DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE **RAPPORT 2023/7**

Survey report for marine raw material mapping for the Danish Environmental Protection Agency 2022

Inner Danish waters and the Baltic Sea around Bornholm

Lara F. Pérez, Eric J. Haase, Luna H. Winther,
Niels Nørgaard-Pedersen, Nicklas Christensen,
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GEOLOGICAL SURVEY OF DENMARK AND GREENLAND
DANISH MINISTRY OF CLIMATE, ENERGY AND UTILITIES

GEUS

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G E U S

Content

1. Summary

GEUS has carried out fieldwork for the Danish Environmental Protection Agency (Miljøstyrelsen, MST) as part of the marine raw material mapping in 2022 in the Inner Danish waters and Baltic Sea.

The survey started October 22 and was completed November 10 and is hereafter referred to as MST 2022 survey. The MST 2022 survey includes 50 areas of interest widespread throughout the Inner Danish waters and the Baltic Sea. The survey activities were carried out using the survey vessel Fortuna Crane and involved two legs: Leg 1 – geophysical mapping with multibeam echo sounder, side scan sonar, sub-bottom profiler, and shallow single channel seismic; and Leg 2 – sediment sampling by means of vibrocores. In 14 areas only geophysical mapping was carried out, in 27 areas only vibrocores were taken, and in 9 areas both geophysical mapping and vibrocoring were implemented.

Mobilization of the geophysical equipment and vibrocore took place in Hundested harbor from October 19 to October 21. A crew change between Leg 1 and Leg 2 took place in Køge harbor on October 31. Demobilization after the survey took place in Hundested harbor on November 11.

During Leg 1, geophysical mapping was performed in 23 areas where 695 km of geophysical data (out of 699 km planned) were acquired along 249 survey lines. Including turns and connecting lines, 997 km of geophysical data were acquired. Including transit between survey areas, the total sailed length during Leg 1 was 2209 km (excluding unplanned transit from Lyø to Svendborg and back) (Figure 1).

Geophysical data was acquired in Hesselø Bugt, Aarhus Bugt, North of Fyn, Lillebælt, Storebælt, Smålandsfarvandet, Bornholm, Fakse Bugt and Køge Bugt. Details on the survey lines and transits are provided in the survey log included as Appendix A. GAMS calibration of the positioning system was performed on October 22, while equipment verification test and multibeam patch test was performed on October 29 over the southern slope of the Bakkegrund Syd survey area near Bornholm.

Based on the interpretation of existing seismic data, 77 vibrocore locations were designated in 34 areas by GEUS before the survey. During the survey, an additional 23 vibrocore locations in 19 areas were designated by a GEUS representative for the Danish Environmental Protection Agency on board, based on the newly acquired geophysical data.

Vibrocoring was performed in Køge Bugt, Fakse Bugt, Hjelm Bugt, Femern Bælt, Lillebælt, North of Fyn, Storebælt, Smålandsfarvandet and Grønsund. In total, 53 vibrocores were taken during Leg 2 of the survey (out of 100 planned possible locations) in 36 areas (Figure 2). Details on the vibrocore locations are included in Appendix B.

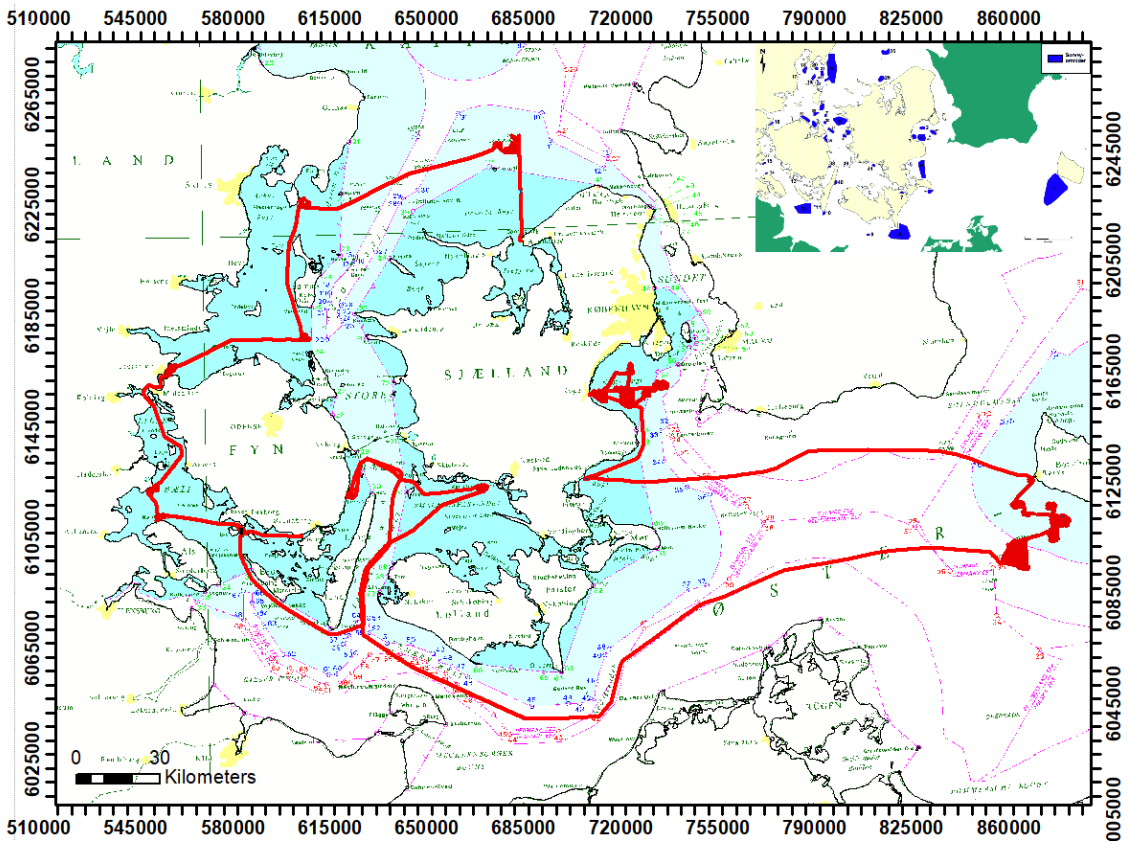

Figure 1. Navigation track of the Leg 1 geophysical part of the MST 2022 survey.

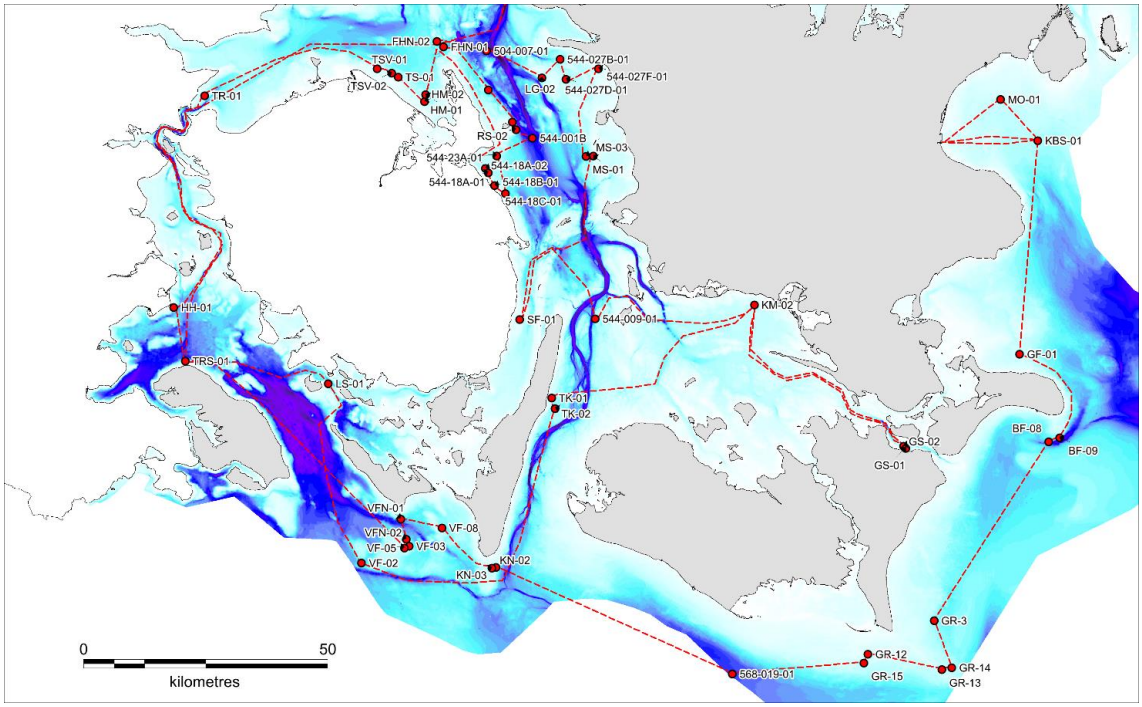

Figure 2. Navigation track of the Leg 2 vibrocoring part of the MST 2022 survey.

2. Introduction and purpose

GEUS has carried out fieldwork for the Danish Environmental Protection Agency (Miljøstyrelsen, MST) as part of the marine raw material mapping in 2022. The survey is hereafter referred to as MST 2022 survey and includes 50 areas of interest widespread throughout the Inner Danish waters and the Baltic Sea.

The purpose of the MST 2022 survey has been to collect geophysical and geological data that improves the knowledge of raw material resources in the Inner Danish waters and the Baltic Sea. Thus, the main aim of the MST 2022 survey is to provide the necessary information for a sustainable management of national raw materials by the Danish Environmental Protection Agency.

Before the survey, GEUS worked out a proposal for geophysical survey activities for the Environmental Protection Agency including multibeam echo sounder, side scan sonar, sub-bottom profiler, and shallow single channel seismic as well as for sediment sampling by means of vibrocores.

The seismic data serve to map the resources and is supported by the echo sounder and side scan seabed mapping, while the vibrocoring serves to confirm the presence of resources interpreted from the geophysical data and provides information of the sediment composition and quality of the resources.

An overview of the survey areas and the planned survey lines and vibrocore locations as well as naming of lines and boreholes can be seen in Table 1.

Table 1. Overview of the survey areas, survey lines and vibrocore locations planned for the MST 2022 survey. Details of the final survey are included in Appendix A and B.

Area	Line names	No. of lines	Planned length (km)	Survey length (km)	Planned Vibrocores	Drilled Vibrocores
Transit line	T_					
Lysegrund	LYS	24	31,6	67,087	1	0
Skade Grund Øst	SGO	5	4,4	11,838	1	0
Skade Grund Vest	SGV	8	10,9	19,113	1	0
Nord for Fyns Hoved	NFH	6	7,6	15,757	2	2
Tragten	TR	10	29,1	39,13	1	1
Halk Hoved	HH	9	20,3	30,345	1	1
Tranesand	TS/TRS	10	16,1	26,605	1	1
Lyø Sand	LS	10	12,2	13,021	1	1
Stokkebæk Flak	SF	9	11,6	18,444	1	1
Karrebæksminde	KM	11	18,0	39,678	1	1
Rønne Banke Syd	RBS	45	277,9	325,271	4	0
Rønne Banke Øst	RBO	13	38,6	55,426	2	0
Bakkegrund Syd	BGS	13	47,7	70,505	1	0
Bakkegrund Nord	BGN	10	18,2	28,855	1	0
Klintegrund Syd	KGS	5	4,6	9,527	1	0
Klintegrund Vest	KGV	9	21,1	31,361	1	0
Rønne	RO	7	4,7	10,451	1	0
Nordmandshage	NH	1	0,7	1,292	1	0
Køge Bugt Øst	KBO	10	28,8	41,019	-	-
Køge Bugt Sydøst	KBS	8	12,5	20,682	1	1
Juelsgrund	JG	13	48,2	67,947	-	-
Mosede	MO	6	9,2	18,97	1	1
Køge	KO	7	25,1	32,821	-	-
Hjelm Dyb	HD	-	-	-	22	0
Nordby bugt	NB	-	-	-	1	0
506-044-055	506-044-055	-	-	-	4	0
Samsø Nord	SN	-	-	-	3	0
Hesbjerg Grund	HG	-	-	-	1	0
Vest for Tørresø	TSV	-	-	-	2	2
Tørresø	TS	-	-	-	1	1
Hasmark	HM	-	-	-	2	2
504-007	504-007	-	-	-	1	1
Stubberup Knold	SK	-	-	-	1	1
Romsø	RS	-	-	-	2	2
504-001B	504-001B	-	-	-	1	1
544-023A	544-023A	-	-	-	1	1

544-018A	544-018A	-	-	-	2	2
544-018B	544-018B	-	-	-	1	1
544-018C	544-018C	-	-	-	1	1
Lysegrunde	LG	-	-	-	1	1
544-027B	544-027B	-	-	-	1	1
544-027F	544-027F	-	-	-	1	1
544-027D	544-027D	-	-	-	1	1
Musholm	MS	-	-	-	2	2
544-025B	544-025B	-	-	-	1	0
544-009	544-009	-	-	-	1	1
Tranekær	TK	-	-	-	2	2
Kendsnor	KN	-	-	-	2	2
Vejsnæs Flak	VF	-	-	-	4	4
Vejnæs Flak Nord	VFN	-	-	-	2	2
568-019	568-019	-	-	-	1	1
Gedser Rev	GR	-	-	-	5	5
Grønsund	GS	-	-	-	2	2
Bjelkes Flak	BF	-	-	-	2	2
Gyldenløves Flak syd	GF	-	-	-	1	1
Total		**249**	**699**	**997,15**	**100**	**53**

3. Overview of survey activities

The MST 2022 survey was carried out using the survey vessel Fortuna Crane (Figure 3) provided by Foga Consult ApS.

Figure 3. Survey vessel Fortuna Crane.

Mobilization of both geophysical equipment and vibrocore on board Fortuna Crane took place in Hundested harbor from October 19 to October 21. The geophysical survey was initiated on October 22 and finished on October 31. A crew change and minor technical adjustments changing from geophysical survey to vibrocore survey took place in Køge harbor on October 31. The vibrocore survey was initiated on November 1 and finished on November 10. The demobilization after the survey took place in Hundested harbor on November 11.

3.1 Geophysical mapping

The acquisition of geophysical data during Leg 1 of the MST 2022 survey developed according to plan. However, unintended events resulted in a delay of the survey completion (see section 6 for details). The general overview of Leg 1 activities is included in Table 2. The survey log, included as Appendix A, contains further details on Leg 1 progress.

Navigation Data was collected in WGS84, UTM32N. The geophysical survey includes multibeam bathymetry and side scan sonar from Edgetech 6205, sub-bottom profiles from Innomar SES 2000, and single channel shallow seismic acquired with a GeoSource 200 Sparker as seismic source recorded through a Geo-sense 1 channel streamer. Sound velocity profiles (SVP) were obtained through the water column in each area.

Originally 690 km of survey lines were planned by GEUS before the survey and including turns and connecting lines a total of 825 km survey lines was expected together with c. 1000 km of transit between areas. During the survey, a number of planned lines in Lyø Sand, Karrebæksminde, Nordmandshage and Køge were modified to fulfil navigation safety near areas of shallow water. These modifications added 9 km to the original survey line plan

resulting in 699 km as noted in Table 1. The final survey provided geophysical data along 695 km of planned survey lines in 23 areas and a total of 997 km of survey lines including turns and connecting lines. The transit between survey areas cover a total of 1212 km. The total navigation track of the geophysical survey was 2209 km (Figure 1), excluding unplanned two-way transit between Lyø and Svendborg.

Table 2. Overview of the Leg 1 geophysical mapping activities, times are in UTC.

Date	Location	Notes
19/10 2022	Hundested harbor	Mobilization on Fortuna Crane
22/10 2022	Hundested harbor/Hesselø Bugt	13:00 Onset of MST 2022 survey, transit to first survey area LYS
22/10 2022	Lysegrund	Survey on area LYS from 13:25 to 21:33. Transit to survey area SGO
23/10 2022	Skade Grund Øst	Survey on area SGO from 01:25 to 03:27. Transit to survey area SGV
23/10 2022	Skade Grund Vest	Survey on area SGV from 03:44 to 05:46. Transit to survey area FHN
23/10 2022	Nord for Fyns Hoved	Survey on area FHN from 09:22 to 11:03. Transit to survey area TR
23/10 2022	Tragten	Survey on area TR from 14: 13 to 18:10. Transit to survey area HH across Lillebælt
23/10 2022	Halk Hoved	Survey on area HH from 22:00 to 01:17 on 24/10 2022. Transit to survey area TS
24/10 2022	Tranesand	Survey on area TS from 02:05 to 04:48. Transit to survey area LS
24/10 2022	Lyø Sand	Starting survey on area LS at 06:45
24/10 2022	Ship grounding	Ship runs aground at 07:03 on Lyø Sand survey area. Survey activities suspended until damage assessment is performed
25/10 2022	Svendborg	Equipment damage assessment and repairs at Svendborg harbor
25/10 2022	Lyø Sand	Transit to LS survey area and survey activity restarted after check of equipment performance. Survey on LS completed at 19:41
26/10 2022	Stokkebæk Flak	Survey on area SF from 04:35 to 06:20. Transit to survey area KM across Storebælt
26/10 2022	Karrebæksminde	Survey on area KM from 11:23 to 14:46. Transit to Bornholm survey areas
26/10 2022	Transit to Bornholm areas	Transit to Bornholm areas >18 hours
27/10 2022	Rønne Banke Syd	Survey on area RBS started at 08:52
28/10 2022	Rønne Banke Syd	Survey on area RBS ended at 19:01. Transit to survey area RBO
28/10 2022	Rønne Banke Øst	Survey on area RBO from 19:59 to 01:29. Transit to survey area GBS
29/10 2022	Bakkegrund Syd	Survey on area BGS from 01:40 to 07:47. Survey activity at BGS interrupted due to weather and transit to survey area BGN
29/10 2022	Bakkegrund Nord	Survey on area BGN from 08:08 to 11:28. Transit (back) to survey area BGS
29/10 2022	Bakkegrund Syd	Survey on area BGS from 11:50 to 17:34
29/10 2022	Patch test	Patch test of the EdgeTech multibeam was performed on BGS survey area between 14:03 and 16:54

29/10 2022	Klintegrund Syd	Survey on area KGS from 18:19 to 19:32. Transit to survey area KGV
29/10 2022	Klintegrund Vest	Survey on area KGV from 20:00 to 23:07. Transit to survey area RO
29/10 2022	Rønne	Survey on area RO from 23:51 to 00:58. Transit to survey area NH
30/10 2022	Nordmandshage	Survey on area NH from 09:44 to 10:17. Transit to Køge harbor
30/10 2022	Køge harbor	Innomar replaced. Transit to survey area KBO
30/10 2022	Køge Bugt Øst	Survey on area KBO from 16:54 to 21:04. Transit to survey area KBS
30/10 2022	Køge Bugt Sydøst	Survey on area KBS from 21:20 to 23:25. Transit to survey area JG
31/10 2022	Juelsgrund Øst	Survey on area JG from 00:00 to 07:02. Transit to survey area MO
31/10 2022	Mosede	Survey on area MO from 07:45 to 09:37. Transit to survey area KO
31/10 2022	Køge	Survey on area KO from 10:19 to 13:28. End of survey and transit to Køge harbor
31/10 2022	Køge harbor	Dock at Køge harbor at 14:34 and end of Leg 1 – geophysical mapping of MST 2022 survey

3.2 Vibrocoring

The acquisition of vibrocores during Leg 2 of the MST 2022 survey developed according to plan. However, unintended events resulted in a delay of the survey completion (see section 6 for details). The general overview of Leg 2 activities is included in Table 3. The vibrocore log, included as Appendix B, contains further details on Leg 2 progress.

Navigation Data was collected in WGS84, UTM32N. The acquisition of vibrocores include sediment cores from the seabed and down to a maximum depth of 6 m.

Based on the interpretation of existing seismic data, 78 vibrocore locations were designated in 34 areas by GEUS before the survey. During the survey, an additional 23 vibrocore locations in 19 areas were designated by a GEUS representative for the Danish Environmental Protection Agency on board, based on the newly acquired geophysical data. The final survey provided 53 vibrocores and 2 unsuccessful attempts in 36 areas and 1282 km transit between borehole positions (Figure 2).

Table 3. Overview of the Leg 2 vibrocore activities, times are in UTC.

Date	**Location**	**Notes**
31/10 2022	Køge harbor	Mobilization of vibrocore equipment
1/11 2022	Køge harbor - Køge Bugt	Transit to first vibrocore location
1/11 2022	Mosede	10:20 vibrocore MO-01, failure on the hydraulic system of the ship
1/11 2022	Køge Bugt – Køge harbor	Transit back to Køge harbor for repair
4/11 2022	Køge harbor - Køge Bugt	Transit to survey area
4/11 2022	Køge Bugt Sydøst	11:25 vibrocore KBS-01, transit to next location
4/11 2022	Gyldenløves Flak	15:11 vibrocore GF-01, transit to next location

4/11 2022	Bjelkes Flak	17:47 vibrocore BF-09, transit to next location
4/11 2022	Bjelkes Flak	19:00 vibrocore BF-08, transit to next location
4/11 2022	Gedser Rev	23:30 vibrocore GR-03, transit to next location
5/11 2022	Gedser Rev	01:10 vibrocore GR-14, transit to next location
5/11 2022	Gedser Rev	02:00 vibrocore GR-13, transit to next location
5/11 2022	Gedser Rev	03:00 vibrocore GR-12, transit to next location
5/11 2022	Gedser Rev	04:03 vibrocore GR-15, transit to next location
5/11 2022	568-019	06:42 vibrocore 568-019-01, transit to next location
5/11 2022	Keldsnor	11:46 vibrocore KN-02, transit to next location
5/11 2022	Keldsnor	13:40 vibrocore KN-03, transit to next location
5/11 2022	Vejsnæs Flak	14:25 vibrocore VF-08, transit to next location
5/11 2022	Vejsnæs Flak Nord	16:55 vibrocore VFN-01, transit to next location
5/11 2022	Vejsnæs Flak Nord	18:04 vibrocore VFN-02, transit to next location
5/11 2022	Vejsnæs Flak	19:00 vibrocore VF-03, transit to next location
5/11 2022	Vejsnæs Flak	21:10 vibrocore VF-05, vessel running over vibrocore, repair, 5,5 hours waiting on weather, transit to new location for more calm wind and waves
6/11 2022	Tragten	13:05 vibrocore TR-01, transit to next location
6/11 2022	Tørresø Vest	14:52 vibrocore TSV-01, transit to next location
6/11 2022	Tørresø Vest	15:54 vibrocore TSV-02, transit to next location
6/11 2022	Tørresø	16:49 vibrocore TS-01, transit to next location
6/11 2022	Hasmark	18:05 vibrocore HM-02, transit to next location
6/11 2022	Hasmark	19:06 vibrocore HM-01, transit to next location, 9 hours waiting on weather
7/11 2022	544-018A	08:51 vibrocore 544-18A-02, transit to next location
7/11 2022	544-018A	09:52 vibrocore 544-18A-01, transit to next location
7/11 2022	544-018B	10:58 vibrocore 544-18B-01, transit to next location
7/11 2022	544-018C	12:03 vibrocore 544-18C-01, transit to next location
7/11 2022	544-023A	13:37 vibrocore 544-23A-01, transit to next location
7/11 2022	544-001B	15:16 vibrocore 544-001B, transit to next location
7/11 2022	Romsø	16:17 vibrocore RS-02, transit to next location
7/11 2022	Romsø	17:38 vibrocore RS-03, transit to next location
7/11 2022	Fynshoved Nord	21:05 vibrocore FHN-01, transit to next location
7/11 2022	Fynshoved Nord	22:02 vibrocore FHN-02, transit to next location
8/11 2022	544-007	00:23 vibrocore 504-007-01, transit to next location
8/11 2022	Lysegrunde	02:03 vibrocore LG-02, transit to next location
8/11 2022	544-027B	09:53 vibrocore 544-027B-01, transit to next location
8/11 2022	544-027F	11:30 vibrocore 544-027F-01, transit to next location
8/11 2022	544-027D	12:53 vibrocore 544-027D-01, transit to next location
8/11 2022	Stubberup Knold	14:46 vibrocore SK-01, transit to next location
8/11 2022	Musholm	17:08 vibrocore MS-03, transit to next location
8/11 2022	Musholm	18:04 vibrocore MS-01, transit to next location
8/11 2022	544-025B	20:20 location 544-025B-01, no anchor traction, aborted, transit to next location
8/11 2022	Stokkebæk Flak	23:15 vibrocore SF-01, transit to next location
9/11 2022	544-009	01:45 vibrocore 544-009-01, transit to next location
9/11 2022	Karrebæksminde	08:20 location KM-01, no anchor traction, aborted, transit to next location
9/11 2022	Grønsund	11:02 vibrocore GS-02, transit to next location
9/11 2022	Grønsund	13:08 vibrocore GS-01, transit to next location
9/11 2022	Karrebæksminde	17:23 vibrocore KM-02, transit to next location
9/11 2022	Tranekær	22:02 vibrocore TK-01, transit to next location
9/11 2022	Tranekær	22:57 vibrocore TK-02, transit to next location

10/11 2022	Vejsnæs Flak	04:30 vibrocore VF-02, transit to next location
10/11 2022	Lyø Sand	07:54 vibrocore LS-01, transit to next location
10/11 2022	Tranesand	10:23 vibrocore TRS-01, transit to next location
10/11 2022	Halk Hoved	11:49 vibrocore HH-01, end of vibrocore survey
10/11 2022	Lillebælt - Hundested	Transit to Hundested harbor
11/11 2022	Hundested harbor	Demobilization of vibrocore and geophysical equipment, end of Leg 2 and MST 2022 survey

4. Personnel

Apart from the professional ship crew, GEUS had a crew of 7 people in total manning the MST 2022 survey and a vibrocore crew of 4 people from Bjerregaard Montage ApS.

