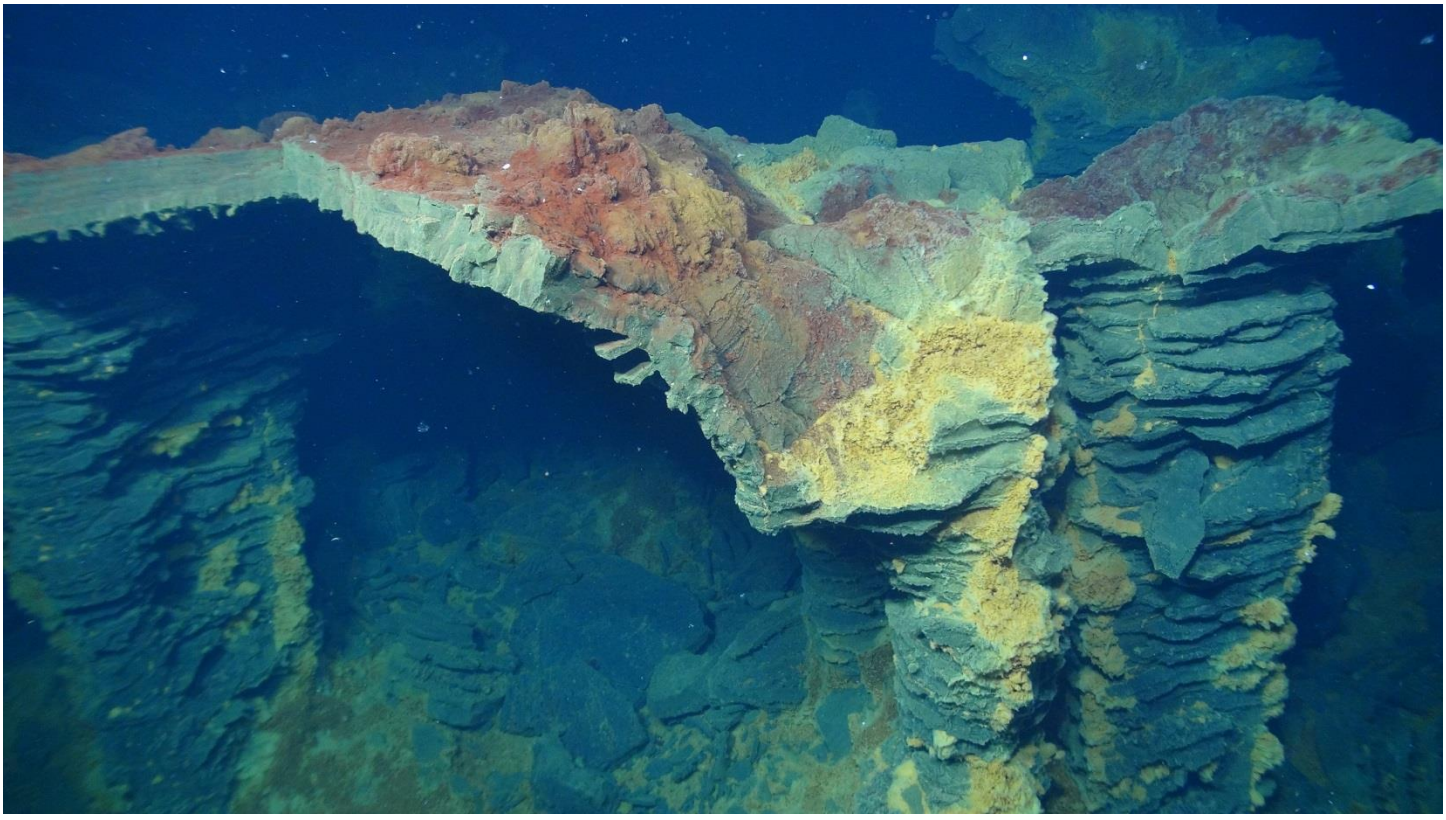
Axial 2013 Cruise Report

Axial Seamount, Juan de Fuca Ridge

R/V Thompson TN 300
September 3–19, 2013
JASON Dives J2-726 – J2-732

Chief Scientist: Bill Chadwick
R/V Thompson Captain: Eric Haroldson
JASON Expedition Leader: Matt Heintz
Cruise report prepared by: Andra Bobbitt



Red Bridges site, area of collapsed 2011 lava flow and red mat. Explored on dives J730 and J732.

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Axial 2013 Expedition Cruise Report

1 - Expedition Summary

Bill Chadwick, Chief Scientist

Our September 3-19, 2013 expedition to Axial Seamount was a great success! We completed all our major goals with the skilled support of the R/V Thompson's crew, the ROV Jason team, and our hard-working group of scientists. We also had unusually good weather, which always makes everything easier at sea. This research cruise had three main projects that were piggybacked together.

One project was to collect fluid and microbial samples from Axial's hydrothermal vents to better understand their microbial ecosystems. We collected samples of hydrothermal vent fluid to track changes in chemistry since Axial's 2011 eruption and how those changes may affect the microbial communities. We used a range of samplers to collect vent fluids, gases, microbial mat, and hydrothermal sediments. We also collected the microbes living in the vent fluids for culturing experiments on board the ship and genetic analysis back on shore. This work was accomplished during Jason dives J2-726, J2-728, and J2-731. This project was led by Dave Butterfield and Jim Holden, and was funded by NOAA/PMEL and the Gordon and Betty Moore Foundation.

The second project was a geothermal energy experiment that deployed prototype instruments on the seafloor to assess the feasibility of converting thermal energy from hydrothermal vents to electrical energy that could be used to power deep-sea sensors or underwater vehicles in the future. Geothermal energy devices were successfully placed on three separate hydrothermal vents (Vixen, Virgin, and Trevi) during Jason dives J2-727, J2-729, and J2-732. The devices will stay deployed for the next year and continue to collect data until they are recovered next summer. The results from this experiment will guide the design of more advanced energy conversion devices in the future. This project was led by Dave Dyer and was funded by the Office of Naval Research.

The third project was to monitor how much the volcano has reinflated since its last eruption in 2011 by making seafloor pressure measurements at an array of seafloor benchmarks. This was accomplished during one long Jason dive, J2-730, which lasted almost 5 days and repeatedly visited 10 different measurement sites, traversing a total of 65 km. We found that the center of Axial's caldera had risen by 1.22 meters in the last 2 years, the highest rate of uplift we've seen since we started these measurements over a decade ago. This means the volcano has already recovered over half of the deflation that occurred during the April 2011 eruption, and suggests that Axial may be closer to its next eruption than we expected. This project was led by Scott Nooner and Bill Chadwick, and was funded by the National Science Foundation.

In between the Jason dives, we recovered 3 OBH instruments, deployed 1 OBH and 3 BPR instruments, 1 self-calibrating pressure recorder (SCPR), 6 cement benchmarks, 1 RAS instrument, and we used elevator moorings to transport the geothermal devices to the seafloor. We also conducted 6 CTD casts and collected multibeam sonar data with the Thompson's EM122 system. We deployed a surface buoy at the beginning of the cruise to communicate with the geothermal devices on the seafloor, but it had to be recovered at the end, because it was not functioning properly.

During the cruise, we also conducted outreach activities, led by our teacher-at-sea, Rachel Teasdale. Before the cruise, she made contacts with classroom teachers in California, Oregon, and Washington, and each of these teachers had their classes follow our cruise blog, which we posted to at sea: axial2013.blogspot.com. Then during the cruise we made a Skype call from the ship to each of their classrooms and had a 30-60 minute question-and-answer session with the students.

We are grateful to the funding agencies that supported our research, and we greatly appreciate the support from the University of Washington, the captain and crew of R/V Thompson, the Woods Hole Oceanographic Institution, the National Deep Submergence Facility, and the Jason ROV team. Thanks to all for making this cruise such a success.

2 - Cruise Participants

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3 - Operations Log

(GMT was 7 hours ahead of local time)

Local Time	GMT Time	Event
9/3/2013 05:30	9/3/2013 12:30	Departed University of Washington Pier, Seattle.
9/4/2013 09:00	9/4/2013 16:00	XBT for EM302 system SVP conducted.
9/4/2013 09:27	9/4/2013 16:27	EM302 logging on/off (problem with SVP).
9/4/2013 14:25	9/4/2013 21:25	Begin APL buoy deployment.
9/4/2013 17:05	9/5/2013 00:05	APL buoy anchor dropped (45°55.228'N 130°0.758'W z=1484m).
9/4/2013 17:30	9/5/2013 00:30	APB buoy anchor release signal verified.
9/4/2013 19:11	9/5/2013 02:11	CTD V13A-01 / TN300-01-01 (45°55.921'N 130°8.765'W z=1693m) Background CTD.
9/4/2013 20:29	9/5/2013 03:29	CTD on board.
9/4/2013 21:53	9/5/2013 04:53	CTD V13A-02 / TN300-02-01 (45°56.808'N 129°58.958'W) Trevi Vent CTD.
9/4/2013 23:13	9/5/2013 06:13	CTD on board.
9/5/2013 01:35	9/5/2013 08:35	JASON USBL calibration begun.
9/5/2013 05:30	9/5/2013 12:30	JASON USBL calibration completed; pole on board.
9/5/2013 09:05	9/5/2013 16:05	BPR Center deployed (45°57.418'N 130°0.661'W)
9/5/2013 10:05	9/5/2013 17:05	BPR South-1 deployed (45°55.910'N 129°59.951'W)
9/5/2013 10:56	9/5/2013 17:56	BPR South-2 deployed (45°54.957'N 129°59.622'W)
9/5/2013 11:55	9/5/2013 18:55	OBH-3 West release code sent.
9/5/2013 12:15	9/5/2013 19:15	OBH-3 West on surface.
9/5/2013 12:46	9/5/2013 19:46	OBH-3 on board.
9/5/2013 13:05	9/5/2013 20:05	OBH-2 East release code sent.
9/5/2013 13:28	9/5/2013 20:28	OBH-2 East on surface.
9/5/2013 13:50	9/5/2013 20:50	OBH-2 on board. (Note: instrument was flooded.)
9/5/2013 14:34	9/5/2013 21:34	BPR Center location survey (Workboat) begun.
9/5/2013 14:50	9/5/2013 21:50	BPR Center survey complete.
9/5/2013 15:23	9/5/2013 22:23	BPR South-2 location survey begun.
9/5/2013 15:50	9/5/2013 22:50	BPR South-2 survey stopped for JASON deployment (incomplete).
9/5/2013 16:24	9/5/2013 23:24	**JASON in water. J2-726** APL vent cap deployment at Vixen Vent.
9/6/2013 08:20	9/6/2013 15:20	JASON on deck. End J2-726.
9/6/2013 10:01	9/6/2013 17:01	AX-307 benchmark deployed (45°56.739'N 130°0.584'W).
9/6/2013 11:12	9/6/2013 18:12	AX-308 benchmark deployed (45°55.900'N 129°59.942'W).
9/6/2013 16:50	9/6/2013 23:50	APL elevator deployed over Coquille (45°55.036'N 129deg 59.581'W).
9/6/2013 19:02	9/7/2013 02:02	**JASON in water. J2-727** at ASHES.
9/6/2013 23:15	9/7/2013 06:15	APL elevator released from seafloor.
9/6/2013 23:43	9/7/2013 06:43	APL elevator at surface.
9/7/2013 00:32	9/7/2013 07:32	APL elevator on board.
9/7/2013 12:15	9/7/2013 19:15	JASON on deck. End J2-727.
9/7/2013 13:05	9/7/2013 20:05	AX-303 benchmark deployed (45°56.01'N -129°58.93'W).
9/7/2013 13:35	9/7/2013 20:35	AX-310 benchmark deployed (45°55.474'N 129°58.665'W)
9/7/2013 15:23	9/7/2013 22:23	RAS deployed (45°55.496'N 129°58.741'W).
9/7/2013 16:40	9/7/2013 23:40	SCPR mooring begin deployment on ship's wire.
9/7/2013 18:18	9/8/2013 01:18	SCPR mooring deployed (45°46.144'N 130°00.730'W).

(GMT was 7 hours ahead of local time)

Local Time	GMT Time	Event
9/7/2013 20:03	9/8/2013 03:03	**JASON in water. J2-728** at International District.
9/8/2013 12:45	9/8/2013 19:45	AX-302 benchmark deployed (45°56.79'N 129°58.96'W).
9/8/2013 13:15	9/8/2013 20:15	AX-309 benchmark deployed (45°56.32'N 129°58.32'W).
9/8/2013 14:25	9/8/2013 21:25	APL elevator deployed over ASHES (45°55.922'N 130°0.719'W)
9/8/2013 15:33	9/8/2013 22:33	OBH 4-North position survey begun (prior recovery).
9/8/2013 16:12	9/8/2013 23:12	OBH 4-North survey complete.
9/8/2013 17:10	9/9/2013 00:10	OBH 4-North on deck
9/8/2013 17:13	9/9/2013 00:13	BPR South-1 begin position survey.
9/8/2013 18:35	9/9/2013 01:35	BPR South-1 survey complete.
9/8/2013 19:04	9/9/2013 02:04	BPR South-2 begin position survey.
9/8/2013 19:27	9/9/2013 02:27	BPR south-2 survey complete.
9/8/2013 20:00	9/9/2013 03:00	**JASON in water. J2-729** at ASHES (APL vent cap deployment at Virgin Vent).
9/9/2013 01:23	9/9/2013 08:23	APL elevator released from seafloor.
9/9/2013 01:50	9/9/2013 08:50	APL elevator on surface.
9/9/2013 02:10	9/9/2013 09:10	APL elevator on board.
9/9/2013 08:48	9/9/2013 15:48	JASON on deck. End J2-729.
9/9/2013 10:14	9/9/2013 17:14	OBH South deployed (45°55.0845'N 129°58.9076'W).
9/9/2013 10:56	9/9/2013 17:56	OBH South begin position survey.
9/9/2013 11:40	9/9/2013 18:40	OBH South survey complete.
9/9/2013 16:11	9/9/2013 23:11	**JASON in water. J2-730** 5-day pressure dive begins.
9/9/2013 18:17	9/10/2013 01:17	AX-308 floats released by JASON.
9/9/2013 18:50	9/10/2013 01:50	AX-308 benchmark floats recovered.
9/10/2013 06:31	9/10/2013 13:31	AX-302 floats released by JASON.
9/10/2013 07:00	9/10/2013 14:00	AX-302 benchmark floats recovered (time approximate).
9/10/2013 10:21	9/10/2013 17:21	AX-309 floats released by JASON.
9/10/2013 11:02	9/10/2013 18:02	AX-309 benchmark floats recovered.
9/10/2013 13:44	9/10/2013 20:44	AX-303 floats released by JASON.
9/10/2013 14:13	9/10/2013 21:13	AX-303 benchmark floats recovered.
9/10/2013 16:27	9/10/2013 23:27	AX-310 floats released by JASON.
9/10/2013 17:05	9/11/2013 00:05	AX-310 benchmark floats recovered.
9/11/2013 19:02	9/12/2013 02:02	AX-307 floats released by JASON.
9/11/2013 19:36	9/12/2013 02:36	AX-307 benchmark floats recovered.
9/14/2013 12:13	9/14/2013 19:13	JASON on deck. End J2-730.
9/14/2013 13:00	9/14/2013 20:00	CTD V13A-03 / TN300-003-01 (45°55.569'N 129°58.807'W) Castle Vent.
9/14/2013 14:30	9/14/2013 21:30	Transit to Dependable Vent Field. EM302 logging on.
9/14/2013 15:35	9/14/2013 22:35	EM302 logging off.
9/14/2013 16:45	9/14/2013 23:45	**JASON in water. J2-731** Dependable Vent Field.
9/15/2013 08:16	9/15/2013 15:16	JASON on deck. End J2-731.
9/15/2013 10:01	9/15/2013 17:01	APL deployed over Trevi Vent (45°56.772'N 129°58.916'W).
9/15/2013 12:05	9/15/2013 19:05	**JASON in water. J2-732** at Trevi.
9/15/2013 16:21	9/15/2013 23:21	APL elevator released from seafloor.
9/15/2013 17:02	9/16/2013 00:02	APL elevator on board.

(GMT was 7 hours ahead of local time)

Local Time	GMT Time	Event
9/16/2013 08:47	9/16/2013 15:47	JASON on board. End J2-732 (vehicle lost power last 15 minutes before scheduled end).
9/16/2013 10:19	9/16/2013 17:19	Attached to APL buoy and begin to recover.
9/16/2013 12:55	9/16/2013 19:55	APL mooring on board.
9/16/2013 13:35	9/16/2013 20:35	CTD V13A-04 / TN300-004-01 (45°56.005'N 130°0.820'W) ASHES.
9/16/2013 15:50	9/16/2013 22:50	CTD V13A-05 / TN300-005-01 (45°56.770'N 129°59.022'W) Trevi.
9/16/2013 18:13	9/17/2013 01:13	CTD V13A-06 / TN300-006-01 (45°59.341'N 130°1.639'W) CASM.
9/16/2013 19:53	9/17/2013 02:53	EM302 Start logging.
9/16/2013 19:58	9/17/2013 02:58	EM302 Start Survey.
9/17/2013 08:20	9/17/2013 15:20	EM302 End Survey.
9/17/2013 10:47	9/17/2013 17:47	EM302 End logging.
9/18/2013 11:27	9/18/2013 18:27	Arrived at dock in Victoria, BC.
9/18/2013 19:49	9/19/2013 02:49	Departed Victoria, BC.
9/19/2013 11:00	9/19/2013 18:00	Arrived University of Washington pier, Seattle.

4 - Discipline Summaries

4.1 Geology/Geophysics

4.1.1 - Pressure Measurements to Monitor Volcanic Inflation and Deflation at Axial Seamount

Scott Nooner and Bill Chadwick

We have made ROV-based pressure measurements at Axial Seamount since 2000 to monitor vertical movements of the seafloor due to volcanic inflation and deflation caused by magma movements beneath the volcano. This year's operations included the following:

1) We deployed three Bottom Pressure Recorder (BPR) instrument moorings. Two of the BPRs (Center and South1) were the same instruments that were recovered for us in mid-August on the previous R/V Thompson cruise by John Delaney so they could be brought back to Seattle for servicing. The third BPR (South2) is a new one to replace one lost during the 2011 eruption. The BPR locations, all acoustically surveyed, are listed below.

Table 4.1.1-1 BPR Deployment Locations:

Name	Lat Deg	Lat Min	Lon Deg	Lon Min	Lat	Lon	Depth
BPR-Center	45	57.407	-130	0.636	45.95678	-130.01060	1541
BPR-South1	45	55.909	-129	59.926	45.93181	-129.99876	1540
BPR-South2	45	54.959	-129	59.609	45.91599	-129.99348	1540

2) We deployed six new cement benchmarks: two were replacements for ones lost during the 2011 eruption (AX-302 @ Trevi and AX-303 @ Marker 33 site), two were new locations to improve the spatial coverage of inflation monitoring (AX-307 @ Magnesia West and AX-308 @ BPR-South1), and two were deployed for University of Washington, near where there will be pressure/tilt instruments on the OOI/RSN cabled observatory (AX-309 @ RSN-PrimaryNode and AX-310 @ International District). The new benchmarks were free-falled from the surface as small moorings with a detachable

descent weight and two glass balls for counterbalance flotation with a Homer probe attached, making it easier for Jason to find them and move them on the bottom. The cement benchmarks weigh ~150 lbs in water, and with the flotation they are ~50 lbs, allowing Jason to pick them up and relocate them to stable sites. There are now a total of 10 cement benchmarks – the six new ones and four old ones. Three of the sites have both cement benchmarks and older metal benchmarks (AX-202 @ Trevi, AX-203 @ Marker 33 Site, and AX004 @ BagCity); the metal benchmarks at Trevi and M33 were used as temporary sites in 2011 for the sites buried in new lava, and were re-occupied again in 2013.

