

# NeMO 2007 Cruise Report

Axial Volcano, Endeavour Segment, and Cobb Segment  
Juan de Fuca Ridge

*R/V Atlantis* Cruise AT 15-21  
August 3-20, 2007, Astoria, Oregon to Astoria Oregon  
Jason dives J2-286 to J2-295

Chief Scientist: Bill Chadwick  
R/V Atlantis Captain: Gary Chiljean  
Jason Expedition Leader: Will Sellers  
Cruise report prepared by: Andra Bobbitt



Close-up of phase separation occurring at the top of El Guapo vent, International District, Axial Volcano.

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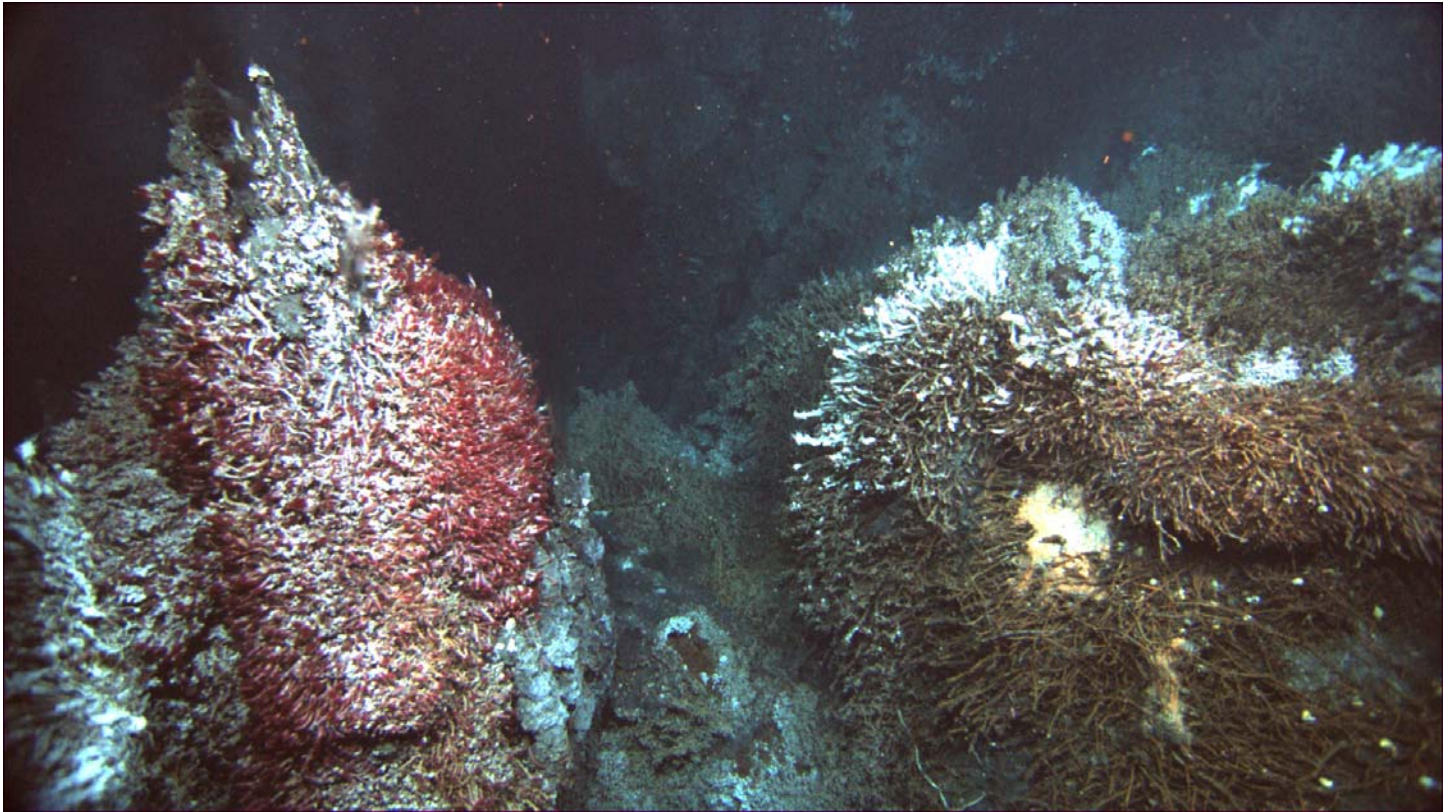
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Vent communities near the top of Hulk chimney, Main Endeavour Field.

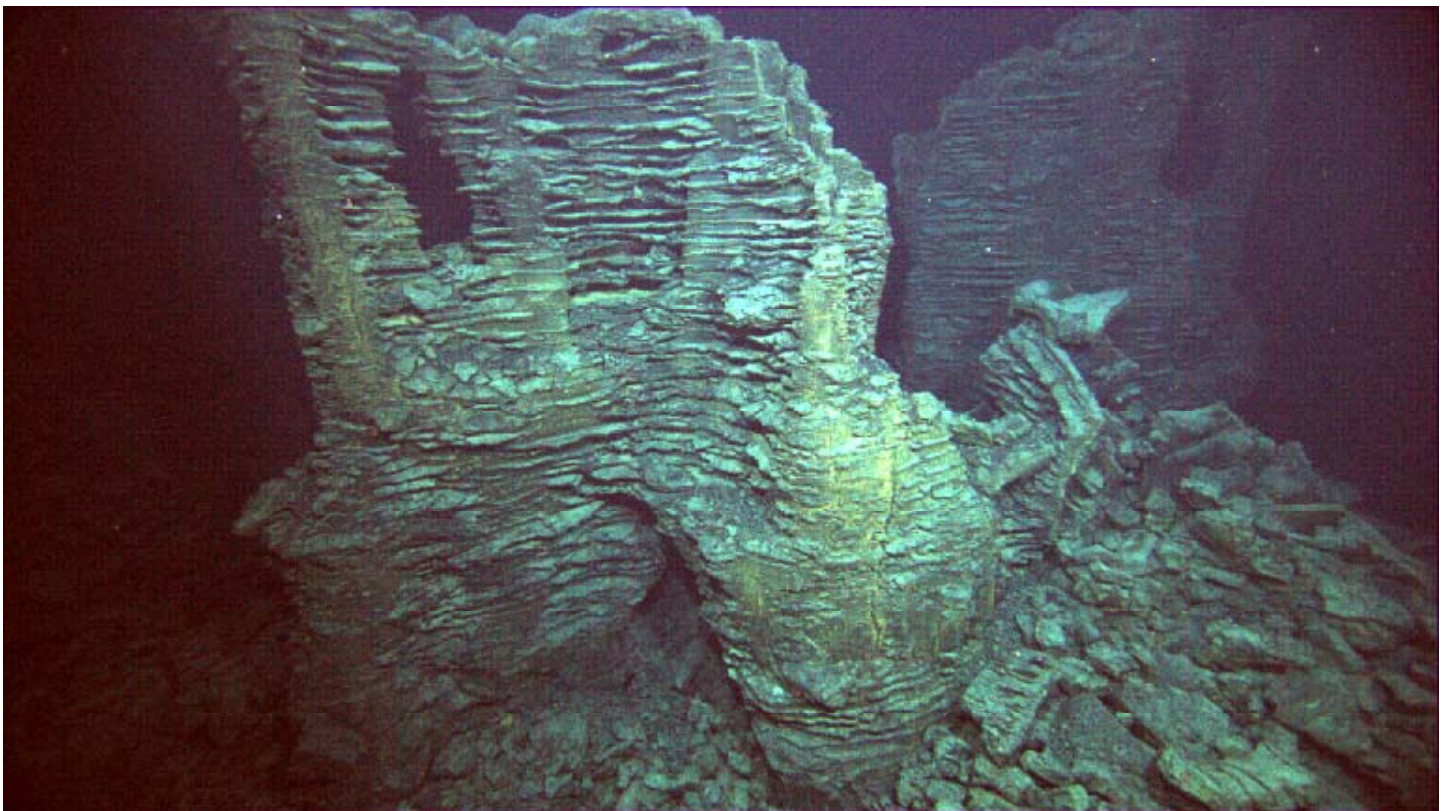


Close-up of Palm worms, tubeworms, and limpets at Main Endeavour Field.



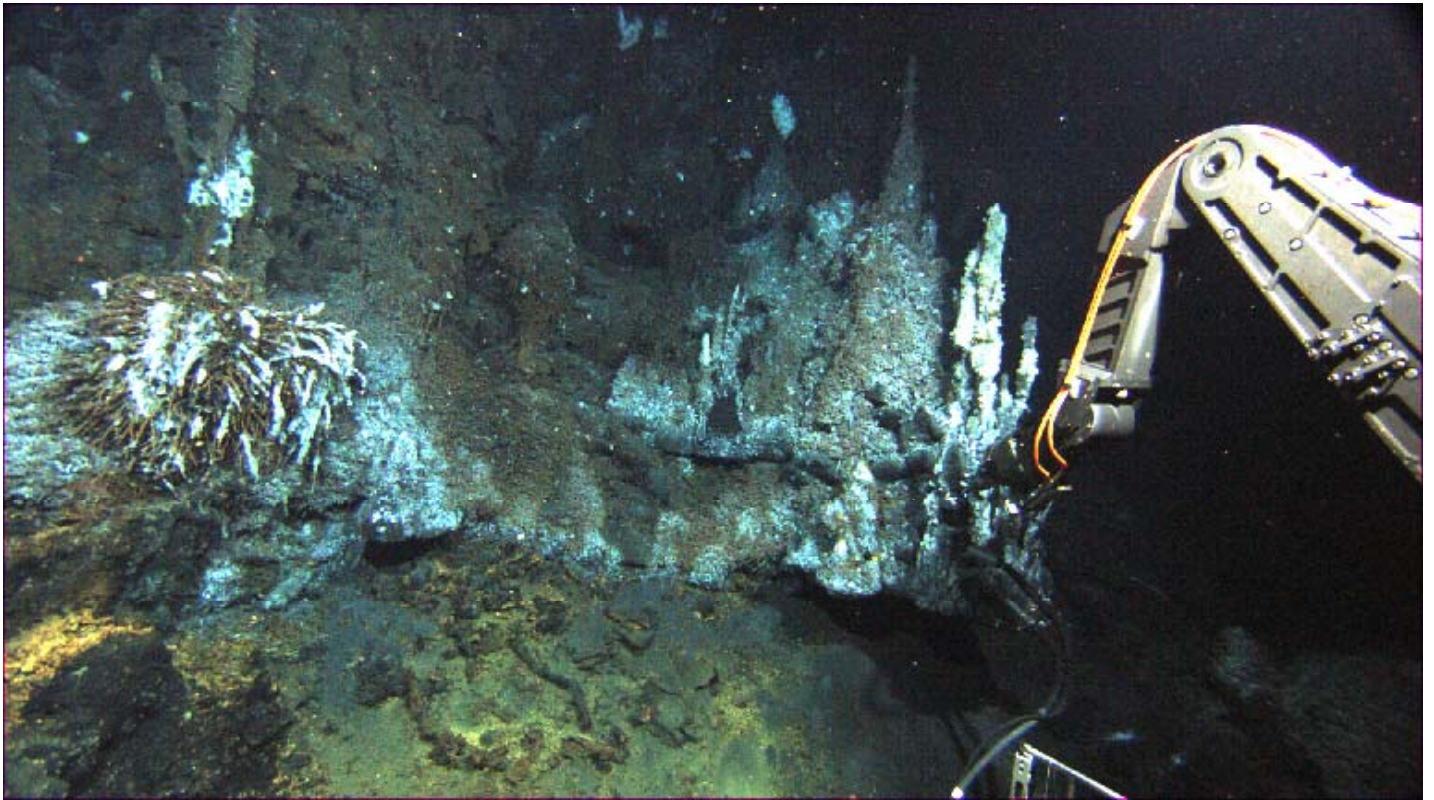


Tubeworm community on T&S Spires vent, CASM vent field, Axial Volcano.

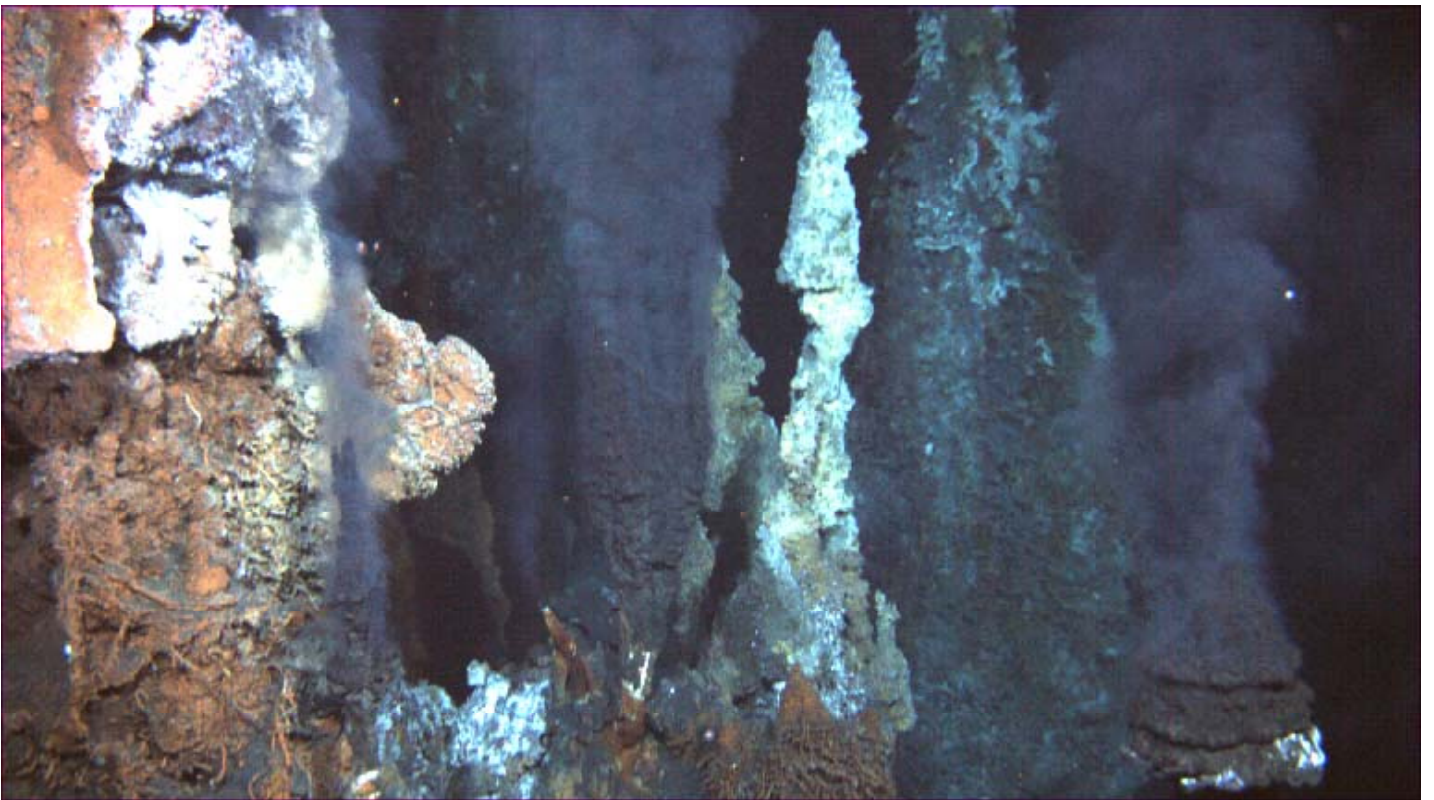


Lava pillars and drainback features in the Magnesia area, Axial Volcano.





Preparing to sample at Not Dead Yet vent site, southern Cobb segment.



Black smokers venting at 222°C at Not Dead Yet vent site, southern Cobb segment.

## 1.0 NeMO 2007 Expedition Summary

*Bill Chadwick, Chief Scientist (OSU/CIMRS-NOAA/PMEL)*

Our NeMO cruise this year on R/V Atlantis with the ROV Jason II was very productive. As usual, we had a wide range of tasks we came out to accomplish and we were able to do almost all of them with the help of hard work, good luck, and good weather. We also had the MBARI mapping AUV on board again this year and our goal was to finish the high-resolution mapping of Axial caldera that we started last year. The plan was to alternate ROV and AUV dives every day, and to fit in the CTD and mooring deployments and recoveries during the AUV dives. The only disappointment of the cruise was that the MBARI AUV experienced a failure that could not be fixed at sea and we were only able to complete 2 AUV dives. The good news is that those two AUV dives provided a wealth of new data that we used to great advantage during the ROV dives. We still hope to finish the AUV mapping of the caldera during future NeMO cruises. Our overall goals were to continue time-series sampling and monitoring at Endeavour and Axial to better understand perturbations to the hydrothermal systems from intermittent magmatic input. We also hoped to explore some new sites on the Cobb segment, if there was time.

The cruise departed Astoria and proceeded directly to Endeavour segment. The year, Daniela DiIorio (Univ. of Georgia) had an NSF-funded project at Endeavour that was scheduled as a piggyback on our NeMO cruise. Her work involved deploying two acoustic moorings around a black smoker vent and this work meshed well with Dave Butterfield's fluid sampling goals at Endeavour. Daniela's group was a pleasure to have at sea with us and they helped greatly by standing watches in the Jason control van throughout the cruise. We made 2 ROV dives in the Main Endeavour vent field (J2-286 & J2-287) to accomplish Daniela's and Dave's work. We also did a CTD cast and turned around a RAS mooring (a remote-controlled fluid sampler). We considered doing an AUV survey but the weather was not good enough. The R/V Thompson arrived at Endeavour with ROV ROPOS on board while we were there, and keeping the two ships out of each other's way was challenging. It would have helped if we had had more complete communication with them about our plans before the cruise.

Next, we transited south to Axial Seamount. At Axial, we made 6 ROV dives and 2 AUV dives. The ROV dives consisted of: (J2-288) fluid sampling at CASM (aborted) and geological exploration to the SE; (J2-289) the long pressure dive including some fluid and biological sampling; (J2-290) fluid sampling at CASM and geological exploration to the SW; (J2-291) fluid sampling and geologic mapping on the northern half of the 1998 lava flow (Marker 33 and north); (J2-292) fluid sampling and geologic mapping on the southern half of the 1998 lava flow (International district and south); (J2-293) fluid sampling and geologic mapping in and near the ASHES vent field. The 2 AUV dives were made in the northern half of the caldera and provided some spectacular new bathymetry that was explored during the ROV dives. We found again that the AUV bathymetry is extraordinarily useful for making sense out of the visual observations we make with the ROV. Combined AUV and ROV operations are an incredibly powerful combination.

Between ROV dives at Axial we conducted 5 CTD casts, turned around 1 RAS mooring, 2 bottom pressure recorders (BPRs), 4 ocean-bottom hydrophones (OBHs), and surveyed in all the new moorings. We also attempted 2 gravity cores, but neither was successful. The continuously recording instruments we now have at Axial include 5 MTRs (low-temperature recorders), 4 MISOs (high-temperature recorders), 3 BPRs, 4 OBHs, and 1 RAS.

After all our work was done at Axial, we used the last two days of the cruise to explore two sites on the Cobb segment where active venting had been photographed by camera tows, but had never been visited on the bottom. The first of these sites was at the southern end of Cobb, and Jason successfully found and sampled fluids and biology at two active chimney sites (J2-294). The second site was at Split seamount at the northern end of the Cobb segment, but no active venting was found (J2-295). At the end of the dives at Cobb R/V Atlantis returned to Astoria.

Some preliminary results from the NeMO 2007 cruise are outlined in the Discipline Summaries that follow. The caldera continues to inflate, the hydrothermal vents have reached a steady-state plateau between eruptions, and I think we have a better understanding of Axial's previous eruptions from the high-resolution AUV data. We hope to document the build-up to Axial's next eruption. However, due to a mix of factors, our plan for the coming years is to only have a major ROV-cruise at NeMO every other year (2007, 2009, etc). Next year, we will probably only turn around the RAS samplers by piggybacking a few dives on another cruise. The other seafloor instruments can all stay down for two years. We have no current plans to replace the NeMO buoy that was lost last year.

The NeMO 2007 science party was interdisciplinary as usual covering the fields of geology, geophysics, acoustics, engineering, chemistry, biology, and microbiology. The cruise ran very smoothly and was a great success largely due to everyone's outstanding efforts at sea. Thank you all, and I look forward to sailing with you again.

## 2.0 Operations Log (UTC is 7 hours ahead of local time PST)

Time UTC	Time PST	Date PST	Operations Log: Comments/Events
<b>August-3-2007 (UTC)</b>			
1330	0630	3-Aug	Depart Astoria, OR; transit to Endeavour Ridge
<b>August-4-2007 (UTC)</b>			
1500	0800	4-Aug	Jason Dive delayed due to bad weather; winds >30kts
1710	1010		CTD <b>V07B-01</b> in water @ Mothra 47°55.416'N/129°6.546'W
2000	1300		CTD on deck
2100	1400		Standing by waiting for Jason (troubleshooting arm problem)
<b>August-5-2007 (UTC)</b>			
0000	1700	4-Aug	Still standing by
0030	1730		Problem with ship bow thruster
0127	1827		Medea in water
0128	1828		Jason in water
0136	1836		Problem with Jason hydraulic line
0149	1849		Medea on deck
0153	1853		Jason on deck
0226	1926		Begin Dive <b>J2-286</b> again (Main Endeavour Field)
0227	1927		Medea in water
0228	1928		Jason in water
2200	1500	5-Aug	RAS recovered (Hulk)
2231	1531		Jason at surface
2233	1533		Medea at surface
2233	1533		Medea on deck Jason wet time=20:10 bottom time=17:20
2237	1537		Jason on deck (end J2-286)
<b>August-6-2007 (UTC)</b>			
0430	2130		10.5kHz transponder deployed 47 56.08601' N/-129 5.53821' W
0530	2230		11.0kHz transponder deployed 47 57.38257' N/-129 5.09595' W
1428	0728	6-Aug	Mooring Dilorio TX deployed (in RX location by mistake)
1530	0830		Mooring Dilorio RX deployed (in TX location by mistake)
1611	0911		RAS deployed Easter Island (47 56.90726N 129 5.93174W)
1644	0944		Begin <b>J2-287</b> Jason launch (Main Endeavour Field)
1645	0945		Medea in water
1647	0947		Jason in water
1824	1148		Jason on bottom
<b>August-7-2007 (UTC)</b>			
1409	0709	7-Aug	Jason off bottom
1535	0835		Medea on deck
1540	0840		Jason on deck (End dive J2-287)
1740	1023		Jason transponder #1 recovered
1840	1140		Jason transponder #2 recovered
			Underway for Axial; ETA 0000
0653	2353		Deploy AUV at Axial
<b>August-8-2007 (UTC)</b>			
		8-Aug	AUV Survey: <b>MBARI-Axial2007-Dive1</b>
1632	0932		Recovered AUV
1700	1000		Turned on NeMO transponders



Time UTC	Time PST	Date PST	Operations Log: Comments/Events
1800	1100		BPR Center deployed (45 57.3336/130 0.603)
1900	1200		Sent release code to BPR Middle (deployed in 2005)
2030	1330		BPR Middle on deck
2110	1410		Sent release code to OBH-N
2155	1455		OBH-N on deck
2309	1609		CTD at CASM (45 59.3285/130 1.634) <b>V07B-02</b>
<b>August-9-2007 (UTC)</b>			
0131	1831		Medea in water
0132	1832		Jason in water Dive <b>J2-288</b> (CASM and exploration to SE)
0231	1931		Jason at bottom
1520	0820		Medea on deck
1524	0824		Jason on deck (end dive J2-288)
1613	0913		AUV in water: <b>MBARI-Axial2007-Dive 2</b>
1950	1250	9-Aug	OBH-N deployed (45 57.606'N/130 0.55'W)
2100	1400		BPR Center recovered (deployed in 2004)
2218	1518		OBH-W release code sent
2325	1625		OBH-W on deck
<b>August-10-2007 (UTC)</b>			
0015	1715	10-Aug	Gravity core #1, 45 58.903, -129 59.948, 1468m (no core recovered)
0250	1950		AUV recovered with small boat
0335	2035		Medea in water
0336	2036		Jason in water Begin dive <b>J2-289</b> (Pressure Dive)
0443	2142		Jason at bottom
<b>August-11-2007 (UTC)</b>			
0648	1348	11-Aug	RAS at Marker 33 released
0730	1430		RAS on deck
<b>August-12-2007 (UTC)</b>			
0249	1949		Jason on surface
0251	1951		Medea on deck
0255	1955		Jason on deck (End dive J2-289)
0409	2109		AUV in water. <b>MBARI-Axial2007-Dive 3</b>
0622	2322		AUV dive aborted; AUV on deck [hit bottom; rock sample]
0753	0053	12-Aug	CTD <b>V07B-03</b> at ASHES (45 56.0156 130 0.843 z=1530.1)
1300	0600		OBH-N position survey
1530	0830		Gravity Core #2 (no core recovered)
1730	1030		AUV deployment (test dive)
			AUV dive aborted immediately & recovered/on deck
1804	1104		OBH-W deployed (45 58.928'N/130 1.040'W)
2308	1608		OBH-E recovered
<b>August-13-2007 (UTC)</b>			
0015	1715		OBH-S recovered
0316	2016		Medea in water
0321	2021		Jason in water <b>Begin dive J2-290</b> (CASM & exploration SW)
0411	2111		Jason on bottom
1531	0831	13-Aug	Jason on surface
1533	0833		Medea on deck

Time UTC	Time PST	Date PST	Operations Log: Comments/Events
1538	0838		Jason on deck (End dive J2-290)
1617	0917		CTD <b>V07B-04</b> at Castle (45 55.56 129 58.8 z=1505)
1820	1120		OBH-E deployed (45 56.517 129 58.773)
1915	1215		BPR Center (recovered to get pressure data; to be redeployed later)
1955	1255		OBH-S deployed (45 55.065 / 129 58.943)
2344	1644		OBH-E survey
2324	1624		OBH-S survey
<b>August-14-2007 (UTC)</b>			
0140	1840	14-Aug	RAS deployed (drop position 45 56.0W 129 58.96'W)
0252	1952		Begin dive <b>J2-291</b> (N. 98 Lava Flow)
2306	1606		J2-291 Dive ends
2345	1645		BPR Middle deployed (45 56.5105N / 130 00.0201W)
<b>August-15-2007 (UTC)</b>			
0040	1740		BPR Center re-deployed (45 57.3157'N / 130 0.6036'W)
0140	1840		RAS deployed at Mkr-33 (& Marker 55)
0442	2142		CTD <b>V07B-05</b> NE of caldera (Background 45 59.97'N / 129 58.97'W)
1130	0430	15-Aug	Begin dive <b>J2-292</b> (S. 98 Lava Flow)
1138	0438		Medea in water
1139	0439		Jason in water
1249	0549		Jason on bottom
<b>August-16-2007 (UTC)</b>			
0606	2306		Jason off bottom.
0710	0010	16-Aug	Medea on deck
0714	0014		Jason on deck (End dive J2-292)
1506	0806		CTD <b>V07B-06</b> at Coquille (45 55.02'N / 129 59.64'W)
1920	1220		Begin dive <b>J2-293 (ASHES)</b>
1921	1221		Medea in water
1928	1228		Jason in water
<b>August-17-2007 (UTC)</b>			
0713	0013	17-Aug	Medea on deck
0713	0013		Jason on deck (End dive J2-293)
			Transponder nets were disabled during ascent.
			Transit to Cobb Segment (~5 hours)
1309	0609		CTD Tow @ Southern Cobb <b>T07B-01</b>
2200	1500		Begin dive <b>J2-294</b> (Southern Cobb)
<b>August-18-2007 (UTC)</b>			
1941	1241	18-Aug	Jason at surface
1943	1243		Medea on deck
1947	1247		Jason on deck (end dive J2-294)
<b>August-19-2007 (UTC)</b>			
0234	1934		CTD <b>V07B-07</b> Cast @ Split Volcano (47 38.49 128 57.9)
			Begin dive <b>J2-295</b> (at Split Volcano at northern Cobb)
0333	2033		Medea in water
0334	2034		Jason in water
0456	2156		Jason on bottom



Time UTC	Time PST	Date PST	Operations Log: Comments/Events
1409	0709	19-Aug	Jason on surface
1411	0711		Medea on deck
1415	0715		Jason on deck (end J2-295). End of science ops
			Atlantis headed for Astoria, Oregon

### 3.0 Cruise Participants

Name	Affiliation	Participation	Email
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Akel Kevis-Stirling	WHOI	ROV Jason	
Mike McCarthy	WHOI	ROV Jason	
Cindy Sellers	WHOI	ROV Jason	
Jim Varnum	WHOI	ROV Jason	
Bob Waters	WHOI	ROV Jason	
Anton Zafereo	WHOI	ROV Jason	
Evan Kovacs	WHOI	HD camera tech	

Participating Organizations	
NOAA/PMEL	NOAA Pacific Marine Environmental Laboratory
OSU/CIMRS	Oregon State University-Cooperative Institute for Marine Resources Studies
UW/JISAO	University of Washington-Joint Institute for Study of the Atmosphere and the Ocean
UG	University of Georgia
UVIC	University of Victoria
MBARI	Monterey Bay Aquarium Research Institute
WHOI	Woods Hole Oceanographic Institute
UW	University of Washington Oceanography

## 4.0 Discipline Summaries

### 4.1 Endeavour (an independent project funded by NSF and piggybacked with NeMO 2007)

*Daniela DiLorio (University of Georgia)*

#### Research at Endeavour Ridge, Aug 4-6, 2007.

The Endeavour Ridge was the first area of focus which included research funded by NSF (OCE0449578). Two dives with the ROV Jason are summarized in this section which summarizes surveys around the Grotto, Dante and Hulk sulfide structures in the Main Endeavour Field, and a dive specifically designed to locate, transport and position two moorings relative to Dante.

We are using the ROV Jason II to find a significant hydrothermal plume that we can monitor over the long term with an acoustic scintillation array. The methodology is based on acoustic propagation over a 100 m path through the turbulent hydrothermal flow 20 m above the vent orifice. Sound is forward scattered by effective refractive index variations allowing us to measure the vertically driven buoyant flow and temperature fluctuations (assuming that temperature variations dominate the forward scattered signal).

Our first task was to find a hydrothermal vent of interest. We first explored Grotto in the Main Endeavour field and found that fairly new sulfide structure was formed with many tubeworm colonies. Although there were some black smoker vents we decided to have a look at Dante for comparison purposes.

Arriving at Dante we found that the plume was much more extensive than Grotto with multiple vent orifices coalescing to form a large buoyantly driven plume. Dave Butterfield sampled one of the black smoker vents at (4986.5, 6144.8; Alvin XY coordinates obtained with the Doppler velocity log) with temperatures reaching 330 °C. There are many vents and diffuse flow on the structure with many of their plumes coalescing. As the acoustic scintillation method gives path averaged measurements, our approach is to obtain an integrated measurement of the vertical flow of the plume as it mixes with surrounding oceanic water at 20 m above the sulfide structure. After this initial survey and sample of data, we went to Hulk for comparison purposes because it was the plume that was sampled in 1991 with the acoustic scintillation system. After inspection of Hulk it was decided to return to Dante since the buoyantly driven plume was much more extensive at Dante than at Hulk.

On our return to Dante we sampled one of the black smoker vents with the Jason Hi temp probe. Once we confirmed that the vent was the 330°C vent sampled previously we deployed a HOBO high temperature probe which will remain in place for approximately 1 year. The coordinates for the sensor is (4975.7, 6157.2) at z=-2176 m

In order to make our measurements approximately 20 m above the Dante structure which as at 2176 m depth, we need to have detailed information of the bottom bathymetry surrounding Dante. With the SM2000 high frequency multibeam sonar we mapped out the seafloor depths using acoustic bottom tracking for navigation, as an LBL system was not deployed. In a survey commonly known as 'mowing the lawn' we were able to get a very detailed map of the area. We could not go up and over Dante (25 m above the seafloor) since we would lose our bottom tracking navigation and so we have no data for the top of the big sulfide structure and its neighbors as shown by no data in the center. With this map we chose a deployment site for TX: (4964, 6107) at 2202 m and RX: (5001, 6205) at 2195 m using the Alvin coordinate system.

From the locations of our transmitter (TX) and receiver (RX) we custom built the moorings accordingly. The RX mooring would have to be approximately 44 m tall and the TX mooring would have to be approximately 51 m tall, giving a 7m difference to compensate for the different depths. Each mooring has a total weight in water of 33 kg and thus a drop time of 30-40 minutes to 2200 m. The drop locations were to the east of the Main Endeavour vent field with coordinates:

TX: 47 57.01'N, 129 5.56'W, Homer 44

RX: 47 56.88'N 129 5.935'W, Homer 34



since it was unknown how much they would drift.

It was decided to deploy the LBL navigation system prior to the mooring deployments. This was essential since the moorings are tall. The best place to pick up the moorings for the ROV Jason is at the top so that no entanglement can happen, which meant that bottom tracking navigation would not be possible.

Each mooring was located with Jason and moved to a position approximately 50 m from Dante. The final mooring locations are as follows:

TX: (x,y) 4960.6,6113.6 at z = 2101.8m

RX: (x,y) 4992.2, 6198.4 at z = 2197 m

From these deployment locations the transmitter/receiver line of sight is along 19°T with a path length of 91m.

In order to quantify the plume characteristics at 20 m above the vent orifice (in terms of vertical expansion, diameter and temperature) we used the SM2000 in downward looking profiling mode to image vertical cross sections of the hydrothermal plume as the ROV Jason hovered above with its CTD sensor. Measured temperatures at 10m above are approximately 3.5-5°C and at 25-30 m they range from 2.3-3.3°C. Plume diameters ranged up to 12 m at 20 m above the structure.

### **Endeavour Project Education and Outreach**

An educational outreach component to this research cruise was added. Two high school teachers (Mr. Mike LeBaron, Norman Lake High School and Mr. Rob Priestley, Savannah Arts Academy) with geology backgrounds participated with the primary objective to identify opportunities and methods for bringing the research activities of the cruise into a public school classroom.

Three outcomes of this experience stood out:

1. Current scientific research and discovery is often the result of integrated, multidisciplinary teams working toward a common goal. This provides a story that will help students *and* teachers see that their high school classes are not isolated educational moments focused on just one discipline, but instead that these classes form the foundation for a framework of higher learning and higher level thinking. This lesson has as much or more value to teachers as it does for students.
2. Four or five main themes, can be envisioned for development into science curriculum modules that span subjects in Physics, Earth Sciences and Oceanography. These themes are the direct result of observation and interactions with the research teams during this cruise. Some of these themes are related to the application of sound propagation and the use of acoustics to study many phenomena from hydrothermal vents to ocean floor mapping. Other themes are related to mid ocean ridge processes, and underwater volcanic activity. And finally a theme on oceanographic water column properties obtained with a CTD profiler.
3. All of the data on board was readily available and the teachers thus learned how to access it and how to use it as a direct outcome of participating on this cruise. Some of this data will be made available to students in the class thus increasing overall quantitative thinking skills.

Overall this outreach provided a unique experience that could not have been duplicated in the types of training or license renewal classes that are commonly available to teachers. It's a level of learning that only comes from "on the job" training and the teachers would like to personally thank Dr. Daniela Di Iorio, the chief scientist Bill Chadwick, the science team and crew on the R/V Atlantis, and to NSF for making opportunities like this available to teachers.

## **4.2 Acoustics - Monitoring Axial Volcano with OBHs**

*Matt Fowler (OSU/CIMRS)*

### **OBH deployments**

Deploying OBHs (Ocean Bottom Hydrophone) at Axial Volcano allows us to investigate the source mechanism of seismicity at much closer range than previously could be accomplished by a distant fixed hydrophone network. During the NeMO'07 cruise, a total of four OBHs were recovered, serviced and re-deployed. The new OBH platform, while providing a good coupling to the ground, is designed to protect the hydrophone and the internal electronics against damages that might occur during deployments and recoveries. Each mooring consists of a bottom anchor plate, an aluminum platform, an acoustic release, and a 35-meter long tether with 8 glass spheres.

Following the 2007 deployments, all four OBHs were surveyed using the "Workboat" program, and all acoustic releases were confirmed disabled. The surveyed positions are listed in Table 5.1.4.1. The logging computers of the OBHs were programmed to begin logging data within a few hours of deployment. The instruments have been prepared with battery and the data storage capacities large enough for two years of continuous monitoring.

After recovery of the OBH's deployed from NeMO '06, the instrument clock errors were measured and data disks removed for analysis in Newport OR. Three of four OBH's performed nominally, collecting 694 ~12 hour datafiles on OBH-W, and 700

datafiles on both OBH-S and OBH-E. OBH-N failed to log data. The instrument had been damaged during shipping prior to deployment.

The followings are the codes associated to the EG&G acoustic releases for each mooring deployed in 2007:

<u>Name</u>	<u>Serial #</u>	<u>Release Code</u>	<u>Disable Code</u>	<u>Enable Code</u>	<u>Int. Freq.</u>	<u>Reply Freq.</u>
OBH-N	31963	545527	555513	555462	11.0kHz	12.0kHz
OBH-S	31964	545542	555555	555530	11.0kHz	12.0kHz
OBS-E	31961	545475	555407	555360	11.0kHz	12.0kHz
OBS-W	30662	142771	140244	140221	11.0kHz	12.0kHz

## 4.3 Biology

### 4.3.1 Macrobiology

Jonathan Rose (UVIC)

#### Tubeworm Collections:

The tubeworm found at the hydrothermal vents on the Juan de Fuca Ridge is the species *Ridgeia piscesae*. *R. piscesae* is found at most venting sites from the vigorous to the weak and is the base of the biological community. Its morphology varies greatly depending on the conditions at the vent. It varies so much that when it was originally being described it was considered two species.

Samples of *R. piscesae* were collected for a study to examine three things:

- 1) Examine the gene flow at different fields along the Juan de Fuca Ridge.
- 2) Examine the symbiont diversity.
- 3) Categorize the environmental controls on its reproduction.

In total there were 9 samples from 6 different vents were collected. There were 2 from the very healthy, 3 from healthy to moderate, and 4 from the lower quality sites. Each collection was taken near a HFS location so the chemistry data obtained there could be used as an addition descriptor of the site.

#### Parasite Culturing and Observations:

Recently a parasitic copepod (Family: Nuclecolidae) has been found on the limpet *Lepetodrilus fucensis*. A lot of work has been done examining the adult stage of the parasite found on *L. fucensis* but it has never been seen alive and very little else is known about its nauplius and copepeditate stages. An experiment was designed to catch and culture some of the nauplii and see some of the different stages in development of the pre-adult parasite.

The first experiment was run with a suction collection from Marker 33 at Axial (J289-Bio-001). The first attempt to collect the nauplius of the parasite was done by putting a number of limpets into beakers and letting them sit for 12 hours. In past experiences with larvae of deep-sea crustaceans they seem to float up to the surface but that was not the case here as no nauplii were found.

A more specific approach was taken next. With a little work I could identify which limpets were infected with the parasite without dissecting them by peeking at the health of the gonad. Previous work done on this parasite show that it dramatically reduces the health of the limpet's gonad. Some of the infected limpets were then placed into the wells of the culture plate. After 6 hours some nauplii were seen swimming in the chambers.

After 24-hours the infected limpets were moved to different chambers to allow the nauplii to develop and the process was repeated. After another 24 hours the limpets were moved again. This produced a time series of nauplii as they were released from the limpet. A few of the nauplii were preserved every move.

Unfortunately the nauplii rarely lived past 72 hours. The cause of death is not known but great care was taken not to contaminate the culture with any of the preservative chemicals. Some copepeditate looking exuvae were seen twice but no copepedites were seen in the tray.

This process was done again with limpets collected from the tubeworms at Marker 113 (J2-Bio-023) but the results were similar.



Some of the limpets had the living parasite removed and it was observed that the rootlet system was very active. When removed from the limpet the parasite was kept in sea water where the rootlet system wiggled and writhed around but no directional movement occurred. The exosome portion of the parasite was inactive throughout all of this.

### Limpet Collections:

In addition to the collection of limpets for use in the parasite study two collections of limpets were taken for Dr. Noreen Kelly currently at Dalhousie University in Canada. The initial goal was for a collection of *L. fucensis* from Cloud vent but upon visiting there during Dive J2-291 no limpets were seen around the larger of the two vents at Cloud. There were some at the smaller vent (N4?) so a sample was taken there.

Another limpet collection for Noreen was taken at ROPOS vent in the ASHES vent field. ROPOS vent is a diffuse vent coming out of a crack in the basalt with a small chimney. There were plenty of limpets here and a good sample was taken.

### Polychaete Collections:

A small number of miscellaneous collections of polychaetes were taken for different groups.

Charleyne Bachraty – University of Montreal – *Amphisamytha galapagensis*

Two subsamples removed from tubeworm collections with each split and preserved in ethanol and formalin.

Sanjoy Som – for Dr. Baross – Subsamples from tubeworm collections of *P. palmiformis* from 3 sites (Hulk, Marker 33, Marker 113).

Michael LeBaron and Robert Priestley – As subsamples from tubeworm collections each received a few *P. palmiformis* and *R. piscesae*.

### Cobb Collection:

A single suction sample was also taken at the vents found on the Cobb segment. The suction collected a good variety of organisms listed below:

Gastropods – *L. Fucensis*, *Depressigyra globulus*, *Provanna variabilis*

Polychaetes – *R. piscesae*, *Paralvinella palmiformis*, *Branchinotogluma sp.*

Other: Pycnogonids, copepods

This collection provides an important piece of information that can help with studies on species migration and genetic drift.

### Macrobiology Collection List:

Sample Number	Location	Lat	Long	Depth	Time	Note	Treatment
J286-BIO-008	Hulk	47.9501	-129.0970	2188.85	05/08/2007 20:11	Tubeworm grab at Hulk. These are fat happy tubeworms for Verena Tunnicliffe.	95% Ethanol, 4 Dissected and frozen (-70)
J286-BIO-009	Hulk	47.9508	-129.0987	2202.49	05/08/2007 21:05	Grabbed some skinny tubeworms. (port biobox)	95% Ethanol, 4 Dissected and frozen (-70)
J287-BIO-026	Hulk	47.9501	-129.0970	2193.74	07/08/2007 13:19	Tubeworm sample - Long, Skinny	95% Ethanol, 4 Dissected and frozen (-70)
J288-BIO-001	T&S Spires (north end)	45.9892	-130.0274	1580.61	09/08/2007 4:22	Bio-macro Two Jason grabs of long-skinny worms at diffuse venting area at N. end of T&S Spires Jason has a large clump in manipulator. Stowing in port biobox.	95% Ethanol, 4 Dissected and frozen (-70)
J288-BIO-002	T&S Spires (north end)	45.9891	-130.0274	1578.54	09/08/2007 4:46	Bio-macro Two grabs of short-fat worms in higher temperature area at N. end T&S Spires.	95% Ethanol, 4 Dissected and frozen (-70)
J289-BIO-001	Marker 33	45.9332	-129.9824	1519.4	11/08/2007 10:18	Suction of some limpets. [Rose]	Parasite Incubation - 2.5% Glut

Sample Number	Location	Lat	Long	Depth	Time	Note	Treatment
J289-BIO-002	Marker 33	45.9337	-129.9824	1520.73	11/08/2007 10:31	Tubeworm grab of some of the less healthy worms. At bush a little ways from the main Marker 33 vent. [Rose]	95% Ethanol, 4 Dissected and frozen (-70)
J289-BIO-003	Marker 33	45.9337	-129.9824	1520.12	11/08/2007 10:54	Handful of tubeworms. Temp on the side is ~8.8C. Peripheral temp ~6.0C. Temp deep near the base of tubes is 36C. Final deep temperature reading is 17C. [Rose]	95% Ethanol, 4 Dissected and frozen (-70)
J291-Suction-005	Cloud	45.9332	-129.9817	1523.53	14/08/2007 6:24	Suction of limpets on tubeworms. Most tubeworms appear to be dead. [Rose]	7% Buffered SW Formalin
J292-BIO-023	Mkr113/62	45.9227	-129.9883	1522.9	15/08/2007 22:21	Weak-looking tubeworms into the port biobox. [Rose]	95% Ethanol, 4 Dissected and frozen (-70)
J293-BIO-018	Inferno	45.9336	-130.0137	1541.79	17/08/2007 1:25	J293-BIO-018 Grabbed clump of healthy tubeworms by the chimney that was fluid sampled. [Rose]	95% Ethanol, 4 Dissected and frozen (-70)
J293-Suction-024	ROPOS	45.9333	-130.0138	1542.79	17/08/2007 3:25	J293-Suction-024 Suction of limpets at ROPOS. (Temperature reading from next sample)	7% Buffered SW Formalin
J293-BIO-026	Phoenix	45.9333	-129.3838	1542.34	17/08/2007 4:11	Got a few worms from the crack near small smoker. Not many healthy worms anywhere on vent. [Rose]	95% Ethanol, 4 Dissected and frozen (-70)
J294-Suction-026	Hogwarts Ron	46.6822	-130.0137	2415.93	18/08/2007 18:08	Suction of general biology here (limpets-worms)	95% Ethanol

### 4.3.2 Microbiology

#### *Sanjoy Som (UW)*

Since the 1998 eruption, venting remains active at the Endeavour Ridge, the Axial Seamount and the Cobb segment of the Juan de Fuca Ridge. All those vents, and particularly the diffuse venting sites, offer prime targets of opportunity to identify micro-organisms living in the subsurface, brought to the surface catastrophically by the vents.

The tasks of the microbiology group on NEMO 2007 were to:

- 1/ fix fluid with formaldehyde for cell counts.
- 2/ inoculate prepared test tubes to target specific metabolic types.
- 3/ filter water in-situ through small volume sterivex (3L) and large volume steripak (30L) 0.2 micrometer filters for DNA/RNA studies.
- 4/ preserve specimens of *Paralvinella Palmiformis* and *Paralvinella Sulfincola* worms for gut fauna study.
- 5/ filter vent fluids at 0.02 micrometers in an attempt to capture viruses living among the bacteria and archea in the subsurface.

Fluids for the diverse experiments were brought to the surface by the Hot Fluid and Particle Sampler (HFPS, or Beast), an instrument designed and built to fit onto ROV Jason, and used in situ to sample vent fluids. For each unfiltered water sample obtained by the HFPS, 60ml were allotted for microbiology, of which 40ml were preserved with formaldehyde, and 20ml were used on ship for inoculation. Successful cultures are identified in the first table below. Those cultures are in addition to those obtained for Dr. Julie Huber (Marine Biological Laboratory).

## Successful inoculations during NEMO 2007:

Sample number	Media type	Location	T <sub>incub</sub> [°C]	Date in	Dive
RR1	Fe-Red	Dante Top	70	5-Aug	J2-286
RR2	Fe-Red	Dante Top	70	5-Aug	J2-286
RR3	Fe-Red	Dante Top	90	5-Aug	J2-286
RR4	Fe-Red	Dante Top	90	5-Aug	J2-286
RR10	Fe-Red	S&M	90	7-Aug	J2-287
RR12	Fe-Red	Hulk cool	90	7-Aug	J2-287
RR14	Fe-Red	Hulk hot	90	7-Aug	J2-287
SG3	Fe-citrate w/ acetate	S&M	70	7-Aug	J2-287
SG5	Fe-citrate w/ acetate	Hulk cool	90	7-Aug	J2-287
SG6	Fe-citrate w/ acetate	Hulk hot	90	7-Aug	J2-287
SR2	Fe-citrate w/o acetate	Easter Island	90	7-Aug	J2-287
SR3	Fe-citrate w/o acetate	S&M	90	7-Aug	J2-287
SR5	Fe-citrate w/o acetate	Hulk cool	70	7-Aug	J2-287
SR6	Fe-citrate w/o acetate	Hulk cool	90	7-Aug	J2-287
Note: the pump on the HFS failed on J2-288					
RR15	Fe-Red	Marker 33	70	11-Aug	J2-289
RR18	Fe-Red	Marker 33	90	11-Aug	J2-289
SG10	Fe-citrate w/ acetate	Cloud	90	11-Aug	J2-289
SR8	Fe-citrate w/o acetate	Cloud	70	11-Aug	J2-289
SR9	Fe-citrate w/o acetate	Cloud	90	11-Aug	J2-289
SR10	Fe-citrate w/o acetate	Shepherd	70	13-Aug	J2-290
RR28	Fe-Red	Forum hot	90	15-Aug	J2-291
BB12	YE no P, No As	Forum cold	90	15-Aug	J2-291
BY10	YE w/ P, no As	Forum hot	90	15-Aug	J2-291
BY12	YE w/ P, no As	Forum cold	90	15-Aug	J2-291
GB7	YE no P, w/ As	Zen Garden	70	15-Aug	J2-291
GB11	YE no P, w/ As	Forum cold	70	15-Aug	J2-291
BR13	N2 fixer w/ antibodies	Forum cold	70	15-Aug	J2-291
SR11	Fe-citrate w/o acetate	Marker 113b	90	16-Aug	J2-292
BB13	YE no P, No As	Marker 113b	70	16-Aug	J2-292
BR16	N2 fixer w/ antibodies	Marker 113b	90	16-Aug	J2-292
BY13	YE w/ P, no As	Marker 113b	70	16-Aug	J2-292
RR37	Fe-Red	Ropos @ Ashes	70	17-Aug	J2-293
RR39	Fe-Red	Ropos @ Ashes	90	17-Aug	J2-293
RR40	Fe-Red	Ropos @ Ashes	90	17-Aug	J2-293
BY15	YE w/ P, no As	Ropos @ Ashes	70	17-Aug	J2-293
RR41	Fe-Red	Hairdoo-ish	90	18-Aug	J2-293
SR14	Fe-citrate w/o acetate	Notdeadyet	70	18-Aug	J2-294
SR13	Fe-citrate w/o acetate	Notdeadyet	90	18-Aug	J2-294
RR47	Fe-Red	Cobb S. Middle	90	18-Aug	J2-294

In addition to culturing, a virus isolation study was initiated. Vent fluid from T&S, Forum and Zen Garden totaling 2.7L were filtered through a 0.02 micrometer filter. Part of the filter was preserved in glutaraldehyde for SEM investigation, while the rest was frozen at -72o for genomic studies.

Twelve *Paralvinella Palmiformis* worms from 3 sites (Hulk, Marker 33 and Inferno) were individually preserved at 4oC for gut fauna study; no *Paralvinella Sulfincola* were obtained.

DNA/RNA filters (steripak and sterivex) were obtained for multiple sites, as summarized in the second table. Application of molecular fingerprinting techniques (such as Terminal Restriction Fragment Length Polymorphism, or T-RFLP) on the DNA isolated from the sterivex will allow extraction of microbial community structure, and allow comparison of such information with variability in fluid chemistry. Steripak filters will be used by Dr. Julie Huber to further vent metagenomic studies.

**Summary of DNA/RNA Steripak and Sterivex 0.2 micrometer filters obtained *in-situ*:**

Sample number	Type	Location	T <sub>max</sub> (°C)	T <sub>avg</sub> (°C)	Volume (ml)	For	Dive
E2-Sp1	Steripak	Hulk cool					J2-287
E2-Sx10	Sterivex	E.I	20.7	19.8	2505	DNA	J2-287
E2-Sx11	Sterivex	S&M	33.2	29.1	3000	DNA	J2-287
E2-Sx13	Sterivex	Hulk hot	159.3	75.6	2511	DNA	J2-287
E2-Sx14	Sterivex	Hulk cool	12.8	11.5	2906	DNA	J2-287
Note: the HFS sampler pump did not work on J2-288							
A1-Sp1	Steripak	The Spot @ Vixen					J2-289
A1-Sx10	Sterivex	Marker 33 dome	18.4	14.7	2568	DNA	J2-289
A1-Sx12	Sterivex	The Spot near Vixen	30.8	30	3556	DNA	J2-289
A1-Sx13	Sterivex	Bag City @ market	13.7	13.2	3153	DNA	J2-289
A1-Sx15	Sterivex	Cloud Pit	6.5	6.8	3005	DNA	J2-289
A2-Sp1	Steripak	Shepherd					J2-290
A2-Sx10	Sterivex	Shepherd	27.9	25	3049	DNA	J2-290
A2-Sx13	Sterivex	T&S @ Chasm	78.8	75.9	2808	DNA	J2-290
A2-Sx14	Sterivex	T&S @ Chasm	76.5	74.5	2505	RNA	J2-290
A3-Sp1	Steripak	N3					J2-291
A3-Sx10	Sterivex	Zen Garden	25.7	23.7	3403	DNA	J2-291
A3-Sx11	Sterivex	Zen Garden	7.7	7.2	2903	DNA	J2-291
A3-Sx13	Sterivex	Forum cold	6.1	5.7	2046	DNA	J2-291
A3-Sx15	Sterivex	N3	25.4	24.9	3074	RNA	J2-291
Steripak pump failed. No sample							
A4-Sx11	Sterivex	Marker 113	31.1	30.7	2600	DNA	J2-292
A4-SX12	Sterivex	Marker 113	31.5	31.3	2617	DNA	J2-292
A5-Sp1	Steripak	Gollum @ Ashes					J2-293
A5-Sx14	Sterivex	Gollum @ Ashes	22.9	21.8	2513	RNA	J2-293
A5-Sx15	Sterivex	Gollum @ Ashes	22.3	21.7	2554	DNA	J2-293
A6-Sp1	Steripak	Notdeadyet @ Cobb					J2-294
A6-Sx11	Sterivex	Notdeadyet @ Cobb	22.3	20.9	2498	DNA	J2-294
A6-Sx10	Sterivex	Notdeadyet @ Cobb	27.1	26.6	2700	DNA	J2-294
A6-Sx15	Sterivex	Notdeadyet @ Cobb	33.6	24.3	2547	DNA	J2-294



## 4.4 Chemistry

### 4.4.1 Hydrothermal Fluid Sampling

*Dave Butterfield (UW/JISAO-NOAA/PMEL)*

Our main objectives for chemistry this year were to maintain our time-series monitoring with the automated samplers (RAS) and temperature sensors at Endeavour and Axial, and to collect samples for chemical and microbiological measurements from a wide range of vent sites in the Main Endeavour Field and around Axial caldera. The program was very successful.

#### *Re-designed hydrothermal fluid sampler*

Over the past year, we redesigned and rebuilt the mechanical and plumbing systems on the fluid sampler. One frame that holds the controller, valve, and pumps is intended to stay attached to the vehicle at all times, while a second frame holds two sample trays (9 water samplers on each) that are attached by multi-port quick-connect fittings. When a dive is over, the sample trays can be quickly and easily removed and brought into the lab. It is an easy job for two people to install the sampler. Piston samplers were re-designed to be smaller diameter. Except for some problems related to an early human error, all systems worked well, and we recovered a total of 134 samples (piston, bag, and filter combined) during the cruise. This is one of the most extensive sets of samples ever recovered during a NeMO cruise.

#### *Summary of sampling*

During this cruise, we recovered a large number of water samples by any standard. “The Beast” was on every Jason deployment, giving us the opportunity to take samples whenever a new site was discovered, and to combine sampling with other operations for better overall efficiency. At every site, we took a number of paired high/low temperature samples to quantify reactions occurring in the mixing zone that feeds low-temperature diffuse vents. We sampled several vents in the Main Endeavour Field, every known vent area at Axial (ASHES, CASM, and all of the SE caldera). A new high-temperature, gas-rich anhydrite chimney was found and sampled at the north end of the 1998 lava flow near Forum/Magnesia. Several vents in the “International District” field were sampled. And, finally, we found and sampled two active vent sites on the Cobb segment. Both sites had high temperatures between 200 and 250°C on old chimneys with active bases. The impression of the Cobb vent sites is of an old, waning system, with the upper, inactive portions of the tall sulfide chimneys apparently undergoing some oxidation and dissolution.

#### *Details of RAS instruments*

We recovered the RAS 18 from a sulfide-hosted diffuse vent site SW of Hulk structure, where we have had 3 previous year-long deployments. The intake was inserted into a PVC cover with 3 holes. MTR #3005 was recovered prior to removing the cover, which was about 1/3 disintegrated. The intake line came out of the titanium sheath that held a second temperature recorder (Vemco #5459) when we tried to recover it. The sheath was visible after removing the cover, but on the next dive we could not find it again, so it was not recovered. There was sulfide growth underneath the cover. Back on shore, we found that the MTR was also damaged, either by flooding or by battery leakage, and data recovery is very unlikely, so we will likely not have any temperature data for this site. Temperatures were 50 to 70°C inside the cover when we recovered the instrument. The intake line clogged with a hard mineral deposit, and only the first 23 samples were recovered. There was no time to evaluate the results of this deployment prior to making the decision on where to re-deploy. Given that relatively little change has occurred at the Hulk site, we elected to move the instrument.

We set up RAS s/n 11605-01 to deploy at Easter Island after reconnaissance and some discussion with scientists on Thompson (Kelley, Wilcock, Juniper, and Bornhold). The instrument is located at the southern edge of the Easter Island area, in a tubeworm clump on basalt, within 1 meter of the base of the Bastille sulfide complex. Temperatures at the intake were 20 to 23°C. The first sample starts 8/10/2007 at 12:00 UTC, last sample will be 7/15/2008, with an interval to sample the same point in the tidal cycle, similar to last year. The rinse acid in both RAS instruments deployed this year is 5% HCl with Y tracer. This instrument has Sonardyne Homer beacon number 16 attached to the buoy line. MTR #3026 is attached to the intake line.

We recovered RAS 19 from Marker 33 vent at Axial on 8/11/07 01:49 UTC. There was good flow of water through the cover, with a temperature of 16 to 18.5°C inside the cover before recovery. Multiple samples were taken. MTR 3043 and Vemco 105 were both recovered from this vent. A near-complete set of samples was recovered (4 failed due to punctured bags or other problems).

We deployed RAS s/n 11605-02 at the same spot at Marker 33, with a minor adjustment of the PVC cover to get better flow through it, and slightly higher temperature (21 to 22.5°C). This instrument was installed on 8/14/07 at 04:30, is set to start on 8/16/2007 12:00 UTC and finish on 7/21/2008 22:10, with the same 7day5hour50minute time interval as the MEF instrument. All samples are filtered, alternating polycarbonate and GFF. An MTR is deployed attached to the Teflon intake line and is just over the crack in the basalt, under the PVC cover. A second MTR 4001 is in one of the exit holes of the cover. This RAS has Sonardyne Homer beacon number 17 attached.

*Personnel involved in chemistry/microbiology work:*

Annie Bourbonnais, graduate student with Kim Juniper (U Vic) and Moritz Lehmann (U Quebec Montreal) analyzed all samples for ammonia concentration on board, helped with RAS processing and setup. Her thesis work centers on chemistry and microbiology of nitrogen cycling.

Nathan Buck, JISAO/PMEL, was responsible for CTD work, and also analyzed pH and alkalinity of hydrothermal fluid samples.

Dave Butterfield, JISAO/PMEL, was responsible for sampling instruments and sampling operations.

Leigh Evans, CIMRS/PMEL, was responsible for gas-tight sampling and processing.

Noah Lawrence-Slavas, NOAA/PMEL/EDD, was responsible for moored instruments, and provided critical support for instrumentation and hydrothermal fluid sampling.

Eric Olson, U.W. Oceanography, was responsible for analysis of methane and hydrogen on hydrothermal fluid and plume samples.

Kevin Roe, JISAO/PMEL, was responsible for shipboard sample processing and chemical analysis of all vent fluid samples.

Sanjoy Som, UW Astrobiology graduate student, was responsible for all microbial culture work, and for microbial sample preservation (included work for Andrew Opatkiewicz, Julie Huber, and Billy Brazelton).

Our shipboard analysis included pH, alkalinity, total H<sub>2</sub>S, dissolved silica, ammonia, methane and hydrogen. All samples were preserved for core analysis: major elements, nutrients, trace metals. Selected samples were preserved for elective analysis: nitrogen isotopes, O/H isotopes, DIC, 13C-DIC, and sulfur isotopes.

**Chemistry sample list:**

Dive	Sample	Vent Site	UTC Date	UTC Start	UTC Stop	Tmax	Tavg	T2	Vol.	mmol/L Si	Site comments
J2_286	P8	Dante	8/5/2007	6:32	6:37	332	331.8	65	505	16.58	Dante Top smoker
J2_286	BF16	Dante	8/5/2007	6:40	6:44	332	332	79	510	14.97	Dante Top smoker
J2_286	P9	Dante	8/5/2007	14:36	14:38	21.7	20.1	8.8	207	1.021	Dante diffuse below HOBO 2182m
J2_287	P1	Easter Is	8/7/2007	04:35:10	04:39:45	20.8	20.8	9.5	718	0.9857	Easter Island key17 2197.5m
J2_287	BF16	Easter Is	8/7/2007	04:42:07	04:45:35	20.6	19.7	9	565	0.8693	Easter Island key17 RAS site
J2_287	F10	Easter Is	8/7/2007	04:47:12	05:04:27	20.7	19.8	9	2505		sterivex filter E.I. key17 RAS
J2_287	BF17	Easter Is	8/7/2007	05:08:50	05:11:55	22.7	22.6	10	563	1.176	EI key 17 RAS site
J2_287	P8	Bastille	8/7/2007	07:00:25	07:04:20	269	268.2	88	701	14.12	top of Bastille 2186m
J2_287	BF18	Bastille	8/7/2007	07:09:50	07:12:31	269.5	268.8	89	488	14.33	top of Bastille
J2_287	P2	S&M	8/7/2007	07:55:02	07:57:48	323.9	321.5	95	504	15.75	S&M hot vent near top
J2_287	BF19	S&M	8/7/2007	07:59:34	08:02:18	323.8	321.1	70	497	16.90	SM hot vent 2182m
J2_287	BF20	S&M	8/7/2007	08:11:33	08:14:29	32.6	31.2	15	498	1.435	SM diffuse vent next to smoker 2182m
J2_287	F11	S&M	8/7/2007	08:16:25	08:37:07	33.2	29.1	13	3000		sterivex filter SM diffuse vent near smoker 2182
J2_287	P9	S&M	8/7/2007	08:40:11	08:43:13	33.9	31.7	14.1	554	0.2305	SM diffuse vent near smoker 2182
J2_287	F12	S&M	8/7/2007	08:45:25	09:01:53	34.1	31.4	14.5	2510		Annie's filter SM top diffuse vent 2182m
J2_287	P3	Hulk SW RAS	8/7/2007	10:34:15	10:37:33	102.7	88.8	40	601	4.992	Hulk RAS site hotter area
J2_287	BF21	Hulk SW RAS	8/7/2007	10:40:01	10:43:21	100.3	84.4	37	592	3.472	Hulk RAS hotter area
J2_287	F13	Hulk SW RAS	8/7/2007	10:45:11	11:03:44	159.3	75.6	35	2511		sterivex filter RAS Hulk hotter area

Dive	Sample	Vent Site	UTC Date	UTC Start	UTC Stop	Tmax	Tavg	T2	Vol.	mmol/L Si	Site comments
J2_287	F14	Hulk SW RAS	8/7/2007	11:26:24	11:48:02	12.8	11.5	6	2906		sterivex filter Hulk RAS site cooler area
J2_287	P4	Hulk SW RAS	8/7/2007	11:49:37	11:53:26	11.4	11	6	701	0.5422	Hulk RAS site cooler area
J2_287	P5	Hulk	8/7/2007	12:47:03	12:52:48	323.8	323.3	95	534	16.25	Hulk smoker
J2_287	BF22	Hulk	8/7/2007	12:55:36	12:58:37	326.2	324.9	95	551	14.66	Hulk black smoker top 2188m
J2_287	BF23	bkgnd sw	8/7/2007	13:14:04	13:18:00	2.2	2	2	560	0.1747	background seawater end of dive near Hulk
J2_288	No samples taken										
J2_289	P2	Mkr 33 RAS	8/11/2007	11:22:45	11:27:53	17.2	15.7	9	860	1.198	unfiltered piston marker 33 east hole of dome
J2_289	BF16	Mkr 33 RAS	8/11/2007	11:29:42	11:33:14	17	15.4	9	645	1.071	filtered bag marker 33 dome RAS site
J2_289	BF17	Mkr 33 RAS	8/11/2007	11:34:20	12:54:10	15.9	6.6	7	716	0.9707	filt bag marker 33, pinhole in bag
J2_289	F10	Mkr 33 RAS	8/11/2007	11:39:28	11:55:02	18.4	14.7	7	2568		sterivex filter marker 33 dome
J2_289	F11	Mkr 33 RAS	8/11/2007	11:56:54	12:12:28	19.9	14.7	8.4	2704		sterivex filter marker 33 dome Annie
J2_289	P3	Mkr 33 RAS	8/11/2007	12:15:19	12:18:53	18.5	17.1	8.1	655	1.408	unfilt piston marker 33 dome RAS
J2_289	P8	Cloud pit	8/11/2007	12:47:40	12:51:41	6.7	6.5	4.8	730	0.3637	unfiltered piston Cloud pit
J2_289	BF18	Cloud pit	8/11/2007	12:55:14	12:58:37	6.7	6.3	4.7	620	0.3315	filt bag Cloud Pit (teflon bag)
J2_289	F15	Cloud pit	8/11/2007	13:00:04	13:19:58	6.8	6.5	4.9	3005		sterivex filter Cloud Pit
J2_289	BF19	Cloud pit	8/11/2007	13:22:21	13:25:40	6.8	6.7	5	604	0.3554	filt bag Cloud Pit
J2_289	P4	Caspar	8/11/2007	16:09:31	16:10:57	301.6	301.3	86	253	13.03	unfilt piston Caspar vent
J2_289	P9	Caspar	8/11/2007	16:13:36	16:15:24	301.6	301.2	85	325	13.20	Caspar vent
J2_289	PF1	Vixen	8/11/2007	16:20:45	16:22:29	330.1	328	100	303	11.97	Vixen vent, filt piston
J2_289	BF24	Vixen	8/11/2007	16:24:09	16:25:27	330.4	330.2	100	228	11.44	filt bag Vixen hot
J2_289	BF22	Vixen	8/11/2007	16:28:38	16:30:01	330.4	330.2	86	243	10.96	filt bag teflon no Au Vixen
J2_289	P5	Spot(Vixen)	8/11/2007	16:50:55	16:54:13	30.4	30	15	604	1.088	the spot south of Vixen
J2_289	F12	Spot(Vixen)	8/11/2007	16:56:13	17:17:36	30.8	30	16	3556		sterivex "the spot" near Vixen
J2_289	BF20	Spot(Vixen)	8/11/2007	17:19:49	17:22:44	30.3	29.9	16	529	0.9645	filtered piston "the spot" south of Vixen
J2_289	P6	Bag City	8/11/2007	19:22:03	19:26:03	13.4	12.7	8	730	0.6812	unfilt piston Bag City
J2_289	P7	Bag City	8/11/2007	19:27:39	19:31:29	13.6	13.1	8.2	705	0.7250	Bag City at marker unfilt piston
J2_289	F13	Bag City	8/11/2007	19:34:03	19:53:21	13.7	13.2	8.5	3153		sterivex Bag City at marker
J2_289	F14	Bag City	8/11/2007	19:56:22	20:10:56	14.7	14.4	9	2508		Bag City sterivex filter
J2_289	BF21	Bag City	8/11/2007	20:12:38	20:15:33	14.7	14.5	8.9	529	0.6644	Bag City filt bag

Dive	Sample	Vent Site	UTC Date	UTC Start	UTC Stop	Tmax	Tavg	T2	Vol.	mmol/L Si	Site comments
J2_289	BF23	Bag City	8/11/2007	20:16:44	20:20:29	14.6	14.4	9	561	0.5977	Bag City filt bag
J2_290	BF23	CASM TS	8/13/2007	04:39:56	04:43:50	306.9	300.8	92	437	14.30	T and S smoke filtered bag gttp .2um
J2_290	P1	CASM TS	8/13/2007	04:47:29	04:50:12	307.6	307.3	94	495	16.69	T and S smoker piston unfiltered
J2_290	P2	CASM TS	8/13/2007	04:51:43	04:53:50	307.7	307.3	94	382	16.92	Tand S smomker piston unfiltered
J2_290	BF22	CASM TS	8/13/2007	04:55:24	04:58:22	308	307.4	93	267	14.52	TS smoker filt bag gttp .2um
J2_290	BF21	CASM TS	8/13/2007	05:28:34	05:31:58	44.9	42.9	23	623	2.376	TS virus fildt bag gttp .2um
J2_290	BF20	CASM TS	8/13/2007	05:32:45	05:37:37	41.2	40.2	24	687		TS virus fildt bag gttp .2um, bag leaking out bottom seal, 260g left at processing.
J2_290	BF19	CASM TS	8/13/2007	05:38:44	05:43:13	45.4	43.5	22	705		TS virus fildt bag gttp .2um, bag leaking, 60ml left when processed
J2_290	BF17	CASM TS	8/13/2007	05:44:53	05:49:22	40.3	36.4	20	694	1.904	TS virus filt bag gttp .2um
J2_290	F13	CASM TS	8/13/2007	05:50:51	06:24:10	78.8	75.9	36	2808		sterivex filter
J2_290	F14	CASM TS	8/13/2007	06:25:26	06:45:53	76.5	74.5	35	2505		TS virus sterivex filter
J2_290	P3	CASM TS	8/13/2007	06:47:44	06:51:35	73.8	73	35	711	2.313	TS piston unfiltered
J2_290	P4	CASM Shep	8/13/2007	07:34:35	07:38:28	27.5	27.1	16	714	1.342	Shepherd Vent 1583m piston unfiltered
J2_290	BF16	CASM Shep	8/13/2007	07:40:41	07:45:50	25.2	21.7	13	545	0.992	Shepherd vent bag fildt gttp .2um
J2_290	F10	CASM Shep	8/13/2007	07:47:53	08:05:46	27.9	25	13	3049		Shepherd sterivex filter
J2_291	BF24	Mkr 33 RAS	8/14/2007	05:04:50	05:09:07	21.5	20.6	10	619	1.333	Mkr 33 RAS filtered bag gttp, did not fill properly
J2_291	PF1	Mkr 33 RAS	8/14/2007	05:11:02	05:14:59	21.7	21	10.5	724	0.1752	piston gttp filtered
J2_291	PF2	Zen Garden	8/14/2007	07:27:38	07:32:55	24.2	23.4	12	746	1.062	zen gard south edge piston gttp filtered
J2_291	P5	Zen Garden	8/14/2007	07:34:21	07:38:21	24.9	24.1	12	730	1.193	ZG south edge p piston unfiltered
J2_291	F10	Zen Garden	8/14/2007	07:40:05	08:00:03	25.7	23.7	12	3403		ZG south edge sterivex filter
J2_291	BF23	Zen Garden	8/14/2007	08:11:53	08:15:40	7.6	7.3	5	504	0.3519	filtered bag gttp
J2_291	F11	Zen Garden	8/14/2007	08:18:56	08:37:24	7.7	7.2	5	2903		sterivex filter
J2_291	BF20	Zen Garden	8/14/2007	08:52:46	08:56:19	5.7	5.4	3.7	502	0.3006	Zen Gard Clams filtered baggttp
J2_291	BF19	Mkr N3	8/14/2007	10:25:14	10:28:45	24.5	24.1	13	528	0.9973	N3 in worms 1528m filtered bag gttp
J2_291	F15	Mkr N3	8/14/2007	10:30:15	10:48:26	25.4	24.9	13	3074		N3 in worms 1528m sterivex filter



Dive	Sample	Vent Site	UTC Date	UTC Start	UTC Stop	Tmax	Tavg	T2	Vol.	mmol/L Si	Site comments
J2_291	P8	Mkr N3	8/14/2007	10:50:12	13:43:36	25.3	7	13	973	1.122	N3 piston unfiltered no gold (accidentally pumped 45ml at Forum lobate top hole after)
J2_291	P7	Forum	8/14/2007	13:44:24	13:48:23	7	6.6	4.8	727	0.3976	piston unfiltered
J2_291	BF16	Forum	8/14/2007	13:50:25	13:53:44	6.2	6	4.6	502	0.2947	Forum lobate top hole bag filtered gtp
J2_291	BF9	Forum	8/14/2007	13:57:32	14:03:12	6.1	5.7	4.5	749	0.3485	Forum lobate top hole piston filt gtp
J2_291	PF3	Forum	8/14/2007	14:04:31	14:09:47	6.2	6	4.7	744	0.3512	Forum lobate top hole piston gtp filtered
J2_291	F13	Forum	8/14/2007	14:11:53	14:25:24	6.1	5.7	4.5	2046		Forum lobate top hole sterivex filter
J2_291	PF4	Forum Trevi	8/14/2007	14:50:25	14:53:03	256.3	256.1	89	301	0.7617	Forum Trevi anhydrite piston gtp filtered sample completely full, loose plug, suspect
J2_291	P6	Forum Trevi	8/14/2007	14:53:57	14:56:00	256.1	256	89	278	12.49	Forum hot anhydrite piston unfiltered
J2_291	BF18	Forum Trevi	8/14/2007	14:57:51	14:59:32	256.2	256.2	84	300	12.54	Forum Trevi Fountain anhydfiltered gtp teflon bag non plated cap sigmaT .04deg
J2_292	BF21	Village	8/15/2007	13:17:50	13:22:17	27	22.6	12	592	0.9311	Village filtered teflon bag 800ml w gtp
J2_292	B16	Village	8/15/2007	13:23:24	13:37:25	24.6	22.8	12	2601	1.016	Village unfiltered bag, overfilled broken
J2_292	PF1	Village	8/15/2007	13:40:05	13:43:14	23.8	22.6	12	576	1.847	Village piston
J2_292	BF17	El Guapo	8/15/2007	15:00:18	15:02:57	330.6	300	90	468	12.58	El Guapo filtered bag, gas bubbles appeared in bag after releasing pressure valve
J2_292	PF2	El Guapo	8/15/2007	15:18:13	15:19:44	338.9	338.5	88	269	13.04	El Guapo filtered piston, 1506m gff .1247g
J2_292	BF22	Hermosa	8/15/2007	16:19:06	16:23:46	26.1	20.8	14	628	1.124	Hermosa filtered bag 1514m
J2_292	PF8	Escargot	8/15/2007	16:51:02	16:53:36	100.2	93.4	35	457	2.152	Escargot filtered piston gff .1233g
J2_292	P7	Escargot	8/15/2007	16:54:52	16:57:34	102.5	96.1	40	404	4.272	Escargot unfiltered piston
J2_292	P5	Diva	8/15/2007	17:14:05	17:16:18	276.5	276.1	81	401		Diva unfiltered piston, exploded, most water saved
J2_292	B18	Diva	8/15/2007	17:18:40	17:22:02	276.2	276	82.4	614	14.42	Diva gff filtered bag, broken, 500ml gas @5psi + 350ml total water in cyl
J2_292	BF24	Castle	8/15/2007	17:51:11	17:54:32	237.8	237.4	74.4	609	15.68	Castle broken bag gff .1278g, analyzed gas and cyl water
J2_292	P4	Castle	8/15/2007	17:56:52	17:58:24	237.3	237.1	73	272		Castle unfiltered piston, completely full 500gas/300ml h2o at 5psi
J2_292	P6	Mkr 113	8/15/2007	21:00:41	21:04:31	31.1	30.7	14.5	705	0.469	Marker 113 unfiltered piston

Dive	Sample	Vent Site	UTC Date	UTC Start	UTC Stop	Tmax	Tavg	T2	Vol.	mmol/L Si	Site comments
J2_292	B23	Mkr 113	8/15/2007	21:09:14	21:13:21	30.8	30.6	14.6	713		Marker 113 unfiltered bag broken, poured into 2 500ml bottles
J2_292	F13	Mkr 113	8/15/2007	21:15:07	21:32:45	31.1	30.7	14.7	2600		Marker 113 Sterivex
J2_292	F14	Mkr 113	8/15/2007	21:33:59	21:51:59	31.5	31.3	15.4	2617		Marker 113 Sterivex
J2_292	P3	Mkr 113	8/15/2007	21:56:37	21:59:05	31.5	31.4	15.6	444	0.5500	Marker 113 piston
J2_292	BF19	Mkr 113	8/15/2007	22:02:21	22:05:39	31.5	31.4	14.9	602	0.3659	Marker 113 filtered bag, hole in bottom of bag, saved cyl h2o
J2_293	PF1	Virgin	8/16/2007	21:12:49	21:14:13	252	251.1	85	247	13.87	VM filtered piston gff prv xs gas
J2_293	PF2	Virgin	8/16/2007	21:15:20	21:16:56	252.5	252	86	285	13.47	VM piston gff prv xs gas
J2_293	BF18	Virgin	8/16/2007	21:18:27	21:19:38	252.3	252.1	85	203	0.1810	VM teflon bag gff prv, sample is bottom seawater, suspect leak
J2_293	B24	Gollum	8/16/2007	21:54:02	21:56:19	22.9	22.3	11.7	413	0.9751	Gollum unfiltered bag 500ml
J2_293	BF22	Gollum	8/16/2007	21:57:35	21:59:50	22.1	21.6	11.3	407	0.7865	Gollum filtered bag 500ml
J2_293	F15	Gollum	8/16/2007	22:01:29	22:18:10	24	22.6	11	2627		Gollum sterivex filter
J2_293	F14	Gollum	8/16/2007	22:19:19	22:34:52	22.9	21.8	11.6	2513		Gollum sterivex
J2_293	F13	Gollum	8/16/2007	22:35:40	22:51:12	22.3	21.7	11	2554		sterivex
J2_293	BF16	Mushroom	8/17/2007	00:14:03	00:16:02	265	255.8	9	348	4.310	Mushroom 500ml bag w GFF, very low T2, possible clogging
J2_293	PF3	Inferno	8/17/2007	00:47:42	00:50:07	313.1	312.8	100	438	15.50	Inferno piston gff w prv
J2_293	PF8	Inferno	8/17/2007	00:51:55	00:54:43	313.4	313.3	100	510	15.52	Inferno piston gff xs gas prv
J2_293	BF20	Inferno	8/17/2007	01:39:12	01:41:38	19.2	17.3	9	427	0.7425	Inferno tubeworm 500ml bag GFF
J2_293	PF4	Hell	8/17/2007	02:17:19	02:20:00	267.1	240.2	12	488	11.92	Hell piston gff prv, low T2, poss clogging
J2_293	P5	Hell	8/17/2007	02:30:08	02:33:44	267.6	265.3	12.5	551	16.36	Hell top of piston NO filt prv
J2_293	BF19	Phoenix	8/17/2007	02:58:41	03:00:55	288.5	286.7	62.6	407	14.59	Phoenix 800ml Teflon bag GFF
J2_293	P6	Phoenix	8/17/2007	03:03:53	03:07:17	292.2	281.5	65	623	14.57	Phoenix piston w prv no filter
J2_293	P7	ROPOS	8/17/2007	03:46:27	03:50:56	34.4	31.8	13.2	620	11.04	Ropos piston No filt
J2_293	B23	Dave	8/17/2007	04:42:10	04:44:50	11.9	11.6	6.7	401	0.6711	not dave's thing 500ml No filt
J2_294	PF1	Cobb North	8/18/2007	09:33:07	09:38:39	150.4	139.7	50	602	8.442	Cobb Flange piston gff .1274g xs gas filtered
J2_294	BF22	Cobb North	8/18/2007	09:39:39	09:43:23	121.8	103.6	35	685		not dead yet Cobb Flange 800ml filtered teflon bag no gold cap
J2_294	BF17	Cobb North	8/18/2007	09:49:06	09:52:10	142.2	132.7	42	545	7.975	Cobb Flange 800ml filtered bag gftp

Dive	Sample	Vent Site	UTC Date	UTC Start	UTC Stop	Tmax	Tavg	T2	Vol.	mmol/L Si	Site comments
J2_294	PF5	Cobb North	8/18/2007	09:54:14	09:56:58	164.5	153.5	42	466	8.060	Cobb Flange piston unfiltered
J2_294	PF6	Cobb North	8/18/2007	10:06:22	10:09:56	20.3	19.7	10	654	1.508	in palm worms Cobb piston unfiltered
J2_294	F11	Cobb North	8/18/2007	10:11:50	10:29:47	22.3	20.9	10.6	2498		in palm worms sterivex filter
J2_294	BF18	Cobb North	8/18/2007	10:31:30	10:34:40	21.6	21.1	10.3	579	1.556	Cobb in palm worms 800ml gff .1244g filtered bag non plated cap
J2_294	BF19	Cobb North	8/18/2007	10:39:20	10:42:09	26.8	24.8	11	510	0.7097	Cobb in orange at base of sulfide 800ml gff .1250g filtered bag
J2_294	PF7	Cobb North	8/18/2007	10:44:40	10:48:22	33.3	29.5	12	676	0.9022	orange layer below sulfide/animals piston unfiltered
J2_294	F15	Cobb North	8/18/2007	10:50:18	11:07:13	33.6	24.3	10	2547		in orange layer base of sulfide Cobb sterivex filter
J2_294	PF2	Cobb NE	8/18/2007	12:30:29	12:33:40	157.8	149.8	58	564	9.670	Cobb eastern smokers at not dead yet xs gas piston filtered gff
J2_294	BF20	Cobb NE	8/18/2007	12:35:20	12:38:24	153.8	148.7	57	510	9.905	Cobb not dead yet eastern smokers 800ML filtered bag gff .1252g
J2_294	BF21	Cobb NE	8/18/2007	12:40:18	12:43:50	222.9	203.6	13	489	7.135	eastern smokers 800ml filtered teflon bag gttp
J2_294	P3	Cobb South	8/18/2007	16:58:42	17:01:43	204.9	204.7	50	551	13.37	southern cobb clear chimney vent backpress piston unfiltered
J2_294	P4	Cobb South	8/18/2007	17:21:18	17:24:52	90.7	84	26.3	654	6.339	cobb southern middle chimney with flange (P3) small chimney backpress piston unfiltered
J2_294	P+B358	Cobb South	8/18/2007	17:40:17	17:44:06	25.9	25.5	12	705	1.837	northern pillar diffuse flow in palm worm bunch suction sample taken piston unfiltered no gold
J2_294	F10	Cobb South	8/18/2007	17:46:32	18:05:12	27.1	26.6	12.3	2700		diffuse vent in large worm community on northern pillar (same as P8) took suction sterivex filter

#### 4.4.2 CTDs

Nathan Buck (UW/JISAO-NOAA/PMEL)

The objectives for CTD operations for the NeMO'07 cruise were two fold. First, contribute to time-series studies by quantifying the chemical signatures of non-buoyant plumes over venting sites sampled in previous years at Axial volcano and Endeavour segment. Second, survey the water-column over Cobb segment to identify possible locations of hydrothermal venting. Seven vertical casts and one tow-yo were conducted (see table for dates and locations). During each hydrocast continuous *in-situ* measurements of conductivity, temperature, depth and light attenuation were taken. Plume water was collected using 20 L niskin bottles from which samples for helium isotopes, DIC, ammonium, total metals, dissolved metals, and total suspended material were taken for shore-based analysis. Likewise, water was collected for ship-board pH analysis.

## Locations of CTDs:

CTD #	Location	Type	Date (z)	Lat (N)	Long (E)
V07B-1	Mothra	Verticle	4-Aug-07	47 55.4167	129 06.5489
V07B-2	Casm	Verticle	8-Aug-07	45 49.3307	130 01.6402
V07B-3	Ashes	Verticle	12-Aug-07	45 56.0156	130 00.843
V07B-4	Castle	Verticle	13-Aug-07	45 55.578	129 58.81
V07B-5	Background	Verticle	15-Aug-07	45 59.97	129 58.97
V07B-6	Coquille	Verticle	16-Aug-07	45 55.021	129 59.640
V07B-7	Split Seamount	Verticle	19-Aug-07	47 38.50	128 57.899
T07B-01	Cobb	Tow	18-Aug-07	46 43.03	129 22.00

## 4.4.3 Gas Sampling

*Leigh Evans (OSU/CIMRS-NOAA/PMEL)*

Vents in each region, Endeavor, Axial and Cobb were sampled. The sampling techniques worked well most of the time. Samples with low weight should be considered to have greater error in gas concentrations. Some samples will add to time series that extend back to 1995. Others are from vents that were discovered more recently or have experienced an increase in activity. The total gas concentration can be taken as a good approximation of the concentration of carbon dioxide. Helium analyses will provide a measure of magmatic degassing into the hydrothermal system.

### Gas Sample Summary:

Dive	identifier	Bottle#	Vent	reported T (deg C)	sample wt (grams)	[gas] mmol/kg
J2-286	STBD	GT 16	Dante	332	150	21
J2-286	white	GT 17	Sully	230	72	12
J2-286	PORT	GT 2	Sully	230	153	12
J2-287	red	GT 9	Hulk	324	153	21
J2-287	PORT	GT 12	Hulk RAZZ	~100	192	7.9
J2-287	STBD	GT 18	Bastille	270	158	14
J2-288	black	GT 18	CASM (T&S)	309	148	49
J2-288	white	GT 17	CASM (T&S)	309	140	48
J2-289	green	GT 2	Casper	301.6	148	103
J2-290	PORT	GT 17	CASM (T&S)	309	157	50
J2-291	blue	GT 12	Trevi (near forum)	256	146	83
J2-291	red	GT 9	Trevi (near forum)	256	144	86
J2-291	black	GT 18	cloud	6.8	167	3.3
J2-291	STBD	GT 16	Mkr 33	21	162	6.9
J2-292	STBD	GT 17	Diva	276	39	459
J2-292	PORT	GT 2	ElGuapo	338	149	71
J2-293	STBD	GT 16	Mushroom	267	160	115
J2-293	blue	GT 12	V.M.	252	161	169
J2-293	black	GT 18	V.M.	252	23	226
J2-293	white	GT 17	Inferno	313	153	71
J2-294	orange	GT 16	Cobb segment	223	153	6.9
J2-294	STBD	GT 2	Cobb segment	164.7	161	5.1



## 4.5 Geology

### 4.5.1 Geologic mapping at Axial Volcano

*Dave Clague (MBARI)*

Parts of four dives were used to conduct geologic mapping of the 1998 lava flow and fissure system and the flows comprising the northern part of the caldera floor. These mapping efforts were undertaken to capitalize on the new AUV maps produced in 2006 and again during this cruise.

The northern caldera is dominated by extensive flows that erupted from the CASM fissure and flowed south and east, lapping onto all the adjacent flows we explored. These flows were explored during dive J2-288 that started at the CASM hydrothermal vents and traversed east and south. The flows have central channels of striated sheet flows, bounded by folded and jumbled sheet flows, which give way to lobate and finally to pillow lava near the margins of the flows. The sheet flows are a meter or so deeper than the surrounding lobate flows and the lobate flows adjacent to the sheet flows have common shallow collapses, but no pillars formed. The striated sheet flows appear as very low backscatter areas in the sidescan, whereas the jumbled sheet flows have moderate backscatter. Both are flat in the 1-m resolution bathymetry. Roughly half of a dozen chimney-like structures seen in the AUV bathymetry, each several meters tall and across, were found to be piles of jumbled sheet flow crusts that accumulated along channel margins.

Exploration of the flat pond adjacent to the eastern caldera wall showed that the CASM pillowed flow margins overflowed the levee surrounding the pond and pillows spilled onto the floor of the pond. The 'bathtub ring' around the pond is several meters tall and characterized by horizontal glass septa that mark the pond levels as it partially drained. The dozen or so mounds in the flat pond surface consist of the upper pond surface of lobate flows with steep sides, again showing septa in places that record the draining of the pond. Slabs of the pond crust are buckled over these islands and commonly are standing nearly vertical. The tops of most of the mounds are the same depth and mark the original pond surface. The pond drained about 4 meters of lava, leaving the islands and bathtub ring around the south and east margins. One small segment of the levee on the west side of the pond survived inundation by the CASM flows. The pond is younger than the flows to the south, having ponded against them, leaving a bathtub ring. We continued to explore to the south along the east caldera wall and reached a lobate flow with collapse structures that resemble skylights in subaerial flows. These collapses into an underlying tube system are spaced along a lava tube that fed this flow. The collapse structures have no lava ring and the bottom of the collapse is rubble, suggesting that the collapses occurred after the tube had drained and lava was no longer flowing.

A second dive, J2-290, started at the CASM vents and traversed south and southwest across the CASM flows, then across an older lobate flow with deep collapse pits along its axis, explored an unusual ponded lava flow, a steep cone, and some jumbled sheet flows. The CASM flows had similar structure to that seen on J2-288, with sheet flows surrounded by lobate and finally pillow lavas. The flow to the south was older, although superposition at the pillow-to-pillow margin was difficult to ascertain. However, the southern flow also had more sediment cover and more abundant animals on the flow top. This lava appears to have flowed along the western caldera wall and branched with one lobe north and northeast of the cone and the other west of the cone adjacent to the caldera wall. This flow is on top of a very flat horizontal pond immediately east of the steep cone. The pond surface has shallower islands arranged roughly in a circle or polygon, with one in the center. These appear to be levees that were breached as the flow extended in all directions. This structure may mark the vent for the large eastern pond explored on dive J2-288. We proceeded up onto the steep cone with a deep crater and found it to be older than any other flows we observed, as determined by the thick sediment cover between pillows. To the south of the cone, the mapping data show a texture like "patterned ground" in the bathymetry. This turned out to be jumbled sheet flows with small ridges of bulldozed crusts. This flow apparently originates near the southeast caldera wall and flowed westward, and then north along the west caldera wall, before flowing eastward into the central northern caldera floor.

Two subsequent dives explored the extent of the 1998 lava flows and eruptive fissures, continuing the ground truthing of the AUV maps that we started last year. The northern end of the 1998 flow and fissures ends near 45°56.57'N, south of a large channelized flow with abundant pillars near its eruptive fissure. Note this is considerably further south than had been interpreted previously from ROPOS dives and Imagenex data. The older flow to the north of the 1998 lava extends westward across the caldera floor, with lobes extending northwest and west. This older flow has abundant oxidized hydrothermal sediment along the trend of its eruptive fissure that is not seen on the 1998 flow. This older flow erupted from a fissure that is nearly in line with the 1998 fissures, and close to the east caldera wall. The second dive mapped the southern lobe of the 1998 flow along its western margin. All the flows in the area are young and have little sediment cover, so the mapping was very difficult. The margin mapped soon after the eruption was confirmed with some nuances determined. The main lobe of the 1998 flow exits the mapped region to the southeast, after being shunted eastward by a large (pre-1987) flow that erupted from a deep south-southwest oriented fissure and extends southward from the Bag City hydrothermal vents. The proximal channels of the 1998 flow have lobate margins with pillars. There is commonly a later veneer of jumbled sheet flows on the upper margin and small channel overflows usually consist of jumbled sheet flows. The lobate margin and lava pillars become less abundant down-flow and are absent south of about 45°55.18'N.

Another flow of striated sheet flows with jumbled levees occurs between the Bag City flow and the 1998 flow, starting about where the lobate margins stop. This flow issued from a small fissure between the 1998 fissures and Bag City fissure.

The visual mapping done from JASON using the AUV 1-m resolution maps as a base allows reconstruction of the eruption and emplacement of lava flows. We have learned what the different textures and backscatter values mean in terms of lava flow morphology and will use this knowledge to extend our interpretation of flows and stratigraphy to the entire mapped region on the summit of Axial volcano.

#### **4.5.2 MBARI Mapping AUV Missions**

The MBARI mapping AUV (*D. Allan B.*) is a torpedo shaped, 6000-m rated vehicle designed and constructed by MBARI. The vehicle is equipped with a 200 kHz multibeam sonar, 110 kHz and 410 kHz chirp sidescan sonar, and a 2-16 kHz sweep chirp sub-bottom profiler. The multibeam provides a 120-degree swath with 0.94 degree by 0.94 degree beam resolution. The endurance of the AUV is 8 hours at 3 knots. Navigation derives from an inertial navigation system (INS) incorporating a ring-gyro aided by GPS at the surface and by velocity over ground observations from a Doppler velocity log (DVL) when within 130 m of the sea floor. A navigational precision of 0.05% of distance traveled is achieved with continuous DVL bottom lock. An acoustic modem allows surface aiding of navigation during deep descents.

The MBARI Mapping AUV was launched four times during the cruise. The first two missions were successful and mapped the central eastern caldera floor and the northwestern caldera floor. We ran all missions with the sub-bottom profiler turned off since the missions last year failed to detect sediment. The missions this year on the caldera floor were planned to fly at 50 m altitude with a line-spacing of 170 m. Planned missions on the rim, run last year at 90 m with a 250 m line spacing, were to be run at 75 m altitude and line spacing of 250 m, but were never run. The AUV was tracked using the Nautronix USBL system on the R/V *Atlantis* with our Sonardyne beacon on the AUV. Communications for navigation updates during descents were done using our Benthos acoustic modem, although testing of the hull-mounted transducer used for voice communications to ALVIN, also worked. The first mission had a planned track length of 38.44 km, starting at 1543 m and ending at 1548 m. The second mission had a planned track length of 39.4 km, starting at 1556 m and ending at 1587 m. The third and fourth missions were aborted soon after arrival at or near the seafloor when the Doppler Velocity Log DVL failed to detect the bottom, and the missions were aborted using the acoustic modem. Post-mission troubleshooting revealed that seawater had leaked into the Doppler pressure housing, apparently through the sonar head(s) of the DVL. With no spare sonar heads, nor replacement electronics for the DVL, repairs could not be done at sea.

#### **4.5.3 Rock and Sediment Sampling**

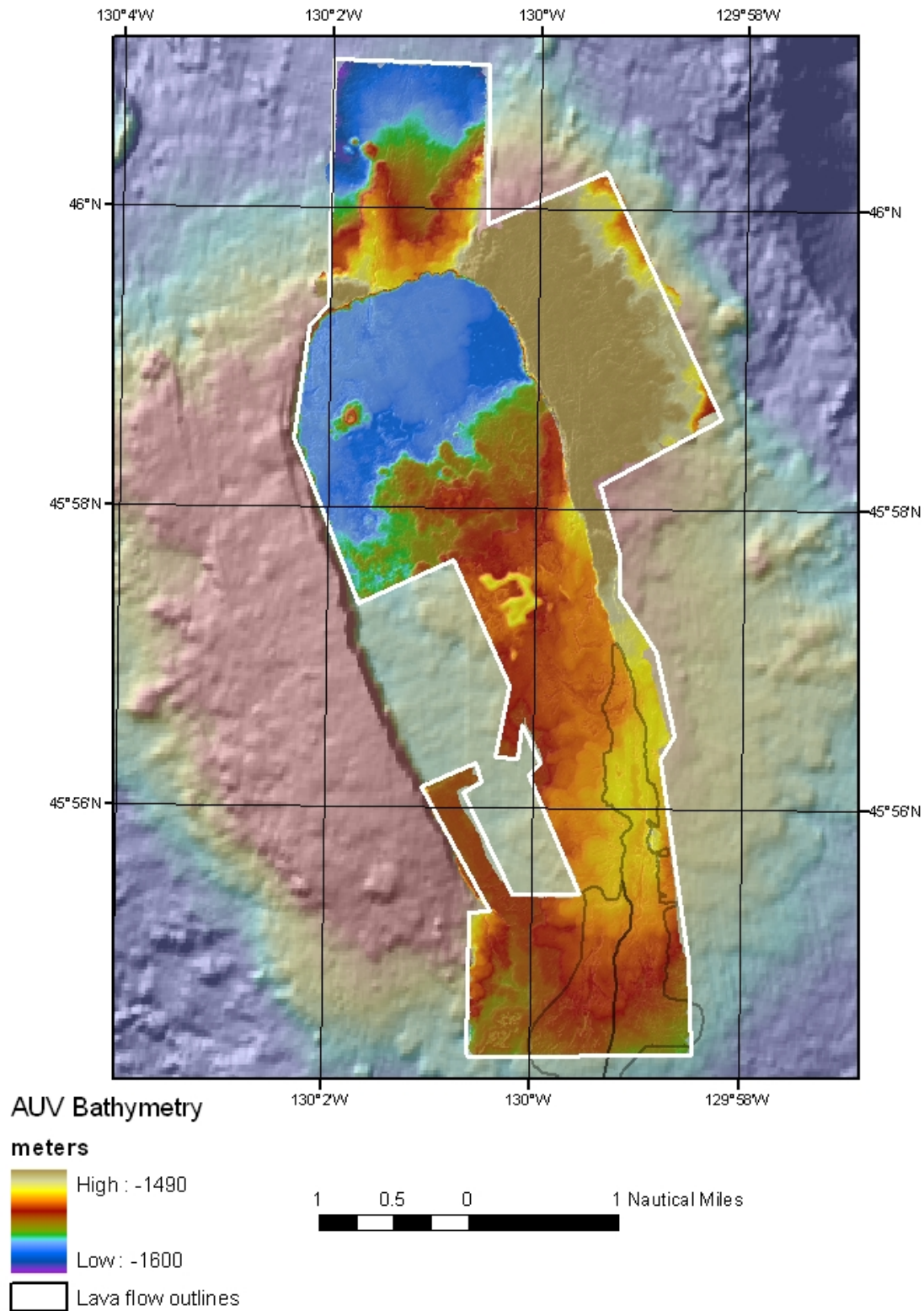
Lava samples were collected during most dives to augment the collections made previously. In particular, samples were collected along the dives in the northern part of Axial caldera and on the two Cobb dives (J2-294 and J2-295). The Cobb dives also recovered single scoop bags of sediment to determine if pyroclastic eruptions have produced glass bubble-wall fragments and Pele's hair as Clague has observed at numerous other sites along the ridge system. Both samples contain abundant glass particles, but the determining the presence of pyroclastic particles awaits processing in the lab and examination under the microscope.

Sulfide samples from chimneys were also recovered from three locations. The first sample was recovered at the Endeavour site during dive J2-286 on the Medea. It consists of a 50-cm square slab, presumably a flange on one of the large chimneys. The second is a collection of fragments from the El Guapo chimney recovered during dive J2-292 that includes pieces of thin chimney walls lined with chalcopyrite and anhydrite. The final sample is a 50-cm section of chimney collected during dive J2-293 from Phoenix chimney in the ASHES vent field. The Endeavour and Phoenix samples will be sent to Meg Tivey (WHOI). The El Guapo chimney samples will go to Mark Hannington (Univ of Ottawa) for sulfide geochemistry and Volker Luders (GFZ Potsdam, Germany) for fluid inclusion and isotope analysis.

#### **4.5.4 Gravity Coring**

Two gravity cores on the rim of the caldera attempted to recover a 2-m section of volcanoclastic and hydrothermal deposits, but both cores bounced on the hard surface. The drop rate on the winch was inadequate to achieve penetration and the core barrel fell over. Push-core and short vibra-core samples of this deposit show it to consist largely of pyroclastic glass particles and fine green hydrothermal clays. The deposit may record the collapse of the caldera.

# AUV Bathymetry Coverage



MBARI AUV bathymetry coverage (including both 2006 and 2007 surveys).

## 4.6 Geophysics: Time-series Pressure Measurements at Axial Volcano

*Scott Nooner (LDEO) and Bill Chadwick (OSU/CIMRS-NOAA/PMEL)*

Pressure measurements have been made at Axial seamount since 2000 in order to see if the volcano has been re-inflating since its eruption in 1998. These measurements are among the first to attempt to measure vertical deformation on a sub-sea volcano. Previous results have shown that the volcano appeared to be inflating up to 19 cm/yr, but large measurement uncertainty in the first few years leads to uncertainty in the long term rate. Last year's more precise measurements showed an uplift rate of about 10 cm/yr, less than the previous trend.

The pressure measurements this year were made on JASON dive J2-289, from about 05:00 UTM on 8/10/07 to 01:00 UTM on 8/12/07. The 2007 survey was carried out in precisely the same way as last year's survey during an approximately 45 hour dive of the JASON, which included about 9 hours of fluid sampling. The average transit speed for towing JASON from benchmark to benchmark was about 1 knot, while last year with ROPOS the average transit speed was less than 0.8 knots. The slower transit speed of ROPOS was primarily due to its new configuration with its cage. JASON used long baseline navigation and was able to find most benchmarks quickly within a few meters of the target. One pressure transect this year took about 12 hours, while last year it was about 15 hours per transect.

Measurements were made by placing the MPR (mobile pressure recorder) on top of benchmarks that were put on the seafloor in 1999. Data collection was the same as in 2004 and 2006. The pressure sensor had a flat plate on the bottom to make the exact orientation of the sensor repeatable from measurement to measurement. The sensor was aligned with a specific side of each triangular benchmark, again to increase repeatability. 20 minutes of data were recorded at each site on a laptop PC in the JASON control room. Measurements were made on five benchmarks (AX63-Caldera Center, AX01-Magnesia, AX05-Marker 33, AX04-Bag City, and AX66-Pillow Mound). AX01, AX05, and AX04 were visited three times each, while AX 63 and AX66 were visited twice each. AX66 is the reference benchmark and is located about 10 km south of the caldera center, outside the area of expected deformation. The pressure data was converted to depth then corrected for varying ocean tides using the worldwide tide model SPOTL. The uncertainty in the measurements is given by the scatter of repeated measurements at each benchmark. The repeatability this year after correcting for ocean tides using the SPOTL model is 1.2 cm. The repeatability may be slightly improved by using real tide data from BPR (Bottom Pressure Recorder) data, which we have recovered but not incorporated yet. In future years, we need to remember to coordinate the BPR deployments & recoveries with the ROV pressure dives. This year we had to recover and redeploy the BPR at the center of the caldera (it was deployed twice) in order to get BPR data during the time of the 2007 pressure dive.

Comparing the 2006 depths to previous years shows that inflation is continuing in the caldera relative the AX66. Benchmark AX63 at the center of the caldera was uplifted by about 10 cm since 2006. The amount of inflation decreases generally with distance from the caldera center, which fits with previous year's observations (and a Mogi model). The inflation rate is greatest at the caldera center (AX63) and decreases to the south. A linear inflation trend does not fit the data well over the entire 6 years. This may be due to a decrease in the inflation rate with time.

## 4.7 Jason HD Camera

*Bill Chadwick (OSU/NOAA) and Evan Kovacs (WHOI)*

This year we had an experimental HDTV camera on Jason that took the place of the 3-chip science camera, a pilot project funded by WHOI and NOAA/OE. The HDTV video feed was recorded continuously to DVcam tape and DVD, and selectively to various HD tape media. In addition, images sequences (usually one frame per second, but occasionally 30 frames per second) were recorded to a RAID hard-disk system for evaluation purposes after the cruise.