4.1 Leg 1 – Geophysical mapping

GEUS personnel was responsible for the geophysical data acquisition. Two technicians carried out the mobilization and the sailing crew was formed by two surveyors and one technician. One GEUS MST representative was responsible for the on-site quality control of the data. The personnel was:

- Lara F. Pérez (Cruise lead/Surveyor)
- Luna H. Winther (GEUS MST representative)
- Sigurd B. Andersen (Technician, mobilization/onboard)
- Nicklas Christensen (Surveyor)
- Lars-Georg Rödel (Technician, mobilization)

Data acquisition was carried out 24/7 during the 10 days of the survey. The watch schedule was as follows:

- 04:00-10:00 Nicklas Christensen
- 10:00-12:00 Sigurd B. Andersen
- 12:00-16:00 Lara F. Pérez
- 16:00-20:00 Nicklas Christensen
- 20:00-22:00 Sigurd B. Andersen
- 22:00-04:00 Lara F. Pérez

4.2 Leg 2 – Vibrocoring

A GEUS cruise lead had the overall responsibility for the vibrocoring survey, but a drilling crew of four people from Bjerregaard Montage ApS operated the vibrocore instrument. One GEUS MST representative was responsible for the on-site quality control of the data. The GEUS personnel was:

- Eric Jürgen Haase (Cruise lead/Surveyor)
- Luna H. Winther (GEUS MST representative, 31/10 – 2/11)
- Niels Nørgaard-Pedersen (GEUS MST representative, 3/11 – 11/11)

The drilling crew was:

- Johnny Bjerregaard (Drilling foreman)
- Allan Stege (Assistant foreman/Drilling operator)

- Ole Camin (Drilling operator)
- Peter Andreas Hansen (Drilling operator)

Data acquisition was carried out 24/7 during the 10 days of the survey.

5. Equipment

Geophysical mapping and sediment sampling equipment used during the MST 2022 survey is summarized in Table 4. Survey lines were defined in HyPack64 2022 software.

Table 4. Summary of the equipment on board Fortuna Crane during the MST 2022 survey.

Geophysical mapping	
Combined Multibeam echosounder and Side scan sonar	EdgeTech 6205
Sub-bottom profiler	Innomar SES 2000 Medium
Sound Velocity Profiler	Valeport Mini CTD
Positioning/Motion sensor system	Applanix PosMV v.5
Streamer	GeoSense 1 channel, 8 elements, High resolution streamer
Sparker	GeoSource 200
Power supply	GeoPulse 1000
Sediment sampling	
Vibrocorer	MED-C VC(VKG)-6

5.1 Ship setup

The setup of the geophysical equipment in relation to the ship is shown in Figure 4.

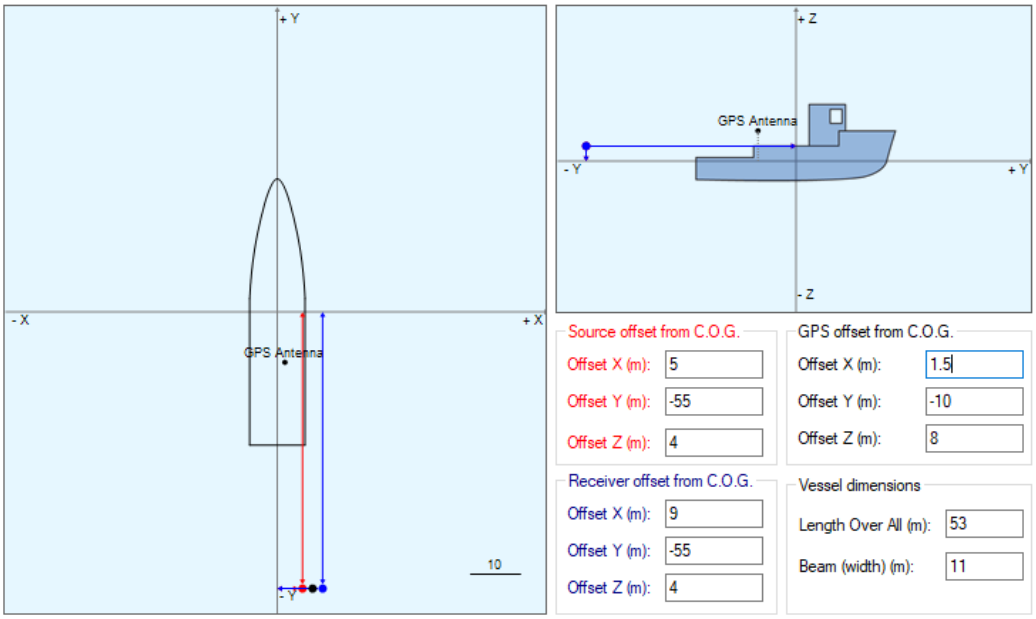

Figure 4. Offset diagram of the geophysical setup on board Fortuna Crane during the MST 2022 survey. Sparker and streamer are towed 20 m behind the ship and separated from each other by 3 m. The Innomar sub-bottom profiler is located 2,95 m under the water line. The multibeam and side scan sonar EdgeTech is located 3,25 m under the water line. Both Innomar and Edge Tech are attached to a pole in starboard side in the central part of the ship.

5.2 Applanix PosMV positioning and motion sensor system

The GPS antennas for the Applanix PosMV positioning and motion sensor system (Figure 5) for the geophysical mapping was located on the roof of GEUS' survey container on the stern deck of Fortuna Crane (Figure 4) and the Inertial Motion Sensor (IMU) unit was placed directly on the EdgeTech multibeam/side scan and Innomar sub-bottom profiler units. The Applanix PosMV merges position data from the Global Navigation Satellite System (GNSS) and NTRIP RTK corrections with angular rate and acceleration data from the IMU, together with heading from the GNSS Azimuth Measurement System (GAMS) to produce a robust and accurate full six degrees-of-freedom position and orientation solution. The positioning and motion sensor data were distributed to the respective acquisition software using HyPack64 2022 software.

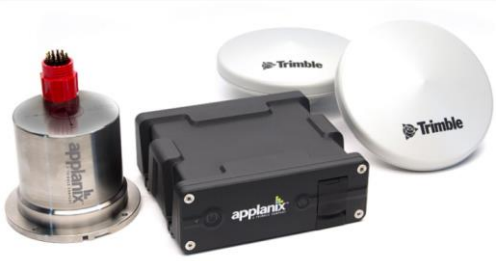

Figure 5. Applanix POS MV with GPS antennas and Inertial Motion Unit.

5.2.1 GAMS calibration test

The GAMS system was calibrated before starting data acquisition to check the offsets of the primary and secondary antennas of the GNSS and their correlation with the land observations. Thus, a heading calibration test (or GAMS test) was performed on the PosMV unit on October 22 during 24 minutes during transit to the Lysegrund survey area (Figure 6). During the GAMS calibration, the ship sailed sharp turns and figures of eight at variable speed. After the GAMS calibration the baseline vector was adjusted to: X component = -1,994 m, Y component = -0,009 m, Z component = 0,032 m with 0 degrees heading correction and a heading calibration threshold of 0,500 degrees.

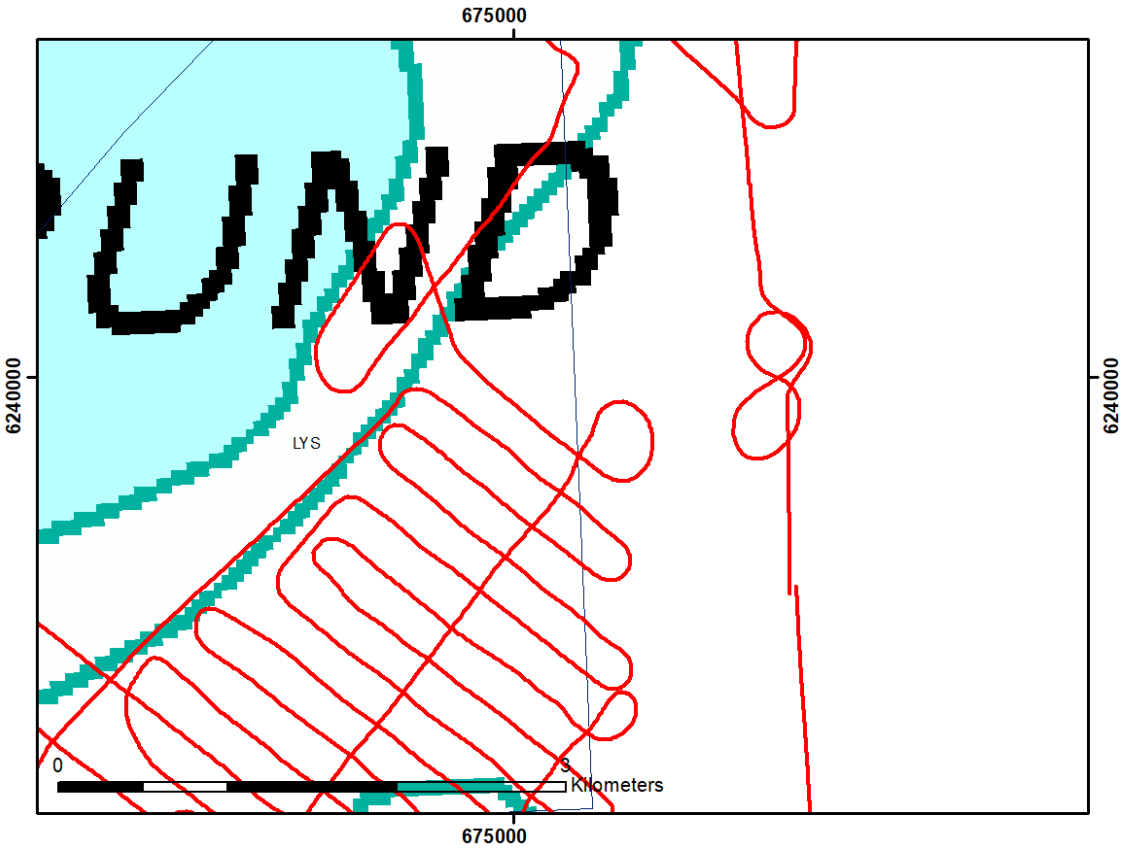

Figure 6. Figures of eight sailing pattern for the GAMS test during the MST 2022 survey to the right.

5.3 EdgeTech 6205 multibeam and side scan sonar

The EdgeTech 6205 was mounted on a pole in the starboard side of the ship. The sensors of the EdgeTech were located 3,25 m under the water line. The combined multibeam and side scan sonar EdgeTech operates on two channels: one low frequency (LF) and one high frequency (HF). The recording range was 100 m to each side, i.e. a total width of 200 m (Table 5, Figure 7).

Table 5. Specifications of the Edgetech 6205 Multibeam and side scan sonar.

Center Frequency	230/550 kHz
Recording range (per side)	100 m
Depth (acoustic center) below water surface	3,25 m

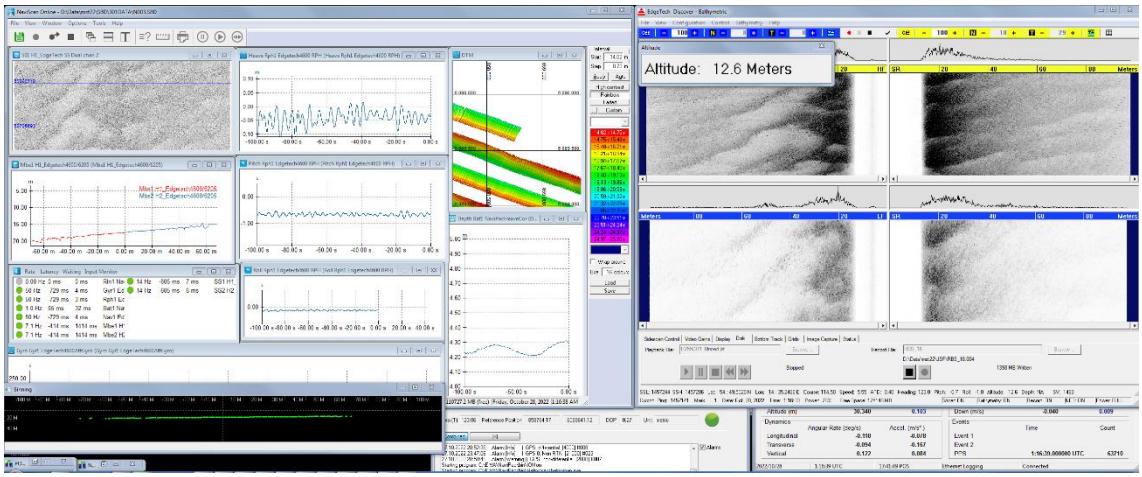

Figure 7. Screenshot of the general EdgeTech settings during the MST 2022 survey.

5.3.1 Sound velocity profiles (SVP)

25 sound velocity profiles (SVP) were obtained during the MST 2022 survey (Appendix A). The profiles were obtained with a Valeport Mini CTD probe manually dropped to the seafloor with a ship speed close to 0 kn. The SVPs were widespread across the survey areas to ensure adequate coverage of velocity measurements in the water column to calibrate the multibeam data (Figure 8).

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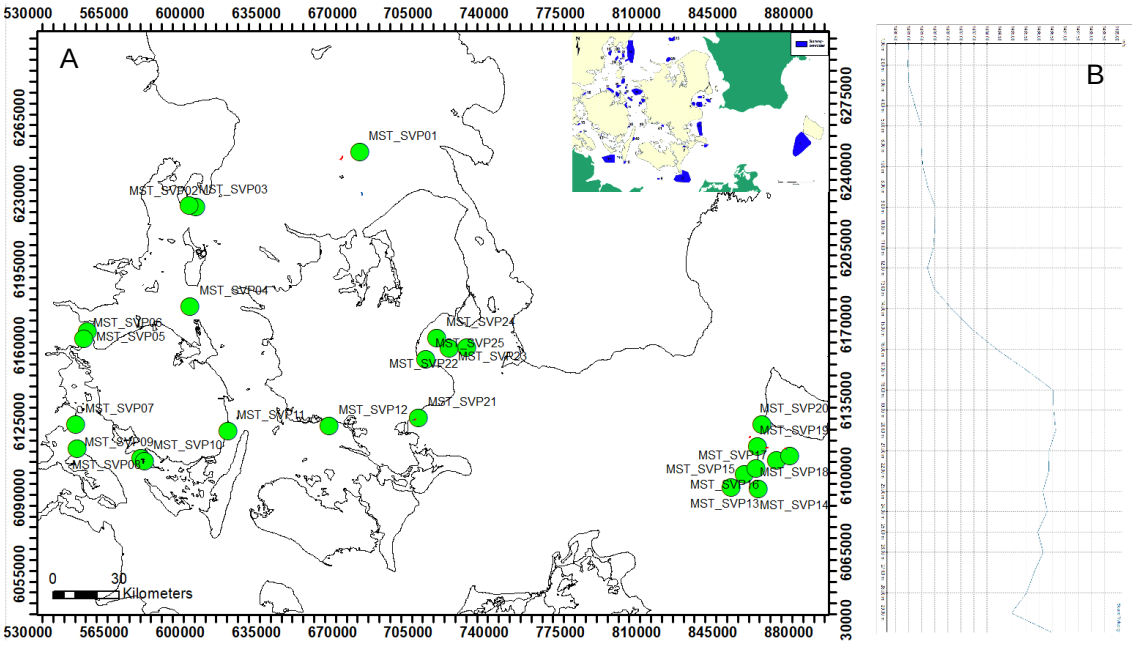


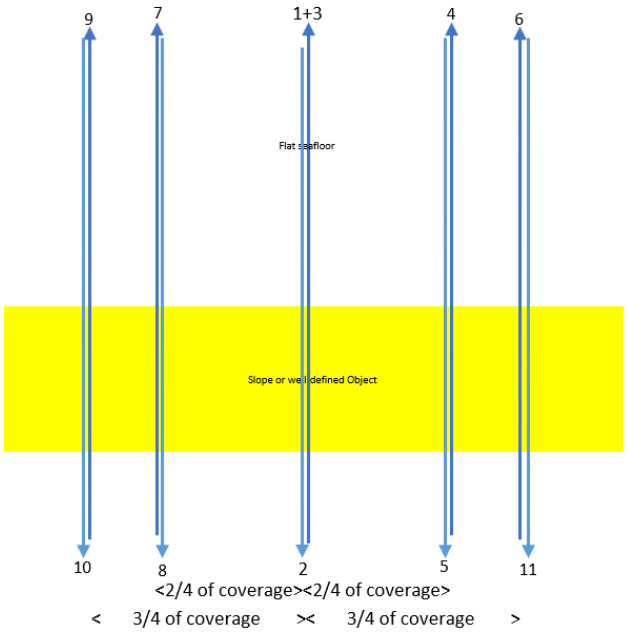
Figure 8. A) Location of the SVP's obtained during the MST 2022 survey (Appendix A). B) SVP number 23 from the Juelsgrund Øst survey area as an example of the data obtained through the water column.

5.3.2 Patch test

A Calibration of the multibeam system through a patch test was performed to 1) determine the mount angles of the multibeam transducer (roll, pitch and heading) in relation to the local coordinate system and the IMU; and 2) confirm the relationship between the time tagging on the multibeam and position data.

For the multibeam data acquired with the EdgeTech during the MST 2022 survey, a standard patch test for a dual-head multibeam was implemented. Calibration of the time validation as well as pitch, roll and heading requires a navigation pattern consisting of 5 parallel lines that are perpendicular to a sharp linear morphological feature (Figure 9). During the MST 2022 survey, the slope located on the southern edge of the Bakkegrund Syd survey area near Bornholm served as a morphological feature for the patch test performed on October 29 for 2 hours and 50 minutes (Figure 10).

The navigation during the patch test fulfil the calibration of: a) time validation: lines surveyed at survey speed and repeated with the same heading at twice the speed; b) pitch: a line was surveyed twice with opposite headings at survey speed; c) roll: a line was surveyed with opposite headings at identical survey speed on flat seafloor; and d) heading: two parallel lines were surveyed with the same heading with approximately 3/4 of the full coverage in separation allowing swath overlap.



Calibration type	Lines
Time	1+3
Pitch_0 (Port)	7+8, 1+2 or 4+5
Roll_0 (Port)	7+2 or 1+5
Heading_0 (Port)	9+7 or 5+11
Pitch_1 (Starboard)	7+8, 1+2 or 4+5
Roll_1 (Starboard)	4+2 or 1+8
Heading_1 (Starboard)	4+6 or 8+10

Figure 9. Predefined sailing pattern of a patch test to determine the mount angles and time validation. Light blue and dark blue arrows illustrate the sailing lines in opposite directions for the four calibration types.

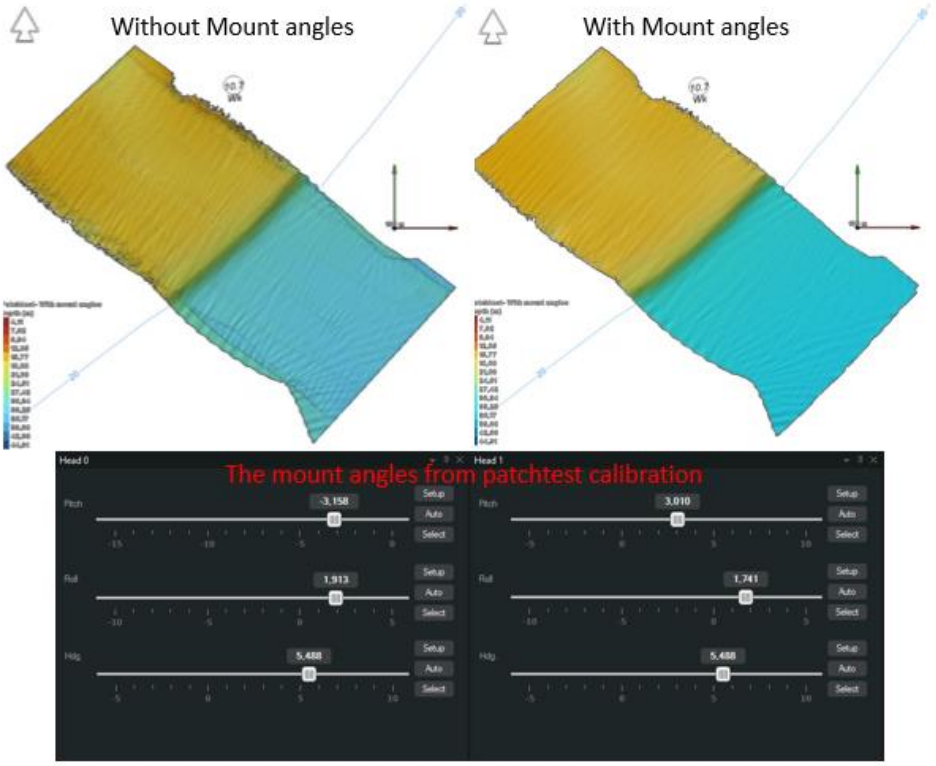


Figure 10. Processed patch test of the MST 2022 survey on the southern slope of the Bakkegrund Syd survey area near Bornholm. The figure shows the DTM before and after the calculated Mount angles. The calculated mount angles of the dual head are included.

5.4 Innomar SES 2000 Medium (Sub-bottom profiler)

The Innomar SES 2000 sub-bottom profiler was mounted on the starboard pole above the EdgeTech and 2,95 m under the water line. The recording window was set to 25 m and the trigger interval was synchronized with the multibeam, thus it changed with depth. The penetration of the Innomar record varied within the areas, but on average it was 5-10 m under the seafloor. Table 6 and Figure 11 summarize the sub-bottom profiler settings.

Table 6. General settings of the Innomar sub-bottom profiler system.

