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**Short Cruise Report
Alkor – AL512**

**15th July – 26th July, 2018
Cuxhaven – Kiel**

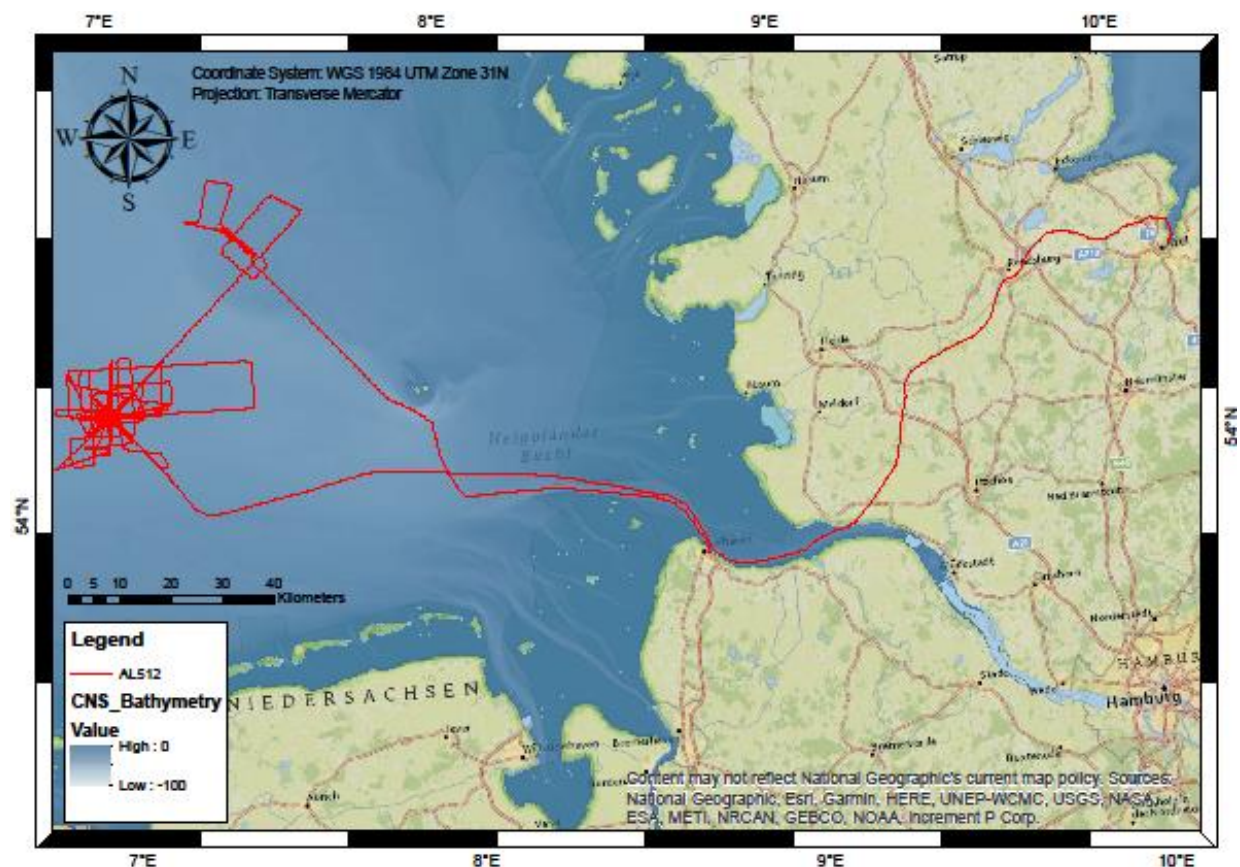
**Chief scientist: Dr. Jens Karstens
Captain: Friedhelm von Staa**



Motivation and objectives

The North Sea Basin is Europe's most prolific hydrocarbon province and has been explored for oil and gas reservoirs since the early 1960s. The first-ever offshore North Sea well was drilled in the German sector of the North Sea in 1964. The exploration well B1 drilled to a depth of 2925 m, when it broke through an anhydrite layer overlying a gas charged dolomite reservoir and initiated a blowout on the 24th of June 1964. The crater is located about 30 nm west of Helgoland and 35 nm north of Juist. The cruise AL512 represents the first-ever geoscientific research campaign targeting the Figge Maar and its main motivation is to image the fluid migration pathways that formed the Figge Maar crater with multi-resolution hydroacoustic and seismic methods. The investigations will help to understand the evolution and hydraulic properties of focused fluid conduits. The cruise will survey the ongoing methane release from the crater. Furthermore, the surveys will allow reconstructing the temporal and structural evolution of seafloor depression formed by the rapid expulsion of gas.

