Baross Lab info

Hydrothermal Fluid Microbiology- Mausmi Mehta, Julie Huber, and Billy Brazelton

Our research on this cruise focuses on using the phylogenetic and physiological diversity of microbial communities in diffuse hydrothermal fluids and the geochemical properties of these fluids to help constrain models of the subseafloor in both young and old oceanic crust. By combining molecular, culture, and microscopic techniques, we will characterize and quantify microorganisms in fluids from Axial Seamount, Baby Bare Seamount, ODP Hole 1026B, and the Endeavour Segment. Using the Butterfield manifold hot fluid sampler and the Lang sampler, we have collected vent fluids from all of these sites, including in-situ filtered fluid samples for DNA/RNA extraction to look at microbial diversity and microbial gene expression and FISH (Fluorescent In-Situ Hybridization) to quantify and track certain microbes within and between vents. Additionally, ship-board we have performed a variety of culturing techniques, such as semi-quantitative enrichments (MPNs, Most-Probable Number technique) to monitor the presence of indicator hyperthermophiles and thermophiles, as well as using media that has no nitrogen other than N_2 gas in order to isolate nitrogen fixers in culture. We have also collected water from CTD casts in both hydrothermal plume and background seawater to allow us to differentiate between indigenous subseafloor microorganisms and resident seawater or plume populations. Preliminary culturing results indicate that our on-axis sites, Axial and Endeavour, host a very different microbial population than that at Baby Bare or ODP Hole 1026B. While our “usual” indicator hyperthermophiles were found in high abundance in Axial and Endeavour diffuse fluids, our culturing efforts were less successful at the sedimented off-axis sites. Further phylogenetic and chemical analyses will help us better understand the differences between these sites.

LExEn 2002 Sample List (Baross Lab)

FS=fluid sampler

LS=Lang sampler

Sample	Dive No.	Purpose	Location	Temp	vol. filtered	Preservation #
FS097(105)	J2002	DNA	2600m bottom seawater Wuzza Bare	1.77	700ml	
FS098(106)	J2002	DNA	2600m bottom seawater Wuzza Bare	1.77	3014ml	
FS099(107)	J2002	water	2600m bottom seawater Wuzza Bare	1.77		FS099-1,2
FS100(108)	J2002	RNA	2563m to 1480m ascending Jason	1 to 2	3026ml	
CTD004-1		DNA	Above Baby Bare Lat: 47^{o} 42.6N	1.776	3250ml	CTD004-1,2
CTD004-4		DNA	ong:127^{o}47.206W 2599m (min T=1.768)		3 L	
FS109	J2003	DNA	old sediment core hole near WB	2.2	755ml	
FS110	J2003	DNA	2m off bottom Wuzza Bare	2.2	1L	
FS111	J2003	RNA	2485m to 2000m ascending Jason		1200ml	
FS112	J2003	water	2600m bottom seawater Wuzza Bare	2.2		FS112-1,2
FS113	J2004	water	push-core hole at Baby Bare mkr 17	3.9/4.5		FS113-1,2
FS114	J2004	DNA	push-core hole at Baby Bare mkr 17	2.6/2.7	1L	
FS115	J2004	water	push-core hole at Baby Bare mkr 17	3.7/3.9		FS115-1,2
FS116	J2004	water	push-core hole at Baby Bare mkr 17	2.6/2.8		FS116-1,2
CTD005-1		DNA	non-plume Lat:47^{o}42'N Long:127^{o}38'W	1.78	3L	CTD005-1,2
CTD005-2		DNA	at 2540m, water depth=2652m	1.78	3L	
FS117	J2005	DNA	probe 4 Baby Bare	10.4/10.6	999ml	
FS118	J2005	DNA	probe 3 Baby Bare	18.2/18.3	1027ml	
FS119	J2005	DNA	probe 3 Baby Bare-2 hours later	19.3/19.4	1007ml	
FS120	J2005	FISH	probe 3 Baby Bare	18.2/18.4	1007ml	
FS121	J2005	FISH	probe 4 Baby Bare	10.2/10.3	1000ml	
FS122	J2005	RNA	probe 4 Baby Bare	19.1/19.4	1L	
FS123	J2005	water	probe 4 Baby Bare	18.9/19.3		FS123-1,2
FS124	J2005	water	probe 3 Baby Bare	18.0/18.2	5ml for FISH	FS124-1,2
FS125	J2005	water	probe 3 Baby Bare-7 hours later	16/16.4		FS125-1,2
FS126	J2005	water	probe 4 Baby Bare	10.8/11.1		FS126-1,2
FS127	J2005	water	probe 4 Baby Bare-1 hour later	9.7/9.8	5ml for FISH	FS127-1,2
FS128	J2005	water	probe 3 Baby Bare	19.2/19.4	5ml for FISH	FS128-1,2
LS1-15		DNA	probe 3 Baby Bare		~750ml	
LS1-14		water	probe 3 Baby Bare			LS1-14-1,2

LExEn 2002 Sample List (Baross Lab)

FS133	J2006	FISH	1026B	62.5/62.5	1044ml	
FS134	J2006	RNA	probe 4 Baby Bare	19.1/19.2	961ml	
FS135	J2006	water	probe 4 Baby Bare	20/20.1		FS135-1,2
FS136	J2006	water	probe 4 Baby Bare	20/20.1		FS136-1,2
FS137	J2006	water	probe 4 Baby Bare	19/19.3		FS137-1,2
FS138	J2006	water	probe 4 Baby Bare	19.9/20		FS138-1,2
FS139	J2006	water	1026B	62.5/62.5		FS139-1,2
CTD006-1		DNA	ambient water 2450m Lat:47^{o}39.00		3L	
CTD006-2		DNA	Long: 127^{o}40.00	1.771	1L	
LS2-2		water	1026B			LS2-2-1,2
LS2-4		water	1026B			LS2-4-1,2
LS2-6		water	1026B			LS2-6-1,2
LS2-8		water	1026B			LS2-8-1,2
LS2-44		water	1026B			LS2-44-1,2
FS140	J2007	DNA	probe 4 Baby Bare	19.1/19.2	1159ml	
FS141	J2007	DNA	1026B	62.2/62.3	1043ml	
FS142	J2007	DNA	probe 3 Baby Bare	19.9/20.1	1015ml	
FS143	J2007	FISH	1026B	62.2/62.2	203ml	
FS144	J2007	FISH	probe 3 Baby Bare	19.9/20.1	208ml	
FS145	J2007	RNA	probe 3 Baby Bare	20.1/20.3	1100ml	
FS146	J2007	water	probe 3 Baby Bare	20/20.1		FS146-1,2
FS147	J2007	water	1026B	62.2/62.3		FS147-1,2
FS148	J2007	water	probe 3 Baby Bare	20.1/20.2		FS148-1,2
FS149	J2007	water	probe 4 Baby Bare	18.9/19.3		FS149-1,2
FS150	J2007	water	probe 3 Baby Bare	19.9/20.1		FS150-1,2
LS3-2	J2008	water	Marker 33, Axial	btw 8-16		LS3-2-1,2
LS3-10	J2008	water	Marker 33, Axial	btw 8-16		LS3-10-1,2
LS3-12	J2008	water	Marker 33, Axial	btw 8-16		LS3-12-1,2
LS3-20	J2008	water	Marker 33, Axial	btw 8-16		LS3-20-1,2
LS3-22	J2008	water	Marker 33, Axial	btw 8-16		LS3-22-1,2
LS3-18	J2008	water	Marker 33, Axial	btw 8-16		LS3-18-1,2
LS3-24	J2008	water	Marker 33, Axial	btw 8-16		LS3-24-1,2
LS3-16	J2008	water	Marker 33, Axial	btw 8-16		LS3-16-1,2
LS3-44	J2008	water	Marker 33, Axial	btw 8-16		LS3-44-1,2
LS3-14	J2008	water	Marker 33, Axial	btw 8-16		LS3-14-1,2

LExEn 2002 Sample List (Baross Lab)