### Log of HDTV video recordings to HD Tape:

Date	Dive	Recording Media	TC In	TC Out	Event
			1:27:00	1:30:00	Jason Launch (Jason POV)
8/5/2007	J2-286	HD CAM 001	1:45:00	1:53:36	Jason Recovery (thruster problem with Jason)
8/5/2007	J2-286	HD CAM 001	5:42	5:45:06	Smokers at Grotto
8/5/2007	J2-286	HD CAM 001	5:59:00	6:02:43	Smokers at Grotto cont.
8/5/2007	J2-286	HD CAM 001	6:06:00	6:29:24	Smokers at Grotto cont.
8/5/2007	J2-286	HD CAM 001	6:49:00	6:58:00	Smokers at Grotto cont.
8/5/2007	J2-286	HD CAM 001	13:10	13:12:46	Smokers at Dante
8/5/2007	J2-286	HD CAM 001	14:38	14:46:43	Tube worms at Dante

Date	Dive	Recording Media	TC In	TC Out	Event
8/5/2007	J2-286	HD CAM 001	14:56	14:57:58	Traveling away from Dante
8/5/2007	J2-286	HD CAM 001	15:51	15:59:31	Sampling at Easter Island
8/5/2007	J2-286	HD CAM 001	16:11	16:17:55	Cruising around Easter Island
8/5/2007	J2-286	HD CAM 001	16:23	16:28	Sulfite Column at Easter Island
8/5/2007	J2-286	HD CAM 001	16:39:30	16:42:43	Transiting and Crab
8/5/2007	J2-286	HD CAM 001	16:53	17:02:38	Smoke n Mirrors Vent
8/5/2007	J2-286	HD CAM 001	17:37:33	17:38:15	Jason Test 1 - Gain at 8 initiallt, I 2.02 NOT VERY GOOD
8/5/2007	J2-286	HD CAM 001	17:48	17:49:03	Jason Test 2 - Gain at 8, I -1.8, F-1.35, Z - 5.16 - Traveling and basalt column
8/5/2007	J2-286	HD CAM 001	17:50:00	17:53:00	Jason Test 3 - G-4, I-1.8, F - 1.35, Z - 5.16 Needle Vent
8/5/2007	J2-286	HD CAM 001	17:54:00	cont	Jason Test 4
8/5/2007	J2-286	HD CAM 001	17:56:00	cont	Jason Test 4 - G - 1.3, I - 1.8,
8/5/2007	J2-286	HD CAM 001	17:57:45	cont	Jason Test 4 - G - 3.8, I 2.95
8/5/2007	J2-286	HD CAM 001	17:59:00	cont	Jason Test 4 (about 1 meter away) G 3.8, I 2.95, ZOOM 13.7 (no more focus)
8/5/2007	J2-286	HD CAM 001	18:02:43	cont	Jason Test 4 Z- 41.862, F- 1.0, I, 3.68
8/5/2007	J2-286	HD CAM 001	18:04:00	cont	Jason Test 4 G - 1.8, I -3.12, Z - In
8/5/2007	J2-286	HD CAM 001	18:08:40	18:13:00	Jason Test 4 G - 3.23, I- 2.13, F - 1.17
8/5/2007	J2-286	HD CAM 001	18:22:54	cont	Jason Test 5 - Sully Site G3.4, I-1.8, F-1.3
8/5/2007	J2-286	HD CAM 001	18:26:00	18:43:28	JASON TEST 5 - Z 34.19, F-1.14
8/5/2007	J2-286	HD CAM 002	19:35	19:37	Hulk Site - approach RAS
8/5/2007	J2-286	HD CAM 002	19:42	2:27	Hulk Site cont
8/5/2007	J2-286	HD CAM 002	20:32	20:34	Sampling near RAS
8/5/2007	J2-286	HD CAM 002	20:40	20:59	Sending up RAS
<b>BARS</b>	<b>BARS</b>	<b>BARS</b>	<b>BARS</b>	<b>BARS</b>	<b>BARS</b>
8/7/2007	J2-287	HD CAM 002	3:02:40	3:05:11	Sulfite on way to Torn G - 3.8, I -1.8
8/7/2007	J2-287	HD CAM 002	3:26	3:32:15	Pick up RAS near Endeavor Field
8/7/2007	J2-287	HD CAM 002	5:20:49	5:28:50	Drop RAS at Easter Island G2.21, I1.8, @ 5:23 G3.2, I2.8
8/7/2007	J2-287	HD CAM 002	5:31	5:33	Nice RAS shot? G1.9, I2.3
8/7/2007	J2-287	HD CAM 002	5:51:56	5:59:00	C/Uof fish near RAS
8/7/2007	J2-287	HD CAM 002	6:08	6:18	Jason Test 1 Panorama E.I. G2.9, I 1.8, Z4.3, F1.19. @6:14 pan opposite direction G7, I2.13
8/7/2007	J2-287	HD CAM 002	6:21	6:23	RAS on bottom G2.8, I 1.8
8/7/2007	J2-287	HD CAM 002	6:30	6:31:34	Needle Recording
8/7/2007	J2-287	HD CAM 002	6:34:30	6:40:45	Looking for Bastille
8/7/2007	J2-287	HD CAM 002	6:53	6:59	Test 2 Bastille G3.78, I2.85
8/7/2007	J2-287	HD CAM 002	7:15	7:20	Test 3 Looking for new Vent G2.5, I2.09 @7:18 G5.59, I1.8
8/7/2007	J2-287	HD CAM 002	7:37	7:41	Smoke and Mirrors (SnM)
8/7/2007	J2-287	HD CAM 003	13:21	13:24:44	Hulk Site
8/7/2007	J2-287	HD CAM 003	13:30:15	13:38	Test 4 Panoramic of Hulk Low G3.4, I1.8 @13:34 reversre G6.5, I 2.06
8/7/2007	J2-287	HD CAM 003	13:42	13:46	Test 5 Top of Hulk G2.8, I1.8
8/7/2007	J2-287	HD CAM 003	13:51	14:08	TEST 6 Panoramic Hulk Upper G5.9, I2.8 diff end times on test with SR and DV Cam
				14:35	BARS
8/9/2007	J2-288	HD CAM 003	2:57:55	3:05:15	T&S Spire G8, I1.8
8/9/2007	J2-288	HD CAM 003	3:06:24	3:09:15	T&S cont

Date	Dive	Recording Media	TC In	TC Out	Event
8/9/2007	J2-288	HD CAM 003	3:27:52	3:30:09	T&S G3.8, I moving
8/9/2007	J2-288	HD CAM 003	4:13	4:18:33	T&S Worm Sampling G7.7, I3.5
			4:21	4:23:00	T&S Sampling cont.
8/9/2007	J2-288	HD CAM 003	4:33:30	4:42	Tube Worm Column G5.5
8/9/2007	J2-288	HD CAM 003	4:46	4:49:43	Tube worm sampling G3.8
8/9/2007	J2-288	HD CAM 003	4:54	4:59:33	TS Smoker
8/9/2007	J2-288	HD CAM 003	5:22:50	5:26:30	CU on bottom lava
8/9/2007	J2-288	HD CAM 003	5:27:20	5:35:33	Lamphier Chimneys
8/9/2007	J2-288	HD CAM 003	5:49:30	5:51:26	Talus Stone G7.5
8/9/2007	J2-288	HD CAM 003	6:18:00	6:21:14	p/u Talus Stone G7.5
8/9/2007	J2-288	HD CAM 003	7:11	7:16:12	Exploration along southern ridge G7.5
8/9/2007	J2-288	HD CAM 003	7:21:50	7:23:30	Flow areas
8/9/2007	J2-288	HD CAM 003	7:59	7:59:50	Skate/ray
8/9/2007	J2-288	HD CAM 003	9:04:30	9:06:13	Pillow Rocks
8/9/2007	J2-288	HD CAM 003	10:33	10:37:58	Drain Back
8/9/2007	J2-288	HD CAM 003	10:44	10:49:25	Drain Back along wall
8/9/2007	J2-288	HD CAM 003	10:53	10:54	Crab eating
8/9/2007	J2-288	HD CAM 003	11:48	12:05	Edge of Lava Lake
8/10/2007	J2-289	HD CAM 004	5:37:01	5:39:04	Caldera Sampler 11 G2, I 2.8
8/10/2007	J2-289	HD CAM 004	8:30:30	8:32:20	Approach Magnesia G8, I 1.8
8/10/2007	J2-289	HD CAM 004	8:42	8:43:41	Magnesia
8/10/2007	J2-289	HD CAM 004	10:30	10:32:30	Approaching Marker 33 G8, I 1.8
8/10/2007	J2-289	HD CAM 004	10:36:28	10:38	2 Mkrs????
8/10/2007	J2-289	HD CAM 004	10:45	10:47	Crab attack
8/10/2007	J2-289	HD CAM 004	17:35:30	17:51:40	S. Pillow Mount and Crack
8/10/2007	J2-289	HD CAM 004	22:04:36	22:06:45	Moving Away from Bag City
8/11/2007	J2-289	HD CAM 004	0:24:00	0:27:00	Approaching temp sensors Marker 33
8/11/2007	J2-289	HD CAM 004	0:54:40	0:57:31	Gathering instruments
8/11/2007	J2-289	HD CAM 004	15:36:00	15:57:12	Marker 57
8/11/2007	J2-289	HD CAM 004	16:48	16:54	Flow around Marker 57
8/11/2007	J2-289	HD CAM 004	19:21:43	19:28:34	Bag Citu close ups
8/11/2007	J2-289	HD CAM 004	20:23:21	20:31:50	Search around Bag City
8/11/2007	J2-289	HD CAM 004	1:07:37	cont	Search along crack in south G5, Shutter 2, I 1.8
8/11/2007	J2-289	HD CAM 004	1:13:16	cont	G6
8/11/2007	J2-289	HD CAM 004	1:18:30	cont	G5.5
8/11/2007	J2-289	HD CAM 004	1:27:40	cont	G6.5
8/11/2007	J2-289	HD CAM 004	1:30:30	cont	G7.5, Shutter 1
8/11/2007	J2-289	HD CAM 004	1:35:00	1:49:05	G8, Shutter 0
8/13/2007	J2-290	HD CAM 005	4:51:56	5:00:53	T&S Spires G 5.6, I 1.8, Shutter 3
8/13/2007	J2-290	HD CAM 005	6:12:15	6:14:31	T&S Sampling
8/13/2007	J2-290	HD CAM 005	7:27:00	7:25:08	Sampling Shepherd Vent G4, Shutter 4
8/14/2007	J2-291	HD CAM 005	2:57:00	3:03	BARS and Launch
8/14/2007	J2-291	HD CAM 005	7:17:05	7:21:00	Travel to S. Edge of Zen Garden
8/14/2007	J2-291	HD CAM 005	10:06:56	10:12:07	N3 Area search - purple matt
8/14/2007	J2-291	HD CAM 005	10:17:50	10:25:36	Sample Purple matt
8/14/2007	J2-291	HD CAM 005	11:31:00	11:49:00	Sample and Beauty of purple area
8/14/2007	J2-291	HD CAM 005	11:51:43	12:07:27	Sample and Beauty of purple area cont.
8/14/2007	J2-291	HD CAM 005	14:43:55	14:44:49	Cool Vent



Date	Dive	Recording Media	TC In	TC Out	Event
8/14/2007	J2-291	HD CAM 005	15:54:50	16:01:13	TEST G8, I 1.8, S 1 - East of Magnesia PANORMAMA
8/14/2007	J2-291	HD CAM 005	16:02	cont	Canyon with spires near Magnesia
8/14/2007	J2-291	HD CAM 005	16:11:20	16:17:41	Panorama
8/14/2007	J2-291	HD CAM 005	16:43:45	16:58:41	Transit
8/14/2007	J2-291	HD CAM 005	19:53:00	19:55	Transit
8/14/2007	J2-291	HD CAM 005	20:27	20:28:00	Transit
8/14/2007	J2-291	HD CAM 005	20:35	20:36:25	Transit
8/15/2007	j2-292	HD CAM 006	12:52:20	13:02:07	Village G5.2, 1.8, S2
8/15/2007	J2-292	HD CAM 006	13:04:14	13:05:47	Approach Vent
8/15/2007	J2-292	HD CAM 006	14:24:25	14:27:00	Not much
8/15/2007	J2-292	HD CAM 006	14:28:25	14:34:31	El Guapo Spire - very nice
8/15/2007	J2-292	HD CAM 006	14:49:00	14:57:55	El Guapo Column G4.2, S4
8/15/2007	J2-292	HD CAM 006	15:18:00	15:32:00	Top of Column
8/15/2007	J2-292	HD CAM 006	15:50:00	15:53:00	Other Column
8/15/2007	J2-292	HD CAM 006	16:06:00	16:10:24	Hermosa
8/15/2007	J2-292	HD CAM 006	16:29:00	16:35:00	Escargot
8/15/2007	J2-292	HD CAM 006	17:33:00	17:39:00	Wide and dark column
8/15/2007	J2-292	HD CAM 006	17:52:00	17:56:00	CU Sampling
8/16/2007	J2-292	HD CAM 006	0:24:00	0:31:00	Search
8/16/2007	J2-292	HD CAM 006	5:44:00	5:48:00	Striated Column, Sample
8/16/2007	J2-293	HD CAM 006	20:30:56	20:31:16	BARS BARS BARS
8/16/2007	J2-293	HD CAM 006	21:09:00	21:11:13	Anhydrite sampling
8/16/2007	J2-293	HD CAM 006	21:46:20	21:47	Gollum
8/16/2007	J2-293	HD CAM 006	23:42:00	23:49:00	Gollum Sampling CU and wide
8/16/2007	J2-293	HD CAM 006	23:55:00	23:59:00	Gollum Wide departing
8/17/2007	J2-293	HD CAM 006	0:32:30	0:45:00	Inferno Survey
8/17/2007	J2-293	HD CAM 006	1:44:49	1:48:25	Beauty Inferno
8/17/2007	J2-293	HD CAM 006	1:53:03	2:03:33	Hell Wides
8/17/2007	J2-293	HD CAM 006	2:42:31	2:46:50	Phoenix
8/17/2007	J2-293	HD CAM 006	4:28:23	4:32:25	Hair-Do
8/18/2007	J2-294	HD CAM 007	9:15:00	9:19:00	New Columns
8/18/2007	J2-294	HD CAM 007	11:40:00	11:48:00	New Columns
8/18/2007	J2-294	HD CAM 007	12:08:20	12:10:00	New Vents
8/18/2007	J2-294	HD CAM 007	12:15:00	12:22:00	New Vents
8/18/2007	J2-294	HD CAM 007	16:32:00	16:51:00	Sampling New Vents
8/18/2007	J2-294	HD CAM 007	17:14:00	17:19:00	Sampling New Vents
8/19/2007	J2-295	HD CAM007	3:33:00		Launch

**Listing of HDTV video sequences captured to the RAID hard disk drive during NeMO 2007:**

Dive number	Start time	End time	Duration (s)	File size (Mb)	Description
J2-286	8/5/07 1:26	8/5/07 1:30	227.92	923.515	Jason Launch
J2-286	8/5/07 2:27	8/5/07 2:28	35.99	145.819	Topside Launch
J2-286	8/5/07 4:03	8/5/07 4:05	135.95	550.869	Homer 97

<b>Dive number</b>	<b>Start time</b>	<b>End time</b>	<b>Duration (s)</b>	<b>File size (Mb)</b>	<b>Description</b>
J2-286	8/5/07 4:29	8/5/07 4:30	45.98	186.324	Misc Descent to mooring ball
J2-286	8/5/07 4:45	8/5/07 4:51	381.86	1,547.292	Marker G (Grotto)
J2-286	8/5/07 5:41	8/5/07 5:49	489.82	1,984.746	Smokers at Grotto 1
J2-286	8/5/07 5:59	8/5/07 6:03	237.91	964.020	Smokers at Grotto 2
J2-286	8/5/07 6:05	8/5/07 6:16	614.77	2,491.059	Smokers at Grotto 3
J2-286	8/5/07 6:18	8/5/07 6:33	917.66	3,718.360	Sampling vents in Grotto
J2-286	8/5/07 6:49	8/5/07 7:06	1025.62	4,155.814	Tube worms at Grotto
J2-286	8/5/07 14:38	8/5/07 14:50	701.74	2,843.452	Dante vent
J2-286	8/5/07 14:56	8/5/07 14:58	136.95	554.920	Moving away from Dante
J2-286	8/5/07 15:29	8/5/07 15:31	113.96	461.758	Homer CU
J2-286	8/5/07 15:44	8/5/07 15:46	166.94	676.435	Unknown instrument
J2-286	8/5/07 15:50	8/5/07 16:01	663.75	2,689.533	Sampling at Easter Island 1
J2-286	8/5/07 16:01	8/5/07 16:02	63.98	259.233	Sampling Easter Island 1.1
J2-286	8/5/07 16:11	8/5/07 16:32	1231.54	4,990.217	Sampling at Easter Island 2
J2-286	8/5/07 16:44	8/5/07 16:50	330.88	1,340.717	Transit to S&M
J2-286	8/5/07 16:53	8/5/07 16:58	308.89	1,251.606	S&M wide and close
J2-286	8/5/07 16:59	8/5/07 17:11	684.75	2,774.594	30/sec with HD Cam
J2-286	8/5/07 17:00	8/5/07 17:27	1572.42	6,371.438	30/sec with HD Cam S&M
J2-286	8/5/07 17:37	8/5/07 18:03	1557.42	6,310.680	30/sec Test 1
J2-286	8/5/07 17:42	8/5/07 18:00	1091.60	4,423.147	Dudley
J2-286	8/5/07 17:47	8/5/07 18:28	2459.09	9,964.231	30/sec Test 2
J2-286	8/5/07 17:50	8/5/07 19:17	5252.06	21,281.328	30/sec Test 3
J2-286	8/5/07 17:54	8/6/07 3:21	34020.40	137,850.668	30/sec Test 4
J2-286	8/5/07 18:22	8/6/07 4:51	37697.04	152,748.407	30/sec Test 5
J2-287	8/6/07 18:56	8/6/07 19:00	260.90	1,057.182	Mooring Ball 1
J2-287	8/6/07 19:03	8/6/07 19:05	67.98	275.435	Mooring Ball 2
J2-287	8/7/07 0:17	8/7/07 0:24	469.83	1,903.736	Placing mooring
J2-287	8/7/07 0:32	8/7/07 0:35	212.92	862.758	Top of mooring
J2-287	8/7/07 1:24	8/7/07 1:27	140.95	571.122	Dante from a distance
J2-287	8/7/07 2:55	8/7/07 3:00	276.90	1,121.990	Bottom on way to RAS
J2-287	8/7/07 3:01	8/7/07 3:05	278.90	1,130.091	Sulfide on bottom
J2-287	8/7/07 3:11	8/7/07 3:14	185.93	753.394	Sulfide pillar
J2-287	8/7/07 3:24	8/7/07 3:32	467.83	1,895.635	Pick up RAS and move
J2-287	8/7/07 3:37	8/7/07 3:37	14.99	60.759	Elise Rexfield
J2-287	8/7/07 3:38	8/7/07 3:38	3.00	12.153	Stills of arm and RAS
J2-287	8/7/07 3:54	8/7/07 3:56	160.94	652.132	Drop TAS and geology
J2-287	8/7/07 3:58	8/7/07 3:59	38.99	157.971	Top of floats on RAS
J2-287	8/7/07 4:17	8/7/07 4:21	259.90	1,053.131	Crab
J2-287	8/7/07 4:25	8/7/07 4:30	267.90	1,085.535	Sampling at Easter Island
J2-287	8/7/07 4:49	8/7/07 4:50	17.99	72.910	Devil crab
J2-287	8/7/07 5:16	8/7/07 5:33	979.64	3,969.491	Moving RAS
J2-287	8/7/07 5:37	8/7/07 5:40	217.92	883.010	Deploying RAS
J2-287	8/7/07 5:45	8/7/07 5:46	94.97	384.799	Temp probe at RAS
J2-287	8/7/07 5:55	8/7/07 6:04	530.80	2,150.817	More RAS stuff on bottom
J2-287	8/7/07 6:08	8/7/07 10:55	17198.63	69,688.854	30/sec Test 1 Panorama of Easter Island
J2-287	8/7/07 6:34	8/7/07 6:41	412.85	1,672.858	Recording of formations on the bottom while looking for Bastille
J2-287	8/7/07 6:45	8/7/07 6:54	505.81	2,049.554	Beauty stills along Bastille
J2-287	8/7/07 6:54	8/7/07 9:08	8014.03	32,472.860	30/sec Test 2

<b>Dive number</b>	<b>Start time</b>	<b>End time</b>	<b>Duration (s)</b>	<b>File size (Mb)</b>	<b>Description</b>
J2-287	8/7/07 7:15	8/7/07 9:43	8871.71	35,948.189	30/sec Test 3 Column around Bastille
J2-287	8/7/07 7:34	8/7/07 7:41	404.85	1,640.454	S&M vent
J2-287	8/7/07 7:47	8/7/07 7:50	214.92	870.859	S&M sampling
J2-287	8/7/07 10:07	8/7/07 10:09	87.97	356.445	Hulk looking for tube
J2-287	8/7/07 13:14	8/7/07 13:21	393.85	1,595.898	Sampling at Hulk
J2-287	8/7/07 13:30	8/7/07 17:50	15654.20	63,430.831	30/sec Test 4 Panorama Hulk lower part
J2-287	8/7/07 13:41	8/7/07 16:29	10060.27	40,764.233	30/sec Test 5 Moving around Hulk
J2-287	8/7/07 13:51	8/7/07 22:22	30663.64	124,249.089	30/sec Test 6 Panorama on upper Hulk
J2-288	8/9/07 2:54	8/9/07 3:23	1733.36	7,023.568	T&S Spires 1
J2-288	8/9/07 3:27	8/9/07 4:08	2417.11	9,794.110	T&S Spires 2
J2-288	8/9/07 4:10	8/9/07 4:10	1.11	4.502	Tubeworm sampling at T&S
J2-288	8/9/07 4:11	8/9/07 4:12	38.99	157.971	Nice stills maybe
J2-288	8/9/07 4:28	8/9/07 4:40	697.74	2,827.250	Sampling and Bio Box at TS
J2-288	8/9/07 4:34	8/9/07 4:50	982.64	3,981.643	Sampling of tubeworms at T&S Spires
J2-288	8/9/07 4:54	8/9/07 5:59	3922.55	15,894.163	Sampling and searching
J2-288	8/9/07 6:09	8/9/07 6:23	857.68	3,475.330	Talus WS
J2-288	8/9/07 6:48	8/9/07 8:16	5294.04	21,451.449	Long search of southern ridge
J2-288	8/9/07 9:23	8/9/07 9:25	113.96	461.758	Cliff into lava pond
J2-288	8/9/07 9:29	8/9/07 9:31	82.97	336.193	At the cliff looking for a rock sample
J2-288	8/9/07 9:38	8/9/07 9:41	165.94	672.384	Looking at cliff
J2-288	8/9/07 9:42	8/9/07 9:48	369.86	1,498.686	Driving along edge of lava lake
J2-288	8/9/07 9:53	8/9/07 9:54	10.00	40.506	Lava lake edge - 10 sec
J2-288	8/9/07 9:54	8/9/07 9:55	16.99	68.860	Ascending edge of lava lake
J2-288	8/9/07 10:02	8/9/07 10:03	15.99	64.809	Driving along pillows
J2-288	8/9/07 10:09	8/9/07 10:09	14.99	60.759	Floor of lake pillows over jumbled sheet flows
J2-288	8/9/07 10:11	8/9/07 10:12	17.99	72.910	Floor of lake sheet flows and tumulus
J2-288	8/9/07 10:15	8/9/07 10:16	19.99	81.011	Tumulus shatter ring
J2-288	8/9/07 10:20	8/9/07 10:21	27.99	113.415	Sheet to bull-dozed flow
J2-288	8/9/07 10:24	8/9/07 10:24	18.99	76.961	Blob sculpin
J2-288	8/9/07 10:27	8/9/07 10:59	1900.30	7,700.002	Drain back and exploration
J2-288	8/9/07 11:47	8/9/07 14:19	9104.63	36,891.955	Exploration of lava lake southern wall
J2-289	8/10/07 3:35	8/10/07 3:37	73.97	299.738	Launch in water
J2-289	8/10/07 5:16	8/10/07 5:23	424.84	1,721.464	Caldera center marker pressure
J2-289	8/10/07 8:28	8/10/07 8:32	275.90	1,117.939	Searching for Magnesia
J2-289	8/10/07 8:35	8/10/07 8:44	552.80	2,239.928	Magnesia pressure
J2-289	8/10/07 10:31	8/10/07 10:38	405.85	1,644.504	Pressure test Marker 33
J2-289	8/10/07 10:47	8/10/07 10:53	353.87	1,433.878	Approach Marker 33
J2-289	8/10/07 10:54	8/10/07 11:00	376.86	1,527.040	Crab on site
J2-289	8/10/07 17:35	8/10/07 17:51	964.64	3,908.734	South Pillow Mound and crack
J2-289	8/10/07 21:47	8/10/07 21:55	475.82	1,928.039	Bag City Marker pressure
J2-289	8/10/07 22:04	8/10/07 22:06	112.96	457.708	Retrieving sensor Bag City
J2-289	8/11/07 0:11	8/11/07 0:30	1147.58	4,649.975	Sampling Near Benchmark 53
J2-289	8/11/07 0:51	8/11/07 1:48	3454.72	13,998.529	Marker 33
J2-289	8/11/07 10:41	8/11/07 10:50	543.80	2,203.473	Mrk33 TWG
J2-289	8/11/07 16:21	8/11/07 16:55	2047.24	8,295.425	Marker 57, sampling vents and flow
J2-289	8/11/07 17:25	8/11/07 17:58	2010.26	8,145.557	Closeups around Marker 57
J2-289	8/11/07 18:06	8/11/07 18:30	1399.48	5,670.701	Travel to Bag City
J2-289	8/11/07 19:18	8/11/07 19:43	1504.44	6,096.004	Close ups Bag City

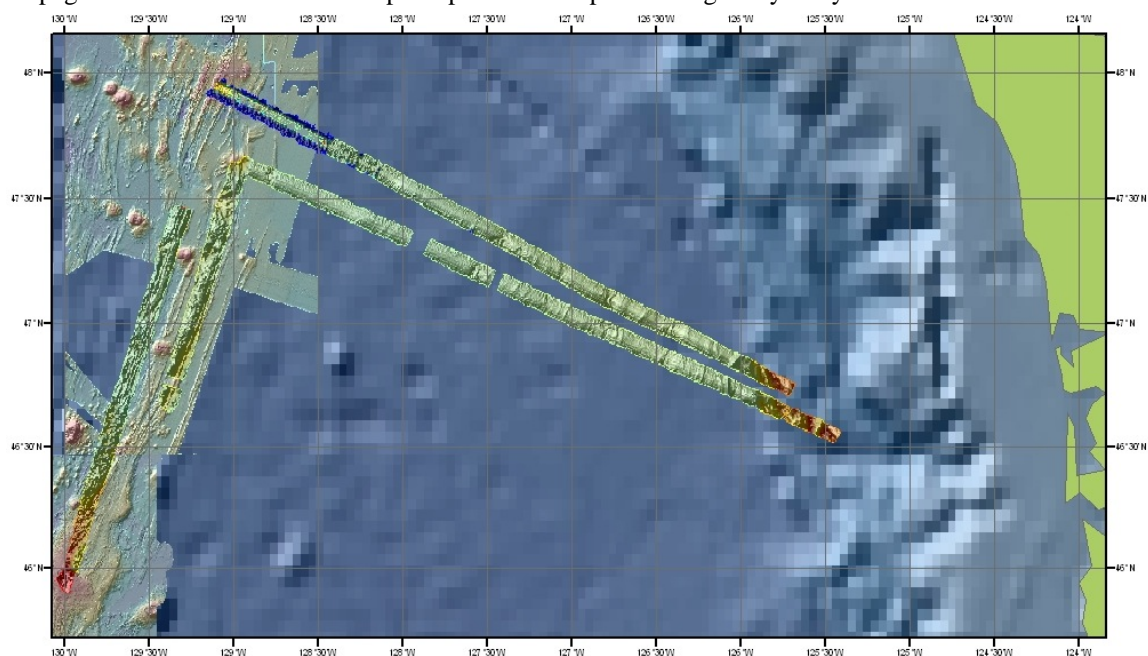
<b>Dive number</b>	<b>Start time</b>	<b>End time</b>	<b>Duration (s)</b>	<b>File size (Mb)</b>	<b>Description</b>
J2-289	8/11/07 19:44	8/11/07 20:14	1804.33	7,311.154	30/sec Tubes
J2-289	8/11/07 20:20	8/11/07 20:31	682.75	2,766.493	Fly by of Bag City
J2-289	8/12/07 1:03	8/12/07 1:49	2740.99	11,106.472	Search along southern crack
J2-290	8/13/07 4:35	8/13/07 5:03	1712.37	6,938.508	T&S Spires
J2-290	8/13/07 5:26	8/13/07 5:45	1143.58	4,633.773	Sampling at T&S Spires
J2-290	8/13/07 7:09	8/13/07 7:14	287.89	1,166.545	Octopus
J2-290	8/13/07 7:23	8/13/07 7:54	1849.32	7,493.426	Sampling at Shepherd vent
J2-290	8/14/07 2:53	8/14/07 3:14	1248.54	5,059.076	Launch
J2-291	8/14/07 6:08	8/14/07 6:12	255.91	1,036.929	Cloud survey for limpets
J2-291	8/14/07 6:16	8/14/07 6:18	130.95	530.617	Cloud N4 survey
J2-291	8/14/07 7:13	8/14/07 7:35	1341.50	5,435.772	S. end of Zen Garden Sampling
J2-291	8/14/07 7:51	8/14/07 7:51	2.00	8.102	Crab
J2-291	8/14/07 8:14	8/14/07 8:38	1489.45	6,035.246	Sampling and survey at vents around Zen
J2-291	8/14/07 9:28	8/14/07 10:45	4657.28	18,871.281	N3 survey and sample
J2-291	8/14/07 11:33	8/14/07 11:34	63.98	259.233	Purple Matt
J2-291	8/14/07 11:34	8/14/07 12:08	2049.24	8,303.526	Marker 52 and other purple matt sample, survey and beauty
J2-291	8/14/07 14:42	8/14/07 14:48	307.89	1,247.555	Cool spire
J2-291	8/14/07 15:46	8/14/07 15:46	4.00	16.203	Lava Formation...
J2-291	8/14/07 15:54	8/14/07 19:14	11972.57	48512.84	Panorama - test G8, shutter 1, I 1.8
J2-291	8/14/07 16:02	8/14/07 16:18	932.65	3,779.118	Survey and panorama near Forum
J2-291	8/14/07 16:20	8/14/07 16:21	76.97	311.890	Rat Tail Fish
J2-291	8/14/07 16:28	8/14/07 16:32	226.92	919.465	Lava Formation Near Forum Bench Mark
J2-291	8/14/07 16:42	8/14/07 17:08	1582.41	6,411.943	Transect to northern lava flow caldera wall
J2-292	8/15/07 12:51	8/15/07 13:06	910.66	3,690.007	Survey of Village vent
J2-292	8/15/07 13:08	8/15/07 14:19	4224.44	17,117.414	Village sample
J2-292	8/15/07 14:23	8/15/07 14:38	924.66	3,746.714	El Guapo spire
J2-292	8/15/07 14:46	8/15/07 15:32	2785.97	11,288.745	El Guapo Column CU
J2-292	8/15/07 16:06	8/15/07 16:12	392.85	1,591.848	Hermosa
J2-292	8/15/07 16:31	8/15/07 16:40	574.79	2,329.039	Escargot
J2-292	8/15/07 18:13	8/15/07 18:14	26.99	109.365	HOBO at Castle
J2-292	8/15/07 18:53	8/15/07 19:06	765.72	3,102.684	Looking for Marker 108
J2-292	8/15/07 20:45	8/15/07 21:02	1023.62	4,147.713	Quick scan of Mker 113
J2-292	8/15/07 22:20	8/15/07 22:21	76.97	311.890	Post sampling at Mkr 113
J2-292	8/15/07 23:11	8/15/07 23:21	633.77	2,568.018	Looking for new lava flows
J2-292	8/16/07 0:19	8/16/07 2:33	8071.01	32,703.738	Looking for the western flow front
J2-292	8/16/07 2:35	8/16/07 2:46	662.75	2,685.483	More along the 98 flow
J2-293	8/16/07 20:42	8/16/07 20:42	1.00	4.052	Manipulator Arm over vent
J2-293	8/16/07 20:47	8/16/07 20:50	204.92	830.354	Virgin - anhydrite chimney
J2-293	8/16/07 21:00	8/16/07 21:00	31.99	129.617	Anhydrite CU
J2-293	8/16/07 21:38	8/16/07 21:38	6.00	24.304	HOBO at Virgin
J2-293	8/16/07 21:42	8/16/07 21:55	788.71	3,195.846	Gollum
J2-293	8/16/07 23:46	8/17/07 0:18	1907.86	7,730.647	Mushroom survey - tubeworms
J2-293	8/16/07 23:55	8/17/07 0:09	837.69	3,394.320	Mushroom - palmworms
J2-293	8/17/07 0:27	8/17/07 0:29	116.96	473.910	Mushroom - survey of base
J2-293	8/17/07 0:32	8/17/07 0:46	883.67	3,580.643	Inferno survey

Dive number	Start time	End time	Duration (s)	File size (Mb)	Description
J2-293	8/17/07 0:53	8/17/07 0:57	257.90	1,045.030	Worms and sampling at Inferno
J2-293	8/17/07 1:06	8/17/07 1:39	1985.27	8,044.294	Inferno sampling
J2-293	8/17/07 1:45	8/17/07 2:23	2277.16	9,227.040	Inferno and Hell
J2-293	8/17/07 2:36	8/17/07 2:36	5.00	20.254	Vent
J2-293	8/17/07 2:41	8/17/07 2:42	31.55	127.858	Phoenix
J2-293	8/17/07 3:00	8/17/07 3:05	319.88	1,296.161	30/sec Ghostly figure
J2-293	8/17/07 3:08	8/17/07 3:08	1.00	4.052	Vent with White bacteria
J2-293	8/17/07 3:23	8/17/07 3:27	288.89	1,170.596	ROPOS vent suction
J2-293	8/17/07 4:19	8/17/07 4:35	971.64	3,937.087	Hairdo
J2-293	8/17/07 4:57	8/17/07 4:57	2.00	8.102	Manipulator over reflector
J2-294	8/18/07 0:01	8/18/07 0:16	846.69	3,430.775	Bottom Survey
J2-294	8/18/07 9:14	8/18/07 9:31	982.64	3,981.643	Not Dead Yet - Approach and survey
J2-294	8/18/07 9:36	8/18/07 9:44	464.83	1,883.484	Not Dead Yet - Survey while sampling
J2-294	8/18/07 10:03	8/18/07 10:05	105.96	429.354	Not Dead Yet - Diffuse site
J2-294	8/18/07 11:28	8/18/07 11:49	1210.55	4,905.157	Not Dead Yet - Survey
J2-294	8/18/07 12:07	8/18/07 12:10	198.93	806.051	NDY-SE survey
J2-294	8/18/07 12:15	8/18/07 12:22	452.83	1,834.878	NDY-SE smokers
J2-294	8/18/07 16:31	8/18/07 16:51	1180.56	4,783.642	Cobb S sulfides 1
J2-294	8/18/07 17:13	8/18/07 17:18	322.88	1,308.313	Cobb S sulfides 2
J2-294	8/18/07 17:29	8/18/07 17:57	1664.38	6,744.084	Cobb S sulfides 3
J2-295	8/19/07 3:32	8/19/07 4:02	1790.34	7,254.447	Launch
J2-295	8/19/07 5:03	8/19/07 5:04	49.98	202.526	Soil sample 1
J2-295	8/19/07 5:04	8/19/07 5:05	62.98	255.183	Soil sample 2

#### 4.8 SeaBeam 2100 Mapping

*Andra Bobbitt (OSU/NOAA)*

SeaBeam 2100 data was collected during transits from sites. Some of the western-most data will supplement existing bathymetric coverage along the Juan de Fuca ridge between Endeavour and Axial. All data will be submitted to NGDC as collected. The map on the previous page shows the collected data superimposed on the pre-existing bathymetry data.



#### 4.9 NeMO 2007 Outreach: Website (<http://www.pmel.noaa.gov/vents/nemo/expeditions.html>)

Andra Bobbitt and Bill Chadwick (OSU/CIMRS-NOAA/PMEL)

Daily logs and images were posted to the NeMO web site during the cruise. This year the web pages were created at sea and transferred back to the PMEL web server in Seattle via secure ftp and the Atlantis's high-seas net. While there were some problems getting this up and running and the internet connection to shore was sometimes slow, this worked fairly well.

### 5.0 Navigation and Positions

Andra Bobbitt and Bill Chadwick (OSU/CIMRS-NOAA/PMEL)

Navigation at Endeavour was by doppler only on dive J2-286 and by two WHOI-deployed transponders combined with doppler on dive J2-287. Navigation at Axial used the two LBL transponder nets deployed in 2003 along with Jason doppler (the two are merged after each dive using a "renav" program). Note the Jason nav system only uses 2 transponders at a time for LBL positions. Navigation during the two dives on the Cobb segment was doppler-only again.

### 5.1 Endeavour navigation

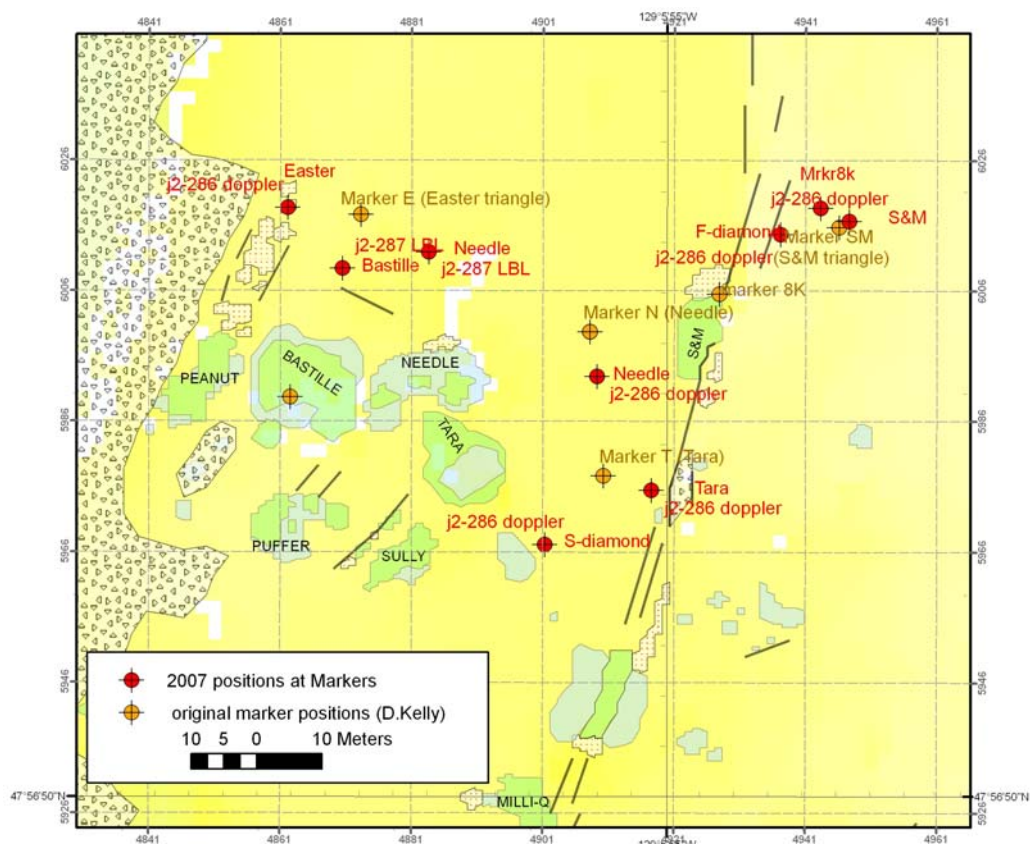
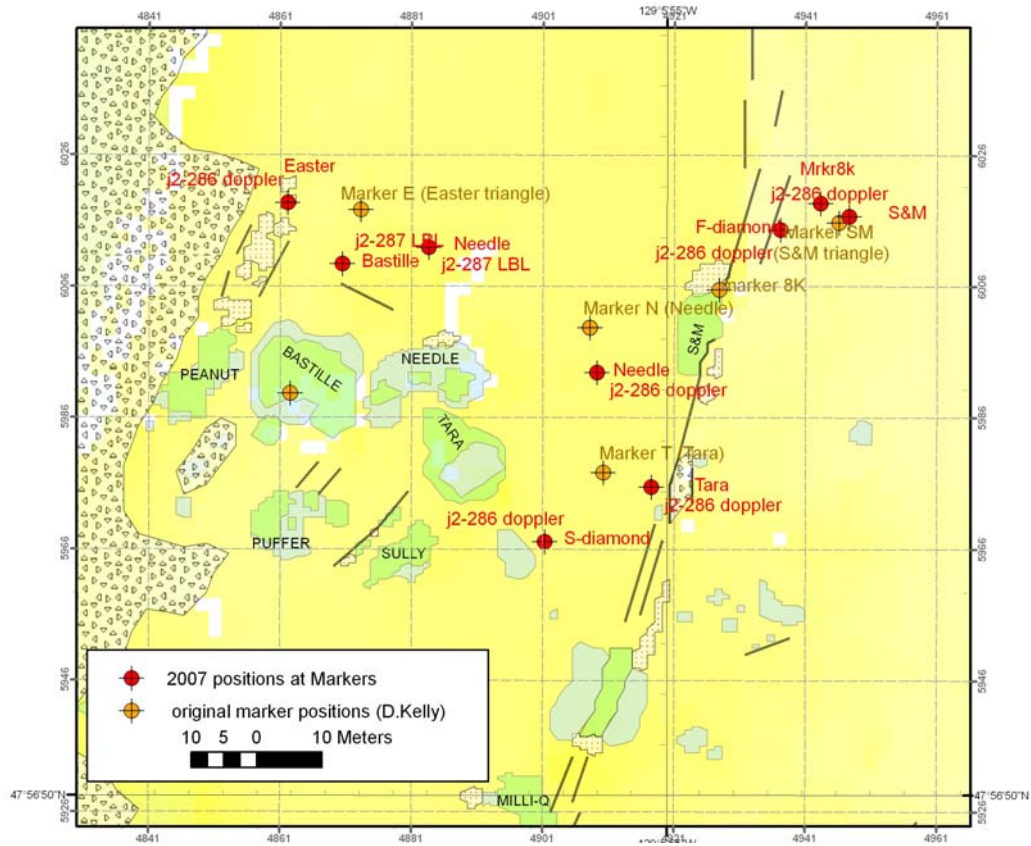
The Main Endeavour Vent Field has previously been well-mapped, and a GIS basemap is available from UW (<http://www2.ocean.washington.edu/gis/>). Using Doppler navigation and the first location of a navigated target (UW markers with known Alvin XY positions), navigating within the vent field was relatively straight-forward using a scanned and georeferenced basemap. During the 2007 dives, offsets in navigation were corrected using Doppler resets and repositioning the underlay map within the Jason navigation system. In general, the navigation fixes seemed to match the underlay map well. However, navigation offsets are evident between the post-dive navigation processed by the Jason group, and the GIS underlay map obtained from UW. We do not understand why. Offsets exist with both of the Endeavour dives, despite the availability of LBL navigation on the second dive. LBL navigation yielded even greater offsets in the Needle-Bastille-Easter Island region compared to the Doppler-navigated dive, with offsets in this area trending to the north and east. Offsets in the Dante-Hulk-Grotto region were primarily to the East. The offsets are 10-30 m (see maps and table below).

**Table of offsets between 2007 Jason navigation and UW-provided marker positions:**

Vent	orig-long	orig-lat	long07	lat07	offset	angle	comment
Marker D (Dante)	- 129.09763	- 47.94921	- 129.09760	- 47.94920	3	297	j2-286 doppler
Marker G (Grotto)	- 129.09842	- 47.94904	- 129.09851	- 47.94910	9	128	j2-286 doppler
Marker H (Hulk)	- 129.09707	- 47.95004	- 47.949986	- 129.0969	12	299	j2-286 doppler
Marker H (Hulk)	- 129.09707	- 47.95004	- 47.950038	- -129.097	2	277	j2-287 LBL
Marker N (Needle)	- 129.09876	- 47.94786	- 129.09875	- 47.94780	7	350	j2-286 doppler
Marker N (Needle)	- 129.09876	- 47.94786	- 129.09909	- 47.94797	27	116	j2-287 LBL
Marker T (Tara)	- 129.09874	- 47.94766	- 129.09864	- 47.94765	8	287	j2-286 doppler
marker 8K	- 129.09850	- 47.94792	- 129.09829	- 47.94803	12	224	j2-286 doppler
Marker E (Easter triangle)	- 129.09923	- 47.94802	- 129.09938	- 47.94803	11	95	j2-286 doppler
Marker SM (S&M triangle)	- 129.09826	- 47.94801	- 129.09824	- 47.94802	2	229	j2-286 doppler
Marker S (Sully)	do not have position		- 129.09886	- 47.94757			j2-286 doppler
Marker F diamond	do not have position		- 129.09838	- 47.94800			j2-286 doppler
Bastille (vent)	- 129.09938	- 47.94777	- 129.09927	- 47.94795	17	199	j2-287 LBL



Markers in bold are positions obtained from University of Washington (D.Kelley). No marker was sighted at Bastille in 2007 although the ROV was on the structure where the marker should have been visible. Offset for Bastille was measured using the vent position on the GIS underlay map. Prior positions for markers S (Sully) and Marker F were not available.



## 5.2 Axial navigation

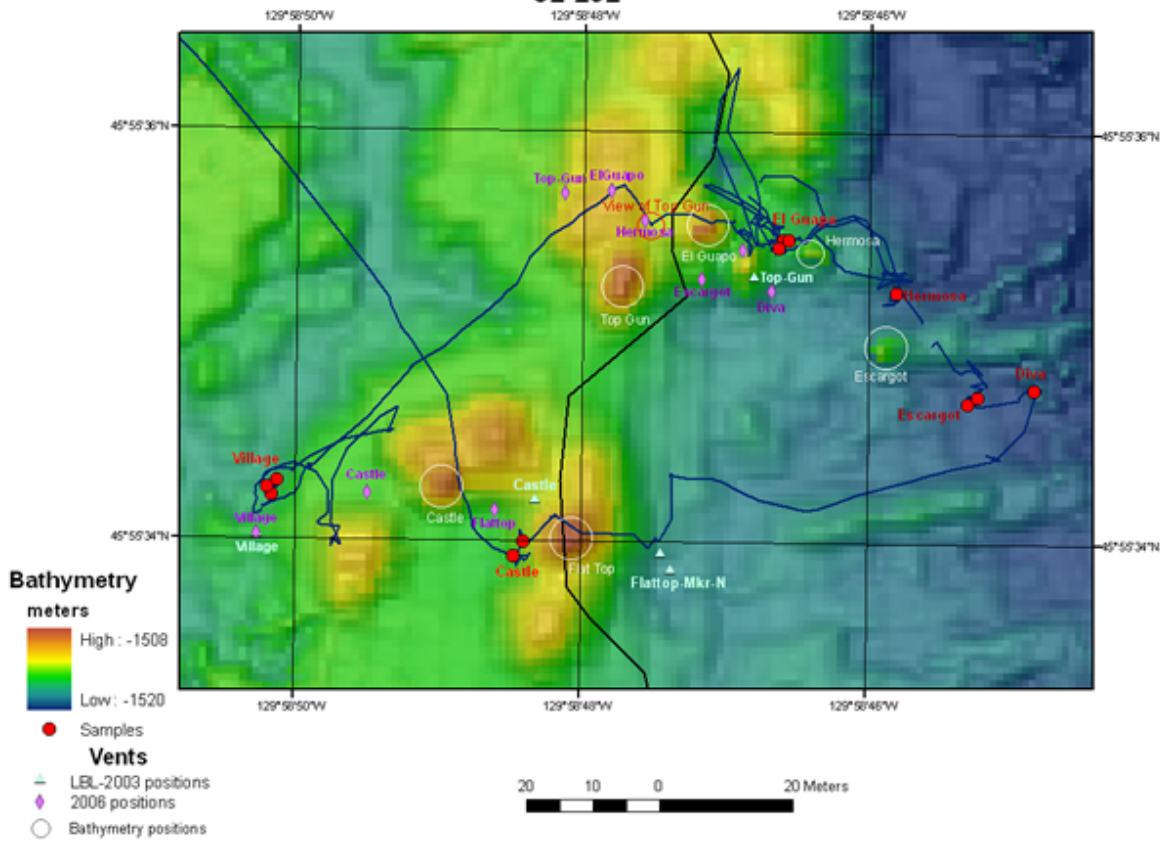
At Axial, our navigation positions this year were more consistent with positions from 2006 (when we used USBL with ROPOS) as compared with navigation from 2003 & 2004 (the last time we used LBL navigation at NeMO). During some dives the LBL navigation seemed to match the AUV basemaps very closely, while during others there were clear offsets. The following table shows navigation offsets in comparison with 2003/2004 LBL, 2006 USBL and AUV bathymetry. Note: Jason is 3.4m in length, 2.2m wide and 2.4m high.

VENT	2007nav-2006		2007nav-2003		2007nav-auvbathy	
	distance (m)	angle	distance (m)	angle	distance (m)	angle
<b>ASHES</b>						
Hell	10	150	22	250	15	191
ROPOS	4	65	20	269		
Phoenix	7	134	25	251		
Daves			18	311		
Gollum	9	74	15	286		
Inferno	10	151	19	238	9	215
Mushroom	5	132	15	249		
Virgin	10	55	20	272		
Hairdo			20	277		
<b>International District</b>						
Village	7	196	7	196		
Castle	24	291	8	20	15	307
El Guapo	27	286			12	281
Top Gun	14	291	18	116	10	202
Hermosa	39	286			14	294
Diva	42	291				

Our 2007 navigation at ASHES yielded positions between the 2006 USBL and 2003/4 LBL fixes, but physically closer to the 2006 positions. In general, ASHES is relatively flat and the vent structures too small to be discernable with the AUV bathymetry, except for Inferno and Hell chimneys. The International District positions in 2007 more closely matched the AUV bathymetry than previous navigation positions.

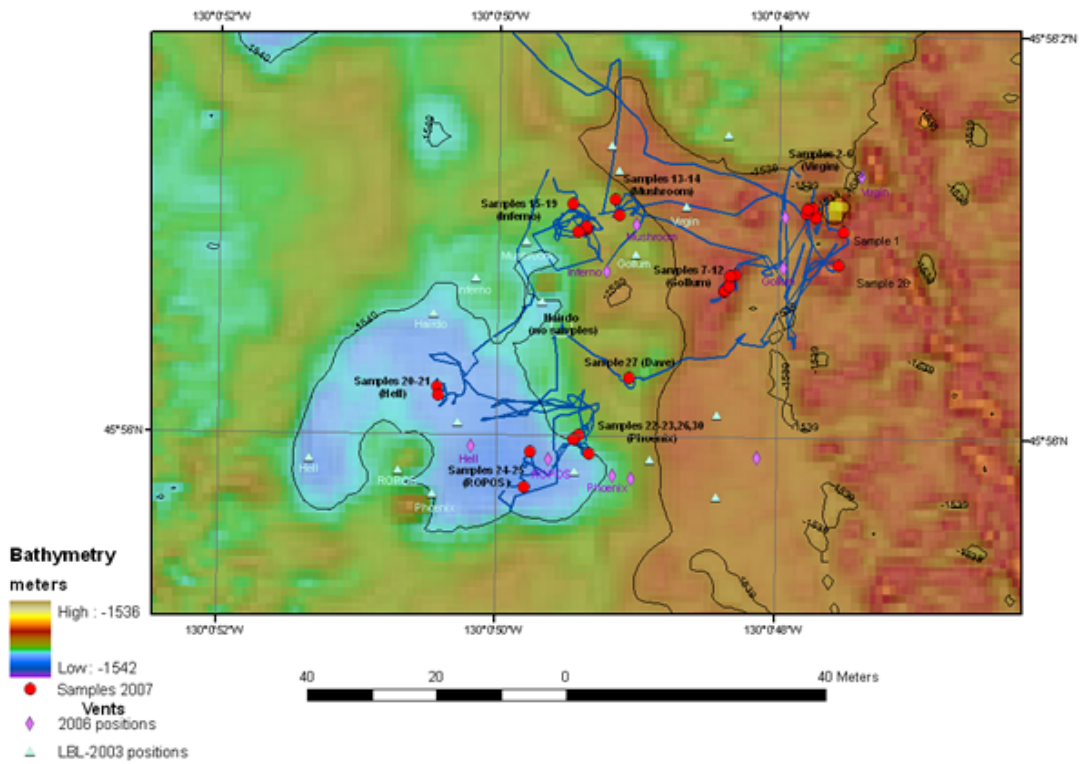
### International District

J2-292



### ASHES

J2-293



## 5.3 Vent and Marker Positions (sites visited in 2007)

### 5.3.1 Axial Vents:

Vent	2006-longitude	2006-latitude	2007-longitude	2007-latitude	Offset (m)	Offset angle	Z
<b>ASHES</b>							
Crack	-130.01334	45.93331	not visited 2007				1546
Dave's**	-130.01377	45.93352	-130.01359	45.93341	13	298	1547
Gollum	-130.01329	45.93357	-130.01340	45.93354	9	74	1547
Hairdo**	-130.01398	45.93350	-130.01375	45.93347	19	281	1547
Hell	-130.01391	45.93332	-130.01398	45.93340	10	150	1546
Inferno	-130.01364	45.93356	-130.01369	45.93362	10	151	1547
Marshmallow	-130.01329	45.93364	-130.01343	45.93370	13	123	1546
Mushroom	-130.01358	45.93363	-130.01362	45.93365	5	132	1547
Phoenix	-130.01362	45.93328	-130.01369	45.93333	7	134	1547
ROPOS	-130.01375	45.93330	-130.01379	45.93329	4	65	1547
Virgin	-130.01313	45.93370	-130.01323	45.93364	10	55	1546
<b>98 Lava Flow</b>							
Marker-33	-129.98230	45.93317	-129.98230	45.93317	0	0	1524
CloudPit	-129.98161	45.93330	-129.98171	45.93329	7	87	1525
Mkr-108	-129.98303	45.92865	2007 marker not seen; near site				1524
Nascent	-129.98160	45.93584	J2-291 passed by; marker not seen		21	12	1520
<b>North 98 Flow</b>							
Forum	-129.98398	45.94632	-129.98388	45.94645	16	209	1529
Trevi	new '07		-129.98369	45.94633			1519
Magnesia	-129.98424	45.94646	-129.98500	45.94611	71	56	1526
Mkr-N3Vent	-129.98518	45.94364	-129.98499	45.94385	28	213	1530
Zen Garden	-129.98128	45.93728	-129.98128	45.93728	0	0	1519
<b>International District</b>							
Castle	-129.98038	45.92618	-129.98009	45.92610	24	291	1518
Flattop	-129.98014	45.92615	-129.97982	45.92611	25	281	1522
Village	-129.98060	45.92612	-129.98057	45.92618	7	196	1520
Diva	-129.97960	45.92645	-129.97909	45.92632	42	291	1524
El Guapo	-129.97991	45.92659	-129.97958	45.92652	27	286	1507
Escargot	-129.97974	45.92647	-129.97921	45.92631	45	294	1520
Hermosa	-129.97985	45.92655	-129.97936	45.92645	39	286	1519
Top-Gun	-129.98000	45.92658	-129.97984	45.92654	14	291	1520
<b>Old Flow</b>							
Casper	-129.99296	45.91748	-129.99299	45.91768	22	174	1538
Vixen	-129.99293	45.91735	-129.99302	45.91729	11	56	1537
Bag City	-129.98924	45.91624	-129.98927	45.91625	3	123	1536
Mkr-113	-129.98840	45.92280	-129.98832	45.92275	(9)	(317)	1526

\*\*position from 2003 LBL dives (offset measured from these positions)

### 5.3.2 Axial Marker Positions:

Marker	Vent-Benchmark	prior longitude	prior latitude	2007 longitude	2007 latitude	depth	comment
<b>ASHES</b>							
D	SE Phoenix	- 130.01364	45.93330	- 130.01372	45.93336	1546	visible J2-293 ('07); nav poor when viewed marker and bucket lid (better when sampling)
I	Marshmallow	- 130.01329	45.93364	- 130.01343	45.93370	1546	visible J2-293 ('07)
21	Styx	- 130.01359	45.93327			1547	did not visit 2007
<b>54</b>	ROPOS			- 130.01383	45.93327		<b>Deployed 2007</b> (J2-293) on west edge of ROPOS vent (white diamond)
<b>64</b>	Gollum			- 130.01333	45.93356	1545	<b>Deployed 2007</b> (J2-293); nav poor during deployment (better during sampling; deployed at sample site)
<b>98 Lava Flow</b>							
55	mrkr33 site	- 129.98230	45.93317	- 129.98240	45.93318	1524	Marker 55 deployed in 2006. Marker 33 may have gone missing in 02/03.
69	CloudPit	- 129.98161	45.93330	- 129.98171	45.93329	1525	Marker next to hole with MTRs nearby ('07).
M	Nascent	- <b>129.98160</b>	<b>45.93584</b>			1520	'07 passed site; did not look for marker
<b>North 98 Flow</b>							
<b>74</b>	Forum	- 129.98398	45.94632	- 129.98388	45.94645	1529	<b>Deployed 2007.</b> (J2-291)
52	mrkrN3 site	- 129.98518	45.94364	- 129.98500	45.94383	1530	Mkr N3 not seen for many years.
N2				- 129.98480	45.94496		Seen on J2-291 south of N3 area.
67	Magnesia	- 129.98424	45.94646	- 129.98503	45.94611	1526	marker on benchmark
<b>International District</b>							
N5	Flattop	- 129.98014	45.92615			1522	Didn't see marker in 2007.
<b>Old Flow</b>							
36	Bag City	- 129.98924	45.91624	- 129.98935	45.91636	1536	07 J2-289
21	Bag City	- 129.98924	45.91622			1535	did not visit 2007
<b>57</b>	Vixen	- 129.99293	45.91735	- 129.99308	45.91742	1537	<b>Deployed 2007.</b> (J2-289)
<b>62</b>	mrkr113 site	- 129.98840	45.92280	- 129.98832	45.92275	1526	<b>Deployed 2007.</b> Site still active ('07) but no signs of old marker.
<b>Benchmarks</b>							
60							5m N from benchmark caldera center (seen in distance '07)
61				- 130.00993	45.95520	1534	5m S from benchmark caldera center(J2-289)
63	AX-63	- 130.01005	45.95515	- 130.00989	45.95507	1530	Caldera Center
67	AX-01	- 129.98490	45.94622	- 129.98503	45.94611	1524	Magnesia
53	AX-05	- 129.98245	45.93325	- 129.98243	45.93319	1523	Mrkr 33 site
65	AX-04	- 129.98945	45.91618	- 129.98950	45.91616	1534	Bag City
66	AX-66	- 130.00372	45.86315	- 130.00121	45.87083	1723	S. Pillow Mound

Markers deployed in 2007 are shown in bold. Prior Axial marker positions were taken from the 2006 USBL positions in the 2006 NeMO cruise report. The exception is Marker M at Nascent which uses a previous position that was from the 2003 LBL position table.

### 5.3.3 South Cobb Vents: Vent sites discovered on J2-294:

Vent	long07	lat07	Z	2007-comments
Not Dead Yet 20m	-129.37724	46.68988	2402	J2-294 sampled
Not Dead Yet clump	-129.37713	46.68973	2404	J2-294 sampled
Harry	-129.38395	46.68202	2419	J2-294 sampled on 2 sides
Ron	-129.38384	46.68226	2416	J2-294 sampling ROV gyro north
Hermione	-129.38392	46.68221	2419	J2-294 circled around vent

### 5.4 NeMO Experiments Deployed/Recovered in 2007:

Vent/Marker	Experiment/ Instrument	Dive Deployed (year)	Dive Recovered (year)	Comments
Cloud	MTR 3312	R1010 ('06)	J2-291 ('07)	MTRs 3312 and 3185 tied together Small hole at base of Mkr-69
Cloud	MTR 3185	R1010 ('06)	J2-291 ('07)	MTRs 3312 and 3185 tied together Small hole at base of Mkr-69
Mkr-33	MTR 3087	R1010 ('06)	J2-289 ('07)	east end of crack
Mkr-33	MTR 3197	R1010 ('06)	J2-289 ('07)	tubeworm bush near benchmark
Mkr-33	MTR 3201	R1010 ('06)	J2-289 ('07)	mid-crack near RAS
Mkr-33	MTR 3291	R1010 ('06)	J2-289 ('07)	west end of crack
Mkr-33	MTR 3042	R1011 ('06)	J2-289 ('07)	In the RAS dome
Mkr-33	MTR 3045	J2-289 ('07)		This MTR is deployed in the tubeworm bush visible from the pressure benchmark in an area of good flow (replacing '06 MTR 3197)
Mkr-33	MTR 3041	J2-289 ('07)		Put on the western side of the crack (right of RAS dome). (replacing '06 MTR 3291)
Mkr-33	MTR 4001	J2-289 ('07)		Mid-crack (originally deployed behind RAS intake dome, then later moved in or under RAS dome, which was moved ~10 cm closer to the crack compared to 2006). (replaced '06 MTR 3042)
Cloud	MTR 3196	J2-291 ('07)		MTRs 3196 and 3334 tied together and deployed in hole at base of Mkr-69
Cloud	MTR 3334	J2-291 ('07)		MTRs 3196 and 3334 tied together and deployed in hole at base of Mkr-69
Coquille	MTR 3317	R551 ('00)	LOST	Couldn't find in 2002. Spotted on HFS dive R741 ('03) - not picked up
Mkr-113	MTR 1055	R627 ('01)	LOST	Couldn't find
Mkr-113	MTR 4126	R551 ('00)	LOST	Couldn't find
T&S Spires	MTR 3017	R497 ('99)	LOST	Couldn't find in 2005
Castle	MISO 102	R1010 ('06)	J2-292 ('07)	In Anhydrite (tip still in anhydrite at recovery)
Virgin Vent	MISO 104	R1013 ('06)	J2-293 ('07)	
Vixen (Coquille)	MISO 101	R1010 ('06)	J2-289 ('07)	Vent with Mkr-57 in it. (Recovered, serviced and re-deployed in '07 at Virgin.)
Casper (Coquille)	MISO 103	R1014 ('06)	J2-289 ('07)	MISO 103 serviced and redeployed at Castle J2-292 ('07)



Vent/Marker	Experiment/ Instrument	Dive Deployed (year)	Dive Recovered (year)	Comments
Castle	MISO 103	J2-292 ('07)		Bent tip and buried deep in anhydrite next to sample hole.
Virgin Vent	MISO 101	J2-293 ('07)		Deployed at Virgin replacing MISO 104 ('06)
Vixen (Coquille)	MISO 130	J2-289 ('07)		Replaced MISO 101 ('06)
Casper (Coquille)	MISO 129	J2-289 ('07)		Replaced MISO 103 ('06)
Cloud	Larval Array O	R659 ('02)		S/SW of Marker 69 ~8m. No plans to recover
Gollum Vent	Larval Array J	R632 ('01)		No plans to recover

#### 5.4.1 Endeavour Instrument Mooring Positions

Instrument	Longitude	Latitude	Depth of instrument on bottom	Height of mooring (glass ball flotation)	Depth of top of mooring	Homer
DiIorio TX mooring	-129.098176	47.948888	2202	50	2152	44
DiIorio RX mooring	-129.097761	47.948810	2197	43	2154	34
RAS @ Easter Island	-129.099308	47.948141	2198	10	2188	16

#### 5.4.2 NeMO Instrument Mooring Positions

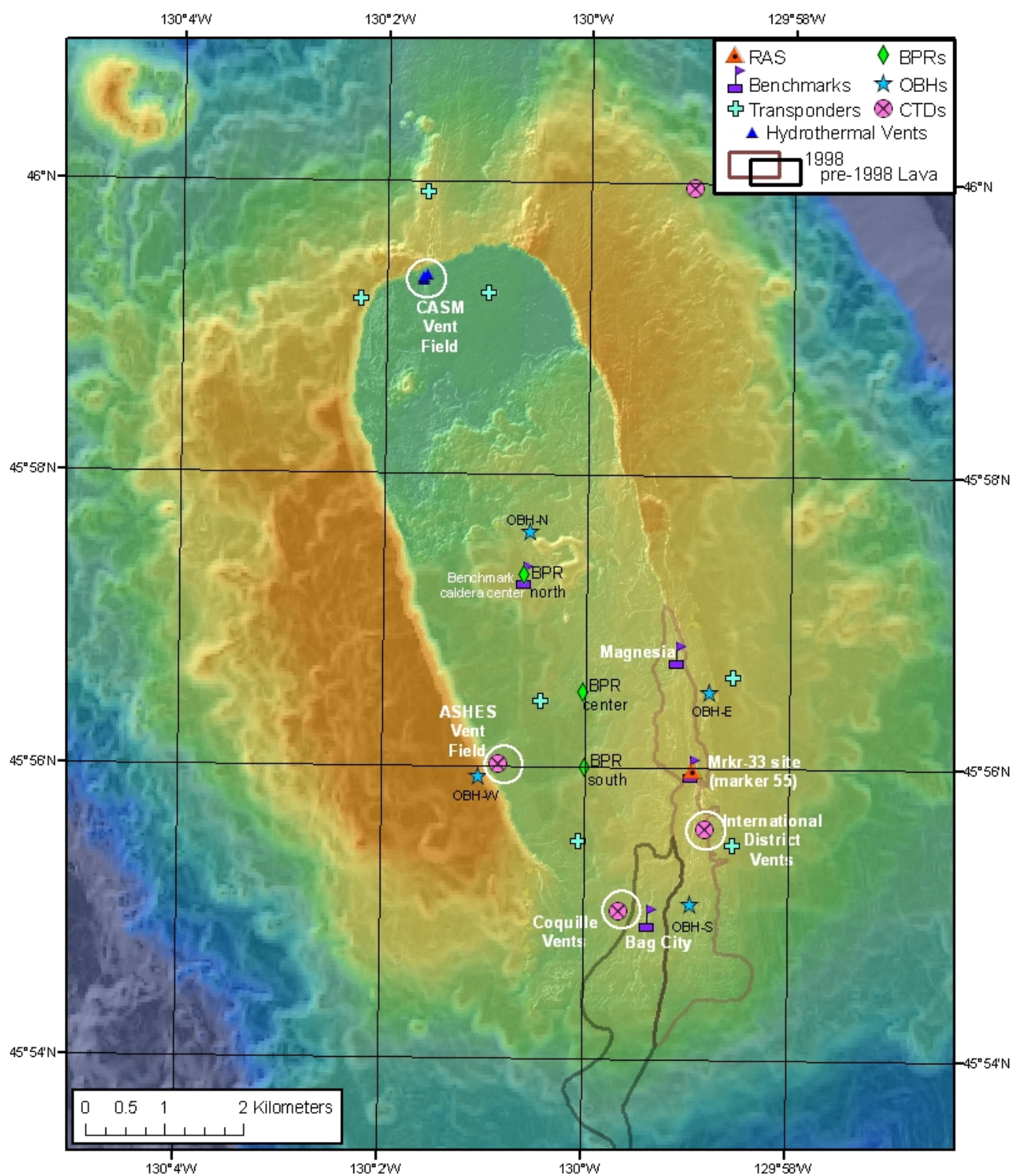
Instrument	Longitude	Latitude	Depth of instrument on bottom	Height of mooring (glass ball flotation)	Depth of top of mooring	Surveyed position?
BPR07-middle	-130° 00.020'	45° 56.511'	1553	15	1540	Yes
BPR05-south	-130° 00.001'	45° 55.999'	1530	30	1500	Yes
BPR07-center	-130° 00.604'	45° 57.316'	1534	15	1520	Yes
OBH-N (north)	-130° 00.550'	45° 57.605'	1534	30	1504	Yes
OBH-W (west)	-130° 01.040'	45° 55.928'	1435	30	1405	Yes
OBH-S (south)	-129° 58.943'	45° 55.065'	1544	30	1514	Yes
OBH-E (east)	-129° 58.773'	45° 56.517'	1525	30	1495	Yes
RAS@Mkr33	-129° 58.936'	45° 55.988'	1520	10	1510	Yes

#### 5.4.3 NeMO Transponder Positions

All Benthos XT-6000's, a 17-inch glass ball floating at the top of a 200-m long mooring line made of parachute chord. All were deployed in 2003 and used during cruises in 2003, 2004, and 2007. They all interrogate at 9.0 kHz.

Reply Frequency (kHz)	UTM X	UTM Y	Long (decimal degrees)	Lat (decimal degrees)	Depth (top of 200-m high mooring)	Enable Code	Disable Code
<b>Lava Net</b>							
10.5	424368	5088261	129.975763	45.943750	1308.21	A	B
8.5	424349	5086129	129.975673	45.924567	1320.87	A	B
11.5	422407	5086195	130.000728	45.924940	1326.71	A	B
7.5	421926	5087976	130.007223	45.940918	1336.26	A	B
<b>CASM Net</b>							
8.0	421279	5093140	130.016412	45.987312	1363.79	A	B
10.0	420510	5094426	130.026552	45.998798	1306.48	A	B
9.5	419661	5093074	130.037288	45.986528	1277.21	A	B

# Map of instruments at Axial:



## 6.0 Jason Dives

### 6.1 Dive Statistics

JASON - Lowering Summaries (All Times GMT)							
Lowering Id	Star Launch	Start Data	End Data	End/On Deck	Line/Area/Site	Data totals (Hrs:Mns:Secs)	Wet Totals (Hrs:Mns:Secs)
J2-286	2007/08/05 02:28:00	2007/08/05 03:45:00	2007/08/05 21:08:00	2007/08/05 22:37:00	Endeavor	17:23:00	20:09:00
J2-287	2007/08/06 16:47:00	2007/08/06 18:24:00	2007/08/07 14:09:00	2007/08/07 15:39:00	Endeavor	19:45:00	22:52:00
J2-288	2007/08/09 01:32:00	2007/08/09 02:31:00	2007/08/09 14:20:00	2007/08/09 15:24:00	Axial Seamount	11:49:00	13:52:00
J2-289	2007/08/10 03:36:00	2007/08/10 04:44:00	2007/08/12 01:49:00	2007/08/12 02:55:00	Axial Seamount	45:05:00	47:19:00
J2-290	2007/08/13 03:22:00	2007/08/13 04:11:00	2007/08/13 14:30:00	2007/08/13 15:38:00	Axial Seamount	10:19:00	12:16:00
J2-291	2007/08/14 02:59:00	2007/08/14 03:46:00	2007/08/14 22:07:00	2007/08/14 23:05:00	Axial Seamount	18:21:00	20:06:00
J2-292	2007/08/15 11:39:00	2007/08/15 12:49:00	2007/08/16 06:07:00	2007/08/16 07:14:00	Axial Seamount	17:18:00	19:35:00
J2-293	2007/08/16 19:28:00	2007/08/16 20:24:00	2007/08/17 06:10:00	2007/08/17 07:13:00	Axial Seamount	9:46:00	11:45:00
J2-294	2007/08/17 21:58:00	2007/08/17 23:16:00	2007/08/18 18:24:00	2007/08/18 19:47:00	Cobb	19:08:00	21:49:00
J2-295	2007/08/19 03:34:00	2007/08/19 04:56:00	2007/08/19 12:47:00	2007/08/19 14:15:00	Split Volcano	7:51:00	10:41:00
				<b>Totals:</b>	<b>10</b>	<b>176:45:00</b>	<b>200:24:00</b>

### 6.2 Dive Summaries

All times and dates are GMT.

**J2-286 Endeavour Main Vent Field** [J2-286 Bottom time: 20hrs10min] Jason equipped with HFS, SM2000, 3 gas-tights, Niskin, HOBO. (ASNAPS on Event Logger quit working at 04:02 near beginning of dive.) Landed at the UW Seismometer, near Grotto and reset nav to its position. Drove N to Grotto and reset nav again. (Original seismometer position was later determined not to be well-navigated). Observed Grotto's activity has decreased since earthquake event. Did some HD video before driving E to Dante. Dante's activity level appears the same. HD video, 2 HFS and 1 Gas-tight completed at Dante. SM2000 survey done of Dante's plume. Location determined to be a better fit to DiIorio's experiment than Grotto as originally planned. Transited NE to Hulk where not much hot water was found, only a small plume. Prepared and conducted SM2000 bottom survey around Dante for determining placement of DiIorio moorings. Deployed HOBO in Dante 333degC smoker. Collected SM2000 data over Dante plume and took Niskin before completing SM2000 data collection. Relocated HOBO within Dante. Found seismometer again and obtained a corrected position. Moved over to Easter Island, S&M, Needle and Tara, viewing markers and positioning at each. Picked up Lilley's instrument at Sully and took 2 gastight samples. Finished dive with a transit north to Hulk and 2 tubeworm samples.

**J2-287 Endeavour Main Field** [J2-287 Bottom time: 19:45] Jason equipped with HFS, SM2000, 1 discreet gastight, Niskin, MTR, Pelagic impeller pump. Jason first found the DiIorio TX mooring located NE of the field. Repositioning mooring south of Dante. (Mooring was accidentally released in the planned RX position). Repositioned HOB0 here to smoker. Collected SM2000 en route to RX mooring (located SE of the field) and relocated it north of Dante. Checked acoustic array and made adjustment to optimizer ducer heading. Collected SM2000 of Dante's plume and took a Niskin sample of the plume. Transited to RAS drop location and relocated RAS to Easter Island. Before setting RAS in its final location, took 4 HFS samples. Positioned RAS and its intake. Took HD recordings of site including a 360deg panorama. Headed for Bastille (crossed Needle) where 2 HFS and 1 GT were taken. Next headed to S&M vent and took 6 HFS samples there. Transited north to Hulk and took 3 HFS and 1 GT in the RAS hotter area; 2 HFS and 1 PIP in the RAS cooler area; and 3 HFS and 1GT in the Hulk black smoker. A BIO sample of tubeworms and a HD video survey were done at Hulk before surfacing.

**J2-288 Axial CASM site** [J2-288 Bottom time: 11:49] Jason equipped with HFS, 4 discreet gastight, MTR, Pelagic impeller pump. Landed at south end of T&S Spires site at CASM and took HD survey. HFS sampler pump failure; no HFS samples on this dive. Took 2 BIO tubeworms samples and 2 GTs at north end of T&S. Transited to Lamphere and conducted HD survey. Began geology survey and headed to base of caldera wall. Moved laterally up caldera wall and sampled basalt outcrop (non-talus). Left caldera rim and wall and headed back south to caldera floor to investigate various target features obtained from AUV bathymetric survey. Took 2 rock samples of a lava pond and 1 of nearby cliff; older flow sample south of lava pond and another older flow sample with pelagic sediment.

**J2-289 Axial Benchmark Pressure Survey** [J2-289 Bottom time: 45:05] Jason equipped with HFS, 2 MISOs, 6 MTRs, Pelagic impeller pump. Started pressure measurements at Marker 62 at Caldera Center site. First measurement was taken for 30 minutes. Transit mid-water to Magnesia benchmark. 20 minute measurement at Magnesia. Transit to Marker 33 benchmark. 20 minute measurement at Marker 33 site. Transit to Bag City benchmark. 20 min measurement at Bag City. Transit to S. Pillow Mound benchmark. 20 min measurement at S. Pillow Mound. HD video survey of eruptive fissure next to benchmark site. Transit to Bag City benchmark. Second pressure measurement at Bag City. Transit to Marker 33 benchmark. Second pressure measurement at Marker 33 site. Recovered MTR (#3197) and deployed MTR (#3045) at Marker 33 vent site. Recovered MTRs (#3021, #3087, #3042 (at RAS intake)). Deployed MTR 4001 at RAS site. Prepared RAS intake for release. Deployed MTR #3041. Released RAS for surfacing. Transit to Magnesia benchmark. Second pressure reading at Magnesia. Transit to Caldera Center benchmark. Second pressure reading at Caldera Center. Transit to Magnesia benchmark. Third pressure reading at Magnesia. Transit to Marker 33 benchmark. Third reading at Marker 33. Sampling at Marker 33 vent site (3 biological, 6 HFS). Transit to Cloud N6 site at Marker 69. 4 HFS samples. Transit to Vixen site. Retrieved MISO 101 and deployed MISO 130 at Vixen. Moved over to Casper. Retrieved MISO 129 and deployed MISO 103 at Casper. HD video of Casper and bubbles. 1 GT and 2 HFS samples. Returned to Vixen and 3 more HFS samples. Took 3HFS and 1 PIP sample 20m south of Vixen in diffuse flow. Transit within bottom site to Bag City benchmark. Third pressure measurement at Bag City. Moved to Bag City vent site and took 6 HFS samples. Did HD fly-by at Bag City. Transit to S. Pillow Mound benchmark. Second reading of S. Pillow Mound site. Explored fissure at site and took HD video. Retrieved one rock sample from fissure.

**J2-290 CASM** [J2-290 Bottom time: 10:19] Return dive to CASM. Ground fault in Kraft arm prevented use during this dive; all samples collected with Schilling. Landed at the T&S Spires site. 12 samples taken (4 HFS and 1 GT at high-temperature vent; 7 HFS at diffuse site). Moved to Sheperd Vent site and took 3 HFS and 1 PIP sample in diffuse flow. Moved over to Lamphere site where activity was viewed as inactive. Remainder of dive was geological exploration of northern caldera floor investigating bathymetric targets derived from MBARI AUV data. Visited sheet flows, lava channels, pits, older pillow flows and a cone. Collected 5 samples (5 rocks and 1 sediment pushcore).

**J2-291 Northern 1998 Flow** [J2-291 Bottom time: 18:21] Started dive at the Marker 33 Site (note: Marker is #55) and located RAS for repositioning. Put MTR 4001 back in vent cover over RAS intake. Took 2 HFS and 1 gas-tight from RAS cover holes. Traveled to Cloud Pit. Recovered MTRs and deployed new double-set. Took one gas tight. Not enough limpets observed at pit for sampling. Moved to venting area to the left of the pit and took a limpet suction sample. Transited to Zen Gardens over collapsed features and lava pillars and visually passed by Nascent. Took 3 HFS samples at southern edge of Zen Gardens. Moved to east side of Zen and took another 2 HFS samples. In a clam area took one additional HFS sample. Next went to N3 site passing over other clam sites. At N3 took 3 HFS and 1 PIP sample in diffuse flow. En route to Forum site observed areas of blue mat and lava flows with collapse and pillars. At Forum took 5 HFS diffuse flow samples. Deployed marker 74 at Forum site. Nearby) located new flow contact with collapsed area. In collapse, discovered a small high-temperature chimney and named it Trevi (20m from Forum). Took 3 HFS and 2 GasTight samples. Remainder of dive explored the geology of the northern extent of 1998 lava flow. Morphology of many collapse features, sheet flows and followed a lava channel. Took scoop of hydrothermal sediment. Found some extinct sulfide chimneys. In older flow area south of N3, found some diffuse venting and blue mat in older flow region. East of N3 crossed into 1998 flow again with lots of collapse and pillars. Took sample of sheet flow and core of hydrothermal sediment.

**J2-292 Southern 1998 Flow** [J2-292 Bottom time: 17:18] (Note: HFS was mis-wired and sample filters are incorrect as logged; sorted out in sample-log sheet post-dive. Also the Digital Still Camera logging was not operating on this dive, there are no DSC images.) Dive started in the International District. Landed nearby the Village site. Took 3 HFS samples at Village. Moved over to El Guapo where 'fire' appearing flow was at top orifices. Sampled 2 HFS, 1 gastight and kept the sulfide from one of the top chimneys that fell into basket. Next went to Hermosa with diffuse flow and a lot of biology. Took 1 HFS sample. Went to Escargot next where 2 HFS samples were taken. Moved over to Diva, small white anhydrite chimney, took 2 high-temperature HFS and 1 Gastight sample. Transited to Castle and took 2 HFS samples. Replaced MISO #102 with MISO #103 in anhydrite. Traveled to Marker 108 site over collapse areas and 1998 flow contacts. Jason contacted a pillar in collapse area and obtained a rock sample of 1998 lava. At Marker 108 site collected another rock sample of 1998 lava. Headed to Marker 113 site (deployed Marker 62) and obtained 6 HFS and 1 sample of tubeworms from the diffuse flow. Remainder of dive devoted to geology transit south examining 1998 flow boundaries. Crossed collapse features, jumbled flow, channels, multi-decked pillars, sheet flow and old lobate flows. Took rock sample from edge of collapse feature and piece of pre-98 lobate floor collapse.

**J2-293 ASHES** [J2-293 Bottom time: 09:46] Deployed a test sonar reflector 20m south of Virgin when reached the bottom, then collected a rock (Fisk). At Virgin, recovered and deployed a MISO, took 3 HFS and 2 gas tight samples (navigation appeared to be off by 20m here). Moved to Gollum (low flow) and took 5 HFS and 1 high-volume pump samples and HD survey. Test of steel sonar reflector not successfully seen by Jason's sonar. **Marker 64 deployed** at Gollum. Next sampled Mushroom with 1 HFS and 1 gas tight. Moved to Inferno; took HD video, 3 HFS, 1 gas tight and 1 tube worm samples. At Hell, obtained 2 HFS samples. Moved to Phoenix and took 2 HFS samples. At ROPOS (north and ROV-length away from Phoenix), took a suction sample of limpets and 1 HFS; **deployed marker 54**. Went back to Phoenix to obtain a tube worm sample. Stopped by Hairdo, then Dave's but not enough water flow for a sample at either site. Did find some flow east of Dave's in a crack with tubeworms and took one HFS sample. Retrieved sonar reflector and sampled nearby sheet flow (~10m SE of Virgin). Moved along at 310deg on a geology run; mixture of lobate and sheet flows up to the base of the caldera wall. Sampled a lobate from a lib of a pillow en route. Moving up the caldera wall from talus up to dikes before ending dive.

**J2-294 Southern Cobb** [J2-294 Bottom time: 19:08] (No LBL navigation). Search for hydrothermal activity based on targets observed on 1990/91 camera tows. Started north of targets (line 1) and drove south while making E-W zig-zags. Observed heavily sedimented pillow flows and many large/deep fault scarps and fissures. Collected a sediment sample and rock just before waypoint 3; start of second line. Drove north (line 2) making zig-zags for search. Heavy sediment, fissures/faults/scarps observed. Line crossed tube worm target in lobates. Moved off of line 2 to explore target area. Sampled a piece of sheet flow at top of scarp that draped over edge of scarp. Moved back over to line 2 then turned south for line 3. Took a rock sample in an area of less sediment and pillow flow. Then sampled sheet flow in an area of collapse/lava pillars and more sediment. Observed pillows between lava pillars and discovered chimneys with hydrothermal activity and hydrothermal sediment. Sampled first chimney (**Not Dead Yet**) structure with 4 HFS and 1 gas tight sample in high-temperature area. Took 3 samples in diffuse flow. Obtained 3 HFS and 1 pelagic pump sample in orange substance of chimney (diffuse). Not Dead Yet is about 20m tall with 2 large spires and flanges located in a horizontal boundary between sedimented rocks. Several other chimneys to the east, low flanges and contact with the basalt. Sampled smokers (Tmax of 222.9) of chimney SE of Not Dead Yet with 3 HFS and 1 gas tight. Explored SW (~210 deg) and observed lots of pillows, some younger looking (light sediment). Headed to sulfide site 4 target. Observed older pillows, heavy sediment, faults and scarps. Headed north on line 4. At sulfide target observed younger looking pillows, less faulting. Found another chimney complex with tubeworms in area of flatter/younger looking lobate flow. Sonar indicated 3 targets (area named **Hogwarts Field**). Sampled 1 HFS (Tmax 204.9) at first structure (**Harry**). Sampled diffuse site, 1 HFS. Did HD survey of second structure (**Hermione**). Went back to Harry and took 2 HFS in diffuse flow and one suction of limpets and worms. Also surveyed other sulfide structure, only 5-7m at 247 from Hermione, (**Ron**) but took no samples. Moved north of sulfide structures and sampled a piece of field basalt prior ascent.

**J2-295 Split Volcano** [J2-295 Bottom time: 07:51] (ASNAPS not working on event logger). Search for hydrothermal activity based on targets observed on 1990/91 camera tows; 4 survey lines trending along axis. Collected a rock and sediment sample at the landing site at the northern end of line #1. Drove relatively south in zig-zag pattern in search of hydrothermal activity. Primarily observed flat sheet flows and heavy sediment covering, using sonar for possible targets to explore. Few outcrops of pillows and jumbled flow. Discovered orange (hydrothermal) sediment and an old-appearing sulfide mound with chimneys, with no observable activity. Marked location for planned exploration on next transit line. South of mound, less sediment observed and some jumbled flow followed by some lobates. Ridge at southern end of line #1. Due to terrain, survey speed was increased for line #2 heading north. Observation of sulfide mound area verified no activity at this location. Remainder of line #2 observed flat, sheet flows with heavy sediment and few outcrops. South line #3 also observed heavily sedimented sheet flows. Dive ended due to time constraints.

### 6.3 Dive Samples

All times and dates are GMT. All Lat/Long fixes were revised at sea based on the Jason renav software.

#### 6.3.1 J2-286 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J286-HFS-001	Dante	47.94919	-129.0977947	2175.36	260.12	8/5/07 6:31	HFS Using piston 8 at Dante. Tmax=332 Tavg=332 T2=88 vol=505 [Butterfield]
J286-GT-002	Dante	47.94919	-129.097798	2175.41	260.36	8/5/07 6:39	Gastight #16 STBD fired at Dante. Temp=332 [Evans]
J286-HFS-003	Dante	47.94919	-129.0977982	2175.44	260.35	8/5/07 6:41	HFS Filtered bag 17 Tmax=332 Tavg=332 T2=56 vol=510 [Butterfield]
J286-NISKIN-004	Dante	47.94922	-129.0978732	2157.7	257.5	8/5/07 13:25	Niskin water sample taken [Dilorio]
J286-HFS-005	Dante	47.9492	-129.0977163	2181.32	311.72	8/5/07 14:38	HFS unfiltered piston #9 Tmax=21.7 Tavg=20.1 vol=207 T2=10 [Butterfield]
J286-GT-006	Sully	47.94757	-129.0988644	2189.07	15.84	8/5/07 18:43	Gastight #17 white tape handheld in the first orifice. (Fired 3 times) [Evans]
J286-GT-007	Sully	47.94757	-129.0988195	2189.41	314.87	8/5/07 18:58	Gastight #2 Firing the port gas tight Tmax=236 [Evans]
J286-BIO-008	Hulk	47.95009	-129.0970386	2188.85	62.43	8/5/07 20:11	Tubeworm grab at Hulk. These are fat happy tubeworms for Verena Tunnicliffe. [Rose]
J286-BIO-009	Hulk	47.95082	-129.0986754	2202.49	284.46	8/5/07 21:03	Grabbed some skinny tubeworms. (port biobox) [Rose]
J286-SULFIDE-010							Sulfide from unknown structure found on Medea at end of dive.

#### 6.3.2 J2-287 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J287-NISKIN-001	Dante	47.94941	-129.0978081	2160.72	135.66	8/7/2007 1:53	Niskin ample over the plume [Dilorio]
J287-HFS-002	Easter Is. (RAS)	47.94811	-129.0993682	2197.61	164.61	8/7/2007 4:35	Tmax=20.8 Tavg=20.8 vol=718 T2=9.5 unfiltered piston #1 [Butterfield]
J287-HFS-003	Easter Is. (RAS)	47.94811	-129.0993634	2197.48	164.49	8/7/2007 4:42	Tmax=20.6 Tavg=19.7 vol=565 T2=9.0 filtered bag #16 [Butterfield]
J287-HFS-004	Easter Is. (RAS)	47.9481	-129.0993643	2197.58	164.41	8/7/2007 4:47	Tmax=20.7 Tavg=19.8 vol=2505 T2=9.0 Sterivex filter #10 [Butterfield]
J287-HFS-005	Easter Is. (RAS)	47.9481	-129.0993569	2197.42	164.2	8/7/2007 5:09	Tmax=227 Tavg=226 vol=563 T2=100 Filtered bag #17 [Butterfield]



Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J287-HFS-006	Bastille	47.94795	-129.0992715	2185.92	212.35	8/7/2007 7:00	Tmax=269 Tavg=268.2 Vol=701 T2=88 Piston #8 Top of Bastille [Butterfield]
J287-GT-007	Bastille	47.94795	-129.0992745	2185.87	212.34	8/7/2007 7:08	STBD gas tight bottle #18 Temp=269 [Evans]
J287-HFS-008	Bastille	47.94795	-129.09927	2185.86	212.4	8/7/2007 7:10	Tmax=269.5 Tavg=268.8 Vol=488 T2=89 filtered bag 18 [Butterfield]
J287-HFS-009	S&M	47.94803	-129.0985241	2180.97	253.81	8/7/2007 7:55	Tmax=323.9 Tavg=321.5 Vol=504 T2=95 unfiltered Piston #2 S+M vent near top. [Butterfield]
J287-HFS-010	S&M	47.94803	-129.0985215	2180.96	253.6	8/7/2007 8:00	Tmax=323.8 Tavg=321.1 Vol=497 T2=70 filtered bag #19 [Butterfield]
J287-HFS-011	S&M	47.94803	-129.098528	2180.97	253.75	8/7/2007 8:11	Tmax=33 Tavg=31.2 Vol=498 T2=15 Vol=498 filtered bag #20 [Butterfield]
J287-HFS-012	S&M	47.94803	-129.0985293	2180.99	254.01	8/7/2007 8:16	Tmax=33.2 Tavg=29.1 Vol=3000 T2=13.7 Sterivex filter #11 [Butterfield]
J287-HFS-013	S&M	47.94802	-129.0985338	2180.92	253.86	8/7/2007 8:40	Tmax=33.9 Tavg=31.7 Vol=554 T2=14.1 Piston #9 [Butterfield]
J287-HFS-014	S&M	47.94802	-129.0985336	2180.92	254.12	8/7/2007 8:45	Tmax=34.1 Tavg=31.4 Vol=2510 T2=?? Sterivex filter #12 [Butterfield]
J287-HFS-015	Hulk (RAS hotter area)	47.95003	-129.0970486	2200.93	87.63	8/7/2007 10:34	Tmax=102.7 Tavg=88.8 Vol=601 T2=40 Piston #3 Hulk RAS site hotter area [Butterfield]
J287-HFS-016	Hulk	47.95003	-129.0970425	2200.93	87.44	8/7/2007 10:40	Tmax=100.3 Tavg=84.4 Vol=592 T2=37 Filtered Bag #21 [Butterfield]
J287-HFS-017	Hulk	47.95003	-129.0970469	2200.97	87.27	8/7/2007 10:45	Tmax=159 Tavg=75.6 Vol=2500 T2=35 Sterivex filter #13 [Butterfield]
J287-GT-018	Hulk	47.95003	-129.0970542	2201.06	86.9	8/7/2007 11:09	PORT gastight bottle #12 Temp=144 [Evans/Butterfield]
J287-HFS-019	Hulk (RAS cooler area)	47.95003	-129.0970503	2201.43	153.14	8/7/2007 11:27	Tmax=12.8 Tavg=11.5 Vol=2900 T2=6 filter #14 Hulk RAS site cooler area [Butterfield]
J287-HFS-020	Hulk	47.95003	-129.0970388	2201.65	153.62	8/7/2007 11:49	Tmax=11.4 Tavg=11 Vol=700 T2=6 piston #4 [Butterfield]
J287-PIP-021	Hulk	47.95003	-129.0970465	2201.73	153.63	8/7/2007 12:10	Large Volume Filter pelagic impeller pump 18 minutes at 06 flow units [Butterfield]
J287-HFS-022	Hulk (smoker)	47.95017	-129.0970416	2186.76	13.66	8/7/2007 12:45	Tmax=323.8 Tavg=323.3 Vol=524 T2=95 piston #5 Hulk smoker [Butterfield]
J287-HFS-023	Hulk	47.95017	-129.097023	2186.79	13.32	8/7/2007 12:56	Tmax=326.2 Tavg=324.9 Vol=550 T2=75 filter #22 [Butterfield]
J287-GT-024	Hulk	47.95016	-129.0970039	2186.9	13	8/7/2007 13:04	Red handheld Gastight bottle #9 T=326 [Butterfield]
J287-HFS-025	Hulk	47.95008	-129.0970218	2192.99	19.23	8/7/2007 13:15	Tmax=2.2 Tavg=2.0 Vol=560 T2=2.2 filter bag #23 background water sample [Butterfield]
J287-BIO-026	Hulk	47.95009	-129.0970139	2193.74	25.98	8/7/2007 13:19	Tubeworm sample [Rose]

### 6.3.3 J2-288 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J288-BIO-001	T&S Spires (north end)	45.98915	130.0273873	1580.61	276.94	8/9/2007 4:22	Bio-macro Two Jason grabs of long-skinny worms at diffuse venting area at N. end of T&S Spires. Jason has a large clump in manipulator. Stowing in port biobox. [Rose]
J288-BIO-002	T&S Spires (north end)	45.9891	130.0273966	1578.54	280.22	8/9/2007 4:46	Bio-macro Two grabs of short-fat worms in higher temperature area at N. end T&S Spires. [Rose]
J288-GT-003	T&S Spires (north end)	45.98912	130.0273667	1577.5	275.42	8/9/2007 5:06	Black gastight. Probe in 309deg hole. At orifice knocked over by taking worm sample [Evans]
J288-GT-004	T&S Spires (north end)	45.98912	130.0273561	1577.44	275.12	8/9/2007 5:11	White gastight. Same place. T=309. At orifice knocked over by taking

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
							worm sample [Evans]
J288-ROCK-005	caldera wall (north end)	45.99065	130.0264887	1523.72	5.76	8/9/2007 6:22	First rock; from shattered, massive flow above a long talus slope, 40m up caldera wall (north rim) [Clague]
J288-ROCK-006	new lava pond	45.98819	130.0262375	1574.49	72.79	8/9/2007 6:54	Second rock; sponge covered spattery crunchy piece from lava mound. Broke into a few pieces entering the box. [Clague]
J288-ROCK-007	new lava pond	45.98663	130.0114305	1580.47	194.97	8/9/2007 9:34	Third rock; large pillow from near the lava pond. It is in the Port box - starboard forward section. [Clague]
J288-ROCK-008	cliff off lava pond	45.98692	130.0114496	1581.61	267.13	8/9/2007 9:55	Fourth rock; inflated pillow rind from cliff off lava pond. [Clague]
J288-ROCK-009	se edge of lava pond	45.98094	130.0040275	1579.54	172.25	8/9/2007 12:25	Fifth rock; twin pillow buds from SE edge of lava pond. [Clague]
J288-ROCK-010	old flow s. of lava pond	45.97998	130.0024091	1558.84	139.64	8/9/2007 12:58	Sixth rock; from older flow just south of lava pond. [Clague]
J288-ROCK-011	older flow w/ pelagic sed	45.97786	129.9997928	1551.55	145.69	8/9/2007 13:48	Seventh rock; rind from an imploded pillow on a flow covered by more pelagic sediment. [Clague]

### 6.3.4 J2-289 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J289-BIO-001	Marker 33	45.93322	129.9824319	1519.4	39.76	8/11/2007 10:18	Suction of some limpets. [Rose]
J289-BIO-002	Marker 33	45.93368	129.9823731	1520.73	75.25	8/11/2007 10:31	Tubeworm grab of some of the less healthy worms. At bush a little ways from the main Marker 33 vent. [Rose]
J289-BIO-003	Marker 33	45.93368	129.9823841	1520.12	236.75	8/11/2007 10:54	Handful of tubeworms. Temp on the side is ~8.8C. Peripheral temperature ~6.0C. Temperature deep near the base of tubes is 36C. Final deep temperature reading is 17C. [Rose]
J289-HFS-004	Marker 33	45.93331	129.9823928	1520.12	203.26	8/11/2007 11:23	Unfiltered piston #2 in PVC cover Tmax=17.2 Tavg=15.8 Vol=750 T2=9 [Butterfield]
J289-HFS-005	Marker 33	45.93314	129.9823825	1520.04	202.96	8/11/2007 11:30	Filtered bag #16 in PVC cover Tmax 17.0 Tavg=15.4 T2=9 Vol=645. [Butterfield]
J289-HFS-006	Marker 33	45.93316	129.9823822	1520	202.61	8/11/2007 11:34	Filtered bag #17 Tmax=18.4 Tavg=14.7 Vol=2568 T2=7. [Butterfield]
J289-HFS-007	Marker 33	45.93318	129.9823589	1519.98	202.49	8/11/2007 11:39	Sterivex filter #10 Tmax=18.4 Tavg=14.7 Vol=2568 T2=7. [Butterfield]
J289-HFS-008	Marker 33	45.93328	129.9823264	1519.88	203.38	8/11/2007 11:57	Sterivex filter #11 Tmax=19.9 Tavg=14.7 T2=8.4 Vol=2704 T2=8.4. [Butterfield]
J289-HFS-009	Marker 33	45.93337	129.9822892	1519.76	202.71	8/11/2007 12:15	Unfiltered piston #3 in PVC cover Tmax=18.5 Tavg=17.1 Vol=655 T2=8.1. [Butterfield]
J289-HFS-010	Cloud	45.93375	129.9816103	1521.1	309.62	8/11/2007 12:48	Unfiltered Piston #8 Tmax=6.7 Tavg=6.5 Vol=730 T2=4.8. [Butterfield]
J289-HFS-011	Cloud	45.93358	129.9816458	1521.1	309.33	8/11/2007 12:53	Filtered bag #18 Tmax = 6.7 Tavg = 6.3 Vol=620 T2=4.7 [Butterfield]
J289-HFS-012	Cloud	45.93316	129.9817188	1521.09	309.16	8/11/2007 13:00	Sterivex filter #15 Tmax=6.8 Tavg=6.5 T2=4.9 Vol=3005 [Butterfield]
J289-HFS-013	Cloud	45.93262	129.9819124	1521.05	309.37	8/11/2007 13:22	Filtered bag #19 Tmax=6.8 Tavg=6.7 Vol=604 T2=5.0 [Butterfield]
J289-HFS-014	Casper	45.91766	129.9929953	1534.08	300.28	8/11/2007 16:09	Piston #4 Tmax=301.6 Tavg=301.3 vol=253 T2=86 [Butterfield]

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J289-GT-015	Casper	45.91768	129.9929884	1534.12	300.26	8/11/2007 16:12	STBD Gastight #2 fired in same exact place after HFS sample. [Evans]
J289-HFS-016	Casper	45.91769	129.9929878	1534.12	300.26	8/11/2007 16:13	Piston #9 Tmax=301.6 Tavg=301.2 Vol=325 T2=85 [Butterfield]
J289-HFS-017	Vixen	45.91729	129.9930173	1533.98	243	8/11/2007 16:20	Piston #1 Tmax=330.1 Tavg=328 vol=303 T2=100. [Butterfield]
J289-HFS-018	Vixen	45.91731	129.9930162	1533.92	243.07	8/11/2007 16:24	Filtered bag #24 Tmax=330.4 Tavg=330.2 vol=228 T2=100. [Butterfield]
J289-HFS-019	Vixen	45.91733	129.9930051	1534.02	243.13	8/11/2007 16:28	Filtered bag #22 Tmax=330.4 Tavg=330.2 vol=243 T2=86 [Butterfield]
J289-HFS-020	Vixen	45.91727	129.9930533	1534.63	359.69	8/11/2007 16:51	Unfiltered piston #5 Tmax=30.4 Tavg=30.0 vol=604 T2=15 [Butterfield/shared microbio]
J289-HFS-021	Vixen	45.91728	129.9930559	1534.7	359.63	8/11/2007 16:56	Sterivex filter #12 Tmax=30.8 Tavg=30.0 vol=3556 T2=16. [Butterfield/shared microbio]
J289-HFS-022	Vixen	45.91728	129.9930837	1534.89	358.82	8/11/2007 17:20	Filtered bag # 20 Tmax=30.3 Tavg=29.9 Vol=529 T2=16 [Butterfield/shared microbio]
J289-PIP-023	Vixen	45.91727	129.9930771	1534.96	358.46	8/11/2007 17:26	Large Volume Filter Guage says .7 flow units. 20 minutes [Huber]
J289-HFS-024	Bag City	45.91625	129.9892701	1533.28	168.38	8/11/2007 19:22	Unfiltered Piston #6 Tmax=13.4 Tavg=12.7 Vol=730 T2=8. [Butterfield]
J289-HFS-025	Bag City	45.91626	129.9892623	1533.3	168.46	8/11/2007 19:28	Unfiltered Ppiston #7 Tmax=13.6 Tavg=13.1 Vol=705 T2=8.2. [Butterfield]
J289-HFS-026	Bag City	45.91626	129.9892761	1533.33	168.7	8/11/2007 19:34	Sterivex filter #13 Tmax=13.7 Tavg=13.2 Vol=3150 T2=8.5. [Butterfield]
J289-HFS-027	Bag City	45.91626	129.9892808	1533.38	169.27	8/11/2007 19:56	Sterivex filter #14 Tmax=14.7 Tavg=14.4 Vol=2500 T2=9 SigmaT=0.14 [Butterfield]
J289-HFS-028	Bag City	45.91623	129.9892981	1533.36	169.31	8/11/2007 20:13	Filtered bag #21 Tmax=14.7 Tavg=14.5 Vol=529 T2=8.9 SigmaT=0.10. [Butterfield]
J289-HFS-029	Bag City	45.91629	129.9892836	1533.38	169.3	8/11/2007 20:17	Filtered bag #23 Tmax=14.6 Tavg=14.4 SigmaT=0.17 Vol=560 T2=9.0. [Butterfield]
J289-ROCK-030	Southern Pillow Mound	45.87014	-130.001161	1720.99	254.3	8/12/2007 1:08	Rock near the South Pillow Mound. [Lebaron]

### 6.3.5 J2-290 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J290-HFS-001	T+S Spires	45.98912	-130.0271994	1576.73	280.15	8/13/2007 4:39	Filtered bag #23. Tmax=307.2 Tavg=301.8 vol=437 T2=92 (pump stopped/restarted during sample) [Butterfield]
J290-GT-002	T+S Spires	45.9891	-130.0277166	1576.73	280.11	8/13/2007 4:44	Fired PORT Gastight Bottle #17 Same orifice; fired twice. [Evans]
J290-HFS-003	T+S Spires	45.9891	-130.0277126	1576.79	280.2	8/13/2007 4:46	Piston #1 unfiltered. Tmax=307.6 Tavg=307.3 vol=495 T2=94 [Butterfield]
J290-HFS-004	T+S Spires	45.9891	-130.0277013	1576.84	280.41	8/13/2007 4:52	Piston #2 unfiltered. Tmax=307.7 Tavg=307.3 vol=382 T2=94 [Butterfield]
J290-HFS-005	T+S Spires	45.9891	-130.0276932	1576.86	280.49	8/13/2007 4:55	Filtered bag #22. Tmax=308 Tavg=307.4 vol=267 T2=93 filtered was clogged. [Butterfield]
J290-HFS-006	T+S Spires	45.98914	-130.0276444	1579.75	297.57	8/13/2007 5:28	Filtered bag #21 Tmax=44.9 Tavg=42.9 vol=623 T2=23. [Butterfield/Som]
J290-HFS-007	T+S Spires	45.98913	-130.0276484	1579.86	297.5	8/13/2007 5:33	Filtered bag #20. Tmax=41.2 Tavg=40.2 vol=687 T2=24. [Butterfield/Som]
J290-HFS-008	T+S Spires	45.98913	-130.0276583	1579.81	297.6	8/13/2007 5:39	Filtered bag #19 Tmax=45.4 Tavg=43.5 vol=705 T2=22 [Butterfield/Som]

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J290-HFS-009	T+S Spires	45.98913	-130.0276822	1579.77	297.92	8/13/2007 5:45	Filtered bag #17. Tmax=40.3 Tavg=36.4 vol=694 T2=20. [Butterfield/Som]
J290-HFS-010	T+S Spires	45.98913	-130.0276792	1579.81	297.93	8/13/2007 5:51	Sterivex filter #13 Tmax=78.8 Tavg=75.9 vol=2808 T2=36. [Butterfield]
J290-HFS-011	T+S Spires	45.98914	-130.0276009	1580.13	298.06	8/13/2007 6:25	Sterivex #14 Tmax=76.5 Tavg=74.5 Vol=2505 T2=35. [Butterfield]
J290-HFS-012	T+S Spires	45.98915	-130.0275531	1580.34	297.9	8/13/2007 6:48	Unfiltered piston #3. Tmax=73.8 Tavg=73.0 Vol=711 T2=35. [Butterfield]
J290-HFS-013	Shepherd	45.98884	-130.0275256	1581.82	255.51	8/13/2007 7:35	Unfiltered piston #4 Tmax=27.5 Tavg=27.1 Vol=714 T2=16. [Butterfield]
J290-HFS-014	Shepherd	45.98884	-130.0275155	1581.87	255.03	8/13/2007 7:40	Filtered bag #16. Tmax=25.2 Tavg=21.7 Vol=545 T2=13. [Butterfield]
J290-HFS-015	Shepherd	45.98884	-130.0275022	1581.95	254.28	8/13/2007 7:48	Sterivex filter #10. Tmax=27.9 Tavg=25 Vol=3049 T2=13. [Butterfield]
J290-PIP-016	Shepherd	45.98885	-130.0274587	1581.81	252.59	8/13/2007 8:13	Pelagic pump high volume sampler. Running it at full flow rate is 0.8. 20 minutes. [Huber]
J290-ROCK-017	W of CASM mbari-pt5	45.97873	-130.0249808	1578.77	176.55	8/13/2007 10:51	Rock sample. MBARI-AUV target 5. [Clague]
J290-ROCK-018	W of CASM mbari-pt5	45.97675	-130.0247295	1579.94	237.57	8/13/2007 11:34	Drained lobate. [Clague]
J290-ROCK-019	W of CASM mbari-pt5	45.97483	-130.0259116	1583.15	8.95	8/13/2007 12:43	Got a rock sample.[Clague]
J290-CORE-020	W of CASM mbari-pt5	45.976	-130.0272285	1570.32	319.45	8/13/2007 13:20	Collecting the push core.[Clague]
J290-ROCK-021	W of CASM mbari-pt5	45.97601	-130.0272815	1569.81	311.1	8/13/2007 13:23	Rock sample from a collapsed pillow.[Clague]
J290-ROCK-022	W of CASM mbari-pt5	45.97648	-130.027996	1567.04	268.8	8/13/2007 13:42	Collecting a sample at the western edge of the small pit. [Clague]

