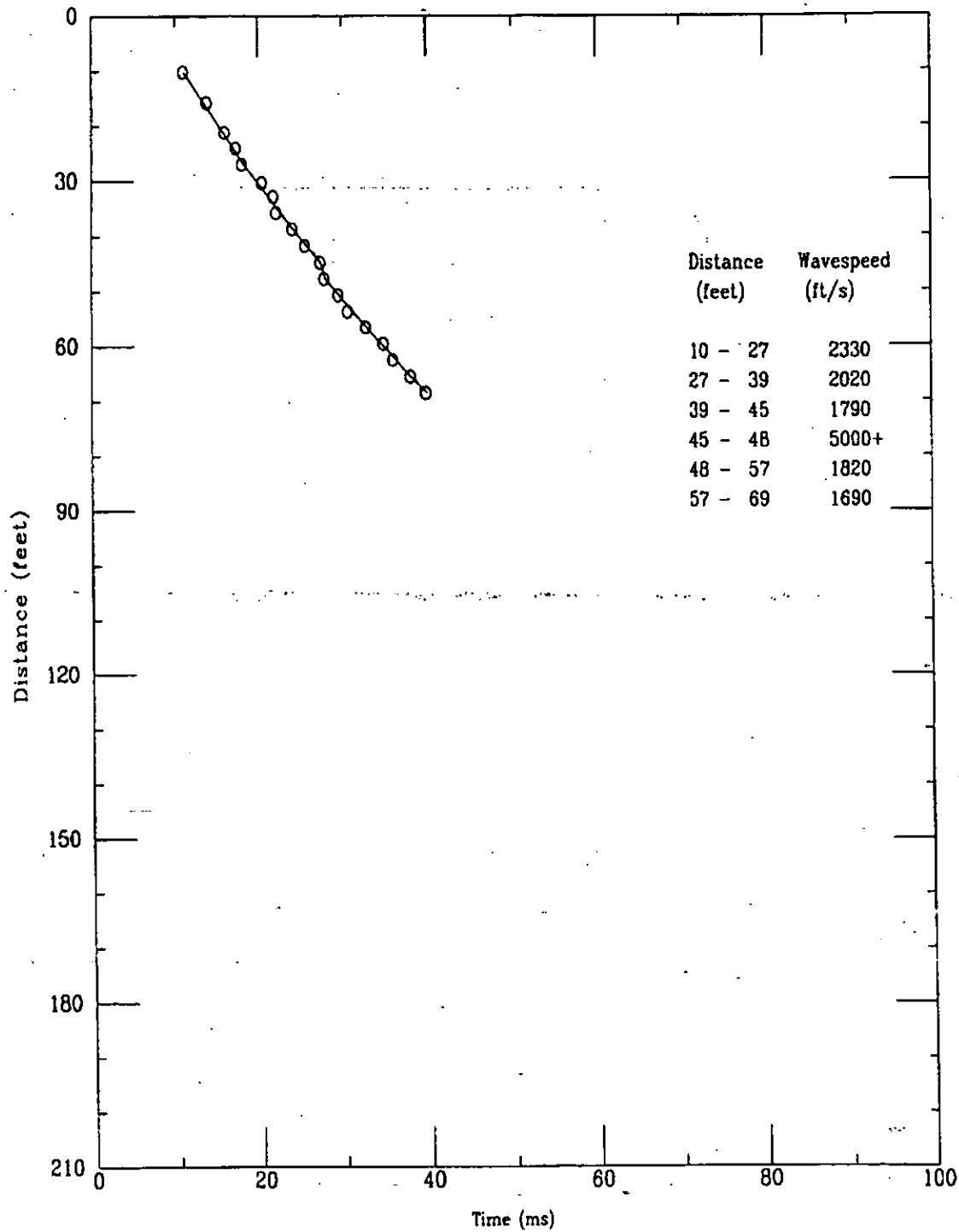


File 419m8015

CPT-178

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/19/98

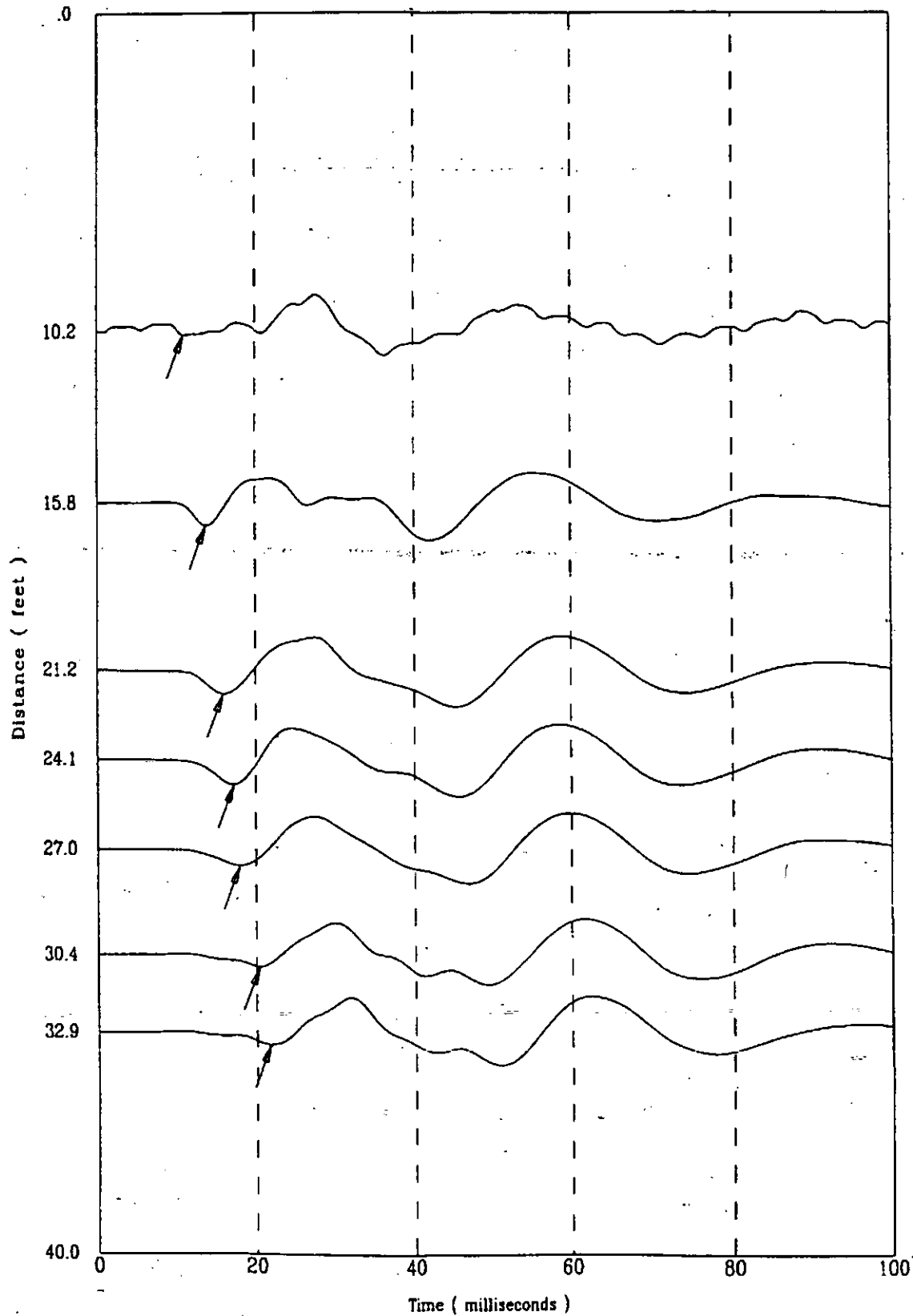


File 419m801S

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-178

P Wave  
03/19/98



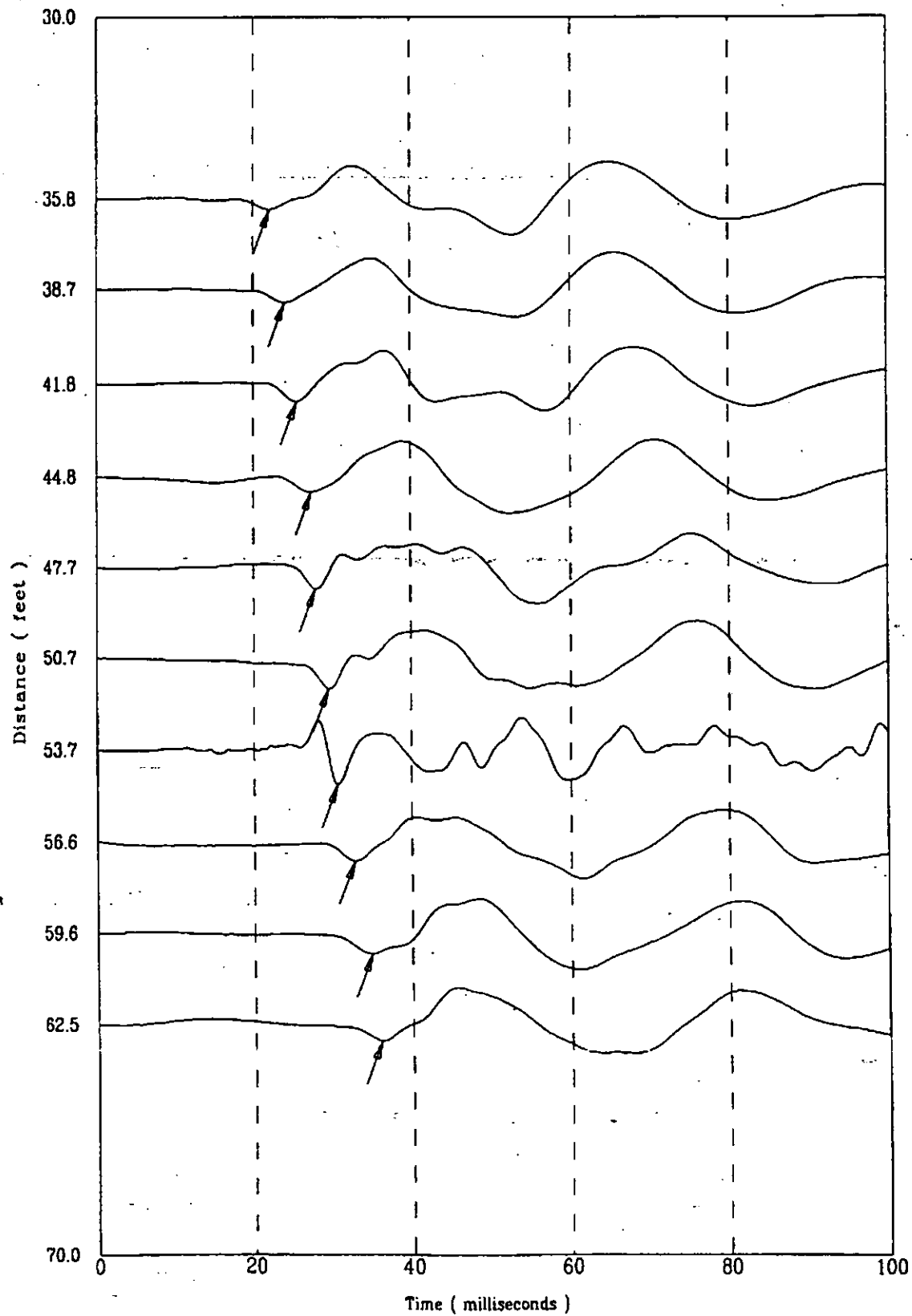
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-178

P Wave  
03/19/98





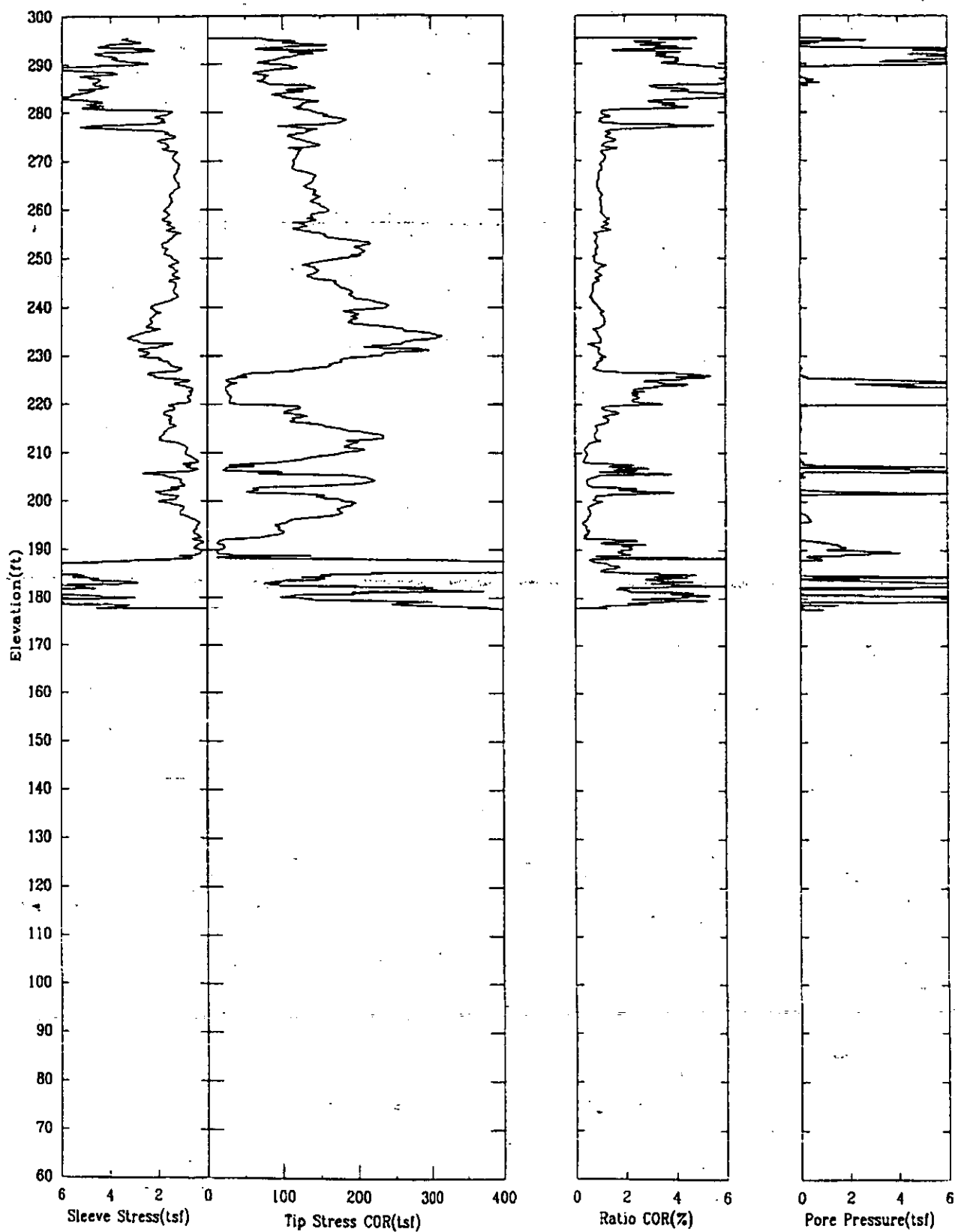
CPT-179

APPLIED RESEARCH ASSOCIATES, INC.

North 78640

East 55518

Elevation 301.4

K-TRT-F-00001  
03/24/98 / 0

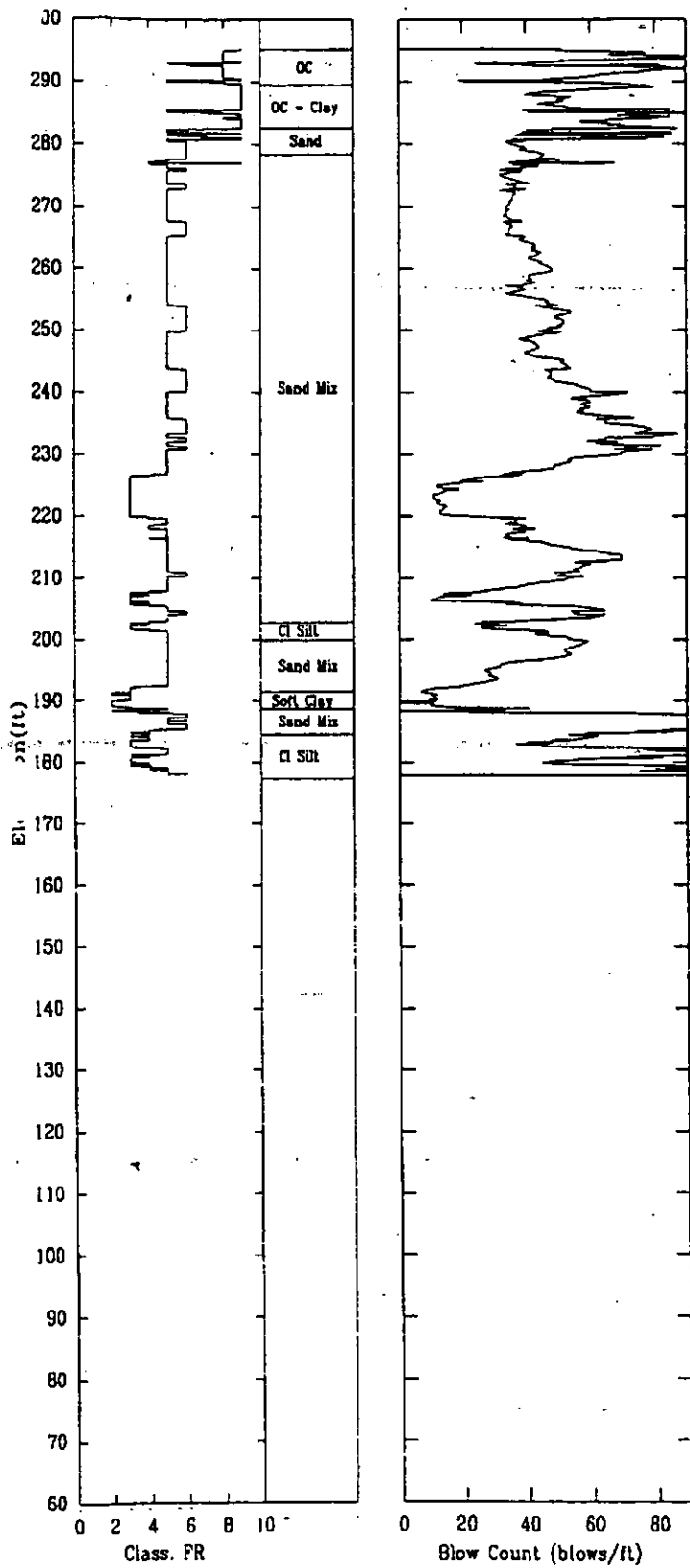
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APPLIED RESEARCH ASSOCIATES, INC.

North 78640

East 55518

Elevation 301.4

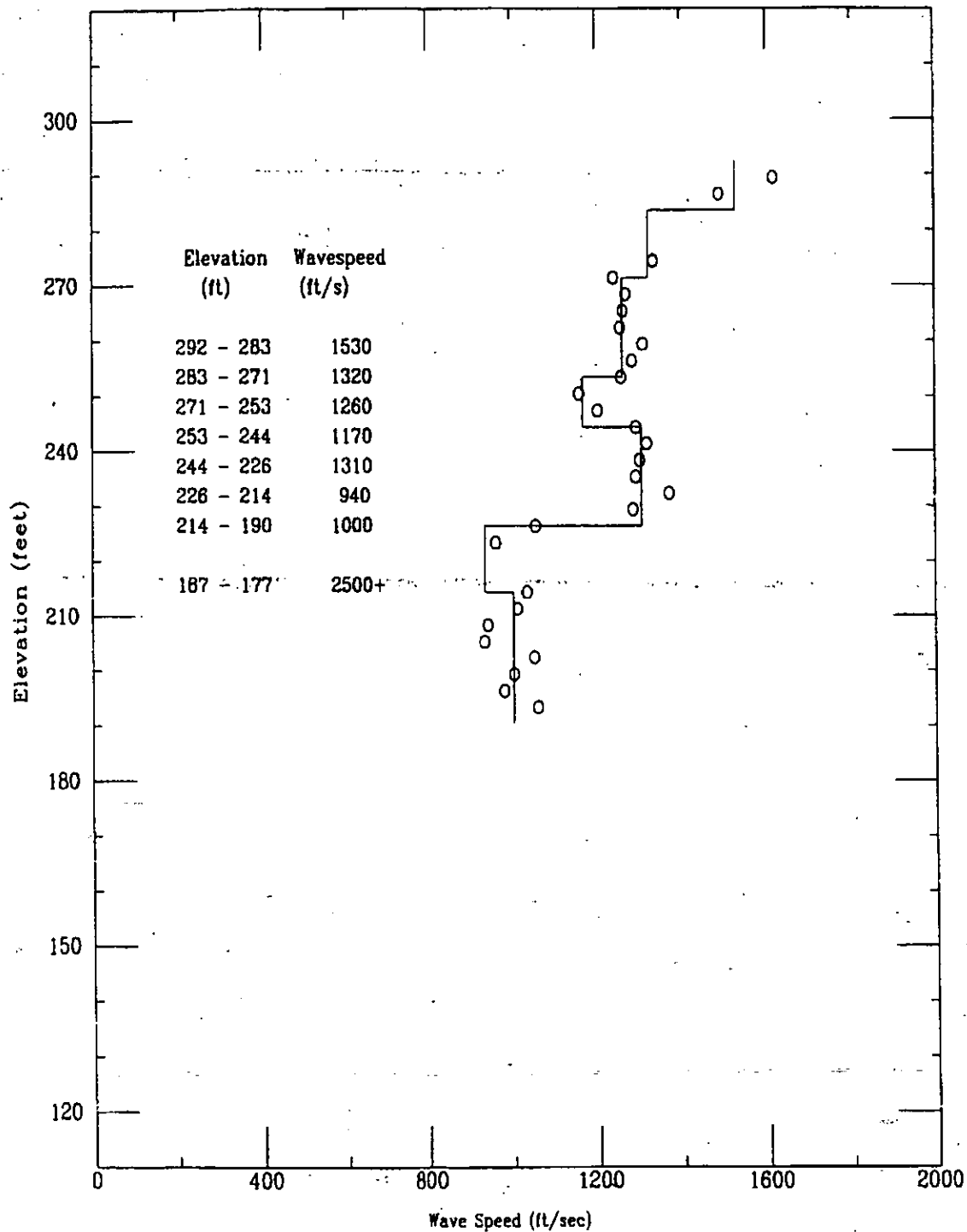
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03/24/98 / 0

CPT-179

APPLIED RESEARCH ASSOCIATES, INC.

03/24/98

Shear Wave Speeds



File 324m804S

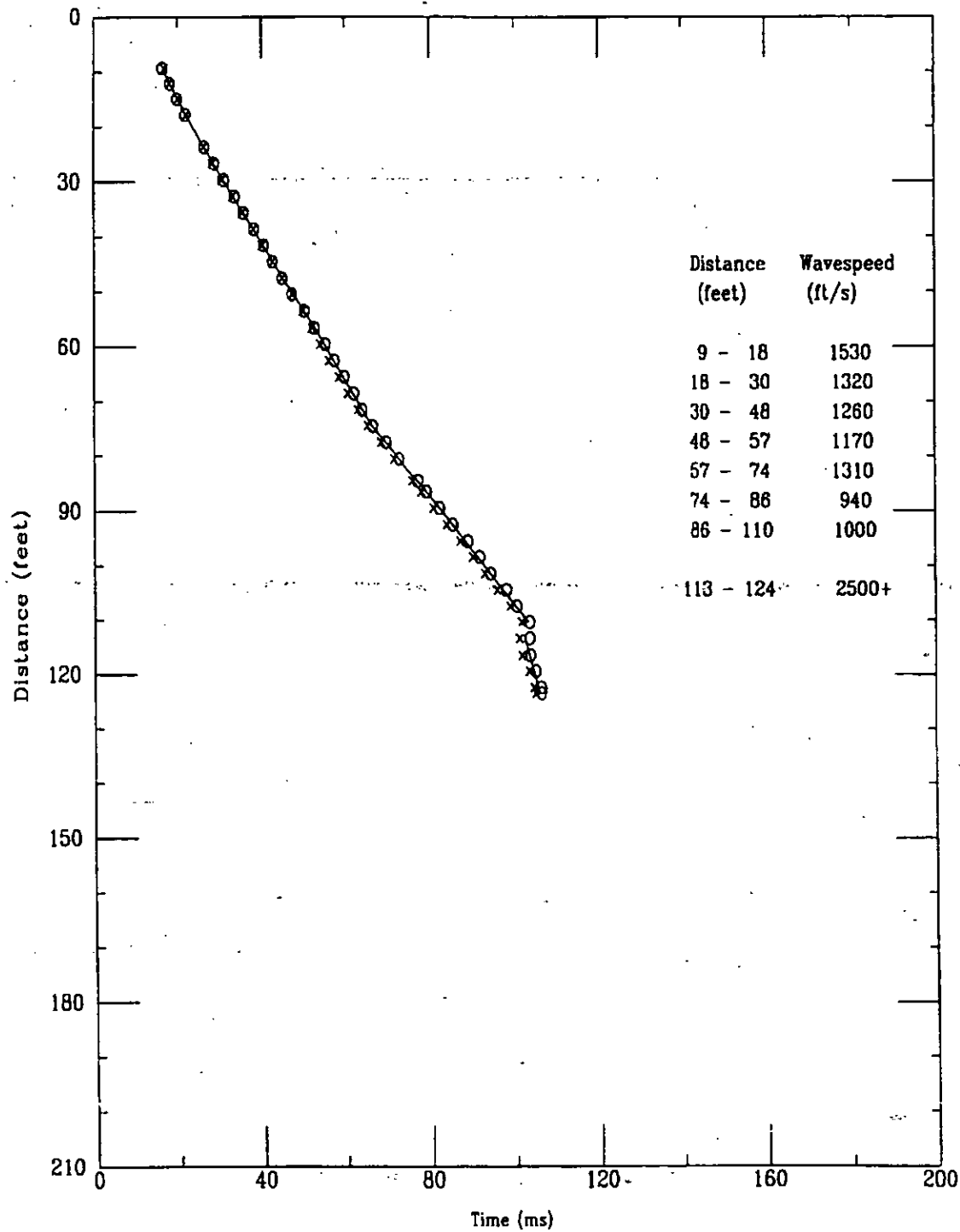
396 of 522

CPT-179

APPLIED RESEARCH ASSOCIATES, INC.

03/24/98

Shear Wave Time of Peak

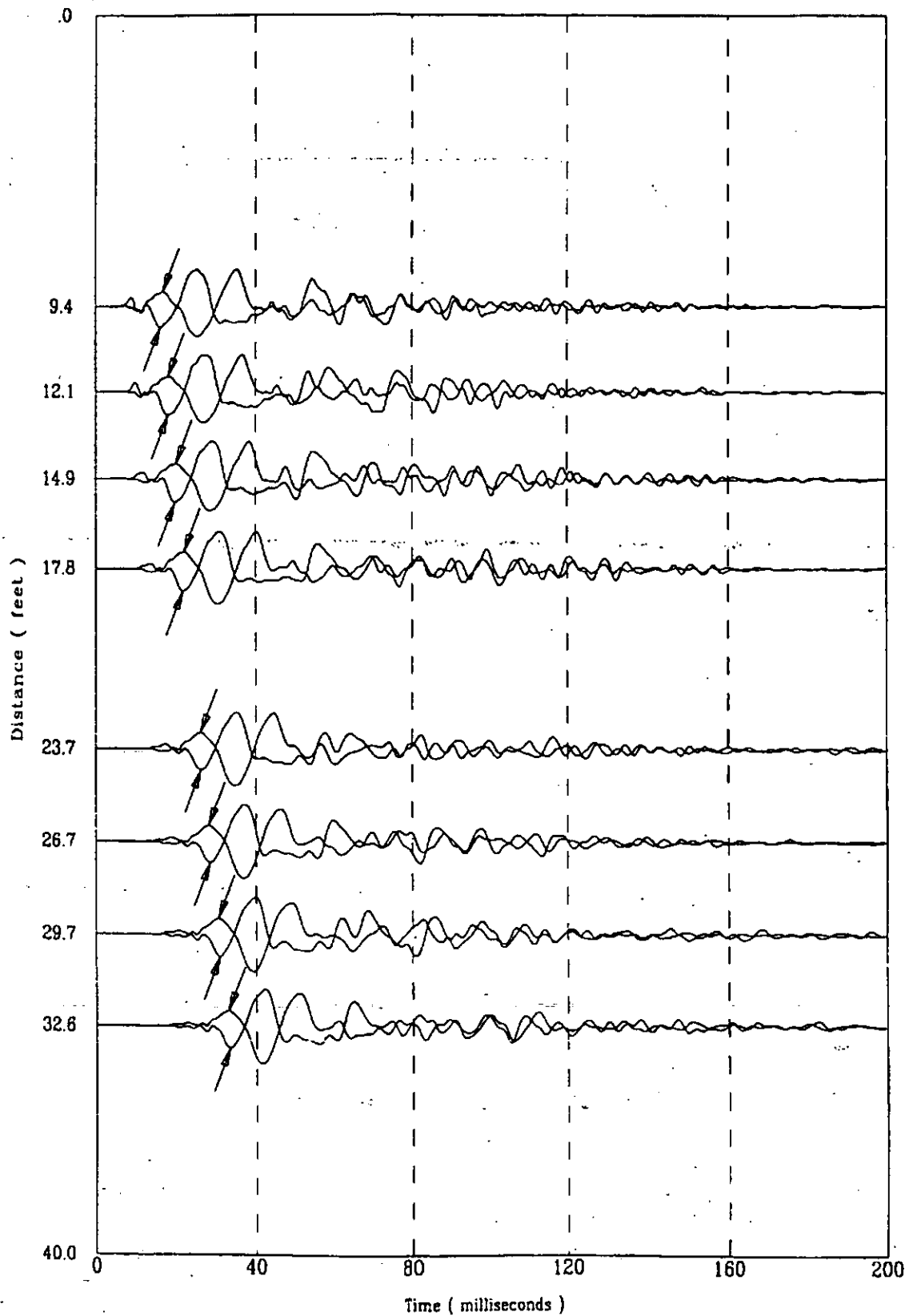


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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-179

S Wave  
03/24/98



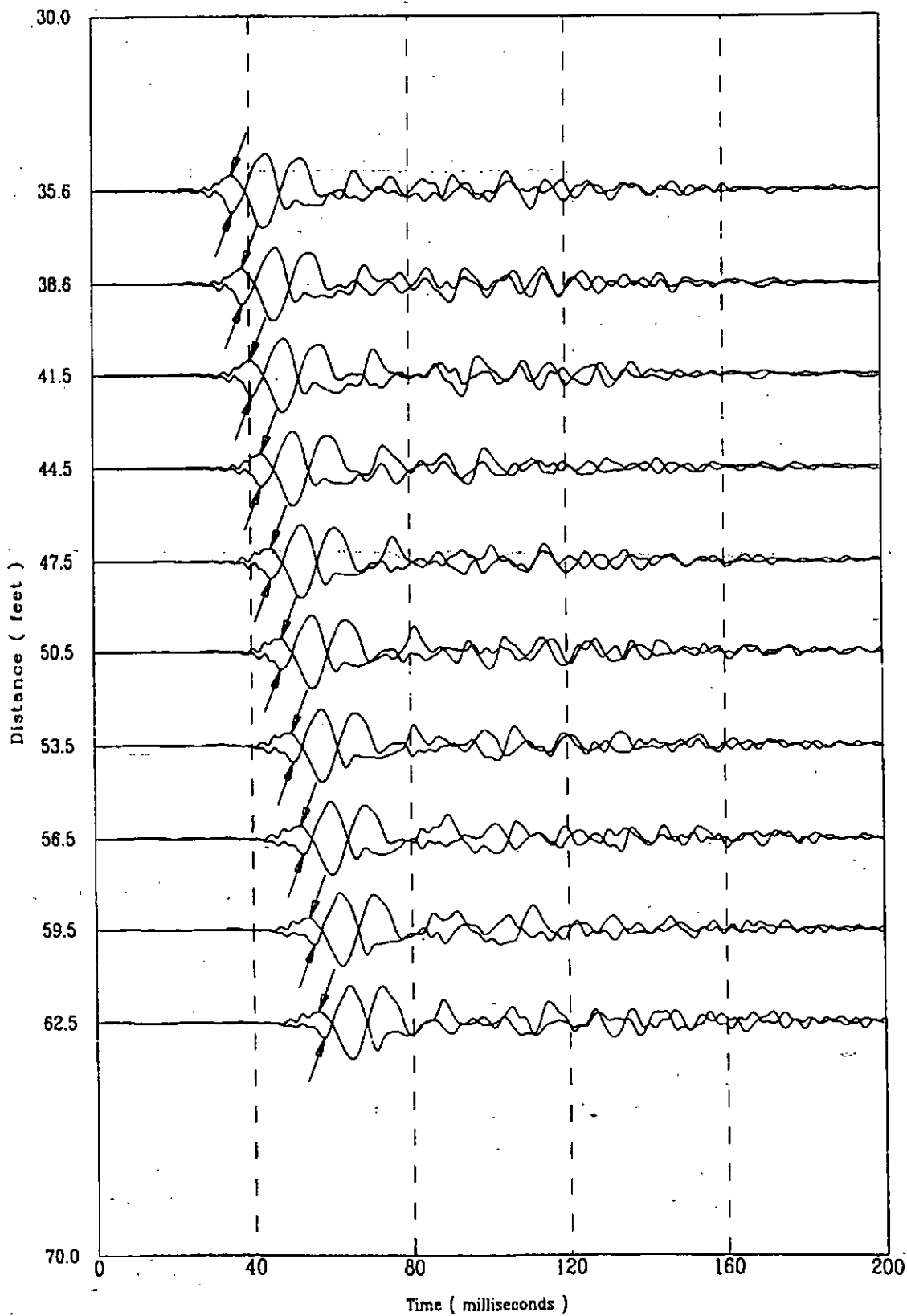
File 324m804S

398 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-179

S Wave  
03/24/98



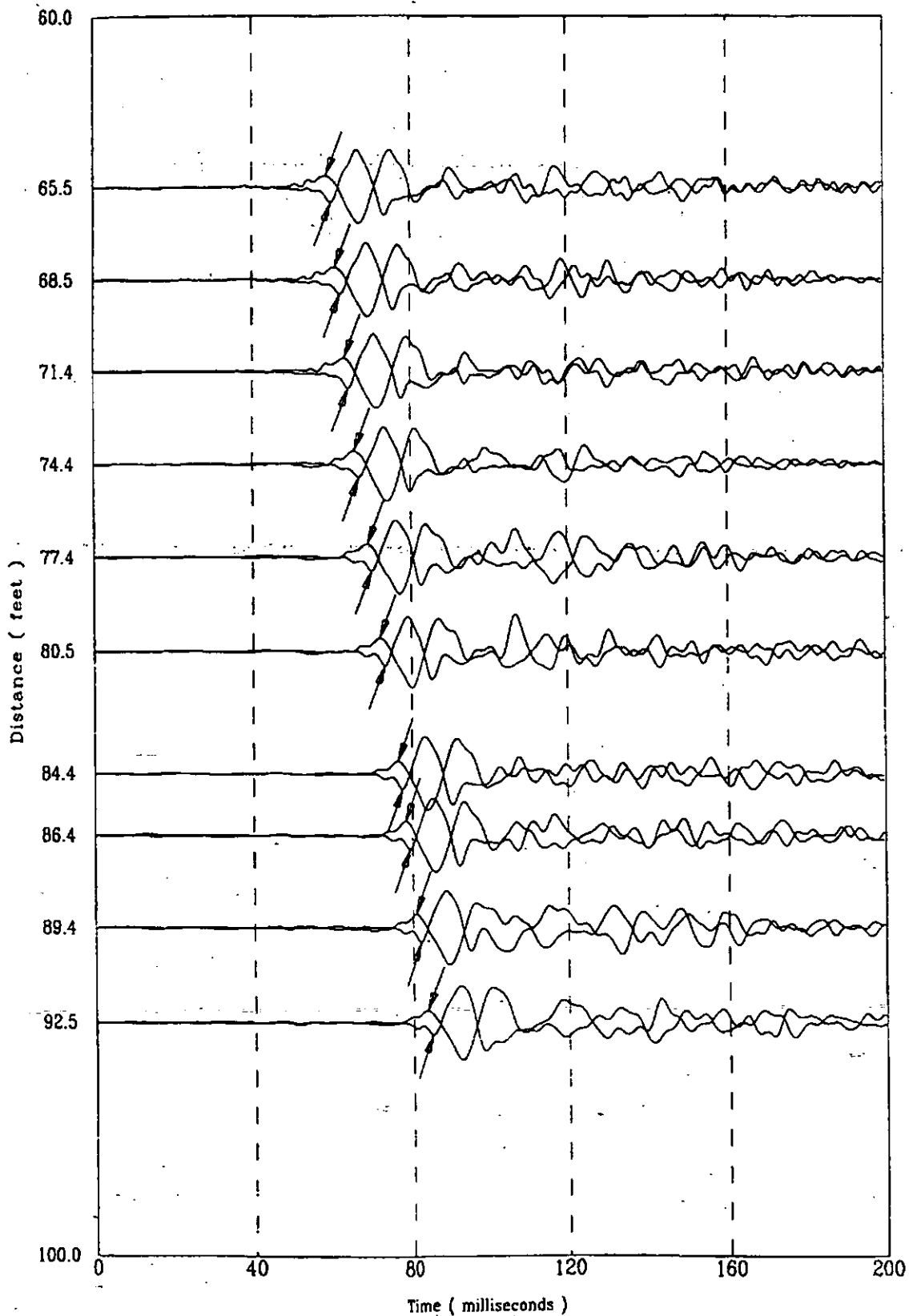
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399 of 522

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-179

S Wave  
03/24/98



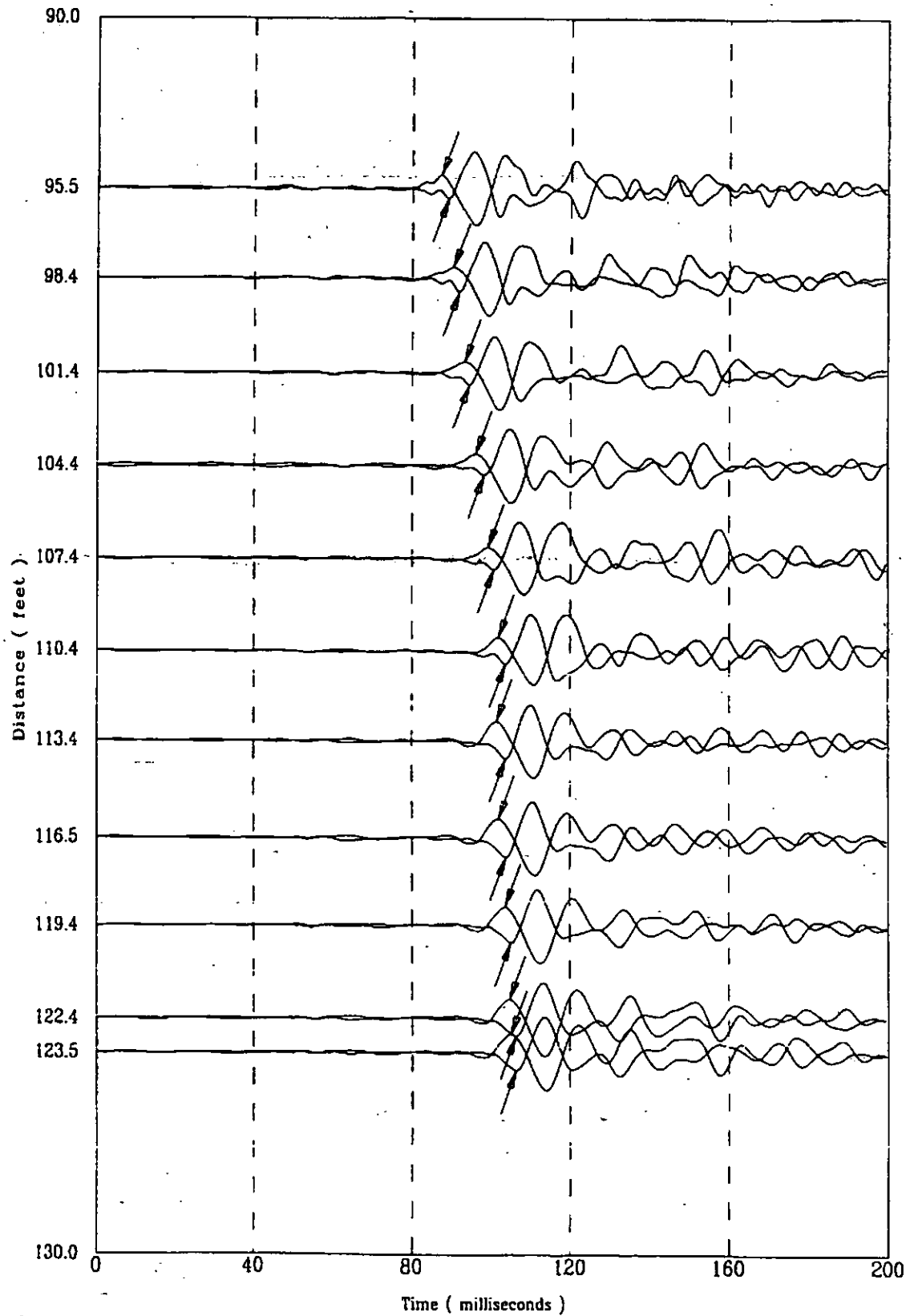
File 324m8045

400 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-179

S Wave  
03/24/98



Am804S

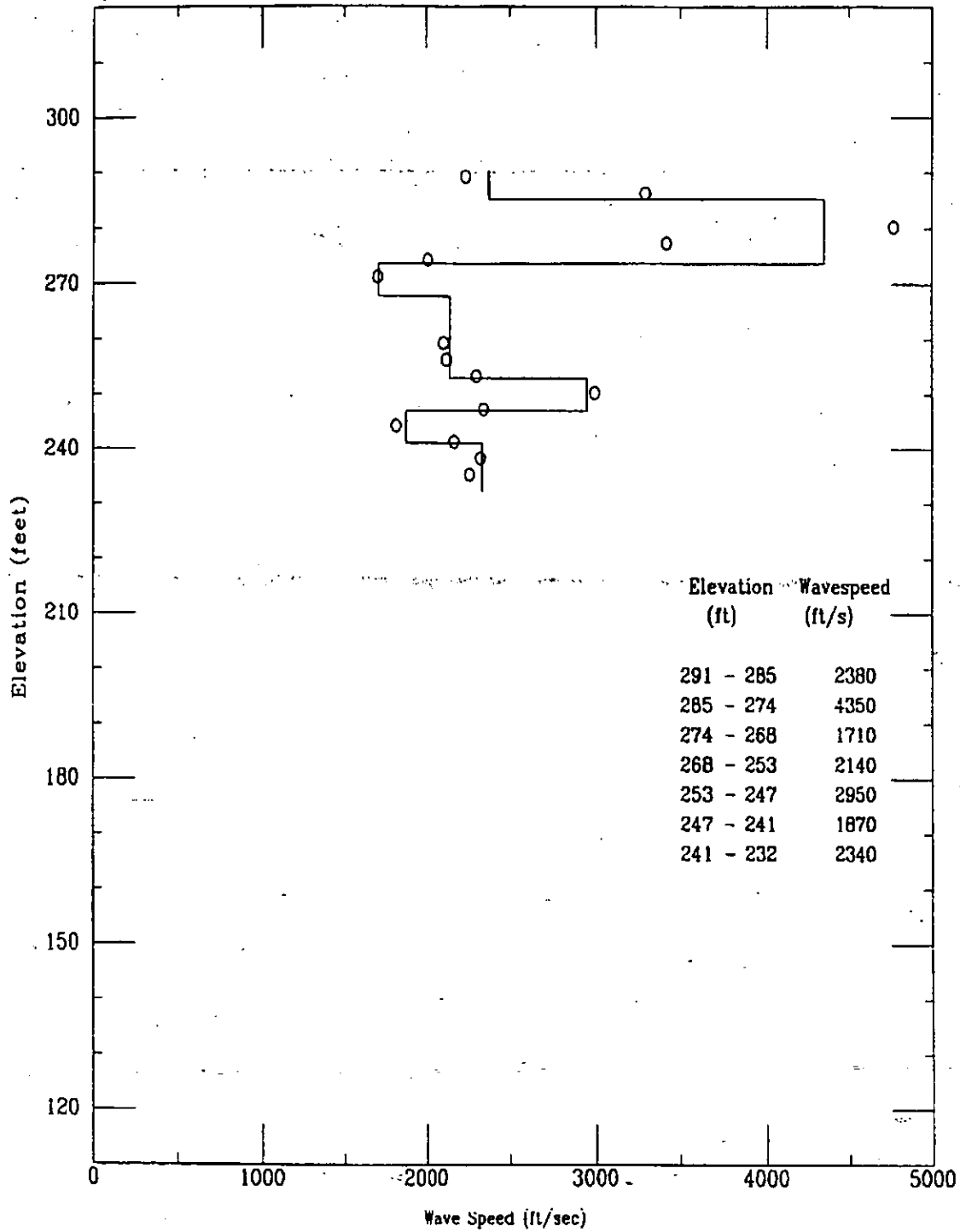
401 of 522



CPT-179

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/24/98

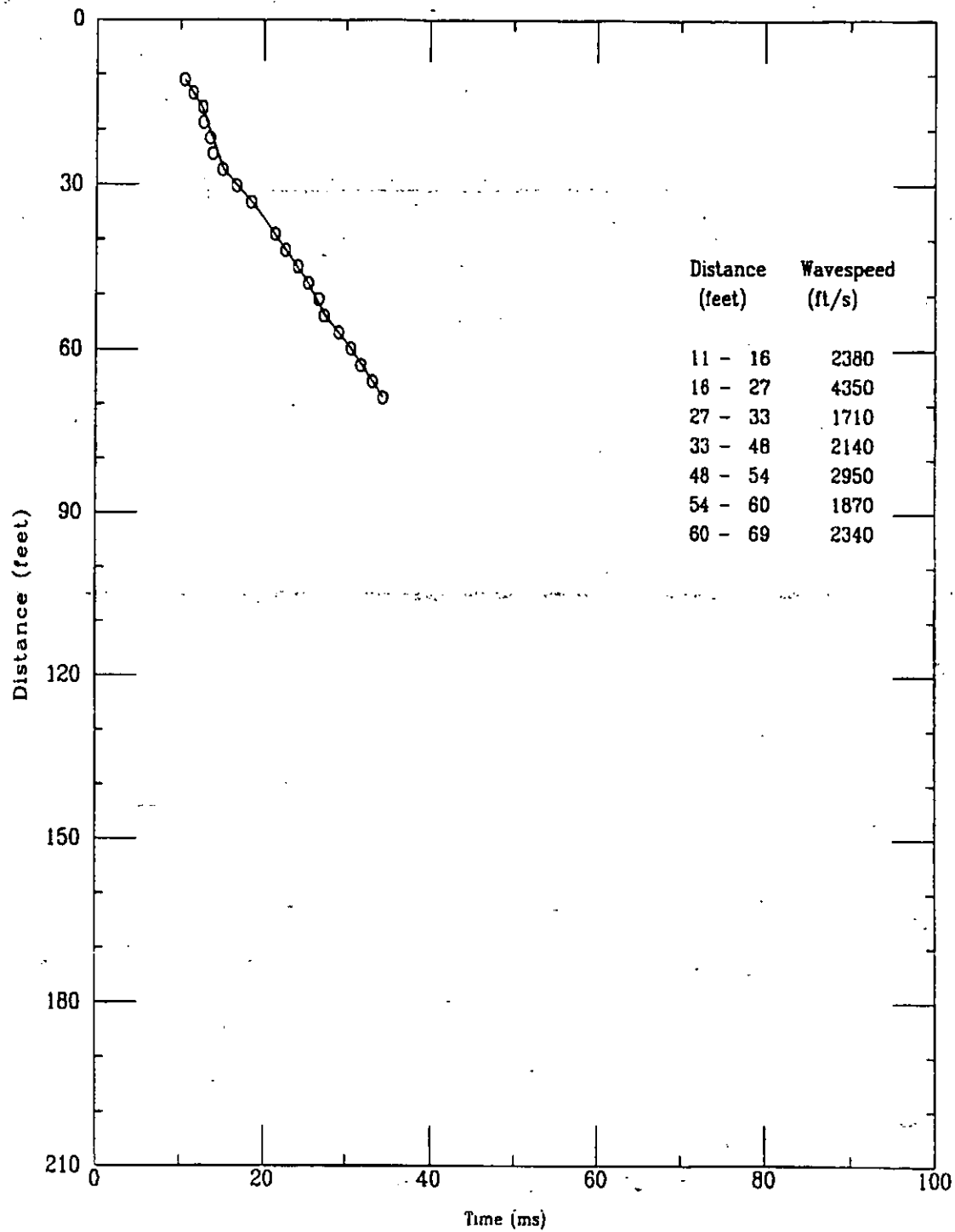


File 324m804S

CPT-179

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/24/98

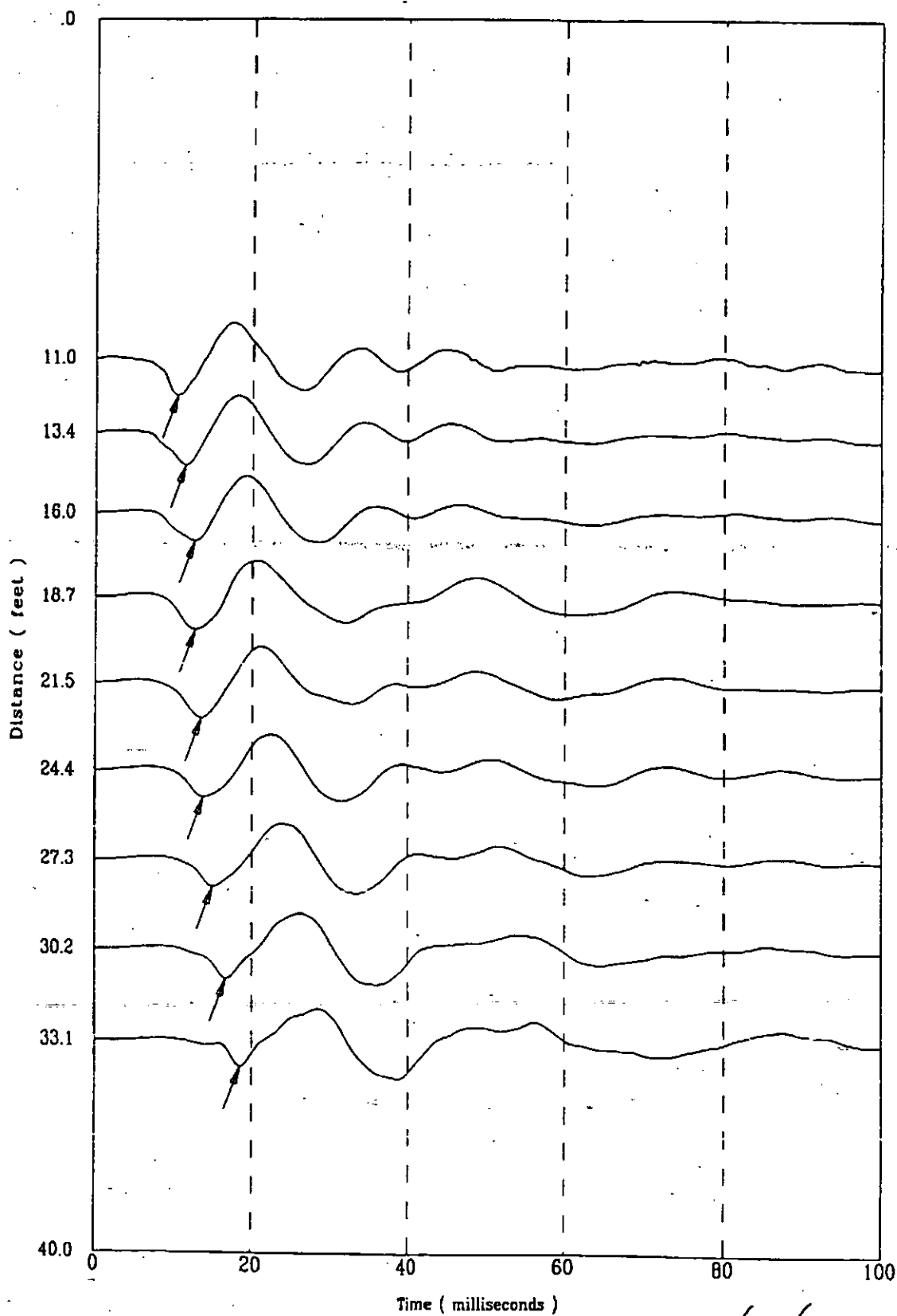


File 324m804S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-179

P Wave  
03/24/98



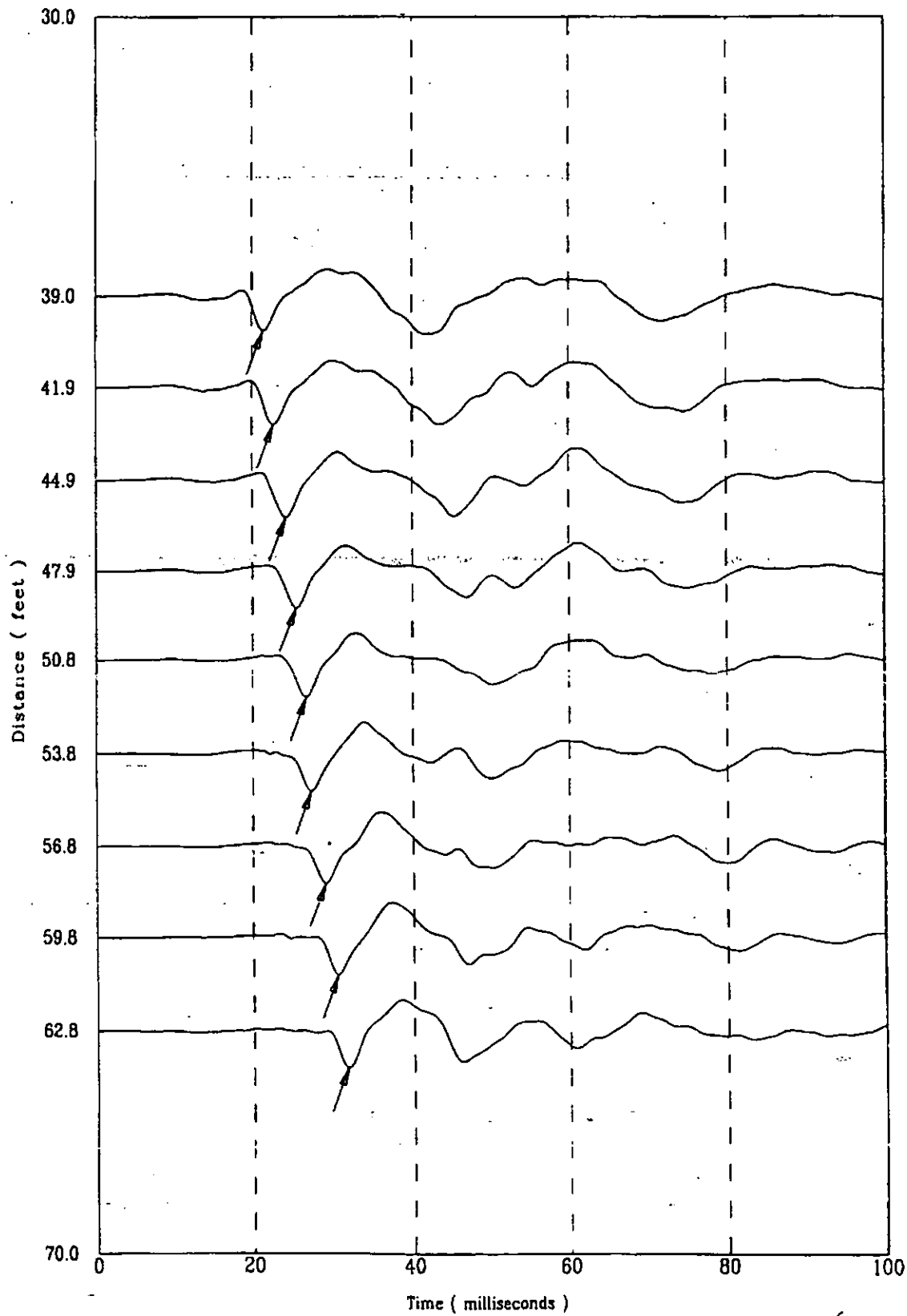
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404 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-179

P Wave  
03/24/98



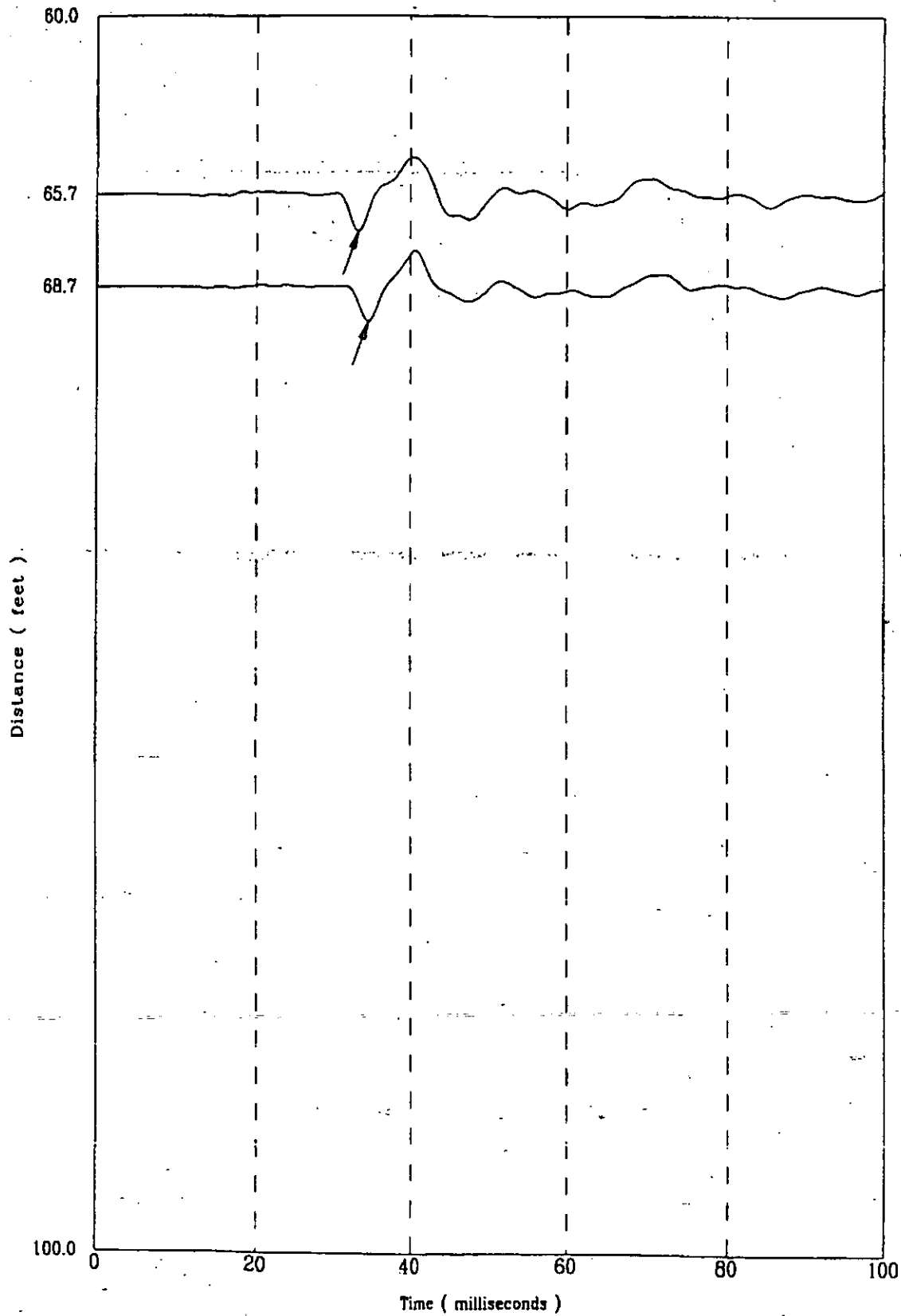
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405 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-179

P Wave  
03/24/98



File 324m804S

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CPT-180

APPLIED RESEARCH ASSOCIATES, INC.

