Appendix to Cruise Report M64/1

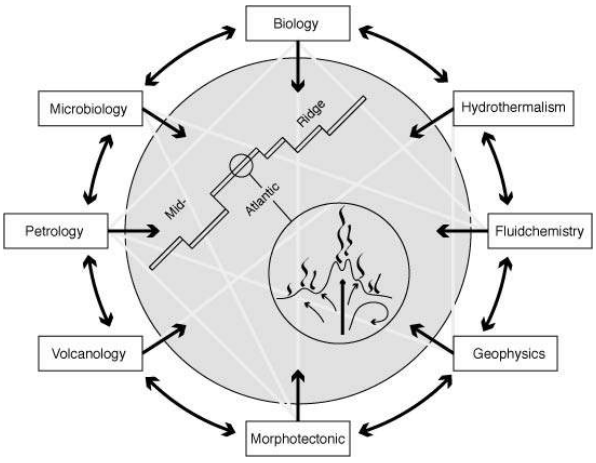
MARSÜD 2

2 April – 3 May 2005, Mindelo (Cape Verde) – Fortaleza (Brazil)

K. Haase, C. Flies, S. Fretzdorff, O.Giere, A. Houk, S. Klar, A. Koschinsky, J. Küver, H. Marbler, P. Mason, N. Nowald, C. Ostertag-Henning, H. Paulick, M. Perner, S. Petersen, V. Ratmeyer,W. Schmidt, T. Schott, M. Schröder, R. Seifert, C. Seiter, J. Stecher, H. Strauss, J. Süling, D. Unverricht, M. Warmuth, S. Weber, U. Westernströer

Project Leader: Karsten Haase

- ROV station protocolls (36 pages)
- Water column samples (1 page)
- Fluid samples (1 page)
- List of zoological samples (8 pages)
- Sample list geology (7pages)



Station No:	108 ROV	**ME-64/1**	
Segment (area):	5°S, Target: Hydrothermal fields Turtle Pits, Wideawake Mussle Field		
Date:	8. April 05	**ROV dive 36**	
Time (hh:mm:ss)	CODE	**Notes** (use "<ctrl>t" to add date and time!)	**SAMPLE**
9:12:21		Begin of station at 4°48.59'S 12°22.40'W, ROV in water	
9:31:49		ROV at 184 m; system tests; Fluid sampler system flushed during the way down	
9:51:03		Fluid pump off	
9:57:12		ROV system failure	
10:06:41		System rebooted, still problems, no transmission of ROV cameras	
10:36:14		ROV system testing, depth 250 to 300 m	
10:42:22		going down, 380 m	
10:59:30		865 m	
11:21:12		ROV system failure	
11:32:34		ROV still non functional	
12:04:54		ROV still non functional	
12:15:28		ROV back online	
12:15:47		ship position: 4°48.59'S 12°22.35'W	
12:19:56		system failure?	
12:22:29		system failure	
12:52:55		ROV still non functional	
13:52:45		ROV still in ca. 1000m - not working	
14:13:42		ROV reload - actual depth 974m - cameras are working	
14:31:51		ROV is going down	
14:44:32		1360 m, going down, 4°48.58'S / 12°22.38'W, HS 2990m	
15:08:10		2000 m, going down, 4°48.60'S / 12°22.35'W, HS 2998m	
15:35:15		2730m, going down, 4°48.58'S / 12°22.36'W, HS 2999m	
15:45:20		bottom view, slightly sedimented lava	
15:47:12		lava tallus slightly sediment covered	
15:48:58		sheet flows, lava tallus, 4.6 m above bottom	
15:50:19		small particle flux	
15:50:21		fracture or little fissure N-S orientated	
15:52:36		sedimented area	
15:54:47		rock fragmets sticking out of the sediment	
15:56:27		orthogonal grid pattern	
15:56:32		highly sedimented sheet flows	
15:59:08		sheet flows partly sedimented, still 4.6 m above bottom	
15:59:12		lobated flows, yellow patch	
16:01:18		jumbled sheet flows, no sediment; shrimp	
16:02:39		shrimp in water column	
16:04:13		jumbled sheet flows, no sediment, 4°48.60'S / 12°22.37'W, HS 2997m	
16:06:31		jumbled sheet flows, no sediment	
16:08:27		small particle flux	
16:09:36		lobate flows sightly sedimented	
16:10:05		lobate flows covered with sediment; fish	
16:11:03		shrimp in water column	
16:12:01		80% sediment cover	
16:13:17		jumbled sheet flows partly sediment covered	
16:14:02		jumbled sheet flow no/little sediment	
16:17:34		slope with jumbled sheet flows coevred with sediment - top at 2995m going down slope	
16:18:49		bottom at 2992m	
16:20:50		flat sedimenetd striated surface	
16:23:29		jumbled sheet flows partly sediment covered	
16:24:29		sedimented area; fish	
16:26:09		jumbled sheet flows only slightly sedimented	
16:29:18		jumbled sheet flows and sedimented area	
16:31:14		sheet flows and striated surface areas	
16:31:58		Aktilie or seestar	
16:33:58		jumbled sheet flows only slightly sedimented	
16:34:56		lobated flows mixed with sheet flows partly sedimented	
16:36:29		flow contact: sedimented sheet flows and above lobated flow	
16:37:03		pillow basalts at 2996m; ship: 4°48.60'S / 12°22.39'W, HS 2998m	
16:38:33		sedimented area	
16:39:47		jumbled sheet flows covered with sediment	
16:40:07		orthogonal grid pattern	
16:40:52		jumbled sheet flows covered with sediment	

Station No:	108 ROV	**ME-64/1**	
Segment (area):	5°S, Target: Hydrothermal fields Turtle Pits, Wideawake Mussle Field		
Date:	8. April 05	**ROV dive 36**	
Time (hh:mm:ss)	CODE	**Notes** (use "<ctrl>t" to add date and time!)	**SAMPLE**
16:42:28		jumbled sheet flows only slightly covered with sediment	
16:44:22		sedimented area	
16:44:45		jumbled sheet flows only slightly covered with sediment	
16:45:12		lobated flow and pillow lava	
16:46:00		jumbled sheet flows only slightly covered with sediment	
16:47:16		2 anemones; gorgonaria (Koralle fadenförmig)	
16:48:52		sedimented basin-like structure	
16:49:50		swirls, partly sediment covered	
16:50:44		sheet flows	
16:50:59		striated sheet flows only slightly covered with sediment; hydrozoa on rock	
16:52:36		very clear water - no particle flux	
16:53:06		jumbled sheet flows only slightly covered with sediment	
16:53:32		mussle field / GAP is working now --> flying towards the british hydrothermal position	
16:55:05		mussle field in sheet flow	
16:55:41		holothurie in mussle field	
16:55:59		sedimented area	
16:57:27		flow contact?	
16:58:05		jumbled sheet flows only slightly covered with sediment	
17:00:28		jumbled sheet flows only slightly covered with sediment	
17:02:52		lost bottom view, 8.9m above see floor	
17:05:25		jumbled sheet flows covered with sediment	
17:06:05		jumbled sheet flows only slightly covered with sediment	
17:06:39		gorgonarie	
17:07:05		thruster dust	
17:08:01		jumbled sheet flows only slightly covered with sediment	
17:09:08		flow contact sheet flow above sedimented jumbled sheet flow; mussle patch	
17:09:10		orthogonal grid pattern	
17:09:46		swirls, partly sediment covered	
17:10:06		mussle patch above jumbled sheet flow	
17:11:10		thruster dust	
17:12:30		jumbled sheet flows only slightly covered with sediment	
17:13:51		jumbled sheet flows only slightly covered with sediment	
17:15:36		jumbled sheet flows, no sediment	
17:15:44		mussle field	
17:16:45		red thruster dust	
17:17:45		small water current	
17:18:53		shells, dead calyptogena, clams	
17:21:24		ROV parking on shell bed	
17:24:01		sheet flow	
17:24:48		red thruster dust	
17:26:27		ROV flying again	
17:27:19		inactive chimney; mussle patch	
17:27:39		fissure behind chimney - steep slope	
17:30:09		jumbled sheet flows covered with red sediment	
17:30:17		inbetween jumbled flow shell beds	
17:31:56		inbetween jumbled flow shell beds	
17:32:17		inactive chimney, on the bottom mussle pach (dead and alive individuals)	
17:33:43		shell beds / dead and alive?	
17:34:59		inactive chimneys	
17:37:20		bacterial mats	
17:38:12		broken peaces of chimneys	
17:40:22		mussle beds - alive	
17:40:41		thruster dust	
17:41:36		lava flow contact; lobated flows above sheet flows, chimney fragments; in fissures mussles	
17:43:57		Crab	
17:47:10		trying to set hydroacustic marker (4°48.591'S / 12°22.397'W)	
17:49:46		hydroacustic marker have been set	
17:51:22		start fluid sampling at 6 m above sea floor	
18:00:38		valves for fluid sampling open	
18:01:00		positioning of hydroacustic marker	
18:02:08		opening bottle 11	

Station No:	108 ROV	**ME-64/1**	
Segment (area):	5°S, Target: Hydrothermal fields Turtle Pits, Wideawake Mussle Field		
Date:	8. April 05	**ROV dive 36**	
Time (hh:mm:ss)	CODE	**Notes** (use "<ctrl>t" to add date and time!)	**SAMPLE**
18:03:15		opening valve for bottle 11 fails	
18:12:00		opening valve for bottle 11 fails	
18:12:56		Start ascent of ROV from 2992 m depth	

Station No:	**114 ROV** **ME-64/1**			
Segment (area):	5°S, Target: Turtle Pits Hydrothermal field (sampling, marker, fluids)			
Date: 9. to 10. April 05		**ROV dive 37**		
Time (hh:mm:ss)	**Notes** (use "<ctrl>t" to add date and time!)	CODE	**SAMPLE**	**MARKER**
17:13:17	Begin of station at 4°48.61'S 12°22.49'W, ROV in water			
17:13:46	Start ascent of ROV from 2992 m depth			
17:33:23	ROV at 4°48.581'S 12°22.410'W, 250 m deep			
17:38:24	test of the fluid pumping system went OK			
17:49:26	ROV at (GAPS failure), 750 m deep			
17:59:37	ROV at (GAPS failure) 1000 m deep			
18:35:21	ROV at (GAPS failure) 2000 m deep			
19:08:38	bottom contact (ship is at 4°48.57 / 12°22.41; HS 2998 m) altimeter 30 m			
19:09:17	bottom sight, sedimented sheet flows, partly jumbled, heading 290			
19:12:02	ROV trying to home in on beakon, ROV depth = 2991 + 5 m alt			
19:18:56	ROV is turning to East, jumbled flows			
19:20:30	moving toward 100 over lobate flows and jumbled flows, slight sediment cover			
19:21:37	baterial mats, high particle flow in water column to the east			
19:22:56	curly flows and whirls (depth 2984+8)			
19:24:06	lobate flows			
19:26:34	hovering over lobate flows			
19:30:50	sheet flows (head 110, depth 2987+5)			
19:33:49	moving forward to 120 over curly flows			
19:35:17	turning to 326, than back to			
19:41:28	head 320, jumbled flows			
19:45:59	lobate flows, trying to home in beakon?			
19:49:23	ship is at 4°48.61 / 12°22.34, HS 2996 m			
19:52:04	ROV is at the same (unknown) position, depth 2986+5			
19:53:26	moving to SE, depth 2986+5			
19:55:04	turning north, fish, smll pressure ridge			
19:55:47	ropy flows, with sediment dusting			
19:56:49	sheet flows, sediment pathces, heading 320			
20:00:59	sitting, on pillows to labate flows			
20:02:23	skylights in lobate flows, turning to SE, headin 140			
20:14:38	hovering over pillows to lobate flows, depth 2986+4			
20:16:36	lobate flow			
20:18:55	lobate flow partly covered with sediment			
20:21:42	sheet flows and lobate flows			
20:24:51	jumbled sheet flows			
20:26:22	homer signal identified - ROV is flying to that position			
20:29:32	sheet flows and lobate flows, flying to the west			
20:31:19	jumbled sheet flows in contact with sedimented sheet flows (N-S orientated)			
20:34:08	orthogonal patches in sediment			
20:37:36	thruster dust			
20:40:08	orthogonal patches in sediment			
20:42:48	mussles? Fissure, steep slope			
20:43:08	old sulfides			
20:44:40	fish			
20:44:55	sheet flows, westside or northside ? of the active hydrothermal field?			
20:45:35	homer appears, temperature anomaly of 0.1°C			
20:49:21	sitting next to homer and calibrating position, massive sulfide talus but also abundant ropy basalt that looks similar			
20:50:14	widespread hydrothermal sediment, shrimp, vent fish; large particle anomaly			
20:57:53	autobrecciated lava surface with few shells? To the west of the marker			
21:00:17	turning in order to look around			
21:01:18	2991 m in shells, we want to go 20 m N and 20 m west			
21:03:20	steep morphology, talus, fractures with collapsed pits in otherwise sheet flows,			
21:05:19	thrusterdust, heading north along this fracture; are these the turtle pits??			
21:09:42	autobreciated jumbled flows, 2988+3, head 009			
21:12:32	stopped at contact between fracture and massive jumbled flows (pressure ridge?)			
21:13:13	thrusterdust			
21:15:43	turning south again, the two sulfides may have been those in the north and not in the west!			
21:17:52	taking fotos at small pit			
21:18:47	moving south, sheet flows with 2-3 m fracture, fracture is widening			
21:20:44	along eastern edge of widening fissure, shrimp			
21:24:54	slowly moving south, head 190, depth 2987+4			
21:26:09	at homer, to the west, taking Niskin bottle			
21:30:22	taking Niskin bottle number 1		**114ROV-1**	
21:33:58	finished sampling, sampling box closed			
21:34:29	moving further south along eastern edge			
21:37:24	black smoke ahead in the pit, going down into the pit			
21:40:08	black smoker 1 m high, at the bottom of the pit, slowly moving "smoke", depth 2991 m			
21:48:25	taking pictures			
21:50:13	Niskin bottle 3 closed		**114ROV-2**	

Station No:	**114 ROV** **ME-64/1**			
Segment (area):	5°S, Target: Turtle Pits Hydrothermal field (sampling, marker, fluids)			
Date: 9. to 10. April 05		**ROV dive 37**		
Time (hh:mm:ss)	**Notes** (use "<ctrl>t" to add date and time!)	CODE	**SAMPLE**	**MARKER**
21:51:44	flying above the black smoker			
21:53:26	bacterial mats at the bottom of the smoker			
21:54:07	shrimps sitting on the smoker			
21:59:02	fluid pumping system turned on, rotate valves, no connection??? At least no feed back from valves			
22:01:16	pump turned off			
22:01:47	software reset, pump on, pump off, system not functioning			
22:07:47	ROV needs to reset part			
22:15:52	in front of other smoker, nice pics			
22:16:10	start to set marker M2			
22:21:37	Marker 2 released			
22:24:14	vent crab, around edge to getter a closer look at this smoker			
22:25:23	fish, macrouridae			
22:27:36	the smoker seems to be boiling, vapor bubbles visible			
22:31:23	possibly vapor and brine phase at same vent			
22:34:00	turning to south to investigate larger smoker in the south			
22:38:08	right in front of large chimney spire			
22:39:44	what height? Approx. 9m			
22:45:14	on southwestern side of spire, taking pictures			
22:53:14	fauna cosist mostly of shrimps (three spcies?) and bythogaida. No molluscs, sparcly anemona			
22:55:45	vent crab eats shrimp			
22:59:43	shrimp patch at the smoker			
23:00:45	zoom in at the shrimp patch			
23:02:22	starting to work with the temperatur sensor within the somkers´s fissure			
23:10:16	try to inject the sensor within a fissure			
23:12:11	increasing T= 4°C			
23:18:58	second measurement , increasing T =5,7			
23:25:11	diffiicult to handle the tool, T-handle insufficient			
23:27:19	slowly moving to the south, depth 2986+4			
23:28:47	exploring along fissure			
23:31:32	western waal of fissure, sheet flows on top, sedimented			
23:32:28	turning to the north, abundant oxidized sulfide talus, there is an entire sulfide mound			
23:40:08	moving along eastern edge of fissure, basalt with Fe-staining			
23:42:13	fish (bathytide)			
23:50:36	accident sampling of sulfides (hit structure)			
23:54:06	moving west, jumbled sheets, few empty shells			
23:58:18	heading back north, large logs of fallen sulfide structures			
23:59:53	the sulfide needle is in the background, same one we saw on the first day (to the north)			
0:01:06	snail shells?			
0:04:14	pilot change			
0:13:00	still at same position, looks like shimmering water			
0:21:00	still at same position, inactive smoker (coiled shape) straight ahead to NE (69°)			
0:34:00	turning ROV, looking south (185°), large boulders, covered with hydrothermal sediment			
0:37:17	start moving south (197°), short distance, talus			
0:41:01	looking SSE (127°) towards "southern tower" (yet informal name)			
0:46:30	slowly approaching "southern tower"			
0:47:36	chimney appears to have a smaller diameter at base than higher up			
0:48:00	thick black smoke rising up from base of large chimney			
0:54:00	thick black smoke coming from relatively small opening at base of "southern tower"			
0:56:24	many shrimp sitting at small opening			
1:00:00	still close to "southern tower", depth: 2990m, reading ROV 3.2 m above ground			
1:02:00	ROV very close to small opening, high T sensor reads up to 250 °C			
1:07:00	starting to move high T sensor into fluid for testing function			
1:09:20	grip of T-handle not optimal			
1:10:00	still operating high T sensor			
1:17:00	grip of sensor still not optimal			
1:18:00	grip now optimal, moving towards fluid discharge			
1:26:00	"excellent sampling" (ROV touches chimney)			
1:30:00	looking direction 305°: M2 marker at depth			
1:32:28	trying once more to move high T sensor into fluid			
1:37:00	very difficult operation, maximum T measured: 56°			
1:37:30	trying the same measurement at top of "southern tower"			
1:41:00	announcing to take a photo mosaic of chimney			
1:42:25	several individual outlets for black smoke, like small flutes			
1:43:40	laser pointer on			
1:47:30	photomosaicing terminated			
1:48:00	moving E (around 10 m), then north towards smaller chimneys, there: test high T sensor			
1:51:38	moving high T sensor (2987.5 m , 1.2 m above ground)			
1:53:11	testing high T sensor at small needle like chimney, not successful			

Station No:	**114 ROV** **ME-64/1**			
Segment (area):	5°S, Target: Turtle Pits Hydrothermal field (sampling, marker, fluids)			
Date: 9. to 10. April 05		**ROV dive 37**		
Time (hh:mm:ss)	**Notes** (use "<ctrl>t" to add date and time!)	CODE	**SAMPLE**	**MARKER**
1:53:15	two large fishes (bathytidae)			
1:57:42	ROV moving out towards east and south, turning around, then second try			
2:09:35	large chimney coming into sight, ROV approaching for testing high T sensor			
2:11:30	starting photomosaicing of large chimney (may be a second one)			
2:13:25	possible second chimney looks to have smaller diameter, also different top (?)			
2:14:34	large chimney is the same, marker M2 clearly visible next to chimney			
2:16:15	another test/try to test hight T sensor			
2:17:45	approaching several discharge sites with high T sensor			
2:27:00	high t sensor test successful, T measured up to 157°, however short failure			
2:28:41	searching for discharge site of gas bubbles			
2:35:39	several discharge sites of black smoke next to marker M2			
2:45:30	high T sensor back to holding position on ROV			
2:52:50	13.9 m above ground, still inside thick plume			
2:53:00	high T sensor stowed away, partly broken (?)			
2:54:00	ROV moving out of plume and then return to black smoker			
3:00:45	ROV moving first towards north, then a turn towards west, returning to chimney			
3:03:00	old chimney structures, the large inactive smoker which we saw during first dive			
3:05:35	chimney structure now named TWIN TOWERS			
3:10:15	moving direction 300°, still inside smoke at 9.5m above ground			
3:10:54	acoustic marker in sight (direction 300 degrees)			
3:13:00	directly above acoustic marker			
3:14:00	moving towards 235°, shell beds			
3:15:00	sulfide mound, brownish, yellow and whitish crusts			
3:17:00	pilot change			
3:18:00	black smoke in the back of sulfide mound			
3:19:35	ROV is now very close to large chimney ("southern tower")			
3:20:42	moving towards discharge site at base of chimney			
3:24:49	looking straight west, black smoke blowing towards us			
3:27:15	Niskin bottle 3 closed, not directly in black smoke		**114ROV-3**	
3:30:00	will start to collect samples for geology/biology			
3:34:40	jumbled sheets			
3:35:30	moving SW, large pit structure, old chimney structures			
3:37:20	black smoker ahead			
3:39:00	sheet flow with shell debris			
3:40:39	large chimney again (informably named "southern tower")			
3:45:50	trying to grab a small sulfide piece from the base of chimney (near black smoker)			
3:50:00	sampling of chimney piece rather difficult			
3:55:00	broken off piece fell on front table of ROV (later recovered)		**114ROV-4A**	
4:02:15	try to move chimney sample from grid into sample box			
4:06:45	cannot move sample from grid, will stay there			
4:09:39	net for biological samples taken out of sample drawer, same chimney as 4A, rubble fell into net		**114ROV-4B**	
4:20:00	larger piece (same piece as before) of chimney on top of ROV arm		**114ROV-5**	
4:27:30	chimney piece fallen off ROV arm, part of it recovered, placed on front grid (later recovered)			
4:40:45	moving west, old sulfide chimneys at TWIN TOWERS, sulfide talus			
4:44:00	acoustic marker in sight (direction 240°)			
4:48:30	near "southern tower", wanting to collect another chimney piece			
5:00:00	so far, sampling of chimney not successful, trying to use net for support, two different samples transferred to		**114ROV-6**	
5:14:00	net with sulfidesfrom the upper part of the sulfide chimney successfully transfered to sample drawer		**114ROV-7**	
5:18:00	trying to secure the high T sensor on grid			
5:24:00	sensor secured			
5:26:58	sampling finished, contact acoustic marker, then sonar scan			
5:31:47	ground weight from ABE in sight			
5:47:45	second sonar scan			
5:55:00	ROV starting to ascend			
8:42:04	ROV on deck; END of station: 4°48,60' S; 12°22,39' W			

Station No:	**123 ROV** **ME-64/1**			Call ROV at Tel# 528
Segment (area):	4°48.6'S/12°22.4'W, Target: Turtle Pits Hydrothermal field (sampling, marker, fluids)			
Date: '11. April 05	**Dive 38**			
Time (hh:mm:ss)	**Notes** (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
8:49:27	ROV goes into the water at 4°48,63S; 12°22,39W (ship coordinates)			
8:56:24	ROV is going down			
10:04:00	ROV at 1750 m, 4°48.573'S / 12°22.410'W (GAPs)			
10:26:55	Testing of valve starboat side failed at 870m; valve portside failed at 1990m			
10:34:24	ROV at 2500 m, 4°48.570'S / 12°22.395'W (GAPs)			
10:52:14	bottom view			
10:52:37	lightly sedimented pillow lavas and lobate flows			
10:57:26	ROV is moving south for 90 m in order to locate Turtle Pits			
10:59:12	lobate flow/jumbled flow			
10:59:51	8 m over ground, hard to make out and seafloor features			
11:00:51	lobate flow/jumbled flow			
11:01:51	lobate flow, sedimented			
11:02:44	lobate flow, sedimented; 2988 m			
11:04:00	2 fishes Ophidiiformes			
11:05:29	lobate flow, sedimented			
11:06:16	there is a discrepancy between DWL and GAPS, change of course due WEST to locate the becon			
11:07:50	beacon: 4°48.577S 12° 22.402W ; GAPS position read from WinGPS. 2990 m. 25 m SE away from the position that was determined during ROV 114			
11:09:49	inactive smoker with abundant mussle-shell beds at the edge of a small cliff			
11:17:08	remaining at station in order to obtain an accurate position			
11:21:09	now: 4°48.551S 12°22.417W; GAPS jumps around a fair bit.			
11:23:21	Octopus sitting right at the beacon			
11:26:21	Octopus show!			
11:31:49	Octupus disappears			
11:32:32	thruster dust			
11:33:58	cameras found octupus again			
11:42:46	still parking to get exact position			
11:45:50	octopus is gone; beacon and inactive smoker are aligned due south (180), cliff is going down to the East			
11:51:07	4°48.557S 12°22.409W is the exact position of the beacon according to the result of the extended survey			
11:56:59	octopus just visible hiding behind the inactive smoker			
12:00:26	still parking at beacon, octopos gone			
12:02:22	jellyfish			
12:05:00	shrimp			
12:06:39	GAPs is very unstable, probably sonar is disturbing GAPs signal			
12:15:00	ADCP and beams off			
12:17:30	leaving the homer flying to the south to enter the valley towards the east			
12:19:30	mussle beds, on basalt covered by brown and white hydrothermal sediment			
12:20:53	sulfide mound, brown and white surfaces			
12:21:53	inactive chimney adjacent to mound			
12:22:13	shrimps, view to the west			
12:23:10	inactive mound			
12:25:10	reached 9 m high southern tower black smoker			
12:25:57	M2 marker black smokers			
12:29:11	looking S, the southern tower is located due 160 degrees from the M2 site			
12:30:30	going south by 10 m			
12:31:34	inactive smoker, hydrothermal sediment mussle beds			
12:33:04	flat surface of sheetflow? Covered with hydrothermal sediments			
12:34:05	sulfide mound, brown and white surfaces			
12:35:27	the sulfide mound is actively discharging black smoke! This is a new active location, smoke is going up straight			
12:38:56	smoker is approximately 1 m high and 0.70 m wide, sitting on top of the sulfide mound (laser points are 20 cm apart)			
12:39:45	4°48.569S 12°22.419W			
12:41:39	smoking orgelpipes, Feoxides and bacterial mats, beehive structures, small and big shrimps (rimicaris and chorocaris), two vent crabs			
12:46:53	foto stitch of the whole smoker			
12:49:33	still on the northside of the smoker			
12:54:33	marker placed on the bottom of the northside of smoker 4; 4°48.571S 12°22.410W			plate marker M
12:59:50	flying around smoker to the southernside			
13:01:10	8 smoking orifices			
13:02:48	vapour bubbles ---> critical boiling (ca. 407°C at that depth)			
13:04:53	Svens filter and temperature sensor will be tested at the vapour bubbles			
13:16:01	still trying to deploy the filter system			
13:23:20	sampling temperature and smoke directly in the chimney	123ROV-1	filter and temperature	
13:25:17	parts of the smoker falling down			
13:28:34	chimney is wide open now --> ideal for fluid sampling			
13:34:35	Niscine white bottle 1 filled next to the smoker	123ROV-2	water in niscine bottle	
13:35:41	Niscine bottle 3 filled directly above the venting	123ROV-3	water in niscine bottle	
13:44:48	trying to grap a sample with rick master and put them into the net			
13:50:25	samples taken from the east-south eastern wall of the smoker; 2986m ROV depth; 4°48.578S 12°22.404W	123ROV-4	sulfides	
13:59:57	exchange of pilots			
14:08:12	resume thw survey, course due south for approx. 20 m			

