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Short Cruise Report

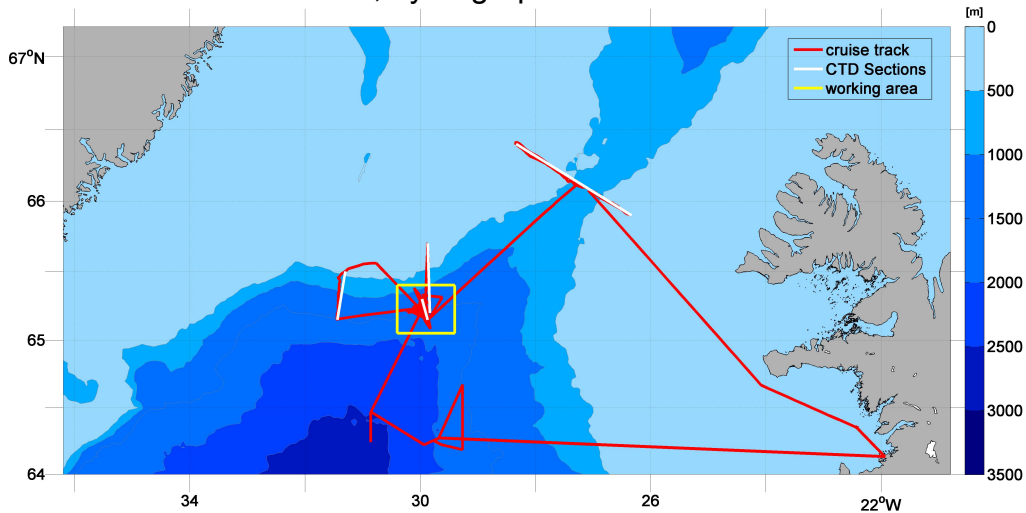
R/V MARIA S. MERIAN Cruise MSM21-1b

Reykjavik – Reykjavik, 9 June – 22 June, 2012

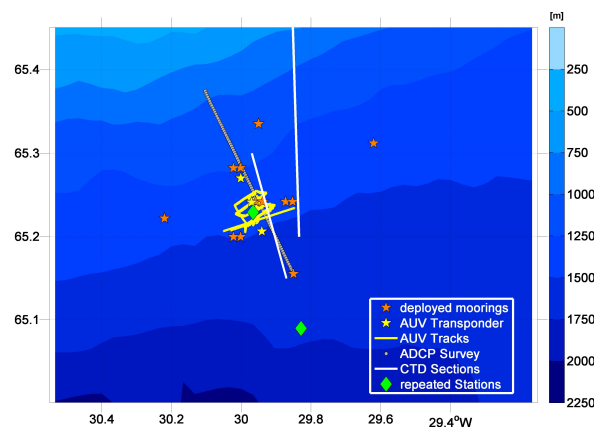
Chief Scientist: Torsten Kanzow

Captain: Ralf Schmidt

MSM21/1b cruise track, hydrographic sections and main work area



MSM21/1b stations covered in main work area



Objectives

The R/V Maria S. Merian cruise MSM21/1b was carried out jointly by GEOMAR Kiel and the Institut für Meereskunde at the Centre for Marine and Atmospheric Sciences of Hamburg University. Scientists and technicians from the Atlantic Branch of the Shirshov Institute for Oceanology (Kaliningrad, Russia) and the Finnish Meteorological Institute (Helsinki; Finland) also participated in the cruise.

The measurements mainly contributed to three projects:

- “Nordatlantik”, funded by the German Ministry of Education and Research (BMBWF)
- “THOR”, funded by the European Commission within the framework of FP7
- “Valley Mixing”, funded by the Deutsche Forschungsgemeinschaft (DFG)

The main objectives of the cruise were to characterize the spatio-temporal variability of the Denmark Strait overflow and to identify processes responsible for the exchange of the overflow plume with ambient water downstream of Denmark Strait. A multi-platform approach was taken to achieve the goals, based on moorings, an autonomous underwater vehicle (AUV), as well as lowered and vessel-mounted observations. From these platforms, measurements of temperature, salinity, dissolved oxygen, current velocity, dissipation of turbulent kinetic energy, and bottom pressure were obtained. Altogether, twelve moorings were deployed, one mooring was recovered, data from two PIES were uploaded via acoustic telemetry, turbulence measurements on six extended AUV dives were carried out, and 92 CTD / LADCP casts were taken, 25 of which had additionally been equipped with a profiling turbulence (MSS) probe. Along with this, underway data of surface hydrography and current velocity were collected throughout the cruise.

Narrative

On Saturday, June 9, 2012, R/V Maria S. Merian left Reykjavik at 8 am. After a successful one-hour test dive of the AUV Abyss in calm seas in the bay of Reykjavik, we steamed toward Denmark Strait – our first work area. Fortunately, the 38 KHz ADCP with the beamformer board from FS Meteor installed during the port stop in Reykjavik prove to work reliably.

In Denmark Strait, we commenced our work in the early morning of June 10, by uploading data from a PIES via acoustic telemetry, which had been deployed approximately one year earlier. After that we carried out a CTD/LADCP section across Denmark Strait, starting from the southeast, measuring both the warm, saline Irminger current and the cold, dense Denmark Strait overflow. Ice coverage made it impossible to complete the three northern-most stations on the Greenland side of the strait. On the way an ADCP mooring was recovered after one year of operation. We concluded our work in Denmark Strait after having uploaded one year’s worth of data via acoustic telemetry from a second PIES.

In calms seas, in the evening of June 11, we arrived in the second work area, located on the Greenland continental slope southwest of Denmark Strait. We stayed in this area with short interruptions until June 20. Here, the overflow plume exhibits an intense exchange with ambient Atlantic waters, accomplished by both lateral and

vertical mixing. First CTD casts used for both mooring release tests and the calibration of instruments to be moored were carried out. In the central part of the planned mooring cluster both 3 transponders to be used as AUV navigation aids were deployed. Subsequently, a topographic survey using R/V Merian's swath echo sounder was carried out, to guide the planning of AUV missions in this area.

In the evening of June 12 we deployed 4 ADCP moorings. Later that evening the AUV Abyss – equipped with a microstructure (turbulence) probe and a conventional CTD – was launched for its first extended mission in the overflow. After completion, the AUV was recovered approximately twelve hours later in the morning of June 13. To determine the stratification, parallel to the AUV mission local CTD / LADCP casts were carried out. The special aspect about our CTD casts is, that on some of them a profiling microstructure turbulence sensor (MSS) was used (similar to that attached to the AUV), whose release from the CTD frame at a desired depth was triggered via the CTD deck unit. In the following days we completed the mooring cluster, which consists of a total of twelve moorings in our approximately 20 nm by 12 nm wide work area. The moorings are to be recovered approximately two months later by R/V Poseidon. We carried out repeated CTD / LADCP / MSS measurements at two sites, with one located near the center of the mooring cluster, and the other south of this location, near the offshore limit of the overflow plume. In parallel, AUV missions with different configurations were carried out in the overflow plume, of which in total 5 missions were successful.

In addition, near the work area, we carried out measurements along two sections from the Greenland shelf down the continental slope. Surprisingly, in the western (downstream) one, completed on June 15, water with densities in excess of 27.9 kg m^{-3} were found in a bottom layer extending all the way from the shelf down into the overflow plume. To establish the origin of the dense water, on June 18 we carried out CTD /LADCP measurements along a second section down the Greenland continental slope, located 35 nm east of the first one. In between the two sections there was a pronounced topographic depression in the Greenland shelf. The data from the second section did not show water with densities in excess of 27.8 kg m^{-3} and 27.9 kg m^{-3} at water depths shallower than 800 m and 1400 m, respectively. After having recovered the AUV navigation transponders, we left the main work area in the evening of June 20, to carry out a calibration of the EM120 swath echo sounder. After the completion of this task, we steamed back to Reykjavik where we arrived in the morning of June 22.

Acknowledgements

We would like to thank the captain of R/V Maria S. Merian, Ralf Schmidt, and his entire crew. Without the professionalism and dedication with which all tasks were accomplished by the bridge, deck, engine, IT, and service personnel, the success of this cruise would not have been possible. The capabilities of both the crew and the vessel to operate in partly ice-covered seas, prove very important to reach our goals. We would further like to thank our funding agencies DFG, BMWF and EU, which made the work possible in the first place. The AUV operations were funded out of the "Großgeräte" budget from the DFG. We are indebted to Johannes Karstensen (GEOMAR), the principal scientist during the preceding cruise MSM21/1a, for handing over to us a fully operational CTD / LADCP system. We would also like to

express our gratitude to the many persons who were involved in the preparation of the cruise, and to those who assisted us with advice during the cruise. This includes the Leitstelle (Hamburg) and the staff of R/V Meteor, who jointly provided us with an electronic board required to operate the vessel-mounted 38 KHz ADCP aboard R/V Maria S. Merian. A special thanks goes to the tremendously calm seas throughout the cruise that everyone on board enjoyed.

