

NeMO 2010 Cruise Report

Axial Volcano, Juan de Fuca Ridge

R/V Thompson TN 253

August 26 - September 6, 2010

Newport, Oregon to Astoria Oregon

Jason Dives J2-520 – J2-525

Chief Scientist: Bill Chadwick

R/V Thompson Captain: John Wilson

JASON Expedition Leader: Tito Collasius

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1.0 Expedition Summary:

Bill Chadwick/Dave Butterfield, Co-chief Scientists

This expedition to Axial Seamount (Axial 2010 or TN-253) on R/V Thompson with ROV Jason (August 26 to September 7, 2010, Newport to Astoria) included two different but complimentary projects funded by the National Science Foundation. One project is continuing a decade-long time-series of pressure measurements at an array of seafloor benchmarks to measure volcanic inflation at Axial (Bill Chadwick and Scott Nooner, co-PIs). The other project is focused on coordinated fluid chemistry and microbiological sampling at hydrothermal vent sites utilizing new methods of sample collection and analysis (Julie Huber and Dave Butterfield, co-PIs). The cruise accomplished six Jason ROV dives, the first two for fluid sampling, followed by one long dive for the pressure measurements, and ending with three additional fluid-sampling dives. In between ROV dives, we deployed and recovered six instrumental moorings (4 ocean-bottom hydrophones (OBHs), 1 bottom pressure recorder (BPR), and 1 remote access fluid sampler (RAS)), deployed six new cement benchmarks to improve the repeatability of the pressure measurements, conducted three CTDs, and collected EM300 multibeam sonar bathymetric data. The expedition was very successful and all our goals were achieved, thanks to the combined efforts of the science party, the Jason team, and the ship's crew.

2.0 Cruise Participants:

Name	Expertise	Affiliation	email
William Chadwick (co-chief Scientist)	Geology	Oregon State U./NOAA Vents	bill.chadwick@noaa.gov
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Dave Butterfield (co-chief Scientist)	Vent fluid chemist	U. Washington/NOAA Vents	david.a.butterfield@noaa.gov
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3.0 Operations Log:

Date (local)	Time (local)	GMT Date	GMT Time	Operations Log
2010/08/26	8:00	2010/08/26	15:00	Thompson departs Newport
2010/08/27	7:00	2010/08/27	14:00	Arrive at Axial
2010/08/27	7:43	2010/08/27	14:43	Release code sent to OBH-3 (east)
2010/08/27	8:42	2010/08/27	15:42	OBH-3 on deck

Date (local)	Time (local)	GMT Date	GMT Time	Operations Log
2010/08/27	9:02	2010/08/27	16:02	Release code sent to OBH-2 (south)
2010/08/27	9:45	2010/08/27	16:45	OBH-2 on deck
2010/08/27	10:15	2010/08/27	17:15	Release code sent to OBH-4 (west)
2010/08/27	11:11	2010/08/27	18:11	OBH-4 on deck
2010/08/27	12:53	2010/08/27	19:53	JASON in water for dive J2-520 @ Mkr113 vent, after ~40 min delay
2010/08/27	12:57	2010/08/27	19:57	MEDEA in water
2010/08/27	13:42	2010/08/27	20:42	JASON on bottom, at Mkr113, Bag City, Coquille, Fluid Sampling
2010/08/28	8:15	2010/08/28	15:15	JASON on deck, end of dive J2-520
2010/08/28	9:00	2010/08/28	16:00	Release code sent to OBH-1 (north)
2010/08/28	9:45	2010/08/28	16:45	OBH-1 on deck
2010/08/28	10:45	2010/08/28	17:45	OBH-4 (north) deployed
2010/08/28	11:30	2010/08/28	18:30	Survey of OBH-4 (north)
2010/08/28	14:12	2010/08/28	21:12	OBH-3 (east) deployed
2010/08/28	16:05	2010/08/28	23:05	JASON in water for dive J2-521 @ ASHES, Fluid Sampling
2010/08/29	8:12	2010/08/29	15:12	JASON on deck, end of dive J2-521
2010/08/29	9:17	2010/08/29	16:17	OBH-1 (south) deployed
2010/08/29	10:36	2010/08/29	17:36	Survey of OBH-1 (south)
2010/08/29	11:24	2010/08/29	18:24	Survey of OBH-3 (east)
2010/08/29	13:17	2010/08/29	20:17	Deployed cement benchmark AX-103 @ Mkr-33 with homer #85 on glass balls
2010/08/29	13:45	2010/08/29	20:45	Deployed cement benchmark AX-102 @ Magnesia, homer #15 on glass balls
2010/08/29	14:11	2010/08/29	21:11	Deployed cement benchmark AX-101 @ caldera center, with homer #45 and strobe
2010/08/29	14:34	2010/08/29	21:34	Deployed cement benchmark AX-106 @ ASHES, with homer #16
2010/08/29	14:59	2010/08/29	21:59	Deployed cement benchmark AX-104 @ Bag City with homer #17
2010/08/29	15:35	2010/08/29	22:35	Deployed cement benchmark AX-105 @ pillow mound, with second homer #15
2010/08/29	16:52	2010/08/29	23:52	XBT collected
2010/08/29	17:07	2010/08/30	0:07	Starting EM300 survey due to high winds and waves precluding a Jason dive today
2010/08/29	12:25	2010/08/30	19:25	End of EM300 survey, transit back to ASHES for possible CTD
2010/08/30	16:25	2010/08/30	23:25	CTD @ ASHES deployed (CTD#1)
2010/08/30	18:05	2010/08/31	1:05	CTD recovered
2010/08/30	18:15	2010/08/31	1:15	JASON in the water for dive J2-522, long dive to make pressure measurements
2010/08/31	16:00	2010/08/31	23:00	RAS sampler released by Jason and recovered by ship with Jason still on bottom
2010/09/03	8:15	2010/09/03	15:15	JASON on deck, end of dive J2-522
2010/09/03	8:50	2010/09/03	15:50	Release code sent to NeMO 2007-center-BPR mooring
2010/09/03	9:30	2010/09/03	16:30	BPR on deck
2010/09/03	10:52	2010/09/03	17:52	RAS mooring deployed near Marker 33
2010/09/03	13:00	2010/09/03	20:00	Background CTD (#2)
2010/09/03	14:10	2010/09/03	21:10	CTD back on deck
2010/09/03	15:10	2010/09/03	22:10	Castle CTD (#3)
2010/09/03	16:47	2010/09/03	23:47	CTD back on deck
2010/09/03	20:00	2010/09/04	3:00	JASON dive J2-523, Fluid Sampling at International District vent field
2010/09/04	12:10	2010/09/04	19:10	JASON on deck, end dive J2-523
2010/09/04	13:15	2010/09/04	20:15	BPR deployed at caldera center
2010/09/04	15:00	2010/09/04	22:00	BPR workboat survey

Date (local)	Time (local)	GMT Date	GMT Time	Operations Log
2010/09/04	20:00	2010/09/05	3:00	JASON dive J2-524, Fluid Sampling at Marker 33 and north to Magnesia
2010/09/05	2:10	2010/09/05	9:10	JASON back on deck, J2-524 aborted due to electrical problems on Medea
2010/09/05	10:05	2010/09/05	17:05	JASON deployed for J2-525 (continuation of last dive)
2010/09/05	23:30	2010/09/06	6:30	JASON on deck, end dive J2-525
2010/09/06	3:00	2010/09/06	10:00	XBT collected, Start EM300 survey
2010/09/06	9:17	2010/09/06	16:17	End of EM300 survey (datafiles included lines 35-41, but 25-34 collected during transits)
2010/09/06	9:17	2010/09/06	16:17	Depart Axial Seamount, headed back to Astoria!
2010/09/07	8:00	2010/09/07	15:00	Arrive Astoria

4.0 Discipline Summaries:

4.1 Geology:

Repeat pressure measurements to monitor volcanic inflation

Scott Nooner and Bill Chadwick

We have made pressure measurements at Axial seamount since 2000 in order monitor the re-inflation of the volcano since its eruption in 1998. These measurements are among the first to attempt to measure vertical deformation on a sub-sea volcano, but large measurement uncertainty in the first few years lead to large uncertainty in the long-term rate.

Comparing the 2007 depths to previous years shows that inflation relative to AX-66 is continuing in the caldera. The Caldera Center has uplifted by 49 cm since 2007 (about 15 cm/yr). The amount of inflation decreases generally with distance from the caldera center, which fits with previous year's observations. The inflation rate is greater at the caldera center (AX63-old and AX101-new) and decreases further south. We previously thought that the inflation might be decreasing exponentially over time, however this year's data does not bear this out, because a linear inflation trend fits the data quite well over the entire 10 years time-series.

The pressure measurements this year were made on JASON dive J2-522 over 3.5 days, from about 8/30/10 to 9/3/10. The 2010 survey was carried out in a similar way as previous surveys. The average transit speed for towing JASON from benchmark to benchmark was about 1 knot. JASON used a USBL navigation system and we were able to find most benchmarks within a few meters of the target. The major change this year was that we installed six new cement benchmarks, with one at each of the five existing sites as well as a sixth benchmark at a new location near the ASHES vent field. The new benchmarks are 150 pound concrete tables and are much more sturdy and stable than the small lightweight galvanized steel benchmarks we have been using up until now. The benchmarks were connected to a drop weight and two glass balls using pull pins and were deployed by dropping them from the ship. The benchmarks were located on bottom using Homer probes that were attached to the float package. Once located, the drop weight was released and the benchmark was moved into place next to the old benchmark. The float package was then released and recovered on the surface (while the ROV was still on the bottom, which took 45 minutes to an hour per benchmark) then the ROV went back to the benchmarks and began the pressure measurements.

During the survey we made two round-trip transits from the ASHES benchmark (AX-106) to the southernmost benchmarks located at Pillow Mound (AX-105), visiting each benchmark along the way. Measurements were made on top of both the new and the old benchmarks during each site visit to tie the new and old benchmarks together. A measurement was made by placing the MPR (mobile pressure recorder) on top of a benchmark. The pressure sensor has a flat plate on the bottom to make the exact orientation of the sensor repeatable from measurement to measurement. The new concrete benchmarks were manufactured with a rectangular indentation on the surface that this flat plate fits into. This design worked well and made positioning the MPR easy and repeatable. The sensor was aligned with a specific side of each old triangular benchmark, again to increase repeatability. The connector faced to the left in all cases. 20 minutes of data were recorded at each benchmark on a laptop PC in the JASON control room. Measurements were made on eleven benchmarks (AX-63-old and AX-101-new--Caldera Center; AX-01-old and AX-102-new--Magnesia; AX-05-old and AX-103-new--Marker 33; AX-04-old and AX-104-new--Bag City; AX-66-old and AX-105-new--Pillow Mound; and AX-106--ASHES). A total of 39 measurements were made including both old and new benchmarks. AX-66 (old) and AX-105 (new) are the reference benchmarks and are 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 tide data collected on an autonomous tide

gauge left at ASHES during the dive by Glenn Sasagawa. The uncertainty in the measurements this year, ± 0.6 cm, is given by the scatter of repeated measurements at each benchmark.

Table 4.1-1 Locations of new cement benchmarks deployed in 2010 and used for pressure measurements:

Site name	New cement benchmark name	Old steel benchmark name	Latitude	Longitude	Depth
Ashes	AX-106	n/a	45° 56.067'	-130° 00.696'	1542
Caldera Center	AX-101	AX-63	45° 57.312'	-130° 00.592'	1532
Magnesia	AX-102	AX-01	45° 56.767'	-129° 59.102'	1524
Marker 33	AX-103	AX-05	45° 55.999'	-129° 58.942'	1520
Bag City	AX-104	AX-04	45° 54.970'	-129° 59.370'	1534
Pillow Mound	AX-105	AX-66	45° 51.790'	-130° 00.225'	1718

Table 4.1-2 Jason Geology samples:

Geology sample	Date	Time (UTC)	Location	Latitude	Longitude	Depth (m)	Heading
J522-GEO-03	03-Sep-10	00:40	Magnesia, basalt	45° 56.017	-129° 58.950	1517	338
J523-GEO-15	04-Sep-10	09:43	Escargot, inactive sulfide	45° 55.584	-129° 58.747	1520	166
J523-GEO-38	04-Sep-10	17:34	El Abuelo, inactive sulfide	45° 55.572	-129° 58.784	1515	051
J523-GEO-39	04-Sep-10	17:37	El Abuelo, inactive sulfide	45° 55.572	-129° 58.784	1515	051
J525-GEO-05	05-Sep-10	20:30	Spanish Steps, inactive sulfide	45° 56.765	-129° 59.021	1520	096

4.2 Chemistry:

Hydrothermal Fluid Chemistry/Microbiology

Dave Butterfield

The primary goal of the Huber/Butterfield NSF project during TN253 was to collect a series of samples for chemical and microbiological analysis. The hydrothermal fluid and particle sampler was the primary instrument for all the sampling, supplemented by titanium gas-tight samples to capture primarily high-temperature fluids for gas analysis. Because the configuration of HFPS changes slightly with time, we provide some details of how it was configured. Valve positions 1 through 9 were occupied by pistons. All odd-numbered pistons were filtered, and even-numbered were unfiltered. Pistons 1-4 were titanium with Teflon end caps. Pistons 5-9 were PVC. The filters used were Millipore http 0.4 micron polycarbonate membrane filters. Positions 10-12 were Sterivex filters used for DNA analysis. Positions 13-16 were flat 0.2 micron filters in housings with a preservative reservoir, filled with RNA-Later preservative that was passively added to the filter in-situ after the sample was taken. Positions 17-24 were collapsible bag samples, with 17-20 filtered and 21-24 not filtered. We used a pH sensor on the zero position. Generally, there were 6 gas-tight samplers on the ROV for HFPS dives, with 3 connected to the fluid manifold and 3 in the basket for hand-held triggering. A removable titanium cylinder attachment with magnetic coupling was used on the intake nozzle for much of the sampling. Kevin Roe analyzed hydrogen sulfide and ammonia on board. UW undergraduates Sara Drescher and Seth Shuler analyzed pH, alkalinity, and dissolved silicate. Eric Olson analyzed methane and hydrogen by GC. Leigh Evans processed gas-tight samplers. We collected 65 samples for fluid chemistry and 23 gas-tight samples during the cruise. The sample split summary table describes how the samples

were processed and divided. The samples represent all of the known high-temperature sites (except CASM) and many of the known diffuse sites. Vents not previously seen were sampled near Trevi anhydrite chimney. A RAS sampler with 23 full samples was recovered from marker 33/55, and a RAS was deployed there for another year of monitoring. An initial look at the RAS chemistry results indicates that the fluid got progressively warmer over the course of the past year. In addition to the microbial ecology objectives, the samples collected will allow us to follow the evolution of the heat and chemical output of Axial in relation to earthquakes and volcanic inflation.

Table 4.2-1 HFS Samples:

Sample-id	Type	Date	Time (UTC)	Temp (°C)	Location	Latitude	Longitude	Depth	Heading
J520-HFS-01 (#5)	filtered	27-Aug-10	21:39	29	Marker 113	45° 55.365	-129° 59.291	1522	322
J520-HFS-02 (#21)	unfiltered	27-Aug-10	21:46	29.3	Marker 113	45° 55.365	-129° 59.291	1522	322
J520-HFS-03 (#10)	sterivex	27-Aug-10	21:51	28.8	Marker 113	45° 55.365	-129° 59.291	1522	322
J520-HFS-04 (#13)	RNA	27-Aug-10	22:15	27	Marker 113	45° 55.365	-129° 59.291	1522	322
J520-HFS-05 (#23)	unfiltered	27-Aug-10	22:44	26.9	Marker 113	45° 55.365	-129° 59.291	1522	322
J520-HFS-08 (#9)	filtered	28-Aug-10	00:27	17.5	8 m N of Mkr 113	45° 55.372	-129° 59.289	1521	21
J520-HFS-09 (#14)	RNA	28-Aug-10	00:36	17.5	8 m N of Mkr 113	45° 55.372	-129° 59.289	1521	21
J520-HFS-10 (#22)	unfiltered	28-Aug-10	01:03	17.4	8 m N of Mkr 113	45° 55.372	-129° 59.289	1521	21
J520-HFS-12 (#24)	unfiltered	28-Aug-10	01:43	10.7	S of Mkr 113	45° 55.354	-129° 59.278	1521	149
J520-HFS-13 (#20)	filtered	28-Aug-10	01:48	10.4	S of Mkr 113	45° 55.354	-129° 59.278	1521	149
J520-HFS-14 (#6)	unfiltered	28-Aug-10	03:18	13	Bag City, Mkr 36	45° 54.981	-129° 59.352	1531	174
J520-HFS-15 (#11)	sterivex	28-Aug-10	03:24	13.2	Bag City, Mkr 36	45° 54.981	-129° 59.352	1531	174
J520-HFS-17 (#17)	filtered	28-Aug-10	03:51	13.2	Bag City, Mkr 36	45° 54.981	-129° 59.352	1531	174
J520-HFS-18 (#15)	RNA	28-Aug-10	03:56	13.2	Bag City, Mkr 36	45° 54.981	-129° 59.352	1531	174
J520-HFS-20 (#8)	unfiltered	28-Aug-10	05:41	46	Vixen, Mkr 57	45° 55.039	-129° 59.576	1533	345
J520-HFS-22 (#12)	sterivex	28-Aug-10	05:46	44.9	Vixen, Mkr 57	45° 55.039	-129° 59.576	1533	345
J520-HFS-23 (#16)	RNA	28-Aug-10	06:11	44.2	Vixen, Mkr 57	45° 55.038	-129° 59.575	1534	344
J520-HFS-24 (#19)	filtered	28-Aug-10	06:36	43.5	Vixen, Mkr 57	45° 55.038	-129° 59.575	1534	344
J520-HFS-26 (#3)	filtered	28-Aug-10	07:37	324.3	Vixen, Mkr 57	45° 55.041	-129° 59.576	1534	349
J520-HFS-27 (#4)	unfiltered	28-Aug-10	07:40	325.1	Vixen, Mkr 57	45° 55.041	-129° 59.576	1534	349
J520-HFS-29 (#1)	filtered	28-Aug-10	08:10	285.1	Casper	45° 55.044	-129° 59.578	1534	20
J520-HFS-30 (#2)	unfiltered	28-Aug-10	08:13	284.6	Casper	45° 55.044	-129° 59.578	1534	21
J520-HFS-33 (#7)	filtered	28-Aug-10	09:27	18.1	Lost MTR site, Mkr 122	45° 55.031	-129° 59.576	1535	282
J520-HFS-34 (#18)	filtered	28-Aug-10	09:34	22	Lost MTR site, Mkr 122	45° 55.031	-129° 59.576	1535	122
J521-HFS-05 (#18)	filtered	29-Aug-10	01:38	20.4	Styx Area	45° 55.997	-130° 0.810	1543	98
J521-HFS-06 (#24)	unfiltered	29-Aug-10	01:43	28.9	Styx Area	45° 55.997	-130° 0.810	1543	98
J521-HFS-07 (#16)	RNA	29-Aug-10	01:48	21.1	Styx Area	45° 55.997	-130° 0.810	1543	98
J521-HFS-09 (#17)	filtered	29-Aug-10	03:23	23.2	Medusa 2010	45° 55.997	-130° 0.836	1542	296
J521-HFS-10 (#23)	unfiltered	29-Aug-10	03:28	24.9	Medusa 2010	45° 55.997	-130° 0.836	1542	296
J521-HFS-11 (#12)	sterivex	29-Aug-10	03:34	22.4	Medusa 2010	45° 55.997	-130° 0.836	1542	296
J521-HFS-12 (#15)	RNA	29-Aug-10	04:02	19.7	Medusa 2010	45° 55.997	-130° 0.836	1542	294
J521-HFS-13 (#21)	unfiltered	29-Aug-10	05:11	22.5	Gollum	45° 56.014	-130° 0.798	1542	295
J521-HFS-14 (#19)	filtered	29-Aug-10	05:16	22.9	Gollum	45° 56.014	-130° 0.798	1542	295
J521-HFS-15 (#13)	RNA	29-Aug-10	05:22	22.2	Gollum	45° 56.014	-130° 0.798	1542	295
J521-HFS-16 (#10)	sterivex	29-Aug-10	05:47	20.5	Gollum	45° 56.014	-130° 0.798	1542	295
J521-HFS-18 (#1)	filtered	29-Aug-10	07:07	264.7	Inferno	45° 56.014	-130° 0.821	1540	351
J521-HFS-20 (#2)	unfiltered	29-Aug-10	07:12	269.4	Inferno	45° 56.014	-130° 0.821	1540	351
J521-HFS-22 (#7)	filtered	29-Aug-10	07:43	178.9	Marshmallow	45° 56.023	-130° 0.803	1542	336
J521-HFS-23 (#22)	unfiltered	29-Aug-10	07:49	180.5	Marshmallow	45° 56.023	-130° 0.803	1542	336
J521-HFS-24 (#11)	sterivex	29-Aug-10	08:00	178.1	Marshmallow	45° 56.023	-130° 0.803	1542	336

Sample-id	Type	Date	Time (UTC)	Temp (°C)	Location	Latitude	Longitude	Depth	Heading
J521-HFS-25 (#14)	RNA	29-Aug-10	08:18	180.3	Marshmallow	45° 56.023	-130° 0.803	1542	336
J521-HFS-26 (#3)	filtered	29-Aug-10	09:13	242.2	Virgin Mound	45° 56.021	-130° 0.792	1543	103
J521-HFS-27 (#4)	unfiltered	29-Aug-10	09:17	242.7	Virgin Mound	45° 56.021	-130° 0.792	1543	103
J521-HFS-30 (#5)	filtered	29-Aug-10	10:43	274.1	Hell	45° 56.002	-130° 0.837	1542	186
J521-HFS-31 (#8)	unfiltered	29-Aug-10	10:48	269.6	Hell	45° 56.002	-130° 0.837	1542	186
J521-HFS-32 (#9)	filtered	29-Aug-10	11:08	284.1	Hell	45° 56.002	-130° 0.837	1542	186
J521-HFS-35 (#6)	unfiltered	29-Aug-10	12:11	104.5	Mushroom	45° 56.015	-130° 0.815	1542	351
J521-HFS-36 (#20)	filtered	29-Aug-10	12:15	101.7	Mushroom	45° 56.015	-130° 0.815	1542	351
J523-HFS-01 (#17)	filtered	04-Sep-10	04:55	102.8	El Gordo, Mkr 151	45° 55.569	-129° 58.738	1522	45
J523-HFS-02 (#14)	RNA	04-Sep-10	04:59	102.6	El Gordo, Mkr 151	45° 55.569	-129° 58.738	1522	45
J523-HFS-04 (#23)	unfiltered	04-Sep-10	05:28	101.6	El Gordo, Mkr 151	45° 55.569	-129° 58.738	1522	45
J523-HFS-06 (#20)	filtered	04-Sep-10	06:13	33	9 m	45° 55.592	-129° 58.757	1519	225
J523-HFS-07 (#10)	sterivex	04-Sep-10	06:19	48.9	9 m	45° 55.592	-129° 58.757	1519	225
J523-HFS-08 (#16)	RNA	04-Sep-10	06:39	50.5	9 m	45° 55.592	-129° 58.757	1519	225
J523-HFS-09 (#21)	unfiltered	04-Sep-10	07:05	47.8	9 m	45° 55.592	-129° 58.757	1519	225
J523-HFS-11 (#19)	filtered	04-Sep-10	07:57	32.6	Hermosa	45° 55.594	-129° 58.761	1518	183
J523-HFS-12 (#15)	RNA	04-Sep-10	08:05	33.4	Hermosa	45° 55.594	-129° 58.761	1518	183
J523-HFS-13 (#11)	sterivex	04-Sep-10	08:36	34.7	Hermosa	45° 55.594	-129° 58.761	1518	183
J523-HFS-14 (#22)	unfiltered	04-Sep-10	08:55	34.5	Hermosa	45° 55.594	-129° 58.761	1518	183
J523-HFS-16 (#18)	filtered	04-Sep-10	10:33	17.2	Escargot	45° 55.583	-129° 58.746	1518	250
J523-HFS-17 (#13)	RNA	04-Sep-10	10:49	19.9	Escargot	45° 55.583	-129° 58.746	1518	250
J523-HFS-18 (#12)	sterivex	04-Sep-10	11:12	21.2	Escargot	45° 55.583	-129° 58.746	1518	250
J523-HFS-19 (#24)	unfiltered	04-Sep-10	11:49	22.6	Escargot	45° 55.583	-129° 58.746	1518	250
J523-HFS-21 (#7)	filtered	04-Sep-10	12:40	296.8	Diva	45° 55.852	-129° 58.741	1520	16
J523-HFS-22 (#8)	unfiltered	04-Sep-10	12:43	296.7	Diva	45° 55.852	-129° 58.741	1520	16
J523-HFS-25 (#5)	filtered	04-Sep-10	13:56	204.5	El Guapo bore hole	45° 55.589	-129° 58.772	1518	5
J523-HFS-26 (#6)	unfiltered	04-Sep-10	14:02	206.5	El Guapo bore hole	45° 55.589	-129° 58.772	1518	5
J523-HFS-28 (#1)	filtered	04-Sep-10	14:32	213.4	El Guapo	45° 55.590	-129° 58.767	1504	307
J523-HFS-29 (#2)	unfiltered	04-Sep-10	14:37	200	El Guapo	45° 55.590	-129° 58.767	1504	307
J523-HFS-30 (#3)	filtered	04-Sep-10	14:43	330.9	El Guapo	45° 55.590	-129° 58.767	1504	307
J523-HFS-35 (#4)	unfiltered	04-Sep-10	16:47	249.8	Castle	45° 55.569	-129° 58.800	1517	40
J523-HFS-36 (#9)	filtered	04-Sep-10	16:50	265.8	Castle	45° 55.569	-129° 58.800	1517	40
J524-HFS-01 (#3)	filtered	05-Sep-10	05:17	37.7	Marker 33	45° 55.991	-129° 58.935	1521	130
J524-HFS-02 (#10)	sterivex	05-Sep-10	05:22	37.8	Marker 33	45° 55.991	-129° 58.935	1521	130
J524-HFS-03 (#13)	RNA	05-Sep-10	05:44	38.7	Marker 33	45° 55.991	-129° 58.935	1521	130
J524-HFS-04 (#4)	unfiltered	05-Sep-10	06:05	37.5	Marker 33	45° 55.991	-129° 58.935	1521	130
J524-HFS-06 (#20)	filtered	05-Sep-10	06:13	37.8	Marker 33	45° 55.989	-129° 58.934	1521	130
J524-HFS-07 (#19)	filtered	05-Sep-10	07:15	8.1	Cloud	45° 55.997	-129° 58.897	1522	306
J525-HFS-02 (#8)	unfiltered	05-Sep-10	20:08	159.5	Spanish Steps	45° 56.765	-129° 59.021	1519	89
J525-HFS-03 (#9)	filtered	05-Sep-10	20:14	155.4	Spanish Steps	45° 56.765	-129° 59.021	1519	89
J525-HFS-06 (#7)	filtered	05-Sep-10	20:56	31.3	Pompeii	45° 56.776	-129° 59.019	1519	55
J525-HFS-07 (#11)	sterivex	05-Sep-10	21:02	31.6	Pompeii	45° 56.776	-129° 59.019	1519	55
J525-HFS-08 (#14)	RNA	05-Sep-10	21:25	30.5	Pompeii	45° 56.776	-129° 59.019	1519	55
J525-HFS-09 (#22)	unfiltered	05-Sep-10	21:50	28.2	Pompeii	45° 56.776	-129° 59.019	1519	55
J525-HFS-10 (#23)	unfiltered	05-Sep-10	21:54	29.8	Pompeii	45° 56.776	-129° 59.019	1519	55
J525-HFS-12 (#1)	filtered	05-Sep-10	22:32	258.4	Trevi	45° 56.777	-129° 59.024	1520	349
J525-HFS-13 (#2)	unfiltered	05-Sep-10	22:34	258.5	Trevi	45° 56.777	-129° 59.024	1520	349
J525-HFS-16 (#6)	unfiltered	05-Sep-10	23:56	22.9	Marker N3	45° 56.619	-129° 59.108	1525	224
J525-HFS-17 (#17)	filtered	06-Sep-10	00:02	22.5	Marker N3	45° 56.619	-129° 59.108	1525	224

Sample-id	Type	Date	Time (UTC)	Temp (°C)	Location	Latitude	Longitude	Depth	Heading
J525-HFS-18 (#12)	sterivex	06-Sep-10	00:07	22.7	Marker N3	45° 56.619	-129° 59.108	1525	224
J525-HFS-19 (#15)	RNA	06-Sep-10	00:31	22.1	Marker N3	45° 56.619	-129° 59.108	1521	224
J525-HFS-23 (#5)	filtered	06-Sep-10	02:06	3.2	Background seawater	45° 56.529	-129° 59.076	1427	343
J525-HFS-24 (#24)	unfiltered	06-Sep-10	02:13	3.2	Background seawater	45° 56.433	-129° 59.044	1398	343

Table 4.2-2 HFS Sample Split Summary:

(Water aliquot volumes in Milliliters)

Jason Dive Fluid Sample Split Summary				Dive Number:		520		28-Aug		Sites sampled:		Vixen/Casper, Coquille, 113, BagCity			
Sample#	Vent	T max	meas vol	gas head-space vol	gas H2O aliquot	H2S/Si	pH/alk	Nutrients	Majors	Holden	Huber	Trace Metal	DOC	S isotopes	O/H iso
3	Vixen	325.5	444	431	15	20	35	40	60			125	125		
4	Vixen	326.2	340	212	15	20	35	40	60			125	30		
1	Casper	286	483	153	15	20	35	35	35			120	120	45	10
2	Casper	285.2	386	215	15	20	35	35	55			220			
7	Coquille Lost MTR	19	432	0	15	30	35	40	65			30	230		
18	Coquille Lost MTR	22.8	515	0	18	30	35	45	65			180	130		
5	Mkr 113	29.7	715	0	15	28	35	40	65			125	430		
21	Mkr 113	29.5	555	0	15	30	35	40	40	65	30	120	220		
23	Mkr 113	27.3	558	1	15	25	35	40	50	65					
9	8 m N of 113	17.5	61			10			40			10			
22	8 m N of 113	17.5	379	0	15	25	35	45	40	45	30	110			
24	9m SE of 113	10.8	521	0	15	30	35	40	45	45	30	100	200		
20	9m SE of 113	10.5	539	0	15	30	35	50	65			125	160		
6	Bag City mkr 36	13.3	800	0	15	25	35	40	60	45	30	125	400		
17	Bag City mkr 36	13.5	552	0	15	30	35	40	45			200	200		
8	Edge of Vixen Floc	46.1	653	0	15	30	35	45	65	65	20	170	230		
19	Edge of Vixen Floc	44.1	445	0	15	30	35	45	65			250			

Jason Dive Fluid Sample Split Summary				Dive Number:		521		29-Aug		Sites sampled:		ASHES			
Sample#	Vent	T max	meas vol	gas head-space vol	gas H2O aliquot	H2S/Si	pH/alk	Nutrients	Majors	Holden	Huber	Trace Metal	DOC	S isotopes	O/H iso
18	Styx	25	566	0	15	20	35	45	65			125			
24	Styx	35.7	572		*spilled	25	35		30			60			
17	Medusa S of Hell	24	551	0	15	25	35	45	65			125	250		10
23	Medusa S of Hell	25.4	518	0	15	20	35	45	45	65	30	125	125		
21	Gollum mkr 121	22.8	558	0	15	25	35	40	60	65	30	125	200		
19	Gollum mkr 121	23.1	557	0	15	25	35	45	65			170	220		10
1	Inferno S lobe	267	450	0	15	12	35	40	45			200		45	
2	Inferno S lobe	270.2	447	0	15	20	35		65			150	200		
7	Marshmallow	179.9	417	830	15	15	35	35	50			240	30		15
22	Marshmallow	180.8	251	600	15	20	35		30	45	15	100			
3	Virgin	244.1	420	411	10	10	30		30			250			12
4	Virgin	243.8	438	1250	13	10	35	40	60			258			12

5	Hell	275	420	0	15	20	35	35	60			100	110		10
8	Hell	275.9	385	0	15	15	35		50			110	130		
9	Hell	290.6	432	0	15	10	35	45	60			155	100		
6	Mushroom	104.7	35	0	15	20									
20	Mushroom	104	540	0	15	20	35	45	65			125	180	45	10

spilled most when bag fell and broke

Jason Dive Fluid Sample Split Summary		Dive Number:		523		04-Sep		Sites sampled:		Int District					
Sample#	Vent	T max	meas vol	gas head-space vol	gas H2O aliquot	H2S/Si	pH/alk	Nutrients	Majors	Holden	Huber	Trace Metal	DOC	S isotopes	O/H iso
BF17	Marker 151 over small spigot BF	104.7	346	230	15	15	35	35	65			138		45	
B23	marker 151 B	102.6	452	132	15	25	35	40	40	45	45	220			
BF20	9 meter BF	40	537	0	15	20	35	45	60			125	160	45	
B21	9 meter mid chimney small spigot B	50.1	563	0	15	10	35	40	60	65	40	260			
BF19	Hermosa BF	34.3	528	0	15	30	35	45	65			250		45	
B22	Hermosa UB	35.7	396	0	15	25	35	45	65	65	40	80			
BF18	Escargot BF	17.7	0	no sample probably due to miss plug											
B24	Escargot B	23	526	0	15	20	35	30	60	65	40	100	100		
PF7	Diva hot PF	297.3	>350	lost	25	10	35		30			240			
P8	Diva hot P	297.1	260	2150	15	40	35	30	60			98			
PF5	El Guapo borehole PF	207.9	515	260	15	5	35	25	50			325		45	15
P6	El guapo borehole P	209.3	603	?	20	2	35	47	65			370			
PF1	El Guapo top hot PF-Ti	251	425	67	20	20	35	30	60			135		45	15
P2	El Guapo hot top P-Ti	235.2	465	81	15	20	35		60			245			
PF3	El Guapo hot PF-Ti	337	340	325	15	20	35	30	30			83		45	10
P4	Castle hot P-Ti	261.1	397	245	15	15	35	35	45			169		45	12
PF9	Castle PF	266.4	358	260	17	10	38	30	35			160		45	13

Jason Dive Fluid Sample Split Summary		Dive Number:		524		05-Sep		Sites sampled:		mkr 33, Cloud					
Sample#	Vent	T max	meas vol	gas head-space vol	gas H2O aliquot	H2S/Si	pH/alk	Nutrients	Majors	Holden	Huber	Trace Metal	DOC	S isotopes	O/H iso
PF3	mkr 33 RAS cover	37.9	565	0	15	30	35	45	65			250			
P4	mkr 33 RAS cover	38.6	619	0	15	30	35	45	65	65	65	200			
BF19	Cloud pit	8.1	554	0	15	40	35	55	65			300			
B20	mkr 33 RAS cover	39.3	497	0	15	25	35	45	65			100	150	45	
GT9	mkr 33 RAS cover	37.5													

P3 and P4 both leaky

Jason Dive Fluid Sample Split Summary

Dive Number: 525 06-Sep Sites sampled: Trevi, Forum, N3

Sample#	Vent	T max	meas vol	gas head-space vol	gas H2O aliquot	H2S/Si	pH/alk	Nutrients	Majors	Holden	Huber	Trace Metal	DOC	S isotopes	O/H iso
17	Mkr N3 BF	23.6	554	1	15	25	35	45	65			350			
6	Mkr N3 P	23.5	40	2	10	10			20						
8	Spanish Steps	159.8	623	0	15	15	35	45	65		45	191	200	45	12
9	Spanish Steps	159.6	456	10	15	18	35	45	65			163	100		
7	Pompei	32.6	709	8	15	22	35	45	65			250	210	45	
22	Pompei	29.9	566	0	15	25	35	45	65	45	65	260			
23	Pompei	30.5	535	0	15	25	35	45	65	65		223		45	
1	Trevi Hot PF-Ti	258.5	404	0	15	25	35	45	60			175		45	12
2	Trevi Hot P-Ti	258.6	315	132	15	15	35	30	60			129			12
5	Background SW PF	3.2	735	0	15	30	35	45	60			505		45	
24	Background SW B	3.3	568	0	15	35	70		65	45		145	175		

RAS Information

A RAS sampler was recovered from marker 33 vent on 8/31/2010, designated RAS-25. There was one MTR on the intake line and one MTR next to the vent. Unfortunately, it was found that both of these MTRs were dead when they were examined in the lab, so there is no temperature data for this deployment. RAS samples 2-26, 32, and 47 did not fill. The remainder of the samples filled normally. There was nothing visibly wrong with these positions.

A portion of the RAS data file is included here to give the date/time of the samples collected:

Software version: ras500_4.c
Compiled: Sep 26 2002 11:05:34
Electronics S/N: ML11605-01
Data recording start time = 06/19/2009 03:52:33
Data recording stop time = 06/01/2010 00:44:52

HEADER

RAS 11605-01 at mkr 33/55 Axial 2009-10
all filtered .2um gttg unweighed laminate bags
no flushing acid, MTRs 3327 on intake, +3321+xxxx

SAMPLE PARAMETERS

Sample volume [ml] = 450
Sample time limit [minutes] = 23
Water flush volume [ml] = 100
Water flush time limit [minutes] = 6
Acid flush volume [ml] = 0
Acid flush time limit [minutes] = 1
Acid exposure delay [minutes] = 0

RAS SAMPLING SCHEDULE

Event 1 of 48 @ 06/25/2009 12:00:00	Event 25 of 48 @ 12/16/2009 09:12:00
Event 2 of 48 @ 07/02/2009 17:53:00	Event 26 of 48 @ 12/23/2009 15:05:00
Event 3 of 48 @ 07/09/2009 23:46:00	Event 27 of 48 @ 12/30/2009 20:58:00
Event 4 of 48 @ 07/17/2009 05:39:00	Event 28 of 48 @ 01/07/2010 02:51:00
Event 5 of 48 @ 07/24/2009 11:32:00	Event 29 of 48 @ 01/14/2010 08:44:00
Event 6 of 48 @ 07/31/2009 17:25:00	Event 30 of 48 @ 01/21/2010 14:37:00
Event 7 of 48 @ 08/07/2009 23:18:00	Event 31 of 48 @ 01/28/2010 20:30:00
Event 8 of 48 @ 08/15/2009 05:11:00	Event 32 of 48 @ 02/05/2010 02:23:00
Event 9 of 48 @ 08/22/2009 11:04:00	Event 33 of 48 @ 02/12/2010 08:16:00
Event 10 of 48 @ 08/29/2009 16:57:00	Event 34 of 48 @ 02/19/2010 14:09:00
Event 11 of 48 @ 09/05/2009 22:50:00	Event 35 of 48 @ 02/26/2010 20:02:00
Event 12 of 48 @ 09/13/2009 04:43:00	Event 36 of 48 @ 03/06/2010 01:55:00
Event 13 of 48 @ 09/20/2009 10:36:00	Event 37 of 48 @ 03/13/2010 07:48:00
Event 14 of 48 @ 09/27/2009 16:29:00	Event 38 of 48 @ 03/20/2010 13:41:00
Event 15 of 48 @ 10/04/2009 22:22:00	Event 39 of 48 @ 03/27/2010 19:34:00
Event 16 of 48 @ 10/12/2009 04:15:00	Event 40 of 48 @ 04/04/2010 01:27:00
Event 17 of 48 @ 10/19/2009 10:08:00	Event 41 of 48 @ 04/11/2010 07:20:00
Event 18 of 48 @ 10/26/2009 16:01:00	Event 42 of 48 @ 04/18/2010 13:13:00
Event 19 of 48 @ 11/02/2009 21:54:00	Event 43 of 48 @ 04/25/2010 19:06:00
Event 20 of 48 @ 11/10/2009 03:47:00	Event 44 of 48 @ 05/03/2010 00:59:00
Event 21 of 48 @ 11/17/2009 09:40:00	Event 45 of 48 @ 05/10/2010 06:52:00
Event 22 of 48 @ 11/24/2009 15:33:00	Event 46 of 48 @ 05/17/2010 12:45:00
Event 23 of 48 @ 12/01/2009 21:26:00	Event 47 of 48 @ 05/24/2010 18:38:00
Event 24 of 48 @ 12/09/2009 03:19:00	Event 48 of 48 @ 06/01/2010 00:31:00

Note that the RAS clock was 38 minutes behind UTC on September 2, 2010, after running for 15 months.

A new RAS was placed in the same spot at marker 33/55 where this year's was recovered. This RAS was set up with Tedlar bags and 0.4micron http filters. The first sample was programmed for UTC 9/7/2010 at 1200, with a sample interval of 7 days, 5 hours, 53 minutes. The last sample will be on 8/14/2011.

4.3 CTD Sampling information:

This year we conducted a very minimal CTD sampling program. The primary goals were to get background seawater and to sample vent plumes for organic chemistry and microbiology. We did not collect any trace metal or helium samples. Vertical casts were taken over ASHES (TN253-V01), International District (Castle, TN253-V03), and to the east of Castle outside the caldera as a background (TN253-V02). Representative samples from each depth were analyzed on board for methane and hydrogen. Large volume samples were taken for Aron Stubbins for organic chemistry.

Three CTDs were performed: one at ASHES, one at Castle (both at the same locations as in 2007), and a background cast east of the caldera.

Date (local)	Time (local)	GMT Date	GMT Time	Description	Latitude	Longitude
8/30/10	16:25	8/30/10	23:25	ASHES CTD (#1)	45 ° 56.015'	-130° 00.842'
9/3/10	13:00	9/3/10	20:00	Background CTD (#2)	45° 55.999'	-129° 56.998'
9/3/10	15:10	9/3/10	22:10	Castle CTD (#3)	45° 55.578'	-129° 58.810'

4.4 Microbiology:

4.4.1 Function, activity, and adaptation of seafloor communities

Julie Huber

The goal of our field work was to collect samples for providing a quantitative assessment of the functional diversity, activity, and physiological adaptation of microbial communities in geochemically diverse seafloor habitats at Axial Seamount. Diffuse fluids were filtered for DNA and RNA analysis from 12 and 15 different venting sites, respectively. These samples will be used for molecular analysis in the laboratory at home. Diffuse fluids were also collected from 15 different venting sites and preserved for cell counts or used for culturing, as detailed below. The CTD was used to collect background seawater and plume water. Background seawater was collected from outside of the caldera at roughly the same depth as the caldera floor. This background seawater was preserved for cell counts and filtered for DNA/RNA analysis. Samples from the plume over Ashes vent field and the International district was also preserved for cell counts and filtered for DNA/RNA analysis.

Culturing, Nancy Akerman: Four types of growth media targeting sulfur-redox archaea and bacteria were used at Axial. At sea, 81 tubes/serum vials were inoculated from 13 different hydrothermal fluid samples collected at Axial, and 2 tubes were inoculated using plume-influenced seawater collected on the CTD cast over ASHES. Two hydrothermal fluid samples stored in sterile serum vials under N₂ headspace were transported back to the laboratory and used to inoculate an additional 14 tubes/vials, making a total of 97 tubes/vials.

Two of the media types are routinely used to culture archaeal sulfur reducers: *Archaeoglobus profundus*, originally designed for a sulfate reducer, and *A. veneficus*, designed for a sulfite reducer. Fluid samples were used to inoculate 28 *A. profundus* and 29 *A. veneficus* Balch tubes and serum vials, with most fluid samples used to inoculate both a serum vial and a Balch tube of the same type of media. Samples were incubated at 80°C, with a few tubes incubated at 70°C. Sometimes the serum vial and the Balch tube inoculated from the same fluid sample only showed turbidity in the serum vial. Approximately 12 serum vials and no tubes appeared turbid at sea, but when checked via phase microscopy in the lab, not all the vials that look turbid show signs of microbial growth. To date, 5 of the *A. profundus* enrichments are positive, and 3 of them potentially contain methanogens due to F420 fluorescence. These enrichments are mainly from Marker 113. None of the *A. veneficus* enrichments checked via phase microscopy show signs of microbial growth, even though 5 of the serum vials looked turbid at sea.

The third type of media, *Thermodesulfobacterium hydrogeniphilum*, was originally designed to culture deep-sea bacterial sulfate reducers. A total of 16 tubes were inoculated and 15 were incubated at 70°C, with one tube incubated at 55°C. These tubes have not yet been checked via phase microscopy for growth, but one tube inoculated with the Marshmallow fluid sample appeared slightly turbid at sea.

Sulfurimonas media, the fourth media type, targeted thiosulfate oxidizers. In total, 24 tubes of *Sulfurimonas* media were inoculated, 9 of which were doubles from the same fluid sample and contained filtered air (oxygen). All tubes were incubated at 45°C. No tubes are visually turbid.

Culturing, Angus Angermeyer: The primary scientific goal was to isolate organisms in the genus *Desulfurobacterium* and culture them as biofilms; members of this genus have demonstrated the ability to form dense flocculations in static laboratory conditions. To isolate organisms specifically suited to this phenotype, a surface was added to Ax 99-59 *Desulfurobacterium* media (+/- acetate; +/- elemental sulfur) in Balch tubes and incubated at 65 °C with gentle shaking. The surfaces were either pyrite, basalt or a Thermanox coverslip. The hypothesis was that a surface would induce bacterial attachment while turbulent flow (shaking) would encourage biofilm growth. Additionally, rocks surrounding a diffuse vent were added to sterile media and shaken to see if biofilms would develop on a native surface. Turbidity was detected in approximately 10% of the shaken tubes, but no obvious signs of biofilms were observed. Future experiments will attempt to enrich for the surface-attached biofilm phenotype under modified laboratory conditions using the organisms collected during this cruise.

Culturing, Holly Cantin: *Nitrosopumilus* media per Konneke *et al.* 2005 was prepared to target aerobic, autotrophic ammonia-oxidizing thermophilic archaea. A total of 13 Balch tubes were inoculated at sea and three Balch tubes were inoculated in the lab with fluid samples collected from sea. Of these, 69% percent were positive although cell abundance was very low and cultures have not been successfully transferred to date.

Culturing, Julie Smith: Media selective for hydrogen oxidizing, sulfur reducing autotrophs of the Nautiliales family of *Epsilonproteobacteria* were inoculated with diffuse fluids and mat samples. Three media types were used based on the published isolation media for *Caminibacter* (with the addition of NO₃) and *Nautilia* (with and without NO₃). Twelve diffuse fluids and one mat sample from different venting sites were used for inoculations at sea. Two additional diffuse fluid samples were kept cold and anaerobic and used to inoculate Nautiliales media back in the lab. At sea, 13 cultures turned turbid (~19% of the tubes inoculated). One additional culture inoculated later in the lab also turned turbid. Most of the positive enrichments were in the *Caminibacter* media, which contains a small amount of yeast extract that may boost growth.

4.4.2 Thermophilic Biogeochemical Processes

Jim Holden

The goal of our research is to model the habitability of hydrothermal vent environments by thermophilic and hyperthermophilic microorganisms and the *in situ* bioenergetics and biogeochemical impact of these organisms on the deep sea. On this cruise, our primary goal was to enrich for new thermophilic and hyperthermophilic isolates that would then be purified and used in the laboratory for metabolic modeling experiments. Eleven low-temperature (*i.e.*, diffuse) hydrothermal fluid samples collected on this cruise using the NOAA hydrothermal fluid sampler were each used to inoculate 27 types of growth media. These media varied in their carbon and energy sources (H₂ and CO₂, acetate, and peptides), terminal electron acceptors (CO₂ and SO₄²⁻, elemental sulfur, Fe(OH)₃), and incubation temperature (55°C, 72°C, and 88°C). Preliminary evidence suggests that we successfully enriched for microorganisms under several different growth conditions.

4.4.3 Deep sea vent micro-organisms as a source of medicinally relevant small molecule natural products

Kerry McPhail

Structurally complex natural products from diverse biological sources continue to be a critical source of lead compounds for drug development and molecular tools to define new cellular targets for rational drug design. Chemical diversity directly correlates with biological diversity, and thus phylogenetically unique organisms from rare or extreme ecosystems are rational sources of novel chemotypes with important biological activities. Therefore, frozen collections of microbial mats and invertebrates hosting microbial symbionts will be chemically extracted (with organic solvents) and the organic extracts crudely fractionated before testing for activity against human cancer cell lines, and eukaryotic (e.g. malarial and trypanosomal parasites) and prokaryotic (e.g. *Mycobacterium tuberculosis*, *Staphylococcus aureus* and *Escherichia coli*) microbial pathogens. Laboratory cultivation of filamentous bacteria from microbial mat samples will also be attempted. Subsequent bioassay-guided HPLC fractionation of active crude fractions from extracts of field-collected and laboratory-cultured microbes will be used to obtain pure active compounds. These fractionations will also be guided by chemical profiling using mass spectrometry (LC-MS) and capillary microflow nuclear magnetic resonance (NMR) spectroscopy. Molecular structure elucidation of new compounds will be carried out by NMR spectroscopy using either a capillary microflow probe or a cryogenic probe on 300, 600 or 700 MHz spectrometers available at OSU. This project is the focus of OSU College of Pharmacy Ph.D. graduate students Christopher Thornburg and Oliver Vining, with assistance from postdoctoral scholar Dr. Dahai Zhang.

Biological samples for this project were obtained from four ROV dives (J2-520, J2-521, J2-523 and J2-525) by collection into a biobox, suction into syringe samplers (100 mL and 400 mL volume) or a single chamber suction sampler, or from sediment push cores. Tubeworm grabs (2) from the biobox were frozen (-70 °C) in 1 gallon Ziplock bags after orange or white microbial mats were separated. The latter microbial mats, as well as microbial mat and sediment samples from the syringe samplers (10) and single chamber suction sampler (3), were transferred into 50 mL conical tubes and left to settle for 6-8 hr. An aliquot (200 mL) of each sample was transferred to filter paper in Petri dishes and left to dry for 10-12 hr. These samples were then plated by “dry stamping” onto six different marine media (two for fungal isolation and four for bacterial isolation). The remainder of each 50 mL conical tube sample was transferred to quart size Ziplock bags and frozen after excess water was decanted. An additional single chamber suction sample comprised a blue ciliate (*Folliculinopsis* sp.) mat that was abundant around Marker N3. This sample was combined with blue mat scraped from a medium size rock collected into the biobox at the same site. The combined sample was frozen for future chemical extraction. Of the three soft sediment push core samples recovered from the caldera west rim near Ashes (four attempted), two were just 2-3 cm deep, while a third contained about 10 cm of sediment. For the two small cores, a sub-sample of sediment was transferred to Petri dishes and allowed to dry somewhat before plating on the six different marine media. The remaining sediment in each sample was frozen in Ziplock bags. For the third core, three separate sub-samples were taken at one-centimeter intervals from the top of the core, and the remainder was frozen.

Table 4.4-1 Biology Samples:

Biology Sample	Date	Time (UTC)	Location	Latitude	Longitude	Depth	Heading
J520-BIO-07	27-Aug-10	23:15	Marker 113, tubeworms	45° 55.360	-129° 59.288	1523	193
J520-MAT-19	28-Aug-10	04:54	Bag City Mkr 36 bact. mat	45° 54.976	-129° 59.352	1531	188
J520-MAT-25	28-Aug-10	07:02	Vixen, Mkr 57, bacterial mat	45° 55.038	-129° 59.576	1534	344
J520-BIO-32	28-Aug-10	08:47	Lost MTR site, tubeworms	45° 55.031	-129° 59.575	1535	281
J520-MAT-36	28-Aug-10	10:27	Casper, bacterial mat	45° 55.047	-129° 59.577	1534	134
J521-SED-01	29-Aug-10	00:06	West rim of caldera, core	45° 55.947	-130° 1.253	1415	141
J521-SED-02	29-Aug-10	00:15	West rim of caldera, core	45° 55.947	-130° 1.253	1415	141
J521-SED-03	29-Aug-10		West rim of caldera, core	45° 55.947	-130° 1.253	1415	141
J521-SED-04	29-Aug-10		West rim of caldera, core	45° 55.947	-130° 1.253	1415	141
J521-MAT-08	29-Aug-10	02:35	Styx, bacterial mat	45° 55.995	-130° 0.808	1543	98
J521-MAT-17	29-Aug-10	06:27	Gollum, slurp sample	45° 56.014	-130° 0.800	1541	19
J521-MAT-37	29-Aug-10	12:35	Mushroom, bacterial mat	45° 56.015	-130° 0.815	1542	353
J522-BIO-01	02-Sep-10	21:32	Bag City, tubeworms	45° 54.966	-129° 59.354	1532	65
J522-MAT-02	03-Sep-10	00:23	Marker 33, bacterial mat	45° 55.990	-129° 58.939	1522	156
J522-BIO-04	03-Sep-10	01:10	South of Magnesia, holothurian	45° 55.144	-129° 59.381	1522	323
J523-MAT-05	04-Sep-10	05:37	Mkr 151, suction sampler	45° 55.569	-129° 58.738	1522	45
J523-MAT-10	04-Sep-10	07:16	9 m, blue protist mat	45° 55.592	-129° 58.757	1519	226
J523-MAT-20	04-Sep-10	12:25	Escargot, blue protist mat	45° 55.583	-129° 58.746	1518	250
J523-MAT-24	04-Sep-10	13:20	Diva, bacterial mat	45° 55.852	-129° 58.741	1520	157
J523-MAT-34	04-Sep-10	15:51	El Antiguo, bacterial mat	45° 55.575	-129° 58.762	1520	271
J525-SED-01	05-Sep-10	18:58	East rim of caldera	45° 56.918	-129° 59.027	1519	203
J525-MAT-11	05-Sep-10	22:05	Pompeii, bacterial mat	45° 56.776	-129° 59.019	1519	58
J525-MAT-21	06-Sep-10	01:07	Mkr N3, blue protist mat	45° 56.619	-129° 59.108	1525	224
J525-MAT-22	06-Sep-10	01:42	Mkr. N3, blue protist mat	45° 56.620	-129° 59.110	1525	148

4.5 Gas Sampling:

Leigh Evans

The 2010 expedition to Axial gathered 23 vent fluid samples in gastight bottles. Of these 19 are likely to be unclouded by problems. In most cases those with problems were duplicates of well samples vents. Separations of dissolved gas from water were performed on board ship. Gases were sealed in glass ampules for at least 2 analytical laboratories; helium isotopes by mass spectrometry and other light gases (methane, hydrogen and carbon dioxide) by gas chromatography. Low temperature vent samples are expected to help characterize the conditions under which microbes are living. High temperature samples show geological trends of different sectors of the volcano. Measurement of some of the high temperature vents extends back to the late 1980's in time series which

contain data points from a dozen expeditions. This year saw many samples which are expected to be of very good quality with respect to exclusion of air and seawater. As of this writing, the only data point available is a nominal gas concentration uncorrected for dilution by seawater. Comparisons to historic data reveal that no major deviations from previous data are expected.

Table 4.5-1 Gas Samples:

Dive	GTB	tape color	Vent	fluid wt. (g)	Fluid Temp °C	[gas] m-mole/kg	comments
J2-520	5	B&W	Vixen	145.9	345	20	bottle open on deck
J2-520	12	blue	Bag City	163.4	13.3	3.5	
J2-520	17	white	Vixen	137.3	345	99.1	
J2-520	2	green	N of mk113	161.4	18	4.1	bottle opened at 2 vents
J2-520	18	black	Casper	144.2	286	124	
J2-520	11	yellow	mk 113	105.8	29	4.7	
J2-521	5	B&W	Inferno	138.7	270	69.8	
J2-521	9	red	VirginMound	159.5	244	246	
J2-521	6	nude	Hell	151.9	289	33	
J2-521	10	purple	VirginMound	165.5	244	235	
J2-521	16	orange	Hell	145.8	289	30	
J2-521	7	B&O	Inferno	158	270	68.7	
J2-523	2	green	Mk 151	156.4	105	115	
J2-523	18	black	Diva	136.5	297	486	
J2-523	12	blue	El Guapo-hole	159.2	209	122	
J2-523	11	yellow	El Guapo-top	161.4	348	103	
J2-523	17	white	El Guapo-top	144.5	348	108	
J2-523	5	B&W	mix EG then Castle	147	?	237	bottle opened at 2 vents
J2-524	9	red	Mkr 33	97.5	38	11.1	
J2-525	2	green	mkr N3	160.3	24	33	
J2-525	7	B&O	Spanish Steps	167.6	155	60.4	
J2-525	10	purple	Trevi	4.4	258	101	no ampules
J2-525	16	orange	Trevi	144.1	258	82.1	

4.6 – Dive Sample Summary and Temperature Probe deployments and recoveries

Below is a table of all the samples taken on this cruise in chronological order. Note that the latitude/longitude positions in all sample tables in this report were logged during the dives prior navigation reprocessing and therefore may be slightly different than the final navigated positions (after “renav”), which are in the dive navigation files and in the final version of the virtual van.

Table 4.6-1 Dive Samples

Sample	Type	Description	Device ID #	Date	Time (UTC)	Latitude	Longitude	Site	Contact Person
J520-HFS-01	Fluid	Vent fluid	HFS-filtered piston 5	2006-08-26	21:39	45°55'22"	-129°59'17"	Marker 113	Dave Butterfield
J520-HFS-02	Fluid	Vent fluid	HFS-unfiltered bag 21	2006-08-26	21:46	45°55'22"	-129°59'17"	Marker 113	Dave Butterfield
J520-HFS-03	Fluid	Vent fluid	HFS-DNA sterivex 10	2006-08-26	21:51	45°55'22"	-129°59'17"	Marker 113	Julie Huber
J520-HFS-04	Fluid	Vent fluid	HFS-RNA flat 13	2006-08-26	22:15	45°55'22"	-129°59'17"	Marker 113	Julie Huber
J520-HFS-05	Fluid	Vent fluid	HFS-unfiltered bag 23	2006-08-26	22:44	45°55'22"	-129°59'17"	Marker 113	Dave Butterfield
J520-GTB-06	Fluid	Vent fluid	GT11 (yellow)	2006-08-26	22:56	45°55'22"	-129°59'17"	Marker 113	Marv Lilley
J520-BIO-07	Biology	Ridgeia tubeworms	ROV arm	2006-08-26	23:15	45°55'22"	-129°59'17"	Marker 113	Kerry McPhail
J520-HFS-08	Fluid	Vent fluid	HFS-filtered piston 9	2006-08-27	00:27	45°55'22"	-129°59'17"	8 m north of Marker 113	Dave Butterfield
J520-HFS-09	Fluid	Vent fluid	HFS-RNA flat 14	2006-08-27	00:36	45°55'22"	-129°59'17"	8 m north of Marker 113	Julie Huber
J520-HFS-10	Fluid	Vent fluid	HFS-unfiltered bag 22	2006-08-27	01:03	45°55'22"	-129°59'17"	8 m north of Marker 113	Dave Butterfield
J520-GTHFS-11	Fluid	Vent fluid	GT2 (green)	2006-08-27	01:07	45°55'22"	-129°59'17"	8 m north of Marker 113	Marv Lilley
J520-HFS-12	Fluid	Vent fluid	HFS-unfiltered bag 24	2006-08-27	01:43	45°55'21"	-129°59'17"	south of Marker 113	Dave Butterfield
J520-HFS-13	Fluid	Vent fluid	HFS-filtered bag 20	2006-08-27	01:48	45°55'21"	-129°59'17"	south of Marker 113	Dave Butterfield
J520-HFS-14	Fluid	Vent fluid	HFS-unfiltered piston 6	2006-08-27	03:18	45°54'59"	-129°59'21"	Bag City, Marker 36	Dave Butterfield
J520-HFS-15	Fluid	Vent fluid	HFS-DNA sterivex 11	2006-08-27	03:24	45°54'59"	-129°59'21"	Bag City, Marker 36	Julie Huber
J520-GTHFS-16	Fluid	Vent fluid	GT12 (blue)	2006-08-27	03:48	45°54'59"	-129°59'21"	Bag City, Marker 36	Marv Lilley
J520-HFS-17	Fluid	Vent fluid	HFS-filtered bag 17	2006-08-27	03:51	45°54'59"	-129°59'21"	Bag City, Marker 36	Dave Butterfield
J520-HFS-18	Fluid	Vent fluid	HFS-RNA flat 15	2006-08-27	03:56	45°54'59"	-129°59'21"	Bag City, Marker 36	Julie Huber
J520-MAT-19	Biology	Bacterial mat	Slurp sampler	2006-08-27	04:54	45°54'59"	-129°59'21"	Bag City, Marker 36	Kerry McPhail
J520-HFS-20	Fluid	Vent fluid	HFS-unfiltered piston 8	2006-08-27	05:41	45°55'02"	-129°59'35"	Vixen, Marker 57	Dave Butterfield
J520-GTHFS-21	Fluid	Vent fluid	GT5 (black & white)	2006-08-27	05:46	45°55'02"	-129°59'35"	Vixen, Marker 57	Marv Lilley
J520-HFS-22	Fluid	Vent fluid	HFS-DNA sterivex 12	2006-08-27	05:46	45°55'02"	-129°59'35"	Vixen, Marker 57	Julie Huber
J520-HFS-23	Fluid	Vent fluid	HFS-RNA flat 16	2006-08-27	06:11	45°55'02"	-129°59'35"	Vixen, Marker 57	Julie Huber
J520-HFS-24	Fluid	Vent fluid	HFS-filtered bag 19	2006-08-27	06:36	45°55'02"	-129°59'35"	Vixen, Marker 57	Dave Butterfield
J520-MAT-25	Biology	Bacterial mat	400 ml syringe	2006-08-27	07:02	45°55'02"	-129°59'35"	Vixen, Marker 57	Kerry McPhail
J520-HFS-26	Fluid	Vent fluid	HFS-filtered piston 3	2006-08-27	07:37	45°55'02"	-129°59'35"	Vixen, Marker 57	Dave Butterfield
J520-HFS-27	Fluid	Vent fluid	HFS-unfiltered piston 4	2006-08-27	07:40	45°55'02"	-129°59'35"	Vixen, Marker 57	Dave Butterfield
J520-GTB-28	Fluid	Vent fluid	GT17 (white)	2006-08-27	07:48	45°55'02"	-129°59'35"	Vixen, Marker 57	Marv Lilley
J520-HFS-29	Fluid	Vent fluid	HFS-filtered piston 1	2006-08-27	08:10	45°55'03"	-129°59'35"	Casper	Dave Butterfield
J520-HFS-30	Fluid	Vent fluid	HFS-unfiltered piston 2	2006-08-27	08:13	45°55'03"	-129°59'35"	Casper	Dave Butterfield
J520-GTHFS31	(SAMPLING ERROR - ACCIDENTALLY TRIPPED GT2 (GREEN) A SECOND TIME AT THIS SITE)								

Sample	Type	Description	Device ID #	Date	Time (UTC)	Latitude	Longitude	Site	Contact Person
J520-BIO-32	Biology	Ridgeia tubeworms	ROV arm	2006-08-27	08:47	45°55'02"	-129°59'35"	Lost MTR site, Marker 122	Kerry McPhail
J520-HFS-33	Fluid	Vent fluid	HFS-filtered piston 7	2006-08-27	09:27	45°55'02"	-129°59'35"	Lost MTR site, Marker 122	Dave Butterfield
J520-HFS-34	Fluid	Vent fluid	HFS-filtered bag 18	2006-08-27	09:34	45°55'02"	-129°59'35"	Lost MTR site, Marker 122	Dave Butterfield
J520-GTB-35	Fluid	Vent fluid	GT18 (black)	2006-08-27	10:03	45°55'03"	-129°59'35"	Casper	Marv Lilley
J520-MAT-36	Biology	Bacterial mat	100 cc syringe	2006-08-27	10:27	45°55'03"	-129°59'35"	Casper	Kerry McPhail
J521-SED-01	Biology	Sediment core	pink core	2006-08-28	00:06	45°55'57"	-130°01'15"	West rim of caldera	Kerry McPhail
J521-SED-02	Biology	Sediment core	orange core 8	2006-08-28	00:15	45°55'57"	-130°01'15"	West rim of caldera	Kerry McPhail
J521-SED-03	Biology	Sediment core	red core	2006-08-28		45°55'57"	-130°01'15"	West rim of caldera	Kerry McPhail
J521-SED-04	Biology	Sediment core	blue core	2006-08-28		45°55'57"	-130°01'15"	West rim of caldera	Kerry McPhail
J521-HFS-05	Fluid	Vent fluid	HFS-filtered bag 18	2006-08-28	01:38	45°56'00"	-130°00'49"	Styx	Dave Butterfield
J521-HFS-06	Fluid	Vent fluid	HFS-unfiltered bag 24	2006-08-28	01:43	45°56'00"	-130°00'49"	Styx	Dave Butterfield
J521-HFS-07	Fluid	Vent fluid	HFS-RNA flat 16	2006-08-28	01:48	45°56'00"	-130°00'49"	Styx	Julie Huber
J521-MAT-08	Biology	Bacterial mat	400 ml syringe	2006-08-28	02:35	45°56'00"	-130°00'48"	Styx	Kerry McPhail
J521-HFS-09	Fluid	Vent fluid	HFS-filtered bag 17	2006-08-28	03:23	45°56'00"	-130°00'50"	Medusa	Dave Butterfield
J521-HFS-10	Fluid	Vent fluid	HFS-unfiltered bag 23	2006-08-28	03:28	45°56'00"	-130°00'50"	Medusa	Dave Butterfield
J521-HFS-11	Fluid	Vent fluid	HFS-DNA sterivex 12	2006-08-28	03:34	45°56'00"	-130°00'50"	Medusa	Julie Huber
J521-HFS-12	Fluid	Vent fluid	HFS-RNA flat 15	2006-08-28	04:02	45°56'00"	-130°00'50"	Medusa	Julie Huber
J521-HFS-13	Fluid	Vent fluid	HFS-unfiltered bag 21	2006-08-28	05:11	45°56'01"	-130°00'48"	Gollum	Dave Butterfield
J521-HFS-14	Fluid	Vent fluid	HFS-filtered bag 19	2006-08-28	05:16	45°56'01"	-130°00'48"	Gollum	Dave Butterfield
J521-HFS-15	Fluid	Vent fluid	HFS-RNA flat 13	2006-08-28	05:22	45°56'01"	-130°00'48"	Gollum	Julie Huber
J521-HFS-16	Fluid	Vent fluid	HFS-DNA sterivex 10	2006-08-28	05:47	45°56'01"	-130°00'48"	Gollum	Julie Huber
J521-MAT-17	Biology	Bacterial mat	Slurp sampler	2006-08-28	06:27	45°56'01"	-130°00'48"	Gollum	Kerry McPhail
J521-HFS-18	Fluid	Vent fluid	HFS-filtered piston 1	2006-08-28	07:07	45°56'01"	-130°00'49"	Inferno	Dave Butterfield
J521-GTHFS-19	Fluid	Vent fluid	GT7 (orange & black)	2006-08-28	07:11	45°56'01"	-130°00'49"	Inferno	Marv Lilley
J521-HFS-20	Fluid	Vent fluid	HFS-unfiltered piston 2	2006-08-28	07:12	45°56'01"	-130°00'49"	Inferno	Dave Butterfield
J521-GTHFS-21	Fluid	Vent fluid	GT5 (black & white)	2006-08-28	07:16	45°56'01"	-130°00'49"	Inferno	Marv Lilley
J521-HFS-22	Fluid	Vent fluid	HFS-filtered piston 7	2006-08-28	07:43	45°56'01"	-130°00'48"	Marshmallow	Dave Butterfield
J521-HFS-23	Fluid	Vent fluid	HFS-unfiltered bag 22	2006-08-28	07:49	45°56'01"	-130°00'48"	Marshmallow	Dave Butterfield
J521-HFS-24	Fluid	Vent fluid	HFS-DNA sterivex 11	2006-08-28	08:00	45°56'01"	-130°00'48"	Marshmallow	Julie Huber
J521-HFS-25	Fluid	Vent fluid	HFS-RNA flat 14	2006-08-28	08:18	45°56'01"	-130°00'48"	Marshmallow	Julie Huber
J521-HFS-26	Fluid	Vent fluid	HFS-filtered piston 3	2006-08-28	09:13	45°56'01"	-130°00'48"	Virgin Mound	Dave Butterfield
J521-HFS-27	Fluid	Vent fluid	HFS-unfiltered piston 4	2006-08-28	09:17	45°56'01"	-130°00'48"	Virgin Mound	Dave Butterfield
J521-GTHFS-28	Fluid	Vent fluid	GT9 (red)	2006-08-28	09:22	45°56'01"	-130°00'48"	Virgin Mound	Marv Lilley
J521-GTB-29	Fluid	Vent fluid	GT10 (purple)	2006-08-28	09:31	45°56'01"	-130°00'48"	Virgin Mound	Marv Lilley
J521-HFS-30	Fluid	Vent fluid	HFS-filtered piston 5	2006-08-28	10:43	45°56'00"	-130°00'50"	Hell	Dave Butterfield
J521-HFS-31	Fluid	Vent fluid	HFS-unfiltered piston 8	2006-08-28	10:48	45°56'00"	-130°00'50"	Hell	Dave Butterfield
J521-HFS-32	Fluid	Vent fluid	HFS-filtered piston 9	2006-08-28	11:08	45°56'00"	-130°00'50"	Hell	Dave Butterfield
J521-GTB-33	Fluid	Vent fluid	GT6 (nude)	2006-08-28	11:23	45°56'00"	-130°00'50"	Hell	Marv Lilley
J521-GTB-34	Fluid	Vent fluid	GT16 (orange)	2006-08-28	11:27	45°56'00"	-130°00'50"	Hell	Marv Lilley

Sample	Type	Description	Device ID #	Date	Time (UTC)	Latitude	Longitude	Site	Contact Person
J521-HFS-35	Fluid	Vent fluid	HFS-unfiltered piston 6	2006-08-28	12:11	45°56'01"	-130°00'49"	Mushroom	Dave Butterfield
J521-HFS-36	Fluid	Vent fluid	HFS-filtered bag 20	2006-08-28	12:15	45°56'01"	-130°00'49"	Mushroom	Dave Butterfield
J521-MAT-37	Biology	Bacterial mat	100 cc syringe	2006-08-28	12:35	45°56'01"	-130°00'49"	Mushroom	Kerry McPhail
J522-BIO-01	Biology	Ridgeia tubeworms	ROV arm	2006-09-01	21:32	45°54'58"	-129°59'21"	Bag City	Kerry McPhail
J522-MAT-02	Biology	Bacterial mat	100 cc syringe	2006-09-02	00:23	45°55'59"	-129°58'56"	Marker 33	Kerry McPhail
J522-GEO-03	Geology	Lava pillar basalt	ROV arm	2006-09-02	00:40	45°56'01"	-129°58'57"	Magnesia	Bill Chadwick
J522-BIO-04	Biology	Holothurian	ROV arm	2006-09-02	01:10	45°55'09"	-129°59'23"	Magnesia	Kerry McPhail
J523-HFS-01	Fluid	Vent fluid	HFS-filtered bag 17	2006-09-03	04:55	45°55'34"	-129°58'44"	Marker 151	Dave Butterfield
J523-HFS-02	Fluid	Vent fluid	HFS-RNA flat 14	2006-09-03	04:59	45°55'34"	-129°58'44"	Marker 151	Julie Huber
J523-GTHFS-03	Fluid	Vent fluid	GT2 (green)	2006-09-03	05:17	45°55'34"	-129°58'44"	Marker 151	Marv Lilley
J523-HFS-04	Fluid	Vent fluid	HFS-unfiltered bag 23	2006-09-03	05:28	45°55'34"	-129°58'44"	Marker 151	Dave Butterfield
J523-MAT-05	Biology	Bacterial mat	suction sampler	2006-09-03	05:37	45°55'34"	-129°58'44"	Marker 151	Kerry McPhail
J523-HFS-06	Fluid	Vent fluid	HFS-filtered bag 20	2006-09-03	06:13	45°55'36"	-129°58'45"	9 m	Dave Butterfield
J523-HFS-07	Fluid	Vent fluid	HFS-DNA sterivex 10	2006-09-03	06:19	45°55'36"	-129°58'45"	9 m	Julie Huber
J523-HFS-08	Fluid	Vent fluid	HFS-RNA flat 16	2006-09-03	06:39	45°55'36"	-129°58'45"	9 m	Julie Huber
J523-HFS-09	Fluid	Vent fluid	HFS-unfiltered bag 21	2006-09-03	07:05	45°55'36"	-129°58'45"	9 m	Dave Butterfield
J523-MAT-10	Biology	Bacterial mat	ROV arm	2006-09-03	07:16	45°55'36"	-129°58'45"	9 m	Kerry McPhail
J523-HFS-11	Fluid	Vent fluid	HFS-filtered bag 19	2006-09-03	07:57	45°55'36"	-129°58'46"	Hermosa	Dave Butterfield
J523-HFS-12	Fluid	Vent fluid	HFS-RNA flat 15	2006-09-03	08:05	45°55'36"	-129°58'46"	Hermosa	Julie Huber
J523-HFS-13	Fluid	Vent fluid	HFS-DNA sterivex 11	2006-09-03	08:36	45°55'36"	-129°58'46"	Hermosa	Julie Huber
J523-HFS-14	Fluid	Vent fluid	HFS-unfiltered bag 22	2006-09-03	08:55	45°55'36"	-129°58'46"	Hermosa	Dave Butterfield
J523-GEO-15	Geology	inactive sulfide	ROV arm	2006-09-03	09:43	45°55'35"	-129°58'45"	Escargot	Mark Hannington
J523-HFS-16	Fluid	Vent fluid	HFS-filtered bag 18	2006-09-03	10:33	45°55'35"	-129°58'45"	Escargot	Dave Butterfield
J523-HFS-17	Fluid	Vent fluid	HFS-RNA flat 13	2006-09-03	10:49	45°55'35"	-129°58'45"	Escargot	Julie Huber
J523-HFS-18	Fluid	Vent fluid	HFS-DNA sterivex 12	2006-09-03	11:12	45°55'35"	-129°58'45"	Escargot	Julie Huber
J523-HFS-19	Fluid	Vent fluid	HFS-unfiltered bag 24	2006-09-03	11:49	45°55'35"	-129°58'45"	Escargot	Dave Butterfield
J523-MAT-20	Biology	Bacterial mat	blue	2006-09-03	12:25	45°55'35"	-129°58'45"	Escargot	Kerry McPhail
J523-HFS-21	Fluid	Vent fluid	HFS-filtered piston 7	2006-09-03	12:40	45°55'51"	-129°58'44"	Diva	Dave Butterfield
J523-HFS-22	Fluid	Vent fluid	HFS-unfiltered piston 8	2006-09-03	12:43	45°55'51"	-129°58'44"	Diva	Dave Butterfield
J523-GTB-23	Fluid	Vent fluid	GT18 (black)	2006-09-03	12:54	45°55'51"	-129°58'44"	Diva	Marv Lilley
J523-MAT-24	Biology	Bacterial mat	orange	2006-09-03	13:20	45°55'51"	-129°58'44"	Diva	Kerry McPhail
J523-HFS-25	Fluid	Vent fluid	HFS-filtered piston 5	2006-09-03	13:56	45°55'35"	-129°58'46"	El Guapo borehole	Dave Butterfield
J523-HFS-26	Fluid	Vent fluid	HFS-unfiltered piston 6	2006-09-03	14:02	45°55'35"	-129°58'46"	El Guapo borehole	Dave Butterfield
J523-GTHFS-27	Fluid	Vent fluid	GT12 (blue)	2006-09-03	14:06	45°55'35"	-129°58'46"	El Guapo borehole	Marv Lilley
J523-HFS-28	Fluid	Vent fluid	HFS-filtered piston 1	2006-09-03	14:32	45°55'35"	-129°58'46"	El Guapo top	Dave Butterfield
J523-HFS-29	Fluid	Vent fluid	HFS-unfiltered piston 2	2006-09-03	14:37	45°55'35"	-129°58'46"	El Guapo top	Dave Butterfield
J523-HFS-30	Fluid	Vent fluid	HFS-filtered piston 3	2006-09-03	14:43	45°55'35"	-129°58'46"	El Guapo top	Dave Butterfield
J523-GTB-31	Fluid	Vent fluid	GT5 (black & white)	2006-09-03	14:46	45°55'35"	-129°58'46"	El Guapo top	Marv Lilley
J523-GTB-32	Fluid	Vent fluid	GT11 (yellow)	2006-09-03	15:02	45°55'35"	-129°58'46"	El Guapo top	Marv Lilley

Sample	Type	Description	Device ID #	Date	Time (UTC)	Latitude	Longitude	Site	Contact Person
J523-GTB-33	Fluid	Vent fluid	GT17 (white)	2006-09-03	15:07	45°55'35"	-129°58'46"	El Guapo top	Marv Lilley
J523-MAT-34	Biology	Bacterial mat	400 ml syringe	2006-09-03	15:51	45°55'35"	-129°58'46"	El Antiguo	Kerry McPhail
J523-HFS-35	Fluid	Vent fluid	HFS-unfiltered piston 4	2006-09-03	16:47	45°55'34"	-129°58'48"	Castle	Dave Butterfield
J523-HFS-36	Fluid	Vent fluid	HFS-filtered piston 9	2006-09-03	16:50	45°55'34"	-129°58'48"	Castle	Dave Butterfield
J523-GTHFS-37	(SAMPLING ERROR - ACCIDENTALLY TRIPPED GT5 (BLACK & WHITE) A SECOND TIME AT THIS SITE)								
J523-GEO-38	Geology	inactive sulfide	ROV arm	2006-09-03	17:34	45°55'34"	-129°58'47"	El Abuelo	WHOI Museum
J523-GEO-39	Geology	inactive sulfide	ROV arm	2006-09-03	17:37	45°55'34"	-129°58'47"	El Abuelo	WHOI Museum
J524-HFS-01	Fluid	Vent fluid	HFS-filtered piston 3	2006-09-04	05:17	45°55'59"	-129°58'56"	Marker 33	Dave Butterfield
J524-HFS-02	Fluid	Vent fluid	HFS-DNA sterivex 10	2006-09-04	05:22	45°55'59"	-129°58'56"	Marker 33	Julie Huber
J524-HFS-03	Fluid	Vent fluid	HFS-RNA flat 13	2006-09-04	05:44	45°55'59"	-129°58'56"	Marker 33	Julie Huber
J524-HFS-04	Fluid	Vent fluid	HFS-unfiltered piston 4	2006-09-04	06:05	45°55'59"	-129°58'56"	Marker 33	Dave Butterfield
J524-GTHFS-05	Fluid	Vent fluid	GT9 (red)	2006-09-04	06:09	45°55'59"	-129°58'56"	Marker 33	Marv Lilley
J524-HFS-06	Fluid	Vent fluid	HFS-filtered bag 20	2006-09-04	06:13	45°55'59"	-129°58'56"	Marker 33	Dave Butterfield
J524-HFS-07	Fluid	Vent fluid	HFS-filtered bag 19	2006-09-04	07:15	45°56'00"	-129°58'54"	Cloud	Dave Butterfield
J525-MAT-01	Biology	Bacterial mat	red	2006-09-04	18:58	45°56'55"	-129°59'02"	East caldera rim	Kerry McPhail
J525-HFS-02	Fluid	Vent fluid	HFS-unfiltered piston 8	2006-09-04	20:08	45°56'46"	-129°59'01"	Spanish Steps	Dave Butterfield
J525-HFS-03	Fluid	Vent fluid	HFS-filtered piston 9	2006-09-04	20:14	45°56'46"	-129°59'01"	Spanish Steps	Dave Butterfield
J525-GTHFS-04	Fluid	Vent fluid	GT7 (orange & black)	2006-09-04	20:21	45°56'46"	-129°59'01"	Spanish Steps	Marv Lilley
J525-GEO-05	Geology	inactive sulfide	ROV arm	2006-09-04	20:30	45°56'46"	-129°59'01"	Spanish Steps	Mark Hannington
J525-HFS-06	Fluid	Vent fluid	HFS-filtered piston 7	2006-09-04	20:56	45°56'47"	-129°59'01"	Pompeii	Dave Butterfield
J525-HFS-07	Fluid	Vent fluid	HFS-DNA sterivex 11	2006-09-04	21:02	45°56'47"	-129°59'01"	Pompeii	Julie Huber
J525-HFS-08	Fluid	Vent fluid	HFS-RNA flat 14	2006-09-04	21:25	45°56'47"	-129°59'01"	Pompeii	Julie Huber
J525-HFS-09	Fluid	Vent fluid	HFS-unfiltered bag 22	2006-09-04	21:50	45°56'47"	-129°59'01"	Pompeii	Dave Butterfield
J525-HFS-10	Fluid	Vent fluid	HFS-unfiltered bag 23	2006-09-04	21:54	45°56'47"	-129°59'01"	Pompeii	Dave Butterfield
J525-SED-11	Biology	Bacterial mat	yellow	2006-09-04	22:05	45°56'47"	-129°59'01"	Pompeii	Kerry McPhail
J525-HFS-12	Fluid	Vent fluid	HFS-filtered piston 1	2006-09-04	22:32	45°56'47"	-129°59'01"	Trevi	Dave Butterfield
J525-HFS-13	Fluid	Vent fluid	HFS-unfiltered piston 2	2006-09-04	22:34	45°56'47"	-129°59'01"	Trevi	Dave Butterfield
J525-GTB-14	Fluid	Vent fluid	GT10 (purple)	2006-09-04		45°56'47"	-129°59'01"	Trevi	Marv Lilley
J525-GTB-15	Fluid	Vent fluid	GT16 (orange)	2006-09-04	22:55	45°56'47"	-129°59'01"	Trevi	Marv Lilley
J525-HFS-16	Fluid	Vent fluid	HFS-unfiltered piston 6	2006-09-04	23:56	45°56'37"	-129°59'06"	Marker N3	Dave Butterfield
J525-HFS-17	Fluid	Vent fluid	HFS-filtered bag 17	2006-09-05	00:02	45°56'37"	-129°59'06"	Marker N3	Dave Butterfield
J525-HFS-18	Fluid	Vent fluid	HFS-DNA sterivex 12	2006-09-05	00:07	45°56'37"	-129°59'06"	Marker N3	Julie Huber
J525-HFS-19	Fluid	Vent fluid	HFS-RNA flat 15	2006-09-05	00:31	45°56'37"	-129°59'06"	Marker N3	Julie Huber
J525-GTHFS-20	Fluid	Vent fluid	GT2 (green)	2006-09-05	00:31	45°56'37"	-129°59'06"	Marker N3	Marv Lilley
J525-MAT-21	Biology	Bacterial mat	Suction sampler	2006-09-05	01:07	45°56'37"	-129°59'06"	Marker N3	Kerry McPhail
J525-MAT-22	Biology	Bacterial mat	ROV arm	2006-09-05	01:42	45°56'37"	-129°59'07"	Marker N3	Kerry McPhail
J525-HFS-23	Fluid	Vent fluid	HFS-filtered piston 5	2006-09-05	02:06	45°56'32"	-129°59'05"	Background seawater	Dave Butterfield
J525-HFS-24	Fluid	Vent fluid	HFS-unfiltered bag 24	2006-09-05	02:13	45°56'26"	-129°59'03"	Background seawater	Dave Butterfield
J525-MAT-25	Biology	Bacterial mat	400 ml syringe	2006-09-05	05:26	45°55'34"	-129°58'46"	El Antiguo	Kerry McPhail

Table 4.6-2 MTR/HOBO/MISO temperature probes recovered and deployed:

Vent/Marker	Temperature probe	Dive Deployed	Dive Recovered	Comments
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
Mkr-33	MTR 3045	J2-289 ('07)	Alvin in 2008 or 2009	MTR deployed in tubeworm bush
Mkr-33	MTR 3041	J2-289 ('07)	Alvin in 2008 or 2009	MTR3041 on western side of crack (right of RAS dome-
Mkr-33	MTR 4001	J2-289 ('07)	Alvin in 2008 or 2009	MTR 4001 in a hole behind
Mkr 33	MTR 3327	Alvin 2009	J2-522	Picked up near RAS sampler
Mrk 33	MTR 3041	Alvin 2009	J2-522	Near RAS sampler (about 30cm
Cloud	MTR 3196	J2-291 ('07)	J2-524 (2010)	MTRs 3196 and 3334 tied
Cloud	MTR 3334	J2-291 ('07)	J2-524 (2010)	MTRs 3196 and 3334 tied
Coquille	MTR 3317	R551 ('00)	J2-520	Couldn't find in 2002. Spotted on
Mkr N3 vent	MTR 3040	???	J2-525 (2010)	Recovered where MTR 3049
Virgin Vent	MISO 101	J2-293 ('07)	J2-520	Deployed at Virgin replacing
Castle	MISO 103	J2-292 ('07)	J2-523 (2010)	Bent tip and buried deep in
Casper (Coquille)	MISO 129	J2-289 ('07)	J2-520	Replaced MISO 103 ('06)
Vixen (Coquille)	MISO 130	J2-289 ('07)	J2-520	Replaced MISO 101 ('06)
El Guapo	APL temp probe and logger	Delaney/Kelley	J2-522	Recovered probe and logger
Mkr113 Vent (Mkr 62)	MTR 4128	J2-520		Deployed ~1 m east of Marker
Bag City	MTR 3087	J2-520		
Gollum	MTR 4127	J2-521		
ASHES (?)	MTR 4001	J2-521		"153" on float on polypro line
Mkr 33	MTR 3292	J2-524		Deployed near RAS intake in
Mkr 33	MTR 3292	J2-524		On top of RAS cover
Mkr 33	MTR 3039	J2-524		On RAS intake line
Mkr 33	MTR ???	???		There is an MTR in the
Hermosa	MTR 3291	J2-523		Deployed MTR
Mrk N3 vent	MTR 3049	J2-525		Put in same vent as previous
Virgin	HOBO 153	J2-521		Put in anhydrite chimney vent
Trevi	MISO 101	J2-525		Put in anhydrite chimney vent
Vixen	MISO 102	J2-520		Put in anhydrite chimney vent
Casper	MISO 104	J2-520		Put in anhydrite chimney vent
Diva	MISO 129	J2-523		Put in anhydrite chimney vent
Castle	MISO 130	J2-523		Put in same hole as previous

Table 4.6-3 MTR data information:

MTR#	Location	Data recovered
3040	mkr N3	battery had died, coin cell battery had also gone dead - therefore, no data could be recovered. Last calibration date was Aug 2000, so it may have been deployed quite some time ago (see MTR-3317 notes)
3041	mkr 33/55	battery had died, coin cell battery had also gone dead - therefore, no data could be recovered. Last calibration date was July 2007
3196	cloud	data recovered: 04-Aug-2007 - 08-Feb-2010
3317	coquille	data recovered: 01-July-2000 - 03-June-2002
3327	mrk 33/55	MTR was damp inside - dessicant pack was gummy, some corrosion evident on board, dark stains on outside of pressure case. MTR did not respond, no data recovered
3334	cloud	data recovered: 04-Aug-2007 - 23-Nov-2009

Each MTRs has 2 batteries - the main battery is a standard 9v alkaline battery and the other is a backup battery (3v coin cell battery). If the main battery dies, the data will be preserved unless the backup battery dies too. If the backup battery dies, all hope for the data is lost.