Station No:	**123 ROV** **ME-64/1**			Call ROV at Tel# 528
Segment (area):	4°48.6'S/12°22.4'W, Target: Turtle Pits Hydrothermal field (sampling, marker, fluids)			
Date: '11. April 05	**Dive 38**			
Time (hh:mm:ss)	**Notes** (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
14:08:54	jumbled sheet flow ridge , cliff facing to the west (downthrough side)			
14:11:01	traveling along cliff, little sediment cover; floor of trough is probably deeper than 10 m			
14:12:58	end of 20 m ROV continues for another 10 m to the south			
14:15:27	end of 10 m change course to the East			
14:15:58	fish Ophidiiformes			
14:16:11	sheet flow, mainly also ropy			
14:17:06	course 10 m due East			
14:17:42	thruster dust			
14:18:36	4 m due East			
14:18:56	fish Ophidiiformes in water column			
14:19:26	ropy sheet flow			
14:21:00	course 10 m due North			
14:21:20	flat sheetflow surface, whorl structure, sediment cover			
14:22:32	contact flat sheetflow structure to jumbled			
14:22:54	continue 10 m to the N			
14:23:22	jumbled sheet flow, no sediment cover; local white patches			
14:25:53	continue 10 m to the N, two fishes Ophidiiformes			
14:27:03	jumbled sheet flow, no sediment cover			
14:28:01	continue 10 m to the N			
14:29:41	change course due West			
14:29:57	crossing cliff top at 2989 m			
14:31:04	chimney structure ahead: the SOUTHERN TOWER			
14:31:56	floor at 2992 m			
14:32:31	active discharge of black smoke at the base + all along the way up to the top			
14:35:23	start of biological sampling program			
14:41:03	black smoke is sourrounding the ROV			
14:44:55	shrimps are located/sitting in pockets close together			
14:45:46	single brown crab			
14:52:50	biological sampling on the northern side of the tower / heading 215			
15:01:17	biological sampling with successful: net full of shrimps	123ROV-5	shrimps / biology	
15:09:29	biological sampling with net: target crab first try: crab escaped			
15:11:39	biological sampling: shrimp in net	123ROV-6	shrimps / biology	
15:19:29	sampling at this site finished (for today...), next target: active chimmeys at marker M1 for fluid sampling using the fluid sampling equipment			
15:28:37	course S to SE towards the active smoker at the M1 marker			
15:30:31	sulfide mound marker M1 in sight			
15:34:15	black smoke with abundant gas bubbles! Smoke is going straight up just like during our first visit in the morning			
15:42:58	temperature sensor deployed and moved into the mounth of the artificially enlarged smoker chimney			
15:46:07	T sensor peaks at 402°C; pump switched on			
15:47:39	404°C			
15:47:54	405°C			
15:48:19	406°C			
15:48:35	405°C	123ROV-7	fluid sample	
15:48:45	414°C			
15:49:31	438°C ??; fluid tube ruptured			
15:49:48	end of sampling exercise;			
15:50:18	pump is off			
15:54:40	loss of small band from orion manipulator			
16:00:59	sonar survey at 10 m above the ground starts			
16:21:31	try to sample basalt			
16:25:30	start sampling with Orion, jumbled sheet flow			
16:26:39	succsessfull lava sample placed in tool box	123ROV-8	lava	
16:29:53	(c?) fish Ophidiiformes Ophidiiformes			
16:30:19	red deep sea shrimp			
16:30:44	thruster dust			
16:33:17	lineated surface			
16:33:18	single mussles			
16:33:34	Ophidiiformes			
16:35:31	transition from straited surface to jumbled sheet flow			
16:35:54	shells			
16:36:21	sulfate mount with several (ca. 6) inactive smoker			
16:38:10	offset of DVL, thus going back to homer			
16:42:08	homer found, Benthoctopus still around			
16:46:25	trying to grap a sample from inactive chimney			
16:50:20	sample taken at homer site	123ROV-9	piece of inactive chimney	
16:52:16	geological and biological sampling completed - flying back to marker 1 to fill Niscine bottle			
16:55:09	mussle patch			
16:59:13	marker M1 in sight, crossing mussle patch			
17:00:05	active discharge of black smoke			
17:02:43	thruster dust			
17:05:28	start of operations for He-fluid sampling			
17:15:20	preparations for He sampling on-going; Cu-tube placed inside of the actively discharging black smoke, very impressive sampling procedure			

Station No:	**123 ROV** **ME-64/1**		Call ROV at Tel# 528	
Segment (area):	4°48.6'S/12°22.4'W, Target: Turtle Pits Hydrothermal field (sampling, marker, fluids)			
Date: '11. April 05	**Dive 38**			
Time (hh:mm:ss)	**Notes** (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
17:21:02	He-sampling completed successfully	123ROV-10	Cu-tube with fluid sample for He	
17:23:50	sampling of black smoke with niskin bottle, labelled with 2 yellow markers	123ROV-11	niskin fluid sample	
17:30:10	flying towards the north			
17:31:52	end of dive - ROV is coming up			
17:34:45	off bottom			

Station No:	**125 ROV** **ME-64/1**		Call ROV at Tel# 528	
Segment (ar	4°48.6'S/12°22.4'W, Target: Wideawake Musselbeds (sampling, marker, fluids)			
Date: 12. Ap	**Dive 39**			
Time (hh:mn	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
8:33:29	Begin of station at 4°48.6'S 12°22.4'W			
10:23:48	2740 m			
10:33:40	seafloor, 4°48.613S 12°22.357'W GAPS coordinates; 2988 m			
10:34:58	lightly sedimented lobate lavaflow			
10:40:11	fish			
10:46:42	course 20 m due south			
10:47:05	encounter of plastic chain dislodged from TV Grab (from Oktopus) tied to seafloor by weight of "karabinerhaken"			
10:48:46	sheet flow with whorls			
10:49:16	lobate sheet flow			
10:52:55	some time stationary, now continues over lobate sheet flow			
10:55:43	lobate sheet flow with minor collapse structures			
10:57:26	completed 40 m (fourty) to the south			
10:57:44	change course due East for 20 m			
10:58:29	lobate sheet flow lightly sediments			
10:59:49	collapse pit			
11:00:02	scattered mussle beds, crossing into more jumbled flow morphologies			
11:02:11	shimmering water and live mussles!			
11:02:29	mussels within pockets of basalt sheet flow, Actinia and some limpits on basalt, mussles overgrown by small grey limpits, + abundant grey strings (byssus)			
11:04:00	vent crabs and a few shrimp			
11:05:15	shimmering water			
11:06:04	thruster dust			
11:07:32	sea anemonea, great image close up of the limpets!			
11:08:39	photo stop of ROV at this site			
11:08:58	crab			
11:10:27	polychaete worm (?)			
11:12:37	recognize a temperature anomly of 2.8°C that occurred a few minutes ago			
11:13:31	Mussels covered by limpits and snail egg aggregates			
11:15:20	recognize that the surrounding is jumbled and thrusted sheet flow surface			
11:16:03	Actinia			
11:18:55	field is 2 x 2 m, estimate of max. extent			
11:22:36	sampling innitiated			
11:23:33	temperature occationally up to 2.9 °C			
11:25:08	shrimp			
11:28:52	sampling with Orion failed beacuse of the instability of rock			
11:29:14	trying sampling with net			
11:38:09	Bathymodiolus colony sampled with net at GAPs: 4°48,611S; 12°22,327´W; 3000m	125ROV-1	mussles with rock pieces	
11:40:38	fish appears			
11:42:07	trying to grap the worm tubes			
11:46:01	worm tubes sampled with Orion at: 4°48,624S; 12°22,355´W; 3000m	125ROV-2	worm tubes	
11:51:22	looking for rock sample to cover the worm tubes and prevent sample loss			
11:57:30	closed niskin bottle marked with one white lable (right side)	125ROV-3	niskin bottle water sample	
11:59:36	basalt sample emplace on top of sample 125ROV-2; 4°48,611S; 12°22,327´W; 3000m	125ROV-4	basalt	
12:03:46	sampling procedure finished			
12:14:54	fying to the east			
12:15:40	new mussle patch of Bathymodiolus colony - 3 times bigger than the first mussle patch - ca. 1 x more than 10m-15m			
12:18:26	mosaic fotos taken (foto stitching)			
12:18:29	crabs siting in the mussle patch			
12:22:38	lava talus field and jumbled sheet flows; 4°48,629S; 12°22,358´W; 3000m			
12:27:54	foto stitching flying 30m to the west, going back 2m next to the first foto stitch area			
12:34:58	fish			
12:35:41	flying 5 m to the south			
12:36:48	jumbled flows - lava with little white spots (anemone?), slightly covered with sediment			
12:39:01	snail (Phymorhynchus)			
12:42:53	Bathymodiolus colony covered with lots of limpids			
12:43:42	Hydrozoa sitting inbetween the mussle patch			
12:45:37	shimering water and small temperature anomalies			
12:49:02	anemones			
12:53:53	scyphopolypen			
12:57:24	ROV is parking and temperature rises upt to 3.3°C			
13:05:26	Niskin bottle closed (middle bottle; 3 white dots))	125ROV-5	niskin bottle water sample	
13:09:06	rock sampling, sample in basket "lower right", position 4°48.639'S / 12°22.346'W, depth 2986m, basalt is overgrown with Hydrozoa	125ROV-6		
13:15:39	try to take second sample, failed			
13:26:16	thrusterdust, heading south to search for clam field			
13:29:22	few clams sitting in depressions of broken jumbled flows, two live rest shells			
13:32:43	moving further south			
13:35:31	jumbled flows, fauna is decreasing			

Station No:	**125 ROV** **ME-64/1**		Call ROV at Tel# 528	
Segment (ar	4°48.6'S/12°22.4'W, Target: Wideawake Musselbeds (sampling, marker, fluids)			
Date: 12. Ap	**Dive 39**			
Time (hh:mn	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
13:38:28	single Gorgonia			
13:38:53	thrusterdust			
13:40:38	thrusterdust			
13:43:51	moving 10 m to the west, jumbled sheet flows			
13:46:46	gestielter Schwamm in jumbled flows			
13:49:07	hornitos or pressure ridge or small sulfide chimneys			
13:49:36	calyptogena shells			
13:50:34	thrusterdust			
13:50:59	moving 5 m to the west than back to north			
13:52:45	jumbled flows			
13:54:23	back in musselfield			
13:58:50	sitting on top of musselbed, shimmering water, 3.0°C			
14:05:31	1 Calyptogena alive, GAPs: 4°48.631'S / 12°22.359'W, depth 2986m (ROV)			
14:10:51	beginning to sample Calyptogena with net GAPs 4°48.631'S/12°22.359'W, depth 2985m (ROV)			
14:25:49	end of sampling; sample in non-marked net 300µm; Container: 4°48.645'S/ 12° 22.348W'	125ROV-7		
	(ROV) erhöhte Temperatur 3,1°C			
14:32:08	collapsed structure of lobated lava			
14:35:07	10 m to south			
14:39:22	10 m to north			
14:42:22	Mussle patch (Calyptogena); altered basalt with Hyrozoa coating			
14:44:44	thruster dust			
14:44:51	course due East for 10 m			
14:47:03	jumbled sheet flow, no biology			
14:48:11	10 m to East			
14:48:29	mussle field			
14:48:50	young lava flow covering mussle patch? Unlikely since there are more musske			
14:50:27	continue due east, more mussle patches			
14:51:53	HERE is the contact of fresh sheet flow covering the mussle and clams?			
14:52:32	This lava lobe is about 20 to 30 cm thick, flow front, ropy sheet flow, however it is not clear whether it is continuous			
14:55:02	jumbled, brecciated flow			
14:59:41	2987 m going up?, jumbled flow with occational mussle patches			
15:00:21	10 m due East			
15:01:42	jumbled flows with occational mussle patch; 2987 m			
15:03:16	pillowed fresh lava overlying jumbled flow			
15:03:58	lobate flow overlies the jumbled flow			
15:04:43	Brisingidia			
15:06:58	4°48.634S 12°22.341W; BUT the GAPS signal is unstable and jumps, positioning good in the second decimal.... sampling plan: take a sample of this younger lobate flow and of the underlying jumbled flow			
15:15:32	sampling under way			
15:20:03	sampling proves difficult due to fragile, glassy nature of the lava, change of position			
15:23:54	white patches are refelctions of the light on the glassy surface of the lava lobes			
15:24:33	fish: Bythitidae			
15:27:37	sampling for glassy basalt, 2985 m			
15:32:17	sampling on-going			
15:37:24	sampling on-going			
15:43:17	too fresh for sampling?			
15:44:53	rig master comes to the rescue...			
15:46:44	frequently hitting the ground-accidental sampling?			
15:50:39	crab			
15:52:01	thruster dust			
15:52:41	sampling ongoing, "the riffle is not thrown into the wheat field yet... "			
15:55:55	pillow rind textures together with lava lobes (escape texture, rind textures)			
16:03:25	basalt fragment in orion jaws!			
16:04:10	4°48.635'S 12°22.345'W, 2985 m, middle of lower row	ROV125-8	basalt	
16:07:21	sampling continues			
16:11:42	fish			
16:12:09	crossed into the jumbled flow, 2986 m			
16:16:12	using shovel for sampling of lava			
16:19:14	some basalt fragments recovered in the shovel and place on the poarch	ROV125-9	basalt	
16:23:58	some more bassalt fragments recovered and placed in lower row left box	ROV125-10	basalt	
16:26:47	flying to the west in order to obtain fluid samples from diffuse discharge			
16:27:19	mussle patch			
16:29:49	mussle patch			
16:30:02	fish: Bythitidae			
16:31:17	back on fresh lobate lava flow			
16:31:55	small collapse pit?			
16:32:10	fish			
16:34:47	hunting the fish, Ophidiiformes			

Station No:	**125 ROV** **ME-64/1**		Call ROV at Tel# 528	
Segment (ar	4°48.6'S/12°22.4'W, Target: Wideawake Musselbeds (sampling, marker, fluids)			
Date: 12. Ap	**Dive 39**			
Time (hh:mn	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
16:35:58	very nice collapsed lobate flow			
16:37:39	collapse lobate lava tounges			
16:38:50	still hunting the fish towards the W-NW			
16:41:52	thruster dust			
16:45:13	collapse lobate lava tounges			
16:47:39	lava collapse structure			
16:50:20	mussle field			
16:50:37	increasing temperature up to 2,9°C			
16:54:12	shimmering water			
16:54:46	start fluid sampling 4° 48,634' S / 12° 22,362' W, 2980 m	ROV125-11	Fluid	
17:00:58	temperature increase up to 3,97° C			
17:02:03	temperature rises up to 4,0°C			
17:09:00	temperature increase up to 4,4°C			
17:10:54	temperatur 4,3°C			
17:11:35	temperature rises up to 15°C			
17:12:12	temperature 16,2°C			
17:12:45	temperature 16,7°C			
17:13:24	start pumping process			
17:14:01	temperature variation 12 to 16 °C			
17:17:03	temperature rises up to 17,2 °C			
17:17:45	temperature 18,0°C			
17:28:50	stop fluid sampling			
17:37:36	problems with fluid sampler handling, sensor tip is twisted too much, doesn't go into holder; leave it on front porche; will try to grab crabs with bionet			
17:41:09	trying to sample crab, first attempt failed, finalla sucsesful	ROV125-12	Bio Crab and mussels	
17:48:02	end of crab sampling			
17:53:52	closing last Niskin bottle 4° 48,622' S / 12° 22,384' W, 2987m	ROV125-13	niskin bottle water sample	
18:00:42	diving up, leaving seafloor			
21:46:39	ROV on deck since 20:45			

Station No:	**130 ROV** **ME-64/1**		Call RC
Segment (area):	4°48.6'S/12°22.4'W, Target: Wideawake Tower (fotoshooting, sampling, marker, fluids)		
Date: 13. April 05	**Dive 40**		
Time (hh:mm:ss)	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
8:55:16	Begin of station at 4°48.6'S 12°22.4'W		
10:14:04	ROV at 1500 m		
11:21:51	bottom view		
11:24:36	sedimented lobate lava flows		
11:27:38	170m north of homer, GAPs is out of order		
11:30:29	jumbled flow contact to linetaed sheet flows		
11:34:54	lineated flow		
11:35:56	ridge-like structure made-up of jumbled flows		
11:38:16	jumbled flow contact to linetaed sheet flows		
11:38:40	jumbled sheeet flows		
11:39:36	jumbled flow contact to linetaed sheet flows		
11:40:26	still 60 m to fly to homer		
11:42:14	lineated sediment		
11:43:45	jumbled sheet flow		
11:43:55	homer reached		
11:44:18	mussle patches		
11:47:49	4°48,5603S, 12°22,4159W position of beacon (communication from container); GAPS is working		
11:52:00	change over of pilots, ROV stationary		
12:04:59	CDT display out of order		
12:12:15	flying to inactive chimney: "Pinoccio" facing north - foto stop		
12:21:57	"Pinocchio" facing north is located at 8m due 37degree relative to the homer beacon		
12:25:40	2nd inactive chimney reached ("Stalagmite")		
12:30:37	stalagmite is located 14 m due 24° relative to the beakon and 5.5 m high		
12:34:59	moving south crossing mussle bed		
12:37:21	reached M2 active smoker site		
12:39:50	several discharge sites defining an active hydrothermal ridge of approx. 2 m length oriented in E-W direction; these are located at approx. 3 m south from the M2 marker		
12:40:48	Marker M2 is located 22 m due 23° relative to the beacon		
12:44:16	black smoke plume is discharging towards the north		
12:49:16	moving across mussle patch due 300°		
12:49:37	change to south; mussle patch is extensive, covering jumbled sheet flow surface that is covered by brown hydrothermal sediment		
12:53:28	position of the TV-grab?, 34 m in direction 39° relative to the homer beacon		
12:58:12	infront of the tower sulfid mounds		
13:03:13	foto stop at southern tower		
13:04:35	southern tower is located at 39m and 14° relative to the homer beacon		
13:10:24	laser on for scaling		
13:22:25	reached the peak of southern tower		
13:26:07	end of foto stop		
13:26:29	flying southwards to the small smoker, passing the tower on the eastside, enter the valley with the small smoker		
13:28:21	foto stop at the small smoker		
13:30:25	big black plume		
13:32:47	temperatur rises up to 2,8 degree		
13:35:38	closed to the tower smoker dust is going from SE-NW		
13:41:52	shrimps at northwest side of the tower		
13:49:31	flying eastwards to M1		
13:53:36	M1 marker is smelting, temperature rises over 3, 1 °		
13:54:51	thruster dust		
13:55:10	ROV is located 18m and 1,96° relative to M1		
14:03:59	ROV is located 29 m and 340° relative to the beacon, waterdepth 2981m - calculation: M1 is located at 45 m due 354° relative to beacon		
14:05:46	flying northwards to M2		
14:08:42	reached the smoker who looks like a fork		
14:10:11	reached the westside of the cliff near by M2, waterdepth 2987m		
14:11:12	flying to the north around the cliff		
14:15:58	reached the "Stalagmite", a lot of dust		
14:16:42	flying to the west, than change direction and want to fly to M2		
14:17:51	"Stalagmite", waterdepth 2982 m, 14m northwards relative to the beacon		
14:23:53	hydrothermal sediments		
14:26:18	infront of the tower sulfid mounds		
14:28:09	shrimps and one vent crab at the southwest side of the smoker by M2		
14:29:00	starting biosampling		
14:37:43	trying to catch shrimps with the net		
14:38:44	brown ceab sitting on the chimney wall		
14:39:55	catched a huge crab	130ROV-1	crab, shrimps
14:44:18	trying to catch shrimps with 2nd net		
14:46:41	catched 4 shrimps		
14:54:01	all shrimps are gone		
14:57:20	catched 2 shrimps with little piece of altered rock	130ROV-2	shrimps, rock

Station No:	**130 ROV** **ME-64/1**		Call RC
Segment (area):	4°48.6'S/12°22.4'W, Target: Wideawake Tower (fotoshooting, sampling, marker, fluids)		
Date: 13. April 05	**Dive 40**		
Time (hh:mm:ss)	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
15:01:36	trying to grab an altered rock sample - failed		
15:09:03	flying westwards over the plateau, trying to get mussles		
15:13:21	lineated in combination with jumbled lava flows, mussle patches		
15:15:33	biosampling failed, only schill, some snails and vent crab, very scattered		
15:17:39	flying back to the smoker M2		
15:20:20	thruster dust		
15:21:55	arriving at M2 hydrothermal site		
15:25:41	deployment of the Harald Straus Münsteraner smoke catching device at M2		
15:32:28	Particle catcher on the way		
15:34:11	catcher deployed into the smoker	130ROV-3	catcher with b
15:35:03	catcher is grey		
15:37:08	catcher placed in sample box (middle of upper row)		
15:45:17	deployment of the high temperature logger of Sven Petersen/Oktopus		
15:47:51	approaching the smoker with the temperature logger		
15:53:51	trying to bring the T-logger back to drawer		
15:56:00	serious problems with the ROV		
16:05:41	ROV at 2968m - 21m above ground		
16:20:48	ROV is coming up		

Station No:	**141 ROV** **ME-64/1**		Call ROV at Tel# 528	
Segment (are	4°48.6'S/12°22.4'W, Target: Turtle Pits (fotoshooting, fluid sampling, collecting homer)			
	Date: 15. April 05			
	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
8:36:56	Begin of station at 4°48.652'S 12°22.43'W			
10:52:12	bottom view at 4°48.573S 12°22.400W (Gaps)			
10:58:49	homer appears on jumbled flows			
10:59:26	starting to place marker M3 next to homer; Position: 4°48.560'S 12°22,423W			
11:06:18	marker M3 placed next to the homer; checking orientation of pinoccio and stalagmite inactive chimneys looking with the ROV from behind the beacon: Beacon, pinoccio and stalagmite align at ~220° confiming the previous measurements			MARKER M3
11:15:15	mussle shells and beds			
11:19:16	lost bottom view - smoke			
11:20:17	mussle patch			
11:22:53	southern tower appears			
11:23:33	just smoke			
11:24:25	marker M1 appears			
11:25:47	recording exact position of marker M1			
11:27:04	vent side from the former fluid sampling appears			
11:29:43	surrounding the vent side and marker M1			
11:32:00	marker M1 is located 47m away from homer in 330° direction			
11:34:44	photo stop			
11:55:49	photo mosaik			
12:06:09	going E mapping the east side of the wall			
12:10:26	moving around for oriantation			
12:13:02	locating the eastern scarpe: 56m in 350° direction from homer; at 10 m to the East of M1 marker			
12:16:12	approaching southern tower			
12:18:40	photo stitching			
12:41:39	start flying to marker M2 in northern direction (330°)			
12:44:20	approaching M2 marker			
12:47:47	hitting chimney at M2			
12:52:36	starting with photo stitching			
12:56:49	chimney at M2 is boiling			
13:04:30	flying above the chimney to fill a Niskin bottle in the black smoker plume			
13:07:55	Niskin bottle 1 filled	141ROV-1	Niskin 1	
13:14:13	marker M1 appears			
13:18:03	black smoke and boiling water discharging			
13:18:47	vent crab sitting on chimney			
13:24:46	prepare for fluid sampling			
13:33:52	pump switched on			
13:38:01	pump switched off and back on; **note:** black shimmering smoke is discharging from the exhaust when the pump is on			
13:41:32	jaw opened and fluid sampling tool fell to the ground.			
13:52:35	rescue operations on-going			
13:54:15	tool back in starting position; another try to get the fluid sampling going			
13:55:02	FL takes a walk...			
13:57:38	tool in orion jaw sampling operations resume			
13:58:07	tool falls out of the jaws again!			
14:00:10	FL back on deck			
14:00:43	two fishes			
14:03:58	pump swithed on; shimmering water leaves the exhausts			
14:14:36	switching the pump on and off results in a short outbreak on the exhaust			
14:19:31	pump switched off, since ROV drifted out off the plume area			
14:28:05	pump switched on			
14:33:12	snorkel stable in smoker			
14:37:21	still stable in smoker, pumps switched off and on			
14:38:08	pumps off and on. Gives black smoke at exhaust when pumps are switched on			
14:39:21	lost contact to smoker, pumps off			
14:43:10	back in smoker,			
14:43:59	pumps on			
14:44:42	lost contact to smoker			
14:45:14	back in smoker,			
14:46:14	lost contact			
14:46:52	pumps off			
14:48:30	back in smoker,			
14:49:04	pumps on			
14:50:59	pumps off, lost contact			
14:54:46	pumps on, in smoker			
15:06:14	no smoke from exhaust pipe			
15:08:48	lost contact, pumps off, end of fluid sampling	141ROV-2	Fluid sample system	
15:09:22	snorkel bent			
15:09:49	sediment pieces falling from snorkel, possibly blocked			