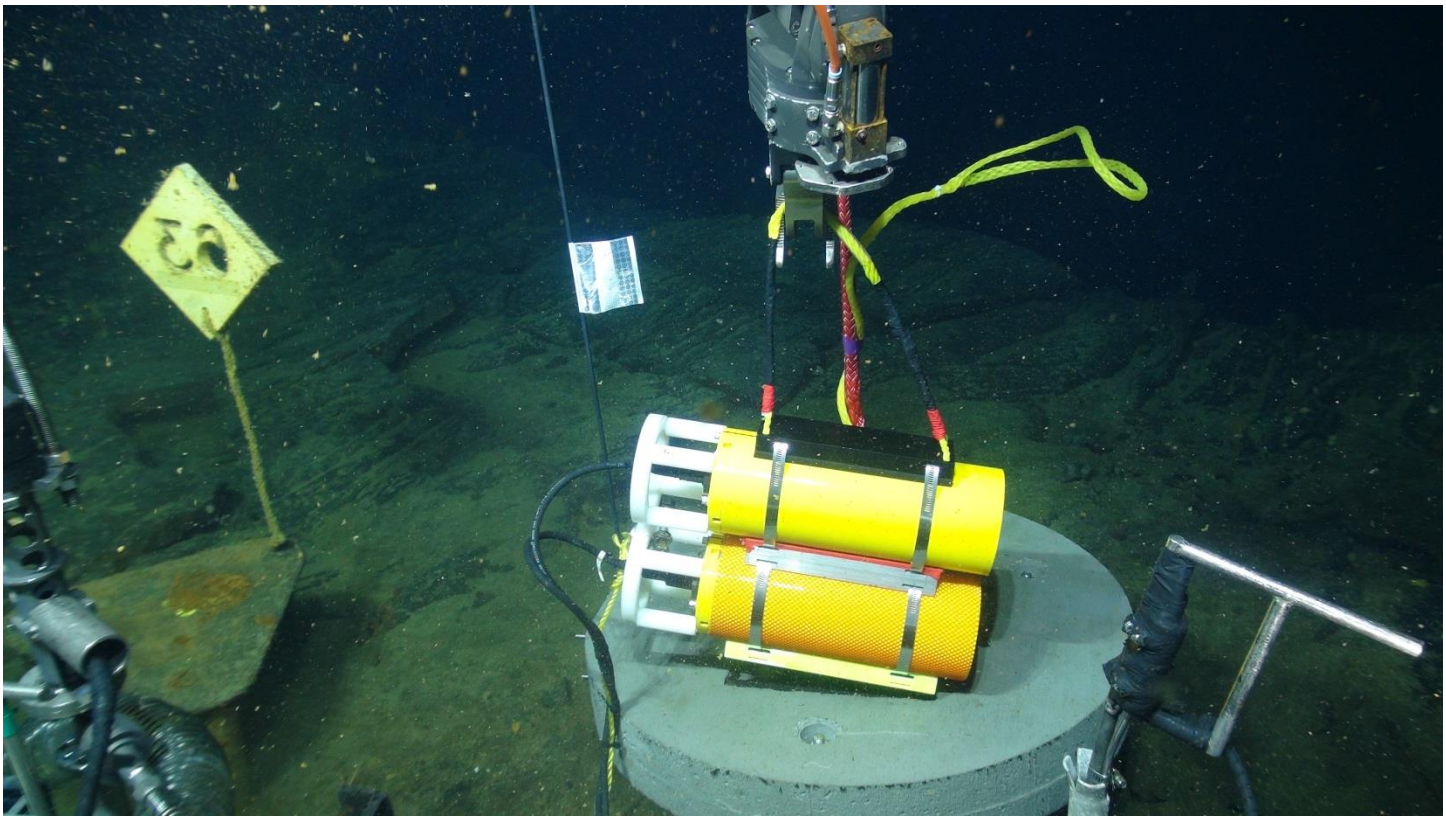


Fig. 4.1-1. Trevi site benchmarks AX-302 (with instrument being lowered) and AX-202 (with Mkr 63 attached).

Table 4.1.1-2 Cement Benchmark Locations:

AXIAL CEMENT BENCHMARK NAMES	Latitude	Longitude	Depth	LAT DEG	LAT MIN	LON DEG	LON MIN
AX-101 Caldera Center	45.95520	-130.00987	1532	45	57.3120	-130	0.5920
AX-104 Bag City	45.91617	-129.98950	1534	45	54.9700	-129	59.3700
AX-105 Pillow Mound	45.86317	-130.00376	1718	45	51.7900	-130	0.2250
AX-106 Ashes	45.93445	-130.01160	1542	45	56.0670	-130	0.6960
AX-302 Trevi	45.94642	-129.98378	1522	45	56.7850	-129	59.0270
AX-303 Marker 33 site	45.93346	-129.98225	1516	45	56.0080	-129	58.9350
AX-307 Magnesia West	45.94535	-130.00906	1544	45	56.7210	-130	0.5440
AX-308 BPR-South1	45.93160	-129.99880	1533	45	55.8960	-129	59.9280
AX-309 RSN-PN	45.93835	-129.97208	1527	45	56.3010	-129	58.3250
AX-310 International District	45.92580	-129.97787	1531	45	55.5480	-129	58.6720

3) Pressure was measured at all the new benchmarks during Jason dive J2-730, which lasted almost 5 days. Each measurement was made by placing an MPR (mobile pressure recorder) on top of a benchmark and recording for 20 minutes. Data were recorded in a laptop PC in the Jason control room. This year we had two MPRs instead of our usual one; the two MPRs were attached together, one on top of the other. The two Paros pressure gauges that we have used in the past (s/n 43535 and 62201) were repackaged by Glenn Sasagawa at Scripps into a new pressure case this year. The second MPR was also built by Scripps for the OOI/RSN and is nearly identical (with new Paros gauges s/n 122882 and 122883). As in the past, benchmark AX-105 was used as the reference site and assumed to be stable, and the depths of the other benchmarks were determined relative to the reference site. The survey consisted of two round trip transects from the caldera to the reference site and back in the following order (with the number of occupations at each site in parentheses): AX-308 (3), 106 (4), 307 (4), 101 (4), 202/302 (4), 309 (4), 203/303 (4), 310 (4), 104 (4), 105 (2). The total distance traversed during the dive was 65 km. The Jason navigation was excellent making finding the benchmarks on the bottom very efficient. We conducted some fluid sampling for Dave Butterfield on the final transect. The average transit speed for towing Jason from benchmark to benchmark was about 1 knot.

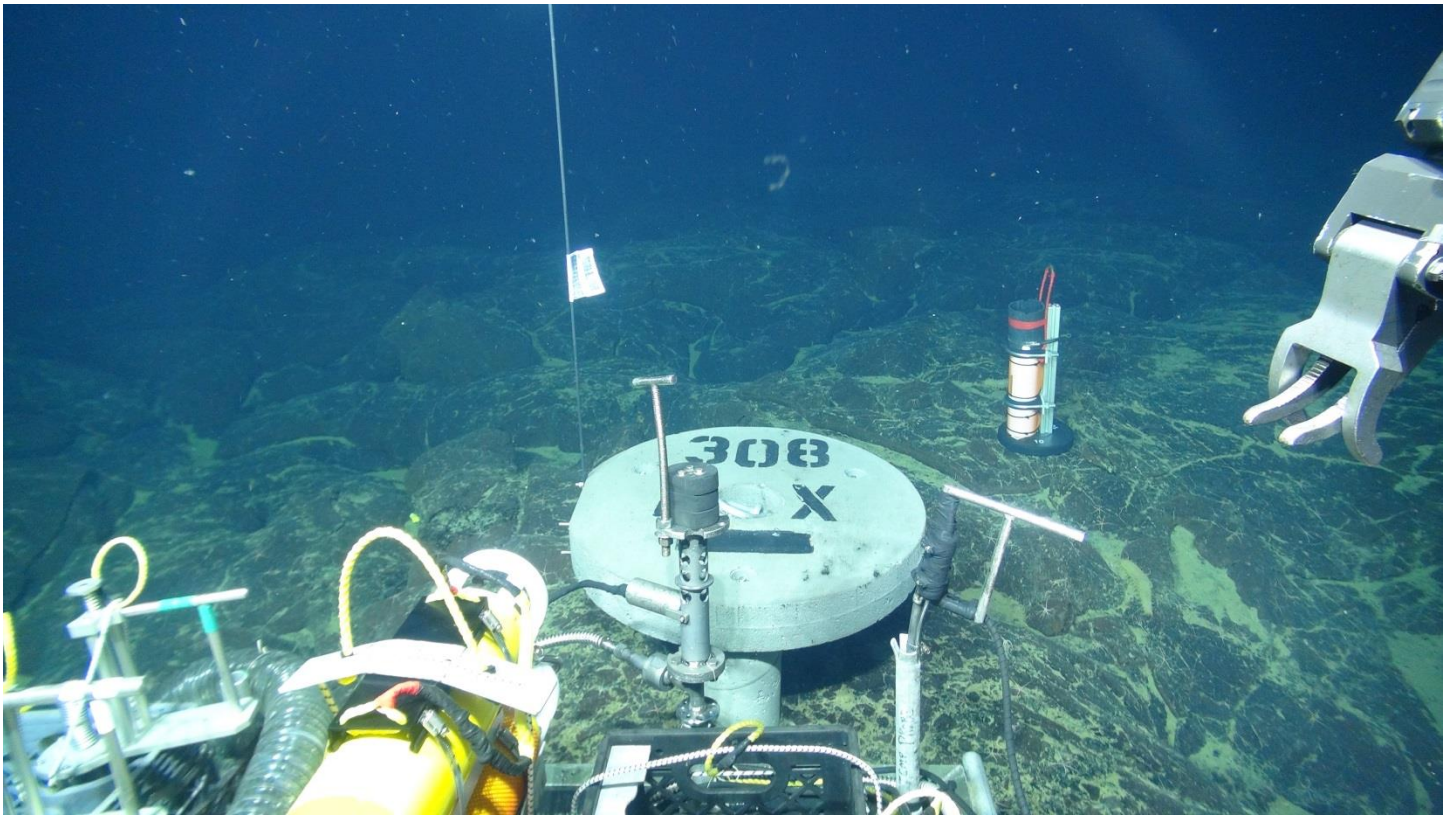


Fig. 4.1-2 2013 deployed AX-308 benchmark at the BPR-South1 location. A mini-BPR was deployed uring this cruise adjacent to the permanent benchmark for calibration purposes. It was recovered at the end of the 5-day pressure dive (J2-730).

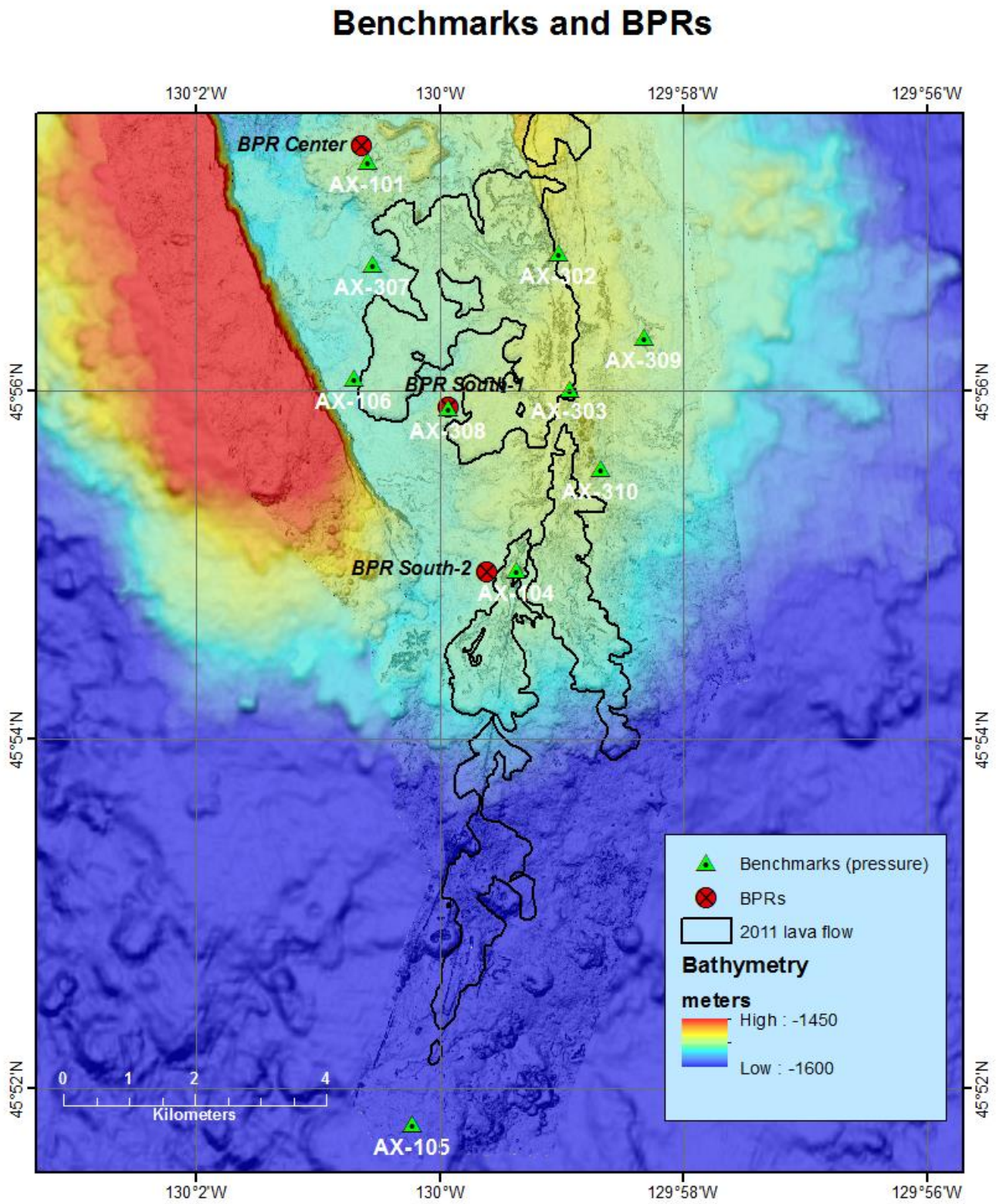
The pressure data were converted to depth then corrected for ocean tides using data collected by an autonomous tide gauge (kindly supplied by Glenn Sasagawa) that Jason deployed near AX-308 at the beginning of the dive and recovered at the end. In addition, instrument drift was calculated during the survey and was removed. The uncertainty in the pressure measurements was determined by the scatter of repeated measurements at each benchmark and was ± 0.6 cm this year, matching our previous best results. Comparing the benchmark depths in 2013 to our previous survey in 2011 shows the following depth changes (all uplift from 2011-2013).

Table 4.1.1-3 Depth changes from 2011 to 2013.

BENCHMARK NAME	Depth change (m)
AX-101 Caldera Center	1.223
AX-104 Bag City	0.516
AX-105 Pillow Mound	0.000
AX-106 Ashes	0.805
AX-202 Trevi	0.607
AX-203 Marker 33 site	0.567

The data from the MPR survey and the BPRs that were recovered suggest to us the following: The post-2011 eruption inflation rate has been higher than we expected to see. We measured 1.22 m of uplift since August 2011, totaling 1.57 m of reinflation since the April 2011 eruption. This is an average uplift rate of 61 cm/yr! For comparison, during most of the period between the 1998 and 2011 eruptions, we saw steady inflation at only 15 cm/yr, but it is possible that we missed this rapid re-inflation phase during a 2-year gap in monitoring after the 1998 eruption. In addition, we expected to see a gradually decreasing rate of uplift since 2011. Instead, there was an almost a doubling in the inflation rate in September 2012, recorded on both of the BPRs that were in place during 2011-2013. Overall, this means that Axial has already recovered 65% of the -2.4 m of deflation that we measured during the 2011 eruption. If this high inflation rate continues, Axial will be back to its pre-2011 level of inflation within only another year and a half (by January 2015)! On the other hand, if the rate of inflation slows down to rates more like we saw between 1998-2011, then the pre-2011 level of inflation will not be reached until ~2018 (more-or-less as depicted in Figure 3a of our 2012 Nature Geoscience paper). We don't really know what this means in terms of forecasting the next eruption, but an inescapable conclusion is that the inflation rate since 2011 has been higher than we've ever measured, and this may imply that the next eruption could come sooner rather than later. These results show that it is important to keep this time-series going, because it is still providing new insights and surprises, it will allow us to document the post-eruption reinflation phase for the first time, and it will provide invaluable context for the OOI/RSN observatory. This work was funded by the National Science Foundation.

Fig. 4.1.1-1. Map of the benchmark (pressure measurement locations) and the BPRs (bottom-pressure-recorders) at Axial.



4.1.2 Self-Calibrating Pressure Recorder

Glenn Sasagawa, Scripps Institution of Oceanography

The UCSD Gravity lab deployed a Self-calibrating Pressure Recorder (SCPR), unit 001, at the Ashes site near AX-103. The SCPR deployment began at 08 Sept 2013, 1600L using the trawl wire. The vessel was initially positioned 250m south of the deployment location. A JASON USBL transponder was temporarily added to the SCPR frame. Starting at 1632L, the SCPR was lowered into the water. Wire was paid out at 20 m/min to 30m wire out, then wire was paid out at 40m/minute to 1400m wire out. The wire was allowed to swing back under the ship; after this was done, the wire was paid out to 1470m. At 1817L, the mooring was released and the touchdown was monitored on the USBL navigation screen in the Jason control van.

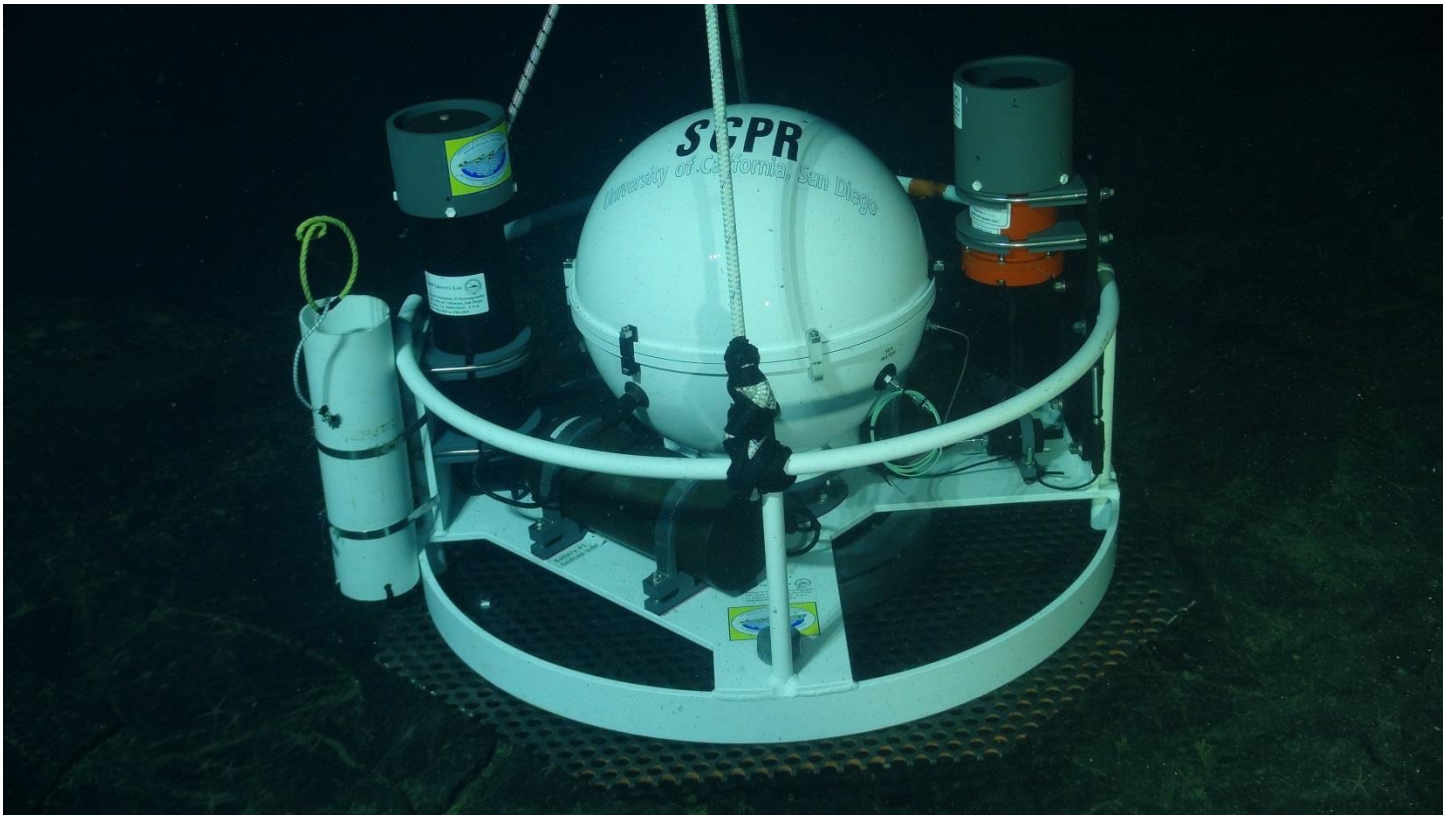


Fig. 4.1.2-1. The SCPR in its final position near ASHES vent field and the pressure benchmark AX-103.

During Jason dive J2-729, the planned work was completed early and the ROV made its way to the SCPR mooring. Mooring was in sight at 09 Sept 2013 1340 UT (0640L). At 1350 UT, communications were established with the SCPR computer. The initial level was out of gimbal range, so the SCPR package was relocated to **45º 56.0626´ N, -130º 0.7069´ E, depth 1541 meters**. At 1419 UT, the repositioning was complete and appeared acceptable. The USBL transponder was recovered to the ROV. A calibration was initiated and appeared to proceed normally. Communications were lost when the ROV was repositioned during the calibration; the Linkquest modem was shadowed by the ROV floatation. Communications were re-established and a normal end of calibration and shutdown was observed.

Additional communications was established during the pressure dive (J2-730), when opportunity allowed. Communications and downloads were obtained on 10 September and 12 September. The SCPR was found to be operating normally. The planned deployment duration is two years, with a hoped-for data offload in 2014.

