

Blacksea

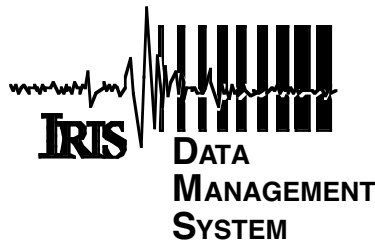
A wide-angle seismic and subsidence study of conjugate margin
systems

In the Eastern Black Sea Basin

February 17 – March 11, 2005

Southampton Oceanography Centre

Assembled Data Set 05-009



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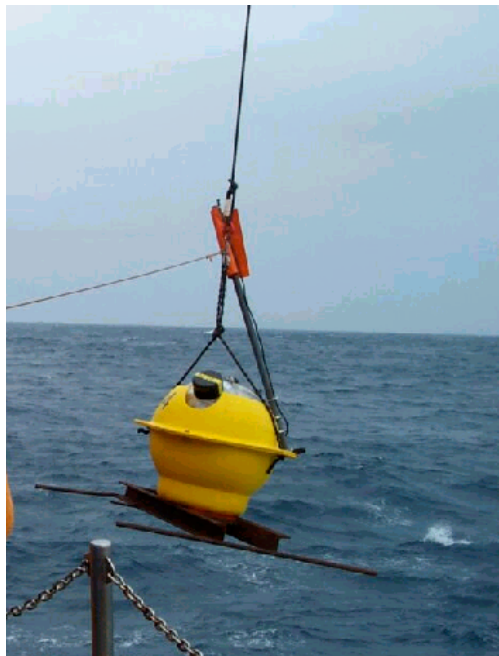


GeoPro GmbH Hamburg

**“THE PROVISION OF OFFSHORE SEISMIC ACQUISITION
SERVICES IN CONNECTION WITH THE ANALYSIS OF
CONJUGATE MARGIN SYSTEMS IN THE EASTERN BLACK SEA”
February- March 2005**

WIDE APPERTURE REFLECTION / REFRACTION PROFILING

WARRP



SURVEY REPORT

FOR THE SOUTHAMPTON OCEANOGRAPHIC CENTRE

MARCH 2005

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1. Summary

On behalf of University of **Southampton** as represented by the **SOUTHAMPTON OCEANOGRAPHY CENTRE (SOC)**, **GeoPro GmbH- Hamburg** performed from 17th of February till the 11th of March 2005 a WARRP (Wide Aperture Seismic Profiling) seismic survey in Black Sea, within Turkish economic zone

Thirty four (34) Ocean Bottom Stations (OBS) recording 3 geophone and one hydrophone each (4C-survey) were deployed in water depth ranging from 400 to 2200 meters along 4 seismic lines. Length of each line varied between 500 and 200 km and the spacing of the OBS positions had to be adjusted accordingly. The seismic signals were generated by airgun array of 3340 cubic inch or 54.6 litres volume firing at 60 to 90 seconds. The 90 seconds shots interval was necessary in order to avoid interaction between acoustic energy travelling through the water with seismic signals having propagated through the thick sediments in crust of this area. Energy obtained by these shots exceeded 200 km.

In total 7046 shots fired at 115 to 170 km spacing, producing 80 common station 4C-gathers (CStG). Two OBS positions were lost, one on profile 1 and one on profile 4. Bad weather conditions caused delay and strained the crew – scientific and marine – extending the survey by a period of 4 days.

Data processing is now completed and CStG prepared in SEG-Y format were delivered. Stations have been treaded for timing effect due to clock drift

2. Acquisition

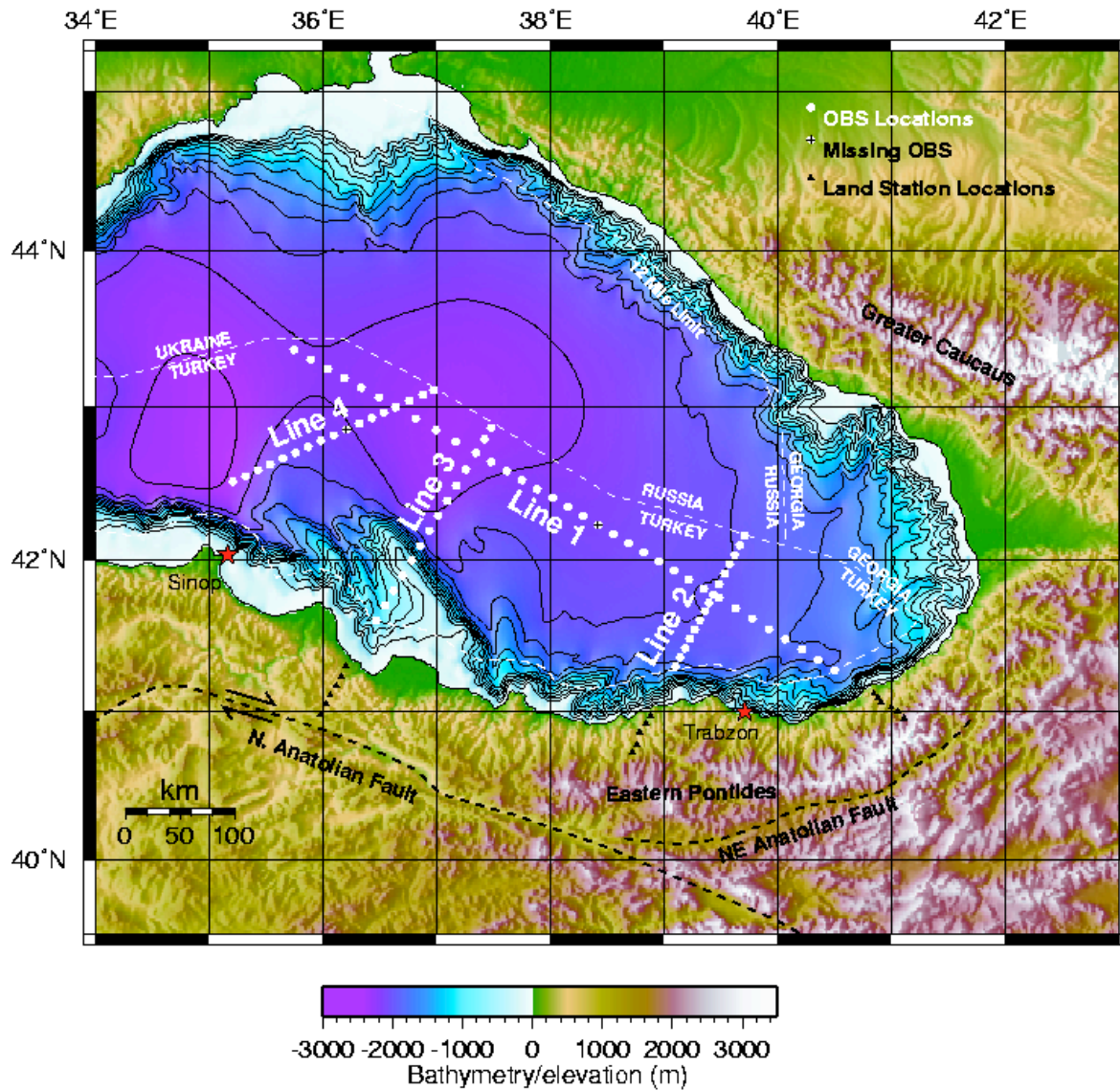


Fig.1 Location of Profiles

2.1 Timing and details

The survey commenced on 17th February 2005 and seismic acquisition was completed on 11th March 2005. The R/V ISKATEL, a 54.8 m long vessel was used to perform the marine operations. The OBS were deployed in a first pass along each line at an average spacing between 8.3 km and 13.6 km. Then shooting was performed along each line at an average speed of 4 knots and 60 to 90 seconds firing frequency. At a third pass along the line OBSs were acoustically released and collected upon surface.

A total of 80 OBSs were deployed and all of them except of 2 were recovered. On profile 1 - 34 the OBS were spaced at a distance of 13.6 km. On profile 4 - 17 the OBS were spaced at a distance of 8.3 km. On profile 3 - 14 the OBS were spaced at an interval of 12.6 km and on profile 2 15 OBSs were spaced 8 km apart. A 55 litres airgun array was employed as the energy source. The shot spacing varied from 115 m on profile 1 and 2 (1 minutes shooting interval) to 170 m on profiles 3 and 4 (90 seconds shooting interval).

Appendix 4.1 to 4.3 provides detailed information on the deployment and recovery of the OBS, their coordinates and water depths. Shooting tables with coordinates and water depth under each 10th of airgun shot on profile 1, 2, 3 and 4 are placed in Appendix 4.4, 4.5, 4.6 and 4.7

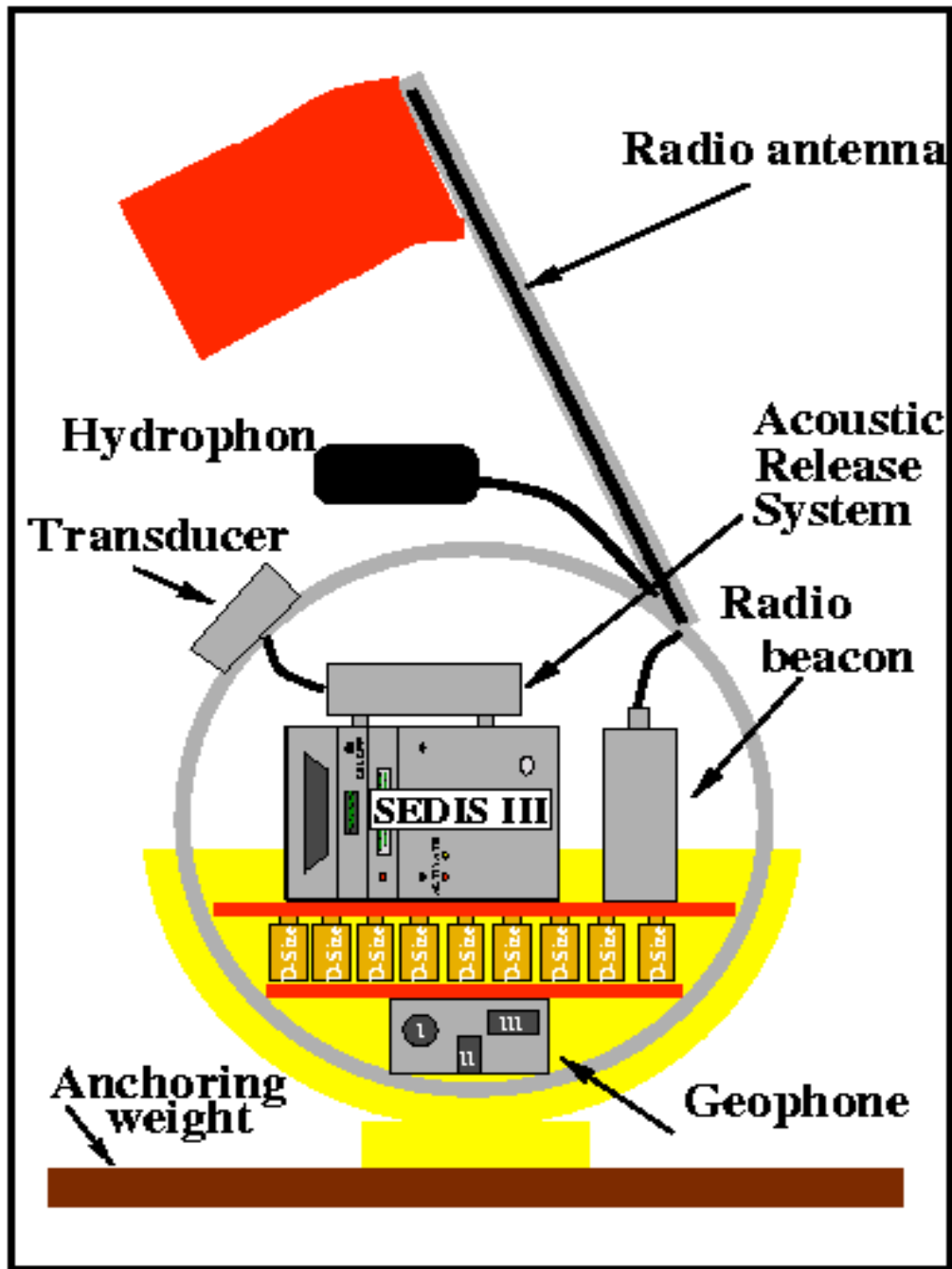


Fig. 2. Sketch of OBS GeoPro GmbH

2.2 Ocean bottom station

The OBS, designed by *GeoPro GmbH*, is a seismic stand-alone station, which can be deployed up to a water depth of 6700 m. A sketch of an OBS is shown in Fig.2. The seismic recording unit SEDIS III or SEDIS IV, constructed by *GeoPro GmbH* is housed in a 17inch (430 mm) diameter glass sphere, which also contains the power pack and electronic release. External components are a transducer connected to the acoustic release, a hydrophone, the mechanical release unit; hand a flags and antenna for the radiolocation. A rigid protection covers the glass sphere. During deployment and recording, the instrument is attached to a 17 kg iron anchor, which keeps the OBS attached to the seabed. The total weight of the instrument including the anchor at deployment is 42 kg in air.

To locate the instrument after it has released from the anchor and risen to the surface, three items are integrated and attached to the unit, these being a reflective flag for daylight observation, a halogen light for recovery at night and a radio beacon transmitting on a frequency received by a direction finder onboard the vessel.

Power is supplied by a battery-pack consisting of 49 alkaline 1.5 V D-size batteries, two 9V block batteries and 25V power supply consisting of rechargeable batteries.

By using the acoustic release, the instrument can be ranged from the ship in order to obtain its location on the seabed and during ascending to the surface. Depending on the weather conditions one or several instruments may be released. The timer and the acoustic release systems are connected to an electronic unit, which activates the burn wire of the release system, 2 minutes later the flashlight and 10 minutes later the radio transmitter. The burn wire that locks the anchor to the instrument corrodes rapidly releasing the OBS which rises to the sea surface with a speed of about 0.6 m/sec.

Three seismic recording channels - one vertical and two horizontal - 4.5 Hz geophones are housed in the bottom of the sphere. They are gimbal mounted and suspended in a viscous silicone fluid. A fourth channel is records the hydrophone.

The current OBS version also uses an electronic compass which is connected to serial port of the SEDIS unit and shows the orientation of horizontal components of geophone. One compass reading is taken when the instrument starts recording. Recording always starts after instrument is landed on the seafloor, in order to protect the hard disk.

The seismic recording unit SEDIS III has a size of 205x105x200 mm, (Fig. 3) is based on a low power consumption Motorola 360 power down microprocessor and has a 16 bits analogue-digital converter (ADC) for 6 channels, a precise quartz clock and a hard disk for storing of recorded information. The internal clock is synchronized by the second's pulse of an external GPS receiver. For on-shore operations the GPS receiver is also recorded at given time intervals.

The communication with Sedis III is achieved through a serial port (9 pins female plug on front panel of Sedis, see Fig. 4).



Fig 3. 6 channels portable seismic recording unit – Seids –III is ideal for offshore and on-shore applications

The instrument has variable recording capacity from 5 to 40 Gigabyte depending on the type of hard disk installed.

2.4 Airgun array

The Airgun array consisted of 2 independent airgun lines deployed from port and starboard sides of the vessel. We used 9 Bolt guns with total volume of 3340 cubic inches (54.7 litres) and air pressure of 145 bars. Depth of shooting was 9 to 10 meters depending on the ship speed, which varied between 3.6 to 4.1 knots. The configuration of the airgun array is outlined on Figure 4.

To determine and adjust the individual firing times of each source element (single airgun) and to detect and monitor misfires and auto fires we used the Long Shot airgun controller. During the operation, firing accuracy of each gun was within two milliseconds with respect to aimed firing time. Gun mask data and actual gun timing accuracy were logged in real time and printed by a matrix printer attached to the Long Shot airgun controller.