Primary frequencies	12 kHz and 100 kHz
Recording window	25 m
LF Gain	18 dB
HF Gain	15 dB
Trigger interval	Synchronized with Edge Tech

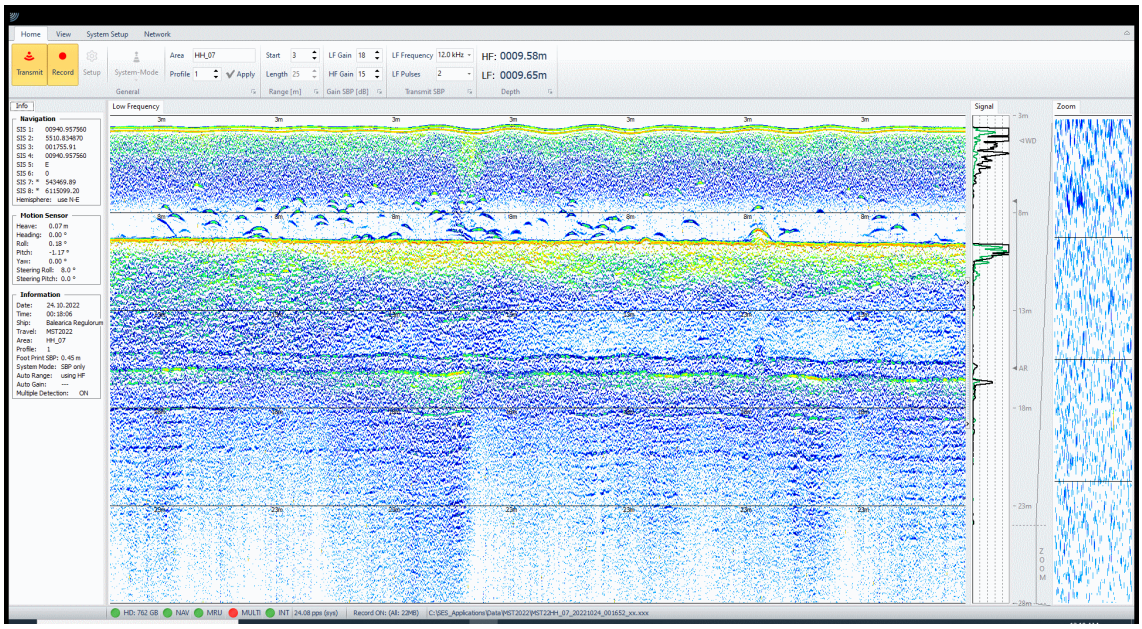


Figure 11. Screenshot of the general sub-bottom profiler settings during the MST 2022 survey.

5.5 Seismic system

The seismic system was formed by a sparker source and a single channel streamer. The used source was a sparker Geo-Source 200 towed after the ship with a layback of approximately 20 m. The streamer was a single channel Geo-Sence Mini-streamer separated approximately 4 m from the source. The data was recording using the Mini-Trace II acquisition system and GeoSuite Acquisition software. Specifications of the seismic system are summarized in Table 7 and Figure 12.

Table 7. Specifications of the seismic acquisition system.

Power Supply	Geo-Spark 1000
Power output	300 J
Tow frame	Geo-Source 200
Streamer	Geo-Sense 8 element single channel
Firing interval	400 ms
Layback	20 m

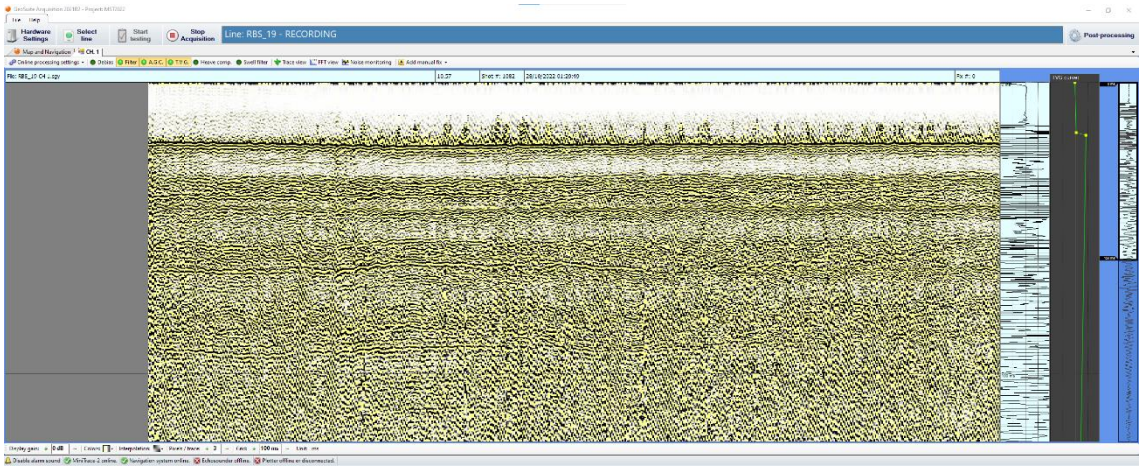


Figure 12. Screenshot of the GeoSuite Acquisition settings during the MST 2022 survey.

5.6 Sediment sampling - coring

Sediment samples were obtained during Leg 2 of the MST 2022 survey with a Vibrocorer MED-C VC(VKG)-6 operated using the ship crane.

6. Unintended events

The general overview of the survey activities during the MST 2022 survey appears from Table 2 and Table 3 and the survey logs Appendix A and B. One navigation incident and a later equipment breakdown caused delays during the geophysical survey while problems with the hydraulic system of the ship and damage of the vibrocore equipment caused delays during the vibrocore survey.

6.1 Navigation incident

At 07:03 (UTC) on October 24, during survey in the Lyø Sand area, the Fortuna Crane and some of the geophysical equipment touched the seabed in shallow waters. The Lyø Sand survey area is located in a very shallow area, most of it around 10 m water depth, and the easternmost around 6 m or less. Here the survey lines were planned to the limit of the 6 m depth bathymetry curve. Line LS_01 was sailed from north to south, i.e., from deep to shallow, but after a few minutes of sailing along the line, it was necessary to break the line due to navigation risk in the shallow waters. The ship was then turning towards the following planned line (LS_02) but ran aground on a sand bank. Data acquisition was immediately stopped, and the seismic equipment retrieved.

The ship was able to get off the ground again, but the pole hosting geophysical equipment was bent (Figure 13). A video inspection in the water showed, that the EdgeTech and Innomar transducers were potentially damaged and partly under the ship due to the bending of the pole. Thus, it was not possible to pull up the pole without further damage on the equipment. Hence, Fortuna Crane headed to Svendborg harbor keeping a slow speed of about 3-4 knots. Once in the harbor, the pole was detached from the ship and lifted. An assessment of the equipment showed that the fiber glass housing of the EdgeTech (Figure 14) was damaged, while the Innomar was in good condition.

The pole and the housing of the EdgeTech were repaired at Svendborg shipyard and returned on October 25. EdgeTech and Innomar sensors and transducers were tested while leaving Svendborg harbor at 15:00 (UTC) on October 25 and the test showed normal response and no further damage of the equipment. Thus, the survey activities were resumed.

Figure 13. Pole where the EdgeTech and Innomar are mounted after running aground.

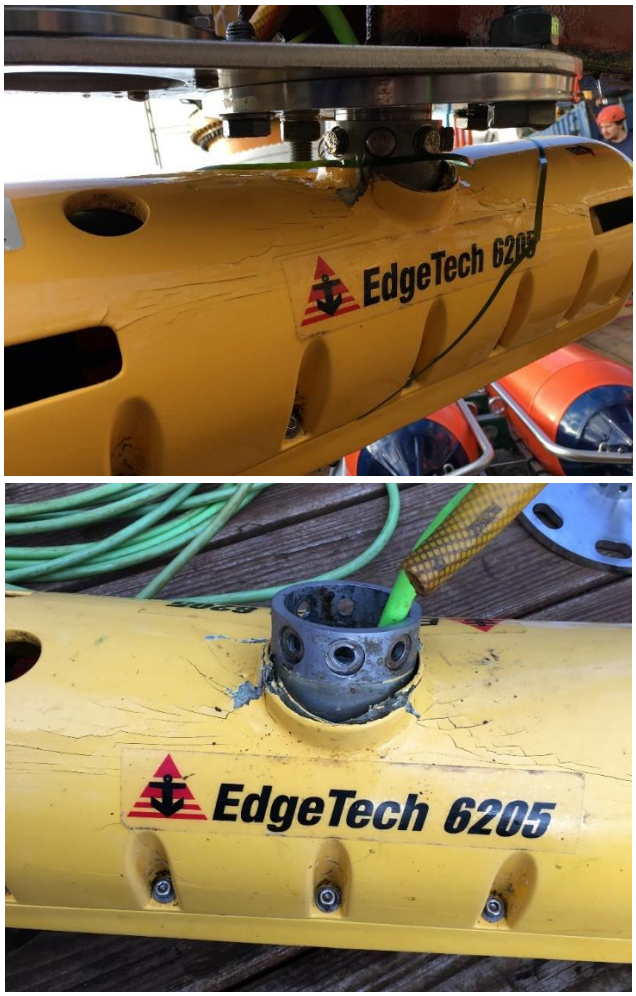


Figure 14. Damage of the fiber glass housing of the EdgeTech.

6.2 Equipment breakdown

At 20:00 (UTC) on October 28, the Innomar system stopped working. The problem was related with the voltage supply in one of the panels of the top unit. After troubleshooting, it was clear that it was not possible to repair the system on site. Thus, the survey continued without Innomar data for the areas Rønne Banke Øst, Bakkegrund Syd, Bakkegrund Nord, Klintegrund Syd, Klintegrund Vest, Rønne and Nordmandshage.

A new top unit was set up in Køge harbor on October 30 before starting the survey activities in the Køge Bugt areas.

6.3 Problems with hydraulic system

On the first day of vibrocoring on November 1 and after completing the first vibrocore (MO-01) in Køge Bugt, there was a technical breakdown of the hydraulic system of the ship controlling the anchors. The ship returned to Køge harbor for repairs. The repair turned out to be more complicated than expected and the survey was delayed until November 4, when the ship was ready to resume the survey activities.

6.4 Damage of vibrocore equipment

On November 5 while carrying out vibrocore VF-05 in the Vejsnæs Flak area, Fortune Crane drifted over the vibrocore equipment at relatively shallow waters. The vibrocore tower was hit and slightly damaged and the survey was delayed for a short while during repair.

7. Survey activity report

The GEUS survey team headed by the GEUS cruise lead was responsible for the geophysical data acquisition and the GEUS cruise lead managed the overall planning and daily reporting. The GEUS MST representative quality-controlled the operations and data and designated new vibrocore locations based on the new data during the survey. In total 997 km of seismic data were acquired along 249 survey lines in 23 areas.

7.1 Leg 1 – Geophysical mapping

7.1.1 Hesselø Bugt

In Hesselø Bugt one survey area, Lysegrund (LYS), was completed on October 22. The planned 31,60 km where sailed (Appendix A), recording a total of 57,34 km of seismic data including turns and connecting lines (Figure 15). Weather was very good during survey and the acquired data is of high quality (Figure 16).

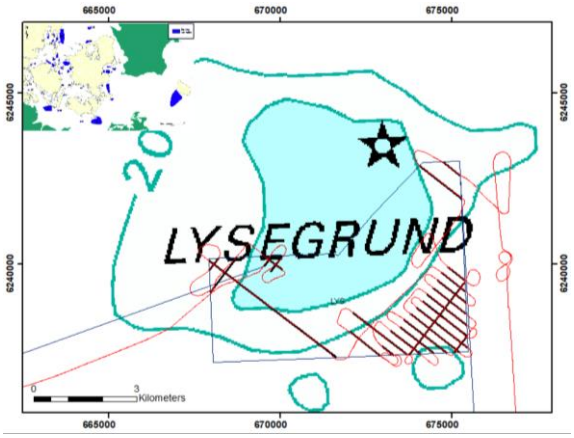


Figure 15. Line planning (black) and navigation track (red) in the Lysegrund (LYS) survey area.

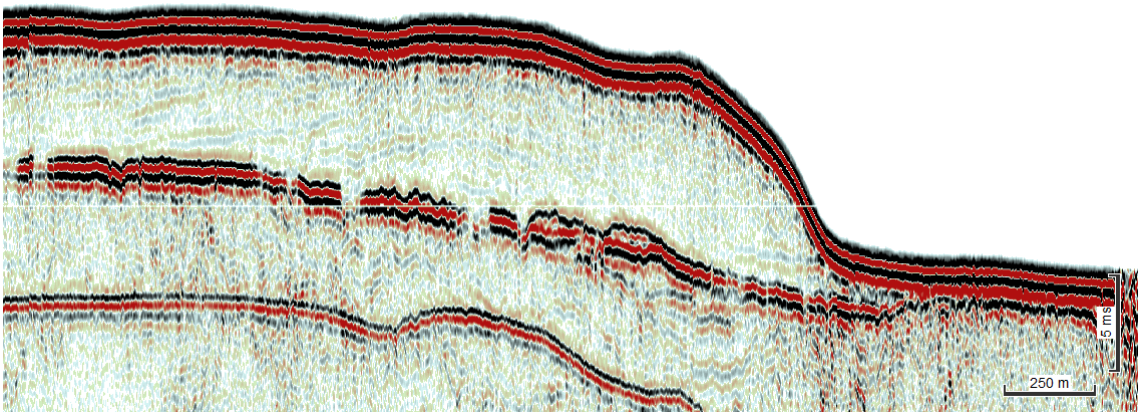


Figure 16. Example of shallow seismic (sparker) profile acquired in the Lysegrund survey area.

7.1.2 Aarhus Bugt

In Aarhus Bugt two survey areas, Skade Grund Øst (SGO) and Skade Grund Vest (SGV), were completed on October 23. The planned lines in SGO included 4,40 km while SGV included 10,90 km (Appendix A). In total 12,27 km and 22,25 km of seismic data including turns and connecting lines (Figure 17) were recorded in SGO and SGV, respectively. Weather was very good during survey and the acquired data is of high quality (Figure 18).

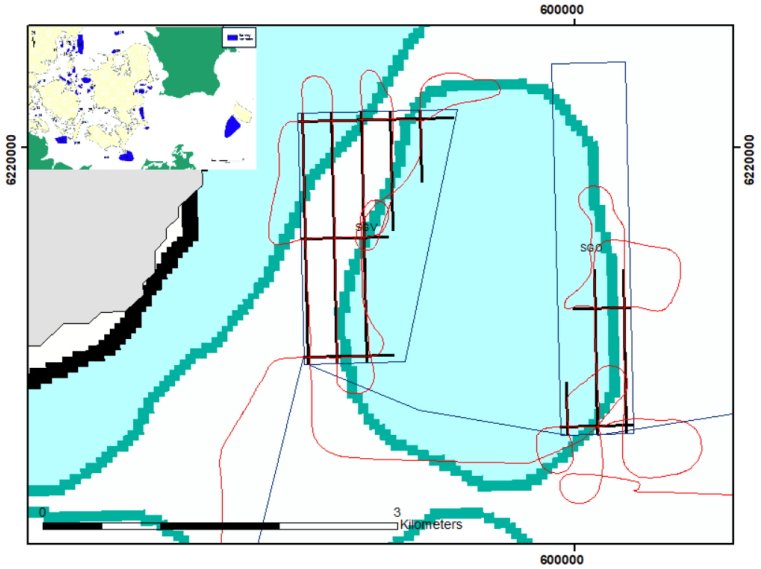


Figure 17. Line planning (black) and navigation track (red) in the Skade Grund Øst (SGO) and Skade Grund Vest (SGV) survey areas.

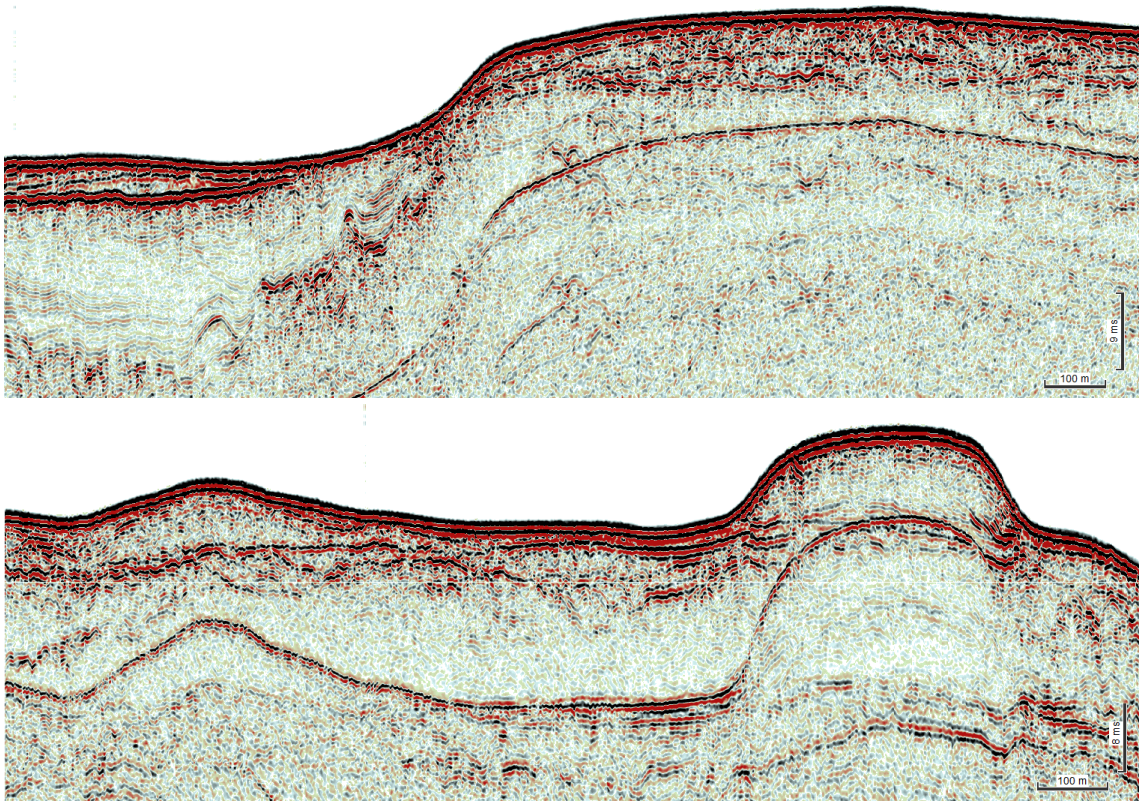


Figure 18. Examples of shallow seismic (sparker) profiles acquired in the Skade Grund Øst (top) and Skade Grund Vest (bottom) survey areas.

7.1.3 North of Fyn

North of Fyn one survey area, Nord for Fyns Hoved (FHN), was completed on October 23. The planned lines included 7,60 km (Appendix A). In total 14,97 km were recorded including turns and connecting lines (Figure 19). Weather was very good during survey and the acquired data is of high quality (Figure 20).

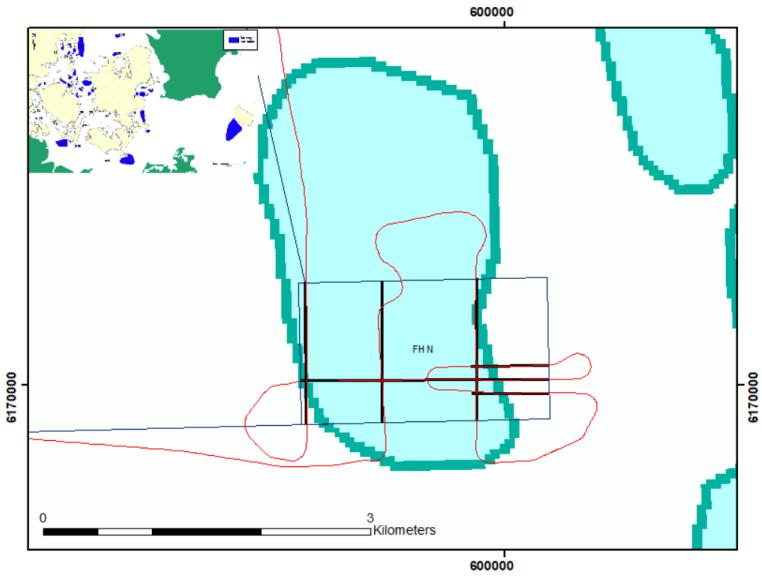


Figure 19. Line planning (black) and navigation track (red) in the Nord for Fyns Hoved (FHN) survey area.

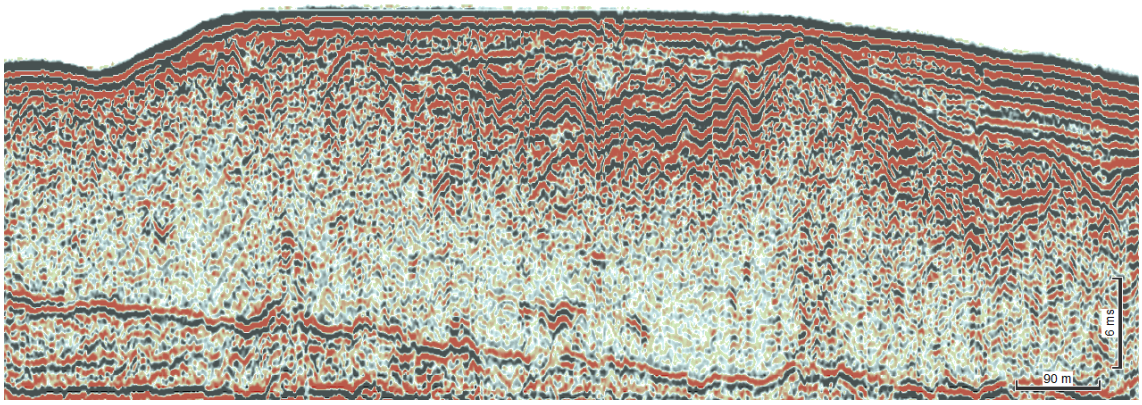


Figure 20. Example of shallow seismic (sparker) profile acquired in the Nord for Fyns Hoved survey area.

7.1.4 Lillebælt

In Lillebælt two surveys areas, Tragten (TR) and Halk Hoved (HH), were completed on October 23 and one survey area, Tranesand (TS), was completed on October 24. Survey lines for a total of 29,10 km, 20,30 km and 16,10 km were planned for TR, HH and TS, respectively (Appendix A), while data acquisition including turns and connecting lines sums up to 38,02 km, 26,63 km and 26,9 km, respectively (Figure 21). Weather was good during survey and the acquired data is of high quality (Figure 22).

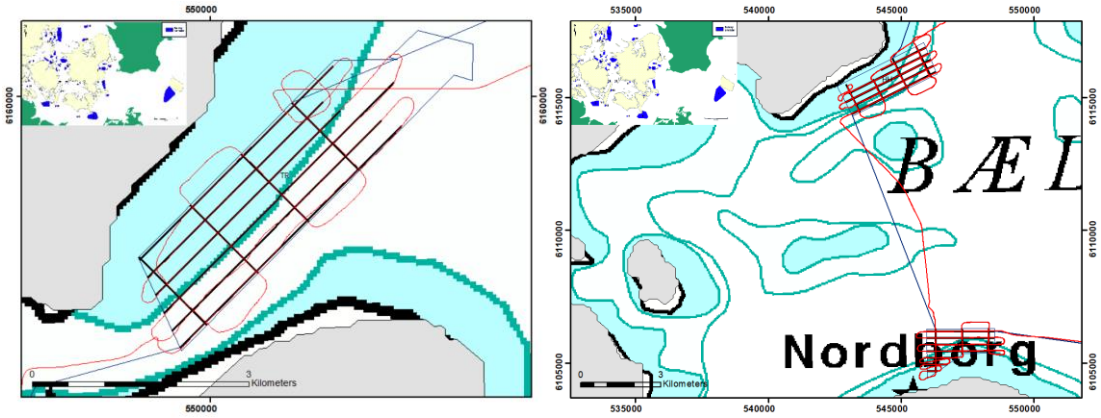


Figure 21. Line planning (black) and navigation track (red) in Tragten (TR, left) Halk Hoved (HH) and Tranesand (TS) survey areas (right).