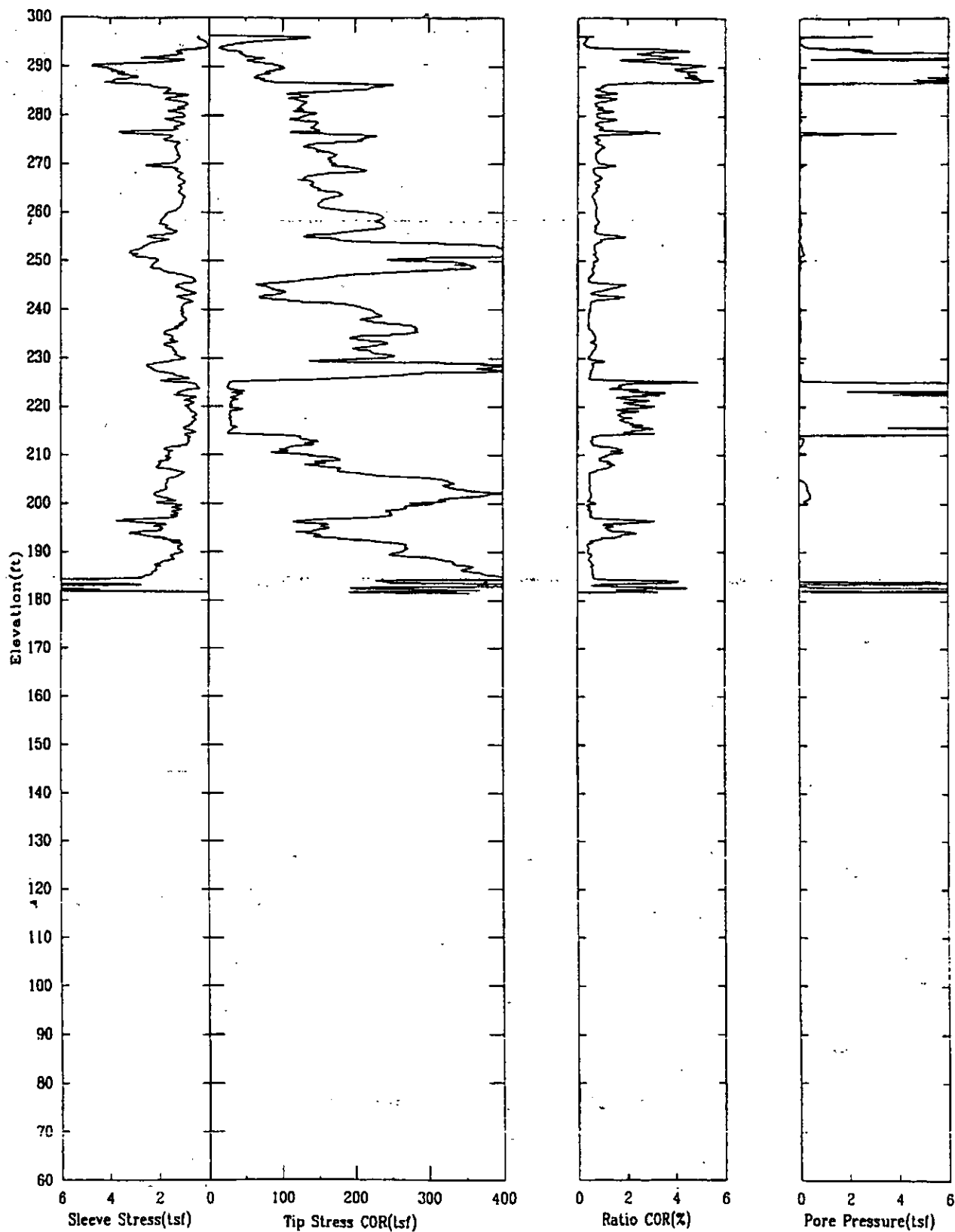
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03/26/98/0

North 78640

East 55650

Elevation 302.3



CPT-180

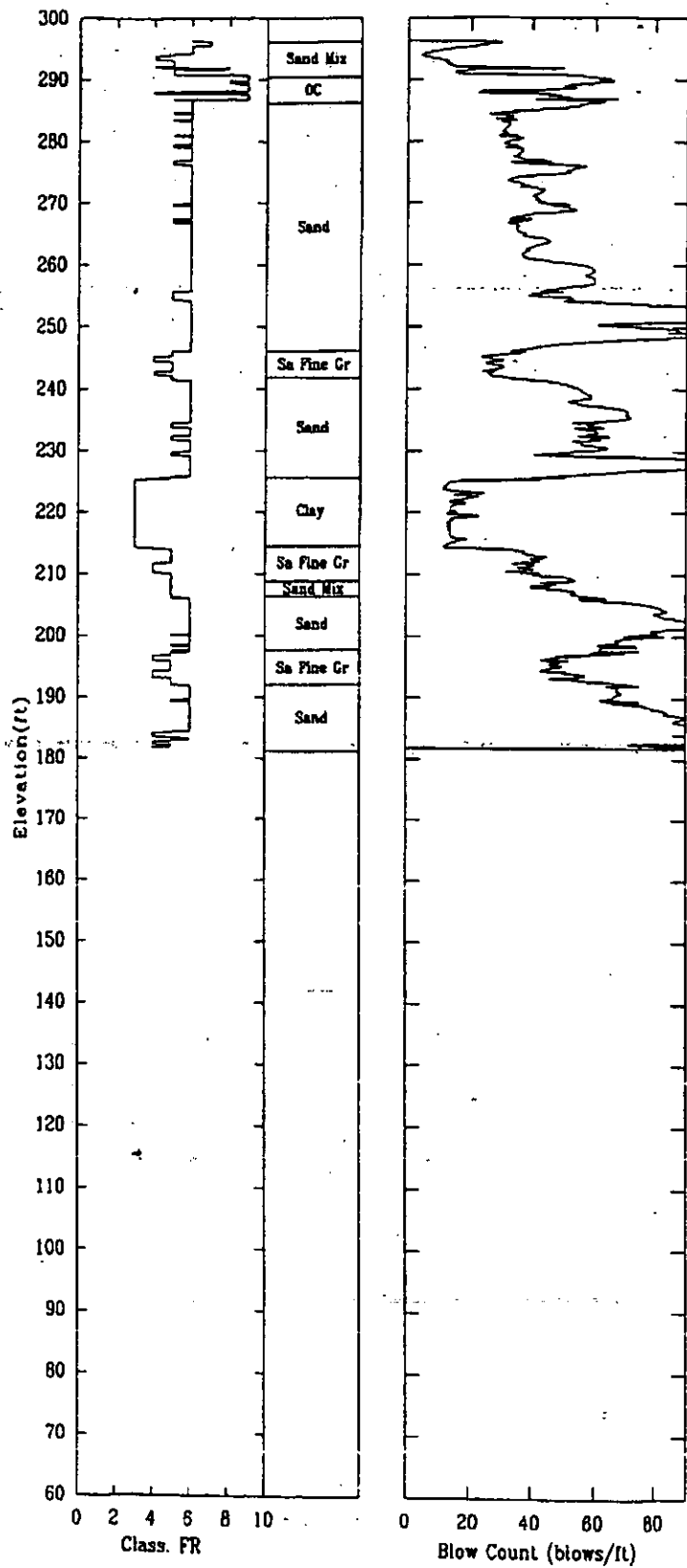
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
03/26/98 / o

North 78640

East 55650

Elevation 302.3

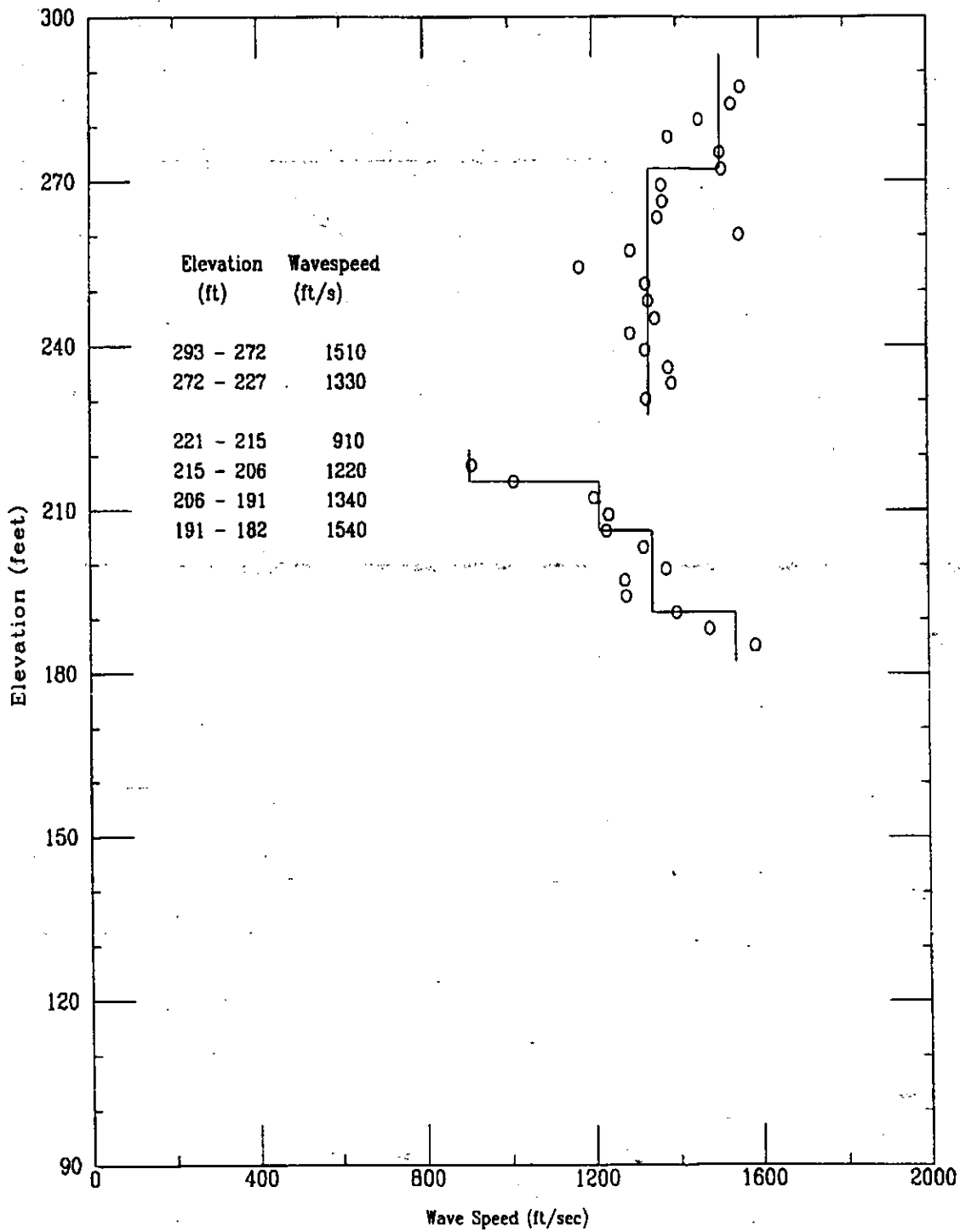


CPT-180

APPLIED RESEARCH ASSOCIATES, INC.

03/26/98

Shear Wave Speeds

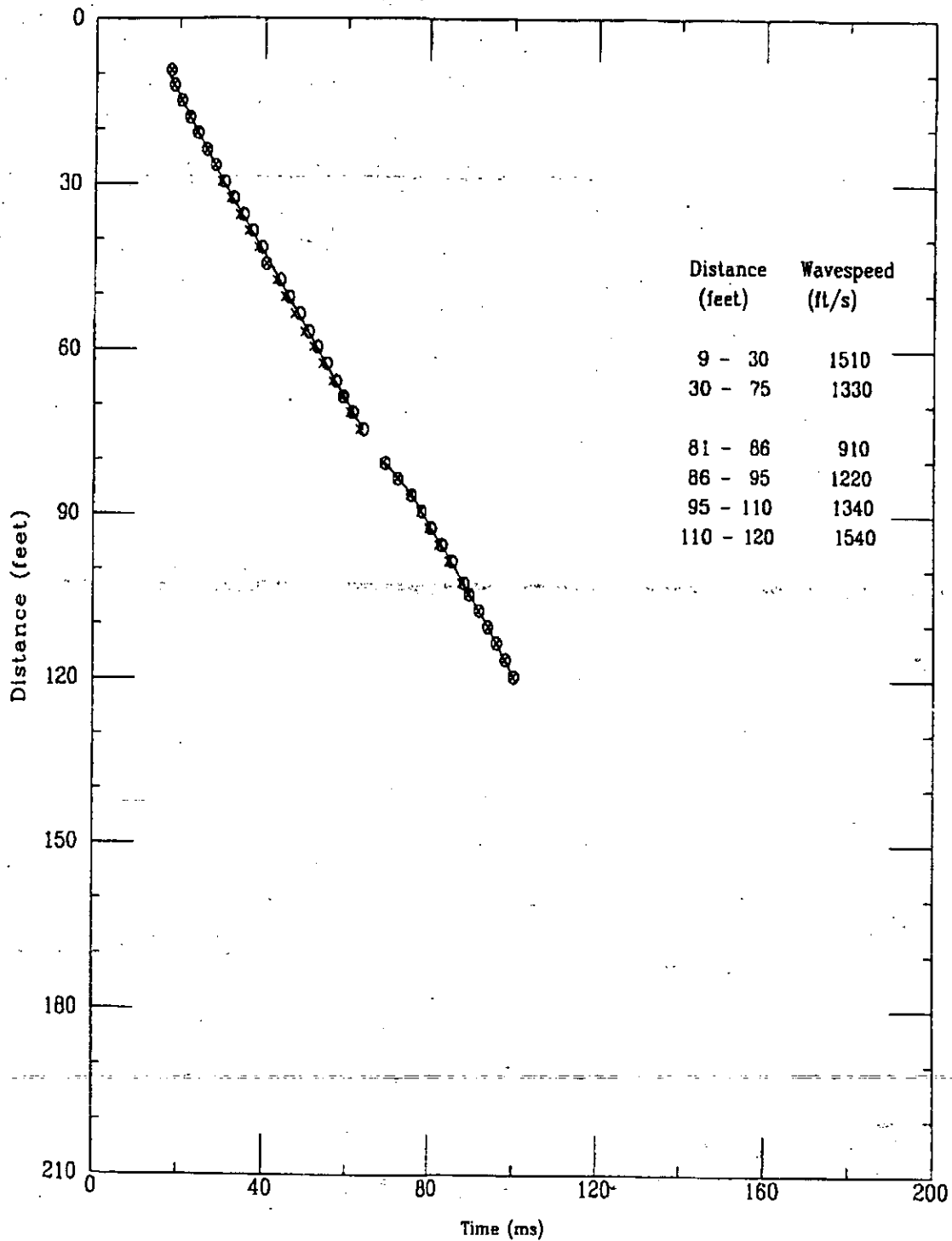




CPT-180

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/26/98

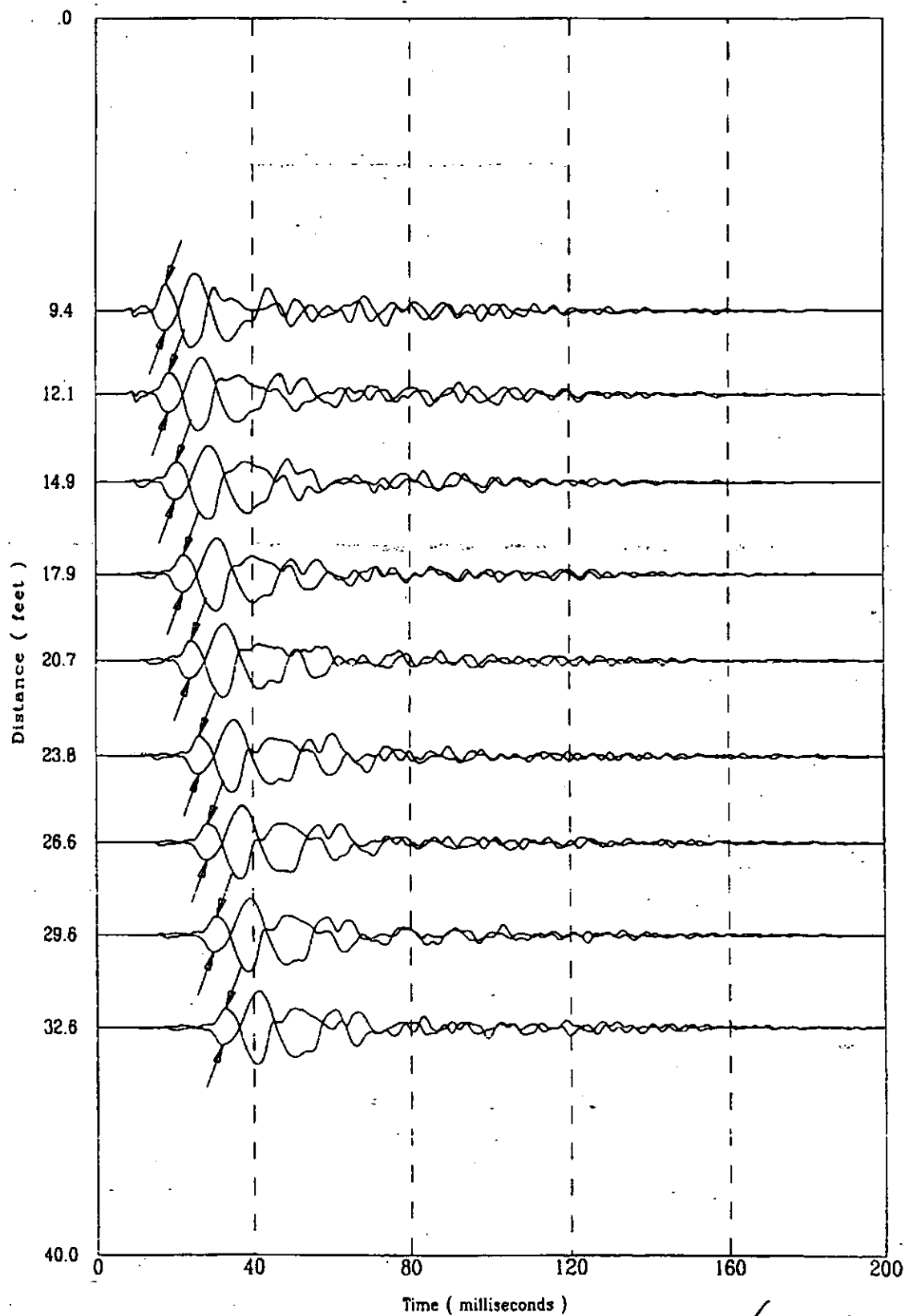


File 326m802S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-180

S Wave  
03/26/98



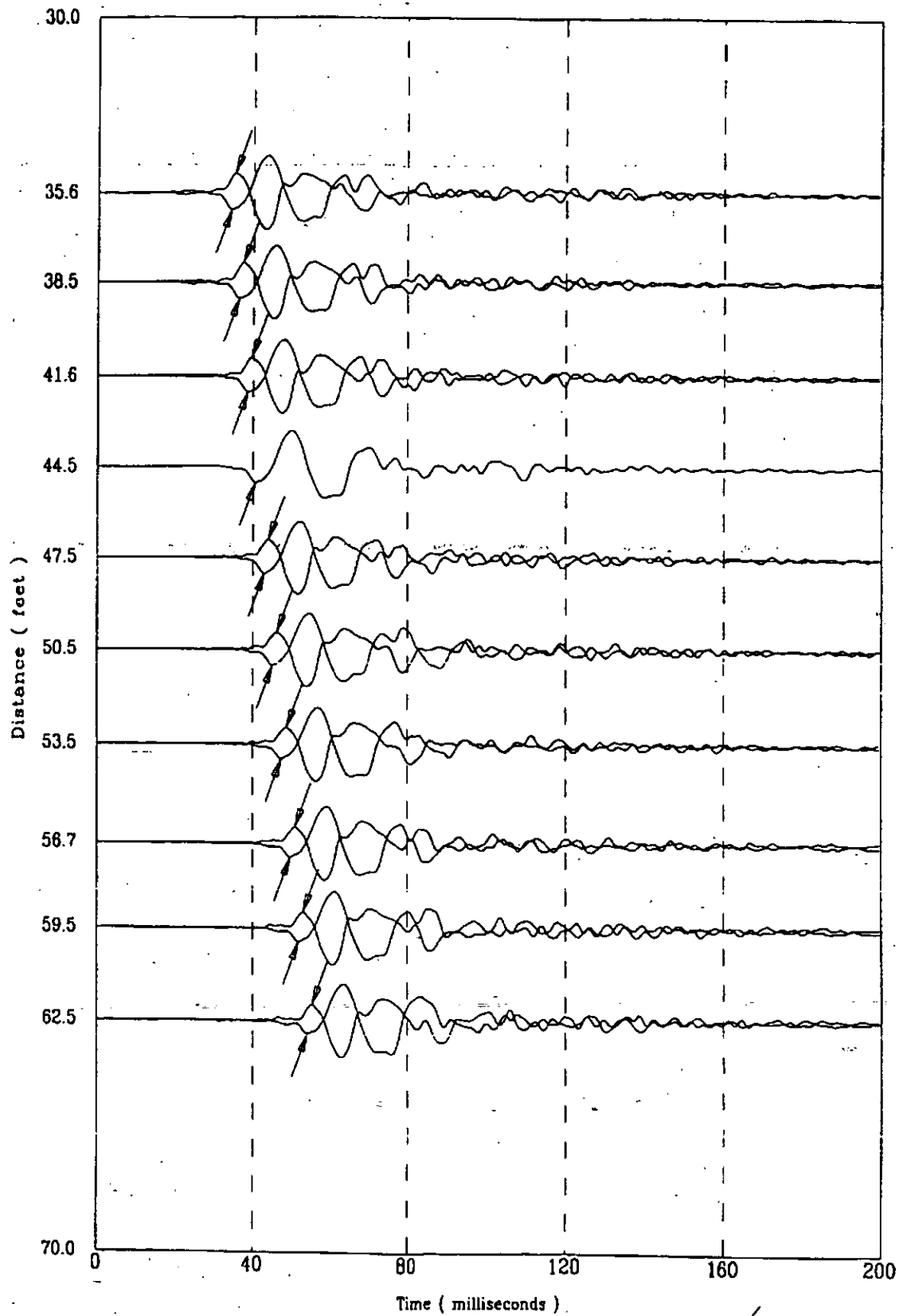
325m802S

411 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-180

S Wave  
03/26/98



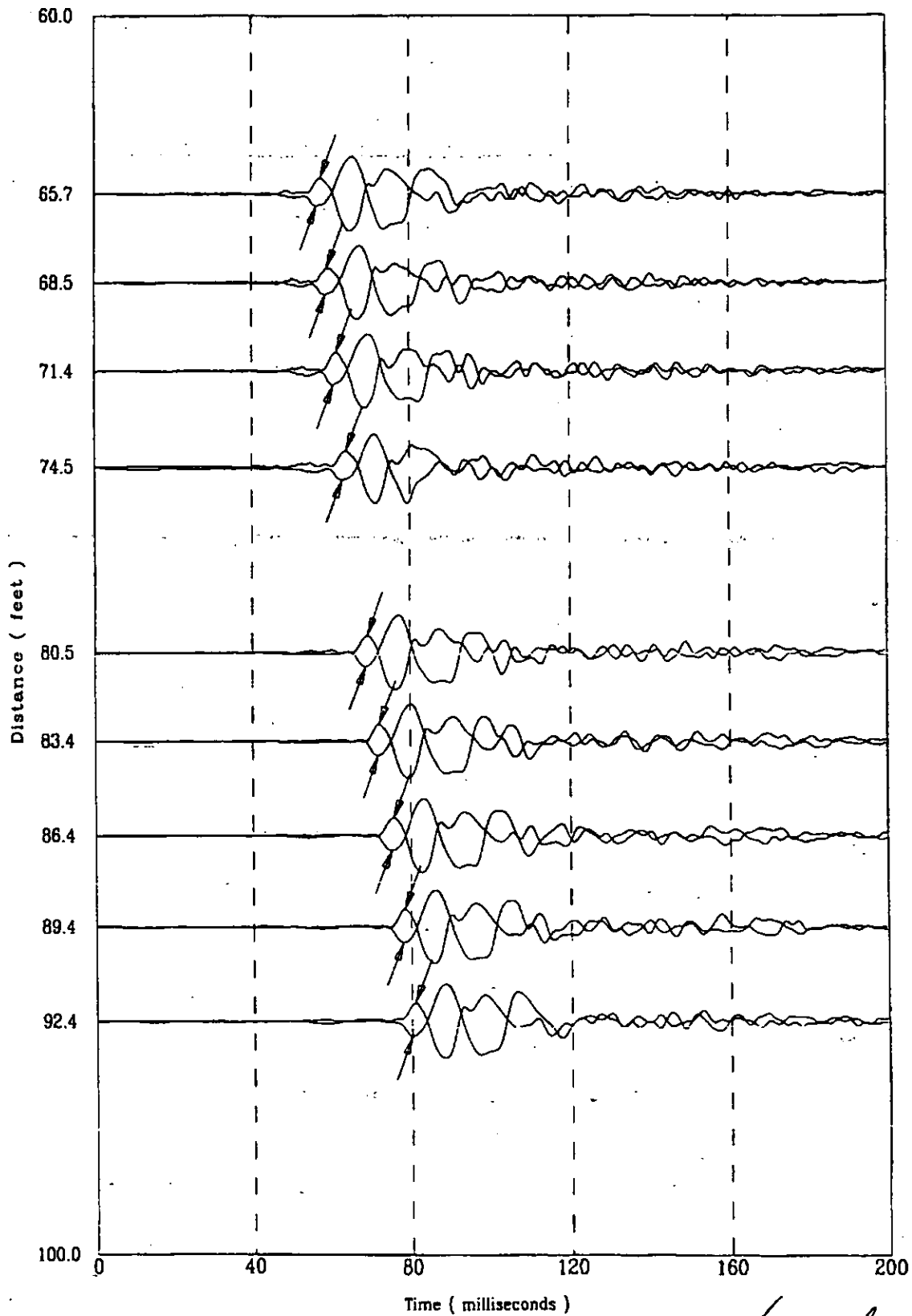
File 326m802S

4/2 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-180

S Wave  
03/26/98



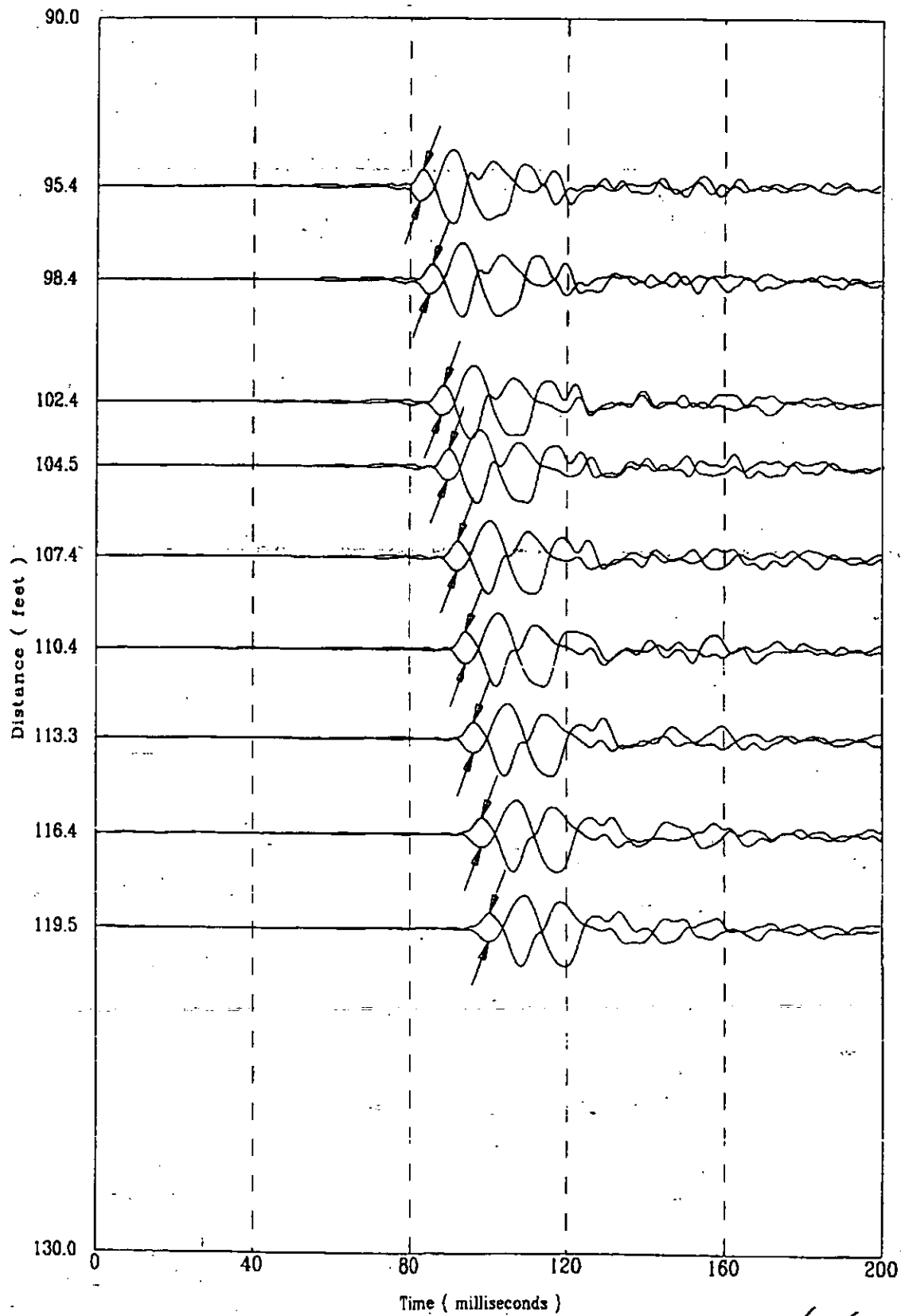
File 326m802S

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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-180

S Wave  
03/26/98



File 326m802S

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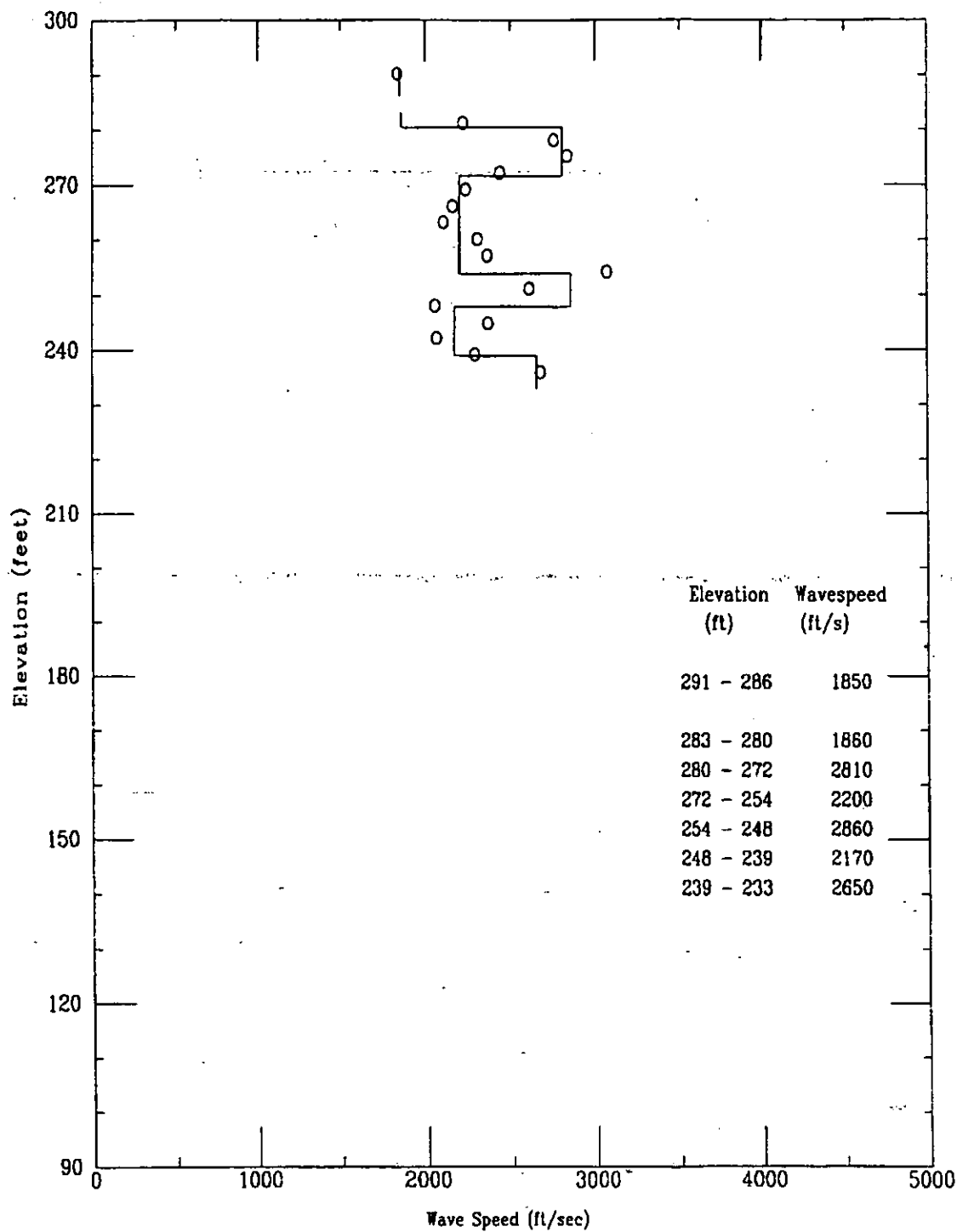
K-TRT-F-00001  
R/O

CPT-180

APPLIED RESEARCH ASSOCIATES, INC.

03/26/98

Compression Wave Speeds



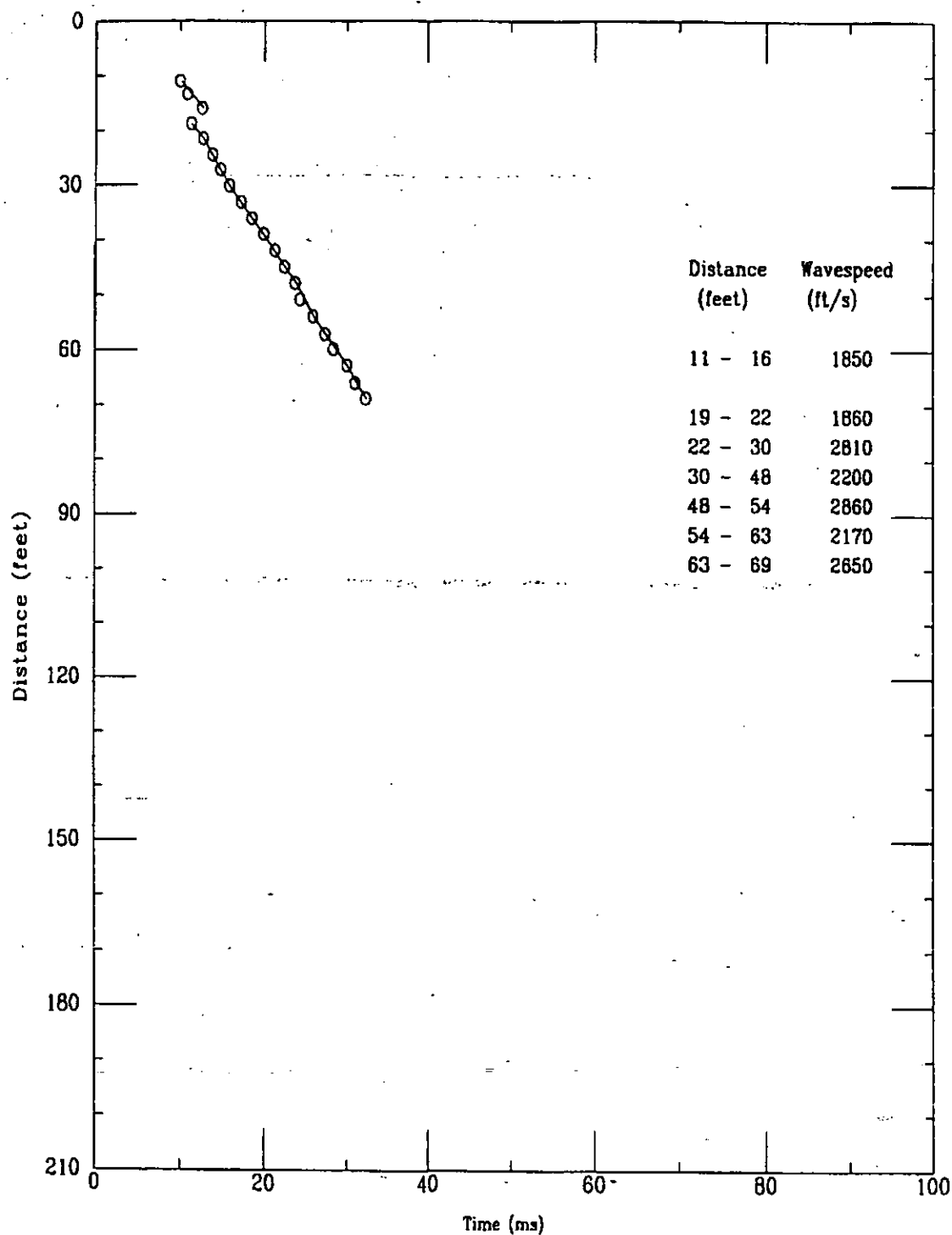
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CPT-180

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

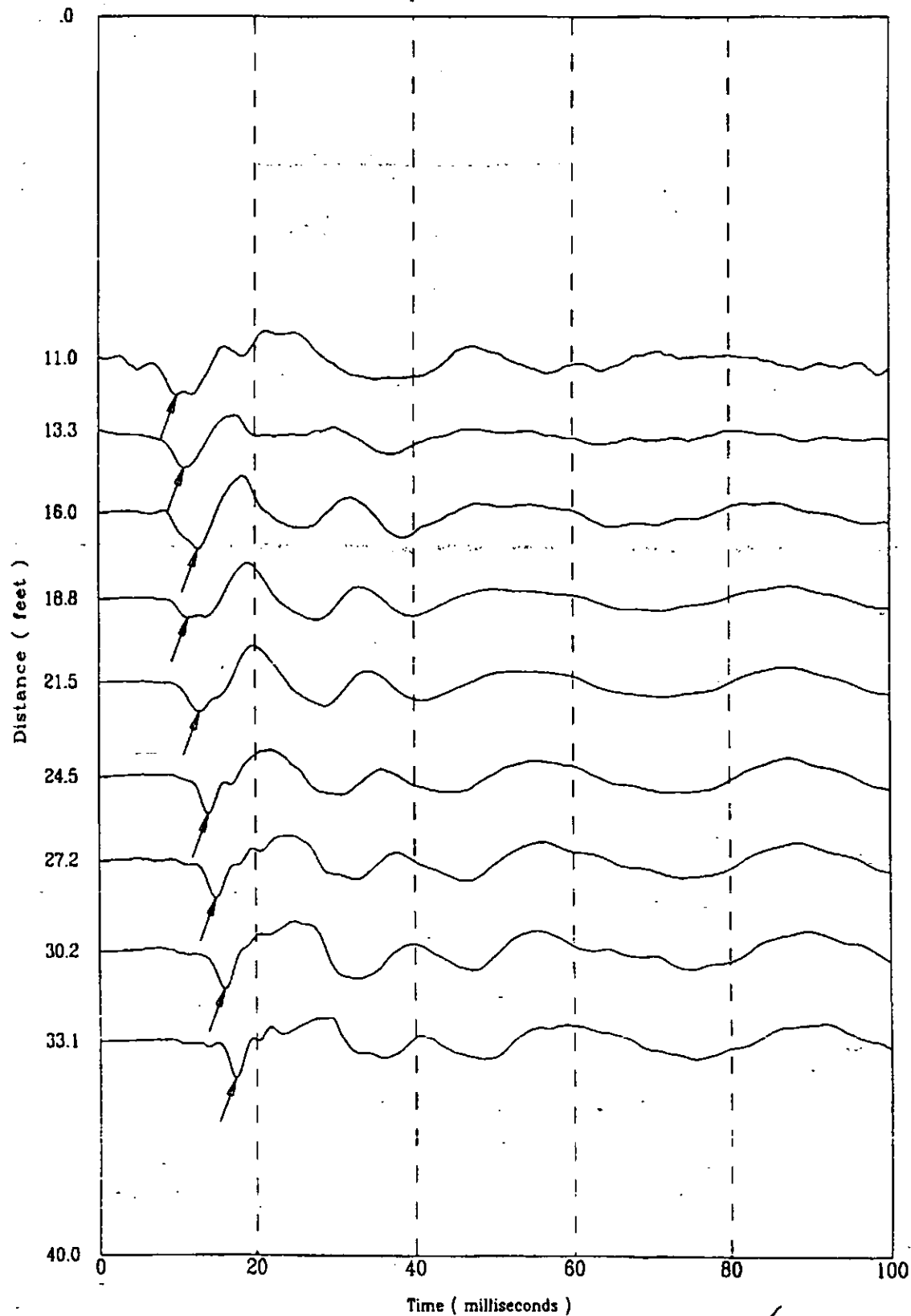
03/26/98



K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-180

P Wave  
03/26/98



326m802S

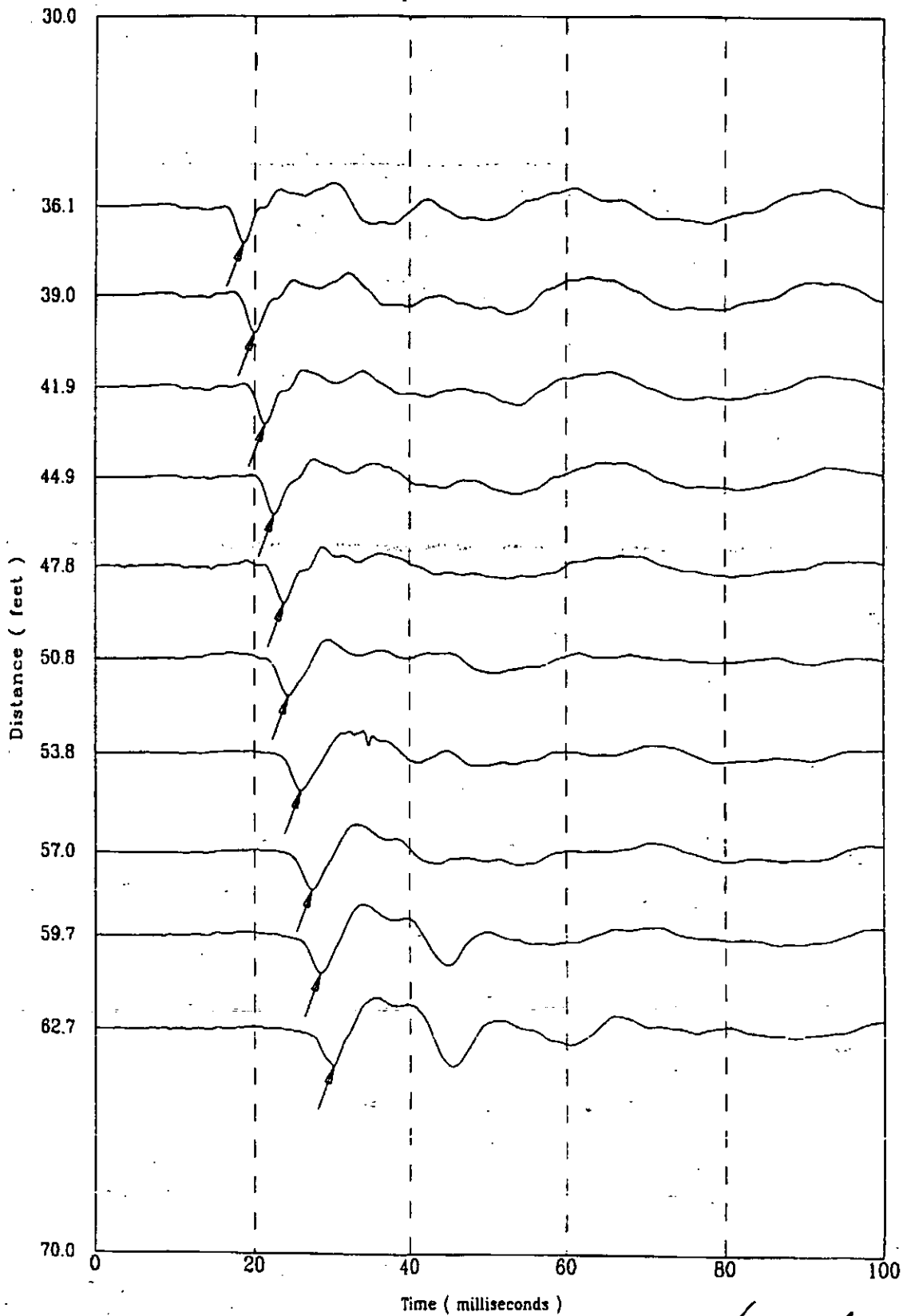
417 of 522



K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-180

P Wave  
03/26/98



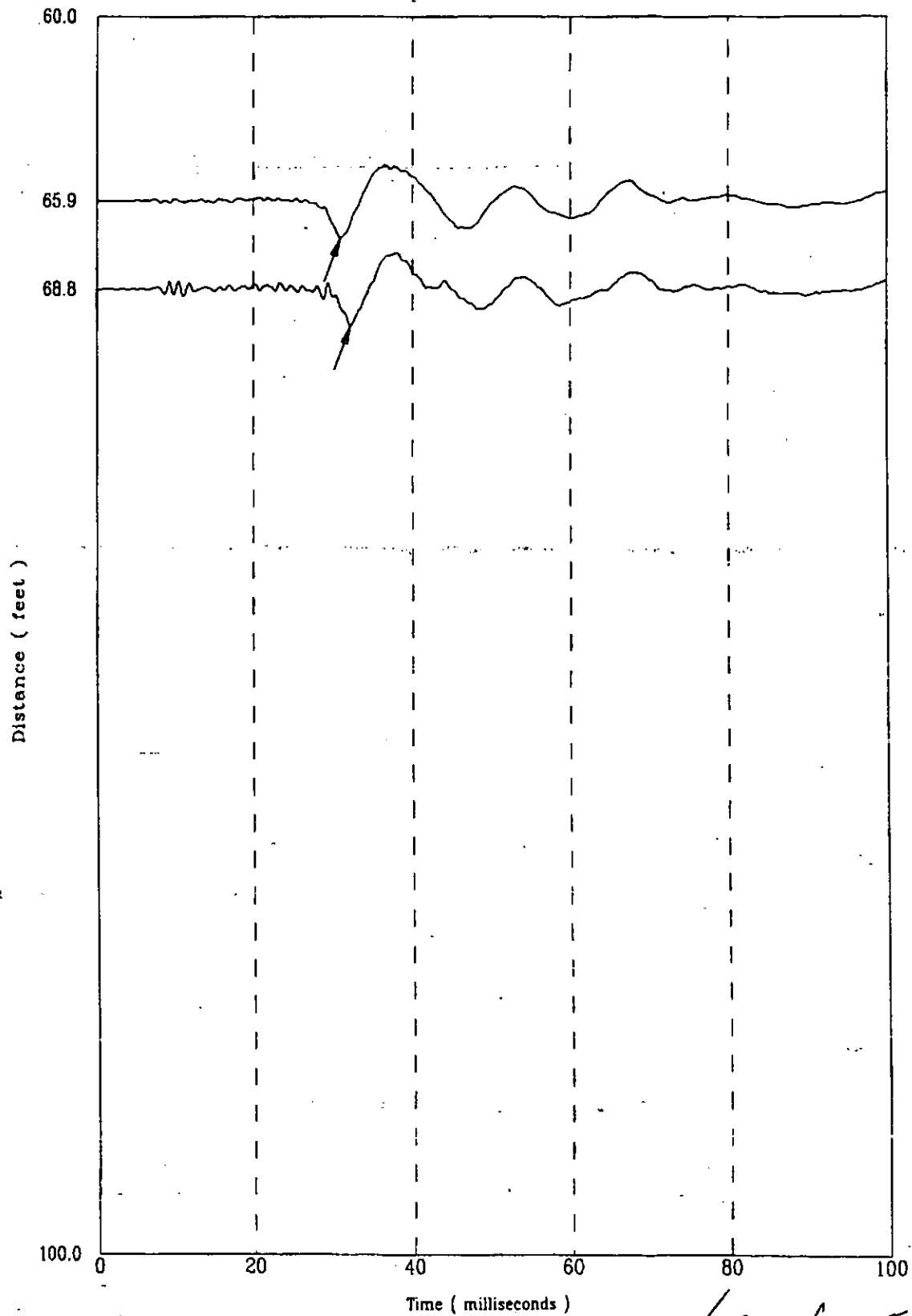
File 326m802S

4/18 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-180

P Wave  
03/26/98



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CPT-181

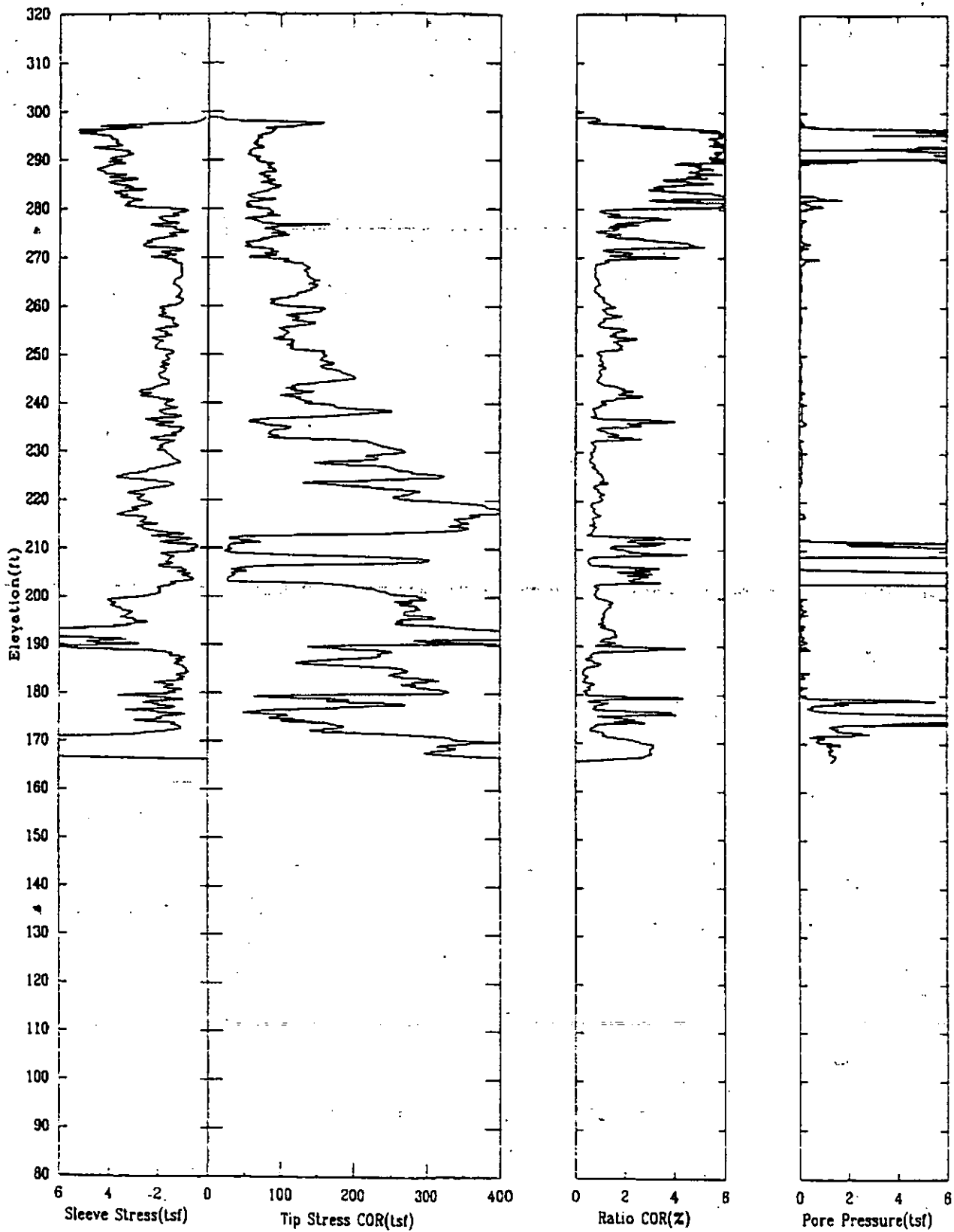
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
03/10/98 / 0

North 78510

East 55330

Elevation 304.9



CPT-181

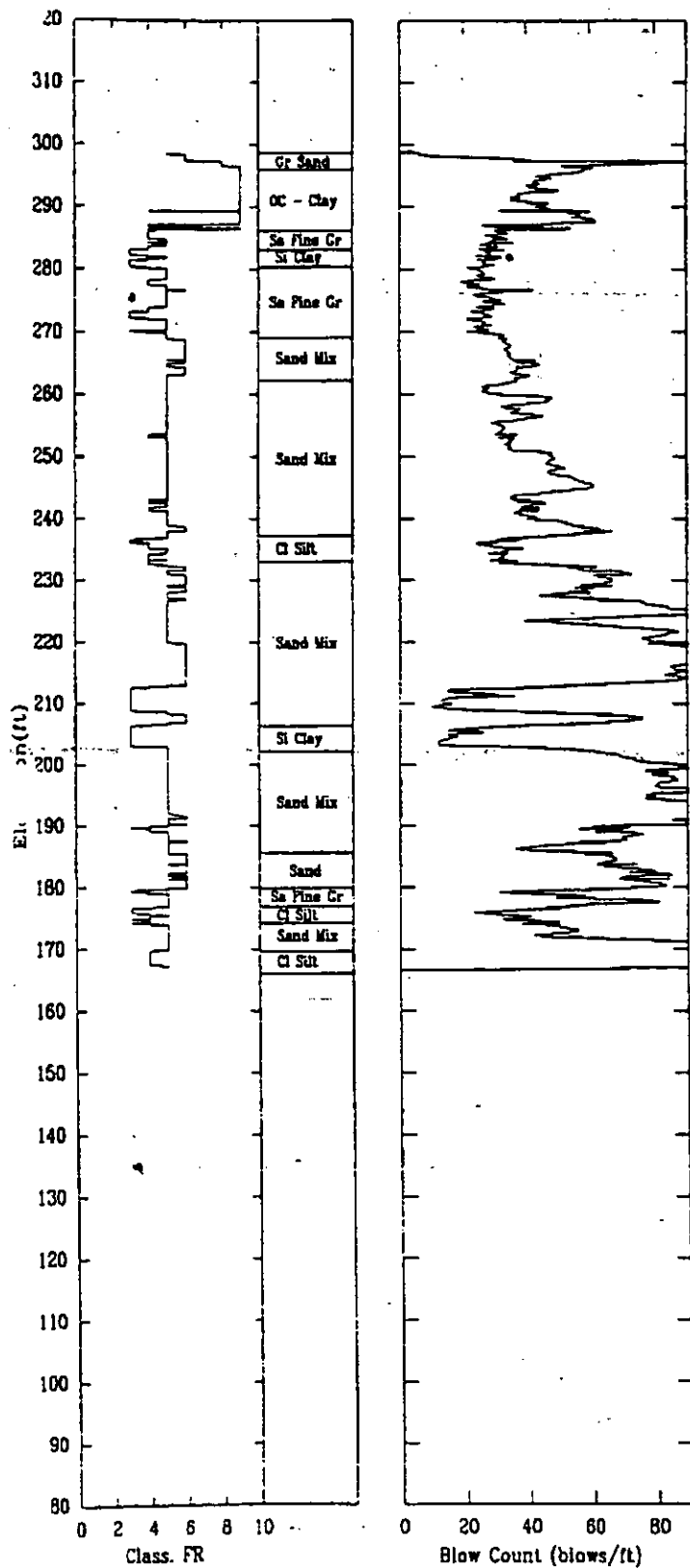
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03/10/98 / 0

North 78510

East 55330

Elevation 304.9

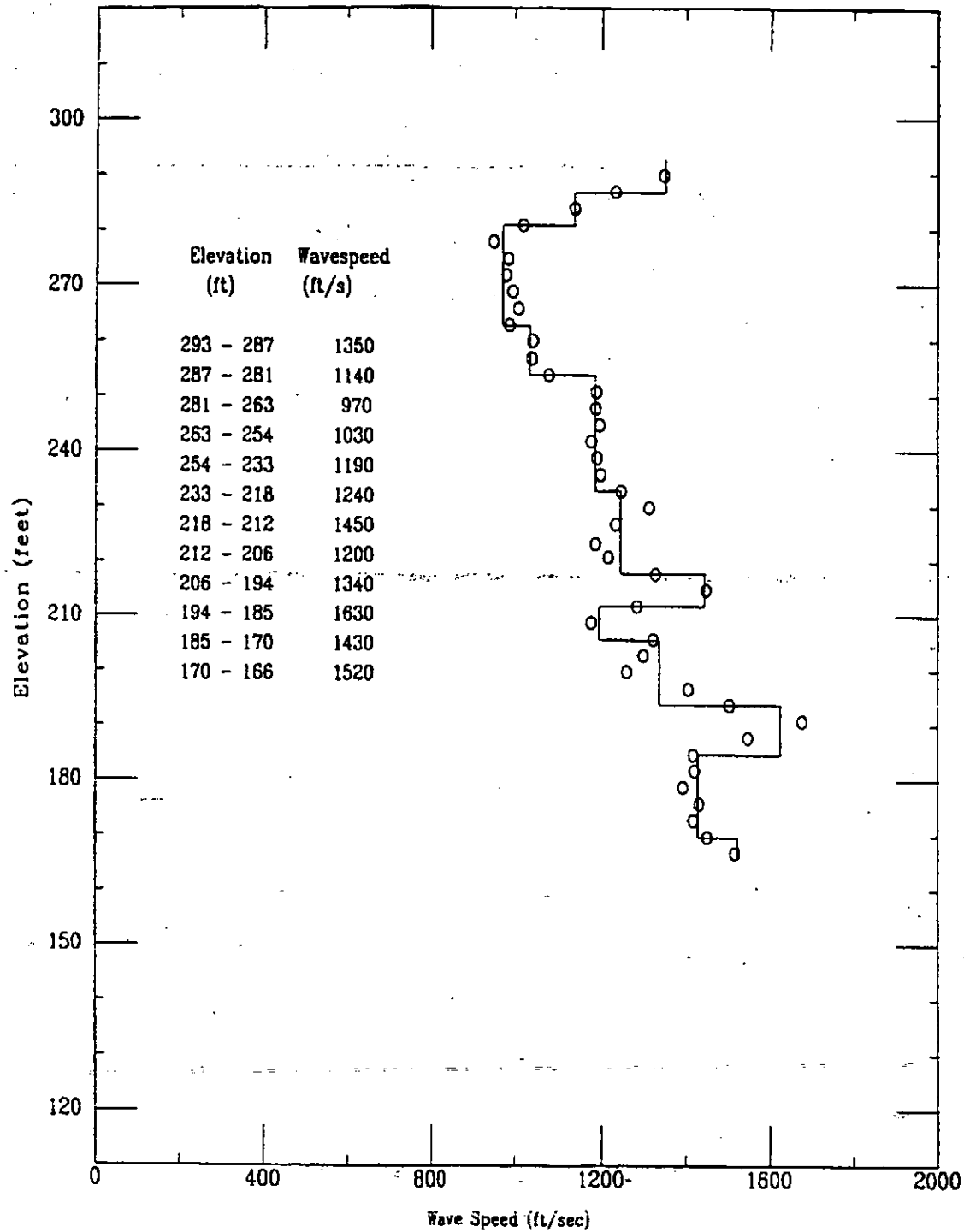


CPT-181

APPLIED RESEARCH ASSOCIATES, INC.

03/10/98

Shear Wave Speeds



File 410m801S

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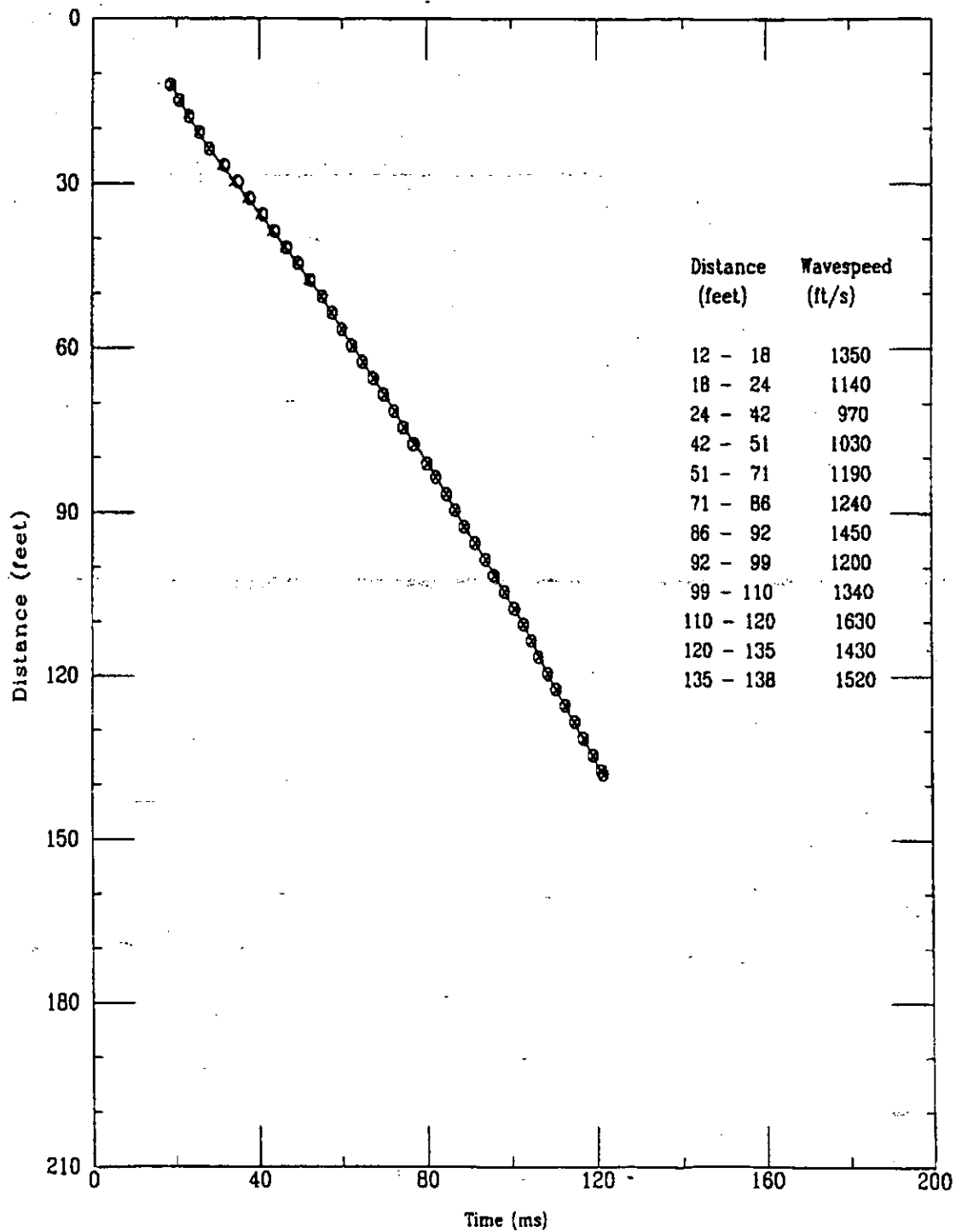
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R/O

CPT-181

APPLIED RESEARCH ASSOCIATES, INC.

