FIELD WORK

- Area: Excavation Site behind the Bld. 26
- Tool: Seismic Refraction
- Objectives:
  - *2D P-wave estimate*
  - *1D S-wave estimate*
- Class: Senior Project
- Instructor: Dr. Ali Osman Oncel
- Date: December 21, 2006

EXCAVATION AREA

Please note that we made measurement of REMI through the Profile 3 in time excavation was present. On the other hand, measurement through the other profiles in when excavation was stopped.

FIELD TEAM

Instructor Technician

Students

GEOPHONE-RECORDER

We used the geophone (receiver) and the seismograph (recorder) to conduct our measurements of seismic refraction and refraction micotremor which means recording the noise. Considering the instrument which is old (more than 15 years), it does work.

FIELD WORKS

DEPLOYING GEOPHONES

Seismic survey is required somewhere to use digging by vibrator through the hard-ground such as the asphalted areas. Thus, vibrator is also important instrument. On the other hand, it is useful to generate continuous noise. The pictures above indicate how hard digging a hole through the hard area even using a vibrator.

NOISE BASED VIBRATOR

Students are trying to generate noise for 1D estimate of S-wave which is based on the records of ground waves. In general, they apply several activities of walking, jogging and hitting for making noise. Then, vibrator is used as a final solution if others do not work.

NOISE BASED VIBRATING
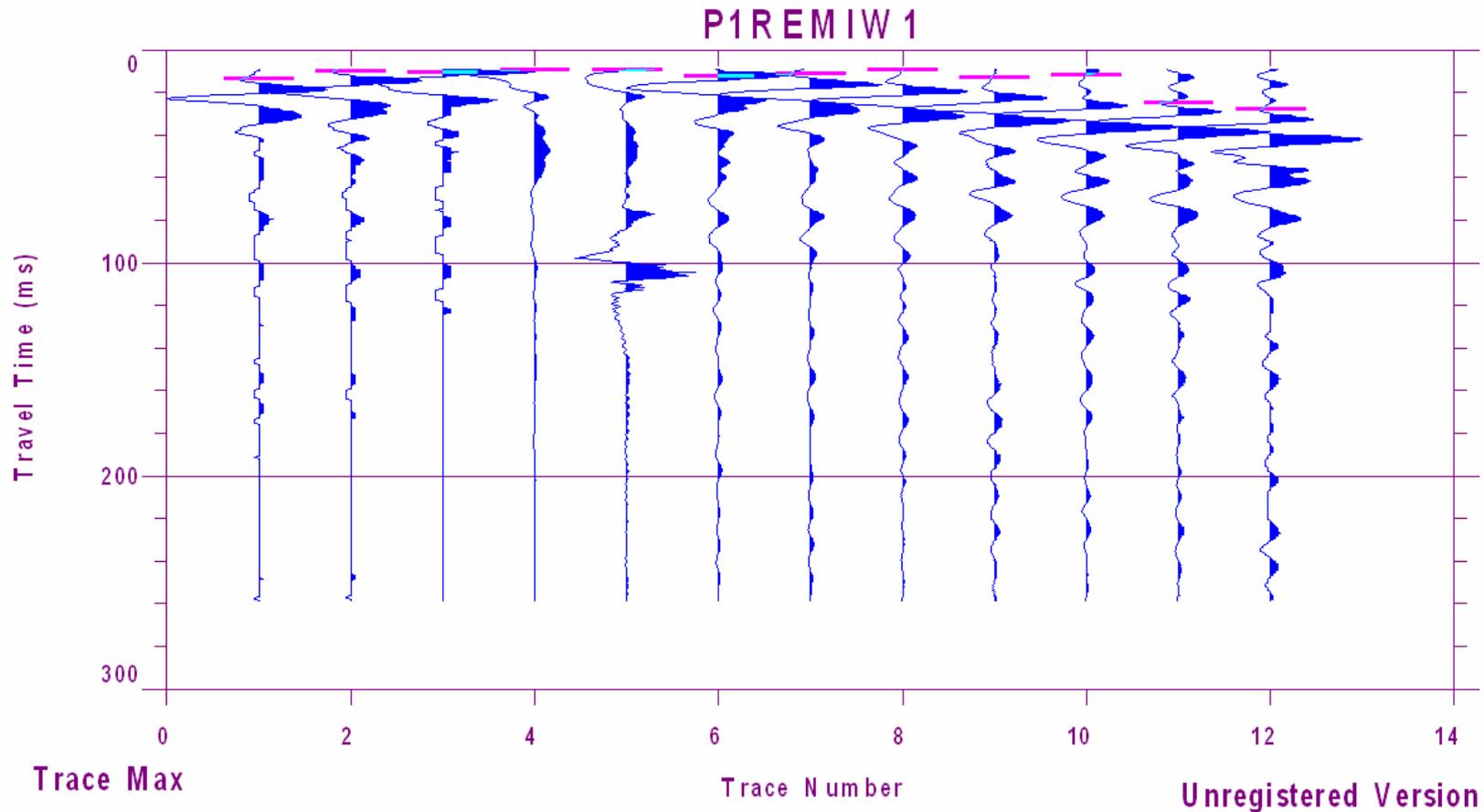
That is very clean record for recorded ground waves, which is made by vibrator. Before that driving, running, walking are used to make a record of ground wave but they did not work sometimes. Lack of controlling facilitates on the used seismograph to increase the sampling rate and recording rate can be a reason for continuous records based different action of making ground waves.