Cruise track



Narrative

A group of five scientists and technicians boarded R/V ALKOR already in the afternoon of the **13th of July** to be available, when the equipment was delivered to the ship in the morning of the **14th of July**. The equipment was unpacked, installed and secured during the day and the rest of the scientific crew arrived in the afternoon to help finalizing the mobilization.

The cruise started on Sunday, **15th of July** at 9:30 from Cuxhaven and R/V ALKOR headed towards the research area, where we arrived in the afternoon. The first experiment of our

campaign was the acquisition of 2D reflection seismic profiles using a streamer with 136 channels and an active length of 212.5 m. During the evening and the night, we acquired three seismic profiles crossing the Figge Maar in W-E, NE-SW and S-N direction. During the seismic measurement, we simultaneously acquired sediment echosounder profiles. In the morning of the **16th of July**, we recovered the seismic streamer and the airgun and begun with the deployment of 15 Ocean-Bottom-Seismometer (OBS) within and around the Figge Maar crater. The deployment was finished at 16:00 and we began a 3 nm x 3 nm bathymetry survey using a NORBIT multibeam system. The multibeam bathymetry survey was finished in the morning of the **17th of July**. Afterwards, we deployed the P-Cable system equipped with 12 streamers and the airgun. However, the trigger line of the airgun was malfunctioning and we had to recover the airgun again. At the same time, the control unit of the P-Cable system indicated connection problems and we had to recover the P-Cable as well.

Both technical problems could be solved and we collected some additional multibeam lines for filling up gaps in our grid. Afterwards, we began a flare imaging survey using the shipboard EK60 echosounder. For these surveys, the ship drifted multiple times above the Figge Maar with a speed of 1 knot. In the morning of the **18th of July**, sea conditions did not allow the deployment of the P-Cable system and we started collecting dedicated seismic profiles for the OBS experiment. We acquired three circular profiles and ten linear profiles, which were additionally surveyed with a short streamer consisting of four streamer segments. During nighttime, the bridge of the ALKOR successfully stopped a fish trawler from running over the OBS stations by giving signals with the horn. The acquisition of the OBS profiles was finalized at midday of the **19th of July** and the P-Cable was deployed a second time. After a short duration of surveying, the P-Cable system again developed a technical problem and we had to recover it after 21:00. During the following night, we filled acquisition gaps of the multibeam survey and started a dedicated water column imaging survey to detect flares within and south of the Figge Maar crater, which was finished at midday of the **20th of July**.

Afterwards, we deployed the airgun and a streamer with 136 channels and an active length of 212.5 m. We began surveying seismic lines crossing the OBS stations and additional profiles for reconstructing the regional salt tectonic-dominated structural setting. We continued shooting 2D seismic profiles on the **21st July** until the morning of the **22nd of July**, when we began recovering the OBS. All 15 OBS were on board at noon and we continued with taking eight box core grab samples within and around the crater. Afterwards, we deployed the airgun and a streamer with 136 channels and an active length of 212.5 m again and headed towards a pockmark field approximately 20 nm northeast of the Figge Maar. The 2D seismic survey was finalized in the morning of the **23rd of July** and we surveyed the area with the multibeam system until the evening. After finishing the multibeam survey, we headed towards Brunsbüttel to enter the Kiel Canal, which we reached in the morning of the **24th of July**. We arrived in Kiel in the afternoon. The **25th of July** was used to calibrate EK60 fishery echosounder in the Kiel fjord, which was finalized in the afternoon. In the morning of the **26th of July**, the equipment was unloaded on the pier of east shore campus of GEOMAR.