Station No:	**141 ROV** **ME-64/1**		Call ROV at Tel# 528	
Segment (are	4°48.6'S/12°22.4'W, Target: Turtle Pits (fotoshooting, fluid sampling, collecting homer)			
	Date: 15. April 05			
	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE	MARKER
15:14:24	a fish swimming from right to left			
15:16:46	positioning of M1 with compass, 40 m at 335°			
15:29:55	going west			
15:30:09	going north			
15:33:02	looking for snails close to the beacon			
15:38:49	jumbled flow with shells			
15:42:36	flying westward to M2			
15:47:50	approaching M2 marker			
15:57:21	18° 28m to homer			
16:03:54	flying into the smoke above the chimney			
16:04:36	Niskin bottle 2 (middle) filled	141ROV-3	Niskin 2	
16:07:43	Niskin 3 (links) filled	141ROV-4	Niskin 3	
16:14:17	Position M2 : 17°, 24 m			
16:16:22	S Tower 17°, 37 m			
16:22:08	back to M2			
16:30:35	Preparing to use particle catcher at M2			
16:35:24	deployment of particle catcher			
16:42:23	particle catching successful; placed in middle bin, lower row	141ROV-5	Particle catcher	
16:52:21	this picuture shows the site of the GTV location 139; on the western foot of the M2 marker site			
16:58:30	Bythilide Fish			
17:00:42	ROV going to the south			
17:04:25	Positioning of M1 site: 350° 53m: ROV located to the south of the smoker, ROV, Smoker and M1 marker aligned			
17:08:49	eastern wall of the pit at the position: 346° 50m relative to the beacon; wall is oriented N-S (360°); depth of valley is about 4 m			
17:13:20	wall turns slightly to the NW aproaching the M2 site			
17:16:03	fish			
17:16:10	beacon site; the eastern and western valley walls are 5 m apart			
17:23:39	orion has recovered the beacon			
17:30:12	beacon in sampling box			
17:34:13	ROV leaves seafloor starting ascent			
19:36:49	ROV reaches surface			
19:49:13	ROV on deck	141ROV-6	sulfide samples	
			on ROV tray	

Station No:	**146 ROV Dive 42 ME-64/1**		
Segment (area):	4°48.9'S/12°22.4'W, Target: exploration in rift valley to the west of Turtle Pits and transit to Red Lion + fluid sampling; Smokers at RED LION: "Shrimps-Smoker", "Sugar-Head", "Mephisto", "Tannenbaum"		
	Date: 16. April 05		
Time	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
9:59:25	ship at at 4°48.89'S 12°22.44'W, HS depth: 3000m; ROV at 320 m depth		
10:00:00	switch on kips-pump		
10:07:48	depth ROV 520m, ship at 4°48.90 S 12°22.41 W		
10:27:14	ROV at 1000m; ship at 4°48.91S; 12°22.40 W		
10:45:40	switch off kips-pump		
10:48:02	ROV at 1503m; ship at 4°48.90S; 12°22.40 W		
11:09:07	ROV at 2000m; ship at 4°48.90S; 12°22.39 W		
11:30:48	ROV at 2500m; ship at 4°48.91S; 12°22.39 W		
11:49:43	Atimeter 35 m		
11:51:04	seafloor in sight Rov at 2990m, Ship at 4°48,88S; 12°2.39W, HS 2996m		
11:52:30	diving up 10m heading 288°		
11:53:41	Ropy lava, less sedimented		
11:55:11	still heading 270° 2990m		
11:56:52	still standing for oriantation, problems with GAPS, go 20m W 2991m		
11:59:59	lava changed from ropy to jumbled, increasing sediment		
12:02:30	still heading W		
12:05:34	flying 20m to the west		
12:06:10	fluid sampling system		
12:06:47	ropy lava slightly covered with sediment		
12:09:16	80% sediment cover		
12:10:59	perfect whorls structures		
12:13:59	80% sediment cover		
12:16:54	ropy surface covered with sediment		
12:18:31	flying 700m to the west		
12:19:06	ropy lava with thin sediment cover		
12:20:41	lobate flows and pillow lava		
12:21:28	lobate flows - sediment in pockets		
12:21:39	flying up the flanks of a little volcano		
12:22:34	50% sediment cover		
12:24:49	lobate flows - sediment in pockets		
12:25:44	Holothuridae		
12:27:10	pillow lava slightly covered with sediment		
12:29:50	little NE-SW orientated fissure in the pillow lava flow on the flanks of the volcano		
12:34:40	trough - probably 3m deep - still heading west		
12:35:03	pillow lava and lobate flows slightly covered with sediment		
12:35:43	sediment cover increases - ca. 40%		
12:38:37	very rough surface 2m up and down		
12:39:52	flying down still along the eastern flank of the volcano		
12:41:22	ropy lava surface with thin sediment cover		
12:42:44	fish		
12:43:24	jumbled like structures (Jens)		
12:46:02	flying still 5m above the seafloor, heading W		
12:47:08	sediment decreases 3010m		
12:48:16	ropy lava		
12:48:55	fish eellike		
12:49:24	sediment increasing		
12:51:10	changing from lineated to ropy again		
12:55:58	lobate flows		
12:56:36	flying 20m down		
12:57:32	lobate flows and pillow lava		
12:58:58	flying down the western flank of the volcano - lobate flows and pillow lavas		
13:00:41	little NE-SW orientated fissure in the pillow lava flow on the flanks of the volcano		
13:01:14	single pillows sticking out of the sediment (60%)		
13:02:55	Holothuridae		
13:08:25	pillow lava on a gentle slope of the eastern flank - thin sediment cover		
13:11:39	shrimp		
13:13:18	flying up a 22m cliff composed of pillow lavas		
13:13:44	pillow lava field		
13:17:29	lobate flows - sediment in pockets		
13:23:52	flying to the western flank of the volcano, where we found high Neph (volts) mapper signals		
13:26:36	pillow lavas and lobate flows - sediment in pockets		
13:29:22	pillow lavas and lobate flows - sediment in pockets		
13:31:24	fish Ophidiformes		
13:34:35	lobate flows		
13:43:12	same spot as before, not moving, nice, but older lobate to pillow flow		
13:47:10	start moving again, heading north, depth 2982m		
13:49:38	large pillows, sediment stained, gorgonarie, grey=not glassy		
13:52:34	searching in the vivinity for sampling point for pillows		
13:53:18	on top of local high, depth=2976m, beautiful pillows		
13:54:59	fissure running N-S, ~ 1-2 m wide, trying to sample these pillows		
14:00:25	not clear where to sample, no easy spot, pillows too large		
14:02:56	slowly mowing to the north along fissure, more sediment between pillows		

Station No:	**146 ROV Dive 42 ME-64/1**		
Segment (area):	4°48.9'S/12°22.4'W, Target: exploration in rift valley to the west of Turtle Pits and transit to Red Lion + fluid sampling; Smokers at RED LION: "Shrimps-Smoker", "Sugar-Head", "Mephisto", "Tannenbaum"		
	Date: 16. April 05		
Time	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
14:04:47	Schlangensterne (Ophiuroidae) and sea stars (Asteroidae, Brisingidae) sitting next to "cauliflower"		
14:08:35	taken rock sample, placed into lower right box (4°48.883'S / 12°22.930'W), depth 2973m	146ROV-1	pillow basalt
	the sample belongs to the grey, slightly sedimented pillow and lobate flows in the area		
14:14:38	moving 30 m west, then 30 m to north		
14:16:48	crossing the same fissure we saw before while heading west		
14:18:46	sedimented pillows and lobate flows, sediment 80%		
14:23:01	flying to N, sedimented pillows		
14:24:49	turnig to E going 30m ahead		
14:26:39	sedimented pillows and lobate flows, sediment 80%		
14:27:33	appraoching same fissure from the western side		
14:34:46	flying over sedimented pillows, turning to north		
14:38:46	pillows, less then 20% sediment, flying 32°		
14:39:19	increasing sediment, same old flows, fish		
14:42:05	still pillow mound,depth 2988m		
14:47:44	pillows stucking out of sediment		
14:50:14	fissure running N-S, ~ 1-2 m wide		
14:52:14	flying down the western flank of the volcano - sedimented lobate flows and pillow lavas		
14:54:24	fish		
14:56:52	sediment cover increases - ca. 40%		
14:59:46	rough surface - troughs and hills made up of pillow lava		
15:05:14	claft partly filled with sediment		
15:08:14	pillows and lobate flows with thin sediment cover		
15:09:10	flat blocky lava mixed with pillow lava, crinoid like starfish		
15:10:19	pillow lavas and lobate flows - sediment in pockets		
15:13:24	pillow lavas and lobate flows - sediment in pockets 3005m		
15:16:48	little fissure (N-S) within compact pillow lava, sediment 80%, Flying still N		
15:18:54	lobated lava less sediment		
15:19:22	following fissure again		
15:19:52	cliff on the right side, 2999m, very deep cleft, altimeter out of range (at least more than 30 m)		
15:21:56	after diving a little bit sinking again		
15:26:34	fresh lava flow with collapse structures appears, unfortunately no sampling possible, because ship is moving		
15:28:40	pillow lava and lobate flows slightly covered with sediment		
15:30:19	sediment cover increases - ca. 30%		
15:31:31	lobate flows fresh appearance		
15:37:59	lineated flows next to jumbled sheet flows		
15:41:03	jumbled flows		
15:42:42	suddenly black screen; high voltage failure		
17:30:13	ROV cameras on in 2885m		
17:50:03	seafloor in sight		
17:52:00	ropy flows with thin sediment cover (whorl)		
18:24:45	taken rock sample, placed into front left box (4°48.354'S / 12°22.693'W), depth 3024m	146ROV-2	ropy basalt
	sample obtained from ropy flows, glassy basalt		
18:37:03	start moving north 30°		
18:38:24	jumbled flows		
18:40:14	ropy flows		
18:41:18	jumbled flows over older sheet flows with thin sediment cover		
18:44:00	jumbled flos with thin sediment cover		
18:45:04	holothurie		
18:47:33	decreasing sediment		
18:49:10	sediment covered old sheet flow below jumbled not sedimented basalt		
18:52:56	lobate lava with sediment and younger jumbled flows		
18:58:22	sheet flow with thin sediment cover		
18:59:45	lobate lava with thin sediment, collapse structures		
19:04:15	jumbled lava		
19:04:33	lobate lava with thin sediment cover		
19:08:29	pillows with thin sediment		
19:09:21	lobate lava and pillows		
19:10:49	pillows		
19:12:02	moving 0°		
19:12:59	jumbled flows at 3028m with thin sediment		
19:15:34	old lobate lava with thin sedinet cover and younger sheet flows		
19:17:00	pillows		
19:18:13	enhanced distance from bottom, no clear visibilty		
19:21:21	old lobate and younger sheet flows		
19:22:46	enhanced distance from bottom, no clear visibilty		
19:23:53	lobate flows with very thin sediment cover		
19:28:28	three open Niskins		
19:28:51	enhanced distance from bottom, no clear visibilty		
19:29:32	lobate flows with thin sediment and younger ropy flows		
19:32:59	lobate lava with thin sediment cover		
19:38:25	lobate lava		
19:39:01	pillows rarely sediment		

Station No:	**146 ROV Dive 42 ME-64/1**		
Segment (area):	4°48.9'S/12°22.4'W, Target: exploration in rift valley to the west of Turtle Pits and transit to Red Lion + fluid sampling; Smokers at RED LION: "Shrimps-Smoker", "Sugar-Head", "Mephisto", "Tannenbaum"		
	Date: 16. April 05		
Time	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
19:45:17	sheet lava with rounded sediment patches		
19:46:23	orange staining rocks - old chimney? In 3047m		
19:47:18	Gorgonaria		
19:56:54	trying to grab a sample from the orange staining rock		
20:12:03	seastar		
20:14:19	mussle bed (50-60 species)		
20:15:57	flying around the old chimney		
20:24:01	altered sulfide from the chimney structure sampled, 4°47,902S; 12°22,618W; 3045m	146ROV-3	sulides of inactive chi
20:27:14	flying 100m towards north		
20:29:49	collapse structure, pillow lava flow		
20:31:33	jumbled flows, grey with rare sediment cover		
20:32:22	jumbled to tortured flow breccia, heading 020		
20:32:50	fish, alone in the jumbled breccia		
20:34:03	gorgonaria in jumbled flow breccia, slowly going downhill depth: 3056m		
20:35:04	jumbled flow breccia, more intense particles in the water column?		
20:37:27	fish over sheet flow with sediment "dunes"		
20:38:33	thrusterdust, over sheet flow with "dunes"		
20:40:58	sheet flow with "dunes"		
20:41:40	holothurie sitting on one of the sand dunes		
20:42:33	small pressure ridges between flat areas of shett flows with "dunes", depth 3059m		
20:44:06	stopped, looking around for Red Lion		
20:44:50	fish over jumbled flows, heading sothest (110)		
20:47:03	will try to look around with sonar		
20:57:27	moving SE again over jumpled flows		
20:59:31	turned to south		
21:00:47	stopped, turned to west		
21:08:09	turning to 135°, going ahead		
21:09:17	flying to the given position nearby Red Lion, 3055m		
21:10:03	pillows less sedimented		
21:11:39	stopped turing W		
21:12:49	jumbled lava, sheets		
21:13:42	turning N going slope down		
21:14:37	turning to E looking ahead, moving E, increasing particle flow		
21:15:58	ropy sheets, flow front (?) changed to pillows		
21:19:08	flying S pillows sedimented		
21:21:05	turning W flying ahead, pillows		
21:23:23	haeding N, flying above ropy lava		
21:25:15	lava jumbled shifting to pillow		
21:26:18	turning to E over W and S, moving E above ropy lava to pillows		
21:28:26	lobate lava more sediment		
21:29:18	sediment increasing, 3055m		
21:31:21	turning S, looking again on pillows, less sediment		
21:32:44	shrimps; nearly 20		
21:36:45	shrimps number increase		
21:39:36	smoke appears		
21:40:07	flanges covered completely with shrimps, wide (6m in diameter) chimney mound structure - Red Lion?		
21:46:20	facing south several little chimneys appear		
21:47:16	shimmering water		
21:48:38	ROV is circling the structure		
21:49:54	black smoke coming out of a fissure		
21:52:51	smoke drifting from north to south		
21:54:07	several inactive chimneys at the flanks		
21:55:42	the structure is about 3m high		
22:02:17	trying to catch shrimps		
22:31:00	shrimp sampling (unsuccsessfull)	146ROV -4	shrimps I
22:32:13	Niskin 3 closed (mistake)	146ROV-5	Niskin 3
22:35:35	the net is damaged -> new net will be deployed		
22:48:13	catching shrimps - net full of shrimps	146ROV -6	shrimps II
22:48:41	very successful shrimp catching		
22:57:35	peace of the chimney "shrimp smoker" sampled; 4°47,824S; 12°22,595W; 3048m	146ROV-7	sulfide
23:06:08	flying to the north - pillow lava field		
23:08:10	orange sediment inbetween the pillows		
23:08:27	orange sediment coverage increases		
23:09:03	single chimney structure appears		
23:10:08	chimney with white top (shrimps) is smoking quite heavily		
23:11:40	behind that white top chimney another acitve chimney appears - looks like a devil (mephisto - approx. 5m high): GAPs: 4°47,824S, 12°22, 595W; 3056m - structure is 4m high, 8m in diameter		
23:17:07	in southern direction? (propably compass not working!) another chimney appears - approx. 6m high and 1m in diameter - small smoke plume - GAPs: 4°47,832S; 12°22,600W		
23:36:05	flying to north-west: pillow lava flows		
23:41:12	flying back tp to south-east		
23:42:57	ROV hit the ground - going up 8m		

Station No:	**146 ROV Dive 42 ME-64/1**		
Segment (area):	4°48.9'S/12°22.4'W, Target: exploration in rift valley to the west of Turtle Pits and transit to Red Lion + fluid sampling; Smokers at RED LION: "Shrimps-Smoker", "Sugar-Head", "Mephisto", "Tannenbaum"		
	Date: 16. April 05		
Time	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
23:44:27	shrimps on bottom, sedimented pillows, hydrothermal sediments yellow-brownish colour		
23:46:19	heading S, going ahead		
23:47:27	smoker ahead "Tannenbaum"		
23:54:00	flying 245° to "shrimp smoker" (struture with flanges, first hit)		
23:58:34	looking to W on the "Shrimps Field", pillows, flying over it		
0:00:27	stopped at the field´s end, going ahead further W		
0:01:29	pillows again		
0:01:51	Tannenbaum and the Shrimp-Smoker located for positioning, searching for "Mephisto" and the other structure		
0:04:17	flying W over the shrimp field		
0:04:57	looking S, stopped at the end of the field		
0:05:52	"Shrimps-Smoker" in sight		
0:08:16	flying W		
0:08:46	pillows uncoverd by shrimps, going W		
0:09:38	slope ahead, ROV stopped		
0:10:34	turning to 133°, flying		
0:11:14	crossing mussel shill (?)		
0:12:00	secound Smoker ="Suggar-Head"		
0:15:12	"Shrimps-Smoker": 4°47,810S, 12°22,605W; "Tannenbaum": 4°47,806S, 12°22,602W, distance 12m at 250° from "Shrimps-Smoker" to Tannenbaum", "Sugar Head": 4°47,818S, 12°22,607W, and 16m at 09° from Sugar-Head to Shrimps-Smoker		
0:25:16	Octopus at NE side of "Mephisto"		
0:34:02	Octopus swimming		
0:35:04	Octopus sits again		
0:36:36	going back to "Mephisto" closing Niskin, secound Niskin will be closed at "Sugar-Head"		
0:46:57	closing Niskin 1 at "Mephisto" 3045m	146ROV-8	Niskin 1
0:48:34	going to "Sugar-Head" for closing the last Niskin		
1:03:54	niskin 1 is not closed, error in closing mechanism		
1:10:21	closing Niskin 2 at "Sugar-Head", 3047m	146ROV-9	Niskin 2
1:20:41	starting to ascend to 2850 m, testing fluid sampler device		
1:23:52	reaching 3000 m		
1:26:30	reaching 2950 m		
1:28:09	at 2910 m, motor of fluid sampler turns again		
1:36:51	all valves working, function move it activated, diving down to 3000 m		
1:41:56	at 2950 m, all systems still working		
1:44:43	at 2988 m, all systems still working		
1:45:37	at 3000 m, all systems working		
1:47:50	at 3020 m, all systems working		
1:51:08	3043.8 m, 4.0 m above ground, all systems working		
1:52:19	move it button de-activated, reset function ok, approaching smoker for fluid sampling !!!		
2:02:59	preparing for fluid sampling at Mephisto chimney		
2:09:30	handle out of holder		
2:13:53	compass out		
2:15:30	depth: 3041.6 + 4.7 m, approaching Mephisto with sampling nozzle		
2:17:19	pump on, filling sample 1, discharge site in top of chimney, torque at 45 Nm	146ROV-10	fluid from Mephisto
2:23:24	move to sample bottle 2, bottle open, pumping	146ROV-11	fluid from Mephisto
2:26:44	black smoke coming out of exhaust		
2:27:28	move to sample bottle 3, bottle open, pumping	146ROV-12	fluid from Mephisto
2:32:24	nothing discharging from exhaust but hopefully ...		
2:33:36	move to sample bottle 4, bottle open, pumping	146ROV-13	fluid from Mephisto
2:39:00	move to sample bottle 5, bottle open, pumping	146ROV-14	fluid from Mephisto
2:43:20	pumping stable at 1,2 Ampere		
2:43:54	pump out, reset, move to port 16, pump on, pumping at 1,1 Ampere, filter 1+2 for biology	146ROV-15	fluid from Mephisto fo
2:47:48	pumping stable between 1,1 and 1,3 Ampere		
2:49:53	close valve 16, pump off		
2:52:08	no large particles out of nozzle		
2:53:00	moving to Sugarhead for next fluid sampling		
2:56:31	pump on to clean, pumping into sampling port 6		
3:01:03	pump closed		
3:04:38	arriving at Sugarhead		
3:17:00	pump on, valve 6 open, pumping fluid	146ROV-16	fluid from Sugarhead
3:23:09	NOTE: all four smokers are not as hot, no gas bubbles discharging		
3:23:54	move to port 7, not working, pump out, reset, ok, pump on		
3:24:47	start pumping into bottle 7 from same vent	146ROV-17	fluid from Sugarhead
3:29:54	move to port 8, not working, pump out, reset, ok, pump on		
3:30:45	start pumping into bottle 8 from same vent	146ROV-18	fluid from Sugarhead
3:35:49	move to port 9, not working, pump out, reset, ok, pump on		
3:36:39	start pumping into bottle 9 from same vent	146ROV-19	fluid from Sugarhead
3:42:18	move to port 10, not working, pump out, reset, ok, pump on		
3:43:00	start pumping into bottle 10 from same vent	146ROV-20	fluid from Sugarhead
3:48:07	move to port 17, pump out, reset, ok, pump on		
3:48:59	start pumping from same vent through port 17, filter 3+4 for biology, pumping at 1,3 Ampere	146ROV-21	fluid from Sugarhead
3:54:16	pumping at 1,3 Ampere, pump out, moving to Tannenbaum		
3:57:23	turn pump on for cleaning for 5 minutes, valve 11 open		

Station No:	**146 ROV Dive 42 ME-64/1**		
Segment (area):	4°48.9'S/12°22.4'W, Target: exploration in rift valley to the west of Turtle Pits and transit to Red Lion + fluid sampling; Smokers at RED LION: "Shrimps-Smoker", "Sugar-Head", "Mephisto", "Tannenbaum"		
	Date: 16. April 05		
Time	Notes (use "<ctrl>t" to add date and time!)	CODE	SAMPLE
3:58:48	approaching Tannenbaum		
4:04:15	Tannenbaum: 3041.4 + 4.5 m		
4:08:34	"conditioning nozzle", then move to chimney again		
4:10:30	Orion handle opened and lost nozzle, starting to recover		
4:23:18	dark sreen, cameras out !!!		
6:11:50	cameras work again, ROV at 2876.5 m		
6:15:03	**End of Dive, ROV is coming up**		
9:14:08	ROV on deck		