03/10/98

Shear Wave Time of Peak



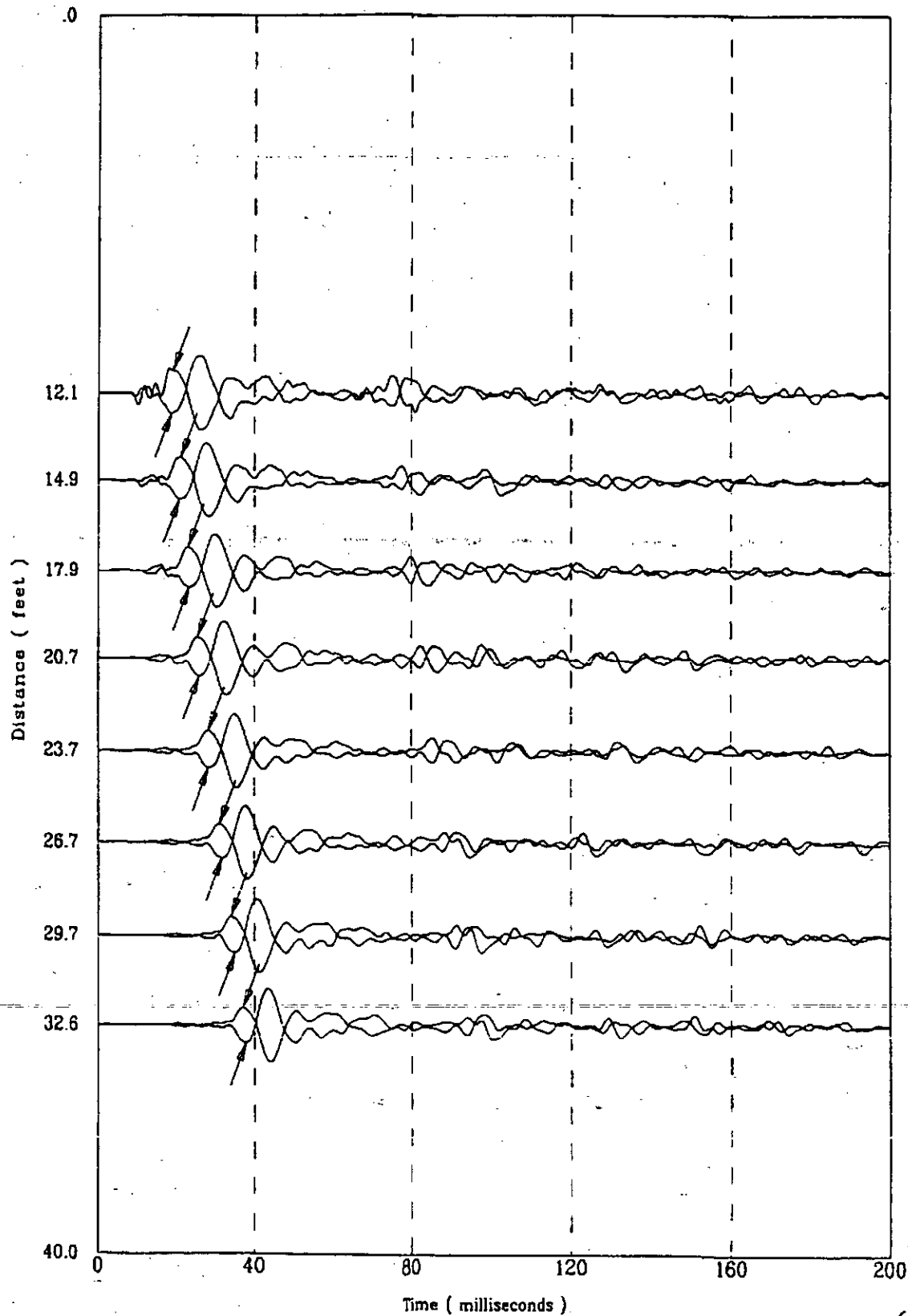
File 410m801S

423 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-181

S Wave  
03/10/98



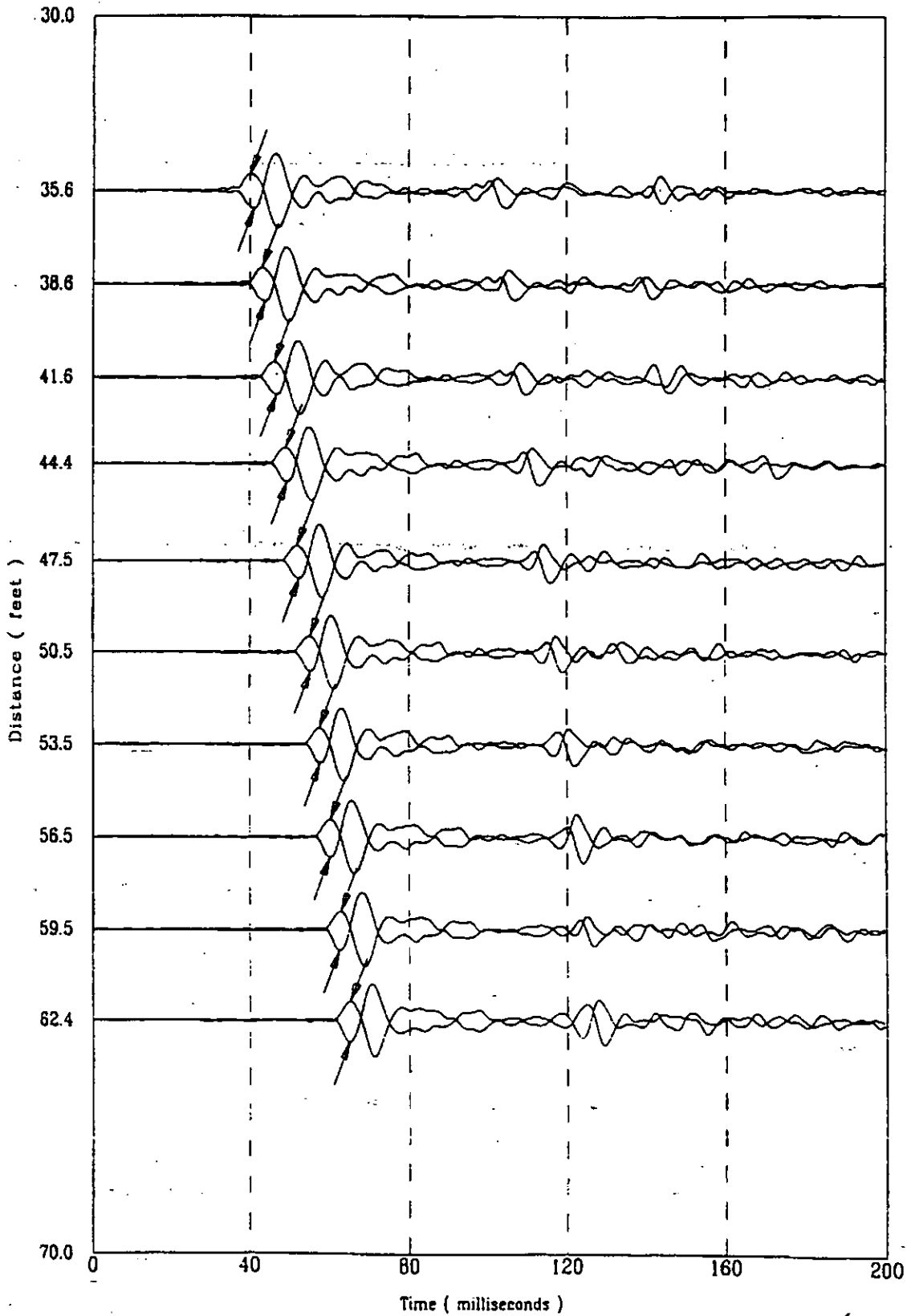
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424 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-181

S Wave  
03/10/98



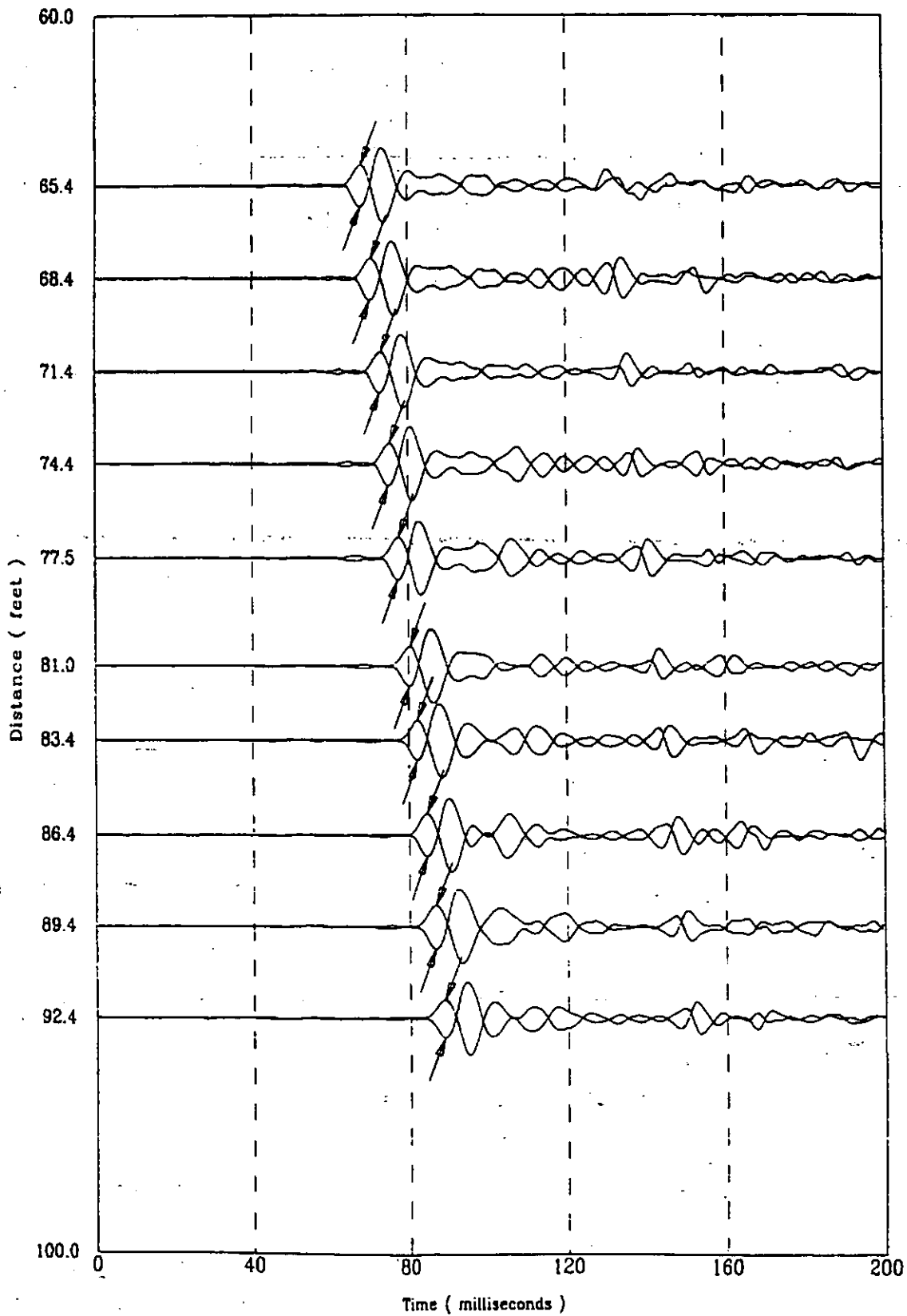
425 of 522



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-181

S Wave  
03/10/98



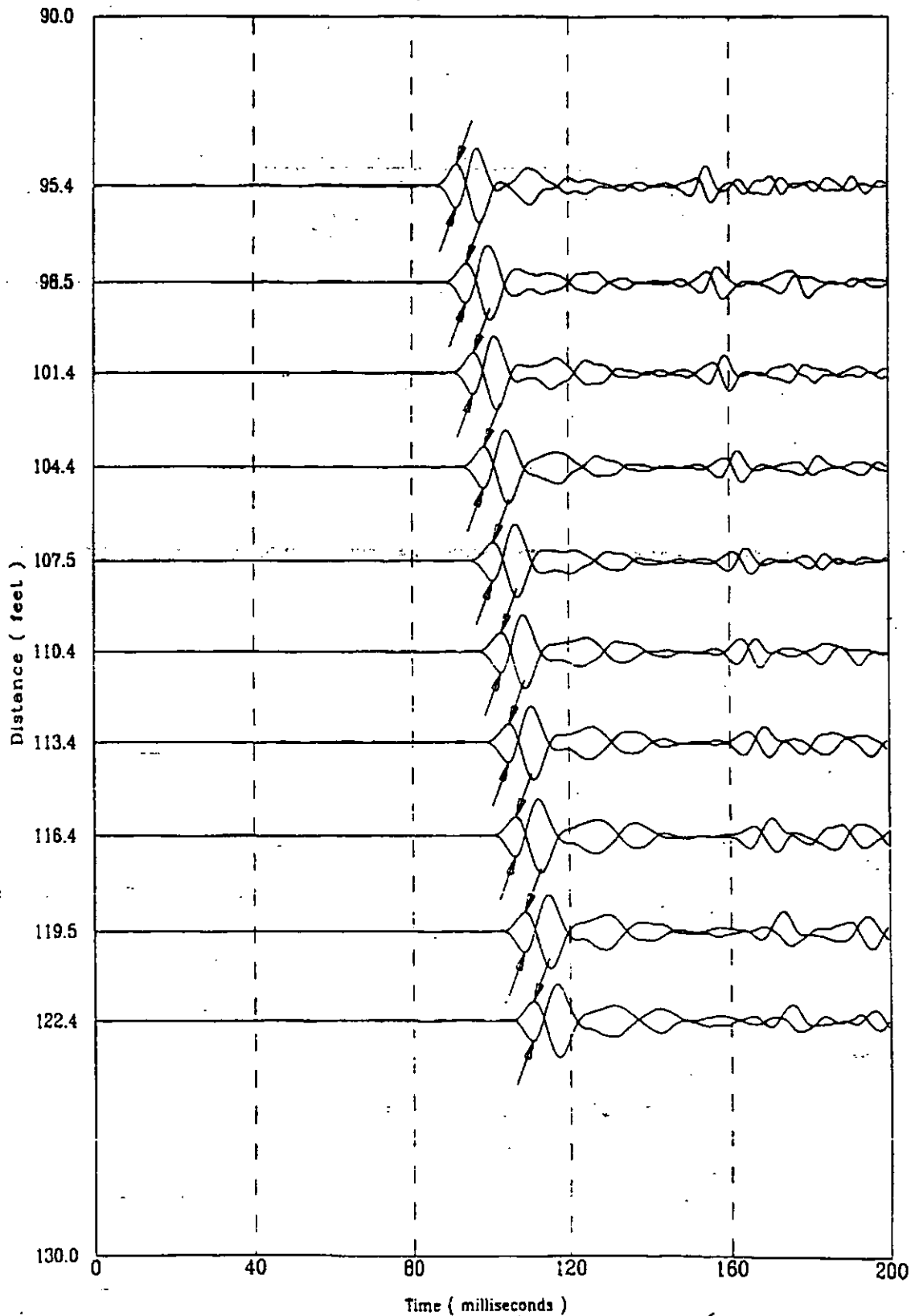
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426 of 522

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-181

S Wave  
03/10/98



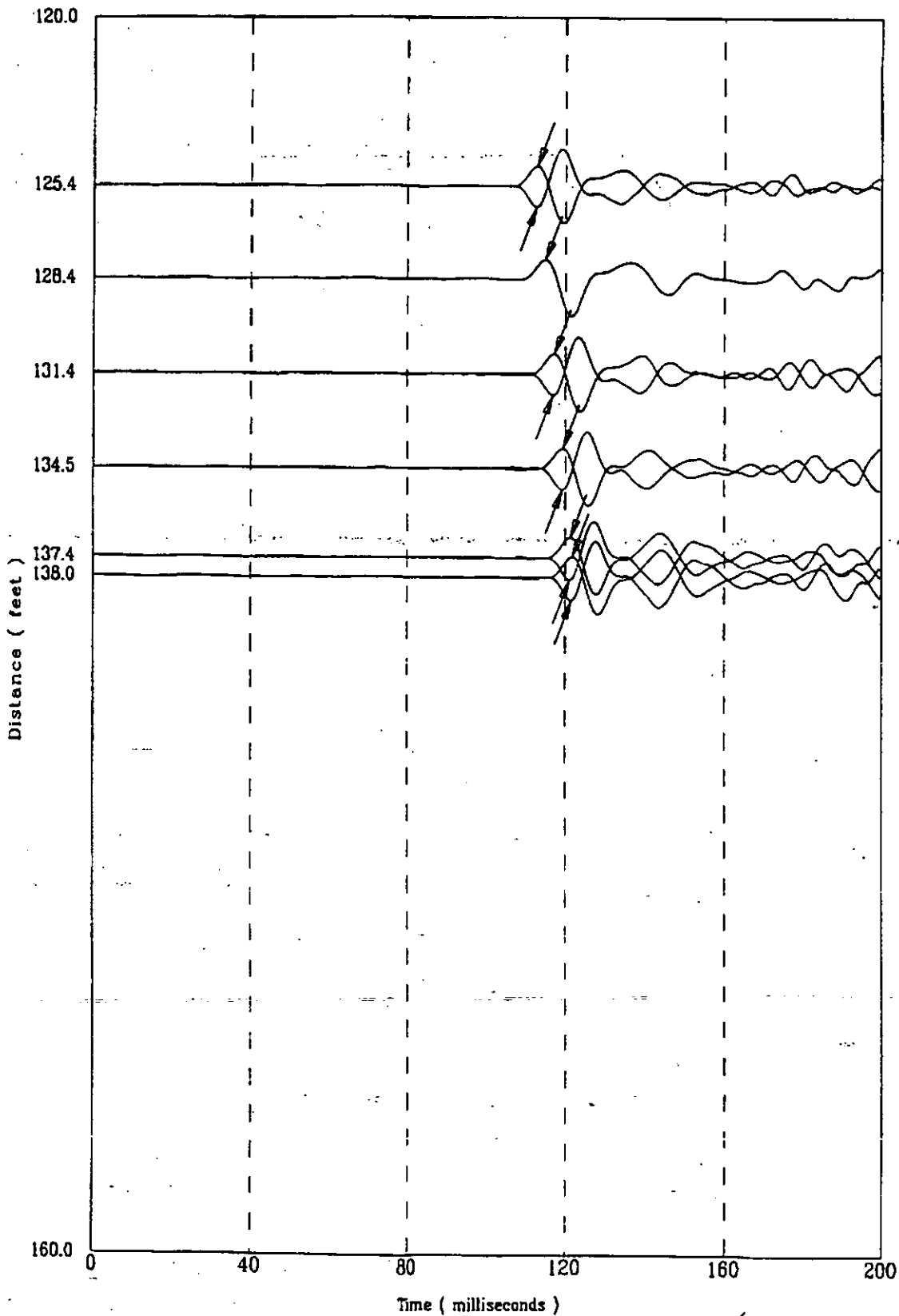
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427 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-181

S Wave  
03/10/98



File 410m801S

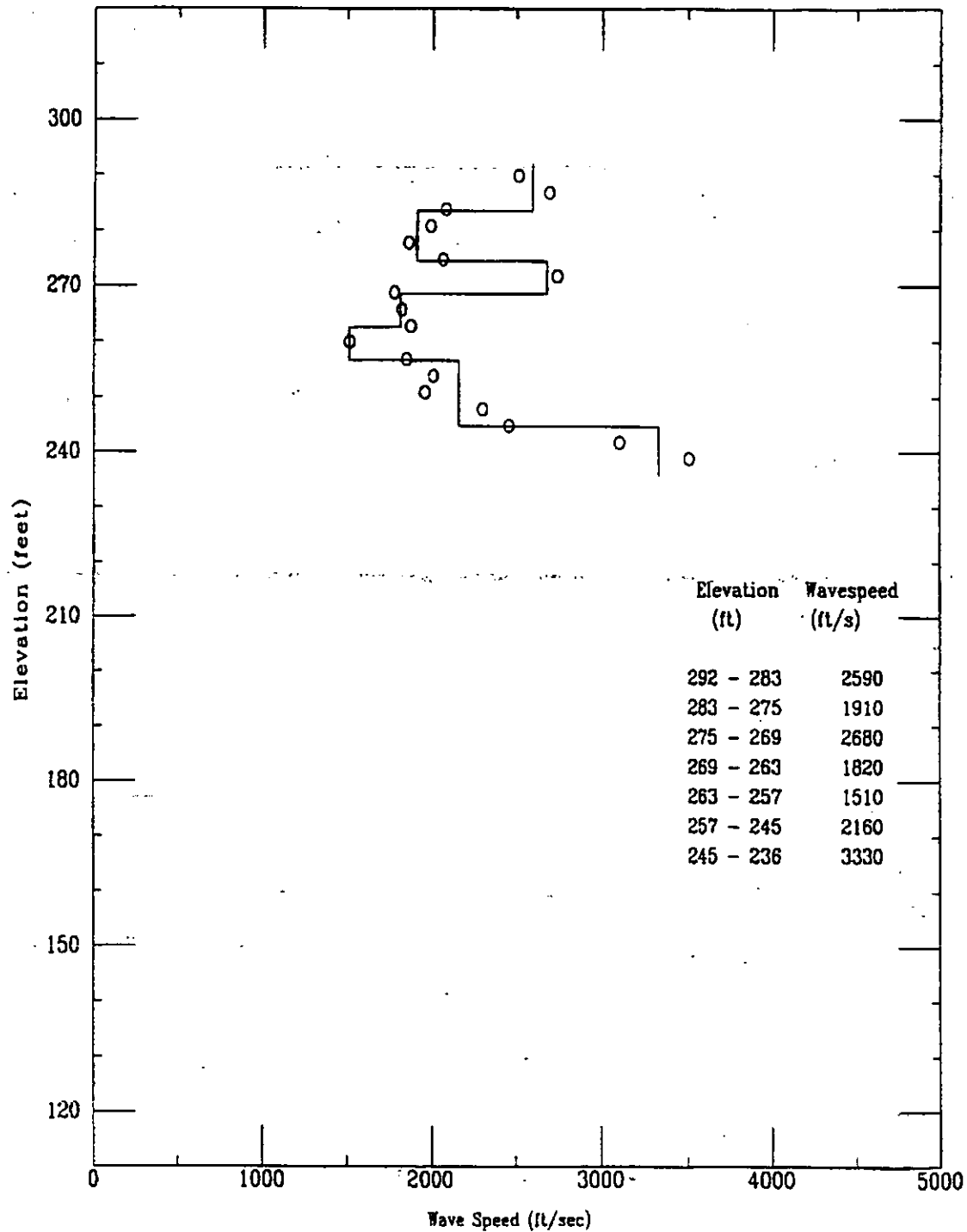
428 of 522

CPT-181

APPLIED RESEARCH ASSOCIATES, INC.

03/10/98

Compression Wave Speeds

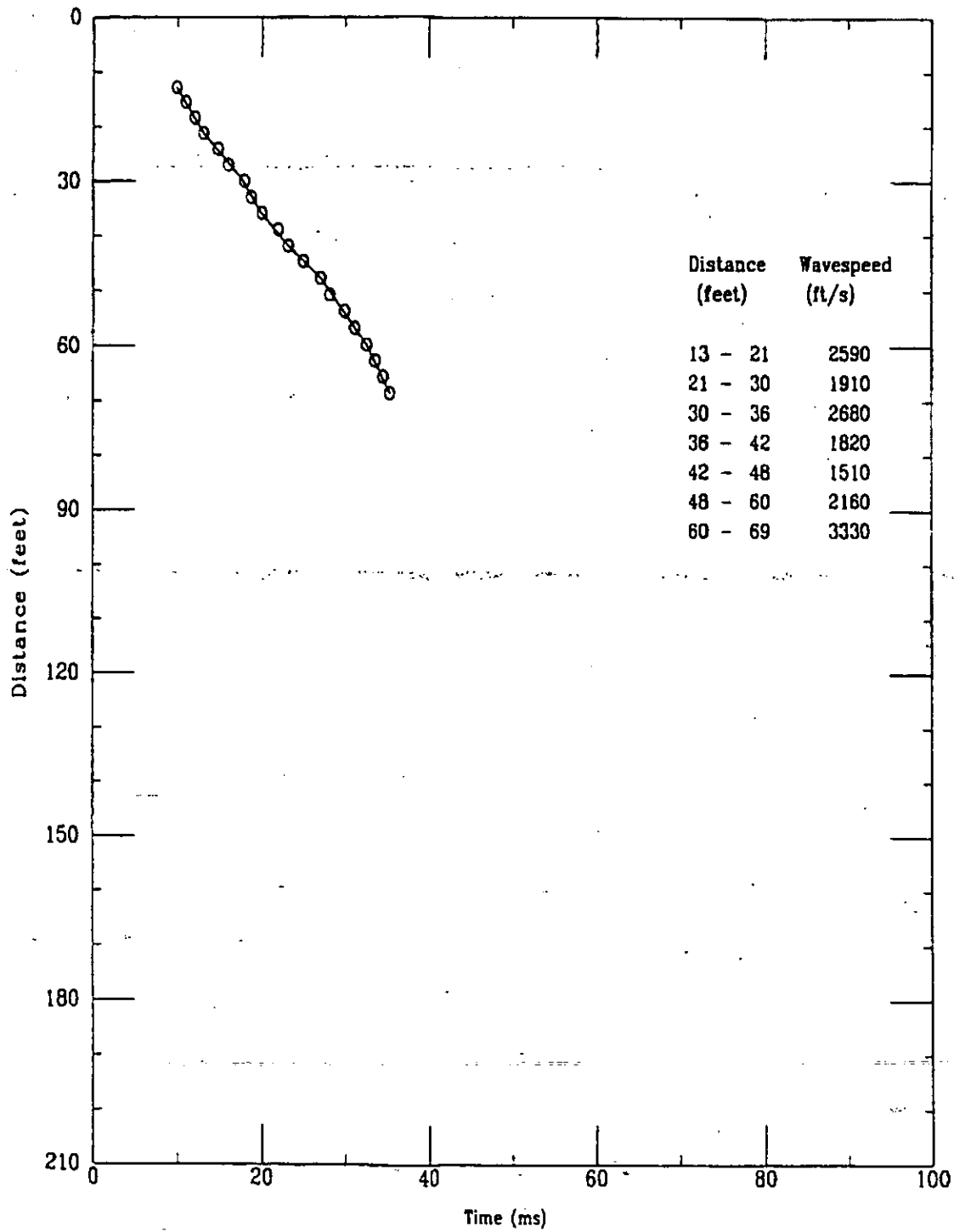


File 410m801S

CPT-181

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/10/98



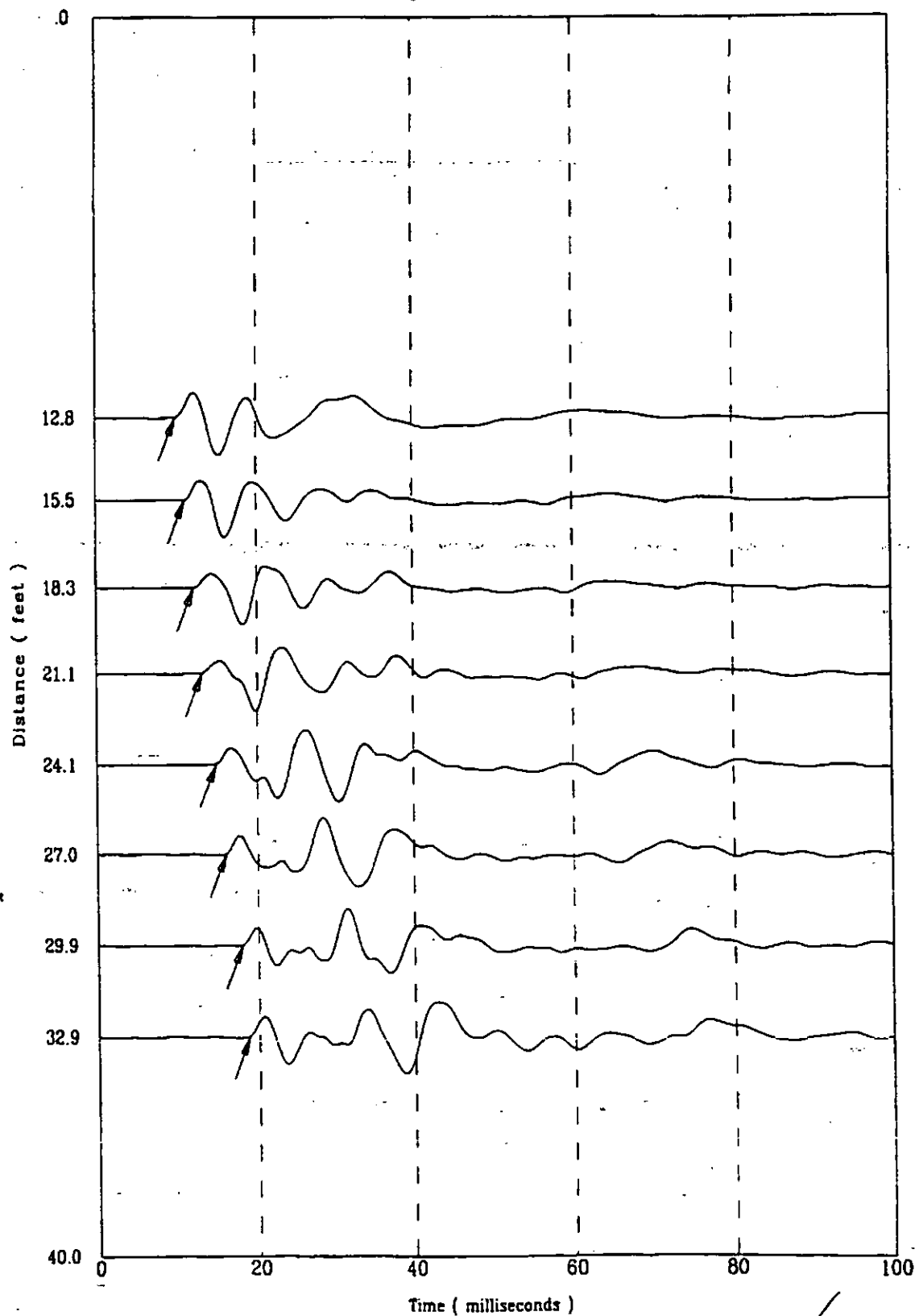
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4/30 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-181

P Wave  
03/10/98

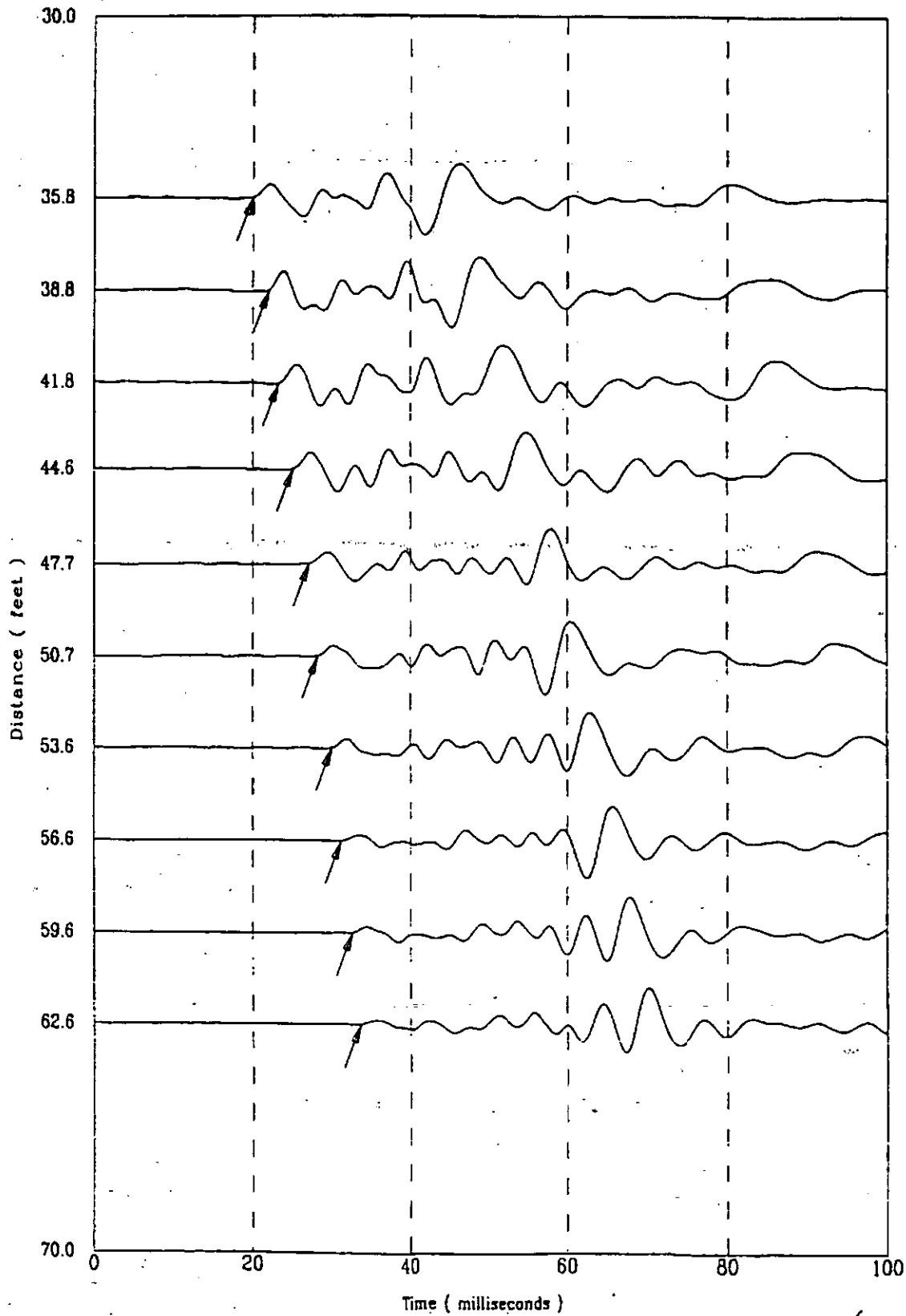


431 of 522

K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-181

P Wave  
03/10/98



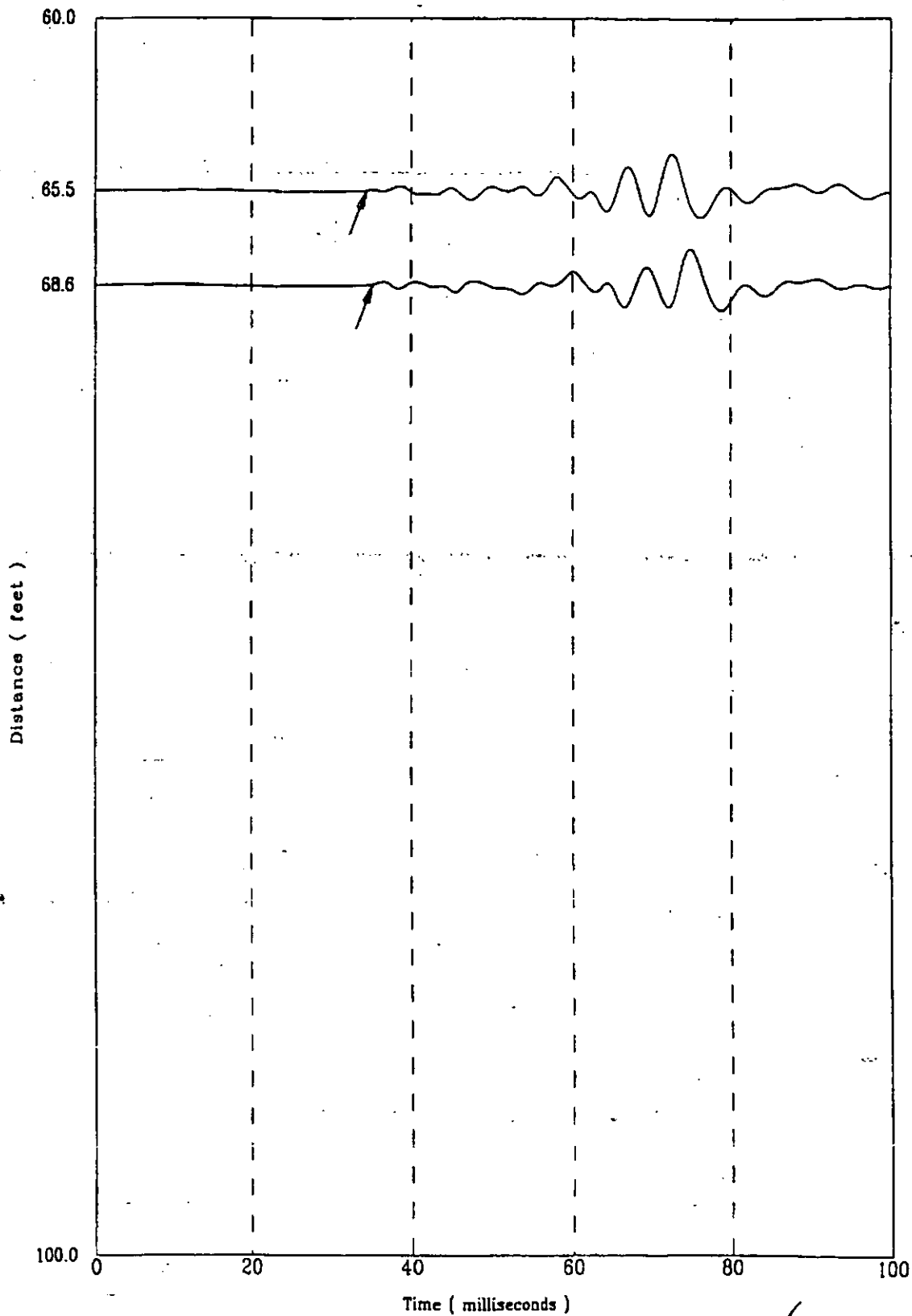
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K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-181

P Wave  
03/10/98



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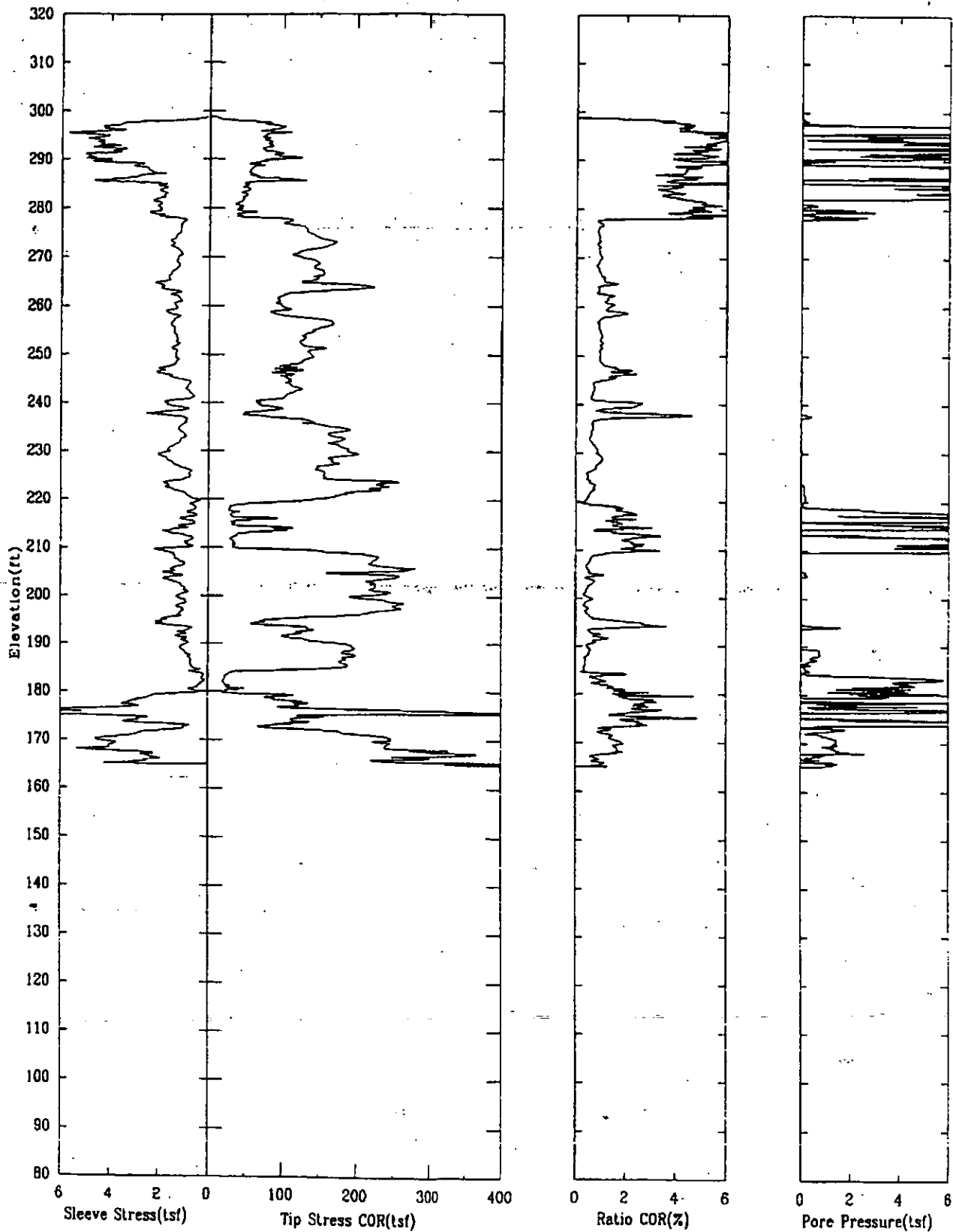
CPT-182

APPLIED RESEARCH ASSOCIATES, INC.

North 78510

East 55451

Elevation 304.8

K-TRT-F-0000/  
03/23/98 / 0

CPT-182

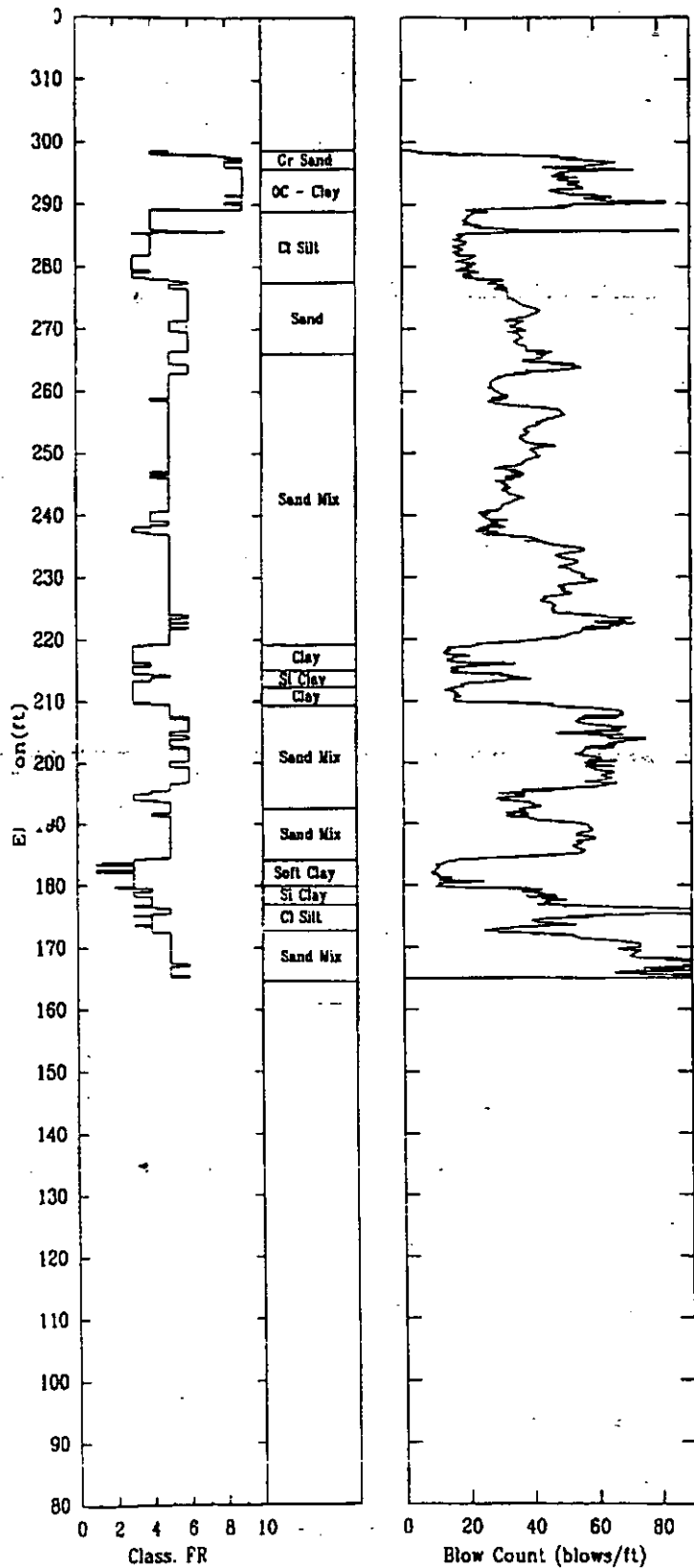
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-00001  
03/23/98 R/O

North 78510

East 55451

Elevation 304.8

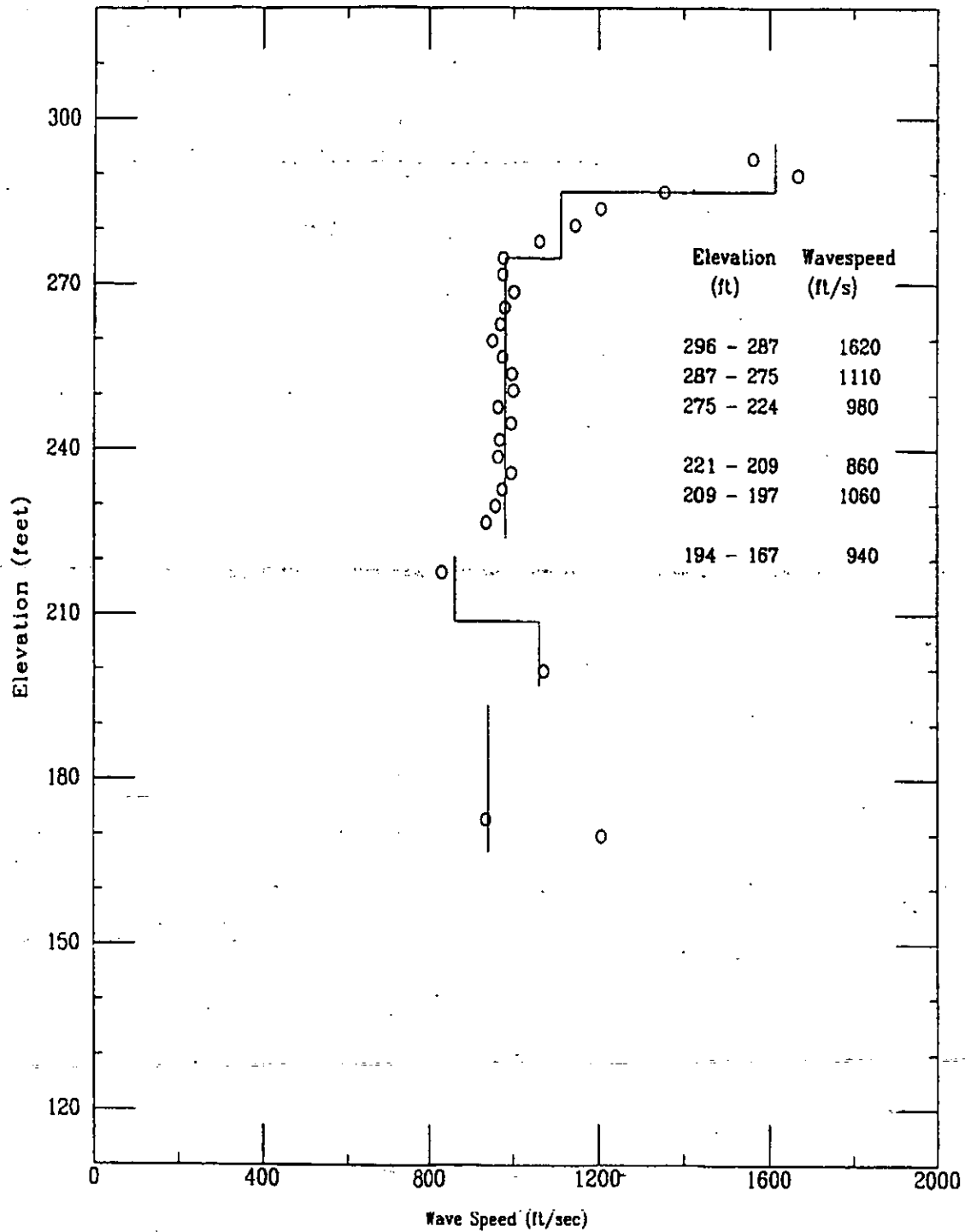


CPT-182

APPLIED-RESEARCH ASSOCIATES, INC.

03/23/98

Shear Wave Speeds



File 323m8015

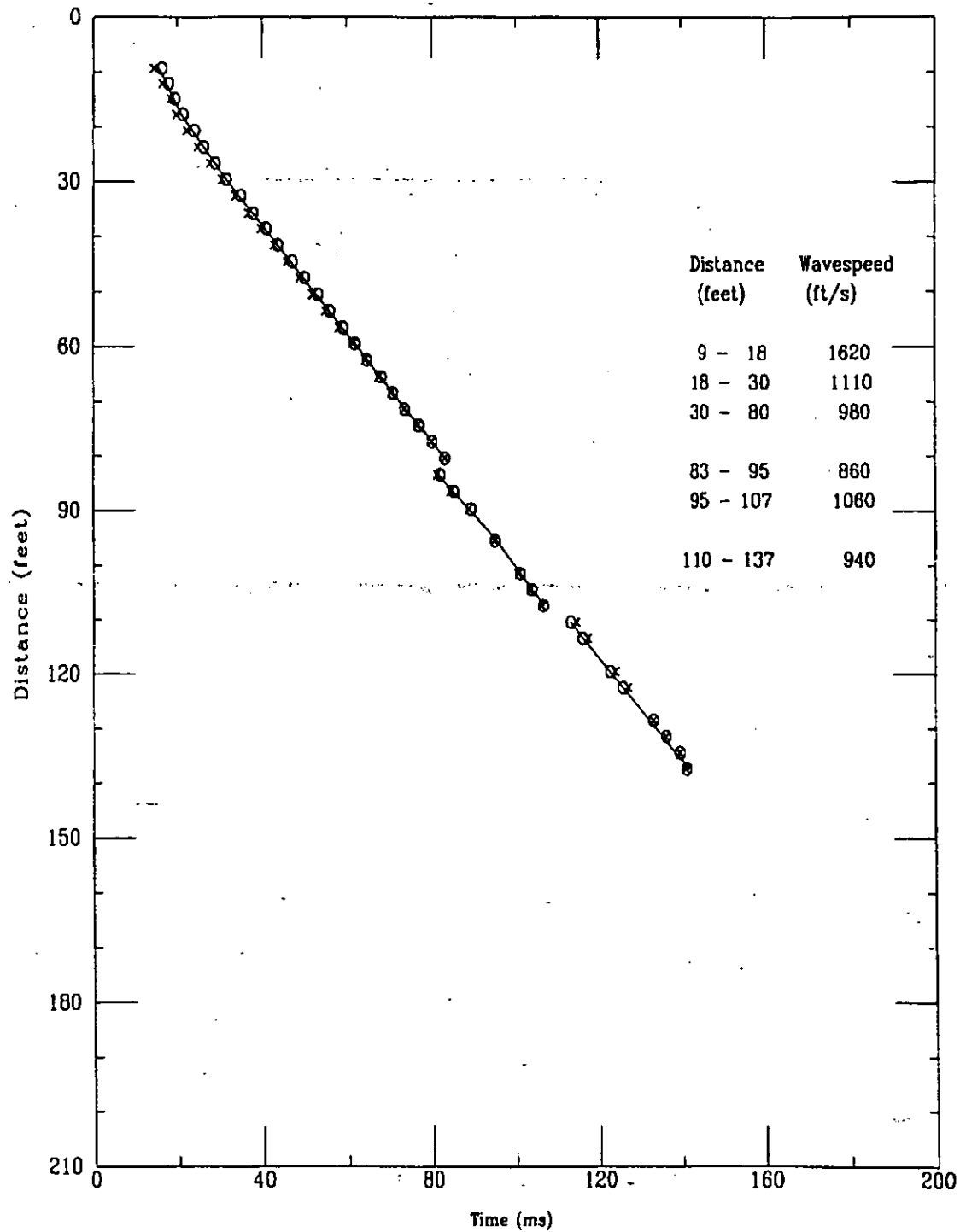
436 of 522

CPT-182

APPLIED RESEARCH ASSOCIATES, INC.

03/23/98

Shear Wave Time of Peak

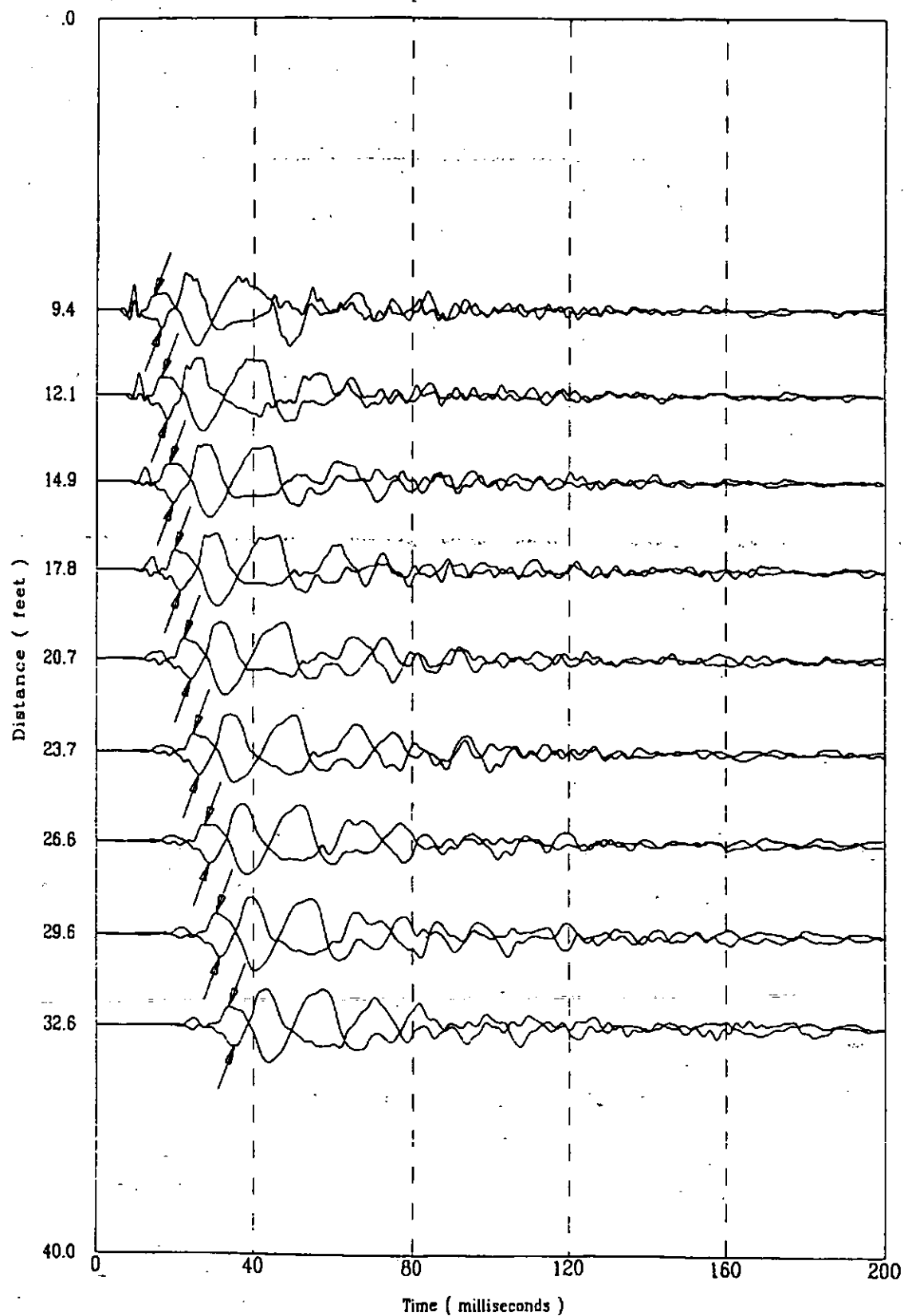


File 323m801S

K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-182

S Wave  
03/23/98



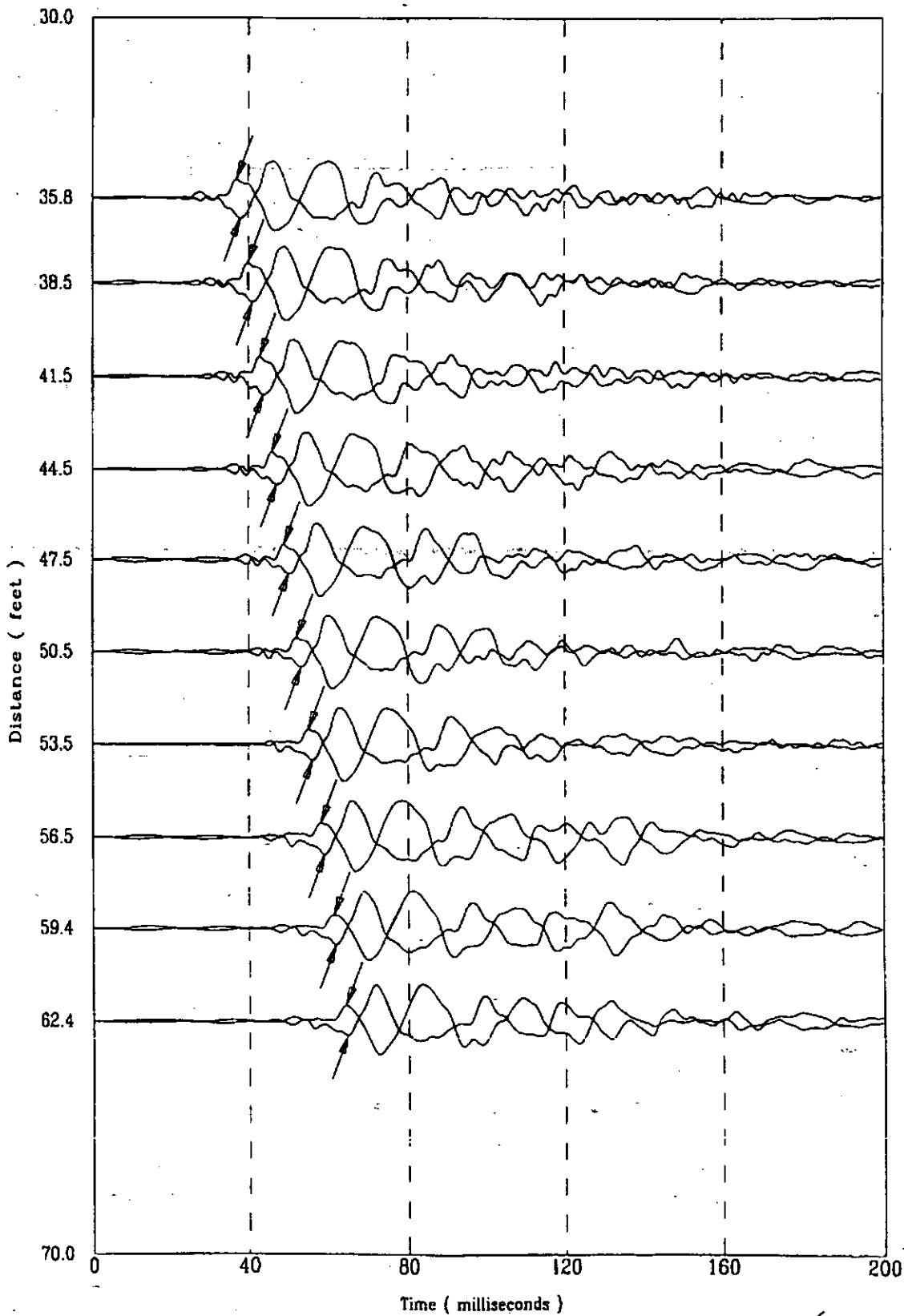
File 323m801S

438 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-182

S Wave  
03/23/98



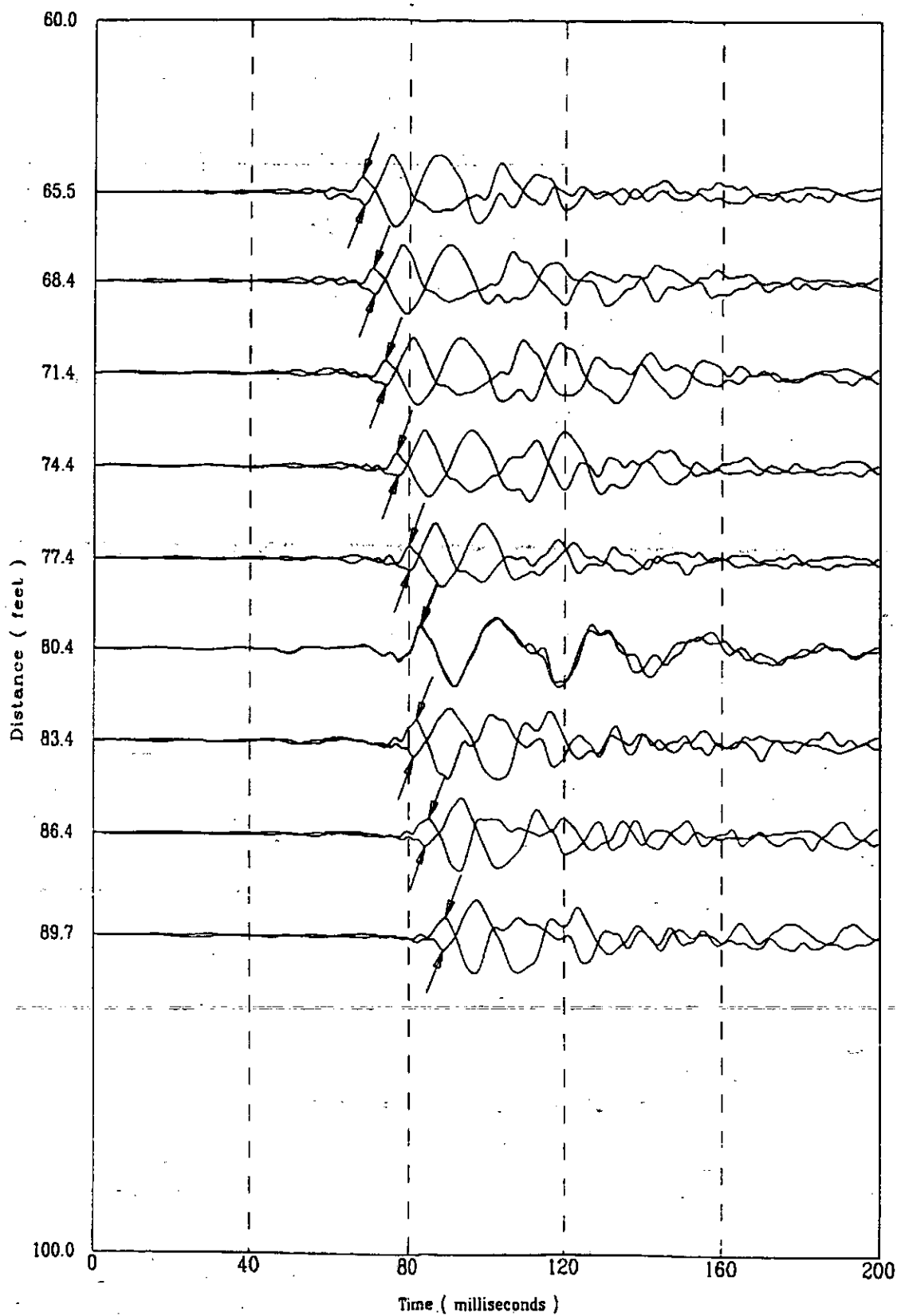
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439 A 522