List of participants

Name	Task	Institute
Dr. Jens Karstens	Chief Scientist, reflection seismics	GEOMAR
Dr. Jens Schneider v.D.	Senior scientist, hydroacoustics	University of Kiel
Christoph Böttner	PhD student, hydroacoustics	GEOMAR
Dr. Judith Elger	Senior scientist, reflection seismics	GEOMAR
Michel Kühn	Master student, reflection seismics	GEOMAR / University of Kiel
Bettina Schramm	PhD student, OBS seismics	GEOMAR
Dr. Benedict Reinardy	Quaternary sedimentology	University of Stockholm
Rebecca Kühn	PhD student	GEOMAR
Helene-Sophie Hilbert	Master student	GEOMAR / University of Kiel
Philipp Müller	Master student	GEOMAR / University of Kiel
Florian Beek	Technician	GEOMAR
Gero Wetzel	Technician	GEOMAR

Acknowledgements

We would like to thank Captain Friedhelm von Staa and the entire crew of R/V ALKOR for their excellent support and hospitality during the entire cruise. Our experiments required advanced maneuvering within a highly tide and traffic-affected area in the North Sea, which have been fulfilled by the bridge to our fullest satisfaction. We would like to thank the crew on deck, in the machine and the caboose for providing an encouraging and supportive working environment. This cruise was funded from GEOMAR, Helmholtz-Centre for Ocean Science Kiel through the EU funded project STEMM-CCS und der grant agreement n°654462.

Institutes

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Station List

Station - Device Operation	date time	Device	Action	Latitude	Longitude
AL512_1-2	2018/07/15 15:04:29	Multibeam	in Moonpool	54° 04.989' N	007° 05.929' E
AL512_1-2	2018/07/23 07:37:38	Multibeam	profile start	54° 28.666' N	007° 20.188' E
AL512_1-2	2018/07/23 17:13:52	Multibeam	profile end	54° 26.028' N	007° 25.473' E
AL512_0 Underway-1	2018/07/15 15:12:55	Thermosalinograph	profile start	54° 00.817' N	007° 30.635' E
AL512_1-1	2018/07/15 15:12:55	Seismic Towed Receiver	Streamer in water	54° 02.372' N	007° 09.470' E
AL512_1-1	2018/07/16 06:32:30	Seismic Towed Receiver	Streamer on deck	54° 14.938' N	006° 58.981' E
AL512_0 Underway-1	2018/07/24 05:15:54	Thermosalinograph	profile end	53° 52.911' N	009° 06.084' E
AL512_1-3	2018/07/15 15:34:42	Seismic Source	Airgun in water	54° 06.085' N	007° 04.200' E
AL512_1-3	2018/07/15 16:40:46	Seismic Source	Airgun on deck	54° 09.286' N	006° 59.358' E
AL512_1-3	2018/07/15 17:01:52	Seismic Source	Airgun in water	54° 10.123' N	006° 58.125' E
AL512_1-3	2018/07/16 06:18:38	Seismic Source	Airgun on deck	54° 15.457' N	006° 59.171' E
AL512_1-4	2018/07/15 15:48:15	Seismic Source	profile start	54° 06.683' N	007° 03.348' E
AL512_1-4	2018/07/15 17:02:27	Seismic Source	profile end	54° 10.147' N	006° 58.092' E
AL512_1-4	2018/07/15 18:39:39	Seismic Source	profile start	54° 10.327' N	006° 49.088' E
AL512_1-4	2018/07/15 21:11:08	Seismic Source	profile end	54° 09.701' N	007° 07.317' E
AL512_1-4	2018/07/15 21:16:41	Seismic Source	profile start	54° 09.983' N	007° 07.591' E
AL512_1-4	2018/07/15 22:35:53	Seismic Source	profile end	54° 15.401' N	007° 08.008' E
AL512_1-4	2018/07/15 22:57:01	Seismic Source	profile end	54° 15.302' N	007° 08.030' E
AL512_1-4	2018/07/16 02:32:40	Seismic Source	profile end	54° 04.973' N	006° 48.678' E
AL512_1-4	2018/07/16 02:48:01	Seismic Source	profile start	54° 04.906' N	006° 48.497' E
AL512_1-4	2018/07/16 04:02:09	Seismic Source	profile end	54° 06.297' N	006° 57.315' E
AL512_1-4	2018/07/16 04:06:11	Seismic Source	profile start	54° 06.476' N	006° 57.695' E
AL512_1-4	2018/07/16 06:05:49	Seismic Source	profile end	54° 15.663' N	006° 58.826' E
AL512_2-1	2018/07/16 07:16:07	CTD	in the water	54° 14.930' N	006° 59.199' E
AL512_2-1	2018/07/16 07:20:13	CTD	on deck	54° 14.950' N	006° 59.223' E
AL512_3-1	2018/07/16 08:37:40	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.020' N	006° 58.274' E
AL512_4-1	2018/07/16 08:53:28	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.011' N	006° 58.139' E
AL512_5-1	2018/07/16 09:10:54	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.081' N	006° 58.327' E