List of Participants

	Name	Operation	Institute
1	Torsten Kanzow	Chief scientist	GEOMAR
2	Klas Lackschewitz	AUV team leader	GEOMAR
3	Uwe Koy	Instrument technician	GEOMAR
4	Sandra Tippenhauer	AUV Microstructure; CTD watch	GEOMAR
5	Marcel Rothenbeck	AUV engineer	GEOMAR
6	Jan Sticklus	AUV engineer	GEOMAR
7	Momme Deutschmann	AUV engineer	GEOMAR
8	Nadine Mengis	CTD watch; underway data; calibration	GEOMAR
9	Kerstin Jochumsen	LADCP&hydrography analysis, CTD watch	IFM HH
10	Detlef Quadfasel	Moorings; CTD watch; EM120 calibration	IFM HH
11	Ulrich Drübbisch	Mooring technician; CTD watch	IFM HH
12	Andreas Welsch	Mooring technician, CTD watch	IFM HH
13	Nuno Nunes	Oxygen titration; VMADCP; CTD watch	IFM HH
14	Bert Rudels	CTD watch; hydrography analysis	FMI; HU
14	Tina Rabenseifner	CTD watch, salinometry	Leitstelle
15	Vadim Paka	Microstructure	AB-SIO
16	Vladimir Baranov	Microstructure	AB-SIO
17	Kari Guddal	CTD watch; Arts	---

GEOMAR: Helmholtz Centre for Ocean Research Kiel, Germany

IFM HH: Institut für Meereskunde at the Centre for Marine and Atmospheric Sciences of Hamburg University

FMI; HU: Finnish Meteorological Institute; Helsinki University, Finland

AB-SIO: Atlantic Branch of Shirshov Institute of Oceanology, Kaliningrad, Russia

Moorings MSM21/1-1

Recovery

Mooring No.	Recovery date	Time UTC	Latitude	Longitude	Depth
DS02-11 ADCP	09.06.2012	18:24	66°07.23'N	027°16.19'W	571 m

Deployments

Mooring No.	Deployment date	Time UTC	Latitude	Longitude	Depth
DS08 ADCP	12.06.2012	18:15	65°16,94'N	030°00,11'W	1285 m
DS09 ADCP	12.06.2012	19:15	65°11,97'N	030°00,10'W	1486 m
DS10 ADCP	12.06.2012	19:58	65°14,51'N	029°57,51'W	1419m
DS11 ADCP	12.06.2012	20:40	65°14,51'N	029°52,35'W	1458m
DS12 RCM	13.06.2012	16:38	65°20,13'N	029°57,00'W	1186m
DS13 RCM	13.06.2012	15:23	65°18,71'N	029°37,20'W	1366m
DS14 RCM	13.06.2012	14:00	65°09,30'N	029°51,00'W	1641m
DS15 RCM	13.06.2012	12:41	65°13,31'N	030°13,20'W	1437m
DS16 MC	14.06.2012	14:43	65°16,80'n	030°00,12'w	1292m
DS17 MC	14.06.2012	13:12	65°14,34'N	029°52,35'W	1456m
DS18 MC	14.06.2012	09:05	65°11,80'N	030°00,16'W	1452m
DS19 MC	16.06.2012	07:21	65°14,34'N	029°57,51'W	1410m

ADCP - acoustic Doppler Current profiler and Microcat

RCM - Aanderaa Currentmeter and Microcat

MC - Micocats, temperature recorders; in DS19 also current meters (Aquadop and ADCP)

Station List

EXPO CODE	Stat No.	Cast No.	Type	Date dd.mm.yyyy	Time UTC-Code	Position Latitude	Longitude	Bottom depth	Max. depth	Bottom dist.	Comments
MSM21/1b	300	1	RO/CTD/ADCP	09.06.2012	13:00	BE 64° 21.06' N	22° 24.67' W	65.0			Test CTD
MSM21/1b	300	1	RO/CTD/ADCP	09.06.2012	13:02	BO 64° 21.05' N	22° 24.72' W	65.0	55	9	Test CTD
MSM21/1b	300	1	RO/CTD/ADCP	09.06.2012	13:08	EN 64° 21.06' N	22° 24.67' W	65.0			
MSM21/1b	301	1	PIES	10.06.2012	03:09	BE 66° 4.58' N	27° 4.87' W	1322.2			Hydrophone
MSM21/1b	301	1	PIES	10.06.2012	06:23	EN 66° 4.57' N	27° 4.91' W	1360.6			Hydrophone on deck
MSM21/1b	302	1	RO/CTD/ADCP	10.06.2012	08:22	BE 65° 53.97' N	26° 20.06' W	283			LADCP #680 installed
MSM21/1b	302	1	RO/CTD/ADCP	10.06.2012	08:32	BO 65° 53.97' N	26° 20.05' W		277	8	
MSM21/1b	302	1	RO/CTD/ADCP	10.06.2012	08:42	EN 65° 53.97' N	26° 20.05' W	1679.7			
MSM21/1b	303	1	RO/CTD/ADCP	10.06.2012	09:06	BE 65° 54.99' N	26° 26.07' W	282.6			
MSM21/1b	303	1	RO/CTD/ADCP	10.06.2012	09:15	BO 65° 54.99' N	26° 26.07' W		274	9	
MSM21/1b	303	1	RO/CTD/ADCP	10.06.2012	09:25	EN 65° 54.99' N	26° 26.07' W	0			
MSM21/1b	304	1	RO/CTD/ADCP	10.06.2012	09:50	BE 65° 57.01' N	26° 32.20' W	286			
MSM21/1b	304	1	RO/CTD/ADCP	10.06.2012	09:59	BO 65° 57.01' N	26° 32.20' W		279	8	
MSM21/1b	304	1	RO/CTD/ADCP	10.06.2012	10:10	EN 65° 57.01' N	26° 32.20' W	0			
MSM21/1b	305	1	RO/CTD/ADCP	10.06.2012	10:54	BE 65° 59.02' N	26° 39.18' W	285.5			
MSM21/1b	305	1	RO/CTD/ADCP	10.06.2012	11:03	BO 65° 59.02' N	26° 39.18' W		276	10	
MSM21/1b	305	1	RO/CTD/ADCP	10.06.2012	11:13	EN 65° 59.03' N	26° 39.19' W	0			
MSM21/1b	306	1	RO/CTD/ADCP	10.06.2012	11:39	BE 66° 0.01' N	26° 45.16' W	371.9			
MSM21/1b	306	1	RO/CTD/ADCP	10.06.2012	11:49	BO 66° 0.03' N	26° 45.20' W		363	9	
MSM21/1b	306	1	RO/CTD/ADCP	10.06.2012	12:00	EN 66° 0.13' N	26° 45.12' W	1650.7			
MSM21/1b	307	1	RO/CTD/ADCP	10.06.2012	12:29	BE 66° 2.00' N	26° 52.01' W	539			
MSM21/1b	307	1	RO/CTD/ADCP	10.06.2012	12:42	BO 66° 2.10' N	26° 51.88' W		527	9	
MSM21/1b	307	1	RO/CTD/ADCP	10.06.2012	12:57	EN 66° 2.25' N	26° 51.72' W				
MSM21/1b	308	1	RO/CTD/ADCP	10.06.2012	13:33	BE 66° 2.99' N	26° 57.04' W	596.0			W/MSS. Aborted. (MSS)
MSM21/1b	308	1	RO/CTD/ADCP	10.06.2012	13:35	BO 66° 2.99' N	26° 57.04' W				W/MSS. Aborted. (MSS)
MSM21/1b	308	1	RO/CTD/ADCP	10.06.2012	14:02	EN 66° 3.21' N	26° 57.02' W				W/MSS. Aborted. (MSS)
MSM21/1b	308	2	RO/CTD/ADCP	10.06.2012	14:26	BE 66° 3.00' N	26° 57.03' W	596			
MSM21/1b	308	2	RO/CTD/ADCP	10.06.2012	14:42	BO 66° 3.19' N	26° 56.92' W		592	4	
MSM21/1b	308	2	RO/CTD/ADCP	10.06.2012	14:58	EN 66° 3.35' N	26° 56.71' W	0			