4.2 Fluid Sampling

4.2.1 2013 Hydrothermal Fluid Chemistry Summary

David Butterfield
University of Washington, Joint Institute for the Study of the Atmosphere and Ocean

Axial 2013 Summary

The NeMO project continued for the 15th consecutive year. The primary goals of our 2013 NeMO program were to collect time-series samples from Axial Seamount as part of a long-term study of the hydrothermal system over an entire eruptive cycle, and to collect samples for detailed microbiological experiments. We had 3 full Jason ROV dives for the NeMO project to sample vents for chemistry and microbiology and recover and deploy temperature sensors. No RAS sampler was deployed at Axial in 2012, so there was no time-series instrument to recover in 2013. A RAS time-series chemistry sampler was installed at El Gordo vent in the International District vent field. We were able to collect samples from additional sites during Bill Chadwick and Scott Nooner's 5-day-long dive for geodetic measurements. Personnel involved in the chemistry/microbiology portion of the Thompson/Jason cruise included Dave Butterfield, Kevin Roe, Ben Larson, Leigh Evans, Chris Algar, James Holden, Caroline Fortunato and Begum Topcuoglu. Funding for the ship and ROV time for NeMO 2013 was provided by NOAA and ONR (through collaboration with Dave Dyer of the UW Applied Physics lab). Science funding for chemistry and microbiology was provided by PMEL and the Gordon and Betty Moore Foundation, Marine Microbiology Initiative.

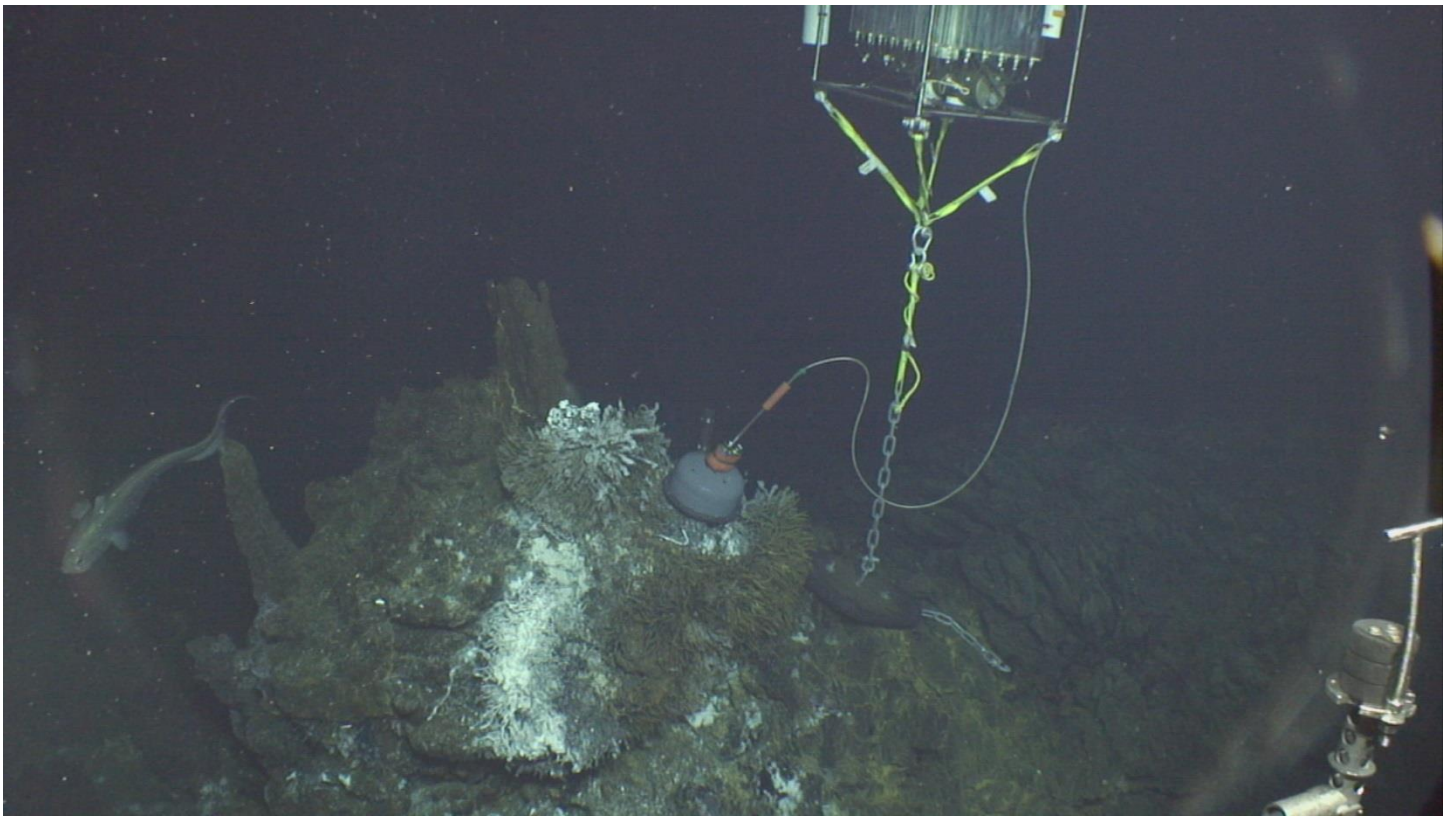


Fig. 4.2-1 RAS chemistry sampler installed at El Gorda vent in the International District vent field on dive J2-728.

We collected 57 samples for fluid chemistry using HFPS and titanium major samplers plus 20 samples with titanium gas-tight samplers during the Thompson/Jason cruise. The Sample Split Summary Table describes how the samples were processed and divided. The samples represent many of the known high-temperature sites (ASHES, International District, Casper/Vixen, and Trevi) and many of the known diffuse sites. We took the first fluid samples from the 'Dependable' vent field located on the SE flank of Axial Seamount at approximately 1940 m depth. This field was discovered by the RSN group during a cable survey dive when it was found that the primary fiber-optic cable had been placed directly in a high-

temperature vent. The appearance of the vents in this field is distinct from all of the vents within the caldera, with horizontally-growing flanges dominating the vent structures at Dependable. We collected an active sulfide flange mineral sample and a large piece of sulfide talus.

Falkor/ROPOS Summary

2013 marks the first research cruise dedicated to the Moore MMI project. The key microbiology and chemistry personnel were on board the Falkor to sample hydrothermal fluids with the ROV ROPOS. Due to the extremely bad weather during most of the cruise, we completed only two full HFPS dives. The focus was on a small number of diffuse vent sites to collect sufficient volume of fluids to do a wide range of microbiological experiments and to characterize fully the chemistry of the target sites. We sampled the high-priority vent sites Marker 113, Skadi, Marker 33 and Boca with HFPS. In addition to these 4 target sites, the IGT samplers and the large volume water sampler for virus work were used at Anemone and a near-caldera background site. Anemone vent was sampled with HFPS during the Thompson/Jason cruise earlier in September. A total of 23 fluid samples were collected with HFPS, along with 10 IGT samples and 7 RNA filters. The research cruise with ROV ROPOS on the Falkor was funded by the Moore Foundation and the Schmidt Ocean Institute.

HFPS Configuration

Because the configuration of HFPS changes slightly with time, we provide some details of how it was set up. Valve position 1 was the large volume bag (4-liter) used for microbiology experiments on board (Stable Isotope Probing, or SIP). Valve positions 2 through 9 were occupied by pistons. Pistons 2-5 were titanium with Teflon end caps. Pistons 6-9 were PVC. Even-numbered positions were filtered through Millipore http 0.4 micron polycarbonate membrane filters. Positions 10, 11, and 14-16 were 47mm diameter, 0.2micron pore size, flat membrane filters in McClane filter holders with preservative reservoirs filled with RNA-Later preservative. The preservative was passively added to the filter in-situ after the sample was taken. Positions 17-24 were collapsible Tedlar bag samples. The even-numbered bags were filtered through 0.4 micron membrane filters, with the exception that bag 18 was not filtered during the Falkor/ROPOS dives in order to provide more unfiltered water for microbiological experiments. Bag 17 was set up with an acid-cleaned Teflon sample bag for gold analysis and processed specifically for gold. Samplers with all Teflon and titanium parts were preferred for the hottest samples. We collected a number of replicates of hot water samples with HFS pistons and titanium major samplers during the Thompson cruise to evaluate sampling equipment artifacts that cannot be easily determined from laboratory experiments. During the Thompson cruise, we connected 3 UCSB-type gas-tight samplers to the HFPS manifold, and also used 3 additional gas-tight samplers in discrete mode and triggered by a hydraulic ram on Jason's manipulator. The number of gas-tight samplers on the ROV varied depending on payload issues. Through both cruises, the standard HFPS intake nozzle was used without any additional attachment/adapter. Giora Proskurowski's IGT samplers (2 per dive) were used instead of the UCSB-type during the Falkor/ROPOS dives.

Chemical Sensors on HFPS. Positions 12 and 13 were dedicated to chemical sensors. A new Seabird (Bellvue, WA) 63 Optical Oxygen sensor was plumbed in series with a AMT (Rostock, Germany) deep-sea glass pH electrode. Both sensors responded consistently. The oxygen sensor produced water column profiles that were very close to the dual Seabird 43 Clark-type electrochemical oxygen sensors mounted on the Thompson CTD. There was no CTD deployment during the Falkor cruise, and we have not yet evaluated the oxygen data recorded by ROPOS. The oxygen sensor on HFPS appeared to continue to work normally throughout the Falkor cruise. We did not fully evaluate the pH data from the AMT sensor during the cruises, but it appeared to respond normally throughout both cruises. Calibration of the AMT pH sensor before and after the Jason cruise was linear and very close to the calibration done by AMT. We will perform a post-Falkor cruise calibration. Two hydrogen sulfide sensors were refurbished and calibrated by AMT before the research cruises. The first sensor failed completely at a depth of approximately 1200 meters on the first deployment, and the second sensor failed in water less than 100 m deep at the beginning of the second Jason dive with HFPS. We need to find an alternative H2S sensor.

Sample Processing and Analysis

Kevin Roe analyzed hydrogen sulfide, dissolved silica and ammonia on board by spectrophotometry. Dave Butterfield (and Chris Algar on the Thompson cruise) analyzed pH and alkalinity. Ben Larson analyzed methane and hydrogen on Butterfield's SRI gas chromatograph during the Thompson cruise, and Giora Proskurowski and Ben Larson analyzed hydrogen and methane on Proskurowski's HP gas chromatograph on the Falkor cruise. Leigh Evans processed gas-tight samplers (UCSB-type) during the Thompson cruise. We processed nearly all of the HFPS samples for gas analysis. If a gas headspace was present, the entire gas volume was removed and combined into a gas sample bag, the volume of the gas was measured at room T and P, and the methane and hydrogen content of the gas was analyzed on the GC. Immediately after the gas removal (within 1 minute), a liquid sample was taken and the gas content of the liquid was also analyzed. The total sample volume of the liquid was determined by weight, by piston displacement, or by tally of all the sub-sample volumes. The measurements are combined to calculate the total methane and hydrogen content of the fluid. In many cases, we have UCSB or IGT gas-tight samples for comparison.

UCSB Gastight bottle contents were divided into three sub-samples during seaboard processing, degassed liquids and two sizes of glass ampule. Magnesium concentration will be analyzed in the liquid and gases will be analyzed from the contents of glass ampules. Aluiminosilicatae ampules of an approximate volume of 3 ml will be dedicated to the stable isotopes of helium in John Lupton's lab in Newport. Pyrex ampules of an approximate volume of 35 ml will be used to measure hydrogen, methane, carbon dioxide and some atmospheric gases in Marv Lilley's lab in Seattle.

Our shore-based analytical plan is similar to previous years. We will analyze major elements (Na, K, Mg, Ca, Cl, SO4) by ion chromatography, minor elements (Li, F, B, Sr, Rb, Fe, Mn) by Atomic Absorption, ICP-OES, ion-selective electrode, and other techniques, a suite of trace metals (Fe, Mn, Cu, Zn, Pb, Mo, Ni, Ag, Cd, Bi, U and others) by ICP-MS, S isotopes on H_2S and SO_4 by mass spectrometry in collaboration with ETH-Zurich, O and H isotopes of water at UW, stable C on DIC (Giora), Sr and Pb isotopes on selected samples. Sub-samples of unfiltered, low-temperature vent fluids were saved for cell counts. Sub-samples of a few samples were saved for virus counts on the Falkor cruise. Nutrient samples (filtered and purged with nitrogen, but not acidified per discussion with Annie Bourbonnais) were frozen and will be sent to Annie Bourbonnais for both nutrient analysis and isotopes of N and O on nitrate. Replicate nutrient samples (filtered, acidified, and purged with nitrogen) were saved and frozen to be analyzed for nutrients (by either the PMEL nutrient lab or the UW nutrient lab). Samples for analysis of N isotopes on nitrite were preserved with NaOH solution and frozen, to be analyzed by Annie Bourbonnais. DOC will be analyzed on selected samples from each vent site. A subset of samples collected by Jason were saved for both total DIC and stable C isotopes on DIC to be analyzed by Giora Proskurowski. Only the IGT samples (not HFPS samples) from the ROPOS dives were saved for DIC and stable C on DIC.

Table 4.2-1 Hydrothermal Fluid Sample Metadata

DB Sample#	Vent	Date	Start Time	Stop Time	Tmax °C	Tavg °C	Pump Volume	Best Volume
J2-726BF24	**Near Casper**	9/5/2009	1:47	1:51	26.6	26	651	607
J2-726BF22	**Near Casper**	9/5/2009	1:53	1:56	26.2	26	651	603
J2-726BF18	**Near Vixen**	9/5/2009	2:29	2:34	34.1	33.9	602	532
J2-726B19	**Near Vixen**	9/5/2009	2:35	2:38	34.2	34	601	614
J2-726PF2	**Vixen**	9/5/2009	3:39	3:41	333.3	319.3	400	316
J2-726P3	**Vixen**	9/5/2009	3:41	3:44	333.6	330.8	401	544
J2-726B17	**Vixen**	9/5/2009	3:53	3:54	334.9	319.9	304	304
J2-726PF4	**Casper**	9/5/2009	5:25	5:28	249.8	247	402	465
J2-726P5	**Casper**	9/5/2009	5:30	5:32	252.9	241	402	383
J2-726PF8	**Virgin**	9/5/2009	8:26	8:33	265.2	265.1	411	316
J2-726P9	**Virgin**	9/5/2009	8:36	8:40	nd		401	0
J2-726LVB1	**Anemone**	9/5/2009	10:08	10:29	30.6	28.5	4003	4003
J2-726BF20	**Anemone**	9/5/2009	10:31	10:34	29.1	28.2	651	614
J2-726B21	**Anemone**	9/5/2009	10:36	10:39	30.9	29.2	651	667
J2-726B23	**Anemone**	9/5/2009	10:41	10:50	35.9	34.3	663	346
J2-726PF6	**Inferno**	9/5/2009	12:16	12:20	300.1	299.6	600	502
J2-726P7	**Inferno**	9/5/2009	12:20	12:27	300.3	300	657	662
J2-726MW	**Inferno**	9/5/2009	12:37		311.3			750
J2-726MY	**Inferno**	9/5/2009	12:56		311.3			750
J2-728BF18	**Marker 151**	9/7/2009	5:40	5:44	62.9	61.3	610	542
J2-728B19	**Marker 151**	9/7/2009	7:46	7:48	59.1	58.8	629	0
J2-728BF22	**Escargot diffuse**	9/7/2009	8:29	8:32	6.6	6.5	627	608
J2-728BF24	**Escargot diffuse**	9/7/2009	8:34	8:37	6.5	6.4	626	600
J2-728PF8	**Escargot**	9/7/2009	9:21	9:23	264.1	262.2	503	505
J2-728P9	**Escargot**	9/7/2009	9:24	9:27	265.7	263.1	501	485
J2-728PF2	**Diva**	9/7/2009	9:54	9:55	271.5	271.2	201	206
J2-728BF20	**El Guapo diffuse**	9/7/2009	11:36	11:39	24.9	23.8	626	605
J2-728B21	**El Guapo diffuse**	9/7/2009	11:41	11:43	24.9	23.8	629	632
J2-728B23	**El Guapo diffuse**	9/7/2009	11:45	11:48	25.7	25.2	629	430
J2-728LVB1	**El Guapo diffuse**	9/7/2009	11:53	12:10	26.1	24.2	4002	4200
J2-728PF4	**El Guapo top**	9/7/2009	13:22	13:24	338.1	332	455	493
J2-728P5	**El Guapo top**	9/7/2009	13:26	13:28	339.2	326.4	451	464
J2-728MW	**El Guapo top**	9/7/2009	13:45		342			750
J2-728MY	**El Guapo top**	9/7/2009	13:49		342			750
J2-728B17GOLD	**El Guapo top**	9/7/2009	13:57	13:59	334	307	401	450
J2-728PF6	**El Guapo midway**	9/7/2009	14:25	14:28	63.3	58	600	742

DB Sample#	Vent	Date	Start Time	Stop Time	Tmax °C	Tavg °C	Pump Volume	Best Volume
J2-728P7	**El Guapo midway**	9/7/2009	14:29	14:32	56.1	54.1	600	612
J2-728P3	**Castle**	9/7/2009	15:22		271.6	266	253	292
J2-730B17	**Bag City**	9/11/2009	01:54:31	01:57:30	19.7	19.5		563
J2-730BF18	**Bag City**	9/11/2009	02:22:45	02:25:29	19.9	19.6		505
J2-730P7	**N3**	9/12/2009	04:19:40	04:23:01	20.1	19.5		671
J2-730B19	**N3**	9/12/2009	09:01:58	09:04:48	19.6	19.1		582
J2-730BF20	**N3**	9/12/2009	09:05:51	09:08:41	18.9	17.5		505
J2-730LVB1	**N3 LVB**	9/12/2009	09:09:56	09:26:50	20.1	19.6		
J2-730B21	**N3**	9/12/2009	14:16:52	14:19:47	19.8	19.7		537
J2-730P9	**Spanish Steps**	9/13/2009	01:58:45	02:02:42	24.5	22.6		662
J2-730PF8	**Spanish Steps**	9/13/2009	04:12:58	04:15:59	20	17.8		709
J2-730PF2	**Trevi**	9/13/2009	05:34:53	05:37:49	250.4	250		400
J2-730P3	**Trevi**	9/13/2009	05:38:39	05:41:22	250.2	250		396
J2-730PF4	**Trevi**	9/13/2009	06:26:49	06:29:30	250.2	249.9		421
J2-730B23	**Bckgnd SW**	9/11/2009	05:44:59	05:47:41	2.5	2.4		583
J2-731B18	**Diffuser w worms**	9/14/2009	01:54:31	01:57:30	26	?	630	606
J2-731B19	**Diffuser w worms**	9/14/2009	02:22:45	02:25:29	23.7	22.8	629	592
J2-731PF2	**Above Mkr 142**	9/14/2009	05:34:53	05:37:49	150.4	143.1	601	605
J2-731P3	**Above Mkr 142**	9/14/2009	05:38:39	05:41:22	141.8	140.2	629	641
J2-731PF4	**Trusty**	9/14/2009	06:26:49	06:29:30	183.8	175.7	601	626
J2-731B21	**Near broken chimney**	9/14/2009	09:05:51	09:08:41	49.2	48	653	659
J2-731B23	**background SW**	9/14/2009	14:16:52	14:19:47	2.8	2.7	626	596
J2-731-LVB1	Near broken chimney	9/14/2009	9:09:59	9:27:30	50	48.8	4002	4200

Table 4.2-2 Hydrothermal Fluid Sample Processing

DB Sample#	gas head vol	gas H2O	H2S/Si	pH/ alk	Majors	Trace Metal	Nutrient	N isotope	Microbio	Total DIC	13C-DIC	Sulfur isotopes	O/H isotopes	DOC
custody->	DB	DB	DB	DB	DB	DB	AB	AB	JH/CF	GP	GP	DB/GFG	DB	DB
J2-726BF24	0	7	25	35	45	250	35	45		10	10	45		100
J2-726BF22	0	12	25	35	35	236	45 din103	45 bno2#106		11	11	45		100
J2-726BF18	0.5	7	30	35	35	250	45 din125	45 bno2#101		11	11	45		
J2-726B19	0	7	30	35	35	210	45 din116	45 bno2#183	140	10	10	24	12	
J2-726PF2	87	3	25	35	35	123	45 din108	35 bno2#151					10	
J2-726P3	215	7	15	38	35	176	50 din122	50 bno2#103		10	10	45	5	
J2-726B17	approx 200		gold analysis		35	400								
J2-726PF4	55*	28	18	35	35	214	45 din114	45 bno2#179				45		
J2-726P5	77	6	20	35	35	207	40 din107	40 bno2#125						
J2-726PF8	336*	6	35	35	35	108	35 + 48 din109	30 bno2#178		10	10			
J2-726P9	FAILED	NO SAMPLE		x	NO SAMPLE									
J2-726LVB1					8					10	10			
J2-726BF20	0	7	25	35	35	244	45 din120	45 bno2#168		10	10	24x2		100
J2-726B21	0	6	15	x	x	30			620					
J2-726B23	0	7	20	35	35	134	45 din112	no	40	10	10			
J2-726PF6	0	7	20	35	35	250	45 din129	45 bno2#193		10	10	45		
J2-726P7	65	12	20	35	35	450	45 din104	45 bno2#105		10	10			
J2-726MW	?	0		35	35	500	45							
J2-726MY	?	0		35	35	500	40 din132	20					15	
J2-728BF18	260	12	25	35	35	250	45 din#178	45 bno2#157						100
J2-728B19	19	NO SAMPLE		NO SAMPLE										
J2-728BF22	0	12	40	35	35	318	45 din195	45 bno2#133		11	11	45		
J2-728BF24	0	12	35	35	35	282	45 din139	45 bno2#153						100
J2-728PF8	1564	8	16	35	35	253	44 din102	44 bno2#152		10	10	45		
J2-728P9	?	8	18	35	35	259+25	45 din134	45 bno2#176					15	
J2-728PF2	1600	7	20	35	35	107								
J2-728BF20	0	20	30	35	35	250	45 din188	45 bno2#129		11	11		15	110
J2-728B21	0	5	microcosm experiment						627					
J2-728B23	0	10	30	36	35	156	45 din142	45 bno2#112	40	10	10			
J2-728LVB1	?	5			60									