AL512_6-1	2018/07/16 10:36:33	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.001' N	006° 58.436' E
AL512_7-1	2018/07/16 10:54:17	Seismic Ocean Bottom Receiver	OBS deployed	54° 09.922' N	006° 58.283' E
AL512_8-1	2018/07/16 11:08:53	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.083' N	006° 57.967' E
AL512_9-1	2018/07/16 12:05:52	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.145' N	006° 58.083' E
AL512_10-1	2018/07/16 12:20:24	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.192' N	006° 58.309' E
AL512_11-1	2018/07/16 12:34:35	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.129' N	006° 58.526' E
AL512_12-1	2018/07/16 13:13:00	Seismic Ocean Bottom Receiver	OBS deployed	54° 09.988' N	006° 58.609' E
AL512_13-1	2018/07/16 13:23:22	Seismic Ocean Bottom Receiver	OBS deployed	54° 09.861' N	006° 58.510' E
AL512_14-1	2018/07/16 13:33:04	Seismic Ocean Bottom Receiver	OBS deployed	54° 09.806' N	006° 58.267' E
AL512_15-1	2018/07/16 14:08:15	Seismic Ocean Bottom Receiver	OBS deployed	54° 09.876' N	006° 58.053' E
AL512_16-1	2018/07/16 14:21:06	Seismic Ocean Bottom Receiver	OBS deployed	54° 10.413' N	006° 58.307' E
AL512_17-1	2018/07/16 14:38:17	Seismic Ocean Bottom Receiver	OBS deployed	54° 09.607' N	006° 58.228' E
AL512_18-1	2018/07/16 14:51:26	CTD	in the water	54° 09.590' N	006° 58.292' E
AL512_18-1	2018/07/16 14:56:30	CTD	on deck	54° 09.587' N	006° 58.289' E
AL512_19-1	2018/07/16 17:06:46	Multibeam	profile start	54° 09.013' N	006° 59.935' E
AL512_19-1	2018/07/17 05:01:00	Multibeam	profile end	54° 10.749' N	006° 55.876' E
AL512_20-1	2018/07/16 19:15:56	CTD	in the water	54° 09.334' N	006° 59.076' E
AL512_20-1	2018/07/16 19:17:40	CTD	on deck	54° 09.341' N	006° 59.314' E
AL512_21-1	2018/07/17 00:10:37	CTD	in the water	54° 10.011' N	006° 58.287' E
AL512_21-1	2018/07/17 00:13:07	CTD	on deck	54° 10.017' N	006° 58.287' E
AL512_22-1	2018/07/17 03:19:26	CTD	in the water	54° 10.462' N	006° 59.937' E
AL512_22-1	2018/07/17 03:22:09	CTD	on deck	54° 10.455' N	006° 59.921' E
AL512_23-1	2018/07/17 07:33:00	Seismic Towed Receiver	PCable in water	54° 11.082' N	007° 08.946' E
AL512_23-1	2018/07/17 12:44:42	Seismic Towed Receiver	PCable on deck	54° 14.073' N	006° 51.320' E
AL512_23-2	2018/07/17 09:11:31	Seismic Source	Airgun in water	54° 11.480' N	007° 04.326' E
AL512_23-2	2018/07/17 09:55:49	Seismic Source	on deck	54° 12.043' N	007° 00.873' E