MSM21/1b	309	1	RO/CTD/ADCP	10.06.2012	15:38	BE	66°	5.00'	N	27°	4.01'	W	660			
MSM21/1b	309	1	RO/CTD/ADCP	10.06.2012	15:56	BO	66°	5.02'	N	27°	3.99'	W		647	7	
MSM21/1b	309	1	RO/CTD/ADCP	10.06.2012	16:15	EN	66°	5.09'	N	27°	3.93'	W	0			
MSM21/1b	310	1	RO/CTD/ADCP	10.06.2012	16:47	BE	66°	5.98'	N	27°	9.95'	W	631.2			
MSM21/1b	310	1	RO/CTD/ADCP	10.06.2012	17:05	BO	66°	5.89'	N	27°	10.06'	W		623	9	
MSM21/1b	310	1	RO/CTD/ADCP	10.06.2012	17:21	EN	66°	5.73'	N	27°	10.30'	W	0			
MSM21/1b	311	1	BOTTOM ADCP	10.06.2012	17:55	BE	66°	6.83'	N	27°	16.74'	W				Hydrophone
MSM21/1b	311	1	BOTTOM ADCP	10.06.2012	18:24	EN	66°	6.52'	N	27°	17.01'	W				Hydrophone
MSM21/1b	312	1	RO/CTD/ADCP	10.06.2012	18:40	BE	66°	6.95'	N	27°	17.07'	W	577.6			
MSM21/1b	312	1	RO/CTD/ADCP	10.06.2012	18:56	BO	66°	6.79'	N	27°	17.35'	W		570	11	
MSM21/1b	312	1	RO/CTD/ADCP	10.06.2012	19:13	EN	66°	6.46'	N	27°	17.80'	W	0			
MSM21/1b	313	1	RO/CTD/ADCP	10.06.2012	19:47	BE	66°	8.96'	N	27°	23.04'	W	514.7			w/MSS. (failed)
MSM21/1b	313	1	RO/CTD/ADCP	10.06.2012	20:01	BO	66°	8.75'	N	27°	23.60'	W		480	18	w/MSS. (failed)
MSM21/1b	313	1	RO/CTD/ADCP	10.06.2012	20:34	EN	66°	8.25'	N	27°	24.32'	W				w/MSS. (failed)
MSM21/1b	314	1	RO/CTD/ADCP	10.06.2012	21:21	BE	66°	9.97'	N	27°	29.05'	W	488			
MSM21/1b	314	1	RO/CTD/ADCP	10.06.2012	21:34	BO	66°	9.84'	N	27°	29.34'	W		474	9	
MSM21/1b	314	1	RO/CTD/ADCP	10.06.2012	21:47	EN	66°	9.66'	N	27°	29.63'	W				
MSM21/1b	315	1	RO/CTD/ADCP	10.06.2012	22:23	BE	66°	11.96'	N	27°	35.05'	W	489.5			
MSM21/1b	315	1	RO/CTD/ADCP	10.06.2012	22:36	BO	66°	11.89'	N	27°	35.10'	W		477	10	
MSM21/1b	315	1	RO/CTD/ADCP	10.06.2012	22:47	EN	66°	11.76'	N	27°	35.18'	W				
MSM21/1b	316	1	RO/CTD/ADCP	10.06.2012	23:55	BE	66°	15.97'	N	27°	49.93'	W	461			
MSM21/1b	316	1	RO/CTD/ADCP	11.06.2012	00:07	BO	66°	15.97'	N	27°	49.93'	W		447	10	
MSM21/1b	316	1	RO/CTD/ADCP	11.06.2012	00:19	EN	66°	15.97'	N	27°	49.93'	W	0			
MSM21/1b	317	1	RO/CTD/ADCP	11.06.2012	01:26	BE	66°	18.98'	N	28°	6.02'	W	444.4			
MSM21/1b	317	1	RO/CTD/ADCP	11.06.2012	01:37	BO	66°	18.99'	N	28°	6.02'	W		332	10	
MSM21/1b	317	1	RO/CTD/ADCP	11.06.2012	01:46	EN	66°	18.99'	N	28°	6.02'	W	0			
MSM21/1b	318	1	RO/CTD/ADCP	11.06.2012	03:38	BE	66°	23.96'	N	28°	20.01'	W	330			
MSM21/1b	318	1	RO/CTD/ADCP	11.06.2012	03:47	BO	66°	23.96'	N	28°	20.02'	W		316	10	
MSM21/1b	318	1	RO/CTD/ADCP	11.06.2012	03:58	EN	66°	23.96'	N	28°	20.02'	W	0			
MSM21/1b	319	1	PIES	11.06.2012	09:51	BE	66°	7.23'	N	27°	16.16'	W	577			Hydrophone
MSM21/1b	319	1	PIES	11.06.2012	12:36	EN	66°	7.23'	N	27°	16.15'	W				Hydrophone on deck
MSM21/1b	320	1	RO/CTD/ADCP	11.06.2012	21:47	BE	65°	8.99'	N	29°	52.21'	W	1633			
MSM21/1b	320	1	RO/CTD/ADCP	11.06.2012	22:18	BO	65°	8.98'	N	29°	52.22'	W		1628	8	
MSM21/1b	320	1	RO/CTD/ADCP	11.06.2012	23:26	EN	65°	8.98'	N	29°	52.21'	W	0			

MSM21/1b	321	1	RO/CTD/ADCP	12.06.2012	00:06	BE	65° 11.98' N	29° 54.00' W	1533			Release Test.
MSM21/1b	321	1	RO/CTD/ADCP	12.06.2012	00:36	BO	65° 11.98' N	29° 54.01' W		1525	9	Release Test.
MSM21/1b	321	1	RO/CTD/ADCP	12.06.2012	01:17	EN	65° 11.98' N	29° 54.00' W				Release Test.
MSM21/1b	322	1	MB+PS	12.06.2012	01:48	BE	65° 14.43' N	29° 47.86' W	1470.8			COG 252° 8 kn SOG
MSM21/1b	322	1	MB+PS	12.06.2012	04:15	EN	65° 16.86' N	29° 50.29' W	1376.7			COG 252° 8 kn SOG
MSM21/1b	323	1	TRANS	12.06.2012	04:55	BE	65° 15.99' N	29° 59.54' W	1324.5			Transponder deployed
MSM21/1b	323	1	TRANS	12.06.2012	04:57	EN	65° 16.05' N	29° 59.53' W	1322.1			Transponder deployed
MSM21/1b	324	1	TRANS	12.06.2012	05:34	BE	65° 14.18' N	29° 58.14' W	1409.2			Transponder deployed
MSM21/1b	324	1	TRANS	12.06.2012	05:41	EN	65° 14.31' N	29° 57.87' W	1407.7			Transponder deployed
MSM21/1b	325	1	TRANS	12.06.2012	06:11	BE	65° 12.15' N	29° 56.46' W				Transponder deployed
MSM21/1b	325	1	TRANS	12.06.2012	06:16	EN	65° 12.26' N	29° 56.31' W				Transponder deployed
MSM21/1b	325	1	TRANS	12.06.2012	06:51	BE	65° 12.63' N	29° 56.35' W				Transponder/Triangul.
MSM21/1b	325	1	TRANS	12.06.2012	07:59	EN	65° 12.42' N	29° 57.57' W				Transponder/Triangul.
MSM21/1b	324	1	TRANS	12.06.2012	08:17	BE	65° 13.77' N	29° 57.71' W				Transponder/Triangul.
MSM21/1b	324	1	TRANS	12.06.2012	09:37	EN	65° 14.74' N	29° 56.86' W				Transponder/Triangul.
MSM21/1b	323	1	TRANS	12.06.2012	09:50	BE	65° 15.67' N	29° 58.82' W				Transponder/Triangul.
MSM21/1b	323	1	TRANS	12.06.2012	11:08	EN	65° 16.73' N	29° 59.30' W				Transponder/Triangul.
MSM21/1b	326	1	RO/CTD/ADCP	12.06.2012	12:06	BE	65° 14.99' N	29° 55.84' W	1402			Release test
MSM21/1b	326	1	RO/CTD/ADCP	12.06.2012	12:22	BO	65° 14.99' N	29° 55.84' W	1402	1390	9	Release test
MSM21/1b	326	1	RO/CTD/ADCP	12.06.2012	12:50	EN	65° 14.99' N	29° 55.84' W	1402			Release test
MSM21/1b	327	1	RO/CTD/ADCP	12.06.2012	13:16	BE	65° 18.00' N	29° 58.18' W	1260.0			
MSM21/1b	327	1	RO/CTD/ADCP	12.06.2012	13:44	BO	65° 18.00' N	29° 58.17' W		1244	10	
MSM21/1b	327	1	RO/CTD/ADCP	12.06.2012	14:43	EN	65° 18.00' N	29° 58.17' W	0.0			
MSM21/1b	328	1	VMADCP	12.06.2012	15:22	BE	65° 22.45' N	30° 6.21' W				VMADCP survey COG 154°
MSM21/1b	328	1	VMADCP	12.06.2012	16:51	EN	65° 9.28' N	29° 50.97' W				VMADCP survey COG 154°
MSM21/1b	329	1	B-ADCP	12.06.2012	18:08	BE	65° 16.93' N	30° 0.14' W	1285.5			Bottom ADCP
MSM21/1b	329	1	B-ADCP	12.06.2012	18:15	EN	65° 16.93' N	30° 0.14' W	1286.4			Bottom ADCP
MSM21/1b	330	1	B-ADCP	12.06.2012	19:12	BE	65° 11.97' N	30° 0.12' W	1485.5			Bottom ADCP
MSM21/1b	330	1	B-ADCP	12.06.2012	19:15	EN	65° 11.97' N	30° 0.12' W	1482.4			Bottom ADCP
MSM21/1b	331	1	B-ADCP	12.06.2012	19:54	BE	65° 14.51' N	29° 57.53' W	1418.9			Bottom ADCP
MSM21/1b	331	1	B-ADCP	12.06.2012	19:58	EN	65° 14.51' N	29° 57.53' W	1418.6			Bottom ADCP