### 6.3.6 J2-291 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J291-GT-001	Mkr33/55	45.93314	-129.9823504	1520.94	180.5	8/14/2007 5:04	Fired STBD .T=21. [Evans]
J291-HFS-002	Mkr33/55	45.93314	-129.9823507	1520.94	180.39	8/14/2007 5:05	Filtered bag #24 Tmax= 21.5 Tavg=20.6 Vol=619 T2=10. [Butterfield]
J291-HFS-003	Mkr33/55	45.93314	-129.9823559	1521.01	180.71	8/14/2007 5:11	J291-HFS-003 Filtered piston #1 Tmax=21.7 Tavg=21.0 Vol=724 T2=10.5 SigmaT1=.3. [Butterfield]
J291-GT-004	Cloud	45.93325	-129.9817125	1522.9	289.9	8/14/2007 6:01	Discreet Black-handle Gastight fired T=6.5 [Evans]
J291-Suction-005	Cloud	45.93322	-129.9817314	1523.53	256.25	8/14/2007 6:24	Suction of limpets on tubeworms. Most tubeworms appear to be dead. [Rose]
J291-HFS-006	Zen Gardens (site 1)	45.93723	-129.9814891	1518.33	10.63	8/14/2007 7:28	Filtered piston #2 . Tmax=24.2 Tavg=23.4 Vol=746 T2=12 SigmaT=0.14. [Butterfield]
J291-HFS-007	Zen Gardens (site 1)	45.93724	-129.9814944	1518.36	10.65	8/14/2007 7:34	Unfiltered piston #5 Tmax=24.9 Tavg=24.1 Vol=730 T2=12 SigmaT=0.2. [Butterfield]
J291-HFS-008	Zen Gardens (site 1)	45.93724	-129.981499	1518.38	10.65	8/14/2007 7:40	Sterivex filter #10 Tmax=25.7 Tavg=23.7 Vol=3403 T2=12 SigmaT=0.6. [Butterfield]

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J291-HFS-009	Zen Gardens (site 2)	45.93723	-129.9814873	1518.26	32.56	8/14/2007 8:12	Filtered bag #23 Tmax=7.6 Tavg=7.3 Vol=504 T2=5 SigmaT=0.12. [Butterfield]
J291-HFS-010	Zen Gardens (site 2)	45.93724	-129.9815003	1518.28	32.65	8/14/2007 8:19	Sterivex #11 Tmax=7.7 Tavg=7.2 Vol=2903 T2=5 SigmaT=0.19. [Butterfield]
J291-HFS-011	Zen Gardens (clam site)	45.93736	-129.9812254	1518.68	347.7	8/14/2007 8:52	Filtered bag #20 Tmax=5.7 Tavg=5.4 Vol=502 T2=3.7 SigmaT=0.18. [Butterfield]
J291-HFS-012	N3	45.9439	-129.985202	1526.99	9.7	8/14/2007 10:25	Filtered bag #19 Tmax=24.5 Tavg=24.1 Vol=528 T2=13 SigmaT=0.3. [Butterfield]
J291-HFS-013	N3	45.9439	-129.9852147	1526.95	9.65	8/14/2007 10:30	Sterivex #15 Tmax=25.4 Tavg=24.9 Vol=30074 T2=13 SigmaT=.19. [Butterfield]
J291-HFS-014	N3	45.94389	-129.9852642	1526.82	9.27	8/14/2007 10:50	Unfiltered piston #8 Tmax=25.3 Tavg=25.0 Vol=~750 T2=13 SigmaT=2.1 Accidentally added 45ml from Forum site after this sample was finished [Butterfield]
J291-PIP-015	N3	45.94392	-129.9852628	1526.62	10.02	8/14/2007 11:10	Pump started on Pelagic Impelie Pump. 15 min. [Huber]
J291-HFS-016	Forum	45.94651	-129.9839172	1523.9	179.99	8/14/2007 13:42	Unfiltered piston #7. Tmax=7.0 Tavg=6.6 Vol=730 T2=4.8. [Butterfield]
J291-HFS-017	Forum	45.94648	-129.9839231	1523.89	179.82	8/14/2007 13:50	Filtered bag #16. Tmax=6.2 Tavg=6.0 Vol=502 T2=4.6. [Butterfield]
J291-HFS-018	Forum	45.94648	-129.9839215	1524.04	179.57	8/14/2007 13:58	Filtered piston #9. Tmax=6.1 Tavg=5.7 Vol=750 T2=4.5. [Butterfield]
J291-HFS-019	Forum	45.94648	-129.983908	1523.92	179.44	8/14/2007 14:04	Filtered piston #3. Tmax=6.2 Tavg=6.0 Vol=744 T2=4.7. [Butterfield]
J291-HFS-020	Forum	45.94648	-129.9839137	1523.84	179.35	8/14/2007 14:12	Sterivex #13. Tmax=6.1 Tavg=5.7 Vol=2046 T2=4.5. [Butterfield]
J291-HFS-021	Forum-Trevi	45.94635	-129.9836885	1519.42	87.7	8/14/2007 14:50	Piston #4 filtered. Tmax=256.3 Tavg=256.1 Vol=300 T2=89 Sigma=.07 pump stopping potential problem sample [Butterfield]
J291-HFS-022	Forum-Trevi	45.94634	-129.9836883	1519.31	87.48	8/14/2007 14:54	Filtered piston #6. Tmax=256.1 Tavg=256.0 Vol=278 T2=89 sigma=.08 [Butterfield]
J291-HFS-023	Forum-Trevi	45.94634	-129.9836886	1519.31	87.52	8/14/2007 14:58	Filtered bag #18. Tmax=256.2 Tavg=256.2 Vol=300 T2=84 sigma=.04 [Butterfield]
J291-GT-024	Forum-Trevi	45.94632	-129.9836979	1519.47	87.72	8/14/2007 15:07	Discreet gastight blue-handle. Fired. (Same orifice as HFS at T=256) Deep in hole.[Evans]
J291-GT-025	Forum-Trevi	45.94631	-129.9836937	1519.56	87.26	8/14/2007 15:14	Red Gastight triggered in Trevi vent [Evans]
J291-Scoop-026	1998 Flow North	45.9486	-129.984044	1517.92	152.97	8/14/2007 17:33	Orange hydrothermal sediment on sheet flow in channel of fissure, on older flow coming down caldera rim. This could be one of the high backscatter regions on the margin. [Clague]
J291-ROCK-027	1998 Flow North	45.9488	-129.9851983	1524.84	354.83	8/14/2007 21:54	First rock sample; crust of broken, drained lobate pillow of okder flow, surrounded by fluffy red hydrothermal sediments. 2 pieces. [Clague]
J291-CORE-028	1998 Flow North	45.94858	-129.9848184	1523.87	129.83	8/14/2007 22:02	Core in thick, fluffy, reddish hydrothermal sediment; in old hydrothermal area; probable eruptive fissure of the old flow. Core reached full penetration. [Clague]

### 6.3.7 J2-292 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
<b>NOTE: HFS sample type/filters listed here have been corrected from what was logged in the Event Logger and sample log sheets. Event Logger/sample sheets as logged were incorrect due to mis-wiring of instrument.</b>							
J292-HFS-001	Village	45.92619	-129.9805646	201.97	1519.97	8/15/2007 13:18	Unfiltered bag 21. Tmax=27.0 Tavg=22.6 Vol=592 T2=12 sigT=1.3. [Butterfield]
J292-HFS-002	Village	45.92617	-129.9805677	202.1	1519.92	8/15/2007 13:23	Unfiltered bag 16, overfilled broken. Tmax=24.6 Tavg=22.8 Vol=2601 T2=12 sigT=1.0. [Butterfield]
J292-HFS-003	Village	45.92618	-129.9805781	202.2	1519.78	8/15/2007 13:40	Filtered piston 1 (gff). Tmax=23.8 Tavg=22.6 Vol=576 T2=12 sigT=0.9. [Butterfield]
J292-HFS-004	El Guapo	45.92652	-129.9795775	70.09	1506.01	8/15/2007 15:00	Filtered bag #17. Tmax=330.6 Tavg=300. vol=468 T2=90 SigmaT=14. [Butterfield]
J292-HFS-005	El Guapo	45.92652	-129.9795658	60.18	1505.95	8/15/2007 15:18	Filtered piston #2. Tmax=338.9 Tavg=338.5 vol=269 T2=88 Sigma=.2. [Butterfield]
J292-GT-006	El Guapo	45.92652	-129.9795666	76.32	1505.92	8/15/2007 15:20	Fired PORT gastight bottle #2. T=339 [Evans]
J292-Sulfide-007	El Guapo	45.92651	-129.9795898	157.68	1503.97	8/15/2007 15:43	Chimney fell off while sampling J292-HFS-004. [Chadwick]
J292-HFS-008	Hermosa	45.92645	-129.9793646	176.97	1514.77	8/15/2007 16:19	Filtered bag #22. Tmax=26.1 Tavg=20.8 vol=628 T2=14 Sigma=4. [Butterfield]
J292-HFS-009	Escargot	45.9263	-129.9792197	261.48	1516.06	8/15/2007 16:51	Filtered piston #8. Tmax=100.2 Tavg=93.4 vol=457 T2=35 Sigma=4.1. [Butterfield]
J292-HFS-10	Escargot	45.92631	-129.9792023	261.53	1516.07	8/15/2007 16:55	Unfiltered piston #7. Tmax=102.5 Tavg=96.1 vol=404 T2=40 Sigma=5. [Butterfield]
J292-HFS-011	Diva	45.92632	-129.9790911	224.04	1520.83	8/15/2007 17:14	Unfiltered piston #5. Tmax=276.5 Tavg=276.1 vol=401 T2=81 Sigma=.23. [Butterfield]
J292-HFS-012	Diva	45.92632	-129.9790898	224.02	1520.86	8/15/2007 17:18	Unfiltered bag #18. Tmax=276.2 Tavg=276. vol=614 T2=82.4 Sigma=.10 [Butterfield]
J292-GT-013	Diva	45.92632	-129.9790901	223.99	1520.9	8/15/2007 17:23	STBD gastight bottle #17 at same place. T=276 [Evans]
J292-HFS-014	Castle	45.92611	-129.9800824	351.52	1517.02	8/15/2007 17:51	Unfiltered bag #24. Tmax=237.8 Tavg=237.4 vol=609 T2=74.4 sigma=.14 [Butterfield]
J292-HFS-015	Castle	45.92609	-129.9800957	351.62	1517.07	8/15/2007 17:56	Unfiltered piston #4. Tmax=237.3 Tavg=237.1 vol=272 T2=73 sigma=.14. [Butterfield]
J292-ROCK-016	Mkr108	45.92878	-129.9831918	85.4	1518.41	8/15/2007 19:37	The rock sample was collected close to where we think Marker 108 is located. From the 1998 lava flow. (Second rock collected-see last sample comment) [Fisk]
J292-HFS-017	Mkr113/62	45.92272	-129.9882576	279.27	1522.74	8/15/2007 21:00	Unfiltered piston #6 Tmax=31.1 Tavg=30.7 Vol=705 T2=14.5 sigT=0.5. [Butterfield]
J292-HFS-018	Mkr113/62	45.92273	-129.9882415	278.69	1522.77	8/15/2007 21:09	Unfiltered bag 23 overfilled broken Tmax=30.8 Tavg=30.6 Vol=713 T2=14.6 sigT=0.05. [Butterfield]
J292-HFS-019	Mkr113/62	45.92274	-129.9882451	278.65	1522.79	8/15/2007 21:15	Sterivex filter #13 Tmax=31.1 Tavg=30.7 Vol=2600 T2= 14.7 sigT=0.17. [Butterfield]
J292-HFS-020	Mkr113/62	45.92274	-129.9882594	278.59	1522.85	8/15/2007 21:34	Sterivex #14 Tmax=31.5 Tavg=31.3 Vol=2617 T2=15.4 sigT=0.14. [Butterfield]
J292-HFS-021	Mkr113/62	45.92274	-129.9882858	278.66	1522.89	8/15/2007 21:56	Unfiltered piston #3 Tmax=31.5 Tavg=31.4 Vol=444 T2=15.6 sigT=0.02. [Butterfield]
J292-HFS-022	Mkr113/62	45.92274	-129.9882891	278.67	1522.9	8/15/2007 22:02	Filtered piston #19 Tmax= 31.5 Tavg=31.4 Vol=602 T2=14.9 sigT=0.03. [Butterfield]
J292-BIO-023	Mkr113/62	45.92275	-129.9883156	288.25	1522.9	8/15/2007 22:21	Weak-looking tubeworms into the port biobox. [Rose]
J292-ROCK-024	98 flow distal end	45.91007	-129.9840587	194.92	1540.45	8/16/2007 5:08	Third rock; from 'a'a levee of what we think is 1998 flow. Rock is crumbly. Fist-sized. [Clague]

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J292-ROCK-025	pre98 lobate flow collapse floor	45.90805	-129.983851	140.58	1547.68	8/16/2007 5:48	Fourth rock; piece of lake crust fallen to base of pillar on floor of collapse in older flow lobate lava at south end. [Clague]
J292-ROCK-026	98 flow near Mkr108	45.92842	-129.9830902	321.5	1518.04	8/15/2007 18:46	First rock; piece of pillar Jason bumped into in collapse area of 98 flow near Mkr 108. (Volunteer sample still in basket at end of dive; out of time collected order). [Peter Shipman]

### 6.3.8 J2-293 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J293-ROCK-001	deploy-reflector	45.93362	-130.0131696	1542.25	25.73	8/16/2007 20:41	First Rock: Collecting a rock sample (glassy basalt) for Fisk.Near Virgin at ASHES
J293-HFS-002	Virgin	45.93364	-130.0132257	1543.87	216.08	8/16/2007 21:13	Filtered piston #1. Tmax=252 Tavg=251.1 Vol=247 T2=85 sigT=0.65. [Butterfield]
J293-HFS-003	Virgin	45.93364	-130.0132249	1543.89	216.1	8/16/2007 21:15	Filtered piston #2 Tmax=252.5 Tavg=252 Vol=285 T2=86 sigT=0.13. [Butterfield]
J293-HFS-004	Virgin	45.93364	-130.0132437	1543.9	216.13	8/16/2007 21:20	Filtered bag #18 - Tmax=252.3 Tavg=252.1 Vol=203 T2=85 sigT=0.13. [Butterfield]
J293-GT-005	Virgin	45.93365	-130.0132314	1543.94	216.11	8/16/2007 21:26	J293-GT-005 Discrete blue gas tight bottle #12. (Same spot as last sample) [Evans]
J293-GT-006	Virgin	45.93365	-130.013242	1543.95	216.11	8/16/2007 21:32	Discreet black gas tight #18 (same spot). [Evans]
J293-HFS-007	Gollum	45.93353	-130.0134071	1543.84	129.84	8/16/2007 21:54	Starting unfiltered bag #24 Tmax=22.9 Tavg=22.3 Vol=413 T2=11.7 sigT=0.36. [Butterfield]
J293-HFS-008	Gollum	45.93354	-130.0134049	1543.85	129.84	8/16/2007 21:57	Filtered bag #22 at Gollum. Tmax=22.1 Tavg=21.6 Vol=407 T2=11.3 sigT=0.23. [Butterfield]
J293-HFS-009	Gollum	45.93354	-130.0133966	1543.87	129.79	8/16/2007 22:02	Starting Sterivex #15 Tmax=24 Tavg=22.6 Vol=2627 T2=11 sigT=0.5. [Butterfield]
J293-HFS-010	Gollum	45.93356	-130.0133843	1543.91	129.35	8/16/2007 22:19	Sterivex #14 Tmax=22.9 Tavg=21.8 Vol=2513 T2=11.6 sigT=0.64. [Butterfield]
J293-HFS-011	Gollum	45.93354	-130.0133957	1543.91	129.57	8/16/2007 22:36	Starting Sterivex filter #13 Sterivex filter #13 - Tmax=22.3 Tavg=21.7 Vol=2554 T2=11 sigT=0.35 [Bourbonnais]
J293-PIP-012	Gollum	45.93356	-130.0133947	1543.91	129.67	8/16/2007 22:56	High volume pelagic pump. Rate 0.7 15 minutes.[Huber]
J293-HFS-013	Mushroom	45.93366	-130.013625	1542.88	203.65	8/17/2007 0:14	Filtered bag #16. Tmax=265 Tavg=256 Vol=348 T2=9. (Started with low T2 reading; reversed pump; started again) [Butterfield]
J293-GT-014	Mushroom	45.93364	-130.0136157	1542.83	203.37	8/17/2007 0:22	STBD Gastight #16. [Evans]
J293-HFS-015	Inferno	45.93362	-130.013682	1541.34	263.65	8/17/2007 0:47	J293-HFS-015 Starting filtered piston #3 at Inferno. Tmax=313.1 Tavg=312.8 Vol=438 T2=100 sigT=0.17. [Butterfield]
J293-HFS-016	Inferno	45.93362	-130.0136818	1541.28	263.84	8/17/2007 0:55	Filtered piston #8.Tmax=313.4 Tavg=313.3 Vol=510 T2=100 sigT=0.07. [Butterfield]
J293-GT-017	Inferno	45.93362	-130.0136819	1541.23	264.52	8/17/2007 1:01	Discreet white gastight#17 sample at Inferno. [Evans]
J293-BIO-018	Inferno	45.93361	-130.0136976	1541.79	230.56	8/17/2007 1:25	J293-BIO-018 Grabbed clump of healthy tubeworms by the chimney that was fluid sampled. [Rose]
J293-HFS-019	Inferno	45.93365	-130.013708	1542.25	203.8	8/17/2007 1:39	Filtered bag #20. Tmax=19.2 Tavg=17.3 Vol=427 T2=9 sigT=1.3. [Butterfield]
J293-HFS-020	Hell	45.9334	-130.0139748	1540.66	200.93	8/17/2007 2:16	Filtered piston #4. Tmax=267.1 Tavg=240.2 Vol=488 T2=12. (T2 dropped-clogged filter?) [Butterfield]



Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J293-HFS-021	Hell	45.93339	-130.0139729	1540.56	200.74	8/17/2007 2:29	Unfiltered piston #5. Tmax=267.6 Tavg=265.3 Vol=551 T2=12.5 sigT=1.59. [Butterfield]
J293-HFS-022	Phoenix	45.93333	-130.0137033	1541.96	200.91	8/17/2007 2:58	Filtered bag #19. Tmax=288.5 Tavg=286.7 vol=407 T2=62.6 Sigma=1.13 [Butterfield]
J293-HFS-023	Phoenix	45.93333	-130.0136926	1541.92	200.84	8/17/2007 3:02	Unfiltered Piston #6 starting. Tmax=292.2 Tavg=281.5 vol=623 T2=65 SigmaT1=7.58 [Butterfield]
J293-Suction-024	ROPOS	45.93331	-130.0137881	1542.79	230.61	8/17/2007 3:25	J293-Suction-024 Suction of limpets at ROPOS. (Temperature reading from next sample)
J293-HFS-025	ROPOS	45.93326	-130.0137994	1542.23	12.63	8/17/2007 3:47	Unfiltered Piston #7. Tmax=34.4 Tavg=31.8 vol=620 T2=13.2 SigmaT1=1.18 [Butterfield]
J293-BIO-026	Phoenix	45.93331	-130.0136706	1542.34	188.16	8/17/2007 4:11	Got a few worms from the crack near small smoker. Not many healthy worms anywhere on vent. [Rose]
J293-HFS-027	Dave	45.93341	-130.0135928	1542.94	61.48	8/17/2007 4:43	Unfiltered Bag #23 Tmax=11.9 Tavg=11.6 vol=401 T2=6.7 Sigma=.16 [Butterfield]
J293-ROCK-028	N. of ASHES	45.93357	-130.0131798	1542.85	81.93	8/17/2007 5:03	Second rock: 10m SE of Virgin (Ashes) picked up rock from pushed up rubble at margin of sheet flow. [Clague]
J293-ROCK-029	N. of ASHES	45.93529	-130.0160906	1547.98	287.07	8/17/2007 5:52	Third rock: from lip of fold in lobate flow after transition out of pillow flow. Crunchy- crumbled while storing. [Clague]
J293-SULFIDE-030	Phoenix	45.93333	-130.0137033	1541.96	200.91	8/17/2007 2:58	Portion of Phoenix sulfide which remained in basket at dive recovery. Sulfide collapsed into basket during HFS sampling. [Chadwick]

### 6.3.9 J2-294 Sample Log

Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J294-SED-001	near waypoint #2	46.70014	-129.3739922	2408.33	213.8	8/18/2007 1:24	Sed scoop of reddish dirt ~6" thick in old, old flows
J294-ROCK-002	near waypoint #2	46.69976	-129.3736444	2411.35	37.3	8/18/2007 1:45	First rock: from near waypoint #2. Second attempt successful. Loose piece on top of truncated lobate pillow at very edge of large rift.
J294-ROCK-003	near tubeworm target	46.70416	-129.3725389	2424.74	186.32	8/18/2007 5:16	Second rock: From sheet flow that laps onto pillow flow (of rock002) near the tubeworm target. Small piece broken from larger slab.
J294-ROCK-004	Cobb lobates	46.69627	-129.3757403	2424.25	215.51	8/18/2007 7:56	Third rock: Pillow lavas sampled.
J294-ROCK-005	Cobb collapse area	46.69218	-129.3769697	2448.83	190.85	8/18/2007 8:28	Fourth rock: From collapse area. It was recovered from the deep hole.
J294-HFS-006	Not Dead Yet	46.69019	-129.3775662	2402.44	96.77	8/18/2007 9:34	Filtered piston #1 Tmax=150.4 Tav=139.7 Vol=602 T2=50 SigT=12.
J294-HFS-007	Not Dead Yet	46.68987	-129.3773474	2402.46	96.37	8/18/2007 9:39	Filtered bag HFS #22. Tmax=121.8 Tav=103.6 Vol=685 T2=35 SigT=8.8.
J294-GT-008	Not Dead Yet	46.68986	-129.3773468	2402.56	96.49	8/18/2007 9:49	Starboard Gas Tight #9 bottle.
J294-HFS-009	Not Dead Yet	46.68986	-129.3773474	2402.55	96.38	8/18/2007 9:49	Filtered bag #17 Tmax=142.2 Tav=132.7 Vol=545 T2=42 SigT=6.7.
J294-HFS-010	Not Dead Yet	46.68987	-129.3773483	2402.57	96.54	8/18/2007 9:55	Unfiltered piston #5 Tmax=164.5 Tav=153.5 Vol=466 T2=42 SigT=10.
J294-HFS-011	Not Dead Yet diffuse area	46.68981	-129.3772571	2402.23	101.19	8/18/2007 10:07	Filtered piston #6 in palm worms Tmax=20.3 Tav=19.7 Vol=654 T2=10 SigT=0.38.

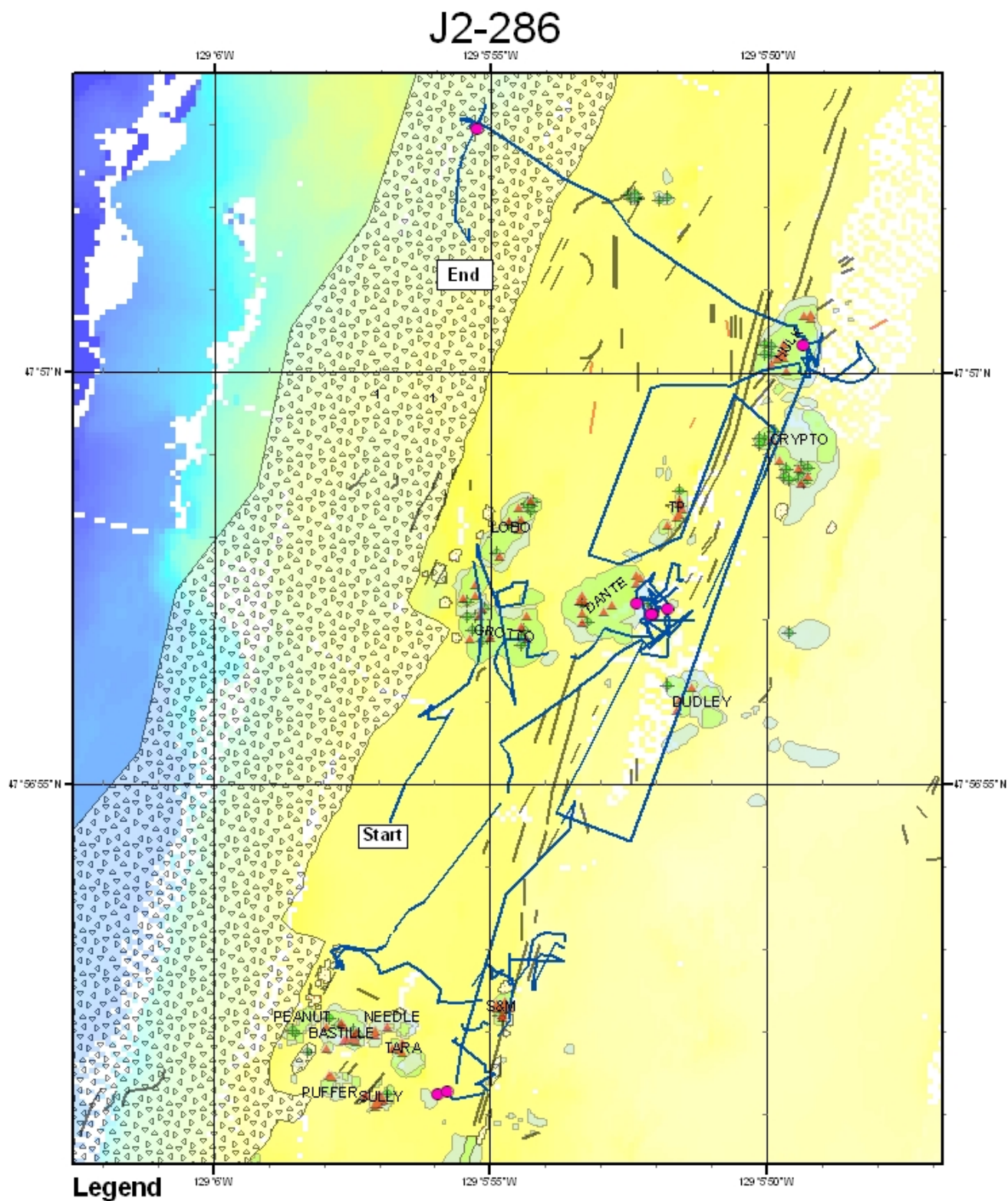
Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J294-HFS-012	Not Dead Yet diffuse area	46.68974	-129.3771968	2402.27	101.08	8/18/2007 10:12	Sterivex #11 in palm worms Tmax=22.3 Tav=20.9 Vol=2500 T2=10.6 SigT=0.88.
J294-HFS-013	Not Dead Yet diffuse area	46.68974	-129.3771915	2402.35	101.01	8/18/2007 10:32	Filtered bag #18 in palm worms Tmax=21.6 Tav=21.1 Vol=579 T2=10.3 SigT=0.6.
J294-HFS-014	Not Dead Yet diffuse orange	46.68973	-129.3771927	2402.4	99.35	8/18/2007 10:39	Filtered bag #19 in orange base of sulfide Tmax=26.8 Tav=24.8 Vol=510 T2=11 SigT=1.1.
J294-HFS-015	Not Dead Yet diffuse orange	46.68973	-129.3771931	2402.4	99.85	8/18/2007 10:45	Unfiltered piston #7 Tmax=33.3 Tav=29.5 Vol=676 T2=12 SigT=2.3.
J294-HFS-016	Not Dead Yet diffuse orange	46.68973	-129.3771886	2402.42	99.88	8/18/2007 10:50	Sterivex #15 Tmax=33.6 Tav=24.3 Vol=2547 T2=10 SigT=5.8.
J294-PIP-017	Not Dead Yet diffuse orange	46.68974	-129.3771732	2402.46	99.03	8/18/2007 11:13	Pumping at 0.7 gallons per minute. 13 minutes.
J294-HFS-018	Not Dead Yet SE	46.68968	-129.3771447	2399.02	61.66	8/18/2007 12:30	Filtered piston #2 Tmax=157.8 Tav=149.8 Vol=564 T2=58 SigT=7.
J294-HFS-019	Not Dead Yet SE	46.68968	-129.3771443	2399.04	61.55	8/18/2007 12:35	Filtered bag #20 Tmax=153.8 Tav=148.7 Vol=510 T2=57 SigT=4.6.
J294-HFS-020	Not Dead Yet SE	46.68968	-129.3771441	2399.02	61.68	8/18/2007 12:40	Filtered bag #21 Tmax=222.9 Tav=203.6 Vol=489 T2=13 SigT=16.
J294-GT-021	Not Dead Yet SE	46.68969	-129.3771426	2399.02	63.02	8/18/2007 12:52	Discreet orange handled gastight bottle #16
J294-HFS-022	Hogwarts Harry	46.68202	-129.3838968	2413.67	277.44	8/18/2007 16:58	Unfiltered piston #3 Tmax=204.9 Tav=204.6 vol=551 T2=50 Sigma=.13
J294-HFS-023	Hogwarts Harry	46.68203	-129.3840072	2414.47	86.74	8/18/2007 17:21	Unfiltered piston #4 Tmax=90.7 Tav=84 vol=654 T2=26.3 Sigma=3.26
J294-HFS-024	Hogwarts Ron	46.68225	-129.383869	2415.89	334.07	8/18/2007 17:40	Unfiltered Piston #8 Tmax=25.9 Tav=25.5 vol=705 T2=12 Sigma=.18
J294-HFS-025	Hogwarts Ron	46.68225	-129.3838535	2415.89	334.04	8/18/2007 17:46	Sterivex #10 Tmax=27.1 Tav=26.6 vol=2700 T2=12.3 Sigma=.24
J294-Suction-026	Hogwarts Ron	46.68225	-129.3838226	2415.93	334.26	8/18/2007 18:08	Suction of general biology here (limpets- worms)
J294-ROCK-027	Hogwarts	46.6823	-129.383509	2418.6	20.72	8/18/2007 18:23	Fifth rock: Hogwarts field basalt placed in gastight basket.

### 6.3.10 J2-295 Sample Log

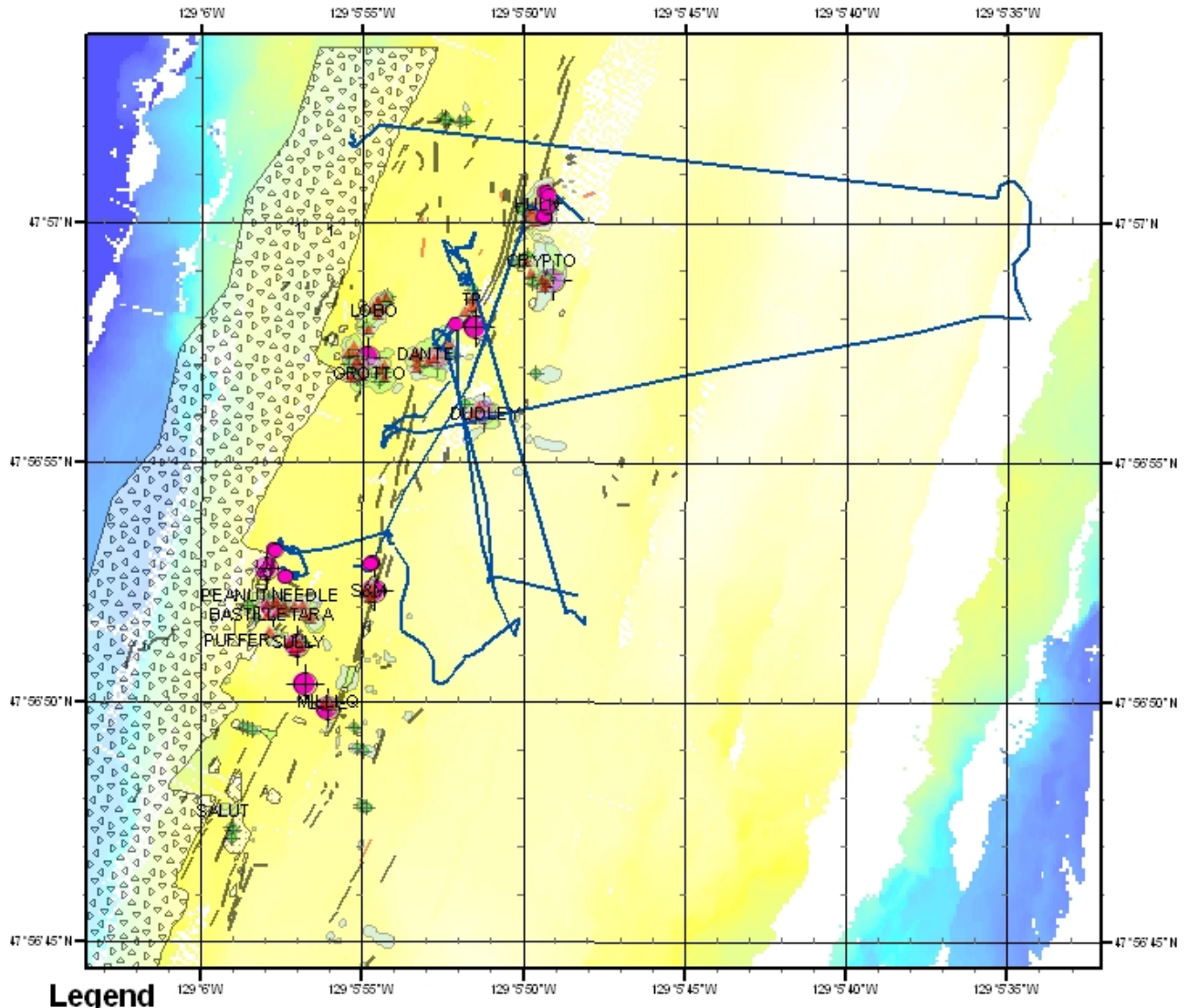
Sample	Area	Lat	Long	Depth	Hdg	Time	Comments
J295-ROCK-001	Split Volcano	47.64698	-128.96335	2352.1	24.1	8/19/07 4:59	Only rock: from sedimented, folded sheet flow from initial landing site.
J295-Scoop-002	Split Volcano	47.64668	-128.96350	2351.8	198.6	8/19/07 5:05	Scoop of sediment near R1 and landing site. Contains glass of lava flow tops and reddish, fluffy hydrothermal sediment.

## 6.4 Dive Maps

All times and dates are GMT. All Lat/Long fixes were revised at sea based on the Jason renav software.

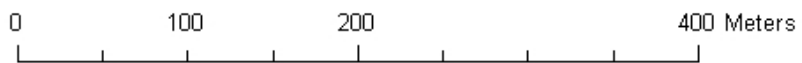


# J2-287



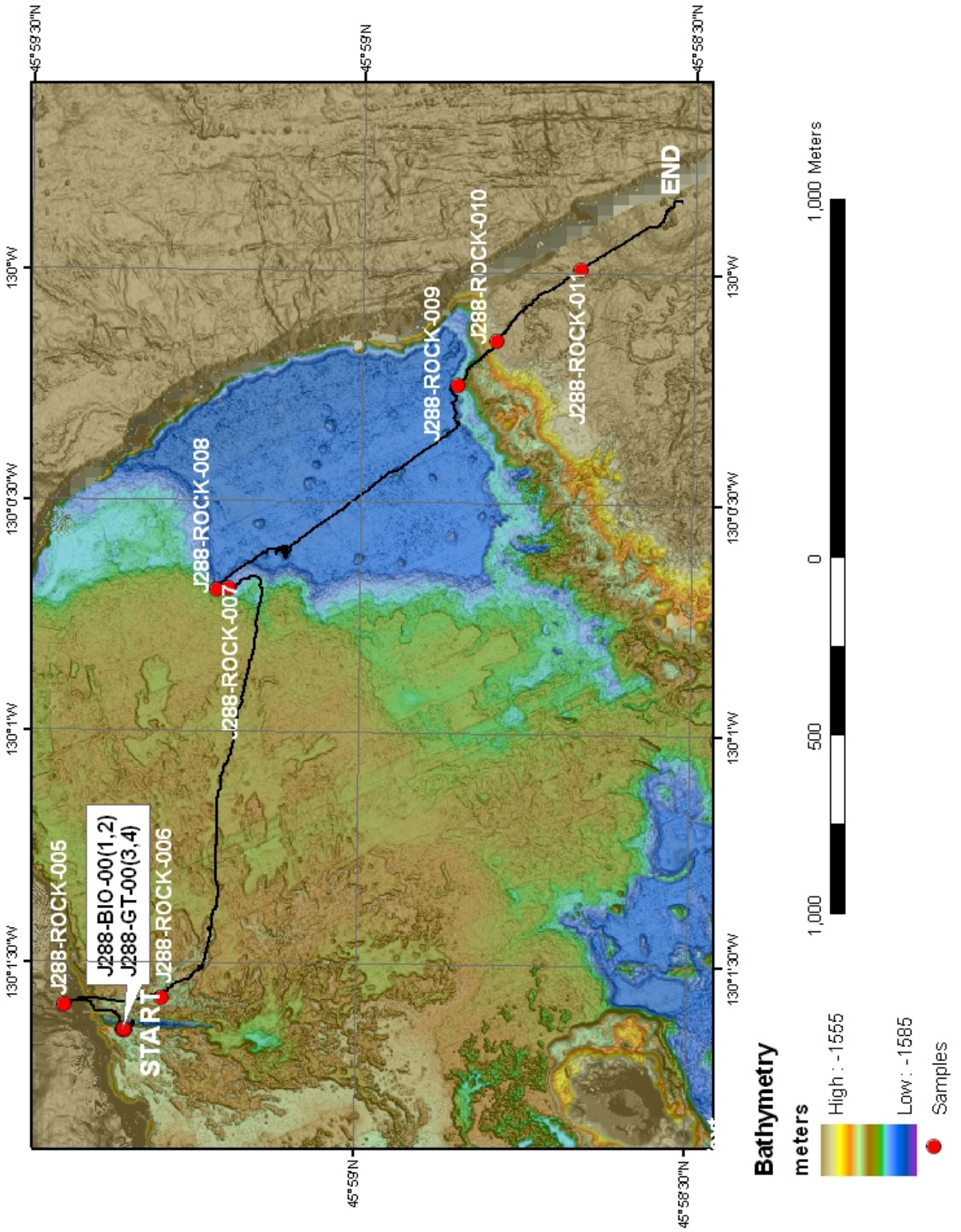
## Legend

- J2-287 Samples
- J2-287 Navigation
- ▲ smokers
- ✦ spires

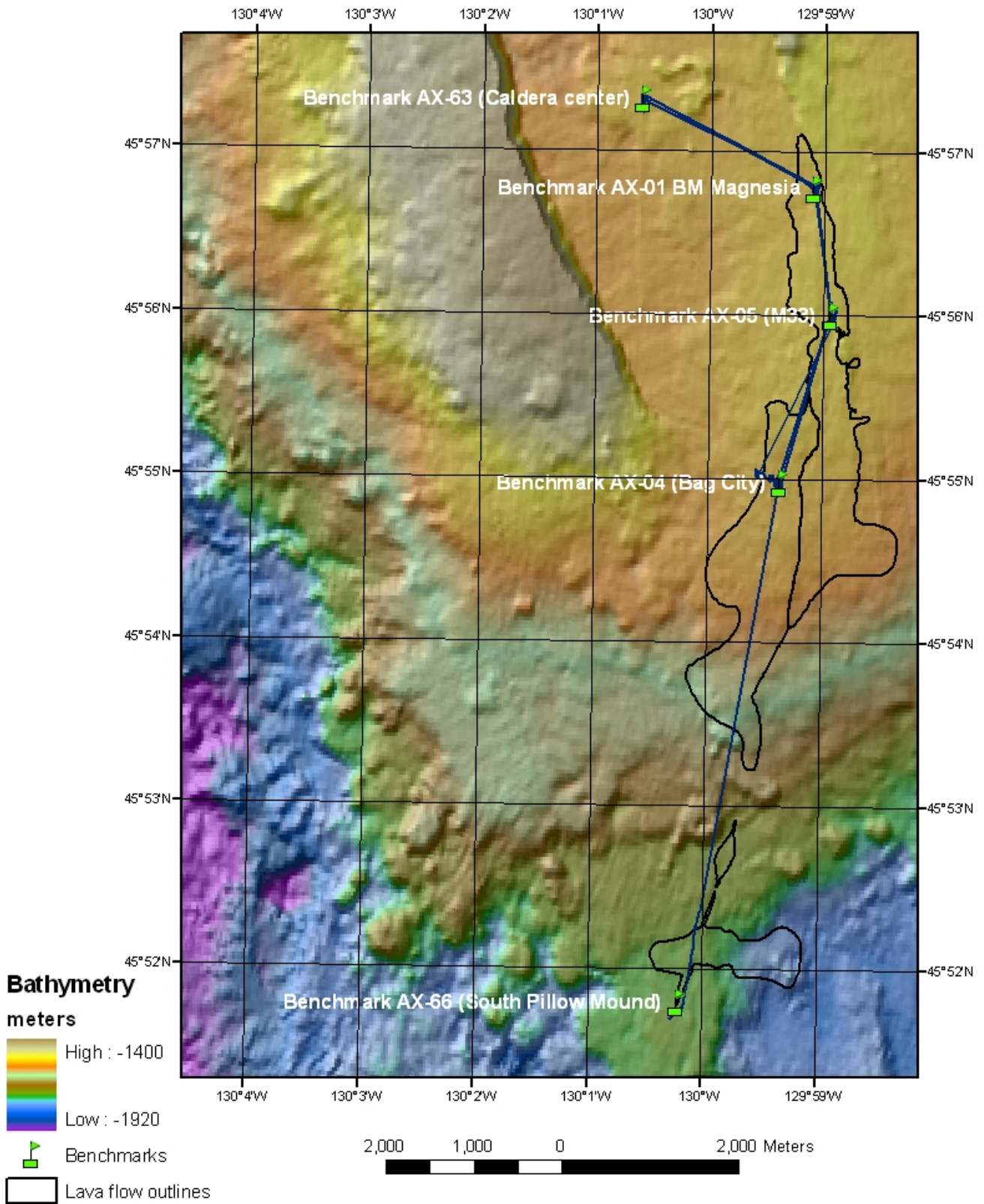




# J2-288

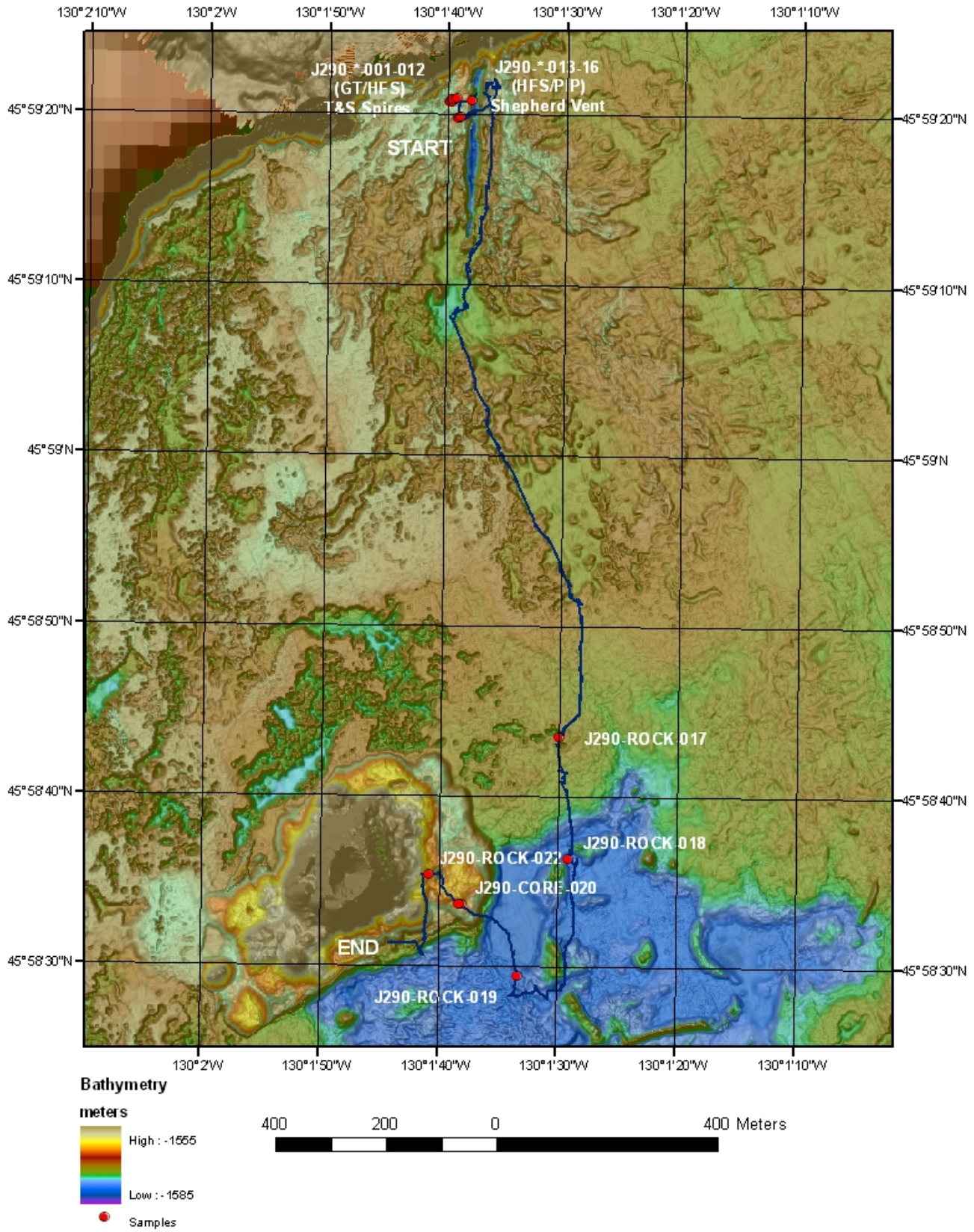


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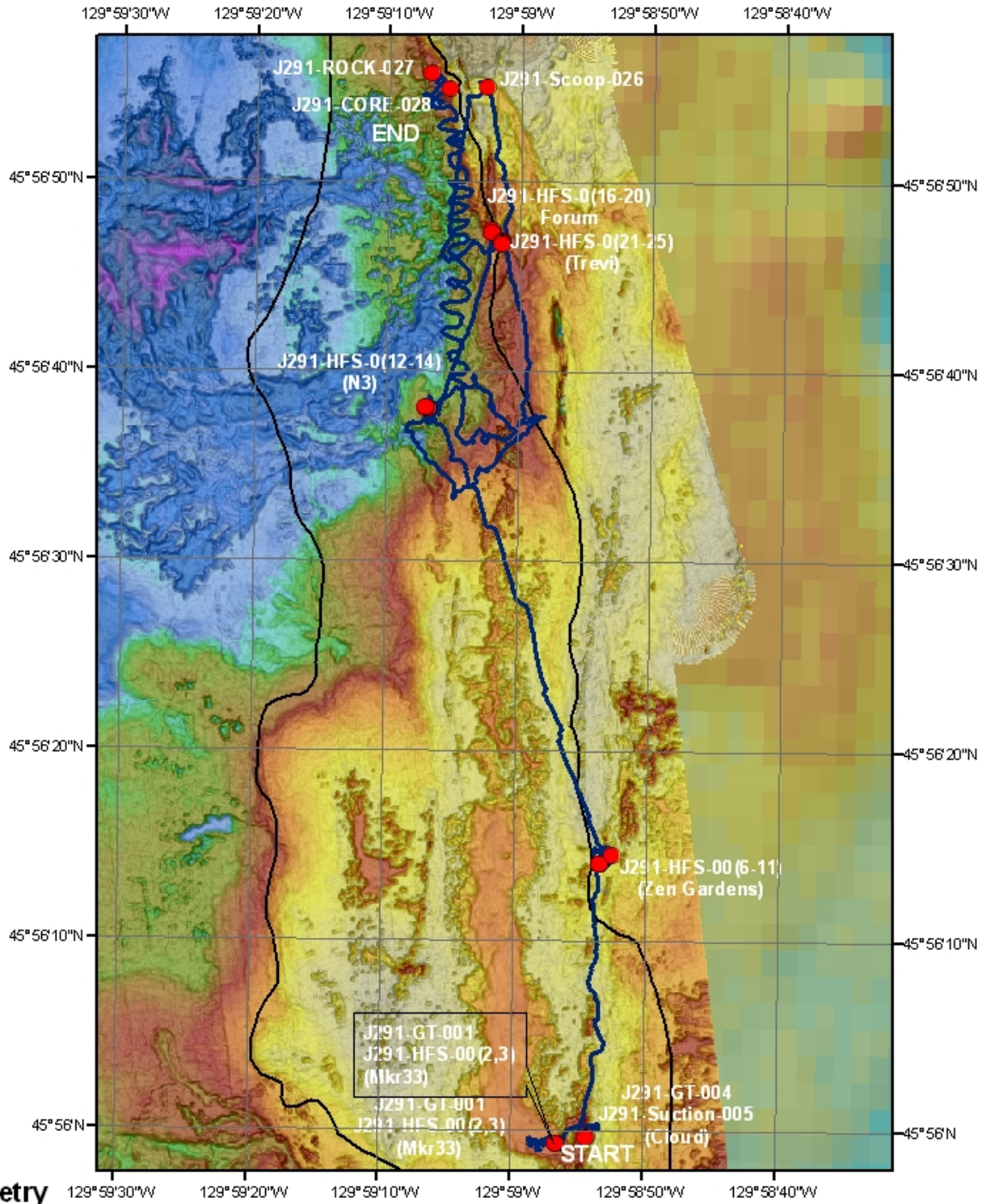


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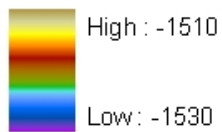


# J2-291



## Bathymetry

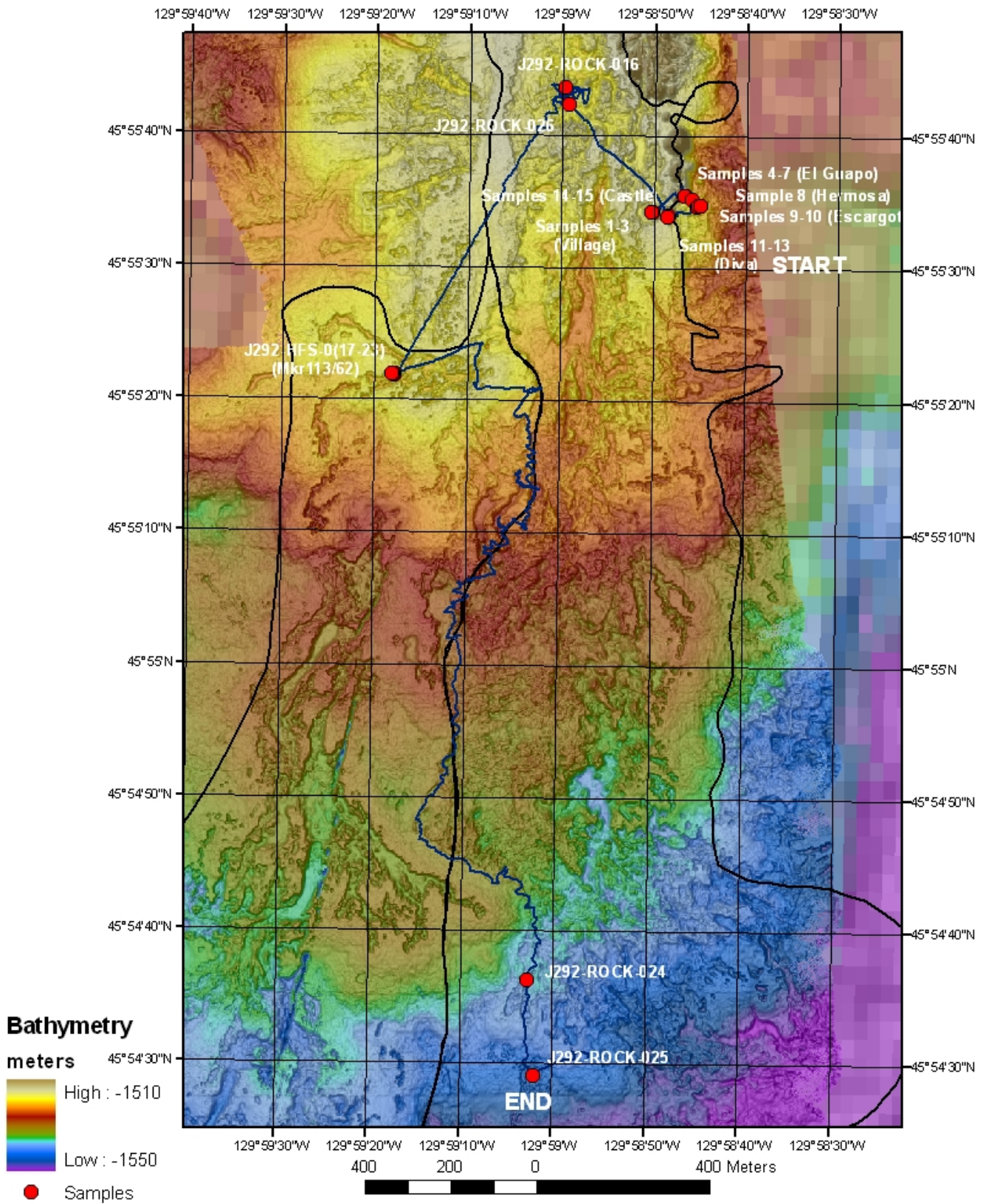
meters



● Samples

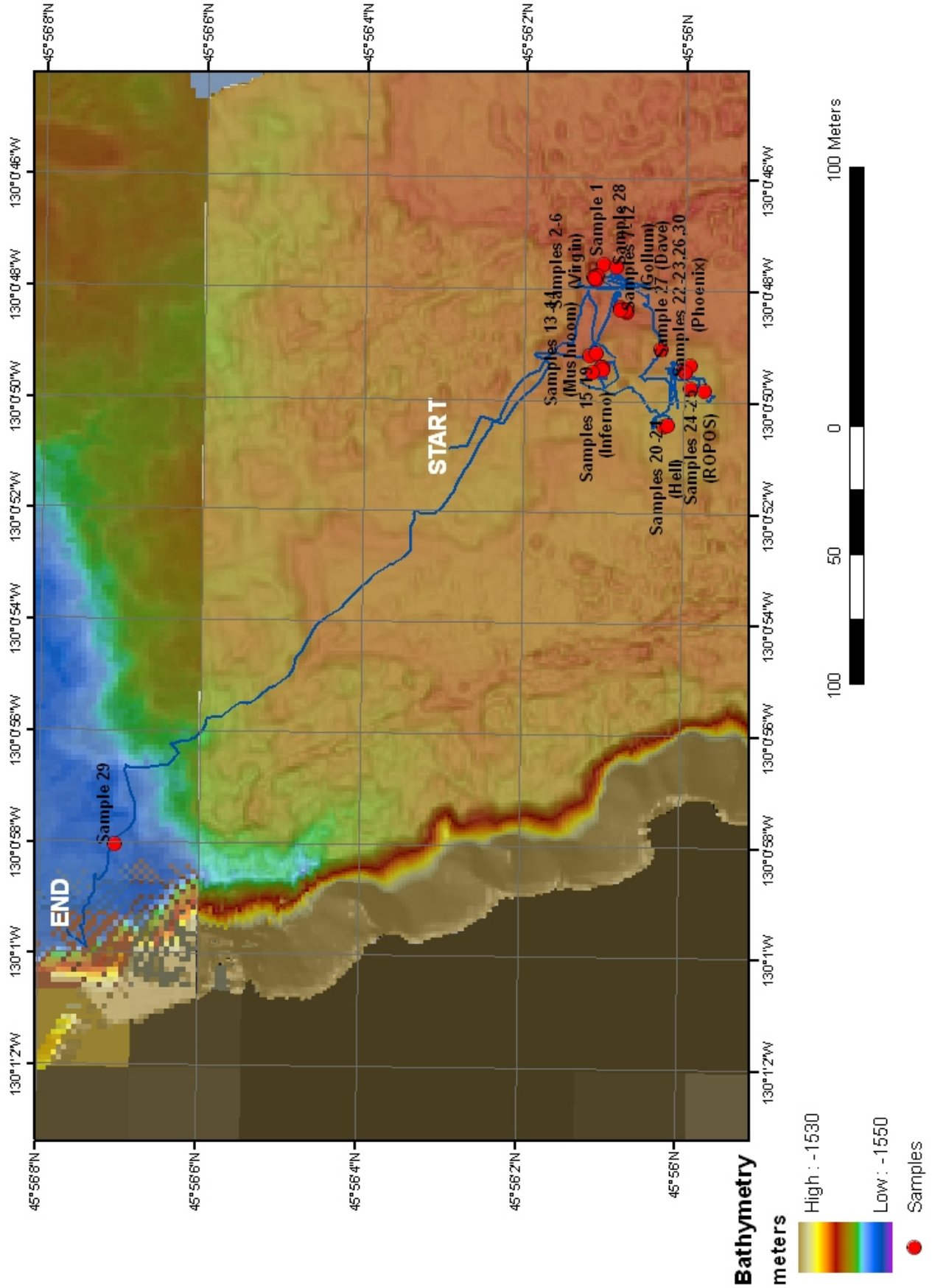


# J2-292

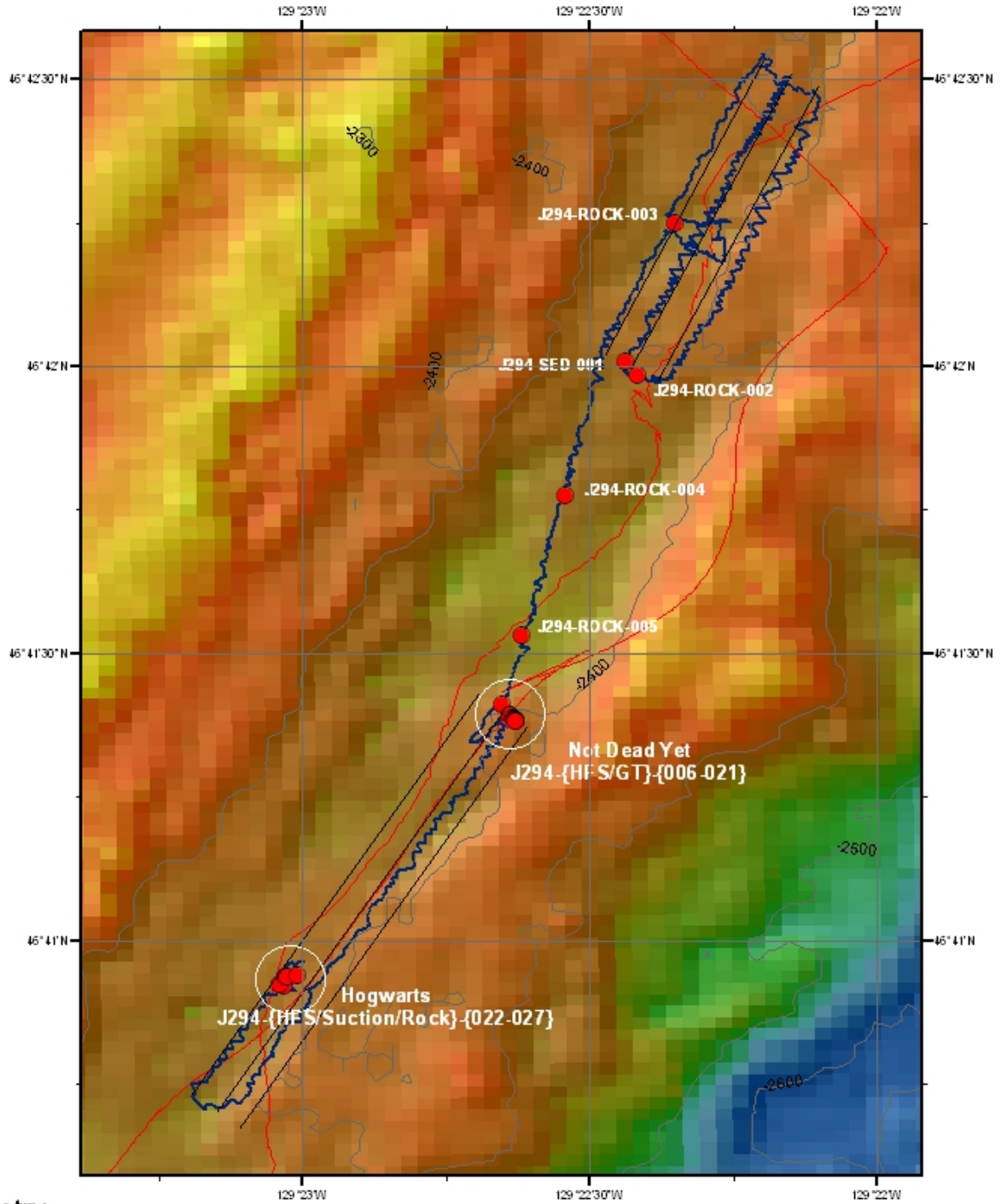




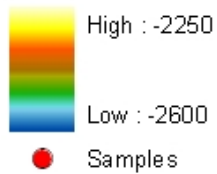
# J2-293



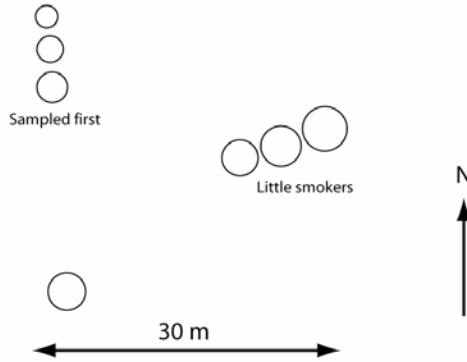
# J2-294 Southern Cobb Segment



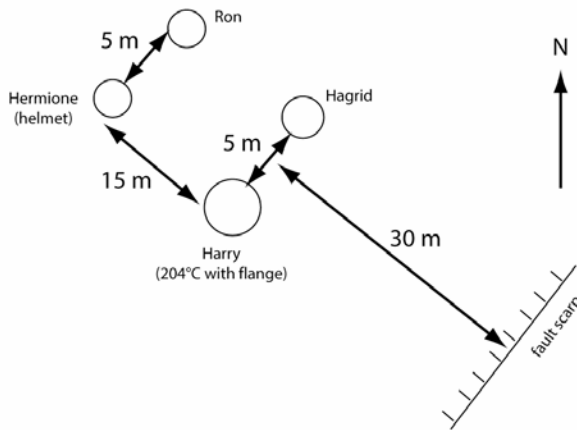
**Bathymetry  
meters**



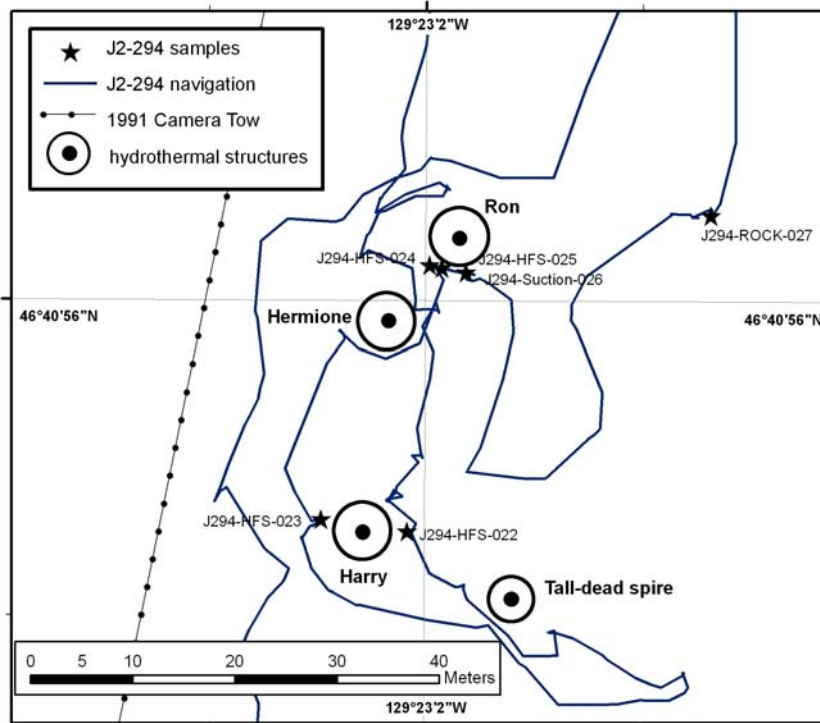
Map of chimneys at "Not Dead Yet" vent, the *northern* of two chimney fields discovered at southern Cobb segment during NeMO 2007



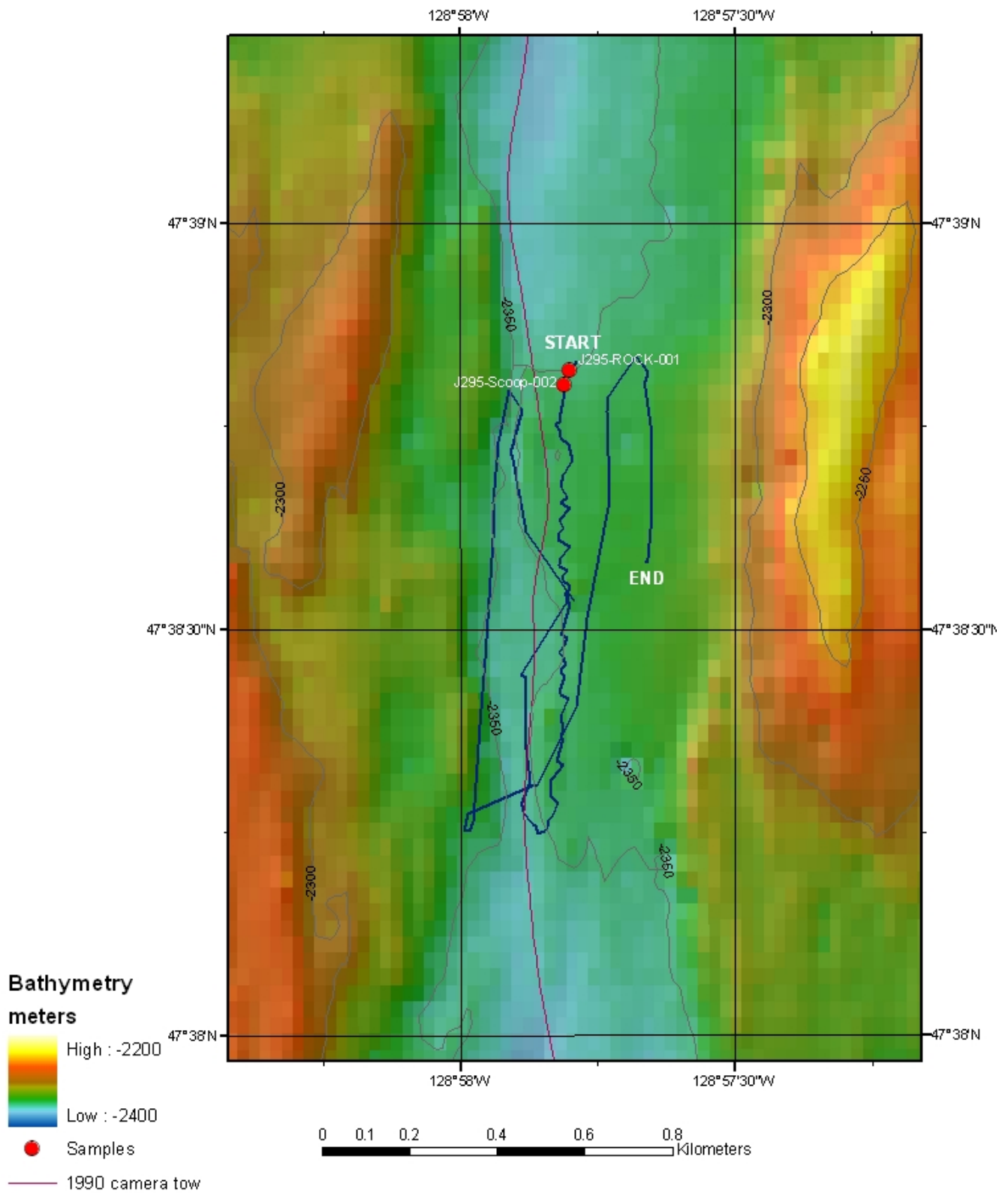
Map of chimneys at "Hogwarts" vent, the *southern* of two chimney fields discovered at southern Cobb segment during NeMO 2007



## J2-294 Hogwarts



# J2-295 Split Volcano



## 6.5 Dive Logs

All times and dates are GMT. All Lat/Long fixes were revised at sea based on the Jason renav software.

### 6.5.1 J2-286 Endeavour Main Vent Field

**J2-286 Endeavour Main Vent Field** [J2-286 Bottom time: 20hrs10min] Jason equipped with HFS, SM2000, 3 gas-tights, Niskin, HOBO. (ASNAPS quit working at 04:02 near beginning of dive.) Landed at the UW Seismometer, near Grotto and reset nav to its position. Drove N to Grotto and reset nav again. (Original seismometer position was later determined not to be well-navigated). Observed Grotto's activity has decreased since earthquake event. Did some HD video before driving E to Dante. Dante's activity level appears the same. HD video, 2 HFS and 1 Gas-tight completed at Dante. SM2000 survey done of Dante's plume. Location determined to be a better fit to DiIorio's experiment than Grotto as originally planned. Transited NE to Hulk where not much hot water was found, only a small plume. Prepared and conducted SM2000 bottom survey around Dante for determining placement of DiIorio moorings. Deployed HOBO in Dante 333degC smoker. Collected SM2000 data over Dante plume and took Niskin before completing SM2000 data collection. Relocated HOBO within Dante. Found seismometer again and obtained a corrected position. Moved over to Easter Island, S&M, Needle and Tara, viewing markers and positioning at each. Picked up Lilley's instrument at Sully and took 2 gastight samples. Finished dive with a transit north to Hulk and 2 tubeworm samples.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 2:26	47.89387	-129.16443	339.5	0.8	Beginning launch again
					Still lowering J2-286 (had another attempt a few hours ago).J671
8/5/07 2:26	47.89387	-129.16443	338.7	0.8	Medea in water.
8/5/07 2:27	47.89386	-129.16444	335.2	0.8	Medea in water.
8/5/07 2:28	47.89383	-129.16443	220.1	2.7	Jason in water.
8/5/07 2:29	47.89381	-129.16444	213.2	3.0	Starting down.
8/5/07 2:38	47.89380	-129.16450	252.5	117.4	Van has control of winch.
8/5/07 3:41	47.89405	-129.16496	44.8	2202.7	Seeing bottom on the altimeter.
8/5/07 3:42	47.89415	-129.16500	358.7	2201.1	Holding 8m off bottom.
8/5/07 3:43	47.89415	-129.16500	359.5	2201.2	Recording videos are on.
8/5/07 3:45	47.94848	-129.09911	335.8	2197.6	Can see bottom.
					Came up over a ledge with active sulfide on top...may have seen an instrument.
8/5/07 3:46	47.94848	-129.09911	287.4	2189.2	This could be the main fissure that goes N-S.
8/5/07 3:46	47.94848	-129.09911	281.4	2189.1	Could have been up to 8m feature.
8/5/07 3:47	47.94848	-129.09911	282.2	2189.3	Had come up off the bottom a bit and can barely see the seafloor.
8/5/07 3:49	47.94848	-129.09911	280.6	2189.2	Working out the first dive kinks.
8/5/07 3:51	47.94848	-129.09911	284.8	2189.1	Checking the tether and Medea before proceeding.
8/5/07 3:52	47.94848	-129.09911	246.9	2189.2	No Sharps yet.
8/5/07 3:52	47.94848	-129.09911	244.4	2189.1	Reset doppler.
8/5/07 3:53	47.94848	-129.09911	246.2	2189.1	Homer on UW seismometer turned on and ranging to it.
8/5/07 3:59	47.94861	-129.09904	34.9	2189.1	50m from the seismometer.
8/5/07 3:59	47.94862	-129.09903	35.4	2190.5	See bottom with crab. Sediment covered basalt.
8/5/07 4:00	47.94866	-129.09899	35.5	2191.8	Instrument in front of us with a Homer on it; looks like seismometer.
8/5/07 4:00	47.94867	-129.09898	35.0	2190.0	Not 50m away: Homer beacon is on Medea not Jason.
8/5/07 4:01	47.94868	-129.09896	36.2	2191.2	Doppler reset to the seismometer position (presumed well navigated by Keck project)
8/5/07 4:02	47.94887	-129.09880	35.4	2192.4	Going to move up to Grotto.
8/5/07 4:03	47.94886	-129.09880	35.2	2192.2	Homer number is 97 with the HD camera.
8/5/07 4:04	47.94886	-129.09881	35.1	2193.0	Lost bow thruster control on the ship...bridge has control.
8/5/07 4:08	47.94884	-129.09883	36.1	2185.3	Jason pulled off bottom.
8/5/07 4:09	47.94883	-129.09892	35.2	2173.2	Still waiting for bow thruster control.
8/5/07 4:18	47.94887	-129.09891	35.0	2145.3	Jason has control of bow thruster.
8/5/07 4:25	47.94887	-129.09890	35.1	2145.4	Jason is up 49 meters and starting to come down.
8/5/07 4:25	47.94887	-129.09890	38.1	2145.3	There is the bottom. Sediment covered basalt.
8/5/07 4:29	47.94884	-129.09897	35.8	2191.9	There is the same seismometer in view.
8/5/07 4:29	47.94886	-129.09892	79.6	2192.1	Navigation still good.
8/5/07 4:30	47.94890	-129.09882	80.5	2191.6	Ready to head up to Grotto.
8/5/07 4:30	47.94890	-129.09882	48.8	2191.7	Grotto should be about 10 meters away.
8/5/07 4:32	47.94895	-129.09872	46.6	2191.6	Flying about 5 meters above the bottom. Lots of sediment on the basalt.
8/5/07 4:33	47.94900	-129.09870	44.1	2191.6	Jellyfish floater in water.
8/5/07 4:35	47.94902	-129.09867	22.6	2191.6	Waiting for the ship to get in position before moving Jason ahead.
8/5/07 4:36	47.94904	-129.09866	23.1	2191.7	Waiting for ship to move north a bit more.
8/5/07 4:39	47.94910	-129.09866	24.6	2191.6	Driving Jason now to Grotto.
8/5/07 4:42	47.94921	-129.09865	24.7	2191.7	On edge of Grotto sulfide structure.
8/5/07 4:45	47.94936	-129.09869	46.2	2191.3	Several spires in view.
8/5/07 4:45	47.94937	-129.09867	45.5	2189.1	Active chimney in background...lots of white staining.
8/5/07 4:45	47.94938	-129.09867	44.8	2187.3	



J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 4:46	47.94940	-129.09868	84.0	2187.9	Marker in view (might be G) but can't read it.
8/5/07 4:46	47.94942	-129.09868	86.5	2187.7	Turning around to read marker--it is <b>Marker G</b> .
8/5/07 4:49	47.94942	-129.09867	76.4	2187.6	Do not have a position for Marker G so the nav map does not agree with our position.
8/5/07 4:51	47.94937	-129.09866	90.7	2187.7	Adding a target for Marker G. Target G...is Marker G.
8/5/07 4:51	47.94937	-129.09866	90.5	2187.7	Jason needs to head south.
8/5/07 4:53	47.94922	-129.09858	91.3	2188.2	Can't see bottom as we are driving.
8/5/07 4:53	47.94922	-129.09858	91.4	2190.6	Jason moving closer to bottom.
8/5/07 4:54	47.94921	-129.09857	91.8	2190.0	We are now over sedimented basalt.
8/5/07 4:55	47.94922	-129.09845	91.0	2189.3	Some rectangular object in far view--could be old dive weight.
8/5/07 4:56	47.94930	-129.09842	90.2	2189.3	With current ship position can't move any further south or east.
8/5/07 4:58	47.94930	-129.09842	91.2	2189.4	Jason is probably further south than the current navigation display is showing.
8/5/07 4:59	47.94930	-129.09842	91.2	2189.3	Jason has a heading north but can't go further south due to Medea's position.
8/5/07 5:01	47.94929	-129.09850	19.2	2189.1	Going to spin around and look (counter-clockwise).
8/5/07 5:02	47.94928	-129.09850	0.8	2189.2	Looking north--not turning yet.
8/5/07 5:03	47.94928	-129.09850	266.9	2189.2	Spinning counter clockwise looking around.
8/5/07 5:03	47.94928	-129.09850	270.6	2189.2	Looking due west.
8/5/07 5:03	47.94928	-129.09850	271.0	2189.2	Just seeing sedimented basalt.
8/5/07 5:04	47.94928	-129.09850	179.2	2189.2	Looking south. More sedimented basalt.
8/5/07 5:08	47.94928	-129.09850	179.7	2192.2	Moving closer to bottom. Thick sediment on pillow basalt.
8/5/07 5:10	47.94928	-129.09850	3.5	2191.7	Turning Jason to a north heading.
8/5/07 5:11	47.94928	-129.09850	359.2	2191.7	More sedimented pillow basalts.
8/5/07 5:13	47.94928	-129.09850	359.1	2191.7	Not seeing any structures on the sonar to our south as we look north but expected to see Grotto there.
8/5/07 5:15	47.94928	-129.09850	359.0	2191.7	Map is not making sense. Maybe using the seismometer position was not good.
8/5/07 5:15	47.94926	-129.09858	357.8	2191.6	Since ship has been in same spot for awhile and Medea is under us it would be good to reset nav here.
8/5/07 5:16	47.94888	-129.09848	358.8	2191.7	Reset doppler under Medea.
8/5/07 5:17	47.94889	-129.09848	358.9	2191.7	Position jumped 40 meters south.
8/5/07 5:17	47.94893	-129.09851	359.0	2191.8	We are south of Grotto on the map which matches what we are seeing on the sonar.
8/5/07 5:18	47.94894	-129.09852	359.0	2191.7	Driving north and moving ship at the same time.
8/5/07 5:18	47.94895	-129.09854	358.9	2191.7	Slowly moving over the pillow basalts. Many targets on the sonar.
8/5/07 5:18	47.94895	-129.09854	358.7	2191.7	Marker G is on the south end of Grotto according to data from D. Kelly.
8/5/07 5:19	47.94895	-129.09854	359.0	2191.7	This new position puts the seismometer further away from Grotto than originally thought.
8/5/07 5:22	47.94899	-129.09857	358.9	2191.7	Deleted Target G position from the record at this time as the position was not correct.
8/5/07 5:23	47.94902	-129.09858	357.6	2191.7	Driving north.
8/5/07 5:23	47.94903	-129.09858	8.3	2189.5	Some sulfide structure in view.
8/5/07 5:24	47.94906	-129.09857	24.3	2190.4	Can see the marker and sulfide structure.
8/5/07 5:24	47.94909	-129.09855	23.9	2189.6	Moving toward marker (D. Kelly put marker at SW corner of Grotto).
8/5/07 5:25	47.94910	-129.09853	23.6	2188.4	At Marker G again. Marker is on top of sulfide structure.
8/5/07 5:27	47.94910	-129.09851	23.2	2186.7	We are within 10 meters of the Alvin x/y position.
8/5/07 5:31	47.94910	-129.09851	23.1	2186.8	Sitting at Marker G trying to figure out the positions of the underlay map vs. what we are observing.
8/5/07 5:38	47.94910	-129.09850	23.3	2186.7	Moving the underlay map 15 meters to the east.
8/5/07 5:42	47.94910	-129.09841	21.6	2185.1	Going north over Grotto. Can see active plumes.
8/5/07 5:42	47.94910	-129.09841	22.8	2185.0	Turning on HD tape.
8/5/07 5:42	47.94910	-129.09841	23.0	2185.0	HiDef Recording On while going over Grotto.
8/5/07 5:43	47.94910	-129.09841	23.2	2185.1	The top of the orifice is 10cm across with the lasers.
8/5/07 5:44	47.94909	-129.09842	21.6	2185.0	Doing some close-ups of the chimney with HD.
8/5/07 5:45	47.94907	-129.09842	17.6	2184.9	Backing up away from vent.
8/5/07 5:45	47.94904	-129.09843	23.2	2185.0	HiDef Recording Off.
8/5/07 5:48	47.94905	-129.09832	11.4	2185.9	Looking at orifices on Grotto. This might be the SE orifice down lower.
8/5/07 5:48	47.94905	-129.09831	23.5	2186.0	Much of the activity has quieted down since the event.
8/5/07 5:49	47.94904	-129.09821	57.6	2185.9	Need to move a little east to get to Marker D.
8/5/07 5:49	47.94904	-129.09819	36.5	2185.9	Heading to Dante to see how much smoke is coming out of it.
8/5/07 5:49	47.94904	-129.09819	4.0	2185.9	We had moved all around the north side of Grotto and saw most of it.
8/5/07 5:50	47.94904	-129.09818	5.6	2186.0	Looking for Marker D. Waiting for ship to move.
8/5/07 5:50	47.94903	-129.09817	62.1	2185.9	Marker D should be at the SW corner of Dante. Getting

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
					strong return at 23m away on sonar.
8/5/07 5:51	47.94904	-129.09816	51.3	2186.0	Off bottom.
8/5/07 5:53	47.94907	-129.09811	51.7	2186.1	No bottom visual while driving to Dante.
8/5/07 5:54	47.94908	-129.09809	50.1	2189.0	Going to come down to bottom for visual.
8/5/07 5:54	47.94908	-129.09809	25.4	2191.2	Can see a sulfide structure and marker should be nearby.
8/5/07 5:55	47.94908	-129.09809	17.9	2191.0	Marker should be at 2190m of depth.
8/5/07 5:56	47.94908	-129.09809	17.4	2192.5	Jason at 2190 depth and looking for marker.
8/5/07 5:57	47.94914	-129.09804	19.4	2192.5	At top of structure and depth isn't the same as Dante..not tall enough.
8/5/07 5:57	47.94913	-129.09801	15.1	2192.7	There are bigger structures ahead on the sonar.
8/5/07 5:59	47.94911	-129.09789	18.2	2189.4	Large structure with worms ahead.
8/5/07 5:59	47.94911	-129.09789	17.4	2187.4	Lots of biology on sulfide but no marker.
8/5/07 6:00	47.94911	-129.09788	18.0	2186.9	At top but no marker. Can see a lot of active venting and biology.
8/5/07 6:01	47.94911	-129.09787	15.4	2186.2	Some black smoke but small compared to past years.
8/5/07 6:02	47.94911	-129.09786	17.1	2185.9	HD camera photos are very vivid and clear. Tubeworms are exceptional.
8/5/07 6:02	47.94911	-129.09781	12.5	2186.0	Height and map are matching where Dante is but no marker.
8/5/07 6:02	47.94911	-129.09779	7.7	2185.9	There is the marker down low.
8/5/07 6:03	47.94911	-129.09780	5.5	2186.0	Turned off HD tape. Missed when it was turned on.
8/5/07 6:03	47.94911	-129.09780	5.9	2185.9	HD tape was on for 4 minutes.
8/5/07 6:04	47.94911	-129.09780	320.4	2184.6	Going to look at top of Dante a bit more before leaving.
8/5/07 6:05	47.94914	-129.09782	11.3	2174.7	Black smoke out of top orifices.
8/5/07 6:06	47.94916	-129.09784	36.9	2174.6	Started a tape.
8/5/07 6:06	47.94915	-129.09784	36.1	2174.7	HiDef Recording On
8/5/07 6:07	47.94916	-129.09786	34.2	2174.8	Dante's orifices are a tight collection compared to other structures.
8/5/07 6:07	47.94917	-129.09786	35.5	2174.7	Want to get closer to top for HD video. At end of tether so can't move much.
8/5/07 6:08	47.94917	-129.09784	35.8	2175.1	Great close-up view of top of Dante with HD.
8/5/07 6:09	47.94917	-129.09784	35.5	2175.2	Lots of biology in close-up but need to move in a bit closer.
8/5/07 6:09	47.94917	-129.09783	35.6	2175.6	Jason moving closer.
8/5/07 6:10	47.94917	-129.09784	35.7	2175.8	Hot water is coming toward camera and makes visibility worse.
8/5/07 6:11	47.94917	-129.09784	41.5	2176.4	Coming down with Jason and then will point up to avoid being in plume.
8/5/07 6:11	47.94919	-129.09783	81.4	2176.4	Visual HD survey of top. Palm worms are very active.
8/5/07 6:14	47.94918	-129.09783	81.4	2176.3	Lots of smoke coming out of the back side of Dante.
8/5/07 6:14	47.94919	-129.09783	80.6	2176.3	Vent is very hydrothermally active.
8/5/07 6:15	47.94918	-129.09783	106.0	2176.2	Moving around Dante to get a better look.
8/5/07 6:15	47.94918	-129.09783	100.5	2176.1	Still recording HD.
8/5/07 6:16	47.94919	-129.09782	124.7	2175.1	HiDef Recording Off
8/5/07 6:16	47.94920	-129.09778	176.3	2173.5	View of top looking down.
8/5/07 6:17	47.94917	-129.09779	210.7	2175.4	Moved around and now Jason has a heading looking south. Much more active orifices with black smoke.
8/5/07 6:19	47.94917	-129.09779	209.5	2175.4	HiDef Recording On
8/5/07 6:19	47.94917	-129.09779	209.3	2175.4	Jason heading 208 as do visual survey with HD.
8/5/07 6:20	47.94917	-129.09779	208.7	2175.3	Two very active black smokers in view. The lower forward orifice would be easier to sample.
8/5/07 6:20	47.94917	-129.09779	245.2	2175.6	Temperature is rising on probe above vent.
8/5/07 6:21	47.94917	-129.09779	243.1	2175.5	HiDef Recording Off
8/5/07 6:22	47.94918	-129.09779	244.6	2175.3	Looking at top orifice. Thrusters have stirred up water.
8/5/07 6:23	47.94918	-129.09779	245.1	2175.3	Looking at orifices to decide which can be sampled.
8/5/07 6:24	47.94918	-129.09779	243.5	2175.3	Setting up for hot sample of one of the orifices on top of Dante (middle orifice used).
8/5/07 6:25	47.94918	-129.09779	243.8	2175.3	HiDef Recording On
8/5/07 6:25	47.94918	-129.09779	244.0	2175.3	Preparing for sample-arm picking up probe.
8/5/07 6:26	47.94918	-129.09779	244.0	2175.3	Putting probe into position.
8/5/07 6:27	47.94919	-129.09779	260.6	2175.3	Temperature reached 135 on probe.
8/5/07 6:28	47.94918	-129.09779	260.3	2175.4	Maximum actually reached 140deg.
8/5/07 6:28	47.94918	-129.09779	260.5	2175.4	Putting probe into position again.
8/5/07 6:28	47.94918	-129.09779	260.6	2175.4	Entered target 42 here at Dante.
8/5/07 6:29	47.94918	-129.09779	261.1	2175.4	HiDef Recording Off
8/5/07 6:29	47.94918	-129.09779	260.8	2175.4	Temperature reached 330deg. Good place to sample.
8/5/07 6:30	47.94918	-129.09779	260.8	2175.4	Want piston view on camera of 8 or 9 (middle to outside).
8/5/07 6:31	47.94918	-129.09779	260.2	2175.2	Lost lock on position while sitting on the bottom and will reset when we come up.
8/5/07 6:31	47.94919	-129.09779	260.1	2175.4	<b>J286-HFS-001: Sample HFS Using piston 8 at Dante.</b>
8/5/07 6:33	47.94919	-129.09780	260.6	2175.3	Viewing hose while taking sample.
8/5/07 6:33	47.94919	-129.09780	260.9	2175.4	Verified water flowing in sampler.
8/5/07 6:34	47.94919	-129.09780	260.7	2175.4	Sample is J286-HFS-001.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 6:37	47.94919	-129.09780	260.2	2175.5	Stopping sample.
8/5/07 6:37	47.94919	-129.09780	260.3	2175.5	Piston 8 Tmax=332 Tavg=332 T2=88 vol=505
8/5/07 6:39	47.94919	-129.09780	260.4	2175.4	<b>J286-GT-002:</b> Gastight STBD fired
8/5/07 6:40	47.94919	-129.09780	260.6	2175.5	Temp for gastight was 332 as well.
8/5/07 6:40	47.94919	-129.09780	260.5	2175.5	Sample J286-gt-002
8/5/07 6:41	47.94919	-129.09780	260.4	2175.4	Sample HFS Filtered bag 17 J286-hfs-003
8/5/07 6:41	47.94919	-129.09780	260.2	2175.4	So far 3 samples at the top of Dante at the middle orifice.
8/5/07 6:44	47.94919	-129.09780	260.3	2175.3	J286-HFS-003
8/5/07 6:44	47.94919	-129.09780	260.2	2175.2	Tmax=332 Tave=332 T2=56 vol=510 for J286-HFS-003
8/5/07 6:45	47.94919	-129.09780	260.4	2175.2	Time for shift change. At top of Dante and finished fluid sampling.
8/5/07 6:51	47.94918	-129.09779	260.8	2175.1	Watches have changed.
8/5/07 6:55	47.94918	-129.09778	261.1	2175.2	Taking a nice look at a scale worm on the HD Camera.
8/5/07 6:58	47.94918	-129.09777	259.1	2175.1	Moving to 10m above the structure (Dante) into the plume to run some SM2000
8/5/07 7:00	47.94918	-129.09780	259.4	2165.1	<b>SM2000 Rise start</b> We are now 10m up- into the plume.
8/5/07 7:04	47.94922	-129.09781	259.3	2165.1	Moving to the right to get the plume better in view.
8/5/07 7:04	47.94922	-129.09781	259.3	2164.9	Move has been completed.
8/5/07 7:05	47.94922	-129.09781	259.5	2164.9	We are currently 12m above the orifice.
8/5/07 7:05	47.94922	-129.09781	259.1	2165.0	<b>SM2000 Rise start</b> Starting to record the SM2000 data.
8/5/07 7:08	47.94922	-129.09781	259.6	2165.0	Starting to rise 10m - there may be some difficulty remaining in this position if we loose doppler lock.
8/5/07 7:09	47.94922	-129.09781	259.4	2151.4	We are now about 10m higher than the previous height.
8/5/07 7:10	47.94922	-129.09781	259.5	2155.6	<b>SM2000 Rise end</b> Now we are descending.
8/5/07 7:13	47.94927	-129.09774	257.9	2163.6	Back down at the 12m height in the plume.
8/5/07 7:14	47.94927	-129.09773	258.3	2163.8	Plume seems to be the right.
8/5/07 7:15	47.94931	-129.09771	250.4	2163.8	We seem to be above the structure now. Moving a bit backwards to find the plume.
8/5/07 7:16	47.94936	-129.09769	258.8	2163.6	SM2000 The plume is now showing up quite nicely on the SM2000.
8/5/07 7:17	47.94936	-129.09770	258.1	2162.6	<b>SM2000 Rise start</b> Heading up about 10m again.
8/5/07 7:18	47.94935	-129.09766	270.8	2152.2	<b>SM2000 Rise end</b> Going backwards a bit.
8/5/07 7:19	47.94935	-129.09766	268.5	2151.7	Going forwards a bit now trying to maximize the view of the plume.
8/5/07 7:19	47.94935	-129.09766	270.0	2151.9	We are currently about 24m above the orifice at Dante.
8/5/07 7:21	47.94935	-129.09766	270.3	2151.7	We lost the plume - need to recenter by moving left.
8/5/07 7:23	47.94935	-129.09766	272.6	2154.4	<b>SM2000 Rise end</b> Done with this rise measurement.
8/5/07 7:23	47.94933	-129.09766	276.5	2158.0	Heading back to the spot 10m above the vent.
8/5/07 7:24	47.94931	-129.09766	268.8	2165.5	At 10m above the vent. Moving backwards to locate the plume.
8/5/07 7:26	47.94930	-129.09768	268.8	2165.5	Changing a few settings on the SM2000.
8/5/07 7:27	47.94930	-129.09764	266.9	2162.2	<b>SM2000 Rise start</b> Starting another rise - this time 20m.
8/5/07 7:29	47.94930	-129.09765	269.2	2146.1	Now 20m above the original spot.
8/5/07 7:29	47.94930	-129.09765	262.6	2146.4	Moving backwards a bit.
8/5/07 7:29	47.94929	-129.09765	268.4	2145.8	Plume width seems to max out between 8 and 12m.
8/5/07 7:30	47.94929	-129.09766	271.0	2146.0	<b>SM2000 Rise end</b>
8/5/07 7:32	47.94928	-129.09767	270.5	2146.6	At about 20m up from the orifice the 12m spread of the plume is seen.
8/5/07 7:34	47.94927	-129.09768	269.8	2146.3	We are still recording on the SM2000.
8/5/07 7:38	47.94925	-129.09772	270.6	2143.8	We are still around Dante - currently planning on doing an SM2000 detailed scan here.
8/5/07 7:44	47.94922	-129.09778	275.1	2151.6	Getting ready to map the bottom. First we will head to Marker D and reset the Doppler there.
8/5/07 7:46	47.94925	-129.09778	276.8	2177.5	It looks like we are coming down on the bottom now.
8/5/07 7:47	47.94927	-129.09782	219.5	2188.6	Searching for Marker D.
8/5/07 7:51	47.94919	-129.09777	241.4	2174.3	Now near the top of the structure.
8/5/07 7:55	47.94921	-129.09776	183.9	2173.5	Moving to the south and doing a reapproach from the south to reset the doppler properly.
8/5/07 7:56	47.94917	-129.09771	186.3	2179.8	Back at the structure - it is still the same one.
8/5/07 8:02	47.94904	-129.09772	357.4	2191.7	Still looking for Marker D.
8/5/07 8:07	47.94905	-129.09785	336.1	2189.0	We are now looking at Marker D.
8/5/07 8:08	47.94906	-129.09786	335.8	2189.1	Resetting the doppler.
8/5/07 8:09	47.94920	-129.09759	335.7	2189.1	Heading back to where we sampled fluid earlier - just to make sure we are at the right spot.
8/5/07 8:13	47.94911	-129.09772	264.9	2187.2	Getting close to the top of Dante.
8/5/07 8:16	47.94916	-129.09783	44.8	2173.3	There is the top.
8/5/07 8:18	47.94916	-129.09782	50.1	2173.9	We are happy with the doppler setting and our current position. Starting to get ready for the SM2000 survey.
8/5/07 8:23	47.94916	-129.09782	50.1	2173.9	Still working out the details of the SM2000 survey.
8/5/07 8:28	47.94917	-129.09758	53.2	2186.4	Heading to the bottom again.
8/5/07 8:30	47.94921	-129.09754	2.5	2186.3	Heading to Hulk to take a quick look there before we do the survey.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 8:40	47.94964	-129.09724	4.5	2191.6	Still cruising to Hulk.
8/5/07 8:49	47.95002	-129.09702	90.9	2193.6	Still cruising along.
8/5/07 8:54	47.95006	-129.09701	46.7	2194.4	Passing by a spider crab.
8/5/07 8:54	47.95004	-129.09697	47.1	2194.2	Coming in from the SW towards Hulk.
8/5/07 8:56	47.95004	-129.09696	116.5	2193.6	At Hulk and looking around.
8/5/07 8:59	47.95005	-129.09706	87.9	2193.9	Trying to locate the RAS at Hulk.
8/5/07 9:02	47.95002	-129.09702	166.4	2196.0	Moving a 360 around the structure.
8/5/07 9:05	47.94998	-129.09692	32.2	2197.8	Found marker H on Hulk.
8/5/07 9:06	47.94999	-129.09692	31.5	2198.6	Other Comment Setting a nav fix at Marker H.
8/5/07 9:07	47.94999	-129.09692	41.2	2191.0	Starting the ascent up Hulk.
8/5/07 9:09	47.94996	-129.09680	359.2	2184.7	Not much in the way of hot water coming out of Hulk here.
8/5/07 9:10	47.94998	-129.09674	351.3	2184.7	Here are some smokers.
8/5/07 9:11	47.95002	-129.09668	295.3	2184.6	Spotted some equipment.
8/5/07 9:15	47.95011	-129.09678	170.8	2183.3	Lots of limpets and tubeworms up top here.
8/5/07 9:19	47.95005	-129.09675	357.3	2179.8	Getting above Hulk to take a look at the plume with the SM2000.
8/5/07 9:25	47.95005	-129.09675	358.8	2180.9	We can see the top of Hulk in the brow cam but not much on the SM2000.
8/5/07 9:26	47.95005	-129.09675	358.8	2181.0	A small plume is visible now on the SM2000.
8/5/07 9:29	47.94997	-129.09690	15.8	2188.7	Heading back down Hulk.
8/5/07 9:32	47.95004	-129.09706	268.3	2186.5	We are setting up to calibrate the SM2000.
8/5/07 9:35	47.95001	-129.09725	195.3	2188.7	The calibration will take a few minutes.
8/5/07 9:42	47.94995	-129.09742	231.3	2193.1	SM2000 Starting the SM2000 Calibration survey.
8/5/07 9:42	47.94995	-129.09742	237.5	2192.9	Recording of the SM2000 has started.
8/5/07 9:48	47.94996	-129.09769	333.2	2192.1	DVCAM tape has been changed.
8/5/07 9:50	47.94996	-129.09763	91.0	2186.8	SM2000 Line start Starting the second calibration line. Going East 20m.
8/5/07 9:53	47.94995	-129.09742	89.9	2187.7	SM2000 Line end End of the Second calibration line.
8/5/07 9:55	47.94995	-129.09745	270.8	2183.0	SM2000 Line start Start of the Third calibration line.
8/5/07 9:58	47.94996	-129.09769	270.1	2182.0	SM2000 Line end End of the Third line.
8/5/07 10:02	47.94996	-129.09775	220.5	2176.3	SM2000 Line start Start of Line 1 of the Survey.
8/5/07 10:02	47.94996	-129.09776	221.0	2176.4	Recording of the SM2000 data into a different file.
8/5/07 10:03	47.94995	-129.09781	220.0	2176.1	Lines as 60m long.
8/5/07 10:06	47.94992	-129.09782	201.2	2175.9	Actual start of the line now.
8/5/07 10:14	47.94953	-129.09803	200.9	2179.0	21 m until the end of the first line.
8/5/07 10:17	47.94939	-129.09811	199.6	2179.1	SM2000 Line end End of the first line.
8/5/07 10:18	47.94939	-129.09811	110.4	2178.1	Moving to the start of the second line.
8/5/07 10:20	47.94935	-129.09796	111.0	2177.6	Back at Dante.
8/5/07 10:29	47.94945	-129.09766	20.6	2177.0	SM2000 Line start Start of the Second survey line.
8/5/07 10:40	47.94993	-129.09739	18.8	2178.9	SM2000 Line end End of the second SM2000 line.
8/5/07 10:41	47.94993	-129.09739	20.1	2178.6	Heading towards the southern side of Dante.
8/5/07 10:54	47.94981	-129.09718	178.6	2181.9	SM2000 Line start Going south along the fissure.
8/5/07 11:40	47.94888	-129.09766	209.6	2180.4	SM2000 Line end End of the line going south.
8/5/07 11:40	47.94888	-129.09766	200.7	2180.3	SM2000 Line start Start of line three.
8/5/07 11:58	47.94842	-129.09790	272.8	2190.1	SM2000 Line end Line three end.
8/5/07 11:59	47.94842	-129.09790	296.7	2189.2	Moving the the start of line four.
8/5/07 12:14	47.94852	-129.09828	20.4	2181.1	SM2000 Line start Begin line four.
8/5/07 12:34	47.94910	-129.09784	30.7	2179.2	SM2000 Line end End of line four.
8/5/07 12:35	47.94912	-129.09782	30.3	2179.1	Headed to Dante to deploy HOBO.
8/5/07 12:37	47.94919	-129.09783	352.8	2177.4	At Dante. Preparing to deploy HOBO.
8/5/07 12:54	47.94925	-129.09786	130.2	2177.0	Positioning Jason at the deployment site.
8/5/07 13:06	47.94923	-129.09780	241.6	2177.1	Jason in position. Getting ready to deploy HOBO.
8/5/07 13:06	47.94923	-129.09780	241.9	2177.1	Taking temperature sample first.
8/5/07 13:10	47.94923	-129.09780	241.9	2177.1	Temperature reached 333 C.
8/5/07 13:10	47.94923	-129.09780	241.8	2177.1	Taking out the HOBO.
8/5/07 13:13	47.94923	-129.09781	242.4	2177.0	<b>Deploy HOBO The HOBO is in the smoker.</b>
8/5/07 13:14	47.94923	-129.09781	241.8	2176.9	The HOBO is number 128.
8/5/07 13:22	47.94923	-129.09781	257.2	2165.1	Moving Jason over the HOBO at Dante to collect Simrad 2000 data.
8/5/07 13:24	47.94924	-129.09790	258.0	2160.7	Collecting SM2000 data over the plume.
8/5/07 13:25	47.94922	-129.09787	257.5	2157.7	<b>J286-NISKIN-004</b> Water sample taken
8/5/07 13:28	47.94923	-129.09788	258.1	2157.4	Plume width is about 12 m.
8/5/07 13:28	47.94923	-129.09788	259.3	2157.5	Adjusting gain setting on SM2000.
8/5/07 13:43	47.94926	-129.09788	258.3	2151.5	Still measuring the plume with the SM2000.
8/5/07 14:10	47.94929	-129.09784	318.0	2186.7	Relocated the HOBO in Dante.
8/5/07 14:10	47.94930	-129.09782	319.5	2188.3	Now moving to Marker D to reset the navigation.
8/5/07 14:14	47.94932	-129.09779	326.5	2189.7	Still searching for Marker D.
8/5/07 14:15	47.94929	-129.09781	349.6	2189.6	Found the Marker.
8/5/07 14:15	47.94929	-129.09782	346.3	2189.6	Doing a Doppler reset at Marker D.
8/5/07 14:21	47.94920	-129.09769	304.7	2181.1	Looking for diffuse flow.
8/5/07 14:25	47.94920	-129.09772	312.1	2181.3	Still at Dante but about 5 m below the HOBO.
8/5/07 14:26	47.94920	-129.09772	311.8	2181.3	Preparing to measure temperature.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 14:31	47.94920	-129.09772	311.6	2181.4	Trying to find a spot that is about 20 degrees C.
8/5/07 14:32	47.94920	-129.09772	312.5	2181.3	Found a site with 19 degree C water.
8/5/07 14:35	47.94920	-129.09772	312.0	2181.3	<b>J286-HFS-005</b> (originally missed in log-added by Andra after dive-renumbered all samples)
8/5/07 14:38	47.94920	-129.09772	311.7	2181.3	HiDef Recording On
8/5/07 14:38	47.94920	-129.09772	311.7	2181.3	HFS Start time 14:34.
8/5/07 14:39	47.94920	-129.09772	311.3	2181.3	Sample pump has stopped.
8/5/07 14:40	47.94920	-129.09772	311.4	2181.3	Trying to get the pump to start again.
8/5/07 14:45	47.94920	-129.09772	311.1	2181.3	The pump is still not working.
8/5/07 14:50	47.94920	-129.09772	311.0	2181.3	Just cycling power on the pump to see if it is working.
8/5/07 14:52	47.94920	-129.09772	312.1	2181.3	Sample pump is not working. May not have HFS fluids remainder of dive.
8/5/07 14:55	47.94920	-129.09772	311.4	2181.4	Seismometer..Easter Island...S
8/5/07 14:55	47.94920	-129.09772	312.0	2181.3	Pulling out the probe and questionable sample. Tmax=21.7 Tavg=20.1 vol=207 T2=10 unfiltered piston #9
8/5/07 14:56	47.94920	-129.09772	312.0	2181.3	Wand is stowed.
8/5/07 14:57	47.94920	-129.09772	312.0	2181.3	HiDef Recording On recording the fly away from the vent.
8/5/07 14:57	47.94920	-129.09772	312.7	2180.6	We are moving away from the vent.
8/5/07 14:58	47.94918	-129.09773	311.9	2180.7	Seismometer should be 50 meters south.
8/5/07 14:58	47.94917	-129.09774	311.1	2179.8	HiDef Recording Off
8/5/07 14:58	47.94917	-129.09773	311.8	2180.9	Overlay on nav screen is too bright.
8/5/07 15:00	47.94913	-129.09773	311.7	2187.7	Turning altimeter back on.
8/5/07 15:00	47.94912	-129.09773	255.6	2195.0	Turning counterclockwise to search for the seismometer.
8/5/07 15:01	47.94907	-129.09781	236.0	2194.9	Homer indicates that seismometer is 105m away from us (not the 50m Chadwick thought).
8/5/07 15:02	47.94907	-129.09781	236.1	2194.2	No bottom visual.
8/5/07 15:03	47.94910	-129.09784	233.7	2194.4	Some sedimented basalt can barely be seen in the cameras.
8/5/07 15:03	47.94910	-129.09785	235.8	2194.9	Back on sedimented basalt.
8/5/07 15:04	47.94910	-129.09785	235.9	2194.5	Area should be fairly flat between vents.
8/5/07 15:04	47.94910	-129.09785	235.8	2194.8	Ship is moving south.
8/5/07 15:08	47.94910	-129.09785	236.1	2194.5	Waiting for ship to get into position.
8/5/07 15:09	47.94906	-129.09794	236.0	2194.6	Jason is on the move SW.
8/5/07 15:10	47.94904	-129.09799	235.1	2193.7	Old lava pillows and crossing a fissure.
8/5/07 15:10	47.94899	-129.09806	236.8	2192.0	On the other side of the fissure with lots of old sediment.
8/5/07 15:11	47.94895	-129.09816	235.4	2192.2	Waiting for Medea to catch up.
8/5/07 15:12	47.94891	-129.09821	238.8	2192.2	Moving again to seismometer.
8/5/07 15:13	47.94888	-129.09829	236.2	2192.2	More basalt and sediment.
8/5/07 15:15	47.94884	-129.09837	235.9	2192.2	Waiting for Medea/ship to move.
8/5/07 15:17	47.94878	-129.09850	238.0	2192.4	Jason on the move.
8/5/07 15:18	47.94878	-129.09850	233.7	2192.2	Actually not moving just a camera pan.
8/5/07 15:19	47.94875	-129.09856	207.3	2192.4	Jason moving slowly looking for target on the sonar and seeing signal on Homer of 49m. range.
8/5/07 15:19	47.94875	-129.09856	224.0	2192.1	Medea is 22 meters from Jason and Homer is 49m from Medea.
8/5/07 15:20	47.94871	-129.09853	182.4	2192.2	Seismometer seen in the distance.
8/5/07 15:22	47.94866	-129.09850	168.6	2191.9	Approaching seismometer with heading of 170.
8/5/07 15:23	47.94862	-129.09852	179.6	2192.1	Position of seismometer is going to be SE of the position originally thought at beginning of dive.
8/5/07 15:25	47.94858	-129.09853	183.1	2191.9	x=4933 y=6081 is the position of the seismometer.
8/5/07 15:26	47.94859	-129.09852	183.3	2190.4	Position is based on Alvin x/y not UTM.
8/5/07 15:27	47.94858	-129.09852	183.3	2190.6	Positioning Jason near the seismometer.
8/5/07 15:30	47.94858	-129.09852	183.2	2193.4	Can see Debbie Stakes duct tape label on the hardhat.
8/5/07 15:31	47.94858	-129.09852	183.0	2193.5	Added target where seismometer really is. Ready to go to Easter Island.
8/5/07 15:32	47.94858	-129.09852	192.8	2193.4	Moving ship at .3 and target is at 220deg.
8/5/07 15:32	47.94858	-129.09852	203.4	2193.0	Jason leaving the seismometer site.
8/5/07 15:33	47.94854	-129.09856	217.2	2187.6	Turned to heading and moving forward. Altitude at 5m and not seeing much bottom.
8/5/07 15:35	47.94855	-129.09856	215.8	2186.7	DV cam tape changed.
8/5/07 15:35	47.94855	-129.09856	215.4	2186.7	No bottom visual.
8/5/07 15:38	47.94855	-129.09856	215.9	2186.8	Checking on ground faults.
8/5/07 15:40	47.94822	-129.09893	217.0	2194.8	Large pillow basalt with sediment.
8/5/07 15:40	47.94822	-129.09894	273.8	2194.8	Seeing a lot of returns on the sonar as we move toward Easter Island.
8/5/07 15:42	47.94818	-129.09902	249.4	2195.8	Can see some white staining around the pillows. Should be on the outskirts of Easter Is.
8/5/07 15:44	47.94813	-129.09908	244.6	2195.7	Seismometer in view...part of one?
8/5/07 15:44	47.94813	-129.09908	242.9	2195.7	Zooming in on instrument with HD. Can't see any markings on it.
8/5/07 15:45	47.94813	-129.09908	244.8	2195.6	Putting a target on location. Looks like a push core body with sand bag base.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 15:46	47.94813	-129.09908	244.8	2195.6	There is a white tube along the instrument. Calling this target PUSHCORE.
8/5/07 15:46	47.94813	-129.09908	244.9	2195.6	Taking some digital stills of instrument. Looks like it is in some kind of flow.
8/5/07 15:47	47.94812	-129.09908	243.9	2195.2	Going to continue moving south to Easter Island.
8/5/07 15:48	47.94811	-129.09909	238.7	2195.0	Can see tube worms ahead.
8/5/07 15:48	47.94811	-129.09911	239.6	2194.9	Butterfield wants temperature reading in the worm patch.
8/5/07 15:49	47.94807	-129.09913	294.7	2195.6	Could not see any flow. Looking around for markers and/or flow for reading.
8/5/07 15:50	47.94805	-129.09916	320.8	2195.6	<b>Marker 12 keyhole</b> in view within worms.
8/5/07 15:51	47.94806	-129.09916	288.7	2196.3	We are at the base of the slope.
8/5/07 15:51	47.94806	-129.09916	281.9	2196.3	HiDef Recording On
8/5/07 15:52	47.94805	-129.09918	264.5	2196.9	Found some flow as panned left.
8/5/07 15:52	47.94805	-129.09918	266.5	2197.1	Small sulfide structures within the flow.
8/5/07 15:54	47.94805	-129.09918	265.8	2197.1	Going to take temperature measurement.
8/5/07 15:55	47.94805	-129.09918	265.6	2197.1	Marker is along the line of tube worms where taking reading but Jason has moved from Marker.
8/5/07 15:57	47.94804	-129.09918	268.1	2197.2	Temperature Degrees C Started temp at 94deg and then knocked a little sulfide away. Temp. climbed to 153.4.
8/5/07 15:57	47.94805	-129.09918	267.7	2197.2	Probe out.
8/5/07 15:57	47.94805	-129.09918	266.4	2197.2	Want some more temperature readings nearby.
8/5/07 15:58	47.94805	-129.09918	267.1	2197.1	At same spot..trying for higher reading.
8/5/07 15:59	47.94805	-129.09918	267.4	2197.2	Temperature Degrees C Tmax=179.2
8/5/07 15:59	47.94805	-129.09918	267.4	2197.1	HiDef Recording Off Curious fish at probe.
8/5/07 15:59	47.94805	-129.09918	267.5	2197.1	Probe out.
8/5/07 16:00	47.94805	-129.09918	267.8	2197.2	Moving arm along tube worm patch.
8/5/07 16:00	47.94805	-129.09918	267.8	2197.2	Worms just left of last temperature reading.
8/5/07 16:00	47.94805	-129.09918	267.9	2197.2	Probe in tube and small flow.
8/5/07 16:01	47.94805	-129.09917	267.8	2197.2	Temperature Degrees C Tmax=58.1 at worms.
8/5/07 16:02	47.94805	-129.09917	268.0	2197.2	Moved probe to top of worms (last reading at base).
8/5/07 16:02	47.94805	-129.09921	267.9	2197.2	Temperature Degrees C Probe at top. Tmax=13.0
8/5/07 16:03	47.94806	-129.09924	267.9	2197.2	Repositioned at top of worms with probe. Tmax=6.8 here. Zooming in with HD.
8/5/07 16:03	47.94806	-129.09924	267.9	2197.2	This could be a location to place the RAS.
8/5/07 16:05	47.94807	-129.09935	267.9	2197.2	Temperature Degrees C Off to the side a bit and a bit warmer. Tmax=33.1
8/5/07 16:05	47.94806	-129.09937	267.1	2197.1	Moving over to small spires to the left and forward.
8/5/07 16:05	47.94805	-129.09939	275.7	2196.6	HiDef Recording Off Turned off a few minutes ago.
8/5/07 16:06	47.94805	-129.09940	289.9	2197.0	Repositioning over spires (very small in height).
8/5/07 16:07	47.94804	-129.09940	289.9	2197.0	Looks like old shackle coated with black. Not shackle as it is squishy. Could be rubber tire from Paul Johnson.
8/5/07 16:07	47.94804	-129.09940	289.9	2197.0	Was a sealing ring over a flow reading instrument. Vent is growing on man-made object.
8/5/07 16:08	47.94804	-129.09940	289.9	2197.0	Temperature probe out.
8/5/07 16:10	47.94804	-129.09938	289.9	2197.0	Temperature Degrees C Next to rubber tube. Tmax=124.3
8/5/07 16:10	47.94803	-129.09938	289.9	2197.0	Marker in background... <b>Marker E triangle.</b>
8/5/07 16:10	47.94803	-129.09938	289.9	2197.0	Repositioning arm to left-Jason did not move.
8/5/07 16:11	47.94803	-129.09938	289.9	2197.0	HiDef Recording On
8/5/07 16:12	47.94801	-129.09937	289.9	2197.0	HiDef Recording Off
8/5/07 16:13	47.94801	-129.09938	289.9	2197.0	Looking around area for other target.
8/5/07 16:13	47.94800	-129.09937	290.0	2197.0	Looking around for possible RAS site.
8/5/07 16:14	47.94799	-129.09938	288.5	2196.9	Moving Jason to left of rubber seal and north to another patch of shimmering water.
8/5/07 16:15	47.94799	-129.09938	288.0	2197.0	Cute octopus in HD.
8/5/07 16:15	47.94799	-129.09938	288.1	2197.0	Putting probe in orange stained area.
8/5/07 16:16	47.94799	-129.09938	288.1	2197.0	Temperature Degrees C Tmax=6.3
8/5/07 16:16	47.94799	-129.09938	287.9	2197.0	Moving probe.
8/5/07 16:17	47.94799	-129.09938	288.0	2197.0	Slight repositioning nearly in same spot.
8/5/07 16:17	47.94799	-129.09938	287.8	2196.9	Temperature Degrees C Tmax=5-6deg.
8/5/07 16:17	47.94799	-129.09938	287.8	2197.0	Trying to move into crack.
8/5/07 16:17	47.94799	-129.09938	287.9	2197.0	HiDef Recording Off
8/5/07 16:18	47.94799	-129.09937	287.9	2196.9	Looking on HD to position probe into flow.
8/5/07 16:19	47.94800	-129.09937	287.6	2196.9	Temperature Degrees C Probe in flow. Tmax=108.7
8/5/07 16:19	47.94800	-129.09936	287.6	2196.9	Vehicle has another ground fault.
8/5/07 16:20	47.94800	-129.09936	281.1	2196.9	Stowing temperature probe.
8/5/07 16:21	47.94800	-129.09937	281.9	2196.9	Another keyhole marker in view. Marker Keyhole 25. 4871/6015 X/Y. Near squishy seal.
8/5/07 16:21	47.94800	-129.09936	287.1	2196.6	Turning the vehicle to the left.
8/5/07 16:22	47.94802	-129.09936	249.6	2195.2	Large pillows with tube worms in between.
8/5/07 16:22	47.94802	-129.09936	176.3	2195.1	Can see beginnings of talus slope in background with heading of 180.
8/5/07 16:22	47.94802	-129.09936	164.4	2195.0	Spinning around and see sulfide with heading of 164.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 16:23	47.94802	-129.09936	156.2	2194.6	This is the beginning of the main Easter Island feature.
8/5/07 16:24	47.94798	-129.09934	110.2	2194.3	HiDef Recording On
8/5/07 16:24	47.94799	-129.09934	108.0	2194.2	Stowing arm.
8/5/07 16:24	47.94799	-129.09936	76.4	2194.3	Done with this site but would like to fly low to next site S&M.
8/5/07 16:25	47.94800	-129.09935	84.1	2195.5	Before leaving want another temperature reading in a tube worm patch at base of sulfide.
8/5/07 16:26	47.94800	-129.09934	81.1	2196.9	Circled around the apron of Easter Island and now positioning for sample at base.
8/5/07 16:27	47.94800	-129.09934	81.1	2196.9	Probe out.
8/5/07 16:27	47.94800	-129.09934	81.7	2196.9	Not yet...now ready to sample temp.
8/5/07 16:28	47.94800	-129.09934	74.7	2196.9	Temperature Degrees C Probe within worms. No warm water there. Repositioning and looking for shimmer.
8/5/07 16:30	47.94801	-129.09935	75.2	2196.8	Temperature Degrees C Different angle in worms. Tmax=20.4
8/5/07 16:31	47.94801	-129.09936	75.2	2196.9	Good possible RAS location just at base of the sulfide structure.
8/5/07 16:31	47.94801	-129.09936	75.2	2196.8	Flat area easy to position RAS.
8/5/07 16:32	47.94801	-129.09937	75.2	2196.8	Looking for possible conflicts with vehicle flight paths.
8/5/07 16:32	47.94802	-129.09937	75.3	2196.8	At the north end of the sulfide structure at the southern end. Tube worm clumps and flat.
8/5/07 16:33	47.94802	-129.09938	75.1	2196.8	Position is 4870/6017 x/y. Trying to mark the site with the keyhole marker left here.
8/5/07 16:33	47.94802	-129.09938	75.2	2196.8	Moving <b>keyhole marker 17</b> with the temperature probe to the spot which would be good for the RAS.
8/5/07 16:34	47.94802	-129.09938	74.8	2196.8	Putting target in as Keyhole 17 at this location in navigation system.
8/5/07 16:34	47.94802	-129.09938	74.8	2196.8	Marker in place.
8/5/07 16:34	47.94802	-129.09938	75.1	2196.1	Next stop is S&M
8/5/07 16:35	47.94802	-129.09938	74.8	2196.0	Stowing wand.
8/5/07 16:36	47.94802	-129.09938	74.5	2196.1	Wand secured.
8/5/07 16:37	47.94806	-129.09933	79.5	2195.2	Heading out at 78deg to next sulfide.
8/5/07 16:38	47.94805	-129.09925	111.4	2195.4	Moving over pillows and stained sediment.
8/5/07 16:38	47.94803	-129.09921	110.7	2195.5	Another marker in view. Triangle but all blackened.
8/5/07 16:38	47.94801	-129.09918	110.2	2195.7	Marker has a CF on it for Chuck Fisher.
8/5/07 16:39	47.94800	-129.09918	109.9	2195.5	HiDef Recording On
8/5/07 16:39	47.94800	-129.09918	110.0	2194.9	Big chunks of sulfide that have fallen off on the bottom.
8/5/07 16:41	47.94797	-129.09916	109.8	2193.1	Underlay map is not aligned well in this area.
8/5/07 16:42	47.94801	-129.09903	137.5	2190.8	HiDef Recording Off
8/5/07 16:43	47.94798	-129.09895	143.4	2190.8	Looking for diffuse flow on basalt near S&M
8/5/07 16:45	47.94794	-129.09888	158.8	2193.0	Pillow basalts with lots of sediment at bases. Not much activity..looks dead.
8/5/07 16:45	47.94793	-129.09887	158.7	2192.9	2 markers with triangles..probably Chuck Fishers trail pre-1999.
8/5/07 16:46	47.94793	-129.09887	158.7	2193.3	Wasteland of Alvin turds.
8/5/07 16:47	47.94792	-129.09885	158.7	2194.0	Tube worms but not as robust as previous patches.
8/5/07 16:48	47.94787	-129.09888	196.3	2194.4	Looking for sample site and shimmering water.
8/5/07 16:48	47.94787	-129.09888	196.3	2194.3	At 4907/6001 x/y worm patch.
8/5/07 16:49	47.94787	-129.09888	196.4	2194.3	Site not very active.
8/5/07 16:49	47.94788	-129.09887	196.1	2193.7	Continuing on to S&M.
8/5/07 16:50	47.94787	-129.09878	178.6	2191.9	More triangle markers at the base of the structure.
8/5/07 16:52	47.94789	-129.09865	63.0	2190.0	Ship should be close to S&M.
8/5/07 16:52	47.94793	-129.09870	81.8	2188.9	Back end of S&M.
8/5/07 16:53	47.94800	-129.09862	132.6	2187.9	Want some HD of underside of flanges.
8/5/07 16:53	47.94799	-129.09860	132.4	2187.2	HiDef Recording On
8/5/07 16:54	47.94798	-129.09858	141.9	2187.3	Moving in for HD shots of flanges.
8/5/07 16:55	47.94798	-129.09855	148.2	2187.2	At the northern end of S&M.
8/5/07 16:56	47.94798	-129.09855	148.5	2187.2	Can see the reflective pond of the flange in the HD with the lasers.
8/5/07 16:56	47.94798	-129.09855	148.6	2187.1	Camera at full tilt up already.
8/5/07 16:58	47.94798	-129.09855	148.4	2187.0	Done with video survey. Want to drive once over the top of structure.
8/5/07 16:58	47.94799	-129.09855	148.5	2185.0	Moving up to view top.
8/5/07 16:59	47.94798	-129.09854	148.5	2182.2	Another flange pool visible. HD capturing video.
8/5/07 17:00	47.94799	-129.09854	173.0	2181.6	At top and can see smoke on bench behind this feature.
8/5/07 17:01	47.94796	-129.09860	105.4	2181.0	Moving over top and toward black smoke and other sulfide top.
8/5/07 17:02	47.94799	-129.09860	146.9	2179.3	No water sampler so only video survey.
8/5/07 17:02	47.94795	-129.09850	232.4	2178.2	Not as many tube worms as past years. Last year was bald as well.
8/5/07 17:02	47.94794	-129.09850	244.7	2178.1	Good top view.
8/5/07 17:02	47.94794	-129.09850	246.9	2178.2	HiDef Recording Off