AL512_24-1	2018/07/17 14:47:57	Multibeam	profile start	54° 09.901' N	006° 55.655' E
AL512_24-1	2018/07/17 16:22:47	Multibeam	profile end	54° 09.865' N	006° 55.543' E
AL512_25-1	2018/07/17 17:07:19	Fish Finder Echosounder	profile start	54° 09.992' N	006° 58.262' E
AL512_25-1	2018/07/18 05:04:10	Fish Finder Echosounder	profile end	54° 09.872' N	006° 58.354' E
AL512_26-1	2018/07/18 06:10:34	Seismic Source	Airgun in water	54° 10.288' N	007° 03.748' E
AL512_26-1	2018/07/18 07:02:00	Seismic Source	profile start	54° 09.966' N	006° 58.876' E
AL512_26-1	2018/07/18 11:18:44	Seismic Source	profile end	54° 06.753' N	006° 57.956' E
AL512_26-1	2018/07/18 11:56:30	Seismic Source	Airgun on deck	54° 06.885' N	006° 55.656' E
AL512_26-1	2018/07/18 12:09:25	Seismic Source	Airgun in water	54° 06.961' N	006° 54.912' E
AL512_26-1	2018/07/19 10:02:15	Seismic Source	Airgun on deck	54° 10.353' N	007° 07.693' E
AL512_26-2	2018/07/18 12:21:35	Seismic Towed Receiver	Streamer in water	54° 07.024' N	006° 54.245' E
AL512_26-2	2018/07/18 14:12:19	Seismic Towed Receiver	profile start	54° 07.677' N	007° 01.446' E
AL512_26-2	2018/07/18 15:34:59	Seismic Towed Receiver	profile end	54° 11.980' N	006° 54.967' E
AL512_26-2	2018/07/18 15:42:56	Seismic Towed Receiver	profile start	54° 12.169' N	006° 54.931' E
AL512_26-2	2018/07/18 17:07:18	Seismic Towed Receiver	profile end	54° 07.913' N	007° 01.449' E
AL512_26-2	2018/07/18 17:14:38	Seismic Towed Receiver	profile start	54° 07.913' N	007° 01.755' E
AL512_26-2	2018/07/18 18:37:01	Seismic Towed Receiver	profile end	54° 12.238' N	006° 55.191' E
AL512_26-2	2018/07/18 18:48:12	Seismic Towed Receiver	profile start	54° 12.146' N	006° 54.891' E
AL512_26-2	2018/07/18 20:10:10	Seismic Towed Receiver	profile end	54° 07.852' N	007° 01.414' E
AL512_26-2	2018/07/18 20:19:54	Seismic Towed Receiver	profile start	54° 07.905' N	007° 01.610' E
AL512_26-2	2018/07/18 21:41:31	Seismic Towed Receiver	profile end	54° 12.220' N	006° 55.040' E
AL512_26-2	2018/07/18 22:52:18	Seismic Towed Receiver	profile start	54° 12.007' N	007° 01.863' E
AL512_26-2	2018/07/19 00:19:07	Seismic Towed Receiver	profile end	54° 08.195' N	006° 54.505' E
AL512_26-2	2018/07/19 00:29:41	Seismic Towed Receiver	profile start	54° 08.089' N	006° 54.700' E

AL512_26-2	2018/07/19 01:27:23	Seismic Towed Receiver	profile end	54° 10.820' N	006° 59.875' E
AL512_26-2	2018/07/19 02:01:43	Seismic Towed Receiver	profile start	54° 10.360' N	006° 58.952' E
AL512_26-2	2018/07/19 02:34:24	Seismic Towed Receiver	profile end	54° 11.901' N	007° 01.885' E
AL512_26-2	2018/07/19 02:43:22	Seismic Towed Receiver	profile start	54° 11.879' N	007° 02.232' E
AL512_26-2	2018/07/19 03:58:08	Seismic Towed Receiver	profile end	54° 08.394' N	006° 55.548' E
AL512_26-2	2018/07/19 05:54:29	Seismic Towed Receiver	profile end	54° 11.915' N	007° 01.790' E
AL512_26-2	2018/07/19 06:03:33	Seismic Towed Receiver	profile start	54° 11.893' N	007° 02.077' E
AL512_26-2	2018/07/19 07:25:39	Seismic Towed Receiver	profile end	54° 08.044' N	006° 54.688' E
AL512_26-2	2018/07/19 08:04:03	Seismic Towed Receiver	profile start	54° 10.128' N	006° 53.457' E
AL512_26-2	2018/07/19 09:24:54	Seismic Towed Receiver	profile end	54° 09.961' N	007° 03.279' E
AL512_26-2	2018/07/19 10:12:39	Seismic Towed Receiver	Streamer on deck	54° 10.453' N	007° 08.453' E
AL512_27-1	2018/07/19 11:45:12	Seismic Towed Receiver	PCable in water	54° 13.296' N	007° 08.162' E
AL512_27-1	2018/07/19 15:10:13	Seismic Towed Receiver	profile start	54° 11.911' N	006° 58.107' E
AL512_27-1	2018/07/19 16:26:35	Seismic Towed Receiver	profile end	54° 08.675' N	006° 57.793' E
AL512_27-1	2018/07/19 16:41:31	Seismic Towed Receiver	profile start	54° 08.676' N	006° 58.192' E
AL512_27-1	2018/07/19 18:00:23	Seismic Towed Receiver	profile end	54° 11.996' N	006° 58.519' E
AL512_27-1	2018/07/19 20:29:11	Seismic Towed Receiver	PCable on deck	54° 09.679' N	006° 57.944' E
AL512_27-2	2018/07/19 13:13:11	Seismic Source	Airgun in water	54° 13.315' N	007° 04.360' E
AL512_27-2	2018/07/19 18:20:06	Seismic Source	profile start	54° 11.826' N	006° 58.141' E
AL512_27-2	2018/07/19 19:27:45	Seismic Source	profile end	54° 08.670' N	006° 57.837' E
AL512_27-2	2018/07/19 19:38:38	Seismic Source	Airgun on deck	54° 08.686' N	006° 57.984' E
AL512_28-1	2018/07/19 21:23:19	CTD	in the water	54° 10.275' N	006° 55.687' E
AL512_28-1	2018/07/19 21:27:17	CTD	on deck	54° 10.312' N	006° 55.621' E