In the case of the 6 MTRs recovered this year, the main battery in all of them had died, but data was able to be recovered from 3 of them because their backup batteries were fine. For the other three, one had leaked (slightly, but enough to damage the board), and the backup battery had failed for the other 2, so no data could be recovered from them.

Based on the data that was recovered, the MTRs lasted 2-2.5 years which is what we planned for given the sample rate used. One had data from 2000-2002, so if either of the two with 2 dead batteries were from the same deployment (the most recent calibration for one of them was 2000) it's not too surprising that both batteries may have died after that long.

5.0 Still imagery: HD frame grabs and Digital Still Camera (DSC) pictures:

The HD frame grabs from the HD science camera (tiffs) were excellent this year and were far better than the Digital Still Camera (DSC) images (jpgs). This is largely because the focus and exposure of the HD video camera are easily controlled in the Jason van and the images are “what you see is what you get”. This is decidedly not the case with the DSC camera, which is very difficult to control with a non-intuitive user interface and a poor-quality video feed makes it hard to judge the focus and the lighting. This discrepancy in the image quality between the two systems had the effect of the DSC being used far less than the HD frame grabber during our cruise. Neither camera system allows you to view the still images during a dive, but they are delivered after each dive.

Table 5.0-1 Still Imagery summary:

Dive number	Number of DSC images	Total size of DSC images	Number of HD frame grabs	Total size of HD images
J2-520	63	66 Mb	222	2.78 Gb
J2-521	2	1 Mb	229	2.87 Gb
J2-522	30	30 Mb	801	10.05 Gb
J2-523	8	9 Mb	290	3.64 Gb
J2-524	0	0 Mb	12	0.15 Gb
J2-525	0	0 Mb	221	2.77 Gb

6.0 High-definition (HD) video:

The HD video science camera was recorded to DVD continuously (in standard definition, SD), and highlights were selectively recorded both to DVCAM tape (in SD) and to hard disk in high-definition (HD). We recorded about 8 hours and 50 minutes of HD video highlights on this cruise. The HD camera, its control system in the van, and the hard disk recording system were all new (installed for the first time on the previous leg). The HD filenames were renamed after each dive based on the start and end times on the hand-written HD camera log from the control van. Note that those times are not always accurate (but they have been corrected in the table below). The HD camera provided good quality video in general, but there were several significant problems with the system.

1. The camera controls were initially on three separate consoles with separate cables of different lengths and very poorly designed. The HD frame grab controller was particularly bad. The controls were improved after the first dive by mounting them together and combining the cables. The camera settings were complicated but not stored from dive to dive and had to be manually input before each dive by a Jason tech (which invites errors). The zoom control was jumpy and not smooth.
2. A flickering of the HD video, that was initially thought to only be a monitor problem, turned out to be a problem with the camera and is in all the recorded video. The flickering is caused by two images offset horizontally being superimposed on single frames occasionally, which is apparently an interlace problem. This problem grew worse during the cruise. The

flickering was infrequent at the beginning, and so was overlooked, but was much more obvious by the end. There was also a vertical line of contrast difference in the center of the screen that is a symptom of a chip problem in the HD camera.

- The microphone for the watch leader did not work well and was abandoned after the first dive.

The following is the log of HD video clips recorded to DVCAM tape (in SD) and to hard disk (in HD):

Table 6.0-1 HD Video Clips:

Dive #	HD Clip Name	DVCAM Tape #	Start time	End time	Clip duration	Cumulative duration	location/comments
J2-520	1ATK29	1	2010/08/27 21:05:28	2010/08/27 21:27:28	00:22:00	00:22:00	Mkr-113 vent (Mkr 62)
J2-520	1ATK30	1	2010/08/27 21:47:20	2010/08/27 21:56:32	00:09:12	00:31:12	Mkr-113 vent (Mkr 62)
J2-520	1ATK31	1	2010/08/27 23:07:06	2010/08/27 23:13:22	00:06:16	00:37:28	Orange mat near Mkr-113
J2-520	1ATK32	1	2010/08/27 23:43:23	2010/08/27 23:49:46	00:06:23	00:43:51	Exploring in collapse near Mkr-113 vent
J2-520	1ATK33	1	2010/08/28 00:25:43	2010/08/28 00:29:35	00:03:52	00:47:43	Fluid sampling 8m north of Mkr-113 vent
J2-520	1ATK34	1	2010/08/28 01:54:12	2010/08/28 02:04:36	00:10:24	00:58:07	Leaving Mkr-113 area
J2-520	1ATK35	1	2010/08/28 02:56:48	2010/08/28 03:03:26	00:06:38	01:04:45	Tubeworms at Bag City vent
J2-520	1ATK36	1	2010/08/28 07:01:20	2010/08/28 07:04:20	00:03:00	01:07:45	Syringe sample of white mat at Coquille
J2-520	1ATK37	1	2010/08/28 07:12:07	2010/08/28 07:17:08	00:05:01	01:12:46	Fluid sampling at Vixen vent
J2-520	1ATK38	1	2010/08/28 07:58:26	2010/08/28 08:03:27	00:05:01	01:17:47	Fluid sampling at Casper vent
J2-520	1ATK39	1	2010/08/28 11:55:52	2010/08/28 12:01:56	00:06:04	01:23:51	Southern end of collapse near Mkr-113
J2-520	1ATK40	1	2010/08/28 13:04:49	2010/08/28 13:20:34	00:15:45	01:39:36	Exploring collapse near Mkr-113 vent
J2-520	1ATK41	1	2010/08/28 13:38:40	2010/08/28 13:50:56	00:12:16	01:51:52	Tubeworms and orange mat at Mkr-113 vent
J2-521	1ATK44	2	2010/08/29 06:46:39	2010/08/29 06:57:14	00:10:35	02:02:27	Inferno chimney in ASHES vent field
J2-521	1ATK45	2	2010/08/29 08:50:06	2010/08/29 09:11:02	00:20:56	02:23:23	Virgin vent in ASHES
J2-521	1ATK46	2	2010/08/29 09:34:57	2010/08/29 09:35:22	00:00:25	02:23:48	Crab at Virgin vent
J2-521	1ATK47	2	2010/08/29 10:13:39	2010/08/29 10:25:13	00:11:34	02:35:22	Hell chimney in ASHES
J2-521	1ATK48	2	2010/08/29 12:47:48	2010/08/29 13:40:15	00:52:27	03:27:49	Inferno chimney (nice video)
J2-521	1ATK49	2	2010/08/29 13:44:20	2010/08/29 13:56:49	00:12:29	03:40:18	Hell (NOTE: UNFORTUNATELY THIS CLIP WAS NEVER ACTUALLY RECORDED)
J2-521	1ATK50	2	2010/08/29 15:09:13	2010/08/29 15:12:38	00:03:25	03:43:43	JASON recovery
J2-522	1ATK52	3	2010/08/31 12:33:45	2010/08/31 12:40:13	00:06:28	03:50:11	Finding cement benchmark at Magnesia (timecode in file incorrect)
J2-522	1ATK53	3	2010/08/31 13:06:10	2010/08/31 13:12:13	00:06:03	03:56:14	Finding old benchmark at Magnesia (timecode in file incorrect)
J2-522	1ATK54	3	2010/08/31 21:17:10	2010/08/31 22:19:06	01:01:56	04:58:10	Releasing RAS mooring at Mkr 33 vent (timecode in file incorrect)
J2-522	1ATK55	3	2010/09/02 16:27:03	2010/09/02 16:44:48	00:17:45	05:15:55	Following fissure near South Pillow Mound
J2-522	1ATK56	3	2010/09/03 02:37:16	2010/09/03 02:37:51	00:00:35	05:16:30	Octopus!
J2-522	1ATK57	3/4	2010/09/03 11:19:08	2010/09/03 12:28:57	01:09:49	06:26:19	El Guapo chimney (International District)
J2-522	1ATK58	4	2010/09/03 12:35:11	2010/09/03 12:42:05	00:06:54	06:33:13	Hermosa Chimney
J2-522	1ATK59	4	2010/09/03 12:56:47	2010/09/03 13:00:18	00:03:31	06:36:44	Diva Chimney
J2-522	1ATK60	4	2010/09/02 13:30:32	2010/09/03 13:36:51	00:06:19	06:43:03	Recovering the APL temperature probe from the drill hole in El Guapo chimney
J2-523	1ATK62	5	2010/09/04 05:08:34	2010/09/04 05:12:24	00:03:50	06:46:53	El Gordo vent (Mkr 151)
J2-523	1ATK63	5	2010/09/04 07:14:25	2010/09/04 07:19:17	00:04:52	06:51:45	9-Meter chimney
J2-523	1ATK64	5	2010/09/04 13:59:11	2010/09/04 14:00:41	00:01:30	06:53:15	Fluid sampling in the El Guapo drill hole
J2-523	1ATK65	5	2010/09/04 14:02:19	2010/09/04 14:03:05	00:00:46	06:54:01	El Guapo drill hole (pilot cam view)

Dive #	HD Clip Name	DVCAM Tape #	Start time	End time	Clip duration	Cumulative duration	location/comments
J2-523	1ATK66	5	2010/09/04 14:07:09	2010/09/04 14:12:15	00:05:06	06:59:07	El Guapo drill hole (pilot cam view)
J2-523	1ATK67	5	2010/09/04 14:16:44	2010/09/04 14:20:06	00:03:22	07:02:29	Placing incubator in El Guapo drill hole
J2-523	1ATK68	5	2010/09/04 14:58:11	2010/09/04 15:17:18	00:19:07	07:21:36	El Guapo, basket gastight
J2-523	1ATK69	5	2010/09/04 15:32:17	2010/09/04 15:36:30	00:04:13	07:25:49	Shrimp and orange mat on El Antiguo chimney
J2-523	1ATK70	5	2010/09/04 16:15:07	2010/09/04 16:18:58	00:03:51	07:29:40	Anhydrite chimney at the base of Castle
J2-523	1ATK71	5	2010/09/04 17:09:40	2010/09/04 17:18:02	00:08:22	07:38:02	Flying around the top of Castle chimney
J2-523	1ATK72	5	2010/09/04 17:19:24	2010/09/04 17:21:07	00:01:43	07:39:45	Octopus on pillow lava near Castle
J2-523	1ATK73	5	2010/09/04 17:23:44	2010/09/04 17:28:07	00:04:23	07:44:08	Flying around Flat Top chimney
J2-523	1ATK74	5	2010/09/04 17:50:17	2010/09/04 18:10:05	00:19:48	08:03:56	Flying around and close-ups at El Gordo vent (Mkr 151)
J2-524	1ATK76	6	2010/09/05 02:59:15	2010/09/05 03:01:51	00:02:36	08:06:32	Jason Launch (a bit dark in the water)
J2-524	1ATK77	6	2010/09/05 06:20:40	2010/09/05 06:23:14	00:02:34	08:09:06	Liftoff from Mkr 33 with RAS mooring
J2-525	1ATK78	6	2010/09/05 17:05:52	2010/09/05 17:11:31	00:05:39	08:14:45	Jason Launch
J2-525	1ATK79	6	2010/09/05 19:58:18	2010/09/05 20:03:27	00:05:09	08:19:54	Fluid sampling at Spanish Steps vent
J2-525	1ATK80	6	2010/09/05 20:36:56	2010/09/05 20:40:38	00:03:42	08:23:36	Flying around Spanish Steps vent (Mkr 155) with crab
J2-525	1ATK81	6	2010/09/05 22:08:52	2010/09/05 22:13:24	00:04:32	08:28:08	Trevi vent (anhydrite chimney)
J2-525	1ATK82	6	2010/09/06 01:19:38	2010/09/06 01:40:48	00:21:10	08:49:18	Blue mat at Mkr N3 vent

7.0 JASON

7.1 Navigation:

Jason was navigated this year with an ultra-short baseline system, which worked extremely well. The dot cloud of acoustic navigation fixes when Jason was stationary on the bottom (~1550 m) was consistently about 10 m in diameter. Note that when Jason was stationary on the bottom sampling its doppler navigation often wanders, because the sonar range is too small. This doppler wander is still present even in the renav files. We used the latest version (not final) of the MBARI AUV bathymetry as an underlay for the Jason dives and noted the following offsets (mismatches between the AUV bathymetry and our USBL Jason dive navigation this year):

- 1) The Magnesia/northern 1998 lava flow area AUV nav was right-on.
- 2) ASHES area AUV nav best fit was to shift the AUV bathy 4m east and 4m south.
- 3) International District nav best fit was to shift the AUV bathy 17 m east and 4 m south.
- 4) South Pillow Mound nav best fit was to shift the AUV bathy 45 m east and 55 m south.
- 5) Marker 113 area nav best fit was to shift the AUV bathy ~7 m east and ~12 m south (though this shift is not quite as well constrained as the ones above).
- 6) Bag City nav best fit was to shift the AUV bathy approximately 20 m east (or an unknown amount to the east and south that would result in the same E-W offset). We didn't do a precise shift determination here, but could see the E-W misfit on the nav screen.

Note that the sample positions (latitude and longitude) in the sample tables (sections) were logged during the dive prior navigation reprocessing ("renav") and therefore may be slightly different than the final navigated positions.

7.2 Vents/Markers:

We have updated our vents and marker tables based on this year's navigation. Several new vents were found and named in the International District vent field and east of Magnesia, near Trevi vent. We also deployed several new markers. The NavInfo column indicates which year the navigation in the table was derived from. Generally, these tables only include the markers and vents that we visited during the 2010 expedition. Note that the MBARI AUV bathymetry used as an underlay in the ASHES and International District maps below have been shifted according to the offsets listed in the navigation summary above.

Table 7.2-1 Marker Positions:

Marker	Latitude	Longitude	Depth	Location	Vent	Deployed	NavInfo
Mkr155	45° 56.7651' N	129° 59.0192' W	1520	98LavaFlow	Spanish Steps	J2-525	2010
Mkr156	45° 56.7766' N	129° 59.0228' W	1520	98LavaFlow	Trevi	J2-525	2010
Mkr52	45° 56.6230' N	129° 59.1098' W	1530	98LavaFlow	mrkrN3 vent	R856	2010
Mkr53	45° 55.9990' N	129° 58.9420' W	1523	98LavaFlow	Mkr33 vent	R623	2010
Mkr55	45° 55.9920' N	129° 58.9361' W	1524	98LavaFlow	mrkr33 vent		2010
Mkr69	45° 55.9979' N	129° 58.8965' W	1525	98LavaFlow	Cloud Pit		2007
Smiley	45° 55.9953' N	129° 58.9069' W	1517	98LavaFlow			2010
AX-106	45° 56.0670' N	130° 00.6960' W	1542	ASHES		J2-522	2010
Mkr121	45° 55.9960' N	130° 00.8340' W	1542	ASHES	Gollum	J2-521	2010
Mkr64	45° 56.0136' N	130° 00.7980' W	1545	ASHES	Gollum	J2-293	2010
Tripod21	45° 56.0140' N	130° 00.7973' W	1547	ASHES	Gollum		2010
Mkr19	45° 56.0092' N	130° 00.8200' W	1547	ASHES	Inferno		2010
Mkr21	45° 55.9964' N	130° 00.8152' W	1547	ASHES	Styx		2007
Mkr47	45° 56.0069' N	130° 00.8095' W	1542	ASHES	between Gollum-Dave's		2010
Mkr54	45° 55.9959' N	130° 00.8298' W	1547	ASHES	ROPOS	J2-293	2006
Mkr68	45° 56.0130' N	130° 00.7950' W	1542	ASHES	Medusa-2010	J2-521	2010
Mkr1	45° 56.0235' N	130° 00.8044' W	1546	ASHES	Marshmallow	R471	2010
Mkr63	45° 57.3120' N	130° 00.5920' W	1530	CalderaCenter	CalderaCenter	R623	2010
Mkr60	45° 57.3071' N	130° 00.5936' W	1534	CalderaCenter	CalderaCenter	R623	2007
Mkr61	45° 57.3016' N	130° 00.5936' W	1534	CalderaCenter	CalderaCenter	R623	2007
Mkr122	45° 55.0300' N	129° 59.5740' W	1534	Coquille	MTR 3317 site	J2-520	2010
Mkr57	45° 55.0396' N	129° 59.5768' W	1537	Coquille	Vixen	J2-289	2010
Mkr150	45° 55.5854' N	129° 58.7385' W	1520	Intl District	Diva	J2-523	2010
Mkr151	45° 55.5716' N	129° 58.7363' W	1520	Intl District	El Gordo		2010
Mkr152	45° 55.5930' N	129° 58.7620' W	1517	Intl District	Hermosa		2010
Mkr153	45° 55.5900' N	129° 58.7520' W	1517	Intl District	9-meter Chimney	J2-523	2010
Mkr67	45° 56.7670' N	129° 59.1020' W	1524	MidAgeFlow	Magnesia	R623	2010
Mkr36	45° 54.9803' N	129° 59.3492' W	1536	Pre87Flow	Bag City		2010
Mkr62	45° 55.3645' N	129° 59.2862' W	1526	Pre87Flow	Mkr113 vent	J2-289	2010
Mkr65	45° 54.9700' N	129° 59.3700' W	1534	Pre87Flow	Bag City	R623	2010
Mkr66	45° 51.7900' N	130° 00.2250' W	1723	SPillowMound		R623	2010

Table 7.2-2 Vent Positions:

Note that markers listed in parentheses at some of the vents have not been seen in recent years and are probably lost.

Vent	Latitude	Longitude	Depth	Location	Marker	Dive Found
CloudPit	45° 55.9979' N	129° 58.8965' W	1525	98LavaFlow	Mkr69	
Marker33	45° 55.9920' N	129° 58.9361' W	1524	98LavaFlow	Mkr55	
Mkr-N3 Vent	45° 56.6230' N	129° 59.1098' W	1530	98LavaFlow	Mkr52	
Crack	45° 55.9983' N	130° 00.8002' W	1546	ASHES	Mkr117	
Dave's-2003	45° 56.0110' N	130° 00.8260' W	1547	ASHES		R469
Dave's-2010	45° 56.0114' N	130° 00.8297' W	1547	ASHES		R469
Gollum	45° 56.0128' N	130° 00.7966' W	1547	ASHES	Mkr121, 64, Tripod21	J2-521
Hell	45° 55.9990' N	130° 00.8378' W	1546	ASHES	(Mkr2/L)	PIS1720
Inferno	45° 56.0137' N	130° 00.8204' W	1547	ASHES		PIS1720
Marshmallow	45° 56.0230' N	130° 00.8039' W	1546	ASHES	Mkri	R471
Medusa	45° 55.9968' N	130° 00.8336' W	1547	ASHES		R469
Mushroom	45° 56.0149' N	130° 00.8149' W	1547	ASHES	(Mkri)	PIS1720
Phoenix	45° 55.9967' N	130° 00.8174' W	1547	ASHES	(MkrD/7)	PIS1720
ROPOS	45° 55.9980' N	130° 00.8251' W	1547	ASHES		
Styx	45° 55.9964' N	130° 00.8152' W	1547	ASHES	Mkr21	
Virgin's Daughter	45° 56.0255' N	130° 00.7932' W	1547	ASHES		
Virgin	45° 56.0210' N	130° 00.7915' W	1546	ASHES		PIS1720
Casper	45° 55.0448' N	129° 59.5793' W	1538	Coquille		
Vixen	45° 55.0396' N	129° 59.5768' W	1537	Coquille	Mkr57	R627
9meterChimney	45° 55.5922' N	129° 58.7564' W	1518	InternationalDistrict	Mkr153	
Castle	45° 55.5731' N	129° 58.7998' W	1518	InternationalDistrict		R461
Diva	45° 55.5854' N	129° 58.7385' W	1524	InternationalDistrict	Mkr150	
El Abuelo	45° 55.5745' N	129° 58.7829' W	1516	InternationalDistrict		
El Antiguo	45° 55.5773' N	129° 58.7638' W	1521	InternationalDistrict		
El Gordo	45° 55.5716' N	129° 58.7363' W	1524	InternationalDistrict	Mkr151	
El Guapo	45° 55.5945' N	129° 58.7687' W	1507	InternationalDistrict		
Escargot	45° 55.5845' N	129° 58.7471' W	1520	InternationalDistrict		
Flattop	45° 55.5692' N	129° 58.7841' W	1522	InternationalDistrict	(MkrN5)	
Hermosa	45° 55.5908' N	129° 58.7639' W	1519	InternationalDistrict	Mkr152	
Tiny Towers	45° 55.5782' N	129° 58.7413' W	1524	InternationalDistrict		
Top Gun	45° 55.5906' N	129° 58.7791' W	1520	InternationalDistrict		
Magnesia	45° 56.7670' N	129° 59.1020' W	1526	MidAgeFlow	Mkr67	
Bag City	45° 54.9803' N	129° 59.3492' W	1536	Pre87LavaFlow	Mkr36	R492
Mkr-113Vent	45° 55.3645' N	129° 59.2862' W	1526	Pre87LavaFlow	Mkr62	
Spanish Steps	45° 56.7651' N	129° 59.0192' W	1520	Pre87LavaFlow	Mkr155	J2-525
Trevi	45° 56.7766' N	129° 59.0228' W	1520	Pre87LavaFlow		J2-291

Figure 7.2-1 Updated ASHES vents and marker position map

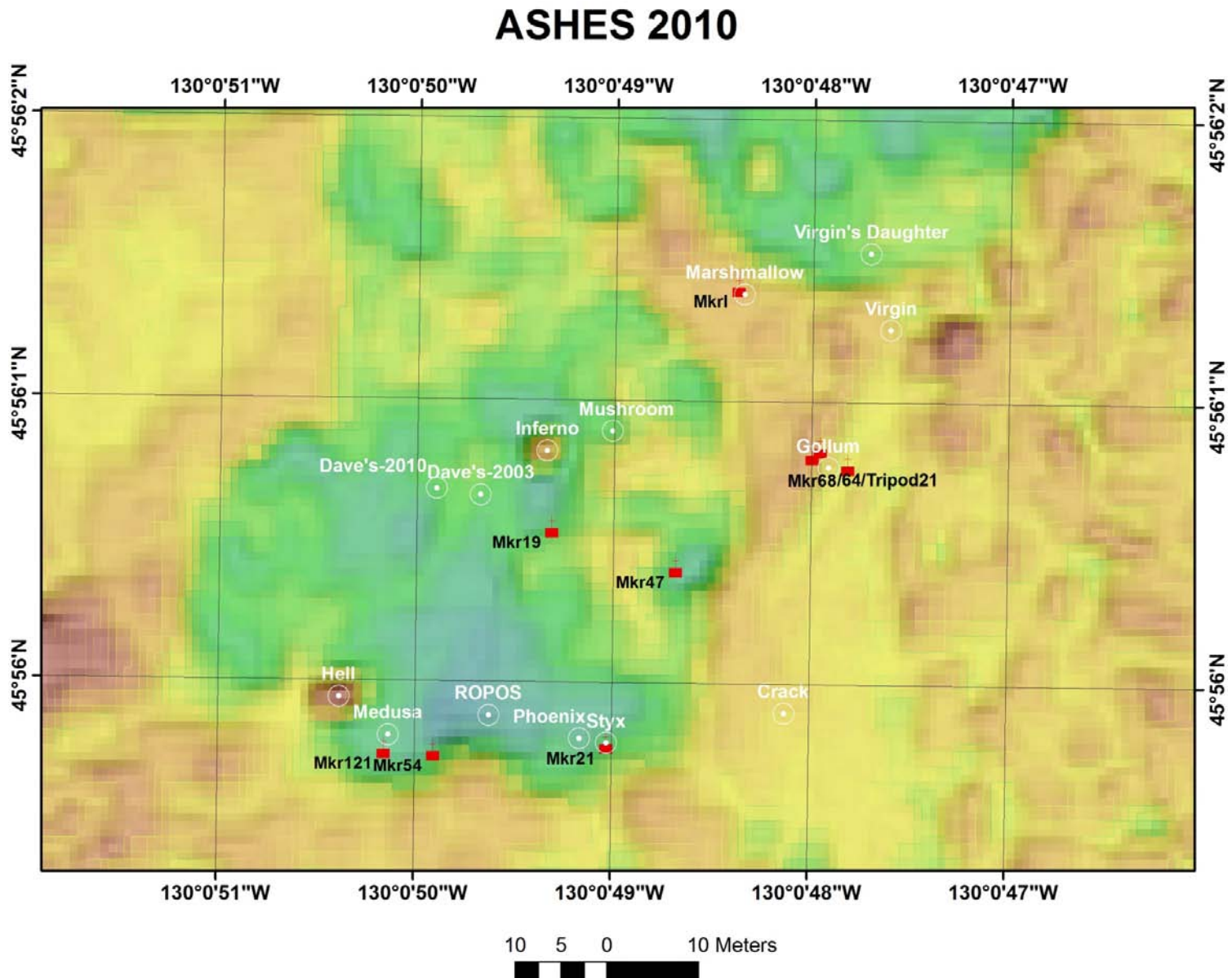
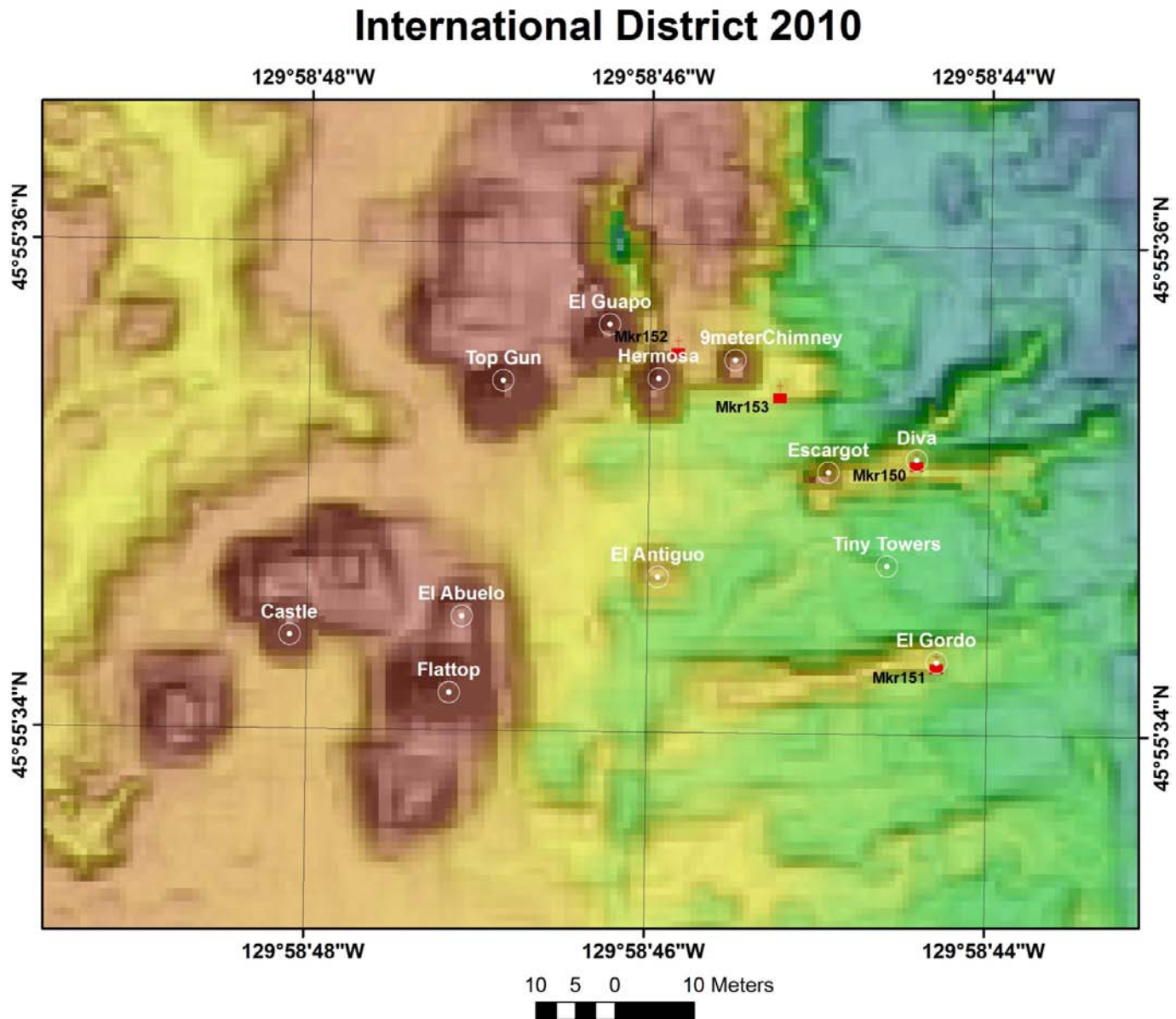


Figure 7.2-2 Updated International District vent and marker position map



8.0 Ship-based Operations

8.1 Mooring recoveries and deployments:

All mooring operations were conducted during daylight hours in the Axial Seamount area of the Juan de Fuca ridge. Four Ocean Bottom Hydrophones (OBH), one Random Access Sampler (RAS), and one Bottom Pressure Recorder (BPR) were successfully recovered. Four OBH and one BPR pressure cases were opened and the data storage devices removed. The BPR had a 128 MB Compact Flash (CF) card replaced with a new 128 MB CF card. The recovered one contains 122 MB of BPR data. It will be returned to NOAA/PMEL EDD for data download and repair of corrupted header file. The four OBHs had 80 GB hard drives with approximately 36 GB of data per instrument, replaced with new 80 GB hard drives. The BPR also received a new battery pack, and had the firmware updated to version 2.48 before being initialized for redeployment.

Three OBH moorings were re-deployed on August 28, anchor first (one OBH that was recovered was not re-deployed, so there are a total 3 OBHs currently deployed). One BPR mooring was re-deployed on September 4 (joining two other BPRs deployed last year for a total of 3 BPRs currently deployed). Each acoustic release was ranged on and the location triangulated using WorkBoat navigation software. One RAS mooring was re-deployed, anchor first and allowed to “freefall” to the seafloor for final repositioning using ROV JASON (during dive J2-524).

Table 8.1-1 Mooring deployments:

Instrument	Longitude	Latitude	Depth of instrument on bottom	Height of mooring (glass ball flotation)	Depth of top of mooring
NeMO2010-center-BPR	-130° 00.574'	45° 57.328'	1550	15	1535
NeMO2009-middle-BPR	-129° 59.984'	45° 56.559'	1543	15	1528
NeMO2009-south-BPR	-129° 59.993'	45° 56.047'	1541	15	1526
RAS @ Mkr33	-129° 58.936'	45° 55.988'	1520	40	1480
OBH-1 (South)	-129° 58.914'	45° 55.089'	1555	30	1525
OBH-3 (East)	-129° 58.687'	45° 56.526'	1534	30	1504
OBH-4 (North)	-130° 00.524'	45° 57.635'	1553	30	1523

8.2 EM300 multibeam sonar surveys

EM300 multibeam sonar data was collected to add to our existing bathymetric coverage at Axial (east, south, and west of the summit) during the 1 day we lost to weather and after the last Jason dive. The way points for the EM300 lines are:

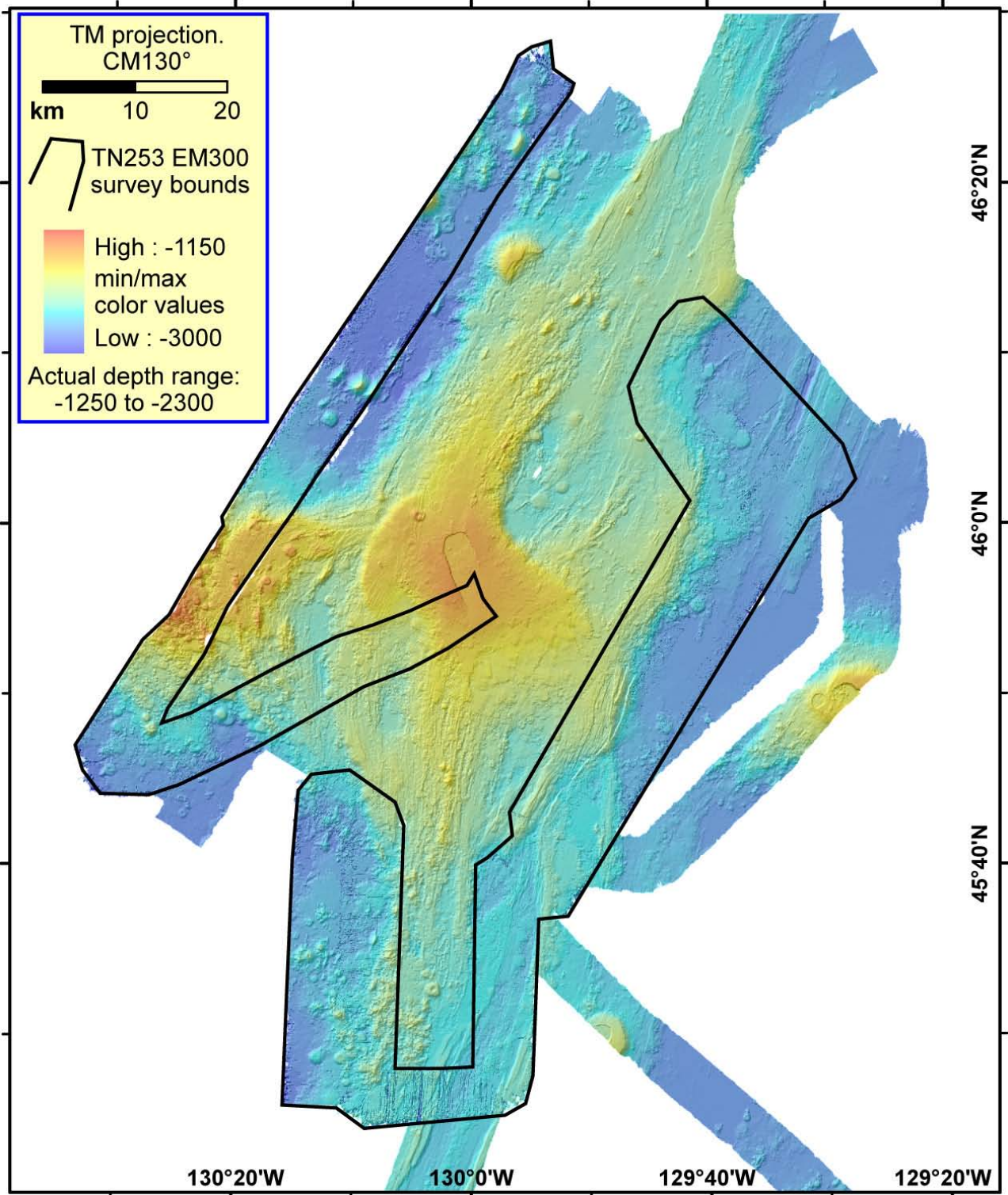
Table 8.2-1 EM300 SURVEY 1 – NeMO2010

Waypoint	Lat	Long	Distance (Nm)
0	45.7081	-129.9104	13.3
1	46.0196	-129.6431	21.8
2	46.1258	-129.7432	7.58
3	46.1985	-129.6894	5.00
4	46.0511	-129.5031	11.76
5	46.0255	-129.5626	3.04
6	45.6326	-129.9017	27.33
7	45.6638	-129.9473	2.7
8	45.449	-129.9562	12.9
9	45.4372	-130.1486	8.1
10	45.7023	-130.1344	15.7
11	45.7405	-130.2033	3.9
12	45.434	-130.2199	18.6
			151.7

Table 8.2-2 EM300 SURVEY #2 - NeMO 2010

Waypoint	Lat	Long	Distance (Nm)
0	45.7714	-130.5143	24
1	46.4344	-129.9019	47
			71.0

Figure 8.2-1 EM300 Bathymetry map:



9.0 Dive Maps

Figure 9.0-1 J2-520 Map

J2-520

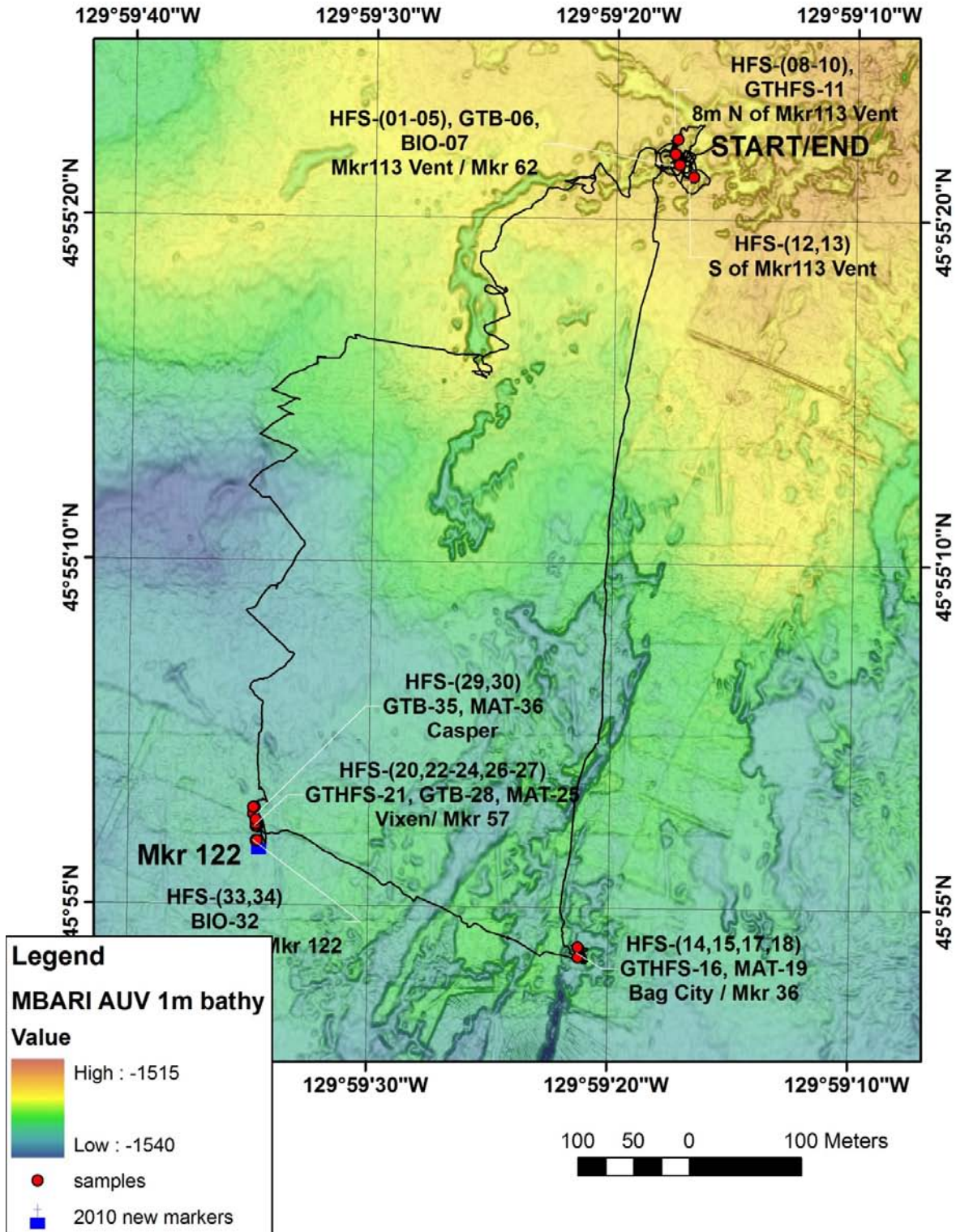


Figure 9.0-2 J2-521 Map

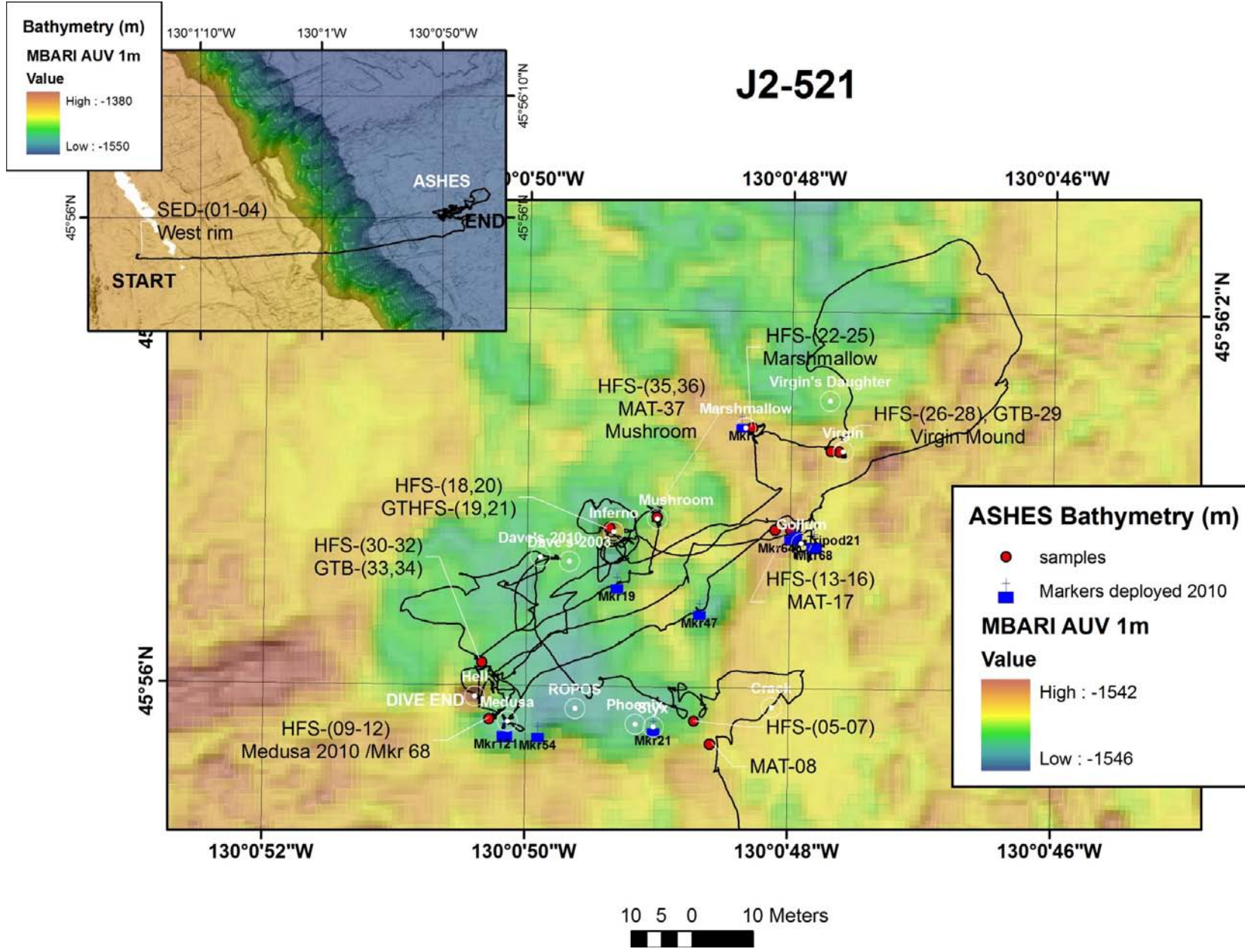


Figure 9.0-3 J2-522 Map

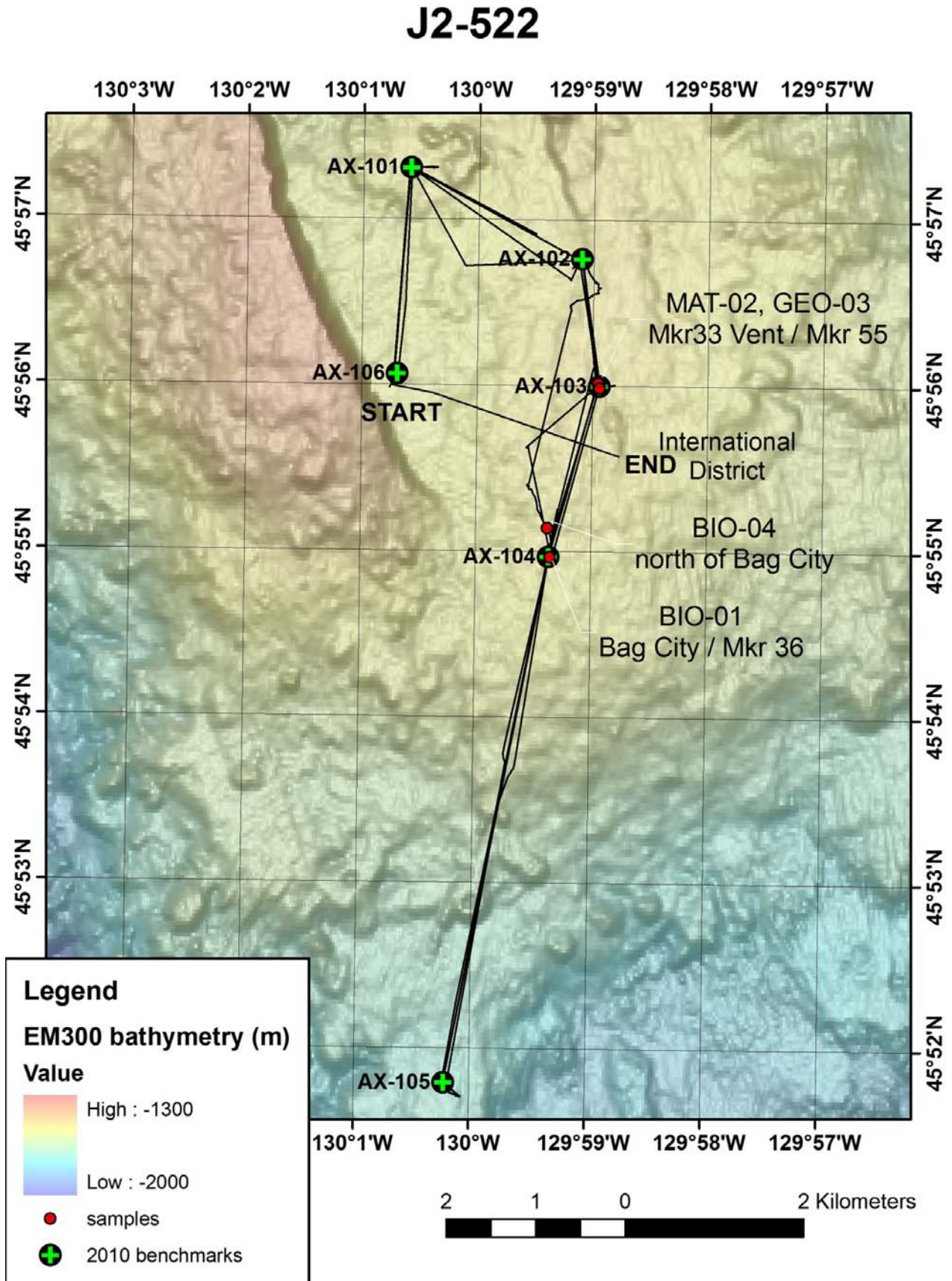


Figure 9.0-4 J2-523 Map

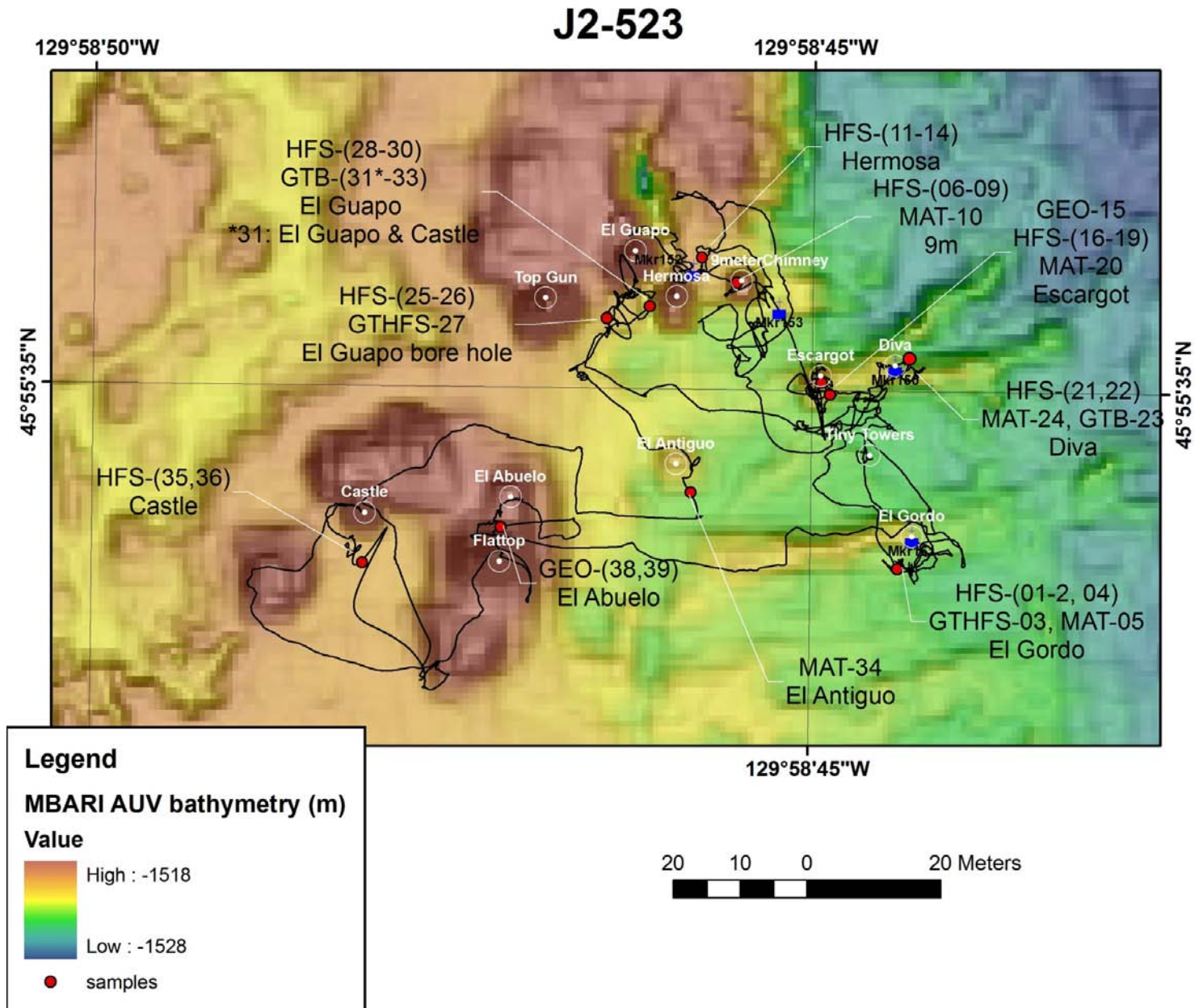


Figure 9.0-5 J2-524 Map

J2-524

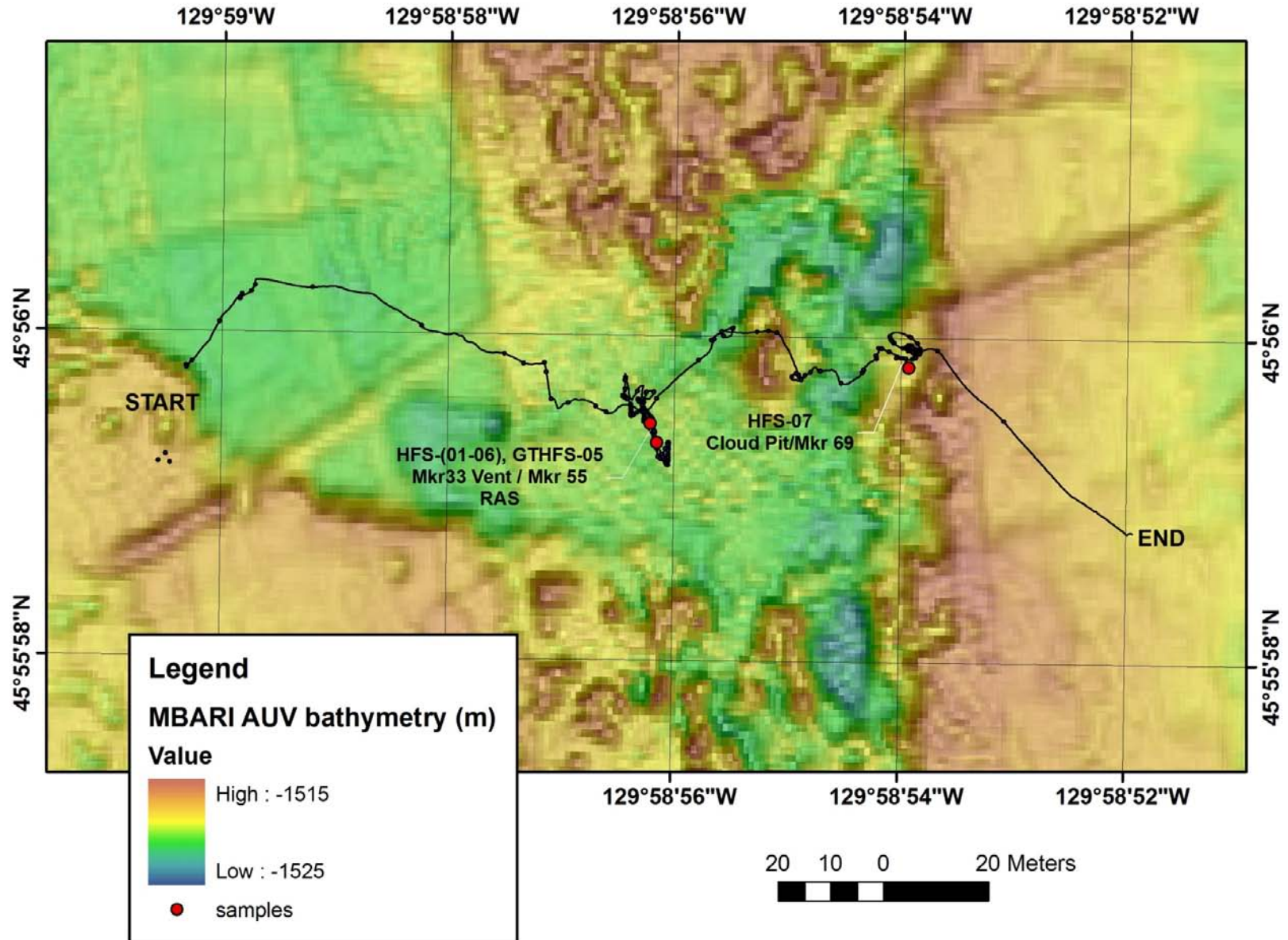
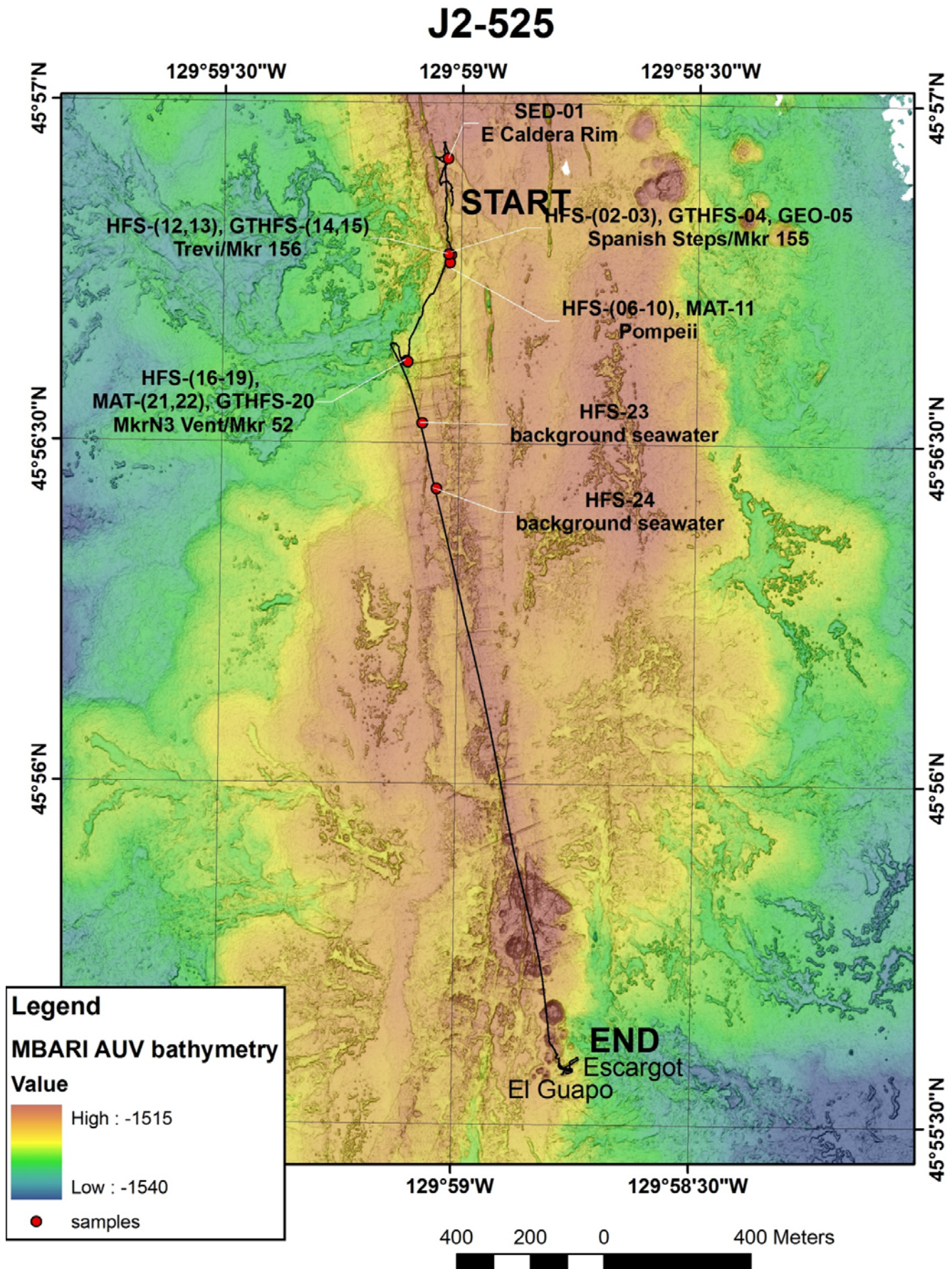


Figure 9.0-6 J2-525 Map



10.0 Dive Logs

Table 10.0-1

J2-520: Marker 113, Bag City, Coquille, fluid sampling

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/27 20:50:32	45.92278	-129.98783	230.9	4.1	1518.2	1522.4	Jason on bottom	25
2010/08/27 20:50:48	45.92276	-129.98787	228.4	4.3	1518.0	1522.4	depth 1518 m alt 5.3 m	26
2010/08/27 20:50:53	45.92276	-129.98788	228.4	4.3	1518.1	1522.4	white mat staining visible on rocks	27
2010/08/27 20:56:25	45.92266	-129.98835	8.5	2.8	1522.1	1524.8	searching for white diamond shaped Marker 62(=Marker 113 location)	31
2010/08/27 20:58:23	45.92267	-129.98833	7.6	8.8	1515.8	1524.6	getting Jason ballast correct	33
2010/08/27 20:59:24	45.92268	-129.98833	7.8	8.3	1516.3	1524.6	putting basket out	34
2010/08/27 20:59:48	45.92268	-129.98833	7.7	7.9	1516.7	1524.6	dropping dive weights	35
2010/08/27 21:00:05	45.92268	-129.98833	7.5	8.5	1516.1	1524.6	retracting basket	36
2010/08/27 21:01:30	45.92269	-129.98835	7.4	4.0	1520.7	1524.7	Jason over lava lake collapse zone	38
2010/08/27 21:04:58	45.92279	-129.98829	42.4	1.6	1521.4	1523.0	have arrived at Marker 62	41
2010/08/27 21:05:16	45.92278	-129.98827	22.8	3.0	1521.6	1524.6	turning on video highlights	42
2010/08/27 21:05:39	45.92278	-129.98823	353.5	2.4	1522.2	1524.5	shimmering water near maker	43
2010/08/27 21:05:44	45.92278	-129.98823	354.0	2.1	1522.2	1524.3	tubeworms and white mat present	44
2010/08/27 21:07:16	45.92279	-129.98822	329.1	2.4	1522.6	1524.9	live tubeworms around edge of precipice	46
2010/08/27 21:07:28	45.92279	-129.98821	329.1	2.4	1522.5	1524.9	white filamentous mat growing on some of tubeworms	47
2010/08/27 21:07:49	45.92279	-129.98821	329.1	2.4	1522.5	1524.9	limpets covering surface of precipice	48
2010/08/27 21:08:25	45.92279	-129.98821	328.4	2.1	1522.8	1524.9	red Palm worms present	50
2010/08/27 21:08:53	45.92278	-129.98820	327.6	2.2	1522.7	1524.9	Ridgia tubeworms and palm worms with carpet of limpets	51
2010/08/27 21:10:00	45.92277	-129.98818	324.2	2.2	1522.7	1524.9	diffuse flow coming up around rim of precipice	52
2010/08/27 21:10:37	45.92276	-129.98817	329.0	2.2	1522.7	1524.9	1st 3 mins on DV cam tape will be blank but HD cam recording is fine	54
2010/08/27 21:14:39	45.92273	-129.98808	328.9	2.2	1522.6	1524.8	looking for best venting site in area	57
2010/08/27 21:17:18	45.92273	-129.98808	328.8	2.3	1522.6	1524.9	looking at crack with tubeworms at back	59
2010/08/27 21:18:54	45.92275	-129.98811	329.2	2.5	1522.1	1524.6	beginning Jason low temperature probing	61
2010/08/27 21:19:04	45.92275	-129.98811	329.2	2.5	1522.1	1524.6	basket out	62
2010/08/27 21:20:04	45.92275	-129.98812	328.9	2.7	1522.0	1524.7	inserting temperature probe	63
2010/08/27 21:20:56	45.92276	-129.98813	328.9	2.7	1522.0	1524.7	area around probe has some tubeworms and shimmering vent fluids	65
2010/08/27 21:23:37	45.92276	-129.98814	328.5	2.7	1522.0	1524.7	T max was 20.6 before probe reinserted a few inches away	67
2010/08/27 21:23:51	45.92276	-129.98814	328.5	2.7	1522.0	1524.7	temperature in second location around 16 - 17	68
2010/08/27 21:24:07	45.92276	-129.98814	329.3	3.2	1521.5	1524.7	low T probe removed	69
2010/08/27 21:25:25	45.92275	-129.98815	322.4	2.8	1522.0	1524.8	at marker 62 (marker covered in white slime)	71
2010/08/27 21:25:45	45.92275	-129.98815	323.1	2.8	1522.0	1524.7	Jason temp probe inserted	72
2010/08/27 21:25:59	45.92275	-129.98814	323.2	2.8	1522.0	1524.7	in shimmering diffuse flow	73
2010/08/27 21:27:08	45.92275	-129.98814	322.9	2.9	1521.9	1524.7	T at 31.5 and climbing	75

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/27 21:27:34	45.92275	-129.98814	322.7	2.8	1521.9	1524.8	highlight video turned off	76
2010/08/27 21:28:21	45.92275	-129.98813	322.6	2.8	1522.0	1524.8	T at 35.5 ~1m to side of marker	78
2010/08/27 21:30:34	45.92275	-129.98813	322.7	2.7	1522.0	1524.8	attached holster to end of fluid sampler	80
2010/08/27 21:30:38	45.92275	-129.98813	322.7	2.8	1522.0	1524.7	picking up fluid sampler intake	81
2010/08/27 21:31:24	45.92275	-129.98813	322.8	2.8	1522.0	1524.8	preparing to sample at site near marker where T probe inserted last	82
2010/08/27 21:32:29	45.92275	-129.98813	322.2	2.7	1522.0	1524.7	inserting fluid sampler intake into diffuse flow	84
2010/08/27 21:33:34	45.92276	-129.98814	321.4	2.7	1522.0	1524.7	turning flush pump on	85
2010/08/27 21:35:34	45.92276	-129.98815	321.4	2.7	1522.0	1524.7	turn sample pump on to check pH	87
2010/08/27 21:36:39	45.92276	-129.98817	321.5	2.7	1522.0	1524.7	T1 is steady at 28.5 T2 at 13.3	89
2010/08/27 21:37:39	45.92276	-129.98817	321.5	2.7	1522.0	1524.7	pH voltage ~1.75	90
2010/08/27 21:37:57	45.92276	-129.98818	321.5	2.7	1522.0	1524.7	Both T1 and T2 are stable	91
2010/08/27 21:38:08	45.92276	-129.98818	321.6	2.7	1522.0	1524.7	position 5 selected	92
2010/08/27 21:38:53	45.92276	-129.98818	321.6	2.7	1522.0	1524.7	started HFS-1 filtered piston 5 sampling	94
2010/08/27 21:39:15	45.92275	-129.98818	321.5	2.7	1522.1	1524.7	SAMPLE: fluid again started HFS-1 filtered piston 5 sampling	95
2010/08/27 21:40:23	45.92275	-129.98819	321.5	2.7	1522.0	1524.7	SAMPLE: fluid t1 29.6 and T2 14.0	97
2010/08/27 21:43:37	45.92275	-129.98818	321.6	2.7	1522.0	1524.7	SAMPLE: fluid HFS-1 done sampling	99
2010/08/27 21:43:48	45.92275	-129.98817	321.5	2.7	1522.1	1524.7	max T 29.7	100
2010/08/27 21:44:17	45.92275	-129.98817	321.5	2.7	1522.1	1524.7	avg T 29.0 pumped 677 mLs T2 avg ~13.5 steady	102
2010/08/27 21:46:02	45.92275	-129.98816	321.5	2.7	1522.0	1524.7	SAMPLE: fluid position 21 selected	103
2010/08/27 21:46:28	45.92275	-129.98816	321.5	2.7	1522.1	1524.7	SAMPLE: fluid HFS-02 started unfiltered bag position 21	105
2010/08/27 21:47:17	45.92276	-129.98815	321.5	2.7	1522.1	1524.7	SAMPLE: fluid T1 = 29.4 T2=13.7 both steady	106
2010/08/27 21:47:44	45.92276	-129.98815	321.5	2.7	1522.0	1524.7	highlights video back on	107
2010/08/27 21:48:16	45.92276	-129.98815	321.5	2.7	1522.1	1524.7	SAMPLE: fluid HFS-02 sample spot is same as HFS-01	109
2010/08/27 21:48:30	45.92276	-129.98815	321.5	2.7	1522.1	1524.7	SAMPLE: fluid T1 = 29.3 T2=13.6 still sampling	110
2010/08/27 21:49:13	45.92277	-129.98815	321.5	2.7	1522.1	1524.7	SAMPLE: fluid HFS-02 finished	111
2010/08/27 21:49:56	45.92277	-129.98814	321.5	2.7	1522.1	1524.7	SAMPLE: fluid Tmax=29.5 Tavg=29.3 vol filtered=502 end time=21:49:13	112
2010/08/27 21:50:20	45.92277	-129.98814	321.6	2.7	1522.1	1524.7	SAMPLE: fluid selecting position 10	114
2010/08/27 21:51:09	45.92277	-129.98814	321.6	2.7	1522.1	1524.8	SAMPLE: fluid DNA sterivex sample HFS-03	115
2010/08/27 21:53:01	45.92278	-129.98814	321.6	2.7	1522.1	1524.7	SAMPLE: fluid T1 = 28.8 T2=14.4	117
2010/08/27 21:53:30	45.92278	-129.98814	321.7	2.7	1522.1	1524.7	Frame_Grab:	118
2010/08/27 21:53:46	45.92278	-129.98814	321.6	2.7	1522.1	1524.7	looking at anemones	119
2010/08/27 21:54:27	45.92278	-129.98814	321.7	2.7	1522.1	1524.7	also clams located near sample site	121
2010/08/27 21:54:49	45.92278	-129.98814	321.7	2.7	1522.1	1524.7	SAMPLE: fluid T1 low battery message	122
2010/08/27 21:55:41	45.92277	-129.98814	321.6	2.7	1522.1	1524.8	SAMPLE: bio flow turned down to 150 ml/min after 499 ml filtered	123
2010/08/27 21:56:07	45.92277	-129.98814	321.6	2.7	1522.1	1524.8	SAMPLE: fluid T1=28.2 T2=13.8	124
2010/08/27 21:56:43	45.92277	-129.98814	321.7	2.7	1522.1	1524.7	HD_CAM: stop video highlights off	126
2010/08/27 22:03:05	45.92277	-129.98814	321.9	2.7	1522.1	1524.8	SAMPLE: fluid T1=27.3 T2=13.7	130
2010/08/27 22:06:41	45.92277	-129.98815	321.6	2.7	1522.1	1524.7	Frame_Grab:	133

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/27 22:07:29	45.92277	-129.98815	321.6	2.7	1522.1	1524.7	SAMPLE: fluid T1=28.8 T2=14.3	134
2010/08/27 22:11:53	45.92275	-129.98813	321.5	2.7	1522.1	1524.7	SAMPLE: fluid T1=29.3 T2=14.2	137
2010/08/27 22:14:12	45.92275	-129.98813	321.5	2.7	1522.0	1524.7	SAMPLE: fluid stopping HFS-03 sterivex filter	140
2010/08/27 22:14:36	45.92275	-129.98812	321.4	2.7	1522.1	1524.7	moving to position number 13	141
2010/08/27 22:15:02	45.92275	-129.98812	321.3	2.7	1522.1	1524.7	SAMPLE: fluid HFS-04 RNA filter sample begin	142
2010/08/27 22:15:19	45.92275	-129.98812	321.3	2.7	1522.1	1524.7	SAMPLE: fluid HFS-04 RNA filter stopped to change flow rate	143
2010/08/27 22:15:41	45.92275	-129.98812	321.3	2.7	1522.1	1524.7	SAMPLE: fluid HFS-04 RNA filter sample re-started at 125 ml/min	144
2010/08/27 22:15:58	45.92275	-129.98812	321.4	2.7	1522.0	1524.7	T1=28.3 T2=13.5	145
2010/08/27 22:18:50	45.92276	-129.98813	321.3	2.7	1522.1	1524.7	SAMPLE: fluid HFS-04 T1=27.9 T2=13.7	148
2010/08/27 22:22:22	45.92277	-129.98814	321.5	2.7	1522.0	1524.7	SAMPLE: fluid HFS-04 RNA filter T1=26.9 T2=13.5	151
2010/08/27 22:24:27	45.92277	-129.98814	321.4	2.7	1522.0	1524.7	SAMPLE: fluid HFS-04 RNA filter has filtered 1L out of 3L	153
2010/08/27 22:25:48	45.92277	-129.98813	321.4	2.7	1522.0	1524.7	SAMPLE: fluid HFS-04 RNA filter T1=27.8 T2=13.1	154
2010/08/27 22:29:00	45.92276	-129.98812	321.4	2.7	1522.0	1524.7	SAMPLE: fluid HFS-04 RNA filter 1500mL filtered T1=28.0 T2=13.9	157
2010/08/27 22:33:02	45.92276	-129.98813	321.6	2.7	1522.0	1524.7	SAMPLE: fluid HFS-04 RNA filter T1=24.9 T2=12.3	160
2010/08/27 22:38:07	45.92277	-129.98816	322.2	2.7	1522.0	1524.7	SAMPLE: fluid HFS-04 RNA filter 2500ml filtered T1=27.1 T2=13.1	163
2010/08/27 22:42:15	45.92276	-129.98815	321.9	2.7	1522.0	1524.7	SAMPLE: fluid finished HFS-04 RNA filter sampling	167
2010/08/27 22:43:02	45.92275	-129.98815	321.7	2.7	1522.0	1524.7	HFS-04 RNA filter start time 22:15:41 Tmax=28.8 Tavg=27.0 vol=3002mL endtime 22:42:15	168
2010/08/27 22:43:11	45.92275	-129.98815	321.7	2.7	1522.0	1524.7	SAMPLE: fluid moving to position 23	169
2010/08/27 22:44:06	45.92275	-129.98814	321.7	2.7	1522.0	1524.7	SAMPLE: fluid starting HFS-05 unfiltered bag position 23	170
2010/08/27 22:45:41	45.92274	-129.98814	322.1	2.7	1522.0	1524.7	SAMPLE: fluid HFS-05 T1 = 27.2 T2=13.7	172
2010/08/27 22:47:47	45.92274	-129.98813	322.1	2.7	1522.0	1524.7	SAMPLE: fluid HFS-05 finished sampling Tmax=27.3 Tavg=26.9 vol=501mL endtime 22:47:41	174
2010/08/27 22:47:56	45.92274	-129.98813	322.1	2.7	1522.0	1524.7	moving to home position	175
2010/08/27 22:48:09	45.92274	-129.98813	322.2	2.7	1522.0	1524.7	stomping flush pump	176
2010/08/27 22:48:56	45.92274	-129.98813	322.8	2.7	1522.0	1524.6	SAMPLE: fluid finished with fluid sampling at Marker 113	178
2010/08/27 22:51:23	45.92274	-129.98813	323.0	2.7	1522.0	1524.7	HFS has been stowed	180
2010/08/27 22:51:29	45.92274	-129.98813	323.0	2.7	1522.0	1524.7	we are reaching for a gas tight	181
2010/08/27 22:53:14	45.92274	-129.98813	322.8	2.7	1522.0	1524.7	SAMPLE: gas yellow gas tight	183
2010/08/27 22:56:01	45.92274	-129.98813	322.4	2.8	1521.9	1524.7	SAMPLE: gas placing gas tight in diffuse flow	185
2010/08/27 22:58:16	45.92274	-129.98813	322.9	2.7	1522.0	1524.7	SAMPLE: gas GTyellow11 from basket is sample J520-GTB-06	188
2010/08/27 23:00:52	45.92274	-129.98812	322.8	2.7	1522.0	1524.7	finished stowing yellow gastight.	190
2010/08/27 23:01:35	45.92274	-129.98812	322.8	2.7	1522.0	1524.7	preparing to drive around base of vent to look for flow	191
2010/08/27 23:03:43	45.92275	-129.98810	316.5	3.0	1521.6	1524.6	Beginning to do a fly-around.	193
2010/08/27 23:04:27	45.92274	-129.98809	252.4	2.7	1521.8	1524.5	Looking for a place to sample on the base.	195
2010/08/27 23:06:03	45.92272	-129.98809	207.2	3.4	1521.1	1524.5	Clams on the bottom of the collapse.	196
2010/08/27 23:06:46	45.92270	-129.98809	198.7	2.5	1522.1	1524.6	Seeing tube worms but not much flow.	198
2010/08/27 23:07:25	45.92270	-129.98809	198.5	2.2	1522.4	1524.6	Turning on HD highlights.	199