DB Sample#	gas head vol	gas H2O	H2S/Si	pH/ alk	Majors	Trace Metal	Nutrient	N isotope	Microbio	Total DIC	13C-DIC	Sulfur isotopes	O/H isotopes	DOC
custody->	DB	DB	DB	DB	DB	DB	AB	AB	JH/CF	GP	GP	DB/GFG	DB	DB
J2-728PF4	64	16	18	35	35	263	45 din#130			11	11	45	12	
J2-728P5	370	12	20	35	35	267	45 din#131	45 bno2#174						
J2-728MW	?	0	30	35	35	500								
J2-728MY	?	0	30	35	35	500								
J2-728B17GOLD	>200ml				35?	450								
J2-728PF6	0.5	10	29	35	35	378	45 din#117	45 bno2#171		10	10	45		100
J2-728P7	0	20	30	35	35	395	45 din#113	45 bno2#116		11				
J2-728P3	705	7	20	35	35	105	45 din#127	35 BNO2#142						
J2-730B17	0	20	40	35	35	166	45 #141	45 #167	40	no	no			94
J2-730BF18	0	20	40	35	35	123	40 #177	45 #131		10	10	45		100
J2-730P7	95	15	30	35	35	?	45 #155	40#135	40	10	10			
J2-730B19	>145		microcosm		10				572					
J2-730BF20	40	15	35	35	35	140	45 #123	40 #140		10	10	45		95
J2-730LVB1														
J2-730B21	258	40	39	35	35	206	45 din144	40 bno2#126		10	11			100
J2-730P9	15	14	35	36	35	398	45 #159	45 #121	40	10	10			
J2-730PF8	0	11	35	35	35	343	45 din110	45 bno2143		10	10	45		95
J2-730PF2	30	15	15	35	35	300		leaking past piston - sample no good						
J2-730P3	225	30	17	35	35	178	45 #135	45 #187			11		no	no
J2-730PF4	190	12	15	35	36	160	45 #160	40#162				45		
J2-730B23	0	20	35	35	35	152	45 #126	43 #107	40	10	11	45	10	100
J2-731B18	0	15	35	35	35	296	45 #162	45 #124						100
J2-731B19	0	15	30	35	35	271	45 #169	45 #115	40	15	10	45		
J2-731PF2	0	15	35	35	35	314	45 #170	45 #182		11	15	45	15	
J2-731P3	0	15	35	35	35	437	45 #133					45		
J2-731PF4	10	23	35	35	35	325	45 #148	45 #108		13	11	45	10	
J2-731B21	2	15	30	35	35	353	45 #161	45 #158	40	10	10			
J2-731B23	0	25	40	35	35	200	45 #137	45 #154	40					100
J2-731-LVB1		10	25		10				4000					

Sample split volumes in mL.

Nutrient and NO2 isotope numbers refer to Annie Bourbonnais bottle label numbers.

Custody indicates whose lab will analyze each sample split: DB=Butterfield; AB=Annie Bourbonnais; GP=Giora Proskurowski; JH=Jim Holden; CF=Caroline Fortunato(Huber lab); GFG=Gretchen Fruh-Green.

4.2.2 RNA-SIP-Genomics Analysis

Julie Huber Laboratory Sampling

Caroline Fortunato / Chris Algar – Marine Biological Laboratory

For each Hydrothermal Fluid and Particle Sampler (HFPS) dive the following was performed:

Collection of RNA for Metatranscriptomics:

Five filter holders charged with RNAlater and containing a 0.2um flat filter were loaded onto the HFPS. At each vent site, 3L was pumped through each filter and flooded with RNA later. Once on deck, filters were removed from their holders, folded into quarters and placed into sterile 50mL tubes with ~15mL of RNA later. Tubes were kept at 4ºC for 24 hours and then moved to -80ºC.

Stable Isotope Probing (SIP) experiments:

On each HFPS dive, 4L of vent fluid was collected using a large volume bag (LVB). This fluid was used to fill six evacuated 500mL bottles. Water was pumped from the LVB into each bottle using a peristaltic pump and needle. Before filling, each bottle was spiked with either 13C or 12C labeled sodium bicarbonate to a final concentration of 10uM. Bottles were filled to 530ml and incubated at 30ºC, 55ºC, 80ºC, with two bottles at each temperature, a labeled experiment (13C) and an unlabeled control (12C). Bottles were incubated for 36 hours. Once the 36 hour incubation was complete, bottles were filtered through 0.22um Sterivex filters, preserved with RNA later, and frozen at -80ºC. SIP experiments were completed at Anemone, El Guapo, N3 Area, and Dependable vents.

Single Cell Genomics:

From the LVB, 1ml of water was added to a sterile cryovial with 100ul of filter-sterilized GlyTE. Vials were then inverted for mixing and incubated at room temperature for 5min before being frozen at -80ºC. Triplicate samples were taken.

4.3 Microbiology

Thermophilic Biogeochemical Processes

Jim Holden / Begum Topcuoglu, University of Massachusetts (Amherst)

The goal of our research is to model the habitability of hydrothermal vent environments by thermophilic and hyperthermophilic anaerobic microorganisms and the biogeochemical impact of these organisms on the deep sea. On this cruise, we determined the concentrations of cultivatable methanogens, autotrophic sulfur reducers, autotrophic iron reducers, and anaerobic heterotrophs that grow at 55 and 80°C, and determined the potential growth restraints (e.g., N availability, H_2 concentration, trace metal or vitamins) on natural assemblages of methanogens at the same temperatures. Low-temperature (< 30°C) hydrothermal fluid samples were collected using the hydrothermal fluid sampler and processed from vents at Anemone (J726-unfiltered bag 21), Vixen (J726-unfiltered bag 19), El Guapo (J728-unfiltered bag 21), and Marker N3 (J730-unfiltered bag 19). From each bag (~640 ml per bag), except the Vixen sample, 400 ml were used for methanogen microcosm incubations, 100 ml were used for three-tube most-probable-number estimates, 18 ml were preserved in 3-4% formaldehyde for total cell counts, and 5 ml and the remaining fluid were filtered onto a 0.2 µm pore size membrane filter and preserved with 4% paraformaldehyde for fluorescence in situ hybridization (FISH) counts of specific cell types. For the Vixen sample, only MPN incubations were run and total cells were preserved. We also filtered and preserved 5 ml, 25 ml, 50 ml, and 100 ml of fluid for FISH analysis from each of the two large volume bags (R1663-01 and R1665-01) collected for SIP experiments by the Huber lab, and preserved 40 ml of fluid from each low-temperature unfiltered hydrothermal fluid sample collected for total cell counts. Final results cannot be determined at sea, but there are very good indications that we had growth of methanogens in our microcosm and MPN experiments at 55 and 80°C and in our heterotroph MPNs at the same temperatures.

Fig. 4.3-1 Jim Holden / Begum Topcuoglu preparing samples for analysis in the Thompson's biology laboratory.

4.4 Pharmacology

Oliver Vining, Oregon State University

The focus of our research is to identify and characterize biologically active small molecules as leads for the treatment of human diseases. We are investigating deep-sea hydrothermal vents based on the observation that chemical diversity often correlates with biological diversity, and thus phylogenetically unique organisms from rare or extreme ecosystems are rational sources of novel chemotypes with important biological activities.

For this cruise our group had three main collection goals. The first was to collect sediment samples from ambient and warm temperature (< 25°C) sites adjacent to diffuse venting as part of our effort to cultivate bacteria with high potential for the biosynthesis of biologically active metabolites, particularly members of the Actinomycetales. To this end we used syringe samplers to collection ten sediment and bacterial mat samples, which were stored in both a glycerol archiving solution for later culturing in the lab and in an RNAlater solution to preserve nucleic acids for sequencing and community analysis. Bacterial isolates will be cultured on several media types and screened for the production of compounds that inhibit growth of a panel of clinically relevant pathogenic bacteria and cancer cell lines.

The second goal was to re-collect bulk samples of the blue ciliate *Folliculinopsis* (blue mat), small amounts of which were collected during the 2009 and 2010 NeMO cruises from the Magic Carpet site near Marker N3. Extractions of these previous collections yielded a blue pigment with inhibitory activity against *Staphylococcus aureus* as well as NCI-H460 human lung cancer cells, but in insufficient quantities to allow full assignment of the chemical structure by NMR spectroscopy. Attempts to re-collect the blue mat at Marker N3 during the 2011 and 2012 cruises were not successful due to the site being completely covered with new lava flow from the 2011 eruption. This year we were able to locate blue mat at both Phoenix and Escargot, and made three large collections using Jason's onboard suction sampler. Combined, these samples total ~500 mL of material and should provide more than enough of the blue pigment for chemical analysis.

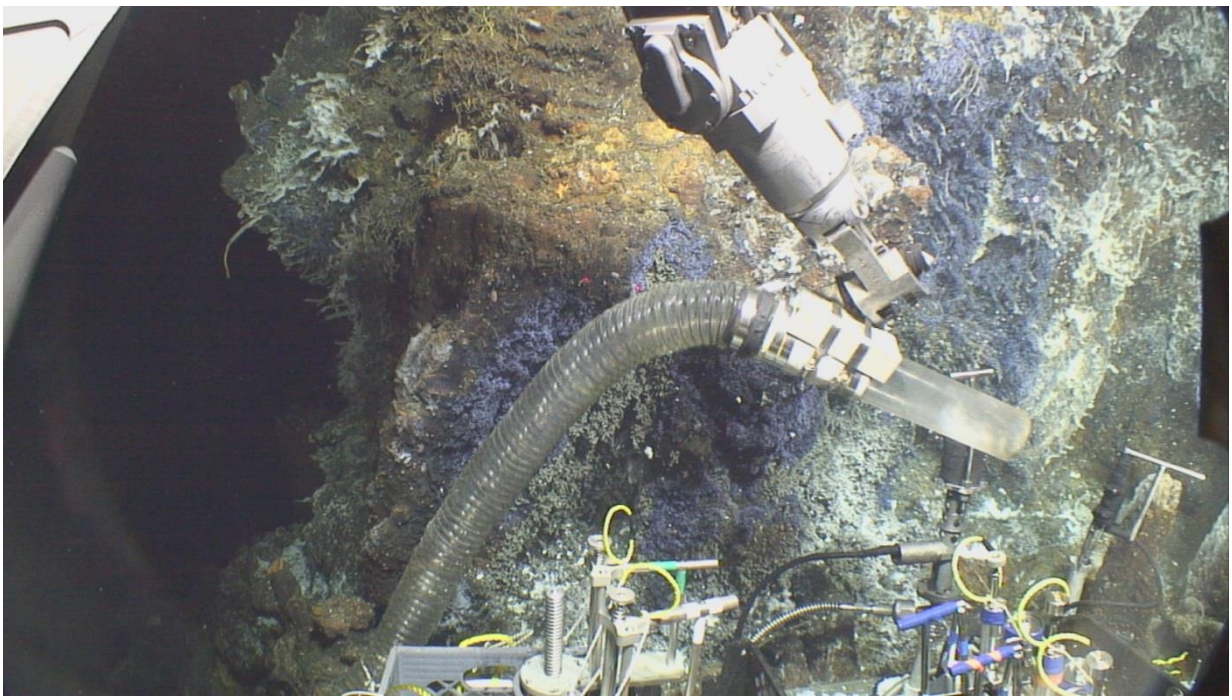


Fig. 4.4-1. Suction sample (J729-microbio-03) of blue mat at Phoenix vent in the ASHES vent field.

Our final goal was to locate and collect bulk samples of a bright red mat that had previously been observed by MBARI researchers in August 2013 near the Trevi vent site. It is unclear whether or not the red material is of biological origin, though similar material has been observed at the Loihi Seamount, and was determined to be iron oxide. Collections will provide material for laboratory cultivation of associated bacteria, metagenomic analysis, and direct chemical analysis.

Three large syringe and one small RNAlater syringe samples of the red mat were collected, as well as one large syringe of nearby tan hydrothermal sediment for comparison. Initial visual and microscopic inspection of the fine red sediment does not suggest that the material is biological and efforts to isolate bacteria are underway.

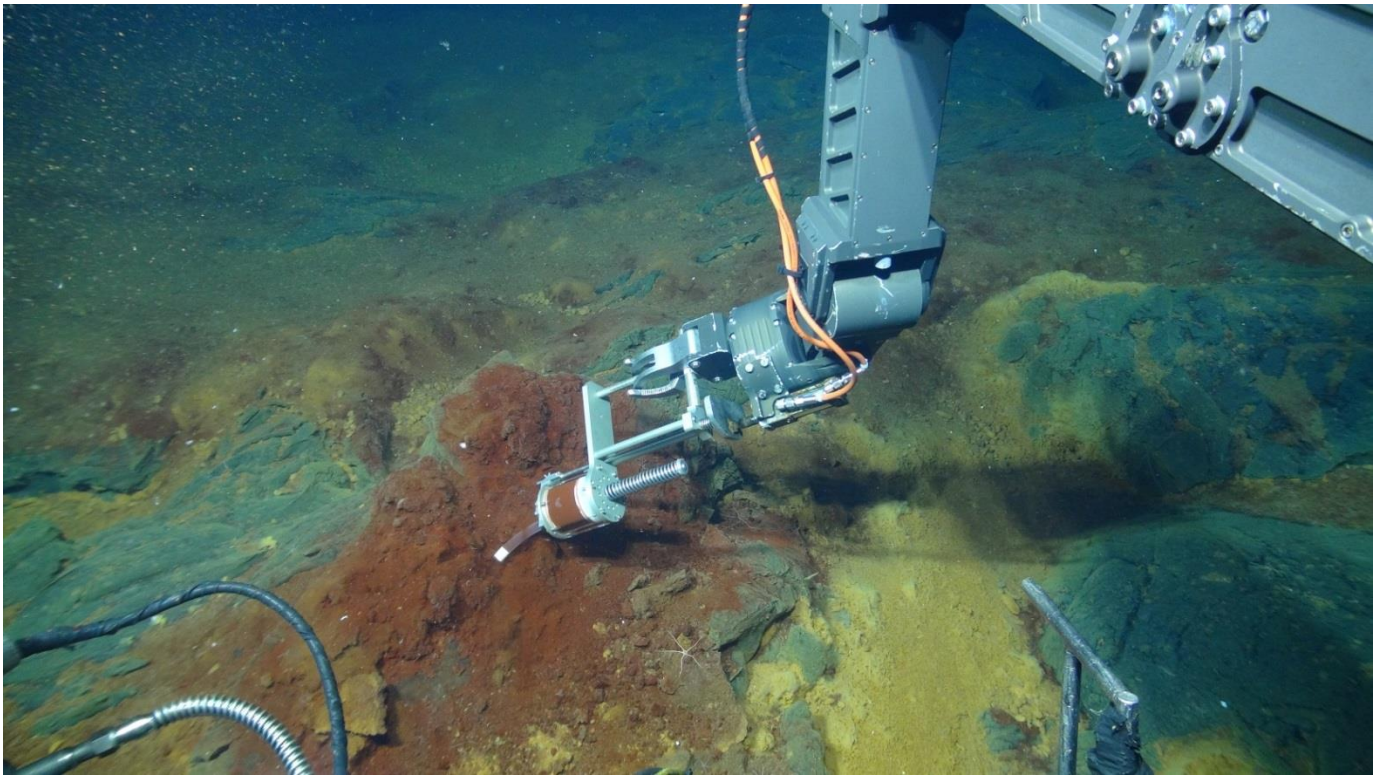


Fig 4.4-2. Sample of red mat at Red Bridges area north of Trevi on dive J2-730 (J730-microbio-22).

4.5 Gas sampling

Leigh Evans, Oregon State University

Axial volcano's high temperature, focused flow fluids were sampled using PMEL's titanium gastight bottles. Some samples were taken using the Fluid Sampler manifold and others transported fluids from vent to bottle using separate individual plumbing. As the spreadsheet shows, very good geographic coverage was attained. Most continue long term time series. The gas concentrations show that in most cases, fluids were likely to be nearly end member composition.

Table. 4.5-1. Total Gas Samples: 20

Sample	Device	Site	Site Description	Sample Information
J726-GTB-16	GTB	Casper	Knocked down chimney and sampling directly in the intense flow.	Green gastight bottle #2. Jason temp probe 314°C.
J726-GTB-19	GTB	Virgin	Chimney fell over. Sampling directly in the intense flow.	Red/green gastight bottle #7. Jason T probe 271.8.
J726-GTB-20	GTB	Virgin		Nude gastight bottle #11. Tried to fire twice becasue the ram wasn't properly positioned the first time. Jason T probe 271.8.
J726-GTHFS-10	GTHFS	Vixen	Knocked down chimney and sampling directly in the intense flow.	Port HFS gastight. T=326. Jason temp probe 344°C.
J726-GTHFS-11	GTHFS	Vixen		Center HFS gastight. T=330. Jason temp probe 344°C.
J726-GTHFS-15	GTHFS	Casper		Stbd HFS gastight. Tmax-310 T2=76. (NOTE: Ram did not move but think sample did fire). Jason temp probe 314°C.
J728-GTB-25	GTB	El Guapo	In direct flow at "boiling flaming" orifice at top of chimney. 14 m off seafloor. Facing SW.	J728-GTB-25 blue-12. Fired in the same orifice as the HFS samples.
J728-GTB-32	GTB	Castle	On ledge near the base in area where the anhydrite chimney was just knocked over and excavated.	White -17 gastight bottle directly in the orifice where the previous 271deg sample was taken.
J728-GTHFS-02	GTHFS	El Gordo	in the same worm clump as the first sample but slightly different location. Still N side of vent.	Starboard red-9 GTHFS. T2=64 Tmax=156.
J728-GTHFS-14	GTHFS	Diva	Hole at the top of the anhydrite mound that used to be the spire base.	GTHFS port purple-10. Temp has dropped significantly; now about 200C. The flush pump had shut off.
J728-GTHFS-15	GTHFS	Diva		GTHFS center orange-16. Tmax= 270.7C.
J729-GTB-04	GTB	Hell	Beehive spigot with intense flow near top (3.4 m up) of sulfide covered in dense biota.	Gastight bottle nude-11 placed in flow of broken-off beehive. Jason temp was 296.5 C.
J729-GTB-06	GTB	Inferno	Excavated hole from largest beehive in this area (not quite at the top) 2.7 meters up the chimney.	Gastight red-green-7 in the excavated hole (that was formerly a large beehive). Jason temp was 310.9C.
J729-GTB-07	GTB	Inferno	Excavated hole from largest beehive in this area (not quite at the top) 2.7 meters up the chimney.	Gastight green-2 in the excavated hole (that was formerly a large beehive). Same position as last sample. Jason temp was 310.9C.
J730-GTHFS-07	GTHFS	Marker N3 vent site. Mkr-135 area.	In diffuse flow coming out of a crack between pillows. White floc and thick white mat at sampling site. Pre/post sample readings: Tmax=20C/19.9; O2= 0.133/0.121 mL/L; pH voltage= 2.766/4.379.	HFS gastight. Purple-10. T=19.2C
J730-GTHFS-16	GTHFS	Trevi	Jason Tmax=257.9 C. In the direct flow at this small anhydrite mound (anhydrite knocked over).	HFS gastight. Red-center-9. T=250C
J730-GTHFS-17	GTHFS	Trevi		HFS gastight. White-stbd-17. T=249C
J731-GTB-12	GTB	Trusty Chimney	Very small chimney on the north side of main Dependable structure. Jason temp=216.2 deg.	Hand-held gastight bottle - green #2.
J731-GTHFS-06	GTHFS	Rusty	Old venting sulfide chimney. Sample position 9 m up; Hdg 256deg. East side of main Dependable structure. Oxygen=0.16	HFS gastight port blue #12. T=41.
J731-GTHFS-10	GTHFS	Small Spire	Area of good flow on spire. North side of main Dependable structure. Looking south. Above and to the right of Mkr-142. Hdg 181 deg.	HFS gastight center orange-16. T=145.