GROUND MOTION SURVEY

Here is what students are applying several actions as walking, running and jumping to generate adequate energy for a record of ground motion, which is required for REFRACTION MICROTREMOR (REMI).

# TRACES BASED JUMPING
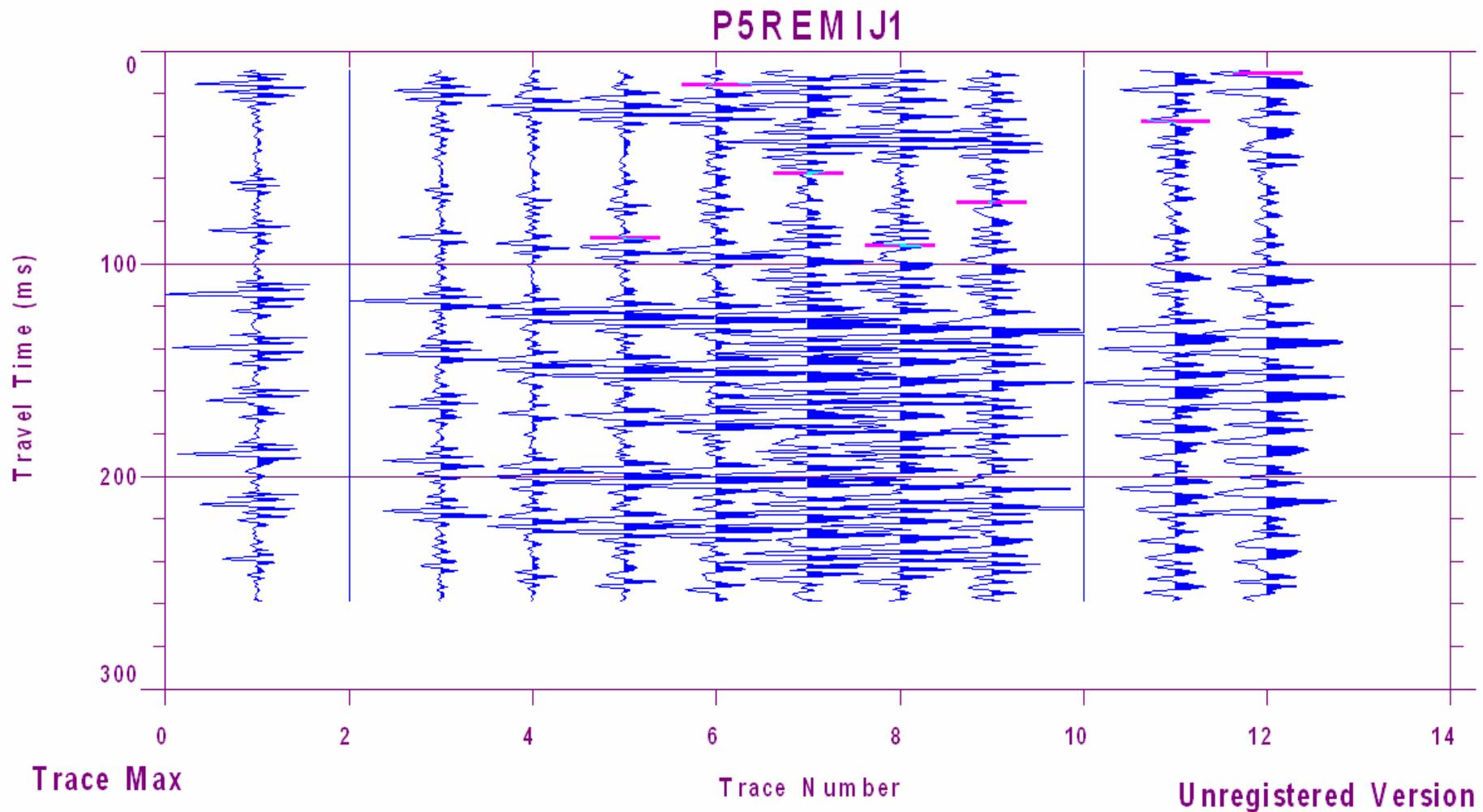
NOISE BASED JOGGING
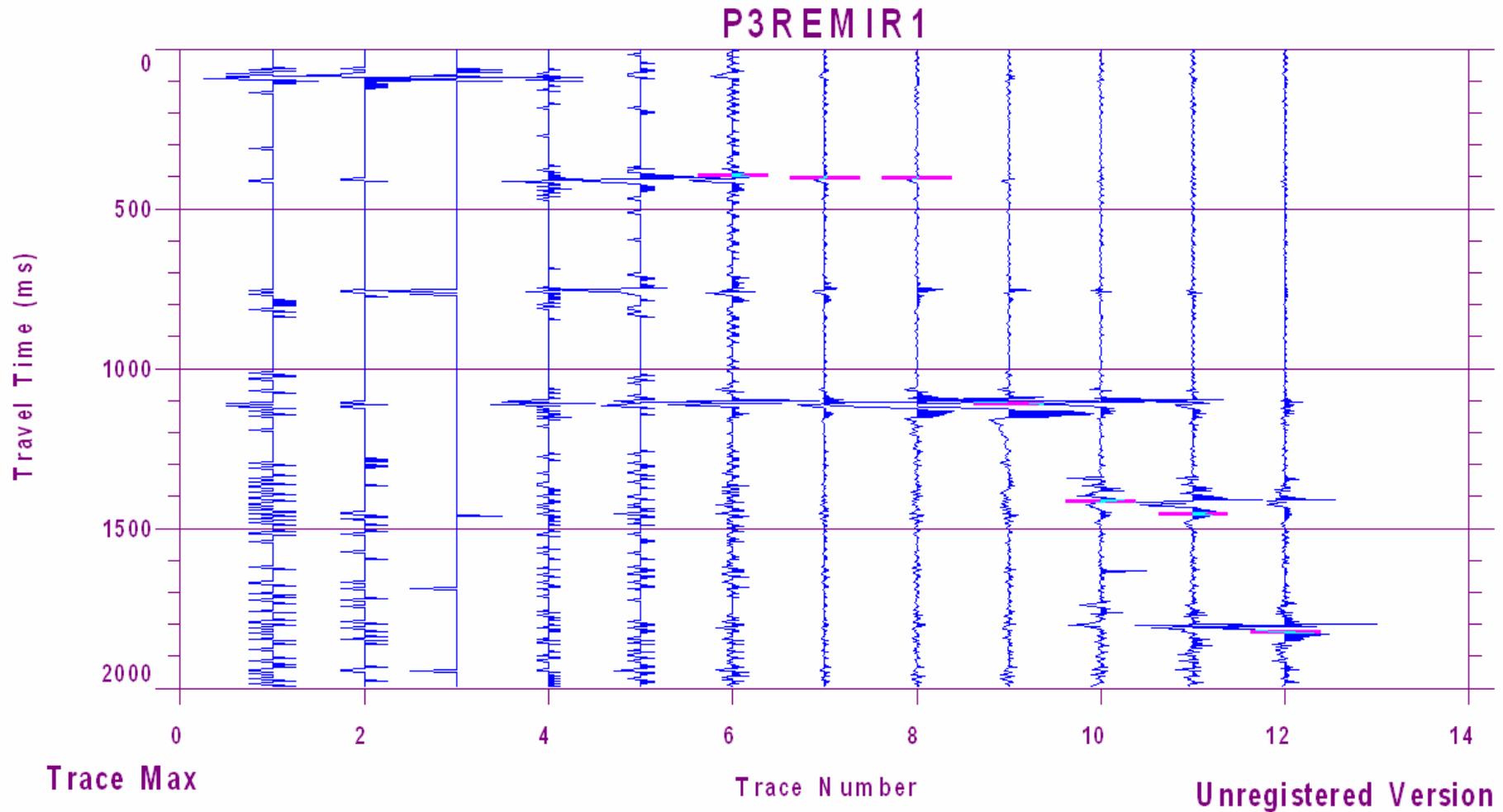
PROFILE 1