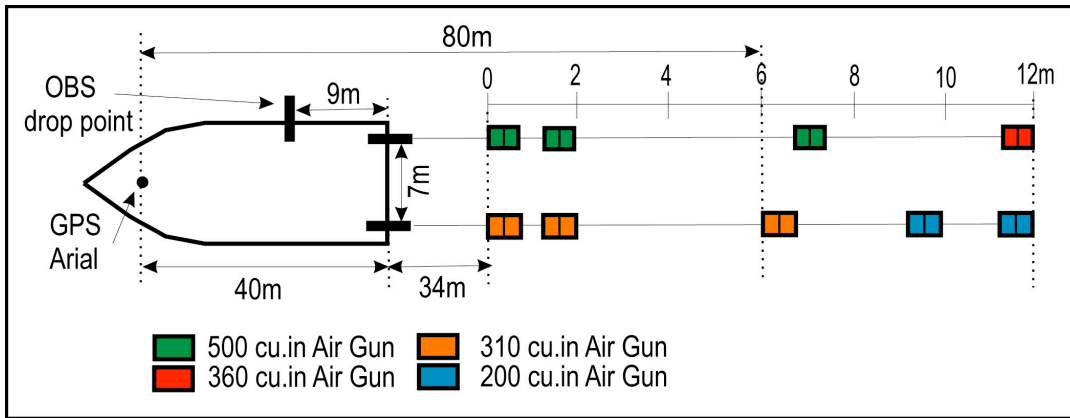


Fig. 4 Airgun array configuration

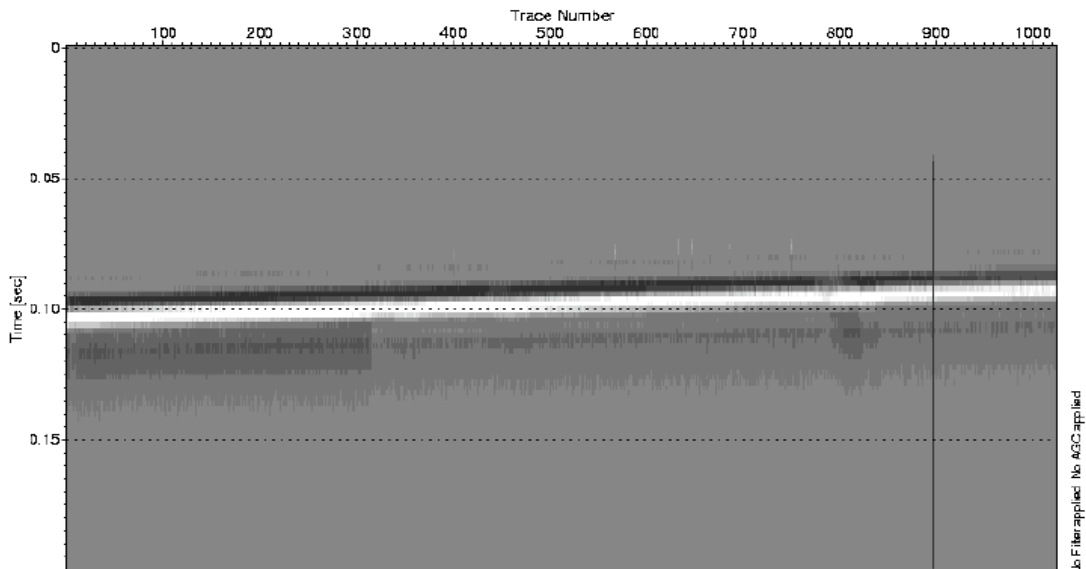
A highly stabilized external master clock triggered each actual shot produced by the airgun controller. Master clock was synchronized to UTC time with the help of a GPS receiver.

We performed 7046 shots along the four profiles with:

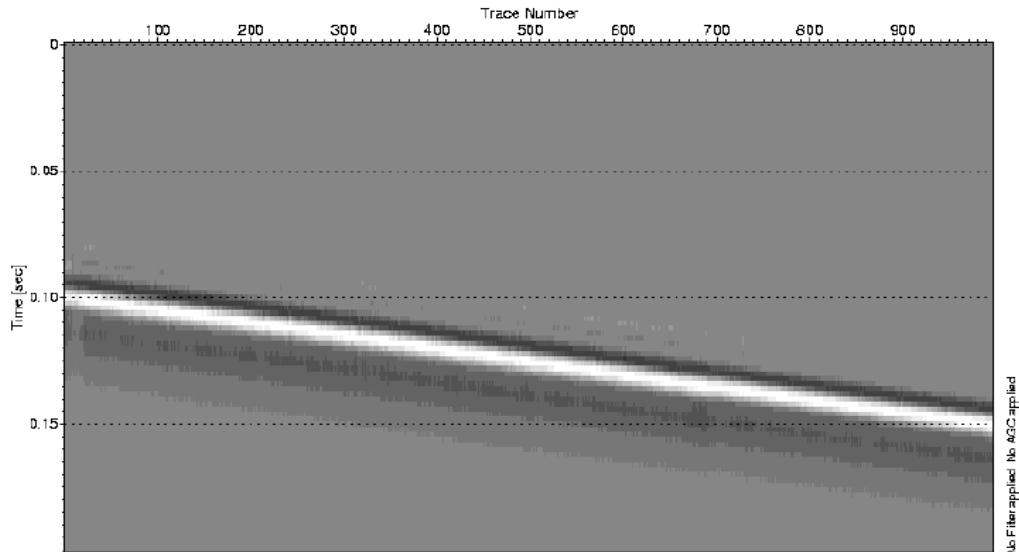
- 3959 shots (every 60 seconds) on profile 1
- 1065 shots (every 60 seconds) on profile 2
- 1025 shots (every 90 seconds) on profile 3
- 997 shots (every 90 seconds) on profile 4

We used Sedis III recorder to obtain each individual airgun shot in exact UTC time. In figure 5 and 6 we show examples of actual filed time break recorded for Profile 3 and 4. The linear Sedis III clock drift in reference to GPS time is obvious. Taking into consideration the Seidis III constant delay of 38 milliseconds for 512 Hz sample rate we can see a constant delay of 50 milliseconds for all shots.

Fig. 5. Field Time Break recorded by SedisIII on Profile



Black Sea 2005. Profile 3. Field Time Break. Recorded by Sedis III, time drift -17 msec



Black Sea 2005. Profile 4. Field Time Break Record by SEDIS III, time drift 53 msec

Fig.6 Field Time Break recorded by SedisIII on Profile 3

3. DATA PROCESSING

3.1 Data Processing Flow

The data acquired on the profiles were subjected to the standard processing graphically shown below. Data processing consists of the following steps:

- 1 - Data extraction from hard disk (raw data) and control files (shooting time)
- 2 - Demultiplexing (incl. correction of time drift as defined from log file)
- 3 - Resampling
- 4 - Determination of OBS positions (from water wave arrivals)
- 5 - Reformatting to SEG-Y data files (incl. filtering and normalization)

3.2 Data Extraction and Demultiplexing

2.5" Notebook hard disk devices are used by the GeoPro SEDIS-III system to store seismic data. These are processed on a Linux based PC and Sun local area network (LAN) environment. In addition to the seismic data, the following information is also stored:

Acquisition parameters:

Sampling rate

Number of recording channels

Date and time of:

Initial clock synchronization with an external GPS clock

Start of recording

End of recording

Final time comparison between the SEDIS internal clock and the external GPS clock

The instrument internal temperature

Processing of the field data consists of the following steps:

Extraction of the seismic information from all recorded data.

The shooting times are extracted from the navigation data and reformatted to fit the input format for the data reading routine. The desired data windows of arbitrary length are read from the field records and stored in a disk file. This step results in one disk file ('Mpsegy data file') per OBS unit.

Demultiplexing.

Each raw data file is demultiplexed resulting in a data file containing all seismic traces for one channel of one OBS sorted by shot times.

The data are then resampled in CWP/SU format and written to SEG-Y tapes to satisfy the requirements for further data processing and modelling.

As the internal clock of each recorder is subject to a temperature dependent drift, the extracted data windows are time shifted in relation to UTC time according to the determined drift corrections. Correction procedures are as follows:

The recorder internal clock is synchronized with UTC time prior to deployment using the GPS system. The exact date and time of synchronization is recorded by the instrument and also logged manually in the OBS field protocols.

After recovery of an OBS, the recorder internal clock is compared with UTC time. The difference between both times, and the time of comparison are recorded by the instrument.

Finally, the time shift for each data window is calculated using linear interpolation. This approach is justified by the fact that the ambient temperature of the internal SEDIS clock is constant. A rapid temperature change can also be considered as the instrument continuously records it and a variable clock drift calculated.

3.3 Data Reformatting

The final data set was reformatted and delivered in SEG-Y format on Client's hard disk via fast Ethernet link.

3.4 Geometry calculation for the SEG-Y trace headers

The SEG-Y headers contain the following information:

- Source Longitude in arc seconds
- Source Latitude in arc seconds
- Water depth at source position
- Receiver Longitude in arc seconds (OBS)
- Receiver Latitude in arc seconds (OBS)
- Water depth at receiver position (OBS)

Offset (source -receiver distance)

The offset calculation is performed in a Gauss- Krueger projection of the geographical coordinates along the direction of each profile. The origin of the local coordinate system coincides with the first production shot on a profile. The direction of the inline local axis is determined by the last production shot on the profile.

3.5 Time corrections explanation

Time of each trace in *SEG Y* file was corrected to airgun field time break delay (50 mseconds) , constant Sedis III time delay of 76 miliseconds (for 256 Hz sample rate of data collecting) and Sedis clock drift according to comparasion with the GPS clock. We used a linear clock dirft since the temperature on the seabed is constant. Resulting time corrections were placed in *delrt* SEG Y trace header:

short delrt; / delay recording time, time in ms between initiation time of energy source and time when recording of data samples begins (for deep water work if recording does not start at zero time) */*

delrt = -50 msec – 76 msec – sedisIII_time_corrections (time dependent)

Sedis III clock drift measurements are outlined in appendix 3 for all recovered OBSs.

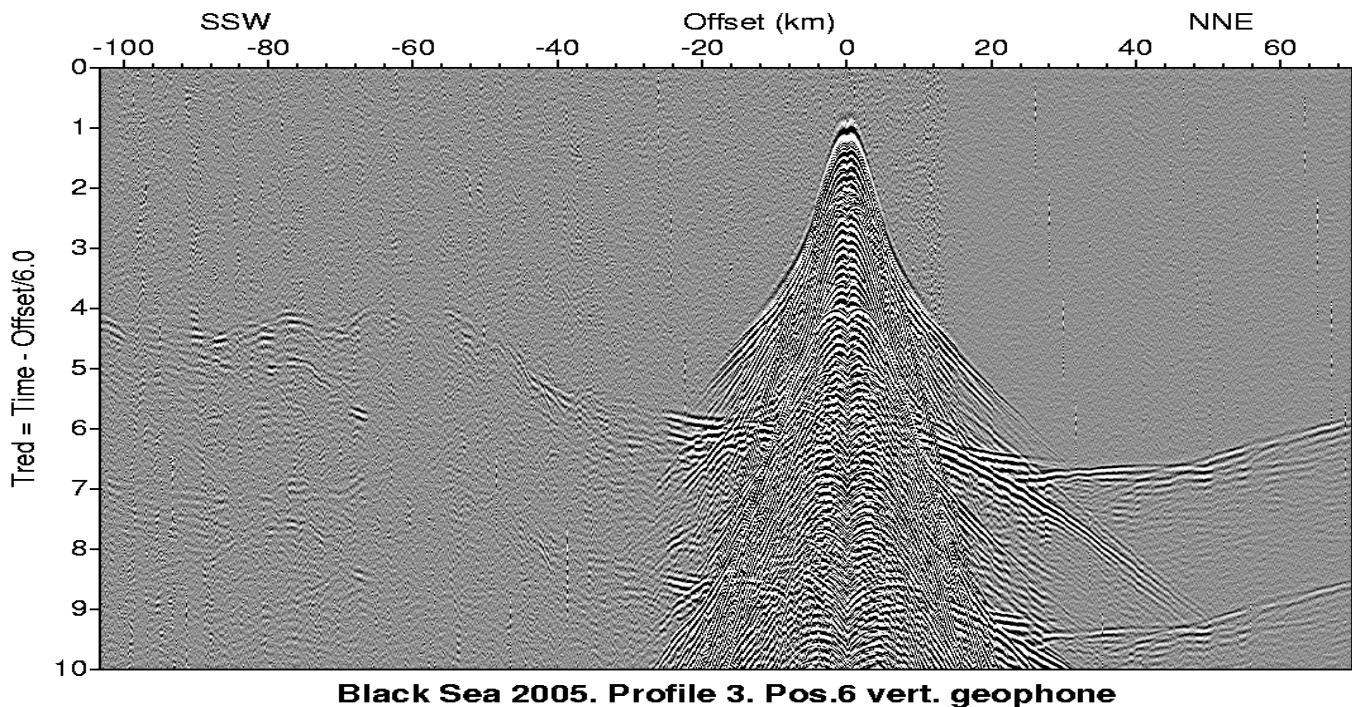


Fig. 7 Common receiver shot gather. OBS Pos. 6 Profile3. Vertical geophone. Linear moveout with velocity of 6 km/sec was applied to the data.

An example of common Receiver Station Gather with linear moveout of 6.0 km/s velocity is presented on figure 7. Energy as can be seen , propagated very efficiently.

3.6 Echo-sounder data processing

For sea bottom profiling the ATLAS DESO 30 dual frequency echo-sounder was used. The echo sounder transducer was installed “over-the-side”. This installation mode does not permit to the vessel to exceed a traveling speed over 6 knots. For this reason the echosounder was used on a continuous mode only during shooting (speed 4.3 knots) and not during deploying and collecting OBS.

The echo-sounder readings were logged into the navigation computer together with GPS coordinates

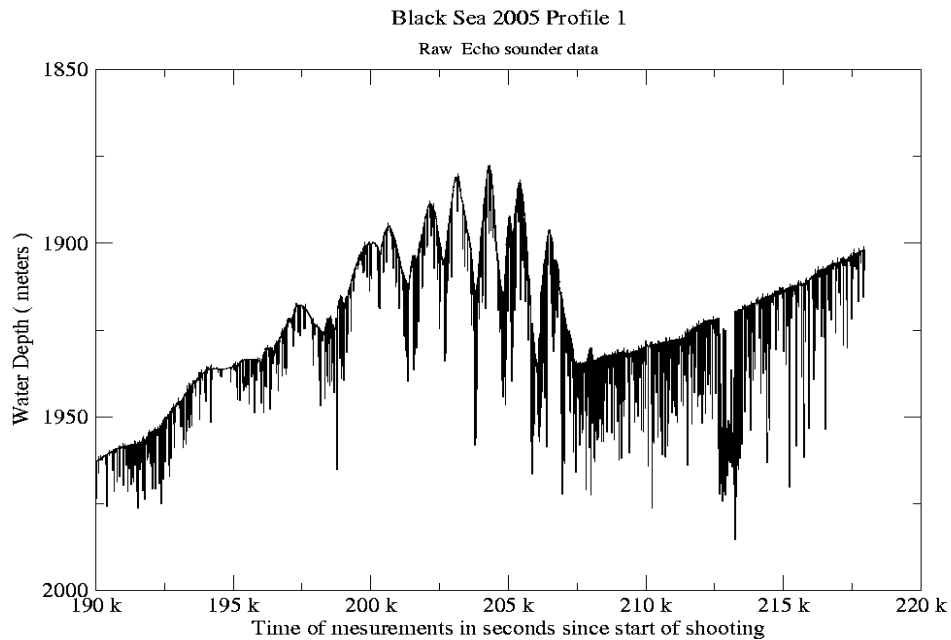


Fig. 8 . Raw Water Depth along the part of Profile 1

The over-the-side echo sounder installation is not a good solution for bad sea conditions since it produced noisy readings which had to be eliminated by postprocessing. Figure 8 shows one example of unprocessed echo sounder data. We used several processing steps to clean up the depth records for each profile. The OBS depth was defined by projecting the OBS position into the shooting line. Examples of water depth profiles along the lines 1 and 3 are presented in Figures 9 and 10.