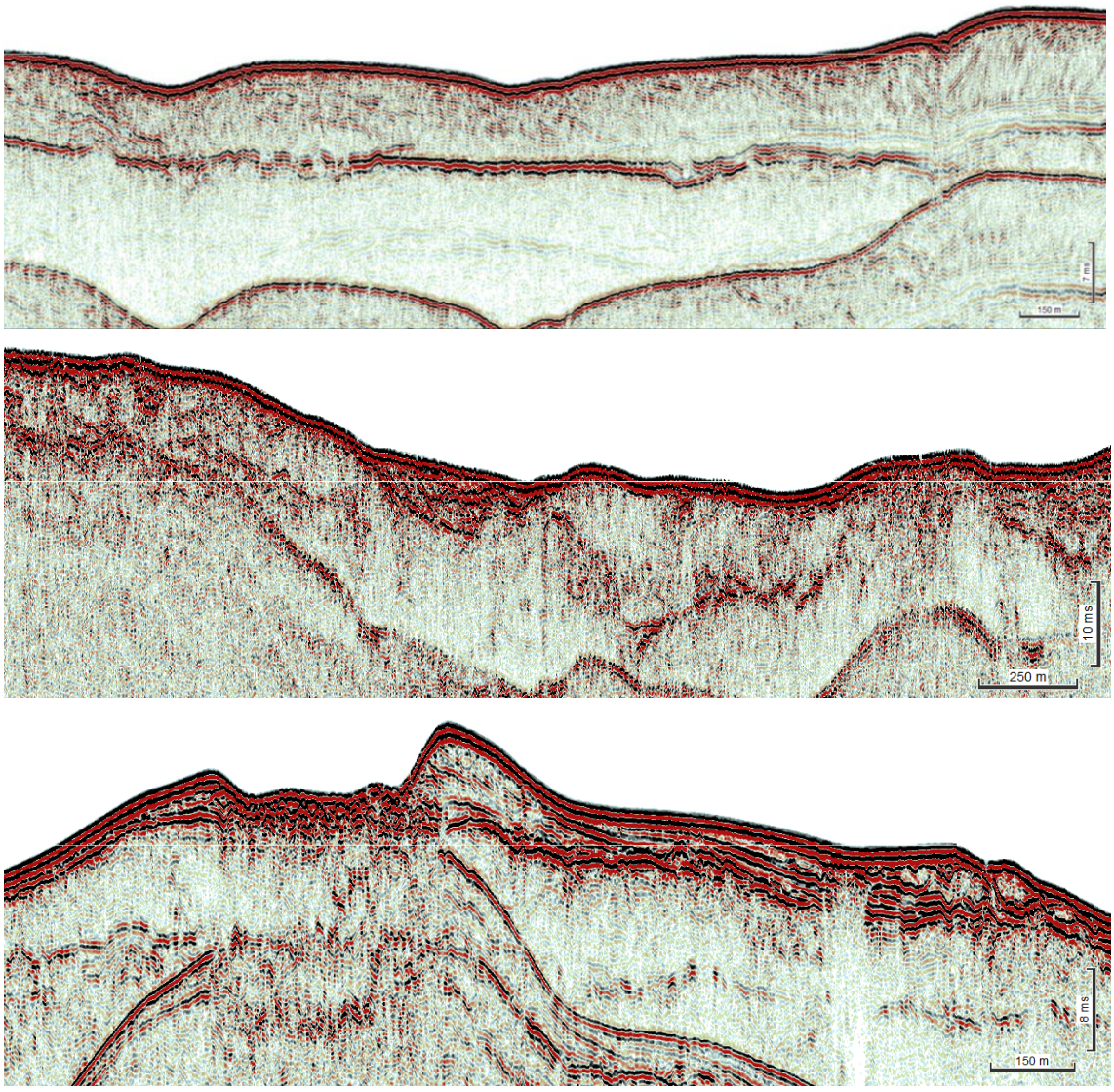


Figure 22. Examples of shallow seismic (sparker) profiles acquired in the Tragten (top), Halk Hoved (center) and Tranesand (bottom) survey areas.

7.1.5 South of Fyn, Storebælt and Smålandsfarvandet

Three surveys areas (from west to east), Lyø Sand (LS), Stokkebæk Flak (SF) and Karrebæksminde (KM), were completed October 25 (LS) and October 26 (SF and KM) south of Fyn, in Storebælt and Smålandsfarvandet, respectively. Surveying in LS started October 24 but was interrupted by a grounding in the shallow waters and resumed the next day after a port call to Svendborg (see section 6). Survey lines for a total of 6,48 km, 11,60 km and 18,00 km were planned for LS, SF and KM, respectively (Appendix A), while data acquisition in these areas including turns and connecting lines sums up to 12,58 km, 16,15 km, and 31,95 km, respectively (Figure 23). Weather was good during survey and the acquired data is of high quality (Figure 24).

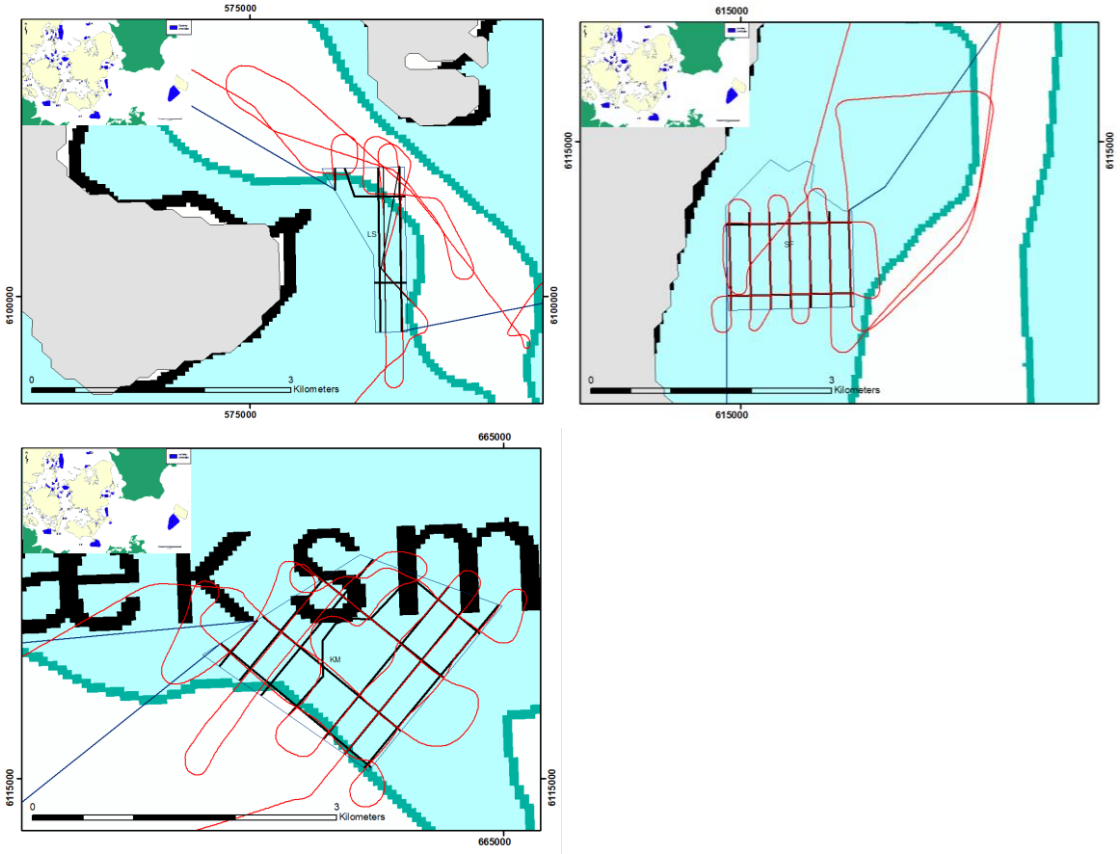


Figure 23. Line planning (black) and navigation track (red) in the Lyø Sand (LS, top left) Stokkebæk Flak (SF, top right) and Karrebæksminde (KM, bottom) survey areas.

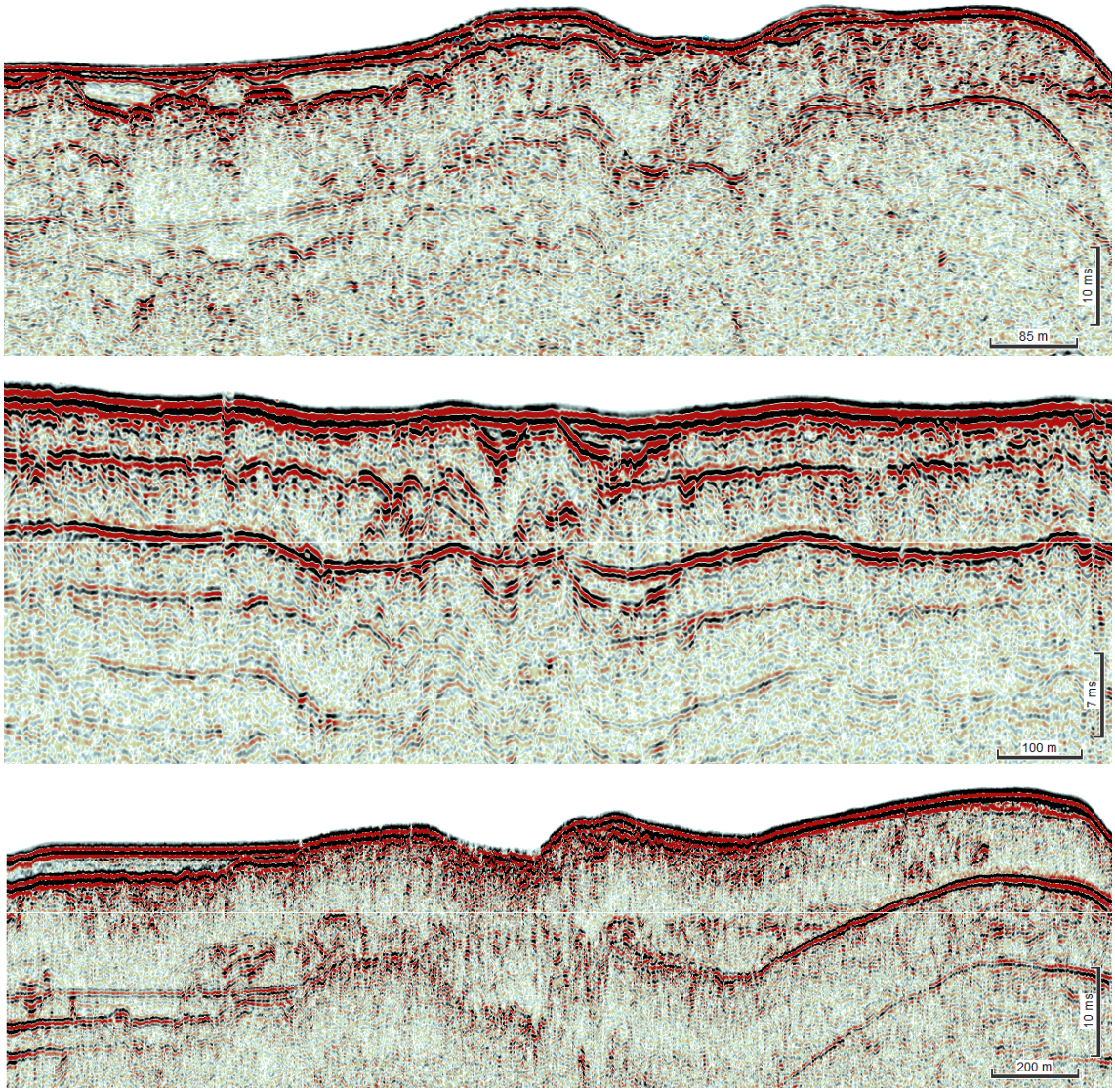


Figure 24. Examples of shallow seismic (sparker) profiles acquired in the Lyø Sand (top), Stokkebæk Flak (center) and Karrebæksminde (bottom) survey areas.

7.1.6 Bornholm

Seven survey areas (Figure 25) were located southwest of Bornholm: Rønne Banke Syd (RBS), Rønne Banke Øst (RBO), Bakkegrund Syd (BGS), Bakkegrund Nord (BGN), Klintegrund Syd (KGS), Klintegrund Vest (KGV) and Rønne (RO). Data acquisition in RBS started on October 27 and was completed on October 28. Survey lines for a total of 277,90 km were planned in RBS (Appendix A), while data acquisition including turns and connecting lines sums up to 325,27 km. The breakdown of the Innomar system (see section 6) happened after finishing the RBS survey area. Thus, Innomar data was not recorded in the remaining Bornholm areas. The survey areas RBO, BGS, BGN, KGS and KGV were completed on October 29. Survey lines for a total of 38,60 km (RBO), 47,70 km (BGS), 18,20 km (BGN),

4,60 km (KGS) and 21,10 km (KGV) were planned (Appendix A), while data acquisition including turns and connecting lines sums up to 55,43 km (RBO), 70,51 km (BGS), 28,86 km (BGN), 9,53 km (KGS) and 31,36 km (KGV) (Figure 25). The survey length in BGS includes the patch test of the multibeam (Figure 10), that was performed over the slope on the southern edge of the area, as explained in section 5.3.2. Weather deteriorated during the survey in BGS and BGN where 1,4 m waves forced a change on the initially planned lines. However, data quality was good and the survey activities continued (Figure 26, Figure 27 and Figure 28). The survey in RO started on October 29 and was completed on October 30. Seven survey lines summing up to 4,70 km were planned in this area (Appendix A), while data acquisition sums up to a total of 10,45 km including turns and connecting lines.

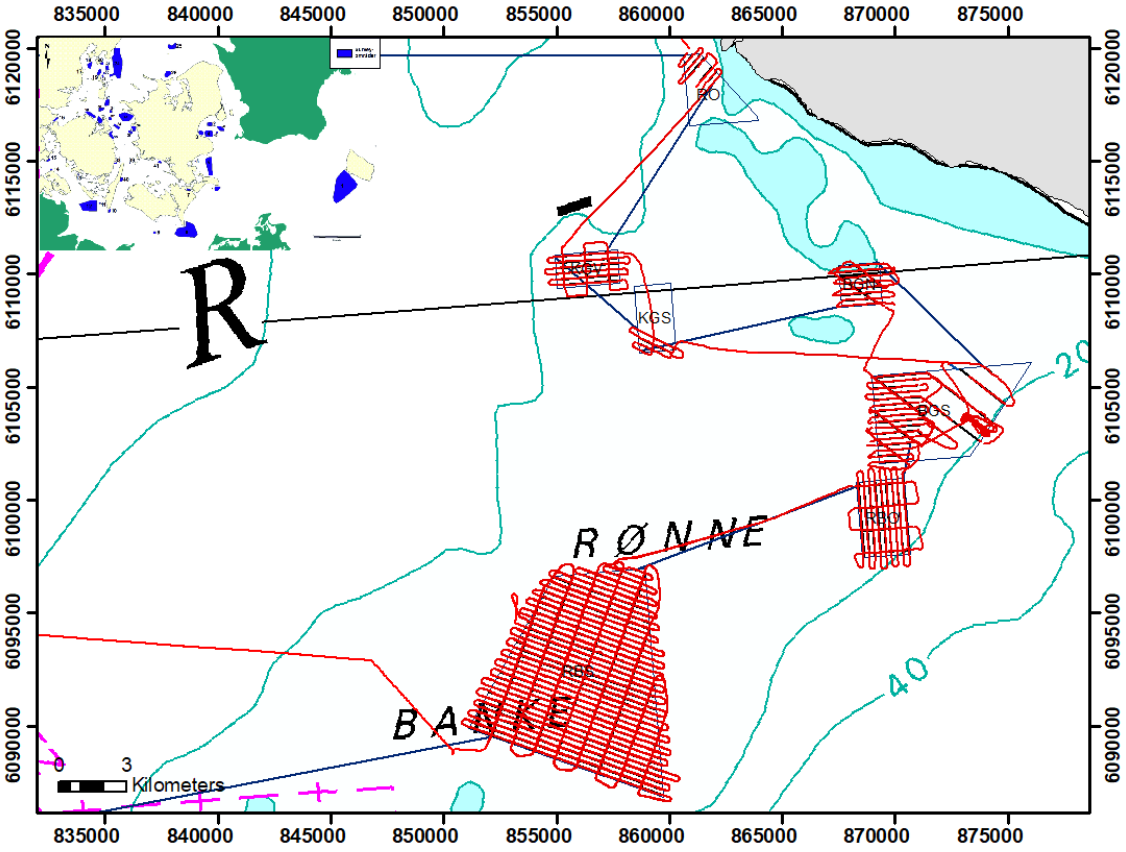


Figure 25. Line planning (black) and navigation track (red) in the Rønne Banke Syd (RBS), Rønne Banke Øst (RBO), Bakkegrund Syd (BGS), Bakkegrund Nord (BGN), Klintegrund Syd (KGS), Klintegrund Vest (KGV) and Rønne (RO) survey areas.

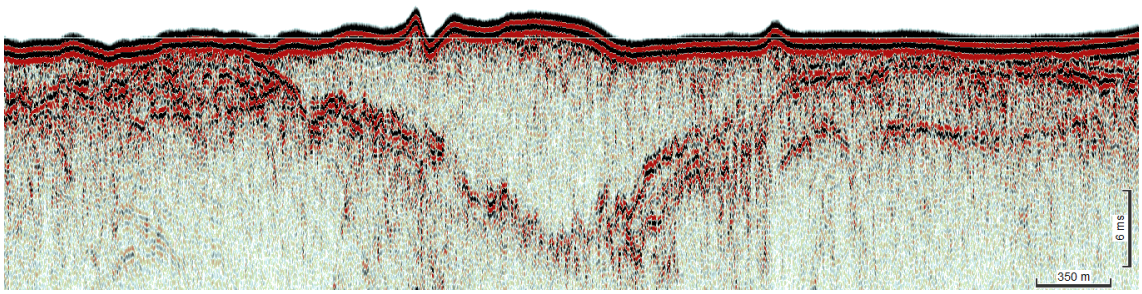


Figure 26. Example of shallow seismic (sparker) profile acquired in the Rønne Banke Syd survey area.

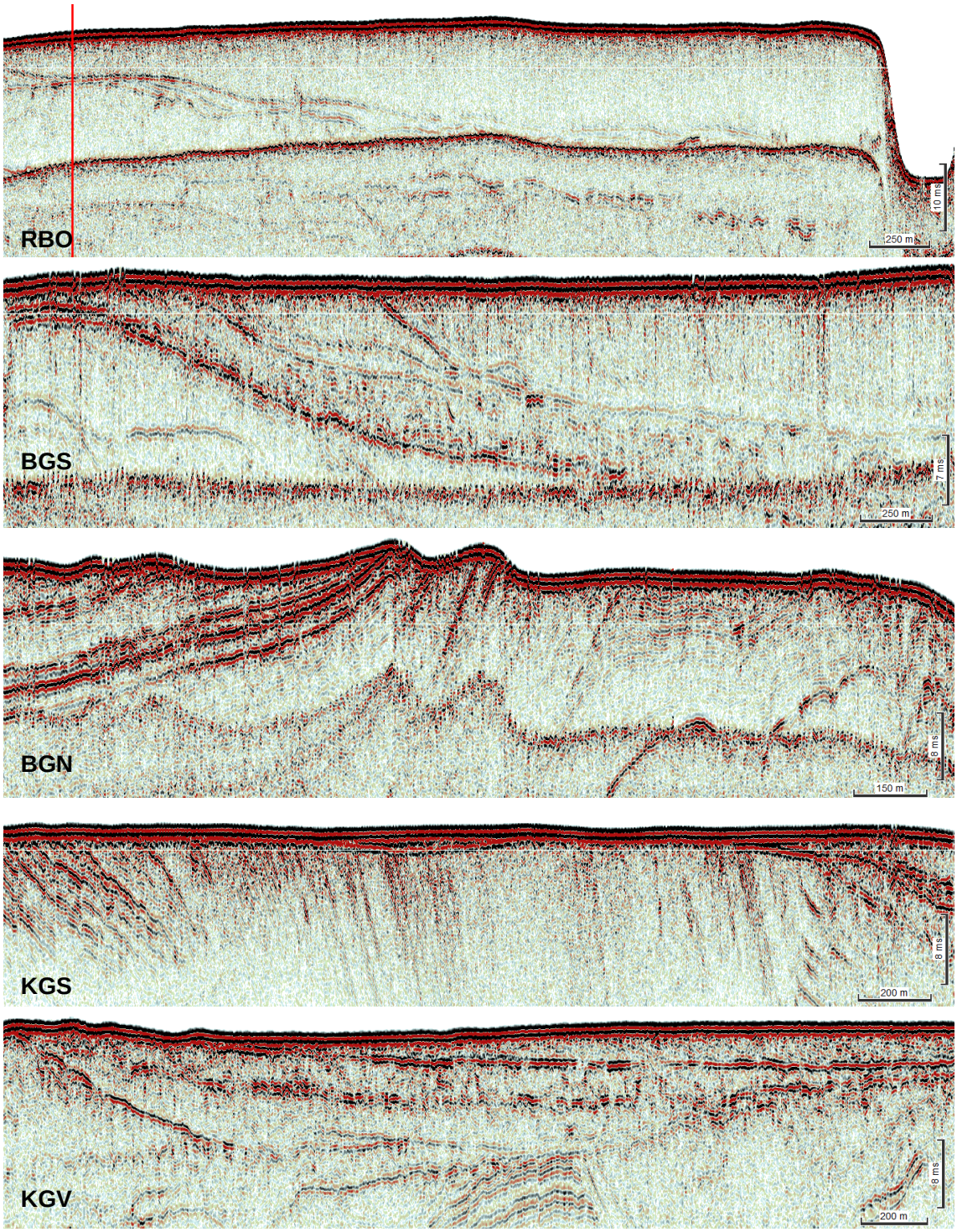


Figure 27. Examples of shallow seismic (sparker) profiles acquired in the Rønne Banke Øst (RBO), Bakkegrund Syd (BGS), Bakkegrund Nord (BGN), Klintegrund Syd (KGS) and Klintegrund Vest (KGV) (from top to bottom) survey areas.

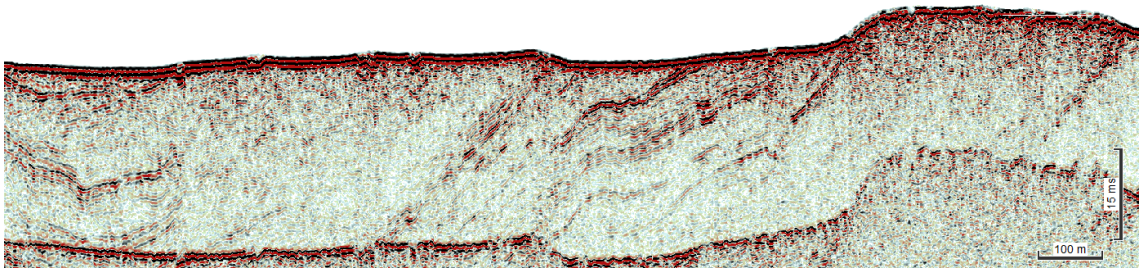


Figure 28. Example of shallow seismic (sparker) profile acquired in the Rønne survey area.

7.1.7 Fakse Bugt

In Fakse Bugt one survey area, Nordmandshage (NH), was completed on October 30. No data have previously been collected here. The location of the area close to shallow waters only allowed data collection along one single line. The planned line in NH had a length of 0,71 km (Appendix A), while the actual recorded length was 1,292 km (Figure 29). Weather was very good during survey and the acquired data is of high quality (Figure 30).