MSM21/1b	332	1	B-ADCP	12.06.2012	20:36	BE	65°	14.51'	N	29°	52.37'	W	1456.3			Bottom ADCP
MSM21/1b	332	1	B-ADCP	12.06.2012	20:40	EN	65°	14.51'	N	29°	52.37'	W	1458			Bottom ADCP
MSM21/1b	333	1	AUV	12.06.2012	22:01	BE	65°	12.80'	N	29°	57.99'	W	1236.6			AUV in water
MSM21/1b	334	1	RO/CTD/ADCP	12.06.2012	23:52	BE	65°	14.09'	N	29°	57.52'	W	1418.3			w/MMS
MSM21/1b	334	1	RO/CTD/ADCP	13.06.2012	00:20	BO	65°	14.09'	N	29°	57.52'	W	1405	10		w/MMS
MSM21/1b	334	1	RO/CTD/ADCP	13.06.2012	01:19	EN	65°	14.14'	N	29°	57.94'	W				w/MMS
MSM21/1b	334	2	RO/CTD/ADCP	13.06.2012	02:10	BE	65°	14.10'	N	29°	57.51'	W	1418.0			w/MSS. (failed)
MSM21/1b	334	2	RO/CTD/ADCP	13.06.2012	02:38	BO	65°	14.10'	N	29°	57.51'	W	1408	7		w/MSS. (failed)
MSM21/1b	334	2	RO/CTD/ADCP	13.06.2012	03:24	EN	65°	14.10'	N	29°	57.51'	W				w/MSS. (failed)
MSM21/1b	334	3	RO/CTD/ADCP	13.06.2012	04:38	BE	65°	14.10'	N	29°	57.51'	W	1418.0			w/MSS
MSM21/1b	334	3	RO/CTD/ADCP	13.06.2012	05:07	BO	65°	14.10'	N	29°	57.51'	W	1407	9		w/MSS
MSM21/1b	334	3	RO/CTD/ADCP	13.06.2012	06:06	EN	65°	13.95'	N	29°	58.10'	W				w/MSS
MSM21/1b	334	4	RO/CTD/ADCP	13.06.2012	06:44	BE	65°	14.10'	N	29°	57.51'	W	1418.0			w/MSS
MSM21/1b	334	4	RO/CTD/ADCP	13.06.2012	06:44	BO	65°	14.10'	N	29°	57.51'	W	1407	2		w/MSS
MSM21/1b	334	4	RO/CTD/ADCP	13.06.2012	08:12	EN	65°	14.01'	N	29°	58.00'	W				w/MSS
MSM21/1b	334	5	RO/CTD/ADCP	13.06.2012	08:29	BE	65°	14.06'	N	29°	57.74'	W	1417			
MSM21/1b	334	5	RO/CTD/ADCP	13.06.2012	08:57	BO	65°	14.06'	N	29°	57.74'	W	1407	9		
MSM21/1b	334	5	RO/CTD/ADCP	13.06.2012	09:28	EN	65°	14.06'	N	29°	57.74'	W	0			
MSM21/1b	333	1	AUV	13.06.2012	11:14	EN	65°	12.37'	N	29°	58.56'	W				AUV on boar
MSM21/1b	335	1	MOR	13.06.2012	12:08	BE	65°	12.27'	N	30°	13.02'	W	1436.8			
MSM21/1b	335	1	MOR	13.06.2012	12:41	EN	65°	13.33'	N	30°	13.20'	W	1384.4			
MSM21/1b	336	1	MOR	13.06.2012	13:48	BE	65°	8.91'	N	29°	51.01'	W	1641.			
MSM21/1b	336	1	MOR	13.06.2012	14:00	EN	65°	9.30'	N	29°	51.01'	W	1630.			
MSM21/1b	337	1	MOR	13.06.2012	15:12	BE	65°	18.34'	N	29°	37.21'	W				
MSM21/1b	337	1	MOR	13.06.2012	15:23	EN	65°	18.71'	N	29°	37.21'	W	1366.1			
MSM21/1b	338	1	MOR	13.06.2012	16:24	BE	65°	19.70'	N	29°	57.00'	W	1202.3			
MSM21/1b	338	1	MOR	13.06.2012	16:38	EN	65°	20.14'	N	29°	57.00'	W	1185.9			
MSM21/1b	339	1	RO/CTD/ADCP	13.06.2012	18:18	BE	65°	5.36'	N	29°	49.68'	W	1749.7			now w/HH LADCP upward
MSM21/1b	339	1	RO/CTD/ADCP	13.06.2012	18:53	BO	65°	5.35'	N	29°	49.69'	W	1738	9		now w/HH LADCP upward
MSM21/1b	339	1	RO/CTD/ADCP	13.06.2012	19:27	EN	65°	5.36'	N	29°	49.70'	W				now w/HH LADCP upward
MSM21/1b	339	2	RO/CTD/ADCP	13.06.2012	19:54	BE	65°	5.36'	N	29°	49.70'	W	1750			Yoyo CTD w/MSS.
MSM21/1b	339	2	RO/CTD/ADCP	13.06.2012	20:28	BO	65°	5.36'	N	29°	49.70'	W	1737	9		Yoyo CTD w/MSS.

