

1994/63
C2

EARTHQUAKES

SM1

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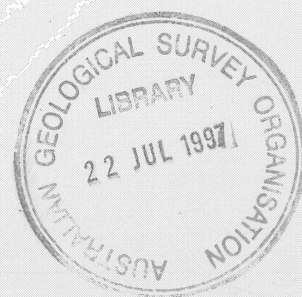
AGSO/SSB Strong Motion Program

Kevin McCue, Garey Gibson, Zhang Wenbo & Zhou Yongnian

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Record 1994/63



Geophysical Observatories & Mapping

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Australia - China
Joint Project on Strong Ground Motion Measurements

Digital Near-Source Accelerograms Recorded in Tangshan, China

Part 1
(October 1991 - December 1993)

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Summary

The Australian Geological Survey Organisation (formerly BMR) and the State Seismological Bureau of China signed a Memorandum of Understanding on 26 April 1990 in Beijing to investigate seismological problems of mutual interest. One of the agreed joint projects was the investigation and comparison of strong ground shaking in intraplate regions of the two countries.

On 28 October 1991 the first of two Australian digital recorders, a Kelunji, was linked to a Chinese WLJ-200 accelerometer and installed near Tangshan, China by Gary Gibson (SRC - RMIT) and Peter Gregson (AGSO - Mundaring). A Toshiba laptop computer was given by AGSO to the SSB for the duration of the project to set computer parameters in the Kelunjis in the field and to download the data. The site chosen by SSB was in the aftershock zone of the magnitude Ms 7.8 earthquake at 03:40 am on 28 July 1976 that destroyed Tangshan and caused the death of at least 250 000 people. Aftershocks have continued through to 1992 and the first to be recorded, a magnitude ML 1.2 micro-earthquake, occurred only hours after installation of the accelerograph. The instrument housing for this first Kelunji is a small building on rock whereas the second, which was installed on 7 December 1991 about 15 km away, is on 40 m of firm soils overlying basement.

This report is a summary of results to date. Between installation of the second recorder (LEI) on 7 December 1991 and 14 February 1992, three close earthquakes up to magnitude ML 4.3 were recorded on both instruments. A further 35 accelerograms were recorded at the rock site (ZHAO) and a more distant magnitude 4.9 earthquake on 22 July 1992 was recorded only at LEI. The latter had an epicentral distance of about 80 km but most of the other records were obtained very close to the focus with S-P times of 2 s or less.

Several earthquakes triggered both instruments allowing preliminary comparison of hard and soft sites near Tangshan. The rock and soil sites were almost equidistant from the focus of the 14 February 1992, ML 4.3 earthquake. The levels of ground shaking were similar; about 0.4 ms^{-2} in both horizontal and vertical directions, though the frequency content is clearly different.

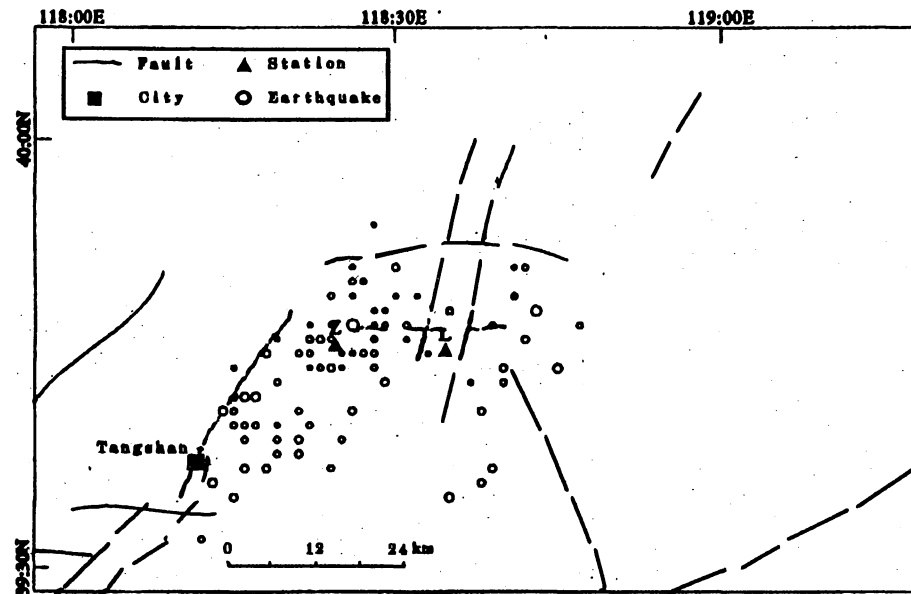
Fourier spectra were computed for each horizontal component of the accelerograms and spectral ratios of soil to rock sites for each component were plotted after smoothing. These verified that a site effect occurs at a frequency (f) of 5 Hz corresponding to a 40 m thick layer with a shear wave velocity (s) of about 800 ms^{-1} . ($s = 4hf$). The amplitude ratio at 5 Hz is about 6, but at frequencies above about 8 to 10 Hz, the ground motion on rock predominates. Another spectral peak appears at about 15 Hz but this may not be significant given the low amplitude of the signal at this frequency at ZHAO.

Kevin McCue

Gary Gibson

AGSO

SRC-RMIT



Epicenter Locations of Earthquakes

Table 1. List of Stations

Code	Name	Site	Coordinate		Elev.
Z	Zhaogezhuang-Mine	Ground/Rock	39:45:38N	118:24:23E	76m
L	LeiZhuang	Ground/Soil	39:45:16N	118:34:34E	45m

Table 2. Catalogue of Earthquake

Event Code	Magnitude	Epicenter	Event Code	Magnitude	Epicenter
10312141.091	ML=1.5	39:45N, 118:26E	11052020.091	ML=2.6	39:39N, 118:21E
11060454.091	ML=2.0	39:38N, 118:19E	11081349.091	ML=1.7	39:49N, 118:32E
12141052.091	ML=2.4	39:47N, 118:47E	12181337.091	ML=2.7	39:51N, 118:30E
01291449.092	ML=2.2	39:32N, 118:12E	02050235.092	ML=1.6	39:51N, 118:26E
02060247.092	ML=2.1	39:50N, 118:27E	02100345.092	ML=1.7	39:46N, 118:31E
02141708.092	ML=4.4	39:47N, 118:26E	02180428.092	ML=1.7	39:49N, 118:41E
02232046.092	ML=1.9	39:49N, 118:41E	02232105.092	ML=2.1	39:47N, 118:39E
03030200.092	ML=1.7	39:51N, 118:26E	03042314.092	ML=1.9	39:51N, 118:41E
03051536.092	ML=1.8	39:50N, 118:27E	03110558.092	ML=1.5	39:44N, 118:25E
03121904.092	ML=1.5	39:49N, 118:30E	03122213.092	ML=2.3	39:49N, 118:41E
03152209.092	ML=1.5	39:52N, 118:29E	03192227.092	ML=1.6	39:45N, 118:25E
03290123.092	ML=1.9	39:43N, 118:37E	03290419.092	ML=1.8	39:47N, 118:24E
04012153.092	ML=2.7	39:35N, 118:15E	04081148.092	ML=1.8	39:49N, 118:30E
04090618.092	ML=2.2	39:45N, 118:22E	04140409.092	ML=2.8	39:36N, 118:38E
04241700.092	ML=2.4	39:44N, 118:23E	04172155.092	ML=1.8	39:44N, 118:15E
05030753.092	ML=1.6	39:45N, 118:33E	05012042.092	ML=2.4	39:45N, 118:21E
05041633.092	ML=1.5	39:48N, 118:28E	05032021.092	ML=1.9	39:54N, 118:28E
05080856.092	ML=1.7	39:49N, 118:26E	05080622.092	ML=2.8	39:48N, 118:35E
05151230.092	ML=2.5	39:37N, 118:16E	05150858.092	ML=1.6	39:48N, 118:29E
05161943.092	ML=2.2	39:50N, 118:26E	05151429.092	ML=3.7	39:48N, 118:43E
05191321.092	ML=2.2	39:45N, 118:21E	05190045.092	ML=2.6	39:37N, 118:39E
06182357.092	ML=2.4	39:44N, 118:28E	06251432.092	ML=2.1	39:40N, 118:15E
07270755.092	ML=2.0	39:46N, 118:24E	07071818.092	ML=2.5	39:38N, 118:21E
09220535.092	ML=2.4	39:47N, 118:31E	08250010.092	ML=1.6	39:40N, 118:19E
10141753.092	ML=2.7	39:37N, 118:16E	10102222.092	ML=2.0	39:49N, 118:24E
10221728.092	ML=2.7	39:45N, 118:18E	10150431.092	ML=2.0	39:46N, 118:28E
11051949.092	ML=1.6	39:46N, 118:28E	10250727.092	ML=1.8	39:46N, 118:19E
11142021.092	ML=2.2	39:43N, 118:19E	11090444.092	ML=3.3	39:42N, 118:17E
11190048.092	ML=2.4	39:46N, 118:22E	11171833.092	ML=2.8	39:37N, 118:18E
11291838.092	ML=3.0	39:42N, 118:16E	11211645.092	ML=2.3	39:39N, 118:19E
12111220.092	ML=2.4	39:40N, 118:22E	12080248.092	ML=1.8	39:49N, 118:30E
02031213.093	ML=2.0	39:48N, 118:35E	12111712.092	ML=2.4	39:41N, 118:21E
03271559.093	ML=2.6	39:44N, 118:24E	03222358.093	ML=2.2	39:45N, 118:28E
03300548.093	ML=1.7	39:47N, 118:29E	03280750.093	ML=2.7	39:43N, 118:29E
04151828.093	ML=2.0	39:40N, 118:17E	03310908.093	ML=1.8	39:47N, 118:22E
04210704.093	ML=1.9	39:47N, 118:28E	04172232.093	ML=2.0	39:37N, 118:24E
05131948.093	ML=2.8	39:46N, 118:22E	04230042.093	ML=2.4	39:39N, 118:25E
07171954.093	ML=3.1	39:36N, 118:13E	07091929.093	ML=3.0	39:35N, 118:35E
07240024.093	ML=3.4	39:41N, 118:14E	07230926.093	ML=2.2	39:45N, 118:27E
07261646.093	ML=2.2	39:43N, 118:40E	07250336.093	ML=2.9	39:46N, 118:23E
07290121.093	ML=2.2	39:51N, 118:42E	07290024.093	ML=2.8	39:46N, 118:42E
08090128.093	ML=2.6	39:42N, 118:15E	07290727.093	ML=2.8	39:41N, 118:38E
09301813.093	ML=3.4	39:44N, 118:45E	08180329.093	ML=1.6	39:44N, 118:22E
11112248.093	ML=2.2	39:40N, 118:17E	10231629.093	ML=2.7	39:44N, 118:40E
11170412.093	ML=2.3	39:39N, 118:16E	11170350.093	ML=2.3	39:41N, 118:15E
11180705.093	ML=4.4	39:36N, 117:27E	11170516.093	ML=2.1	39:40N, 118:16E
11192344.093	ML=2.7	39:41N, 118:26E	11190753.093	ML=1.9	39:52N, 118:29E

Records of Zhaogezhuang-Mine Station

Zhaogezhuang-Mine Station:

SITE AND SAMPLING

Authority BSMOC, IEM/SSB

Sampling At 200 sample/sec

Ch	Type	Serial	Name	Direction	Gain	Filters
1	WLJ-200	#9101	North	Unknown	1.00	0.20 50.0
2	WLJ-200	#9101	East	Unknown	1.00	0.20 50.0
3	WLJ-200	#9101	Up	Unknown	1.00	0.20 50.0

HARDWARE

Kelunji #87, GURIA B4.08A rev 135
KA1M #52
KC1 #43
KI1 #37, board 1, capacity 1024kB
KP1 V1 #52

Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10312141.091

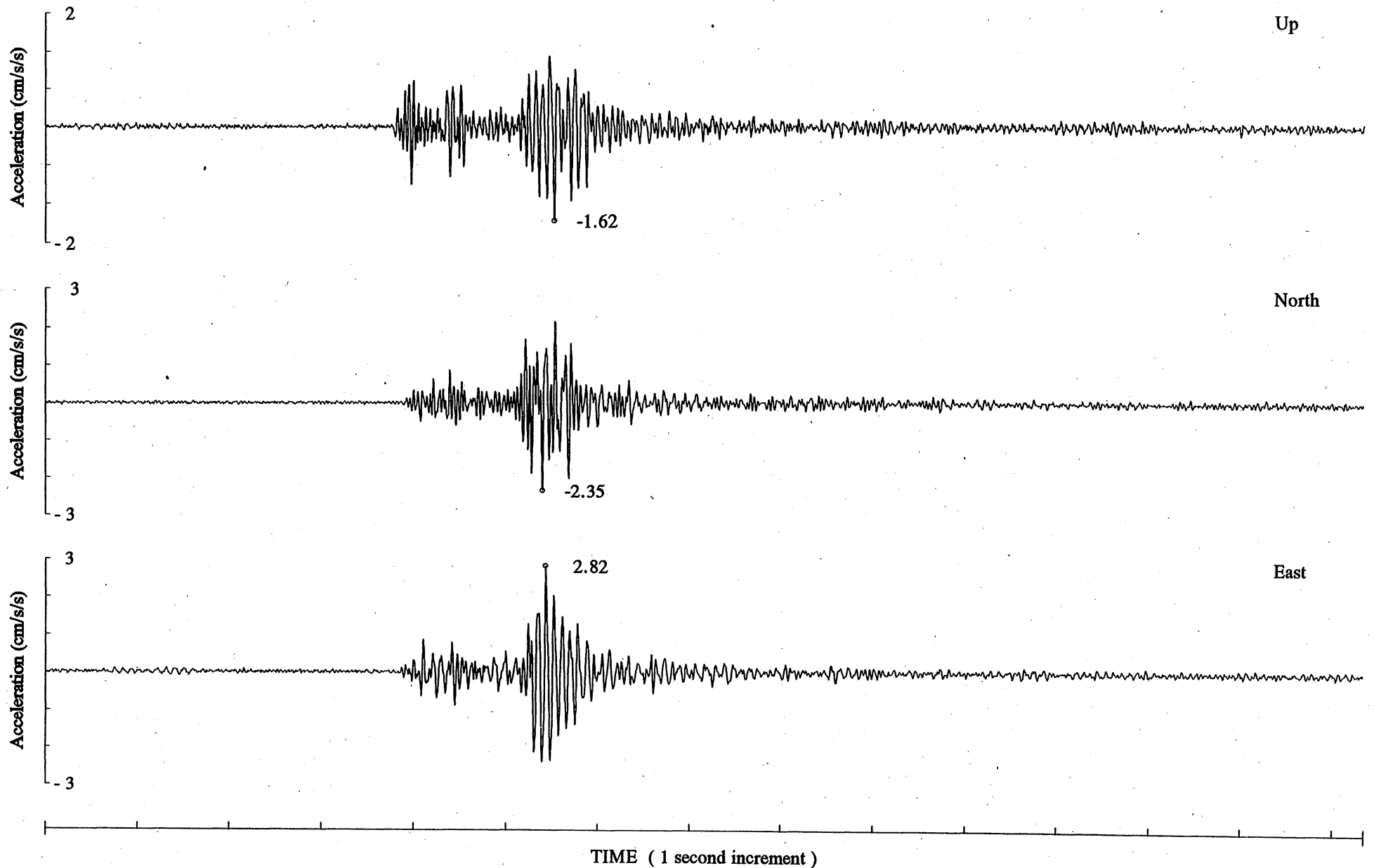
Start Time: 1991-10-31 2141 23.705

Total number=2869

Sample Rate=200

ML=1.5

Epicentre: 39:45N,118:26E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

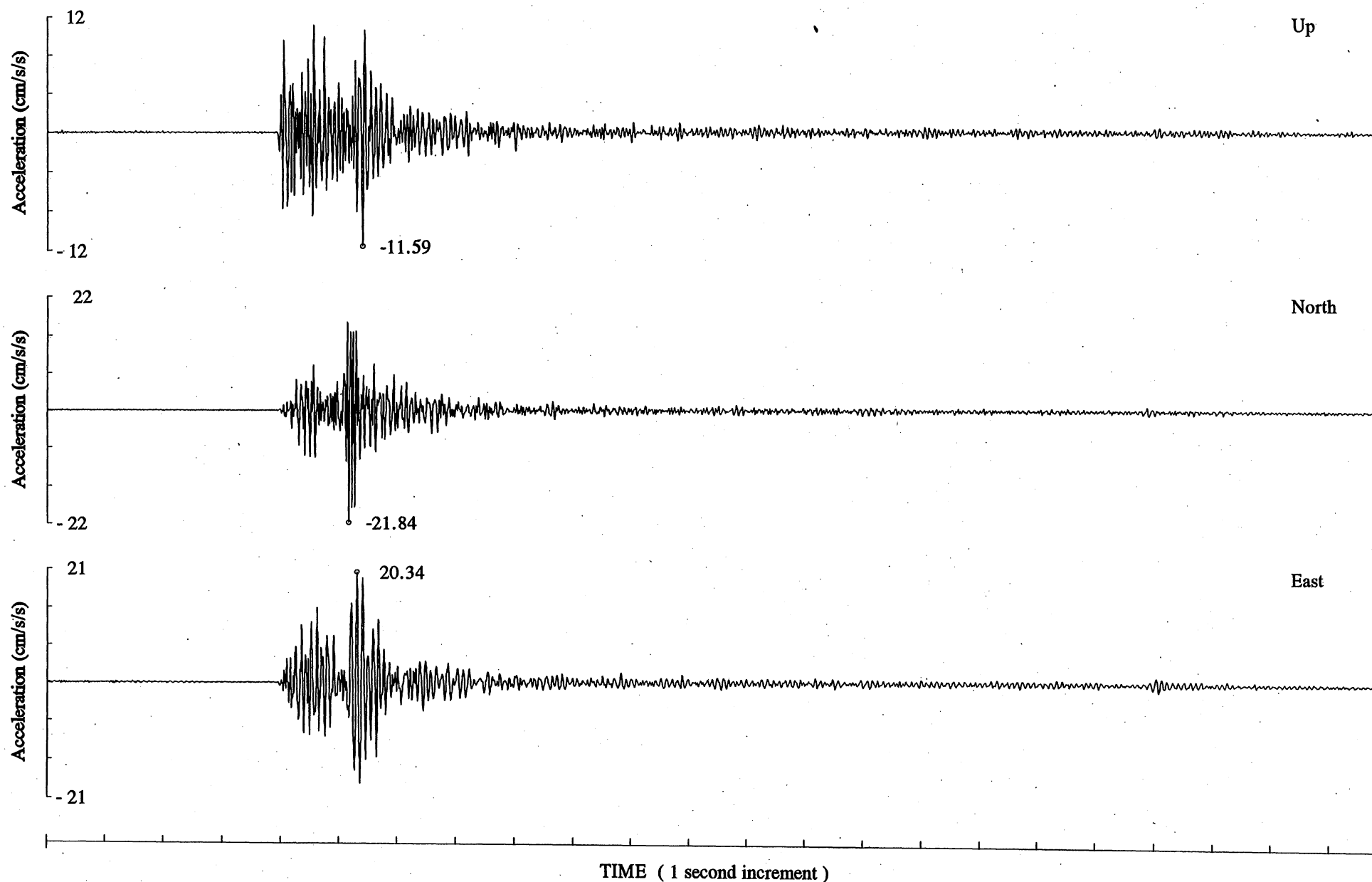
Event: 11052020.091

Start Time: 1991-11-05 2020 34.710

Total number=4581

Sample Rate=200

ML=2.6 Epicentre: 39:39N,118:21E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunji#87

Data: Acceleration

Event: 11060454.091

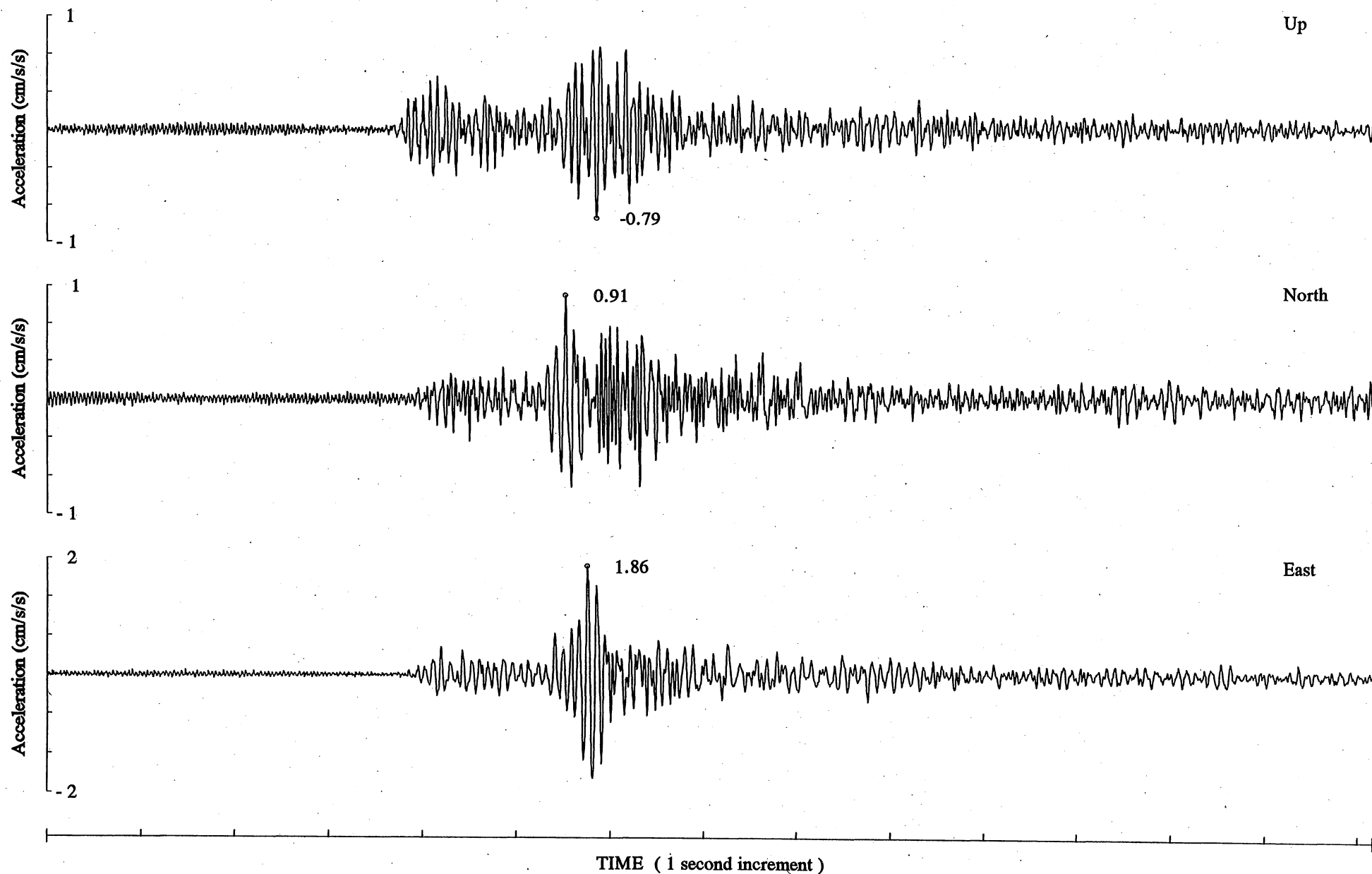
Start Time: 1991-11-06 0454 21.115

Total number=2833

Sample Rate=200

ML=2.0

Epicentre: 39:38N,118:19E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11081349.091

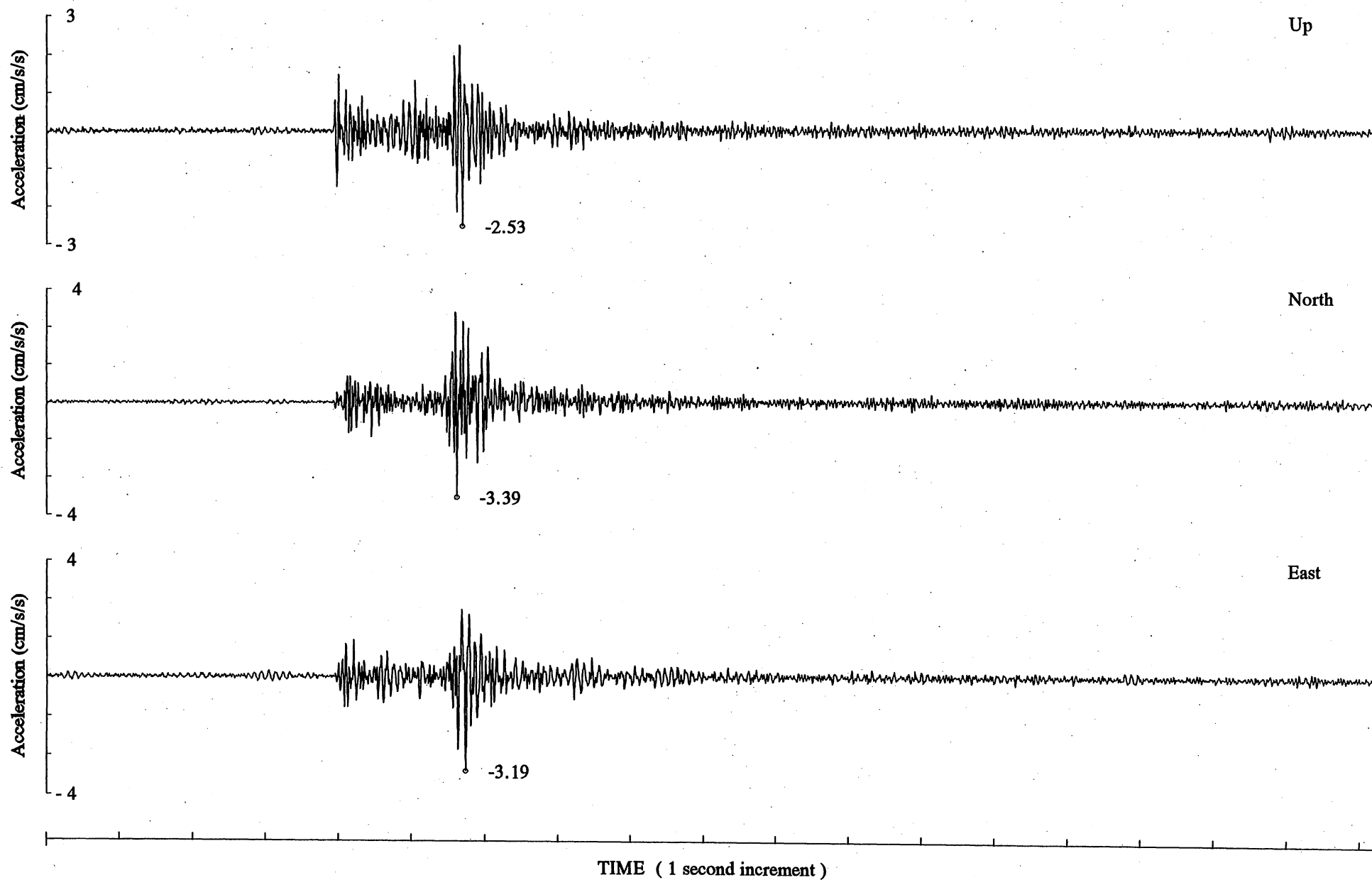
Start Time: 1991-11-08 1349 17.480

Total number=3652

Sample Rate=200

ML=1.7

Epicentre: 39:49N,118:32E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 12141052.091

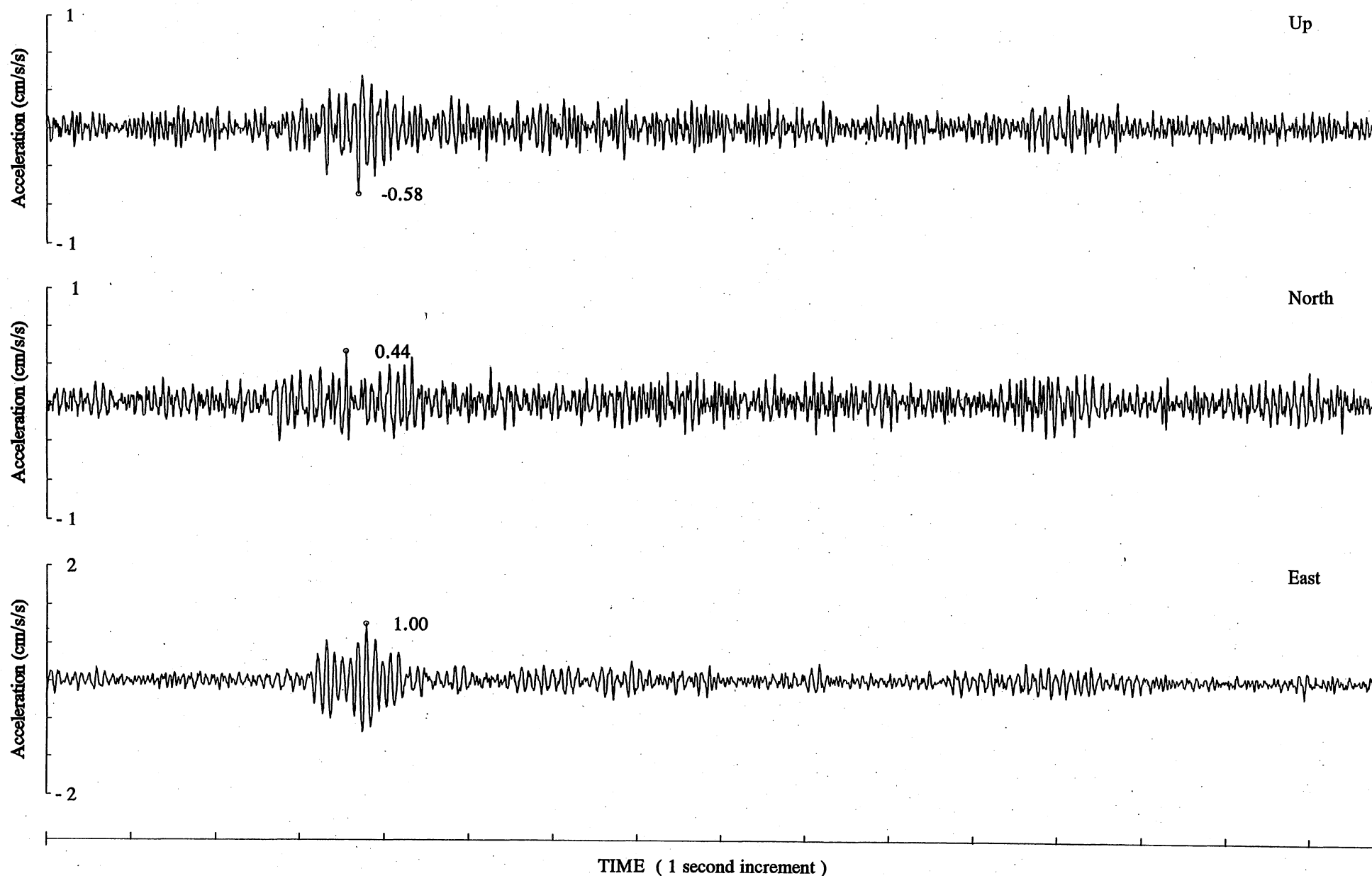
Start Time: 1991-12-14 1052 53.570

Total number=3163

Sample Rate=200

ML=2.4

Epicentre: 39:47N,118:47E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 12181337.091

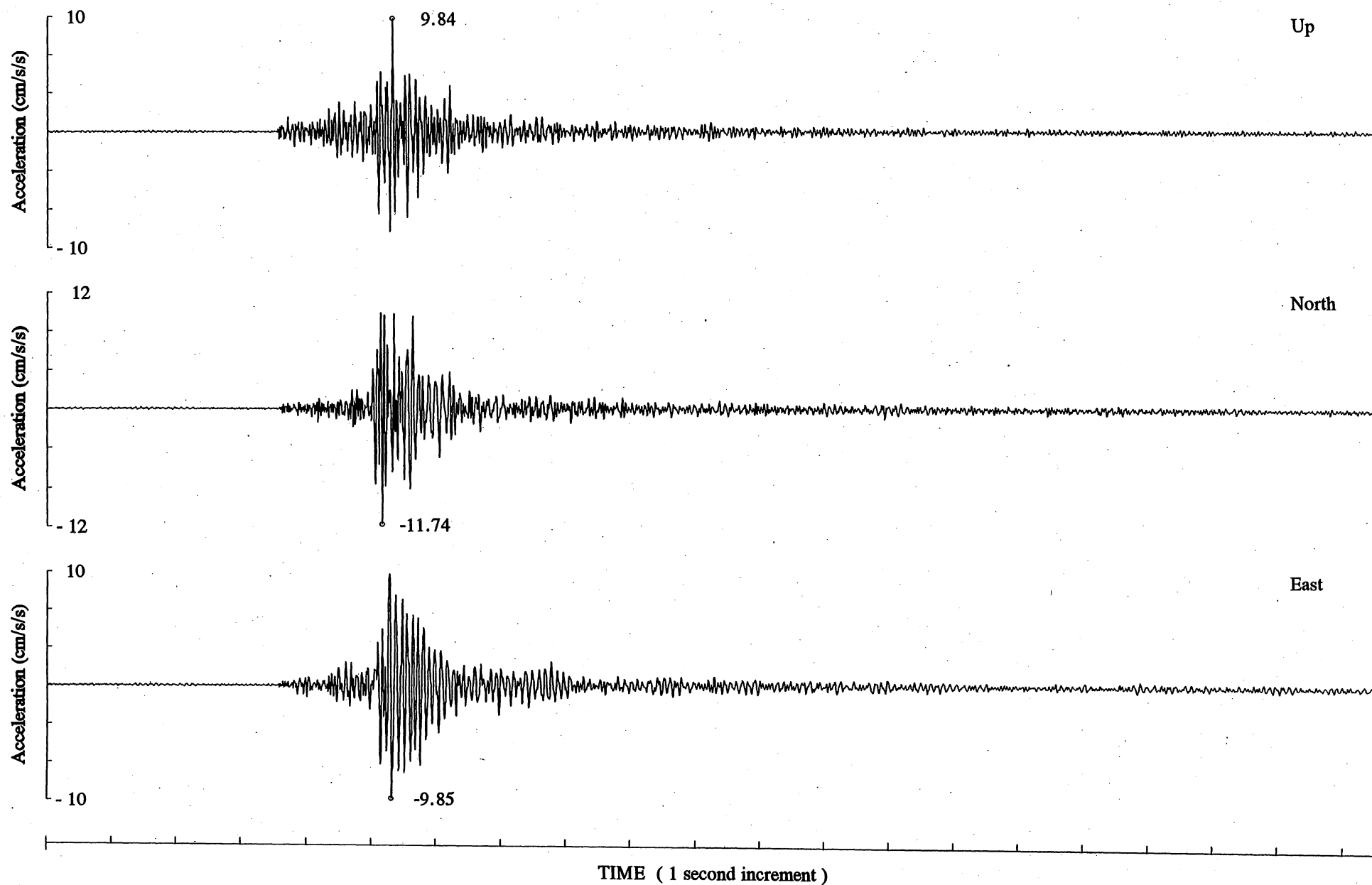
Start Time: 1991-12-18 1337 18.405

Total number=4118

Sample Rate=200

ML=2.7

Epicentre: 39:51N,118:30E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 01291449.092

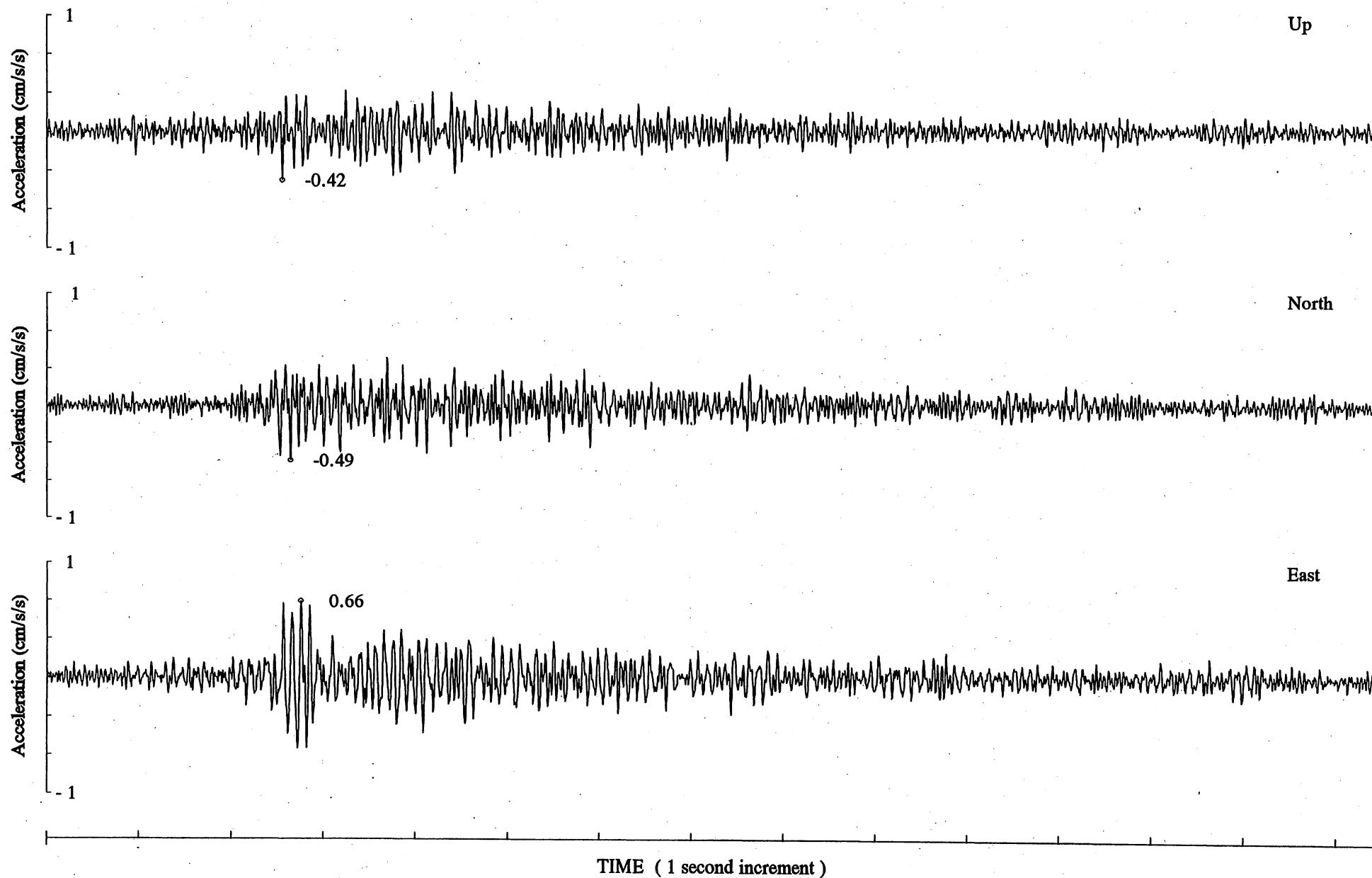
Start Time: 1992-01-29 1449 31.710

Total number=2891

Sample Rate=200

ML=2.2

Epicentre: 39:32N,118:12E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02050235.092

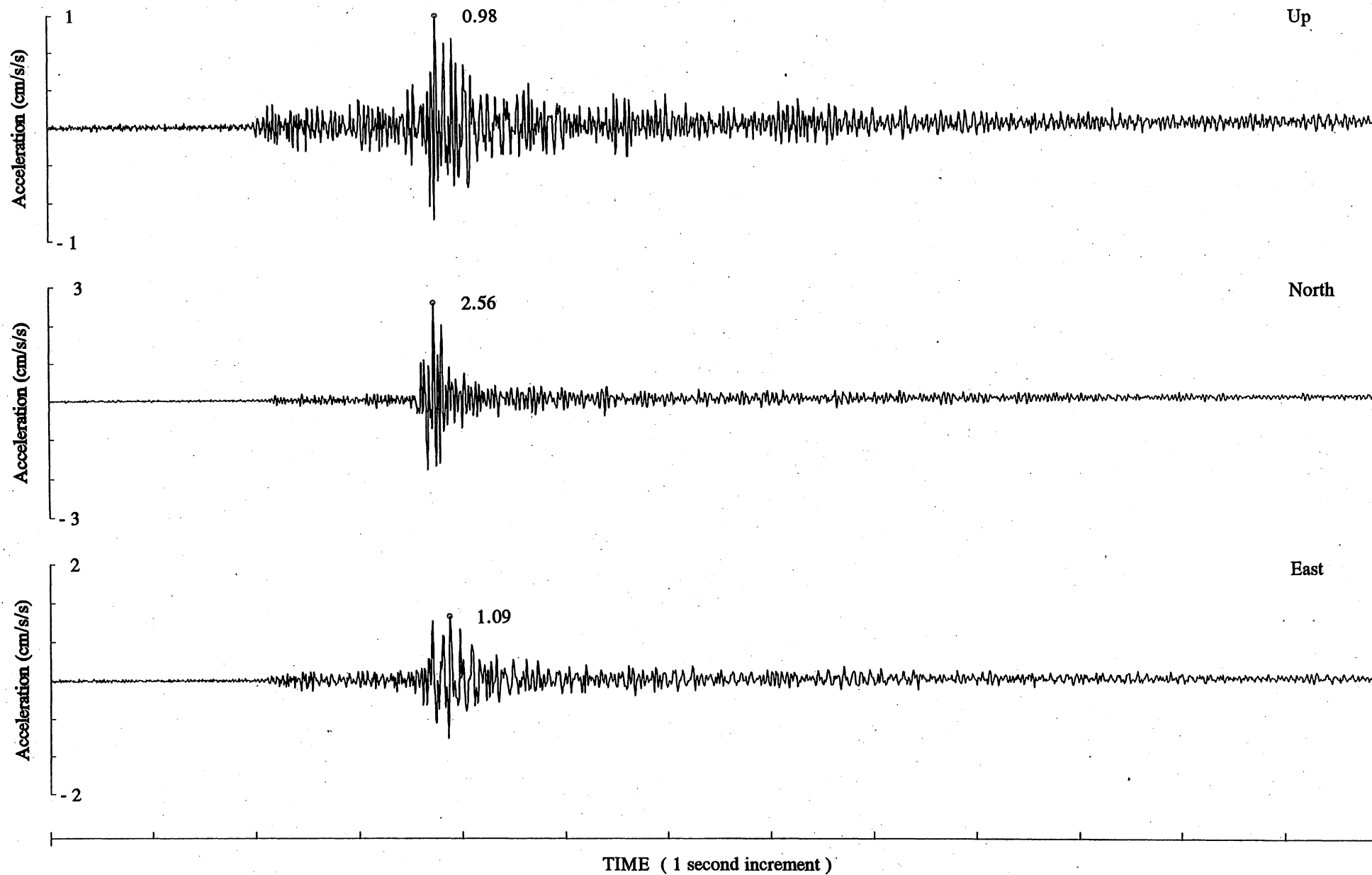
Start Time: 1992-02-05 0235 18.255

Total number=2587

Sample Rate=200

ML=1.6

Epicentre: 39:51N,118:26E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02060247.092

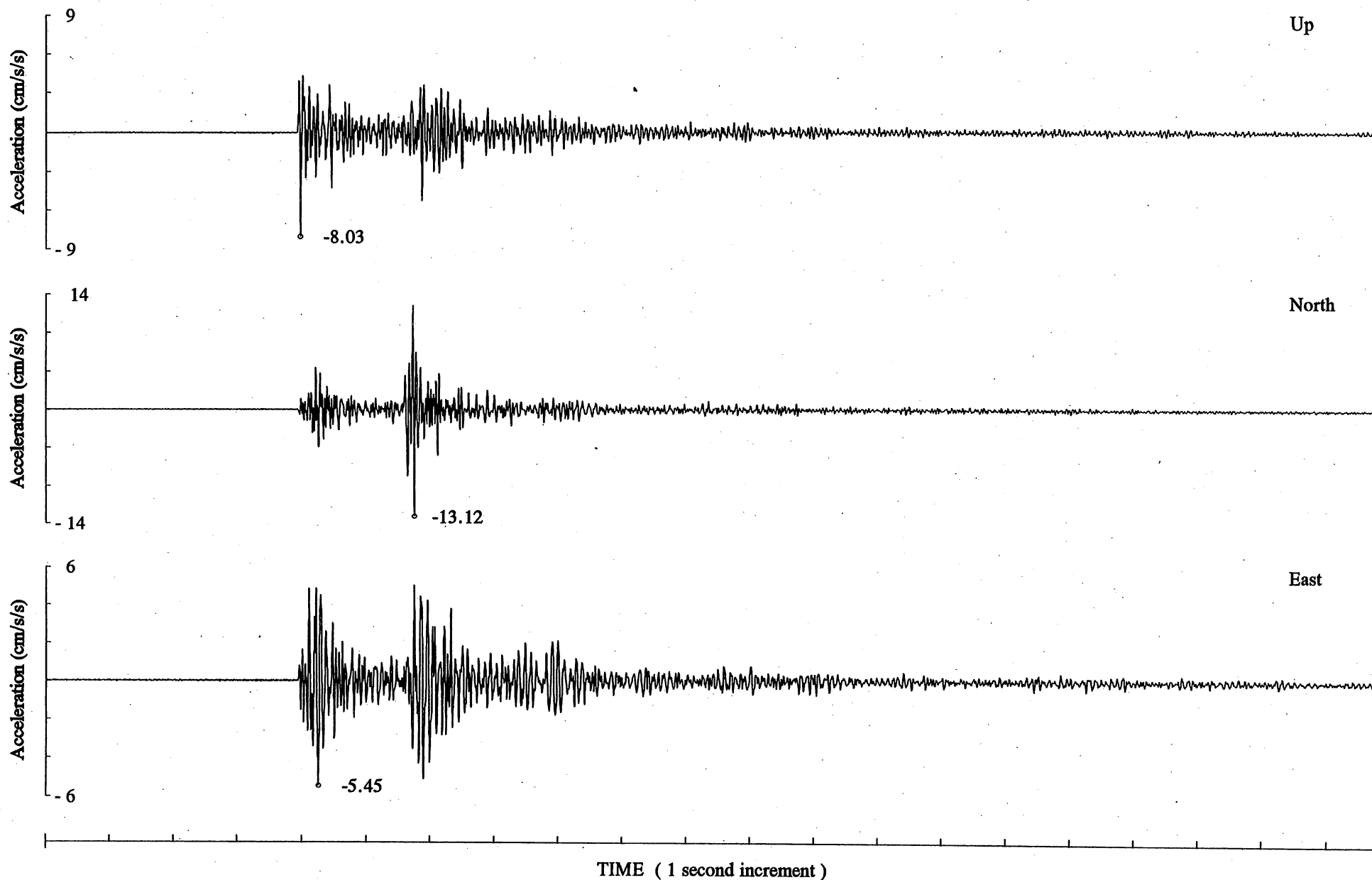
Start Time: 1992-02-06 0247 43.160

Total number=4167

Sample Rate=200

ML=2.1

Epicentre: 39:50N,118:27E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02100345.092

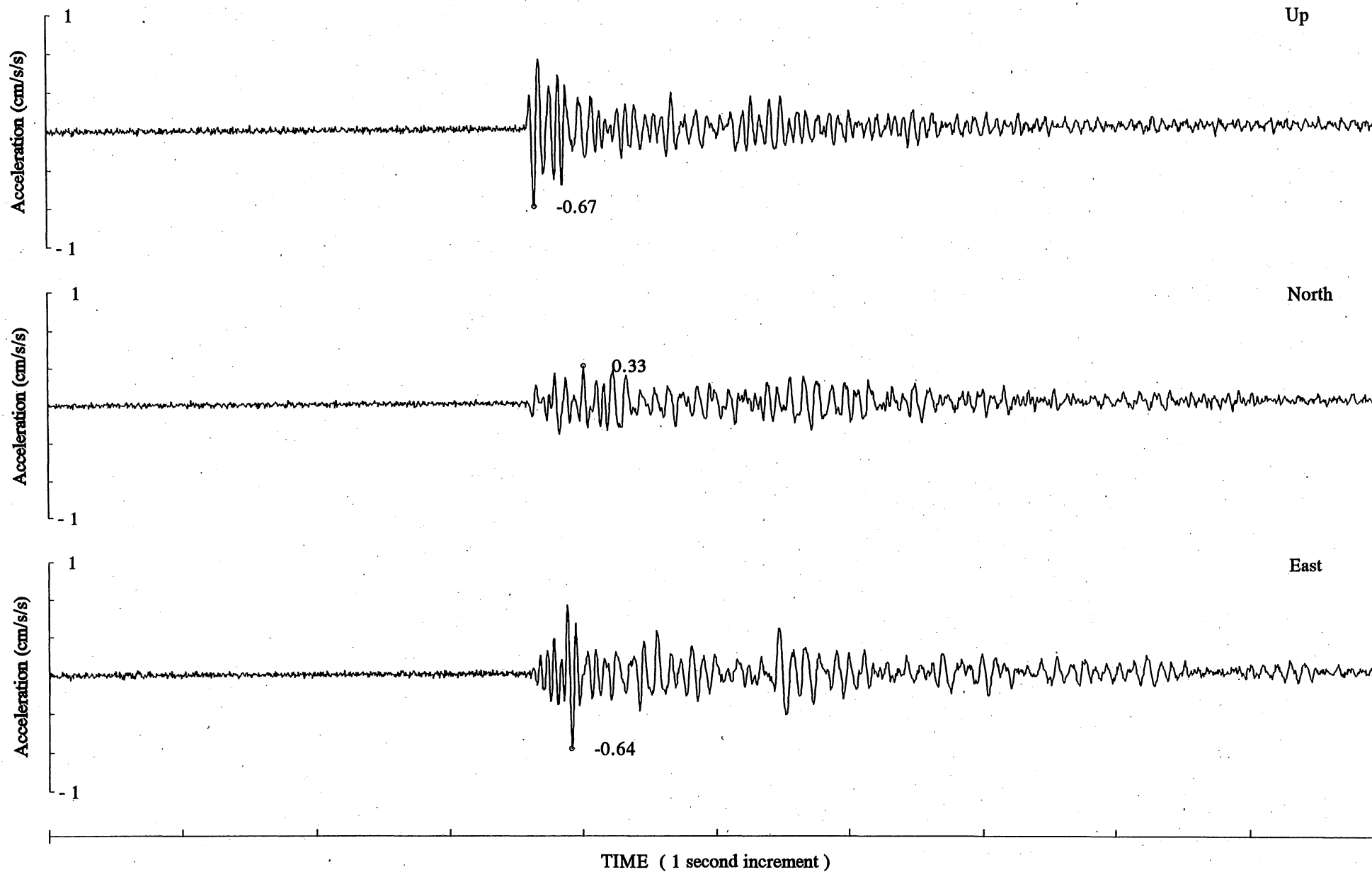
Start Time: 1992-02-10 0345 47.015

Total number=1996

Sample Rate=200

ML=1.7

Epicentre: 39:46N,118:31E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02141708.092