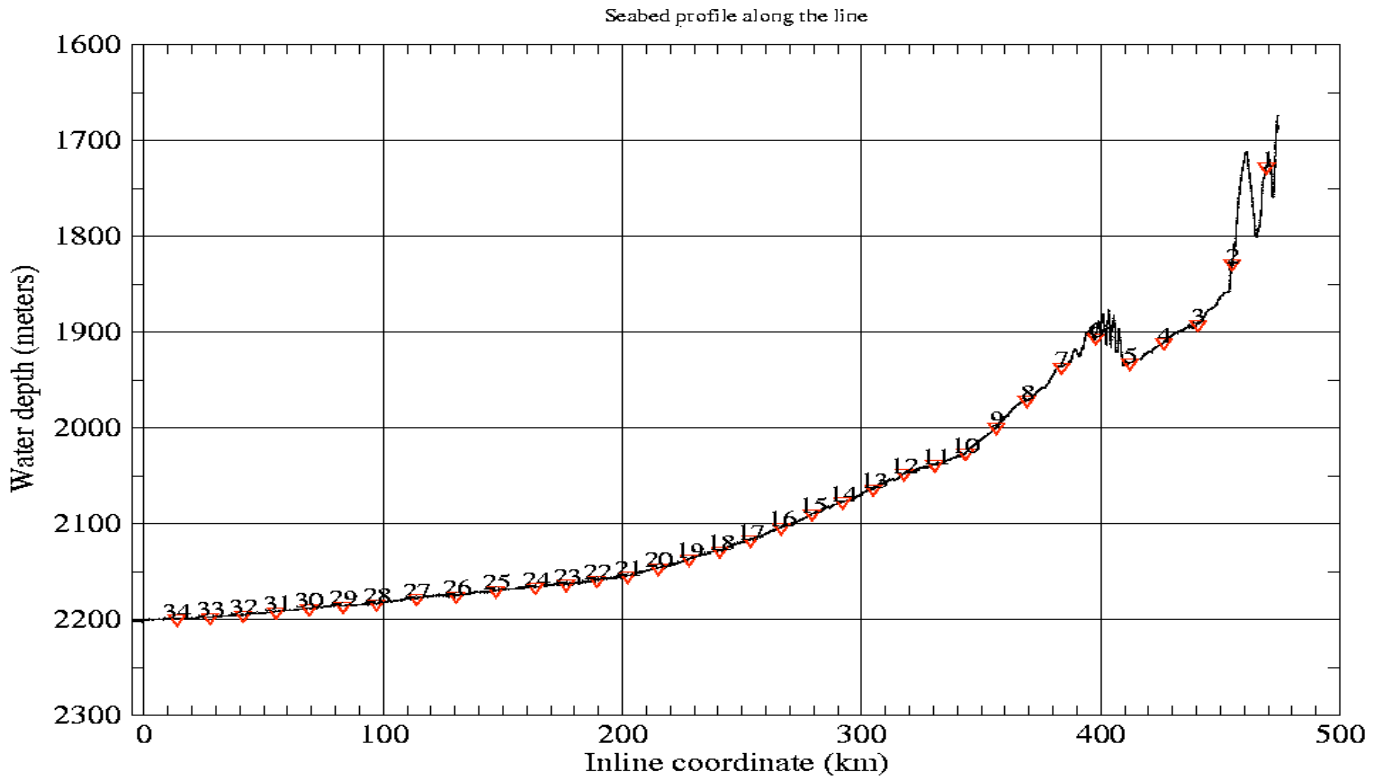


Fig. 9 . Water Depth along Profile 1

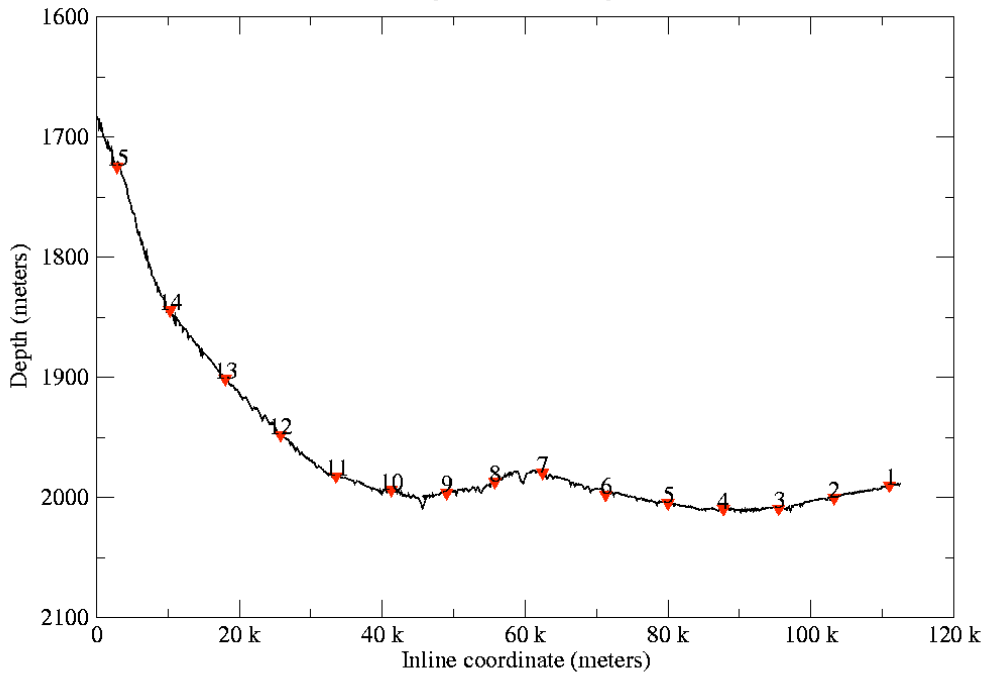


Fig. 10 . Water Depth along Profile 2

Black Sea 2005. Profile 3.
OBS positions & Seabed profile

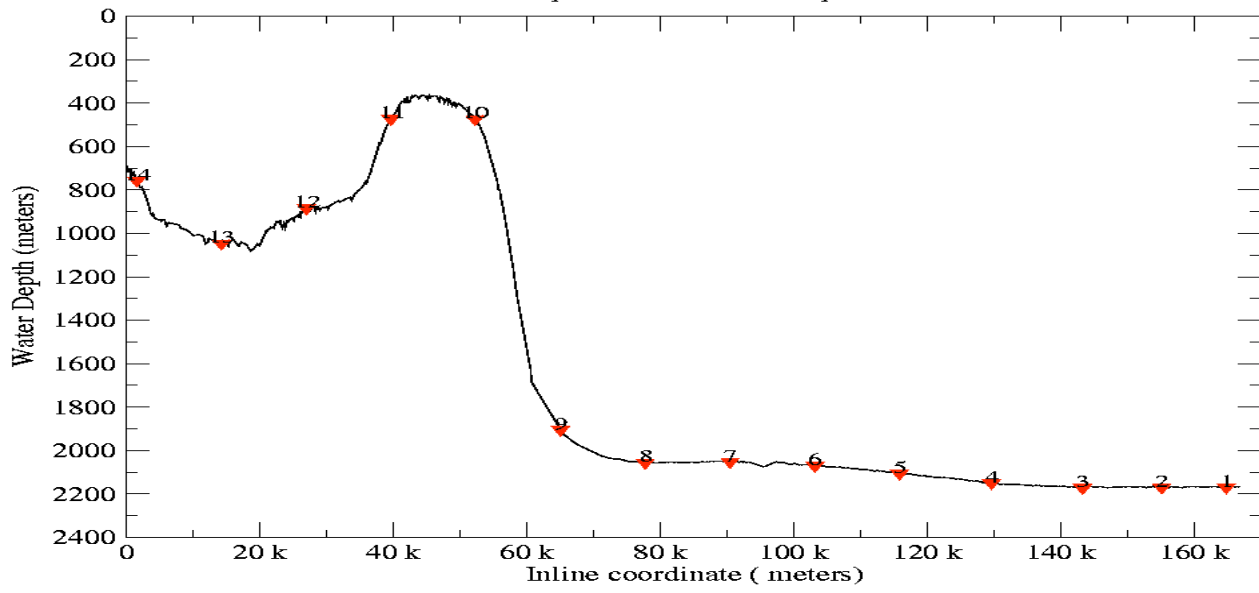


Fig. 11 . Water Depth along Profile 3

Black Sea 2005. Profile 4
OBS positions & seabed profile

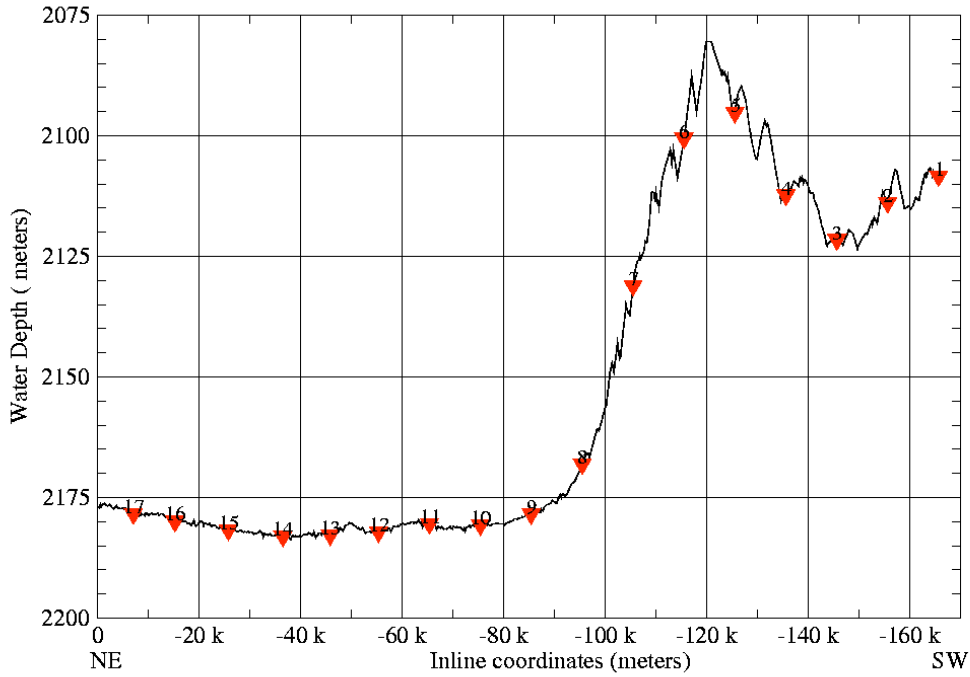


Fig. 12 . Water Depth along Profile 4

Appendix 4.1
OBS deployment coordinates and water depth

Profile 1

OBS Pos. No	Latitude	Longitude	Water depth(m)
	North(Deg Min)	East (Deg Min)	
1	41 16.424114	40 30.362332	1727
2	41 20.542497	40 21.693475	1828
3	41 24.632923	40 13.019062	1892
4	41 28.716570	40 04.318879	1910
5	41 32.788972	39 55.609263	1932
6	41 36.839711	39 46.883917	1905
7	41 40.887277	39 38.135362	1936
8	41 44.998450	39 29.229502	1971
9	41 48.618047	39 21.328730	1999
10	41 52.231192	39 13.415687	2026
11	41 55.840284	39 05.486730	2038
12	41 59.439347	38 57.533019	2047
13	42 03.032144	38 49.561147	2063
14	42 06.603237	38 41.602451	2077
15	42 10.162162	38 33.632370	2089
16	42 13.732785	38 25.603548	2103
17	42 17.282014	38 17.585350	2117
18	42 20.823119	38 09.542824	2127
19	42 24.357233	38 01.490118	2136
20	42 27.879110	37 53.425255	2146
21	42 31.389962	37 45.346082	2154
22	42 34.888534	37 37.243442	2158
23	42 38.391798	37 29.131964	2163
24	42 41.881187	37 20.985562	2166
25	42 46.375725	37 10.523297	2169
26	42 50.804364	36 59.986570	2175
27	42 55.244560	36 49.457755	2177
28	42 59.739494	36 38.725155	2183
29	43 03.476482	36 29.760052	2186
30	43 07.242002	36 20.662218	2188
31	43 10.896966	36 11.794832	2192
32	43 14.540906	36 02.905622	2195
33	43 18.167754	35 53.999318	2198
34	43 21.793276	35 45.087003	2199

Profile 2

OBS Pos. No	Latitude	Longitude	Water depth(m)
	North(degree)	East (degree)	
1	42.1581	39.7145	1990
2	42.0965	39.6702	2000
3	42.035	39.6262	2009
4	41.9734	39.5822	2009
5	41.9119	39.5382	2004
6	41.8424	39.4888	1997
7	41.7721	39.4388	1979
8	41.7191	39.4012	1987
9	41.6655	39.3633	1996
10	41.6037	39.3197	1994
11	41.5422	39.2763	1982
12	41.4805	39.233	1948
13	41.4188	39.1897	1901
14	41.3571	39.1465	1844
15	41.298	39.1052	1724

Profile 3

OBS Pos. No	Latitude	Longitude	Water depth(m)
	North(degree)	East (degree)	
1	42.8638	37.4855	2167
2	42.7894	37.4245	2168
3	42.6980	37.3498	2170
4	42.5926	37.2640	2147
5	42.4864	37.1778	2104
6	42.3884	37.0986	2068
7	42.2902	37.0197	2050
8	42.1921	36.9405	2054
9	42.0938	36.8628	1902
10	41.9948	36.7836	472
11	41.8973	36.7064	472
12	41.7991	36.6286	883
13	41.7005	36.5511	1045
14	41.6021	36.4738	774

Profile 4

OBS Pos. No	Latitude	Longitude	Water depth(m)
	North(degree)	East(degree)	
1	42.5111	35.2130	2108
2	42.5492	35.3233	2114
3	42.5874	35.4338	2121
4	42.6254	35.5446	2112
5	42.6634	35.6554	2095
6	42.7013	35.7664	2100
7	42.7390	35.8775	2131
8	42.7766	35.9887	2168
9	42.8142	36.1004	2178
10	42.8516	36.2116	2181
11	42.8888	36.3233	2180
12	42.9260	36.4351	2182
13	42.9613	36.5414	2183
14	42.9955	36.6457	2182
15	43.0351	36.7658	2180
16	43.0738	36.8836	2178
17	43.1037	36.9754	2178

Appendix 4.2
OBS Recovery Protocols

Profile1

OBS Pos. No	Depth m	OBS Release time		OBS on sea surf		OBS on board		
		local time		local time		local time		
		time	date	time	date	time	date	
1	1727	23:23	22.02.05	00:08	23.02.05	00:26	23.02.05	
2	1828	01:32	23.02.05	02:17	23.02.05	02:36	23.02.05	
3	1892	03:44	23.02.05	04:42	23.02.05	05:28	23.02.05	
4	1910	06:27	23.02.05	07:25	23.02.05	07:45	23.02.05	
5	1932	08:52	23.02.05	09:40	23.02.05	10:05	23.02.05	
6	1905	11:05	23.02.05	12:10	23.02.05	12:22	23.02.05	
7	1936	13:34	23.02.05	14:30	23.02.05	14:40	23.02.05	
8	1971	15:57	23.02.05	16:52	23.02.05	17:10	23.02.05	
9	1999	18:04	23.02.05	18:58	23.02.05	19:23	23.02.05	
10	2026	20:24	23.02.05	21:18	23.02.05	21:50	23.02.05	
11	2038	22:44	23.02.05	23:57	23.02.05	00:10	24.02.05	
12	2047	01:14	24.02.05	02:10	24.02.05	02:36	24.02.05	
13	2063	03:50	24.02.05	04:45	24.02.05	04:55	24.02.05	
14	2077	06:00	24.02.05	06:48	24.02.05	07:11	24.02.05	
15	2090	08:17	24.02.05	09:20	24.02.05	09:29	24.02.05	
16	2104	10:26	24.02.05	Was not recovered				
17	2117	20:06	24.02.05	21:00	24.02.05	21:20	24.02.05	
18	2128	22:33	24.02.05	23:29	24.02.05	23:34	24.02.05	
19	2137	00:45	25.02.05	01:49	25.02.05	02:01	25.02.05	
20	2146	03:04	25.02.05	04:06	25.02.05	04:16	25.02.05	
21	2154	05:22	25.02.05	06:25	25.02.05	07:17	25.02.05	
22	2159	08:15	25.02.05	09:20	25.02.05	09:33	25.02.05	
23	2163	10:35	25.02.05	11:50	25.02.05	11:55	25.02.05	
24	2166		Was recovered on Profile 3 (Pos. 3)					
25	2170	14:08	25.02.05	15:01	25.02.05	15:12	25.02.05	
26	2175	16:27	25.02.05	17:28	25.02.05	17:37	25.02.05	
27	2178	18:48	25.02.05	19:55	25.02.05	20:01	25.02.05	
28	2183	01:57	26.02.05	03:04	26.02.05	03:22	26.02.05	
29	2186	23:45	25.02.05	00:36	26.02.05	00:42	26.02.05	
30	2187	05:40	26.02.05	06:47	26.02.05	07:05	26.02.05	
31	2192	08:09	26.02.05	09:09	26.02.05	09:15	26.02.05	
32	2195	10:29	26.02.05	11:27	26.02.05	11:44	26.02.05	
33	2198	12:46	26.02.05	13:46	26.02.05	13:54	26.02.05	
34	2199	14:54	26.02.05	16:10	26.02.05	16:14	26.02.05	

Profile 2

OBS Pos. No	Depth m	OBS Release time local time		OBS on sea sur local time		OBS on board local time	
		time	date	time	date	time	date
		1	1990	07:17	10.03.0	08:11	10.03.0
2	2000	09:07	10.03.0	10:05	10.03.0	510:13	10.03.0
3	2009	11:12	10.03.0	12:13	10.03.0	512:25	10.03.0
4	2009	13:13	10.03.0	14:08	10.03.0	514:20	10.03.0
5	2004	15:13	10.03.0	16:07	10.03.0	516:12	10.03.0
6	1997	16:51	10.03.0	17:40	10.03.0	517:59	10.03.0
7	1979	18:43	10.03.0	19:33	10.03.0	519:43	10.03.0
8	1987	20:18	10.03.0	21:15	10.03.0	521:19	10.03.0
9	1996	21:55	10.03.0	22:49	10.03.0	522:57	10.03.0
10	1994	23:38	10.03.0	00:31	11.03.0	500:42	11.03.0
11	1982	01:27	11.03.0	02:26	11.03.0	502:45	11.03.0
12	1948	03:31	11.03.0	04:32	11.03.0	504:40	11.03.0
13	1901	05:30	11.03.0	06:40	11.03.0	507:00	11.03.0
14	1844	07:55	11.03.0	08:47	11.03.0	508:51	11.03.0
15	1724	09:39	11.03.0	10:28	11.03.0	510:35	11.03.0