REFRACTION: PROFILE1
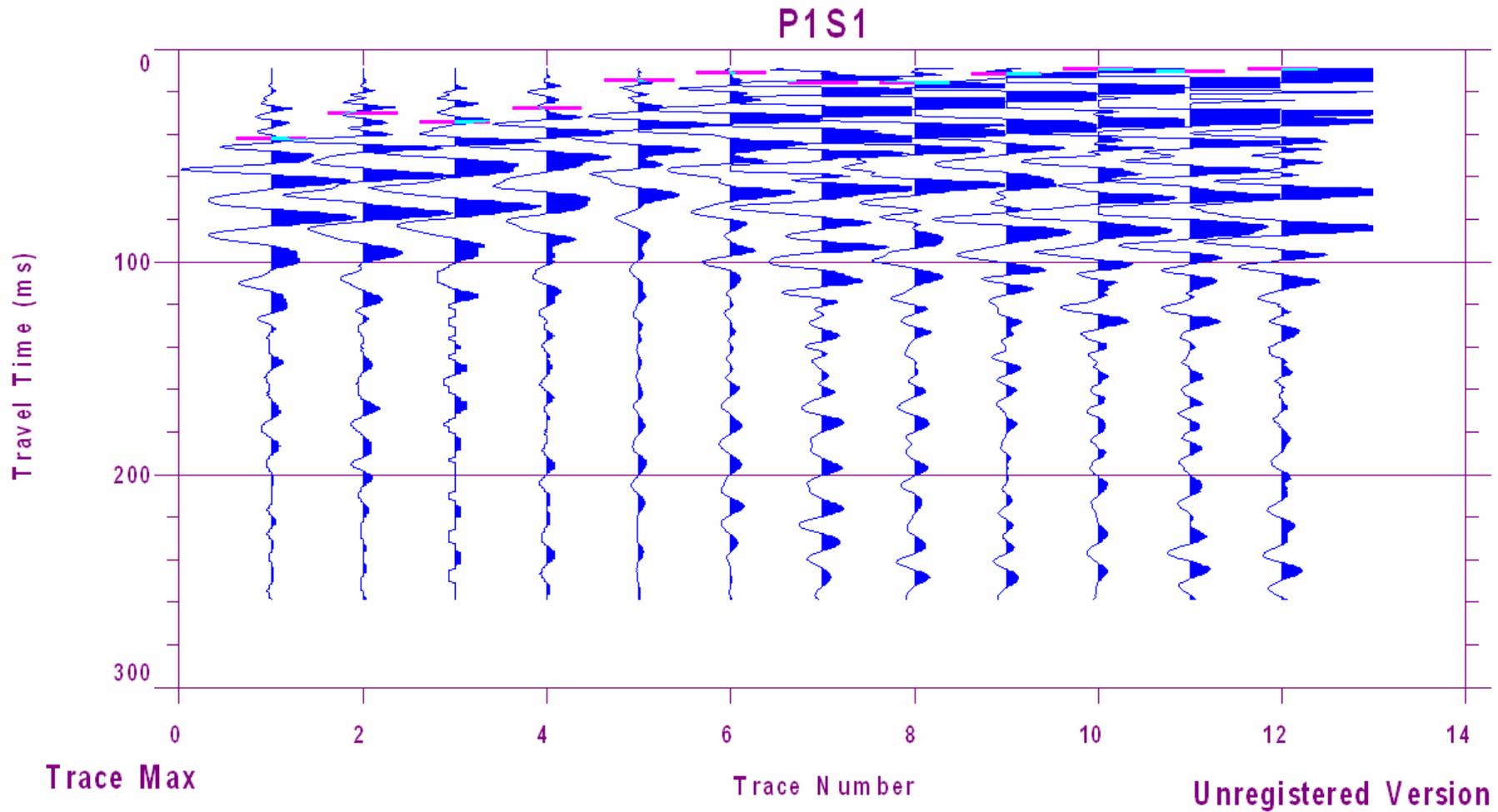
PROFILES-2 AND 3

PROFILE-2

Profile Design
Aamer Al-Hakeem
216197

Geophones Spacing = 0.4 m
Shot Spacing = 0.4 m
Profile long = 4.4 m

Shot	Data	Distance (m) G1-Sn
1	P2-S01	-0.2
2	P2-S02	0.2
3	P2-S03	0.6
4	P2-S04	1
5	P2-S05	1.4
6	P2-S06	1.8
7	P2-S07	2.2
8	P2-S08	2.6
9	P2-S09	3
10	P2-S10	3.4
11	P2-S11	3.8
12	P2-S12	4.2
13	P2-S13	4.6

0 m   0.4 m   4.4 m

4.4 m

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13

G1 G2 G3 G4 G5 G6 G7 G8 G9 G10 G11 G12

2 m

PROFILE-3

0.0 m

4.4 m   4.4 m

S1

S13

G1

G1

Geophone spacing = 0.4 m
Shot spacing = 0.4 m

Denth= 2m

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shot	data	distance (m) S_N and G1
S_1	P1_01	-0.2
S_2	P1_02	0.2
S_3	P1_03	0.6
S_4	P1_04	1
S_5	P1_05	1.4
S_6	P1_06	1.8
S_7	P1_07	2.2
S_8	P1_08	2.6
S_9	P1_09	3
S_10	P1_10	3.4
S_11	P1_11	3.8
S_12	P1_12	4.2
S_13	P1_13	4.6