K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-182

S Wave  
03/23/98



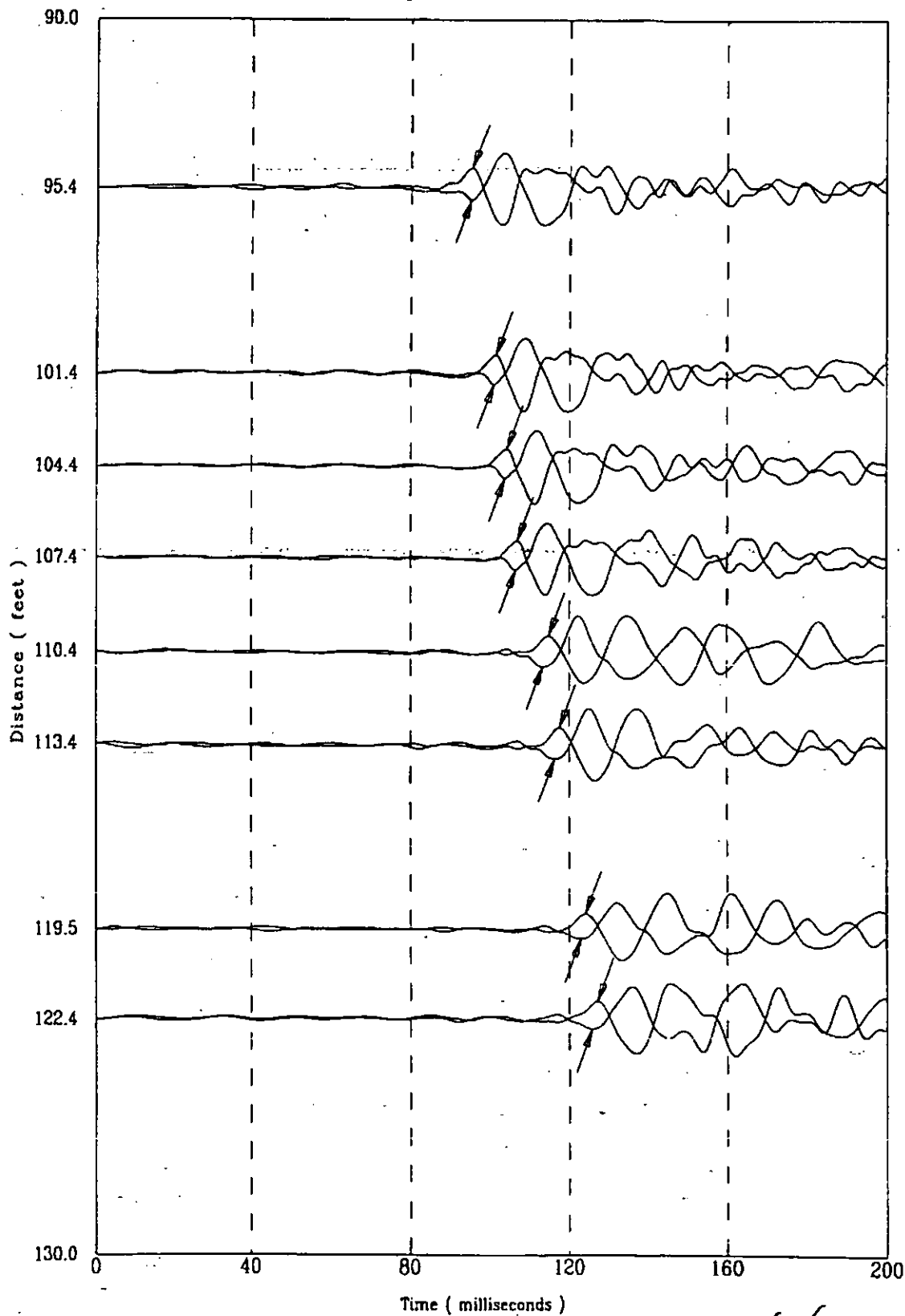
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K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-182

S Wave  
03/23/98



.23m801S

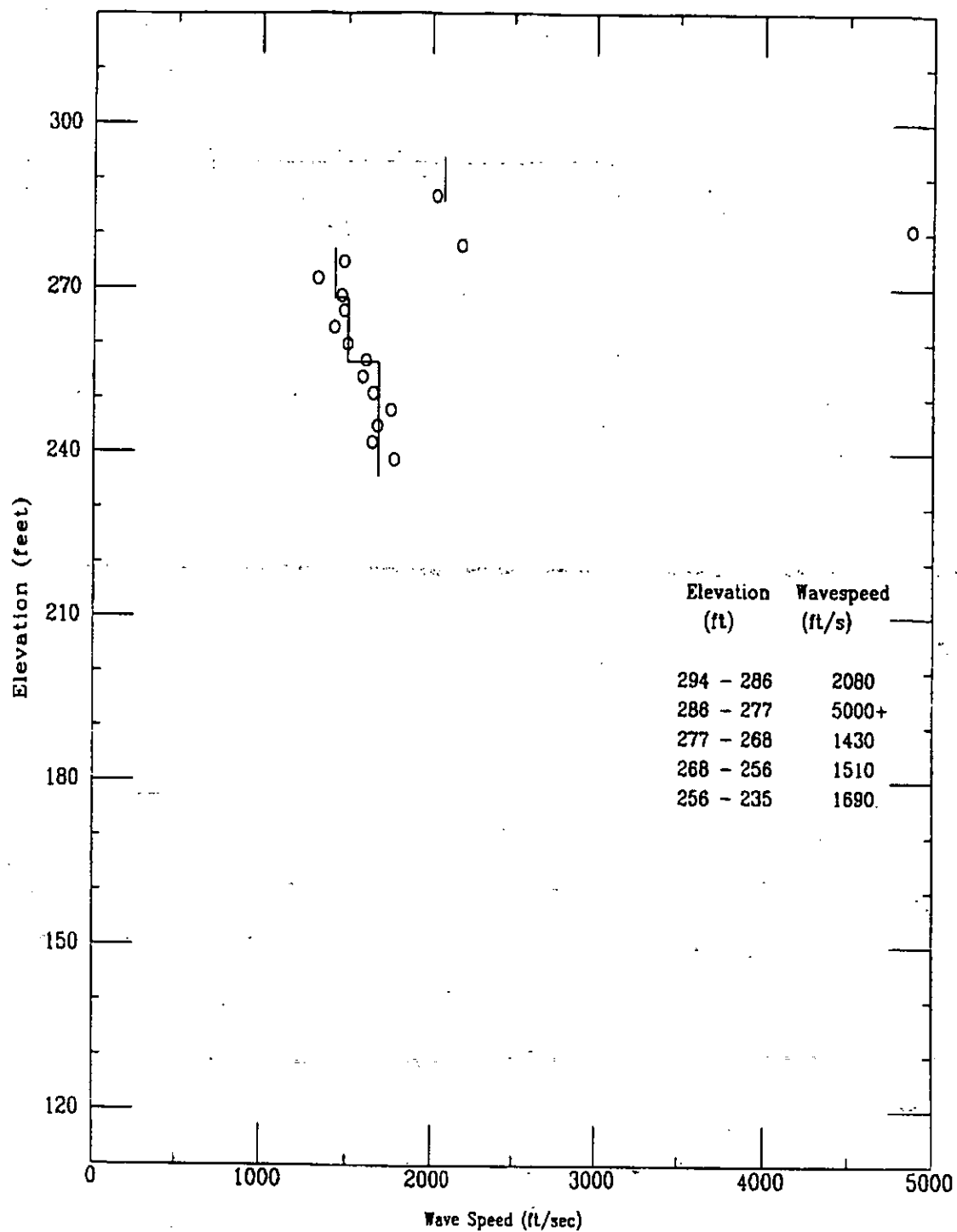
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CPT-182

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

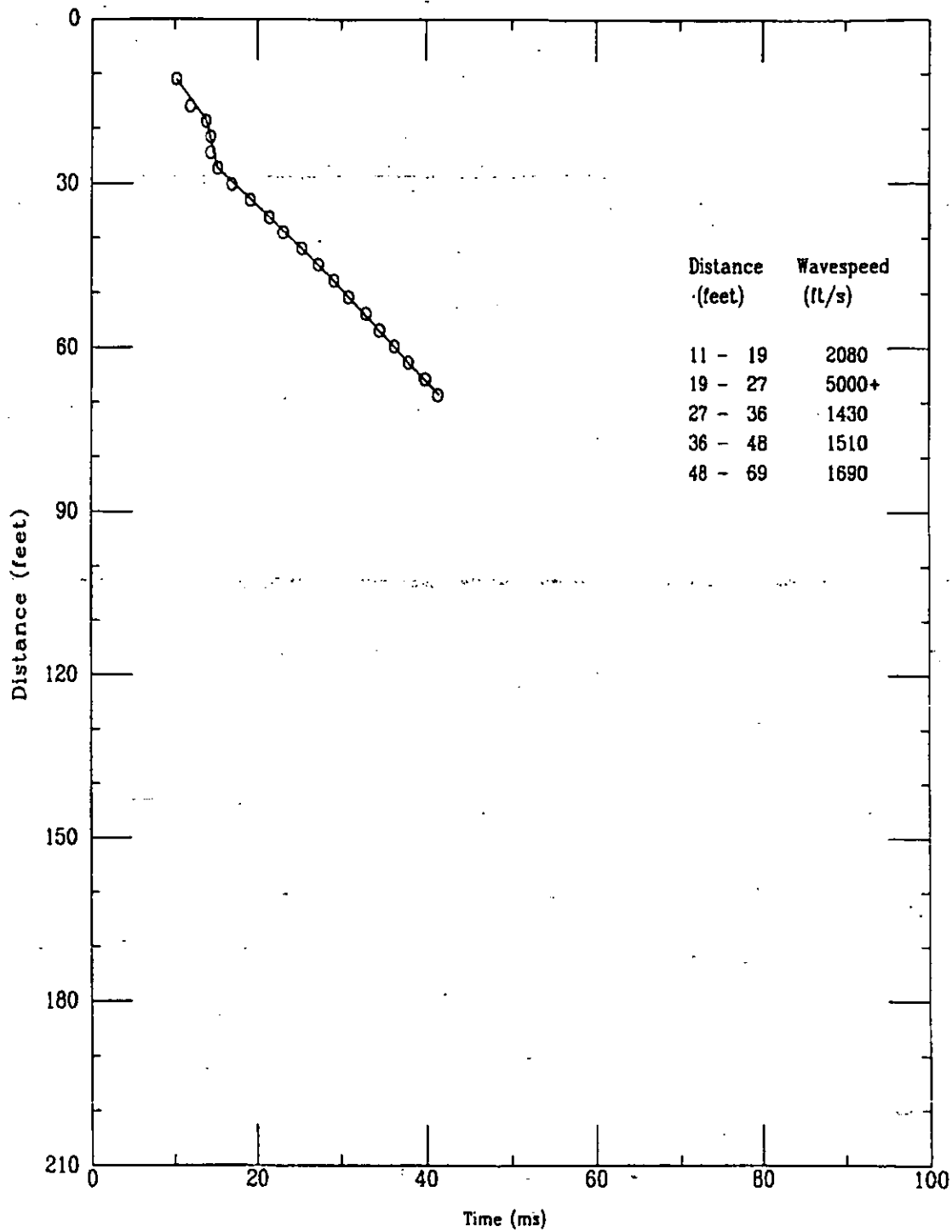
03/23/98



CPT-182

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/23/98



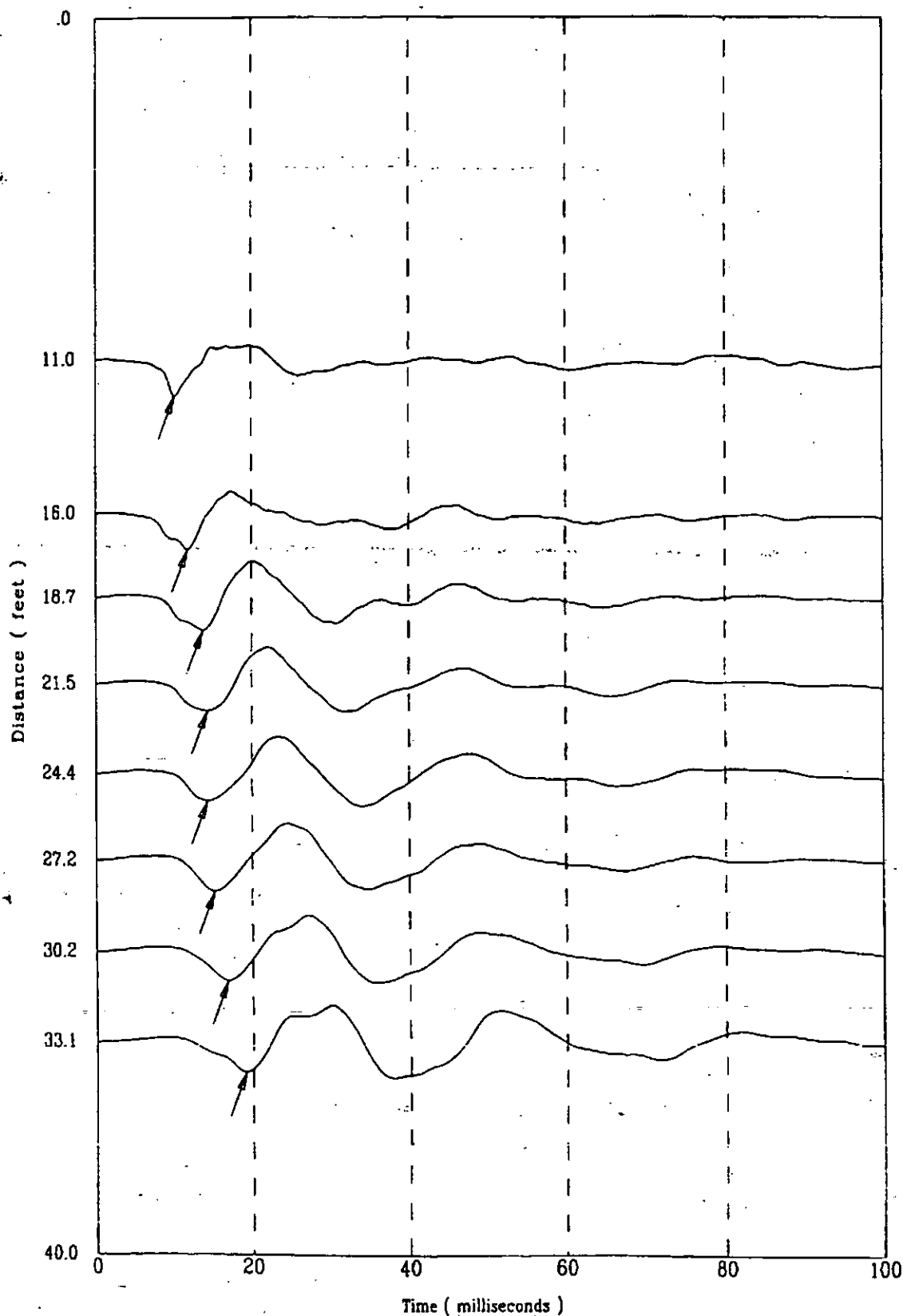
File 323m801S

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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-182

P Wave  
03/23/98



File 323m801S

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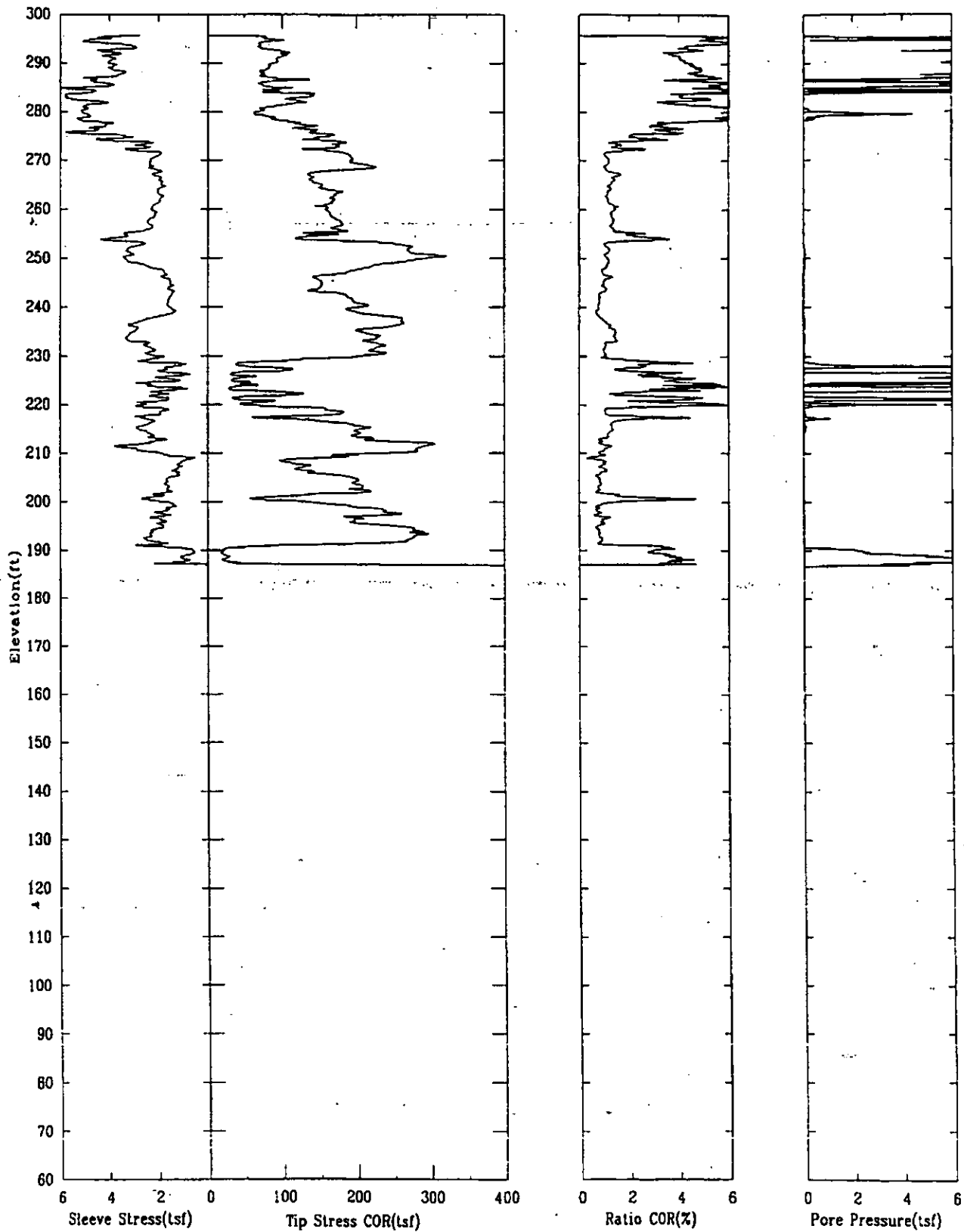
CPT-183

APPLIED RESEARCH ASSOCIATES, INC.

North 78510

East 55583

Elevation 301.7

K-TRT-F-0000/  
03/25/98/o

CPT-183

APPLIED RESEARCH ASSOCIATES, INC.

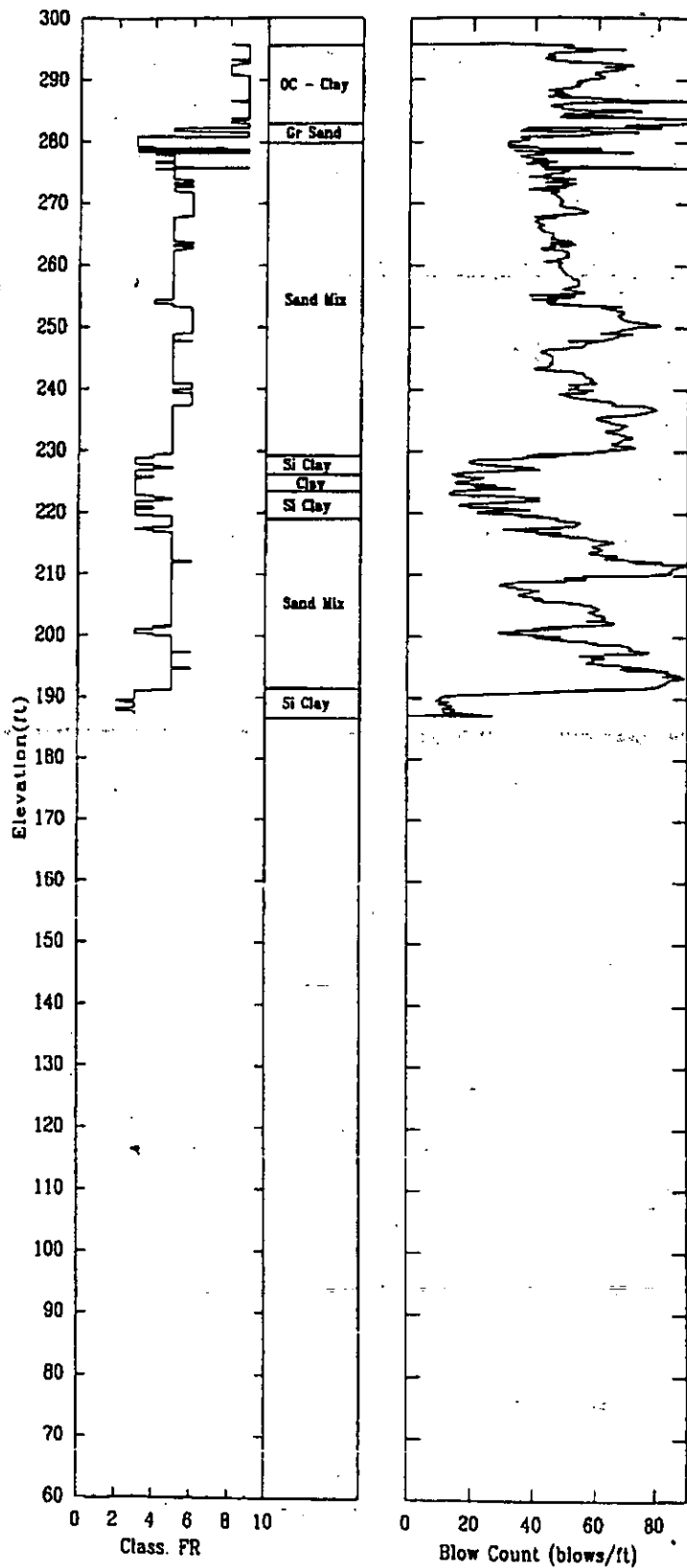
North 78510

East 55583

Elevation 301.7

K-TRT-F-00001

03/25/98/0

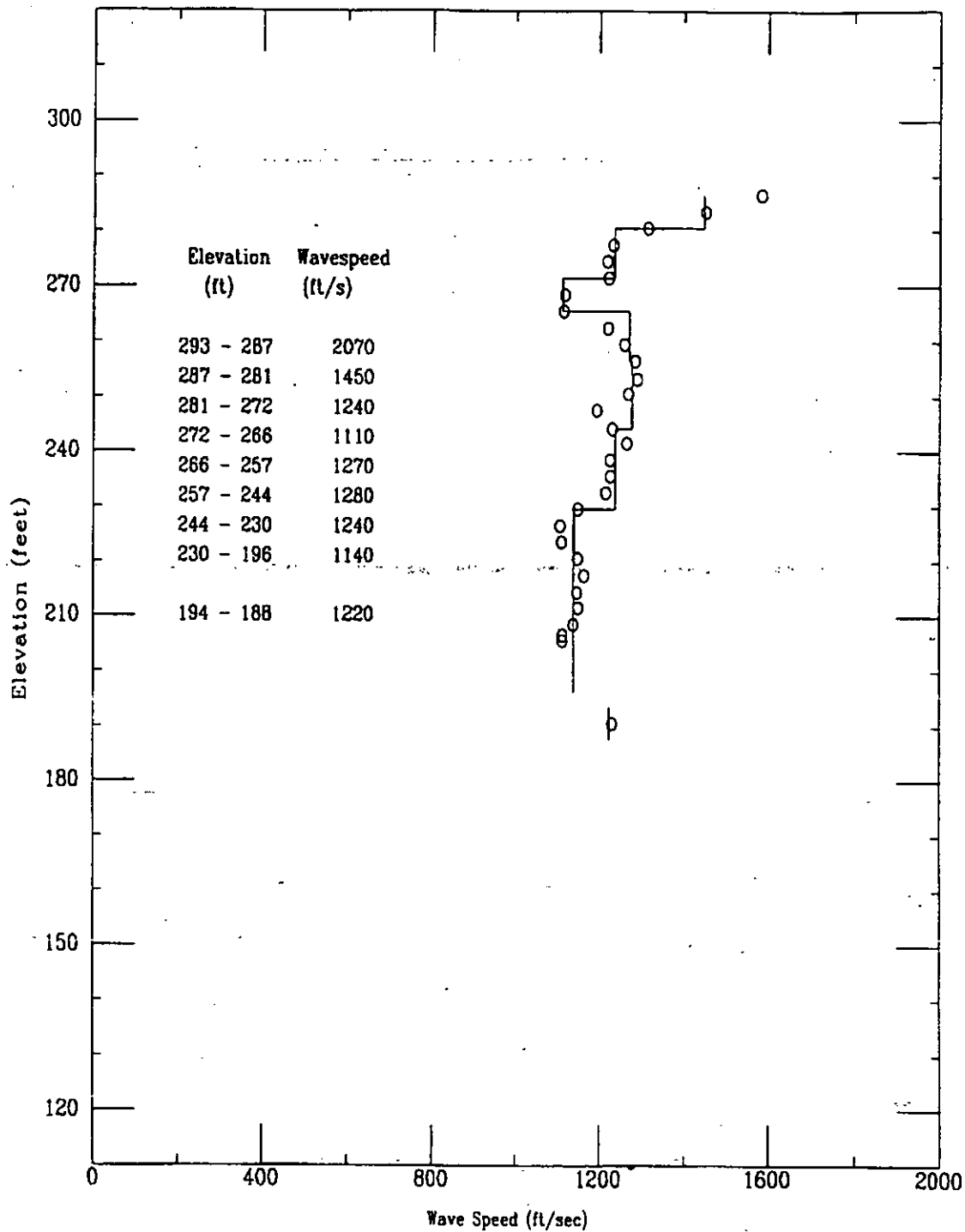


CPT-183

APPLIED-RESEARCH ASSOCIATES, INC.

03/25/98

Shear Wave Speeds



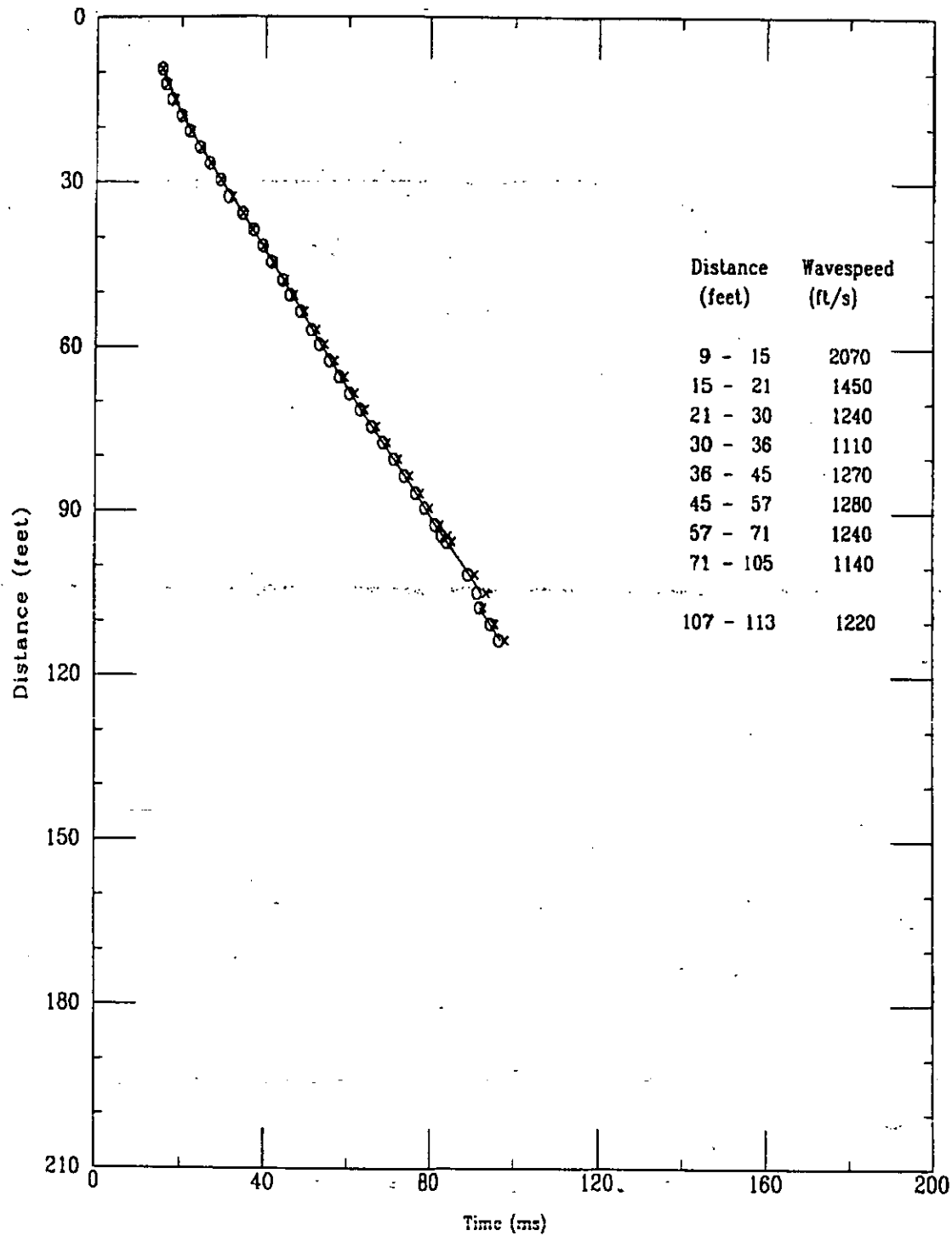
K-TRT-F-00001  
R/O

CPT-183

APPLIED RESEARCH ASSOCIATES, INC.

03/25/98

Shear Wave Time of Peak



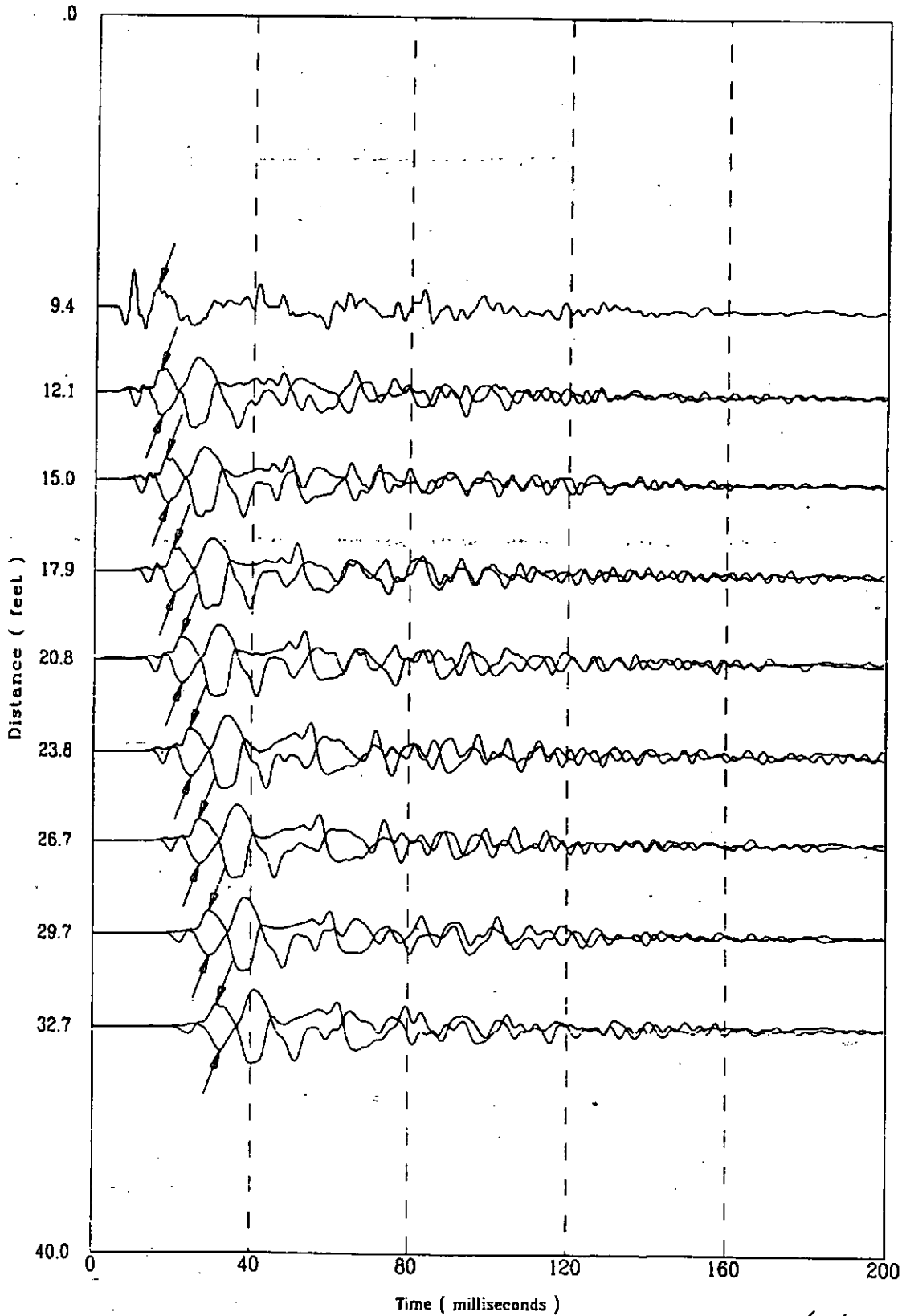
File 325m804S

448 of 522

K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-183

S Wave  
03/25/98



325m804S

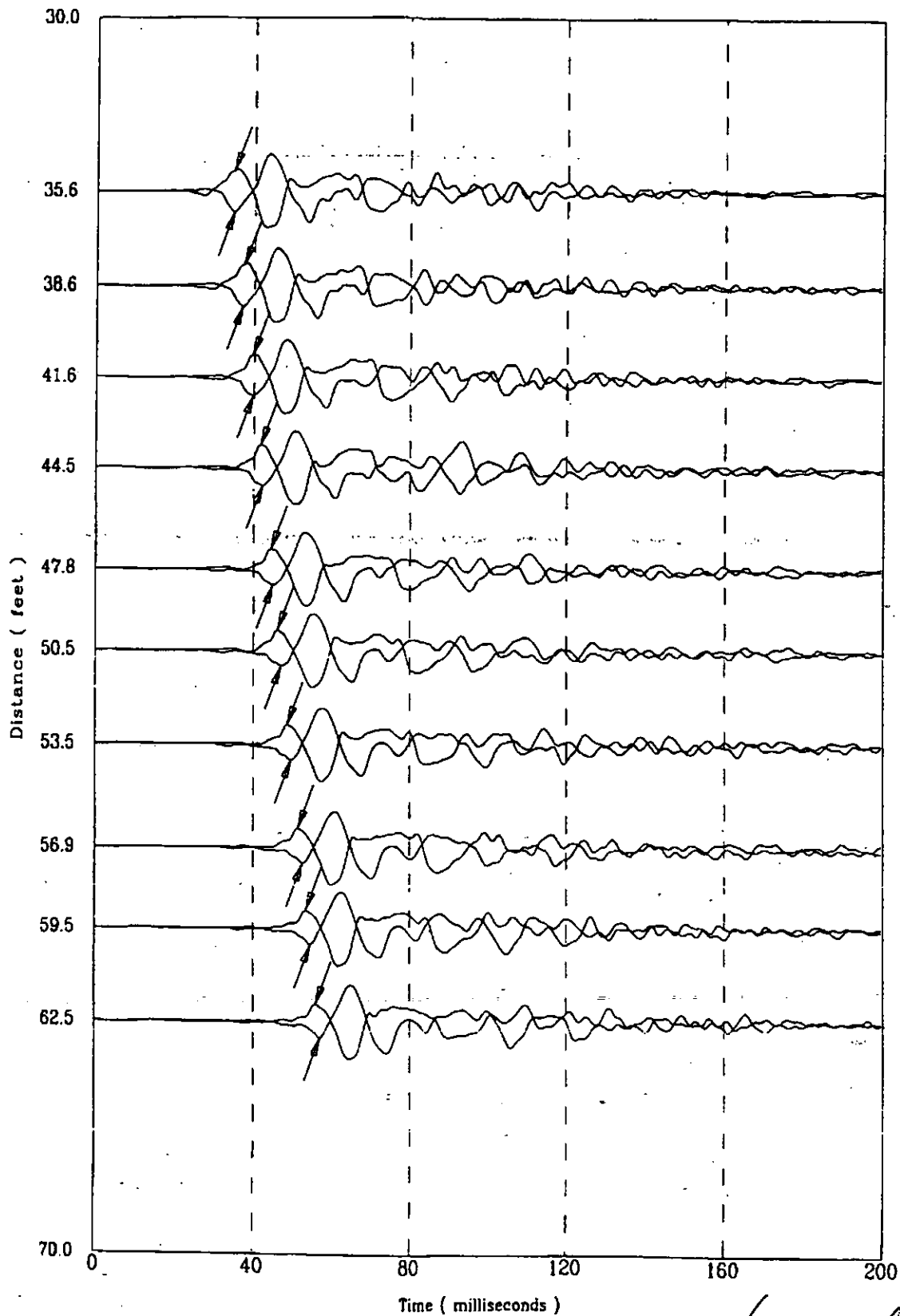
449 of 522



K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-183

S Wave  
03/25/98



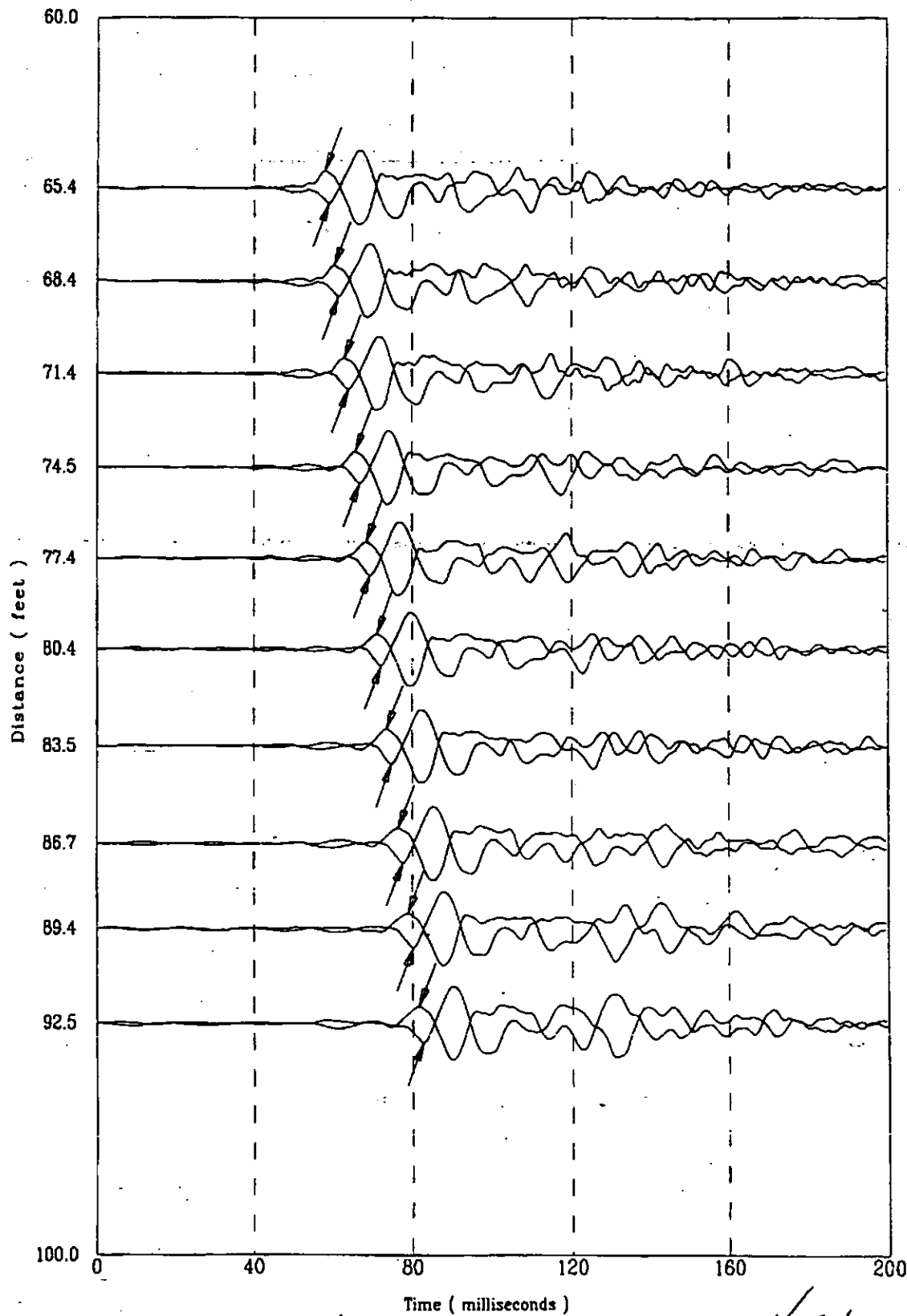
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-183

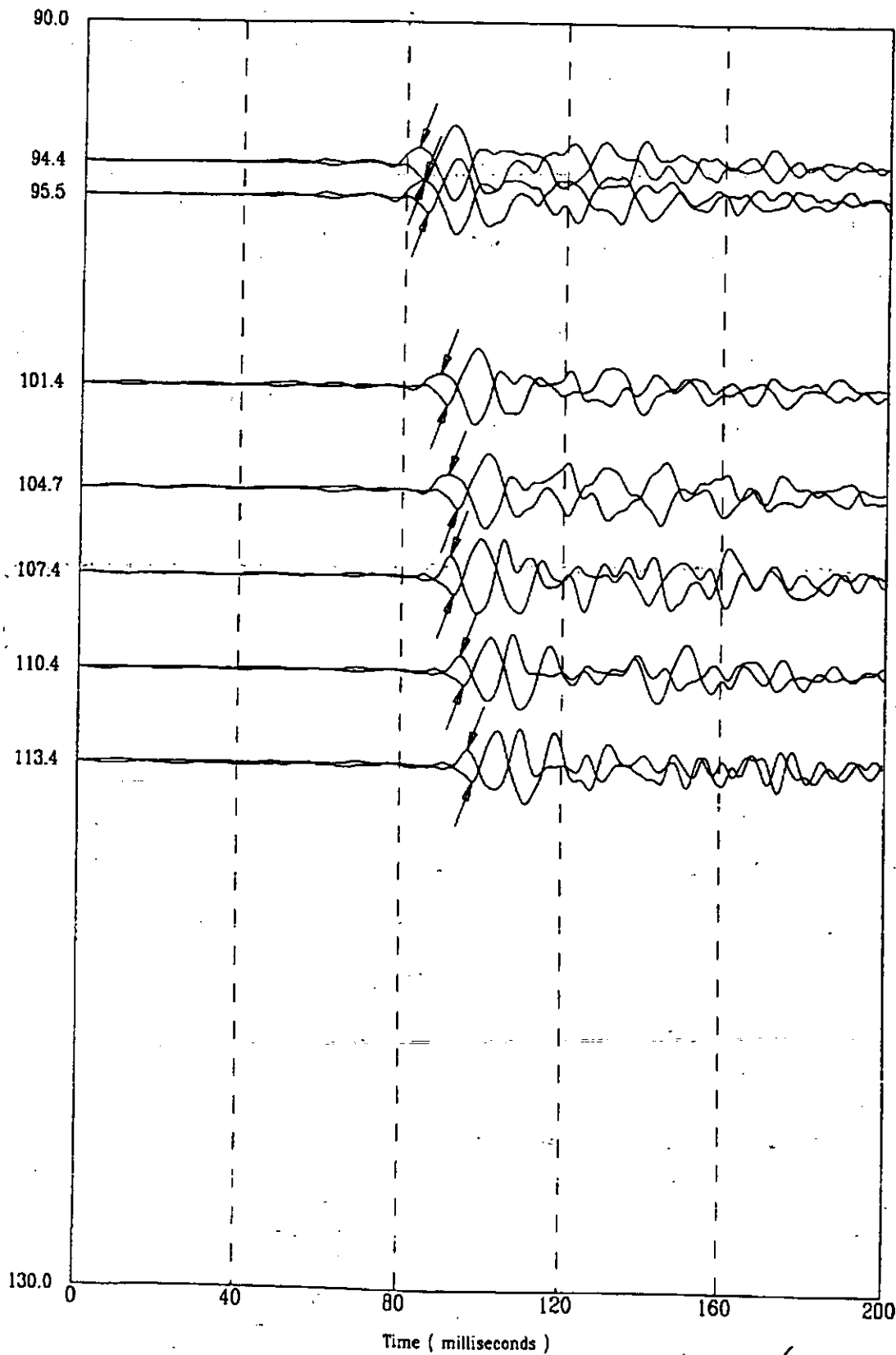
S Wave  
03/25/98



K-TRT-F-00001  
R/O

Applied Research Associates, Inc.  
CPT-183

S Wave  
03/25/98

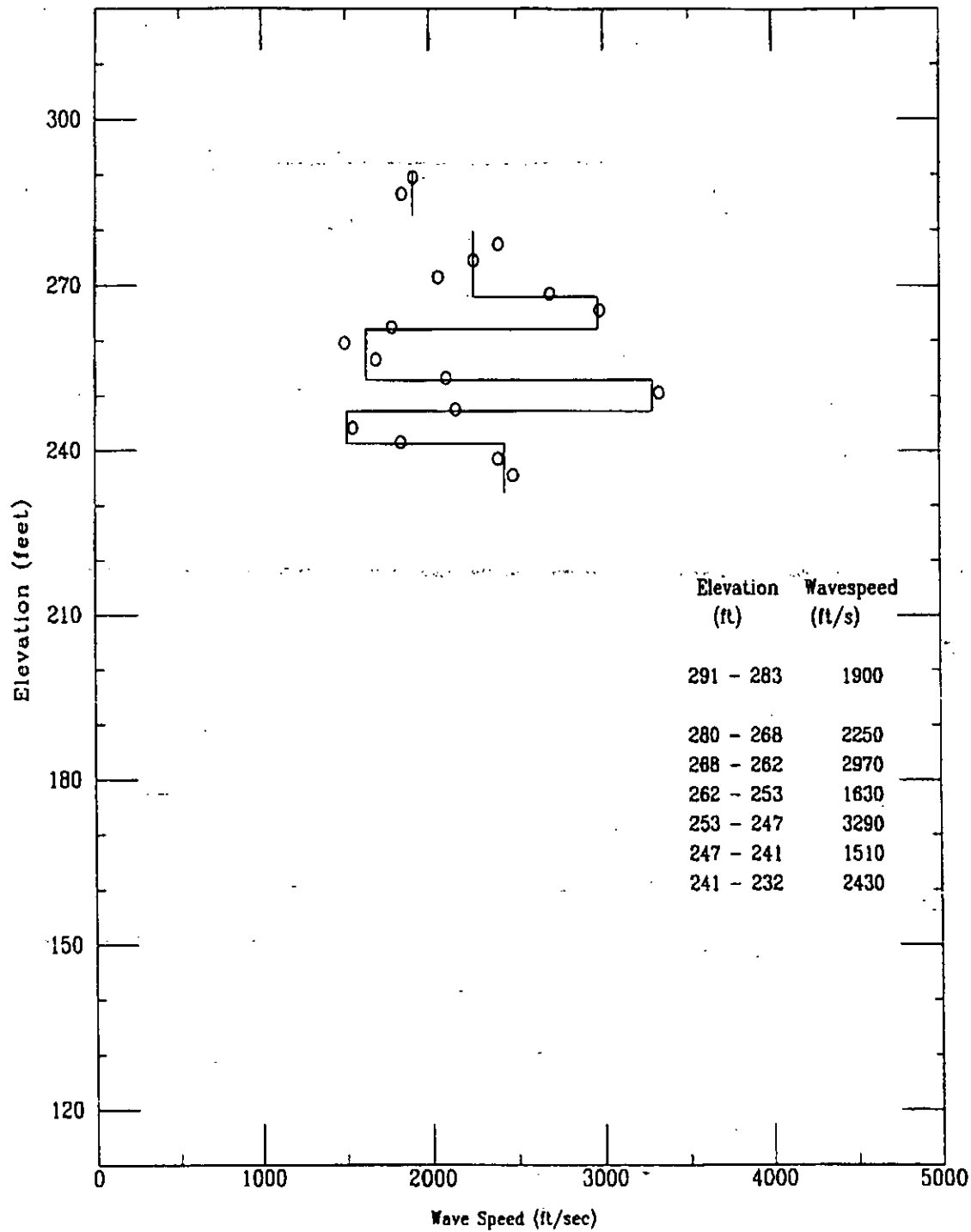


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CPT-183

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

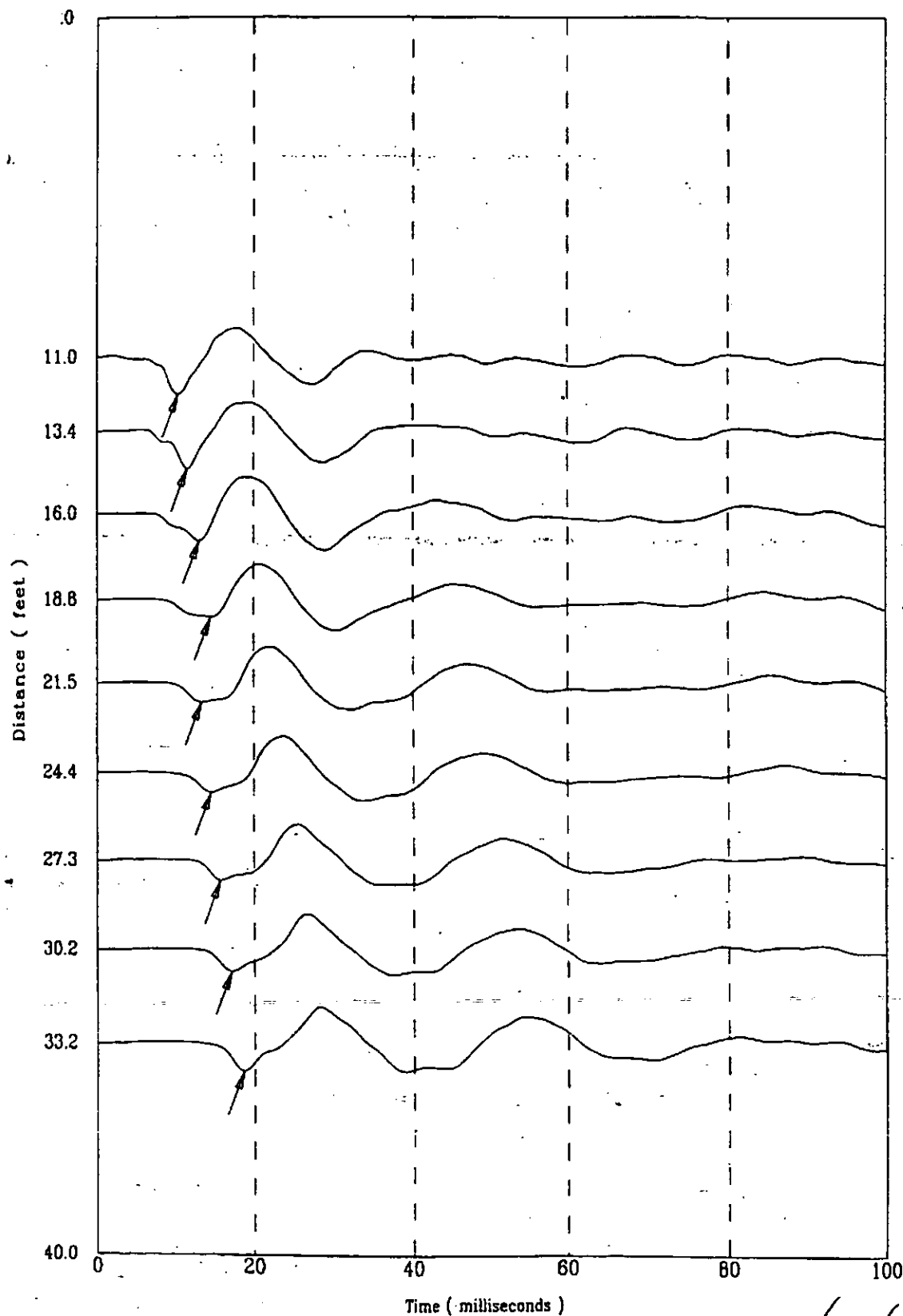
03/25/98



K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-183

P Wave  
03/25/98



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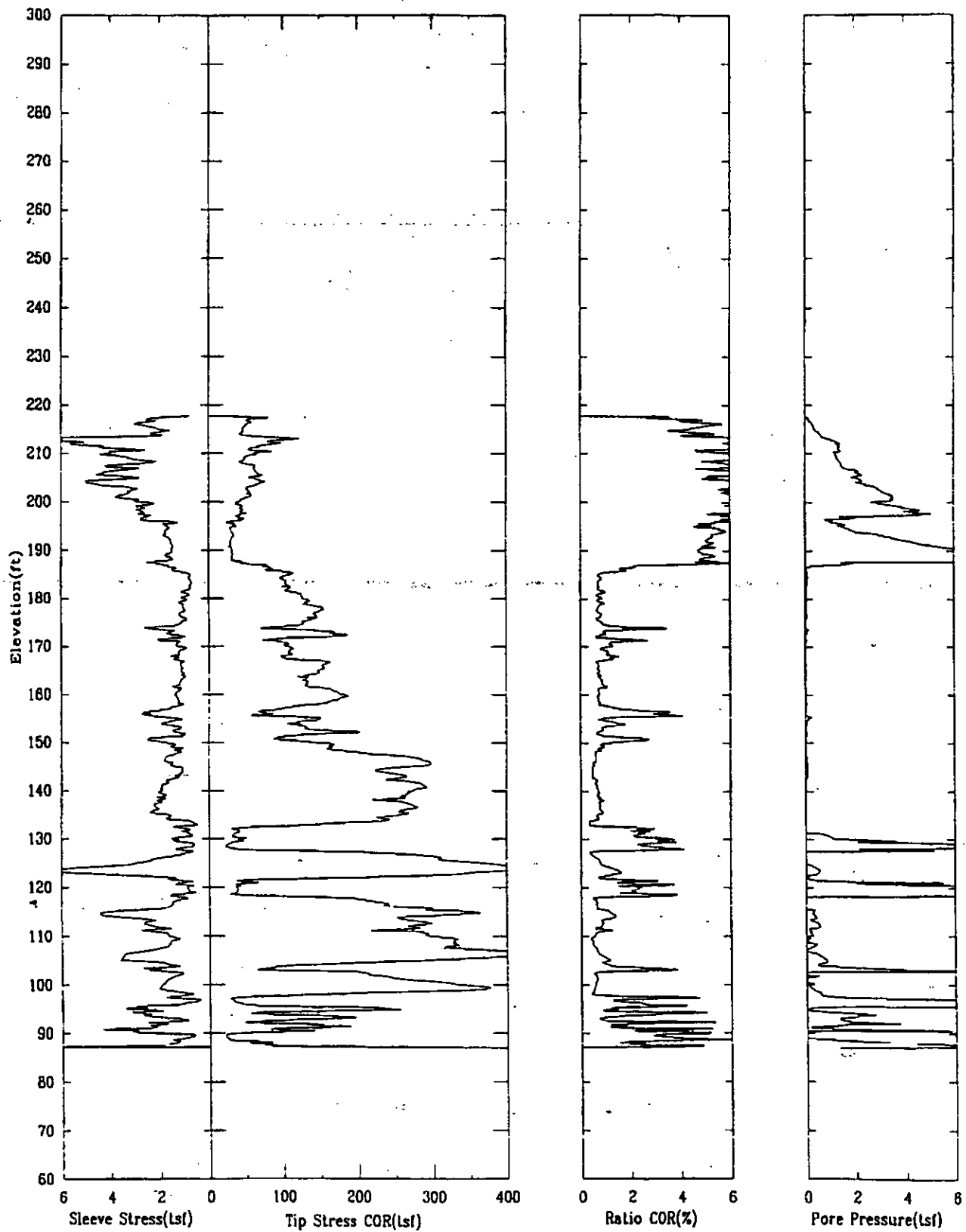
CPT-185

APPLIED RESEARCH ASSOCIATES, INC.

North 78380

East 55385

Elevation 223.7

K-TRT-F-00001  
03/18/98/0

CPT-185

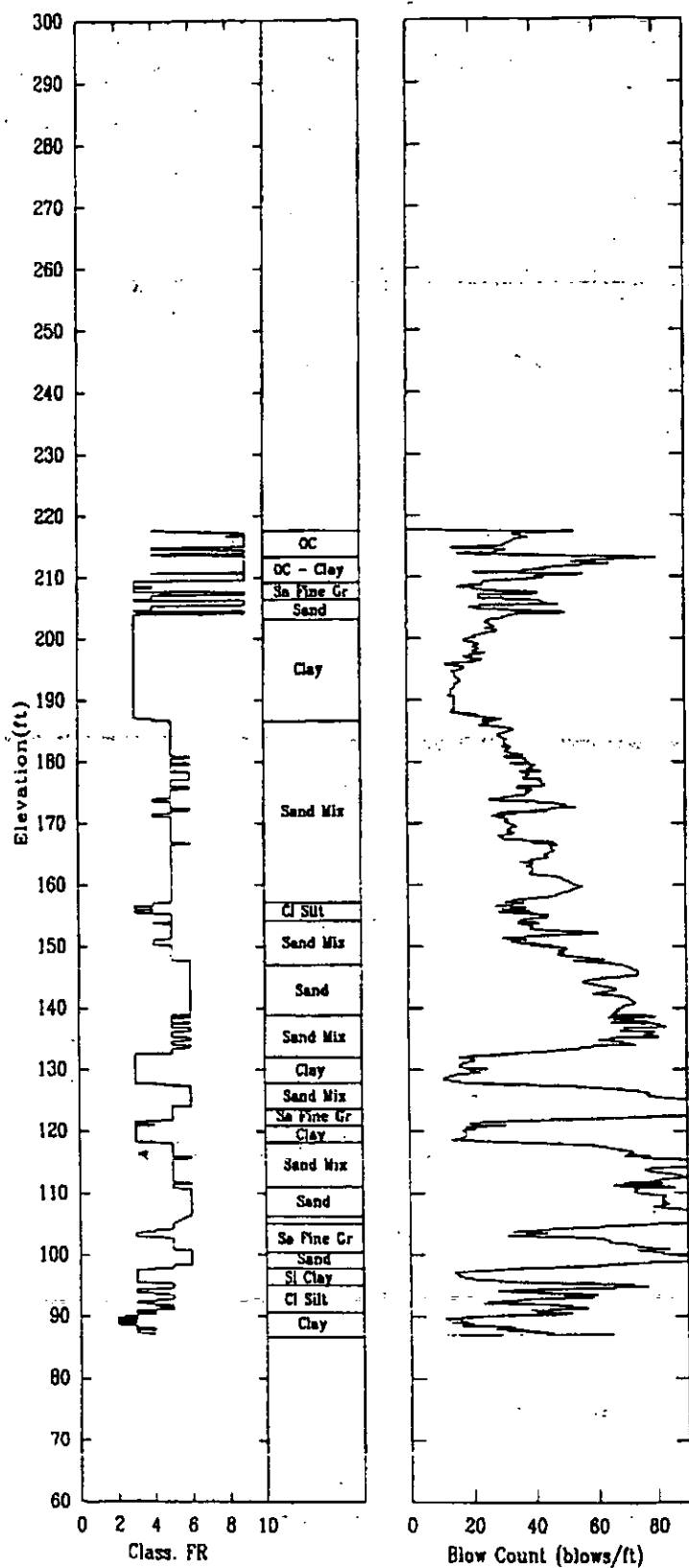
APPLIED RESEARCH ASSOCIATES, INC.

K-TRT-F-0000/  
03/18/98R/O

North 78380

East 55385

Elevation 223.7

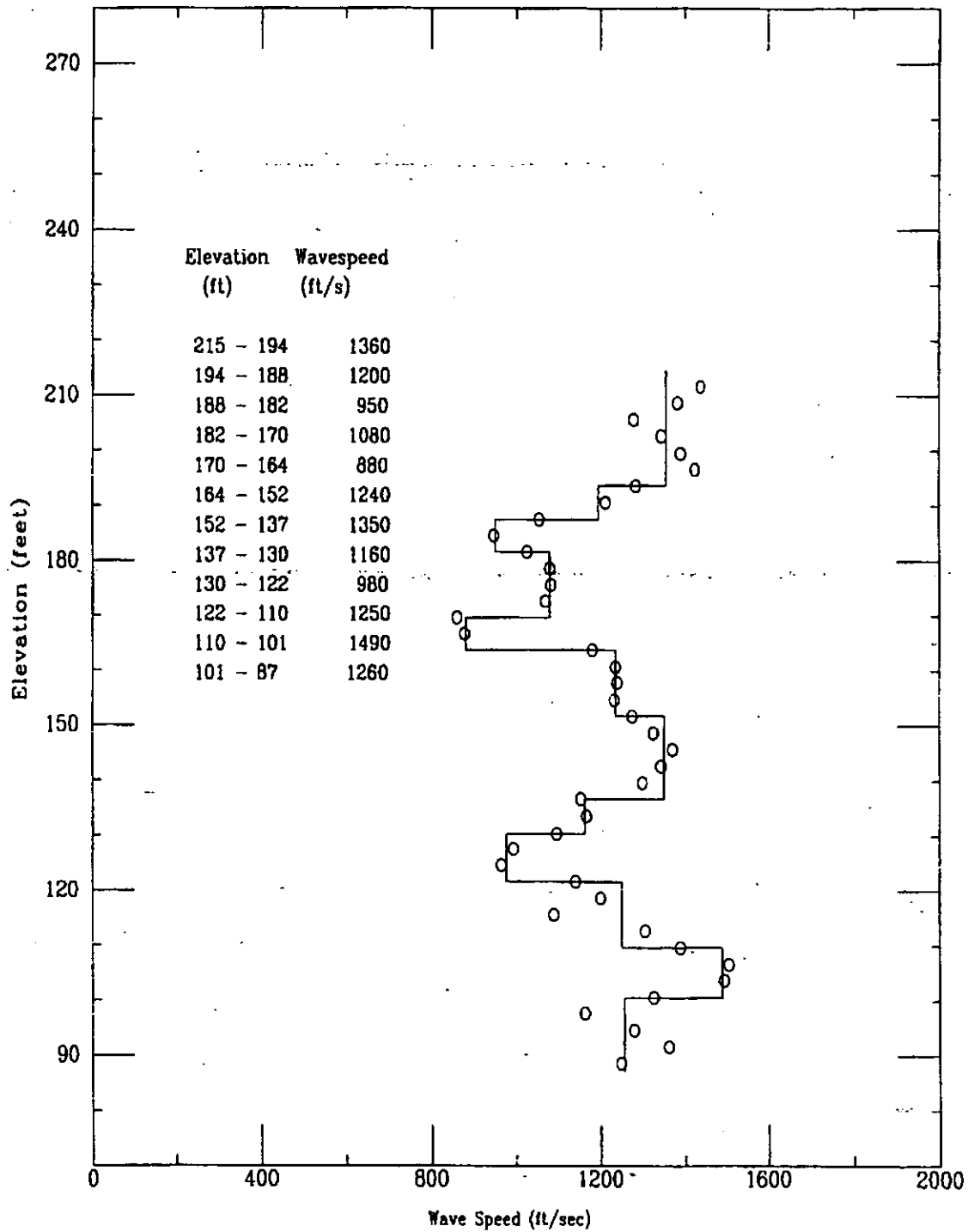


CPT-185

APPLIED RESEARCH ASSOCIATES, INC.