Station No:	**155 ROV Dive 43 ME-64/1**		
Segment (area):	8°50'S volcanic area; target: exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m), starting from old lavas in the west towards the east		
	Date: 19. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
8:21:13	ROV in the water; ship at: 8°48,99'S 13°30,48'S; water depth 2611 m		
8:30:00	ROV at 200m going down (8°48,99'S 13°30,48'S)		
9:24:49	ROV at 1412 m		
9:54:52	ROV at 2000 m		
10:02:35	bottom in sight, sedimented sheet flows, depth 2167m, trying to get GAPS fix		
10:08:30	at same position, fish is visiting		
10:13:24	turning to east, rough morphology, jumbled flows, volcaniclastics on top of sediment		
10:15:05	fault scarp with 13 m offset, will try sampling of the upper part of this scarp		
	fault is oriented N/S and west facing, positioning to take sample		
10:21:25	sampling of autobrecciated "in situ" lava, sedimented		
10:23:21	thrusterdust, first attempt failed, try again		
10:26:03	thrusterdust, second attempt failed, try again		
10:28:02	third try at scarp itself, thrusterdust		
10:30:40	will try to use bionet for rock sampling (sorry biologists!!)		
10:35:24	sampling with bionet succesfull, several kg; position: **8°48,98'S / 13°30,50'S**, depth: 2161m	155ROV-1	basalt
10:40:21	sample stored in large box		
10:44:26	turning to east, will start traversing, here we are western edge of flows in faulted terrain		
10:48:38	poor visibilty due to our sampling attempt, getting deeper		
10:52:57	small east-facing terraces, flying high to avoid to stir up sediment		
10:56:09	coming down on talus field, depth 2186m, angular pieces of basalt, some tube relics		
10:57:20	facing west facing wall of pillows, ~ 25 m high		
11:01:13	in front of west facing talus pile; depth 2170m		
11:03:15	will try to sample this pillow talus, less sediment, but probably because of currents		
11:07:53	sampling of large block within the talus field; position: **8°48,99'S / 13°30,44'S**, depth: 2172m	155ROV-2	basalt
11:09:38	sample stored in box 1		
	the basalt seems to be overgrown by fauna (actinie?)		
11:15:50	flash is not working		
11:17:42	moving again, heading east over well sorted talus, coming up, depth 2165m		
11:19:05	gorgonarie, top of this mound in 2158m		
11:22:04	pillow lava and lobes, depth 2176, hdg:117		
11:23:58	only slightly sedimented pillows and lobes, depth 2180m, mound ahead		
11:25:36	climbing up pillow basalt mound, depth 2170m, flying high		
11:26:45	nice pillows and tubes, depth 2160m		
11:29:27	sedimented ropy flows, depth 2150m; hdg: 110		
11:31:15	collapse structure in sedimented ropy flows		
11:39:16	heading 110°, above ropy flows; 2155 m, surching for sampling station		
11:47:22	going 110°		
11:50:37	try to sample old basalt with Orion, lobate lava, sediments 75%		
11:51:37	thruster dust		
11:54:36	taking sample; **08°49,00'S / 13°30,30'W**; depth: 2149m	155ROV-3	basalt
11:58:29	going E		
11:59:36	pllows and lobate lava, strongly sedimented, stopped to look at		
12:01:00	going on E		
12:02:13	lobate lava , strongly sedimented		
12:11:33	lobate to pillows, hdg. east		
12:18:28	lobate to ropy flows, thin sediment cover, depth 2177m		
12:21:48	pillows to lobate and tubes, thin sediment cover, depth 2188m		
12:25:45	same position, waiting for something?		
12:27:16	start to sample basalt with orion, heading 104°, 2191m, exposed basalt with sponges		
12:32:42	thruster dust		
12:37:03	looking for sampling spot in beautiful sedimented pillows, striated pillows		
12:42:24	first attempt failed, looking for better spot		
12:45:49	still looking for the spot, no easy place to grab!! Thrusterdust		
12:50:12	second attempt failed, looking for better spot		
12:54:41	and another try :-(... and another		
13:01:42	holothurie (pink) at sampling point		
13:03:07	and another try :-(... and another		
13:07:55	this time we settle for a place with a gorgonarie		
13:08:54	thrusterdust		
13:16:50	and another try :-(... and another		
13:16:51	small fracture in pillowed terrain		
13:20:25	FINALLY! taking sample in pillows near fracture; **08°48,96'S / 13°30,17'W**; depth: 2195m	155ROV-4	pillow basalt rim
13:25:36	turning east again		
13:27:01	pillow field, thin sediment cover		
13:33:35	flying east over small pillows; few larger pillows (older generation) in between?		
13:34:32	a younger flow of small-sized pillows seems to come in from the south		
13:37:34	lonely fish in the dark pillows		

Station No:	**155 ROV Dive 43 ME-64/1**		
Segment (area):	8°50'S volcanic area; target: exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m), starting from old lavas in the west towards the east		
	Date: 19. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
13:38:32	sedimented pillows		
13:39:29	increasing lobate content, very flat terrain, continous at 2197m		
13:41:42	flows come from the east, several flows on top of each other, pancake		
13:45:12	same flows, slightly sedimented		
13:46:41	more pancake flows, less pillows, sediment cover is increasing		
13:49:07	small ridge, fracture facing east (1m), contact to large talus field		
13:52:09	fracture facing east (1m), contact to large talus field		
13:53:58	fracture facing east (1m), contact to large talus field with sediment patches		
13:55:51	try to sample basalt talus		
14:00:59	sampling successful: **8°48,99S, 13°30,06W**; 2199m	155ROV-5	pillow basalt fragment
14:06:21	flying to the east, 2 Gorgonarie		
14:06:37	collapse structure in sedimented ropy flows		
14:07:01	lava flow front horizontally laminated		
14:07:43	lobate flows		
14:09:16	pillows to lobate and tubes, thin sediment cover, depth 2188m		
14:09:48	Gorgonarie		
14:12:27	trying to grap another pilow fragment		
14:18:50	ROV hit the ground		
14:19:12	thruster dust		
14:21:28	try to sample basalt from pillow lava		
14:32:55	sampling successful: **8°48,99S, 13°30,04W**; 2190m	155ROV-6	pillow basalt fragment
14:38:18	lobate flows		
14:39:14	drifting holothurian over steep escarpment, N/S trending		
14:43:34	east facing scarp, at least 20 m deep		
14:47:01	heading east, base of cliff is sedimented, going east another 30 m, depth 2209m		
14:50:55	trying to appoach seafllor but going downhill, depth 2213m		
14:53:27	flattened ground at 2214m, sedimented pillows		
14:55:05	ROV is appeoaching seafloor, depth: 2221m, small fracture		
15:00:32	need to readjust the GAPS position		
15:02:40	try to sample basalt, 2221m		
15:14:19	failed, and another ... and another ... and ...		
15:19:13	well lets go for the schovel!		
15:23:34	collected small pebbles, stored in box 5 (there was another sample in there before!)	155ROV-7	basalt pebbles taken wit
	sampling successful: **8°48,99S, 13°29,97W**; 2221m		
15:30:51	moving 20 m to the east, pillows, sedimented		
15:33:17	pillows, sedimented, another 20 m east		
15:33:40	few large pillows		
15:35:22	large sedimented pillows		
15:38:16	stopped, sedimented pillows		
15:39:07	moving again, sedimented pillows, depth 2215m		
15:45:47	small break, now moving again, sedimented pillows		
15:46:56	at base of wall?, depth 2215m, only little talus		
15:47:42	going up to 2199m, 15 m high scarp facing west		
15:50:21	on top of narrow ridge, going down on other side		
15:53:01	flying high over the ground, nothing to see		
15:54:46	blue sky		
15:57:48	bottom view, talus field - still flying east		
15:58:34	pillow and lobate flows		
15:59:21	east facing scarp, at least 10m deep; waterdepth 2216m		
16:07:46	pillow lava and lobes, depth 2215m, 20% sediment cover		
16:14:58	fissure, N-S; 0.5 m to 1 m wide		
16:15:22	start sampling with schovel		
16:20:59	small fissure, N-S; same as the one above, trending ~135		
16:30:55	still sampling :-)		
16:31:21	schovel back into box		
16:40:46	bottom current is strong ROV needs to follow the ship		
16:40:53	moving south, sedimented pillows		
16:41:36	small pillows are overflowing older sheet flows, barely visible underneath		
16:42:45	setting ROV on the ground for sampling, depth 2218m		
16:44:03	thrusterdust		
16:48:20	trying to sample sedimented pillows		
16:51:34	still sampling :-)		
16:54:24	still sampling :-)		
16:59:23	sampled tiny chips : **8°49,04'S / 13°29,85'W**; 2218m	155ROV-8	basalt chips?
17:02:57	geosampling is finished; moving few m to the east before ascending		
17:06:22	a fish in the sky, start moving to east over sedimented pillows		
17:07:34	small pillows		

Station No:	**155 ROV Dive 43 ME-64/1**		
Segment (area):	8°50'S volcanic area; target: exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m), starting from old lavas in the west towards the east		
	Date: 19. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
17:08:06	climbing up pillow basalt mound, depth 2215m, sediment on top		
17:08:41	fissured area, top of small terrasse, sediment thickness ~ 20 cm		
17:09:42	steep scarp ahead facing west		
17:12:54	fissures trend 310/130		
17:14:03	thick sediment		
17:14:32	back west over sedimented pillows		
17:15:44	same pillows heading west		
17:16:30	east-west trending fissure		
17:16:47	moving north, turning		
17:17:33	large talus field, heading northwest to METEOR, then coming up		
17:18:24	scarp, facing east, height ~15m		
17:21:39	talus field, sedimented, heading north		
17:23:04	coming up, leaving bottom		

Station No:	**159 ROV Dive 44 ME-64/1**		
Segment (ai	8°50'S volcanic area; target: south to north exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m)		
	Date: 20. April 05		
Time (hh:mi	Notes	CODE	SAMPLE
8:32:27	ROV in the water; ship at: 8°48,09'S 13°30,09'S; water depth 2219 m		
9:29:46	ROV at 1600m		
9:50:58	bottom in sight, sedimented pillows, very simlar to the those found yesterday, depth 2203m		
9:56:21	will take basalt sample, Karsten! I should have known this!		
10:01:59	compass is off, sampling		
10:04:05	first attempt failed, another try		
10:06:50	second attempt failed :-(		
10:10:51	brittle star		
10:15:32	:-(thrusterdust		
10:25:13	**8°48.18'S / 13°30.12'W**, depth 2204m; small bits and pieces into box 6, contamination by other bits?? from earlier dives?	159ROV-1	small pillow basalt bits
10:28:39	will now head north, compass is on, fish		
10:29:41	start moving, sedimented pillows, foto taken		
10:32:55	stopped, taking fotos		
10:33:58	testing PTFE valves for fluid pumping system, function OK		
10:36:10	start moving north again, hdg: 001, depth 2203m, sedimented pillows		
10:37:04	fish over sedimented pillows		
10:38:01	sedimented pillows		
10:39:14	sedimented pillows, sediment cover is increasing to 50%		
10:40:18	sedimented pillows and tubes		
10:41:35	sedimented pillows and tubes, fewer of the large pillows then before		
10:42:10	sediment cover thickens, lava becomes flatter, pancakes		
10:44:03	pancakes to sheets, sediment 80%		
10:48:49	taking rock sample at sheet flow		
10:51:35	first attempt failed, another try		
10:54:08	sampled small piece of sheet flow in box 4; **8°48.15'S / 13°30.12'W**; depth 2201m	159ROV-2	sheet flow
11:00:07	start moving north , thrusterdust		
11:01:14	sedimented sheet flows with few tubes, sediment 70%		
11:02:39	more pillows and fractures, but generally sheets		
11:04:05	stopped, sedimented sheet flow, broken		
11:04:42	moving again, sedimented sheet flow		
11:05:40	sedimented sheet flows with few tubes, sediment 70%		
11:06:03	more pillows and lobes, less sediment 30% (younger flow or bottom currents?)		
11:07:20	sedimented pillows		
11:07:54	large flow, more sediment, pancake		
11:08:46	sedimented lobes, sediment 70%		
11:09:23	sedimented lobes, sediment 70%		
11:11:22	moving backwards		
11:12:34	heading north, sedimented lobes		
11:14:06	sedimented lobes, sediment 50%		
11:15:13	sedimented pillows and lobes, sed 50%, fish		
11:16:11	contact between lobes and pillows		
11:17:11	sedimented pillows, sed 10%		
11:17:51	sedimented pillows and tubes, sed 10%, depth 2200m, hdg: 355		
11:19:09	sedimented pillows, sed 30%		
11:20:05	sedimented pillows to sheets, sed 30%		
11:22:13	contact to jumbled flows, less sediment		
11:23:29	will take sample at flow front of jumbled flow		
11:28:08	sampled small piece of jumbled flow in large box next to shovel; **8°48.06'S / 13°30.12'W**; depth 2198m	159ROV-3	jumbled flow
11:31:38	closing front drawer, parking arm		
11:32:29	start moving, jumbled flows, depth 2197m		
11:35:19	sediment slightly increasing		
11:36:12	going up on a plateau plane lava forms, 2196m sheet flow, my be lineated covered by sediments		
11:39:23	on the bottom of plateau pillows and lobated lava strongly sedimented 2199m		
11:41:35	sediment covers >75%		
11:43:41	lobate contact pillows, sediment 80%		
11:46:47	lobate contact ropy forms (wirls) with several depressions in between , some jumbled characteristics in view		
11:48:27	going to take a sample nearby a plane lava structure consisting of single plates, which were shifted upwards, coverd by 100% sediment		
11:50:06	thruster dust		
11:53:35	plates contact pillows		
11:55:12	Gorgonaria, threadshaped		
12:11:21	changing tool from Orion to net, 2201m		
12:16:30	sample was taken, **8°47,99 S; 13°30,12 W** sedimented sheet flows, 2201m, sample in box3	159ROV-4 (n	sheet flows

Station No:	**159 ROV Dive 44 ME-64/1**		
Segment (ai	8°50'S volcanic area; target: south to north exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m)		
	Date: 20. April 05		
Time (hh:mi	Notes	CODE	SAMPLE
12:21:01	looking to W		
12:22:23	large broken sheets, sed 90%		
12:23:39	moving west 20 m		
12:24:12	thick sedimented sheet flow		
12:24:54	younger pillows cover sheet flow		
12:25:33	beautiful sedimented sheets flows, broken, sed 70%, stopped		
12:27:51	start another 20 m to the west, large broken sheets		
12:28:54	edge of sheet flow		
12:29:28	sedimented ropy flows		
12:30:16	contact to jumbled flows, less sediment, gorgonarie		
12:31:04	another 20 m to the west, over jumbled flows		
12:32:20	stopped, other side of jumbled flow		
12:32:53	fractured sedimented sheets, sed 70%		
12:34:04	contact to jumbled flows, coming in from the north		
12:34:56	back in jumbled flow breccia		
12:36:34	stopped in jumbled flow breccia		
12:36:58	north/south trending cracks, turning north		
12:38:46	start moving north in jumbled flow breccia, depth 2197m		
12:40:22	at edge of flow breccia, sedimented pillows and lobes appear		
12:41:17	sedimented pillows, fissured		
12:42:05	sedimented pillows, fissured, we moved in total 40m to the north		
12:43:42	moving north, sedimented pillows to lobes		
12:44:54	at base of small wall, sedimented pillows, depth 2200m		
12:46:42	another 10 m to the north, uphill		
12:47:27	contact to pillow mound, shrimp		
12:48:29	macroide, climbing pillow mound, depth 2192m		
12:49:53	two generations of lava, older, larger pillows and smaller younger tubes		
12:50:29	still climbing, depth 2190m, waiting for ship?		
12:54:23	still climbing, depth 2184m		
12:55:50	trying to sample pillow, depth 2182m, second shrimp		
12:57:10	Viel Spass Susanne		
12:57:31	thrusterdust		
13:02:03	start to take a sample, 2986m		
13:12:56	sampling successful: **8°47.96'S; 13°30.16'W**; 2186m waterdepth	159ROV-5	pillow
13:17:24	flying 10m north		
13:17:46	flying 10m in 330° direction		
13:19:21	impressive pillow lava and lobate flow		
13:21:04	flying another 20m in 330° direction		
13:21:06	Gorgornarie		
13:22:39	flying 30m in 330° direction		
13:23:54	fish over sedimented pillows		
13:24:46	meduse in watercolumn		
13:25:46	sediment cover increased to 90% - dark patches		
13:30:19	flying 20m north		
13:32:06	pillow fragments forming little rigde sturcture on the sedimented area facing north		
13:36:11	Holoturie		
13:36:30	Gorgornarie		
13:37:50	flying along a gentle slope to the north		
13:41:40	pillow lava field covered with 40%		
13:42:29	sediment cover increased to 90% - dark patches		
13:44:08	flying 40m north		
13:45:23	little depression filled with talus material slightly covered with sediment		
13:47:13	red shrimp		
13:49:03	pillow lava and lobate flow		
13:50:34	branched Gorgornarie (1.20m high) still alive, probably 30-40 years old, partly dead		
13:58:54	sedimented pillows - ca. 50% sediment cover		
13:59:56	flying 20m north		
14:02:54	sediment cover increased to 80% - dark patches		
14:06:44	gentle slope - flying down, pillow and lobate flows with with thin sediment cover		
14:08:32	Holothurie		
14:10:56	Gorgornaria		
14:11:39	trying to sample pillow fragment, depth 2152m		
14:29:24	sedimented pillow, still trying to sample		
14:48:45	using bionet for sampling, Ooooops, lost the net, but retrieved		
14:53:23	sampling successful: **8°47.81'S; 13°30.19'W**; 2151m depth, in large box	159ROV-6	pillow
14:58:22	trying to sample unknown biota, not sucessful		

Station No:	**159 ROV Dive 44 ME-64/1**		
Segment (ai	8°50'S volcanic area; target: south to north exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m)		
	Date: 20. April 05		
Time (hh:mi	Notes	CODE	SAMPLE
15:03:32	large pillows and tubes, slight sediment cover, stopped, hdg: 005, depth: 2151m		
15:07:16	replacing us 20 m to north		
15:08:07	sedimented pillows, sed 10%		
15:08:44	another 10 to the north in sedimented pilows, downhill: 2153m		
15:10:46	another 20 m to the north, sedimented pillows		
15:11:08	steep slope downhill, edge of mound, depth 2160		
15:14:47	sedimented pillows steep slope, turned to south to look at wall		
15:16:22	brittle star		
15:17:15	still at wall, depth 2177m		
15:18:20	talus at base visible, depth 2191m		
15:19:03	turning back to north, at base sedimented sheet flows, depth 2200m		
15:21:14	sampling point, sedimented sheet flow, broken into large, but thick blocks		
15:27:16	move a few meter to sample blocky lava		
15:34:01	still trying, :-(		
15:42:49	sampling successful: **8°47.75'S; 13°30.21'W**; 2201m depth, in box 2	159ROV-7	pillow
15:47:00	flying 20m north		
15:48:31	jumbled sheet flow		
15:49:29	sheet flow covered with sediment		
15:50:49	jumbled sheet flow		
15:51:46	sheet flow covered with sediment		
15:59:30	flying 20m north		
15:59:55	sheet flow contact to sedimented pillow lava		
16:04:53	sedimented pillow lava		
16:08:28	broken sheet flows, sedimented pillows and lobes		
16:11:21	sedimented pillows and lobes, sed 70%		
16:12:27	sedimented pillows and lobes, sed 70%		
16:14:01	stopped on sedimented pillows		
16:16:20	flying over sedimente lobes, sed 70%		
16:17:19	sedimented sheets and lobes, sed 80%		
16:20:46	sedimented sheets and lobes, sed 80%		
16:21:52	sedimented sheets and lobes, sed 70%		
16:22:57	flying north		
16:23:53	broken sheet flows, sedimented		
16:25:26	sed 80%, sheet flows		
16:25:51	small fissure in sheet flows, sed 70%		
16:26:08	pillow field ahead, turning around		
16:27:23	back at broken flow		
16:28:15	searching for a point to sample		
16:35:49	still trying to sample, we call him "the Terminator"		
16:40:05	sampling successful: **8°47.7(6?)5(1?)'S / 13°30.21'W**; 2202m depth, small piece in box 5	159ROV-8	sheet flow extrusion for
16:44:21	moving 010 over fissured sheet flows		
16:46:15	large collapse pit		
16:52:39	over pit taking fotos		
16:53:03	flying 20m north, sedimented sheet flows to lobes		
16:54:22	sheet flows have seen more recent tectonic movement, cracks are sediment-free		
16:56:58	broken sheet flows, fissure		
16:57:56	stopped in sedimented lobes, sed 70%		
17:00:15	following fissures to N		
17:02:19	sedimented pillows and lobes		
17:03:04	fish over sedimented pillows, less sed 20%		
17:04:48	sedimented pillows, brittle star		
17:09:11	sedimented pillows, sed 10%		
17:11:38	stopped over sedimented pillows		
17:12:47	moving north, sedimented pillows		
17:13:05	fish		
17:13:45	sampling point, sedimented pillows, small diameter		
17:15:23	thrusterdust, compass off		
17:17:44	on bottom, preparing for sampling		
17:31:45	sampling successful: **8°47.50'S / 13°30.21'W**; 2215m depth, larger piece in box 1	159ROV-9	slightly sedimented pillo
17:33:53	moving, turning north		
17:34:32	sedimented pillows, sed. 10%		
17:37:32	moving northwards		
17:38:15	jumbled sheet flow covered by sediments (20%)		
17:40:08	westwards surface change in sedimented pillows (sed 70%), photo stop		
17:42:46	flying north again		
17:43:16	changing pilots		

Station No:	**159 ROV Dive 44 ME-64/1**		
Segment (ai	8°50'S volcanic area; target: south to north exploration along rift valley center in area of proposed young lava flows and series of pillow mounds (depth ~ 2200m)		
	Date: 20. April 05		
Time (hh:mi	Notes	CODE	SAMPLE
17:45:11	flying north		
17:45:28	sedimented pillows (sed 30%)		
17:46:30	turning to the east, back to the border jumbled flows/ pillow, trying to take a sample from there		
17:49:13	jumbled flow with fracture trending north - south		
17:51:48	fracture in jumbled flow trending west -east		
17:55:18	trying to grap a sample from jumbled sheet flow		
17:56:30	sampling successful: **8°47.46'S / 13°30.18'W**; 2219m depth, larger piece in box 6	159ROV-10	jumbled sheet flow frag
17:59:51	trying to grap another sample from jumbled sheet flow		
18:01:52	sampling successful: **8°47.46'S / 13°30.18'W**; 2219m depth, placed behind push cores	159ROV-11	jumbled sheet flow frag
18:04:54	flying north again		
18:06:08	Holothurie		
18:07:28	sedimented pillow field		
18:08:23	shrimp		
18:10:45	flying another 20m north		
18:11:54	flying another 20m north		
18:12:10	Holothurie, 2 Gorgonaria at exposed Pillow		
18:14:01	**8°47.41'S / 13°30.18'W**; 22201m depth, waiting for METEOR		
18:18:55	moving on N, lobate lava		
18:22:37	increasing sediment, cracks		
18:24:09	Gorgonaria, threadshaped		
18:24:53	end of DIVE 44, last flight was 60m N, going up, 2219m		

Station No:	**188 ROV Dive 45 ME-64/1**		
Segment (area):	9°40'S volcanic area; target: west to east exploration within axis area with abundant seamounts to the east of the main axis		
	Date: 23. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
10:25:18	ROV in the water; ship at: 9°42,54'S 13°04,95'W; water depth 1867 m		
10:28:40	200 m below sea level		
10:28:00	196m start testing the pump-system		
11:11:50	finished testing pump, successful, diving further down, pump switch on, bottles 1-5: each bottle for 5 minutes washed		
11:16:22	diving up		
11:17:28	reaching 150m		
11:19:03	stoped diving up at 124m, going down again		
11:22:17	200m depth		
11:34:09	reaching 500m		
11:50:50	black out at 867,3m		
11:52:14	screen on, 882m		
11:54:32	resetting computer system of ROV		
11:59:00	online again, 920m		
12:05:32	reachng 1000m		
12:20:30	black out again		
12:24:26	screen on, 1276m, diving slowly up		
12:29:19	reachig 1271m going down again		
12:40:27	reachng 1500m		
12:45:45	black out No3 1598,7m		
12:48:16	back again, 1604m		
12:48:52	black ot No4		
12:55:05	online again, 1598m		
12:57:43	diving slowly up		
12:59:06	reaching 1596m, going down again		
13:05:39	altitude 30 m, going down		
13:06:07	bottom in sight, sedimented pillows, depth 1772		
13:09:12	start with rock sampling in sedimented pillows		
13:12:58	compass off		
13:15:00	sample in box 6; sample location: **09°42.48'S / 13°05.02'W**, depth:1772m	188ROV-1	angular piece of pillow basalt
13:18:02	compass on, turning to east		
13:18:32	20 m to east, slightly sedimented pillows and lobes, sed 10% only in depressions		
13:19:43	gorgonaria, lobate flows, little sediment		
13:20:32	lobate flows		
13:21:20	gorgonaria, lobate flows, little sediment		
13:21:45	20 m to east, slightly sedimented pillows and lobes, sed <5% only in depressions		
13:22:36	red staining? on basalt		
13:24:04	20 m to east, slightly sedimented pillows and lobes, sed <5% only in depressions		
13:24:32	slightly more sediment in depressions of lobate flows		
13:25:45	sed 20% inceasing, going down, depth 1779m		
13:27:07	stopped at 1783m depth in sedimented pillows, hdg: 120		
13:30:46	start moving 120, turning east 20m to east		
13:30:57	thick sediment pile with few pillows		
13:32:43	strong ripple marks in 100% sediment, deepening to the south		
13:34:03	approach edge of pillow flow, coming off the mound		
13:36:46	crinoid		
13:38:45	looking for a spot to take push core sample		
13:40:02	compass off		
13:41:03	some lights off?		
13:43:28	taking sample P7, half full, dropped out into sampling container; **09°42.48'S / 13°04.99'W**, depth:1797m	188ROV-2	
13:48:03	20m to the east, compass on		
13:48:46	at edge of flow, pillows		
13:49:20	at same depth level, mound to the north, pillows		
13:50:50	pillows, another 10m east		
13:51:16	higher density of crinoids		
13:52:19	preparing to take sample, compass off		
13:58:33	sample in box 6 again; sample location: **09°42.49'S / 13°04.96'W**, depth:1787m	188ROV-3	grey pillow protrusion, well rounde
14:01:21	compass on		
14:02:33	on edge of pillow mound, moving 10 m to the east, depth 1782m		
14:04:23	increasing number of "Seefedern"		
14:05:15	in pillow talus at edge of mound		
14:07:11	6 x Gorgonaria		
14:08:30	ascending eastwards on pillow talus to 1763 m		
14:15:37	increasing turbidity whilst progreesing eastwards		
14:16:18	descending to 1780 m eastwards		
14:17:47	further down over terraces to 1785 m		
14:19:55	white Porifera?? on large pillow		
14:26:14	large nubers of sessile fauna, filter feeders		
14:26:35	edge of mound, steep flank		
14:27:12	going down wall, 179m		
14:28:12	1797m		
14:28:47	1806m, sedimented pillows plus gorgonaria, still going down		
14:29:36	still going down (inside crater?), depth 1809m		