Profile 3

OBS Pos. No	Depth m	OBS Release time local time		OBS on sea sur local time		OBS on board local time	
		time	date	time	date	time	date
		1	2167	10:48	06.03.0	11:44	06.03.0
2	2168	12:50	06.03.0	13:45	06.03.0	514:05	06.03.0
3	2170	15:20	06.03.0	16:15	06.03.0	516:23	06.03.0
4	2147	17:45	06.03.0	18:33	06.03.0	518:45	06.03.0
5	2104	19:50	06.03.0	20:46	06.03.0	520:52	06.03.0
6	2068	21:55	06.03.0	23:00	06.03.0	523:08	06.03.0
7	2050	00:24	07.03.0	01:18	07.03.0	501:29	07.03.0
8	2054	02:36	07.03.0	03:27	07.03.0	503:47	07.03.0
9	1902	04:53	07.03.0	06:05	07.03.0	506:17	07.03.0
10	472	07:18	07.03.0	07:31	07.03.0	507:40	07.03.0
11	472	08:50	07.03.0	09:08	07.03.0	509:13	07.03.0
12	883	10:37	07.03.0	11:05	07.03.0	511:13	07.03.0
13	1045	12:25	07.03.0	12:55	07.03.0	513:00	07.03.0
14	774	14:10	07.03.0	14:30	07.03.0	514:40	07.03.0

Profile4

OBS Pos. No	Depth m	OBS Release time		OBS on sea sur		OBS on board	
		local time		local time		local time	
		time	date	time	date	time	date
1	2108	17:50	01.03.0	18:40	01.03.0	5:18:54	01.03.0
2	2114	19:55	01.03.0	21:40	01.03.0	5:22:06	01.03.0
3	2121	23:30	01.03.0	00:15	01.03.0	5:00:37	01.03.0
4	2112	20:40	02.03.0	21:29	02.03.0	5:21:44	02.03.0
5	2095	18:40	02.03.0	19:26	02.03.0	5:19:42	02.03.0
6	2100	16:32	02.03.0	17:35	02.03.0	5:15:41	02.03.0
7	2131	11:22	02.03.0	12:10	02.03.0	5:12:18	02.03.0
8	2168	01:10	03.03.0	02:28	03.03.0	5:02:42	03.03.0
9	2178	03:38	03.03.0	04:33	03.03.0	5:04:41	03.03.0
10	2181	05:40	03.03.0	Was not recovered			
11	2180	11:38	03.03.0	13:05	03.03.0	5:13:17	03.03.0
12	2182	14:15	03.03.0	15:12	03.03.0	5:15:23	03.03.0
13	2183	16:13	03.03.0	17:01	03.03.0	5:17:14	03.03.0
14	2182	18:04	03.03.0	19:05	03.03.0	5:19:13	03.03.0
15	2180	20:02	03.03.0	20:52	03.03.0	5:21:00	03.03.0
16	2178	21:59	03.03.0	23:05	03.03.0	5:00:14	04.03.0
17	2178	01:05	04.03.0	02:05	04.03.0	5:02:13	04.03.0

Appendix 4.3

OBS clock drift and compass reading

Direction of compass coincides with horizontal geophone on SEDIS channel 3

Profile 1

OBS Pos.	SEDIS No.	Synchronisation UTC		Sedis clock drift UTC		Drift ms	No. of recorded Blocks	Compass Reading Degree	
		Time	Date	Time	Date				
1	20	09:05	13.02.05	23:10	02/22/05	10.5	780267	4 213	
2	21	09:32	13.02.05	01:31	02/23/05	-3.3	918365	90 122	
3	12	09:49	13.02.05	03:42	02/23/05	86.0	484150	6 361	
4	24	12:10	13.02.05	06:27	02/23/05	31.0	119076	00 255	
5	53	11:06	13.02.05	08:04	02/23/05	-6.4	419380	88 341	
6	65	12:05	13.02.05	11:06	02/23/05	25.0	919745	41 158	
7	57	14:31	13.02.05	13:27	02/23/05	27.6	220083	74 55	
8	32	13:04	13.02.05	16:00	02/23/05	26.4	204515	55 70	
9	81	17:00	13.02.05	18:14	02/23/05	76.0	820771	51 361	
10	16	13:46	13.02.05	20:45	02/23/05	56.7	921135	72 351	
11	64	14:52	13.02.05			no drift	216721	5 236	
12	48	15:11	13.02.05	00:52	02/24/05	56.2	821729	31 361	
13	22	16:16	13.02.05	04:11	02/24/05	87.7	122207	9 306	
14	80	16:13	13.02.05	05:54	02/24/05	77.5	823327	0 361	
15	70	16:50	13.02.05	07:50	02/24/05	-84.6	227328	80 361	
16	51	Was not recovered							
17	11	09:50	15.02.05			no drift		236	
18	19H	13:38	14.02.05	22:16	02/24/05	23.9	321354	50 361	
19	39	14:27	14.02.05	01:21	02/25/05	39.5	521798	49 322	
20	72	09:10	15.02.05	03:04	02/25/05	25.4	321469	96 329	
21	52	13:51	14.02.05	05:32	02/25/05	76.4	222385	21 242	
22	206	09:08	15.02.05	07:49	02/25/05	45.3	622152	26 37	
23	76	09:41	15.02.05	10:40	02/25/05	31.1	322548	03 358	
24	26	10:34	15.02.05	Was recovered on profile 3 (Pos					
25	3	10:43	15.02.05	14:26	02/25/05	291.9	923105	62 255	
26	68	10:57	15.02.05	16:37	02/25/05	98.4	234197	8 256	
27	34	12:25	15.02.05	19:02	02/25/05	2.9	237696	66 361	
28	42	14:53	15.02.05	03:09	02/26/05	374.7	249379	2 180	
29	74	14:17	15.02.05	23:32	02/25/05	16.0	624416	87 184	
30	67	14:31	15.02.05	05:25	02/26/05	59.0	825265	48 117	
31	62	16:04	15.02.05	08:51	02/26/05	66.8	625759	61 227	
32	6	16:57	15.02.05	11:51	02/26/05	234.8	626190	79 216	
33	49	16:32	15.02.05	13:14	02/26/05	78.5	626390	92 208	
34	58	17:05	16.02.05	16:35	02/26/05	261.3	268733	33 361	

OBS Pos.	SEDIS No.	Synchronisation UTC		Sedis clock dr UTC		Drift ms	No of recorded blocks	Compass Reading Degree
		Time	Date	Time	Date			
1	76	13:54	07.03.05	07:03	10.03.05	6.5	56226	143
2	52	15:25	07.03.05	09:22	10.03.05	-16.7	5595746	354
3	70	15:46	07.03.05	11:50	10.03.05	-24.7	2631135	88
4	39	17:50	07.03.05	14:20	10.03.05	-5.5	9643000	138
5	65	19:10	07.03.05	15:22	10.03.05	-10.8	682083	165
6	53	19:22	07.03.05	16:38	10.03.05	4.7	6700212	223
7	80	21:04	07.03.05	18:16	10.03.05	-53.7	4723847	341
8	22	21:15	07.03.05	19:49	10.03.05	16.6	3746059	361
9	67	23:29	07.03.05	21:12	10.03.05	-5.4	9766061	14
10	19A	23:53	07.03.05	23:03	10.03.05	-41.6	6792783	56
11	57	01:21	08.03.05	03:29	11.03.05	-13.9	8859000	59
12	81	01:54	08.03.05	05:14	11.03.05	-1232.3	981930	33
13	48	03:06	08.03.05	06:22	11.03.05	37.4	2898058	361
14	42	03:32	08.03.05	07:10	11.03.05	-116.6	7909721	347
15	206	04:20	08.03.05	08:52	11.03.05	-78.6	1934043	0

Profile 2

Profile 3

OBS Pos.	SEDIS No.	Synchronisation UTC		Sedis clock dr UTC		Drift ms	No of recorded blocks	Compass Reading Degree
		Time	Date	Time	Date			
1	32	13:08	03.03.05	11:22	06.03.05	9.2	581266	36
2	34	16:22	03.03.05	13:42	06.03.05	-1.9	5614998	207
3	26	10:31	15.02.05	14:56	06.03.05	-2.2	3541768	89 35
4	62	19:17	03.03.05	17:11	06.03.05	13.9	5665036	133
5	3	00:45	04.03.05	19:44	06.03.05	78.4	9701669	3
6	68	02:08	04.03.05			no drift	730300	361
7	21	05:02	04.03.05	01:02	07.03.05	-4.6	7778212	71
8	72	05:30	04.03.05	03:20	07.03.05	-69.7	6811200	148
9	24	06:30	04.03.05	05:05	07.03.05	16.6	6836482	361
10	6	07:22	04.03.05	06:34	07.03.05	-71.7	2857820	243
11	20	14:59	03.03.05	07:45	07.03.05	-45.6	5874864	361
12	74	08:49	04.03.05	10:13	07.03.05	-35.1	910297	361
13	58	22:44	03.03.05	11:26	07.03.05	-89.7	8927837	361
14	49	09:10	04.03.05	17:25	07.03.05	-95.1	2101407	1 28

Profile4

OBS Pos.	SEDIS No.	Synchronisation UTC		Sedis clock dr UTC		Drift ms	No of recorded blocks	Compass Reading Degree
		Time	Date	Time	Date			
		1	24	18:43	25.02.			
2	21	18:51	25.02.	20:23	01.03.05.	-3.17	826268	28
3	72	21:01	25.02.	23:49	01.03.05.	-102.2	875840	108
4	52	21:22	25.02.	20:45	02.03.05.	-47.09	1177388	361
5	39	21:35	25.02.	18:51	02.03.05.	-16.05	1149909	361
6	22	00:39	26.02.	16:26	02.03.05.	21.15	1115136	124
7	65	01:31	26.02.	11:32	02.03.05.	-25.06	1039884	244
8	53	02:04	26.02.	01:12	03.03.05.	1.56	1241368	63
9	81	04:30	26.02.	03:26	03.03.05.	-32.44	1273628	50
10	16	09:15	26.02.	Was not recovered				
11	76	11:40	26.02.	12:09	03.03.05.	8.31	1399080	260
12	57	03:34	27.02.	15:18	03.03.05.	-10.32	1444495	241
13	206	14:55	26.02.	17:20	03.03.05.	-134.25	1472382	361
14	48	15:06	26.02.	18:13	03.03.05.	58.17	1486502	361
15	70	15:17	26.02.	20:25	03.03.05.	-55.73	1518066	324
16	80	17:17	26.02.	23:37	03.03.05.	-103.27	1564243	361
17	19A	17:32	26.02.	01:29	04.03.05.	-82.46	1591192	61

Appendix 4.4 Shooting table for profile 1

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
1	88	02.19.05	15:09:00	35.563975	43.438795	2201	441	528	02.19.05	23:00:00	36.171373	43.192177	2192
11	98	02.19.05	15:19:00	35.578497	43.433116	2201	451	538	02.19.05	23:10:00	36.185298	43.186464	2192
21	108	02.19.05	15:29:00	35.592695	43.427244	2201	461	548	02.19.05	23:20:00	36.199241	43.180729	2191
31	118	02.19.05	15:39:00	35.606291	43.421781	2201	471	558	02.19.05	23:30:00	36.213198	43.175007	2191
41	128	02.19.05	15:49:00	35.619931	43.416278	2200	481	568	02.19.05	23:40:00	36.226932	43.169363	2191
51	138	02.19.05	15:59:00	35.633639	43.410770	2200	491	578	02.19.05	23:50:00	36.240671	43.163694	2190
61	148	02.19.05	16:09:00	35.647618	43.405171	2200	501	588	02.20.05	00:00:00	36.254482	43.158016	2190
71	158	02.19.05	16:19:00	35.661846	43.399431	2200	511	598	02.20.05	00:10:00	36.268261	43.152336	2190
81	168	02.19.05	16:29:00	35.676093	43.393675	2199	521	608	02.20.05	00:20:00	36.281916	43.146692	2189
91	178	02.19.05	16:39:00	35.690292	43.387964	2199	531	618	02.20.05	00:30:00	36.295493	43.141121	2189
101	188	02.19.05	16:49:00	35.704351	43.382260	2199	541	628	02.20.05	00:40:00	36.308989	43.135551	2189
111	198	02.19.05	16:59:00	35.718425	43.376581	2199	551	638	02.20.05	00:50:00	36.322470	43.129991	2188
121	208	02.19.05	17:09:00	35.732644	43.370840	2199	561	648	02.20.05	01:00:00	36.335807	43.124485	2188
131	218	02.19.05	17:19:00	35.746955	43.365038	2199	571	658	02.20.05	01:10:00	36.348976	43.119029	2188
141	228	02.19.05	17:29:00	35.761448	43.359190	2199	581	668	02.20.05	01:20:00	36.362011	43.113648	2188
151	238	02.19.05	17:39:00	35.776138	43.353236	2199	591	678	02.20.05	01:30:00	36.374873	43.108319	2187
161	248	02.19.05	17:49:00	35.788764	43.348141	2199	601	688	02.20.05	01:40:00	36.387516	43.103153	2187
171	258	02.19.05	17:59:00	35.800532	43.343361	2198	611	698	02.20.05	01:50:00	36.400342	43.097796	2186
181	268	02.19.05	18:09:00	35.812304	43.338564	2198	621	708	02.20.05	02:00:00	36.413373	43.092430	2187
191	278	02.19.05	18:50:00	35.821021	43.335314	2198	631	718	02.20.05	02:10:00	36.426521	43.086989	2186
201	288	02.19.05	19:00:00	35.834479	43.329575	2198	641	728	02.20.05	02:20:00	36.439516	43.081594	2186
211	298	02.19.05	19:10:00	35.848151	43.324167	2198	651	738	02.20.05	02:30:00	36.452497	43.076216	2185
221	308	02.19.05	19:20:00	35.861791	43.318403	2198	661	748	02.20.05	02:40:00	36.465693	43.070744	2186
231	318	02.19.05	19:30:00	35.875811	43.312815	2197	671	758	02.20.05	02:50:00	36.479086	43.065197	2185
241	328	02.19.05	19:40:00	35.889652	43.307121	2197	681	768	02.20.05	03:00:00	36.492263	43.059727	2185
251	338	02.19.05	19:50:00	35.903945	43.301353	2197	691	778	02.20.05	03:10:00	36.505433	43.054259	2185
261	348	02.19.05	20:00:00	35.918273	43.295471	2197	701	788	02.20.05	03:20:00	36.518543	43.048806	2185
271	358	02.19.05	20:10:00	35.932589	43.289765	2197	711	798	02.20.05	03:30:00	36.531506	43.043435	2185
281	368	02.19.05	20:20:00	35.946652	43.283993	2196	721	808	02.20.05	03:40:00	36.544206	43.038146	2185
291	378	02.19.05	20:30:00	35.960454	43.278308	2196	731	818	02.20.05	03:50:00	36.557076	43.032808	2185
301	388	02.19.05	20:40:00	35.974313	43.272767	2196	741	828	02.20.05	04:00:00	36.569949	43.027432	2184
311	398	02.19.05	20:50:00	35.988244	43.267074	2196	751	838	02.20.05	04:10:00	36.582865	43.022065	2184
321	408	02.19.05	21:00:00	36.002324	43.261313	2196	761	848	02.20.05	04:20:00	36.595789	43.016685	2184
331	418	02.19.05	21:10:00	36.016660	43.255447	2195	771	858	02.20.05	04:30:00	36.608637	43.011321	2184
341	428	02.19.05	21:20:00	36.030913	43.249591	2195	781	868	02.20.05	04:40:00	36.621288	43.006049	2183
351	438	02.19.05	21:30:00	36.045134	43.243872	2195	791	878	02.20.05	04:50:00	36.633887	43.000797	2183
361	448	02.19.05	21:40:00	36.058817	43.238200	2195	801	888	02.20.05	05:00:00	36.646564	42.995501	2183
371	458	02.19.05	21:50:00	36.072935	43.232507	2194	811	898	02.20.05	05:10:00	36.659141	42.990252	2183
381	468	02.19.05	22:00:00	36.087055	43.226695	2194	821	908	02.20.05	05:20:00	36.671659	42.985024	2182
391	478	02.19.05	22:10:00	36.101291	43.220881	2193	831	918	02.20.05	05:30:00	36.684082	42.979883	2181
401	488	02.19.05	22:20:00	36.115671	43.214985	2193	841	928	02.20.05	05:40:00	36.696432	42.974679	2181
411	498	02.19.05	22:30:00	36.129745	43.209275	2193	851	938	02.20.05	05:50:00	36.709000	42.969416	2181
421	508	02.19.05	22:40:00	36.143623	43.203573	2193	861	948	02.20.05	06:00:00	36.721655	42.964132	2181
431	518	02.19.05	22:50:00	36.157468	43.197858	2192	871	958	02.20.05	06:10:00	36.734134	42.958839	2180