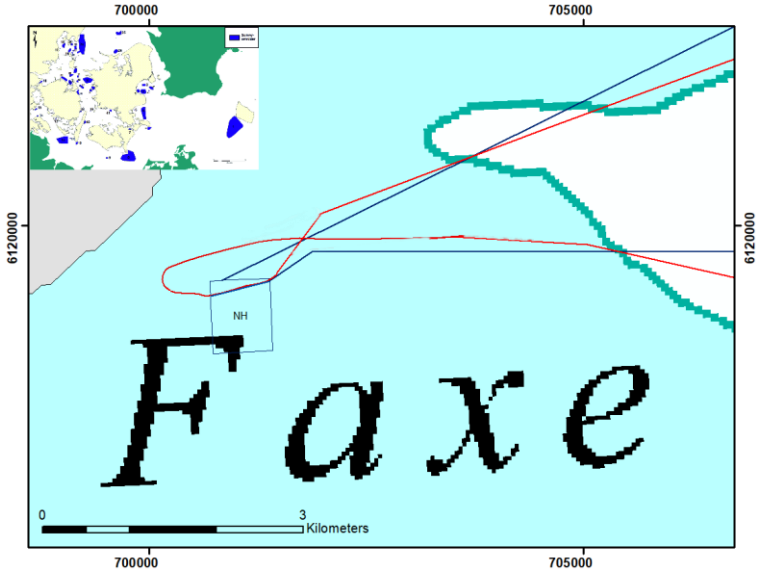


Figure 29. Line planning (black) and navigation track (red) in the Nordmandshage (NH) survey area.

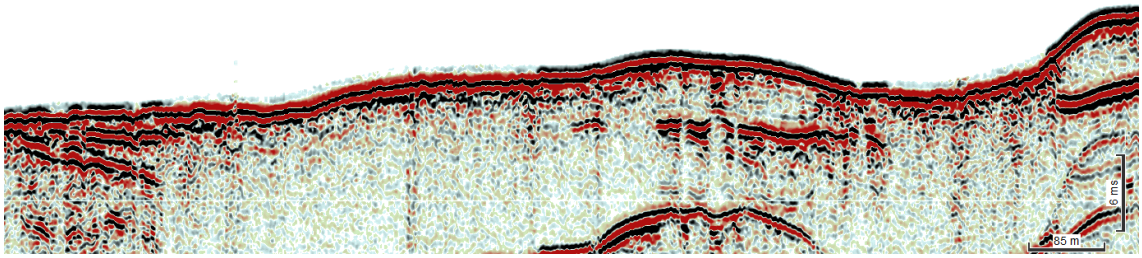


Figure 30. Example of shallow seismic (sparker) profile acquired in the Nordmandshage survey area.

7.1.8 Køge Bugt

Five survey areas were located in Køge Bugt (from east to west): Køge Bugt Øst (KBO), Køge Bugt Sydøst (KBS), Juelsgrund Øst (JG) Mosede (MO) and Køge (KO). Data acquisition in KBO and KBS was completed on October 30, while JG, MO and KO were surveyed on October 31. Survey lines for a total of 28,80 km (KBO), 12,50 km (KBS), 48,20 km (JG), 9,20 km (MO) and 25,10 km (KO) were planned (Appendix A), while data acquisition including turns and connecting lines sums up to 41,02 km (KBO), 20,68 km (KBS), 67,95 km (JG), 18,97 km (MO) and 32,82 km (KO) (Figure 31). The weather was fair and stable during the survey in Køge Bugt and the acquired data is of high quality (Figure 32).

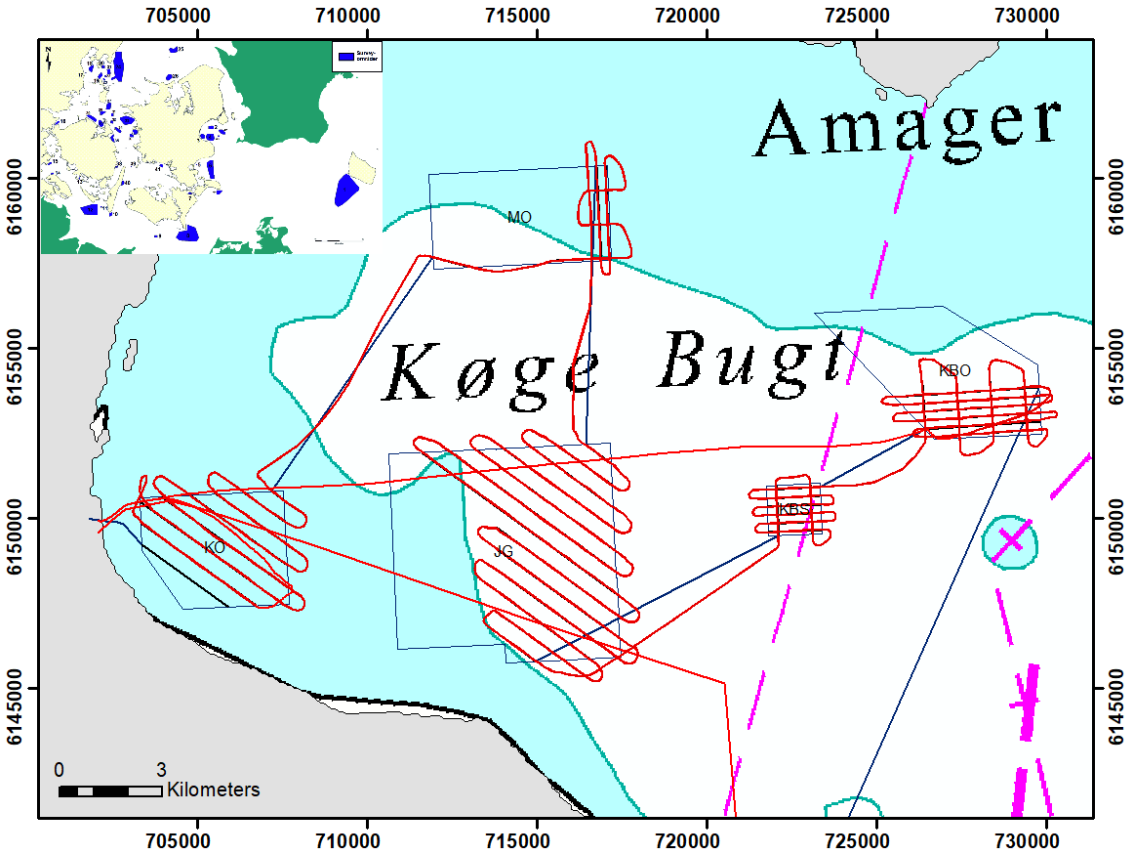


Figure 31. Line planning (black) and navigation track (red) in the Køge Bugt Øst (KBO), Køge Bugt Sydøst (KBS), Juelsgrund Øst (JG) Mosede (MO) and Køge (KO) survey areas.

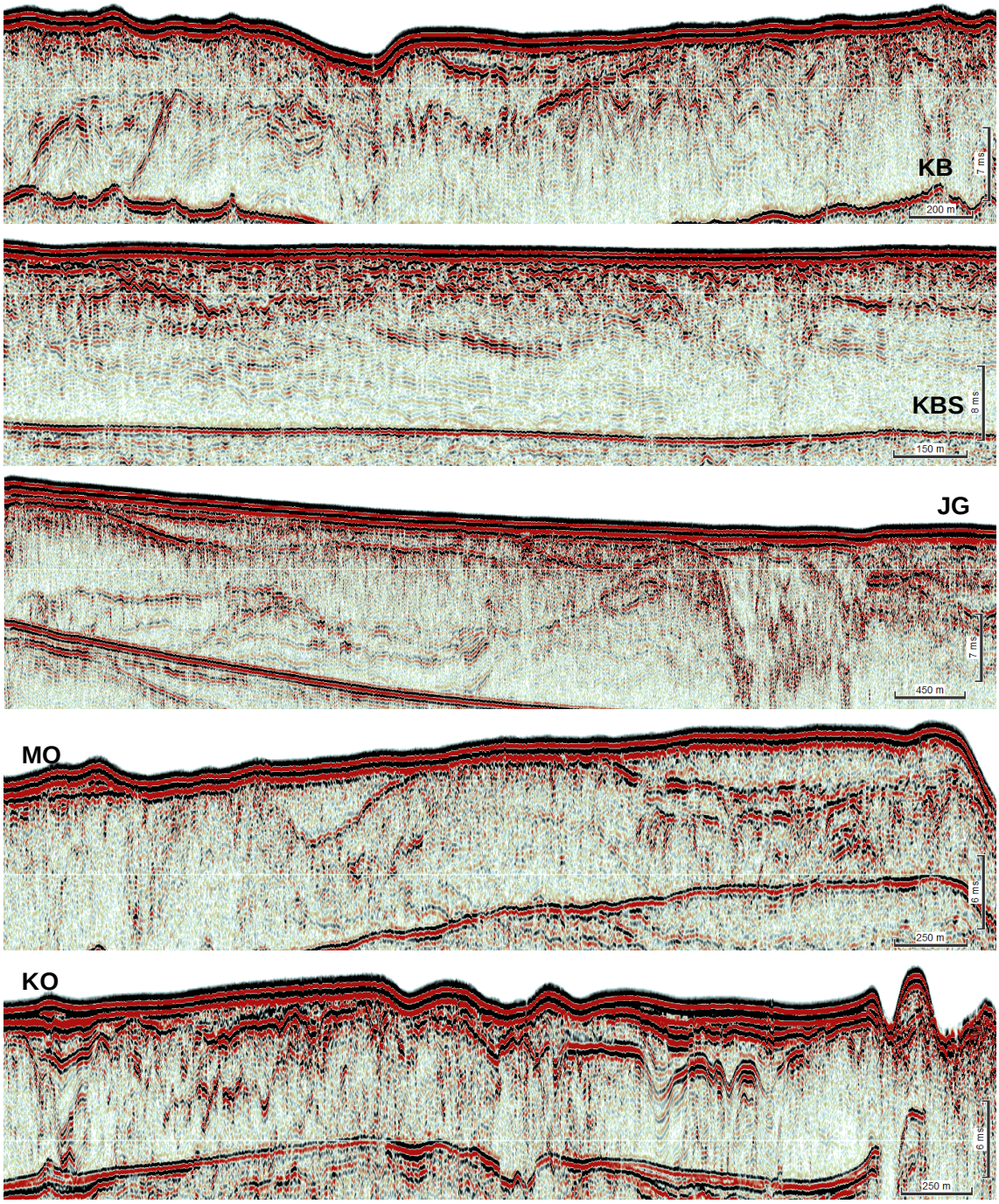


Figure 32. Examples of shallow seismic (sparker) profiles acquired in the Køge Bugt Øst (KBO), Køge Bugt Sydøst (KBS), Juelsgrund Øst (JG) Mosede (MO) and Køge (KO) (from top to bottom) survey areas.

7.2 Leg 2 – Sediment sampling

The drilling crew prepared, deployed, operated and recovered the vibrocore instrument (Figure 33). After the Vibrocorer was back on deck, the 6 m long plastic core sleave was extracted from inside the metal core barrel and cut into 1 m segments for storage and handling. GEUS geologists labeled the core segments with site-identifying codes and logged the lithology at

the top of every core segment as well as any sediment in the core-catcher at the tip of the core barrel, to get an indication of the geology at the deepest penetration point.

The GEUS MST representative quality-controlled the operations and sedimentological interpretations while the GEUS cruise lead managed the recording of core and navigation data as well as the daily reporting.

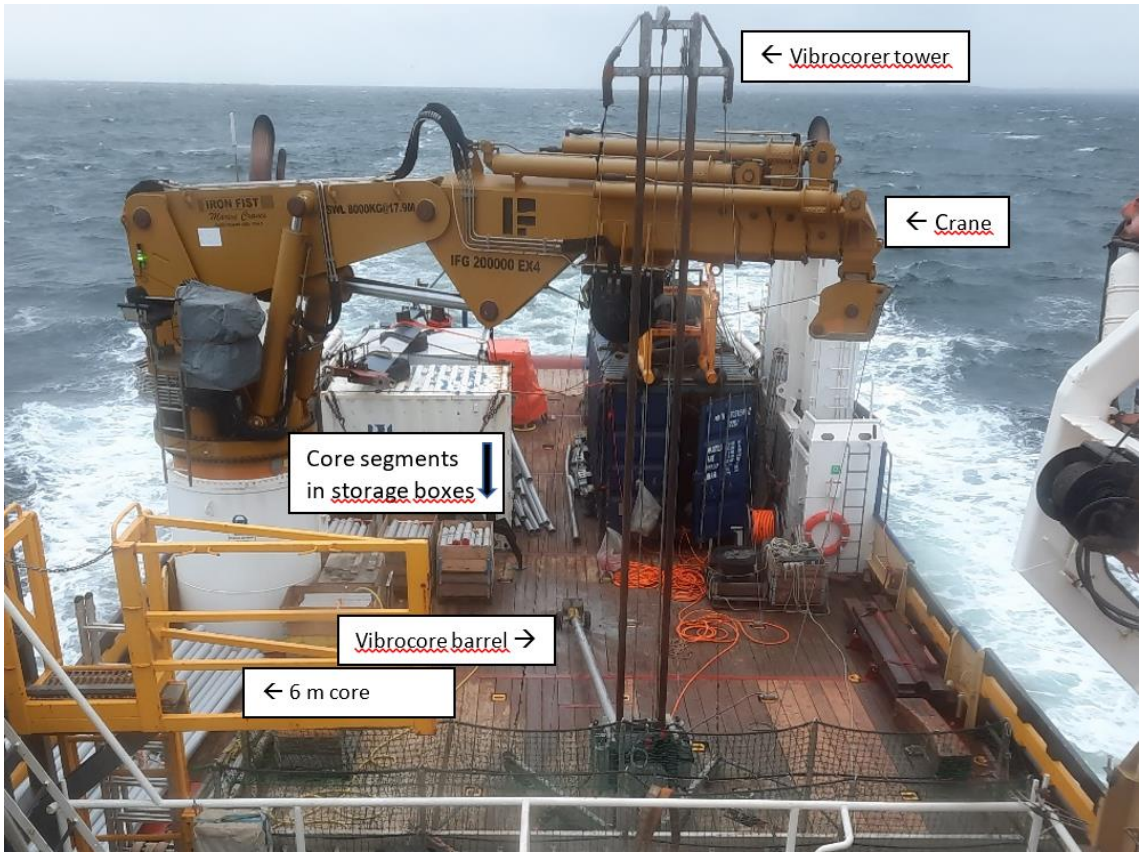


Figure 33. The image shows the deck arrangement of Fortuna Crane during vibrocore operations, looking aft from the bridge. Port is to the right and starboard is to the left. The crane is mounted on the starboard side, but always deployed the Vibrocore (centre of deck) over the port side of the ship.

The vibrocore survey started in Køge Bugt and proceeded clockwise around Sjælland, Møn, Falster, past Gedser, Lolland, across to southern Langeland, westward to Ærø and Als (Figure 2). Then into Lillebælt, past Middelfart and around northern Fyn into Storebælt and south to Smålandsfarvandet and into Grønsund. Then, it continued west across to northern Langeland and again clockwise around Fyn through Lillebælt and across to northern Sjælland, ending the survey in Hundested Harbor. The second trip through Lillebælt was needed to acquire high priority sites initially missed due to rough weather.

In total 53 vibrocores were taken and two attempts failed on locations where anchor traction was not possible due to current and seabed conditions. Details are included in Appendix B.

7.2.1 Køge Bugt

One vibrocore was carried out in Køge Bugt on November 1 (MO-01) and after problems with the hydraulic system of the ship and repair, another vibrocore was carried out on November 4 (KBS-01).

7.2.2 Fakse Bugt

One vibrocore was carried out in Fakse Bugt on November 4 in the Gyldenløves Flak area (GF-01).

7.2.3 Hjelm Bugt

Two vibrocores were carried out in Hjelm Bugt on November 4 in the Bjelkes Flak area (BF-08 and BF-09).

7.2.4 Femern Bælt

One vibrocore was carried out in Femern Bælt on November 4 in the Gedser Rev area (GR-03) and four on November 5 (GR-12, GR-13, GR-14, GR-15).

Another vibrocore was carried out in the 568-019 area on November 5 (568-019-01) and two in the Keldsnor area (KN-02 and KN03).

Three vibrocores were carried out in the Vejsnæs Flak area (VF-03, VF-05, VF-08) and two in the Vejsnæs Flak Nord area (VFN-01, VFN-02) on November 5. On November 10 a fourth vibrocore that had to be given up in the first place due to damage of the vibrocore instrument and poor weather conditions was carried out in the Vejsnæs Flak area (VF-02).

7.2.5 Lillebælt

One vibrocore was carried out in Lillebælt on November 6 in the Tragten area (TR-01). Three more vibrocores that had to be given up in the first place due to poor weather conditions were carried out in the Lyø Sand (LS-01), Tranesand (TRS-01) and Halk Hoved (HH-01) areas on November 10.

7.2.6 North of Fyn

Five vibrocores were carried out North of Fyn in the Tørresø Vest (TSV-01, TSV-02), Tørresø (TS-01) and Hasmark (HM-01, HM-02) areas on November 6.

Two vibrocores that had to be given up in the first place due to poor weather conditions were carried out in the Fynshoved Nord area (FHN-01, FHN-02) on November 7.

7.2.7 Storebælt

In total 19 vibrocores were carried out in Storebælt.

On November 7, eight vibrocores were carried out in the 544-018A (544-18A-01, 544-18A-02), 544-018B (544-18B-01), 544-018C (544-18C-01), 544-023A (544-23A-01), 544-001B (544-001B) and Romsø (RS-02, RS-03) areas.

On November 8, 10 vibrocores were carried out in the 544-007 (544-007-01), Lysegrunde (LG-02), 544-027B (544-027B-01), 544-027D (544-027D-01), 544-027F (544-027F-01), Stubberup Knold (SK-01), Musholm (MS-01, MS-03) and Stokkebæk Flak (SF-01) areas.

On November 9, three vibrocores were carried out in the 544-009 (544-009-01) and Tranekær (TK-01, TK-02) areas.

One vibrocore in area 544-025B (location 544-025B-01) had to be given up as anchor traction was not possible due to current and seabed conditions.

7.2.8 Smålandsfarvandet and Grønsund

On November 9, three vibrocores were carried out in Smålandsfarvandet and Grønsund in the Karrebæksminde (KM-02) and Grønsund (GS-01, GS-02) areas.

One vibrocore in the Karrebæksminde area (location KM-01) had to be given up as anchor traction was not possible due to current and seabed conditions.

8. Concluding remarks

GEUS has carried out fieldwork for the Danish Environmental Protection Agency (Miljøstyrelsen, MST) as part of the marine raw material mapping in 2022 in the Inner Danish waters and Baltic Sea.

The MST 2022 survey was completed on board the survey vessel Fortuna Crane between October 22 and November 10. The survey was divided in two legs.

During Leg 1, geophysical data was collected along 997 km of survey lines, recording multibeam echo sounder, side scan sonar, sub-bottom profiler, and shallow single channel seismic (Figure 1 and Table 2).

During Leg 2, 53 vibrocores were recovered in designated locations (Figure 2 and Table 3).

The ship and survey equipment generally performed satisfactorily and as expected. However, a navigation incident and equipment breakdown as well as problems with the hydraulic system of the vessel and damage of the vibrocore equipment caused some delay during the survey operations. The delays did not have any impact on the overall conduction of survey activities or data quality. The problems were resolved along the way.

The weather conditions were generally very good during the geophysical survey, but during the vibrocore survey, rough weather was encountered with difficult working conditions and 14,5 hours of waiting on weather.

The first quality assessment of the data reveals high quality data and samples that serves for the purpose of the survey.