MSM21/1b	339	2	RO/CTD/ADCP	13.06.2012	21:17	EN	65°	5.30'	N	29° 49.70'	W				Yoyo CTD w/MSS.
MSM21/1b	339	3	RO/CTD/ADCP	13.06.2012	22:21	BE	65°	5.29'	N	29° 49.78'	W	1754			Yoyo CTD w/MSS.
MSM21/1b	339	3	RO/CTD/ADCP	13.06.2012	22:56	BO	65°	5.29'	N	29° 49.78'	W		1742	9	Yoyo CTD w/MSS.
MSM21/1b	339	3	RO/CTD/ADCP	13.06.2012	23:45	EN	65°	5.22'	N	29° 49.80'	W				Yoyo CTD w/MSS.
MSM21/1b	339	4	RO/CTD/ADCP	14.06.2012	00:44	BE	65°	5.36'	N	29° 49.70'	W	1754			w/MSS
MSM21/1b	339	4	RO/CTD/ADCP	14.06.2012	01:20	BO	65°	5.36'	N	29° 49.70'	W		1740	6	w/MSS
MSM21/1b	339	4	RO/CTD/ADCP	14.06.2012	02:08	EN	65°	5.36'	N	29° 49.70'	W				w/MSS
MSM21/1b	339	5	RO/CTD/ADCP	14.06.2012	03:32	BE	65°	5.36'	N	29° 49.70'	W	1754			w/MSS
MSM21/1b	339	5	RO/CTD/ADCP	14.06.2012	04:08	BO	65°	5.36'	N	29° 49.70'	W		1738	9	w/MSS
MSM21/1b	339	5	RO/CTD/ADCP	14.06.2012	04:54	EN	65°	5.36'	N	29° 49.70'	W				w/MSS
MSM21/1b	339	6	RO/CTD/ADCP	14.06.2012	05:57	BE	65°	5.36'	N	29° 49.70'	W				w/MSS
MSM21/1b	339	6	RO/CTD/ADCP	14.06.2012	06:30	BO	65°	5.36'	N	29° 49.70'	W		1738	8	w/MSS
MSM21/1b	339	6	RO/CTD/ADCP	14.06.2012	07:15	EN	65°	5.36'	N	29° 49.69'	W				w/MSS
MSM21/1b	340	1	MOR	14.06.2012	08:26	BE	65°	11.31'	N	29° 57.52'	W				
MSM21/1b	340	1	MOR	14.06.2012	09:05	EN	65°	11.80'	N	30° 0.17'	W	1541.8			
MSM21/1b	341	1	RO/CTD/ADCP	14.06.2012	09:51	BE	65°	12.80'	N	29° 57.92'	W	1466.3			w/MSS.
MSM21/1b	341	1	RO/CTD/ADCP	14.06.2012	10:20	BO	65°	12.79'	N	29° 57.93'	W		1450	10	w/MSS.
MSM21/1b	341	1	RO/CTD/ADCP	14.06.2012	11:02	EN	65°	12.79'	N	29° 57.95'	W				w/MSS.
MSM21/1b	341	2	AUV	14.06.2012	11:41	EN	65°	13.14'	N	29° 57.14'	W				AUV in water
MSM21/1b	342	1	MOR	14.06.2012	12:54	BE	65°	13.93'	N	29° 50.72'	W	1465			
MSM21/1b	342	1	MOR	14.06.2012	13:12	EN	65°	14.18'	N	29° 51.71'	W	1455			
MSM21/1b	343	1	MOR	14.06.2012	14:13	BE	65°	16.36'	N	29° 58.50'	W	1329.1			
MSM21/1b	343	1	MOR	14.06.2012	14:43	EN	65°	16.82'	N	30° 0.18'	W	1292.7			
MSM21/1b	344	1	RO/CTD/ADCP	14.06.2012	15:25	BE	65°	12.80'	N	29° 57.94'	W	1466.5			w/MSS
MSM21/1b	344	1	RO/CTD/ADCP	14.06.2012	15:57	BO	65°	12.80'	N	29° 57.94'	W		1449	10	w/MSS
MSM21/1b	344	1	RO/CTD/ADCP	14.06.2012	16:40	EN	65°	12.80'	N	29° 57.94'	W				w/MSS
MSM21/1b	344	2	RO/CTD/ADCP	14.06.2012	17:44	BE	65°	12.80'	N	29° 57.99'	W	1466.0			w/MSS
MSM21/1b	344	2	RO/CTD/ADCP	14.06.2012	18:13	BO	65°	12.80'	N	29° 57.99'	W		1449	9	w/MSS
MSM21/1b	344	2	RO/CTD/ADCP	14.06.2012	18:57	EN	65°	12.80'	N	29° 57.99'	W				w/MSS
MSM21/1b	344	3	RO/CTD/ADCP	14.06.2012	20:03	BE	65°	12.80'	N	29° 57.99'	W	1466.0			w/MSS
MSM21/1b	344	3	RO/CTD/ADCP	14.06.2012	20:32	BO	65°	12.80'	N	29° 57.99'	W		1451	10	w/MSS
MSM21/1b	344	3	RO/CTD/ADCP	14.06.2012	21:34	EN	65°	12.71'	N	29° 58.39'	W				w/MSS

MSM21/1b	341	2	AUV	14.06.2012	22:22	EN	65° 14.62' N	29° 51.83' W				AUV on board
MSM21/1b	344	4	RO/CTD/ADCP	14.06.2012	22:52	BE	65° 12.80' N	29° 57.83' W	1466			w/MSS
MSM21/1b	344	4	RO/CTD/ADCP	14.06.2012	23:22	BO	65° 12.80' N	29° 57.83' W		1454	10	w/MSS
MSM21/1b	344	4	RO/CTD/ADCP	15.06.2012	00:07	EN	65° 12.80' N	29° 57.83' W				w/MSS
MSM21/1b	344	5	RO/CTD/ADCP	15.06.2012	01:41	BE	65° 12.80' N	29° 57.99' W	1466			
MSM21/1b	344	5	RO/CTD/ADCP	15.06.2012	02:09	BO	65° 12.80' N	29° 57.99' W				
MSM21/1b	344	5	RO/CTD/ADCP	15.06.2012	02:54	EN	65° 12.80' N	29° 57.99' W				Pump2 failed (upcast)
MSM21/1b	345	1	RO/CTD/ADCP	15.06.2012	08:12	BE	65° 29.97' N	31° 18.20' W	370			
MSM21/1b	345	1	RO/CTD/ADCP	15.06.2012	08:22	BO	65° 29.97' N	31° 18.20' W		357	10	
MSM21/1b	345	1	RO/CTD/ADCP	15.06.2012	08:33	EN	65° 29.97' N	31° 18.20' W	0			
MSM21/1b	346	1	RO/CTD/ADCP	15.06.2012	11:37	BE	65° 27.04' N	31° 23.63' W	647.4			
MSM21/1b	346	1	RO/CTD/ADCP	15.06.2012	11:55	BO	65° 27.04' N	31° 23.64' W		642	9	
MSM21/1b	346	1	RO/CTD/ADCP	15.06.2012	12:12	EN	65° 27.17' N	31° 24.36' W	0			
MSM21/1b	347	1	RO/CTD/ADCP	15.06.2012	13:02	BE	65° 25.03' N	31° 23.75' W	792			
MSM21/1b	347	1	RO/CTD/ADCP	15.06.2012	13:24	BO	65° 25.12' N	31° 23.99' W		762	9	
MSM21/1b	347	1	RO/CTD/ADCP	15.06.2012	13:41	EN	65° 25.24' N	31° 24.28' W	0			
MSM21/1b	348	1	RO/CTD/ADCP	15.06.2012	14:25	BE	65° 23.13' N	31° 24.21' W	912.9			
MSM21/1b	348	1	RO/CTD/ADCP	15.06.2012	14:44	BO	65° 23.20' N	31° 24.34' W		884	9	
MSM21/1b	348	1	RO/CTD/ADCP	15.06.2012	15:06	EN	65° 23.34' N	31° 24.59' W	0			
MSM21/1b	349	1	RO/CTD/ADCP	15.06.2012	15:54	BE	65° 20.96' N	31° 24.58' W	1027			
MSM21/1b	349	1	RO/CTD/ADCP	15.06.2012	16:17	BO	65° 21.09' N	31° 24.68' W		1000	9	
MSM21/1b	349	1	RO/CTD/ADCP	15.06.2012	16:39	EN	65° 21.22' N	31° 24.81' W	0			
MSM21/1b	350	1	RO/CTD/ADCP	15.06.2012	17:42	BE	65° 18.00' N	31° 24.96' W	1192.7			
MSM21/1b	350	1	RO/CTD/ADCP	15.06.2012	18:07	BO	65° 18.12' N	31° 24.92' W		1163	10	
MSM21/1b	350	1	RO/CTD/ADCP	15.06.2012	18:34	EN	65° 18.44' N	31° 25.28' W	0			
MSM21/1b	351	1	RO/CTD/ADCP	15.06.2012	19:07	BE	65° 15.03' N	31° 25.45' W	1342.5			
MSM21/1b	351	1	RO/CTD/ADCP	15.06.2012	19:35	BO	65° 15.11' N	31° 25.57' W		1319	9	
MSM21/1b	351	1	RO/CTD/ADCP	15.06.2012	20:03	EN	65° 15.29' N	31° 25.80' W	0			
MSM21/1b	352	1	RO/CTD/ADCP	15.06.2012	22:14	BE	65° 12.01' N	31° 25.99' W	1491.1			
MSM21/1b	352	1	RO/CTD/ADCP	15.06.2012	22:44	BO	65° 12.04' N	31° 26.11' W		1464	11	
MSM21/1b	352	1	RO/CTD/ADCP	15.06.2012	23:15	EN	65° 12.17' N	31° 26.42' W	0			
MSM21/1b	353	1	RO/CTD/ADCP	15.06.2012	23:41	BE	65° 9.02' N	31° 26.45' W	1609.3			
MSM21/1b	353	1	RO/CTD/ADCP	16.06.2012	00:11	BO	65° 9.09' N	31° 26.67' W		1590	7	
MSM21/1b	353	1	RO/CTD/ADCP	16.06.2012	00:43	EN	65° 9.22' N	31° 27.09' W				