J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 17:03	47.94794	-129.09851	296.6	2178.7	Can see 2 black smoker orifices.
8/5/07 17:04	47.94795	-129.09851	256.2	2181.0	Nice view of black smokers.
8/5/07 17:05	47.94800	-129.09851	205.9	2178.2	Want to move to north end at base and find the marker.
8/5/07 17:06	47.94804	-129.09851	199.0	2192.2	<b>Marker in view. Triangle SM.</b>
8/5/07 17:07	47.94804	-129.09851	199.2	2192.8	Marker is at edge of fissure at base.
8/5/07 17:08	47.94804	-129.09851	199.2	2192.8	Underlay map is skewed a bit to the east and south.
8/5/07 17:08	47.94804	-129.09851	199.2	2192.8	Changing DVD tapes
8/5/07 17:11	47.94802	-129.09851	199.3	2192.8	Positioning Jason on top of the marker S&M
8/5/07 17:11	47.94802	-129.09851	198.9	2192.8	Current x/y =4935/6018.
8/5/07 17:16	47.94802	-129.09851	199.3	2192.8	Current Jason position is 15m east of underlay map.
8/5/07 17:17	47.94802	-129.09824	199.3	2192.8	Doppler reset to Marker S&M
8/5/07 17:17	47.94801	-129.09824	199.4	2192.8	New position agrees with the tabulated position.
8/5/07 17:18	47.94803	-129.09829	199.4	2192.8	Old orange marker as move along structure.
8/5/07 17:19	47.94804	-129.09834	180.4	2193.2	Diffuse flow along cracks. Marker could be 8K or DK...can't read.
8/5/07 17:19	47.94804	-129.09836	170.1	2193.1	Hydrothermal staining around pillows.
8/5/07 17:19	47.94802	-129.09838	130.0	2193.2	Looking for any active flow. There was active flow in 2000. Activity has calmed down.
8/5/07 17:20	47.94800	-129.09838	108.2	2193.1	Another marker in view. Marker F diamond shaped and orange.
8/5/07 17:21	47.94799	-129.09838	108.0	2193.5	Orange marker was 8K which is between SM and E Markers.
8/5/07 17:21	47.94797	-129.09839	107.7	2193.8	Typo that was the F diamond marker--not E.
8/5/07 17:22	47.94795	-129.09839	106.5	2193.5	No visible hydrothermal activity.
8/5/07 17:23	47.94792	-129.09840	106.7	2192.8	Looking for diffuse flow but only seeing basalt.
8/5/07 17:24	47.94792	-129.09838	104.6	2192.6	Some staining at base with tube worms (not very robust).
8/5/07 17:25	47.94795	-129.09838	95.8	2191.1	Done at S&M+J589
8/5/07 17:27	47.94808	-129.09828	166.9	2193.2	Some small structures with shimmering water. Just north of the S&M
8/5/07 17:28	47.94807	-129.09828	187.0	2194.5	ZHOU-O6#2 and a marker. Some instruments and <b>Marker 117</b> here. ZHOU 06-2#.
8/5/07 17:29	47.94808	-129.09828	187.2	2194.3	4952/6024 x/y instruments in place at flow.
8/5/07 17:29	47.94808	-129.09828	187.4	2193.9	Lots of instruments. Could be Noreen's settling larval array.
8/5/07 17:30	47.94808	-129.09827	187.3	2193.7	Area littered with instruments here.
8/5/07 17:31	47.94807	-129.09827	187.6	2194.5	Using HD to zoom into orange instrument. Might be part of Noreen's instrument.
8/5/07 17:31	47.94807	-129.09826	187.4	2194.1	Looks like a chimney collapse may have smashed instruments.
8/5/07 17:31	47.94807	-129.09826	187.5	2193.6	Another instrument visible in pressure case.
8/5/07 17:32	47.94807	-129.09826	187.5	2193.6	Location is 5m north of the S&M
8/5/07 17:35	47.94806	-129.09824	188.0	2193.7	These instruments will sit until the Chinese get funded to come back.
8/5/07 17:35	47.94806	-129.09824	188.6	2193.7	OSMO sampler attached to titanium. Looks like half melted.
8/5/07 17:36	47.94806	-129.09824	188.4	2193.7	Just junk and should be cleaned up.
8/5/07 17:37	47.94806	-129.09823	205.3	2193.7	Plan is driving south down the fissure. Going to Milli Q.
8/5/07 17:37	47.94808	-129.09823	222.5	2193.7	Looking around this site and all the instruments left behind.
8/5/07 17:39	47.94811	-129.09824	255.6	2193.7	Plan is to do video surveying for next 45 minutes at several chimneys in the area.
8/5/07 17:40	47.94811	-129.09828	254.9	2193.9	Alvin weight in view with crabs.
8/5/07 17:41	47.94811	-129.09832	227.3	2192.3	Going to start a HD tape continuously during this survey.
8/5/07 17:41	47.94810	-129.09838	164.7	2192.9	Moving toward Tara . <b>There is Dudley!!</b>
8/5/07 17:42	47.94809	-129.09839	146.9	2193.5	Dudley has lost an arm. Looking good Dudley. A few limpets.
8/5/07 17:42	47.94809	-129.09839	146.8	2193.9	4944/6025 x/y is position of Dudley at base of S&M
8/5/07 17:44	47.94803	-129.09841	216.8	2190.8	Ship is moving as is Jason to new vents.
8/5/07 17:45	47.94800	-129.09841	216.3	2193.3	Tube on seafloor in basalt.
8/5/07 17:45	47.94800	-129.09842	215.5	2193.3	Looks like a push core tube.
8/5/07 17:47	47.94793	-129.09849	216.5	2192.2	More Alvin weights.
8/5/07 17:47	47.94792	-129.09850	215.4	2192.0	Sedimented pillow basalt.
8/5/07 17:48	47.94785	-129.09852	216.0	2191.3	Another Fisher triangle marker.
8/5/07 17:48	47.94782	-129.09851	218.1	2191.0	Believe Fisher put triangles around the base of the hydrothermal structures.
8/5/07 17:49	47.94776	-129.09857	278.1	2190.8	Ship should be positioned over Tara and Jason is following along.
8/5/07 17:50	47.94780	-129.09861	319.7	2192.6	Coming into tube worms and staining.
8/5/07 17:51	47.94780	-129.09862	319.4	2193.3	Can see some water flow at top of tubeworms.
8/5/07 17:51	47.94781	-129.09864	319.7	2188.6	HiDef Recording On
8/5/07 17:52	47.94781	-129.09864	282.5	2184.8	Beginning video survey of this complex of hydrothermal features.
8/5/07 17:53	47.94781	-129.09864	282.6	2184.6	HiDef Recording Off
8/5/07 17:54	47.94780	-129.09865	304.6	2184.4	Believe this is Needle and it should go up another 10m. Tara off to the south of Needle.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 17:54	47.94779	-129.09866	322.3	2184.4	Waiting for Medea to catch up.
8/5/07 17:54	47.94778	-129.09870	345.6	2184.5	HiDef Recording On
8/5/07 17:55	47.94778	-129.09873	345.1	2184.5	Lots of tube worms on sulfide.
8/5/07 17:55	47.94779	-129.09874	345.5	2183.8	Moving up the sulfide.
8/5/07 17:55	47.94779	-129.09874	345.0	2184.1	Turning lasers off for cleaner video.
8/5/07 17:56	47.94780	-129.09875	341.3	2183.3	Still moving up the sulfide. Large colonies of worms.
8/5/07 17:58	47.94780	-129.09875	341.0	2181.7	Doing video survey of tube worms as move toward the top...not there yet.
8/5/07 18:00	47.94780	-129.09875	340.8	2181.4	Basket is touching the tube worms and HD camera maybe 1 meter away.
8/5/07 18:00	47.94780	-129.09875	340.8	2181.8	Nice view of palm worms next to tubeworms.
8/5/07 18:01	47.94780	-129.09875	340.9	2181.7	Zooming in on palm worms.
8/5/07 18:01	47.94780	-129.09875	340.9	2181.7	Great HD in current view of palm worms.
8/5/07 18:02	47.94780	-129.09875	340.8	2181.7	Limpets look like they are in chains attached to each other.
8/5/07 18:04	47.94780	-129.09875	340.8	2181.7	Going to move up the sulfide now.
8/5/07 18:06	47.94780	-129.09875	340.9	2180.7	Can see some scale worms.
8/5/07 18:07	47.94780	-129.09875	340.8	2180.3	Vent fish visible on HD.
8/5/07 18:09	47.94780	-129.09875	340.5	2179.6	Going to move up a bit faster.
8/5/07 18:09	47.94780	-129.09875	341.8	2178.9	Sulfide in back looks like a camel.
8/5/07 18:10	47.94780	-129.09875	357.2	2176.4	Continuing up the sulfide. Irregularly shaped but no smoker on top. Marker N visible on top.
8/5/07 18:10	47.94780	-129.09875	357.5	2176.0	Don't think there has been a fluid sample here since 1995. Top looks dead.
8/5/07 18:11	47.94780	-129.09875	357.3	2175.9	<b>Marker N</b> current position 4917/5993 x/y.
8/5/07 18:11	47.94781	-129.09875	357.4	2175.9	Looking at top with HD.
8/5/07 18:12	47.94780	-129.09875	353.2	2175.8	Done at Needle and will head over to Sully (going to skip Tara).
8/5/07 18:13	47.94776	-129.09877	297.8	2176.0	Want to drive south around Tara which is not as tall as Needle.
8/5/07 18:13	47.94776	-129.09877	291.7	2179.9	Lots of smoke to the west of Needle so want to drive on the east side.
8/5/07 18:13	47.94774	-129.09879	291.6	2179.5	HiDef Recording Off during the transit to Sully.
8/5/07 18:14	47.94775	-129.09880	291.0	2179.0	Lost sight of bottom.
8/5/07 18:15	47.94772	-129.09873	307.1	2179.6	<b>Tara in sight</b>
8/5/07 18:17	47.94766	-129.09863	265.9	2180.4	Marker visible. Probably still on Tara.
8/5/07 18:17	47.94764	-129.09864	263.8	2181.5	<b>Marker T</b> triangle for Tara. Want to move around Tara to Sully.
8/5/07 18:18	47.94764	-129.09858	212.7	2189.0	Moving Jason down and around Tara.
8/5/07 18:19	47.94760	-129.09869	341.5	2188.4	Some staining at base of feature.
8/5/07 18:19	47.94760	-129.09866	285.9	2182.6	Still at Tara and Marker T in view.
8/5/07 18:20	47.94758	-129.09862	223.9	2192.4	Small fissure and pillow basalts.
8/5/07 18:20	47.94757	-129.09863	223.6	2192.0	Moving SW with Jason.
8/5/07 18:21	47.94755	-129.09879	275.9	2190.9	East of Sully with some staining in basalts.
8/5/07 18:21	47.94756	-129.09880	274.5	2189.1	Can see another marker in view. It is <b>Star marker at Sully</b>
8/5/07 18:22	47.94756	-129.09881	332.0	2188.8	Star marker is at Sully Vent. There is the T-handle at the vent.
8/5/07 18:22	47.94757	-129.09883	326.7	2188.9	HiDef Recording On
8/5/07 18:23	47.94757	-129.09883	321.9	2189.0	Three years ago this was much more active.
8/5/07 18:24	47.94757	-129.09883	309.0	2189.3	Two separate orifices here. Looks hot in the water coming out between worms.
8/5/07 18:25	47.94757	-129.09884	307.7	2188.9	Instrument is in flow.
8/5/07 18:25	47.94757	-129.09884	308.2	2189.1	10 minutes left on DV cam tape.
8/5/07 18:26	47.94757	-129.09884	308.3	2189.1	Good flow coming out on top vent.
8/5/07 18:26	47.94757	-129.09884	308.4	2188.8	Worms do not have any red lips...all died out.
8/5/07 18:28	47.94757	-129.09884	308.4	2189.3	Can see vent fish in HD.
8/5/07 18:28	47.94757	-129.09884	310.4	2189.1	Can see one of the snails in HD.
8/5/07 18:28	47.94757	-129.09885	317.4	2188.9	Maybe some palm worms.
8/5/07 18:29	47.94757	-129.09885	330.8	2189.2	Palm worms at bottom.
8/5/07 18:29	47.94757	-129.09886	341.0	2188.7	Good view of orifice on HD. <b>Marker S</b> in view on brow cam.
8/5/07 18:30	47.94757	-129.09886	341.2	2188.8	Going to setup for temp probe and then gas tight.
8/5/07 18:31	47.94757	-129.09886	348.2	2189.0	Going to pick up t-handle test stick of Marv Lilley's that is testing some materials.
8/5/07 18:31	47.94757	-129.09886	348.1	2189.0	Setting basket up.
8/5/07 18:33	47.94757	-129.09887	14.3	2189.1	New DV cam tape in.
8/5/07 18:33	47.94757	-129.09887	14.2	2189.1	Grabbing temperature probe.
8/5/07 18:34	47.94757	-129.09887	14.5	2189.1	Placing probe in orifice at top of sulfide.
8/5/07 18:35	47.94757	-129.09887	14.6	2189.1	Temperature Degrees C Tmax=227 at the left most orifice.
8/5/07 18:35	47.94757	-129.09887	14.6	2189.1	Repositioning probe.
8/5/07 18:37	47.94757	-129.09887	15.0	2189.1	Temperature Degrees C Tmax=232.3 in the same orifice after reposition.
8/5/07 18:37	47.94757	-129.09887	15.1	2189.1	Moving over to other orifice to the right in current view.
8/5/07 18:38	47.94757	-129.09887	15.0	2189.1	Probe in other orifice.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 18:39	47.94757	-129.09887	15.6	2189.1	Temperature Degrees C Tmax=225 at second orifice.
8/5/07 18:39	47.94757	-129.09887	15.6	2189.1	Last summer temperatures were over 300deg.
8/5/07 18:40	47.94757	-129.09887	15.7	2189.1	Stowing probe and getting gas tight out of basket.
8/5/07 18:40	47.94757	-129.09887	16.2	2189.1	Gastight in grip.
8/5/07 18:41	47.94757	-129.09887	16.5	2189.1	Hand-held gastight white being used.
8/5/07 18:43	47.94757	-129.09886	15.8	2189.1	<b>J286-GT-006</b> Sample Gastight Sampling in the first orifice. Fired.
8/5/07 18:44	47.94757	-129.09886	15.9	2189.1	J286-GT-006Samp Must have gone..pushing piston again. Ram didn't go down very far...questionable firing.
8/5/07 18:46	47.94757	-129.09886	16.0	2189.1	J286-GT-006Samp Trying to fire the gastight again.
8/5/07 18:46	47.94757	-129.09886	15.9	2189.1	J286-GT-006bSamp Going to try one more time to push piston. Still questionable.
8/5/07 18:48	47.94756	-129.09883	354.8	2189.3	Bottle was returned to the milk crate.
8/5/07 18:49	47.94756	-129.09883	354.8	2189.3	Watch change.
8/5/07 18:52	47.94757	-129.09881	321.7	2189.4	<b>Recover Instrument We have grabbed Marv's Test Stick.</b>
8/5/07 18:52	47.94757	-129.09881	321.9	2189.4	VID_GRAB
8/5/07 18:53	47.94757	-129.09881	321.9	2189.4	It was put in the central milk crate.
8/5/07 18:56	47.94757	-129.09882	314.6	2189.4	Using the water sampler - running without the pump.
8/5/07 18:57	47.94757	-129.09882	314.8	2189.4	Temperature is 235C.
8/5/07 18:58	47.94757	-129.09882	314.9	2189.4	<b>J286-GT-006</b> Firing the port gas tight bottle.
8/5/07 18:59	47.94758	-129.09880	317.5	2189.4	J286-GT-007 Tmax=236.
8/5/07 19:01	47.94760	-129.09878	358.4	2180.9	Next is driving up to Hulk. We will release the RAS and collect some tubeworms.
8/5/07 19:06	47.94773	-129.09875	24.9	2156.9	On transit to Hulk.
8/5/07 19:16	47.94824	-129.09853	24.5	2156.8	Still traveling to Hulk.
8/5/07 19:25	47.94846	-129.09821	30.9	2156.8	Still transiting.
8/5/07 19:29	47.94849	-129.09820	25.0	2175.1	We are back at Hulk but 40m up. Goal is to find the Marker H to reset the doppler.
8/5/07 19:30	47.94856	-129.09818	89.2	2195.7	Back on the bottom.
8/5/07 19:32	47.94848	-129.09825	102.8	2195.0	Following the fissure North. Hulk should be to the right soon.
8/5/07 19:34	47.95003	-129.09705	75.8	2197.0	At Marker H. Resetting the Doppler here.
8/5/07 19:35	47.95001	-129.09706	94.1	2197.4	VID_GRAB
8/5/07 19:35	47.95000	-129.09706	94.7	2197.2	RAS has been spotted.
8/5/07 19:35	47.94999	-129.09704	94.8	2197.4	Doing some Video work first. Then the collection of some tube worms. Then release the RAS.
8/5/07 19:36	47.94998	-129.09701	95.9	2197.6	Moving to look at the RAS intake.
8/5/07 19:37	47.95000	-129.09700	95.4	2201.1	Started HD recording.
8/5/07 19:37	47.95000	-129.09700	94.0	2201.3	Stopping HD recording.
8/5/07 19:41	47.95000	-129.09701	92.9	2201.3	From all the fresh growth it looks like Hulk heated up.
8/5/07 19:41	47.95000	-129.09701	92.8	2201.3	Zooming in on some of the nearby fauna.
8/5/07 19:42	47.95000	-129.09701	92.8	2201.3	Starting HD recording.
8/5/07 19:48	47.95000	-129.09700	91.7	2201.1	Stopped HD recording.
8/5/07 19:49	47.95001	-129.09701	72.6	2200.4	Started up HD again.
8/5/07 19:49	47.95003	-129.09702	31.0	2196.3	Heading to the top of Hulk.
8/5/07 19:50	47.95008	-129.09702	21.5	2186.3	Looking for the healthy tubeworms.
8/5/07 19:53	47.95009	-129.09702	23.0	2187.9	Good footage on the HD of a high temperature vent.
8/5/07 19:59	47.95009	-129.09702	25.5	2188.1	Going to sample the tubeworms.
8/5/07 19:59	47.95009	-129.09702	25.3	2188.1	Stopping the HD recording.
8/5/07 20:01	47.95009	-129.09702	27.9	2188.0	Sulfide worms on small chimney
8/5/07 20:01	47.95009	-129.09702	25.2	2188.1	Getting ready to take a temperature where we intend to sample tubeworms
8/5/07 20:03	47.95010	-129.09704	78.7	2188.7	Positioning Jason
8/5/07 20:04	47.95011	-129.09704	81.9	2188.8	Getting temp probe and putting it into tubeworm bush
8/5/07 20:06	47.95011	-129.09704	82.0	2188.8	Temperature Degrees C: Temp = 47.1 C taken midway down into the tubeworm bush
8/5/07 20:07	47.95011	-129.09704	82.7	2188.8	Repositioning temp probe for another measurement
8/5/07 20:07	47.95011	-129.09704	81.1	2188.8	Decided to stow the temp probe and collect some tubeworms
8/5/07 20:08	47.95011	-129.09704	81.7	2188.8	These will go in the starboard biobox.
8/5/07 20:11	47.95009	-129.09704	62.4	2188.9	<b>J286-BIO-008+J6537</b> Sample Bio-macro Tubeworm grab at Hulk. These are fat happy tubeworms for Verena Tunncliffe.
8/5/07 20:12	47.95011	-129.09696	23.1	2185.8	VID_GRAB
8/5/07 20:13	47.95013	-129.09694	24.4	2185.5	One more look at the top of Hulk.
8/5/07 20:13	47.95013	-129.09695	23.2	2185.5	Many limpets up at the top.
8/5/07 20:16	47.95013	-129.09695	23.1	2185.6	Lots of Shimmer at the top here.
8/5/07 20:18	47.95013	-129.09695	23.2	2185.6	Good HD footage.
8/5/07 20:21	47.95010	-129.09696	32.1	2185.3	Done with the HD at the top.
8/5/07 20:27	47.95002	-129.09698	69.3	2201.5	Moving to recover the MTR and RAS inlet.
8/5/07 20:28	47.95002	-129.09698	71.3	2201.3	Stopping the HD footage.

J286 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/5/07 20:31	47.95012	-129.09704	68.2	2201.8	Taking a temperature probe in the holes at the top of the dome.
8/5/07 20:32	47.95011	-129.09702	67.9	2201.8	Temperature maxed at 70C.
8/5/07 20:32	47.95011	-129.09702	68.2	2201.7	Deeper inside the temperature was 55C.
8/5/07 20:32	47.95011	-129.09703	68.2	2201.8	At the top of the Dome the temperature is around 20C.
8/5/07 20:32	47.95011	-129.09703	68.2	2201.7	HD Recording started.
8/5/07 20:34	47.95013	-129.09706	68.9	2201.7	Stopped recording.
8/5/07 20:34	47.95013	-129.09708	68.8	2201.7	Temperature is around 44C on top of a different part of the dome.
8/5/07 20:35	47.95014	-129.09707	68.8	2201.7	Measuring the temperature around the bottom edge of the dome. Around 12-15C.
8/5/07 20:39	47.95016	-129.09708	68.9	2201.8	Back side of the dome - Temp is 78C and still rising slowly.
8/5/07 20:40	47.95016	-129.09711	68.9	2201.8	Port biobox is out.
8/5/07 20:40	47.95017	-129.09716	69.0	2201.8	Started the HD again.
8/5/07 20:42	47.95023	-129.09736	68.9	2201.8	Stopped recording again.
8/5/07 20:44	47.95029	-129.09750	68.9	2201.8	Starting the HD Again.
8/5/07 20:44	47.95033	-129.09759	68.8	2201.8	Grabbing for the MTR.
8/5/07 20:47	47.95047	-129.09789	67.6	2201.9	<b>MTR recovered.</b> into Port Biobox.
8/5/07 20:49	47.95056	-129.09799	67.5	2201.9	The RAS intake tube has been removed.
8/5/07 20:49	47.95056	-129.09800	67.5	2201.9	VID_GRAB
8/5/07 20:49	47.95058	-129.09802	67.5	2201.9	The RAS cap has melted in a large section.
8/5/07 20:51	47.95066	-129.09826	67.5	2201.9	RAS Cap has been placed into the center milk crate.
8/5/07 20:52	47.95069	-129.09832	67.5	2201.9	Looking for the Titanium bit from the RAS intake.
8/5/07 20:54	47.95082	-129.09861	67.6	2201.9	Preparing to grab some of the sickly tubeworms.
8/5/07 20:54	47.95086	-129.09873	65.5	2202.0	Moving to pull the pin on the RAS first to clear some airspace.
8/5/07 20:56	47.95085	-129.09876	66.0	2202.0	HD Video running.
8/5/07 20:56	47.95085	-129.09876	66.0	2202.0	Some close-ups of the bacterial growth on the RAS.
8/5/07 20:59	47.95084	-129.09869	51.1	2201.5	<b>Releasing the RAS.</b>
8/5/07 20:59	47.95084	-129.09869	51.5	2201.9	Having a little trouble. Going to attempt again.
8/5/07 20:59	47.95084	-129.09869	59.7	2201.9	RAS successfully released.
8/5/07 20:59	47.95083	-129.09872	67.5	2201.9	Stopped HD video.
8/5/07 21:03	47.95082	-129.09868	284.5	2202.5	J286-Bio-009 Grabbed some skinny tubeworms.
8/5/07 21:04	47.95082	-129.09868	284.6	2202.6	Trying to get them in the Port Biobox.
8/5/07 21:05	47.95082	-129.09867	284.3	2202.6	Got some in there. Hopefully that is enough.
8/5/07 21:06	47.95082	-129.09868	284.9	2202.6	Done sampling and getting ready to recover.
8/5/07 21:07	47.95082	-129.09867	284.1	2202.4	Dropping weights.
8/5/07 21:10	47.95090	-129.09864	347.9	2156.2	Preparing the recovery.
8/5/07 21:50	47.95074	-129.09875	1.5	936.7	NOTE: Samples are mis-numbered and labeled after J286-GT-005.
8/5/07 21:51	47.95073	-129.09875	1.0	915.0	Originally some instrument recoveries were labeled as samples.
8/5/07 21:51	47.95072	-129.09875	2.2	896.7	The following are the real sample id's and what was wrongly entered:
8/5/07 21:54	47.95068	-129.09877	5.1	812.3	None of the J286-INST are samples except with the misnaming of the port gastight J286-GT-006 as an INST.
8/5/07 22:18	47.95051	-129.09879	280.3	194.8	We have been sitting around at 200m awaiting the go ahead for recovery.
8/5/07 22:20	47.95051	-129.09878	286.5	192.0	Continuing the ascent now. 20m per minute.
8/5/07 22:31	47.95044	-129.09872	225.0	1.2	Jason is at the surface.
8/5/07 22:33	47.95045	-129.09871	232.9	1.7	Medea is on deck.
8/5/07 22:37	47.95048	-129.09872	267.6	0.6	Jason is on deck.

## 6.5.2 J2-287 Endeavour

**J2-287 Endeavour Main Field** [J2-287 Bottom time: 19:45] Jason equipped with HFS, SM2000, 1 discreet gastight, Niskin, MTR, Pelagic impeller pump. Jason first found the DiIorio TX mooring located NE of the field. Repositioning mooring south of Dante. (Mooring was accidentally released in the planned RX position). Repositioned HOBO here to smoker. Collected SM2000 en route to RX mooring (located SE of the field) and relocated it north of Dante. Checked acoustic array and made adjustment to optimizer ducer heading. Collected SM2000 of Dante's plume and took a Niskin sample of the plume. Transited to RAS drop location and relocated RAS to Easter Island. Before setting RAS in its final location, took 4 HFS samples. Positioned RAS and its intake. Took HD recordings of site including a 360deg panorama. Headed for Bastille (crossed Needle) where 2 HFS and 1 GT were taken. Next headed to S&M vent and took 6 HFS samples there. Transited north to Hulk and took 3 HFS and 1 GT in the RAS hotter area; 2 HFS and 1 PIP in the RAS cooler area; and 3 HFS and 1GT in the Hulk black smoker. A BIO sample of tubeworms and a HD video survey were done at Hulk before surfacing.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/6/2007 16:16	47.95050	-129.09871	297.9	0.7	preparing for launch J2-287
8/6/2007 16:16	47.95050	-129.09871	294.7	0.8	DSC pictures not downloaded from previous lowering - not many
8/6/2007 16:17	47.95049	-129.09872	279.3	0.8	time sync checked
8/6/2007 16:44	47.95051	-129.09870	323.5	1.5	beginning launch J2-287
8/6/2007 16:45	47.95050	-129.09871	320.7	1.5	medea in water
8/6/2007 16:47	47.95046	-129.09868	191.0	2.6	Jason in water
8/6/2007 16:47	47.95047	-129.09869	209.6	2.9	pin pulled
8/6/2007 16:47	47.95046	-129.09869	202.1	3.0	tether in water
8/6/2007 16:48	47.95045	-129.09870	193.1	4.0	starting down
8/6/2007 16:48	47.95045	-129.09870	181.7	19.1	LBL returns from Jason
8/6/2007 16:49	47.95044	-129.09869	176.2	27.3	asnaps seemed to stop working early in last dive
8/6/2007 16:49	47.95044	-129.09869	176.1	28.1	stop and restart DAQ
8/6/2007 17:42	47.95046	-129.09873	325.4	1606.7	Jason 1600m down
8/6/2007 17:45	47.95045	-129.09871	286.4	1702.5	On Jason: HFS; SM200 (down-looking on back end); gastight; Niskin; MTR; pelagic impeller pump
8/6/2007 17:47	47.95044	-129.09870	275.1	1702.4	Dive goal to locate/reposition Dilorio moorings; temp survey Dante; pume temp time series; Niskin; locate/reposition RAS; deploy MTR; HFS; HDTV
8/6/2007 17:49	47.95043	-129.09868	261.3	1702.5	LBL transponder net wast deployed for this dive.
8/6/2007 18:21	47.95056	-129.09847	48.1	2161.9	Heading back down.
8/6/2007 18:24	47.95014	-129.09313	48.1	2181.0	Seeing bottom 50m below with the SM2000.
8/6/2007 18:25	47.95014	-129.09314	47.9	2181.0	First mooring to be located is TX. Homer indicates it is 84 m away from Medea.
8/6/2007 18:25	47.95015	-129.09315	47.9	2181.0	Data indicates the mooring is south of our location.
8/6/2007 18:28	47.95021	-129.09312	48.3	2184.2	Have a sonar target-could be mooring.
8/6/2007 18:29	47.95024	-129.09307	0.2	2186.6	Going down about 4m for better signals to mooring.
8/6/2007 18:31	47.95024	-129.09301	2.1	2188.1	Going to move the ship south to look for the mooring-moving 30m.
8/6/2007 18:35	47.95020	-129.09295	0.7	2187.6	Range is closing on the Homer as we move south.
8/6/2007 18:37	47.95011	-129.09286	0.7	2187.7	Jason will continue to go south until the homer range doesn't close.
8/6/2007 18:42	47.94985	-129.09289	243.1	2187.7	Jason is 16-17m from Medea; range on homer is 38m.
8/6/2007 18:43	47.94976	-129.09301	184.7	2187.4	Bringing Medea up 20m.
8/6/2007 18:46	47.94963	-129.09298	224.5	2173.3	See the mooring in the sonar 36m from Jason.
8/6/2007 18:52	47.94963	-129.09301	228.4	2173.4	Watch changed over.
8/6/2007 18:53	47.94954	-129.09295	154.7	2165.0	We are right in front of the mooring. Turning the video back on.
8/6/2007 18:55	47.94945	-129.09288	155.9	2139.8	Mooring spotted.
8/6/2007 18:58	47.94943	-129.09287	99.4	2140.3	Moving Medea into position to allow for easy movement of the mooring.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/6/2007 19:04	47.94944	-129.09292	98.8	2140.5	We have grabbed the top of the mooring.
8/6/2007 19:04	47.94944	-129.09292	71.5	2131.0	Going to take this mooring to South of Dante.
8/6/2007 19:11	47.94946	-129.09325	257.3	2039.9	Turning the video off while transitting with the mooring.
8/6/2007 19:19	47.94936	-129.09387	258.3	2040.1	Still travelling.
8/6/2007 19:35	47.94918	-129.09534	257.4	2039.9	Still travelling.
8/6/2007 19:51	47.94897	-129.09691	257.4	2039.9	Still on the way to Dante.
8/6/2007 20:04	47.94878	-129.09812	261.1	2039.9	Just about at the designated spot. Going to descend to release the mooring.
8/6/2007 20:10	47.94882	-129.09843	359.5	2107.3	Looking for the tabletop position where the mooring is to be deployed.
8/6/2007 20:14	47.94880	-129.09829	6.7	2107.1	Getting ready to drop.
8/6/2007 20:14	47.94879	-129.09831	6.6	2107.2	Video is on for the drop.
8/6/2007 20:16	47.94876	-129.09840	5.2	2111.7	Mooring TX has been released.
8/6/2007 20:23	47.94870	-129.09843	4.0	2139.5	Going down to the mooring base to check the location.
8/6/2007 20:23	47.94870	-129.09844	4.3	2146.5	We have spotted the mooring on the Medea camera.
8/6/2007 20:25	47.94873	-129.09844	5.2	2190.8	Bottom is in sight.
8/6/2007 20:26	47.94874	-129.09843	4.1	2189.8	Mooring came down safely and is not caught in anything.
8/6/2007 20:29	47.94879	-129.09843	34.8	2194.8	Going to pick up the mooring by grabbing the chain.
8/6/2007 20:29	47.94879	-129.09843	35.7	2194.8	We will be moving it to the east.
8/6/2007 20:31	47.94887	-129.09826	43.0	2191.0	Going lateral to the east.
8/6/2007 20:34	47.94888	-129.09815	355.8	2195.9	We need to move the base of the mooring off this ledge.
8/6/2007 20:35	47.94888	-129.09815	355.7	2195.9	We are going to rise up a bit to get a better swath on the SM2000.
8/6/2007 20:39	47.94889	-129.09816	355.7	2189.0	Some debate going on where to but the base of the mooring.
8/6/2007 20:39	47.94889	-129.09816	355.5	2193.0	Taking it down here.
8/6/2007 20:41	47.94888	-129.09817	351.4	2200.2	Touch down.
8/6/2007 20:41	47.94888	-129.09817	348.8	2200.3	The bottom of mooring TX is at 2202m.
8/6/2007 20:42	47.94887	-129.09816	352.9	2198.0	Time to back away safely and then head to the next mooring.
8/6/2007 20:44	47.94887	-129.09809	18.0	2196.9	Going around the mooring to get a good fix on the Hobo deployed previously.
8/6/2007 20:55	47.94909	-129.09786	27.5	2195.5	Recording the SM2000 data.
8/6/2007 21:04	47.94931	-129.09785	5.3	2177.1	At Dante
8/6/2007 21:05	47.94931	-129.09788	56.0	2174.7	Looking for the Hobo deployed yesterday.
8/6/2007 21:07	47.94936	-129.09786	103.6	2174.8	Circling around Dante.
8/6/2007 21:14	47.94926	-129.09794	341.7	2176.8	Spotted the Hobo right at the top of Dante.
8/6/2007 21:18	47.94928	-129.09797	88.1	2175.9	Nice view of the Hobo here.
8/6/2007 21:21	47.94928	-129.09798	88.7	2175.9	Heading to get the other mooring - RX.
8/6/2007 21:24	47.94928	-129.09798	89.1	2175.9	Change of plan.
8/6/2007 21:25	47.94929	-129.09798	85.0	2175.9	Going to change position of the Hobo.
8/6/2007 21:28	47.94929	-129.09798	93.4	2176.4	Picking up the Hobo.
8/6/2007 21:29	47.94929	-129.09799	92.5	2176.4	Putting the Hobo back into the smoker.
8/6/2007 21:30	47.94929	-129.09799	93.2	2176.4	Stopping the SM2000 recording.
8/6/2007 21:31	47.94929	-129.09800	93.3	2176.4	Heading to the RX mooring.
8/6/2007 21:31	47.94929	-129.09800	92.6	2176.4	We will be taking an SM2000 swath on the way to the mooring.
8/6/2007 21:32	47.94929	-129.09801	161.6	2169.7	SM2000 data is now recording.
8/6/2007 21:33	47.94930	-129.09799	165.0	2165.9	On the way to the mooring.
8/6/2007 21:36	47.94925	-129.09789	160.0	2165.9	Stopping video recording on the transit.
8/6/2007 21:50	47.94838	-129.09756	183.4	2178.4	Still on the way to the mooring.
8/6/2007 21:57	47.94798	-129.09750	201.3	2178.6	SM2000 recording stopped.
8/6/2007 21:59	47.94791	-129.09754	200.7	2167.3	Getting close to the mooring.
8/6/2007 22:00	47.94795	-129.09748	97.1	2167.4	Moving medea to a safe spot to get a better fix on the mooring.
8/6/2007 22:11	47.94784	-129.09674	169.6	2162.7	Spotted the mooring and video recording has started.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/6/2007 22:13	47.94772	-129.09670	168.1	2166.1	Moving to pick up the mooring.
8/6/2007 22:14	47.94768	-129.09670	170.1	2165.4	We have grabbed the top line.
8/6/2007 22:16	47.94773	-129.09677	169.8	2143.5	We have hauled up the mooring and are moving back to Dante
8/6/2007 22:17	47.94774	-129.09678	170.1	2138.5	This is the mooring RX.
8/6/2007 22:17	47.94775	-129.09681	170.0	2124.1	Turning off the DVCam tape.
8/6/2007 22:18	47.94775	-129.09683	170.1	2110.2	DVDs are stopping now as well.
8/6/2007 22:18	47.94775	-129.09685	170.9	2100.6	On the way to Dante.
8/6/2007 22:22	47.94774	-129.09686	181.0	2060.5	On the way to Dante.
8/6/2007 22:56	47.94977	-129.09773	339.1	2042.4	Approximately on site and headed towards the bottom.
8/6/2007 22:58	47.94979	-129.09776	331.7	2051.7	Video started.
8/6/2007 23:03	47.94983	-129.09788	338.8	2121.6	Released the mooring.
8/6/2007 23:25	47.94987	-129.09770	160.1	2121.7	Positioning Medea before moving the mooring to its final location.
8/6/2007 23:32	47.94994	-129.09766	158.3	2182.2	Jason is approaching the bottom.
8/6/2007 23:33	47.94993	-129.09764	158.5	2194.7	Bottom in site.
8/6/2007 23:33	47.94992	-129.09765	157.6	2195.3	Looking for the mooring.
8/6/2007 23:35	47.94989	-129.09767	158.5	2194.6	Having some problems with the Homer.
8/6/2007 23:37	47.94985	-129.09769	153.0	2194.3	Homer is working.
8/6/2007 23:45	47.94986	-129.09782	172.4	2150.4	Searching for the instrument and floats with the sonar.
8/6/2007 23:52	47.94976	-129.09776	172.8	2163.2	Still searching for the mooring.
8/6/2007 23:55	47.94988	-129.09788	176.1	2164.8	Found the mooring line.
8/6/2007 23:58	47.94989	-129.09793	169.3	2167.3	Locating the polypro lifting line.
8/7/2007 0:03	47.94987	-129.09790	172.5	2195.8	The mooring anchor.
8/7/2007 0:06	47.94987	-129.09791	172.1	2197.6	Grabbing the anchor chain with the schilling arm.
8/7/2007 0:06	47.94986	-129.09791	171.9	2197.8	Lifting the mooring.
8/7/2007 0:07	47.94986	-129.09790	154.3	2195.2	Moving the mooring to the deployment location.
8/7/2007 0:11	47.94978	-129.09786	157.8	2192.7	Moving the acousting mooring slowly.
8/7/2007 0:17	47.94969	-129.09780	157.1	2192.4	Trying to decide where to drop the anchor.
8/7/2007 0:20	47.94966	-129.09777	157.0	2192.9	The anchor has been released.
8/7/2007 0:22	47.94966	-129.09776	156.1	2192.4	Mooring placed at target 65.
8/7/2007 0:24	47.94969	-129.09778	158.0	2182.1	Moving up the mooring line to the acoustic package.
8/7/2007 0:25	47.94970	-129.09776	159.2	2162.1	Target 65 is the location of TX.
8/7/2007 0:26	47.94971	-129.09776	155.5	2152.8	Instrument package in sight.
8/7/2007 0:31	47.94969	-129.09773	199.7	2152.1	The acoustic package needs to be rotated a few degrees.
8/7/2007 0:32	47.94969	-129.09773	200.8	2148.4	DP dropped out. Need to reposition the ship.
8/7/2007 0:34	47.94971	-129.09771	200.3	2148.3	Things are under control now. Need to reposition Medea to the NE.
8/7/2007 0:37	47.94970	-129.09769	247.6	2146.5	Sitting around waiting for things to stabilize.
8/7/2007 0:40	47.94968	-129.09769	240.9	2153.6	Need to do a 90 degree rotation on the mooring.
8/7/2007 0:43	47.94966	-129.09774	248.5	2194.3	Moving to the base of the mooring. Going to try to rotate this 90 degrees.
8/7/2007 0:45	47.94968	-129.09774	248.2	2192.9	We have rotated the base a little more than 90 degrees to the left.
8/7/2007 0:45	47.94970	-129.09773	245.9	2178.1	Moving up the line to check and make sure everything is lined up.
8/7/2007 0:47	47.94969	-129.09772	238.5	2149.2	At the transducer array.
8/7/2007 0:48	47.94967	-129.09769	287.4	2149.8	Setting Jason's heading to get an idea of the transducer array's orientation.
8/7/2007 0:49	47.94965	-129.09768	295.9	2150.9	Moving the base did not change the orientation of the transducer array.
8/7/2007 0:51	47.94964	-129.09769	295.0	2151.8	Trying to workout a different plan.
8/7/2007 0:52	47.94964	-129.09770	294.8	2158.8	Maybe going down to the acoustic release and trying to rotate there.
8/7/2007 0:55	47.94965	-129.09775	294.4	2189.8	At the swivel.



J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 0:59	47.94963	-129.09777	295.1	2189.9	DV/Cam video restarted now.
8/7/2007 1:00	47.94963	-129.09778	294.9	2190.0	Grabbing the shackle.
8/7/2007 1:01	47.94963	-129.09778	295.0	2189.9	We have done a 90 degree rotation or so.
8/7/2007 1:02	47.94964	-129.09778	294.9	2189.9	Now to check up at the transducer array to make sure it rotated properly.
8/7/2007 1:05	47.94966	-129.09771	284.2	2152.9	Transducer array looks good.
8/7/2007 1:05	47.94966	-129.09771	283.6	2152.8	Back to Dante.
8/7/2007 1:06	47.94966	-129.09771	281.1	2158.1	Actually we will stay here.
8/7/2007 1:07	47.94965	-129.09773	276.6	2168.8	Back down to the bottom.
8/7/2007 1:09	47.94966	-129.09774	274.4	2189.6	Resetting the doppler.
8/7/2007 1:09	47.94965	-129.09774	274.0	2189.4	Nav Doppler Reset
8/7/2007 1:11	47.94964	-129.09770	201.0	2189.5	Now transiting to the HOB0 probe at Dante.
8/7/2007 1:15	47.94946	-129.09783	200.1	2178.0	At a mound north of Dante.
8/7/2007 1:22	47.94933	-129.09796	200.6	2175.5	Approaching Dante.
8/7/2007 1:26	47.94932	-129.09797	200.5	2175.5	Approaching Dante to do another SM2000 profile of the plume.
8/7/2007 1:28	47.94931	-129.09800	200.6	2157.0	Moving Jason into the plume.
8/7/2007 1:31	47.94932	-129.09800	200.7	2157.0	Jason is over the plume.
8/7/2007 1:35	47.94937	-129.09800	314.2	2160.8	Trying to find the maximum plume flow.
8/7/2007 1:35	47.94937	-129.09801	313.9	2160.9	SM2000 is recording.
8/7/2007 1:38	47.94938	-129.09797	42.7	2160.8	Still trying to position Jason optimally in the plume.
8/7/2007 1:50	47.94934	-129.09789	135.4	2160.7	Finished with the SM2000.
8/7/2007 1:51	47.94936	-129.09787	135.3	2160.7	Finished with the acoustic mooring work.
8/7/2007 1:53	47.94941	-129.09781	135.7	2160.7	Forgot the NISKIN sample.
8/7/2007 2:04	47.94933	-129.09790	135.8	2160.7	Sample Niskin Taking a NISKIN sample over the plume.
8/7/2007 2:06	47.94933	-129.09791	135.2	2160.7	Sample Niskin Taking NISKIN sample
8/7/2007 2:07	47.94934	-129.09789	137.6	2160.7	Headed to the RAS.
8/7/2007 2:09	47.94940	-129.09779	199.5	2160.7	Data logger feed is no longer getting to the monitor.
8/7/2007 2:21	47.94903	-129.09779	182.3	2137.2	The plan is to move the RAS mooring to the Easter Island site.
8/7/2007 2:24	47.94874	-129.09773	181.0	2110.6	Nav has lost ship GPS.
8/7/2007 2:32	47.94812	-129.09758	181.3	2110.9	We are waiting. The GPS loss has caused the loss of DP.
8/7/2007 2:36	47.94782	-129.09746	181.0	2110.6	Nav Nav is back.
8/7/2007 2:48	47.94760	-129.09730	173.9	2211.5	Bottom in sight.
8/7/2007 2:52	47.94771	-129.09726	284.9	2211.9	Homer range was opening when heading south and now is not so deciding which direction to head next.
8/7/2007 2:55	47.94755	-129.09757	306.2	2213.2	Driving west now looking for RAS.
8/7/2007 2:55	47.94754	-129.09757	303.0	2213.0	Pillow lavas with a lot of sediment...good view.
8/7/2007 2:56	47.94753	-129.09758	303.2	2213.2	On this transect should come across a big fissure and depth should rise 10m.
8/7/2007 2:58	47.94750	-129.09767	302.9	2213.2	Range to RAS is not changing very quickly.
8/7/2007 2:59	47.94748	-129.09773	241.2	2210.8	More numerous pillows or old sulfides covered in sediment.
8/7/2007 3:00	47.94747	-129.09774	242.7	2208.4	Looks like extinct sulfides.
8/7/2007 3:00	47.94746	-129.09775	242.0	2207.8	Old chimney spires.
8/7/2007 3:01	47.94741	-129.09781	240.9	2203.7	This is a 50x100m area of old sulfides.
8/7/2007 3:01	47.94739	-129.09783	241.4	2203.5	Can see old flanges on the chimney structure.
8/7/2007 3:02	47.94735	-129.09787	242.4	2201.4	Doppler and LBL are about the same as doppler was reset to LBL. We do have good LBL now.
8/7/2007 3:02	47.94734	-129.09789	242.3	2199.9	Very large old sulfide.
8/7/2007 3:03	47.94733	-129.09793	248.8	2193.5	This chimney appears to be 18m tall (and in the way of our progress)
8/7/2007 3:04	47.94734	-129.09799	267.8	2188.9	The chimney was actually 22m in height as we just cleared it.
8/7/2007 3:06	47.94747	-129.09800	350.1	2199.7	Doppler held during transit over the old chimney.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 3:09	47.94755	-129.09808	269.3	2205.9	Down at the bottom in old sulfide structures again.
8/7/2007 3:10	47.94757	-129.09814	306.8	2205.8	Range to RAS has closed to within 90m.
8/7/2007 3:12	47.94763	-129.09827	306.8	2202.0	Other Comment Another tall chimney structure ahead and on the approach could see the old parts that fell down.
8/7/2007 3:15	47.94781	-129.09828	309.1	2202.2	Range closing still on the RAS.
8/7/2007 3:17	47.94790	-129.09823	309.6	2202.2	Homer still indicates the instrument is to the north and range continues to drop.
8/7/2007 3:17	47.94792	-129.09822	309.1	2202.2	Can see a fissure in the brow cam.
8/7/2007 3:20	47.94799	-129.09822	309.6	2203.9	Range is under 50m.
8/7/2007 3:21	47.94801	-129.09824	309.5	2203.8	Drop off ahead; a large fissure.
8/7/2007 3:23	47.94807	-129.09829	309.2	2203.8	Moving over fissure as range is closing to 44m.
8/7/2007 3:24	47.94812	-129.09833	309.2	2203.8	Seeing fissure on the SM200 as well as the sonar.
8/7/2007 3:24	47.94812	-129.09833	309.2	2203.8	Can see the RAS!
8/7/2007 3:25	47.94813	-129.09834	309.3	2203.8	RAS is very close to the side of the fissure.
8/7/2007 3:25	47.94813	-129.09835	334.3	2203.9	RAS is actually in the fissure.
8/7/2007 3:26	47.94815	-129.09838	0.2	2203.8	Moving the ship back over Medea.
8/7/2007 3:26	47.94816	-129.09840	351.9	2206.0	Dropping a weight.
8/7/2007 3:27	47.94819	-129.09839	332.6	2210.4	RAS is up against the wall of the fissure and a few crabs are checking out the action.
8/7/2007 3:28	47.94819	-129.09841	330.7	2210.6	Jason is positioning to remove the drop anchor.
8/7/2007 3:29	47.94820	-129.09843	330.5	2210.7	Drop anchor is released.
8/7/2007 3:31	47.94822	-129.09841	332.2	2206.8	Going to grab RAS just above the frame at the link and heading up with RAS.
8/7/2007 3:31	47.94822	-129.09841	332.7	2204.1	RAS being lifted out of the fissure.
8/7/2007 3:32	47.94821	-129.09838	333.8	2192.6	RAS needs to go about 84m to its final deployment site.
8/7/2007 3:34	47.94819	-129.09837	332.0	2191.9	Bearing 262 to target.
8/7/2007 3:35	47.94818	-129.09836	332.3	2191.9	Turning off the Homer.
8/7/2007 3:37	47.94819	-129.09837	282.9	2192.0	Good frame grab of the RAS frame with Elise's name who helped put the instrument together (Dave Butterfield's daughter).
8/7/2007 3:39	47.94819	-129.09843	261.9	2191.9	Little chimneys below as we transit.
8/7/2007 3:40	47.94819	-129.09848	262.1	2190.1	Heading for Easter Island for the deployment.
8/7/2007 3:43	47.94812	-129.09887	261.6	2187.7	Less than 50m to go to the vent.
8/7/2007 3:50	47.94808	-129.09925	202.0	2191.0	Target site is the keyhole 17 marker (which was moved to the desired site on the previous dive).
8/7/2007 3:51	47.94810	-129.09925	197.7	2192.0	Can see one of the Fisher triangle markers.
8/7/2007 3:53	47.94809	-129.09925	196.3	2195.7	Setting RAS down so Jason can find the correct marker.
8/7/2007 3:54	47.94809	-129.09925	195.3	2195.6	RAS is free of Jason.
8/7/2007 3:55	47.94810	-129.09922	215.8	2195.3	Earlier in the dive the nav was showing a 10m offset to the NW.
8/7/2007 3:55	47.94810	-129.09921	233.8	2195.2	Can see the flat pancake vents.
8/7/2007 3:56	47.94810	-129.09921	235.6	2195.1	Ship is coming back toward Jason now.
8/7/2007 3:57	47.94810	-129.09921	233.9	2195.1	Pancake area is a drainback feature.
8/7/2007 3:57	47.94811	-129.09921	237.8	2190.5	Coming up over a wall.
8/7/2007 3:58	47.94810	-129.09928	266.7	2189.4	Taking frame grabs of the floats.
8/7/2007 4:03	47.94810	-129.09928	283.6	2190.0	Site should be on other side of the mound in front of us.
8/7/2007 4:05	47.94812	-129.09925	237.1	2192.2	Target should be fairly close to the mound but on the other side.
8/7/2007 4:08	47.94810	-129.09924	192.8	2193.4	Need to move ship 060 to keep the Jason-Medea tether out of the work area.
8/7/2007 4:11	47.94812	-129.09927	205.7	2193.2	Target believed to be just around the corner to the west.
8/7/2007 4:13	47.94811	-129.09931	195.3	2195.0	Could be in the tubeworms ahead but no marker.
8/7/2007 4:14	47.94812	-129.09933	191.7	2195.1	Will want to take fluid samples before placing the RAS.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 4:15	47.94811	-129.09932	191.7	2195.1	The keyhole marker is in front of us but waiting for ship to get closer for more tether with Medea.
8/7/2007 4:17	47.94811	-129.09932	191.6	2195.1	Waiting for tether to get behind Jason.
8/7/2007 4:20	47.94811	-129.09932	175.8	2195.7	Firing lasers at the crab.
8/7/2007 4:20	47.94811	-129.09932	175.9	2195.7	Body of the crab is 10cm.
8/7/2007 4:23	47.94811	-129.09931	175.8	2195.6	Medea is starting slowly to move.
8/7/2007 4:25	47.94811	-129.09934	164.2	2197.1	Medea is in place
8/7/2007 4:26	47.94811	-129.09936	164.6	2197.8	going to do temperature measurements
8/7/2007 4:28	47.94811	-129.09937	164.7	2197.7	Probe removed and basket stowed.
8/7/2007 4:28	47.94811	-129.09937	164.7	2197.7	Pushing marker off the tubeworm clump to take reading.
8/7/2007 4:30	47.94811	-129.09937	164.7	2197.7	Other Comment Probe in place and pumps are on. Temp 81 10.8
8/7/2007 4:31	47.94811	-129.09937	164.7	2197.7	Temperature is 10.8 (typo)
8/7/2007 4:31	47.94811	-129.09937	164.6	2197.7	Moving probe to another location within the clump.
8/7/2007 4:31	47.94811	-129.09937	164.6	2197.7	Want to get near base of the rock.
8/7/2007 4:32	47.94811	-129.09937	164.6	2197.7	Temp here is 18.7deg.
8/7/2007 4:33	47.94811	-129.09937	164.6	2197.7	Temp is now 20deg.
8/7/2007 4:35	47.94811	-129.09937	164.6	2197.6	J287-HFS-002 Sample HFS Starting piston #1
8/7/2007 4:40	47.94811	-129.09936	164.5	2197.6	J287-HFS-002 Sample complete.
8/7/2007 4:41	47.94811	-129.09936	164.5	2197.6	J287-HFS-002 Tmax=20.8 Tave=20.8 vol=718 T2=9.5 unfiltered piston #1
8/7/2007 4:42	47.94811	-129.09936	164.5	2197.5	Sample HFS Starting HFS
8/7/2007 4:43	47.94811	-129.09936	164.5	2197.5	J287-HFS-003 J2-287-003 filtered bag #16
8/7/2007 4:46	47.94810	-129.09936	164.4	2197.6	J287-HFS-003 Stop sample. Tmax=20.6 Tave=19.7 vol=565 T2=9.0
8/7/2007 4:47	47.94810	-129.09936	164.4	2197.6	J287-HFS-004 Sample HFS Sterivix filter #10 starting
8/7/2007 5:05	47.94810	-129.09936	164.2	2197.5	J287-HFS-004 Stop sample. Tmax=20.7 Tave=19.8 vol=2505 T2=9.0
8/7/2007 5:06	47.94810	-129.09936	164.2	2197.5	Moving the probe a small amount to check the temperature.
8/7/2007 5:07	47.94810	-129.09936	164.2	2197.5	Tip up against rock within the clump. Temp=22.5
8/7/2007 5:09	47.94810	-129.09936	164.2	2197.5	Sample HFS Will take sample in this new position. Start sample J287-HFS-005.
8/7/2007 5:09	47.94810	-129.09936	164.2	2197.4	J287-HFS-005 Filtered bag #17
8/7/2007 5:12	47.94810	-129.09935	164.2	2197.4	J287-HFS-005 Stop. Tmax=22.7 Tave=22.6 vol=563 T2=10.0
8/7/2007 5:12	47.94810	-129.09935	164.2	2197.4	Stowing the intake wand.
8/7/2007 5:13	47.94810	-129.09935	164.2	2197.4	Deleted target 66 and will replace with RAS target when get better position.
8/7/2007 5:16	47.94817	-129.09931	204.5	2194.6	Going to go get the RAS.
8/7/2007 5:17	47.94816	-129.09934	218.3	2196.7	Jason is grabbing the RAS at the mooring base on the line.
8/7/2007 5:18	47.94816	-129.09934	217.0	2196.3	Heading over to its deployment location at the keyhole marker 17.
8/7/2007 5:19	47.94815	-129.09930	209.0	2196.0	Circling base of sulfide structure.
8/7/2007 5:20	47.94814	-129.09931	164.8	2197.1	Placing anchor weight between sulfide structure and tubeworm clump.
8/7/2007 5:20	47.94814	-129.09931	162.3	2197.1	RAS in place.
8/7/2007 5:24	47.94814	-129.09931	156.0	2197.0	Keyhole is the next tubeworm clump over so will need to move RAS a bit closer.
8/7/2007 5:24	47.94814	-129.09931	155.2	2196.8	Jason has RAS at anchor and moving closer to sample site.
8/7/2007 5:25	47.94811	-129.09934	160.0	2197.4	RAS anchor is now adjacent to the keyhole marker tubeworms.
8/7/2007 5:27	47.94810	-129.09935	129.3	2194.9	Jason ascending to instrument height.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 5:28	47.94810	-129.09935	129.7	2194.8	Releasing the intake hose binding.
8/7/2007 5:31	47.94809	-129.09935	114.8	2195.3	Releasing second intake hose binding-looked like a knot was forming so undoing another binding.
8/7/2007 5:31	47.94809	-129.09935	115.0	2195.4	Top binding released and intake fell to seafloor.
8/7/2007 5:33	47.94809	-129.09937	60.9	2197.5	Jason positioning to grab intake host to place in the tubeworms just sampled.
8/7/2007 5:36	47.94809	-129.09934	156.2	2197.2	Have not been logging HD taping.
8/7/2007 5:36	47.94809	-129.09934	156.2	2197.2	Placing the intake in the sample clump.
8/7/2007 5:36	47.94809	-129.09934	156.2	2197.2	Jason gently tapping the instrument into the tubeworms.
8/7/2007 5:38	47.94809	-129.09934	156.1	2197.1	Spiders seen climbing near intake.
8/7/2007 5:39	47.94809	-129.09935	156.0	2197.2	Want shimmering water on both sides of instrument. Need to nudge it over a bit.
8/7/2007 5:40	47.94809	-129.09935	155.5	2197.1	Instrument is in great position...no nudging needed.
8/7/2007 5:40	47.94809	-129.09935	155.5	2197.1	Jason temperature probe taking reading near intake.
8/7/2007 5:40	47.94809	-129.09935	155.5	2197.1	Temperature Degrees C
8/7/2007 5:41	47.94809	-129.09935	155.5	2197.1	Temperature Degrees C Jason probe reading 2.8 in front of the instrument.
8/7/2007 5:41	47.94809	-129.09935	155.4	2197.1	RAS MTR is number 3026.
8/7/2007 5:42	47.94810	-129.09935	155.4	2197.1	Temperature Degrees C Moved probe over to other side of intake front. T=3.6
8/7/2007 5:43	47.94810	-129.09935	155.4	2197.1	Temperature Degrees C Trying another location with probe. T=20.3
8/7/2007 5:43	47.94810	-129.09935	155.4	2197.1	Nudging intake over to the 20deg location within the tubeworms.
8/7/2007 5:46	47.94810	-129.09934	155.3	2197.1	Temperature Degrees C Temperture with probe at intake T=20.5 Probe next to intake.
8/7/2007 5:49	47.94811	-129.09934	155.3	2197.0	Temperature Degrees C Probe now directly in front of temperature sensor on RAS intake. T=19.5
8/7/2007 5:49	47.94811	-129.09934	155.2	2197.0	Temperature Degrees C Move probe a few centimeters in front of RAS temp sensor. T=21.2
8/7/2007 5:50	47.94811	-129.09934	155.3	2197.0	RAS location is good. Want to back away and position for better HD imaging.
8/7/2007 5:51	47.94810	-129.09935	155.2	2197.0	Other Comment Stowing temperature probe.
8/7/2007 5:51	47.94811	-129.09935	155.2	2197.0	HiDef Recording On
8/7/2007 5:52	47.94810	-129.09935	155.9	2197.0	Fish hanging out near the RAS intake.
8/7/2007 5:52	47.94810	-129.09935	155.2	2196.9	Fish checking out the intake.
8/7/2007 5:54	47.94810	-129.09935	143.0	2197.0	Great clarity on HD with MTR 3026 easily readable.
8/7/2007 5:56	47.94810	-129.09935	143.0	2197.0	Continuing HD video.
8/7/2007 5:59	47.94810	-129.09935	142.3	2195.6	Would like to do a panorama video 360deg with Jason spinning above this site.
8/7/2007 6:05	47.94813	-129.09932	271.1	2195.5	Setting up for the panorama.
8/7/2007 6:06	47.94813	-129.09932	93.2	2196.3	Adjusting lighting settings for full-video panaorama. Will use 2 light settings and 2 full revolutions.
8/7/2007 6:08	47.94813	-129.09931	77.0	2196.0	HiDef Recording On Starting HD panorama video.
8/7/2007 6:09	47.94812	-129.09931	77.6	2196.0	Trying for 2 minutes for full roatation.
8/7/2007 6:09	47.94812	-129.09931	80.3	2196.0	Start Jason spinning.
8/7/2007 6:09	47.94812	-129.09931	133.3	2196.0	Slowing Jason a bit.
8/7/2007 6:12	47.94812	-129.09931	15.2	2196.0	Spinning clockwise.
8/7/2007 6:13	47.94812	-129.09931	77.8	2196.0	Sampler with the bag on bottom visible. Finished circle.
8/7/2007 6:14	47.94812	-129.09931	77.6	2196.0	Ready to spin around again with different light setting.
8/7/2007 6:14	47.94812	-129.09931	75.6	2196.0	Start spin.
8/7/2007 6:14	47.94812	-129.09931	46.4	2196.0	Spinning in opposite direction.
8/7/2007 6:18	47.94812	-129.09931	77.7	2196.0	Second spin complete.
8/7/2007 6:18	47.94812	-129.09931	77.6	2196.0	HiDef Recording Off

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 6:18	47.94812	-129.09931	90.2	2196.0	Next stop is to go over smoker near top of Bastille.
8/7/2007 6:19	47.94813	-129.09932	174.8	2196.0	Should be only 12m to the NE from here to Bastille.
8/7/2007 6:21	47.94813	-129.09932	174.9	2196.0	That is Bastille is SOUTH of current position (not NE).
8/7/2007 6:22	47.94811	-129.09930	175.7	2188.5	Leaving RAS.
8/7/2007 6:22	47.94810	-129.09929	175.3	2187.7	HiDef Recording On Have been recording the HD as moving away from RAS.
8/7/2007 6:23	47.94811	-129.09924	175.5	2181.2	Seeing sonar target for Bastille.
8/7/2007 6:24	47.94812	-129.09921	175.0	2184.7	Probably turned off HD-just recorded fly-away from RAS.
8/7/2007 6:25	47.94810	-129.09916	175.0	2183.9	Getting good LBL fixes as came off the bottom.
8/7/2007 6:29	47.94798	-129.09909	174.9	2183.9	Bottom visible again. Looks like some hydrothermal deposits.
8/7/2007 6:30	47.94798	-129.09907	165.3	2182.6	Sulfide structures. Not sure which one.
8/7/2007 6:30	47.94798	-129.09907	164.5	2181.8	This is the camel-head structure.
8/7/2007 6:30	47.94798	-129.09907	165.0	2178.8	Lots of worms on sulfide walls.
8/7/2007 6:31	47.94798	-129.09907	163.7	2178.3	Marker visible is N for Needle.
8/7/2007 6:31	47.94797	-129.09909	160.3	2178.4	Good LBL fix at Marker N (Needle)
8/7/2007 6:31	47.94795	-129.09913	166.8	2179.3	HiDef Recording Off Only recorded for a few minutes.
8/7/2007 6:34	47.94795	-129.09927	151.6	2185.3	Looking for Bastille-should have been between Easter Is. and Needle.
8/7/2007 6:34	47.94797	-129.09928	153.4	2185.3	Jason moved over back west. Sulfide structure could be Bastille.
8/7/2007 6:34	47.94798	-129.09928	160.1	2185.4	HiDef Recording On
8/7/2007 6:35	47.94799	-129.09928	159.9	2185.5	Skinny sulfide chimney behind larger structure. Can see another in the distance.
8/7/2007 6:36	47.94795	-129.09926	168.1	2185.6	These vents are not hot enough to sample-no black smoke visible but some flow at top.
8/7/2007 6:38	47.94794	-129.09920	169.3	2185.5	Heading for the large sonar targets to the left.
8/7/2007 6:39	47.94793	-129.09920	132.2	2184.5	Approaching chimneys.
8/7/2007 6:39	47.94794	-129.09917	134.1	2183.4	No robust black smoke here either. There is a larger structure behind these.
8/7/2007 6:40	47.94797	-129.09914	167.4	2179.8	We ended back at Needle's camel head.
8/7/2007 6:40	47.94797	-129.09915	180.1	2178.9	HiDef Recording Off
8/7/2007 6:41	47.94797	-129.09915	246.0	2178.6	Searching around to the west.
8/7/2007 6:43	47.94797	-129.09924	198.9	2184.1	Another sulfide chimney but no hot water.
8/7/2007 6:45	47.94800	-129.09928	198.1	2184.1	The orifice on this unnamed vent is too small to sample (not black smoke).
8/7/2007 6:46	47.94800	-129.09930	198.2	2185.7	We think we are in between Needle and Bastille along this ridge of sulfides.
8/7/2007 6:46	47.94800	-129.09930	205.3	2185.6	Going to try west to find Bastille.
8/7/2007 6:47	47.94797	-129.09929	209.5	2189.9	The wall is now visible on the sonar.
8/7/2007 6:50	47.94797	-129.09928	204.0	2187.6	Tall and skinny spires on this chimney. Looks very fragile. Good smoke coming out of beehive.
8/7/2007 6:50	47.94796	-129.09926	209.4	2187.2	Can see another triangle marker on the other side of this chimney.
8/7/2007 6:51	47.94795	-129.09926	224.2	2186.1	The B marker is supposed to be on the south face of Bastille.
8/7/2007 6:52	47.94795	-129.09926	212.2	2185.8	HiDef Recording On Markers were not big triangles but the small Fisher triangles.
8/7/2007 6:53	47.94795	-129.09926	212.4	2186.0	Going to sample on what we think is Bastille.
8/7/2007 6:54	47.94795	-129.09927	212.3	2185.9	Preparing for HFS sample at Bastille.
8/7/2007 6:55	47.94795	-129.09927	212.2	2186.0	First taking a temperature reading.
8/7/2007 6:56	47.94795	-129.09927	212.2	2185.9	Repositioning probe slight back into center of orifice.
8/7/2007 6:56	47.94795	-129.09927	212.2	2185.9	Probe reading T=265. Vent has cooled off substantially.
8/7/2007 6:56	47.94795	-129.09927	212.2	2186.0	Going to take a HFS sample with a piston.
8/7/2007 7:00	47.94795	-129.09927	212.4	2185.9	Sample HFS Starting sample. Piston #8.
8/7/2007 7:01	47.94795	-129.09927	212.1	2185.9	Note HD Video was stopped a few minutes ago.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 7:04	47.94795	-129.09928	212.3	2185.9	J287-HFS-006 End of J287-HFS-006 which was Piston #8.
8/7/2007 7:06	47.94795	-129.09927	212.4	2185.9	J287-HFS-006 Volume sampled 701ml
8/7/2007 7:08	47.94795	-129.09927	212.3	2185.9	J287-HFS-007 Firing starboard gas tight bottle. J287-GT-007.
8/7/2007 7:08	47.94795	-129.09927	212.3	2185.9	J287-HFS-007 Temperature=269.
8/7/2007 7:10	47.94795	-129.09927	212.4	2185.9	J287-HFS-008 Starting filtered bag 18.
8/7/2007 7:13	47.94795	-129.09927	212.4	2185.8	J287-HFS-008 Finished filtered bag 18. Volume=488ml. Tmax=269.5. Tavg=268.8. T2=89.
8/7/2007 7:14	47.94795	-129.09927	212.2	2185.8	Finished here at Bastille.
8/7/2007 7:15	47.94795	-129.09927	212.0	2185.9	Preparing to stow the sampler.
8/7/2007 7:17	47.94796	-129.09926	212.4	2186.0	HD recording while backing away.
8/7/2007 7:17	47.94796	-129.09926	212.4	2186.0	Next stop is over at S and M.
8/7/2007 7:18	47.94796	-129.09926	212.1	2186.7	Taking a looking at the column beside the one we just sampled.
8/7/2007 7:20	47.94797	-129.09916	87.7	2187.2	Stopping the HD recording.
8/7/2007 7:28	47.94800	-129.09869	87.0	2187.1	At S and M.
8/7/2007 7:30	47.94801	-129.09862	80.9	2185.0	Some problems with the HD camera.
8/7/2007 7:31	47.94798	-129.09859	47.0	2178.4	Coming up to the top of the main structure.
8/7/2007 7:33	47.94798	-129.09855	3.3	2178.9	Not much hot water at S and M.
8/7/2007 7:34	47.94799	-129.09851	320.3	2179.4	HD Video has been fixed.
8/7/2007 7:34	47.94799	-129.09852	319.2	2180.8	Some black smoke spotted on the side.
8/7/2007 7:35	47.94799	-129.09851	319.4	2180.7	Recording some HD of the reflective pool.
8/7/2007 7:36	47.94801	-129.09850	305.8	2180.3	We cannot get a good shot in the HD.
8/7/2007 7:39	47.94799	-129.09852	316.9	2179.8	Just on the edge of some good HD footage of the reflecting pool.
8/7/2007 7:41	47.94802	-129.09848	252.4	2179.8	Stopping the HD recording.
8/7/2007 7:41	47.94802	-129.09849	253.3	2179.5	There is still a little black smoke here at S and M.
8/7/2007 7:45	47.94803	-129.09850	253.2	2179.6	Grabbing the wand of the HFS.
8/7/2007 7:46	47.94803	-129.09850	253.2	2179.6	The plan is to sample the near smoker.
8/7/2007 7:49	47.94803	-129.09853	255.7	2180.9	The nozzle is not quite in the orifice.
8/7/2007 7:50	47.94804	-129.09853	254.5	2181.0	Temperature is rising.
8/7/2007 7:50	47.94804	-129.09853	254.4	2180.9	Over 300C.
8/7/2007 7:53	47.94803	-129.09853	254.0	2181.0	Temperature is dropping off.
8/7/2007 7:54	47.94803	-129.09853	253.7	2181.0	Starting to sample here.
8/7/2007 7:55	47.94803	-129.09852	253.8	2181.0	First sample will be unfiltered Piston #2.
8/7/2007 7:55	47.94803	-129.09852	254.4	2181.0	J287-HFS-009 Unfiltered Piston #2 start.
8/7/2007 7:58	47.94803	-129.09852	254.0	2181.0	J287-HFS-009 End of sample. Volume=504. Tmax=323.9. Tavg=321.5. T2=95.
8/7/2007 8:00	47.94803	-129.09852	253.6	2181.0	J287-HFS-010 Starting filtered bag #19
8/7/2007 8:02	47.94803	-129.09853	253.8	2181.0	J287-HFS-010 End of the sample.
8/7/2007 8:03	47.94803	-129.09853	253.9	2181.0	J287-HFS-010 Tmax=323.8. Tavg=321.1. T2=70. Volume=497.
8/7/2007 8:03	47.94803	-129.09853	253.8	2181.1	Finished sampling the high flow here.
8/7/2007 8:03	47.94803	-129.09853	253.7	2181.0	Now looking for some diffuse.
8/7/2007 8:05	47.94803	-129.09852	253.8	2181.1	Sampling some diffuse here.
8/7/2007 8:06	47.94803	-129.09852	253.8	2181.0	Checking the temperature first.
8/7/2007 8:09	47.94803	-129.09852	253.8	2181.0	Temperatures still are not high. It looks like there could be some mixing with ambient water.
8/7/2007 8:10	47.94803	-129.09853	254.0	2181.0	The end of the nozzle had clogged a little. It should be better now.
8/7/2007 8:11	47.94803	-129.09853	253.8	2181.0	J287-HFS-011 Starting filtered bag #20.
8/7/2007 8:14	47.94803	-129.09853	253.8	2181.0	J287-HFS-011 End of the sample.
8/7/2007 8:15	47.94803	-129.09853	253.9	2181.0	J287-HFS-011 Tmax=33. Tavg31.2. T2=15. Volume=498.
8/7/2007 8:16	47.94803	-129.09853	254.0	2181.0	J287-HFS-012 Starting Sterivex filter #11.
8/7/2007 8:37	47.94802	-129.09853	254.1	2180.9	J287-HFS-012 End of the sample.

J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 8:38	47.94802	-129.09853	254.2	2180.9	J287-HFS-012 Volume=3000ml. Tmax=33.2. Tavg 29.1. T2=13.7.
8/7/2007 8:40	47.94802	-129.09853	253.9	2180.9	J287-HFS-013 Starting next sample. Piston #9.
8/7/2007 8:43	47.94802	-129.09853	253.4	2180.9	J287-HFS-013 End of sample. Volume=554ml. Tmax=33.9. Tavg=31.7. T2=14.1.
8/7/2007 8:45	47.94802	-129.09853	254.1	2180.9	J287-HFS-014 Starting Sterivex filter #12.
8/7/2007 9:03	47.94802	-129.09854	254.1	2180.9	J287-HFS-014 End of the sample. Volume=2510ml. Tmax=34.1. Tavg=31.4.
8/7/2007 9:04	47.94802	-129.09855	253.9	2180.9	J287-HFS-014 We have stowed the sampler wand.
8/7/2007 9:04	47.94802	-129.09855	253.0	2180.9	J287-HFS-014 Heading to Hulk next
8/7/2007 9:05	47.94804	-129.09852	305.2	2180.0	J287-HFS-014 We will come up to 2100m then transit to Hulk.
8/7/2007 9:05	47.94806	-129.09850	29.4	2172.9	Comin up now.
8/7/2007 9:15	47.94845	-129.09824	24.2	2098.7	Still on the way to Hulk.
8/7/2007 9:23	47.94905	-129.09771	23.7	2098.8	Still cruising.
8/7/2007 9:43	47.95003	-129.09721	65.9	2191.9	Down at the bottom.
8/7/2007 9:44	47.95004	-129.09724	1.7	2194.8	Heading towards marker H.
8/7/2007 9:48	47.95010	-129.09719	87.2	2195.1	Coming up to Hulk.
8/7/2007 9:51	47.95006	-129.09706	119.1	2199.4	Looking for the location that the RAS sampler was deployed.
8/7/2007 9:51	47.95004	-129.09704	119.2	2199.7	Spotted the marker at Hulk.
8/7/2007 9:54	47.95004	-129.09700	248.3	2197.5	Moving to get to a position where we will not be working downhill.
8/7/2007 9:57	47.95002	-129.09698	271.6	2199.3	Waiting for Medea to move over.
8/7/2007 10:01	47.95003	-129.09699	249.2	2200.4	Still positioning here at Hulk.
8/7/2007 10:02	47.95003	-129.09699	240.1	2199.9	Looking for the Titanium nozzle left from the RAS first.
8/7/2007 10:04	47.95003	-129.09700	251.9	2201.2	Settling down to sample first now.
8/7/2007 10:09	47.95004	-129.09701	290.4	2199.9	A quick look for the Titanium tube was unsuccessful.
8/7/2007 10:11	47.95003	-129.09704	39.3	2200.8	Settling down on the other side.
8/7/2007 10:14	47.95003	-129.09706	90.6	2200.4	Still searching.
8/7/2007 10:17	47.95003	-129.09704	87.0	2200.8	Probing with the wand a bit to look for the Titanium tube.
8/7/2007 10:20	47.95003	-129.09703	87.4	2200.8	Turning on the HFS sampler.
8/7/2007 10:20	47.95003	-129.09703	87.4	2200.8	Looking for the 70C temperature range water.
8/7/2007 10:23	47.95003	-129.09705	87.6	2200.9	Trying to unkink the hose
8/7/2007 10:26	47.95004	-129.09705	87.7	2200.9	Still looking for some warm water.
8/7/2007 10:29	47.95003	-129.09704	87.7	2200.9	Temperatures are pretty good here. Up to 75C.
8/7/2007 10:34	47.95003	-129.09705	87.6	2200.9	J287-HFS-015 Starting sample - Piston #3.
8/7/2007 10:37	47.95003	-129.09704	87.5	2200.9	J287-HFS-015 End of Sample
8/7/2007 10:38	47.95002	-129.09704	87.5	2200.9	J287-HFS-015 Vol=601. Tmax=102.7. Tavg=88.8. T2=40.
8/7/2007 10:40	47.95003	-129.09704	87.4	2200.9	J287-HFS-016 Start of sample - Filtered Bag #21.
8/7/2007 10:43	47.95003	-129.09705	87.3	2201.0	J287-HFS-016 End of Sample
8/7/2007 10:44	47.95003	-129.09705	87.3	2201.0	J287-HFS-016 Vol=592. Tmax=100.3. Tavg=84.4. T2=37.
8/7/2007 10:45	47.95003	-129.09705	87.3	2201.0	J287-HFS-017 Starting Sterivex filter #13.
8/7/2007 11:04	47.95002	-129.09705	86.9	2201.0	J287-HFS-017 End of sample.
8/7/2007 11:04	47.95002	-129.09705	86.9	2201.0	J287-HFS-017 Vol=2500 Tmax=159 ave=75.6.
8/7/2007 11:09	47.95003	-129.09705	86.9	2201.1	Looking for a spot to take a Gas Tight sample.
8/7/2007 11:09	47.95003	-129.09705	86.9	2201.1	J287-GT-018 Taking port gastight sample.
8/7/2007 11:13	47.95003	-129.09704	91.5	2201.0	Looking for the stainless intake tip from the RAS that was recovered earlier.
8/7/2007 11:22	47.95003	-129.09706	153.1	2201.4	Pecking around the area for high temperatures.
8/7/2007 11:27	47.95003	-129.09705	153.1	2201.4	J287-HFS-019 Starting HFS sample with filter #14.
8/7/2007 11:48	47.95003	-129.09704	153.6	2201.6	J287-HFS-019 End of sample.
8/7/2007 11:48	47.95003	-129.09704	153.6	2201.6	J287-HFS-019 Vol=2900 Tmax=12.8 Tave=11.5.
8/7/2007 11:49	47.95003	-129.09704	153.6	2201.7	J287-HFS-020 Taking piston sample with piston #4.
8/7/2007 11:53	47.95003	-129.09707	153.7	2201.6	J287-HFS-020 End of sample.
8/7/2007 11:54	47.95003	-129.09707	153.7	2201.7	J287-HFS-020 Vol=700 Tmax=11.4 Tave=11.