REFRACTION: PROFILE 2
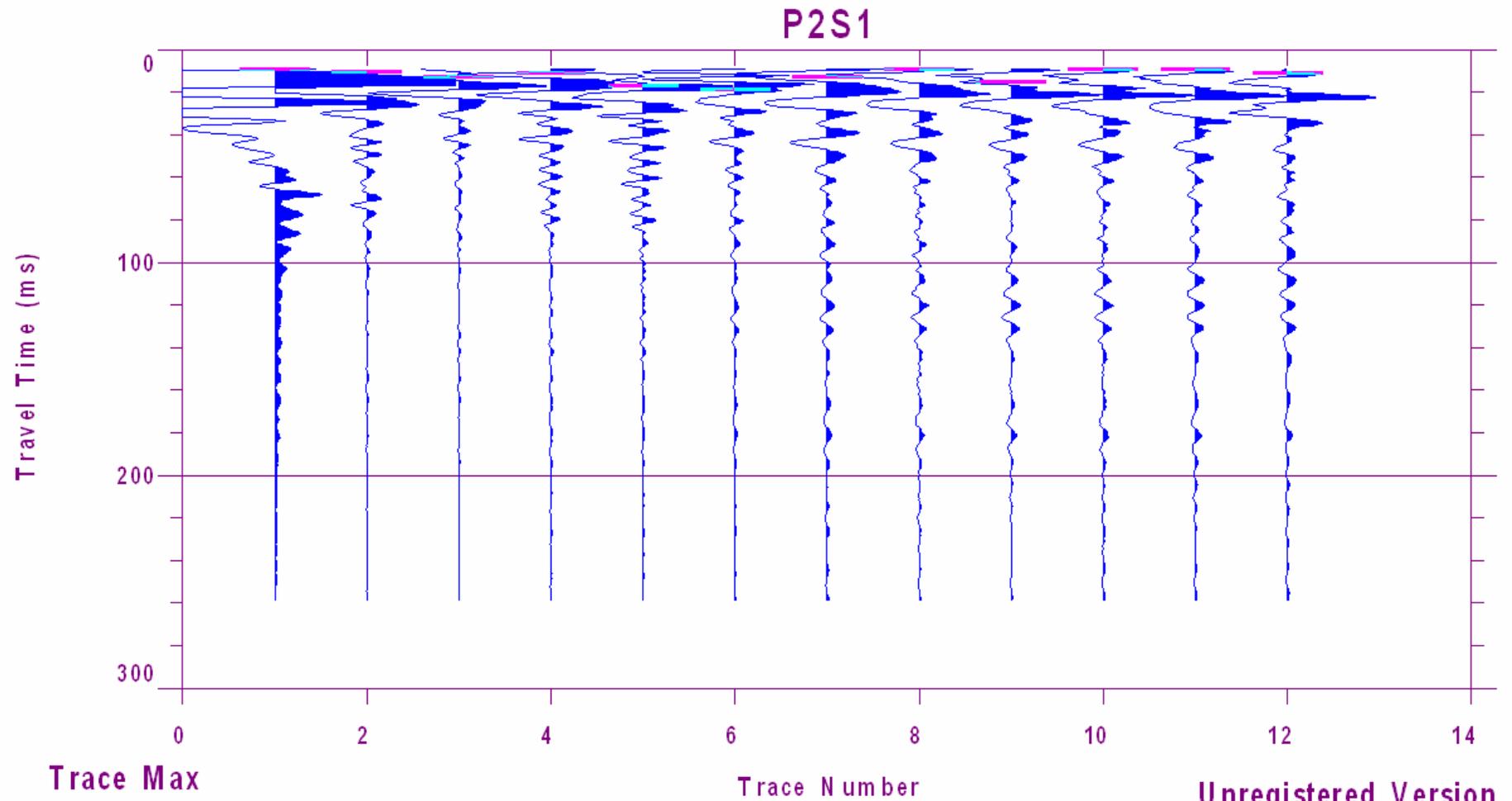
REFRACTION: PROFILE 3
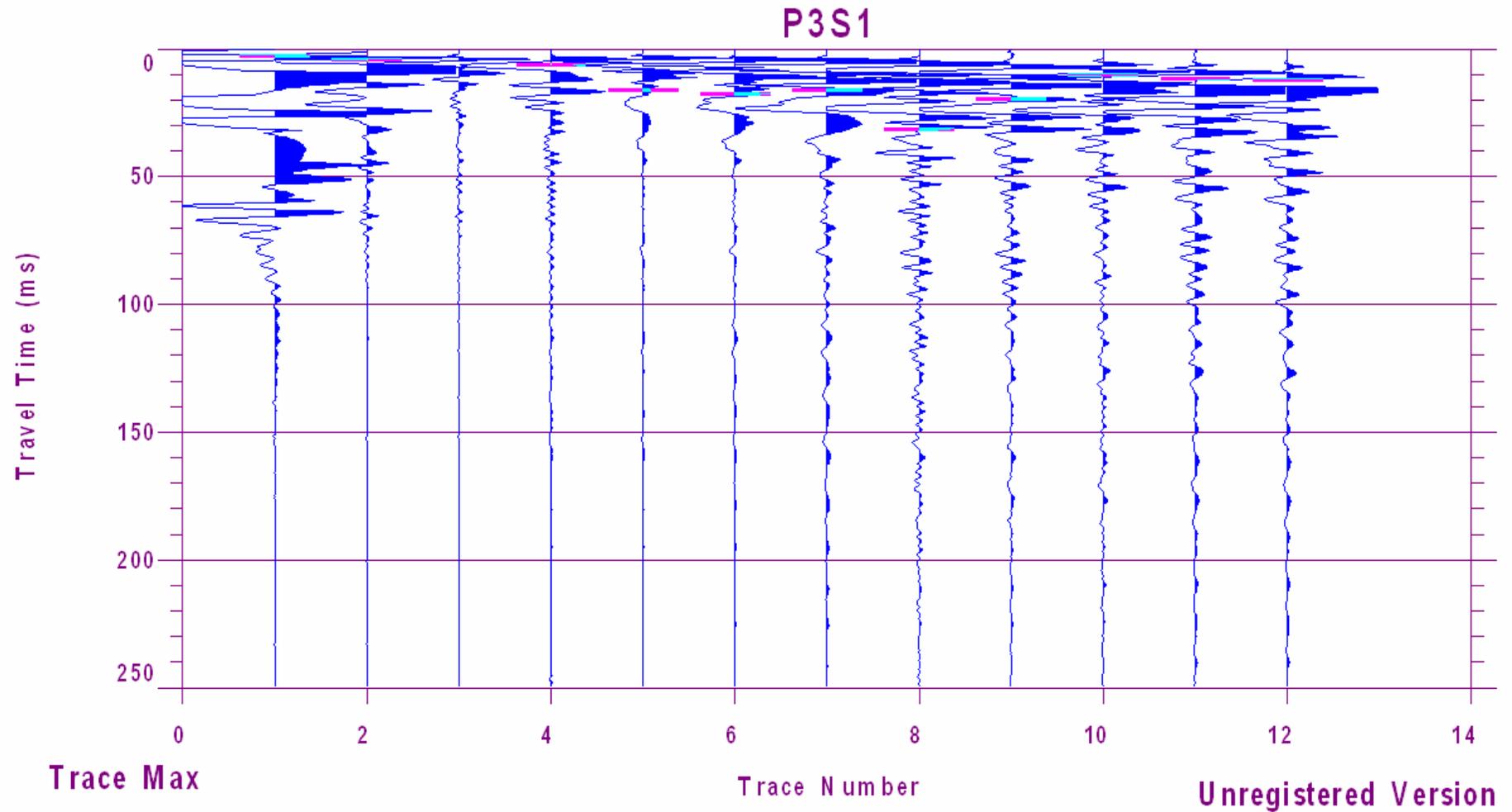
PROFILES-4 AND 5

