



**HARVARD UNIVERSITY**  
DEPARTMENT OF EARTH AND PLANETARY SCIENCES  
20 OXFORD ST.  
CAMBRIDGE, MA 02138

June 4, 2014

**DRAFT STANDARD FORM C**

PRELIMINARY CRUISE REPORT

Cruise name/number:	KNORR 0207 (State File F2012-002)
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Authorizations:

Coastal State	Authorization Document Number	National Participant(s)
Portugal	2556-2012	
BERMUDA	40/2012	

Scientist in charge of reporting:

Name:	Charles H. Langmuir
Country/Nationality:	USA
Affiliation:	Harvard University
Address:	20 Oxford Street Cambridge MA 02138
Telephone:	617 384 9948
Email:	Langmuir@eps.harvard.edu
Website (for CV and photo):	<a href="http://www.people.fas.harvard.edu/~langmuir/homepage.html">http://www.people.fas.harvard.edu/~langmuir/homepage.html</a>

Brief description of scientific objective:

<p>The primary objective of this cruise was to sample the mid-Atlantic Ridge in international waters between 23°N and 30°N. At the end of the expedition, a small number of samples were taken in Portuguese waters near the Azores Islands, to obtain gravity cores in segments with hydrothermal activity, and to obtain volcanic samples from the poorly known segment near 38°N. The aim of the cruise was to determine whether segments exhibiting symmetric and asymmetric spreading had</p>
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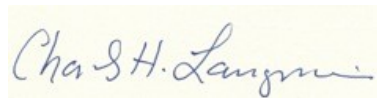
differing petrological signatures.

Update on anticipated dates for delivery of final results:

Metadata:	Included with this report. Cruise track is shown in Figure 1. The detailed ship track with station locations is provided in Figure 2. Dredge locations are in Table 1. Rock Core locations in Table 2. Gravity core locations in Table 3.
Raw Data:	Map data were delivered to NRDC and are in the public domain. They can be obtained at <a href="http://www.rvdata.us/catalog/KN207-02">http://www.rvdata.us/catalog/KN207-02</a> The geochemistry of rock samples is currently being collected. It will be delivered to PetDB and be in the public domain.
Processed Data:	Processed data were also delivered immediately following the cruise
Data Analysis:	No further data analysis of multibeam data is anticipated. Analysis of petrological data is on-going.
WODC Data Registration (if applicable):	Accession number

Append image or URL illustrating the route of the platform, locations where measurements were taken, and actual cruise track:

Sincerely,



Charles H. Langmuir  
Higgins Professor of Geochemistry  
Harvard University

## DREDGE LOCATIONS

KN 0207--- 02

Station #	ON BOTTOM							OFF BOTTOM						depth
	Day	Time GMT	Lat °	Lat '	Lon °	Lon '	interbeam de	Time GMT	Lat °	Lat '	Lon °	Lon '	interbeam de	
DR001	5/14/12	1:23	29	58.421	42	44.592	--4160	2:36	29	58.675	42	44.383	--3969	
DR002	5/14/12	20:09	29	49.81	42	48.28	--2938	21:27	29	50.03	42	47.92	--2817	
DR003	5/15/12	13:24	29	21.017	43	5.984	--3365	14:43	29	21.355	43	5.53	--3332	
DR004	5/15/12	19:33	29	15.271	43	8.183	--3287	20:44	29	15.638	43	7.96	--3115	
DR005	5/16/12	3:09	29	3.168	43	11.184	--3363	3:52	29	3.43	43	11.125	--3250	
DR006	5/16/12	14:41	28	49.3	43	20.844	--3693	15:18	28	49.398	43	20.616	--3547	
DR007	5/16/12	21:35	28	44.81	43	24.68	--3626	22:05	28	44.649	43	24.68	--3562	
DR008	5/17/12	4:13	28	40.418	43	32.290	--3404	5:49	28	40.319	43	31.79	--3107	
DR009	5/17/12	14:38	28	36.805	43	35.775	--3414	15:35	28	36.855	43	35.374	--3488	
DR010	5/17/12	22:43	28	36.101	43	36.921	--3684	0:06	28	35.573	43	37.008	--3678	
DR011	5/18/12	9:49	28	22.809	43	43.925	--3210	10:54	28	23.091	43	43.714	--3174	
DR012	5/18/12	17:17	28	12.718	43	49.472	--3825	18:19	28	12.966	43	49.227	--3699	
DR013	5/18/12	23:17	28	6.509	43	57.077	--3746	0:31	28	6.948	43	56.919	--3716	
DR014	5/19/12	7:05	27	54.913	43	59.676	--3125	7:39	27	55.106	43	59.581	--3067	
DR015	5/19/12	15:58	27	42.401	44	5.852	--3655	17:10	27	42.85	44	5.702	--3473	
DR016	5/19/12	22:07	27	37.263	44	9.018	--3958	23:17	27	37.655	44	9.004	--3832	
DR017	5/20/12	7:10	27	29.051	44	11.599	--3364	7:57	27	29.309	44	11.791	--3289	
DR018	5/20/12	16:09	27	17.400	44	15.000	--3838	17:21	27	17.546	44	14.451	--3584	
DR019	5/20/12	22:22	27	11.401	44	18.972	--4132	22:51	27	11.51	44	18.74	--4066	
DR020	5/21/12	2:40	27	7.570	44	20.966	--3695	4:11	27	7.96	44	20.65	--3639	
DR021	5/21/12	12:42	26	59.308	44	27.575	--3448	13:54	26	59.763	44	27.483	--3385	
DR022	5/22/12	0:18	26	44.500	44	31.979	--3606	1:16	26	44.7885	44	32.1991	--3494	
DR023	5/22/12	7:48	26	36.4	44	37.55	--4170	8:16	26	36.212	44	37.52	--4089	
DR024	5/22/12	14:45	26	24.102	44	39.583	--3687	16:14	26	24.389	44	39.46	--3631	
DR025	5/22/12	22:52	26	16.560	44	41.776	--4284	23:56	26	16.773	44	41.341	--4048	
DR026	5/23/12	5:06	26	13.659	44	47.075	--3866	5:52	26	13.858	44	46.837	--3815	
DR027	5/23/12	12:10	26	11.500	44	55.604	--3077	13:18	26	11.563	44	55.174	--2927	
DR028	5/24/12	0:01	25	57.909	44	59.689	--3963	0:59	25	58.222	44	59.455	--3784	
DR029	5/24/12	10:49	25	50.054	45	2.474	--3622	12:42	25	49.892	45	2.033	--3218	
DR030	5/24/12	17:04	25	46.908	45	2.072	--3831	18:22	25	46.909	45	1.5	--3463	
DR031	5/24/12	23:37	25	39.814	45	10.681	--3902	0:36	25	40.168	45	10.563	--3775	
DR032	5/25/12	3:31	25	38.817	45	12.293	--3891	4:13	25	38.667	45	12.522	--3671	
DR033	5/25/12	9:09	25	34.120	45	15.884	--4295	9:54	25	34.322	45	15.68	--4204	
DR034	5/25/12	17:13	25	24.123	45	20.695	--3711	18:20	25	24.127	45	20.903	--3679	
DR035	5/26/12	0:47	25	16.980	45	25.170	--3826	1:57	25	17.25	45	24.95	--3708	
DR036	5/26/12	6:38	25	13.285	45	26.280	--3666	7:32	25	12.965	45	26.289	--3595	
DR037	5/26/12	15:14	25	1.785	45	28.079	--3569	16:09	25	1.842	45	27.85	--3570	