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
881	968	02.20.05	06:20:00	36.746808	42.953590	2180	1321	1408	02.20.05	18:27:00	37.276077	42.729964	2167
891	978	02.20.05	06:30:00	36.759462	42.948274	2179	1331	1418	02.20.05	18:37:00	37.289326	42.724264	2167
901	988	02.20.05	06:40:00	36.772173	42.942937	2179	1341	1428	02.20.05	18:47:00	37.302589	42.718581	2166
911	998	02.20.05	06:50:00	36.785050	42.937804	2178	1351	1438	02.20.05	18:57:00	37.315811	42.712929	2166
921	1008	02.20.05	07:00:00	36.798061	42.932213	2178	1361	1448	02.20.05	19:07:00	37.328968	42.707313	2166
931	1018	02.20.05	07:10:00	36.811030	42.927025	2178	1371	1458	02.20.05	19:17:00	37.342126	42.701692	2166
941	1028	02.20.05	07:20:00	36.823324	42.921484	2177	1381	1468	02.20.05	19:27:00	37.355382	42.695932	2165
951	1038	02.20.05	07:30:00	36.836017	42.916153	2176	1391	1478	02.20.05	19:37:00	37.368686	42.690245	2165
961	1048	02.20.05	07:40:00	36.848780	42.910763	2176	1401	1488	02.20.05	19:47:00	37.382109	42.684513	2164
971	1058	02.20.05	07:50:00	36.861782	42.905470	2176	1411	1498	02.20.05	19:57:00	37.395503	42.678794	2164
981	1068	02.20.05	08:00:00	36.874636	42.899976	2176	1421	1508	02.20.05	20:07:00	37.409003	42.673042	2164
991	1078	02.20.05	08:10:00	36.887581	42.894465	2175	1431	1518	02.20.05	20:17:00	37.422588	42.667184	2164
1001	1088	02.20.05	08:20:00	36.900325	42.889175	2175	1441	1528	02.20.05	20:27:00	37.436168	42.661383	2163
1011	1098	02.20.05	08:30:00	36.912905	42.883775	2175	1451	1538	02.20.05	20:37:00	37.449524	42.655691	2163
1021	1108	02.20.05	08:40:00	36.925603	42.878463	2174	1461	1548	02.20.05	20:47:00	37.463130	42.649839	2162
1031	1118	02.20.05	08:50:00	36.938272	42.873194	2175	1471	1558	02.20.05	20:57:00	37.476827	42.643936	2163
1041	1128	02.20.05	09:00:00	36.951045	42.867755	2175	1481	1568	02.20.05	21:07:00	37.490289	42.638174	2162
1051	1138	02.20.05	09:10:00	36.963804	42.862449	2175	1491	1578	02.20.05	21:17:00	37.503533	42.632431	2162
1061	1148	02.20.05	14:07:00	36.925275	42.878617	2174	1501	1588	02.20.05	21:27:00	37.516698	42.626765	2162
1071	1158	02.20.05	14:17:00	36.938396	42.873089	2175	1511	1598	02.20.05	21:37:00	37.529866	42.621109	2161
1081	1168	02.20.05	14:27:00	36.951635	42.867496	2175	1521	1608	02.20.05	21:47:00	37.543023	42.615521	2161
1091	1178	02.20.05	14:37:00	36.964717	42.861987	2175	1531	1618	02.20.05	21:57:00	37.556204	42.609743	2161
1101	1188	02.20.05	14:47:00	36.977973	42.856384	2175	1541	1628	02.20.05	22:07:00	37.569470	42.604086	2161
1111	1198	02.20.05	14:57:00	36.991453	42.850689	2175	1551	1638	02.20.05	22:17:00	37.582753	42.598462	2160
1121	1208	02.20.05	15:07:00	37.004678	42.845105	2175	1561	1648	02.20.05	22:27:00	37.595763	42.592762	2159
1131	1218	02.20.05	15:17:00	37.017834	42.839557	2175	1571	1658	02.20.05	22:37:00	37.608468	42.587306	2159
1141	1228	02.20.05	15:27:00	37.031104	42.833955	2174	1581	1668	02.20.05	22:47:00	37.621121	42.581797	2158
1151	1238	02.20.05	15:37:00	37.044712	42.828168	2173	1591	1678	02.20.05	22:57:00	37.633584	42.576493	2158
1161	1248	02.20.05	15:47:00	37.058649	42.822284	2173	1601	1688	02.20.05	23:07:00	37.645815	42.571155	2157
1171	1258	02.20.05	15:57:00	37.072489	42.816419	2172	1611	1698	02.20.05	23:17:00	37.658262	42.565767	2157
1181	1268	02.20.05	16:07:00	37.086312	42.810592	2171	1621	1708	02.20.05	23:27:00	37.670647	42.560413	2157
1191	1278	02.20.05	16:17:00	37.099894	42.804805	2171	1631	1718	02.20.05	23:37:00	37.683330	42.554941	2157
1201	1288	02.20.05	16:27:00	37.113448	42.799050	2171	1641	1728	02.20.05	23:47:00	37.696565	42.549207	2156
1211	1298	02.20.05	16:37:00	37.126952	42.793324	2171	1651	1738	02.20.05	23:57:00	37.710164	42.543306	2156
1221	1308	02.20.05	16:47:00	37.140561	42.787538	2171	1661	1748	02.21.05	00:07:00	37.723590	42.537512	2155
1231	1318	02.20.05	16:57:00	37.154106	42.781800	2170	1671	1758	02.21.05	00:17:00	37.736785	42.531778	2155
1241	1328	02.20.05	17:07:00	37.167600	42.776051	2169	1681	1768	02.21.05	00:27:00	37.749901	42.526024	2154
1251	1338	02.20.05	17:17:00	37.180976	42.770359	2169	1691	1778	02.21.05	00:37:00	37.762786	42.520459	2153
1261	1348	02.20.05	17:27:00	37.194643	42.764561	2169	1701	1788	02.21.05	00:47:00	37.775764	42.514966	2153
1271	1358	02.20.05	17:37:00	37.208308	42.758762	2169	1711	1798	02.21.05	00:57:00	37.788482	42.509354	2152
1281	1368	02.20.05	17:47:00	37.222116	42.752865	2168	1721	1808	02.21.05	01:07:00	37.801534	42.503753	2151
1291	1378	02.20.05	17:57:00	37.235962	42.746971	2168	1731	1818	02.21.05	01:17:00	37.814566	42.497954	2150
1301	1388	02.20.05	18:07:00	37.249574	42.741131	2168	1741	1828	02.21.05	01:27:00	37.827790	42.492317	2150
1311	1398	02.20.05	18:17:00	37.262828	42.735545	2168	1751	1838	02.21.05	01:37:00	37.841156	42.486520	2148

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
1761	1848	02.21.05	01:47:00	37.854351	42.480658	2148	2201	2288	02.21.05	09:07:00	38.435847	42.225144	2102
1771	1858	02.21.05	01:57:00	37.867422	42.475008	2147	2211	2298	02.21.05	09:17:00	38.448614	42.219485	2101
1781	1868	02.21.05	02:07:00	37.880307	42.469433	2146	2221	2308	02.21.05	09:27:00	38.461314	42.213840	2100
1791	1878	02.21.05	02:17:00	37.893282	42.463754	2146	2231	2318	02.21.05	09:37:00	38.473931	42.208237	2099
1801	1888	02.21.05	02:27:00	37.906160	42.458134	2145	2241	2328	02.21.05	09:47:00	38.486533	42.202600	2098
1811	1898	02.21.05	02:37:00	37.918732	42.452618	2145	2251	2338	02.21.05	09:57:00	38.499102	42.197032	2097
1821	1908	02.21.05	02:47:00	37.931193	42.447212	2144	2261	2348	02.21.05	10:07:00	38.511742	42.191383	2095
1831	1918	02.21.05	02:57:00	37.943680	42.441803	2143	2271	2358	02.21.05	10:17:00	38.524452	42.185748	2094
1841	1928	02.21.05	03:07:00	37.955975	42.436405	2142	2281	2368	02.21.05	10:27:00	38.537193	42.180075	2093
1851	1938	02.21.05	03:17:00	37.968425	42.430968	2141	2291	2378	02.21.05	10:37:00	38.549830	42.174452	2091
1861	1948	02.21.05	03:27:00	37.981040	42.425441	2140	2301	2388	02.21.05	10:47:00	38.562443	42.168780	2089
1871	1958	02.21.05	03:37:00	37.994025	42.419776	2139	2311	2398	02.21.05	10:57:00	38.575144	42.163150	2088
1881	1968	02.21.05	03:47:00	38.007319	42.413920	2138	2321	2408	02.21.05	11:07:00	38.587882	42.157484	2086
1891	1978	02.21.05	03:57:00	38.020817	42.408083	2137	2331	2418	02.21.05	11:17:00	38.600461	42.151848	2085
1901	1988	02.21.05	04:07:00	38.034285	42.402168	2136	2341	2428	02.21.05	11:27:00	38.612992	42.146265	2083
1911	1998	02.21.05	04:17:00	38.047735	42.396289	2136	2351	2438	02.21.05	11:37:00	38.625521	42.140662	2082
1921	2008	02.21.05	04:27:00	38.061268	42.390368	2133	2361	2448	02.21.05	11:47:00	38.638115	42.135054	2083
1931	2018	02.21.05	04:37:00	38.074629	42.384456	2133	2371	2458	02.21.05	11:57:00	38.650666	42.129436	2080
1941	2028	02.21.05	04:47:00	38.088173	42.378537	2132	2381	2468	02.21.05	12:07:00	38.663131	42.123839	2079
1951	2038	02.21.05	04:57:00	38.102075	42.372454	2131	2391	2478	02.21.05	12:17:00	38.675386	42.118377	2079
1961	2048	02.21.05	05:07:00	38.116257	42.366220	2130	2401	2488	02.21.05	12:27:00	38.687445	42.113008	2077
1971	2058	02.21.05	05:17:00	38.130544	42.359944	2129	2411	2498	02.21.05	12:37:00	38.699830	42.107415	2076
1981	2068	02.21.05	05:27:00	38.144750	42.353703	2128	2421	2508	02.21.05	12:47:00	38.712168	42.101906	2076
1991	2078	02.21.05	05:37:00	38.158882	42.347492	2128	2431	2518	02.21.05	12:57:00	38.724615	42.096321	2075
2001	2088	02.21.05	05:47:00	38.173170	42.341185	2127	2441	2528	02.21.05	13:07:00	38.737093	42.090742	2074
2011	2098	02.21.05	05:57:00	38.187315	42.334958	2125	2451	2538	02.21.05	13:17:00	38.749602	42.085118	2072
2021	2108	02.21.05	06:07:00	38.201149	42.328924	2124	2461	2548	02.21.05	13:27:00	38.762208	42.079450	2071
2031	2118	02.21.05	06:17:00	38.214916	42.322837	2122	2471	2558	02.21.05	13:37:00	38.774708	42.073840	2069
2041	2128	02.21.05	06:27:00	38.228693	42.316763	2121	2481	2568	02.21.05	13:47:00	38.787303	42.068176	2067
2051	2138	02.21.05	06:37:00	38.242525	42.310668	2120	2491	2578	02.21.05	13:57:00	38.799922	42.062527	2065
2061	2148	02.21.05	06:47:00	38.256017	42.304767	2119	2501	2588	02.21.05	14:07:00	38.812668	42.056805	2064
2071	2158	02.21.05	06:57:00	38.269206	42.298894	2118	2511	2598	02.21.05	14:17:00	38.825445	42.051045	2063
2081	2168	02.21.05	07:07:00	38.282497	42.293036	2117	2521	2608	02.21.05	14:27:00	38.838372	42.045229	2061
2091	2178	02.21.05	07:17:00	38.295607	42.287294	2116	2531	2618	02.21.05	14:37:00	38.851219	42.039475	2058
2101	2188	02.21.05	07:27:00	38.308109	42.281601	2115	2541	2628	02.21.05	14:47:00	38.864087	42.033656	2058
2111	2198	02.21.05	07:37:00	38.321089	42.275994	2114	2551	2638	02.21.05	14:57:00	38.876855	42.027888	2057
2121	2208	02.21.05	07:47:00	38.334057	42.270226	2113	2561	2648	02.21.05	15:07:00	38.889678	42.022122	2055
2131	2218	02.21.05	07:57:00	38.347052	42.264478	2112	2571	2658	02.21.05	20:39:00	38.798889	42.062982	2065
2141	2228	02.21.05	08:07:00	38.359997	42.258753	2110	2581	2668	02.21.05	20:49:00	38.812393	42.056921	2064
2151	2238	02.21.05	08:17:00	38.372841	42.253067	2108	2591	2678	02.21.05	20:59:00	38.825974	42.050770	2063
2161	2248	02.21.05	08:27:00	38.385529	42.247438	2107	2601	2688	02.21.05	21:09:00	38.839204	42.044850	2061
2171	2258	02.21.05	08:37:00	38.398023	42.241882	2106	2611	2698	02.21.05	21:19:00	38.852217	42.038977	2058
2181	2268	02.21.05	08:47:00	38.410506	42.236362	2105	2621	2708	02.21.05	21:29:00	38.865245	42.033163	2058
2191	2278	02.21.05	08:57:00	38.423147	42.230767	2104	2631	2718	02.21.05	21:39:00	38.878222	42.027279	2057

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
2641	2728	02.21.05	21:49:00	38.891289	42.021393	2054	3081	3168	02.22.05	05:09:00	39.454509	41.765129	1974
2651	2738	02.21.05	21:59:00	38.904399	42.015510	2054	3091	3178	02.22.05	05:19:00	39.466371	41.759678	1973
2661	2748	02.21.05	22:09:00	38.917257	42.009735	2054	3101	3188	02.22.05	05:29:00	39.478169	41.754252	1971
2671	2758	02.21.05	22:19:00	38.930139	42.003893	2053	3111	3198	02.22.05	05:39:00	39.490781	41.748424	1970
2681	2768	02.21.05	22:29:00	38.943061	41.998040	2049	3121	3208	02.22.05	05:49:00	39.503486	41.742635	1969
2691	2778	02.21.05	22:39:00	38.956089	41.992165	2047	3131	3218	02.22.05	05:59:00	39.516196	41.736766	1966
2701	2788	02.21.05	22:49:00	38.968965	41.986356	2046	3141	3228	02.22.05	06:09:00	39.529230	41.730805	1962
2711	2798	02.21.05	22:59:00	38.981970	41.980469	2045	3151	3238	02.22.05	06:19:00	39.542502	41.724679	1959
2721	2808	02.21.05	23:09:00	38.994979	41.974580	2044	3161	3248	02.22.05	06:29:00	39.555915	41.718500	1958
2731	2818	02.21.05	23:19:00	39.008071	41.968673	2044	3171	3258	02.22.05	06:39:00	39.569277	41.712333	1957
2741	2828	02.21.05	23:29:00	39.021103	41.962752	2042	3181	3268	02.22.05	06:49:00	39.582720	41.706133	1952
2751	2838	02.21.05	23:39:00	39.034094	41.956881	2041	3191	3278	02.22.05	06:59:00	39.596274	41.699870	1945
2761	2848	02.21.05	23:49:00	39.047044	41.951010	2041	3201	3288	02.22.05	07:09:00	39.609938	41.693539	1939
2771	2858	02.21.05	23:59:00	39.059976	41.945134	2041	3211	3298	02.22.05	07:19:00	39.623662	41.687181	1936
2781	2868	02.22.05	00:09:00	39.073064	41.939230	2039	3221	3308	02.22.05	07:29:00	39.637524	41.680804	1936
2791	2878	02.22.05	00:19:00	39.086002	41.933334	2038	3231	3318	02.22.05	07:39:00	39.651317	41.674468	1933
2801	2888	02.22.05	00:29:00	39.099036	41.927433	2038	3241	3328	02.22.05	07:49:00	39.663558	41.668764	1934
2811	2898	02.22.05	00:39:00	39.112042	41.921516	2037	3251	3338	02.22.05	07:59:00	39.675786	41.663106	1929
2821	2908	02.22.05	00:49:00	39.125152	41.915583	2036	3261	3348	02.22.05	08:09:00	39.687975	41.657464	1920
2831	2918	02.22.05	00:59:00	39.138355	41.909580	2034	3271	3358	02.22.05	08:19:00	39.700235	41.651801	1920
2841	2928	02.22.05	01:09:00	39.151482	41.903618	2033	3281	3368	02.22.05	08:29:00	39.712495	41.646241	1925
2851	2938	02.22.05	01:19:00	39.164645	41.897613	2032	3291	3378	02.22.05	08:39:00	39.724603	41.640536	1916
2861	2948	02.22.05	01:29:00	39.177790	41.891629	2031	3301	3388	02.22.05	08:49:00	39.737025	41.634766	1905
2871	2958	02.22.05	01:39:00	39.191061	41.885609	2029	3311	3398	02.22.05	08:59:00	39.749467	41.628978	1899
2881	2968	02.22.05	01:49:00	39.204365	41.879537	2029	3321	3408	02.22.05	09:09:00	39.761890	41.623226	1895
2891	2978	02.22.05	01:59:00	39.217657	41.873490	2027	3331	3418	02.22.05	09:19:00	39.773907	41.617673	1910
2901	2988	02.22.05	02:09:00	39.230884	41.867475	2024	3341	3428	02.22.05	09:29:00	39.785995	41.612040	1897
2911	2998	02.22.05	02:19:00	39.244139	41.861416	2021	3351	3438	02.22.05	09:39:00	39.798200	41.606344	1898
2921	3008	02.22.05	02:29:00	39.257173	41.855481	2018	3361	3448	02.22.05	09:49:00	39.810577	41.600607	1882
2931	3018	02.22.05	02:39:00	39.270048	41.849575	2015	3371	3458	02.22.05	09:59:00	39.822934	41.594841	1903
2941	3028	02.22.05	02:49:00	39.282820	41.843739	2013	3381	3468	02.22.05	10:09:00	39.835296	41.589110	1879
2951	3038	02.22.05	02:59:00	39.295724	41.837856	2011	3391	3478	02.22.05	10:19:00	39.847456	41.583458	1914
2961	3048	02.22.05	03:09:00	39.308509	41.832035	2009	3401	3488	02.22.05	10:29:00	39.859345	41.577952	1883
2971	3058	02.22.05	03:19:00	39.321047	41.826266	2007	3411	3498	02.22.05	10:39:00	39.871199	41.572415	1920
2981	3068	02.22.05	03:29:00	39.333432	41.820620	2004	3421	3508	02.22.05	10:49:00	39.882898	41.566968	1902
2991	3078	02.22.05	03:39:00	39.345692	41.815020	2001	3431	3518	02.22.05	10:59:00	39.894489	41.561564	1926
3001	3088	02.22.05	03:49:00	39.357877	41.809440	1998	3441	3528	02.22.05	11:09:00	39.906034	41.556185	1934
3011	3098	02.22.05	03:59:00	39.369915	41.803888	1995	3451	3538	02.22.05	11:19:00	39.917359	41.550900	1932
3021	3108	02.22.05	04:09:00	39.382098	41.798336	1992	3461	3548	02.22.05	11:29:00	39.928827	41.545534	1931
3031	3118	02.22.05	04:19:00	39.394140	41.792850	1989	3471	3558	02.22.05	11:39:00	39.941200	41.539787	1931
3041	3128	02.22.05	04:29:00	39.406276	41.787276	1986	3481	3568	02.22.05	11:49:00	39.953722	41.533914	1929
3051	3138	02.22.05	04:39:00	39.418443	41.781665	1982	3491	3578	02.22.05	11:59:00	39.966118	41.528147	1928
3061	3148	02.22.05	04:49:00	39.430526	41.776176	1979	3501	3588	02.22.05	12:09:00	39.978394	41.522415	1927
3071	3158	02.22.05	04:59:00	39.442522	41.770620	1976	3511	3598	02.22.05	12:19:00	39.990681	41.516649	1923