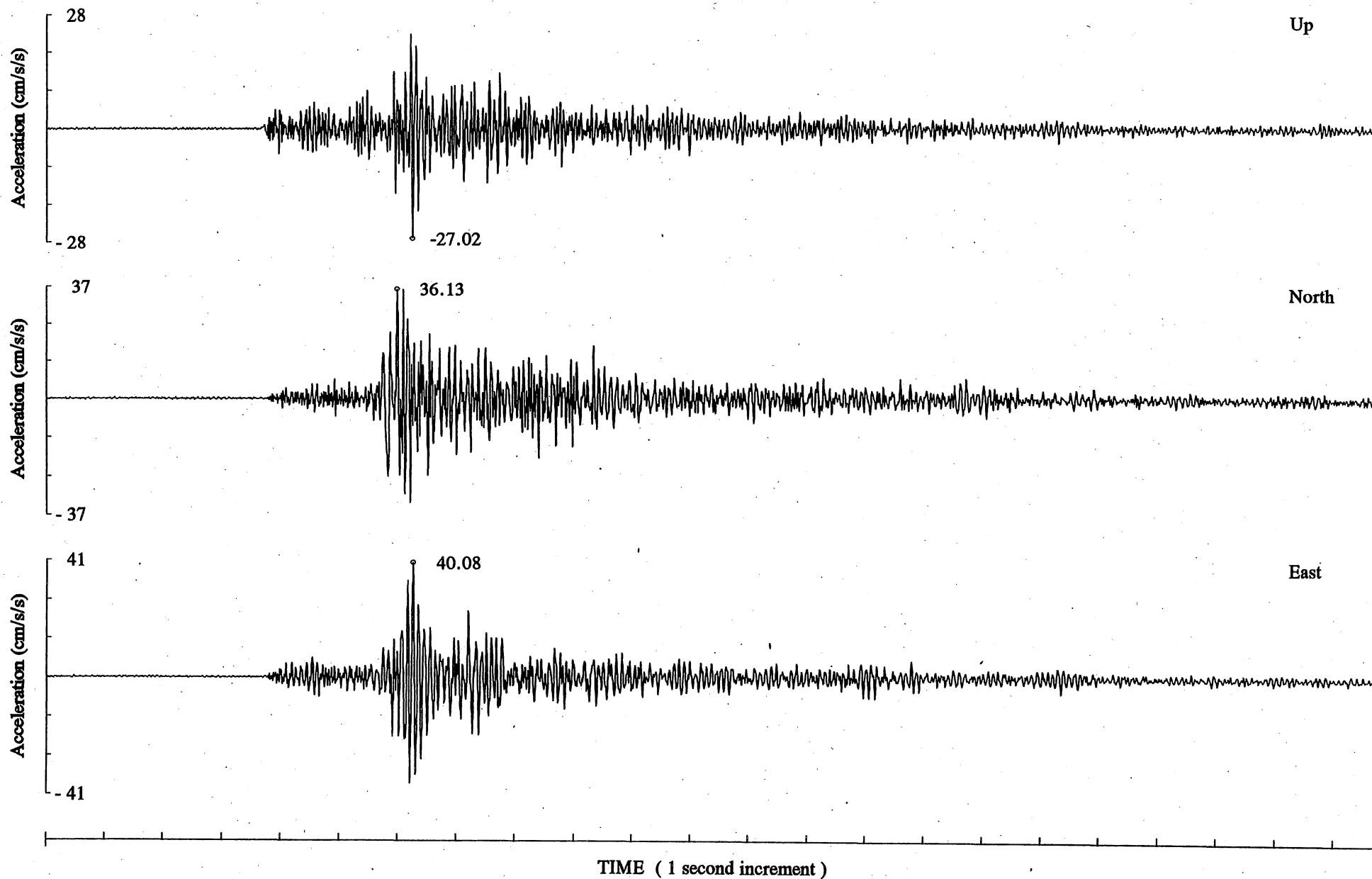
Start Time: 1992-02-14 1708 13.875

Total number=4557

Sample Rate=200

ML=4.4

Epicentre: 39:47N,118:26E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02180428.092

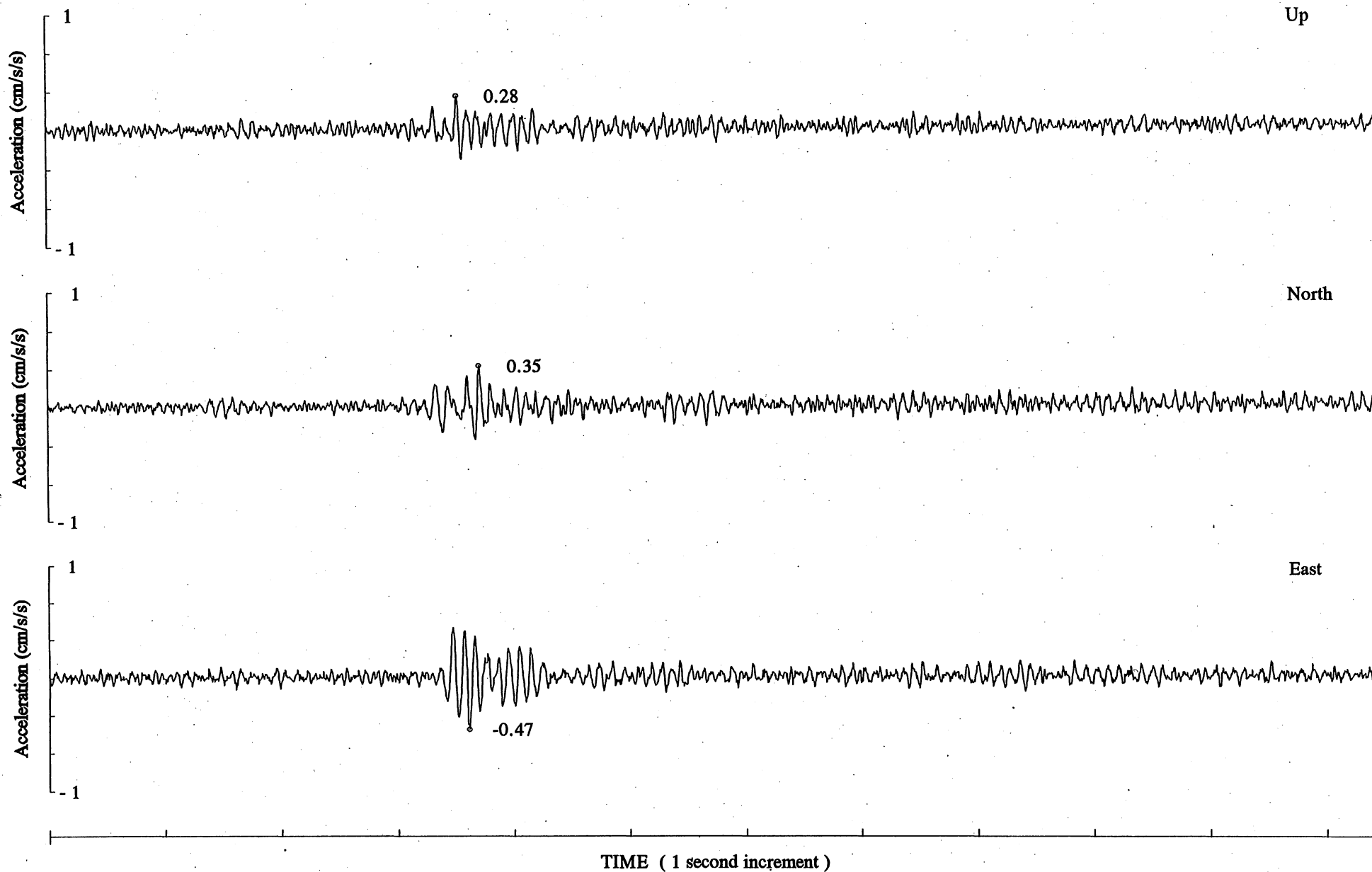
Start Time: 1992-02-18 0428 42.535

Total number=2292

Sample Rate=200

ML=1.7

Epicentre: 39:49N,118:41E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02232046.092

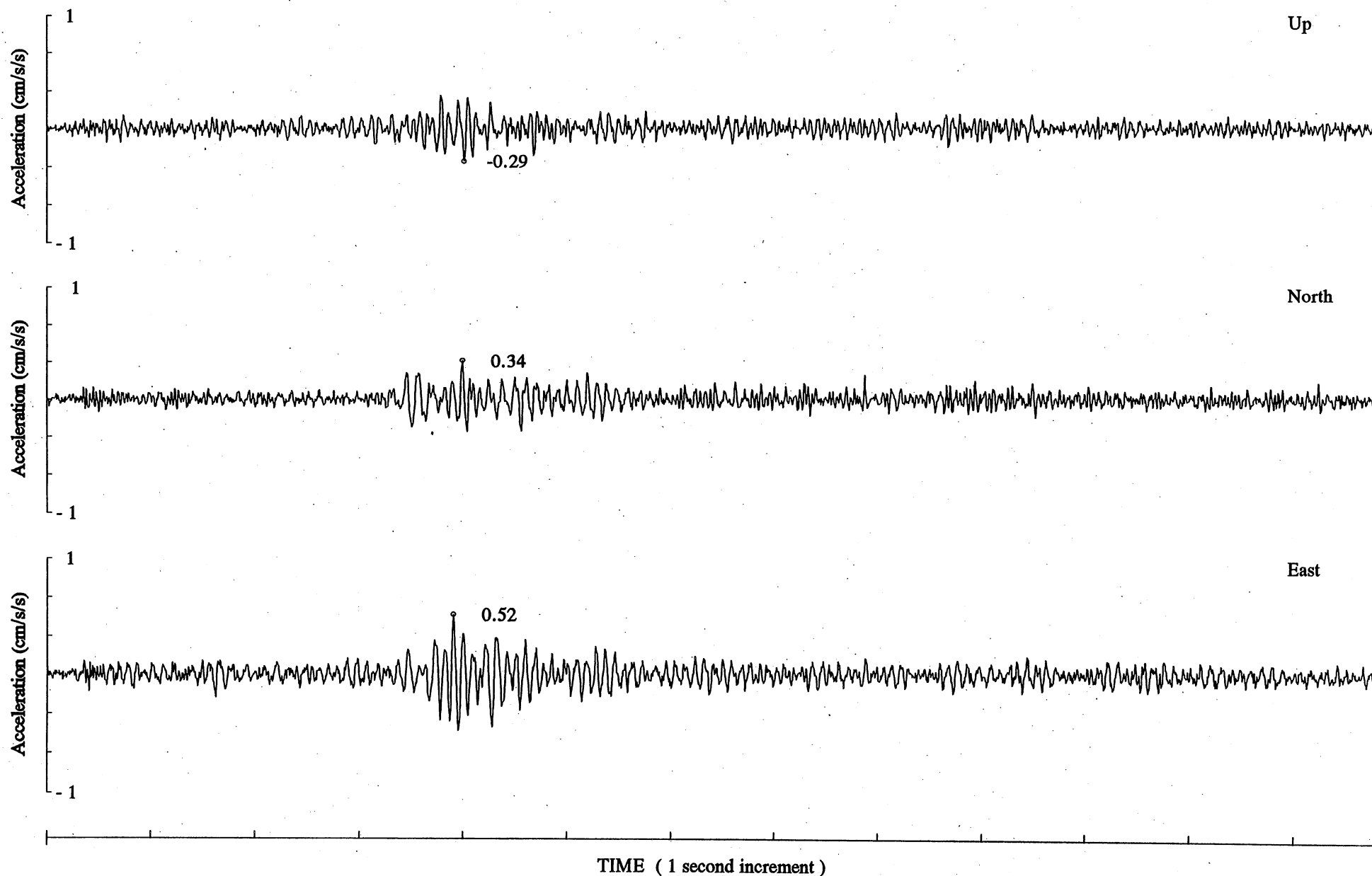
Start Time: 1992-02-23 2046 35.840

Total number=2562

Sample Rate=200

ML=1.9

Epicentre: 39:49N,118:41E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 02232105.092

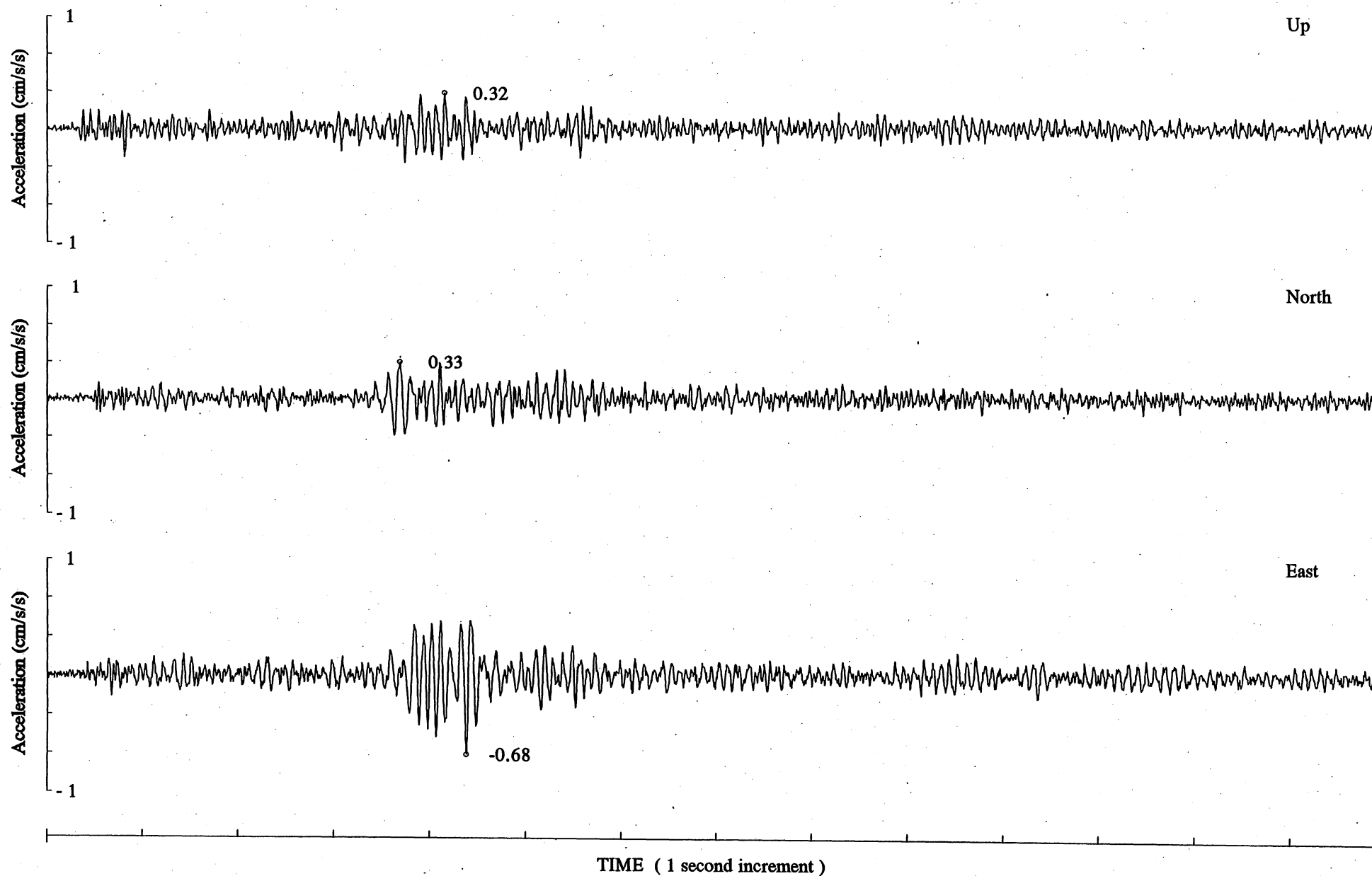
Start Time: 1992-02-23 2105 58.500

Total number=2780

Sample Rate=200

ML=2.1

Epicentre: 39:47N,118:39E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03030200.092

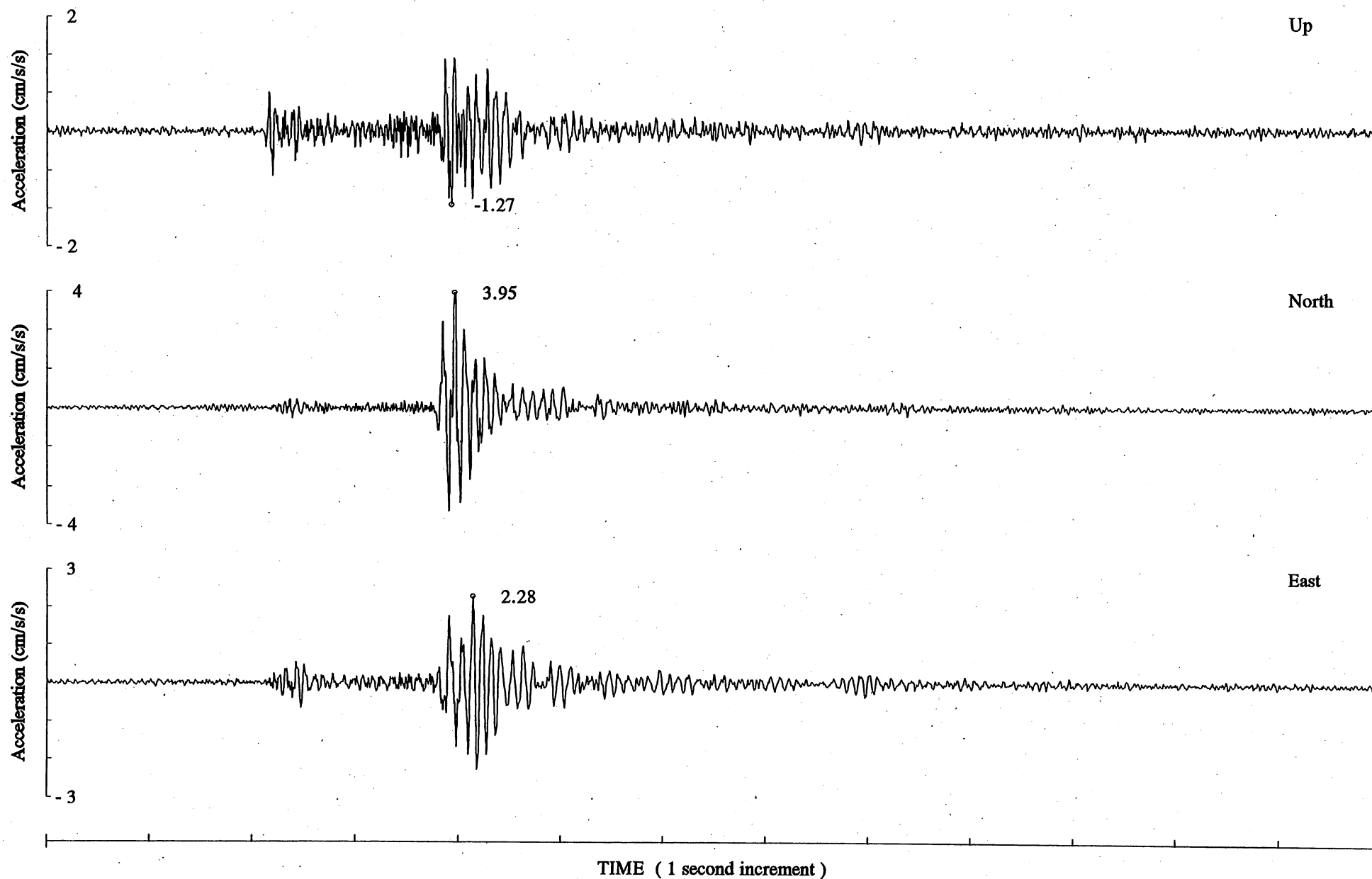
Start Time: 1992-03-03 0200 13.655

Total number=2594

Sample Rate=200

ML=1.7

Epicentre: 39:51N,118:26E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03042314.092

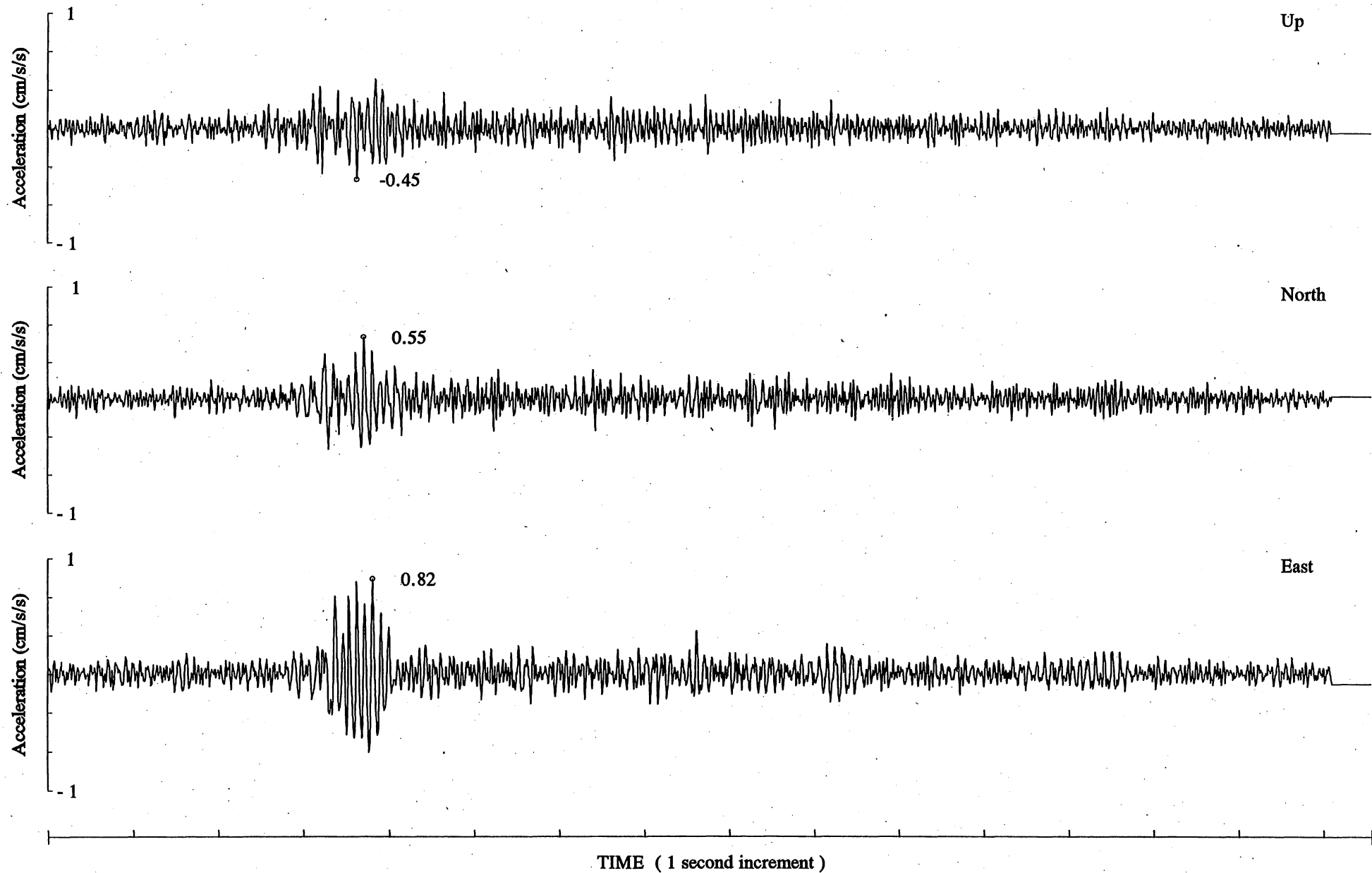
Start Time: 1992-03-04 2314 46.430

Total number=3113

Sample Rate=200

ML=1.9

Epicentre: 39:51N,118:41E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03051536.092

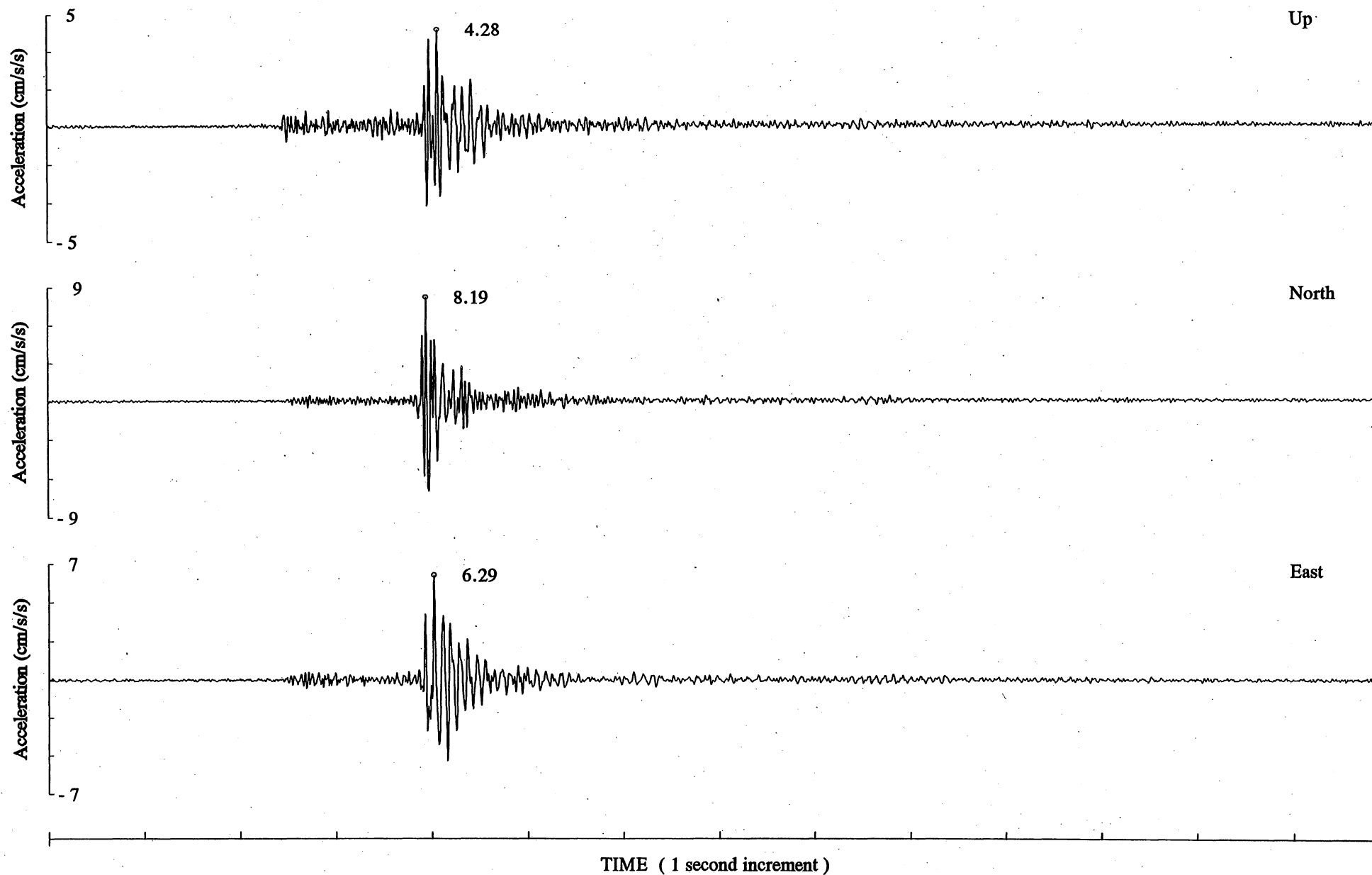
Start Time: 1992-03-05 1536 29.085

Total number=2782

Sample Rate=200

ML=1.8

Epicentre: 39:50N,118:27E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03110558.092

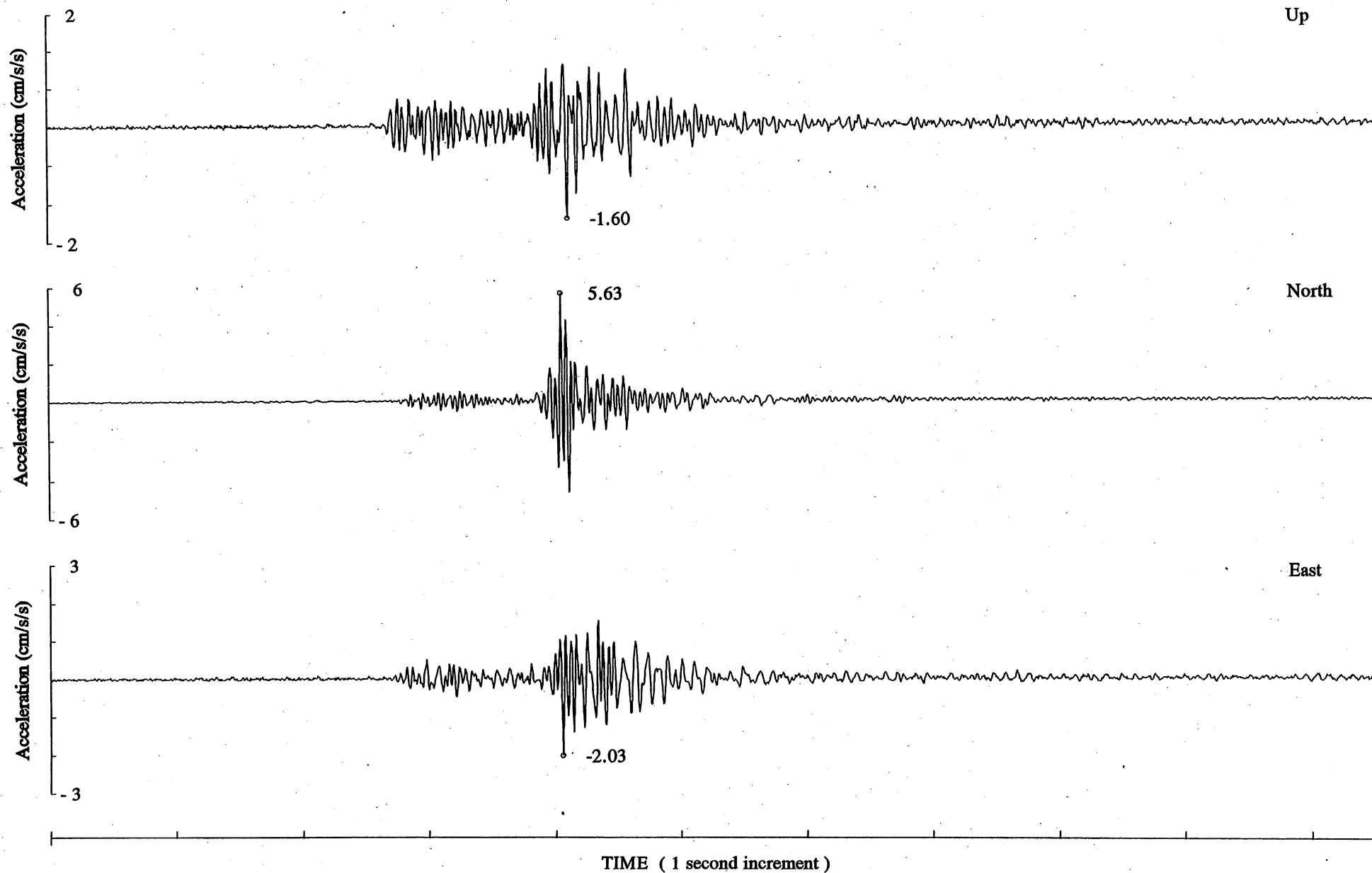
Start Time: 1992-03-11 0558 08.135

Total number=2107

Sample Rate=200

ML=1.5

Epicentre: 39:44N,118:25E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03121904.092

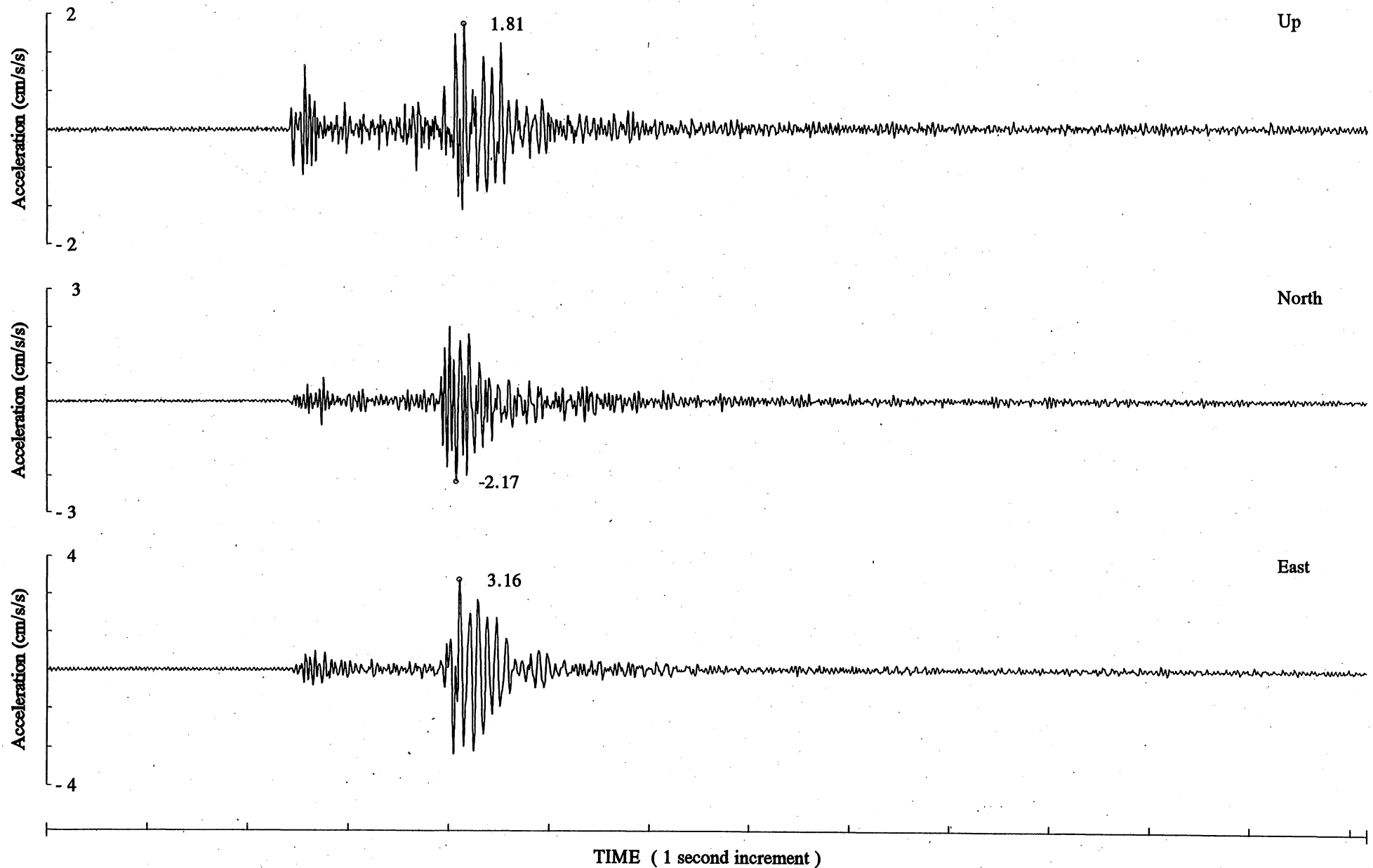
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Total number=2634

Sample Rate=200

ML=1.5

Epicentre: 39:49N,118:30E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03122213.092

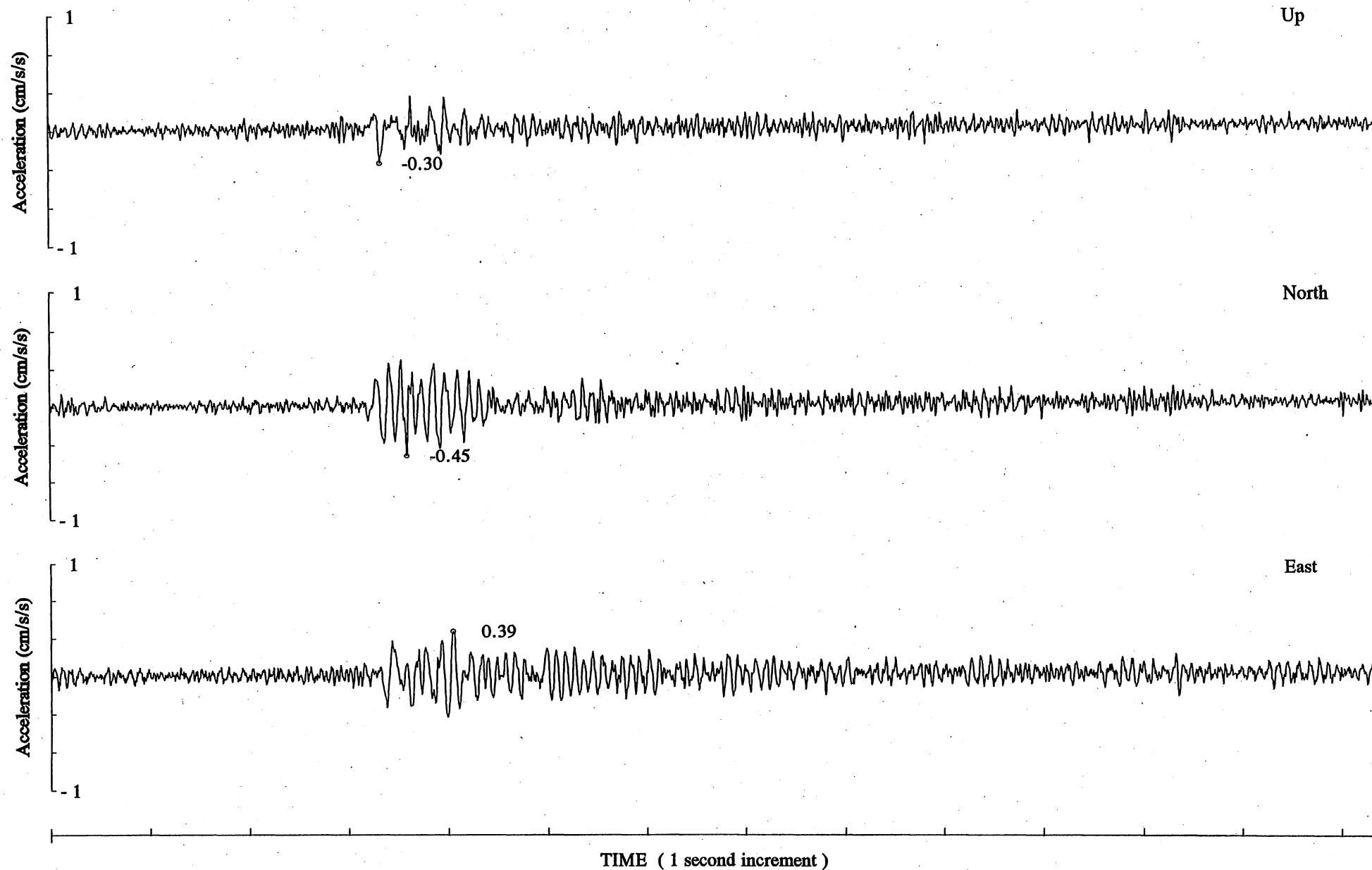
Start Time: 1992-03-12 2213 41.115

Total number=2667

Sample Rate=200

ML=2.3

Epicentre: 39:49N,118:41E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03152209.092

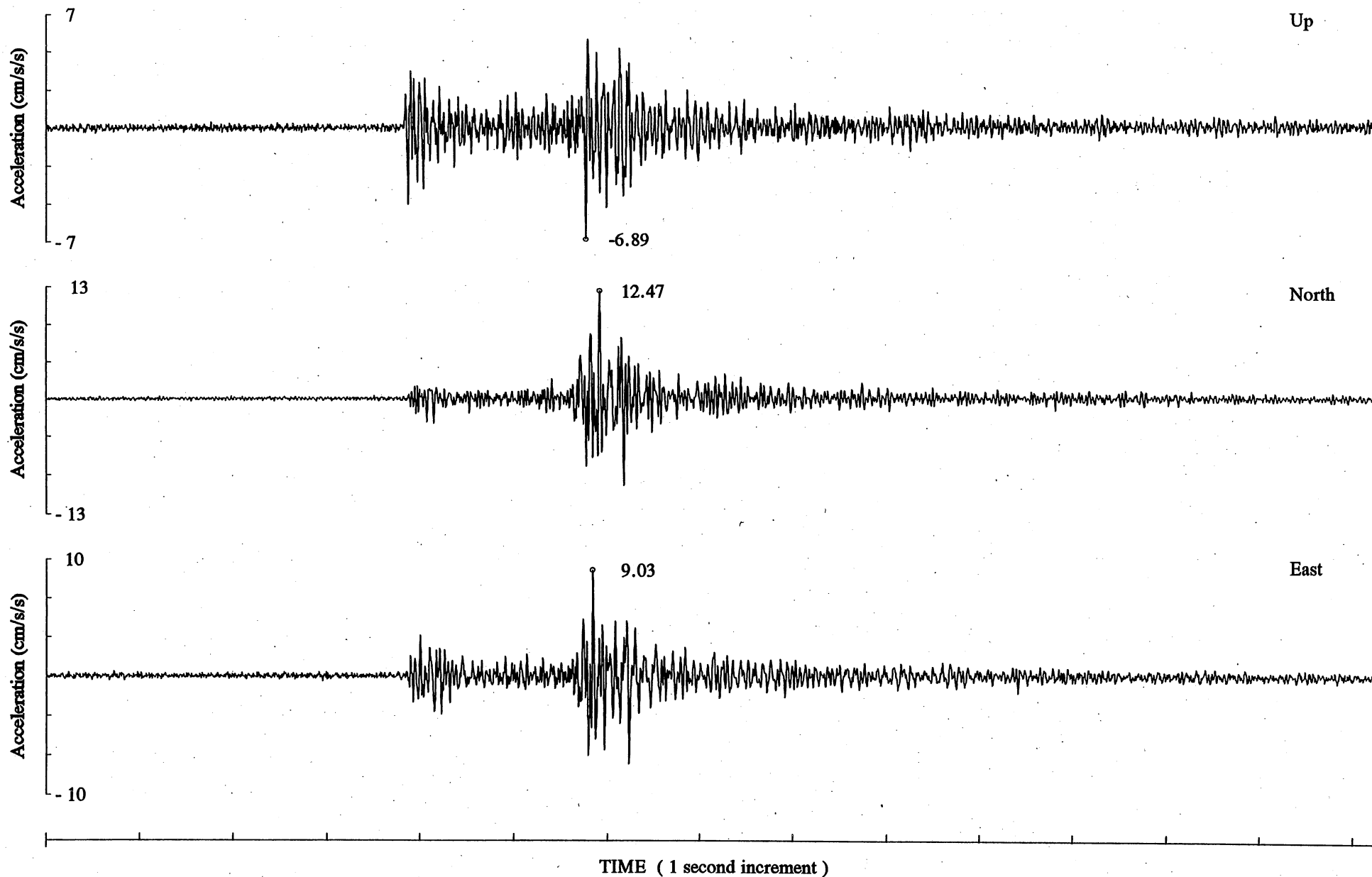
Start Time: 1992-03-15 2209 38.695

Total number=2860

Sample Rate=200

ML=1.5

Epicentre: 39:52N,118:29E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03192227.092

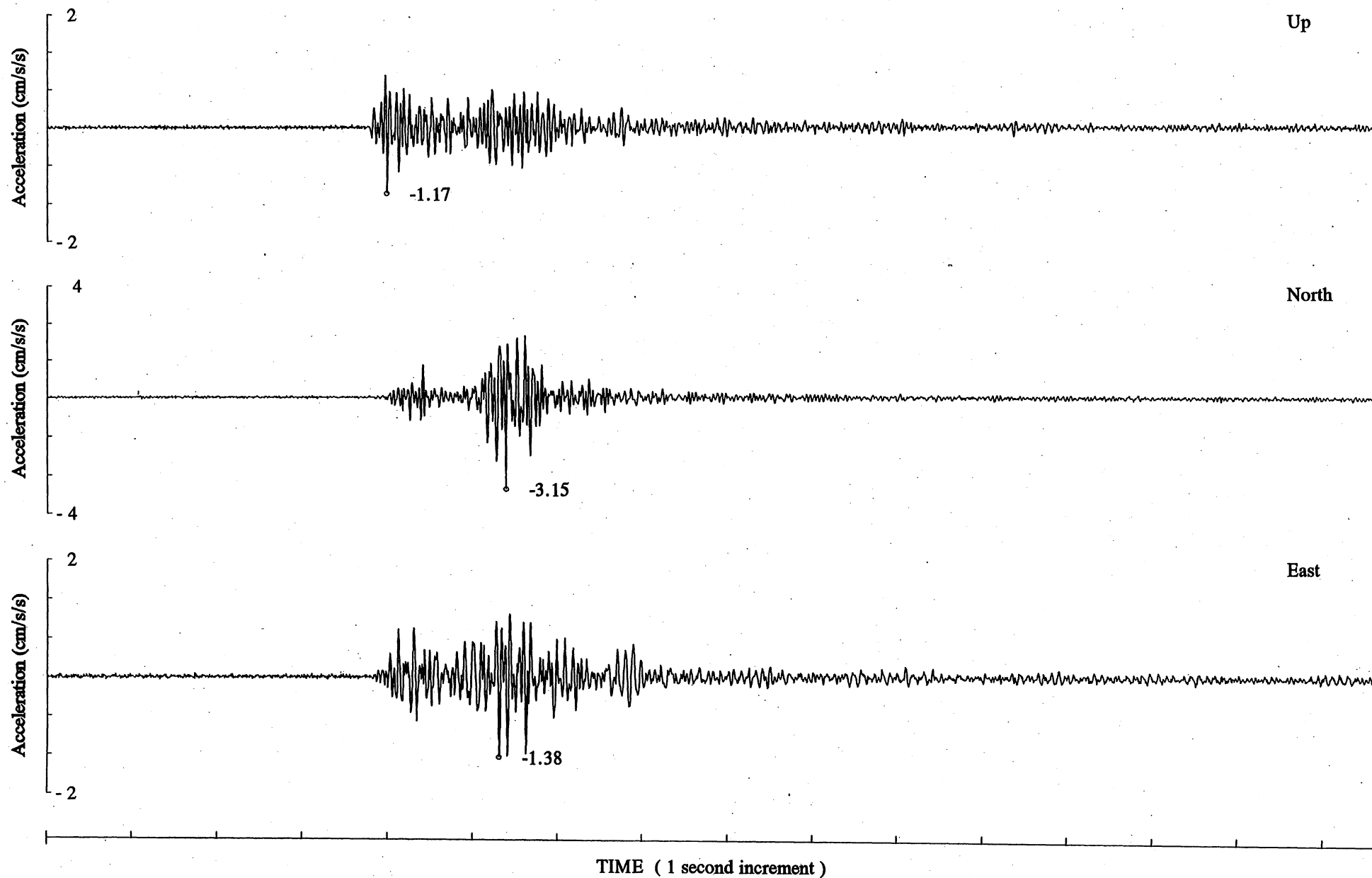
Start Time: 1992-03-19 2227 41.345

Total number=3130

Sample Rate=200

ML=1.6

Epicentre: 39:45N,118:25E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03290123.092

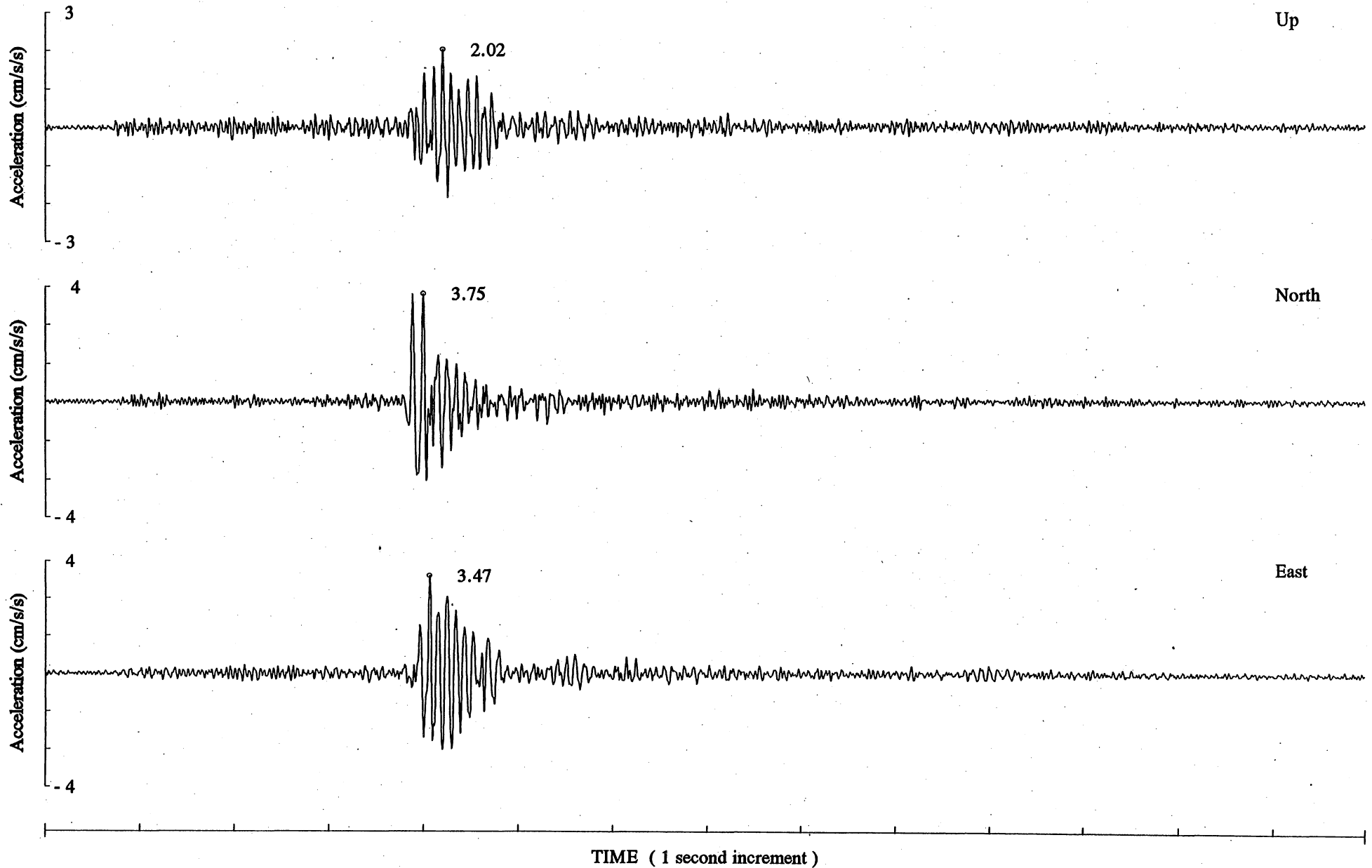
Start Time: 1992-03-29 0123 31.025

Total number=2795

Sample Rate=200

ML=1.9

Epicentre: 39:43N,118:37E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03290419.092

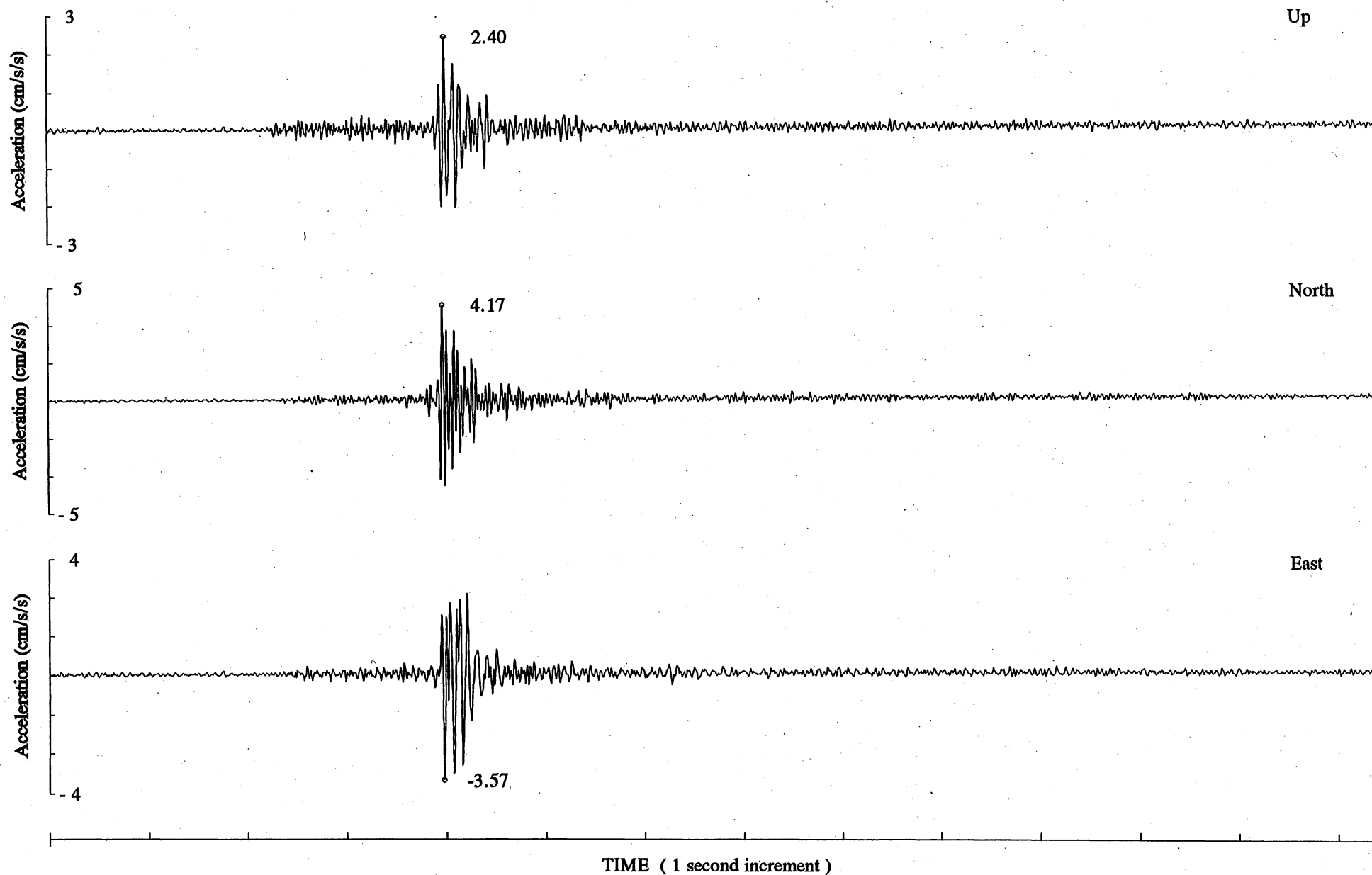
Start Time: 1992-03-29 0419 03.355

Total number=2687

Sample Rate=200

ML=1.8

Epicentre: 39:47N,118:24E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04012153.092