MSM21/1b	354	1	RO/CTD/ADCP	16.06.2012 03:51	BE	65° 13.74' N	29° 58.01' W	1429.6			lADCP manual start
MSM21/1b	354	1	RO/CTD/ADCP	16.06.2012 04:20	BO	65° 13.73' N	29° 58.03' W		1415	8	
MSM21/1b	354	1	RO/CTD/ADCP	16.06.2012 04:51	EN	65° 13.73' N	29° 58.02' W				lADCP manual stop
MSM21/1b	355	1	MOR	16.06.2012 06:11	BE	65° 11.82' N	29° 54.13' W	1544.7			
MSM21/1b	355	1	MOR	16.06.2012 07:21	EN	65° 14.32' N	29° 57.49' W	1410			
MSM21/1b	356	1	AUV	16.06.2012 08:04	BE	65° 13.20' N	29° 57.51' W				AUV in Water
MSM21/1b	356	1	AUV	16.06.2012 08:41	EN	65° 13.12' N	29° 57.41' W				AUV on Board. (abort)
MSM21/1b	357	1	RO/CTD/ADCP	16.06.2012 09:05	BE	65° 13.72' N	29° 57.96' W	1428.6			w/MSS.
MSM21/1b	357	1	RO/CTD/ADCP	16.06.2012 09:33	BO	65° 13.71' N	29° 57.96' W		1415	10	w/MSS.
MSM21/1b	357	1	RO/CTD/ADCP	16.06.2012 10:18	EN	65° 13.70' N	29° 58.13' W				w/MSS.
MSM21/1b	357	2	RO/CTD/ADCP	16.06.2012 11:26	BE	65° 13.73' N	29° 57.99' W	1427			w/MSS
MSM21/1b	357	2	RO/CTD/ADCP	16.06.2012 11:53	BO	65° 13.73' N	29° 57.99' W		1418	7	w/MSS
MSM21/1b	357	2	RO/CTD/ADCP	16.06.2012 12:38	EN	65° 13.73' N	29° 58.00' W				w/MSS
MSM21/1b	358	1	AUV	16.06.2012 13:22	BE	65° 12.99' N	29° 57.42' W				AUV in Water
MSM21/1b	359	1	RO/CTD/ADCP	16.06.2012 14:26	BE	65° 13.71' N	29° 57.99' W	1428			w/MSS
MSM21/1b	359	1	RO/CTD/ADCP	16.06.2012 14:55	BO	65° 13.72' N	29° 58.01' W		1420	8	w/MSS
MSM21/1b	359	1	RO/CTD/ADCP	16.06.2012 15:39	EN	65° 13.72' N	29° 58.01' W				w/MSS
MSM21/1b	359	2	RO/CTD/ADCP	16.06.2012 16:59	BE	65° 13.74' N	29° 57.99' W	1428.7			w/MSS, aborted (MSS).
MSM21/1b	359	2	RO/CTD/ADCP	16.06.2012 17:10	BO	65° 13.74' N	29° 57.99' W				w/MSS, aborted (MSS).
MSM21/1b	359	2	RO/CTD/ADCP	16.06.2012 17:21	EN	65° 13.74' N	29° 57.99' W				w/MSS. Aborted (MSS).
MSM21/1b	359	3	RO/CTD/ADCP	16.06.2012 17:48	BE	65° 13.74' N	29° 57.99' W	1430			
MSM21/1b	359	3	RO/CTD/ADCP	16.06.2012 18:16	BO	65° 13.74' N	29° 57.99' W			9	
MSM21/1b	359	3	RO/CTD/ADCP	16.06.2012 18:48	EN	65° 13.74' N	29° 57.99' W	0			
MSM21/1b	359	4	RO/CTD/ADCP	16.06.2012 19:35	BE	65° 13.74' N	29° 57.99' W	1430.0			w/MSS.
MSM21/1b	359	4	RO/CTD/ADCP	16.06.2012 20:02	BO	65° 13.74' N	29° 57.99' W		1415	11	w/MSS.
MSM21/1b	359	4	RO/CTD/ADCP	16.06.2012 20:46	EN	65° 13.75' N	29° 58.06' W				w/MSS.
MSM21/1b	359	5	RO/CTD/ADCP	16.06.2012 23:15	BE	65° 13.74' N	29° 58.00' W	1429			w/MSS.
MSM21/1b	359	5	RO/CTD/ADCP	16.06.2012 23:44	BO	65° 13.74' N	29° 58.00' W		1415	8	w/MSS.
MSM21/1b	359	5	RO/CTD/ADCP	17.06.2012 00:38	EN	65° 13.74' N	29° 58.00' W				w/MSS. (failed)
MSM21/1b	359	6	RO/CTD/ADCP	17.06.2012 01:08	BE	65° 13.74' N	29° 57.99' W	1428.3			no lADCP
MSM21/1b	359	6	RO/CTD/ADCP	17.06.2012 01:37	BO	65° 13.74' N	29° 58.00' W		1416	8	no lADCP
MSM21/1b	359	6	RO/CTD/ADCP	17.06.2012 02:05	EN	65° 13.74' N	29° 57.99' W				no lADCP

MSM21/1b	358	1	AUV	17.06.2012	02:45	EN	65°	12.72'	N	29°	58.83'	W				AUV on Bord
MSM21/1b	360	1	RO/CTD/ADCP	17.06.2012	04:34	BE	65°	5.36'	N	29°	49.71'	W	1748.0			
MSM21/1b	360	1	RO/CTD/ADCP	17.06.2012	05:07	BO	65°	5.36'	N	29°	49.71'	W		1740	8	
MSM21/1b	360	1	RO/CTD/ADCP	17.06.2012	05:42	EN	65°	5.36'	N	29°	49.71'	W	0.0			
MSM21/1b	360	2	RO/CTD/ADCP	17.06.2012	06:47	BE	65°	5.36'	N	29°	49.71'	W	1748.0			
MSM21/1b	360	2	RO/CTD/ADCP	17.06.2012	07:22	BO	65°	5.36'	N	29°	49.71'	W		1740	8	
MSM21/1b	360	2	RO/CTD/ADCP	17.06.2012	07:56	EN	65°	5.36'	N	29°	49.72'	W	0.0			
MSM21/1b	360	3	RO/CTD/ADCP	17.06.2012	08:24	BE	65°	5.36'	N	29°	49.72'	W	1748.0			
MSM21/1b	360	3	RO/CTD/ADCP	17.06.2012	08:58	BO	65°	5.36'	N	29°	49.72'	W		1738	9	
MSM21/1b	360	3	RO/CTD/ADCP	17.06.2012	09:32	EN	65°	5.57'	N	29°	50.04'	W	0			
MSM21/1b	360	4	RO/CTD/ADCP	17.06.2012	10:56	BE	65°	5.36'	N	29°	49.68'	W	1748.0			Yoyo-CTD below 1600m
MSM21/1b	360	4	RO/CTD/ADCP	17.06.2012	11:31	BO	65°	5.36'	N	29°	49.66'	W		1737	9	Yoyo-CTD below 1600m
MSM21/1b	360	4	RO/CTD/ADCP	17.06.2012	15:41	EN	65°	5.36'	N	29°	49.70'	W				Yoyo-CTD below 1600m
MSM21/1b	361	1	RO/CTD/ADCP	17.06.2012	16:36	BE	65°	13.18'	N	29°	57.09'	W	1460.1			
MSM21/1b	361	1	RO/CTD/ADCP	17.06.2012	17:04	BO	65°	13.14'	N	29°	57.05'	W		1446	9	
MSM21/1b	361	1	RO/CTD/ADCP	17.06.2012	17:36	EN	65°	13.14'	N	29°	57.05'	W	0			
MSM21/1b	362	1	AUV	17.06.2012	18:35	BE	65°	13.56'	N	29°	55.22'	W				AUV in water
MSM21/1b	363	1	RO/CTD/ADCP	17.06.2012	19:22	BE	65°	13.74'	N	29°	57.98'	W	1428.5			w/MSS
MSM21/1b	363	1	RO/CTD/ADCP	17.06.2012	19:50	BO	65°	13.74'	N	29°	57.99'	W		1413	9	w/MSS
MSM21/1b	363	1	RO/CTD/ADCP	17.06.2012	20:36	EN	65°	13.74'	N	29°	57.98'	W				w/MSS
MSM21/1b	363	2	RO/CTD/ADCP	17.06.2012	21:50	BE	65°	13.75'	N	29°	57.96'	W	1428			w/MSS.
MSM21/1b	363	2	RO/CTD/ADCP	17.06.2012	22:18	BO	65°	13.75'	N	29°	57.96'	W		1413	9	w/MSS.
MSM21/1b	363	2	RO/CTD/ADCP	17.06.2012	23:04	EN	65°	13.72'	N	29°	57.90'	W				w/MSS.
MSM21/1b	363	3	RO/CTD/ADCP	18.06.2012	00:36	BE	65°	13.75'	N	29°	57.95'	W	1427			w/MSS
MSM21/1b	363	3	RO/CTD/ADCP	18.06.2012	01:06	BO	65°	13.75'	N	29°	57.95'	W		1415	8	w/MSS
MSM21/1b	363	3	RO/CTD/ADCP	18.06.2012	01:47	EN	65°	13.75'	N	29°	57.95'	W				w/MSS
MSM21/1b	363	4	RO/CTD/ADCP	18.06.2012	02:58	BE	65°	13.75'	N	29°	57.96'	W	1427			w/MSS. (failed)
MSM21/1b	363	4	RO/CTD/ADCP	18.06.2012	03:27	BO	65°	13.75'	N	29°	57.96'	W		1416	8	w/MSS. (failed)
MSM21/1b	363	4	RO/CTD/ADCP	18.06.2012	04:12	EN	65°	13.75'	N	29°	57.96'	W				w/MSS. (failed)
MSM21/1b	363	5	RO/CTD/ADCP	18.06.2012	05:31	BE	65°	13.74'	N	29°	57.99'	W	1427			w/MSS
MSM21/1b	363	5	RO/CTD/ADCP	18.06.2012	06:00	BO	65°	13.74'	N	29°	57.99'	W		1416	8	w/MSS
MSM21/1b	363	5	RO/CTD/ADCP	18.06.2012	06:41	EN	65°	13.74'	N	29°	57.99'	W				w/MSS