Station No:	**188 ROV Dive 45 ME-64/1**		
Segment (area):	9°40'S volcanic area; target: west to east exploration within axis area with abundant seamounts to the east of the main axis		
	Date: 23. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
14:30:50	on talus slope, sedimented, depth: 1814m, heading east		
14:32:08	on talus slope, sedimented, depth: 1820m, heading east		
14:33:18	on bottom, depth 1820m, sedimented talus, moving backwards		
14:35:26	blue sky		
14:36:16	at bottom again, sed talus, 1827m, flank deepening to the south		
14:38:41	blue sky		
14:40:27	blue sky		
14:41:24	sedimented talus, 1830m		
14:43:39	still at talus slope, moving east		
14:46:33	single gorgonaria (no friends?)		
14:47:25	talus slope, 1844m		
14:48:55	contact between talus slope and sediment showing ripple marks		
14:49:56	on sediment, few large boulders, outbound wall ahead		
14:53:07	deepest part of the "crater": 1858m		
14:54:58	pillows and lobate flow talus material on sediment		
14:57:50	trying to grap a sample of the talus material		
15:05:02	in box 4; sample location: **09°42.49'S / 13°04.80'W**, depth:1857m	188ROV-4	pillow talus on E inner wall of crate
15:11:44	fyling up the eastern flank		
15:13:58	lobate flows - sediment patches about 40%		
15:19:40	lobate flows with some pillows - sediment patches about 30%		
15:20:32	flying about 20m south to get closer to the ship		
15:30:01	lobate flows with some pillows - sediment patches about 30%		
15:47:04	start moving again, sedimented pillows		
15:48:23	sedimented pillows, 1834m, numerous gorgonaria		
15:51:01	sedimented pillows to lobes, 60% sed, going downhill 1840m		
15:53:17	stopped at sediment-pillow contact, abundant sediment ahead, 1850m		
15:54:13	sediment with ripplemarks		
15:56:37	sediment with ripplemarks, single boulder		
15:58:41	100% sed, 1860m		
15:59:30	100% sed, 1862m		
16:00:05	contact to boulders, > 1m, talus?		
16:01:42	in sedimented pillows, sed 50%		
16:03:13	sed pillows, 1862m, sed 50%		
16:05:48	stopped in sed pillows, 1862m, sed 50%		
16:08:00	moving again, more sediment, nice pillows, sed 75%		
16:10:06	stopped again, compass was off for a few minutes		
16:10:53	heading east, increasing sediment thickness		
16:12:22	contact to boulder field, less sedimented due to currents, 1864m		
16:13:32	will try to take sample in boulder field		
16:28:37	in box 1; sample location: **09°42.386'S / 13°04.671'W**, depth:1864m	188ROV-5	pillow talus on southeastern
16:31:53	flying eastwards to a ripple field, trying to take sample with the pushcorer		outer wall of crater
16:36:00	single gorgonaria		
16:37:11	dust from landing in the sediment		
16:37:40	start sampling with the puscorer		
16:43:13	pushcorer 8 in big box ; sample location: **09°42.382'S / 13°04.664'W**, depth:1866m	188ROV-6	sediment in pushcorer
16:46:05	zoom to a single red gorgonaria, nearby sediment consist of pteropod schill		
16:49:34	flying eastwards		
16:49:59	single broken pillow boulder in sediment		
16:51:13	just white sediment		
16:51:30	lobate lava covered by sediment (sed 40%)		
16:52:32	single shrimps		
16:55:41	reset the GAPS		
16:57:40	flying eastwards over lobate lava with separately pillows (sed 50%), depth1867 m		
16:58:53	single gorgonaria		
17:00:34	approach edge of lobate flow, in the east is a steep slope		
17:05:35	turn to west, flying backwards (eastwards) with the quest to dive into the deep slope		
17:06:46	single gorgonaria		
17:07:31	single gorgonaria		
17:07:42	start dive into the slope, 13-15m deep, wall consist of small pillows, waterdepth 1873m		
17:11:25	out of the slope		
17:11:55	turn to south		
17:12:58	turn to east, just sediment, waterdepth 1896m		
17:14:09	small single fish		
17:14:25	sediment with changing colours (brown to white)		
17:15:02	single pillows covered by sediment (sed 75%)		
17:15:42	actinaria on pillow		
17:16:46	sediment field with current		
17:18:30	small single fish		
17:20:04	echinodermata on single pillow		
17:20:30	single small dune in sediment field		
17:22:15	lobate lava covered by sediment (sed 35%), single pillows		
17:24:22	steep slope (20%) with single lava boulders in white rippled sediment		
17:28:01	turn to north		
17:28:17	will try to take sample in boulder field		

Station No:	**188 ROV Dive 45 ME-64/1**		
Segment (area):	9°40'S volcanic area; target: west to east exploration within axis area with abundant seamounts to the east of the main axis		
	Date: 23. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
17:35:56	frist sampling failed, rock fall down from the Quest front grid infront of the niskin bottles		
17:39:41	start second try to take sample at the same loation, waterdepth 1882 m		
17:42:29	in big box , right side; sample location: **09°42.36'S / 13°04.51'W**, depth:1882m	188ROV-7	pillow talus on S-side of the slope
17:45:27	orion takes fluid sampling system while we're flying eastwards		
17:47:15	will try to test fluid sampling, sample bottle 6 is open		
17:51:03	flying over ripple field		
17:53:07	stop pumping		
17:56:28	moving up strongly sedimented pillow slope, checking ROV cable		
18:03:26	start pumping bottle 6 - again (1867m) - sediment 100%		
18:07:28	stop pumping bottle 6; start pumping bottle 7 (1867m) - sediment 100%		
18:13:41	stop pumping bottle 7		
18:14:41	start pumping bottle 8 (1872-1879m)		
18:18:43	gorgonaria, talus, sediment 50%		
18:19:36	stop pumping bottle 8 (1881m)		
18:19:57	deep slope; pillows		
18:22:24	gorgonaria		
18:30:21	Holoturie		
18:32:27	start pumping bottle 14; pillows and low bate (1887m)		
18:37:34	stop pumping bottle 14; Position 15 started pumping (1887m)		
18:42:33	stop pumping position 15; start pumping position 17 (Filter 3+4) (1887m)		
19:00:24	stop pumping position17 (Filter 3+4) (1885m)		
19:09:19	slightly sedimented pillows		
19:27:14	have been trying to take geology sample unsuccessfully		
19:37:17	Brinsigida (brittle star)		
19:37:50	still trying to take geology sample		
19:42:35	Aborted taking geology samples - coming up		

Station No:	**194 ROV Dive 46 ME-64/1**		
Segment (area):	9°34'S volcanic area; target: west to east exploration within axis area, with few mounds and apparent younger lava flow		
	Date: 24. April 05		
Time (hh:mm:ss	Notes	CODE	SAMPLE
10:15:00	~ begin station		
11:05:57	ROV at 750m; ship at: 9°34,41'S 13°13,01'S; water depth 1482 m		
11:06:53	pumping system was tested during descend		
11:16:24	ROV at 1000m		
11:34:19	altimeter at +30		
11:34:52	bottom sight, slightly sedimented pillows, depth 1454m, ship is at 9°34.38'S / 13°13.00'W		
11:39:35	checking position and instrumentation		
11:40:12	pillows look grey and quite old, however, sediment mainly in pockets		
11:41:38	turning east, grey pillows with sediment in pockets		
11:43:48	looking for sampling site		
11:45:48	dark coarse-grained material on top of sediment, "snail" sediment? looks more like rock chips		
11:49:23	compass off for sampling		
11:52:01	fish in the background, preparing O'Ryan		
11:54:48	first attempt to sample		
11:56:47	sample in box 4; **09°34,37'S 13°12.95'W**; water depth 1454 m	194ROV-1	old pillow basalt
12:04:23	biology on pillow, several pictures taken,		
12:04:55	move 30 m east		
12:05:34	from time to time, similar "dendritic" structurs on pillows		
12:09:18	start testing the pumping system, move handle out of holding position		
12:15:34	big fish approaching ROV		
12:17:53	pump on, bottle 15		
12:19:47	while pumping, move 30 m east		
12:20:29	Pteropod shells on sediment between pillows		
12:21:12	laser on		
12:21:54	move another 30 m east		
12:22:16	larger area with sediments: Pteropod shell fragments		
12:23:42	pump out, reset, then move to bottle 10		
12:24:22	pump on, fill bottle 10		
12:24:56	Gorgonaria on pillow, Echinoderm on Gorgonaria		
12:26:27	many pillows covered with biology: Gorgonaria		
12:27:39	densely populated pillows		
12:29:18	well developed Gorgonaria		
12:29:43	pump off, wait 5 seconds, move to bottle 12		
12:30:11	pump on, fill bottle 12		
12:34:48	nozzle fell out of Orion		
12:35:45	move to bottle 13 while pumping		
12:39:33	zoom into white Gorgonaria (white=dead), Crinoid on top (looks like palm tree), also two Ophioroideu, one Hermit Crab		
12:40:39	move to bottle 14 while pumping	194ROV-2	water sample
12:43:59	densely populated pillows around		
12:47:00	pump out, move to reset position (all fluid samples:194 ROV 2)		
12:51:41	nozzle back in holder position		
	moved 135 m from start of pumping, position: 09°34,37'S, 13°12,86'W		
12:54:01	Niskin 1 closed	194ROV-3	Niskin
12:55:50	collect a rock sample		
13:05:39	still trying to recover sample		
13:06:45	rock sample successfully recovered, placed in box 6, water depth 1429 m, position: **09°34,37'S, 13°12,86'W**	194ROV-4	basalt
13:09:20	collect piece of the Gorgonaria, place into large box, water depth 1429 m, position: 09°34,37'S, 13°12,86'W	194ROV-5	
13:15:04	move 30 m east		
13:18:56	move across a ridge flank, water depth now 1447 m		
13:20:07	looking east across a pillow field, relief going up again		
13:22:55	moving up hill, depth 1430m, numerous gorgonaria		
13:24:28	stopped, closeup movie of ??gorgonaria		
13:27:10	moving east along flank of mound, large pillows 1m wide, slightly sedimented		
13:32:40	moving downhill, more talus, depth: 1436m		
13:33:30	prepare to collect rock sample		
13:36:04	turned north to collect grey old pillow material		
13:39:40	first attempt to sample failed		
13:40:54	recovered small piece; **09°34.37'S / 13°12.77'W**, depth 1436m; sample in box 1	194ROV-6	small pc of pillow basalt
13:44:44	start movin' again, turning east, pillows and tubes, little sediment, anundant gorgonaria		
13:47:06	pillows and tubes, little sediment, abundant gorgonaria, slope down to the north		
13:48:51	positioning to take foto of gorgonian forrest		
13:51:32	moving east along local high, slope doen to the north, pillows		
13:51:56	steep slope ahead, only few metres, depth:1418m		
13:52:46	hdg east on slope down north, pillows		
13:55:38	small N/S trending scarp		

Station No:	**194 ROV Dive 46 ME-64/1**		
Segment (area):	9°34'S volcanic area; target: west to east exploration within axis area, with few mounds and apparent younger lava flow		
	Date: 24. April 05		
Time (hh:mm:ss	Notes	CODE	SAMPLE
13:56:31	another small scarp N/S, always 1-2 meters down stepping, depth 1424m		
13:57:08	next step, this time larger, depth 1429m		
13:58:16	depth 1440m, blue sky		
13:59:11	pillow tubes, hdg east, depth: 1447m		
14:00:30	compass off, for sampling		
14:10:35	pillow fragment recovered; **09°34.37'S / 13°12.67'W**, depth 1448m; sample in box 6	194ROV-7	pillow fragment
14:18:31	flying east		
14:19:35	fish in the background		
14:21:41	pillow and lobate flows - no sediment		
14:25:19	fish - Bythitidae		
14:32:33	flying north - about 8m above ground		
14:36:56	checking cabel		
14:39:36	cabel seems to be ok, thus flying east again		
14:43:20	Gorgonaria on pillow		
14:47:54	tallus on steep slope		
14:52:51	collecting another rock sample		
14:56:16	angular piece from tallus recovered, placed into large box	194ROV-8	tallus piece
14:57:20	**09° 34,41'S, 13° 12,53'W**, water depth 1465 m		
15:02:13	looking down a "canyon", estimated depth 10m, direction NE-SW		
15:12:00	flying above an area with lobate lava		
15:15:03	wanting to collect another rock sample		
15:24:24	old collapse pit, and fish		
15:27:27	solving cable problems (cable on the ground)		
15:33:56	occasional crinoids on lobate lava		
15:44:54	large fractured pillow		
15:47:42	finally trying to collect a rock sample		
15:58:35	small piece successfully collected, rim of very large pillow, 1465 m	194ROV-9	pillow rim fragment
16:01:03	sample in large box, broken into pieces, sampling position: **09°34,43'S, 13°12,52'W**	difficult to distinguish between samples	
16:06:14	moving 100m north, trying to find fresher lava flow	that were deposited previously	
16:15:56	still pillows and lobate lava flows, no sediment, few gorgonaria and crinoids		
16:17:57	collapse pit		
16:20:07	moving 30m into direction 60°, water depth 1471m		
16:22:39	moving again further towards northeast		
16:25:19	approaching small elevated area , sheet flow on top of pillows		
16:30:27	jumbled lava, small fissure		
16:31:31	sheet flow (main lava channel?) with jumbled flows at the edges		
16:33:20	main sheet flow is fractured, no apparent age difference between small pillows and large flow		
16:37:27	prepare to collect rock sample from top of large sheet flow, main lava channel		
16:44:34	sampling successful; sample in box 2, **09° 34,37'S, 13° 12,50'W**, water depth 1470 m	194ROV-10	sheet flow rim, 2 pieces
16:49:23	turning north, jumbled flows ahead		
16:50:09	moving along 060, small pillows		
17:00:50	sampling not successful		
17:01:56	aiming for another sampling site		
17:04:40	sampled small pillows; sample in box 3; **09° 34,38'S, 13°12,49'W**, water depth 1470 m	194ROV-11	pillows
17:10:31	take off, hdg 090		
17:10:46	unsedimented pillows to lobes, small diameter, heading east		
17:12:07	collapse pit with pillows in sheet flow surface		
17:13:13	sheet flow with pit texture (small depressions)		
17:14:19	fish, increasing pillows		
17:16:22	unsedimented pillows to lobes, small diameter, heading east		
17:18:01	on slightly sedimented sheet flow surface, sediment in cracks, small pits		
17:21:00	pillow field, drastic change in morphology from sheets to pillows, depth 1467m		
17:24:21	gentle slope up in the northeast		
17:26:06	still on pillow field, very extensive, camera failure, depth 1460m		
17:29:10	pillow field, depth 1457m		
17:29:33	on edge of ridge?, on pillow field, moving downhill, depth 1459m		
17:30:36	pillows, lobes and tubes, depth 1461m		
17:33:09	broken pillows, depth 1462m		
17:34:37	stopped, waiting for ship?, pillow field		
17:36:33	prepare to take sample, will stop dive after this sampling; pumping at 200m if necessary		
17:48:00	big pillow fragment; sample in box 5; **09° 34,38'S, 13°12,34'W**, water depth 1460 m - pillow broke and several pieces fall into other boxes...	194ROV-12	pillows
17:55:35	flying north to get closer to the ship		
18:04:33	collapse structure, lava pillars, crinoid		
18:20:44	big pillow fragment placed on top of ROV next to the NISKIN bottles; **09° 34,38'S, 13°12,34'W**, water depth 1468 m	194ROV-13	pillows
18:30:33	ROV is coming up		
20:50:59	ROV on deck		

Station No:	**200 ROV Dive 47 ME-64/1**		
Segment (area):	9°33'S volcanic area; target: exploration within axis area and apparent younger lava flow		
	Date: 25. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
8:03:22	~ begin station		
8:34:21	ROV in the water, water depth 1500m HS		
8:37:51	pump on		
9:01:02	pump off		
9:17:49	ROV at 1000m, going down		
9:37:55	bottom sight, sedimented pillows, sed 30% in patches and depressions, depth 1469m		
9:47:19	current position: 09°32.99'S / 13°12.92'W		
9:49:42	preparing to take sample		
9:55:10	elongated tubes, abundant gorgonaria, single red shrimp		
9:57:27	sampling successful, sampled placed in box 6; **09°32.99'S / 13°12.92'W**; depth 1469m	200ROV-1	pillow fragment with fauna
10:02:41	turning to E, 30 m to the east, depth 1470m on gentle slope		
10:03:35	large pillows, thick sediment in between		
10:04:14	slope is upward to N, numerous dead (partly blackened) gorgonaria		
10:05:54	another 30 m east, patches of pteropode-shell sediment, depth 1464m		
10:07:15	local high, depth 1459m, large broken pillows with sediment in between, pteropode shells		
10:08:19	another 30 m to the East, numerous live and dead (partly blackened) gorgonaria		
10:09:25	slope is still there upwards to north, less sediment due to local current regime		
10:13:34	foto shooting of gorgonaria. they are N/SW oriented, = local current = E/W		
10:22:56	want to move east again, another 30 m towards rift valley, depth 1456m		
10:31:39	slope down ahead		
10:32:15	start moving east, sedimented pillows		
10:33:24	slowly going down, depth 1459m		
10:33:42	steep cliff ahead, down,		
10:35:05	going down N/S trending fault scarp, 1470m, turined vehicle west for descent		
10:36:09	going down N/S trending fault scarp, 1480m		
10:36:23	talus material at base, depth 1490m, turning back east, scarp height=30m		
10:38:54	descending on talus slope, 1500m		
10:40:37	still on talus, very extensive!!, 1518m		
10:41:15	contact to sedimented basement floor		
10:41:50	jumbled material, small ridge on sedimented plain with pteropode shells, 1525m		
10:43:14	sheet flows ahead, depth constant at 1525m		
10:44:32	increasing pillows		
10:44:57	contact to talus, trying to take sample		
10:48:55	sampling successful, sampled placed in box 4; **09°32.96'S / 13°12.80'W**; depth 1523m	200ROV-2	angular talus piece
10:52:07	moving east, talus with few rounded pillows		
10:52:39	climbing up slope, 1518m		
10:53:51	climbing up slope, 1502m		
10:54:47	near top 1476m, very narrow at top, steep slope down on other side		
10:57:48	turning west to descent on other side of narrow ridge		
10:58:43	going down talus slope. touched other wall behind us, very narrow cleft		
11:01:01	over the top, next fissure, 1485m		
11:02:18	only slightly sedimented pillows, steep slope ahead		
11:03:50	turning west to descent on other side of local high		
11:04:32	touch down on pillows, nice soccer balls		
11:05:21	pillows are less sedimented, depth 1505m		
11:07:11	lava more lobate, depth 1501		
11:07:55	planing to collect a sample of collapsed pillow		
11:14:52	sampling difficult, material extremely fragile and crumbled		
11:20:00	take out shovel		
11:26:59	it does not work !		
11:29:50	successfully sampled the rim of a fractured pillow, sample placed in large box, depth 1505m, **09°32,90'S, 13°12,72'W (GAPS)**	200ROV-3	pillow rim
11:35:47	heading east		
11:36:51	pillows with individual gorgonaria		
11:38:52	small fish inbetween pillows and lobate lava, depth 1494m		
11:41:10	stronger relief		
11:41:35	gorgonaria		
11:45:24	brownish coloured/covered lava fragments over quite an area		
11:50:24	slightly sedimented pillows, 1493m		
11:53:39	fissured terrain heading 320, turning SW		
11:55:15	on pillow field, stopped		
11:59:09	large grey pillows, hdg east, start moving		
11:59:56	small fisure, NW/SE trending		
12:00:46	more lobate flows		
12:02:09	pillows and lobate flows, hdg 064, depth 1496m		
12:03:07	pillows overly sheet flow, stopped		
12:07:50	heading south to retrieve cable, lobate flows		
12:11:30	younger lava flow with **bathymodiolus shells** in fractures and depressions, dead and live?		
12:15:54	position: **09°32.94'S / 13°12.52'W**, depth 1494 m		
12:20:08	will try to take net for sampling		
12:39:29	sampling ssucessful: **09°32.93'S / 13°12.51'W**, depth 1494m, net into box 4	200ROV-4	bathy shells
12:52:27	will take 100µm net for sampling of Fe-oxyhydroxides		

Station No:	**200 ROV Dive 47 ME-64/1**		
Segment (area):	9°33'S volcanic area; target: exploration within axis area and apparent younger lava flow		
	Date: 25. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
13:01:47	fished net through porous Fe-oxyhydroxides; **09°32.93'S / 13°12.51'W**, depth 1494m, sample in box 1	200ROV-5	Fe-oxyhydroxides
13:06:22	start moving again, pillows, fractures partly filled with Fe-oxyhydroxides, patchy shells areas		
13:07:14	will take rock sample of red-stained large pillows		
13:14:01	first attempt failed, will try again		
13:16:28	still looking for best spot to sample		
13:26:01	giving up? hdg east		
13:27:57	then north, pillows		
13:30:48	stopped at another shell pad		
13:35:54	?? Tiefseeanglerfisch		
13:37:50	gorgonaria		
13:39:33	conductivity decreases (34,2 mS)		
13:40:14	heading west		
13:41:35	more patches of dead bathymodiolus		
13:43:18	lobate and pillow lava, more shell patches, but only empty shells		
13:46:39	continue heading west		
13:48:35	move northward now		
13:49:23	patches of **iron oxide crusts** and some sediment in between lava, no mussel shells		
13:50:22	conductivity decreases further (33,84 mS)		
13:52:22	an area with **massive occurrences of iron oxide crusts** and staining on basalts		
13:55:14	conductivity decreases further (33,56 mS)		
13:58:58	heading east, oops, the cable		
14:04:28	heading south		
14:07:59	heading west		
14:11:10	lost the GAPS system, moving back to iron oxide crust area, continue from there		
14:12:51	move 20m north		
14:14:12	move 20m west		
14:15:38	fragmented large lava blocks		
14:16:04	move 10m north		
14:17:04	very fresh lava, several gorgonaria		
14:21:20	possible sampling spot, taking several photos first, depth 1496m		
14:24:57	collecting rock sample, not so very fresh lava as before (14:17:04)		
14:27:25	successful sampling, 1496.1m, sample in box no.3, **09°32,92'S, 13°12,53'W**	200ROV-6	pillow fragment
14:31:06	heading north, looking for fresh basalt		
14:33:22	move 10m west, then turn south		
14:33:52	found the area with intense iron oxide crusts and staining		
14:35:24	move 5m east, then turn northwards		
14:36:17	move 10m north, flying over patches with iron oxide crusts, also sediments		
14:38:30	two larger collapse structures filled with brownish material - ? Fe oxides		
14:42:03	rectangular shaped collapse (looks like grave), 60cm x 200cm, 1495m depth		
14:45:15	continue to move north		
14:47:52	turning to east, move 20m eastward		
14:48:27	large collapsed lava domes		
14:49:02	large pillows, no sediment		
14:50:45	in between pillows, brown patches indicate (?) old discharge sites for temperate fluids		
14:54:45	10m north, then westwards		
14:56:15	again areas with brownish staining		
15:00:34	diffuse discharge sites, only Fe oxides		
15:01:29	trying to sample the Fe oxide crust/chimneys		
15:12:42	push core not successful, continue to move north		
15:18:47	sediment and small, dark brown Mn-Oxide structures		
15:21:18	Grenadier fish		
15:23:17	trying to sample the Fe oxide crust/chimneys with Schotti's shovel		
15:25:24	too much, too thick Fe oxide crusts, may be fully oxidized sulfide chimney/mound		
15:27:41	conductivity now at 31 mS - something wrong with recording ?		
15:40:00	Fe oxide structure sampled with shovel, 1495m depth		
15:48:55	sample placed in box 5, **09°32,88'S, 13°12,55'W (GAPS: 09°32,86'S, 13°12,53'W)**	200ROV-7	Fe-oxyhydroxides
15:50:47	moving west 10m		
15:51:43	moving west another 10m		
15:52:28	now back into fresh lobate basalts		
15:53:05	estimated size of Fe oxide area: 25 m diameter		
	DISCOVERY !!!		
15:54:52	**patches of living mussels - bathymodiolus, small ones, small chimney structures**		
	GAPS: 09°32,850'S, 13°12,540'W		
15:58:36	young mussels, may be young field		
16:00:05	thin clear white structure, may be a sponge		
16:04:08	temperature at 4°C		
16:05:36	temperature stays around 4°C		
16:06:44	cracks between pillows completed covered with mostly young mussels		
16:09:23	temperature at 4°C		
16:12:03	in between pillows, mussels, also several gorgonaria		
16:23:18	Niskin 1 closed, 1495m, 09°32,86'S, 13°12,56'W (Doppler)	200ROV-8	Niskin 1