LS3-28	J2008	water	Marker 33, Axial	btw 8-16		LS3-28-1,2
LS3-30	J2008	water	Marker 33, Axial	btw 8-16		LS3-30-1,2
FS151	J2008	DNA	under rock; N3 area, Axial	22.5/22.3		
FS152	J2008	DNA	floc vent near Vixen, Axial	41.4/39.3		
FS153	J2008	DNA	Village, Axial	35.9/30.7		
FS154	J2008	DNA	Bag City, Axial	17.7/17.2		
FS155	J2008	DNA	Marker 33, Axial	34.2/30.8		
FS156	J2008	RNA	Marker 33, Axial	32/30.4		
FS157	J2008	water	Marker 33, Axial	36.5/34.8		FS157-1,2
FS158	J2008	water	Marker 33, Axial	27.3/21.7		FS158-1,2
FS159	J2008	water	Village, Axial	36.2/31.1		FS159-1,2
FS160	J2008	water	Marker 113, Axial	18.2/17.9		FS160-1,2
FS161	J2008	water	floc vent near Vixen, Axial	40.7/39.9		FS161-1,2
FS162	J2008	water	Marker 33, Axial	21.5/18.2		FS162-1,2
FS163	J2008	water	Bag City, Axial	18.3/17.8		FS163-1,2
CTD007		water	Clam Bed 1965m	1.98	3L	CTD007-1,2
CTD008		water	East Field 1900m		3L	CTD008-1,2
FS164	J2010	DNA	Easter Island, Endeavour	24.4/23.5	1L	
FS165	J2010	DNA	Base of Hulk, Endeavour	19.1/14.7	1114ml	
FS166	J2010	DNA	Raven field, Endeavour	39.3/38.5	1001ml	
FS167	J2010	RNA	Base of Hulk, Endeavour	12.8/9	1L	
FS168	J2010	water	Milli-Q, Endeavour	?		FS168-1,2
FS169	J2010	water	Hulk, Endeavour	347		FS169-1,2
FS170	J2010	water	S & M, Endeavour	8.9/8.7		FS170-1,2
FS171	J2010	water	Raven field, Endeavour	212		FS171-1,2
FS172	J2010	water	S & M, Endeavour	?		FS172-1,2
FS173	J2010	water	Easter Island, Endeavour	25.3/23.3		FS173-1,2
FS174	J2010	water	Raven field, Endeavour	38.9/38.4		FS174-1,2
FS175	J2010	water	Hulk, Endeavour	14.3/12.2		FS175-1,2
FS176	J2011	DNA	Grotto, S side, Endeavour	22.4/17.6		
FS177	J2011	DNA	Dudley, Endeavour	82.2/61.5		
FS178	J2011	water	Puffer, Endeavour			FS178-1,2
FS179	J2011	water	Grotto, S side, Endeavour	347		FS179-1,2
FS180	J2011	water	Grotto, S side, Endeavour	22.8/21		FS180-1,2
FS181	J2011	water	Dudley, near top E side above smoker	68.9/54.5		FS181-1,2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

	McCarthy- Large Volume Ultrafiltration Samples (Barrel and CTD samplers)						
UF						**Sub-Spl**	
Code	**Date**	**sampler**	**Location**	**What**	**Volume**	**Codes**	**Comments**
ATL-UF#1	02-Sep-02	CTD	Baby Bear	Plume water	1000 l		10m off bottom. Small T anomoly recorded in CTD data.
ATL-UF#2	10-Sep-02	BARREL	Baby Bear, PROBE 4	crust fluid-Probe 4	~150L	B1-1A, 1B	UF#2- one bag broke- but barrels were drained together, so sample is mixed broken + unbroken bag. Likely barrel, foam, and charge-water had contact with sample, as food coloring we used to charge barrel water seems to be visible in isolated samples.
ATL-UF#3	11-12 Sept-02	BARREL	1026b-cone effluent	crust fluid	250l	B2-1A, 1B, B3-2R	UF#3- good barrels from 1026, combined for one 250L sample
ATL-UF#3A	12-13 Sept-02	BARREL	1026b-cone effluent	crust fluid	80L	B3-2L	UF#3A-1 sample from broken bag in barrel 2L, processed as separate sample. NH4 values indicate it is a fairly pure fluid sample, however may have contamination from barrel, foam, etc.
ATL-UF#4	14-Sep-02	BARREL	Baby Bear, Probe 3	crust fluid-Probe 3	165L	B4-1A, 1B	UF#4-Second deployment at Baby Bear, Probe 3 this time. Both bags were intact, and thus mixed together.
ATL-UF#5	15-Sep-02	BARREL	Axial, Marker 33	crust fluid	50L	B5-1A	UF#5-B5, axial marker 33: both bags were intact, however sample rates were very diff, resulting in quite diff "purity" of crust fluid vs seawater mixing. Therefore, processed each barrel separately. Barrel 5-1A was sampled slowly, got highest H2S Dave recorded from any sampler. Barrel 5-1B sampled much more rapidly, had mid-range H2S values.
ATL-UF#5A	15-Sep-02	BARREL	Axial, Marker 33	crust fluid	80L	B5-1B	UF#5- B5, axial marker 33: both bags were intact, however sample rates were very diff, resulting in quite diff "purity" of crust fluid vs seawater mixing. Therefore, processed each barrel separately. Barrel 5-1A was sampled slowly, got highest H2S Dave recorded from any sampler. Barrel 5-1B sampled much more rapidly, had mid-range H2S values.

Drum Sampler Antares Temp Probe Data

Date	Time	Start	End	Battery Voltage	Interval	Datalogger #	Comment	file name
9/12.02	01:50 gmt	9/12 03:00gmt	96 hrs. later	2921 mV	10 sec.	90	1026B barrel samler	200209120300.dat/wtl
09/13/2002	01:47 gmt	9/13 03:00gmt	96 hrs. later	2911 mV	10 sec.	90	Baby Bare Sampler	200209130300.dat/wtl
09/15/2002	4:06 gmt	9/15 15:00gmt	96 hrs. later	2974 mV	10 sec.	110	Axial drumsampler	200209151500.dat/wtl

Sample list																
J2_002			start	stop												
HFS#	type	site	time (GMT)	time	maxT1	AvgT1	Volume	filter type	investigato	note	wt.					
16	b															
19	b															
14	b															
18	b															
8	b	bkgnd sw 10 m altitude														
9	b															
17	bf							GFF			0.1197					
11	bf	bkgnd sw 3 m altitude						GFF			0.1189					
21	f															
15	f															
7	f															
10	f															
1	f															
13	f															
6	f															
12	f															
3	f															
5	p	bkgnd sw 3 m altitude														
23	pf															
22	p															
24	p															
20	p															
4	pf															
	b=bag															
	bf=filtered bag															
	f=filter															
	gp=gas piston															
	p=piston															
	pf=filtered piston															

J2-003																
			start	stop												
HFS#	type	site	time (GMT)	time	maxT1	AvgT1	Volume	filter type	filter mass	investigator	note					
16	b-Teflon															
19	b-Tedlar															
11	bf-Tedlar							GFF#v2523			.1241G					
17	bf-Tedlar															
18	b-Tedlar															
9	b-Teflon															
14	b-Teflon															
8	b-Teflon															
21	f							FISH								
15	f							GFFsusan								
7	f							GFFsusan								
10	f							RNA								
1	f							chem								
13	f							FISH								
6	f							Sterivex DNA								
12	f							Sterivex DNA								
3	f							Sterivex DNA								
5	p															
23	pf							GFF#v2522	0.1241							
22	p															
24	p															
20	p															
4	pf							GFF#v2576	0.1188							
2								GFF#v2521	.1262G							
	b=bag															
	bf=filtered bag															
	f=filter															