## DREDGE LOCATIONS

KN 0207--- 02

DR038	5/26/12	21:43	24	54.809	45	34.714	--4268	23:01	24	55.21	45	34.219	--3964
DR039	5/27/12	4:47	24	53.802	45	42.923	--3970	5:58	24	54.016	45	42.485	--3907
DR040	5/27/12	12:57	24	49.107	45	48.164	--4707	14:39	24	49.233	45	47.462	--4518
DR041	5/27/12	19:49	24	46.783	45	48.795	--4527	21:28	24	46.893	45	48.251	--4225
DR042	5/28/12	2:20	24	46.050	45	53.999	--3893	3:18	24	46.349	45	53.798	--3833
DR043	5/28/12	9:38	24	42.071	45	57.886	--3768	10:10	24	42.242	45	57.779	--3729
DR044	5/28/12	14:58	24	38.330	46	1.398	--4291	15:59	24	38.606	46	0.991	--4112
DR045	5/28/12	23:05	24	35.000	46	9.470	--3919	0:10	24	35.27	46	9.11	--3737
DR046	5/29/12	3:25	24	34.601	46	6.799	--4434	5:02	24	34.296	46	6.509	--4284
DR047	5/29/12	9:52	24	45.008	45	48.776	--4235	11:18	24	45.158	45	48.171	--3952
DR048	5/29/12	14:55	24	52.383	45	40.800	--4057	16:38	24	51.726	45	40.93	--3800
DR049	5/29/12	20:14	24	58.404	45	31.479	--4103	21:15	24	58.69	45	31.199	--3992
DR050	5/30/12	4:08	25	19.985	45	24.689	--3997	5:40	25	20.459	45	24.688	--3824
DR051	5/30/12	17:12	25	46.090	45	0.580	--2947	18:31	25	46.25	44	59.989	--2821
DR052	5/31/12	2:16	25	47.782	45	1.811	--3651	4:36	25	48.156	45	1.401	--3379
DR053	5/31/12	8:31	25	50.599	45	0.098	--3293	10:47	25	50.107	44	59.697	--2964
DR054	5/31/12	15:50	25	44.970	45	2.480	--4245	17:43	25	44.97	45	1.77	--3631
DR055	6/1/12	9:42	25	49.486	45	0.900	--3050	10:57	25	49.334	45	0.446	--2741
DR056	6/1/12	14:12	25	54.272	45	8.356	--3553	15:26	25	54.601	45	8.468	--3461
DR057	6/1/12	22:54	26	18.079	44	38.986	--3684	0:03	26	17.971	44	38.457	--3403
DR058	6/3/12	4:25	28	45.498	43	29.479	--3682	5:52	28	45.08	43	29.09	--3499
DR059	6/3/12	15:54	28	47.593	43	25.322	--3898	17:20	28	47.749	43	25.578	--3700
DR060	6/3/12	21:55	28	45.370	43	23.290	--3582	0:04	28	44.77	43	22.98	--2902
DR061	6/4/12	2:47	28	43.097	43	25.920	--3513	3:58	28	42.657	43	25.801	--3387
DR062	6/4/12	7:26	28	50.986	43	18.315	--3765	8:54	28	50.524	43	18.212	--3654
DR063	6/5/12	3:58	29	22.402	43	3.797	--3564	6:18	29	22.766	43	3.795	--3435
DR064	6/5/12	10:15	29	38.293	42	51.299	--3237	12:13	29	38.034	42	51.037	--3141
DR065	6/5/12	18:10	29	52.488	42	45.015	--2971	19:11	29	52.195	42	44.722	--2691
DR066	6/8/12	1:29	36	33.296	33	20.617	--3125	3:32	36	33.598	33	19.996	--2956
DR067	6/8/12	21:10	37	32.387	32	9.512	--3524	23:09	37	31.84	32	9.6	--3355
DR068	6/9/12	7:39	38	3.782	30	47.802	--2373	9:03	38	4.146	30	47.44	--2247
DR069	6/9/12	12:36	38	10.650	30	47.100	--1508	13:49	38	10.99	30	46.67	--1370
DR70	6/9/12	15:30	38	8.409	30	45.304	--1963	16:40	38	8.796	30	45.007	--1885
DR071	6/9/12	18:46	38	14.700	30	42.480	--1478	19:33	38	14.894	30	42.205	--1321
DR072	6/9/12	21:10	38	19.999	30	39.997	--883	21:42	38	20.123	30	40.162	--792
DR073	6/9/12	23:12	38	23.895	30	38.195	--1214	23:37	38	23.701	30	38.139	--1130
DR074	6/10/12	1:05	38	22.479	30	39.071	--1078	1:55	38	22.16	30	39.05	--892
DR075	6/10/12	3:07	38	20.883	30	39.203	--969	3:44	38	20.849	30	39.095	--933

Station #	Lat °	Lat '	Lon °	Lon '	Wire out (o depth of h it (seabeam))	
1	30	3.814	42	45.33	3877*	3847
2	30	3.307	42	43.078	4318*	4284
3	29	52.412	42	47.488	2960*	2929
4	29	44.734	42	48.615	2900*	2883
5	29	40.048	42	50.079	3151*	3089
6	29	36.702	42	51.623	3214*	3158
7	29	31.704	42	51.217	3779*	3717
8	29	31.62	42	53.76	3139*	3091
9	29	26.198	42	54.4091	3668*	3622
10	29	23.367	43	4.002	3435*	3456
11	29	18.079	43	7.312	3395*	3343
12	29	12.376	43	8.506	3218*	3170
13	29	10.992	43	10.326	3113*	3081
14	29	2.037	43	12.557	3055*	3036
15	28	55.53	43	13.713	3470*	3439
16	28	57.289	43	15.223	3718*	3686
17	28	50.194	43	23.902	3620*	3591
18	28	49.103	43	23.583	3655*	3666
19	28	46.49	43	25.49	3886*	3837
20	28	44.213	43	28.838	3661*	3586
21	28	41.474	43	28.01	3072*	3015
22	28	39.998	43	35.503	3430*	3373
23	28	37.621	43	37.055	3389	3366
24	28	36.312	43	37.931	3542	3545
25	28	35.845	43	39.146	3410*	3394
26	28	33.409	43	40.144	3300	3292
27	28	29.093	43	41.010	3223	3190
28	28	24.984	43	42.863	3026	2991
29	28	21.149	43	44.531	3466	3474
30	28	17.729	43	46.312	3417	3411
31	28	10.938	43	52.623	3565	3551
32	28	3.546	43	57.222	3787	3714
33	27	59.66	43	58.504	3572	3541
34	27	52.74	44	0.591	3256	3241