Station No:	**200 ROV Dive 47 ME-64/1**		
Segment (area):	9°33'S volcanic area; target: exploration within axis area and apparent younger lava flow		
	Date: 25. April 05		
Time (hh:mm:ss)	Notes	CODE	SAMPLE
16:30:47	collecting mussle sample from rock cracks (4.1°C; 1495m); alterierte pillows mit Eisenoxyd		
16:38:05	biological sampling of mussel field, temperature at 4,35°C		
16:45:10	sampling successful, depth 1495.0m, sample in large box, **09°32,86'S, 13°12,56'W**	200ROV-9	Bathymodiolus
16:50:16	continue to move west, pillows with cracks overgrown with small young mussels		
16:55:06	pillow cracks covered with biofilm		
16:59:27	moving north for 40m in 20° direction, still full of Fe oxides		
16:59:34	looking east		
16:59:52	moving east for 10m		
17:00:47	moving east for another 10m		
17:01:48	rough Fe oxide crusts continuing		
17:01:58	continue to move east		
17:03:16	slowly loosing Fe oxides, area is 30m wide		
17:03:33	move north for 10m		
17:04:33	bottom current direction: SE to NW		
17:05:22	move westward, parallel to previous track		
17:05:34	Grenadier fish, 1495m		
17:06:55	moving across area with Fe oxide crusts again, but not so abundant in between pillows, no mussels		
17:07:46	turning direction 170°, returning to mussel fields		
17:11:33	having moved 40m, still 15m to go		
17:13:57	arrived at mussel fields, searching for fluid sampling site		
17:17:29	preparing for fluid sampling a little bit away to avoid dust at sampling site		
17:33:42	Quest changes the pilots - waiting for a moment		
17:36:16	flying to search a good place for fluid sampling		
17:37:05	start fluid sampling, trying to put the snorchel in fluid spring		
17:38:50	temperature increase on 4,1 °C		
17:39:52	temperature increase on 4,2 ° C		
17:40:44	start pumping, shimmering water		
17:44:43	temperature 4,3°C		
17:46:53	two shrimps		
17:55:20	Mini shrimp aufgesaugt		
17:56:54	shrimps in between mussels		
18:25:10	crap appears		
18:26:30	temperature 4.5°C		
18:30:00	temperature 5.1°C		
18:41:31	end of fluid sampling	200ROV-10	diffuse fluid
18:41:44	will take Niskin bottle at same site		
18:47:39	fotoshooting of snails		
18:50:48	Niskin 2 closed, 1495m, **09°32,84'S, 13°12,54'W** (Doppler)	200ROV-11	Niskin 2dots
18:55:16	exploring to 330		
18:57:40	pillows with thick Fe-Mn crusts		
18:58:22	number of crusts is decreasing, but still 30% crusts		
18:59:53	elongated ridge of Fe-crusts		
19:00:59	broken pillows, moved 60 to 330, will move another 30m in 330		
19:02:18	pillows, no crusts		
19:03:34	pillows, no crusts		
19:14:08	moved 30 m to 330		
19:14:48	moving 20 m to west, pillows, little sediment		
19:17:30	moving 30m north, pillows, depth 1500m		
19:22:37	moving 30m east, pilows		
19:26:01	moving 30m north, pillows, depth 1500m		
19:27:27	pillows		
19:28:22	Fe-staining in between pillows, possible snail		
19:29:22	20m to 330, exploring		
19:30:19	red staining on fractures of pillows		
19:31:49	turning around, surrounded by pillow field, 1496m		
19:32:36	hdg east		
19:33:53	30m to the west!!		
19:37:53	pillows with some Fe-staining, going north		
19:38:31	more staining, 30%, moving 30 m east		
19:41:19	pillows, pillows, pillows		
19:45:05	will take rock sample than finish dive		
19:48:08	angular piece from frature in pillow (pillow section), sample in large box: **09°32.71'S / 13°12.55'W**, depth 1495m	200ROV-12	pillow
19:55:01	coming up		
19:55:30	lost bottom sight		
21:10:00	ROV on deck		

M64/1
Water column samples

Station	Instrument	Position*		Water depth*	CTD/Rosette bottle no.																							
		Lat (S)	Long (W)	[m]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
111	CTD	04°48,6'	12°22,4'	2998		B	C	B		B		B	BC			B	C	B		B		B	C	B		B	B	B
116	CTD	04°48,8'	12°22,7'	2961	AC	B	A	B	A	B	AC	B	A	B	A	B	A	B	A	B	AC	B	A	B	A	B	AC	AB
121	CTD	04°47,8'	12°22,6'	3022	A	B	AC	B	A	B	A	B	AC	B	AC	B	A	B	A	B	AC	B	A	B				
122	CTD	04°48,5'	12°22,4'	2971		B	A	B	A	B	AC	B	A		AB	B	A	B	A	B	A	B	A	B	AC		AB	AB
126	CTD	04°46,8'	12°23,2'	3063																								
127	CTD	04°48,7'	12°23,0'	2959	A		A		A																			
128	CTD	04°48,8'	12°22,4'	2967	A		A		A		A																	
129	CTD	04°48,6'	12°22,6'	2982																								
133	CTD	04°48,6'	12°22,4'	2966	AC	B	A	B	A	B	AC	B			AC	B			AC	B	A	B	A	B	A	B	A	B
138	CTD	04°47,8'	12°22,6'	2971	A	B	AC	B	A	B	AC	B					AC	B	A		A	B			A	B		
145	CTD	04°48,9'	12°22,8'	2974	A	B	A	B	A	B		AB			A	B	A	B	A	B	A	B		AB		B	A	
154	CTD	08°47,0'	13°31,0'	2182		B		B		B		B				B		B		B		B		B		B		B
164	CTD	08°54,0'	13°29,2'	2122		B		B		B		B	B			B		B		B		B		B		B		B
177	CTD	09°10,5'	13°26,1'	2654		B		B		B		B																
178	CTD	09°10,4'	13°25,0'	2582	B																							
186	CTD	09°19,0'	13°17,0'	1932		B		B		B		B	B			B		B		B		B						
187	CTD	09°19,0'	13°15,0'	2059	B			B		B		B	B			B		B		B		B						
189	CTD	09°27,0'	13°14,0'	1701	A	B	A	B	A	B	A	B	AB			B	A		A		A		A					
190	CTD	09°27,0'	13°16,0'	2083	A	B	A	B	A	B	A	B																
191	CTD	09°27,0'	13°12,0'	1886	A	B	A	B	A	B	A	B	AB			AB												
192	CTD	09°30,0'	13°13,0'	1653	A	B	A	B	A	B	A	B	AB			B	A	B	A	B	A	B	A					
193	CTD	09°32,5'	13°12,9'	1458	A	B	A	B	A	B	A	B	AB															
195	CTD	09°34,5'	13°12,5'	1402	A	B	A	B	A	B	A	B	A		B	B	A	B	A	B	A	B	A					
196	CTD	09°31,5'	13°13,0'	1550	A	B	A	B	A	B	A	B	A		B	B	A	B	A	B	A							
197	CTD	09°33,9'	13°12,7'	1477	A	B	A	B	A	B	A	B	A		B		AB											
199	CTD	09°33,0'	13°12,9'	1473	A	B	A	B	A	B	A	B	A		B	B	A	B	A	B	A	B	A					
206	CTD	09°33,3'	13°12,5'	1469	A	B	A	B	A	B	A	B	AB		A	B	A	B	A	B	A	B	A	B	A	B	A	B
208	CTD	09°32,8'	13°12,6'	1501	AC	B	A	B	A	B	A	B	AB		A	B	A	B	A	B	A	B						
216	CTD	09°32,8'	13°12,9'	1509	AC	B	A	B	A	B	A	B	ABC		A	B	A	B	A	B	A	B	A	B	A	B	A	B

*data from station protocol
A: gas chemistry, DIC
B: trace elements, sulphur isotopes
C: amino acids, NH4

M64/1
Table of fluid samples

Station	114	123	125	130	141	146	200
Instrument	ROV	ROV	ROV	ROV	ROV	ROV	ROV
Location	Turtle Pits	Turtle Pits	Wideawake	Turtle Pits	Turtle Pits	Red Lion	Liliput
Lat (S)*	04°48,6'	04°48,6'	04°48,6'	04°48,6'	04°48,6'	04°47,8'	09°32,6'
Long (W)*	12°22,4'	12°22,4'	12°22,4'	12°22,4'	12°22,4'	12°22,6'	13°12,5'
Water depth* [m]	2998	2998	2995	2998	2998	3048	1495
N1	ABD	ABD	ABD	-	ABCD	ABCD	ABCD
N2	ABD	ABCD	ABCD	-	ABCD	ABCD	ABCD
N3	ABCD	ABCD	ABCD	-	ABC	ABD	-
B1	-	-	-	-	-	B	-
B2	-	-	-	-	-	B	-
B3	-	-	-	-	-	B	-
B4	-	-	-	-	-	B	-
B5	-	-	-	-	-	B	-
B6	-	-	-	-	-	AB	-
B7	-	-	-	-	-	AB	-
B8	-	-	-	-	-	BCD	-
B9	-	-	-	-	-	B	-
B10	-	-	-	-	-	B	-
B11	-	BCD	B	-	B	B	B
B12	-	-	B	-	B	BC	B
B13	-	-	B	-	BCD	-	CD
B14	-	-	B	-	B	-	A
B15	-	BC	CD	-	B	-	A

*data from station protocol
A: gas chemistry, DIC
B: trace elements
C: sulphur isotopes
D: amino acids, NH4

M64/1
List of zoological samples

Nr.	Station / Sample	Date	Time	Location	Depth	Lat.	Long.	Content
1	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	juvenile Bathymodiolus
2	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Polychaetenröhren
3	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Aufwuchs von Basalt
4	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Polychaeten
5	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Actinie (groß)
6	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	kleine Actinien auf Basalt
7	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Limpets
8	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Holothurien & Diverses
9	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Eikapseln von Phymorhynchus
10	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Sediment für Meiobenthos
11	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Individuen v. Rimicaris
12	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	1 Individuum v. Chorocaris
13	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	kleine Actinien auf Basalt
14	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Muschelklappen
15	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 1(8), Doppelklappe
16	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 2(8), Doppelklappe
17	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 3(8), Doppelklappe
18	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 4(8), Doppelklappe
19	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 5(8), Doppelklappe
20	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 6(8), Doppelklappe
21	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 7(8), Doppelklappe
22	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	Bathymodiolus 8(8), Doppelklappe
23	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	ca. 20 Individuen v. Bathymodiolus
24	109GTV-A	09.04.20005	00:58	Widawake Mussel Field	2998m	12°22,36W	04°48,64S	ca. 20 Individuen v. Bathymodiolus
25	114 ROV #6	10.04.2005		Turtle Pits / Tower	2987m			1 Chorocaris, 2 Rimicaris
26	123 ROV #5 +#6	11.04.2005	15:01 / 15:11	Turtle Pits / Tower	2992m			1 Rimicaris Weibchen mit Eiern
27	123 ROV #5 +#6	11.04.2005	15:01 / 15:11	Turtle Pits / Tower	2992m	Gaps out of order		4 adulte Rimicaris
28	123 ROV #5 +#6	11.04.2005	15:01 / 15:11	Turtle Pits / Tower	2992m			2 Mirocaris
29	123 ROV #5 +#6	11.04.2005	15:01 / 15:11	Turtle Pits / Tower	2992m			Copepoda von Shrimps + Limpets
30	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Restprobe
31	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Polychaetenröhren
32	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Limpets
33	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Limpets
34	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Bythograeidea (Männchen, juv.)
35	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Pantopoda
36	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Polychaeta
37	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Bathymodiolus
38	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Bathymodiolus 1(3) Doppelklappe
39	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Bathymodiolus 2(3) Doppelklappe
40	125ROV #1	12.04.2005	11:38	Widawake Mussel Field (Musselpatch)	3000m	12°22.33W	4°48,61S	Bathymodiolus 1(3) Doppelklappe
41	125ROV #2	12.04.2005	11:46	Widawake Mussel Field (Musselpatch)	3000m	12°22.36W	4°48,62S	Polychataröhren
42	125ROV #2	12.04.2005	11:46	Widawake Mussel Field (Musselpatch)	3000m	12°22.36W	4°48,62S	Terebellida

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List of zoological samples

Nr.	Station / Sample	Box	Fixed with	Comment
1	109GTV-A	Kautex 50ml	Formol 4%	
2	109GTV-A	Kautex 1000ml	Formol 4%	
3	109GTV-A	Kautex 1000ml	Formol 4%	
4	109GTV-A	Kautex 50ml	Formol 4%	
5	109GTV-A	Kautex 50ml	Formol 4%	
6	109GTV-A	Kautex 50ml	Formol 4%	
7	109GTV-A	Kautex 50ml	Formol 4%	
8	109GTV-A	Kautex 50ml	Formol 4%	
9	109GTV-A	Kautex 50ml	Formol 4%	
10	109GTV-A	Kautex 50ml	Formol 4%	
11	109GTV-A	Kautex 50ml	Ethanol 72%	
12	109GTV-A	Kautex 50ml	Ethanol 72%	
13	109GTV-A	Kautex 50ml	Ethanol 72%	
14	109GTV-A	Kautex 500ml	Ethanol 72%	
15	109GTV-A	Kautex 500ml	Ethanol 72%	
16	109GTV-A	Kautex 500ml	Ethanol 72%	
17	109GTV-A	Kautex 500ml	Ethanol 72%	
18	109GTV-A	Kautex 500ml	Ethanol 72%	Weichkörper wurde von Prof. Giere für Genetik entnommen, an AG Dubilier (MPI
19	109GTV-A	Kautex 500ml	Ethanol 72%	Bremen) ging Gewebe für Unteruchungen an Symionten, an Tim Shank (WHOI)
20	109GTV-A	Kautex 500ml	Ethanol 72%	Gewebe (Fuß und Muskel) für Untersuuchungen des Wirtes
21	109GTV-A	Kautex 500ml	Ethanol 72%	
22	109GTV-A	Kautex 500ml	Ethanol 72%	
23	109GTV-A	5l-Eimer	Formol 4%	
24	109GTV-A	5l-Eimer	Formol 4%	
25	114 ROV #6	Kautex 500ml	Ethanol 72%	
26	123 ROV #5 +#6	Kautex 50ml	Ethanol 72%	Fanggerät: 123ROV#5 Netz 100µm, 123ROV#6 300µm, gleiche Lokation; fotografiertes
27	123 ROV #5 +#6	Kautex 500ml	Ethanol 72%	Fanggerät: 123ROV#5 Netz 100µm, 123ROV#6 300µm, gleiche Lokation
28	123 ROV #5 +#6	Kautex 50ml	Ethanol 72%	
29	123 ROV #5 +#6	Kautex 50ml	Ethanol 72%	
30	125ROV #1	Kautex 50ml	Formol 4%	
31	125ROV #1	Kautex 50ml	Formol 4%	
32	125ROV #1	Kautex 50ml	Formol 4%	
33	125ROV #1	Kautex 50ml	Ethanol 72%	
34	125ROV #1	Kautex 50ml	Formol 4%	
35	125ROV #1	Kautex 50ml	Formol 4%	
36	125ROV #1	Kautex 50ml	Formol 4%	2 Archinome, 2 Branchipolynoe, 2 Terebellida an Christian Osterberg- Henning für Amino
37	125ROV #1	5l-Eimer	Formol 4%	
38	125ROV #1	Kautex 500ml	Ethanol 72%	Weichkörper wurde von Prof. Giere für Genetik entnommen, an AG Dubilier (MPI
39	125ROV #1	Kautex 500ml	Ethanol 72%	Bremen) ging Gewebe für Unteruchungen an Symionten, an Tim Shank (WHOI)
40	125ROV #1	Kautex 500ml	Ethanol 72%	Gewebe (Fuß und Muskel) für Untersuuchungen des Wirtes
41	125ROV #2	Kautex 1000ml	Formol 4%	
42	125ROV #2	kl. PE Röhre	Ethanol 72%	

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List of zoological samples

Nr.	Station / Sample	Date	Time	Location	Depth	Lat.	Long.	Content
43	125ROV #2	12.04.2005	11:46	Widawake Mussel Field (Musselpatch)	3000m	12°22.36W	4°48,62S	2 St. Archinome sp.
44	125ROV #2	12.04.2005	11:46	Widawake Mussel Field (Musselpatch)	3000m	12°22.36W	4°48,62S	2 St. Gastropoda
45	125ROV #2	12.04.2005	11:46	Widawake Mussel Field (Musselpatch)	3000m	12°22.36W	4°48,62S	Pantopoda
46	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Bruchstück v.Calyptogena, 1 Bathymodiolus (juv.)
47	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Calyptogena 1(3)
48	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Calyptogena 2(3)
49	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Calyptogena 3(3)
50	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Bathymodiolus 1(3) Doppelklappe
51	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Bathymodiolus 2(3) Doppelklappe
52	125ROV #7	12.04.2005	14:25	Widawake Mussel Field (Musselfield)	2985m	12°22.35W	4°48,65S	Bathymodiolus 1(3) Doppelklappe
53	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bythograeidea (adultes Männchen)
54	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Limpets
55	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bathymodiolus 1(6) Doppelklappe
56	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bathymodiolus 2(6) Doppelklappe
57	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bathymodiolus 3(6) Doppelklappe
58	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bathymodiolus 4(6) Doppelklappe
59	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bathymodiolus 5(6) Doppelklappe
60	125ROV #12	12.04.2005	17:41	Widawake Mussel Field (Musselfield)	2980m	12°22.36W	4°48,63S	Bathymodiolus 6(6) Doppelklappe
61	130ROV #1	13.04.2005	14:39	Turtle Pits / Marker M2	2989m			Segonzacia mesatlantica (1 Män. adult, 1 Män. juv.)
63	130ROV #1	13.04.2005	14:39	Turtle Pits / Marker M2	2989m	GAS out of order		2 Rimicaris
64	130ROV #2	13.04.2005	14:57	Turtle Pits / Marker M2	2989m			4 Mirocaris
65	130ROV #2	13.04.2005	14:57	Turtle Pits / Marker M2	2989m			2 Pantopoda
66	131 GTV-A	13.04.2005	21:05	Turtle Pits / 5m E vom Stalagmith	2949m	12°22,37W	4°48,57S	Actinien
67	131 GTV-A	13.04.2005	21:05	Turtle Pits / 5m E vom Stalagmith	2949m	12°22,37W	4°48,57S	Polychaetaröhren
68	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Mischprobe, ungesiebt 1(3)
69	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Mischprobe, ungesiebt 2(3)
70	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Mischprobe, ungesiebt 3(3)
71	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Bathymodiolus ca. 20St.
72	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Polychaetaröhren
73	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Segonzacia mesatlantica
74	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Micocaris
75	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Polychaeta
76	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Limpets
77	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Pantopoda
78	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Actinaria auf Basalt
79	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Aufwuchsgeflecht von Basalt
80	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Siebgut von Segonzacia mesatlantica, 40µm
81	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Bathymodiolus ca. 20 St. 1(2)
82	131 GTV-A	14.04.2005	01:36	Wideawake Mussel Field	2996m(HS)	12°22,34W	4°48,62S	Bathymodiolus ca. 20 St. 2(2)
83	139 GTV-A	14.04.2005	20:18	Turtle Pits, Massivsulfide	2990m (HS)	12°22,40W	4°48,58S	Sediment für Meiobenthos, ungesiebt
84	146 ROV #6	16.04.2005	22:57	Red Lion, "Shrimps Smoker"	3048m	12°22,595W	4°47,824S	37 Rimicaris Weibchen mit Eiern
85	146 ROV #6	16.04.2005	22:57	Red Lion, "Shrimps Smoker"	3048m	12°22,595W	4°47,824S	42 Rimicaris Weibchen mit Eiern

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List of zoological samples

Nr.	Station / Sample	Box	Fixed with	Comment
43	125ROV #2	kl. PE Röhre	Ethanol 72%	
44	125ROV #2	kl. PE Röhre	Ethanol 72%	
45	125ROV #2	kl. PE Röhre	Ethanol 72%	
46	125ROV #7	Kautex 50ml	Ethanol 72%	
47	125ROV #7	Kautex 500ml	Ethanol 72%	vollständig erhaltenes Exemplar
48	125ROV #7	Kautex 500ml	Ethanol 72%	beschädigte Exemplare, Weichkörper wurde von Prof. Giere für Genetik entnommen, an
49	125ROV #7	Kautex 500ml	Ethanol 72%	AG Dubilier (MPI Bremen) ging Gewebe für Unteruchungen an Symionten, an Tim
50	125ROV #7	Kautex 500ml	Ethanol 72%	
51	125ROV #7	Kautex 500ml	Ethanol 72%	
52	125ROV #7	Kautex 500ml	Ethanol 72%	
53	125ROV #12	Kautex 500ml	Ethanol 72%	
54	125ROV #12	Kautex 500ml	Ethanol 72%	6 Limpets an Christian Osterberg- Henning für Aminosäurenuntersuchung
55	125ROV #12	Kautex 500ml	Ethanol 72%	
56	125ROV #12	Kautex 500ml	Ethanol 72%	
57	125ROV #12	Kautex 500ml	Ethanol 72%	Weichkörper wurde von Prof. Giere für Genetik entnommen, an AG Dubilier (MPI
58	125ROV #12	Kautex 500ml	Ethanol 72%	Bremen) ging Gewebe für Unteruchungen an Symionten, an Tim Shank (WHOI)
59	125ROV #12	Kautex 500ml	Ethanol 72%	Gewebe (Fuß und Muskel) für Untersuuchungen des Wirtes
60	125ROV #12	Kautex 500ml	Ethanol 72%	
61	130ROV #1	Kautex 500ml	Formol 4%	Fotographiert, falsch beschriftet
63	130ROV #1	Kautex 50ml	Ethanol 72%	1 Exemplar an Olav Giere für genetische Analysen
64	130ROV #2	Kautex 50ml	Ethanol 72%	4 Exemplare an Olav Giere für genetische Analysen
65	130ROV #2	Kautex 50ml	Ethanol 72%	
66	131 GTV-A	Kautex 50ml	Formol 4%	Basaltaufwuchs
67	131 GTV-A	Kautex 50ml	Ethanol 72%	Basaltaufwuchs
68	131 GTV-A	Kautex 1000ml	Formol 4%	
69	131 GTV-A	Kautex 1000ml	Formol 4%	
70	131 GTV-A	Kautex 1000ml	Formol 4%	
71	131 GTV-A	Kautex 1000ml	Ethanol 72%	
72	131 GTV-A	Kautex 500ml	Formol 4%	
73	131 GTV-A	Kautex 500ml	Formol 4%	
74	131 GTV-A	Kautex 50ml	Formol 4%	
75	131 GTV-A	Kautex 50ml	Formol 4%	
76	131 GTV-A	Kautex 50ml	Formol 4%	ca. 20St. a Giere für Elektronenmikroskopie
77	131 GTV-A	Kautex 50ml	Formol 4%	
78	131 GTV-A	Kautex 50ml	Formol 4%	
79	131 GTV-A	Kautex 50ml	Formol 4%	
80	131 GTV-A	Kautex 50ml	Formol 4%	
81	131 GTV-A	18l PE-Eimer	Formol 4%	9 kl. Individuen (19-27mm) an Giere für molekularbiologische Untersuchungen
82	131 GTV-A	18l PE-Eimer	Formol 4%	
83	139 GTV-A	Kautex 500ml	Formol 4%	
84	146 ROV #6	Kautex 1000ml	Formol 4%	
85	146 ROV #6	Kautex 1000ml	Ethanol 72%	1 Exemplar an Christian Oosterbrg-Hennig für Aminosäurenisotopie