J2-004	Baby Bare	9/4-9/5/2002	start	stop												
HFS#	type	site	time (GMT)	time	maxT1	AvgT1	Volume	filter type	filter mass	investigato	note					
16	b-Teflon															
19	b-Tedlar	Baby Bare mkr 17 - push core hole	0.0868056	0.089583333	3.9	3.7	622									
11	bf-Tedlar							GFF#v2523			.1241G					
17	bf-Tedlar															
18	b-Tedlar															
9	b-Teflon	Baby Bare mkr 17 - push core hole	0.0576389	0.061111111	2.6	2.6	705									
14	b-Teflon															
8	b-Teflon	Baby Bare mkr 17 - push core hole	0.0527778	0.05625	2.7	2.6	737									
21	f							FISH								
15	f							GFFsusan								
7	f							GFFsusan								
10	f							RNA								
1	f							chem								
13	f							FISH								
6	f							Sterivex DNA								
12	f							Sterivex DNA								
3	f	Baby Bare mkr 17 - push core hole					1004	Sterivex DNA								
5	p	Baby Bare mkr 17 - push core hole	0.0756944	0.079166667	4.5	3.9	683									
23	pf							GFF#v2522	0.1241							
22	p															
24	p															
20	p															
4	pf	Baby Bare mkr 17	0.0480903	0.050694444	2.8	2.6	686	GFF#v2576	0.1188		bkgrnd sw 2m alt					
2								GFF#v2521	.1262G							
	b=bag															
	bf=filtered bag															
	f=filter															
	gp=gas piston															
	p=piston															
	pf=filtered piston															
		hi dave- second push core was a bust in terms of any temperature anomalys, so we opted not to take any samples.														

J2-005	Baby Bare	9/6/02-9/7/02		start	stop											
HFS#	type	site	Julian Day	time (GMT)	time	maxT1	AvgT1	std dev	Volume	filter type	filter mass	investigat	note			
16	b-Teflon	spike 3	249	0.834722222	0.838888889	18.4	18.2		618				sudden obstruction message at 618ml			
19	b-Tedlar	spike 3 at 4900 ml/mn	249	0.86875	0.872916667	19.4	19.2	0.08	632							
11	bf-Tedlar	spike 3 at 4800ml/min	249	0.8625	0.868055556	19.3	19.2	0.08	630	GFF#v2523	0.1241					
17	bf-Tedlar	probe 4	249	0.649201389	1541:03	10.1	10		626	?						
18	b-Tedlar	probe 4	249	0.654699074	1549:19	9.8	9.7		634	?						
9	bf-Teflon	spike 3 at 2800 ml./m	249	0.840277778	0.845138889	18.5	18.3		630	anodisc						
14	b-Teflon	probe 4	249	0.643761574	1533:41	10.2	10		626							
8	bf-Teflon	probe 4	249	0.636168981	1522:43	10.1	10		641	anodisc						
21	f	spike 3	249	0.825	0.334027778	18.4	18.2		1007	FISH		Huber	now fluid is quite clear			
15	f	probe 4	249	0.660844907	1600:24	9.8	9.7	0.07	1002	GFFsusan						
7	f	spike 3 at 4800ml/min	249	0.384027778	924	19.5	19.3		1000	GFFsusan		Lang				
10	f	spike 4 at 3700 ml/min	250	2032:56	19.1	19.4	2043:33		1000	RNA		Mehta				
1	f	spike 3 at 4800ml/min	249	0.874305556	0.381944444	19.5	19.3		1002	chem			effluent has cleared up considerably			
13	f	probe 4	249	0.627893519	1515:01	10.3	10.2		1000	FISH		Huber				
6	f	spike 3	249	0.816666667	0.822916667	18.3	18.2		1027	Sterivex DNA		Huber				
12	f	spike 3 at 4800ml/min	249	0.893055556	0.400694444	19.4	19.3		1007	Sterivex DNA		Huber				
3	f	probe 4	249	0.619594907	1502:25	10.6	10.4		999	Sterivex DNA		Huber				
5	p	probe 4	249	0.610763889	1446:37	11.1	10.8		697							
23	pf	spike3, had trouble filling	249	0.808333333	0.814583333	18.2	18		700	GFF#v2522	0.1241		fluid has gotten			
22	p	spike 4 at 3700 ml/min	250	2023:00	2030:00	19.4	18.9		660							
24	p	spike 3 at 2800 ml./m	249	0.807638889		18.2	18		660							
20	p	spike 3 at 4900 ml/mn	250	0.093055556	0.097916667	16.4	16	0.1	689				9/7/02 with gas-tight samples 1 and 2			
4	pf	probe 4	249	0.670231481	1612:16	10	9.9		705	GFF#v2426	0.1166					
2	sensors									GFF#v2597	0.1173					
gt1			250	0.089583333	0.089583333	16.2	16.2									
gt2			250	0.090277778	0.090277778	16.2	16.2									

J2-006	Baby Bare	9/8/02		start	stop	max	Avg									
HFS#	type	site	Julian Day	time (GMT)	time	T1	T1	T2	std dev	Volume	filter type	filter mass	investigator			
16	b-Teflon	probe 4	251	0.888888889	0.892361111	20.1	20		0.05	498						
19	b-Tedlar	1026B	252	0.211111111	0.215972222	62.5	62.5	39.6	0.03	618						
11	bf-Tedlar	probe 3	253	0.546342593	0.551585648	20.4	20.2	14.8	0.07	621	GFF	0.1189				
17	bf-Tedlar	probe 4	251	0.863194444	0.868055556	20.1	20		0.05	650	anodisc					
18	b-Tedlar	probe 4	251	0.847361111	0.852083333	20	19.9			650						
9	bf-Teflon	probe 4	251	0.879166667	0.883333333	20.1	20		0.04	600	anodisc					
14	b-Teflon	probe 4	251	0.884722222	0.8875	20.1	20		0.05	599						
8	bf-Teflon	probe 4	251	0.873611111	0.878472222	20.1	20		0.04	601	anodisc					
21	f	probe 4	251	0.869444444	0.872222222	20.1	20		0.05	500	FISH					
15	f	1026B	252	0.240972222	0.247916667	62.5	62.5	38.9	0.05	1030	GFFSusan					
7	f	probe 4	251	0.895833333	0.902083333	20.1	20		0.05	1001	GFFSusan					
10	f	probe 4	253	0.90625	0.911111111	19.2	19.1	12.6	0.05	961	RNA					
1	f	1026B	252	0.218055556	0.224305556	62.5	62.5	38.8	0.02	1041	GFF	0.1198				
13	f	1026B	252	0.233333333	0.240972222	62.5	62.5	38.8	0.02	1044	FISH					
6	f	1026B	252	0.225694444	0.232638889	62.5	62.5	39.7	0.03	1010	Sterivex DNA					
12	f	probe 4	253	0.911805556	0.915277778	19.3	19.1	12.6	0.06	736	Sterivex DNA					
3	f	probe 4	251	0.853634259	0.860416667	20.1	20		0.06	1000	Sterivex DNA					
5	p	probe 3	didn't work													
23	pf	probe 3	already fired								anodisc					
22	p	probe 4	251	0.917361111	0.922222222	20.1	20	13.9	0.04	711						
24	p	probe 4	251	0.911805556	0.916666667	20.1	20	13.8	0.05	639						
20	p	probe 4	253	0.9	0.904861111	19.3	19	12.6	0.15	693	questionable if it worked-couldn't see anything move, but stopped itself at this volume					
4	pf	1026B	252	0.205555556	0.210416667	62.5	62.4	39.5	0.01	714	GFF	0.1211				
2	sensors										GFF+anodisc					
gt1																
gt2																
	b=bag															