Trace	Shot	Date	Time	Longitude	Latitude	Depth	Trace	Shot	Date	Time	Longitude	Latitude	Depth
#	#		UTC	(°)	(°)	(m)	#	#		UTC	(°)	(°)	(m)
1761	1848	02.21.05	01:47:00	37.854351	42.480658	2148	2201	2288	02.21.05	09:07:00	38.435847	42.225144	2102
1771	1858	02.21.05	01:57:00	37.867422	42.475008	2147	2211	2298	02.21.05	09:17:00	38.448614	42.219485	2101
1781	1868	02.21.05	02:07:00	37.880307	42.469433	2146	2221	2308	02.21.05	09:27:00	38.461314	42.213840	2100
1791	1878	02.21.05	02:17:00	37.893282	42.463754	2146	2231	2318	02.21.05	09:37:00	38.473931	42.208237	2099
1801	1888	02.21.05	02:27:00	37.906160	42.458134	2145	2241	2328	02.21.05	09:47:00	38.486533	42.202600	2098
1811	1898	02.21.05	02:37:00	37.918732	42.452618	2145	2251	2338	02.21.05	09:57:00	38.499102	42.197032	2097
1821	1908	02.21.05	02:47:00	37.931193	42.447212	2144	2261	2348	02.21.05	10:07:00	38.511742	42.191383	2095
1831	1918	02.21.05	02:57:00	37.943680	42.441803	2143	2271	2358	02.21.05	10:17:00	38.524452	42.185748	2094
1841	1928	02.21.05	03:07:00	37.955975	42.436405	2142	2281	2368	02.21.05	10:27:00	38.537193	42.180075	2093
1851	1938	02.21.05	03:17:00	37.968425	42.430968	2141	2291	2378	02.21.05	10:37:00	38.549830	42.174452	2091
1861	1948	02.21.05	03:27:00	37.981040	42.425441	2140	2301	2388	02.21.05	10:47:00	38.562443	42.168780	2089
1871	1958	02.21.05	03:37:00	37.994025	42.419776	2139	2311	2398	02.21.05	10:57:00	38.575144	42.163150	2088
1881	1968	02.21.05	03:47:00	38.007319	42.413920	2138	2321	2408	02.21.05	11:07:00	38.587882	42.157484	2086
1891	1978	02.21.05	03:57:00	38.020817	42.408083	2137	2331	2418	02.21.05	11:17:00	38.600461	42.151848	2085
1901	1988	02.21.05	04:07:00	38.034285	42.402168	2136	2341	2428	02.21.05	11:27:00	38.612992	42.146265	2083
1911	1998	02.21.05	04:17:00	38.047735	42.396289	2136	2351	2438	02.21.05	11:37:00	38.625521	42.140662	2082
1921	2008	02.21.05	04:27:00	38.061268	42.390368	2133	2361	2448	02.21.05	11:47:00	38.638115	42.135054	2083
1931	2018	02.21.05	04:37:00	38.074629	42.384456	2133	2371	2458	02.21.05	11:57:00	38.650666	42.129436	2080
1941	2028	02.21.05	04:47:00	38.088173	42.378537	2132	2381	2468	02.21.05	12:07:00	38.663131	42.123839	2079
1951	2038	02.21.05	04:57:00	38.102075	42.372454	2131	2391	2478	02.21.05	12:17:00	38.675386	42.118377	2079
1961	2048	02.21.05	05:07:00	38.116257	42.366220	2130	2401	2488	02.21.05	12:27:00	38.687445	42.113008	2077
1971	2058	02.21.05	05:17:00	38.130544	42.359944	2129	2411	2498	02.21.05	12:37:00	38.699830	42.107415	2076
1981	2068	02.21.05	05:27:00	38.144750	42.353703	2128	2421	2508	02.21.05	12:47:00	38.712168	42.101906	2076
1991	2078	02.21.05	05:37:00	38.158882	42.347492	2128	2431	2518	02.21.05	12:57:00	38.724615	42.096321	2075
2001	2088	02.21.05	05:47:00	38.173170	42.341185	2127	2441	2528	02.21.05	13:07:00	38.737093	42.090742	2074
2011	2098	02.21.05	05:57:00	38.187315	42.334958	2125	2451	2538	02.21.05	13:17:00	38.749602	42.085118	2072
2021	2108	02.21.05	06:07:00	38.201149	42.328924	2124	2461	2548	02.21.05	13:27:00	38.762208	42.079450	2071
2031	2118	02.21.05	06:17:00	38.214916	42.322837	2122	2471	2558	02.21.05	13:37:00	38.774708	42.073840	2069
2041	2128	02.21.05	06:27:00	38.228693	42.316763	2121	2481	2568	02.21.05	13:47:00	38.787303	42.068176	2067
2051	2138	02.21.05	06:37:00	38.242525	42.310668	2120	2491	2578	02.21.05	13:57:00	38.799922	42.062527	2065
2061	2148	02.21.05	06:47:00	38.256017	42.304767	2119	2501	2588	02.21.05	14:07:00	38.812668	42.056805	2064
2071	2158	02.21.05	06:57:00	38.269206	42.298894	2118	2511	2598	02.21.05	14:17:00	38.825445	42.051045	2063
2081	2168	02.21.05	07:07:00	38.282497	42.293036	2117	2521	2608	02.21.05	14:27:00	38.838372	42.045229	2061
2091	2178	02.21.05	07:17:00	38.295607	42.287294	2116	2531	2618	02.21.05	14:37:00	38.851219	42.039475	2058
2101	2188	02.21.05	07:27:00	38.308109	42.281601	2115	2541	2628	02.21.05	14:47:00	38.864087	42.033656	2058
2111	2198	02.21.05	07:37:00	38.321089	42.275994	2114	2551	2638	02.21.05	14:57:00	38.876855	42.027888	2057
2121	2208	02.21.05	07:47:00	38.334057	42.270226	2113	2561	2648	02.21.05	15:07:00	38.889678	42.022122	2055
2131	2218	02.21.05	07:57:00	38.347052	42.264478	2112	2571	2658	02.21.05	20:39:00	38.798889	42.062982	2065
2141	2228	02.21.05	08:07:00	38.359997	42.258753	2110	2581	2668	02.21.05	20:49:00	38.812393	42.056921	2064
2151	2238	02.21.05	08:17:00	38.372841	42.253067	2108	2591	2678	02.21.05	20:59:00	38.825974	42.050770	2063
2161	2248	02.21.05	08:27:00	38.385529	42.247438	2107	2601	2688	02.21.05	21:09:00	38.839204	42.044850	2061
2171	2258	02.21.05	08:37:00	38.398023	42.241882	2106	2611	2698	02.21.05	21:19:00	38.852217	42.038977	2058
2181	2268	02.21.05	08:47:00	38.410506	42.236362	2105	2621	2708	02.21.05	21:29:00	38.865245	42.033163	2058
2191	2278	02.21.05	08:57:00	38.423147	42.230767	2104	2631	2718	02.21.05	21:39:00	38.878222	42.027279	2057
Trace	Shot	Date	Time	Longitude	Latitude	Depth	Trace	Shot	Date	Time	Longitude	Latitude	Depth

#	#		UTC	(°)	(°)	(m)	#	#		UTC	(°)	(°)	(m)
2641	2728	02.21.05	21:49:00	38.891289	42.021393	2054	3081	3168	02.22.05	05:09:00	39.454509	41.765129	1974
2651	2738	02.21.05	21:59:00	38.904399	42.015510	2054	3091	3178	02.22.05	05:19:00	39.466371	41.759678	1973
2661	2748	02.21.05	22:09:00	38.917257	42.009735	2054	3101	3188	02.22.05	05:29:00	39.478169	41.754252	1971
2671	2758	02.21.05	22:19:00	38.930139	42.003893	2053	3111	3198	02.22.05	05:39:00	39.490781	41.748424	1970
2681	2768	02.21.05	22:29:00	38.943061	41.998040	2049	3121	3208	02.22.05	05:49:00	39.503486	41.742635	1969
2691	2778	02.21.05	22:39:00	38.956089	41.992165	2047	3131	3218	02.22.05	05:59:00	39.516196	41.736766	1966
2701	2788	02.21.05	22:49:00	38.968965	41.986356	2046	3141	3228	02.22.05	06:09:00	39.529230	41.730805	1962
2711	2798	02.21.05	22:59:00	38.981970	41.980469	2045	3151	3238	02.22.05	06:19:00	39.542502	41.724679	1959
2721	2808	02.21.05	23:09:00	38.994979	41.974580	2044	3161	3248	02.22.05	06:29:00	39.555915	41.718500	1958
2731	2818	02.21.05	23:19:00	39.008071	41.968673	2044	3171	3258	02.22.05	06:39:00	39.569277	41.712333	1957
2741	2828	02.21.05	23:29:00	39.021103	41.962752	2042	3181	3268	02.22.05	06:49:00	39.582720	41.706133	1952
2751	2838	02.21.05	23:39:00	39.034094	41.956881	2041	3191	3278	02.22.05	06:59:00	39.596274	41.699870	1945
2761	2848	02.21.05	23:49:00	39.047044	41.951010	2041	3201	3288	02.22.05	07:09:00	39.609938	41.693539	1939
2771	2858	02.21.05	23:59:00	39.059976	41.945134	2041	3211	3298	02.22.05	07:19:00	39.623662	41.687181	1936
2781	2868	02.22.05	00:09:00	39.073064	41.939230	2039	3221	3308	02.22.05	07:29:00	39.637524	41.680804	1936
2791	2878	02.22.05	00:19:00	39.086002	41.933334	2038	3231	3318	02.22.05	07:39:00	39.651317	41.674468	1933
2801	2888	02.22.05	00:29:00	39.099036	41.927433	2038	3241	3328	02.22.05	07:49:00	39.663558	41.668764	1934
2811	2898	02.22.05	00:39:00	39.112042	41.921516	2037	3251	3338	02.22.05	07:59:00	39.675786	41.663106	1929
2821	2908	02.22.05	00:49:00	39.125152	41.915583	2036	3261	3348	02.22.05	08:09:00	39.687975	41.657464	1920
2831	2918	02.22.05	00:59:00	39.138355	41.909580	2034	3271	3358	02.22.05	08:19:00	39.700235	41.651801	1920
2841	2928	02.22.05	01:09:00	39.151482	41.903618	2033	3281	3368	02.22.05	08:29:00	39.712495	41.646241	1925
2851	2938	02.22.05	01:19:00	39.164645	41.897613	2032	3291	3378	02.22.05	08:39:00	39.724603	41.640536	1916
2861	2948	02.22.05	01:29:00	39.177790	41.891629	2031	3301	3388	02.22.05	08:49:00	39.737025	41.634766	1905
2871	2958	02.22.05	01:39:00	39.191061	41.885609	2029	3311	3398	02.22.05	08:59:00	39.749467	41.628978	1899
2881	2968	02.22.05	01:49:00	39.204365	41.879537	2029	3321	3408	02.22.05	09:09:00	39.761890	41.623226	1895
2891	2978	02.22.05	01:59:00	39.217657	41.873490	2027	3331	3418	02.22.05	09:19:00	39.773907	41.617673	1910
2901	2988	02.22.05	02:09:00	39.230884	41.867475	2024	3341	3428	02.22.05	09:29:00	39.785995	41.612040	1897
2911	2998	02.22.05	02:19:00	39.244139	41.861416	2021	3351	3438	02.22.05	09:39:00	39.798200	41.606344	1898
2921	3008	02.22.05	02:29:00	39.257173	41.855481	2018	3361	3448	02.22.05	09:49:00	39.810577	41.600607	1882
2931	3018	02.22.05	02:39:00	39.270048	41.849575	2015	3371	3458	02.22.05	09:59:00	39.822934	41.594841	1903
2941	3028	02.22.05	02:49:00	39.282820	41.843739	2013	3381	3468	02.22.05	10:09:00	39.835296	41.589110	1879
2951	3038	02.22.05	02:59:00	39.295724	41.837856	2011	3391	3478	02.22.05	10:19:00	39.847456	41.583458	1914
2961	3048	02.22.05	03:09:00	39.308509	41.832035	2009	3401	3488	02.22.05	10:29:00	39.859345	41.577952	1883
2971	3058	02.22.05	03:19:00	39.321047	41.826266	2007	3411	3498	02.22.05	10:39:00	39.871199	41.572415	1920
2981	3068	02.22.05	03:29:00	39.333432	41.820620	2004	3421	3508	02.22.05	10:49:00	39.882898	41.566968	1902
2991	3078	02.22.05	03:39:00	39.345692	41.815020	2001	3431	3518	02.22.05	10:59:00	39.894489	41.561564	1926
3001	3088	02.22.05	03:49:00	39.357877	41.809440	1998	3441	3528	02.22.05	11:09:00	39.906034	41.556185	1934
3011	3098	02.22.05	03:59:00	39.369915	41.803888	1995	3451	3538	02.22.05	11:19:00	39.917359	41.550900	1932
3021	3108	02.22.05	04:09:00	39.382098	41.798336	1992	3461	3548	02.22.05	11:29:00	39.928827	41.545534	1931
3031	3118	02.22.05	04:19:00	39.394140	41.792850	1989	3471	3558	02.22.05	11:39:00	39.941200	41.539787	1931
3041	3128	02.22.05	04:29:00	39.406276	41.787276	1986	3481	3568	02.22.05	11:49:00	39.953722	41.533914	1929
3051	3138	02.22.05	04:39:00	39.418443	41.781665	1982	3491	3578	02.22.05	11:59:00	39.966118	41.528147	1928
3061	3148	02.22.05	04:49:00	39.430526	41.776176	1979	3501	3588	02.22.05	12:09:00	39.978394	41.522415	1927
3071	3158	02.22.05	04:59:00	39.442522	41.770620	1976	3511	3598	02.22.05	12:19:00	39.990681	41.516649	1923