4.6 ONR Vents Energy Harvesting Project

Dave Dyer, Applied Physics Laboratory

The Applied Physics Lab at University of Washington, Maritime Applied Physics Corporation and Creare Inc. are on contract with the Office of Naval Research to explore options for harvesting energy from hydrothermal vents. The team selected three vents in the Axial Seamount area for device installation.

Project Log:

September 6: Installation of Creare device 1 (short tube configuration) at Vixen. (For the purposes of this discussion all weights are considered to be wet weight)

Vixen vent site location: 45° 55.040' N, 129° 59.577' W, 1537 meters

Elevator Deployment

Elevator deployment with the Creare device occurred at 1400 PST. In an effort to get the elevator as close to the vent site as possible, the Jason team requested that the elevator be cable deployed. However, during the cable lowering operations, excessive snap-loads were occurring. Nominal loading on the cable was 470 lbs, but shock loads in excess of 5000 lbs where observed. After a brief debate it was decided to release the elevator for free fall to the sea floor. The acoustic release was initiated and the elevator completed the fall (from 200 meters to 1530 meters) with a controlled and predictable path at a rate of 67 meter/min. This rate is well within the predicted fall rate and within the elevator design parameters. The elevator landed within 105 meters of the desired elevator landing site.

Device Installation

Jason dive start Sept 7, 2013 at 3:30:18 GMT; Jason Virtual Van frame 1470 of dive J2-727. The elevator was located using the USBL system and inspected. All hardware on the device and elevator looked to be intact except the skirt. The device was removed from the elevator without the skirt snagging and transported to the Vixen vent site and set on the sea floor next to the vent. It was observed that the device weight was approximately 100 to 105 lbs. Jason then returned to the elevator and recovered a donut to the vent site. Jason returned to the elevator and attempted, with success, to pick up the elevator and move it closer to the vent site. It is estimated that the elevator weighed approximately 150 to 170 lbs with all drop weights on-board and a single donut on the elevator deck. Once at the vent site, the second donut was removed and placed on the sea floor. The elevator appeared to weight approximately 30 to 60 lbs. With the hardware removed from the elevator, Jason inspected the elevator to ensure the drop platform was free to operate, the pull pin was pulled and the elevator ascended to the surface where it was picked up by RV Thompson (Elevator pin release 6:16:15 GMT, Jason Virtual Van frame 1841). The elevator ascended to the surface in a controlled and predictable path at a rate of 64 m/min. Approximately 25 minutes after the drop platform was activated, the elevator was spotted on the surface (6:40:05) approximately 250 meters on the starboard bow. The elevator was recovered on board. During the elevator recovery the ship lost the forward bow thruster and Jason operations were suspended. After approximately 4 hours the bow thruster was operational again and Jason resumed hardware installation. Upon completion of the hardware installation, we were able to verify the vent effluent was adequately routed through the Creare tubes. Dive ended 9/7/13 15:44:18; Jason Van Virtual frame 2262 of dive J2-727 Total dive time from reaching the elevator to completing the device installation was 12 hr 15 min. However, Jason was in standby mode for approximately 4-1/2 hours. Time for device installation from reaching elevator to Jason leaving installed device site was 7 hrs 45 min.

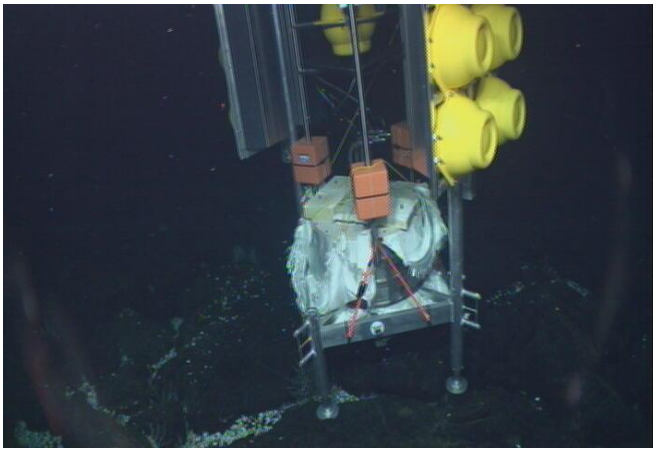


Fig. 4.6-1. Elevator with Creare hardware; skirt damaged during elevator deployment while attached to the winch cable.

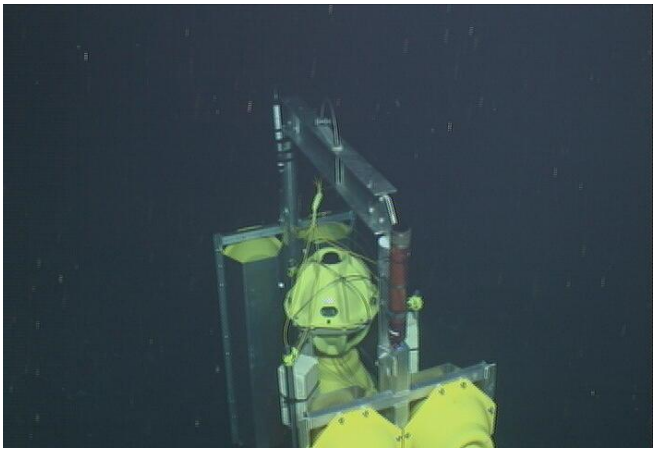


Fig. 4.6-2. Creare hardware with acoustic modem intact.

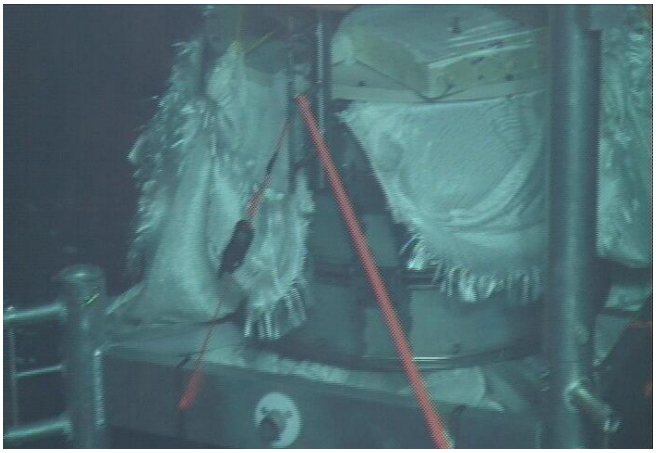


Fig. 4.6-3. Damaged skirt; device secured to elevator.

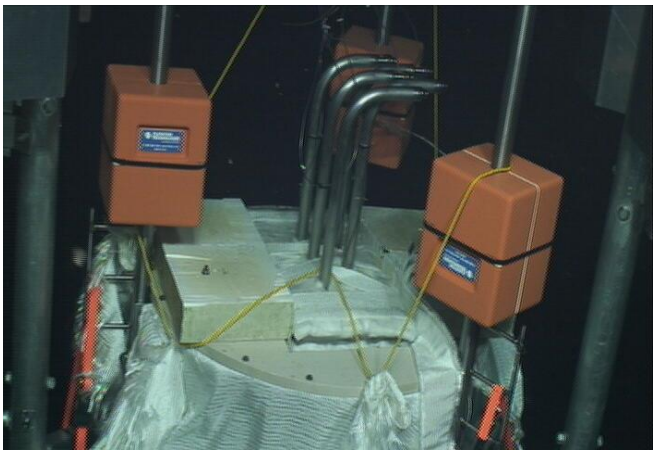


Fig. 4.6-4. Inspection of Creare device after elevator descent; note skirt restraining line (yellow) with damaged skirt.

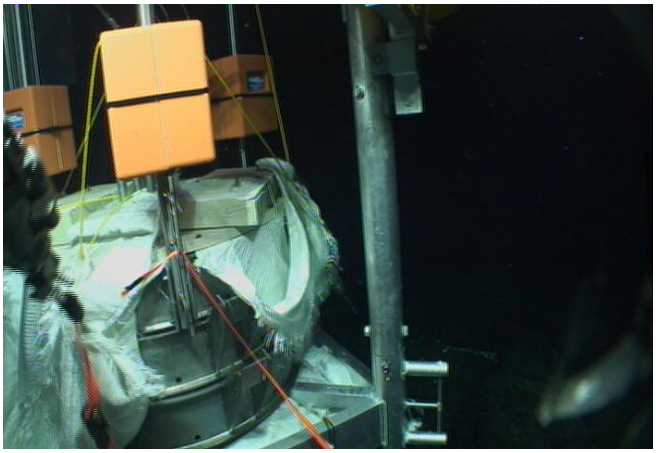


Fig. 4.6-5. Jason cutting tie downs with knife to remove the hardware.

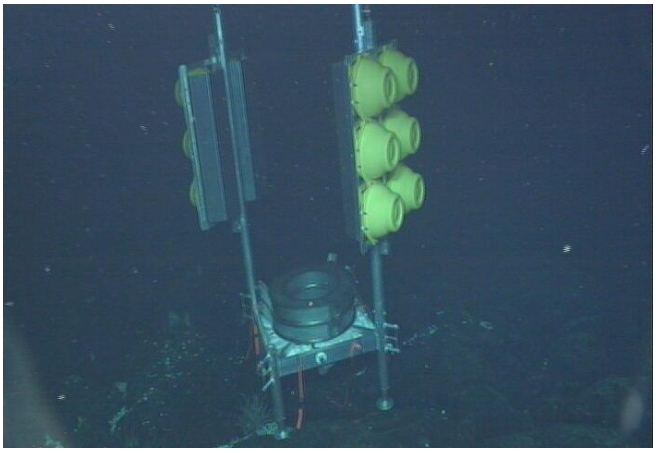


Fig. 4.6-6. View of elevator with donuts after returning from delivering the device to the vent site.

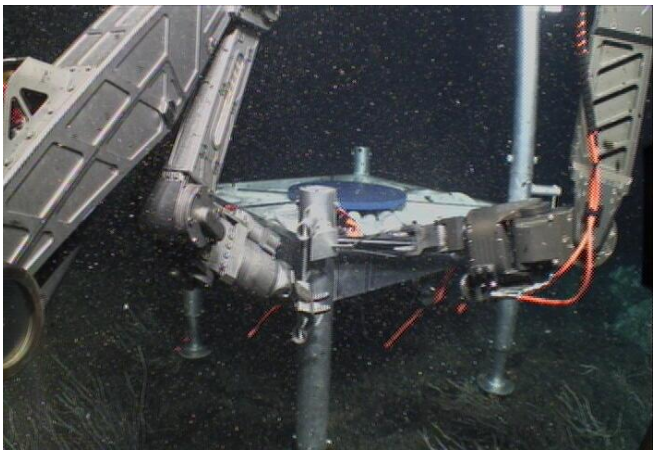


Fig. 4.6- 9. Pulling the drop platform pin on the elevator.

Fig. 4.6-10. Elevator away leaving the sand bags.

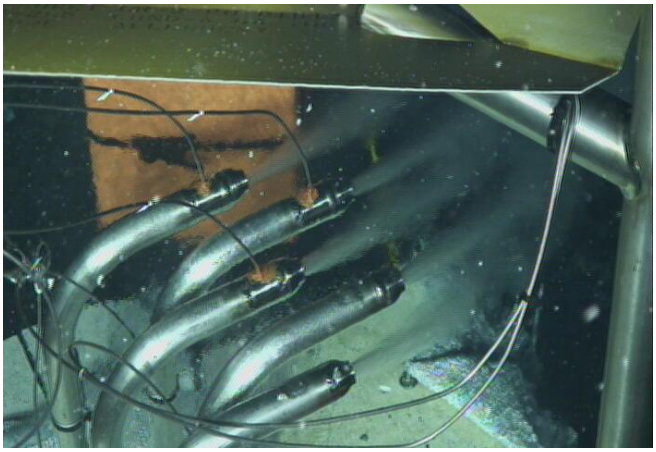


Fig. 4.6-11. Effluent routed thru Creare tubes.

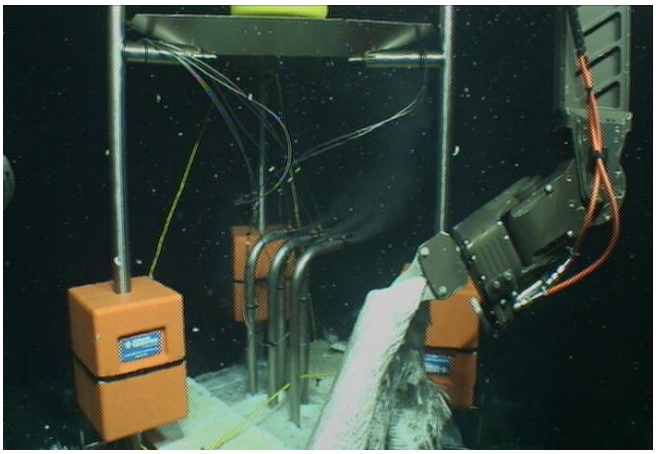


Fig. 4.6-12. Creare installation.

September 8 - MAPC Device Installation

Virgin vent site location: 45° 56.020' N, 130° 0.796' W, 1543 meters

The MAPC hardware was installed on the elevator and released for free fall at approx. 1430 PST. The elevator was tracked to the sea floor and landed approximately 200 meters from the target vent (Virgin) and approximately 150 meters from the nearest RSN hardware. The descent rate was 67 meters/min and had a lateral drift of approximately 50 meters.

The elevator deployment procedures where altered based on the experience of the 1st Creare device deployment. The MAPC device did not have a skirt due to weight concerns of the device assembly. During the elevator deployment, the loaded elevator was lowered approximately 2/3 of the way (10 feet) into the ocean and allow to vent all floodable chambers. Flooding took approximately 15-20 seconds after which, the elevator was lowered until the top lift beam was submerged, and then the sea catch was activated allowing the elevator to begin free fall. This method resulted in a much more controlled deployment, and we did not experience any slack and shock loading even though the seas where approximately as active as the previous deployment. All aspects of lessons learned outlined above where incorporated into the MAPC elevator deployment.

Start of the device installation began Sept 9 at 04:11:34 GMT, Virtual Van frame 4340 of Jason dive J2-728. Upon approach by Jason, the elevator and payload where inspected and found to be intact. The device was removed from the elevator and carried to the vent site. Once the device was relocated, Jason was able to transport the elevator system, including the remaining hardware, to the vent site by dropping 80 lbs of Jason trim ballast. The terrain surrounding Virgin is very uneven with significant small ridges. It was anticipated that significant excavation and leveling would be required to properly place a donut on Virgin. After installation, the Jason thermal probe was placed at the top opening of the resistor load bank heat sink to provide an initial validation that the MAPC panels where functional. A temperature of 7.2°C was measured, which compared to the surrounding sea water temperature of 3.9°C indicating that the MAPC panels were functional and generating power. The Jason thermal probe was also placed at the top of the MAPC panel stack to measure the exit temperature of the effluent which was recorded to be 97.8°C. It is uncertain if the measured temperature is an indication of the amount of heat being removed (earlier dive had recorded Virgin effluent temperature of 272°C) or if significant cold water was being introduced at the base of the installation or if the probe was measuring diffused flow temperatures up off of the device exit ports. Looking at recorded thermocouples and output voltages will provide additional data for a more conclusive understanding of the functionality of the MAPC device. MAPC device installation was completed on Sept 9, 11:28:04 GMT, Virtual Van frame 5090 of dive J2-729.

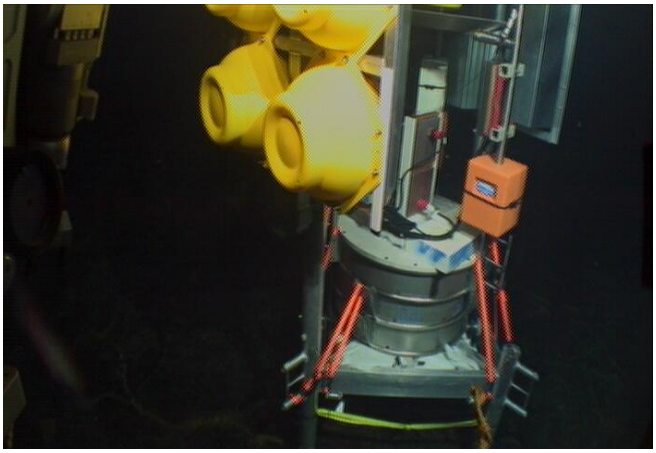


Fig. 4.6-11. Inspection of MAPC device shows all in good condition after descent to sea floor.

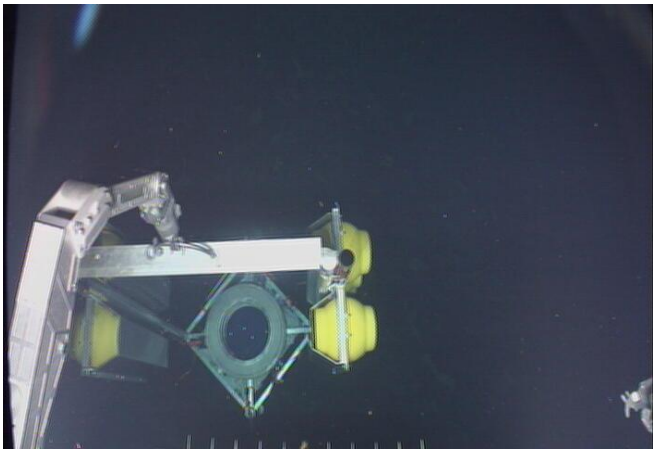


Fig. 4.6-12 Jason carrying elevator with both donuts still onboard.

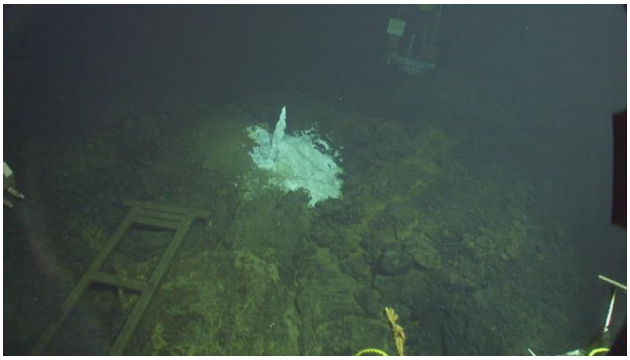


Fig. 4.6-13. Virgin vent; MAPC device in background; old frame in foreground; note drop off on right side of vent.1

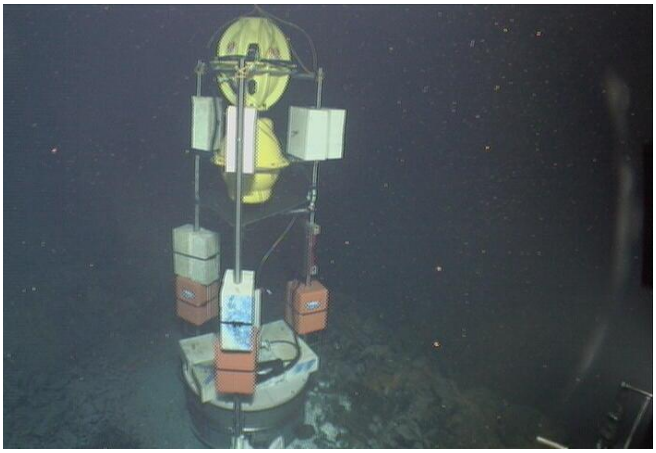


Fig. 4.6-14. Installed device assembly

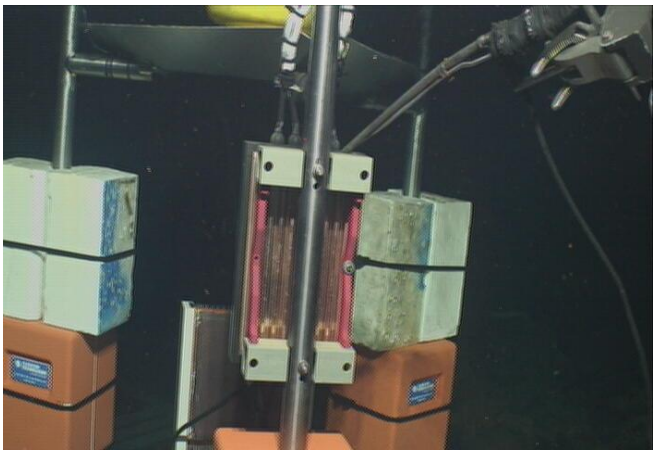


Fig. 4.6-15. Measuring the temperature of water flowing off of resistor load bank heat sink; max temp of 7.2°C.