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/27 23:08:46	45.92269	-129.98810	198.5	2.2	1522.4	1524.6	Cool orange mat on the tube worms.	201
2010/08/27 23:09:54	45.92269	-129.98810	198.4	2.2	1522.4	1524.6	Orange is possible sponge. White mat is there too.	202
2010/08/27 23:10:58	45.92268	-129.98811	193.2	2.3	1522.4	1524.7	Preparing to grab some worms with orange stuff and white mat on them.	204
2010/08/27 23:12:21	45.92268	-129.98811	192.6	1.7	1522.9	1524.7	Taking a few still shots before grabbing a sample.	206
2010/08/27 23:13:30	45.92267	-129.98812	192.3	1.7	1522.9	1524.7	HD highlights are off.	207
2010/08/27 23:15:07	45.92267	-129.98812	192.7	1.8	1522.9	1524.7	SAMPLE: bio Grabbing a sample. Sample J520-TUBEWORMS-07.	209
2010/08/27 23:15:57	45.92267	-129.98812	192.3	1.8	1522.9	1524.7	Putting the sample in the left swing arm.	210
2010/08/27 23:17:59	45.92268	-129.98812	192.7	1.8	1523.0	1524.7	Trying the grab again.	212
2010/08/27 23:19:09	45.92268	-129.98812	192.5	1.6	1523.1	1524.8	Disaster. Knocked off the edge of the vent.	214
2010/08/27 23:20:19	45.92269	-129.98811	192.5	1.7	1523.1	1524.8	SAMPLE: bio Got one worm into the box.	216
2010/08/27 23:21:15	45.92269	-129.98811	192.5	1.7	1523.0	1524.7	SAMPLE: bio One more grab for sample J520-TUBEWORMS-07.	217
2010/08/27 23:24:51	45.92271	-129.98809	192.4	1.7	1523.0	1524.7	Stuffing the tube worms in the box in order to close it.	220
2010/08/27 23:26:12	45.92271	-129.98809	192.4	1.6	1523.0	1524.6	Pulling the polypro to close the lid. It is hard to see the hook.	222
2010/08/27 23:27:39	45.92272	-129.98810	192.9	2.2	1522.4	1524.6	Trying to close the box but there are too many worms.	223
2010/08/27 23:28:13	45.92272	-129.98811	193.1	2.4	1522.2	1524.6	Box closed.	225
2010/08/27 23:29:48	45.92271	-129.98812	193.3	2.9	1521.7	1524.5	Taking a temperature measurement in the worms.	226
2010/08/27 23:31:25	45.92270	-129.98813	192.7	2.2	1522.4	1524.5	No much flow if any where the orange mat was. No temperature increase.	228
2010/08/27 23:34:08	45.92269	-129.98814	192.6	2.2	1522.3	1524.5	Temperature just above the worm sample is about 15 degrees.	230
2010/08/27 23:35:05	45.92269	-129.98813	193.0	2.3	1522.3	1524.6	Holstering the temp. probe.	232
2010/08/27 23:36:33	45.92270	-129.98813	212.5	2.2	1522.3	1524.5	Getting out MTR4128. It says 04 on the float.	234
2010/08/27 23:37:38	45.92272	-129.98813	336.2	2.7	1521.8	1524.5	Now back at marker 113.	235
2010/08/27 23:40:30	45.92275	-129.98811	330.7	2.8	1521.8	1524.6	Trying to untangle the line from the MTR.	238
2010/08/27 23:41:47	45.92275	-129.98811	330.1	2.7	1521.9	1524.5	Putting down MTR4128 in a little clump of tube worms next to the marker for marker113.	239
2010/08/27 23:43:10	45.92274	-129.98811	291.9	2.2	1522.4	1524.6	Going down into the collapse next to marker 113 to look for flow at the base to sample.	241
2010/08/27 23:43:22	45.92273	-129.98812	296.0	1.9	1522.6	1524.5	HD_CAM: start	242
2010/08/27 23:44:45	45.92271	-129.98818	200.0	1.7	1521.9	1523.6	Down in the collapse and searching around.	244
2010/08/27 23:47:07	45.92273	-129.98831	228.4	2.6	1522.0	1524.5	Searching to the west of Marker 113.	246
2010/08/27 23:47:48	45.92272	-129.98831	153.0	1.9	1521.9	1523.8	Turning around and going east back towards Marker 113.	247
2010/08/27 23:49:50	45.92273	-129.98822	105.2	1.8	1522.9	1524.7	HD_CAM: stop	249
2010/08/27 23:52:40	45.92270	-129.98805	164.2	2.2	1522.5	1524.7	Lots of white mat just east of marker 113.	252
2010/08/27 23:53:27	45.92270	-129.98805	164.2	2.2	1522.5	1524.7	Checking out this area for flow.	253
2010/08/27 23:54:24	45.92270	-129.98805	164.2	2.1	1522.6	1524.7	There are little spots of blue mat.	255
2010/08/27 23:54:57	45.92270	-129.98805	164.1	2.2	1522.6	1524.7	Not much flow. Moving on.	256
2010/08/28 00:02:57	45.92252	-129.98795	211.8	1.6	1521.0	1522.5	Nothing venting down on the base.	261
2010/08/28 00:03:32	45.92252	-129.98796	229.8	1.5	1520.8	1522.3	Turning around and heading back to Marker 113/62.	262
2010/08/28 00:04:21	45.92258	-129.98808	314.2	3.5	1520.4	1524.0	Some white mat.	264

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 00:04:59	45.92267	-129.98816	316.9	1.7	1520.6	1522.3	Going over gap and past marker.	265
2010/08/28 00:05:08	45.92269	-129.98818	316.0	3.2	1521.0	1524.1	Heading north.	266
2010/08/28 00:06:06	45.92274	-129.98823	15.7	3.0	1521.4	1524.4	Passing previously sampled area.	267
2010/08/28 00:09:23	45.92278	-129.98821	319.5	1.6	1520.9	1522.5	Continuing north to look for diffuse flow.	270
2010/08/28 00:10:59	45.92282	-129.98820	18.0	2.0	1520.4	1522.4	Diffuse flow appears to be coming from this area with tubeworms.	272
2010/08/28 00:11:09	45.92283	-129.98820	21.2	1.8	1520.5	1522.2	There are also clams in the crack.	273
2010/08/28 00:11:27	45.92283	-129.98819	21.3	2.0	1520.2	1522.1	Taking a temperature probe and placing in tubeworm clump.	274
2010/08/28 00:12:20	45.92282	-129.98819	21.0	2.1	1520.0	1522.1	deploying Jason temperature probe along crack where worms are	276
2010/08/28 00:12:41	45.92283	-129.98819	20.9	1.9	1520.3	1522.2	there is shimmering water over the worms	277
2010/08/28 00:15:11	45.92282	-129.98817	20.5	0.7	1521.5	1522.3	Temp is 17.7.	279
2010/08/28 00:16:22	45.92281	-129.98817	21.0	0.7	1521.6	1522.3	Max temp observed was 17.9	281
2010/08/28 00:16:27	45.92281	-129.98817	20.9	0.7	1521.6	1522.4	Stowing temperature probe.	282
2010/08/28 00:17:01	45.92281	-129.98817	20.8	0.8	1521.5	1522.3	deploying basket	283
2010/08/28 00:17:57	45.92282	-129.98817	20.9	0.8	1521.5	1522.3	stowing probe	284
2010/08/28 00:18:42	45.92282	-129.98817	20.7	0.8	1521.5	1522.2	Getting the Beast fluid intake valve out.	286
2010/08/28 00:19:36	45.92282	-129.98816	21.1	0.8	1521.5	1522.3	Placing intake valve into crack inside clump of worms.	287
2010/08/28 00:20:13	45.92283	-129.98816	21.1	0.8	1521.5	1522.3	NAV: Doppler Reset	289
2010/08/28 00:21:46	45.92284	-129.98816	21.1	0.8	1521.5	1522.3	Preparing to take fluid samples 20m north of Marker 113.	290
2010/08/28 00:23:37	45.92285	-129.98816	21.0	0.8	1521.5	1522.2	Correction...that is 8m north of Marker 113.	292
2010/08/28 00:23:57	45.92285	-129.98816	21.0	0.8	1521.5	1522.3	Pumping water through to get a Ph reading.	293
2010/08/28 00:24:55	45.92286	-129.98816	21.0	0.8	1521.4	1522.2	Ph voltage 1.80	295
2010/08/28 00:25:36	45.92286	-129.98816	21.1	0.8	1521.4	1522.2	HD_CAM: start	296
2010/08/28 00:27:02	45.92287	-129.98815	21.0	0.8	1521.4	1522.2	SAMPLE: fluid Sample J520-HFS-08 Filtered piston #9.	298
2010/08/28 00:29:36	45.92288	-129.98815	21.0	0.8	1521.4	1522.2	HD_CAM: stop	300
2010/08/28 00:32:23	45.92288	-129.98814	21.0	0.8	1521.4	1522.2	Done with Sample. J520-HFS-08 Tmax=17.5 Tave=17.5 T2=9.5 Vol=677	303
2010/08/28 00:35:53	45.92288	-129.98814	20.9	0.8	1521.4	1522.2	Flushing sampler.	305
2010/08/28 00:36:40	45.92288	-129.98815	20.9	0.8	1521.4	1522.1	SAMPLE: fluid Sample J520-HFS-09 RNA filter.	307
2010/08/28 00:40:54	45.92289	-129.98815	21.0	0.8	1521.3	1522.1	Still taking sample.	310
2010/08/28 00:45:39	45.92291	-129.98814	20.8	0.8	1521.3	1522.1	Still taking sample.	313
2010/08/28 00:50:07	45.92292	-129.98814	20.8	0.8	1521.2	1522.0	Halfway finished.	316
2010/08/28 00:58:55	45.92291	-129.98812	20.8	0.8	1521.2	1522.0	Still taking sample.	322
2010/08/28 01:03:06	45.92291	-129.98813	20.7	0.8	1521.2	1522.0	Stopped sample Sample J520-HFS-09 Tmax=17.6 Tave=17.5 T2=9.6 Vol=3002	325
2010/08/28 01:03:28	45.92291	-129.98813	20.7	0.8	1521.2	1522.0	SAMPLE: fluid Sample started	326
2010/08/28 01:03:56	45.92291	-129.98813	20.7	0.8	1521.2	1522.0	SAMPLE: fluid Sample J520-HFS-10 Unfiltered bag sample	327
2010/08/28 01:06:41	45.92291	-129.98813	20.7	0.8	1521.1	1522.0	Sample stopped. Tmax=17.5 Tave=17.4 T2=9.7 Vol=501	330
2010/08/28 01:07:42	45.92291	-129.98813	20.7	0.8	1521.1	1521.9	SAMPLE: fluid J520-GTM-11 Firing gas tight 1	331
2010/08/28 01:07:57	45.92291	-129.98813	20.7	0.8	1521.1	1521.9	T=17.5.	332
2010/08/28 01:08:53	45.92291	-129.98813	20.7	0.8	1521.1	1521.9	Sample J520-GTM was hydraulic function #1 and green#2 gastight.	334

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2010/08/28 01:11:06	45.92291	-129.98813	20.7	0.7	1521.2	1521.9	Sample Sample J520-GTM-11 was green #2.	336
2010/08/28 01:12:47	45.92291	-129.98813	20.7	0.7	1521.2	1521.9	Trying to figure out the next site.	338
2010/08/28 01:17:25	45.92295	-129.98805	27.7	1.8	1519.7	1521.6	Looking for another vent sight withing about 30m of marker 113.	341
2010/08/28 01:18:27	45.92297	-129.98795	71.6	3.7	1519.6	1523.3	NAV: Doppler Reset	343
2010/08/28 01:21:05	45.92289	-129.98795	181.6	1.4	1520.0	1521.4	Turning south because we see nothing venting to the northeast.	345
2010/08/28 01:22:33	45.92280	-129.98801	186.2	0.7	1521.0	1521.7	Little bit of flow east of marker 113.	347
2010/08/28 01:23:46	45.92272	-129.98807	171.1	2.3	1521.4	1523.6	Some mat and worms in sight.	348
2010/08/28 01:24:58	45.92269	-129.98803	183.0	3.0	1521.0	1524.0	We have been here before. There is a dive weight.	350
2010/08/28 01:26:18	45.92261	-129.98803	239.2	1.2	1521.3	1522.5	Going further south. There is some stuff here.	352
2010/08/28 01:27:28	45.92261	-129.98808	263.8	1.7	1522.6	1524.3	At some scrawny looking tube worms and looking for venting.	353
2010/08/28 01:29:58	45.92265	-129.98809	295.6	1.8	1522.3	1524.1	There is a little shimmer but not much.	355
2010/08/28 01:31:04	45.92266	-129.98803	311.0	2.7	1521.5	1524.2	Heading back to the site of the tube worm grab earlier to try and get a fluid sample there.	357
2010/08/28 01:34:37	45.92276	-129.98803	143.1	2.5	1521.4	1523.9	Back at the grab site. Found a bit of shimmering water.	360
2010/08/28 01:36:10	45.92273	-129.98799	148.5	2.8	1521.1	1523.9	Preparing to take a fluid sample.	361
2010/08/28 01:43:23	45.92257	-129.98796	147.7	2.8	1521.0	1523.8	SAMPLE: fluid Sample J520-HFS-12 unfiltered bag 24.	366
2010/08/28 01:46:05	45.92256	-129.98801	148.1	2.8	1521.0	1523.8	sample stopped	368
2010/08/28 01:46:40	45.92256	-129.98802	148.4	2.8	1521.0	1523.8	Tmax=10.8 Tave=10.7 T2=6.4 Vol=501	370
2010/08/28 01:48:19	45.92256	-129.98805	148.5	2.8	1521.0	1523.8	SAMPLE: fluid Sample J520-HFS-13 filtered bag 20	372
2010/08/28 01:51:41	45.92258	-129.98809	148.4	2.8	1520.9	1523.7	Stop sample. Tmax=10.5 Tave=10.4 T2=6.3 Vol=502	374
2010/08/28 01:51:55	45.92258	-129.98809	148.3	2.8	1520.9	1523.7	Done sampling here.	375
2010/08/28 01:52:22	45.92259	-129.98809	149.2	2.9	1520.9	1523.8	Stowing sampler nozzle.	377
2010/08/28 01:53:07	45.92259	-129.98809	148.9	2.8	1521.0	1523.8	Begin transit to Bag City.	378
2010/08/28 01:54:08	45.92261	-129.98812	186.3	4.7	1519.0	1523.6	HD_CAM: start	379
2010/08/28 01:55:08	45.92258	-129.98816	190.5	3.3	1518.0	1521.3	Recording HD as we leave the site. Have to wait for the ship to change directions.	381
2010/08/28 01:57:16	45.92266	-129.98824	209.2	2.0	1521.5	1523.6	Ship is ready. Heading for Bag City.	383
2010/08/28 02:00:13	45.92264	-129.98836	152.9	1.6	1520.8	1522.4	Lots of cool collapse features.	386
2010/08/28 02:00:40	45.92264	-129.98837	163.7	0.7	1522.3	1523.0	Nice pillars.	387
2010/08/28 02:04:12	45.92230	-129.98840	187.1	1.4	1520.1	1521.5	Going over pillows.	390
2010/08/28 02:04:34	45.92223	-129.98841	188.3	2.0	1520.2	1522.3	HD_CAM: stop	391
2010/08/28 02:06:10	45.92210	-129.98844	190.5	0.9	1521.4	1522.3	Approx 45 minutes for transit to Bag City.	392
2010/08/28 02:06:29	45.92206	-129.98843	189.1	1.0	1521.6	1522.5	Going over pillows and collapse features.	394
2010/08/28 02:15:14	45.92078	-129.98869	193.0	1.8	1524.9	1526.7	Lots of pillows.	399
2010/08/28 02:19:48	45.92026	-129.98882	182.6	2.8	1524.0	1526.9	Patch of heavier sediment.	402
2010/08/28 02:21:29	45.92000	-129.98886	187.5	2.8	1526.2	1529.0	Lots more sediment here.	404
2010/08/28 02:26:11	45.91936	-129.98893	181.0	1.9	1527.8	1529.7	Less sediment here.	408
2010/08/28 02:31:32	45.91876	-129.98893	181.3	1.2	1531.8	1533.0	Sheet-like flows.	411
2010/08/28 02:33:33	45.91839	-129.98895	181.4	2.6	1531.0	1533.6	Mussels.	413

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 02:33:48	45.91832	-129.98895	180.9	2.2	1531.9	1534.1	Crab.	414
2010/08/28 02:35:31	45.91799	-129.98901	241.9	2.6	1531.5	1534.1	Huge pillar with orange staining.	416
2010/08/28 02:36:46	45.91781	-129.98916	198.5	5.6	1527.0	1532.6	Little skinny pillar.	418
2010/08/28 02:37:03	45.91773	-129.98919	198.3	5.2	1527.4	1532.5	Going over lots of collapse features.	419
2010/08/28 02:39:07	45.91749	-129.98926	184.8	6.5	1526.9	1533.4	NAV: Doppler Reset	421
2010/08/28 02:42:51	45.91693	-129.98935	185.0	2.5	1528.5	1531.0	TXT:	424
2010/08/28 02:43:15	45.91690	-129.98936	183.8	1.4	1529.3	1530.7	Pillows and collapses abound.	425
2010/08/28 02:47:14	45.91654	-129.98937	177.6	5.0	1527.2	1532.1	Little off the bottom over a collapse pit.	428
2010/08/28 02:52:00	45.91627	-129.98924	142.4	2.6	1528.6	1531.2	Tube worms. Basically at Bag City	431
2010/08/28 02:52:31	45.91627	-129.98919	99.1	3.2	1528.1	1531.3	looking for event marker 36	433
2010/08/28 02:53:24	45.91628	-129.98919	29.3	2.3	1529.0	1531.2	very old crusty marker	434
2010/08/28 02:53:40	45.91628	-129.98919	27.3	1.3	1529.8	1531.1	fluid sampling with beast and leave MTR	435
2010/08/28 02:55:09	45.91632	-129.98918	174.5	0.7	1531.3	1532.0	setting up sample at marker	437
2010/08/28 02:57:22	45.91633	-129.98921	175.0	0.7	1531.3	1532.1	HD_CAM: start	439
2010/08/28 02:58:39	45.91634	-129.98923	175.0	0.7	1531.3	1532.1	shimmer over worms with white mat and limpets	441
2010/08/28 03:03:23	45.91637	-129.98928	175.0	0.7	1531.3	1532.1	HD_CAM: stop turn	444
2010/08/28 03:03:54	45.91637	-129.98927	175.0	0.7	1531.3	1532.1	less vigorous than last time Dave seen	445
2010/08/28 03:05:10	45.91637	-129.98927	174.9	0.7	1531.3	1532.1	NAV: Doppler Reset	447
2010/08/28 03:06:31	45.91636	-129.98926	174.7	0.7	1531.3	1532.1	SAMPLE: fluid starting fluid sampling	449
2010/08/28 03:07:09	45.91636	-129.98925	174.8	0.7	1531.3	1532.0	probe down in soft mound in mat patch	450
2010/08/28 03:10:43	45.91635	-129.98922	174.5	0.7	1531.2	1531.9	not starting temperature only 10 deg C	453
2010/08/28 03:11:56	45.91635	-129.98922	174.7	0.7	1531.2	1532.0	no evidence of outtake plume	454
2010/08/28 03:12:23	45.91635	-129.98922	174.5	0.7	1531.2	1532.0	moving intake right and pushing back into tubeworm bush	456
2010/08/28 03:13:15	45.91635	-129.98921	174.4	0.7	1531.2	1532.0	temp 12.6 deg C now	457
2010/08/28 03:14:26	45.91635	-129.98921	174.4	0.8	1531.2	1532.0	waiting for temp to go up a little more thsn take pH reading	459
2010/08/28 03:16:05	45.91635	-129.98921	174.3	0.7	1531.2	1531.9	pH voltage 1.89 V	460
2010/08/28 03:16:10	45.91635	-129.98921	174.3	0.7	1531.2	1532.0	temp 13 deg C	461
2010/08/28 03:17:10	45.91635	-129.98920	174.3	0.7	1531.2	1531.9	starting sample unfiltered piston #6	463
2010/08/28 03:18:04	45.91635	-129.98920	174.3	0.7	1531.2	1531.9	SAMPLE: fluid J520-HFS-14 unfiltered piston #6	464
2010/08/28 03:18:13	45.91635	-129.98920	174.3	0.7	1531.2	1531.9	shimmering water now	466
2010/08/28 03:21:36	45.91634	-129.98919	174.4	0.7	1531.2	1531.9	fluid sample done	468
2010/08/28 03:22:03	45.91634	-129.98919	174.4	0.7	1531.2	1531.9	Tmax 13.3 Tavg 15.0 T2 7.7 vol 675 mL	469
2010/08/28 03:23:54	45.91634	-129.98919	174.5	0.7	1531.2	1531.9	SAMPLE: fluid starting DNA sterivex filter # 11	471
2010/08/28 03:24:42	45.91634	-129.98919	174.5	0.7	1531.2	1531.9	J520-HFS-15 DNA sterivex filter # 11	473
2010/08/28 03:25:21	45.91633	-129.98919	174.5	0.7	1531.2	1531.9	going to be a long one...	474
2010/08/28 03:25:31	45.91633	-129.98919	174.5	0.7	1531.2	1531.9	about 40 min	475
2010/08/28 03:34:41	45.91634	-129.98917	174.4	0.7	1531.1	1531.9	still sampling almost half way	481
2010/08/28 03:36:17	45.91634	-129.98918	174.3	0.7	1531.1	1531.9	zooming in to look at worms close up	483

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 03:40:14	45.91633	-129.98918	174.4	0.7	1531.1	1531.9	DSC picture taken	486
2010/08/28 03:45:43	45.91632	-129.98917	174.3	0.7	1531.2	1531.9	extensive tube worm fileds	489
2010/08/28 03:45:54	45.91632	-129.98917	174.4	0.7	1531.2	1531.9	almost done with fluid sample	490
2010/08/28 03:47:52	45.91633	-129.98917	174.4	0.7	1531.1	1531.9	SAMPLE: fluid J520-HFS-15 filter 11 Tmax 13.6 Tavg 8 vol 3000 mL	492
2010/08/28 03:48:33	45.91633	-129.98917	174.4	0.7	1531.1	1531.9	SAMPLE: gas GTM-16 gas tight	494
2010/08/28 03:49:20	45.91633	-129.98917	174.3	0.7	1531.1	1531.9	gas tight blue #12 was second one	495
2010/08/28 03:50:54	45.91633	-129.98917	174.4	0.7	1531.1	1531.9	SAMPLE: fluid J520-HFS-16 filtered bag	497
2010/08/28 03:51:43	45.91633	-129.98917	174.4	0.7	1531.1	1531.9	SAMPLE: fluid started HFS-16 now	498
2010/08/28 03:55:07	45.91632	-129.98917	174.4	0.7	1531.1	1531.8	SAMPLE: fluid HFS-16 done	501
2010/08/28 03:55:49	45.91632	-129.98917	174.4	0.7	1531.1	1531.8	SAMPLE: fluid HTS-16 end Tmax 13.5 Tavg 13.2 T2 = 8 vol 500 mL	502
2010/08/28 03:56:17	45.91632	-129.98917	174.3	0.7	1531.1	1531.8	SAMPLE: fluid J520-HFS-17 RNA filter #15	504
2010/08/28 04:00:12	45.91632	-129.98917	174.3	0.7	1531.1	1531.9	SAMPLE: fluid correction... should be J520-HFS-17 filtered bag at 03:51.43	507
2010/08/28 04:01:20	45.91633	-129.98917	174.3	0.7	1531.1	1531.9	correction...should be J520-HFS-18 RNA filter #15 at 03:56:17	508
2010/08/28 04:04:24	45.91633	-129.98916	174.4	0.7	1531.1	1531.9	SAMPLE: fluid correction to temp for J520-HFS-15 Tmax=13.6 Tavg=13.3 T2=8	511
2010/08/28 04:04:50	45.91633	-129.98916	174.4	0.7	1531.1	1531.9	fish on all cameras	512
2010/08/28 04:13:07	45.91634	-129.98914	174.5	0.7	1531.1	1531.9	NAV: Doppler Reset	517
2010/08/28 04:13:26	45.91634	-129.98914	174.5	0.7	1531.1	1531.8	reset doppler to Mkr 36	518
2010/08/28 04:14:26	45.91633	-129.98914	174.5	0.7	1531.1	1531.9	BIOLOGY: clams very filamentous white mat sparse on limpets and worms	520
2010/08/28 04:24:04	45.91632	-129.98911	174.5	0.7	1531.1	1531.9	SAMPLE: fluid HFS-18 RNA filter # 15 end Tmax=13.5 Tavg=13.2 T2=8 vol=3000ml	525
2010/08/28 04:25:47	45.91633	-129.98910	174.5	0.7	1531.1	1531.9	done with fluid sampling	527
2010/08/28 04:26:59	45.91633	-129.98909	174.4	0.7	1531.2	1531.9	DEPLOY: MTR temp probe	529
2010/08/28 04:27:49	45.91634	-129.98909	176.4	0.7	1530.8	1531.5	repositioning to access biobox where MTR is	530
2010/08/28 04:28:19	45.91634	-129.98909	176.6	0.7	1530.8	1531.5	opening biobox	532
2010/08/28 04:29:00	45.91634	-129.98909	176.3	0.7	1530.8	1531.5	lifting MTR with green line rubber banded	533
2010/08/28 04:29:52	45.91634	-129.98910	176.4	0.7	1530.8	1531.5	released green line	534
2010/08/28 04:30:43	45.91634	-129.98911	176.4	0.7	1530.8	1531.5	put MTR 3087	536
2010/08/28 04:31:21	45.91634	-129.98912	176.4	0.7	1530.7	1531.5	DEPLOY: MTR temp probe MTR probe 3087 successfully deployed	537
2010/08/28 04:32:25	45.91634	-129.98913	176.4	0.7	1530.8	1531.5	BIOLOGY: mat no mat directly around marker 36 worth collecting	539
2010/08/28 04:32:47	45.91634	-129.98913	176.4	0.7	1530.8	1531.5	BIOLOGY: other going to look around briefly in the area	540
2010/08/28 04:34:04	45.91636	-129.98915	18.5	1.8	1529.7	1531.5	BIOLOGY: mat looking north east	541
2010/08/28 04:34:48	45.91636	-129.98918	147.9	3.2	1528.1	1531.2	no mat....bare lava lobes	543
2010/08/28 04:34:54	45.91636	-129.98919	176.6	3.0	1528.3	1531.3	back to vent site	544
2010/08/28 04:34:59	45.91636	-129.98919	172.4	2.3	1528.9	1531.2	headed south now	545
2010/08/28 04:35:23	45.91634	-129.98920	172.4	1.2	1530.1	1531.2	tube worm bushes without mat	546
2010/08/28 04:37:19	45.91628	-129.98916	173.1	1.5	1530.1	1531.6	small mat	548
2010/08/28 04:37:39	45.91628	-129.98913	173.7	1.3	1530.2	1531.5	looking for a bigger patch to test syringe	549
2010/08/28 04:39:41	45.91623	-129.98916	187.0	1.4	1530.1	1531.5	larger mat in view now	551
2010/08/28 04:45:56	45.91623	-129.98912	254.3	1.3	1530.3	1531.6	decided to do single chamber slurp in large limpet/mat patch	555

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 04:54:21	45.91623	-129.98916	192.1	1.6	1531.0	1532.6	BIOLOGY: mat MAT-19 starting single chamber slurp	561
2010/08/28 04:54:35	45.91623	-129.98916	192.1	1.6	1531.0	1532.6	limpets with white mat	562
2010/08/28 04:56:40	45.91623	-129.98915	188.8	2.6	1528.7	1531.3	BIOLOGY: mat stopping slurp pump	564
2010/08/28 04:58:10	45.91622	-129.98914	188.3	3.3	1528.1	1531.4	mat sampling site 10 m south of marker 36	565
2010/08/28 04:59:06	45.91623	-129.98914	293.7	3.5	1527.9	1531.4	transit to Coquille next	567
2010/08/28 05:03:02	45.91629	-129.98962	293.0	6.4	1528.1	1534.5	sulfide pillars	570
2010/08/28 05:06:27	45.91642	-129.98999	85.6	2.7	1528.3	1531.0	low over lobe scape	573
2010/08/28 05:07:57	45.91650	-129.99030	290.6	2.9	1528.8	1531.7	collapse	574
2010/08/28 05:09:26	45.91653	-129.99049	289.3	0.7	1531.2	1531.9	fish	576
2010/08/28 05:10:16	45.91657	-129.99055	289.0	3.0	1531.8	1534.8	more fish	578
2010/08/28 05:10:48	45.91659	-129.99060	288.1	2.7	1531.2	1533.9	DSC taken of fish	579
2010/08/28 05:11:15	45.91663	-129.99069	291.7	4.7	1529.2	1533.9	DSC taken of collapse	580
2010/08/28 05:13:28	45.91671	-129.99110	292.2	1.2	1530.4	1531.7	deep collapse	582
2010/08/28 05:13:47	45.91672	-129.99112	293.1	1.1	1530.3	1531.4	orange Fe ridges around collapse area	583
2010/08/28 05:14:29	45.91676	-129.99121	292.6	2.0	1529.8	1531.7	DSC of collapse	585
2010/08/28 05:19:33	45.91704	-129.99198	301.6	1.4	1531.3	1532.6	starfish	588
2010/08/28 05:19:51	45.91706	-129.99203	301.4	0.7	1531.9	1532.6	holothurians	589
2010/08/28 05:20:32	45.91711	-129.99216	301.2	1.4	1532.0	1533.4	DSC of holothurians	591
2010/08/28 05:21:23	45.91717	-129.99227	301.7	2.5	1531.1	1533.6	will come back to lost MTR	592
2010/08/28 05:23:30	45.91724	-129.99267	301.4	2.1	1531.7	1533.8	going to try to drive by Mkr 57	594
2010/08/28 05:23:38	45.91724	-129.99269	302.4	1.7	1531.8	1533.5	clams	595
2010/08/28 05:24:03	45.91724	-129.99274	301.5	1.2	1532.3	1533.4	BIOLOGY: clams clams denser each year	596
2010/08/28 05:24:14	45.91724	-129.99276	301.4	1.5	1531.9	1533.5	BIOLOGY: other DSC of clams	598
2010/08/28 05:25:13	45.91729	-129.99289	309.2	2.5	1531.4	1533.9	approaching Marker 57	599
2010/08/28 05:25:25	45.91730	-129.99291	309.9	2.6	1531.1	1533.7	black smoker near Mkr 57	600
2010/08/28 05:25:43	45.91731	-129.99292	326.9	2.6	1531.2	1533.8	now at Mkr 57	601
2010/08/28 05:26:16	45.91733	-129.99295	331.9	1.2	1532.5	1533.7	HOBO probe	603
2010/08/28 05:27:16	45.91733	-129.99295	332.5	0.7	1533.2	1534.0	small chimney surrounded by white mat	604
2010/08/28 05:27:27	45.91733	-129.99296	332.7	0.7	1533.2	1533.9	may need to move HOBO to sample fluid	605
2010/08/28 05:28:16	45.91733	-129.99296	341.4	2.2	1531.5	1533.7	lots of floc pouring out below chimney	607
2010/08/28 05:29:08	45.91732	-129.99296	343.9	1.6	1532.2	1533.8	Jason tugged by Medea	608
2010/08/28 05:33:06	45.91733	-129.99295	345.7	0.9	1533.5	1534.4	going to collect fluid samples from small flow below chimney	611
2010/08/28 05:35:57	45.91732	-129.99294	345.1	0.7	1533.4	1534.2	SAMPLE: fluid positioning cylindrical sampler of beast over flow	613
2010/08/28 05:37:07	45.91731	-129.99294	345.2	0.7	1533.4	1534.2	temp 40 deg C good spot	615
2010/08/28 05:38:08	45.91731	-129.99293	345.3	0.7	1533.4	1534.1	white floc coming out of exhaust	616
2010/08/28 05:38:59	45.91731	-129.99293	345.2	0.7	1533.4	1534.2	temp stable 45 deg C T2=20	618
2010/08/28 05:39:15	45.91731	-129.99293	345.2	0.7	1533.4	1534.2	increasing flow rate	619
2010/08/28 05:41:44	45.91731	-129.99292	345.2	0.7	1533.4	1534.2	SAMPLE: fluid HFS-20 unfiltered piston #8 start	621

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 05:45:42	45.91731	-129.99292	345.2	0.7	1533.5	1534.2	HFS-20 end	624
2010/08/28 05:46:18	45.91731	-129.99292	345.2	0.7	1533.5	1534.2	HFS-20 Tmax=46.1 Tavg=46.0 T2=22 vol=600mL	625
2010/08/28 05:46:44	45.91731	-129.99292	345.2	0.7	1533.5	1534.2	SAMPLE: gas Gas tight #3 fired	626
2010/08/28 05:48:22	45.91731	-129.99292	345.3	0.7	1533.5	1534.2	SAMPLE: gas GT-22 is third GT fired = black	628
2010/08/28 05:49:40	45.91732	-129.99292	345.2	1.7	1533.5	1535.2	SAMPLE: fluid HFS-21 DNA sterivex filter # 12	629
2010/08/28 05:51:31	45.91732	-129.99292	345.2	0.7	1533.5	1534.2	correction...GT-21 black	631
2010/08/28 05:52:16	45.91731	-129.99292	345.1	0.7	1533.5	1534.3	correction ...HT-22 DNA sterivex filter #12	633
2010/08/28 05:58:48	45.91730	-129.99291	344.9	0.7	1533.6	1534.3	SAMPLE: fluid HFS-22 DNA sterivex filter still in progress	637
2010/08/28 06:03:34	45.91731	-129.99291	344.7	0.7	1533.6	1534.3	working ahead of schedule	640
2010/08/28 06:08:55	45.91732	-129.99293	344.6	0.9	1533.6	1534.6	SAMPLE: fluid HFS-22 end	644
2010/08/28 06:10:29	45.91732	-129.99293	344.4	0.9	1533.6	1534.5	SAMPLE: fluid HFS-22 DNA sterivex filter #12 Tmax=45.5 Tavg=44.9 T2=22 Vol=3000mL	646
2010/08/28 06:11:36	45.91732	-129.99293	344.3	0.9	1533.7	1534.6	SAMPLE: fluid HFS-23 RNA filter #16 start	647
2010/08/28 06:16:10	45.91731	-129.99293	344.3	1.7	1533.7	1535.4	DSC taken	650
2010/08/28 06:22:00	45.91731	-129.99292	343.8	0.8	1533.7	1534.5	not much metal in this chimney flow	654
2010/08/28 06:24:17	45.91731	-129.99291	343.8	0.8	1533.7	1534.6	first observed chimney about 8 yrs ago...somewhat darker now	657
2010/08/28 06:35:23	45.91731	-129.99289	343.5	0.7	1533.8	1534.6	SAMPLE: fluid HFS-23 end	663
2010/08/28 06:35:51	45.91731	-129.99289	343.5	0.9	1533.8	1534.7	HFS-23 Tmax=44.6 Tavg=44.2 T2=20 Vol=3000mL	664
2010/08/28 06:36:38	45.91731	-129.99289	343.6	0.7	1533.8	1534.6	SAMPLE: fluid HFS-24 filtered bag #19	666
2010/08/28 06:38:10	45.91731	-129.99289	343.6	0.7	1533.8	1534.6	temp cooling slightly but nearly done	667
2010/08/28 06:38:27	45.91731	-129.99289	343.4	0.9	1533.8	1534.7	back end temp and flow dropping	669
2010/08/28 06:38:51	45.91731	-129.99289	343.5	0.8	1533.8	1534.6	HFS-24 stopped	670
2010/08/28 06:39:46	45.91731	-129.99289	343.4	0.8	1533.9	1534.7	HFS-24 filtered bag # 19 Tmax=44.1 Tavg=43.5 T2=17 Vol=400 mL	671
2010/08/28 06:43:09	45.91731	-129.99291	343.5	0.9	1533.9	1534.7	SAMPLE: fluid pH 1.47 V	674
2010/08/28 06:43:58	45.91732	-129.99292	343.5	0.9	1533.9	1534.8	next is syringe sampling of white mat on left of mound	675
2010/08/28 07:01:14	45.91730	-129.99292	348.1	0.9	1533.6	1534.4	SAMPLE: bio Taking large syringe sample (400mL) of white mat	685
2010/08/28 07:01:32	45.91730	-129.99292	348.1	0.9	1533.6	1534.4	HD_CAM: start starting hd cam	686
2010/08/28 07:02:37	45.91730	-129.99292	348.2	0.9	1533.6	1534.5	SAMPLE: bio Taking sample of white mat and sediment underneath mat	688
2010/08/28 07:04:48	45.91731	-129.99291	348.5	0.7	1533.9	1534.6	HD_CAM: stop	690
2010/08/28 07:08:28	45.91733	-129.99291	347.8	0.7	1533.8	1534.6	Moving Jason high temp probe.	693
2010/08/28 07:08:58	45.91733	-129.99291	348.8	0.7	1533.9	1534.6	Moving marker out of the way	694
2010/08/28 07:10:18	45.91733	-129.99292	348.0	0.8	1533.7	1534.5	Just moving marker out of the way of the arm.	696
2010/08/28 07:10:39	45.91734	-129.99292	348.0	0.7	1533.8	1534.5	Relocating Marker 57.	697
2010/08/28 07:11:54	45.91735	-129.99293	350.0	0.7	1533.8	1534.6	Frame_Grab:	698
2010/08/28 07:12:09	45.91735	-129.99293	349.8	0.7	1533.8	1534.6	HD_CAM: start	699
2010/08/28 07:12:25	45.91735	-129.99293	349.8	0.7	1533.8	1534.6	A deep-sea fish was hovering over the vent	701
2010/08/28 07:12:43	45.91735	-129.99293	349.5	0.7	1533.8	1534.5	High T probe inserted into vent	702
2010/08/28 07:13:08	45.91735	-129.99293	349.4	0.8	1533.8	1534.6	Probe inside Vixen vent.	703

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 07:13:15	45.91735	-129.99293	349.4	0.7	1533.8	1534.5	Temp=284.6 and rising	704
2010/08/28 07:13:32	45.91735	-129.99293	349.4	0.7	1533.8	1534.6	T=316.4 and up	705
2010/08/28 07:14:28	45.91735	-129.99293	349.2	0.8	1533.8	1534.6	Temp probe destroying vent entrance to get in deeper	707
2010/08/28 07:14:59	45.91735	-129.99293	349.1	0.7	1533.8	1534.6	T=341 and up	708
2010/08/28 07:15:51	45.91735	-129.99293	349.0	0.7	1533.8	1534.6	T=344.2 and holding steady	709
2010/08/28 07:16:13	45.91735	-129.99293	349.0	0.7	1533.8	1534.6	Tmax=344.3	711
2010/08/28 07:16:56	45.91735	-129.99293	348.9	0.7	1533.8	1534.6	Correction: Tmax=345	712
2010/08/28 07:17:12	45.91735	-129.99293	348.9	0.7	1533.8	1534.6	HD_CAM: stop	713
2010/08/28 07:19:20	45.91734	-129.99293	348.4	0.8	1533.8	1534.6	SAMPLE: fluid Deploying fluid sampler at Vixen.	715
2010/08/28 07:28:17	45.91734	-129.99294	348.7	0.8	1533.9	1534.7	Waiting... working out the flush pump on the Beast	721
2010/08/28 07:37:08	45.91735	-129.99294	348.6	0.7	1534.0	1534.7	SAMPLE: fluid starting HFS-26	726
2010/08/28 07:37:32	45.91735	-129.99294	348.7	0.7	1534.0	1534.7	SAMPLE: fluid T1=321.3 T2=103.2	727
2010/08/28 07:38:27	45.91735	-129.99294	348.6	0.7	1534.0	1534.7	SAMPLE: fluid HFS-26 is filtered piston #3	729
2010/08/28 07:40:09	45.91735	-129.99294	348.7	0.8	1534.0	1534.8	SAMPLE: fluid HFS-26 done starttime 07:37:08 Tmax= 325.5 Tavg=324.3 vol=402mL	730
2010/08/28 07:40:46	45.91735	-129.99294	348.7	0.8	1534.0	1534.8	SAMPLE: fluid starting HFS-27 unfiltered piston #4	732
2010/08/28 07:41:44	45.91735	-129.99294	348.8	0.8	1534.0	1534.8	SAMPLE: fluid T2average ~105 for both HFS-26 and HFS-27	733
2010/08/28 07:43:22	45.91735	-129.99294	348.5	0.7	1534.0	1534.8	SAMPLE: fluid HFS-27 Tmax=326.2 Tavg=325.1 T2=~106 endtime 7:43:00	735
2010/08/28 07:44:03	45.91735	-129.99293	348.4	0.7	1534.0	1534.7	Finished with fluid sampler at Vixen taking out a gastight.	736
2010/08/28 07:44:14	45.91735	-129.99293	348.3	0.8	1534.0	1534.8	Returning fluid sampler intake to basket	738
2010/08/28 07:45:24	45.91735	-129.99293	347.0	0.8	1534.0	1534.8	Flushing manifold with seawater to clean it out.	739
2010/08/28 07:47:15	45.91734	-129.99293	347.5	0.8	1534.0	1534.8	Jason picking up gastight white #17	741
2010/08/28 07:47:35	45.91734	-129.99293	347.6	0.9	1534.0	1534.9	SAMPLE: gas Taking gastight sample in Vixen.	742
2010/08/28 07:48:56	45.91734	-129.99293	347.8	0.8	1534.0	1534.8	SAMPLE: gas starting gastight white #17 in Vixen.	744
2010/08/28 07:50:12	45.91734	-129.99294	348.1	0.8	1534.0	1534.8	Placing gastight white #17 back in box	746
2010/08/28 07:50:30	45.91734	-129.99294	348.1	0.9	1534.0	1534.8	Recovering HOBO #30.	747
2010/08/28 07:52:57	45.91734	-129.99294	347.9	0.9	1534.0	1534.9	DEPLOY: HOBO temp probe Inserting HOBO temp probe 102 into Vixen.	749
2010/08/28 07:54:08	45.91734	-129.99295	348.0	0.8	1534.0	1534.9	HOBO inserted about 4 inches down into Vixen	750
2010/08/28 07:55:17	45.91733	-129.99298	355.4	2.2	1532.8	1534.9	Leaving Marker 57 where it was moved about 1.5 ft from previous location	752
2010/08/28 07:55:25	45.91734	-129.99300	7.6	2.8	1532.6	1535.3	Leaving Vixen heading towards Casper	753
2010/08/28 07:55:48	45.91739	-129.99300	21.4	1.1	1533.4	1534.6	Covering lobate flow with tubeworms mats and crevices	754
2010/08/28 07:56:53	45.91741	-129.99300	20.6	0.7	1534.3	1535.0	At Casper vent deploying Jason temp probe	756
2010/08/28 07:57:01	45.91741	-129.99300	20.6	0.7	1534.3	1535.0	High temp probe into Casper vent.	757
2010/08/28 07:57:35	45.91741	-129.99299	21.3	0.7	1534.3	1535.0	T=303.3 and climbing	758
2010/08/28 07:58:14	45.91741	-129.99299	21.4	0.7	1534.3	1535.0	T=315.8	760
2010/08/28 07:58:26	45.91741	-129.99299	21.3	0.8	1534.3	1535.0	HD_CAM: start	761
2010/08/28 07:59:46	45.91741	-129.99299	21.4	0.7	1534.3	1535.0	Tmax=316.8	762
2010/08/28 08:00:27	45.91741	-129.99299	21.2	0.7	1534.4	1535.1	Stowing high Temp Jason probe	764
2010/08/28 08:01:04	45.91741	-129.99298	21.5	0.8	1534.3	1535.1	Removing HOBO 129 from Casper vent	765

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2010/08/28 08:02:09	45.91741	-129.99298	21.1	0.7	1534.4	1535.1	looking at yellow stuff behind vent looks like gravel mixed with clam shells	766
2010/08/28 08:02:51	45.91741	-129.99298	21.3	0.7	1534.4	1535.1	SAMPLE: fluid Deploying fluid sampler at Casper	768
2010/08/28 08:03:15	45.91741	-129.99298	20.7	0.8	1534.4	1535.1	started flush pump on fluid sampler	769
2010/08/28 08:03:25	45.91741	-129.99298	20.7	0.8	1534.4	1535.1	HD_CAM: stop	770
2010/08/28 08:06:16	45.91741	-129.99298	20.4	0.8	1534.4	1535.1	SAMPLE: fluid T1=283.8 T2=88.1	773
2010/08/28 08:07:06	45.91740	-129.99298	20.5	0.8	1534.4	1535.2	Can see pyrite around vent below fluid sampler intake	774
2010/08/28 08:10:22	45.91741	-129.99297	20.8	0.8	1534.4	1535.2	SAMPLE: fluid beginning HFS-29 sample filtered piston #1	777
2010/08/28 08:12:56	45.91741	-129.99298	20.8	0.8	1534.4	1535.1	SAMPLE: fluid HFS-29 finished Tmax=286.0 Tavg=285.1 T2avg=91 vol pumped =404 ml	779
2010/08/28 08:13:38	45.91741	-129.99298	20.8	0.8	1534.4	1535.1	SAMPLE: fluid HFS-30 starting - unfiltered piston #2	780
2010/08/28 08:16:07	45.91741	-129.99298	20.8	0.7	1534.4	1535.2	SAMPLE: fluid HFS-30 finished	782
2010/08/28 08:16:55	45.91741	-129.99298	20.9	0.7	1534.4	1535.2	HFS unfiltered piston #2 Tmax=285.2 Tavg=284.6 T2avg=~90 starttime 08:13:38 endtime 08:16:07	784
2010/08/28 08:17:40	45.91741	-129.99298	20.7	0.7	1534.4	1535.2	HFS unfiltered piston #2 = HFS-30	785
2010/08/28 08:21:09	45.91741	-129.99298	24.9	0.9	1534.2	1535.1	SAMPLE: fluid GTHFS-31 is #1 taken at Xasper	788
2010/08/28 08:23:24	45.91741	-129.99298	18.4	0.7	1534.5	1535.3	Correction... Xasper=Casper	790
2010/08/28 08:24:54	45.91741	-129.99297	16.4	0.7	1534.6	1535.3	SAMPLE: gas Correction... all 3 gastights on HFS have already been used.	792
2010/08/28 08:29:03	45.91741	-129.99298	24.8	0.7	1534.8	1535.5	DEPLOY: HOBO temp probe Deploying HOBO #104 into Casper	795
2010/08/28 08:30:24	45.91741	-129.99299	25.5	0.7	1534.8	1535.6	Now exploring area and looking for lost MTR that someone saw in SE	797
2010/08/28 08:32:45	45.91739	-129.99299	27.5	1.4	1533.5	1534.8	Moving south.	799
2010/08/28 08:33:44	45.91740	-129.99299	180.2	1.8	1533.4	1535.2	Lobate flow with white microbial mat and tubeworms in cracks	800
2010/08/28 08:33:54	45.91740	-129.99298	151.6	1.9	1533.3	1535.3	More yellow-ish "sediment"	801
2010/08/28 08:35:54	45.91732	-129.99285	179.7	1.8	1533.4	1535.3	Little clams present and crabs.	803
2010/08/28 08:38:39	45.91720	-129.99282	180.4	1.4	1533.2	1534.6	Over small collapsed pit.	806
2010/08/28 08:40:25	45.91714	-129.99283	290.6	2.0	1533.3	1535.2	More lobate flow with bacterial mats and tubeworms around areas	808
2010/08/28 08:40:45	45.91714	-129.99286	287.2	2.0	1533.3	1535.2	Looking at clumps of tubeworms	809
2010/08/28 08:40:59	45.91715	-129.99288	287.1	1.9	1533.3	1535.2	Continuing south and seeing larger tubeworms in cracks	810
2010/08/28 08:41:51	45.91717	-129.99293	279.0	1.3	1533.6	1534.9	Zooming in on large clump of tubeworms.	811
2010/08/28 08:42:31	45.91717	-129.99293	280.9	0.8	1534.7	1535.5	Frame_Grab:	813
2010/08/28 08:42:35	45.91717	-129.99293	280.9	0.7	1534.7	1535.5	Frame_Grab:	814
2010/08/28 08:42:35	45.91717	-129.99293	280.9	0.7	1534.7	1535.5	Frame_Grab:	815
2010/08/28 08:42:44	45.91717	-129.99293	280.7	0.7	1534.7	1535.5	Frame_Grab:	816
2010/08/28 08:43:28	45.91717	-129.99293	280.4	0.9	1534.3	1535.1	Found something in the tubeworm clump -- the lost MTR?	817
2010/08/28 08:44:35	45.91716	-129.99294	282.1	0.8	1534.8	1535.6	Can see a ..17 on the tag	819
2010/08/28 08:45:19	45.91716	-129.99294	281.9	0.7	1534.7	1535.5	Found MTR 3317 in the tubeworm clump. Pulling it out.	820
2010/08/28 08:45:22	45.91716	-129.99294	281.8	0.7	1534.8	1535.6	Frame_Grab:	821
2010/08/28 08:45:43	45.91716	-129.99294	281.9	0.7	1534.8	1535.6	MTR came with a large clump of tubeworms.	822
2010/08/28 08:47:10	45.91716	-129.99292	281.1	0.8	1534.8	1535.5	SAMPLE: bio Tubeworm clump with MTR 3317 is now sample BIO-32.	824

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2010/08/28 08:55:01	45.91716	-129.99290	280.9	0.8	1534.8	1535.6	SAMPLE: bio Rearranging basket so MTR 3317 and BIO-32 tubeworms can be stowed.	829
2010/08/28 08:59:07	45.91716	-129.99291	280.6	0.7	1534.8	1535.5	Stowing MTR 3317 and tubeworms BIO-32 in basket with HOBOS 129 and 130(=30)	832
2010/08/28 09:01:33	45.91716	-129.99292	280.6	0.7	1534.8	1535.5	BIO-32 and MTR 3317 pushed into basket.	834
2010/08/28 09:03:33	45.91717	-129.99291	281.3	0.9	1534.8	1535.6	Deploying Jason low T probe inside clump of tubeworms where MTR 3317 found in diffuse flow	836
2010/08/28 09:04:21	45.91717	-129.99292	280.2	0.8	1534.4	1535.2	Limpets on tubeworms near diffuse flow	838
2010/08/28 09:05:35	45.91717	-129.99291	281.3	0.7	1534.8	1535.5	Diffuse flow T=12	839
2010/08/28 09:05:41	45.91717	-129.99291	281.3	0.7	1534.8	1535.5	and rising	840
2010/08/28 09:06:20	45.91716	-129.99291	281.1	0.7	1534.8	1535.5	Diffuse flow Tmax = 12.7	842
2010/08/28 09:06:34	45.91716	-129.99291	281.6	0.7	1534.8	1535.5	Inserting T probe into another spot	843
2010/08/28 09:07:00	45.91716	-129.99291	281.6	0.7	1534.8	1535.5	T=16.1 and rising	844
2010/08/28 09:08:05	45.91716	-129.99291	281.7	0.7	1534.8	1535.5	Tmax=21.7	845
2010/08/28 09:08:34	45.91716	-129.99291	282.3	0.7	1534.8	1535.5	We will take another fluid sample at this site	847
2010/08/28 09:10:51	45.91716	-129.99291	281.5	0.7	1534.8	1535.5	Frame_Grab:	849
2010/08/28 09:11:02	45.91716	-129.99292	281.6	0.7	1534.8	1535.5	SAMPLE: fluid Big black jellyfish(?) floating past arm.	850
2010/08/28 09:16:25	45.91717	-129.99292	281.7	0.7	1534.8	1535.6	Replacing Jason temp probe	854
2010/08/28 09:19:22	45.91717	-129.99291	282.5	0.7	1534.8	1535.6	Inserting fluid sampler intake into diffuse flow	856
2010/08/28 09:22:19	45.91716	-129.99291	280.9	0.7	1534.9	1535.6	Checking temperature before fluid sampling begins.	859
2010/08/28 09:24:33	45.91716	-129.99292	283.6	0.7	1534.9	1535.7	Checking temperature in a second spot	861
2010/08/28 09:27:05	45.91715	-129.99293	283.1	0.8	1534.9	1535.7	SAMPLE: fluid HFS-33 filtered piston #7 starting	863
2010/08/28 09:28:06	45.91715	-129.99293	283.0	0.8	1534.9	1535.7	SAMPLE: fluid T1=18.4 T2=9.2	864
2010/08/28 09:29:38	45.91714	-129.99293	283.2	0.7	1534.9	1535.7	SAMPLE: fluid HFS-33 filtered piston #7 finished	866
2010/08/28 09:30:38	45.91714	-129.99293	283.2	0.7	1534.9	1535.7	HFS-33 Tmax=19.0 Tavg=18.1 T2avg ~9 vol pumped=402 ml start time 09:27:05 endtime 09:29:38	868
2010/08/28 09:33:54	45.91714	-129.99293	281.5	0.7	1535.0	1535.7	SAMPLE: fluid starting HFS-34	870
2010/08/28 09:34:13	45.91714	-129.99293	281.6	0.7	1534.9	1535.7	SAMPLE: fluid HFS-34 is filtered bag #18	872
2010/08/28 09:35:33	45.91715	-129.99292	281.6	0.7	1534.9	1535.7	SAMPLE: fluid T1=21.8	873
2010/08/28 09:37:07	45.91716	-129.99292	281.5	0.7	1535.0	1535.7	SAMPLE: fluid HFS-34 sample finished.	875
2010/08/28 09:38:03	45.91717	-129.99292	281.4	0.7	1535.0	1535.7	SAMPLE: fluid HFS-34 Tmax=22.8 Tavg=22.0 T2avg=11 vol pumped=502 start time=09:34:13 end time=09:37:07	876
2010/08/28 09:38:20	45.91717	-129.99292	281.4	0.7	1535.0	1535.7	Check pH here at Lost MTR site.	878
2010/08/28 09:39:37	45.91717	-129.99292	281.5	0.7	1535.0	1535.7	pH voltage 1.466 at Lost MTR site	879
2010/08/28 09:40:22	45.91718	-129.99292	281.7	0.7	1535.0	1535.7	The Beast is full.	881
2010/08/28 09:41:05	45.91718	-129.99292	281.8	0.7	1534.9	1535.7	Stowing fluid sampler intake.	882
2010/08/28 09:41:47	45.91717	-129.99291	281.7	0.7	1535.0	1535.7	Leaving Lost MTR and going back to Casper	883
2010/08/28 09:43:07	45.91717	-129.99290	297.0	1.1	1534.1	1535.2	Before we leave Lost MTR we are leaving a marker	885
2010/08/28 09:44:44	45.91716	-129.99289	297.3	1.2	1534.1	1535.2	Leaving Marker 122 at tubeworm clump/diffuse flow where Lost MTR found.	887

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 09:45:28	45.91716	-129.99289	302.0	1.7	1533.4	1535.2	DEPLOY: marker Marker 122 deployed at Lost MTR 3317 site on edge of tubeworm clump.	888
2010/08/28 09:48:06	45.91726	-129.99288	333.9	1.9	1533.5	1535.4	Going north back to Casper.	890
2010/08/28 09:48:30	45.91725	-129.99293	335.5	1.5	1533.6	1535.2	Tubeworms and bacterial mat along cracks.	892
2010/08/28 09:48:39	45.91726	-129.99294	335.3	1.9	1533.5	1535.4	Proceeding past Vixen.	893
2010/08/28 09:51:13	45.91741	-129.99297	96.4	1.9	1533.6	1535.4	Back at Casper.	895
2010/08/28 09:51:53	45.91741	-129.99298	96.5	2.0	1533.5	1535.5	Two aims at Casper: collect a gastight - and - collect "sediment" sample of pyrite and unconsolidated sediment below pyrite in syringe	896
2010/08/28 09:54:50	45.91742	-129.99296	134.9	1.0	1534.4	1535.4	Picking up black gastight #18 from basket	899
2010/08/28 10:00:31	45.91742	-129.99295	135.0	1.0	1534.4	1535.4	SAMPLE: gas Positioning gastight in Casper vent.	903
2010/08/28 10:02:05	45.91742	-129.99295	134.7	1.1	1534.4	1535.5	SAMPLE: gas Repositioning grip to hold gastight at better angle.	904
2010/08/28 10:02:50	45.91742	-129.99296	134.3	1.1	1534.4	1535.5	SAMPLE: gas Positioning gastight in Casper.	906
2010/08/28 10:03:56	45.91743	-129.99297	134.3	1.1	1534.4	1535.5	SAMPLE: gas Sampling gastight GTB-35 in Casper.	907
2010/08/28 10:04:54	45.91743	-129.99297	134.4	1.0	1534.4	1535.4	SAMPLE: gas Sampling GTB-35 finished.	909
2010/08/28 10:05:35	45.91743	-129.99298	134.5	0.9	1534.5	1535.4	Replacing GTB-35 in Jason basket.	910
2010/08/28 10:08:44	45.91744	-129.99298	134.3	0.9	1534.5	1535.5	Looking at yellow stuff on rock around vent.	913
2010/08/28 10:12:55	45.91744	-129.99298	134.2	0.9	1534.5	1535.4	Gastight stowed.	916
2010/08/28 10:13:27	45.91744	-129.99298	134.1	1.0	1534.5	1535.4	Around vent see black "sediment" near vent orifice then yellow further away.	917
2010/08/28 10:13:55	45.91744	-129.99298	134.2	1.0	1534.5	1535.5	Going to try to collect yellow stuff in small syringe.	918
2010/08/28 10:15:28	45.91744	-129.99298	133.9	1.0	1534.5	1535.5	Removed small syringe from Jason basket.	920
2010/08/28 10:18:29	45.91743	-129.99298	134.5	1.0	1534.5	1535.5	Positioning syringe over yellow stuff.	923
2010/08/28 10:20:01	45.91743	-129.99298	134.6	1.2	1534.4	1535.5	Changing syringe to left Jason arm.	924
2010/08/28 10:20:14	45.91743	-129.99298	134.9	1.2	1534.4	1535.5	POsitioning syringe for sample collection.	926
2010/08/28 10:27:05	45.91744	-129.99298	133.6	1.0	1534.6	1535.6	SAMPLE: bio Collecting BIO-36: shells and material underneath shells.	930
2010/08/28 10:28:09	45.91744	-129.99298	133.6	1.0	1534.6	1535.6	SAMPLE: bio BIO-36 shells/sediment collected in small syringe.	931
2010/08/28 10:30:41	45.91745	-129.99300	133.8	1.8	1533.6	1535.4	Stowing small syringe in box on right swing arm.	934
2010/08/28 10:31:39	45.91744	-129.99300	134.1	1.7	1533.7	1535.4	Syringe stowed.	935
2010/08/28 10:32:43	45.91743	-129.99300	133.7	1.8	1533.7	1535.4	Now we are going to explore the area north of the 3 vents we have visited.	937
2010/08/28 10:33:50	45.91744	-129.99302	8.9	1.3	1533.8	1535.1	Moving north and following white mats/diffuse venting.	938
2010/08/28 10:35:54	45.91746	-129.99297	11.6	1.1	1534.0	1535.2	Lobate flow with dense tubeworm clumps.	940
2010/08/28 10:36:18	45.91746	-129.99295	11.1	0.7	1534.2	1535.0	About 10m north of Casper.	942
2010/08/28 10:37:07	45.91746	-129.99294	12.5	1.1	1533.8	1535.0	Going past tubeworm clumps. Saw a limpet.	943
2010/08/28 10:37:38	45.91748	-129.99294	12.0	1.9	1532.9	1534.9	Going over a small collapsed pit.	944
2010/08/28 10:38:03	45.91750	-129.99291	12.3	1.1	1533.9	1534.9	Tubeworm clumps around rims of pit.	945
2010/08/28 10:40:24	45.91753	-129.99283	353.3	1.3	1533.6	1534.9	Tubeworms are lined up along a crack .	948
2010/08/28 10:40:33	45.91754	-129.99283	353.1	1.2	1533.8	1534.9	Dense clumps of worms and white bacterial mat.	949
2010/08/28 10:40:38	45.91754	-129.99283	353.3	1.1	1533.8	1534.9	Small collapse.	950
2010/08/28 10:41:17	45.91758	-129.99285	352.9	1.8	1532.9	1534.7	Dense white microbial mat area.	951

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2010/08/28 10:41:26	45.91759	-129.99286	353.7	1.7	1533.1	1534.9	Shimmering water ascending from cracks.	952
2010/08/28 10:41:49	45.91759	-129.99288	353.6	1.8	1533.2	1534.9	40m north of Casper.	953
2010/08/28 10:43:53	45.91764	-129.99290	354.0	1.5	1533.3	1534.8	Diffuse flow in area with thin tubeworms.	955
2010/08/28 10:46:18	45.91773	-129.99291	354.3	1.5	1533.4	1534.9	Going past collapsed pits on left and right.	958
2010/08/28 10:46:28	45.91774	-129.99292	353.7	1.5	1533.4	1534.9	Following tubeworms and white mats along ridge.	959
2010/08/28 10:46:57	45.91779	-129.99292	354.5	1.5	1533.5	1535.0	Coming to edge of ridge.	960
2010/08/28 10:47:48	45.91786	-129.99293	354.6	2.1	1533.2	1535.2	Dropped down into collapse zone.	961
2010/08/28 10:47:54	45.91787	-129.99292	354.6	1.9	1533.1	1534.9	No tubeworms.	962
2010/08/28 10:49:31	45.91800	-129.99292	354.5	2.4	1532.6	1535.0	Continuing north.	964
2010/08/28 10:49:45	45.91803	-129.99291	355.7	2.3	1532.5	1534.8	A few spots of white mat and tubeworms.	965
2010/08/28 10:50:51	45.91806	-129.99289	354.1	3.0	1532.1	1535.0	Tubeworm clumps more spread out here following cracks.	967
2010/08/28 10:53:03	45.91808	-129.99288	354.0	3.7	1531.3	1535.0	Checking Jason basket to make sure everything is tied down.	969
2010/08/28 10:54:11	45.91815	-129.99288	354.9	3.8	1531.1	1534.9	Continuing north and exploring.	971
2010/08/28 10:55:59	45.91833	-129.99293	357.1	2.6	1532.8	1535.4	No worms.	972
2010/08/28 10:56:12	45.91835	-129.99296	357.4	2.8	1532.3	1535.1	Old mat on rocks more yellow than white.	974
2010/08/28 10:57:54	45.91848	-129.99291	355.8	3.3	1532.6	1535.9	Moving to northeast/east.	975
2010/08/28 10:58:02	45.91848	-129.99289	357.2	3.4	1532.5	1535.9	No clumps of worms.	976
2010/08/28 10:58:35	45.91849	-129.99281	356.4	3.0	1532.7	1535.7	Maybe some old bacterial staining on cracks - brown/yellow.	978
2010/08/28 10:59:02	45.91853	-129.99275	357.6	3.1	1532.7	1535.8	125m north of Casper.	979
2010/08/28 10:59:18	45.91855	-129.99270	355.4	3.0	1532.8	1535.8	Old sediment or brown mat collected in cracks between boulders/rocks.	980
2010/08/28 10:59:27	45.91857	-129.99267	354.5	2.8	1532.9	1535.7	Lobate flow.	981
2010/08/28 10:59:54	45.91863	-129.99258	355.8	2.5	1532.9	1535.4	Continuing northeast.	982
2010/08/28 11:00:20	45.91869	-129.99252	358.9	3.0	1532.8	1535.8	Still just clumps of sediments/old mats between rocks and no tubeworms.	984
2010/08/28 11:00:55	45.91876	-129.99265	357.6	2.9	1533.1	1536.0	Moving north/northwest now.	985
2010/08/28 11:01:23	45.91883	-129.99277	358.5	2.7	1533.6	1536.3	Still yellow/brown old mat/sediments between rocks.	986
2010/08/28 11:03:00	45.91905	-129.99302	353.8	2.9	1533.7	1536.6	Looking at old mats/sediments between rocks.	988
2010/08/28 11:03:20	45.91909	-129.99295	355.3	2.6	1533.9	1536.5	Now traveling east after ~40m northwest.	989
2010/08/28 11:03:55	45.91919	-129.99286	358.3	2.5	1534.0	1536.5	Zigzagging back and forth from NW to NE.	990
2010/08/28 11:04:30	45.91924	-129.99273	356.4	3.1	1533.3	1536.4	Something seems to be blowing from east.	992
2010/08/28 11:06:26	45.91925	-129.99272	357.2	2.3	1533.9	1536.3	Plume coming from N/NE	994
2010/08/28 11:06:45	45.91929	-129.99266	357.1	2.3	1533.6	1535.9	Continuing NE.	995
2010/08/28 11:07:28	45.91941	-129.99255	0.0	2.0	1533.6	1535.6	Passing over rocks with old bacterial mat staining/sediments.	996
2010/08/28 11:08:54	45.91965	-129.99248	356.0	3.4	1532.1	1535.4	We may have missed the venting source and it may be behind us now.	998
2010/08/28 11:09:56	45.91981	-129.99266	356.4	2.9	1534.1	1536.9	Traveling NW over rocks with old mat stains.	999
2010/08/28 11:10:58	45.91995	-129.99283	358.9	2.3	1535.6	1537.9	Ridges of rock with mat between them.	1001
2010/08/28 11:12:57	45.92013	-129.99295	356.7	2.6	1534.4	1537.0	Starfish and worms(?) on rocks.	1003
2010/08/28 11:14:06	45.92024	-129.99272	354.1	2.3	1534.3	1536.7	Entering large rock field.	1004
2010/08/28 11:14:38	45.92024	-129.99267	358.2	3.1	1532.3	1535.4	Lava pillows with old mat staining on them.	1006

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2010/08/28 11:16:05	45.92032	-129.99251	357.9	2.6	1529.0	1531.6	Seem to have lost traces of hydrothermal activity.	1007
2010/08/28 11:21:14	45.92068	-129.99271	354.0	2.4	1528.7	1531.1	pillow lava flow with some brown sedimentation in cracks	1011
2010/08/28 11:22:13	45.92074	-129.99249	0.1	3.2	1527.6	1530.8	pillow lava	1013
2010/08/28 11:27:50	45.92107	-129.99229	358.4	2.5	1527.3	1529.8	Jason turning east toward southern end of Mkr 113 collapse.	1016
2010/08/28 11:28:42	45.92108	-129.99226	97.4	2.4	1527.6	1530.0	We are about 140 m west of that point on the west side of a mega-lobe with collapse along its axis.	1018
2010/08/28 11:28:57	45.92108	-129.99220	94.3	2.3	1527.6	1529.8	Bill taking over as data logger ...	1019
2010/08/28 11:29:20	45.92108	-129.99225	87.7	3.0	1526.9	1529.9	We are in pillow lava on the west flank of the lobe.	1020
2010/08/28 11:40:05	45.92118	-129.99114	95.4	2.1	1524.5	1526.7	There is a mix of high-standing pillows and low-lying darker lobate flows.	1026
2010/08/28 11:43:29	45.92112	-129.99044	95.9	1.7	1523.3	1525.1	We're near the axis of the collapse at the top of the lobe.	1029
2010/08/28 11:43:32	45.92112	-129.99043	96.0	1.8	1523.3	1525.1	Here it is.	1030
2010/08/28 11:45:03	45.92111	-129.99038	95.5	2.1	1523.2	1525.3	We're on the western edge of the collapse. We'll drive to the south end to compare to the nav underlay to see if there's an offset.	1032
2010/08/28 11:49:23	45.92110	-129.99044	95.4	0.8	1524.5	1525.3	The underlay should be about 25 m further east 10 m further south.	1035
2010/08/28 11:49:42	45.92110	-129.99044	95.4	0.8	1524.5	1525.3	OK now we'll go to the southern end of the collapse and follow it north.	1036
2010/08/28 11:54:28	45.92108	-129.99049	95.2	0.9	1524.3	1525.2	NAV: Doppler Reset	1040
2010/08/28 11:55:25	45.92100	-129.99041	95.5	1.2	1524.0	1525.2	We've been sitting in one place getting a cluster of acoustic fixes.	1041
2010/08/28 11:56:19	45.92093	-129.99035	29.7	1.5	1523.5	1525.1	HD_CAM: start	1043
2010/08/28 11:56:51	45.92093	-129.99034	4.7	1.6	1523.7	1525.3	TXT:	1044
2010/08/28 11:56:52	45.92093	-129.99034	4.2	1.6	1523.6	1525.2	TXT:	1045
2010/08/28 11:57:06	45.92094	-129.99034	5.0	1.8	1523.5	1525.3	We're at the southern end looking north.	1046
2010/08/28 11:58:20	45.92095	-129.99037	5.0	1.3	1523.6	1524.9	We're going to drive over to a distinctive collapse pit.	1048
2010/08/28 12:01:37	45.92098	-129.99039	2.9	4.5	1523.5	1528.0	Looks like nav offset between map and USBL is more like 15 m east and 15 m south for where the underlay would shift.	1050
2010/08/28 12:02:06	45.92098	-129.99033	2.7	1.2	1523.7	1524.8	HD_CAM: stop	1051
2010/08/28 12:03:47	45.92096	-129.99031	4.2	1.4	1523.5	1524.9	Jason drove back to the southern end of the collapse. Will drive north along it.	1053
2010/08/28 12:05:09	45.92099	-129.99028	4.1	1.8	1525.7	1527.5	We're down inside the collapse.	1055
2010/08/28 12:05:49	45.92100	-129.99028	4.5	2.7	1525.0	1527.6	Jumbled lava down here.	1056
2010/08/28 12:10:24	45.92109	-129.99039	2.8	1.0	1523.8	1524.8	OK we're going to follow this north at rim height zigzagging from one rim to the other.	1060
2010/08/28 12:11:54	45.92117	-129.99010	4.5	1.6	1523.6	1525.2	We were on the west rim now going across to east rim. See a few pillars in the middle.	1061
2010/08/28 12:12:43	45.92123	-129.99015	4.9	4.5	1523.5	1528.1	Lobate top. Nice pillar.	1063
2010/08/28 12:13:47	45.92128	-129.99028	4.6	4.4	1523.6	1528.0	More pillars on this traverse back to the west.	1064
2010/08/28 12:15:39	45.92139	-129.99022	3.3	3.2	1523.7	1526.8	Zigging back to the east over island in the middle of the collapse channel.	1066
2010/08/28 12:16:44	45.92147	-129.99009	2.6	4.2	1523.6	1527.8	Eastern edge.	1068
2010/08/28 12:17:48	45.92157	-129.99013	3.7	2.6	1523.5	1526.2	Following north along east edge.	1069
2010/08/28 12:18:57	45.92167	-129.99029	2.4	3.8	1523.6	1527.4	Going back west.	1071

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2010/08/28 12:20:02	45.92162	-129.99032	3.3	1.2	1525.0	1526.3	Looks like there are lined flows in the bottom of the collapse here.	1072
2010/08/28 12:21:40	45.92163	-129.99012	3.2	2.5	1524.3	1526.9	Lined to ropy to jumbled lava in the bottom but looks like it was flowing south in the collapse channel.	1074
2010/08/28 12:24:50	45.92167	-129.99023	3.9	3.5	1524.0	1527.5	Traversing back to west.	1077
2010/08/28 12:26:45	45.92183	-129.99039	3.0	3.2	1523.5	1526.7	Collapse jogs to the west here.	1079
2010/08/28 12:27:14	45.92189	-129.99042	3.9	3.3	1523.5	1526.8	No sign of venting along here so far. We're at the western wall.	1080
2010/08/28 12:30:09	45.92204	-129.99022	4.1	2.2	1523.0	1525.3	On the eastern side. Channel curves to the east ahead.	1082
2010/08/28 12:31:30	45.92216	-129.99018	35.7	3.3	1523.1	1526.4	Jason nav target 20 is where we begin to follow eastern edge of collapse around the bend in the collapse.	1084
2010/08/28 12:31:56	45.92220	-129.99013	46.1	2.5	1523.3	1525.7	Correction it is target 28.	1085
2010/08/28 12:41:05	45.92247	-129.98955	88.7	3.0	1522.4	1525.4	Getting near where the channel appears to end in the bathymetry. Still following east rim of collapse.	1091
2010/08/28 12:44:51	45.92248	-129.98914	342.1	3.2	1521.3	1524.6	Following the upper reaches of the collapse. Some yellow staining.	1094
2010/08/28 12:45:13	45.92252	-129.98913	42.5	3.3	1521.2	1524.5	Basically mapping the collapse edge with Jason.	1095
2010/08/28 12:47:24	45.92252	-129.98944	303.9	4.1	1521.8	1525.9	Jason heading back west to the end of its leash after following edge of collapse. There is a cul-de-sac in the collapse.	1097
2010/08/28 12:48:03	45.92251	-129.98936	37.7	4.5	1521.8	1526.3	Adding Jason target 29 that is end of wall following.	1098
2010/08/28 12:51:53	45.92267	-129.98905	72.8	0.9	1521.8	1522.7	We are about 100 m ESE of Marker 62. We are going to zigzag north and south over the collapse area between here and Marker 62.	1101
2010/08/28 12:53:38	45.92253	-129.98887	72.2	1.8	1520.5	1522.3	Out of collapse over solid stretch of lobate lava.	1103
2010/08/28 12:54:12	45.92244	-129.98882	70.9	2.0	1520.2	1522.2	Back into collapse.	1105
2010/08/28 12:58:45	45.92265	-129.98865	91.2	3.9	1520.3	1524.2	First sign of venting. A few isolate worms covered in mat in low points between lobes. Some shimmering water.	1108
2010/08/28 12:59:43	45.92278	-129.98857	90.5	1.6	1520.5	1522.2	More minor venting patches. All these are in the lobate roof.	1109
2010/08/28 13:02:37	45.92266	-129.98840	66.4	1.6	1521.6	1523.2	Collapse with staining. A few limpets blue mat a few tubeworms and peach mat.	1112
2010/08/28 13:03:24	45.92261	-129.98831	66.5	1.5	1520.5	1522.0	More venting patches but all pretty small.	1113
2010/08/28 13:05:09	45.92251	-129.98811	66.5	1.6	1520.1	1521.7	HD_CAM: start More isolated venting patches with worms limpets and mats.	1115
2010/08/28 13:06:21	45.92243	-129.98799	67.6	1.6	1520.3	1522.0	Ran out of venting patches.	1117
2010/08/28 13:07:09	45.92248	-129.98790	13.7	2.1	1519.8	1521.9	Turning north.	1118
2010/08/28 13:09:28	45.92262	-129.98793	9.1	4.0	1520.2	1524.2	Still no sign of venting even though we are 20 m SE of Marker 62.	1120
2010/08/28 13:10:10	45.92265	-129.98805	3.8	1.3	1520.1	1521.4	OK now first sign venting.	1121
2010/08/28 13:10:55	45.92268	-129.98818	31.5	0.7	1520.9	1521.6	There's the marker straight ahead.	1123
2010/08/28 13:11:20	45.92270	-129.98818	71.4	3.1	1520.6	1523.7	Now looking at place where we sampled tubeworms at the beginning of the dive.	1124
2010/08/28 13:14:18	45.92275	-129.98801	2.8	2.0	1522.0	1524.0	Looking at spot a little east of Mkr 62	1127
2010/08/28 13:15:49	45.92276	-129.98804	3.0	2.1	1521.8	1523.9	Now following edge of collapse back to the west to Marker 62.	1128
2010/08/28 13:19:25	45.92275	-129.98814	354.1	2.5	1521.4	1523.9	Now at Mrk 62.	1131
2010/08/28 13:20:43	45.92278	-129.98823	38.6	2.7	1521.0	1523.7	HD_CAM: stop	1133
2010/08/28 13:32:14	45.92275	-129.98840	19.4	0.8	1520.9	1521.7	Was considering changing to a different underlay but decided against it because running out of time.	1140

J2-520 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 13:32:23	45.92275	-129.98840	18.9	0.7	1521.0	1521.7	Will leave bottom in 15 minutes.	1141
2010/08/28 13:38:24	45.92274	-129.98817	28.6	2.7	1521.4	1524.1	Back at Marker 62 for video close ups.	1145
2010/08/28 13:42:08	45.92273	-129.98815	21.8	2.6	1521.3	1524.0	NAV: Doppler Reset	1147
2010/08/28 13:44:29	45.92273	-129.98813	7.7	2.5	1521.4	1523.9	Now moving to pillar to east with peach mat on it.	1150
2010/08/28 13:47:58	45.92276	-129.98809	337.3	1.6	1522.1	1523.6	Looking at peach mat on pillar about 5 m east of Mkr 62.	1152
2010/08/28 13:50:57	45.92270	-129.98809	267.7	5.3	1518.2	1523.5	HD_CAM: stop	1155

Table 10.0-2**J2-521: ASHES Vent Field, fluid sampling**

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/28 23:57:10	45.93249	-130.02087	78.6	3.1	1412.9	1416.0	JASON: Jason on bottom	1171
2010/08/28 23:59:41	45.93249	-130.02087	77.9	3.5	1412.4	1415.9	Dropping dive weights.	1173
2010/08/29 00:06:57	45.93243	-130.02091	142.1	1.3	1414.8	1416.0	SAMPLE: bio SED-01 pink push core start	1178
2010/08/29 00:07:46	45.93243	-130.02092	134.9	0.9	1414.9	1415.8	soft core about 10 cm	1179
2010/08/29 00:09:04	45.93243	-130.02092	140.1	0.9	1415.0	1415.9	SAMPLE: bio lost some out end as well yellow sediment	1181
2010/08/29 00:13:57	45.93240	-130.02090	144.6	1.7	1413.6	1415.3	SAMPLE: bio moving position a little left to find harder sediment	1184
2010/08/29 00:15:36	45.93240	-130.02088	134.8	0.9	1414.9	1415.8	SAMPLE: bio SED-02 orange push core # 8 start	1186
2010/08/29 00:15:51	45.93240	-130.02088	135.3	0.8	1414.9	1415.7	deeper core this time	1187
2010/08/29 00:16:05	45.93240	-130.02088	134.5	0.8	1414.9	1415.7	about 25 cm?	1188
2010/08/29 00:16:32	45.93240	-130.02088	134.3	116.9	1414.9	1531.8	still losing most from end	1190
2010/08/29 00:19:44	45.93240	-130.02087	132.2	0.8	1414.8	1415.6	SAMPLE: bio SED-03 red push core	1191
2010/08/29 00:19:56	45.93240	-130.02087	131.4	100.7	1414.8	1515.5	deep core again	1192
2010/08/29 00:20:09	45.93240	-130.02087	131.3	100.7	1414.8	1515.5	lost some from end but enough left	1193
2010/08/29 00:21:17	45.93240	-130.02087	128.1	150.9	1414.7	1565.6	SAMPLE: bio SED-04 blue push core	1194
2010/08/29 00:21:35	45.93240	-130.02087	127.9	0.9	1414.7	1415.7	long core but lost some again	1195
2010/08/29 00:25:17	45.93239	-130.02088	84.5	2.6	1412.3	1414.9	moving to AShes	1198
2010/08/29 00:26:21	45.93239	-130.02088	84.7	3.0	1411.9	1414.9	temperature 3.5 deg C	1200
2010/08/29 00:33:03	45.93238	-130.01990	83.1	3.6	1416.2	1419.8	Heading west to the caldera rim.	1204
2010/08/29 00:38:56	45.93241	-130.01878	85.6	3.4	1417.7	1421.1	Still headed west. Traversing sedimented basalt.	1208
2010/08/29 00:49:40	45.93251	-130.01687	85.1	3.4	1428.0	1431.4	Set the clock on the DSC to the correct time and date. No longer need a correction.	1214
2010/08/29 00:51:26	45.93253	-130.01660	311.1	9.3	1429.1	1438.4	Going over caldera rim.	1216
2010/08/29 01:00:22	45.93270	-130.01518	73.7	12.4	1531.0	1543.4	Still going down.	1220
2010/08/29 01:01:29	45.93274	-130.01501	73.6	3.2	1540.3	1543.5	At the bottom in the caldera.	1221
2010/08/29 01:04:12	45.93282	-130.01449	73.9	3.1	1540.4	1543.5	See some hydrothermal staining.	1224
2010/08/29 01:07:29	45.93289	-130.01388	50.5	2.4	1540.9	1543.3	White stuff and orange staining on jumbled lava.	1226
2010/08/29 01:09:10	45.93299	-130.01369	52.5	1.9	1541.3	1543.2	Lots of orange staining.	1228
2010/08/29 01:09:49	45.93302	-130.01362	52.9	1.8	1541.8	1543.6	Anemone.	1229
2010/08/29 01:12:17	45.93317	-130.01342	359.5	2.4	1540.7	1543.1	More yellow orange staining.	1232
2010/08/29 01:12:40	45.93321	-130.01345	1.2	1.6	1541.7	1543.2	Fathead sculpin fish.	1233
2010/08/29 01:13:41	45.93321	-130.01345	1.6	1.2	1542.0	1543.2	Mooring anchor.	1234
2010/08/29 01:14:49	45.93326	-130.01345	0.7	1.4	1541.2	1542.6	Iron oxide chimneys.	1236

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 01:15:14	45.93325	-130.01342	1.2	1.7	1541.7	1543.4	Iron oxide chimneys and white staining.	1237
2010/08/29 01:16:34	45.93332	-130.01332	0.5	2.3	1541.0	1543.3	Some sort of instrument dropping and line.	1239
2010/08/29 01:16:51	45.93333	-130.01332	0.5	2.4	1540.9	1543.3	Maybe the big Johnson...	1240
2010/08/29 01:17:19	45.93332	-130.01331	358.0	3.6	1539.8	1543.3	Adding target for the Big Johnson.	1241
2010/08/29 01:17:43	45.93332	-130.01329	346.2	2.3	1541.0	1543.3	Already a target named poly pro line.	1242
2010/08/29 01:17:57	45.93334	-130.01327	309.0	2.6	1540.7	1543.3	Should be at Crack.	1243
2010/08/29 01:19:17	45.93335	-130.01332	294.1	1.1	1542.3	1543.4	Can on the bottom.	1245
2010/08/29 01:19:56	45.93336	-130.01341	294.2	1.3	1541.8	1543.1	Another Alvin drop weight.	1246
2010/08/29 01:20:29	45.93334	-130.01345	269.2	0.8	1542.6	1543.4	Several small bunches of tube worms.	1248
2010/08/29 01:20:52	45.93333	-130.01345	234.7	0.7	1542.7	1543.4	There is flow coming out.	1249
2010/08/29 01:21:30	45.93332	-130.01345	214.5	0.7	1542.9	1543.6	NAV: Doppler Reset	1250
2010/08/29 01:22:04	45.93332	-130.01348	207.1	1.1	1542.5	1543.6	Lots of flow in the cracks.	1251
2010/08/29 01:24:24	45.93329	-130.01348	140.9	0.7	1543.1	1543.8	Flow in the cracks may be hard to reach with Jason.	1254
2010/08/29 01:27:14	45.93330	-130.01348	97.5	0.7	1543.3	1544.1	Going to take out the fluid sampler wand and try to get a sample from the crack.	1256
2010/08/29 01:31:15	45.93332	-130.01349	99.0	0.7	1543.3	1544.1	Trying to find the best spot for sampling the fluids.	1259
2010/08/29 01:34:27	45.93332	-130.01350	98.0	0.7	1543.3	1544.0	Trying out the diffuse flow cone on the fluid sampler nozzle.	1262
2010/08/29 01:38:10	45.93333	-130.01352	97.8	0.7	1543.2	1544.0	SAMPLE: fluid Filtered #18. Sample J521-JFS-05.	1264
2010/08/29 01:42:03	45.93332	-130.01352	97.8	0.7	1543.2	1544.0	end sample. Tmax=25 Tave=20.4 T2=2.5 Vol=501	1267
2010/08/29 01:42:45	45.93332	-130.01353	97.8	0.7	1543.2	1543.9	Unfiltered	1269
2010/08/29 01:43:18	45.93332	-130.01353	97.8	0.7	1543.2	1543.9	Sample J521-HFS-06 Unfiltered bag #24	1270
2010/08/29 01:43:23	45.93332	-130.01353	97.7	0.7	1543.2	1543.9	SAMPLE: fluid	1271
2010/08/29 01:46:25	45.93331	-130.01353	97.7	0.7	1543.2	1543.9	end sample. Tmax=35.7 Tave=28.9 T2=2.5 Vol=502	1274
2010/08/29 01:48:05	45.93331	-130.01353	97.7	0.7	1543.2	1543.9	SAMPLE: fluid Sample J521-HFS-07. RNA filter #16.	1275
2010/08/29 02:18:55	45.93333	-130.01354	98.0	0.7	1542.9	1543.7	End sample. Tmax=24.8 Tave=21.1 T2=10.6 Vol=3000	1292
2010/08/29 02:19:20	45.93333	-130.01354	98.1	0.7	1542.9	1543.7	Done with fluid sampling. Stowing the wand.	1293
2010/08/29 02:22:23	45.93333	-130.01356	97.6	0.7	1543.0	1543.7	Deploying MTR.	1296
2010/08/29 02:24:18	45.93333	-130.01356	96.7	1.6	1541.7	1543.3	MTR 4001 (153 on float) is deployed.	1298
2010/08/29 02:26:25	45.93330	-130.01351	17.1	0.7	1542.6	1543.3	Finding a site to collect a syringe sample.	1300
2010/08/29 02:33:59	45.93331	-130.01347	17.1	0.8	1542.4	1543.2	SAMPLE: geo Using large syringe but it seems stuck at the moment.	1304
2010/08/29 02:34:53	45.93331	-130.01346	16.5	0.8	1542.4	1543.2	Collecting sediment sample with large syringe. Sample J521-SED-08.	1306
2010/08/29 02:35:07	45.93331	-130.01346	16.5	0.8	1542.4	1543.2	SAMPLE: geo Collecting sediment sample with large syringe. Sample J521-SED-08	1307
2010/08/29 02:36:31	45.93331	-130.01344	16.6	0.7	1542.4	1543.2	Stowing syringe.	1309
2010/08/29 02:37:49	45.93331	-130.01343	14.1	1.4	1541.8	1543.2	Heading to Daves or Hairdo to the north.	1310