J2-007	Baby Bare	9/11/02-		start	stop	max	Avg									
HFS#	type	site	Julian Day	time (GMT)	time	T1	T1	T2	std dev	Volume	filter type	filter mass				
16	b-Teflon	1026B	255	0.911805556	0.915972222	62.2	62.2	39.2	0.05	601						
19	b-Tedlar	probe3	256	0.540972222	0.545138889	20.1	19.9	12.4	0.09	614						
11	bf-Tedlar	probe3	256	0.546736111	0.551122685	20.1	20		0.06	614	GFF					
17	bf-Tedlar	probe4	256	0.506747685	0.511550926	19.1	19	13	0.09	616	anodisc					
18	b-Tedlar	probe4	256	0.501597222	0.506018519	19	18.9	13.1	0.09	610						
9	bf-Teflon	1026B	255	0.874305556	0.878472222	62.3	62.2	40.4	0	600	anodisc					
14	b-Teflon	1026B	255	0.879166667	0.881944444	62.3	62.2	40.2	0.02	601						
8	bf-Teflon	1026B	255	0.90625	0.910416667	62.1	62.1	39.4	0.06	600	anodisc					
21	f	Probe 3-only 200 ml please	256	0.552303241	0.553645833	20.1	19.9	12.5	0.08	208	FISH					
15	f	1026B	255	0.922916667	0.928472222	41.5	17.6	11.8	8.71	787	GFFSusan	scraped the side				
7	f	1026B	255	0.916666667	0.922222222	62.2	62.2	39.2	0.01	1000	GFFSusan					
10	f	Probe 3-very last sample, 1 L	256	0.577037037	0.585439815	20.3	20.1	13.1	0.06	1100	RNA					
1	f	1026B	255	0.8625	0.868055556	62.2	62.2	41.1	0	1000	GFF					
13	f	1026B	255	0.859722222	0.861111111	62.2	62.2	41	0.05	203	FISH					
6	f	1026B	255	0.847916667	0.854166667	62.3	62.2	41.9	0.03	1043	Sterivex DNA					
12	f	Probe 3	256	0.555	0.563078704	20.1	19.9	12	0.05	1015	Sterivex DNA					
3	f	Probe 4	256	0.489849537	0.499571759	19.2	19.1	13.1	0.09	1159	Sterivex DNA					
5	p	1026B	255	0.754155093	0.758032407	62.3	62.3	33.2			stuck piston					
23	pf	probe4	256	0.482280093	0.487685185	19.2	19.1	13.4	0.05	750	anodisc					
22	p	1026B	255	0.847916667	0.873611111	62.3	62.2	40.5	0.01	701						
24	p	Probe3	256	0.570891204	0.57568287	20.2	20.1	13	0.06	695						
20	p	Probe3	256	0.564340278	0.569085648	20.1	20	12.1	0.06	695						
4	pf	1026b	255	0.64869213	0.653611111	62.3	62.2	36.1	0.05	700	GFF					
2	sensors										GFF+anodisc					
gt1																
gt2																

J2-008	Axial Volc	9/14/02-		start	stop	max	Avg										
HFS#	type	site	Julian Day	time (GMT)	time	T1	T1	T2	std dev	Volume	filter type	filter mass	investigator				
16	b-Teflon	mkr 33 mid-crack, touch	258	0.990972222		36.5	34.8	18	0.9	618							
19	b-Tedlar	Marker 113	258	7:37:00	7:43:00	18.2	17.9	10.6	0.21	625							
11	bf-Tedlar	floc near Vixen	258	3:30:14	3:37:27	41.6	40.2	22	0.5	782	GFF						
17	bf-Tedlar	Village	258	10:08:28	10:16:25	35.9	31.1	18	2.5	613	anodisc						
18	b-Tedlar	Village	258	10:17:23	10:22:49	36.2	31.1	17	2	615							
9	bf-Teflon	Bag City	258	5:28:00	5:33:00	18.2	17.5	10.2	0.31	600	anodisc						
14	b-Teflon	mkr 33 mid-crack, touch	258	23:35:00	23:44:00	27.3	21.7	12	2.6	613							
8	bf-Teflon	under rock N3 area, tub	257	16:08:38	16:14:43	22.4	22.1	13.6	0.3	613	anodisc						
21	f	mkr 33 mid-crack, touch	259	0:03:00	0:26:00	34.2	30.8	17.5	1.6	2038	Sterivex DNA						
15	f	floc near Vixen	258	3:41:10	3:51:25	41	40.1			1046	GFFSusan						
7	f	Village	258	10:24:56	10:34:19	37.9	31.3	17	2.3	1019	GFFSusan						
10	f	mkr 33 mid-crack, touch	259	0:32:00	0:42:00	32		30.4	0.7	1000	RNA						
1	f	Vixen floc	258	3:54:00							GFFv2515	0.1248					
13	f	Bag City	258	5:34:00	5:45:00	17.7	17.2	10.8	0.29	1000	Sterivex DNA						
6	f	floc near Vixen	258	3:08:24	3:19:10	41.4	39.3	23	0.9	1059	Sterivex DNA						
12	f	Village	258	10:24:56	10:46:41	35.9	30.7		2.3	1063	Sterivex DNA						
3	f	under rock N3 area, tub	257	15:46:52	15:57:55	22.5	22.3	13.4	0.23	1003	Sterivex DNA						
5	p	same as 3, steady flow, piston stuck after about 15% of sample taken. tried start/stop pump, but no visible flow out of sample pump ex									stuck piston						
23	pf	under rock N3 area, tub	257	16:17:04	16:27:41	22.4	22.1	13.5	0.3	681	GFF v2514	0.1247					
22	p	floc near Vixen	258	3:21:24	3:27:25	40.7	39.9	21	0.65	695							
24	p	mkr 33 mid-crack, touch	258	23:25:00	23:32:00	21.5	18.2	10	1.7	708							
20	p	Bag City	258	5:46:00	5:52:00	18.3	17.8	10.7	0.24	700							
4	pf	mkr 33 mid-crack, touch	258	23:54:00	23:59:00	34.9	33.7	18	1.2	644	GFF v2513	0.1254					
2	sensors										GFFv2516+anodis	0.1179					
gt1		mkr 33 mid-crack, touching red MTR polypro line															
gt2		mkr 33 mid-crack, touching red MTR polypro line															
major	yell on top,	Vixen	258	1:31:00		287											
major15	red tape	Casper	258	2:25:00		290											
gastight, white		Casper	258	2:38:00		290											
gastight	red on han	Vixen	258	1:49:00		287											
no sample		Castle	258	9:28:00		246.4											
major11	blue handle	Castle	258	9:40:00		246											
	b=bag																