AL512_29-1	2018/07/19 21:34:30	Multibeam	profile start	54° 10.356' N	006° 55.939' E
AL512_29-1	2018/07/20 05:13:30	Multibeam	profile end	54° 09.280' N	006° 56.066' E
AL512_30-1	2018/07/20 03:15:17	CTD	in the water	54° 09.741' N	006° 59.944' E
AL512_30-1	2018/07/20 03:19:31	CTD	on deck	54° 09.749' N	006° 59.930' E
AL512_31-1	2018/07/20 05:46:55	Multibeam	profile start	54° 09.733' N	006° 58.220' E
AL512_31-1	2018/07/20 09:08:26	Multibeam	profile end	54° 10.131' N	006° 58.551' E
AL512_32-1	2018/07/20 09:19:52	CTD	in the water	54° 09.948' N	006° 58.175' E
AL512_32-1	2018/07/20 09:23:47	CTD	on deck	54° 09.966' N	006° 58.183' E
AL512_33-1	2018/07/20 10:24:27	Seismic Towed Receiver	Streamer in water	54° 06.077' N	006° 55.272' E
AL512_33-1	2018/07/22 06:17:13	Seismic Towed Receiver	Streamer on deck	54° 11.050' N	006° 57.628' E
AL512_33-2	2018/07/20 10:31:32	Seismic Source	Airgun in water	54° 06.062' N	006° 55.669' E
AL512_33-2	2018/07/20 11:08:41	Seismic Source	profile start	54° 06.510' N	006° 57.931' E
AL512_33-2	2018/07/20 12:45:25	Seismic Source	profile end	54° 13.093' N	006° 58.622' E
AL512_33-2	2018/07/20 13:07:13	Seismic Source	profile start	54° 12.834' N	006° 58.389' E
AL512_33-2	2018/07/20 14:28:54	Seismic Source	profile end	54° 07.254' N	006° 57.739' E
AL512_33-2	2018/07/20 14:39:23	Seismic Source	profile start	54° 07.182' N	006° 58.326' E
AL512_33-2	2018/07/20 16:02:14	Seismic Source	profile end	54° 12.871' N	006° 58.708' E
AL512_33-2	2018/07/20 16:57:23	Seismic Source	Airgun on deck	54° 11.220' N	007° 03.681' E
AL512_33-2	2018/07/20 17:56:47	Seismic Source	Airgun in water	54° 10.305' N	007° 06.658' E
AL512_33-2	2018/07/20 17:59:06	Seismic Source	profile start	54° 10.247' N	007° 06.431' E
AL512_33-2	2018/07/21 02:48:04	Seismic Source	profile end	54° 10.606' N	006° 53.639' E
AL512_34-1	2018/07/21 03:53:26	Seismic Source	profile start	54° 15.004' N	006° 53.764' E
AL512_34-1	2018/07/22 01:45:21	Seismic Source	profile end	54° 06.698' N	006° 59.976' E
AL512_35-1	2018/07/22 03:13:59	Seismic Towed Receiver	profile start	54° 04.298' N	007° 06.953' E
AL512_35-1	2018/07/22 05:36:39	Seismic Towed Receiver	profile end	54° 11.786' N	006° 55.631' E
AL512_35-1	2018/07/22 06:16:26	Seismic Towed Receiver	Streamer on deck	54° 11.070' N	006° 57.579' E
AL512_36-1	2018/07/22 06:38:31	Seismic Ocean Bottom Receiver	released	54° 09.968' N	006° 58.453' E
AL512_36-1	2018/07/22 06:49:10	Seismic Ocean Bottom Receiver	on deck	54° 09.998' N	006° 58.334' E
AL512_37-1	2018/07/22 06:52:48	Seismic Ocean Bottom Receiver	released	54° 09.964' N	006° 58.366' E
AL512_37-1	2018/07/22 06:58:55	Seismic Ocean Bottom Receiver	on deck	54° 09.986' N	006° 58.108' E