Appendix A – Geophysical survey log

Contractor: MST				**Project name: MST raw material mapping 2022**			**Survey crew: Lara F. Pérez (LFP), Sigurd B. Andersen (SBA), Nicklas Christensen (NC) Luna H. Winther (LHW)**				**Vessel: Fortuna Crane (Call sign: OZWM2)**					
Initials	**Date**	**Start time: UTC**	**End time: UTC**	**Line name:**	**Nav file name**	**Subbottom profiler**	**Seismic**	**Side scan sonar**	**Echosounder**	**Heading**	**Line length km**	**Accumulated length km**	**Wind m/sec**	**Sea state**	**Backup Data status**	**Comments**
LFP	19-10-2022	10:00:00														Mobilization of equipment to MS Fortuna Crane
LFP	22-10-2022		10:45													Mobilization end
LFP	22-10-2022	10:48	13:01	Transit Hundested-Lysegrund		MST20B02_20221022_104830							6	1	x	
LFP	22-10-2022	13:01	13:25	GAMs test		MSTGAMS_20221022_130101							6	1	x	GAMS test to calibrate PosMV and atenas location
LFP	22-10-2022	13:25	14:11	LYS_01	0001_1411	MST22LYS01_20221022_141156	LYS_01	LYS_01	295DATA/N011	310	0,652	0,652	6	1	x	SVP before start. Deploiment of seismic equipment.
LFP	22-10-2022	14:11	14:25	LYS_02	0002_1425	MST22LYS02_20221022_142526	LYS_02	LYS_02	295DATA/N013	364	1,535	2,187	6	1	x	
NC	22-10-2022	14:25	14:45	LYS_03	0003_1457	MST22LYS03_20221022_145712		LYS-03	295DATA/N015	364			6	1	x	Seismic equipment set up change: starboard pole is bending. Sparker and streamer retrieved and deployed under a new set up
NC	22-10-2022	14:45	15:28	LYS_03A	0003_1446	MST22LYS03A_20221022_152815	LYS_03C	LYS_03A	295DATA/N017	364	0,627	2,814	6	1	x	
NC	22-10-2022	15:28	15:58	LYS_04	0004_1535	MST22LYS04_20221022_153733	LYS_04	LYS_04	295DATA/N019	210	2,653	5,467	6	1	x	
NC	22-10-2022	15:58	16:15	LYS_05	0005_1556	MST22LYS05_20221022_155834	LYS_05	LYS_05	295DATA/N021	310	2,018	7,485	6	1	x	
NC	22-10-2022	16:15	16:34	LYS_06	0006_1614	MST22LYS06_20221022_161654	LYS_06	LYS_06	295DATA/N022	364	1,140	8,625	6	1	x	
NC	22-10-2022	16:34	16:53	LYS_07	0007_1634	MST22LYS07_20221022_163441	LYS_07	LYS_07	295DATA/N023	310	0,423	9,048	6	1	x	
NC	22-10-2022	16:53	17:09	LYS_08	0008_1650	MST22LYS08_20221022_165312	LYS_08	LYS_08	295DATA/N024	364	1,095	10,143	6	1	x	
LFP	22-10-2022	17:09	17:23	LYS_09	0009_1709	MST22LYS09_20221022_170957	LYS_09	LYS_09	295DATA/N026	310	1,244	11,387	6	1	x	
LFP	22-10-2022	17:23	17:42	LYS_10	0010_1723	MST22LYS09_20221022_172339	LYS_10	LYS_10	295DATA/N027	364	1,583	12,97	6	1	x	
LFP	22-10-2022	17:42	17:49	LYS_11	0011_1740	MST22LYS11_20221022_174239	LYS_11	LYS_11	295DATA/N030	104	0,626	13,596	6	1	x	
LFP	22-10-2022	17:49	18:04	LYS_12	0012_1749	MST22LYS12_20221022_174925	LYS_12	LYS_12	295DATA/N031	213	1,650	15,246	6	1	x	
LFP	22-10-2022	18:04	18:23	LYS_13	0013_1804	MST22LYS13_20221022_180444	LYS_13	LYS_13	295DATA/N034	364	1,892	17,138	6	1	x	
LFP	22-10-2022	18:23	18:37	LYS_14	0014_1823	MST22LYS14_20221022_182329	LYS_14	LYS_14	295DATA/N036	317	1,832	18,97	6	1	x	
LFP	22-10-2022	18:37	18:56	LYS_15	0015_1836	MST22LYS15_20221022_183744	LYS_15	LYS_15 + LYS_15A	295DATA/N038	364	1,471	20,441	6	1	x	Seismic acquisition stopped for a few minutes sparker line named as LYS_15A
LFP	22-10-2022	18:56	19:08	LYS_16	0016_1854	MST22LYS16_20221022_185649	LYS_16	LYS_16	295DATA/N039	315	1,218	21,659	6	1	x	
LFP	22-10-2022	19:08	19:23	LYS_17	0017_1906	MST22LYS17_20221022_190823	LYS_17	LYS_17	295DATA/N040	364	1,055	22,714	6	1	x	
LFP	22-10-2022	19:23	19:33	LYS_18	0018_1906	MST22LYS18_20221022_192351	LYS_18A	LYS_18	295DATA/N041	310	0,881	23,595	6	1	x	
LFP	22-10-2022	19:33	20:01	T_LYS-19	0019_1930	MST22T_LYS9_20221022_193332	T_LYS-19	T_LYS-19	295DATA/N043	221			6	1	x	
LFP	22-10-2022	20:01	20:33	LYS_19	0019_1931	MST22LYS19_20221022_200155	LYS_19	LYS_19	295DATA/N045	303	4,664	28,259	6	1	x	
LFP	22-10-2022	20:33	20:48	LYS_20	0020_2033	MST22LYS20_20221022_203318	LYS_20	LYS_20	295DATA/N047	213	0,449	28,708	6	1	x	
LFP	22-10-2022	20:48	20:58	LYS_21	0021_2048	MST22LYS21_20221022_204822	LYS_21	LYS_21	295DATA/N048	50	1,281	29,989	6	1	x	
LFP	22-10-2022	20:58	20:10	LYS_22	0022_2057	MST22LYS22_20221022_205815	LYS_22	LYS_22	295DATA/N050	128	0,657	30,646	6	1	x	
LFP	22-10-2022	21:06	21:24	LYS_23	0023_2108	MST22LYS23_20221022_210600	LYS_23	LYS_23	295DATA/N051	50	0,587	31,233	6	1	x	
LFP	22-10-2022	21:24	21:33	LYS_24	0024_2124	MST22LYS24_20221022_212417	LYS_24	LYS_24	295DATA/N052	213	0,369	31,602	6	1	x	
LFP	22-10-2022	21:33	02:13	Transit Lysegrund-Skade Ø	001_2151	MST22LYS24_20221022_213324	T_L-SO		295DATA/N053	255			6	1		Retrieving of seismic equipment for transit.
LFP	23-10-2022	01:55	02:13	SGO_01	0001_0130	MST22SGO_01_20221023_021348	SGO_01	SGO_01	296DATA/N006	348	1,395	32,997	5	2	x	SVP taken at arrival to the survey area. Deployment of seismic equipment.
NC	23-10-2022	02:13	02:26	SGO_02	0002_0221	MST22SGO_02_20221023_022432	SGO_02	SGO_02	296DATA/N007	93	0,495	33,492	5	2	x	
NC	23-10-2022	02:26	02:40	SGO_03	003_0237	MST22SGO_03_20221023_023939	SGO_03	SGO_03	296DATA/N008	188	1,395	34,887	5	2	x	Bouy was in the way at the end of the line
NC	23-10-2022	02:40	03:02	SGO_04	0004_0300	MST22SGO_04_20221023_030250	SGO_04	SGO_04	296DATA/N010	273	0,622	35,509	5	2	x	Bouy was in the way at the start of the line
NC	23-10-2022	03:02	03:27	SGO_05	0005_0325	MST22SGO_05_20221023_031714	SGO_05	SGO_05	296DATA/N010	345	0,445	35,954	5	2	x	Too shallow so we followed the 5 meter curve
NC	23-10-2022	03:27	03:44	Transit Skade Grund Øst-Vest	0006_0326	MST22SGO_06_20221023_032831	T_SGV_01	T_SGV_01	296DATA/N012	227			5	2	x	
NC	23-10-2022	03:44	04:00	SGV_01	0006_0343	MST22SGV_01_20221023_034355	SGV_01	SGV_01	296DATA/N013	345	2,135	38,089	5	2	x	SVP taken at arrival to the survey area
NC	23-10-2022	04:00	04:20	SGV_02	0007_0357	MST22SGV_02_20221023_035951	SGV_02	SGV_02	296DATA/N014	185	2,134	40,223	5	2	x	
NC	23-10-2022	04:20	04:39	SGV_03	0008_0418	MST22SGV_03_20221023_042031	SGV_03	SGV_03	296DATA/N016	359	2,134	42,357	5	2	x	40 meter off the line at the start
NC	23-10-2022	04:39	04:55	SGV_04	0009_0437	MST22SGV_04_20221023_043932	SGV_04	SGV_04	296DATA/N018	186	1,021	43,378	5	2	x	Too shallow at the end so we followed the 5 meter curve
NC	23-10-2022	04:55	05:04	SGV_05	0010_0451	MST22SGV_05_20221023_045307	SGV_05	SGV_05	296DATA/N020	358	0,620	43,998	5	2	x	Too shallow at the start of line so we followed the 5 meter curve
NC	23-10-2022	05:04	05:18	SGV_06	0011_0501	MST22SGV_06_20221023_050317	SGV_06	SGV_06	296DATA/N022	273	1,319	45,317	5	2	x	
NC	23-10-2022	05:18	05:34	SGV_07	0012_0519	MST22SGV_07_20221023_052106	SGV_07	SGV_07	296DATA/N023	87	0,749	46,066	5	2	x	
NC	23-10-2022	05:34	05:46	SGV_08	0013_0531	MST22SGV_08_20221023_053342	SGV_08	SGV_08	296DATA/N024	273	0,774	46,84	5	2	x	
NC	23-10-2022	05:46	09:22	Transit Skade Grund Vest-North Fyn	0001_0548	MST22T_FHN_01_20221023_054657		T_FHN_01	296DATA/N025						x	Transit to FHN
LFP	23-10-2022	09:22	09:33:00	FHN_01	0001_0548	MST22FHN_01_20221023_092207	FHN_01	FHN_01	296DATA/N037	182	1,300	48,14	6	2	x	Offset of the GeoSuite acquisition system. SVP taken at arrival to the survey area.
LFP	23-10-2022	09:33:00	09:57:00	FHN_02	0002_0934	MST22FHN_02_20221023_093316	FHN_02	FHN_02	296DATA/N039	277	2,276	50,416	6	2	x	Innomar stopped triggering for a few minutes.
LFP	23-10-2022	09:57:00	10:08:00	FHN_03	0003_0955	MST22FHN_03_20221023_095749	FHN_03	FHN_03	296DATA/N041	270	0,710	51,126	6	2	x	
SBA	23-10-2022	10:08:00	10:21:00	FHN_04	0004_1005	MST22FHN_04_20221023_100834	FHN_04	FHN_04	296DATA/N042	91	0,706	51,832	6	2	x	
SBA	23-10-2022	10:21:00	10:39:00	FHN_05	0005_1017	MST22FHN_05_20221023_102112	FHN_05	FHN_05	296DATA/N044	0	1,300	53,132	6	2	x	
LFP	23-10-2022	10:30:00	11:03:00	FHN_06	0006_1040	MST22FHN_06_20221023_103906	FHN_06	FHN_06	296DATA/N046	182	1,300	54,432	6	2	x	
LFP	23-10-2022	11:03	14:13:00	Transit Nord Fyns-Tragten	0007_1103	MST22T_F-T_20221023_110313		T_F-T	296DATA/N048						x	Retrieving of seismic equipment for transit.
NC	23-10-2022	14:13:00	14:28:00	TR_01	007_1413	MST22TR_01_20221023_141353	TR_01	TR_01	296DATA/N058	155	1,329	55,761	7	2	x	SVP taken at arrival to the survey area. Deployment of seismic equipment.
NC	23-10-2022	14:28:00	14:43:00	TR_02	0008_1428	MST22TR_02_20221023_142809	TR_02	TR_02	296DATA/N060	310	1,329	57,09	7	2	x	
NC	23-10-2022	14:43:00	14:59:00	TR_03	0009_1443	MST22TR_03_20221023_144252	TR_03	TR_03	296DATA/N061	155	1,330	58,42	7	2	x	
NC	23-10-2022	14:59:00	15:15:00	TR_04	0010_1459	MST22TR_04_20221023_145915	TR_04	TR_04	296DATA/N063	310	1,331	59,751	7	2	x	
NC	23-10-2022	15:15:00	15:37:00	TR_05	0011_1514	MST22TR_05_20221023_151516	TR_05	TR_05 + TR_05A	296DATA/N064	40	3,798	63,549	7	2	x	The seismic acqusition software freezed during the line. Line continuation named as TR_05A
NC	23-10-2022	15:37:00	16:01:00	TR_06	0012_1536	MST22TR_06_20221023_153517	TR_06A	TR_06	296DATA/N067	225	3,441	66,99	7	2	x	
NC	23-10-2022	16:01:00	16:24:00	TR_07	0013_1601	MST22TR_07_20221023_160125	TR_07	TR_07	296DATA/N070	40	3,617	70,607	7	2	x	
NC	23-10-2022	16:24:00	17:04:00	TR_08	0014_1623	MST22TR_08_20221023_162408	TR_08	TR_08	296DATA/N072	225	4,509	75,116	7	2	x	
NC	23-10-2022	17:04:00	07:32:00	TR_09	0015_1704	MST22TR_09_20221023_170405	TR_09	TR_09	296DATA/N075	29	4,103	79,219	7	2	x	
NC	23-10-2022	07:32:00	18:10:00	TR_10	0016_1732	MST22TR_10_20221023_173210	TR_10	TR_10	296DATA/N077	219	4,335	83,554	7	2	x	
NC	23-10-2022	18:10:00	22:00:00	Transit Traten-Halk Hoved	0001_1811	MST22T_HH_01_20221023_181051			296DATA/N079						x	Retrieving of seismic equipment for transit.
LFP	23-10-2022	22:00:00	22:13:00	HH_01	0001_1811	MST22HH_01_20221023_220036	HH_01	HH_01	296DATA/N091	119	1,273	84,827	7	2	x	SVP taken at arrival to the survey area. Deployment of seismic equipment.
LFP	23-10-2022	22:13:00	22:34:00	HH_02	0002_2213	MST22HH_02_20221023_221357	HH_02	HH_02	296DATA/N093	230	1,281	86,108	7	2	x	
LFP	23-10-2022	22:34:00	22:54:00	HH_03	0003_2234	MST22HH_03_20221023_223422	HH_03	HH_03	296DATA/N096	239	1,874	87,982	7	2	x	
LFP	23-10-2022	22:54:00	23:04:00	HH_04	0004_2254	MST22HH_04_20221023_225459	HH_04	HH_04	296DATA/N099	130	0,893	88,875	7	2	x	
LFP	23-10-2022	23:04:00	23:28:00	HH_05	0005_2304	MST22HH_05_20221023_230459	HH_05	HH_05	296DATA/N100	230	1,171	90,046	7	2	x	
LFP	23-10-2022	23:28:00	23:57:00	HH_06	0006_2319	MST22HH_06_20221023_232801	HH_06D	HH_06	296DATA/N102	57	3,337	93,383	7	2	x	Minitrace stopped working during the turn. Computer 1 and minitrace restarted.
LFP	23-10-2022	23:57:00	00:22:00	HH_07	0007_2357	MST22HH_07_20221023_235714	HH_07	HH_07	296DATA/N105	240	3,590	96,973	7	2	x	
LFP	24-10-2022	00:22:00	00:52:00	HH_08	0008_0022	MST22HH_08_20221024_002215	HH_08	HH_08 + HH_08B	297DATA/N001	72	3,309	100,282	7	2	x	GeoSuite stopped recording for a few minutes. Second part of the line as HH_08B
LFP	24-10-2022	00:52:00	01:17:00	HH_09	0009_0051	MST22HH_09_20221024_005245	HH_09	HH_09	297DATA/N003	240	3,544	103,826	7	2	x	
LFP	24-10-2022	01:17:00	02:05	Transit Halk Hoved-Tranesand	0010_0120	MST22T_HH-TS_20221024_011758	T_HH-TS	T_HH-TS	297DATA/N006						x	Transit to Tranesand, 8 kn with equipment in the water
NC	24-10-2022	02:05:00	02:19:00	TS_01	0010_0203	MST22TS_01_20221024_020404	TS_01	TS_01	297DATA/N010	180	1,639	105,465	7	2	x	
NC	24-10-2022	02:19:00	02:28:00	TS_02	0011_0218	MST22TS_02_20221024_021734	TS_02	TS_02	297DATA/N012	89	0,393	105,858	7	2	x	
NC	24-10-2022	02:28:00	02:41:00	TS_03	0012_0228	MST22TS_03_20221024_022835	TS_03	TS_03	297DATA/N013	90	0,764	106,622	7	2	x	The line is taken from the west.
NC	24-10-2022	02:41:00	02:57:00	TS_04	0013_0241	MST22TS_04_20221024_024110	TS_04	TS_04	297DATA/N015	90	1,139	107,761	7	2	x	
NC	24-10-2022	02:57:00	03:06:00	TS_05	0014_0257	MST22TS_05_20221024_025724	TS_05	TS_05	297DATA/N017	360	0,967	108,728	7	2	x	
NC	24-10-2022	03:06:00	03:19:00	TS_06	0015_0306	MST22TS_06_20221024_030601	TS_06	TS_06	297DATA/N019	176	0,928	109,656	7	2	x	
NC	24-10-2022	03:19:00	03:41:00	TS_07	0016_0319	MST22TS_07_20221024_031940	TS_07	TS_07	297DATA/N021	270	2,553	112,209	7	2	x	
NC	24-10-2022	03:41:00	04:02:00	TS_08	0017_0341	MST22TS_01_20221024_034137	TS_08	TS_08	297DATA/N024	90	2,553	114,762	7	2	x	
NC	24-10-2022	04:02:00	04:25:00	TS_09	0018_0402	MST22TS_09_20221024_040245	TS_09	TS_09	297DATA/N026	270	2,553	117,315	7	2	x	
NC	24-10-2022	04:25:00	04:48:00	TS_10	0019_0424	MST22TS_10_20221024_042442	TS_10	TS_10	297DATA/N028	90	2,553	119,868	7	2	x	
NC	24-10-2022	04:48:00	06:45:00	Transit Lyø sand	0020_0448	MST22T_TS-LS_20221024_044838			297DATA/N031						x	

NC	24-10-2022	06:45:00	07:03	LS_01	0020_0644	MST22LS_01_20221024_064432	LS_01	LS_01	297DATA/N038	0	0,260	120,128	6	2	x	Captain took the line the opposite way around due to traffic before the line and shallow waters.
																The ship hit the ground. We retrieved the seismic equipment and stopped the recording of data.
																The pole with EdgeTech and Innomar is bent under the ship. We go to Svendborg harbor to take off the pole and assess the damage in the equipment.
																The survey is in standby until the evaluation of damage fisnish.
LFP	25-10-2022	15:00:00		Transit Svendborg – Lyø Sand												Leaving Svendborg harbor and heading back to Lyø Sand. Equipment testing on the way gives possitive response from all the sensors.
LFP	25-10-2022	16:45:00	18:37													SVP and seismic equipment deploiment.
LFP	25-10-2022	18:37:00	18:50:00	LS_01	0001_1830	MST22LS_01_B_20221025_183708	LS_01_B	LS_01_B	298DATA/N009	272	0,948	121,076	6	2	x	
LFP	25-10-2022	18:50:00	19:06:00	LS_03	0003_1848	MST22LS_03_20221025_185004	LS_03	LS_03	298DATA/N009	180	1,922	122,998	6	2	x	
LFP	25-10-2022	19:06:00	19:26:00	LS_02	0002_1904	MST22LS_02_20221025_190506	LS_02	LS_02	298DATA/N011	0	1,922	124,92	6	2	x	50 to 60 m east from the line due to shallow waters.
LFP	25-10-2022	19:26	19:41	LS_04	0005_1928	MST22LS_04_20221025_192638	LS_04	LS_04	298DATA/N013	130	1,690	126,61	6	2	x	
LFP	25-10-2022	19:41	04:05:00	Transit Lyø Sand - Stokkebæk Flak		MST22LS_04_20221025_032619			299DATA/N010				6	2	x	Seismic equipment retrieved on deck.
NC	26-10-2022	04:35:00	04:50:00	SF_01	0013_0436	MST22SF_01_20221026_043557	SF_01	SF_01	299DATA/N015	92	1,572	128,182	5	2	x	
NC	26-10-2022	04:50:00	05:10:00	SF_02 + SF_02A	0012_0450	MST22SF_02_20221026_045056	SF_02 + SF_02A	SF_02	299DATA/N017	265	1,572	129,754	5	2	x	GeoSuite stopped recording for a few minutes. Second part of the line as SF_02A
NC	26-10-2022	05:10:00	05:23:00	SF_03	0011_0509	MST22SF_03_20221026_051000	SF_03	SF_03	299DATA/N019	355	1,218	130,972	5	2	x	
NC	26-10-2022	05:23:00	05:35:00	SF_04	0010_0523	MST22SF_03_20221026_052348	SF_04	SF_04	299DATA/N021	180	1,215	132,187	5	2	x	
NC	26-10-2022	05:35:00	05:46:00	SF_05	0009_0534	MST22SF_05_20221026_053453	SF_05	SF_05	299DATA/N023	355	1,211	133,398	5	2	x	
NC	26-10-2022	05:46:00	05:57:00	SF_06	0008_0546	MST22SF_06_20221026_054627	SF_06	SF_06	299DATA/N024	180	1,208	134,606	5	2	x	
NC	26-10-2022	05:57:00	06:08:00	SF_07	0007_0557	MST22SF_07_20221026_055752	SF_07	SF_07	299DATA/N026	360	1,205	135,811	5	2	x	
NC	26-10-2022	06:08:00	06:20:00	SF_08	0006_0607	MST22SF_08_20221026_060806	SF_08	SF_08	299DATA/N028	180	1,202	137,013	5	2	x	
NC	26-10-2022	06:20:00	06:50:00	Transit Kærrebæksminde	0014_0623	MST22T_KM_01_20221026_060807			299DATA/N029				5	2	x	We returned to complete the last missing line of the area that was left behind by mistake.
NC	26-10-2022	06:50:00	07:04:00	SF_09		MST22SF_09_20221026_065230	SF_09	SF_09	299DATA/N032	180	1,200	138,213	5	2	x	
NC	26-10-2022	07:04:00	11:23:00	Transit Kærrebæksminde	0014_0703	MST22T_KM_A_20221026_070611			299DATA/N033							
LFP	26-10-2022	11:23:00	11:34:00	KM_01	0014_1123	MST22KM_01_20221026_112359	KM_01	KM_01	299DATA/N048	127	1,186	139,3986	5	2	x	SVP before starting line.
LFP	26-10-2022	11:34:00	11:52:00	KM_02	0015_1133	MST22KM_02_20221026_113421	KM_02	KM_02	299DATA/N050	230	1,168	140,5665	5	2	x	
LFP	26-10-2022	11:52:00	12:08:00	KM_03	0016_1155	MST22KM_03_20221026_115209	KM_03	KM_03	299DATA/N051	130	1,000	141,5665	5	2	x	
LFP	26-10-2022	12:08:00	12:29:00	KM_04	0017_1208	MST22KM_04_20221026_120859	KM_04	KM_04	299DATA/N053	209	2,087	143,6535	5	2	x	
LFP	26-10-2022	12:29:00	12:47:00	KM_05	0018_1228	MST22KM_05_20221026_122916	KM_05	KM_05	299DATA/N055	230	1,928	145,5815	5	2	x	
LFP	26-10-2022	12:47:00	13:09:00	KM_06		MST22KM_06_20221026_124735	KM_06	KM_06	299DATA/N057	151	0,595	146,1765	5	2	x	
LFP	26-10-2022	13:09:00	13:34:00	KM_07	0020_1308	MST22KM_07_20221026_130940	KM_07	KM_07	299DATA/N060	209	1,315	147,4915	5	2	x	The line started slighly to the south becoause of a dregging vessel located on the way
LFP	26-10-2022	13:34:00	13:43:00	KM_08	0021_1319	MST22KM_08_20221026_133451	KM_08	KM_08	299DATA/N062	45	1,742	149,2335	5	2	x	
LFP	26-10-2022	13:43:00	14:03:00	KM_09	0022_1342	MST22KM_09_20221026_134313	KM_09	KM_09	299DATA/N065	209	2,161	151,3945	5	2	x	
LFP	26-10-2022	14:03:00	14:19:00	KM_10	0023_1402	MST22KM_10_20221026_140308	KM_10	KM_10	299DATA/N067	137	1,949	153,3435	5	2	x	
LFP	26-10-2022	14:19:00	14:46:00	KM_11	0024_1419	MST22KM_11_20221026_141934	KM_11	KM_11	299DATA/N069	223	2,020	155,3635	5	2	x	
LFP	26-10-2022	14:46:00	08:52:00	Transit Rønne Banke Syd		MST22T_B_20221026_144646		T_K-B	299DATA/N071				5	2	x	We retrieved the equipment and head towards Bornholm
LFP	27-10-2022	08:52:00	09:28:00	RBS_01	0001_0620	MST22RBS_01_20221027_085047	RBS_01	RBS_01	300DATA/N010	14	6,212	161,5755	7	2	x	SVP and seismic equipment deploiment at arrival to the area.
NC	27-10-2022	09:28:00	10:38:00	RBS_02	0002_0929	MST22RBS_02_20221027_092830	RBS_02	RBS_02	300DATA/N012	212	7,938	169,5135	7	2	x	
NC	27-10-2022	10:38:00	11:14:00	RBS_03	0003_1038	MST22RBS_03_20221027_103825	RBS_03	RBS_03	300DATA/N016	14	8,390	177,9035	7	2	x	
LFP	27-10-2022	11:14:00	12:44:00	RBS_04	0004_1134	MST22RBS_04_20221027_114415	RBS_04	RBS_04	300DATA/N019	212	8,839	186,7425	7	2	x	GeosSuite navigation stopped for a few minutes at 12:10. The seismic line was renamed to RBS_04B
LFP	27-10-2022	12:44:00	13:04:00	RBS_05	0005_1243	MST22RBS_05_20221027_124405	RBS_05	RBS_05	300DATA/N023	14	9,168	195,9105	7	2	x	
LFP	27-10-2022	13:04:00	14:50:00	RBS_06	0006_1342	MST22RBS_06_20221027_134301	RBS_06	RBS_06	300DATA/N026	212	6,934	202,8445	7	2	x	
NC	27-10-2022	14:50:00	15:25:00	RBS_07	0007_1450	MST22RBS_07_20221027_145033	RBS_07	RBS_07	300DATA/N030	14	4,667	207,5115	7	2	x	
NC	27-10-2022	15:25:00	16:02:00	RBS_08	0008_1525	MST22RBS_08_20221027_152447	RBS_08	RBS_08	300DATA/N032	212	2,435	209,9465	7	2	x	Lost connection to RTK and to POSMV software. Ethernet log was interrupted.
NC	27-10-2022	16:02:00	17:10:00	RBS_09	0009_1602	MST22RBS_09_20221027_160221	RBS_09	RBS_09	300DATA/N034	290	9,118	219,0645	7	2	x	
NC	27-10-2022	17:10:00	18:08:00	RBS_10	0010_1710	MST22RBS_09_20221027_170924	RBS_10	RBS_10	300DATA/N038	110	8,963	228,0275	7	2	x	
SBA	27-10-2022	18:08:00	19:04:00	RBS_11	0011_1808	MST22RBS_11_20221027_180834	RBS_11	RBS_11	300DATA/N041	289	8,807	236,8345	7	2	x	
SBA	27-10-2022	19:04:00	20:00:00	RBS_12	0012_1904	MST22RBS_12_20221027_190609	RBS_12	RBS_12	300DATA/N044	109	8,653	245,4875	7	2	x	SVP at the end of the line
LFP	27-10-2022	20:00:00	21:03:00	RBS_13	0013_2000	MST22RBS_13_20221027_200053	RBS_13A	RBS_13	300DATA/N047	292	8,498	253,9855	7	2	x	
LFP	27-10-2022	21:03:00	21:53:00	RBS_14	0014_2102	MST22RBS_14_20221027_210345	RBS_14	RBS_14	300DATA/N052	118	8,343	262,3285	7	2	x	
LFP	27-10-2022	21:53:00	22:45:00	RBS_15	0015_2152	MST22RBS_15_20221027_215306	RBS_15	RBS_15	300DATA/N054	290	8,192	270,5205	7	2	x	
LFP	27-10-2022	22:45:00	23:37:00	RBS_16	0016_2244	MST22RBS_16_20221027_224523	RBS_16	RBS_16	300DATA/N057	108	8,038	278,5585	7	2	x	
LFP	27-10-2022	23:37:00	00:28:00	RBS_17	0017_2306	MST22RBS_17_20221027_233755	RBS_17	RBS_17	300DATA/N061	297	7,878	286,4365	7	2	x	
LFP	28-10-2022	00:28:00	01:22:00	RBS_18	0018_0029	MST22RBS_18_20221028_002817	RBS_18	RBS_18	301DATA/N001	112	7,723	294,1595	7	2	x	
LFP	28-10-2022	01:22:00	02:15:00	RBS_19	0019_0126	MST22RBS_19_20221028_012212	RBS_19	RBS_19	301DATA/N005	295	7,570	301,7295	7	2	x	
NC	28-10-2022	02:15:00	03:06:00	RBS_20	0020_0214	MST22RBS_20_20221028_021448	BS_20D, RBS_20E	RBS_20	301DATA/N008	112	7,416	309,1455	5	3	x	Geosuite freezed and could not restart. We had to restart the topside.
NC	28-10-2022	03:06:00	04:00:00	RBS_21	0021_0306	MST22RBS_21_20221028_030621	RBS_21	RBS_21	301DATA/N012	295	7,257	316,4025	5	3	x	
NC	28-10-2022	04:00:00	04:49:00	RBS_22	0022_0400	MST22RBS_22_20221028_040049	RBS_22	RBS_22	301DATA/N015	112	7,103	323,5055	5	3	x	
NC	28-10-2022	04:49:00	05:42:00	RBS_23	0023_0449	MST22RBS_23_20221028_044937	RBS_23	RBS_23	301DATA/N019	295	6,962	330,4675	5	3	x	
NC	28-10-2022	05:42:00	06:27:00	RBS_24	0024_0542	MST22RBS_24_20221028_054224	RBS_24	RBS_24	301DATA/N023	112	6,810	337,2775	5	3	x	
NC	28-10-2022	06:27:00	07:09:00	RBS_25	0025_0627	MST22RBS_25_20221028_062744	RBS_25	RBS_25	301DATA/N027	295	6,652	343,9295	5	3	x	
NC	28-10-2022	07:09:00	08:01:00	RBS_26	0026_0718	MST22RBS_26_20221028_071859	RBS_26	RBS_26	301DATA/N031	112	6,495	350,4245	5	3	x	
SBA	28-10-2022	08:01:00	08:37:00	RBS_27	0027_0801	MST22RBS_27_20221028_080243	RBS_27	RBS_27	301DATA/N035	289	6,340	356,7645	5	3	x	
SBA	28-10-2022	08:37:00	09:29:00	RBS_28	0028_0847	MST22RBS_28_20221028_084839	RBS_28, RBS_28B	RBS_28	301DATA/N038	109	6,183	362,9475	5	3	x	Geosuite freezed. Geosuite and topside restarted.
SBA	28-10-2022	09:29:00	10:15:00	RBS_29	0029_0929	MST22RBS_29_20221028_093053	RBS_29	RBS_29	301DATA/N042	289	6,024	368,9715	5	3	x	
LFP	28-10-2022	10:15:00	10:43:00			MST22RBS_T30_20221028_101524							5	3	x	Captain-officer Brar have decided to leave the ship. Thus, we wait for him to pick up before starting the new line. An SVP was taken while standing by
LFP	28-10-2022	10:43:00	11:22:00	RBS_30	0030_1914	MST22RBS_30_20221028_104338	RBS_30	RBS_30	301DATA/N048	118	5,867	374,8385	5	3	x	Survey activities resume as usual.
LFP	28-10-2022	11:22:00	12:10:00	RBS_31	0031_1121	MST22RBS_31_20221028_112236	RBS_31	RBS_31	301DATA/N054	290	5,710	380,5485	5	3	x	
LFP	28-10-2022	12:10:00	12:46:00	RBS_32	0032_1210	MST22RBS_32_20221028_121044	RBS_32	RBS_32	301DATA/N051	114	5,555	386,1035	5	3	x	
LFP	28-10-2022	12:46:00	13:28:00	RBS_33	0033_1245	MST22RBS_33_20221028_124635	RBS_33	RBS_33	301DATA/N056	290	5,398	391,5015	5	3	x	
LFP	28-10-2022	13:28:00	14:07:00	RBS_34	0034_1329	MST22RBS_34_20221028_132843	RBS_34	RBS_34	301DATA/N060	117	5,243	396,7445	5	3	x	
NC	28-10-2022	14:07:00	14:44:00	RBS_35	0035_1406	MST22RBS_35_20221028_140653	RBS_35	RBS_35	301DATA/N062	290	5,088	401,8325	5	3	x	
NC	28-10-2022	14:44:00	15:21:00	RBS_36	0036_1443	MST22RBS_36_20221028_144415	RBS_36	RBS_36	301DATA/N064	117	4,934	406,7665	5	3	x	
NC	28-10-2022	15:21:00	15:56:00	RBS_37	0037_1519	MST22RBS_37_20221028_152055	RBS_37	RBS_37	301DATA/N066	290	4,778	411,5445	5	3	x	
NC	28-10-2022	15:56:00	16:30:00	RBS_38	0038_1556	MST22RBS_38_20221028_155618	RBS_38	RBS_38	301DATA/N068	117	4,624	416,1685	5	3	x	
NC	28-10-2022	16:30:00	17:03:00	RBS_39	0039_1629	MST22RBS_39_20221028_163008	RBS_39	RBS_39	301DATA/N070	290	4,468	420,6365	5	3	x	
NC	28-10-2022	17:03:00	17:32:00	RBS_40	0040_1703	MST22RBS_40_20221028_170320	RBS_40	RBS_40	301DATA/N072	117	3,843	424,4795	5	3	x	
NC	28-10-2022	17:32:00	17:59:00	RBS_41	0041_1732	MST22RBS_41_20221028_173241	RBS_41	RBS_41	301DATA/N074	290	3,168	427,6475	5	3	x	
NC	28-10-2022	17:59:00	18:19:00	RBS_42	0042_1758	MST22RBS_42_20221028_175858	RBS_42	RBS_42	301DATA/N076	118	2,494	430,1415	5	3	x	
SBA	28-10-2022	18:19:00	18:38:00	RBS_43	0043_1819	MST22RBS_43_20221028_182057	RBS_43	RBS_43	301DATA/N079	289	1,813	431,9545	5	3	x	
SBA	28-10-2022	18:38:00	18:52:00	RBS_44	0044_1838	MST22RBS_44_20221028_183916	RBS_44	RBS_44	301DATA/N080	109	1,139	433,0935	5	3	x	
SBA	28-10-2022	18:52:00	19:01:00	RBS_45		MST22RBS_45_20221028_185404	RBS_45	RBS_45	301DATA/N081		0,460	433,5535	5	3	x	SVP at the end of the line.
SBA	28-10-2022	19:02:00	19:59:00	Transit Rønne Banke Øst		MST22T_RBS_20221028_190238	T_RBO	T_RBO	301DATA/N082				5	3	x	
LFP	28-10-2022	19:59:00	20:10:00	RBO_01	0046_1959		RBO_01	RBO_01	301DATA/N084	87	2,140	435,6935	6	3	x	SVP before starting the line. The Innomar has stopped working. It returns a warning about voltage
LFP	28-10-2022	20:10:00	20:36:00	RBO_02	0047_2015		RBO_02	RBO_02	301DATA/N086	273	2,141	437,8345	6	3	x	
LFP	28-10-2022	20:36:00	20:57:00	RBO_03	0048_2036		RBO_03	RBO_03	301DATA/N088	87	2,141	439,9755	6	3	x	
LFP	28-10-2022	20:57:00	21:25:00	RBO_04	0049_2057		RBO_04	RBO_04	301DATA/N090	268	2,142	442,1175	6	3	x	
LFP	28-10-2022	21:25:00	21:52:00	RBO_05	0050_2125		RBO_05	RBO_05	301DATA/N092	2	3,344	445,4615	6	3	x	
LFP	28-10-2022	21:52:00	22:17:00	RBO_06	0051_2152		RBO_06	RBO_06	301DATA/N094	181	3,344	448,8055	6	3	x	
LFP	28-10-2022	22:17:00	22:44	RBO_07	0052_2217		RBO_07	RBO_07	301DATA/N095	1	3,344	452,1495	6	3	x	
LFP	28-10-2022	22:44	23:11:00	RBO_08	0053_2244		RBO_08	RBO_08	301DATA/N098	180	3,344	455,4935	11	3	x	
LFP	28-10-2022	23:11:00	23:38:00	RBO_09	0054_2311		RBO_09	RBO_09	301DATA/N100	1	3,344	458,8375	11	3	x	
LFP	28-10-2022	23:38:00	00:06:00	RBO_10	0055_2338		RBO_10	RBO_10	301DATA/N102	180	3,344	462,1815	11	3	x	
LFP	29-10-2022	00:06:00	00:33:00	RBO_11	0056_0006		RBO_11	RBO_11	302DATA/N002	1	3,344	465,5255	11	3	x	
LFP	29-10-2022	00:33:00	01:02:00	RBO_12	0057_0033		RBO_12	RBO_12	302DATA/N007	189	3,344	468,8695	11	3	x	