Sample	Date Collected	Time Collected (GMT)	Location	Sample Type	Sample Shape and Size	Latitude	Longitude	Depth (m)	Frame Grab #	Comments
J2-004-RK-01	09/05/2002	3:39:00 AM ?	Baby Bare - at Marker 17 (4m SW of marker 17 at an outcrop)	Possible hydrothermal deposit	Sample broken into small pieces less than 2 cm in length					Sample too small to be used - disregard
J2-004-RK-02	09/05/2002	3:49	Baby Bare - at Marker 17 (4m SW of marker 17 at an outcrop)	Possible hydrothermal deposit	~ 10 inches long, oval shaped	47 42.596 N	127 47.140 W	2596.4	1718-1729	
	Not sure if this sample is altered basalt, cemented bottom sediments or a hydrothermal deposit. Majority of sample is clay material, black to brown in color. Appears to be layered somewhat, indicated by the color variations, with layers not exceeding 1 cm in width. Sample is friable and breaks apart easily. Brown Mn coating on sample is up to 3 mm thick, patchy and very bulbous. No crystalline structure to this sample at all. Varying thin patches of orange and cream colored clays and patches of bottom sediments on the outer layer of the sample, no bigger than 2 mm in diameter. One patch in particular is 5x3x3 cm of beige clay material about 3 mm thick. Some particles of clear stringy material that are probably biology, in clumps on sample ~ 2 cm in diameter.									
J2-004-RK-03	09/05/2002	4:29	Baby Bare - 4 m SW of Marker 17	Possible hydrothermal deposit	20x5x15 cm - irregularly shaped	47 42.596 N	127 47.140 W	2595.8	1764-1772	
	Not sure if this sample is altered basalt, cemented bottom sediments or a hydrothermal deposit. Sample is coated in a thin (< 3 mm) layer of light brown bottom sediments. Majority of sample is clay-like material, black in color and slight variations in color from dark blue to black. Brown Mn coating on sample is up to 2 cm thick but is patchy, and very bulbous. No crystalline structure to this sample at all. Varying thin patches of beige and brown clays, fe-oxyhydroxide clays and bottom sediments on the outer layer of the sample, no bigger than 2 cm in diameter. One patch in particular is 5x3x3 cm of beige clay material about 3 mm thick. Some particles of clear stringy material that are probably biology, in clumps on sample ~ 2 cm in diameter.									
J2-005-RK-04	09/07/2002	11:36	Baby Bare - at probe site	Basalt?	20x18x25 cm - blocky chunk.	47 42.604 N	127 47.135 W	2594.6	2897-2911	
	Not sure if this sample is altered basalt, cemented bottom sediments or a hydrothermal deposit. Dark blue-grey massive clay-like material comprises most of the sample. There is an outer layer of dark grey clay material that has iridescent particles in it, and this layer does not exceed 2 mm in thickness. The sample is somewhat fractured (~ 5%) (more so in the centre of the sample) with fractures (< 1 cm long) being infilled with rust colored clay. Some small (< 2mm) irregularly shaped vesicles are found in the sample (< 2%) and are partially infilled with gold or cream colored clays. No crystalline structure to this sample at all. Varying patches of beige and brown clays, fe-oxyhydroxide clays and or bottom sediments, no thicker than 2 mm and < 2 cm in diameter are found on outer later of sample.									
J2-005-RK-05	09/07/2002	13:11	Baby Bare - 25 m from summit (S of nav target 17)	Possible hydrothermal deposit	22x10x18 cm. Oval shaped sample - like a football	47 42.615 N	127 47.134 W	2591.2	2976-2986	
	Not sure if this sample is altered basalt, cemented bottom sediments or a hydrothermal deposit. Dark gray massive clay-like material comprises the majority of the sample. Sample is coated with a patchy layer of bottom sediments (< 3mm thick) and light brown clays. There are also sparse rust colored patches < 1 cm in diameter. Mn coating on sample is patchy and is up to 0.5 cm thick, and very bulbous. No crystalline structure to this sample at all. Rock is friable and breaks apart easily.									
J2-006-RK-06	09/09/2002	20:37	Baby Bare - near Nav Target 18 -rock outcrop	Basalt	16x13x10 cm. Oval pillow chunk with < 1mm thick man coating	47 42.605 N	127 47.169 W	2601.6	3810-3817	Not a good fix on Jason
	Aphyric basalt, moderately altered (alteration 10-50%), alteration is in the form of thin coatings of Fe-oxyhydroxides and clays. <1% vesicles, which are partially filled with clays and Fe-oxyhydroxides and are tubular or irregularly shaped and < 1mm in size. Vesicles are 40% filled with light brown clay and orange clays. Veins are <2 cm long and extend down into the interior of the rock at an angle perpendicular to the top cooling surface of the rock. They are <1 mm wide and partially infilled with fe-oxyhydroxides and clays. Several different patches of clays found on outer surface of sample, varying from orange, to gold to green in color and no larger than 2 cm in diameter and 2 mm in thickness. A little glass patch on the bottom of the sample is 0.5 cm thick and 5 cm long. Another glass patch on the top is 2x2 cm and 0.5 cm thick. Mn coating is patchy and < 1mm thick.									
J2-008-RK-07	09/14/2002	11:00	Axial - Village Vent (20 m due west of Castle Vent	Basalt	30x20x7 cm. Curved piece of sheet flow (or top sloughed off a large pillow.)	45 55.562 N	129 58.814 W	1518	6449-6452	Medea fix - no fix on Jason
	Very fresh (alteration <10%) sparsely phyric basalt, plagioclase phenocrysts being < 5 mm in length. Bottom glass layer is 1 mm thick with iron staining penetrating into rock to glass/rock interface. Only a small patch of fe-oxyhydroxide coating 2 cm in diameter on top glass surface, with some fe-oxyhydroxides in fractures on the glass surface as well. Veins (1 % of rock) are very small (< 2mm in diameter) . Three glass layers in the rock: top <1 cm thick, middle <5 mm thick (does not extend throughout rock, pinches out) and bottom <2 mm thick (patchy). Glass for the most part has been sloughed off the bottom of the sample. Vesicles are tubular, 1 mm wide max and 1 cm long. Rock is ~2% vesicular and vesicular cooling front is 5 mm thick and 1 cm into the interior of the rock, from the top surface. There are about 5 larger round vesicles that are up to 3 cm in diameter. There is a clump of white material that maybe biology.									
J2-008-RK-08	09/14/2002	11:08	Axial - Village Vent (20 m due west of Castle Vent	Basalt	Flat piece - piece of sheet flow? - 21x21x6 cm in size	45 55.562 N	129 58.814 W	1518	6456-6461	Medea fix - no fix on Jason
	Very fresh (alteration <10%) sparsely phyric basalt. Plagioclase phenocrysts up to 4 mm long. Covered in white biological material. No fractures visible. Top glass layer is 5 mm thick and bottom glass layer is 2 mm thick. Vesicle cooling front at the top of the sample begins 1 cm into the interior of the sample and is 1 cm thick. Vesicles are small (< 1mm) and are tubular or rounded. There is another gas front at the bottom of the rock which is 5 mm into the interior of the rock, and is 1 cm thick, with vesicles not being more than 2 mm in length. There is an interior glass layer 2 mm thick that pinches out, and is 7 cm long. Vesicles are not infilled or lined. Sample is 2 % vesicular (rounded vesicles < 2mm in interior of sample as well). At base of top glass layer, in the rock is a white deposit (1 cm in width) that appears crystalline. It is very hard and cannot be scraped off, and is continuous around the rock, thinly coating it. Top glass and bottom glass layers are 0.5 cm thick.									
J2-008-RK-09	09/14/2002	0:32	Axial - Marker 33	Basalt	Blocky piece of broken pillow - 16x13x13 cm.	45 55.985 N	129 58.924 W	1521.9	6937-6947	Not a good fix on Jason

	Very fresh (alteration <10%) sparsely phyric, with plagioclase phenocrysts 1 mm in diamater. Vesicles (<5%) are small (0.5 mm), round and not infilled or lined. There are several larger round vesicles in interior up to 1 cm in diameter.There is a gas front layer 1 cm into the rock from the top surface of the sample that is comprised of elongate irregularly shaped vesicles, up to 2 mm in length and 1 mm wide. Gas front layer is approx. 2 cm in width. There is iron staining on the surface of the sample and extends 1 cm into the interior of the sample. Thin (~1mm) patchy coatings of a white, amorphous material coats the surface of the sample, which is likely a biological deposit. Along the bottom glass layer, the iron staining only penetrates to the glass/rock interface. Top glass layer is up to 3 mm thick and bottom glass layer is 4 mm thick. Iron staining in patches along fractures in top glass layer. Some patchy beige clays on glass on top of sample, no more than 2 cm in diameter and <5 mm thick. Sample is 1-2 % fractures. Fractures extend from top glass layer up to 8 cm into sample and are < 2mm wide. Very little or no orange clay infilling or lining fractures (~10% infilled). There is an interior layer of glass and vesicles ~ 2 up from	

Jason Handheld Antares Temp Prove Data

Date	Time	Start	End	Battery Voltage	Interval	Datalogger #	Comment	file name
09/05/2002	20:42 gmt	9/6 04:00 gmt	96 hrs. later	2928 mV	10 sec.	114	No Calibration file	1854114B_200209060400_nocal.wtf
09/07/2002	19:42 pac	9/8 02:42 gmt	96 hrs. later	2847 mV	10 sec.	114	No Calibration file	1854114b_200209081942.dat/wtf

Lang Sampler

Lang Sampler Deployments

Time Started	Time Ended	Location	Avg. Temp	#Samples	Avg. Volume
Deployment I	3:00pm, 9/7/02	11:23am, 9/9/02	Baby Bare Probe Site #4	15 deg. C	15	1L
Deployment II	4:40pm,9/11/02	2:30pm, 9/12/02	ODP Hole #1026b	40 deg. C	5	3.5 L
Deployment III	3:45pm, 9/14/02	2:15pm, 9/15/05	Marker #33, Axial Volcano	10 deg. C	22	1.5 L

Lang Sampler Antares Temperature probe log

Date	Time	Start	End	Voltage	Interval	Datalogger #	Comment	file name
09/14/2002	17:06 GMT	9/14 22:00gmt	96 hours later	?	10 sec.	90	Axial deployment	ls-3.dat/wtf
09/17/2002	17:17 GMT	9/17 18:00gmt	96 hours later	2932 mV	10 sec.	114	M.E.F. Deployment. No Calibration file	

MACROBIOLOGY

LEXEN 2002 MACROBIOLOGY REPORT-Christian Kammerer, R/V Atlantis Cruise 7-20, (Aug.-Sept.)