MSM21/1b	362	1	AUV	18.06.2012	08:26	EN	65° 14.22' N	29° 54.58' W				AUV on board
MSM21/1b	364	1	RO/CTD/ADCP	18.06.2012	10:51	BE	65° 42.00' N	29° 52.20' W	320			
MSM21/1b	364	1	RO/CTD/ADCP	18.06.2012	11:03	BO	65° 41.99' N	29° 52.22' W		300	9	
MSM21/1b	364	1	RO/CTD/ADCP	18.06.2012	11:16	EN	65° 41.99' N	29° 52.23' W	0			
MSM21/1b	365	1	RO/CTD/ADCP	18.06.2012	11:49	BE	65° 38.98' N	29° 51.98' W	300.3			
MSM21/1b	365	1	RO/CTD/ADCP	18.06.2012	11:59	BO	65° 38.98' N	29° 51.99' W		296	8	
MSM21/1b	365	1	RO/CTD/ADCP	18.06.2012	12:08	EN	65° 38.98' N	29° 51.99' W	0			
MSM21/1b	366	1	RO/CTD/ADCP	18.06.2012	12:40	BE	65° 36.02' N	29° 51.68' W	323			
MSM21/1b	366	1	RO/CTD/ADCP	18.06.2012	12:50	BO	65° 36.02' N	29° 51.67' W		311	8	
MSM21/1b	366	1	RO/CTD/ADCP	18.06.2012	12:59	EN	65° 36.02' N	29° 51.67' W	0			
MSM21/1b	367	1	RO/CTD/ADCP	18.06.2012	13:35	BE	65° 33.01' N	29° 51.57' W	360			
MSM21/1b	367	1	RO/CTD/ADCP	18.06.2012	13:44	BO	65° 33.01' N	29° 51.57' W		350	8	
MSM21/1b	367	1	RO/CTD/ADCP	18.06.2012	13:53	EN	65° 33.01' N	29° 51.57' W	0			
MSM21/1b	368	1	RO/CTD/ADCP	18.06.2012	14:27	BE	65° 30.03' N	29° 51.39' W	521			
MSM21/1b	368	1	RO/CTD/ADCP	18.06.2012	14:40	BO	65° 30.03' N	29° 51.39' W		510	8	
MSM21/1b	368	1	RO/CTD/ADCP	18.06.2012	14:52	EN	65° 30.03' N	29° 51.39' W	0			
MSM21/1b	369	1	RO/CTD/ADCP	18.06.2012	15:21	BE	65° 27.01' N	29° 51.17' W	780			
MSM21/1b	369	1	RO/CTD/ADCP	18.06.2012	15:38	BO	65° 27.01' N	29° 51.17' W		767	8	
MSM21/1b	369	1	RO/CTD/ADCP	18.06.2012	15:55	EN	65° 26.99' N	29° 51.44' W	0			
MSM21/1b	370	1	RO/CTD/ADCP	18.06.2012	16:42	BE	65° 24.00' N	29° 50.96' W	1005.4			w/MSS
MSM21/1b	370	1	RO/CTD/ADCP	18.06.2012	17:04	BO	65° 24.00' N	29° 51.05' W		990	9	w/MSS
MSM21/1b	370	1	RO/CTD/ADCP	18.06.2012	17:27	EN	65° 24.03' N	29° 51.31' W				w/MSS
MSM21/1b	371	1	RO/CTD/ADCP	18.06.2012	17:58	BE	65° 21.00' N	29° 50.71' W	1194			
MSM21/1b	371	1	RO/CTD/ADCP	18.06.2012	18:23	BO	65° 21.00' N	29° 50.70' W			9	
MSM21/1b	371	1	RO/CTD/ADCP	18.06.2012	18:49	EN	65° 21.05' N	29° 50.85' W	0			
MSM21/1b	372	1	RO/CTD/ADCP	18.06.2012	19:16	BE	65° 18.01' N	29° 50.54' W	1335.1			
MSM21/1b	372	1	RO/CTD/ADCP	18.06.2012	19:42	BO	65° 18.02' N	29° 50.62' W		1322	9	
MSM21/1b	372	1	RO/CTD/ADCP	18.06.2012	20:12	EN	65° 18.05' N	29° 50.85' W	0			
MSM21/1b	373	1	RO/CTD/ADCP	18.06.2012	20:54	BE	65° 11.99' N	29° 50.07' W	1548.1			
MSM21/1b	373	1	RO/CTD/ADCP	18.06.2012	21:23	BO	65° 11.99' N	29° 50.07' W		1534	9	
MSM21/1b	373	1	RO/CTD/ADCP	18.06.2012	21:54	EN	65° 11.99' N	29° 50.07' W	0			
MSM21/1b	374	1	AUV	18.06.2012	22:46	BE	65° 14.14' N	29° 55.22' W				AUV in water
MSM21/1b	375	1	RO/CTD/ADCP	18.06.2012	23:41	BE	65° 13.77' N	29° 57.95' W	1426.9			w/MSS