03/18/98

Shear Wave Speeds



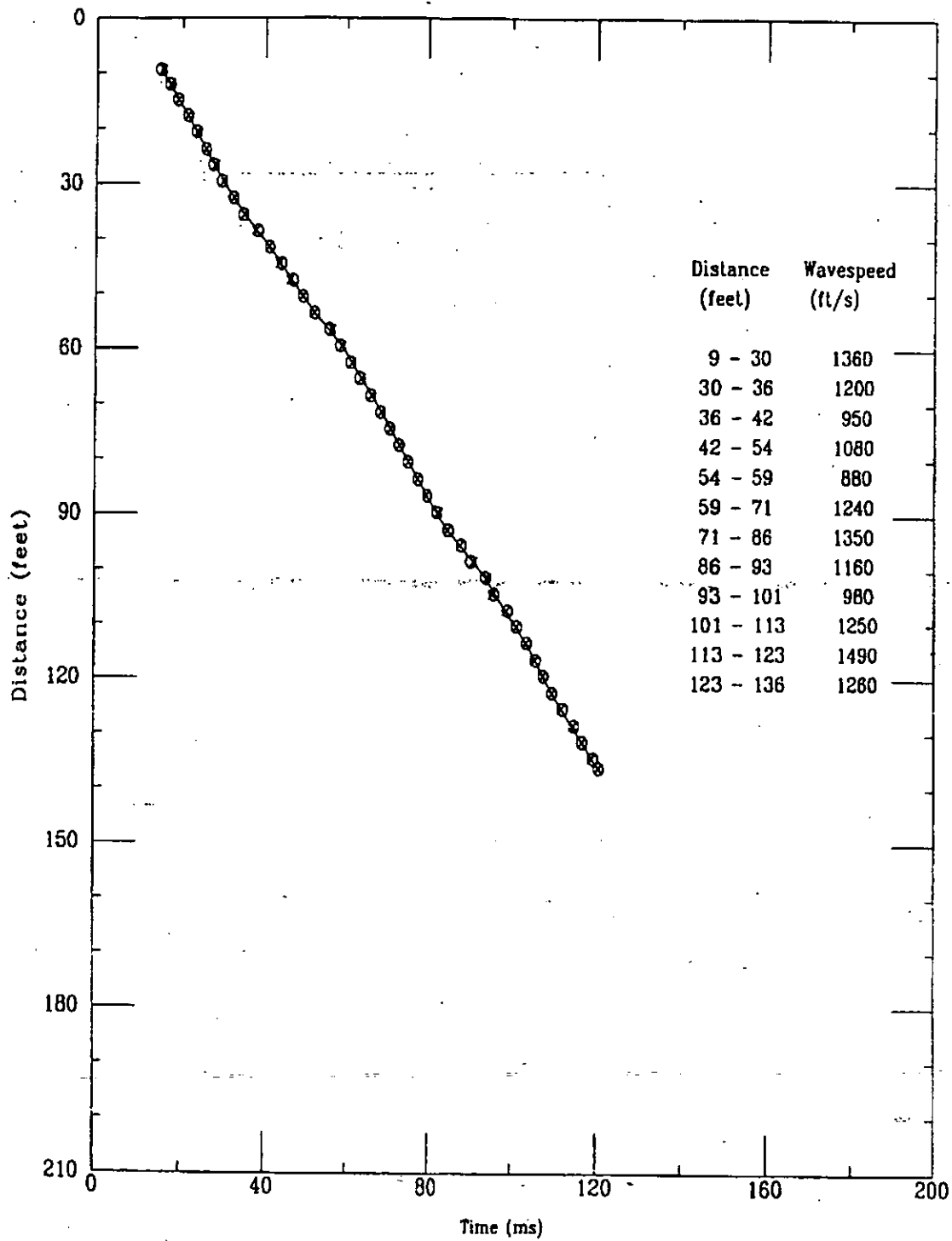


CPT-185

APPLIED RESEARCH ASSOCIATES, INC.

03/18/98

Shear Wave Time of Peak



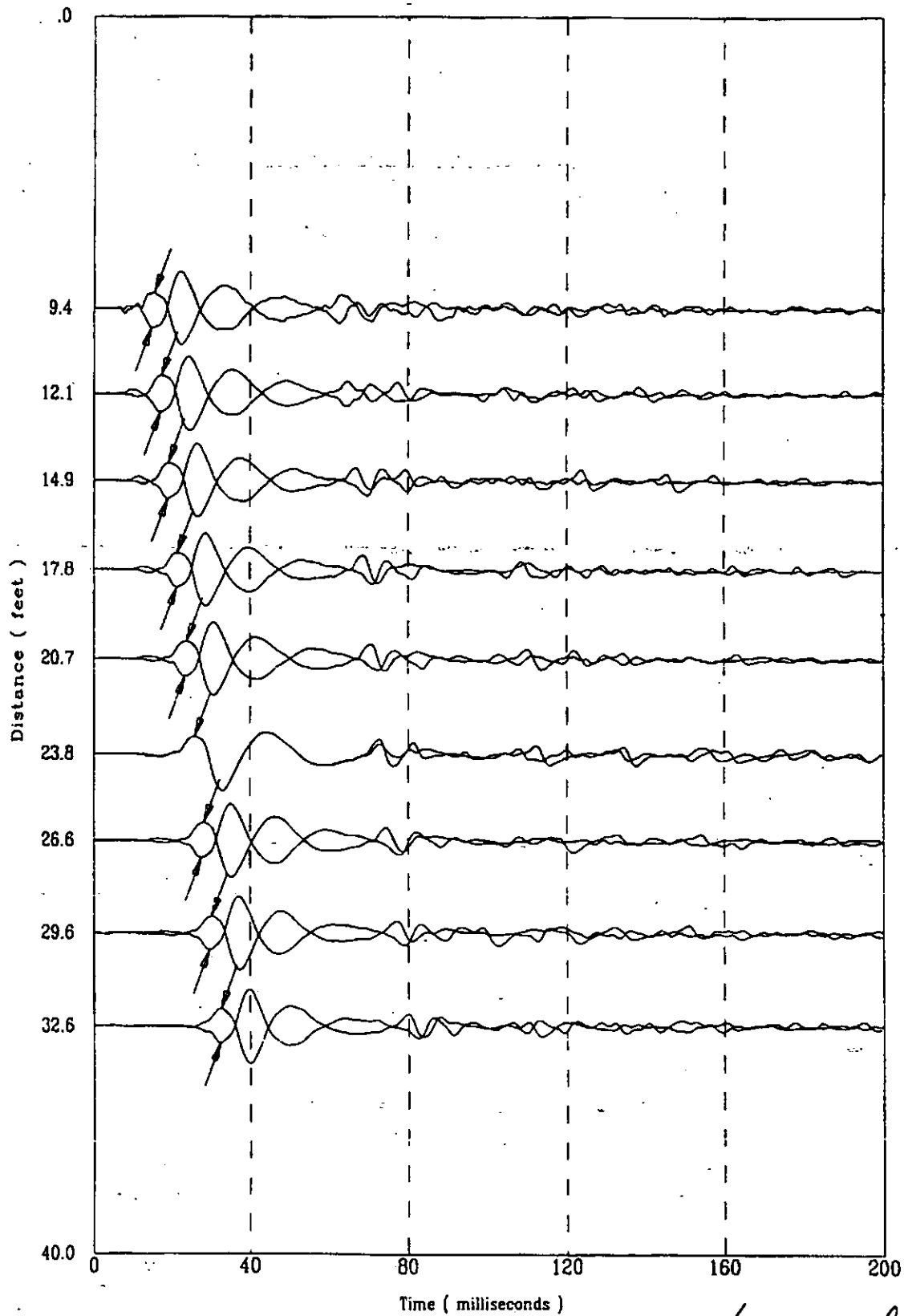
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K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-185

S Wave  
03/18/98



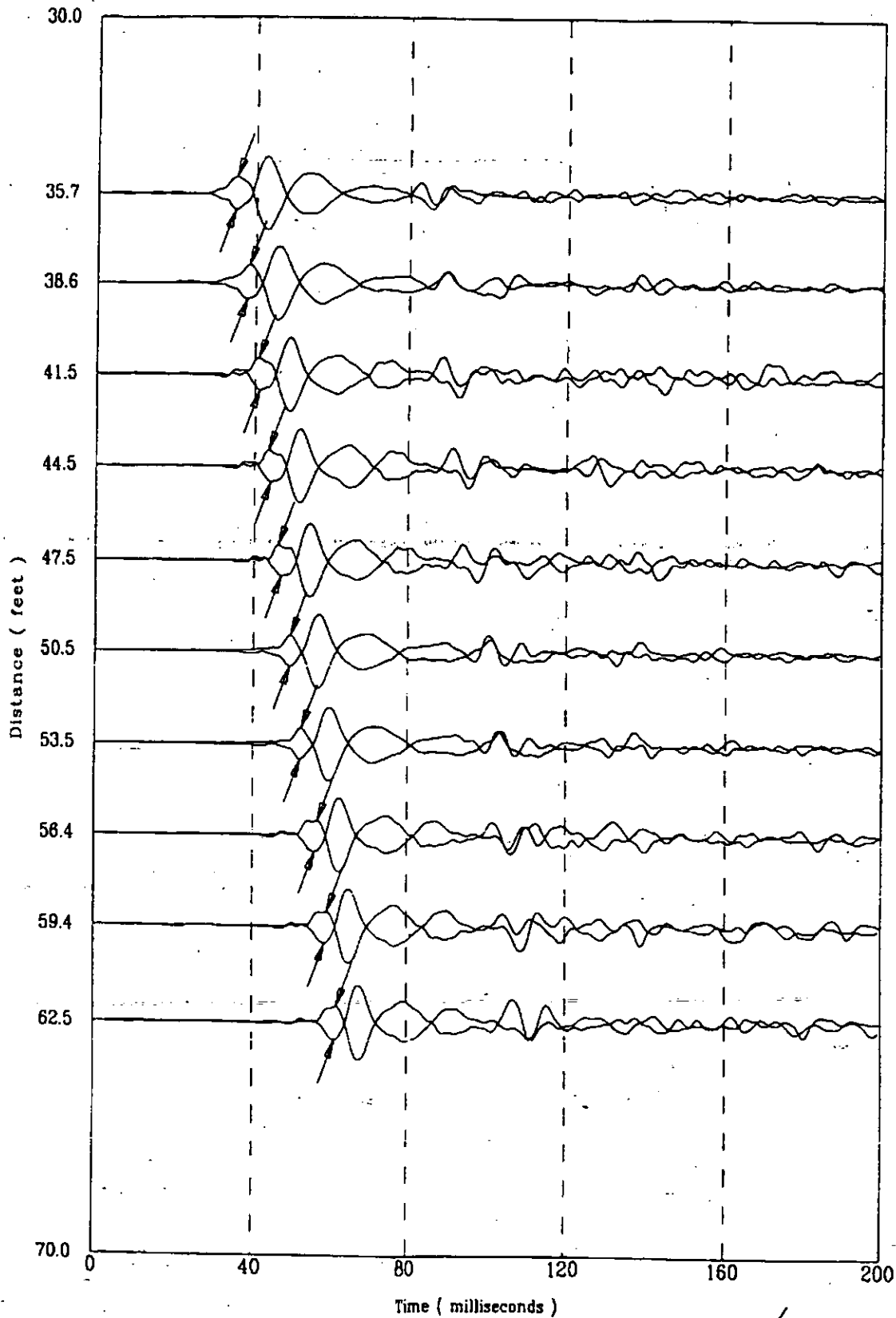
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K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-185

S Wave  
03/18/98



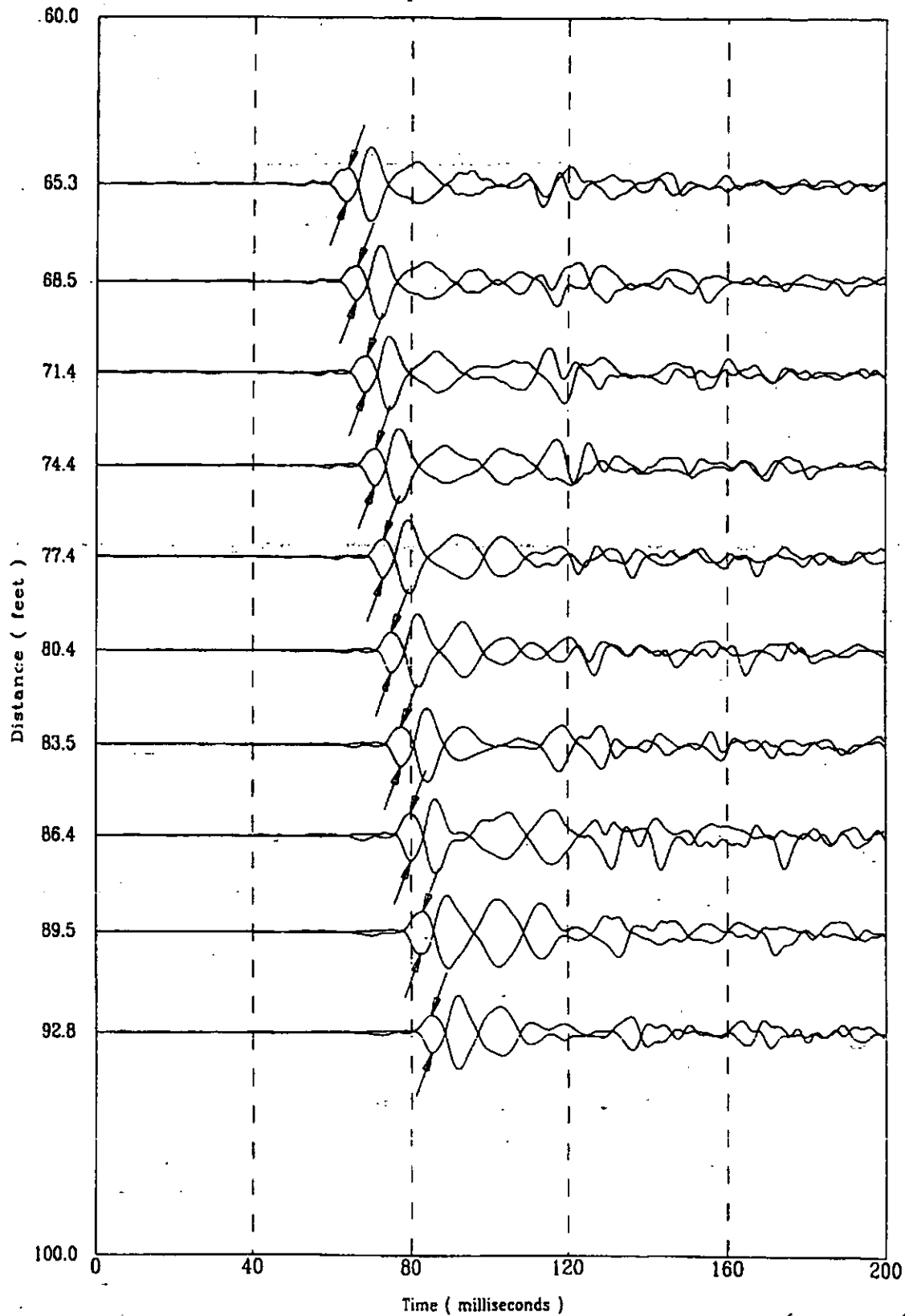
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R/O

Applied Research Associates  
CPT-185

S Wave  
03/18/98

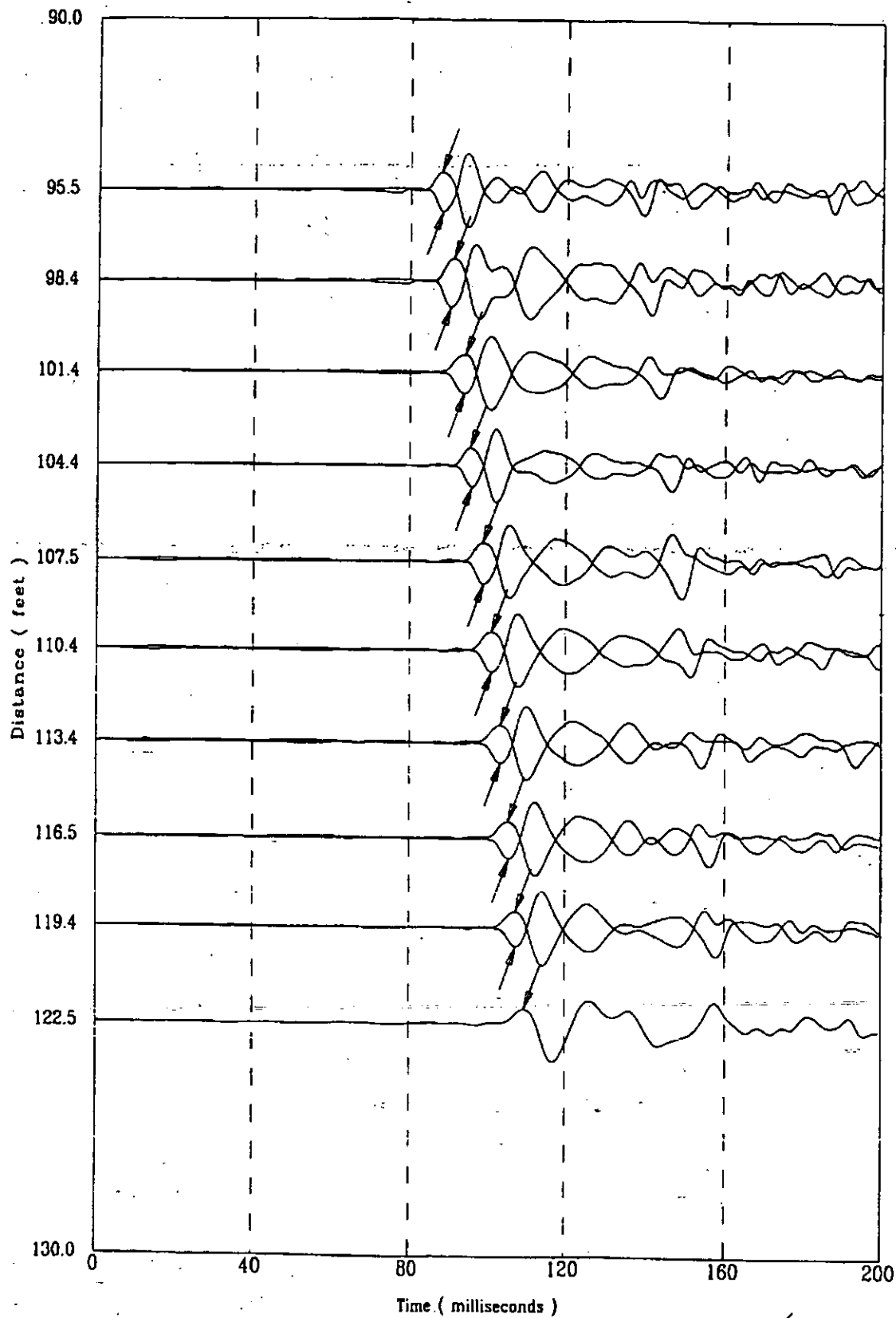


461 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates  
CPT-185

S Wave  
03/18/98



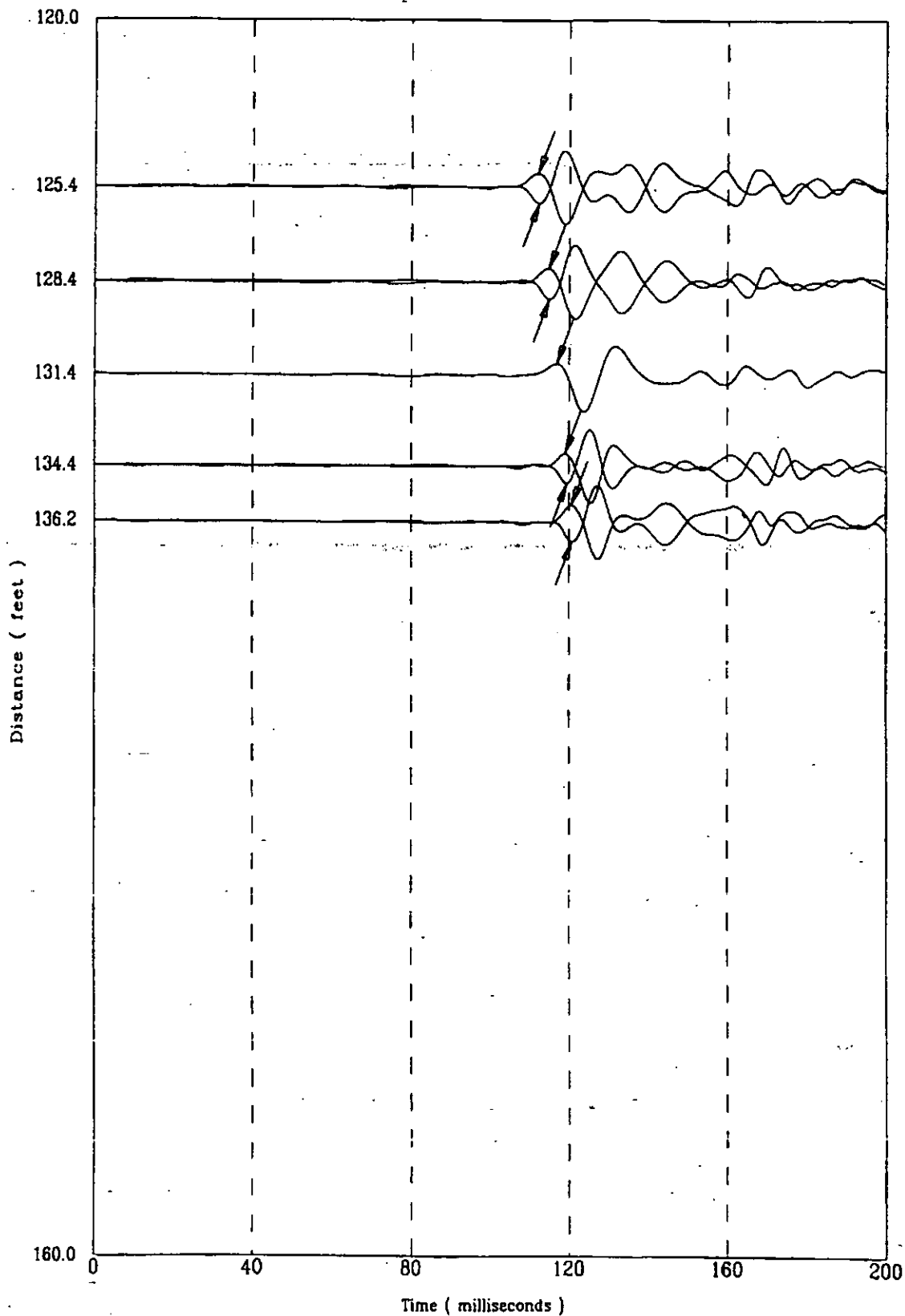
File 418m802S

462 of 522

K-TRT-F-00001  
R/O

Applied Research Associates  
CPT-185

S Wave  
03/18/98



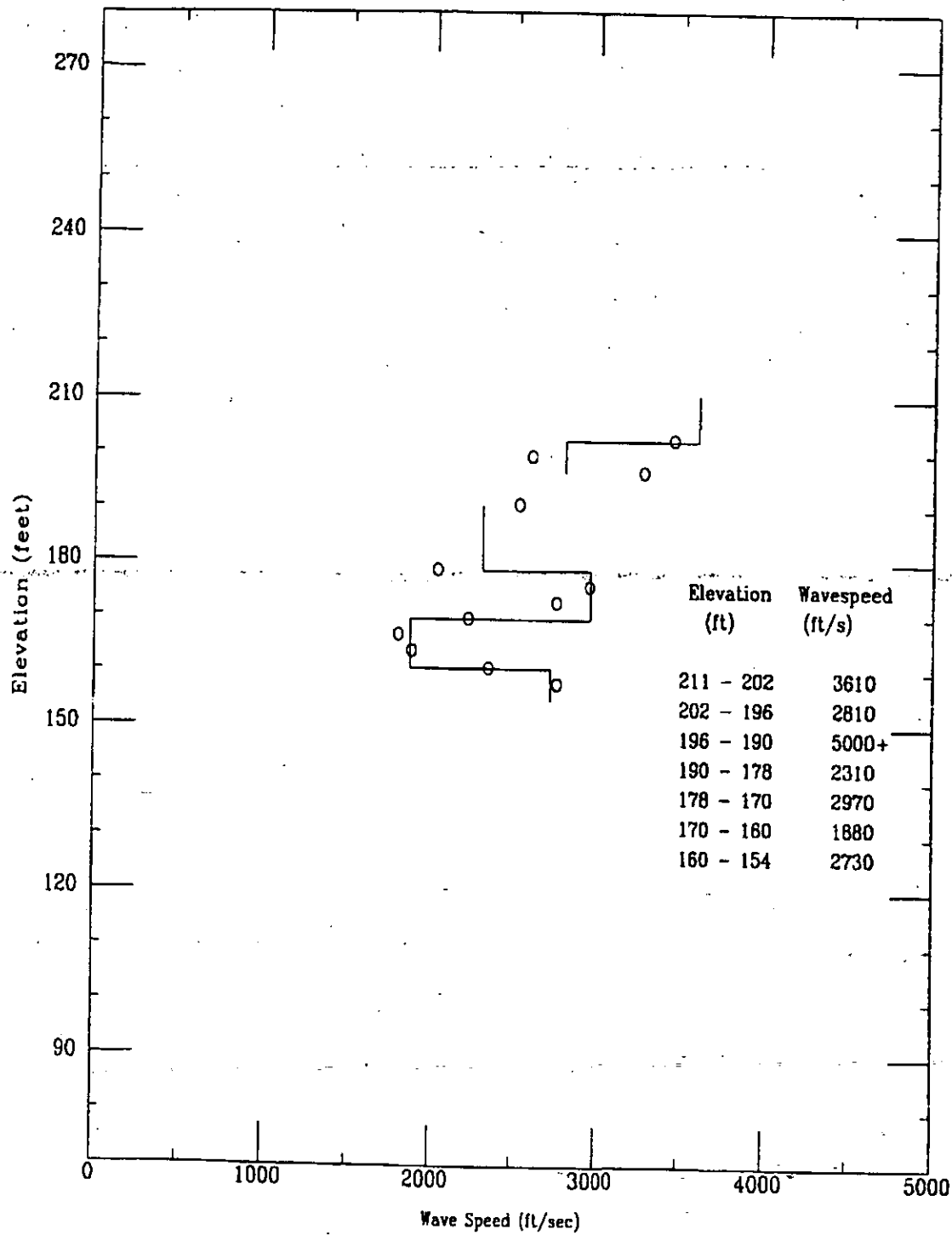
463 of 522

CPT-185

APPLIED RESEARCH ASSOCIATES, INC.

03/18/98

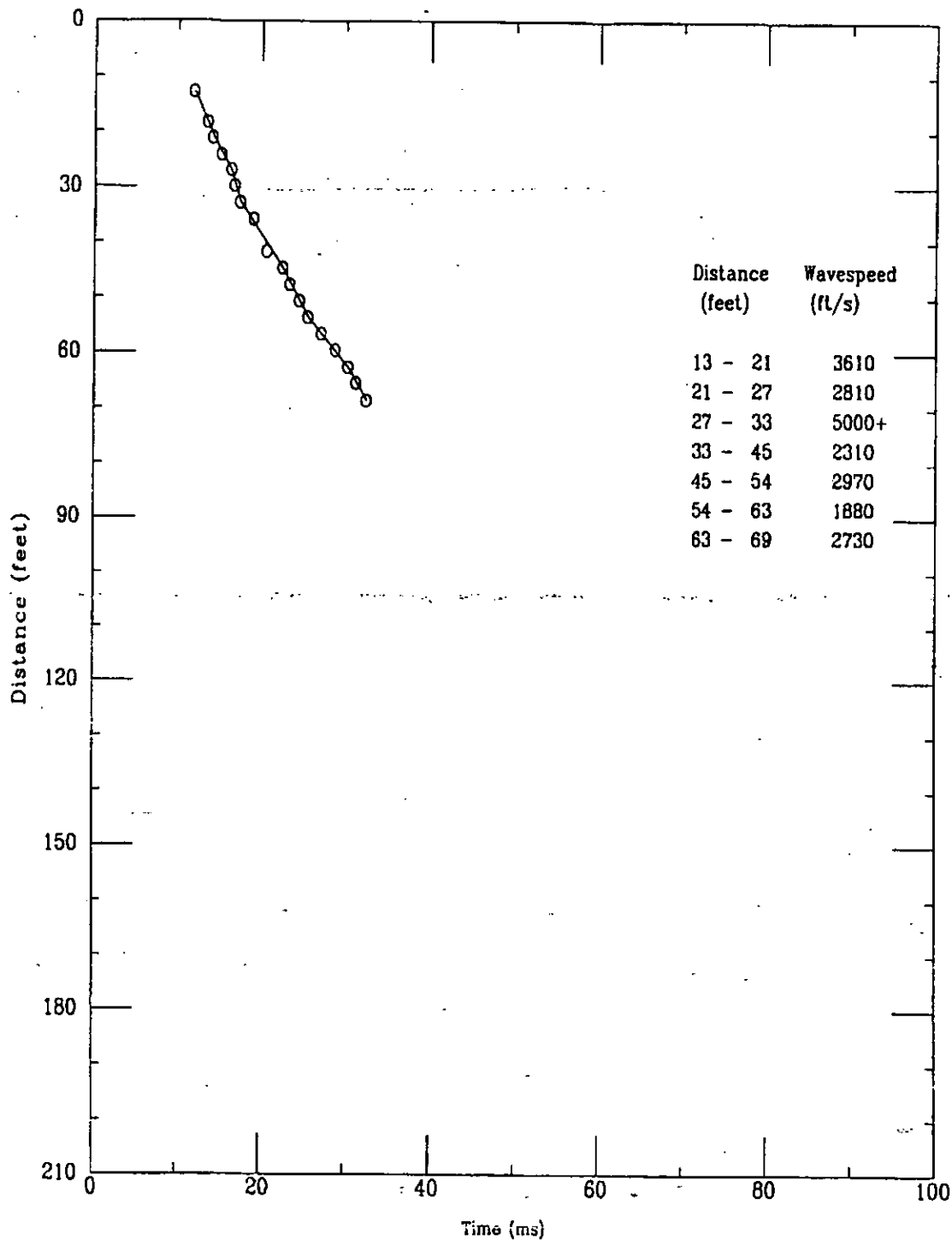
Compression Wave Speeds



CPT-185

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/18/98



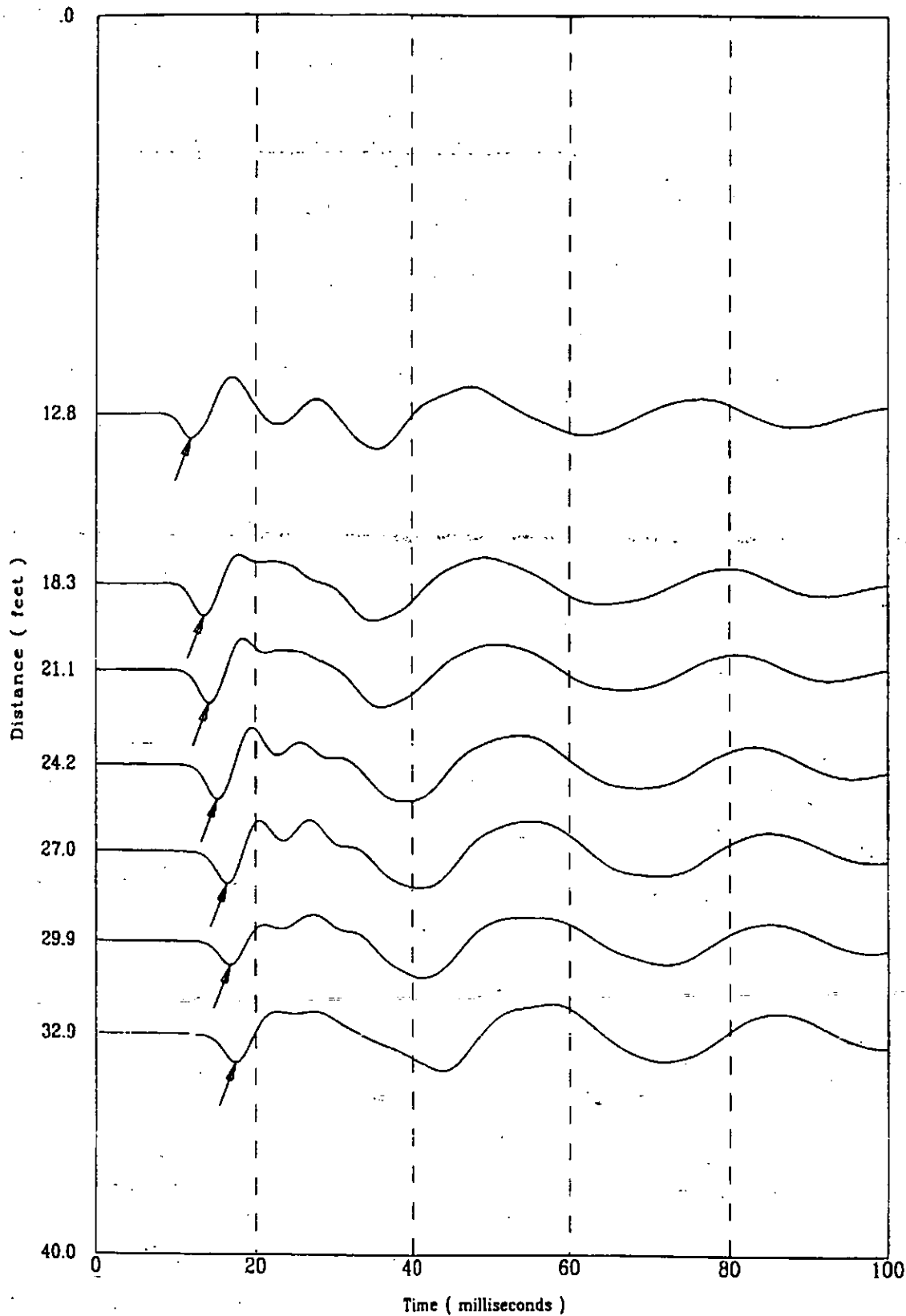
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K-TRT-F-0000/  
R/o

Applied Research Associates, Inc.  
CPT-185

P Wave  
03/18/98



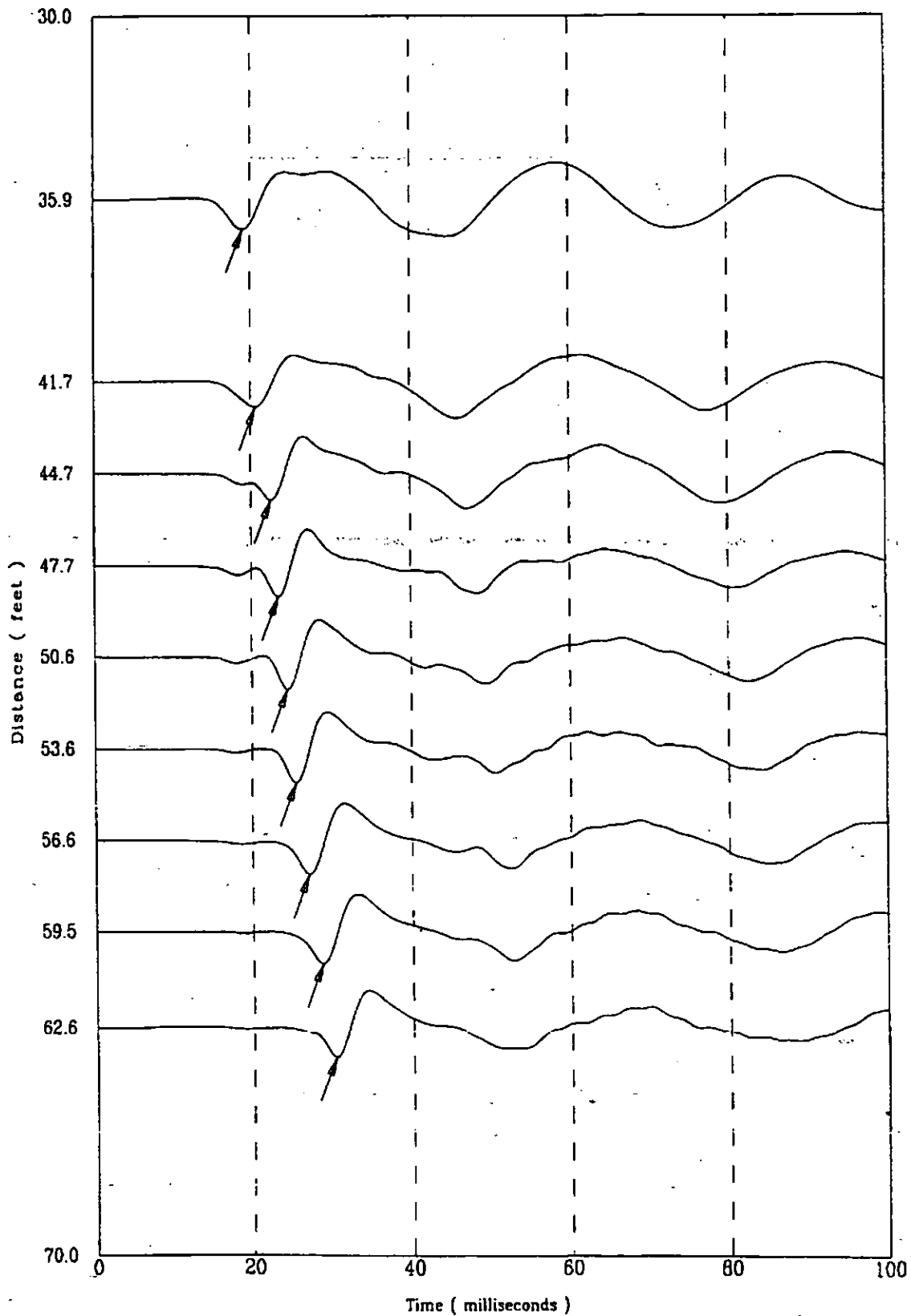
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466 of 522

K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-185

P Wave  
03/18/98



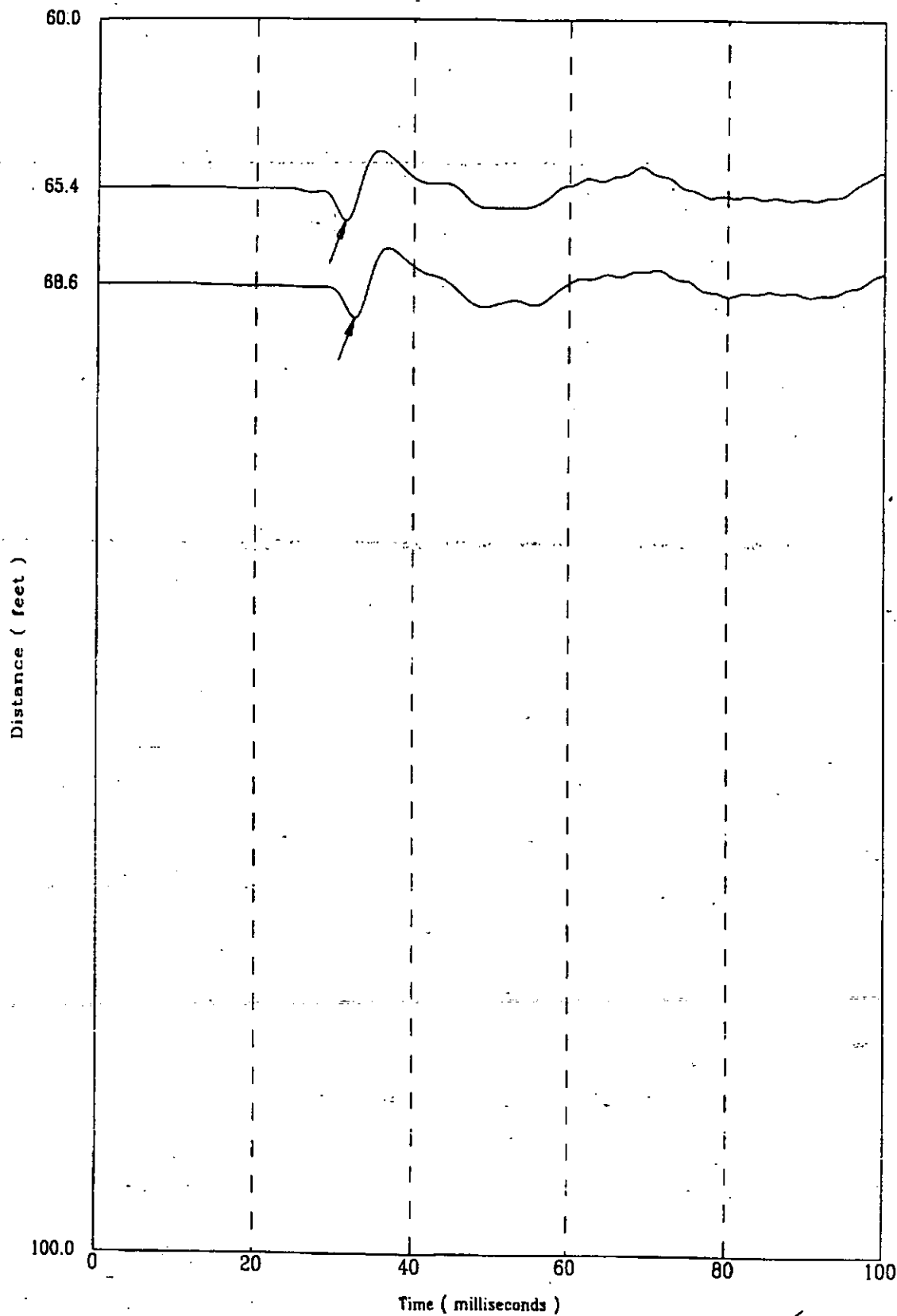
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K-TRT-F-0000/  
R/O

Applied Research Associates, Inc.  
CPT-185

P Wave  
03/18/98



File 418m8025

468 A 522

CPT-186

APPLIED RESEARCH ASSOCIATES, INC.

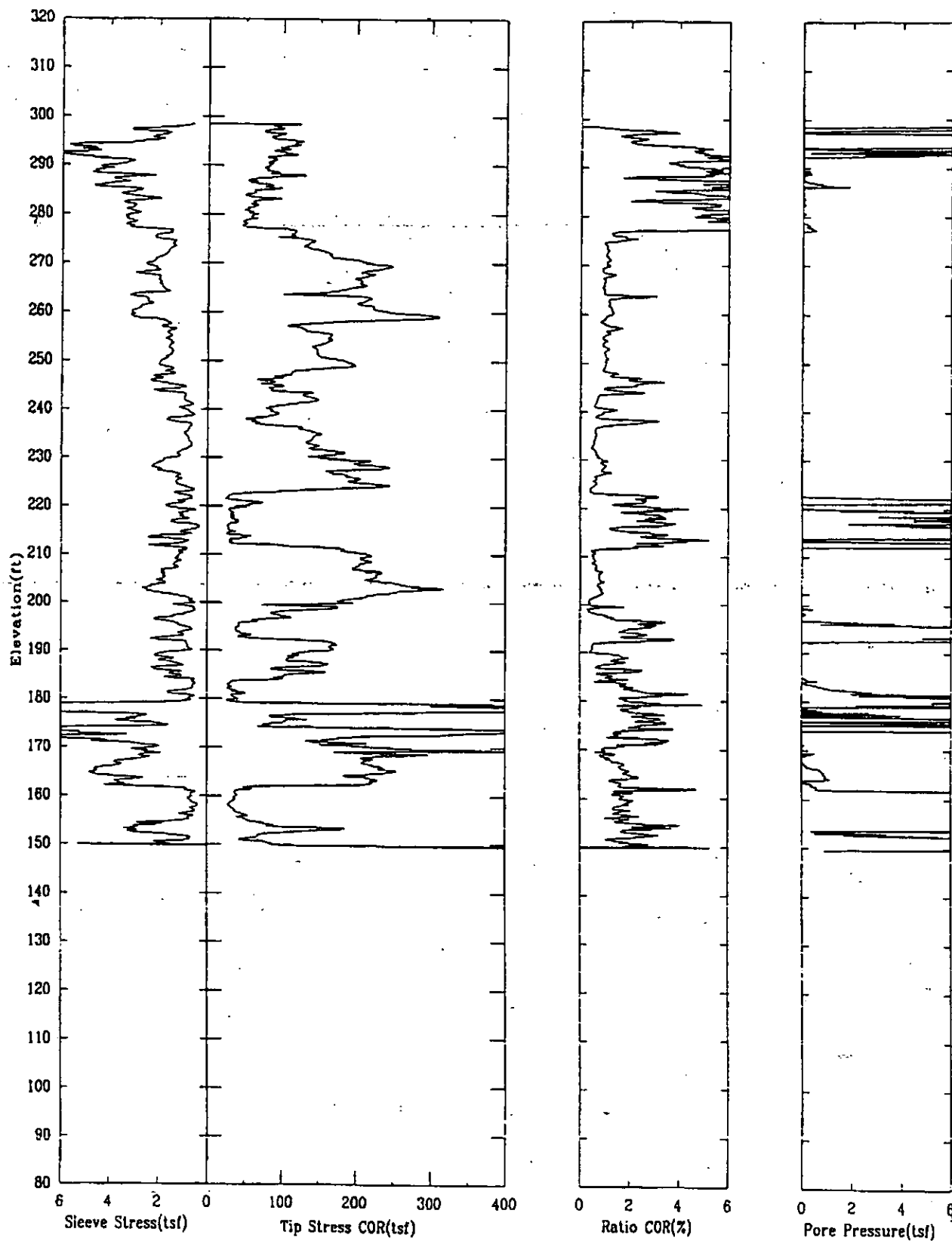
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03/24/98/0

North 78380

East 55518

Elevation 304.5



CPT-186

APPLIED RESEARCH ASSOCIATES, INC.

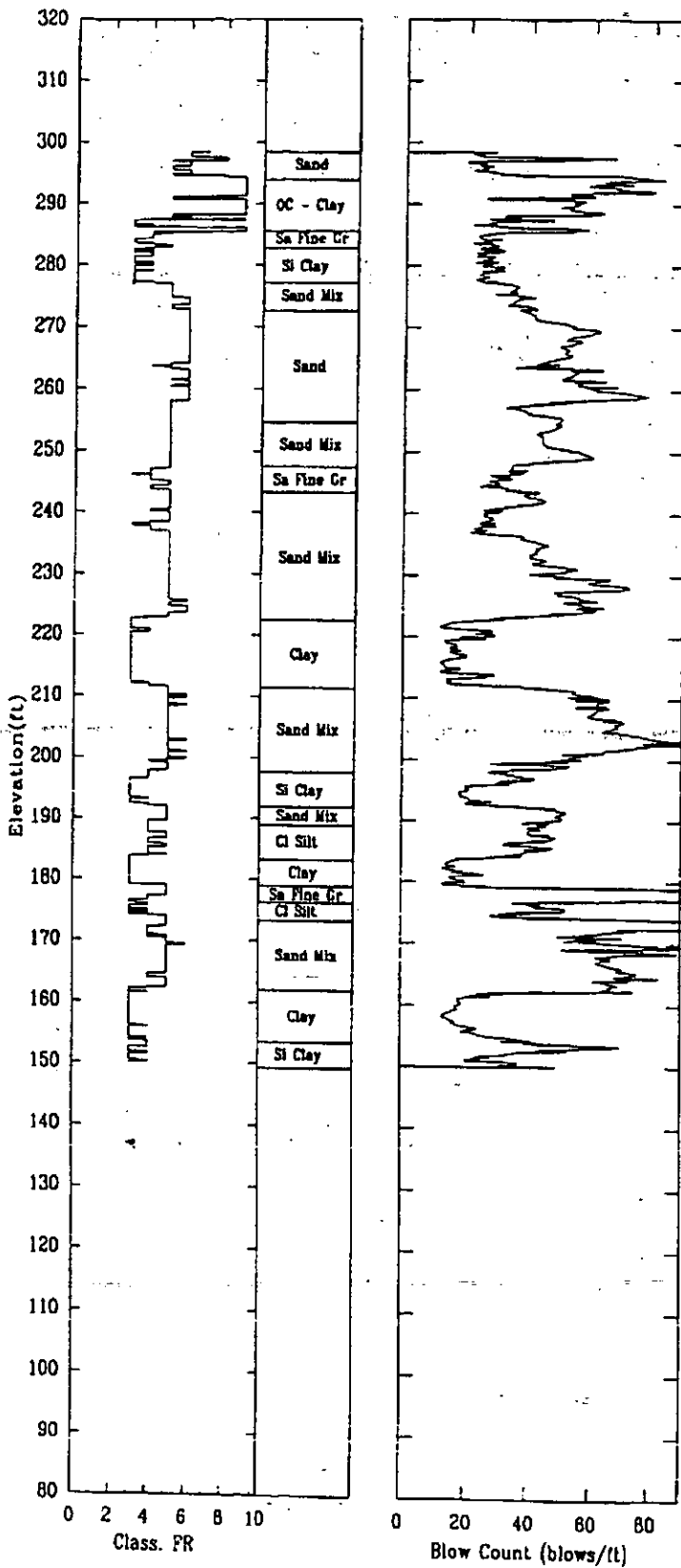
North 78380

East 55518

Elevation 304.5

K-TRT-F-00001

03/24/80



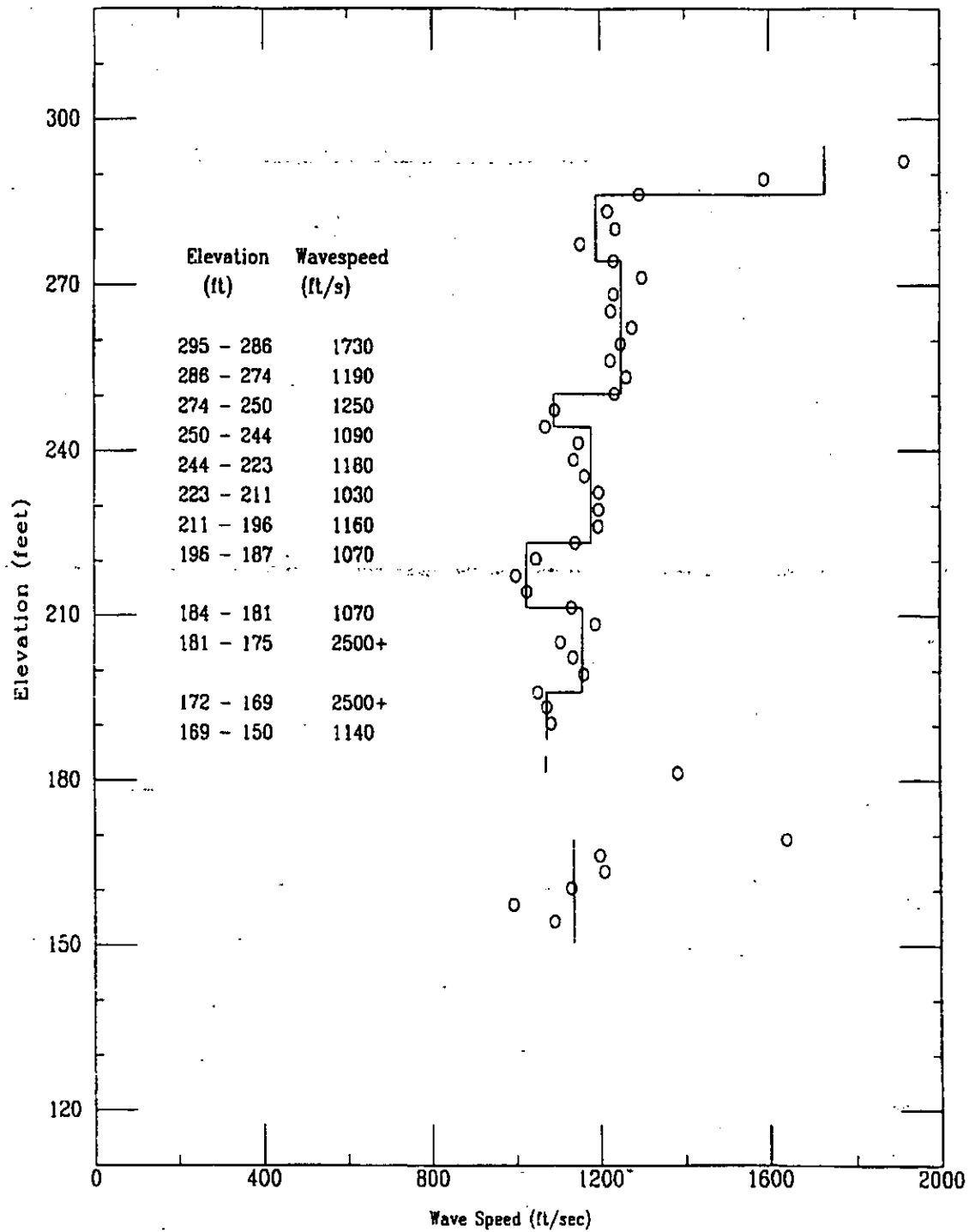
K-TRT-F-00001  
R/O

CPT-186

APPLIED RESEARCH ASSOCIATES, INC.

03/24/98

Shear Wave Speeds



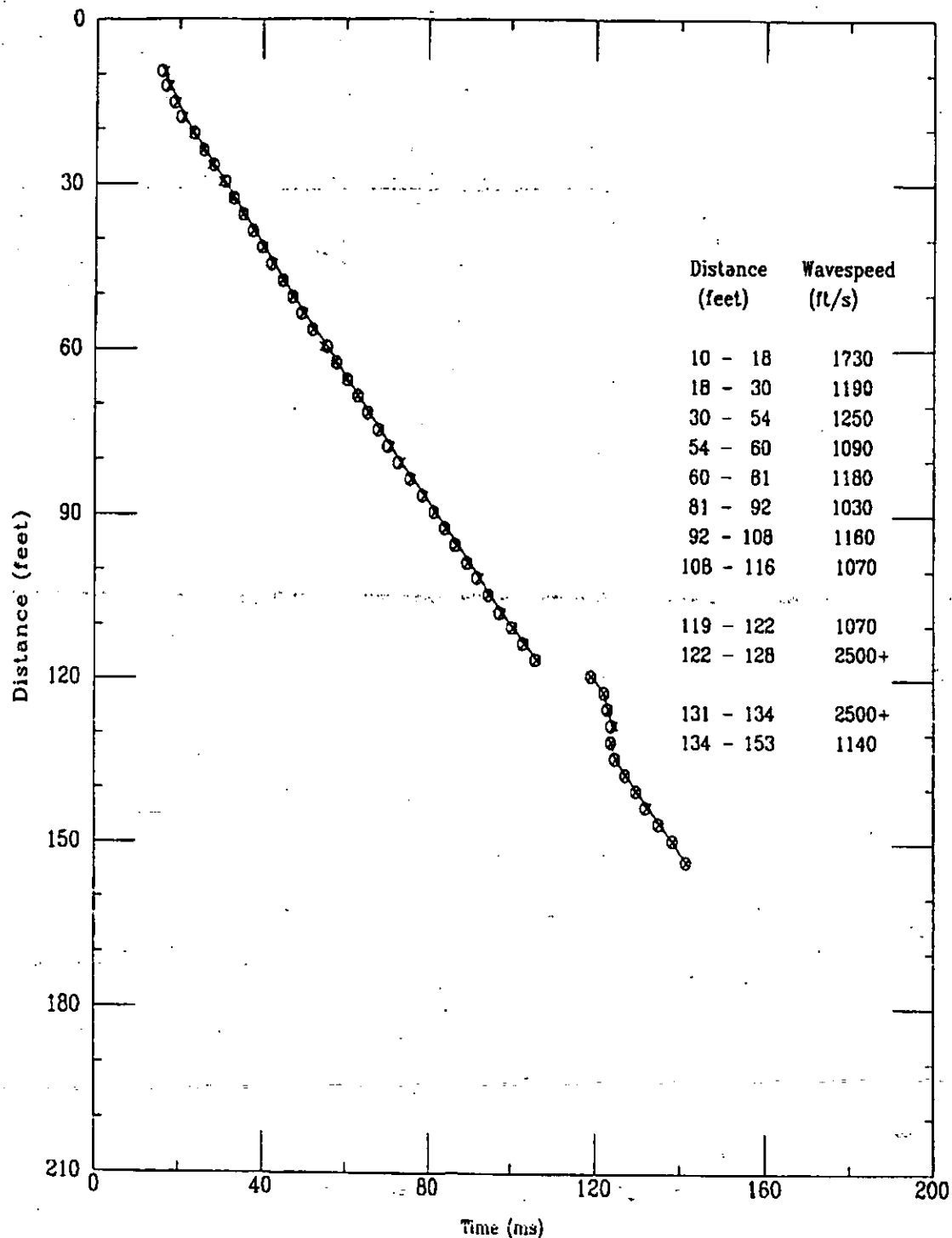
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471 & 522

CPT-186

APPLIED RESEARCH ASSOCIATES, INC.  
Shear Wave Time of Peak

03/24/98

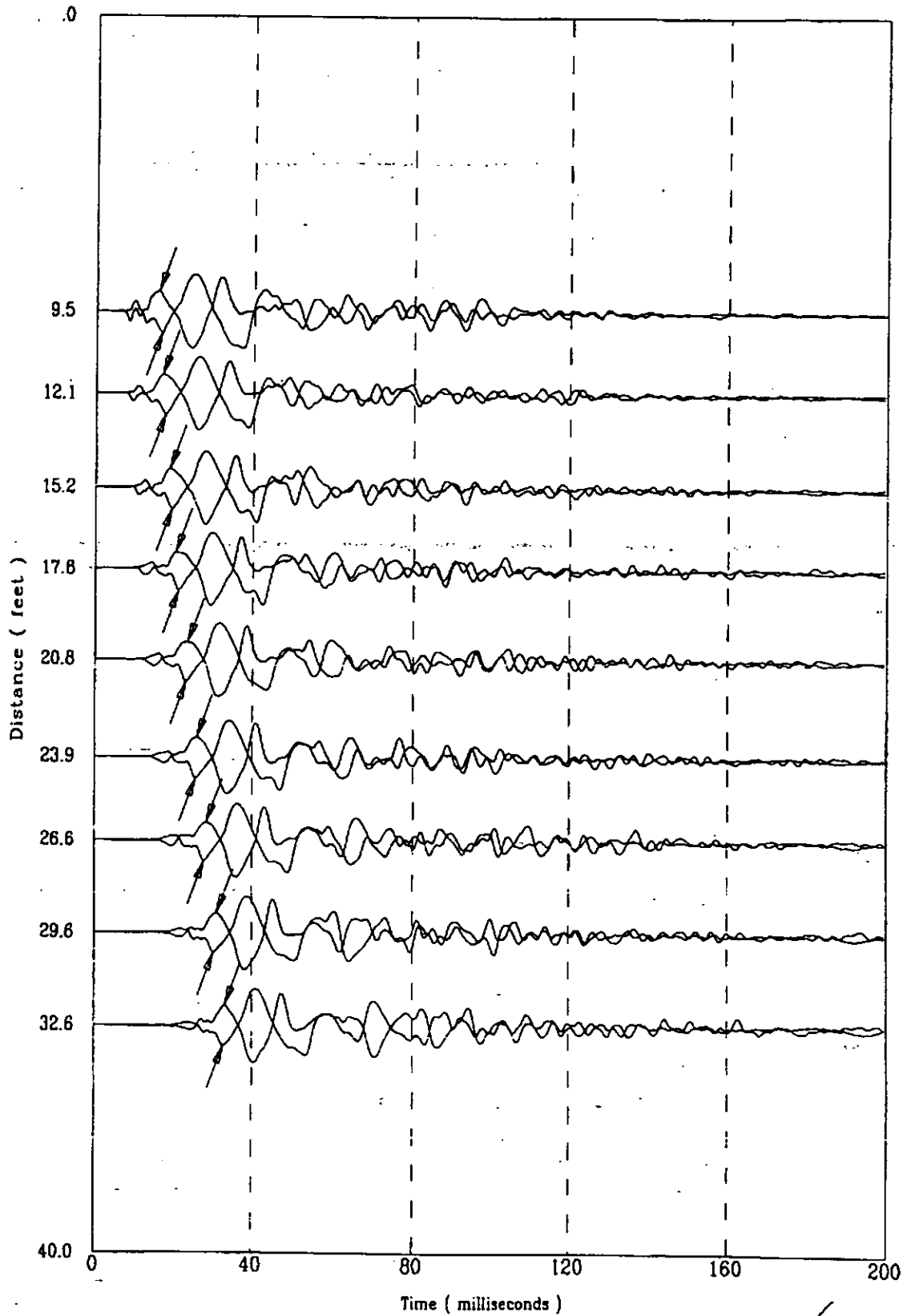


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K-TRT-F-00001  
R/o

Applied Research Associates, Inc.  
CPT-186

S Wave  
03/24/98



24m8015

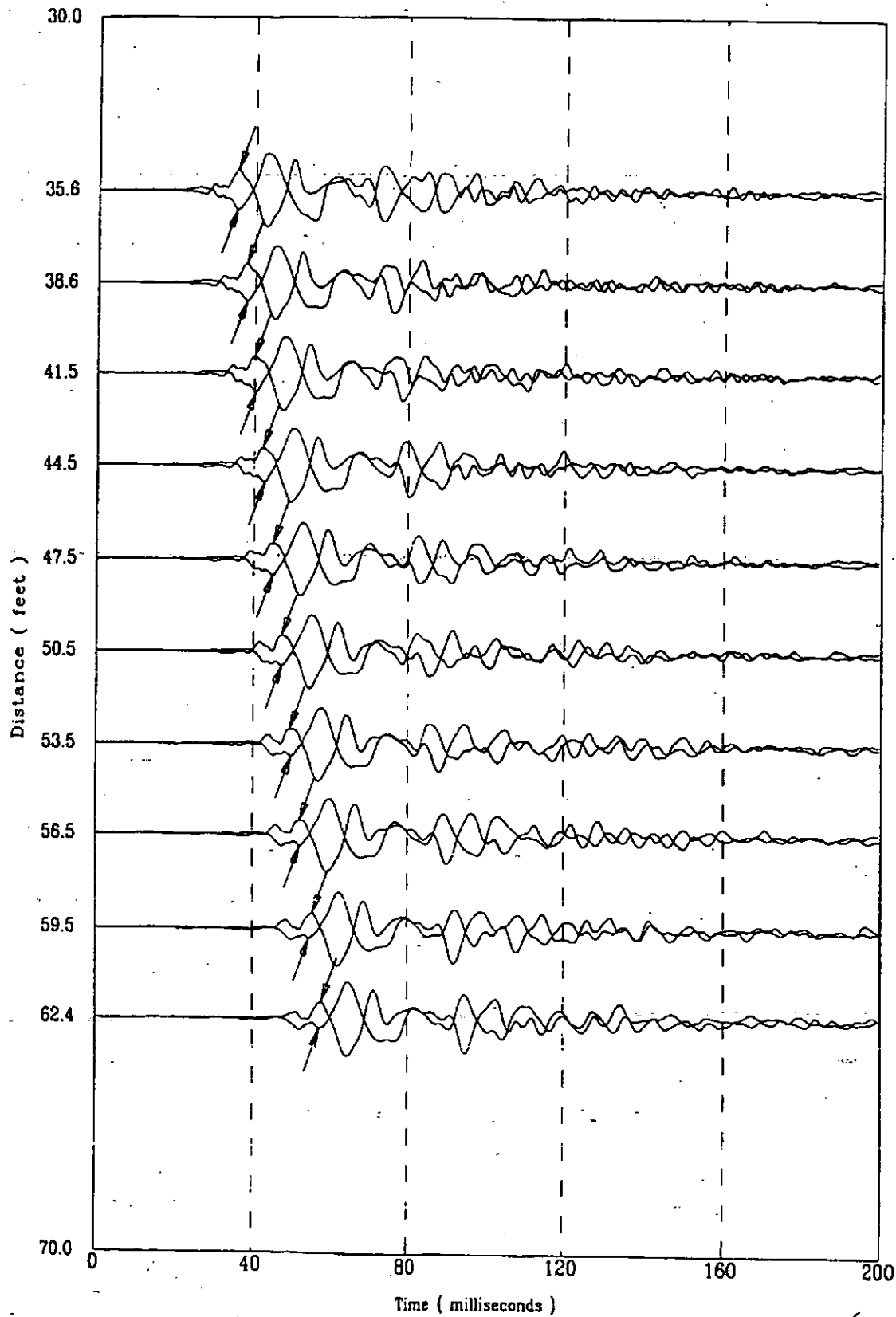
473 of 522



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R/O

Applied Research Associates, Inc.  
CPT-186

S Wave  
03/24/98



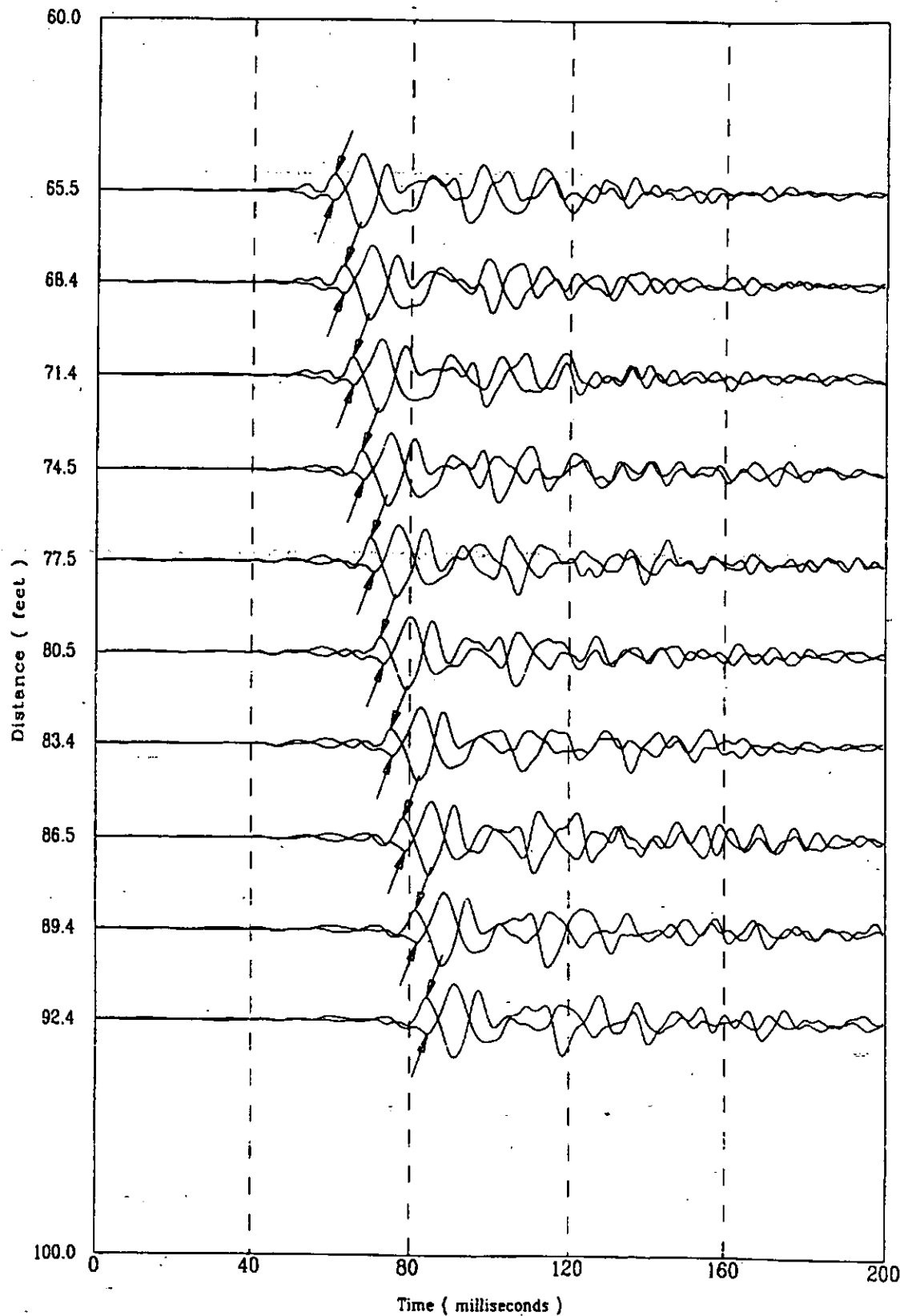
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Applied Research Associates, Inc.  
CPT-186