Although active macrobiological study was not a written objective of this cruise, macrobiological observation and collection as a side effect of geological/fluid collection proved inevitable. Only one expressly biological sample was taken, a tubeworm grab at Axial. The other samples recorded were either taken off of rocks intended for geological study, taken off of geophysical/fluid sampling equipment, or taken off of Jason II itself.

FISH

Fish were observed during all dives. At Wuzza Bare, Baby Bare, and 1026b, the macrourid *Coryphaenoides* sp., the skate *Raja* sp., and various ophidiiforms dominated the fish fauna. At Baby Bare, the zoarcid *Pachycara* and the morid *Antimora microlepis* were also observed. At the active vents at Axial, the macrourid *Coryphaenoides* dominated, with the zoarcid *Pachycara gymninium* frequently observed among the tubeworms. One individual of the giant macrourid *Albatrossia pectoralis* was observed at Axial.

INVERTEBRATES

The dominant benthic invertebrate fauna differed dramatically between Wuzza Bare, Baby Bare, and Axial. Violet elasipod holothurians, stalked crinoids, white anemones, and pink/white asteroids dominated the bottom fauna at Wuzza Bare. Pink ophiuroids were by far the numerically dominant visible macrofauna at the rockier Baby Bare, though orange stalkless crinoids and red anemones were also common. The rock samples taken from this site (see below for sample data) were covered in ophiuroids, articulate brachiopods, sponges, and non-vestimentiferan worm tubes. The octopus genera *Graneledone* and *Benthoctopus* were observed brooding eggs at Baby Bare, and an egg-bearing rock (of *Graneledone*) was taken as a sample. Various spider crabs were observed at sites of bottom disturbance (e.g. places where the elevators touched down or the thermal blanket or wood deployments were placed.) Several patches of broken clamshells were seen at this site, but no living bivalves were observed. The most common holothurian at Baby Bare was an off-white form that was never observed on the bottom. Rather, it was either seen floating amidst particulate matter kicked up by Jason II or swimming (with the characteristic “back-and-forth” motion of semi-natatory elasipods) several meters above the bottom.

At Axial, the hydrothermal vent fauna was numerically dominated by the limpet *Leptodrilus fucensis* and the vestimentiferan polychaete *Ridgeia pisciae*. Somewhat away from the vents themselves, spider crabs were abundant. At the higher-temperature diffuse vents (e.g. the site of Butterfield Sampler Piston #24 taken at 2002/09/15 23:04:47), the polychaete *Paralvinella* was abundant. One tubeworm grab was taken at Axial (see below for locality data.) Preliminary sorting of this sample has produced the following information: Numerically, the most abundant macrofaunal metazoan is the gastropod *Leptodrilus*, which makes up roughly 99% of the molluscan portion of the sample. The gastropods *Provanna* and *Depressigyra* are also present. In addition to the sessile polychaete *Ridgeia pisciae*, at least five different species of errant polychaetes are present. These consist of polynoids and one large, nereid-like form. The *Ridgeia* tubes are

themselves covered with the tubes of the polychaete *Amphicymanthia galapagensis*, as well as dense masses of orange and pink bacteria. Pycnogonids (possibly two species) were also recovered in this sample. A second sample was removed from a rock collected for geological study (see below and see also geological sample portion of the Cruise Report.) The biological portion of this sample consisted of several dead, empty *Ridgeia* tubes covered in a white bacterial mass and some live specimens of *Paralvinella*. Small, errant polychaetes (probably polynoids) were also taken from this sample.

MACROBIOLOGY SAMPLE LIST-LEXEN 2002 (ATLANTIS CRUISE 7-20)

Baby Bare

J2-004-RK-01: grab of rock (manganese crust with ophiuroids, brachiopods, and sponges attached) at Baby Bare, Marker 17 (see Geology Samples for additional data)
J2-004-RK-02: grab of rock (manganese crust with ophiuroids, octopus eggs, and brachiopods attached) at Baby Bare, Marker 17 (see Geology Samples for additional data)
J2-004-RK-03: grab of rock (manganese crust with ophiuroids, brachiopods, and sponges attached) at Baby Bare, 4 m SW of Marker 17 (see Geology Samples for additional data)
J2-004-RK-04: grab of rock (basalt with ophiuroids, brachiopods and a large sponge attached) at Baby Bare, probe site (see Geology Samples for additional data)
J2-004-RK-05: grab of rock (possible manganese crust with ophiuroids, brachiopods, and sponges attached) at Baby Bare, 25 m from summit (south of Nav. Target 17) (see Geology Samples for additional data)
#???: ophiuroids collected off of Jason II following recovery (still trying to pinpoint locality)

Axial

#???: tubeworm grab at Bag City, Marker 36 (Sept. 15, 2002, 05:56 GMT; Lat. 45.91617 N, Long. 129.98943 W, utmx 423271, utmy 5085209, depth 1534 m, frame grabs #6286-6319)
J2-008-RK-08: grab of rock (basalt with dead tubeworms and *Paralvinella* attached) at Axial, Village Vent (20 m due west of Castle Vent) (see Geology Samples for additional information)
#???: *Leptodrilus* removed from Lang Sampler (Marker 33) (*cf*. Fluid Samples)

HOBOs - Endeavour - LExEn 2002

Instrument	Date	Time	X	Y	Z	Location	Action
33	30-Jun-01	1:11	492576	5310521	2194	Easter Island*	Deployed.
33	18-Sep-02	1:22	492576	5310521	2194	Easter Island*	Recovered.
34	29-Jun-01	5:44	492637	5310538	2192	Near S&M*	Deployed.
34	18-Sep-02	8:20	492637	5310538	2196	Near S&M*	Recovered.
35	29-Jun-01	18:33	492788	5311236	2182	Raven*	Deployed.
35	17-Sep-02	19:22	492788	5311236	2182	Raven*	Recovered.
33	20-Sep-02	17:58	492639	5310523	2197	Easter Island*	Deployed.
34	20-Sep-02	17:37	492636	5310525	2197	Easter Island*	Deployed.
35	20-Sep-02	17:39	492638	5310521	2197	Easter Island*	Deployed.

* 2001 position.