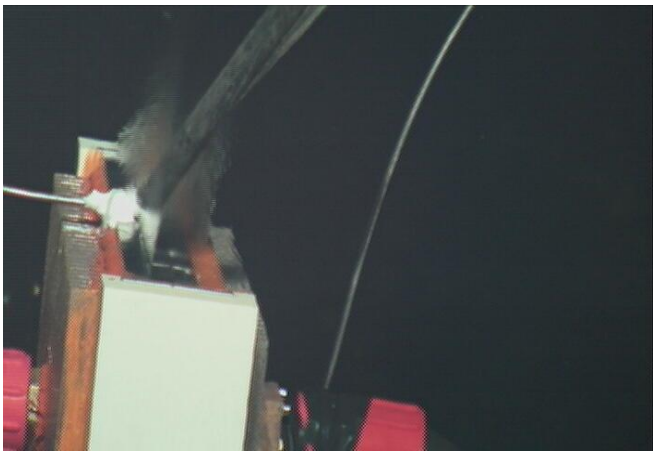


Fig. 4.6-16. Measuring temperature of effluent exiting the top of MAPC device; max temp of 97.8°C.

September 12 – Creare Device 1 Inspection

Visual inspection of Creare 1st install – 5 days after the initial installation; 1651 PST, Virtual Van frame 10701. During dive J2-730, we were able to visually inspect the 1st Creare installation at Vixen vent. We were able to verify that effluent flow was still actively emitting from the Creare device tubes with minimal change in flow volumes compared to that of the initial observations. It was noted that significant anhydrite growth around the device base and on one of the orange floats was present. However, it was apparent that the anhydrite deposits were not impairing on the primary device objectives – maintaining high flow volumes of vent effluent through the device tubes.

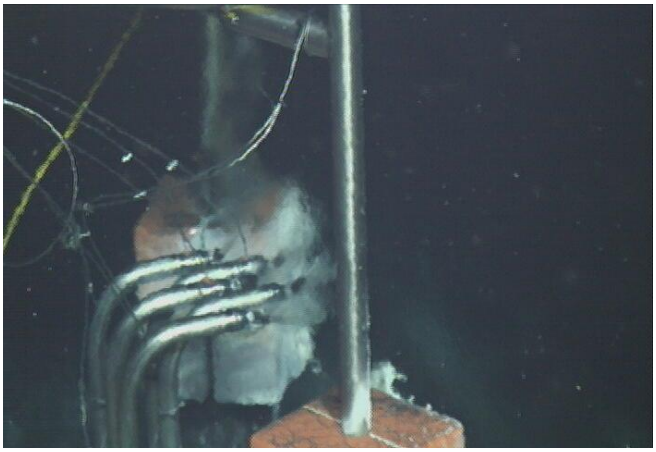


Fig. 4.6-17. Creare Device 1 inspection.

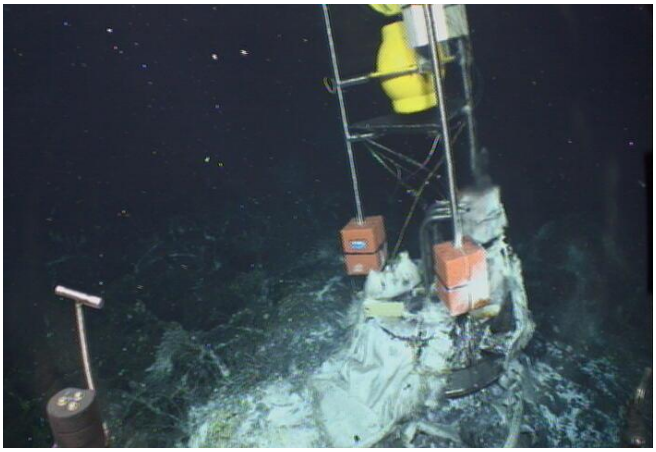


Fig. 4.6-18. Creare Device 1 inspection.

September 14 – MAPC Device Visual Inspection

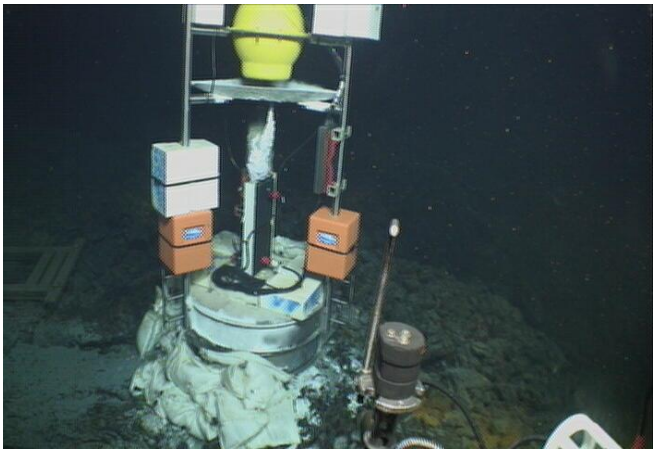


Fig. 4.6-19 MAPC Device inspection.

Later during dive J2-730, we were also able to conduct a visual inspection of the MAPC installation at Virgin vent. We were able to verify that effluent flow was still actively emitting from the MAPC device with minimal change flow volumes compared to the initial observations. Again, there was significant anhydrite growth on top of the MAPC device, but they were not impairing on the primary device objectives –maintaining high flow volumes of vent effluent through the device. Thermal measurements were taken using the Jason thermal probe at the MAPC device effluent exit. A maximum temperature of 240°C was observed.

September 15 – Installation of Creare device 2 (long tube configuration) onto Trevi vent site.

Trevi vent site location: 45° 56.775' N, 129° 59.027' W, 1520 meters

Elevator Deployment

The elevator was free falled as before and descended at a rate of 67 meters/min. The target drop site was approximately 150 meters east of the vent, to avoid areas of collapse west of the vent. Jason control van tracked the elevator to the sea

floor. The final landing site of the elevator was 130 meters east of Trevi. Following the lessons learned on the 1st elevator deployment, this deployment was uneventful with no apparent damage or impact to the device. The fiberglass skirt was installed on the device and survived the deployment with no apparent damage.

Device Installation

Start of device installation began Sept 15 at 20:06:37 GMT, Virtual Van frame 16338 of Jason dive J2-732. Upon approach by Jason, the elevator and payload where inspected and found to be intact. After removing the device from the elevator and relocating it close to the vent, Jason moved the elevator to a location approximately 5 meters from the vent. At this point the elevator assembly total weight was approximately 260 lbs. The device was placed onto the vent. Once the device was secured, the skirt deployment pins where removed by the ROV manipulator arms. Although the skirt is slightly negatively buoyant, the skirt remained in the deployment configuration and required the use of the manipulator arms to pull the skirt down into position around the base of the installation. Once the skirt was deployed, we observed effluent or warmed seawater coming out between one of the device float support tubes and the skirt. Using the ROV thermal probe we measured the temperature of that seawater and found it to only be 6.5 C. We do not anticipate any anhydrite forming at this location since it appears the water temperature is less than the required 150°C to participated anhydrite out of seawater. The temperature out of the Creare tubes was measured to be a maximum of 116.4°C.

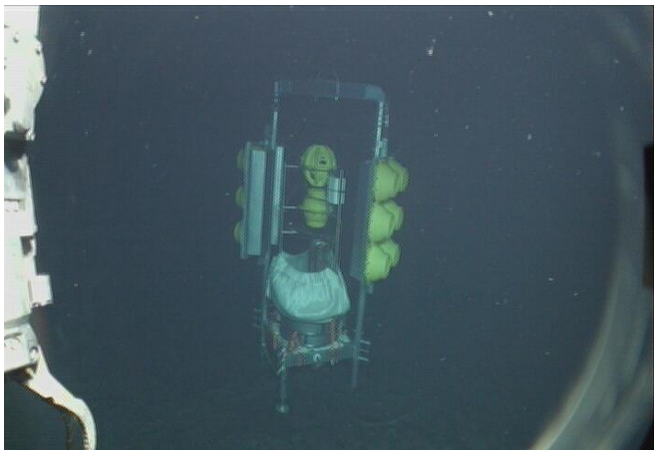


Fig. 4.6-20. Inspection of Creare device shows all in good condition including the skirt.

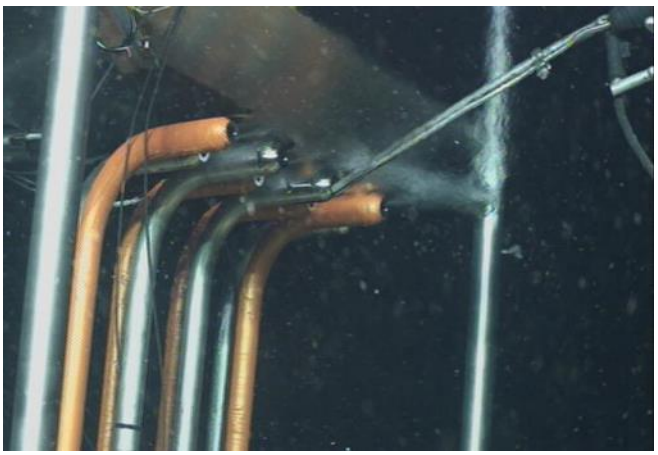


Fig. 4.6-21. Using thermal probe to determine temperature coming out of Creare tubes; max temperature of 116.4°C.

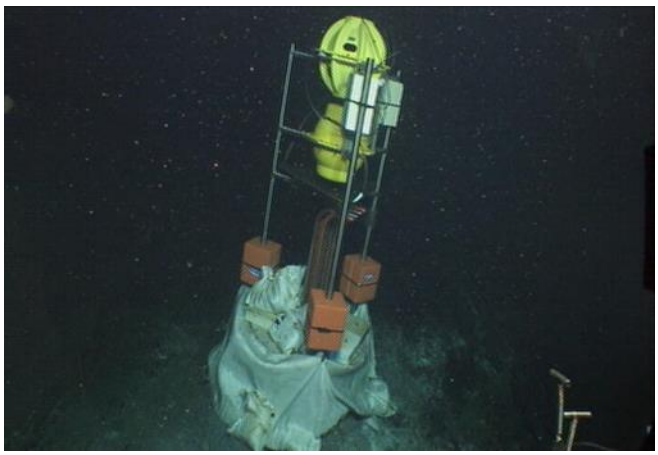


Fig. 4.6-22. Final view of Creare 2 installation.

4.7 Outreach and Education Activities

Rachel Teasdale, California State University - Chico

Ship-to-shore Skype calls to classrooms:

Sixteen ship-to-shore Skype calls (1-3 per weekday) were completed from R/V Thompson to school classrooms in Washington, Oregon, and California (the home states of PIs Chadwick, Butterfield, and Dyer and outreach coordinator Teasdale) and to schools in Tulsa, Oklahoma. The Skype calls were to High School science classes (7); Junior High School classrooms (6); to Elementary School 5th and 6th grade classrooms (2); and to one Professional Development workshop for science teachers who brought questions from their students. We estimate that the classes had at least 30 students per classroom, and at least four Skype calls included multiple classrooms, which resulted in approximately 640 students participating in the calls. During the 16 calls our contact was with at least 23 teachers plus school administrators who attended several calls. The Axial 2013 blog (axial2013.blogspot.com) was integrated into the Skype call activities by allowing the teachers and students to learn about the cruise and prepare questions for the Skype calls ahead of time, and follow the progress of the cruise afterward. The feedback we received from teachers was extremely positive.

Fig. 4.7-1 Scientist Jim Holden and Dave Dyer conducting a Skype call with a classroom on shore.

On board R/V Thompson, Teasdale scheduled two scientists (and/or ROV Jason crew) for each call and communicated scheduled calls to the Captain and ship's crew responsible for internet communications. Times and dates of Skype calls (and therefore Internet interruptions) were posted and updated throughout the ship.

Educational Cruise Blog: http://axial2013.blogspot.com

18 blog entries were created and posted before and during the cruise describing the scientific research projects being conducted onboard and background information to help readers better understand the geologic setting and significance of Axial Seamount. 16 videos were embedded in blogs that introduced scientists, instruments, and life on board the R/V Thompson and research undertaken with ROV Jason. On the blog, links for 17 schools and one general submission link were established for readers to send questions to researchers on board R/V Thompson during the cruise. Questions were answered individually by email and posted online. As of September 24, there were 7798 hits to the blog recorded (the maximum number of hits in one day was more than 1000 hits on Sept 10). One blog entry, "The Science Team" was created from information submitted by 26 (of 36) science team and Jason crew personnel on the cruise, describing their professional background and preparation for their careers and their goals for the cruise. This entry became a very popular entry, with 474 hits. As of September 24, there were 2031 hits to the blog's Questions and Answers pages (including pages for individual schools who participated in Skype calls). As of September 24, there were hits to the blog from 13 countries (US, Canada, Turkey, United Kingdom, S. Korea, Germany, France, Australia, Brazil, Russia, India, Malaysia and Poland).

Table 4.7-1: List of our Skype calls during Axial 2013 Expedition

Skype #	Date	Time	Classroom	Location
1	Mon 9/9/13	8:40-9:45	Pleasant Valley High School	Chico, CA
2	Tues 9/10/13	7:50-8:35	Pleasant Valley High School	Chico, CA
3	Tues 9/10/13	10:50-11:50	Emerson Jr. High School	Davis, CA
4	Tues 9/10/13	2:20-3:20	Newport High School	Newport, OR
5	Weds 9/11/13	8:50-9:50	Tulsa Public High School	Tulsa, OK
6	Weds 9/11/13	11:20-12:20	Willett Elementary	Davis, CA
7	Thurs 9/12/13	9:00-10	Chico Jr. High School	Chico, CA
8	Thurs 9/12/13	10:55-11:50	Scott Valley Jr. High School	Yreka, CA
9	Friday 9/13/13	8:40-9:20	Port Angeles High School	Port Angeles, WA
10	Friday 9/13/13	9:55-10:50	Terrace Park Elem. School	Edmonds, WA
11	Sat 9/14/13	10:55- 11:50	Science Teacher Workshop	Chico, CA
12	Mon 9/16/13	8:00-8:55	Union High School	Tulsa, OK
13	Mon 9/16/13	9:50-10:40	Allen Middle School	Skagit, WA
14	Mon 9/16/13	1:45-3:00	Kamiakin Middle School	Kirkland, WA
15	Tues 9/17/13	8:20-9:20	Sammamish High School	Bellevue, WA
16	Tues 9/17/13	1:20-2:18	University City High School	San Diego, CA
17	Tues 9/17/13	2:30-3:20	The Girls Middle School	Palo Alto, CA

4.8 Moorings

Matt Fowler, Oregon State University

Mooring Operations:

All operations went very smoothly and deployments were conducted during the day in calm conditions. Benchmark floats and APL elevators were released by JASON, and were recovered shortly after surfacing. Deck operations were led by Chief Mate Lloyd Patten using the ship's crane to deploy and recover most moorings over the starboard rail. The APL buoy was deployed using the A-frame and capstan. A few instruments were lowered to the seafloor using the trawl wire, but most deployments allowed the anchor to "freefall" to the seafloor. The second OBH recovered, OBH-2, when recovered had suffered a catastrophic failure of the pressure case during the deployment.

Mooring Operations Log:

09/04 APL Buoy Deployment

This is a taut-line type of mooring with a mooring line length ~98% of the water depth, deployed float first, then the ~1500m of mooring line is streamed out behind the ship, the 6000lb anchor is allowed to freefall last. The 2.5 hour deployment went very well and the anchor settled on the seafloor at the correct depth for the line length used.

09/05 BPR Deployments, OBH Recoveries, BPR WorkBoat Surveys

Bottom Pressure Recorder (BPR) and Ocean Bottom Hydrophone (OBH) Moorings: BPR and OBH moorings are subsurface with ~ 10m line (~30m on OBH) attached to 10 17" glass spheres and have similar instrument configuration with a cylindrical pressure housing mounted horizontally on a table like platform. There is a centrally mounted acoustic release positioned vertically through the platform connected to the detachable anchor plate beneath the instrument platform, and 10m or 30m line to the floats above.

BPR Deployments: The BPR mooring has short line sections totaling ~ 10m and is assembled prior to deployment. The floats are deployed over the side via a slip line and allowed to float in the water while the crane lifts the platform over the side. It then lowers the platform to the sea surface where the 5 minute process is concluded by releasing the instrument using a Sea Catch quick release and allowing the mooring to free-fall to the seafloor. All 3 BPR moorings were deployed in less than 2 hours.

OBH Recoveries: The OBH's positioned on the east and west of the caldera were recovered. Each recovery took under 1 hour from when the release code to drop the anchor was issued, until the instrument was on board. Recovery was accomplished by first capturing the floating line attached to the floats and hooking it to the crane for retrieval. The easternmost OBH, OBH-2 failed catastrophically during the recovery resulting in the destruction of one instrument and the loss of 2 years of data.

OBH-2 Pressure Housing Failure: Post cruise analysis indicates a small leak at the hydrophone penetration of the pressure case end cap allowed a small amount of seawater, ~1L, in equalizing pressure at some point during the deployment. When the instrument ascent began, the internal pressure soon exceeded the external pressure. At some point, the pressure differential exceeded the ability of the end cap to contain the internal pressure resulting in the forceful expulsion of the end cap and internal frame of the instrument. The stainless steel hose clamp securing the end cap in place is replaced every turnaround, however on the previous turnaround, the replacement part was a substandard one. The worm gear was not stainless and corroded, resulting in a weakened clamp that failed before the pressure release valve operated.

BPR WorkBoat Surveys: During the 1.5hr operation, BPR Center was surveyed, and a partial survey of BPR South-2 was done. The APL elevator deployment site was near BPR South-2, so a partial survey (all time permitted) was done to verify the instrument settled on the seafloor near the target deployment location. BPR South-2 was re-surveyed later in the cruise.

09/06 Benchmark Deployments, APL Elevator Deployed over Coquille

Benchmark Deployments: Benchmarks must be first free-fall deployed from the ship, then moved into final position with a submersible vehicle. The mooring is designed to be deployed with extra, detachable, weight and flotation. The mooring was pre-assembled, the crane then lifts the entire mooring from the top of the floats over the rail and lowers it into the sea. Using a quick release, the mooring is allowed to free-fall to the approximate deployment site. During a subsequent JASON dive, the ROV pulls a pin releasing the extra weight. The benchmark, with the floats still attached, is now slightly negatively buoyant, and is easily maneuvered by ROV into the exact position required. JASON then pulls another release pin, this time releasing the floats, permanently mooring the benchmark in place. The surface portion of the benchmark deployments took about 5 minutes. AX-307 and AX-308 were deployed.

APL Elevator Deployments: The APL group used an elevator to lower their instruments to the seafloor, then required extensive ROV operations to move vent cap from elevator to vent and properly emplace it. After the vent cap is removed, the weights are jettisoned and the now positively buoyant elevator returns to the surface for retrieval. The initial plan was to lower the elevator to the seafloor using the ship's trawl wire, however due to high drag of elevator, even in modest conditions extremely violent snap loading, exceeding 3G acceleration, began to occur as the ship rolled in calm seas. Due to concerns of damage to either ship, elevator, or the instrument from the snap loading the decision was made to release the elevator and allow it to free fall the remaining distance into position. All subsequent elevator deployments were free fall deployed from the surface.

APL Elevator Deployed over Coquille: The 12' elevator is pre-assembled on deck, the trawl wire attached to the top of the elevator via a quick release. The unit is lifted over the rail and lowered into the sea. For the first deployment, an acoustic release was attached to the trawl wire with the intent of lowering the elevator to the seafloor, then activating the acoustic release to disconnect the trawl wire from the elevator. This method had to be abandoned due to severe snap loading described above. The acoustic release was replaced by a Sea Catch quick release and deployments modified from "lowered by wire" to "free fall" type.

09/07 Benchmark Deployments, Random Access Sampler (RAS), Self-Calibrating Pressure Recorder (SCPR)

Benchmark Deployments: Benchmark AX-303 and AX-310 were deployed as previously described.

APL Elevator Recovered: The APL elevator deployed at Coquille vent site was released from the seafloor and recovered after surfacing.

Random Access Sampler (RAS): The mooring is pre-assembled and free fall deployed, and has two drop weights when deployed. The ROV pulls a release pin dropping the primary weight when it reaches the seafloor, it can now move the RAS to the vent for sampling. The RAS is positioned by the ROV close to vent site and a probe is extended from the RAS to the vent for duration of deployment. The second drop weight remains attached until the end of the ~ 1 year deployment period, when it is then dropped by ROV and the RAS returns to the surface for recovery.

Self-Calibrating Pressure Recorder (SCPR): The SCPR is lowered by wire to the seafloor then repositioned by JASON to the target. The ~30m mooring was pre-assembled into subsystems and deployed instrument platform first. The line was stopped off and the next assembly was attached, and deployed. When the entire mooring was overboard, but still attached to the wire, the trawl winch was paid out until the SCPR was allowed to free fall from 50m off the seafloor. The ROV repositioned SCPR into the final position for deployment.

09/08 Benchmark Deployments, APL Elevator Deployed over ASHES, OBH WorkBoat Survey

Benchmark Deployments: Benchmarks AX-302 and AX-309 free fall deployed, repositioned by JASON

APL Elevator Deployed over ASHES: APL elevator free fall deployed. Vent cap repositioned by ROV.

OBH WorkBoat Survey: OBH-North was not surveyed after deployment in 2011. A 30 minute duration WorkBoat acoustic survey was conducted prior to recovery of the mooring.