Trace	Shot	Date	Time	Longitude	Latitude	Depth	Trace	Shot	Date	Time	Longitude	Latitude	Depth
#	#		UTC	(°)	(°)	(m)	#	#		UTC	(°)	(°)	(m)
3521	3608	02.22.05	12:29:00	40.002945	41.510919	1921	3959	4047	02.22.05	19:49:00	40.550234	41.252660	1680
3531	3618	02.22.05	12:39:00	40.015099	41.505273	1920							
3541	3628	02.22.05	12:49:00	40.027289	41.499550	1918							
3551	3638	02.22.05	12:59:00	40.039592	41.493791	1915							
3561	3649	02.22.05	13:11:00	40.054128	41.486998	1913							
3571	3659	02.22.05	13:21:00	40.066212	41.481307	1911							
3581	3669	02.22.05	13:31:00	40.078390	41.475618	1908							
3591	3679	02.22.05	13:41:00	40.090562	41.469904	1906							
3601	3689	02.22.05	13:51:00	40.102757	41.464167	1904							
3611	3699	02.22.05	14:01:00	40.115203	41.458349	1901							
3621	3709	02.22.05	14:11:00	40.127684	41.452498	1900							
3631	3719	02.22.05	14:21:00	40.140303	41.446580	1899							
3641	3729	02.22.05	14:31:00	40.152971	41.440592	1897							
3651	3739	02.22.05	14:41:00	40.165590	41.434656	1895							
3661	3749	02.22.05	14:51:00	40.178257	41.428725	1893							
3671	3759	02.22.05	15:01:00	40.191078	41.422662	1893							
3681	3769	02.22.05	15:11:00	40.203882	41.416616	1893							
3691	3779	02.22.05	15:21:00	40.216743	41.410554	1891							
3701	3789	02.22.05	15:31:00	40.229486	41.404583	1888							
3711	3799	02.22.05	15:41:00	40.242156	41.398641	1884							
3721	3809	02.22.05	15:51:00	40.254560	41.392795	1878							
3731	3819	02.22.05	16:01:00	40.266543	41.387140	1876							
3741	3829	02.22.05	16:11:00	40.278542	41.381458	1875							
3751	3839	02.22.05	16:21:00	40.290552	41.375786	1873							
3761	3849	02.22.05	16:31:00	40.302660	41.370076	1866							
3771	3859	02.22.05	16:41:00	40.314793	41.364362	1862							
3781	3869	02.22.05	16:51:00	40.326772	41.358649	1859							
3791	3879	02.22.05	17:01:00	40.338855	41.352993	1858							
3801	3889	02.22.05	17:11:00	40.350956	41.347239	1860							
3811	3899	02.22.05	17:21:00	40.363184	41.341471	1828							
3821	3909	02.22.05	17:31:00	40.375518	41.335633	1809							
3831	3919	02.22.05	17:41:00	40.387896	41.329797	1765							
3841	3929	02.22.05	17:51:00	40.400366	41.323861	1737							
3851	3939	02.22.05	18:01:00	40.412871	41.317932	1719							
3861	3949	02.22.05	18:11:00	40.425372	41.311993	1715							
3871	3959	02.22.05	18:21:00	40.437983	41.306006	1743							
3881	3969	02.22.05	18:31:00	40.450609	41.300012	1775							
3891	3979	02.22.05	18:41:00	40.463284	41.294008	1801							
3901	3989	02.22.05	18:51:00	40.475952	41.287947	1790							
3911	3999	02.22.05	19:01:00	40.488614	41.281953	1751							
3921	4009	02.22.05	19:11:00	40.501371	41.275921	1728							
3931	4019	02.22.05	19:21:00	40.514203	41.269800	1720							
3941	4029	02.22.05	19:31:00	40.526972	41.263776	1736							
3951	4039	02.22.05	19:41:00	40.539908	41.257569	1734							

Appendix 4.5 Shooting table for profile 2

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
1	1	08.03.2005	18:29:00	39.090000	41.275000	1683.0	441	441	09.03.2005	17:37:00	39.370278	41.675278	1996.2
11	11	08.03.2005	18:39:00	39.094167	41.282222	1697.3	451	451	09.03.2005	17:47:00	39.376111	41.683333	1993.1
21	21	08.03.2005	18:49:00	39.099444	41.289722	1710.7	461	461	09.03.2005	17:57:00	39.381667	41.691389	1993.4
31	31	08.03.2005	18:59:00	39.106389	41.299722	1721.9	471	471	09.03.2005	18:07:00	39.387222	41.699444	1992.2
41	41	08.03.2005	19:09:00	39.113611	41.310000	1748.2	481	481	09.03.2005	18:17:00	39.392778	41.707222	1992.1
51	51	08.03.2005	19:19:00	39.121111	41.320833	1778.7	491	491	09.03.2005	18:27:00	39.398333	41.715000	1989.2
61	61	08.03.2005	19:29:00	39.128333	41.331111	1796.2	501	501	09.03.2005	18:37:00	39.403611	41.722778	1985.8
71	71	08.03.2005	19:39:00	39.135556	41.341389	1823.1	511	511	09.03.2005	18:47:00	39.409167	41.730278	1981.2
81	81	08.03.2005	19:49:00	39.142778	41.351667	1836.8	521	521	09.03.2005	18:57:00	39.414722	41.738056	1981.6
91	91	08.03.2005	19:59:00	39.149722	41.361667	1852.7	531	531	09.03.2005	19:07:00	39.419722	41.745278	1979.5
101	101	08.03.2005	20:09:00	39.156389	41.371389	1861.2	541	541	09.03.2005	19:17:00	39.424722	41.752222	1985.2
111	111	08.03.2005	20:19:00	39.163611	41.381389	1866.9	551	551	09.03.2005	19:27:00	39.429722	41.759167	1979.3
121	121	08.03.2005	20:29:00	39.170556	41.391667	1881.1	561	561	09.03.2005	19:37:00	39.434444	41.766111	1977.9
131	131	08.03.2005	20:39:00	39.177778	41.401944	1885.6	571	571	09.03.2005	19:47:00	39.440278	41.774167	1979.7
141	141	08.03.2005	20:49:00	39.185000	41.411944	1895.4	581	581	09.03.2005	19:57:00	39.447222	41.783889	1984.4
151	151	08.03.2005	20:59:00	39.191944	41.421944	1903.9	591	591	09.03.2005	20:07:00	39.453611	41.793056	1984.0
161	161	08.03.2005	21:09:00	39.198889	41.431944	1910.2	601	601	09.03.2005	20:17:00	39.460000	41.801944	1986.1
171	171	08.03.2005	21:19:00	39.205833	41.441944	1916.7	611	611	09.03.2005	20:27:00	39.466111	41.810556	1989.4
181	181	08.03.2005	21:29:00	39.213056	41.451944	1926.6	621	621	09.03.2005	20:37:00	39.472500	41.819444	1993.2
191	191	08.03.2005	21:39:00	39.220000	41.462222	1932.5	631	631	09.03.2005	20:47:00	39.478611	41.828333	1994.1
201	201	08.03.2005	21:49:00	39.227222	41.472500	1938.6	641	641	09.03.2005	20:57:00	39.485000	41.836944	1992.8
211	211	08.03.2005	21:59:00	39.235278	41.483611	1949.5	651	651	09.03.2005	21:07:00	39.491111	41.845556	1995.9
221	221	08.03.2005	22:09:00	39.240556	41.492778	1954.4	661	661	09.03.2005	21:17:00	39.496944	41.854167	1995.9
231	231	08.03.2005	22:19:00	39.248056	41.501944	1964.1	671	671	09.03.2005	21:27:00	39.503056	41.862500	1998.1
241	241	08.03.2005	22:29:00	39.255278	41.512222	1967.9	681	681	09.03.2005	21:37:00	39.508889	41.870833	1999.3
251	251	08.03.2005	22:39:00	39.261944	41.521944	1975.0	691	691	09.03.2005	21:47:00	39.514722	41.878889	2001.2
261	261	08.03.2005	22:49:00	39.268889	41.531667	1980.2	701	701	09.03.2005	21:57:00	39.520278	41.886944	2003.1
271	271	08.03.2005	22:59:00	39.275833	41.541667	1982.2	711	711	09.03.2005	22:07:00	39.526111	41.894722	2003.6
281	281	08.03.2005	23:09:00	39.282778	41.551389	1983.9	721	721	09.03.2005	22:17:00	39.531667	41.902778	2004.2
291	291	08.03.2005	23:19:00	39.289167	41.560556	1985.9	731	731	09.03.2005	22:27:00	39.537222	41.910556	2004.3
301	301	08.03.2005	23:29:00	39.295278	41.569167	1987.8	741	741	09.03.2005	22:37:00	39.542778	41.918333	2007.1
311	311	08.03.2005	23:39:00	39.301667	41.578056	1991.1	751	751	09.03.2005	22:47:00	39.548333	41.926111	2007.0
321	321	08.03.2005	23:49:00	39.307500	41.586389	1993.2	761	761	09.03.2005	22:57:00	39.553889	41.933889	2008.1
331	331	08.03.2005	23:59:00	39.313333	41.594722	1994.7	771	771	09.03.2005	23:07:00	39.559444	41.941667	2008.9
341	341	09.03.2005	00:09:00	39.319722	41.603611	1993.6	781	781	09.03.2005	23:17:00	39.565000	41.949444	2009.8
351	351	09.03.2005	00:19:00	39.326111	41.613056	1996.1	791	791	09.03.2005	23:27:00	39.570556	41.957222	2009.5
361	361	09.03.2005	00:29:00	39.332500	41.621944	1999.1	801	801	09.03.2005	23:37:00	39.576111	41.965000	2010.3
371	371	09.03.2005	00:39:00	39.339167	41.631389	2000.4	811	811	09.03.2005	23:47:00	39.581667	41.973056	2009.6
381	381	09.03.2005	00:49:00	39.345556	41.640278	2005.6	821	821	09.03.2005	23:57:00	39.587222	41.980556	2009.7
391	391	09.03.2005	00:59:00	39.350833	41.649444	1998.4	831	831	10.03.2005	00:07:00	39.592778	41.988333	2010.3
401	401	09.03.2005	16:57:00	39.347500	41.643333	1999.7	841	841	10.03.2005	00:17:00	39.598056	41.995833	2011.7
411	411	09.03.2005	17:07:00	39.353333	41.651389	1998.7	851	851	10.03.2005	00:27:00	39.603611	42.003333	2011.3
421	421	09.03.2005	17:17:00	39.358889	41.659444	1995.8	861	861	10.03.2005	00:37:00	39.608889	42.011111	2009.8
431	431	09.03.2005	17:27:00	39.364722	41.667500	1995.2	871	871	10.03.2005	00:47:00	39.614444	42.018611	2009.4

Trace	Shot	Date	Time	Longitude	Latitude	Depth	Trace	Shot	Date	Time	Longitude	Latitude	Depth
#	#		UTC	(°)	(°)	(m)	#	#		UTC	(°)	(°)	(m)
881	881	10.03.2005	00:57:00	39.620000	42.026389	2009.1							
891	891	10.03.2005	01:07:00	39.625556	42.033889	2008.4							
901	901	10.03.2005	01:17:00	39.631111	42.041667	2009.6							
911	911	10.03.2005	01:27:00	39.636389	42.049444	2007.4							
921	921	10.03.2005	01:37:00	39.641944	42.057500	2006.2							
931	931	10.03.2005	01:47:00	39.647778	42.065000	2003.7							
941	941	10.03.2005	01:57:00	39.653333	42.072778	2002.7							
951	951	10.03.2005	02:07:00	39.658889	42.080556	2001.2							
961	961	10.03.2005	02:17:00	39.664444	42.088333	2002.2							
971	971	10.03.2005	02:27:00	39.670000	42.096111	2000.3							
981	981	10.03.2005	02:37:00	39.675556	42.103889	1997.8							
991	991	10.03.2005	02:47:00	39.681111	42.111667	1997.4							
1001	1001	10.03.2005	02:57:00	39.686667	42.119444	1995.8							
1011	1011	10.03.2005	03:07:00	39.692500	42.127500	1994.9							
1021	1021	10.03.2005	03:17:00	39.698056	42.135278	1994.4							
1031	1031	10.03.2005	03:27:00	39.703889	42.143333	1993.5							
1041	1041	10.03.2005	03:37:00	39.709444	42.151111	1991.3							
1051	1051	10.03.2005	03:47:00	39.715278	42.159167	1989.9							
1061	1061	10.03.2005	03:57:00	39.721111	42.167222	1988.5							
1065	1065	10.03.2005	04:01:00	39.723333	42.170278	1988.5							

Appendix 4.6 Shooting table for profile 3

Trace	Shot	Date	Time	Longitude	Latitude	Depth	Trace	Shot	Date	Time	Longitude	Latitude	Depth
#	#		UTC	(°)	(°)	(m)	#	#		UTC	(°)	(°)	(m)
1	10	05.03.2005	05:05:01	36.463333	41.590278	684.0	441	450	05.03.2005	16:05:01	36.934444	42.183611	2052.1
11	20	05.03.2005	05:20:01	36.474444	41.602778	760.1	451	460	05.03.2005	16:20:01	36.945278	42.197222	2055.5
21	30	05.03.2005	05:35:01	36.484444	41.615833	870.9	461	470	05.03.2005	16:35:01	36.956389	42.211111	2056.0
31	40	05.03.2005	05:50:01	36.495000	41.628889	936.2	471	480	05.03.2005	16:50:01	36.967500	42.224722	2054.9
41	50	05.03.2005	06:05:01	36.505000	41.641944	953.6	481	490	05.03.2005	17:05:01	36.976389	42.236111	2054.3
51	60	05.03.2005	06:20:01	36.515278	41.654722	978.0	491	500	05.03.2005	17:20:01	36.985278	42.247222	2053.9
61	70	05.03.2005	06:35:01	36.525556	41.667778	1009.7	501	510	05.03.2005	17:35:01	36.994444	42.258611	2051.9
71	80	05.03.2005	06:50:01	36.535833	41.680556	1032.3	511	520	05.03.2005	17:50:01	37.003611	42.270000	2050.9
81	90	05.03.2005	07:05:01	36.545833	41.693611	1031.2	521	530	05.03.2005	18:05:01	37.012778	42.281667	2050.5
91	100	05.03.2005	07:20:01	36.556389	41.707222	1052.3	531	540	05.03.2005	18:20:01	37.021944	42.292778	2050.1
101	110	05.03.2005	07:35:01	36.566944	41.720556	1058.5	541	550	05.03.2005	18:35:01	37.031111	42.304167	2052.0
111	120	05.03.2005	07:50:01	36.577778	41.734167	1081.8	551	560	05.03.2005	18:50:01	37.040278	42.315556	2057.2
121	130	05.03.2005	08:05:01	36.588056	41.747222	1033.9	561	570	05.03.2005	19:05:01	37.049444	42.326944	2072.4
131	140	05.03.2005	08:20:01	36.597778	41.759722	974.3	571	580	05.03.2005	19:20:01	37.058889	42.338611	2059.1
141	150	05.03.2005	08:35:01	36.606667	41.771111	974.2	581	590	05.03.2005	19:35:01	37.068333	42.350556	2054.9
151	160	05.03.2005	08:50:01	36.615278	41.782222	932.0	591	600	05.03.2005	19:50:01	37.078333	42.362778	2060.9
161	170	05.03.2005	09:05:01	36.624167	41.793333	909.7	601	610	05.03.2005	20:05:01	37.088056	42.375278	2064.9
171	180	05.03.2005	09:20:01	36.633333	41.805000	880.1	611	620	05.03.2005	20:20:01	37.098333	42.388056	2068.8
181	190	05.03.2005	09:35:01	36.643056	41.816944	883.6	621	630	05.03.2005	20:35:01	37.108889	42.400833	2073.5
191	200	05.03.2005	09:50:01	36.652500	41.828889	867.4	631	640	05.03.2005	20:50:01	37.119167	42.413611	2076.4
201	210	05.03.2005	10:05:01	36.661389	41.840278	850.7	641	650	05.03.2005	21:05:01	37.129444	42.426389	2080.4
211	220	05.03.2005	10:20:01	36.671389	41.852778	836.5	651	660	05.03.2005	21:20:01	37.140000	42.439167	2085.9
221	230	05.03.2005	10:35:01	36.681667	41.866111	774.2	661	670	05.03.2005	21:35:01	37.150556	42.451944	2090.6
231	240	05.03.2005	10:50:01	36.692500	41.879722	638.2	671	680	05.03.2005	21:50:01	37.160833	42.465278	2095.2
241	250	05.03.2005	11:05:01	36.703889	41.894167	494.1	681	690	05.03.2005	22:05:01	37.170833	42.477500	2100.4
251	260	05.03.2005	11:20:01	36.715278	41.908611	397.9	691	700	05.03.2005	22:20:01	37.180833	42.489722	2105.5
261	270	05.03.2005	11:35:01	36.726944	41.923333	371.6	701	710	05.03.2005	22:35:01	37.190556	42.501944	2110.7
271	280	05.03.2005	11:50:01	36.738889	41.938333	374.2	711	720	05.03.2005	22:50:01	37.200556	42.514167	2116.6
281	290	05.03.2005	12:05:01	36.750833	41.953333	391.8	721	730	05.03.2005	23:05:01	37.210278	42.526389	2122.3
291	300	05.03.2005	12:20:01	36.762500	41.968333	411.3	731	740	05.03.2005	23:20:01	37.220000	42.538333	2124.9
301	310	05.03.2005	12:35:01	36.774167	41.982778	426.5	741	750	05.03.2005	23:35:01	37.229444	42.550000	2130.2
311	320	05.03.2005	12:50:01	36.785833	41.997222	491.6	751	760	05.03.2005	23:50:01	37.238889	42.561389	2134.4
321	330	05.03.2005	13:05:01	36.796944	42.011389	636.5	761	770	06.03.2005	00:05:01	37.248333	42.572778	2140.4
331	340	05.03.2005	13:20:01	36.808611	42.026111	863.0	771	780	06.03.2005	00:20:01	37.257222	42.584167	2146.9
341	350	05.03.2005	13:35:01	36.820000	42.040000	1194.3	781	790	06.03.2005	00:35:01	37.266111	42.595278	2151.5
351	360	05.03.2005	13:50:01	36.831389	42.054444	1528.8	791	800	06.03.2005	00:50:01	37.275000	42.605833	2155.0
361	370	05.03.2005	14:05:01	36.843056	42.069167	1742.7	801	810	06.03.2005	01:05:01	37.283611	42.616667	2157.2
371	380	05.03.2005	14:20:01	36.855000	42.083889	1839.8	811	820	06.03.2005	01:20:01	37.292222	42.627500	2158.1
381	390	05.03.2005	14:35:01	36.866944	42.099167	1931.6	821	830	06.03.2005	01:35:01	37.301111	42.638333	2160.8
391	400	05.03.2005	14:50:01	36.878889	42.114167	1974.0	831	840	06.03.2005	01:50:01	37.310000	42.648889	2161.9
401	410	05.03.2005	15:05:01	36.891111	42.129444	2002.5	841	850	06.03.2005	02:05:01	37.318611	42.659444	2162.7
411	420	05.03.2005	15:20:01	36.902222	42.143611	2027.8	851	860	06.03.2005	02:20:01	37.327222	42.670278	2164.3
421	430	05.03.2005	15:35:01	36.913056	42.156667	2037.9	861	870	06.03.2005	02:35:01	37.335833	42.680833	2167.6
431	440	05.03.2005	15:50:01	36.923611	42.170000	2047.6	871	880	06.03.2005	02:50:01	37.344444	42.691111	2166.8