MSM21/1b	375	1	RO/CTD/ADCP	18.06.2012	23:43	BO	65°	13.77'	N	29°	57.95'	W	1414	8	w/MSS
MSM21/1b	375	1	RO/CTD/ADCP	19.06.2012	00:52	EN	65°	13.77'	N	29°	57.95'	W			w/MSS
MSM21/1b	375	2	RO/CTD/ADCP	19.06.2012	02:14	BE	65°	13.74'	N	29°	57.99'	W	1426.6		Yoyo-CTD below 1000m
MSM21/1b	375	2	RO/CTD/ADCP	19.06.2012	02:43	BO	65°	13.74'	N	29°	57.99'	W	1414	8	Yoyo-CTD below 1000m
MSM21/1b	375	2	RO/CTD/ADCP	19.06.2012	04:00	EN	65°	13.74'	N	29°	57.99'	W			Yoyo-CTD below 1000m
MSM21/1b	375	3	RO/CTD/ADCP	19.06.2012	04:27	BE	65°	13.74'	N	29°	57.99'	W	1426		Yoyo-CTD below 1000m
MSM21/1b	375	3	RO/CTD/ADCP	19.06.2012	04:55	BO	65°	13.74'	N	29°	57.99'	W			Yoyo-CTD below 1000m
MSM21/1b	375	3	RO/CTD/ADCP	19.06.2012	06:59	EN	65°	13.74'	N	29°	57.99'	W			Yoyo-CTD below 1000m
MSM21/1b	375	4	RO/CTD/ADCP	19.06.2012	07:25	BE	65°	13.74'	N	29°	57.99'	W	1424		w/MSS
MSM21/1b	375	4	RO/CTD/ADCP	19.06.2012	07:53	BO	65°	13.74'	N	29°	57.99'	W	1415	9	w/MSS
MSM21/1b	375	4	RO/CTD/ADCP	19.06.2012	08:36	EN	65°	13.74'	N	29°	57.99'	W			w/MSS
MSM21/1b	375	5	RO/CTD/ADCP	19.06.2012	09:11	BE	65°	13.74'	N	29°	57.94'	W	1424		
MSM21/1b	375	5	RO/CTD/ADCP	19.06.2012	09:38	BO	65°	13.74'	N	29°	57.93'	W	1414	9	
MSM21/1b	375	5	RO/CTD/ADCP	19.06.2012	10:07	EN	65°	13.74'	N	29°	57.93'	W	0		
MSM21/1b	375	6	RO/CTD/ADCP	19.06.2012	10:49	BE	65°	13.74'	N	29°	57.94'	W	1424		
MSM21/1b	375	6	RO/CTD/ADCP	19.06.2012	11:17	BO	65°	13.74'	N	29°	57.93'	W	1413	10	
MSM21/1b	375	6	RO/CTD/ADCP	19.06.2012	11:46	EN	65°	13.74'	N	29°	57.94'	W	0		
MSM21/1b	374	1	AUV	19.06.2012	13:17	EN	65°	14.70'	N	29°	59.00'	W			AUV on board
MSM21/1b	323	1	TRANS	19.06.2012	14:12	EN	65°	16.14'	N	30°	0.35'	W			Transponder picked up
MSM21/1b	376	1	RO/CTD/ADCP	19.06.2012	14:37	BE	65°	13.73'	N	29°	57.94'	W	1427		Yoyo-CTD below 1000m
MSM21/1b	376	1	RO/CTD/ADCP	19.06.2012	15:08	BO	65°	13.73'	N	29°	57.94'	W	1418	9	Yoyo-CTD below 1000m
MSM21/1b	376	1	RO/CTD/ADCP	19.06.2012	18:23	EN	65°	13.73'	N	29°	57.95'	W			Yoyo-CTD below 1000m
MSM21/1b	376	2	RO/CTD/ADCP	19.06.2012	19:05	BE	65°	13.73'	N	29°	57.95'	W	1427		w/MSS
MSM21/1b	376	2	RO/CTD/ADCP	19.06.2012	19:33	BO	65°	13.73'	N	29°	57.95'	W	1417	9	w/MSS
MSM21/1b	376	2	RO/CTD/ADCP	19.06.2012	20:18	EN	65°	13.74'	N	29°	57.93'	W			w/MSS
MSM21/1b	376	3	RO/CTD/ADCP	19.06.2012	21:23	BE	65°	13.75'	N	29°	58.00'	W	1427		w/MSS
MSM21/1b	376	3	RO/CTD/ADCP	19.06.2012	21:51	BO	65°	13.74'	N	29°	58.00'	W	1417	9	w/MSS
MSM21/1b	376	3	RO/CTD/ADCP	19.06.2012	22:36	EN	65°	13.79'	N	29°	57.89'	W			w/MSS
MSM21/1b	376	4	RO/CTD/ADCP	19.06.2012	23:46	BE	65°	13.75'	N	29°	58.00'	W	1427		w/MSS
MSM21/1b	376	4	RO/CTD/ADCP	20.06.2012	00:13	BO	65°	13.75'	N	29°	57.99'	W	1420	6	w/MSS
MSM21/1b	376	4	RO/CTD/ADCP	20.06.2012	00:55	EN	65°	13.75'	N	29°	57.99'	W			w/MSS
MSM21/1b	376	5	RO/CTD/ADCP	20.06.2012	02:06	BE	65°	13.75'	N	29°	57.99'	W	1427		
MSM21/1b	376	5	RO/CTD/ADCP	20.06.2012	02:35	BO	65°	13.75'	N	29°	57.99'	W	1421	7	

MSM21/1b	376	5	RO/CTD/ADCP	20.06.2012 03:16	EN	65° 13.75' N	29° 57.99' W	0		
MSM21/1b	377	1	AUV	20.06.2012 06:06	BE	65° 13.04' N	29° 58.35' W			AUV in water (abort)
MSM21/1b	377	1	AUV	20.06.2012 07:51	EN	65° 12.82' N	29° 58.51' W			AUV on board
MSM21/1b	377	2	RO/CTD/ADCP	20.06.2012 08:12	BE	65° 12.98' N	29° 58.07' W	1460		
MSM21/1b	377	2	RO/CTD/ADCP	20.06.2012 08:42	BO	65° 12.97' N	29° 58.08' W		1446	9
MSM21/1b	377	2	RO/CTD/ADCP	20.06.2012 09:12	EN	65° 12.97' N	29° 58.08' W			
MSM21/1b	377	3	AUV	20.06.2012 09:18	BE	65° 12.97' N	29° 58.08' W			AUV in water
MSM21/1b	378	1	RO/CTD/ADCP	20.06.2012 10:52	BE	65° 14.67' N	29° 49.81' W	1453.5		
MSM21/1b	378	1	RO/CTD/ADCP	20.06.2012 11:20	BO	65° 14.67' N	29° 49.81' W		1440	9
MSM21/1b	378	1	RO/CTD/ADCP	20.06.2012 11:48	EN	65° 14.67' N	29° 49.81' W	0		
MSM21/1b	379	1	RO/CTD/ADCP	20.06.2012 12:17	BE	65° 16.08' N	29° 42.94' W	1463		
MSM21/1b	379	1	RO/CTD/ADCP	20.06.2012 12:46	BO	65° 16.08' N	29° 42.93' W		1449	8
MSM21/1b	379	1	RO/CTD/ADCP	20.06.2012 13:13	EN	65° 16.08' N	29° 42.92' W	0		
MSM21/1b	380	1	RO/CTD/ADCP	20.06.2012 13:41	BE	65° 17.41' N	29° 35.95' W	1435		
MSM21/1b	380	1	RO/CTD/ADCP	20.06.2012 14:11	BO	65° 17.41' N	29° 35.95' W		1425	7
MSM21/1b	380	1	RO/CTD/ADCP	20.06.2012 14:40	EN	65° 17.41' N	29° 35.95' W	0		
MSM21/1b	377	3	AUV	20.06.2012 16:08	EN	65° 17.40' N	29° 38.18' W			AUV on board
MSM21/1b	325	1	TRANS	20.06.2012 18:02	EN	65° 14.70' N	29° 58.68' W			Transponder picked up
MSM21/1b	324	1	TRANS	20.06.2012 19:00	EN	65° 12.56' N	29° 56.93' W			Transponder picked up
MSM21/1b	381	1	RO/CTD/ADCP	20.06.2012 23:10	BE	64° 28.73' N	30° 51.57' W	2472.7		for EM120 calibration
MSM21/1b	381	1	RO/CTD/ADCP	20.06.2012 23:41	BO	64° 28.73' N	30° 51.57' W		1900	for EM120 calibration
MSM21/1b	381	1	RO/CTD/ADCP	21.06.2012 00:08	EN	64° 28.73' N	30° 51.57' W			for EM120 calibration
MSM21/1b	381	2	EM120	21.06.2012 00:16	BE	64° 28.20' N	30° 51.50' W	2479		EM120 calibration
MSM21/1b	381	2	EM120	21.06.2012 07:30	EN	64° 28.18' N	30° 51.50' W			EM120 calibration
MSM21/1b	382	1	RO/CTD/ADCP	21.06.2012 10:02	BE	64° 13.19' N	29° 56.72' W	2425.5		for EM120 calibration
MSM21/1b	382	1	RO/CTD/ADCP	21.06.2012 10:32	BO	64° 13.18' N	29° 56.70' W		1901	for EM120 calibration
MSM21/1b	382	1	RO/CTD/ADCP	21.06.2012 11:09	EN	64° 13.18' N	29° 56.70' W			for EM120 calibration
MSM21/1b	382	2	EM120	21.06.2012 11:20	BE	64° 13.33' N	29° 55.94' W			EM120 calibration
MSM21/1b	382	2	EM120	21.06.2012 15:12	EN	64° 16.45' N	29° 40.26' W			EM120 calibration