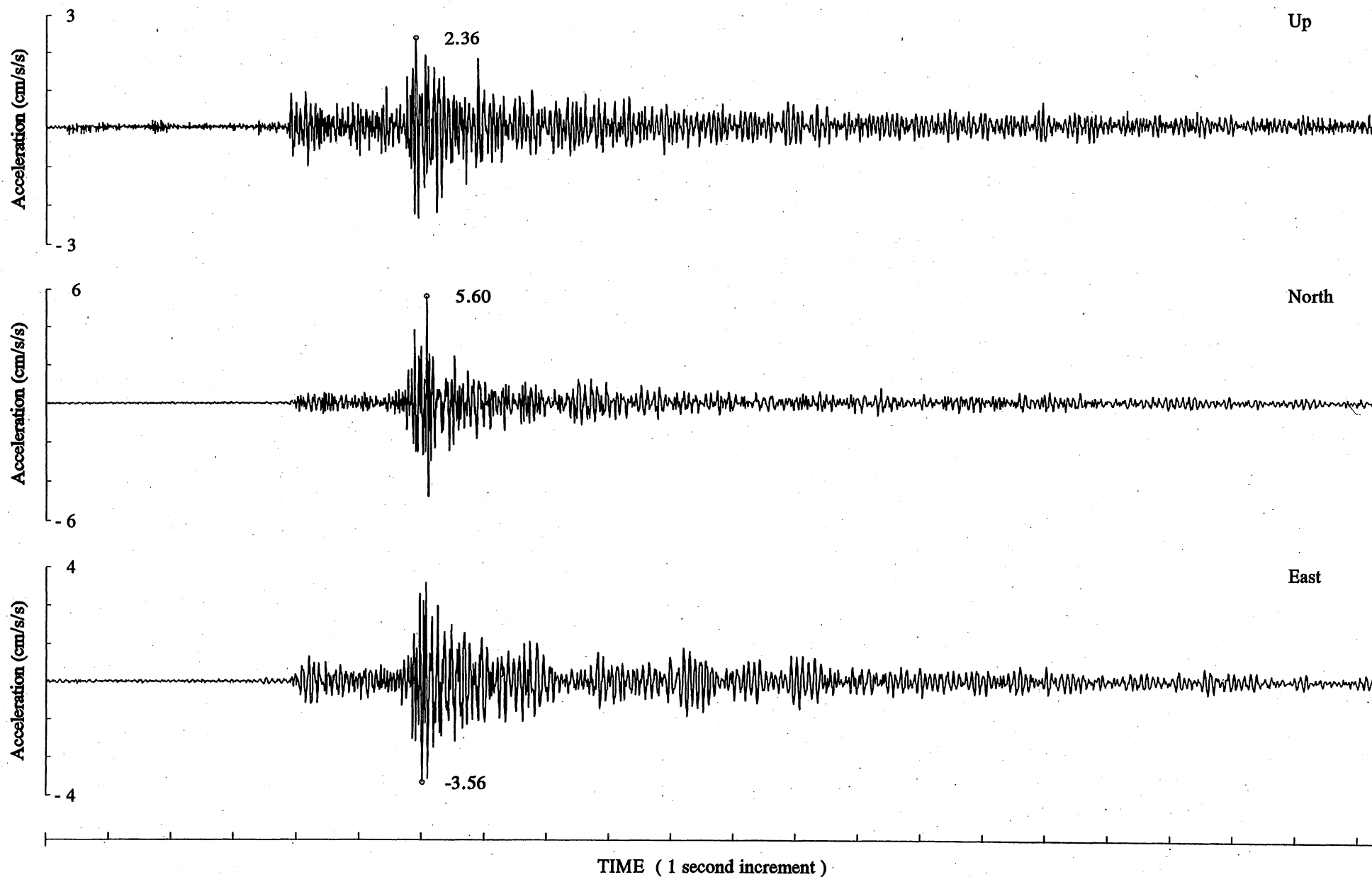
Start Time: 1992-04-01 2153 09.650

Total number=4269

Sample Rate=200

ML=2.7

Epicentre: 39:35N,118:15E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04081148.092

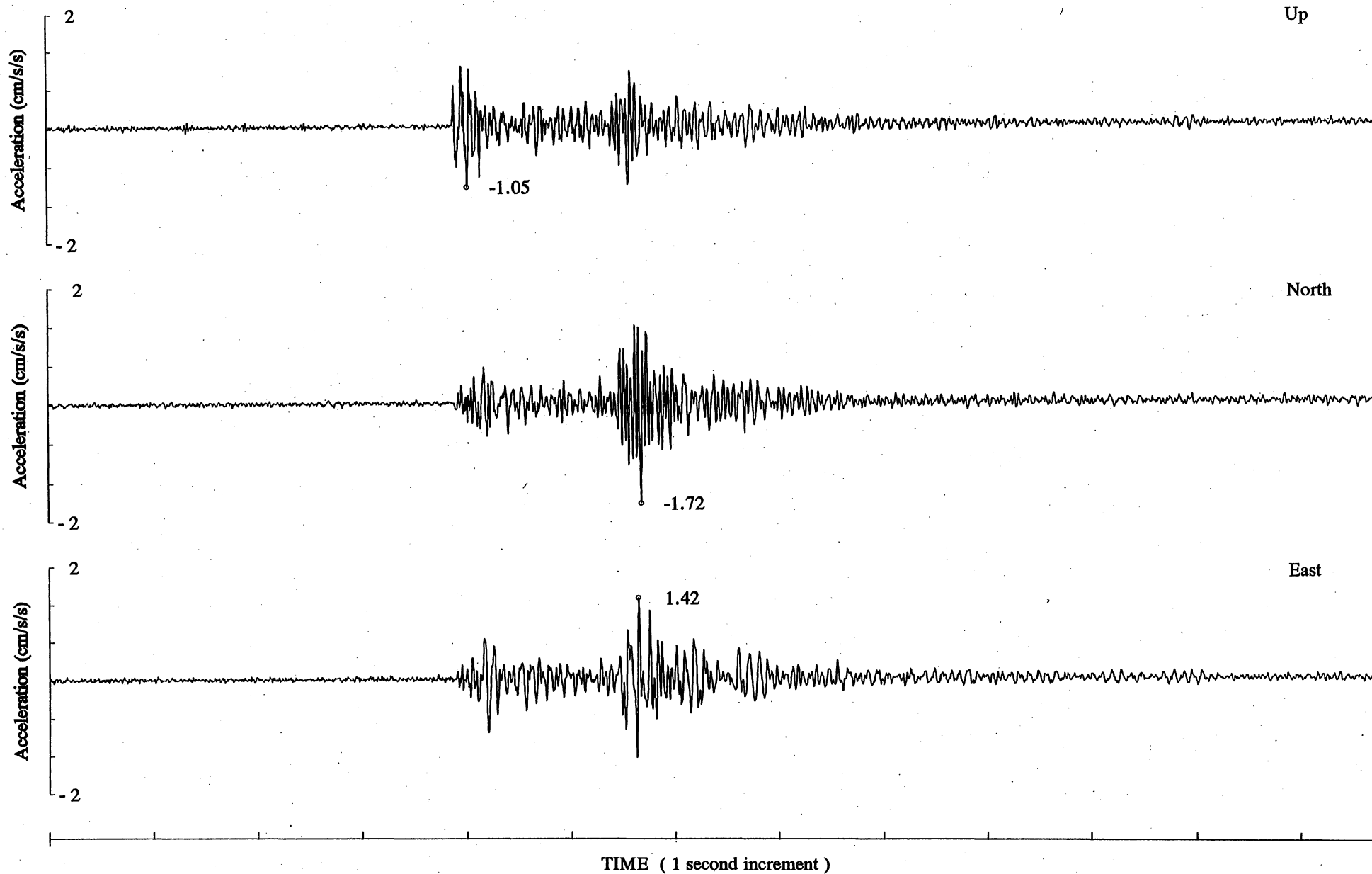
Start Time: 1992-04-08 1148 30.235

Total number=2552

Sample Rate=200

ML=1.8

Epicentre: 39:49N,118:30E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04090618.092

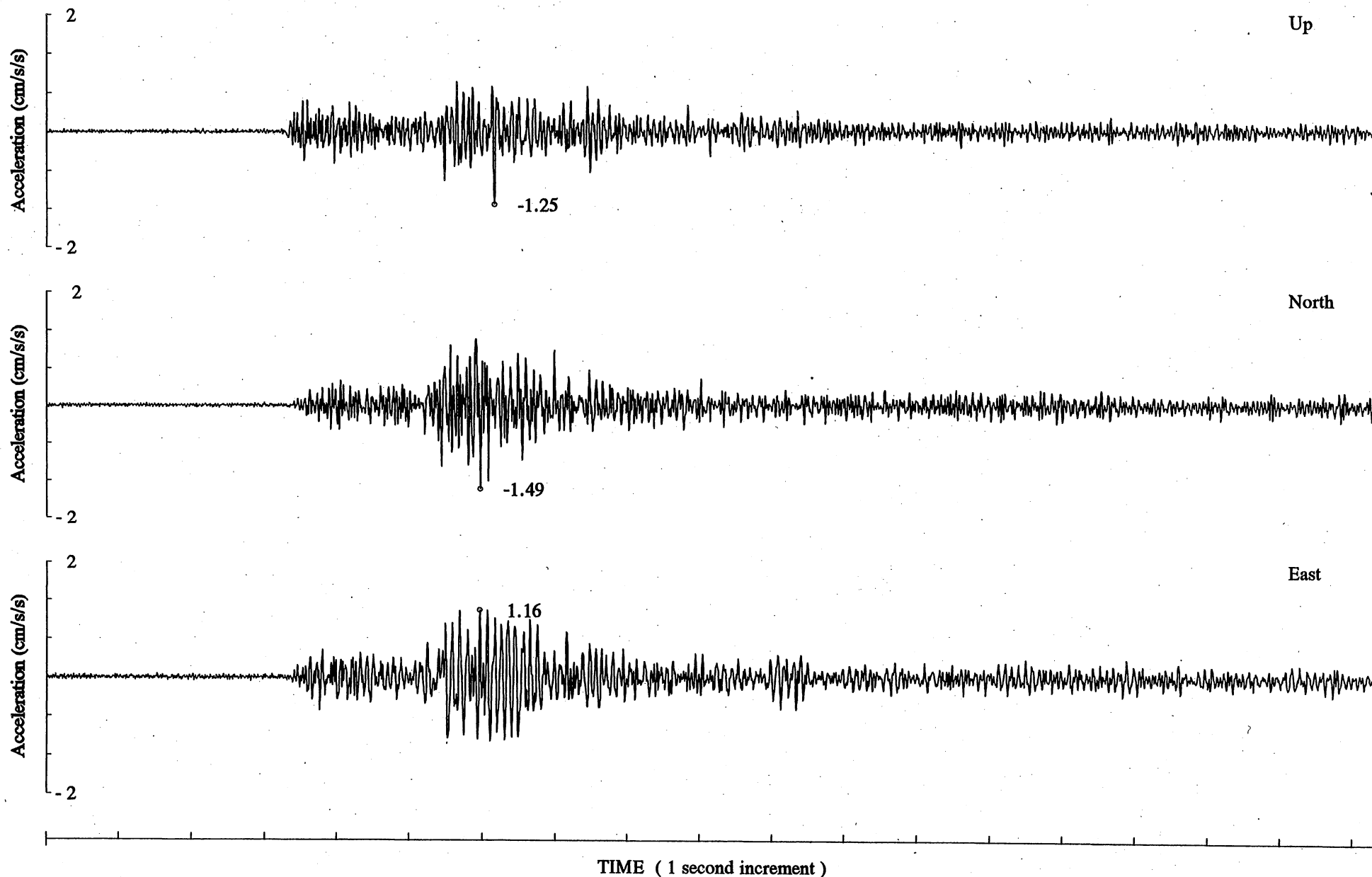
Start Time: 1992-04-09 0618 57.785

Total number=3672

Sample Rate=200

ML=2.2

Epicentre: 39:45N,118:22E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04140409.092

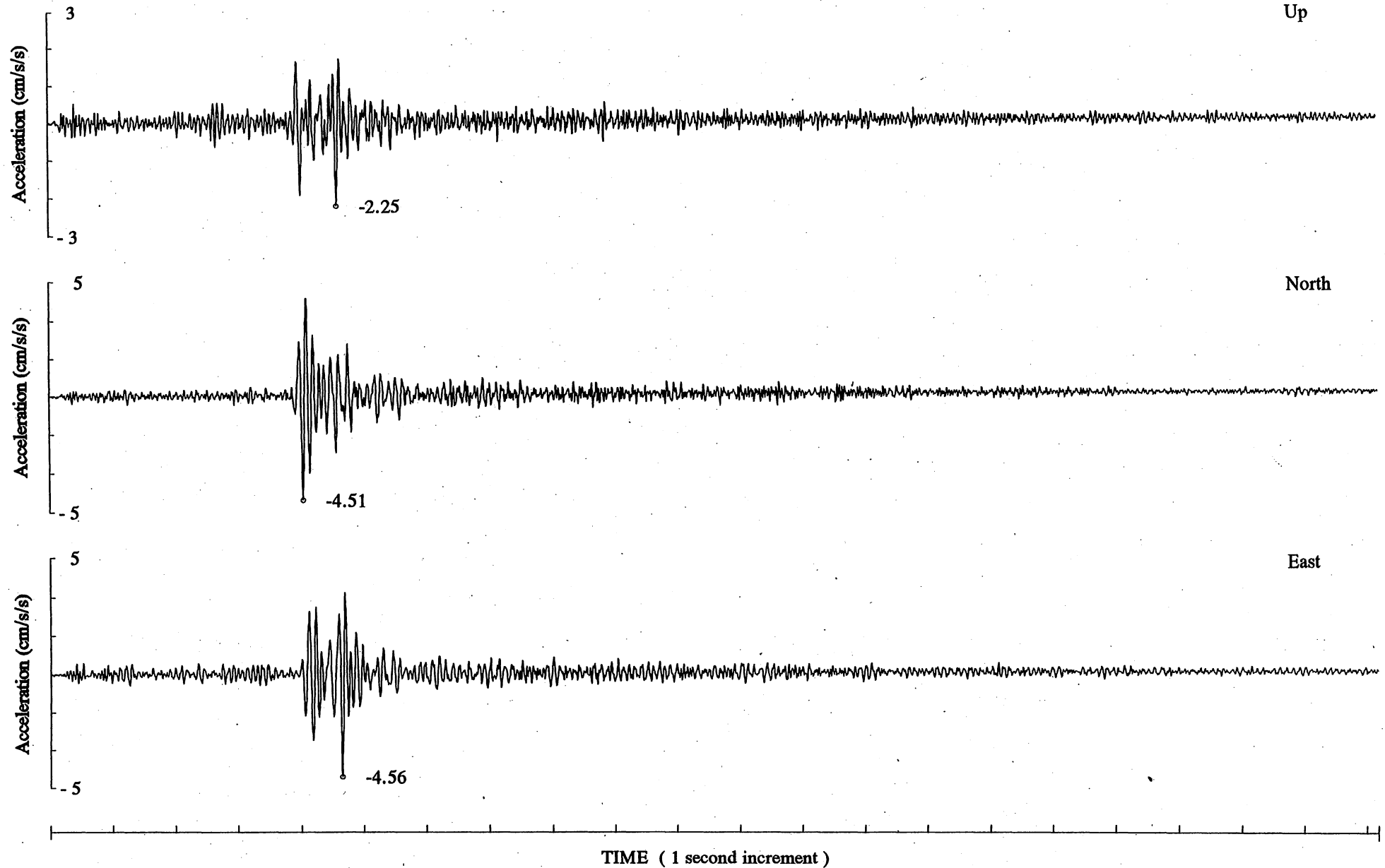
Start Time: 1992-04-14 0409 37.925

Total number=4237

Sample Rate=200

ML=2.8

Epicentre: 39:36N,118:38E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04172155.092

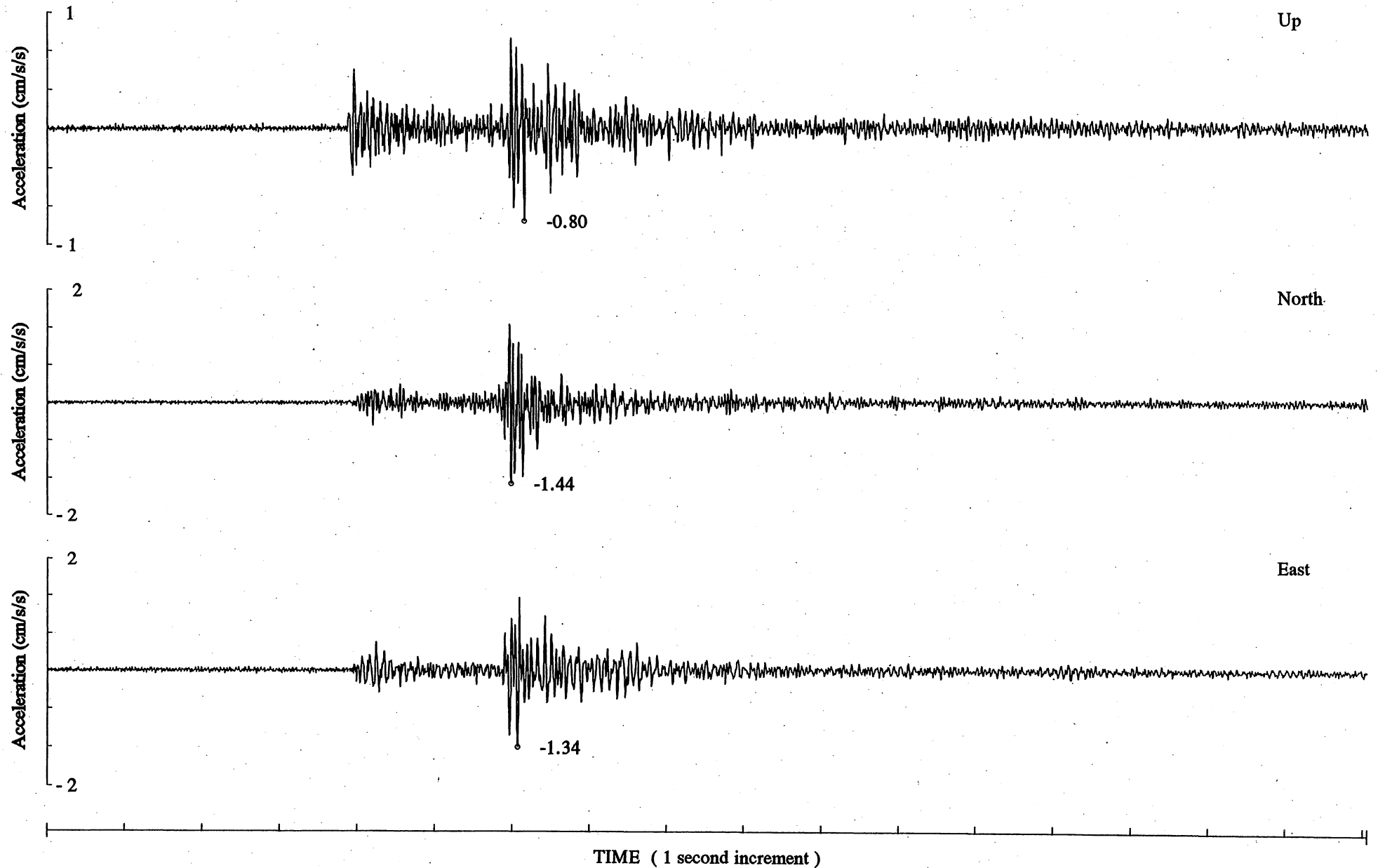
Start Time: 1992-04-17 21:55:37.630

Total number=3412

Sample Rate=200

ML=1.8

Epicentre: 39:44N,118:15E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04241700.092

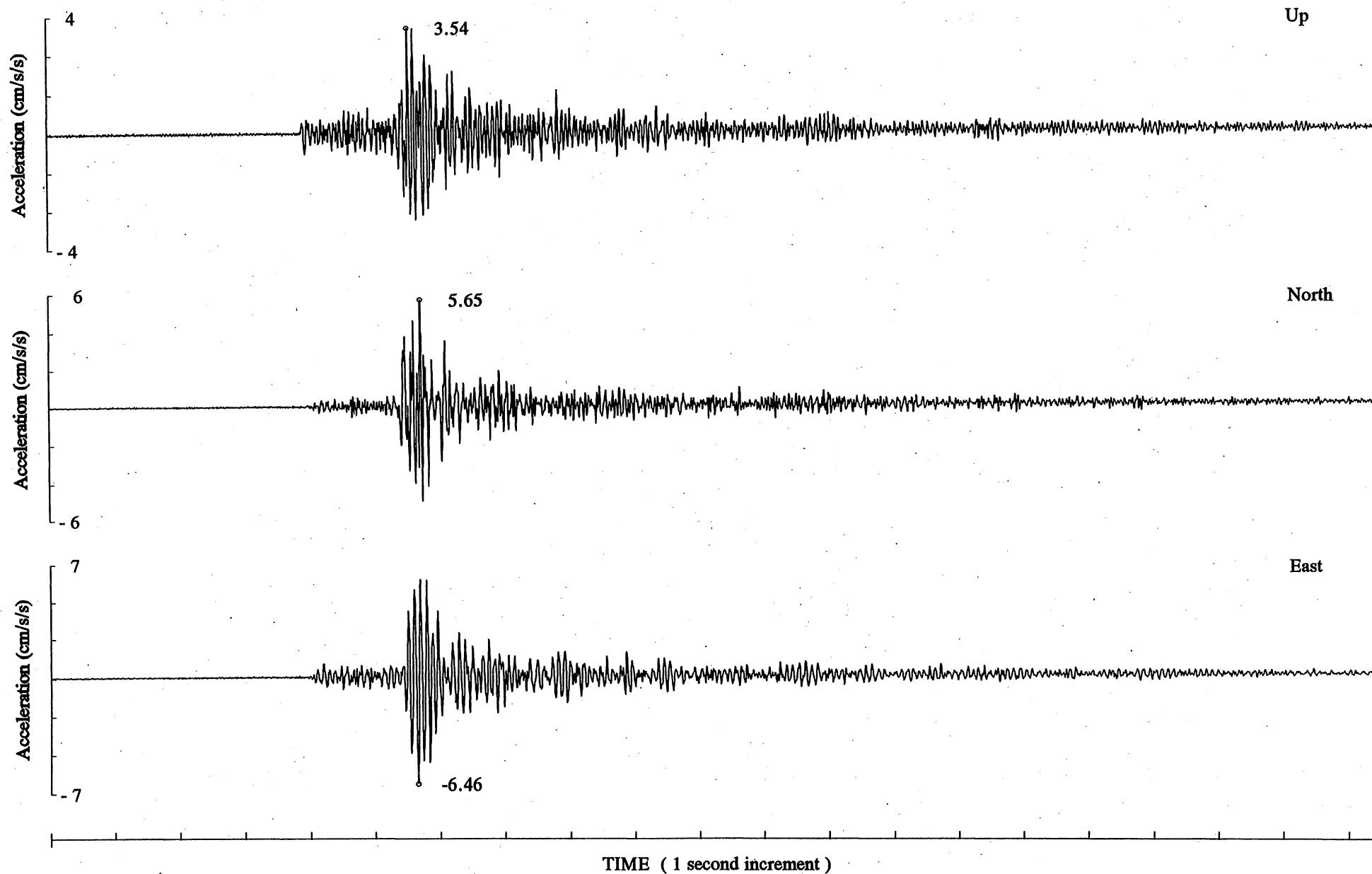
Start Time: 1992-04-24 1700 53.090

Total number=4100

Sample Rate=200

ML=2.4

Epicentre: 39:44N,118:23E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05012042.092

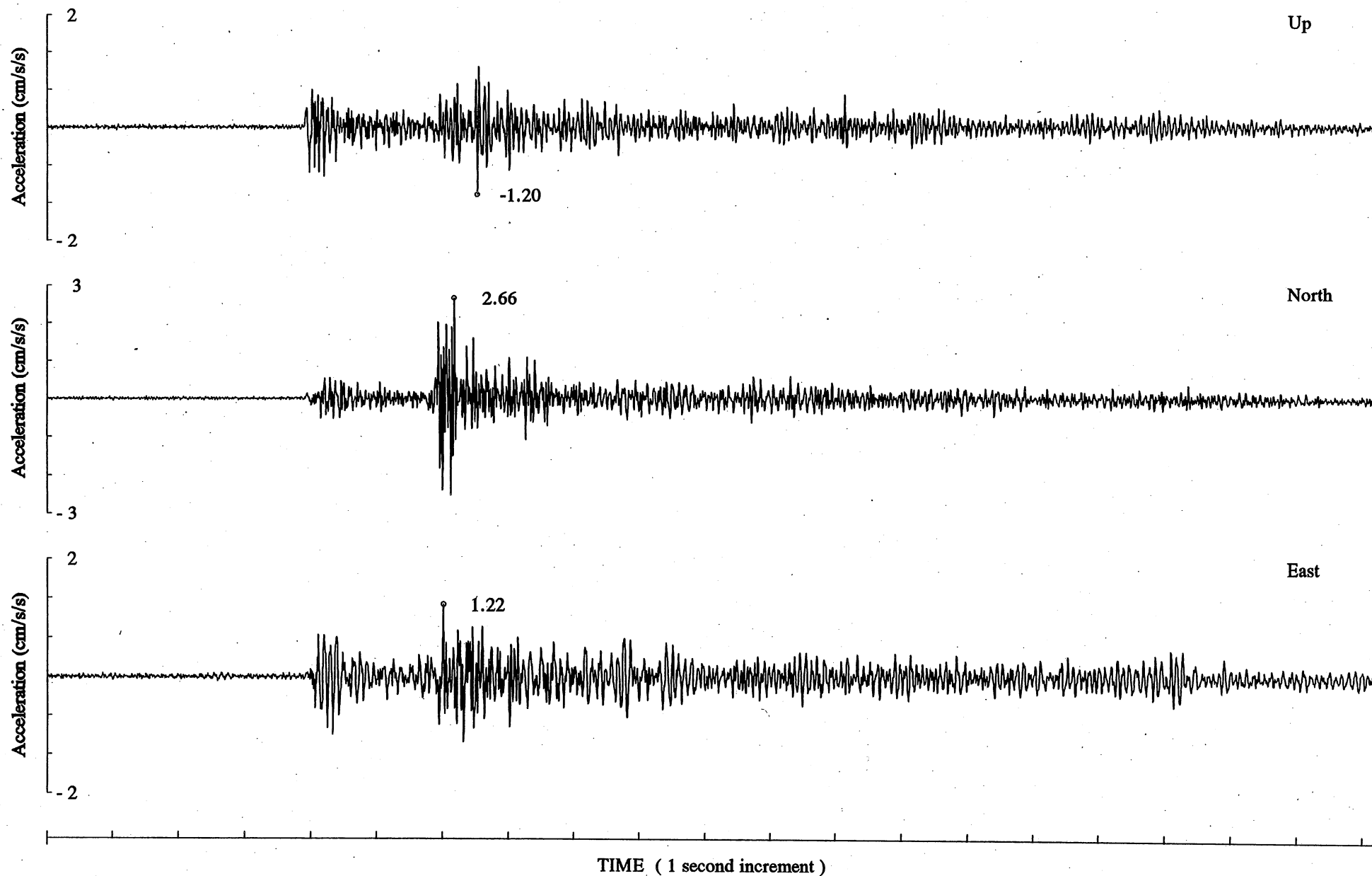
Start Time: 1992-05-01 2042 33.350

Total number=4046

Sample Rate=200

ML=2.4

Epicentre: 39:45N,118:21E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05030753.092

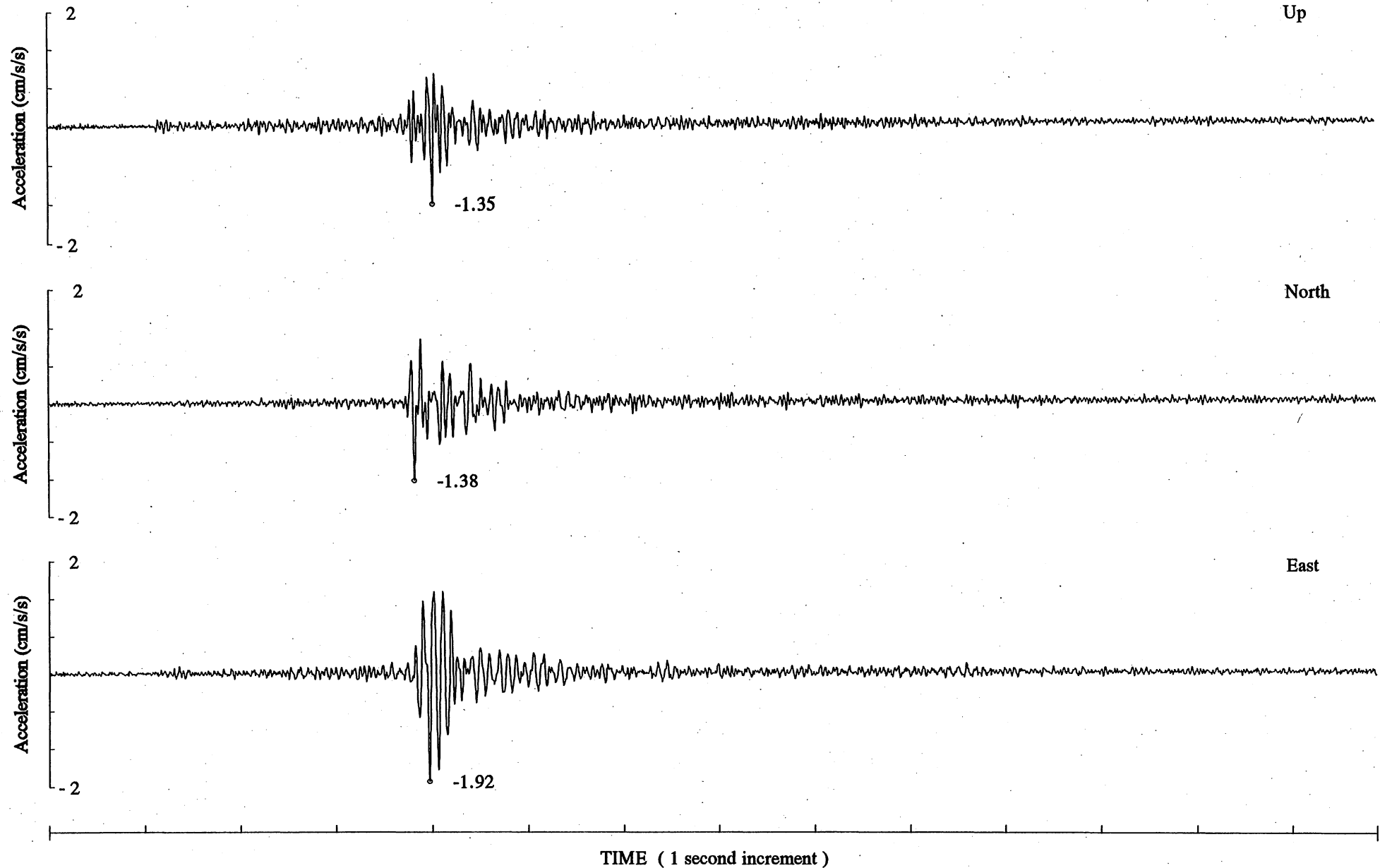
Start Time: 1992-05-03 0753 19.110

Total number=2777

Sample Rate=200

ML=1.6

Epicentre: 39:45N,118:33E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05032021.092

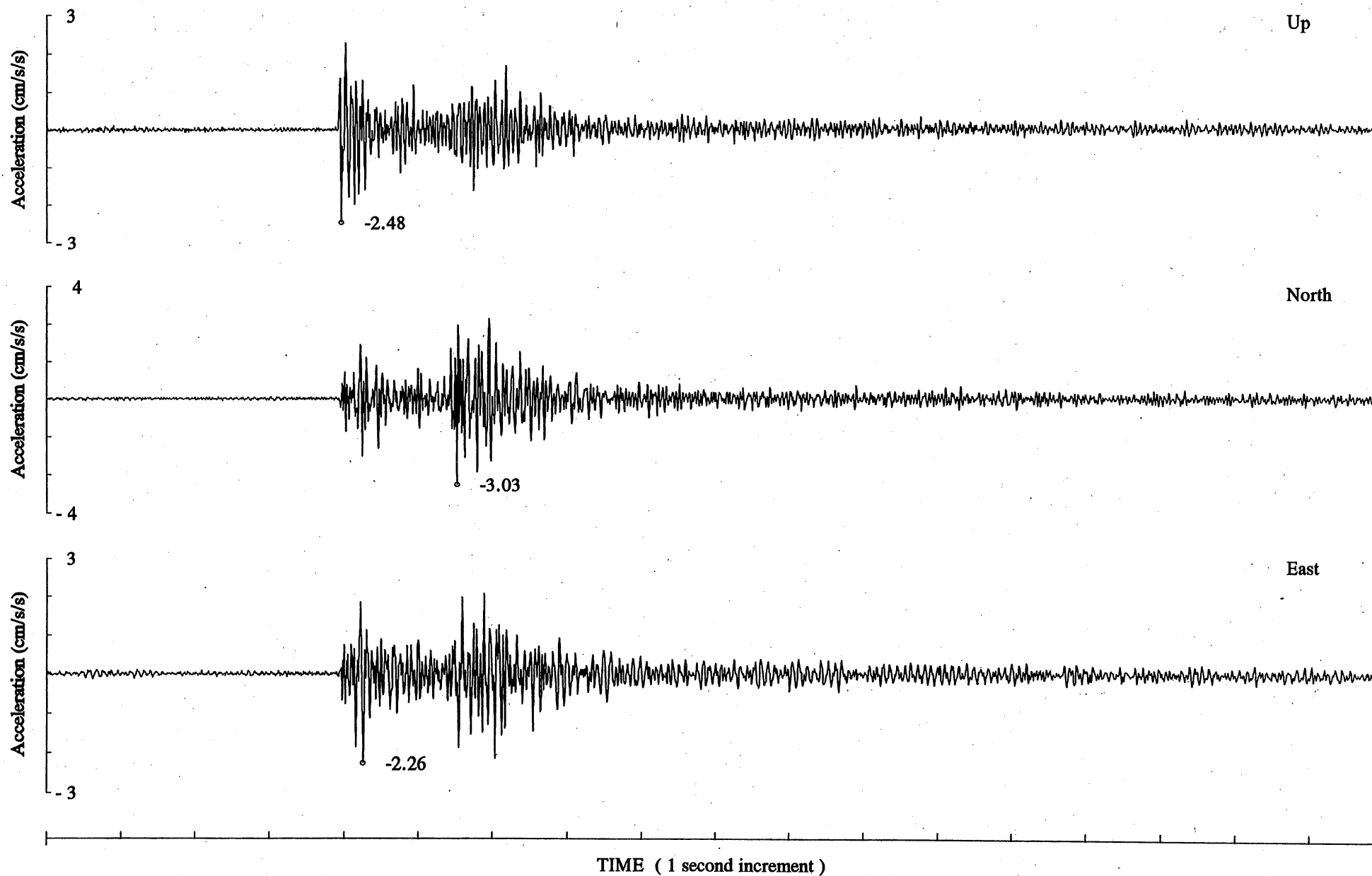
Start Time: 1992-05-03 2021 39.450

Total number=3582

Sample Rate=200

ML=1.9

Epicentre: 39:54N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05041633.092

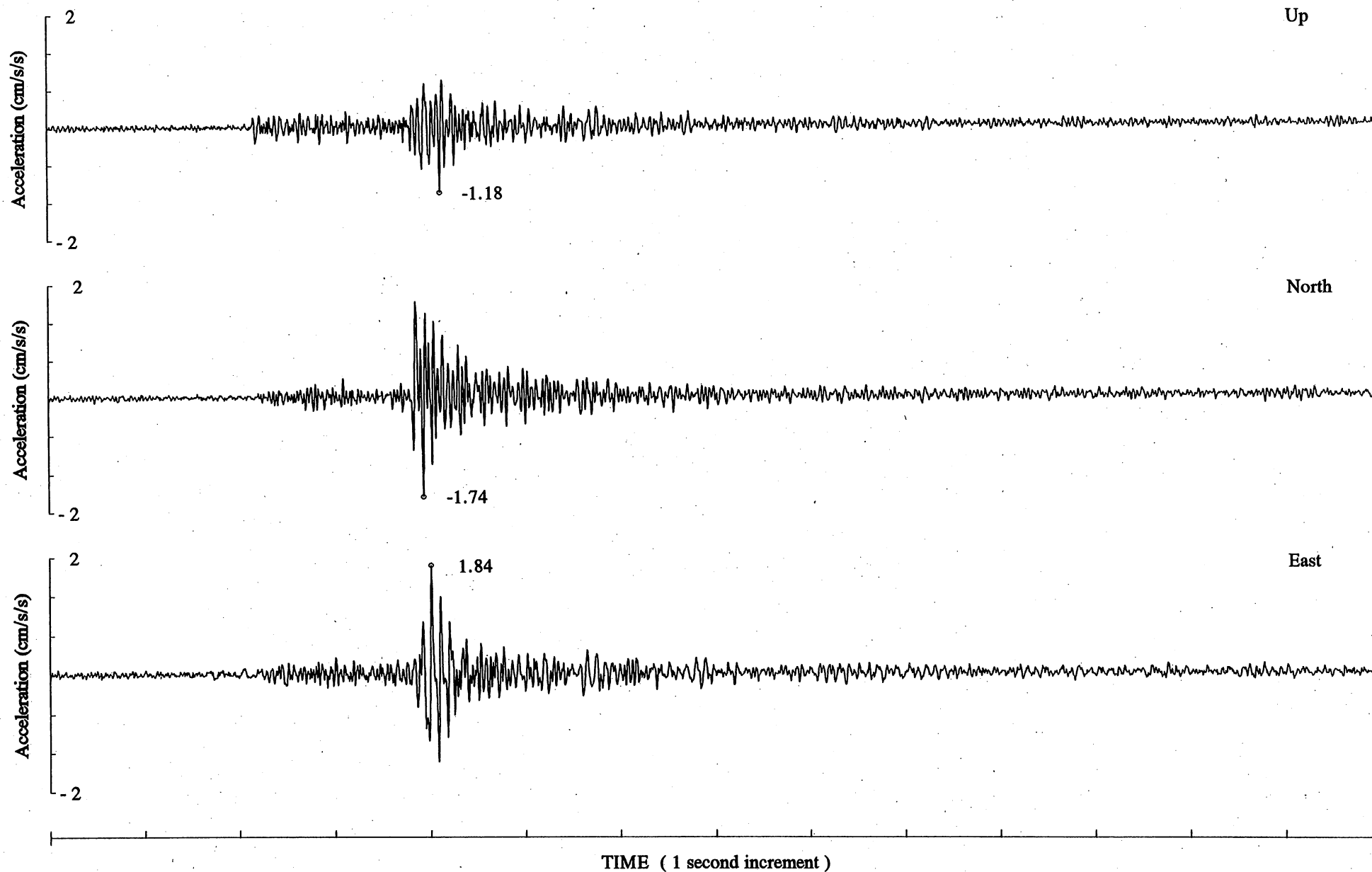
Start Time: 1992-05-04 1633 12.005

Total number=2798

Sample Rate=200

ML=1.5

Epicentre: 39:48N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05080622.092

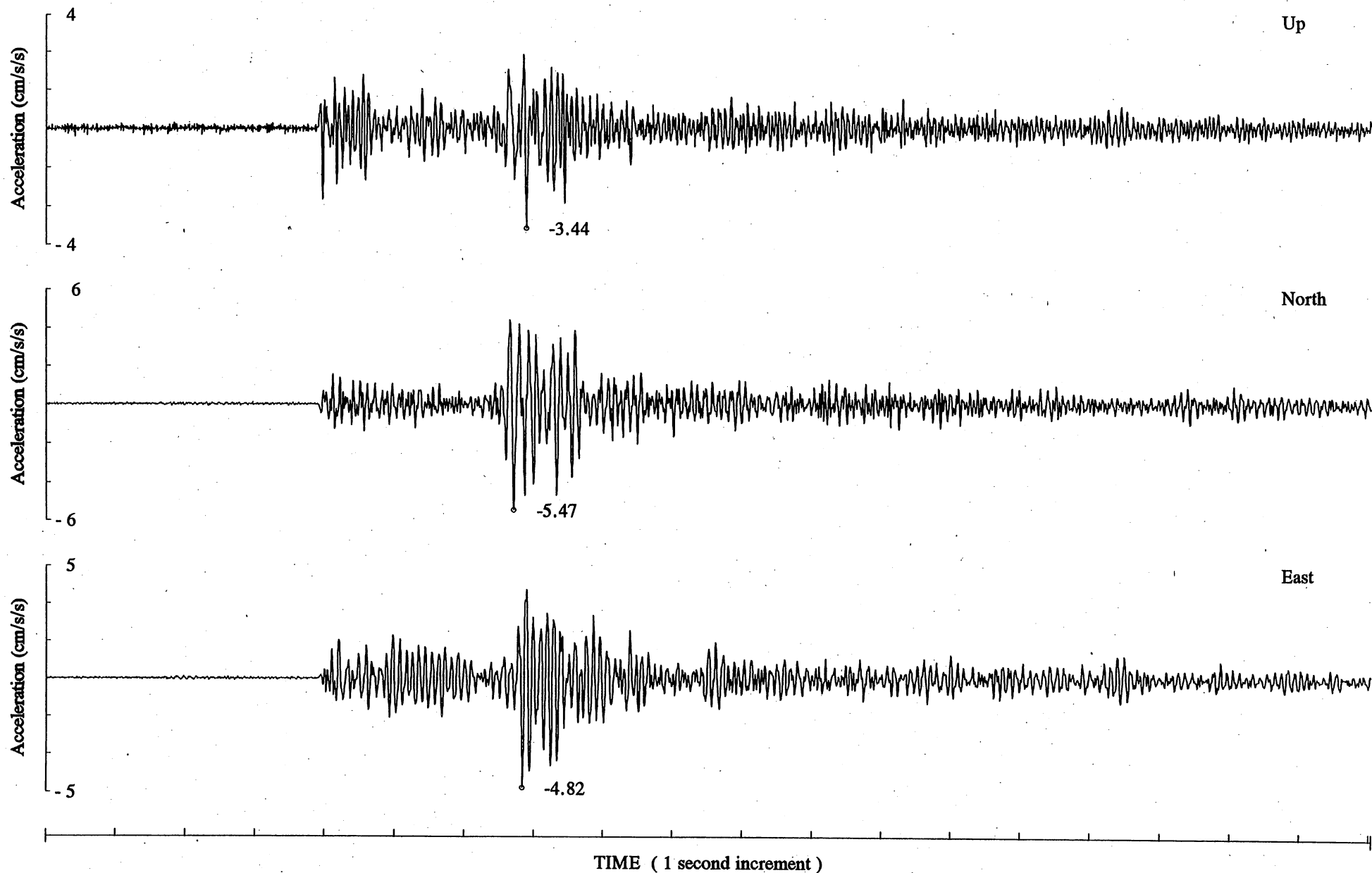
Start Time: 1992-05-08 0622 32.775

Total number=3808

Sample Rate=200

ML=2.8

Epicentre: 39:48N,118:35E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05080856.092

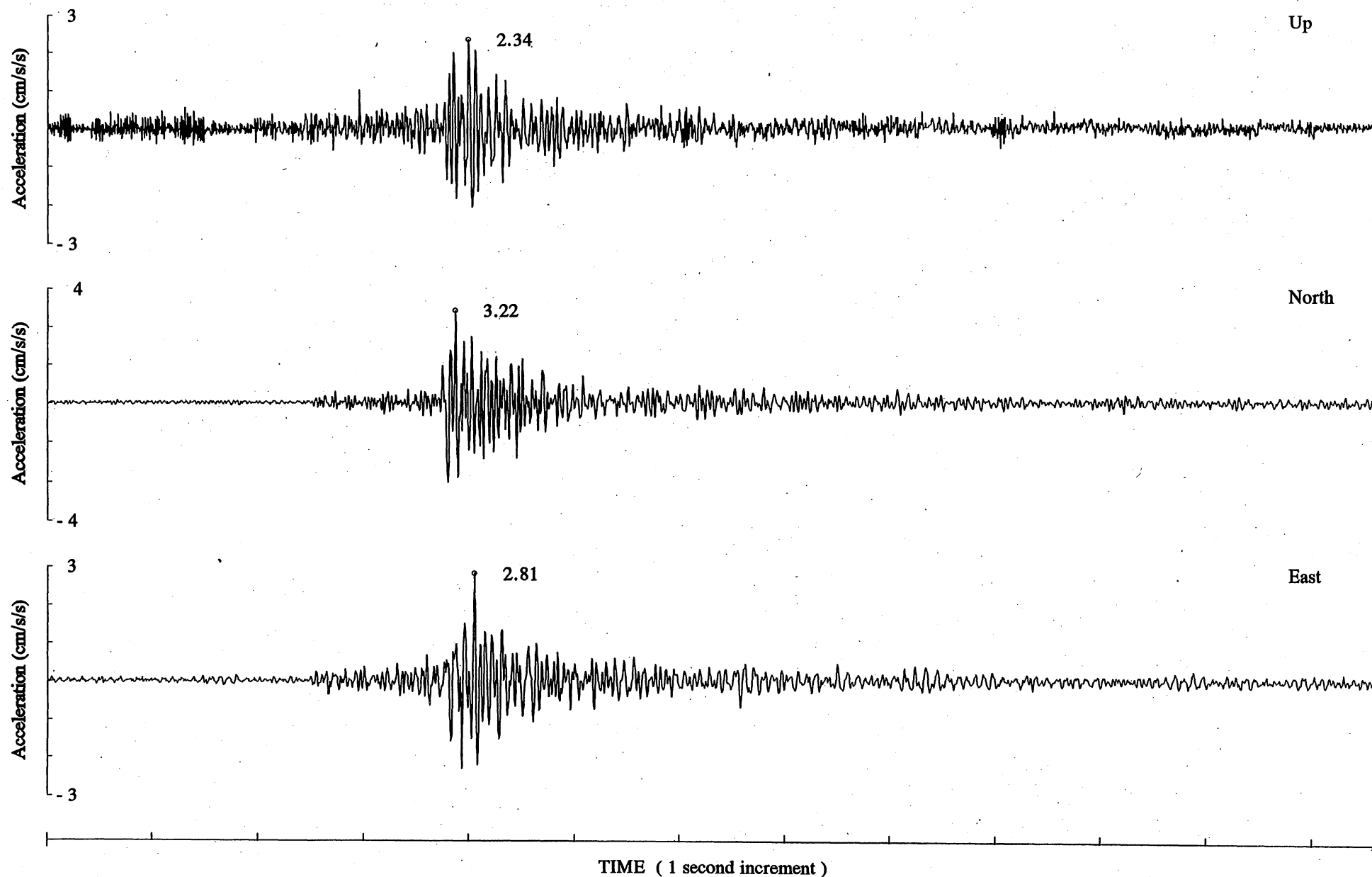
Start Time: 1992-05-08 0856 14.355

Total number=2528

Sample Rate=200

ML=1.7

Epicentre: 39:49N,118:26E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05150858.092

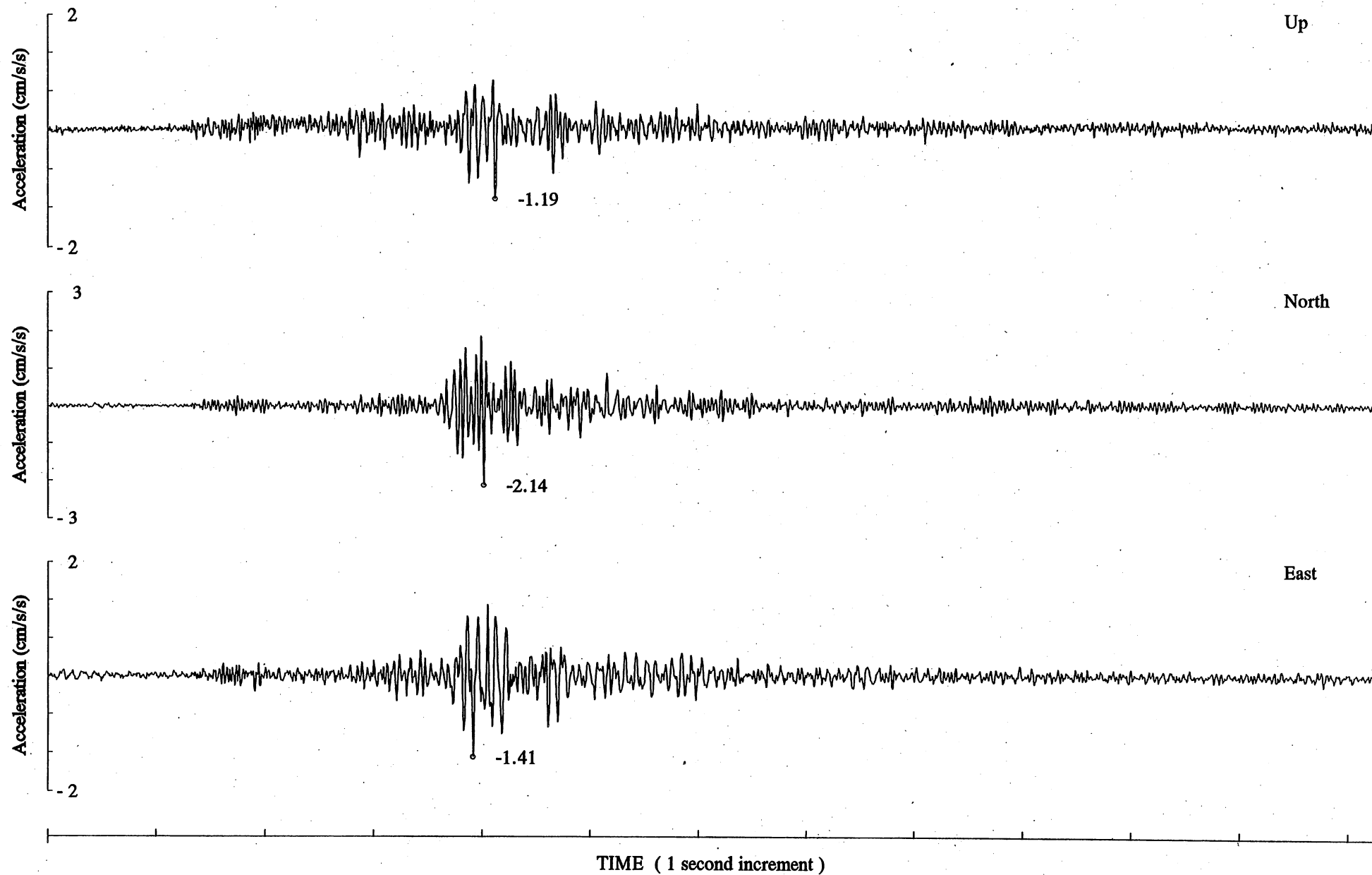
Start Time: 1992-05-15 0858 38.750

Total number=2449

Sample Rate=200

ML=1.6

Epicentre: 39:48N,118:29E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05151230.092