LFP	29-10-2022	01:02:00	01:29:00	RBO_13	0058_0102		RBO_13	RBO_13	302DATA/N006	1	3,344	472,2135	11	3	x	
LFP	29-10-2022	01:29:00	01:40:00	Transit Bakkegrund Syd	0059_0129		T_BGS	T_BGS	302DATA/N010				11	3	x	
LFP	29-10-2022	01:40	01:55	BGS_01	0059_0139		BGS_01	BGS_01	302DATA/N012	274	1,483	473,6965	11	3	x	
NC	29-10-2022	01:55:00	02:08:00	BGS_02	0060_0152		BGS_02, BGS_02A	BGS_02	302DATA/N013	90	1,620	475,3165	11	3	x	GEOSUITE freezed and we had to restart the software
NC	29-10-2022	02:08:00	02:34:00	BGS_03	0061_0207		BGS_03, BGS_03A	BGS_03	302DATA/N014	274	1,977	477,2935	11	3	x	GEOSUITE freezed and we had to restart the software
NC	29-10-2022	02:34:00	02:52:00	BGS_04	0062_0234		BGS_04	BGS_04	302DATA/N016	90	2,206	479,4995	12	4	x	
NC	29-10-2022	02:52:00	03:34:00	BGS_05	0063_0252		BGS_05	BGS_05	302DATA/N017	280	3,708	483,2075	12	4	x	
NC	29-10-2022	03:34:00	03:51:00	BGS_06	0064_0334		BGS_06	BGS_06	302DATA/N021	90	1,990	485,1975	12	4	x	
NC	29-10-2022	03:51:00	04:19:00	BGS_07	0065_0350		BGS_07	BGS_07	302DATA/N022	280	1,997	487,1945	12	4	x	
NC	29-10-2022	04:19:00	04:35:00	BGS_08	0066_0419		BGS_08	BGS_08	302DATA/N024	90	2,004	489,1985	12	4	x	
NC	29-10-2022	04:35:00	05:17:00	BGS_09	0067_0435		BGS_09	BGS_09	302DATA/N026	280	2,031	491,2295	12	4	x	Big turn. Captain said "I am trying to avoid the waves"
NC	29-10-2022	05:17:00	05:30:00	BGS_10	0068_0517		BGS_10	BGS_10	302DATA/N029	90	2,024	493,2535	12	4	x	
NC	29-10-2022	05:30:00	06:01:00	BGS_11	0069_0537		BGS_11	BGS_11	302DATA/N030	280	2,017	495,2705	12	4	x	
NC	29-10-2022	06:01:00	06:38:00	BGS_12	0070_0601	BGS_12, BGS_12A, BGS_12B, BGS_12C, RBS_12C		BGS_12	302DATA/N032	90	5,393	500,6635	12	4	x	Geosuite freezed. Had to restart topside and software. Wrong restart seismic name "RBS_12C"
NC	29-10-2022	06:38:00	07:47:00	BGS_13	0071_0637		BGS_14	BGS_13	302DATA/N035	280	6,093	506,7565	12	4	x	Wrong Seismic name. Next line in the area will be named BGS_15
NC	29-10-2022	07:47:00	08:08:00	Transit Bakkegrund Nord	0081_0747			T_BGN_01	302DATA/N040						x	It is not possible to acquire N-S lines due to weater. We transit to BGN Area, to do the E-W lines in the area.
NC	29-10-2022	08:08:00	08:29:00	BGN_01	0088_0808		BGN_01	BGN_01	302DATA/N042	280	1,816	508,5725	12	4	x	SVP in this area is not taken since it would be risky for the seismic equipment to stop the ship due to wave high >1,2 m
NC	29-10-2022	08:29:00	08:42:00	BGN_02	0087_0828		BGN_02	BGN_02	302DATA/N045	85	1,816	510,3885	12	4	x	
SBA	29-10-2022	08:42:00	09:10:00	BGN_03	0086_0842		BGN_03	BGN_03	302DATA/N047	265	1,816	512,2045	12	4	x	
SBA	29-10-2022	09:10:00	09:22:00	BGN_04	0085_0910		BGN_04	BGN_04	302DATA/N049	85	1,816	514,0205	12	4	x	
SBA	29-10-2022	09:22:00	09:45:00	BGN_05	0084_0922		BGN_05	BGN_05	302DATA/N050	265	1,815	515,8355	12	4	x	
SBA	29-10-2022	09:45:00	09:59:00	BGN_06	0083_0945		BGN_06	BGN_06	302DATA/N051	85	1,815	517,6505	12	4	x	
SBA	29-10-2022	09:59:00	10:24:00	BGN_07	0082_0959		BGN_07	BGN_07	302DATA/N054	265	1,815	519,4655	12	4	x	
SBA	29-10-2022	10:24:00	10:41:00	BGN_08	0081_1024		BGN_08	BGN_08	302DATA/N057	85	1,815	521,2805	12	4	x	
SBA	29-10-2022	10:41:00	11:07:00	BGN_09	0002_1041		BGN_09	BGN_09	302DATA/N058	309	1,508	522,7885	12	4	x	Wave high is still >1,2 m. Thus N-S lines mean high roll. We change the planned lines to NW-SE to facilitate navigation. Data quality is good.
SBA	29-10-2022	11:07:00	11:28	BGN_10	0001_1107		BGN_10	BGN_10	302DATA/N058	122	2,111	524,8995	12	4	x	
SBA	29-10-2022	11:28	11:50	Transit Bakkegrund Syd A	0002_1128		T_BGN_A	T_BGN_A	302DATA/N063						x	Wave high is still >1,2 m. Data quality is good, thus, we transit back to BGS area with a changed navigation plan. No N-S liens will be sailed, but NW-SE.
LFP	29-10-2022	11:50	12:10	BGS_15	0007_1150		BGS_15	BGS_15	302DATA/N066	65	2,894	527,7935	11	4	x	
LFP	29-10-2022	12:10	12:45	BGS_16	0008_1210		BGS_16	BGS_16	302DATA/N068	297	2,126	529,9195	11	4	x	
LFP	29-10-2022	12:45	13:09:00	BGS_17	0009_1245		BGS_17	BGS_17	302DATA/N071	65	1,566	531,4855	11	4	x	GeoSuite freezed in the turn, line name restarted as BGS_17A
LFP	29-10-2022	13:09:00	13:28:00	BGS_18	0004_1318		BGS_18	BGS_18	302DATA/N073	85	1,022	532,5075	11	4	x	
LFP	29-10-2022	13:28:00	13:46:00	BGS_19	0003_1328		BGS_19	BGS_19	302DATA/N076	270	0,977	533,4845	11	4	x	
LFP	29-10-2022	13:46:00	14:03:00	BGS_20	0004_1346		BGS_20	BGS_20	302DATA/N077	85	1,135	534,6195	10	4	x	
LFP	29-10-2022	14:03:00		Transit Bakkegrund Syd patch test	0005_1403		T_BGS_PT	T_BGS_PT	302DATA/N078		2,545	537,1645	10	4	x	Transit to line 21 in BGS area. Multibeam patch test done during the transit.
NC	29-10-2022	14:17:00		PatchTest									9	3	x	Retry Too far away from the line
NC	29-10-2022				0005_1420				302DATA/N081				9	3	x	We take the planned lines from south to north. Speed is 4-5 knots.
NC	29-10-2022				0005_1430				302DATA/N083	145			9	3	x	
NC	29-10-2022				0004_1339				302DATA/N085	290			9	3	x	
NC	29-10-2022				0004_1449				302DATA/N087	145			9	3	x	
NC	29-10-2022				0003_1500				302DATA/N089	290			9	3	x	
NC	29-10-2022				0003_1509				302DATA/N091	145			9	3	x	
NC	29-10-2022				0003_1524				302DATA/N092	311			9	3	x	8 kn speed for latency
NC	29-10-2022				0002_1531				302DATA/N096	130			9	3	x	
NC	29-10-2022				0002_1535				302DATA/N097	310			9	3	x	too far away from the line. We have to retake it.
NC	29-10-2022				0002_1550				302DATA/N098	310			9	3	x	
NC	29-10-2022				0001_1602				302DATA/N100	130			9	3	x	
NC	29-10-2022		16:27:00		0001_1609				302DATA/N100 + N102				9	3	x	SVP in the deep part of the test area. Survey resumed.
NC	29-10-2022	16:27:00	16:54:00	Transit Bakkegrund Syd patch test A	0006_1627		T_BGS_PT_A	T_BGS_PT_A	302DATA/N103				7	3	x	
NC	29-10-2022	16:54:00	17:13:00	BGS_21	0006_1654		BGS_21, BGS_21A	BGS_21	302DATA/N105	125	2,544	539,7	7	3	x	GeoSuite freezed software restarted.
NC	29-10-2022	17:13:00	17:34:00	BGS_22	0005_1713		BGS_22	BGS_22	302DATA/N107	302	0,500	540,2	7	3	x	
NC	29-10-2022	17:34:00	18:19:00	Transit Kintegrund syd	0089_1736		T_KGS, T_KGS_A	T_KGS	302DATA/N110				7	3	x	
SBA	29-10-2022	18:19:00	18:37:00	KGS_01	0092_1819		KGS_01	KGS_01	302DATA/N114	205	0,283	540,5	7	3	x	
SBA	29-10-2022	18:37:00	18:58:00	KGS_02	0093_1837		KGS_02	KGS_02	302DATA/N116	295	1,857	542,3	7	3	x	
SBA	29-10-2022	18:58:00	19:12:00	KGS_03	0091_1858		KGS_03	KGS_03	302DATA/N118	115	1,397	543,7	6	3	x	
SBA	29-10-2022	19:12:00	19:25:00	KGS_04	0090_1912		KGS_04	KGS_04	302DATA/N119	295	0,825	544,6	6	3	x	
SBA	29-10-2022	19:25:00	19:32	KGS_05	0089_1925		KGS_05	KGS_05	302DATA/N123	115	0,256	544,8	6	3	x	
LFP	29-10-2022	19:32	20:00	Transit Kintegrund Vest	0094_1932		T_KGV	T_KGV	302DATA/N121				6	3	x	SVP at the end of the line and transit to Kintergrund Vest
LFP	29-10-2022	20:00	20:15	KGV_01	0094_2000		KGV_01	KGV_01	302DATA/N126	278	2,775	547,6	6	3	x	Most of the line was sailed at 7 kns.
LFP	29-10-2022	20:15	20:34	KGV_02	0095_2015		KGV_02	KGV_02	302DATA/N127	88	2,775	550,4	6	3	x	Survey speed is 6 kn in average within this survey area.
LFP	29-10-2022	20:34	21:01	KGV_03	0096_2034		KGV_03	KGV_03	302DATA/N128	268	2,775	553,2	6	3	x	
LFP	29-10-2022	21:01	21:22	KGV_04	0097_2101		KGV_04	KGV_04	302DATA/N131	90	2,775	555,9	6	3	x	
LFP	29-10-2022	21:22	21:47	KGV_05	0096_2122		KGV_05	KGV_05	302DATA/N131	270	2,776	558,7	6	3	x	
LFP	29-10-2022	21:47	22:07	KGV_06	0099_2147		KGV_06	KGV_06	302DATA/N137	90	2,776	561,5	6	3	x	
LFP	29-10-2022	22:07	22:27	KGV_07	0102_2207		KGV_07	KGV_07	302DATA/N140	270	1,486	563,0	6	3	x	
LFP	29-10-2022	22:27	22:48	KGV_08	0101_2227		KGV_08	KGV_08	302DATA/N143	1	1,486	564,5	6	3	x	
LFP	29-10-2022	22:48	23:07	KGV_09	0100_2248		KGV_09	KGV_09	302DATA/N146	180	1,486	565,9	6	3	x	
LFP	29-10-2022	23:07	23:51	Transit Rønne	0103_2307		T_RO	T_RO	302DATA/N147	1			8	3	x	8 kn transit speed
LFP	29-10-2022	23:51	23:55	RO_01	0103_2351		RO_01	RO_01	302DATA/N151	41	0,270	566,2	2	2	x	
LFP	29-10-2022	23:55	00:02	RO_02	0104_2355		RO_02	RO_02	302DATA/N153	231	0,557	566,8	2	2	x	
LFP	29-10-2022	00:02	00:16:00	RO_03	0105_0002		RO_03	RO_03	303DATA/N000	40	0,853	567,6	2	2	x	Line taken 50 m more to the starboard side due to buoy
LFP	30-10-2022	00:16:00	00:31:00	RO_04	0106_0016		RO_04	RO_04	303DATA/N001	230	1,280	568,9	2	2	x	GeoSuite restarting at start of line
LFP	30-10-2022	00:31:00	00:42:00	RO_05	0107_0031		RO_05	RO_05	303DATA/N002	40	1,068	570,0	2	2	x	
LFP	30-10-2022	00:42:00	00:51:00	RO_06	0108_0042		RO_06	RO_06	303DATA/N003	230	0,602	570,6	2	2	x	
LFP	30-10-2022	00:51:00	00:58:00	RO_07	0109_0051		RO_07	RO_07	303DATA/N004	40	0,113	570,7	2	2	x	
LFP	30-10-2022	00:58:00	09:44:00	Transit Nordmandshage				T_NH								
NC	30-10-2022	09:44:00	10:09:00	NH_01	0001_0947_0001		NH_01	NH_01	303DATA/N032						x	Seismic equipment deploiment. Transit to the survey line in NH named NH_02
NC	30-10-2022	10:09:00	10:17:00	NH_02	0001_1009		NH_02	NH_02	303DATA/N034	80	0,711	571,4	2	2	x	Survey line. SVP at the end of the line and seismic equipment on deck. Boom is removed to sail into harbor.
NC	30-10-2022	10:17:00	13:30:00	Transit to Køge harbor	0002_1016				303DATA/N035						x	Transit to Køge harbor to pick the top unit of the Innomar.
LFP	30-10-2022	16:04:00	16:54:00	Transit to Køge Bugt Øst	0002_1458	MST2022T_KBO_20221030_160419	T_KBO	T_KBO	303DATA/N048						x	Transit to KBO to start survey of the areas in Køge Bugt. Innomar is up and running. Started T_KBO at 16_40
LFP	30-10-2022	16:54:00	17:20:00	KBO_01	0002_1637	MST2022KBO_01_20221030_175411	KBO_01	KBO_01	303DATA/N054	260	4,275	575,7	3	1	x	Innomar is time out on this area. The computer is not set in UTC, Thus, the time stamp is 1 hr and 2 mins ahead. Applies to the whole area KBO
NC	30-10-2022	17:20:00	17:52:00	KBO_02	0003_1719	MST2022KBO_02_20221030_182114	KBO_02	KBO_02	303DATA/N057	90	4,066	579,7	3	1	x	
NC	30-10-2022	17:52:00	18:20:00	KBO_03	0004_1752	MST2022KBO_03_20221030_185332	KBO_03	KBO_03	303DATA/N059	260	3,861	583,6	3	1	x	
NC	30-10-2022	18:20:00	18:51:00	KBO_04	0005_1820	MST2022KBO_04_20221030_192141	KBO_04	KBO_04	303DATA/N061	90	3,651	587,2	3	1	x	
NC	30-10-2022	18:51:00	19:17:00	KBO_05	0006_1851	MST2022KBO_05_20221030_195255	KBO_05	KBO_05	303DATA/N066	260	3,440	590,7	3	1	x	
SBA	30-10-2022	19:17:00	19:44:00	KBO_06	0007_1917	MST2022KBO_06_20221030_202048	KBO_06	KBO_06	303DATA/?	86	3,230	593,9	3	1	x	
SBA	30-10-2022	19:44:00	20:01:00	KBO_07	0008_1944	MST2022KBO_07_20221030_204633	KBO_07	KBO_07	303DATA/N069	217	1,664	595,6	3	1	x	
SBA	30-10-2022	20:01:00	20:24:00	KBO_08	0009_2001	MST2022KBO_08_20221030_210357	KBO_08	KBO_08	303DATA/N070	176	1,652	597,2	3	1	x	