J287 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/7/2007 11:55	47.95003	-129.09706	153.7	2201.6	Stowing the HFS sampler.
8/7/2007 11:59	47.95004	-129.09706	153.6	2201.7	Getting out the Pelagic pump.
8/7/2007 12:09	47.95004	-129.09705	153.6	2201.7	Sample Large Volume Filter Taking a sample with the pelagic impeller pump.
8/7/2007 12:10	47.95003	-129.09705	153.6	2201.7	J287-PIP-021
8/7/2007 12:24	47.95004	-129.09707	153.7	2201.8	J287-PIP-021 End sample.
8/7/2007 12:26	47.95003	-129.09706	151.5	2200.5	J287-PIP-021 18 minutes at 0.6 flow units.
8/7/2007 12:27	47.95003	-129.09705	151.6	2200.5	Stowing sampler.
8/7/2007 12:30	47.95003	-129.09704	152.0	2200.4	Cable management.
8/7/2007 12:35	47.95010	-129.09705	4.9	2189.0	Looking around for tubeworms.
8/7/2007 12:41	47.95017	-129.09702	13.8	2186.7	Preparing to take HFS sample.
8/7/2007 12:43	47.95017	-129.09704	13.7	2186.6	Found a spot with temperature up to 315 degrees C.
8/7/2007 12:45	47.95017	-129.09704	13.7	2186.8	J287-HFS-022 Taking sample with piston #5.
8/7/2007 12:53	47.95017	-129.09702	13.4	2186.8	J287-HFS-022 End sample.
8/7/2007 12:54	47.95017	-129.09702	13.4	2186.8	J287-HFS-022 Tmax=323.8 Tave=323.3 Vol=524 T2=95.
8/7/2007 12:56	47.95017	-129.09702	13.3	2186.8	J287-HFS-022 Starting sample with filter #22.
8/7/2007 12:58	47.95017	-129.09703	13.3	2186.7	J287-HFS-023 End sample.
8/7/2007 12:59	47.95017	-129.09703	13.2	2186.8	J287-HFS-023 Tmax=326.2 Tave=324.9 Vol=550 T2=75.
8/7/2007 13:01	47.95016	-129.09701	13.2	2187.0	Stowing the HFS sampler.
8/7/2007 13:04	47.95016	-129.09700	13.0	2186.9	Fired Red handheld Gastight sample.
8/7/2007 13:04	47.95016	-129.09700	13.0	2186.9	J287-GT-024
8/7/2007 13:07	47.95016	-129.09701	13.0	2186.9	J287-GT-024 End GT sample. T=326.
8/7/2007 13:08	47.95016	-129.09700	13.0	2187.0	Looking for tubeworms.
8/7/2007 13:15	47.95008	-129.09702	19.2	2193.0	J287-HFS-024 Taking background water sample with filter bag #23.
8/7/2007 13:17	47.95009	-129.09702	25.3	2193.7	J287-HFS-025 Typo in previous entry...it is sample 025 not 024.
8/7/2007 13:18	47.95009	-129.09702	25.8	2193.8	J287-HFS-025 End sample.
8/7/2007 13:18	47.95009	-129.09702	25.7	2193.7	J287-HFS-025 Tmax=2.2 Tave=2.0 Vol=560.
8/7/2007 13:19	47.95009	-129.09701	26.0	2193.7	J287-BIO-026 Collecting a tubeworm sample.
8/7/2007 13:20	47.95009	-129.09701	25.6	2193.7	J287-BIO-026 Putting tubeworms in the bio box.
8/7/2007 13:21	47.95009	-129.09702	24.4	2193.7	J287-BIO-026 Finished sampling.
8/7/2007 13:22	47.95009	-129.09702	25.5	2193.6	Started HD recording.
8/7/2007 13:24	47.95008	-129.09705	134.8	2197.9	Stop HD recording.
8/7/2007 13:27	47.95006	-129.09706	205.4	2199.7	The plan is to record some HD panoramic shots of the vent.
8/7/2007 13:30	47.95006	-129.09705	246.1	2199.6	HD recording on.
8/7/2007 13:30	47.95006	-129.09705	198.0	2199.7	Shooting panoramic video of the area.
8/7/2007 13:40	47.95006	-129.09707	19.5	2199.0	HD off. Now moving up the chimney to look at the top.
8/7/2007 13:42	47.95012	-129.09706	22.7	2187.8	HD recording on.
8/7/2007 13:47	47.95011	-129.09698	323.4	2186.2	HD off.
8/7/2007 13:48	47.95009	-129.09701	348.4	2187.4	Positioning Jason for mosaic shots.
8/7/2007 13:51	47.95010	-129.09703	352.8	2188.3	HD recording.
8/7/2007 14:06	47.95013	-129.09703	33.9	2187.5	Moving up to the very top of the chimney on our way to the surface.
8/7/2007 14:08	47.95016	-129.09698	108.4	2183.8	HD off.
8/7/2007 14:08	47.95016	-129.09694	111.6	2183.8	Jason is coming to the surface.
8/7/2007 15:32	47.95001	-129.09672	233.6	1.1	Jason at the surface
8/7/2007 15:35	47.95001	-129.09672	240.8	1.9	Medea on deck
8/7/2007 15:39	47.95001	-129.09672	227.7	0.7	Jason on deck
8/7/2007 15:39	47.95001	-129.09672	227.7	0.7	End lowering J2-287

### 6.5.3 J2-288 Axial CASM

**J2-288 Axial CASM site** [J2-288 Bottom time: 11:49] Jason equipped with HFS, 4 discreet gastight, MTR, Pelagic impeller pump. Landed at south end of T&S Spires site at CASM and took HD survey. HFS sampler pump failure; no HFS samples on this dive. Took 2 BIO tubeworms samples and 2 GTs at north end of T&S. Transited to Lamphere and conducted HD survey. Began geology survey and headed to base of caldera wall. Moved laterally up caldera wall and sampled basalt outcrop (non-talus). Left caldera rim and wall and headed back south to caldera floor to investigate various target features obtained from AUV bathymetric survey. Took 2 rock samples of a lava pond and 1 of nearby cliff; older flow sample south of lava pond and another older flow sample with pelagic sediment.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 1:14	47.95036	-129.09463	336.9	1.5	preparing for launch J2-288
8/9/2007 1:16	47.95036	-129.09463	336.9	1.5	times are synced
8/9/2007 1:17	47.95036	-129.09463	336.9	1.5	site is Axial Seamount
8/9/2007 1:29	45.97314	-129.95767	306.3	1.3	changing topside in file origin and dive number
8/9/2007 1:31	45.97314	-129.95767	306.9	1.4	Medea in water
8/9/2007 1:32	45.97310	-129.95763	175.5	3.1	Jason in water
8/9/2007 1:32	45.97310	-129.95764	179.6	3.0	pin is pulled
8/9/2007 1:33	45.97309	-129.95764	171.4	3.8	tether in water
8/9/2007 1:33	45.97307	-129.95765	186.4	7.2	starting down
8/9/2007 1:45	45.97310	-129.95768	115.5	114.7	getting rid of weight plate
8/9/2007 2:31	45.98895	-130.02724	183.9	1564.1	The bottom is in site.
8/9/2007 2:33	45.98895	-130.02723	183.9	1568.8	Trying to set the navigation.
8/9/2007 2:37	45.98896	-130.02723	186.8	1571.1	We are at Casm and are preparing to survey the area.
8/9/2007 2:39	45.98896	-130.02721	133.3	1570.8	Adding a nav target at this tubeworm site.
8/9/2007 2:43	45.98890	-130.02716	155.6	1570.8	Starting to survey the area before beginning fluid sampling.
8/9/2007 2:49	45.98891	-130.02711	325.2	1571.7	The ROV is in the big crack.
8/9/2007 2:50	45.98889	-130.02715	301.6	1571.7	More tubeworms.
8/9/2007 2:53	45.98900	-130.02734	333.4	1572.1	Found a chimney moving north in the crack.
8/9/2007 2:54	45.98902	-130.02736	334.9	1572.4	This is probably TnS Spires.
8/9/2007 2:57	45.98905	-130.02738	334.9	1572.8	Moving the ship North a bit.
8/9/2007 2:57	45.98905	-130.02738	333.4	1575.8	HD recording.
8/9/2007 2:59	45.98906	-130.02741	334.6	1576.9	Several plumes of hot water.
8/9/2007 3:01	45.98909	-130.02737	309.9	1576.9	Starting from south we are flying to the east and around the chimney.
8/9/2007 3:03	45.98910	-130.02736	309.9	1576.8	Hot water is pooled under an overhang.
8/9/2007 3:07	45.98915	-130.02734	281.0	1578.2	Video survey of TnS Spires
8/9/2007 3:09	45.98915	-130.02734	280.5	1579.9	Looking for potential water sampling sites.
8/9/2007 3:10	45.98915	-130.02734	280.5	1579.9	Looks like some chain links in the brow camera and can now see it on pilot cam
8/9/2007 3:11	45.98915	-130.02734	280.6	1579.9	Going to prod what looks like anchor chain.
8/9/2007 3:12	45.98915	-130.02733	286.6	1579.9	Jason powering up arm to probe the chain.
8/9/2007 3:13	45.98915	-130.02733	287.4	1579.9	Removing the temperature probe.
8/9/2007 3:13	45.98915	-130.02733	288.0	1579.9	Chain falls apart when probe just touches it.
8/9/2007 3:14	45.98915	-130.02734	283.0	1580.0	Each piece breaks off when touched by probe.
8/9/2007 3:15	45.98915	-130.02733	285.1	1580.0	Trying to find a solid piece of the chain.
8/9/2007 3:16	45.98915	-130.02733	284.7	1580.0	Done with the chain-taking a temperature reading in shimmering water adjacent chain.
8/9/2007 3:16	45.98915	-130.02733	285.2	1580.0	Temperature Degrees C T=9 in shimmer
8/9/2007 3:18	45.98915	-130.02733	285.2	1580.0	At the north end of the TnS Spires
8/9/2007 3:18	45.98915	-130.02733	285.2	1579.9	Nav offset on pilot nav screen shows us on the west rim of casm-but we are really inside the casm at TnS Spires
8/9/2007 3:19	45.98916	-130.02732	285.2	1580.0	Going to HFS sample here at various locations.
8/9/2007 3:21	45.98916	-130.02731	285.3	1580.0	Stowed temperature probe and readying the fluid sampler probe.
8/9/2007 3:22	45.98916	-130.02731	285.3	1579.9	Sampling in shimmering water adjacent and below where the chain was located.
8/9/2007 3:23	45.98916	-130.02731	285.0	1579.9	Area is n+J63orth part of TnS Spires
8/9/2007 3:26	45.98916	-130.02730	283.4	1580.6	Going to reposition to get a better probe angle. Same spot.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 3:27	45.98916	-130.02730	289.4	1580.7	HiDef Recording On
8/9/2007 3:32	45.98917	-130.02729	289.5	1580.8	HiDef Recording Off
8/9/2007 3:33	45.98917	-130.02729	289.5	1580.8	Highest temperature so far as been T=33.7--no sample yet.
8/9/2007 3:34	45.98917	-130.02729	289.6	1580.8	Sampling water that is just barely coming out of a lip on the basalt.
8/9/2007 3:35	45.98917	-130.02728	289.6	1580.8	(sample failed) Sample HFS Piston #8 unfiltered TnS Spires
8/9/2007 3:44	45.98917	-130.02727	289.6	1580.8	Sample pump is not working.
8/9/2007 3:47	45.98916	-130.02730	289.1	1580.6	Trying to get the sampler working-cycled power/etc.
8/9/2007 3:55	45.98914	-130.02741	289.3	1580.6	There is no HFS sample-pump failed.
8/9/2007 3:56	45.98914	-130.02741	288.9	1580.6	No fluid sampling on this dive.
8/9/2007 3:59	45.98913	-130.02742	289.5	1580.6	Reset doppler.
8/9/2007 4:00	45.98913	-130.02742	289.4	1580.6	Stowing HFS wand.
8/9/2007 4:01	45.98913	-130.02742	283.3	1580.2	Switching to geology aspect of dive.
8/9/2007 4:03	45.98913	-130.02742	282.9	1579.6	Great biology on the basket-photo in the pilot cam.
8/9/2007 4:04	45.98913	-130.02742	282.8	1579.6	HD cam is getting some images of the animals that fell on top of the basket.
8/9/2007 4:05	45.98913	-130.02742	282.8	1579.6	Arm is cleaning up the bio on the basket.
8/9/2007 4:06	45.98913	-130.02742	283.0	1579.6	Stowing basket.
8/9/2007 4:12	45.98914	-130.02740	283.0	1579.6	Going to sample tubeworms at the northern part of the TnS Spires
8/9/2007 4:14	45.98915	-130.02739	276.3	1580.6	HiDef Recording On Sampling diffuse flow worms.
8/9/2007 4:14	45.98915	-130.02740	276.3	1580.6	Biobox swung on port swung out.
8/9/2007 4:15	45.98915	-130.02739	276.3	1580.6	Using HD to film the worms that will be sampled.
8/9/2007 4:15	45.98915	-130.02739	276.4	1580.6	Biobox is open.
8/9/2007 4:16	45.98915	-130.02739	276.5	1580.5	Temperature of worms will be taken first.
8/9/2007 4:18	45.98915	-130.02739	276.4	1580.5	Temperature Degrees C T=5.1 in center of tube worm bush.
8/9/2007 4:20	45.98915	-130.02739	276.1	1580.5	Temperature Degrees C Taking another probe in center of clump. HD turned off. T=24.0
8/9/2007 4:20	45.98915	-130.02738	276.2	1580.5	Stowing probe.
8/9/2007 4:21	45.98915	-130.02739	276.9	1580.6	Jason will try to get 2 handfuls of worms. HD on.
8/9/2007 4:22	45.98915	-130.02739	276.9	1580.6	Sample Bio-macro Jason has a large clump in manipulator. Stowing in port biobox.
8/9/2007 4:23	45.98915	-130.02738	277.0	1580.3	HiDef Recording Off
8/9/2007 4:24	45.98915	-130.02737	277.4	1580.4	J288-BIO-001 Jason having difficulty putting sample in biobox-can't reach.
8/9/2007 4:25	45.98915	-130.02737	276.9	1580.4	Schilling was holding biobox out of reach-released and now reachable.
8/9/2007 4:25	45.98915	-130.02737	277.4	1580.4	Worms stowed in port biobox.
8/9/2007 4:26	45.98915	-130.02737	277.1	1580.4	Zoom on biobox indicates a few more worms will be needed.
8/9/2007 4:28	45.98915	-130.02738	253.5	1580.7	Sample Bio-macro Taking a second helping of worms from the same clump-same sample number.
8/9/2007 4:30	45.98916	-130.02738	254.3	1580.6	Closing biobox.
8/9/2007 4:34	45.98913	-130.02741	252.8	1579.6	HiDef Recording On Heading over to the higher temperature chimneys just to the left.
8/9/2007 4:34	45.98912	-130.02741	252.9	1579.6	Some smoke coming out of the top but it is not real dark.
8/9/2007 4:35	45.98910	-130.02742	279.6	1579.1	Spectacular worm photos in HD.
8/9/2007 4:37	45.98910	-130.02741	279.6	1578.5	Taking temperature of the short-fat worms at the higher temperature site.
8/9/2007 4:39	45.98910	-130.02741	279.5	1578.5	Temperature Degrees C Probe in large clump of fat-short worms T=44.7
8/9/2007 4:40	45.98910	-130.02741	278.9	1578.5	Repositioning probe. Same clump of worms on side of chimney with some smoke coming out of the top.
8/9/2007 4:42	45.98910	-130.02740	280.2	1578.5	Temperature Degrees C T=twenties-going to reposition
8/9/2007 4:43	45.98910	-130.02740	280.4	1578.5	Temperature Degrees C Moved probe slightly. HD off.
8/9/2007 4:44	45.98910	-130.02740	279.5	1578.5	Temperature Degrees C T=43 Going to stow probe and prepare to sample worms.
8/9/2007 4:44	45.98910	-130.02740	279.8	1578.5	Probe stowed.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 4:46	45.98910	-130.02740	280.2	1578.5	J288-BIO-002 Sam+J102ple Bio-macro Start HD. Grabbing some short-fat worms.
8/9/2007 4:46	45.98910	-130.02740	279.5	1578.5	Sample at north end TnS Spires
8/9/2007 4:48	45.98910	-130.02739	279.3	1578.5	Going to get a second grab of these worms for the STBD biobox. Same sample number.
8/9/2007 4:50	45.98911	-130.02739	279.8	1578.5	HiDef Recording Off Finished tubeworm sampling. Closing stbd biobox.
8/9/2007 4:51	45.98910	-130.02738	279.2	1576.8	There are 2 chimneys in front of cameras-both venting fluid from top.
8/9/2007 4:52	45.98910	-130.02739	293.6	1576.2	The larger spire has a more vigorous flow. Looks like 2 orifices and a third up higher.
8/9/2007 4:52	45.98911	-130.02739	291.4	1577.1	The middle orifice on the shorter piece looks the most vigorous.
8/9/2007 4:53	45.98911	-130.02738	276.5	1577.4	Jason is positioning for best sample location.
8/9/2007 4:54	45.98912	-130.02739	275.3	1577.6	Recording HD.
8/9/2007 4:54	45.98912	-130.02739	275.8	1577.5	Retrieving temperature probe.
8/9/2007 4:56	45.98912	-130.02739	275.6	1577.5	Temperature Degrees C Probe knocked the top of the middle spire off. Placing probe in orifice.
8/9/2007 4:56	45.98912	-130.02739	275.5	1577.5	Taller spire accidentally knocked down at the same time.
8/9/2007 4:59	45.98912	-130.02738	275.7	1577.5	Temperature Degrees C T=308.9 HD tape done.
8/9/2007 5:02	45.98912	-130.02738	275.6	1577.5	Stowing wand. Just stopped recording HD-did not run out of tape.
8/9/2007 5:03	45.98912	-130.02737	275.7	1577.5	At same spire as worm grab. Will do a gastight in the orifice of the knocked down chimney spire.
8/9/2007 5:06	45.98912	-130.02737	275.4	1577.5	J288-GT-003 Sample Gastight Black gastight. Probe in 309deg hole. Fired.
8/9/2007 5:06	45.98912	-130.02737	275.5	1577.5	Sample looks good.
8/9/2007 5:07	45.98912	-130.02736	275.4	1577.5	Turned Beast back on (hoping it will come to life).
8/9/2007 5:07	45.98912	-130.02736	275.7	1577.5	Going to take a second gastight from the same orifice.
8/9/2007 5:08	45.98912	-130.02736	275.5	1577.5	Stowed black gastight.
8/9/2007 5:11	45.98912	-130.02736	275.1	1577.4	J288-GT-004 Sample Gastight White gastight. Same place. T=309. Fired.
8/9/2007 5:12	45.98912	-130.02735	275.0	1577.5	Intake moved within the orifice as the gastight was fired.
8/9/2007 5:12	45.98912	-130.02735	274.9	1577.5	Whole orifice collapsed as sampling.
8/9/2007 5:12	45.98912	-130.02735	275.0	1577.5	J288-GT-004 Large sample in the basket of the chimney fell over.
8/9/2007 5:12	45.98912	-130.02735	275.0	1577.5	GT stowed in basket.
8/9/2007 5:14	45.98912	-130.02735	275.5	1577.5	Going to see if any of the fallen basket material is solid enough to keep as a sample.
8/9/2007 5:15	45.98912	-130.02734	276.3	1577.2	Not going to keep the material. Pilot will try to remove it from the basket.
8/9/2007 5:15	45.98912	-130.02734	276.6	1577.2	Using a weight as a sweeper to tidy up the basket.
8/9/2007 5:16	45.98912	-130.02734	276.5	1577.2	Weight stowed.
8/9/2007 5:17	45.98913	-130.02733	276.4	1577.2	Nice view of the new orifice after the chimney collapse in pilot cam.
8/9/2007 5:19	45.98913	-130.02731	334.0	1577.3	Leaving this chimney and heading east for ~40m.
8/9/2007 5:19	45.98913	-130.02730	333.8	1577.2	Large fish in brow cam.
8/9/2007 5:19	45.98917	-130.02728	333.9	1577.2	Nice view of the TnS Spires
8/9/2007 5:21	45.98921	-130.02723	46.8	1576.6	Jason is swinging around to the east. Heading to Lamphere vent on the eastern rim.
8/9/2007 5:21	45.98921	-130.02722	51.2	1576.7	Plan is after Lamphere to go to base of rim before heading south to new targets from AUV bathy.
8/9/2007 5:22	45.98921	-130.02719	64.8	1576.4	No LBL down here in the CASM-we'll have to wait until we get to the top of the rim.
8/9/2007 5:23	45.98922	-130.02715	65.2	1576.1	Going over large sheet flow.
8/9/2007 5:23	45.98922	-130.02712	65.2	1574.3	Can see some staining (little) in a few areas.
8/9/2007 5:24	45.98923	-130.02709	65.9	1573.9	Heading east. More sheet flow.
8/9/2007 5:24	45.98923	-130.02706	65.6	1573.5	Doppler is working but no LBL.
8/9/2007 5:25	45.98924	-130.02701	65.8	1571.7	This is the east wall-we are now heading up the wall.
8/9/2007 5:26	45.98926	-130.02694	65.5	1568.1	Still moving up the wall.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 5:26	45.98928	-130.02690	65.5	1568.3	HiDef Recording Off
8/9/2007 5:27	45.98931	-130.02686	65.0	1568.4	Seeing some white staining.
8/9/2007 5:27	45.98933	-130.02682	64.8	1568.3	Looks like 2 chimneys of Lamphere. There are 2 big chimneys with a lot of white.
8/9/2007 5:28	45.98935	-130.02678	66.2	1568.3	HiDef Recording On
8/9/2007 5:28	45.98936	-130.02678	65.7	1568.1	Do not see much smoke coming out of these if any.
8/9/2007 5:29	45.98939	-130.02678	94.6	1568.1	There are tube worms and some shimmering water but no black smokers.
8/9/2007 5:29	45.98940	-130.02676	95.0	1570.5	Jason moving closer and near the top of chimney.
8/9/2007 5:30	45.98940	-130.02676	94.9	1571.0	DV cam needs changing.
8/9/2007 5:30	45.98941	-130.02676	95.3	1572.3	Can see shimmer in the tube worms in HD.
8/9/2007 5:31	45.98941	-130.02676	95.4	1572.3	Small chimney near worms-not at top of sulfide feature.
8/9/2007 5:31	45.98941	-130.02676	95.4	1572.3	Going to take temperature measurement in chimney.
8/9/2007 5:32	45.98941	-130.02676	95.6	1572.0	This chimney seems to be 2-3 meters.
8/9/2007 5:33	45.98941	-130.02674	105.8	1571.3	Placing probe in flow.
8/9/2007 5:36	45.98942	-130.02674	106.1	1571.3	Temperature Degrees C Removing some material to better place probe. T=181 Stop HD.
8/9/2007 5:37	45.98942	-130.02673	106.0	1571.3	Poking around a bit more and making a bigger hole. Did not get higher reading. Stowing probe.
8/9/2007 5:38	45.98942	-130.02674	108.0	1571.2	Next stop is up to caldera wall to get a rock from the base.
8/9/2007 5:40	45.98946	-130.02673	98.7	1570.9	Marker visible. Small red marker-probably Canadian-no number visible. LBL nav is lousy here.
8/9/2007 5:41	45.98950	-130.02672	0.1	1571.0	Jumbled sheet flow with some lobate pillows.
8/9/2007 5:42	45.98954	-130.02672	0.9	1570.9	Some coating or sediment on the pillows.
8/9/2007 5:42	45.98956	-130.02672	1.8	1570.8	Heading due north to the caldera wall.
8/9/2007 5:43	45.98962	-130.02672	0.8	1571.0	Bottom is very flat with jumbled sheet flow.
8/9/2007 5:44	45.98969	-130.02672	1.0	1571.0	Nice zoom in on HD to see the jumbled sheet flow.
8/9/2007 5:45	45.98977	-130.02671	0.7	1570.9	Nice still of a drained lobate pillow in the still cam.
8/9/2007 5:46	45.98980	-130.02671	1.1	1571.0	Looking at the wall approaching in the sonar display.
8/9/2007 5:47	45.98986	-130.02671	1.4	1570.7	Talus from caldera wall.
8/9/2007 5:47	45.98988	-130.02671	0.9	1567.9	We are probably east of the east casm wall at the intersection of the caldera rim.
8/9/2007 5:47	45.98988	-130.02670	0.1	1567.9	Going to drive Jason a bit further to the north east.
8/9/2007 5:48	45.98990	-130.02661	0.2	1570.1	Water is flowing from east to west in front of us. Must be something venting to the east of us (Clague)
8/9/2007 5:49	45.98994	-130.02652	2.0	1571.7	Talus from the caldera wall as we move north.
8/9/2007 5:49	45.98994	-130.02652	1.7	1571.7	HiDef Recording On
8/9/2007 5:49	45.98994	-130.02651	1.2	1571.6	Going NE and seeing large pieces of talus.
8/9/2007 5:51	45.98994	-130.02649	0.5	1571.8	HiDef Recording Off
8/9/2007 5:52	45.98997	-130.02642	0.1	1572.6	More talus as we move along the caldera wall base.
8/9/2007 5:52	45.98997	-130.02639	0.7	1572.7	Fish.
8/9/2007 5:54	45.98999	-130.02637	0.3	1573.2	Trying to angle up the talus wall to see the outcrop.
8/9/2007 5:55	45.99005	-130.02637	1.0	1567.2	Moving up the wall and still seeing talus.
8/9/2007 5:55	45.99009	-130.02637	1.3	1563.6	Anemone looking bio in still cam.
8/9/2007 5:56	45.99014	-130.02637	0.6	1558.2	Large talus boulders.
8/9/2007 6:01	45.99026	-130.02636	0.8	1550.7	More talus.
8/9/2007 6:04	45.99044	-130.02635	0.7	1540.6	We have come up 30m and still in talus.
8/9/2007 6:06	45.99051	-130.02635	0.3	1537.8	Close-up view of the talus.
8/9/2007 6:07	45.99055	-130.02635	1.0	1532.8	Still climbing up the talus slope.
8/9/2007 6:08	45.99062	-130.02634	1.2	1528.0	May be an outcrop!
8/9/2007 6:09	45.99065	-130.02632	2.0	1526.2	It does look like an outcrop.
8/9/2007 6:09	45.99066	-130.02631	0.7	1525.0	Would like sample of outcrop and not talus.
8/9/2007 6:11	45.99066	-130.02636	328.9	1524.5	Looks like a good sample site. Moving over to the west to find a more distinct outcrop
8/9/2007 6:12	45.99064	-130.02643	329.6	1526.1	Surveying outcrops.
8/9/2007 6:13	45.99064	-130.02644	329.8	1526.1	We have come up about 40m-halfway up the wall.
8/9/2007 6:14	45.99064	-130.02644	330.4	1526.2	Seastars in HD cam.
8/9/2007 6:16	45.99065	-130.02650	8.9	1525.0	Sample Staining on the basalt in the joints.
8/9/2007 6:16	45.99065	-130.02650	7.8	1524.7	Jason trying to sample basalt.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 6:18	45.99065	-130.02650	6.0	1524.6	HiDef Recording On
8/9/2007 6:22	45.99065	-130.02649	5.8	1523.7	Sample Rock Wiggled a piece off. Placing in forward portion of port-aft milk crate.
8/9/2007 6:23	45.99063	-130.02648	296.2	1522.1	HiDef Recording Off Heading south from here but will head down at angle over the caldera wall.
8/9/2007 6:24	45.99058	-130.02644	134.8	1521.0	270m to next target due south in the water column for next 10-15 minutes.
8/9/2007 6:40	45.98899	-130.02640	182.2	1555.3	Still flying mid-water and do not have LBL. Heading for AUV target.
8/9/2007 6:46	45.98825	-130.02608	166.4	1573.3	On the bottom.
8/9/2007 6:48	45.98821	-130.02609	258.3	1572.0	A lot of sponges on this outcrop here.
8/9/2007 6:48	45.98820	-130.02609	270.6	1571.6	Starting to get LBL back.
8/9/2007 6:50	45.98816	-130.02615	352.1	1570.5	Not quite sure what this structure is.
8/9/2007 6:51	45.98820	-130.02626	71.3	1569.9	There are a few anemones on this rock as well.
8/9/2007 6:54	45.98819	-130.02624	72.8	1574.5	Making a rock sample grab here.
8/9/2007 6:58	45.98821	-130.02624	73.8	1571.8	J288-Rock-006 This is Rock #2. It is put into the forward port basket. It broke into a few pieces entering the box.
8/9/2007 6:59	45.98818	-130.02607	97.6	1572.3	Now heading off.
8/9/2007 7:02	45.98818	-130.02607	86.9	1572.3	It is looking like there is a small offset between map grid and the actual position.
8/9/2007 7:02	45.98818	-130.02606	87.0	1572.3	It could be due to a UTM definition problem or a processing offset.
8/9/2007 7:03	45.98818	-130.02606	87.0	1572.3	There are many channels in the flows here.
8/9/2007 7:04	45.98818	-130.02606	86.8	1574.0	It was a very fast moving lava flow here.
8/9/2007 7:04	45.98818	-130.02606	68.4	1573.8	We are heading to another of the target points.
8/9/2007 7:08	45.98812	-130.02605	146.1	1573.6	The sponges are not as abundant on these smoother flows.
8/9/2007 7:11	45.98805	-130.02596	146.1	1574.4	Lots of sponges around here. The HD is recording here.
8/9/2007 7:15	45.98793	-130.02579	189.3	1573.7	This looks to be a collapsed lobe with a very thin layer on top.
8/9/2007 7:16	45.98785	-130.02572	155.7	1573.1	HD is off.
8/9/2007 7:17	45.98776	-130.02564	156.4	1575.1	Passing by a few Rattail fishes.
8/9/2007 7:18	45.98762	-130.02557	156.5	1575.5	Some staining seen on the he rocks here.
8/9/2007 7:19	45.98763	-130.02557	154.0	1575.7	We have stirred up some bacteria as well.
8/9/2007 7:21	45.98753	-130.02555	154.9	1577.1	HD recording started up again.
8/9/2007 7:23	45.98744	-130.02541	153.9	1576.4	Stopped the HD recording.
8/9/2007 7:27	45.98725	-130.02519	163.7	1574.2	Getting close to the next point.
8/9/2007 7:27	45.98725	-130.02513	173.1	1573.0	We are back in the rocky area.
8/9/2007 7:31	45.98720	-130.02509	300.2	1572.8	This is another large lava structure.
8/9/2007 7:33	45.98724	-130.02521	152.1	1574.7	We are planning to head to the east to check out more of these large targets.
8/9/2007 7:36	45.98716	-130.02498	156.4	1576.1	Looking to grab another rock here.
8/9/2007 7:37	45.98714	-130.02497	156.4	1574.2	Changed of plans. We will continue along.
8/9/2007 7:42	45.98712	-130.02484	102.1	1574.0	Continuing to cruise along.
8/9/2007 7:46	45.98707	-130.02448	101.4	1573.8	A nice jellyfish recorded on the HD.
8/9/2007 7:52	45.98698	-130.02395	101.5	1572.8	Cresting a little ridge.
8/9/2007 7:55	45.98703	-130.02380	43.7	1573.1	At the next outcropping.
8/9/2007 7:56	45.98704	-130.02379	42.7	1573.0	We will be heading into some of the real smooth lavas soon.
8/9/2007 7:59	45.98705	-130.02371	64.9	1572.9	Spotted a ray on the HD camera.
8/9/2007 8:05	45.98695	-130.02332	92.0	1574.9	Continuing along the lavas here.
8/9/2007 8:08	45.98693	-130.02304	92.0	1574.7	Bottom is unchanged - still the odd sponges.
8/9/2007 8:08	45.98687	-130.02301	91.6	1574.8	The speed of the Atlantis has been increased a bit to get through this transit a little quicker.
8/9/2007 8:16	45.98687	-130.02197	91.0	1575.0	This may be another one of the rocky points.
8/9/2007 8:24	45.98686	-130.02073	92.4	1576.0	Smooth lava flows here.
8/9/2007 8:24	45.98686	-130.02070	90.2	1576.1	Some nice swirls too.
8/9/2007 8:31	45.98686	-130.01939	94.4	1575.9	This area of long smooth flows is quite large.
8/9/2007 8:36	45.98678	-130.01857	90.2	1575.2	Things are a little more jumbled here.
8/9/2007 8:43	45.98646	-130.01668	130.3	1575.8	Still cruising along this smoother lava.
8/9/2007 8:49	45.98623	-130.01520	104.8	1574.5	Getting a little rougher now.



J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 8:53	45.98613	-130.01447	100.2	1575.1	Still the odd sponges and seastars on the he bottom.
8/9/2007 8:54	45.98608	-130.01406	106.7	1574.2	We have been going through this collapsed channel waves but have now entered an area of uncollapsed sheet flows.
8/9/2007 9:01	45.98589	-130.01229	105.6	1577.2	Coming into an area of large pillows.
8/9/2007 9:04	45.98582	-130.01141	104.5	1579.2	Starting some HD recording of the pillows.
8/9/2007 9:06	45.98585	-130.01110	88.1	1579.7	Stopped the HD recording.
8/9/2007 9:09	45.98609	-130.01100	7.7	1579.8	Passing by a cliff coming up to a lava pond (NW Edge).
8/9/2007 9:09	45.98610	-130.01104	7.3	1579.5	We are on some lava flows that must have come over the cliff.
8/9/2007 9:09	45.98610	-130.01105	4.4	1579.7	We are heading north to see some of the cliff area.
8/9/2007 9:15	45.98638	-130.01127	357.6	1578.4	Coming up to the cliff now.
8/9/2007 9:20	45.98658	-130.01137	292.3	1578.8	Skimming along the cliff.
8/9/2007 9:21	45.98661	-130.01139	275.3	1578.9	Right at the edge of the cliff. It is the edge of the drained pond.
8/9/2007 9:22	45.98656	-130.01143	278.7	1578.9	This is the limit where the pillowed flow went over the edge of the cliff.
8/9/2007 9:24	45.98659	-130.01142	285.7	1581.4	Taking some DSCs and HD of the cliff face.
8/9/2007 9:27	45.98661	-130.01145	276.7	1580.6	HD Stopped.
8/9/2007 9:34	45.98663	-130.01143	195.0	1580.5	J288-ROCK-007 Rock 3 sample. From near the lava pond. It is in the Port box - starboard forward section.
8/9/2007 9:38	45.98665	-130.01140	283.0	1581.7	Lots of rings around the cliff here.
8/9/2007 9:41	45.98675	-130.01141	333.1	1578.6	Cruising along the cliff a bit.
8/9/2007 9:43	45.98682	-130.01138	280.5	1579.0	The lobate flows look to have made it to the edge of the lava pond here but did not go over.
8/9/2007 9:44	45.98685	-130.01139	318.7	1581.4	Here are a few pillows that went over the edge.
8/9/2007 9:50	45.98691	-130.01144	316.0	1582.6	Looking to pick up some of these dribbles of lava over the edge.
8/9/2007 9:54	45.98692	-130.01145	267.8	1582.8	J288-ROCK-008 Rock #4 taken at the edge of the cliff. Put into the center box.
8/9/2007 9:55	45.98692	-130.01145	267.1	1581.6	That was Rock #4 which is sample R288-rock-008.
8/9/2007 9:58	45.98686	-130.01125	147.2	1581.7	Heading to the large structures seen in the lava pond.
8/9/2007 10:00	45.98670	-130.01109	147.1	1581.4	Stopped at some pillows.
8/9/2007 10:02	45.98662	-130.01100	147.5	1581.4	Continuing on the way.
8/9/2007 10:06	45.98650	-130.01087	147.7	1579.1	Dropped a ballast weight.
8/9/2007 10:09	45.98612	-130.01050	146.5	1583.0	At the edge of the pillow flow. The bottom of the pond is the jumbled sheet flows.
8/9/2007 10:10	45.98600	-130.01039	146.6	1584.0	It is a very rough surface on the pond.
8/9/2007 10:15	45.98579	-130.01016	310.2	1582.8	A slime star.
8/9/2007 10:18	45.98562	-130.01001	178.9	1582.7	The large structure here is a tumulus that has formed a different way. It is the remnant of a collapse.
8/9/2007 10:19	45.98554	-130.01002	179.9	1582.6	Heading south to the second mound.
8/9/2007 10:23	45.98523	-130.00998	267.9	1582.5	We should be coming up to the second mound now.
8/9/2007 10:23	45.98522	-130.00999	268.8	1582.4	There is a blob sculpin.
8/9/2007 10:32	45.98529	-130.01008	307.5	1579.4	There are some lobate flows on the top here.
8/9/2007 10:33	45.98520	-130.01017	307.3	1579.7	Started the HD tape.
8/9/2007 10:38	45.98521	-130.01034	343.3	1581.0	Trying to skirt around the base of the second mound.
8/9/2007 10:38	45.98521	-130.01031	7.8	1580.5	Turning off the HD footage.
8/9/2007 10:38	45.98520	-130.01020	27.3	1580.8	We are looking for the remnants of the collapse.
8/9/2007 10:41	45.98539	-130.01002	276.8	1579.8	Checking out this larger slab here.
8/9/2007 10:44	45.98545	-130.01016	213.7	1581.0	Started the HD again.
8/9/2007 10:44	45.98546	-130.01019	181.5	1580.6	Skirting around the mound here.
8/9/2007 10:49	45.98544	-130.01019	182.2	1580.5	HD off.
8/9/2007 10:51	45.98545	-130.01019	182.2	1580.5	Still looking at bathtub rings.
8/9/2007 10:53	45.98545	-130.01018	182.2	1580.5	HD on.
8/9/2007 10:53	45.98545	-130.01018	182.3	1580.5	Recording an eating crab.
8/9/2007 10:54	45.98545	-130.01018	158.4	1580.5	HD off.
8/9/2007 10:54	45.98545	-130.01008	138.3	1580.8	Moving around the rim.
8/9/2007 10:58	45.98536	-130.01000	144.2	1579.6	Starting a 600m transect across the lake to flows coming in.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 10:58	45.98535	-130.01000	144.6	1579.8	The plan is to collect samples from two flows coming in from the south.
8/9/2007 11:17	45.98379	-130.00856	144.0	1581.5	Still in transit.
8/9/2007 11:27	45.98281	-130.00738	142.5	1581.1	Still in transit.
8/9/2007 11:33	45.98220	-130.00687	143.5	1581.8	Traveling over jumbled basalt.
8/9/2007 11:45	45.98097	-130.00556	136.7	1581.2	Getting close to the edge of the lava pond.
8/9/2007 11:48	45.98089	-130.00542	126.8	1579.9	We have arrived at the rim.
8/9/2007 11:48	45.98088	-130.00541	125.7	1580.3	The southern rim.
8/9/2007 11:49	45.98088	-130.00541	126.5	1580.2	HD is on.
8/9/2007 11:51	45.98088	-130.00539	124.1	1580.2	Waiting for the ROV to get settled.
8/9/2007 11:51	45.98088	-130.00539	124.2	1580.3	Nav Doppler Reset
8/9/2007 11:52	45.98088	-130.00538	124.1	1580.2	HD off.
8/9/2007 11:53	45.98090	-130.00536	121.5	1580.2	HD on.
8/9/2007 11:54	45.98092	-130.00534	84.9	1580.2	Moving laterally along the edge.
8/9/2007 11:55	45.98093	-130.00535	85.8	1580.8	Nice pillows from the older flow south of the pond edge.
8/9/2007 11:58	45.98096	-130.00536	114.7	1580.4	Lots of yellow staining on the pillows.
8/9/2007 12:00	45.98098	-130.00531	140.3	1580.4	Nice pillows on the edge.
8/9/2007 12:01	45.98098	-130.00530	121.7	1580.8	Some sheet-like flows.
8/9/2007 12:02	45.98099	-130.00529	127.2	1581.3	A sharp drop from the sheet-like flows.
8/9/2007 12:05	45.98101	-130.00522	187.5	1580.8	Linear features going down the shelf.
8/9/2007 12:06	45.98100	-130.00518	204.4	1580.8	Still moving slowly east along the edge of the lava pond.
8/9/2007 12:07	45.98098	-130.00513	192.8	1580.8	Shelf with horizontal rings below.
8/9/2007 12:09	45.98095	-130.00501	175.8	1580.8	Lots of horizontal drainage shelves.
8/9/2007 12:10	45.98102	-130.00487	167.1	1579.2	Pillows.
8/9/2007 12:13	45.98095	-130.00442	181.7	1579.3	Another collapsed edge.
8/9/2007 12:16	45.98111	-130.00420	158.7	1578.0	Still moving east along the edge of the pond.
8/9/2007 12:21	45.98102	-130.00412	149.7	1577.7	Lobates on top of pillows.
8/9/2007 12:25	45.98094	-130.00403	172.3	1579.5	J288-ROCK-009 Collecting a rock sample.
8/9/2007 12:29	45.98085	-130.00384	142.3	1573.7	Putting the rock sample in forward right and aft left.
8/9/2007 12:33	45.98074	-130.00373	133.6	1573.4	Moving east along the flow edge again.
8/9/2007 12:34	45.98074	-130.00372	134.0	1573.4	Lots of pillowy stuff.
8/9/2007 12:39	45.98059	-130.00329	133.6	1567.9	A jumble of all types of flows.
8/9/2007 12:42	45.98036	-130.00306	134.8	1569.0	Little pillow mounds.
8/9/2007 12:45	45.98029	-130.00295	132.8	1566.9	Continuing to move onto the older flow.
8/9/2007 12:46	45.98023	-130.00286	132.8	1564.1	Lots of big pillows with smaller wormy looking ones in between.
8/9/2007 12:46	45.98023	-130.00285	131.2	1563.2	Some eggshell ones too.
8/9/2007 12:48	45.98016	-130.00277	129.7	1562.8	Looks like an imploded pillow. Good place for a sample.
8/9/2007 12:50	45.98016	-130.00277	153.2	1564.9	J288-ROCK-010 Collecting a rock sample from the inflated pillow.
8/9/2007 12:55	45.98003	-130.00250	151.4	1558.8	Stowing the sample in front right basket.
8/9/2007 12:58	45.97995	-130.00237	139.8	1558.9	Moving further onto the older flow looking for another sample.
8/9/2007 13:00	45.97993	-130.00231	140.1	1558.6	Lots of yellow staining in the cracks.
8/9/2007 13:00	45.97993	-130.00230	139.4	1558.6	A lonely round pillow.
8/9/2007 13:06	45.97966	-130.00187	137.7	1555.8	Flows are flatter here.
8/9/2007 13:09	45.97957	-130.00168	138.6	1555.4	Completely on top of the older flow.
8/9/2007 13:10	45.97946	-130.00148	127.1	1555.0	Headed towards a hole visible in the bathymetry.
8/9/2007 13:11	45.97939	-130.00137	128.5	1555.0	Entering the pit.
8/9/2007 13:13	45.97930	-130.00129	173.4	1558.7	Looking around for sediment at the bottom of the pit.
8/9/2007 13:18	45.97926	-130.00119	139.6	1557.2	Jason is at the edge of the loaded bathymetry.
8/9/2007 13:18	45.97926	-130.00119	139.6	1557.2	Attempting to load in a new bathy bitmap.
8/9/2007 13:25	45.97911	-130.00108	158.1	1555.2	Moving south towards a large drainout pit.
8/9/2007 13:28	45.97910	-130.00107	147.7	1555.2	The direction we are moving is really southeast.
8/9/2007 13:30	45.97902	-130.00090	149.3	1554.2	Short pillars.
8/9/2007 13:38	45.97854	-130.00047	147.3	1553.7	Nav Doppler Reset
8/9/2007 13:39	45.97851	-130.00045	150.5	1553.7	Still traveling southeast towards the pit.
8/9/2007 13:47	45.97785	-129.99979	147.8	1552.0	This broken pillow looks like a good place to sample.
8/9/2007 13:48	45.97786	-129.99979	145.7	1551.6	J288-ROCK-011 Taking a rock sample.

J288 Date Time	Latitude	Longitude	Heading	Depth	Event
8/9/2007 13:49	45.97773	-129.99965	146.7	1550.1	This rock sample is from a collapsed pillow on a flow covered by more pelagic sediment.
8/9/2007 13:53	45.97746	-129.99939	147.6	1549.3	Putting it in the aft part of the left aft basket.
8/9/2007 13:54	45.97737	-129.99932	148.0	1548.4	Moving along.
8/9/2007 14:00	45.97680	-129.99883	151.0	1542.6	Lots of pillows.
8/9/2007 14:02	45.97673	-129.99874	201.4	1543.0	Striations on a flow.
8/9/2007 14:05	45.97633	-129.99838	143.1	1536.8	Same pillows all over.
8/9/2007 14:07	45.97606	-129.99824	147.1	1533.8	Pit is visible on the sonar.
8/9/2007 14:07	45.97601	-129.99823	143.8	1533.2	It is huge and deep.
8/9/2007 14:07	45.97600	-129.99824	143.5	1533.0	We are at the edge of the pit.
8/9/2007 14:07	45.97599	-129.99823	142.8	1532.9	Lobate on the upper surface.
8/9/2007 14:08	45.97592	-129.99816	145.8	1536.4	Going down in the Puka.
8/9/2007 14:11	45.97584	-129.99803	85.5	1535.5	Turning Jason to get a view of the puka walls.
8/9/2007 14:12	45.97580	-129.99800	83.0	1537.6	Bathtub rings are visible.
8/9/2007 14:12	45.97580	-129.99797	100.6	1533.7	Apparently this was a lava lake that drained.
8/9/2007 14:15	45.97572	-129.99767	224.2	1532.2	The dive is at an end.
8/9/2007 14:20	45.97554	-129.99738	109.0	1527.5	Starting to bring Jason up.
8/9/2007 15:17	45.97534	-129.99731	181.2	1.1	Jason at surface
8/9/2007 15:20	45.97535	-129.99728	188.2	1.5	Medea on deck
8/9/2007 15:24	45.97534	-129.99727	192.5	0.5	Jason on deck
8/9/2007 15:24	45.97534	-129.99727	192.5	0.5	End Lowering J2-288

## 6.5.4 J2-289 Axial Pressure Survey

**J2-289 Axial Benchmark Pressure Survey** [J2-289 Bottom time: 45:05] Jason equipped with HFS, 2 MISOs, 6 MTRs, Pelagic impeller pump. Started pressure measurements at Marker 62 at Caldera Center site. First measurement was taken for 30 minutes. Transit mid-water to Magnesia benchmark. 20 minute measurement at Magnesia. Transit to Marker 33 benchmark. 20 minute measurement at Marker 33 site. Transit to Bag City benchmark. 20 min measurement at Bag City. Transit to S. Pillow Mound benchmark. 20 min measurement at S. Pillow Mound. HD video survey of eruptive fissure next to benchmark site. Transit to Bag City benchmark. Second pressure measurement at Bag City. Transit to Marker 33 benchmark. Second pressure measurement at Marker 33 site. Recovered MTR (#3197) and deployed MTR (#3045) at Marker 33 vent site. Recovered MTRs (#3021, #3087, #3042 (at RAS intake)). Deployed MTR 4001 at RAS site. Prepared RAS intake for release. Deployed MTR #3041. Released RAS for surfacing. Transit to Magnesia benchmark. Second pressure reading at Magnesia. Transit to Caldera Center benchmark. Second pressure reading at Caldera Center. Transit to Magnesia benchmark. Third pressure reading at Magnesia. Transit to Marker 33 benchmark. Third reading at Marker 33. Sampling at Marker 33 vent site (3 biological, 6 HFS). Transit to Cloud N6 site at Marker 69. 4 HFS samples. Transit to Vixen site. Retrieved MISO 101 and deployed MISO 130 at Vixen. Moved over to Casper. Retrieved MISO 129 and deployed MISO 103 at Casper. HD video of Casper and bubbles. 1 GT and 2 HFS samples. Returned to Vixen and 3 more HFS samples. Took 3HFS and 1 PIP sample 20m south of Vixen in diffuse flow. Transit within bottom site to Bag City benchmark. Third pressure measurement at Bag City. Moved to Bag City vent site and took 6 HFS samples. Did HD fly-by at Bag City. Transit to S. Pillow Mound benchmark. Second reading of S. Pillow Mound site. Explored fissure at site and took HD video. Retrieved one rock sample from fissure.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/10/2007 3:35	45.97905	-130.00089	353.6	1.4	Medea in water
8/10/2007 3:36	45.97900	-130.00090	217.9	3.2	Jason in water
8/10/2007 3:37	45.97900	-130.00093	222.4	3.6	starting down
8/10/2007 3:37	45.97900	-130.00093	224.0	3.0	tether is in the water
8/10/2007 4:17	45.97899	-130.00090	42.3	1135.2	Still going down to the first pressure target at caldera center.
8/10/2007 4:39	45.97888	-130.00083	2.2	1494.7	Floater in the Medea cam--very pretty.
8/10/2007 4:43	45.97884	-130.00088	356.9	1523.2	Can see the bottom--Jason is 7m up!
8/10/2007 4:44	45.95441	-130.01033	357.3	1525.9	Looks like lava.
8/10/2007 4:44	45.95432	-130.01034	357.3	1526.2	Starting the video recordings.
8/10/2007 4:45	45.95458	-130.01030	357.3	1525.5	Doppler reset.
8/10/2007 4:48	45.95460	-130.01030	356.6	1527.3	Looks like sheet flow.
8/10/2007 4:50	45.95464	-130.01028	356.9	1528.6	Ropey looking flow.
8/10/2007 4:53	45.95492	-130.01024	356.4	1527.8	Looking for the benchmark Caldera Center (Marker 61)
8/10/2007 4:59	45.95499	-130.01018	0.6	1529.4	Looking for the marker.
8/10/2007 4:59	45.95503	-130.01018	0.6	1530.2	Temperature Getting good LBL as we are looking for the marker.
8/10/2007 5:00	45.95515	-130.01016	0.5	1529.8	Can hear 4 transponders from this location.
8/10/2007 5:05	45.95471	-130.01026	358.7	1529.7	Going to search to the north.
8/10/2007 5:06	45.95578	-130.01012	298.8	1529.2	Great lava forms in sheet flow.
8/10/2007 5:06	45.95559	-130.01014	358.3	1530.5	Some kind of red flag on the seafloor.
8/10/2007 5:07	45.95558	-130.01017	183.4	1530.8	Turning back around to the south (keeping within tether to Medea).
8/10/2007 5:07	45.95602	-130.01009	284.5	1527.4	Zoomed in a fish in the pilot cam.
8/10/2007 5:08	45.95473	-130.01031	182.3	1527.6	Going over a small fissure.
8/10/2007 5:08	45.95517	-130.01024	182.5	1530.6	Jumbled looking sheet flows and elongated pillows.
8/10/2007 5:09	45.95434	-130.01027	65.8	1527.9	Changing heading back to north. Looking at fissure again as we turn.
8/10/2007 5:10	45.95496	-130.01004	21.1	1529.8	There it is...white marker in the sheet flow.
8/10/2007 5:11	45.95520	-130.00993	11.1	1532.6	Close-up of marker 61 with anemone attached.
8/10/2007 5:11	45.95509	-130.00995	13.2	1533.4	Fish in the crack next to marker.
8/10/2007 5:12	45.95578	-130.00986	100.6	1529.2	Benchmark should be 5m away to north. Marker 61 is 5m south and the other marker here is 5m north.
8/10/2007 5:13	45.95543	-130.00989	162.0	1529.9	Can see all three markers in a line in pilot and HD cam.
8/10/2007 5:13	45.95571	-130.00985	129.1	1529.1	Can see both markers in a line in the pilot cam.
8/10/2007 5:15	45.95480	-130.00995	8.4	1533.7	Lining up Jason to the benchmark at marker 63.
8/10/2007 5:17	45.95514	-130.00989	358.5	1534.3	Retrieving pressure instrument from basket.
8/10/2007 5:18	45.95517	-130.00988	358.5	1534.3	Picking up instrument

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/10/2007 5:21	45.95505	-130.00990	358.4	1534.3	Checking benchmark placement.
8/10/2007 5:21	45.95505	-130.00990	358.4	1534.3	Repositioning instrument on benchmark.
8/10/2007 5:22	45.95506	-130.00990	358.3	1534.3	Jason has released the instrument and decided to take 30 minutes of measurement for first recording.
8/10/2007 5:22	45.95507	-130.00989	358.3	1534.3	Started recording now.
8/10/2007 5:23	45.95508	-130.00989	358.3	1534.3	The LBL position is about 20m east of the target given.
8/10/2007 5:36	45.95507	-130.00989	358.1	1534.3	HiDef Recording On
8/10/2007 5:37	45.95507	-130.00989	358.1	1534.3	Rolling a few minutes of video.
8/10/2007 5:38	45.95508	-130.00989	358.1	1534.3	Satellite radio is now on in the van.
8/10/2007 5:39	45.95509	-130.00989	358.1	1534.3	HiDef Recording Off
8/10/2007 5:53	45.95507	-130.00988	358.2	1534.3	Medea is getting LBL fixes but not Jason.
8/10/2007 5:54	45.95508	-130.00987	358.2	1534.3	We are taking another 5 minutes worth of data to make sure the instrument has acclimated.
8/10/2007 5:57	45.95507	-130.00991	358.2	1534.3	<b>Caldera Center Benchmark.</b> Measurement complete. Ready to retrieve instrument.
8/10/2007 5:58	45.95505	-130.00992	358.2	1534.2	Picking up instrument with Jason.
8/10/2007 5:59	45.95503	-130.00994	358.2	1534.3	Instrument stowed on basket.
8/10/2007 6:03	45.95518	-130.00989	358.2	1534.2	Jason tied instrument down.
8/10/2007 6:03	45.95503	-130.00991	357.6	1534.2	Lifting off and heading to next site.
8/10/2007 6:03	45.95509	-130.00990	358.0	1534.3	Stowing arm.
8/10/2007 6:05	45.95498	-130.01003	299.4	1523.7	Here we go up and then over to Magnesia.
8/10/2007 6:05	45.95552	-130.01003	311.8	1520.9	Turning off video cameras.
8/10/2007 6:06	45.95589	-130.01005	28.6	1514.9	Could be BPR target on the sonar here.
8/10/2007 6:07	45.95507	-130.01021	26.0	1515.0	Good LBL fix here.
8/10/2007 6:07	45.95552	-130.01014	26.2	1516.5	Heading to BPR is 028 at about 25m.
8/10/2007 6:08	45.95513	-130.01018	26.4	1514.2	Can see BPR in camera.
8/10/2007 7:59	45.94682	-129.98546	286.9	1423.4	Coming up to the 2nd site which is Magnesia.
8/10/2007 8:05	45.94621	-129.98480	165.1	1520.1	Bottom in sight.
8/10/2007 8:05	45.94628	-129.98479	165.2	1520.2	Medea's heading is a little off - trying to fix it now.
8/10/2007 8:06	45.94657	-129.98477	165.6	1519.5	Reset the doppler.
8/10/2007 8:08	45.94665	-129.98478	165.1	1524.5	Some nice views of some lava pillars.
8/10/2007 8:09	45.94620	-129.98479	177.0	1520.7	Looking for the Magnesia benchmark.
8/10/2007 8:12	45.94640	-129.98467	120.7	1522.0	Checking to the east as the first benchmark was slightly to the east of the nav location.
8/10/2007 8:20	45.94680	-129.98457	304.5	1521.0	Still no sign of the benchmark.
8/10/2007 8:23	45.94575	-129.98457	79.8	1519.9	Crossing some neat lava bridges.
8/10/2007 8:23	45.94645	-129.98449	327.7	1519.1	Moving back west now.
8/10/2007 8:29	45.94640	-129.98481	271.9	1521.2	We have spotted the benchmark.
8/10/2007 8:30	45.94636	-129.98487	301.9	1521.8	Heading should be 046 at this benchmark.
8/10/2007 8:30	45.94630	-129.98496	359.7	1521.1	Started recording on the HD.
8/10/2007 8:30	45.94621	-129.98495	347.0	1521.3	The Nav quality is good.
8/10/2007 8:32	45.94608	-129.98510	43.8	1521.1	Stopped the HD.
8/10/2007 8:33	45.94599	-129.98513	43.9	1521.0	Getting ready to position the MPR.
8/10/2007 8:35	45.94614	-129.98504	46.6	1525.4	Placing the MPR with the connector facing to the left.
8/10/2007 8:36	45.94615	-129.98504	46.6	1525.4	These benchmarks were placed in 1999.
8/10/2007 8:39	45.94611	-129.98504	46.6	1525.4	Working on getting the MPR on the benchmark in the proper orientation.
8/10/2007 8:39	45.94611	-129.98505	46.6	1525.4	<b>Magnesia Benchmark.</b> Starting the MPR measurements.
8/10/2007 8:42	45.94612	-129.98504	46.6	1525.4	Starting the HD recording.
8/10/2007 8:44	45.94613	-129.98504	46.6	1525.3	Stopped the HD recording.
8/10/2007 8:59	45.94613	-129.98502	46.3	1525.2	Done with the MPR recording here.
8/10/2007 8:59	45.94614	-129.98502	46.3	1525.2	Now to recover the MPR and head to the next site.
8/10/2007 9:04	45.94607	-129.98503	45.4	1502.7	The MPR was dropped. Hopefully it is ok. There may be an offset now.
8/10/2007 9:04	45.94624	-129.98484	44.3	1496.8	Up off the bottom and heading to Marker 33.
8/10/2007 10:22	45.93226	-129.98244	179.1	1517.2	Bottom is in sight near Marker 33.
8/10/2007 10:23	45.93291	-129.98257	279.3	1517.2	Spotted the Marker 33 RAS.
8/10/2007 10:25	45.93302	-129.98255	330.1	1516.8	Spotted the benchmark.
8/10/2007 10:25	45.93312	-129.98247	237.1	1516.3	We are getting some decent nav fixes here now.

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8/10/2007 10:27	45.93338	-129.98254	115.6	1516.8	Working out the position of the MPR.
8/10/2007 10:30	45.93337	-129.98253	116.0	1519.0	Starting some HD of the MPR placement.
8/10/2007 10:32	45.93321	-129.98253	115.5	1520.4	Stopped the HD.
8/10/2007 10:35	45.93322	-129.98253	112.8	1520.3	<b>Marker 33 benchmark.</b> MPR has been placed on the benchmark and the 20 minute measurement has been started.
8/10/2007 10:36	45.93322	-129.98253	112.8	1520.3	HD has been started.
8/10/2007 10:37	45.93323	-129.98253	112.9	1520.3	Stopped the HD.
8/10/2007 10:46	45.93329	-129.98250	113.1	1520.2	Spider crab has crawled up on the Jason platform.
8/10/2007 10:50	45.93331	-129.98248	113.0	1520.2	That spider crab is still crawling around Jason.
8/10/2007 10:53	45.93334	-129.98248	113.0	1520.2	The crab is now very interested in the Benchmark.
8/10/2007 10:55	45.93334	-129.98248	113.0	1520.2	Done with the MPR recording here.
8/10/2007 10:56	45.93334	-129.98248	112.9	1520.2	Preparing for recovery of the MPR.
8/10/2007 10:57	45.93336	-129.98247	112.4	1520.2	Some good HD footage on the RAID here of the crab.
8/10/2007 11:00	45.93341	-129.98248	115.3	1518.8	Lifting off and heading to Bag City.
8/10/2007 11:01	45.93335	-129.98250	115.9	1518.8	HD recording.
8/10/2007 11:02	45.93330	-129.98253	116.6	1518.7	Stopped HD.
8/10/2007 11:05	45.93359	-129.98231	15.4	1485.0	In transit approximately 2 hours
8/10/2007 12:28	45.91613	-129.98948	349.1	1527.1	Looking for MPR benchmark #4 Bag City
8/10/2007 12:32	45.91659	-129.98945	326.6	1527.1	Found MPR benchmark #4
8/10/2007 12:35	45.91580	-129.98955	326.7	1527.2	Repositioning Medea prior to MPR measurement
8/10/2007 12:39	45.91665	-129.98947	29.2	1530.4	Placing MPR #4 on benchmark
8/10/2007 12:40	45.91663	-129.98947	29.5	1530.4	Starting 20 minute recording
8/10/2007 13:01	45.91627	-129.98953	29.2	1530.5	End of MPR #4 recording
8/10/2007 13:01	45.91626	-129.98953	29.3	1530.5	Putting MPR back on Jason
8/10/2007 13:04	45.91625	-129.98953	29.1	1530.5	MPR on board
8/10/2007 13:08	45.91692	-129.98934	12.3	1493.7	In transit to next site (Southern Pillow Mound) approximate transit time 3 hours
8/10/2007 16:54	45.90515	-129.99283	217.4	1714.2	Seeing bottom at target area.
8/10/2007 16:55	45.90481	-129.99282	216.3	1714.3	Doppler reset.
8/10/2007 16:55	45.90474	-129.99283	257.3	1714.4	Searching for benchmark-heading west at nav location.
8/10/2007 16:56	45.90516	-129.99288	267.6	1714.3	Looking for marker 66 at South Pillow Mound.
8/10/2007 16:56	45.90522	-129.99288	264.5	1714.4	That is Mound.
8/10/2007 16:56	45.90574	-129.99293	270.2	1714.4	Up 6m from bottom but lots of pillow viewable.
8/10/2007 16:57	45.90542	-129.99293	174.2	1714.3	Spinning left to search.
8/10/2007 16:57	45.90565	-129.99292	235.3	1714.3	Video cameras had been turned on at bottom.
8/10/2007 16:59	45.90307	-129.99299	91.6	1714.1	Heading east to search.
8/10/2007 16:59	45.90318	-129.99300	92.5	1714.2	Jason having a problem with thrusters.
8/10/2007 17:01	45.90365	-129.99313	88.7	1715.3	Jason moving backwards with an eastern heading while testing thrusters.
8/10/2007 17:02	45.90456	-129.99282	66.7	1715.3	Resuming search for benchmark and marker.
8/10/2007 17:02	45.90451	-129.99287	45.4	1715.4	Thrusters are fine.
8/10/2007 17:03	45.90411	-129.99277	186.1	1715.5	Going to look toward the south.
8/10/2007 17:04	45.90321	-129.99294	185.5	1715.9	Not getting LBL here the doppler reset was to the Medea position under the ship when first arrived.
8/10/2007 17:05	45.90261	-129.99310	283.1	1715.9	Can't go any further south without moving the ship. Going to try a bit to the west
8/10/2007 17:06	45.90336	-129.99316	274.5	1715.5	Large pillows. Need to go south more so moving ship a bit.
8/10/2007 17:07	45.90419	-129.99322	274.3	1716.2	Crack with 1998 lava inside it in view.
8/10/2007 17:07	45.90375	-129.99320	273.8	1715.8	Marker straight ahead.
8/10/2007 17:07	45.90397	-129.99322	275.2	1715.7	This is marker 66 (Bag City) at the benchmark.
8/10/2007 17:09	45.90408	-129.99328	343.9	1715.7	Moving Jason into proper heading for measurement.
8/10/2007 17:09	45.90420	-129.99330	7.9	1717.4	Taking a few digital stills of site.
8/10/2007 17:10	45.90426	-129.99329	7.6	1719.1	Great views of marker and crack together in brow cam and HD.
8/10/2007 17:12	45.90423	-129.99331	8.3	1720.0	Jason in position-removing instrument from basket.
8/10/2007 17:13	45.90419	-129.99332	8.1	1720.0	Jason placing instrument on benchmark.
8/10/2007 17:14	45.90415	-129.99333	8.5	1720.0	Setting instrument down and regrabbing it. Benchmark did move.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/10/2007 17:15	45.90413	-129.99334	8.6	1720.0	Instrument in proper place-recording started.
8/10/2007 17:15	45.90414	-129.99333	8.6	1720.0	Looked like benchmark just moved up and right back down in place.
8/10/2007 17:16	45.90411	-129.99334	8.7	1720.0	During benchmark movement the forward left leg may have been the only piece to have moved up off seafloor.
8/10/2007 17:20	45.90398	-129.99338	8.8	1720.0	Position of benchmark is about 10m west of where we had thought but nav info not great here.
8/10/2007 17:24	45.90385	-129.99342	8.9	1720.1	Sanjoy getting Jason manipulator lesson.
8/10/2007 17:25	45.90383	-129.99342	9.0	1720.1	Could crab on basket be the same one from the last site--hitchhiker?
8/10/2007 17:28	45.90372	-129.99345	8.7	1720.1	Filter feeding animal on mooring line close-up in HD.
8/10/2007 17:35	45.90352	-129.99351	8.7	1720.2	Twenty minutes have passed.
8/10/2007 17:36	45.90348	-129.99352	8.6	1720.1	Instrument off benchmark.
8/10/2007 17:36	45.90350	-129.99352	8.5	1720.1	Jason retrieving the instrument.
8/10/2007 17:37	45.90343	-129.99353	7.5	1719.7	Going to take some HD of the crack before moving to the next benchmark.
8/10/2007 17:37	45.90345	-129.99353	8.8	1720.2	Instrument in place on basket next to crab.
8/10/2007 17:38	45.90331	-129.99354	12.3	1719.4	HiDef Recording On
8/10/2007 17:38	45.90326	-129.99354	12.5	1719.6	Recording from above crack and then will move within.
8/10/2007 17:38	45.90339	-129.99353	7.3	1719.1	Retracting basket.
8/10/2007 17:39	45.90324	-129.99355	12.3	1719.3	Reset doppler.
8/10/2007 17:39	45.90325	-129.99355	12.2	1720.0	Taking DSC as well of the crack.
8/10/2007 17:40	45.90324	-129.99355	12.4	1718.3	Brow cam has best view.
8/10/2007 17:41	45.90338	-129.99351	14.7	1718.6	New lava flowing out of crack as we move along-best view in DSC and brow cam.
8/10/2007 17:42	45.90341	-129.99351	17.9	1719.8	Lava flow completely filling fissure and obscures it at this end.
8/10/2007 17:44	45.90366	-129.99345	8.4	1719.8	Going to turn around and come back along fissure.
8/10/2007 17:44	45.90370	-129.99344	95.7	1718.9	Tether loop to Medea will fix after this run down the fissure.
8/10/2007 17:45	45.90355	-129.99345	202.8	1717.6	Actually turning East and coming back to marker at the crack.
8/10/2007 17:46	45.90286	-129.99353	286.8	1715.1	Can see marker in overview.
8/10/2007 17:46	45.90331	-129.99347	272.1	1716.9	Turning laterally to left.
8/10/2007 17:48	45.90271	-129.99359	270.7	1719.2	Great overview from Medea cam of the fissure.
8/10/2007 17:48	45.90265	-129.99358	271.7	1718.9	Taking DSC of the flow with the white staining from the flow's heat in view.
8/10/2007 17:49	45.90275	-129.99361	271.7	1719.1	Approaching marker/benchmark.
8/10/2007 17:49	45.90271	-129.99360	271.6	1719.0	Slight touchdown on bottom with auto altimeter problem with the doppler.
8/10/2007 17:50	45.90285	-129.99363	271.5	1719.8	Great layers visible within the fissure.
8/10/2007 17:50	45.90282	-129.99362	271.5	1719.5	This fissure opened up in 1998 with the eruption.
8/10/2007 17:51	45.90277	-129.99366	269.5	1717.2	Done here and will head to Bag City after tether management.
8/10/2007 17:51	45.90288	-129.99364	271.0	1719.1	Finished HD survey.
8/10/2007 17:51	45.90285	-129.99365	271.3	1718.5	HiDef Recording Off
8/10/2007 17:52	45.90214	-129.99386	215.7	1713.0	Transit is 6K.
8/10/2007 17:52	45.90235	-129.99380	215.0	1712.7	Turning video cameras off.
8/10/2007 17:52	45.90258	-129.99373	217.5	1713.4	Up to 4 hour transit.
8/10/2007 21:34	45.91774	-129.98958	13.0	1532.1	Video recording has started.
8/10/2007 21:34	45.91680	-129.98974	359.4	1531.6	We can see the bottom now.
8/10/2007 21:36	45.91604	-129.98960	111.0	1530.6	Found the benchmark.
8/10/2007 21:37	45.91630	-129.98958	108.0	1530.8	Heading of 040 at Benchmark 4 Bag City.
8/10/2007 21:40	45.91614	-129.98958	52.7	1530.4	Waiting for Medea to settle out a bit.
8/10/2007 21:41	45.91617	-129.98953	355.2	1532.3	Nav quality is mediocre.
8/10/2007 21:43	45.91621	-129.98953	351.4	1532.3	Positioning the MPR on the benchmark.
8/10/2007 21:44	45.91622	-129.98953	351.4	1532.3	MPR recording has started.
8/10/2007 21:46	45.91623	-129.98953	351.4	1532.2	Spider crab on the Pilot camera.
8/10/2007 21:50	45.91621	-129.98953	351.3	1532.2	We are back at Bag City here.
8/10/2007 22:04	45.91622	-129.98953	351.0	1532.2	Finished the MPR recording.
8/10/2007 22:04	45.91616	-129.98954	353.1	1531.6	Some HD footage is recording.



289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/10/2007 22:06	45.91655	-129.98950	350.2	1528.5	Now off to Marker 33. The first thing we will do there is release the RAS.
8/10/2007 22:06	45.91673	-129.98954	217.3	1529.4	Stopping recording of the HD footage.
8/10/2007 23:40	45.93333	-129.98253	113.2	1517.3	At the bottom near Marker 33.
8/10/2007 23:40	45.93335	-129.98253	111.9	1517.6	Spotted the benchmark already.
8/10/2007 23:41	45.93321	-129.98254	105.8	1520.7	Moving in to place the MPR.
8/10/2007 23:41	45.93327	-129.98254	104.9	1520.1	The Medea fixes are good here. Jason not so much.
8/10/2007 23:41	45.93338	-129.98253	111.6	1518.5	We need to be at heading 115.
8/10/2007 23:44	45.93322	-129.98253	104.5	1521.0	Positioning the MPR on the Benchmark at Marker 33.
8/10/2007 23:45	45.93323	-129.98253	104.7	1521.0	The MPR has been successfully placed and the recording has been started.
8/11/2007 0:05	45.93330	-129.98250	104.5	1521.0	Done recording.
8/11/2007 0:06	45.93329	-129.98250	104.5	1521.0	We will recover the MPR then head to Marker 33 vent to recover some MTRs and release the RAS.
8/11/2007 0:12	45.93292	-129.98256	92.0	1517.2	Moving to the tubeworm bush where an MTR was deployed last year.
8/11/2007 0:15	45.93299	-129.98249	69.4	1520.5	The rope handle looks to be covered in bacterial filaments.
8/11/2007 0:16	45.93304	-129.98247	68.4	1520.7	Recovering MTR 3197 into the starboard biobox.
8/11/2007 0:20	45.93322	-129.98243	68.3	1520.7	Deploying MTR #3045.
8/11/2007 0:21	45.93325	-129.98242	67.7	1520.7	This MTR is deployed in the tubeworm bush in an area of good flow.
8/11/2007 0:24	45.93258	-129.98244	190.8	1520.2	Recording some HD footage.
8/11/2007 0:26	45.93238	-129.98248	184.3	1520.8	There are many instruments here - MTRs; Osmometer; RAS inlet.
8/11/2007 0:27	45.93251	-129.98247	182.8	1519.2	Medea is a little too far away as the ship is having some DP issues.
8/11/2007 0:27	45.93255	-129.98248	178.6	1518.6	Stopping the HD recording.
8/11/2007 0:36	45.93339	-129.98229	355.2	1509.1	Problems with doppler pulling up a short distance from bottom before continuing
8/11/2007 0:51	45.93322	-129.98231	189.7	1519.6	Coming back down to marker 33
8/11/2007 0:54	45.93313	-129.98231	188.7	1520.9	HD started
8/11/2007 0:54	45.93314	-129.98232	188.8	1520.9	Picked up MTR 3291 from west end of track located near right end of RAS intake
8/11/2007 0:55	45.93313	-129.98231	188.9	1520.9	MTR 3201 picked up
8/11/2007 0:57	45.93316	-129.98233	180.1	1520.0	Repositioning for 3rd MTR retrieval
8/11/2007 0:57	45.93317	-129.98232	159.4	1519.9	Stopping HD
8/11/2007 1:01	45.93307	-129.98233	200.0	1520.9	Got MTR 3087. Stowing it in the biobox.
8/11/2007 1:03	45.93308	-129.98232	199.5	1520.8	Picked up the final MTR 3042 from the RAS intake and put it in the bio box.
8/11/2007 1:05	45.93310	-129.98231	199.3	1520.9	Preparing to deploy the new MTRS.
8/11/2007 1:11	45.93314	-129.98230	199.3	1520.9	Putting MTR 4001 in the crack where there is shimmering water.
8/11/2007 1:11	45.93314	-129.98230	199.3	1520.9	Setting the MTR down temporarily to move the RAS intake tube.
8/11/2007 1:12	45.93315	-129.98230	199.2	1520.9	Shaking the stuff off of the tube.
8/11/2007 1:13	45.93315	-129.98229	174.3	1519.4	Taking the intake over to the RAS to drape over the top for the ride up.
8/11/2007 1:15	45.93315	-129.98229	150.6	1517.8	Putting the intake onto the top of the RAS.
8/11/2007 1:18	45.93314	-129.98231	195.0	1520.9	Putting MTR 3041 on the eastern side of the crack.
8/11/2007 1:21	45.93311	-129.98232	195.2	1520.9	I mean the Western side of the crack.
8/11/2007 1:24	45.93306	-129.98231	200.9	1520.9	Picking MTR 4001 back up.
8/11/2007 1:25	45.93306	-129.98231	192.8	1520.9	Looking further to the west along the crack.
8/11/2007 1:28	45.93316	-129.98233	145.6	1513.4	Jason is coming up a bit for tether management.
8/11/2007 1:30	45.93319	-129.98234	145.3	1511.9	Moving Medea to the Northwest.
8/11/2007 1:34	45.93306	-129.98235	192.6	1520.9	Putting MTR 4001 in a hole behind the Osmo sampler dome.
8/11/2007 1:38	45.93316	-129.98232	155.5	1519.1	Deploy Headed to the RAS to pull the pin.
8/11/2007 1:40	45.93310	-129.98230	160.6	1521.0	Calling the bridge to okay the release of the RAS.
8/11/2007 1:43	45.93320	-129.98223	162.7	1521.0	Pulling the rip cord.
8/11/2007 1:44	45.93324	-129.98220	163.9	1521.0	Using both arms to release the RAS.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 1:45	45.93328	-129.98217	163.9	1521.0	The rope broke!
8/11/2007 1:46	45.93331	-129.98215	164.4	1521.0	That is the rope to the pull pin broke.
8/11/2007 1:48	45.93337	-129.98210	163.5	1521.0	The RAS is released.
8/11/2007 1:50	45.93341	-129.98207	163.2	1521.1	Coming off the bottom until the RAS is recovered.
8/11/2007 2:36	45.93479	-129.98150	167.4	1255.7	Begin transit to Magnesia
8/11/2007 3:40	45.94593	-129.98508	70.1	1523.7	At the site.
8/11/2007 3:42	45.94610	-129.98501	34.9	1525.9	Marker 67. Jason retrieving instrument from basket.
8/11/2007 3:44	45.94608	-129.98500	35.0	1525.9	Magnesia site (AX01 benchmark) at Marker 67.
8/11/2007 3:45	45.94601	-129.98502	34.6	1525.9	A loop is in the cable and Jason is trying to take it out by rotating the instrument.
8/11/2007 3:47	45.94597	-129.98503	35.4	1525.9	Instrument in place and starting data collections.
8/11/2007 3:49	45.94602	-129.98501	35.8	1525.9	Navigation position is within 10m of original target.
8/11/2007 3:52	45.94591	-129.98503	35.5	1526.0	Position now using is the position found on the first visit to Magnesia on this dive (not original pre-dive position)
8/11/2007 3:53	45.94594	-129.98502	35.5	1526.0	New marker position is 15m at 225deg from pre-dive position.
8/11/2007 3:58	45.94601	-129.98501	35.3	1526.0	Biology on the marker tether in pilot cam.
8/11/2007 4:08	45.94587	-129.98505	35.6	1526.1	Jason retrieving instrument.
8/11/2007 4:08	45.94587	-129.98504	35.7	1526.1	Twenty minutes of measurement. All done here.
8/11/2007 4:09	45.94595	-129.98505	34.8	1525.4	Basket out and setting instrument down.
8/11/2007 4:09	45.94593	-129.98505	34.9	1524.9	Jason is moving away from benchmark with instrument in arm.
8/11/2007 4:10	45.94642	-129.98497	40.2	1518.4	Next target is at 298deg and 2165m: Marker 63 at Caldera Center.
8/11/2007 4:10	45.94665	-129.98494	89.6	1516.3	Video tapes are stopped.
8/11/2007 4:11	45.94652	-129.98488	105.2	1516.3	ETA to next site is about 2 hours.
8/11/2007 5:48	45.95518	-130.00965	186.1	1531.3	Touched bottom near Marker 63.
8/11/2007 5:51	45.95519	-130.00965	186.4	1531.3	Target is 11m away at a heading of 247
8/11/2007 5:54	45.95528	-130.00974	252.5	1531.2	Markers visible
8/11/2007 5:56	45.95514	-130.00984	245.1	1531.2	working on aligning Jason will all 3 markers
8/11/2007 6:01	45.95489	-130.00989	358.9	1530.6	We are at Caldera Center Marker 63.
8/11/2007 6:03	45.95519	-130.00987	0.6	1532.8	Rattail fish is under the pillow on the right side of the benchmark.
8/11/2007 6:05	45.95507	-130.00992	0.6	1534.2	Grabbing instrument with arm.
8/11/2007 6:06	45.95504	-130.00993	0.7	1534.2	Retracting basket.
8/11/2007 6:08	45.95505	-130.00991	2.8	1534.4	Instrument in place and starting recording.
8/11/2007 6:08	45.95506	-130.00991	2.4	1534.3	Placing instrument on benchmark.
8/11/2007 6:16	45.95473	-130.00998	3.0	1534.4	Ratfish in pilot cam.
8/11/2007 6:28	45.95428	-130.01004	2.6	1534.4	Done with 20 minute measurement.
8/11/2007 6:28	45.95428	-130.01003	2.8	1534.3	Retrieving instrument.
8/11/2007 6:29	45.95418	-130.01004	359.9	1534.0	Moving away from benchmark.
8/11/2007 6:31	45.95385	-130.01011	1.0	1531.1	2100 m and 171 back to Magnesia.
8/11/2007 6:31	45.95385	-130.01010	1.0	1533.6	Placing instrument on basket.
8/11/2007 6:31	45.95443	-130.01009	290.0	1528.1	Videos off.
8/11/2007 8:02	45.94549	-129.98498	250.9	1522.5	Just touched bottom at Magnesia.
8/11/2007 8:03	45.94595	-129.98498	332.8	1523.4	Spotted the benchmark.
8/11/2007 8:06	45.94611	-129.98505	36.4	1526.2	Placing the MPR.
8/11/2007 8:07	45.94600	-129.98507	35.4	1526.2	Benchmark placed successfully and starting the measurement now.
8/11/2007 8:28	45.94610	-129.98505	34.9	1526.0	Done with the pressure recording.
8/11/2007 8:28	45.94606	-129.98506	34.9	1526.0	The nav quality was very good here.
8/11/2007 8:29	45.94589	-129.98507	34.6	1522.5	The MPR has been successfully stowed. Now off to Marker 33.
8/11/2007 9:36	45.93279	-129.98256	207.6	1515.1	bottom in sight
8/11/2007 9:39	45.93368	-129.98254	102.3	1520.3	We are at bench mark 5
8/11/2007 9:42	45.93358	-129.98254	99.8	1521.3	The RAS is on the benchmark
8/11/2007 9:43	45.93363	-129.98253	99.8	1521.3	The cable is coiled and the RAS is being repositioned
8/11/2007 9:47	45.93380	-129.98250	108.7	1521.2	Started the pressure measurement.
8/11/2007 9:47	45.93378	-129.98250	108.8	1521.3	The MPR is in final position on the benchmark

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 10:07	45.93456	-129.98235	107.8	1521.0	Finished the pressure measurement.
8/11/2007 10:07	45.93456	-129.98235	107.7	1521.0	Stowing the MPR.
8/11/2007 10:10	45.93418	-129.98230	183.5	1519.6	Nav was ok here.
8/11/2007 10:12	45.93312	-129.98237	304.2	1519.4	Searching for the Marker 33 vent.
8/11/2007 10:16	45.93361	-129.98239	101.3	1519.6	At the main vent were the RAS was deployed and will be deployed.
8/11/2007 10:16	45.93331	-129.98242	42.0	1519.6	We are preparing to suction some limpets.
8/11/2007 10:18	45.93322	-129.98243	39.8	1519.4	J289-BIO-001 Suction of some limpets here. (Marker 33+I271)
8/11/2007 10:19	45.93333	-129.98241	47.4	1520.3	J289-BIO-001 Getting ready to start the suction.
8/11/2007 10:21	45.93345	-129.98238	79.8	1520.8	J289-BIO-001 Started the sample.
8/11/2007 10:27	45.93363	-129.98237	81.8	1520.7	J289-BIO-001 Finished the suction.
8/11/2007 10:31	45.93368	-129.98237	75.3	1520.7	J289-BIO-002 Doing a quick Tubeworm grab of some of the less healthy worms.
8/11/2007 10:34	45.93373	-129.98237	75.1	1520.7	J289-BIO-002 Tubeworm grab was put in the starboard biobox.
8/11/2007 10:37	45.93387	-129.98220	282.7	1519.3	At this bush a little ways from the main Marker 33 vent.
8/11/2007 10:37	45.93344	-129.98221	336.2	1521.2	J289-BIO-002 Dave will have some corresponding water data for that spot a little later.
8/11/2007 10:37	45.93391	-129.98220	273.6	1518.6	There was an MTR recovered from here earlier this dive.
8/11/2007 10:46	45.93392	-129.98235	235.6	1520.3	J289-BIO-003 Temperature on the side is max of around 8.8C.
8/11/2007 10:48	45.93386	-129.98236	235.6	1520.3	J289-BIO-003 Another more peripheral temperature reading is around 6.0C.
8/11/2007 10:48	45.93387	-129.98236	235.7	1520.3	J289-BIO-003 Temperature deep inside near the base of the tubes is 36C.
8/11/2007 10:49	45.93383	-129.98236	236.0	1520.2	J289-BIO-003 A final deep temperature reading is 17C.
8/11/2007 10:49	45.93382	-129.98237	236.7	1520.3	J289-BIO-003 We have put away the temperature readings and are preparing to grab some worms.
8/11/2007 10:54	45.93368	-129.98238	236.8	1520.1	J289-BIO-003 Grabbed a handful and are having troubles reaching the box.
8/11/2007 10:56	45.93357	-129.98240	236.5	1520.1	J289-BIO-003 Put the worms on the box and stuffing them in with the other arm.
8/11/2007 10:58	45.93346	-129.98242	236.9	1520.1	J289-BIO-003 Closing the box.
8/11/2007 10:59	45.93341	-129.98243	236.9	1520.1	Stowing the bio box.
8/11/2007 11:06	45.93303	-129.98242	184.3	1520.3	We moved back over to Marker 33.
8/11/2007 11:07	45.93304	-129.98242	185.6	1520.3	Now attempting to get the fluid sampler out.
8/11/2007 11:10	45.93304	-129.98240	185.9	1520.3	Got it out
8/11/2007 11:18	45.93307	-129.98241	203.0	1520.1	J289-HFS-004 Measuring temperature in three holes.
8/11/2007 11:18	45.93307	-129.98241	203.0	1520.1	J289-HFS-004 South hole temp=14.
8/11/2007 11:18	45.93307	-129.98241	203.0	1520.1	J289-HFS-004 West hole temp=17.5.
8/11/2007 11:21	45.93309	-129.98240	203.2	1520.1	J289-HFS-004 East hole temp=17.
8/11/2007 11:23	45.93310	-129.98239	203.3	1520.1	J289-HFS-004 Taking a sample in unfiltered piston #2.
8/11/2007 11:28	45.93312	-129.98238	203.1	1520.1	J289-HFS-004 Full. Tmax=17.2 Tavg=15.8 Vol=750 T2=9.
8/11/2007 11:30	45.93314	-129.98238	203.0	1520.0	J289-HFS-005 Started sampling in filtered bag #16
8/11/2007 11:33	45.93315	-129.98238	202.3	1520.0	J289-HFS-005 Stop sample.
8/11/2007 11:33	45.93315	-129.98238	202.4	1520.0	J289-HFS-005 Tmax 17.0 Tavg=15.4 T2=9 Vol=645.
8/11/2007 11:34	45.93316	-129.98238	202.6	1520.0	J289-HFS-006 Starting filtered bag #17.
8/11/2007 11:38	45.93318	-129.98236	202.9	1520.0	J289-HFS-006 Stopped.
8/11/2007 11:38	45.93318	-129.98236	203.0	1520.0	J289-HFS-006 Tmax=15.9 Tavg=14.7 T2=8.4 Vol=648.
8/11/2007 11:39	45.93318	-129.98236	202.5	1520.0	J289-HFS-007 Starting sterivex filter #10.
8/11/2007 11:56	45.93328	-129.98233	203.3	1519.9	J289-HFS-007 Tmax=18.4 Tavg=14.7 Vol=2568 T2=7.
8/11/2007 11:57	45.93328	-129.98233	203.4	1519.9	J289-HFS-008 Starting Sterivex filter #11.
8/11/2007 12:12	45.93336	-129.98229	202.9	1519.8	J289-HFS-008 Stop sample.
8/11/2007 12:13	45.93336	-129.98229	202.9	1519.8	J289-HFS-008 Tmax=19.9 Tavg=14.7 T2=8.4 Vol=2704.
8/11/2007 12:15	45.93337	-129.98229	202.7	1519.8	J289-HFS-009 Starting unfiltered piston #3.
8/11/2007 12:19	45.93339	-129.98228	202.7	1519.7	J289-HFS-009 Stop sample.
8/11/2007 12:19	45.93340	-129.98228	202.7	1519.7	J289-HFS-009 Tmax=18.5 Tavg=17.1 Vol=655 T2=8.1.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 12:21	45.93341	-129.98227	202.6	1519.7	Stowing fluid sampler wand and then we are going to move to Cloud vent
8/11/2007 12:25	45.93331	-129.98224	258.0	1518.0	In transit to Cloud
8/11/2007 12:37	45.93303	-129.98161	99.3	1517.4	Continuing to look around for the other vent hole
8/11/2007 12:37	45.93316	-129.98160	102.3	1517.3	See hole with cloudy water which is probably the N4 vent
8/11/2007 12:42	45.93393	-129.98158	310.1	1521.1	Found N6 vent at Cloud which has marker 69 next to it
8/11/2007 12:43	45.93393	-129.98158	310.0	1521.1	In position to fluid sample. The two vents N4 and N6 are within sight of each other and the only white areas
8/11/2007 12:47	45.93383	-129.98160	309.7	1521.1	Cloud vent is white inside with tubeworms and shimmering water similar to last year
8/11/2007 12:48	45.93375	-129.98161	309.6	1521.1	J289-HFS-010 Sample HFS Starting HFS sample - unfiltered Piston #8
8/11/2007 12:49	45.93372	-129.98162	309.6	1521.1	J289-HFS-010 We are at Marker 69 at Cloud vent
8/11/2007 12:52	45.93361	-129.98164	309.4	1521.1	J289-HFS-010 Tmax=6.7 Tavg=6.5 T2=4.8 Vol=730
8/11/2007 12:53	45.93358	-129.98165	309.3	1521.1	J289-HFS-011 Starting HFS sample - filtered bag #17
8/11/2007 12:55	45.93354	-129.98165	309.3	1521.1	J289-HFS-011 Oops that was a mistake - bag #17 is already full it will be #18
8/11/2007 12:55	45.93353	-129.98166	309.3	1521.1	J289-HFS-011 Starting HFS sample filtered bag #18
8/11/2007 12:59	45.93323	-129.98171	309.2	1521.1	J289-HFS-011 Tmax = 6.7 Tavg = 6.3 Vol=620 T2=4.7
8/11/2007 13:00	45.93316	-129.98172	309.2	1521.1	J289-HFS-012 Sterivex filter #15
8/11/2007 13:21	45.93267	-129.98190	309.4	1521.1	J289-HFS-012 Stopped filter sample. Vol=3005 Tmax=6.8 Tavg=6.5 T2=4.9
8/11/2007 13:22	45.93262	-129.98191	309.4	1521.1	J289-HFS-013 HFS sample filtered bag #19
8/11/2007 13:27	45.93238	-129.98196	309.6	1521.1	J289-HFS-013 Tmax=6.8 Tavg=6.7 T2=5.0 Vol=604
8/11/2007 13:27	45.93236	-129.98197	309.6	1521.1	Pulling HFS wand out of hole
8/11/2007 13:30	45.93231	-129.98200	309.5	1520.7	Trying to stow HFS wand
8/11/2007 13:39	45.93225	-129.98210	25.3	1520.4	Decided not to recover MTRs at Cloud during this dive because the basket is too full
8/11/2007 13:39	45.93224	-129.98210	25.3	1520.4	Looked down Cloud vent with video cameras
8/11/2007 13:40	45.93284	-129.98195	28.2	1513.6	Decided not to deploy new MTRs either yet because the rope is not long enough
8/11/2007 13:40	45.93297	-129.98189	30.2	1510.3	Leaving Cloud to transit to Vixen
8/11/2007 13:41	45.93302	-129.98185	33.3	1509.4	Turning video off for transit
8/11/2007 15:09	45.91738	-129.99254	197.7	1530.1	At the bottom at Vixen.
8/11/2007 15:09	45.91725	-129.99253	198.3	1530.7	Jason is descending at the site.
8/11/2007 15:09	45.91740	-129.99253	197.9	1530.0	Starting videos.
8/11/2007 15:10	45.91714	-129.99253	198.0	1530.8	Some sediment was stirred up upon arrival.
8/11/2007 15:11	45.91678	-129.99268	249.8	1530.9	Big pillows with sediment in cracks and crevices.
8/11/2007 15:11	45.91662	-129.99280	273.2	1530.9	Reset doppler.
8/11/2007 15:13	45.91745	-129.99296	289.2	1532.2	Looking for a few anhydrite chimneys. Want to recover and replace HOBOS.
8/11/2007 15:13	45.91738	-129.99288	335.8	1532.2	White is diffuse flow at Vixen site.
8/11/2007 15:14	45.91733	-129.99307	344.9	1532.3	Can see a marker in the distance.
8/11/2007 15:14	45.91739	-129.99299	272.6	1532.2	Fish disturbed in brow cam.
8/11/2007 15:15	45.91750	-129.99307	353.5	1532.2	Can see the chimney behind the marker with the HOBO.
8/11/2007 15:15	45.91763	-129.99304	353.8	1532.2	Marker 57 with the HOBO at the base.
8/11/2007 15:16	45.91733	-129.99307	314.9	1532.3	Flat area with a lot of white biology within diffuse flow.
8/11/2007 15:17	45.91737	-129.99305	289.0	1532.6	Smoke from Vixen is fairly strong.
8/11/2007 15:18	45.91736	-129.99307	288.8	1533.5	Setting Jason down near the vent in position to retrieve HOBO.
8/11/2007 15:19	45.91735	-129.99308	288.8	1533.6	Jason anxiously awaiting to pick up the HOBO-great shot in video of claw poised over HOBO.
8/11/2007 15:23	45.91741	-129.99308	288.9	1533.6	Jason has HOBO and placing it in the port-forward milkcrate.
8/11/2007 15:25	45.91742	-129.99308	289.1	1533.6	Jason landed on the Vixen target and then went north. We are at Vixen at marker 57.
8/11/2007 15:25	45.91742	-129.99308	289.1	1533.6	This is not a HOBO it is <b>MISO 101</b> .
8/11/2007 15:28	45.91744	-129.99308	289.2	1533.6	Moved Vixen target in nav to current location.
8/11/2007 15:29	45.91746	-129.99308	289.2	1533.6	Deployed <b>MISO 130</b> at the Vixen site.
8/11/2007 15:29	45.91741	-129.99307	289.6	1531.8	Recover HOBO Deployed/recover MISO at Vixen.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 15:30	45.91745	-129.99302	7.8	1532.1	Can see some tubeworm clumps in the cracks.
8/11/2007 15:30	45.91746	-129.99303	10.4	1531.2	Recover HOBO Leaving Vixen for Casper should only be 10m away.
8/11/2007 15:32	45.91717	-129.99304	13.7	1531.0	There is no marker at Casper.
8/11/2007 15:33	45.91703	-129.99300	297.4	1532.4	Heading north 350 according to map target with reset in nav.
8/11/2007 15:34	45.91715	-129.99298	282.6	1531.6	Taking a few DSC of the area.
8/11/2007 15:35	45.91764	-129.99302	268.8	1533.2	There is Casper-small mound with less smoke coming out than Vixen-but bigger chimney formation at top.
8/11/2007 15:36	45.91739	-129.99307	301.6	1533.8	HiDef Recording On HD of the chimney and retrieval of the MISO.
8/11/2007 15:37	45.91737	-129.99307	301.8	1533.8	Jason has MISO. Chimney broke as soon as it was touched. Pyrite formed on wand tip.
8/11/2007 15:37	45.91737	-129.99307	302.5	1533.8	Placing MISO in basket. This is <b>MISO 103</b> .
8/11/2007 15:38	45.91738	-129.99306	302.5	1533.8	Reset the target on nav to Casper.
8/11/2007 15:39	45.91743	-129.99305	302.6	1533.8	Recording a few minutes of the vent before deploying the new HOBO/MISO.
8/11/2007 15:40	45.91747	-129.99304	302.3	1533.8	Basket management.
8/11/2007 15:42	45.91746	-129.99305	302.9	1533.9	Can see scale worms and vent worms at the base.
8/11/2007 15:42	45.91747	-129.99304	302.8	1533.8	Moving basket out of the view for video.
8/11/2007 15:42	45.91747	-129.99304	302.6	1533.9	Retrieving MISO 129 out of the basket.
8/11/2007 15:43	45.91746	-129.99305	302.9	1533.9	Flow now at Casper seem equivalent to Vixen (with Casper's chimney knocked over)
8/11/2007 15:43	45.91746	-129.99304	302.9	1533.9	See bubbles coming out of Casper.
8/11/2007 15:44	45.91747	-129.99304	302.9	1533.9	Closeup of the flow.
8/11/2007 15:44	45.91746	-129.99304	302.9	1533.9	Occasional bubbles not a steady stream.
8/11/2007 15:45	45.91747	-129.99304	302.9	1533.9	Looking for worms at the surrounding area of the base but only see them on the base itself.
8/11/2007 15:48	45.91751	-129.99303	303.2	1533.9	Brow cam has view of yellow ring around the vent structure.
8/11/2007 15:49	45.91751	-129.99303	303.1	1533.9	HiDef Recording Taking DSC of the vent as well as HD.
8/11/2007 15:51	45.91752	-129.99303	303.0	1533.9	Ready to put in MISO.
8/11/2007 15:52	45.91752	-129.99303	302.1	1533.9	Placing MISO tip in the anhydrite in the high flow orifice. Having to excavate the area to get tip in properly.
8/11/2007 15:53	45.91754	-129.99302	302.5	1533.9	Excavation complete-placing MISO in flow.
8/11/2007 15:53	45.91753	-129.99303	302.8	1533.9	One of the videos PCWB34 is going to be 10 minute behind and an unknown DVD was found in the recorder.
8/11/2007 15:54	45.91755	-129.99302	302.4	1534.0	Looks like the same spot as the one just retrieved. Tip is at least 6inches inside the orifice.
8/11/2007 15:56	45.91756	-129.99302	302.4	1534.0	Fish .
8/11/2007 15:57	45.91756	-129.99302	302.6	1534.0	HiDef Recording Off Done with HD recording.
8/11/2007 15:57	45.91757	-129.99302	302.8	1534.0	Retrieving HFS wand from the basket.
8/11/2007 15:58	45.91758	-129.99302	298.6	1534.0	Placing wand in orifice to see if it will fit with the MISO wand already in there.
8/11/2007 16:00	45.91760	-129.99301	300.3	1534.0	Big hole-everything fits. Anhydrite piece fell onto orifice but moved it away with wand tip.
8/11/2007 16:01	45.91760	-129.99301	300.3	1534.0	Reading is not accurate since pump is not running.
8/11/2007 16:01	45.91760	-129.99301	300.3	1534.0	Temperature reading on HFS is 120.
8/11/2007 16:03	45.91762	-129.99301	300.3	1534.0	Pump turned on and temperature is rising.
8/11/2007 16:04	45.91763	-129.99300	300.3	1534.0	Temperature was up to 292 and went down to 267 so moving the wand around a bit.
8/11/2007 16:06	45.91764	-129.99300	300.3	1534.0	Sample HFS
8/11/2007 16:06	45.91764	-129.99300	300.3	1534.0	Wiggling wand around. Can see some bubbles.
8/11/2007 16:09	45.91766	-129.99300	300.3	1534.1	<b>J289-HFS-014</b> Start HFS. Piston #4.
8/11/2007 16:09	45.91766	-129.99299	300.3	1534.1	J289-HFS-014 Temperature is holding at 300-301.
8/11/2007 16:11	45.91767	-129.99299	300.3	1534.1	J289-HFS-014 Sample HFS Stopping. Tmax=301.6 Tavg=301.3 vol=253 T2=86
8/11/2007 16:12	45.91768	-129.99299	300.3	1534.1	<b>J289-GT-015</b> Gastight fired in same exact place after HFS sample.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 16:12	45.91768	-129.99299	300.3	1534.1	J289-GT-015 GT did something to HFS-stopped pump when fired.
8/11/2007 16:12	45.91767	-129.99299	300.3	1534.1	J289-GT-015 Sample Gastight
8/11/2007 16:13	45.91769	-129.99299	300.3	1534.1	<b>J289-HFS-016</b> Sample HFS Starting Piston #9
8/11/2007 16:15	45.91770	-129.99299	300.2	1534.1	J289-HFS-015GT sample was not labeled as STBD--it is STBD Gas Tight
8/11/2007 16:15	45.91770	-129.99299	300.2	1534.1	J289-HFS-016 Stopped.
8/11/2007 16:16	45.91770	-129.99299	300.2	1534.2	J289-HFS-016 Tmax=301.6 Tavg=301.2 vol=325 T2=85
8/11/2007 16:17	45.91770	-129.99298	300.9	1534.0	J289-HFS-016 This is the same exact place for all 3 of these samples-wand never moved.
8/11/2007 16:17	45.91761	-129.99298	258.4	1533.0	Moving back over to Vixen for some more water sampling.
8/11/2007 16:18	45.91727	-129.99302	243.0	1534.0	Back at Vixen with MISO 130 in view.
8/11/2007 16:18	45.91727	-129.99302	243.0	1534.0	Placing wand in orifice with a bit of excavating.
8/11/2007 16:19	45.91728	-129.99302	243.0	1534.0	<b>J289-HFS-017</b> Temperature here is hotter. Over 315.
8/11/2007 16:20	45.91729	-129.99302	243.0	1534.0	J289-HFS-017 Sample HFS Start. Piston #1
8/11/2007 16:22	45.91730	-129.99302	243.0	1533.9	J289-HFS-017 Stop.
8/11/2007 16:23	45.91730	-129.99302	243.0	1533.9	J289-HFS-017 Tmax=330.1 Tavg=328 vol=303 T2=100.
8/11/2007 16:24	45.91731	-129.99302	243.1	1533.9	<b>J289-HFS-018</b> Another sample at Vixen without moving the wand.
8/11/2007 16:24	45.91731	-129.99302	243.1	1533.9	J289-HFS-018 Sample HFS Filtered bag #24. Starting
8/11/2007 16:25	45.91732	-129.99301	243.1	1533.9	J289-HFS-018 Stopping.
8/11/2007 16:25	45.91733	-129.99301	243.1	1533.9	J289-HFS-018 Tmax=330.4
8/11/2007 16:26	45.91733	-129.99301	243.1	1533.9	J289-HFS-018 Tavg=330.2 vol=228 T2=100.
8/11/2007 16:28	45.91733	-129.99301	243.1	1534.0	Sample HFS Filtered bag #22.start.
8/11/2007 16:29	45.91733	-129.99301	243.1	1534.0	J289-HFS-019
8/11/2007 16:29	45.91733	-129.99301	243.1	1534.1	J289-HFS-019 Same spot at Vixen.
8/11/2007 16:30	45.91735	-129.99300	243.1	1534.2	Done HFS sampling at Vixen.
8/11/2007 16:30	45.91734	-129.99301	243.1	1534.2	J289-HFS-019 Stopping.
8/11/2007 16:30	45.91735	-129.99300	243.2	1534.2	J289-HFS-019 Tmax=330.4 Tavg=330.2 vol=243 T2=86
8/11/2007 16:32	45.91743	-129.99299	242.9	1533.5	Flying away over Vixen. Good HD.
8/11/2007 16:32	45.91739	-129.99299	243.5	1533.1	Looking for a diffuse flow to take HFS.
8/11/2007 16:32	45.91728	-129.99300	241.2	1532.7	Reset doppler.
8/11/2007 16:34	45.91724	-129.99298	306.2	1530.2	High above over Vixen.
8/11/2007 16:34	45.91726	-129.99298	295.3	1531.2	Thrusters kicked up some of the sediment.
8/11/2007 16:36	45.91732	-129.99296	302.8	1533.2	Good overviews of the area with pillows and lots of anhydrite/biology within the cracks.
8/11/2007 16:39	45.91729	-129.99297	305.2	1532.5	Found a spot with diffuse flow and bacterial mat.
8/11/2007 16:40	45.91723	-129.99300	305.3	1532.9	Location is near Vixen and marker.
8/11/2007 16:41	45.91727	-129.99300	355.2	1534.5	Good closeups of the biology in the pilot cam.
8/11/2007 16:42	45.91729	-129.99300	351.5	1534.5	Need to circle around to the north and have Jason heading south for the Huber sample.
8/11/2007 16:43	45.91728	-129.99301	351.5	1534.5	Jason is already location to the south of Vixen so will look for a good sample site here.
8/11/2007 16:43	45.91730	-129.99300	346.8	1534.5	Location in notes say location of sample was 20m south of Vixen from previous year.
8/11/2007 16:44	45.91725	-129.99301	356.4	1533.8	(No need to circle north-etc.)
8/11/2007 16:45	45.91717	-129.99303	356.9	1533.8	Hairy bacterial filaments.
8/11/2007 16:46	45.91732	-129.99304	0.6	1534.5	Clams here.
8/11/2007 16:46	45.91736	-129.99304	358.7	1534.4	Found a potential clump of worms and flow just south and west of marker with Jason heading 358.
8/11/2007 16:47	45.91727	-129.99305	0.6	1534.5	Found a bright white spot near the fish in view.
8/11/2007 16:48	45.91728	-129.99305	359.7	1534.6	Great images in HD. Can see flow better as well as the fish.
8/11/2007 16:48	45.91726	-129.99305	359.7	1534.6	HiDef Recording On Just starting HD not a new tape.
8/11/2007 16:48	45.91727	-129.99305	359.7	1534.6	Just starting a HD tape.
8/11/2007 16:49	45.91726	-129.99305	359.7	1534.6	Good flow coming out of HFS exhaust.
8/11/2007 16:50	45.91726	-129.99305	359.7	1534.6	Temperature coming up. (Turned lasers off)
8/11/2007 16:51	45.91727	-129.99305	359.7	1534.6	<b>J289-HFS-020</b> Sample HFS
8/11/2007 16:51	45.91727	-129.99305	359.7	1534.6	J289-HFS-020 Starting. Unfiltered piston #5.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 16:52	45.91727	-129.99305	359.7	1534.6	J289-HFS-020 Sample in the clump of tube worms with good diffuse flow.
8/11/2007 16:54	45.91728	-129.99305	359.7	1534.7	J289-HFS-020 Stopping sample.
8/11/2007 16:54	45.91728	-129.99305	359.7	1534.7	J289-HFS-020 Stopping tape HD.
8/11/2007 16:54	45.91728	-129.99305	359.7	1534.7	J289-HFS-020 Tmax=30.4 Tavg=30.0 vol=604 T2=15.
8/11/2007 16:56	45.91728	-129.99306	359.6	1534.7	<b>J289-HFS-021</b> Sample HFS Same place. Sterivex filter #12 starting.
8/11/2007 17:17	45.91727	-129.99308	358.9	1534.9	J289-HFS-021 Stopping. (Probe has been down in the clump all the way for these diffuse samples). Location is 3m southwest (30deg) of Vixen with Casper visible due north.
8/11/2007 17:18	45.91728	-129.99308	358.9	1534.9	J289-HFS-021 Tmax=30.8 Tavg=30.0 vol=3556 T2=16.
8/11/2007 17:19	45.91728	-129.99308	358.8	1534.9	During last sample a lot of good video of the biology was taken. Very lush clump.
8/11/2007 17:20	45.91728	-129.99308	358.8	1534.9	Filtered bag # 20 starting
8/11/2007 17:20	45.91728	-129.99308	358.8	1534.9	<b>J289-HFS-022</b> Sample HFS
8/11/2007 17:21	45.91728	-129.99308	358.8	1534.9	J289-HFS-022 Same exact location as previous low-temp samples SW of Vixen.
8/11/2007 17:22	45.91726	-129.99308	358.8	1534.9	J289-HFS-022 Stopping.
8/11/2007 17:23	45.91726	-129.99308	358.8	1534.9	Done fluid sampling in this location.
8/11/2007 17:23	45.91726	-129.99308	358.8	1534.9	J289-HFS-022 Tmax=30.3 Tavg=29.9 vol=529 T2=16
8/11/2007 17:24	45.91726	-129.99307	358.6	1535.0	Wand has been removed and now stowing.
8/11/2007 17:25	45.91726	-129.99307	358.5	1535.0	Going to do a PIP sample here at low-temp Vixen (for Huber)
8/11/2007 17:26	45.91727	-129.99308	358.5	1535.0	<b>J289-PIP-023</b> Sample Large Volume Filter Intake wand placed at same location as HFS wand had been (with a bit of excavating-completely submerged in clump)
8/11/2007 17:28	45.91727	-129.99309	358.4	1535.0	J289-PIP-023 Have flow meter in video.
8/11/2007 17:28	45.91727	-129.99309	358.4	1535.0	J289-PIP-023 Starting. Guage says .7 flow units.
8/11/2007 17:40	45.91725	-129.99308	358.4	1535.1	J289-PIP-023 Changing DVD tapes.
8/11/2007 17:41	45.91725	-129.99309	358.4	1535.1	J289-PIP-023 Flow rate is coming down.
8/11/2007 17:49	45.91725	-129.99308	358.4	1535.1	J289-PIP-023 Twenty minutes of sampling with PIP. (Flow only came down to .6) Still pumping.
8/11/2007 17:53	45.91724	-129.99308	358.4	1535.2	J289-PIP-023 Pilot cam showing pump chamber.with limpets inside from previous sample.
8/11/2007 17:55	45.91719	-129.99309	358.4	1535.2	J289-PIP-023 Stopping PIP.
8/11/2007 17:55	45.91720	-129.99309	358.4	1535.2	Stowing intake wand.
8/11/2007 17:57	45.91733	-129.99306	358.4	1535.2	Next target is 300m away and will be transiting along the bottom.
8/11/2007 17:58	45.91752	-129.99301	358.4	1535.2	Next stop will be Bag City. Jason heading off.
8/11/2007 17:59	45.91693	-129.99301	118.4	1532.8	Cracks between pillow with tubeworm and diffuse flow. Long-skinny tubeworms.
8/11/2007 17:59	45.91732	-129.99300	80.1	1532.3	Going by Vixen marker. and heading off east.
8/11/2007 17:59	45.91687	-129.99301	117.6	1532.5	Reset doppler.
8/11/2007 17:59	45.91680	-129.99301	119.8	1531.1	Stowing arm.
8/11/2007 18:01	45.91708	-129.99296	117.1	1531.5	Before stowing-rearranging the basket to put intakes in more secure locations.
8/11/2007 18:03	45.91704	-129.99282	118.3	1531.9	Just out of vent area-no more staining between cracks.
8/11/2007 18:03	45.91758	-129.99284	117.7	1531.5	Stowing basket and heading off to Bag City 300m to the east.
8/11/2007 18:04	45.91685	-129.99273	117.6	1532.5	Few little patches of biology and long pillows of lava.
8/11/2007 18:04	45.91692	-129.99259	118.0	1532.1	Some sediment between pillows.
8/11/2007 18:07	45.91709	-129.99226	117.1	1533.2	Transiting over flow pre-1997 (younger than over at Vixen).
8/11/2007 18:09	45.91708	-129.99212	117.1	1532.5	Very similar structure on bottom of pillows.
8/11/2007 18:10	45.91725	-129.99198	117.6	1532.4	Big crab.
8/11/2007 18:10	45.91716	-129.99191	114.1	1532.1	Pillows and tubes.
8/11/2007 18:12	45.91675	-129.99154	116.8	1531.5	Edge of collapse.
8/11/2007 18:12	45.91683	-129.99141	117.3	1530.9	Other side of collapse. Lava pillars.
8/11/2007 18:13	45.91668	-129.99131	117.4	1530.9	Holes (swiss cheese area).
8/11/2007 18:13	45.91679	-129.99138	117.4	1530.8	Smaller collapse area.
8/11/2007 18:14	45.91672	-129.99113	117.0	1530.8	Many collapse areas.



289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 18:15	45.91637	-129.99091	116.7	1530.4	Here's another one starting.
8/11/2007 18:15	45.91696	-129.99100	117.8	1529.9	Larger collapse area.
8/11/2007 18:15	45.91644	-129.99095	117.7	1530.2	Other side of collapse.
8/11/2007 18:16	45.91655	-129.99080	193.4	1532.5	Navigation seems to be right on target with map.
8/11/2007 18:16	45.91645	-129.99083	124.2	1531.3	This could be the start of the large lava flow channel as seen on the AUV data.
8/11/2007 18:17	45.91678	-129.99075	203.5	1532.5	Can see edge off to the right on camera.
8/11/2007 18:17	45.91686	-129.99072	171.6	1532.4	Panning camera back to forward view.
8/11/2007 18:17	45.91710	-129.99067	96.5	1532.5	Sonar shows strong lineated feature to left of Jason.
8/11/2007 18:18	45.91669	-129.99051	99.9	1532.5	At the other end of the channel.
8/11/2007 18:18	45.91671	-129.99053	99.8	1532.7	Bottom of channel has sheet flow structure.
8/11/2007 18:19	45.91607	-129.99028	100.4	1531.0	More pillows and sediment on this side of the channel.
8/11/2007 18:19	45.91597	-129.99034	100.2	1531.2	Using LBL to navigate (map and nav are on target together).
8/11/2007 18:20	45.91669	-129.99001	108.5	1531.3	Hole 2m deep.
8/11/2007 18:20	45.91659	-129.99010	108.2	1531.4	Nice hole with lava arch/bridge.
8/11/2007 18:20	45.91650	-129.99018	106.6	1531.0	Some collapse structures (holes).
8/11/2007 18:21	45.91666	-129.98996	108.8	1531.4	Seeing lava pillars in collapse area.
8/11/2007 18:22	45.91638	-129.98985	125.7	1531.3	Large collapse area on map matching with visual.
8/11/2007 18:22	45.91630	-129.98976	137.1	1532.0	Large pillar.
8/11/2007 18:23	45.91629	-129.98974	171.9	1531.8	Bag City should be on other side of this collapse feature up on top of the rim.
8/11/2007 18:24	45.91614	-129.98959	73.4	1531.9	See some worms on floor of collapse.
8/11/2007 18:25	45.91616	-129.98951	98.2	1532.7	Long-skinny worms in clumps. Should be edge of Bag City area but still on floor of collapse.
8/11/2007 18:25	45.91634	-129.98946	94.7	1530.4	Worms on side of collapse wall.
8/11/2007 18:26	45.91625	-129.98942	71.3	1530.3	On top edge and driving along looking for site.
8/11/2007 18:27	45.91628	-129.98940	222.1	1530.6	Benchmark is 20m away (see it in HD).
8/11/2007 18:27	45.91636	-129.98935	222.5	1530.5	There is the marker for Bag City (Marker 36). Benchmark should be nearby.
8/11/2007 18:28	45.91605	-129.98945	126.7	1530.4	Benchmark marker is #65.
8/11/2007 18:28	45.91620	-129.98945	245.0	1530.5	Dizzy. Jason is spinning.
8/11/2007 18:28	45.91623	-129.98944	351.5	1530.6	Positioning Jason for benchmark reading.
8/11/2007 18:30	45.91612	-129.98949	38.8	1532.4	This is benchmark #4 at marker #65 near Bag City marker #36.
8/11/2007 18:31	45.91612	-129.98949	37.8	1532.3	Removing instrument from basket.
8/11/2007 18:32	45.91613	-129.98950	37.4	1532.3	Placing instrument on benchmark with cable toward Jason.
8/11/2007 18:33	45.91614	-129.98951	37.3	1532.3	DV tape changing.
8/11/2007 18:33	45.91614	-129.98951	37.3	1532.3	Other Instrument moved as basket was stowed so repositioning.
8/11/2007 18:34	45.91615	-129.98951	37.7	1532.3	In place again. Starting measurement at Bag City.
8/11/2007 18:59	45.91613	-129.98950	37.7	1532.5	Done with the MPR recording here.
8/11/2007 19:00	45.91612	-129.98950	37.9	1532.5	Time to recover the MPR and then head out for some fluid sampling.
8/11/2007 19:06	45.91601	-129.98956	37.1	1531.6	Trying to position a float out of the view of the camera.
8/11/2007 19:07	45.91597	-129.98956	39.7	1530.5	Heading NE to the Bag City vent.
8/11/2007 19:09	45.91624	-129.98928	145.2	1532.2	Moving to the area where there is the best flow.
8/11/2007 19:09	45.91621	-129.98928	142.9	1533.2	You can see some shimmering in the area with the bacterial mat growing on the tubeworms.
8/11/2007 19:12	45.91627	-129.98924	168.8	1533.3	Getting ready to do some fluid samples.
8/11/2007 19:21	45.91626	-129.98927	168.4	1533.3	Some HD is being recorded.
8/11/2007 19:22	45.91625	-129.98927	168.4	1533.3	<b>J289-HFS-024</b> Starting Unfiltered Piston sample #6.
8/11/2007 19:27	45.91625	-129.98926	168.4	1533.3	J289-HFS-024 End of unfiltered piston #6 at Bag city Tmax=13.4 Tavg=12.7 Vol=730 T2=8.
8/11/2007 19:28	45.91626	-129.98926	168.5	1533.3	<b>J289-HFS-025</b> Starting unfiltered piston #7.
8/11/2007 19:28	45.91626	-129.98926	168.5	1533.3	Stopped HD.
8/11/2007 19:32	45.91626	-129.98927	168.6	1533.3	J289-HFS-025 End of unfiltered piston #7 - Tmax=13.6 Tavg=13.1 Vol=705 T2=8.2.
8/11/2007 19:34	45.91626	-129.98928	168.7	1533.3	<b>J289-HFS-026</b> Starting Sterivex filter #13.
8/11/2007 19:54	45.91626	-129.98927	169.3	1533.4	J289-HFS-026 End of Sterivex #13 - Tmax=13.7 Tavg=13.2 Vol=3150 T2=8.5.
8/11/2007 19:54	45.91626	-129.98927	169.3	1533.4	Moving the probe around a little to look for warmer flow.