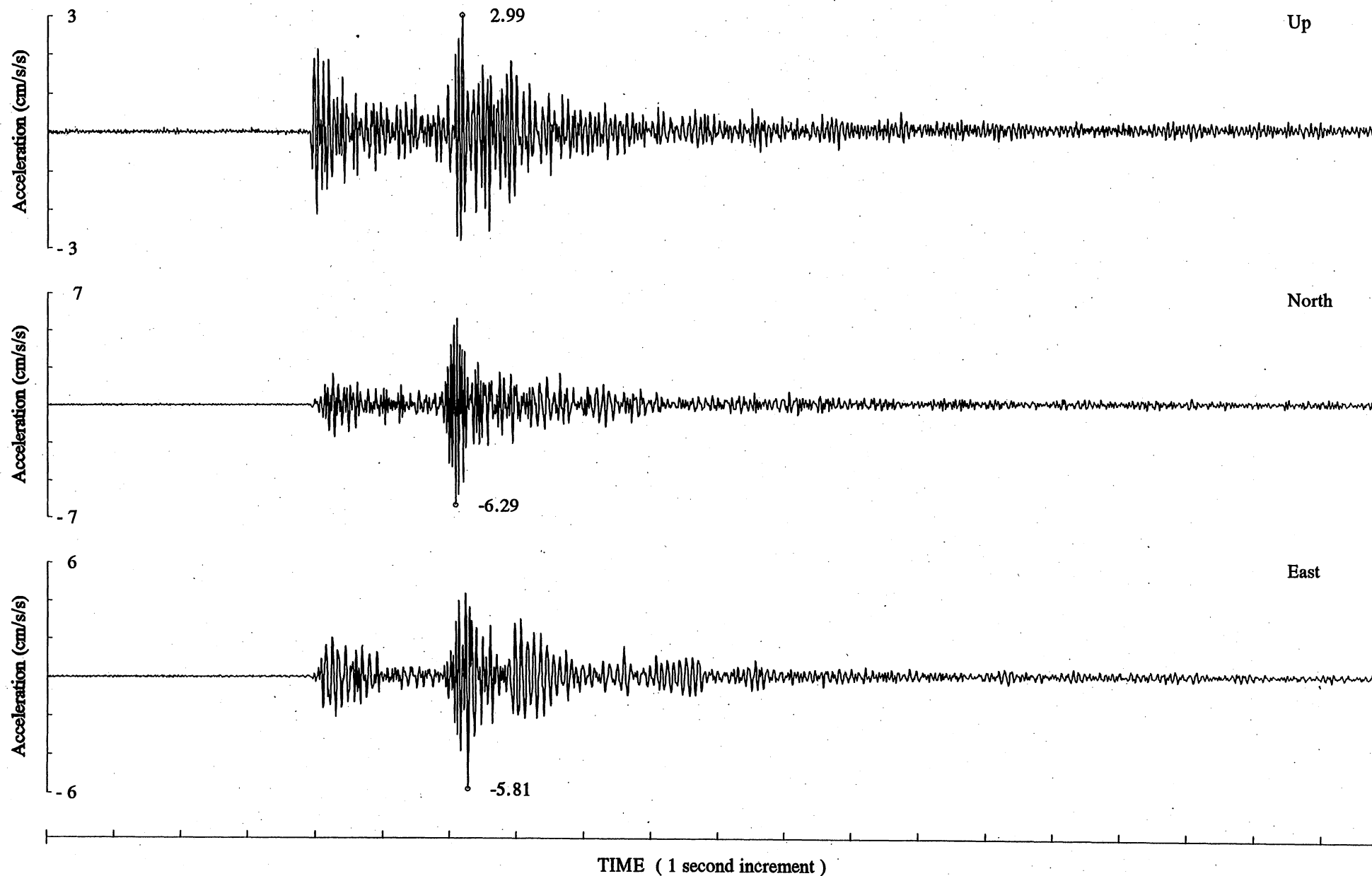
Start Time: 1992-05-15 1230 24.145

Total number=3970

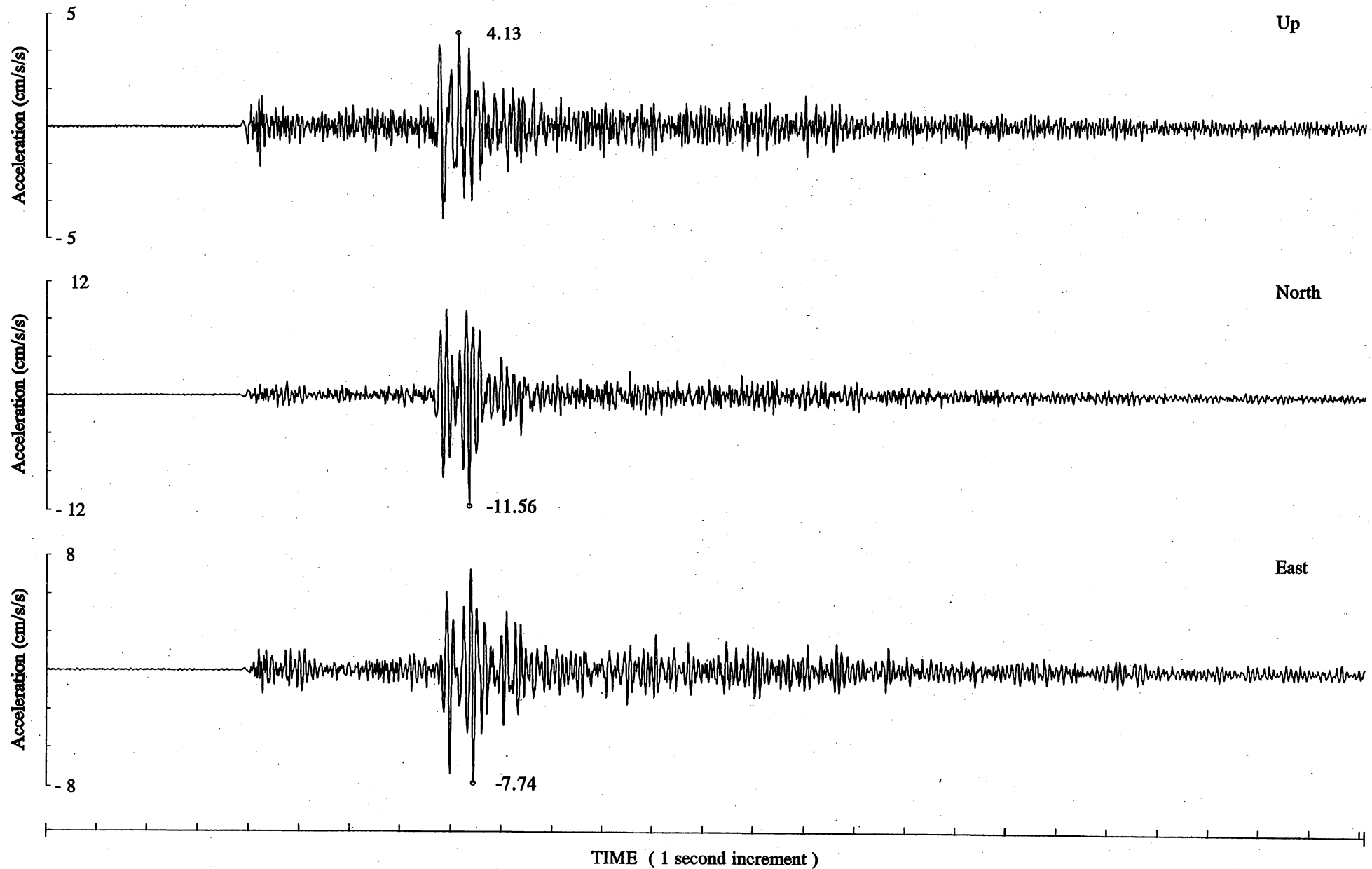
Sample Rate=200

ML=2.5

Epicentre: 39:37N,118:16E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E) Site: Ground/Rock Instrument: Kelunj#87 Data: Acceleration
Event: 05151429.092 Start Time: 1992-05-15 1429 12.900 Total number=5219 Sample Rate=200
ML=3.7 Epicentre: 39:48N,118:43E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05161943.092

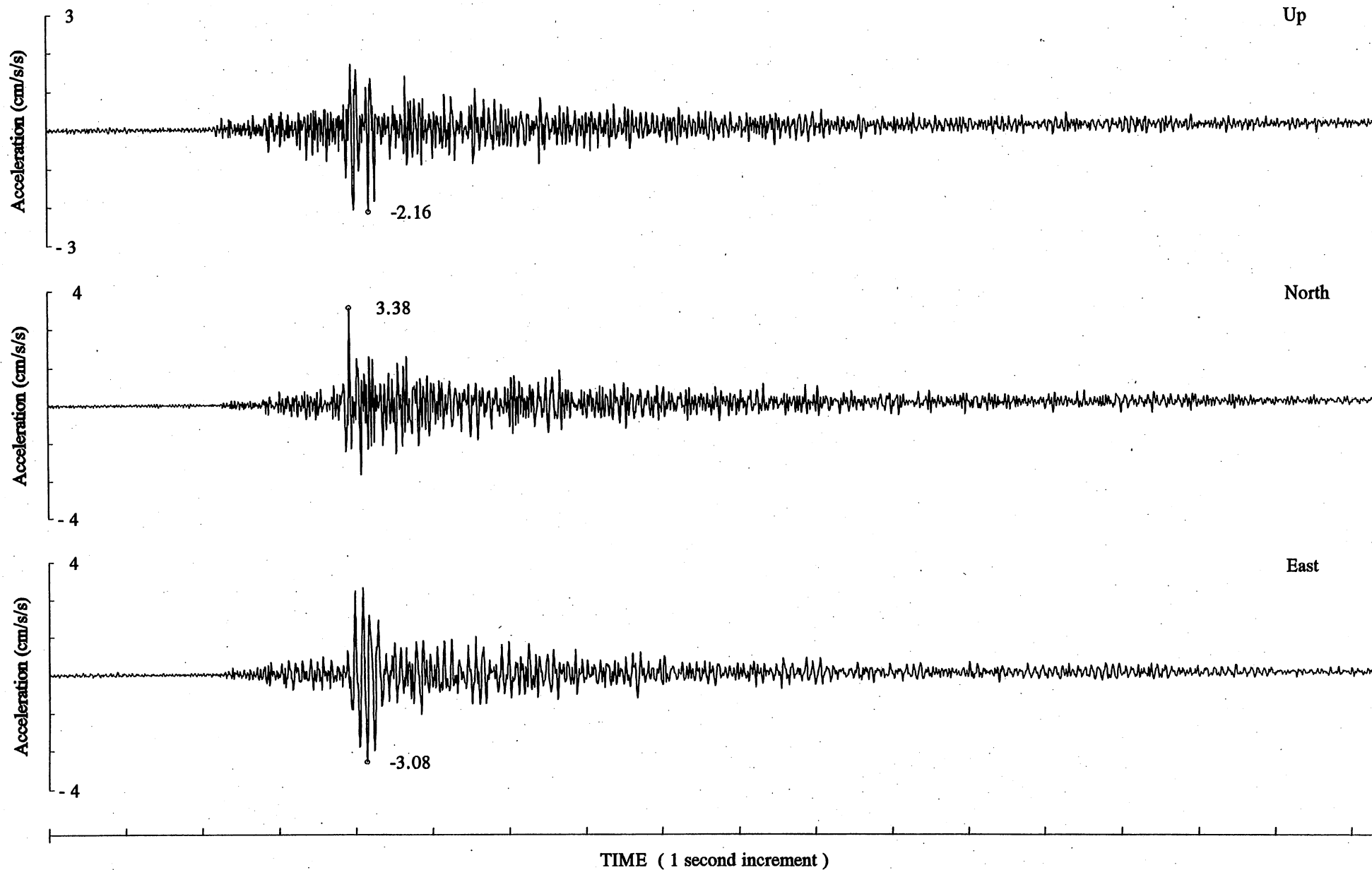
Start Time: 1992-05-16 1943 37.000

Total number=3467

Sample Rate=200

ML=2.2

Epicentre: 39:50N,118:26E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05191321.092

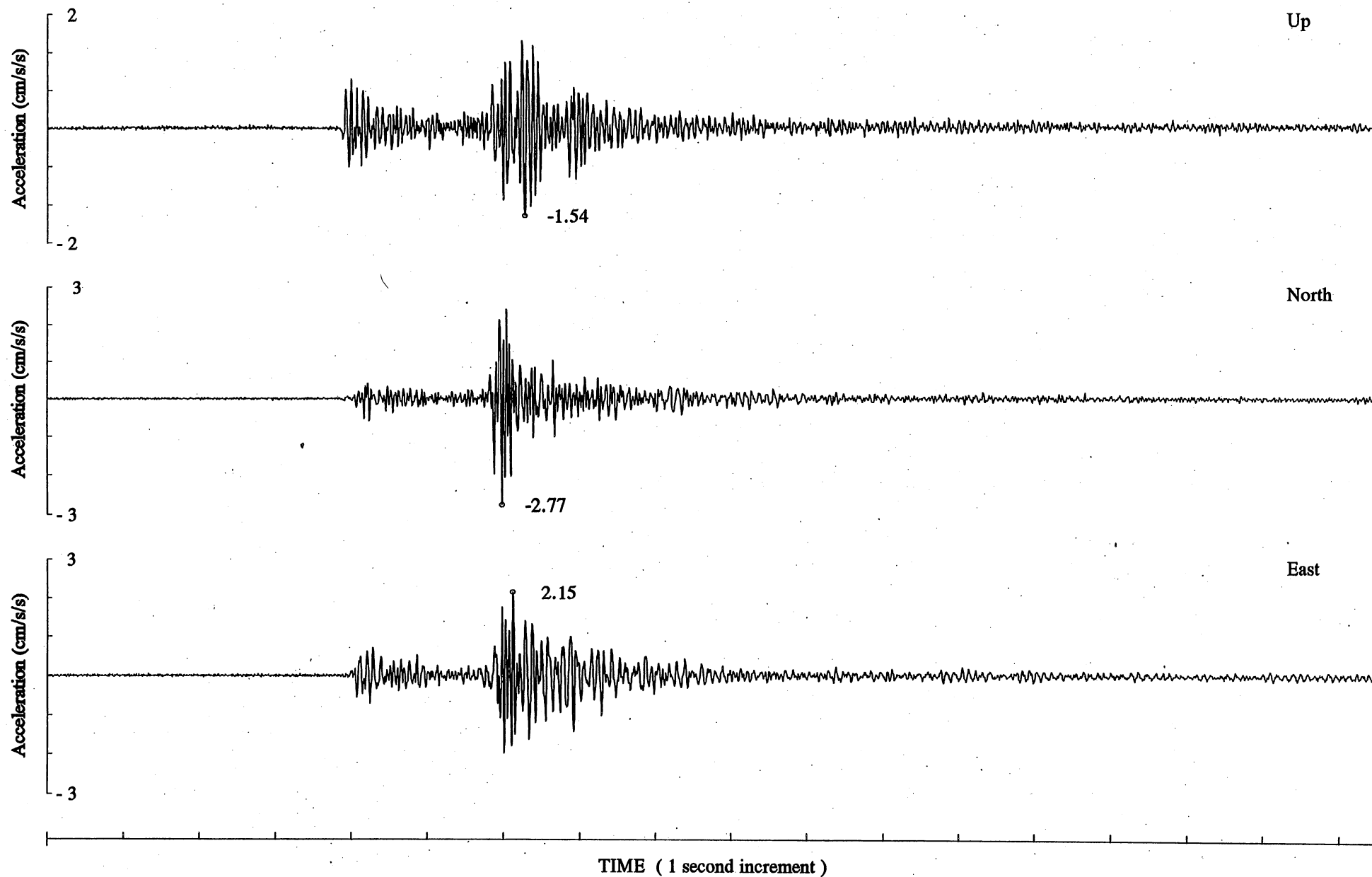
Start Time: 1992-05-19 1321 01.480

Total number=3503

Sample Rate=200

ML=2.2

Epicentre: 39:45N,118:21E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 06182357.092

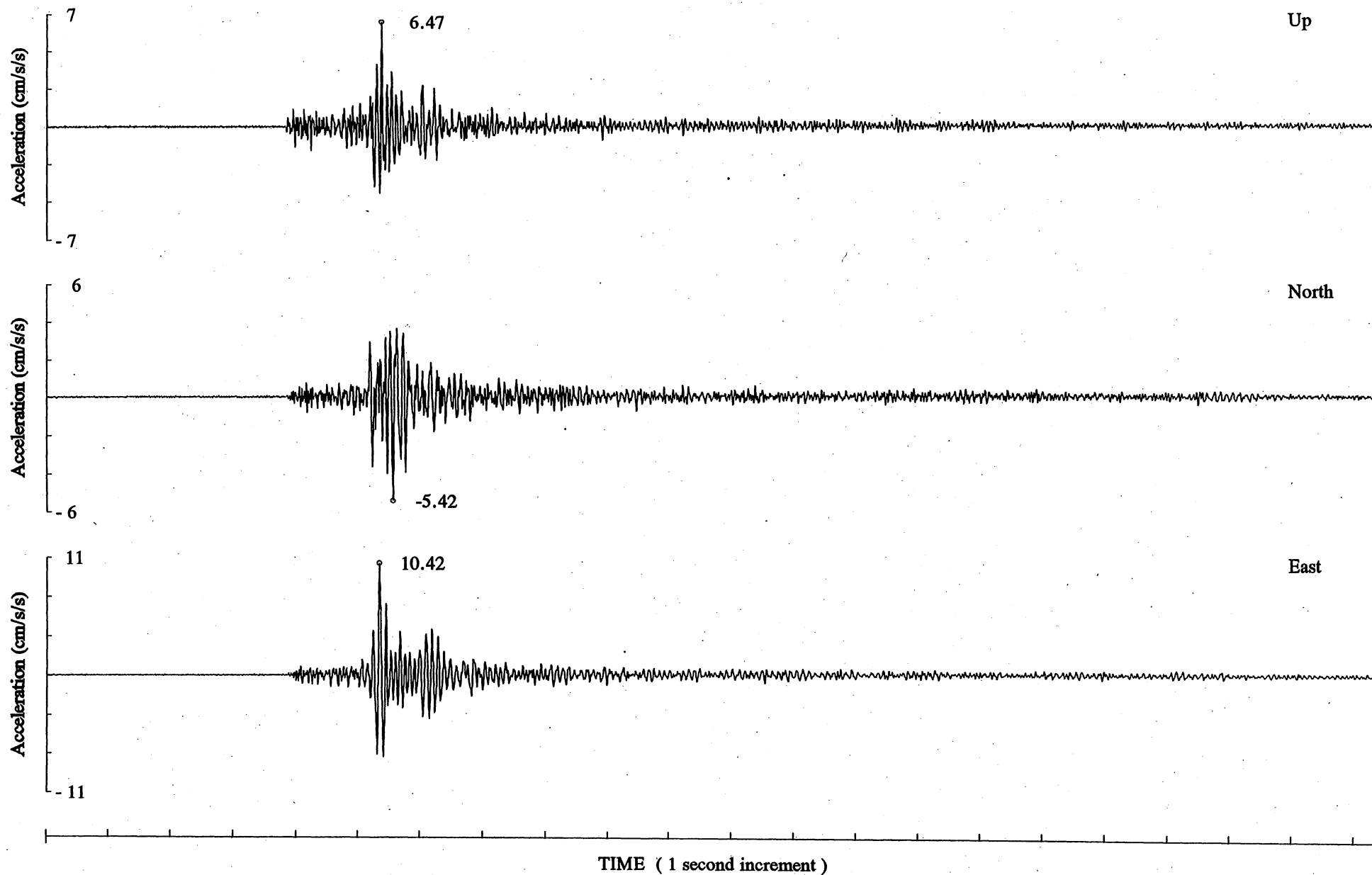
Start Time: 1992-06-18 2357 25.925

Total number=4283

Sample Rate=200

ML=2.4

Epicentre: 39:44N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 06251432.092

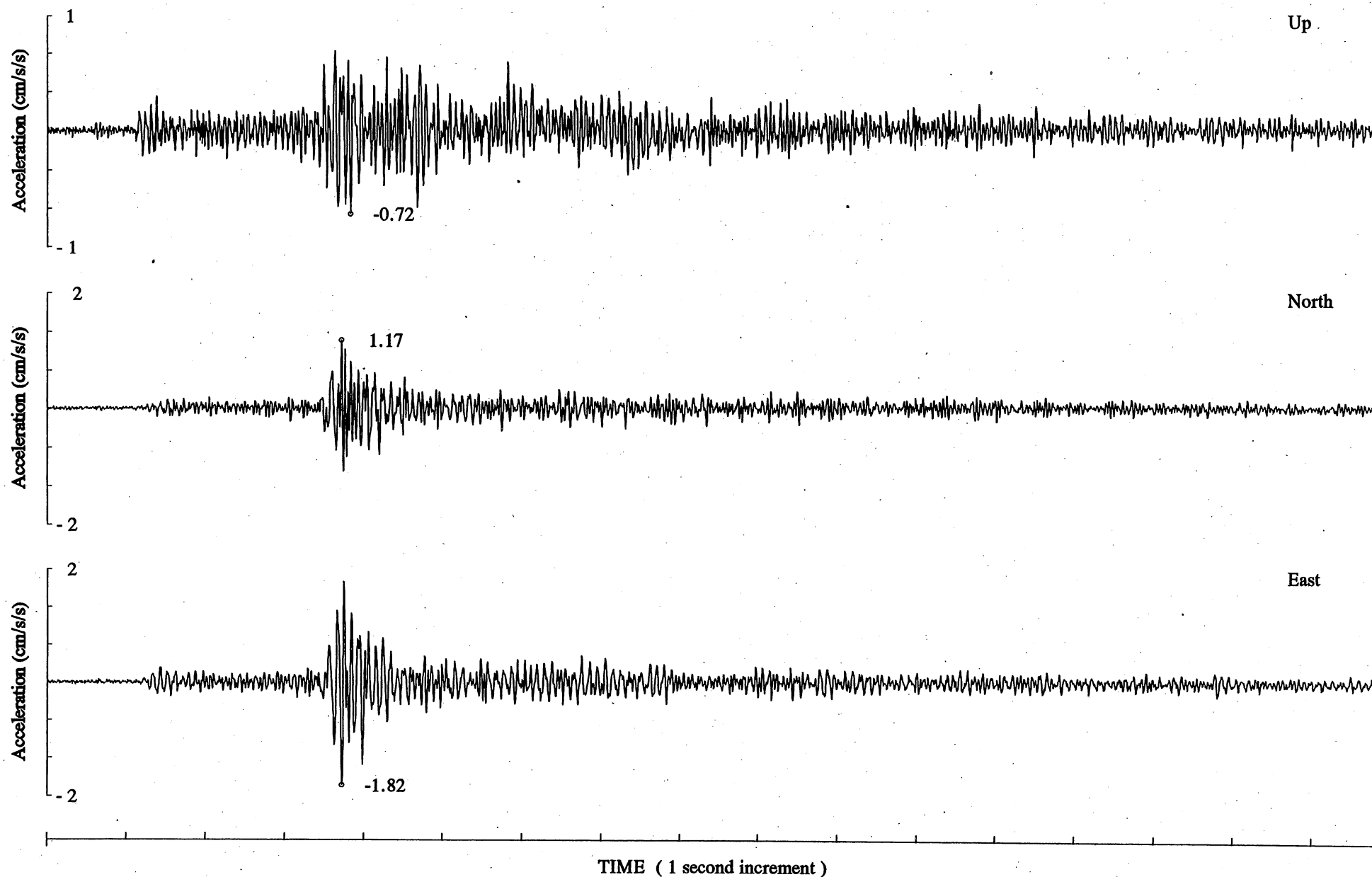
Start Time: 1992-06-25 1432 15.440

Total number=3369

Sample Rate=200

ML=2.1

Epicentre: 39:40N,118:15E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07071818.092

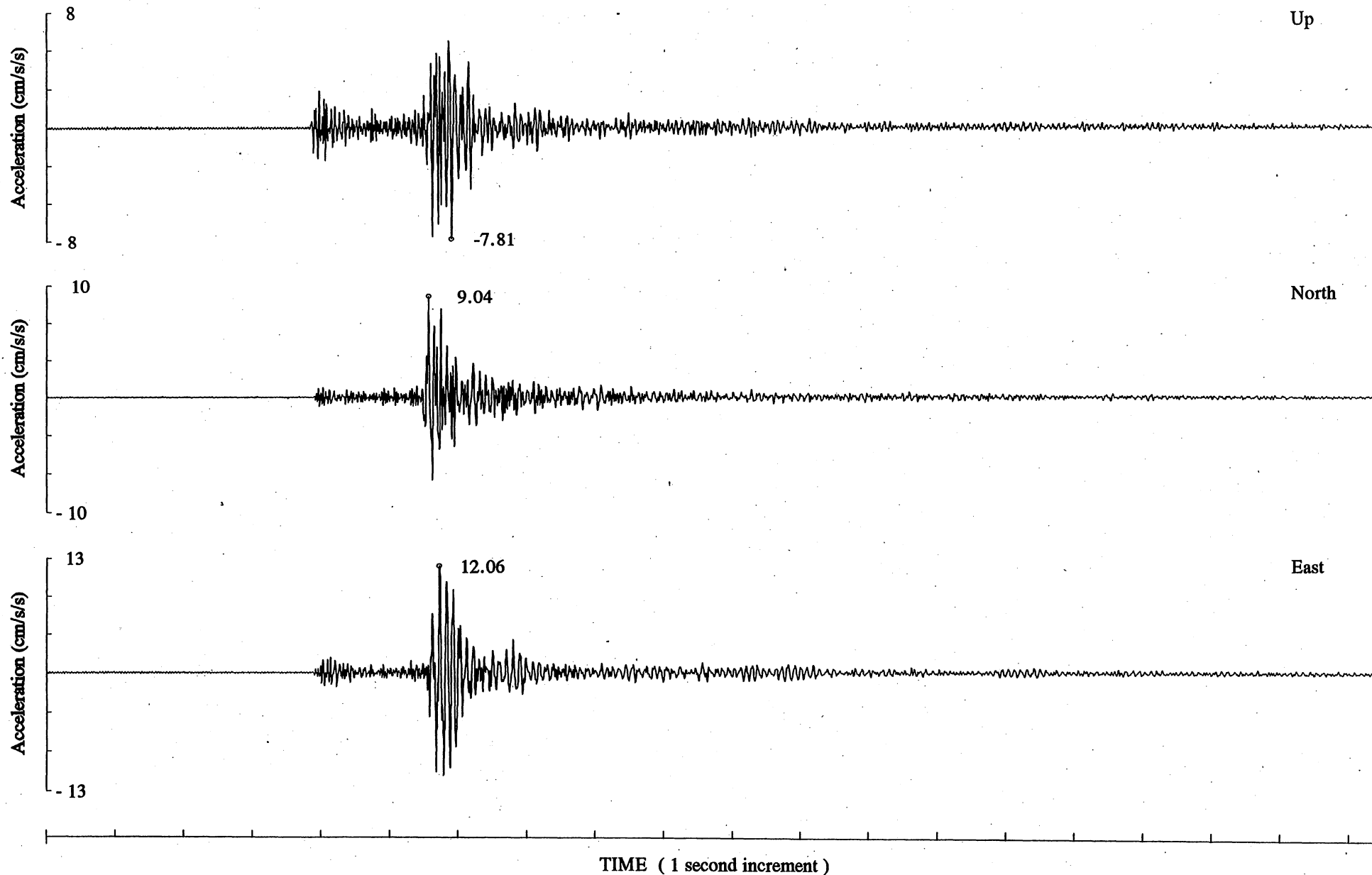
Start Time: 1992-07-07 1818 32.095

Total number=3900

Sample Rate=200

ML=2.5

Epicentre: 39:39N,118:21E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07270755.092

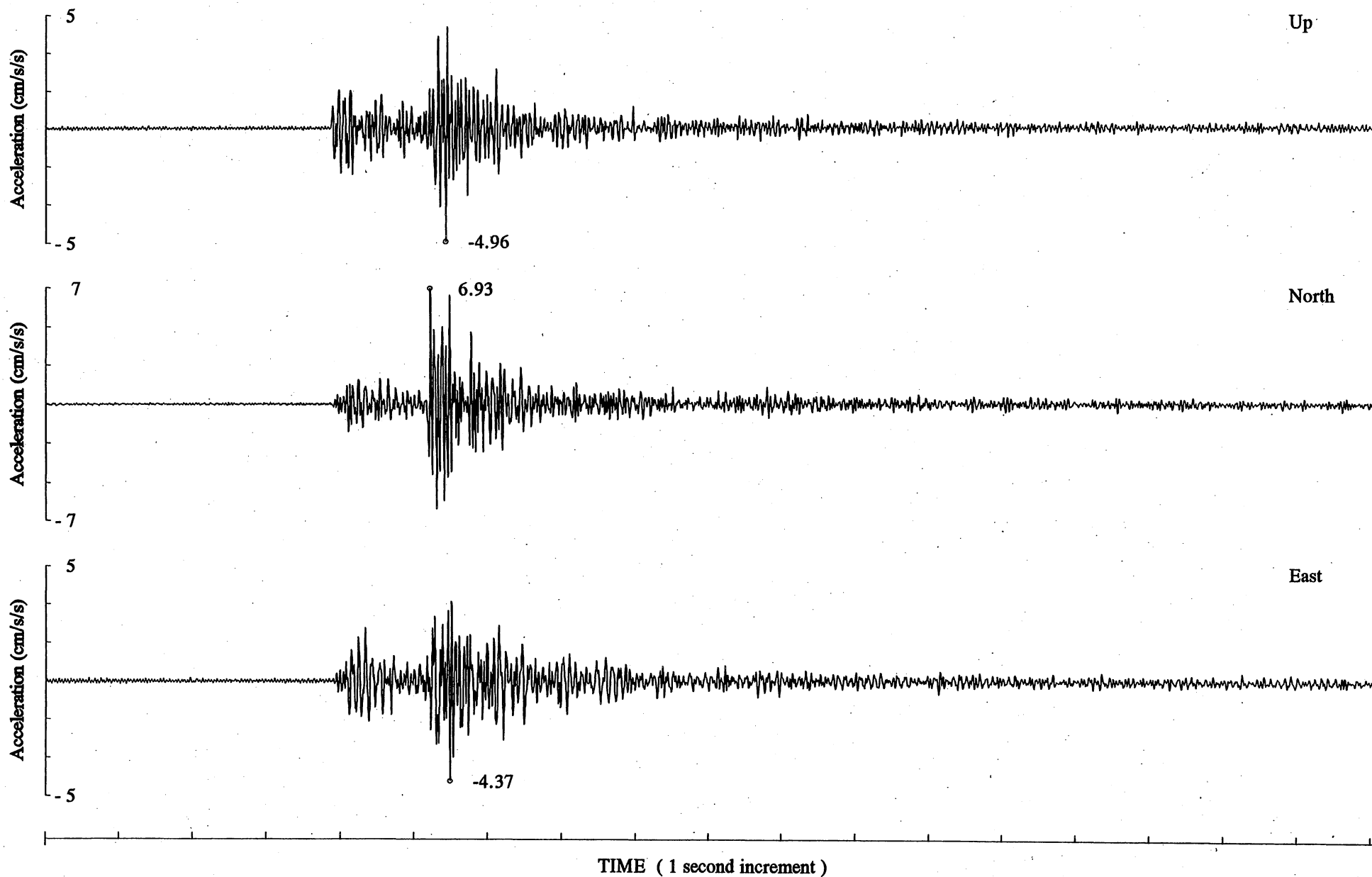
Start Time: 1992-07-27 0755 11.865

Total number=3626

Sample Rate=200

ML=2.0

Epicentre: 39:46N,118:24E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 08250010.092

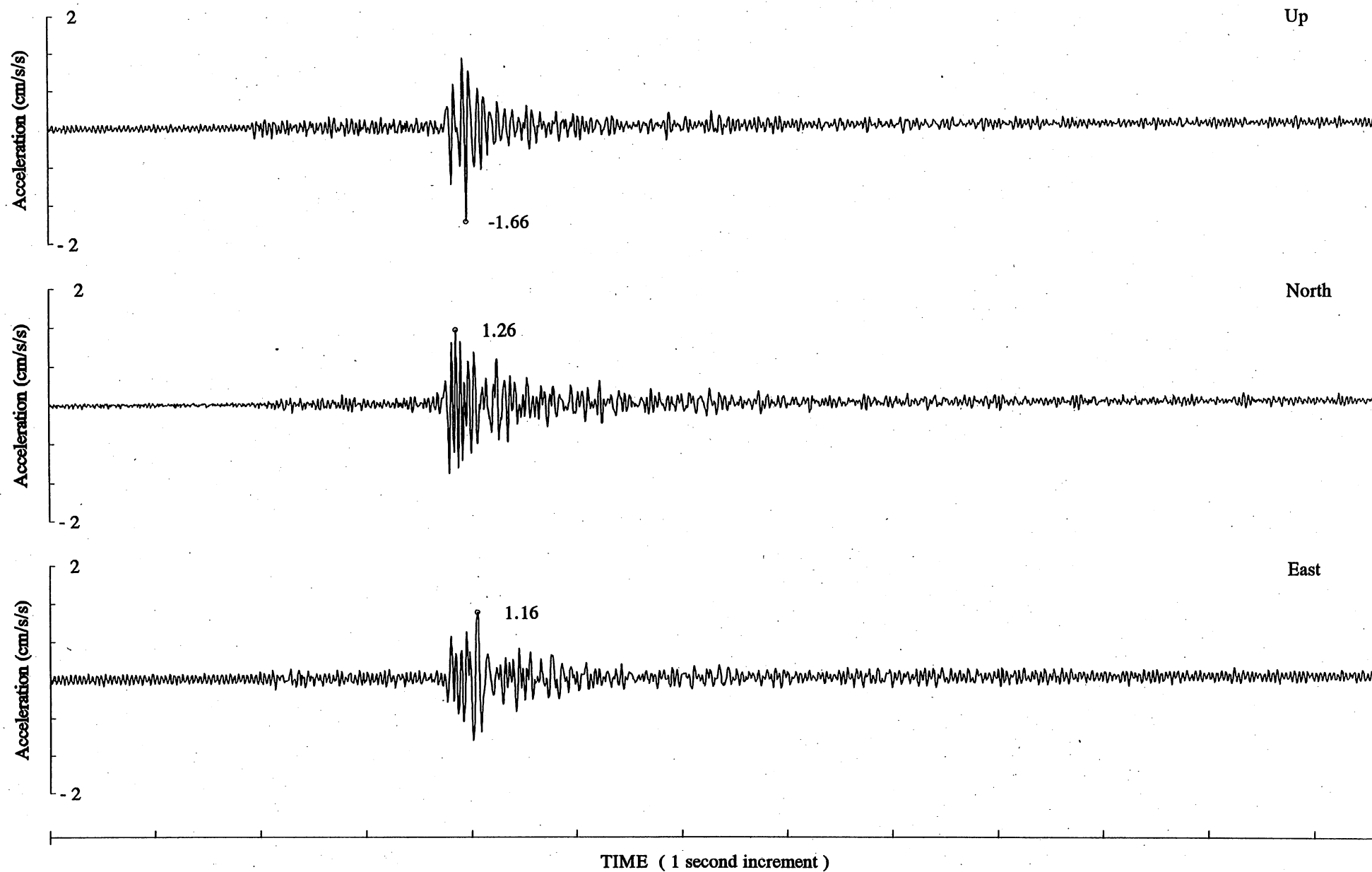
Start Time: 1992-08-25 0010 53.380

Total number=2523

Sample Rate=200

ML=1.6

Epicentre: 39:40N,118:19E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10102222.092

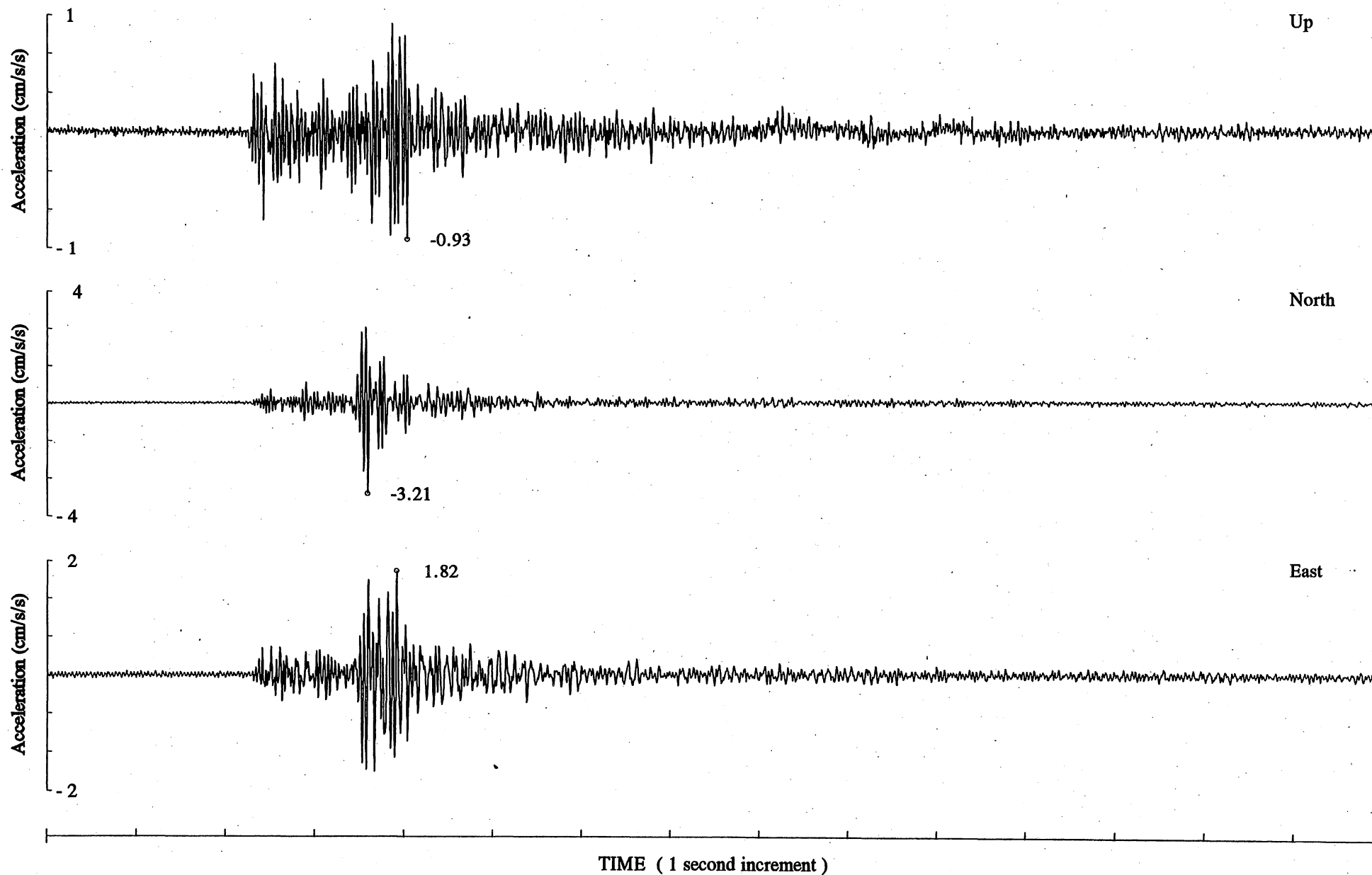
Start Time: 1992-10-10 2222 27.020

Total number=2995

Sample Rate=200

ML=2.0

Epicentre: 39:49N,118:24E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10141753.092

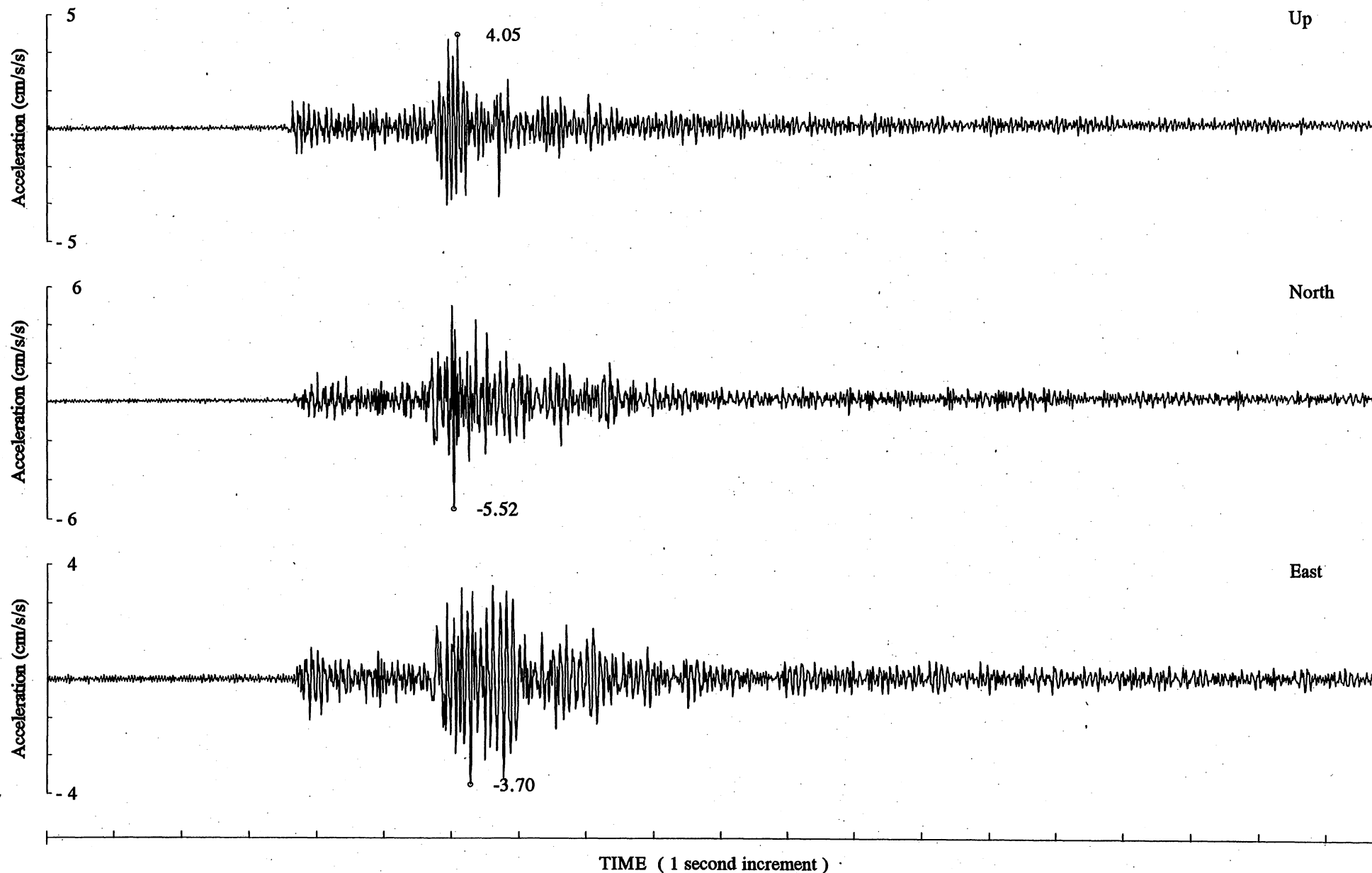
Start Time: 1992-10-14 1753 32.180

Total number=3963

Sample Rate=200

ML=2.7

Epicentre: 39:37N,118:16E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10150431.092

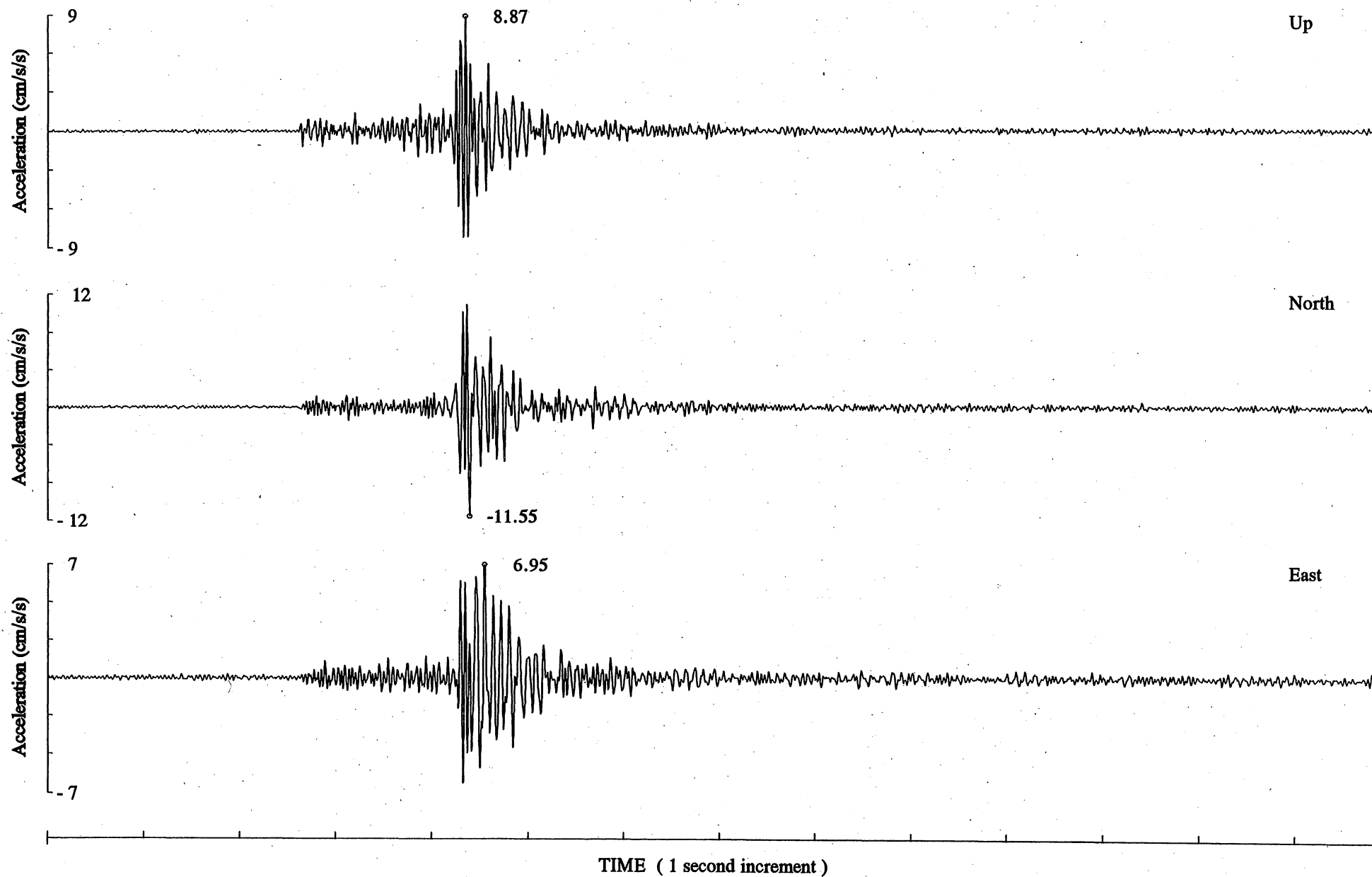
Start Time: 1992-10-15 0431 30.115

Total number=2776

Sample Rate=200

ML=2.0

Epicentre: 39:46N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10221728.092

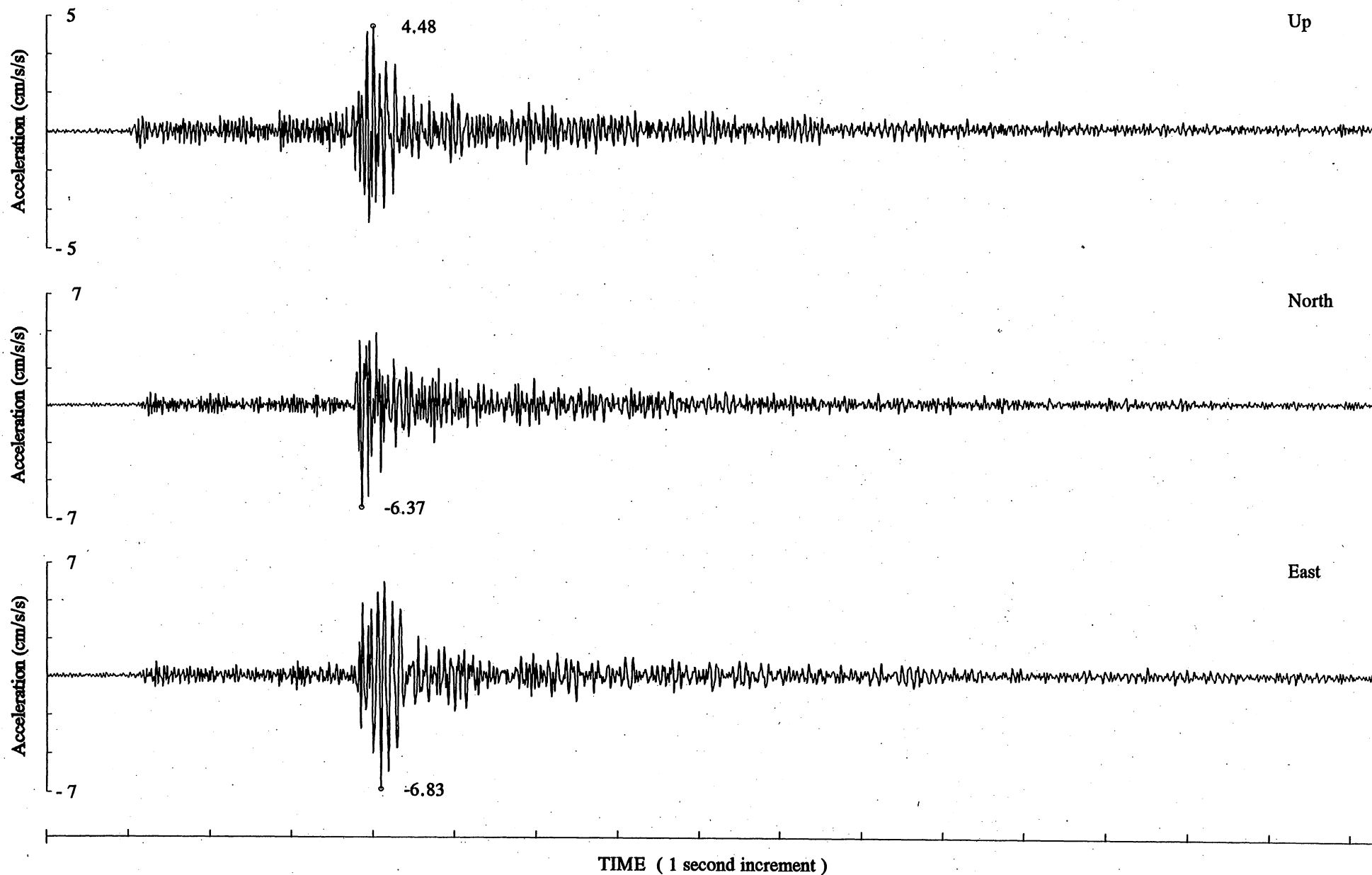
Start Time: 1992-10-22 1728 08.875

Total number=3269

Sample Rate=200

ML=2.7

Epicentre: 39:45N,118:18E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10250727.092

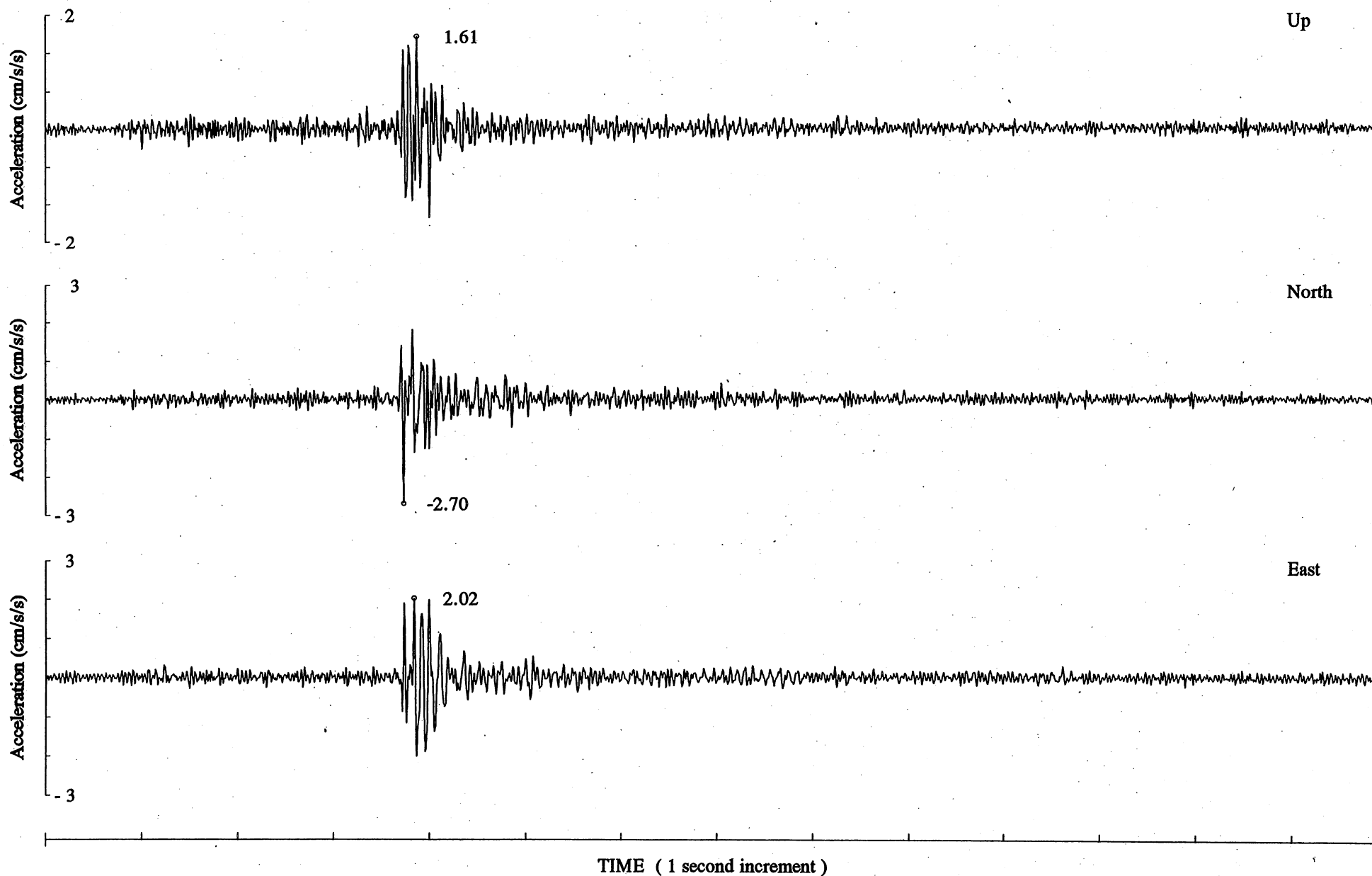
Start Time: 1992-10-25 0727 04.820

Total number=2782

Sample Rate=200

ML=1.8

Epicentre: 39:46N,118:19E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11051949.092