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List of zoological samples

Nr.	Station / Sample	Date	Time	Location	Depth	Lat.	Long.	Content
86	146 ROV #6	16.04.2005	22:57	Red Lion, "Shrimps Smoker"	3048m	12°22,595W	4°47,824S	35 Rimicaris ohne Eiern
87	146 ROV #6	16.04.2005	22:57	Red Lion, "Shrimps Smoker"	3048m	12°22,595W	4°47,824S	42 Rimicaris ohne Eiern
88	146 ROV #6	16.04.2005	22:57	Red Lion, "Shrimps Smoker"	3048m	12°22,595W	4°47,824S	Copepoda von Rimicaris
						12°22,595W	4°47,824S	Restprobe von präparierten Rimicaris
89	146 ROV #6	16.04.2005	22:57	Red Lion, "Shrimps Smoker"	3048m			
90	155 ROV #5	19.04.2005	14:00	Riftvally, Arbeitsgebiet II	2199m	13°30,06W	8°48,99S	Porifera auf altem Basalt
91	159 ROV #4	20.04.2005	12:16	Riftvally, Arbeitsgebiet II	2201m	13°30,12 W	8°47,99 S	Pteropodenschille
92	159 ROV #7	20.04.2005	15:44	Riftvally, Arbeitsgebiet II	2201m	13°30,21W	8°47,75S	Cnidaria & Octocorallia
93	159 ROV #9	20.04.2005	17:28	Riftvally, Arbeitsgebiet II	2215m	13°30,21W	8°47,50S	Porifera auf altem Basalt, Sheet-fow lava
94	170b VSR	21.04.2005	20:40	Riftvally, Arbeitsgebiet II	2313m (HS)	13°26,99W	9°02,00S	Pteropodengehäuse
95	188 ROV #2	23.04.2005	13:43	Riftvally, Arbeitsgebiet III	1797m	13°04,99W	9°42,48S	Sedimentmischprobe, ungesiebt, Meiobenthos
96	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 1(8) 0-2cm Meiobenthos
97	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 2(8) 2-4cm Meiobenthos
98	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 3(8) 4-6cm Meiobenthos
99	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 4(8) 6-8cm Meiobenthos
100	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 5(8) 8-10cm Meiobenthos
101	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 6(8) 10-12cm Meiobenthos
102	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 7(8) 12-14cm Meiobenthos
103	188 ROV #6	23.04.2005	16:43	Riftvally, Arbeitsgebiet III	1865m	13°04,664W	9°42,382S	Sedimentprobe P8 8(8) 14-16cm Meiobenthos
104	194 ROV #4	24.04.2005	13:06	Vulkane im Riftvally, Arbeitsgebiet III	1429m	13°12,86W	9°34,37S	Porifera auf Basalt
105	194 ROV #5	24.04.2005	13:09	Vulkane im Riftvally, Arbeitsgebiet III	1429m	13°12,86W	9°34,37S	abgestorbene Gorgonarie mit Aufuchs (Neolepas)
106	200 ROV #4	25.04.2005	12:39	Liliput	1494m	13°12,51W	9°32,93S	Schille von Bathymodiolus
107	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 1(8), Doppelklappe
108	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 2(8), mit Kommensale, Doppelklappe
109	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 3(8), Doppelklappe
110	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 4(8), Doppelklappe
111	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 5(8), Doppelklappe
112	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 6(8), Doppelklappe
113	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 7(8), Doppelklappe
114	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus 8(8), Doppelklappe
115	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Polychaeta
116	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Siebgutrest (500µm)
117	200 ROV #9	25.04.2005	16.45	Liliput	1495m	13°12,56W	9°32,86S	Bathymodiolus
118	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Polychaetenröhren
119	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Polychaeten
120	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Polychaetenreste
121	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	juv. Gastropoda
122	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Bathymodiolus
123	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Holothurie
124	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Siebgut >500µm
125	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Siebgut >1000µm
126	213 GTV-A	27.04.2005	01:58	Liliput	1513m	13°12,55W	9°32,83S	Sediment ungesiebt & Dekantat für Meiobenthos

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List of zoological samples

Nr.	Station / Sample	Box	Fixed with	Comment
86	146 ROV #6	Kautex 1000ml	Formol 4%	
87	146 ROV #6	Kautex 1000ml	Ethanol 72%	1 zerbrochenes Exemplar an Christian Oosterbrg-Hennig für Aminosäurenisotopie
88	146 ROV #6	Kautex 50ml	Ethanol 72%	
89	146 ROV #6	Kautex 50ml	Ethanol 72%	Olav Giere entfernete Mundwerkzeuge und Augen für elektonenmikroskpische Untersuchungen,
90	155 ROV #5	Kautex 50ml	Formol 4%	Arbeittsgebiet II, Vulkane im zentralen Achsenbereich
91	159 ROV #4	Kautex 50ml	Trockenprobe	
92	159 ROV #7	Kautex 50ml	Formol 4%	Basaltaufwuchs
93	159 ROV #9	Kautex 500ml	Ethanol 72%	15ml Schappdeckel in 500ml Kautex Flasche
94	170b VSR	Kautex 50ml	Ethanol 72%	
95	188 ROV #2	Kautex 500ml	Formol 4%	Probe stammte vom Pushcore P7
96	188 ROV #6	Kautex 50ml	Formol 4%	
97	188 ROV #6	Kautex 50ml	Formol 4%	
98	188 ROV #6	Kautex 50ml	Formol 4%	
99	188 ROV #6	Kautex 50ml	Formol 4%	Probe stammte vom Pushcore P8, 17cm Kern, je eine Unterprobe an Reitner Uni
100	188 ROV #6	Kautex 50ml	Formol 4%	Göttingen und Immhof, IFM-Geomar, Kiel
101	188 ROV #6	Kautex 50ml	Formol 4%	
102	188 ROV #6	Kautex 50ml	Formol 4%	
103	188 ROV #6	Kautex 50ml	Formol 4%	
104	194 ROV #4	Kautex 50ml	Formol 4%	
105	194 ROV #5	Kautex 2000ml	Formol 4%	
106	200 ROV #4	Kautex 1000ml	Formol 4%	
107	200 ROV #9	Kautex 500ml	Ethanol 72%	
108	200 ROV #9	Kautex 500ml	Ethanol 72%	
109	200 ROV #9	Kautex 50ml	Ethanol 72%	
110	200 ROV #9	Kautex 50ml	Ethanol 72%	Weichkörper wurde von Prof. Giere für Genetik entnommen, an AG Dubilier (MPI Bremen) ging Gewebe für Unteruchungen an Symbionten, an Tim Shank (WHOI)
111	200 ROV #9	Kautex 50ml	Ethanol 72%	
112	200 ROV #9	Kautex 50ml	Ethanol 72%	Gewebe (Fuß und Muskel) für Untersuuchungen des Wirtes
113	200 ROV #9	Kautex 50ml	Ethanol 72%	
114	200 ROV #9	Kautex 50ml	Ethanol 72%	
115	200 ROV #9	Kautex 50ml	Formol 4%	
116	200 ROV #9	Kautex 50ml	Formol 4%	
117	200 ROV #9	Kautex 500ml	Formol 4%	
118	213 GTV-A	Kautex 500ml	Formol 4%	
119	213 GTV-A	Kautex 50ml	Formol 4%	
120	213 GTV-A	Kautex 50ml	Formol 4%	
121	213 GTV-A	Kautex 50ml	Formol 4%	
122	213 GTV-A	Kautex 500ml	Formol 4%	
123	213 GTV-A	Kautex 500ml	Ethanol 72%	
124	213 GTV-A	Kautex 500ml	Formol 4%	
125	213 GTV-A	Kautex 500ml	Formol 4%	
126	213 GTV-A	Kautex 1000ml	Formol 4%	

M64/1
List of zoological samples

Nr.	Station / Sample	Date	Time	Location	Depth	Lat.	Long.	Content
127	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Gastropoda
128	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Polychaeta
129	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Polychaetaröhren
130	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Bathymodiolus
131	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Bathymodiolus
132	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Siebgut >500µm
133	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Siebgut >1000µm
134	214 GTV-A	27.04.2005	03:33	Liliput	1511m	13°12,54W	9°32,84S	Sediment ungesiebt & Dekantat für Meiobenthos

M64/1
List of zoological samples

Nr.	Station / Sample	Box	Fixed with	Comment
127	214 GTV-A	Kautex 50ml	Formol 4%	
128	214 GTV-A	Kautex 50ml	Formol 4%	
129	214 GTV-A	Kautex 500ml	Formol 4%	
130	214 GTV-A	Kautex 500ml	Formol 4%	
131	214 GTV-A	Kautex 500ml	Ethanol 72%	
132	214 GTV-A	Kautex 500ml	Formol 4%	
133	214 GTV-A	Kautex 500ml	Formol 4%	
134	214 GTV-A	Kautex 1000ml	Formol 4%	

Sample list Geology M64/1

Abbreviations for sampling equipment	
GTV	TV grab samples
ROV_AC	Accidentially sampled material during ROV dive due to seafloor contact
ROV_P	Sample taken on position with ROV manipulators
VSR	Vulkanit Stossrohr (wax-corer for volcanic rocks)
ROV-PC	Particle Catcher deployed by ROV

Abbreviations for scientists who took samples/subsamples:

KH	Karsten Haase
JK	Jan Küver
SP	Sven Petersen
JSch	Jan Scholten
HS	Harald Strauss
CF	Christine Flies
MP	Miriam Perner

Sample ID			Information about station							Sample description		Sampling record
						Sample Position				Size	Rock type	Comments	Where is the sample:
Cruise#	Station	Sample	Sampling equipment	Date+	Time+	Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth			
M64/1	109#	1	GTV	08.04.2005	22:34	4	48.64	12	22.36	2998	30 x 3 0 x 10 cm	Fresh, glassy basalt; aphyric sheet flow.	1.5 cm glass, Fe staining (abundant additional material)	KH, Uni Kiel
M64/1	109#	2	GTV	08.04.2005	22:34	4	48.64	12	22.36	2998	14 x 16 x 6 cm	Very fresh aphyric sheet flow, wrinkled surface.	1 cm glass, slight Mn staining (abundant additional material)	KH, Uni Kiel
M64/1	109#	3	GTV	08.04.2005	22:34	4	48.64	12	22.36	2998	10 x 10 x 6 cm	basalt with 1 cm glass crust.	strong Fe staining, older than other samples? (abundant additional material)	KH, Uni Kiel
M64/1	109#	4	GTV	08.04.2005	22:34	4	48.64	12	22.36	2998	20 x 15 x 15 cm	Piece of fresh, glassy sheet flow lava, wrinkled surface, aphyric.	minor sediment and yellow Fe staining (abundant additional material)	KH, Uni Kiel
M64/1	109#	5	GTV	08.04.2005	22:34	4	48.64	12	22.36	2998	15 x 10 x 6 cm	Fresh, aphyric sheet lava with 1 cm glass rind on both sides.	some Mn coating of glass	KH, Uni Kiel
M64/1	110	1	GTV	09.04.2005	2:45	4	48.55	12	22.36	2998	20 x 20 x 10 cm	Fresh, aphyric sheet flow, 1 cm glassy rim.	white to brown staining (abundant additional material)	KH, Uni Kiel
M64/1	110	2	GTV	09.04.2005	2:45	4	48.55	12	22.36	2998	10 x 10 x 5 cm	Aphyric basalt glass.	very fresh (abundant additional material)	KH, Uni Kiel
M64/1	110	3	GTV	09.04.2005	2:45	4	48.55	12	22.36	2998	20 x 20 x 10 cm	Fresh aphyric basalt, glassy margins on both sides of sample.	minor Fe staining (abundant additional material)	KH, Uni Kiel
M64/1	112	1	VSR	09.04.2005	11:05	4	48.75	12	22.28	2995	ca. 2 g	Small glass particles.		KH, Uni Kiel
M64/1	113	1	VSR	09.04.2005	13:58	4	48.77	12	21.76	2951	3 x 2 x 1 cm	Fresh, aphyric basalt glass.	in addition there are some smaller pieces	KH, Uni Kiel
M64/1	113	2	VSR	09.04.2005	13:58	4	48.77	12	21.76	2951	ca. 1 g	Fresh glassy ash with foram. sand.		KH, Uni Kiel
M64/1	114	4A*	ROV-P	10.04.2005	3:55	4	48.579	12	22.418	2993	22 x 18 x 11 cm	Piece of black smoker chimney, zoned, interior consists of chalcopyrite (friable, porous). Outer rim: 1-2 cm of pyrite-marcasite, marcasite-rich outer crust coated with Fe-Oxihydroxides.	Location: southern tower, turtle pits; slabs cut on board	SP, IFM-GEOMAR
M64/1	114	5A*	ROV-P	10.04.2005	4:20	4	48.579	12	22.418	2993	29 x 20 x 20 cm	Zoned black smoker chimney. Outer 2 - 5 cm: pyrite-marcasite crust, interior; chalcopyrite-rich with abundant anhydrite and rare sphalerite. Prominent ribbon banding. Central conduit is open: 4 to 9 cm in diameter lined and filled by anhydrite (partially intergrown with fine-grained sulfide [sphalerite?]).	Location: southern tower, turtle pits; slabs cut on board	SP, IFM-GEOMAR
M64/1	114	5B-F*	ROV-P	10.04.2005	4:20	4	48.579	12	22.418	2993	up to 6 cm	Several small pieces of pyrite-marcasite black smoker crustal material, behive-like layering.	Location: southern tower, turtle pits	SP, IFM-GEOMAR
M64/1	114	5G-H*	ROV-P	10.04.2005	4:20	4	48.579	12	22.418	2993	up to 5 cm	Porous, friable chalcopyrite-rich material from black smoker interior.	Location: southern tower, turtle pits	SP, IFM-GEOMAR
M64/1	114	5Bag*	ROV-P	10.04.2005	4:20	4	48.579	12	22.418	2993	loose rubble ca. 1 kg	Loose sulfide rubble, very porous, soft, collected in bionet.	Location: southern tower, turtle pits	SP, IFM-GEOMAR
M64/1	114	6*	ROV-P	10.04.2005	5:00	4	48.579	12	22.418	2984	20 x 10 x 5 cm + rubble	Sample of beehive structure, similar to sample 114-4; outer marcasite crust, interior is porous chalcopyrite showing behive layering.	Location: top of southern tower, turtle pits, inactive at sampling	SP, IFM-GEOMAR
M64/1	114	7*	ROV-P	10.04.2005	5:14	4	48.579	12	22.418	2984	20 x 20 x 10 cm	Piece adjacent to 114-6 but not behive structured (more like a layered knob); marcasite-rich outer crust; chalcopyrite-rich interior.	Location: top of southern tower, turtle pits, inactive at sampling; slabs cut on board	SP, IFM-GEOMAR
M64/1	115	1	VSR	10.04.2005	9:10	4	48.77	12	22.61	3048	1 x 1 x 1.5 cm	Basalt glass with large plagioclase phenocryst (10 mm in diameter).		KH, Uni Kiel

Sample ID			Information about station								Sample description			Sampling record
						Sample Position					Size	Rock type	Comments	Where is the sample:
Cruise#	Station	Sample	Sampling equipment	Date+	Time+	Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth				
M64/1	115	2	VSR	10.04.2005	9:10	4	48.77	12	22.61	3048	ca. 2 g	Glass particles with plagioclase phenocrysts.	recovered at the Pb-weight of the corer	KH, Uni Kiel
M64/1	117	1	VSR	10.04.2005	15:05	4	48.25	12	23.00	3033	1 x1 x1 cm	Two small pieces of aphyric basalt glass.		KH, Uni Kiel
M64/1	118	1	VSR	10.04.2005	17:38	4	48.26	12	22.23	3000	several pieces max. diamter is 3 cm	Very fresh aphyric glass.	some additional glass shard together with vaseline	KH, Uni Kiel
M64/1	119	1	VSR	10.04.2005	19:43	4	48.26	12	21.48	2980	5 cm max diameter	Fresh basaltic glass with plagioclase phenocrysts (max. 1 cm).		KH, Uni Kiel
M64/1	120	1	VSR	10.04.2005	21:58	4	47.79	12	22.97	3050	approx. 2 x 3 x 2 cm	~1 cm thick glass crust, basalt with several plagioclase phenocrysts up to 1 cm.	2 large pieces and abundant glass shards	KH, Uni Kiel
M64/1	123	4A*	ROV-P	11.04.2005	13:50	4	48.583	12	22.410	2986	12 x 12 x 10 cm	Outer portion of active chimney consisting of numerous, friable microchimney structures (1 - 5 cm diameter). Marcasite crust. Interior is complex and zoned grading from anhydrite, sphalerite to pyrite-sphalerite to chalcopyrite. Exterior is partially oxidized and locally covered with white bacterial? dots.	Location: marker M1 active black smoker	SP, IFM-GEOMAR
M64/1	123	4B*	ROV-P	11.04.2005	13:50	4	48.583	12	22.410	2986	10 x 7 x 7 cm	Two fragments of chimney interior, chalcopyrite-anhyydrite association	Location: marker M1 active black smoker	SP, IFM-GEOMAR; JK
M64/1	123	4C*	ROV-P	11.04.2005	13:50	4	48.583	12	22.410	2986	rubble, max diameter is 5 cm	Various fragments of chimney exterior, marcasite-pyrite + Fe-oxihydroxide + white coatings. Finer rubble with chalcopyrite-rich material, anhydrite, microchimneys.	Location: marker M1 active black smoker	SP, IFM-GEOMAR
M64/1	123	8	ROV-P	11.04.2005	16:26	4	48.58	12	22.40	2985	10 x 6 x 11 cm	Aphyric basalt, lobate feature on surface of jumbled sheet flow. 3 mm thick glass on both sides. Interior is microcrystalline with large lensoida cavities parallel to outer surfaces (drain-out feature?) lines with thin Mn Oxide film.	Location: ca. 20 m East of marker M1 active black smoker	KH, Uni Kiel
M64/1	123	9*	ROV-P	11.04.2005	16:50	4	48.559	12	22.413	2990	12 x 12 x 8 cm	Piece of inactive sulfide chimney, recrystallized. Chalcopyrite-rich interior ca. 5 cm in diameter, partly oxidized (pigeon coloration). Outer zone is sphalerite-pyrite-marcasite. Crust is marcasite, outer crust is 1 mm thick Fe-oxihydroxide.	Location: beacon site	SP, IFM-GEOMAR
M64/1	124	1A*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	3 piece, largest is 17 x 14 x 7 cm	Three pieces of approx. similar size, slabby blocks of aphyric basalt, 1-2 mm of glass crust on both sides and extensive Fe-oxihydroxide coating.	West of Turtle pits, some sulfide coating most likely due to transport in TV grab together with smoker fragments	SP, IFM-GEOMAR
M64/1	124	1B*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	4 piece, largest is 9 x 20 x 15 cm	Similar to 124-1A but with prominent wrinkles on the surfaces.	West of turtle pits, ropy flow structure	SP, IFM-GEOMAR
M64/1	124	2A*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	1 big piece	Massive pyrite/marcasite; outer 5 mm biogenic(?) marcasite crust followed by 1 cm massive marcasite, interior pyrite: dendritic growth cross cutting beehive layering.	cut in 6 slabs	SP, IFM-GEOMAR; slabs: SP, JSch, HS
M64/1	124	2B*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	1 big piece	Same as 2A + small normal fractures lined with chalcopyrite. Zones of sphalerite enrichment.	cut in 8 slabs	SP, IFM-GEOMAR; slabs: SP, JSch, HS
M64/1	124	2C*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	1 big piece	Same as 2A but interior is with more chalcopyrite (Cu-rich end member of this type).	cut in slabs	SP, IFM-GEOMAR; slabs: JSch, SP
M64/1	124	2 D to M*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	several big pieces	Crustal material of black smoker chimney: pyrite + marcasite, rare to trace sphalerite + chalcopyrite in cavities and along fractures.		SP, IFM-GEOMAR
M64/1	124	2G*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	1 big piece	Similar to 2A but more black sphalerite, Zn-rich end member of this type.		SP, IFM-GEOMAR
M64/1	124	3 A to C*	GTV	11.04.2005	22:11	4	48.573	12	22.424	2998	several big pieces	Massive pyrite-marcasite with strong beehive texture.		SP, IFM-GEOMAR
M64/1	125	1A	ROV-P	12.04.2005	11:38	4	48.61	12	22.33	3000	12 x 4 x 5 cm	Glassy aphyric lava with large vesicle (max. diameter is 5 cm) and some spotty biological coating.		KH, Uni Kiel
M64/1	125	4	ROV-P	12.04.2005	11:59	4	48.61	12	22.33	3000	20 x 4 x 12 cm	Aphyric basalt crust, 4 cm thick, 3 mm glass crust with rough polyhedral joints. Interior is microcrystalline with small vesicles and 3-4 cm thick lower surfaces showing complex plastic deformation and lava stalagtites.	This sample represents the roof of a lava lobe that was at least partially drained.	KH, Uni Kiel
M64/1	125	6	ROV-P	12.04.2005	13:10	4	48.62	12	22.36	2986	5 x 3 x 4 cm, largest piece	Three pieces, basalt overgrown with scyphocytes, aphyric basalt, 2 mm thick glass crust, interior with large vesicles.		KH, Uni Kiel
M64/1	125	8	ROV-P	12.04.2005	16:04	4	48.64	12	22.35	2985	7 x 10 x 8 cm	Aphyric basalt, 3 mm thick glass crust, interior is microcrystalline. Fracture surfaces normal to top of sample are coated with Fe-oxihydroxides.	pillow sector (flow front) of young, glassy dominately lobate flow covering mussle patches and overlying jumbled flow	KH, Uni Kiel

Sample ID			Information about station								Sample description			Sampling record
						Sample Position					Size	Rock type	Comments	Where is the sample:
Cruise#	Station	Sample	Sampling equipment	Date+	Time+	Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth				
M64/1	125	9	ROV-P	12.04.2005	16:19	4	48.63	12	22.36	2986	5 x 5 x 3 cm, largest piece, total ~1 kg	Very fresh glass from flow carapace, abundant quench fractures, <1 vol% olivine phenocrysts, max. diameter ~1mm, locally with elongate to lensoidal vesicles up to 2 x 3 cm, no small vesicles.	sample from the older jumbled sheet flow	KH, Uni Kiel
M64/1	125	10	ROV-P	12.04.2005	16:24	4	48.63	12	22.36	2986	some small pieces	Some more fragments of the same type and the same location as sample 125-9 (see above).		KH, Uni Kiel
M64/1	130	1*	ROV-P	13.04.2005	14:40	4	48.570	12	22.417	2985	abundant small pieces, total ca- 500 g, 8 x 7 x 6 cm max. size	There are two types of fragments: 1. Chimney interior consisting of anhydrite and chalcopyrite. 2. Chimney crust consisting of pyrite, chalcopyrite and marcasite, partially covered by Fe-oxihydroxides.	Rock sample in bio net together with vent carb; Marker M2 site	SP, IFM-GEOMAR; HS (sulfide, anhydrite)
M64/1	130	2*	ROV-P	13.04.2005	14:57	4	48.570	12	22.417	2985	9 x 7 x 5 cm	Hollow chimney structure with 2 cm thick walls. Walls consist of cpy and marcasite and a 1-5 mm marcasite crust. Interior of the vent (5 x 3 x 2 cm) is extensively lined by 1-3 mm thick pyrrotine crust with beautiful blade crystals up to 1 mm in diameter.	Rock sample in bio net together with shrimp; Marker M2 site	SP, IFM-GEOMAR
M64/1	130	3*	ROV-PC	13.04.2005	15:34	4	48.570	12	22.417	2985	ca. 5 g	Particles are 5 to <1mm, 75% pyrite particles including some collomorphic aggregates; 10% basalt glass chips (max. 5 mm); 10% anhydrite <1 mm, some larger particles are well-rounded due to resorption by seawater;<5% cpy (altered) and pyrite aggregates, <1% globugerina; rare goethite.	Sample take from M2 marker site black smoker by placing the catcher into the billowing plume for ca. 2 minutes.	HS
M64/1	131	1	GTV	13.04.2005	21:05	4	48.57	12	22.37	2999	20 x 30 x 32 cm3	Piece of aphyric basalt with 1 x 1 cm mafic xenolith. Wrinkled to bulbous crust of a sheet flow with 1 to 5 mm glassy upper surface (locally some Feox-hydrox. staining). Lower surface shows plastic deformation indicating that this is the roof of a lava lobe/tunnel. Xenoliths of gabbro (cpx to 8 mm and plag to 2 mm) up to 5 cm in diameter.	Turtle Pits area	KH, Uni Kiel
M64/1	131	2	GTV	13.04.2005	21:05	4	48.57	12	22.37	2999	10 x 30 x 23 cm3	Similar to 131-1. Crust of drained lava tube. Top surface shows ropy texture; 2 to 3 mm thick glass covered by Fe-Oxihydroxides. Margins of piece are normal fractures covered by Fe-Oxihydroxides and biology.	Turtle Pits area	KH, Uni Kiel
M64/1	131	3	GTV	13.04.2005	22:05	4	48.57	12	22.37	2999	3 x 16 x 4 cm^3	Similar to 131-1 and 2. Platy slab representing the roof of a drained sheet lava flow. Top is flat and covered by <1 mm hydrothermal(?) crust. Glass is 10 mm thick and shows nice gradation over 3 mm into microcrystalline interior. Lower surface shows lava stalagtites.	Turtle Pits area	KH, Uni Kiel
M64/1	131	4	GTV	13.04.2005	22:05	4	48.57	12	22.37	2999	10 x 4 x 8 cm3	Similar to 131-1,-2, and -3. Lava tongue (4 cm thick) with 1 to 5 mm thick glass on both sides. Top surface is ropy to wrinkled.	Turtle Pits area	KH, Uni Kiel
M64/1	131	5	GTV	13.04.2005	22:05	4	48.57	12	22.37	2999	several pieces up to 5 cm in diameter	Aphyric lava with gabbroic xenoliths: clinopyroxene and plagioclase up to 8 mm.	Turtle Pits area	KH, Uni Kiel
M64/1	132#	1	GTV	14.04.2005	1:36	4	48.62	12	22.34	2996	25 x 25 x 20 cm3	Fresh lava piece, bulbous, aphyric, 10 mm of glass on both sides.	Wideawake Mussle Beds	KH, Uni Kiel
M64/1	132#	2	GTV	14.04.2005	1:36	4	48.62	12	22.34	2996	15 x 10 x 10 cm3	Similar to 132-1, fresh surface with biological colonization.	Wideawake Mussle Beds	KH, Uni Kiel
M64/1	132#	3	GTV	14.04.2005	1:36	4	48.62	12	22.34	2996	9 x 5 cm	Similar to 132-1.	Wideawake Mussle Beds	KH, Uni Kiel
M64/1	134	1	VSR	14.04.2005	6:54	4	49.01	12	23.05	3000	few small pieces	Basaltic glass with plagioclase phenocrysts.		KH, Uni Kiel
M64/1	135	1	VSR	14.04.2005	9:00	4	49.02	12	22.51	3001	max diameter: 7 cm	Two pieces of aphyric basalt lava with 1 cm glass crust.	in addition , the sample contains several glass shards	KH, Uni Kiel
M64/1	136	1	VSR	14.04.2005	11:24	4	48.26	12	21.86	2970	up to 0,5 cm	Aphyric basalt glass + some globigerina.		KH, Uni Kiel
M64/1	137	1	VSR	14.04.2005	13:36	4	48.23	12	21.00	2903	<2 g	Foraminiferous sediment.		KH, Uni Kiel
M64/1	139	1 to 8	GTV	14.04.2005	20:17	4	48.570	12	22.417	2985	ca. 1000 kg	Diverse accociation of different types of sulfides: individual cpy-rich chimneys, pyrite-marcasite-chimneys, coalesced microchimneys, anhydrite-rich pieces with varying proportions of magnetite+chalcopyrite, cavities lined with euhedral gypsyum crystals, friable magnetite-rich samples, minor sphalerite; locally oxidation => hematite bands.	from inactive chimney adjacent M2 site at Turtle Pits; position confirmed by following ROV dive	SP, IFM-GEOMAR
M64/1	141	6	ROV_AC	15.04.2005	?	4	48.56	12	22.41	2985	6 pieces up to 8 x 3 x 4 cm	Pyrite-marcasite crust, chalocopyrite in the interior is typically altered (pigeon color). Redbrown outer surface: Fe-oxihydroxide coating. One piece with central vug (2 x 3 cm) line with pyrrotite + isocubanite (?). Some of the fragments contain 1-3 mm layer of magnetite separating the chacopyrite and pyrite-marcasite zones.	position of Turtle Pits area	SP, IFM-GEOMAR
M64/1	142	1	VSR	15.04.2005	22:44	4	48.75	12	22.52	3004	up to 2 cm	Several aphyric basalt glass fragments.		KH, Uni Kiel