AL512_38-1	2018/07/22 07:07:27	Seismic Ocean Bottom Receiver	released	54° 10.043' N	006° 58.485' E
AL512_38-1	2018/07/22 07:12:30	Seismic Ocean Bottom Receiver	on deck	54° 10.099' N	006° 58.321' E
AL512_39-1	2018/07/22 07:19:45	Seismic Ocean Bottom Receiver	released	54° 09.934' N	006° 58.654' E
AL512_39-1	2018/07/22 07:25:40	Seismic Ocean Bottom Receiver	on deck	54° 10.070' N	006° 58.359' E
AL512_40-1	2018/07/22 07:33:45	Seismic Ocean Bottom Receiver	released	54° 09.843' N	006° 58.414' E
AL512_40-1	2018/07/22 07:39:21	Seismic Ocean Bottom Receiver	on deck	54° 09.931' N	006° 58.276' E
AL512_41-1	2018/07/22 07:41:11	Seismic Ocean Bottom Receiver	released	54° 09.953' N	006° 58.242' E
AL512_41-1	2018/07/22 07:52:53	Seismic Ocean Bottom Receiver	on deck	54° 10.067' N	006° 57.951' E
AL512_42-1	2018/07/22 07:57:53	Seismic Ocean Bottom Receiver	released	54° 10.018' N	006° 58.018' E
AL512_42-1	2018/07/22 08:03:16	Seismic Ocean Bottom Receiver	on deck	54° 10.165' N	006° 58.078' E
AL512_43-1	2018/07/22 08:05:58	Seismic Ocean Bottom Receiver	released	54° 10.202' N	006° 58.089' E
AL512_43-1	2018/07/22 08:11:18	Seismic Ocean Bottom Receiver	on deck	54° 10.187' N	006° 58.343' E
AL512_44-1	2018/07/22 08:13:10	Seismic Ocean Bottom Receiver	released	54° 10.184' N	006° 58.362' E
AL512_44-1	2018/07/22 08:19:13	Seismic Ocean Bottom Receiver	on deck	54° 10.141' N	006° 58.508' E
AL512_45-1	2018/07/22 08:21:43	Seismic Ocean Bottom Receiver	released	54° 10.140' N	006° 58.526' E
AL512_45-1	2018/07/22 08:28:37	Seismic Ocean Bottom Receiver	on deck	54° 10.002' N	006° 58.579' E
AL512_46-1	2018/07/22 08:30:58	Seismic Ocean Bottom Receiver	released	54° 09.996' N	006° 58.600' E
AL512_46-1	2018/07/22 08:37:30	Seismic Ocean Bottom Receiver	on deck	54° 09.860' N	006° 58.427' E
AL512_47-1	2018/07/22 08:39:06	Seismic Ocean Bottom Receiver	released	54° 09.857' N	006° 58.400' E
AL512_47-1	2018/07/22 08:45:11	Seismic Ocean Bottom Receiver	on deck	54° 09.810' N	006° 58.185' E