289 Date-Time	Latitude	Longitude	Heading	Depth	Event
8/11/2007 19:56	45.91626	-129.98928	169.3	1533.4	Starting Sterivex filter #14.
8/11/2007 19:57	45.91625	-129.98928	169.3	1533.4	<b>J289-HFS-027</b> Sterivex filter #14 started at Bag city
8/11/2007 20:12	45.91624	-129.98929	169.3	1533.4	J289-HFS-027 End of Sterivex #14 at Bag city - Tmax=14.7 Tavg=14.4 Vol=2500 T2=9 SigmaT=0.14.
8/11/2007 20:13	45.91623	-129.98930	169.3	1533.4	<b>J289-HFS-028</b> Starting filtered bag #21 at Bag City.
8/11/2007 20:16	45.91629	-129.98929	169.3	1533.4	J289-HFS-028 End of filtered bag #21 at Bag City - Tmax=14.7 Tavg=14.5 Vol=529 T2=8.9 SigmaT=0.10.
8/11/2007 20:17	45.91629	-129.98928	169.3	1533.4	<b>J289-HFS-029</b> Starting filtered bag #23 at Bag City.
8/11/2007 20:21	45.91620	-129.98929	169.2	1533.4	Done with the HFS sampling. It is completely filled up.
8/11/2007 20:21	45.91614	-129.98930	169.3	1533.4	J289-HFS-029 End of Filtered bag #23 - Tmax=14.6 Tavg=14.4 SigmaT=0.17 Vol=560 T2=9.0.
8/11/2007 20:22	45.91639	-129.98925	169.2	1533.4	Stowing the HFS wand.
8/11/2007 20:23	45.91670	-129.98919	169.1	1533.4	Preparing to do a flyby of the tubeworms at Bag City and recording it on HD.
8/11/2007 20:23	45.91679	-129.98917	170.0	1533.2	Started HD recording.
8/11/2007 20:30	45.91604	-129.98919	222.7	1532.1	Crossing some nice lava arches.
8/11/2007 20:31	45.91599	-129.98928	321.7	1528.3	Stopping the HD recording.
8/11/2007 20:32	45.91617	-129.98927	167.8	1516.7	Next is off to the South Pillow Mound.
8/11/2007 20:33	45.91616	-129.98932	167.6	1516.5	This will be a long transit. Close to 4 hours.
8/12/2007 0:32	45.87084	-130.00110	351.1	1716.5	Back on bottom at benchmark 66 - South Pillow Mound
8/12/2007 0:35	45.87110	-130.00107	12.0	1719.5	Positioning MPR on benchmark
8/12/2007 0:35	45.87110	-130.00107	12.0	1719.5	Starting pressure recording
8/12/2007 0:59	45.87092	-130.00106	12.6	1719.5	Pressure recording completed
8/12/2007 1:04	45.87047	-130.00112	200.2	1718.3	Leaving benchmark to explore fissure and follow it south
8/12/2007 1:07	45.87015	-130.00116	254.0	1721.0	Starting some HD recordings.
8/12/2007 1:08	45.87014	-130.00116	254.3	1721.0	<b>J289-ROCK-030</b> Taking a rock sample here. (originally sample J289-GEO-030)
8/12/2007 1:08	45.87014	-130.00116	254.2	1721.0	J289-ROCK-030 This is near the South Pillow Mound.
8/12/2007 1:09	45.87013	-130.00116	253.7	1721.0	J289-ROCK-030 In the port milkcrate on the platform.
8/12/2007 1:13	45.86887	-130.00128	207.9	1719.6	Some white staining.
8/12/2007 1:15	45.86835	-130.00138	207.1	1719.1	The 2 fissures meet up into a single larger one.
8/12/2007 1:17	45.86849	-130.00142	199.3	1719.6	There are some nice pillow lavas on the bottom of the fissure.
8/12/2007 1:19	45.86838	-130.00144	200.0	1719.1	Starting to really see the lava in the fissure.
8/12/2007 1:24	45.86739	-130.00164	199.7	1718.9	At the end of the large fissure. It is now split into some smaller ones.
8/12/2007 1:30	45.86659	-130.00181	200.1	1717.7	Looks lava is filling the fissure and spilling out.
8/12/2007 1:32	45.86641	-130.00187	200.1	1717.8	Pillows on pillows.
8/12/2007 1:33	45.86603	-130.00197	199.6	1717.7	Fissure is filled with large pillows on either side.
8/12/2007 1:35	45.86568	-130.00204	201.0	1717.5	Fissure is filled to the top.
8/12/2007 1:36	45.86534	-130.00213	201.0	1718.7	Some large pillows that have been pulled apart.
8/12/2007 1:37	45.86530	-130.00214	208.4	1718.7	Black coral which means this is an old flow.
8/12/2007 1:37	45.86512	-130.00219	206.6	1718.7	fissure is deeper here.
8/12/2007 1:38	45.86449	-130.00233	205.8	1718.4	The crack has a small offset then continues.
8/12/2007 1:38	45.86430	-130.00238	208.2	1718.4	The pillows probably broke and fell into the fissure.
8/12/2007 1:39	45.86413	-130.00242	207.8	1718.4	The fissure is obvious again.
8/12/2007 1:40	45.86369	-130.00251	207.1	1718.3	Fissure seems to be narrowing.
8/12/2007 1:41	45.86335	-130.00259	206.9	1718.3	Jumbled pillows and unclear crack.
8/12/2007 1:41	45.86321	-130.00266	207.3	1718.4	There is still some crack.
8/12/2007 1:42	45.86305	-130.00273	220.9	1717.5	Pressure ridge maybe.
8/12/2007 1:43	45.86266	-130.00278	252.2	1715.7	Maybe a small inflation mound.
8/12/2007 1:43	45.86217	-130.00286	216.3	1717.3	Very small crack at the edge of the mound.
8/12/2007 1:46	45.86285	-130.00287	291.6	1714.8	Preparing to come up.
8/12/2007 1:47	45.86285	-130.00287	291.8	1714.7	Grabbing the drop weight.
8/12/2007 1:51	45.86170	-130.00446	27.5	1685.7	Bringing Jason to the surface.
8/12/2007 2:49	45.86158	-130.00466	165.7	1.6	Jason at surface
8/12/2007 2:51	45.86160	-130.00467	167.9	1.1	Medea on deck
8/12/2007 2:55	45.86164	-130.00470	132.8	0.3	Jason on deck

## 6.5.5 J2-290 Axial CASM

**J2-290 CASM** [J2-290 Bottom time: 10:19] Return dive to CASM. Ground fault in Kraft arm prevented use during this dive; all samples collected with Schilling. Landed at the T&S Spires site. 12 samples taken (4 HFS and 1 GT at high-temperature vent; 7 HFS at diffuse site). Moved to Sheperd Vent site and took 3 HFS and 1 PIP sample in diffuse flow. Moved over to Lamphere site where activity was viewed as inactive. Remainder of dive was geological exploration of northern caldera floor investigating bathymetric targets derived from MBARI AUV data. Visited sheet flows, lava channels, pits, older pillow flows and a cone. Collected 5 samples (5 rocks and 1 sediment pushcore).

J290 Date Time	Latitude	Longitude	Heading	Depth	Event
8/13/2007 3:16	45.87030	-130.00438	0.0	0.0	powered up for launch
8/13/2007 3:21	45.87031	-130.00439	70.2	1.0	Medea in water
8/13/2007 3:22	45.87032	-130.00443	338.1	2.4	Jason in water
8/13/2007 3:22	45.87032	-130.00444	326.2	2.5	Pin is pulled
8/13/2007 3:22	45.87032	-130.00444	325.0	2.7	Tether in water
8/13/2007 3:23	45.87033	-130.00446	316.3	5.1	Starting down
8/13/2007 4:10	45.87020	-130.00430	82.5	1548.4	Heading down-altitude registering on Jason.
8/13/2007 4:10	45.98923	-130.02713	82.2	1551.8	Reset doppler.
8/13/2007 4:11	45.98925	-130.02710	83.6	1572.6	See the bottom.
8/13/2007 4:11	45.98922	-130.02712	231.5	1573.9	First stop is T+S Spires. Right on target in front of us.
8/13/2007 4:11	45.98920	-130.02713	232.5	1575.4	Video cams on.
8/13/2007 4:14	45.98912	-130.02720	270.8	1576.3	Going to sample hot water first in the same spot as J2-288 where spire collapsed during sampling.
8/13/2007 4:14	45.98912	-130.02720	269.3	1576.2	Spire has rebuilt some already.
8/13/2007 4:14	45.98912	-130.02720	279.5	1576.4	Basket out.
8/13/2007 4:15	45.98911	-130.02720	277.7	1576.6	Jason in position in front of 3 smokers at top of T+S Spires.
8/13/2007 4:16	45.98911	-130.02720	277.7	1576.7	Big puff of smoke from near chimney.
8/13/2007 4:18	45.98912	-130.02720	276.9	1576.7	Ground fault big time.
8/13/2007 4:19	45.98912	-130.02720	277.8	1576.7	Kraft arm ground fault.
8/13/2007 4:20	45.98912	-130.02720	277.8	1576.7	Going to try to sample with other arm (Schilling).
8/13/2007 4:23	45.98912	-130.02720	278.0	1576.7	HD cam was all black for first few minutes.
8/13/2007 4:25	45.98911	-130.02720	277.6	1576.7	Arm has HFS wand.
8/13/2007 4:26	45.98911	-130.02720	278.1	1576.7	Wand inside chimney orifice.
8/13/2007 4:26	45.98911	-130.02720	278.1	1576.7	Almost inside-excavating slighting as chimney crumbles.
8/13/2007 4:27	45.98911	-130.02720	278.2	1576.7	Chimney has collapsed.
8/13/2007 4:27	45.98911	-130.02720	278.6	1576.7	Waiting for the smoke and debris to clear.
8/13/2007 4:28	45.98912	-130.02718	278.8	1575.2	Wand was dropped and Jason is retrieving
8/13/2007 4:28	45.98912	-130.02718	279.0	1575.3	Wand is on basket.
8/13/2007 4:34	45.98912	-130.02718	278.8	1575.3	Arm has wand again.
8/13/2007 4:35	45.98911	-130.02720	282.0	1576.4	Going to try another sample attempt.
8/13/2007 4:35	45.98911	-130.02720	280.2	1576.7	Carefully approaching vent
8/13/2007 4:36	45.98911	-130.02720	280.3	1576.7	Wand near orifice.
8/13/2007 4:37	45.98911	-130.02720	280.2	1576.7	In hot water. Slight reposition and now T going back down.
8/13/2007 4:37	45.98911	-130.02720	280.2	1576.8	T going up.
8/13/2007 4:37	45.98911	-130.02720	280.2	1576.7	T over 285.
8/13/2007 4:38	45.98911	-130.02720	280.2	1576.7	T is 305.
8/13/2007 4:39	45.98912	-130.02720	280.2	1576.7	J290-HFS-001 T reached 306.5 before pump went out briefly.
8/13/2007 4:40	45.98912	-130.02720	280.3	1576.8	J290-HFS-001 Filtered bag #23. Starting.
8/13/2007 4:41	45.98910	-130.02772	280.1	1576.8	J290-HFS-001 Pump stopped again for a second and is restarting.
8/13/2007 4:42	45.98910	-130.02772	280.2	1576.8	J290-HFS-001 Can see a lot of exhaust now as just a minute ago there was none.
8/13/2007 4:43	45.98910	-130.02772	280.2	1576.8	J290-HFS-001 Stopped.
8/13/2007 4:44	45.98910	-130.02772	280.2	1576.7	J290-HFS-001 Tmax=307.2 Tavg=301.8 vol=437 T2=92
8/13/2007 4:44	45.98910	-130.02772	280.1	1576.7	Fired PORT GT same orifice.
8/13/2007 4:45	45.98910	-130.02771	280.2	1576.8	J290-GT-002 Did not see anything on the first firing. Second fire saw a blip.
8/13/2007 4:46	45.98910	-130.02771	280.2	1576.8	J290-HFS-003 Piston #1 unfiltered.

J290 Date Time	Latitude	Longitude	Heading	Depth	Event
8/13/2007 4:47	45.98910	-130.02771	280.2	1576.8	J290-HFS-003 Starting #1 now.
8/13/2007 4:47	45.98910	-130.02771	280.2	1576.8	J290-HFS-003 Same place as last 2 samples.
8/13/2007 4:50	45.98910	-130.02770	280.3	1576.8	J290-HFS-003 Stopping.
8/13/2007 4:51	45.98910	-130.02770	280.3	1576.8	J290-HFS-003 Tmax=307.6 Tavg=307.3 vol=495 T2=94
8/13/2007 4:52	45.98910	-130.02770	280.4	1576.8	J290-HFS-004 Piston #2 unfiltered. HD on
8/13/2007 4:54	45.98910	-130.02770	280.4	1576.8	J290-HFS-004 Stopping sample.
8/13/2007 4:54	45.98910	-130.02770	280.4	1576.8	J290-HFS-004 Tmax=307.7 Tavg=307.3 vol=382 T2=94
8/13/2007 4:55	45.98910	-130.02769	280.5	1576.9	J290-HFS-005 Filtered bag #22. Starting.
8/13/2007 4:58	45.98910	-130.02769	280.5	1576.8	J290-HFS-005 Stopping sample.
8/13/2007 4:59	45.98910	-130.02769	280.5	1576.9	J290-HFS-005 Tmax=308 Tavg=307.4 vol=267 T2=93 filtered was clogged.
8/13/2007 4:59	45.98910	-130.02769	280.4	1576.8	J290-HFS-005 Last sample at this orifice.
8/13/2007 5:00	45.98910	-130.02768	280.5	1576.9	Schilling is putting the wand back on the basket.
8/13/2007 5:00	45.98911	-130.02767	280.7	1576.8	Still gripping the wand while looking for a diffuse venting area.
8/13/2007 5:00	45.98914	-130.02766	281.5	1576.8	Stopping HD.
8/13/2007 5:01	45.98915	-130.02766	291.2	1579.4	Moving down the sulfide to the right looking for diffuse area.
8/13/2007 5:02	45.98915	-130.02766	290.0	1579.4	Going to have to regrip the wand to get angle right for sample.
8/13/2007 5:04	45.98915	-130.02765	290.4	1579.4	Trying to get a good angle and grip.
8/13/2007 5:09	45.98915	-130.02764	250.2	1578.5	Got a new grip on wand and will search for diffuse shimmering water at a good angle.
8/13/2007 5:14	45.98915	-130.02765	240.4	1579.1	Searching around short sulfide with no smoke and so far only 5 and 7degC.
8/13/2007 5:19	45.98914	-130.02764	297.7	1579.7	Ship lost GPS.
8/13/2007 5:20	45.98914	-130.02765	297.5	1579.7	Can't position probe with this arm.
8/13/2007 5:22	45.98914	-130.02765	297.5	1579.7	Not working so pulling wand back out. Worried about hoses.
8/13/2007 5:23	45.98914	-130.02765	297.8	1579.7	Trying to stow wand.
8/13/2007 5:23	45.98914	-130.02765	297.9	1579.7	Ship is having difficulties with satellites and GPS.
8/13/2007 5:25	45.98914	-130.02765	298.0	1579.7	Found a good spot in a clump of limpets-over 30deg.
8/13/2007 5:25	45.98914	-130.02765	298.2	1579.8	Ship is ok now.
8/13/2007 5:26	45.98914	-130.02765	298.0	1579.8	Taking DSC of this site. Looks good for sample.
8/13/2007 5:27	45.98914	-130.02765	298.0	1579.7	J290-HFS-006 Ship is taking control back.
8/13/2007 5:28	45.98914	-130.02764	297.6	1579.8	J290-HFS-006 Virus filtered bag #21 starting.
8/13/2007 5:29	45.98914	-130.02764	298.0	1579.8	J290-HFS-006 Probe is in limpet and worm clump (submerged) and clear flow from exhaust.
8/13/2007 5:32	45.98913	-130.02765	297.2	1579.8	J290-HFS-006 Stopping.
8/13/2007 5:32	45.98913	-130.02765	297.6	1579.9	J290-HFS-006 Tmax=44.9 Tavg=42.9 vol=623 T2=23.
8/13/2007 5:33	45.98913	-130.02765	297.5	1579.9	J290-HFS-007 Filtered bag #20. Start.
8/13/2007 5:33	45.98913	-130.02765	297.5	1579.9	J290-HFS-007 Jason has control of ship again.
8/13/2007 5:37	45.98913	-130.02766	297.3	1579.9	J290-HFS-007 Stop.
8/13/2007 5:38	45.98913	-130.02766	297.5	1579.9	J290-HFS-007 Tmax=41.2 Tavg=40.2 vol=687 T2=24.
8/13/2007 5:39	45.98913	-130.02766	297.6	1579.8	J290-HFS-008 Filtered bag #19 starting.
8/13/2007 5:43	45.98913	-130.02768	297.9	1579.8	J290-HFS-008 Stopping sample.
8/13/2007 5:43	45.98912	-130.02768	297.9	1579.8	J290-HFS-008 Tmax=45.4 Tavg=43.5 vol=705 T2=22.
8/13/2007 5:45	45.98913	-130.02768	297.9	1579.8	J290-HFS-009 Starting #17 filtered bag.
8/13/2007 5:49	45.98913	-130.02768	298.0	1579.8	J290-HFS-009 Stopping sample.
8/13/2007 5:50	45.98913	-130.02768	298.1	1579.8	J290-HFS-009 Tmax=40.3 Tavg=36.4 vol=694 T2=20.
8/13/2007 5:50	45.98913	-130.02768	297.9	1579.8	J290-HFS-010 Temperature is dropping but wand hasn't moved.
8/13/2007 5:51	45.98913	-130.02768	297.9	1579.8	J290-HFS-010 Sterivex filter #13 starting.
8/13/2007 5:58	45.98913	-130.02767	297.9	1580.0	J290-HFS-010 Down to 17deg. Temperature continued going down while sampling.
8/13/2007 5:58	45.98913	-130.02767	297.5	1580.0	J290-HFS-010 Moved wand while still immersed in limpet clump. Going up slightly.
8/13/2007 5:59	45.98913	-130.02767	297.6	1580.0	J290-HFS-010 Moved out of clump and temperature fell. Trying to find another spot.
8/13/2007 5:59	45.98913	-130.02766	297.9	1580.0	J290-HFS-010 Pushed wand down in limpets and all cold.
8/13/2007 6:01	45.98913	-130.02766	297.2	1580.0	J290-HFS-010 Moving wand all around. Found another spot. Back in flow.

J290 Date Time	Latitude	Longitude	Heading	Depth	Event
8/13/2007 6:02	45.98913	-130.02766	297.4	1580.0	J290-HFS-010 Smoking out the back exhaust.
8/13/2007 6:03	45.98913	-130.02766	297.7	1580.1	J290-HFS-010 Sterivex stopped at 05:54 by itself and now has been restarted.
8/13/2007 6:24	45.98914	-130.02761	298.0	1580.2	J290-HFS-010 Stopping sample.
8/13/2007 6:24	45.98914	-130.02761	297.9	1580.1	J290-HFS-010 Tmax=78.8 Tavg=75.9 vol=2808 T2=36.
8/13/2007 6:25	45.98914	-130.02760	298.1	1580.1	Sterivex #14 starting (DNA sample) .
8/13/2007 6:26	45.98914	-130.02760	298.0	1580.1	J290-HFS-011 Last entry was start of this sample.
8/13/2007 6:46	45.98915	-130.02755	298.1	1580.3	J290-HFS-011 Stopping sample.
8/13/2007 6:47	45.98915	-130.02755	298.1	1580.3	J290-HFS-011 Sterivex #14 - Tmax=76.5 Tavg=74.5 Vol=2505 T2=35.
8/13/2007 6:48	45.98915	-130.02755	297.9	1580.3	J290-HFS-012 Starting unfiltered piston #3.
8/13/2007 6:52	45.98915	-130.02755	297.9	1580.3	J290-HFS-012 End of unfiltered piston #3 at T and S. Tmax=73.8 Tavg=73.0 Vol=711 T2=35.
8/13/2007 6:53	45.98915	-130.02755	297.9	1580.3	We are done sampling at T and S.
8/13/2007 6:59	45.98915	-130.02755	297.9	1580.3	Heading to Shepherd vent.
8/13/2007 7:00	45.98916	-130.02754	293.5	1577.3	It is about 30m due south.
8/13/2007 7:10	45.98883	-130.02745	142.3	1573.4	Passed by an octopus.
8/13/2007 7:17	45.98892	-130.02728	15.0	1573.1	Coming up to Shepherd vent.
8/13/2007 7:18	45.98895	-130.02726	15.1	1571.4	Looking for the best flow.
8/13/2007 7:19	45.98894	-130.02726	15.3	1571.2	There is some shimmering around the tubeworms.
8/13/2007 7:22	45.98896	-130.02713	91.2	1571.1	Looking around for some better flow.
8/13/2007 7:25	45.98884	-130.02752	257.1	1580.6	Here is some good flow coming out of this vent.
8/13/2007 7:25	45.98884	-130.02752	258.1	1580.3	There is a lot of floc.
8/13/2007 7:26	45.98884	-130.02753	261.4	1581.7	We are still saying this is Shepherd vent.
8/13/2007 7:27	45.98883	-130.02754	251.8	1581.8	Starting some HD recording.
8/13/2007 7:30	45.98883	-130.02753	255.6	1581.6	Positioning the wand to get the highest temperature.
8/13/2007 7:35	45.98884	-130.02753	255.5	1581.8	J290-HFS-013 Starting unfiltered piston #4 at Shepherd.
8/13/2007 7:35	45.98884	-130.02752	255.5	1581.9	Stopping the HD recording.
8/13/2007 7:39	45.98884	-130.02752	255.1	1581.9	J290-HFS-013 End of unfiltered piston #4 at Shepherd. Tmax=27.5 Tavg=27.1 Vol=714 T2=16.
8/13/2007 7:40	45.98884	-130.02752	255.0	1581.9	J290-HFS-014 Starting filtered bag #16.
8/13/2007 7:46	45.98884	-130.02750	254.2	1581.8	J290-HFS-014 End of filtered bag #16. Tmax=25.2 Tavg=21.7 Vol=545 T2=13.
8/13/2007 7:48	45.98884	-130.02750	254.3	1582.0	J290-HFS-015 Starting Sterivex filter #10.
8/13/2007 8:06	45.98885	-130.02747	254.8	1581.8	J290-HFS-015 End of Sterivex #10 at Shepherd vent. Tmax=27.9 Tavg=25 Vol=3049 T2=13.
8/13/2007 8:07	45.98885	-130.02747	254.9	1581.8	Done sampling here at Shepherd.
8/13/2007 8:07	45.98885	-130.02747	254.9	1581.8	We are going to head up to Lamphere.
8/13/2007 8:09	45.98885	-130.02746	252.9	1581.8	We are going to use the high volume sampler now.
8/13/2007 8:13	45.98885	-130.02746	252.6	1581.8	J290-Pump-016 Starting the pelagic pump - high volume sampler. Running it at full.
8/13/2007 8:13	45.98885	-130.02746	252.7	1581.8	J290-Pump-016 The initial flow rate is 0.8.
8/13/2007 8:13	45.98885	-130.02746	252.8	1581.8	J290-Pump-016 We are still at Shepherd vent.
8/13/2007 8:33	45.98884	-130.02743	252.8	1581.6	J290-Pump-016 It is still at about 0.8 but we are stopping all the same.
8/13/2007 8:35	45.98884	-130.02742	252.5	1581.7	The pump has been successfully stowed.
8/13/2007 8:36	45.98886	-130.02742	228.9	1580.8	We are going to take a look at the other side of the venting area.
8/13/2007 8:39	45.98883	-130.02736	51.9	1580.7	Heading to Lamphere and the Geologists will be taking over.
8/13/2007 8:54	45.98946	-130.02666	200.6	1568.2	At Lamphere now.
8/13/2007 8:56	45.98935	-130.02671	37.5	1568.8	It is quite a nice structure.
8/13/2007 8:59	45.98940	-130.02678	127.0	1568.2	All the vents here look largely inactive.
8/13/2007 9:09	45.98867	-130.02674	182.9	1575.6	Passing over a lava spiral.
8/13/2007 9:11	45.98856	-130.02675	185.1	1575.3	This area had very rapid flows.
8/13/2007 9:14	45.98829	-130.02674	169.9	1575.9	Lots of sponges here too.
8/13/2007 9:18	45.98806	-130.02673	170.2	1574.6	Close up of the sponges here. They probably are feeding on bacteria from the vents.
8/13/2007 9:18	45.98799	-130.02674	173.0	1575.1	This lava if composed of crunchy glass.
8/13/2007 9:20	45.98789	-130.02678	166.5	1575.4	A seasquirt.
8/13/2007 9:26	45.98720	-130.02696	175.4	1575.5	Still lots of sponges.

J290 Date Time	Latitude	Longitude	Heading	Depth	Event
8/13/2007 9:27	45.98715	-130.02694	179.8	1575.3	We have been driving along the cleft.
8/13/2007 9:30	45.98686	-130.02692	178.3	1575.0	It looks like a broken surface that oxidized here.
8/13/2007 9:31	45.98677	-130.02707	195.5	1575.8	We are seeing some sheet flows here.
8/13/2007 9:32	45.98671	-130.02714	200.6	1576.8	There are some large blocks that have rafted out into the flow.
8/13/2007 9:32	45.98664	-130.02718	195.4	1577.6	The sponges are gone. They don't like the smooth flows.
8/13/2007 9:35	45.98612	-130.02720	182.5	1576.3	Some rockier crust here. The sponges are present again.
8/13/2007 9:39	45.98581	-130.02732	166.1	1577.7	Back into the sheet flows.
8/13/2007 9:39	45.98577	-130.02725	163.3	1577.4	Getting close to target #3. It is in a low a ways south of the chasm.
8/13/2007 9:41	45.98573	-130.02748	189.0	1577.9	Here a nice smooth hill in the lava flow here.
8/13/2007 9:42	45.98560	-130.02767	202.8	1577.3	The low could be caused by the pre-existing topography.
8/13/2007 9:49	45.98480	-130.02716	156.1	1575.8	We are not in the channel according to the map but judging by the terrain we still are.
8/13/2007 9:49	45.98479	-130.02716	155.7	1575.8	There must be an offset in the map.
8/13/2007 9:53	45.98441	-130.02703	146.1	1573.7	At a drain edge here.
8/13/2007 9:56	45.98410	-130.02670	183.3	1575.1	Crossing some lava pillars here.
8/13/2007 10:00	45.98344	-130.02644	149.0	1574.7	A single pillar here.
8/13/2007 10:04	45.98299	-130.02608	154.9	1577.3	We are now down in the low.
8/13/2007 10:05	45.98295	-130.02610	150.3	1576.9	We are starting to get a few LBL fixes. It looks to be about 10m E of the current doppler position.
8/13/2007 10:05	45.98291	-130.02605	151.1	1576.9	So it looks like the map may not be offset.
8/13/2007 10:07	45.98269	-130.02589	151.5	1576.9	Reset the doppler so the position should be more accurate.
8/13/2007 10:09	45.98240	-130.02571	149.9	1574.7	The navigation matches the map much better now.
8/13/2007 10:17	45.98145	-130.02502	151.6	1574.2	Crossing some pits that seem to show up on the map.
8/13/2007 10:19	45.98108	-130.02471	171.2	1574.7	Coming near to point 4.
8/13/2007 10:25	45.98044	-130.02445	183.4	1576.7	At about point 4 here. There is a lot of sediment here.
8/13/2007 10:32	45.97946	-130.02449	183.2	1576.7	We think we are going up the older pillow flow.
8/13/2007 10:32	45.97945	-130.02449	183.3	1576.4	The transition was very subtle.
8/13/2007 10:38	45.97885	-130.02490	225.3	1574.7	Entering into a collapsed area.
8/13/2007 10:39	45.97871	-130.02505	173.8	1577.8	Settling down into the rubble pile here.
8/13/2007 10:40	45.97871	-130.02504	183.2	1578.7	Looking for some rocks to sample.
8/13/2007 10:45	45.97869	-130.02500	178.7	1578.6	This is site #5.
8/13/2007 10:46	45.97869	-130.02499	176.9	1578.5	The crust is really thick and we are not finding any small chunks.
8/13/2007 10:50	45.97872	-130.02498	177.5	1578.8	Still hunting for a rock we can pick up.
8/13/2007 10:51	45.97873	-130.02498	176.6	1578.8	J290-Geo-017 Collected a rock sample.
8/13/2007 10:57	45.97865	-130.02503	173.5	1575.0	J290-Geo-017 Nav Doppler Reset
8/13/2007 10:58	45.97860	-130.02500	173.0	1575.0	Headed south further into the older flow towards a flatter area.
8/13/2007 11:04	45.97829	-130.02494	172.2	1575.0	Lots of pillowy stuff.
8/13/2007 11:12	45.97762	-130.02473	170.2	1575.6	Pillows-pillows everywhere.
8/13/2007 11:13	45.97751	-130.02471	172.7	1576.5	Still headed south across pillows.
8/13/2007 11:17	45.97720	-130.02464	173.4	1582.1	Moved into striated sheet flows with a few pillows.
8/13/2007 11:19	45.97719	-130.02465	204.9	1582.5	Looks like the pillow flows flowed from the north onto the sheet flow.
8/13/2007 11:19	45.97710	-130.02463	171.4	1581.8	Inflation mound.
8/13/2007 11:20	45.97703	-130.02463	174.1	1582.0	Moving south across the sheet flows.
8/13/2007 11:23	45.97683	-130.02462	185.0	1583.5	Folded pile of basalt.
8/13/2007 11:24	45.97685	-130.02464	184.9	1583.5	Looking for a sample to take.
8/13/2007 11:25	45.97690	-130.02470	183.0	1583.5	This stuff crumbles easily.
8/13/2007 11:28	45.97690	-130.02469	178.2	1583.3	Moving the ROV over a bit.
8/13/2007 11:29	45.97689	-130.02470	184.3	1583.4	Trying again to get a sample from this jumbled pile.
8/13/2007 11:30	45.97685	-130.02469	185.3	1582.7	Giving up for now and heading south.
8/13/2007 11:32	45.97677	-130.02470	211.2	1576.9	Found a levy that was breached a bit.
8/13/2007 11:33	45.97675	-130.02474	236.5	1579.9	Drained lobate flow on the top of the pond.
8/13/2007 11:34	45.97675	-130.02473	237.6	1579.9	J290-Geo-018 Attempting to collect a sample of the drained lobate.
8/13/2007 11:35	45.97675	-130.02471	232.9	1579.9	J290-Geo-018 Got a sample.
8/13/2007 11:37	45.97675	-130.02466	231.6	1579.5	Stowing the sample in the basket.

J290 Date Time	Latitude	Longitude	Heading	Depth	Event
8/13/2007 11:40	45.97666	-130.02457	179.2	1580.1	Moving south deeper into the pond towards a hump in the bathymetry.
8/13/2007 11:41	45.97677	-130.02450	195.8	1580.2	Nav Doppler Reset
8/13/2007 11:41	45.97671	-130.02453	194.3	1582.3	Picking up the speed a bit.
8/13/2007 11:46	45.97645	-130.02460	195.9	1582.4	Rough jumbly stuff.
8/13/2007 11:54	45.97565	-130.02459	191.5	1583.7	Still moving south across a jumbled sheet flow.
8/13/2007 11:56	45.97546	-130.02464	187.3	1578.7	Coming to a wall.
8/13/2007 11:56	45.97543	-130.02465	190.3	1579.2	Going up and over a mound.
8/13/2007 11:57	45.97534	-130.02477	244.7	1574.2	Spatter on the top.
8/13/2007 11:58	45.97519	-130.02481	195.0	1575.5	Moving along the crest of the mound.
8/13/2007 12:01	45.97495	-130.02477	198.4	1576.1	Starting to move down from the southern edge of the mound.
8/13/2007 12:03	45.97476	-130.02477	195.3	1582.3	Coming into a chanel with a sheet flow.
8/13/2007 12:04	45.97473	-130.02477	189.7	1584.0	Bottom is sedimented.
8/13/2007 12:08	45.97473	-130.02477	189.5	1583.9	Blocks are sitting on the boundary of the sheet flow chanel.
8/13/2007 12:11	45.97473	-130.02477	264.0	1583.5	Starting to move east along the channel.
8/13/2007 12:14	45.97467	-130.02485	256.1	1582.6	Turned into more jumbled flow.
8/13/2007 12:19	45.97446	-130.02516	257.4	1581.4	Looking around to see if there is any smoother stuff.
8/13/2007 12:20	45.97449	-130.02519	254.8	1581.5	Does not look like there is any.
8/13/2007 12:30	45.97452	-130.02588	256.4	1581.5	Brisingidae.
8/13/2007 12:32	45.97452	-130.02607	257.9	1581.6	Still lots of jumbled flows.
8/13/2007 12:32	45.97452	-130.02606	266.8	1581.3	Starting to head north a bit.
8/13/2007 12:41	45.97480	-130.02593	353.6	1582.4	Setting up to try collecting another sample.
8/13/2007 12:43	45.97483	-130.02591	9.0	1583.2	J290-Geo-019 Got a rock sample.
8/13/2007 12:45	45.97490	-130.02591	340.9	1583.1	Heading north again.
8/13/2007 12:45	45.97494	-130.02593	347.4	1583.4	Moving back toward the flat area.
8/13/2007 12:46	45.97500	-130.02595	345.9	1582.3	Looks like an a'a flow.
8/13/2007 12:49	45.97519	-130.02598	347.3	1582.7	Moving into the flat.
8/13/2007 12:49	45.97521	-130.02599	74.2	1583.1	Looking at the contact between the rougher and the flat surface.
8/13/2007 12:50	45.97523	-130.02600	130.2	1583.7	Looks like sheet flow runs into the jumbled flow.
8/13/2007 12:53	45.97532	-130.02603	345.5	1584.2	Driving out into the lake.
8/13/2007 12:55	45.97552	-130.02610	338.1	1584.1	Starting to move west towards point 11.
8/13/2007 13:01	45.97558	-130.02618	312.8	1584.1	Approaching the cone.
8/13/2007 13:02	45.97558	-130.02618	312.7	1584.1	There is a pit on the flank of the cone.
8/13/2007 13:08	45.97567	-130.02633	308.0	1583.7	Looking at the contact between laminar and turbulent flow.
8/13/2007 13:10	45.97572	-130.02640	312.3	1583.8	Nice linear buckle.
8/13/2007 13:13	45.97579	-130.02656	293.1	1577.6	Here is the bathtub ring with the pillows behind.
8/13/2007 13:13	45.97581	-130.02661	293.9	1577.0	Here are the cone pillows.
8/13/2007 13:14	45.97580	-130.02661	249.4	1576.7	Looking at the contact with the pillows.
8/13/2007 13:15	45.97581	-130.02675	291.5	1572.1	Elongate pillows.
8/13/2007 13:16	45.97583	-130.02684	314.5	1569.8	The area is covered with light sediment.
8/13/2007 13:18	45.97599	-130.02724	318.1	1570.1	The plan is to try to get a push core in the sediment.
8/13/2007 13:20	45.97600	-130.02723	319.5	1570.3	J290-CORE-020 Collecting the push core.
8/13/2007 13:23	45.97601	-130.02728	311.1	1569.8	J290-ROCK-021 Rock sample from a collapsed pillow.
8/13/2007 13:26	45.97624	-130.02761	332.0	1566.1	Moving further up the cone.
8/13/2007 13:28	45.97636	-130.02763	338.9	1565.9	Collapse pit visible in the sonar.
8/13/2007 13:30	45.97643	-130.02767	334.7	1566.4	The pit is in view.
8/13/2007 13:30	45.97644	-130.02767	334.9	1566.5	We are at the edge.
8/13/2007 13:31	45.97650	-130.02774	152.4	1566.5	Looks like the bottom is filled with rubble.
8/13/2007 13:33	45.97651	-130.02777	268.5	1566.4	Moving west about 30 m.
8/13/2007 13:38	45.97648	-130.02789	269.4	1566.6	Coming up to a smaller pit crater to the west.
8/13/2007 13:42	45.97648	-130.02800	268.8	1567.0	J290-ROCK-022 Collecting a sample at the western edge of the small pit.
8/13/2007 13:45	45.97648	-130.02799	227.6	1567.0	Moving south to site 12.
8/13/2007 13:48	45.97649	-130.02797	214.6	1564.6	Pelagic pump fell off the front of the ROV.
8/13/2007 13:48	45.97649	-130.02797	214.6	1564.6	Pulling it back up.
8/13/2007 13:51	45.97648	-130.02796	214.5	1564.6	Fluid sampler t-handle was momentarily caught in the arm joint.
8/13/2007 13:54	45.97649	-130.02793	214.6	1564.6	Still trying to retrieve the pelagic pump.
8/13/2007 13:55	45.97648	-130.02793	214.3	1564.6	Got it.



<b>J290 Date Time</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Heading</b>	<b>Depth</b>	<b>Event</b>
8/13/2007 13:57	45.97647	-130.02801	214.2	1563.8	Moving south off of the cone.
8/13/2007 14:02	45.97647	-130.02810	198.0	1562.2	Anemone.
8/13/2007 14:05	45.97622	-130.02812	180.9	1564.8	Pillows going down the slope of the cone.
8/13/2007 14:11	45.97583	-130.02804	178.2	1562.5	Going down a steep slope.
8/13/2007 14:15	45.97552	-130.02805	179.4	1572.8	Bottom looks shattered at the bottom of the slope.
8/13/2007 14:16	45.97551	-130.02804	189.4	1573.4	Jumbled flow against the cone.
8/13/2007 14:18	45.97526	-130.02818	160.3	1576.6	Still going downslope. Jumbled flow.
8/13/2007 14:22	45.97533	-130.02825	331.2	1575.1	Over the pond area.
8/13/2007 14:24	45.97534	-130.02824	340.3	1576.4	Time for some basket management before coming to the surface.
8/13/2007 14:29	45.97534	-130.02823	339.2	1576.4	Dropping the weight and coming to the surface.
8/13/2007 15:31	45.97537	-130.02885	10.5	1.1	Jason at surface
8/13/2007 15:33	45.97536	-130.02888	352.5	1.7	Medea on deck
8/13/2007 15:38	45.97535	-130.02892	345.1	0.7	Jason on deck
8/13/2007 15:38	45.97535	-130.02892	345.1	0.7	end J2-290

## 6.5.6 J2-291 Axial Northern 1998 Flow

**J2-291 Northern 1998 Flow** [J2-291 Bottom time: 18:21] Started dive at the Marker 33 Site (note: Marker is #55) and located RAS for repositioning. Put MTR 4001 back in vent cover over RAS intake. Took 2 HFS and 1 gas-tight from RAS cover holes. Traveled to Cloud Pit. Recovered MTRs and deployed new double-set. Took one gas tight. Not enough limpets observed at pit for sampling. Moved to venting area to the left of the pit and took a limpet suction sample. Transited to Zen Gardens over collapsed features and lava pillars and visually passed by Nascent. Took 3 HFS samples at southern edge of Zen Gardens. Moved to east side of Zen and took another 2 HFS samples. In a clam area took one additional HFS sample. Next went to N3 site passing over other clam sites. At N3 took 3 HFS and 1 PIP sample in diffuse flow. En route to Forum site observed areas of blue mat and lava flows with collapse and pillars. At Forum took 5 HFS diffuse flow samples. Deployed marker 74 at Forum site. Nearby located new flow contact with collapsed area. In collapse, discovered a small high-temperature chimney and named it Trevi (20m from Forum). Took 3 HFS and 2 GasTight samples. Remainder of dive explored the geology of the northern extent of 1998 lava flow. Morphology of many collapse features, sheet flows and followed a lava channel. Took scoop of hydrothermal sediment. Found some extinct sulfide chimneys. In older flow area south of N3, found some diffuse venting and blue mat in older flow region. East of N3 crossed into 1998 flow again with lots of collapse and pillars. Took sample of sheet flow and core of hydrothermal sediment.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 2:52	-130.02818	45.99042	105.7	1.5	Powering up for launch J2-291
8/14/2007 2:58	-130.02818	45.99043	89.7	1.0	Medea in water
8/14/2007 2:59	-130.02822	45.99045	1.1	3.0	Jason in water
8/14/2007 2:59	-130.02822	45.99045	359.6	2.6	pin is pulled
8/14/2007 2:59	-130.02822	45.99045	1.5	2.8	tether in water
8/14/2007 3:00	-130.02823	45.99048	352.9	5.7	starting down
8/14/2007 3:46	-129.98263	45.93313	108.7	1500.7	On Jason: 1 scoop bag; pelagic impeller pump; push core; MISO; 2 MTR; 2 markers; 3 gastights; suction sampler.
8/14/2007 3:46	-129.98261	45.93312	108.5	1504.5	First task is to locate RAS.
8/14/2007 3:46	-129.98258	45.93312	108.8	1517.5	On bottom.
8/14/2007 3:46	-129.98258	45.93312	109.1	1517.9	Starting videos.
8/14/2007 3:48	-129.98257	45.93315	109.3	1517.8	RAS should be 45m away straight ahead.
8/14/2007 3:51	-129.98234	45.93309	110.1	1517.1	Reset doppler.
8/14/2007 3:52	-129.98225	45.93308	332.8	1517.3	ASNAP enable as BSNAP didn't work.
8/14/2007 3:54	-129.98240	45.93318	7.7	1519.2	Marker 55 in site.
8/14/2007 3:54	-129.98243	45.93319	6.5	1519.2	Benchmark in site. Marker 53.
8/14/2007 3:55	-129.98246	45.93322	352.1	1519.2	Big swirl of lava.
8/14/2007 3:55	-129.98247	45.93323	336.7	1519.1	Ship is moving west.
8/14/2007 3:55	-129.98253	45.93321	230.7	1519.3	We are headed for Marker 33 to locate the RAS.
8/14/2007 3:56	-129.98257	45.93320	227.4	1519.2	Sheet flows with light sediment in folds.
8/14/2007 3:56	-129.98262	45.93319	263.0	1519.2	RAS has Homer #17 and it is 46m away.
8/14/2007 3:57	-129.98270	45.93318	262.9	1519.2	The RAS is in site.
8/14/2007 3:57	-129.98273	45.93318	263.2	1519.2	HD shows RAS well.
8/14/2007 3:58	-129.98275	45.93319	263.0	1519.2	ASNAP is working.
8/14/2007 3:59	-129.98276	45.93319	263.3	1519.1	Waiting for ship and then will grab RAS to move to Marker 33.
8/14/2007 4:00	-129.98284	45.93317	243.8	1519.2	Slowly approaching RAS.
8/14/2007 4:01	-129.98290	45.93315	243.5	1520.7	<b>At RAS</b> and positioning to remove it from its drop anchor.
8/14/2007 4:02	-129.98290	45.93314	241.4	1521.3	Grabbing line and pulling pin. Lost Sharps.
8/14/2007 4:03	-129.98289	45.93314	242.9	1520.8	Holding on to anchor (crab in the way-hitchhiking on basket).
8/14/2007 4:03	-129.98291	45.93314	243.2	1518.8	Moving away from drop site. Anchor links hitching a short ride.
8/14/2007 4:04	-129.98284	45.93317	246.5	1518.2	Links away.
8/14/2007 4:04	-129.98283	45.93319	269.0	1518.6	Heading to Marker 33.
8/14/2007 4:07	-129.98291	45.93319	162.5	1519.1	Heading south to Marker 33 over sheet flows and light sediment.
8/14/2007 4:07	-129.98290	45.93316	152.4	1519.1	Just passed over RAS anchor chain again.
8/14/2007 4:11	-129.98279	45.93316	105.6	1518.6	Searching for Marker 33 as ship and Jason move east.
8/14/2007 4:11	-129.98276	45.93315	145.8	1519.2	Long striated sheet flows.
8/14/2007 4:15	-129.98273	45.93309	57.2	1519.1	Marker 33 is really Marker 55 since 33 disappeared and was replaced by 55.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 4:16	-129.98256	45.93319	85.3	1518.9	We are now heading back to marker 55 seen at the beginning.
8/14/2007 4:17	-129.98251	45.93321	134.3	1518.7	Back at the marker 53 (the benchmark). There is 55 just beyond the tubeworm bush.
8/14/2007 4:18	-129.98238	45.93316	132.8	1520.6	Large staining areas with tubeworms and the crabs all along the edges.
8/14/2007 4:18	-129.98235	45.93315	132.6	1520.5	Putting the RAS on the left side where the intake is in place.
8/14/2007 4:19	-129.98231	45.93316	174.9	1519.9	Great views in HD.
8/14/2007 4:20	-129.98228	45.93315	171.9	1520.8	Placing anchor down adjacent to cover and near crabs.
8/14/2007 4:21	-129.98230	45.93315	139.9	1518.1	Retrieving the intake hose from top of RAS.
8/14/2007 4:26	-129.98230	45.93314	101.1	1519.6	Intake on bottom. One loop in hose to top of instrument.
8/14/2007 4:28	-129.98229	45.93313	49.3	1520.5	Hose is not that long-not a lot of extra length for positioning.
8/14/2007 4:29	-129.98229	45.93312	50.4	1520.5	Jason holding on to MTR to better position and taking loops out of line.
8/14/2007 4:34	-129.98230	45.93312	46.9	1519.9	One loop removed.
8/14/2007 4:34	-129.98231	45.93312	46.9	1519.9	Loops all removed.
8/14/2007 4:36	-129.98232	45.93314	180.0	1520.7	Intake hose now is long enough but not too much slack on this one.
8/14/2007 4:37	-129.98232	45.93314	176.2	1520.9	Removed MTR to the side.
8/14/2007 4:37	-129.98233	45.93314	176.4	1520.8	Want to remove cover and look at flow.
8/14/2007 4:38	-129.98233	45.93314	176.4	1520.8	Grabbing cover.
8/14/2007 4:38	-129.98233	45.93314	176.7	1520.8	Lots of floc under the cover.
8/14/2007 4:40	-129.98232	45.93313	167.4	1520.8	Whole vent used to be covered by the worms now just in concentrated areas.
8/14/2007 4:40	-129.98232	45.93313	167.4	1520.8	Jason has intake hose..
8/14/2007 4:40	-129.98232	45.93313	167.3	1520.8	Want to place hose facing the crack.
8/14/2007 4:41	-129.98233	45.93314	182.1	1520.8	Moving intake back over to site.
8/14/2007 4:42	-129.98233	45.93314	182.4	1520.8	Bacterial floc obscures the view.
8/14/2007 4:43	-129.98233	45.93314	182.0	1520.8	Viewing instrument placement and where flow is concentrated.
8/14/2007 4:43	-129.98233	45.93314	182.1	1520.8	Moving instrument to the right and closer to the crack.
8/14/2007 4:44	-129.98233	45.93314	182.1	1520.8	Moving anchor closer to get some more slack in the intake line.
8/14/2007 4:45	-129.98232	45.93314	181.6	1520.8	Anchor picked up (crab standing by) and moving closer to flow area.
8/14/2007 4:46	-129.98233	45.93313	179.2	1520.8	Moving back to vent area to reposition the intake.
8/14/2007 4:47	-129.98234	45.93313	180.3	1520.8	Picking instrument up and rotating intake to face crack (crab came to investigate).
8/14/2007 4:48	-129.98234	45.93313	180.7	1520.8	Flow looks good with instrument placement.
8/14/2007 4:49	-129.98234	45.93313	180.5	1520.8	Took one DSC but not good angle.
8/14/2007 4:50	-129.98234	45.93313	180.6	1520.8	Picking up cover.
8/14/2007 4:51	-129.98234	45.93313	180.6	1520.9	Placing cover over instrument.
8/14/2007 4:51	-129.98234	45.93313	180.5	1520.9	Waiting for dust to settle.
8/14/2007 4:52	-129.98234	45.93313	180.8	1520.8	Cover flipped over and needs to be repositioned.
8/14/2007 4:52	-129.98234	45.93313	180.9	1520.9	Worms and bacteria on underside of cover.
8/14/2007 4:53	-129.98234	45.93314	180.7	1520.9	Cover turned over.
8/14/2007 4:53	-129.98234	45.93314	180.5	1520.8	Holding over and gently placing on instrument.
8/14/2007 4:54	-129.98234	45.93314	180.6	1520.9	Instrument covered.
8/14/2007 4:54	-129.98234	45.93314	180.7	1520.9	Flow is coming out of cover holes.
8/14/2007 4:55	-129.98234	45.93314	180.3	1520.9	Picking up MTR that was placed aside and putting inside cover holes.
8/14/2007 4:55	-129.98234	45.93314	180.4	1520.9	This MTR is the one placed here a few days ago.
8/14/2007 4:56	-129.98234	45.93314	180.8	1520.9	Grabbed MTR and putting in a hole.
8/14/2007 4:58	-129.98235	45.93314	180.9	1520.9	MTR 4001 is readable in HD.
8/14/2007 4:59	-129.98235	45.93314	180.9	1520.9	Checking all the cables and wires of the instrument.
8/14/2007 4:59	-129.98235	45.93314	181.0	1520.9	Placement looks good. Going to sample at instrument.
8/14/2007 5:01	-129.98235	45.93314	180.6	1520.9	Positioning HFS for sample within a hole cover.
8/14/2007 5:01	-129.98235	45.93314	180.4	1520.9	Wand in place.
8/14/2007 5:02	-129.98235	45.93314	180.7	1520.9	Temperature slowing going up at 16deg.
8/14/2007 5:02	-129.98235	45.93314	180.3	1520.9	Observed flow in exhaust.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 5:04	-129.98235	45.93314	180.5	1520.9	J291-GT-001 Fired STBD.
8/14/2007 5:04	-129.98235	45.93314	180.5	1520.9	J291-GT-001 In hole with T=21.
8/14/2007 5:05	-129.98235	45.93314	180.4	1520.9	J291-HFS-002 Filtered bag #24 starting.
8/14/2007 5:07	-129.98235	45.93314	180.8	1521.0	J291-HFS-002 Pump stalled out and is coming back on.
8/14/2007 5:09	-129.98235	45.93314	180.6	1521.0	J291-HFS-002 Stopped.
8/14/2007 5:10	-129.98235	45.93314	180.5	1521.0	J291-HFS-002 Tmax= 21.5 Tavg=20.6 Vol=619 T2=10.
8/14/2007 5:11	-129.98236	45.93314	180.7	1521.0	J291-HFS-003 Filtered piston #1 starting.
8/14/2007 5:11	-129.98236	45.93314	180.8	1521.0	J291-HFS-003 Same hole in cover.
8/14/2007 5:15	-129.98236	45.93314	180.8	1521.0	J291-HFS-003 Stopping.
8/14/2007 5:15	-129.98236	45.93314	180.9	1521.0	J291-HFS-003 Tmax=21.7 Tavg=21.0 Vol=724 T2=10.5
8/14/2007 5:15	-129.98236	45.93314	181.0	1521.0	J291-HFS-003 SigmaT1=.3.
8/14/2007 5:17	-129.98236	45.93314	180.9	1521.1	Done here and moving to Cloud (due east). Retrieving wand.
8/14/2007 5:20	-129.98236	45.93314	182.2	1520.9	Taking DSC as move away.
8/14/2007 5:23	-129.98232	45.93313	150.9	1520.9	Cloud is about 85m at 070 from here.
8/14/2007 5:23	-129.98231	45.93314	128.8	1520.9	Jason heading for Cloud.
8/14/2007 5:23	-129.98229	45.93315	106.9	1520.8	Sheet flows and cracks with mat.
8/14/2007 5:23	-129.98226	45.93316	34.5	1520.7	Tilted lava plates.
8/14/2007 5:24	-129.98225	45.93317	35.0	1520.8	Old anchor lines on seafloor.
8/14/2007 5:25	-129.98219	45.93323	35.5	1520.2	Smaller tubeworm bush clumps as heading along a stained crack.
8/14/2007 5:25	-129.98217	45.93326	35.6	1519.3	Ridge and place with staining along broken edge.
8/14/2007 5:26	-129.98211	45.93333	46.7	1516.4	Ledge with worms and bacteria. Climbing up an elevated block.
8/14/2007 5:27	-129.98201	45.93337	66.4	1515.2	Small islands of lava structures.
8/14/2007 5:28	-129.98194	45.93338	80.6	1515.3	Flew over edge and lost bottom.
8/14/2007 5:29	-129.98178	45.93339	80.6	1515.4	Large lava pillar.
8/14/2007 5:29	-129.98172	45.93340	80.5	1515.6	Crab on foreground pillar.
8/14/2007 5:30	-129.98168	45.93341	80.8	1515.5	Water is getting cloudy as we approach.
8/14/2007 5:31	-129.98147	45.93343	81.1	1515.5	There is no marker here but the vent is fairly bright.
8/14/2007 5:31	-129.98146	45.93343	81.1	1515.4	Going over jumbled flow.
8/14/2007 5:32	-129.98145	45.93343	101.4	1515.5	Should be a bit south from here. Turning.
8/14/2007 5:32	-129.98145	45.93343	127.2	1515.5	At the top of the lobate flow.
8/14/2007 5:32	-129.98146	45.93342	152.8	1515.4	Vent is down in collapse. Heading over ridge edge and down into collapse.
8/14/2007 5:33	-129.98146	45.93337	153.5	1515.5	Doppler reset.
8/14/2007 5:33	-129.98146	45.93336	167.6	1515.5	Took DSC of 2 lava pillars.
8/14/2007 5:33	-129.98146	45.93335	165.1	1515.5	Cable on seafloor down in collapse area.
8/14/2007 5:34	-129.98148	45.93335	238.5	1515.4	Turning west and should be about 15m back.
8/14/2007 5:34	-129.98148	45.93336	281.5	1515.4	Had already gone through cloudy smoke.
8/14/2007 5:34	-129.98152	45.93337	282.7	1515.4	Lava pillar and white staining behind.
8/14/2007 5:35	-129.98160	45.93337	281.3	1515.7	Lots of smoke in water.
8/14/2007 5:35	-129.98168	45.93335	259.1	1515.7	Can see plume from vent ahead.
8/14/2007 5:35	-129.98171	45.93332	185.8	1515.9	Lava pillars and smoke.
8/14/2007 5:36	-129.98171	45.93330	179.7	1517.5	There is a marker below and in a lot of smoke.
8/14/2007 5:36	-129.98171	45.93329	143.3	1519.9	Marker 69 in view.
8/14/2007 5:36	-129.98170	45.93329	143.6	1520.7	Marker 69 is the Cloud Pit marker.
8/14/2007 5:37	-129.98171	45.93329	161.4	1521.5	Lots of worms here at the marker.
8/14/2007 5:38	-129.98170	45.93329	177.3	1521.4	Lateralling left to view vent structure.
8/14/2007 5:38	-129.98169	45.93327	241.3	1521.6	There is the MTR in the hole.
8/14/2007 5:38	-129.98170	45.93327	276.6	1522.2	Need to recover that MTR and deploy a new MTR with a long line.
8/14/2007 5:39	-129.98172	45.93327	273.7	1522.6	Going to deploy the double MTR 3196/3334 at this site.
8/14/2007 5:40	-129.98173	45.93327	285.2	1522.7	First recover the old MTR.
8/14/2007 5:41	-129.98173	45.93327	284.9	1522.7	Old double MTR pulled from hole.
8/14/2007 5:43	-129.98172	45.93326	288.0	1522.2	Putting this MTR in the STBD biobox.
8/14/2007 5:44	-129.98172	45.93326	286.7	1521.7	3312/3185 MTR put in STBD biobox.
8/14/2007 5:45	-129.98173	45.93326	286.6	1521.7	Changing DVDs (one will need labeling later).
8/14/2007 5:46	-129.98173	45.93326	286.6	1521.7	Stowing biobox.
8/14/2007 5:46	-129.98173	45.93326	286.5	1521.7	Retrieving new double-MTR.
8/14/2007 5:49	-129.98173	45.93326	290.4	1522.8	Placing double MTR 3196/3334 down in the hole.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 5:50	-129.98173	45.93326	290.2	1522.8	The line went in a ways-hole is deep.
8/14/2007 5:51	-129.98173	45.93326	290.1	1522.8	Going to take a temperature reading. Need about 6deg for a gastight.
8/14/2007 5:54	-129.98172	45.93326	289.8	1522.8	Using Jason probe for temperature. T=6.5 in one place
8/14/2007 5:54	-129.98172	45.93326	289.8	1522.9	Moving around hole and getting T=6.0.
8/14/2007 5:56	-129.98172	45.93326	289.8	1522.9	T=6.7 in white bacteria on back hole wall.
8/14/2007 6:00	-129.98171	45.93325	290.6	1522.9	Discreet GT black-handle. Fired.
8/14/2007 6:01	-129.98171	45.93325	289.9	1522.9	J291-GT-004 Gastight fired and now viewing the instrument.
8/14/2007 6:02	-129.98171	45.93325	288.5	1522.9	J291-GT-004 Stowing gastight in aft center compartment.
8/14/2007 6:03	-129.98171	45.93325	288.9	1522.9	Next is a limpet sample around the Cloud hole.
8/14/2007 6:06	-129.98171	45.93325	289.0	1523.0	First DSC survey of this area without moving Jason.
8/14/2007 6:07	-129.98171	45.93325	289.0	1522.9	Not a lot of limpets around here at all.
8/14/2007 6:08	-129.98170	45.93325	289.0	1522.9	Good views of the plume coming out of the hole.
8/14/2007 6:10	-129.98170	45.93325	289.0	1523.0	Need Jason to move straight back to get a better look down.
8/14/2007 6:10	-129.98170	45.93325	291.4	1522.6	Does not look like any limpets here at all.
8/14/2007 6:11	-129.98169	45.93324	289.9	1522.8	Moved back and still not seeing any limpets in this area.
8/14/2007 6:12	-129.98169	45.93324	290.0	1522.8	Done with video survey and no limpets at all.
8/14/2007 6:13	-129.98169	45.93324	290.3	1522.8	Jason moving up and over to the left looking for the other venting area.
8/14/2007 6:13	-129.98169	45.93324	290.1	1522.8	Looking right as well.
8/14/2007 6:13	-129.98170	45.93327	217.8	1521.6	Moving over pit and looking around.
8/14/2007 6:14	-129.98169	45.93324	226.6	1522.3	Other venting area is to the left and just beyond pit.
8/14/2007 6:14	-129.98169	45.93323	232.2	1522.9	Coming down to look for limpets at this site.
8/14/2007 6:15	-129.98169	45.93323	231.7	1522.9	Lots of worm tubes and some limpets here
8/14/2007 6:15	-129.98169	45.93323	231.4	1522.9	Reset doppler.
8/14/2007 6:16	-129.98170	45.93323	231.6	1522.9	Doing video survey of the site with HD and DSC.
8/14/2007 6:19	-129.98170	45.93323	231.3	1522.9	Done with video survey.
8/14/2007 6:19	-129.98170	45.93323	231.5	1522.9	Want to do a suction sample of some limpets.
8/14/2007 6:20	-129.98170	45.93323	232.6	1523.0	Found a best target with the HD in a patch of bright white bacteria.
8/14/2007 6:20	-129.98170	45.93323	231.9	1523.0	Grabbing suction sampler.
8/14/2007 6:24	-129.98173	45.93322	256.3	1523.5	J291-Suction-005 Positioning slurp intake.
8/14/2007 6:24	-129.98173	45.93322	256.3	1523.5	J291-Suction-005 Slurping. Getting some tubes (ok-limpets are on tubes).
8/14/2007 6:25	-129.98173	45.93322	256.4	1523.5	J291-Suction-005 Most of the tubes are dead.
8/14/2007 6:26	-129.98173	45.93322	256.5	1523.5	J291-Suction-005 Looks like enough of a sample.
8/14/2007 6:27	-129.98174	45.93322	256.3	1523.5	Crab attacking manipulator as putting back suction intake.
8/14/2007 6:29	-129.98174	45.93322	257.2	1523.5	Crab is exploring basket.
8/14/2007 6:29	-129.98174	45.93322	257.2	1523.5	Stowing suction intake despite crab attack. Stowing basket.
8/14/2007 6:30	-129.98174	45.93322	256.8	1523.5	Great fish-not a rattail.
8/14/2007 6:32	-129.98174	45.93322	256.9	1523.6	After Cloud we will go to Zen Garden.
8/14/2007 6:33	-129.98174	45.93323	260.0	1522.9	Zen Garden is 150m away north.
8/14/2007 6:34	-129.98182	45.93326	355.0	1520.8	Old anchor weight.
8/14/2007 6:34	-129.98183	45.93327	354.9	1520.3	Moving ship to head north to Zen Gardens.
8/14/2007 6:34	-129.98185	45.93330	355.1	1520.0	Blocky flow with layered block features..
8/14/2007 6:35	-129.98186	45.93332	354.8	1519.5	Layered cake pillars.
8/14/2007 6:35	-129.98185	45.93332	355.2	1519.0	Staining on base of pillows (bacteria).
8/14/2007 6:35	-129.98184	45.93334	354.9	1519.3	Heading is 354 moving away from Cloud enroute to Zen.
8/14/2007 6:36	-129.98184	45.93335	355.0	1519.3	Collapsed feature.
8/14/2007 6:37	-129.98184	45.93335	355.0	1519.3	Reset doppler.
8/14/2007 6:39	-129.98184	45.93335	354.9	1519.3	Waiting for ship to move.
8/14/2007 6:41	-129.98184	45.93336	356.9	1519.4	Moving.
8/14/2007 6:42	-129.98183	45.93345	355.5	1519.2	Moving over jumbled flow.
8/14/2007 6:42	-129.98178	45.93351	355.1	1519.0	Layered cake pieces of lava with a bit of staining and bacteria.
8/14/2007 6:43	-129.98176	45.93358	3.1	1519.2	Came to other side of collapsed feature.
8/14/2007 6:44	-129.98175	45.93364	2.7	1517.4	Large blocks of uncollapsed lava surrounded by collapse.
8/14/2007 6:44	-129.98175	45.93364	3.2	1516.9	Pillars too.
8/14/2007 6:44	-129.98174	45.93375	5.4	1516.6	Moving along edge of collapse area which corresponds well with map.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 6:44	-129.98171	45.93383	6.7	1516.5	Shift change.
8/14/2007 6:45	-129.98165	45.93393	5.5	1516.7	More pillars in collapse.
8/14/2007 6:52	-129.98154	45.93490	345.8	1517.7	There is a little venting around this area.
8/14/2007 6:55	-129.98151	45.93526	345.1	1516.9	Crossing some big collapses.
8/14/2007 6:56	-129.98155	45.93533	344.8	1516.7	This is all part of the 1998 lava flow.
8/14/2007 6:59	-129.98166	45.93562	36.3	1517.2	Crossing some small tubeworm bushes.
8/14/2007 6:59	-129.98165	45.93566	5.6	1517.6	This could be around Nascent vent.
8/14/2007 7:02	-129.98153	45.93592	26.4	1517.6	Passing on past Nascent. It is looking alive still but not as healthy as in past years.
8/14/2007 7:16	-129.98154	45.93708	2.8	1517.2	Seeing signs of hydrothermal activity.
8/14/2007 7:16	-129.98155	45.93712	1.5	1517.0	There were some iron deposits in the caverns and now some white spots.
8/14/2007 7:17	-129.98156	45.93713	357.7	1516.7	Started the HD footage.
8/14/2007 7:19	-129.98151	45.93721	14.0	1517.5	Quite a few tubeworm bushes.
8/14/2007 7:19	-129.98152	45.93721	10.7	1518.3	We can see some decent diffuse flow here.
8/14/2007 7:20	-129.98152	45.93722	10.6	1518.3	We are going to settle down to do some fluid sampling.
8/14/2007 7:21	-129.98153	45.93723	10.6	1518.3	Stopping the HD recording.
8/14/2007 7:22	-129.98152	45.93723	10.6	1518.3	This is the southern edge of the Zen Garden.
8/14/2007 7:28	-129.98149	45.93723	10.6	1518.3	J291-HFS-006 Starting filtered piston #2 at the Zen Gardens.
8/14/2007 7:33	-129.98149	45.93723	10.6	1518.4	J291-HFS-006 End of filtered piston #2 - Tmax=24.2 Tavg=23.4 Vol=746 T2=12 SigmaT=0.14.
8/14/2007 7:34	-129.98149	45.93724	10.7	1518.4	J291-HFS-007 Starting unfiltered piston #5 at Zen Gardens.
8/14/2007 7:39	-129.98150	45.93724	10.7	1518.4	J291-HFS-007 End of unfiltered piston #5 - Tmax=24.9 Tavg=24.1 Vol=730 T2=12 SigmaT=0.2.
8/14/2007 7:40	-129.98150	45.93724	10.7	1518.4	J291-HFS-008 Starting Sterivex filter #10 at Zen Gardens.
8/14/2007 8:00	-129.98146	45.93722	10.6	1518.5	J291-HFS-008 End of Sterivex filter #10 - Tmax=25.7 Tavg=23.7 Vol=3403 T2=12 SigmaT=0.6.
8/14/2007 8:03	-129.98153	45.93723	9.8	1516.8	We have picked up off the bottom.
8/14/2007 8:06	-129.98153	45.93725	32.5	1518.2	Taking out the wand to do a little sampling here.
8/14/2007 8:12	-129.98149	45.93723	32.6	1518.3	Starting filtered bag #23 at Zen Gardens. A different flow that before.
8/14/2007 8:13	-129.98149	45.93723	32.6	1518.2	J291-HFS-009 Filtered bag #23 at Zen Gardens.
8/14/2007 8:16	-129.98149	45.93724	32.6	1518.3	J291-HFS-009 End of filtered bag #23 - Tmax=7.6 Tavg=7.3 Vol=504 T2=5 SigmaT=0.12.
8/14/2007 8:19	-129.98150	45.93724	32.7	1518.3	J291-HFS-010 Starting Sterivex #11 at the 2nd Zen Garden spot.
8/14/2007 8:38	-129.98151	45.93726	32.7	1518.3	J291-HFS-010 End of Sterivex #11 - Tmax=7.7 Tavg=7.2 Vol=2903 T2=5 SigmaT=0.19.
8/14/2007 8:38	-129.98151	45.93726	32.7	1518.3	Done sampling here.
8/14/2007 8:39	-129.98151	45.93725	44.2	1517.4	We are going to take a quick look around the Zen Garden area.
8/14/2007 8:41	-129.98130	45.93724	140.5	1518.4	There are lots of small tubeworm clumps.
8/14/2007 8:42	-129.98129	45.93727	99.0	1516.7	This is about the eastern edge of the Zen Gardens.
8/14/2007 8:42	-129.98130	45.93729	28.5	1515.8	It is about 20m across and filled with small areas of venting.
8/14/2007 8:45	-129.98121	45.93735	350.3	1518.7	Definitely some clams here. Calyptogen pacifica I think.
8/14/2007 8:49	-129.98121	45.93736	347.8	1518.7	Not much flow - about a tenth of a degree higher than background.
8/14/2007 8:51	-129.98122	45.93736	347.7	1518.7	Over closer to the clams the temperature is about 5 degrees.
8/14/2007 8:51	-129.98122	45.93736	347.7	1518.7	We will take one water sample here.
8/14/2007 8:52	-129.98123	45.93736	347.7	1518.7	J291-HFS-011 Starting filtered bag #20 at Zen Gardens - clam site.
8/14/2007 8:57	-129.98124	45.93736	347.6	1518.7	J291-HFS-011 End of filtered bag #20 - Tmax=5.7 Tavg=5.4 Vol=502 T2=3.7 SigmaT=0.18.
8/14/2007 8:58	-129.98124	45.93736	347.6	1518.7	Stowing the HFS wand and preparing to transit to Marker N3.
8/14/2007 9:01	-129.98126	45.93744	0.0	1517.7	Clams are living in an area with reddish coloured sediments - likely iron.
8/14/2007 9:02	-129.98134	45.93750	308.1	1516.4	Trying to trace the boundaries of the Zen Gardens.
8/14/2007 9:02	-129.98140	45.93749	307.7	1515.2	There is a lot of orange sediment in this area.
8/14/2007 9:03	-129.98143	45.93747	316.2	1513.9	Some clams bellow.
8/14/2007 9:03	-129.98146	45.93747	317.3	1513.8	The clams seem to be all around the outer edges of the field.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 9:05	-129.98163	45.93740	282.3	1514.6	Heading to marker N3.
8/14/2007 9:06	-129.98147	45.93740	140.3	1515.1	There are a lot of clams in this area.
8/14/2007 9:27	-129.98235	45.93926	325.7	1515.7	We are passing over some more clams.
8/14/2007 9:27	-129.98240	45.93933	325.6	1515.5	Also some little reddish and white patches.
8/14/2007 9:29	-129.98255	45.93955	328.0	1514.6	There is some cloudiness in the water here.
8/14/2007 9:49	-129.98374	45.94206	334.8	1515.9	Cruising along.
8/14/2007 9:56	-129.98440	45.94297	344.9	1518.3	We are getting close to some hydrothermal activity.
8/14/2007 9:57	-129.98441	45.94306	344.2	1522.4	Thick orange sediment here.
8/14/2007 9:57	-129.98442	45.94307	341.1	1522.5	Some very reddish patches too.
8/14/2007 10:02	-129.98486	45.94360	319.7	1526.0	There are white patches on the rocks here.
8/14/2007 10:05	-129.98503	45.94367	352.3	1527.6	There is a patch of the blue mat on the side. We are close to N4.
8/14/2007 10:07	-129.98508	45.94382	337.6	1526.3	Starting some HD recording.
8/14/2007 10:07	-129.98507	45.94383	2.0	1526.2	Correction - we are close to N3.
8/14/2007 10:12	-129.98514	45.94372	51.4	1525.9	Stopped HD recording.
8/14/2007 10:12	-129.98509	45.94381	2.2	1525.0	Heading over to the actual Marker N3.
8/14/2007 10:15	-129.98512	45.94390	307.9	1525.0	Lots of blue mat around here.
8/14/2007 10:16	-129.98517	45.94388	351.0	1525.0	Preparing to take some water samples here.
8/14/2007 10:17	-129.98518	45.94390	9.4	1527.0	Starting the HD tape again.
8/14/2007 10:18	-129.98518	45.94390	9.6	1527.0	There is some nice flow coming out of here.
8/14/2007 10:25	-129.98520	45.94390	9.7	1527.0	J291-HFS-012 Starting to take Filtered bag #19 at Marker N3.
8/14/2007 10:25	-129.98520	45.94390	9.7	1527.0	Stopping the HD recording.
8/14/2007 10:29	-129.98521	45.94390	9.7	1527.0	J291-HFS-012 End of filtered bag #19 - Tmax=24.5 Tavg=24.1 Vol=528 T2=13 SigmaT=0.3.
8/14/2007 10:30	-129.98521	45.94390	9.7	1527.0	J291-HFS-013 Starting Sterivex #15 at Marker N3.
8/14/2007 10:49	-129.98526	45.94389	9.3	1526.8	J291-HFS-013 End of Sterivex #15. Tmax=25.4 Tavg=24.9 Vol=30074 T2=13 SigmaT=.19.
8/14/2007 10:50	-129.98526	45.94389	9.3	1526.8	J291-HFS-014 Starting Unfiltered piston #8.
8/14/2007 10:57	-129.98528	45.94389	9.1	1526.7	J291-HFS-014 End of piston #8. Tmax=25.3 Tavg=25.0 Vol=~750 T2=13 SigmaT=2.1.
8/14/2007 11:00	-129.98529	45.94389	9.2	1526.7	Stowing the HFS and getting out the pelagic pump.
8/14/2007 11:05	-129.98530	45.94389	9.3	1526.7	J291-PUMP-015 Starting Pelagic Pump.
8/14/2007 11:05	-129.98530	45.94389	9.3	1526.7	J291-PUMP-015 No flow so stopping. The pump.
8/14/2007 11:06	-129.98530	45.94389	9.3	1526.7	J291-PUMP-015 Starting the pelagic pump again but no flow.
8/14/2007 11:07	-129.98531	45.94389	10.0	1526.7	Looking around at the pump hose.
8/14/2007 11:10	-129.98527	45.94392	10.0	1526.6	The hose looks fine. Pumping a bit in clear water.
8/14/2007 11:10	-129.98526	45.94392	10.0	1526.6	Went to full.
8/14/2007 11:10	-129.98526	45.94392	10.0	1526.6	J291-PUMP-015 The pump is on.
8/14/2007 11:11	-129.98526	45.94392	10.0	1526.6	J291-PUMP-015 Now moving it into position.
8/14/2007 11:13	-129.98525	45.94393	10.0	1526.6	J291-PUMP-015 It is pumping slowly.
8/14/2007 11:25	-129.98516	45.94398	10.1	1526.5	J291-PUMP-015 End of measurement.
8/14/2007 11:26	-129.98515	45.94399	10.2	1526.5	Stowing the pump intake.
8/14/2007 11:31	-129.98514	45.94401	10.1	1526.4	The T-handle on the HFS intake was bent by the arm accidentally.
8/14/2007 11:31	-129.98514	45.94401	10.1	1526.4	HD on.
8/14/2007 11:36	-129.98517	45.94405	114.6	1525.6	Flying the ROV around to get good video of the blue mat.
8/14/2007 11:46	-129.98498	45.94391	170.6	1524.9	Flying southeast a bit to get some more video.
8/14/2007 11:48	-129.98499	45.94385	166.0	1524.9	Found Marker 52.
8/14/2007 11:49	-129.98499	45.94382	152.6	1525.2	HD off.
8/14/2007 12:01	-129.98522	45.94382	179.3	1525.1	Flying over tons of blue mat at Marker 52.
8/14/2007 12:08	-129.98509	45.94391	18.2	1525.1	HD off. HD was recording since 11:51.
8/14/2007 12:08	-129.98508	45.94394	20.1	1525.1	Moving northeast 300 m.
8/14/2007 12:15	-129.98490	45.94405	21.9	1523.7	Just flew over interesting lenticular basalt flow feature
8/14/2007 12:43	-129.98395	45.94620	9.4	1523.7	Nearing the forum.
8/14/2007 12:43	-129.98396	45.94622	10.7	1523.6	Lots of arches and pillars.
8/14/2007 12:46	-129.98395	45.94636	9.0	1523.7	Found the vent site the Forum.
8/14/2007 12:47	-129.98395	45.94639	9.2	1523.6	Cool vent site in a collapse area surrounded by columns and arches.
8/14/2007 12:58	-129.98395	45.94640	9.0	1523.6	We have been waiting for Medea to come into place over the ROV.



J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 13:03	-129.98392	45.94645	281.6	1524.3	Exploring the area before descending into the collapse.
8/14/2007 13:07	-129.98392	45.94646	281.6	1524.2	Probing temperature at this vent on the roof.
8/14/2007 13:09	-129.98392	45.94645	243.6	1524.2	Temperature was 10 degrees.
8/14/2007 13:15	-129.98393	45.94647	212.0	1524.3	Trying to cope with the bent t-handle.
8/14/2007 13:17	-129.98392	45.94647	212.1	1524.2	The ship is not in DP.
8/14/2007 13:23	-129.98388	45.94648	212.6	1524.1	Ship is back in DP.
8/14/2007 13:27	-129.98388	45.94649	212.7	1524.1	Headed across the collapse to a clump of worms.
8/14/2007 13:27	-129.98389	45.94648	213.2	1523.7	Could not bend the t-handle back to a useful position.
8/14/2007 13:31	-129.98394	45.94647	349.8	1523.7	Looking around for a place to take a fluid sample.
8/14/2007 13:40	-129.98391	45.94652	180.0	1524.0	This site is 6.5 degrees.
8/14/2007 13:42	-129.98392	45.94651	180.0	1523.9	J291-HFS-016 Starting unfiltered piston #8.
8/14/2007 13:44	-129.98392	45.94650	180.0	1523.9	J291-HFS-016 Cancel piston #8. Change to Piston #7.
8/14/2007 13:49	-129.98393	45.94648	179.9	1523.9	J291-HFS-016 Sample finished. Tmax=7.0 Tavg=6.6 Vol=730 T2=4.8.
8/14/2007 13:50	-129.98392	45.94648	179.8	1523.9	J291-HFS-017 Filtered bag #16.
8/14/2007 13:54	-129.98393	45.94648	179.7	1524.0	J291-HFS-017 End sample filtered bag #16. Tmax=6.2 Tavg=6.0 Vol=502 T2=4.6.
8/14/2007 13:58	-129.98392	45.94648	179.6	1524.0	J291-HFS-018 Start filtered piston #9.
8/14/2007 14:03	-129.98391	45.94648	179.5	1523.9	J291-HFS-018 End filtered piston #9. Tmax=6.1 Tavg=5.7 Vol=750 T2=4.5.
8/14/2007 14:04	-129.98391	45.94648	179.4	1523.9	J291-HFS-019 Start filtered piston #3.
8/14/2007 14:10	-129.98391	45.94648	179.4	1523.8	J291-HFS-019 Stop filtered piston #3. Tmax=6.2 Tavg=6.0 Vol=744 T2=4.7.
8/14/2007 14:12	-129.98391	45.94648	179.4	1523.8	J291-HFS-020 Start sterivex #13.
8/14/2007 14:26	-129.98391	45.94650	179.3	1523.7	J291-HFS-020 Stop sterivex #13. Tmax=6.1 Tavg=5.7 Vol=2046 T2=4.5.
8/14/2007 14:26	-129.98391	45.94650	179.3	1523.7	Finished with the fluid sampling.
8/14/2007 14:29	-129.98391	45.94650	185.2	1523.2	Stowed the fluid sampler intake.
8/14/2007 14:30	-129.98391	45.94646	165.6	1522.8	Finding the Forum vent again to put in a marker.
8/14/2007 14:32	-129.98388	45.94645	164.6	1523.8	Putting out Marker 74 at the Forum.
8/14/2007 14:35	-129.98381	45.94645	90.9	1520.9	Looks like the contact of the most recent flow.
8/14/2007 14:37	-129.98390	45.94640	199.9	1520.9	Looking around the collapse area for a place to go down into the collapse.
8/14/2007 14:39	-129.98374	45.94635	89.2	1517.1	Found a small chimney.
8/14/2007 14:44	-129.98370	45.94635	88.2	1519.4	Watch change.
8/14/2007 14:45	-129.98370	45.94635	88.2	1519.4	Doing a HD survey of the vent.
8/14/2007 14:46	-129.98368	45.94635	88.6	1519.3	HD recording is on.
8/14/2007 14:46	-129.98368	45.94635	88.5	1519.3	Vent broken off. Getting ready to water sample.
8/14/2007 14:47	-129.98369	45.94635	88.3	1519.4	Going to water sample first.
8/14/2007 14:48	-129.98369	45.94635	87.9	1519.4	Placing wand in freshly excavated hole.
8/14/2007 14:50	-129.98369	45.94635	87.7	1519.4	J291-HFS-021 Piston #4 filtered.
8/14/2007 14:53	-129.98369	45.94634	87.5	1519.4	J291-HFS-021 Stopped.
8/14/2007 14:53	-129.98369	45.94634	87.4	1519.3	J291-HFS-021 Tmax=256.3 Tavg=256.1 Vol=300 T2=89 Sigma=.07
8/14/2007 14:54	-129.98369	45.94634	87.5	1519.3	J291-HFS-022 Starting. Filtered piston #6.
8/14/2007 14:56	-129.98369	45.94634	87.7	1519.3	J291-HFS-022 Stopping.
8/14/2007 14:56	-129.98369	45.94634	87.6	1519.3	J291-HFS-022 Tmax=256.1 Tavg=256.0 Vol=278 T2=89 sigma=.08
8/14/2007 14:58	-129.98369	45.94634	87.5	1519.3	J291-HFS-023 Start. Filtered bag #18.
8/14/2007 14:59	-129.98369	45.94633	87.3	1519.3	J291-HFS-023 Stop.
8/14/2007 15:00	-129.98369	45.94633	87.3	1519.3	J291-HFS-023 Tmax=256.2 Tavg=256.2 Vol=300 T2=84 sigma=.04
8/14/2007 15:00	-129.98369	45.94633	87.3	1519.3	Stowing HFS.
8/14/2007 15:02	-129.98369	45.94633	87.8	1519.2	The vent sampled is ~20m SE of Marker 74 at Forum.
8/14/2007 15:03	-129.98369	45.94633	87.8	1519.3	Bent handle hard to stow wand.
8/14/2007 15:03	-129.98369	45.94633	88.1	1519.3	Proposed name for new vent is Trevi at Forum.
8/14/2007 15:04	-129.98369	45.94633	87.3	1519.3	Retrieving blue-handle gastight.
8/14/2007 15:07	-129.98370	45.94632	87.7	1519.5	J291-GT--024 Discreet gastight blue-handle. Fired. (Same orifice as HFS at T=256) Deep in hole.
8/14/2007 15:10	-129.98370	45.94632	86.9	1519.4	Stowed GT in aft center.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 15:11	-129.98370	45.94632	87.2	1519.3	Retrieving red handle discreet GT
8/14/2007 15:14	-129.98369	45.94631	87.3	1519.6	J291-GT--025 Red Gastight triggered in Trevi vent
8/14/2007 15:16	-129.98370	45.94631	87.5	1519.7	J291-GT--025 Stowing gastight. Trying to figure out map underlay situation on Nav screen.
8/14/2007 15:17	-129.98371	45.94629	214.1	1516.5	End of water sampling and begin geological part of the dive.
8/14/2007 15:18	-129.98372	45.94629	270.8	1516.6	Going to be driving west.
8/14/2007 15:24	-129.98410	45.94619	270.2	1519.9	Holding steady while fixing underlay.
8/14/2007 15:32	-129.98404	45.94619	270.2	1520.1	Swiss cheese looking lava flow.
8/14/2007 15:35	-129.98404	45.94618	270.6	1520.1	Changing DVDs.
8/14/2007 15:36	-129.98404	45.94618	270.8	1520.1	Been waiting for ship to move and fixing underlay.
8/14/2007 15:37	-129.98404	45.94618	270.7	1520.1	Waiting for Medea to catch up.
8/14/2007 15:47	-129.98450	45.94618	218.0	1523.0	Reset Doppler.
8/14/2007 16:10	-129.98481	45.94606	197.9	1526.7	Been taking a HD video survey.
8/14/2007 16:11	-129.98481	45.94606	178.3	1526.7	Going to do another 360 here zoomed out.
8/14/2007 16:11	-129.98481	45.94606	165.3	1526.7	Circling counter-clockwise.
8/14/2007 16:11	-129.98480	45.94606	142.3	1526.8	Great layered pillars.
8/14/2007 16:18	-129.98480	45.94606	178.4	1526.7	Done with spin.
8/14/2007 16:22	-129.98480	45.94605	178.4	1526.7	20m east of Magnesia benchmark-area of pillars for HD spin. (west of Forum)
8/14/2007 16:23	-129.98480	45.94605	178.8	1525.5	Going to rise over this collapse area and will go NW.
8/14/2007 16:23	-129.98481	45.94605	211.2	1525.0	Great pillars in collapse.
8/14/2007 16:23	-129.98481	45.94605	292.8	1524.3	Driving 20m NW to get out of collapse.
8/14/2007 16:23	-129.98482	45.94605	313.3	1523.6	Navigation is good.
8/14/2007 16:24	-129.98483	45.94606	312.7	1524.0	View of marker at benchmark in video as we rose.
8/14/2007 16:25	-129.98487	45.94609	312.3	1523.9	Magnesia benchmark perched on top of uncollapsed feature.
8/14/2007 16:25	-129.98489	45.94611	312.7	1524.0	Layers of lava on the benchmark island.
8/14/2007 16:25	-129.98490	45.94613	285.7	1523.9	Marker 67.
8/14/2007 16:27	-129.98493	45.94614	175.5	1524.9	Lava cake.
8/14/2007 16:28	-129.98493	45.94614	165.6	1524.9	Looking all around benchmark island.
8/14/2007 16:28	-129.98494	45.94614	159.0	1524.9	DSC was briefly stuck on multi-shots.
8/14/2007 16:30	-129.98496	45.94613	147.7	1524.8	Brow cam has great angle on island base.
8/14/2007 16:32	-129.98497	45.94613	142.4	1524.8	247m NE to edge of caldera wall where there looks like a channel coming over the lip.
8/14/2007 16:32	-129.98497	45.94613	142.3	1524.8	Looks like an eruptive fissure over the wall and want to see if it is 1998 or older.
8/14/2007 16:34	-129.98497	45.94613	142.1	1524.5	On the move now.
8/14/2007 16:37	-129.98477	45.94640	29.8	1522.7	Traversing over collapse with many pillars.
8/14/2007 16:38	-129.98475	45.94644	3.5	1522.7	Crab on pillar.
8/14/2007 16:40	-129.98480	45.94658	3.1	1522.9	There is sediment here but it is brown and probably hydrothermal.
8/14/2007 16:43	-129.98476	45.94681	3.4	1522.9	Still heading north over collapse and pillars.
8/14/2007 16:44	-129.98474	45.94696	3.2	1522.9	Different kind of pillar structure.
8/14/2007 16:46	-129.98471	45.94709	3.6	1522.9	Pillars are taller and not just on edges. Flooded and drained vs. channels on edge.
8/14/2007 16:46	-129.98471	45.94711	3.4	1522.9	Would expect this structure to be near a vent.
8/14/2007 16:46	-129.98470	45.94716	4.2	1523.0	Jumbled sheet flows in collapse.
8/14/2007 16:47	-129.98467	45.94727	3.1	1522.9	This area on the map looks smoother than surrounding.
8/14/2007 16:47	-129.98466	45.94730	2.4	1523.0	Back into pillars with some knocked over.
8/14/2007 16:47	-129.98466	45.94733	3.2	1522.9	Different looking fish.
8/14/2007 16:48	-129.98465	45.94741	2.6	1522.9	Looks like roof just collapsed down here. Delicate looking features.
8/14/2007 16:50	-129.98462	45.94753	3.2	1522.9	About to leave this terrain and hit the wall (little scarp ~10m high)
8/14/2007 16:50	-129.98462	45.94756	3.4	1522.9	Pillars are shorter and squatter here.
8/14/2007 16:50	-129.98461	45.94761	3.2	1522.9	As approach the caldera wall the pillars are shorter as the lake was shallower.
8/14/2007 16:51	-129.98461	45.94763	3.5	1522.9	Well connected pillars.
8/14/2007 16:51	-129.98460	45.94765	3.5	1522.9	Delicate arch in DSC.
8/14/2007 16:52	-129.98458	45.94774	4.3	1522.9	Good position here.
8/14/2007 16:52	-129.98458	45.94776	3.3	1523.0	Haven't had LBL fix in awhile but nav good.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 16:53	-129.98456	45.94783	3.4	1522.9	Lots of brown sediment here (top and collapse).
8/14/2007 16:53	-129.98455	45.94784	3.4	1522.9	Sediment is very red.
8/14/2007 16:53	-129.98454	45.94789	3.7	1523.0	Lots of sediment or are we in older area somehow?
8/14/2007 16:53	-129.98453	45.94792	3.2	1523.0	Must have been a vent here. Looks like old vents.
8/14/2007 16:54	-129.98452	45.94795	3.4	1521.8	Must have been old smokers here--all rusted out. Thick sediment.
8/14/2007 16:54	-129.98452	45.94797	4.4	1521.3	Coming out of pillar area.
8/14/2007 16:54	-129.98451	45.94799	3.3	1521.1	Ship is in position.
8/14/2007 16:54	-129.98450	45.94802	6.1	1520.8	Going to take a look to the right to find where sediment came from.
8/14/2007 16:55	-129.98449	45.94805	17.3	1519.2	Looks like we are going up a large mound.
8/14/2007 16:55	-129.98448	45.94805	33.0	1517.4	Lava at top.
8/14/2007 16:56	-129.98448	45.94805	49.9	1516.5	May have stepped up to older flow.
8/14/2007 16:56	-129.98448	45.94812	1.3	1515.9	Looking over edge of mound. Lava is truncated. Caldera wall may be short here.
8/14/2007 16:57	-129.98446	45.94821	0.7	1515.5	Following edge of old lavas. Almost at end of destination.
8/14/2007 16:57	-129.98444	45.94829	0.6	1515.5	Going to want to sample at the end of this transit.
8/14/2007 16:57	-129.98442	45.94835	357.6	1515.3	These lavas here look old and did not flow into the 1998 area. They are truncated.
8/14/2007 16:58	-129.98444	45.94842	348.6	1515.3	Following top of pillow lavas on edge of wall.
8/14/2007 16:59	-129.98445	45.94847	348.8	1515.4	Stopped HD tape.
8/14/2007 16:59	-129.98444	45.94847	348.1	1515.3	We are up on scarp and lavas look truncated not spilling over.
8/14/2007 17:01	-129.98438	45.94847	348.9	1515.3	Have about 30lbs of rock sampling capability.
8/14/2007 17:01	-129.98438	45.94847	348.8	1515.3	Older looking pillows with sediment.
8/14/2007 17:02	-129.98438	45.94847	348.8	1515.3	Changed DVCam tape.
8/14/2007 17:02	-129.98437	45.94847	354.2	1515.3	Fissure off to the east of us on the sonar.
8/14/2007 17:03	-129.98434	45.94848	354.6	1515.3	Lateralling to the right to look at fissure and then over further east to channel area.
8/14/2007 17:04	-129.98427	45.94848	355.0	1515.3	Getting LBL on Medea.
8/14/2007 17:04	-129.98423	45.94848	354.9	1515.3	At edge of fissure.
8/14/2007 17:05	-129.98419	45.94849	355.2	1515.3	Moving east over fissure.
8/14/2007 17:05	-129.98418	45.94849	355.1	1515.2	Altitude is 6m down to base of fissure.
8/14/2007 17:06	-129.98418	45.94849	355.1	1515.3	Waiting for Medea.
8/14/2007 17:08	-129.98418	45.94849	9.8	1515.3	Other side of fissure.
8/14/2007 17:10	-129.98411	45.94863	359.1	1513.4	Driving along fissure and getting into the channel area of caldera rim.
8/14/2007 17:10	-129.98418	45.94869	344.6	1513.2	Limited mobility as still waiting for Medea.
8/14/2007 17:11	-129.98420	45.94868	48.3	1513.3	Turning Jason to right to view lava.
8/14/2007 17:12	-129.98418	45.94868	154.4	1513.2	Swinging Jason around to look south in flatter are. Looking at edge of fissure again.
8/14/2007 17:15	-129.98411	45.94864	153.7	1513.3	Looking for a place to get a scoop of sediment and possibly a rock in the channel region.
8/14/2007 17:15	-129.98407	45.94861	153.2	1513.1	Lots of sediment to choose from.
8/14/2007 17:17	-129.98404	45.94859	151.8	1516.3	Setting Jason down in a heavily sedimented area.
8/14/2007 17:20	-129.98404	45.94860	152.6	1517.8	Going to store the scoop sample in the port biobox. Preparing biobox for sample.
8/14/2007 17:22	-129.98404	45.94860	152.9	1517.8	Biobox is ready. Getting scoop from front of the milk crate.
8/14/2007 17:27	-129.98404	45.94860	153.5	1517.9	Got the scoop.
8/14/2007 17:30	-129.98404	45.94860	153.5	1517.9	Scooping sediment. Red and fluffy.
8/14/2007 17:30	-129.98404	45.94860	153.8	1517.9	J291-Scoop--026 Scooping sediment-second helping.
8/14/2007 17:33	-129.98404	45.94860	153.0	1517.9	J291-Scoop--026 Wanted some more. Third scoop. Seastart close by-escaped.
8/14/2007 17:33	-129.98404	45.94860	153.0	1517.9	J291-Scoop--026 Worm trying to escape from scoop.
8/14/2007 17:34	-129.98404	45.94860	153.0	1518.0	J291-Scoop--026 This could be one of the high backscatter regions on the margin.
8/14/2007 17:39	-129.98405	45.94860	167.2	1518.0	J291-Scoop--026 Scooping again. Bag is still not very full. Sediment not very thick but pervasive. Big scoop.
8/14/2007 17:39	-129.98405	45.94860	167.2	1518.0	Another polychaete escaped during the scoop.
8/14/2007 17:41	-129.98405	45.94860	166.7	1518.0	Placing sample in the Port biobox.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 17:42	-129.98405	45.94860	166.3	1518.0	Swirled scoop top to seal a bit and closed box.
8/14/2007 17:42	-129.98405	45.94861	159.9	1518.0	Stowing biobox.
8/14/2007 17:44	-129.98405	45.94861	159.8	1518.0	Going to traverse south along caldera rim. 550m at 173deg. On bottom with no stops.
8/14/2007 17:46	-129.98404	45.94863	173.2	1517.8	Off we go.
8/14/2007 17:47	-129.98401	45.94856	173.2	1516.5	Sheet flow with sediment.
8/14/2007 17:48	-129.98398	45.94848	173.4	1516.4	Less sediment here.
8/14/2007 17:50	-129.98397	45.94847	173.5	1515.6	More jumbled flow and pillow lobes.
8/14/2007 17:51	-129.98397	45.94847	173.5	1514.7	Went from flat to lobates.
8/14/2007 17:51	-129.98395	45.94843	174.1	1514.9	Sediment not as thick here.
8/14/2007 17:51	-129.98393	45.94835	173.8	1514.7	Still quite a bit of sediment but not as thick as before.
8/14/2007 17:53	-129.98387	45.94817	174.6	1514.3	Small collapsed pillows in the lobate flow.
8/14/2007 17:54	-129.98388	45.94810	173.8	1514.3	Edge of a larger collapse feature.
8/14/2007 17:56	-129.98383	45.94796	173.4	1514.4	Edge of fissure off to the west.
8/14/2007 17:57	-129.98382	45.94793	173.3	1514.3	Map is 20m offset to the west.
8/14/2007 17:58	-129.98379	45.94770	179.5	1514.4	Shifting the underlay map 20m to the east.
8/14/2007 18:00	-129.98382	45.94757	162.0	1514.3	Off bottom over the fissure.
8/14/2007 18:02	-129.98369	45.94746	162.4	1514.3	Underlay map doesn't look like it shifted.
8/14/2007 18:04	-129.98367	45.94725	159.7	1519.3	Back on bottom. Flattened pillow flow with sediment.
8/14/2007 18:05	-129.98362	45.94719	156.3	1518.8	Still amount of sediment. Sheet flow.
8/14/2007 18:06	-129.98357	45.94702	155.9	1518.8	Flatter sheet flow and sediment pervasive.
8/14/2007 18:07	-129.98357	45.94696	156.3	1518.8	Less sediment and still sheet flow.
8/14/2007 18:07	-129.98353	45.94689	155.5	1518.7	Swirls of lava in sheet flow. Map reset again.
8/14/2007 18:08	-129.98351	45.94684	168.4	1518.7	Same flow but sediment disappears when lava becomes less flat.
8/14/2007 18:09	-129.98356	45.94675	172.8	1518.8	Rougher looking flow with less sediment coverage.
8/14/2007 18:10	-129.98359	45.94668	169.4	1518.8	Edge of caldera wall or fissure?
8/14/2007 18:10	-129.98362	45.94663	171.2	1518.9	Doppler reset.
8/14/2007 18:10	-129.98363	45.94659	170.2	1519.0	Lots of orange sediment here again.
8/14/2007 18:11	-129.98362	45.94650	168.9	1518.7	Driving along caldera rim and crack. Area of orange sediment.
8/14/2007 18:11	-129.98363	45.94644	168.9	1518.8	Pull apart fissures and bench falling into caldera.
8/14/2007 18:11	-129.98364	45.94642	170.9	1518.8	Sediment is definitely hydrothermal.
8/14/2007 18:12	-129.98366	45.94638	170.1	1518.8	Back near area where we saw some old chimneys along caldera wall.
8/14/2007 18:12	-129.98367	45.94633	186.5	1518.6	Mounds coming up. Striated sheet flow and active mounds.
8/14/2007 18:13	-129.98367	45.94631	206.5	1518.7	Back at Trevi where sampled near Forum.
8/14/2007 18:13	-129.98365	45.94629	180.3	1518.8	Tube worm bush should be off to the left.
8/14/2007 18:13	-129.98362	45.94628	174.5	1517.9	There is the other mound to the left.
8/14/2007 18:14	-129.98365	45.94625	172.9	1518.0	Younger flow should be just off to the right from here.
8/14/2007 18:14	-129.98364	45.94622	171.6	1518.1	Near the contact.
8/14/2007 18:15	-129.98358	45.94614	169.3	1518.2	Tubeworm bushes and staining. Striated sheet flow.
8/14/2007 18:16	-129.98351	45.94583	167.8	1518.1	Back over sheet flow with sediment.
8/14/2007 18:17	-129.98349	45.94579	167.3	1518.0	Some jumbled and coming to edge of a feature.
8/14/2007 18:18	-129.98344	45.94573	167.5	1518.0	Striated sheet flow as we may have crossed over the channel.
8/14/2007 18:18	-129.98343	45.94572	172.1	1519.5	Looks like the area where the scoop sample was taken.
8/14/2007 18:19	-129.98340	45.94567	174.5	1522.2	Still slight N-S offset in underlay. We are slightly south of where the map is showing.
8/14/2007 18:19	-129.98340	45.94565	172.9	1522.1	Crack in sheet flow.
8/14/2007 18:19	-129.98339	45.94558	173.2	1522.1	Nice DSC of crack in sheet flow (small crack).
8/14/2007 18:20	-129.98335	45.94546	171.1	1522.1	Still in striated sheet flow o channel.
8/14/2007 18:21	-129.98332	45.94540	171.2	1522.1	Coming to more structure in flow. Other side of channel.
8/14/2007 18:21	-129.98331	45.94538	171.3	1522.0	That was the southern edge of the channel.
8/14/2007 18:22	-129.98329	45.94536	167.3	1521.3	Now in a jumbled flow again.
8/14/2007 18:22	-129.98325	45.94529	168.9	1520.9	Stepping over collapse area with pillar.
8/14/2007 18:23	-129.98324	45.94526	170.1	1520.9	Lots of sediment at base of pillars in collapse.
8/14/2007 18:23	-129.98323	45.94523	170.4	1521.0	Looks like same age flow.
8/14/2007 18:24	-129.98320	45.94515	170.4	1520.7	Edge of collapse. Staining of pillows on top of collapse edge.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 18:24	-129.98319	45.94510	174.3	1520.6	Pillows-lobates and collapse. Seeing biology between pillows.
8/14/2007 18:24	-129.98319	45.94505	174.2	1520.7	Tube worms at pillow edges.
8/14/2007 18:25	-129.98317	45.94497	171.1	1520.6	Larger collapse features in the lobates.
8/14/2007 18:26	-129.98317	45.94487	172.3	1520.7	More collapse in pillows.
8/14/2007 18:27	-129.98317	45.94481	171.1	1520.6	Hydrothermal sediment in the collapse areas.
8/14/2007 18:28	-129.98315	45.94469	171.0	1520.7	Rounder pillow structures with sediment (hydrothermal-orange).
8/14/2007 18:29	-129.98311	45.94459	149.4	1520.6	Some worms and flow to left.
8/14/2007 18:29	-129.98308	45.94458	164.0	1520.7	Lots of white mat and worms. Putting a target here. Target 35.
8/14/2007 18:30	-129.98313	45.94448	178.2	1520.7	Old and active worms in cracks.
8/14/2007 18:30	-129.98314	45.94445	176.4	1520.6	Pillows are elongated.
8/14/2007 18:31	-129.98314	45.94438	177.5	1520.7	Patches of worms at bases of pillows.
8/14/2007 18:32	-129.98315	45.94433	175.8	1520.7	Pillows are coalescing.
8/14/2007 18:33	-129.98314	45.94417	171.9	1520.8	Still in older flow.
8/14/2007 18:33	-129.98315	45.94405	169.6	1520.8	Want to drive Jason as far west as possible while driving south.
8/14/2007 18:36	-129.98319	45.94382	168.6	1520.6	Still in lobates with sediment in cracks.
8/14/2007 18:37	-129.98316	45.94378	169.3	1520.6	Something changed in the characteristic of the lava.
8/14/2007 18:39	-129.98330	45.94366	211.6	1520.5	At northern edge of the collapse feature on map.
8/14/2007 18:40	-129.98331	45.94365	211.3	1520.5	Going to head due west along the edge of this collapse.
8/14/2007 18:41	-129.98331	45.94366	197.0	1520.6	Turning east (not west) along the edge.
8/14/2007 18:42	-129.98314	45.94371	90.8	1520.5	If that was the northern edge of collapse then the underlay is 10m offset NE of where it should be.
8/14/2007 18:43	-129.98306	45.94373	90.2	1520.6	Hydrothermal sediment in pillows.
8/14/2007 18:44	-129.98297	45.94376	90.3	1520.5	Doppler reset.
8/14/2007 18:45	-129.98305	45.94375	206.2	1520.8	Turning to south over flattened lobates.
8/14/2007 18:47	-129.98306	45.94376	206.1	1520.6	Haven't gotten into the older lava yet. Still think this is all the same age as we traversed south.
8/14/2007 18:47	-129.98305	45.94377	162.3	1520.9	Moving ship East 30m to get to the older area.
8/14/2007 19:03	-129.98308	45.94363	237.0	1520.0	Cruising along seeing quite a bit of hydrothermal sediments between the rocks.
8/14/2007 19:06	-129.98320	45.94353	238.3	1520.2	A small collapse here.
8/14/2007 19:14	-129.98375	45.94313	226.7	1521.1	It looks like there was a steam explosion here.
8/14/2007 19:15	-129.98376	45.94311	228.4	1520.9	It looks like there is another up to the left
8/14/2007 19:16	-129.98378	45.94312	256.3	1520.4	All the angular debris is spread out a bit as opposed to falling into the collapsed area.
8/14/2007 19:20	-129.98417	45.94298	223.5	1520.3	Some orange sediments over here.
8/14/2007 19:23	-129.98416	45.94282	235.3	1519.6	Here is another one of the blowouts.
8/14/2007 19:25	-129.98444	45.94273	232.8	1520.0	Some old hydrothermal sediments here.
8/14/2007 19:26	-129.98451	45.94269	262.5	1520.0	An old chimney
8/14/2007 19:28	-129.98462	45.94261	189.5	1519.5	Back into some channels.
8/14/2007 19:29	-129.98467	45.94259	11.9	1519.6	Lots of sediments here.
8/14/2007 19:30	-129.98467	45.94261	28.8	1519.8	We are likely in the older flows here.
8/14/2007 19:30	-129.98465	45.94268	19.4	1519.9	This is a big fissure here.
8/14/2007 19:36	-129.98511	45.94311	213.5	1526.5	A large tubeworm bush on top of here.
8/14/2007 19:39	-129.98526	45.94318	296.2	1524.9	More stained areas over here.
8/14/2007 19:39	-129.98527	45.94323	300.3	1525.5	There is a lot of diffuse vent here with more blue mat.
8/14/2007 19:39	-129.98527	45.94325	295.9	1525.4	Marker N3 is north of us.
8/14/2007 19:42	-129.98552	45.94352	329.1	1528.9	Not much hydrothermal sediments over here.
8/14/2007 19:42	-129.98554	45.94355	297.7	1529.0	Crossing a little orange sediments now.
8/14/2007 19:48	-129.98560	45.94368	74.7	1526.1	It looks like the 1998 flow might have reoccupied the channel from earlier flows.
8/14/2007 19:52	-129.98537	45.94368	57.8	1525.5	We are on the outskirts of N3.
8/14/2007 19:52	-129.98534	45.94370	57.0	1525.3	There is lots of staining and blue mat around.
8/14/2007 19:53	-129.98526	45.94376	56.9	1525.5	The HD recording has started.
8/14/2007 20:02	-129.98449	45.94424	42.6	1526.1	Crossing some smooth terrain.
8/14/2007 20:06	-129.98427	45.94437	217.9	1523.9	Heading to the east.
8/14/2007 20:09	-129.98418	45.94422	174.6	1524.8	Working out some new nav tracks.
8/14/2007 20:14	-129.98386	45.94399	150.4	1525.2	Lots of orange sediments here.
8/14/2007 20:16	-129.98384	45.94389	112.6	1524.7	We have just crossed into the 98 lavas.
8/14/2007 20:16	-129.98385	45.94388	341.0	1524.0	We were in the older flows with the orange sediments.