Summary of CTD Casts AT-7-20

CTD File	Date 2002	Time start	Latitude °N	Longitude °W	Water Depth (m)	Bottle Depths (m)	McLane Pump depths, volume
at720001	2 Sept	19:50:39	47° 42.60’	127° 47.20’	2609	12@2599	no
at720002	2 Sept	23:25:28	47° 42.60’	127° 47.20’	2609	12@2591	no
at720003	3 Sept	02:19:44	47° 42.60’	127° 47.20’	2609	12@2585	no
at720004	3 Sept	16:36:12	47° 47.10’	127° 41.56’	2650	3@2500, 4@2600, 5@2640	no
at720005	5 Sept	12:58:07	47° 42.00’	127° 37.99’	2652	4@2440, 4@2540, 4@2624	+210>+15>+210 341.5 L
at720006	11 Sept	01:17:43	47° 45.41’	127° 43.84’	2657	4@2642, 4@2662, 4@2442	off after 2 mins, flow too low
at720007	11 Sept	06:49:31	47° 38.99’	127° 39.99’	2640	4@2630, 4@2550, 4@2450	+200>+20>+200 320.1 L
at720008	16 Sept	20:42:34	47° 57.76’	129° 05.50’	2180	4@1265, 5@2065, 3@1965	+210>+25>+210 329.4 L
at720009	17 Sept	02:26:57	47° 56.78’	129° 05.33’	2105	3@2080, 4@1990, 4@1900	+205>+25>+205 230.7 L
at720010	18 Sept	22:07:25	47° 58.20’	129° 13.65’	2535	12@2000	no
at720011	19 Sept	01:44:04	47° 58.20’	129° 13.65’	2535	12@2000	no
at720012	19 Sept	05:05:55	47° 58.20’	129° 13.65’	2535	12@2000	no

Summary of preliminary short-lived radium isotope measurements

Sample file	location	Water Source	coll. date	coll. time	Vol. L	Ra223 dpm/100L	Ra224 dpm/100L	224/223 AR
AT-1 col A	Baby Bare	CTD 001	02-Sep-02	14:00	217	0.190	0.843	4.43
AT-1 col B	Baby Bare	CTD 001	02-Sep-02	14:00	217	0.003	0.043	
AT-2 col A	Baby Bare	CTD 002&3	02-Sep-02	17:30	637	0.138	0.378	2.75
AT-2 col B	Baby Bare	CTD 002&3	02-Sep-02	17:30	637	0.002	0.019	
AT-4 +10	Wuzza Bare	CTD 004	03-Sep-02	11:30	140	0.151	0.411	2.72
AT-4 +60	Wuzza Bare	CTD 004	03-Sep-02	11:30	115	0.116	0.340	2.93
AT-4 +160	Wuzza Bare	CTD 004	03-Sep-02	11:30	85	0.052	0.184	3.55
AT-5 col A	Ambient	CTD 005	05-Sep-02	8:15	341.5	0.039	0.135	3.43
AT-5 col B	Ambient	CTD 005	05-Sep-02	8:15	341.5	0.008	0.052	
AT-5 +10	Ambient	CTD 005	05-Sep-02	8:10	115	0.092	0.191	2.08
AT-5 +100	Ambient	CTD 005	05-Sep-02	8:10	105	0.108	0.357	3.32
AT-5 +200	Ambient	CTD 005	05-Sep-02	8:10	85	0.112	0.441	3.94
AT-9	probe 3 bbl	Bbl unfiltered	07-Sep-02	2:00	18*	4.08	13.21	3.24
*may be diluted with sea water								
AT-10 Col A	probe 4 bbl	Bbl filtered	10-Sep-02	3:00	120	11.12	10.39	0.93
AT-10 Col B	probe 4 bbl	Bbl filtered	10-Sep-02	3:00	120	0.003	0.180	
AT-11 +15	1026b	CTD 006	10-Sep-02	20:48	115	0.129	0.454	3.53
AT-11 +35	1026b	CTD 006	10-Sep-02	20:55	115	0.131	0.305	2.33
AT-11 +200	1026b	CTD 006	10-Sep-02	21:35	115	0.050	0.547	10.94
AT-12 Col A	Ambient	CTD 007	11-Sep-02	1:50	320	0.050	0.128	2.54
AT-12 Col B	Ambient	CTD 007	11-Sep-02	1:50	320	0.017	0.044	
AT-12 +10	Ambient	CTD 007	11-Sep-02	1:55	115	0.188	0.419	2.23
AT-12 +100	Ambient	CTD 007	11-Sep-02	2:12	115	0.126	0.291	2.31
AT-12 +200	Ambient	CTD 007	11-Sep-02	2:40	108	0.095	0.433	4.57
AT-13 col A	1026B vent	Bbl filtered	12-Sep-02	3:30	214.3	0.780	9.42	12.08
AT-13 col B	1026B vent	Bbl filtered	12-Sep-02	3:30	214.3	0.005	0.13	
AT-14	1026B vent	Lang LS-2-6	12-Sep-02	12:00	0.87	1.64	13.8	8.43
AT-16	Axial seep	Lang LS-3-8	15-Sep-02	12:00	0.99	5.50	48.7	8.86
AT-17 col A	Clam Bed	CTD 008	16-Sep-02	21:00	329.4	0.201	0.380	1.89
AT-17 col B	Clam Bed	CTD 008	16-Sep-02	21:00	329.4	0.010	0.034	

These preliminary data are not adjusted for final system calibrations. Additional measurements of parent activities are required to determine unsupported activities.

Summary of preliminary short-lived radium isotope measurements

AT-19	ambient 2000m	CTD 10-12	18-Sep-02	21:00	1000	0.058	0.295	5.12
AT-20	Baby Bare	Bbl filtered	13-Sep-02	12:00	120	13.06		
AT-21	Endeavour surf	uncont. SW line	20-Sep-02	23:00	351	0.011	0.685	
AT-22	Endeavour surf	uncont. SW line	21-Sep-02	9:30	481	0.010	0.537	
AT-23	Axial	Bbl filtered	15-Sep	12:00	120	5.83	124.29	21.33
AT-24	Dudley	J2-001 1C	21-Sep	12:00	0.18	177.4	1948	10.98
AT-25	Baby Bare Surf	uncont. SW line						
AT-26	Dudley	J2-011 B19	21-Sep	12:00	0.3	83.4	1499	17.97

These preliminary data are not adjusted for final system calibrations. Additional measurements of parent activities are required to determine unsupported activities.

Rock Sample Summary

Alteration of basalt samples due to interaction with low-temperature (<100^0C) diffuse hydrothermal fluid flow will be studied in samples collected from on-axis and off-axis locations. By comparing the secondary mineral assemblages that form in basalt samples due to contact with low-temperature diffuse fluids, with the chemistry of these fluids (collected previously and on this cruise), it is hoped that there will be a better understanding of the reactions and chemical fluxes that occur during fluid-rock interaction at off-axis and on-axis locations. Samples were collected from Baby Bare seamount as an older end-member, where approximately 1 Ma old basalt has been in contact with more reacted low-temperature fluids, to compare with very young samples collected from Axial Seamount. Samples will be collected from the Main Endeavour Field as well, the active ridge axis adjacent to Baby Bare.

All samples collected will be examined petrographically and selected mineral phases will be analyzed with a Scanning Electron Microprobe. Inductively Coupled Plasma – Mass Spectrometry will be used to analyze trace element and selected rare earth element geochemistry, X-Ray Fluorescence will be used for major element and selected trace element geochemistry, and Pb, Nd and Sr isotopes will be analyzed. Also, modeling will be performed to attempt to calculate chemical fluxes between hydrothermal fluids and the basalt samples.

Small pieces of basalt samples collected were treated in a 4% paraformaldehyde solution overnight, and then preserved at –70^0C in a 70% ethanol solution. Microbial work will be done on these samples at a later date to examine the possible bacterial influences on the formation of secondary minerals in the basalt samples.

Note: In the following the sample are divided into Fluids, Rocks, Push Core and Fe-Mn Crusts.
The fluid samples were obtained from Butterfield, Lang, and Major Samplers and are accordingly divided into three categories
They represent an aliquot of the sample obtained during the dive.