AL512_48-1	2018/07/22 08:46:39	Seismic Ocean Bottom Receiver	released	54° 09.810' N	006° 58.157' E
AL512_48-1	2018/07/22 08:52:17	Seismic Ocean Bottom Receiver	on deck	54° 09.874' N	006° 57.936' E
AL512_49-1	2018/07/22 09:01:55	Seismic Ocean Bottom Receiver	released	54° 09.689' N	006° 58.047' E
AL512_49-1	2018/07/22 09:07:05	Seismic Ocean Bottom Receiver	on deck	54° 09.602' N	006° 58.150' E
AL512_50-1	2018/07/22 09:18:51	Seismic Ocean Bottom Receiver	released	54° 10.263' N	006° 58.133' E
AL512_50-1	2018/07/22 09:25:42	Seismic Ocean Bottom Receiver	on deck	54° 10.420' N	006° 58.194' E
AL512_51-1	2018/07/22 10:20:39	Grab	in the water	54° 10.080' N	006° 58.272' E
AL512_51-1	2018/07/22 10:23:11	Grab	on deck	54° 10.077' N	006° 58.266' E
AL512_52-1	2018/07/22 10:47:53	Grab	in the water	54° 09.891' N	006° 58.307' E
AL512_52-1	2018/07/22 10:50:20	Grab	on deck	54° 09.897' N	006° 58.292' E
AL512_53-1	2018/07/22 10:58:23	Grab	in the water	54° 09.877' N	006° 58.298' E
AL512_53-1	2018/07/22 11:00:16	Grab	on deck	54° 09.879' N	006° 58.296' E
AL512_54-1	2018/07/22 11:14:26	Grab	in the water	54° 10.013' N	006° 58.289' E
AL512_54-1	2018/07/22 11:16:35	Grab	on deck	54° 10.010' N	006° 58.289' E
AL512_55-1	2018/07/22 11:36:18	Grab	in the water	54° 10.019' N	006° 58.164' E
AL512_55-1	2018/07/22 11:38:27	Grab	on deck	54° 10.015' N	006° 58.164' E
AL512_56-1	2018/07/22 11:59:02	Grab	in the water	54° 10.023' N	006° 58.101' E
AL512_56-1	2018/07/22 12:02:02	Grab	on deck	54° 10.026' N	006° 58.074' E
AL512_57-1	2018/07/22 12:17:59	Grab	in the water	54° 10.027' N	006° 58.002' E
AL512_57-1	2018/07/22 12:21:04	Grab	on deck	54° 10.024' N	006° 57.986' E
AL512_58-1	2018/07/22 12:37:32	Grab	in the water	54° 10.012' N	006° 58.379' E
AL512_58-1	2018/07/22 12:40:54	Grab	on deck	54° 10.008' N	006° 58.400' E
AL512_59-1	2018/07/22 13:28:06	Grab	in the water	54° 09.851' N	007° 02.738' E
AL512_59-1	2018/07/22 13:30:30	Grab	on deck	54° 09.853' N	007° 02.739' E
AL512_60-1	2018/07/22 13:52:27	Seismic Towed Receiver	Streamer in water	54° 10.187' N	007° 03.374' E
AL512_60-1	2018/07/22 14:15:56	Seismic Towed Receiver	profile start	54° 11.572' N	007° 03.919' E
AL512_60-1	2018/07/23 05:18:18	Seismic Towed Receiver	profile end	54° 29.843' N	007° 16.212' E
AL512_60-1	2018/07/23 06:04:08	Seismic Towed Receiver	on deck	54° 29.855' N	007° 13.725' E
AL512_60-2	2018/07/22 13:55:58	Seismic Source	Airgun in water	54° 10.360' N	007° 03.431' E
AL512_60-2	2018/07/23 05:58:48	Seismic Source	on deck	54° 29.839' N	007° 13.885' E

AL512_61-1	2018/07/23 06:10:32	CTD	in the water	54° 29.850' N	007° 13.619' E
AL512_61-1	2018/07/23 06:16:18	CTD	on deck	54° 29.829' N	007° 13.645' E
AL512_62-1	2018/07/23 12:18:40	CTD	in the water	54° 28.963' N	007° 20.185' E
AL512_62-1	2018/07/23 12:25:02	CTD	on deck	54° 28.581' N	007° 20.602' E
AL512_63-1	2018/07/23 14:19:28	CTD	in the water	54° 28.984' N	007° 20.546' E
AL512_63-1	2018/07/23 14:21:57	CTD	on deck	54° 28.995' N	007° 20.539' E
AL512_64-1	2018/07/23 17:17:28	CTD	in the water	54° 25.887' N	007° 25.625' E
AL512_64-1	2018/07/23 17:20:24	CTD	on deck	54° 25.861' N	007° 25.623' E
AL512_65-1	2018/07/23 17:20:30	Multibeam	in Moonpool	54° 25.860' N	007° 25.624' E
AL512_65-1	2018/07/23 18:47:10	Multibeam	out Moonpool	54° 26.567' N	007° 24.723' E