J291 Date Time	Latitude	Longitude	Heading	Depth	Event
8/14/2007 20:16	-129.98383	45.94393	348.7	1523.8	You can see where some new pillow have dropped off the edge here.
8/14/2007 20:18	-129.98389	45.94394	164.3	1524.0	Taking a series of DSCs here.
8/14/2007 20:19	-129.98376	45.94380	155.5	1522.5	There is very little sediment in these pillows.
8/14/2007 20:21	-129.98351	45.94365	141.6	1522.1	We have come up to a little cliff here.
8/14/2007 20:21	-129.98349	45.94362	132.1	1522.2	There are some lava pillars.
8/14/2007 20:24	-129.98348	45.94351	234.8	1521.6	Crossing over into another collapse.
8/14/2007 20:27	-129.98371	45.94348	261.5	1522.6	HD recording has started
8/14/2007 20:28	-129.98373	45.94349	171.1	1521.9	There are this odd hanging flows.
8/14/2007 20:29	-129.98396	45.94350	223.0	1522.9	Stopped HD recording.
8/14/2007 20:32	-129.98420	45.94353	224.0	1523.9	Dropping down a bit. This looks like an older surface.
8/14/2007 20:33	-129.98427	45.94341	241.4	1522.7	An anemone and sponges - further evidence of the older flow.
8/14/2007 20:34	-129.98426	45.94340	261.2	1523.3	A nice DSC of the contact point between the new and old flow.
8/14/2007 20:34	-129.98424	45.94339	234.8	1522.9	HD started.
8/14/2007 20:36	-129.98435	45.94340	113.0	1523.2	Stopping the HD.
8/14/2007 20:37	-129.98446	45.94339	305.1	1522.9	Back into some red sediments.
8/14/2007 20:37	-129.98456	45.94349	317.6	1523.5	We are coming up to the N-S fissure.
8/14/2007 20:38	-129.98458	45.94350	346.3	1523.0	The hydrothermal sediments seem to be associated with this fissure.
8/14/2007 20:44	-129.98451	45.94374	1.0	1524.5	Crossing some rough flows here.
8/14/2007 20:45	-129.98449	45.94385	0.6	1524.4	Some hydrothermal sediments.
8/14/2007 20:48	-129.98447	45.94396	12.0	1525.6	Spotted a blob sculpin.
8/14/2007 20:51	-129.98455	45.94430	3.5	1526.3	We are crossing over some fast moving sheet flows.
8/14/2007 20:54	-129.98463	45.94459	5.5	1526.0	We are over some very rough flows.
8/14/2007 20:58	-129.98480	45.94496	15.1	1528.4	We have come up to a marker N2. There was some red sediment stirred up.
8/14/2007 21:02	-129.98470	45.94530	16.3	1524.8	Crossing into a collapsed area.
8/14/2007 21:03	-129.98496	45.94543	6.1	1526.7	This must have been a vigorous hydrothermal vent field in the past.
8/14/2007 21:09	-129.98448	45.94575	18.3	1525.7	Some nice tall lava pillars here
8/14/2007 21:11	-129.98462	45.94609	7.9	1524.2	A curved lava pillar.
8/14/2007 21:15	-129.98468	45.94644	358.0	1524.2	Looking around this large lava pond.
8/14/2007 21:15	-129.98475	45.94643	357.7	1524.2	There are lots of lava pillars.
8/14/2007 21:33	-129.98462	45.94774	1.5	1524.6	More orange sediment.
8/14/2007 21:37	-129.98471	45.94781	342.9	1524.7	Still in the low lying area with lots of lava pillars.
8/14/2007 21:40	-129.98460	45.94795	278.0	1524.7	There is a large amount of hydrothermal sediment around here.
8/14/2007 21:47	-129.98499	45.94852	42.7	1523.4	Back into the Mars simulator region.
8/14/2007 21:48	-129.98494	45.94855	22.8	1523.3	These red sediments have covered everything.
8/14/2007 21:48	-129.98502	45.94866	276.2	1523.7	Another blob sculpin.
8/14/2007 21:52	-129.98520	45.94880	340.5	1524.9	Trying to sample the lava crust here.
8/14/2007 21:54	-129.98520	45.94880	354.8	1524.8	J291-Rock-027 Taking rock sample #1. There are 2 pieces here.
8/14/2007 21:55	-129.98519	45.94880	326.7	1524.9	J291-Rock-027 This is the second piece. It was put in the port crate.
8/14/2007 21:56	-129.98518	45.94880	326.5	1524.9	Dropping some ballast weight.
8/14/2007 21:59	-129.98484	45.94861	127.8	1523.2	Taking a pushcore in the sediments here.
8/14/2007 22:02	-129.98482	45.94858	129.8	1523.9	J291-Core-028 Taking pushcore number 1.
8/14/2007 22:02	-129.98481	45.94858	129.9	1523.9	J291-Core-028 It looks to be pretty good. The sediment was quite deep - it reach the full core length.
8/14/2007 22:04	-129.98491	45.94865	263.6	1518.3	Getting prepared for recovery.
8/14/2007 22:07	-129.98519	45.94849	276.8	1514.8	On the way up.
8/14/2007 23:00	-129.98496	45.94839	350.7	1.8	At the surface.
8/14/2007 23:01	-129.98500	45.94838	353.6	1.1	Moving to the aft and holding here.
8/14/2007 23:02	-129.98501	45.94837	353.1	1.3	Medea is on deck.
8/14/2007 23:05	-129.98506	45.94837	323.7	0.4	Jason is out of the water and on deck.
8/14/2007 23:05	-129.98506	45.94837	323.9	0.4	Power is secured.
8/14/2007 23:06	-129.98506	45.94837	323.9	0.4	End of dive.

## 6.5.7 J2-292 Axial Southern 1998 Flow

**J2-292 Southern 1998 Flow** [J2-292 Bottom time: 17:18] (Note: HFS was mis-wired and sample filters are incorrect as logged; sorted out in sample-log sheet post-dive.) Dive started in the International District. Landed nearby the Village site. Took 3 HFS samples at Village. Moved over to El Guapo where 'fire' appearing flow was at top orifices. Sampled 2 HFS, 1 gastight and kept the sulfide from one of the top chimneys that fell into basket. Next went to Hermosa with diffuse flow and a lot of biology. Took 1 HFS sample. Went to Escargot next where 2 HFS samples were taken. Moved over to Diva, small white anhydrite chimney, took 2 high-temperature HFS and 1 Gastight sample. Transited to Castle and took 2 HFS samples. Replaced MISO #102 with MISO #103 in anhydrite. Traveled to Marker 108 site over collapse areas and 1998 flow contacts. Jason contacted a pillar in collapse area and obtained a rock sample of 1998 lava. At Marker 108 site collected another rock sample of 1998 lava. Headed to Marker 113 site (deployed Marker 62) and obtained 6 HFS and 1 sample of tubeworms from the diffuse flow. Remainder of dive devoted to geology transit south examining 1998 flow boundaries. Crossed collapse features, jumbled flow, channels, multi-decked pillars, sheet flow and old lobate flows. Took rock sample from edge of collapse feature and piece of pre-98 lobate floor collapse.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
Note: All HFS samples have wrong filter/types associated with bottles due to mis-wiring instrument before launch. Dave Butterfield will sort out identities and provide updated sample list information in the cruise report.					
8/15/2007 11:37	45.94684	-129.98355	131.3	1.1	Preparing for launch
8/15/2007 11:37	45.94684	-129.98355	131.6	1.1	Starboard arm has problem
8/15/2007 11:37	45.94684	-129.98355	132.4	1.1	water leak of undetermined origin
8/15/2007 11:38	45.94684	-129.98355	132.2	1.2	going in with only port arm use
8/15/2007 11:38	45.94684	-129.98355	130.4	1.2	Medea in water
8/15/2007 11:39	45.94687	-129.98358	16.1	2.7	Jason in water
8/15/2007 11:40	45.94687	-129.98358	17.2	2.7	pin is pulled
8/15/2007 11:40	45.94688	-129.98358	16.9	2.9	tether in water
8/15/2007 11:40	45.94688	-129.98358	15.5	5.0	starting down
8/15/2007 12:49	45.92615	-129.98060	96.1	1516.2	Bottom in sight.
8/15/2007 12:49	45.92615	-129.98059	61.3	1515.5	And at Village.
8/15/2007 12:50	45.92614	-129.98061	61.3	1515.7	Driving around to look at the vent sight.
8/15/2007 12:51	45.92617	-129.98060	83.6	1518.6	DSC is out of commission.
8/15/2007 12:51	45.92618	-129.98060	97.7	1518.3	Starboard arm is out of commission.
8/15/2007 12:56	45.92612	-129.98045	30.3	1517.9	The vent site is perched on top an area surrounded by collapse.
8/15/2007 13:08	45.92620	-129.98057	202.9	1519.9	Preparing to take some fluid samples at Village.
8/15/2007 13:17	45.92619	-129.98057	201.9	1520.0	Trying to find a good hot spot.
8/15/2007 13:18	45.92619	-129.98056	202.0	1520.0	<b>J292-HFS-001</b> Starting unfiltered piston #5.
8/15/2007 13:23	45.92617	-129.98057	202.2	1519.9	J292-HFS-001 End of sample. Tmax=27.0 Tavg=22.6 Vol=592 T2=12 sigT=1.3.
8/15/2007 13:23	45.92617	-129.98057	202.1	1519.9	<b>J292-HFS-002</b> Stating sterivex filter #10.
8/15/2007 13:38	45.92618	-129.98058	202.2	1519.8	J292-HFS-002 End sterivex #10. Tmax=24.6 Tavg=22.8 Vol=2601 T2=12 sigT=1.0.
8/15/2007 13:40	45.92618	-129.98058	202.2	1519.8	<b>J292-HFS-003</b> Starting filtered bag #17.
8/15/2007 13:44	45.92617	-129.98057	202.2	1519.8	J292-HFS-003 End filtered bag #17. Tmax=23.8 Tavg=22.6 Vol=576 T2=12 sigT=0.9.
8/15/2007 13:44	45.92616	-129.98057	202.2	1519.8	Finished sampling here. Going to el Guapo next.
8/15/2007 13:46	45.92615	-129.98059	201.5	1519.1	Testing to see if the port arm can open the starboard bio box.
8/15/2007 14:13	45.92654	-129.97984	141.9	1511.3	There is a large vent in front of us. Must be Top Gun.
8/15/2007 14:18	45.92655	-129.97968	113.7	1511.0	Coming up to el Guapo.
8/15/2007 14:18	45.92655	-129.97968	114.0	1511.2	Looking around the perimeter first.
8/15/2007 14:24	45.92654	-129.97967	195.3	1512.0	HD on.
8/15/2007 14:27	45.92651	-129.97963	111.9	1514.5	HD off.
8/15/2007 14:28	45.92655	-129.97963	122.4	1513.3	HD on.
8/15/2007 14:33	45.92654	-129.97959	121.2	1505.1	Very cool and large chimney with black smoke pouring out of the top.
8/15/2007 14:34	45.92653	-129.97959	120.1	1505.2	HD off.
8/15/2007 14:35	45.92654	-129.97960	136.0	1505.3	All of the hot venting looks like its coming out of the top.
8/15/2007 14:36	45.92654	-129.97959	133.2	1505.2	The sides and base are mostly diffuse.
8/15/2007 14:38	45.92660	-129.97972	134.9	1505.1	Preparing to attempt fluid sampling on the top of the vent.



J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/15/2007 14:43	45.92659	-129.97968	76.7	1505.2	Moving under Medea to check the tether.
8/15/2007 14:46	45.92656	-129.97963	115.7	1505.4	Done with tether management.
8/15/2007 14:48	45.92653	-129.97960	112.9	1505.4	Smoking at the top as Jason approaches for HFS sampling.
8/15/2007 14:52	45.92653	-129.97958	113.0	1505.9	Great HD of vent. Top appears to be boiling.
8/15/2007 14:53	45.92653	-129.97958	112.9	1505.9	In position on smoking orifice below the top.
8/15/2007 14:54	45.92653	-129.97958	113.0	1505.5	Jason has wand.
8/15/2007 14:56	45.92652	-129.97958	91.2	1506.0	DVD tapes changed a few minutes ago.
8/15/2007 14:57	45.92652	-129.97958	88.0	1506.0	Placing wand in vent
8/15/2007 14:58	45.92652	-129.97958	85.7	1506.0	Small top crumbled as wand excavated. Stop HD.
8/15/2007 15:00	45.92652	-129.97958	70.1	1506.0	<b>J292-HFS-004</b> Filtered piston #1 starting.
8/15/2007 15:01	45.92652	-129.97958	66.1	1506.0	J292-HFS-004 At El Guapo and piece of orifice just broke. T had reached 330.
8/15/2007 15:03	45.92652	-129.97958	67.0	1506.0	J292-HFS-004 Stop.
8/15/2007 15:03	45.92652	-129.97958	66.3	1506.0	J292-HFS-004 Tmax=330.6 Tavg=300. vol=468 T2=90 SigmaT=14
8/15/2007 15:05	45.92652	-129.97958	62.4	1506.0	Excavated after sample to fully remove piece that broke away. Temp dropped during sampling.
8/15/2007 15:05	45.92652	-129.97958	60.6	1506.0	Repositioning in newly excavated hole.
8/15/2007 15:15	45.92652	-129.97958	72.6	1506.0	Not hot enough. Will reposition.
8/15/2007 15:18	45.92652	-129.97957	60.2	1506.0	<b>J292-HFS-005</b> Filtered bag #18. Starting. HD on.
8/15/2007 15:19	45.92652	-129.97956	68.2	1505.9	J292-HFS-005 Stopping.
8/15/2007 15:20	45.92652	-129.97956	73.2	1505.9	J292-HFS-005 Tmax=338.9 Tavg=338.5 vol=269 T2=88 Sigma=.2
8/15/2007 15:20	45.92652	-129.97957	76.3	1505.9	<b>J292-GT-006</b> Fired port gastight.
8/15/2007 15:23	45.92651	-129.97959	68.5	1506.0	Moving up to the top and the boiling vents.
8/15/2007 15:24	45.92652	-129.97958	181.7	1505.0	Amazing HD of 'fire' torches at top of vent.
8/15/2007 15:26	45.92652	-129.97956	157.4	1505.1	Trying to position Jason at top for sample.
8/15/2007 15:27	45.92653	-129.97955	171.5	1505.0	Vent 'fire' appears to be stronger than last year's.
8/15/2007 15:27	45.92652	-129.97955	146.9	1504.9	Basket bump broke off the top and don't see as much fire.
8/15/2007 15:30	45.92652	-129.97955	147.5	1504.7	Waited for smoke to clear. Fire is not as torch like as before bump.
8/15/2007 15:30	45.92652	-129.97955	147.3	1504.7	Fire is pumping and not as steady as well.
8/15/2007 15:31	45.92651	-129.97956	147.8	1504.7	Basket driving into vent and will attempt sample of the top.
8/15/2007 15:32	45.92651	-129.97957	146.3	1504.7	Top crumbled as tried. HD off.
8/15/2007 15:38	45.92651	-129.97958	146.9	1504.7	Stowing wand. No HFS sample here.
8/15/2007 15:39	45.92650	-129.97959	146.9	1504.7	Trying to stow piece of sulfide that toppled into basket from top of El Guapo.
8/15/2007 15:40	45.92651	-129.97960	160.1	1504.0	Backing away from vent.
8/15/2007 15:40	45.92651	-129.97960	157.8	1503.9	Multiple pieces of sulfide on basket apron.
8/15/2007 15:41	45.92651	-129.97961	157.8	1504.0	<b>J292-Sulfide-007</b> Placed sulfide from top of El Guapo (fell during HFS attempt). into Port milkcrate.
8/15/2007 15:43	45.92651	-129.97959	157.7	1504.0	J292-Sulfide-007 Left other small pieces of the sulfide on the basket apron.
8/15/2007 15:44	45.92652	-129.97958	157.1	1504.0	Going down to the base of the chimney to move to next site.
8/15/2007 15:45	45.92660	-129.97963	141.8	1513.8	Hermosa is next target just to east of this chimney.
8/15/2007 15:46	45.92659	-129.97952	130.4	1513.7	Hermosa should only be 10m East from El Guapo.
8/15/2007 15:48	45.92652	-129.97954	221.6	1503.1	This is the base of El Guapo but another side. Drove up to top of chimney.
8/15/2007 15:49	45.92655	-129.97942	151.2	1514.3	Top of El Guapo was 1503. At the base it is 1517 total depth.
8/15/2007 15:50	45.92649	-129.97939	154.3	1513.2	See Hermosa behind El Guapo. HD on.
8/15/2007 15:50	45.92648	-129.97938	154.4	1514.1	Moving up to top of Hermosa.
8/15/2007 15:51	45.92648	-129.97935	177.2	1514.5	Massive clumps of biology at top.
8/15/2007 15:54	45.92647	-129.97933	137.2	1515.4	Top is 1513 at this chimney.
8/15/2007 15:55	45.92648	-129.97938	109.6	1514.4	Trying to figure out the navigation and vehicle management.
8/15/2007 15:55	45.92648	-129.97939	112.8	1513.3	There is an un-named structure between El Guapo and Hermosa.
8/15/2007 15:56	45.92648	-129.97939	154.7	1513.5	Lost DP
8/15/2007 15:57	45.92648	-129.97938	154.6	1513.5	Have control again. Bridge lost satellites.
8/15/2007 16:04	45.92654	-129.97948	182.2	1513.2	Looking at the unnamed vent in the cameras right now.
8/15/2007 16:05	45.92655	-129.97944	179.3	1513.2	Can see all three in camera by panning around with Jason.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/15/2007 16:06	45.92649	-129.97937	180.2	1515.0	Going to sample Hermosa which we are approaching from the north. Start HD.
8/15/2007 16:06	45.92647	-129.97936	180.3	1515.5	Do not see any smoke but there is biology.
8/15/2007 16:07	45.92646	-129.97936	180.2	1515.5	Diffuse flow at top in worms and limpets.
8/15/2007 16:08	45.92645	-129.97935	176.2	1514.8	Attempting HFS sample here.
8/15/2007 16:09	45.92644	-129.97936	176.1	1514.8	Positioning wand in the flow with active tubeworms.
8/15/2007 16:10	45.92644	-129.97937	176.9	1514.8	Stopped HD.
8/15/2007 16:14	45.92643	-129.97938	176.9	1514.8	Looking around a bit more for a sample site. Temp here just ~15deg.
8/15/2007 16:18	45.92645	-129.97936	177.0	1514.8	Reset doppler.
8/15/2007 16:19	45.92645	-129.97936	177.0	1514.8	<b>J292-HFS-008</b> Unfiltered piston #6. Starting.
8/15/2007 16:23	45.92644	-129.97937	177.0	1514.8	J292-HFS-008 Stopping. Can see El Guapo in Medea cam to the west.
8/15/2007 16:24	45.92644	-129.97936	177.0	1514.8	J292-HFS-008 Tmax=26.1 Tavg=20.8 vol=628 T2=14 Sigma=4
8/15/2007 16:24	45.92644	-129.97936	177.0	1514.8	No more HFS sample here.
8/15/2007 16:26	45.92641	-129.97931	178.0	1515.7	Moving to Escargot. (Named after its appearance of a snail).
8/15/2007 16:26	45.92638	-129.97929	144.3	1516.4	Escargot is to the SE of Hermosa. Waiting on Medea.
8/15/2007 16:27	45.92638	-129.97928	143.7	1516.5	Moving arm out of the way for better images.
8/15/2007 16:28	45.92638	-129.97928	143.8	1516.4	Stowing basket.
8/15/2007 16:30	45.92635	-129.97925	143.7	1514.3	At Escargot and can see the 'snail's head'.
8/15/2007 16:31	45.92634	-129.97923	143.8	1514.5	Snail head also resembles a rabbit or donkey according to van gallery.
8/15/2007 16:31	45.92635	-129.97922	154.7	1514.6	Looking for water on ledge under the snail head.
8/15/2007 16:31	45.92634	-129.97919	214.5	1515.9	Can see venting below and back of vent.
8/15/2007 16:32	45.92634	-129.97919	212.9	1515.8	Great image of underside of head and see a hole and big blue mat.
8/15/2007 16:32	45.92634	-129.97920	212.8	1515.8	Shimmering water and some white bacteria strands. Lots of limpets.
8/15/2007 16:33	45.92634	-129.97920	212.7	1515.9	Tiny chimney to left with a little smoke.
8/15/2007 16:33	45.92634	-129.97921	212.7	1515.8	Top of vent covered in white bacterial hair.
8/15/2007 16:34	45.92635	-129.97921	207.5	1515.9	Moving down the vent as most of the water action is lower.
8/15/2007 16:35	45.92636	-129.97922	207.4	1516.0	HD off (started at 1629).
8/15/2007 16:36	45.92636	-129.97922	207.3	1516.0	Very lush tubeworms on chimney walls lower in the vent.
8/15/2007 16:37	45.92633	-129.97918	260.7	1515.8	Moving clockwise around vent.
8/15/2007 16:38	45.92633	-129.97921	260.4	1515.7	Located a place to sample just at the top edge of the lush tubeworms.
8/15/2007 16:39	45.92633	-129.97921	260.0	1516.1	There are 2 old chimney stacks to either side of the sampling area on chimney sides at this height.
8/15/2007 16:39	45.92632	-129.97920	259.8	1516.1	Retrieving wand.
8/15/2007 16:42	45.92632	-129.97919	260.1	1516.1	<b>J292-HFS-009</b> Escargot. Excavating a sampling area.
8/15/2007 16:43	45.92632	-129.97920	261.4	1516.1	J292-HFS-009 Wand came out of site. Repositioning.
8/15/2007 16:48	45.92631	-129.97921	261.4	1516.1	J292-HFS-009 Videos all at end. No recording.
8/15/2007 16:51	45.92630	-129.97922	261.5	1516.1	J292-HFS-009 Filtered bag #24. Starting.
8/15/2007 16:54	45.92630	-129.97921	261.6	1516.1	J292-HFS-009 Stopping.
8/15/2007 16:54	45.92631	-129.97920	261.5	1516.1	J292-HFS-009 Tmax=100.2 Tavg=93.4 vol=457 T2=35 Sigma=4.1
8/15/2007 16:55	45.92631	-129.97920	261.5	1516.1	<b>J292-HFS-010</b> Unfiltered bag #23. Starting.
8/15/2007 16:57	45.92631	-129.97921	261.6	1516.1	J292-HFS-010 Stopping.
8/15/2007 16:58	45.92631	-129.97921	261.6	1516.1	J292-HFS-010 Tmax=102.5 Tavg=96.1 vol=404 T2=40 Sigma=5
8/15/2007 16:58	45.92631	-129.97921	261.6	1516.1	Last HFS sample at Escargot.
8/15/2007 16:58	45.92631	-129.97921	261.7	1516.1	Going to move from here to go to Diva. Stowing wand.
8/15/2007 17:02	45.92631	-129.97912	55.4	1520.7	Quick trip as here we are at Diva.
8/15/2007 17:03	45.92632	-129.97909	215.3	1520.4	Positioning to sample at Diva. White and small anhydrite chimney.
8/15/2007 17:03	45.92632	-129.97909	212.0	1520.3	Stirring up the dust here.
8/15/2007 17:04	45.92632	-129.97909	214.2	1520.3	Basket chopped off chimney for sampling.
8/15/2007 17:05	45.92632	-129.97908	225.0	1520.8	Positioning wand in newly excavated opening.
8/15/2007 17:06	45.92632	-129.97908	224.8	1520.8	Wand dropped.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/15/2007 17:10	45.92632	-129.97909	224.0	1520.8	Grabbed wand and positioning in hole again.
8/15/2007 17:14	45.92632	-129.97909	224.0	1520.8	<b>J292-HFS-011</b> Diva. Filtered bag #21. Starting.
8/15/2007 17:16	45.92632	-129.97909	224.0	1520.8	J292-HFS-011 Stopping.
8/15/2007 17:17	45.92632	-129.97909	224.0	1520.9	J292-HFS-011 Tmax=276.5 Tavg=276.1 vol=401 T2=81 Sigma=.23
8/15/2007 17:18	45.92632	-129.97909	224.0	1520.9	<b>J292-HFS-012</b> Starting. Filtered piston #2. Has additional gas expansion bag. Diva.
8/15/2007 17:22	45.92632	-129.97909	224.0	1520.9	J292-HFS-012 Stopping.
8/15/2007 17:22	45.92632	-129.97909	224.0	1520.9	J292-HFS-012 Tmax=276.2 Tavg=276. vol=614 T2=82.4 Sigma=.10
8/15/2007 17:23	45.92632	-129.97909	224.0	1520.9	<b>J292-GT-013</b> STBD gastight at same place. T=276. Fired.
8/15/2007 17:25	45.92632	-129.97909	223.9	1521.0	Done sampling here. Stowing wand then basket. Next stop is Castle 92m at 260deg.
8/15/2007 17:25	45.92632	-129.97909	222.5	1520.4	80m at 270 with no chimneys in between (from navigator).
8/15/2007 17:26	45.92632	-129.97909	264.4	1519.0	There is Escargot in camera view.
8/15/2007 17:26	45.92628	-129.97910	265.1	1518.8	Clear sailing after Escargot.
8/15/2007 17:27	45.92623	-129.97916	263.1	1520.5	Lots of hydrothermal staining as we wait for ship and Medea. Broken up sheet flow.
8/15/2007 17:28	45.92623	-129.97916	262.9	1519.6	Cool fish-fat head sculpin.
8/15/2007 17:29	45.92623	-129.97917	263.4	1521.8	HD of fish while waiting.
8/15/2007 17:31	45.92622	-129.97917	263.5	1521.0	On the move to Castle.
8/15/2007 17:31	45.92621	-129.97925	261.1	1519.6	Moving away from the red hydrothermal staining.
8/15/2007 17:31	45.92620	-129.97933	262.7	1519.6	Flatter sheet flow.
8/15/2007 17:32	45.92616	-129.97948	263.2	1518.4	Old sulfide chimney with crab. Little chimney around Flat Top with no name.
8/15/2007 17:32	45.92615	-129.97953	263.4	1518.8	Pillow flow (flattened).
8/15/2007 17:33	45.92618	-129.97966	267.5	1518.8	Lobates with staining. Much bigger pillows.
8/15/2007 17:34	45.92620	-129.97971	267.8	1518.3	HD on.
8/15/2007 17:34	45.92620	-129.97972	267.7	1518.3	Waiting for Medea.
8/15/2007 17:35	45.92620	-129.97975	267.8	1517.1	Here we go again.
8/15/2007 17:35	45.92620	-129.97979	264.8	1513.7	Large pillow mound and old sulfide chimney.
8/15/2007 17:35	45.92620	-129.97979	270.5	1513.4	HD off.
8/15/2007 17:36	45.92611	-129.97982	242.9	1511.8	Map says this is Flat Top.
8/15/2007 17:37	45.92610	-129.97984	225.2	1509.2	Diffuse flow on chimney sides with some biology. Top is flat and no smoke.
8/15/2007 17:37	45.92612	-129.97995	284.5	1510.5	Map has offset of ~10m to the west of where we are.
8/15/2007 17:38	45.92612	-129.97997	280.7	1510.7	HD on.
8/15/2007 17:38	45.92614	-129.98002	282.1	1512.1	This is Castle. HOBO should be in the lower left.
8/15/2007 17:38	45.92614	-129.98002	280.6	1512.3	Anhydrite vent on the lower left is the sample area as well.
8/15/2007 17:39	45.92614	-129.98003	280.5	1512.5	Looks like HOBO may have fallen out of the vent.
8/15/2007 17:39	45.92614	-129.98003	280.4	1512.8	Still waiting for the ship and Medea.
8/15/2007 17:39	45.92614	-129.98002	280.1	1513.7	Map offset may be less-everything is very close together here. HD off.
8/15/2007 17:43	45.92611	-129.98009	351.1	1516.7	Approaching vent from the south (looking north).
8/15/2007 17:43	45.92611	-129.98009	349.6	1516.7	HOBO is off to the left.
8/15/2007 17:44	45.92611	-129.98009	349.8	1516.7	Going to fluid sample before retrieving the HOBO.
8/15/2007 17:44	45.92612	-129.98009	349.2	1516.7	Retrieving wand and stowing basket.
8/15/2007 17:45	45.92612	-129.98009	349.2	1516.7	Top of anhydrite knocked over by wand. Nice hole for sampling. Castle.
8/15/2007 17:47	45.92611	-129.98009	347.2	1516.0	Pulled off sample site.
8/15/2007 17:51	45.92611	-129.98008	351.6	1517.0	<b>J292-HFS-014</b> Repositioned at Castle with more excavating. Filtered piston with no gold ring. #8 with expandable gas bag.
8/15/2007 17:51	45.92611	-129.98008	351.5	1517.0	J292-HFS-014 Starting filtered piston #8.
8/15/2007 17:52	45.92611	-129.98008	351.6	1517.0	J292-HFS-014 Good flow on exhaust. HD on.
8/15/2007 17:54	45.92610	-129.98009	351.6	1517.0	J292-HFS-014 Stopping.
8/15/2007 17:55	45.92610	-129.98009	351.6	1517.0	J292-HFS-014 Tmax=237.8 Tavg=237.4 vol=609 T2=74.4 sigma=.14
8/15/2007 17:55	45.92609	-129.98009	351.6	1517.0	Reset doppler.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/15/2007 17:56	45.92609	-129.98010	351.6	1517.1	J292-HFS-015 Filtered bag #20. Starting. Same spot at Castle. HD stopped just before starting sample.
8/15/2007 17:58	45.92609	-129.98009	351.6	1517.1	J292-HFS-015 Stopping.
8/15/2007 17:59	45.92608	-129.98009	351.6	1517.1	J292-HFS-015 Tmax=237.3 Tavg=237.1 vol=272 T2=73 sigma=.14
8/15/2007 18:01	45.92608	-129.98009	352.1	1517.1	Done at Castle. Next stop is Marker 105. Stowing wand and basket.
8/15/2007 18:01	45.92608	-129.98009	352.1	1517.1	Not done. Need to exchange HOBOS for a MISO.
8/15/2007 18:02	45.92608	-129.98009	352.0	1517.1	HOBOS knocked out of the anhydrite-tip still was in structure.
8/15/2007 18:03	45.92608	-129.98009	351.7	1517.0	Have HOBOS and putting in port milkcrate with sulfide sample. (MISO #102.)
8/15/2007 18:04	45.92608	-129.98009	351.8	1517.0	Replacing with <b>MISO #103</b> . Retrieving from basket.
8/15/2007 18:07	45.92608	-129.98009	352.3	1517.1	Positioning MISO in anhydrite. We are at the SE part of Castle base looking north.
8/15/2007 18:07	45.92608	-129.98009	352.2	1517.1	Bent intake more on basket for better fit.
8/15/2007 18:09	45.92609	-129.98008	352.0	1517.1	Tip buried deep in anhydrite hold next to sample hole. Position looks good.
8/15/2007 18:10	45.92609	-129.98008	352.0	1517.1	Back end of MISO resting on white stained piece of structure.
8/15/2007 18:10	45.92609	-129.98008	352.0	1517.1	360m at 320deg is are target to next site at Marker 108.
8/15/2007 18:11	45.92609	-129.98008	351.8	1517.1	Looking at tip again and would like to move it over in to the same hold as HFS samples (just a bit to the right in same anhydrite area)
8/15/2007 18:12	45.92609	-129.98008	351.8	1517.1	Jason hasn't moved from site.
8/15/2007 18:12	45.92609	-129.98007	351.8	1517.1	Repositioning intake even though lots of flow but more action just to right.
8/15/2007 18:13	45.92609	-129.98007	351.8	1517.1	Tip pushed deep into same sampling hole. Looks much better.
8/15/2007 18:14	45.92609	-129.98007	352.0	1517.2	Back end is now resting on sulfide without staining (just below white stained area).
8/15/2007 18:14	45.92609	-129.98007	351.6	1517.2	Now ready to go to Marker 108.
8/15/2007 18:14	45.92609	-129.98012	351.6	1516.4	Lots of sulfide structures at base (inactive-dead).
8/15/2007 18:14	45.92610	-129.98014	352.3	1515.9	Moving out over pillows.
8/15/2007 18:15	45.92613	-129.98018	350.2	1514.9	Contact of 1998 lava with older flow.
8/15/2007 18:16	45.92616	-129.98019	349.6	1515.6	Older flow has larger lobate pillows. New flow has flattened pillows.
8/15/2007 18:16	45.92618	-129.98020	349.2	1516.4	Both flows have sediment cover.
8/15/2007 18:18	45.92621	-129.98021	350.0	1517.0	Waiting for ship and Medea only moving very slightly.
8/15/2007 18:20	45.92628	-129.98023	351.4	1517.3	Collapsed area.
8/15/2007 18:20	45.92631	-129.98023	351.1	1517.3	Stubby pillar.
8/15/2007 18:20	45.92638	-129.98030	349.2	1517.9	Another pillar as we move across the collapse.
8/15/2007 18:20	45.92640	-129.98032	349.3	1518.0	Lineated sheet flow and swirls.
8/15/2007 18:21	45.92644	-129.98035	350.4	1516.4	Other side of the collapse and another one coming up.
8/15/2007 18:22	45.92648	-129.98039	322.3	1517.0	Skylights on top of uncollapsed areas.
8/15/2007 18:23	45.92653	-129.98045	322.5	1516.9	Top of uncollapsed feature is flattened pillows with staining between lobates.
8/15/2007 18:24	45.92664	-129.98057	318.2	1517.6	Coming up to another edge of a collapsed area.
8/15/2007 18:24	45.92669	-129.98064	320.5	1518.0	Over collapse and coming up to pillar. Rattail.
8/15/2007 18:25	45.92677	-129.98073	320.0	1516.6	Other side. Stained area of past activity.
8/15/2007 18:25	45.92679	-129.98077	320.2	1516.3	Just a small island as head over more collapse and cake-layer pillars.
8/15/2007 18:27	45.92691	-129.98096	320.2	1516.3	Large island with big skylights.
8/15/2007 18:27	45.92697	-129.98106	320.0	1516.3	Past island.
8/15/2007 18:30	45.92718	-129.98141	316.5	1515.6	Fair amount of hydrothermal sediment on the lobate surface here.
8/15/2007 18:31	45.92723	-129.98150	320.6	1515.8	Square shaped skylight.
8/15/2007 18:33	45.92738	-129.98176	320.5	1515.7	Moving over collapse.
8/15/2007 18:33	45.92743	-129.98186	320.4	1515.8	Other side of collapse. We are flying a bit higher. Get a few of the edge and holes.
8/15/2007 18:34	45.92746	-129.98195	320.2	1515.8	Collapse was over 2m deep.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/15/2007 18:35	45.92752	-129.98209	320.2	1515.8	Flattened lobates with a good amount of sediment.
8/15/2007 18:36	45.92756	-129.98218	320.0	1515.8	Lighter orange on map appears to be uncollapsed regions. Matches well.
8/15/2007 18:37	45.92767	-129.98226	321.1	1515.9	Coming to edge of another large collapse area. Peninsula sticking out.
8/15/2007 18:38	45.92776	-129.98231	321.4	1515.9	Total depth went from 1519 to 1521.
8/15/2007 18:38	45.92780	-129.98232	321.3	1515.9	Large pillar (or mini island).
8/15/2007 18:39	45.92786	-129.98235	320.8	1515.8	Total depth is increasing to 1524 and taller pillars.
8/15/2007 18:39	45.92791	-129.98240	321.0	1515.9	Good view of crag on top of pillar.
8/15/2007 18:39	45.92792	-129.98242	320.9	1515.8	That is a crab not a crag.
8/15/2007 18:40	45.92805	-129.98251	321.2	1515.9	May be some fallen pillars but flying a bit high.
8/15/2007 18:41	45.92808	-129.98255	320.6	1518.6	Moved closer to bottom. Jumbled flow in collapse area.
8/15/2007 18:42	45.92809	-129.98262	320.2	1518.9	Uncollapsed area to right.
8/15/2007 18:43	45.92816	-129.98273	320.8	1518.9	Large collapse area with jumbled sheet flow.
8/15/2007 18:44	45.92828	-129.98287	320.8	1520.2	Shift change as Jason stopped moving.
8/15/2007 18:44	45.92829	-129.98290	320.3	1520.2	Smoother sheet flow with sediment.
8/15/2007 18:46	45.92840	-129.98304	320.8	1520.2	Sheet flow with lots of swirls and striations.
8/15/2007 18:46	45.92842	-129.98309	321.5	1518.0	Ran into pillar with crab. Piece of pillar collapsed to bottom. [Note: when still on basket, given sample id <b>J292-ROCK-026</b> ]
8/15/2007 18:48	45.92853	-129.98326	319.8	1517.2	Large pieces of pillar fell into basket. Should be able to distinguish from the sulfide on the bottom.
8/15/2007 18:51	45.92865	-129.98339	320.3	1519.3	Clearing off some of the debris that landed on the platform.
8/15/2007 18:53	45.92862	-129.98321	167.8	1517.8	The marker 108 site has tubeworms on top of a pillar.
8/15/2007 18:57	45.92876	-129.98313	278.6	1517.7	Some orange staining in the cracks up here.
8/15/2007 19:03	45.92864	-129.98304	122.3	1517.2	Still looking around this area with lots of lava pillars.
8/15/2007 19:17	45.92881	-129.98304	115.8	1517.0	More sediments over this way.
8/15/2007 19:26	45.92878	-129.98325	87.8	1517.5	We are close to marker 108 and are in the 98 lava flow.
8/15/2007 19:26	45.92879	-129.98325	87.2	1517.4	We will be taking the rock sample for Marty Fiske here.
8/15/2007 19:35	45.92877	-129.98321	85.5	1518.4	We have put a chunk of the rock in the biobox.
8/15/2007 19:37	45.92878	-129.98319	85.4	1518.4	<b>J292-ROCK-016</b> A second piece in the Port biobox.
8/15/2007 19:38	45.92878	-129.98325	95.0	1518.4	J292-Rock-016 The rock sample was collected close to where we think Marker 108 is located.
8/15/2007 19:38	45.92874	-129.98326	158.9	1518.7	We are now headed to Marker 113.
8/15/2007 20:12	45.92615	-129.98543	209.2	1517.1	Still traveling.
8/15/2007 20:41	45.92276	-129.98819	210.4	1519.0	At Marker 113. Exactly where it should be based on the Nav.
8/15/2007 20:41	45.92275	-129.98820	241.9	1519.1	Looking for some flow.
8/15/2007 20:49	45.92272	-129.98824	269.4	1520.9	Getting the HFS wand out to sample.
8/15/2007 20:54	45.92272	-129.98827	279.7	1522.7	Temperature is going up.
8/15/2007 21:00	45.92272	-129.98826	279.3	1522.7	<b>J292-HFS-017</b> Starting Filtered Bag #22 at Marker 113.
8/15/2007 21:05	45.92273	-129.98825	279.2	1522.8	J292-HFS-017 End of filtered bag #22 - Tmax=31.1 Tav=30.7 Vol=705 T2=14.5 sigT=0.5.
8/15/2007 21:09	45.92273	-129.98824	278.7	1522.8	<b>J292-HFS-018</b> Starting unfiltered piston #7 at Marker 113.
8/15/2007 21:14	45.92274	-129.98824	278.7	1522.8	J292-HFS-018 End of unfiltered piston #7. Tmax=30.8 Tav=30.6 Vol=713 T2=14.6 sigT=0.05.
8/15/2007 21:15	45.92274	-129.98825	278.7	1522.8	J292-HFS-019 Starting Sterivex filter #11 at Marker 113.
8/15/2007 21:33	45.92274	-129.98826	278.6	1522.8	J292-HFS-019 End of the Sterivex filter - Tmax=31.1 Tav=30.7 Vol=2600 T2= 14.7 sigT=0.17
8/15/2007 21:34	45.92274	-129.98826	278.6	1522.9	<b>J292-HFS-020</b> Starting Sterivex #12 at Marker 113.
8/15/2007 21:52	45.92274	-129.98828	278.7	1522.9	J292-HFS-020 End of Sterivex #12 - Tmax=31.5 Tav=31.3 Vol=2617 T2=15.4 sigT=0.14.
8/15/2007 21:56	45.92274	-129.98829	278.7	1522.9	<b>J292-HFS-021</b> Starting filtered bag #19 at Marker 113.
8/15/2007 21:59	45.92274	-129.98829	278.7	1522.9	J292-HFS-021 End of filtered bag #19 - Tmax=31.5 Tav=31.4 Vol=444 T2=15.6 sigT=0.02.
8/15/2007 22:02	45.92274	-129.98829	278.7	1522.9	<b>J292-HFS-022</b> Starting unfiltered piston #3 at Marker 113.
8/15/2007 22:06	45.92274	-129.98830	278.7	1522.9	J292-HFS-022 End of unfiltered piston #3 - Tmax= 31.5 Tav=31.4 Vol=602 T2=14.9 sigT=0.03.
8/15/2007 22:11	45.92274	-129.98830	278.7	1522.9	Done with the HFS collections.
8/15/2007 22:12	45.92274	-129.98830	278.7	1522.9	Having a little trouble with the manipulator.
8/15/2007 22:20	45.92274	-129.98832	288.3	1522.9	Collected some tubeworms.
8/15/2007 22:21	45.92275	-129.98832	288.3	1522.9	<b>J292-BIO-023</b> Tubeworms into the port biobox.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/15/2007 22:22	45.92275	-129.98832	288.3	1522.9	J292-Bio-023 Those were weak looking tubeworms.
8/15/2007 22:24	45.92275	-129.98831	288.3	1522.9	Deploying a marker here.
8/15/2007 22:25	45.92275	-129.98831	288.3	1522.9	It is marker 62.
8/15/2007 22:26	45.92275	-129.98831	288.3	1522.9	Securing some of the accidentally collected sulphides into the port milkcrate.
8/15/2007 22:27	45.92275	-129.98831	288.3	1522.9	It is now time for the geology portion of the dive.
8/15/2007 22:29	45.92276	-129.98830	73.4	1519.1	Traveling ENE 217m to start examining some flows.
8/15/2007 22:39	45.92294	-129.98745	69.7	1520.1	Crossing some big collapses.
8/15/2007 22:46	45.92322	-129.98643	65.3	1520.1	Crossing some pillows.
8/15/2007 22:49	45.92335	-129.98599	70.4	1519.8	Some small collapses.
8/15/2007 22:50	45.92340	-129.98570	68.9	1519.8	Larger collapsed area. with some pillars.
8/15/2007 22:53	45.92340	-129.98562	151.8	1520.2	Heading south 150 m.
8/15/2007 22:54	45.92337	-129.98565	152.4	1520.2	We are currently over the 98 flow.
8/15/2007 23:04	45.92284	-129.98578	206.4	1520.6	Really large collapse.
8/15/2007 23:06	45.92262	-129.98576	146.7	1520.9	Large bathtub rings.
8/15/2007 23:14	45.92247	-129.98578	136.6	1520.1	Trying to determine if the collapse is older or part of the new flow.
8/15/2007 23:15	45.92246	-129.98577	136.1	1520.5	There is a bit of accumulated sediment so it may not be the 98 flow.
8/15/2007 23:16	45.92244	-129.98575	136.3	1520.6	Going east 100 m.
8/15/2007 23:16	45.92244	-129.98576	135.9	1520.6	Trying to find the western edge of the 98 flow.
8/15/2007 23:20	45.92247	-129.98557	88.3	1520.5	Still over the older flow most likely.
8/15/2007 23:27	45.92246	-129.98498	90.6	1521.3	We are midway into the collapse area and it still looks old.
8/15/2007 23:28	45.92246	-129.98475	89.0	1521.4	Still heading east.
8/15/2007 23:34	45.92241	-129.98433	87.1	1522.7	Everything looks older and sedimented.
8/15/2007 23:35	45.92246	-129.98417	88.5	1522.8	Exploded lobate flows.
8/15/2007 23:40	45.92246	-129.98409	88.0	1522.7	Waiting for Medea.
8/15/2007 23:42	45.92247	-129.98394	87.9	1522.8	Approaching the edge of the collapse.
8/15/2007 23:45	45.92248	-129.98385	88.1	1522.8	We are now in the channel of the 98 flow.
8/15/2007 23:49	45.92236	-129.98422	214.0	1523.4	Heading south along the channel.
8/15/2007 23:55	45.92211	-129.98448	213.5	1523.1	This stuff looks older.
8/15/2007 23:59	45.92189	-129.98462	177.6	1523.1	Jumbled flows.
8/16/2007 0:01	45.92186	-129.98457	169.9	1523.6	We are at the south edge of the collapse.
8/16/2007 0:06	45.92191	-129.98439	81.1	1524.4	It is hard to pick the margin of the flow.
8/16/2007 0:09	45.92188	-129.98426	158.4	1524.3	Still over the 98 channel.
8/16/2007 0:12	45.92181	-129.98423	178.7	1524.5	This wall is rubble.
8/16/2007 0:15	45.92172	-129.98420	162.3	1523.3	Jumble slabs.
8/16/2007 0:18	45.92165	-129.98421	169.7	1523.3	Traveling south along a levee of lava crusts.
8/16/2007 0:20	45.92161	-129.98425	171.2	1524.3	There are lobate flows to the west.
8/16/2007 0:20	45.92158	-129.98424	169.4	1524.3	A rapidly moving channel formed crusts on the edge that overlapped the earlier lobates.
8/16/2007 0:23	45.92144	-129.98416	170.2	1524.4	We are moving south along this channel from the 98 flow.
8/16/2007 0:24	45.92142	-129.98424	173.1	1524.2	HD started.
8/16/2007 0:25	45.92141	-129.98418	170.4	1524.2	Doing a video sequence to illustrate the levee process.
8/16/2007 0:29	45.92114	-129.98402	186.8	1524.5	Spotted some trash on the seafloor here.
8/16/2007 0:30	45.92112	-129.98398	184.6	1524.6	The spider crab was very interested in it.
8/16/2007 0:31	45.92100	-129.98418	189.5	1524.6	HD recording turned off.
8/16/2007 0:38	45.92047	-129.98413	217.6	1524.3	We are getting down to the narrow part of the ridge.
8/16/2007 0:38	45.92042	-129.98411	220.7	1524.6	We will stop it here so we can take a look down the sides
8/16/2007 0:39	45.92038	-129.98406	203.7	1524.5	The eastern side has the crust bulldozed up against the edge of the channel.
8/16/2007 0:41	45.92038	-129.98435	195.4	1524.7	Dropping down the western side.
8/16/2007 0:41	45.92039	-129.98439	276.0	1524.6	It is a large collapsed area here.
8/16/2007 0:44	45.92043	-129.98443	360.0	1524.6	We are waiting for Medea then will head north in the collapse a bit
8/16/2007 0:50	45.92066	-129.98456	2.8	1524.6	Heading north in this collapse.
8/16/2007 0:53	45.92069	-129.98446	134.8	1524.7	The thought is there was a pre-existing structure where the ridge is.
8/16/2007 0:53	45.92060	-129.98449	138.0	1524.7	The lava flow seem to be banked up against it on the west and the 98 flow on the east.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 0:57	45.92041	-129.98408	123.7	1524.5	Going back over the ridge to the east side.
8/16/2007 1:04	45.92036	-129.98393	276.8	1527.5	Looking at the ridge from the east.
8/16/2007 1:06	45.92037	-129.98396	231.4	1527.4	We are in a patch of really flat sheet flow.
8/16/2007 1:08	45.92027	-129.98402	213.0	1527.5	Looking at the contact between the flat flows and the ridge.
8/16/2007 1:09	45.92025	-129.98402	212.6	1527.4	This could have been a lake.
8/16/2007 1:10	45.92018	-129.98402	155.0	1527.5	Approaching the southern edge of the sheet flow.
8/16/2007 1:12	45.92011	-129.98407	244.1	1527.0	There is a big pile of rubble at the southern margin.
8/16/2007 1:13	45.92011	-129.98415	218.7	1525.8	Moving up to the top of the ridge to the west.
8/16/2007 1:15	45.92002	-129.98417	185.9	1525.1	We are continuing to move south along the lobate flow levee.
8/16/2007 1:16	45.91998	-129.98415	187.9	1525.0	Upping the transit speed to 0.25 knots.
8/16/2007 1:17	45.91997	-129.98413	253.1	1525.5	Looking at something stuck in the wall.
8/16/2007 1:18	45.91996	-129.98415	213.8	1525.6	Probably a fragment that was carried along.
8/16/2007 1:19	45.91994	-129.98420	182.5	1525.7	Big fish.
8/16/2007 1:20	45.91990	-129.98428	182.8	1525.7	Big tube from the west.
8/16/2007 1:21	45.91982	-129.98415	184.8	1525.8	The crest of the ridge is really jumbled.
8/16/2007 1:22	45.91981	-129.98417	183.2	1525.5	And spattery.
8/16/2007 1:23	45.91970	-129.98422	189.9	1525.3	Soup can.
8/16/2007 1:28	45.91951	-129.98423	188.2	1528.2	Still a jumble of a'a like flow.
8/16/2007 1:31	45.91961	-129.98443	253.5	1525.7	Headed west to see how far the 98 went towards the channel to the west.
8/16/2007 1:33	45.91972	-129.98461	253.7	1527.5	Found a sheet flow draining into the western channel.
8/16/2007 1:35	45.91960	-129.98477	252.1	1528.3	Still going down the west side of the levee.
8/16/2007 1:38	45.91954	-129.98496	264.5	1527.4	Still looks like the 98 flow overtopped the levee on it's southern end and flowed into the channel.
8/16/2007 1:41	45.91961	-129.98507	334.5	1528.3	Lots of jumbled stuff in and around the channel.
8/16/2007 1:43	45.91974	-129.98506	28.2	1527.8	Moving north along the channel for a bit.
8/16/2007 1:44	45.91972	-129.98506	184.4	1528.6	Found where the 98 flow overlapped the channel sheet flow.
8/16/2007 1:45	45.91967	-129.98507	188.3	1528.3	Now going south along the channel.
8/16/2007 1:51	45.91945	-129.98497	167.7	1528.5	Jumbled stuff all over.
8/16/2007 1:52	45.91943	-129.98501	239.0	1527.0	Looking at the western side of the channel.
8/16/2007 1:52	45.91942	-129.98502	233.3	1526.8	Jumbled flows all the way up.
8/16/2007 1:54	45.91932	-129.98486	160.8	1529.3	Moving west to go over another ridge.
8/16/2007 1:56	45.91927	-129.98481	163.7	1529.4	Reset LBL.
8/16/2007 1:56	45.91926	-129.98480	163.3	1529.4	Nav Doppler Reset
8/16/2007 1:57	45.91920	-129.98477	220.6	1529.2	Decided to continue down the narrow channel.
8/16/2007 1:59	45.91918	-129.98497	247.1	1526.8	Going over a wall to the west.
8/16/2007 1:59	45.91918	-129.98499	247.6	1526.7	Rubbly stuff still.
8/16/2007 1:59	45.91914	-129.98505	245.9	1526.7	Transition to collapsed lobated on top of the ridge.
8/16/2007 2:01	45.91923	-129.98518	246.2	1526.6	This stuff is older.
8/16/2007 2:02	45.91926	-129.98529	246.2	1526.9	Back into jumbled flow a little to the north.
8/16/2007 2:04	45.91919	-129.98530	245.8	1526.7	Reaching the western edge of the ridge.
8/16/2007 2:06	45.91913	-129.98525	242.1	1527.6	This is the southern edge of the flow over the ridge.
8/16/2007 2:08	45.91910	-129.98546	239.2	1530.3	This is the western edge. It is overlapping sheet flows in the channel.
8/16/2007 2:10	45.91913	-129.98549	253.4	1531.8	Traveling along channel where crustal fragments from flow surface have fallen into channel bed following outflow of magma
8/16/2007 2:12	45.91913	-129.98548	200.2	1531.8	The fragments form a series of tabular fragments along the channel floor and sides
8/16/2007 2:14	45.91907	-129.98548	177.7	1531.9	Looks like jumbled flow invading the channel from the east and south.
8/16/2007 2:17	45.91899	-129.98539	139.0	1529.0	Continuing south in the jumbled flow.
8/16/2007 2:19	45.91900	-129.98532	138.0	1528.7	There are some lobates.
8/16/2007 2:20	45.91887	-129.98532	135.7	1529.1	Moving southeast across jumbly flows.
8/16/2007 2:25	45.91861	-129.98517	140.1	1530.5	Dropping down into an area still covered by jumbled sheet flows.
8/16/2007 2:31	45.91853	-129.98546	266.4	1529.5	Moving west in search of the edge of the 98 flow.
8/16/2007 2:35	45.91848	-129.98579	302.1	1529.0	Double decker pillars.
8/16/2007 2:36	45.91848	-129.98580	267.5	1529.4	Triple decker pillars.



J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 2:38	45.91847	-129.98581	222.2	1528.9	98 jumbled flow is coming up to the pillar structure.
8/16/2007 2:40	45.91843	-129.98588	240.6	1528.7	Still moving west tracking the 98 flow.
8/16/2007 2:42	45.91843	-129.98594	241.9	1528.6	Smooth shiny lobate flows on to of the ridge to the north of the 98 flow.
8/16/2007 2:44	45.91841	-129.98600	244.0	1528.6	Still moving west along the ridge.
8/16/2007 2:45	45.91840	-129.98601	243.1	1528.8	Looks like the 98 jumble flow lapped onto the upper edge of the ridge.
8/16/2007 2:48	45.91840	-129.98625	292.0	1527.0	Trying to determine different flows. In old flow now. Turning south to follow western edge of flow.
8/16/2007 2:50	45.91830	-129.98620	173.0	1532.1	Driving south along jumbled flow with strong lineations.
8/16/2007 2:50	45.91828	-129.98619	172.6	1532.5	Sheet flow.
8/16/2007 2:51	45.91825	-129.98622	172.2	1530.4	Bulldozed area of sheet pieces.
8/16/2007 2:51	45.91824	-129.98632	170.3	1529.6	Turning west and looks like a pressure ridge. Heading back south.
8/16/2007 2:52	45.91819	-129.98641	171.9	1531.6	Sheet flow and swirl.
8/16/2007 2:52	45.91817	-129.98630	174.3	1530.6	Rough spot in channel-sheet jumbled.
8/16/2007 2:53	45.91816	-129.98620	173.6	1529.8	Holes in sheet. More pillow like structure. Edge.
8/16/2007 2:53	45.91815	-129.98610	173.6	1528.7	Jumbled flow.
8/16/2007 2:54	45.91807	-129.98600	171.8	1529.5	Jumbled flow and flow front appeared not to be steep-gradual.
8/16/2007 2:55	45.91806	-129.98605	170.9	1528.4	Edge of collapse.
8/16/2007 2:55	45.91803	-129.98612	170.3	1528.1	Over collapse area.
8/16/2007 2:56	45.91797	-129.98633	171.2	1529.0	Still in jumbled area.
8/16/2007 2:56	45.91795	-129.98639	171.2	1529.4	Back in sheet flow.
8/16/2007 2:56	45.91794	-129.98646	119.3	1529.7	Turning a bit east to look back at transition from jumble to sheet.
8/16/2007 2:56	45.91794	-129.98645	88.3	1529.8	All the sheet flow came down the channel.
8/16/2007 2:57	45.91797	-129.98642	71.6	1531.1	Transition area.
8/16/2007 2:58	45.91791	-129.98637	69.0	1531.7	Driving along transition.
8/16/2007 2:59	45.91782	-129.98637	72.2	1530.7	At end of Medea leash driving 070 along transition.
8/16/2007 3:01	45.91791	-129.98636	70.2	1532.2	Pre-1998 channel coming up from north on the blue area on the map.
8/16/2007 3:02	45.91791	-129.98636	70.1	1532.3	Pre-98 flow ridge may have blocked new lava from coming from east. Should see the newer flow in south again.
8/16/2007 3:02	45.91791	-129.98636	70.2	1532.4	Waiting for Medea.
8/16/2007 3:06	45.91775	-129.98666	159.1	1529.3	Heading south again. Over lineated sheet flow.
8/16/2007 3:06	45.91775	-129.98664	160.3	1529.1	Sheet flow less lineated.
8/16/2007 3:06	45.91775	-129.98645	160.5	1531.2	Lineated sheet flow as head 160.
8/16/2007 3:07	45.91773	-129.98638	161.2	1530.9	Expecting to find new lava in 50m.
8/16/2007 3:07	45.91766	-129.98635	158.1	1531.7	Small pressure mound in sheet flow.
8/16/2007 3:08	45.91760	-129.98637	159.4	1532.3	Seeing something in the channel. Ridge or sliding crust.
8/16/2007 3:09	45.91756	-129.98633	158.9	1531.9	Strongly lineated sheet flow .
8/16/2007 3:09	45.91756	-129.98633	156.9	1531.7	Eastern edge of channel.
8/16/2007 3:09	45.91748	-129.98644	159.2	1530.7	Back in channel.
8/16/2007 3:12	45.91730	-129.98653	159.1	1531.5	Looks like a lava river going in long-straight lines.
8/16/2007 3:12	45.91725	-129.98655	159.7	1531.7	Lava whirl.
8/16/2007 3:13	45.91720	-129.98657	160.2	1531.2	Less lineations and more whirls and smooth structure.
8/16/2007 3:13	45.91722	-129.98648	160.3	1529.8	Seeing jumbled now.
8/16/2007 3:15	45.91727	-129.98623	159.2	1531.3	Over jumbled flow area with some rough or a'a transition.
8/16/2007 3:15	45.91727	-129.98620	158.1	1531.7	Some shallow collapse and disorganized.
8/16/2007 3:15	45.91727	-129.98618	159.5	1531.7	Swinging heading from side to side and looking at different flow structure.
8/16/2007 3:16	45.91726	-129.98619	197.7	1531.5	Lava wash.
8/16/2007 3:16	45.91727	-129.98629	201.0	1531.8	Jumbled and low sediment. Some lobate structure or hackly.
8/16/2007 3:17	45.91719	-129.98630	200.3	1532.2	Don't know if in hackly channel or new flow.
8/16/2007 3:18	45.91705	-129.98623	201.1	1530.6	Material doesn't like to show its age as little sediment and all similar structure.
8/16/2007 3:18	45.91701	-129.98622	200.1	1530.9	Broken up sheet plates and jumble.
8/16/2007 3:20	45.91675	-129.98616	191.0	1531.6	Some lobate structure in jumble (some rounded edges-not really lobates).

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 3:21	45.91671	-129.98617	199.7	1531.8	Edge of jumble with sheet flow.
8/16/2007 3:21	45.91668	-129.98618	198.1	1532.3	Will continue along edge and switch underlay maps at edge of channel.
8/16/2007 3:26	45.91633	-129.98633	198.9	1531.6	Broken up sheet flow jumble.
8/16/2007 3:27	45.91625	-129.98639	197.7	1531.6	Small collapse or drain down.
8/16/2007 3:28	45.91613	-129.98632	198.3	1531.5	More jumbled sheet flows with little evidence of sediment (hard to stick).
8/16/2007 3:29	45.91603	-129.98627	198.1	1531.0	Over a slight depression and a few larger boulders.
8/16/2007 3:30	45.91596	-129.98626	171.3	1531.0	Changed underlay map.
8/16/2007 3:31	45.91589	-129.98624	170.6	1531.0	Lots of jumble still.
8/16/2007 3:32	45.91574	-129.98629	169.6	1530.1	Some large pieces within flow. Just secured one of the lights so looks like more sediment
8/16/2007 3:33	45.91572	-129.98628	168.9	1530.1	Reset doppler.
8/16/2007 3:33	45.91570	-129.98626	168.9	1530.1	Looks like more sediment but not (just less light).
8/16/2007 3:35	45.91550	-129.98640	171.9	1530.1	Cucumbers on jumble. This is smoother here.
8/16/2007 3:35	45.91548	-129.98640	168.0	1530.2	Transitioned to lobate flow now.
8/16/2007 3:37	45.91531	-129.98616	177.4	1531.2	Jumbled flow again with some large boulders.
8/16/2007 3:38	45.91521	-129.98626	177.9	1531.4	Transitioned into lobates again.
8/16/2007 3:38	45.91516	-129.98631	178.4	1531.4	Jumble again.
8/16/2007 3:40	45.91496	-129.98629	183.2	1531.6	Jumble on boundary of lobates.
8/16/2007 3:41	45.91486	-129.98630	196.0	1531.7	Actually striated sheet flow in the depression not edge of lobate.
8/16/2007 3:41	45.91481	-129.98630	205.6	1531.5	Depression could be remnant of old channel surrounded by new jumble flow.
8/16/2007 3:43	45.91476	-129.98636	202.9	1531.7	Waiting for Medea lateralling to west. Edge of depression in cameras.
8/16/2007 3:44	45.91475	-129.98642	223.6	1531.6	Top side of depression is jumbled flow.
8/16/2007 3:44	45.91473	-129.98648	239.3	1531.6	Depression was about 3 meters down.
8/16/2007 3:45	45.91471	-129.98657	237.9	1531.7	Lobates on the west of the depression-older flow is lobate.
8/16/2007 3:45	45.91457	-129.98665	210.5	1531.7	Collapse in jumble or edge of depression.
8/16/2007 3:46	45.91452	-129.98662	200.6	1531.6	Over jumble now as looking more west.
8/16/2007 3:46	45.91449	-129.98658	183.4	1531.7	Swinging east again over rough looking jumble.
8/16/2007 3:46	45.91449	-129.98654	183.1	1531.6	South of the depression now.
8/16/2007 3:47	45.91439	-129.98652	206.6	1531.7	Waiting for Medea.
8/16/2007 3:48	45.91434	-129.98664	208.1	1531.7	More jumble and lava balls. Out of remnant channel (depression on map).
8/16/2007 3:48	45.91432	-129.98669	207.7	1531.7	Lobates as we look west.
8/16/2007 3:49	45.91424	-129.98666	182.4	1531.7	Swinging more east again and over the jumble.
8/16/2007 3:51	45.91416	-129.98673	183.7	1531.9	Sheet flow here.
8/16/2007 3:51	45.91409	-129.98679	185.8	1532.4	Little remnant up against wall again?
8/16/2007 3:51	45.91404	-129.98684	200.7	1532.2	Still in sheet flow (old channel?)
8/16/2007 3:53	45.91394	-129.98693	206.0	1533.8	Jumble again-out of sheet flow as headed south.
8/16/2007 3:54	45.91389	-129.98708	203.9	1533.7	Old lobates here.
8/16/2007 3:54	45.91388	-129.98710	204.5	1533.8	Elongated lobates.
8/16/2007 3:55	45.91379	-129.98713	189.3	1533.5	Changing heading toward east as head south.
8/16/2007 3:55	45.91378	-129.98713	190.2	1533.6	Long lobates.
8/16/2007 3:56	45.91369	-129.98722	189.5	1533.8	Lobates flattening with some collapsed pillows.
8/16/2007 3:56	45.91361	-129.98731	189.6	1533.5	Some small jumble.
8/16/2007 3:57	45.91354	-129.98735	189.2	1533.7	Still lobate as we move down toward ship location.
8/16/2007 3:58	45.91342	-129.98744	187.1	1533.8	Old pillows.
8/16/2007 3:58	45.91341	-129.98741	157.7	1533.8	Edge of jumble-lobate contact to east.
8/16/2007 3:59	45.91339	-129.98736	159.2	1533.8	On jumble flow again as we moved east while continuing south.
8/16/2007 3:59	45.91334	-129.98730	157.3	1533.8	Looks like more folded than jumbled could be some remnant of channel flow.
8/16/2007 4:00	45.91331	-129.98729	149.7	1533.9	Now more jumbled looking here rather than folded.
8/16/2007 4:00	45.91325	-129.98734	149.3	1533.4	Still very jumbled.
8/16/2007 4:01	45.91319	-129.98729	160.7	1533.7	Edge of jumble and lobate.
8/16/2007 4:02	45.91316	-129.98730	195.1	1533.1	Up against edge on map. On older lobates. Edge on map runs NW-SE.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 4:02	45.91314	-129.98729	149.5	1533.3	Going to follow transition edge.
8/16/2007 4:04	45.91298	-129.98728	143.3	1533.2	Going to move SE along edge.
8/16/2007 4:05	45.91295	-129.98711	132.2	1533.3	Still over lobates looking for transition edge.
8/16/2007 4:07	45.91282	-129.98695	130.1	1533.3	Trying to head a bit more northerly to find the edge.
8/16/2007 4:09	45.91270	-129.98669	129.9	1533.3	Still lobates but rougher looking.
8/16/2007 4:11	45.91258	-129.98645	137.9	1533.2	Waiting for ship to move slightly north so we can get back over jumble.
8/16/2007 4:12	45.91258	-129.98639	138.2	1533.3	Empty pillows.
8/16/2007 4:12	45.91257	-129.98636	138.3	1533.2	Small collapsed pillows.
8/16/2007 4:14	45.91258	-129.98622	135.0	1533.3	Lobates have changed.
8/16/2007 4:15	45.91260	-129.98616	134.8	1533.2	Edge of jumble.
8/16/2007 4:15	45.91260	-129.98613	135.1	1533.1	Very subtle change just lapped up to pillows.
8/16/2007 4:16	45.91257	-129.98602	141.9	1533.0	Trying to see what small feature on the map are within the jumble (to the north from where we are).
8/16/2007 4:17	45.91252	-129.98589	143.1	1533.0	Seeing broken up striated lobates.
8/16/2007 4:17	45.91250	-129.98587	142.3	1533.0	In lobate region again.
8/16/2007 4:17	45.91248	-129.98586	141.3	1533.0	Old lobates again.
8/16/2007 4:18	45.91235	-129.98580	141.9	1533.1	Lobates are flattening out.
8/16/2007 4:20	45.91234	-129.98580	142.5	1532.9	Wandered a bit south into the older lobates.
8/16/2007 4:20	45.91232	-129.98568	142.3	1533.1	Holes in lobates (small collapsed features).
8/16/2007 4:22	45.91226	-129.98528	141.2	1533.0	Larger collapsed area or edge of pit.
8/16/2007 4:22	45.91224	-129.98526	141.2	1533.1	Sheet flow again at boundary.
8/16/2007 4:22	45.91224	-129.98522	141.3	1533.0	Rattail.
8/16/2007 4:23	45.91216	-129.98514	144.4	1533.2	Sheet flow laps up along edge of lobates. as head 145deg.
8/16/2007 4:23	45.91212	-129.98513	142.9	1533.1	Turning north and over jumbled flow again.
8/16/2007 4:24	45.91208	-129.98508	122.4	1533.2	Folded structure in jumble.
8/16/2007 4:25	45.91209	-129.98494	87.1	1533.0	Edge again of jumble and flatter looking lavas.
8/16/2007 4:26	45.91214	-129.98495	10.1	1533.2	This is boundary of sheet flow-jumble.
8/16/2007 4:26	45.91222	-129.98497	8.7	1533.2	Back on top of jumble as head north.
8/16/2007 4:28	45.91237	-129.98477	6.2	1533.5	Very rough looking jumble.
8/16/2007 4:31	45.91239	-129.98476	135.6	1533.4	Heading SE along flow edge. Will need to wait for ship and Medea.
8/16/2007 4:31	45.91235	-129.98473	148.2	1533.4	060deg at 150meters.
8/16/2007 4:33	45.91232	-129.98468	147.8	1533.2	Sea cucumbers and jumble. (That heading must have been 160-makes more sense.)
8/16/2007 4:34	45.91226	-129.98478	150.9	1533.3	Jumble still with some big boulders to right.
8/16/2007 4:37	45.91211	-129.98428	149.8	1533.0	Still going over jumble.
8/16/2007 4:38	45.91202	-129.98425	184.4	1533.1	Looking off to right and see jumble.
8/16/2007 4:39	45.91195	-129.98440	182.9	1534.8	Lobates now.
8/16/2007 4:39	45.91193	-129.98442	166.0	1534.8	Saw the lobates as we turned southerly.
8/16/2007 4:39	45.91192	-129.98442	145.2	1534.8	Turning back north some to look for transition again.
8/16/2007 4:40	45.91184	-129.98421	142.9	1534.9	Still lobates.
8/16/2007 4:41	45.91183	-129.98407	142.8	1536.3	Edge of jumble and lobate.
8/16/2007 4:41	45.91180	-129.98402	144.1	1535.9	Jumble goes right up to edge of lobates with a smooth transition.
8/16/2007 4:43	45.91165	-129.98409	143.6	1537.9	Lobates and a collapse feature-subtle change again.
8/16/2007 4:44	45.91158	-129.98410	144.0	1536.7	Small collapse feature matches with map.
8/16/2007 4:46	45.91158	-129.98390	174.4	1536.9	Edge of jumble with a wall right on target with map.
8/16/2007 4:46	45.91154	-129.98388	197.6	1537.0	Crack along edge with jumble on both sides.
8/16/2007 4:51	45.91114	-129.98379	185.7	1538.9	Still in jumble.
8/16/2007 4:51	45.91114	-129.98379	185.7	1537.8	Jason looking at light and ground problems.
8/16/2007 4:53	45.91107	-129.98383	191.9	1538.1	Heading down south.
8/16/2007 4:54	45.91088	-129.98366	190.7	1538.3	Looks like some in place lobates in the jumble.
8/16/2007 4:56	45.91083	-129.98377	192.5	1538.1	Collapse on map matches well.
8/16/2007 4:56	45.91083	-129.98376	192.1	1538.2	More jumble at bottom of collapse.
8/16/2007 5:01	45.91029	-129.98399	197.3	1538.4	Moving south over jumble.
8/16/2007 5:02	45.91016	-129.98398	195.4	1538.1	Edge of a depressed area.
8/16/2007 5:02	45.91015	-129.98390	194.1	1538.2	There is an edge in front of us.
8/16/2007 5:04	45.91014	-129.98405	195.3	1538.2	Collapsed area and jumble.
8/16/2007 5:05	45.91007	-129.98404	195.6	1538.1	Getting ready to sample here at edge of collapse.

J292 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 5:07	45.91007	-129.98405	195.6	1539.2	Reset doppler.
8/16/2007 5:08	45.91007	-129.98406	194.9	1540.5	<b>J292-ROCK-024</b> Looking for a sample rock.
8/16/2007 5:09	45.91008	-129.98406	195.0	1540.5	J292-ROCK-024 Taking a sample near distal end of what we think is 1998 flow. Analysis will verify.
8/16/2007 5:17	45.91004	-129.98411	194.9	1540.5	J292-ROCK-024 Rock is crumbly. Fist-sized. Placing in STBD aft quadrant of stbd milkcrate.
8/16/2007 5:18	45.91005	-129.98411	194.4	1540.5	Going to continue straight south and collect another rock at end of depression.
8/16/2007 5:19	45.91006	-129.98410	181.8	1539.6	Going 227m south to what is believed to be old sheet flow.
8/16/2007 5:20	45.91003	-129.98398	181.4	1539.1	Waiting for ship to move south.
8/16/2007 5:22	45.90993	-129.98402	182.8	1538.5	Edge of collapse feature.
8/16/2007 5:23	45.90984	-129.98406	183.6	1538.7	Other Moving forward over jumble.
8/16/2007 5:26	45.90958	-129.98405	181.3	1541.1	Sheet flow again.
8/16/2007 5:27	45.90952	-129.98407	183.8	1541.4	Down inside collapse area with sheet flow.
8/16/2007 5:28	45.90945	-129.98406	182.3	1541.6	Heading down collapse. (only 30 minutes of bottom time left)
8/16/2007 5:28	45.90944	-129.98406	182.2	1541.7	Jumbled now.
8/16/2007 5:29	45.90940	-129.98412	179.6	1541.4	Sheet flow with striations.
8/16/2007 5:29	45.90939	-129.98412	181.3	1541.8	Fish of non-rattail variety.
8/16/2007 5:29	45.90938	-129.98413	202.3	1540.4	Edge of drain feature. Undercut.
8/16/2007 5:30	45.90937	-129.98413	202.8	1539.1	Lobates on top.
8/16/2007 5:30	45.90932	-129.98415	181.9	1538.9	Lobates with collapse features.
8/16/2007 5:32	45.90904	-129.98408	175.7	1538.9	Lobates and lobates.
8/16/2007 5:35	45.90876	-129.98409	178.6	1541.7	Still heading south with older looking lobates.
8/16/2007 5:39	45.90830	-129.98414	175.9	1543.6	Other Collapse in lobates matches with map.
8/16/2007 5:40	45.90823	-129.98400	178.7	1543.6	Pillars in collapse area.
8/16/2007 5:40	45.90820	-129.98398	176.6	1543.5	Stonehenge pillars.
8/16/2007 5:41	45.90816	-129.98396	176.9	1543.6	Would like to sample here and then head east before time runs out.
8/16/2007 5:41	45.90813	-129.98396	177.5	1543.4	Want the sample to be of an old flow.
8/16/2007 5:44	45.90805	-129.98389	141.0	1547.7	Stacked pillar piece layers in collapse floor.
8/16/2007 5:44	45.90805	-129.98389	141.0	1547.7	These small slabs will be pure glass and will crumble if try to sample.
8/16/2007 5:48	45.90805	-129.98385	140.6	1547.7	<b>J292-ROCK-025</b> Piece from collapse floor in old lobate lava area at south end.
8/16/2007 5:48	45.90805	-129.98385	140.6	1547.7	J292-ROCK-025 Placed in aft center crate behind scoop.
8/16/2007 5:48	45.90805	-129.98385	140.6	1547.7	Stopped HD.
8/16/2007 5:48	45.90805	-129.98385	140.6	1547.7	Going to drop a weight.
8/16/2007 5:51	45.90806	-129.98386	140.1	1547.7	Dropping a weight.
8/16/2007 5:51	45.90806	-129.98385	140.1	1547.7	Going to head East until time runs out.
8/16/2007 5:52	45.90805	-129.98385	142.4	1547.6	Shrimp in brow cam.
8/16/2007 5:52	45.90805	-129.98385	142.6	1547.2	Off we go.
8/16/2007 5:52	45.90804	-129.98384	140.9	1545.8	Heading 068deg.
8/16/2007 5:53	45.90805	-129.98383	68.9	1543.5	Edge of collapse wall.
8/16/2007 5:53	45.90805	-129.98381	67.5	1543.7	Top of flow is old lobate.
8/16/2007 5:56	45.90816	-129.98370	68.4	1543.9	More lobates.
8/16/2007 6:00	45.90831	-129.98325	68.6	1543.8	Looks like a contact between small pillows and broken up lobate.
8/16/2007 6:03	45.90839	-129.98293	71.0	1543.3	Pillows/lobates look more cemented here.
8/16/2007 6:05	45.90840	-129.98285	89.8	1542.3	Driving forward a few more minutes. Basket looks good for surfacing.
8/16/2007 6:05	45.90840	-129.98272	92.2	1542.5	Wide pillows with some collapse.
8/16/2007 6:05	45.90842	-129.98259	88.5	1542.0	Collapse area to the left.
8/16/2007 6:06	45.90844	-129.98260	89.1	1541.8	Small feature is on the map.
8/16/2007 6:06	45.90853	-129.98257	88.0	1538.2	Pulling off bottom. Dive is ending.
8/16/2007 6:06	45.90853	-129.98256	88.3	1537.5	Stopping tapes.
8/16/2007 6:07	45.90859	-129.98274	88.2	1536.8	Heading for the surface.
8/16/2007 7:07	45.90853	-129.98217	71.1	1.3	Jason on surface
8/16/2007 7:10	45.90851	-129.98218	76.3	1.7	Medea on deck
8/16/2007 7:14	45.90847	-129.98220	57.8	0.7	Jason on deck
8/16/2007 7:14	45.90847	-129.98220	57.8	0.7	End lowering J2-292

Rock from pillar bump remained on basket; sample J292-ROCK-026 added to sample list: (Pillar sample from 1998 lava flow from collapsed lava lake. Near Marker 113. [Clague])

## 6.5.8 J2-293 Axial ASHES Vent Field

**J2-293 ASHES** [J2-293 Bottom time: 09:46] Deployed a test sonar reflector 20m south of Virgin when reached the bottom, then collected a rock (Fisk). At Virgin, recovered and deployed a MISO, took 3 HFS and 2 gas tight samples (navigation appeared to be off by 20m here). Moved to Gollum (low flow) and took 5 HFS and 1 high-volume pump samples and HD survey. Test of steel sonar reflector not successfully seen by Jason's sonar. **Marker 64 deployed** at Gollum. Next sampled Mushroom with 1 HFS and 1 gas tight. Moved to Inferno; took HD video, 3 HFS, 1 gas tight and 1 tube worm samples. At Hell, obtained 2 HFS samples. Moved to Phoenix and took 2 HFS samples. At ROPOS (north and ROV-length away from Phoenix), took a suction sample of limpets and 1 HFS; **deployed marker 54**. Went back to Phoenix to obtain a tube worm sample. Stopped by Hairdo, then Dave's but not enough water flow for a sample at either site. Did find some flow east of Dave's in a crack with tubeworms and took one HFS sample. Retrieved sonar reflector and sampled nearby sheet flow (~10m SE of Virgin). Moved along at 310deg on a geology run; mixture of lobate and sheet flows up to the base of the caldera wall. Sampled a lobate from a lib of a pillow en route. Moving up the caldera wall from talus up to dikes before ending dive.

J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 19:21	45.91664	-130.02500	187.9	1.2	Preparing for launch J2-293
8/16/2007 19:27	45.91664	-130.02500	188.4	1.4	Medea in water
8/16/2007 19:28	45.91668	-130.02497	72.2	3.1	Jason in water
8/16/2007 19:29	45.91668	-130.02494	68.2	8.4	.1 ground on kraft arm
8/16/2007 19:29	45.91667	-130.02495	68.3	3.3	Starting down
8/16/2007 19:30	45.91668	-130.02494	50.6	11.0	Ran slurp
8/16/2007 19:37	45.91664	-130.02499	347.7	114.0	On the way to the bottom for lowering J2-293.
8/16/2007 19:40	45.91666	-130.02501	346.9	110.0	The Kraft arm seems to be in good shape.
8/16/2007 20:24	45.93415	-130.01410	327.7	1535.8	Should be coming up to the bottom.
8/16/2007 20:24	45.93408	-130.01407	105.5	1537.7	We have made it to the bottom.
8/16/2007 20:25	45.93403	-130.01395	106.8	1537.9	Starting the video.
8/16/2007 20:26	45.93391	-130.01386	107.5	1538.2	First job is to deploy the Sonar Reflector.
8/16/2007 20:27	45.93380	-130.01369	112.5	1539.5	We are at the ASHES vent field.
8/16/2007 20:32	45.93367	-130.01331	120.2	1539.6	Spotted one of the Metaxas settling arrays.
8/16/2007 20:33	45.93367	-130.01330	121.6	1539.5	The LBL position is about 10m east of the targets.
8/16/2007 20:34	45.93367	-130.01330	121.3	1539.5	We are putting out the sonar reflector south of Virgin.
8/16/2007 20:37	45.93347	-130.01327	182.3	1538.4	Spotted a little marker in the distance.
8/16/2007 20:38	45.93347	-130.01328	183.2	1543.5	Deploying the reflector 20m south of Virgin.
8/16/2007 20:41	45.93362	-130.01317	25.7	1542.3	J293-rock-001 Collecting a rock sample for Fisk. It is going in the starboard biobox.
8/16/2007 20:43	45.93362	-130.01317	25.9	1542.2	J293-rock-001 Rock successfully placed.
8/16/2007 20:46	45.93365	-130.01322	200.1	1543.6	Back at Virgin. We will be collecting and deploying a MISO and doing some water sampling.
8/16/2007 20:48	45.93364	-130.01323	203.6	1543.8	Nav offset is more like 20m - not 10m.
8/16/2007 20:50	45.93364	-130.01324	203.4	1543.8	Recovering MISO 104.
8/16/2007 20:55	45.93364	-130.01323	202.3	1543.9	Going to do some fluid sampling now.
8/16/2007 20:55	45.93364	-130.01323	202.3	1543.9	Placing MISO 104 out but will properly deploy it later.
8/16/2007 21:01	45.93362	-130.01323	216.0	1543.8	Getting into an ok position.
8/16/2007 21:01	45.93362	-130.01323	216.0	1543.8	Temperature around 200 here. It usually ranges between 250-320.
8/16/2007 21:07	45.93363	-130.01322	216.1	1543.8	Temperature is now 230C.
8/16/2007 21:10	45.93365	-130.01323	216.1	1543.8	Starting some HD recording.
8/16/2007 21:11	45.93364	-130.01323	216.1	1543.9	Stopped the HD.
8/16/2007 21:13	45.93364	-130.01323	216.1	1543.9	J293-HFS-002 Starting filtered piston #1. Temperature is 252C at Virgin vent.
8/16/2007 21:15	45.93364	-130.01322	216.1	1543.9	J293-HFS-002 End of filtered piston #1 - Tmax=252 Tavg=251.1 Vol=247 T2=85 sigT=0.65.
8/16/2007 21:15	45.93364	-130.01322	216.1	1543.9	J293-HFS-003 Starting filtered piston #2 at Virgin.
8/16/2007 21:17	45.93363	-130.01324	216.1	1543.9	J293-HFS-003 End of filtered piston #2 - Tmax=252.5 Tavg=252 Vol=285 T2=86 sigT=0.13.
8/16/2007 21:18	45.93364	-130.01325	216.1	1543.9	J293-HFS-003 Starting filtered bag #18 at Virgin.
8/16/2007 21:20	45.93364	-130.01324	216.1	1543.9	J293-HFS-003 End of filtered bag #18 - Tmax=252.3 Tavg=252.1 Vol=203 T2=85 sigT=0.13.

J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 21:21	45.93365	-130.01323	216.1	1543.9	J293-HFS-004 It was filtered bag #18 - Tmax=252.3 Tavg=252.1 Vol=203 T2=85 sigT=0.13.
8/16/2007 21:21	45.93365	-130.01324	216.1	1543.9	J293-HFS-004 Those last samples were actually sample 004.
8/16/2007 21:22	45.93365	-130.01323	216.1	1543.9	Done with the HFS sampler. Now preparing a gas tight bottle.
8/16/2007 21:25	45.93365	-130.01323	216.1	1543.9	Blue Gas tight bottle for Leigh from the same spot.
8/16/2007 21:26	45.93365	-130.01323	216.1	1543.9	J293-GT-005 Taking the blue gas tight bottle.
8/16/2007 21:27	45.93365	-130.01323	216.1	1543.9	J293-GT-005 It looks to be a good sample.
8/16/2007 21:28	45.93365	-130.01324	216.1	1543.9	We are going to take a second gas tight here as well.
8/16/2007 21:31	45.93364	-130.01325	216.1	1544.0	Second gas tight bottle at Virgin - black bottle.
8/16/2007 21:32	45.93365	-130.01324	216.1	1544.0	J293-GT-006 It looks to be a good sample as well.
8/16/2007 21:32	45.93365	-130.01324	216.1	1544.0	J293-GT-006 Taking the black gas tight.
8/16/2007 21:34	45.93365	-130.01324	216.1	1544.0	Positioning MISO 101 that was taken off earlier.
8/16/2007 21:37	45.93367	-130.01323	217.8	1544.1	MISO 101 successfully positioned.
8/16/2007 21:40	45.93369	-130.01326	170.9	1542.8	Next stop is Gollum or whatever we find.
8/16/2007 21:40	45.93370	-130.01327	174.9	1542.6	Passing an old Alvin dive weight.
8/16/2007 21:41	45.93371	-130.01328	182.8	1542.6	The frame is an anchor for an old instrument.
8/16/2007 21:43	45.93357	-130.01332	268.8	1541.4	Just passing by the reflector deployed earlier this dive.
8/16/2007 21:44	45.93356	-130.01339	146.6	1542.1	We think this is Gollum here.
8/16/2007 21:45	45.93354	-130.01340	130.6	1543.4	Gollum is looking quite low flow.
8/16/2007 21:45	45.93353	-130.01340	130.2	1543.7	There is a dive weight here in the front.
8/16/2007 21:46	45.93353	-130.01341	129.7	1543.8	We are recording some HD video here.
8/16/2007 21:47	45.93352	-130.01342	128.6	1543.8	Stopped the HD.
8/16/2007 21:48	45.93352	-130.01343	129.6	1543.8	We are going to do some HFS sampling here.
8/16/2007 21:50	45.93352	-130.01342	129.7	1543.8	This spot is 10C so we will move the wand around a bit to see if we can find anything hotter.
8/16/2007 21:52	45.93353	-130.01341	129.9	1543.8	Temperature is over 20 here.
8/16/2007 21:54	45.93353	-130.01341	129.8	1543.8	J293-HFS-007 Starting unfiltered bag #24 at Gollum.
8/16/2007 21:56	45.93353	-130.01341	129.9	1543.9	J293-HFS-007 End of unfiltered bag #24 - Tmax=22.9 Tavg=22.3 Vol=413 T2=11.7 sigT=0.36.
8/16/2007 21:57	45.93354	-130.01340	129.8	1543.9	J293-HFS-008 Starting filtered bag #22 at Gollum.
8/16/2007 22:00	45.93354	-130.01340	129.8	1543.9	J293-HFS-008 End of filtered bag # 22 - Tmax=22.1 Tavg=21.6 Vol=407 T2=11.3 sigT=0.23.
8/16/2007 22:02	45.93354	-130.01340	129.8	1543.9	J293-HFS-009 Starting Sterivex #15 at Gollum.
8/16/2007 22:19	45.93356	-130.01338	129.4	1543.9	J293-HFS-009 End of Sterivex #15 - Tmax=24 Tavg=22.6 Vol=2627 T2=11 sigT=0.5.
8/16/2007 22:19	45.93356	-130.01338	129.4	1543.9	J293-HFS-010 Starting Sterivex #14 at Gollum.
8/16/2007 22:35	45.93354	-130.01340	129.6	1543.9	J293-HFS-010 End of Sterivex #14 - Tmax=22.9 Tavg=21.8 Vol=2513 T2=11.6 sigT=0.64.
8/16/2007 22:36	45.93354	-130.01340	129.6	1543.9	J293-HFS-011 Starting Sterivex filter #13 at Gollum for Annie.
8/16/2007 22:52	45.93356	-130.01339	129.6	1543.9	J293-HFS-011 End of Sterivex filter #13 - Tmax=22.3 Tavg=21.7 Vol=2554 T2=11 sigT=0.35
8/16/2007 22:56	45.93356	-130.01339	129.7	1543.9	J293-PUMP-012 Starting sample from high volume pelagic pump.
8/16/2007 22:57	45.93355	-130.01340	129.7	1543.9	J293-PUMP-012 Starting at 0.7 gallons per minute.
8/16/2007 23:16	45.93355	-130.01339	129.6	1543.9	J293-PUMP-012 End of sample from pump.
8/16/2007 23:21	45.93353	-130.01329	198.9	1542.7	Doppler Reset
8/16/2007 23:31	45.93356	-130.01323	214.1	1541.8	Trying different vehicle positions to see if sonar reflector can be detected by Jason's sonar
8/16/2007 23:32	45.93355	-130.01323	213.2	1544.4	Sonar reflector is 12 or 14 gauge galvanized steel sheet approximately 30 cm across
8/16/2007 23:36	45.93356	-130.01333	282.1	1543.4	Sonar target not visible to Jason
8/16/2007 23:37	45.93356	-130.01333	280.9	1543.3	Moved to Gollum will put marker #64 at sample site
8/16/2007 23:40	45.93356	-130.01331	281.8	1542.9	Doppler reset
8/16/2007 23:40	45.93356	-130.01331	281.9	1542.8	Sample site is small rocky mound
8/16/2007 23:41	45.93362	-130.01350	280.0	1542.1	Approaching Mushroom Chimney
8/16/2007 23:42	45.93364	-130.01355	279.8	1542.2	Hi def tape started
8/16/2007 23:43	45.93364	-130.01358	280.0	1543.0	Hi def segment of Mushroom Chimney

J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/16/2007 23:46	45.93365	-130.01359	280.0	1543.0	Started HD frame grabs.
8/16/2007 23:49	45.93364	-130.01359	279.9	1543.0	HD frame grabs off.
8/16/2007 23:49	45.93364	-130.01359	280.1	1543.0	HD off.
8/16/2007 23:55	45.93365	-130.01358	279.6	1542.9	HD on.
8/16/2007 23:56	45.93366	-130.01360	206.4	1543.0	Moving around Mushroom and taking some video.
8/16/2007 23:59	45.93364	-130.01362	203.1	1543.0	HD off.
8/17/2007 0:02	45.93364	-130.01363	203.2	1543.0	Trying to find a good hot place to sample.
8/17/2007 0:07	45.93364	-130.01362	203.4	1542.9	Repositioning the sub.
8/17/2007 0:08	45.93365	-130.01362	203.1	1542.9	Actually just repositioned the arm.
8/17/2007 0:14	45.93366	-130.01363	203.7	1542.9	J293-HFS-013 Starting filtered bag #16.
8/17/2007 0:17	45.93365	-130.01362	203.4	1542.9	J293-HFS-013 Low T2 readings. Trying to figure out the issue.
8/17/2007 0:19	45.93365	-130.01361	203.3	1542.9	J293-HFS-013 Pumping in reverse.
8/17/2007 0:21	45.93364	-130.01361	203.1	1542.8	J293-HFS-013 Stopped bag #16. Tmax=265 Tavg=256 Vol=348 T2=9.
8/17/2007 0:22	45.93364	-130.01362	203.4	1542.8	J293-GT-014 Firing starboard Gastight.
8/17/2007 0:24	45.93364	-130.01362	203.5	1542.8	Removing the fluid sampler nozzle.
8/17/2007 0:24	45.93364	-130.01362	203.3	1542.9	Reversing the flow.
8/17/2007 0:25	45.93364	-130.01362	203.1	1542.8	Lots of particles coming out.
8/17/2007 0:26	45.93367	-130.01361	206.6	1543.2	Looking for bubbles emanating from the base of the chimney.
8/17/2007 0:31	45.93357	-130.01364	294.0	1539.8	Heading over to Inferno.
8/17/2007 0:31	45.93358	-130.01366	295.7	1539.5	Taking a quick look around it with the HD.
8/17/2007 0:32	45.93361	-130.01368	254.8	1540.6	HD on.
8/17/2007 0:34	45.93360	-130.01366	253.4	1538.2	Circling around the top of Inferno in a counterclockwise direction.
8/17/2007 0:37	45.93365	-130.01371	151.5	1539.2	Looking at smokers on the side and on the top of the chimney
8/17/2007 0:42	45.93361	-130.01369	262.9	1541.4	Getting ready to sample on top of Inferno.
8/17/2007 0:44	45.93361	-130.01368	263.5	1541.4	At Inferno preparing the HFS.
8/17/2007 0:45	45.93362	-130.01368	263.7	1541.4	Stopping the HD tape here.
8/17/2007 0:45	45.93362	-130.01368	263.8	1541.4	There is a good survey recorded here on tape and the RAID recorder.
8/17/2007 0:45	45.93361	-130.01368	263.6	1541.4	We are still taking the HD video.
8/17/2007 0:47	45.93362	-130.01368	263.7	1541.3	J293-HFS-015 Starting filtered piston #3 at Inferno.
8/17/2007 0:50	45.93362	-130.01368	263.8	1541.3	J293-HFS-015 End of filtered piston #3 - Tmax=313.1 Tavg=312.8 Vol=438 T2=100 sigT=0.17.
8/17/2007 0:52	45.93362	-130.01368	263.8	1541.3	J293-HFS-016 Starting Filtered Piston #8 at Inferno.
8/17/2007 0:55	45.93362	-130.01368	263.8	1541.3	J293-HFS-016 End of filtered piston #8 - Tmax=313.4 Tavg=313.3 Vol=510 T2=100 sigT=0.07.
8/17/2007 1:01	45.93362	-130.01368	264.5	1541.2	J293-GT-017 Taking white gastight sample at Inferno.
8/17/2007 1:04	45.93362	-130.01368	261.3	1540.8	Now we are looking around for healthy fat worms.
8/17/2007 1:25	45.93361	-130.01370	230.6	1541.8	J293-BIO-018 Grabbed on clump by the chimney that was fluid sampled.
8/17/2007 1:28	45.93362	-130.01370	230.5	1541.8	J293-BIO-018 Grabbed a few more.
8/17/2007 1:32	45.93364	-130.01368	230.5	1541.8	J293-BIO-018 Finished sampling worms.
8/17/2007 1:33	45.93364	-130.01368	230.4	1541.8	J293-BIO-018 The worms were put in the starboard bio box.
8/17/2007 1:35	45.93365	-130.01370	203.4	1542.3	We are going to take a water sample where the worms were living.
8/17/2007 1:36	45.93365	-130.01370	203.6	1542.3	Problems with the starboard arm means we are using the port arm.
8/17/2007 1:39	45.93365	-130.01371	203.8	1542.3	J293-HFS-019 Starting filtered bag #20.
8/17/2007 1:39	45.93365	-130.01371	203.7	1542.2	Starting filtered bag #20.
8/17/2007 1:42	45.93365	-130.01372	203.8	1542.3	J293-HFS-019 End of filtered bag #20. Tmax=19.2 Tavg=17.3 Vol=427 T2=9 sigT=1.3.
8/17/2007 1:44	45.93366	-130.01371	203.7	1542.2	HD on.
8/17/2007 1:48	45.93369	-130.01375	135.1	1541.0	Flew around the top of the vent for video.
8/17/2007 1:48	45.93370	-130.01376	200.3	1541.4	HD off.
8/17/2007 1:50	45.93357	-130.01382	199.3	1542.7	Looking for Hairdo.

J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/17/2007 1:53	45.93349	-130.01382	233.7	1541.3	HD on.
8/17/2007 1:53	45.93347	-130.01387	237.0	1541.7	No luck finding the clump of tubeworms.
8/17/2007 1:54	45.93347	-130.01387	235.9	1541.6	Approaching Hell.
8/17/2007 1:56	45.93342	-130.01392	242.6	1540.2	Navigation points for this chimney is off.
8/17/2007 2:00	45.93339	-130.01393	281.8	1540.9	Flying around the chimney looking for good water flow.
8/17/2007 2:01	45.93339	-130.01394	270.0	1540.6	There is a nice clump of healthy fat tubeworms.
8/17/2007 2:03	45.93338	-130.01396	305.2	1540.2	HD off.
8/17/2007 2:06	45.93341	-130.01398	199.8	1540.8	Taking out the fluid sampler intake nozzle.
8/17/2007 2:11	45.93340	-130.01398	200.1	1540.7	The port arm is hard to lock into position. It drifts out of place.
8/17/2007 2:16	45.93340	-130.01397	200.9	1540.7	J293-HFS-020 Starting filtered piston #4.
8/17/2007 2:17	45.93340	-130.01397	200.5	1540.6	J293-HFS-020 Starting Piston #4 now.
8/17/2007 2:20	45.93340	-130.01397	200.6	1540.6	J293-HFS-020 T2 has dropped...the intake may be clogged.
8/17/2007 2:28	45.93339	-130.01397	200.8	1540.6	J293-HFS-020 Stopping Piston #4 at Hell. Tmax=267.1 Tavg=240.2 Vol=488 T2=12.
8/17/2007 2:29	45.93339	-130.01397	200.7	1540.6	J293-HFS-021 Starting unfiltered piston #5.
8/17/2007 2:33	45.93338	-130.01397	200.9	1540.5	J293-HFS-021 Stopping piston #5 at Hell. Tmax=267.6 Tavg=265.3 Vol=551 T2=12.5 sigT=1.59.
8/17/2007 2:36	45.93338	-130.01397	200.4	1540.6	Stowing the fluid sampler.
8/17/2007 2:37	45.93340	-130.01396	179.9	1540.0	Heading 15m east to ROPOS.
8/17/2007 2:41	45.93338	-130.01365	176.0	1541.8	This is Phoenix.
8/17/2007 2:42	45.93337	-130.01365	194.4	1541.7	HD on.
8/17/2007 2:42	45.93337	-130.01365	195.9	1541.8	We will sample here.
8/17/2007 2:45	45.93335	-130.01367	194.3	1542.2	Setting up to sample fluids at Phoenix.
8/17/2007 2:47	45.93335	-130.01368	198.9	1542.0	HD off.
8/17/2007 2:50	45.93334	-130.01367	199.7	1542.1	Nice flow with black smoke under worm bulge.
8/17/2007 2:53	45.93335	-130.01368	200.6	1542.0	Phoenix is about 3-4m tall.
8/17/2007 2:58	45.93333	-130.01370	200.9	1542.0	J293-HFS-022 Phoenix. Starting Filtered bag #19.
8/17/2007 3:01	45.93333	-130.01370	202.0	1542.0	J293-HFS-022 Stopping.
8/17/2007 3:01	45.93333	-130.01370	202.1	1542.0	J293-HFS-022 Tmax=288.5 Tavg=286.7 vol=407 T2=62.6 Sigma=1.13
8/17/2007 3:02	45.93333	-130.01369	201.3	1541.9	J293-HFS-023
8/17/2007 3:02	45.93333	-130.01369	200.8	1541.9	J293-HFS-023 Unfiltered Piston #6 starting.
8/17/2007 3:03	45.93333	-130.01369	201.2	1541.9	J293-HFS-023 Doppler reset.
8/17/2007 3:07	45.93333	-130.01369	201.9	1541.9	J293-HFS-023 Stopping.
8/17/2007 3:07	45.93333	-130.01368	202.3	1541.9	J293-HFS-023 Tmax=292.2 Tavg=281.5 vol=623 T2=65 SigmaT1=7.58
8/17/2007 3:09	45.93334	-130.01367	195.7	1541.9	Done at Phoenix. Next stop ROPOS.
8/17/2007 3:09	45.93335	-130.01366	204.9	1541.6	Leaving Phoenix.
8/17/2007 3:10	45.93338	-130.01368	306.8	1542.3	ROPOS should be just to north of Phoenix.
8/17/2007 3:13	45.93338	-130.01384	292.1	1542.2	There is ROPOS at 307deg.
8/17/2007 3:16	45.93336	-130.01372	160.2	1542.4	Not sure that may have been Hell. Here we are back at Phoenix with Marker D and the bucket lid.
8/17/2007 3:20	45.93329	-130.01380	236.7	1542.2	ROPOS is a very small patch of white with tiny chimney just north of Phoenix (practically can just spin vehicle around).
8/17/2007 3:25	45.93331	-130.01379	230.6	1542.8	J293-Suction-024 Suction of limpets at ROPOS.
8/17/2007 3:25	45.93331	-130.01379	231.0	1542.8	J293-Suction-024 Suction on.
8/17/2007 3:26	45.93331	-130.01379	230.9	1542.8	J293-Suction-024 Suctioning next to vent in shimmering water.
8/17/2007 3:26	45.93332	-130.01379	230.7	1542.8	Will get temperature from following HFS sampler wand.
8/17/2007 3:27	45.93331	-130.01379	230.8	1542.8	Stowing suction sampler and get HFS wand.
8/17/2007 3:27	45.93331	-130.01379	230.7	1542.8	Taking more DSC of sample site.
8/17/2007 3:45	45.93326	-130.01380	12.4	1542.2	Temperature in the limpet patch next to the small chimney Tmax=24. Other spots ~10deg.
8/17/2007 3:46	45.93326	-130.01380	12.7	1542.2	Repositioned wand again. Tmax=30
8/17/2007 3:47	45.93326	-130.01380	12.6	1542.2	J293-HFS-025 Starting. Unfiltered #7.
8/17/2007 3:51	45.93326	-130.01381	11.4	1542.2	Done at ROPOS.
8/17/2007 3:51	45.93326	-130.01381	11.5	1542.2	J293-HFS-025 Tmax=34.4 Tavg=31.8 vol=620 T2=13.2 SigmaT1=1.18



J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/17/2007 3:51	45.93326	-130.01381	12.7	1542.2	J293-HFS-025 Unfiltered Piston #7 stopped. ROPOS at limpet suction sample.
8/17/2007 3:53	45.93326	-130.01381	11.9	1542.2	Reset doppler.
8/17/2007 3:53	45.93326	-130.01381	11.8	1542.2	Stowing wand
8/17/2007 3:56	45.93327	-130.01383	14.5	1542.3	Deploying Marker 54 at ROPOS on west edge of vent.
8/17/2007 3:57	45.93326	-130.01384	90.0	1540.9	Going back to Phoenix for a worm sample.
8/17/2007 3:57	45.93327	-130.01383	14.4	1542.3	Marker is a white diamond with number cut-out.
8/17/2007 4:00	45.93332	-130.01372	128.5	1541.3	At Phoenix and going around chimney to other side where smoker is.
8/17/2007 4:02	45.93332	-130.01370	176.1	1541.9	Going back around counter-clockwise.
8/17/2007 4:02	45.93331	-130.01367	229.1	1541.8	Looking for tubeworms.
8/17/2007 4:03	45.93329	-130.01374	98.0	1542.0	Not seeing any clumps of worms. Moving further around counter-clockwise.
8/17/2007 4:08	45.93330	-130.01368	188.2	1542.4	Potential sample site just along crack where all the flow appears to be (below smoker).
8/17/2007 4:11	45.93331	-130.01367	188.2	1542.3	J293-BIO-026 Got a few worms in Port biobox from the crack.
8/17/2007 4:13	45.93331	-130.01367	188.2	1542.4	J293-BIO-026 Tried Kraft arm but still not functioning well enough to put in biobox.
8/17/2007 4:15	45.93330	-130.01368	188.3	1542.4	J293-BIO-026 Second grab in biobox-much larger clump.
8/17/2007 4:17	45.93331	-130.01368	186.7	1542.4	Changing video tapes.
8/17/2007 4:20	45.93331	-130.01367	188.8	1542.4	Done sampling worms (not very many here to begin with).
8/17/2007 4:20	45.93332	-130.01366	191.4	1541.8	Going to Dave's thing next.
8/17/2007 4:24	45.93335	-130.01389	297.7	1542.1	This looks like Hell.
8/17/2007 4:28	45.93347	-130.01375	12.4	1543.0	At Hairdo with Inferno in the background.
8/17/2007 4:32	45.93349	-130.01373	12.9	1543.0	Hairdo. Not enough water here to sample. Only got up to T=11.5deg.
8/17/2007 4:34	45.93344	-130.01364	113.6	1543.1	This may be Dave's as it is almost due east of Hairdo. Can't see much flow.
8/17/2007 4:35	45.93344	-130.01365	111.1	1542.8	Looking along crack for flow. Not seeing anything here.
8/17/2007 4:35	45.93342	-130.01362	79.2	1542.4	Moving further east to next white patch not far.
8/17/2007 4:36	45.93342	-130.01361	70.0	1542.9	Long and sparse tubes in cracks.
8/17/2007 4:36	45.93341	-130.01361	74.2	1542.6	There is some flow where the long-skinny tubeworms are.
8/17/2007 4:37	45.93340	-130.01360	60.8	1542.9	Can see a lot of limpets in the HD cam.
8/17/2007 4:43	45.93341	-130.01359	61.5	1542.9	J293-HFS-027 Unfiltered Bag #23 Starting.
8/17/2007 4:45	45.93341	-130.01359	61.5	1542.9	J293-HFS-027 Stopping.
8/17/2007 4:45	45.93341	-130.01359	61.5	1542.9	J293-HFS-027 Tmax=11.9 Tavg=11.6 vol=401 T2=6.7 Sigma=.16
8/17/2007 4:49	45.93341	-130.01357	68.7	1542.9	Looks like orange thing in worm clump is just a can of some sort.
8/17/2007 4:49	45.93341	-130.01357	68.6	1542.9	Not a marker.
8/17/2007 4:50	45.93341	-130.01357	68.7	1542.9	Going to look for a rock to pick up. Not here as all flattened lobates.
8/17/2007 4:50	45.93343	-130.01352	69.7	1541.1	Heading over to small ridge to the east to pick up the reflector and find a rock.
8/17/2007 4:51	45.93344	-130.01348	70.6	1541.6	Sheet flow here.
8/17/2007 4:52	45.93348	-130.01337	58.2	1540.4	Heading over 060. There's the reflector. Looking down for rocks.
8/17/2007 4:53	45.93346	-130.01338	28.0	1542.6	Can see Marker 64 in background by Gollum (put out on this dive).
8/17/2007 4:53	45.93347	-130.01332	30.9	1542.1	Heading for the reflector.
8/17/2007 4:55	45.93346	-130.01333	29.1	1542.7	Rocks all here are very crunchy with reflector in front of us at heading of 030.
8/17/2007 4:56	45.93347	-130.01333	31.2	1542.2	In lineated sheet flow with crunchy crust when trying to sample.
8/17/2007 4:57	45.93349	-130.01331	31.2	1542.6	Heading to reflector for pick-up.
8/17/2007 4:58	45.93350	-130.01330	33.0	1542.7	Reflector placed on basket in center.
8/17/2007 4:58	45.93350	-130.01330	33.0	1542.7	Reset doppler.
8/17/2007 5:00	45.93351	-130.01329	32.7	1542.7	Drive a bit north to look for a rock.