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 02:39:56	45.93332	-130.01357	234.2	3.3	1540.3	1543.6	Black smocker.	1312
2010/08/29 02:43:44	45.93352	-130.01369	287.8	3.2	1540.0	1543.2	A frame from some past experiment.	1315
2010/08/29 02:47:05	45.93352	-130.01371	40.9	3.5	1539.7	1543.2	column visible	1318
2010/08/29 02:47:18	45.93352	-130.01371	41.0	3.5	1539.7	1543.2	don't know what it is	1319
2010/08/29 02:47:26	45.93352	-130.01371	41.0	3.4	1539.8	1543.2	next to frame	1320
2010/08/29 02:47:50	45.93352	-130.01372	41.7	3.4	1539.7	1543.2	Identified as Inferno	1321
2010/08/29 02:49:25	45.93342	-130.01381	48.6	1.3	1542.0	1543.3	pillow lava	1323
2010/08/29 02:49:44	45.93343	-130.01380	49.0	0.8	1542.4	1543.2	navigation off	1324
2010/08/29 02:51:47	45.93347	-130.01385	70.3	2.2	1541.0	1543.2	can't identify location	1326
2010/08/29 02:53:34	45.93348	-130.01389	60.1	2.5	1540.9	1543.3	waiting for Dave to see if he can identify location	1328
2010/08/29 02:57:14	45.93350	-130.01384	59.9	2.4	1540.9	1543.3	moving again	1331
2010/08/29 02:57:36	45.93352	-130.01383	60.4	1.1	1542.2	1543.3	hydrothermal staining?	1332
2010/08/29 02:57:44	45.93352	-130.01383	60.0	0.7	1542.6	1543.4	some tubeworms	1333
2010/08/29 02:58:41	45.93352	-130.01383	60.3	0.7	1542.6	1543.4	column just visible	1335
2010/08/29 02:59:26	45.93352	-130.01383	60.3	0.7	1542.6	1543.4	Hairdo?	1336
2010/08/29 03:00:17	45.93352	-130.01383	60.3	0.7	1542.6	1543.4	Correction this is Dave's straight south of Inferno	1338
2010/08/29 03:00:42	45.93352	-130.01383	60.3	0.7	1542.7	1543.4	not much vent activity	1339
2010/08/29 03:00:53	45.93352	-130.01383	60.5	1.2	1542.2	1543.3	small clump of worms	1340
2010/08/29 03:01:13	45.93352	-130.01388	349.8	1.8	1541.3	1543.1	moving to Hairdo	1341
2010/08/29 03:01:29	45.93351	-130.01390	353.0	2.2	1541.1	1543.3	frame again	1342
2010/08/29 03:01:49	45.93349	-130.01396	353.0	2.7	1540.5	1543.2	probably used for camera previously	1343
2010/08/29 03:04:32	45.93346	-130.01411	353.6	2.7	1540.4	1543.1	hydrothermal staining	1346
2010/08/29 03:04:56	45.93345	-130.01413	16.9	2.7	1540.3	1542.9	lobate lava	1347
2010/08/29 03:05:17	45.93344	-130.01412	63.9	3.0	1539.8	1542.8	where is Hairdo?	1348
2010/08/29 03:05:30	45.93344	-130.01411	63.0	1.8	1541.0	1542.9	also just a small vent marked by tubeworm bush	1349
2010/08/29 03:07:06	45.93340	-130.01400	154.0	2.8	1539.9	1542.7	Hell?	1351
2010/08/29 03:07:27	45.93338	-130.01398	153.4	2.2	1540.6	1542.8	Mushroom vent?	1352
2010/08/29 03:08:03	45.93337	-130.01396	185.4	2.5	1540.5	1543.0	No must be Hell vent	1353
2010/08/29 03:08:53	45.93337	-130.01395	185.6	2.3	1540.7	1543.0	Not Medusa because it is much smaller not big like this	1355
2010/08/29 03:09:15	45.93336	-130.01395	185.0	2.5	1540.6	1543.1	flow visible	1356
2010/08/29 03:10:22	45.93336	-130.01395	185.6	3.5	1539.5	1543.1	navigation not right for Hell vent	1358
2010/08/29 03:10:33	45.93336	-130.01395	185.7	3.6	1539.5	1543.0	flow from top visible	1359
2010/08/29 03:11:37	45.93335	-130.01393	213.6	1.5	1541.7	1543.2	previously called Medusa by mistake	1360

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 03:12:24	45.93333	-130.01391	257.0	1.0	1542.1	1543.1	sculpin?	1362
2010/08/29 03:13:26	45.93335	-130.01392	190.1	0.8	1542.3	1543.0	dark tubeworm bushes and crab	1363
2010/08/29 03:14:03	45.93334	-130.01389	190.6	1.1	1542.0	1543.1	going to sample here	1364
2010/08/29 03:15:00	45.93329	-130.01388	295.0	0.8	1542.5	1543.4	tube worm bushes off vent column	1366
2010/08/29 03:15:13	45.93329	-130.01388	296.2	0.8	1542.9	1543.7	looking for site to sample here	1367
2010/08/29 03:16:19	45.93329	-130.01388	296.8	0.7	1542.9	1543.7	flow coming out of crack on left	1369
2010/08/29 03:16:34	45.93329	-130.01388	296.8	0.7	1542.9	1543.7	right is big bush where hard to figure out source of flow	1370
2010/08/29 03:17:05	45.93328	-130.01388	296.8	0.7	1542.9	1543.7	this site looks like Medusa	1371
2010/08/29 03:17:08	45.93328	-130.01388	296.8	0.7	1542.9	1543.7	small venting area	1372
2010/08/29 03:17:20	45.93328	-130.01388	296.8	0.7	1542.9	1543.7	shimmer above tubeworms visible	1373
2010/08/29 03:17:52	45.93328	-130.01389	297.2	0.8	1542.7	1543.5	preparing for fluid sampling	1374
2010/08/29 03:18:18	45.93328	-130.01390	296.0	0.9	1542.4	1543.4	some floc coming out of vent	1376
2010/08/29 03:19:42	45.93328	-130.01390	295.8	1.0	1542.3	1543.3	picking up temp probe	1377
2010/08/29 03:20:21	45.93328	-130.01390	295.9	1.0	1542.3	1543.3	checking for stable temperature	1379
2010/08/29 03:20:30	45.93328	-130.01390	296.4	1.0	1542.3	1543.3	temp 12.9 and up	1380
2010/08/29 03:21:38	45.93328	-130.01390	295.8	1.0	1542.3	1543.3	steady temp almost 15 deg	1381
2010/08/29 03:21:51	45.93328	-130.01390	295.4	1.0	1542.3	1543.3	going to move slightly left	1382
2010/08/29 03:22:18	45.93328	-130.01390	295.9	1.0	1542.3	1543.3	inserting nozzle in middle of small bush	1384
2010/08/29 03:22:27	45.93328	-130.01390	295.8	1.0	1542.3	1543.3	temp 18.6 and up	1385
2010/08/29 03:23:36	45.93328	-130.01390	295.5	0.9	1542.3	1543.3	starting with filtered bag # 17	1386
2010/08/29 03:23:50	45.93329	-130.01391	295.8	1.0	1542.3	1543.3	HFS-09 start	1387
2010/08/29 03:24:10	45.93329	-130.01391	295.8	1.0	1542.3	1543.3	HFS-09 filtered bag #17 in progress	1388
2010/08/29 03:25:36	45.93329	-130.01391	295.7	1.0	1542.3	1543.3	floc coming out of vent	1390
2010/08/29 03:26:28	45.93329	-130.01391	295.7	1.0	1542.3	1543.3	sudden shadow?	1392
2010/08/29 03:26:38	45.93329	-130.01391	295.9	1.0	1542.3	1543.3	lots of shimmer over vent	1393
2010/08/29 03:27:04	45.93329	-130.01391	295.5	1.0	1542.3	1543.3	HFS09 stop	1394
2010/08/29 03:27:55	45.93329	-130.01391	295.4	1.0	1542.3	1543.3	HFS-09 Tmax=24.0 Tavg=23.2 T2=11.9 vol=502 mL	1395
2010/08/29 03:28:37	45.93329	-130.01391	295.6	1.0	1542.3	1543.3	SAMPLE: fluid HFS-10 unfiltered bag #23 start	1397
2010/08/29 03:31:26	45.93329	-130.01390	295.6	1.0	1542.3	1543.2	SAMPLE: fluid HFS-10 stop	1399
2010/08/29 03:32:03	45.93329	-130.01390	295.6	1.0	1542.2	1543.2	SAMPLE: fluid HFS-10 Tmax=25.4 Tavg=24.9 T2=12.2 vol=501 mL	1400
2010/08/29 03:34:44	45.93329	-130.01390	295.8	1.0	1542.3	1543.2	SAMPLE: fluid HFS-11 DNA filter #12 start	1403
2010/08/29 03:35:58	45.93328	-130.01390	296.2	0.9	1542.3	1543.2	long filamentous white mat on worms next to fluid intake	1404
2010/08/29 03:37:08	45.93328	-130.01390	296.0	1.0	1542.3	1543.2	crab still in place	1406

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 04:00:34	45.93327	-130.01388	294.1	0.9	1542.2	1543.1	SAMPLE: fluid HFS-11 DNA filter #12 stop	1419
2010/08/29 04:01:03	45.93327	-130.01388	294.2	1.0	1542.2	1543.2	HFS-11 Tmax=24.2 Tavg 22.4 T2=8.7 vol=3004 mL	1420
2010/08/29 04:02:39	45.93327	-130.01387	293.9	1.0	1542.2	1543.1	SAMPLE: fluid HFS-12 RNA #15 start	1422
2010/08/29 04:05:48	45.93327	-130.01387	294.8	1.0	1542.2	1543.2	switching watch leader Julie leaving Dave arriving	1425
2010/08/29 04:21:51	45.93328	-130.01389	294.6	1.0	1542.2	1543.1	SAMPLE: fluid 2000 mL out of 3000 mL now	1434
2010/08/29 04:28:28	45.93327	-130.01390	295.4	0.9	1542.2	1543.1	after this sample will put MTR in against rock and marker out	1439
2010/08/29 04:28:57	45.93327	-130.01390	295.1	1.0	1542.2	1543.1	then heading to Marshmallow area	1440
2010/08/29 04:29:54	45.93327	-130.01390	295.0	0.9	1542.2	1543.1	SAMPLE: fluid HFS-12 RNA #15 stop	1441
2010/08/29 04:30:27	45.93327	-130.01390	295.6	0.9	1542.2	1543.1	HFS-12 Tmax=23.9 Tavg=19.7 T2=10 Vol=3000 mL	1443
2010/08/29 04:31:46	45.93327	-130.01390	295.6	0.9	1542.2	1543.2	picking up MTR and marker from starboard biobox	1444
2010/08/29 04:32:34	45.93327	-130.01390	295.8	1.0	1542.2	1543.2	opening box	1446
2010/08/29 04:32:52	45.93327	-130.01390	295.9	0.9	1542.2	1543.1	marker # 68	1447
2010/08/29 04:33:02	45.93327	-130.01390	295.8	0.9	1542.2	1543.2	lifting out marker	1448
2010/08/29 04:33:49	45.93327	-130.01390	296.1	0.9	1542.2	1543.1	marker 68 in place	1449
2010/08/29 04:34:14	45.93327	-130.01390	296.0	1.0	1542.2	1543.2	MTR 3054	1451
2010/08/29 04:34:46	45.93327	-130.01390	295.0	0.9	1542.2	1543.1	MTR 3054 being placed next to Marker 68	1452
2010/08/29 04:34:59	45.93327	-130.01390	295.0	0.9	1542.2	1543.2	moved biobox out of way first	1453
2010/08/29 04:35:40	45.93327	-130.01390	295.0	1.0	1542.2	1543.1	MTR being placed	1454
2010/08/29 04:36:27	45.93327	-130.01390	295.8	0.9	1542.3	1543.2	looks like temperature sensor of MTR is in vent flow	1456
2010/08/29 04:37:24	45.93327	-130.01391	296.1	0.9	1542.3	1543.1	looks good position for temp sensor	1457
2010/08/29 04:37:37	45.93327	-130.01391	296.1	0.8	1542.3	1543.1	frame grab of MTR	1458
2010/08/29 04:38:09	45.93327	-130.01390	298.6	0.9	1542.2	1543.1	heading for Gollum	1459
2010/08/29 04:39:03	45.93335	-130.01383	47.8	1.4	1541.6	1543.0	moving low over lava pillows	1461
2010/08/29 04:39:11	45.93336	-130.01381	50.9	1.1	1541.8	1542.9	tube worm patch	1462
2010/08/29 04:39:38	45.93338	-130.01373	53.6	1.5	1542.0	1543.5	white mat	1463
2010/08/29 04:45:35	45.93342	-130.01356	54.1	0.8	1541.6	1542.4	tube worm bush	1467
2010/08/29 04:46:12	45.93344	-130.01350	54.1	1.8	1541.1	1542.9	more tube worms	1468
2010/08/29 04:46:21	45.93345	-130.01350	56.2	0.9	1541.6	1542.5	marker? visible	1470
2010/08/29 04:46:44	45.93345	-130.01349	18.5	1.1	1541.9	1543.0	something in tubeworm patch small rusted frame	1471
2010/08/29 04:47:33	45.93349	-130.01347	34.9	2.9	1539.9	1542.7	marker 47 on tube worm patch frame	1472
2010/08/29 04:48:32	45.93358	-130.01332	41.2	3.3	1538.5	1541.8	abandoned object	1474
2010/08/29 04:48:43	45.93359	-130.01330	21.6	2.4	1539.2	1541.6	going down to look at vent	1475
2010/08/29 04:50:25	45.93359	-130.01326	338.6	0.7	1541.8	1542.5	no markers visible around this vent	1477

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2010/08/29 04:50:56	45.93359	-130.01326	338.5	0.7	1541.8	1542.6	Virgin visible in distance	1478
2010/08/29 04:51:13	45.93359	-130.01326	338.5	0.7	1541.8	1542.6	taking range and bearing for Virgin column	1479
2010/08/29 04:52:14	45.93359	-130.01326	338.3	0.8	1541.8	1542.6	expt rack with MTR pointing to Virgin	1481
2010/08/29 04:54:10	45.93359	-130.01326	338.5	0.7	1541.8	1542.5	vent has lots of limpet and usual white mat	1482
2010/08/29 04:54:33	45.93358	-130.01326	339.2	0.8	1541.5	1542.3	going to look at vents just south passed on the way here	1484
2010/08/29 04:56:09	45.93354	-130.01328	292.0	1.4	1540.8	1542.2	tripod visible on vent now	1485
2010/08/29 04:56:25	45.93355	-130.01328	291.0	1.3	1540.9	1542.2	tripod number 21	1487
2010/08/29 04:57:06	45.93355	-130.01328	291.6	1.3	1540.9	1542.2	lots of filamentous bacteria trapped around vent	1488
2010/08/29 04:57:49	45.93355	-130.01327	291.6	1.3	1540.9	1542.2	assuming that this is Gollum	1489
2010/08/29 04:58:03	45.93355	-130.01327	291.6	1.4	1540.9	1542.3	bacterial traps have been here for about 5 yr	1490
2010/08/29 04:58:32	45.93355	-130.01328	258.1	1.1	1541.2	1542.3	going to sample here at Gollum	1492
2010/08/29 05:00:12	45.93354	-130.01329	294.3	0.7	1541.6	1542.4	note that exptl rack near here was from Tunicliffe expt on larval settling	1493
2010/08/29 05:00:32	45.93354	-130.01329	294.5	0.7	1541.6	1542.4	picking up HFS intake	1495
2010/08/29 05:02:09	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	inserting intake in vent shimmer near bacterial traps	1496
2010/08/29 05:02:17	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	waiting for floc to clear	1498
2010/08/29 05:04:36	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	inserting HFS intake into crack	1500
2010/08/29 05:04:58	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	temp 12 and climbing	1501
2010/08/29 05:07:05	45.93353	-130.01329	294.6	0.7	1541.6	1542.3	temp 20 and climbing	1503
2010/08/29 05:07:51	45.93353	-130.01329	294.6	0.7	1541.6	1542.3	ready to fluid sample	1504
2010/08/29 05:09:02	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	going to check pH voltage	1506
2010/08/29 05:09:29	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	pH voltage 1.70	1507
2010/08/29 05:11:19	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	SAMPLE: fluid HFS-13 unfiltered bag # 21 start	1509
2010/08/29 05:14:02	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	SAMPLE: fluid HFS-13	1511
2010/08/29 05:14:37	45.93353	-130.01329	294.7	0.7	1541.6	1542.3	HFS-13 Tmax=22.8 Tavg=22.5 T2=11.3 vol=500 mL	1513
2010/08/29 05:15:13	45.93354	-130.01329	294.7	0.7	1541.6	1542.3	HFS-13 stop time at 05:14:02	1514
2010/08/29 05:15:22	45.93354	-130.01329	294.7	0.7	1541.6	1542.4	HFS-14 filtered bag # 19 start	1515
2010/08/29 05:16:47	45.93354	-130.01329	294.8	0.7	1541.6	1542.4	SAMPLE: fluid HFS-14 did not go	1517
2010/08/29 05:16:54	45.93354	-130.01329	294.8	0.7	1541.6	1542.4	HFS-14 restarted	1518
2010/08/29 05:17:14	45.93354	-130.01329	294.8	0.7	1541.6	1542.3	SAMPLE: fluid HFS-14 filtered bag # 19 in progress now	1519
2010/08/29 05:21:16	45.93355	-130.01329	294.8	0.7	1541.6	1542.4	SAMPLE: fluid HFS-14 stop	1522
2010/08/29 05:21:45	45.93355	-130.01329	294.8	0.7	1541.6	1542.3	SAMPLE: fluid HFS-14 Tmax=23.1 Tavg=22.9 T2=11 vol= 500 mL	1523
2010/08/29 05:22:07	45.93355	-130.01329	294.8	0.7	1541.6	1542.3	HFS-15 RNA filter #13 start	1524
2010/08/29 05:22:23	45.93355	-130.01329	294.8	0.7	1541.6	1542.3	correction not started yet	1526

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 05:22:38	45.93355	-130.01329	294.8	0.7	1541.6	1542.3	SAMPLE: fluid HFS-15 RNA filter #13 start	1527
2010/08/29 05:24:46	45.93356	-130.01329	294.8	0.7	1541.6	1542.3	3 bacterial traps are each about 4 inches tall	1529
2010/08/29 05:39:01	45.93357	-130.01327	294.9	0.7	1541.7	1542.4	scale worm covered in mat	1537
2010/08/29 05:46:57	45.93355	-130.01327	294.9	0.7	1541.7	1542.4	SAMPLE: fluid HFS-15 stop	1542
2010/08/29 05:47:38	45.93355	-130.01327	294.9	0.7	1541.7	1542.4	HFS-15 Tmax=22.8 Tavg=22.2 T2=11 Vol=3000 mL	1543
2010/08/29 05:47:54	45.93355	-130.01327	294.9	0.7	1541.7	1542.4	SAMPLE: fluid HFS-16 DNA filter 10 start	1544
2010/08/29 05:49:05	45.93355	-130.01327	294.9	0.7	1541.7	1542.4	Frame_Grab:	1546
2010/08/29 05:56:15	45.93353	-130.01328	294.9	0.7	1541.7	1542.4	looking at white mat with worms limpets and ?	1551
2010/08/29 06:06:11	45.93354	-130.01326	294.9	0.7	1541.7	1542.5	SAMPLE: fluid 2250 mL collected	1556
2010/08/29 06:10:37	45.93354	-130.01326	294.9	0.7	1541.8	1542.5	SAMPLE: fluid going to deploy MTR and marker and then slurp before moving to Inferno	1560
2010/08/29 06:11:24	45.93354	-130.01326	294.9	0.7	1541.8	1542.5	SAMPLE: fluid fish	1561
2010/08/29 06:11:36	45.93354	-130.01326	294.9	0.7	1541.8	1542.5	hagfish	1562
2010/08/29 06:12:14	45.93354	-130.01326	294.9	0.7	1541.8	1542.5	SAMPLE: fluid HFS-16 stop	1564
2010/08/29 06:12:54	45.93355	-130.01326	294.9	0.7	1541.8	1542.5	HFS-16 Tmax=21.7 Tavg=20.5 T2=10.5 Vol=3000 mL	1565
2010/08/29 06:13:43	45.93355	-130.01326	295.0	0.7	1541.8	1542.5	deploying Mkr 4127	1566
2010/08/29 06:15:09	45.93354	-130.01325	294.4	0.9	1542.1	1542.9	opening starboard biobox	1568
2010/08/29 06:15:33	45.93354	-130.01326	294.0	0.9	1542.1	1543.0	picking up marker 4127	1569
2010/08/29 06:15:45	45.93354	-130.01326	294.3	1.0	1542.0	1543.0	correction marker 121	1570
2010/08/29 06:16:04	45.93354	-130.01326	293.7	1.0	1542.1	1543.0	DEPLOY: marker 121 deployed at Gollum	1571
2010/08/29 06:16:26	45.93354	-130.01326	293.9	0.9	1542.1	1543.0	next is MTR	1573
2010/08/29 06:18:43	45.93354	-130.01326	293.4	0.8	1542.1	1542.9	DEPLOY: MTR temp probe 4127	1575
2010/08/29 06:19:31	45.93354	-130.01326	293.3	0.8	1542.0	1542.9	repositioning MTR slightly	1576
2010/08/29 06:20:23	45.93353	-130.01326	293.8	0.8	1542.2	1543.0	note that these are deployed near old tripod #21 noted earlier	1578
2010/08/29 06:20:27	45.93353	-130.01326	293.7	0.9	1542.1	1543.0	Frame_Grab:	1579
2010/08/29 06:21:09	45.93353	-130.01326	293.9	0.8	1542.1	1542.9	going to pick up and move back to reposition in shimmer	1580
2010/08/29 06:22:20	45.93353	-130.01326	293.5	1.4	1542.1	1543.5	MTR in middle of shimmer looks good now	1582
2010/08/29 06:22:26	45.93353	-130.01326	293.3	1.3	1542.1	1543.5	Frame_Grab:	1583
2010/08/29 06:23:18	45.93353	-130.01326	290.4	2.1	1540.4	1542.5	moving to slurp site	1584
2010/08/29 06:23:29	45.93353	-130.01326	266.9	2.0	1540.5	1542.5	approaching from other side	1585
2010/08/29 06:26:57	45.93354	-130.01328	19.7	0.7	1541.2	1541.9	BIOLOGY: mat MAT-17 single chamber slurp	1588
2010/08/29 06:27:30	45.93354	-130.01328	19.7	0.7	1541.2	1541.9	BIOLOGY: mat starting now	1589
2010/08/29 06:28:30	45.93354	-130.01328	19.0	0.7	1541.2	1541.9	MAT collection finished	1591
2010/08/29 06:28:56	45.93353	-130.01328	19.0	0.7	1541.2	1542.0	sampler stowed	1592

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2010/08/29 06:30:14	45.93355	-130.01330	1.4	1.4	1540.7	1542.1	moving to Inferno now	1594
2010/08/29 06:30:33	45.93358	-130.01332	354.1	2.4	1539.7	1542.0	Mkr 64 was behind us while collecting slurp mat	1595
2010/08/29 06:32:08	45.93356	-130.01345	268.0	2.3	1540.9	1543.1	passed mushroom	1596
2010/08/29 06:32:19	45.93354	-130.01347	267.7	1.2	1541.0	1542.2	looks like a dog	1598
2010/08/29 06:32:25	45.93353	-130.01349	268.1	1.7	1541.0	1542.7	Inferno just visible	1599
2010/08/29 06:32:48	45.93353	-130.01353	270.3	1.0	1541.5	1542.5	hot fluid sampling and gas tights here	1600
2010/08/29 06:33:02	45.93353	-130.01355	270.4	1.5	1541.0	1542.5	probably using the cone on HFS intake	1601
2010/08/29 06:33:21	45.93353	-130.01358	269.9	2.9	1539.8	1542.7	going to sample near top of Inferno	1602
2010/08/29 06:33:47	45.93355	-130.01361	242.2	4.2	1538.9	1543.2	chimney spire taller than last time Dave seen	1603
2010/08/29 06:34:25	45.93355	-130.01364	196.4	5.5	1537.8	1543.3	top of chimney	1605
2010/08/29 06:34:54	45.93355	-130.01364	196.4	5.6	1537.7	1543.3	going to look around other side for another hot flow	1606
2010/08/29 06:36:20	45.93354	-130.01363	225.7	3.6	1539.6	1543.3	SAMPLE: bio lower flow	1608
2010/08/29 06:37:18	45.93355	-130.01365	178.1	3.2	1540.1	1543.4	looking around other side of column	1609
2010/08/29 06:37:37	45.93354	-130.01367	151.7	2.8	1540.4	1543.2	small flow	1610
2010/08/29 06:38:00	45.93355	-130.01368	145.8	2.9	1540.4	1543.3	another small flow	1611
2010/08/29 06:40:08	45.93354	-130.01366	150.3	2.2	1541.1	1543.3	still looking for flow to sample without knocking spire off	1613
2010/08/29 06:45:16	45.93355	-130.01365	197.4	4.3	1539.1	1543.4	aiming for base of spire now	1617
2010/08/29 06:51:07	45.93352	-130.01365	349.8	3.5	1539.9	1543.3	Priority is sampling at Inferno then Virgin and then back to low T Marshmallow	1621
2010/08/29 06:51:38	45.93352	-130.01365	349.9	3.5	1539.9	1543.3	Will go to Hell vent for high temperature samples after that	1622
2010/08/29 06:52:43	45.93352	-130.01365	350.0	3.5	1539.9	1543.3	Using Jason temperature probe	1624
2010/08/29 06:54:09	45.93353	-130.01365	349.9	3.4	1539.9	1543.3	Temp 80 and up	1625
2010/08/29 06:54:20	45.93353	-130.01365	349.9	3.4	1539.9	1543.3	Temp 137	1627
2010/08/29 06:54:39	45.93353	-130.01365	350.0	3.4	1539.9	1543.3	Temp 220	1628
2010/08/29 06:54:48	45.93353	-130.01365	349.9	3.4	1539.9	1543.3	Temp 270	1629
2010/08/29 06:55:18	45.93353	-130.01365	349.9	3.5	1539.9	1543.3	Temp 297	1630
2010/08/29 06:56:03	45.93353	-130.01365	350.0	3.5	1539.9	1543.4	Temp 300	1631
2010/08/29 06:56:15	45.93353	-130.01365	350.1	3.4	1539.9	1543.3	Temp 300.3	1633
2010/08/29 06:59:46	45.93353	-130.01365	350.0	3.4	1540.0	1543.4	Deploying Beast intake	1635
2010/08/29 07:03:02	45.93354	-130.01365	350.4	3.5	1540.0	1543.5	Trying to reposition Beast intake	1638
2010/08/29 07:03:21	45.93354	-130.01365	350.1	3.5	1539.9	1543.4	Changing pump rate on Beast	1639
2010/08/29 07:04:13	45.93354	-130.01365	350.3	3.4	1540.0	1543.4	There are white mats and limpets on the shelf by Inferno.	1640
2010/08/29 07:04:23	45.93354	-130.01365	350.3	3.4	1540.0	1543.4	We're going to sample here at Inferno.	1642
2010/08/29 07:07:23	45.93355	-130.01366	350.6	3.5	1540.0	1543.5	SAMPLE: fluid Still checking for a good place to take a sample	1644

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2010/08/29 07:07:35	45.93355	-130.01366	350.6	3.5	1540.0	1543.5	SAMPLE: fluid Filtered piston #1 starting	1645
2010/08/29 07:08:39	45.93355	-130.01366	350.7	3.5	1540.0	1543.5	SAMPLE: fluid T=264	1647
2010/08/29 07:08:50	45.93355	-130.01366	350.7	3.5	1540.0	1543.5	SAMPLE: geo After this fluid sample we'll collect a gastight	1648
2010/08/29 07:10:06	45.93355	-130.01366	350.8	3.4	1540.0	1543.5	SAMPLE: fluid HFS-18 finished	1649
2010/08/29 07:10:49	45.93355	-130.01367	350.6	3.5	1540.1	1543.5	SAMPLE: fluid HFS-18 Tmax=267 Tavg=264.7 T2=100 vol=400 filtered piston #1	1651
2010/08/29 07:11:29	45.93355	-130.01367	350.5	3.4	1540.0	1543.4	SAMPLE: gas triggering gastight T=266	1652
2010/08/29 07:12:39	45.93356	-130.01367	350.4	3.4	1540.0	1543.4	SAMPLE: gas GTHFS-19 was orange/black #7	1654
2010/08/29 07:12:55	45.93356	-130.01367	350.4	3.4	1540.0	1543.4	SAMPLE: fluid HFS-20 piston #2 unfiltered	1655
2010/08/29 07:14:35	45.93356	-130.01368	350.6	3.5	1540.1	1543.6	SAMPLE: fluid T=216 and slowly rising	1657
2010/08/29 07:15:15	45.93356	-130.01368	350.7	3.5	1540.1	1543.5	HFS-20 finished	1658
2010/08/29 07:16:20	45.93356	-130.01368	350.6	3.5	1540.1	1543.6	SAMPLE: fluid HFS-20 piston#2 unfiltered Tmax=270.2 Tavg=269.4 T2=100 vol=400 start time=07:12:55 end time= 07:15:15	1660
2010/08/29 07:16:53	45.93356	-130.01368	350.6	3.5	1540.1	1543.6	SAMPLE: gas Fire gastight #2 on HFS	1661
2010/08/29 07:17:53	45.93356	-130.01368	350.1	3.4	1540.1	1543.5	SAMPLE: gas GTHFS-21 black/white #5 T=270	1662
2010/08/29 07:19:04	45.93356	-130.01369	350.3	3.4	1540.1	1543.5	Jason Temp probe was 300 and Beast had 270	1664
2010/08/29 07:19:18	45.93356	-130.01369	350.3	3.4	1540.1	1543.5	We're heading to Virgin now	1665
2010/08/29 07:21:18	45.93352	-130.01365	53.8	5.1	1538.4	1543.4	Small mound is Mushroom vent	1667
2010/08/29 07:21:44	45.93353	-130.01357	72.7	4.4	1538.5	1542.8	Mats in cracks on seafloor	1668
2010/08/29 07:22:25	45.93357	-130.01348	72.1	4.6	1538.0	1542.6	Going past a marker now.	1670
2010/08/29 07:22:46	45.93357	-130.01343	72.7	5.0	1537.9	1542.9	Checking Marker 64	1671
2010/08/29 07:23:13	45.93359	-130.01339	64.9	4.6	1538.2	1542.8	Marker 121 was placed earlier only a meter or so from Marker 64 on Gollum.	1672
2010/08/29 07:23:31	45.93362	-130.01334	65.0	4.4	1538.0	1542.5	We're looking for Marshmallow.	1673
2010/08/29 07:23:45	45.93363	-130.01332	63.9	5.1	1537.3	1542.4	There is a small white patch on the ground which may be Marshmallow.	1674
2010/08/29 07:25:08	45.93371	-130.01339	5.6	2.6	1539.9	1542.5	Now we're heading further north ~12 m to see if Marshmallow is over there	1676
2010/08/29 07:25:22	45.93371	-130.01339	4.3	1.3	1541.1	1542.4	Marshmallow is a small anhydrite spire.	1677
2010/08/29 07:25:33	45.93371	-130.01338	5.8	0.8	1541.7	1542.5	We have found Marshmallow.	1678
2010/08/29 07:25:57	45.93371	-130.01340	345.2	0.7	1541.8	1542.5	There's a marker 1m away that says Marker 1.	1679
2010/08/29 07:26:01	45.93371	-130.01340	349.7	0.7	1542.0	1542.7	We're at Marshmallow.	1680
2010/08/29 07:28:37	45.93372	-130.01337	335.1	0.7	1541.7	1542.4	Butterfield	1683
2010/08/29 07:29:11	45.93372	-130.01337	335.1	0.7	1541.7	1542.4	There is diffuse flow venting out of Marshmallow that is colored.	1684
2010/08/29 07:30:55	45.93372	-130.01336	335.1	0.7	1541.7	1542.4	Deploying Jason temp probe	1686
2010/08/29 07:31:43	45.93372	-130.01336	335.4	0.7	1541.7	1542.5	T=100 and climbing	1687
2010/08/29 07:33:16	45.93372	-130.01336	335.9	0.7	1541.7	1542.5	Now probe against wall says T=59.8	1689
2010/08/29 07:34:03	45.93372	-130.01336	335.8	0.8	1541.7	1542.5	T=100.4	1690

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 07:35:16	45.93372	-130.01336	335.8	0.8	1541.7	1542.5	Marshmallow has been T=200 before. Tmax=161.4 now.	1692
2010/08/29 07:36:35	45.93372	-130.01336	335.7	0.8	1541.7	1542.5	There are more colored pieces coming out of the diffuse flow in Marshmallow. They may be pieces of the mat by the vent.	1694
2010/08/29 07:37:51	45.93372	-130.01336	335.8	0.8	1541.7	1542.5	Picking up Beast intake with Jason.	1695
2010/08/29 07:39:01	45.93372	-130.01336	335.8	0.8	1541.8	1542.5	Deploying intake valve into Marshmallow	1697
2010/08/29 07:39:37	45.93372	-130.01336	335.7	0.8	1541.8	1542.5	Beast flush pump is on	1698
2010/08/29 07:43:48	45.93371	-130.01336	335.7	0.7	1541.8	1542.5	SAMPLE: fluid Sampling HFS-22 filtered piston #7 starting	1701
2010/08/29 07:46:14	45.93371	-130.01337	335.8	0.8	1541.8	1542.5	SAMPLE: fluid HFS-22 finished.	1704
2010/08/29 07:47:15	45.93371	-130.01337	335.8	0.7	1541.8	1542.5	SAMPLE: fluid HFS-22 starttime=07:43:48 Tmax=179.9 Tavg=178.9 T2avg=60 vol=403 endtime=07:46:14 filtered piston #7	1705
2010/08/29 07:49:43	45.93371	-130.01337	335.8	0.8	1541.8	1542.6	SAMPLE: fluid HFS-23 starting unfiltered bag #22	1707
2010/08/29 07:52:36	45.93371	-130.01338	335.8	0.8	1541.9	1542.6	SAMPLE: fluid HFS-23 finished.	1710
2010/08/29 07:53:58	45.93371	-130.01338	335.8	0.8	1541.9	1542.6	SAMPLE: fluid HFS-23 Tmax=180.8 Tavg=180.5 T2avg=63 vol=501 start time=07:49:44 end time=07:52:36. unfiltered bag #22	1711
2010/08/29 07:55:59	45.93370	-130.01338	335.8	0.7	1541.9	1542.6	Thinking about taking more samples here.	1713
2010/08/29 07:56:18	45.93370	-130.01338	335.8	0.8	1541.9	1542.6	Adjusting the flow of the flush pump so it will be cool enough for DNA/RNA samples.	1715
2010/08/29 08:00:57	45.93370	-130.01338	335.7	0.8	1541.9	1542.7	SAMPLE: fluid HFS-24 starting. DNA sterivex #11	1718
2010/08/29 08:01:37	45.93370	-130.01338	335.7	0.8	1541.9	1542.7	SAMPLE: fluid Flush pump flow rate changed to 1200 from 3000 mL/min.	1719
2010/08/29 08:02:12	45.93370	-130.01338	335.7	0.8	1541.9	1542.7	SAMPLE: fluid T1=177.7 T2=31.6	1720
2010/08/29 08:06:02	45.93370	-130.01338	335.7	0.8	1541.9	1542.7	SAMPLE: fluid T1=178.6 T2=32.1	1723
2010/08/29 08:09:12	45.93370	-130.01338	335.7	0.8	1541.9	1542.7	SAMPLE: fluid T1=177.6 T2=32.9	1726
2010/08/29 08:09:28	45.93370	-130.01338	335.7	0.8	1542.0	1542.7	SAMPLE: fluid halfway done filtering.	1727
2010/08/29 08:16:59	45.93369	-130.01337	335.3	0.8	1542.0	1542.8	Looking around the area.	1732
2010/08/29 08:17:08	45.93369	-130.01337	335.3	0.7	1542.0	1542.7	SAMPLE: fluid HFS-24 finished.	1733
2010/08/29 08:18:33	45.93370	-130.01337	335.3	0.7	1542.0	1542.8	SAMPLE: fluid HFS-24 Tmax=180.0 Tavg=178.1 T2avg=33 vol=3001 DNA starttime=08:00:57 endtime=08:17:08 sterivex filter #11	1735
2010/08/29 08:18:59	45.93370	-130.01337	335.3	0.7	1542.0	1542.8	SAMPLE: fluid HFS-25 starting. RNA flat filter #14	1736
2010/08/29 08:20:12	45.93370	-130.01338	335.3	0.8	1542.0	1542.8	Looking at close-up of diffuse venting with white precipitates	1737
2010/08/29 08:23:29	45.93370	-130.01338	335.3	0.8	1542.0	1542.8	White precipitates around diffuse flow with some tubeworms on right and limpets.	1740
2010/08/29 08:23:32	45.93370	-130.01338	335.3	0.8	1542.0	1542.8	Frame_Grab:	1741
2010/08/29 08:24:24	45.93370	-130.01338	335.2	0.8	1542.0	1542.8	SAMPLE: fluid T1=180.9 T2=34	1743
2010/08/29 08:25:20	45.93371	-130.01339	335.3	0.8	1542.0	1542.8	Looking at anemones with spider-y arms	1744
2010/08/29 08:25:22	45.93371	-130.01339	335.3	0.8	1542.1	1542.8	Frame_Grab:	1745
2010/08/29 08:26:33	45.93371	-130.01339	335.3	0.7	1542.1	1542.8	Frame_Grab:	1747
2010/08/29 08:26:36	45.93371	-130.01339	335.3	0.7	1542.1	1542.8	Orange mat along cracks in lava.	1748

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 08:27:28	45.93371	-130.01339	335.3	0.7	1542.1	1542.8	Frame_Grab:	1749
2010/08/29 08:27:58	45.93371	-130.01339	335.3	0.7	1542.1	1542.8	Red anemone on yellow mat/precipitates	1750
2010/08/29 08:32:12	45.93372	-130.01340	335.3	0.7	1542.1	1542.8	Halfway done filtering T1=178.5 T2=34.2	1753
2010/08/29 08:45:20	45.93371	-130.01338	335.3	0.7	1542.2	1542.9	SAMPLE: fluid HFS-25 finished	1761
2010/08/29 08:46:24	45.93371	-130.01338	335.3	0.7	1542.2	1542.9	SAMPLE: fluid sample HFS-25 Tmax=181.7 Tavg=180.3 T2avg=34 vol=3002 starttime=08:18:59 endtime=08:45:20 RNA flat filter #14	1763
2010/08/29 08:46:37	45.93371	-130.01338	335.3	0.7	1542.2	1542.9	Stowing fluid sampler intake arm.	1764
2010/08/29 08:48:47	45.93370	-130.01332	68.6	1.5	1541.1	1542.7	We're heading to Virgin now	1766
2010/08/29 08:49:46	45.93369	-130.01324	105.5	2.3	1540.5	1542.8	Virgin has two twin spires of anhydrite.	1767
2010/08/29 08:50:03	45.93369	-130.01322	107.2	1.7	1541.3	1542.9	There is something like a door or a bed frame next to Virgin on the seafloor.	1768
2010/08/29 08:51:05	45.93368	-130.01320	107.6	0.9	1541.9	1542.8	There is a starfish to the left behind Virgin.	1770
2010/08/29 08:51:20	45.93368	-130.01320	107.4	0.9	1541.9	1542.8	There is shimmering diffuse flow all around Virgin	1771
2010/08/29 08:51:47	45.93369	-130.01320	117.9	1.1	1541.8	1542.9	We are circling around Virgin	1772
2010/08/29 08:52:45	45.93368	-130.01320	100.4	1.6	1541.4	1542.9	HD_CAM: start	1774
2010/08/29 08:53:54	45.93367	-130.01319	103.4	0.7	1542.4	1543.2	Frame_Grab:	1775
2010/08/29 08:55:39	45.93368	-130.01319	102.8	0.7	1542.6	1543.4	We are searching for a good place to sample and not disturb the anhydrite spires.	1777
2010/08/29 08:56:13	45.93368	-130.01319	102.9	0.7	1542.6	1543.4	Deploying HFS sampler intake.	1778
2010/08/29 08:58:39	45.93368	-130.01319	102.8	0.7	1542.6	1543.4	Correction... deploying Jason temp probe	1781
2010/08/29 08:59:08	45.93368	-130.01319	102.8	0.7	1542.6	1543.4	T=49.4 and rising	1782
2010/08/29 08:59:28	45.93368	-130.01319	102.8	0.7	1542.6	1543.4	Temp probe only in shimmering flow over anhydrite spires	1783
2010/08/29 08:59:37	45.93368	-130.01319	102.8	0.7	1542.6	1543.4	We are breaking off the left anhydrite spire	1784
2010/08/29 09:00:36	45.93368	-130.01319	102.8	0.7	1542.6	1543.4	Now the Jason temp probe can go directly into the vent flow at the chimney.	1786
2010/08/29 09:00:47	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	T=77.9 and up.	1787
2010/08/29 09:00:56	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Correction T=177.9 and up	1788
2010/08/29 09:01:15	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	T=228.1 and up	1789
2010/08/29 09:02:07	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Moving T probe around a little	1790
2010/08/29 09:02:18	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	T=235.3 and up	1792
2010/08/29 09:03:40	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Tmax =244.3	1793
2010/08/29 09:03:57	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Replacing Jason temp probe	1794
2010/08/29 09:04:44	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Frame_Grab:	1796
2010/08/29 09:05:11	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Looking at starfish behind Virgin	1797
2010/08/29 09:06:03	45.93368	-130.01319	102.7	0.7	1542.6	1543.4	Second anhydrite chimney broken off by Jason arm	1798
2010/08/29 09:09:18	45.93368	-130.01319	102.7	0.7	1542.7	1543.4	Deploying HFS intake arm with can on end	1801
2010/08/29 09:10:05	45.93368	-130.01319	102.7	0.7	1542.7	1543.4	Intake arm jammed into chimney	1802

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 09:11:06	45.93368	-130.01319	102.7	0.7	1542.7	1543.4	HD_CAM: stop	1804
2010/08/29 09:13:59	45.93368	-130.01319	102.7	0.7	1542.7	1543.4	SAMPLE: fluid HFS-26 starting. Filtered piston #3	1806
2010/08/29 09:16:14	45.93368	-130.01319	102.7	0.7	1542.7	1543.4	SAMPLE: fluid HFS-26 finished.	1809
2010/08/29 09:17:18	45.93368	-130.01319	102.6	0.7	1542.7	1543.4	SAMPLE: fluid HFS-26: Tmax=244.1 Tavg=242.2 T2avg=81 vol=402 mL start=09:13:59 end=09:16:14. Filtered piston #3	1810
2010/08/29 09:17:35	45.93368	-130.01319	102.7	0.7	1542.7	1543.4	SAMPLE: fluid HFS-27 starting. Unfiltered piston #4.	1811
2010/08/29 09:19:36	45.93368	-130.01320	102.7	0.7	1542.7	1543.4	SAMPLE: fluid HFS-27 finished.	1813
2010/08/29 09:20:39	45.93368	-130.01320	102.7	0.7	1542.7	1543.4	SAMPLE: fluid HFS-27: Tmax=243.8 Tavg=242.7 T2avg=80 vol=404 start=09:17:35 end=09:19:36	1815
2010/08/29 09:21:13	45.93368	-130.01320	102.7	0.7	1542.7	1543.4	SAMPLE: gas Going to take gasttight #3 on HFS	1816
2010/08/29 09:22:52	45.93368	-130.01321	102.6	0.7	1542.7	1543.5	SAMPLE: gas Gastight #3 taken.	1818
2010/08/29 09:24:02	45.93368	-130.01321	102.6	0.7	1542.7	1543.5	Stowed HFS intake arm.	1819
2010/08/29 09:25:06	45.93368	-130.01321	102.6	0.7	1542.7	1543.4	Selecting a gasttight bottle from the basket.	1821
2010/08/29 09:26:34	45.93368	-130.01322	102.6	0.7	1542.7	1543.4	SAMPLE: gas Selected purple gasttight #10 out of Jason basket	1823
2010/08/29 09:28:01	45.93369	-130.01322	102.6	0.7	1542.7	1543.5	SAMPLE: gas Placing gasttight in vent flow	1824
2010/08/29 09:29:28	45.93369	-130.01322	102.5	0.7	1542.7	1543.5	SAMPLE: gas Crab coming towards Virgin vent	1826
2010/08/29 09:29:33	45.93369	-130.01322	102.5	0.7	1542.7	1543.5	Frame_Grab:	1827
2010/08/29 09:31:03	45.93369	-130.01322	102.5	0.7	1542.7	1543.5	SAMPLE: gas Gasttight purple #10 triggered.	1829
2010/08/29 09:32:13	45.93369	-130.01322	102.6	0.8	1542.7	1543.5	Crab has reached anhydrite surrounding chimneys	1830
2010/08/29 09:32:19	45.93369	-130.01322	102.6	0.8	1542.7	1543.5	Frame_Grab:	1832
2010/08/29 09:32:27	45.93369	-130.01322	102.6	0.8	1542.7	1543.5	Stowing gasttight in basket.	1833
2010/08/29 09:35:00	45.93370	-130.01322	102.5	0.8	1542.7	1543.5	HD_CAM: start	1835
2010/08/29 09:35:22	45.93370	-130.01322	102.5	0.8	1542.7	1543.5	HD_CAM: stop	1836
2010/08/29 09:35:43	45.93370	-130.01322	102.5	0.7	1542.8	1543.5	Gasttight stowed.	1837
2010/08/29 09:36:50	45.93370	-130.01321	102.8	0.8	1542.8	1543.6	We will now recover the HOB0 from Virgin and deploy a new HOB0	1839
2010/08/29 09:37:33	45.93370	-130.01321	103.3	0.7	1542.8	1543.6	RECOVER: HOB0 temp probe Recovering HOB0 101	1840
2010/08/29 09:38:16	45.93370	-130.01321	103.2	0.7	1542.9	1543.6	HOB0 101 from Virgin stowed in Jason basket	1842
2010/08/29 09:39:48	45.93370	-130.01321	103.2	0.7	1542.8	1543.5	DEPLOY: HOB0 temp probe Deploying HOB0 153 at Virgin.	1843
2010/08/29 09:42:41	45.93370	-130.01320	103.1	0.7	1542.8	1543.5	DEPLOY: HOB0 temp probe HOB0 153 inserted at Virgin.	1846
2010/08/29 09:45:10	45.93370	-130.01319	102.4	0.8	1542.8	1543.5	DEPLOY: HOB0 temp probe HOB0 destroyed chimney and became unstable - reinserting	1848
2010/08/29 09:46:53	45.93370	-130.01319	102.5	0.7	1542.8	1543.6	DEPLOY: HOB0 temp probe HOB0 stable in Virgin vent	1850
2010/08/29 09:48:28	45.93370	-130.01320	113.7	0.8	1542.4	1543.2	Now we're heading to Hell.	1852
2010/08/29 09:48:44	45.93371	-130.01318	155.1	1.1	1542.3	1543.4	Hell is SW of Virgin.	1853

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 09:56:28	45.93380	-130.01286	222.0	2.8	1540.2	1543.1	The ship is heading the wrong way for Jason to go SW.	1858
2010/08/29 09:57:44	45.93379	-130.01286	222.3	0.8	1542.7	1543.5	We are looking at a crab with long spindly legs. This crab's front pincers are not as thick as the previous crab.	1859
2010/08/29 09:57:47	45.93379	-130.01286	222.6	0.7	1542.7	1543.4	Frame_Grab:	1860
2010/08/29 09:58:09	45.93379	-130.01285	222.8	1.1	1542.6	1543.6	It's a spider crab.	1861
2010/08/29 10:00:14	45.93374	-130.01290	224.4	2.0	1541.8	1543.7	We are going past a collapse area.	1864
2010/08/29 10:00:32	45.93372	-130.01292	224.2	1.8	1541.5	1543.4	Jumbled basalt lava flow with some mat in the crevasses.	1865
2010/08/29 10:00:43	45.93371	-130.01293	223.7	2.2	1541.0	1543.1	A starfish on the mats.	1866
2010/08/29 10:01:31	45.93370	-130.01301	241.6	2.5	1540.9	1543.5	The ship position is correcting so Jason can go SW.	1867
2010/08/29 10:02:04	45.93368	-130.01307	241.8	2.6	1540.6	1543.2	A lava mound is present with a vent site on top.	1868
2010/08/29 10:02:42	45.93367	-130.01313	241.6	2.6	1539.5	1542.1	The vent site is Virgin again.	1870
2010/08/29 10:03:09	45.93365	-130.01316	241.6	2.8	1540.6	1543.4	The door-like object is an anchor for a RAS that had been deployed here.	1871
2010/08/29 10:05:09	45.93362	-130.01323	241.5	2.4	1541.3	1543.7	Going past a fungus/microbial growth experiment	1873
2010/08/29 10:05:53	45.93360	-130.01324	239.4	2.5	1541.3	1543.7	Going past Marker 121.	1874
2010/08/29 10:07:04	45.93356	-130.01330	232.2	2.4	1540.9	1543.2	Passing Marker 64.	1876
2010/08/29 10:07:41	45.93355	-130.01339	245.3	2.9	1540.5	1543.3	Area of white mats in cracks.	1877
2010/08/29 10:08:41	45.93352	-130.01352	210.9	1.3	1542.7	1544.0	Continuing SW towards Hell.	1879
2010/08/29 10:09:19	45.93349	-130.01352	197.1	1.7	1542.8	1544.5	Passing "strange manmade object" -- looks like an anchor with a rope attached.	1880
2010/08/29 10:11:17	45.93344	-130.01363	237.5	2.1	1542.0	1544.1	Passing over some clumps of tubeworms	1882
2010/08/29 10:12:47	45.93340	-130.01382	236.8	2.3	1542.1	1544.5	Approaching Hell vent.	1884
2010/08/29 10:12:57	45.93339	-130.01383	237.2	2.2	1542.2	1544.4	Hell is a large sulfide structure.	1885
2010/08/29 10:13:41	45.93336	-130.01388	237.4	2.2	1542.2	1544.4	Hell has some white mats on the sides and tubeworms.	1886
2010/08/29 10:13:46	45.93335	-130.01388	237.3	2.2	1542.1	1544.4	HD_CAM: start	1887
2010/08/29 10:14:27	45.93335	-130.01388	227.0	2.3	1542.0	1544.3	We're at Marker 68.	1889
2010/08/29 10:15:41	45.93335	-130.01391	226.5	2.8	1541.6	1544.4	There are both yellow and white clumps of tubeworms.	1890
2010/08/29 10:17:20	45.93333	-130.01392	204.1	3.6	1540.5	1544.1	Venting is coming directly from the top of the chimney structure on one side.	1892
2010/08/29 10:17:32	45.93333	-130.01392	204.1	3.6	1540.5	1544.1	Tubeworms are visible all around the vent site.	1893
2010/08/29 10:17:40	45.93333	-130.01391	204.5	3.6	1540.5	1544.1	The vent spire is black.	1894
2010/08/29 10:19:58	45.93330	-130.01391	300.7	3.8	1540.5	1544.3	Top of Hell mound is covered in tubeworms and limpets	1896
2010/08/29 10:21:21	45.93329	-130.01392	326.9	3.3	1540.9	1544.3	Continuing around the side of Hell to get another view.	1898
2010/08/29 10:23:02	45.93329	-130.01393	330.1	3.6	1540.5	1544.1	Some purple-colored mat.	1900
2010/08/29 10:24:39	45.93333	-130.01393	188.5	1.6	1542.5	1544.1	We will have to knock a chimney down for sampling.	1902
2010/08/29 10:24:47	45.93332	-130.01393	188.6	1.4	1542.7	1544.2	Looking for a good sampling site.	1903
2010/08/29 10:25:14	45.93332	-130.01392	190.3	1.5	1542.7	1544.1	HD_CAM: stop	1904

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 10:25:36	45.93332	-130.01393	190.4	1.4	1542.7	1544.1	Knocking down a sulfide chimney near the base of the Hell mound.	1905
2010/08/29 10:27:28	45.93333	-130.01393	190.5	1.4	1542.7	1544.1	Chalcopyrite lining inside chimney wall.	1907
2010/08/29 10:28:21	45.93333	-130.01393	188.2	1.3	1542.7	1544.1	Orange-brown staining on outside of sulfide chimney	1909
2010/08/29 10:28:48	45.93334	-130.01393	189.0	1.4	1542.8	1544.2	Little red sea-star armed creatures around sulfide vent.	1910
2010/08/29 10:29:06	45.93333	-130.01393	189.7	1.6	1542.5	1544.1	Jason pulling away for better position	1911
2010/08/29 10:30:59	45.93334	-130.01393	188.4	1.9	1542.3	1544.2	Deploying Jason temp probe.	1913
2010/08/29 10:32:43	45.93333	-130.01393	186.0	1.9	1542.2	1544.1	Using one Jason arm to anchor onto Hell mound.	1915
2010/08/29 10:32:55	45.93333	-130.01393	186.3	1.9	1542.2	1544.2	Inserting probe into sulfide chimney vent with other Jason arm.	1916
2010/08/29 10:33:22	45.93333	-130.01393	186.1	1.9	1542.2	1544.1	T=176 and rising.	1917
2010/08/29 10:34:14	45.93333	-130.01393	186.0	1.9	1542.2	1544.1	T=243.1	1919
2010/08/29 10:37:00	45.93334	-130.01393	186.1	1.9	1542.2	1544.2	Tmax=289.6	1921
2010/08/29 10:37:16	45.93334	-130.01393	186.1	1.9	1542.2	1544.2	Replacing Jason Temp probe.	1922
2010/08/29 10:37:25	45.93334	-130.01393	186.1	1.9	1542.3	1544.2	We will sample here using the Beast.	1923
2010/08/29 10:38:29	45.93334	-130.01393	185.8	1.9	1542.2	1544.1	Picking up intake arm for the HFS.	1925
2010/08/29 10:41:41	45.93334	-130.01393	186.2	2.0	1542.2	1544.1	SAMPLE: fluid Checking temperature using HFS before sampling begins	1927
2010/08/29 10:43:55	45.93334	-130.01394	185.9	2.0	1542.2	1544.2	SAMPLE: fluid HFS-30 filtered piston #5 started.	1929
2010/08/29 10:47:04	45.93334	-130.01394	186.1	1.9	1542.2	1544.1	SAMPLE: fluid HFS-30 finished.	1932
2010/08/29 10:48:07	45.93334	-130.01394	186.1	1.9	1542.2	1544.1	HFS-30: Tmax=275.0 Tavg=274.1 T2avg=84 vol=401start=10:43:55 end=10:47:04 filtered piston #5	1933
2010/08/29 10:48:19	45.93334	-130.01394	186.1	1.9	1542.2	1544.1	Replaced targets in navigation menu	1935
2010/08/29 10:48:30	45.93334	-130.01394	186.1	1.9	1542.2	1544.1	SAMPLE: fluid HFS-31 unfiltered piston #8	1936
2010/08/29 10:49:57	45.93333	-130.01394	186.0	2.0	1542.2	1544.1	Replaced targets in navigation menu: What was called Medusa is now called Hell.	1937
2010/08/29 10:51:49	45.93333	-130.01395	185.9	2.0	1542.2	1544.1	SAMPLE: fluid HFS-31 finished.	1939
2010/08/29 10:56:03	45.93332	-130.01395	185.9	2.0	1542.2	1544.2	SAMPLE: fluid HFS-31: Tmax=275.9 Tavg=269.6 T2avg=80 vol=401 start=10:48:30 end=10:51:49 unfiltered piston #8	1942
2010/08/29 10:56:19	45.93332	-130.01395	185.6	1.9	1542.2	1544.1	Repositioning intake of the Beast HFS	1944
2010/08/29 10:56:39	45.93332	-130.01395	185.8	2.0	1542.2	1544.1	Shaking it in case something is clogged inside	1945
2010/08/29 10:57:27	45.93331	-130.01395	186.1	2.0	1542.2	1544.1	Restarting pump on HFS	1946
2010/08/29 10:58:26	45.93331	-130.01395	185.9	1.9	1542.2	1544.1	The T2 is only 4 on the HFS	1948
2010/08/29 10:58:41	45.93331	-130.01395	185.9	1.9	1542.2	1544.1	Maybe something is stuck in the can on the HFS	1949
2010/08/29 10:58:54	45.93331	-130.01395	185.6	1.9	1542.2	1544.1	Turning the pump off on the HFS and shaking the can again	1950
2010/08/29 11:00:29	45.93331	-130.01395	185.7	1.9	1542.2	1544.1	Temperature T1 has been dropping and T2 is low so wondering if the pump is not working or the intake is obstructed.	1952
2010/08/29 11:01:29	45.93330	-130.01395	185.7	1.9	1542.2	1544.1	Just need to get filtered piston #9 and two gas tights in basket and two more samples in HFS plus the small syringe sampler	1953

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 11:02:40	45.93330	-130.01395	185.6	2.0	1542.2	1544.2	Going to pull the extension can off the HFS wand to see if that helps.	1955
2010/08/29 11:05:28	45.93330	-130.01396	185.5	1.9	1542.2	1544.1	HFS intake back in the vent.	1957
2010/08/29 11:06:21	45.93330	-130.01396	185.2	2.0	1542.2	1544.2	Temperature going up so the can must have been clogged. Up over 280C.	1959
2010/08/29 11:08:52	45.93331	-130.01396	185.3	1.9	1542.2	1544.2	SAMPLE: fluid Start sample J521-HFS-32 filtered piston #9	1961
2010/08/29 11:11:13	45.93331	-130.01396	185.3	1.9	1542.2	1544.1	Changed DSC camera from normal to fine resolution.	1963
2010/08/29 11:13:21	45.93332	-130.01396	185.5	1.9	1542.2	1544.1	SAMPLE: fluid Tmax=290.6 Tavg=284.1 Vol=40ml T2=82.5 End time=11:11:11 Sample J2-HFS-32 PI Butterfield	1965
2010/08/29 11:14:55	45.93333	-130.01396	185.7	1.9	1542.2	1544.1	Putting the wand back in its holster. Going to take the two remaining gastights that are in the basket.	1967
2010/08/29 11:21:20	45.93334	-130.01396	185.5	1.9	1542.2	1544.1	Restowed HOB0 probe to get it out of the way. Picking up Gastight Nude#6.	1971
2010/08/29 11:23:17	45.93335	-130.01396	185.5	1.9	1542.2	1544.1	Gastight in orifice.	1973
2010/08/29 11:23:51	45.93335	-130.01396	185.6	1.9	1542.2	1544.1	SAMPLE: fluid J521-GTB-33 Nude#6	1974
2010/08/29 11:26:17	45.93335	-130.01396	185.0	1.9	1542.2	1544.1	SAMPLE: gas Correction that was a gas sample not a fluid sample and the sample time was 11:23:20	1977
2010/08/29 11:26:33	45.93335	-130.01396	185.3	1.9	1542.2	1544.1	Getting ready for next gastight in same place.	1978
2010/08/29 11:27:05	45.93335	-130.01396	185.3	1.9	1542.2	1544.1	SAMPLE: gas J521-GTB-34 Orange#16	1979
2010/08/29 11:30:25	45.93336	-130.01396	187.5	2.2	1542.1	1544.3	NAV: Doppler Reset	1982
2010/08/29 11:30:38	45.93336	-130.01396	188.6	1.7	1542.4	1544.1	Backing away from Hell.	1983
2010/08/29 11:32:01	45.93337	-130.01396	188.4	2.6	1541.8	1544.4	Going to head to Mushroom vent for the last HFS samples.	1984
2010/08/29 11:35:30	45.93349	-130.01367	50.7	3.2	1540.9	1544.2	Passing bucket lid marker 19.	1987
2010/08/29 11:39:10	45.93357	-130.01358	8.1	0.7	1543.3	1544.0	At Mushroom. Inferno off to the left.	1990
2010/08/29 11:43:25	45.93359	-130.01358	348.2	2.0	1542.0	1544.0	Looking for place to sample low-T fluid at Mushroom.	1993
2010/08/29 11:45:31	45.93359	-130.01358	347.7	2.0	1542.0	1544.0	Putting wand in vent on Mushroom.	1995
2010/08/29 11:46:26	45.93359	-130.01358	347.9	2.0	1542.0	1544.0	Correction we are using the Jason temperature probe.	1997
2010/08/29 11:47:36	45.93358	-130.01358	346.8	1.9	1542.1	1544.0	Decided we could look for a high-T site here too.	1998
2010/08/29 11:50:31	45.93358	-130.01358	351.0	2.4	1541.7	1544.0	Knocking off small black orifice. Temp is over 240C.	2001
2010/08/29 11:50:46	45.93358	-130.01358	350.8	2.4	1541.7	1544.0	Going to sample here. Can or no can?	2002
2010/08/29 11:51:26	45.93358	-130.01358	350.6	2.4	1541.7	1544.0	Going can-less.	2003
2010/08/29 11:53:27	45.93357	-130.01358	350.9	2.4	1541.7	1544.0	Position here is 45 56.015' 130 00.815'	2005
2010/08/29 11:54:51	45.93357	-130.01358	350.9	2.4	1541.7	1544.0	HFS intake is in vent. Temp going up.	2007
2010/08/29 11:56:39	45.93357	-130.01358	350.8	2.3	1541.7	1544.0	Repositioning wand.	2009
2010/08/29 12:02:13	45.93358	-130.01358	350.7	2.3	1541.7	1544.0	Temps are only getting up to 55 or so still trying to find a hotter place.	2012
2010/08/29 12:02:57	45.93358	-130.01358	350.8	2.3	1541.7	1544.0	Hard to see where the spigot is with all the shimmering water.	2014
2010/08/29 12:03:29	45.93358	-130.01358	350.6	2.6	1541.5	1544.0	Repositioning Jason.	2015

J2-521 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/29 12:04:03	45.93358	-130.01358	350.2	2.9	1541.1	1544.0	Trying another orifice on the top of Mushroom.	2016
2010/08/29 12:04:56	45.93358	-130.01358	350.5	2.9	1541.1	1544.0	This is not where we took the temperature with the Jason temp probe.	2018
2010/08/29 12:07:18	45.93359	-130.01359	350.5	2.9	1541.1	1544.0	Temp got up to 90 or so. Going to try putting on the can on the end of the intake.	2020
2010/08/29 12:09:41	45.93359	-130.01359	351.0	2.9	1541.2	1544.0	Can over the vent temp going up.	2022
2010/08/29 12:12:07	45.93360	-130.01360	351.1	2.9	1541.1	1544.0	SAMPLE: fluid J521-HFS-35 Start=12:11:30 Unfiltered Piston#6	2024
2010/08/29 12:14:23	45.93360	-130.01360	351.2	2.9	1541.1	1544.0	J521-HFS-35 Start=12:11:30 Tmax= 104.7 Tavg=104.5 Vol=401 ml T2=39.2 End time = 12:14:00	2027
2010/08/29 12:15:30	45.93360	-130.01360	351.1	2.9	1541.1	1544.0	SAMPLE: fluid J521-HFS-36 Unfiltered bag #20	2028
2010/08/29 12:19:43	45.93360	-130.01360	351.1	2.9	1541.1	1544.0	SAMPLE: fluid J521-HFS-36 Starttime= 12:15:30 Tmax= 104 Tavg=101.7 Vol=501ml T2=40.2 Endtime= 12:19:10 PI=Butterfield Vent=Mushroom	2031
2010/08/29 12:20:17	45.93360	-130.01360	350.7	2.9	1541.1	1544.0	That is the last fluid sample. Only thing left is the small syringe sampler.	2033
2010/08/29 12:21:20	45.93360	-130.01360	350.9	2.8	1541.1	1543.9	Stowing wand.	2034
2010/08/29 12:25:10	45.93358	-130.01359	353.3	0.7	1543.4	1544.1	We backed up a little to sample mat on the bottom just off the Mushroom chimney.	2037
2010/08/29 12:28:01	45.93358	-130.01358	353.4	1.4	1543.4	1544.8	Grabbing small syringe sampler with both arms.	2039
2010/08/29 12:35:55	45.93359	-130.01359	352.5	0.7	1543.3	1544.0	SAMPLE: bio J521-Mat-37 With small syringe sampler. Mat on seafloor at base of Mushroom vent.	2044
2010/08/29 12:38:04	45.93359	-130.01359	352.9	0.7	1543.3	1544.1	Small syringe sampler went in starboard biobox.	2046
2010/08/29 12:46:30	45.93359	-130.01359	353.0	0.8	1543.2	1544.0	Going to go up and down the sides of Inferno.	2052
2010/08/29 12:47:28	45.93356	-130.01365	288.2	1.5	1541.8	1543.3	Only have a little over an hour left so just going to sightsee.	2053
2010/08/29 12:48:04	45.93356	-130.01365	280.6	1.6	1541.8	1543.4	HD_CAM: start	2054
2010/08/29 12:52:20	45.93349	-130.01370	13.4	2.4	1541.4	1543.8	Looking due north at Inferno.	2058
2010/08/29 13:11:00	45.93356	-130.01370	9.2	1.2	1542.9	1544.1	Did lots of frame grabs and close ups of south side of Inferno vent.	2068
2010/08/29 13:11:06	45.93356	-130.01371	9.4	1.6	1542.6	1544.2	Now moving to north side.	2069
2010/08/29 13:18:22	45.93360	-130.01371	180.3	6.0	1538.1	1544.1	Went from the base up to the top. There is a tall beehive at the top. Total height is 6 m.	2074
2010/08/29 13:40:26	45.93360	-130.01368	180.2	3.5	1540.6	1544.1	HD_CAM: stop	2086
2010/08/29 13:41:01	45.93360	-130.01367	208.5	3.2	1540.8	1544.0	That was one long HD highlight run of Inferno chimney first from the south side then the north side.	2087
2010/08/29 13:41:11	45.93360	-130.01366	208.4	3.0	1540.9	1543.9	Now moving to Hell	2088
2010/08/29 13:44:28	45.93348	-130.01379	238.4	1.4	1542.8	1544.2	HD_CAM: start	2091
2010/08/29 13:44:49	45.93347	-130.01380	238.4	1.2	1543.0	1544.2	Approaching Hell vent for HD video survey.	2092
2010/08/29 13:47:12	45.93341	-130.01378	237.1	2.4	1541.7	1544.1	Waiting to move Medea.	2094
2010/08/29 13:48:07	45.93340	-130.01383	239.7	1.9	1542.2	1544.1	Slowly approaching Hell	2095
2010/08/29 13:56:52	45.93330	-130.01394	46.0	8.2	1535.0	1543.2	HD_CAM: stop	2101
2010/08/29 13:57:23	45.93320	-130.01386	136.2	8.0	1535.1	1543.1	Went around Hell then rose up from the base to the top on the south side.	2102

Table 10.0-3**J2-522: Pressure transect dive, RAS recovery, El Guapo temp probe recovery**

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/31 02:19:03	45.93433	-130.01271	21.8	4.6	1538.9	1543.5	JASON: Jason on bottom	2123
2010/08/31 02:19:09	45.93433	-130.01272	22.1	4.7	1538.7	1543.4	Frame_Grab:	2124
2010/08/31 02:19:58	45.93412	-130.01250	17.8	6.7	1537.0	1543.6	NAV: Doppler Reset	2125
2010/08/31 02:21:20	45.93411	-130.01250	61.8	10.1	1533.5	1543.6	Homer range 80 meters	2127
2010/08/31 02:23:03	45.93415	-130.01242	62.3	2.9	1540.5	1543.4	lava flow very little sediment	2129
2010/08/31 02:23:32	45.93416	-130.01239	60.5	2.4	1541.1	1543.5	Frame_Grab:	2130
2010/08/31 02:23:41	45.93417	-130.01238	60.7	2.7	1540.9	1543.6	jumbled flow	2131
2010/08/31 02:26:57	45.93426	-130.01216	60.6	2.9	1540.4	1543.3	Ropp\y flow	2134
2010/08/31 02:27:04	45.93427	-130.01215	60.8	2.7	1540.5	1543.2	Frame_Grab:	2135
2010/08/31 02:27:32	45.93430	-130.01205	66.5	2.4	1540.7	1543.1	blocky flow	2136
2010/08/31 02:29:49	45.93435	-130.01189	76.4	7.8	1535.7	1543.4	Now waiting for medea	2138
2010/08/31 02:31:43	45.93438	-130.01175	74.9	2.7	1540.8	1543.5	Much smoke in the water	2140
2010/08/31 02:31:56	45.93439	-130.01171	75.6	2.9	1540.9	1543.8	Frame_Grab:	2141
2010/08/31 02:32:05	45.93440	-130.01169	76.6	2.8	1540.9	1543.8	At target	2142
2010/08/31 02:32:15	45.93440	-130.01167	76.5	3.0	1540.7	1543.8	Frame_Grab:	2143
2010/08/31 02:32:46	45.93440	-130.01162	76.5	2.7	1541.1	1543.7	Frame_Grab:	2145
2010/08/31 02:32:51	45.93440	-130.01162	76.0	2.6	1541.0	1543.7	Frame_Grab:	2146
2010/08/31 02:33:03	45.93440	-130.01161	76.6	2.7	1541.0	1543.7	Frame_Grab:	2147
2010/08/31 02:33:09	45.93439	-130.01162	76.7	2.8	1540.9	1543.7	Frame_Grab:	2148
2010/08/31 02:33:53	45.93440	-130.01160	76.4	1.9	1541.6	1543.5	Frame_Grab:	2149
2010/08/31 02:35:19	45.93439	-130.01158	59.1	0.8	1543.1	1543.9	First we need to pull the pin near the bicycle flag to release the weights	2151
2010/08/31 02:35:30	45.93439	-130.01158	59.1	0.8	1543.1	1543.9	Frame_Grab:	2152
2010/08/31 02:35:38	45.93439	-130.01158	59.1	0.8	1543.1	1543.9	Frame_Grab:	2153
2010/08/31 02:36:15	45.93439	-130.01158	59.1	0.8	1543.1	1543.9	pull pin pulled out now we will pick it up and move it	2154
2010/08/31 02:36:51	45.93439	-130.01158	60.9	1.0	1543.0	1544.0	Frame_Grab:	2156
2010/08/31 02:37:10	45.93439	-130.01158	61.2	1.0	1543.0	1544.0	Frame_Grab:	2157
2010/08/31 02:38:36	45.93445	-130.01155	58.2	1.9	1541.8	1543.7	Lookin g for a flat spot. This looks like a dome because the vehicle is pitched.	2159
2010/08/31 02:41:22	45.93445	-130.01156	123.2	2.0	1541.4	1543.4	Pressure sensor platform set down and now will drive around and look at it	2161
2010/08/31 02:45:26	45.93443	-130.01155	47.9	1.5	1541.9	1543.5	Proper name is a bench mark and the serial number is AX166	2164

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/31 02:49:50	45.93445	-130.01155	50.2	0.7	1542.6	1543.4	LDEO BPR being deployed	2167
2010/08/31 02:51:22	45.93445	-130.01155	51.8	0.8	1542.5	1543.3	Frame_Grab:	2169
2010/08/31 02:52:47	45.93445	-130.01155	52.6	0.7	1542.5	1543.3	TG09 being deployed	2171
2010/08/31 02:57:50	45.93445	-130.01155	52.1	0.7	1542.6	1543.3	DSC frame grab	2174
2010/08/31 02:59:28	45.93444	-130.01154	53.7	0.8	1542.5	1543.3	pulling pin for glass floats	2176
2010/08/31 03:00:13	45.93443	-130.01154	52.9	0.9	1542.4	1543.3	bench mark moved during pin pulling	2177
2010/08/31 03:00:23	45.93443	-130.01154	53.8	0.8	1542.4	1543.3	repositioning bench mark	2179
2010/08/31 03:01:28	45.93443	-130.01155	53.4	0.8	1542.5	1543.3	pin pulled	2180
2010/08/31 03:01:42	45.93443	-130.01155	53.8	0.8	1542.5	1543.3	Frame_Grab:	2181
2010/08/31 03:02:37	45.93443	-130.01164	325.8	3.2	1540.1	1543.4	Bench mark is serial number AX106	2183
2010/08/31 03:03:50	45.93451	-130.01194	310.1	12.4	1531.5	1543.9	coming up off the bottom so that the ship can recover the glass balls	2184
2010/08/31 03:04:15	45.93450	-130.01195	309.8	25.5	1518.2	1543.6	should take approximately 30 minutes	2185
2010/08/31 03:04:54	45.93450	-130.01195	306.6	23.2	1501.6	1524.8	camera recording is off for now	2187
2010/08/31 03:25:23	45.93444	-130.01189	148.5	127.4	1415.2	1542.6	glass float sighted on surface	2188
2010/08/31 03:58:22	45.93435	-130.01177	319.8	178.0	1364.7	1542.6	jason moving up approximately 100 meters to avoid hitting anything on bottom	2189
2010/08/31 04:05:11	45.93433	-130.01175	343.1	66.0	1349.8	1415.8	glass floats recovered	2190
2010/08/31 04:06:16	45.93432	-130.01175	340.9	122.0	1349.6	1471.6	700 meters to get back to bench mark site	2191
2010/08/31 05:02:15	45.93416	-130.01156	340.3	33.6	1508.7	1542.3	descending to bench mark site now	2192
2010/08/31 05:03:25	45.93426	-130.01163	343.1	6.1	1535.9	1542.0	JASON: Jason on bottom bottom in sight	2193
2010/08/31 05:05:18	45.93436	-130.01155	358.8	3.6	1538.4	1542.0	bench mark in sight	2195
2010/08/31 05:05:29	45.93438	-130.01157	13.6	3.5	1538.7	1542.3	Frame_Grab:	2196
2010/08/31 05:05:38	45.93441	-130.01158	41.2	3.4	1539.3	1542.6	Frame_Grab:	2197
2010/08/31 05:05:50	45.93443	-130.01158	66.2	2.7	1540.0	1542.6	Frame_Grab:	2198
2010/08/31 05:06:47	45.93444	-130.01155	65.2	1.6	1541.0	1542.6	setting up to deploy MPR on bench mark AX106	2200
2010/08/31 05:11:34	45.93445	-130.01155	62.7	0.8	1541.6	1542.4	MPR on bench mark with cable positioned to the left	2203
2010/08/31 05:11:50	45.93445	-130.01155	62.9	0.8	1541.6	1542.4	nudging bench mark to check stability	2204
2010/08/31 05:12:25	45.93445	-130.01155	64.1	0.7	1541.9	1542.6	Heading is 63.8	2206
2010/08/31 05:12:55	45.93445	-130.01155	63.8	0.7	1541.9	1542.6	starting p-measurement	2207
2010/08/31 05:13:19	45.93445	-130.01155	63.8	0.7	1541.9	1542.6	DSC frame grab	2208
2010/08/31 05:32:34	45.93443	-130.01154	63.5	0.7	1541.8	1542.6	NAV: Doppler Reset	2219
2010/08/31 05:32:54	45.93443	-130.01154	63.5	0.7	1541.8	1542.6	p-measurement finished	2220
2010/08/31 05:33:28	45.93443	-130.01154	63.7	0.7	1541.8	1542.5	removing MPR from bench mark and stowing	2221

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/31 05:34:27	45.93443	-130.01154	63.7	0.7	1541.8	1542.5	MPR stowed	2223
2010/08/31 05:36:04	45.93444	-130.01154	63.9	0.8	1542.0	1542.8	moving pull pin out of the way	2224
2010/08/31 05:37:02	45.93441	-130.01156	93.7	5.7	1536.8	1542.5	beginning transit to Center	2226
2010/08/31 05:37:38	45.93428	-130.01146	173.1	4.7	1537.0	1541.7	correction: Caldera Center	2227
2010/08/31 05:38:17	45.93416	-130.01148	175.4	9.9	1532.1	1542.0	transit will be approximately 2 hours	2229
2010/08/31 07:23:05	45.95564	-130.00966	349.6	6.2	1525.3	1531.6	nearing caldera center	2232
2010/08/31 07:23:24	45.95563	-130.00966	288.2	7.3	1525.5	1532.8	Positioning Jason	2233
2010/08/31 07:24:52	45.95548	-130.00971	228.3	6.5	1525.8	1532.3	Heading south for the benchmark target	2235
2010/08/31 07:29:47	45.95507	-130.00963	200.4	4.6	1525.6	1530.2	Located target with go-kart flag	2238
2010/08/31 07:30:29	45.95506	-130.00963	199.6	4.2	1525.6	1529.8	Have not seen BPR mooring on sonar (but haven't been looking for it)	2240
2010/08/31 07:32:01	45.95507	-130.00962	199.7	4.4	1525.9	1530.3	Cement benchmark is ~40-50m ahead	2241
2010/08/31 07:32:49	45.95508	-130.00962	199.9	4.6	1525.7	1530.4	Searching for old galvanized steel tripod benchmark	2243
2010/08/31 07:34:55	45.95516	-130.00984	310.4	6.1	1525.7	1531.7	Located 2 markers - benchmark probably in the middle	2245
2010/08/31 07:35:39	45.95521	-130.00989	257.3	2.0	1529.8	1531.8	We're at AX63	2246
2010/08/31 07:36:03	45.95521	-130.00988	256.4	2.3	1529.5	1531.8	Going to cement marker and pulling anchor on it and setting it down close by to where we are now	2247
2010/08/31 07:39:00	45.95493	-130.00970	159.3	1.6	1526.6	1528.1	At Ax101	2250
2010/08/31 07:39:47	45.95493	-130.00970	159.2	0.7	1527.5	1528.2	Releasing anchor on Ax101	2251
2010/08/31 07:41:02	45.95493	-130.00970	159.5	0.7	1527.5	1528.2	Anchor released	2253
2010/08/31 07:42:40	45.95493	-130.00970	160.4	1.5	1526.5	1528.0	Picking up AX101	2255
2010/08/31 07:43:11	45.95493	-130.00970	212.5	4.2	1523.9	1528.1	Frame_Grab:	2256
2010/08/31 07:43:12	45.95493	-130.00971	217.4	4.4	1523.7	1528.0	Frame_Grab:	2257
2010/08/31 07:44:10	45.95501	-130.00972	328.1	5.2	1523.1	1528.3	Moving AX101 north	2258
2010/08/31 07:46:01	45.95520	-130.00990	328.1	8.9	1523.0	1532.0	Correction... moving AX101 northwest	2260
2010/08/31 07:47:32	45.95521	-130.00989	293.2	3.0	1528.8	1531.8	Placing AX101 next to steel tripod marker on a flat stable spot to create a platform for pressure measurements	2262
2010/08/31 07:50:03	45.95524	-130.00991	268.3	0.8	1531.4	1532.2	AX101 placed on a flat lava rock near AX63 steel tripod	2264
2010/08/31 07:50:52	45.95524	-130.00991	268.0	0.9	1531.2	1532.2	Instrument will be placed on black rectangle on AX101	2266
2010/08/31 07:51:15	45.95524	-130.00991	269.2	0.8	1531.4	1532.2	Trying to position AX101 so the black rectangle is as level as possible	2267
2010/08/31 07:52:18	45.95524	-130.00991	268.6	0.8	1531.4	1532.2	Using Jason arm to move AX101 into position	2269
2010/08/31 07:54:27	45.95523	-130.00991	269.2	1.3	1530.9	1532.2	Shifting AX101 to a flatter rock	2271
2010/08/31 07:55:45	45.95523	-130.00992	270.4	0.8	1531.4	1532.2	AX101 stabilized.	2272
2010/08/31 07:55:57	45.95523	-130.00992	269.7	0.7	1531.5	1532.2	Checking positions of AX101 and AX63 in relation to each other.	2273