S Wave  
03/24/98

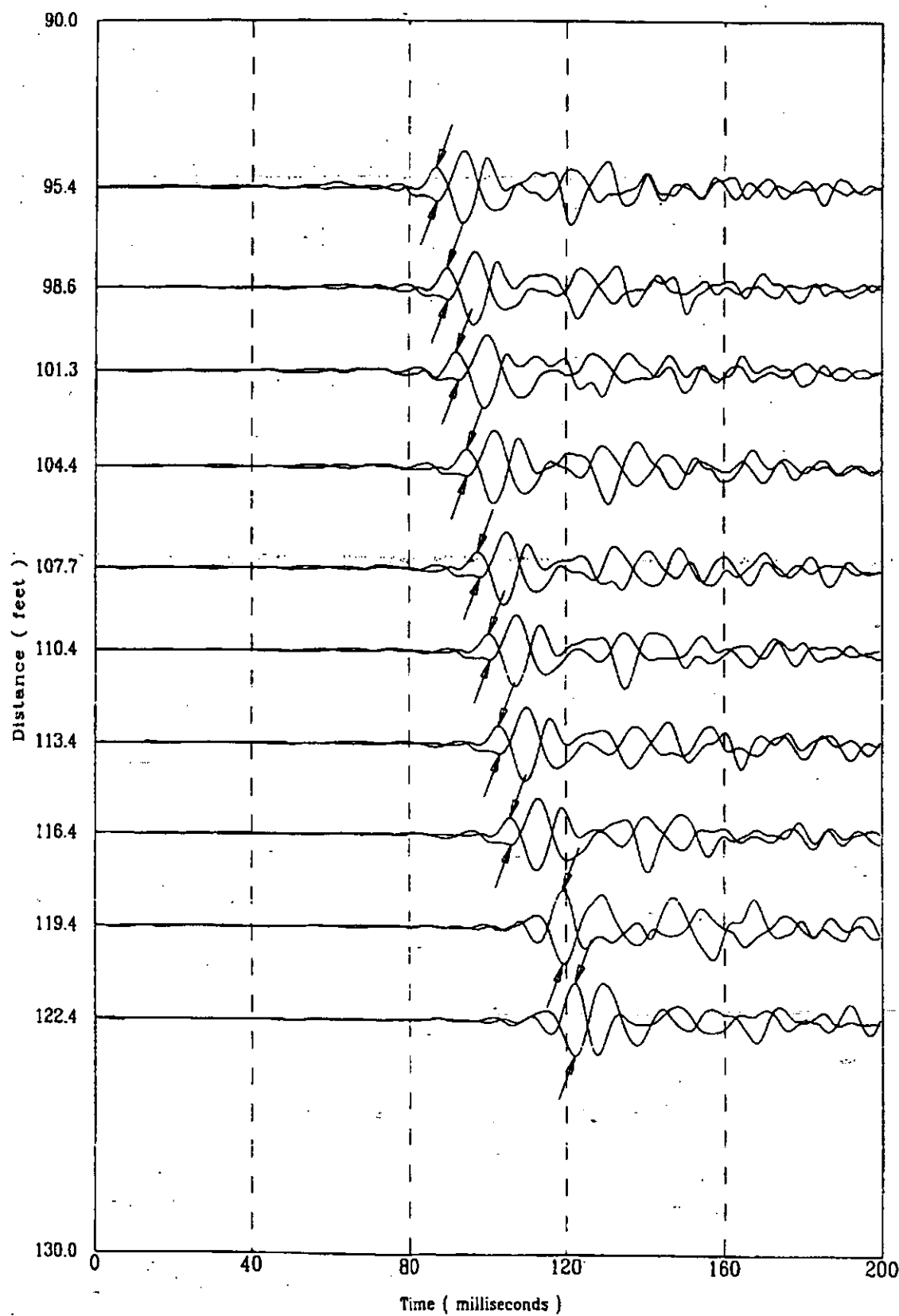


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CPT-186

S Wave  
03/24/98



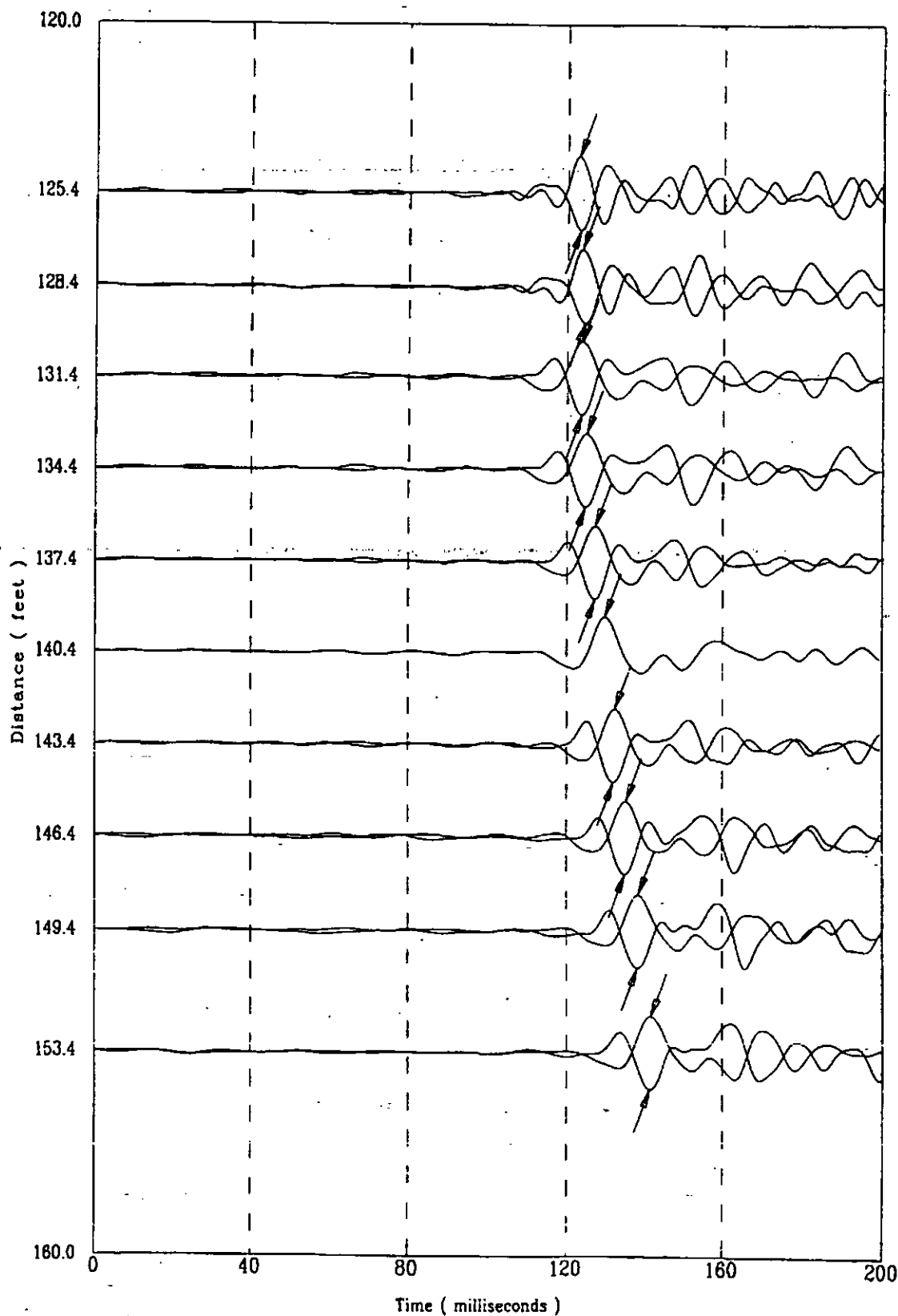
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Applied Research Associates, Inc.  
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S Wave  
03/24/98



F. .m801S

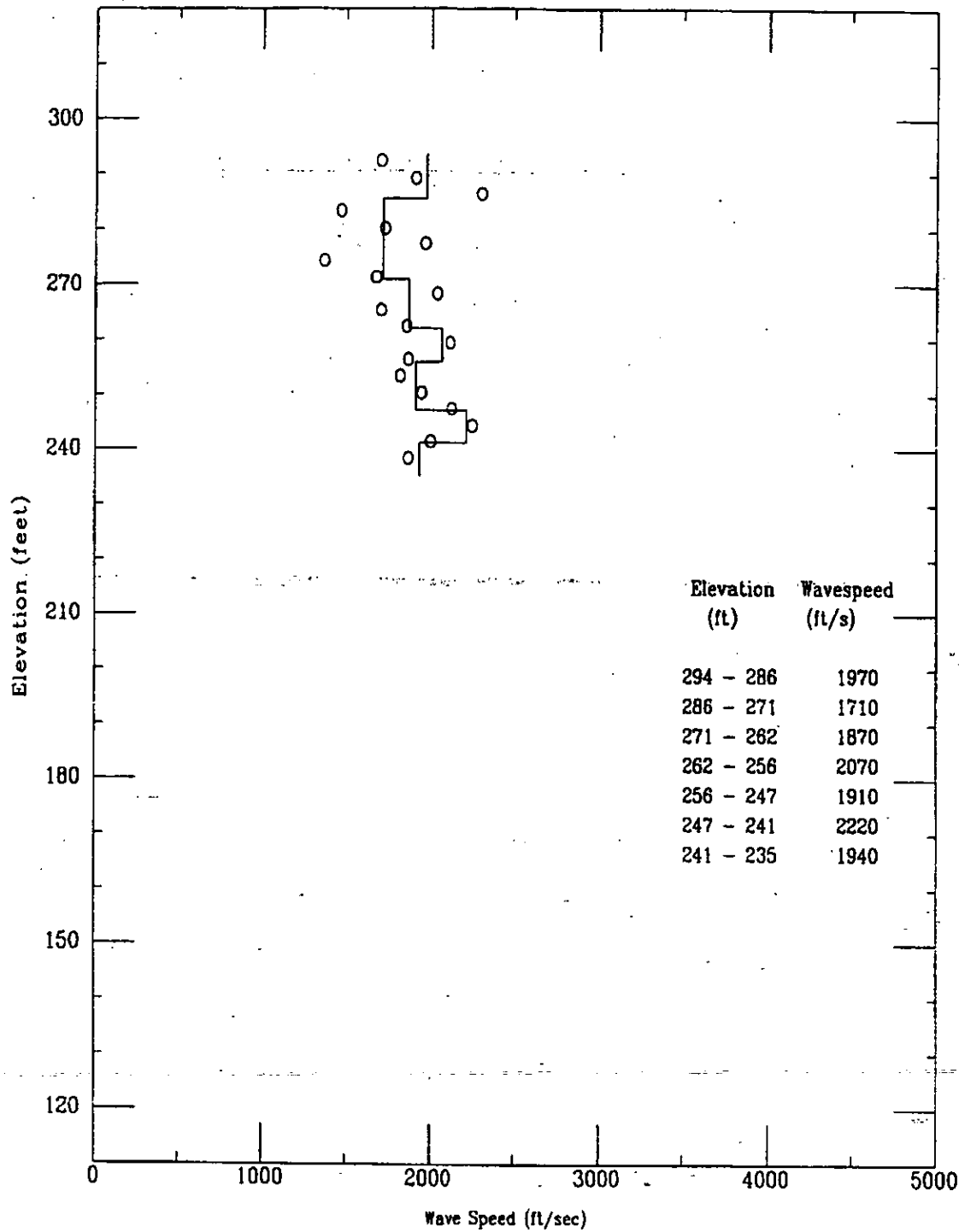
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R/o

CPT-186

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

03/24/98



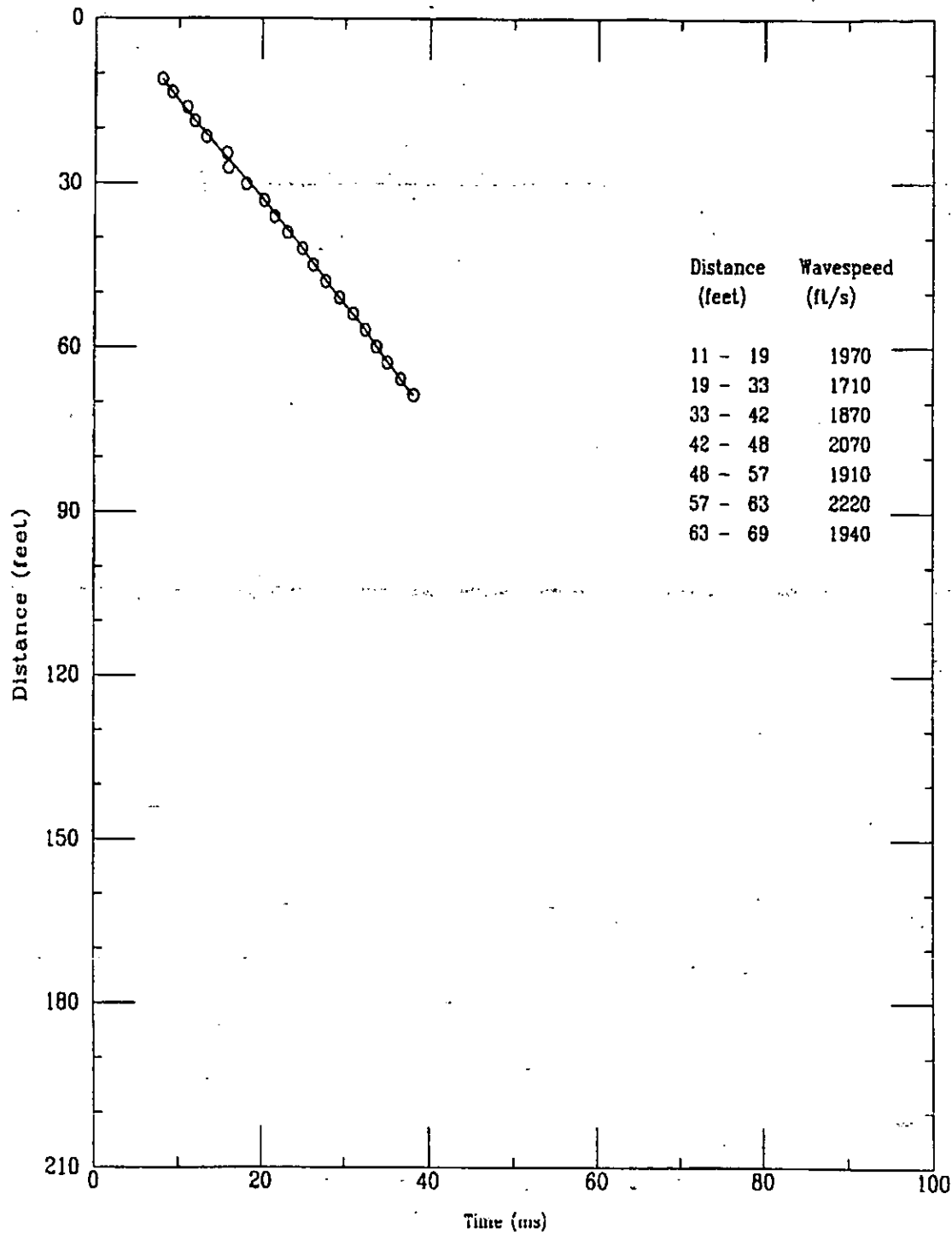
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CPT-186

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Time of Peak

03/24/98

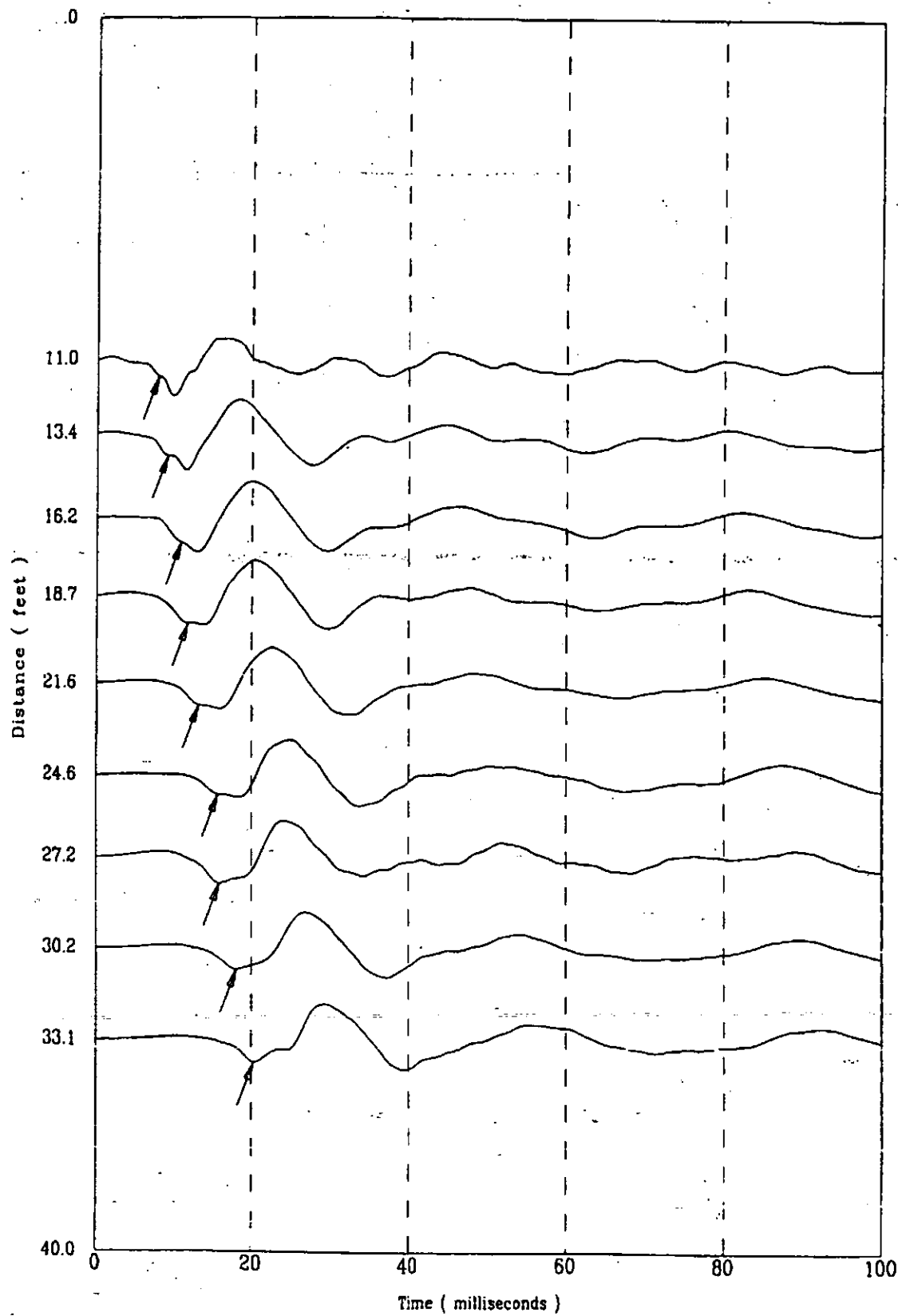


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P Wave  
03/24/98



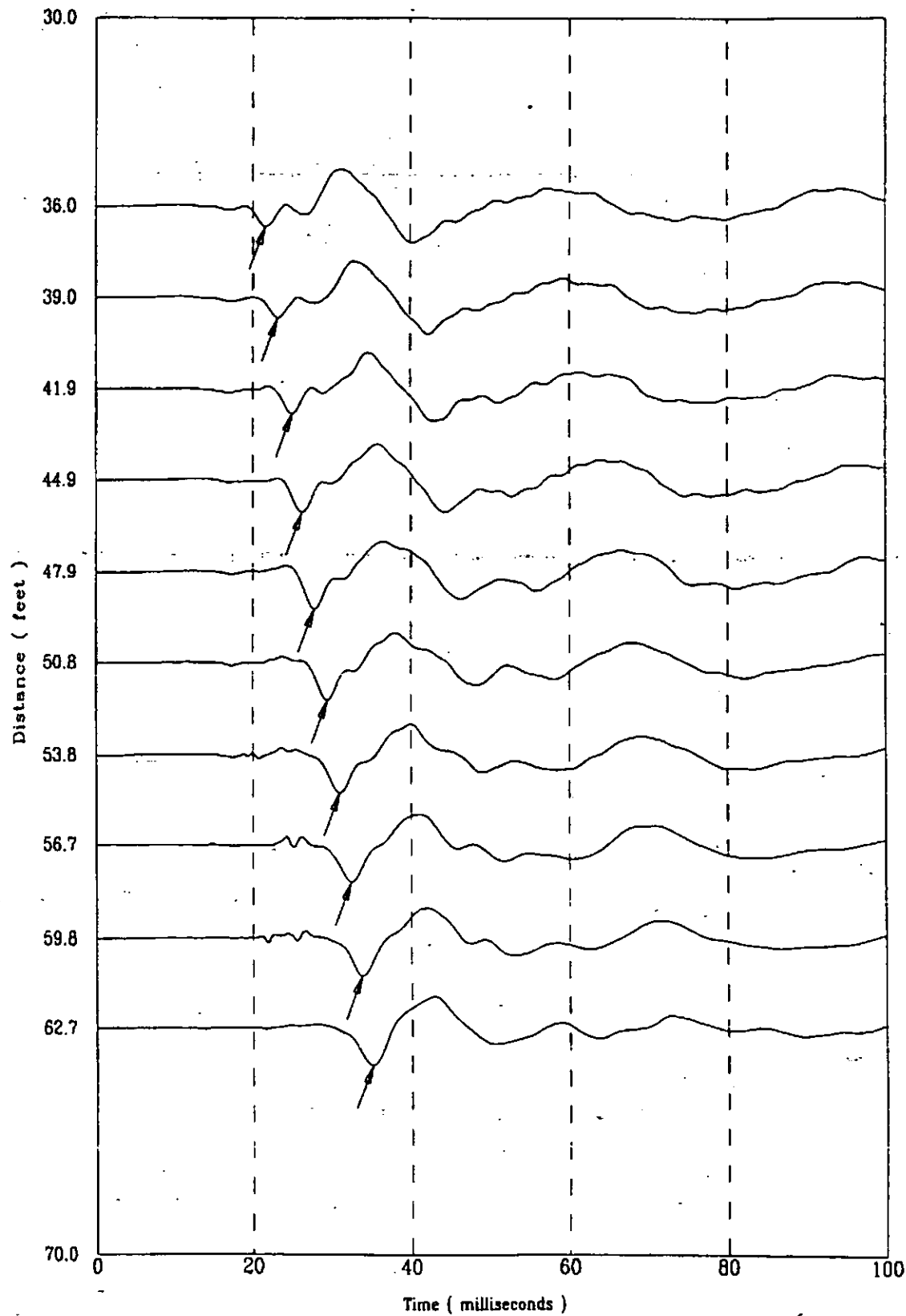
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P Wave  
03/24/98



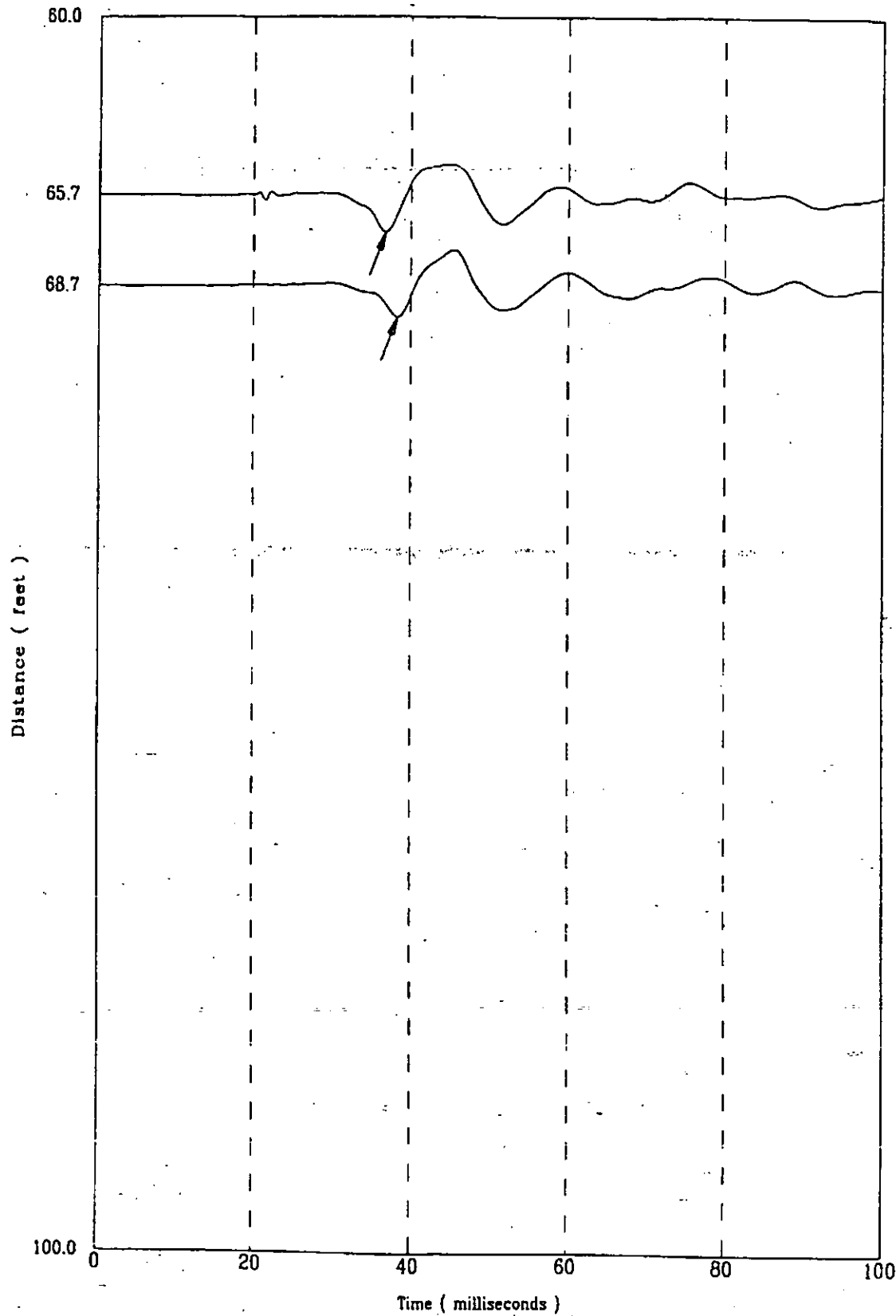
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CPT-186

P Wave  
03/24/98



File 324m801S

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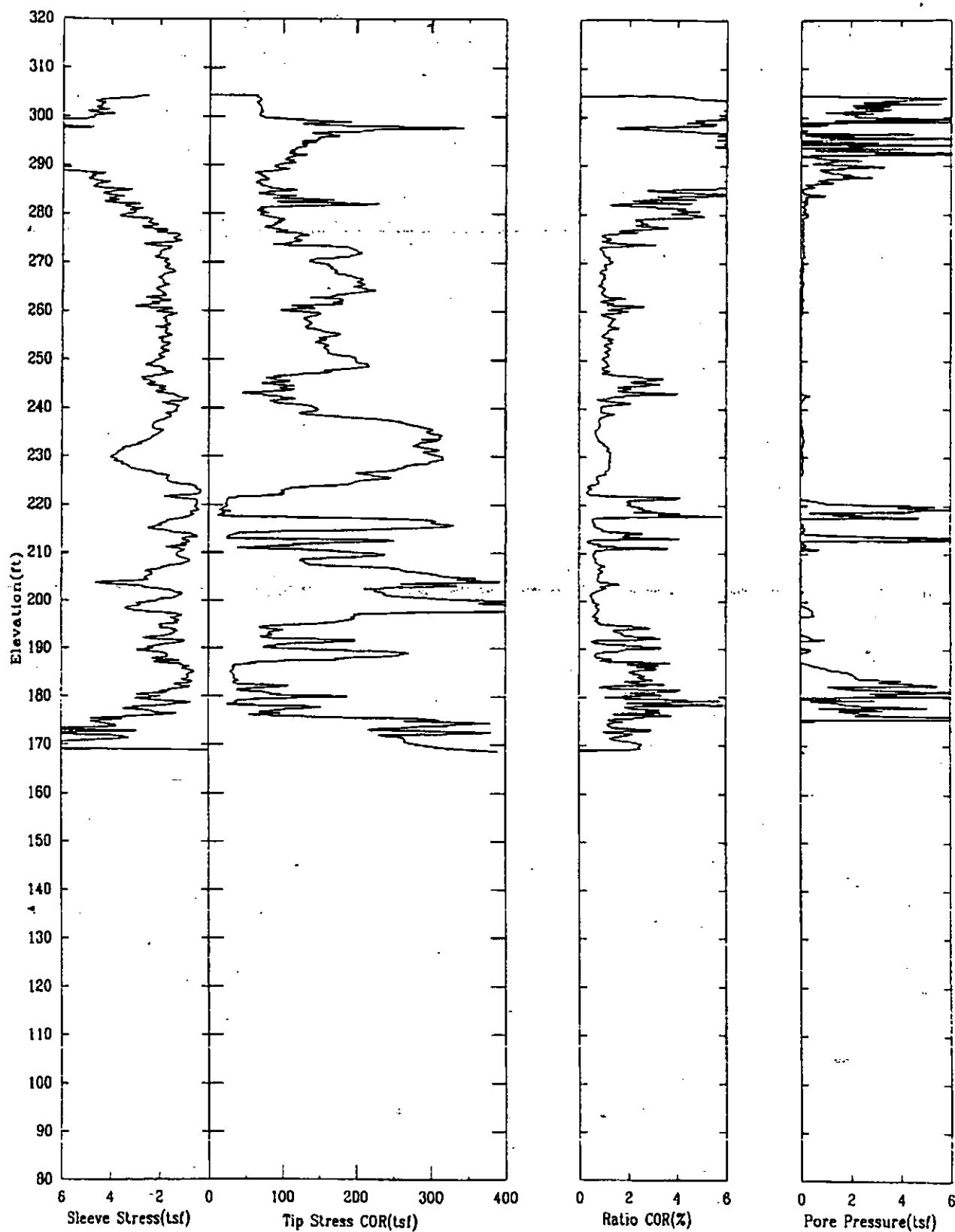
CPT-188

APPLIED RESEARCH ASSOCIATES, INC.

North 78250

East 55330

Elevation 310.4

K-TRT-F-00001  
03/09/98/0

CPT-188

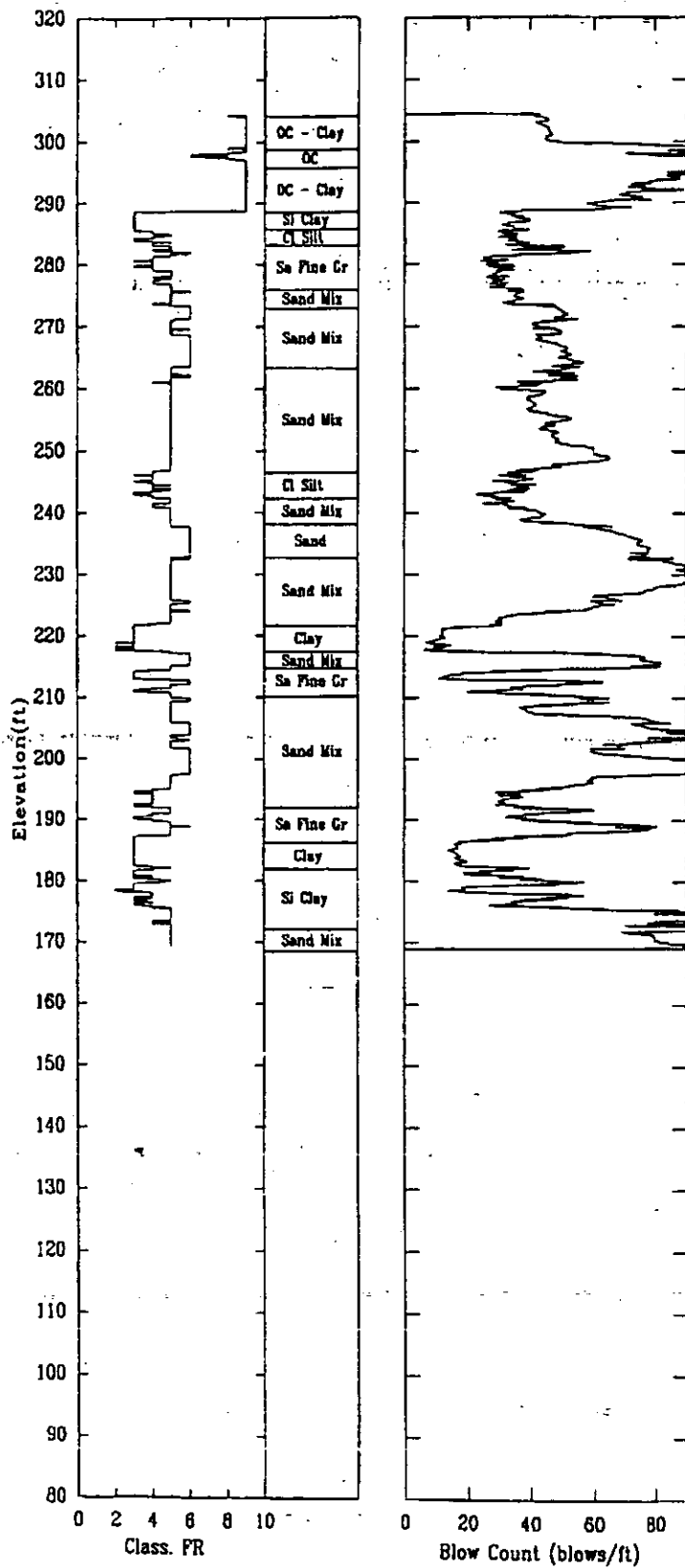
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East 55330

Elevation 310.4



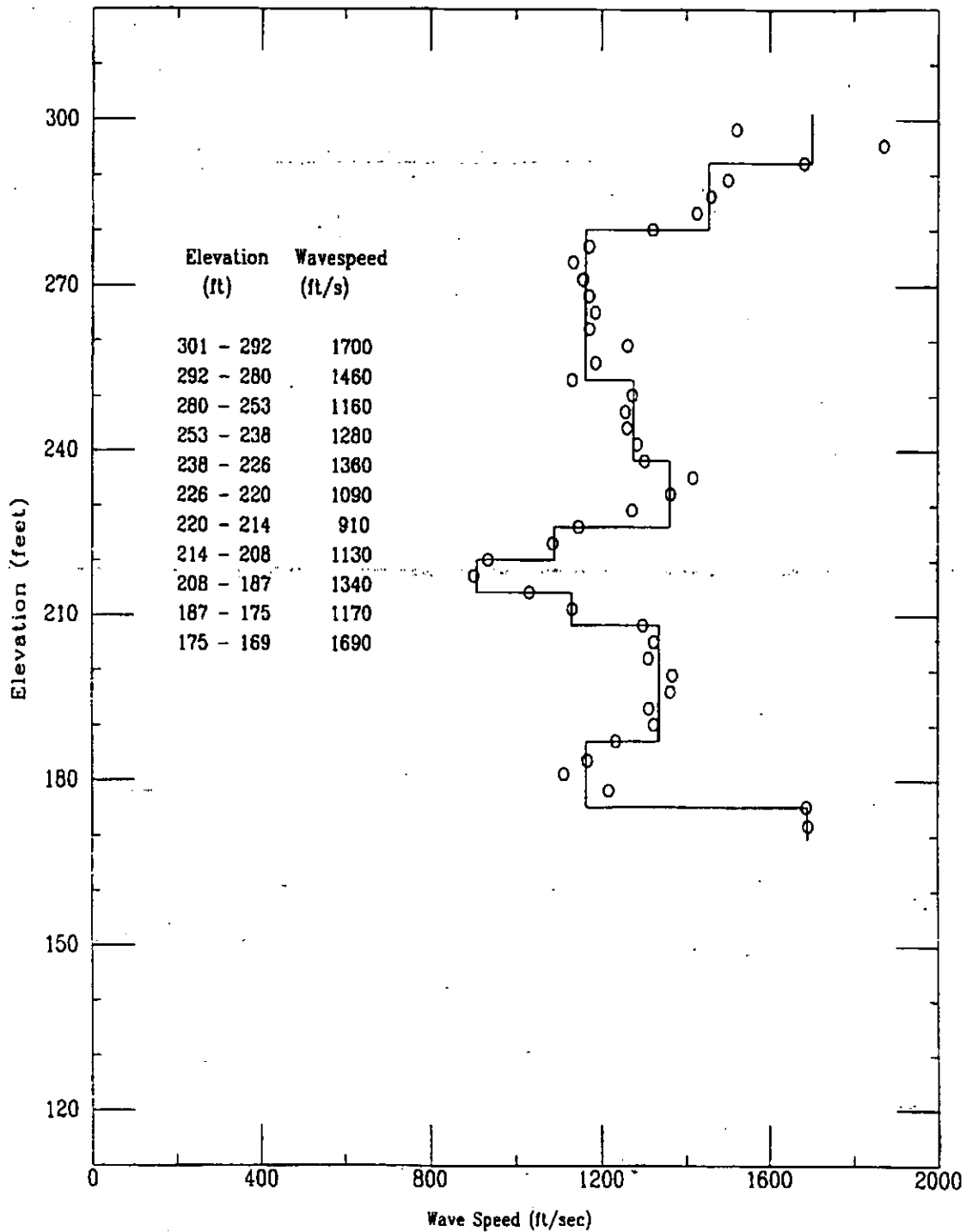
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03/09/98

### Shear Wave Speeds



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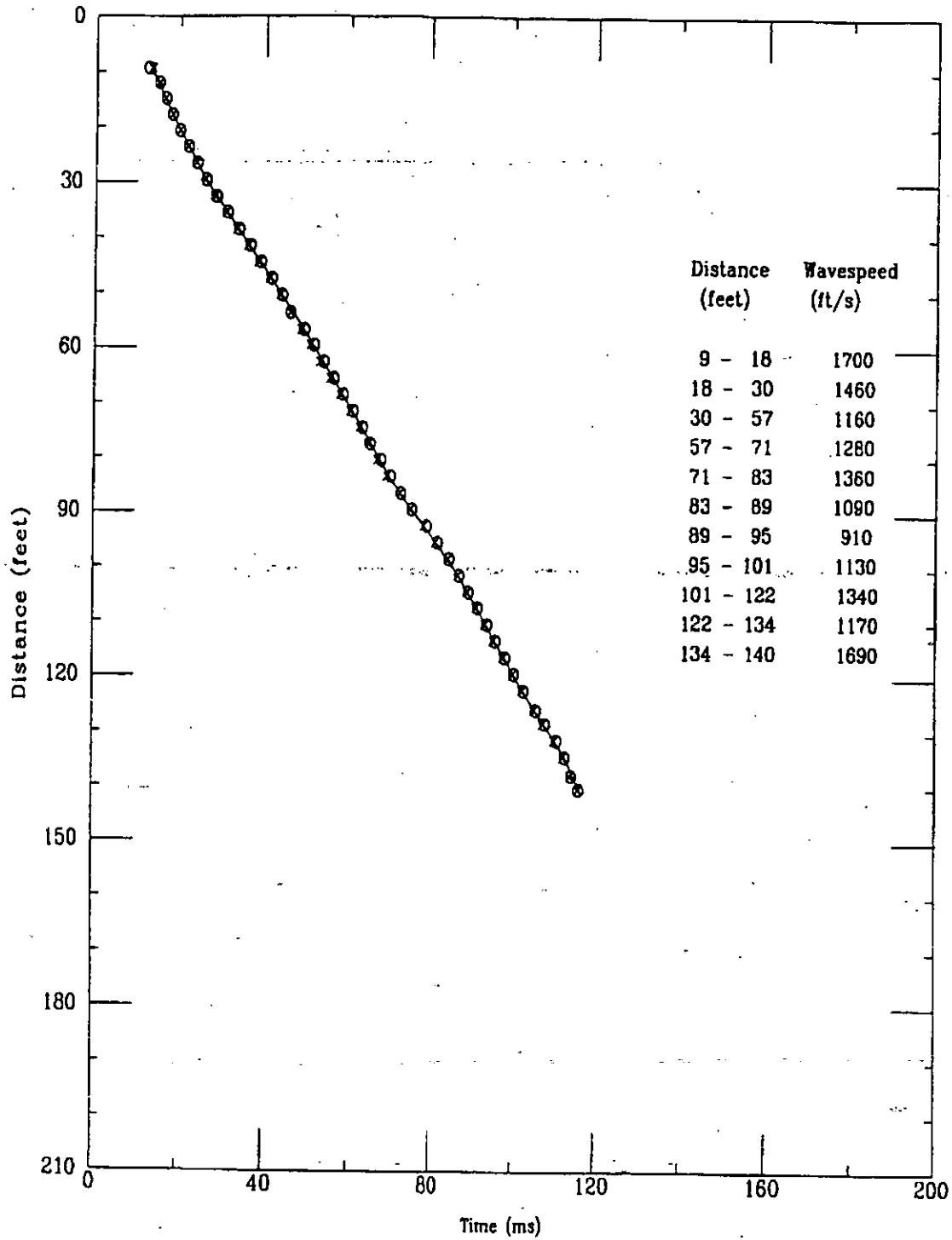
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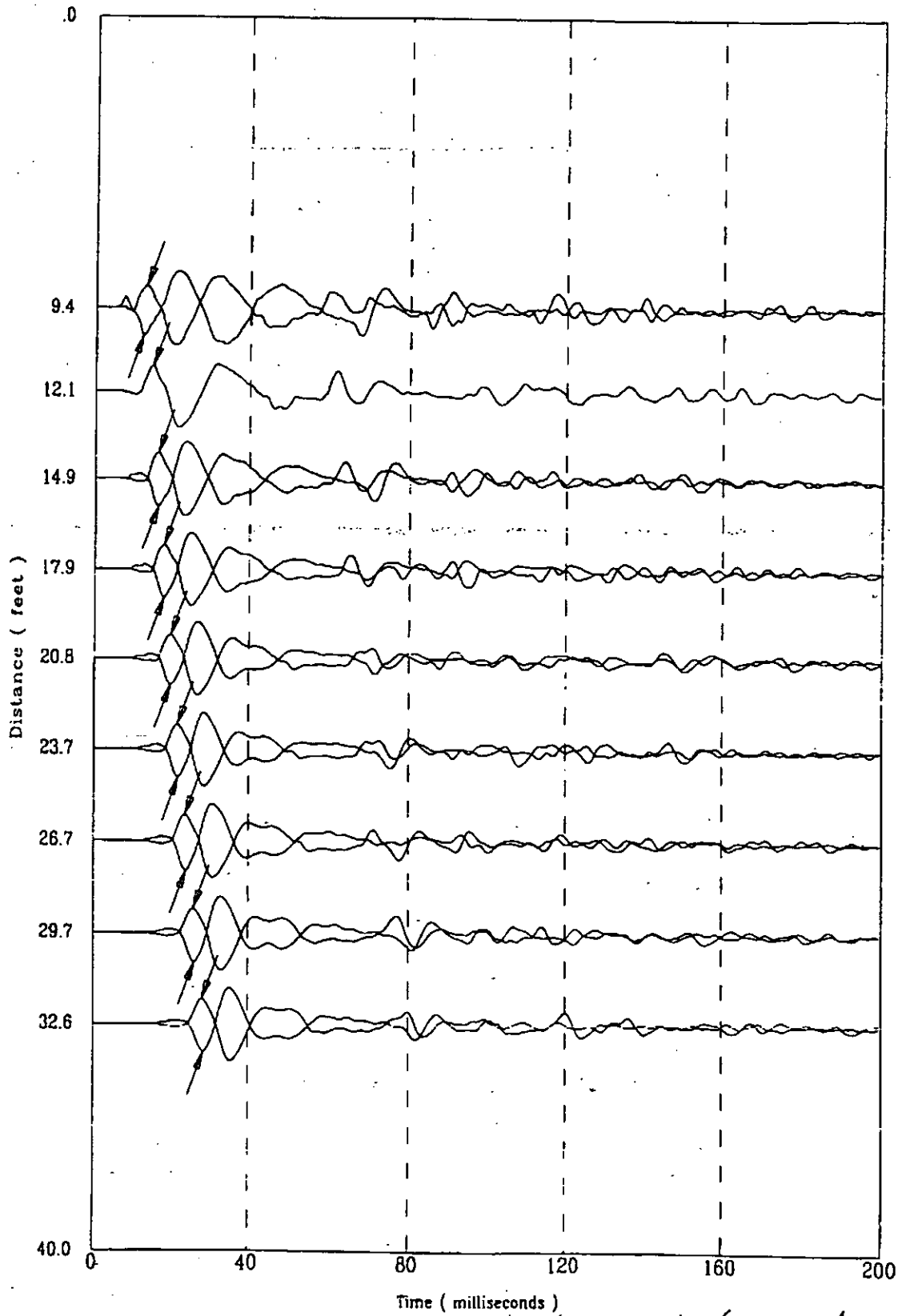
Shear Wave Time of Peak



K-TRT-F-00001  
R/O

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CPT-188

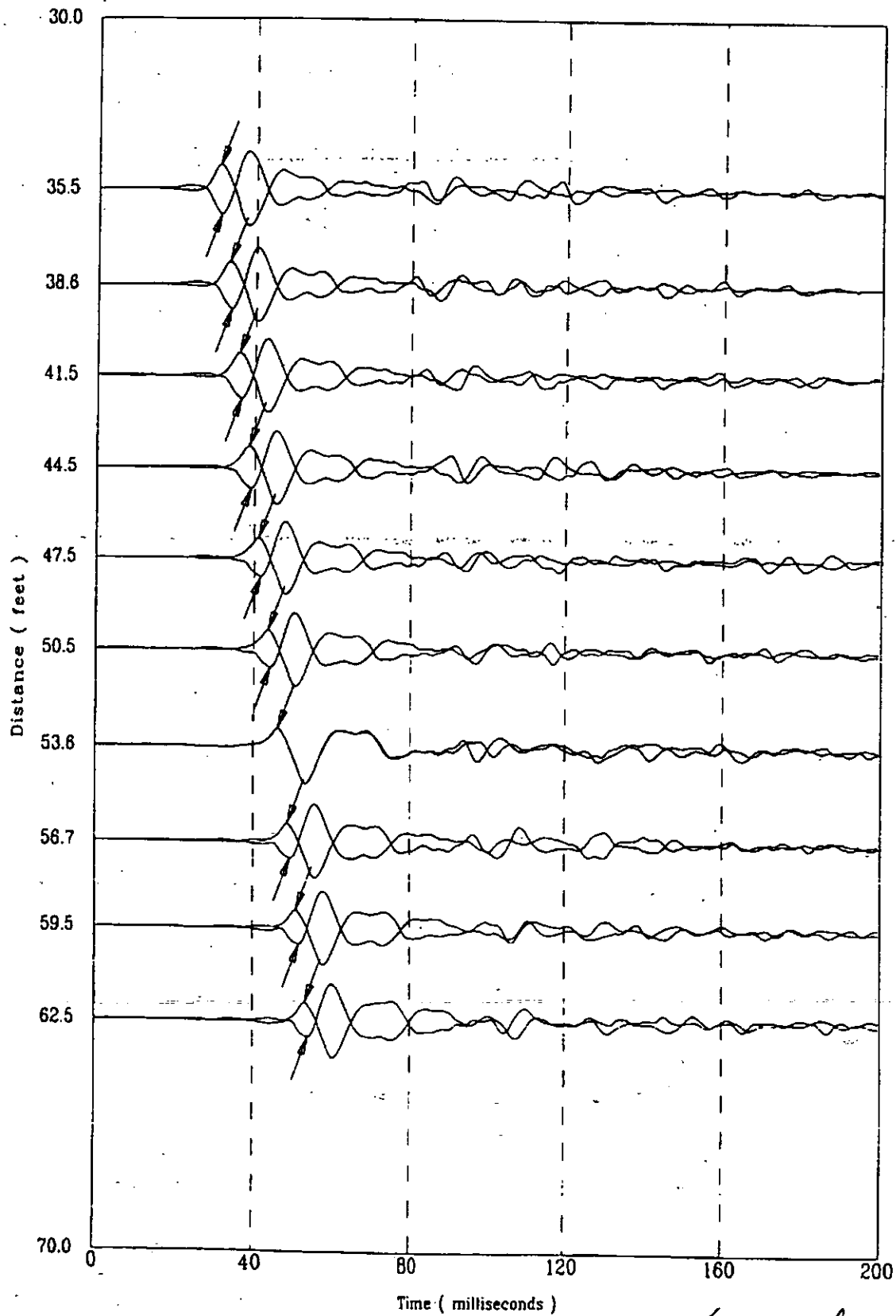
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03/09/98



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R/O

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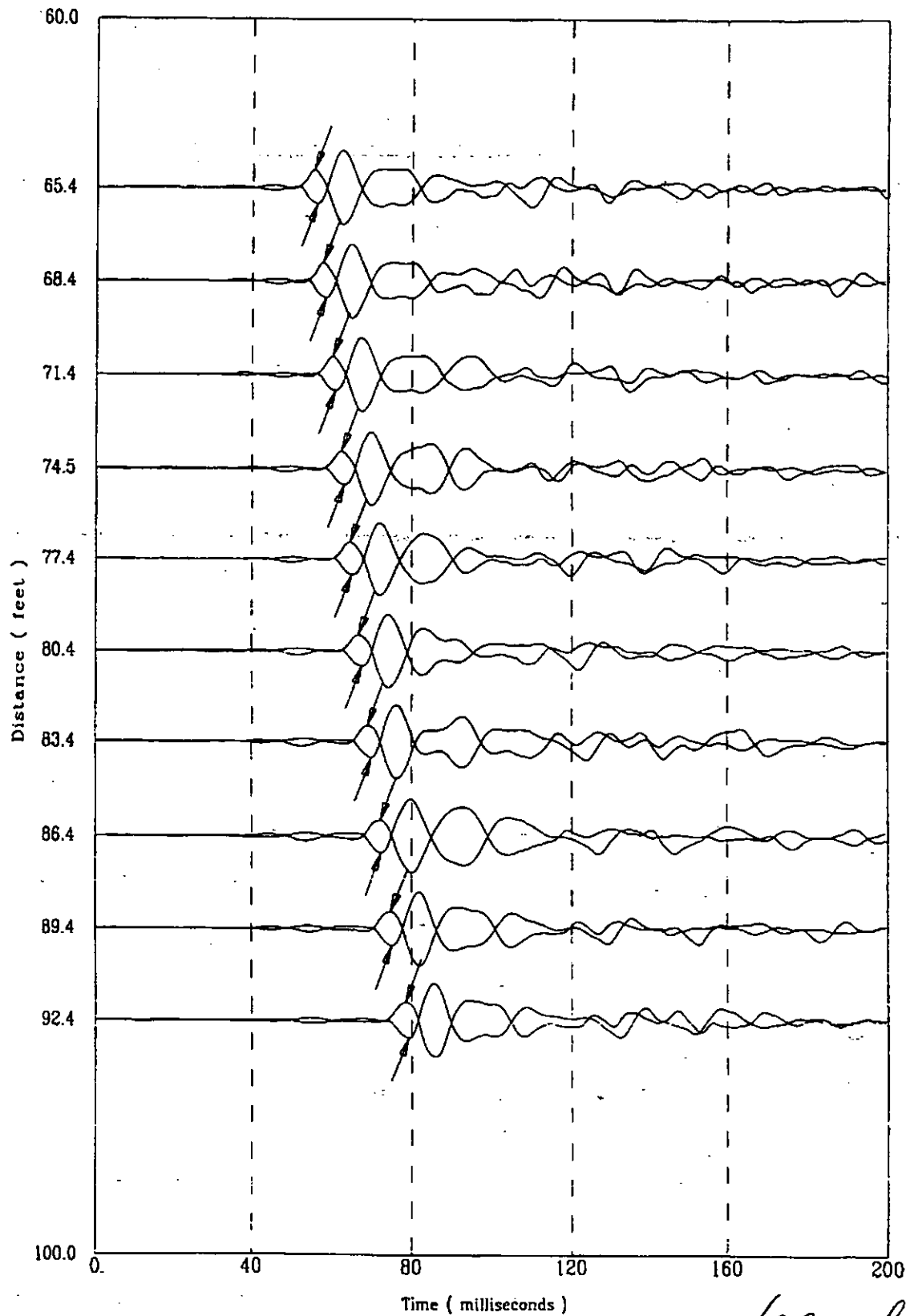
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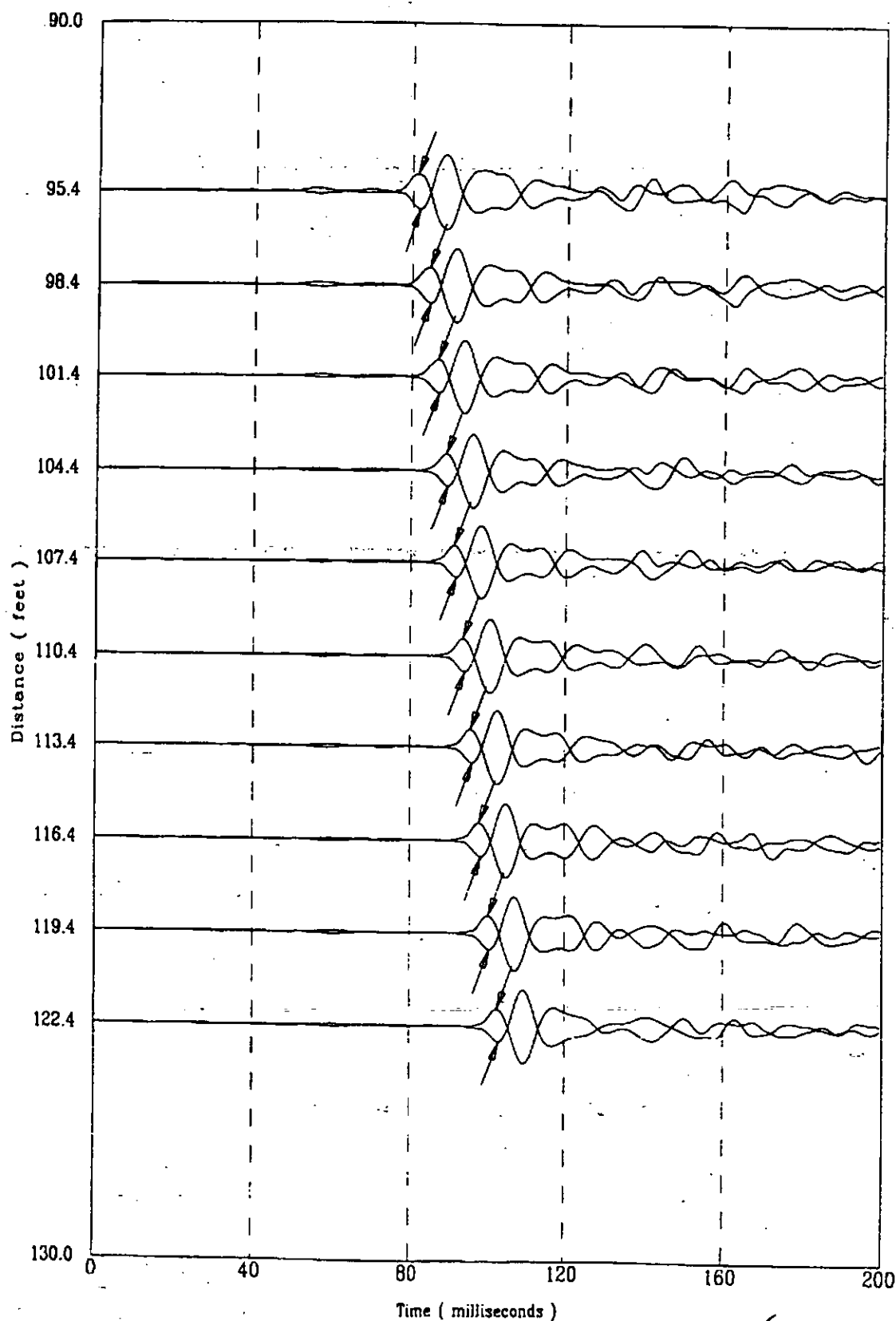