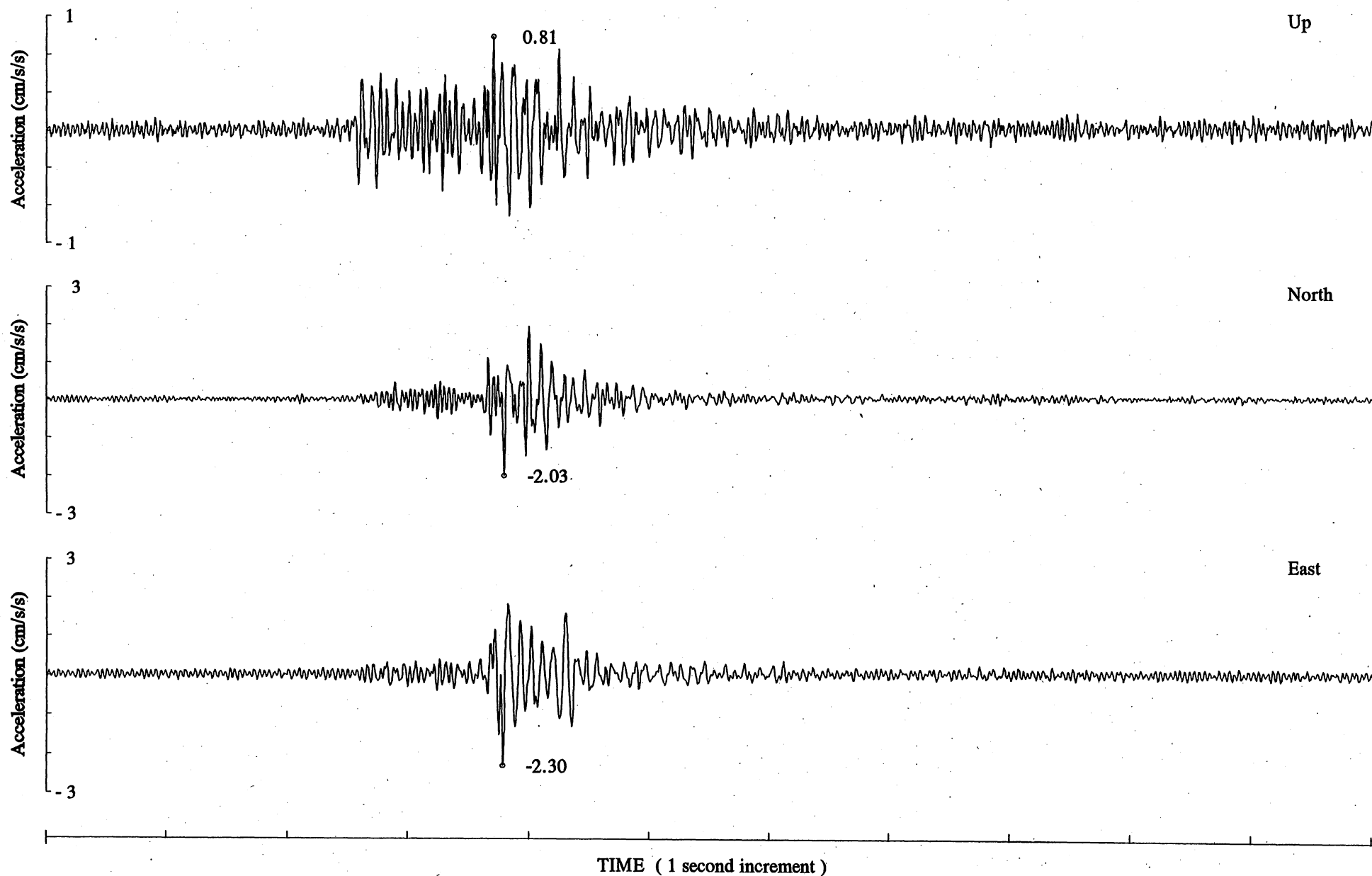
Start Time: 1992-11-05 1947 12.935

Total number=2212

Sample Rate=200

ML=1.6

Epicentre: 39:46N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11090444.092

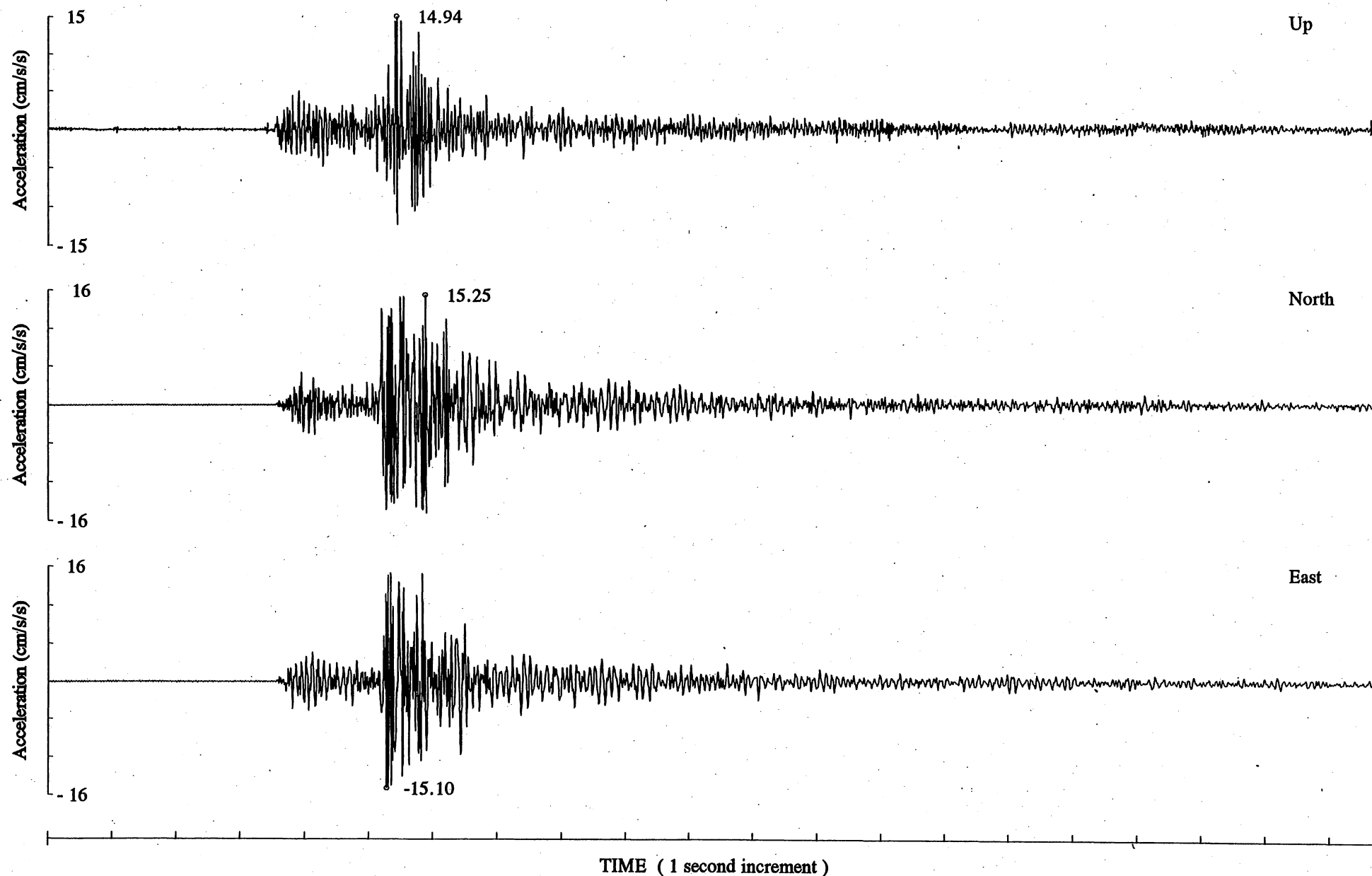
Start Time: 1992-11-09 0444 36.210

Total number=4157

Sample Rate=200

ML=3.3

Epicentre: 39:42N,118:17E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11142021.092

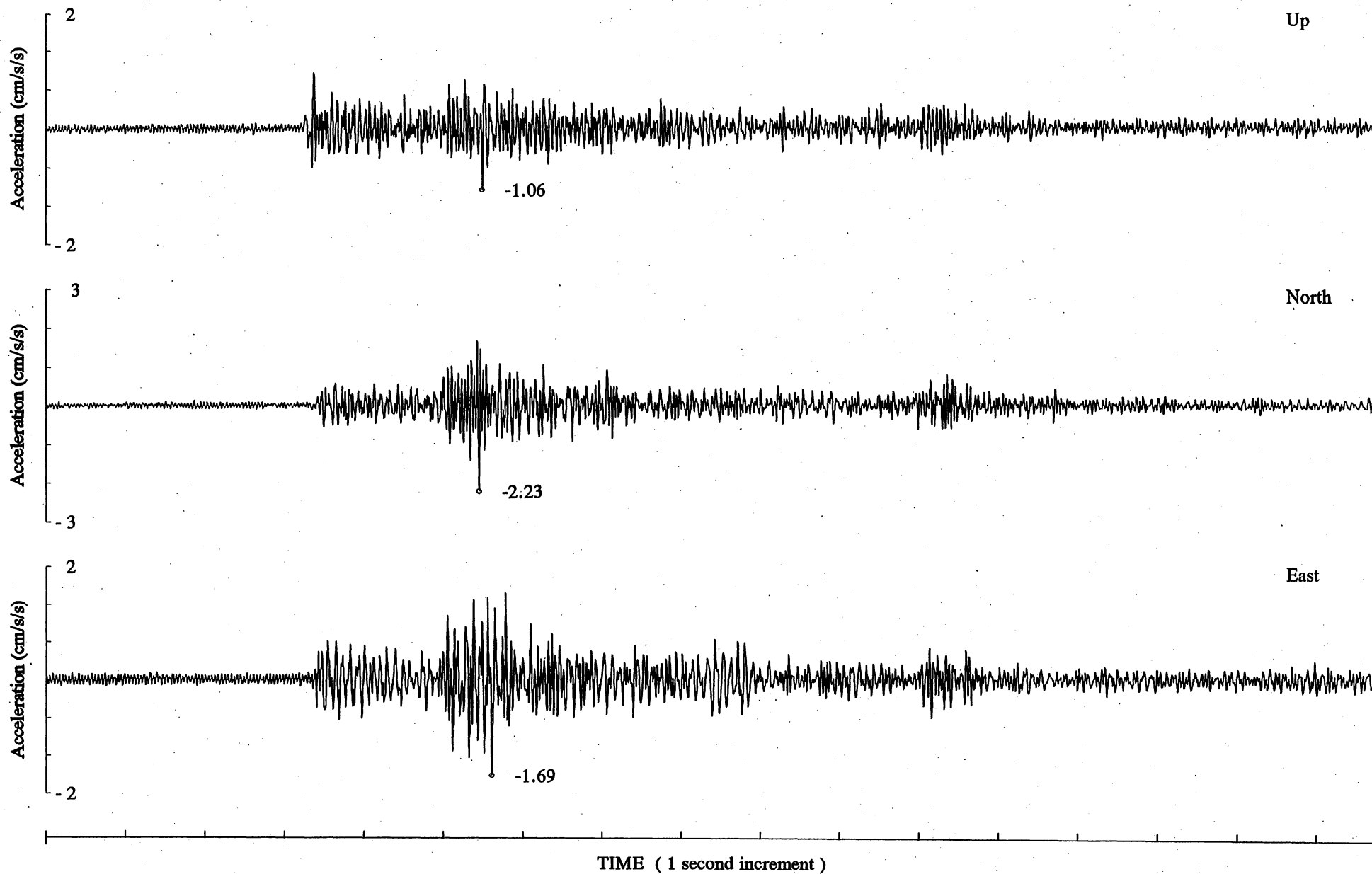
Start Time: 1992-11-14 2021 07.975

Total number=3354

Sample Rate=200

ML=2.2

Epicentre: 39:43N,118:19E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11171833.092

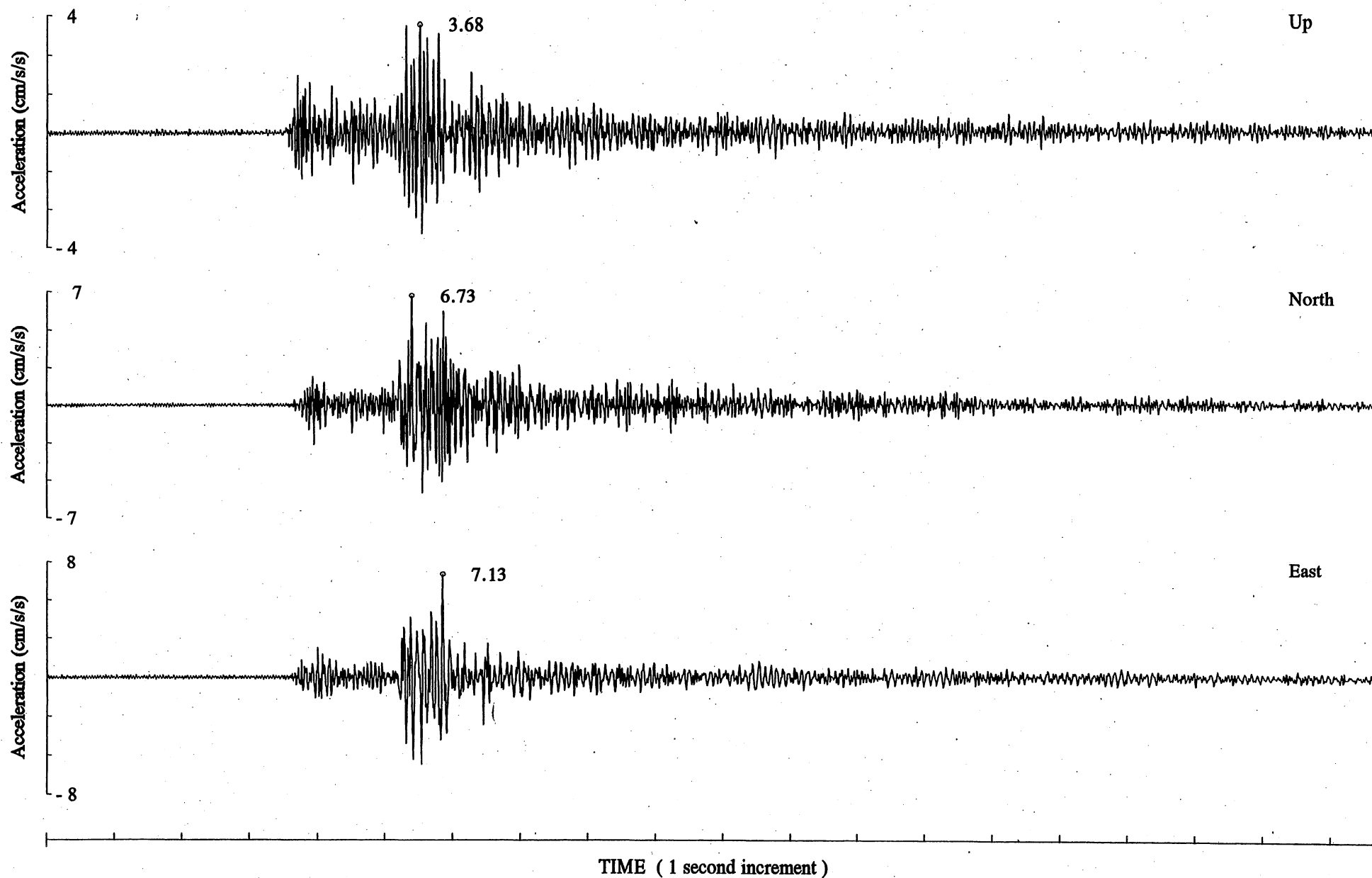
Start Time: 1992-11-17 1833 29.105

Total number=3946

Sample Rate=200

ML=2.8

Epicentre: 39:37N,118:18E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11190048.092

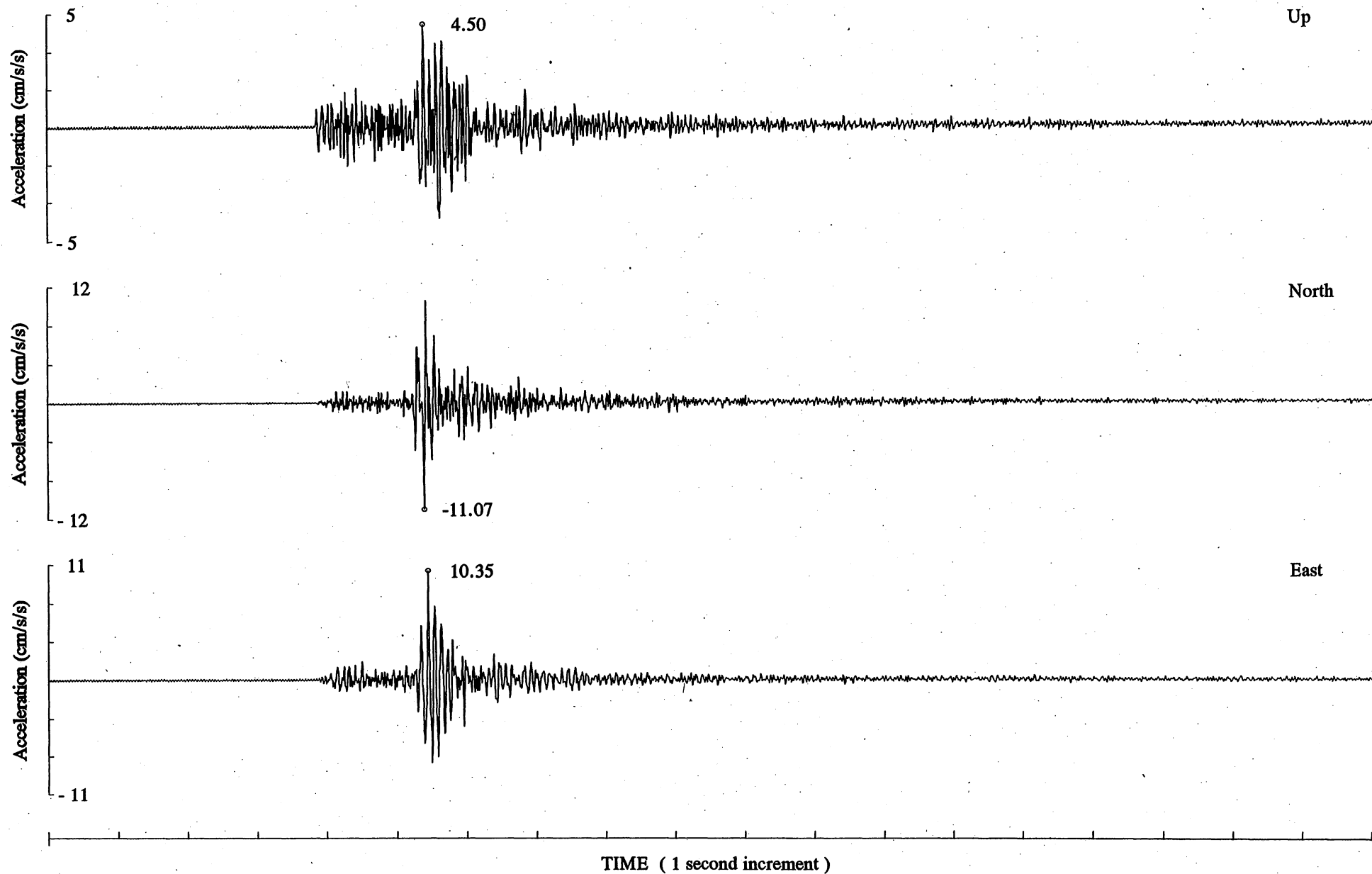
Start Time: 1992-11-19 0048 55.075

Total number=3827

Sample Rate=200

ML=2.4

Epicentre: 39:46N,118:22E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11211645.092

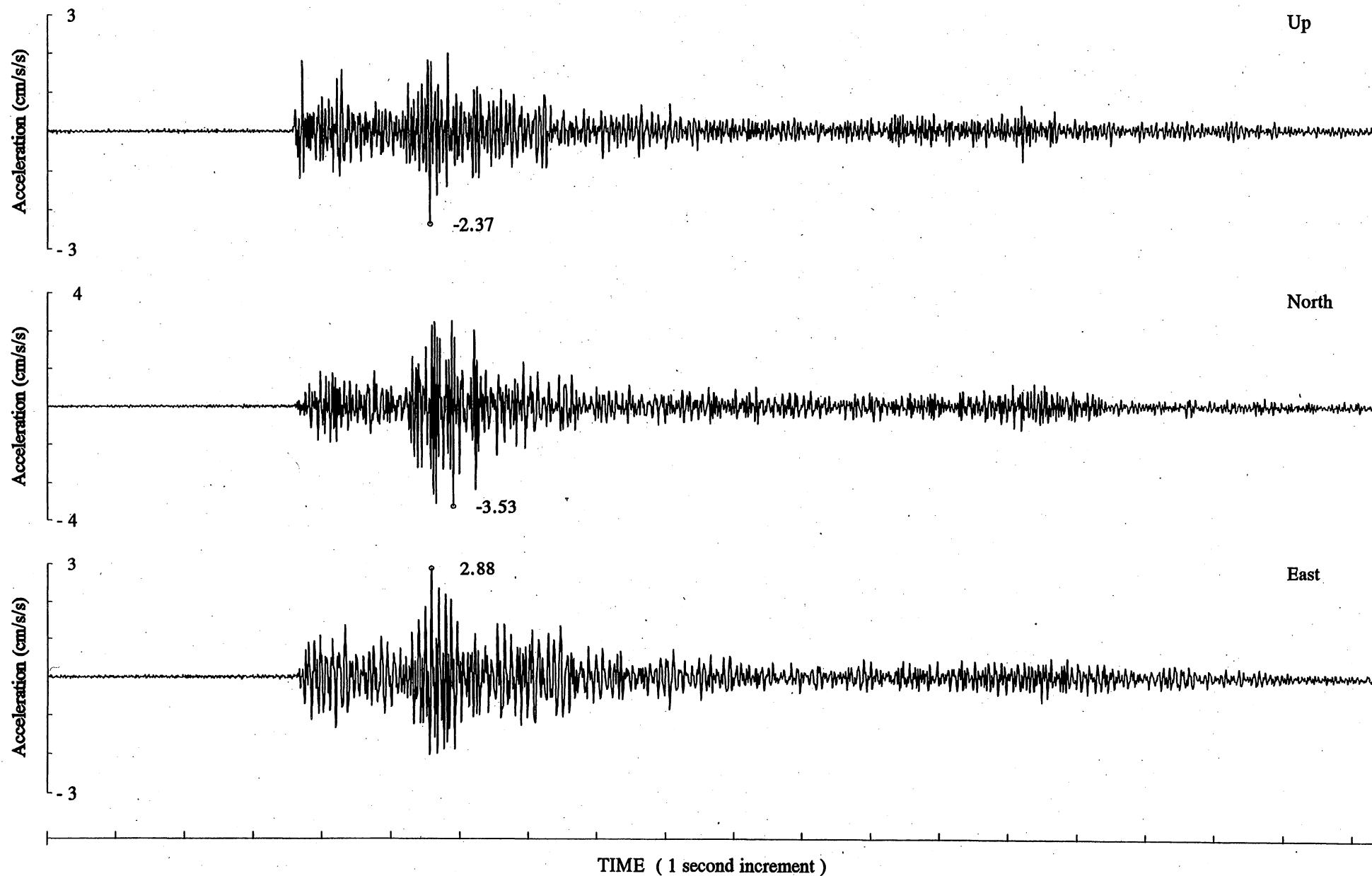
Start Time: 1992-11-21 1645 06.625

Total number=3874

Sample Rate=200

ML=2.3

Epicentre: 39:39N,118:19E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11291838.092

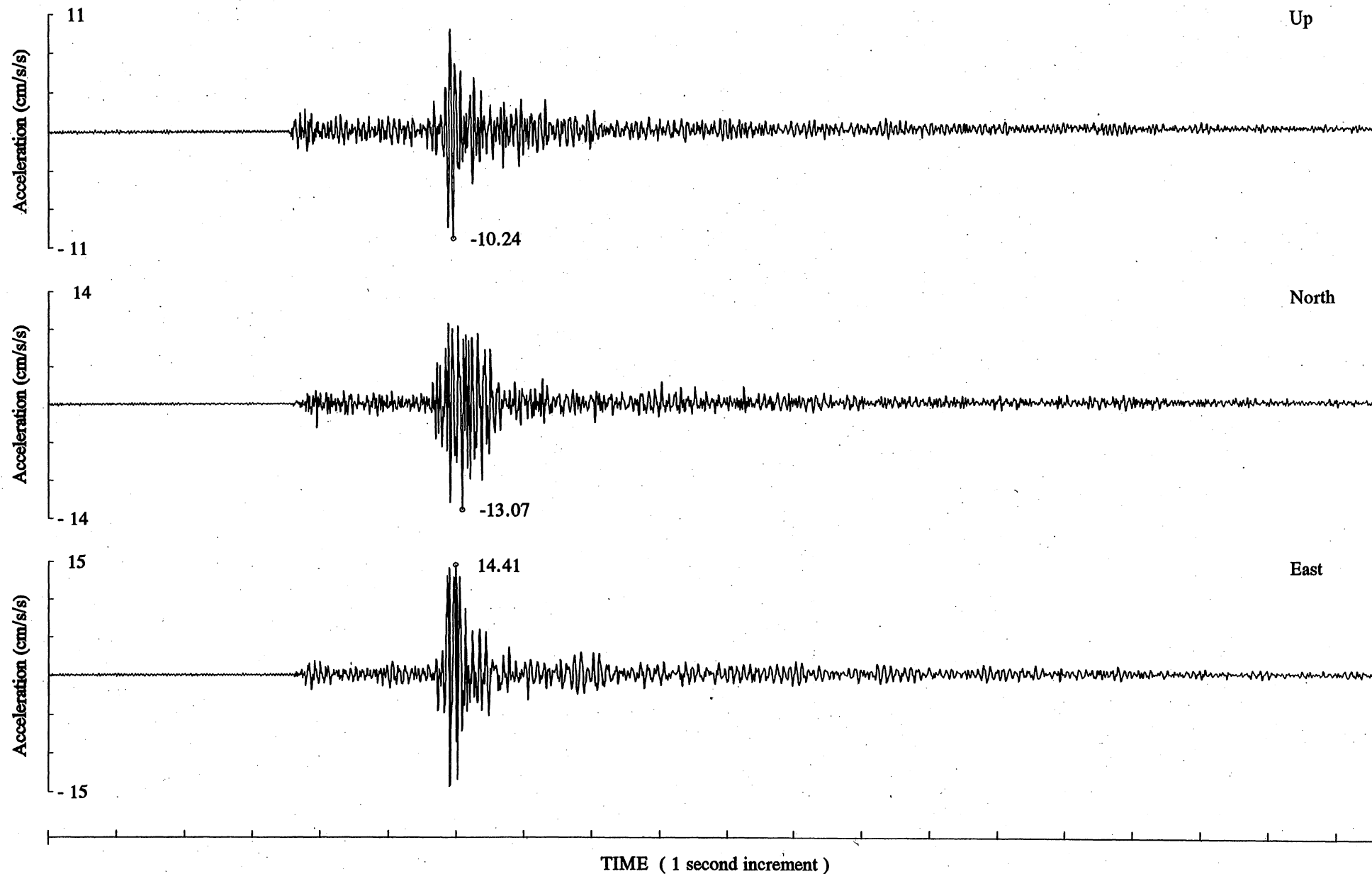
Start Time: 1992-11-29 1838 00.330

Total number=3933

Sample Rate=200

ML=3.0

Epicentre: 39:42N,118:16E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 12080248.092

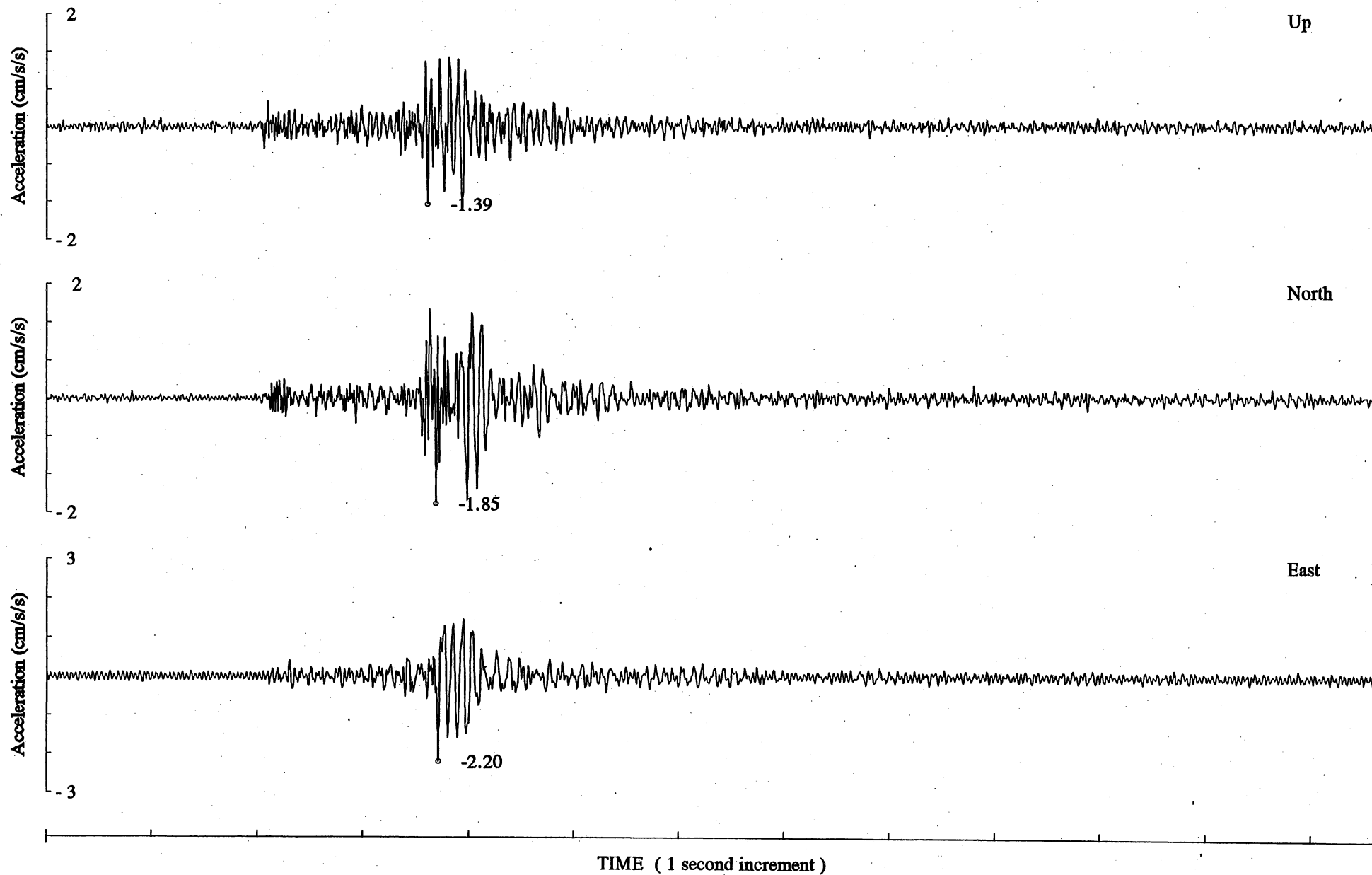
Start Time: 1992-12-08 0248 49.770

Total number=2527

Sample Rate=200

ML=1.8

Epicentre: 39:49N,118:30E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 12111220.092

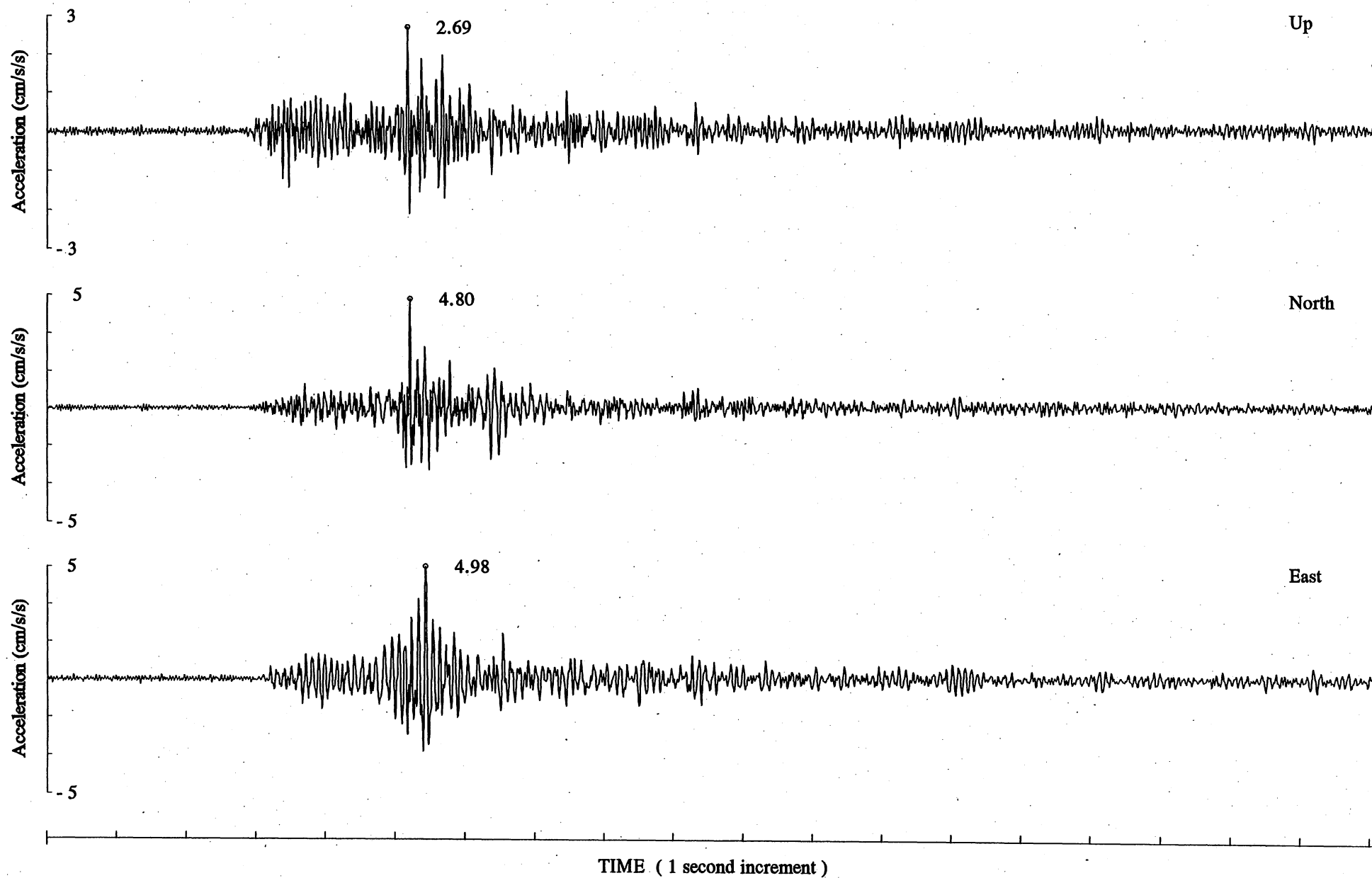
Start Time: 1992-12-11 1220 26.215

Total number=3829

Sample Rate=200

ML=2.4

Epicentre: 39:40N,118:22E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 12111712.092

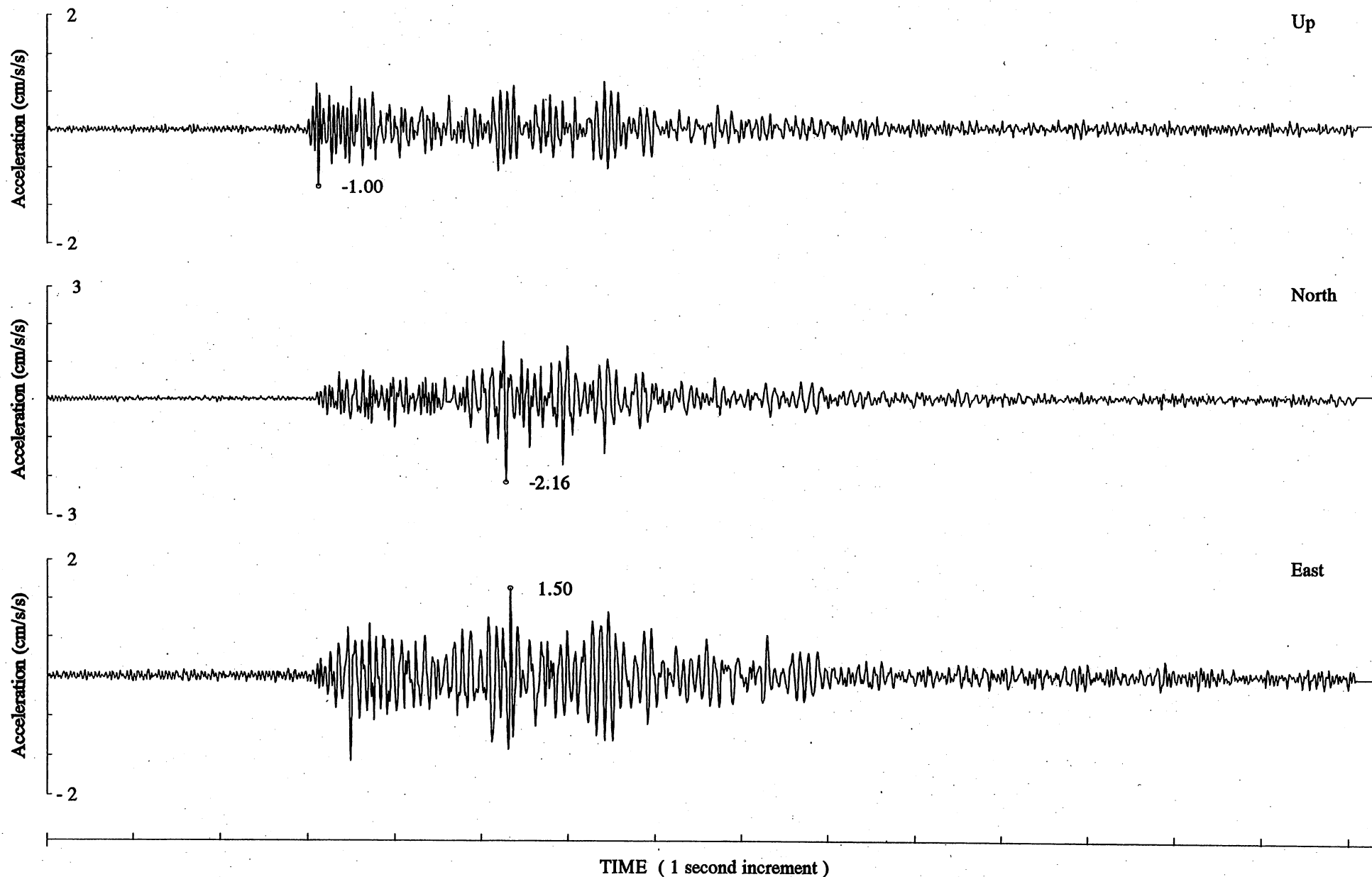
Start Time: 1992-12-11 1712 38.930

Total number=3077

Sample Rate=200

ML=2.4

Epicentre: 39:41N,118:21E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03222358.093

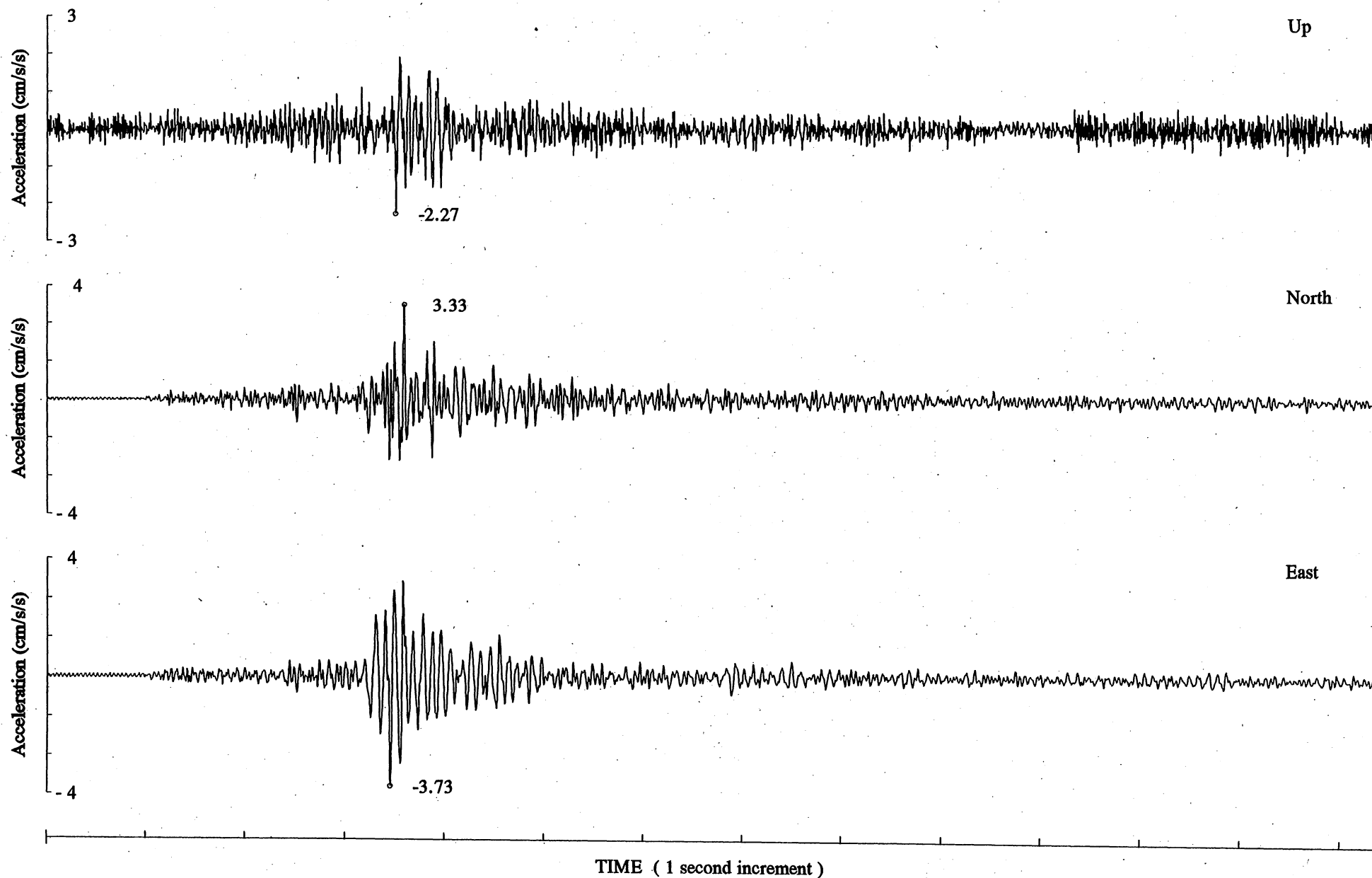
Start Time: 1993-03-22 2358 14.835

Total number=2673

Sample Rate=200

ML=2.2

Epicentre: 39:45N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03271559.093

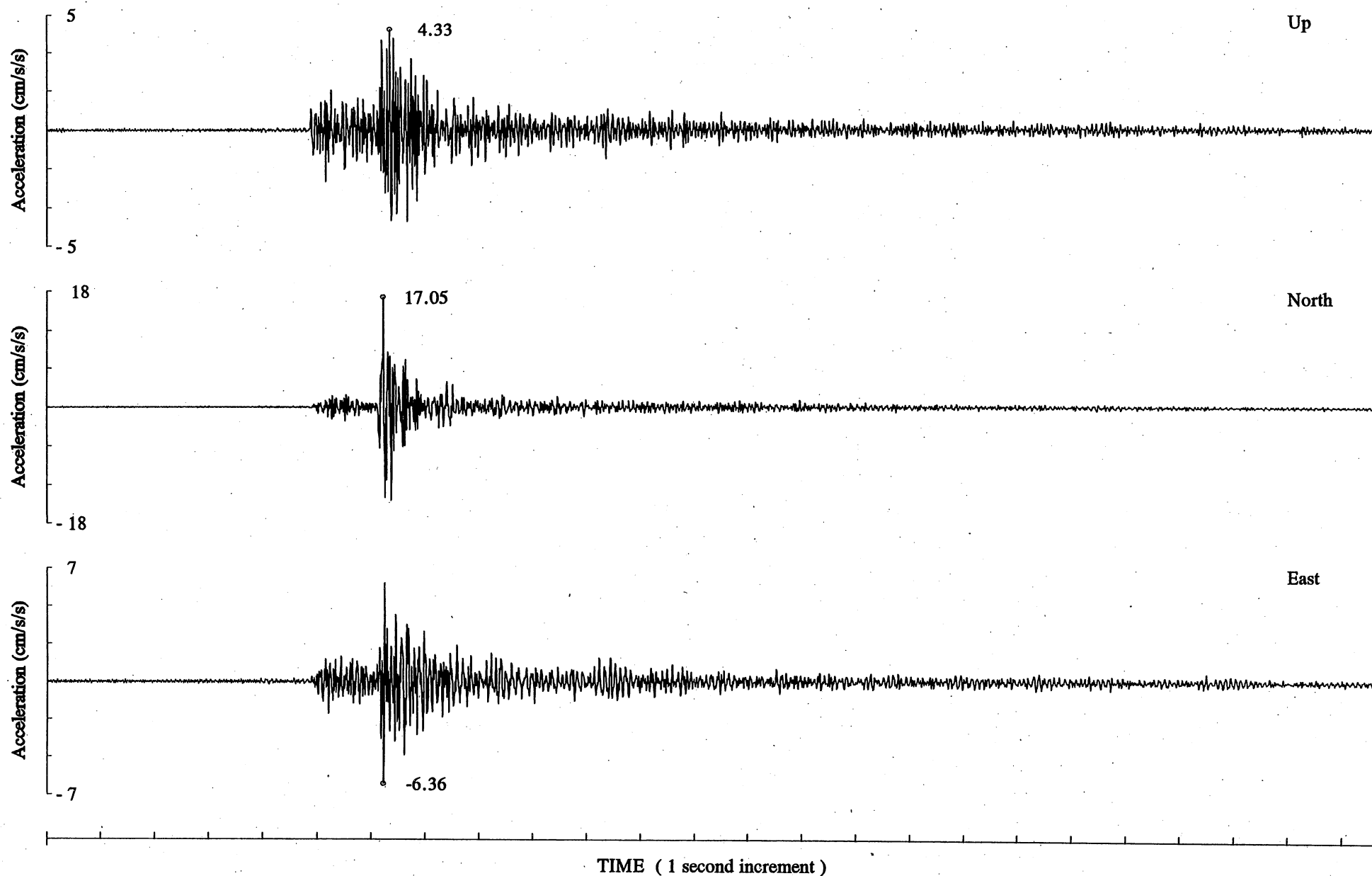
Start Time: 1993-03-27 1559 06.325

Total number=4934

Sample Rate=200

ML=2.6

Epicentre: 39:44N,118:24E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03280750.093

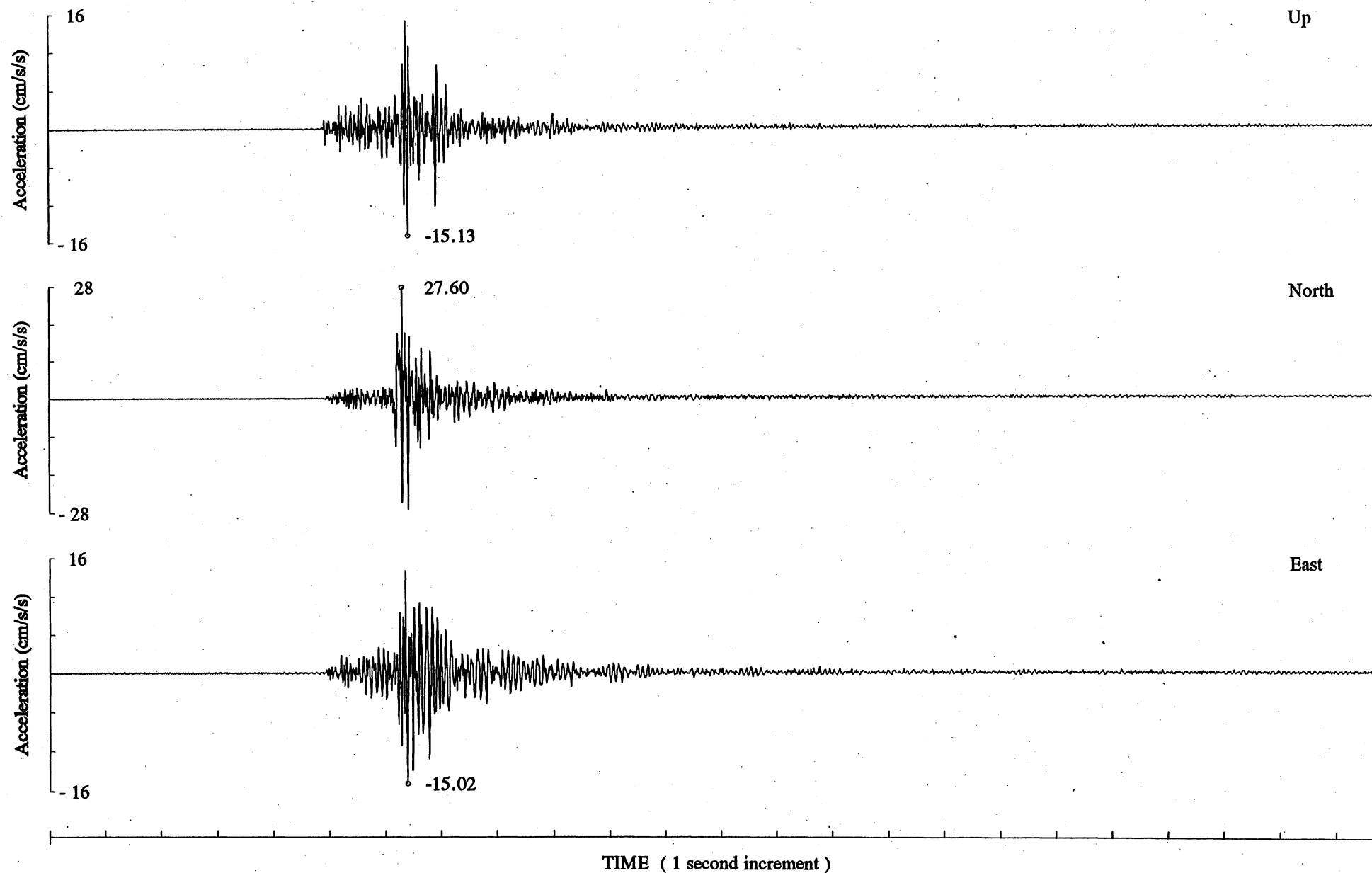
Start Time: 1993-03-28 0750 54.930

Total number=4760

Sample Rate=200

ML=2.7

Epicentre: 39:43N,118:29E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03300548.093