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2010/08/31 07:57:09	45.95523	-130.00992	267.3	1.1	1531.1	1532.2	Removing anchor pin from AX101.	2275
2010/08/31 07:58:04	45.95523	-130.00989	255.0	2.3	1529.7	1532.0	AX63 and AX101 are located well in relation to each other.	2276
2010/08/31 07:58:22	45.95523	-130.00989	255.1	2.3	1529.7	1532.0	Next step: release glass balls.	2278
2010/08/31 08:00:38	45.95524	-130.00993	238.1	1.0	1531.3	1532.3	Releasing glass balls from AX101	2280
2010/08/31 08:01:16	45.95524	-130.00993	238.6	1.0	1531.3	1532.3	Release line is in a knot!	2281
2010/08/31 08:01:56	45.95524	-130.00993	238.4	1.0	1531.3	1532.3	Pulling on the glass balls line is shifting the marker on the seafloor	2282
2010/08/31 08:02:28	45.95524	-130.00993	238.4	1.0	1531.3	1532.3	Using one arm to hold the marker in place and the other to release the line	2284
2010/08/31 08:04:34	45.95524	-130.00993	239.4	1.0	1531.2	1532.3	Glass balls released	2286
2010/08/31 08:04:56	45.95524	-130.00993	238.1	1.0	1531.4	1532.3	Float package is on its way up -- about 20 mins to surface	2287
2010/08/31 08:05:49	45.95524	-130.00993	238.8	1.0	1531.3	1532.3	Putting release line pin in Jason basket	2288
2010/08/31 08:08:10	45.95524	-130.00991	229.6	2.4	1529.8	1532.2	Trying to determine whether markers are level.	2290
2010/08/31 08:09:21	45.95525	-130.00988	58.1	17.1	1514.6	1531.7	Jason off bottom.	2292
2010/08/31 08:09:36	45.95526	-130.00982	70.6	20.3	1511.6	1531.9	Ship maneuvering to pick up float package of glass balls.	2293
2010/08/31 08:10:41	45.95529	-130.00952	85.7	33.1	1499.1	1532.1	JASON: Jason off bottom	2295
2010/08/31 08:50:37	45.95518	-130.00655	243.0	46.0	1485.0	1531.0	Glass balls recovered.	2296
2010/08/31 08:52:44	45.95519	-130.00638	245.2	31.3	1496.6	1528.0	Returning to AX63/AX101 site for pressure measurements.	2297
2010/08/31 08:56:12	45.95523	-130.00611	267.9	3.7	1523.0	1526.7	Approx 200 m from target location.	2299
2010/08/31 09:06:45	45.95524	-130.00801	268.0	3.5	1526.4	1529.9	Going past fissures in lava rocks	2306
2010/08/31 09:07:16	45.95524	-130.00811	267.7	3.8	1526.1	1529.9	Rocks in this area very smooth and flat	2307
2010/08/31 09:11:23	45.95525	-130.00864	264.7	2.4	1527.8	1530.2	Going past some ropy lava flow	2310
2010/08/31 09:15:29	45.95520	-130.00947	260.5	2.8	1530.3	1533.1	JASON: Jason on bottom	2313
2010/08/31 09:17:38	45.95520	-130.00982	270.8	3.2	1528.9	1532.1	Have returned to benchmarks for pressure measurements.	2315
2010/08/31 09:20:16	45.95520	-130.00982	270.6	3.3	1528.8	1532.1	Taking MPR out of Jason basket.	2318
2010/08/31 09:21:23	45.95520	-130.00982	270.6	3.3	1528.8	1532.1	Retracting basket.	2319
2010/08/31 09:22:09	45.95521	-130.00982	269.8	3.3	1528.8	1532.1	Moving Jason to benchmarks.	2320
2010/08/31 09:24:36	45.95521	-130.00994	226.3	0.7	1531.9	1532.7	Setting MPR on AX101	2323
2010/08/31 09:25:44	45.95521	-130.00994	226.3	0.7	1531.9	1532.7	Positioning bottom of MPR into black rectangle.	2324
2010/08/31 09:26:22	45.95521	-130.00994	226.3	0.7	1532.0	1532.7	MPR set in correct position.	2326
2010/08/31 09:27:00	45.95521	-130.00994	226.3	0.7	1532.0	1532.7	Pressure measurement has started.	2327
2010/08/31 09:35:58	45.95521	-130.00994	226.2	0.7	1532.0	1532.8	Heading is 226.3	2332
2010/08/31 09:46:13	45.95522	-130.00994	225.4	0.8	1532.0	1532.8	1 min to go on pressure measurement.	2338
2010/08/31 09:47:57	45.95521	-130.00994	226.0	0.8	1532.0	1532.8	Pressure measurement finished.	2340

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2010/08/31 09:49:58	45.95522	-130.00985	231.5	2.0	1530.4	1532.4	Removing MPR from AX101 and turning Jason	2342
2010/08/31 09:53:10	45.95519	-130.00988	357.7	0.7	1532.1	1532.8	Placing MPR on AX63 now.	2345
2010/08/31 09:54:51	45.95519	-130.00988	357.8	0.7	1532.1	1532.8	MPR placed on edge of AX63. 90 degrees from placement on AX101.	2347
2010/08/31 09:54:57	45.95519	-130.00988	357.8	0.7	1532.1	1532.8	Pressure measurement started.	2348
2010/08/31 10:14:57	45.95519	-130.00988	357.6	0.7	1532.2	1532.9	Pressure measurement finished.	2359
2010/08/31 10:15:27	45.95519	-130.00987	357.6	0.8	1532.2	1533.0	Picking up MPR from AX63.	2360
2010/08/31 10:16:30	45.95517	-130.00989	357.4	2.6	1529.8	1532.4	Moving away from Marker 63 and replacing MPR in basket.	2362
2010/08/31 10:17:36	45.95517	-130.00989	357.9	2.3	1530.0	1532.4	MPR stowed.	2363
2010/08/31 10:18:09	45.95517	-130.00989	358.1	2.7	1529.7	1532.4	Basket retracted.	2364
2010/08/31 10:18:51	45.95520	-130.01003	302.7	4.9	1527.9	1532.8	Transiting to Magnesia - approx 1.5 hrs.	2366
2010/08/31 11:10:32	45.95075	-130.00058	298.8	99.8	1429.5	1529.3	TXT:	2369
2010/08/31 12:17:59	45.94423	-129.98691	216.1	49.3	1474.1	1523.4	Homer range 100 meters	2371
2010/08/31 12:20:34	45.94410	-129.98673	194.7	4.7	1521.3	1526.0	Homer range to Magnesia is 80 meters at 6 meters altitude	2373
2010/08/31 12:21:02	45.94403	-129.98666	193.1	5.1	1520.9	1526.0	JASON: Jason on bottom	2374
2010/08/31 12:21:57	45.94402	-129.98661	119.9	4.4	1521.7	1526.1	Looking down on a lava pillar	2375
2010/08/31 12:22:26	45.94604	-129.98528	117.3	5.0	1521.2	1526.2	NAV: Doppler Reset	2377
2010/08/31 12:23:20	45.94605	-129.98527	227.4	4.2	1522.1	1526.3	Frame_Grab:	2378
2010/08/31 12:23:50	45.94604	-129.98530	262.2	3.3	1523.3	1526.6	Frame_Grab:	2379
2010/08/31 12:26:33	45.94624	-129.98530	38.9	5.2	1522.8	1528.0	Over collapse pits	2382
2010/08/31 12:27:08	45.94632	-129.98522	29.7	3.5	1522.3	1525.8	Frame_Grab:	2383
2010/08/31 12:28:00	45.94632	-129.98522	22.7	3.1	1522.7	1525.8	Frame_Grab:	2384
2010/08/31 12:28:59	45.94633	-129.98521	20.6	4.9	1522.3	1527.2	Lsva pillar in butt camera	2386
2010/08/31 12:29:15	45.94633	-129.98521	19.1	4.7	1522.3	1527.0	range to Homer 15 56 meters	2387
2010/08/31 12:32:00	45.94636	-129.98518	21.9	3.3	1522.5	1525.8	Frame_Grab:	2389
2010/08/31 12:32:46	45.94644	-129.98510	17.2	5.4	1522.4	1527.8	Frame_Grab:	2391
2010/08/31 12:34:08	45.94656	-129.98504	19.7	5.1	1522.7	1527.8	Frame_Grab:	2392
2010/08/31 12:34:48	45.94657	-129.98503	18.3	3.6	1522.6	1526.2	collapse pit with lava pillars	2394
2010/08/31 12:35:01	45.94659	-129.98502	18.4	4.4	1522.3	1526.7	Frame_Grab:	2395
2010/08/31 12:35:14	45.94660	-129.98501	18.9	3.4	1522.5	1525.9	HD camera on	2396
2010/08/31 12:36:03	45.94660	-129.98501	18.7	3.3	1522.5	1525.8	Range to Homer 20 meters	2397
2010/08/31 12:36:20	45.94660	-129.98501	18.7	3.3	1522.5	1525.8	Frame_Grab:	2399
2010/08/31 12:37:19	45.94666	-129.98497	17.2	2.2	1522.6	1524.8	flag and glass balls in sight	2400

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2010/08/31 12:38:01	45.94669	-129.98495	19.5	2.6	1522.3	1524.8	bench mark is on top of a pillar	2401
2010/08/31 12:38:33	45.94671	-129.98494	19.2	3.2	1522.2	1525.5	There isn't much "flat" in this area	2403
2010/08/31 12:38:42	45.94671	-129.98494	18.9	2.6	1522.5	1525.1	Frame_Grab:	2404
2010/08/31 12:39:37	45.94672	-129.98493	10.1	3.8	1522.6	1526.3	This bench mark is AX102	2405
2010/08/31 12:40:19	45.94673	-129.98492	339.9	3.9	1522.3	1526.1	HD highlights off	2407
2010/08/31 12:40:28	45.94674	-129.98492	335.7	3.6	1522.6	1526.2	Frame_Grab:	2408
2010/08/31 12:42:21	45.94675	-129.98492	336.7	2.8	1524.4	1527.1	Bench mark is in a hole between two pillars	2410
2010/08/31 12:42:30	45.94675	-129.98492	336.1	2.5	1524.6	1527.2	Frame_Grab:	2411
2010/08/31 12:43:26	45.94675	-129.98492	337.3	2.6	1524.6	1527.2	We've picked up AX 102 with one arm and preparing to release weights with the other arm	2412
2010/08/31 12:43:34	45.94675	-129.98492	337.2	2.5	1524.7	1527.2	Frame_Grab:	2413
2010/08/31 12:44:13	45.94675	-129.98492	336.9	2.5	1524.6	1527.2	Frame_Grab:	2414
2010/08/31 12:44:44	45.94675	-129.98492	337.3	2.6	1524.6	1527.2	pull pin released weights	2416
2010/08/31 12:47:00	45.94675	-129.98492	345.8	3.8	1521.6	1525.4	With benchmark in hand we are searching for flatter terraine	2418
2010/08/31 12:52:43	45.94637	-129.98519	133.0	7.0	1520.9	1527.9	Moving 30 meters south to where the galvanized steel benchmark is	2422
2010/08/31 12:53:13	45.94633	-129.98521	133.9	4.7	1521.0	1525.6	This galvanized steel benchmark has a marker float attached	2423
2010/08/31 12:57:54	45.94607	-129.98503	135.5	5.4	1523.8	1529.3	Set down AX102 to go look for the other bench mark	2426
2010/08/31 13:00:18	45.94606	-129.98502	135.5	5.8	1523.8	1529.5	AX102 has been set down on a lava pillar as there isn't much flat area around	2429
2010/08/31 13:01:06	45.94607	-129.98503	135.6	5.7	1523.7	1529.4	Frame_Grab:	2430
2010/08/31 13:03:21	45.94611	-129.98502	107.0	4.6	1522.7	1527.2	20 degree heading change for the ship	2432
2010/08/31 13:05:51	45.94609	-129.98510	10.7	5.7	1525.0	1530.7	Frame_Grab:	2434
2010/08/31 13:06:17	45.94609	-129.98510	239.5	4.2	1524.9	1529.1	HD highlights back on	2436
2010/08/31 13:08:04	45.94618	-129.98507	52.1	2.9	1522.8	1525.7	marker for galvanized steel bench mark found	2437
2010/08/31 13:08:24	45.94620	-129.98508	106.3	4.6	1523.2	1527.8	Frame_Grab:	2439
2010/08/31 13:12:24	45.94621	-129.98505	61.6	3.6	1523.6	1527.2	Highlight video off	2442
2010/08/31 13:12:55	45.94620	-129.98506	94.9	4.1	1522.8	1527.0	Frame_Grab:	2443
2010/08/31 13:15:12	45.94613	-129.98510	123.1	6.5	1521.2	1527.7	Going over to pick up AX102 again	2445
2010/08/31 13:17:14	45.94606	-129.98503	121.3	5.4	1524.3	1529.7	Frame_Grab:	2447
2010/08/31 13:17:57	45.94608	-129.98506	8.4	6.8	1522.0	1528.8	AX102 is being moved over to the galvanized steel bench mark	2448
2010/08/31 13:19:17	45.94617	-129.98505	18.0	4.1	1522.2	1526.3	Frame_Grab:	2450
2010/08/31 13:21:21	45.94620	-129.98506	79.9	1.8	1523.8	1525.7	AX102 has been emplaced	2452
2010/08/31 13:24:47	45.94620	-129.98505	100.1	2.0	1524.7	1526.7	Frame_Grab:	2455

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2010/08/31 13:25:53	45.94620	-129.98506	99.1	2.0	1524.7	1526.6	adjusting the position of AX102 as one of the legs was not making contact with surface	2456
2010/08/31 13:30:30	45.94621	-129.98505	96.6	3.7	1523.9	1527.5	Frame_Grab:	2460
2010/08/31 13:34:55	45.94618	-129.98505	349.6	2.8	1524.1	1526.9	moving AX102 to a spot with greater stability	2463
2010/08/31 13:44:15	45.94618	-129.98505	341.1	3.1	1523.4	1526.5	adjusting position of AX102 to get all three legs in contact with surface	2468
2010/08/31 13:45:46	45.94618	-129.98505	342.3	2.1	1524.4	1526.5	Frame_Grab:	2470
2010/08/31 13:52:55	45.94619	-129.98502	49.1	1.0	1524.8	1525.8	Once again only two legs making contact	2475
2010/08/31 13:54:09	45.94619	-129.98503	48.4	1.0	1524.8	1525.8	Frame_Grab:	2476
2010/08/31 13:57:36	45.94619	-129.98505	59.6	4.2	1521.4	1525.5	In final position and preparing to release glass floats	2479
2010/08/31 14:04:37	45.94619	-129.98500	350.0	1.9	1524.4	1526.4	Frame_Grab:	2484
2010/08/31 14:04:54	45.94619	-129.98500	352.2	2.0	1524.4	1526.4	Frame_Grab:	2485
2010/08/31 14:08:27	45.94619	-129.98500	345.5	2.2	1524.4	1526.6	Floats released	2488
2010/08/31 14:09:27	45.94618	-129.98502	326.9	5.3	1521.0	1526.3	moving off to recover the floats	2489
2010/08/31 14:49:18	45.94610	-129.98512	309.9	90.5	1426.6	1517.1	floats recovered on surface	2491
2010/08/31 14:52:14	45.94610	-129.98511	313.4	88.4	1426.5	1514.9	Descending back to benchmark position	2492
2010/08/31 14:54:01	45.94609	-129.98511	309.5	89.0	1426.8	1515.8	That is being towed back to location first	2493
2010/08/31 15:30:01	45.94606	-129.98502	338.2	55.3	1470.2	1525.5	NAV: Location Range 40 m	2494
2010/08/31 15:33:22	45.94606	-129.98501	334.3	50.4	1475.3	1525.7	Descending to benchmark AX102	2495
2010/08/31 15:34:46	45.94608	-129.98507	335.4	9.8	1519.2	1529.0	Bottom in sight	2497
2010/08/31 15:35:04	45.94609	-129.98506	335.8	8.0	1522.0	1530.0	Looking for benchmark	2498
2010/08/31 15:35:41	45.94619	-129.98501	335.0	6.8	1520.9	1527.7	Benchmark in sight	2499
2010/08/31 15:36:15	45.94622	-129.98494	275.8	5.4	1521.3	1526.7	Need to reposition AX102 slightly	2500
2010/08/31 15:36:34	45.94624	-129.98496	229.2	3.8	1522.6	1526.4	Going to park in between steel and cement benchmarks to take measurements	2502
2010/08/31 15:37:18	45.94622	-129.98496	289.0	3.3	1522.6	1525.9	Making measurements on both benchmarks	2503
2010/08/31 15:38:53	45.94615	-129.98496	286.4	1.7	1524.4	1526.1	NAV: Doppler Reset	2505
2010/08/31 15:39:39	45.94615	-129.98496	286.4	1.7	1524.4	1526.1	Going to move benchmark slightly left so can see legs	2506
2010/08/31 15:40:33	45.94616	-129.98496	286.6	1.7	1524.4	1526.1	Moving it further left	2508
2010/08/31 15:41:13	45.94616	-129.98496	286.6	1.7	1524.4	1526.0	Benchmark right on edge of small overhang	2509
2010/08/31 15:42:20	45.94615	-129.98497	284.6	2.0	1524.1	1526.0	Moved back to original position	2511
2010/08/31 15:44:36	45.94616	-129.98497	284.8	1.8	1524.3	1526.1	Checking stability of area	2513
2010/08/31 15:48:29	45.94616	-129.98497	286.2	1.9	1524.3	1526.2	Going to push benchmark to reposition	2516
2010/08/31 15:49:44	45.94616	-129.98497	287.0	1.8	1524.4	1526.1	Pushing benchmark up further	2517

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2010/08/31 15:50:35	45.94616	-129.98497	287.7	1.8	1524.4	1526.1	Cannot push benchmark	2519
2010/08/31 15:50:39	45.94616	-129.98497	287.7	1.8	1524.4	1526.1	Does not slide	2520
2010/08/31 15:50:47	45.94615	-129.98497	289.8	1.8	1524.3	1526.0	Trying to pull from other side	2521
2010/08/31 15:51:31	45.94615	-129.98497	290.1	1.7	1524.4	1526.1	Better position now must check third leg	2522
2010/08/31 15:54:18	45.94616	-129.98500	160.6	1.4	1524.7	1526.1	Third leg looks okay	2525
2010/08/31 15:54:55	45.94616	-129.98500	160.7	1.3	1524.8	1526.1	Going to push down on benchmark to check stability	2526
2010/08/31 15:55:56	45.94616	-129.98500	160.9	1.3	1524.7	1526.1	Seems okay	2527
2010/08/31 15:56:25	45.94616	-129.98500	162.1	1.7	1524.3	1526.0	Going to fly over area to check steel benchmark position	2529
2010/08/31 15:57:01	45.94617	-129.98497	209.3	6.3	1520.9	1527.2	Steel benchmark in view	2530
2010/08/31 15:58:04	45.94614	-129.98498	282.2	2.2	1523.8	1526.0	Going to take measurement on cement benchmark first	2531
2010/08/31 16:00:54	45.94614	-129.98498	281.7	1.8	1524.1	1526.0	DEPLOY: pressure sensor MPR onto AX-102	2534
2010/08/31 16:01:23	45.94614	-129.98498	282.0	1.9	1524.1	1526.0	positioning MPR on black rectangle	2535
2010/08/31 16:02:04	45.94614	-129.98498	282.7	1.9	1524.1	1526.0	MPR in position	2536
2010/08/31 16:02:43	45.94614	-129.98498	280.2	1.9	1524.0	1525.9	Worried that MPR is going to fall off benchmark	2538
2010/08/31 16:03:02	45.94614	-129.98498	280.5	1.9	1524.0	1525.9	Going to let go of MPR	2539
2010/08/31 16:03:25	45.94614	-129.98498	280.0	2.0	1524.0	1526.0	MPR stayed in position in the slot	2540
2010/08/31 16:08:30	45.94614	-129.98498	280.4	2.0	1524.0	1526.0	Pressure measurement started at 16.05	2544
2010/08/31 16:10:04	45.94614	-129.98498	280.2	2.0	1524.0	1526.0	Concerned about ability to place MPR on benchmark in future	2545
2010/08/31 16:10:24	45.94614	-129.98498	280.3	2.0	1524.0	1526.0	Suggested to use lanyard to deploy MPR	2547
2010/08/31 16:11:07	45.94614	-129.98498	280.4	2.0	1524.0	1526.0	Perhaps approach benchmark orthogonally to this time	2548
2010/08/31 16:13:04	45.94614	-129.98498	278.5	2.0	1524.0	1526.0	Steel benchmark is off to right from this position	2550
2010/08/31 16:15:25	45.94614	-129.98498	279.5	2.0	1524.0	1525.9	10 min of data collected	2552
2010/08/31 16:19:20	45.94614	-129.98498	279.4	2.0	1524.0	1525.9	Measurement stopped 16.25	2555
2010/08/31 16:25:05	45.94614	-129.98498	279.6	2.0	1524.0	1525.9	Pressure measurement stopped now	2559
2010/08/31 16:25:44	45.94614	-129.98498	279.5	2.0	1524.0	1525.9	RECOVER: pressure sensor MPR picked up by lanyard to move to other benchmark	2560
2010/08/31 16:26:45	45.94614	-129.98497	297.0	2.7	1522.9	1525.6	Moving to other benchmark	2562
2010/08/31 16:27:00	45.94615	-129.98496	312.7	2.8	1522.8	1525.7	Steel benchmark in view	2563
2010/08/31 16:28:50	45.94615	-129.98496	302.9	1.9	1524.4	1526.3	Placing MPR on benchmark	2565
2010/08/31 16:29:40	45.94615	-129.98496	302.9	1.9	1524.4	1526.3	In position now along marked edge	2566
2010/08/31 16:30:15	45.94615	-129.98496	302.8	1.9	1524.4	1526.3	Starting pressure measurement now	2567
2010/08/31 16:30:27	45.94615	-129.98496	302.8	1.9	1524.4	1526.3	Measurement started at 16.30	2569
2010/08/31 16:31:33	45.94615	-129.98496	302.8	1.9	1524.4	1526.3	Hydroids on marker line?	2570

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/31 16:40:06	45.94615	-129.98496	303.0	1.9	1524.4	1526.3	Halfway through pressure measurement	2575
2010/08/31 16:41:57	45.94615	-129.98496	302.9	1.9	1524.4	1526.3	Frame_Grab:	2577
2010/08/31 16:50:15	45.94615	-129.98496	302.9	1.9	1524.3	1526.3	Measurement stopped now at 16:50	2582
2010/08/31 16:50:32	45.94615	-129.98496	302.9	1.9	1524.3	1526.3	Transit speed will be 0.8 knots	2584
2010/08/31 16:50:48	45.94615	-129.98496	302.9	1.9	1524.3	1526.3	Will recover MPR and transit to M33	2585
2010/08/31 16:51:38	45.94615	-129.98496	302.9	1.9	1524.3	1526.2	RECOVER: pressure sensor MPR	2586
2010/08/31 16:51:54	45.94615	-129.98496	302.5	1.8	1524.4	1526.2	Placing MPR in basket	2587
2010/08/31 16:52:52	45.94615	-129.98496	301.9	1.9	1524.4	1526.3	Retracting Jason basket	2589
2010/08/31 16:53:52	45.94619	-129.98503	306.6	5.2	1520.7	1525.9	Ascending for transit to M33	2590
2010/08/31 16:54:54	45.94637	-129.98537	305.9	11.4	1513.9	1525.3	DVD recording off	2592
2010/08/31 18:10:39	45.93322	-129.98244	178.6	7.7	1513.0	1520.7	Bottom in sight near Marker 33.	2594
2010/08/31 18:12:43	45.93310	-129.98231	187.2	37.5	1483.4	1520.9	Medea and Jason are right over the RAS mooring.	2596
2010/08/31 18:13:07	45.93310	-129.98230	185.5	38.0	1479.5	1517.6	Looks like we need to drive east to get to the Homer on the cement benchmark.	2597
2010/08/31 18:15:35	45.93310	-129.98223	91.6	47.7	1473.3	1521.0	Range on Homer is 80 m and closing as we drive east of M33.	2598
2010/08/31 18:20:21	45.93309	-129.98210	90.9	45.4	1473.4	1518.8	Waiting to make sure Medea is away from the RAS mooring before we go back down to the bottom.	2599
2010/08/31 18:20:29	45.93309	-129.98210	90.7	47.8	1473.3	1521.1	Jason is at 50 m altitude.	2600
2010/08/31 18:24:48	45.93308	-129.98200	90.6	10.1	1511.0	1521.1	Jason back on the bottom. We are 10-20 m east of M33 and driving east.	2602
2010/08/31 18:30:40	45.93305	-129.98178	86.1	6.6	1514.5	1521.1	NAV: Location DVD recording is back on	2606
2010/08/31 18:33:48	45.93313	-129.98165	49.3	6.4	1514.9	1521.3	Waiting for Medea	2608
2010/08/31 18:36:37	45.93321	-129.98153	44.0	7.6	1514.4	1522.0	Benchmark in sight	2611
2010/08/31 18:37:02	45.93326	-129.98150	21.0	7.1	1514.8	1521.8	Range on Homer 20 m	2612
2010/08/31 18:37:51	45.93333	-129.98148	20.5	4.9	1516.9	1521.8	Homer range 10 m	2613
2010/08/31 18:38:32	45.93337	-129.98148	26.0	4.8	1518.2	1523.0	Need to pull pin for bench weights first	2615
2010/08/31 18:39:18	45.93341	-129.98149	72.4	3.0	1519.1	1522.1	This is benchmark AX103	2616
2010/08/31 18:41:15	45.93341	-129.98146	70.6	0.7	1522.5	1523.3	Pin on weights being pulled	2618
2010/08/31 18:41:31	45.93341	-129.98146	70.5	0.7	1522.5	1523.3	Dragging benchmark	2619
2010/08/31 18:42:13	45.93341	-129.98146	70.3	0.7	1522.5	1523.3	Pin won't release	2620
2010/08/31 18:43:02	45.93341	-129.98146	70.4	0.7	1522.5	1523.3	Lifting benchmark by rope to floats	2622
2010/08/31 18:43:33	45.93341	-129.98146	70.7	0.7	1522.5	1523.3	Benchmark down again	2623
2010/08/31 18:44:04	45.93341	-129.98146	70.7	0.7	1522.5	1523.3	Trying to pull pin again	2624
2010/08/31 18:44:29	45.93341	-129.98146	70.7	0.8	1522.5	1523.3	Still won't release	2626

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/31 18:46:36	45.93341	-129.98146	76.7	0.7	1522.5	1523.2	Pulling pin for weights again using both claws	2628
2010/08/31 18:46:55	45.93341	-129.98146	74.5	0.7	1522.5	1523.3	Success at last pin released	2629
2010/08/31 18:47:59	45.93341	-129.98146	73.7	0.7	1522.4	1523.2	Stowing pin in Jason basket	2630
2010/08/31 18:48:45	45.93341	-129.98146	74.0	0.7	1522.3	1523.1	Moving benchmark now	2632
2010/08/31 18:50:22	45.93342	-129.98147	106.8	4.9	1517.6	1522.5	Moving benchmark straight west	2634
2010/08/31 18:51:46	45.93345	-129.98158	270.4	7.1	1514.6	1521.7	NAV: Doppler Reset 46 min ago during transit	2635
2010/08/31 19:01:22	45.93345	-129.98221	221.6	6.3	1514.0	1520.3	moving benchmark changing direction towards south	2641
2010/08/31 19:03:45	45.93333	-129.98233	131.0	0.9	1519.9	1520.8	old benchmark in sight next to marker 33	2643
2010/08/31 19:05:20	45.93333	-129.98232	127.6	1.6	1519.1	1520.7	deploying new benchmark AX103 two meters from old benchmark on smooth sheet lava flow	2645
2010/08/31 19:06:17	45.93333	-129.98232	124.0	0.8	1520.5	1521.2	clusters of tubeworms visible in background along with an unknown marker	2647
2010/08/31 19:13:15	45.93331	-129.98229	305.2	0.7	1520.4	1521.1	releasing glass balls from new marker for surface recovery	2651
2010/08/31 19:13:30	45.93331	-129.98229	304.9	0.7	1520.4	1521.2	glass balls away to surface	2652
2010/08/31 19:14:25	45.93329	-129.98226	294.2	3.6	1517.0	1520.6	several groups of clams in immediate vicinity of new marker on top of lava flow in cracks	2654
2010/08/31 19:15:18	45.93329	-129.98226	291.3	3.8	1516.9	1520.7	leaving bottom while the ship recovers the glass balls	2655
2010/08/31 19:17:06	45.93327	-129.98220	115.2	33.1	1487.4	1520.5	Passed RAS sampler mooring	2657
2010/08/31 19:18:43	45.93328	-129.98210	123.3	46.4	1475.4	1521.8	hovering near 50 m altitude during glass ball recovery	2658
2010/08/31 19:31:58	45.93335	-129.98132	219.6	66.4	1450.9	1517.3	continuing to hover at 70 m altitude during glass ball recovery	2659
2010/08/31 19:36:19	45.93337	-129.98106	253.3	66.3	1450.8	1517.1	glass balls on surface	2660
2010/08/31 19:47:46	45.93342	-129.98038	228.8	54.0	1465.1	1519.0	glass balls on ship	2661
2010/08/31 19:48:12	45.93342	-129.98036	230.6	51.2	1468.1	1519.3	ROV descending back to the bottom	2662
2010/08/31 19:50:13	45.93343	-129.98024	265.9	49.6	1468.4	1518.0	ship and ROV repositioning over Marker 33 vent site	2663
2010/08/31 19:53:34	45.93349	-129.98013	246.7	3.9	1516.0	1519.8	bottom in sight	2665
2010/08/31 19:54:41	45.93344	-129.98041	246.2	3.6	1516.0	1519.6	bottom is slightly ropery sheet flow with light sedimentation in longitudinal grooves	2667
2010/08/31 19:55:13	45.93340	-129.98058	245.9	3.0	1516.0	1518.9	bottom transitioning to pillow lava and lobate flow	2668
2010/08/31 19:58:26	45.93351	-129.98091	245.6	3.5	1514.5	1518.0	passing over lobate lava flow	2671
2010/08/31 20:02:16	45.93347	-129.98139	232.2	3.9	1513.4	1517.4	on edge of collapse zone	2673
2010/08/31 20:08:55	45.93331	-129.98175	168.3	7.3	1513.1	1520.3	passing smiley face marker at Cloud vent	2678
2010/08/31 20:11:05	45.93328	-129.98199	247.0	4.2	1517.7	1521.9	white bacterial mat and tubeworms and clams visible along cracks on bottom	2680
2010/08/31 20:11:57	45.93328	-129.98223	247.4	4.7	1516.2	1521.0	passing RAS sampler at Marker 33	2681
2010/08/31 20:12:49	45.93334	-129.98238	152.4	3.8	1517.2	1521.0	approaching benchmark AX103	2683
2010/08/31 20:14:13	45.93332	-129.98236	140.8	2.7	1518.3	1520.9	landed at benchmark AX103	2684

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2010/08/31 20:21:34	45.93331	-129.98236	141.5	0.7	1520.6	1521.3	DEPLOY: pressure sensor pressure sensor on benchmark AX103 for pressure measurement	2689
2010/08/31 20:22:16	45.93331	-129.98236	141.7	0.7	1520.6	1521.4	measurements started from control van	2691
2010/08/31 20:25:19	45.93331	-129.98236	141.6	0.7	1520.7	1521.4	live clams embedded in sediments along cracks in lava flow next to benchmark	2693
2010/08/31 20:25:49	45.93331	-129.98236	141.6	0.7	1520.7	1521.4	short tubeworms also along crack near benchmark	2694
2010/08/31 20:42:38	45.93331	-129.98236	141.3	0.8	1520.8	1521.5	stopped pressure sensor measurement at AX103	2704
2010/08/31 20:43:10	45.93331	-129.98236	141.9	0.8	1520.7	1521.5	RECOVER: pressure sensor placing pressure sensor back into ROV basket	2705
2010/08/31 20:45:34	45.93330	-129.98243	117.1	4.5	1516.6	1521.1	transiting to old steel benchmark for second pressure sensor measurement	2707
2010/08/31 20:46:13	45.93330	-129.98243	117.5	4.7	1516.4	1521.1	marker 53 is next to the old steel benchmark	2708
2010/08/31 20:47:19	45.93329	-129.98239	112.9	1.7	1519.5	1521.2	both new benchmarker and old benchmarker are in view and are 2-3 m apart	2710
2010/08/31 20:50:22	45.93329	-129.98239	114.2	0.8	1520.5	1521.3	DEPLOY: pressure sensor placing pressure sensor on top of old benchmark	2713
2010/08/31 20:52:56	45.93329	-129.98239	113.8	0.8	1520.6	1521.3	beginning pressure measurement from control van	2715
2010/08/31 20:55:51	45.93329	-129.98239	113.2	0.8	1520.6	1521.4	mound of tubeworms visible in distance from pressure site with MTR lanyard visible from inside clump of tubeworms	2717
2010/08/31 20:58:02	45.93329	-129.98239	113.9	0.8	1520.6	1521.4	RAS sampler can be seen behind mound of tubeworms in foreground	2719
2010/08/31 21:12:38	45.93329	-129.98239	112.1	1.0	1520.4	1521.4	end pressure sensor measurement at old benchmark next to Marker 53	2728
2010/08/31 21:15:54	45.93330	-129.98241	113.0	4.1	1517.2	1521.3	RECOVER: pressure sensor placing pressure sensor back into ROV basket	2730
2010/08/31 21:17:11	45.93330	-129.98241	113.0	4.1	1517.2	1521.4	heading towards RAS sampler mooring	2732
2010/08/31 21:17:23	45.93330	-129.98241	111.0	4.4	1517.0	1521.4	HD video recorder is on	2733
2010/08/31 21:19:37	45.93320	-129.98233	113.8	1.3	1519.8	1521.1	RAS sampler directly ahead	2735
2010/08/31 21:20:02	45.93320	-129.98230	112.7	1.2	1519.9	1521.1	approaching RAS sampler and nearby Marker 55	2736
2010/08/31 21:21:37	45.93320	-129.98229	114.0	2.7	1518.6	1521.2	venting at Marker 33 vent is along crack with white bacterial mat and tubeworms in crack	2738
2010/08/31 21:22:54	45.93321	-129.98228	138.2	3.3	1517.8	1521.1	zooming in on RAS bottles with HD science camera	2740
2010/08/31 21:26:40	45.93319	-129.98222	198.9	1.0	1520.3	1521.3	preparing for temperature probe measurement in hole on top of RAs intake cover	2743
2010/08/31 21:26:55	45.93319	-129.98222	199.1	1.0	1520.3	1521.3	palm worms growing on top of intake cover	2744
2010/08/31 21:30:25	45.93319	-129.98221	199.1	1.0	1520.2	1521.3	temperature inside RAS intake cover is up to 37.7 deg C	2747
2010/08/31 21:31:45	45.93319	-129.98222	199.2	1.0	1520.3	1521.3	temperature probe placed back into basket	2748
2010/08/31 21:34:26	45.93319	-129.98221	198.7	1.0	1520.3	1521.3	searching for MTRs under lid of RAS intake cover	2751
2010/08/31 21:35:28	45.93319	-129.98221	198.7	1.0	1520.3	1521.3	copious amount of white bacterial floc under intake cover	2752
2010/08/31 21:37:24	45.93319	-129.98222	198.7	1.1	1520.3	1521.3	MTR visible at former site of intake cover	2754
2010/08/31 21:40:35	45.93319	-129.98221	199.4	1.1	1520.3	1521.3	MTR in ROV claw	2757
2010/08/31 21:40:59	45.93319	-129.98222	200.2	1.2	1520.1	1521.4	MTR number is 3327	2758

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/08/31 21:42:30	45.93319	-129.98222	200.9	1.3	1520.2	1521.4	separating MTR from RAS intake line	2760
2010/08/31 21:43:31	45.93319	-129.98222	200.2	1.2	1520.2	1521.4	RECOVER: MTR temp probe Put RAS MTR into starboard biobox	2761
2010/08/31 21:44:49	45.93319	-129.98221	199.8	1.1	1520.3	1521.4	recovering MTR that is not part of the RAS sampler that is also at Marker 33 site	2763
2010/08/31 21:45:25	45.93319	-129.98221	199.8	1.1	1520.3	1521.4	RECOVER: MTR temp probe put second MTR also into starboard biobox	2764
2010/08/31 21:52:28	45.93319	-129.98221	200.9	1.2	1520.2	1521.4	flipping RAS lid back on top of venting	2769
2010/08/31 22:02:07	45.93319	-129.98222	199.8	1.1	1520.4	1521.4	lid upright back over venting at Marker 33 vent	2774
2010/08/31 22:05:22	45.93320	-129.98224	199.6	1.6	1519.9	1521.5	moving RAS sampler mooring and its anchor away from venting so that anchor weight is relocated	2777
2010/08/31 22:09:39	45.93322	-129.98235	272.5	2.5	1518.9	1521.5	driving west with RAS sampler to drop anchor weight	2780
2010/08/31 22:12:22	45.93324	-129.98257	272.1	1.3	1520.6	1521.8	in position to drop anchor weight and release RAS sampler to surface	2783
2010/08/31 22:18:25	45.93325	-129.98257	271.7	1.0	1520.9	1521.9	RAS sampler released to the surface	2787
2010/08/31 22:19:18	45.93325	-129.98257	272.2	1.0	1520.8	1521.8	HD recorder turned off	2788
2010/08/31 22:22:15	45.93325	-129.98257	272.0	0.9	1520.9	1521.8	leaving previous pull-pin lanyards from benchmarks at the site where the RAS sampler was released to the surface	2790
2010/08/31 22:23:43	45.93330	-129.98260	270.9	23.1	1498.4	1521.6	leaving seafloor during RAS mooring recovery	2792
2010/08/31 22:26:58	45.93321	-129.98285	286.6	50.4	1471.0	1521.3	holding ROV at approximately 50 m above the bottom during surface recovery of RAS mooring	2793
2010/08/31 22:42:27	45.93259	-129.98386	312.6	46.9	1470.9	1517.8	RAS sampler has reached the surface	2794
2010/08/31 23:15:08	45.93128	-129.98601	293.6	47.5	1471.1	1518.5	RAS sampler has been recovered and is on the deck of the ship	2795
2010/08/31 23:16:38	45.93122	-129.98611	315.3	53.9	1464.3	1518.2	Beginning transit to Bag City	2796
2010/09/01 00:46:36	45.92763	-129.99201	31.4	106.7	1425.4	1532.2	Scott taking over as pilot	2797
2010/09/01 00:59:24	45.92711	-129.99271	31.7	5.3	1528.5	1533.8	Jason back on bottom	2799
2010/09/01 01:00:49	45.92724	-129.99261	30.7	2.8	1530.9	1533.7	TXT:	2801
2010/09/01 01:01:12	45.92726	-129.99258	30.4	3.6	1530.0	1533.7	Benchmark in sight	2802
2010/09/01 01:02:22	45.92729	-129.99255	335.6	4.3	1531.7	1536.0	This is benchmark AX104 near Bag City. Getting ready to move the benchmark.	2804
2010/09/01 01:04:27	45.91609	-129.98911	305.3	4.4	1531.6	1536.0	Doppler reset	2806
2010/09/01 01:10:51	45.91622	-129.98939	114.2	4.2	1530.7	1534.8	Located old marker 65 now we will go back and bring the benchmark over to it.	2810
2010/09/01 01:14:29	45.91613	-129.98914	203.2	2.6	1532.9	1535.5	Releasing pin on benchmark AX104.	2813
2010/09/01 01:16:09	45.91613	-129.98915	226.5	3.4	1531.9	1535.3	Lifting benchmark to move to Bag City maker.	2814
2010/09/01 01:20:00	45.91622	-129.98938	325.3	1.1	1531.7	1532.7	Placing benchmark AX104 at marker 65	2817
2010/09/01 01:26:46	45.91621	-129.98940	320.1	1.2	1531.6	1532.8	Releasing glass spheres from benchmark.	2822
2010/09/01 01:28:24	45.91625	-129.98952	295.5	13.8	1519.5	1533.3	Jason moving off the bottom.	2824
2010/09/01 01:30:28	45.91622	-129.98956	259.5	65.2	1464.3	1529.5	Passing 60m off of the bottom	2825

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/01 02:05:47	45.91612	-129.98927	247.8	95.9	1439.2	1535.1	Glass spheres on deck.	2826
2010/09/01 02:18:49	45.91608	-129.98917	160.2	93.7	1439.2	1532.9	Moving back to benchmark to make pressure measurements.	2827
2010/09/01 02:41:10	45.91601	-129.98898	325.9	69.5	1463.8	1533.4	Seeing plume.	2828
2010/09/01 02:44:28	45.91608	-129.98919	310.7	5.0	1528.0	1533.0	Jason at the bottom again.	2830
2010/09/01 02:44:56	45.91607	-129.98919	310.5	5.1	1527.9	1533.0	Shift change Tito taking over as pilot.	2831
2010/09/01 02:46:21	45.91614	-129.98935	324.3	5.0	1527.5	1532.5	Benchmark in sight.	2833
2010/09/01 02:49:50	45.91622	-129.98937	325.4	1.8	1530.5	1532.3	Arrived back at benchmark AX104	2835
2010/09/01 02:49:59	45.91622	-129.98937	325.2	1.8	1530.5	1532.3	Removing MPR from basket	2836
2010/09/01 02:51:45	45.91622	-129.98937	325.3	1.1	1531.2	1532.2	DEPLOY: pressure sensor MPR	2838
2010/09/01 02:52:07	45.91622	-129.98937	325.1	1.1	1531.2	1532.2	Positioning MPR in slot	2839
2010/09/01 02:52:21	45.91622	-129.98937	325.5	1.1	1531.2	1532.3	MPR in position	2841
2010/09/01 02:52:39	45.91622	-129.98937	325.0	0.9	1531.3	1532.3	Starting pressure measurement	2842
2010/09/01 02:55:57	45.91622	-129.98937	325.0	1.0	1531.3	1532.3	Zooming in on MPR	2844
2010/09/01 02:56:09	45.91622	-129.98937	324.9	1.0	1531.3	1532.3	Frame_Grab:	2845
2010/09/01 03:02:02	45.91622	-129.98938	325.1	1.0	1531.2	1532.2	Halfway through measurement	2849
2010/09/01 03:12:02	45.91622	-129.98939	325.1	1.0	1531.1	1532.1	Pressure measurement stopped	2855
2010/09/01 03:12:51	45.91622	-129.98939	325.2	1.0	1531.1	1532.1	RECOVER: pressure sensor MPR for next measurement on neighboring steel benchmark AX-05	2857
2010/09/01 03:13:26	45.91623	-129.98937	307.6	0.8	1531.3	1532.1	Moving MPR to AX-05 steel benchmark	2858
2010/09/01 03:14:35	45.91623	-129.98937	308.5	0.8	1531.3	1532.2	DEPLOY: pressure sensor MPR on AX-05	2860
2010/09/01 03:15:57	45.91623	-129.98937	308.2	0.8	1531.3	1532.2	Need to move MPR further onto bench	2861
2010/09/01 03:16:16	45.91623	-129.98937	308.2	0.8	1531.3	1532.2	MPR repositioned	2862
2010/09/01 03:17:16	45.91623	-129.98937	308.8	0.8	1531.4	1532.2	Pressure measurement started	2864
2010/09/01 03:18:21	45.91623	-129.98937	309.0	0.8	1531.3	1532.2	Mkr 65 has anemones and other growing on it	2866
2010/09/01 03:20:37	45.91623	-129.98937	309.4	0.9	1531.3	1532.2	Frame_Grab:	2868
2010/09/01 03:21:48	45.91623	-129.98937	309.0	0.8	1531.3	1532.1	Frame_Grab:	2869
2010/09/01 03:34:00	45.91624	-129.98937	309.0	0.8	1531.3	1532.1	3 min of measurement left	2876
2010/09/01 03:37:02	45.91624	-129.98937	308.7	0.8	1531.2	1532.0	Pressure measurement stopped	2879
2010/09/01 03:37:41	45.91624	-129.98937	308.3	0.9	1531.2	1532.0	RECOVER: pressure sensor MDR	2880
2010/09/01 03:38:02	45.91624	-129.98937	308.0	0.9	1531.2	1532.0	Placing MDR in Jason basket	2881
2010/09/01 03:38:19	45.91624	-129.98937	308.3	0.8	1531.2	1532.0	correction that is MPR	2883
2010/09/01 03:39:05	45.91624	-129.98937	308.6	0.9	1531.1	1532.0	Next will transit to Pillow Mound	2884

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/01 03:40:05	45.91620	-129.98936	275.9	6.8	1525.3	1532.1	Ascending for transit	2885
2010/09/01 03:40:50	45.91617	-129.98937	193.5	21.9	1510.0	1531.9	Transit to Pillow Mound will take about 3.5 hr	2887
2010/09/01 03:42:23	45.91625	-129.98935	6.1	34.0	1497.9	1531.9	Should arrive approx. 07.10	2888
2010/09/01 07:15:51	45.89618	-129.99559	179.0	68.0	1534.7	1602.7	HD cam picture has a vertical line running down the middle	2890
2010/09/01 07:16:10	45.89615	-129.99558	178.0	67.5	1542.4	1609.9	Cycling power to the camera didn't fix the line problem	2891
2010/09/01 07:18:31	45.89591	-129.99551	178.5	122.6	1595.3	1718.0	We have arrived at Pillow Mound and are looking for homer #15 on the benchmark	2892
2010/09/01 07:20:10	45.89575	-129.99546	176.6	45.9	1648.0	1693.9	Depth here is ~1723m - we are at 1647m	2893
2010/09/01 07:23:13	45.89555	-129.99538	175.0	4.0	1714.7	1718.7	Jason on the bottom	2895
2010/09/01 07:24:31	45.89550	-129.99527	114.0	3.1	1715.7	1718.8	At steel tripod Marker 66	2897
2010/09/01 07:25:19	45.86317	-130.00375	113.4	4.9	1713.9	1718.8	NAV: Doppler Reset	2898
2010/09/01 07:26:30	45.86316	-130.00374	113.0	4.2	1714.4	1718.6	Jason-Medea tether heaving a lot in the water	2900
2010/09/01 07:27:35	45.86307	-130.00373	284.6	7.2	1712.5	1719.7	Searching for homer #15 on benchmark AX105	2901
2010/09/01 07:27:58	45.86304	-130.00381	268.4	6.3	1713.2	1719.6	Located AX105 with float package	2902
2010/09/01 07:28:41	45.86306	-130.00388	195.1	2.0	1716.9	1718.9	Circling around AX105	2904
2010/09/01 07:30:02	45.86305	-130.00389	140.8	0.7	1718.5	1719.3	Removing AX105 anchor pin	2905
2010/09/01 07:30:40	45.86305	-130.00389	141.3	0.7	1718.6	1719.3	Leaving anchor pin on seafloor	2907
2010/09/01 07:31:03	45.86305	-130.00389	141.6	0.7	1718.5	1719.2	Picking up AX105 to move benchmark into position	2908
2010/09/01 07:31:54	45.86306	-130.00388	73.7	3.9	1715.3	1719.2	Moving to Marker 66	2909
2010/09/01 07:33:38	45.86314	-130.00373	348.5	0.7	1718.7	1719.4	Setting AX105 on ropy lava flow	2911
2010/09/01 07:35:55	45.86314	-130.00373	348.9	0.8	1718.4	1719.2	Adjusting AX105	2913
2010/09/01 07:37:31	45.86314	-130.00373	348.9	0.8	1718.5	1719.2	AX105 situated correctly.	2915
2010/09/01 07:37:50	45.86314	-130.00373	346.9	1.6	1717.4	1719.0	Next: release float package of glass balls.	2916
2010/09/01 07:40:30	45.86315	-130.00372	349.7	0.7	1718.4	1719.2	Holding AX105 in place with one arm while releasing glass balls with other arm	2919
2010/09/01 07:41:03	45.86315	-130.00372	348.7	0.7	1718.4	1719.1	Glass balls released.	2920
2010/09/01 07:42:26	45.86312	-130.00374	320.7	3.8	1715.2	1719.0	Jason off bottom while glass balls being recovered.	2922
2010/09/01 07:44:08	45.86301	-130.00393	250.5	5.0	1714.0	1719.1	Left glass balls release pin next to benchmark anchor pin.	2923
2010/09/01 08:19:47	45.86206	-130.00233	290.9	24.0	1693.1	1717.1	Glass balls recovered and on deck.	2925
2010/09/01 08:24:29	45.86180	-130.00134	292.7	23.0	1699.8	1722.8	Transiting back to Pillow Mound.	2929
2010/09/01 08:32:59	45.86207	-130.00174	4.8	3.7	1716.6	1720.3	Driving past pillow lava	2934
2010/09/01 08:34:40	45.86213	-130.00185	302.9	2.8	1716.5	1719.3	Big fish on seafloor	2936
2010/09/01 08:35:43	45.86216	-130.00191	302.6	2.6	1716.0	1718.6	Little fast black fish	2937
2010/09/01 08:36:06	45.86218	-130.00195	302.6	2.7	1716.2	1718.8	Driving over pillow lava mound with fissures	2938

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2010/09/01 08:37:06	45.86223	-130.00207	301.1	3.0	1715.9	1718.9	Lava here is more in sheets with a ropy texture on top	2940
2010/09/01 08:39:18	45.86237	-130.00225	303.0	3.1	1716.1	1719.2	Frame_Grab:	2942
2010/09/01 08:40:42	45.86247	-130.00245	302.6	3.7	1716.0	1719.8	Here the lava is back to pillow lava and big bombs	2944
2010/09/01 08:44:17	45.86264	-130.00287	303.7	4.0	1717.1	1721.1	Frame_Grab:	2947
2010/09/01 08:46:13	45.86269	-130.00301	288.1	2.7	1717.8	1720.6	Frame_Grab:	2948
2010/09/01 08:46:28	45.86269	-130.00301	288.1	2.1	1718.4	1720.5	Spider crabs	2950
2010/09/01 08:50:03	45.86296	-130.00326	311.1	2.6	1717.6	1720.2	Flat lava here with shattered cracks	2952
2010/09/01 08:54:04	45.86312	-130.00359	298.4	4.0	1716.6	1720.6	Back at benchmarks	2955
2010/09/01 08:54:24	45.86312	-130.00362	297.5	3.9	1716.5	1720.3	Jason basket out	2957
2010/09/01 08:55:24	45.86312	-130.00362	298.8	3.7	1716.6	1720.3	Picking up MPR	2958
2010/09/01 08:56:23	45.86313	-130.00364	307.7	4.2	1716.0	1720.2	Moving to benchmarks	2960
2010/09/01 08:58:51	45.86316	-130.00372	349.6	1.0	1718.3	1719.2	Placing MPR in black inset rectangle on AX105 benchmark	2962
2010/09/01 08:59:49	45.86316	-130.00372	349.8	0.9	1718.3	1719.2	Pushing MPR into place with arm.	2963
2010/09/01 09:00:28	45.86316	-130.00372	349.7	0.9	1718.4	1719.3	Starting p-measurement	2965
2010/09/01 09:03:48	45.86316	-130.00372	350.2	0.9	1718.3	1719.2	Heading 350.3	2967
2010/09/01 09:16:29	45.86316	-130.00375	350.1	0.9	1718.3	1719.3	NAV: Doppler Reset	2975
2010/09/01 09:21:30	45.86316	-130.00375	350.1	0.9	1718.4	1719.3	Pressure measurement finished	2978
2010/09/01 09:22:01	45.86316	-130.00375	350.2	0.9	1718.3	1719.3	Picking up MPR	2979
2010/09/01 09:24:19	45.86315	-130.00373	349.1	2.0	1717.2	1719.2	Moving to benchmark 66	2982
2010/09/01 09:26:49	45.86315	-130.00370	2.8	0.7	1718.9	1719.6	Frame_Grab:	2984
2010/09/01 09:26:50	45.86315	-130.00370	3.1	0.7	1718.9	1719.6	Frame_Grab:	2985
2010/09/01 09:27:24	45.86315	-130.00370	2.9	0.7	1718.8	1719.6	Frame_Grab:	2986
2010/09/01 09:27:43	45.86315	-130.00370	2.7	0.7	1718.8	1719.6	At benchmark 66. It has some sea stars on its marker line.	2987
2010/09/01 09:29:18	45.86315	-130.00370	2.6	0.7	1718.7	1719.5	Placing MPR on benchmark 66	2989
2010/09/01 09:31:03	45.86316	-130.00370	2.6	0.7	1718.8	1719.5	MPR placed on edge of benchmark triangular top	2991
2010/09/01 09:31:36	45.86316	-130.00370	2.6	0.7	1718.9	1719.6	P-measurement started	2992
2010/09/01 09:51:04	45.86316	-130.00370	2.4	0.7	1718.9	1719.6	P-measurement finished	3003
2010/09/01 09:52:18	45.86315	-130.00370	0.7	1.3	1718.1	1719.3	Picked up MPR	3005
2010/09/01 09:53:29	45.86312	-130.00370	360.0	3.6	1716.1	1719.7	Replacing MPR in Jason basket	3006
2010/09/01 09:54:01	45.86313	-130.00370	0.3	3.7	1716.1	1719.8	Retracting Jason basket.	3007
2010/09/01 09:56:31	45.86281	-130.00375	194.0	16.9	1702.6	1719.4	Transit time back to Bag City ~3.5 hrs	3010
2010/09/01 13:41:45	45.91472	-129.98983	14.3	6.0	1526.5	1532.5	Jason is at the bottom	3011

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2010/09/01 13:42:13	45.91483	-129.98980	14.2	6.1	1526.4	1532.5	Waiting for the ship to come around a little bit	3012
2010/09/01 13:42:49	45.91497	-129.98976	12.7	3.5	1529.1	1532.6	Benchmark in sight.	3014
2010/09/01 13:47:27	45.91608	-129.98946	328.3	0.9	1531.3	1532.2	Taking pressure measurement at new benchmark AX104 at Bag City	3017
2010/09/01 13:47:55	45.91617	-129.98943	328.3	0.9	1531.3	1532.2	Reset doppler	3018
2010/09/01 13:49:48	45.91617	-129.98943	328.5	0.9	1531.3	1532.2	Frame_Grab:	3020
2010/09/01 13:50:04	45.91617	-129.98943	328.4	0.9	1531.3	1532.2	Jason heading 328.5	3021
2010/09/01 14:07:07	45.91617	-129.98943	328.4	0.9	1531.3	1532.2	Finished taking pressure measurement at new benchmark AX104 Bag City	3031
2010/09/01 14:08:19	45.91616	-129.98943	322.6	1.9	1530.3	1532.2	Moving mobile pressure recorder to old benchmark AX05 at Bag City	3033
2010/09/01 14:10:54	45.91618	-129.98942	302.6	1.4	1531.1	1532.5	Begin taking pressure measurement at old benchmark Bag City	3035
2010/09/01 14:31:04	45.91618	-129.98942	302.3	1.3	1531.1	1532.4	Finished taking pressure measurement at old benchmark Bag City	3046
2010/09/01 14:31:51	45.91618	-129.98942	302.2	1.3	1531.1	1532.4	Stowing MPR in basket	3047
2010/09/01 14:33:45	45.91617	-129.98941	306.2	2.9	1529.5	1532.4	Begin transit to Marker 33	3049
2010/09/01 16:11:39	45.93286	-129.98251	21.0	37.1	1478.1	1515.3	NAV: Doppler Reset	3052
2010/09/01 16:16:31	45.93331	-129.98238	133.5	2.1	1518.8	1520.9	Frame_Grab:	3055
2010/09/01 16:17:04	45.93330	-129.98237	130.9	0.7	1520.7	1521.5	JASON: Jason on bottom at benchmark AX103 near Marker 33	3056
2010/09/01 16:18:14	45.93330	-129.98237	134.3	0.7	1520.4	1521.1	DEPLOY: pressure sensor on benchmark AX103	3057
2010/09/01 16:19:13	45.93330	-129.98237	134.9	0.7	1520.3	1521.1	pressure sensor stable	3059
2010/09/01 16:19:57	45.93330	-129.98237	134.7	0.7	1520.4	1521.1	Begin pressure measurement at AX103	3060
2010/09/01 16:20:14	45.93330	-129.98237	134.5	0.7	1520.4	1521.1	Heading is 134.5	3061
2010/09/01 16:30:21	45.93330	-129.98237	134.3	0.7	1520.4	1521.1	DSC frame grab	3068
2010/09/01 16:40:25	45.93331	-129.98237	134.7	0.7	1520.3	1521.0	End pressure measurement at AX103	3074
2010/09/01 16:41:55	45.93331	-129.98237	134.2	0.8	1520.0	1520.8	Moving to old benchmark AX03	3075
2010/09/01 16:43:59	45.93328	-129.98239	104.5	0.8	1520.1	1520.9	DEPLOY: pressure sensor on old benchmark AX03	3077
2010/09/01 16:45:57	45.93328	-129.98239	104.0	0.8	1520.1	1520.9	MPR deployed and stable	3079
2010/09/01 16:46:07	45.93328	-129.98239	104.0	0.8	1520.1	1520.9	repositioning MPR again	3080
2010/09/01 16:46:23	45.93328	-129.98239	103.9	0.8	1520.1	1520.9	MPR now stable	3082
2010/09/01 16:46:46	45.93328	-129.98239	103.9	0.8	1520.1	1520.9	Begin pressure measurement at 16:46	3083
2010/09/01 16:59:34	45.93328	-129.98239	103.6	0.8	1520.0	1520.9	Frame_Grab:	3090
2010/09/01 17:06:36	45.93328	-129.98239	103.8	0.8	1520.0	1520.9	End pressure measurement on old benchmark AX03 at 17:06	3095
2010/09/01 17:06:52	45.93328	-129.98239	103.7	0.8	1520.0	1520.9	RECOVER: pressure sensor	3096
2010/09/01 17:07:38	45.93328	-129.98239	103.6	0.8	1520.1	1520.9	MPR stowed on Jason	3097
2010/09/01 17:08:16	45.93328	-129.98240	103.8	0.9	1520.1	1521.0	Beginning transit to Magnesia	3098

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2010/09/01 17:08:35	45.93329	-129.98240	87.0	4.3	1516.5	1520.7	1400 meters to Magnesia	3100
2010/09/01 17:08:54	45.93327	-129.98243	183.5	4.8	1516.1	1520.9	Approximately 1.5 hours	3101
2010/09/01 18:18:45	45.94566	-129.98490	350.1	71.6	1450.6	1522.2	NAV: Doppler Reset	3103
2010/09/01 18:23:35	45.94615	-129.98497	297.2	4.3	1521.5	1525.9	JASON: Jason on bottom at benchmark AX102 at Magnesia site	3105
2010/09/01 18:25:02	45.94616	-129.98496	295.5	3.6	1522.1	1525.7	DEPLOY: pressure sensor on benchmark AX102	3107
2010/09/01 18:28:36	45.94616	-129.98499	281.9	1.9	1524.3	1526.1	MPR is stable	3110
2010/09/01 18:29:05	45.94616	-129.98499	281.9	1.9	1524.3	1526.1	Begin pressure measurement on benchmark AX102 at 18:28	3111
2010/09/01 18:29:39	45.94616	-129.98499	281.9	1.9	1524.2	1526.1	fish	3112
2010/09/01 18:30:08	45.94616	-129.98499	281.9	1.8	1524.2	1526.1	fish on jason	3113
2010/09/01 18:31:27	45.94616	-129.98499	281.9	1.9	1524.2	1526.2	Heading is 281.9	3115
2010/09/01 18:34:09	45.94616	-129.98499	281.8	1.9	1524.2	1526.1	fish hit MPR cable	3117
2010/09/01 18:35:50	45.94616	-129.98499	281.8	1.9	1524.3	1526.1	MPR still stable	3119
2010/09/01 18:48:34	45.94616	-129.98499	281.7	1.9	1524.2	1526.1	End pressure measurement at AX102 at 18:48	3127
2010/09/01 18:49:05	45.94616	-129.98499	281.6	1.9	1524.2	1526.1	RECOVER: pressure sensor	3128
2010/09/01 18:49:51	45.94615	-129.98497	342.9	5.6	1521.0	1526.6	Moving to old benchmark AX01	3129
2010/09/01 18:53:24	45.94617	-129.98497	313.8	2.2	1524.3	1526.5	DEPLOY: pressure sensor on old benchmark AX01	3132
2010/09/01 18:53:32	45.94617	-129.98497	313.7	2.1	1524.3	1526.4	TXT:	3133
2010/09/01 18:55:26	45.94617	-129.98498	334.7	2.3	1524.0	1526.2	Repositioning to new heading	3135
2010/09/01 18:56:26	45.94617	-129.98498	339.0	1.3	1524.5	1525.8	Deploying MPR on AX01	3137
2010/09/01 18:58:00	45.94617	-129.98498	338.8	1.3	1524.5	1525.8	MPR deployed and stable	3138
2010/09/01 18:58:33	45.94617	-129.98498	338.6	1.4	1524.4	1525.8	began pressure measurements on old benchmark	3140
2010/09/01 19:01:18	45.94617	-129.98498	338.5	1.3	1524.4	1525.8	pressure measurement is being taken near Magnesia vent next to Marker 67	3142
2010/09/01 19:08:07	45.94617	-129.98498	338.9	1.3	1524.5	1525.8	stalked anemone-like animals are attached to Marker 67	3146
2010/09/01 19:17:12	45.94617	-129.98498	338.4	1.3	1524.5	1525.8	finished pressure measurments at old benchmark AX-01 at Magnesia and Marker 67	3152
2010/09/01 19:20:55	45.94613	-129.98496	336.9	8.9	1520.2	1529.1	pressure sensor placed into ROV basket and dropped two feet to ground during recovery	3155
2010/09/01 19:24:04	45.94616	-129.98500	285.7	2.2	1523.8	1526.0	redeploying presure sensor onto new benchmark AX102 for repeat pressure measurement	3157
2010/09/01 19:27:29	45.94623	-129.98482	283.6	1.8	1524.3	1526.1	pressure sensor placed on AX102 and stable	3160
2010/09/01 19:29:34	45.94627	-129.98474	285.0	3.2	1522.9	1526.0	moving pressure sensor back into ROV basket	3162
2010/09/01 19:30:15	45.94627	-129.98474	285.0	3.1	1522.9	1525.9	pressure sensor secure in ROV basket	3163
2010/09/01 19:32:42	45.94628	-129.98476	278.7	1.7	1524.4	1526.1	preparing to relocate new benchmark AX102 to more level surface	3166

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2010/09/01 19:34:35	45.94628	-129.98477	278.3	1.7	1524.3	1526.1	top of benchmark grabbed by port ROV arm and moving it slightly upwards to the top of the mound	3168
2010/09/01 19:36:42	45.94626	-129.98482	268.4	1.6	1524.5	1526.1	new benchmark location appears to be stable	3170
2010/09/01 19:37:28	45.94625	-129.98480	268.1	1.6	1524.5	1526.1	redeploying pressure sensor onto new benchmark AX102	3171
2010/09/01 19:39:21	45.94621	-129.98484	268.0	1.6	1524.5	1526.1	pressure sensor deployed onto AX102 and secure	3173
2010/09/01 19:39:49	45.94621	-129.98484	268.0	1.6	1524.5	1526.1	beginning pressure measurement on new benchmark AX102	3174
2010/09/01 19:59:49	45.94616	-129.98486	268.1	1.6	1524.5	1526.1	pressure measurement concluded on new benchmark AX102	3185
2010/09/01 20:00:51	45.94614	-129.98488	268.1	1.6	1524.5	1526.1	placing pressure sensor back into ROV basket	3187
2010/09/01 20:04:09	45.94614	-129.98485	296.0	6.1	1521.8	1527.8	pressure sensor secured in basket	3189
2010/09/01 20:06:36	45.94616	-129.98477	96.6	9.4	1517.5	1526.9	lifting off of the bottom and transiting to the caldera center	3192
2010/09/01 21:30:25	45.94545	-129.99960	114.9	79.1	1449.1	1528.2	approaching caldera center 90 m - ROV 90 m above bottom	3199
2010/09/01 21:43:40	45.94544	-130.00188	300.2	3.9	1528.6	1532.5	on bottom	3201
2010/09/01 21:44:59	45.94547	-130.00195	337.7	1.9	1530.9	1532.8	two markers and two pressure benchmarks are in sight	3203
2010/09/01 21:46:11	45.95520	-130.00980	305.2	1.8	1531.2	1533.0	NAV: Doppler Reset	3204
2010/09/01 21:48:24	45.95528	-130.00966	102.6	2.6	1530.5	1533.1	pillow basalt and lobate flow in the vicinity with significant sedimentation in cracks between pillows	3207
2010/09/01 21:51:32	45.95526	-130.00991	230.8	2.0	1530.9	1532.9	approaching old and new benchmarks in caldera center	3209
2010/09/01 21:52:06	45.95525	-130.00991	229.7	2.2	1530.6	1532.7	Marker 63 visible on old benchmark	3210
2010/09/01 21:53:49	45.95525	-130.00991	228.4	2.0	1530.7	1532.7	deploying pressure sensor onto new benchmark AX-101	3212
2010/09/01 22:09:15	45.95524	-130.00994	227.0	1.2	1532.5	1533.7	pressure sensor in place and secure on benchmark AX-101	3221
2010/09/01 22:09:50	45.95524	-130.00994	227.0	1.2	1532.5	1533.7	beginning pressure measurements on benchmark AX-101 at the caldera center	3222
2010/09/01 22:29:03	45.95524	-130.00994	226.5	1.3	1532.5	1533.8	pressure measurement concluded at AX-101 at the caldera center	3233
2010/09/01 22:29:58	45.95524	-130.00994	225.8	1.1	1532.7	1533.8	recovering pressure sensor from benchmark AX-101 and moving it to old benchmark AX-63	3234
2010/09/01 22:35:15	45.95521	-130.00993	355.5	1.0	1532.7	1533.6	pressure sensor in place on old benchmark AX-63 along edge opposite the marker 63 sign	3238
2010/09/01 22:35:50	45.95521	-130.00993	356.0	0.8	1532.7	1533.4	beginning pressure measurements on old benchmark AX-63 at caldera center	3239
2010/09/01 22:54:58	45.95521	-130.00993	355.5	0.7	1532.8	1533.5	pressure measurement concluded at AX-63 at the caldera center	3248
2010/09/01 22:57:17	45.95521	-130.00993	355.7	0.8	1532.7	1533.5	Stowing pressure recorder in basket	3249
2010/09/01 22:59:01	45.94853	-129.99164	353.2	1.4	1531.7	1533.1	Beginning transit to Ashes	3251
2010/09/01 23:01:04	45.95534	-130.00994	5.3	2.8	1529.6	1532.4	Doppler reset	3253
2010/09/02 00:55:14	45.93470	-130.01199	179.7	9.8	1534.7	1544.5	Heading down at 13 meters	3255
2010/09/02 00:55:32	45.93461	-130.01199	181.6	5.5	1539.1	1544.7	bottom in sight	3256

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2010/09/02 00:56:00	45.93453	-130.01194	135.0	3.2	1540.9	1544.2	Frame_Grab:	3257
2010/09/02 00:56:22	45.93449	-130.01193	76.2	2.9	1541.4	1544.3	Right at benchmark AX106	3259
2010/09/02 00:56:40	45.93449	-130.01192	69.4	3.2	1541.2	1544.5	basket going out	3260
2010/09/02 00:57:02	45.93449	-130.01191	69.9	1.7	1542.6	1544.3	Frame_Grab:	3261
2010/09/02 00:58:58	45.93449	-130.01191	70.0	0.7	1543.7	1544.4	untangling cord for pressure sensor to be installed on benchmark	3263
2010/09/02 01:01:32	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	pressure recorder installed on benchmark	3265
2010/09/02 01:01:58	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	measurment started	3266
2010/09/02 01:03:59	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3268
2010/09/02 01:04:15	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3269
2010/09/02 01:04:57	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3271
2010/09/02 01:06:08	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3272
2010/09/02 01:10:05	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3275
2010/09/02 01:13:44	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3278
2010/09/02 01:15:16	45.93449	-130.01191	70.0	0.7	1543.7	1544.5	Frame_Grab:	3280
2010/09/02 01:20:45	45.93449	-130.01191	70.2	0.7	1543.7	1544.4	Bill is using the science cam for some shrimp video	3284
2010/09/02 01:22:00	45.93449	-130.01191	70.3	0.8	1543.8	1544.5	pressure measurement done stowing recorder	3285
2010/09/02 01:23:35	45.95512	-130.00995	194.0	6.9	1537.5	1544.4	lift off from Ashes site heading to Ashes central	3287
2010/09/02 02:57:57	45.95498	-130.00973	179.8	99.3	1432.9	1532.2	Ten minutes from Caldera Center	3289
2010/09/02 03:01:40	45.95499	-130.00972	181.4	76.1	1455.3	1531.4	NAV: Doppler Reset 12min ago	3291
2010/09/02 03:07:31	45.95501	-130.00970	14.3	36.6	1481.0	1517.7	NAV: Location Jason range to AX-101 at Center is 50 m	3292
2010/09/02 03:11:01	45.95502	-130.00970	16.0	22.5	1506.3	1528.9	Descending to target now at range 20 m	3293
2010/09/02 03:11:35	45.95502	-130.00969	15.2	4.6	1524.5	1529.1	Bottom in sight	3294
2010/09/02 03:12:27	45.95511	-130.00980	15.5	5.2	1528.2	1533.4	Marker in sight	3296
2010/09/02 03:12:42	45.95513	-130.00983	349.1	5.4	1527.6	1533.0	Benchmark in sight	3297
2010/09/02 03:13:43	45.95519	-130.00982	236.5	1.4	1531.8	1533.3	Arrived at Benchmark AX-101	3298
2010/09/02 03:14:40	45.95519	-130.00982	236.1	0.7	1532.6	1533.4	Preparing for pressure measurement	3300
2010/09/02 03:15:24	45.95519	-130.00982	236.0	0.9	1532.4	1533.3	picking up MPR	3301
2010/09/02 03:15:40	45.95519	-130.00982	236.0	0.9	1532.4	1533.3	DEPLOY: pressure sensor MPR	3302
2010/09/02 03:15:59	45.95519	-130.00982	236.0	0.9	1532.4	1533.3	MPR fell over!	3303
2010/09/02 03:16:10	45.95519	-130.00982	235.9	0.9	1532.4	1533.3	repositioning MPR in slot	3304
2010/09/02 03:16:33	45.95519	-130.00982	236.0	0.9	1532.4	1533.3	MPR in position	3306
2010/09/02 03:16:43	45.95519	-130.00982	235.9	0.9	1532.4	1533.3	P-measurement started	3307

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2010/09/02 03:18:21	45.95519	-130.00982	235.9	0.9	1532.4	1533.3	ragtail and crinoids	3309
2010/09/02 03:18:36	45.95519	-130.00982	235.9	0.9	1532.4	1533.3	sea urchin near old benchmark	3310
2010/09/02 03:18:48	45.95519	-130.00982	235.9	0.9	1532.4	1533.3	also orange starfish	3311
2010/09/02 03:19:10	45.95519	-130.00982	235.9	0.9	1532.4	1533.3	sea cucumber	3312
2010/09/02 03:26:37	45.95519	-130.00982	236.0	0.9	1532.3	1533.3	10 min of measurement to go	3317
2010/09/02 03:33:39	45.95519	-130.00982	236.1	0.9	1532.3	1533.2	Many white crinoids here!	3321
2010/09/02 03:33:49	45.95519	-130.00982	236.1	0.9	1532.3	1533.2	Frame_Grab:	3322
2010/09/02 03:36:36	45.95519	-130.00982	236.1	0.9	1532.3	1533.2	P-measurement stopped	3325
2010/09/02 03:36:54	45.95519	-130.00982	236.1	0.9	1532.3	1533.2	RECOVER: pressure sensor MPR	3326
2010/09/02 03:38:01	45.95519	-130.00982	236.0	0.7	1532.4	1533.2	Moving MPR ro steel benchmark AX-63	3327
2010/09/02 03:38:23	45.95519	-130.00982	235.9	0.7	1532.5	1533.2	White starfish	3329
2010/09/02 03:39:10	45.95516	-130.00981	355.0	1.3	1531.4	1532.7	MPR will be placed on bench along edge opposite marker	3330
2010/09/02 03:40:27	45.95516	-130.00982	0.6	0.8	1532.3	1533.1	DEPLOY: pressure sensor MPR	3332
2010/09/02 03:41:15	45.95516	-130.00982	0.7	0.8	1532.3	1533.1	P-measurement started	3333
2010/09/02 03:42:01	45.95516	-130.00982	0.5	0.8	1532.3	1533.1	Sea cucumbers	3334
2010/09/02 03:43:16	45.95516	-130.00981	0.2	0.8	1532.3	1533.1	Seems to have sucker and tentacle legs?? A worm??	3336
2010/09/02 03:44:42	45.95516	-130.00981	0.1	0.8	1532.3	1533.1	Seem to be about 6-7 inches	3338
2010/09/02 03:45:29	45.95516	-130.00981	0.4	0.8	1532.3	1533.1	Frame_Grab:	3339
2010/09/02 03:46:41	45.95516	-130.00981	0.5	0.8	1532.3	1533.1	DSC frame-grab	3341
2010/09/02 03:47:17	45.95516	-130.00981	0.7	0.8	1532.3	1533.0	We want to collect a couple of these on the last round of p-measurements at AX-101	3342
2010/09/02 03:47:41	45.95516	-130.00982	0.3	0.8	1532.3	1533.0	Must be over a foot long	3343
2010/09/02 03:49:53	45.95516	-130.00982	0.4	0.8	1532.3	1533.1	will ask for 2-3 of these large grey "worms" to be collected on last visit to Center	3345
2010/09/02 03:50:17	45.95516	-130.00982	0.4	0.8	1532.3	1533.0	they are around the cement benchmark AX-101	3346
2010/09/02 03:51:56	45.95516	-130.00982	0.4	0.8	1532.3	1533.1	10 min to go on measurement	3348
2010/09/02 03:55:29	45.95516	-130.00982	0.3	0.8	1532.2	1533.0	There are two	3351
2010/09/02 03:56:03	45.95516	-130.00982	0.5	0.8	1532.2	1533.0	... two worms on one side of AX-101 and one on the other	3352
2010/09/02 04:01:18	45.95516	-130.00981	0.2	0.8	1532.2	1533.0	Animal mating ritual - one is moving upper body a lot?	3356
2010/09/02 04:01:30	45.95516	-130.00981	0.3	0.8	1532.2	1533.0	P-measurement stopped	3357
2010/09/02 04:01:57	45.95516	-130.00981	0.1	0.8	1532.2	1533.0	Frame_Grab:	3358
2010/09/02 04:02:07	45.95516	-130.00981	0.4	0.8	1532.2	1533.0	RECOVER: pressure sensor MPR	3359
2010/09/02 04:02:45	45.95515	-130.00981	1.6	1.7	1530.9	1532.6	Stowing MPR in basket for transit	3361
2010/09/02 04:04:42	45.95515	-130.00981	1.8	1.9	1530.8	1532.6	sculpin	3363

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2010/09/02 04:05:09	45.95514	-130.00981	302.0	6.1	1526.6	1532.7	Ascending for transit to Magnesia	3364
2010/09/02 04:06:28	45.95516	-130.00985	305.7	31.9	1500.7	1532.6	Transit from Center to Magnesia approximately 1.5 hr	3366
2010/09/02 05:31:08	45.94648	-129.98662	289.8	137.4	1387.6	1525.0	NAV: Doppler Reset	3368
2010/09/02 05:33:07	45.94628	-129.98607	94.6	119.3	1405.7	1525.1	NAV: Location Jason range 36 m from target	3369
2010/09/02 05:36:26	45.94594	-129.98516	90.7	25.0	1454.4	1479.4	Jason descending	3370
2010/09/02 05:38:49	45.94579	-129.98475	91.8	6.4	1519.6	1526.0	Bottom in sight	3372
2010/09/02 05:41:54	45.94594	-129.98497	323.1	6.6	1522.4	1529.0	Considering rebooting system	3374
2010/09/02 05:42:31	45.94594	-129.98497	323.2	6.7	1522.4	1529.1	Waiting for reboot	3376
2010/09/02 05:44:28	45.94611	-129.98491	310.0	8.1	1519.2	1527.3	Benchmark in sight	3378
2010/09/02 05:44:44	45.94611	-129.98490	308.6	7.7	1519.6	1527.3	Going to wait for ship GPS system reboot	3379
2010/09/02 05:45:16	45.94611	-129.98491	308.2	7.7	1519.6	1527.3	Currently ship GPS system under manual control	3380
2010/09/02 05:51:33	45.94611	-129.98491	307.7	7.6	1519.6	1527.2	GPS system rebooted and ready to continue operations	3384
2010/09/02 05:53:48	45.94612	-129.98491	302.3	5.4	1520.7	1526.1	At AX-102 benchmark	3386
2010/09/02 05:54:33	45.94612	-129.98492	275.7	5.1	1520.3	1525.4	MPR lifted out of Jason basket	3388
2010/09/02 05:54:52	45.94614	-129.98492	212.4	3.7	1520.8	1524.5	Rotating Jason into better position	3389
2010/09/02 05:56:36	45.94613	-129.98492	278.1	2.7	1522.8	1525.5	Approaching benchmark now	3391
2010/09/02 05:57:42	45.94613	-129.98493	277.3	1.8	1523.7	1525.5	DEPLOY: pressure sensor MPR	3392
2010/09/02 05:58:55	45.94613	-129.98493	277.2	1.8	1523.7	1525.5	Nudging MPR forward but knocked over	3394
2010/09/02 05:59:39	45.94613	-129.98493	277.5	1.8	1523.7	1525.5	MPR repositioned	3395
2010/09/02 05:59:58	45.94613	-129.98493	277.5	1.8	1523.8	1525.6	P-measurement started	3396
2010/09/02 06:09:56	45.94613	-129.98493	277.5	1.8	1523.7	1525.5	sea spider??	3402
2010/09/02 06:10:27	45.94613	-129.98493	277.6	1.8	1523.7	1525.5	bluish with very long legs next to anemone	3404
2010/09/02 06:11:32	45.94613	-129.98493	277.6	1.8	1523.7	1525.5	ophiuroid sea stars on HD cam	3405
2010/09/02 06:12:01	45.94613	-129.98493	277.7	1.8	1523.7	1525.5	interesting rock formation near benchmark	3406
2010/09/02 06:20:02	45.94613	-129.98493	277.6	1.8	1523.7	1525.4	P-measurement stopped	3411
2010/09/02 06:20:17	45.94613	-129.98493	277.6	1.8	1523.7	1525.4	RECOVER: pressure sensor MPR	3412
2010/09/02 06:20:33	45.94613	-129.98493	277.3	1.7	1523.7	1525.4	Moving to steel benchmark AX-01	3414
2010/09/02 06:22:06	45.94615	-129.98491	340.2	2.6	1523.3	1525.9	Approach on heading 338	3415
2010/09/02 06:23:03	45.94615	-129.98491	340.3	1.4	1524.0	1525.4	Will position MPR along edge opposite marker	3417
2010/09/02 06:24:23	45.94615	-129.98491	340.6	1.4	1523.9	1525.4	DEPLOY: pressure sensor MPR on steel benchmark AX-01	3419
2010/09/02 06:24:43	45.94615	-129.98491	340.4	1.4	1523.9	1525.4	Moving MPR tether out of the way	3420
2010/09/02 06:24:48	45.94615	-129.98491	340.8	1.5	1523.9	1525.4	MPR fell over	3421