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S Wave  
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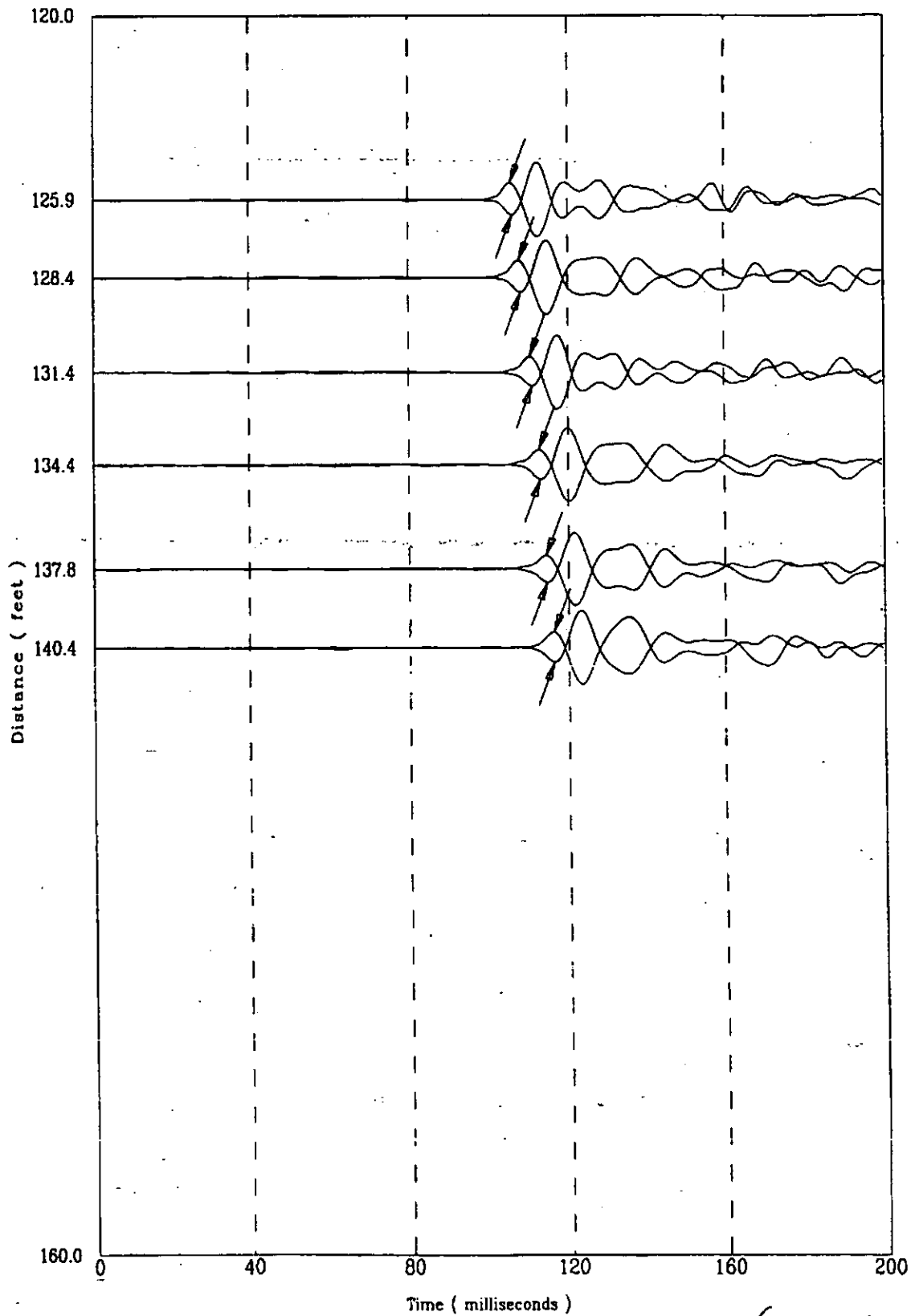
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CPT-188

S Wave  
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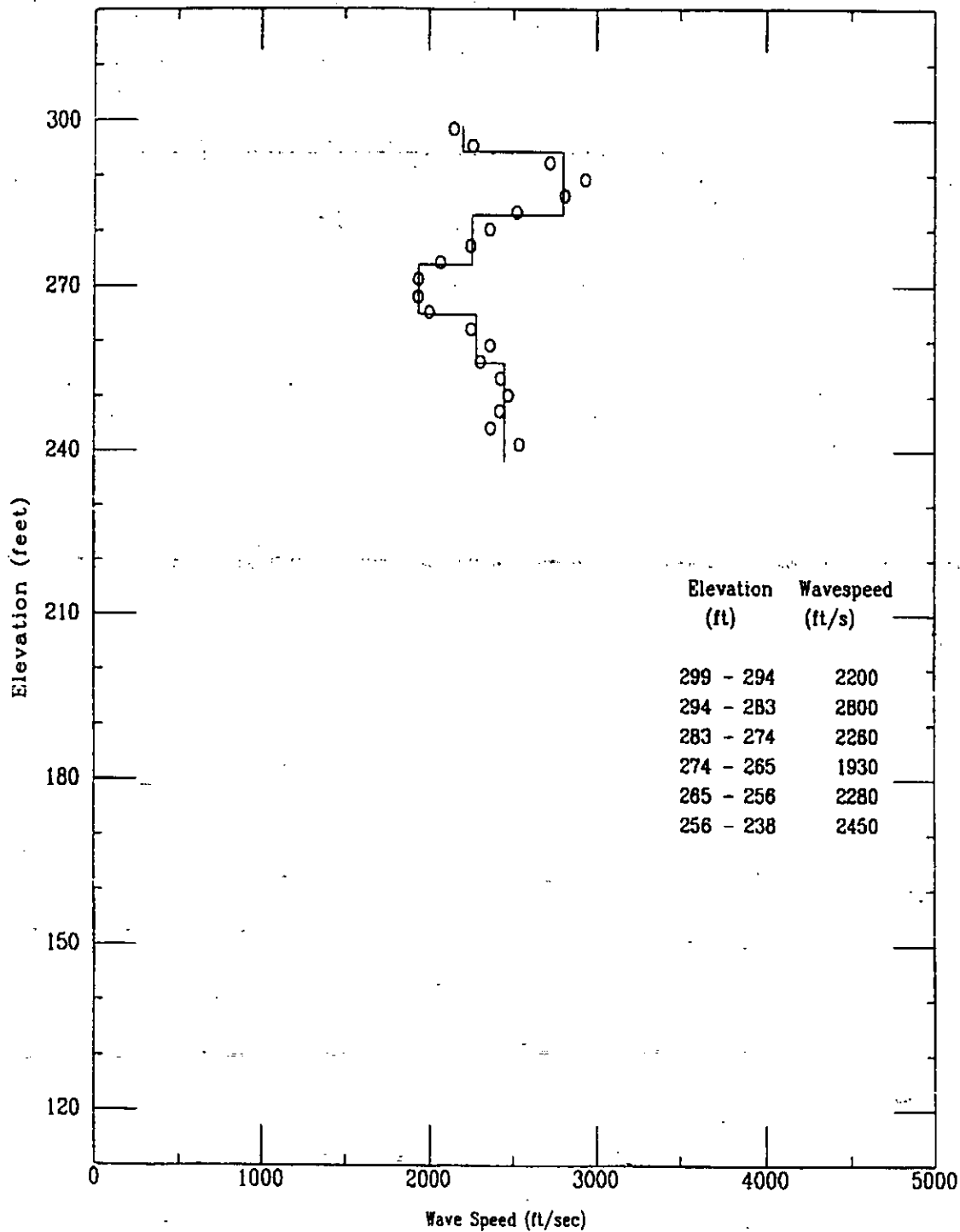
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CPT-188

APPLIED RESEARCH ASSOCIATES, INC.  
Compression Wave Speeds

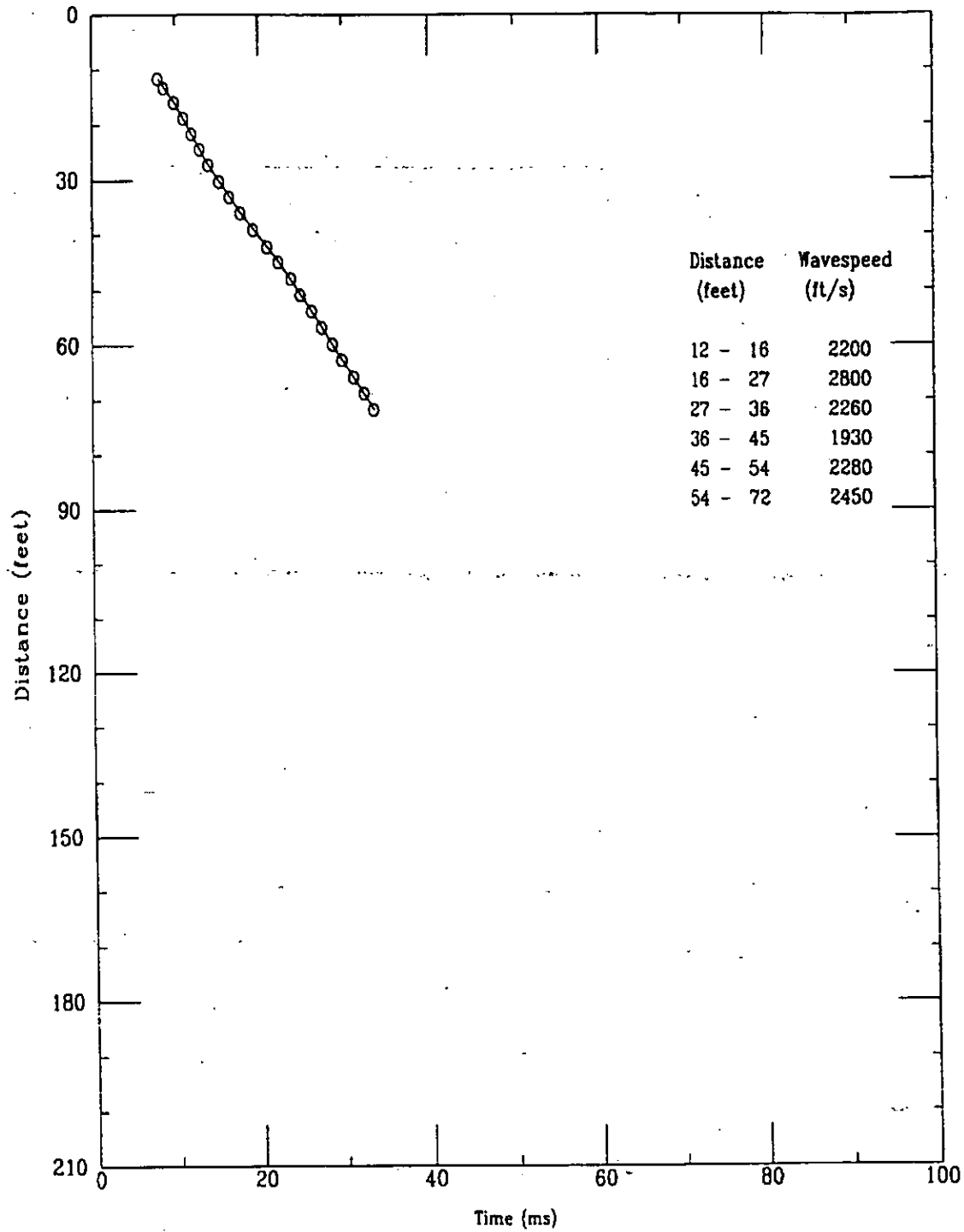
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Compression Wave Time of Peak

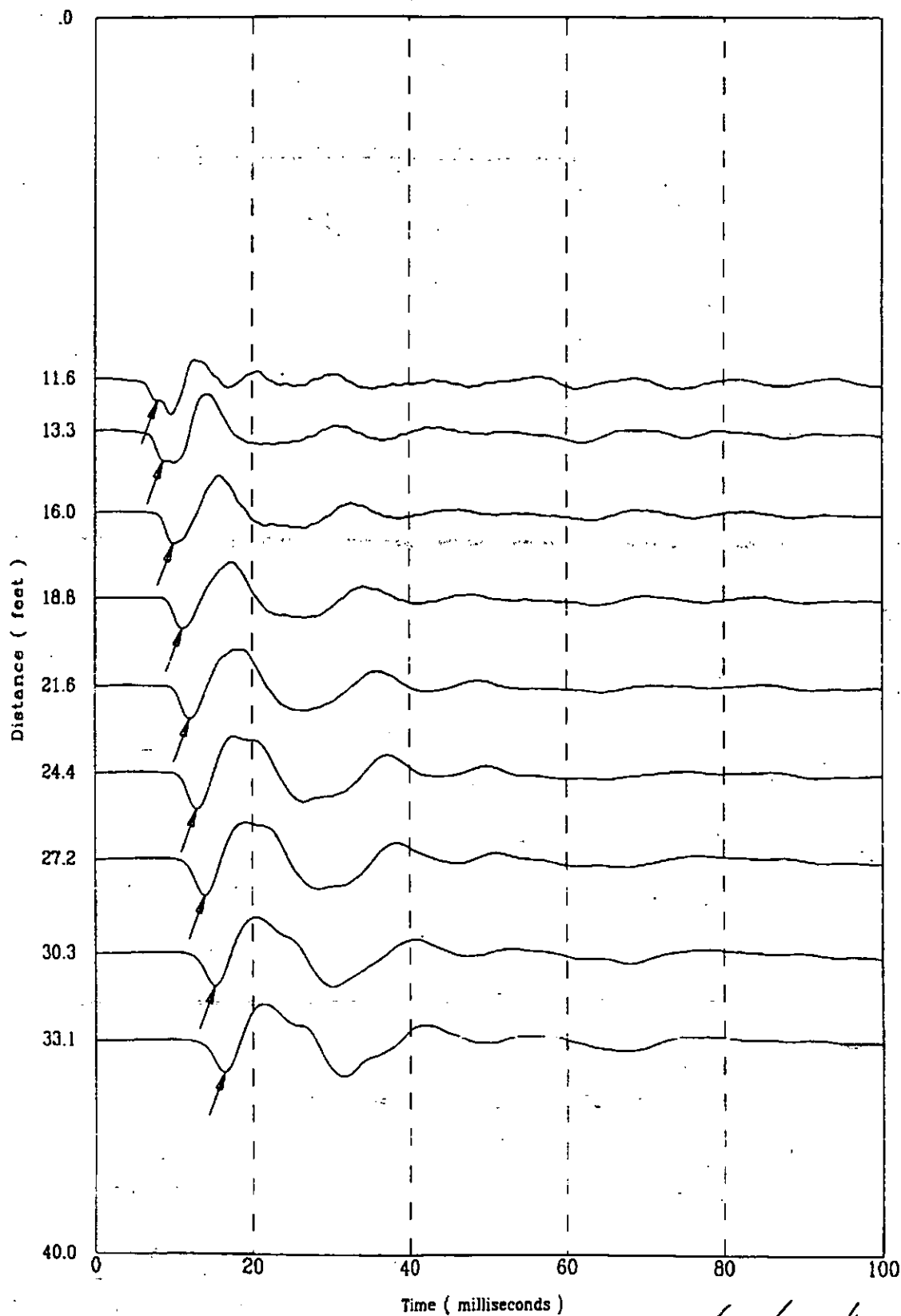
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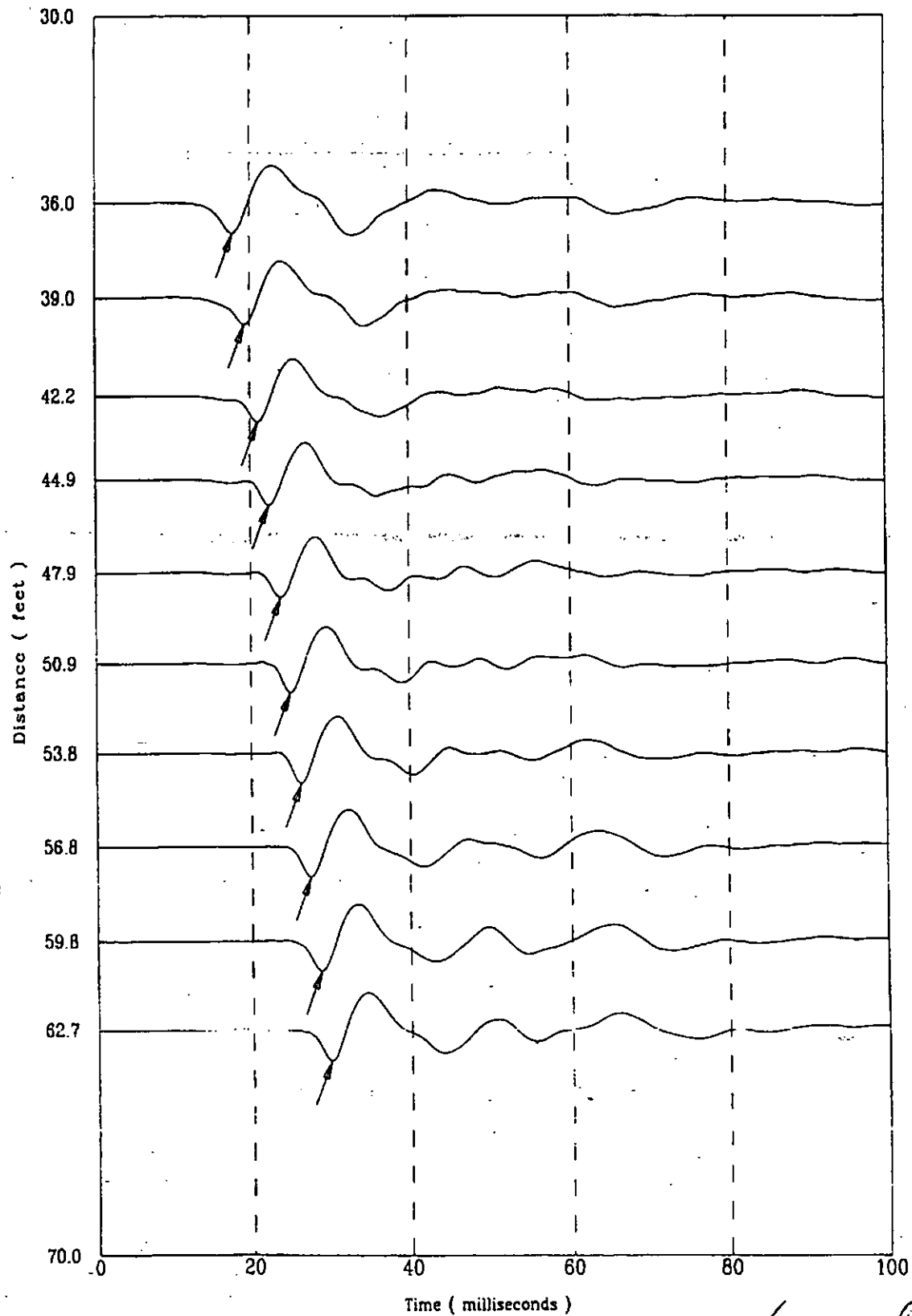
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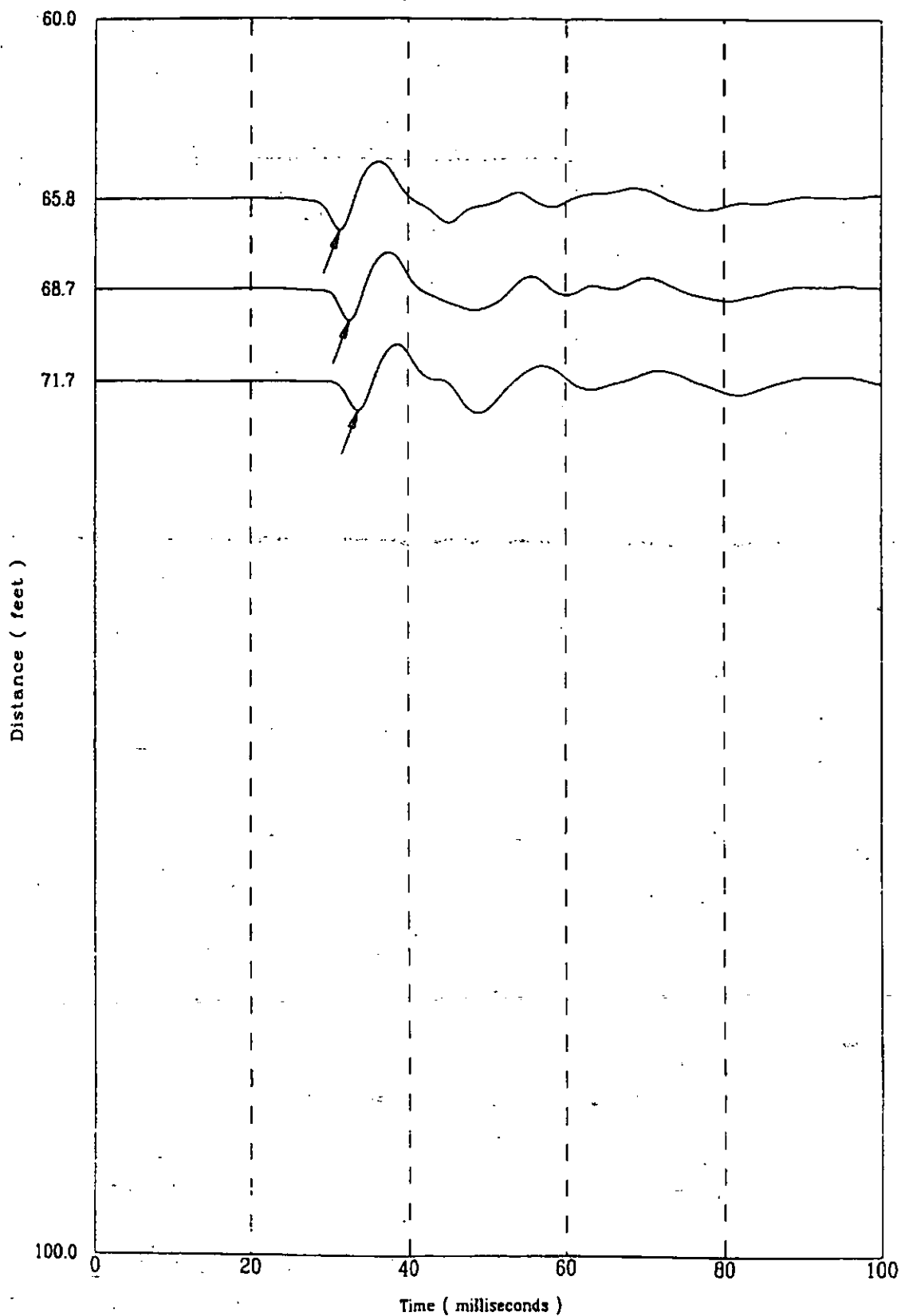
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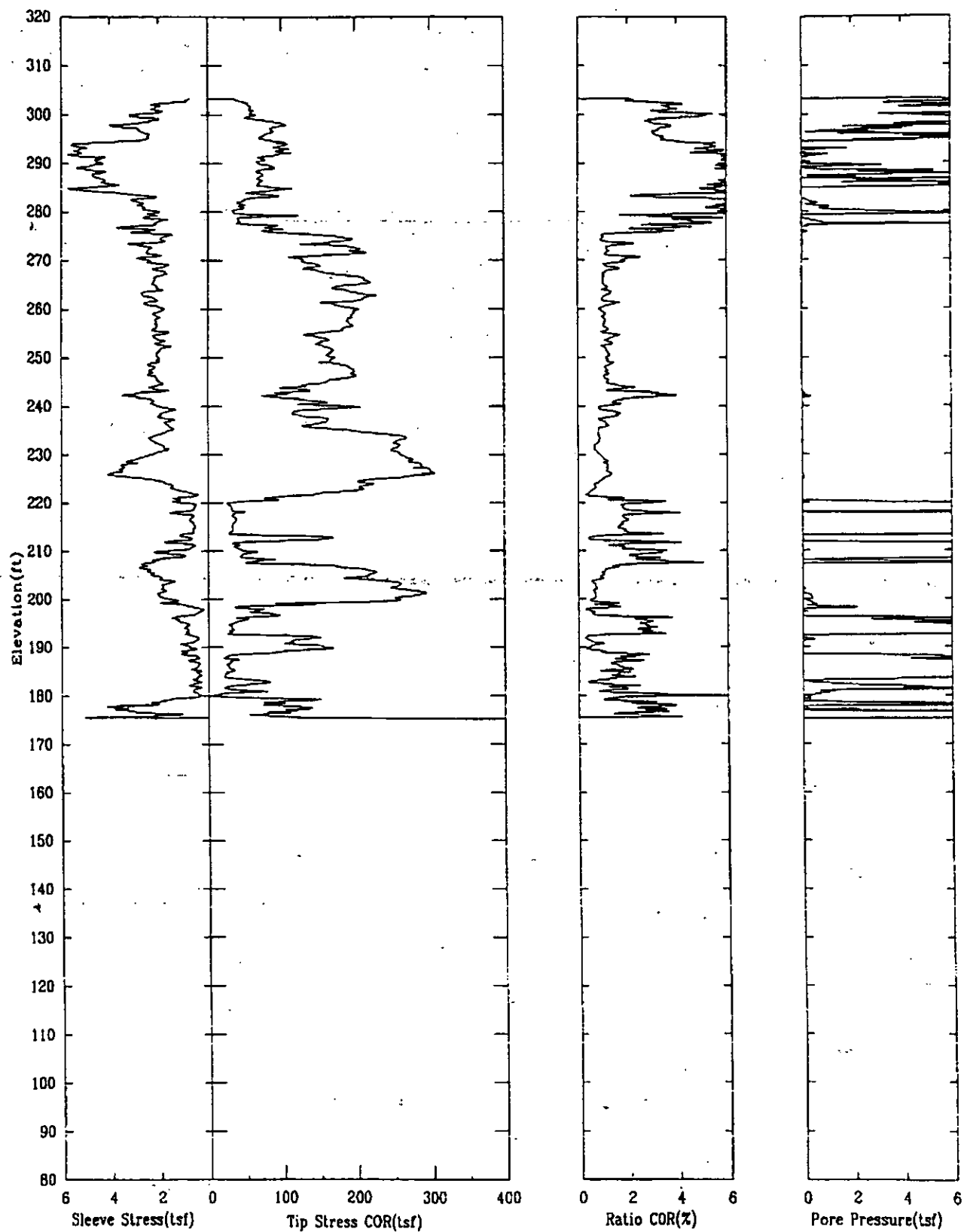
APPLIED RESEARCH ASSOCIATES, INC.

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North 78250

East 55451

Elevation 309.2





CPT-189

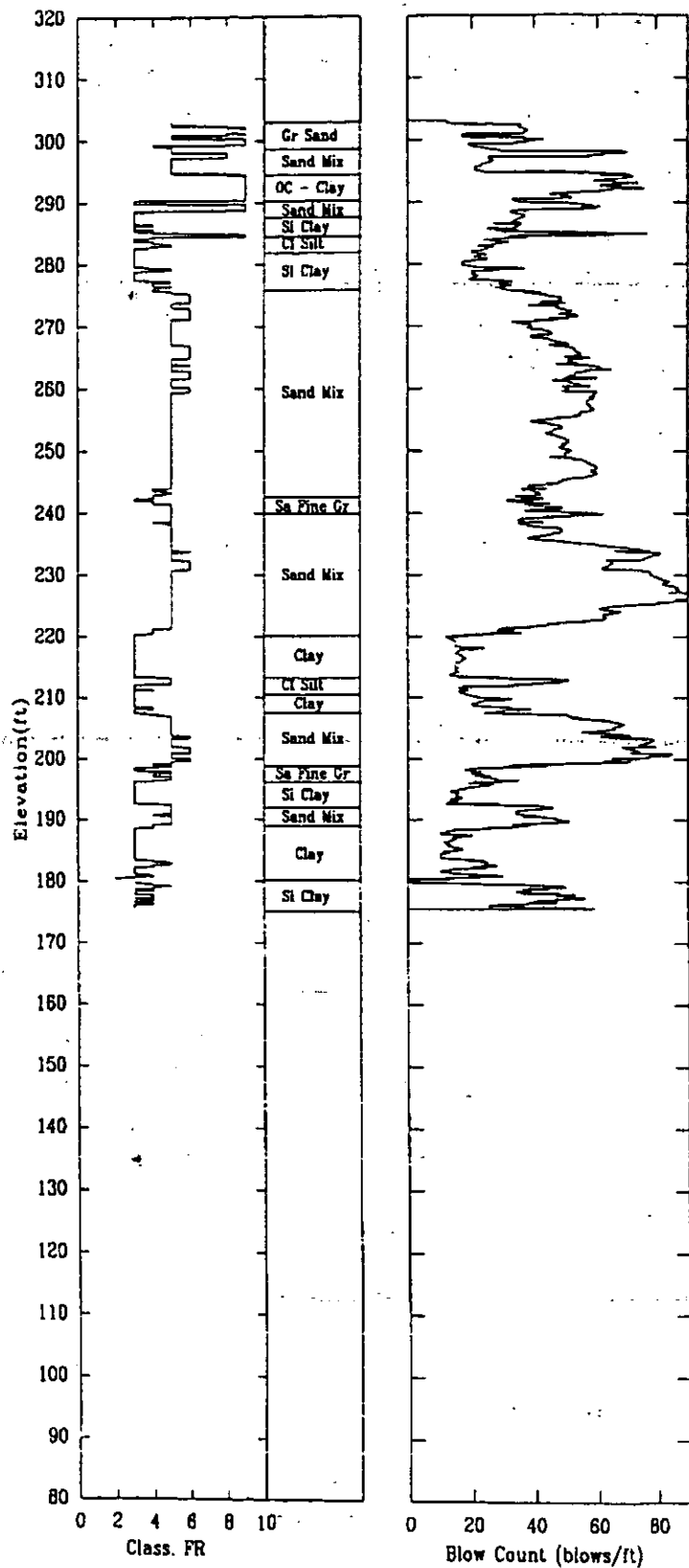
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Elevation 309.2



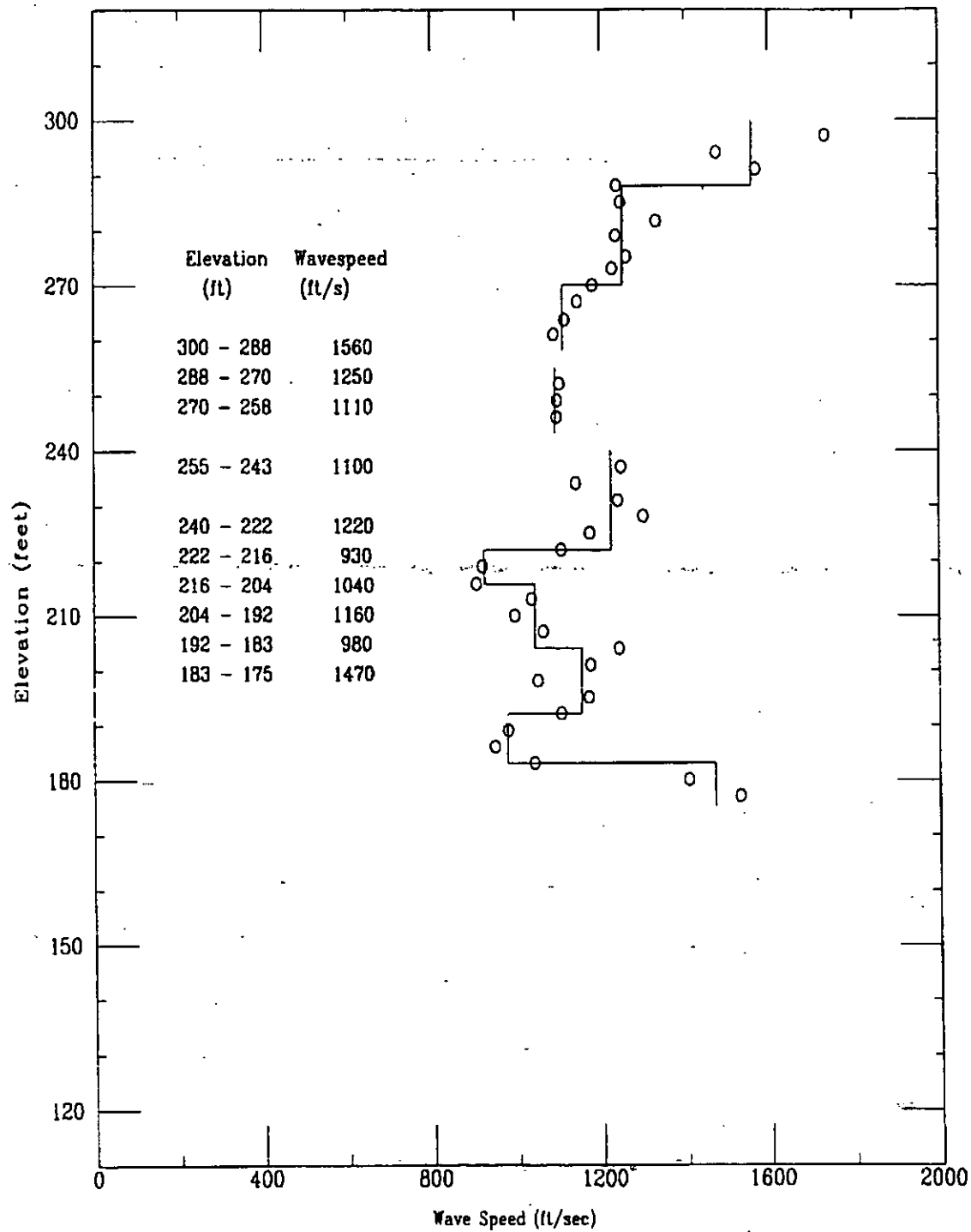
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### Shear Wave Speeds



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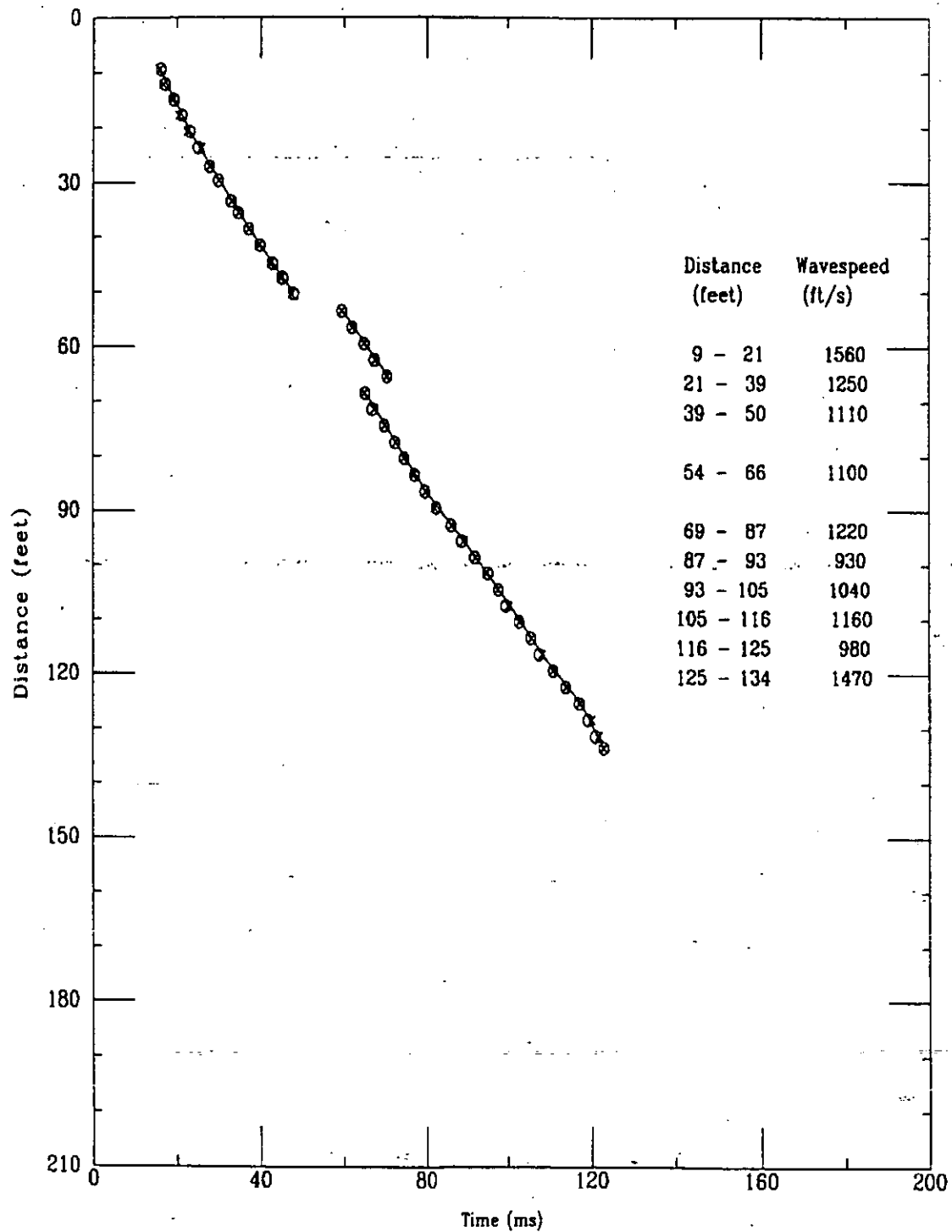
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Shear Wave Time of Peak

03/23/98



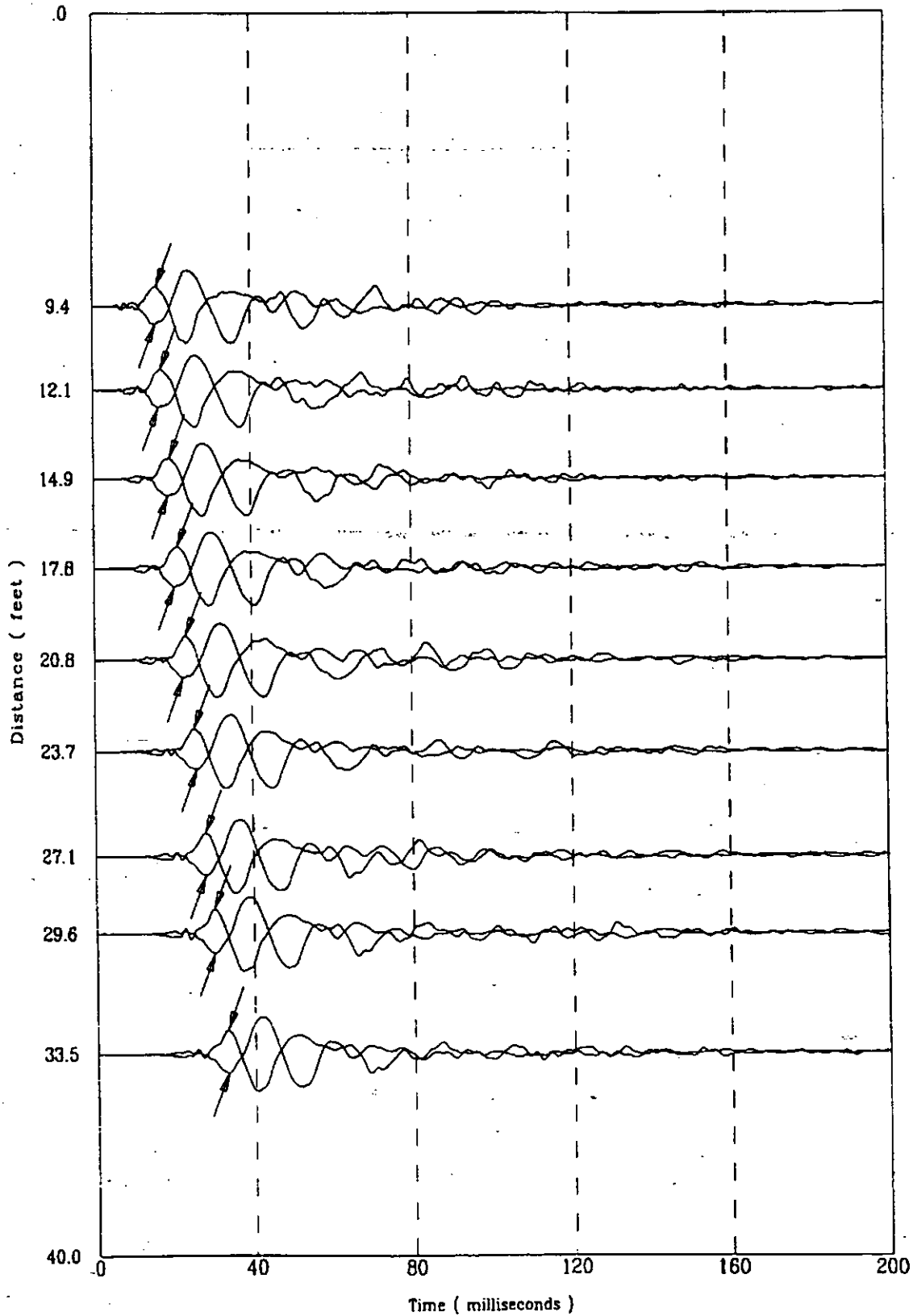
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CPT-189

S Wave  
03/23/98



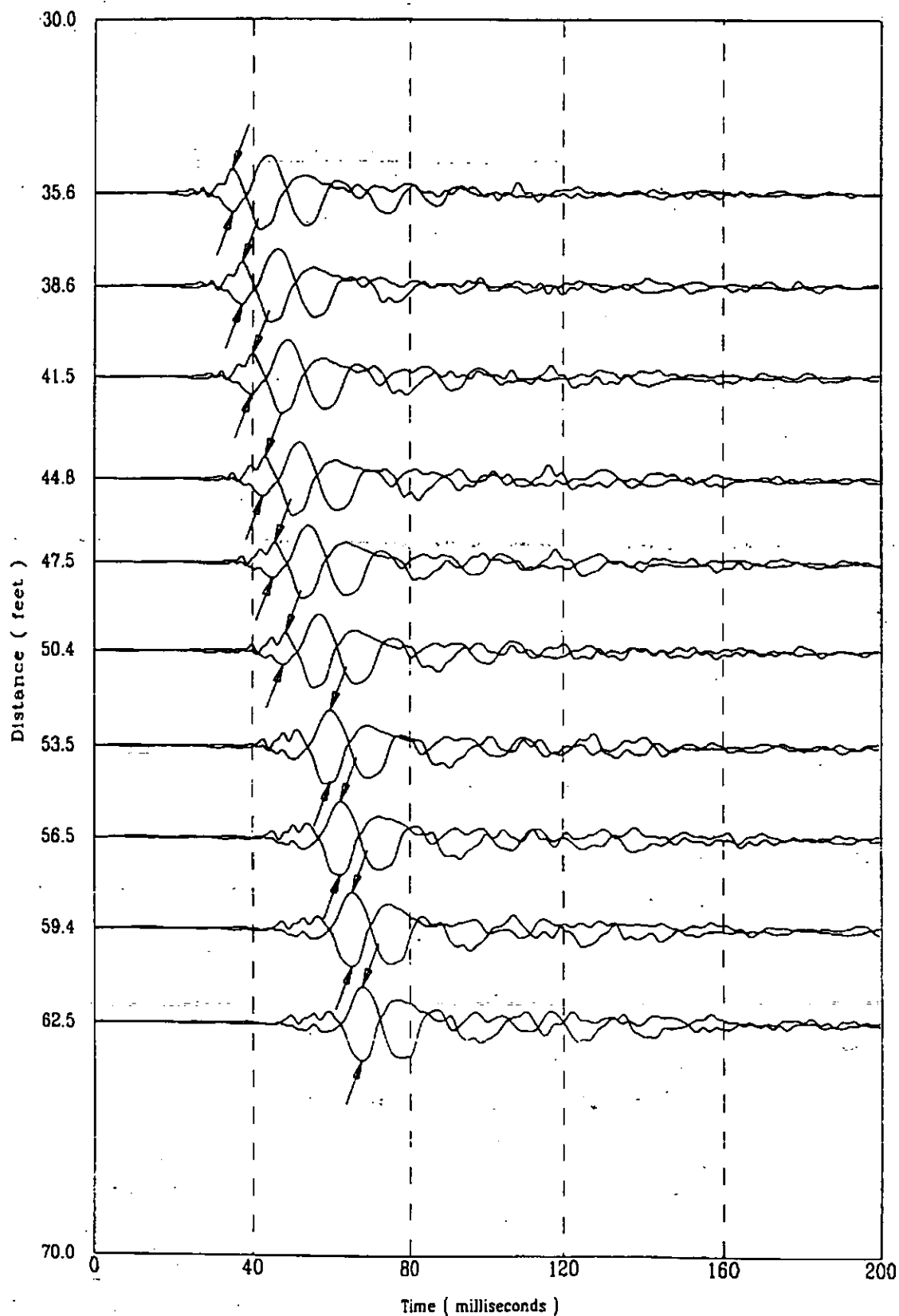
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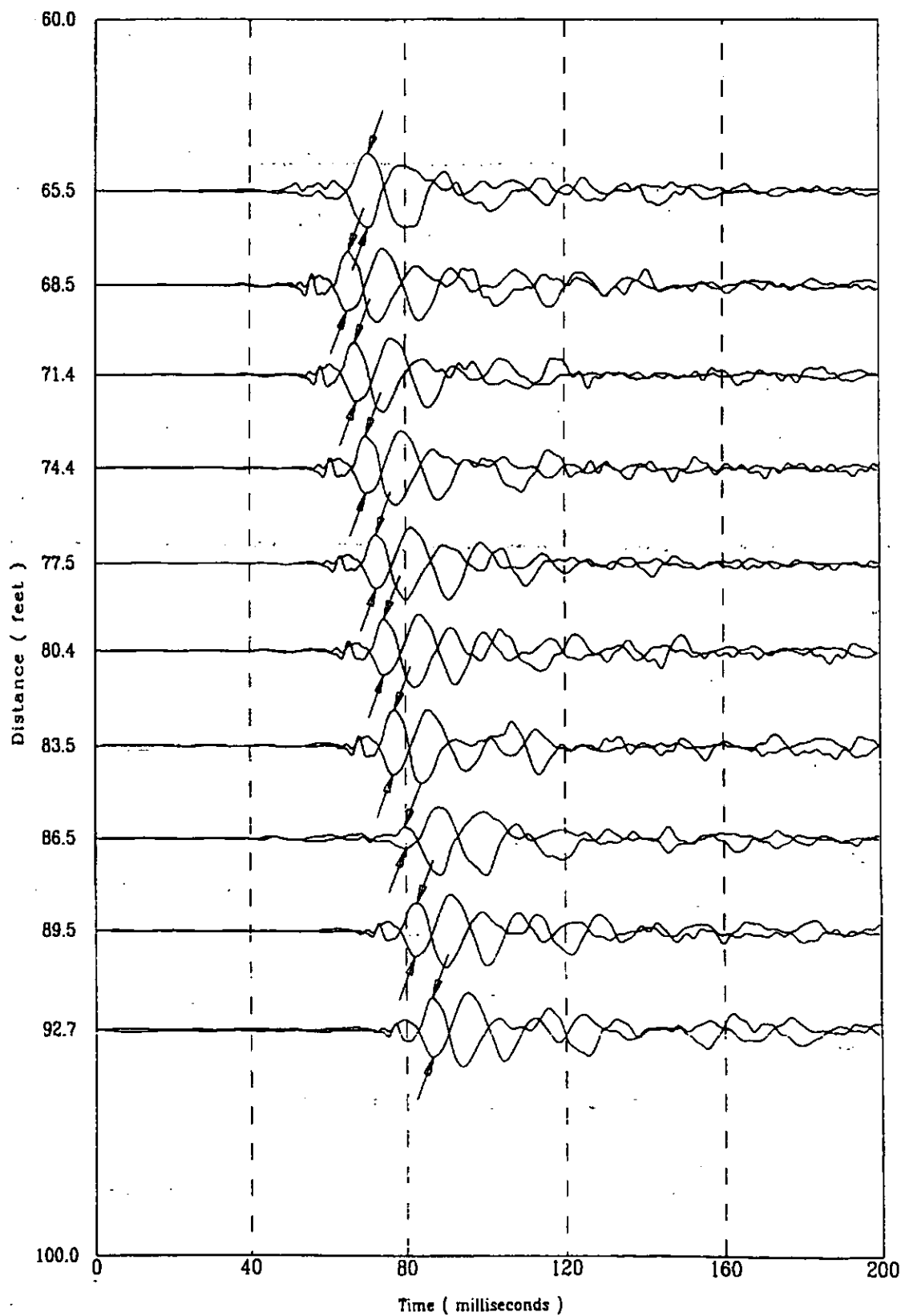
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03/23/98



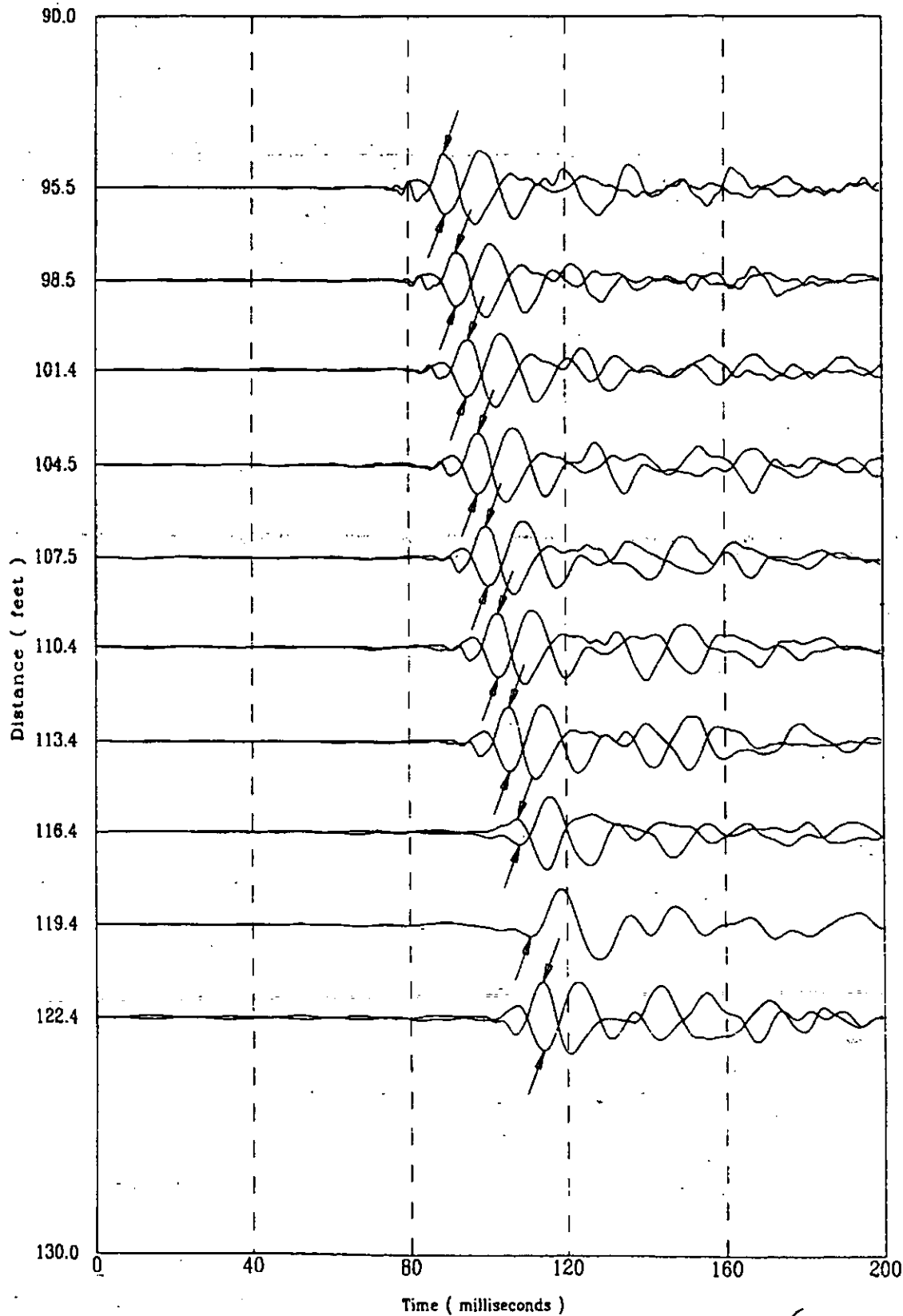
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CPT-189

S Wave  
03/23/98



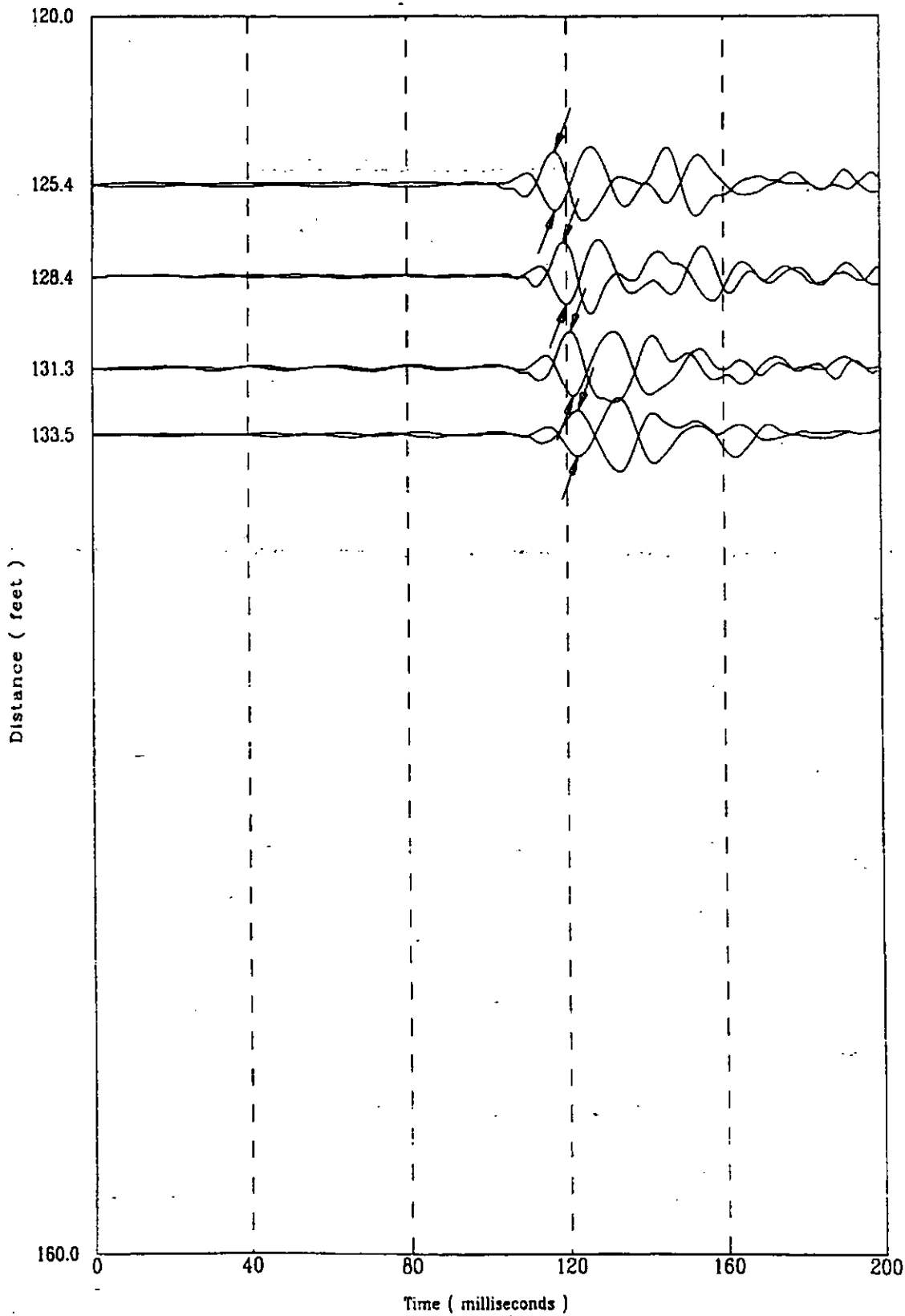
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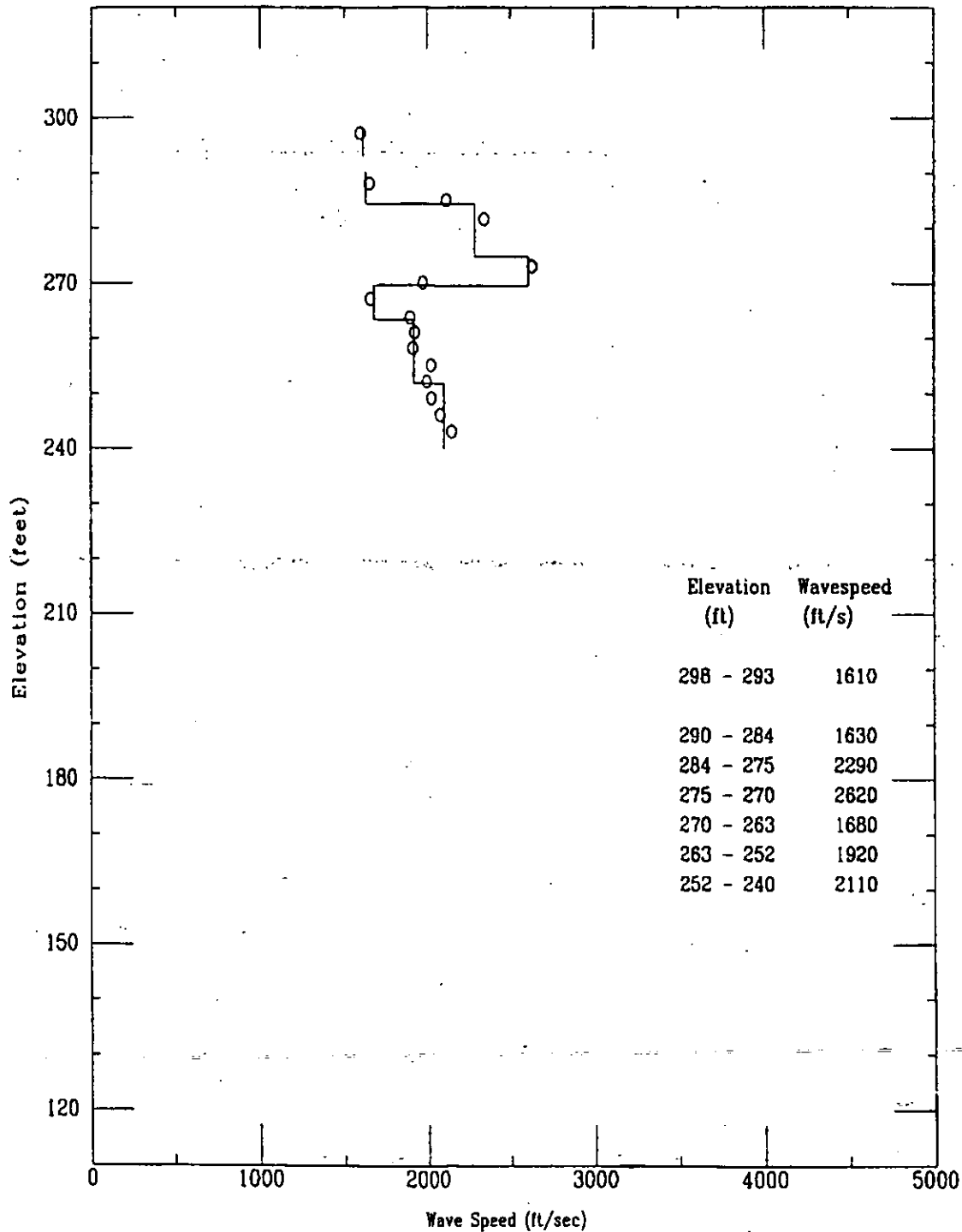


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Compression Wave Speeds

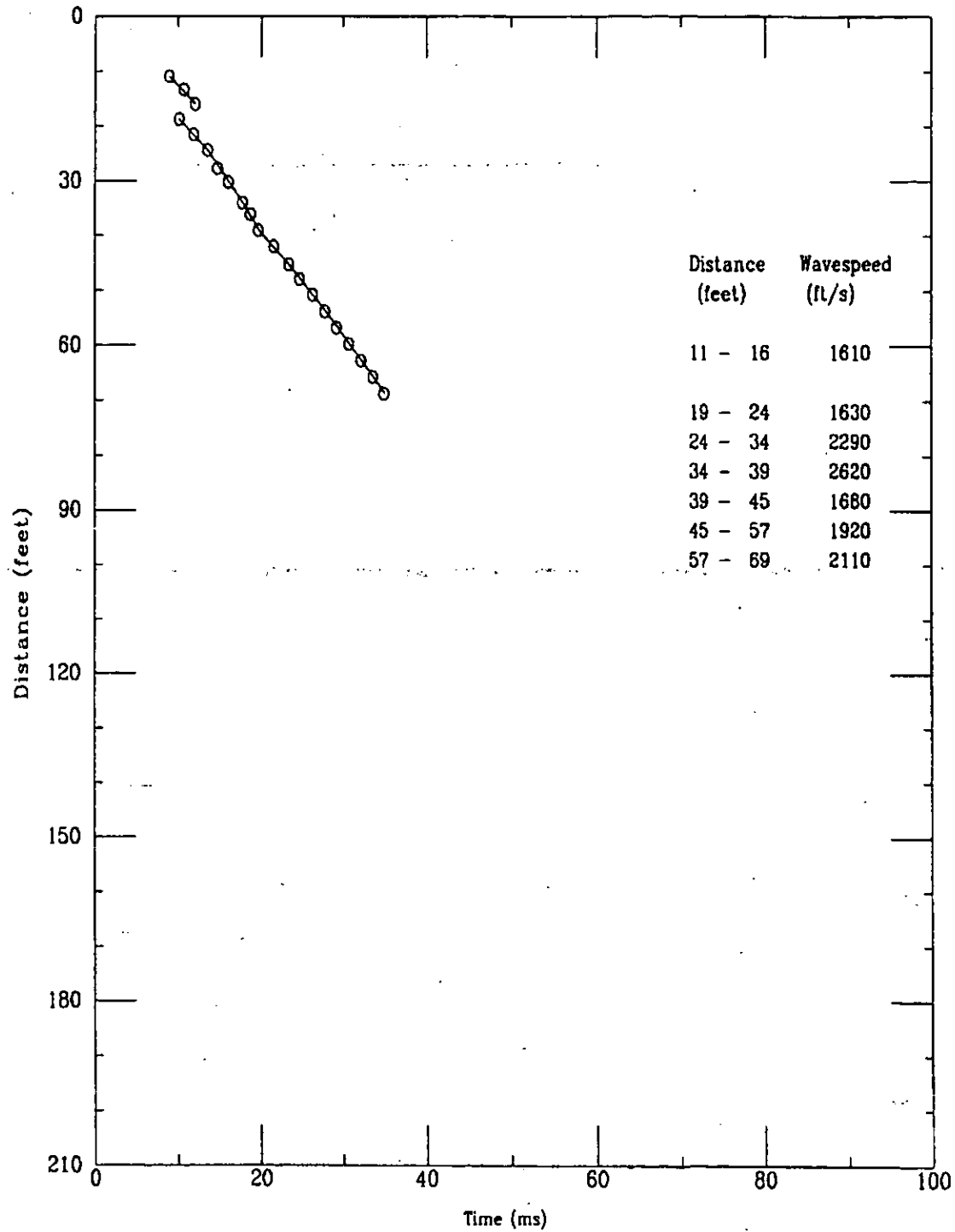


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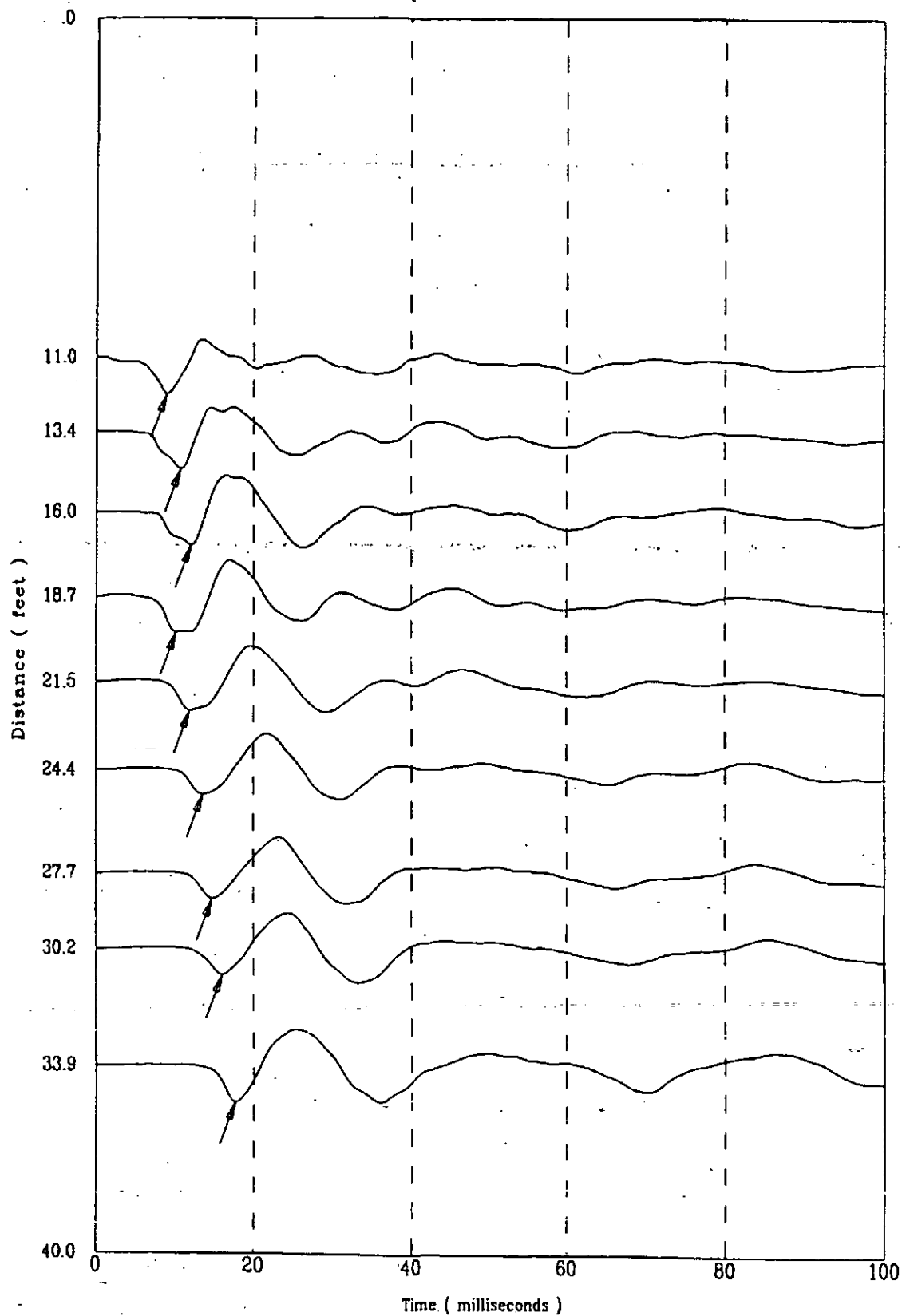
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03/23/98