REFRACTION: PROFILE 4
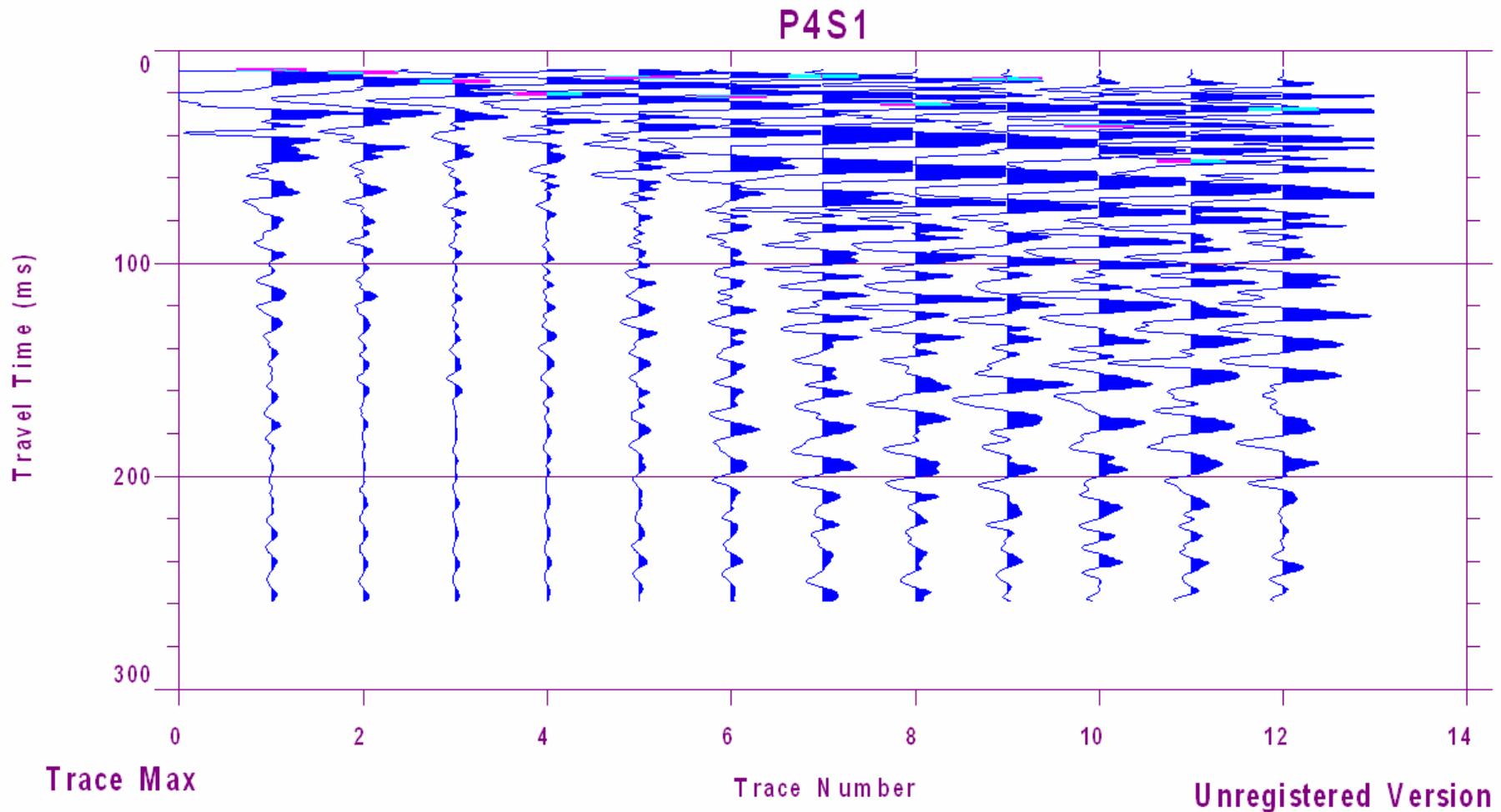