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/02 06:25:30	45.94615	-129.98491	341.1	1.4	1523.9	1525.3	MPR repositioned	3422
2010/09/02 06:25:43	45.94615	-129.98491	341.3	1.5	1523.9	1525.4	No MPR fell over again	3423
2010/09/02 06:26:10	45.94615	-129.98491	341.2	1.5	1523.9	1525.4	Turning MPR around	3424
2010/09/02 06:27:02	45.94615	-129.98491	341.1	1.5	1523.9	1525.4	Repositioning MPR with tether out of way now	3426
2010/09/02 06:27:56	45.94615	-129.98491	341.2	1.5	1523.9	1525.4	MPR aligned along edge now	3427
2010/09/02 06:28:02	45.94615	-129.98491	341.2	1.5	1523.9	1525.4	P-measurement started	3428
2010/09/02 06:28:38	45.94615	-129.98491	341.1	1.5	1523.9	1525.4	Shrimp being filmed in HD	3430
2010/09/02 06:29:02	45.94615	-129.98491	341.3	1.5	1523.9	1525.4	Frame_Grab:	3431
2010/09/02 06:29:08	45.94615	-129.98491	341.2	1.5	1523.9	1525.4	Frame_Grab:	3432
2010/09/02 06:29:57	45.94615	-129.98491	341.2	1.5	1523.9	1525.4	Hydroids on marker line	3433
2010/09/02 06:36:13	45.94615	-129.98491	341.1	1.5	1523.9	1525.4	Lots of great HD pictures of hydroids	3437
2010/09/02 06:38:11	45.94615	-129.98491	341.2	1.4	1523.9	1525.3	10 min to go with measurement	3439
2010/09/02 06:49:02	45.94615	-129.98491	341.1	1.5	1523.8	1525.3	P-measurement stopped	3446
2010/09/02 06:49:42	45.94615	-129.98491	341.1	1.5	1523.8	1525.3	RECOVER: pressure sensor MPR from AX-01	3447
2010/09/02 06:50:26	45.94614	-129.98489	338.9	5.3	1520.4	1525.7	Will transit from Magnesia to Marker 33 next	3449
2010/09/02 06:51:04	45.94615	-129.98490	340.6	5.8	1520.9	1526.7	MPR stowed in Jason basket	3450
2010/09/02 06:51:42	45.94615	-129.98490	340.6	5.9	1519.8	1525.8	Basket retracted	3451
2010/09/02 06:52:03	45.94616	-129.98491	340.1	6.7	1518.6	1525.3	Ascending for transit to Marker 33	3452
2010/09/02 06:53:33	45.94624	-129.98494	340.0	8.3	1518.0	1526.4	Transit should take 1.5 hr	3454
2010/09/02 08:15:50	45.93332	-129.98238	139.6	0.7	1519.7	1520.5	We are on the bottom at Marker 33 benchmark AX-103.	3464
2010/09/02 08:15:59	45.93332	-129.98238	139.6	0.7	1519.7	1520.5	Placing p-sensor on benchmark.	3465
2010/09/02 08:17:30	45.93332	-129.98238	139.6	0.7	1519.7	1520.5	RECOVER: pressure sensor Start of pressure measurement at AX-103.	3467
2010/09/02 08:26:54	45.93332	-129.98238	139.6	0.7	1519.8	1520.5	Heading 139.6	3473
2010/09/02 08:35:19	45.93332	-129.98238	139.6	0.7	1519.8	1520.5	Frame_Grab:	3478
2010/09/02 08:35:36	45.93332	-129.98238	139.6	0.7	1519.8	1520.5	Frame_Grab:	3479
2010/09/02 08:36:59	45.93332	-129.98238	139.6	0.7	1519.8	1520.5	RECOVER: pressure sensor Pressure measurement finished at AX-103	3481
2010/09/02 08:37:55	45.93332	-129.98238	139.6	0.7	1519.8	1520.5	Picking up MPR from AX-103	3482
2010/09/02 08:38:40	45.93331	-129.98241	137.6	2.3	1517.6	1519.9	Moving MPR to AX-05	3484
2010/09/02 08:40:39	45.93328	-129.98241	85.3	1.2	1519.8	1521.0	Placing MPR on AX-05	3486
2010/09/02 08:41:36	45.93328	-129.98241	85.5	1.2	1519.8	1521.0	RECOVER: pressure sensor Start of pressure measurement at AX-05	3487
2010/09/02 08:41:46	45.93328	-129.98241	85.7	1.2	1519.8	1521.0	Heading 85.7	3488
2010/09/02 08:44:19	45.93328	-129.98241	86.0	1.2	1519.8	1521.0	Frame_Grab:	3491

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2010/09/02 08:44:23	45.93328	-129.98241	86.1	1.2	1519.8	1521.0	Picture of clams on seafloor near benchmark	3492
2010/09/02 08:44:24	45.93328	-129.98241	86.1	1.2	1519.8	1521.0	Frame_Grab:	3493
2010/09/02 08:59:03	45.93328	-129.98241	86.4	1.3	1519.8	1521.2	RECOVER: pressure sensor Spider crab approaching benchmark AX-05	3501
2010/09/02 09:01:05	45.93328	-129.98241	86.4	1.2	1519.8	1521.1	RECOVER: pressure sensor Pressure measurement finished	3503
2010/09/02 09:01:59	45.93328	-129.98241	86.3	1.5	1519.8	1521.3	Replacing MPR in Jason basket	3504
2010/09/02 09:02:33	45.93327	-129.98243	90.7	2.9	1516.9	1519.7	Extending basket]	3506
2010/09/02 09:03:03	45.93327	-129.98243	92.1	2.7	1517.2	1519.8	Stowing MPR in basket	3507
2010/09/02 09:03:40	45.93327	-129.98243	91.9	2.8	1517.1	1519.9	Retracting Jason basket	3508
2010/09/02 09:04:15	45.93327	-129.98243	170.6	3.6	1516.5	1520.1	Beginning transit to Bag City	3509
2010/09/02 09:05:28	45.93340	-129.98246	350.2	7.4	1512.5	1520.0	Transit should take ~1.5 hrs	3511
2010/09/02 10:24:37	45.92005	-129.98809	12.7	86.7	1434.5	1521.2	NAV: Doppler Reset	3518
2010/09/02 10:45:32	45.91644	-129.98953	174.9	31.3	1502.8	1534.1	RECOVER: pressure sensor Jason heading down	3519
2010/09/02 10:45:40	45.91641	-129.98953	173.9	28.0	1505.9	1533.9	Jason heading down to bottom	3520
2010/09/02 10:46:44	45.91627	-129.98945	174.9	7.6	1526.1	1533.7	We have arrived at Bag City	3522
2010/09/02 10:47:04	45.91627	-129.98943	174.4	8.0	1525.9	1533.8	Marker AX-104 and AX-04 in sight	3523
2010/09/02 10:48:05	45.91620	-129.98943	324.8	5.1	1526.4	1531.5	Jason basket out	3524
2010/09/02 10:50:28	45.91622	-129.98944	323.7	1.1	1530.3	1531.4	Picking up MPR	3527
2010/09/02 10:53:50	45.91622	-129.98944	329.1	1.3	1530.3	1531.6	Placing MPR on new benchmark AX104 at Bag City	3529
2010/09/02 10:57:23	45.91622	-129.98944	329.7	1.2	1530.4	1531.6	Begin pressure measurement	3532
2010/09/02 11:18:22	45.91622	-129.98944	328.6	1.2	1530.5	1531.7	Finished taking pressure measurement at new benchmark AX104 at Bag City	3544
2010/09/02 11:20:51	45.91622	-129.98942	323.7	2.1	1529.3	1531.5	Moving to old benchmark	3546
2010/09/02 11:22:53	45.91623	-129.98943	310.9	1.2	1530.3	1531.5	Placing MPR on old benchmark AX-04 at Bag City	3548
2010/09/02 11:23:08	45.91623	-129.98943	310.8	1.3	1530.3	1531.5	Begin pressure measurement on old benchmark AX-04	3549
2010/09/02 11:42:23	45.91623	-129.98943	310.9	1.3	1530.3	1531.6	Finished taking pressure measurement at old benchmark AX04 at Bag City	3560
2010/09/02 11:45:39	45.92065	-129.98812	311.3	1.3	1530.4	1531.7	Trying to free cable that is wound around the end in a funny way	3562
2010/09/02 11:48:36	45.92065	-129.98812	310.8	1.3	1530.4	1531.6	The cable is now free of the notch at the bottom of the MPR	3565
2010/09/02 11:48:47	45.92065	-129.98812	311.1	1.2	1530.4	1531.6	Stowing the MPR in basket	3566
2010/09/02 11:50:08	45.92065	-129.98812	312.2	1.8	1529.9	1531.7	Beginning transit to Pillow Mound. Approximately 4 hour transit.	3567
2010/09/02 15:24:56	45.87144	-130.00191	344.4	100.6	1513.3	1613.9	NAV: Doppler Reset	3570
2010/09/02 15:33:42	45.86342	-130.00379	159.7	9.6	1710.6	1720.2	Bottom in sight	3572
2010/09/02 15:34:51	45.86328	-130.00376	174.7	10.5	1709.8	1720.3	Marker AX-105 and AX-66 at Pillow Mound in sight	3574
2010/09/02 15:37:33	45.86319	-130.00372	1.0	6.2	1713.6	1719.8	NAV: Doppler Reset	3576

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2010/09/02 15:37:49	45.86319	-130.00373	0.6	3.2	1716.6	1719.8	Moving to benchmark AX-105	3577
2010/09/02 15:37:53	45.86319	-130.00373	358.3	3.0	1716.8	1719.7	Frame_Grab:	3578
2010/09/02 15:38:02	45.86320	-130.00373	359.7	2.3	1717.7	1720.0	DSC frame grab	3579
2010/09/02 15:38:13	45.86320	-130.00373	357.5	1.5	1718.5	1720.1	DSC frame grab	3580
2010/09/02 15:38:34	45.86320	-130.00373	358.3	0.7	1719.9	1720.6	JASON: Jason on bottom	3582
2010/09/02 15:39:51	45.86320	-130.00373	357.8	0.7	1719.9	1720.6	DEPLOY: pressure sensor on benchmark AX-105 at Pillow Mound	3583
2010/09/02 15:41:10	45.86320	-130.00373	357.9	0.7	1719.8	1720.6	MPR is positioned and stable	3585
2010/09/02 15:41:46	45.86320	-130.00373	357.9	0.8	1719.8	1720.6	Begin pressure measurement at 15:41	3586
2010/09/02 15:45:11	45.86320	-130.00373	357.9	0.8	1719.8	1720.6	Heading is 357.9	3589
2010/09/02 16:01:24	45.86320	-130.00373	358.0	0.8	1719.6	1720.4	End pressure measurement on benchmark AX-105 at 16:01	3598
2010/09/02 16:01:48	45.86320	-130.00373	358.1	0.7	1719.7	1720.4	RECOVER: pressure sensor and moving to old benchmark AX-66	3599
2010/09/02 16:03:49	45.86320	-130.00370	4.0	0.8	1719.5	1720.3	Placing MPR on old benchmark AX-66	3601
2010/09/02 16:04:35	45.86320	-130.00370	3.9	0.7	1719.4	1720.2	MPR is positioned and stable	3603
2010/09/02 16:05:17	45.86320	-130.00370	3.9	0.7	1719.5	1720.2	Begin pressure measurement on benchmark AX-66 at 16:05	3604
2010/09/02 16:10:29	45.86320	-130.00370	4.0	0.7	1719.5	1720.2	Frame_Grab:	3608
2010/09/02 16:18:00	45.86320	-130.00370	4.0	0.7	1719.5	1720.2	Frame_Grab:	3612
2010/09/02 16:21:29	45.86320	-130.00370	3.8	0.7	1719.4	1720.2	Heading is 3.9	3615
2010/09/02 16:24:57	45.86320	-130.00370	3.7	0.7	1719.4	1720.1	End pressure measurement on benchmark AX-66 at 16:24	3618
2010/09/02 16:25:05	45.86320	-130.00370	3.8	0.7	1719.4	1720.1	RECOVER: pressure sensor	3619
2010/09/02 16:25:47	45.86320	-130.00370	4.1	0.8	1719.3	1720.1	MPR stowed on Jason	3620
2010/09/02 16:26:39	45.86319	-130.00368	15.9	3.7	1716.6	1720.2	Traveling along crack at Pillow Mound in a NE direction for a video survey	3622
2010/09/02 16:27:25	45.86318	-130.00367	15.4	3.9	1716.4	1720.3	HD_CAM: start	3623
2010/09/02 16:27:35	45.86320	-130.00367	14.2	3.1	1717.1	1720.2	Frame_Grab:	3624
2010/09/02 16:27:55	45.86322	-130.00365	15.3	3.4	1717.3	1720.7	Frame_Grab:	3625
2010/09/02 16:28:09	45.86324	-130.00364	15.4	4.5	1717.4	1722.0	Frame_Grab:	3626
2010/09/02 16:28:22	45.86325	-130.00363	15.8	3.3	1717.8	1721.1	Frame_Grab:	3628
2010/09/02 16:28:29	45.86326	-130.00362	15.8	4.1	1717.6	1721.7	Frame_Grab:	3629
2010/09/02 16:28:52	45.86329	-130.00360	15.5	4.2	1717.7	1721.9	Frame_Grab:	3630
2010/09/02 16:29:42	45.86336	-130.00360	15.4	3.2	1718.1	1721.3	Frame_Grab:	3631
2010/09/02 16:30:37	45.86335	-130.00360	73.6	3.9	1717.5	1721.3	Turning around to try a different angle	3633
2010/09/02 16:31:20	45.86333	-130.00364	195.5	2.7	1718.6	1721.3	Frame_Grab:	3634
2010/09/02 16:31:27	45.86333	-130.00364	198.6	2.0	1719.5	1721.6	Frame_Grab:	3635

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2010/09/02 16:32:03	45.86330	-130.00363	195.9	4.6	1716.7	1721.3	frame grab of red jellyfish with green lights	3636
2010/09/02 16:32:14	45.86327	-130.00362	208.6	4.6	1716.8	1721.4	Frame_Grab:	3637
2010/09/02 16:33:13	45.86323	-130.00364	214.8	2.0	1718.4	1720.4	Frame_Grab:	3639
2010/09/02 16:33:33	45.86322	-130.00366	254.2	2.3	1717.8	1720.1	Frame_Grab:	3640
2010/09/02 16:34:06	45.86323	-130.00364	14.6	2.8	1717.2	1719.9	Frame_Grab:	3641
2010/09/02 16:34:17	45.86325	-130.00363	11.8	3.7	1717.9	1721.6	Frame_Grab:	3642
2010/09/02 16:34:24	45.86326	-130.00362	12.4	2.8	1718.4	1721.2	Frame_Grab:	3644
2010/09/02 16:34:30	45.86327	-130.00361	10.9	2.1	1718.7	1720.7	Frame_Grab:	3645
2010/09/02 16:35:23	45.86339	-130.00358	11.1	3.4	1718.0	1721.3	Frame_Grab:	3646
2010/09/02 16:35:43	45.86340	-130.00355	14.9	3.4	1717.6	1721.0	Frame_Grab:	3647
2010/09/02 16:37:09	45.86354	-130.00351	12.4	3.1	1717.7	1720.7	Frame_Grab:	3649
2010/09/02 16:37:23	45.86356	-130.00350	12.2	2.7	1718.1	1720.9	Frame_Grab:	3650
2010/09/02 16:37:29	45.86357	-130.00350	11.2	2.5	1718.6	1721.1	Frame_Grab:	3651
2010/09/02 16:37:42	45.86359	-130.00349	11.5	2.5	1718.7	1721.2	Frame_Grab:	3652
2010/09/02 16:38:07	45.86362	-130.00348	11.8	2.7	1718.4	1721.1	Frame_Grab:	3653
2010/09/02 16:38:44	45.86367	-130.00344	10.9	1.7	1719.1	1720.9	Frame_Grab:	3655
2010/09/02 16:39:15	45.86372	-130.00342	10.5	2.2	1719.0	1721.2	Frame_Grab:	3656
2010/09/02 16:39:48	45.86378	-130.00340	11.6	2.9	1718.8	1721.7	Frame_Grab:	3657
2010/09/02 16:40:13	45.86380	-130.00338	11.2	2.3	1718.9	1721.2	Frame_Grab:	3658
2010/09/02 16:40:23	45.86381	-130.00338	11.8	2.4	1718.7	1721.1	Frame_Grab:	3660
2010/09/02 16:40:41	45.86383	-130.00337	10.7	2.8	1718.8	1721.6	Frame_Grab:	3661
2010/09/02 16:41:36	45.86389	-130.00336	11.5	2.6	1719.6	1722.2	Frame_Grab:	3662
2010/09/02 16:42:01	45.86392	-130.00336	11.3	2.2	1720.0	1722.2	Heading is 11.4	3663
2010/09/02 16:42:47	45.86394	-130.00335	11.4	1.7	1720.4	1722.2	Frame_Grab:	3665
2010/09/02 16:43:11	45.86396	-130.00334	11.6	2.1	1720.3	1722.4	Frame_Grab:	3666
2010/09/02 16:43:43	45.86398	-130.00333	12.0	2.0	1720.2	1722.2	Frame_Grab:	3667
2010/09/02 16:43:51	45.86399	-130.00333	10.8	1.4	1720.2	1721.6	Frame_Grab:	3668
2010/09/02 16:43:56	45.86400	-130.00333	11.5	1.5	1720.2	1721.7	Frame_Grab:	3669
2010/09/02 16:44:53	45.86406	-130.00331	12.0	2.9	1719.9	1722.9	HD_CAM: stop	3671
2010/09/02 16:45:07	45.86406	-130.00330	40.6	8.8	1714.0	1722.8	Beginning transit to Bag City	3672
2010/09/02 16:45:38	45.86400	-130.00324	137.7	16.6	1705.7	1722.3	Approximately 4 hour transit	3673
2010/09/02 20:25:31	45.89461	-129.99432	31.1	5.5	1527.8	1533.3	ship is over the Bag City site and the ROV is following	3677

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2010/09/02 20:25:50	45.89468	-129.99426	31.2	3.2	1529.2	1532.5	ROV has reached the bottom	3678
2010/09/02 20:26:46	45.89480	-129.99411	28.3	4.1	1528.7	1532.8	traversing over a lava flow collapse zone	3680
2010/09/02 20:28:00	45.89496	-129.99406	22.2	3.8	1528.1	1531.9	new marker AX-104 in sight	3681
2010/09/02 20:29:20	45.89496	-129.99407	20.6	3.9	1528.0	1531.8	preparing to deploy pressure sensor onto new benchmark AX-104	3683
2010/09/02 20:33:57	45.89501	-129.99401	326.4	0.7	1531.5	1532.3	pressure sensor in place on benchmark AX-104	3686
2010/09/02 20:34:17	45.89501	-129.99401	325.7	0.7	1531.6	1532.3	beginning pressure measurement on AX-104 at Bag City	3687
2010/09/02 20:54:03	45.91618	-129.98942	326.1	0.7	1531.6	1532.3	pressure measurement concluded on AX-104	3698
2010/09/02 20:54:40	45.91618	-129.98942	325.7	0.8	1531.6	1532.4	moving pressure sensor from AX-104 to old benchmark AX-04	3700
2010/09/02 20:55:31	45.91619	-129.98941	304.1	1.6	1530.7	1532.3	Marker 65 is next to the old benchmark	3701
2010/09/02 20:58:45	45.91619	-129.98941	300.7	1.0	1531.2	1532.2	pressure sensor in place on old benchmark AX-04	3704
2010/09/02 20:59:03	45.91619	-129.98941	301.0	1.0	1531.3	1532.3	beginning pressure measurements on old benchmark AX-04	3705
2010/09/02 21:19:28	45.91619	-129.98941	299.5	1.1	1531.2	1532.3	pressure measurement concluded at AX-04	3716
2010/09/02 21:20:13	45.91619	-129.98941	299.8	1.0	1531.3	1532.3	recovering pressure sensor	3717
2010/09/02 21:23:23	45.91618	-129.98937	215.4	2.5	1529.5	1532.0	pressure sensor in place and secure in ROV basket	3720
2010/09/02 21:25:35	45.91611	-129.98946	354.7	2.6	1529.5	1532.1	moving southeast to tubeworm bushes to look for tubeworm samples and possible bacterial mat for sampling	3722
2010/09/02 21:28:25	45.91609	-129.98932	171.7	2.7	1529.5	1532.2	large bushes of tubeworms growing in cracks of basalt	3725
2010/09/02 21:30:07	45.91610	-129.98924	63.4	2.1	1530.4	1532.6	moving into tubeworm bush with white bacterial mat covering their tubes	3726
2010/09/02 21:32:43	45.91611	-129.98924	64.9	0.7	1531.9	1532.7	BIOLOGY: mat collection with starboard arm from Bag City	3729
2010/09/02 21:33:20	45.91611	-129.98924	64.8	0.7	1532.0	1532.7	BIOLOGY: tubeworms collection included clump of tubeworms covered in extensive bacterial mat	3730
2010/09/02 21:33:46	45.91611	-129.98924	65.0	0.7	1531.9	1532.7	biology sample placed into port side biobox	3731
2010/09/02 21:34:04	45.91611	-129.98924	64.9	0.7	1531.9	1532.7	sample location is 17 m southeast of the benchmarks	3732
2010/09/02 21:36:52	45.91611	-129.98924	65.1	0.7	1532.0	1532.7	portside biobox is secured	3735
2010/09/02 21:37:31	45.91610	-129.98926	64.0	4.6	1527.8	1532.4	lifting off of bottom and beginning transit to Marker 33	3736
2010/09/02 21:38:06	45.91610	-129.98931	165.5	5.5	1526.7	1532.2	transit time to Marker 33 is 90 min	3737
2010/09/02 23:17:23	45.93330	-129.98289	95.0	10.0	1511.5	1521.5	NAV: Doppler Reset	3743
2010/09/02 23:19:22	45.93330	-129.98257	95.6	5.6	1516.0	1521.6	bottom in sight	3745
2010/09/02 23:21:56	45.93330	-129.98253	95.0	5.7	1515.8	1521.5	benchmark in sight AX-103 old benchmark AX-05 also in view	3747
2010/09/02 23:22:03	45.93330	-129.98253	95.1	5.7	1515.9	1521.6	Frame_Grab:	3748
2010/09/02 23:22:41	45.93330	-129.98247	116.8	2.2	1519.3	1521.5	waiting while we move medea	3750
2010/09/02 23:25:02	45.93329	-129.98244	133.7	0.8	1520.6	1521.4	basket out and grabbing pressure recorder	3752
2010/09/02 23:26:30	45.93329	-129.98244	133.7	0.8	1520.6	1521.4	prssure measurement started	3754

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2010/09/02 23:31:26	45.93329	-129.98245	133.4	0.8	1520.6	1521.5	tube worms seen in the background	3757
2010/09/02 23:34:31	45.93329	-129.98245	133.6	0.8	1520.7	1521.5	rat-tao; at marker	3760
2010/09/02 23:34:57	45.93329	-129.98245	133.6	0.8	1520.7	1521.5	Frame_Grab:	3761
2010/09/02 23:36:35	45.93329	-129.98245	133.5	0.8	1520.7	1521.5	rat-tail squirmed under and disturbed cable to pressure sensor	3763
2010/09/02 23:39:07	45.93329	-129.98245	133.3	0.8	1520.7	1521.5	Frame_Grab:	3765
2010/09/02 23:39:28	45.93329	-129.98245	133.3	0.8	1520.7	1521.5	small tube worms in crack close to benchmark and mussels in the distance	3766
2010/09/02 23:40:02	45.93329	-129.98245	133.3	0.8	1520.7	1521.5	view of crab near mussels on science cam	3767
2010/09/02 23:40:08	45.93329	-129.98245	133.2	0.8	1520.7	1521.5	Frame_Grab:	3768
2010/09/02 23:46:12	45.93329	-129.98244	133.2	0.8	1520.7	1521.5	Pressure measurement done	3772
2010/09/02 23:47:22	45.93329	-129.98244	133.3	0.8	1520.7	1521.5	marker 33 is to the southeast of AX-103	3774
2010/09/02 23:49:03	45.93326	-129.98248	101.1	0.8	1520.8	1521.6	approaching old benchmark AX05 with pressure record in "hand"	3776
2010/09/02 23:50:41	45.93326	-129.98248	101.1	0.9	1520.7	1521.6	pressure record placed on benchmark AX05 which has a marker flag #53	3778
2010/09/02 23:50:51	45.93326	-129.98248	101.1	0.8	1520.8	1521.6	started pressure measurement	3779
2010/09/02 23:52:14	45.93326	-129.98248	101.1	0.8	1520.8	1521.6	Frame_Grab:	3780
2010/09/02 23:54:49	45.93326	-129.98248	101.1	0.8	1520.8	1521.6	we can see a marker 55 which might be attached to a mooring	3783
2010/09/02 23:57:22	45.93326	-129.98248	101.2	0.8	1520.8	1521.6	Frame_Grab:	3785
2010/09/02 23:58:36	45.93326	-129.98248	101.2	0.8	1520.8	1521.6	two mounds seen in the distant view with the one to the right being mkr 33	3787
2010/09/03 00:10:03	45.93326	-129.98248	101.1	0.8	1520.9	1521.7	Pressure measurement stopped	3793
2010/09/03 00:10:51	45.93326	-129.98248	100.9	0.8	1520.9	1521.7	RECOVER: pressure sensor MPR	3795
2010/09/03 00:12:00	45.93326	-129.98249	101.8	2.0	1519.6	1521.5	MPR stowed in basket	3796
2010/09/03 00:12:36	45.93326	-129.98249	101.5	1.9	1519.7	1521.5	Going to look for white mat to suction into single chamber slurp now	3798
2010/09/03 00:15:25	45.93322	-129.98238	144.3	3.0	1518.5	1521.4	Going back to where RAS is to suction	3800
2010/09/03 00:17:02	45.93318	-129.98231	146.4	2.1	1519.4	1521.5	Marker 55 in view	3802
2010/09/03 00:18:23	45.93316	-129.98231	156.7	1.0	1520.6	1521.6	Old OSMO sampler	3804
2010/09/03 00:23:34	45.93316	-129.98231	156.5	1.0	1520.5	1521.6	BIOLOGY: mat suctioned with single chamber slurp	3807
2010/09/03 00:23:51	45.93316	-129.98231	156.5	1.0	1520.5	1521.6	suctioning in bursts is better	3808
2010/09/03 00:24:05	45.93316	-129.98231	156.2	1.0	1520.5	1521.6	otherwise mat si fine enough to go through filter on backend	3809
2010/09/03 00:25:07	45.93316	-129.98231	156.5	1.1	1520.5	1521.6	Short burst suctioning probably better than using finer filter	3811
2010/09/03 00:27:14	45.93316	-129.98231	157.2	1.1	1520.6	1521.6	Finer filter will get clogged in < 10 s and stop suctioning	3813
2010/09/03 00:28:23	45.93316	-129.98231	157.1	1.0	1520.6	1521.6	sample done	3815
2010/09/03 00:29:40	45.93317	-129.98231	223.6	2.0	1519.6	1521.6	transit along the bottom to 1998 lava flow then traverse to Magnesia	3816
2010/09/03 00:32:00	45.93338	-129.98237	338.4	3.2	1518.4	1521.6	Frame_Grab:	3818

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2010/09/03 00:32:12	45.93339	-129.98238	338.9	3.3	1518.2	1521.6	Frame_Grab:	3819
2010/09/03 00:32:41	45.93343	-129.98239	337.5	3.4	1517.1	1520.5	old tube worm "tower"	3821
2010/09/03 00:32:55	45.93346	-129.98240	339.0	3.2	1516.8	1519.9	lava pillar with crab on top	3822
2010/09/03 00:33:03	45.93347	-129.98241	337.5	3.7	1516.6	1520.4	Frame_Grab:	3823
2010/09/03 00:33:46	45.93348	-129.98241	337.7	3.5	1517.4	1521.0	holding for ship to move	3824
2010/09/03 00:36:36	45.93351	-129.98242	339.3	2.3	1516.1	1518.4	back on the move	3827
2010/09/03 00:38:47	45.93361	-129.98249	338.7	4.1	1516.5	1520.6	SAMPLE: geo	3829
2010/09/03 00:40:29	45.93361	-129.98249	338.7	2.1	1517.1	1519.2	Rock sample from lava pillar	3831
2010/09/03 00:41:32	45.93361	-129.98249	338.7	2.3	1517.1	1519.4	In the process of taking the rock sample two pillars got knocked over-a domino effect	3832
2010/09/03 00:41:52	45.93361	-129.98249	338.7	2.3	1517.2	1519.5	Frame_Grab:	3833
2010/09/03 00:43:05	45.93372	-129.98252	337.5	4.5	1513.9	1518.4	some of the rock got in the basket on the edge of the dive weights	3835
2010/09/03 00:43:36	45.93379	-129.98255	338.0	5.4	1512.7	1518.1	white stains on rocks	3836
2010/09/03 00:46:54	45.93393	-129.98260	339.2	1.4	1517.1	1518.5	Frame_Grab:	3839
2010/09/03 00:47:33	45.93393	-129.98262	339.6	0.8	1517.6	1518.4	Frame_Grab:	3840
2010/09/03 00:48:28	45.93403	-129.98266	338.6	3.4	1516.2	1519.5	lava pillar with drainback features in the center of a drained out lava lake	3842
2010/09/03 00:49:04	45.93411	-129.98268	339.8	2.5	1517.9	1520.4	Frame_Grab:	3843
2010/09/03 00:50:07	45.93423	-129.98276	92.4	2.9	1518.0	1520.8	Frame_Grab:	3844
2010/09/03 00:51:12	45.93437	-129.98289	329.6	2.4	1518.9	1521.2	out of lava pillars into sheet flow	3846
2010/09/03 00:52:55	45.93437	-129.98290	299.3	2.6	1518.6	1521.2	striations on sheet flow were tending about 030 from our heading of 330	3848
2010/09/03 00:54:31	45.93460	-129.98299	352.9	3.1	1518.4	1521.5	some jumbled sheet flow here	3850
2010/09/03 00:55:36	45.93472	-129.98298	349.6	3.9	1517.9	1521.8	striations tending 350	3851
2010/09/03 00:59:53	45.91802	-129.98910	339.9	0.7	1520.9	1521.6	Frame_Grab:	3854
2010/09/03 01:00:22	45.91808	-129.98913	340.9	2.3	1519.2	1521.5	crack at a right angle to the striations	3856
2010/09/03 01:01:47	45.91817	-129.98917	342.1	1.0	1520.6	1521.6	contact between two flows	3857
2010/09/03 01:02:08	45.91817	-129.98917	342.4	0.9	1520.6	1521.6	BIOLOGY: other	3858
2010/09/03 01:03:11	45.91820	-129.98917	342.1	3.1	1518.4	1521.6	sea slug sampled	3860
2010/09/03 01:04:01	45.91825	-129.98918	341.6	4.3	1517.2	1521.5	sea slug dropped--no sample	3861
2010/09/03 01:05:58	45.91863	-129.98943	338.6	3.9	1517.4	1521.3	ropy lava flow	3863
2010/09/03 01:07:42	45.91887	-129.98957	330.9	3.0	1518.4	1521.4	heading toward the northern end of the 1998 lava flow	3865
2010/09/03 01:08:11	45.91892	-129.98957	329.0	0.7	1521.2	1522.0	jumbled lava flow	3866
2010/09/03 01:09:30	45.91895	-129.98956	323.4	1.3	1520.3	1521.6	sea cucumber in the grasp	3868

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2010/09/03 01:10:35	45.91907	-129.98969	323.3	4.0	1517.7	1521.7	Frame_Grab:	3870
2010/09/03 01:13:14	45.91917	-129.98978	323.0	5.2	1516.5	1521.6	sea cucumber in the box/sample successful	3872
2010/09/03 01:13:59	45.91935	-129.98991	325.8	4.3	1516.9	1521.2	part of the sea cucumber is hanging out of the box	3873
2010/09/03 01:16:20	45.91993	-129.99038	325.2	3.8	1514.8	1518.6	Frame_Grab:	3876
2010/09/03 01:20:03	45.92019	-129.99057	323.9	4.1	1514.6	1518.7	sea cucumber completely stowed away	3878
2010/09/03 01:21:34	45.92055	-129.99076	329.2	2.3	1516.1	1518.4	drain out pits	3880
2010/09/03 01:21:56	45.92060	-129.99083	356.1	3.1	1517.6	1520.7	very glassy lava	3881
2010/09/03 01:22:11	45.92063	-129.99087	291.8	3.4	1517.6	1521.0	Frame_Grab:	3882
2010/09/03 01:22:33	45.92062	-129.99087	319.2	2.6	1518.6	1521.2	Frame_Grab:	3884
2010/09/03 01:22:46	45.92065	-129.99089	318.0	5.7	1515.5	1521.2	large drain out pit	3885
2010/09/03 01:24:13	45.92091	-129.99106	318.6	2.7	1517.1	1519.8	some pillow basalts	3886
2010/09/03 01:24:49	45.92097	-129.99113	317.1	1.8	1518.1	1519.9	Frame_Grab:	3888
2010/09/03 01:26:09	45.92118	-129.99108	341.3	1.9	1517.6	1519.5	lobate flows	3889
2010/09/03 01:33:31	45.92223	-129.99148	336.2	1.9	1519.1	1521.0	pillow basalts	3894
2010/09/03 01:37:15	45.92256	-129.99177	337.6	2.7	1519.8	1522.5	pillow basalts in a right angle lines	3897
2010/09/03 01:40:58	45.92295	-129.99235	330.4	3.1	1522.8	1525.8	Frame_Grab:	3900
2010/09/03 01:43:46	45.92328	-129.99229	273.6	4.1	1522.1	1526.2	more lobate flows	3902
2010/09/03 01:45:00	45.92331	-129.99262	296.3	3.0	1524.8	1527.8	jumbled sheet flow	3904
2010/09/03 01:46:05	45.92346	-129.99244	353.0	2.2	1523.9	1526.1	we see a change from pillows to jumbled sheets right at the blue line of the map	3905
2010/09/03 01:47:11	45.94089	-129.98650	40.8	3.6	1522.1	1525.7	NAV: Doppler Reset	3907
2010/09/03 01:48:59	45.94108	-129.98652	41.0	3.1	1522.5	1525.6	back in the pillow and lobate flows	3909
2010/09/03 01:54:17	45.94158	-129.98642	59.3	3.1	1521.3	1524.3	glassy lobate flows and occasional pillows	3912
2010/09/03 01:57:10	45.94172	-129.98613	38.0	1.9	1522.2	1524.1	small drain out feature	3915
2010/09/03 01:57:16	45.94172	-129.98612	37.9	1.8	1522.2	1524.1	Frame_Grab:	3916
2010/09/03 02:00:06	45.94197	-129.98569	54.6	2.9	1520.1	1522.9	pillow basalt	3918
2010/09/03 02:02:03	45.94200	-129.98539	62.3	1.9	1519.9	1521.8	light dusting of hydrothermal sediment in pillow basalts	3920
2010/09/03 02:02:38	45.94200	-129.98537	61.2	1.7	1520.4	1522.0	Frame_Grab:	3922
2010/09/03 02:03:18	45.94203	-129.98525	59.6	2.3	1518.8	1521.1	small drain out feature	3923
2010/09/03 02:04:06	45.94206	-129.98506	76.1	2.8	1517.7	1520.5	greater amounts of hydrothermal sediments and hydrothermal smoke	3924
2010/09/03 02:05:00	45.94208	-129.98489	78.0	2.6	1518.1	1520.6	drain back feature	3926
2010/09/03 02:05:05	45.94208	-129.98487	76.4	2.4	1518.1	1520.6	Frame_Grab:	3927
2010/09/03 02:05:45	45.94208	-129.98479	85.1	4.0	1517.4	1521.4	all of the surfaces here are covered in greenish sediment	3928

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2010/09/03 02:05:50	45.94208	-129.98478	85.0	4.3	1517.1	1521.4	Frame_Grab:	3929
2010/09/03 02:07:10	45.94210	-129.98474	14.1	3.6	1517.8	1521.5	People in this room have compared this area to roman buildings	3931
2010/09/03 02:11:42	45.94229	-129.98392	65.3	3.2	1518.3	1521.5	collapse pits	3934
2010/09/03 02:13:08	45.94240	-129.98360	41.9	3.7	1518.4	1522.1	over another collapse pit with one lava pillar	3936
2010/09/03 02:14:19	45.94245	-129.98352	333.2	1.7	1520.1	1521.8	Frame_Grab:	3937
2010/09/03 02:15:18	45.94252	-129.98350	57.5	5.6	1517.4	1522.9	Frame_Grab:	3939
2010/09/03 02:17:55	45.94271	-129.98270	67.5	2.6	1518.8	1521.4	back in lobate flows	3941
2010/09/03 02:18:54	45.94276	-129.98254	28.8	3.3	1517.5	1520.9	some sediment but the green cover seen earlier is gone	3943
2010/09/03 02:20:57	45.94304	-129.98264	357.4	1.9	1520.7	1522.5	pillow basalts	3945
2010/09/03 02:21:07	45.94306	-129.98266	344.2	2.0	1520.6	1522.5	Frame_Grab:	3946
2010/09/03 02:25:06	45.94326	-129.98256	330.3	2.8	1517.9	1520.7	travelled over and back a short wall on one side east then crossed another wall to the west	3949
2010/09/03 02:26:34	45.94351	-129.98265	334.3	2.2	1518.2	1520.4	the previous observation was identified as a graben	3951
2010/09/03 02:28:50	45.94373	-129.98287	320.5	2.1	1520.1	1522.1	pillow basalts	3953
2010/09/03 02:29:44	45.94376	-129.98311	332.1	1.5	1521.7	1523.2	small collapse features	3954
2010/09/03 02:30:15	45.94379	-129.98308	315.5	3.0	1520.3	1523.3	chimneys	3955
2010/09/03 02:30:40	45.94382	-129.98299	323.3	4.9	1518.1	1522.9	extinct chimneys	3957
2010/09/03 02:35:41	45.94432	-129.98357	292.6	1.5	1522.8	1524.3	sheet flows	3960
2010/09/03 02:37:14	45.94444	-129.98368	3.9	0.8	1523.6	1524.4	octopus	3962
2010/09/03 02:37:25	45.94444	-129.98368	326.7	1.0	1523.7	1524.7	turned on highlight video	3963
2010/09/03 02:38:02	45.94450	-129.98377	312.3	2.5	1521.8	1524.3	HD highlight video off	3964
2010/09/03 02:46:29	45.94542	-129.98449	334.7	3.0	1523.1	1526.0	collapse area	3970
2010/09/03 02:48:17	45.94557	-129.98474	332.8	5.5	1523.3	1528.7	at least three lava pillars	3971
2010/09/03 02:50:43	45.94572	-129.98489	267.6	5.8	1524.3	1530.1	lava pillars with connecting "roof"	3974
2010/09/03 02:51:10	45.94575	-129.98492	193.3	2.6	1525.4	1528.0	Frame_Grab:	3975
2010/09/03 02:53:53	45.94612	-129.98498	322.4	5.6	1522.8	1528.4	at benchmark AX 102	3977
2010/09/03 02:56:35	45.94614	-129.98499	281.7	3.0	1523.8	1526.9	NAV: Doppler Reset 4 min ago	3980
2010/09/03 02:58:02	45.94614	-129.98500	280.5	1.9	1525.2	1527.2	DEPLOY: pressure sensor MPR	3981
2010/09/03 02:58:33	45.94613	-129.98503	280.3	1.9	1525.3	1527.2	MPR installed on cement benchmark AX-102	3983
2010/09/03 02:59:28	45.94611	-129.98506	280.7	1.9	1525.3	1527.2	P-measurement started	3984
2010/09/03 03:05:51	45.94565	-129.98573	280.6	1.9	1525.3	1527.2	Frame_Grab:	3988
2010/09/03 03:19:34	45.94519	-129.98639	280.1	2.0	1525.2	1527.2	P-measurement stopped	3996

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2010/09/03 03:20:19	45.94518	-129.98640	280.3	1.9	1525.2	1527.1	RECOVER: pressure sensor MPR	3998
2010/09/03 03:21:08	45.94519	-129.98638	323.3	2.7	1524.2	1526.9	Moving to AX-01 steel benchmark at Magnesia	3999
2010/09/03 03:23:01	45.94519	-129.98638	354.4	1.2	1525.4	1526.6	DEPLOY: pressure sensor MPR	4001
2010/09/03 03:23:22	45.94519	-129.98638	354.4	1.2	1525.4	1526.6	aligning MPR on AX-01 benchmark	4002
2010/09/03 03:24:54	45.94519	-129.98638	354.2	1.2	1525.4	1526.6	P-measurement started	4004
2010/09/03 03:33:42	45.94519	-129.98638	354.1	1.0	1525.4	1526.4	Marker line with hydroids	4009
2010/09/03 03:33:53	45.94519	-129.98638	354.1	1.1	1525.3	1526.4	Frame_Grab:	4010
2010/09/03 03:46:52	45.94519	-129.98638	353.9	1.1	1525.3	1526.3	P-measurement stopped	4018
2010/09/03 03:47:17	45.94519	-129.98638	354.0	1.2	1525.3	1526.5	RECOVER: pressure sensor MPR	4019
2010/09/03 03:47:59	45.94519	-129.98638	354.0	1.2	1525.3	1526.5	Stowing MPR in preparation for transit to Caldera Center	4020
2010/09/03 03:48:39	45.94611	-129.98497	354.0	1.0	1525.3	1526.3	Bearing 298 and range 2180 m	4022
2010/09/03 03:49:23	45.94611	-129.98489	82.7	7.0	1519.0	1525.9	Ascending for transit	4023
2010/09/03 03:50:30	45.94614	-129.98455	110.4	18.9	1506.9	1525.8	Transit will be 1.5 hr	4025
2010/09/03 05:27:27	45.95496	-130.00978	281.2	3.6	1525.2	1528.8	Fissure in rock	4028
2010/09/03 05:27:50	45.95497	-130.00981	289.7	2.8	1525.8	1528.6	Lots of sea cucumbers!	4029
2010/09/03 05:28:09	45.95497	-130.00985	303.8	3.6	1525.3	1529.0	Up to 2 foot long slugs!	4030
2010/09/03 05:28:47	45.95504	-130.00985	357.8	1.3	1528.6	1529.8	Marker in sight	4032
2010/09/03 05:29:11	45.95512	-130.00983	14.3	2.8	1530.0	1532.7	Jason range 10 m	4033
2010/09/03 05:29:39	45.95517	-130.00980	278.1	2.6	1529.8	1532.5	Arrived at AX-101 Caldera Center benchmark	4034
2010/09/03 05:31:49	45.95518	-130.00982	222.9	0.8	1532.1	1532.9	Lifting MPR	4036
2010/09/03 05:31:59	45.95518	-130.00982	223.0	0.8	1532.1	1532.9	DEPLOY: pressure sensor MPR on benchmark AX-101	4037
2010/09/03 05:32:49	45.95518	-130.00982	223.1	0.8	1532.1	1532.9	P-measurement started	4039
2010/09/03 05:38:24	45.95518	-130.00982	223.3	0.8	1532.1	1532.9	Very big fish swam by on HD Cam	4043
2010/09/03 05:41:30	45.95518	-130.00982	223.3	0.8	1532.1	1532.9	10 min to go on measurement	4045
2010/09/03 05:41:53	45.95518	-130.00982	223.4	0.8	1532.1	1532.9	big fish behind Jason	4046
2010/09/03 05:43:38	45.95518	-130.00982	223.4	0.8	1532.1	1532.9	Frame_Grab:	4048
2010/09/03 05:45:42	45.95518	-130.00982	223.4	0.8	1532.1	1532.9	Frame_Grab:	4050
2010/09/03 05:45:49	45.95518	-130.00982	223.4	0.8	1532.1	1532.9	Big fish	4051
2010/09/03 05:46:05	45.95518	-130.00982	223.4	0.8	1532.1	1532.9	Bizarre eyes	4052
2010/09/03 05:46:59	45.95518	-130.00982	223.4	0.8	1532.1	1532.9	Just over a foot long fish	4054
2010/09/03 05:47:34	45.95518	-130.00982	223.5	0.8	1532.1	1532.9	Deep brownish body with very defined dorsal fin and rings around eyes	4055
2010/09/03 05:51:42	45.95518	-130.00982	223.5	0.8	1532.1	1532.8	Big ragtail	4058

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2010/09/03 05:52:42	45.95518	-130.00982	223.5	0.8	1532.1	1532.8	P-measurement stopped	4060
2010/09/03 05:53:42	45.95518	-130.00982	237.0	1.4	1531.3	1532.7	RECOVER: pressure sensor MPR	4061
2010/09/03 05:54:00	45.95516	-130.00979	317.3	1.6	1530.3	1532.0	Moving to steel benchmark AX-63	4062
2010/09/03 05:55:07	45.95515	-130.00982	358.4	0.7	1532.2	1532.9	Approaching edge of benchmark opposite marker	4064
2010/09/03 05:55:47	45.95515	-130.00982	358.2	0.7	1532.1	1532.9	DEPLOY: pressure sensor MPR on benchmark AX-63	4065
2010/09/03 05:56:42	45.95515	-130.00982	0.0	0.8	1532.1	1532.9	Moved benchmark	4067
2010/09/03 05:56:49	45.95515	-130.00982	359.6	0.7	1532.1	1532.9	MPR was stuck	4068
2010/09/03 05:57:10	45.95515	-130.00982	359.2	0.7	1532.1	1532.9	Put MPR back down to reposition	4069
2010/09/03 05:57:51	45.95515	-130.00982	359.0	0.7	1532.1	1532.9	Benchmark may have just lifted and come back down	4070
2010/09/03 05:58:01	45.95515	-130.00982	359.0	0.7	1532.1	1532.9	MPR positioned	4071
2010/09/03 05:58:07	45.95515	-130.00982	359.0	0.7	1532.1	1532.9	P-measurement started	4072
2010/09/03 05:58:32	45.95515	-130.00982	359.0	0.7	1532.1	1532.9	Shrimp in HD cam frame	4074
2010/09/03 06:00:11	45.95515	-130.00982	359.1	0.7	1532.1	1532.9	Marker 61 just visible	4075
2010/09/03 06:01:08	45.95515	-130.00982	359.1	0.7	1532.1	1532.9	That is the marker in the background behind the bicycle flag	4077
2010/09/03 06:02:48	45.95515	-130.00982	359.1	0.7	1532.1	1532.9	Ragtail approaching again	4079
2010/09/03 06:02:54	45.95515	-130.00982	359.1	0.7	1532.1	1532.8	Frame_Grab:	4080
2010/09/03 06:02:58	45.95515	-130.00982	359.1	0.7	1532.1	1532.8	Frame_Grab:	4081
2010/09/03 06:06:39	45.95515	-130.00982	359.1	0.7	1532.1	1532.8	Sea cucumber in HD	4084
2010/09/03 06:09:04	45.95515	-130.00982	359.0	0.7	1532.1	1532.8	Frame_Grab:	4086
2010/09/03 06:18:10	45.95515	-130.00982	359.0	0.7	1532.0	1532.7	P-measurement stopped	4091
2010/09/03 06:18:33	45.95515	-130.00982	358.9	0.7	1532.0	1532.7	RECOVER: pressure sensor MPR	4093
2010/09/03 06:19:20	45.95515	-130.00982	359.0	2.1	1530.0	1532.1	Stowing MPR for transit to Ashes	4094
2010/09/03 06:19:47	45.95515	-130.00982	359.2	3.6	1528.6	1532.1	Ascending for transit	4095
2010/09/03 06:20:40	45.95515	-130.00982	359.6	9.8	1522.5	1532.3	Transit to Ashes from Center will take approx. 2 hr	4097
2010/09/03 07:09:21	45.94579	-130.01118	3.6	145.8	1393.0	1538.8	Frame_Grab:	4099
2010/09/03 07:58:53	45.93455	-130.01167	36.8	5.2	1537.6	1542.9	Arriving at Center	4102
2010/09/03 07:59:12	45.93455	-130.01167	34.8	4.8	1538.0	1542.8	Correction... Arriving at ASHES	4103
2010/09/03 07:59:18	45.93455	-130.01167	34.0	4.9	1537.9	1542.7	Picking up MPR from basket	4104
2010/09/03 08:05:26	45.93459	-130.01165	72.1	4.6	1538.0	1542.6	Waiting for ship to reposition	4108
2010/09/03 08:11:43	45.93460	-130.01165	69.7	1.4	1541.0	1542.4	Placing MPR on AX-106	4112
2010/09/03 08:14:38	45.93446	-130.01156	66.8	0.7	1541.9	1542.6	Starting p-measurement	4115
2010/09/03 08:16:37	45.93443	-130.01151	67.1	0.7	1541.8	1542.6	Heading 67.1	4117

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2010/09/03 08:35:22	45.93444	-130.01151	66.8	0.7	1541.8	1542.5	P-measurement finished	4127
2010/09/03 08:35:42	45.93444	-130.01151	67.3	0.7	1541.8	1542.5	That was the final p-measurement for this dive	4128
2010/09/03 08:35:43	45.93444	-130.01151	67.3	0.7	1541.8	1542.6	TXT:	4129
2010/09/03 08:36:03	45.93444	-130.01151	67.5	1.1	1541.8	1542.9	RECOVER: pressure sensor Retrieving MPR from AX-106	4130
2010/09/03 08:36:59	45.93444	-130.01152	68.7	1.1	1541.1	1542.2	Extending Jason basket	4132
2010/09/03 08:38:09	45.93445	-130.01149	67.3	0.7	1541.8	1542.5	Stowing MPR in basket	4133
2010/09/03 08:38:26	45.93445	-130.01149	67.3	0.7	1541.8	1542.5	MPR stowed	4135
2010/09/03 08:41:57	45.93445	-130.01149	67.2	0.7	1541.8	1542.5	MPR bungee-tied into basket	4137
2010/09/03 08:42:44	45.93445	-130.01149	67.2	0.7	1541.7	1542.5	Next: recovering other 2 tide-gauge instruments	4139
2010/09/03 08:43:25	45.93445	-130.01149	67.2	0.7	1541.7	1542.5	Large hexagonal gauge should go in left side of basket (11 lbs)	4140
2010/09/03 08:43:43	45.93445	-130.01149	67.2	0.7	1541.7	1542.5	Yellow cylinders gauge should go in right side of basket (15 lbs)	4141
2010/09/03 08:45:26	45.93445	-130.01149	66.9	0.7	1541.7	1542.4	Rearranging the basket	4143
2010/09/03 08:46:48	45.93445	-130.01149	66.9	0.7	1541.7	1542.4	Unhooking bungee on left	4145
2010/09/03 08:48:05	45.93445	-130.01149	66.9	0.7	1541.7	1542.4	Moving cords out of the way on the basket	4146
2010/09/03 08:48:58	45.93445	-130.01149	66.4	0.7	1541.6	1542.4	Fixing orange slurp arm tie	4148
2010/09/03 08:49:22	45.93445	-130.01149	66.3	0.7	1541.5	1542.3	Picking up hexagonal tide gauge	4149
2010/09/03 08:50:35	45.93445	-130.01149	66.5	0.7	1541.6	1542.4	Placing tide gauge in basket on its side	4151
2010/09/03 08:52:52	45.93445	-130.01149	66.3	0.7	1541.6	1542.4	Tide gauge stowed - tying bungee closed	4153
2010/09/03 08:53:22	45.93445	-130.01149	66.2	0.7	1541.6	1542.4	Bungee closed	4154
2010/09/03 08:54:56	45.93445	-130.01149	66.6	0.7	1541.7	1542.4	Rearranging weight plates in basket	4156
2010/09/03 08:58:38	45.93445	-130.01149	66.7	0.7	1541.7	1542.4	Picking up yellow tide gauge	4159
2010/09/03 08:59:34	45.93445	-130.01149	66.7	0.7	1541.7	1542.4	Placing tide gauge in right side of basket	4160
2010/09/03 09:00:26	45.93445	-130.01149	66.7	0.7	1541.7	1542.4	Tying bungee closed on yellow tide gauge	4162
2010/09/03 09:00:45	45.93445	-130.01149	66.7	0.7	1541.7	1542.4	All instruments stowed	4163
2010/09/03 09:01:09	45.93445	-130.01150	68.1	1.8	1540.6	1542.4	Retracting basket	4164
2010/09/03 09:01:55	45.93443	-130.01150	69.4	3.6	1538.9	1542.5	Transiting to El Guapo Chimney in the International District now	4165
2010/09/03 09:03:19	45.93443	-130.01150	69.5	3.6	1538.9	1542.5	Transit should take ~2.5 hrs	4167
2010/09/03 10:57:34	45.92653	-129.97982	110.5	12.5	1505.3	1517.8	NAV: Doppler Reset Doppler reset	4173
2010/09/03 10:58:20	45.92652	-129.97980	110.5	7.0	1510.9	1517.9	Bottom in sight.	4175
2010/09/03 10:58:32	45.92651	-129.97978	109.6	5.1	1512.6	1517.7	Chimney right in front.	4176
2010/09/03 11:00:08	45.92652	-129.97975	126.6	5.1	1509.8	1514.9	This chimney is dead.	4177
2010/09/03 11:02:25	45.92657	-129.97965	92.3	3.8	1510.9	1514.6	There is a marker to the left.	4180

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2010/09/03 11:04:24	45.92658	-129.97961	102.8	0.7	1515.0	1515.7	Picking up a temperature probe holder that came off of the vehicle during the last leg.	4182
2010/09/03 11:06:20	45.92658	-129.97961	103.2	0.7	1515.0	1515.7	We are just west of El Guapo	4184
2010/09/03 11:09:27	45.92658	-129.97961	103.6	0.7	1515.0	1515.8	NAV: Doppler Reset	4186
2010/09/03 11:11:15	45.92652	-129.97948	101.1	1.7	1514.0	1515.7	We are going around to pick up the temperature probe and logger left by the last cruise near the base of El Guapo	4188
2010/09/03 11:14:16	45.92648	-129.97942	155.6	3.2	1513.1	1516.3	The dead three spire chimney is southwest of El Guapo.	4190
2010/09/03 11:14:54	45.92648	-129.97937	41.9	5.8	1513.0	1518.8	Another dead chimney in view.	4192
2010/09/03 11:16:08	45.92649	-129.97937	352.0	8.1	1511.3	1519.3	Waiting to move Medea before getting into the base to pick up equipment	4193
2010/09/03 11:19:41	45.92650	-129.97937	344.2	15.4	1503.1	1518.5	We can see some "flash" at the base of the smoke	4196
2010/09/03 11:21:59	45.92651	-129.97937	344.1	16.4	1502.7	1519.1	Our altitude now is about 17 meters.	4198
2010/09/03 11:22:16	45.92651	-129.97937	344.3	16.1	1503.0	1519.1	So the chimney is about that tall now.	4199
2010/09/03 11:22:38	45.92651	-129.97937	344.3	16.0	1503.4	1519.4	Frame_Grab:	4201
2010/09/03 11:23:06	45.92651	-129.97937	344.3	15.2	1504.4	1519.7	Frame_Grab:	4202
2010/09/03 11:23:19	45.92651	-129.97937	344.2	14.7	1504.8	1519.5	We can see a hobo left by the previous cruise	4203
2010/09/03 11:23:57	45.92651	-129.97937	344.3	13.2	1506.4	1519.6	Frame_Grab:	4204
2010/09/03 11:24:02	45.92651	-129.97937	344.2	13.1	1506.6	1519.6	Multiple frame grabs as we move down the chimney	4205
2010/09/03 11:28:22	45.92647	-129.97935	315.4	5.4	1515.4	1520.7	We have had the HD highlights on as we moved down the chimney	4209
2010/09/03 11:30:28	45.92647	-129.97937	316.8	4.2	1516.1	1520.3	The highlights were turned on beginning when we saw the flash	4211
2010/09/03 11:32:57	45.92647	-129.97937	317.6	4.3	1515.7	1520.0	There is a small marker here for one of the holes drilled by the last cruise	4213
2010/09/03 11:37:12	45.92647	-129.97937	317.0	4.6	1515.4	1519.9	We are going to investigate the chimneys in this area to help decide what to sample on next dive	4216
2010/09/03 11:45:50	45.92652	-129.97941	90.5	5.9	1510.9	1516.9	Frame_Grab:	4221
2010/09/03 11:46:11	45.92652	-129.97941	90.0	6.8	1510.1	1516.9	More frame grabs as we move up the chimney	4222
2010/09/03 11:49:53	45.92652	-129.97941	90.4	14.3	1502.4	1516.7	Not as much diffuse flow on this second side as there was on the first side	4225
2010/09/03 11:50:17	45.92652	-129.97942	90.1	13.8	1502.8	1516.6	The second side is looking east at El Guapo	4226
2010/09/03 11:50:26	45.92652	-129.97943	90.1	13.3	1503.1	1516.4	The first side was looking west at El Guapo	4228
2010/09/03 11:56:58	45.92655	-129.97941	143.8	4.2	1512.8	1517.0	We can see some blue mat and an active area of diffuse flow	4232
2010/09/03 11:57:44	45.92656	-129.97939	170.6	2.6	1512.9	1515.5	There is a lot of diffuse flow at a depth of 1520 on both sides of El Guapo	4233
2010/09/03 11:59:50	45.92656	-129.97937	177.2	4.1	1512.8	1516.8	Changing HD highlights tape	4235
2010/09/03 12:16:45	45.92652	-129.97936	269.9	14.5	1503.7	1518.2	Lots of "flame" here	4245
2010/09/03 12:21:03	45.92652	-129.97936	269.8	14.0	1504.3	1518.3	Frame_Grab:	4248
2010/09/03 12:21:19	45.92652	-129.97936	269.7	13.3	1504.9	1518.2	Many more frame grabes as we travel down the chimney again	4249

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2010/09/03 12:28:33	45.92653	-129.97932	254.7	1.5	1516.3	1517.8	Now we're going to go have a look at Mimosa	4254
2010/09/03 12:31:38	45.92653	-129.97932	175.3	0.9	1517.3	1518.2	There is some diffuse flow and white mat at the base of this small chimney to the south east of El Guapo	4256
2010/09/03 12:33:22	45.92654	-129.97934	175.6	2.3	1516.1	1518.4	This is a little chimney between El Guapo and Hermosa (not Mimosa)	4258
2010/09/03 12:34:42	45.92650	-129.97925	133.7	3.7	1515.0	1518.7	More blue mat here	4260
2010/09/03 12:35:12	45.92649	-129.97924	133.9	3.6	1515.0	1518.6	We are now looking at Hermosa	4261
2010/09/03 12:35:24	45.92649	-129.97925	133.6	3.3	1514.9	1518.2	HD_CAM: start	4262
2010/09/03 12:39:09	45.92650	-129.97919	207.1	4.0	1517.0	1521.0	Somewhere in here is where we should sample heading 207 depth 1517	4265
2010/09/03 12:41:56	45.92649	-129.97921	207.2	6.5	1513.7	1520.2	Next we will go look at Escargot	4267
2010/09/03 12:42:06	45.92649	-129.97920	180.3	6.4	1513.7	1520.1	HD_CAM: stop	4268
2010/09/03 12:43:35	45.92642	-129.97914	157.8	7.5	1513.8	1521.3	Approaching Escargot	4270
2010/09/03 12:44:29	45.92639	-129.97910	155.8	7.1	1515.4	1522.5	Frame_Grab:	4272
2010/09/03 12:46:40	45.92638	-129.97905	221.4	6.7	1515.6	1522.3	Scott taking over as pilot	4274
2010/09/03 12:51:36	45.92638	-129.97908	198.2	4.9	1518.0	1522.8	A little bit of blue mat here. Also tubeworms heavily coated with white bacterial mat	4277
2010/09/03 12:52:40	45.92640	-129.97908	129.1	5.5	1516.9	1522.4	Heading to one more chimney to the east called Diva	4279
2010/09/03 12:54:25	45.92634	-129.97896	53.5	3.0	1519.3	1522.3	This is Diva. It is very hot and gassy	4281
2010/09/03 12:55:46	45.92634	-129.97894	20.6	2.3	1520.6	1522.8	The worms used to be alive here. Now they all look dead.	4282
2010/09/03 12:56:47	45.92634	-129.97894	20.4	2.4	1520.5	1522.9	HD_CAM: start	4284
2010/09/03 12:57:16	45.92634	-129.97894	20.4	2.4	1520.5	1522.9	We can see gas bubbles coming out.	4285
2010/09/03 12:58:53	45.92634	-129.97894	20.4	2.4	1520.5	1522.9	It looks like nothing is alive here. Last year things were alive here.	4287
2010/09/03 13:00:23	45.92633	-129.97895	19.6	3.5	1519.7	1523.2	We won't be collecting diffuse flow here on the next dive	4289
2010/09/03 13:00:29	45.92633	-129.97895	21.4	3.5	1519.7	1523.2	HD_CAM: stop	4290
2010/09/03 13:00:48	45.92633	-129.97894	65.5	2.9	1519.9	1522.7	It looks like the diffuse flow shut off since last year killing all of the biology	4291
2010/09/03 13:04:26	45.92628	-129.97898	198.7	1.8	1521.7	1523.4	We see two little baby chimneys	4294
2010/09/03 13:04:52	45.92628	-129.97899	198.6	1.4	1522.0	1523.3	These are anhydrites	4295
2010/09/03 13:05:28	45.92628	-129.97899	197.5	1.2	1522.2	1523.4	We could see this in the butt cam when we where looking at Diva	4296
2010/09/03 13:10:26	45.92627	-129.97903	130.1	0.9	1521.8	1522.8	This whole area has gone rusty since the last time we looked at it	4300
2010/09/03 13:10:50	45.92626	-129.97903	99.0	0.9	1521.9	1522.8	It used to be bright with blue mat. It looks like the diffuse flow has shut off.	4301
2010/09/03 13:14:50	45.92624	-129.97896	69.0	2.5	1520.5	1523.0	Time to go pick up the temp probe and logger at El Guapo	4304
2010/09/03 13:16:48	45.92619	-129.97893	137.9	3.0	1520.0	1523.0	This is marker 151. This may be what we sampled as Diva last year with live worms and diffuse flow	4306
2010/09/03 13:17:44	45.92618	-129.97892	138.2	3.2	1519.8	1523.0	There wasn't a high temperature vent here. just diffuse flow.	4307

J2-522 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/03 13:22:23	45.92640	-129.97934	317.5	4.0	1517.3	1521.3	There are some mat areas between Escargot and the first anhydrite that we called Diva	4311
2010/09/03 13:24:53	45.92654	-129.97935	270.9	0.8	1517.4	1518.2	We are back to the base of El Guapo	4313
2010/09/03 13:30:33	45.92647	-129.97942	4.5	1.9	1517.6	1519.4	HD_CAM: start	4317
2010/09/03 13:31:25	45.92647	-129.97942	5.2	2.0	1517.5	1519.4	Recovering temp probe and logger deployed during the last cruise	4318
2010/09/03 13:36:54	45.92646	-129.97943	3.9	4.5	1516.5	1521.0	HD_CAM: stop	4322
2010/09/03 13:38:05	45.92646	-129.97943	4.1	3.0	1516.7	1519.7	Lots of limpets on the ICL cable	4323
2010/09/03 13:40:53	45.92646	-129.97943	3.8	3.1	1516.7	1519.8	Stowing the probe in the basket	4326
2010/09/03 13:41:55	45.92646	-129.97943	3.6	3.1	1516.7	1519.8	Removing some weights from the basket	4327
2010/09/03 13:45:04	45.92647	-129.97942	3.5	4.3	1515.5	1519.8	Placing lead pipe in the hole left by the temp probe as a place marker	4330
2010/09/03 13:46:15	45.92647	-129.97942	4.0	2.3	1517.3	1519.6	We can see a lot of flow coming out of the hole	4331
2010/09/03 13:50:15	45.92647	-129.97942	9.7	3.3	1516.3	1519.6	Going to use the Jason temp probe to see how hot the hole is	4334
2010/09/03 13:53:15	45.92647	-129.97942	9.6	1.9	1517.7	1519.6	The temp probe is reading 32 degrees still going up	4337
2010/09/03 13:53:45	45.92647	-129.97942	9.7	2.0	1517.6	1519.6	Not getting hotter than 32 degrees	4338
2010/09/03 13:54:10	45.92647	-129.97942	9.7	1.9	1517.6	1519.6	Now it is going up again.	4339
2010/09/03 13:54:29	45.92647	-129.97942	9.8	1.9	1517.6	1519.6	Stabilizing around 50 degrees.	4341
2010/09/03 13:59:04	45.92642	-129.97936	57.2	13.7	1508.5	1522.2	JASON: Jason off bottom	4344

Table 10.0-4**J2-523: International District, fluid sampling**

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 03:55:15	45.92459	-129.97838	170.1	43.0	1445.3	1488.3	JASON: Jason on bottom Thick plume here	4351
2010/09/04 03:55:44	45.92466	-129.97840	174.4	77.1	1447.1	1524.2	Correction Jason not yet on bottom	4352
2010/09/04 03:55:51	45.92469	-129.97840	173.5	76.7	1447.3	1524.0	Altitude 80 m	4353
2010/09/04 03:56:04	45.92474	-129.97841	174.9	35.0	1447.7	1482.7	Plume very thick here	4354
2010/09/04 04:00:25	45.92621	-129.97890	319.7	5.9	1517.8	1523.6	Bottom in sight	4356
2010/09/04 04:00:47	45.92623	-129.97891	319.5	2.3	1521.3	1523.7	JASON: Jason on bottom	4357
2010/09/04 04:01:08	45.92623	-129.97890	319.8	2.0	1521.9	1523.9	Sheet flow with white staining in cracks	4358
2010/09/04 04:01:50	45.92623	-129.97890	319.3	2.0	1521.7	1523.7	Sediment dust cloud	4359
2010/09/04 04:02:15	45.92623	-129.97890	319.7	2.2	1521.5	1523.7	Dropping weights	4360
2010/09/04 04:02:52	45.92623	-129.97890	319.6	2.4	1521.3	1523.7	Waiting for dust to settle!	4362
2010/09/04 04:03:50	45.92623	-129.97890	319.7	2.6	1521.1	1523.7	NAV: Doppler Reset 6 min ago	4363
2010/09/04 04:04:46	45.92623	-129.97890	319.5	2.8	1520.9	1523.7	Going to go straight to Escargot most prominent landmark	4365
2010/09/04 04:06:09	45.92634	-129.97906	307.4	6.6	1517.7	1524.3	Escargot in view	4366
2010/09/04 04:07:23	45.92634	-129.97915	359.8	6.1	1517.4	1523.4	Deb's APL devices in Escargot	4368
2010/09/04 04:08:39	45.92634	-129.97915	359.9	6.7	1516.8	1523.5	NAV: Doppler Reset	4370
2010/09/04 04:09:16	45.92635	-129.97915	0.1	6.8	1516.8	1523.6	APL = Applied Physics Lab UW	4371
2010/09/04 04:10:09	45.92635	-129.97916	0.1	6.7	1516.9	1523.6	Frame_Grab:	4372
2010/09/04 04:10:10	45.92635	-129.97916	0.1	6.7	1516.9	1523.6	Frame_Grab:	4373
2010/09/04 04:10:59	45.92635	-129.97916	0.2	6.8	1516.8	1523.6	DSC grab	4375
2010/09/04 04:13:36	45.92634	-129.97916	0.1	5.5	1518.1	1523.6	Now that Doppler is reset going to tour area	4377
2010/09/04 04:14:05	45.92634	-129.97916	23.3	4.8	1518.6	1523.3	Looking East along ridge	4378
2010/09/04 04:14:28	45.92634	-129.97916	85.6	3.7	1519.7	1523.5	Going to drive to anhydrite chimney at end of ridge	4380
2010/09/04 04:15:13	45.92634	-129.97905	33.1	4.2	1519.9	1524.1	Diva in view	4381
2010/09/04 04:15:21	45.92635	-129.97903	36.1	4.6	1519.7	1524.2	Orange sediment around Diva	4382
2010/09/04 04:15:45	45.92636	-129.97901	359.2	4.7	1519.7	1524.5	Going to mark this as Diva on map	4383
2010/09/04 04:17:06	45.92635	-129.97900	355.2	3.6	1521.0	1524.5	Frame_Grab:	4385
2010/09/04 04:17:07	45.92635	-129.97900	355.2	3.5	1521.0	1524.5	Frame_Grab:	4386
2010/09/04 04:18:02	45.92635	-129.97900	355.3	3.4	1521.1	1524.5	Very hot gas rich vent	4387
2010/09/04 04:18:28	45.92635	-129.97900	355.2	3.3	1521.2	1524.5	Over 300 deg C	4389
2010/09/04 04:18:45	45.92635	-129.97899	3.3	3.2	1521.1	1524.4	Coming back later to sample Diva	4390

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 04:18:59	45.92635	-129.97899	23.5	3.0	1521.1	1524.1	Turning south to Mkr 151	4391
2010/09/04 04:19:38	45.92634	-129.97899	160.5	1.4	1521.1	1522.5	Coming off ridge looking for double chimney	4392
2010/09/04 04:19:48	45.92634	-129.97898	181.3	1.8	1521.1	1522.9	In view now	4393
2010/09/04 04:21:48	45.92630	-129.97903	195.6	2.3	1522.2	1524.5	On top of "double" chimney in between Diva and Mkr 151	4395
2010/09/04 04:22:17	45.92630	-129.97902	191.8	1.4	1523.1	1524.5	Very small flows from double chimney	4396
2010/09/04 04:22:25	45.92630	-129.97903	193.3	1.2	1523.2	1524.4	Frame_Grab:	4398
2010/09/04 04:22:33	45.92630	-129.97903	192.9	1.3	1523.2	1524.5	Frame_Grab:	4399
2010/09/04 04:23:24	45.92630	-129.97903	193.0	1.3	1523.1	1524.4	Rusty vent with some white mat	4400
2010/09/04 04:23:42	45.92631	-129.97903	193.1	1.3	1523.2	1524.5	Biology does not look healthy	4401
2010/09/04 04:25:15	45.92631	-129.97903	193.1	1.3	1523.2	1524.4	NAV: Location Tiny Towers	4403
2010/09/04 04:25:46	45.92631	-129.97903	193.0	1.3	1523.2	1524.4	Criss-crossed with "rusty" and white cracks	4404
2010/09/04 04:25:47	45.92631	-129.97903	193.0	1.3	1523.1	1524.4	Frame_Grab:	4405
2010/09/04 04:26:27	45.92631	-129.97903	193.1	1.2	1523.1	1524.4	NAV: Location Tiny Towers hdg 193	4407
2010/09/04 04:26:48	45.92631	-129.97903	193.0	1.3	1523.2	1524.5	Tube worms look dead	4408
2010/09/04 04:26:52	45.92631	-129.97903	193.0	1.2	1523.1	1524.4	One with red plume	4409
2010/09/04 04:27:16	45.92631	-129.97903	193.0	1.2	1523.2	1524.4	No worms in tubes	4410
2010/09/04 04:27:37	45.92631	-129.97903	193.0	1.2	1523.2	1524.4	Not much flow directly around worms	4411
2010/09/04 04:28:08	45.92631	-129.97903	193.1	1.2	1523.1	1524.4	Zooming in to look at bluish mat	4412
2010/09/04 04:28:22	45.92631	-129.97903	193.1	1.3	1523.2	1524.4	Ragtail fish in view	4414
2010/09/04 04:29:26	45.92630	-129.97903	193.1	1.2	1523.2	1524.4	Blue mat on spire	4415
2010/09/04 04:30:50	45.92627	-129.97903	189.7	2.6	1521.9	1524.5	Moving south to Mkr 151 just over 10 m	4417
2010/09/04 04:31:37	45.92623	-129.97899	171.6	3.6	1520.9	1524.5	Marker 151 in view	4418
2010/09/04 04:31:57	45.92622	-129.97895	143.9	3.4	1520.9	1524.2	Going to do fluid sampling at this site	4419
2010/09/04 04:32:04	45.92621	-129.97894	164.1	3.4	1521.0	1524.4	Frame_Grab:	4420
2010/09/04 04:32:20	45.92621	-129.97892	194.6	3.2	1521.4	1524.6	Frame_Grab:	4421
2010/09/04 04:33:08	45.92619	-129.97890	217.6	2.4	1521.4	1523.8	Frame_Grab:	4423
2010/09/04 04:33:21	45.92618	-129.97890	231.0	1.5	1521.7	1523.2	Going to approach from other side	4424
2010/09/04 04:33:41	45.92617	-129.97891	302.7	1.5	1522.3	1523.7	Some tube worm bushes and blue mat	4425
2010/09/04 04:33:57	45.92616	-129.97892	309.6	0.8	1522.7	1523.5	Also white mat next to white fat tube worms	4426
2010/09/04 04:36:25	45.92615	-129.97893	315.1	0.8	1523.0	1523.8	Looking for flow to sample	4429
2010/09/04 04:37:20	45.92615	-129.97893	314.8	1.0	1522.7	1523.7	White mat looks like snow	4430
2010/09/04 04:38:19	45.92615	-129.97897	356.3	1.9	1521.9	1523.7	Flow in view	4431

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 04:38:48	45.92615	-129.97897	356.2	1.8	1521.9	1523.7	Lotsof palm worms right around flow	4433
2010/09/04 04:39:08	45.92615	-129.97897	356.3	1.8	1521.9	1523.7	NAV: Doppler Reset	4434
2010/09/04 04:39:58	45.92615	-129.97898	25.7	1.9	1521.3	1523.2	Looking behind current flow	4435
2010/09/04 04:40:54	45.92616	-129.97899	46.4	0.8	1521.5	1522.3	Strong flow enjoyed by palm worms	4437
2010/09/04 04:41:52	45.92616	-129.97899	46.2	0.8	1521.5	1522.3	More flow on back bulge but not as strong	4438
2010/09/04 04:42:33	45.92616	-129.97899	46.3	0.8	1521.5	1522.3	Going to sample flow with palm worms	4440
2010/09/04 04:43:50	45.92616	-129.97899	44.7	0.8	1521.9	1522.7	Jason basket extended	4441
2010/09/04 04:45:07	45.92615	-129.97898	44.7	0.7	1521.9	1522.6	Jason temperature probe in hand	4443
2010/09/04 04:45:41	45.92615	-129.97898	44.8	0.7	1521.9	1522.6	Probing near very small chimney	4444
2010/09/04 04:45:50	45.92615	-129.97898	44.7	0.7	1521.9	1522.6	Knocked chimney over	4445
2010/09/04 04:46:14	45.92615	-129.97898	44.7	0.7	1521.9	1522.6	Temp 60	4446
2010/09/04 04:46:41	45.92615	-129.97898	44.7	0.7	1521.9	1522.6	Temp 89	4448
2010/09/04 04:47:07	45.92615	-129.97897	44.7	0.7	1521.9	1522.6	Temp 100 and rising slowly	4449
2010/09/04 04:47:16	45.92615	-129.97897	44.7	0.7	1521.9	1522.6	Temp going back down	4450
2010/09/04 04:47:42	45.92614	-129.97897	44.8	0.7	1521.9	1522.6	Temp 86	4451
2010/09/04 04:47:54	45.92614	-129.97897	44.8	0.7	1521.9	1522.6	Moving probe again	4452
2010/09/04 04:48:59	45.92614	-129.97897	44.8	0.7	1521.9	1522.6	Temp 77 and rising	4454
2010/09/04 04:49:25	45.92614	-129.97896	44.8	0.7	1521.9	1522.6	Stowing Jason temp probe	4455
2010/09/04 04:49:30	45.92614	-129.97896	44.8	0.7	1521.9	1522.6	Frame_Grab:	4456
2010/09/04 04:49:31	45.92614	-129.97896	44.8	0.7	1521.9	1522.6	Frame_Grab:	4457
2010/09/04 04:50:08	45.92615	-129.97896	44.8	0.7	1521.9	1522.6	Going to use HFS cylindrical nozzle	4458
2010/09/04 04:50:54	45.92615	-129.97896	44.8	0.7	1521.9	1522.6	Picking up HFS intake	4460
2010/09/04 04:52:41	45.92615	-129.97896	44.8	0.7	1521.9	1522.6	HFS pump on	4462
2010/09/04 04:52:53	45.92615	-129.97896	44.8	0.7	1521.9	1522.6	HFS temp 60	4463
2010/09/04 04:53:56	45.92616	-129.97896	44.8	0.7	1521.9	1522.6	HFS temp 102	4464
2010/09/04 04:54:33	45.92616	-129.97896	44.8	0.7	1521.8	1522.6	HFS temp 104	4466
2010/09/04 04:55:46	45.92616	-129.97896	44.8	0.7	1521.8	1522.6	SAMPLE: fluid HFS-01 BF # 17 start	4467
2010/09/04 04:57:21	45.92616	-129.97896	44.7	0.7	1521.8	1522.6	white floc coming out	4469
2010/09/04 04:58:09	45.92616	-129.97896	44.7	0.7	1521.8	1522.6	SAMPLE: fluid HFS-01 BF#17 stopped	4470
2010/09/04 04:58:45	45.92616	-129.97896	44.7	0.7	1521.8	1522.6	HFS-01 Tmax=104.7 Tavg=102.8 T2=43 Vol=400 mL	4472
2010/09/04 04:59:45	45.92616	-129.97896	44.7	0.7	1521.8	1522.6	SAMPLE: fluid HFS-02 RNA filter #14 start	4473
2010/09/04 05:07:48	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	Ragfish hiding behind vent	4478

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 05:08:00	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	Ragtail!	4479
2010/09/04 05:08:16	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	Frame_Grab:	4480
2010/09/04 05:08:39	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	HD_CAM: start	4482
2010/09/04 05:09:28	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	Jim H operating HD Cam	4483
2010/09/04 05:10:16	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	Palm worms and limpets in vent flow	4484
2010/09/04 05:12:27	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	HD_CAM: stop	4487
2010/09/04 05:12:55	45.92616	-129.97896	44.5	0.7	1521.8	1522.5	1950 mL fluid collected	4488
2010/09/04 05:15:42	45.92616	-129.97896	44.4	0.7	1521.8	1522.5	When sample is finished going to adjust joy stick gain to see if vehicle moves	4490
2010/09/04 05:16:16	45.92616	-129.97896	44.4	0.7	1521.7	1522.5	Going to take gas tight while HFS is in progress	4491
2010/09/04 05:17:20	45.92616	-129.97896	44.4	0.7	1521.7	1522.5	GTM-03 Gastight sample # 1 temp 103	4493
2010/09/04 05:19:44	45.92616	-129.97896	44.4	0.7	1521.7	1522.5	SAMPLE: fluid HFS-02 stopped	4495
2010/09/04 05:20:26	45.92616	-129.97896	44.6	0.7	1521.6	1522.4	HFS-02 RNA#14 Tmax=104.1 Tavg=102.6 T2=42 Vol=3000 mL	4497
2010/09/04 05:21:26	45.92616	-129.97896	44.7	0.7	1521.7	1522.4	Jason shifted	4498
2010/09/04 05:21:34	45.92616	-129.97896	44.7	0.7	1521.7	1522.4	Waiting for temperature to go up again	4499
2010/09/04 05:25:28	45.92615	-129.97895	44.7	0.7	1521.6	1522.4	Temperature only got to 93.2	4502
2010/09/04 05:25:40	45.92615	-129.97895	44.7	0.7	1521.7	1522.4	Moved HFS intake to reposition it over vent	4503
2010/09/04 05:27:01	45.92615	-129.97895	44.7	0.7	1521.7	1522.4	Only 74.3 need to move again	4505
2010/09/04 05:27:43	45.92615	-129.97895	44.7	0.7	1521.6	1522.4	Temp 90 and rising now	4506
2010/09/04 05:28:09	45.92615	-129.97895	44.7	0.7	1521.6	1522.4	Temp over 100	4507
2010/09/04 05:28:31	45.92615	-129.97894	44.7	0.7	1521.6	1522.4	Temp 102.3	4509
2010/09/04 05:28:47	45.92615	-129.97894	44.7	0.7	1521.6	1522.4	HFS-04 Bag unfiltered #23 start	4510
2010/09/04 05:31:42	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	SAMPLE: fluid HFS-04 stopped	4512
2010/09/04 05:32:28	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	HFS-04 B#23 Tmax=102.6 Tavg=101.6 T2=42 Vol=400 mL	4514
2010/09/04 05:33:08	45.92615	-129.97894	44.7	0.7	1521.6	1522.4	Withdrawing HFS intake	4515
2010/09/04 05:33:18	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	Going to suction sample next	4516
2010/09/04 05:37:21	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	SAMPLE: bio white mat below tubeworm bushes	4519
2010/09/04 05:37:22	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	Frame_Grab:	4520
2010/09/04 05:37:44	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	suction pump started	4521
2010/09/04 05:37:59	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	suction in progress	4522
2010/09/04 05:40:20	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	Looked like some mat still gets through plankton net on exhaust	4525
2010/09/04 05:40:33	45.92616	-129.97894	44.7	0.7	1521.6	1522.3	Shook hose to get mat into chamber	4526
2010/09/04 05:41:10	45.92616	-129.97894	44.7	0.7	1521.6	1522.3	Frame_Grab:	4527

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 05:41:18	45.92616	-129.97894	44.7	0.7	1521.6	1522.3	Frame_Grab:	4528
2010/09/04 05:41:19	45.92616	-129.97894	44.7	0.7	1521.6	1522.3	Frame_Grab:	4529
2010/09/04 05:41:20	45.92615	-129.97894	44.7	0.7	1521.6	1522.3	Frame_Grab:	4530
2010/09/04 05:43:07	45.92615	-129.97894	44.7	0.7	1521.6	1522.4	Leaving site to go North past Escargot	4532
2010/09/04 05:43:23	45.92615	-129.97894	45.9	0.8	1521.1	1521.9	Going to find 9m vent next	4533
2010/09/04 05:44:50	45.92619	-129.97901	332.9	2.2	1521.2	1523.4	Almost direct line from Mkr 151 past Escargot to 9-meter	4535
2010/09/04 05:44:59	45.92621	-129.97901	332.7	1.9	1521.8	1523.7	Ragtail in front	4536
2010/09/04 05:45:11	45.92622	-129.97900	333.1	1.7	1521.8	1523.5	Tiny Towers in sight	4537
2010/09/04 05:45:58	45.92623	-129.97907	311.4	3.2	1520.5	1523.7	Escargot ahead	4538
2010/09/04 05:46:30	45.92624	-129.97909	311.4	1.9	1521.5	1523.4	Wind surfer star	4540
2010/09/04 05:48:08	45.92629	-129.97910	335.8	5.8	1517.3	1523.1	At Escargot	4541
2010/09/04 05:48:36	45.92631	-129.97908	291.7	7.5	1516.1	1523.6	This one will be sampled above APL instrument or at top	4543
2010/09/04 05:48:58	45.92634	-129.97908	257.8	6.0	1515.6	1521.7	Good snail angle	4544
2010/09/04 05:49:00	45.92634	-129.97908	259.9	6.0	1515.7	1521.6	Frame_Grab:	4545
2010/09/04 05:49:09	45.92634	-129.97909	260.9	6.5	1515.0	1521.5	Frame_Grab:	4546
2010/09/04 05:49:15	45.92634	-129.97909	260.8	6.6	1514.9	1521.5	Frame_Grab:	4547
2010/09/04 05:49:27	45.92633	-129.97910	263.2	6.9	1515.1	1522.0	Good amount of flow	4548
2010/09/04 05:50:10	45.92634	-129.97909	243.6	5.4	1516.1	1521.5	Flow source is below snail part near bottom of column	4549
2010/09/04 05:50:38	45.92634	-129.97908	274.1	4.6	1517.2	1521.8	This is probably best place to sample	4551
2010/09/04 05:52:26	45.92639	-129.97926	337.0	4.6	1518.4	1523.0	Some flow around base of Escargot off to side	4553
2010/09/04 05:52:45	45.92640	-129.97925	339.9	7.1	1515.9	1522.9	9-meter vent in view	4554
2010/09/04 05:53:24	45.92642	-129.97928	14.5	5.8	1517.0	1522.8	Worms on top with some white mat below	4555
2010/09/04 05:55:28	45.92643	-129.97923	276.7	7.4	1514.4	1521.8	Deifinitely 9-meter	4557
2010/09/04 05:55:42	45.92644	-129.97923	285.7	6.6	1515.2	1521.8	Small spire at top	4558
2010/09/04 05:56:19	45.92643	-129.97923	285.2	6.9	1514.9	1521.7	Flow on right and probably left	4559
2010/09/04 05:56:31	45.92643	-129.97923	285.2	6.9	1514.9	1521.8	Looking at right sode	4561
2010/09/04 05:56:45	45.92643	-129.97923	285.2	6.9	1514.9	1521.8	right side covered with limpets palm worms	4562
2010/09/04 05:56:59	45.92643	-129.97923	285.1	6.9	1514.9	1521.8	Looking at small left area below	4563
2010/09/04 05:57:52	45.92643	-129.97923	285.2	6.9	1514.9	1521.8	Some flow on small left area	4564
2010/09/04 05:58:14	45.92643	-129.97923	284.8	5.6	1516.3	1521.9	Going to look around RHS of column	4565
2010/09/04 05:59:30	45.92645	-129.97922	254.8	4.1	1517.2	1521.2	Looking at shimmering lower	4567
2010/09/04 05:59:43	45.92645	-129.97922	254.9	3.8	1517.6	1521.3	Large white tubeworms at lower site	4568