09/09 OBH Recovery, BPR & OBH WorkBoat Surveys, APL Elevator Recovered, OBH Deployment

OBH Recovery: Recovery was completed quickly. 32 minutes after issuing the release code to drop the anchor, the instrument was on board. Recovery was accomplished by first capturing the floating line attached to the floats and hooking it to the crane for retrieval.

BPR WorkBoat Survey: Acoustic survey of BPR South -1 and complete acoustic re-survey of BPR South-2 were done in just over two hours.

APL Elevator Recovered: The APL elevator deployed at ASHES vent site was released from the seafloor and recovered after surfacing.

OBH Deployment: OBH South was pre-assembled, the floats were lowered over the side using a slip line and released into the water next to the ship. The instrument platform was then lifted with the crane, attached to the top of the acoustic release by a quick release. It was lowered over the rail and into the water 3-4m before tripping the release for a free fall descent.

OBH WorkBoat Survey: 45 minute WorkBoat acoustic survey conducted following procedures detailed above.

09/15 APL Elevator Deployment over TREVI

APL elevator free fall deployed. Vent cap repositioned by ROV to final position.

09/16 APL Elevator Recovery, APL Buoy Recovery

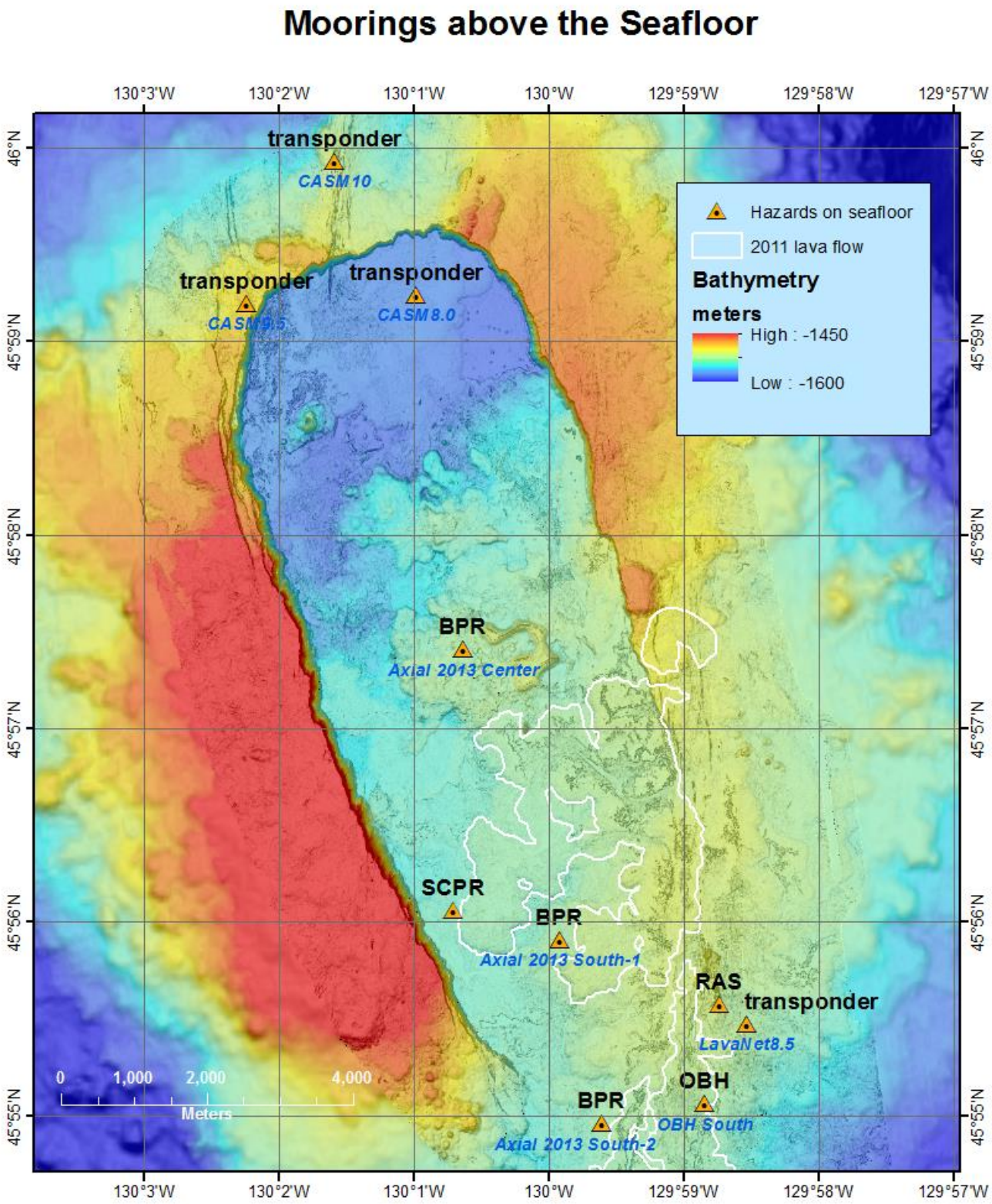
APL Elevator Recovery: The APL elevator deployed at TREVI vent site was released from the seafloor and recovered after surfacing.

APL Buoy Recovery: Buoy lifting line attached to crane and recovered over starboard rail. Load was transferred to capstan and 1500m of line was recovered using the capstan.

Table 4.8.1 Mooring Operations

Instrument	Latitude	Longitude	Depth	Notes	Deployed	Recovered
	Surveyed positions unless otherwise indicated.					
APL BUOY	45.91798	-130.01720	1484	on rim ~1.7 km SSW of ASHES	9/4/2013	9/16/2013
OBH-S	45.91769	-129.98085	1539	There was no OBH-S in 2011	9/9/2013	
OBH-2 (East)	45.94132	-129.97717		recovery: end of 2-year deployment	7/25/2011	9/5/2013
OBH-3 (West)	45.93199	-130.01717		recovery: end of 2-year deployment	7/27/2011	9/5/2013
OBH-4 (North)	45.95983	-130.00836		recovery: end of 2-year deployment	7/27/2011	9/9/2013
BPR-center	45.95678	-130.01060	1541	~200 m NNW of AX-101	9/5/2013	
BPR-south1	45.93181	-129.99876	1540	Near AX-308	9/5/2013	
BPR-south2	45.91599	-129.99348	1540	~160 m SSW of Vixen, ~320 m W of AX-304	9/5/2013	
AX-302 @ Trevi	45.94642	-129.98378	1522	~100 m ENE of Trevi vent	9/8/2013	
AX-303 @ Marker 33	45.93346	-129.98225	1516	same as AX-203	9/7/2013	
AX-307 @ Magnesia West	45.94535	-130.00906	1544	~1.4 km NNW of ASHES	9/6/2013	
AX-308 @ BPR-South1	45.93160	-129.99880	1533	~200 m S of RSN cable	9/6/2013	
AX-309 @ RSN PN	45.93835	-129.97208	1527	~200 m SE of RSN J-box	9/8/2013	
AX-310 @ IntDist	45.92580	-129.97787	1531	~150 m S of RSN2 J-box	9/7/2013	
(Benchmarks: final positions and depth after ROV placement)						
RAS mooring @ IntDist	45.92615	-129.97890	1521	~50 m S of RSN1 J-box	9/7/2013	
(RAS: final positions and depth after ROV placement)						
APL elevator @ Vixen	45.91733	-129.99310	1530	~10 m W of Vixen	9/6/2013	9/7/2013
APL elevator @ ASHES	45.93345	-130.01320	1539	~10 m SE of Virgin	9/8/2013	9/9/2013
APL elevator @ Trevi	45.94628	-129.98357	1515	~10 m E of Trevi	9/15/2013	9/16/2013
(Elevators: drop positions)						
SIO-SCPR mooring	45.93438	-130.01178	1541	~20 m SW of AX-106, ~50 m from RSN cables	9/7/2013	
(SCPR: final positions and depth after ROV placement)						

Figure 4.8-1 Moorings above the seafloor after the 2013 expedition.



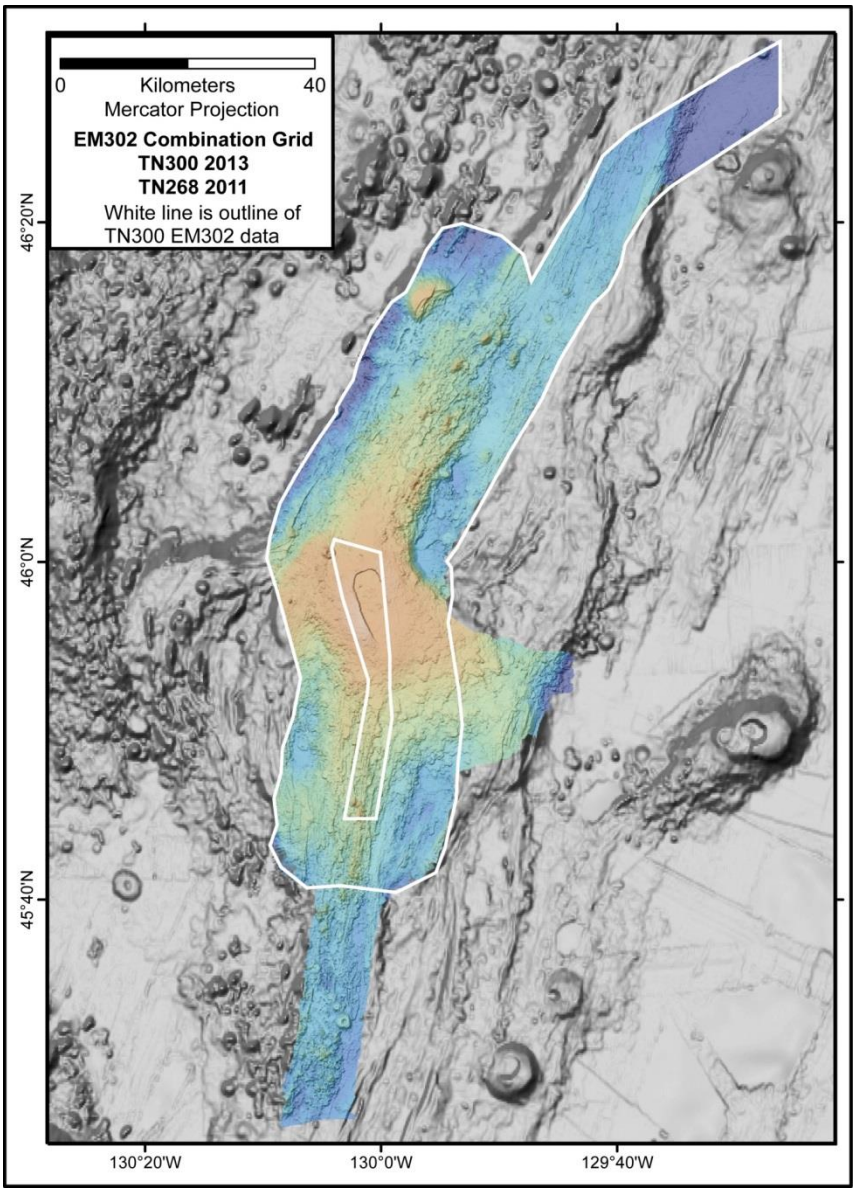
4.9 EM302 Multibeam Mapping

Susan G. Merle, OSU

EM302 multibeam data (bathymetry and backscatter) were collected when all other operations were completed at Axial Volcano during the Axial 2013 expedition (Figure 4.9-1). The multibeam data survey occurred from 9/17 0258 – 1520 UTC. The survey area covered 1575 km^2.

The multibeam data were collected to increase EM302 coverage in the area, particularly along Axial's north rift zone and part of the adjacent CoAxial segment. The Axial 2013 (TN300) survey plan was designed to add coverage, butting up to EM302 data collected by University of Washington in 2011 (TN268). There is extensive EM300 data coverage at Axial, but the new and improved EM302 system has added more beams per ping, increasing data density dramatically. The EM300 system provides a total of 135 beams (soundings) per ping, compared to the newer EM302 which can collect up to 432 beams per ping. A preliminary look at the data has been completed. The data were cleaned with the 3D editor mbeditviz. A more critical look at the data will take place in the near future. The survey speed was 8 knots. Data quality is good to excellent and can be easily gridded at 20 meter resolution.

Figure 4.9.1 Multibeam data collected on the TN300.



4.10 CTDs

In 2013, we conducted 6 CTD casts in and around the caldera to gather time-series data on the extent of the hydrothermal plumes over Axial. The primary goal was to characterize the intensity and depth of the plumes (based on transmissometer signal from particles). We did one background cast SW of the caldera. Time series stations over ASHES, International District (Castle), Trevi, and CASM were occupied. We collected some samples for shipboard GC measurement of methane and hydrogen, preserved helium samples in copper tubes, and saved trace metal samples..

GMT Date/Time	CTD	Area/Purpose	Latitude	Longitude
9/5/2013 02:11	CTD V13A-01 / TN300-01-01	background	45.93202	-130.14608
9/5/2013 04:53	CTD V13A-02 / TN300-02-01	Trevi Vent	45.94680	-129.98263
9/14/2013 20:00	CTD V13A-03 / TN300-003-01	Castle Vent	45.92615	-129.98012
9/16/2013 20:35	CTD V13A-04 / TN300-004-01	ASHES	45.93342	-130.01367
9/16/2013 22:50	CTD V13A-05 / TN300-005-01	Trevi Vent	45.94617	-129.98370
9/17/2013 01:13	CTD V13A-06 / TN300-006-01	CASM	45.98902	-130.02732

(GMT was 7 hours ahead of local time)

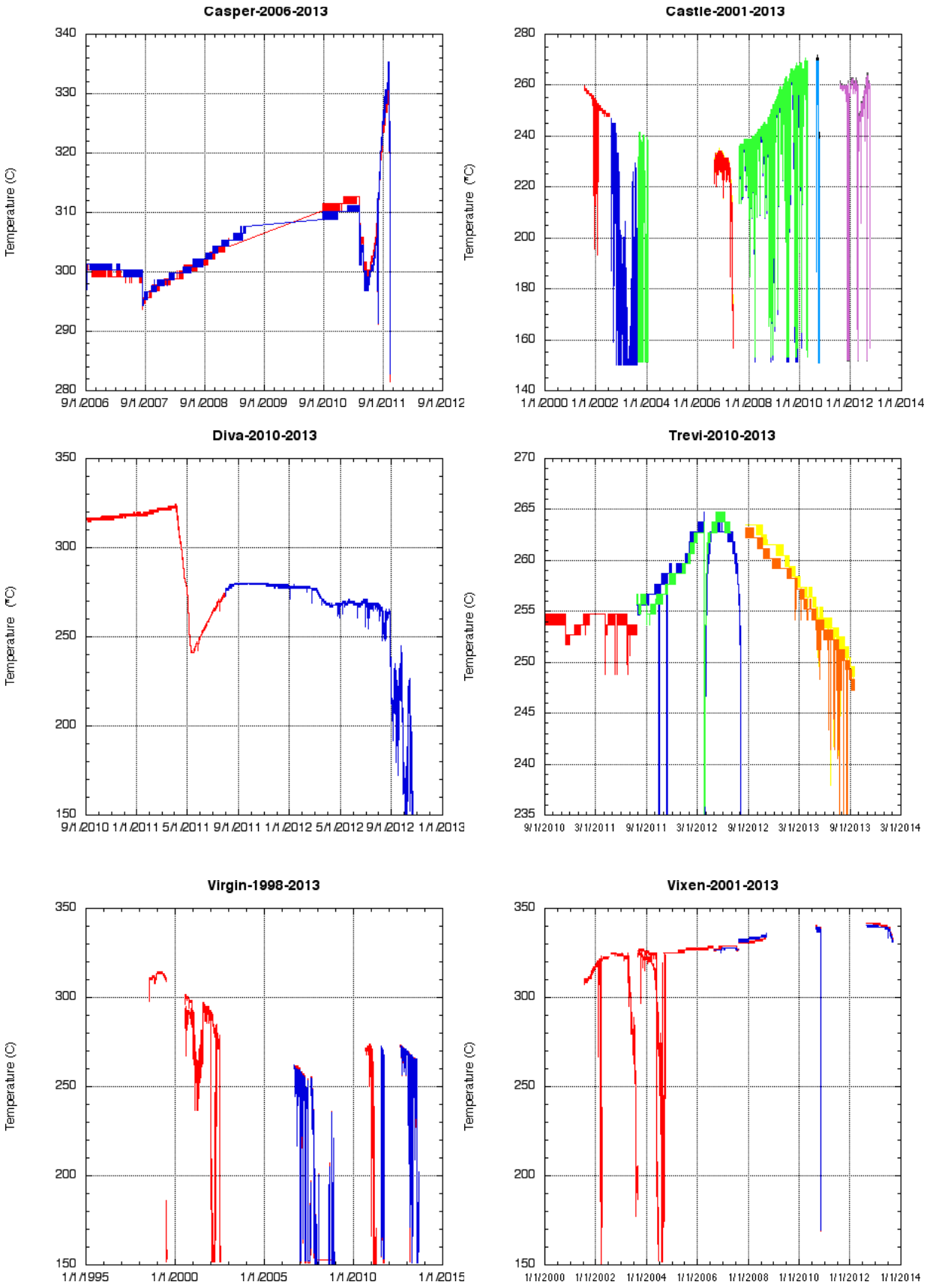
4.11 Hydrothermal Vent Fluid Temperature Recorders

As in the past, we recovered and deployed two kinds of temperature recorders: miniature temperature recorders (MTRs) for low-temperature vents (max temp ~60°C), and HOBO or MISO high-temperature recorders (the two names are used interchangeably, the MISOs are just newer versions of the HOBOs, and have two sensors for redundancy instead of one) for temperatures between 152-419°C. Generally, MTRs are deployed at diffuse vents and HOBOs at high-temperature anhydrite vents. The main difference this year is that we could not deploy HOBO recorders at the anhydrite vents where the APL Vent Caps were deployed (Trevi, Virgin, and Vixen). This will interrupt the long-term temperature time-series at these vents, but hopefully the vent caps will provide a temperature record to fill the gap.

The long-term HOBO records show:
* The temperature at Casper decreased after the 2011 eruption, then it turned around and has been getting hotter since June 2011.
* Diva, which also went down after the 2011 eruption, sort of leveled off before it got back up to its pre-eruption temperature.
* Trevi went up in 2011-2012, then went back down again in 2012-2013.
* Castle has a nice downward then upward trend between the 1998 and 2011 eruptions.
* The Virgin record is mostly a downward trend, but is also problematic because the probes fell out of the vent often.
* Vixen shows mostly an upward trend.

Casper, Diva, and Trevi were recording during the 2011 eruption; Castle, Virgin, and Vixen were not.

Figure 4.11-1 Graphs of time-series temperature data at various venting locations.



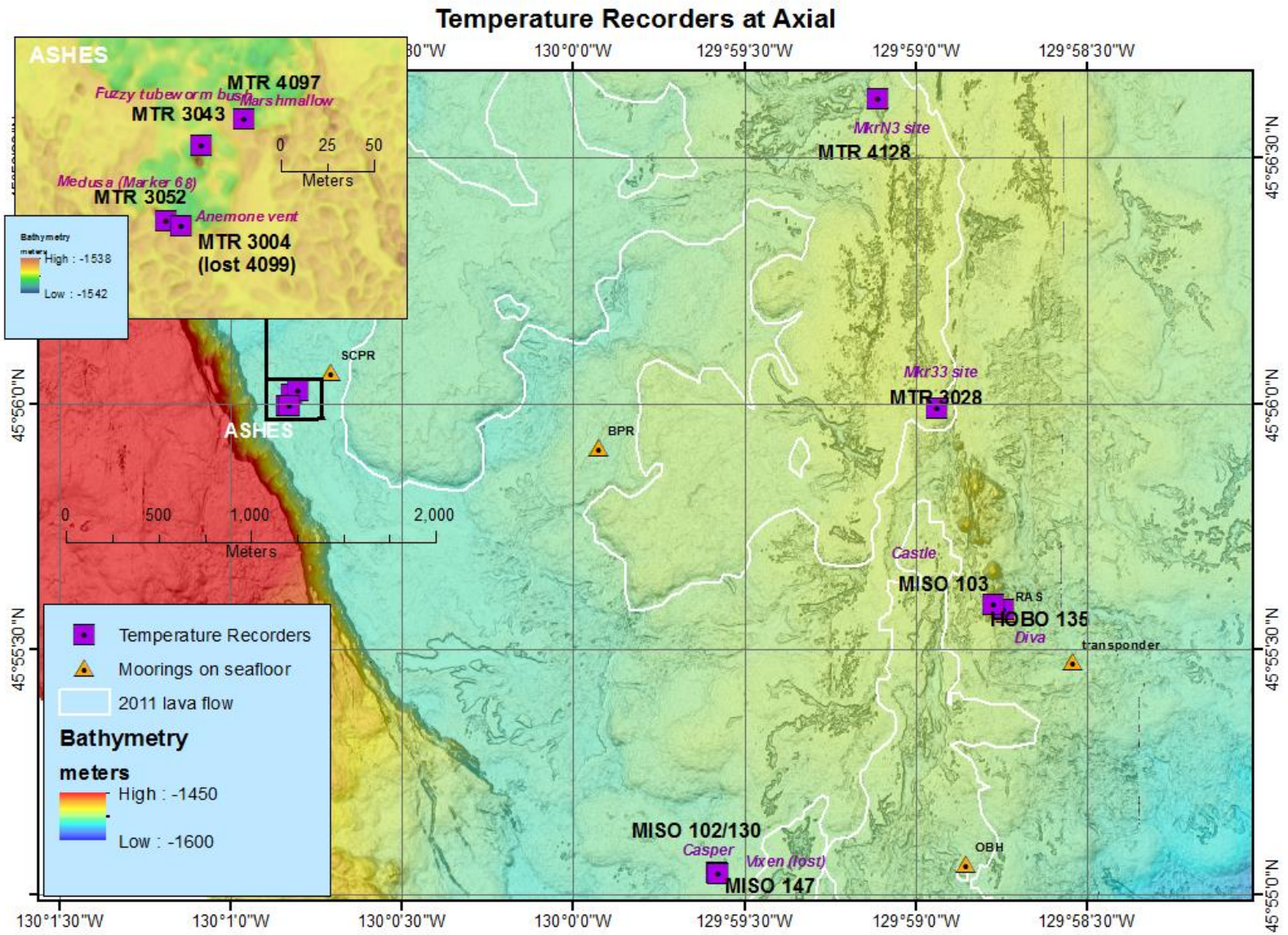


Fig. 4.11.1 Temperature recorders remaining at Axial after the 2013 expedition. All devices were deployed in 2013 with the exception of MISO 147 at Vixen (2011 deployment) and MTR 4099 at Anemone (2012 deployment) which were not found for recovery in 2013. ASHES inset map bathymetry data were shifted +9X/-3Y from the original grids provided by MBARI in 2011 to best fit the vent and marker locations.