REFRACTION: PROFILE 5
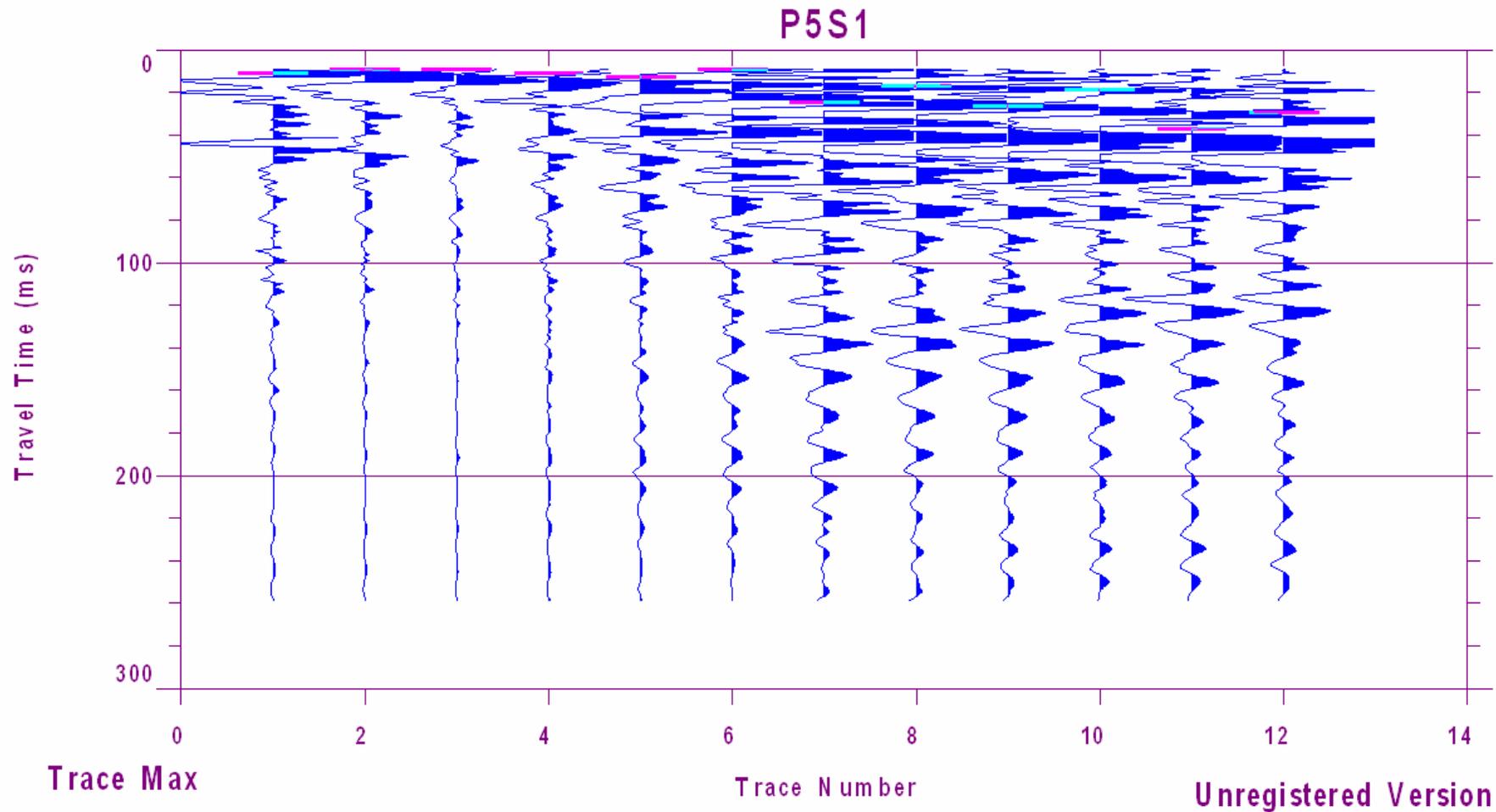
EXPOSURE: PROFILE-1