J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/17/2007 5:00	45.93353	-130.01327	31.0	1541.7	Just going about 20m away from the reflector.
8/17/2007 5:01	45.93357	-130.01324	30.5	1541.7	Lineations now perpendicular to our path (on way to reflector they were parallel).
8/17/2007 5:02	45.93358	-130.01318	82.4	1542.8	Pushed up sheet flow for sampling.
8/17/2007 5:03	45.93357	-130.01318	81.9	1542.9	J293-ROCK-028 At 10m SE of Virgin picked up rock from pushed up sheet flow feature.
8/17/2007 5:03	45.93357	-130.01318	81.8	1542.8	J293-ROCK-028 Placing in aft STBD milkcrate in the front-port quadrant.
8/17/2007 5:07	45.93359	-130.01322	320.0	1541.2	As turn-there are a few patches of white mat in crack.
8/17/2007 5:07	45.93356	-130.01319	63.7	1541.1	Heading 310 on a geology run.
8/17/2007 5:08	45.93363	-130.01324	310.2	1540.8	This is J302Gollum with larval settling substrate experiment.
8/17/2007 5:09	45.93367	-130.01332	309.6	1540.4	Going about 300m on this run.
8/17/2007 5:09	45.93367	-130.01330	309.5	1540.4	Going over lobate flow. Can see patches of hydrothermal activity.
8/17/2007 5:10	45.93370	-130.01343	309.6	1540.4	Here is a marker. This is Marker I at Marshmallow.
8/17/2007 5:10	45.93369	-130.01338	309.6	1540.4	Lobate-sheet flow with patches of white to STBD.
8/17/2007 5:11	45.93371	-130.01350	309.4	1540.4	More trash below us (another can).
8/17/2007 5:12	45.93371	-130.01351	308.9	1540.4	Broken up sheet flow with a lot of orange staining.
8/17/2007 5:12	45.93373	-130.01357	309.7	1540.4	Lobates over to port running along parallel to us.
8/17/2007 5:12	45.93371	-130.01354	310.1	1540.4	More sheet flow to port and coming up.
8/17/2007 5:13	45.93374	-130.01356	310.5	1540.4	Lobates may be trending a bit to the front of us.
8/17/2007 5:13	45.93377	-130.01358	310.3	1540.4	Lot of sediment here on sheet flow.
8/17/2007 5:14	45.93378	-130.01359	310.4	1540.4	Flow breaking up more in front of us and less sediment accumulated.
8/17/2007 5:14	45.93378	-130.01359	310.3	1540.4	Waiting for ship.
8/17/2007 5:15	45.93381	-130.01363	310.1	1540.5	Moving forward again. Patches of gray over flow.
8/17/2007 5:15	45.93381	-130.01365	310.3	1540.3	Sheet flow.
8/17/2007 5:16	45.93385	-130.01371	310.6	1540.4	Lobate flow coming back into view angling to NNE to our movement.
8/17/2007 5:17	45.93387	-130.01373	308.1	1540.4	Less hydrothermal sediment.
8/17/2007 5:17	45.93388	-130.01374	301.0	1540.4	Mixture of sheet and lobate flow.
8/17/2007 5:18	45.93393	-130.01382	298.1	1540.4	Large plate-like features.
8/17/2007 5:18	45.93395	-130.01385	298.1	1540.4	Turning into lobates.
8/17/2007 5:21	45.93403	-130.01404	318.8	1541.1	As camera panned right there were more sheet flows.
8/17/2007 5:21	45.93402	-130.01402	326.4	1541.1	Lobates with sediment in cracks.
8/17/2007 5:21	45.93401	-130.01400	297.4	1541.2	Moving very slowly forward.
8/17/2007 5:21	45.93404	-130.01407	311.5	1541.1	Uplifted area of lobates.
8/17/2007 5:22	45.93409	-130.01420	313.4	1541.4	Moving more swiftly now. Lots of lobates.
8/17/2007 5:23	45.93420	-130.01443	311.2	1541.1	Flattened lobates turning into sheet flow.
8/17/2007 5:23	45.93412	-130.01430	310.0	1541.2	Long lobates and sheet flow.
8/17/2007 5:24	45.93427	-130.01443	311.4	1541.0	Crusting looking plates in small pushed up area.
8/17/2007 5:24	45.93425	-130.01443	311.8	1541.1	Sheet flows with some pushed up plates but very flat.
8/17/2007 5:25	45.93427	-130.01449	311.2	1541.2	Long linear features in sheet flow.
8/17/2007 5:25	45.93427	-130.01445	312.2	1541.1	Seastar (looks lonely).
8/17/2007 5:25	45.93428	-130.01462	312.8	1541.1	Sheets turning into crunchy jumble.
8/17/2007 5:26	45.93441	-130.01475	311.7	1541.6	Flattening a bit but still jumble.
8/17/2007 5:26	45.93435	-130.01468	313.7	1540.8	More structure in jumble.
8/17/2007 5:26	45.93430	-130.01465	312.7	1541.2	The change coincided with the depth change on map.
8/17/2007 5:27	45.93447	-130.01483	311.9	1539.9	More seastars here.
8/17/2007 5:27	45.93451	-130.01489	312.6	1540.2	Smoother appearance here.
8/17/2007 5:28	45.93457	-130.01496	312.1	1540.5	Breaking up again.
8/17/2007 5:28	45.93454	-130.01492	312.4	1540.7	Changing to sheet flow.
8/17/2007 5:28	45.93460	-130.01499	311.9	1540.5	Jumble.
8/17/2007 5:29	45.93465	-130.01512	312.0	1541.1	At a transition on the map and there is the flat sheet flow again. Sheet flow is descending away from us.
8/17/2007 5:30	45.93467	-130.01516	311.4	1541.0	Edge of jumble and sheet flow.
8/17/2007 5:30	45.93470	-130.01525	314.4	1541.2	That is lobate not jumble. Changing DV cam tape.
8/17/2007 5:31	45.93480	-130.01536	311.5	1541.0	Sediment in cracks.

J293 Date Time	Latitude	Longitude	Heading	Depth	Event
8/17/2007 5:31	45.93476	-130.01531	311.9	1541.0	Sheet flow again.
8/17/2007 5:31	45.93482	-130.01538	311.7	1541.1	Transitioning into lobates.
8/17/2007 5:32	45.93486	-130.01538	320.5	1541.0	Flattened lobates as camera pans right and left.
8/17/2007 5:34	45.93498	-130.01548	320.2	1542.1	Large pillow clumps.
8/17/2007 5:34	45.93499	-130.01551	320.1	1542.1	Should go down another meter.
8/17/2007 5:34	45.93497	-130.01546	320.7	1542.4	Some transition to the right (larger structures).
8/17/2007 5:35	45.93506	-130.01557	321.2	1542.7	Large pillow features.
8/17/2007 5:35	45.93502	-130.01556	320.4	1542.7	Pillows and lobates with sediment in cracks.
8/17/2007 5:35	45.93503	-130.01557	320.9	1542.7	Sponges on pillows.
8/17/2007 5:38	45.93509	-130.01566	332.8	1543.1	Here we go at 333.
8/17/2007 5:38	45.93507	-130.01563	329.3	1543.2	Think we are waiting for Medea.
8/17/2007 5:39	45.93511	-130.01570	334.1	1543.2	Large pillow pile in flattened lobate flow.
8/17/2007 5:39	45.93520	-130.01571	348.6	1543.1	Medium sized pillows in comparison now.
8/17/2007 5:39	45.93523	-130.01571	5.8	1545.5	Pillow are elongating as we head 018.
8/17/2007 5:40	45.93526	-130.01570	355.8	1545.4	Going to head 30m west now toward caldera wall.
8/17/2007 5:40	45.93523	-130.01571	355.5	1545.7	Light and dark pillows.
8/17/2007 5:40	45.93525	-130.01570	355.8	1545.4	Seeing sea cucumbers.
8/17/2007 5:43	45.93526	-130.01573	309.2	1545.4	Large pillows as we start to head more westerly.
8/17/2007 5:43	45.93524	-130.01583	309.2	1545.5	Pillows here are very round.
8/17/2007 5:44	45.93523	-130.01593	309.1	1545.3	Pillows are elongating in places.
8/17/2007 5:44	45.93524	-130.01601	309.9	1545.0	Pillows are flattening.
8/17/2007 5:45	45.93530	-130.01607	317.9	1546.6	Backing up to try for a sample here.
8/17/2007 5:45	45.93528	-130.01605	314.3	1546.9	Transitioned back into lobate flow.
8/17/2007 5:48	45.93529	-130.01610	289.0	1548.0	Rock attempt at lip in lobate flow after the transition out of the big pillow flow.
8/17/2007 5:52	45.93529	-130.01609	287.1	1548.0	J293-ROCK-029 Lip is a bit crumbly. Got a small chunk. From lip of lobate flow after transition out of pillow flow.
8/17/2007 5:54	45.93530	-130.01608	287.1	1548.0	J293-ROCK-029 Putting in the STBD milkcrate. Crumbled all over box. Largest 2 pieces in the aft-stbd quadrant.
8/17/2007 5:55	45.93530	-130.01608	287.1	1548.0	J293-ROCK-029 Another piece did fall into the front-port quadrant with the other rock sample. This piece should be smaller.
8/17/2007 5:55	45.93530	-130.01608	287.1	1548.0	J293-ROCK-029 Once piece still on claw put into STBD-aft quadrant with the other 2 pieces.
8/17/2007 5:56	45.93530	-130.01607	289.2	1547.9	Going to head over to wall just for a look. 30m West.
8/17/2007 5:57	45.93530	-130.01609	281.5	1547.5	Got DSC of sample site.
8/17/2007 5:57	45.93532	-130.01620	268.1	1547.4	Heading due west.
8/17/2007 5:57	45.93531	-130.01613	292.2	1547.7	Lots of hydrothermal staining here.
8/17/2007 5:57	45.93532	-130.01623	269.3	1547.4	Lots of pillow and getting larger.
8/17/2007 5:57	45.93531	-130.01614	294.6	1547.3	Pillows are smaller.
8/17/2007 5:58	45.93536	-130.01627	268.5	1546.4	Caldera wall should be ~100m high here.
8/17/2007 5:58	45.93535	-130.01627	268.7	1546.5	Here comes the wall dead ahead on sonar.
8/17/2007 6:00	45.93536	-130.01625	268.1	1546.8	Waiting for Medea to get in position behind us. Dropping a weight while waiting.
8/17/2007 6:03	45.93536	-130.01624	268.0	1546.7	Weight away (covered in hydrothermal sediment).
8/17/2007 6:04	45.93536	-130.01631	267.8	1546.7	Approaching the wall.
8/17/2007 6:05	45.93538	-130.01639	245.0	1546.7	Dikes here.
8/17/2007 6:05	45.93539	-130.01640	272.3	1546.2	Looking over right a bit. Talus.
8/17/2007 6:05	45.93538	-130.01638	240.7	1546.7	Sulfide mount (extinct). Not sulfide-chunk of wall that fell down.
8/17/2007 6:06	45.93540	-130.01650	225.3	1541.7	Big plate.
8/17/2007 6:06	45.93540	-130.01646	245.0	1543.1	Columnar basalt.
8/17/2007 6:06	45.93540	-130.01643	263.2	1544.9	Large rock in front of us in talus pile.
8/17/2007 6:06	45.93540	-130.01644	254.7	1543.1	Turning left.
8/17/2007 6:07	45.93541	-130.01651	244.3	1535.3	Jason bumped something.
8/17/2007 6:07	45.93541	-130.01651	226.6	1538.9	Seeing solid pieces in talus.
8/17/2007 6:08	45.93540	-130.01651	214.1	1536.7	Big slab of wall.
8/17/2007 6:08	45.93541	-130.01650	198.6	1536.4	Not sure if bumped. Big dike in front of us.
8/17/2007 6:09	45.93539	-130.01661	225.2	1535.1	Looking for that last rock.

<b>J293 Date Time</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Heading</b>	<b>Depth</b>	<b>Event</b>
8/17/2007 6:09	45.93540	-130.01653	252.4	1536.6	Talus ramp as pan to right.
8/17/2007 6:09	45.93538	-130.01661	224.3	1534.8	Turning left.
8/17/2007 6:10	45.93543	-130.01657	233.7	1531.9	All done as no easy sample here.
8/17/2007 6:10	45.93543	-130.01656	246.8	1526.7	Jason is coming to surface.
8/17/2007 6:11	45.93544	-130.01656	273.9	1522.9	Tapes off.
8/17/2007 7:05	45.93549	-130.01576	108.0	8.7	Jason at surface
8/17/2007 7:09	45.93549	-130.01579	107.8	1.4	Medea on deck
8/17/2007 7:13	45.93550	-130.01582	106.3	0.5	End J2-293
8/17/2007 7:13	45.93550	-130.01582	106.3	0.5	Jason on deck

## 6.5.9 J2-294 Southern Cobb Segment

**J2-294 Southern Cobb** [J2-294 Bottom time: 19:08] (No LBL navigation). Search for hydrothermal activity based on targets observed on 1990/91 camera tows. Started north of targets (line 1) and drove south while making E-W zig-zags. Observed heavily sedimented pillow flows and many large/deep fault scarps and fissures. Collected a sediment sample and rock just before waypoint 3; start of second line. Drove north (line 2) making zig-zags for search. Heavy sediment, fissures/faults/scarps observed. Line crossed tube worm target in lobates. Moved off of line 2 to explore target area. Sampled a piece of sheet flow at top of scarp that draped over edge of scarp. Moved back over to line 2 then turned south for line 3. Took a rock sample in an area of less sediment and pillow flow. Then sampled sheet flow in an area of collapse/lava pillars and more sediment. Observed pillows between lava pillars and discovered chimneys with hydrothermal activity and hydrothermal sediment. Sampled first chimney (**Not Dead Yet**) structure with 4 HFS and 1 gas tight sample in high-temperature area. Took 3 samples in diffuse flow. Obtained 3 HFS and 1 pelagic pump sample in orange substance of chimney (diffuse). Not Dead Yet is about 20m tall with 2 large spires and flanges located in a horizontal boundary between sedimented rocks. Several other chimneys to the east, low flanges and contact with the basalt. Sampled smokers (Tmax of 222.9) of chimney SE of Not Dead Yet with 3 HFS and 1 gas tight. Explored SW (~210 deg) and observed lots of pillows, some younger looking (light sediment). Headed to sulfide site 4 target. Observed older pillows, heavy sediment, faults and scarps. Headed north on line 4. At sulfide target observed younger looking pillows, less faulting. Found another chimney complex with tubeworms in area of flatter/younger looking lobate flow. Sonar indicated 3 targets (area named **Hogwarts Field**). Sampled 1 HFS (Tmax 204.9) at first structure (**Harry**). Sampled diffuse site, 1 HFS. Did HD survey of second structure (**Hermione**). Went back to Harry and took 2 HFS in diffuse flow and one suction of limpets and worms. Also surveyed other sulfide structure, only 5-7m at 247 from Hermione, (**Ron**) but took no samples. Moved north of sulfide structures and sampled a piece of field basalt prior ascent.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/17/2007 21:51	46.65108	-129.42028	150.5	0.9	Powered up for launch J2-294
8/17/2007 21:53	46.65108	-129.42032	213.8	0.7	No LBL at this site - Cobb
8/17/2007 21:58	46.65107	-129.42031	202.2	1.1	Medea in water
8/17/2007 21:59	46.65109	-129.42027	114.3	2.2	Jason in water
8/17/2007 21:59	46.65109	-129.42028	115.4	2.8	Pin is pulled
8/17/2007 22:00	46.65108	-129.42025	116.9	3.0	Tether in water
8/17/2007 22:01	46.65108	-129.42025	99.9	6.2	Starting down
8/17/2007 23:16	46.70843	-129.36918	327.0	2389.5	Bottom in sight.
8/17/2007 23:26	46.70843	-129.36918	194.7	2392.3	Heading south making east west zig zags.
8/17/2007 23:27	46.70843	-129.36918	194.7	2392.5	Quite a bit of sediment here.
8/17/2007 23:27	46.70843	-129.36918	197.7	2392.5	There are pillows draped with sediment and sediment filled between.
8/17/2007 23:30	46.70843	-129.36918	201.8	2392.4	Something is growing on this pillow.
8/17/2007 23:32	46.70840	-129.36933	199.4	2392.7	Fault scarp.
8/17/2007 23:35	46.70826	-129.36939	203.0	2392.4	The fault scarp is running SSE.
8/17/2007 23:39	46.70799	-129.36949	206.3	2398.3	Mounds of pillows.
8/17/2007 23:42	46.70783	-129.36956	209.5	2398.3	Scarp.
8/17/2007 23:43	46.70779	-129.36975	205.6	2398.4	Still moving SSE along a 5 m wide fissure.
8/17/2007 23:43	46.70775	-129.36971	207.0	2398.2	There are some linear cracks on either side.
8/17/2007 23:44	46.70763	-129.36958	203.6	2398.3	The fissure to the west is visible on the sonar.
8/17/2007 23:44	46.70768	-129.36961	206.4	2398.2	There is another fissure about 50 to the west.
8/17/2007 23:47	46.70740	-129.36976	204.3	2398.6	Corals?
8/17/2007 23:57	46.70678	-129.37008	202.1	2409.6	Still following the fissure with sediment pillows all around.
8/17/2007 23:58	46.70674	-129.37028	200.5	2410.2	Large scarp. Lots of sediment.
8/17/2007 23:58	46.70674	-129.37030	202.0	2410.2	Sponge?
8/17/2007 23:59	46.70665	-129.37026	205.1	2410.6	Deep large scarp and fissure.
8/18/2007 0:02	46.70657	-129.37047	210.6	2409.8	More large fissures.
8/18/2007 0:03	46.70645	-129.37051	206.6	2410.0	Another smaller crack.
8/18/2007 0:06	46.70624	-129.37072	212.3	2411.5	This area is pretty sliced up with faults and fissure.
8/18/2007 0:13	46.70551	-129.37108	220.7	2402.7	Really deep and huge fissure.
8/18/2007 0:14	46.70537	-129.37099	220.1	2403.5	We have run out of land. The fissure opened up too much.
8/18/2007 0:23	46.70481	-129.37137	201.8	2405.9	Floor drops down.
8/18/2007 0:24	46.70468	-129.37122	203.2	2408.8	We went down to a lower platform.
8/18/2007 0:28	46.70448	-129.37169	212.4	2413.9	Still highly faulted and fissured.
8/18/2007 0:30	46.70418	-129.37148	217.4	2415.7	Some white staining.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 0:34	46.70382	-129.37171	216.0	2416.0	There are some sheet flows - first time spotted on the traverse.
8/18/2007 0:34	46.70382	-129.37172	213.3	2416.3	They are still very old.
8/18/2007 0:36	46.70379	-129.37213	220.6	2416.2	The bottom has changed to jumbled sheets.
8/18/2007 0:36	46.70375	-129.37212	218.0	2416.0	We used to be in pillows.
8/18/2007 0:43	46.70324	-129.37235	197.6	2416.4	Crossing over a steep drop off.
8/18/2007 0:45	46.70293	-129.37234	216.8	2417.1	Back into the pillows.
8/18/2007 0:55	46.70220	-129.37270	206.4	2414.0	Jumble of cracked stuff.
8/18/2007 0:58	46.70202	-129.37293	204.5	2411.0	Another deep fissure.
8/18/2007 0:58	46.70200	-129.37299	211.8	2410.6	The fissure is about 9 m deep.
8/18/2007 1:00	46.70174	-129.37310	210.1	2409.1	The fissure has gotten wide and the western edge is more sloped now.
8/18/2007 1:04	46.70144	-129.37319	197.2	2409.7	Rubble at the bottom.
8/18/2007 1:06	46.70131	-129.37336	202.8	2409.1	Lonesome basalt pillar.
8/18/2007 1:07	46.70119	-129.37329	200.7	2406.0	Very steep and tall scarp to the east.
8/18/2007 1:17	46.70050	-129.37383	198.8	2408.2	Now the fissure is narrower.
8/18/2007 1:24	46.70013	-129.37399	207.1	2408.5	Collecting a sediment sample with the scoop.
8/18/2007 1:24	46.70014	-129.37399	213.8	2408.3	J294-SED-001
8/18/2007 1:25	46.70014	-129.37399	213.9	2408.4	J294-SED-001 Collected a sediment sample with the scoop.
8/18/2007 1:28	46.70001	-129.37398	213.2	2408.4	J294-SED-001 Stowing the sample in the port bio box.
8/18/2007 1:37	46.69981	-129.37396	126.9	2410.3	Headed to Way Point 3 to begin the second line.
8/18/2007 1:41	46.69973	-129.37377	71.3	2412.1	J294-ROCK-002 Collecting a rock sample.
8/18/2007 1:43	46.69974	-129.37371	72.5	2410.8	Strike that. We were not able to get it.
8/18/2007 1:44	46.69976	-129.37364	37.2	2411.3	Trying again to get a rock sample.
8/18/2007 1:45	46.69976	-129.37364	37.3	2411.4	J294-ROCK-002 Got it.
8/18/2007 1:48	46.69960	-129.37335	122.9	2408.6	J294-ROCK-002 Stowed in the starboard left front box.
8/18/2007 1:52	46.69964	-129.37312	75.1	2407.8	At Way Point 3 and preparing to go north.
8/18/2007 1:54	46.69970	-129.37318	21.3	2408.4	Heading put line 2 to the NNE towards WP 4.
8/18/2007 1:55	46.69960	-129.37291	20.1	2408.2	Nav Doppler Reset
8/18/2007 1:57	46.69964	-129.37279	20.4	2408.2	Lots of crumbly blocks.
8/18/2007 2:00	46.69967	-129.37273	20.2	2407.7	Deep rumbly fissure.
8/18/2007 2:08	46.69995	-129.37260	16.4	2405.7	Moving north slowly. It is taking a while to get going.
8/18/2007 2:09	46.70007	-129.37236	15.7	2405.7	Now we are in an area of pillows.
8/18/2007 2:11	46.70021	-129.37243	13.1	2405.7	Jumbled and broken to the west with intact pillows to the east.
8/18/2007 2:18	46.70070	-129.37214	18.2	2400.8	Zig-zagging along.
8/18/2007 2:25	46.70121	-129.37169	70.0	2397.9	Looks like a scarp to the east.
8/18/2007 2:30	46.70167	-129.37123	20.2	2397.4	Coming over a sedimented sheet flow.
8/18/2007 2:31	46.70187	-129.37127	13.2	2397.5	Faulted sheet flow.
8/18/2007 2:34	46.70211	-129.37112	14.8	2397.6	heavily sedimented sheet flows
8/18/2007 2:35	46.70218	-129.37121	21.8	2397.4	numerous N/S trending fractures or faults
8/18/2007 2:36	46.70227	-129.37103	21.4	2398.0	contorted overfolded sheet flows
8/18/2007 2:38	46.70247	-129.37086	22.1	2397.7	back over pillowed flows
8/18/2007 2:41	46.70275	-129.37092	16.3	2398.0	heavier sediment accumulation between pillows
8/18/2007 2:43	46.70296	-129.37063	17.2	2397.5	returning over larger pillow flow
8/18/2007 2:45	46.70306	-129.37078	16.9	2397.5	mounded pillows occasionally sinous
8/18/2007 2:46	46.70315	-129.37056	18.4	2397.2	Watch change.
8/18/2007 2:47	46.70319	-129.37059	15.3	2397.1	Old pillows with lots of sediment.
8/18/2007 2:48	46.70337	-129.37063	13.4	2396.6	More biology here.
8/18/2007 2:50	46.70363	-129.37047	12.5	2394.4	Pillows slightly more flattened here but could be camera angle.
8/18/2007 2:51	46.70378	-129.37039	11.3	2394.3	Fault scarp within the pillows.
8/18/2007 2:51	46.70375	-129.37052	10.9	2394.4	Fissure! Something different.
8/18/2007 2:51	46.70378	-129.37050	14.0	2394.4	Fissures are parallel to our direction.
8/18/2007 2:52	46.70379	-129.37025	12.7	2394.0	Another fault.
8/18/2007 2:52	46.70380	-129.37017	13.6	2392.2	Back into pillows and sediment-Jason had to climb up a bit.
8/18/2007 2:53	46.70393	-129.37020	14.4	2391.8	Faults in pillows.
8/18/2007 2:54	46.70411	-129.37040	13.4	2391.7	Fissure again.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 2:54	46.70408	-129.37037	13.4	2391.7	Pillows more tube shaped.
8/18/2007 2:55	46.70415	-129.37026	12.3	2391.5	Cracks in pillows near fault.
8/18/2007 2:55	46.70413	-129.37039	11.6	2391.6	Fault near edge.
8/18/2007 2:55	46.70414	-129.37043	12.5	2391.7	Funning along fissure
8/18/2007 2:56	46.70417	-129.37010	12.6	2391.3	A scarp.
8/18/2007 2:56	46.70417	-129.37010	13.1	2391.2	Jason is climbing
8/18/2007 2:56	46.70416	-129.37017	13.0	2391.8	Running along small fault.
8/18/2007 2:57	46.70426	-129.36996	15.3	2387.0	Crossed back over fault.
8/18/2007 2:57	46.70419	-129.37001	12.4	2387.5	On top of scarp. Medea has a good view.
8/18/2007 2:57	46.70421	-129.36993	13.8	2386.6	Small fault through pillows.
8/18/2007 2:58	46.70438	-129.37006	10.9	2388.4	Bottom of fissure is more pillows.
8/18/2007 2:58	46.70433	-129.37003	13.6	2387.0	Edge of fissure.
8/18/2007 2:59	46.70452	-129.37018	10.4	2389.8	Back over a large fissure.
8/18/2007 2:59	46.70445	-129.37014	12.5	2389.8	Fault.
8/18/2007 2:59	46.70456	-129.37021	8.1	2389.7	Part of pillows almost cleaved off side.
8/18/2007 3:00	46.70458	-129.37006	11.3	2390.5	Another small fault.
8/18/2007 3:00	46.70458	-129.37014	11.0	2389.5	Fault at edge of fissure.
8/18/2007 3:01	46.70459	-129.36994	13.8	2389.9	Coming to edge of fissure. Big sonar target.
8/18/2007 3:01	46.70460	-129.36985	12.5	2385.3	Other side of fissure.
8/18/2007 3:02	46.70472	-129.36982	14.5	2387.1	Crossing fissure again as we veer left.
8/18/2007 3:03	46.70485	-129.36990	9.6	2394.4	Bottom of fissure has more pillows with much more sediment.
8/18/2007 3:04	46.70500	-129.37001	9.8	2395.1	Another fissure to left.
8/18/2007 3:04	46.70504	-129.36990	10.2	2396.6	Heading back over this second fissure as we move back over to the east.
8/18/2007 3:05	46.70511	-129.36974	9.6	2397.1	Here is the taller scarp to the east again.
8/18/2007 3:05	46.70510	-129.36975	10.4	2397.9	Narrow piece of pillows and sediment with another fissure.
8/18/2007 3:06	46.70515	-129.36964	10.7	2386.8	At the top gain. Pillows much more massive appearing with less sediment than below.
8/18/2007 3:07	46.70529	-129.36950	8.3	2388.9	Following along scarp.
8/18/2007 3:07	46.70520	-129.36949	11.3	2387.8	Tubular structures the further east we go.
8/18/2007 3:08	46.70548	-129.36964	11.9	2399.5	Back on the bottom of the scarp.
8/18/2007 3:08	46.70546	-129.36960	8.5	2395.0	Heading over the edge again. ~10m deep.
8/18/2007 3:08	46.70552	-129.36966	8.7	2400.1	Pillows less intact.
8/18/2007 3:09	46.70557	-129.36969	8.5	2400.6	Another scarp stepping down west.
8/18/2007 3:09	46.70559	-129.36965	8.1	2401.1	Moving back east over top of scarp.
8/18/2007 3:10	46.70558	-129.36948	7.7	2402.0	Another scarp to east and approaching large step up to the east again in the sonar.
8/18/2007 3:11	46.70561	-129.36936	9.5	2397.6	Climbing back over the top of the scarp again.
8/18/2007 3:11	46.70570	-129.36918	9.1	2399.2	Riding top of this fissure and another large fissure target to the east on sonar.
8/18/2007 3:12	46.70587	-129.36932	9.7	2400.3	About 15m deep.
8/18/2007 3:12	46.70573	-129.36919	8.9	2399.4	Fault on top as we turn back west.
8/18/2007 3:12	46.70583	-129.36930	9.1	2400.1	Stepping down to the west with another fault.
8/18/2007 3:13	46.70588	-129.36922	9.6	2400.7	Moving back over east fissure top.
8/18/2007 3:14	46.70593	-129.36908	9.9	2402.1	Coming to eastern edge.
8/18/2007 3:14	46.70598	-129.36905	10.0	2402.7	Drops off a few meters.
8/18/2007 3:14	46.70594	-129.36912	9.4	2401.9	On crest of fissure.
8/18/2007 3:15	46.70602	-129.36911	10.4	2402.2	Heading back over west.
8/18/2007 3:15	46.70605	-129.36914	9.9	2401.9	Massive pillows. Very round.
8/18/2007 3:15	46.70608	-129.36917	9.5	2402.0	Off side of fissure. About 10m deep.
8/18/2007 3:16	46.70608	-129.36909	8.4	2400.8	Crossing back east.
8/18/2007 3:16	46.70608	-129.36902	8.3	2401.4	Here's the eastern edge again.
8/18/2007 3:16	46.70610	-129.36894	11.6	2402.1	Over 10 m deep.
8/18/2007 3:17	46.70615	-129.36901	13.3	2400.1	Back on top as turned west again.
8/18/2007 3:18	46.70629	-129.36897	9.0	2398.7	Back over western edge and following along.
8/18/2007 3:18	46.70623	-129.36910	11.1	2398.1	Over west edge. About 10m deep down fissure.
8/18/2007 3:21	46.70668	-129.36869	9.2	2408.8	Another fault.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 3:21	46.70668	-129.36875	8.7	2408.7	Back on top of heavily sedimented boulders. Small fault.
8/18/2007 3:22	46.70671	-129.36866	5.4	2409.1	Coming up to large sonar target on East.
8/18/2007 3:22	46.70675	-129.36870	10.1	2409.4	Moving back west.
8/18/2007 3:22	46.70683	-129.36879	10.2	2410.0	Scarp wall on west.
8/18/2007 3:23	46.70685	-129.36884	9.5	2408.7	Climbing up large basalt face.
8/18/2007 3:23	46.70686	-129.36886	9.7	2408.7	Small fault.
8/18/2007 3:23	46.70690	-129.36893	9.9	2409.0	West side of fissure or small fault.
8/18/2007 3:24	46.70693	-129.36900	9.1	2407.0	Talus at bottom of fissure. At the other side on top.
8/18/2007 3:25	46.70698	-129.36901	6.8	2405.5	Fault as move up scarp.
8/18/2007 3:25	46.70704	-129.36888	9.4	2404.4	Large scarp.
8/18/2007 3:25	46.70697	-129.36907	6.3	2405.6	Sonar target ahead.
8/18/2007 3:25	46.70697	-129.36904	6.7	2405.7	Turning east again.
8/18/2007 3:26	46.70709	-129.36869	8.5	2408.0	Crossing over another down scarp.
8/18/2007 3:26	46.70710	-129.36869	10.1	2405.9	Getting closer to east wall.
8/18/2007 3:26	46.70707	-129.36882	9.4	2405.3	Sonar has us in the bottom of a scarp in the middle.
8/18/2007 3:27	46.70719	-129.36849	8.7	2401.2	Big lobates on top.
8/18/2007 3:27	46.70717	-129.36855	9.5	2403.3	Here is east side wall.
8/18/2007 3:27	46.70716	-129.36858	8.6	2403.9	Still 15m below us.
8/18/2007 3:28	46.70729	-129.36847	8.8	2402.0	Turning back west. Lobates and small faults.
8/18/2007 3:29	46.70734	-129.36850	7.9	2402.5	At edge of fissure dropping off west.
8/18/2007 3:29	46.70744	-129.36846	9.2	2401.7	Talus at base.
8/18/2007 3:31	46.70754	-129.36840	9.5	2402.5	Sitting on bottom of the talus.
8/18/2007 3:32	46.70762	-129.36838	9.4	2399.7	Line of larger pillows.
8/18/2007 3:32	46.70759	-129.36838	9.4	2401.1	Some large intact pillows.
8/18/2007 3:33	46.70766	-129.36837	9.4	2398.8	Moving over to the NW where we will go down south and another line.
8/18/2007 3:33	46.70763	-129.36838	9.1	2399.2	Waiting for ship to move.
8/18/2007 3:34	46.70772	-129.36836	10.0	2396.9	Base of a talus slope.
8/18/2007 3:34	46.70775	-129.36835	9.2	2395.7	Starting to climb up scarp. Can see in the sonar.
8/18/2007 3:35	46.70782	-129.36834	9.3	2393.4	Still talus.
8/18/2007 3:37	46.70792	-129.36844	350.1	2390.2	At face of wall.
8/18/2007 3:37	46.70788	-129.36841	350.2	2391.5	Talus has smaller pieces here.
8/18/2007 3:38	46.70798	-129.36846	350.4	2388.7	Heading NW along scarp wall.
8/18/2007 3:43	46.70810	-129.36897	272.3	2402.0	Here we go west.
8/18/2007 3:44	46.70803	-129.36901	271.6	2398.9	Going up the scarp.
8/18/2007 3:44	46.70806	-129.36899	275.9	2401.8	Strong sonar ahead-wall.
8/18/2007 3:45	46.70804	-129.36905	272.9	2394.7	Massive lobates at top.
8/18/2007 3:46	46.70817	-129.36918	270.5	2391.9	Lobates with sediment.
8/18/2007 3:47	46.70823	-129.36941	273.9	2391.8	Faults are perpendicular to our path as we head west.
8/18/2007 3:47	46.70817	-129.36931	274.1	2390.8	Small fault down.
8/18/2007 3:51	46.70846	-129.36962	322.9	2392.1	Coming to the edge of scarp.
8/18/2007 3:51	46.70850	-129.36962	326.9	2392.7	Crinoids on pillows at edge of scarp.
8/18/2007 3:53	46.70864	-129.36985	322.2	2402.8	Other side of fault as we head west. Small faults through lobates.
8/18/2007 3:55	46.70863	-129.36988	322.6	2400.8	Waiting for ship before going south.
8/18/2007 3:58	46.70872	-129.36993	333.1	2399.7	Talus. Large sonar target ahead of us.
8/18/2007 4:00	46.70869	-129.37008	8.2	2395.3	Lots of talus.
8/18/2007 4:00	46.70870	-129.37009	2.8	2393.8	Narrow ridge.
8/18/2007 4:01	46.70872	-129.37006	348.9	2391.6	Knife ridge with pillow on top.
8/18/2007 4:01	46.70875	-129.36991	349.9	2394.8	Still waiting for ship to change heading.
8/18/2007 4:02	46.70878	-129.36979	9.2	2401.4	Large split pillow.
8/18/2007 4:03	46.70890	-129.36975	334.7	2404.5	Jason on bottom of scarp from sonar view.
8/18/2007 4:04	46.70893	-129.36987	315.8	2399.6	Big scarp on Medea view. Medea is on ridge.
8/18/2007 4:04	46.70892	-129.36982	321.0	2402.6	On edge of talus slope.
8/18/2007 4:05	46.70896	-129.36993	314.6	2389.7	At the top.
8/18/2007 4:05	46.70895	-129.36992	316.3	2391.3	Slide channels down the slope.
8/18/2007 4:07	46.70906	-129.36994	9.6	2385.4	Going to sample a rock here.
8/18/2007 4:07	46.70905	-129.36997	5.4	2385.7	Top of scarp



J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 4:08	46.70908	-129.36998	119.3	2386.6	Looking around on the top of the lobate flow.. Best chance in the small fractures.
8/18/2007 4:11	46.70906	-129.36996	102.7	2388.1	Looking for smaller broken up pillow piece.
8/18/2007 4:11	46.70905	-129.36996	88.8	2387.1	Not enough time to sample. Ship is moving.
8/18/2007 4:12	46.70897	-129.37003	202.6	2385.8	Heading south.
8/18/2007 4:13	46.70888	-129.37010	204.3	2391.9	Going down to bottom of scarps.
8/18/2007 4:14	46.70869	-129.37022	186.1	2390.8	Driving south along narrow scarp.
8/18/2007 4:14	46.70880	-129.37011	186.6	2390.5	Knife edge scarp.
8/18/2007 4:15	46.70864	-129.37026	197.1	2386.0	Large lobates on top.
8/18/2007 4:16	46.70852	-129.37034	197.8	2386.1	Scarp is narrow and faulted.
8/18/2007 4:20	46.70827	-129.37051	223.3	2387.4	Moving along this scarp still with sharp drops to east
8/18/2007 4:23	46.70809	-129.37075	224.4	2386.8	Still following heavily sediment pillow scarp.
8/18/2007 4:25	46.70792	-129.37078	207.6	2392.5	Scarp is 12 m deep on one side and 8m on the other. Scarp only few meters wide.
8/18/2007 4:26	46.70776	-129.37068	206.2	2397.0	Sonar has Jason in middle of scarps to either side.
8/18/2007 4:27	46.70767	-129.37087	206.0	2399.0	Crossed over narrow pillow block.
8/18/2007 4:27	46.70761	-129.37089	204.9	2399.3	Following parallel with us.
8/18/2007 4:28	46.70753	-129.37090	225.4	2399.3	Fracture in lobates.
8/18/2007 4:30	46.70745	-129.37106	197.3	2399.6	On top of scarps.
8/18/2007 4:33	46.70715	-129.37126	197.8	2402.9	Traveling along a narrow scarp again.
8/18/2007 4:33	46.70713	-129.37128	197.6	2402.0	Up 16m now with sonar target to Port.
8/18/2007 4:38	46.70657	-129.37144	197.7	2403.2	At edge of narrow ridge.
8/18/2007 4:39	46.70645	-129.37146	198.5	2405.8	Approaching the worm target area.
8/18/2007 4:39	46.70645	-129.37146	198.2	2406.6	Flying up 7m.
8/18/2007 4:40	46.70645	-129.37145	197.9	2410.0	Narrow ridges in sonar.
8/18/2007 4:40	46.70644	-129.37145	198.3	2410.5	Talus at bottom.
8/18/2007 4:45	46.70595	-129.37183	202.1	2419.1	At edge of a large scarp. Lots of talus.
8/18/2007 4:53	46.70509	-129.37226	213.1	2413.5	Ship is about at the worm site.
8/18/2007 4:54	46.70500	-129.37231	213.4	2410.0	Jason is about 100m NW of the tubeworm site.
8/18/2007 4:55	46.70488	-129.37248	214.7	2412.0	Large lobates and sediment.
8/18/2007 4:55	46.70484	-129.37252	213.2	2412.9	Stopping ship near the worm site as Jason catches up.
8/18/2007 4:56	46.70482	-129.37253	212.8	2415.2	Elongated tubes.
8/18/2007 4:58	46.70458	-129.37257	213.2	2420.1	Top of this scarp has a bit more sheet flow morphology at edge.
8/18/2007 4:59	46.70459	-129.37261	343.0	2420.3	Sheets are lapped up on lobates here.
8/18/2007 4:59	46.70458	-129.37260	304.6	2420.6	Top of this scarp is more sheet flow in appearance.
8/18/2007 5:00	46.70458	-129.37262	225.1	2417.8	Looks like sheet flow poured over.
8/18/2007 5:01	46.70450	-129.37265	210.0	2421.5	Cracks in sheet flow
8/18/2007 5:02	46.70447	-129.37267	216.0	2421.8	Sheet flow draped over edge.
8/18/2007 5:04	46.70441	-129.37275	183.7	2423.2	Going to try to sample some sheet flow.
8/18/2007 5:08	46.70443	-129.37274	182.8	2424.7	Attempting to sample a piece of the sheet flow near the top edge of the scarp.
8/18/2007 5:08	46.70443	-129.37274	186.5	2424.8	West is the edge of a the lobates where sheets lapped up against.
8/18/2007 5:09	46.70443	-129.37275	186.5	2424.7	Sheet flow goes over the edge to the East.
8/18/2007 5:10	46.70440	-129.37278	185.0	2424.7	Sheet flow is very crumbly and fragile.
8/18/2007 5:11	46.70437	-129.37274	184.6	2424.7	Small piece broke from larger slab. Waiting for dust to clear to try and grab it.
8/18/2007 5:13	46.70434	-129.37261	184.6	2424.8	Got the piece.
8/18/2007 5:16	46.70416	-129.37254	186.3	2424.7	J294-ROCK-003 Rock fell in front of the STBD-AFT milkcrate. Going to try to get another piece.
8/18/2007 5:23	46.70403	-129.37258	181.8	2424.7	J294-ROCK-003 Grabbed other piece and placing in the basket
8/18/2007 5:25	46.70403	-129.37257	178.4	2424.2	J294-ROCK-003 Put in STBD-Front quadrant of STBD-AFT milk crate.
8/18/2007 5:27	46.70425	-129.37257	178.2	2424.2	Reset doppler.
8/18/2007 5:28	46.70426	-129.37257	149.1	2423.5	Going to head over east to the tube worm target area.
8/18/2007 5:29	46.70426	-129.37256	91.3	2422.4	Starting to head east.
8/18/2007 5:30	46.70426	-129.37249	91.0	2422.4	Moved off top of scarp.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 5:30	46.70425	-129.37234	90.9	2427.0	Up 11m and looks like jumble below us.
8/18/2007 5:31	46.70425	-129.37227	91.0	2426.8	Looks like all talus down here.
8/18/2007 5:31	46.70425	-129.37227	91.5	2427.4	Sonar shows scarp we came off of behind us and approach to wall ahead of us.
8/18/2007 5:33	46.70425	-129.37227	91.0	2429.4	Waiting for ship.
8/18/2007 5:36	46.70422	-129.37209	94.2	2427.0	Moving east and approaching wall. Lots of talus below.
8/18/2007 5:37	46.70421	-129.37202	93.9	2426.0	Moving up wall.
8/18/2007 5:38	46.70419	-129.37199	94.0	2416.7	Lobates on top.
8/18/2007 5:38	46.70420	-129.37199	94.0	2420.3	Top of wall and sheared pillows.
8/18/2007 5:40	46.70411	-129.37180	92.7	2415.0	Still fissure.
8/18/2007 5:41	46.70417	-129.37157	62.4	2415.3	Lobates and heavy sediment. No evidence of hydrothermal activity.
8/18/2007 5:44	46.70418	-129.37136	75.8	2410.8	All lobates as we are over the target point.
8/18/2007 5:44	46.70417	-129.37135	74.7	2410.6	Fault through lobates.
8/18/2007 5:47	46.70423	-129.37132	91.1	2407.3	Going to move another 20m east.
8/18/2007 5:50	46.70422	-129.37100	92.2	2407.2	Going over small scarp. (End of Medea tether)
8/18/2007 5:56	46.70426	-129.37113	286.6	2409.1	Edge of scarp again..
8/18/2007 5:58	46.70426	-129.37118	13.1	2412.7	Going to try to head south after spinning around.
8/18/2007 5:59	46.70420	-129.37122	182.6	2409.3	Large pillow at top of scarp.
8/18/2007 5:59	46.70424	-129.37121	185.0	2409.0	Now heading south.
8/18/2007 5:59	46.70427	-129.37121	169.4	2408.1	On top of wall.
8/18/2007 6:00	46.70393	-129.37125	183.9	2413.3	Driving along the top of this scarp.
8/18/2007 6:02	46.70370	-129.37128	183.0	2414.4	Lobates look a little flatter here.
8/18/2007 6:02	46.70369	-129.37129	273.5	2414.5	Looking down a scarp to the west.
8/18/2007 6:05	46.70368	-129.37142	69.9	2414.5	Fault.
8/18/2007 6:05	46.70370	-129.37134	68.8	2414.3	Lobates on top of scarp again.
8/18/2007 6:07	46.70370	-129.37110	134.3	2416.2	Talus slope in front of us.
8/18/2007 6:09	46.70356	-129.37111	144.9	2417.3	Moving up talus slope.
8/18/2007 6:09	46.70356	-129.37111	145.8	2418.6	Scarp coming up quick.
8/18/2007 6:10	46.70337	-129.37107	179.5	2409.6	Almost at top.
8/18/2007 6:11	46.70328	-129.37108	179.8	2409.0	Big wall coming up.
8/18/2007 6:12	46.70320	-129.37112	174.9	2397.0	Top of scarp.
8/18/2007 6:13	46.70315	-129.37110	69.3	2396.6	Taking out a wrap going counter clockwise.
8/18/2007 6:13	46.70318	-129.37111	138.6	2397.1	Top lobates are sheared off on scarp.
8/18/2007 6:16	46.70305	-129.37118	246.1	2396.4	Moving along scarp.
8/18/2007 6:16	46.70305	-129.37119	280.6	2396.4	Want to move 310 back to where rock was sampled.
8/18/2007 6:17	46.70311	-129.37135	314.1	2412.4	Back on bottom.
8/18/2007 6:17	46.70314	-129.37141	313.8	2412.8	Driving over very flat sheet flows.
8/18/2007 6:18	46.70318	-129.37148	313.9	2412.8	Pressure ridge and lobates ahead.
8/18/2007 6:19	46.70328	-129.37143	286.2	2413.6	Flattened lobates with faults.
8/18/2007 6:20	46.70319	-129.37153	318.7	2413.7	Looks like it could be sheet flows with a scarp.
8/18/2007 6:21	46.70338	-129.37161	316.6	2415.4	Low lobates and sheet flows.
8/18/2007 6:21	46.70334	-129.37159	319.1	2415.1	Sedimented sheet flow.
8/18/2007 6:22	46.70332	-129.37165	280.9	2415.0	Moving 280 over very flat flows.
8/18/2007 6:23	46.70334	-129.37180	310.6	2415.3	More lobates here.
8/18/2007 6:24	46.70343	-129.37189	316.6	2415.3	Jumbled flow.
8/18/2007 6:24	46.70341	-129.37189	289.7	2415.1	Sheets draping down into fault.
8/18/2007 6:26	46.70349	-129.37194	280.6	2416.2	Sheet flows and jumble.
8/18/2007 6:27	46.70359	-129.37206	295.5	2416.3	Fault through flow.
8/18/2007 6:28	46.70356	-129.37225	297.5	2416.0	Edge of scarp.
8/18/2007 6:28	46.70359	-129.37216	293.5	2415.3	Lineations in small pieces of the sheet flow.
8/18/2007 6:29	46.70356	-129.37234	327.5	2416.3	Knife slices of scarps.
8/18/2007 6:31	46.70378	-129.37246	320.0	2432.1	Over scarp (sonar shows wall behind us) as we move on to last point of transit line before the eastern excursion.
8/18/2007 6:31	46.70378	-129.37247	292.0	2432.5	Sheet that has draped over.
8/18/2007 6:32	46.70382	-129.37250	302.4	2431.3	Back on sheet flows at top of this scarp.
8/18/2007 6:32	46.70387	-129.37252	306.7	2430.2	Sheet flow came up against the lobates.
8/18/2007 6:33	46.70392	-129.37264	286.4	2428.8	Talus with a wall ahead of us.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 6:34	46.70393	-129.37275	319.7	2426.4	Climbing up scarp wall.
8/18/2007 6:34	46.70394	-129.37278	299.1	2422.8	Lobates on top of this one.
8/18/2007 6:34	46.70395	-129.37280	298.1	2422.3	Some sheet right on top of lobates.
8/18/2007 6:35	46.70393	-129.37283	188.3	2422.7	Rocks just pulled apart at scarps.
8/18/2007 6:36	46.70391	-129.37283	233.9	2423.2	Sheet flow is very thin.
8/18/2007 6:38	46.70392	-129.37275	224.7	2427.2	Jason is back at the point where we left the transit line.
8/18/2007 6:38	46.70392	-129.37275	214.2	2426.1	Taken a lot of DSC photos of the sheet flow.
8/18/2007 6:40	46.70381	-129.37283	240.6	2426.0	Heading back south along line at 240deg.
8/18/2007 6:41	46.70375	-129.37285	244.0	2425.9	Large scarp on sonar angling ahead.
8/18/2007 6:42	46.70368	-129.37291	242.6	2425.7	See scarp in Medea.
8/18/2007 6:49	46.70305	-129.37347	198.9	2419.2	A little sponge over here.
8/18/2007 6:57	46.70226	-129.37365	188.0	2420.1	Crossing some talus like material.
8/18/2007 7:02	46.70187	-129.37396	190.6	2418.7	Stopping here a bit to plan out the rest of this watch.
8/18/2007 7:14	46.70059	-129.37454	216.2	2408.8	Heavily sediment here.
8/18/2007 7:29	46.69892	-129.37500	190.5	2420.1	Passing some critters along the cliff here.
8/18/2007 7:30	46.69892	-129.37500	190.2	2419.8	Quite a bit of sediment in between the pillows here.
8/18/2007 7:49	46.69695	-129.37565	187.9	2420.1	Not as much sediment here as the flows further to the North.
8/18/2007 7:54	46.69641	-129.37574	207.0	2426.2	J294-ROCK-004 Taking a rock sample here.
8/18/2007 7:55	46.69629	-129.37573	219.3	2426.6	J294-ROCK-004 Skipping ahead of the ship to attempt the sample.
8/18/2007 7:56	46.69627	-129.37574	215.5	2424.3	J294-ROCK-004 Pillow lavas sampled.
8/18/2007 7:59	46.69580	-129.37596	192.9	2426.1	J294-ROCK-004 Put into the Starboard crate - Port Rear slot.
8/18/2007 8:01	46.69557	-129.37600	195.9	2428.4	Some more sediment on the rocks here.
8/18/2007 8:09	46.69468	-129.37631	174.2	2432.4	Restarting the winch control.
8/18/2007 8:23	46.69282	-129.37664	187.9	2446.7	Crossing some collapses here.
8/18/2007 8:25	46.69267	-129.37670	189.0	2448.2	Lava pillar with a lot of growth on it.
8/18/2007 8:26	46.69255	-129.37681	193.3	2448.5	We are in the deepest part with sheet flows.
8/18/2007 8:26	46.69246	-129.37687	191.2	2448.6	We will attempt to sample a piece of the sheet flow here.
8/18/2007 8:28	46.69218	-129.37697	190.9	2448.8	J294-ROCK-005 It was recovered from the deep hole.
8/18/2007 8:28	46.69222	-129.37697	191.6	2448.8	J294-ROCK-005 Picked up sample 5 rock.
8/18/2007 8:29	46.69205	-129.37696	190.6	2449.2	J294-ROCK-005 Placed in the starboard crate - Starboard aft section.
8/18/2007 8:31	46.69185	-129.37702	194.8	2449.7	We see some pillows in-between the pillars.
8/18/2007 8:43	46.69031	-129.37751	186.3	2399.5	Maybe a chimney up here.
8/18/2007 8:43	46.69034	-129.37749	180.8	2399.4	Possible hydrothermal sediments here.
8/18/2007 8:44	46.69026	-129.37750	181.1	2392.4	It is an older chimney but it has some active spots.
8/18/2007 8:44	46.69024	-129.37751	179.3	2381.9	It is tall - 20m high or so.
8/18/2007 8:45	46.69020	-129.37755	190.7	2380.8	We need to run for a bit with the ship.
8/18/2007 8:47	46.68994	-129.37791	77.4	2401.3	Some hydrothermal sediments here.
8/18/2007 8:50	46.68955	-129.37814	204.8	2404.2	Moving the ship back to the chimneys.
8/18/2007 8:58	46.68908	-129.37831	81.0	2397.4	Getting back to the hydrothermal sediments.
8/18/2007 9:11	46.68971	-129.37766	44.9	2398.6	This is about due south of the chimneys.
8/18/2007 9:14	46.68995	-129.37753	38.1	2399.4	Chimneys here in front.
8/18/2007 9:14	46.68995	-129.37754	45.9	2400.7	Some nice hydrothermal sediments here.
8/18/2007 9:15	46.68998	-129.37752	23.2	2398.5	Started recording the HD.
8/18/2007 9:16	46.68998	-129.37752	23.2	2398.3	Spotted some shimmering.
8/18/2007 9:16	46.68998	-129.37752	26.6	2399.0	The SONAR looks pretty eventfully. This is about 50 m south of the initial contact.
8/18/2007 9:19	46.69031	-129.37764	118.4	2402.2	Stopping the HD.
8/18/2007 9:21	46.69022	-129.37757	129.7	2402.0	There are a few tubeworms.
8/18/2007 9:21	46.69022	-129.37757	129.7	2402.0	This is the base of the big tower.
8/18/2007 9:25	46.69019	-129.37759	89.6	2400.1	Preparing to do some water sampling.
8/18/2007 9:30	46.69020	-129.37757	96.8	2402.4	There are some scale worms and alvinellids in the base here.
8/18/2007 9:34	46.69019	-129.37757	96.8	2402.4	J294-HFS-006 Starting filtered piston #1 at Cobb field. Vent has not been named yet.
8/18/2007 9:39	46.68987	-129.37735	96.4	2402.5	J294-HFS-006 End of sample - Tmax=150.4 Tav=139.7 Vol=602 T2=50 SigT=12.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 9:39	46.68987	-129.37735	96.4	2402.5	J294-HFS-007 Starting filtered bag sample #2. Unnamed vent.
8/18/2007 9:44	46.68986	-129.37735	96.4	2402.5	J294-HFS-007 End of filtered bag #2 - Tmax=121.8 Tav=103.6 Vol=685 T2=35 SigT=8.8.
8/18/2007 9:49	46.68986	-129.37735	96.5	2402.6	J294-GT-008 Triggered successfully.
8/18/2007 9:49	46.68986	-129.37735	96.5	2402.5	J294-GT-008 Triggering the starboard Gas Tight bottle.
8/18/2007 9:49	46.68986	-129.37735	96.4	2402.6	J294-HFS-009 Starting filtered bag #17. Unnamed vent.
8/18/2007 9:52	46.68987	-129.37735	96.5	2402.5	J294-HFS-009 End of filtered bag #17 - Tmax=142.2 Tav=132.7 Vol=545 T2=42 SigT=6.7.
8/18/2007 9:55	46.68987	-129.37735	96.5	2402.6	J294-HFS-010 Starting unfiltered piston #5 at unnamed vent.
8/18/2007 9:57	46.68987	-129.37735	96.5	2402.6	J294-HFS-010 End of unfiltered bag #5 - Tmax=164.5 Tav=153.5 Vol=466 T2=42 SigT=10.
8/18/2007 9:59	46.68987	-129.37734	99.5	2402.0	Moving to take a diffuse sample on a different part of this chimney.
8/18/2007 10:04	46.68985	-129.37729	101.3	2402.3	Over to the left of the original sampling spot.
8/18/2007 10:06	46.68982	-129.37727	101.2	2402.2	Starting filtered piston #6 at diffuse part of unnamed vent.
8/18/2007 10:07	46.68981	-129.37726	101.2	2402.2	J294-HFS-011 Starting filtered piston #6 at diffuse part of the unnamed vent.
8/18/2007 10:10	46.68975	-129.37721	101.1	2402.3	J294-HFS-011 End of filtered piston #6 - Tmax=20.3 Tav=19.7 Vol=654 T2=10 SigT=0.38.
8/18/2007 10:12	46.68974	-129.37720	101.1	2402.3	J294-HFS-012 Starting Sterivex #11 at diffuse part of unnamed vent.
8/18/2007 10:30	46.68974	-129.37719	100.9	2402.4	J294-HFS-012 End of Sterivex #11 - Tmax=22.3 Tav=20.9 Vol=2500 T2=10.6 SigT=0.88.
8/18/2007 10:30	46.68974	-129.37719	100.9	2402.4	This vent is now named - Not Dead Yet.
8/18/2007 10:32	46.68974	-129.37719	101.0	2402.4	J294-HFS-013 Filtered bag #18 at Not Dead Yet.
8/18/2007 10:32	46.68974	-129.37719	101.0	2402.4	Starting filtered bag #18 at Not Dead Yet.
8/18/2007 10:33	46.68973	-129.37719	101.0	2402.4	We will head out to explore after this one.
8/18/2007 10:35	46.68974	-129.37719	101.0	2402.4	J294-HFS-013 End of Filtered Bag #18 - Tmax=21.6 Tav=21.1 Vol=579 T2=10.3 SigT=0.6.
8/18/2007 10:35	46.68974	-129.37719	100.9	2402.4	We are going to take a water sample in the orange stuff now.
8/18/2007 10:38	46.68973	-129.37719	99.5	2402.4	Temperature is going up now.
8/18/2007 10:39	46.68973	-129.37719	99.4	2402.4	J294-HFS-014 Starting Filtered bag #19 at Not Dead Yet.
8/18/2007 10:41	46.68973	-129.37720	99.4	2402.4	J294-HFS-014 This is some diffuse flow around the orange.
8/18/2007 10:43	46.68973	-129.37720	99.3	2402.4	J294-HFS-014 End of Filtered Bag #19 - Tmax=26.8 Tav=24.8 Vol=510 T2=11 SigT=1.1.
8/18/2007 10:45	46.68973	-129.37719	99.9	2402.4	J294-HFS-015 Starting unfiltered piston #7 at Not Dead Yet.
8/18/2007 10:49	46.68973	-129.37719	99.7	2402.4	J294-HFS-015 End of unfiltered piston #7. Tmax=33.3 Tav=29.5 Vol=676 T2=12 SigT=2.3.
8/18/2007 10:50	46.68973	-129.37719	99.9	2402.4	J294-HFS-016 Taking sterivex #15.
8/18/2007 11:07	46.68974	-129.37718	99.0	2402.5	J294-HFS-016 End of sterivex #15 at Not Dead Yet. Tmax=33.6 Tav=24.3 Vol=2547 T2=10 SigT=5.8..
8/18/2007 11:13	46.68974	-129.37717	99.0	2402.5	J294-PUMP-017 Pumping at 0.7 gallons per minute.
8/18/2007 11:13	46.68974	-129.37717	99.1	2402.5	J294-PUMP-017 Starting Pelagic Pump at Not Dead Yet.
8/18/2007 11:26	46.68975	-129.37717	99.2	2402.5	J294-PUMP-017 Pump stopped.
8/18/2007 11:28	46.68985	-129.37735	98.0	2402.1	Moving to fly around the vent a bit.
8/18/2007 11:29	46.68984	-129.37736	99.2	2402.0	Started HD framegrabs.
8/18/2007 11:30	46.68985	-129.37736	101.0	2402.8	Cool looking flanges with hot fluid coming from beneath.
8/18/2007 11:31	46.68985	-129.37736	101.0	2402.8	Getting out the Jason temperature probe to poke around with.
8/18/2007 11:33	46.68985	-129.37736	100.9	2402.8	Lots of critters.
8/18/2007 11:34	46.68985	-129.37736	99.0	2402.7	There is a horizontal boundary between the sedimented rocks and the chimney.
8/18/2007 11:36	46.68985	-129.37736	98.6	2402.7	Jason temp probe up to 186 degrees.
8/18/2007 11:39	46.68980	-129.37736	79.3	2402.0	HD on.
8/18/2007 11:43	46.68981	-129.37735	89.7	2385.8	Not Dead Yet has two large spires on the same base.
8/18/2007 11:45	46.68981	-129.37734	89.8	2384.2	Not Dead Yet is about 20 m tall.
8/18/2007 11:49	46.68977	-129.37739	164.8	2397.6	HD off.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 11:49	46.68976	-129.37739	159.7	2397.6	There are a few other spires to the west.
8/18/2007 11:50	46.68975	-129.37736	52.1	2397.7	Going around the spires from the south.
8/18/2007 11:53	46.68975	-129.37727	338.7	2397.7	Looks like there are several clusters of chimneys in this area.
8/18/2007 11:56	46.68979	-129.37725	301.7	2397.7	Headed to a clump of chimneys to the east a few meters.
8/18/2007 11:57	46.68979	-129.37724	301.5	2399.7	Actually still looking at the Not Dead Yet cluster.
8/18/2007 12:00	46.68980	-129.37723	301.7	2399.8	Waiting for Medea to move east.
8/18/2007 12:03	46.68982	-129.37716	69.9	2399.8	Now moving the to clump of chimneys to the east.
8/18/2007 12:06	46.68977	-129.37716	151.2	2400.7	Most of the chimneys seem to have a low flange and contact basalt.
8/18/2007 12:07	46.68969	-129.37719	96.4	2399.9	HD framegrab on.
8/18/2007 12:07	46.68968	-129.37718	95.8	2400.0	HD on.
8/18/2007 12:07	46.68970	-129.37718	96.9	2400.0	This is another clump of chimneys to the SE of NDY.
8/18/2007 12:07	46.68969	-129.37719	95.2	2400.0	This one has some smokers.
8/18/2007 12:10	46.68971	-129.37718	87.1	2392.7	HD framegrab off.
8/18/2007 12:10	46.68971	-129.37718	86.3	2392.4	HD off.
8/18/2007 12:14	46.68971	-129.37718	96.0	2398.6	Setting up to sample the smokers at NDY southeast.
8/18/2007 12:15	46.68969	-129.37718	92.8	2398.5	HD on.
8/18/2007 12:15	46.68970	-129.37719	95.9	2398.6	The smokers are on the south side of the chimney clump.
8/18/2007 12:18	46.68968	-129.37714	61.8	2399.1	Stabilized Jason against a flange.
8/18/2007 12:21	46.68968	-129.37714	61.5	2399.0	Getting out the fluid sampler.
8/18/2007 12:22	46.68968	-129.37714	62.0	2399.1	HD off.
8/18/2007 12:30	46.68968	-129.37714	61.7	2399.0	J294-HFS-018 Starting sample filtered piston #2 at NDY-SE.
8/18/2007 12:34	46.68968	-129.37714	61.6	2399.0	J294-HFS-018 End of filtered piston #2. Tmax=157.8 Tav=149.8 Vol=564 T2=58 SigT=7.
8/18/2007 12:35	46.68968	-129.37714	61.6	2399.0	J294-HFS-019 Starting filtered bag #20.
8/18/2007 12:39	46.68968	-129.37714	61.5	2399.0	J294-HFS-019 End of filtered bag #20. Tmax=153.8 Tav=148.7 Vol=510 T2=57 SigT=4.6.
8/18/2007 12:40	46.68968	-129.37714	61.6	2399.0	Filtered bag #21.
8/18/2007 12:40	46.68968	-129.37714	61.7	2399.0	J294-HFS-020 Filtered bag #21.
8/18/2007 12:44	46.68968	-129.37714	61.6	2399.0	J294-HFS-020 End of filtered bag #21. Tmax=222.9 Tav=203.6 Vol=489 T2=13 SigT=16.
8/18/2007 12:45	46.68968	-129.37714	61.6	2399.0	Looking at the HFS nozzle.
8/18/2007 12:46	46.68968	-129.37714	61.6	2399.0	Reversing the flow to blow it out.
8/18/2007 12:52	46.68969	-129.37714	63.0	2399.0	J294-GT-021 Collecting a orange handled gastight sample at NDY-SE.
8/18/2007 12:53	46.68969	-129.37714	62.8	2399.0	J294-GT-021 Finished with the sample.
8/18/2007 12:57	46.68968	-129.37716	61.8	2398.4	Moving from NDY-SE.
8/18/2007 12:58	46.68967	-129.37718	239.3	2398.4	Turning to the south to look at another chimney a few meters away.
8/18/2007 13:02	46.68970	-129.37725	188.3	2398.1	Moving southwest to explore some more.
8/18/2007 13:08	46.68956	-129.37745	225.4	2398.7	Beginning to move southwest.
8/18/2007 13:10	46.68962	-129.37759	226.9	2398.2	Passing over area of pillow flows
8/18/2007 13:22	46.68898	-129.37783	224.1	2400.7	Lots of pillows.
8/18/2007 13:23	46.68895	-129.37792	218.6	2398.5	This area looks less sedimented than north in the earlier part of the dive.
8/18/2007 13:31	46.68831	-129.37833	216.2	2394.6	We also have not seen any fissures or faulting.
8/18/2007 13:36	46.68796	-129.37854	214.4	2404.5	Still in younger looking pillows.
8/18/2007 13:40	46.68768	-129.37857	208.7	2409.2	Going downslope here.
8/18/2007 13:44	46.68731	-129.37908	228.0	2424.8	Some type of ray.
8/18/2007 13:59	46.68593	-129.37992	226.7	2430.4	Still nothing but lightly sedimented pillows.
8/18/2007 14:00	46.68587	-129.38014	224.5	2429.7	We have passed the Marker 3 sight of expected vents a few minutes ago.
8/18/2007 14:03	46.68554	-129.38009	171.1	2425.5	Looks like a wall or scarp ahead on the sonar.
8/18/2007 14:03	46.68546	-129.38019	197.6	2424.6	The wall is composed of pillow crusts.
8/18/2007 14:04	46.68539	-129.38042	224.1	2425.7	The scarp is trending generally in the direction we are going-SW.
8/18/2007 14:10	46.68497	-129.38080	222.1	2427.4	Some white stuff on the pillows.
8/18/2007 14:13	46.68467	-129.38101	222.4	2421.7	Now we have stumbled on some cracking in the pillows.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 14:14	46.68449	-129.38117	227.0	2417.5	Going up a hill of pillows.
8/18/2007 14:14	46.68447	-129.38123	223.5	2416.3	There is a scarp to the east.
8/18/2007 14:19	46.68396	-129.38146	140.4	2405.8	Getting too close to the east scarp so moving to the top.
8/18/2007 14:20	46.68392	-129.38148	131.1	2391.3	Very tall scarp 20m tall.
8/18/2007 14:21	46.68382	-129.38142	211.7	2390.7	Pillows look older on top and covered with sediment.
8/18/2007 14:21	46.68368	-129.38155	212.5	2390.8	The area looks pretty chopped up by faulting.
8/18/2007 14:27	46.68306	-129.38215	212.7	2392.4	11 meters deep.
8/18/2007 14:27	46.68318	-129.38206	212.0	2392.6	Dropping into a large casm.
8/18/2007 14:29	46.68291	-129.38219	213.0	2404.5	Pretty rough bottom with a scarp to the east.
8/18/2007 14:32	46.68275	-129.38241	212.4	2405.8	Scarp ahead too.
8/18/2007 14:32	46.68265	-129.38252	210.8	2406.4	Still older looking sedimented and highly fissured.
8/18/2007 14:36	46.68233	-129.38270	212.0	2397.7	Coming up because of a ridge in front.
8/18/2007 14:38	46.68207	-129.38293	210.1	2395.5	The ridge is a narrow long sliver running to the SW.
8/18/2007 14:43	46.68167	-129.38313	210.3	2405.2	Approaching Sulfide Site 4.
8/18/2007 14:50	46.68096	-129.38348	209.4	2401.2	Almost at the sulfide site again.
8/18/2007 14:50	46.68096	-129.38361	210.5	2399.4	Fault running NNW of us.
8/18/2007 14:50	46.68096	-129.38353	210.7	2400.4	Old looking pillows with sediment. Faults.
8/18/2007 14:51	46.68096	-129.38377	212.9	2395.2	Flying off edge of scarp (again).
8/18/2007 14:52	46.68091	-129.38380	212.1	2394.6	Back over edge and following edge.
8/18/2007 14:53	46.68069	-129.38391	211.8	2393.6	Big tubes along left side edge of scarp.
8/18/2007 14:54	46.68049	-129.38406	210.3	2391.7	Top of this scarp was fairly narrow. Ran off terminal edge and can see ridge below us to some extent.
8/18/2007 14:56	46.68037	-129.38410	211.6	2395.7	Dropped lower to another scarp.
8/18/2007 14:56	46.68036	-129.38412	211.9	2395.5	Running along a fault in pillows.
8/18/2007 14:58	46.68024	-129.38419	211.9	2395.3	Dropped over edge and coming down to more pillows.
8/18/2007 14:59	46.68016	-129.38425	212.3	2395.9	Following lower scarp on its edge.
8/18/2007 15:00	46.67996	-129.38423	211.7	2397.6	Fault in scarp running perpendicular to our heading.
8/18/2007 15:00	46.68003	-129.38422	212.4	2395.2	Faulted blocks and scarps--just looks ripped apart.
8/18/2007 15:02	46.67988	-129.38442	213.7	2394.6	Following edge of scarp.
8/18/2007 15:02	46.67975	-129.38453	212.4	2393.7	Small fault on top.
8/18/2007 15:04	46.67961	-129.38461	211.7	2392.6	West edge of scarp to our right. All pillows and sediment.
8/18/2007 15:05	46.67952	-129.38458	212.0	2393.1	Off on eastern edge of this scarp now.
8/18/2007 15:06	46.67943	-129.38473	211.5	2391.4	Turned to west edge and flying off.
8/18/2007 15:07	46.67941	-129.38477	211.4	2391.1	Scarp ended and see remnant below.
8/18/2007 15:09	46.67916	-129.38477	210.9	2389.7	Flat lobates on top truncated by scarp.
8/18/2007 15:09	46.67918	-129.38494	209.0	2388.6	Over west edge of another scarp.
8/18/2007 15:10	46.67907	-129.38489	212.1	2391.1	Small crack running through pillow field.
8/18/2007 15:11	46.67904	-129.38486	211.7	2390.7	Ship is at target.
8/18/2007 15:11	46.67903	-129.38485	200.7	2390.3	Talus slope.
8/18/2007 15:12	46.67890	-129.38491	210.8	2385.1	Back on top of scarp with lobates on top.
8/18/2007 15:12	46.67895	-129.38488	212.0	2386.1	One small intact pillow perched in talus.
8/18/2007 15:13	46.67866	-129.38516	212.2	2387.1	Bottom has dropped below us 8m with no sonar targets around.
8/18/2007 15:13	46.67880	-129.38505	211.9	2385.0	Small intact pieces of scarp standing as pillars and small knife edge islands.
8/18/2007 15:15	46.67867	-129.38533	310.3	2393.4	Driving down to bottom. Flatted lobates and some large pillows. Lots of sediment.
8/18/2007 15:15	46.67871	-129.38543	310.6	2394.5	Edge of pillow scarp.
8/18/2007 15:21	46.67847	-129.38583	303.9	2396.2	At southern end of transit line--must go all the ways back to see the vents.
8/18/2007 15:23	46.67847	-129.38585	311.5	2409.6	Waiting for ship to start heading north.
8/18/2007 15:26	46.67857	-129.38614	263.0	2434.4	Down between scarps according to sonar.
8/18/2007 15:26	46.67857	-129.38616	278.8	2432.2	Looks like more pillows and sediment.
8/18/2007 15:27	46.67842	-129.38619	202.9	2433.4	Next to large wall on sonar.
8/18/2007 15:27	46.67843	-129.38618	202.7	2433.4	Talus as Jason spins south.
8/18/2007 15:29	46.67860	-129.38639	324.7	2432.3	Heading north again over lobates and sediment with scarp behind.
8/18/2007 15:30	46.67883	-129.38654	327.9	2431.2	Running off triangular edge of scarp.
8/18/2007 15:38	46.67915	-129.38659	323.0	2432.2	Here we go a bit north.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 15:40	46.67920	-129.38631	61.3	2423.8	15m high scarp that one.
8/18/2007 15:40	46.67922	-129.38622	60.1	2423.7	Fault across top.
8/18/2007 15:40	46.67919	-129.38637	60.9	2424.8	Going up over a scarp with pillows on top.
8/18/2007 15:42	46.67940	-129.38607	21.3	2423.7	On top of scarp with no sonar targets.
8/18/2007 15:44	46.67950	-129.38599	26.3	2424.3	Elongated pillow tubes with a perpendicular crack/fault.
8/18/2007 15:45	46.67963	-129.38594	26.8	2424.8	Following west edge of scarp as head north.
8/18/2007 15:46	46.67972	-129.38578	27.2	2425.8	Fault on edge of scarp as long piece poised to cleave off.
8/18/2007 15:50	46.68004	-129.38562	1.1	2426.6	Coming up on west edge of scarp.
8/18/2007 15:50	46.68000	-129.38560	3.8	2426.5	Flat pillows with a lot of sediment.
8/18/2007 15:52	46.68016	-129.38560	31.9	2428.6	Almost looks like a large overhang on west edge.
8/18/2007 15:53	46.68018	-129.38536	49.6	2430.3	Flatter area of pillows. Looks like a ridge of rubble or talus coming up.
8/18/2007 15:53	46.68023	-129.38538	28.3	2430.0	Turning away back north from talus-jumble.
8/18/2007 15:54	46.68034	-129.38544	27.8	2429.9	Very flat looking lobate flow.
8/18/2007 15:55	46.68038	-129.38539	43.3	2430.3	Some collapsed pillow features.
8/18/2007 15:56	46.68037	-129.38527	66.3	2428.5	Climbing up slope of broken up pillow or jumble.
8/18/2007 15:58	46.68069	-129.38521	16.7	2430.5	Bottom here is lobates with sediment.
8/18/2007 15:58	46.68057	-129.38514	11.8	2428.6	Wall off to east on sonar.
8/18/2007 16:00	46.68078	-129.38498	24.4	2431.4	Big tubes and pillows.
8/18/2007 16:01	46.68085	-129.38494	22.8	2428.2	Pillows here have smaller lobes between.
8/18/2007 16:01	46.68092	-129.38496	22.0	2426.8	Pillows look younger as not as much sediment evident either.
8/18/2007 16:03	46.68112	-129.38480	21.6	2421.0	Pillows still look younger here. At the area of the sulfide target from the camera tow.
8/18/2007 16:04	46.68115	-129.38480	20.5	2420.9	Nothing was seen here on the south Jason run.
8/18/2007 16:07	46.68144	-129.38445	28.5	2417.7	Still less sediment here and not as much faulting.
8/18/2007 16:10	46.68177	-129.38434	29.2	2415.9	Pillows flattening as we move uphill a little.
8/18/2007 16:12	46.68187	-129.38409	28.5	2414.0	Rounder pillows. This was the camtow area of observed sulfides.
8/18/2007 16:13	46.68198	-129.38405	22.9	2413.3	Putting target here.
8/18/2007 16:13	46.68192	-129.38410	22.2	2413.1	Seeing something on camera. Staining.
8/18/2007 16:13	46.68196	-129.38407	23.3	2414.5	Sulfide!
8/18/2007 16:13	46.68199	-129.38405	23.5	2412.3	Will bring ship around and explore.
8/18/2007 16:14	46.68200	-129.38408	17.7	2408.5	A big target on the sonar.
8/18/2007 16:14	46.68206	-129.38413	16.7	2410.1	Could see tubeworms on the sulfide.
8/18/2007 16:14	46.68200	-129.38407	17.5	2408.8	Got some DSC.
8/18/2007 16:14	46.68205	-129.38414	17.0	2412.7	Stopping ship and coming back around.
8/18/2007 16:15	46.68204	-129.38414	17.8	2416.2	A number of sonar targets in the area.
8/18/2007 16:15	46.68211	-129.38411	19.1	2416.8	Chimney ahead.
8/18/2007 16:15	46.68208	-129.38413	18.0	2417.0	Targets to the east of us at our heading of 018.
8/18/2007 16:16	46.68216	-129.38408	17.9	2415.3	Approaching sulfide.
8/18/2007 16:17	46.68221	-129.38409	14.0	2412.6	Sulfide staining in nearby pillows.
8/18/2007 16:18	46.68229	-129.38398	86.0	2417.0	Taking DSC of site.
8/18/2007 16:19	46.68233	-129.38389	146.4	2415.3	Lots of staining and looks old-squat-massive.
8/18/2007 16:20	46.68235	-129.38387	156.0	2414.3	Can't see any smoke-looks all diffuse.
8/18/2007 16:20	46.68234	-129.38388	150.0	2414.6	Lots of worms in HD.
8/18/2007 16:20	46.68235	-129.38384	174.2	2413.6	Most activity at base on this side looking south (on its north end).
8/18/2007 16:23	46.68269	-129.38363	15.8	2413.8	Ship had been moving fast to northern target.
8/18/2007 16:23	46.68268	-129.38361	15.5	2414.3	Waiting for ship to stop so we can explore the multiple sonar targets around the sulfide.
8/18/2007 16:24	46.68268	-129.38369	296.4	2412.9	Surrounding area is flat and younger looking lobates in comparison to other areas. Little faulting if any.
8/18/2007 16:25	46.68254	-129.38387	185.2	2415.3	Jason spinning around to targets.
8/18/2007 16:25	46.68255	-129.38387	229.5	2415.5	See a line of 3 targets on sonar to the east of us.
8/18/2007 16:26	46.68248	-129.38387	172.0	2414.3	Heading due south to the sonar targets.
8/18/2007 16:26	46.68244	-129.38388	173.3	2412.9	There's a crab as we approach (more to eat here).
8/18/2007 16:27	46.68234	-129.38390	170.8	2412.7	At the same one with another target behind.
8/18/2007 16:27	46.68238	-129.38390	173.5	2412.7	These are the vents.
8/18/2007 16:28	46.68231	-129.38393	141.6	2413.3	Lots of worms and mat.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 16:31	46.68232	-129.38384	202.0	2414.2	Can see shimmer around base of worms.
8/18/2007 16:31	46.68232	-129.38385	198.8	2414.2	Going to take some HD of sulfide.
8/18/2007 16:32	46.68232	-129.38385	199.5	2414.2	Didn't get to zoom in with camera around big tubeworm clump with ledge under it.
8/18/2007 16:33	46.68232	-129.38385	199.2	2414.2	Lots of shimmering water all around crack at base.
8/18/2007 16:34	46.68232	-129.38385	199.0	2414.2	Tubeworms-palm worms and limpets.
8/18/2007 16:35	46.68230	-129.38393	144.5	2414.2	Other targets behind still.
8/18/2007 16:35	46.68231	-129.38391	145.8	2414.1	This chimney is elongated n-s a bit and see staining along line to south.
8/18/2007 16:35	46.68228	-129.38395	106.1	2416.0	Zooming in with camera under ledge with clump of worms on top.
8/18/2007 16:37	46.68223	-129.38389	231.9	2412.9	Not seeing too much staining on this side of second sulfide.
8/18/2007 16:37	46.68223	-129.38389	243.2	2412.8	Some white at base. Small spire at top.
8/18/2007 16:37	46.68225	-129.38389	170.8	2413.2	Turning over to other target.
8/18/2007 16:38	46.68221	-129.38389	246.0	2412.4	Not much flow on top at spire.
8/18/2007 16:38	46.68221	-129.38386	275.4	2416.7	Smaller areas of staining at base. Not as much biology as the first one.
8/18/2007 16:39	46.68222	-129.38386	292.8	2416.5	Going to lateral around right on base of this one.
8/18/2007 16:39	46.68222	-129.38386	278.2	2416.8	Some worms at base here but not as plentiful on the west side of base.
8/18/2007 16:40	46.68220	-129.38388	314.4	2414.9	Smaller sulfide right next to this one. More white staining on it.
8/18/2007 16:42	46.68209	-129.38388	230.1	2415.6	Looking at north side of base of second one.
8/18/2007 16:42	46.68208	-129.38388	227.8	2415.4	This is the third structure in the line.
8/18/2007 16:43	46.68209	-129.38389	244.3	2415.2	Lots of worms in a clump with a spire at top.
8/18/2007 16:43	46.68209	-129.38389	244.3	2415.2	Small crabs in cracks.
8/18/2007 16:43	46.68209	-129.38389	244.8	2415.2	This is actually the first sulfide found and looking at the opposite side of the ledge with the worms on it.
8/18/2007 16:44	46.68208	-129.38388	229.0	2414.5	Looking at cracks for water.
8/18/2007 16:44	46.68208	-129.38388	228.5	2414.8	Small sulfide spire at top.
8/18/2007 16:46	46.68205	-129.38392	239.8	2414.2	Beautiful skinny spires in background on other sulfides.
8/18/2007 16:46	46.68205	-129.38391	237.9	2414.2	Zooming in on area of worms above a little cave-like feature.
8/18/2007 16:47	46.68206	-129.38391	237.9	2414.0	Little crabs and lots of biology clustered around shimmering water.
8/18/2007 16:48	46.68205	-129.38390	232.6	2413.7	Pulling out the basket to get ready for water sample.
8/18/2007 16:50	46.68205	-129.38392	221.4	2414.1	Have wand and looking for highest flow in limpet clump. This is the first sulfide seen in this area.
8/18/2007 16:50	46.68205	-129.38392	221.5	2414.0	Scale worms.
8/18/2007 16:50	46.68205	-129.38392	221.4	2414.0	Wand in limpets and palm worms.
8/18/2007 16:51	46.68205	-129.38392	221.5	2414.1	Turning HD off.
8/18/2007 16:53	46.68205	-129.38392	221.6	2414.1	Temperatures on HFS only 13deg.
8/18/2007 16:55	46.68205	-129.38392	221.8	2414.1	Not going to sample in this patch. Pulling out and lateralling left.
8/18/2007 16:55	46.68202	-129.38389	275.5	2413.6	Top of white spire looks like some flow.
8/18/2007 16:56	46.68202	-129.38390	279.2	2413.6	Good flow coming out of top of these spires.
8/18/2007 16:57	46.68202	-129.38390	277.7	2413.7	Wand in flow deep. Temp is going up.
8/18/2007 16:58	46.68202	-129.38390	277.4	2413.7	J294-HFS-022 Unfiltered piston #3 starting.
8/18/2007 16:59	46.68202	-129.38390	278.0	2413.7	J294-HFS-022 Temperature was 204deg at start.
8/18/2007 17:01	46.68202	-129.38390	277.6	2413.7	J294-HFS-022 Stopping.
8/18/2007 17:02	46.68202	-129.38390	278.1	2413.7	J294-HFS-022 Tmax=204.9 Tavg=204.6 vol=551 T2=50 Sigma=.13
8/18/2007 17:04	46.68197	-129.38383	4.9	2415.8	Backing off sulfide for a look around at other structures here.
8/18/2007 17:05	46.68196	-129.38382	38.7	2416.4	Less activity here at base. Long skinny worms.
8/18/2007 17:05	46.68197	-129.38382	38.5	2417.1	This is other sulfide that was to the right of one sampled.
8/18/2007 17:06	46.68191	-129.38371	277.4	2413.4	Tall dead looking sulfide.
8/18/2007 17:07	46.68193	-129.38368	175.5	2415.3	Exploring around trying to map out the sulfide field.
8/18/2007 17:07	46.68193	-129.38372	215.1	2416.6	Skinny old spires left on tops of sulfides.
8/18/2007 17:08	46.68188	-129.38357	78.0	2413.4	Near fault scarp to west.



J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 17:08	46.68191	-129.38364	114.5	2414.6	Ridge of collapse here.
8/18/2007 17:08	46.68189	-129.38360	101.4	2414.0	See sulfide line perpendicular to drop.
8/18/2007 17:09	46.68190	-129.38354	61.5	2414.8	Diffuse flow and lots of limpets.
8/18/2007 17:09	46.68189	-129.38354	64.4	2414.6	Small crack with lots of worms.
8/18/2007 17:10	46.68187	-129.38356	159.1	2414.2	Orange staining on seafloor.
8/18/2007 17:10	46.68187	-129.38360	220.4	2412.8	Swinging south. Fault.
8/18/2007 17:10	46.68188	-129.38354	141.2	2414.8	Turning west to south. See crabs.
8/18/2007 17:11	46.68187	-129.38370	284.3	2411.9	Looking back west again
8/18/2007 17:11	46.68194	-129.38379	5.3	2412.1	Looks like 3 major structures.
8/18/2007 17:11	46.68190	-129.38375	355.3	2412.2	There is the line of sulfides again as we start to swing north.
8/18/2007 17:12	46.68195	-129.38396	359.5	2412.5	There is the ledge with spire on top.
8/18/2007 17:13	46.68197	-129.38400	7.9	2413.9	Turning HD tape on.
8/18/2007 17:13	46.68197	-129.38399	8.1	2413.8	Turning HD time lapse back on.
8/18/2007 17:14	46.68202	-129.38402	70.4	2413.8	Lots of water flowing out of limpet area.
8/18/2007 17:14	46.68201	-129.38403	58.8	2413.8	Moving around vent structure.
8/18/2007 17:15	46.68202	-129.38402	79.5	2413.9	Flange with flow.
8/18/2007 17:15	46.68202	-129.38402	79.5	2414.0	Going to try to sample in flow.
8/18/2007 17:18	46.68203	-129.38401	86.9	2414.5	Higher temp area-not diffuse flow.
8/18/2007 17:18	46.68203	-129.38401	86.8	2414.5	May sample anyhow-had wanted a diffuse sample.
8/18/2007 17:19	46.68203	-129.38401	86.8	2414.5	Bit of wand excavating.
8/18/2007 17:19	46.68203	-129.38401	86.8	2414.5	HD tape off.
8/18/2007 17:19	46.68203	-129.38401	86.8	2414.5	HD time-lapse off.
8/18/2007 17:20	46.68203	-129.38401	86.7	2414.5	Getting about 90deg water here.
8/18/2007 17:21	46.68203	-129.38401	86.7	2414.5	J294-HFS-023 Unfiltered piston #4. Starting.
8/18/2007 17:24	46.68203	-129.38401	86.7	2414.5	J294-HFS-023 Stopping. Lots of spiders here.
8/18/2007 17:25	46.68203	-129.38401	86.7	2414.5	J294-HFS-023 Now stopping.
8/18/2007 17:25	46.68203	-129.38401	86.7	2414.5	J294-HFS-023 Tmax=90.7 Tavg=84 vol=654 T2=26.3 Sigma=3.26
8/18/2007 17:26	46.68203	-129.38401	87.1	2414.5	Looking for a diffuse site nearby.
8/18/2007 17:28	46.68207	-129.38405	60.5	2414.2	Looks like 3 in a line running perpendicular to the scarp.
8/18/2007 17:29	46.68220	-129.38398	46.9	2415.5	HD on.
8/18/2007 17:29	46.68219	-129.38398	49.1	2416.2	Looks like old hole as come up the chimney. Remnant flange.
8/18/2007 17:29	46.68220	-129.38398	47.0	2415.6	Starting HD frames.
8/18/2007 17:29	46.68219	-129.38398	35.6	2417.7	This is the second one again. Has the overhanging tubeworms at base.
8/18/2007 17:30	46.68220	-129.38398	47.2	2415.4	Not as much flow here.
8/18/2007 17:30	46.68220	-129.38398	47.2	2415.4	This is Hermione. Last one was Harry.
8/18/2007 17:31	46.68220	-129.38398	47.2	2415.4	Doing HD survey of Hermione.
8/18/2007 17:32	46.68217	-129.38393	0.5	2415.4	Looks old with lost of spires and flanges.
8/18/2007 17:33	46.68222	-129.38386	293.8	2415.6	Circling around Hermione.
8/18/2007 17:33	46.68225	-129.38387	323.1	2415.8	Is this the third structure? Ron. Looking for diffuse sample site.
8/18/2007 17:35	46.68225	-129.38387	334.3	2415.9	Looking for best flow.
8/18/2007 17:35	46.68225	-129.38387	334.3	2415.9	Taking HD closeups.
8/18/2007 17:36	46.68225	-129.38387	334.2	2415.8	Looks like good diffuse flow at top of worms to left.
8/18/2007 17:38	46.68225	-129.38387	334.4	2415.9	Wand is deep in worm clump-completely buried.
8/18/2007 17:40	46.68225	-129.38387	334.1	2415.9	J294-HFS-024 Unfiltered Piston #8. Starting.
8/18/2007 17:44	46.68225	-129.38385	334.0	2415.9	J294-HFS-024 Stopping.
8/18/2007 17:44	46.68225	-129.38385	334.1	2415.9	J294-HFS-024 Tmax=25.9 Tavg=25.5 vol=705 T2=12 Sigma=.18
8/18/2007 17:46	46.68225	-129.38385	334.1	2415.9	J294-HFS-025 Not yet. Now starting.
8/18/2007 17:46	46.68225	-129.38385	334.0	2415.9	J294-HFS-025 Sterivex # 10. Starting.
8/18/2007 17:57	46.68225	-129.38383	334.1	2415.9	J294-HFS-025 HD off.
8/18/2007 18:05	46.68225	-129.38381	334.1	2415.9	J294-HFS-025 Stopping.
8/18/2007 18:06	46.68225	-129.38381	333.9	2415.9	J294-HFS-025 Tmax=27.1 Tavg=26.6 vol=2700 T2=12.3 Sigma=.24
8/18/2007 18:07	46.68225	-129.38381	333.9	2415.9	Stowing HFS wand and preparing for suction sample next to Sterivex site.

J294 Date Time	Latitude	Longitude	Heading	Depth	Event
8/18/2007 18:08	46.68225	-129.38382	334.3	2415.9	J294-Suction-026 Suction of general biology here (limpets-worms)
8/18/2007 18:09	46.68225	-129.38382	334.4	2416.0	Looking at sonar there are the 2 chimneys behind us (Hermione and Ron).
8/18/2007 18:10	46.68224	-129.38382	318.6	2415.7	Looking for a rock to pick up of the flow substrate surrounding sulfides.
8/18/2007 18:10	46.68224	-129.38379	234.8	2414.3	Spun around from Ron to see Hermione.
8/18/2007 18:10	46.68224	-129.38380	250.1	2415.1	There is Hermione only 5-6m away at 247.
8/18/2007 18:11	46.68215	-129.38377	194.3	2412.0	Driving ahead to 2 more sonar targets.
8/18/2007 18:12	46.68207	-129.38382	230.7	2412.7	This is Harry.
8/18/2007 18:13	46.68207	-129.38372	145.0	2409.7	Here is another one slightly to the left. Only a few meters apart.
8/18/2007 18:14	46.68211	-129.38366	82.2	2411.8	Bill has ranges and bearings of all the sulfide locations and will sort out after dive their relative positions to each other.
8/18/2007 18:14	46.68211	-129.38365	84.3	2413.4	Looking for a basalt to collect.
8/18/2007 18:15	46.68222	-129.38369	356.7	2417.9	Going to move further north away from sulfides.
8/18/2007 18:15	46.68221	-129.38369	349.1	2419.2	Lots of hydrothermal sediment here so want to move further away from the sulfides.
8/18/2007 18:16	46.68224	-129.38367	26.5	2416.8	Can see sulfide targets to south in sonar.
8/18/2007 18:16	46.68230	-129.38356	60.2	2419.4	Seem to be away from a lot of the hydrothermal deposits here. Still some.
8/18/2007 18:18	46.68230	-129.38355	59.9	2418.9	Moving a bit to find a loose piece.
8/18/2007 18:21	46.68230	-129.38351	20.9	2418.7	Got a piece.
8/18/2007 18:23	46.68230	-129.38351	21.2	2416.7	Going to prepare to ascend from here and end dive.
8/18/2007 18:23	46.68230	-129.38351	20.7	2418.6	J294-ROCK-027 Harry Potter field basalt placed in gastight basket.
8/18/2007 18:24	46.68250	-129.38350	2.1	2409.0	Starting ascent.
8/18/2007 18:25	46.68256	-129.38355	10.5	2408.1	Turning off camera tapes.
8/18/2007 19:41	46.68276	-129.38334	134.8	1.2	Jason at surface
8/18/2007 19:43	46.68275	-129.38335	135.9	0.9	Medea on deck
8/18/2007 19:47	46.68274	-129.38335	119.2	0.1	End J2-294
8/18/2007 19:47	46.68274	-129.38335	119.2	0.1	Jason on deck

## 6.5.10 J2-295 Cobb Split Volcano

**J2-295 Split Volcano** [J2-295 Bottom time: 07:51] (ASNAPS not working on event logger). Search for hydrothermal activity based on targets observed on 1990/91 camera tows; 4 survey lines trending along axis. Collected a rock and sediment sample at the landing site at the northern end of line #1. Drove relatively south in zig-zag pattern in search of hydrothermal activity. Primarily observed flat sheet flows and heavy sediment covering, using sonar for possible targets to explore. Few outcrops of pillows and jumbled flow. Discovered orange (hydrothermal) sediment and an old-appearing sulfide mound with chimneys, with no observable activity. Marked location for planned exploration on next transit line. South of mound, less sediment observed and some jumbled flow followed by some lobates. Ridge at southern end of line #1. Due to terrain, survey speed was increased for line #2 heading north. Observation of sulfide mound area verified no activity at this location. Remainder of line #2 observed flat, sheet flows with heavy sediment and few outcrops. South line #3 also observed heavily sedimented sheet flows. Dive ended due to time constraints.

J295 Date Time	Latitude	Longitude	Heading	Depth	Event
8/19/2007 3:29	47.60162	-129.00414	0.0	0.0	Powered up for launch J2-295
8/19/2007 3:33	47.60164	-129.00413	23.5	0.8	Medea in water
8/19/2007 3:34	47.60162	-129.00417	279.2	2.4	Jason in water
8/19/2007 3:35	47.60162	-129.00417	279.9	2.4	pin is pulled
8/19/2007 3:36	47.60162	-129.00418	280.0	4.0	starting down
8/19/2007 4:56	47.64684	-128.96347	37.0	2346.6	At the bottom. Turning tapes on.
8/19/2007 4:56	47.64684	-128.96347	36.7	2348.4	Reset doppler.
8/19/2007 4:56	47.64685	-128.96345	36.2	2348.5	Landed on sheet flow with heavy sediment.
8/19/2007 4:58	47.64694	-128.96341	23.5	2352.1	Attempting to grab a rock at initial position.
8/19/2007 4:58	47.64695	-128.96340	23.5	2352.1	Seastars and sediment on rocks.
8/19/2007 4:59	47.64698	-128.96335	24.1	2352.1	J295-ROCK-001 Rock from initial sheet flow at landing. DSC of it.
8/19/2007 5:01	47.64713	-128.96315	24.1	2352.1	J295-ROCK-001 Crinoid swimming at sample site.
8/19/2007 5:01	47.64715	-128.96315	24.1	2352.1	J295-ROCK-001 Waiting for ship and Medea to start north.
8/19/2007 5:02	47.64684	-128.96348	7.9	2350.0	Taking a scoop sample in the same place as the rock. Reset doppler.
8/19/2007 5:04	47.64670	-128.96349	189.3	2350.7	Had to come up for Medea tether management.
8/19/2007 5:04	47.64669	-128.96349	189.6	2351.4	Going back down to get a scoop of sediment.
8/19/2007 5:05	47.64668	-128.96350	198.6	2351.8	J295-Scoop-002 Scoop of sediment near landing site. Old pelagic sediment with maybe some hydrothermal component.
8/19/2007 5:07	47.64636	-128.96354	190.6	2345.3	J295-Scoop-002 Having to travel with scoop as ship is moving. Still over sheet flow with no sonar targets.
8/19/2007 5:08	47.64634	-128.96355	189.4	2344.5	J295-Scoop-002 Scoop in STBD biobox.
8/19/2007 5:09	47.64611	-128.96360	189.2	2344.6	Sheet rock and a lot of sediment.
8/19/2007 5:10	47.64595	-128.96362	188.9	2344.9	Heading south down first dives.
8/19/2007 5:12	47.64585	-128.96377	191.5	2345.7	Going to zigzag down the line.
8/19/2007 5:13	47.64573	-128.96361	189.4	2343.3	Some buried pushed up sheet flow under sediment.
8/19/2007 5:14	47.64558	-128.96361	187.1	2343.1	Very flat sheet flows and sediment.
8/19/2007 5:17	47.64545	-128.96336	179.9	2342.8	Still no sonar targets. Lots of sediment and sea stars. Barely visible sheet flow ridges.
8/19/2007 5:21	47.64512	-128.96325	116.1	2343.7	Lava swirl coming through the sediment. Animals that look like upright cucumbers.
8/19/2007 5:23	47.64481	-128.96352	134.3	2343.6	Long lineated sheet flow peeping through.
8/19/2007 5:25	47.64462	-128.96363	143.5	2342.8	Filter feeders reaching up from bottom.
8/19/2007 5:28	47.64438	-128.96342	140.1	2343.5	Nothing on sonar-very flat here as we move south.
8/19/2007 5:29	47.64425	-128.96362	148.4	2343.3	Sponge on rock.
8/19/2007 5:31	47.64415	-128.96333	167.0	2343.1	Not much of anything penetrating up from the sediment.
8/19/2007 5:33	47.64391	-128.96366	169.0	2342.7	A bit of pushed up sheet flow visible. Lots of animals. Looks old.
8/19/2007 5:34	47.64373	-128.96356	170.2	2343.0	A few pillows on little ridge of pushed up sheet flow.
8/19/2007 5:35	47.64362	-128.96367	170.4	2343.2	Some linear sheet flow evidence through the sediment.
8/19/2007 5:36	47.64350	-128.96371	172.0	2343.1	Spider crab-a good sign that there is food around.
8/19/2007 5:39	47.64335	-128.96332	166.3	2343.0	Crinoid on stalk.
8/19/2007 5:40	47.64313	-128.96363	167.2	2343.2	More structure evident in sheet flow.
8/19/2007 5:41	47.64298	-128.96367	167.7	2342.4	Came up over a pushed up zone/ridge of sheet flow.

J295 Date Time	Latitude	Longitude	Heading	Depth	Event
8/19/2007 5:41	47.64296	-128.96365	165.4	2342.7	Dropping back down to very flat sediment.
8/19/2007 5:43	47.64286	-128.96340	165.6	2343.3	Endless sediment with miniscule outcrops.
8/19/2007 5:44	47.64277	-128.96352	170.4	2343.3	Fish.
8/19/2007 5:45	47.64265	-128.96354	180.7	2343.2	Little outcrop of jumbled sheet flow with sponges.
8/19/2007 5:46	47.64258	-128.96337	161.0	2339.7	Maybe small lobate outcrop.
8/19/2007 5:47	47.64248	-128.96334	160.1	2332.8	Small outcrop. Lots of seastars.
8/19/2007 5:49	47.64242	-128.96345	159.4	2332.3	Could be old hydrothermal mound. Sediment is orange. Nothing active in appearance.
8/19/2007 5:49	47.64236	-128.96344	158.8	2327.4	Looks like sulfide with no active venting. No white.
8/19/2007 5:50	47.64226	-128.96339	160.3	2325.9	Target 10 at 2325 m. Sulfide mound.
8/19/2007 5:50	47.64218	-128.96333	148.8	2323.5	Looks like sulfide mound. Old chimneys and maybe bacterial mat.
8/19/2007 5:50	47.64216	-128.96333	151.4	2323.5	No other targets on sonar.
8/19/2007 5:52	47.64199	-128.96343	149.4	2338.1	About 2m tall and came up to the left out of visual.
8/19/2007 5:52	47.64191	-128.96345	153.4	2341.0	Didn't want to stop ship (too time consuming) and hoped to get good overhead view.
8/19/2007 5:53	47.64188	-128.96346	151.3	2343.7	Wasn't much of a sonar target as we approached.
8/19/2007 5:54	47.64162	-128.96358	148.7	2346.3	Long target ahead and more pushed up sheet flow.
8/19/2007 5:55	47.64156	-128.96361	148.5	2347.7	Less sediment as we're in some jumble.
8/19/2007 5:56	47.64148	-128.96344	148.4	2343.7	Looks like small pushed up sheet flow ridge.
8/19/2007 5:57	47.64136	-128.96351	143.0	2344.3	Moving back down other side of the short ridge.
8/19/2007 5:58	47.64118	-128.96366	149.2	2346.2	In a jumbled area with more structure making it through the sediment.
8/19/2007 6:00	47.64108	-128.96353	148.4	2344.2	Flat sheet flow next to the more jumbled flow.
8/19/2007 6:01	47.64094	-128.96344	145.1	2344.5	Lineated sheet flows.
8/19/2007 6:02	47.64085	-128.96357	147.2	2345.7	Small ridge. Lots of sediment.
8/19/2007 6:02	47.64078	-128.96362	149.9	2347.5	Lobates in this area.
8/19/2007 6:04	47.64068	-128.96348	148.2	2344.9	Back into sheet flows again (hard to see transition with all the sediment)
8/19/2007 6:05	47.64046	-128.96361	147.9	2346.4	Big pillow out in the flow.
8/19/2007 6:06	47.64038	-128.96364	148.9	2347.1	More lobate structure.
8/19/2007 6:06	47.64031	-128.96363	147.4	2346.3	Long lobates with a lot of sediment.
8/19/2007 6:07	47.64024	-128.96340	147.2	2344.8	Some structure sticking out of sediment (maybe jumble)
8/19/2007 6:10	47.63989	-128.96360	147.8	2345.2	Sheet flow folds in sediment.
8/19/2007 6:13	47.63964	-128.96352	147.6	2345.3	Small ridges in a lot of sediment.
8/19/2007 6:14	47.63942	-128.96362	147.6	2345.8	Almost at southern extent of this line.
8/19/2007 6:15	47.63941	-128.96353	147.8	2345.6	Darker lava outcrops but still a lot of sediment.
8/19/2007 6:18	47.63896	-128.96375	147.6	2347.5	Jelly floated by.
8/19/2007 6:20	47.63889	-128.96353	147.2	2346.7	Sediment and not much else.
8/19/2007 6:20	47.63887	-128.96356	146.3	2346.9	A bit of jumbled outcrop.
8/19/2007 6:22	47.63862	-128.96386	205.1	2346.8	Some structure in sonar.
8/19/2007 6:23	47.63855	-128.96395	239.0	2346.7	Looking 237 at sonar target . Looks like a pillow ridge.
8/19/2007 6:23	47.63854	-128.96395	225.4	2346.7	Talus. Base of wall.
8/19/2007 6:24	47.63850	-128.96389	109.8	2347.2	Sheet flows meet talus.
8/19/2007 6:25	47.63829	-128.96392	190.2	2347.7	Running along wall target in sonar as we head 180.
8/19/2007 6:26	47.63826	-128.96394	199.8	2347.4	Seeing talus to STBD (or west).
8/19/2007 6:28	47.63809	-128.96369	157.4	2348.5	Flat sheet flow.
8/19/2007 6:31	47.63785	-128.96386	233.3	2339.2	Coming up over ridge. Fault scarp with flat sheet flow on top.
8/19/2007 6:32	47.63775	-128.96399	171.9	2337.6	Super flat.
8/19/2007 6:33	47.63761	-128.96403	194.4	2339.3	Small outcrop.
8/19/2007 6:33	47.63753	-128.96412	196.1	2344.7	Jumbled and heavily sedimented.
8/19/2007 6:34	47.63748	-128.96423	196.8	2351.6	Ship is already headed north.
8/19/2007 6:35	47.63748	-128.96429	197.7	2351.8	Line spacing is 75m and seeing 80m out on sonar. Should lines be spaced further apart.
8/19/2007 6:38	47.63763	-128.96440	342.7	2352.5	Going to speed up ship on north run as it is so flat here.
8/19/2007 6:38	47.63767	-128.96446	339.4	2352.8	Relying on sonar to see structure.
8/19/2007 6:41	47.63790	-128.96475	341.7	2354.9	Heading north. Flat sediment.

J295 Date Time	Latitude	Longitude	Heading	Depth	Event
8/19/2007 6:44	47.63802	-128.96474	341.6	2352.9	Can see wall to the east in sonar. Sonar's range is very good in the flat sediment.
8/19/2007 6:45	47.63806	-128.96484	341.2	2352.2	Scarp to the west a bit.
8/19/2007 6:50	47.63854	-128.96456	2.7	2346.2	Crossing very flat sediments.
8/19/2007 6:57	47.63920	-128.96465	19.6	2345.8	Going with a ridge on the right of Jason.
8/19/2007 7:10	47.64067	-128.96465	0.2	2350.7	Still cruising with the ridge off the starboard side.
8/19/2007 7:11	47.64073	-128.96481	358.7	2346.9	We have come up to a large fault or something similar.
8/19/2007 7:29	47.64220	-128.96347	53.6	2331.9	In some orange sediments.
8/19/2007 7:34	47.64241	-128.96339	198.0	2329.3	This sulfide mound looks pretty dead.
8/19/2007 7:39	47.64224	-128.96321	322.1	2320.5	Back to the line.
8/19/2007 8:03	47.64365	-128.96466	15.7	2346.5	Skimming along a well sedimented cliff here.
8/19/2007 8:19	47.64516	-128.96507	275.5	2347.0	Some orange sediments here.
8/19/2007 8:19	47.64516	-128.96507	284.4	2346.8	Stopping to take a sample.
8/19/2007 8:20	47.64522	-128.96512	304.9	2344.6	Cancel that sample - too far behind the ship.
8/19/2007 8:20	47.64527	-128.96513	280.3	2345.3	It was at a small patch of very old sulfide.
8/19/2007 8:26	47.64615	-128.96480	1.3	2340.3	Back to that rubble slope.
8/19/2007 8:39	47.64657	-128.96517	172.8	2347.1	Still heading south.
8/19/2007 8:52	47.64551	-128.96552	178.9	2351.3	A large rocky face here.
8/19/2007 9:03	47.64424	-128.96566	180.6	2348.7	Heavily sedimented rocks here.
8/19/2007 9:05	47.64393	-128.96563	192.5	2349.6	Into some pillow flows here.
8/19/2007 9:18	47.64231	-128.96581	173.9	2352.8	A spider crab over here.
8/19/2007 9:28	47.64106	-128.96591	197.6	2356.4	Well sedimented here.
8/19/2007 9:38	47.63969	-128.96608	180.0	2355.4	Terrain has flattened out a bit.
8/19/2007 9:54	47.63770	-128.96628	241.1	2342.4	Almost hit a fish.
8/19/2007 9:56	47.63753	-128.96640	243.9	2343.4	Passing some small white clumps.
8/19/2007 9:59	47.63752	-128.96656	292.7	2346.9	Rubbled slope here.
8/19/2007 10:04	47.63787	-128.96644	66.8	2336.3	We are going to zig back to the east and drive a line parallel to the first but east.
8/19/2007 10:24	47.63846	-128.96441	60.5	2339.3	Steep and rocky cliff here.
8/19/2007 10:25	47.63845	-128.96436	57.7	2337.5	Heavily sedimented up top.
8/19/2007 10:42	47.64007	-128.96312	2.9	2344.1	Sedimented plain here.
8/19/2007 10:57	47.64189	-128.96283	342.9	2341.7	Heavily sedimented.
8/19/2007 11:14	47.64431	-128.96213	355.3	2341.3	Still lots of sediment over sheet flows.
8/19/2007 11:28	47.64612	-128.96223	355.8	2344.2	Still lots of sediment.
8/19/2007 11:31	47.64644	-128.96218	355.9	2345.3	Going north in sediment.
8/19/2007 11:44	47.64728	-128.96132	83.0	2345.3	Just a little slope and more blocky looking basalt under the sediment.
8/19/2007 11:54	47.64707	-128.96114	181.8	2344.5	The ship is heading east.
8/19/2007 12:03	47.64695	-128.96098	182.4	2343.7	A flashing jelly fish.
8/19/2007 12:05	47.64664	-128.96107	181.9	2342.7	We are headed south now along another line.
8/19/2007 12:05	47.64663	-128.96104	181.9	2342.3	Still very sedimented flows.
8/19/2007 12:21	47.64565	-128.96084	177.4	2335.6	Still headed south over an very sedimented area.
8/19/2007 12:37	47.64404	-128.96083	181.3	2337.0	Still mostly sediment.
8/19/2007 12:47	47.64310	-128.96098	105.4	2334.9	Dropped the weight and we are coming up.
8/19/2007 12:52	47.64303	-128.96103	6.6	2197.5	The dive is over.
8/19/2007 14:09	47.64304	-128.96103	73.2	0.9	Jason on surface
8/19/2007 14:11	47.64304	-128.96103	97.2	0.9	Medea on deck
8/19/2007 14:15	47.64304	-128.96103	169.1	0.4	Jason on deck
8/19/2007 14:15	47.64304	-128.96103	169.2	0.4	End J2-295
8/19/2007 14:15	47.64304	-128.96103	169.2	0.4	End Ops