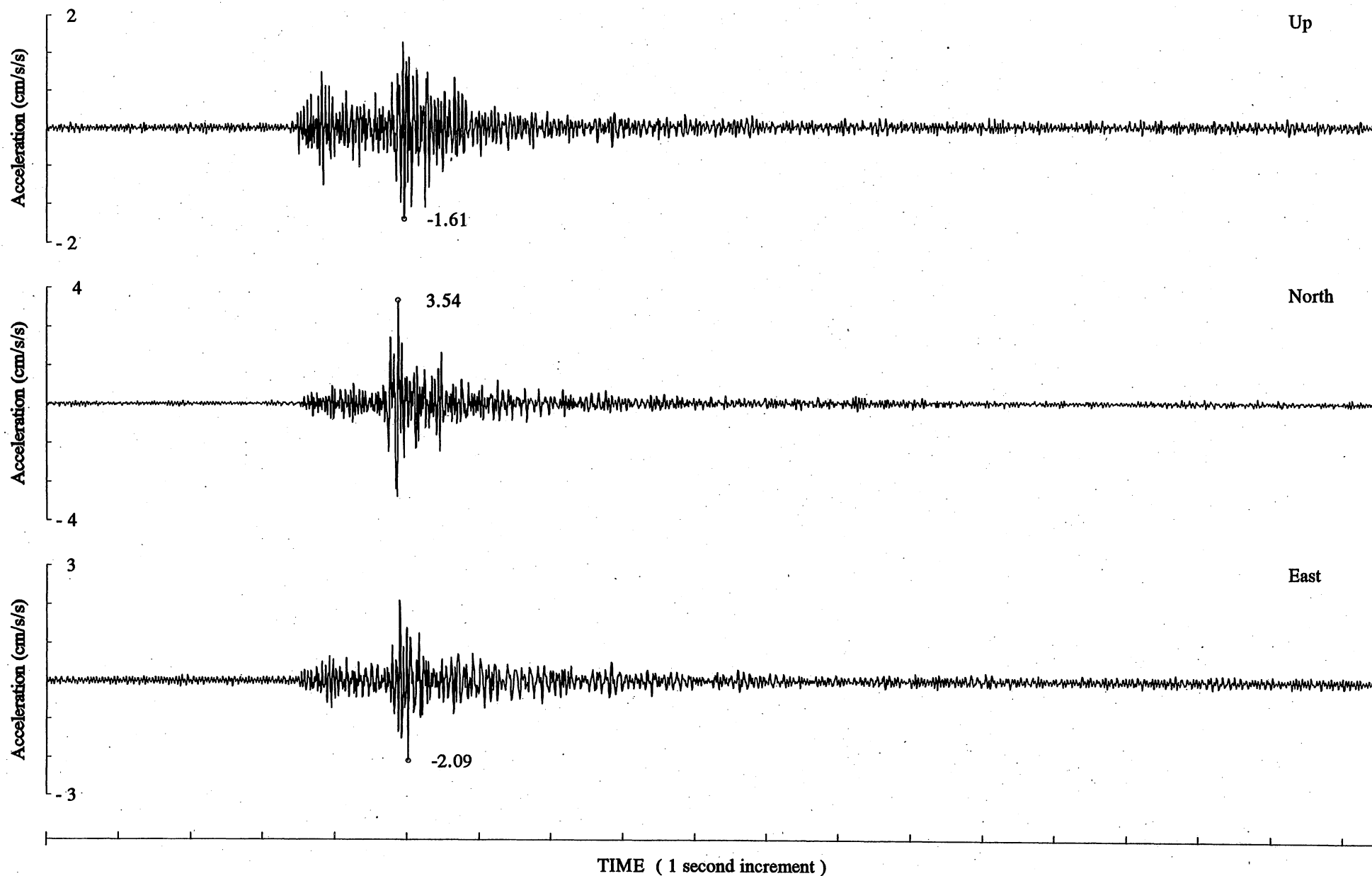
Start Time: 1993-03-30 0548 04.500

Total number=3699

Sample Rate=200

ML=1.7

Epicentre: 39:47N,118:29E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 03310908.093

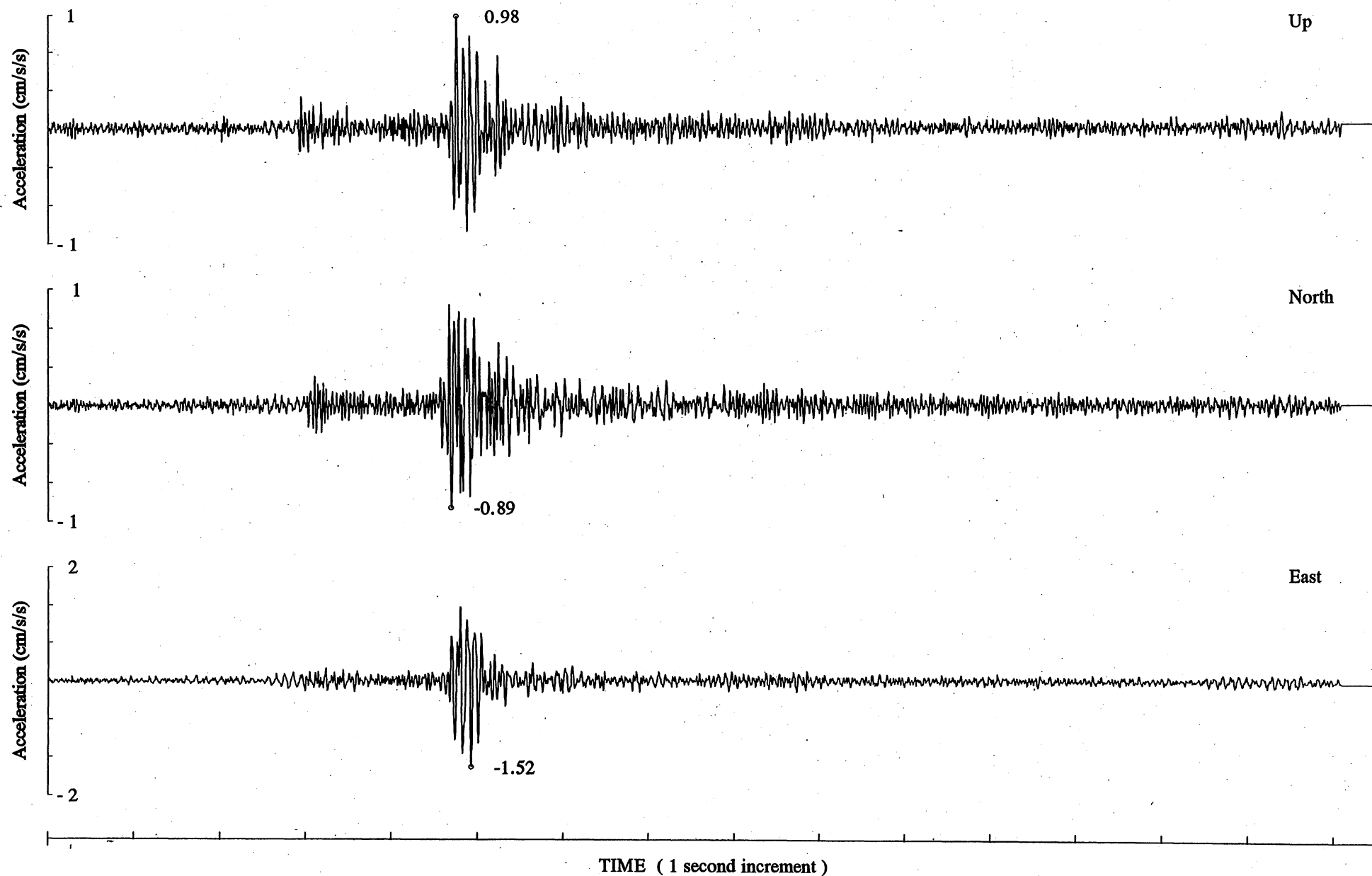
Start Time: 1993-03-31 0908 57.705

Total number=3108

Sample Rate=200

ML=1.8

Epicentre: 39:47N,118:22E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04151828.093

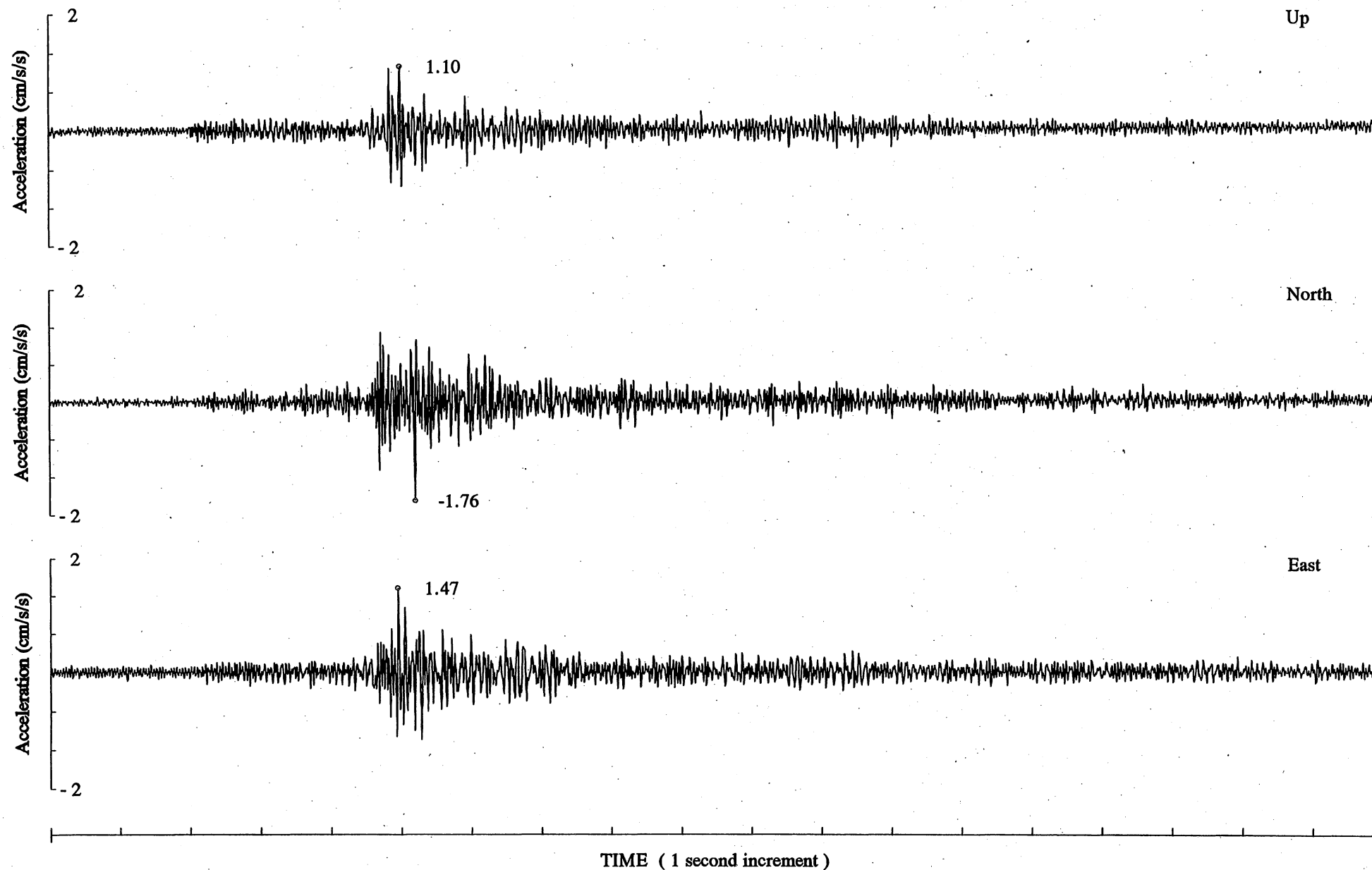
Start Time: 1993-04-15 1828 54.055

Total number=3788

Sample Rate=200

ML=2.0

Epicentre: 39:40N,118:17E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04172232.093

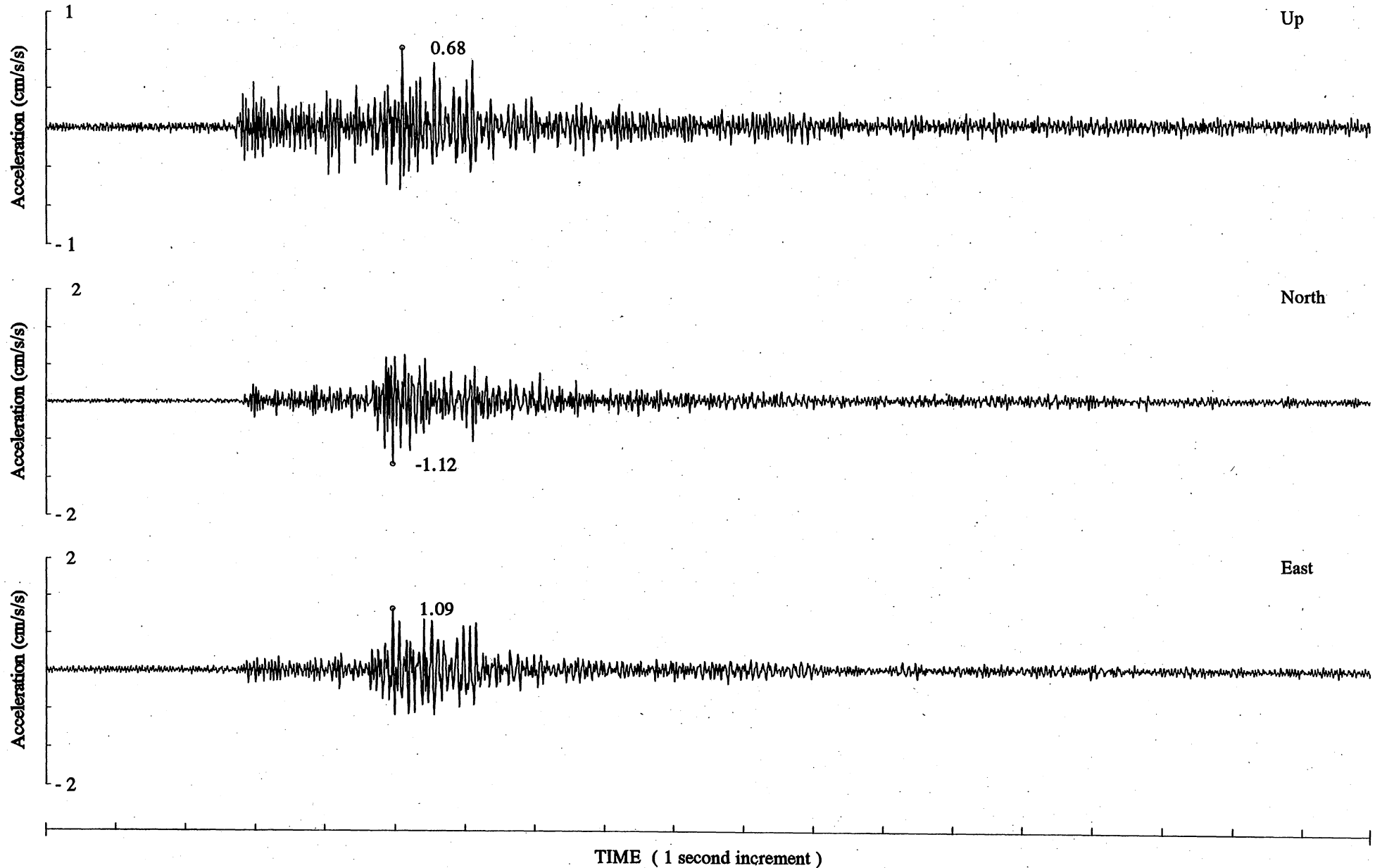
Start Time: 1993-04-17 2232 14.010

Total number=3797

Sample Rate=200

ML=2.0

Epicentre: 39:37N,118:24E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 04210704.093

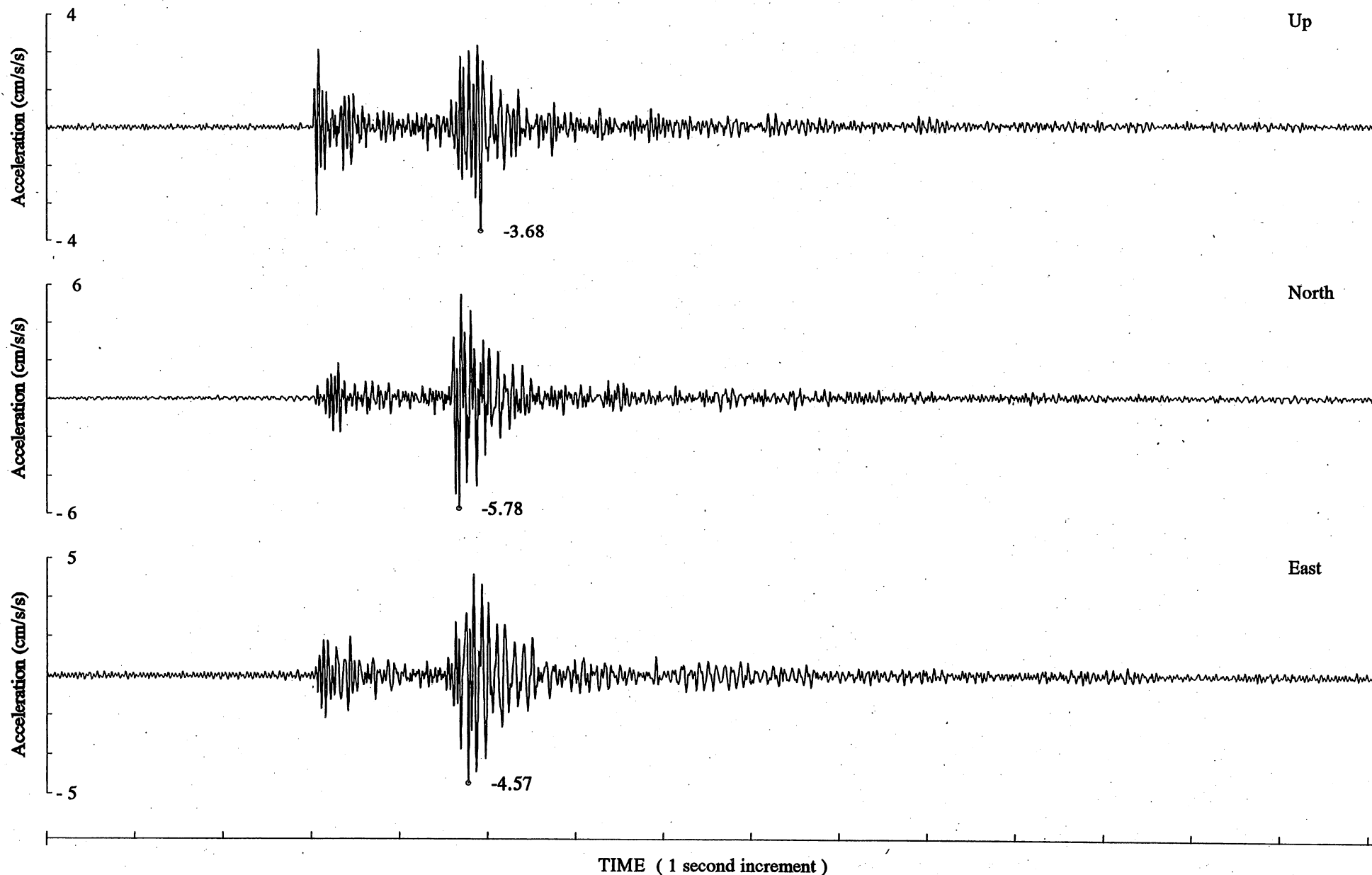
Start Time: 1993-04-21 0704 31.145

Total number=3026

Sample Rate=200

ML=1.9

Epicentre: 39:47N,118:28E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 05131948.093

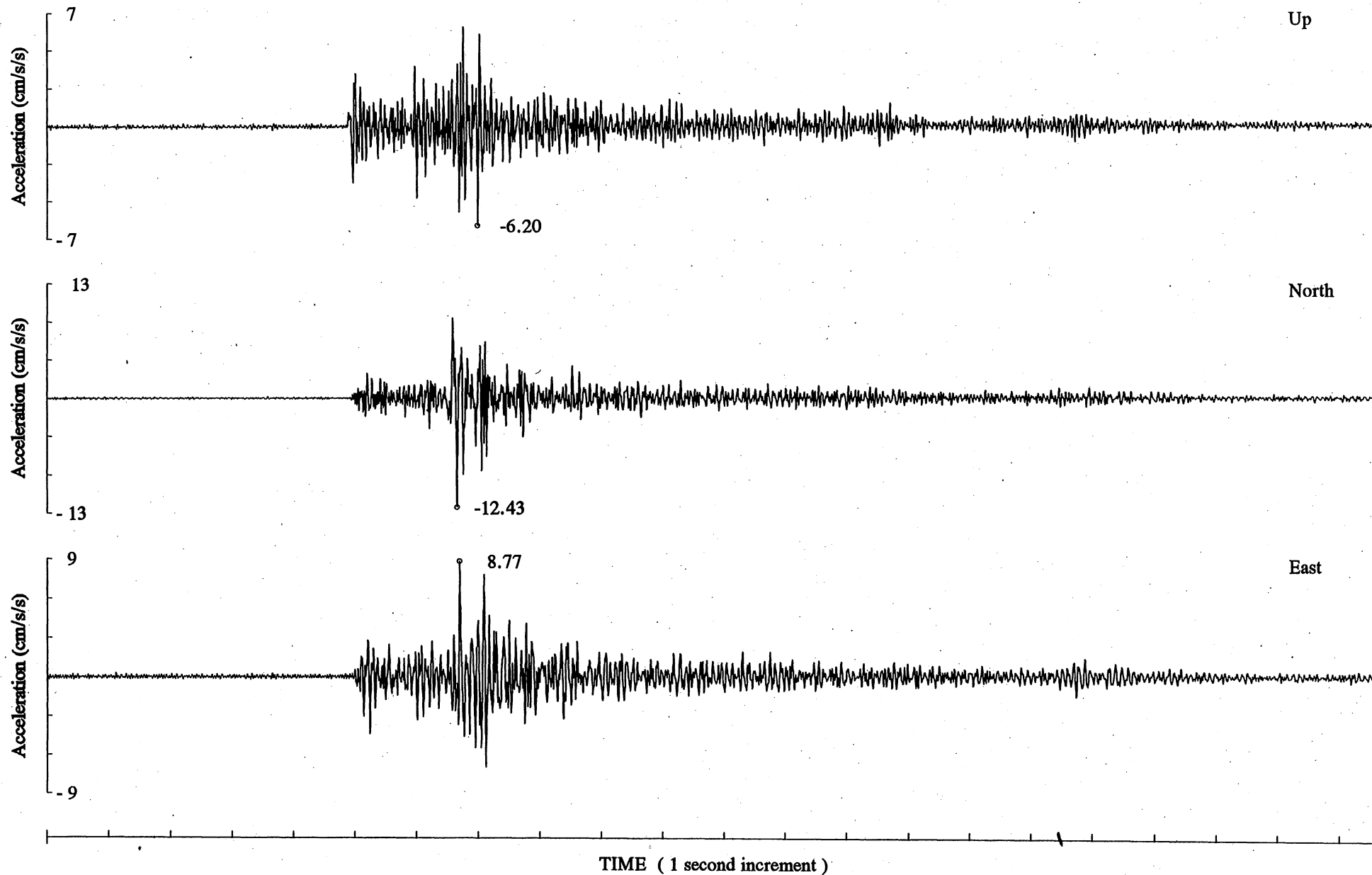
Start Time: 1993-05-13 1948 13.330

Total number=4333

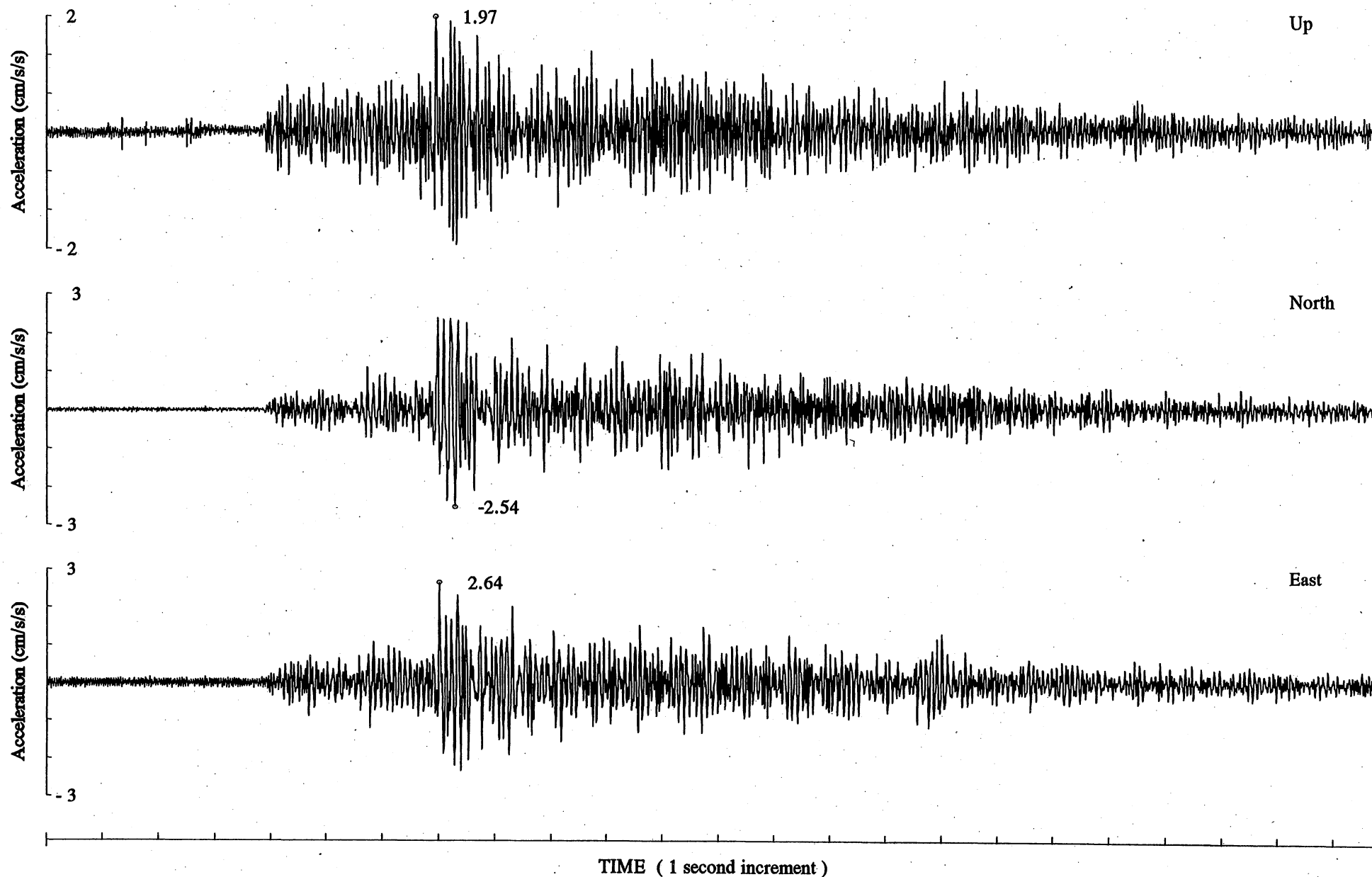
Sample Rate=200

ML=2.8

Epicentre: 39:46N,118:22E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E) Site: Ground/Rock Instrument: Kelunj#87 Data: Acceleration
Event: 07091929.093 Start Time: 1993-07-09 1929 31.340 Total number=4767 Sample Rate=200
ML=3.0 Epicentre: 39:35N,118:35E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07171954.093

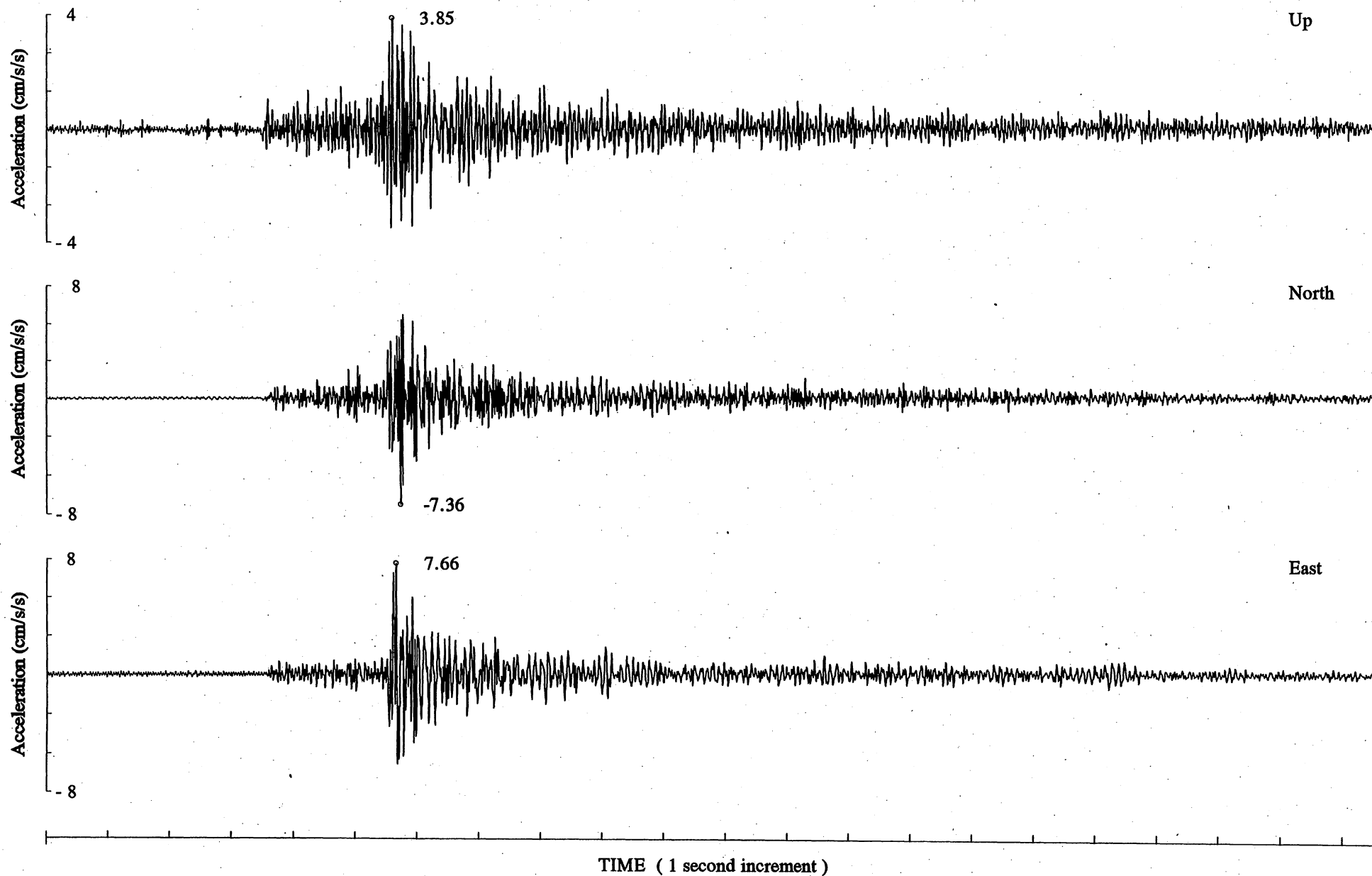
Start Time: 1993-07-17 1954 12.380

Total number=4323

Sample Rate=200

ML=3.1

Epicentre: 39:36N,118:13E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07230926.093

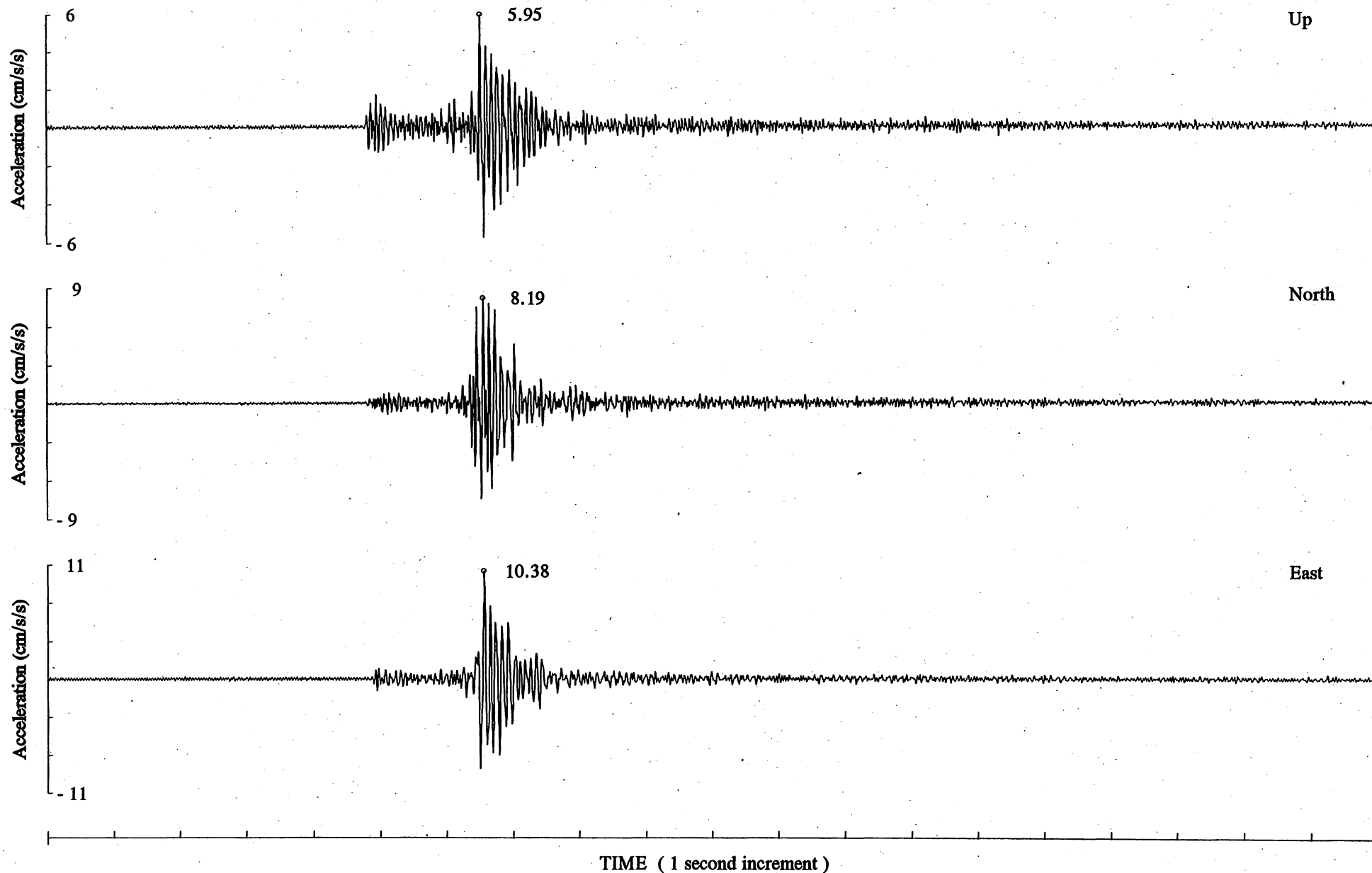
Start Time: 1993-07-23 0926 54.945

Total number=4010

Sample Rate=200

ML=2.2

Epicentre: 39:45N,118:27E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07240024.093

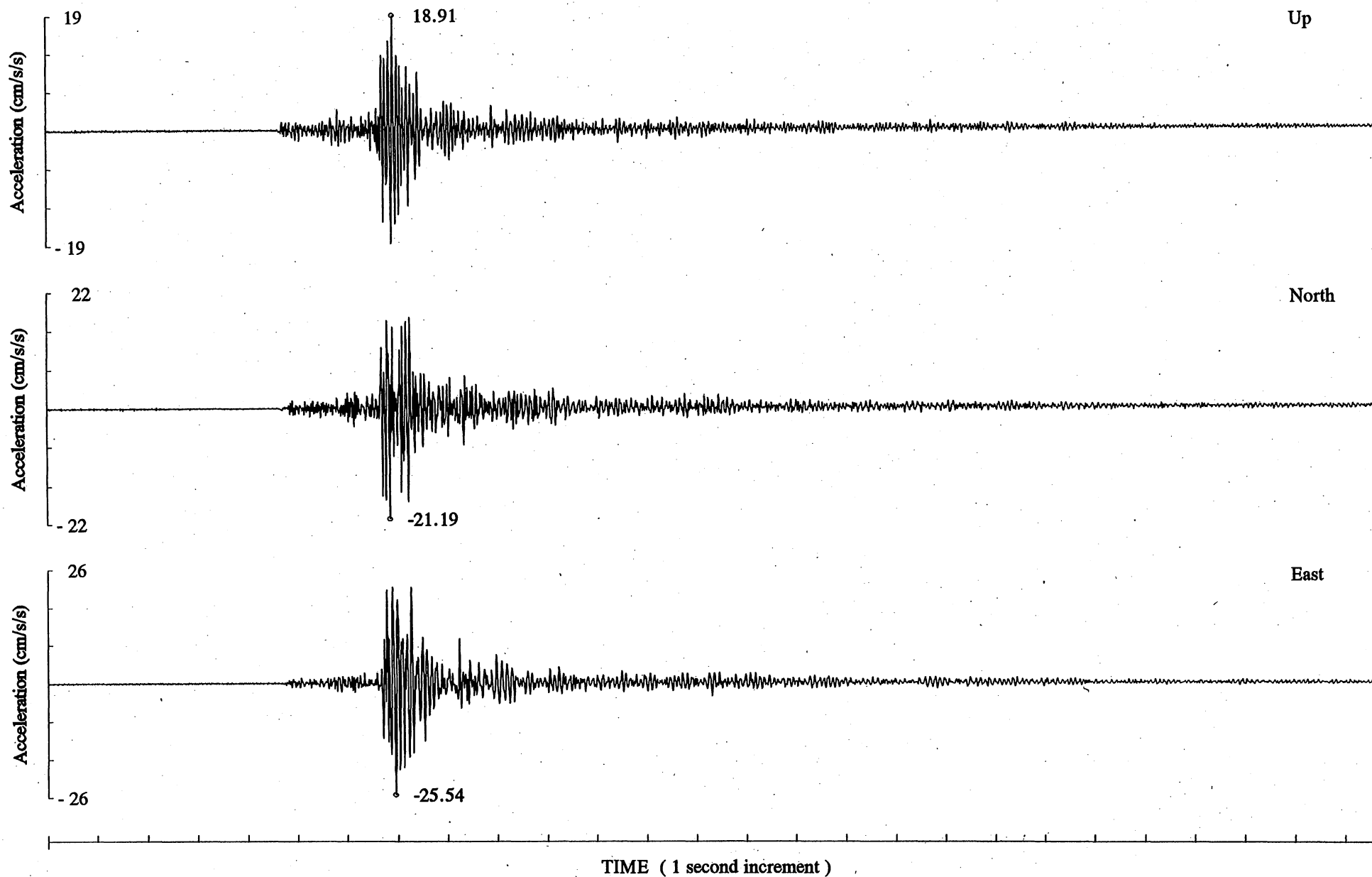
Start Time: 1993-07-24 0024 27.250

Total number=5349

Sample Rate=200

ML=3.4

Epicentre: 39:41N,118:14E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07250336.093

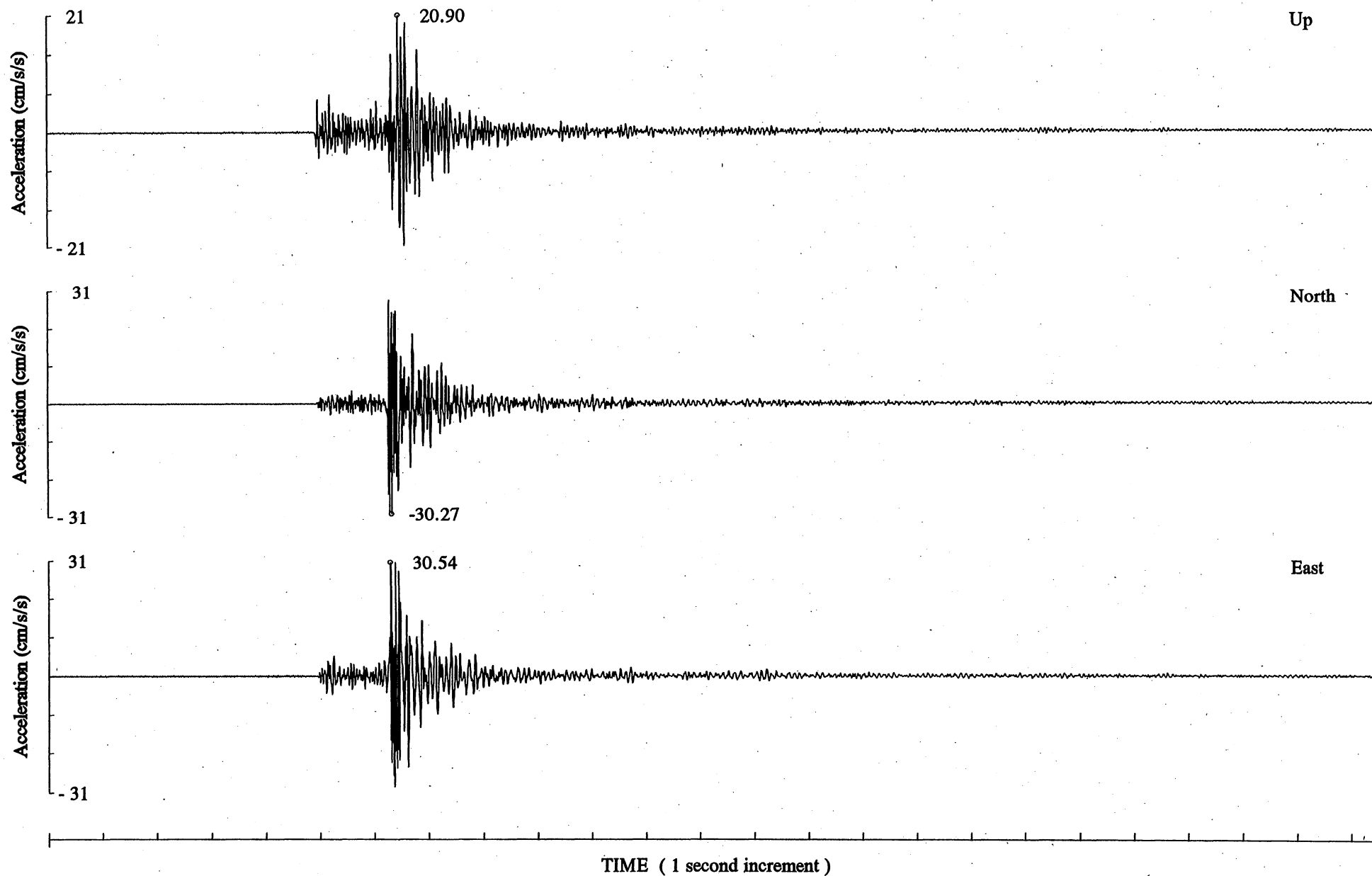
Start Time: 1993-07-25 0336 17.700

Total number=4911

Sample Rate=200

ML=2.9

Epicentre: 39:46N,118:23E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07261646.093

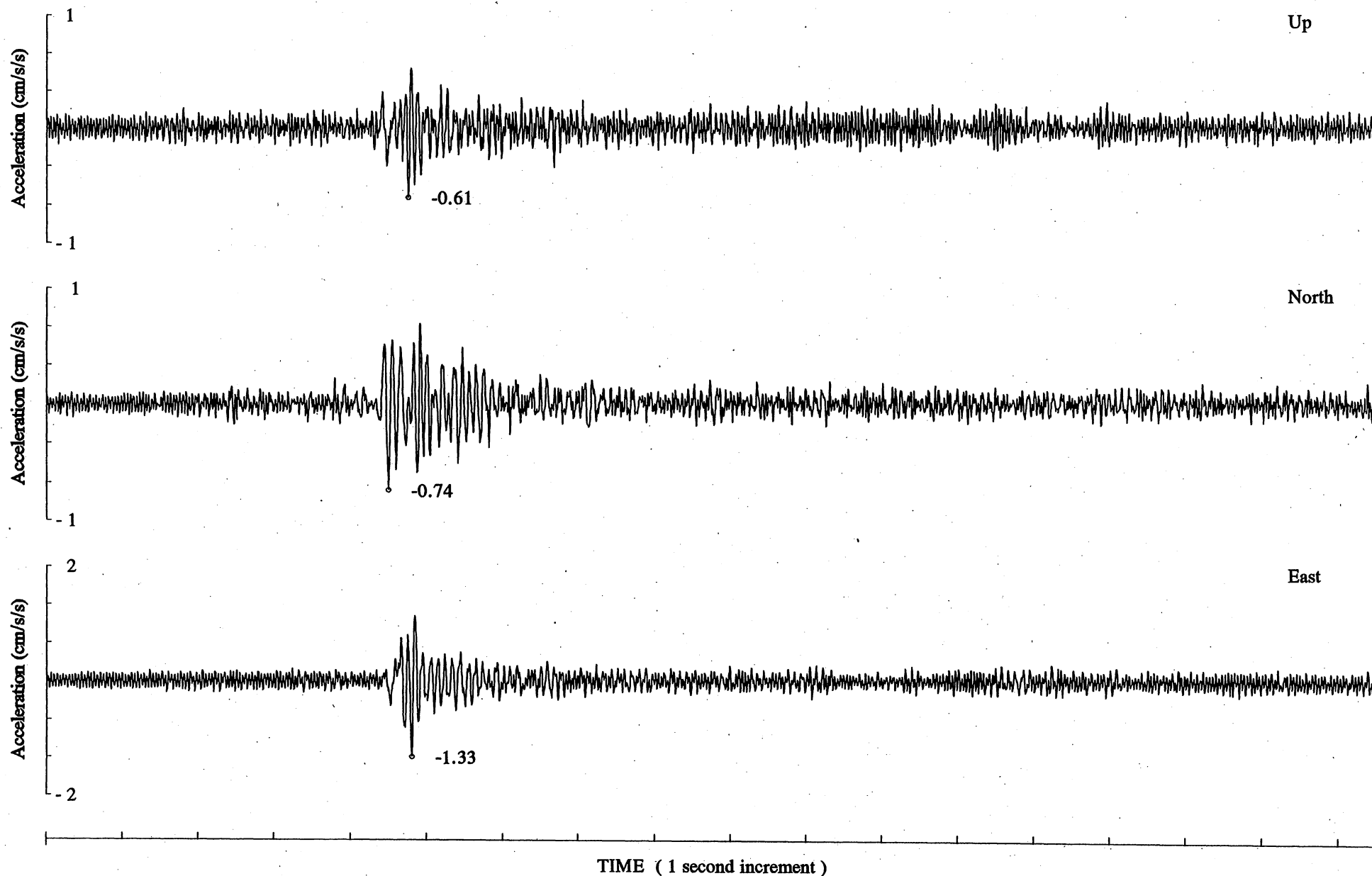
Start Time: 1993-07-26 1646 33.460

Total number=3507

Sample Rate=200

ML=2.2

Epicentre: 39:43N,118:40E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07290024.093

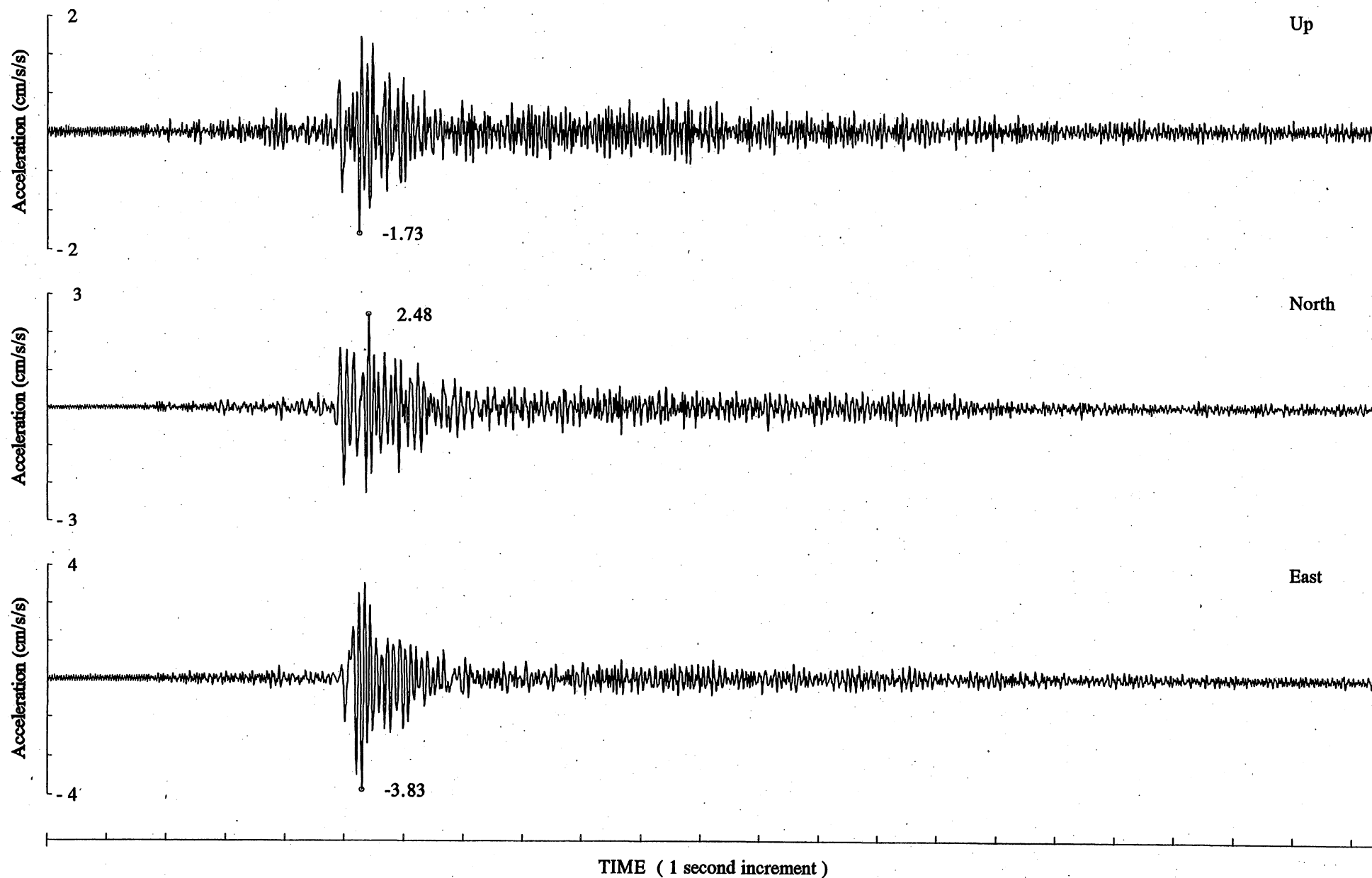
Start Time: 1993-07-29 0024 03.675

Total number=4494

Sample Rate=200

ML=2.8

Epicentre: 39:46N,118:42E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07290121.093

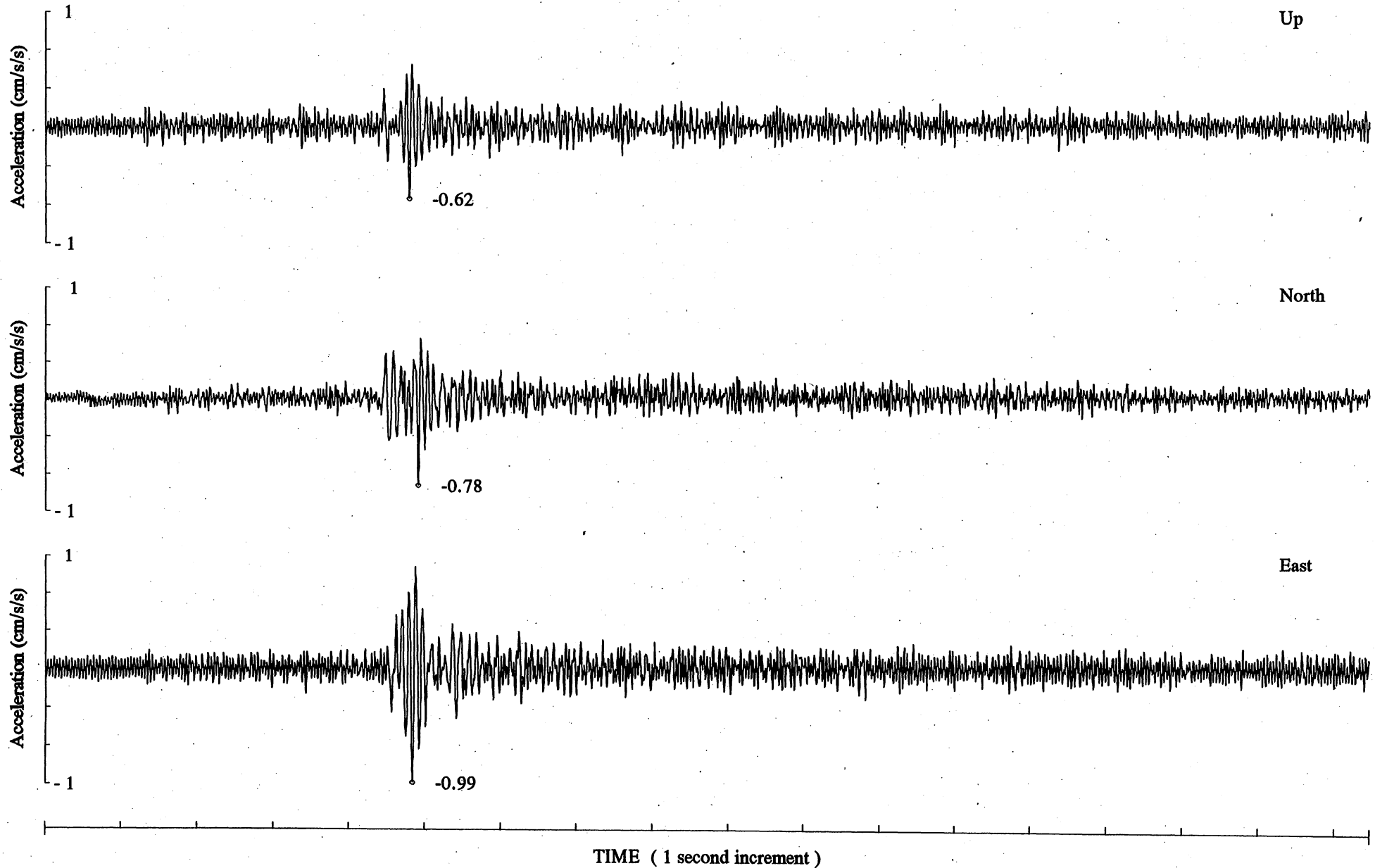
Start Time: 1993-07-29 0121 10.525

Total number=3494

Sample Rate=200

ML=2.2

Epicentre: 39:51N,118:42E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 07290727.093