EXPOSURE: PROFILES 4 and 5

EXPOSURE: PROFILE-4

PROFILE-4

Geophone spacing = 0.5 m
Shot spacing = 0.5 m
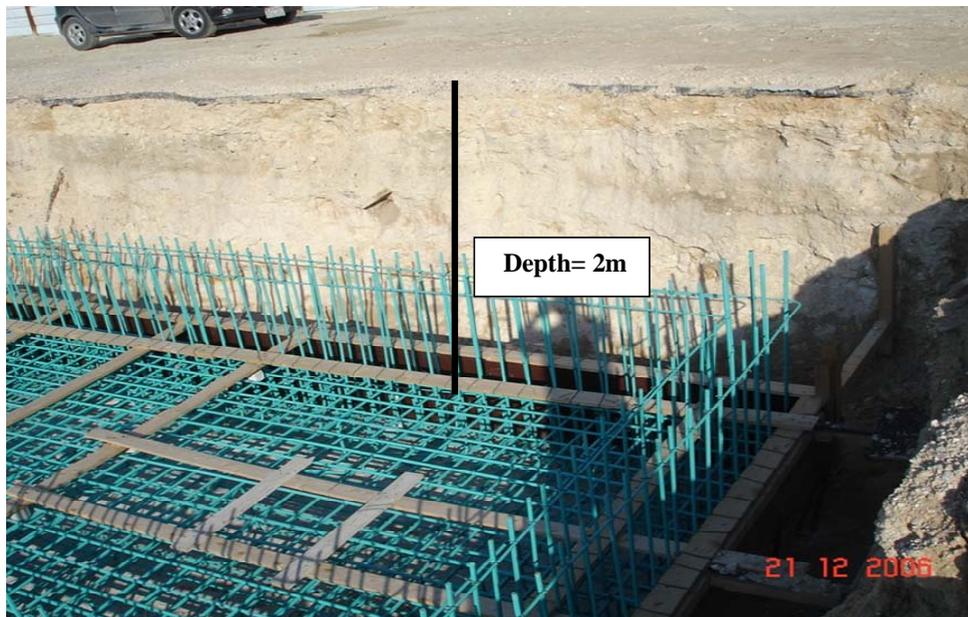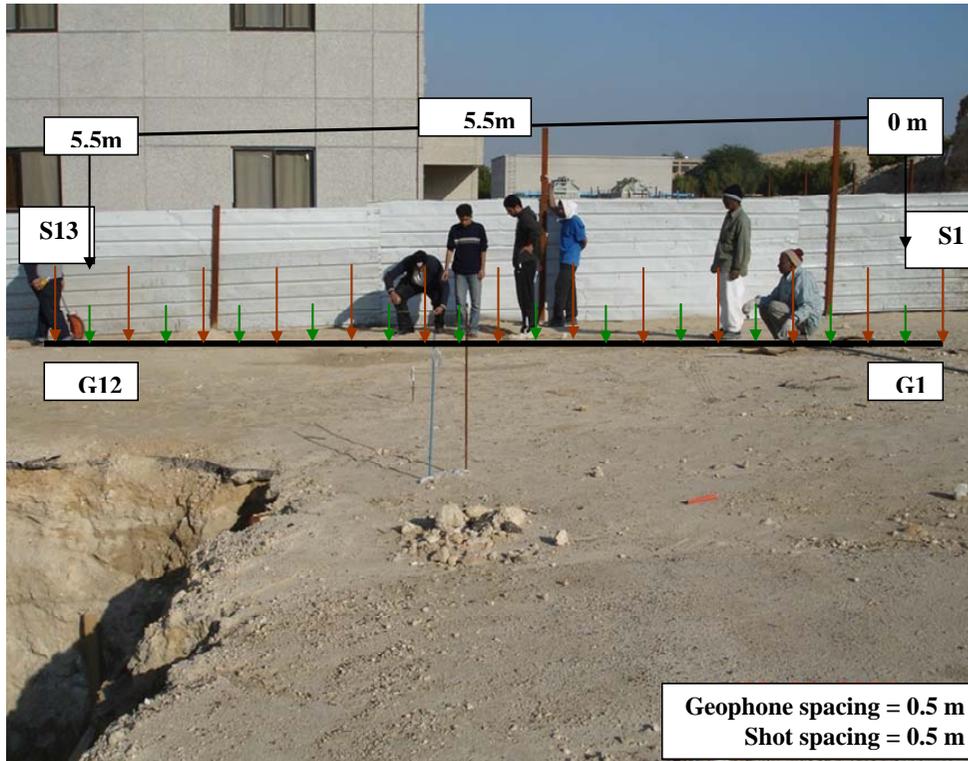
shot	data	distance (m) S_N and G1
S_1	P4_01	-0.25
S_2	P4_02	0.25
S_3	P4_03	0.75
S_4	P4_04	1.25
S_5	P4_05	1.75
S_6	P4_06	2.25
S_7	P4_07	2.75
S_8	P4_08	3.25
S_9	P4_09	3.75
S_10	P4_10	4.25
S_11	P4_11	4.75
S_12	P4_12	5.25
S_13	P4_13	5.75

EXPOSURE PROFILE-5