35	27	49.448	44	2.273	3373	3448
36	27	47.563	44	1.019	3243	3197
37	27	40.229	44	7.095	3664	3649
38	27	34.625	44	10.617	3433	3402
39	27	33.596	44	9.857	3677	3661
40	27	32.013	44	10.287	3553	3527
41	27	25.022	44	13.696	3231	3191
42	27	24.745	44	12.819	3591	3542
43	27	20.659	44	13.558	3603	3551
44	27	13.227	44	17.191	3735	3663
45	27	6.001	44	24.387	3865	3830
46	27	4.664	44	24.319	3840	3808
47	27	3.183	44	26.501	3758	3723
48	26	56.692	44	27.991	3724	3720
49	26	56.186	44	26.666	3952	3935
50	26	51.92	44	29.674	3955	3945
51	26	47.914	44	31.15	3550	3517
52	26	39.204	44	33.794	3509	3475
53	26	35.657	44	34.597	3595	3546
54	26	30.204	44	38.7	3489	3420
55	26	28.647	44	40.596	3134	3097
56	26	23.612	44	39.478	3566	3533
57	26	20.62	44	40.1	3649	3655
58	26	13.855	44	45.389	4172	4140
59	26	12.647	44	47.695	3831	3775
60	26	10.409	44	51.043	3747	3706
61	26	8.425	44	49.819	3700	3677
62	26	4.426	44	51.56	4075	4071
63	26	1.34	44	51.916	4177	4131
64	25	59.499	44	52.718	4035	3999
65	25	56.621	45	1.204	3930	3905
66	25	56.31	44	59.301	3528	3513
67	25	54.613	45	2.524	3920	3872
68	25	51.309	45	4.893	3563	3524
69	25	48.22266	45	5.27598	3460	3474

70	25	48.897	45	1.758	3272	3264
71	25	36.615	45	15.303	3655	3730
72	25	31.8105	45	17.886	3829	3781
73	25	27.103	45	19.468	3534	3534
74	25	22.743	45	21.275	3701	3691
75	25	16.842	45	23.255	3577	3604
76	25	14.909	45	25.305	3596	3531
77	25	10.403	45	26.602	NR	3437
78	25	8.796	45	26.761	3407	3374
79	25	3.429	45	27.398	3536	3495
80	24	53.41	45	28.98	3688	3653
81	24	53.129	45	35.267	4298	4310
82	24	50.791	45	41.61	3888	3816
83	24	50.105	45	46.234	4407	4285
84	24	50.399	45	48.306	4360	4312
85	24	47.921	45	52.557	3774	3734
86	24	44.95	45	55.341	3991	3980
87	24	43.691	45	56.871	3781	3721
88	24	40.336	45	58.739	3870	3850
89	24	37.848	46	0.968	4271	4248
90	24	36.457	46	9.383	3684	3649
91	25	18.007	45	24.314	3850	3835
92	25	20.855	45	22.452	3968	3907
93	25	19.376	45	23.434	3896	3833
94	25	29.205	45	19.052	3700	3651
95	25	46.565	45	3.55	3889	3842
96	25	45.575	45	5.987	3475	3452
97	25	47.086	45	5.803	3310	3341
98	25	51.395	45	1.083	2982	2963
99	25	50.084	45	3.456	3862	3823
100	26	28.014	44	37.274	3768	3744
101	26	33.351	44	37.729	3692	3723
102	27	27.698	44	13.327	3227	3169
103	27	38.576	44	7.709	3780	3742
104	27	43.166	44	3.806	3470	3435





gravity core	date	hit time	wire ou	lat °	lat '	long °	long '	calibrated ce
GGC01	5/17/12	19:47	3680	28	36.101	43	36.928	---3643.246
GGC02	5/31/12	21:20	2881	25	46.101	44	59.998	---2837.08
GGC03	6/1/12	19:40		26	8.533	44	48.293	---3433.17
GGC04	6/3/12	8:35	2740	28	44.583	43	21.683	---2732.38
GGC05	6/4/12	21:44	2842	29	12.199	43	12.097	---2831.621
GGC06	6/4/12	23:49	3018	29	12.4	43	13.798	---3004.421
GGC07	6/8/12	5:37	3020	36	33.801	33	18.3	---3009.235
GGC08	6/8/12	12:18	2690	37	6.298	32	18.162	---2671.344
GGC09	6/8/12	14:49	2173	37	5.255	32	1.887	---2167.698
GGC10	6/8/12	18:50	3275	37	32.602	32	13.586	---3267.971
GGC11	6/10/12	7:50	2203	38	19.299	30	26.386	---2178.712