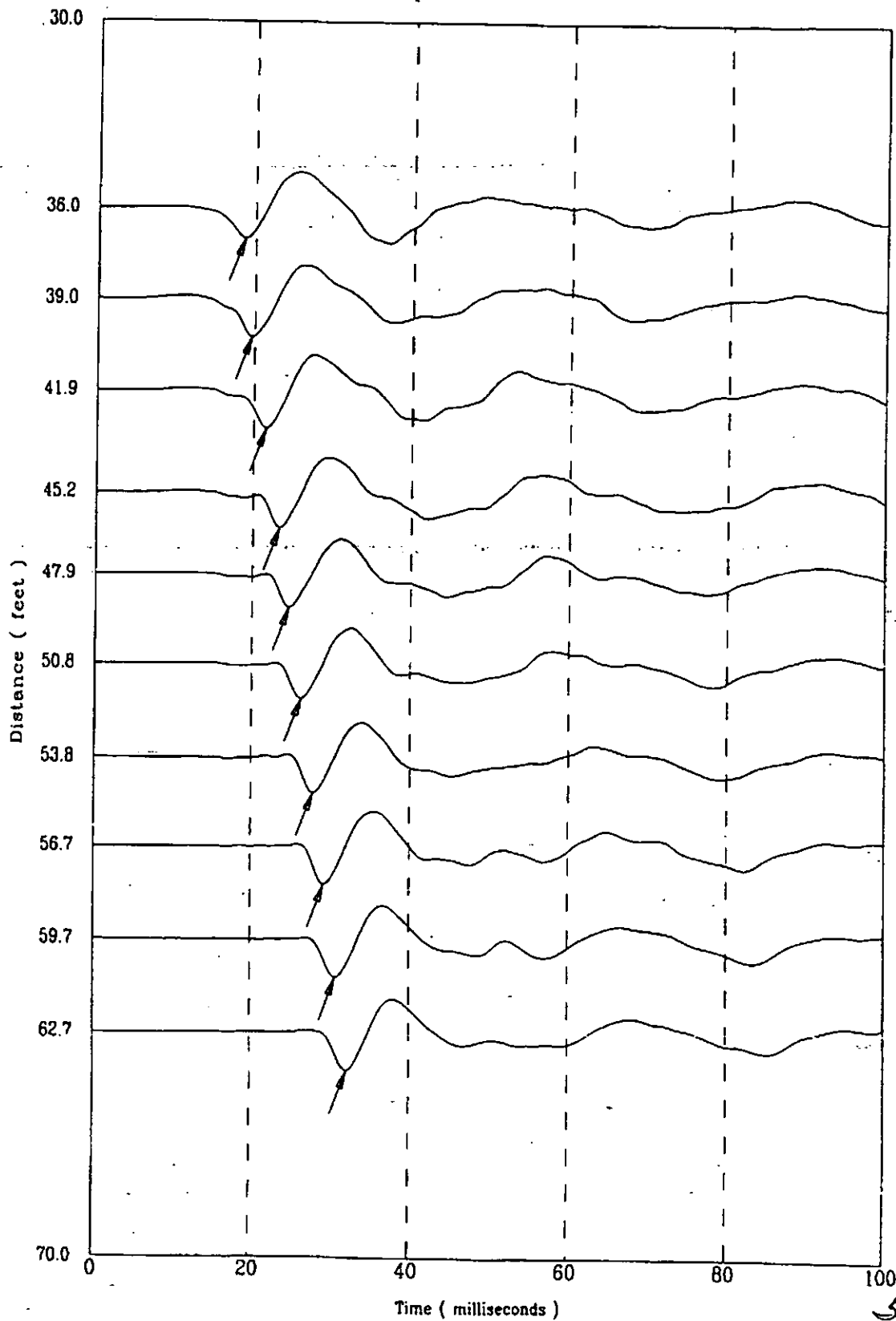
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Jm804S

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AA82276N-017-A-AR3

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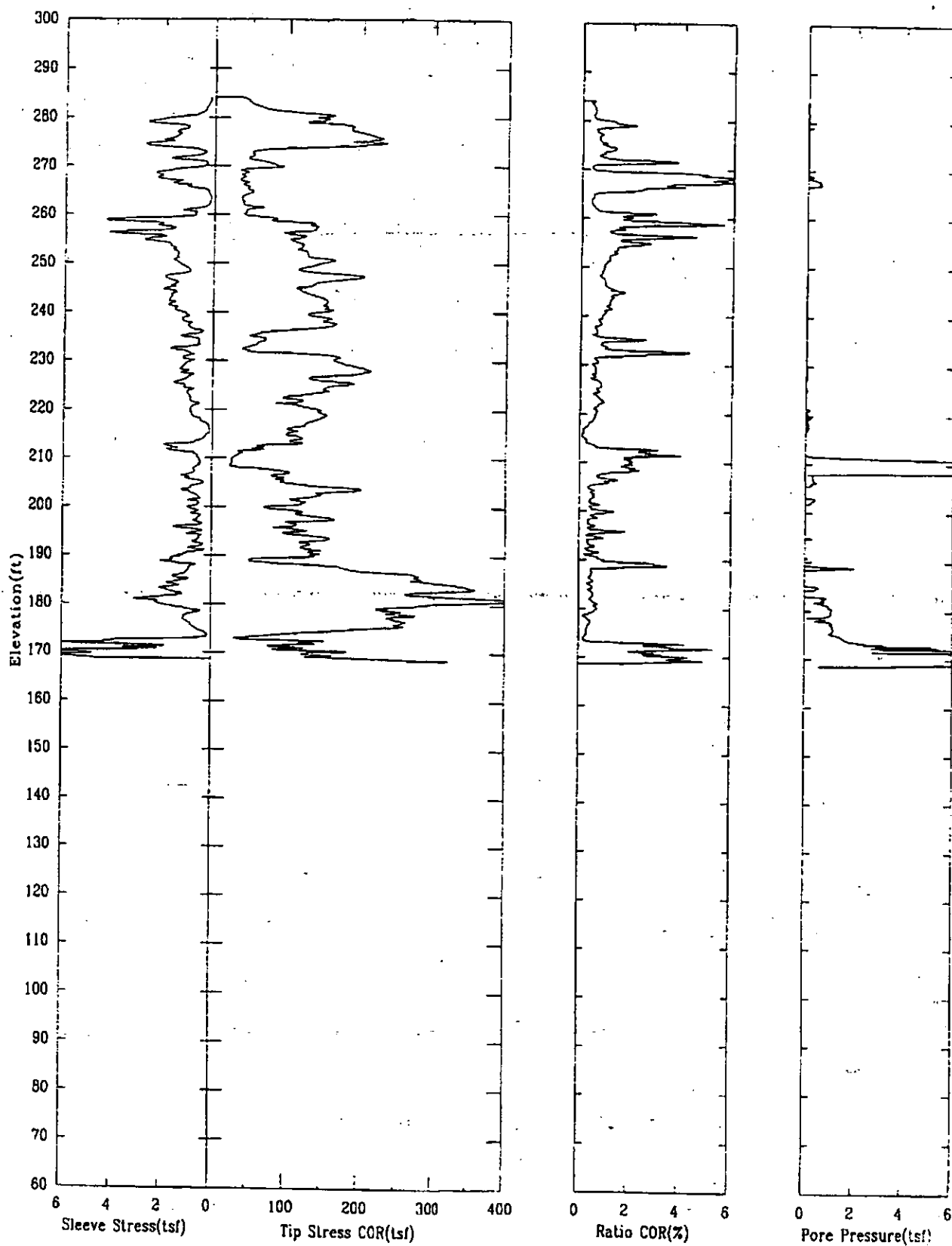
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East 55135

Elevation 290.1

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04/14/98/0



CPT-196

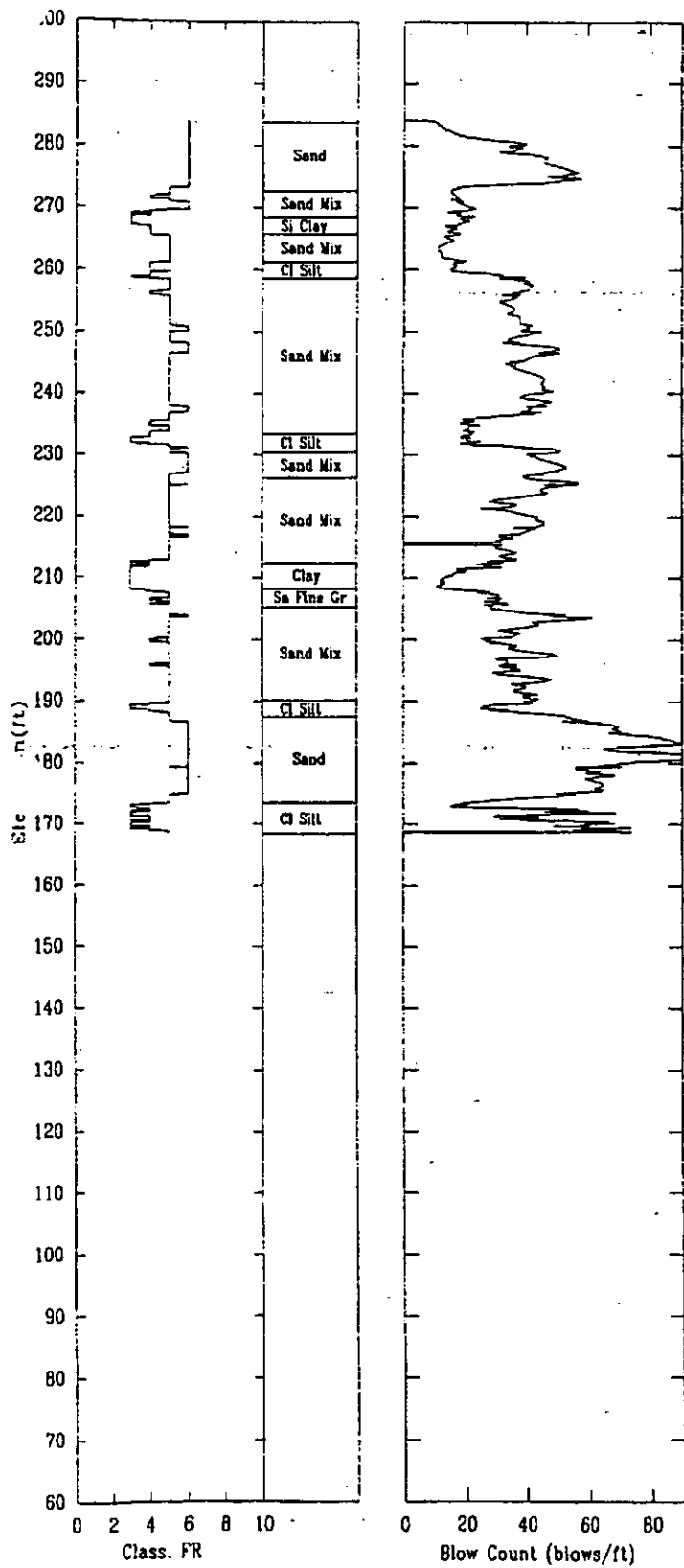
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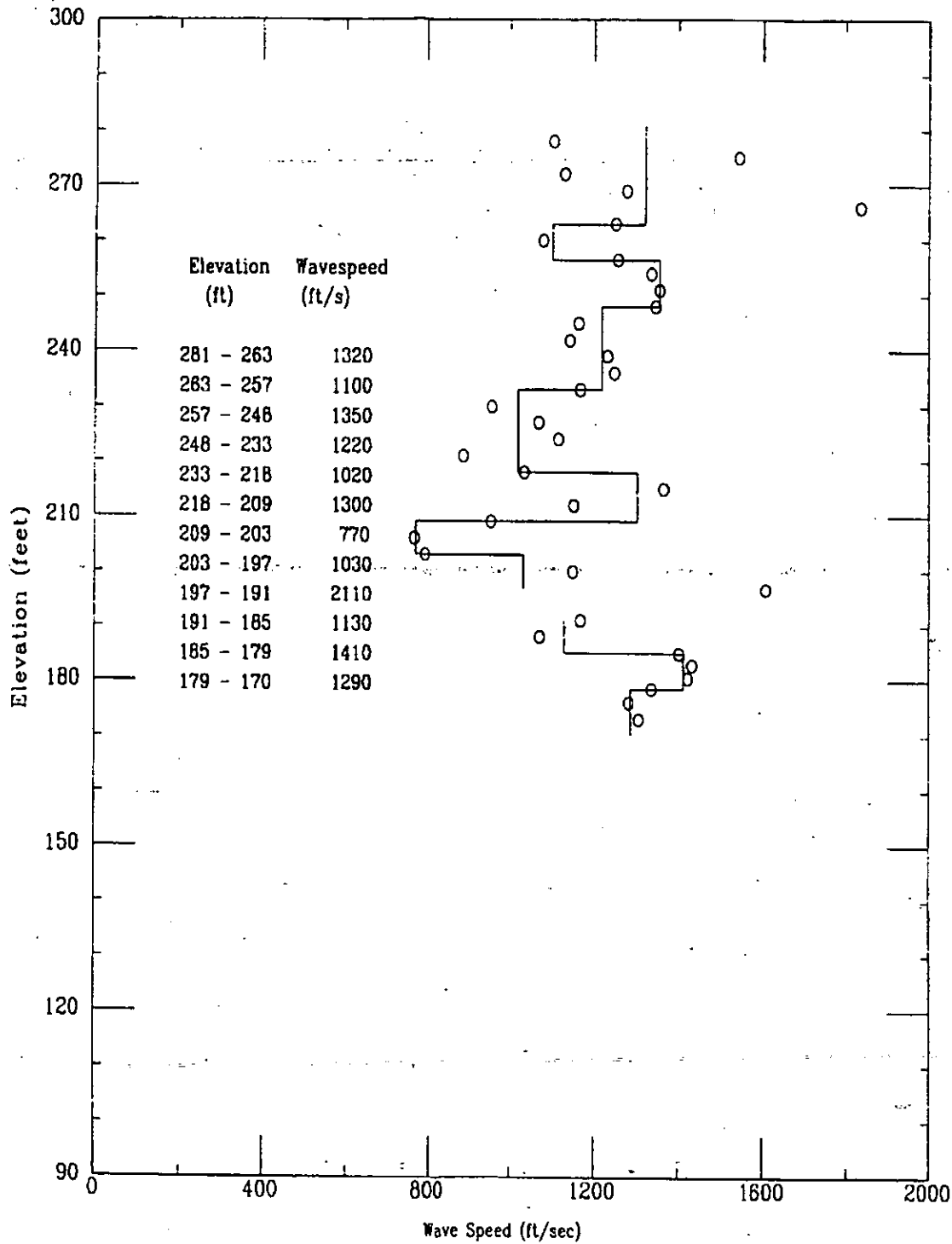


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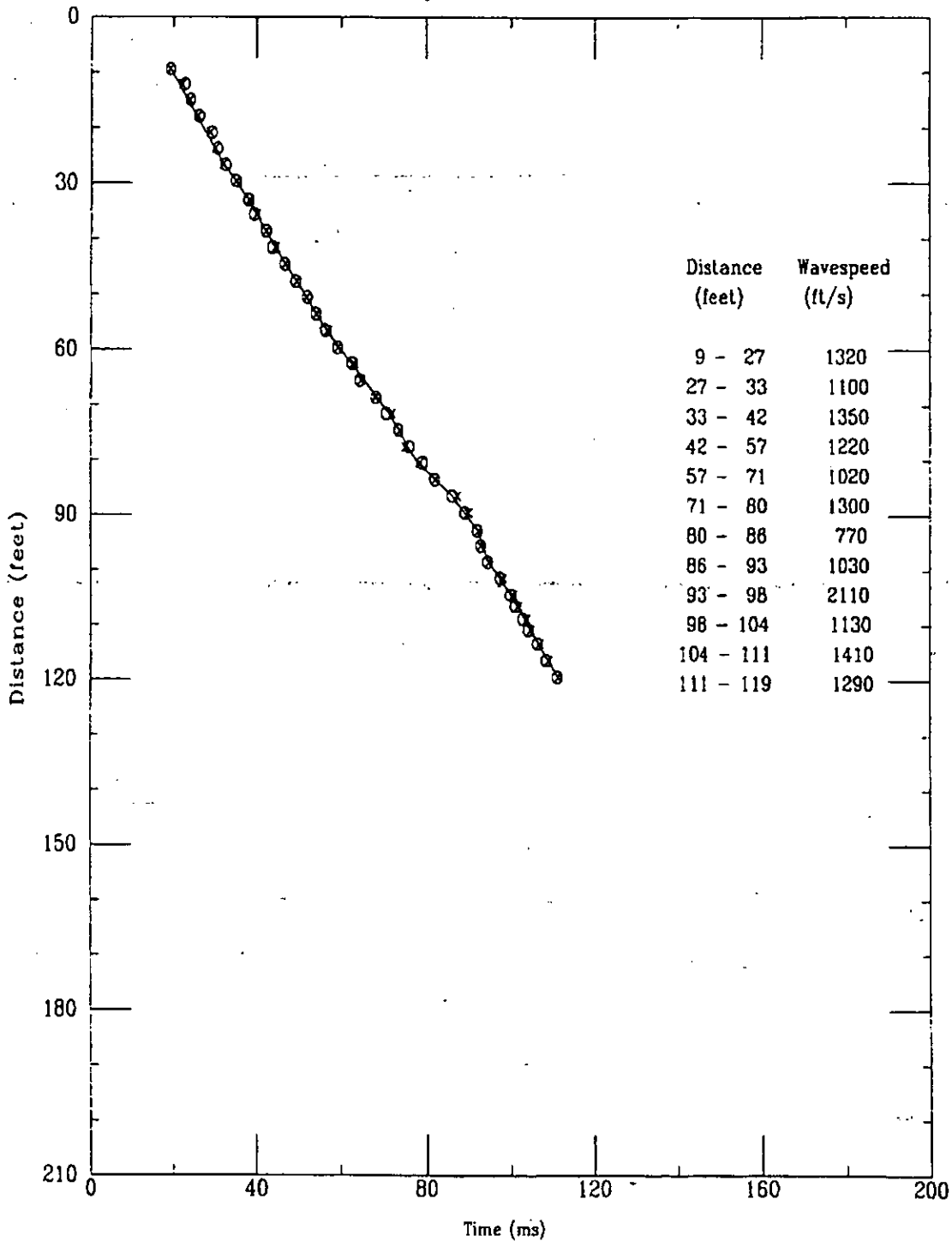


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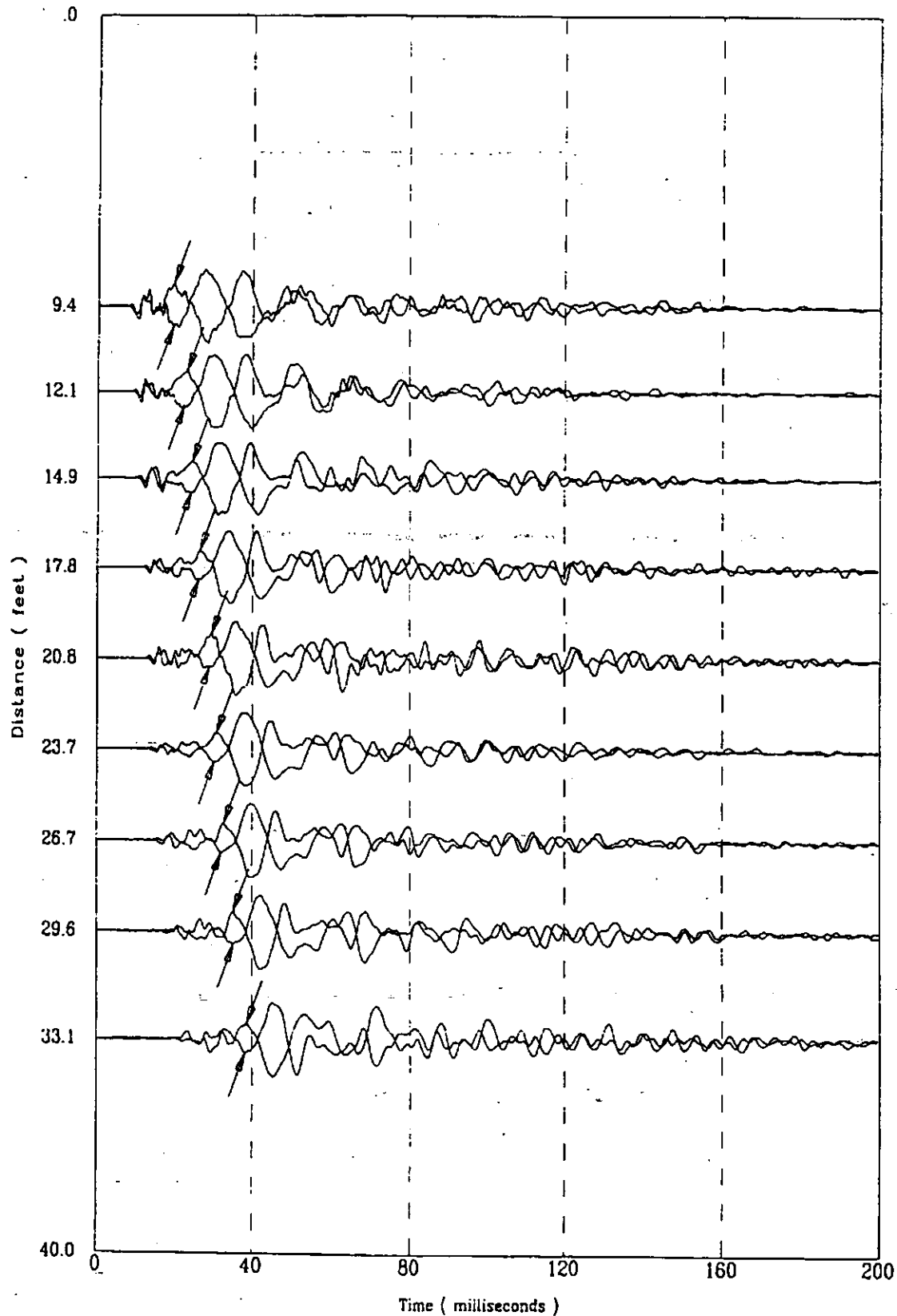




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04/14/98



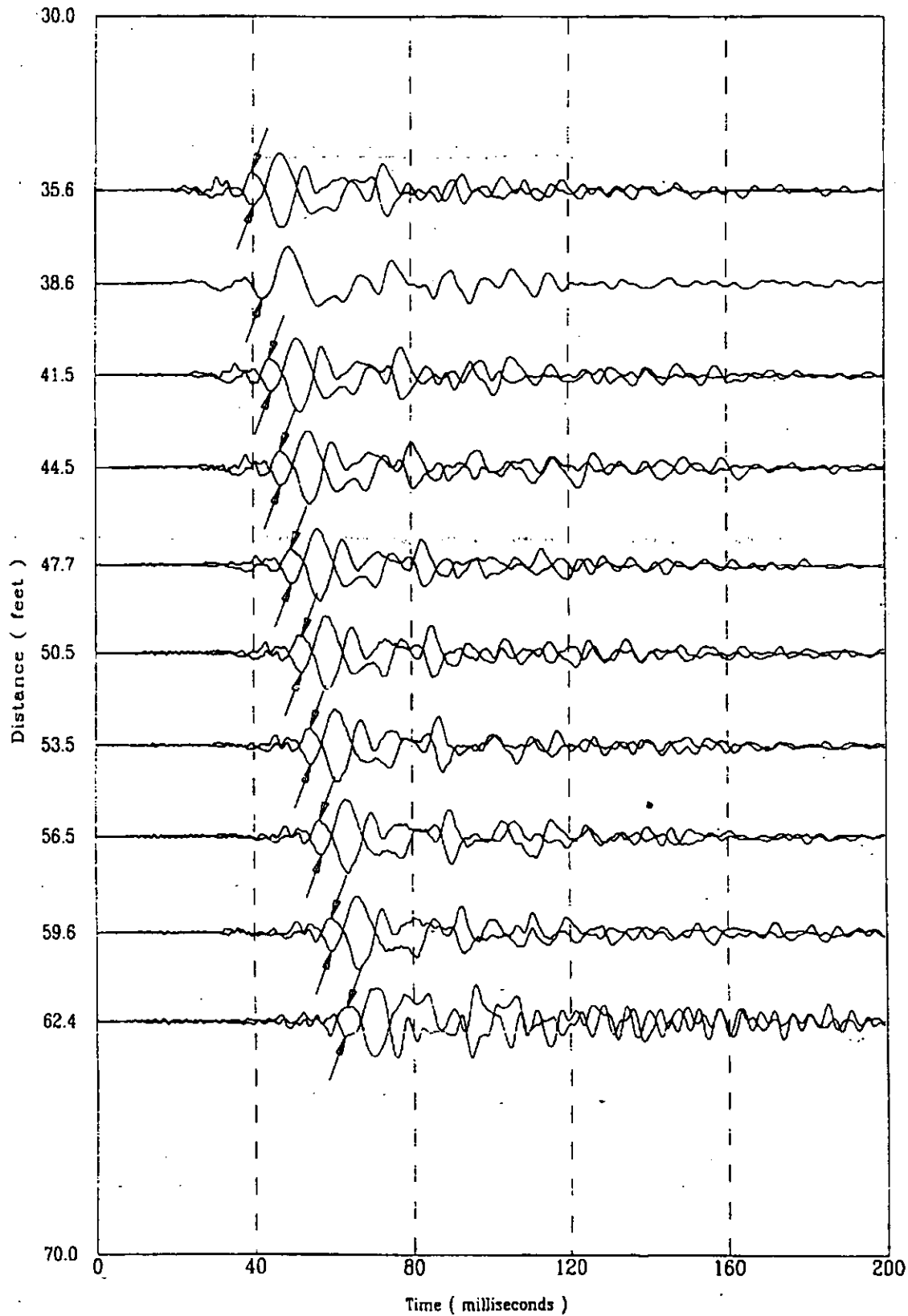
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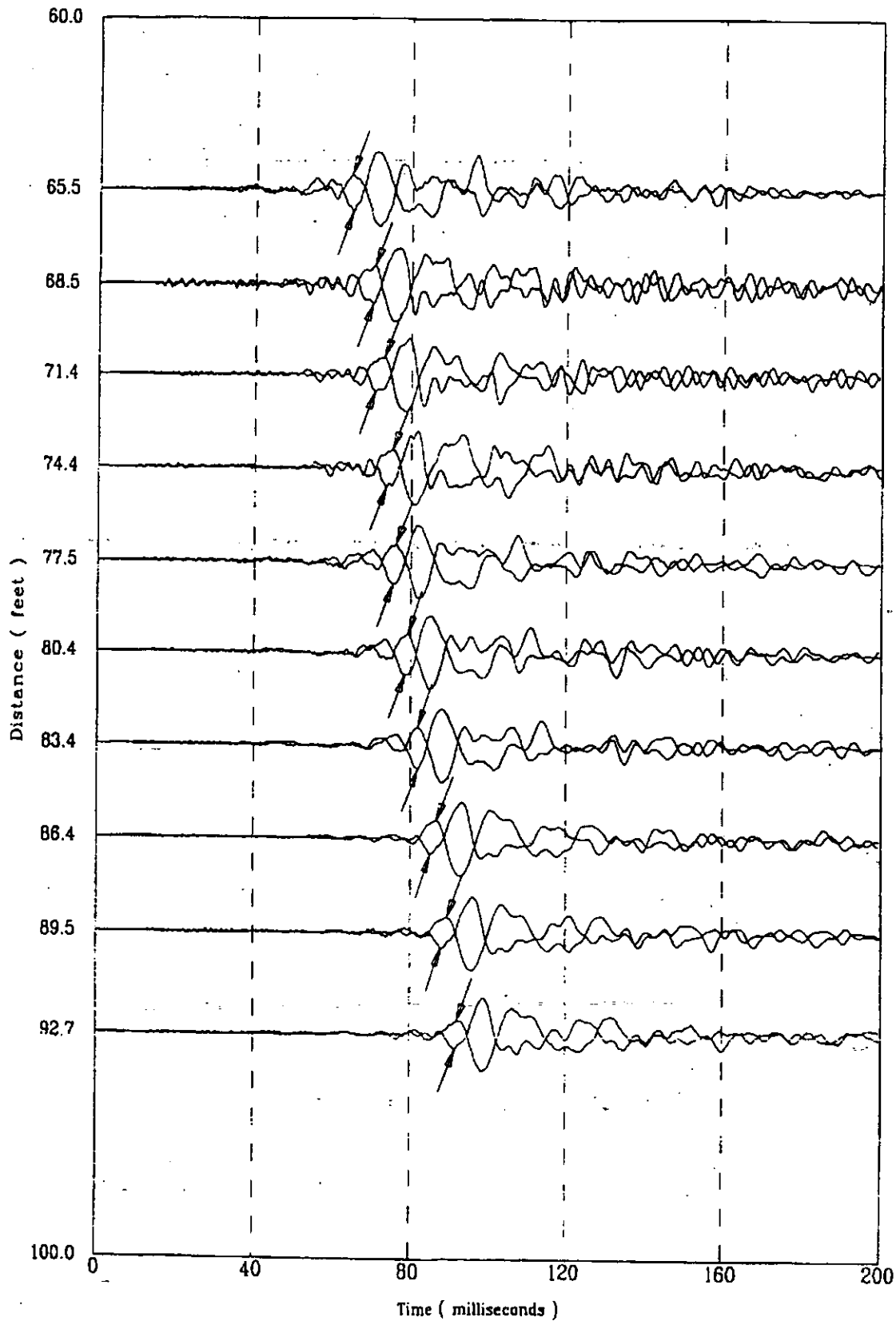
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CPT-196

S Wave  
04/14/98



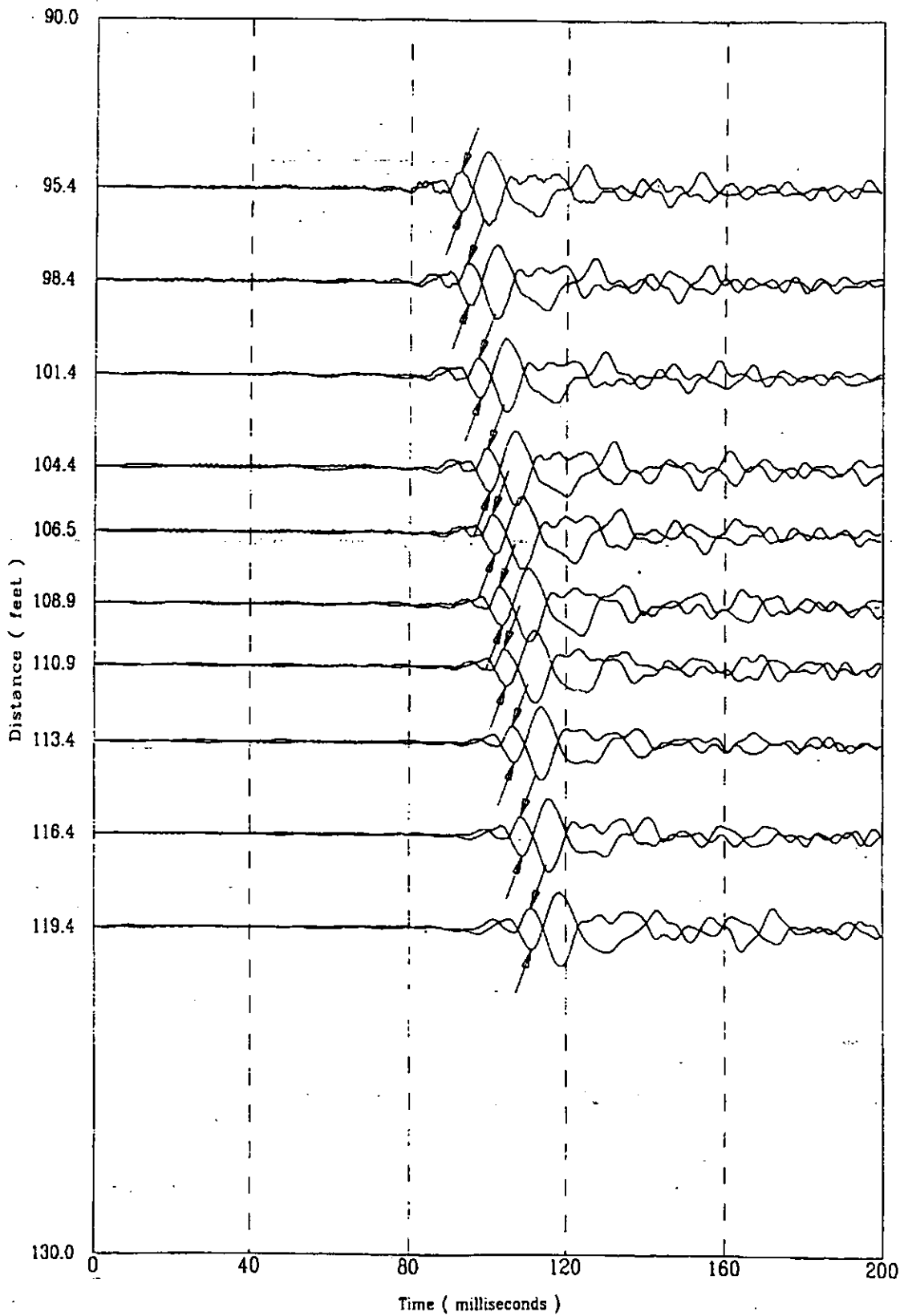
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S Wave  
04/14/98



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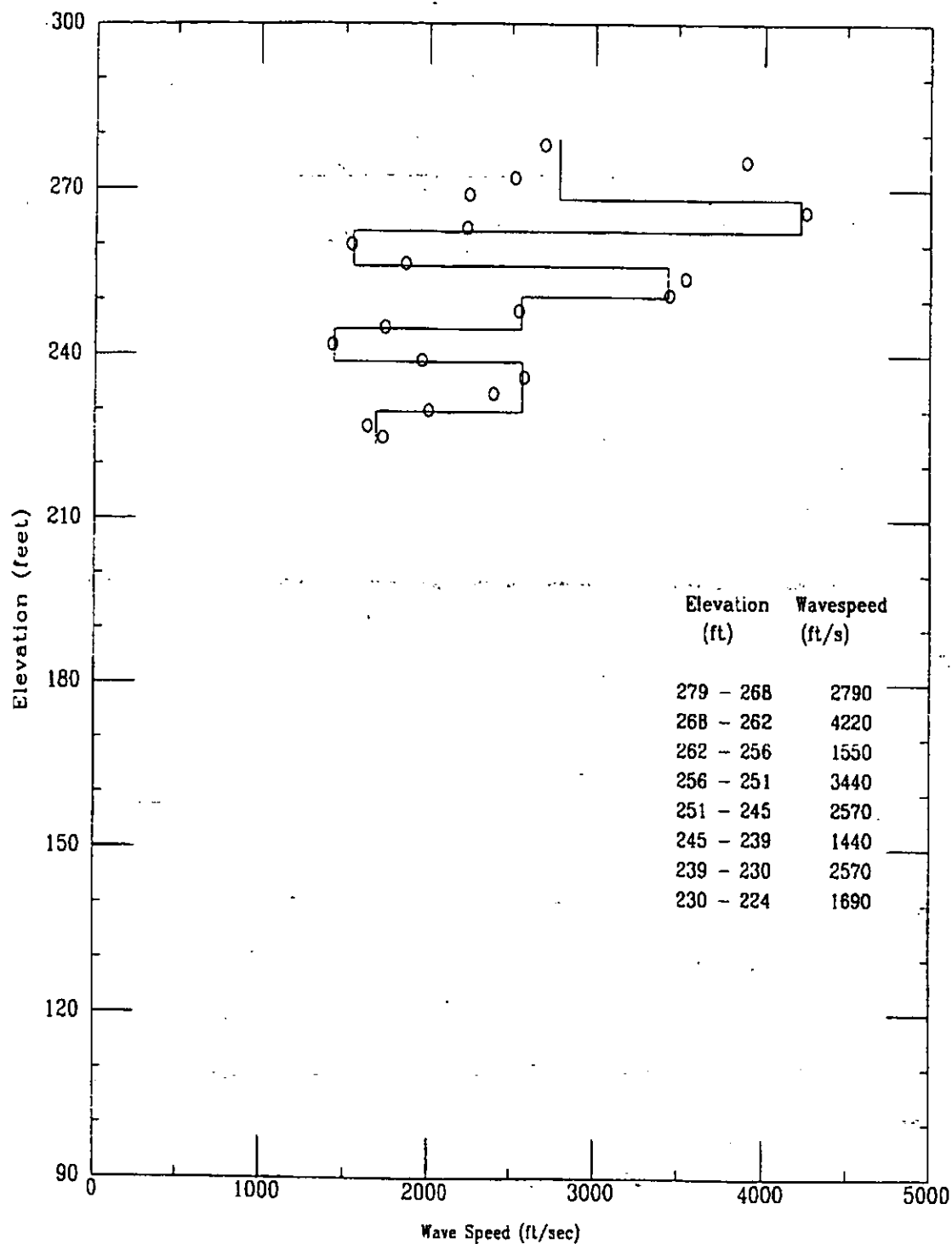
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Compression Wave Speeds

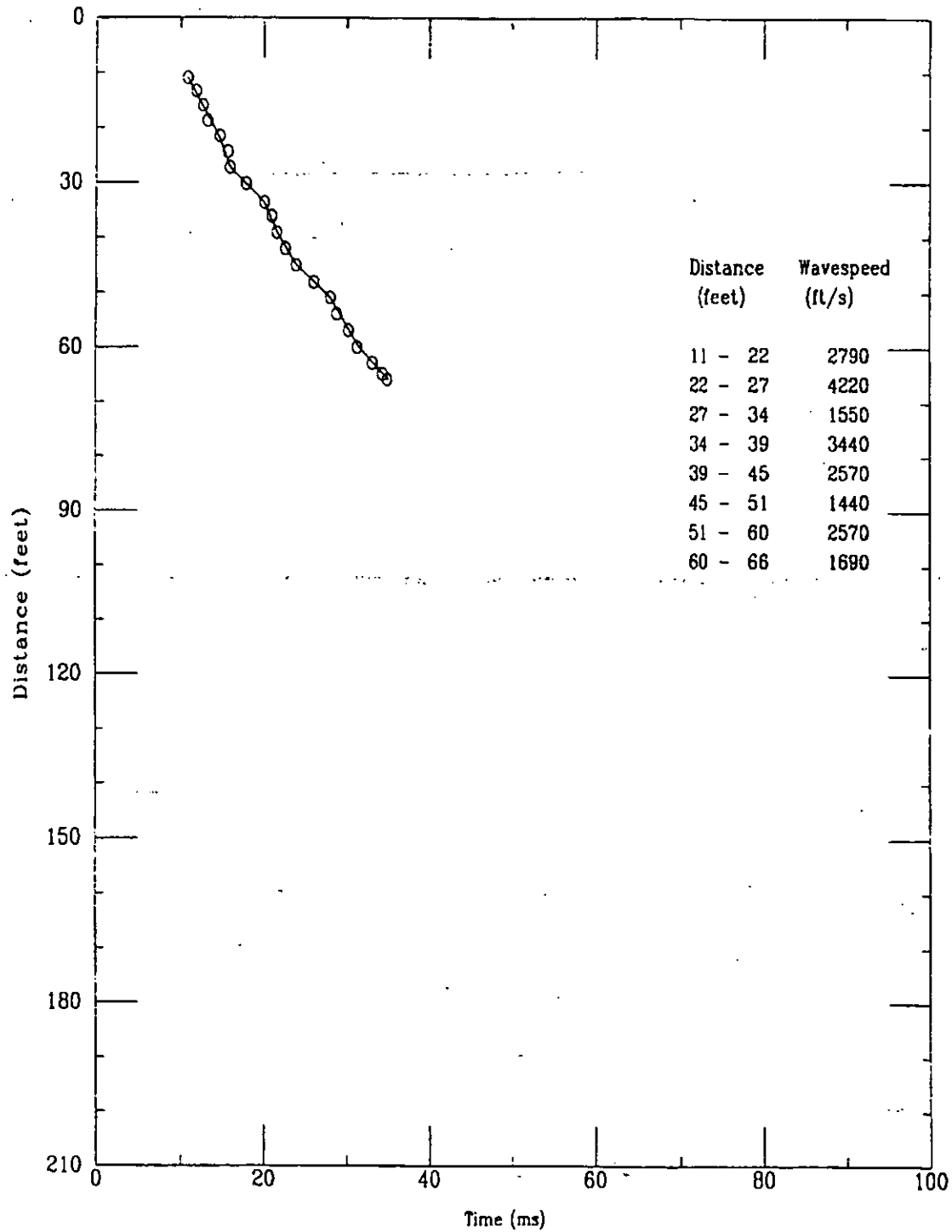


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Compression Wave Time of Peak

04/14/98

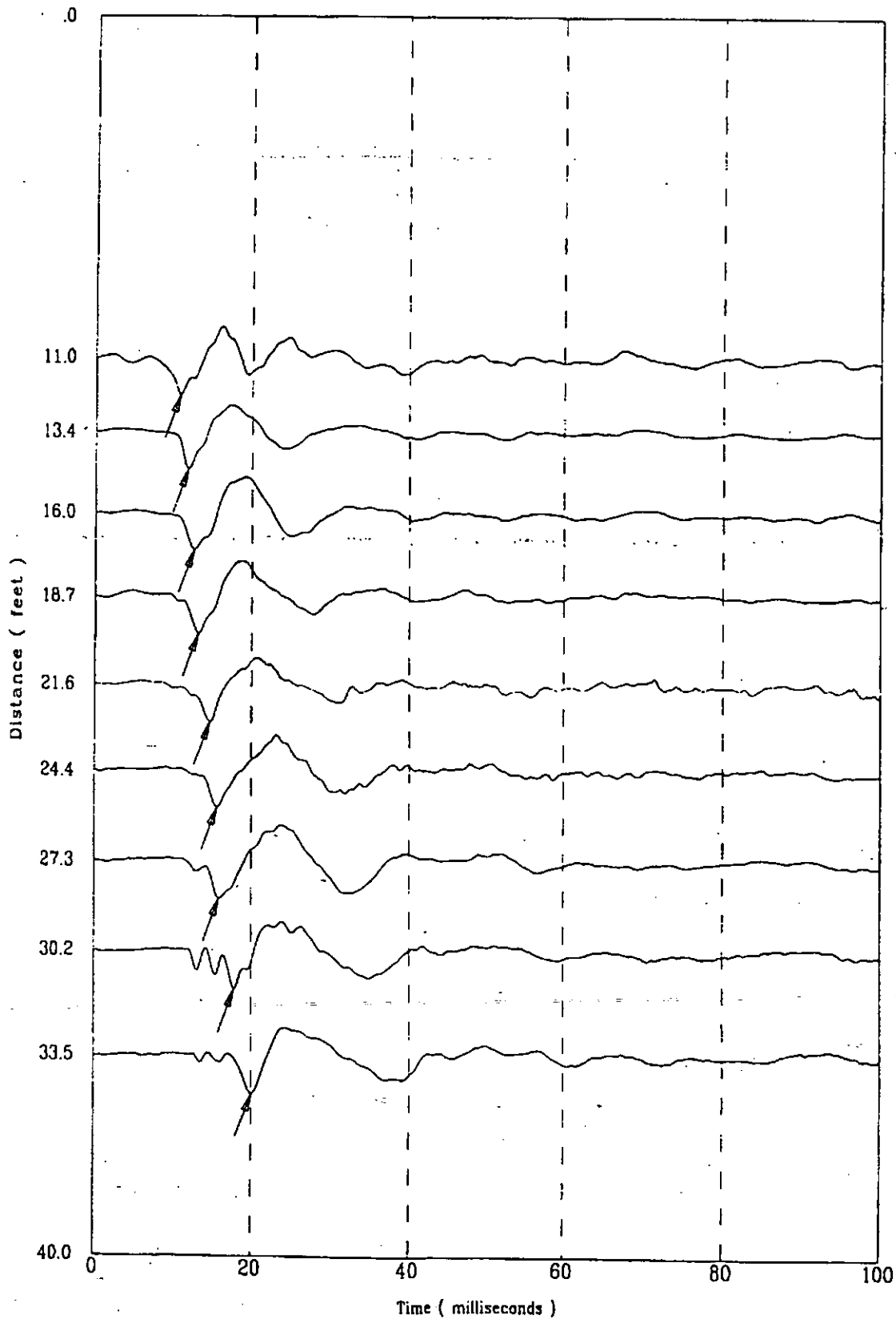


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04/14/98



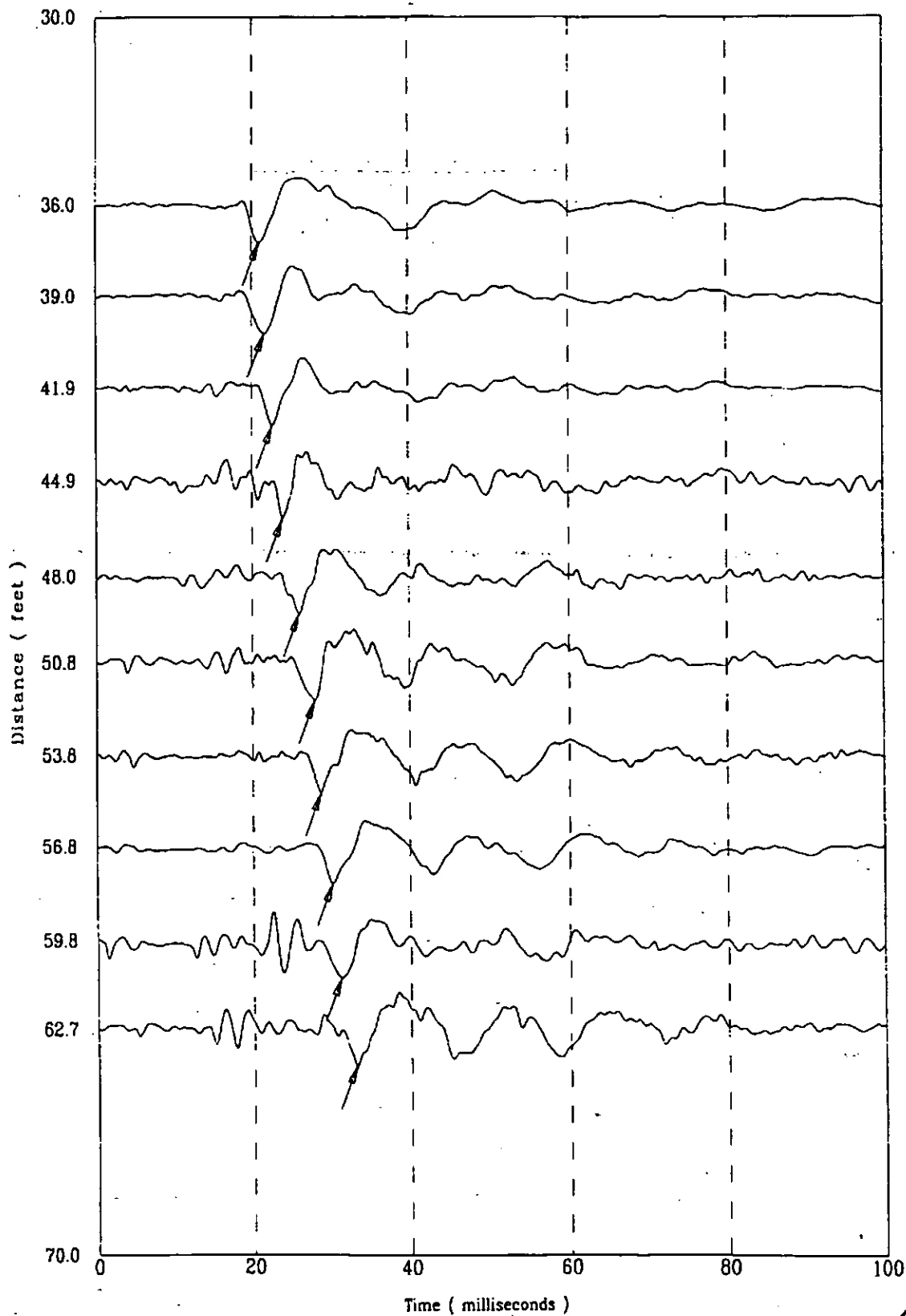
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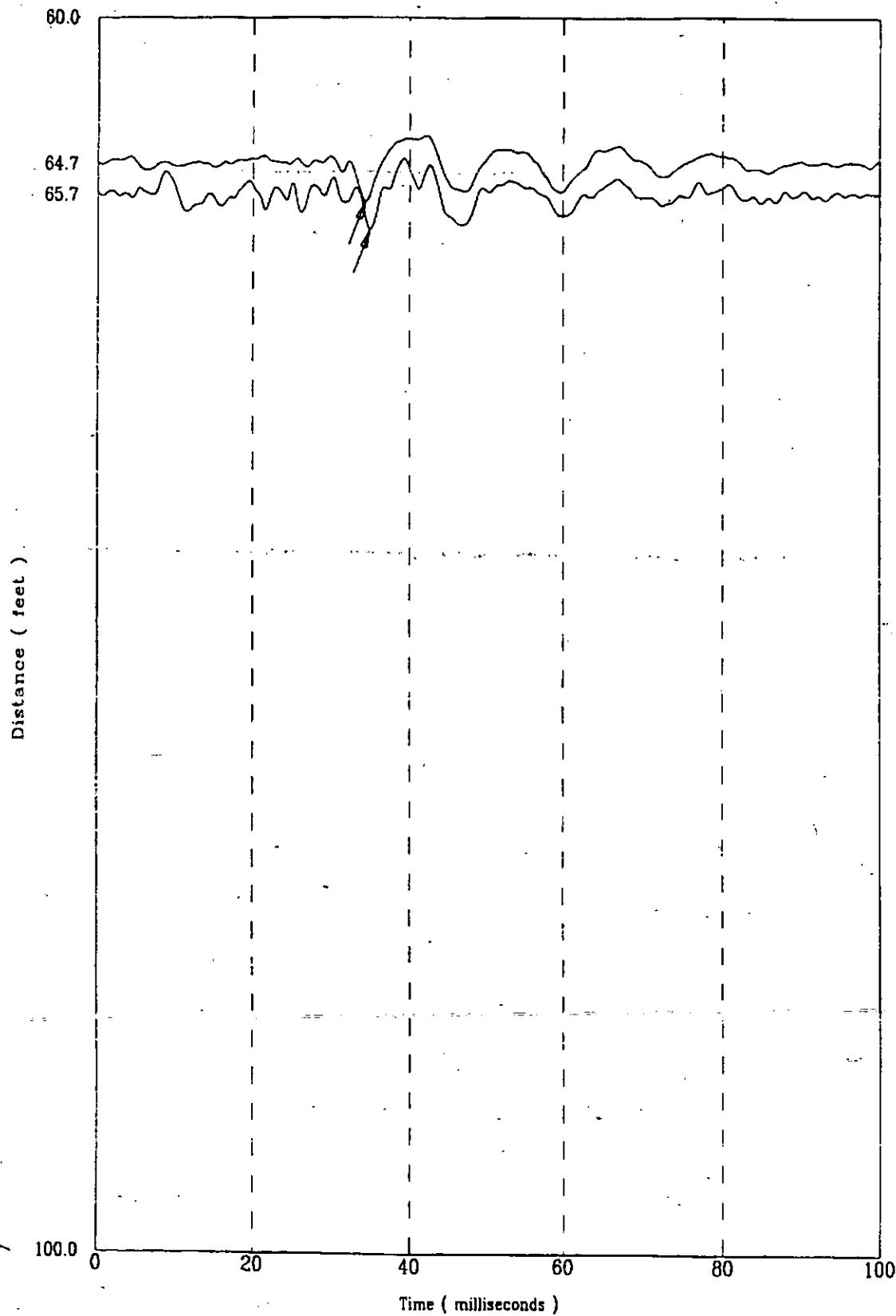
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04/14/98



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A08277611-017-A-AR3

K-TRT-F-00001 R/O

DOE CONTACT: BRENT GUITEZ  
5-3919

Westinghouse Savannah River Company

# Document Approval Sheet

Document No. <b>K-TRT-F-00001</b>	
Title <b>F-AREA NORTHEAST EXPANSION REPORT (U) 1642</b>	
Key Words (list 3) <b>GEOTECHNICAL</b>	
Primary Author/Contact (Must be WSRC) <b>FRANK H. SYMS</b>	Location <b>730-2B-1084</b>
Phone No. <b>26927</b>	Position <b>GEOLOGIST</b>
Organization Code <b>EA3B0</b>	Organization (No Abbreviations) <b>SITE GEOTECHNICAL SERVICES</b>
Other Authors	Approval Requested by (date) <b>8/23/99</b>
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Disclosure No. (If Known) _____ Title _____	
If no, do you intend to submit one? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, projected date _____	
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Westinghouse  
Savannah River Company

August 18, 1999

DOE Contact

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S&TI

Ms. W. F. Perrin, Technical Information Officer  
U. S. Department of Energy - Savannah River Operations Office

Dear Ms. Perrin:

# REQUEST FOR APPROVAL TO RELEASE SCIENTIFIC/TECHNICAL INFORMATION

The attached document is submitted for classification and technical approvals for the purpose of external release. Please complete Part II of this letter and return the letter to the undersigned by 8/23/1999. The document has been reviewed for classification and export control by a WSRC Classification staff member and has been determined to be Unclassified.

*Irish Baughman for*  
Kevin J. Schmidt, WSRC STI Program Manager

## I. DETAILS OF REQUEST FOR RELEASE

Document Number: K-TRT-F-00001

Author's Name: F. H. Syms

Location: 730-2B, 1084

Phone 2-6927

Department: Site Geotechnical Services

Document Title: F-Area Northeast Expansion Report, Volumes 1 and 2

Presentation/Publication:

Meeting/Journal:

Location:

Meeting Date:

N/A

OSTI Reportable

## II. DOE-SR ACTION

Date Received by TIO 08/19/99

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Approved for Release     | <input type="checkbox"/> Not Approved                  |
| <input type="checkbox"/> Approved Upon Completion of Changes | <input type="checkbox"/> Revise and Resubmit to DOE-SR |
| <input type="checkbox"/> Approved with Remarks               |  |

Remarks: \_\_\_\_\_

*W. F. Perrin*  
W. F. Perrin, Technical Information Officer, DOE-SR

8/23/99  
Date

US DEPARTMENT OF ENERGY  
ANNOUNCEMENT OF U. S. DEPARTMENT OF ENERGY (DOE)  
SCIENTIFIC AND TECHNICAL INFORMATION (STI)

OMB Control No.  
1910-14(X)

K-TRT-F-00001 R/O.

RECORD STATUS (select one):

☒ New ☐ Revised Data ☐ Revised STI Product

Part I: STI PRODUCT DESCRIPTION

A. STI PRODUCT TYPE (select one)

☒ 1. Technical Report

a. Type: ☒ Topical ☐ Semiannual ☐ Annual ☐ Final Other (specify) \_\_\_\_\_

b. Reporting Period (mm/dd/yyyy) \_\_\_\_\_ thru \_\_\_\_\_

☐ 2. Conference

a. Product Type: ☐ Conference Proceedings ☐ Conference Paper or Other (abstracts, excerpts, etc.) \_\_\_\_\_

b. Conference Information (title, location, dates) \_\_\_\_\_

☐ 3. Software Manual (The actual software package should be made available simultaneously. Follow instructions provided with ESTSC F 1 and ESTSC F 2.)

☐ 4. Journal Article

a. Type: ☒ Announcement citation only ☐ Preprint ☐ Postprint

b. Journal Name \_\_\_\_\_

c. Volume \_\_\_\_\_ d. Issue \_\_\_\_\_ e. Serial identifier (e.g., ISSN or CODEN) \_\_\_\_\_

☐ 5. S&T Accomplishment Report

☐ 6. Book

☐ 7. Patent Application

a. Date Filed (mm/dd/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

b. Date Priority (mm/dd/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

c. Patent Assignee \_\_\_\_\_

☐ 8. Thesis/Dissertation

B. STI PRODUCT TITLE F-Area Northeast Expansion Report, Volumes 1 and 2

C. AUTHOR(s) F. H. Syms  
E-mail Address(es): \_\_\_\_\_

D. STI PRODUCT IDENTIFIER

1. Report Number(s) K-TRT-F-00001

2. DOE Contract Number(s) DE-AC09-96SR18500

3. R&D Project ID(s) \_\_\_\_\_

4. Other Identifying Number(s) \_\_\_\_\_

E. ORIGINATING RESEARCH ORGANIZATION Savannah River Site

F. DATE OF PUBLICATION (mm/dd/yyyy) \_\_\_\_\_

G. LANGUAGE (if non-English) English

(Grantees and Awardees: Skip to Description/Abstract section at the end of Part I)

H. SPONSORING ORGANIZATION \_\_\_\_\_

I. PUBLISHER NAME AND LOCATION (if other than research organization) \_\_\_\_\_

Availability (refer requests to [if applicable])

J. SUBJECT CATEGORIES (list primary one first) 54

Keywords Geotechnical, Actinide Packaging, Subsurface

K. DESCRIPTION/ABSTRACT

A geotechnical program has been completed in F-Area at the Savannah River Site in South Carolina. This program investigated the subsurface conditions for the area known as the "northeast expansion" located in the F-Area.

## US DEPARTMENT OF ENERGY

ANNOUNCEMENT OF U. S. DEPARTMENT OF ENERGY (DOE)  
SCIENTIFIC AND TECHNICAL INFORMATION (STI)

DOE F 241.1 (p. 2 of 2)

## Part II: STI PRODUCT MEDIA/FORMAT and LOCATION/TRANSMISSION

## A. MEDIA/FORMAT INFORMATION

1. Medium of STI product is: ☒ Paper ☐ Electronic document ☐ Computer medium ☐ Audiovisual material
2. Size of STI product \_\_\_\_\_
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  - a. If electronic document is posted at site, indicate: ☐ html ☐ pdfn ☐ sgml ☐ xml
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\_\_\_\_ TIFFG4 \_\_\_\_ WP-indicate Version (5.0 or greater) \_\_\_\_ platform/operating system \_\_\_\_  
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  - b. Machine compatibility (specify) \_\_\_\_\_ c. Sound: \_\_\_\_ (yes) d. Color \_\_\_\_ (yes) e. Tables/Graphics \_\_\_\_ (yes)
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## C. ADDITIONAL INFORMATION (concerning media/format or location/transmission; for OSTI internal use only): \_\_\_\_\_

(Grantees and Awardees: Skip to Contact section at the end of Part III)

## Part III: STI PRODUCT REVIEW? RELEASE INFORMATION

## A. ACCESS LIMITATION

- ☒ 1. Unlimited Announcement (available to U.S. and non-U.S. public)
- ☐ 2. OpenNet (use OpenNet guidance for below):
- a. If additional source other than making it available through NTIS:
    - (1) Accession Number \_\_\_\_\_
    - (2) Document Location \_\_\_\_\_
  - b. Field Office Acronym \_\_\_\_\_
  - c. Declassification date (mm/dd/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_
  - d. Declassification Status:  
\_\_\_\_ Declassified \_\_\_\_ Sanitized \_\_\_\_ Never classified
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6. Small Business Technology Transfer (STTR) Release date (mm/dd/yyyy) \_\_\_\_\_
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8. Patent Pending
9. Protected data \_\_\_\_ CRADA \_\_\_\_ Other (specify) \_\_\_\_\_ Release date (mm/dd/yyyy) \_\_\_\_\_
10. Official Use Only (OUO)
11. Program-Directed Special Handling (specify) \_\_\_\_\_
12. Export Control/ITAR/EAR
13. Unclassified Controlled Nuclear Information (UCNI) \_\_\_\_\_
14. Classified Classification Level/Category of:
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  - b. The STI Product Unclassified \_\_\_\_\_
15. Other information relevant to access (specify; for OSTI internal use only) \_\_\_\_\_

## B. OTHER (information useful to include in published announcement record which is not suited for any other field on this form)

## C. CONTACT AND RELEASING OFFICIAL

1. Contact (if appropriate, the organization or site contact to include in published citations who would receive any external questions about the content of the STI Product or the research information contained therein)

Name and/or Position K.J. Schmidt, Manager STI Program & Site Support  
E-mail \_\_\_\_\_ Phone (803) 725-2321  
Organization Westinghouse Savannah River Company2. Releasing Official ☒ I verify that all necessary reviews have been completed (e.g. Patent, Copyright, ECI, UCNI, etc.)  
Released by (name) K. J. Schmidt Date (mm/dd/yyyy) \_\_\_\_\_  
E-Mail \_\_\_\_\_ Phone \_\_\_\_\_ (803) 725-7373