Sample ID			Information about station								Sample description			Sampling record
						Sample Position					Size	Rock type	Comments	Where is the sample:
Cruise#	Station	Sample	Sampling equipment	Date[+]	Time[+]	Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth				
M64/1	146	1	ROV_P	16.04.2005	14:08	4	48.88	12	22.93	2973	10 x 16 x 14 cm	Altered, highly plagioclase-phyric basalt, 20 % plagioclase phenocrysts up to 12 mm in diameter. Sample of lava crust. Glass is completely altered (clay-Mn Oxide, Fe Oxihydroxide), abundant biological colonization.	sedimented pillow lava on top of volcanic peak within the axial valley	KH, Uni Kiel
M64/1	146	2	ROV_P	16.04.2005	18:24	4	48.35	12	22.69	3024	largest piece: 6 x 5 x 4 cm; ca. 500 g	Fresh glassy aphyric basalt; large elongate cavities: long axis (>5 cm) parallel to the flow fold axis.	jumbled sheet flow	KH, Uni Kiel
M64/1	146	3	ROV_P	16.04.2005	20:24	4	47.90	12	22.62	3045	15 x 13 x 9 cm	Sulfide knob on inactive chimney. Friable interior with irregular cavities lined by sphalerite and chalcopyrite (crystals <1 mm). Bulk of the piece consists of chalcopyrite-marcasite. Crust: 2 mm black Fe-oxihydrixide.	inactive chimney S of Red Lion hydrothermal field	SP, IFM-GEOMAR
M64/1	146	7	ROV_P	16.04.2005	22:57	4	47.82	12	22.60	3048	12 x 8 x 6 cm	Sphalerite-rich fragment of active smoker. Internal cavitiy (2 x 1.5 cm) lined by pyrrotite (+isocubanite?). Crust of Fe-oxihydroxide is extensively coated by white material (sulfur?) and orange-brown globules coated by Fe-oxides .	Location: Shrimp smoker in Red Lion Field	SP, IFM-GEOMAR
M64/1	148	1	VSR	18.04.2005	19:42	8	49.00	13	29.80	2230	ca. 1 g	Small chips of gray, microcrystalline aphyric basalt, trace of glass chips.		KH, Uni Kiel
M64/1	150	1	VSR	18.04.2005	23:27	8	48.01	13	30.30	2211	< 1 g	Small amount of glass particles.		KH, Uni Kiel
M64/1	151	1	VSR	19.04.2005	1:06	8	47.99	13	30.10	2219	up to 3 cm	Basalt		KH, Uni Kiel
M64/1	152	1	VSR	19.04.2005	2:29	8	47.99	13	29.81	2223	up to 1 cm	Several glass pieces.		KH, Uni Kiel
M64/1	153	1	VSR	19.04.2005	3:56	8	47.99	13	29.29	2165	ca. 1 g	Shell fragments (sediment patch).		KH, Uni Kiel
M64/1	155	1	ROV_P	19.04.2005	10:35	8	48.98	13	30.50	2161	10 x 10 x 5 cm; total: ca 2 kg	Glassy basalt from talus breccia, covered by mud, rare <1mm olivine phenocrysts.		KH, Uni Kiel; 1 kg to CF
M64/1	155	2	ROV_P	19.04.2005	11:07	8	48.99	13	30.44	2172	11 x 20 x 15 cm	Microcrystalline basalt, ca. 5% vesicles up to 2 mm in diamter, <1% olivine phenocrysts up to 1 mm, top coated by Mn-Oxide crust, abundant microorganisms.		KH, Uni Kiel
M64/1	155	3	ROV_P	19.04.2005	11:54	8	49.00	13	30.30	2149	22 x 14 x 4 cm	Four cm thick roof of lava lobe. Top surface is glassy (2 mm thick), 5 % vesicles up to 5 mm in the microcrystalline basalt below the glass crust; lower surface with stalagtite texture; rare olivine phenocrysts <1mm.		KH, Uni Kiel
M64/1	155	4	ROV_P	19.04.2005	13:20	8	48.96	13	30.17	2195	18 x 9 x 7 cm	Aphyric basalt, pillow section, microcrystalline with partially palagonitized glass crust (ca. 1 mm); 2 % vesicles up to 2 mm.		KH, Uni Kiel
M64/1	155	5	ROV_P	19.04.2005	14:01	8	48.99	13	30.06	2199	21 x 12 x 10 cm	Altered aphyric basalt with <1% pyroxene and rare plagioclase (<1 mm). Piece consists of two individual lobes showing ductile deformation.		KH, Uni Kiel
M64/1	155	6	ROV_P	19.04.2005	14:33	8	48.99	13	30.04	2190	19 x 8 x 3 cm	Piece of pillow crust with prominent striated top surface texture. Roof (3 cm thick) of partially drained pillow. Glass on both sides (top: 2 to 4 mm; base < 1mm). Partial palagonitization. 1% olivine phenocrysts up to 5 mm.		KH, Uni Kiel
M64/1	155	7	ROV_P	19.04.2005	15:23	8	48.99	13	29.97	2221	largest piece 3 x 3 x 0.3 cm; total ca. 400 g	Abundant aphyric basalt glass chips of pillow crust. Partially palagonitized.		KH, Uni Kiel
M64/1	155	8	ROV_P	19.04.2005	16:59	8	49.04	13	29.85	2218	1.5 x 3 x 2 cm	Single piece of microcrystalline basalt with 1% olivine phenocrysts (up to 1 mm); ca 1% vesicles (up to 2 mm). Glass crust is 1-3 mm thick and locally shows spherulitic textures.		KH, Uni Kiel
M64/1	156	1	VSR	19.04.2005	20:02	8	48.43	13	30.42	2208	up to 1 cm	Basalt glass.		KH, Uni Kiel
M64/1	157	1	VSR	19.04.2005	21:56	8	47.70	13	30.56	2190	up to 5 mm	Basalt glass.		KH, Uni Kiel
M64/1	159	1	ROV_P	20.04.2005	10:25	8	48.18	13	30.12	2204	several small pieces up to 2 cm, ~10 g	Glassy basalt with 1% olivine and plagioclase phenocrysts up to 1 mm, some palagonite.	Pillow lava, contamination by pieces from previous dive?	KH, Uni Kiel
M64/1	159	2	ROV_P	20.04.2005	10:54	8	48.15	13	30.12	2201	8 x 6 x 2 cm3	Basalt with 3 mm glass crust, <1% plagioclase phenocrysts 2% vesicles up to 2 mm, minor Fe staining.	sheet flow	KH, Uni Kiel
M64/1	159	3	ROV_P	20.04.2005	11:28	8	48.06	13	30.12	2198	3 x 7 x 9 cm3	Aphyric glassy basalt; flow fold quenched on both sides, slight palagonitization, microcrystalline groundmass surrounds elongate cavity (long axis >4 cm parallel to fold axis).	jumbled sheet flow	KH, Uni Kiel
M64/1	159	4	ROV_P	20.04.2005	12:16	8	47.99	13	30.12	2201	largest piece 6 x 4 x 3 cm3, total 1 kg	Aphyric glassy basalt, abundant shards <1 to 3 cm in foram./pteropod sand.		KH, Uni Kiel

Sample ID			Information about station								Sample description			Sampling record
						Sample Position					Size	Rock type	Comments	Where is the sample:
Cruise#	Station	Sample	Sampling equipment	Date+	Time+	Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth				
M64/1	159	5	ROV_P	20.04.2005	13:12	8	47.96	13	30.16	2186	16 x 10 x 13 cm3	Piece of lava protrusion, plagioclase-phyric glassy basalt, 10 vol.% plagioclase phenocrysts up to 10 mm, surface with striation marks, glass crust partially palagonitized and covered by thin layer of black Mn oxide.	pillow lava	KH, Uni Kiel
M64/1	159	6	ROV_P	20.04.2005	14:53	8	47.81	13	30.19	2151	4 x 3 x 0.5 cm3 , ca. 200 g	Abundant fragments of aphyric basalt glass shards.	pillow lava	KH, Uni Kiel
M64/1	159	7	ROV_P	20.04.2005	15:42	8	47.75	13	30.21	2201	largest of three pieces: 12 x 15 x 10 cm3	Plagioclase-phyric basalt with 2 mm glass crust, <1% plagioclase up to 1 mm, 3% vesicles up to 2 mm, several zones of shearing up to 1 cm wide oriented parallel to the surface spaced at 2-4 cm intervals. Slight Fe-Oxihydroxide staining.	pillow lava flow	KH, Uni Kiel
M64/1	159	8	ROV_P	20.04.2005	16:40	8	47.76	13	30.21	2202	5 x 3 x 3 cm3	Basalt with 1-2 mm glass crust, slightly palagonitized, few plagioclase phenocrysts (< 1mm), 1 vol. % vesicles up to 1 mm.	sheet flow	KH, Uni Kiel
M64/1	159	9	ROV_P	20.04.2005	17:31	8	47.50	13	30.21	2215	13 x 9 x 8 cm3 in two pieces	Pillow top is glassy (1-2 mm thick), slight palagonitization, <1% plagioclase and olivine, up to 1 mm, lower surface is ondulated, solidified lava droplets.	pillow lava on top of jumbled flow #10 and 11	KH, Uni Kiel
M64/1	159	10	ROV_P	20.04.2005	17:56	8	47.46	13	30.18	2219	6 x 4 x 5 cm3	Small lava fold with glassy crust (1-2 mm), plagioclase-phyric basalt, 1% plagioclase up to 1 mm.	jumbled flow	KH, Uni Kiel
M64/1	159	11	ROV_P	20.04.2005	18:01	8	47.46	13	30.18	2219	13 x 14 x 4 cm3	Lava lobe of 4 cm thickness with glassy crust on both sides, abundant palagonitization, 1% plagioclase phenocrysts up to 5 mm, rare olivine.	same location and flow as #10	KH, Uni Kiel; most of the sample for CF
M64/1	160	1	VSR	20.04.2005	21:05	8	46.93	13	30.39	2208	glass fragments up to 2 cm	Basalt glass.		KH, Uni Kiel
M64/1	161	1	VSR	20.04.2005	22:53	8	46.70	13	30.57	2266	glass fragments up to 2 cm	Basalt glass with plagioclase phenocrysts.		KH, Uni Kiel
M64/1	162	1	VSR	21.04.2005	0:34	8	46.22	13	30.64	2273	glass fragments up to 2 cm	Basalt glass with plagioclase phenocrysts.		KH, Uni Kiel
M64/1	163	1	VSR	21.04.2005	2:10	8	45.43	13	30.74	2287	glass fragments up to 2 cm	Basalt glass with plagioclase phenocrysts.		KH, Uni Kiel
M64/1	165	1	VSR	21.04.2005	7:35	8	50.00	13	29.68	2225	glass fragments up to 2 cm	Aphyric basalt glass.		KH, Uni Kiel
M64/1	166	1	VSR	21.04.2005	10:21	8	50.51	13	29.48	2188	ca. 200 g	Chips and fragments of microcrystalline and glassy basalt.		KH, Uni Kiel
M64/1	170	1	VSR	21.04.2005	20:03	9	2.00	13	27.00	2313	<1g	Sediment in vaseline with a few glass particles.		KH, Uni Kiel
M64/1	171	1	VSR	21.04.2005	21:54	9	4.01	13	26.60	2320		Sediment patches.		KH, Uni Kiel
M64/1	175	1	VSR	22.04.2005	5:20	9	7.50	13	25.86	2530	up to 4 cm, total ca. 20 g	Olivine-phyric basalt (1% olivine phenocrysts up to 2 mm), glassy and microcrystalline fragments, moderate palagonitization.		KH, Uni Kiel
M64/1	176	1	VSR	22.04.2005	7:20	9	9.02	13	25.51	2640	up to 2 cm	Basalt glass.		KH, Uni Kiel
M64/1	181	1	VSR	22.04.2005	18:38	9	15.29	13	17.50	2285	up to 3 cm	Altered glass crust with sediment.		KH, Uni Kiel
M64/1	182	1	VSR	22.04.2005	20:22	9	17.02	13	17.02	2072	<0.5 cm	Very few glass chips.		KH, Uni Kiel
M64/1	184	1	VSR	23.04.2005	0:10	9	22.49	13	15.53	1932	<1 g	Few thin rock fragments.		KH, Uni Kiel
M64/1	188	1	ROPV_P	23.04.2005	13:15	9	42.48	13	5.02	1772	14 x 8 x 3 cm3	Piece of aphyric basalt lava. Roof of lava lobe. Glassy crust with abundant palagonitization. Rare olivine phenocrysts (< 1 mm), ca 1% vesicles up to 5 mm. Extensive Mn-oxide coating.		KH, Uni Kiel
M64/1	188	3	ROPV_P	23.04.2005	13:58	9	42.49	13	4.96	1787	14 x 14 x 9 cm3	Piece of aphyric lava lobe. 1 to 2 mm glassy crust with intense palagonitization. Ca. 5 % tubular vesicles (1 mm x 10 mm) concentrated below crust. Extensive Mn-oxide coating and biological colonization.		KH, Uni Kiel
M64/1	188	4	ROPV_P	23.04.2005	15:05	9	42.49	13	4.80	1857	9 x 6 x 4 cm3	Piece of aphyric basalt lava lobe with rare olivine phenocrysts. Glass crust (1 to 3 mm) is heavily palagonitized. Some Fe-oxihydroxide alteration and abundant worm tubes. Vesicles: <1%, < 1mm.		KH, Uni Kiel
M64/1	188	5	ROPV_P	23.04.2005	16:28	9	42.39	13	4.67	1864	5 x 3 x 3 cm3	Two pieces of small lava lobe. Glass crust (1 to 2 mm) is strongly palagonitized. Vesicles: < 1%, < 1 mm.		KH, Uni Kiel
M64/1	188	7	ROPV_P	23.04.2005	17:42	9	42.36	13	4.51	1882	12 x 10 x 7 cm3	Aphyric basalt pillow. Glass crust (1 to 2 mm) is strongly palagonitized. Coated by Mn-oxide and some biological colonization.	Fragment of large pillow.	KH, Uni Kiel; Most of the piece to CF.
M64/1	194	1	ROPV_P	24.04.2005	11:57	9	34.37	13	12.95	1454	10 x 10 x 7 cm3	One piece of aphyric pillow basalt. Vesicles: 3% up to 3 mm. Palagonitized glass crust (1-3 mm); Mn-oxide and Fe-oxihydroxide coating and some biology.		KH, Uni Kiel

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Cruise#	Station	Sample	Sampling equipment	Date+	Time+	Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth				
M64/1	194	4	ROPV_P	24.04.2005	13:06	9	34.37	13	12.86	1429	26 x 17 x 12 cm3	Section of aphyric pillow basalt. Vesicles: 5% up to 10 mm. Palagonitized glass crust. Extensive Mn-oxide coating. Biological colonization including trunk of gorgonaria.		KH, Uni Kiel
M64/1	194	6	ROPV_P	24.04.2005	13:40	9	34.37	13	12.77	1436	5 x 5 x 3 cm3	Aphyric basalt. Extensive palagoniti.zation and Mn-oxide coating.		KH, Uni Kiel
M64/1	194	7	ROPV_P	24.04.2005	14:10	9	34.37	13	12.67	1448	9 x 15 x 3 cm3	Roof of lava lobe; Top: wrinkled glass (ca. 5 cm), fresh. Aphyric. Vesicles: 3%, up to 1 mm.		KH, Uni Kiel
M64/1	194	8	ROPV_P	24.04.2005	14:56	9	34.41	13	14.53	1465	34 x 12 x 16 cm3	Section of pillow. Rare olivine phenocrysts (up to 1 mm). Vesicular central part (30% up to 20 mm, locally coalesced). Tubular vesicles (up to 4 cm long) oriented normal to the exterior in the outer 10 cm of the section. Outermost 1-2 cm are vesicle-free. Some glassy patches preserved.		KH, Uni Kiel
M64/1	194	9	ROPV_P	24.04.2005	16:01	9	34.43	13	12.52	1465	7 x 4 x 3 cm3	Three pieces of aphyric basalt with 1 to 3 mm glass crust.		KH, Uni Kiel
M64/1	194	10	ROPV_P	24.04.2005	16:44	9	34.37	13	12.50	1470	13 x 10 x 6 cm3	Vesicular aphyric basalt. Vesicles: 10%, up to 5 mm, locally coalesced. Outer zone (1 cm) is vesicle-free. Glass crust (1-2 mm) is slightly palagonititzed.		KH, Uni Kiel
M64/1	194	11	ROPV_P	24.04.2005	17:04	9	34.38	13	12.49	1470	8 x 6 x 5 cm3	Piece of aphyric lava fold with 1 mm glass crust on both sides. Central zone contains 20% vesicles up to 1 cm; abundant tubular vesicles oriented normal to the exterior. Outer 1 cm on both sides are vesicles-free.		KH, Uni Kiel
M64/1	194	12	ROPV_P	24.04.2005	17:48	9	34.38	13	12.34	1460	15 x 10 x 8 cm3	Crust of aphyric lava lobe with wrinkely lower surface. Slightly palagonitized glass crust (1 to 2 mm). Vesicles are tubular, oriented normal to the surface (20%).	Total is about 1 kg,	KH, Uni Kiel; some of the piece to CF.
M64/1	194	13	ROPV_P	24.04.2005	18:20	9	34.38	13	12.34	1468	30 x 23 x 5 cm3	Slab of aphyric sheet flow exposed in collapse pit. Roof of lava tunnel. Top surface is wrinkled on 10 cm scale. Fresh glassy crust with prominent perlite texture. Lower surface with abundant lava droplets, thin-walled bubbles and linear lava stalagtites.		KH, Uni Kiel
M64/1	200	1	ROV_P	25.04.2005	9:57	9	32,99	13	12,92	1469	8 x 14 x 7 cm3	Aphyric pillow basalt. Vesicles: 5% up to 10 mm. Extensive Mn-Oxide coating. Patch of glassy crust, partially palagonitized.		KH, Uni Kiel
M64/1	200	2	ROV_P	25.04.2005	10:48	9	32,96	13	12,80	1523	11 x 11 x 8 cm3	Pillow basalt. Olivine phenocrysts: <1% up to 1 mm. Vesicles: 5%, irregular shapes, up to 10 mm. Extensive Mn-oxide coating, 1 mm palagonitized glass crust.		KH, Uni Kiel
M64/1	200	3	ROV_P	25.04.2005	11:29	9	32,90	13	12,72	1505	22 x 17 x 5 cm3	Piece of lava lobe roof. Aphyric. Top surface shows mm-scale scretch marks (parallel to flow direction) and cm-scale flow folds (long axis normal to flow direction). Fresh glass crust (3 mm). Vesicles: 10% round and tubular. Lower surface: irregular stalagtite texture.		KH, Uni Kiel
M64/1	200	5	ROV_P	25.04.2005	13:01	9	32,93	13	12,51	1494	mud, ca. 300 g	Bright orange Fe-oxihydroxide mud and few small pieces of semi-lithified material.		SP, IFM-GEOMAR; MP
M64/1	200	6	ROV_P	25.04.2005	14:27	9	32,92	13	12,53	1496	13 x 6 x 6 cm3	Piece of 6 cm thick aphyric lava crust. Glass crust (1-2 mm) with minor Mn-oxide coating. Upper layer is vesicle-free; lower 3 cm contain 20% tubular vesicles (up to 3 cm long and 0.5 cm wide) normal to surface with regular spacing.		KH, Uni Kiel
M64/1	200	7	ROV_P	25.04.2005	15:48	9	32,88	13	12,55	1495	6 x 10 x 2 cm3; largest piece	Semi-lithified pieces of Fe-oxihydroxides; crude layering, no apparent Mn-oxides.	Likely low-T hydrothermal product.	SP, IFM-GEOMAR; CF
M64/1	200	12	ROV_P	25.04.2005	19:48	9	32,71	13	12,55	1495	18 x 20 x 10 cm3	Section of aphyric pillow basalt. Vesicles: 10% round to irregular, locally coalesced (up to 2 cm). Glass crust (2 mm) with Mn-oxide coating and biological colonization.		KH, Uni Kiel
M64/1	201	1	VSR	25.04.2005	22:07	9	31,98	13	12,21	1551	few grams	Pelagic sediment.		KH, Uni Kiel
M64/1	202	1	VSR	25.04.2005	23:28	9	32,49	13	12,71	1512	several pieces up to 2 cm in diameter	Basalt glass.		KH, Uni Kiel
M64/1	203	1	VSR	26.04.2005	0:46	9	32,72	13	12,65	1509	ca. 1 g	Basalt glass.		KH, Uni Kiel
M64/1	204	1	VSR	26.04.2005	1:59	9	33,01	13	12,36	1518	several pieces up to 2 cm in diameter	Basalt glass.		KH, Uni Kiel
M64/1	205	1	VSR	26.04.2005	3:13	9	33,5	13	12,53	1497	max diameter: 8 cm	One pillow fragment with glass crust and several glass chips.		KH, Uni Kiel
M64/1	209	1	GTV	26.04.2005	14:53	9	32,86	13	12,52	1511	several pieces; max dimensions 3 x 4 x 0.5 cm	Glassy volcanic crust; partially altered.		KH, Uni Kiel

Sample ID			Information about station								Sample description			Sampling record
Cruise#	Station	Sample	Sampling equipment	Date+	Time+	Sample Position Lat Deg. S	Lat Min.	Long Deg. W	Long Min.	Water depth	Size	Rock type	Comments	Where is the sample:
M64/1	209	2	GTV	26.04.2005	14:53	9	32,86	13	12,52	1511	about 1000 kg of mud with pieces of crust; ca. 1 kg of crusts sampled	Orange to brown semi-lithified Fe-oxihydroxides; numerous pieces of fragile crusts up to 15 x 10 x 1 cm; fine grained.		SP, IFM-GEOMAR; CF
M64/1	210	1	VSR	26.04.2005	16:54	9	33,83	13	12,50	1482	several pieces, max. diameter is 3 cm	Several pieces of aphyric basalt, abundant glass shards.		KH, Uni Kiel
M64/1	211	1	VSR	26.04.2005	18:18	9	34,13	13	12,55	1488	several pieces, max. diameter is 2 cm	Fresh aphyric basalt glass.		KH, Uni Kiel
M64/1	212	1	VSR	26.04.2005	19:31	9	34,55	13	12,40	1413	ca. 0.5 g	Some glass chips.		KH, Uni Kiel
M64/1	213	1	GTV#	27.04.2005	1:58	9	32,83	13	12,55	1513	few grams	Basalt glass chips.		KH, Uni Kiel
M64/1	213	2	GTV#	27.04.2005	1:58	9	32,83	13	12,55	1513	several pieces; max dimensions 7 x 4 x 0.5 cm	Fe-oxihydroxide crusts.		SP, IFM-GEOMAR
M64/1	213	3	GTV#	27.04.2005	1:58	9	32,83	13	12,55	1513	ca. 1 g	Thin (<1 mm) sheets of sulfides.		SP, IFM-GEOMAR
M64/1	214	1	GTV	27.04.2005	3:55	9	32,84	13	12,54	1511	few grams	Fresh aphyric basaltic glass chips.		KH, Uni Kiel
M64/1	214	2	GTV	27.04.2005	3:55	9	32,84	13	12,54	1511	several small pieces	Fe-oxihydroxide crusts.		SP, IFM-GEOMAR
M64/1	214	3	GTV	27.04.2005	3:55	9	32,84	13	12,54	1511	ca. 1 g	Thin sheets (<1 mm) of sulfides.		SP, IFM-GEOMAR

Comments:

#: Sample also contained abundant fauna.

+: Date and time of sample acquisition.

*: Sample position accurate within +/- 1 to 2 m relative to the beacon set at 4°48,559'S; 12° 22,413'W