SBA	30-10-2022	20:24:00	20:43:00	KBO_09	0010_2024	MST2022KBO_09_20221030_210357	KBO_09	KBO_09	303DATA/N073	356	1,640	598,9	3	1	x	
SBA	30-10-2022	20:43:00	21:04:00	KBO_10	0011_2043	MST2022KBO_10_20221030_214609	KBO_10	KBO_10	303DATA/N076	176	1,350	600,2	3	1	x	
LFP	30-10-2022	21:04:00	21:20:00	Transit to Køge Bugt Sydøst	0012_2104	MST2022T_KBS_20221030_220711	T_KBS	T_KBS	303DATA/N077				3	1	x	Innomar time is syncronised with the rest of the instruments and set up to UTC time. Thus the timestamp is good from this area onwards.
LFP	30-10-2022	21:20:00	21:32:00	KBS_01	0012_2120	MST2022KBS_01_20221030_212230	KBS_01	KBS_01	303DATA/N079	280	1,582	601,8	3	1	x	
LFP	30-10-2022	21:32:00	21:50:00	KBS_02	0013_2132	MST2022KBS_02_20221030_213321	KBS_02	KBS_02	303DATA/N081	85	1,582	603,4	3	1	x	
LFP	30-10-2022	21:50:00	22:03:00	KBS_03	0014_2150	MST2022KBS_03_20221030_215028	KBS_03	KBS_03	303DATA/N083	281	1,582	605,0	3	1	x	
LFP	30-10-2022	22:03:00	22:18:00	KBS_04	0015_2203	MST2022KBS_04_20221030_220419	KBS_04	KBS_04	303DATA/N084	88	1,582	606,5	3	1	x	
LFP	30-10-2022	22:18:00	22:35	KBS_05	0016_2218	MST2022KBS_05_20221030_222019	KBS_05	KBS_05	303DATA/N085	280	1,583	608,1	3	1	x	
LFP	30-10-2022	22:35	22:48	KBS_06	0017_2234	MST2022KBS_06_20221030_223505	KBS_06	KBS_06	303DATA/N086	85	1,583	609,7	3	1	x	
LFP	30-10-2022	22:48	23:07	KBS_07	0018_2248	MST2022KBS_07_20221030_224952	KBS_07	KBS_07	303DATA/N087	356	1,484	611,2	3	1	x	
LFP	30-10-2022	23:07	23:25	KBS_08		MST2022KBS_08_20221030_230710	KBS_08	KBS_08	303DATA/N088	175	1,484	612,7	3	1	x	
LFP	30-10-2022	23:25	23:57	Transit Juelsgrund Øst	0020_2322	MST2022T_JG_20221030_232504	T_JG	T_JG	303DATA/N090				3	1	x	
LFP	30-10-2022	23:57	00:11:00	JG_01	0020_2357	MST2022JG_01_20221030_000000	JG_01	JG_01	303DATA/N093	305	1,254	613,9	3	1	x	
LFP	31-10-2022	00:11:00	00:32:00	JG_02	0021_0010	MST2022JG_01_20221031_001122	JG_02	JG_02	304DATA/N001	130	2,279	616,2	1	1	x	
LFP	31-10-2022	00:32:00	01:07:00	JG_03	0022_0031	MST2022JG_03_20221031_003241	JG_03	JG_03	304DATA/N003	305	3,296	619,5	1	1	x	
LFP	31-10-2022	01:07:00	01:46:00	JG_04	0023_0106	MST2022JG_04_20221031_010707	JG_04	JG_04	304DATA/N006	127	4,338	623,8	1	1	x	
LFP	31-10-2022	01:46:00	02:23:00	JG_05	0024_0145	MST2022JG_05_20221031_014620	JG_05	JG_05	304DATA/N009	305	4,449	628,3	1	1	x	
LFP	31-10-2022	02:23:00	03:00:00	JG_06	0025_0222	MST2022JG_06_20221031_022305	JG_06	JG_06	304DATA/N012	130	4,453	632,8	1	1	x	
NC	31-10-2022	03:00:00	03:53:00	JG_07	0026_0300	MST2022JG_07_20221031_030012	JG_07	JG_07	304DATA/N015	305	7,107	639,9	1	1	x	
NC	31-10-2022	03:53:00	04:41:00	JG_08	0027_0353	MST2022JG_08_20221031_035327	JG_08	JG_08	304DATA/N019	130	6,079	645,9	1	1	x	
NC	31-10-2022	04:41:00	05:22:00	JG_09	0028_0441	MST2022JG_09_20221031_044151	JG_09	JG_09	304DATA/N022	305	5,059	651,0	1	1	x	
NC	31-10-2022	05:22:00	05:55:00	JG_10	0029_0521	MST2022JG_10_20221031_052153	, JG_10A, JG_10E	JG_10	304DATA/N025	130	4,026	655,0	1	1	x	Geosuite freezed and we had to restart software and topside
NC	31-10-2022	05:55:00	06:22:00	JG_11	0030_0555	MST2022JG_11_20221031_055527	JG_11	JG_11	304DATA/N027	305	3,000	658,0	1	1	x	
NC	31-10-2022	06:22:00	06:46:00	JG_12	0031_0622	MST2022JG_12_20221031_062441	JG_12	JG_12	304DATA/N029	130	1,969	660,0	1	1	x	
NC	31-10-2022	06:46:00	07:02:00	JG_13	0032_0646	MST2022JG_12_20221031_064605	JG_13	JG_13	304DATA/N031	305	0,945	660,9	1	1	x	
NC	31-10-2022	07:02:00	07:45:00	T_MO	0032_0702	MST2022T_MO_20221031_070228	T_MO	JG_14	304DATA/N032						x	
NC	31-10-2022	07:45:00	08:05:00	MO_01	0033_0745	MST2022MO_01_20221031_074526	MO_1	MO_1	304DATA/N036	180	2,784	663,7	1	1	x	
NC	31-10-2022	08:05:00	08:28:00	MO_02	0034_0805	MST2022MO_02_20221031_080520	MO_02	MO_02	304DATA/N038	360	2,784	666,5	1	1	x	
NC	31-10-2022	08:28:00	08:42:00	MO_03	0035_0827	MST2022MO_03_20221031_082802	MO_03	MO_03	304DATA/N040	275	0,419	666,9	1	1	x	
NC	31-10-2022	08:42:00	08:55:00	MO_04	0035_0843	MST2022MO_04_20221031_084245	MO_04	MO_04	304DATA/N041	85	0,453	667,4	1	1	x	
NC	31-10-2022	08:55:00	09:15:00	MO_05	0037_0855	MST2022MO_05_20221031_085525	MO_05	MO_05	304DATA/N043	275	1,611	669,0	1	1	x	
SBA	31-10-2022	09:15:00	09:37:00	MO_06	0038_0915	MST2022MO_06_20221031_091559	MO_06	MO_06	304DATA/N046	284	1,128	670,1	1	1	x	
SBA	31-10-2022	09:37:00	10:19:00	T_KO	0039_0937	MST2022T_KO_20221031_093903	T_KO	T_KO	304DATA/N049				1	1	x	SVP 09:41
NC	31-10-2022	10:19:00	10:31:00	KO_01	0039_1017	MST2022KO_01_20221031_101907	KO_01	KO_01	304DATA/N053	125	0,465	670,6	1	1	x	
NC	31-10-2022	10:31:00	10:41:00	KO_02	0040_1022	MST2022KO_02_20221031_102210	KO_02	KO_02	304DATA/N054	305	1,494	672,1	1	1	x	
NC	31-10-2022	10:41:00	11:05:00	KO_03	0041_1041	MST2022KO_03_20221031_104110	KO_03	KO_03	304DATA/N056	125	2,534	674,6	1	1	x	
NC	31-10-2022	11:05:00	11:36	KO_04	0042_1105	MST2022KO_04_20221031_110552	KO_04	KO_04	304DATA/N059	309	3,554	678,2	1	1	x	Line taken 50 m more to the starboard side due to buoy. 11:52 deviation to starboard side due to shallow area
LFP	31-10-2022	11:36	12:11:00	KO_05	0043_1135	MST2022KO_05_20221031_113642	KO_05	KO_05	304DATA/N061	128	4,601	682,8	1	1	x	
LFP	31-10-2022	12:11:00	12:49:00	KO_06	0044_1211	MST2022KO_06_20221031_121239	KO_06	KO_06	304DATA/N063	309	5,194	688,0	1	1	x	12:46 deviation of the line due to buoy and ferry.
LFP	31-10-2022	12:49:00	13:28:00	KO_07	0045_1249	MST2022KO_07_20221031_125010	KO_07	KO_07	304DATA/N065	125	4,164	692,1	1	1	x	
LFP	31-10-2022	13:28:00	14:34:00	Transit to Køge harbor	0046_1327	MST2022T_KO_20221031_132827	KO_08	KO_08	304DATA/N068		3,134	695,3	1	1	x	
LFP	31-10-2022	14:34:00		Dock at Køge harbor												End of MST 2022 survey – Leg 1

Project: MST raw material mapping 2022				Vessel: Fortuna Crane (Call sign: OZWM2)						
Location	**SVP**	**Date**	**Time (UTC)**		**Degrees**	**Minutes**	**Seconds**	**Degrees**	**Decimal minutes**	**Decimal degrees**
Lysegrund	MST_SVP01	22-10-2022	13:20	*Latitude*	56	17,7877		56	17,7877	56,29646167
	V0004 – Valeport			*Longitude*	11	50,8794		11	50,8794	11,84799
Skade Grund Øst	MST_SVP02	23-10-2022	01:50	*Latitude*	56	5,4447		56	5,4447	56,090745
	V0010 – Valeport			*Longitude*	10	37,114		10	37,114	10,61856667
Skade Grund Vest	MST_SVP03	23-10-2022	03:40	*Latitude*	56	5,828		56	5,828	56,09713333
				Longitude	10	34,3563		10	34,3563	10,572605
Nord for Fyns Hoved	MST_SVP04	23-10-2022	09:18:00	*Latitude*	55	40,769		55	40,769	55,67948333
	V0014 – Valeport			*Longitude*	10	33,689		10	33,689	10,56148333
Tragten Start	MST_SVP05	23-10-2022	14:13:00	*Latitude*	55	34,995		55	34,995	55,58325
	V0015- Valeport			*Longitude*	9	48,447		9	48,447	9,80745
Tragten End	MST_SVP06	23-10-2022	18:13:00	*Latitude*	55	33,1814		55	33,1814	55,55302333
	V0020			*Longitude*	9	46,8688		9	46,8688	9,781146667
Halk Hoved	MST_SVP07			*Latitude*	55	11,993		55	11,993	55,19988333
	V0022			*Longitude*	9	42,946		9	42,946	9,715766667
Tranesand	MST_SVP08	24-10-2022	02:00:00	*Latitude*	55	6,008		55	6,008	55,10013333
	V0023			*Longitude*	9	43,585		9	43,585	9,726416667
Lyø Sand	MST_SVP09	24-10-2022	06:40:00	*Latitude*	55	3,408		55	3,408	55,0568
	V0026			*Longitude*	10	10,858		10	10,858	10,18096667
Lyø Sand	MST_SVP10	25-10-2022	17:00	*Latitude*	55	2,699		55	2,699	55,04498333
	V0028			*Longitude*	10	12,467		10	12,467	10,20778333
Stokkebæk flak	MST_SVP11	26-10-2022	04:02:00	*Latitude*	55	9,7325		55	9,7325	55,16220833
	V0029			*Longitude*	10	49,0802		10	49,0802	10,81800333
Karrebæksminde	MST_SVP12	26-10-2022	11:30:00	*Latitude*	55	10,273		55	10,273	55,17121667
	V0032			*Longitude*	11	32,855		11	32,855	11,54758333
Rønne Banke Syd	MST_SVP13	27-10-2022	08:30:00	*Latitude*	54	49,294		54	49,294	54,82156667
	V0033			*Longitude*	14	24,462		14	24,462	14,4077
Rønne Banke Syd	MST_SVP14	27-10-2022	20:00:00	*Latitude*	54	48,4156		54	48,4156	54,80692667
	V0035			*Longitude*	14	36,0256		14	36,0256	14,60042667
Rønne Banke Syd	MST_SVP15	28-10-2022	10:20:00	*Latitude*	54	52,4077		54	52,4077	54,87346167
	V0036			*Longitude*	14	30,3952		14	30,3952	14,50658667
Rønne Banke Syd	MST_SVP16	28-10-2022	19:02:00	*Latitude*	54	53,539		54	53,539	54,89231667
	V0037			*Longitude*	14	35,559		14	35,559	14,59265
Rønne Banke Øst	MST_SVP17	28-10-2022	19:55:00	*Latitude*	54	54,997		54	54,997	54,91661667
	V0038			*Longitude*	14	44,714		14	44,714	14,74523333
Patchtest/Rønne Bank Syd	MST_SVP18	29-10-2022	16:45:00	*Latitude*	54	55,976		54	55,976	54,93293333
	No SVP recorded			*Longitude*	14	50,657		14	50,657	14,84428333
Kintegrund	MST_SVP19	29-10-2022	19:32	*Latitude*	54	58,976		54	58,976	54,98293333
	V0044			*Longitude*	14	37,095		14	37,095	14,61825
Rønne	MST_SVP20	30-10-2022	01:13:00	*Latitude*				0	0	0
	V0045 and V0046			*Longitude*				0	0	0
Norsmindehage	MST_SVP21	30-10-2022	10:30:00	*Latitude*	55	11,3242		55	11,3242	55,18873667
	V0003 and V0005			*Longitude*	12	11,75		12	11,75	12,19583333
Køge Bugt Øst	MST_SVP22	30-10-2022	16:21:00	*Latitude*	55	28,074		55	28,074	55,4679
	V0008			*Longitude*	12	34,096		12	34,096	12,56826667
Juelsgrund Øst	MST_SVP23	31-10-2022	07:02:00	*Latitude*	55	28,14		55	28,14	55,469
	No SVP recorded			*Longitude*	12	26,326		12	26,326	12,43876667
Mosede	MST_SVP24	31-10-2022	09:41	*Latitude*	55	30,923		55	30,923	55,51538333
	V0016			*Longitude*	12	21,186		12	21,186	12,3531
Køge	MST_SVP25	31-10-2022	13:49:00	*Latitude*	55	25,696		55	25,696	55,42826667
	V0017			*Longitude*	12	16,023		12	16,023	12,26705

Appendix B – Vibrocore survey log

Project: MST raw material mapping 2022														Drilling Platform: Fortuna Crane (Call sign: OZWM2)
Core	Planned position					Drilled position								Comments
	UTM Zone 32		WGS 84			UTM Zone 32		WGS 84						
	X	Y	LATITUDE	LONGITUDE	Water Depth	X	Y	LATITUDE	LONGITUDE	Water Depth	Date (UTC)	Time (UTC)	Recovery	
	m	m	Degrees Decimal minutes		m	m	m	Degrees Decimal minutes		m			m	
MO-01			55°31.811'N	12°23.845'E				55°31.802N	12°23.872E	11	01.11.2022	10:20	2,88	
KBS-01			55°27,059'N	12°30,697'E				55° 27.060N	012° 30.699E	15	04.11.2022	11:25	2,3	
GF-01			55° 03.608	012° 25.168				55° 03.627N	012° 25.149E	17	04.11.2022	15:11	4,23	
BF-09			54° 54,211	012° 31,992				54° 54.213	012° 31.996	18,7	04.11.2022	17:47	5,15	
BF-08			54° 53.816	012° 29.884				54° 53.825	012° 29.883	25,6	04.11.2022	19:00	5,25	
GR-03			54° 34.683	012° 06.422				54° 34.690	012° 06.427	16.1m	04.11.2022	23:30	5,88	
GR-14			54° 29.451	012° 09.357				54° 29.446	012° 09.363	12,9	05.11.2022	01:10	3,55	
GR-13			54° 29.280	012° 07.487				54° 29.282	012° 07.494	10	05.11.2022	02:00	3,63	
GR-12			54°31,294	011° 53.571				54° 31.309	011° 53.595	7,4	05.11.2022	03:00	2,9	
GR-15			54°30.365	011° 52.747				54° 30.379	011° 52.760	11,1	05.11.2022	04:03	4	
568-019-01			54° 29.673	011° 27.721				54° 29.712	011° 27.727	28,1	05.11.2022	06:42	5,4	
KN-02			54° 42.211	010° 43.363				54° 42.235	010° 43.366	10,6	05.11.2022	11:46	3,66	Large rock jammed into core bit, blocking further recovery, but happened in glacial clay after targeted sand horizons
KN-03			54° 42.184	010° 42.618				54° 42.186	010° 42.627	11,5	05.11.2022	13:40	5,65	
VF-08			54° 46.756	010° 33.206				54° 46.754	010° 33.220	11,5	05.11.2022	14:25	5	
VFN-01			54° 47.796	010° 25.381				54° 47.816	010° 25.373	18,1	05.11.2022	16:55	5,75	
VFN-02			54° 45.595	010° 26.345				54° 45.581	010° 26.366	11	05.11.2022	18:04	5,3	
VF-03			54° 44.806	010° 26.870				54° 44.816	010° 26.867	9,5	05.11.2022	19:00	4,62	
VF-05			54° 44.594	010° 25.952				54° 44.591	010° 25.967	9,1	05.11.2022	21:10	1	Mishap with ship running over vibracore tower and damaging it
TR-01			55° 34.838	009° 48.854				55° 34.866	009° 48.815	8	06.11.2022	13:05	3,8	Cores marked TR-4, but changed to TR-01 during description and reporting
TSV-01			55° 37.563	010° 22.555				55° 37.557	010° 22.571	10,4	06.11.2022	14:52	2,13	Originally named TV-01. Marked TSV-01 on map & cores. TSV=Tørresø Vest
TSV-02			55° 37.024	010° 25.412				55° 37.022	010° 25.389	12,4	06.11.2022	15:54	1	Originally named TV-02. Marked TSV-02 on map & cores. TSV=Tørresø Vest
TS-01			55° 36.592	010° 26.653				55° 36.581	010° 26.635	12	06.11.2022	16:49	3,45	Originally named TO-01. Marked TS-01 on map & cores. TS = Tørresø
HM-02			55° 33.809	010° 31.689				55° 33.806	010° 31.644	12,7	06.11.2022	18:05	2	Cobble jammed into core bit inhibiting recovery, but was moraine clay
HM-01			55° 34.562	010° 31.853				55° 34.564	010° 31.893	15,6	06.11.2022	19:06	4,87	
544-18A-02			55° 26.311	010° 43.240				55° 26.309	010° 43.249	13,1	07.11.2022	08:51	2,9	
544-18A-01			55° 25.776	010° 43.798				55° 25.784	010° 43.795	14	07.11.2022	09:52	5,8	
544-18B-01			55° 24.359	010° 44.856				55° 24.363	010° 44.876	8	07.11.2022	10:58	5,5	
544-18C-01			55° 23.448	010° 46.972				55° 23.465	010° 46.967	14,1	07.11.2022	12:03	4,7	
544-23A-01			55° 27.624	010° 45.497				55° 27.633	010° 45.496	6,9	07.11.2022	13:37	5	
544-001B			55° 27.624	010° 45.497				55° 29.480	010° 52.537	27,4	07.11.2022	15:16	2	
RS-02			55° 30.482	010° 49.325				55° 30.479	010° 49.342	18	07.11.2022	16:17	5	
RS-03			55° 31.329	010° 48.656				55° 31.323	010° 48.683	19	07.11.2022	17:38	1,9	10cm granitic rock stuck in core bit, but was in Moraine clay.
FHN-01			55° 39.820	010° 35.622				55° 39.824	010° 35.628	18,4	07.11.2022	21:05	5,9	
FHN-02			55° 40.419	010° 34.330				55° 40.425	010° 34.333	14,4	07.11.2022	22:02	4,45	
504-007-01			55° 39.242	010° 43.978				55° 39.253	010° 43.999	29,1	08.11.2022	00:23	5,65	
LG-02			55° 36.129	010° 54.708				55° 36.132	010° 54.651	13,1	08.11.2022	02:03	5,9	
544-027B-01			55° 38.123	010° 58.348				55° 38,128	010° 58,328	15,6	08.11.2022	09:53	4,6	
544-027F-01			55° 36.949	011° 05.743				55° 36.954	011° 05.726	9	08.11.2022	11:30	6	
544-027D-01			55° 35.882	010° 59.387				55° 35.890	010° 59.377	13	08.11.2022	12:53	5	
SK-01			55° 34.956	010° 44.122				55° 34.956	010° 44.138	21,4	08.11.2022	14:46	5,85	
MS-03			55° 27.317	011° 02.856				55° 27.321	011° 02.852	20	08.11.2022	17:08	4,68	
MS-01			55° 27,377	011° 04.302				55° 27.334	011° 04.286	7,8	08.11.2022	18:04	2,23	
544-025B-01			55° 28.918	011° 07.689							08.11.2022			No anchor traction to hold ship in place - aborted
SF-01			55° 09.531	010° 49.106				55° 09.535	010° 49.114	12,3	08.11.2022	23:15	4,23	
544-009-01			55° 09.379	011° 03.707				55° 09.392	011° 03.679	23,9	09.11.2022	01:45	5,32	
KM-01											09.11.2022	08:20		No anchor traction to hold ship in place - aborted
GS-02			54° 54.098	012° 02.071				54° 54.091	012° 02.048	17,7	09.11.2022	11:02	5,15	
GS-01			54° 53.848	012° 02.423				54° 53.847	012° 02.447	9,8	09.11.2022	13:08	5,15	Much difficulty getting anchors to hold
KM-02			55° 10.292	011° 34.476				55° 10.307	011° 34.461	8,6	09.11.2022	17:23	3,4	Substitute position for KM-01 (where anchors did not hold)
TK-01			55° 00.745	010° 54.867				55° 00.752	010° 54.866	9,1	09.11.2022	22:02	5,15	
TK-02			54° 59.598	010° 55.427				54° 59.595	010° 55.451	16,7	09.11.2022	22:57	1,8	
VF-02			54° 43.050	010° 17.704				54° 43.066	010° 17.714	20	10.11.2022	04:30	5,25	
LS-01			55° 02.880	010° 11.985				55° 02.879	010° 11.984	9,5	10.11.2022	07:54	4,5	
TRS-01			55° 05.608	009° 44.483				55° 05.618	009° 44.479	10,5	10.11.2022	10:23	5,55	North of Als. Orignally named TS-01
HH-01			55° 11.524	009° 42.344				55° 11.533	009° 42.355	10,3	10.11.2022	11:49	1,9	

Danish Ministry of Climate,
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