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 05:59:51	45.92645	-129.97922	239.6	3.8	1517.3	1521.0	This side is better	4569
2010/09/04 06:00:48	45.92646	-129.97923	225.1	3.9	1517.4	1521.3	Going to sample here with the cylindrical nozzle again	4571
2010/09/04 06:02:19	45.92646	-129.97923	225.2	3.9	1517.4	1521.3	Picking up HFS intake	4572
2010/09/04 06:04:17	45.92647	-129.97923	225.4	3.6	1517.6	1521.2	Medium source is not in the middle of tube worms	4574
2010/09/04 06:04:35	45.92647	-129.97923	225.2	3.5	1517.9	1521.4	Going to sample source flow so will be hot	4576
2010/09/04 06:05:03	45.92647	-129.97923	225.3	3.4	1518.1	1521.5	Flow rises up and around tube worms	4577
2010/09/04 06:07:04	45.92647	-129.97923	224.8	2.7	1518.7	1521.4	Blue mat on upper right side of sampling site	4579
2010/09/04 06:08:28	45.92647	-129.97922	225.3	2.7	1518.7	1521.4	HFS intake in place	4581
2010/09/04 06:08:46	45.92647	-129.97922	225.4	2.7	1518.7	1521.4	HFS pump started	4582
2010/09/04 06:09:13	45.92647	-129.97922	225.3	2.7	1518.7	1521.4	Temp 20 and rising	4583
2010/09/04 06:10:09	45.92647	-129.97922	225.3	2.7	1518.7	1521.4	Temp 40 and rising	4584
2010/09/04 06:10:24	45.92647	-129.97922	225.2	2.7	1518.7	1521.4	Temp stabilized	4586
2010/09/04 06:13:15	45.92647	-129.97922	225.3	2.7	1518.7	1521.3	SAMPLE: fluid HFS-06 BF#20 start	4588
2010/09/04 06:16:30	45.92648	-129.97924	225.2	2.7	1518.7	1521.3	SAMPLE: fluid HFS-06 stop	4591
2010/09/04 06:17:25	45.92648	-129.97924	225.2	2.7	1518.7	1521.3	HFS-06 BF #20 Tmax=40.0 Tavg=33.0 T2=20 Vol=499 mL	4592
2010/09/04 06:19:34	45.92648	-129.97925	224.9	2.7	1518.7	1521.4	SAMPLE: fluid HFS-07 DNA #10 start	4594
2010/09/04 06:24:52	45.92644	-129.97923	225.1	2.7	1518.7	1521.3	SAMPLE: fluid Turned HFS flush pump dpwn causing temp to rise about 20 deg	4598
2010/09/04 06:25:34	45.92644	-129.97923	225.0	2.7	1518.6	1521.3	That is temp change about 10 deg Celsius	4599
2010/09/04 06:26:51	45.92643	-129.97923	225.0	2.8	1518.6	1521.4	Temperature had dropped to near 30 deg C	4601
2010/09/04 06:27:18	45.92643	-129.97923	225.0	2.8	1518.6	1521.4	Jim therefore reduced pump rate to avoid pulling in sea water with slow vent flow	4602
2010/09/04 06:27:36	45.92643	-129.97923	225.0	2.8	1518.6	1521.4	Temperature then went up to around 49 deg C	4603
2010/09/04 06:27:59	45.92644	-129.97923	224.9	2.8	1518.6	1521.4	Means that vent flow might be quite slow and now matched by flush pump rate	4604
2010/09/04 06:29:26	45.92644	-129.97923	225.1	2.7	1518.6	1521.3	Halfway T1 49.9 T2 47.7	4606
2010/09/04 06:30:10	45.92645	-129.97923	225.1	2.7	1518.6	1521.3	correction T2 22.3	4607
2010/09/04 06:33:58	45.92647	-129.97925	225.2	2.7	1518.6	1521.3	Blue mat on HD	4610
2010/09/04 06:34:48	45.92648	-129.97926	225.2	2.6	1518.6	1521.2	DSC grab	4612
2010/09/04 06:35:33	45.92648	-129.97926	225.3	2.6	1518.6	1521.2	Frame_Grab:	4613
2010/09/04 06:38:19	45.92648	-129.97925	225.3	2.6	1518.6	1521.2	SAMPLE: fluid HFS-07 DNA#10 stopped	4615
2010/09/04 06:38:51	45.92648	-129.97925	225.3	2.6	1518.6	1521.2	HFS-07 Tmax=50.0 Tavg=48.9 T2=22 Vol=3001 mL	4617
2010/09/04 06:40:08	45.92648	-129.97925	225.2	2.6	1518.6	1521.2	SAMPLE: fluid HFS-08 RNA#16 start	4618
2010/09/04 06:40:31	45.92647	-129.97925	225.3	2.6	1518.6	1521.2	Started at 6:39:06	4620
2010/09/04 06:50:50	45.92649	-129.97926	225.4	2.6	1518.5	1521.1	Halfway through fluid sample	4626

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 06:51:23	45.92649	-129.97926	225.4	2.6	1518.5	1521.1	T1=51.4 T2=22.7	4627
2010/09/04 07:02:57	45.92650	-129.97922	225.4	2.5	1518.5	1521.0	Frame_Grab:	4634
2010/09/04 07:03:39	45.92650	-129.97922	225.6	2.5	1518.5	1521.0	SAMPLE: fluid HFS-08 Tmax=52.6 Tavg=50.5 T2=20 vol=3000	4635
2010/09/04 07:04:42	45.92650	-129.97922	225.8	2.5	1518.5	1521.0	SAMPLE: fluid HFS-08 start=06:39:06 end=07:03:39 RNA filter #16	4637
2010/09/04 07:05:07	45.92650	-129.97922	225.6	2.5	1518.5	1521.0	SAMPLE: fluid HFS-09 unfiltered bag 21 starting sample	4638
2010/09/04 07:08:19	45.92651	-129.97922	225.9	2.5	1518.5	1520.9	HFS-09 start=07:05 Tmax=51 Tavg=47.8 T2=21 vol=500 end=07:08:16	4640
2010/09/04 07:09:02	45.92651	-129.97922	225.9	2.5	1518.5	1520.9	Jason basket extended	4642
2010/09/04 07:09:57	45.92651	-129.97923	225.9	2.5	1518.5	1521.0	Replacing the HFS intake in basket	4643
2010/09/04 07:12:36	45.92652	-129.97923	225.4	2.5	1518.5	1520.9	Port biobox extended	4646
2010/09/04 07:13:05	45.92652	-129.97923	225.2	2.6	1518.4	1521.0	Opening lid of biobox	4647
2010/09/04 07:14:27	45.92652	-129.97923	240.9	3.1	1517.7	1520.8	HD_CAM: start	4649
2010/09/04 07:15:17	45.92652	-129.97923	239.0	3.1	1517.7	1520.8	SAMPLE: bio Trying to scrape bio sample into biobox	4650
2010/09/04 07:16:16	45.92652	-129.97923	237.6	3.0	1517.8	1520.8	SAMPLE: bio Using temp probe to scrape blue protozoan mat into biobox	4651
2010/09/04 07:16:43	45.92652	-129.97923	237.7	3.0	1517.8	1520.8	Mat is hard to scrape off	4653
2010/09/04 07:17:04	45.92652	-129.97923	238.2	3.0	1517.8	1520.7	Some mat has fallen into box	4654
2010/09/04 07:18:02	45.92652	-129.97923	237.6	3.0	1517.7	1520.7	The mat seems very hard and difficult to break	4655
2010/09/04 07:18:40	45.92652	-129.97923	237.8	3.0	1517.7	1520.7	The scraping technique is not working	4657
2010/09/04 07:19:04	45.92652	-129.97923	237.4	3.0	1517.7	1520.7	There is one piece of mat and rock in the biobox - will keep an eye out for more mats in other places to collect	4658
2010/09/04 07:19:21	45.92652	-129.97924	237.6	3.0	1517.8	1520.7	Replacing Jason temp probe	4659
2010/09/04 07:19:26	45.92652	-129.97924	237.4	3.0	1517.7	1520.7	HD_CAM: stop	4660
2010/09/04 07:20:44	45.92652	-129.97924	224.0	2.9	1518.1	1521.0	Using arm to try and break piece of mat off	4662
2010/09/04 07:22:20	45.92652	-129.97924	224.4	2.1	1518.6	1520.7	Could not grab a piece	4664
2010/09/04 07:22:40	45.92652	-129.97924	222.9	2.3	1518.5	1520.8	Retracting biobox	4665
2010/09/04 07:23:08	45.92652	-129.97923	223.0	2.3	1518.5	1520.8	Heading to Hermosa now	4666
2010/09/04 07:26:06	45.92658	-129.97936	211.9	1.2	1517.6	1518.8	Some small chimneys with white mats/precipitates	4668
2010/09/04 07:27:28	45.92655	-129.97934	199.2	1.4	1516.8	1518.2	Larger chimney structures next to small white chimneys	4670
2010/09/04 07:29:26	45.92656	-129.97927	223.0	4.4	1515.2	1519.6	Going to fly around area starting at borehole to locate ourselves	4672
2010/09/04 07:31:06	45.92647	-129.97934	11.3	5.1	1516.6	1521.7	Tall spires here with old white/yellow mats	4674
2010/09/04 07:31:17	45.92648	-129.97935	31.4	4.6	1516.6	1521.2	Chimneys seem to be growing from a fissure	4675
2010/09/04 07:31:36	45.92648	-129.97935	31.7	3.8	1516.6	1520.4	At borehole marker now	4676
2010/09/04 07:31:53	45.92649	-129.97933	27.4	4.0	1516.7	1520.7	Going through gully and looking to the right for Hermosa	4677

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 07:36:48	45.92653	-129.97919	325.7	3.9	1518.0	1521.9	Circling around the borehole site to look for Hermosa	4681
2010/09/04 07:36:53	45.92653	-129.97919	330.1	4.0	1517.7	1521.7	It is not on the south	4682
2010/09/04 07:37:41	45.92659	-129.97921	329.9	2.4	1516.3	1518.7	Going past small white anhydrite chimneys again	4683
2010/09/04 07:38:06	45.92663	-129.97924	287.3	2.7	1516.3	1519.0	The small white chimneys are possibly Hermosa and another vent	4684
2010/09/04 07:39:34	45.92665	-129.97935	228.8	5.8	1515.5	1521.3	Going past a marker 152	4686
2010/09/04 07:40:39	45.92664	-129.97940	154.1	1.4	1515.1	1516.5	Not sure what marker 152 is for	4688
2010/09/04 07:42:08	45.92660	-129.97931	197.9	2.0	1516.8	1518.7	There are lots of tall dead chimneys in this area	4689
2010/09/04 07:42:43	45.92658	-129.97932	197.1	1.4	1517.5	1519.0	The white chimneys with the 3 spires are Hermosa	4691
2010/09/04 07:42:56	45.92658	-129.97933	198.5	1.1	1517.8	1518.9	Marker 152 was left at teh end of an Alvin dive	4692
2010/09/04 07:43:12	45.92658	-129.97933	195.8	1.1	1517.8	1518.9	Mkr 152 was left at the north end of El Guapo	4693
2010/09/04 07:43:35	45.92657	-129.97934	197.2	1.0	1517.9	1519.0	There are some thin tube worms on Hermosa	4694
2010/09/04 07:44:17	45.92657	-129.97934	186.5	0.9	1517.9	1518.8	We will sample from this vent	4695
2010/09/04 07:44:28	45.92657	-129.97934	184.3	0.7	1518.0	1518.7	Extending basket	4697
2010/09/04 07:44:38	45.92657	-129.97934	184.1	1.1	1517.9	1519.0	Looking at diffuse flow	4698
2010/09/04 07:44:40	45.92657	-129.97934	184.1	1.1	1517.9	1519.0	Frame_Grab:	4699
2010/09/04 07:45:19	45.92656	-129.97935	184.0	1.0	1517.9	1519.0	Picking up fluid sampler intake	4700
2010/09/04 07:47:12	45.92655	-129.97935	184.1	1.0	1517.9	1519.0	Looking at vent for best sampling spot	4702
2010/09/04 07:48:41	45.92655	-129.97935	184.1	1.1	1517.9	1519.0	Placing intake on small spire at base of vent	4704
2010/09/04 07:49:03	45.92655	-129.97935	185.1	1.0	1517.9	1518.9	T1=21	4705
2010/09/04 07:49:17	45.92654	-129.97935	185.1	1.0	1517.9	1518.9	T1=24 and going up slowly	4706
2010/09/04 07:50:16	45.92654	-129.97936	185.2	0.7	1517.9	1518.6	Checking temperature at a lower spot	4707
2010/09/04 07:50:36	45.92654	-129.97936	179.7	1.0	1517.9	1518.9	T1=16.7 and dropping	4709
2010/09/04 07:51:29	45.92654	-129.97937	181.1	1.0	1517.9	1518.9	Going back up to a higher spot to check temperature	4710
2010/09/04 07:53:06	45.92654	-129.97939	180.2	1.0	1517.9	1518.9	Going back to first spot on small nub of chimney	4712
2010/09/04 07:53:16	45.92654	-129.97939	180.3	1.0	1517.9	1518.9	T1=17.6 and rising	4713
2010/09/04 07:53:41	45.92654	-129.97939	180.4	1.0	1517.9	1518.9	T1=24 and rising	4714
2010/09/04 07:54:24	45.92654	-129.97939	180.3	1.0	1517.9	1518.9	Tmax=28.3	4716
2010/09/04 07:54:46	45.92654	-129.97940	180.5	0.7	1517.9	1518.6	Getting a better position for the fluid intake	4717
2010/09/04 07:55:12	45.92654	-129.97940	180.5	1.0	1517.9	1518.9	Repositioned intake	4718
2010/09/04 07:56:07	45.92654	-129.97940	182.8	1.0	1517.9	1518.9	T1=31.8 now	4719
2010/09/04 07:57:33	45.92654	-129.97940	182.8	1.0	1517.9	1518.9	NAV: Doppler Reset Doppler reset 9mins 50sec ago	4721
2010/09/04 07:57:57	45.92654	-129.97940	182.8	1.0	1517.9	1518.9	HFS-11 Filtered bag #19 starting	4722

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 08:01:44	45.92654	-129.97938	182.7	1.0	1517.8	1518.9	SAMPLE: fluid HFS-11 finished	4725
2010/09/04 08:02:45	45.92654	-129.97938	182.7	1.0	1517.8	1518.9	HFS-11: start=07:57 Tmax=34.3 Tavg=32.6 T2=15 vol=500 end=08:01 - filtered bag #19	4727
2010/09/04 08:05:09	45.92653	-129.97938	182.7	1.0	1517.8	1518.8	SAMPLE: fluid HFS-12 started	4729
2010/09/04 08:06:29	45.92653	-129.97939	182.7	1.0	1517.8	1518.8	SAMPLE: fluid HFS-12 is RNA filter #15	4731
2010/09/04 08:17:52	45.92654	-129.97941	182.6	1.0	1517.7	1518.7	SAMPLE: fluid HFS-12 halfway finished	4737
2010/09/04 08:18:03	45.92654	-129.97941	182.6	1.0	1517.7	1518.8	SAMPLE: fluid T1=32.4 T2=14.2	4738
2010/09/04 08:34:50	45.92655	-129.97940	182.6	1.0	1517.6	1518.6	SAMPLE: fluid HFS-12 finished	4748
2010/09/04 08:35:43	45.92655	-129.97941	182.7	1.0	1517.6	1518.6	HFS-12: Tmax=35.7 Tavg=33.4 T2=16 vol=3001 start=08:05 end=08:34 - RNA filter #15	4749
2010/09/04 08:36:51	45.92655	-129.97940	182.7	1.0	1517.6	1518.6	SAMPLE: fluid HFS-13 DNA #11 starting	4751
2010/09/04 08:45:40	45.92653	-129.97939	182.6	1.0	1517.5	1518.6	SAMPLE: fluid HFS-13 half finished T1=35.1 T2=15.6	4756
2010/09/04 08:52:44	45.92654	-129.97939	182.7	1.0	1517.5	1518.5	SAMPLE: fluid HFS-13 finished	4761
2010/09/04 08:53:37	45.92654	-129.97939	182.7	1.0	1517.5	1518.5	SAMPLE: fluid HFS-13: Tmax=36.7 Tavg=34.7 T2=15 vol=3002 start=08:36 end=08:52	4762
2010/09/04 08:55:18	45.92655	-129.97939	182.7	1.0	1517.5	1518.5	SAMPLE: fluid HFS-14 starting - unfiltered bag #22	4764
2010/09/04 08:56:51	45.92655	-129.97939	182.7	1.0	1517.5	1518.5	SAMPLE: fluid HFS-14 shut down by mistake and pump re-started	4766
2010/09/04 08:58:19	45.92655	-129.97939	182.7	1.0	1517.5	1518.5	SAMPLE: fluid HFS-14 finished	4767
2010/09/04 08:59:09	45.92655	-129.97939	182.7	1.0	1517.5	1518.5	HFS-14: Tmax=35.7 Tavg=34.5 T2=60 vol=500 start=08:55 end=08:58 - unfiltered bag #22	4769
2010/09/04 09:00:00	45.92655	-129.97939	182.7	1.0	1517.5	1518.5	Removing fluid intake from vent and placing in basket	4770
2010/09/04 09:01:31	45.92655	-129.97939	182.7	1.1	1517.4	1518.5	Fluid intake stowed	4772
2010/09/04 09:02:02	45.92655	-129.97939	182.8	1.1	1517.5	1518.5	Next: place MTR in Hermosa	4773
2010/09/04 09:03:27	45.92655	-129.97938	182.7	1.1	1517.4	1518.5	Right swing arm box out	4775
2010/09/04 09:03:38	45.92655	-129.97938	182.7	1.1	1517.4	1518.5	Opening bungee	4776
2010/09/04 09:04:39	45.92655	-129.97937	182.7	1.0	1517.4	1518.5	DEPLOY: MTR temp probe Picking up MTR	4778
2010/09/04 09:08:30	45.92656	-129.97937	182.7	1.1	1517.4	1518.5	DEPLOY: MTR temp probe Placing MTR 3291 at Hermosa	4781
2010/09/04 09:09:37	45.92657	-129.97938	196.3	1.8	1516.6	1518.4	Going to pick up Marker 152 (seen earlier) at El Guapo and place at Hermosa	4782
2010/09/04 09:12:03	45.92660	-129.97949	192.1	6.0	1515.0	1521.0	Marker 152 located. Marker 152 not useful at El Guapo.	4784
2010/09/04 09:12:47	45.92660	-129.97949	191.4	6.0	1515.2	1521.2	Picking up Marker 152	4786
2010/09/04 09:14:33	45.92657	-129.97941	212.6	2.4	1515.0	1517.4	Returning to Hermosa with marker	4788
2010/09/04 09:15:43	45.92654	-129.97938	209.4	1.7	1517.0	1518.7	Back at Hermosa	4789
2010/09/04 09:17:16	45.92654	-129.97937	210.3	1.5	1517.2	1518.7	DEPLOY: marker Placing Marker 152 in Hermosa	4791
2010/09/04 09:18:14	45.92655	-129.97936	213.5	2.1	1516.9	1519.0	Going back to 9m to place a marker there	4792

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2010/09/04 09:20:14	45.92653	-129.97929	154.0	3.2	1515.7	1518.9	Right swing arm box out and open	4794
2010/09/04 09:20:19	45.92653	-129.97929	154.0	3.2	1515.7	1518.9	Selecting a marker from box	4795
2010/09/04 09:20:45	45.92653	-129.97929	153.7	3.2	1515.7	1518.9	Correction.. opening box	4797
2010/09/04 09:21:24	45.92653	-129.97929	153.9	3.2	1515.7	1518.9	Now: "Selecting a marker from box"	4798
2010/09/04 09:22:01	45.92653	-129.97929	154.4	3.2	1515.7	1518.9	DEPLOY: marker Right swing arm box retracted	4799
2010/09/04 09:25:21	45.92651	-129.97930	149.6	2.6	1516.6	1519.2	Placing marker 153 at 9m vent	4802
2010/09/04 09:26:32	45.92652	-129.97929	148.1	2.5	1516.7	1519.2	DEPLOY: marker Marker 153 at 9M vent	4804
2010/09/04 09:26:51	45.92653	-129.97927	142.3	2.9	1516.7	1519.6	Moving to Escargot vent now	4805
2010/09/04 09:29:01	45.92640	-129.97914	165.4	4.6	1518.0	1522.5	Looking for diffuse venting at base of Escargot	4807
2010/09/04 09:29:12	45.92640	-129.97914	166.4	4.4	1518.2	1522.6	Looking on north side of Escargot for venting	4808
2010/09/04 09:30:59	45.92639	-129.97912	179.4	2.9	1519.5	1522.4	Tubeworms don't look good here	4810
2010/09/04 09:31:07	45.92639	-129.97913	167.1	3.0	1519.4	1522.4	Hard to see any signs of diffuse venting here	4811
2010/09/04 09:31:47	45.92639	-129.97913	166.0	2.6	1519.7	1522.3	Looking under clumps of worms for fluid venting signs	4812
2010/09/04 09:33:55	45.92639	-129.97912	165.4	2.4	1519.9	1522.4	Checking out area where palm worms located	4814
2010/09/04 09:33:59	45.92639	-129.97912	165.8	2.5	1519.9	1522.4	Using Jason temp probe	4815
2010/09/04 09:37:22	45.92639	-129.97910	166.0	2.7	1519.7	1522.4	Tring to find a good location to sample at	4818
2010/09/04 09:38:12	45.92640	-129.97910	165.6	2.8	1519.7	1522.4	Temp probe picked up	4819
2010/09/04 09:40:26	45.92640	-129.97910	166.2	2.9	1519.6	1522.4	SAMPLE: gas Going to collect some tubeworms	4822
2010/09/04 09:40:31	45.92640	-129.97910	166.0	2.9	1519.6	1522.5	Left biobox out	4823
2010/09/04 09:41:22	45.92641	-129.97911	166.0	3.0	1519.6	1522.6	Going to break off dark chimney with bulbous growths	4824
2010/09/04 09:42:22	45.92641	-129.97911	166.2	2.9	1519.6	1522.5	Breaking off extinct chimney piece with arm	4826
2010/09/04 09:43:00	45.92641	-129.97911	166.2	2.9	1519.6	1522.5	Chimney piece broken off	4827
2010/09/04 09:43:43	45.92641	-129.97911	165.9	2.8	1519.7	1522.5	Placing chimney on top of basket by HOBOS	4828
2010/09/04 09:46:51	45.92641	-129.97912	165.8	2.8	1519.6	1522.4	Looking for a place to put the Jason temp probe	4831
2010/09/04 09:47:17	45.92641	-129.97912	165.9	2.8	1519.6	1522.4	SAMPLE: geo Chimney piece is sample CHIMNEY-15	4832
2010/09/04 09:47:55	45.92641	-129.97912	165.6	2.8	1519.6	1522.4	Moving Jason temp probe to new spot	4833
2010/09/04 09:48:50	45.92641	-129.97912	166.0	2.8	1519.6	1522.4	New spot T=7.6	4835
2010/09/04 09:48:57	45.92641	-129.97912	166.0	2.8	1519.6	1522.4	Lots of tubeworms and some limpets	4836
2010/09/04 09:49:39	45.92641	-129.97912	166.1	2.7	1519.6	1522.4	Searching for a higher temperature spot	4837
2010/09/04 09:52:59	45.92641	-129.97913	180.5	2.8	1519.5	1522.4	T=10.9 and rising	4840
2010/09/04 09:55:45	45.92642	-129.97913	180.0	2.8	1519.5	1522.3	T=36.7 and up	4842
2010/09/04 09:55:58	45.92642	-129.97913	180.0	2.8	1519.5	1522.3	We broke open a spot through the tubeworms	4843

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 09:56:16	45.92642	-129.97913	180.1	2.8	1519.5	1522.3	This broke a hole into the very high T fluids	4844
2010/09/04 09:56:45	45.92643	-129.97912	180.0	2.8	1519.5	1522.3	Tmax ~ 75 from Jason temp probe	4846
2010/09/04 09:57:02	45.92643	-129.97912	180.0	2.8	1519.5	1522.3	Take can off of HFS sampler to get into the diffuse flow	4847
2010/09/04 09:58:28	45.92642	-129.97912	179.9	2.8	1519.5	1522.3	Replacing Jason temp probe in basket	4849
2010/09/04 09:59:11	45.92642	-129.97912	179.9	2.8	1519.5	1522.3	Picking up HFS	4850
2010/09/04 09:59:36	45.92642	-129.97912	179.8	2.7	1519.5	1522.3	Removed HFS sampler intake bottom from can	4851
2010/09/04 10:00:33	45.92642	-129.97911	179.8	2.8	1519.5	1522.3	Inserting HFS intake into the diffuse flow	4853
2010/09/04 10:00:51	45.92642	-129.97911	179.8	2.8	1519.5	1522.3	Flush pump on	4854
2010/09/04 10:02:33	45.92642	-129.97911	180.1	2.8	1519.5	1522.3	SAMPLE: fluid HFS intake does not seem to be in high temp fluids	4856
2010/09/04 10:02:42	45.92642	-129.97911	180.0	2.7	1519.6	1522.3	Moving intake arm to deeper within crack	4857
2010/09/04 10:04:07	45.92642	-129.97911	179.6	2.7	1519.6	1522.3	Still only sampling 6 degree C fluids	4858
2010/09/04 10:06:06	45.92642	-129.97911	180.0	2.8	1519.5	1522.3	Trying to reach intake arm into left of crack to reach higher T fluids	4860
2010/09/04 10:06:43	45.92642	-129.97911	180.0	2.8	1519.5	1522.3	Now at 10C	4862
2010/09/04 10:06:56	45.92642	-129.97911	180.0	2.8	1519.5	1522.3	13C and rising	4863
2010/09/04 10:08:11	45.92642	-129.97912	179.7	2.8	1519.6	1522.3	Angled arm to the left more	4864
2010/09/04 10:09:25	45.92642	-129.97912	179.7	2.8	1519.5	1522.3	Can't find a high T spot without the can on teh HFS	4866
2010/09/04 10:09:50	45.92641	-129.97913	179.7	2.8	1519.5	1522.3	HFS may be getting clogged. Lots of white cloudiness in fluids.	4867
2010/09/04 10:11:08	45.92641	-129.97913	178.2	3.7	1518.7	1522.4	Arm out of vent and waiting for fluid to clar	4869
2010/09/04 10:11:16	45.92641	-129.97913	178.0	3.8	1518.6	1522.4	Correction... "Clar" = "Clear"	4870
2010/09/04 10:14:04	45.92639	-129.97910	218.5	3.4	1518.6	1522.0	Looking for a new site to sample	4872
2010/09/04 10:16:00	45.92636	-129.97911	224.1	1.8	1519.1	1521.0	See a new site with lots of palm worms - tubeworms are dead here	4874
2010/09/04 10:16:27	45.92636	-129.97911	236.0	1.8	1518.8	1520.6	Rotating Jason 90degrees for easier access	4876
2010/09/04 10:17:23	45.92636	-129.97911	237.4	1.7	1518.7	1520.4	Replacing can on end of HFS sampler intake	4877
2010/09/04 10:18:17	45.92636	-129.97912	236.8	1.7	1518.6	1520.4	The intake on teh HFS may have been clogged with mat - that's why the T was low	4878
2010/09/04 10:19:20	45.92636	-129.97912	236.8	1.7	1518.7	1520.4	White mat is very cloudy when it breaks off	4880
2010/09/04 10:20:45	45.92637	-129.97912	235.6	2.3	1518.4	1520.7	Trying to insert HFS intake into can	4882
2010/09/04 10:21:57	45.92638	-129.97912	235.5	2.3	1518.4	1520.7	Can on HFS	4883
2010/09/04 10:23:22	45.92638	-129.97914	245.8	1.7	1518.5	1520.2	Looking for a good spot to place HFS sampler onto diffuse flow	4885
2010/09/04 10:24:02	45.92639	-129.97914	245.9	1.7	1518.5	1520.2	Placing HFS in mat through palm worms	4886
2010/09/04 10:25:22	45.92639	-129.97914	251.6	2.0	1518.0	1520.1	No - correction - still looking for a spot to sample	4888
2010/09/04 10:25:47	45.92639	-129.97914	250.2	1.9	1518.3	1520.2	Limpets can clog HFS - maybe	4889
2010/09/04 10:28:08	45.92640	-129.97914	250.6	2.0	1518.1	1520.1	HFS intake placed in pile of limpets/worms	4891

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 10:28:16	45.92640	-129.97914	250.7	1.9	1518.1	1520.1	T=10.8 now and going up	4892
2010/09/04 10:31:05	45.92639	-129.97913	250.8	2.0	1518.0	1520.0	T over 15 now	4895
2010/09/04 10:33:32	45.92639	-129.97913	250.1	2.0	1518.1	1520.1	SAMPLE: fluid Starting HFS-16	4897
2010/09/04 10:35:35	45.92639	-129.97913	250.0	2.1	1518.1	1520.2	SAMPLE: fluid HFS-16 is filtered bag #18	4899
2010/09/04 10:37:57	45.92639	-129.97913	250.1	2.0	1518.1	1520.1	HFS-16 finished	4901
2010/09/04 10:38:47	45.92640	-129.97913	249.3	2.1	1518.0	1520.2	SAMPLE: fluid HFS-16: Tmax=17.7 Tavg=17.2 T2=6 vol=501 start=10:33 end=10:37	4903
2010/09/04 10:49:54	45.92638	-129.97911	251.6	2.0	1518.1	1520.1	SAMPLE: fluid Start HFS#17 which is RNA#13	4909
2010/09/04 11:12:02	45.92635	-129.97912	251.1	1.9	1518.1	1520.1	SAMPLE: fluid J523-HFS-17 Tmax=22.5 Tavg=19.9 T2=6.3 Vol=3002 start=10:49:50 end=11:11:25 RNA#13 at Escargot vent PI= Huber	4921
2010/09/04 11:12:22	45.92635	-129.97912	251.0	2.0	1518.1	1520.1	J2-HFS-18 DNA filter #12 Start	4923
2010/09/04 11:47:41	45.92639	-129.97914	249.3	2.1	1518.2	1520.3	SAMPLE: fluid J2-HFS-18 DNA filter#12 Tmax=22.9 Tavg=21.2 T2=9.8 Vol=3000 start=11:12 end=11:47 Escargot vent PI=Huber	4941
2010/09/04 11:49:05	45.92639	-129.97914	249.2	2.1	1518.2	1520.3	SAMPLE: fluid J523-HFS-19 unfiltered bag 24 Start	4943
2010/09/04 11:52:43	45.92639	-129.97913	248.9	2.1	1518.2	1520.3	SAMPLE: fluid J523-HFS-19 unfiltered bag#24 Tmax=23.0 Tavg=22.6 T2=9.8 Vol=501 start=11:49 end=11:52 Escargot vent PI=Huber	4946
2010/09/04 11:53:18	45.92639	-129.97913	248.8	2.1	1518.2	1520.4	Done with fluid sampling here. Going to try to syringe blue mat here.	4947
2010/09/04 11:54:14	45.92638	-129.97914	248.9	2.1	1518.2	1520.4	Puttting HFS wand away.	4948
2010/09/04 11:57:30	45.92638	-129.97915	249.0	2.1	1518.3	1520.4	Grabbing small blue syringe sampler.	4951
2010/09/04 12:03:09	45.92639	-129.97918	249.2	2.1	1518.2	1520.4	Attempting syringe sample of blue mat on Escargot chimney.	4955
2010/09/04 12:06:09	45.92640	-129.97918	248.1	2.1	1518.3	1520.4	Waiting to move Medea because we were getting tugged.	4957
2010/09/04 12:10:56	45.92641	-129.97916	250.1	2.0	1518.3	1520.3	Regrabbing the syringe sampler.	4961
2010/09/04 12:16:43	45.92639	-129.97914	250.9	2.0	1518.3	1520.3	Did one pull on the syringe to get it unstuck. Now we will push it back in and try it again.	4965
2010/09/04 12:21:38	45.92638	-129.97913	251.1	2.1	1518.3	1520.4	Going to try a third time for the blue mat syringe.	4968
2010/09/04 12:25:17	45.92638	-129.97913	250.4	2.1	1518.2	1520.4	SAMPLE: bio J523-MAT-20 Blue mat from Escargot chimney taken by small blue syringe sampler. Put in port biobox.	4971
2010/09/04 12:29:07	45.92639	-129.97911	255.0	2.0	1518.2	1520.2	Now we're going to move over to Diva.	4974
2010/09/04 12:29:16	45.92639	-129.97909	266.9	2.0	1518.2	1520.2	Should be right behind us.	4975
2010/09/04 12:33:00	45.92636	-129.97901	7.6	2.7	1519.9	1522.6	OK we were right on top of it. Coming up to Diva vent.	4978
2010/09/04 12:34:12	45.92637	-129.97901	16.0	2.3	1520.0	1522.3	Going to do two piston HFS samples and one gastight.	4979
2010/09/04 12:40:27	45.92636	-129.97904	15.6	2.4	1520.0	1522.3	SAMPLE: fluid J523-HFS-21 filtered piston#7 start at Diva vent	4984
2010/09/04 12:42:15	45.92637	-129.97905	15.4	2.3	1520.0	1522.3	Added new target here at Diva vent on the nav screen. 45 55.582 129 58.741	4985
2010/09/04 12:43:37	45.92637	-129.97905	15.3	2.3	1520.0	1522.3	SAMPLE: fluid J523-HFS-21 Start=12:40 end=12:42 Tmax=297.3 Tavg=296.8 Vol=351 T2=73.6 PI=Butterfield Dive vent	4987

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 12:43:53	45.92637	-129.97905	15.3	2.3	1520.0	1522.3	SAMPLE: fluid Unfiltered piston#8 start	4988
2010/09/04 12:46:22	45.92638	-129.97905	15.2	2.3	1520.0	1522.3	J523-HFS-22 Unfiltered piston#8 start=12:43 end=12:46 Tmax=297.1 Tavg=296.7 Vol=353 T2=74.1 PI=Butterfield Diva Vent	4991
2010/09/04 12:48:09	45.92639	-129.97905	15.0	2.3	1520.0	1522.3	Putting away HFS wand. Going to do gastight bottle from the basket.	4992
2010/09/04 12:53:20	45.92640	-129.97900	221.3	1.4	1520.3	1521.7	Repositioning Jason.	4996
2010/09/04 12:54:16	45.92640	-129.97900	221.5	1.4	1520.3	1521.7	SAMPLE: gas J523-GTB-23 Gastight bottle Black#18 Diva vent PI=Evans/Lupton	4997
2010/09/04 12:57:17	45.92640	-129.97899	220.7	1.3	1520.4	1521.7	Now going to put a HOBO temperature probe in Diva vent.	5000
2010/09/04 13:01:23	45.92641	-129.97896	221.8	1.4	1520.3	1521.7	DEPLOY: HOBO temp probe HOBO 129 placed in Diva vent.	5003
2010/09/04 13:01:44	45.92642	-129.97896	221.8	1.4	1520.4	1521.7	Tip of HOBO is just in vent orifice. Looks good.	5004
2010/09/04 13:05:12	45.92641	-129.97894	223.0	1.4	1520.3	1521.7	Marker 150 put out at Diva vent. Vent location is 45 55.584' 129 58.741'	5007
2010/09/04 13:05:29	45.92641	-129.97894	223.6	1.3	1520.5	1521.7	DEPLOY: marker marker 150 at Diva vent.	5008
2010/09/04 13:05:52	45.92641	-129.97894	220.2	1.5	1520.3	1521.8	Now going to move to El Guapo.	5009
2010/09/04 13:07:23	45.92641	-129.97893	220.1	2.5	1519.7	1522.2	Change of plan. Going to do a small syringe here of the orange mat.	5011
2010/09/04 13:10:56	45.92640	-129.97895	220.1	2.7	1519.5	1522.2	Grabbing small red syringe sampler.	5014
2010/09/04 13:17:01	45.92642	-129.97900	148.4	1.3	1520.2	1521.6	Repositioning Jason for syringe sampling.	5018
2010/09/04 13:20:30	45.92642	-129.97900	157.1	1.4	1520.0	1521.4	SAMPLE: bio J523-MAT-24 Orange mat near Diva vent with small red syringe sampler.	5021
2010/09/04 13:21:01	45.92642	-129.97900	157.1	1.4	1520.1	1521.4	Looks like it is full.	5022
2010/09/04 13:21:32	45.92642	-129.97900	157.1	1.4	1520.0	1521.4	Going to put it in the port biobox.	5023
2010/09/04 13:24:17	45.92640	-129.97901	156.3	1.3	1520.2	1521.5	OK it's in the biobox. Now we're going to move to El Guapo for HFS sampling.	5025
2010/09/04 13:33:44	45.92649	-129.97953	15.4	2.9	1516.5	1519.4	We are approaching the small vent south of El Guapo where the drill hole is.	5031
2010/09/04 13:34:12	45.92649	-129.97954	13.9	3.0	1516.3	1519.3	We are going to collect a fluid sample from the drill hole.	5032
2010/09/04 13:36:52	45.92649	-129.97953	14.0	2.8	1516.3	1519.1	Picking up HFS wand.	5035
2010/09/04 13:37:39	45.92648	-129.97953	17.9	2.9	1516.5	1519.4	Repositioning Jason to sample in drill hole.	5036
2010/09/04 13:41:53	45.92648	-129.97953	7.0	1.9	1517.5	1519.4	Pulling out the lead pipe marker from the drill hole.	5039
2010/09/04 13:44:17	45.92649	-129.97953	6.0	1.8	1517.7	1519.4	Lead pipe put in basket (it's a PVC pipe with lead wrapped around it and duct tape). Parts of it looked melted.	5041
2010/09/04 13:44:26	45.92649	-129.97953	5.9	1.8	1517.7	1519.4	Placing HFS wand into drill hole.	5043
2010/09/04 13:54:13	45.92647	-129.97952	4.5	1.7	1517.9	1519.6	Getting temperatures over 200. The can on the end of the HFS wand neatly fits into the borehole for a good seal.	5048
2010/09/04 13:54:33	45.92647	-129.97952	4.6	1.8	1517.9	1519.7	Experimenting with different pump flow rates to maximize the temperature.	5050
2010/09/04 13:56:25	45.92646	-129.97951	4.3	1.8	1517.9	1519.7	SAMPLE: fluid J523-HFS-25 El Guapo borehole (Marker 6) Filtered piston#5 Start	5052
2010/09/04 13:59:44	45.92646	-129.97949	4.9	1.6	1517.9	1519.5	HD_CAM: start	5054

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2010/09/04 14:01:04	45.92646	-129.97949	4.4	1.7	1517.9	1519.6	SAMPLE: fluid J523-HFS-25 El Guapo borehole Filtered piston#5 Start=13:56 End=14:00 Tmax=207.9 Tavg=204.5 Vol=450 T2=44.0 PI=Butterfield	5056
2010/09/04 14:02:21	45.92647	-129.97949	4.5	1.7	1518.0	1519.6	SAMPLE: fluid J523-HFS-26 unfiltered piston#6 Start	5058
2010/09/04 14:02:53	45.92647	-129.97949	4.7	1.7	1518.0	1519.6	Switched HD cam recording to be recording the mini-Zeus camera instead of the Science HD camera.	5059
2010/09/04 14:03:27	45.92647	-129.97949	4.5	1.8	1518.0	1519.8	HD_CAM: stop	5060
2010/09/04 14:06:06	45.92649	-129.97951	4.6	1.7	1518.0	1519.7	SAMPLE: fluid J523-HFS-26 unfiltered piston#6 Start=14:02 End=14:05 Tmax=209.3 Tavg=206.5 T2=46 Vol=500 El Guapo borehole PI=Butterfield	5062
2010/09/04 14:06:35	45.92649	-129.97951	4.7	1.7	1518.0	1519.6	SAMPLE: gas J523-GTM-27 Gastight Blue#12 on HFS	5064
2010/09/04 14:07:25	45.92650	-129.97951	4.6	1.7	1518.0	1519.6	HD_CAM: start Recording HD on mini-Zeus	5065
2010/09/04 14:12:12	45.92650	-129.97953	5.4	1.8	1517.8	1519.6	Pulling HFS can out of borehole.	5068
2010/09/04 14:12:17	45.92650	-129.97953	5.5	1.8	1517.8	1519.6	HD_CAM: stop	5069
2010/09/04 14:12:35	45.92650	-129.97953	5.4	1.8	1517.8	1519.6	Stowing HFS wand.	5071
2010/09/04 14:12:52	45.92650	-129.97953	5.6	1.8	1517.8	1519.6	HD input switched back to Science camera for future recordings.	5072
2010/09/04 14:13:50	45.92649	-129.97953	5.9	1.8	1517.8	1519.6	Going to place Girguis incubator in borehole.	5073
2010/09/04 14:16:31	45.92649	-129.97953	5.3	1.8	1517.8	1519.6	Grabbing Girguis incubator and putting it in the El Guapo borehole.	5076
2010/09/04 14:17:04	45.92649	-129.97953	5.4	1.8	1517.8	1519.6	HD_CAM: start	5077
2010/09/04 14:17:57	45.92648	-129.97952	6.1	1.7	1517.9	1519.6	Girguis incubator is smaller than the borehole so it went in easily.	5078
2010/09/04 14:20:06	45.92648	-129.97952	5.0	1.8	1517.9	1519.6	HD_CAM: stop	5080
2010/09/04 14:20:20	45.92648	-129.97951	5.5	1.8	1517.9	1519.6	Grabbing HFS wand.	5081
2010/09/04 14:21:36	45.92648	-129.97951	4.6	3.9	1515.5	1519.4	Now moving up to top of El Guapo.	5083
2010/09/04 14:25:34	45.92651	-129.97947	299.8	16.2	1503.9	1520.1	Going to try to sample the flaming vents near the top of El Guapo.	5086
2010/09/04 14:28:53	45.92652	-129.97947	307.0	15.4	1503.8	1519.2	Grabbing HFS wand with can.	5089
2010/09/04 14:29:58	45.92652	-129.97948	307.1	15.5	1503.8	1519.2	Holding HFS wand over flaming vents.	5090
2010/09/04 14:30:36	45.92652	-129.97948	307.1	15.4	1503.8	1519.2	Temp at 180 and going up.	5092
2010/09/04 14:32:28	45.92652	-129.97949	307.1	15.7	1503.8	1519.5	SAMPLE: fluid J253-HFS-28 Piston#1 Start at top of El Guapo at the flaming vents.	5094
2010/09/04 14:35:10	45.92652	-129.97950	307.1	15.5	1503.8	1519.3	SAMPLE: fluid J253-HFS-28 Filtered Piston#1 Start=14:32 End=14:34 Tmax=251 Tavg=213 T2=49 Vol=375 PI=Butterfield El Guapo top	5096
2010/09/04 14:37:23	45.92654	-129.97950	307.0	14.3	1503.8	1518.1	SAMPLE: fluid J523-HFS-29 Unfiltered piston#2 Start	5098
2010/09/04 14:40:09	45.92656	-129.97951	307.0	14.3	1503.8	1518.0	SAMPLE: fluid J523-HFS-29 Unfiltered piston#2 Start=14:37 End=14:39 Tmax=235 Tavg=200 T2=48 Vol=375 PI=Butterfield El Guapo top	5100
2010/09/04 14:41:08	45.92656	-129.97951	307.1	15.4	1503.8	1519.1	Cleared of part of chimney.	5102
2010/09/04 14:43:56	45.92657	-129.97951	307.9	14.3	1503.7	1518.0	SAMPLE: fluid J523-HFS-30 Filtered piston#3 Start at El Guapo top	5104
2010/09/04 14:44:07	45.92657	-129.97951	307.6	14.3	1503.7	1518.0	Temperature 311 to start with.	5105

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2010/09/04 14:47:56	45.92656	-129.97949	307.1	15.2	1503.8	1518.9	SAMPLE: fluid J523-HFS-30 Filtered piston#3 Start=14:43 End=14:45 Tmax=337 Tavg=331 T2=60 Vol=256 PI=Butterfield El Guapo top	5108
2010/09/04 14:49:20	45.92655	-129.97949	306.8	14.3	1503.8	1518.1	SAMPLE: gas J523-GTM-31 Gastight on HFS Black	5110
2010/09/04 14:50:00	45.92655	-129.97949	306.9	14.3	1503.8	1518.1	Going to do a Jason temp probe measurement then a hand-held gastight.	5111
2010/09/04 14:50:54	45.92655	-129.97948	307.1	13.9	1504.2	1518.1	Maximum temp reached was 340.6 C. Boiling point is around 348.	5113
2010/09/04 14:51:05	45.92654	-129.97948	307.0	14.0	1504.2	1518.1	Jason temp probe is in right arm.	5114
2010/09/04 14:51:32	45.92654	-129.97948	307.1	13.9	1504.3	1518.1	The 340.6C temperature was measured with the HFS.	5115
2010/09/04 14:55:03	45.92653	-129.97948	307.1	13.3	1504.9	1518.1	Frame_Grab:	5118
2010/09/04 14:56:13	45.92653	-129.97948	307.2	13.3	1504.9	1518.2	Jason temp probe in El Guapo vent	5119
2010/09/04 14:56:46	45.92653	-129.97948	307.5	13.3	1504.8	1518.1	Frame_Grab:	5121
2010/09/04 14:57:44	45.92652	-129.97949	306.2	13.2	1504.9	1518.1	Max temperature is 347.5	5122
2010/09/04 14:58:09	45.92652	-129.97949	307.3	14.3	1504.8	1519.1	Will try gas tight from the same spot	5123
2010/09/04 14:58:17	45.92652	-129.97949	307.2	14.1	1504.9	1519.0	HD_CAM: start	5124
2010/09/04 15:02:01	45.92651	-129.97949	308.6	14.4	1504.8	1519.2	SAMPLE: gas J523-GTB-32 GTB yellow #11 PI=Butterfield El Guapo Top	5127
2010/09/04 15:03:56	45.92651	-129.97948	308.9	13.4	1504.8	1518.2	Jason temperature probe stowed	5129
2010/09/04 15:06:13	45.92652	-129.97948	309.7	13.4	1504.8	1518.2	Gas tight stowed	5131
2010/09/04 15:07:34	45.92652	-129.97948	309.4	13.4	1504.8	1518.3	SAMPLE: gas J523-GTB-33 white #17 PI= Butterfield El Guapo Top	5133
2010/09/04 15:11:59	45.92652	-129.97949	310.3	13.5	1504.8	1518.3	Gas tight stowed	5136
2010/09/04 15:12:58	45.92652	-129.97950	309.2	15.5	1504.9	1520.4	Moving Jason basket for better HD highlight of vent	5138
2010/09/04 15:17:22	45.92652	-129.97948	307.1	15.0	1504.7	1519.7	HD_CAM: stop	5141
2010/09/04 15:19:35	45.92651	-129.97944	305.8	2.6	1511.6	1514.2	Going down to base of El Guapo to look for a mat to sample	5143
2010/09/04 15:28:33	45.92641	-129.97957	333.5	4.1	1514.3	1518.4	Mat quality is not very good for syringe sampling	5149
2010/09/04 15:28:55	45.92640	-129.97958	127.8	5.4	1514.1	1519.5	Going back to Tiny Towers for a temperature measurement	5150
2010/09/04 15:31:15	45.92629	-129.97937	256.1	4.9	1517.9	1522.8	Old chimney	5152
2010/09/04 15:31:34	45.92629	-129.97936	255.6	4.9	1517.9	1522.8	Shows up as a relief on map	5153
2010/09/04 15:32:01	45.92629	-129.97936	255.5	4.9	1517.9	1522.8	shrimp	5154
2010/09/04 15:32:20	45.92629	-129.97936	255.6	4.9	1517.9	1522.8	HD_CAM: start	5155
2010/09/04 15:33:45	45.92629	-129.97935	255.6	4.9	1517.9	1522.8	Frame_Grab:	5157
2010/09/04 15:34:03	45.92629	-129.97935	255.5	4.9	1517.9	1522.8	Frame_Grab:	5158
2010/09/04 15:34:15	45.92629	-129.97935	255.5	4.9	1517.9	1522.8	Frame_Grab:	5159
2010/09/04 15:36:03	45.92629	-129.97935	255.5	4.5	1518.3	1522.8	Going to base to check out orange material	5161
2010/09/04 15:36:32	45.92630	-129.97935	255.6	4.2	1518.6	1522.8	HD_CAM: stop	5163

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2010/09/04 15:37:49	45.92630	-129.97935	255.9	4.3	1518.5	1522.8	Will try large syringe	5164
2010/09/04 15:38:17	45.92630	-129.97935	255.8	4.2	1518.5	1522.8	Frame_Grab:	5165
2010/09/04 15:38:38	45.92630	-129.97935	255.7	4.3	1518.5	1522.8	Frame_Grab:	5167
2010/09/04 15:38:38	45.92630	-129.97935	255.7	4.3	1518.5	1522.8	Frame_Grab:	5168
2010/09/04 15:40:15	45.92629	-129.97936	255.7	4.3	1518.5	1522.8	Picking up syringe	5169
2010/09/04 15:41:37	45.92629	-129.97936	255.7	4.3	1518.5	1522.9	Syringe in port grip	5171
2010/09/04 15:41:49	45.92629	-129.97936	255.6	4.4	1518.5	1522.9	Site is being named El Antiguo	5172
2010/09/04 15:41:58	45.92629	-129.97936	255.7	4.3	1518.5	1522.9	This means ancient	5173
2010/09/04 15:43:40	45.92627	-129.97938	273.5	2.3	1520.1	1522.4	Frame_Grab:	5175
2010/09/04 15:43:48	45.92627	-129.97938	271.4	1.9	1520.3	1522.1	Frame_Grab:	5176
2010/09/04 15:43:55	45.92627	-129.97938	271.2	1.5	1520.6	1522.1	Frame_Grab:	5177
2010/09/04 15:44:25	45.92627	-129.97938	271.1	1.6	1520.6	1522.2	Positioning syringe for sampling	5179
2010/09/04 15:45:48	45.92626	-129.97938	271.1	1.6	1520.6	1522.2	HD camera is stuck	5180
2010/09/04 15:47:43	45.92625	-129.97937	271.1	1.5	1520.6	1522.2	Camera is now unstuck	5182
2010/09/04 15:47:57	45.92625	-129.97937	271.2	1.6	1520.6	1522.2	Frame_Grab:	5183
2010/09/04 15:48:12	45.92625	-129.97936	271.2	1.6	1520.6	1522.2	Chimney is crumbling	5184
2010/09/04 15:48:19	45.92625	-129.97936	271.2	1.6	1520.6	1522.2	Frame_Grab:	5185
2010/09/04 15:49:49	45.92624	-129.97936	271.2	1.5	1520.7	1522.2	Changing syringe to starboard grip	5187
2010/09/04 15:50:24	45.92623	-129.97936	271.3	1.5	1520.6	1522.1	Repositioning syringe near orange mat	5189
2010/09/04 15:51:18	45.92623	-129.97935	271.3	1.6	1520.6	1522.2	SAMPLE: bio J523-MAT-34 PI=Kerry McPhail at base of El Antiguo	5190
2010/09/04 15:52:05	45.92622	-129.97935	271.3	1.5	1520.7	1522.2	Sample complete	5191
2010/09/04 15:52:33	45.92622	-129.97935	271.9	1.5	1520.6	1522.1	Frame_Grab:	5193
2010/09/04 15:52:43	45.92622	-129.97935	271.9	1.5	1520.6	1522.1	Frame_Grab:	5194
2010/09/04 15:52:48	45.92622	-129.97935	271.8	1.5	1520.7	1522.1	Frame_Grab:	5195
2010/09/04 15:53:07	45.92622	-129.97935	271.6	1.4	1520.7	1522.1	Stowing syringe	5196
2010/09/04 15:53:09	45.92622	-129.97936	271.7	1.4	1520.7	1522.1	Frame_Grab:	5197
2010/09/04 15:53:15	45.92622	-129.97935	271.6	2.1	1520.3	1522.4	Frame_Grab:	5198
2010/09/04 15:58:02	45.92628	-129.97958	289.6	3.1	1518.0	1521.1	Moving to Tiny Towers	5201
2010/09/04 16:00:12	45.92632	-129.97972	292.2	3.4	1516.0	1519.4	Correction: now moving to Castle	5203
2010/09/04 16:00:26	45.92632	-129.97972	291.2	3.4	1515.9	1519.4	We will be placing a HOBO there	5205
2010/09/04 16:03:36	45.92624	-129.97999	188.5	4.7	1512.9	1517.6	Castle in sight	5207
2010/09/04 16:04:50	45.92618	-129.97993	271.0	3.6	1513.8	1517.4	Frame_Grab:	5209

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2010/09/04 16:05:02	45.92616	-129.97994	277.3	3.6	1514.0	1517.6	Frame_Grab:	5210
2010/09/04 16:05:14	45.92616	-129.97994	277.6	4.8	1514.1	1518.9	Frame_Grab:	5211
2010/09/04 16:05:47	45.92615	-129.97993	278.7	4.9	1514.1	1518.9	Frame_Grab:	5212
2010/09/04 16:06:03	45.92614	-129.97993	278.5	4.7	1514.1	1518.8	White mat covering top of vent	5213
2010/09/04 16:06:38	45.92613	-129.97992	279.0	4.8	1514.2	1518.9	Frame_Grab:	5215
2010/09/04 16:07:08	45.92612	-129.97992	279.2	4.8	1514.2	1519.0	Looking for venting near top	5216
2010/09/04 16:08:02	45.92610	-129.97991	279.4	4.7	1514.2	1518.9	Anhydrite near left of base	5217
2010/09/04 16:08:51	45.92608	-129.97989	279.1	4.8	1514.2	1518.9	Appears to be a dead chimney	5219
2010/09/04 16:09:46	45.92606	-129.97988	279.3	4.8	1514.1	1519.0	Mat may be a result of diffuse flow at the bottom that bathes the sides	5220
2010/09/04 16:10:21	45.92605	-129.97987	279.1	4.7	1514.2	1518.8	Waiting for Medea to catch up	5222
2010/09/04 16:10:55	45.92603	-129.97987	295.6	5.2	1514.4	1519.6	Moving to left	5223
2010/09/04 16:11:01	45.92602	-129.97988	308.5	5.6	1514.4	1520.0	Anhydrite spires	5224
2010/09/04 16:11:19	45.92600	-129.97989	347.1	5.4	1514.3	1519.7	Frame_Grab:	5225
2010/09/04 16:11:32	45.92599	-129.97988	335.0	4.0	1515.7	1519.6	HOB0 in sight	5226
2010/09/04 16:11:35	45.92599	-129.97988	334.9	3.8	1515.9	1519.6	Frame_Grab:	5227
2010/09/04 16:11:48	45.92600	-129.97988	301.0	4.3	1515.5	1519.9	Frame_Grab:	5228
2010/09/04 16:14:52	45.92598	-129.97986	351.3	3.8	1515.8	1519.6	Still waiting for Medea to release tension in cable	5231
2010/09/04 16:14:58	45.92598	-129.97987	16.4	3.8	1515.8	1519.6	Frame_Grab:	5232
2010/09/04 16:15:09	45.92598	-129.97988	33.7	3.0	1516.6	1519.6	HD_CAM: start	5233
2010/09/04 16:15:23	45.92598	-129.97988	36.7	2.7	1516.9	1519.6	Frame_Grab:	5234
2010/09/04 16:15:57	45.92599	-129.97988	39.3	2.0	1517.8	1519.7	Thick mat near diffuse venting	5235
2010/09/04 16:16:09	45.92600	-129.97988	39.4	2.0	1517.8	1519.7	Frame_Grab:	5236
2010/09/04 16:16:35	45.92600	-129.97988	39.4	2.0	1517.8	1519.7	Frame_Grab:	5238
2010/09/04 16:16:37	45.92600	-129.97988	39.4	2.0	1517.8	1519.7	Frame_Grab:	5239
2010/09/04 16:16:46	45.92600	-129.97988	39.5	2.0	1517.8	1519.7	Frame_Grab:	5240
2010/09/04 16:16:55	45.92600	-129.97988	39.5	2.0	1517.8	1519.7	Frame_Grab:	5241
2010/09/04 16:17:07	45.92600	-129.97988	39.4	2.0	1517.8	1519.7	Frame_Grab:	5242
2010/09/04 16:17:24	45.92601	-129.97988	39.4	2.0	1517.8	1519.7	Frame_Grab:	5243
2010/09/04 16:17:50	45.92601	-129.97988	39.4	2.0	1517.8	1519.7	More venting from front	5244
2010/09/04 16:18:06	45.92602	-129.97989	39.4	2.0	1517.8	1519.7	Frame_Grab:	5245
2010/09/04 16:18:12	45.92602	-129.97989	39.4	2.0	1517.8	1519.7	Frame_Grab:	5246
2010/09/04 16:18:54	45.92603	-129.97990	39.5	2.0	1517.8	1519.7	HD_CAM: stop	5248

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 16:19:19	45.92603	-129.97990	39.2	2.0	1517.7	1519.7	Getting ready to recover HOBO temperature probe	5249
2010/09/04 16:19:31	45.92603	-129.97991	39.0	2.0	1517.7	1519.7	HOBO in grip	5250
2010/09/04 16:19:47	45.92604	-129.97991	39.2	2.0	1517.8	1519.7	RECOVER: HOBO temp probe	5251
2010/09/04 16:20:02	45.92604	-129.97991	38.8	2.0	1517.7	1519.7	HOBO dropped off basket	5252
2010/09/04 16:20:15	45.92604	-129.97992	38.9	2.0	1517.7	1519.7	Recovered once more	5253
2010/09/04 16:20:51	45.92605	-129.97993	38.9	2.0	1517.7	1519.7	Stowing HOBO temperature probe	5255
2010/09/04 16:21:17	45.92605	-129.97994	39.0	2.0	1517.7	1519.7	Flushing HFS tip	5256
2010/09/04 16:21:31	45.92605	-129.97995	39.0	2.0	1517.7	1519.7	Left over fluid from El Guapo	5257
2010/09/04 16:23:56	45.92607	-129.97999	39.6	2.0	1517.7	1519.7	SAMPLE: fluid Placing HFS over small spigot at base	5259
2010/09/04 16:25:49	45.92609	-129.98001	40.3	2.0	1517.7	1519.7	Temperature is 198	5261
2010/09/04 16:26:25	45.92609	-129.98001	41.3	2.0	1517.8	1519.7	Repositioning so that tip is flush with the surface	5263
2010/09/04 16:27:24	45.92611	-129.98001	40.9	2.0	1517.8	1519.7	Temperature is normally around 280/290	5264
2010/09/04 16:29:28	45.92614	-129.97999	40.8	2.0	1517.8	1519.7	Frame_Grab:	5266
2010/09/04 16:29:34	45.92615	-129.97999	40.9	2.0	1517.8	1519.7	Surface is too hard to dig into	5267
2010/09/04 16:30:40	45.92617	-129.97997	40.8	2.0	1517.8	1519.7	Temperature slowly rising	5269
2010/09/04 16:31:11	45.92618	-129.97997	40.7	2.0	1517.8	1519.7	Only 177	5270
2010/09/04 16:31:26	45.92618	-129.97996	40.4	2.0	1517.7	1519.7	Attempting to knock down chimney	5271
2010/09/04 16:32:24	45.92619	-129.97996	40.5	2.0	1517.7	1519.7	Stowing HFS first	5273
2010/09/04 16:32:56	45.92620	-129.97995	40.5	2.0	1517.8	1519.8	Knocking chimney down	5274
2010/09/04 16:33:18	45.92620	-129.97995	40.5	2.0	1517.8	1519.7	One chimney down	5275
2010/09/04 16:33:39	45.92620	-129.97995	40.4	2.0	1517.8	1519.7	Second chimney knocked down	5276
2010/09/04 16:33:56	45.92620	-129.97995	40.3	2.0	1517.8	1519.7	Last chimney knocked over	5277
2010/09/04 16:34:38	45.92620	-129.97996	40.4	2.0	1517.8	1519.8	Will try again with HFS with can on tip	5279
2010/09/04 16:34:57	45.92619	-129.97996	40.4	2.0	1517.8	1519.7	Flow is much stronger now	5280
2010/09/04 16:35:49	45.92619	-129.97996	40.5	2.0	1517.8	1519.8	Positioning HFS	5281
2010/09/04 16:37:52	45.92616	-129.97999	41.3	2.0	1517.7	1519.7	Temperature now going up	5283
2010/09/04 16:39:43	45.92615	-129.98000	41.0	2.0	1517.7	1519.7	Temperature went down	5285
2010/09/04 16:39:49	45.92615	-129.98001	40.9	2.0	1517.7	1519.7	Repositioning	5286
2010/09/04 16:41:35	45.92615	-129.98002	40.5	2.1	1517.7	1519.8	Can may be clogged	5288
2010/09/04 16:41:52	45.92615	-129.98002	40.4	2.0	1517.7	1519.7	Stowing HFS to remove can	5289
2010/09/04 16:43:35	45.92615	-129.98002	40.7	2.0	1517.8	1519.8	Positioning HFS with tip inside flow	5291
2010/09/04 16:43:50	45.92616	-129.98002	41.3	1.9	1517.8	1519.7	Frame_Grab:	5292

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 16:44:29	45.92616	-129.98002	40.6	2.0	1517.8	1519.8	Temperature still too low	5294
2010/09/04 16:45:27	45.92616	-129.98001	40.6	2.0	1517.8	1519.8	Temperature increasing now	5295
2010/09/04 16:45:53	45.92617	-129.98001	40.6	2.0	1517.8	1519.8	Frame_Grab:	5296
2010/09/04 16:46:24	45.92617	-129.98001	40.6	2.0	1517.8	1519.8	Temperature at 237 and stabilizing	5298
2010/09/04 16:47:15	45.92617	-129.98001	40.5	2.0	1517.8	1519.8	Starting J523-HFS-35 Piston #4	5299
2010/09/04 16:49:38	45.92617	-129.98000	40.5	2.0	1517.8	1519.8	SAMPLE: fluid J523-HFS-35 Unfiltered piston#4 Start=16:47 End=16:49 Tmax=261 Tavg=249 T2=57 Vol=350 PI=Butterfield Castle bottom	5301
2010/09/04 16:50:57	45.92617	-129.98000	40.5	2.0	1517.8	1519.8	SAMPLE: fluid Starting J523-HFS-36 PF #9	5303
2010/09/04 16:53:38	45.92616	-129.98001	40.5	2.0	1517.8	1519.8	SAMPLE: fluid J523-HFS-36 Filtered piston#9 Start=16:50 End=16:53 Tmax=266.4 Tavg=265.8 T2=52 Vol=300 PI=Butterfield Castle bottom	5305
2010/09/04 16:55:07	45.92616	-129.98002	40.4	2.0	1517.8	1519.8	J523-GTB-37 GTM black and white #5	5307
2010/09/04 16:55:21	45.92616	-129.98002	40.4	2.0	1517.8	1519.8	Tubes did not move during sampling but ram moved	5308
2010/09/04 16:56:04	45.92616	-129.98002	40.5	2.0	1517.8	1519.8	Stowing HFS	5309
2010/09/04 16:58:16	45.92616	-129.98003	39.1	2.0	1517.8	1519.8	DEPLOY: HOBO temp probe # 130 at Castle near sampling site	5311
2010/09/04 16:59:43	45.92616	-129.98003	38.8	2.0	1517.8	1519.8	May need to bend end into a hook so that it will stay in vent	5313
2010/09/04 17:00:20	45.92616	-129.98003	39.5	2.0	1517.8	1519.8	All sampling for this dive has been completed	5314
2010/09/04 17:01:07	45.92616	-129.98003	39.6	2.0	1517.8	1519.8	Attempting to place HOBO now	5316
2010/09/04 17:01:53	45.92616	-129.98003	39.5	2.0	1517.8	1519.8	Picking up with wire now for better positioning	5317
2010/09/04 17:02:15	45.92616	-129.98003	41.9	2.1	1517.8	1519.8	Attempting to insert vertically into a hole	5318
2010/09/04 17:05:54	45.92617	-129.98003	39.3	2.1	1517.7	1519.8	Trying to get a better of placement	5321
2010/09/04 17:06:15	45.92617	-129.98003	39.5	2.1	1517.7	1519.8	Correction: better view of placement	5322
2010/09/04 17:06:16	45.92617	-129.98003	39.5	2.1	1517.8	1519.8	Frame_Grab:	5323
2010/09/04 17:06:38	45.92617	-129.98003	41.0	2.0	1517.8	1519.8	Using camera on port arm	5325
2010/09/04 17:08:18	45.92618	-129.98003	40.6	2.0	1517.8	1519.8	Placement looks good	5326
2010/09/04 17:08:36	45.92618	-129.98003	40.6	2.0	1517.8	1519.8	Finished with dive plan	5328
2010/09/04 17:09:09	45.92618	-129.98003	40.7	2.0	1517.8	1519.8	Will do some video highlights around Castle to investigate other reliefs on map	5329
2010/09/04 17:10:36	45.92617	-129.98001	1.9	2.7	1517.0	1519.7	HD_CAM: start	5331
2010/09/04 17:11:47	45.92618	-129.98002	2.7	5.8	1513.9	1519.7	Near top of Castle now	5332
2010/09/04 17:12:58	45.92618	-129.98002	2.4	8.7	1511.1	1519.8	Frame_Grab:	5334
2010/09/04 17:12:58	45.92618	-129.98002	2.4	8.7	1511.1	1519.8	Frame_Grab:	5335
2010/09/04 17:13:00	45.92618	-129.98002	2.4	8.8	1511.0	1519.8	Frame_Grab:	5336
2010/09/04 17:13:30	45.92619	-129.98004	24.6	8.8	1510.3	1519.1	Over the top now Altitude is approx 9 meters	5337
2010/09/04 17:13:37	45.92619	-129.98005	42.1	8.9	1510.3	1519.2	Frame_Grab:	5338

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 17:13:42	45.92619	-129.98005	42.1	8.9	1510.3	1519.3	Frame_Grab:	5339
2010/09/04 17:13:55	45.92619	-129.98006	60.3	8.4	1510.5	1518.9	Frame_Grab:	5340
2010/09/04 17:14:14	45.92621	-129.98007	101.1	6.7	1510.9	1517.5	Frame_Grab:	5341
2010/09/04 17:14:35	45.92623	-129.98006	143.8	4.7	1510.9	1515.6	Frame_Grab:	5343
2010/09/04 17:14:44	45.92623	-129.98005	150.9	4.2	1510.9	1515.0	Frame_Grab:	5344
2010/09/04 17:14:57	45.92623	-129.98005	164.7	4.2	1510.9	1515.1	Frame_Grab:	5345
2010/09/04 17:15:03	45.92623	-129.98004	173.6	4.3	1510.9	1515.1	Frame_Grab:	5346
2010/09/04 17:15:12	45.92623	-129.98004	171.5	4.5	1510.7	1515.2	Frame_Grab:	5347
2010/09/04 17:15:29	45.92623	-129.98003	178.4	4.3	1510.6	1514.9	Frame_Grab:	5348
2010/09/04 17:16:11	45.92623	-129.98002	214.5	5.2	1510.5	1515.7	Around 6 meters now	5349
2010/09/04 17:16:52	45.92622	-129.98000	239.2	5.9	1510.7	1516.6	Frame_Grab:	5351
2010/09/04 17:17:04	45.92623	-129.98002	214.4	5.0	1510.8	1515.7	Frame_Grab:	5352
2010/09/04 17:17:12	45.92623	-129.98003	181.9	4.2	1510.7	1514.9	Frame_Grab:	5353
2010/09/04 17:17:21	45.92623	-129.98004	173.2	4.2	1511.0	1515.2	Frame_Grab:	5354
2010/09/04 17:17:31	45.92623	-129.98005	130.8	4.4	1511.3	1515.6	Frame_Grab:	5355
2010/09/04 17:17:39	45.92622	-129.98006	102.7	5.3	1511.4	1516.7	Frame_Grab:	5356
2010/09/04 17:17:46	45.92621	-129.98006	78.1	6.7	1511.3	1518.0	Frame_Grab:	5357
2010/09/04 17:17:51	45.92621	-129.98007	82.5	6.9	1511.3	1518.2	Frame_Grab:	5358
2010/09/04 17:17:58	45.92620	-129.98007	87.6	7.0	1511.5	1518.5	Frame_Grab:	5359
2010/09/04 17:18:06	45.92618	-129.98008	113.7	7.6	1511.3	1518.9	HD_CAM: stop	5360
2010/09/04 17:18:24	45.92615	-129.98010	110.5	6.0	1512.4	1518.4	Moving to left of Castle now	5362
2010/09/04 17:19:18	45.92613	-129.98021	114.8	3.7	1514.2	1517.9	Octopus	5363
2010/09/04 17:19:26	45.92612	-129.98022	112.9	4.1	1514.1	1518.2	HD_CAM: start	5364
2010/09/04 17:20:26	45.92611	-129.98021	97.4	3.7	1515.0	1518.7	Frame_Grab:	5366
2010/09/04 17:21:09	45.92609	-129.98021	94.3	5.0	1514.4	1519.4	HD_CAM: stop	5367
2010/09/04 17:22:46	45.92600	-129.97995	96.1	3.6	1516.1	1519.7	Pillow mound in sight	5369
2010/09/04 17:23:10	45.92601	-129.97987	90.8	5.6	1514.0	1519.5	Frame_Grab:	5370
2010/09/04 17:23:26	45.92602	-129.97984	82.3	5.3	1513.3	1518.6	No chimney present	5371
2010/09/04 17:23:37	45.92603	-129.97982	28.6	5.8	1511.8	1517.6	Flattop should be north of us	5372
2010/09/04 17:23:42	45.92604	-129.97982	26.7	5.2	1511.4	1516.6	Flattop in sight	5373
2010/09/04 17:23:47	45.92605	-129.97981	28.1	5.4	1511.0	1516.4	HD_CAM: start	5374
2010/09/04 17:24:30	45.92609	-129.97976	45.7	9.0	1508.2	1517.1	Flat on top	5376

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 17:25:09	45.92613	-129.97978	119.3	8.8	1508.6	1517.3	Frame_Grab:	5377
2010/09/04 17:25:21	45.92615	-129.97977	144.3	9.0	1508.4	1517.4	Frame_Grab:	5378
2010/09/04 17:25:31	45.92617	-129.97975	174.7	8.4	1508.4	1516.8	Blue mat on side	5379
2010/09/04 17:25:33	45.92617	-129.97974	176.9	8.3	1508.5	1516.8	Frame_Grab:	5380
2010/09/04 17:25:46	45.92616	-129.97970	206.4	8.0	1508.5	1516.5	Frame_Grab:	5381
2010/09/04 17:25:56	45.92615	-129.97968	233.9	9.1	1508.5	1517.5	Frame_Grab:	5382
2010/09/04 17:26:05	45.92613	-129.97967	262.4	9.3	1508.5	1517.8	Frame_Grab:	5383
2010/09/04 17:26:49	45.92613	-129.97967	252.0	8.5	1509.4	1517.9	Going to go down the side with blue mat for highlights	5385
2010/09/04 17:27:24	45.92616	-129.97973	176.3	6.2	1510.6	1516.8	Frame_Grab:	5386
2010/09/04 17:27:29	45.92616	-129.97973	176.2	6.0	1510.7	1516.7	Frame_Grab:	5387
2010/09/04 17:27:37	45.92616	-129.97973	175.7	5.2	1511.3	1516.5	Frame_Grab:	5388
2010/09/04 17:27:43	45.92617	-129.97973	174.9	4.5	1512.2	1516.6	Frame_Grab:	5389
2010/09/04 17:27:50	45.92617	-129.97974	172.0	4.0	1512.7	1516.8	Frame_Grab:	5390
2010/09/04 17:27:57	45.92618	-129.97974	173.6	4.2	1513.3	1517.5	Frame_Grab:	5391
2010/09/04 17:28:02	45.92618	-129.97974	173.1	3.9	1513.7	1517.6	Frame_Grab:	5392
2010/09/04 17:28:11	45.92619	-129.97975	184.1	3.5	1514.1	1517.7	HD_CAM: stop	5393
2010/09/04 17:28:54	45.92621	-129.97963	92.3	4.2	1511.8	1516.0	Heading to Marker 151 along ridge	5395
2010/09/04 17:29:38	45.92620	-129.97958	183.5	4.2	1517.1	1521.3	Small chimney spotted behind ROV	5396
2010/09/04 17:29:48	45.92619	-129.97960	245.7	3.8	1517.1	1520.9	Turning around to take a look	5397
2010/09/04 17:29:52	45.92619	-129.97960	247.6	4.0	1516.9	1520.9	Frame_Grab:	5398
2010/09/04 17:30:15	45.92619	-129.97963	304.0	3.6	1516.2	1519.8	Chimney is just north of Flattop	5399
2010/09/04 17:30:24	45.92619	-129.97965	307.1	2.2	1516.5	1518.7	Frame_Grab:	5401
2010/09/04 17:30:38	45.92620	-129.97966	297.5	2.3	1516.4	1518.7	Orange mat present	5402
2010/09/04 17:30:58	45.92622	-129.97966	214.1	4.2	1515.6	1519.8	Frame_Grab:	5403
2010/09/04 17:31:58	45.92624	-129.97971	172.1	3.0	1515.5	1518.6	Frame_Grab:	5404
2010/09/04 17:32:56	45.92622	-129.97973	95.0	1.8	1516.0	1517.8	Frame_Grab:	5406
2010/09/04 17:33:26	45.92622	-129.97973	94.1	1.8	1515.9	1517.7	Will try to collect a spire to be preserved	5407
2010/09/04 17:34:52	45.92622	-129.97974	92.9	1.6	1516.0	1517.6	Placing target and naming this site El Abuelo	5409
2010/09/04 17:37:16	45.92621	-129.97974	51.4	2.9	1514.9	1517.8	Piece broke during stowing	5411
2010/09/04 17:37:25	45.92621	-129.97974	51.2	2.7	1515.1	1517.9	Trying for a second piece	5412
2010/09/04 17:38:19	45.92620	-129.97976	51.1	2.9	1515.1	1518.0	Stowing chimney structure	5413
2010/09/04 17:38:56	45.92620	-129.97976	51.0	2.7	1515.2	1517.9	Chimney stowed and intact	5415

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 17:42:38	45.92617	-129.97952	89.4	3.3	1518.4	1521.7	Heading east along ridge to Marker 151 to look for venting sites	5418
2010/09/04 17:44:25	45.92615	-129.97934	89.9	2.5	1519.7	1522.1	Frame_Grab:	5420
2010/09/04 17:45:19	45.92615	-129.97926	83.1	1.4	1519.7	1521.2	On top of the well defined ridge	5421
2010/09/04 17:46:41	45.92619	-129.97918	91.3	2.9	1520.3	1523.2	Mat spotted	5423
2010/09/04 17:47:10	45.92620	-129.97915	104.7	1.4	1521.9	1523.3	Frame_Grab:	5424
2010/09/04 17:47:19	45.92620	-129.97914	104.7	1.3	1522.0	1523.3	Frame_Grab:	5425
2010/09/04 17:47:23	45.92619	-129.97913	104.2	1.1	1522.2	1523.3	Frame_Grab:	5426
2010/09/04 17:47:32	45.92619	-129.97913	104.7	0.8	1522.6	1523.3	Frame_Grab:	5427
2010/09/04 17:47:38	45.92620	-129.97913	105.4	0.8	1522.5	1523.3	Frame_Grab:	5428
2010/09/04 17:48:01	45.92620	-129.97909	104.0	2.1	1521.3	1523.4	Marker 151 in sight	5429
2010/09/04 17:48:11	45.92619	-129.97907	120.3	2.9	1520.5	1523.4	Frame_Grab:	5430
2010/09/04 17:48:26	45.92620	-129.97903	128.0	3.5	1520.0	1523.6	Frame_Grab:	5432
2010/09/04 17:49:31	45.92619	-129.97898	127.6	3.2	1520.3	1523.5	Frame_Grab:	5433
2010/09/04 17:49:44	45.92620	-129.97897	134.9	3.3	1520.3	1523.7	Frame_Grab:	5434
2010/09/04 17:50:19	45.92622	-129.97892	173.3	3.8	1520.4	1524.2	HD_CAM: start	5435
2010/09/04 17:50:41	45.92620	-129.97891	176.5	3.8	1520.2	1524.0	Frame_Grab:	5437
2010/09/04 17:51:18	45.92620	-129.97887	222.8	3.4	1520.4	1523.8	Frame_Grab:	5438
2010/09/04 17:51:29	45.92619	-129.97886	241.0	2.8	1520.3	1523.1	Frame_Grab:	5439
2010/09/04 17:51:51	45.92617	-129.97884	280.8	2.8	1520.2	1523.0	Frame_Grab:	5440
2010/09/04 17:52:15	45.92616	-129.97884	296.3	2.9	1520.5	1523.4	Frame_Grab:	5441
2010/09/04 17:58:09	45.92617	-129.97890	181.6	2.1	1521.9	1524.0	Frame_Grab:	5445
2010/09/04 18:00:22	45.92618	-129.97892	181.5	2.1	1521.9	1524.0	Frame_Grab:	5448
2010/09/04 18:00:45	45.92618	-129.97892	181.4	2.1	1521.9	1523.9	Frame_Grab:	5449
2010/09/04 18:00:56	45.92618	-129.97893	181.4	2.1	1521.9	1524.0	Frame_Grab:	5450
2010/09/04 18:04:50	45.92615	-129.97892	355.6	1.4	1521.9	1523.3	Frame_Grab:	5453
2010/09/04 18:05:28	45.92615	-129.97893	38.9	1.1	1521.7	1522.8	Still running HD highlights of Marker 151	5454
2010/09/04 18:07:28	45.92616	-129.97895	64.5	0.8	1521.4	1522.2	Frame_Grab:	5456
2010/09/04 18:07:46	45.92616	-129.97895	64.9	0.7	1521.3	1522.0	Frame_Grab:	5457
2010/09/04 18:08:08	45.92616	-129.97895	64.9	176.3	1521.3	1697.6	Frame_Grab:	5458
2010/09/04 18:08:24	45.92616	-129.97895	65.0	107.7	1521.3	1629.0	Frame_Grab:	5459
2010/09/04 18:09:25	45.92616	-129.97895	65.1	0.8	1521.3	1522.1	Frame_Grab:	5460
2010/09/04 18:09:41	45.92616	-129.97896	65.2	1.0	1521.2	1522.2	Frame_Grab:	5461

J2-523 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/04 18:09:55	45.92616	-129.97896	60.0	3.4	1518.2	1521.7	HD_CAM: stop	5462
2010/09/04 18:10:21	45.92615	-129.97898	243.6	8.0	1513.8	1521.8	JASON: Jason off bottom	5464