Fluids: Butterfield Sampler

Sample list

J2_002										
HFS#	type	site								
16	b									
14	b									
8	b	bkgnd sw 10 m altitude								
9	b									

J2-003

HFS#	type	site								
16	b-Teflon									
9	b-Teflon									
14	b-Teflon									
8	b-Teflon									

J2-004 **Baby Bare** 9/4-9/5/2002

HFS#	type	site								
16	b-Teflon									
9	b-Teflon	Baby Bare mkr 17 - push core hole	1:23 AM	1:28 AM	2.6	2.6	705			
14	b-Teflon									

J2-005 **Baby Bare** 9/6/02-9/7/02

				start	stop					
HFS#	type	site	Julian Day GMT	time (GMT)	time	maxT1	AvgT1	std dev	Volume	filter type
9	bf-Teflon	spike 3 at 2800 ml./m	249	8:10 PM	8:17 PM	18.5	18.3		630	anodisc
14	b-Teflon	probe 4	249	3:27 PM	1533:41	10.2	10		626	
8	bf-Teflon	probe 4	249	3:16 PM	1522:43	10.1	10		641	anodisc

J2-006 **Baby Bare** 9/8/02

				start	stop	max	Avg			
HFS#	type	site	Julian Day	time (GMT)	time	T1	T1	T2	std dev	Volume
16	b-Teflon	probe 4	251	9:20 PM	9:25 PM	20.1	20		0.05	498
9	bf-Teflon	probe 4	251	9:06 PM	9:12 PM	20.1	20		0.04	600
14	b-Teflon	probe 4	251	9:14 PM	9:18 PM	20.1	20		0.05	599
8	bf-Teflon	probe 4	251	8:58 PM	9:05 PM	20.1	20		0.04	601

J2-007 **Baby Bare/1026B** 9/11/02-

				start	stop	max	Avg			
HFS#	type	site	Julian Day	time (GMT)	time	T1	T1	T2	std dev	Volume
16	b-Teflon	1026B	255	9:53 PM	9:59 PM	62.2	62.2	39.2	0.05	601
9	bf-Teflon	1026B	255	8:59 PM	9:05 PM	62.3	62.2	40.4	0	600
14	b-Teflon	1026B	255	9:06 PM	9:10 PM	62.3	62.2	40.2	0.02	601
8	bf-Teflon	1026B	255	9:45 PM	9:51 PM	62.1	62.1	39.4	0.06	600

Sharma Samples

J2-008	**Axial Volcano**	9/14/02-		start	stop	max	Avg			
HFS#	type	site	Julian Day	time (GMT)	time	T1	T1	T2	std dev	Volume
16	b-Teflon	mkr 33 mid-crack, touching red MTR polypro line	258	11:47 PM		36.5	34.8	18	0.9	618
19	b-Tedlar	Marker 113	258	7:37 AM	7:43 AM	18.2	17.9	10.6	0.21	625
11	bf-Tedlar	floc near Vixen	258	3:30 AM	3:37 AM	41.6	40.2	22	0.5	782
17	bf-Tedlar	Village	258	10:08 AM	10:16 AM	35.9	31.1	18	2.5	613
18	b-Tedlar	Village	258	10:17 AM	10:22 AM	36.2	31.1	17	2	615
9	bf-Teflon	Bag City	258	5:28 AM	5:33 AM	18.2	17.5	10.2	0.31	600
14	b-Teflon	mkr 33 mid-crack, touching red MTR polypro line	258	11:35 PM	11:44 PM	27.3	21.7	12	2.6	613
8	bf-Teflon	under rock N3 area, tube worms, white mats on rock	257	4:08 PM	4:14 PM	22.4	22.1	13.6	0.3	613

J2-010	**Endeavour**	09/17/2002								
11	bf-Tedlar	Easter Island	261	10:32:00 AM	10:38:00 AM	25.9	23.9			
17	bf-Tedlar	Hulk	261	3:21:52 PM	3:27:42 PM	22.6	17.5			
18	b-Tedlar	Raven Field	260	5:38:00 PM	5:45:00 PM	38.9	38.4			
9	bf-Teflon	Hulk Plume 1.25 m ht	261	4:03:43 PM	4:06:38 PM	11.5	7			
8	bf-Teflon	Hulk Plume 1.00 m ht	261							

b=bag
bf=filtered bag

Fluids: Lang Sampler

Bag 6	unfiltered	Baby Bare								
Bag 16	unfiltered	Baby Bare								
Bag 24	unfiltered	Baby Bare								

Fluids: Major Sampler

	J2-008-M15	Axial								
	J2-008-M16	Axial								
	J2-010-M14	Hulk (200 ml+ dregs)	261	2:15:00 PM	347					
	J2-010-M15	Raven Field (200 ml+ dregs)	260	6:36 PM		212				
	J2-010-M11	Milli -Q (200 ml + dregs)	261	5:00:00 AM	(temp probe broken, 278 on Butterfield's probe but with no pumping)					
	J2-010-M16	S&M (200 ml +dregs)	260	6:31	??					
	J2-011-M16	Grotto, S side near mkr/metal, hdg 310, z 2188.5			347					
	J2-011-M1C (part of double	Dudley E side 2193m hdg 300								
	J2-011-M10C (part of doub	Dudley E side 2193m hdg 301	This sample has roughly 80% SW as determined by DB using Refractive Index							
	J2-011-M11	Puffer, mkr	263	7:34:00 AM	7:37:00 AM					

Rocks

	J2-005-Rk-04	Baby Bare	Lat 47 42.604N, Long 127 47.135W Depth = 2594.6 m				
	J2-008-Rk-08	Axial	Village Vent, Lat 45 55.562N, 129 58.814W; depth = 1518 m (Main Sample with Cathy)				
	J2-008-Rk-09	Axial	Marker 33, Lat 45 55.985N, Long 129 58.924W depth = 1521.9 m (Main sample with Cathy)				

Sharma Samples

Push Cores

	J2-04-WW 2-5 cm fraction	Baby Bare	JPC, all white tape (log # 1600ish; from Susan Lang)							
	J2-04-WW 16-19 cm fractio	Baby Bare								
	J2-05-PC3	Baby Bare, 1 m from probe 3	JPC#3							
	J2-06-GGG	Baby Bare, probe 4 site	JPC, triple green lines (log#3387)							
	J2-06-R	Baby Bare, probe 4 site	JPC, red lines (log#3794)							
	J2-007-PC-2	1026B	255	mud around the cone; possibly contains drilling mud; collected 9/12/2002 (log#2127)						
	J2-007-PC-21	1026B	255	mud around the cone; possibly contains drilling mud; collected 9/12/2003 (log#2129)						

Fe-Mn Crusts

	J2-003-FeMn	Baby Bare	(From Cathy)							
	J2-010-FeMn+sulfide+FeO	Possibly Hulk: Accidentally picked up by Jason	Larger samples with Paul Johnson							

THERMAL BLANKET DEPLOYMENTS, 2002						
Endeavour Thermal Blanket Sites, actual 2001 and actual 2002					**year**	**depth**
YEAR 2001						
site	**X**	**Y**				
#1	492603	5310453			2001	
#2	492754	5310501			2001	
#3	492712	5310466			2001	
#4	492870	5310861			2001	
YEAR 2002						
Endeavour Deployments, 2002	**X**	**Y**	**deploy time**	**recover time**	**comments**	
#1 Mid Valley site	47 deg 56.781	129 deg 05.822	259-18:10	261-03:08		
#2, 25 meters from Station #1	492643	5310444	261-04:15	261-12:25	Site A	
#3, 75 m from Sta #1	492687	5310447	261-12:45	263-04:29	site B	
#4, Site C	492862	5310455	263-05:10	263-11:58	Site C	2217
#5, Site D	492939	5310450	263-12:24	263-20:21	Site D	2223
#6, Site E	492470	5310466	263-22:19	264-04:04	Site E	2135
#7, Site F	493159	5310490	264-05:23	264-14:14	Site F	2114
Baby Bare Deployments, 2002	**LATITUDE**	**LONGITUDE**	**deploy time**	**recover time**	**comments**	
	all 47 deg	**all 127 deg**				
#1	42.598	47.145	248-02:55	248-09:01	nav target 19	
#2	42.595	47.162	249-18:33	250-0:11	near probe	
#3	42.595	47.145	250-00:22	250-11:00		
#4	42.6	47.14	250-11:15	250-18:57		
#5	42.585	47.143	251-19:46	252-12:39		
#6	42.58	47.142	252-12:44	252-18:06		
#7	42.616	47.15	252-18:38	253-01:12		
#8	42.574	47.087	253-01:43	253-10:17		
#9	42.565	47.083	253-10:35	253-21:22		
#10, on J-012	591144	5284803	265-03:33	265-08:50		2627
#11, site 2 on J-012	591088	5284736	265-09:16	265-12:39		2616