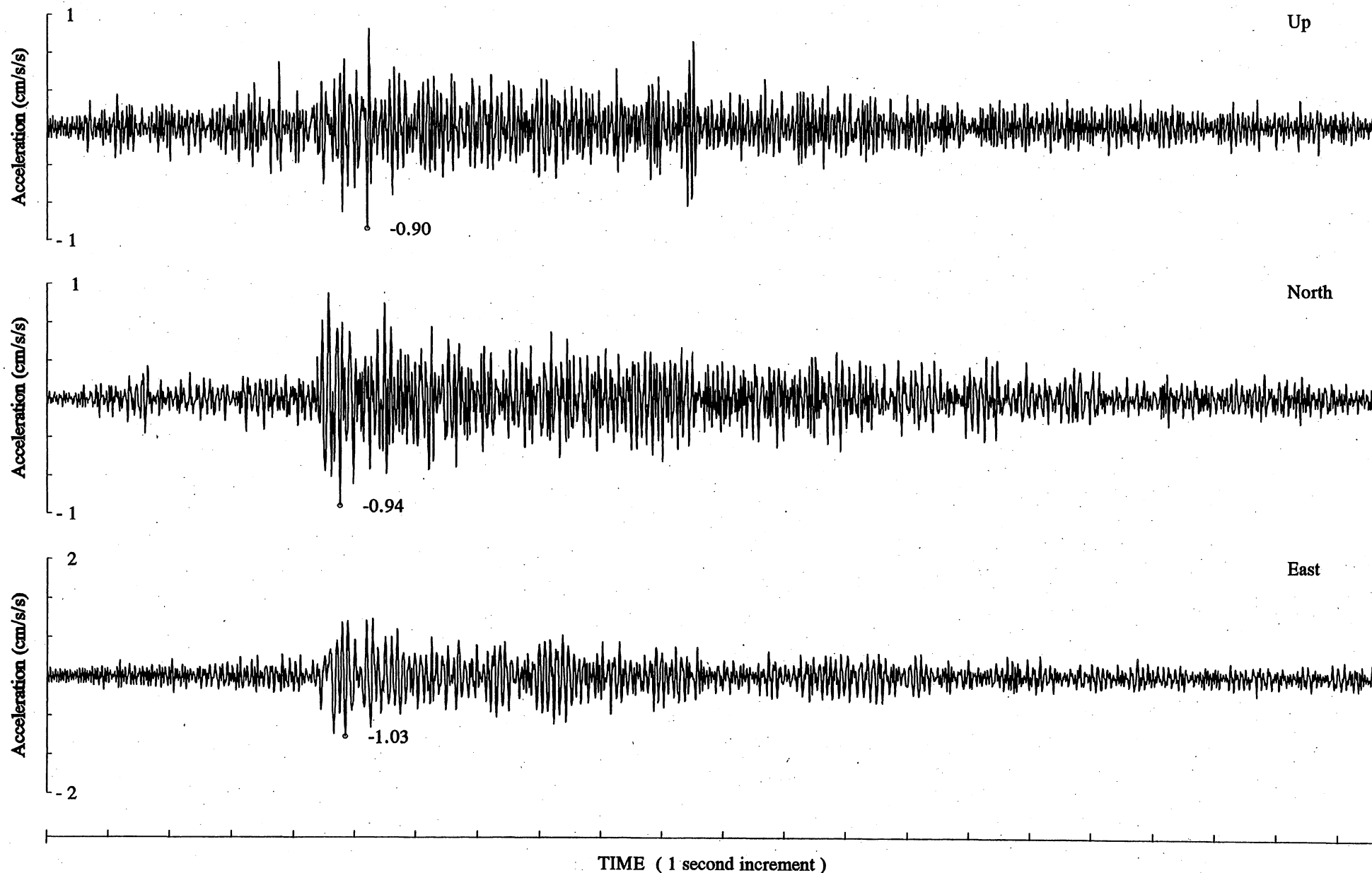
Start Time: 1993-07-29 0727 19.340

Total number=4331

Sample Rate=200

ML=2.8

Epicentre: 39:41N,118:38E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 08090128.093

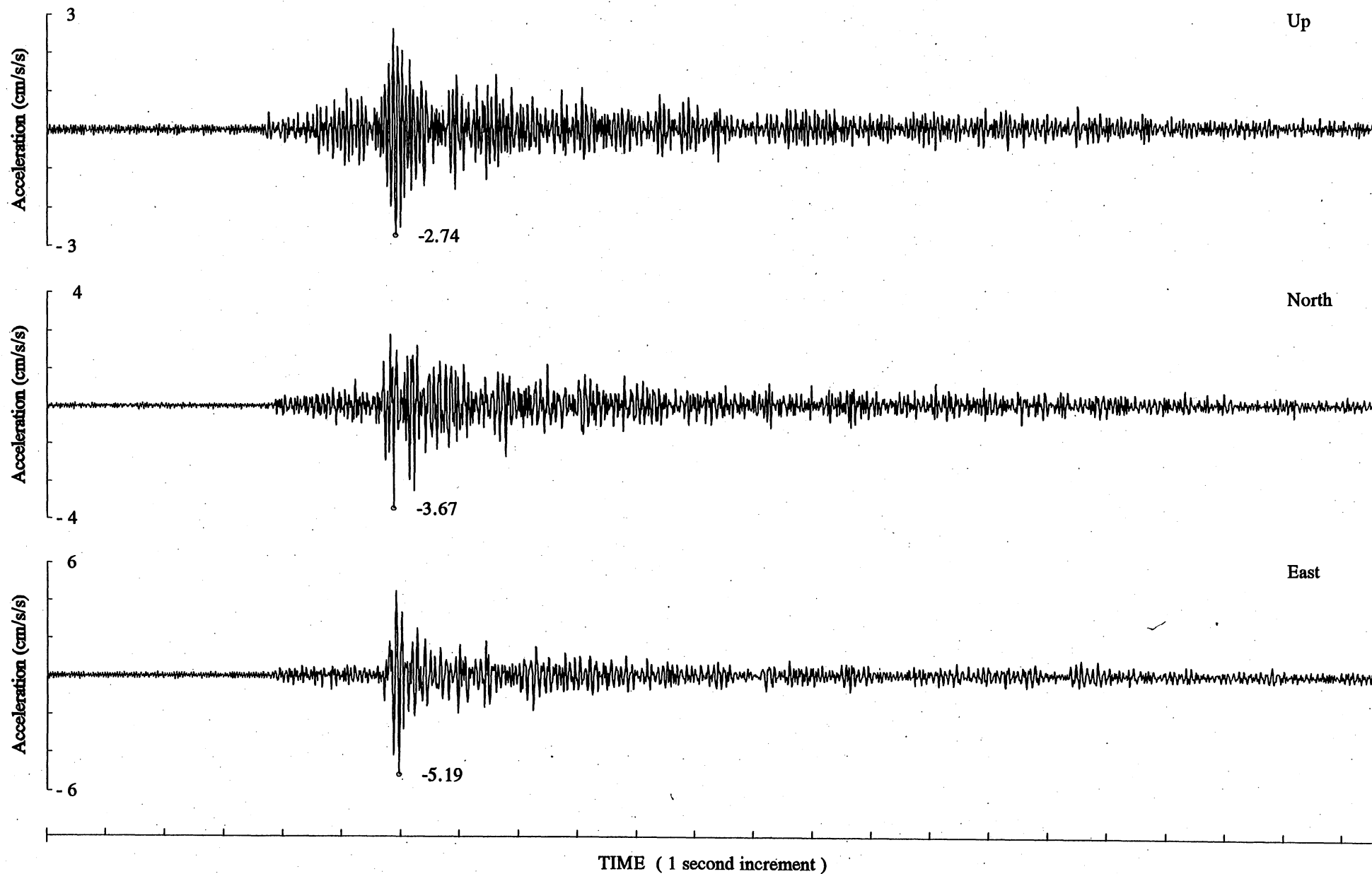
Start Time: 1993-08-09 0128 47.390

Total number=4521

Sample Rate=200

ML=2.6

Epicentre: 39:42N,118:15E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 08180329.093

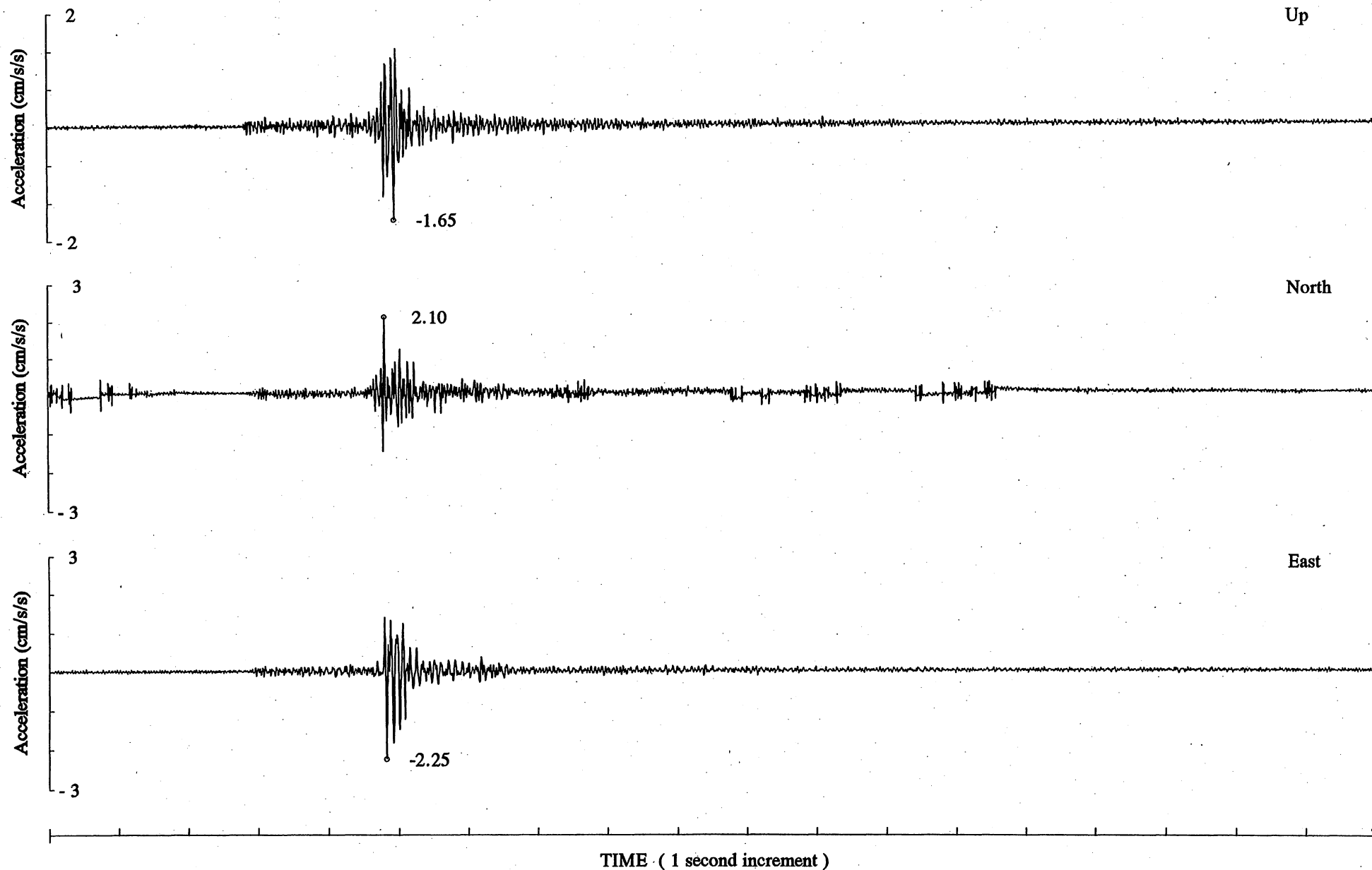
Start Time: 1993-08-18 0329 35.610

Total number=3811

Sample Rate=200

ML=1.6

Epicentre: 39:44N,118:22E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 09301813.093

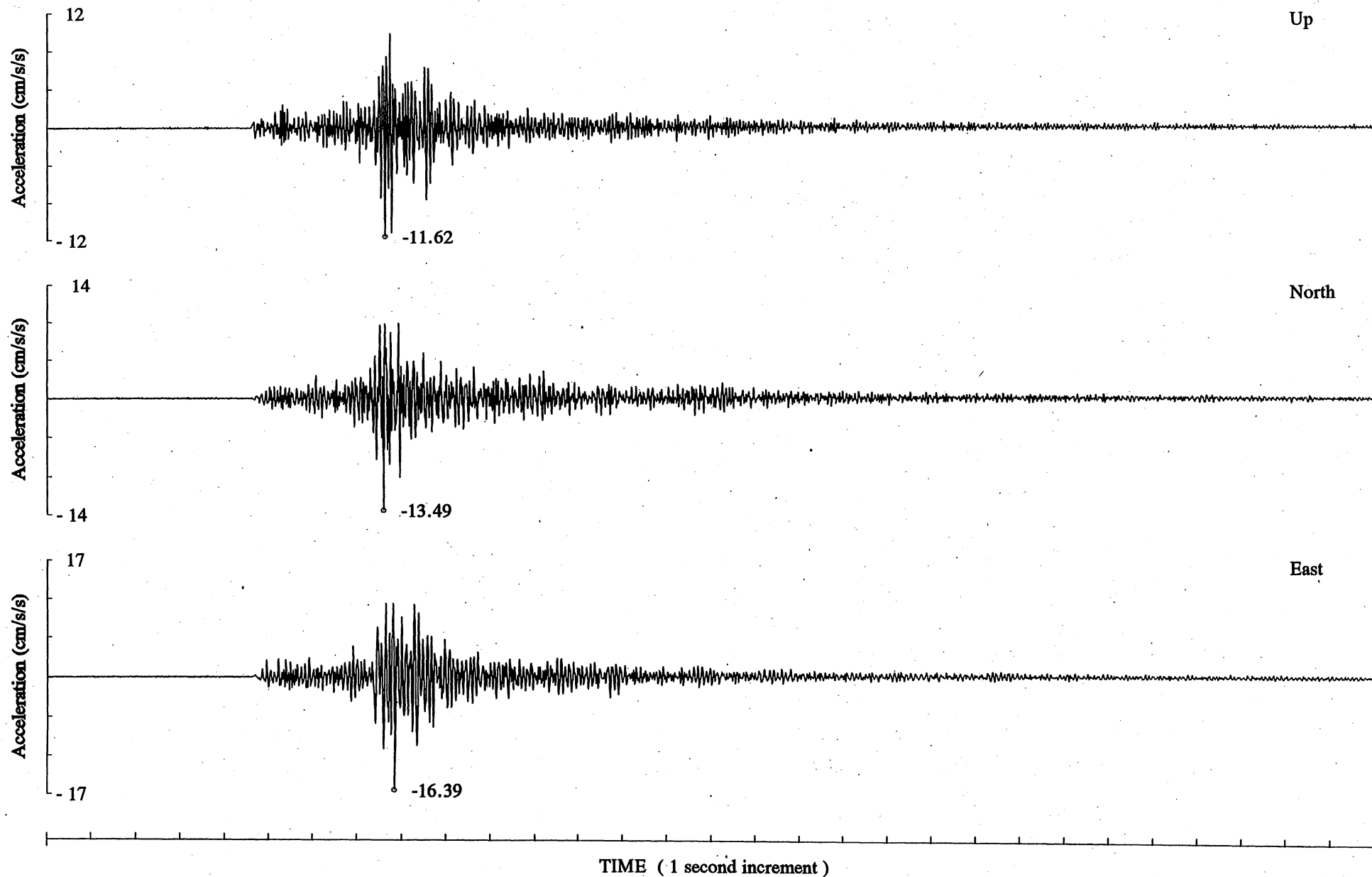
Start Time: 1993-09-30 1813 33.835

Total number=6032

Sample Rate=200

ML=3.4

Epicentre: 39:44N,118:45E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 10231629.093

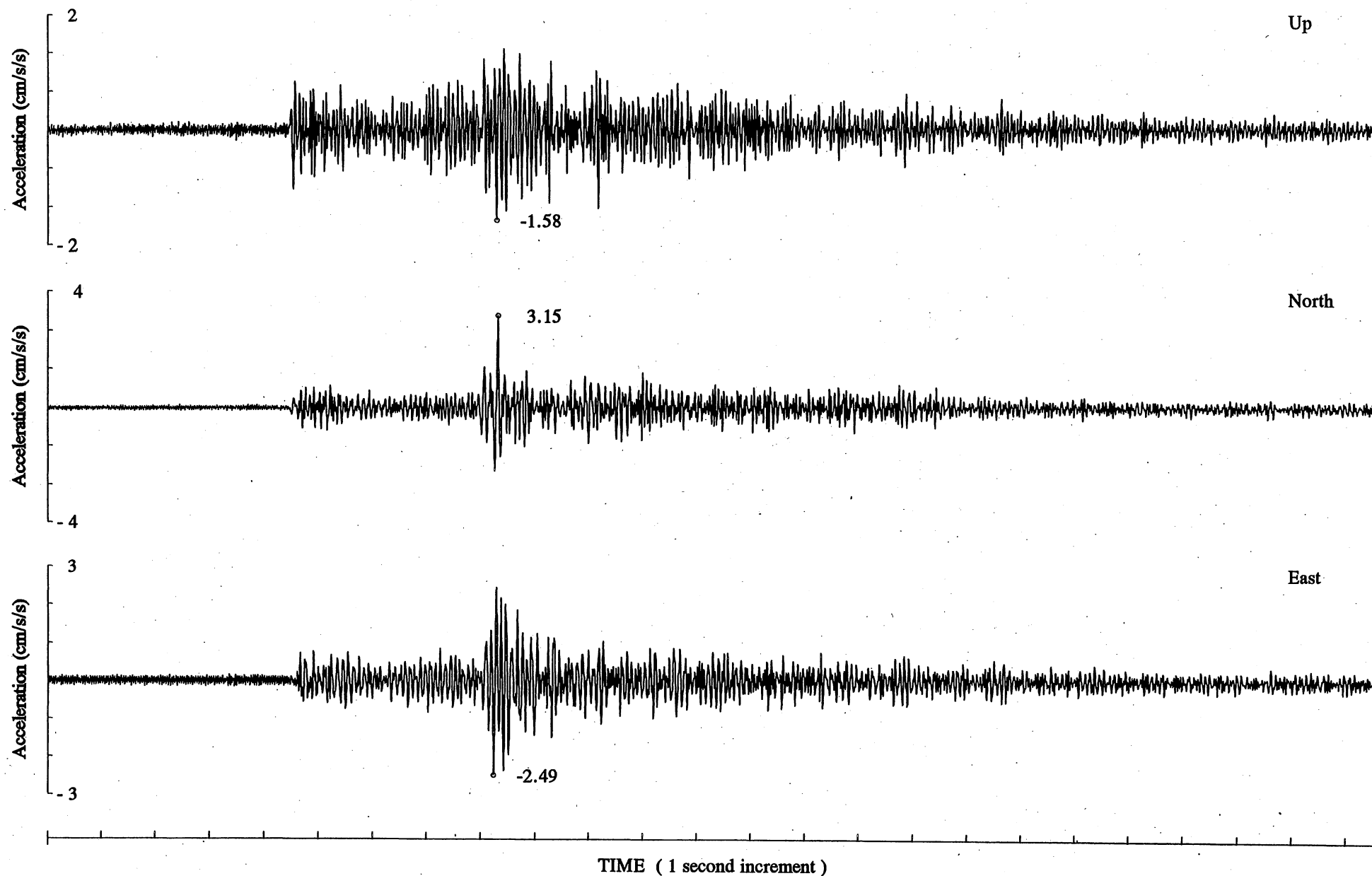
Start Time: 1993-10-23 1629 16.480

Total number=4922

Sample Rate=200

ML=2.7

Epicentre: 39:44N,118:40E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11112248.093

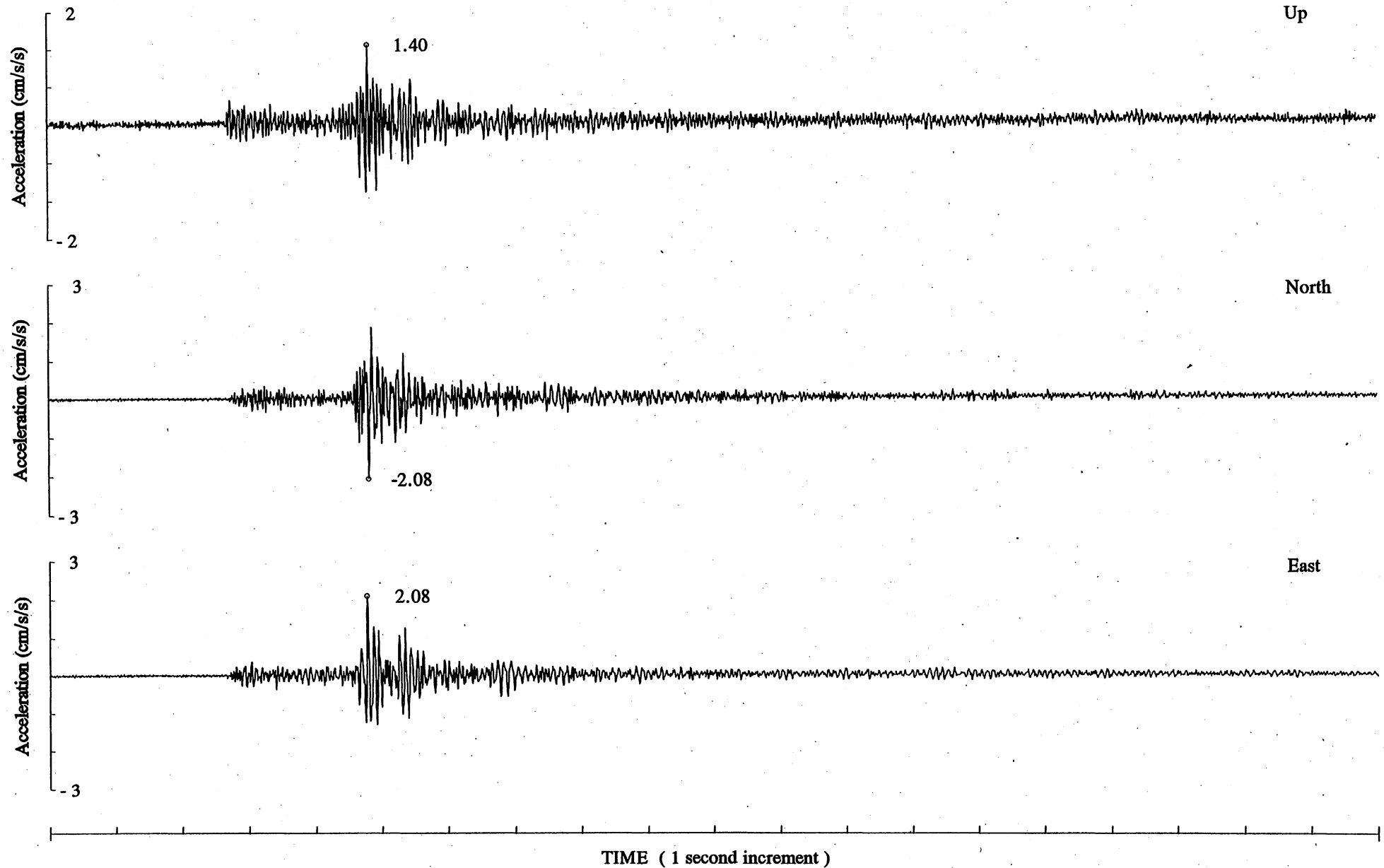
Start Time: 1993-11-11 2248 53.985

Total number=4002

Sample Rate=200

ML=2.2

Epicentre: 39:40N,118:17E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11170350.093

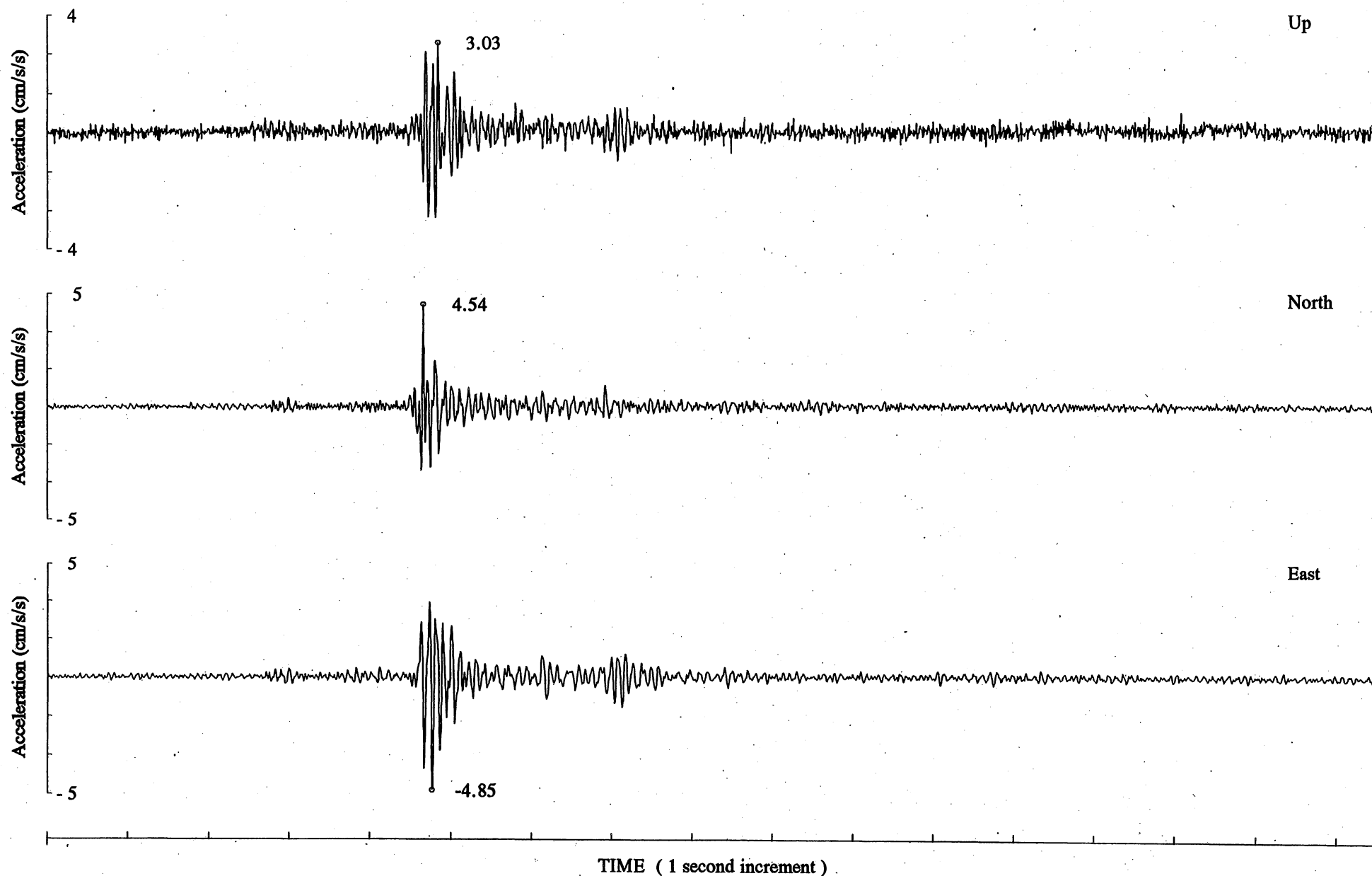
Start Time: 1993-11-17 0350 58.475

Total number=3304

Sample Rate=200

ML=2.3

Epicentre: 39:41N,118:15E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11170412.093

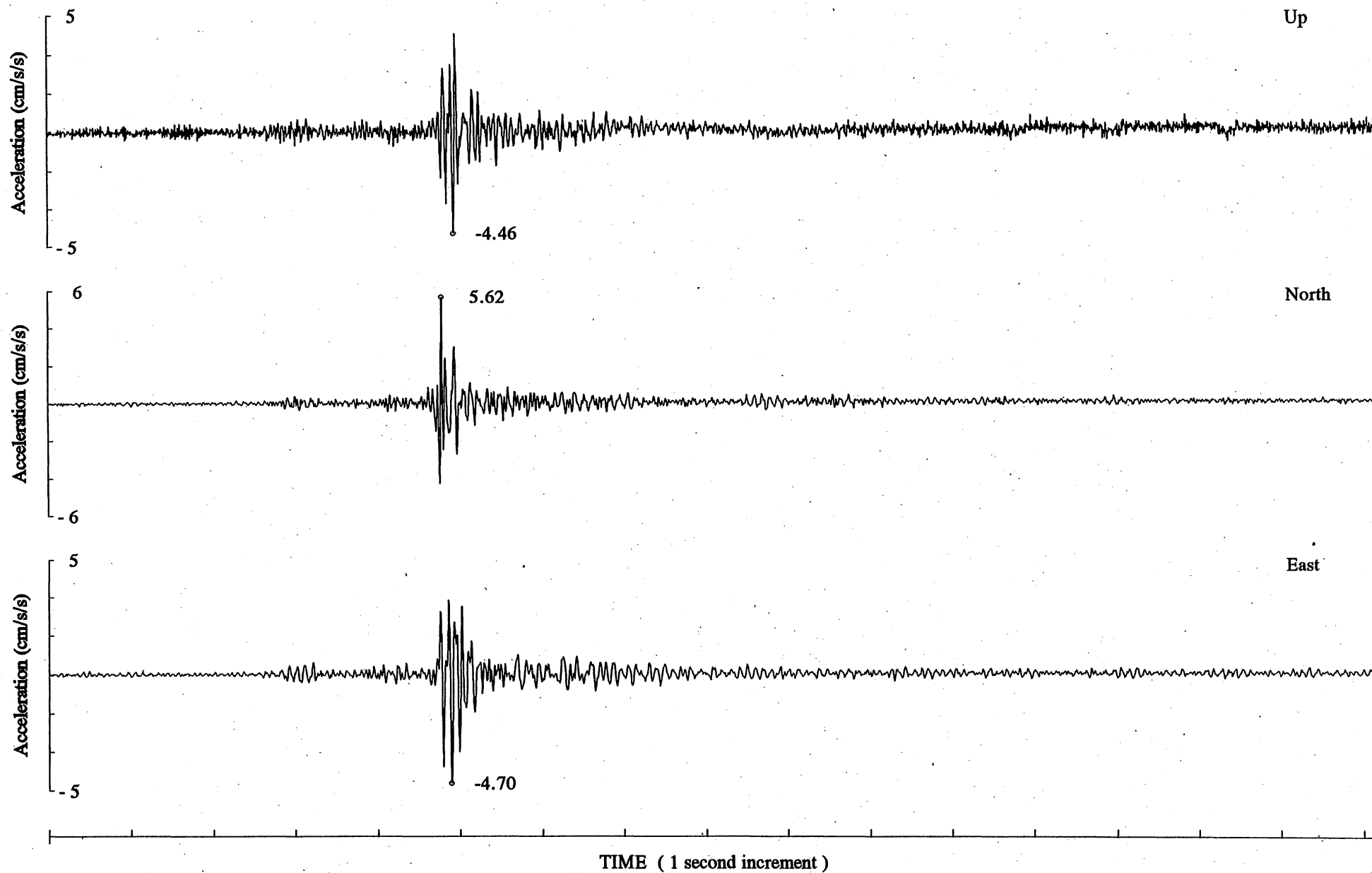
Start Time: 1993-11-17 0412 44.830

Total number=3233

Sample Rate=200

ML=2.3

Epicentre: 39:39N,118:16E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11170516.093

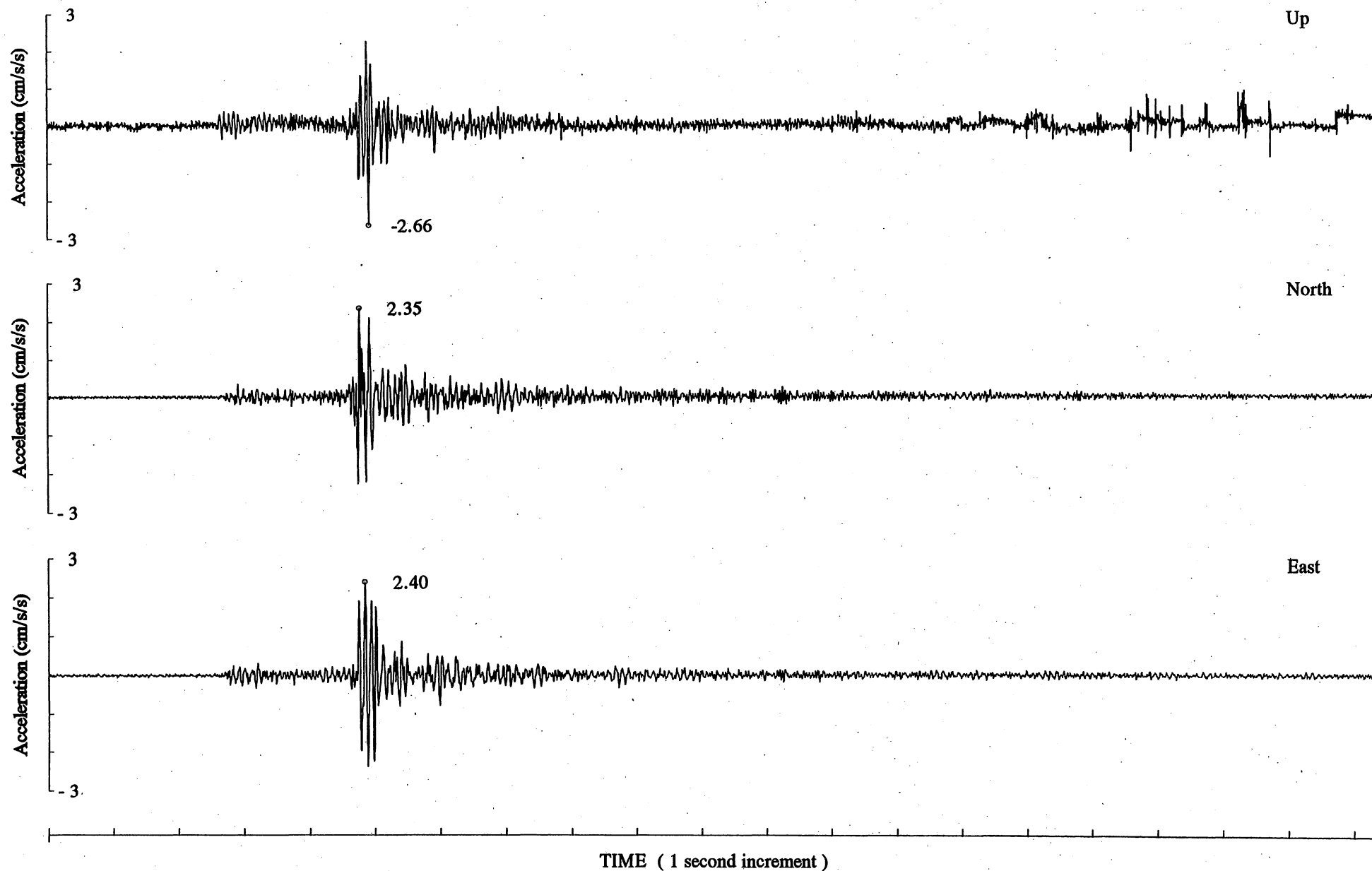
Start Time: 1993-11-17 0516 17.120

Total number=4072

Sample Rate=200

ML=2.1

Epicentre: 39:40N,118:16E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11180705.093

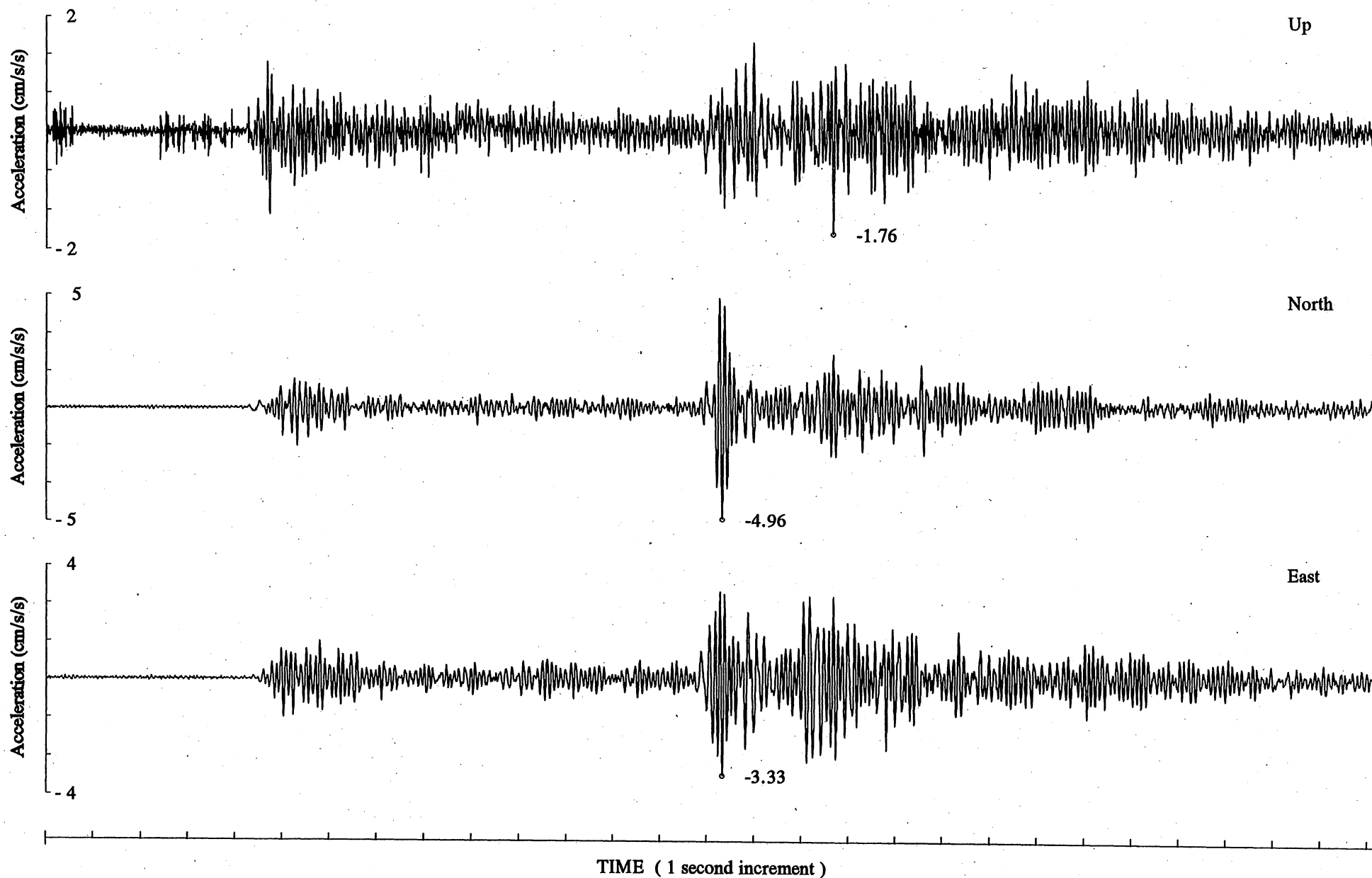
Start Time: 1993-11-18 0705 44.725

Total number=5644

Sample Rate=200

ML=4.4

Epicentre: 39:36N,117:27E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11190753.093

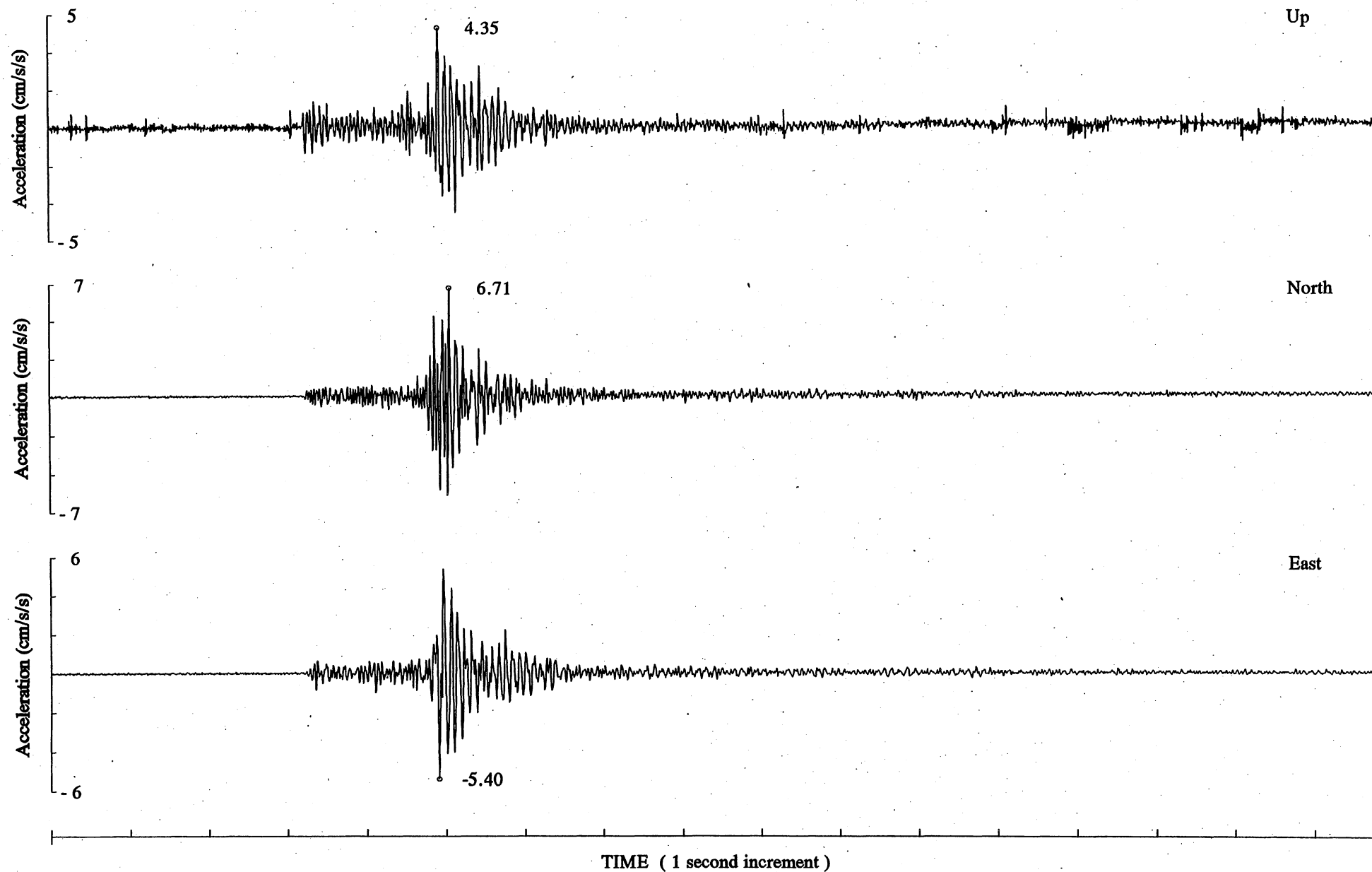
Start Time: 1993-11-19 0753 06.750

Total number=3365

Sample Rate=200

ML=1.9

Epicentre: 39:52N,118:29E, Tangshan, CHINA



Station: Zhaogezhuang-Mine(39:45:38N,118:24:23E)

Site: Ground/Rock

Instrument: Kelunj#87

Data: Acceleration

Event: 11192344.093

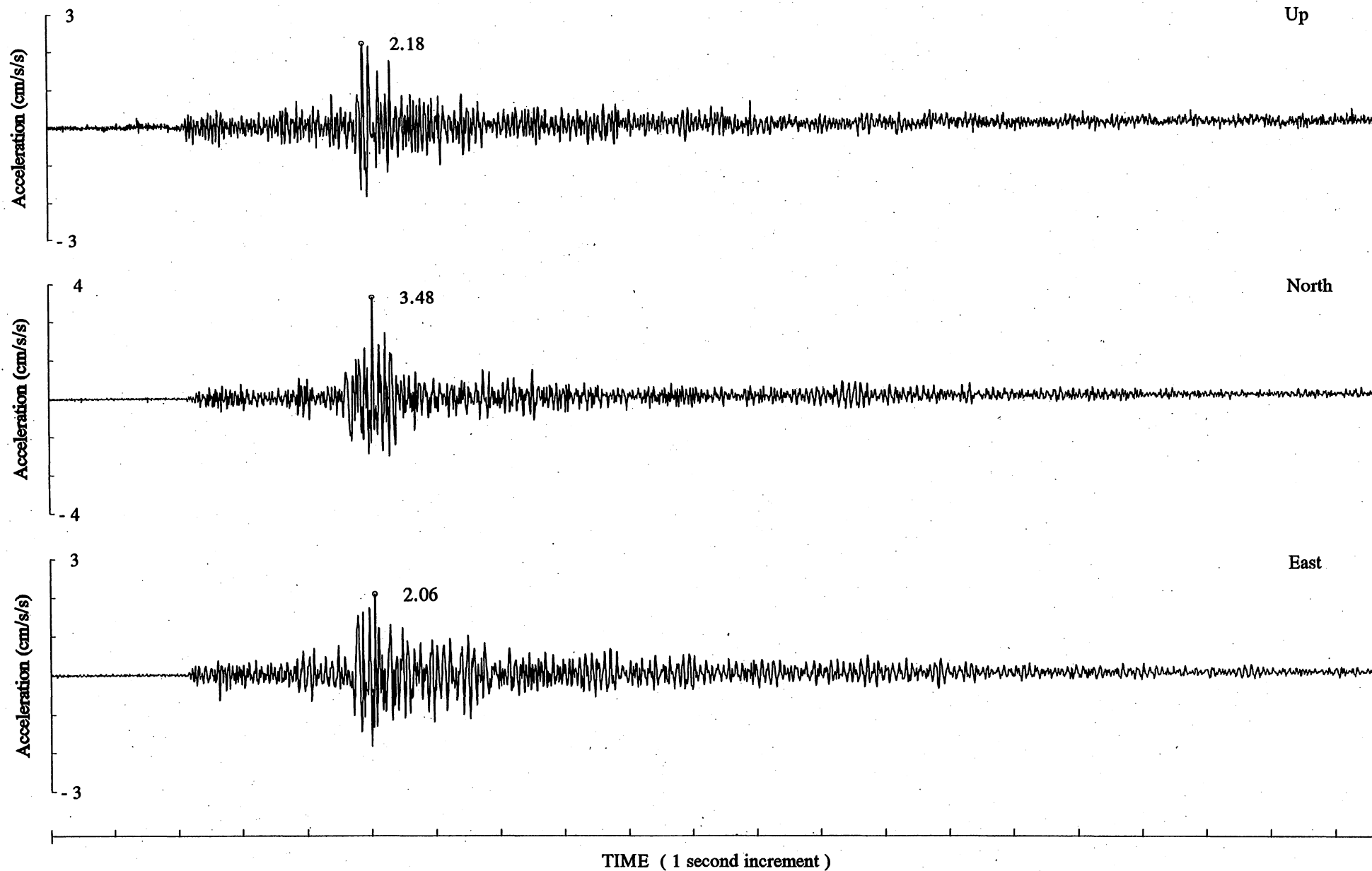
Start Time: 1993-11-19 2344 35.300

Total number=4139

Sample Rate=200

ML=2.7

Epicentre: 39:41N,118:26E, Tangshan, CHINA



Records of Leizhuang Station

Leizhuang-Mine Station:

SITE AND SAMPLING

Authority BSMOC, IEM/SSB

Sampling At 200 sample/sec

Ch	Type	Serial	Name	Direction	Gain	Filters
1	WLJ-200	# 9102	NORTH	Unknown	1.00	0.20 50.0
2	WLJ-200	# 9102	EAST	Unknown	1.00	0.20 50.0
3	WLJ-200	# 9102	Up	Unknown	1.00	0.20 50.0

HARDWARE

Kelunji #78, GURIA B4.08A rev 135
KA1M #70
KC1 #33
KI1 #61184, board 1, capacity 1024kB #23? #26
KP1 V1 #41

Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 12181337.091

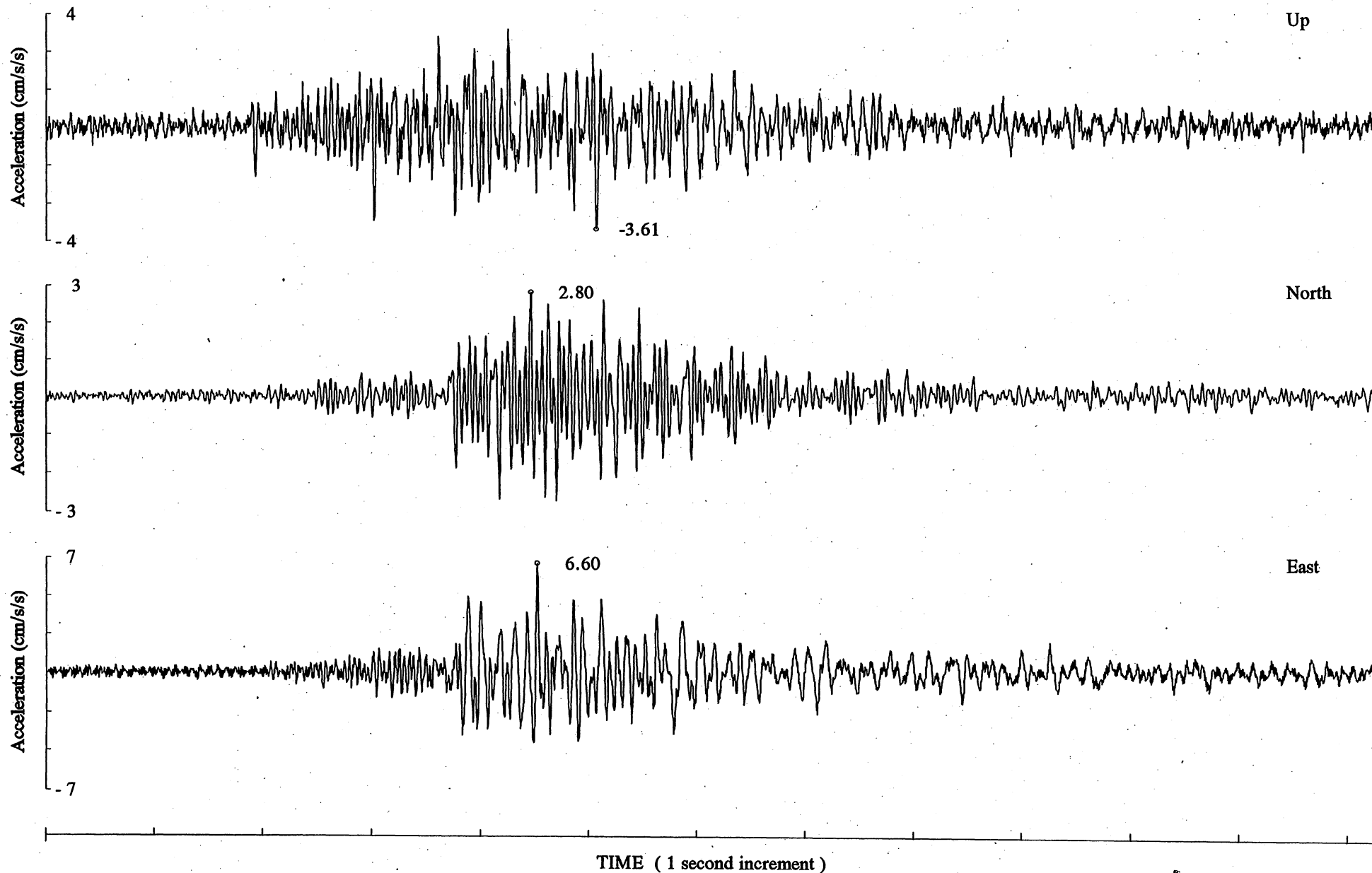
Start Time: 1991-12-18 1337 35.720

Total number=2455

Sample Rate=200

ML=2.7

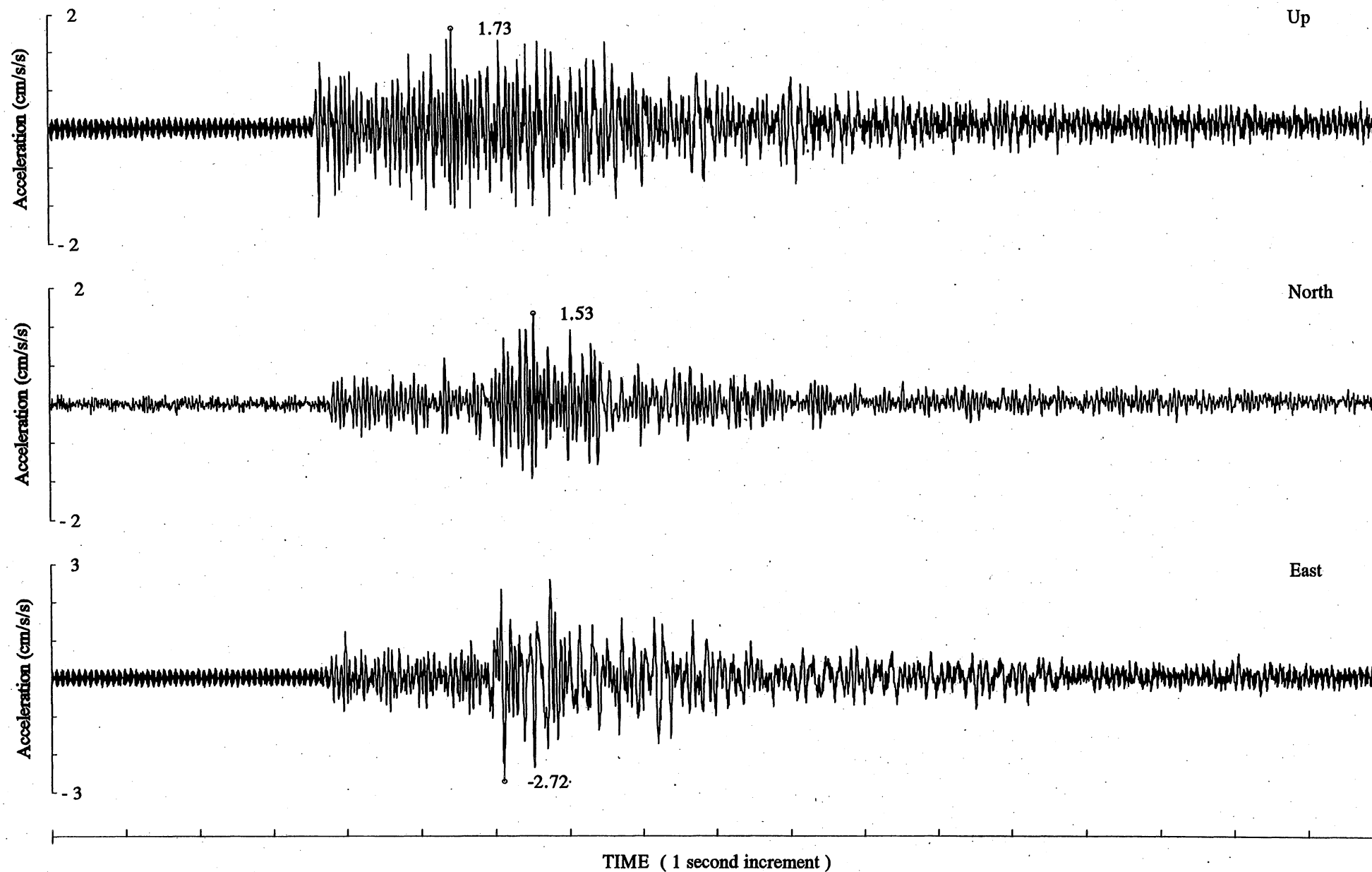
Epicentre: 39:51N,118:30E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E) Site: Ground/Soil
Event: 02060247.092 Start Time: 1992-02-06 0247 40.740
ML=2.1 Epicentre: 39:50N,118:27E, Tangshan, CHINA

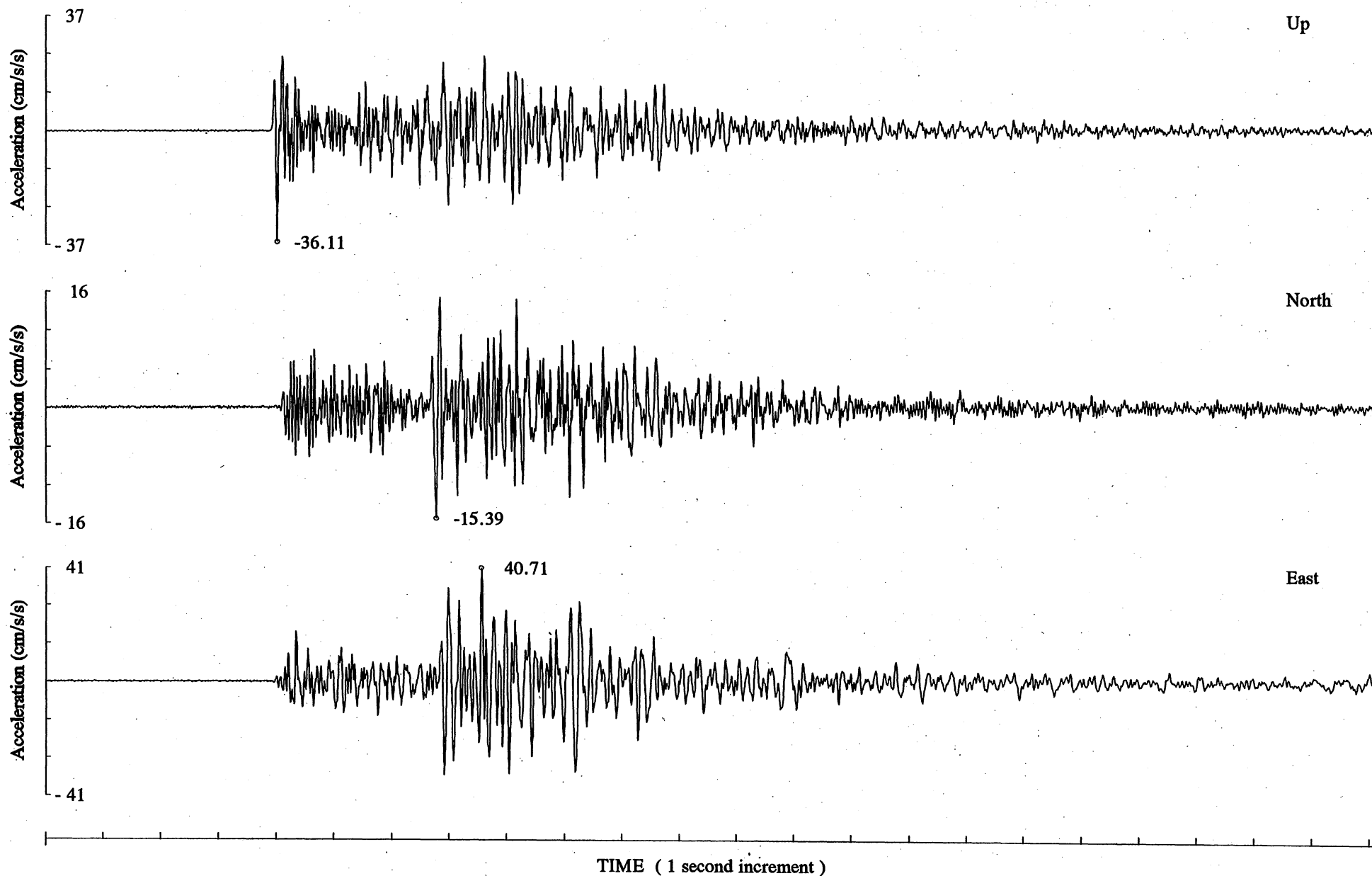
Instrument: Kelunj#78
Total number=3594

Data: Acceleration
Sample Rate=200



Station: Leizhuang(39:45:16N,118:34:35E) Site: Ground/Soil
Event: 02141708.092 Start Time: 1992-02-14 1708 10.945
ML=4.4 Epicentre: 39:47N,118:26E, Tangshan, CHINA

Instrument: Kelunj#78 Data: Acceleration
Total number=4626 Sample Rate=200



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelun#78

Data: Acceleration

Event: 04140415.092

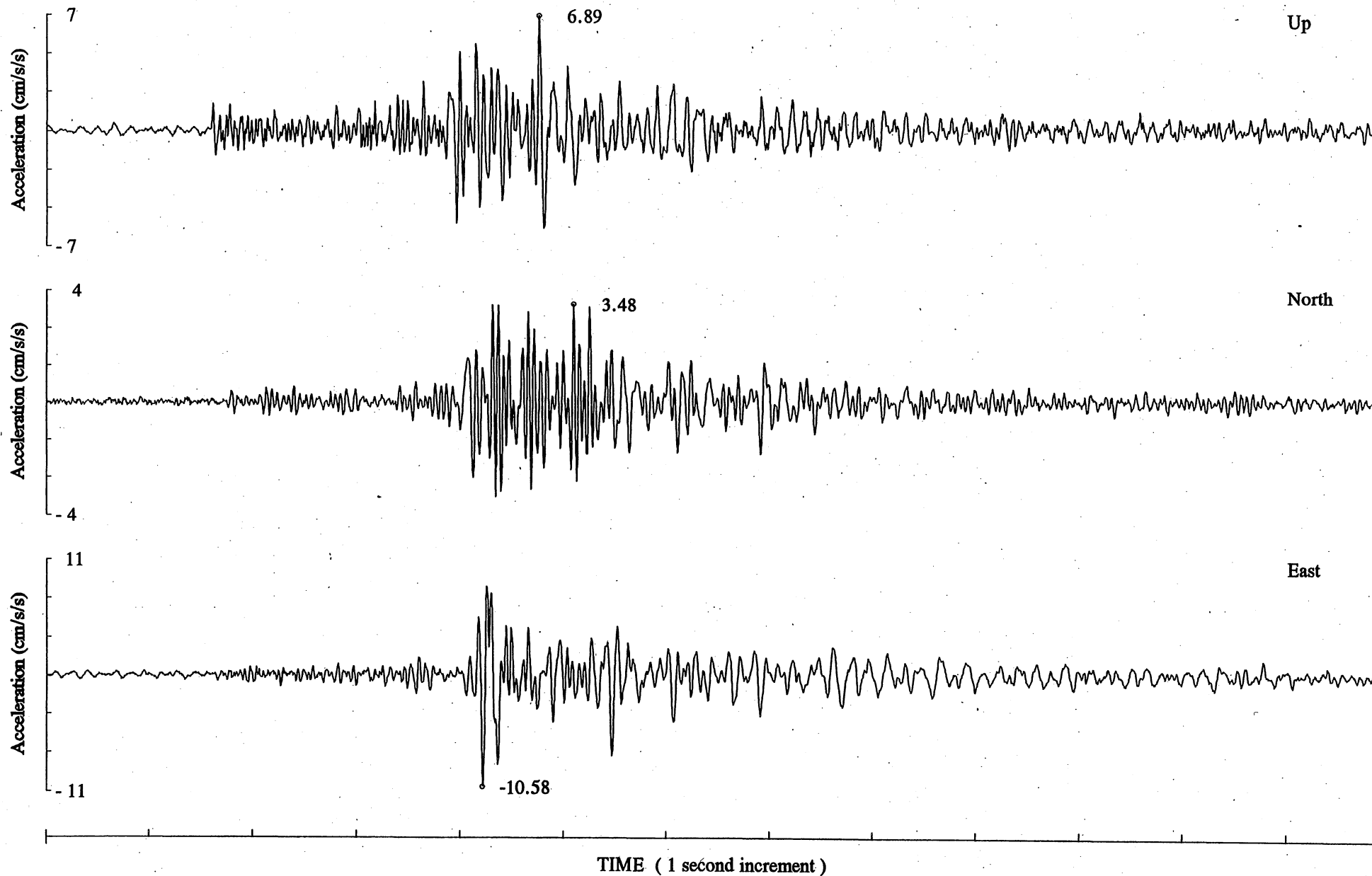
Start Time: 1992-04-14 0415 35.105

Total number=2578

Sample Rate=200

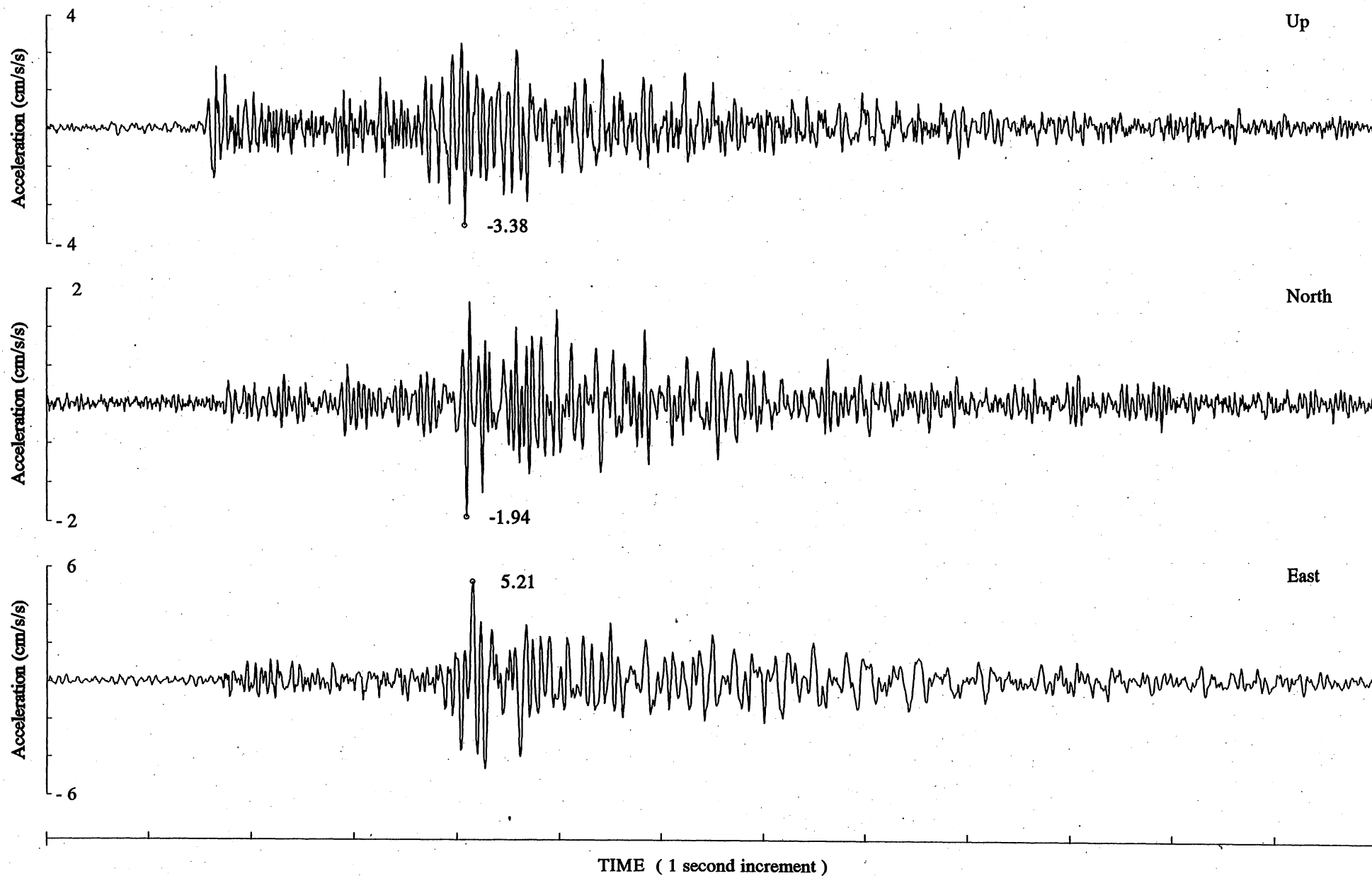
ML=2.8

Epicentre: 39:36N,118:38E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E) Site: Ground/Soil
Event: 05190045.092 Start Time: 1992-05-19 0045 03.810
ML=2.6 Epicentre: 39:37N,118:39E, Tangshan, CHINA

Instrument: Kelunj#78 Data: Acceleration
Total number=2602 Sample Rate=200



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 09220535.092

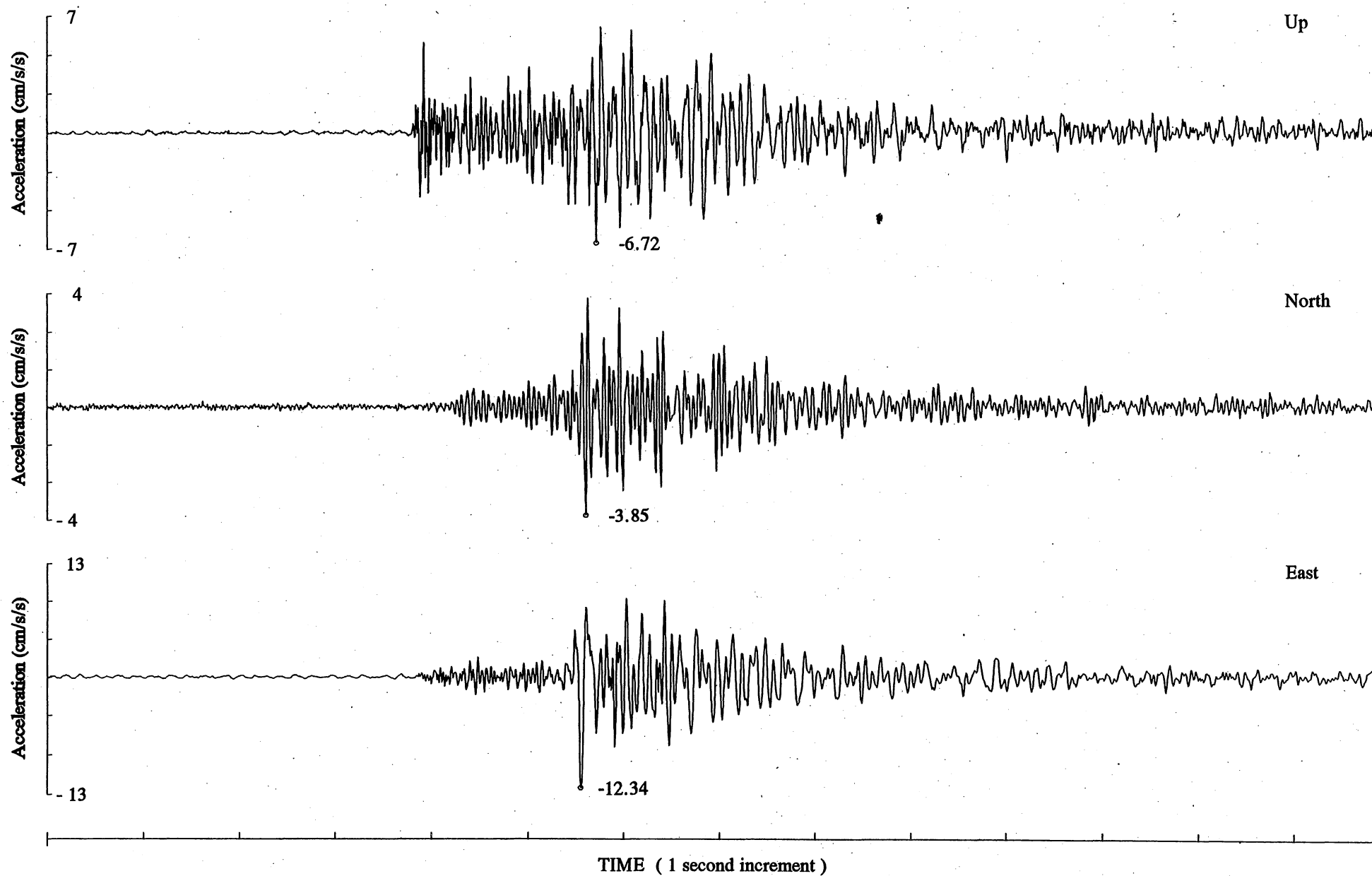
Start Time: 1992-09-22 0535 36.135

Total number=2772

Sample Rate=200

ML=2.4

Epicentre: 39:47N,118:31E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 10150438.092

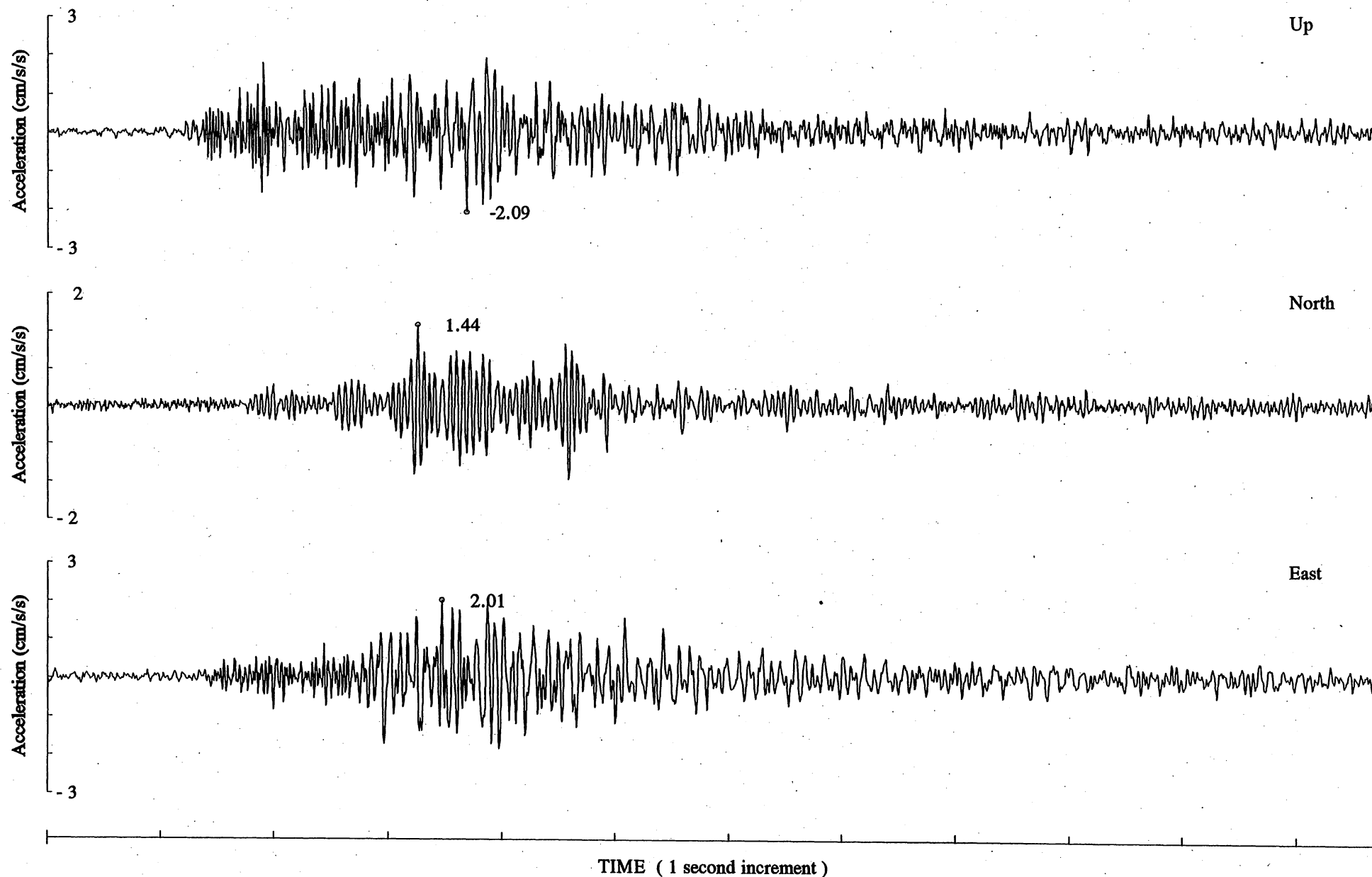
Start Time: 1992-10-15 0438 00.265

Total number=2347

Sample Rate=200

ML=2.0

Epicentre: 39:46N,118:28E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 11090451.092

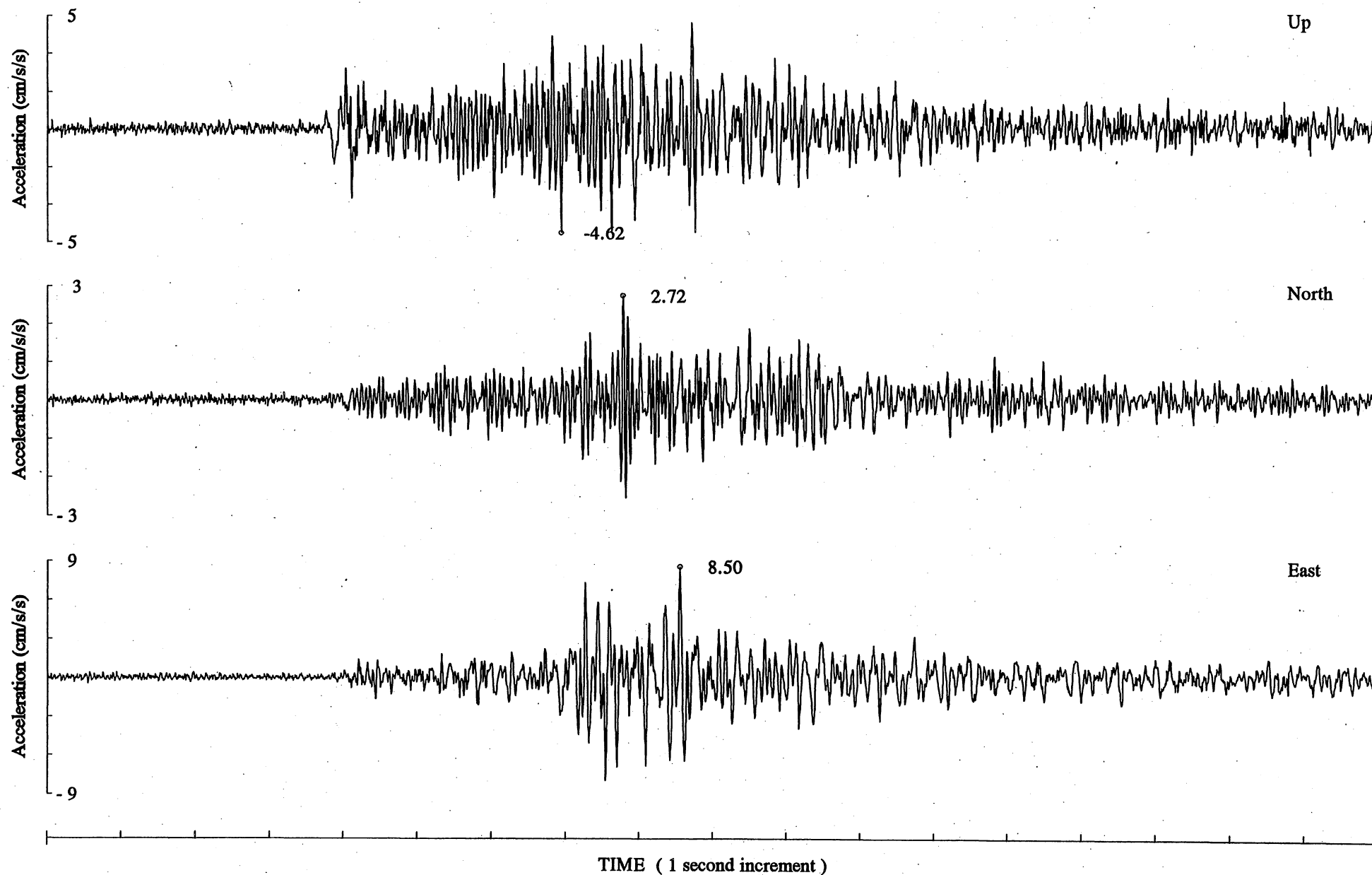
Start Time: 1992-11-09 0451 05.990

Total number=3602

Sample Rate=200

ML=3.3

Epicentre: 39:42N,118:17E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 02031213.093

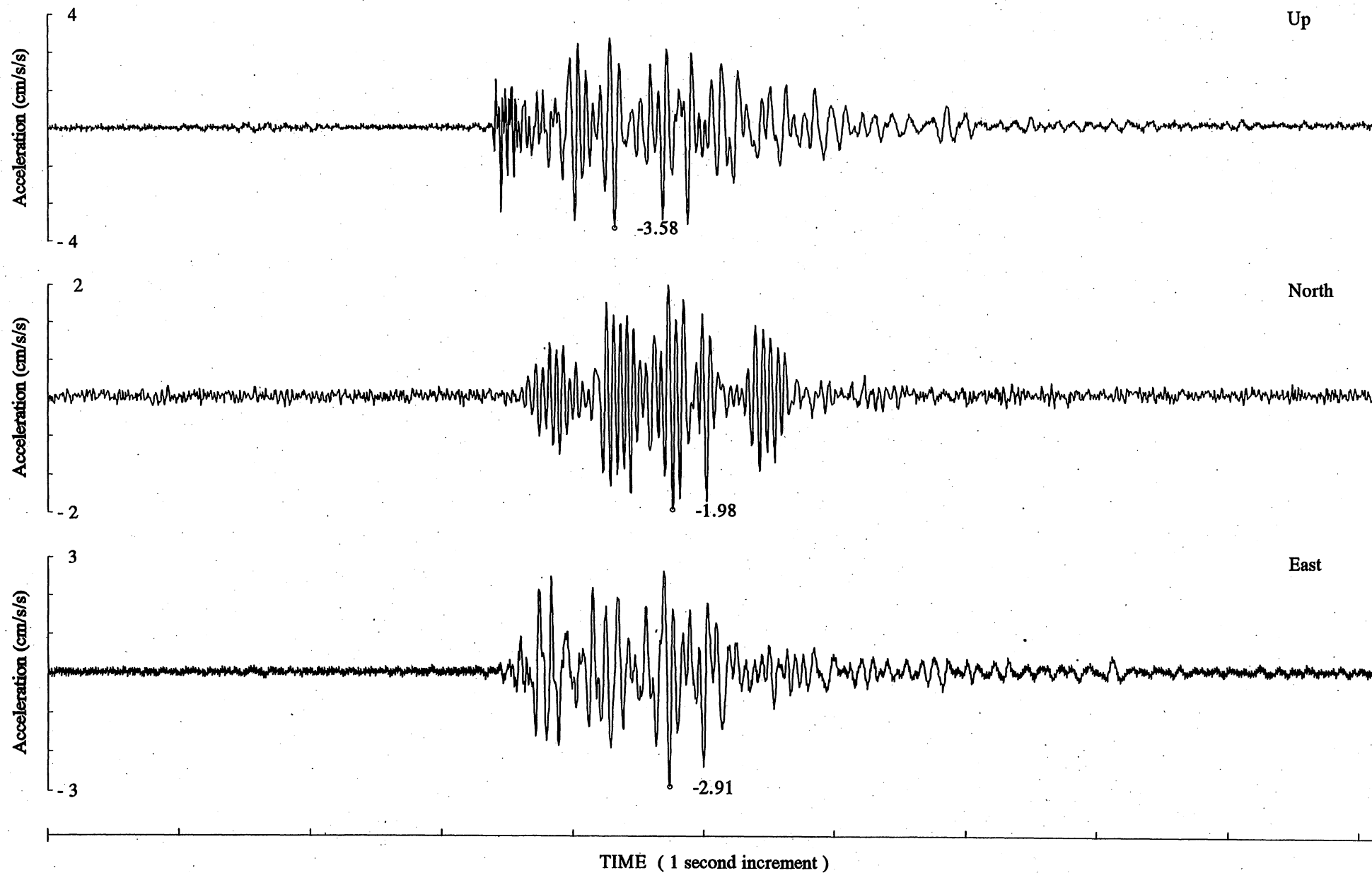
Start Time: 1993-02-03 1213 18.835

Total number=2032

Sample Rate=200

ML=2.0

Epicentre: 39:48N,118:35E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 03271559.093

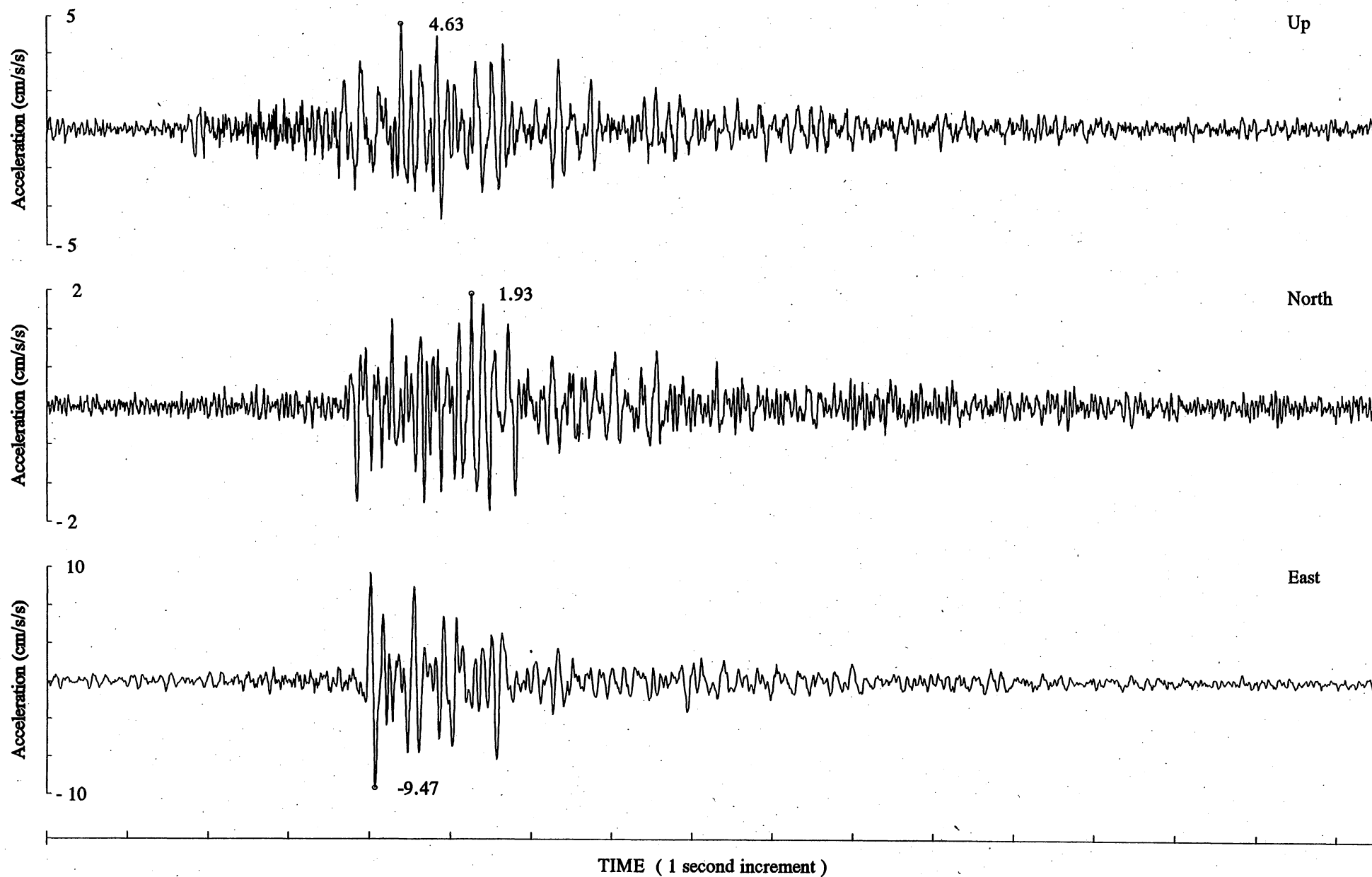
Start Time: 1993-03-27 1559 54.475

Total number=3304

Sample Rate=200

ML=2.6

Epicentre: 39:44N,118:24E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 03280751.093

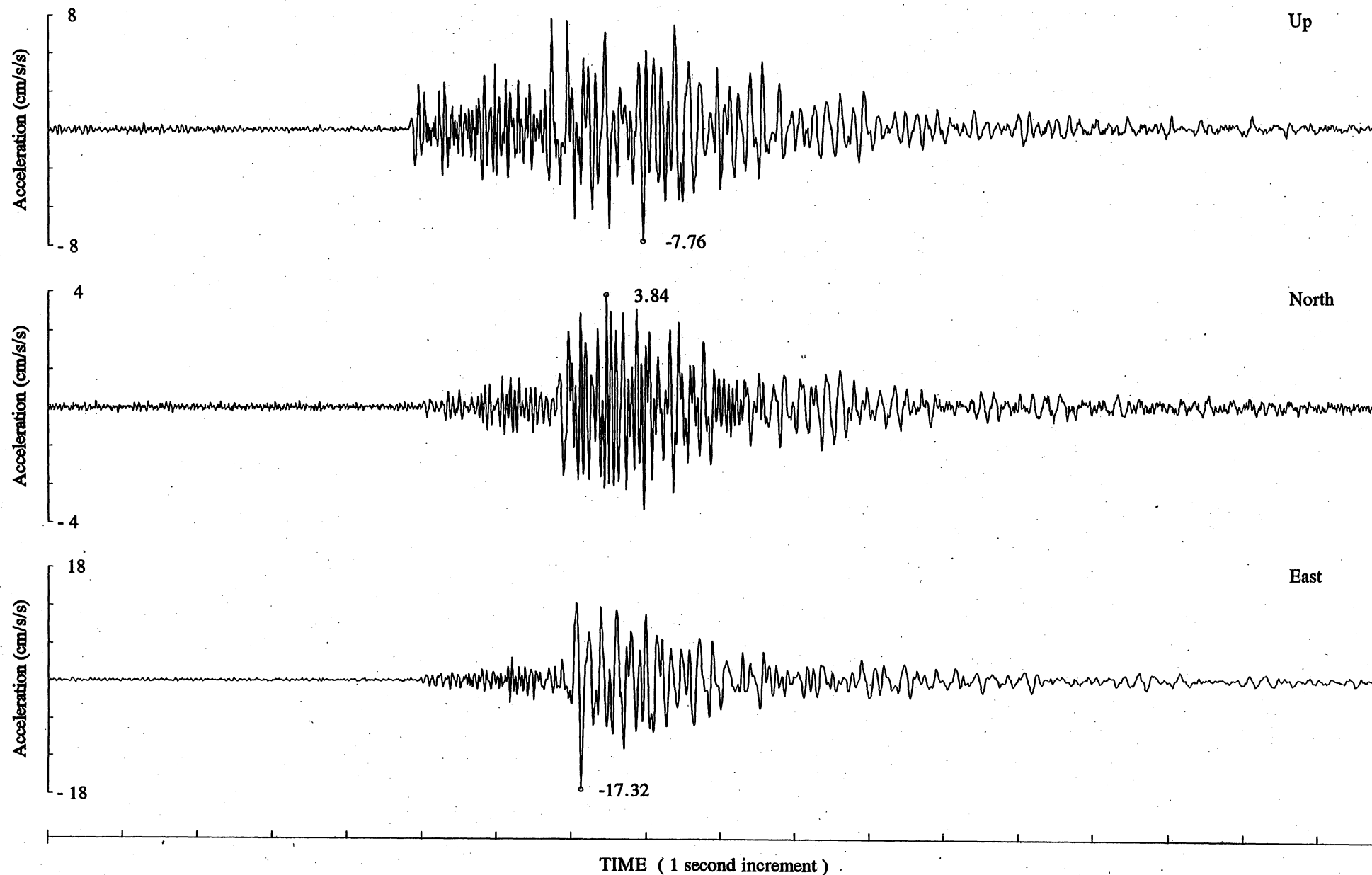
Start Time: 1993-03-28 0751 39.980

Total number=3568

Sample Rate=200

ML=2.7

Epicentre: 39:43N,118:29E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 04230042.093

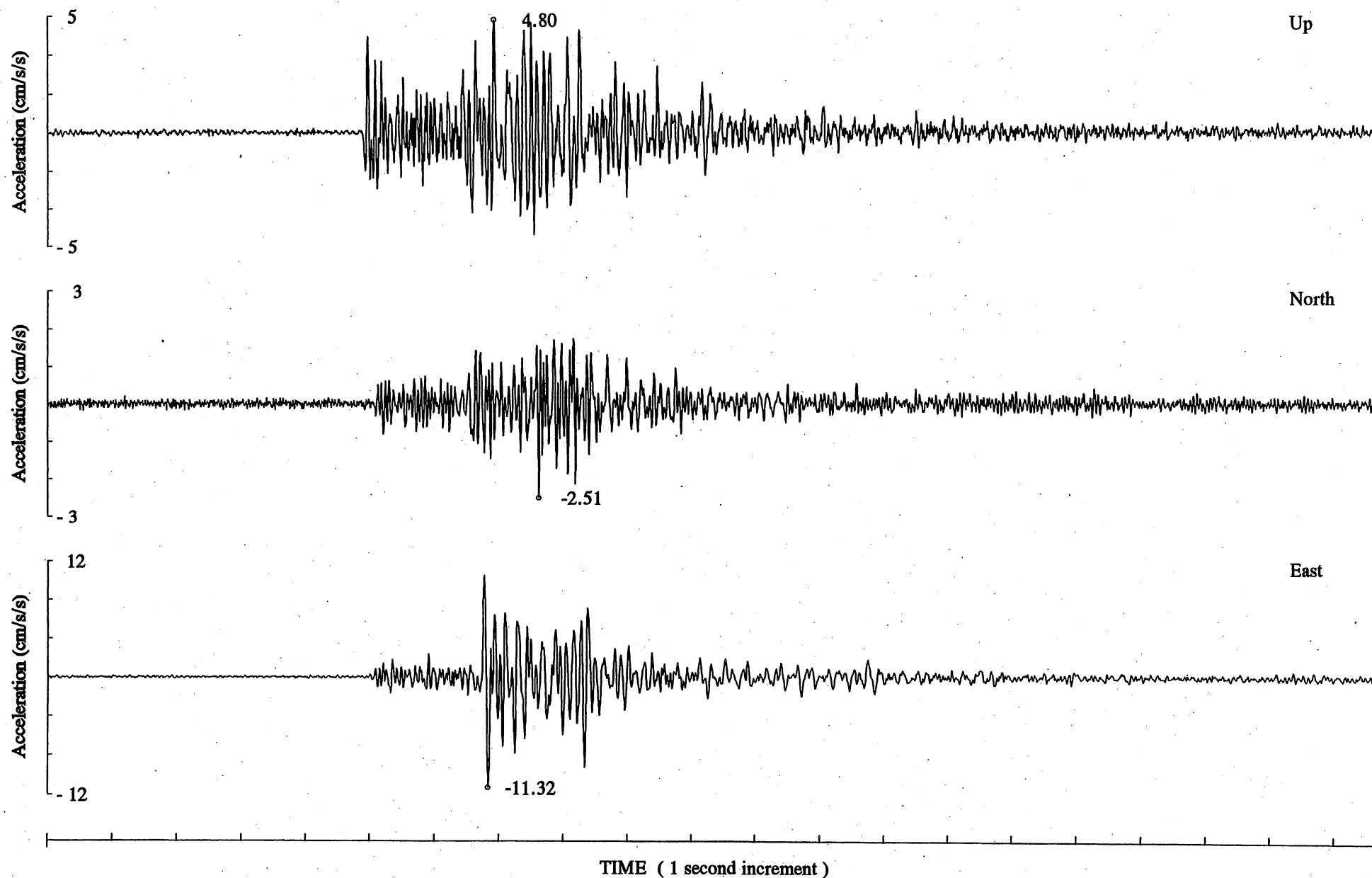
Start Time: 1993-04-23 0042 58.765

Total number=4146

Sample Rate=200

ML=2.4

Epicentre: 39:39N,118:25E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 07091929.093

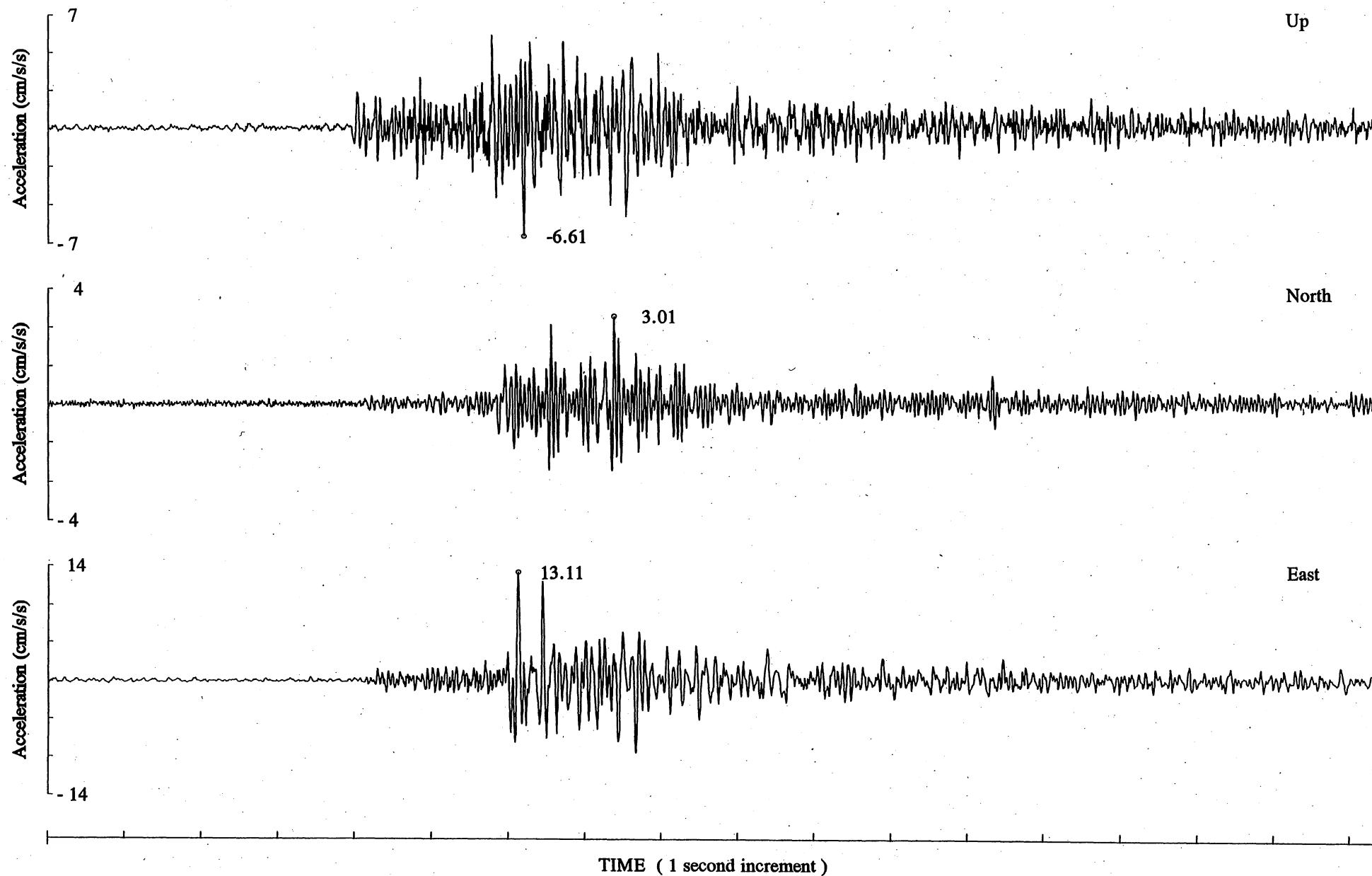
Start Time: 1993-07-09 1929 31.625

Total number=3474

Sample Rate=200

ML=3.0

Epicentre: 39:35N,118:35E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 07250336.093

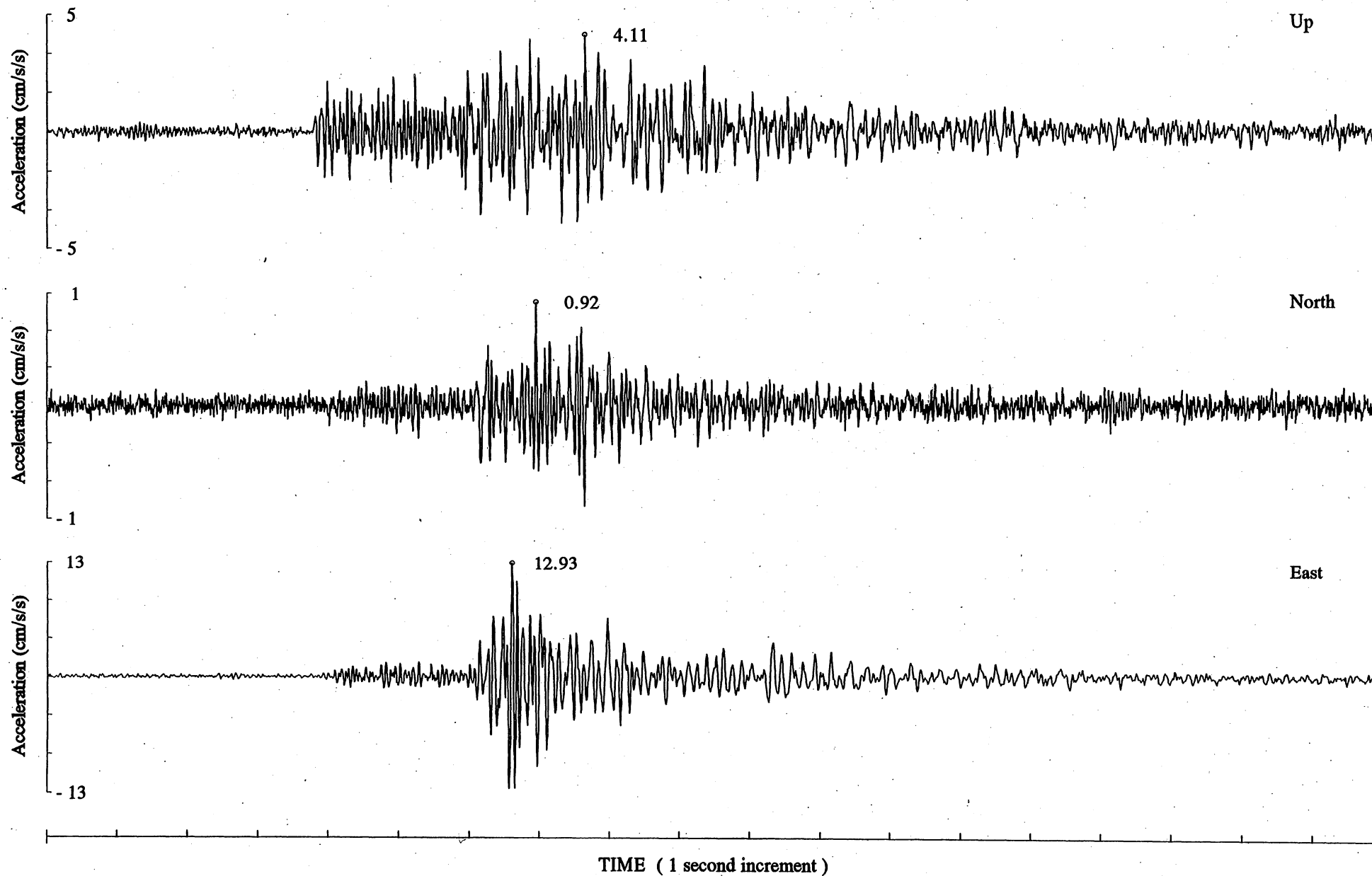
Start Time: 1993-07-25 0336 22.025

Total number=3794

Sample Rate=200

ML=2.9

Epicentre: 39:46N,118:23E, Tangshan, CHINA



Station: Leizhuang(39:45:16N,118:34:35E)

Site: Ground/Soil

Instrument: Kelunj#78

Data: Acceleration

Event: 07290024.093

Start Time: 1993-07-29 0024 02.565

Total number=3930

Sample Rate=200

ML=2.8

Epicentre: 39:46N,118:42E, Tangshan, CHINA