Trace	Shot	Date	Time	Longitude	Latitude	Depth	Trace	Shot	Date	Time	Longitude	Latitude	Depth
#	#		UTC	(°)	(°)	(m)	#	#		UTC	(°)	(°)	(m)
881	890	06.03.2005	03:05:01	37.352778	42.701667	2168.5							
891	900	06.03.2005	03:20:01	37.361111	42.711667	2166.6							
901	910	06.03.2005	03:35:01	37.369444	42.721944	2170.0							
911	920	06.03.2005	03:50:01	37.378889	42.733333	2169.1							
921	930	06.03.2005	04:05:01	37.389444	42.746389	2166.1							
931	940	06.03.2005	04:20:01	37.400000	42.759444	2169.3							
941	950	06.03.2005	04:35:01	37.410833	42.772500	2169.8							
951	960	06.03.2005	04:50:01	37.421389	42.785556	2168.4							
961	970	06.03.2005	05:05:01	37.431667	42.798056	2170.3							
971	980	06.03.2005	05:20:01	37.441111	42.809722	2170.9							
981	990	06.03.2005	05:35:01	37.451667	42.822500	2167.2							
991	1000	06.03.2005	05:50:01	37.462778	42.835833	2166.6							
1001	1010	06.03.2005	06:05:01	37.473889	42.849444	2166.5							
1011	1020	06.03.2005	06:20:01	37.484444	42.862500	2166.0							
1021	1030	06.03.2005	06:35:01	37.494722	42.875000	2166.4							
1025	1034	06.03.2005	06:41:01	37.498889	42.880278	2166.9							

Appendix 4.7 Shooting table for profile 4

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
1	1	27.02.2005	11:26:31	37.055000	43.129722	2176.8	441	441	27.02.2005	22:26:31	36.118889	42.820556	2178.9
11	11	27.02.2005	11:41:31	37.032778	43.122222	2176.7	451	451	27.02.2005	22:41:31	36.098889	42.813611	2178.2
21	21	27.02.2005	11:56:31	37.011111	43.115278	2177.0	461	461	27.02.2005	22:56:31	36.080278	42.807500	2178.1
31	31	27.02.2005	12:11:31	36.991944	43.109167	2177.4	471	471	27.02.2005	23:11:31	36.060556	42.800833	2176.3
41	41	27.02.2005	12:26:31	36.972222	43.102778	2177.8	481	481	27.02.2005	23:26:31	36.040833	42.794167	2175.3
51	51	27.02.2005	12:41:31	36.951944	43.096111	2178.5	491	491	27.02.2005	23:41:31	36.021111	42.787500	2174.1
61	61	27.02.2005	12:56:31	36.930278	43.088889	2178.5	501	501	27.02.2005	23:56:31	35.998611	42.779722	2170.3
71	71	27.02.2005	13:11:31	36.908333	43.081944	2178.7	511	511	28.02.2005	00:11:31	35.978611	42.773056	2165.7
81	81	27.02.2005	13:26:31	36.885833	43.074444	2179.8	521	521	28.02.2005	00:26:31	35.958611	42.766389	2161.6
91	91	27.02.2005	13:41:31	36.864444	43.067500	2179.9	531	531	28.02.2005	00:41:31	35.938056	42.759444	2156.2
101	101	27.02.2005	13:56:31	36.843889	43.060833	2180.2	541	541	28.02.2005	00:56:31	35.917500	42.752500	2147.4
111	111	27.02.2005	14:11:31	36.822500	43.053889	2180.3	551	551	28.02.2005	01:11:31	35.897222	42.745556	2138.6
121	121	27.02.2005	14:26:31	36.800556	43.046667	2180.7	561	561	28.02.2005	01:26:31	35.876667	42.738611	2130.3
131	131	27.02.2005	14:41:31	36.778611	43.039444	2181.3	571	571	28.02.2005	01:41:31	35.856667	42.731944	2124.6
141	141	27.02.2005	14:56:31	36.756389	43.032222	2181.4	581	581	28.02.2005	01:56:31	35.838333	42.725556	2113.6
151	151	27.02.2005	15:11:31	36.733611	43.024722	2182.1	591	591	28.02.2005	02:11:31	35.821111	42.719722	2114.8
161	161	27.02.2005	15:26:31	36.710278	43.016944	2182.6	601	601	28.02.2005	02:26:31	35.800833	42.713056	2104.3
171	171	27.02.2005	15:41:31	36.686389	43.009167	2182.5	611	611	28.02.2005	02:41:31	35.782500	42.706667	2107.6
181	181	27.02.2005	15:56:31	36.662778	43.001389	2182.8	621	621	28.02.2005	02:56:31	35.763056	42.700000	2098.4
191	191	27.02.2005	16:11:31	36.641389	42.994167	2183.0	631	631	28.02.2005	03:11:31	35.743611	42.693333	2092.0
201	201	27.02.2005	16:26:31	36.620000	42.987222	2183.1	641	641	28.02.2005	03:26:31	35.723056	42.686389	2083.9
211	211	27.02.2005	16:41:31	36.598889	42.980278	2182.7	651	651	28.02.2005	03:41:31	35.701667	42.679167	2082.1
221	221	27.02.2005	16:56:31	36.577222	42.973056	2182.1	661	661	28.02.2005	03:56:31	35.682778	42.673333	2086.7
231	231	27.02.2005	17:11:31	36.556111	42.966111	2182.2	671	671	28.02.2005	04:11:31	35.670000	42.672222	2088.4
241	241	27.02.2005	17:26:31	36.534722	42.959167	2182.1	681	681	28.02.2005	04:26:31	35.658333	42.671389	2094.6
251	251	27.02.2005	17:41:31	36.513056	42.951944	2181.9	691	691	28.02.2005	04:41:31	35.645556	42.670000	2092.2
261	261	27.02.2005	17:56:31	36.491389	42.944722	2180.6	701	701	28.02.2005	04:56:31	35.633889	42.666111	2090.5
271	271	27.02.2005	18:11:31	36.470278	42.937778	2181.3	711	711	28.02.2005	05:11:31	35.621389	42.662778	2096.2
281	281	27.02.2005	18:26:31	36.449167	42.930833	2182.2	721	721	28.02.2005	05:26:31	35.608611	42.659167	2102.8
291	291	27.02.2005	18:41:31	36.428611	42.923889	2181.8	731	731	28.02.2005	05:41:31	35.595556	42.655556	2102.1
301	301	27.02.2005	18:56:31	36.408056	42.916944	2182.1	741	741	28.02.2005	05:56:31	35.583889	42.651111	2096.8
311	311	27.02.2005	19:11:31	36.388333	42.910556	2180.8	751	751	28.02.2005	06:11:31	35.572222	42.646667	2100.5
321	321	27.02.2005	19:26:31	36.369722	42.904444	2180.3	761	761	28.02.2005	06:26:31	35.559444	42.642778	2107.7
331	331	27.02.2005	19:41:31	36.349722	42.897500	2180.0	771	771	28.02.2005	06:41:31	35.546111	42.638333	2113.1
341	341	27.02.2005	19:56:31	36.327500	42.890278	2180.1	781	781	28.02.2005	06:56:31	35.532500	42.634167	2111.7
351	351	27.02.2005	20:11:31	36.305278	42.882778	2181.0	791	791	28.02.2005	07:11:31	35.518611	42.629722	2109.6
361	361	27.02.2005	20:26:31	36.283889	42.875833	2181.4	801	801	28.02.2005	07:26:31	35.503889	42.625278	2108.9
371	371	27.02.2005	20:41:31	36.263056	42.868611	2181.0	811	811	28.02.2005	07:41:31	35.489722	42.620278	2110.3
381	381	27.02.2005	20:56:31	36.243056	42.861944	2181.2	821	821	28.02.2005	07:56:31	35.475833	42.615000	2113.3
391	391	27.02.2005	21:11:31	36.223611	42.855556	2180.6	831	831	28.02.2005	08:11:31	35.461389	42.609722	2118.0
401	401	27.02.2005	21:26:31	36.203611	42.848889	2180.6	841	841	28.02.2005	08:26:31	35.446389	42.604722	2122.4
411	411	27.02.2005	21:41:31	36.181111	42.841111	2180.5	851	851	28.02.2005	08:41:31	35.430000	42.599167	2121.7
421	421	27.02.2005	21:56:31	36.161111	42.834722	2180.4	861	861	28.02.2005	08:56:31	35.413056	42.594722	2122.7
431	431	27.02.2005	22:11:31	36.139722	42.827500	2179.7	871	871	28.02.2005	09:11:31	35.396111	42.589722	2119.8

Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)	Trace #	Shot #	Date	Time UTC	Longitude (°)	Latitude (°)	Depth (m)
881	881	28.02.2005	09:26:31	35.378611	42.585000	2123.0							
891	891	28.02.2005	09:41:31	35.359722	42.580278	2120.3							
901	901	28.02.2005	09:56:31	35.342222	42.575556	2116.9							
911	911	28.02.2005	10:11:31	35.330000	42.568056	2113.7							
921	921	28.02.2005	10:26:31	35.317222	42.560833	2114.3							
931	931	28.02.2005	10:41:31	35.304444	42.553333	2108.0							
941	941	28.02.2005	10:56:31	35.290556	42.545833	2111.5							
951	951	28.02.2005	11:11:31	35.276944	42.538056	2114.7							
961	961	28.02.2005	11:26:31	35.263333	42.530556	2113.2							
971	971	28.02.2005	11:41:31	35.249167	42.523611	2110.4							
981	981	28.02.2005	11:56:31	35.234722	42.518611	2107.1							
991	991	28.02.2005	12:11:31	35.220833	42.513889	2108.3							
997	997	28.02.2005	12:20:31	35.212500	42.510833	2108.2							

Appendix 4.8 DESCRIPTION AND SPECIFICATION OF VESSEL AND EQUIPMENT RV "ISKATEL"

Type:

Research, sea, steel, one-screw with the sunken tank, the lengthened average superstructure.
Signal EOFV IMO 7646580.

Purpose: Vessel is intended for complex geology and geophysical surveys for study a geological structure and mineral resources.

Area of navigation:

Unlimited, could come into broken ice areas during all year.

Year and place of construction: 1977, Khabarovsk.

Port of registry and register #: Port Ilyichevsk, 752374.

Rules of construction:

Vessel is constructed on « Rules of classification and construction of sea vessels » the Register of the USSR of the edition of 1970. A class of the Register of the USSR is KM_2 1 research vessel.

Category of stability: Unlimited area of navigation.

The main measurements:

Length the greatest – 54.90 m.

Length on KVL – 50.88 m.

Length between perpendiculars – 48.00 m.

Breadth – 9.52 m.

Height of a board on a midel-frame – 5.167 m.

Height of a mast - 9,7 m.

Height of a superstructure – 2.40 m.

Draft maximal – 4.5 m.

Draft in empty - 3,8 m.

Displacement - 1140 t at average draft of 4,18 m.

Height of up-water board - 9,88 m.

Gross tonnage - 758 t

Net tonnage - 227 t

Carrying tonnage - 308 t.

Full stocks:

Diesel fuel – 152.42 t.

Lubricant - 6.23 t.

Technical water – 50.65 t.

Drinking water - 36.12 t.

Non-mineral water - 21,02 t.

Autonomy:

On the fuel and lubricant - 33 days

On potable water - 19 days, at use of 40 litres per day per person.

Water-proof sheets:

On frames: 5, 12, 22, 37, 52, 68, 78.

The main engine:

6 NVD - 48 A2V, capacity 1000 horse power, 736 kW.

Safety equipment:

Life boats 2 for 25 persons

Safety rafts: PSN-10 - 5 pieces.

Safety rafts PSN-6 - 1 piece.

Lifebuoy rings - 8 pieces.

Life jackets - 45 pieces.

Diving suits - 20 pieces.

Alarm equipment:

Lamp of the day time signal system - 1.

Ringin Bell - 1.

Whistle - 1.

Black rhombus - 1 piece.

Black spheres - 3 pieces.

Parachute alarm rockets - 12 pieces.

Line throwing device with 4 rockets.

The fire-prevention equipment:

The fire pumps: 2 by 63 m³
The emergency fire pump: 1 with 25 m³
Fire hydrant - 6 pieces. Ø50 mm
Fire hoses - 6 pieces. Ø50 mm
The portable fire extinguisher - 9/8-7 pieces.
OPCH-10 - 7 pieces, 1 by 45 litres, 2 by 70 litres.
Fire Equipment - 3 complete sets.

The anchor device:

Anchor of the Hall - 2 pieces x 700 kg with anchor chain of Ø28 mm, L-362 m.
Anchor of the Hall spare – 1 piece x 700 kg.

The cargo device:

Crane HIBE-110 electro-hydraulic with the maximal carrying capacity of 6 tonnes

The steering device:

Type of the steering machine - RO-9; Power of 3.2 kW; a manual drive - emergency pump; type of a rudder - a rotary nozzle.

The rowing screw:

1 x 5800, number of blades - 3, screw - Ø 1,65m.

Auxiliary engines (diesel generators):

62N 18/22 - 3 pieces, 64 12/14 power of 80 horse power, 64N 18/22 - 225 horse power, the hour fuel consumption – 21.0 kg; lubricant - M10B2, lubricant consumption for 2 electric hours - 4.0 kg.

Tanks:

Soothing - 32,83 m³, gathering of wasted waters - 38,26 m³, waste - 4,50 m³, faecal - 3,29 m³, the wasted lubricant - 2,54 m³, a plum of a water-sediment - 1,7 m³, gathering of products of separation - 1,74 m³; diesel fuel # 1- 11.07 tonnes, # 4 - 17,68 tonnes, # 5 - 17,81 tonnes., # 6 - 43,68 tonnes, # 7 - 34,78 tonnes, # 8 - 7,94 tonnes, # 9 - 12,95 tonnes., a stock of lubricant oil - 4,96 tonnes, separated fuel - 1,66 tonnes, a sediment of fuel - 4,85 tonnes.

Radio equipment:

The basic systems - "REID-1"; RT-4822; "Brig"; INMARSAT –C; satellite safety radio buoys - "KOSPAS -SARSAT" - 2 pieces; "MUSSON - 502", the equipment of 2 side communications IC-Gm15000, GLS, "PRIZIV"



The special equipment:

Air diesel compressors DK - 10 - 6 pieces. Digital streamer of 3 km active length
Navigating system " Navigator " with DGPS the receiver.

The register of classification: The classification certificate of the Register Valid till 14.12.2005.
Dock survey is valid till 14.12.2005.