Table 10.0-5**J2-524: Marker 33, fluid sampling, RAS deployment**

J2-524 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 03:59:04	45.93311	-129.98343	278.0	8.6	1509.8	1518.4	Bottom in sight	5474
2010/09/05 04:06:41	45.93328	-129.98338	38.2	4.6	1513.8	1518.4	RAS in sight	5479
2010/09/05 04:10:07	45.93340	-129.98325	36.9	0.7	1521.7	1522.4	Releasing drop anchor from RAS	5482
2010/09/05 04:11:56	45.93339	-129.98326	36.5	0.9	1520.9	1521.9	Grabbing anchor chain to move RAS to target site	5483
2010/09/05 04:12:31	45.93340	-129.98323	95.3	1.5	1520.5	1521.9	Moving RAS now to Marker 33	5485
2010/09/05 04:12:55	45.93341	-129.98322	94.4	3.4	1518.5	1521.9	Crab near pull pin	5486
2010/09/05 04:18:26	45.93328	-129.98256	96.3	2.8	1519.1	1521.9	Lava swirl	5490
2010/09/05 04:19:08	45.93328	-129.98251	97.9	2.9	1519.1	1522.0	Benchmark AX-103 in sight	5491
2010/09/05 04:19:22	45.93327	-129.98251	96.4	2.8	1519.1	1521.9	Moving to the right of the benchmark	5492
2010/09/05 04:21:23	45.93322	-129.98245	97.7	2.8	1519.2	1522.0	Marker 33 in sight	5494
2010/09/05 04:22:04	45.93321	-129.98238	92.4	2.4	1519.2	1521.6	Correction: MTR in a tubeworm bush was spotted	5496
2010/09/05 04:22:22	45.93320	-129.98236	94.8	2.7	1518.8	1521.5	Marker 33 is now in sight	5497
2010/09/05 04:23:24	45.93321	-129.98230	128.7	2.3	1519.2	1521.5	Will place RAS to the left of the crack near the marker	5498
2010/09/05 04:25:17	45.93321	-129.98227	130.2	0.7	1521.5	1522.3	Positioning RAS near cover that is on the vent	5500
2010/09/05 04:26:01	45.93324	-129.98226	159.8	4.1	1517.7	1521.8	Jason moving to free intake lines of RAS	5501
2010/09/05 04:26:28	45.93324	-129.98224	172.3	4.5	1517.2	1521.7	Intake has an MTR attached to it	5503
2010/09/05 04:27:55	45.93322	-129.98227	186.7	3.6	1518.2	1521.8	Pulling up on the loop should break everything free	5504
2010/09/05 04:29:16	45.93322	-129.98227	187.2	3.4	1518.3	1521.7	Releasing intake line now	5506
2010/09/05 04:29:35	45.93322	-129.98227	187.2	3.5	1518.3	1521.7	Intake is free	5507
2010/09/05 04:30:55	45.93324	-129.98228	185.3	1.1	1520.7	1521.8	Rubber bands holding line to frame broken	5509
2010/09/05 04:32:15	45.93326	-129.98231	169.8	2.2	1519.6	1521.7	One more rubber band to go	5511
2010/09/05 04:32:17	45.93326	-129.98231	171.8	2.0	1519.7	1521.7	TXT:	5512
2010/09/05 04:32:28	45.93324	-129.98231	168.6	1.4	1520.4	1521.8	Line is kinking	5513
2010/09/05 04:34:08	45.93322	-129.98231	129.0	0.7	1521.4	1522.1	Getting into position to place tip of intake under cover that is on the vent	5515
2010/09/05 04:35:18	45.93323	-129.98231	129.6	0.7	1521.4	1522.1	Attempting to place intake line into hole in the top of cover first	5516
2010/09/05 04:36:56	45.93323	-129.98232	131.3	0.8	1521.0	1521.7	Intake line is on the side of the MTR	5518
2010/09/05 04:37:40	45.93323	-129.98232	130.1	0.8	1521.3	1522.1	Attempting to place line in the hole once again	5519
2010/09/05 04:38:51	45.93323	-129.98232	130.0	0.7	1521.3	1522.1	MTR is positioned upright but will not fit into the hole	5521
2010/09/05 04:39:41	45.93323	-129.98231	130.0	0.7	1521.3	1522.1	Will now move cover and place MTR and line on vent and then recover	5522
2010/09/05 04:39:59	45.93323	-129.98231	130.0	0.7	1521.3	1522.1	Lots of floc under the cover	5523

J2-524 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 04:40:24	45.93323	-129.98231	130.0	0.7	1521.3	1522.1	Snow storm of floc	5525
2010/09/05 04:41:01	45.93323	-129.98231	130.0	0.7	1521.3	1522.1	Going to align intake at edge of crack	5526
2010/09/05 04:41:56	45.93322	-129.98231	130.5	0.8	1521.3	1522.1	Positioning MTR intake	5527
2010/09/05 04:44:27	45.93321	-129.98230	130.3	0.7	1521.3	1522.1	Need to replace cover without moving MTR	5530
2010/09/05 04:44:36	45.93321	-129.98230	130.8	0.7	1521.3	1522.1	Replacing cover now	5531
2010/09/05 04:45:16	45.93321	-129.98230	130.5	0.8	1521.3	1522.1	Cover in place now need to wait to see if correct position	5532
2010/09/05 04:46:50	45.93320	-129.98230	130.5	0.8	1521.3	1522.1	Mooring is about 40m tall	5534
2010/09/05 04:47:09	45.93320	-129.98230	130.4	0.8	1521.3	1522.1	Going to measure temperature here	5535
2010/09/05 04:48:06	45.93320	-129.98230	130.2	0.8	1521.3	1522.1	Jason high temperature probe inserted	5537
2010/09/05 04:48:46	45.93320	-129.98230	130.2	0.8	1521.3	1522.1	Repositioned temp probe	5538
2010/09/05 04:50:39	45.93320	-129.98230	130.1	0.7	1521.3	1522.0	Temperature only 10 deg C so moving cover upwards	5540
2010/09/05 04:52:22	45.93320	-129.98229	130.1	0.8	1521.3	1522.1	Teperature 24.8 deg C on RHS of cover	5542
2010/09/05 04:56:07	45.93320	-129.98227	130.1	0.8	1521.3	1522.1	Temperature 26.7 deg C at LHS hole of cover	5545
2010/09/05 04:57:05	45.93320	-129.98227	130.1	0.8	1521.3	1522.1	Going to deploy another MTR here	5546
2010/09/05 04:57:35	45.93320	-129.98227	130.1	0.8	1521.3	1522.1	Opening starboard biobox	5547
2010/09/05 04:58:42	45.93320	-129.98227	130.0	0.8	1521.3	1522.1	DEPLOY: MTR temp probe Note that MTR 3039 was the one placed in the crack under the cover	5549
2010/09/05 05:00:24	45.93320	-129.98226	130.1	0.8	1521.3	1522.1	DEPLOY: MTR temp probe	5551
2010/09/05 05:01:32	45.93319	-129.98226	130.0	0.8	1521.3	1522.1	Trying to put this MTR in RHS hole of cover	5552
2010/09/05 05:03:02	45.93319	-129.98226	130.0	0.8	1521.3	1522.1	Note that this is MTR 3049	5554
2010/09/05 05:05:51	45.93319	-129.98227	129.9	0.7	1521.3	1522.0	Attempting to insert MTR 3049 in top of cover again	5556
2010/09/05 05:05:57	45.93319	-129.98227	129.9	0.8	1521.3	1522.1	Looks good	5557
2010/09/05 05:06:34	45.93319	-129.98226	129.9	0.7	1521.3	1522.0	Pushing cover up now to cover more of the crack	5559
2010/09/05 05:07:21	45.93318	-129.98226	129.9	0.8	1521.3	1522.1	Cover repositioned over crack	5560
2010/09/05 05:07:31	45.93318	-129.98226	129.9	0.8	1521.3	1522.1	Waiting to see how much flow is coming out	5561
2010/09/05 05:08:28	45.93318	-129.98226	129.9	0.8	1521.3	1522.1	Trying to push cover further into worm bush	5563
2010/09/05 05:09:23	45.93318	-129.98226	129.7	0.7	1521.3	1522.0	Looks good	5564
2010/09/05 05:10:21	45.93318	-129.98225	129.7	0.8	1521.3	1522.1	Correction to MTR number	5566
2010/09/05 05:11:35	45.93318	-129.98225	129.8	0.7	1521.3	1522.0	MTR 3327 is on the intake under cover and MTR 3292 is in the RHS hole on top of the cover	5567
2010/09/05 05:12:57	45.93318	-129.98225	129.9	0.8	1521.3	1522.1	Going to sample fluid at cover	5569
2010/09/05 05:13:43	45.93317	-129.98224	129.8	0.8	1521.2	1522.0	Inserting HFS intake in back left hole of cover	5570
2010/09/05 05:14:34	45.93317	-129.98224	129.7	0.8	1521.2	1522.0	Temp 32 and rising	5572

J2-524 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 05:15:54	45.93317	-129.98224	129.7	0.9	1521.2	1522.1	HFS Temp 37.5 deg C	5573
2010/09/05 05:17:43	45.93317	-129.98225	129.7	0.8	1521.2	1522.0	HFS-01 PF#3 start	5575
2010/09/05 05:21:16	45.93317	-129.98225	129.7	0.9	1521.2	1522.1	HFS-01 filtered piston #3 stop	5578
2010/09/05 05:21:39	45.93317	-129.98225	129.7	0.9	1521.2	1522.1	HFS-01 Tmax=37.9 Tavg=37.7 T2=17 Vol=551 mL	5579
2010/09/05 05:22:49	45.93317	-129.98224	129.7	0.9	1521.2	1522.1	HFS-02 DNA filter #10 start	5581
2010/09/05 05:43:22	45.93322	-129.98228	129.6	0.7	1521.1	1521.9	SAMPLE: fluid HFS-02 DNA filter #10 stopped	5592
2010/09/05 05:43:50	45.93322	-129.98228	129.6	0.9	1521.1	1522.0	HFS-02 Tmax=38.6 Tavg=37.8 T2=18 Vol=3000 mL	5593
2010/09/05 05:44:30	45.93322	-129.98228	129.6	0.9	1521.1	1522.0	HFS-03 RNA filter #13 start	5595
2010/09/05 05:49:26	45.93319	-129.98225	129.6	0.8	1521.1	1521.9	SAMPLE: fluid Note that Marker 33 site is marked with Marker 55	5598
2010/09/05 05:50:50	45.93318	-129.98224	129.6	0.9	1521.1	1522.0	SAMPLE: fluid HFS-03 one third complete	5600
2010/09/05 06:04:38	45.93315	-129.98221	129.7	0.9	1521.0	1521.9	SAMPLE: fluid HFS-03 RNA #13 stopped	5608
2010/09/05 06:05:05	45.93315	-129.98221	129.6	0.8	1521.0	1521.9	HFS-03 Tmax=39.3 Tavg =38.7 T2=18 Vol=3000 mL	5609
2010/09/05 06:06:19	45.93315	-129.98220	129.7	0.9	1521.0	1521.9	HFS-04 piston #4	5611
2010/09/05 06:06:56	45.93315	-129.98220	129.7	0.9	1521.0	1521.9	SAMPLE: fluid HFS-04 is unfiltered piston #4 started 06:05:37	5612
2010/09/05 06:09:33	45.93314	-129.98220	129.6	0.9	1521.0	1521.9	SAMPLE: fluid HFS-04 unfiltered piston #4 stopped	5614
2010/09/05 06:09:54	45.93314	-129.98220	129.6	0.9	1521.0	1521.9	Triggering GTM #1	5615
2010/09/05 06:10:10	45.93314	-129.98220	129.6	0.9	1521.0	1521.9	HFS-05 is GTM#1	5617
2010/09/05 06:11:19	45.93313	-129.98220	129.6	0.9	1521.0	1521.9	HFS-04 piston #4 stopped at 06:09 Tmax=37.8 Tavg=37.5 T2=17 Vol=600 mL	5618
2010/09/05 06:12:31	45.93312	-129.98221	129.7	0.9	1521.0	1521.9	HFS-05 GTM #1 hydraulics = Red #9 Temp 37.5 deg C	5620
2010/09/05 06:13:20	45.93312	-129.98221	129.6	0.9	1521.0	1521.9	SAMPLE: fluid HFS-06 BF #20 start	5621
2010/09/05 06:17:31	45.93311	-129.98221	129.7	0.8	1521.0	1521.7	SAMPLE: fluid HFS-06 filtered bag #20 stop	5624
2010/09/05 06:18:13	45.93311	-129.98221	129.7	0.9	1521.0	1521.9	HFS-06 BF#20 Tmax=38.2 Tavg=37.8 T2=17 Vol=500 mL	5626
2010/09/05 06:19:13	45.93312	-129.98221	129.6	0.7	1520.9	1521.7	Finished fluid sampling at M33	5627
2010/09/05 06:19:54	45.93312	-129.98222	129.6	0.8	1521.0	1521.8	Going to stow HFS intake and move to Cloud vent	5628
2010/09/05 06:20:43	45.93313	-129.98222	129.6	0.8	1521.0	1521.8	HD_CAM: start	5630
2010/09/05 06:22:02	45.93316	-129.98223	58.8	0.7	1520.9	1521.6	Crabss near RAS	5631
2010/09/05 06:22:21	45.93315	-129.98223	129.0	0.9	1520.5	1521.4	Looking at mooring	5633
2010/09/05 06:23:17	45.93319	-129.98224	61.7	6.0	1515.2	1521.2	HD_CAM: stop	5634
2010/09/05 06:24:58	45.93329	-129.98213	67.6	3.4	1518.0	1521.3	Sheet lava with some tube worm bushes along cracks	5636
2010/09/05 06:25:26	45.93333	-129.98209	67.5	2.9	1517.2	1520.2	Now over jumbled lava and pillars	5637
2010/09/05 06:26:31	45.93335	-129.98205	89.0	5.4	1515.5	1520.9	Following a channel	5639
2010/09/05 06:27:11	45.93333	-129.98207	89.5	3.1	1517.6	1520.7	Overhanging sheet looks fragile	5640

J2-524 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 06:27:40	45.93334	-129.98208	89.9	4.1	1516.4	1520.5	Like an old Roman aqueduct!	5641
2010/09/05 06:28:10	45.93334	-129.98196	88.8	5.7	1515.2	1520.9	Going over not under overhang	5643
2010/09/05 06:28:15	45.93334	-129.98194	87.7	2.6	1515.7	1518.2	Marker in sight	5644
2010/09/05 06:28:54	45.93327	-129.98189	89.0	6.8	1515.7	1522.6	Smiley Marker in view	5645
2010/09/05 06:29:29	45.93327	-129.98189	91.5	3.1	1519.8	1522.9	Some white mat on jumbled bottom of channel	5646
2010/09/05 06:30:17	45.93327	-129.98190	122.6	3.2	1519.4	1522.6	Looking at channel wall	5648
2010/09/05 06:31:03	45.93326	-129.98188	123.1	3.1	1519.2	1522.3	Looking for MTRs to recover	5649
2010/09/05 06:32:13	45.93327	-129.98186	109.3	4.9	1517.5	1522.4	Looking for vent here which is a big hole	5651
2010/09/05 06:32:39	45.93328	-129.98183	96.1	3.8	1518.8	1522.6	Moving closer to Smiley Mkr	5652
2010/09/05 06:33:36	45.93326	-129.98178	48.8	2.5	1515.4	1517.9	Going over top and down other side	5653
2010/09/05 06:34:00	45.93327	-129.98173	275.1	5.3	1515.7	1521.0	On other side of marker now	5654
2010/09/05 06:34:51	45.93330	-129.98170	239.8	1.8	1519.8	1521.6	Something in HD view	5656
2010/09/05 06:35:07	45.93330	-129.98170	230.4	1.5	1520.0	1521.5	Only a sculpin	5657
2010/09/05 06:35:56	45.93332	-129.98169	139.3	1.1	1520.1	1521.1	Larval trap in view near vent	5658
2010/09/05 06:36:06	45.93332	-129.98168	133.1	1.0	1520.1	1521.1	Smoke coming out of vent hole	5660
2010/09/05 06:36:23	45.93331	-129.98167	123.7	1.3	1520.1	1521.5	Water very cloudy here	5661
2010/09/05 06:37:10	45.93330	-129.98165	153.7	0.7	1521.0	1521.7	Hole is ahead past the worms and white mat	5662
2010/09/05 06:39:04	45.93330	-129.98163	211.0	1.6	1521.2	1522.7	Marker 69 behind us	5664
2010/09/05 06:39:19	45.93330	-129.98163	287.4	2.2	1521.2	1523.3	Turning around	5665
2010/09/05 06:39:57	45.93330	-129.98161	0.7	1.7	1521.4	1523.1	Marker in sight near tubeworm bush	5666
2010/09/05 06:40:10	45.93330	-129.98160	345.5	1.8	1521.5	1523.3	This is probably for the MTR	5668
2010/09/05 06:40:43	45.93331	-129.98160	306.4	0.8	1522.1	1522.9	Big tube worm bush of large worms	5669
2010/09/05 06:40:50	45.93332	-129.98160	291.0	0.7	1522.1	1522.8	Frame_Grab:	5670
2010/09/05 06:40:50	45.93332	-129.98160	288.8	0.7	1522.1	1522.9	Frame_Grab:	5671
2010/09/05 06:41:08	45.93331	-129.98160	286.3	0.7	1522.2	1522.9	Bush is right on edge of pit with marker	5672
2010/09/05 06:41:16	45.93331	-129.98160	286.3	0.7	1522.2	1522.9	This site has cooled off a lot	5673
2010/09/05 06:42:14	45.93331	-129.98161	286.3	0.7	1522.2	1522.9	Vent hole just below tube worm bush	5675
2010/09/05 06:46:05	45.93333	-129.98165	286.3	0.7	1522.2	1522.9	Brown rusty marker on left is on the MTR	5678
2010/09/05 06:46:40	45.93333	-129.98166	286.3	0.7	1522.1	1522.9	RECOVER: MTR temp probe	5679
2010/09/05 06:47:01	45.93333	-129.98166	286.3	0.7	1522.2	1522.9	Lifting MTR out of hole	5680
2010/09/05 06:47:09	45.93333	-129.98166	286.2	1.3	1522.2	1523.5	Was very deep	5681
2010/09/05 06:47:22	45.93333	-129.98166	286.2	0.7	1522.2	1522.9	Going to remove double MTR set from rusty chain marker	5682

J2-524 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 06:48:23	45.93334	-129.98166	286.2	0.8	1522.1	1522.9	Pulling chain and marker off	5684
2010/09/05 06:53:57	45.93334	-129.98162	286.3	1.3	1522.1	1523.4	These are MTRs 3334 and 3196	5685
2010/09/05 06:54:19	45.93333	-129.98161	286.3	0.7	1522.1	1522.8	Still attempting to separate them from marker line	5686
2010/09/05 06:57:41	45.93332	-129.98159	286.4	0.7	1522.1	1522.8	MTRs are being pulled free	5688
2010/09/05 06:58:59	45.93331	-129.98159	286.4	0.7	1522.1	1522.8	Breaking rope to free MTRs	5690
2010/09/05 07:00:26	45.93331	-129.98159	285.0	0.9	1522.1	1522.9	Placing double MTR set into basket	5692
2010/09/05 07:02:54	45.93331	-129.98161	286.4	0.7	1522.0	1522.8	Butterfield and Holden discussing next target	5697
2010/09/05 07:04:44	45.93332	-129.98162	316.6	0.9	1522.4	1523.3	Untangling ropes and lines around marker	5699
2010/09/05 07:05:15	45.93332	-129.98162	316.6	0.9	1522.4	1523.3	Hovering over Cloud vent	5700
2010/09/05 07:06:07	45.93332	-129.98162	316.5	1.0	1522.4	1523.4	Going to take a sample from Cloud	5702
2010/09/05 07:06:14	45.93332	-129.98163	312.4	1.0	1521.7	1522.7	...A fluid sample	5703
2010/09/05 07:06:36	45.93332	-129.98162	311.1	1.0	1521.8	1522.8	Extending Jason basket	5704
2010/09/05 07:06:51	45.93332	-129.98162	311.2	1.1	1521.7	1522.8	Picking up HFS intake	5705
2010/09/05 07:08:52	45.93332	-129.98162	311.3	1.0	1521.7	1522.8	Releasing bungee from HFS intake	5707
2010/09/05 07:09:24	45.93332	-129.98162	311.5	1.0	1521.7	1522.7	Picked up HFS intake	5708
2010/09/05 07:09:56	45.93332	-129.98162	311.4	1.0	1521.7	1522.7	Pulling marker chain and line out of the way	5709
2010/09/05 07:10:43	45.93332	-129.98162	306.7	1.1	1521.6	1522.7	MTRs 3334 and 3196 were placed at Cloud in August 2007	5711
2010/09/05 07:11:44	45.93332	-129.98162	305.6	0.8	1522.4	1523.2	Putting HFS fluid intake into vent opening under tubeworm bouquet	5712
2010/09/05 07:13:29	45.93332	-129.98161	305.6	0.8	1522.4	1523.2	Last time Butterfield was here he thought the vent was dying	5714
2010/09/05 07:13:39	45.93332	-129.98161	305.5	0.8	1522.4	1523.2	It is now ~8 degrees and seems to be warmer than last time	5715
2010/09/05 07:15:17	45.93332	-129.98161	305.6	0.9	1522.4	1523.2	SAMPLE: fluid Starting HFS-07 filtered bag #19	5717
2010/09/05 07:16:09	45.93332	-129.98161	305.6	0.9	1522.4	1523.2	Medea camera flickering in and out	5719
2010/09/05 07:17:41	45.93332	-129.98161	305.7	0.9	1522.4	1523.2	Hard ground fault on Medea	5720
2010/09/05 07:18:27	45.93332	-129.98161	305.7	0.8	1522.4	1523.1	SAMPLE: fluid HFS-07 finished	5722
2010/09/05 07:19:14	45.93332	-129.98161	305.7	0.9	1522.3	1523.2	SAMPLE: fluid HFS-07: Tmax=8.2 Tavg=8.1 T2=5 vol=502 start=07:15 end=07:18	5723
2010/09/05 07:20:34	45.93332	-129.98161	305.9	0.8	1522.3	1523.1	Remvoing HFS intake from Cloud	5725
2010/09/05 07:20:47	45.93332	-129.98161	305.9	0.7	1522.3	1523.1	Need to stop sampling because of hard fault on Medea	5726
2010/09/05 07:21:07	45.93332	-129.98161	305.5	0.7	1522.3	1523.0	Extending basket	5727
2010/09/05 07:21:17	45.93332	-129.98161	305.4	0.7	1522.1	1522.9	Replacing HFS intake in basket	5728
2010/09/05 07:22:09	45.93332	-129.98161	306.0	0.8	1522.1	1522.9	Bungee tying down HFS intake arm	5730
2010/09/05 07:23:45	45.93332	-129.98161	305.9	0.7	1522.1	1522.9	HFS intake tied down	5731
2010/09/05 07:23:56	45.93332	-129.98161	307.2	0.7	1522.1	1522.9	Retracting basket	5732

J2-524 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 07:24:37	45.93331	-129.98155	111.0	5.8	1516.3	1522.0	Medea cameras still malfunctioning	5734
2010/09/05 07:25:21	45.93319	-129.98138	142.0	5.5	1512.0	1517.5	Jason coming back up to the surface	5735

Table 10.0-6
J2-525: Trevi, fluid sampling, El Guapo temp probe re-deployment

J2-525 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 18:14:11	45.94747	-129.98366	47.3	9.8	1513.7	1523.5	JASON: Jason on bottom	5756
2010/09/05 18:16:21	45.94758	-129.98361	26.3	5.1	1514.5	1519.6	Not much sediment here so going to move the ship north about 100 m where there should be more sediment.	5758
2010/09/05 18:19:33	45.94784	-129.98370	1.0	1.6	1516.5	1518.1	NAV: Doppler Reset	5760
2010/09/05 18:20:54	45.94788	-129.98368	28.0	1.0	1517.7	1518.7	Sea cucumbers and fish here	5762
2010/09/05 18:25:23	45.94801	-129.98402	347.2	5.4	1513.2	1518.7	Thin layer of sediment to the left	5765
2010/09/05 18:32:01	45.94837	-129.98396	14.7	4.1	1512.6	1516.7	Still looking for a push core site	5769
2010/09/05 18:33:13	45.94858	-129.98387	8.2	3.0	1515.2	1518.1	Thin layer of sediment ahead	5771
2010/09/05 18:36:16	45.94871	-129.98393	5.7	3.9	1514.8	1518.7	Going to see what it looks like on the other side of the mound	5774
2010/09/05 18:38:26	45.94865	-129.98409	282.6	1.4	1517.6	1519.0	Now going around the mound	5776
2010/09/05 18:42:12	45.94871	-129.98392	10.2	2.9	1515.8	1518.7	Back on top of the mound	5779
2010/09/05 18:44:17	45.94884	-129.98395	9.7	6.7	1512.0	1518.6	Deciding to go back to layer of thin sediment to use a syringe instead	5781
2010/09/05 18:47:15	45.94890	-129.98393	176.2	0.8	1516.4	1517.1	Waiting for Medea to catch up	5783
2010/09/05 18:56:28	45.94866	-129.98378	202.9	0.7	1518.4	1519.2	Going to sample here	5789
2010/09/05 18:57:04	45.94865	-129.98379	203.2	0.8	1518.5	1519.3	Extending basket	5790
2010/09/05 18:57:50	45.94864	-129.98380	203.2	0.8	1518.5	1519.3	Releasing small syringe from basket	5791
2010/09/05 18:58:44	45.94862	-129.98381	203.2	0.8	1518.5	1519.3	Small red syringe in starboard grip	5793
2010/09/05 18:59:07	45.94862	-129.98381	203.2	0.7	1518.5	1519.3	Frame_Grab:	5794
2010/09/05 18:59:42	45.94861	-129.98382	203.2	0.7	1518.5	1519.2	Switching syringe to port arm	5795
2010/09/05 19:00:50	45.94861	-129.98383	203.2	0.7	1518.5	1519.2	Positioning syringe in the sediment	5797
2010/09/05 19:02:42	45.94861	-129.98383	203.1	0.7	1518.5	1519.3	Starfish are present on top of sediment	5799
2010/09/05 19:03:00	45.94861	-129.98383	203.1	0.7	1518.5	1519.3	Sample is J-525-SED-01 location is east caldera rim north of Marker 33 PI=McPhail	5800
2010/09/05 19:03:13	45.94861	-129.98383	203.1	0.7	1518.5	1519.3	Sample complete and looks good	5801
2010/09/05 19:03:59	45.94861	-129.98383	203.1	0.8	1518.5	1519.3	Frame_Grab:	5802
2010/09/05 19:05:29	45.94862	-129.98383	204.3	1.1	1517.8	1519.0	Starboard basket out	5804
2010/09/05 19:05:42	45.94862	-129.98382	204.2	1.0	1518.0	1518.9	Opening starboard biobox	5805
2010/09/05 19:06:55	45.94862	-129.98382	204.3	1.0	1517.9	1518.9	Stowing red syringe in starboard biobox	5807
2010/09/05 19:07:59	45.94863	-129.98383	260.0	2.3	1516.5	1518.8	Ground fault on Medea/Jason	5808
2010/09/05 19:10:21	45.94848	-129.98385	168.2	2.8	1515.8	1518.6	Correction... ground fault on the right/starboard Jason arm	5811

J2-525 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 19:11:26	45.94846	-129.98388	168.4	2.9	1515.7	1518.6	Will not use the right arm anymore on this dive	5812
2010/09/05 19:13:20	45.94826	-129.98388	167.9	2.9	1514.1	1517.0	Now heading to Trevi	5814
2010/09/05 19:13:44	45.94822	-129.98388	169.4	3.3	1513.9	1517.2	Transit is 270m - should take ~30mins	5815
2010/09/05 19:18:18	45.94785	-129.98386	167.9	6.4	1515.2	1521.6	Passing a fissure - high cliff on one side	5819
2010/09/05 19:19:02	45.94775	-129.98383	169.3	3.3	1515.0	1518.3	Frame_Grab:	5820
2010/09/05 19:23:45	45.94738	-129.98383	179.7	2.8	1518.9	1521.7	Frame_Grab:	5823
2010/09/05 19:23:48	45.94738	-129.98383	181.4	3.2	1518.8	1521.9	Frame_Grab:	5824
2010/09/05 19:24:12	45.94733	-129.98385	180.2	3.4	1517.4	1520.8	Heading straight south	5826
2010/09/05 19:26:18	45.94710	-129.98390	181.9	1.5	1520.0	1521.5	Some craggy rocks with sedimented layers on top	5828
2010/09/05 19:27:59	45.94688	-129.98379	186.7	3.2	1520.5	1523.8	Jumbled piles of rocks - we are along the caldera wall	5829
2010/09/05 19:30:37	45.94661	-129.98378	166.6	3.0	1520.3	1523.3	Following a shelf covered in yellow mat in cracks	5832
2010/09/05 19:31:48	45.94655	-129.98371	166.2	2.9	1518.7	1521.6	Lots of orange-yellow mats in cracks and fissures	5833
2010/09/05 19:32:30	45.94649	-129.98370	165.9	1.9	1519.4	1521.3	Frame_Grab:	5835
2010/09/05 19:32:33	45.94648	-129.98369	166.2	2.1	1519.5	1521.6	A small collapse pit	5836
2010/09/05 19:33:52	45.94638	-129.98364	168.4	3.1	1517.8	1520.9	We are approaching Trevi	5837
2010/09/05 19:34:22	45.94632	-129.98366	168.3	2.2	1518.6	1520.8	Frame_Grab:	5839
2010/09/05 19:34:37	45.94631	-129.98368	168.2	2.8	1518.2	1521.0	There are 2 small white anhydrite cones	5840
2010/09/05 19:34:43	45.94630	-129.98369	168.6	3.0	1518.3	1521.3	The one on the left is more of a cone	5841
2010/09/05 19:35:08	45.94629	-129.98372	169.6	3.0	1518.3	1521.2	The one on the right has a small vent chimney	5842
2010/09/05 19:35:13	45.94629	-129.98372	171.1	2.8	1518.4	1521.2	The one on the right is Trevi	5843
2010/09/05 19:35:40	45.94626	-129.98366	172.7	2.1	1518.5	1520.6	The cone on the left is actually covered in tubeworms	5844
2010/09/05 19:36:21	45.94626	-129.98364	137.2	1.4	1519.2	1520.6	The tubeworm cone is actively venting	5846
2010/09/05 19:38:28	45.94614	-129.98366	147.8	1.9	1518.4	1520.3	Lots of worms between Trevi and new tubeworm cone	5848
2010/09/05 19:39:30	45.94609	-129.98369	129.0	1.6	1519.2	1520.9	Quite a few areas of diffuse venting with anhydrite precipitates	5849
2010/09/05 19:39:40	45.94610	-129.98369	129.1	1.7	1519.1	1520.9	Purple mat between anhydrite precipitates	5850
2010/09/05 19:40:58	45.94610	-129.98368	119.5	2.2	1518.5	1520.8	Sampling area of diffuse flow near purple mat	5852
2010/09/05 19:42:38	45.94611	-129.98367	104.3	1.4	1519.3	1520.7	The starboard arm will only be used intermittently	5854
2010/09/05 19:42:43	45.94611	-129.98367	104.3	1.4	1519.3	1520.7	The port arm will be used for sampling	5855
2010/09/05 19:44:02	45.94612	-129.98367	104.1	1.6	1519.2	1520.8	Using right arm to pick up HFS sampler	5856
2010/09/05 19:48:56	45.94613	-129.98365	103.4	1.6	1519.2	1520.8	Using left arm to try and put can on end	5860
2010/09/05 19:52:14	45.94612	-129.98367	102.1	1.9	1518.9	1520.8	Knocked can off of basket	5863
2010/09/05 19:52:37	45.94611	-129.98367	99.2	0.8	1520.2	1521.0	Moved Jason back	5864
2010/09/05 19:52:42	45.94611	-129.98367	102.2	0.8	1520.2	1521.1	Picking up can with left arm	5865
2010/09/05 19:53:28	45.94611	-129.98367	102.7	0.8	1520.3	1521.1	Inserting fluid sampler in right arm into can being held by left arm	5866
2010/09/05 19:55:53	45.94612	-129.98367	91.7	1.5	1519.4	1520.9	Using right arm to position HFS intake in diffuse flow	5868
2010/09/05 19:56:20	45.94612	-129.98367	92.1	1.3	1519.5	1520.9	HFS intake is above red tubeworms	5870
2010/09/05 19:56:37	45.94612	-129.98367	89.2	1.4	1519.4	1520.8	Intake pushed down into flow	5871
2010/09/05 19:57:14	45.94612	-129.98367	88.6	1.5	1519.3	1520.8	T1=62.5 and rising	5872

J2-525 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 19:57:39	45.94612	-129.98367	88.7	1.5	1519.3	1520.8	T1=124 and rising	5873
2010/09/05 19:58:19	45.94613	-129.98367	88.7	1.5	1519.3	1520.8	HD_CAM: start	5875
2010/09/05 20:01:51	45.94612	-129.98365	88.6	1.5	1519.3	1520.8	Waiting for Butterfield to consult about fluid sampling	5877
2010/09/05 20:03:44	45.94612	-129.98365	88.9	1.5	1519.3	1520.8	HD_CAM: stop	5879
2010/09/05 20:08:31	45.94613	-129.98368	88.9	1.6	1519.2	1520.8	SAMPLE: fluid HFS-02 starting	5883
2010/09/05 20:08:42	45.94613	-129.98368	88.8	1.6	1519.2	1520.8	SAMPLE: fluid HFS-02 is unfiltered piston #8	5884
2010/09/05 20:12:27	45.94615	-129.98371	88.8	1.6	1519.2	1520.8	SAMPLE: fluid Calling this new site Spanish Steps	5887
2010/09/05 20:12:58	45.94616	-129.98371	88.9	1.6	1519.2	1520.8	SAMPLE: fluid HFS-02 finished	5888
2010/09/05 20:13:39	45.94616	-129.98371	88.9	1.6	1519.2	1520.8	SAMPLE: fluid HFS-02: Tmax=159.8 Tavg=159.5 T2=34 vol=601 start=20:08 end=20:12	5889
2010/09/05 20:14:11	45.94616	-129.98371	88.8	1.5	1519.2	1520.7	SAMPLE: fluid HFS-03 starting - filtered piston #9	5891
2010/09/05 20:18:11	45.94614	-129.98368	89.3	1.6	1519.1	1520.8	SAMPLE: fluid HFS clogging	5894
2010/09/05 20:19:23	45.94613	-129.98367	89.4	1.6	1519.1	1520.8	SAMPLE: fluid HFS-03 finished	5895
2010/09/05 20:20:18	45.94613	-129.98366	89.3	1.7	1519.1	1520.8	SAMPLE: fluid HFS-03: Tmax=159.6 Tavg=155.4 T2=33 vol=602 start=20:14 end=20:19 - filtered piston #9	5897
2010/09/05 20:21:00	45.94613	-129.98366	89.2	1.7	1519.1	1520.7	SAMPLE: gas GTHFS-04 sampled	5898
2010/09/05 20:23:05	45.94612	-129.98365	90.3	1.6	1519.2	1520.8	Replacing HFS intake arm	5900
2010/09/05 20:25:53	45.94612	-129.98365	90.2	1.6	1519.2	1520.8	Laying HFS intake arm into holder on basket	5902
2010/09/05 20:26:32	45.94612	-129.98364	90.3	1.6	1519.2	1520.8	Now going to place a marker here	5904
2010/09/05 20:28:51	45.94611	-129.98365	96.3	0.7	1520.0	1520.8	Going to pick up some mat+rock samples	5906
2010/09/05 20:29:34	45.94611	-129.98364	96.3	0.7	1520.0	1520.7	Looks like an extinct chimney that fell over	5907
2010/09/05 20:30:08	45.94611	-129.98364	96.5	0.7	1520.0	1520.7	Going to pick off a piece	5909
2010/09/05 20:30:14	45.94611	-129.98364	95.9	0.7	1519.9	1520.7	Chimney very crumbly	5910
2010/09/05 20:30:34	45.94611	-129.98364	96.2	0.7	1520.0	1520.7	Picking up a small piece with some white fuzzy biofilms on it	5911
2010/09/05 20:30:36	45.94611	-129.98364	96.1	0.7	1520.0	1520.7	Frame_Grab:	5912
2010/09/05 20:30:41	45.94611	-129.98364	96.1	0.7	1520.0	1520.7	Frame_Grab:	5913
2010/09/05 20:31:13	45.94610	-129.98364	96.4	0.7	1520.0	1520.7	Placing piece of rock in milk crate in basket	5914
2010/09/05 20:31:44	45.94610	-129.98364	96.6	0.7	1519.9	1520.7	Picking up another piece of chimney	5915
2010/09/05 20:32:44	45.94610	-129.98364	96.4	0.7	1519.9	1520.7	Frame_Grab:	5917
2010/09/05 20:33:01	45.94610	-129.98364	96.2	0.8	1519.9	1520.7	This piece has some orange mat and white filments on it	5918
2010/09/05 20:33:02	45.94610	-129.98364	96.2	0.8	1519.9	1520.7	Frame_Grab:	5919
2010/09/05 20:33:28	45.94609	-129.98364	96.3	0.7	1519.9	1520.7	Placing chimney rock in left milk crate in basket	5920
2010/09/05 20:33:56	45.94609	-129.98365	97.0	0.8	1520.0	1520.7	Extending right side biobox	5921
2010/09/05 20:35:12	45.94609	-129.98365	96.4	0.8	1519.9	1520.7	Picking up Marker 155	5923
2010/09/05 20:35:20	45.94609	-129.98365	95.7	0.8	1519.9	1520.7	DEPLOY: marker Placing Marker 155 at Spanish Steps	5924
2010/09/05 20:37:14	45.94609	-129.98368	95.3	1.4	1519.2	1520.6	HD_CAM: start	5926
2010/09/05 20:37:56	45.94607	-129.98366	31.1	1.3	1519.3	1520.6	Circling around Spanish Steps to see the whole sulfide structure	5927
2010/09/05 20:38:18	45.94607	-129.98364	348.0	1.9	1519.4	1521.3	Large dead piece of sulfide chimney collapsed on right side of marker	5929
2010/09/05 20:38:35	45.94608	-129.98363	317.6	1.5	1519.6	1521.2	Tubeworms and white mat precipitates on top	5930

J2-525 Date Time	Latitude	Longitude	Heading	Altitude	Depth	Total Depth	Comment	Virtual Van #
2010/09/05 20:38:45	45.94609	-129.98363	294.3	1.4	1519.6	1521.1	Large spider crab on back side of mound	5931
2010/09/05 20:38:54	45.94610	-129.98363	292.1	1.7	1519.5	1521.2	Frame_Grab:	5932
2010/09/05 20:40:33	45.94614	-129.98376	221.8	2.6	1518.1	1520.7	Now moving back to Trevi	5934
2010/09/05 20:40:39	45.94615	-129.98378	247.0	2.5	1518.2	1520.6	HD_CAM: stop	5935
2010/09/05 20:41:41	45.94621	-129.98377	13.6	2.5	1518.0	1520.5	Looking at clams on seafloor by Trevi	5936
2010/09/05 20:41:54	45.94622	-129.98375	43.5	2.2	1518.1	1520.3	Small thin tubeworms with clams along ridges of lava	5937
2010/09/05 20:42:11	45.94625	-129.98370	41.4	2.3	1518.2	1520.5	Looking at tubeworm bush by Trevi	5939
2010/09/05 20:42:44	45.94627	-129.98367	41.7	1.8	1518.3	1520.1	Tubeworm mound is sitting on a collapsed sulfide pile	5940
2010/09/05 20:44:18	45.94626	-129.98367	40.8	0.7	1519.8	1520.5	Looking at tubeworms covered in white/grey fuzz	5942
2010/09/05 20:44:24	45.94626	-129.98367	40.8	0.7	1519.8	1520.5	Going to sample here	5943
2010/09/05 20:44:33	45.94626	-129.98367	40.8	0.7	1519.8	1520.5	Picking up HFS fluid sampler intake arm	5944
2010/09/05 20:46:08	45.94625	-129.98366	40.7	0.7	1519.8	1520.5	Shaking sediment and precipitates out of intake valve	5946
2010/09/05 20:46:25	45.94625	-129.98366	40.7	0.7	1519.8	1520.5	Running flush pump on HFS to clear out intake	5947
2010/09/05 20:47:04	45.94625	-129.98366	40.6	0.8	1519.8	1520.6	Placing HFS intake near top of tubeworm bush	5948
2010/09/05 20:50:04	45.94624	-129.98364	56.1	1.4	1518.7	1520.0	Looking for a place to put the HFS intake	5950
2010/09/05 20:50:27	45.94625	-129.98364	55.3	1.4	1518.6	1520.0	Putting HFS intake in top of bush	5952
2010/09/05 20:50:47	45.94625	-129.98364	55.5	1.4	1518.6	1520.0	T=11 and rising	5953
2010/09/05 20:52:45	45.94626	-129.98363	54.9	1.4	1518.6	1520.0	T=28 and rising slowly	5955
2010/09/05 20:53:38	45.94626	-129.98363	55.2	1.4	1518.6	1520.0	T=30.5 and is steady	5956
2010/09/05 20:56:12	45.94627	-129.98364	55.3	1.4	1518.6	1520.0	SAMPLE: fluid HFS-06 starting	5959
2010/09/05 20:56:24	45.94627	-129.98364	54.9	1.4	1518.6	1520.0	SAMPLE: fluid HFS-06 is filtered piston #7	5960
2010/09/05 20:58:37	45.94627	-129.98364	54.6	1.4	1518.6	1520.0	SAMPLE: fluid Tubeworm bush site is now called Pompei	5962
2010/09/05 21:00:40	45.94627	-129.98364	54.9	1.4	1518.6	1520.0	SAMPLE: fluid HFS-06 finished	5964
2010/09/05 21:01:17	45.94627	-129.98364	54.8	1.4	1518.6	1520.0	SAMPLE: fluid HFS-06: Tmax=32.6 Tavg=31.3 T2=15 vol=652 start=20:56 end=21:00	5965
2010/09/05 21:02:17	45.94627	-129.98364	54.6	1.4	1518.6	1520.0	SAMPLE: fluid HFS-07 DNA filter #11 starting	5967
2010/09/05 21:05:55	45.94627	-129.98364	54.7	1.4	1518.5	1519.9	Correction... tubeworm bush site is called Pompeii	5969
2010/09/05 21:13:21	45.94628	-129.98364	54.5	1.4	1518.5	1519.9	SAMPLE: fluid Halfway finished with HFS-07 - T1=30.1 T2=14.6	5974
2010/09/05 21:15:38	45.94629	-129.98365	54.6	1.4	1518.5	1519.9	NAV: Doppler Reset	5976
2010/09/05 21:23:49	45.94628	-129.98368	55.0	1.4	1518.5	1519.9	SAMPLE: fluid HFS-07 finished	5981
2010/09/05 21:24:34	45.94628	-129.98368	54.9	1.4	1518.4	1519.9	SAMPLE: fluid HFS-07: Tmax=33.8 Tavg=31.6 T2=15 vol=3001 start=21:02 end=21:23 - DNA filter #11	5983
2010/09/05 21:24:55	45.94628	-129.98368	54.8	1.4	1518.4	1519.8	Pompeii is located ~8m southeast of Trevi	5984
2010/09/05 21:25:41	45.94628	-129.98367	54.3	1.4	1518.4	1519.8	SAMPLE: fluid HFS-08 RNA filter #14	5985
2010/09/05 21:37:33	45.94626	-129.98364	55.1	1.4	1518.4	1519.8	SAMPLE: fluid HFS-08 halfway finished filtering T1=30.3 T2=14.4	5992
2010/09/05 21:49:18	45.94629	-129.98366	56.3	1.3	1518.3	1519.7	SAMPLE: fluid HFS-08 finished	5999
2010/09/05 21:50:03	45.94629	-129.98366	56.5	1.4	1518.3	1519.7	HFS-08: Tmax=33.7 Tavg=30.5 T2=14 vol=3001 start=21:25 end=21:49 RNA filter #14	6000
2010/09/05 21:50:49	45.94629	-129.98366	56.2	1.4	1518.3	1519.7	SAMPLE: fluid HFS-09 starting	6002
2010/09/05 21:51:04	45.94629	-129.98366	56.2	1.4	1518.3	1519.7	SAMPLE: fluid HFS-09 is unfiltered bag 22	6003

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2010/09/05 21:53:36	45.94628	-129.98366	57.2	1.4	1518.3	1519.7	SAMPLE: fluid HFS-09 finished	6005
2010/09/05 21:54:19	45.94628	-129.98366	58.0	1.4	1518.3	1519.7	SAMPLE: fluid HFS-09: Tmax=29.9 Tavg=28.2 T2=14 vol=502 start=21:50 end=21:53 - unfiltered bag 22	6007
2010/09/05 21:54:40	45.94628	-129.98366	57.9	1.4	1518.3	1519.7	SAMPLE: fluid HFS-10 starting now - unfiltered bag 23	6008
2010/09/05 21:57:19	45.94629	-129.98367	57.0	1.3	1518.3	1519.7	SAMPLE: fluid HFS-10 finished	6010
2010/09/05 21:58:11	45.94629	-129.98367	56.7	1.4	1518.3	1519.7	SAMPLE: fluid HFS-10: Tmax=30.5 Tavg=29.8 T2=15 vol=502 start=21:54 end=21:57 - unfiltered bag 23	6012
2010/09/05 21:58:16	45.94629	-129.98367	56.9	1.3	1518.4	1519.7	Stowing fluid sampler in basket	6013
2010/09/05 22:00:30	45.94630	-129.98367	57.1	1.4	1518.3	1519.7	HFS holder in basket fell over	6015
2010/09/05 22:01:04	45.94630	-129.98367	56.9	1.4	1518.3	1519.7	Now going to sample sediments	6016
2010/09/05 22:01:08	45.94630	-129.98367	57.0	1.4	1518.3	1519.7	Picking up small yellow syringe	6017
2010/09/05 22:02:27	45.94630	-129.98367	57.8	1.6	1518.2	1519.8	Changing syringe to be held in left arm	6019
2010/09/05 22:03:40	45.94629	-129.98366	58.0	1.6	1518.2	1519.9	Placing syringe at base of Pompeii tubeworm mound	6020
2010/09/05 22:03:57	45.94629	-129.98366	58.4	1.7	1518.2	1519.9	Yellow hose of syringe in fluffy filamentous white mat	6021
2010/09/05 22:03:59	45.94629	-129.98366	58.4	1.7	1518.2	1519.9	Frame_Grab:	6022
2010/09/05 22:05:03	45.94629	-129.98365	58.0	1.7	1518.2	1519.9	Frame_Grab:	6024
2010/09/05 22:05:04	45.94629	-129.98365	57.9	1.7	1518.2	1519.9	Frame_Grab:	6025
2010/09/05 22:05:04	45.94629	-129.98365	57.9	1.7	1518.2	1519.9	Frame_Grab:	6026
2010/09/05 22:05:11	45.94629	-129.98365	57.9	1.6	1518.2	1519.9	Pulling handle on syringe	6027
2010/09/05 22:05:43	45.94628	-129.98365	58.0	1.7	1518.2	1519.9	Trying to suck filamentous white stuff into syringe	6028
2010/09/05 22:06:21	45.94628	-129.98364	58.4	1.7	1518.2	1519.9	Some chunks of mat/filaments are in syringe	6030
2010/09/05 22:07:19	45.94628	-129.98364	57.9	1.6	1518.2	1519.8	SAMPLE: bio This is sample J525-MAT-11	6031
2010/09/05 22:08:28	45.94627	-129.98365	359.9	2.8	1517.3	1520.1	Yellow syringe stored in right biobox	6033
2010/09/05 22:08:41	45.94627	-129.98368	339.3	3.2	1516.8	1520.0	We are done sampling at Pompeii	6034
2010/09/05 22:08:45	45.94627	-129.98369	338.0	2.9	1516.9	1519.8	We are heading to Trevi	6035
2010/09/05 22:08:55	45.94628	-129.98370	336.8	1.2	1518.7	1519.9	HD_CAM: start	6036
2010/09/05 22:09:18	45.94628	-129.98370	337.4	1.1	1518.9	1519.9	Arriving at Trevi	6037
2010/09/05 22:09:29	45.94628	-129.98370	337.0	0.9	1519.0	1519.9	Jason basket out	6038
2010/09/05 22:10:00	45.94628	-129.98369	337.2	1.0	1519.0	1520.0	Looking around for HD video	6039
2010/09/05 22:10:40	45.94628	-129.98370	338.1	0.7	1519.6	1520.3	Small chimney is actively venting	6041
2010/09/05 22:10:56	45.94628	-129.98370	338.6	0.8	1519.8	1520.6	Vent fluids are grey/black and clear	6042
2010/09/05 22:11:12	45.94628	-129.98369	338.6	0.8	1519.8	1520.5	Small limpets at base of chimney	6043
2010/09/05 22:12:37	45.94628	-129.98369	338.6	0.8	1519.8	1520.5	Venting coming from top and side base of chimney	6045
2010/09/05 22:13:23	45.94628	-129.98369	338.6	0.7	1519.8	1520.5	HD_CAM: stop	6046
2010/09/05 22:13:40	45.94628	-129.98369	338.6	0.8	1519.8	1520.5	Taking Jason temp probe out	6047
2010/09/05 22:13:58	45.94627	-129.98369	338.6	0.8	1519.8	1520.5	Correction... knocking over sulfide/anhydrite chimney of Trevi	6048
2010/09/05 22:14:28	45.94627	-129.98369	338.5	0.7	1519.8	1520.5	Now taking Jason temp probe out	6050
2010/09/05 22:15:28	45.94627	-129.98370	338.6	0.7	1519.8	1520.5	Placing temp probe into vent hole where chimney was	6051

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2010/09/05 22:15:48	45.94627	-129.98370	339.0	0.7	1519.8	1520.5	T=100 and climbing	6052
2010/09/05 22:16:02	45.94627	-129.98370	339.0	0.7	1519.8	1520.5	T=206 and climbing	6053
2010/09/05 22:16:17	45.94627	-129.98370	339.0	187.1	1519.8	1706.8	T=250 and climbing	6054
2010/09/05 22:17:33	45.94626	-129.98371	339.8	0.8	1519.8	1520.5	Tmax=262.8	6055
2010/09/05 22:17:58	45.94626	-129.98371	339.8	0.8	1519.7	1520.5	Returning probe to basket	6056
2010/09/05 22:18:15	45.94626	-129.98371	339.8	0.8	1519.7	1520.5	Going to sample using HFS intake arm without can	6058
2010/09/05 22:19:15	45.94626	-129.98371	339.8	0.8	1519.7	1520.5	Picking up HFS intake arm	6059
2010/09/05 22:19:46	45.94626	-129.98372	339.8	0.8	1519.7	1520.5	Bracket for HFS holder snapped before	6060
2010/09/05 22:19:53	45.94626	-129.98372	339.8	0.8	1519.7	1520.5	Have to dislodge holder from arm	6061
2010/09/05 22:20:30	45.94626	-129.98372	339.8	0.8	1519.7	1520.5	Arm out of holder but now trying to replace can extension into holder	6063
2010/09/05 22:21:01	45.94626	-129.98372	339.8	0.7	1519.7	1520.5	Taking can off with other arm	6064
2010/09/05 22:22:33	45.94626	-129.98372	339.7	0.9	1519.7	1520.6	Pulling arm free from can	6066
2010/09/05 22:23:36	45.94627	-129.98372	336.0	0.8	1519.8	1520.6	Moving closer to venting site	6067
2010/09/05 22:23:54	45.94627	-129.98372	336.0	0.7	1519.8	1520.6	Placing HFS intake arm into venting site	6068
2010/09/05 22:25:27	45.94628	-129.98372	336.0	0.7	1519.8	1520.5	Repositioning so wire not in the way of intake arm	6070
2010/09/05 22:25:33	45.94628	-129.98372	336.0	0.7	1519.8	1520.5	Intake inside Trevi	6071
2010/09/05 22:26:06	45.94628	-129.98371	350.3	0.8	1519.6	1520.4	TTook intake out to move Jason so cable not in vent fluid	6073
2010/09/05 22:26:19	45.94628	-129.98370	349.3	0.7	1519.9	1520.6	Flush pump on HFS not working	6074
2010/09/05 22:26:34	45.94628	-129.98370	348.8	1.3	1519.2	1520.4	Repositioning Jason	6075
2010/09/05 22:27:33	45.94629	-129.98370	348.8	0.8	1520.0	1520.8	Placed intake into vent	6076
2010/09/05 22:27:48	45.94629	-129.98370	348.8	0.8	1520.0	1520.8	HFS cord not directly in fluid flow	6077
2010/09/05 22:27:50	45.94629	-129.98370	348.8	0.8	1520.0	1520.8	T=200	6078
2010/09/05 22:28:03	45.94629	-129.98370	348.8	0.8	1520.0	1520.8	T still rising	6079
2010/09/05 22:31:41	45.94629	-129.98369	348.8	71.7	1520.0	1591.6	SAMPLE: fluid Sorting out the HFS	6081
2010/09/05 22:31:54	45.94629	-129.98369	348.9	0.8	1520.0	1520.8	SAMPLE: fluid HFS-12 starting	6082
2010/09/05 22:32:03	45.94629	-129.98368	348.9	0.8	1520.0	1520.8	SAMPLE: fluid HFS-12 is filtered piston #1	6083
2010/09/05 22:33:59	45.94628	-129.98369	348.9	0.8	1520.0	1520.8	SAMPLE: fluid HFS-12 finished	6085
2010/09/05 22:34:48	45.94627	-129.98369	348.9	80.3	1520.0	1600.2	HFS-12: Tmax=258.5 Tavg=258.4 T2=88 vol=354 start=22:32 end=22:33 - filtered piston #1	6087
2010/09/05 22:34:58	45.94627	-129.98369	348.9	109.1	1520.0	1629.1	SAMPLE: fluid HFS-13 starting	6088
2010/09/05 22:35:08	45.94627	-129.98369	348.9	109.1	1520.0	1629.1	SAMPLE: fluid HFS-13 unfiltered piston #2	6089
2010/09/05 22:36:53	45.94626	-129.98369	348.9	87.3	1520.0	1607.2	SAMPLE: fluid HFS-13 finished	6090
2010/09/05 22:37:49	45.94626	-129.98370	348.9	106.6	1520.0	1626.6	SAMPLE: fluid HFS-13: Tmax=258.6 Tavg=258.5 T2=88 vol=354 start=22:34 end=22:36 - unfiltered piston #2	6091
2010/09/05 22:37:58	45.94626	-129.98370	348.9	0.7	1519.9	1520.7	Removing fluid sampler from Trevi	6092
2010/09/05 22:38:30	45.94626	-129.98370	349.0	0.7	1519.9	1520.7	Replacing can on end of HFS intake	6094
2010/09/05 22:40:14	45.94626	-129.98370	349.0	0.8	1519.9	1520.7	Putting HFS intake arm back into holder on basket	6096
2010/09/05 22:41:12	45.94626	-129.98371	348.6	0.7	1519.9	1520.7	Next: sampling with two gastights in basket	6097

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2010/09/05 22:41:17	45.94626	-129.98371	348.7	139.0	1519.9	1658.9	Basket extended	6098
2010/09/05 22:41:52	45.94626	-129.98371	348.7	89.5	1519.9	1609.4	Unhooking bungee from gastight bottle	6099
2010/09/05 22:42:40	45.94626	-129.98371	348.7	0.7	1519.9	1520.7	Picking up gastight purple #10	6100
2010/09/05 22:44:55	45.94626	-129.98371	348.7	134.9	1519.9	1654.8	Changing pilots	6101
2010/09/05 22:46:32	45.94626	-129.98371	348.6	86.7	1519.9	1606.6	Getting gastight into position	6102
2010/09/05 22:47:18	45.94626	-129.98371	348.5	0.8	1519.9	1520.7	SAMPLE: gas Triggering gastight	6103
2010/09/05 22:47:49	45.94626	-129.98370	348.5	0.8	1519.9	1520.7	SAMPLE: gas Sample is GTB-14 - gastight bottle #10 purple	6104
2010/09/05 22:47:56	45.94626	-129.98370	348.5	0.8	1519.9	1520.7	Replacing gastight bottle in basket	6105
2010/09/05 22:48:50	45.94626	-129.98370	348.5	173.5	1519.9	1693.4	Tying bungee closed on gastight	6107
2010/09/05 22:49:39	45.94626	-129.98371	348.4	96.5	1519.9	1616.3	Bastight bungeed into basket	6108
2010/09/05 22:50:12	45.94626	-129.98371	348.4	0.8	1519.9	1520.7	Untying cord from HOBO 101 temp probe	6110
2010/09/05 22:55:13	45.94627	-129.98371	348.3	76.8	1519.9	1596.7	SAMPLE: gas Triggering gastight sample orange#16. Sample GTB-16.	6111
2010/09/05 22:55:43	45.94627	-129.98371	348.3	40.6	1519.9	1560.5	That was actually sample GTB-15.	6112
2010/09/05 22:56:52	45.94627	-129.98371	348.3	191.5	1519.9	1711.4	DEPLOY: HOBO temp probe Deploying Hobo logger in Trevi vent.	6113
2010/09/05 22:58:14	45.94628	-129.98371	348.3	88.1	1519.9	1608.0	DEPLOY: marker Deploying Marker 156 at Trevi.	6114
2010/09/05 22:59:07	45.94628	-129.98371	348.3	0.8	1519.9	1520.6	Marker 156 deployed.	6115
2010/09/05 23:00:34	45.94627	-129.98371	349.6	1.4	1518.6	1520.0	Finished sampling at Trevi. Moving on.	6117
2010/09/05 23:01:53	45.94626	-129.98372	348.9	1.7	1518.3	1520.0	Adjusting fluid sampler nozzle and holster which broke off.	6118
2010/09/05 23:03:11	45.94625	-129.98371	349.0	1.7	1518.3	1520.0	Attempting to stow fluid sampler nozzle in another spot. No luck.	6120
2010/09/05 23:04:12	45.94625	-129.98371	348.9	1.7	1518.4	1520.1	Success. Fluid samper nozzle stowed.	6122
2010/09/05 23:06:17	45.94626	-129.98373	22.2	0.8	1519.8	1520.5	Moving to a good spot to make some temperature measurements around the clams.	6124
2010/09/05 23:07:03	45.94625	-129.98373	21.9	0.8	1519.7	1520.5	Getting temperature probe out.	6125
2010/09/05 23:09:16	45.94626	-129.98374	21.7	0.7	1519.7	1520.4	A few inches from the base of the mound where anhydrite stops the temperature gets up to at least 17 degrees.	6127
2010/09/05 23:12:08	45.94626	-129.98374	21.4	0.7	1519.7	1520.4	Moving a few inches further from the anhydrite we see a temperature of 14.5 degrees.	6130
2010/09/05 23:13:40	45.94625	-129.98373	21.5	0.7	1519.6	1520.4	Still a few more inches further from the anhydrite we see a temperature of 5 degrees.	6131
2010/09/05 23:16:10	45.94624	-129.98372	21.5	0.7	1519.7	1520.4	Moving a few inched into the anhydrite we see a temperature of about 17 degrees.	6134
2010/09/05 23:17:28	45.94623	-129.98372	21.4	0.7	1519.7	1520.4	Stowing temperature probe.	6135
2010/09/05 23:20:48	45.94620	-129.98372	199.5	2.4	1517.8	1520.2	Moving to Marker N-3 Vent (Marker 52).	6138
2010/09/05 23:21:59	45.94620	-129.98372	199.9	2.3	1517.9	1520.3	Heading about 200 for the transit to N3 Vent.	6139
2010/09/05 23:27:06	45.94606	-129.98383	201.3	3.0	1518.0	1521.0	Transiting up the edge of a scarp.	6143
2010/09/05 23:35:55	45.94531	-129.98433	88.1	1.3	1524.7	1526.0	Cool red orange mat.	6148
2010/09/05 23:37:38	45.94515	-129.98450	203.3	2.5	1523.7	1526.1	Jumbled flows with some sediment.	6150
2010/09/05 23:39:26	45.94470	-129.98473	205.5	3.8	1522.4	1526.2	Transiting along the edge of a large collapse area.	6152
2010/09/05 23:42:21	45.94454	-129.98483	202.0	2.5	1525.5	1528.0	Sheet flow with a small collaped trench.	6155
2010/09/05 23:43:01	45.94438	-129.98494	202.8	2.7	1524.3	1527.0	Flow is more broken.	6156

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2010/09/05 23:47:47	45.94374	-129.98508	183.6	2.5	1522.4	1524.9	Lots of white stuff.	6159
2010/09/05 23:47:52	45.94373	-129.98508	185.6	2.4	1522.3	1524.8	Found a marker.	6160
2010/09/05 23:48:16	45.94371	-129.98508	185.1	2.4	1522.2	1524.6	Some blue mat.	6162
2010/09/05 23:49:31	45.94368	-129.98513	214.9	1.3	1523.5	1524.8	There are patches of blue mat surrounding white stuff.	6163
2010/09/05 23:49:55	45.94366	-129.98515	215.0	1.5	1523.5	1525.0	A bunch more blue mat here.	6164
2010/09/05 23:50:12	45.94365	-129.98516	207.5	1.1	1524.4	1525.5	Blue mats everywhere.	6166
2010/09/05 23:51:16	45.94365	-129.98518	226.5	0.8	1524.4	1525.2	Looking for a good place to sample fluids.	6167
2010/09/05 23:53:16	45.94364	-129.98517	225.1	0.7	1524.5	1525.2	White particles floating everywhere.	6169
2010/09/05 23:53:37	45.94364	-129.98517	225.3	0.7	1524.5	1525.3	Getting out fluid sampler.	6170
2010/09/05 23:54:48	45.94365	-129.98516	224.5	0.8	1524.4	1525.2	NAV: Doppler Reset	6172
2010/09/05 23:55:07	45.94365	-129.98516	224.4	0.8	1524.4	1525.2	Checking temperature of water before sampling.	6173
2010/09/05 23:56:51	45.94365	-129.98515	224.4	0.8	1524.5	1525.2	SAMPLE: fluid Unfiltered pison #6. Sample HFS-16.	6175
2010/09/06 00:00:39	45.94364	-129.98517	224.4	0.8	1524.5	1525.2	end sample.	6178
2010/09/06 00:01:21	45.94363	-129.98518	224.5	0.8	1524.4	1525.2	Tmax= Tave= T2= Vol= will be listed after next sample.	6179
2010/09/06 00:01:48	45.94363	-129.98518	224.5	0.8	1524.5	1525.2	SAMPLE: fluid Filtered bag #17. Sample HFS-17.	6180
2010/09/06 00:05:22	45.94364	-129.98522	224.6	0.8	1524.5	1525.2	End sample.	6183
2010/09/06 00:07:25	45.94366	-129.98523	224.4	0.8	1524.5	1525.2	HFS-17: Tmax=23.6 Tave=22.5 T2=10.8 Vol=501. Sample HFS-16: Tmax=23.6 Tave=22.9 T2=10.8 Vol=677	6185
2010/09/06 00:07:57	45.94366	-129.98524	224.4	0.8	1524.5	1525.2	SAMPLE: fluid DNA filter #12 sample J525-HFS-18	6186
2010/09/06 00:30:22	45.94368	-129.98522	224.0	0.8	1524.5	1525.3	SAMPLE: fluid End sample at 00:29. Tmax=24.0 Tave=22.7 T2=9.5 Vol=3001	6199
2010/09/06 00:31:20	45.94368	-129.98522	223.7	0.8	1524.5	1525.3	SAMPLE: fluid Start RNA filter#15. J525-HFS-19.	6200
2010/09/06 00:55:57	45.94371	-129.98524	222.6	0.8	1524.6	1525.4	SAMPLE: fluid End J525-HFS-19. RNA Filter#15. Tmax=23.9 Tavg=22.1 T2=9.1 Vol=3002	6213
2010/09/06 00:56:36	45.94371	-129.98524	222.5	0.8	1524.6	1525.4	SAMPLE: gas J525-GTM-20	6215
2010/09/06 00:57:12	45.94371	-129.98524	222.7	0.8	1524.6	1525.4	Gastight was Green #2.	6216
2010/09/06 00:57:39	45.94371	-129.98524	223.5	0.7	1524.7	1525.4	Done with fluid sampling and stowing fluid sampler.	6217
2010/09/06 00:58:40	45.94371	-129.98524	223.9	0.8	1524.7	1525.4	Trying to get polypro covered in white stuff. Maybe it is an MTR.	6219
2010/09/06 00:59:54	45.94371	-129.98524	223.9	0.9	1524.6	1525.5	It is an MTR.	6220
2010/09/06 01:01:18	45.94371	-129.98524	224.4	0.9	1524.6	1525.5	Getting MTR out of right swing arm to deploy.	6222
2010/09/06 01:02:12	45.94371	-129.98525	224.9	0.9	1524.7	1525.6	Deploying MTR3049 (label 3197).	6224
2010/09/06 01:03:09	45.94371	-129.98525	224.9	1.0	1524.6	1525.6	Putting recovered MTR into the right swing arm.	6225
2010/09/06 01:04:28	45.94371	-129.98525	225.2	0.9	1524.7	1525.6	Dropping MTR3049 into the water.	6227
2010/09/06 01:07:20	45.94371	-129.98525	223.7	0.9	1524.6	1525.5	BIOLOGY: mat Using the suction sampler to get some blue mat. Sample J525-MAT-21.	6229
2010/09/06 01:07:40	45.94371	-129.98525	224.6	0.9	1524.6	1525.5	TXN:	6230
2010/09/06 01:08:22	45.94371	-129.98525	224.5	0.9	1524.6	1525.5	Blue mat is going into the sampler. Some stuff (rocks?) falling back out of the hose.	6232
2010/09/06 01:10:38	45.94372	-129.98525	206.7	0.7	1524.9	1525.6	Adjusting position a bit for better access to the blue mat.	6234
2010/09/06 01:13:21	45.94372	-129.98524	238.4	0.9	1524.7	1525.6	Adjusting position again slightly.	6236
2010/09/06 01:14:55	45.94372	-129.98524	238.2	0.7	1525.0	1525.8	Done with the suction sampler.	6238

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2010/09/06 01:17:20	45.94372	-129.98523	239.1	0.7	1525.0	1525.8	Pulled pull pin on suction sampler holster.	6240
2010/09/06 01:19:33	45.94372	-129.98522	240.0	1.0	1524.6	1525.5	Starting the video survey while searching for a good rock with mat to sample.	6242
2010/09/06 01:19:37	45.94372	-129.98522	240.0	0.9	1524.6	1525.5	HD_CAM: start	6243
2010/09/06 01:20:22	45.94372	-129.98523	239.9	1.0	1524.5	1525.5	NAV: Doppler Reset	6245
2010/09/06 01:23:45	45.94370	-129.98529	304.5	1.3	1524.3	1525.6	TXT:	6247
2010/09/06 01:23:46	45.94370	-129.98529	305.2	1.3	1524.2	1525.5	TXT:	6248
2010/09/06 01:24:06	45.94371	-129.98529	340.8	1.6	1524.7	1526.3	Lots of debris in the water.	6250
2010/09/06 01:26:35	45.94369	-129.98522	84.0	1.4	1524.1	1525.4	Blue mat all over.	6252
2010/09/06 01:28:01	45.94372	-129.98516	56.9	1.4	1524.1	1525.5	Found Marker 52.	6253
2010/09/06 01:30:34	45.94371	-129.98530	288.6	0.8	1524.8	1525.6	Still flying around looking at the blue mat.	6256
2010/09/06 01:32:20	45.94374	-129.98532	218.8	2.0	1523.8	1525.8	Looking for a place to take a rock sample.	6258
2010/09/06 01:35:40	45.94370	-129.98521	122.7	1.5	1524.0	1525.6	How about sampling on the edge of this collapse?	6260
2010/09/06 01:39:31	45.94370	-129.98518	148.0	0.7	1524.9	1525.6	BIOLOGY: mat Trying to pick up some rocks but it is crumbly.	6263
2010/09/06 01:40:54	45.94370	-129.98518	147.0	0.7	1524.9	1525.6	HD_CAM: stop	6265
2010/09/06 01:42:38	45.94370	-129.98519	148.1	0.7	1525.0	1525.7	BIOLOGY: mat Picking up a rock sample covered in blue mat. Sample J525-MAT-22. Put in the right swing arm.	6267
2010/09/06 01:51:39	45.94403	-129.98572	319.2	97.2	1429.0	1526.2	Starting transit to International district.	6271
2010/09/06 02:06:18	45.94230	-129.98473	342.7	83.7	1427.2	1510.9	SAMPLE: fluid Sample J525-HFS-23. Background sample.	6272
2010/09/06 02:10:59	45.94144	-129.98441	346.6	90.6	1426.9	1517.5	end sample.	6273
2010/09/06 02:11:36	45.94135	-129.98439	349.4	96.5	1420.6	1517.0	Tmax=3.2 Tave=3.2 Vol=677.	6274
2010/09/06 02:13:20	45.94106	-129.98431	343.7	116.9	1399.5	1516.5	Sample J525-HFS-24. Background sample. Unfiltered bag #24.	6275
2010/09/06 02:13:35	45.94100	-129.98428	338.2	117.2	1399.2	1516.5	TXT:	6276
2010/09/06 02:14:46	45.94076	-129.98420	344.0	118.0	1398.6	1516.6	The previous sample (HFS-23) was in filtered piston #5.	6277
2010/09/06 02:17:28	45.94019	-129.98400	343.2	29.9	1397.8	1427.7	End sample J52-HFS-24. Tmax=3.2 Tave=3.2 Vol=501	6278
2010/09/06 03:22:25	45.92639	-129.97947	352.7	23.0	1497.7	1520.7	NAV: Doppler Reset	6279
2010/09/06 03:23:29	45.92643	-129.97948	351.0	7.1	1515.4	1522.5	Approaching El Guapo.	6280
2010/09/06 03:24:34	45.92649	-129.97950	12.0	2.9	1517.4	1520.3	Found the incubator that we will pull out of the drill hole.	6282
2010/09/06 03:26:16	45.92651	-129.97950	10.1	2.7	1517.9	1520.6	Waiting for Medea.	6284
2010/09/06 03:28:22	45.92651	-129.97951	7.4	3.4	1516.8	1520.2	Incubator retrieved and stowed	6286
2010/09/06 03:30:30	45.92640	-129.97944	112.6	8.0	1514.4	1522.3	Moving to Escargot	6288
2010/09/06 03:32:24	45.92636	-129.97914	316.0	7.5	1516.1	1523.6	Arrived at Escargot	6290
2010/09/06 03:33:12	45.92636	-129.97917	14.7	4.9	1518.2	1523.2	Going to remove temperature probe and data logger	6291
2010/09/06 03:33:54	45.92636	-129.97915	324.8	6.0	1517.6	1523.6	These are APL devices which will be moved over to El Guapo drill holes	6292
2010/09/06 03:34:27	45.92636	-129.97914	322.7	4.5	1518.1	1522.6	Frame_Grab:	6294
2010/09/06 03:36:28	45.92634	-129.97913	322.9	4.6	1518.0	1522.6	Grabbed data logger	6296
2010/09/06 03:37:35	45.92634	-129.97912	317.8	4.9	1517.9	1522.8	Retrieving temperature probe now	6297
2010/09/06 03:38:09	45.92634	-129.97911	315.0	4.8	1517.9	1522.7	Hard to pull out	6299
2010/09/06 03:38:32	45.92633	-129.97911	322.7	4.6	1518.1	1522.7	Success but dropped temperature probe	6300

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2010/09/06 03:39:35	45.92632	-129.97911	336.9	5.2	1518.4	1523.5	Cable looped around vent column	6301
2010/09/06 03:40:08	45.92632	-129.97910	337.6	5.1	1518.4	1523.5	Lifting data logger over side chimney	6303
2010/09/06 03:40:40	45.92632	-129.97910	337.7	5.2	1518.3	1523.5	Need to unhook cable	6304
2010/09/06 03:41:53	45.92632	-129.97911	352.7	5.2	1518.3	1523.5	Lifting cable with starboard arm	6305
2010/09/06 03:43:15	45.92633	-129.97911	352.3	5.2	1518.4	1523.5	Cable unhooked	6307
2010/09/06 03:43:57	45.92633	-129.97911	350.9	5.3	1518.3	1523.6	Now need to collect temperature probe lying at base of column	6308
2010/09/06 03:44:28	45.92633	-129.97910	351.5	4.5	1519.1	1523.6	But first will insert incubator from El Guapo into drill hole where temp probe was	6310
2010/09/06 03:46:32	45.92634	-129.97910	336.9	3.5	1520.1	1523.6	Collecting temp probe first	6312
2010/09/06 03:47:26	45.92634	-129.97910	336.2	3.1	1520.6	1523.7	Temperature probe in starboard claw	6313
2010/09/06 03:48:57	45.92634	-129.97910	336.6	3.0	1520.6	1523.6	Temperature probe stowed in Jason basket	6315
2010/09/06 03:49:50	45.92634	-129.97910	336.0	3.7	1519.9	1523.7	Connecting cable clear	6316
2010/09/06 03:50:06	45.92634	-129.97910	336.3	4.0	1519.6	1523.6	Backing up from column	6318
2010/09/06 03:50:48	45.92634	-129.97911	340.6	6.0	1517.6	1523.6	Now going to find hole again to deploy incubator in Escargot	6319
2010/09/06 04:00:00	45.92644	-129.97949	308.3	8.9	1514.0	1522.8	Could not find hole	6324
2010/09/06 04:00:19	45.92645	-129.97948	316.2	10.0	1512.9	1522.9	Moving to El Guapo to deploy temp probe and data logger	6326
2010/09/06 04:00:49	45.92645	-129.97945	321.8	9.8	1512.7	1522.5	Will go back to Escargot after that to insert incubator	6327
2010/09/06 04:05:07	45.92646	-129.97950	356.5	10.1	1512.6	1522.8	Waiting for Medea	6330
2010/09/06 04:05:45	45.92646	-129.97950	356.6	10.1	1512.7	1522.8	Moving ship north	6331
2010/09/06 04:06:26	45.92646	-129.97950	356.5	10.1	1512.7	1522.8	Starboard thruster problem	6333
2010/09/06 04:07:02	45.92646	-129.97951	356.6	10.1	1512.7	1522.8	Waiting on ship	6334
2010/09/06 04:11:41	45.92634	-129.97917	355.8	20.1	1503.1	1523.2	Ascending a little to align with ship	6337
2010/09/06 04:16:28	45.92660	-129.97886	239.3	34.3	1491.9	1526.2	Ship moving south again	6340
2010/09/06 04:26:30	45.92644	-129.97948	357.4	29.6	1491.9	1521.6	NAV: Doppler Reset	6342
2010/09/06 04:27:43	45.92644	-129.97949	359.9	18.4	1504.6	1522.9	El Guapo in sight	6343
2010/09/06 04:28:55	45.92648	-129.97952	9.8	2.5	1518.1	1520.6	Locating drill hole to deploy temperature probe and data logger	6345
2010/09/06 04:30:41	45.92647	-129.97952	11.4	3.0	1517.6	1520.6	Temperature probe is being deployed into drill hole of El Guapo	6347
2010/09/06 04:31:33	45.92647	-129.97952	12.2	2.9	1517.7	1520.7	Hole is difficult to see with debris in water	6348
2010/09/06 04:32:12	45.92647	-129.97953	13.0	2.9	1517.7	1520.6	Stowed temperature probe. Grasping with different handle.	6350
2010/09/06 04:34:08	45.92646	-129.97953	12.2	2.9	1517.7	1520.7	Trying once again with different angle	6352
2010/09/06 04:35:11	45.92646	-129.97954	15.3	3.1	1517.5	1520.6	Probe going into drill hole	6353
2010/09/06 04:36:08	45.92646	-129.97954	16.5	2.9	1517.7	1520.6	Trying to push probe in further	6355
2010/09/06 04:37:03	45.92646	-129.97955	12.4	3.2	1517.5	1520.7	Probe is now out of the hole	6356
2010/09/06 04:37:27	45.92646	-129.97954	12.6	3.2	1517.4	1520.7	Lots of debris. Waiting for image to clear up.	6357
2010/09/06 04:43:04	45.92648	-129.97952	12.9	3.2	1517.5	1520.7	Looking at virtual van record for images of last probe location	6361
2010/09/06 04:43:37	45.92648	-129.97951	13.0	3.1	1517.6	1520.7	Trying a different angle based on those photos	6362
2010/09/06 04:45:01	45.92648	-129.97951	12.8	3.1	1517.6	1520.7	Cleaning out drill hole with temperature probe	6364
2010/09/06 04:47:01	45.92648	-129.97951	12.6	3.1	1517.6	1520.7	Temperature probe going in fairly deep	6366
2010/09/06 04:48:55	45.92648	-129.97952	12.9	3.1	1517.6	1520.7	Grasping temperature probe to try again	6368

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2010/09/06 04:49:49	45.92648	-129.97952	16.3	3.4	1517.6	1521.0	Probe starting to go into the hole but stuck at the moment	6369
2010/09/06 04:50:26	45.92648	-129.97952	15.8	3.8	1517.4	1521.2	Trying with a lower angle	6371
2010/09/06 04:51:13	45.92649	-129.97952	15.8	3.7	1517.4	1521.0	Probe still seems to be stuck	6372
2010/09/06 04:51:58	45.92649	-129.97952	14.5	3.6	1517.4	1521.0	Probe removed from hole and stowed	6373
2010/09/06 04:52:28	45.92649	-129.97952	16.8	3.8	1517.3	1521.1	Trying again with different angle	6375
2010/09/06 04:54:44	45.92648	-129.97953	8.9	3.4	1517.7	1521.1	Jason lost position	6377
2010/09/06 04:55:55	45.92648	-129.97953	8.9	3.1	1517.8	1520.9	Will have to reposition and try again	6378
2010/09/06 04:57:27	45.92649	-129.97952	4.7	2.3	1518.5	1520.8	Repositioning now for another attempt	6380
2010/09/06 04:59:37	45.92648	-129.97953	10.5	2.1	1518.6	1520.7	Waiting for Bill Chadwick to retrieve a picture of Girguis incubator originally placed in this hole	6382
2010/09/06 05:00:43	45.92647	-129.97952	6.6	2.4	1518.3	1520.7	Temperature probe seems stable	6384
2010/09/06 05:02:16	45.92648	-129.97953	40.6	3.0	1518.1	1521.1	Appears to be similar to photo retrieved from Bill Chadwick showing similar temperature probe in same hole	6386
2010/09/06 05:02:45	45.92648	-129.97953	41.3	3.2	1518.0	1521.1	Deploying data logger for temperature probe now	6387
2010/09/06 05:03:36	45.92648	-129.97953	40.3	3.1	1518.1	1521.2	Data logger deployed and stable	6388
2010/09/06 05:04:07	45.92648	-129.97954	41.1	3.0	1518.1	1521.1	Frame_Grab:	6390
2010/09/06 05:04:09	45.92648	-129.97954	41.0	3.0	1518.1	1521.1	Frame_Grab:	6391
2010/09/06 05:04:13	45.92648	-129.97954	41.0	3.0	1518.1	1521.1	Frame_Grab:	6392
2010/09/06 05:05:35	45.92644	-129.97955	108.7	3.1	1518.0	1521.1	Moving back to Escargot to deploy Girguis incubator	6393
2010/09/06 05:08:01	45.92634	-129.97914	323.1	7.3	1516.7	1524.0	At Escargot and positioning near drill hole	6395
2010/09/06 05:08:54	45.92636	-129.97913	264.8	3.5	1518.6	1522.1	Drill hole spotted	6397
2010/09/06 05:10:08	45.92636	-129.97913	266.7	3.6	1518.4	1522.1	Deploying incubator into hole now. Heading is 266.8.	6399
2010/09/06 05:11:20	45.92636	-129.97912	266.7	3.6	1518.6	1522.2	Incubator in drill hole	6400
2010/09/06 05:11:23	45.92636	-129.97912	266.4	3.6	1518.6	1522.1	Frame_Grab:	6401
2010/09/06 05:11:24	45.92636	-129.97912	266.6	3.6	1518.6	1522.1	Frame_Grab:	6402
2010/09/06 05:11:24	45.92636	-129.97912	266.6	3.6	1518.6	1522.1	Frame_Grab:	6403
2010/09/06 05:12:36	45.92637	-129.97909	264.3	5.7	1516.6	1522.3	Frame_Grab:	6405
2010/09/06 05:13:10	45.92638	-129.97908	60.8	5.0	1515.8	1520.8	Moving southwest of Escargot to sample orange sediment at El Antigua	6406
2010/09/06 05:13:59	45.92629	-129.97910	255.3	10.1	1514.4	1524.4	Correction El Antigua	6407
2010/09/06 05:15:09	45.92628	-129.97927	272.8	5.5	1518.5	1524.0	NAV: Doppler Reset	6409
2010/09/06 05:15:44	45.92630	-129.97935	218.6	4.5	1518.3	1522.9	Coming in from East of El Antigua	6410
2010/09/06 05:17:24	45.92625	-129.97943	25.3	1.9	1521.4	1523.3	Frame_Grab:	6412
2010/09/06 05:17:25	45.92625	-129.97943	25.3	1.9	1521.4	1523.3	Frame_Grab:	6413
2010/09/06 05:17:51	45.92625	-129.97943	24.3	1.2	1522.0	1523.2	Going to sample orange/yellow sediment/mat	6414
2010/09/06 05:18:22	45.92625	-129.97943	24.3	1.2	1522.0	1523.2	Frame_Grab:	6416
2010/09/06 05:19:11	45.92625	-129.97943	24.4	1.2	1522.0	1523.2	Frame_Grab:	6417
2010/09/06 05:22:42	45.92625	-129.97942	25.3	1.5	1521.9	1523.4	Releasing and grabbing large syringe	6420
2010/09/06 05:23:19	45.92625	-129.97942	25.5	1.5	1521.9	1523.4	Targeted sediment patch crumbled	6421

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2010/09/06 05:23:27	45.92625	-129.97941	25.5	1.5	1521.9	1523.4	Waiting for water to clear	6422
2010/09/06 05:24:20	45.92625	-129.97941	25.3	1.5	1521.9	1523.3	BIOLOGY: mat Starting big syringe sample of orange sediment	6424
2010/09/06 05:26:42	45.92625	-129.97941	25.4	1.5	1521.9	1523.4	SAMPLE: bio Syringe sample taken	6426
2010/09/06 05:27:30	45.92625	-129.97941	25.7	1.5	1522.0	1523.4	Frame_Grab:	6427
2010/09/06 05:29:26	45.92624	-129.97941	24.3	1.4	1521.9	1523.3	Syringe stowed	6429
2010/09/06 05:29:36	45.92624	-129.97941	24.5	1.4	1522.0	1523.3	Sampling finished	6430
2010/09/06 05:30:05	45.92624	-129.97941	24.6	1.2	1522.0	1523.2	Retracting Jason basket	6432
2010/09/06 05:31:24	45.92624	-129.97941	24.3	1.3	1522.1	1523.5	Discarding weight	6433
2010/09/06 05:31:48	45.92624	-129.97941	24.1	1.3	1522.1	1523.4	And another weight	6434
2010/09/06 05:32:14	45.92624	-129.97941	24.2	1.4	1522.0	1523.4	Picking up small rocks	6436
2010/09/06 05:33:22	45.92624	-129.97941	24.4	1.3	1522.1	1523.4	Two small rocks in weight basket	6437
2010/09/06 05:34:19	45.92622	-129.97943	25.8	2.5	1520.9	1523.4	Beginning ascent to surface	6439