Table 4.11.1 Temperature recorder instrument deployment and recoveries.

Location of Device	Instrument	Deployed	Recovered	Comments	Latitude	Longitude	Depth	Heading	Virtual Van #
DEPLOYED 2013									
Medusa (Marker 68)	MTR 3052	J2-726		Replaced MTR 4098.	45.93328	-130.01389	1544	334	874
Anemone vent	MTR 3004	J2-726		Placed where J726-28 sampled.	45.93325	-130.01379	1542	218	1019
Fuzzy tubeworm bush	MTR 3043	J2-726		Replaced MTR 3041.	45.93364	-130.01366	1542	91	1234
Marshmallow	MTR 4097	J2-726		Replaced MTR 3334.	45.93377	-130.01336	1541	293	1260
Diva	HOBO 135	J2-728		In vent; fell down side initially.	45.92637	-129.97906	1521	66	3260
Castle	MISO 103	J2-728		In sampling position J728-31.	45.92654	-129.97954	1515	23	4026
Casper	MISO 102	J2-730		Deployed in flow-may not be exact.	45.91744	-129.99298	1534	163	10945
Casper	MISO 130	J2-730		Deployed in flow orifice.	45.91744	-129.99298	1534	163	10979
Marker 33	MTR 3028	J2-730		In diffuse flow; replaced 4095.	45.93316	-129.98228	1515	205	11920
Marker N3	MTR 4128	J2-730		Replaced MTR 3332.	45.94370	-129.98518	1521	269	12450
RECOVERED 2013									
Virgin	MISO 129	J2-660	J2-726		45.93366	-130.01322			
Vixen	MISO 101	J2-661	J2-726		45.91733	-129.99295			
Casper	MISO 141	J2-581	J2-726	2012	45.91745	-129.99303			
Hell Marker 68	MTR 4098	J2-660	J2-726	Deployed near marker 68.	45.93332	-130.01396			
Fuzzy tubeworm bush	MTR 3040	J2-660	J2-726	Deployed in 2012 sampling spot	45.93364	-130.01366			
Fuzzy tubeworm bush	MTR 3041	J2-580	J2-726	Not recovered. Need to find next year.	45.93364	-130.01370			
Marshmallow	MTR 3334	J2-580	J2-726	Did not visit in 2012.	45.93374	-130.01343			
Diva	HOBO 153	J2-583	J2-728	Unable to visit this vent in 2012	45.92640	-129.97896			
Castle	MISO 102	J2-583	J2-728	Unable to visit this vent in 2012	45.91734	-129.99294			
Trevi	MISO 104	J2-661	J2-730		45.94628	-129.98371			
Marker N3	MTR 3332	J2-661	J2-730	Deployed in same spot where 3312 was recovered.	45.94372	-129.98516			
Marker 33	MTR 4095	J2-661	J2-730	Installed where RAS intake was 2011-12.	45.93320	-129.98227			
Boca	MTR 4001	J2-661	(Falkor 2013)	"52" on float on polypro line.	45.92769	-129.98248			
Mkr113 Vent (Mkr 62)	MTR 4127	J2-661	(Falkor 2013)	Near HFPS sampling spot	45.92274	-129.98810			
Not Found (Lost?) 2013									
Anemone vent	MTR 4099	J2-660	LOST?	(2012) Placed where 4096 was.	45.93325	-130.01379		308	529
Vixen	MISO 147	J2-581	LOST	(2011)Must be buried in anhydrite.	45.91737	-129.99296		291	7684

5 - Imagery

Jason records video from 3 cameras to DVD in standard definition: Brow Cam, Pilots Pan/Tilt and the HD Science camera. There are 2 original copies of all three camera's data (one for Science and one for the WHOI archive). Below is a list of the DVDs recorded during the cruise.

JASON DVD Video List

DVD_Id	Start Date/Time	End Date/Time	Dive	Site	Time Rec
DVD-001	*9/6/2013 0:36*	*9/6/2013 2:36*	J2-726	Vixen Vent	2:00:00
DVD-002	*9/6/2013 2:34*	*9/6/2013 4:34*	J2-726	Vixen Vent	1:59:37
DVD-003	*9/6/2013 4:32*	*9/6/2013 6:32*	J2-726	Casper Vent	2:00:00
DVD-004	*9/6/2013 7:55*	*9/6/2013 9:55*	J2-726	Virgin	2:00:00
DVD-005	*9/6/2013 9:53*	*9/6/2013 11:53*	J2-726	Anemone	2:00:00
DVD-006	*9/6/2013 11:52*	*9/6/2013 13:52*	J2-726	Phoenix/Inferno	2:00:00
DVD-007	*9/6/2013 13:50*	*9/6/2013 14:03*	J2-726	Exploring ASHES vents	0:13:00
DVD-008	*9/7/2013 3:09*	*9/7/2013 5:09*	J2-727	APL elevator 100m to VIXEN-	2:00:00
DVD-009	*9/7/2013 5:07*	*9/7/2013 7:07*	J2-727	APL elevator 48m to VIXEN-	2:00:00
DVD-010	*9/7/2013 6:56*	*9/7/2013 12:04*	J2-727	Ship Bow thruster problem, JASON above seafloor*	5:08:00
DVD-011	*9/7/2013 11:49*	*9/7/2013 13:49*	J2-727	Deploying sand bags at Vixen to hold donut	2:00:00
DVD-012	*9/7/2013 14:19*	*9/7/2013 15:34*	J2-727	Continue putting cap on Vixen	1:15:00
DVD-013	*9/7/2013 15:45*	*9/7/2013 17:45*	J2-727	Engineering dive	2:00:00
DVD-014	*9/8/2013 4:20*	*9/8/2013 6:20*	J2-728	El Gordo	2:00:00
DVD-015	*9/8/2013 6:18*	*9/8/2013 8:18*	J2-728	Fluid Sampling at El Gordo	2:00:00
DVD-016	*9/8/2013 8:16*	*9/8/2013 10:16*	J2-728	Fluid Sampling and HOBO recovery at DIVA	2:00:00
DVD-017	*9/8/2013 10:14*	*9/8/2013 12:14*	J2-728	El Guapo	2:00:00
DVD-018	*9/8/2013 12:13*	*9/8/2013 14:13*	J2-728	El Guapo	2:00:00
DVD-019	*9/8/2013 14:13*	*9/8/2013 16:13*	J2-728	El Guapo and Castle	2:00:00
DVD-020	*9/8/2013 16:09*	*9/8/2013 18:09*	J2-728	Transit to move benchmark AX-310	2:00:00
DVD-021	*9/9/2013 4:05*	*9/9/2013 6:05*	J2-729	Carrying vent cap from elevator to Virgin vent	2:00:00
DVD-022	*9/9/2013 6:03*	*9/9/2013 8:03*	J2-729	Transiting and positioning donut on Virgin vent	2:00:00
DVD-023	*9/9/2013 8:01*	*9/9/2013 10:01*	J2-729	Elevator release and recovery	2:00:00
DVD-024	*9/9/2013 9:59*	*9/9/2013 11:59*	J2-729	Installing vent cap at Virgin vent	2:00:00
DVD-025	*9/9/2013 11:58*	*9/9/2013 13:58*	J2-729	Pheonix and Hell and Inferno	2:00:00
DVD-026	*9/9/2013 13:56*	*9/9/2013 14:50*	J2-729	SCPR mooring	0:54:00
DVD-027	*9/10/2013 0:16*	*9/10/2013 2:20*	J2-730	BMRK-308 in place at BPR south location.	2:04:00
DVD-028	*9/10/2013 2:33*	*9/10/2013 4:33*	J2-730	BPR south location then transit to Ashes	2:00:00
DVD-029	*9/10/2013 4:31*	*9/10/2013 6:31*	J2-730	Ashes AX106 then transit to Magnesia West	2:00:00
DVD-030	*9/10/2013 6:30*	*9/10/2013 8:30*	J2-730	AX-307 then transit to AX-101	2:00:00
DVD-031	*9/10/2013 9:07*	*9/10/2013 11:07*	J2-730	AX-101 then transit to AX-202/303	2:00:00
DVD-032	*9/10/2013 11:48*	*9/10/2013 13:48*	J2-730	TREVI	2:00:00
DVD-033	*9/10/2013 15:35*	*9/10/2013 17:35*	J2-730	AX-309 benchmark	2:00:00
DVD-034	*9/10/2013 19:09*	*9/10/2013 21:09*	J2-730	AX-303 benchmark	2:00:00
DVD-035	*9/10/2013 22:22*	*9/11/2013 0:22*	J2-730	AX-310 benchmark	2:00:00
DVD-036	*9/11/2013 1:30*	*9/11/2013 3:30*	J2-730	AX-104 benchmark**	2:00:00
DVD-037	*9/11/2013 7:03*	*9/11/2013 9:03*	J2-730	AX-105 benchmark	2:00:00
DVD-038	*9/11/2013 11:43*	*9/11/2013 13:43*	J2-730	AX-104 benchmark	2:00:00
DVD-039	*9/11/2013 13:52*	*9/11/2013 15:52*	J2-730	AX-310 transit to AX-203 benchmark	2:00:00
DVD-040	*9/11/2013 15:50*	*9/11/2013 17:50*	J2-730	AX-203 to AX-303 benchmark	2:00:00
DVD-041	*9/11/2013 17:48*	*9/11/2013 19:48*	J2-730	AX-303 benchmark and RSN	2:00:00
DVD-042	*9/11/2013 20:57*	*9/11/2013 22:57*	J2-730	AX-302 and 202 benchmark	2:00:00
DVD-043	*9/11/2013 23:47*	*9/12/2013 1:47*	J2-730	AX-101 Caldera Center and AX-307 Magnesia West	2:00:00
DVD-044	*9/12/2013 1:45*	*9/12/2013 3:45*	J2-730	AX-307 and transit to AX-106	2:00:00

JASON DVD Video List

DVD_Id	Start Date/Time	End Date/Time	Dive	Site	Time Rec
DVD-045	*9/12/2013 3:55*	*9/12/2013 5:55*	J2-730	Ax-106 and transit to AX-308	2:00:00
DVD-046	*9/12/2013 6:05*	*9/12/2013 8:05*	J2-730	AX-308 and transit to AX-106	2:00:00
DVD-047	*9/12/2013 8:03*	*9/12/2013 10:03*	J2-730	AX-106 and AX-307	2:00:00
DVD-048	*9/12/2013 10:02*	*9/12/2013 12:02*	J2-730	AX-101	2:00:00
DVD-049	*9/12/2013 13:27*	*9/12/2013 15:27*	J2-730	Exploring around TREVI and AX-302	2:00:00
DVD-050	*9/12/2013 15:56*	*9/12/2013 17:56*	J2-730	AX-309 to 203/303 benchmark	2:00:00
DVD-051	*9/12/2013 17:54*	*9/12/2013 19:54*	J2-730	AX-203/303 benchmark	2:00:00
DVD-052	*9/12/2013 19:54*	*9/12/2013 21:54*	J2-730	AX-310 benchmark	2:00:00
DVD-053	*9/12/2013 22:25*	*9/13/2013 0:25*	J2-730	AX-104 benchmark-Bag City fluid sampling	2:00:00
DVD-054	*9/13/2013 0:23*	*9/13/2013 2:23*	J2-730	VIXEN and CASPER	2:00:00
DVD-055	*9/13/2013 6:17*	*9/13/2013 8:17*	J2-730	AX-105 and transit to Bag City	2:00:00
DVD-056	*9/13/2013 10:51*	*9/13/2013 12:51*	J2-730	AX-104	2:00:00
DVD-057	*9/13/2013 12:50*	*9/13/2013 14:50*	J2-730	AX-104 amd transit	2:00:00
DVD-058	*9/13/2013 14:48*	*9/13/2013 16:48*	J2-730	Transit to move benchmark AX-303	2:00:00
DVD-059	*9/13/2013 16:46*	*9/13/2013 18:46*	J2-730	AX-303 benchmark and Mkr33 site	2:00:00
DVD-060	*9/13/2013 18:45*	*9/13/2013 20:45*	J2-730	AX-303 to AX-309	2:00:00
DVD-061	*9/13/2013 21:35*	*9/13/2013 23:35*	J2-730	MkrN3 site Fluid sampling MTR 3332	2:00:00
DVD-062	*9/13/2013 23:35*	*9/14/2013 1:35*	J2-730	AX-302 and 202 benchmark and fluid sampling at TREVI	2:00:00
DVD-063	*9/14/2013 1:33*	*9/14/2013 3:33*	J2-730	Spanish Steps Fluid Sampling	2:00:00
DVD-064	*9/14/2013 3:31*	*9/14/2013 5:31*	J2-730	Red Mat samples North of Trevi	2:00:00
DVD-065	*9/14/2013 6:32*	*9/14/2013 8:32*	J2-730	AX-101 and transit to AX-307	2:00:00
DVD-066	*9/14/2013 8:30*	*9/14/2013 10:30*	J2-730	AX-307 and search for lost BPR	2:00:00
DVD-067	*9/14/2013 11:26*	*9/14/2013 13:26*	J2-730	AX106 and APL cap at Virgin	2:00:00
DVD-068	*9/14/2013 13:25*	*9/14/2013 15:25*	J2-730	APL cap at Virgin and AX-308	2:00:00
DVD-069	*9/14/2013 15:23*	*9/14/2013 16:06*	J2-730	Pickup mini-BPR. Finishing up	0:43:00
DVD-070	*9/14/2013 17:29*	*9/14/2013 18:05*	J2-730	Engineering work.	0:36:00
DVD-071	*9/15/2013 0:58*	*9/15/2013 2:58*	J2-731	Begin exploration-transit to Dependable West	2:00:00
DVD-072	*9/15/2013 3:19*	*9/15/2013 5:19*	J2-731	Southeast side of Dependable, Weak and Rusty, Flange	2:00:00
DVD-073	*9/15/2013 5:17*	*9/15/2013 7:17*	J2-731	Trusty, Flange	2:00:00
DVD-074	*9/15/2013 7:15*	*9/15/2013 9:12*	J2-731	Sampling sulfide chimney near gargoyle	1:57:00
DVD-075	*9/15/2013 9:12*	*9/15/2013 11:12*	J2-731	Sampling at Dependable Mound	2:00:00
DVD-076	*9/15/2013 11:12*	*9/15/2013 13:12*	J2-731	Undependable Spire and East of Dependable	2:00:00
DVD-077	*9/15/2013 13:11*	*9/15/2013 14:50*	J2-731	North Dependable	1:39:00
DVD-078	*9/15/2013 20:02*	*9/15/2013 22:02*	J2-732	Trevi Vent Cap moving vent cap, donut, elevator	2:00:00
DVD-079	*9/15/2013 22:00*	*9/16/2013 0:00*	J2-732	Trevi Vent Cap moving vent cap, donut, elevator	2:00:00
DVD-080	*9/16/2013 0:24*	*9/16/2013 2:24*	J2-732	Trevi Vent Cap placement	2:00:00
DVD-081	*9/16/2013 2:22*	*9/16/2013 4:22*	J2-732	Trevi Vent Cap placement	2:00:00
DVD-082	*9/16/2013 4:23*	*9/16/2013 6:23*	J2-732	Trevi Vent Cap and Red Bridges	2:00:00
DVD-083	*9/16/2013 6:21*	*9/16/2013 8:21*	J2-732	2011 Lava Flow	2:00:00
DVD-084	*9/16/2013 8:19*	*9/16/2013 10:19*	J2-732	2011 Lava Flow	2:00:00
DVD-085	*9/16/2013 10:17*	*9/16/2013 12:17*	J2-732	Old Lava	2:00:00
DVD-086	*9/16/2013 12:15*	*9/16/2013 14:15*	J2-732	Caldera Wall	2:00:00

* *DVD recording stopped because of bow thruster issues. Only has 15 min of recording, overlap with disc 8 and 10*

** *No recording for 5-7 min from the moment Jason was at the bottom*

6 - JASON

6.1 Jason Dive Statistics:

Dive	Dates	Max. Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on deck not available to science
J2-726	2013/09/05-2013/09/06	1544	1:10	1:21	13:21	15:52	NA	NA
J2-727	9/7/2013	1538	1:06	1:38	14:29	17:13	10:45	4
J2-728	9/8/2013	1528	1:18	1:08	13:43	16:09	7:47	4
J2-729	9/9/2013	1543	1:07	0:55	10:43	12:45	7:49	4
J2-730	2013/09/09-2013-09/14	1543	1:05	1:08	113:47:00	116:00:00	7:26	4
J2-731	2013/09/14-2013-09/15	1993	1:14	1:19	12:57	15:30	4:33	4
J2-732	2013/09/15-2013-09/16	1537	1:00	2:05	17:36	20:41	3:52	
				Total time:	196:36	214:10		

6.2 Jason Dive Summaries

DIVE J2-726 Coquille and ASHES Fluid Sampling

Main goals: Fluid sampling at Vixen and Casper (Coquille vent field), and Virgin, Anemone, and Inferno vents (ASHES vent field)

Samples:
Sample Totals: 33 (24 fluid/6 gas/2 bio)

Tasks Accomplished:
1) Recovered HOBO/MISO 101 (Vixen), HOBO/MISO 141m Casper). HOBO 147 not found at Vixen after extensive looking and excavation.
2) Collected fluid samples at Vixen, Casper, and two nearby diffuse locations to these vents.
3) Conducted pH-H2S-O2-T at Vixen, Casper.
4) Collected syringe microbial sediment sample at Anemone, sediment/mat at Marshmallow and blue mat at Phoenix.
5) Conducted visual survey to assess suitability for APL instrument deployments, and recon area around Vixen/Casper for APL elevator drop target.
6) Recovered HOBO/MISO 129 at Virgin vent
7) Collected fluid samples at Virgin, Anemone, and Inferno and did pH-H2S-O2-Tsurveys.
8) Conducted a visual survey to assess suitability for APL instrument deployments, and recon area around Virgin for APL elevator drop target
9) Recovered MTR temp recorders Medusa (MTR-4098), Anemone (MTR-4099), Fuzzy tubeworm bush (MTR-3040 & 3041), Marshmallow (MTR-3334)and deployed 4 replacements Marshmallow (4097), Fuzzy tubeworm (3043), Anemone (3004) and Hell (3052).
10) Collected suction sample of blue mat
11) Deployed Marker 129 at Anemone..

DIVE J2-727 Installation of Vent Cap at Vixen Vent

Main goals: Deploy vent cap at Vixen vent. After that, as time permits, collect hand-held fluid samples and/or explore 2011 lava flows near Bag City vents.

Samples: none collected

Tasks Accomplished:
1) Located APL elevator.
2) Retrieved vent cap and moved to Vixen.
3) Retrieved and deployed 1 donut from elevator at Vixen vent
4) Moved elevator to vent site.
5) Released (Jason) and recovered (ship) elevator.
6) Positioned second donut and then vent cap on Vixen.
7) Jason positioned sandbags around vent cap at Vixen vent.
8) Jason engineering work (2 hours).

DIVE J2-728 International District Fluid Sampling and RAS deployment

Main goals: High-T and diffuse fluid sampling at International District vent field; deploy RAS instrument at El Gordo vent (Marker 151).

Samples:
Sample Totals: 32 (24 fluid/5 gas/3 bio)

Tasks Accomplished:
1) Located RAS mooring (USBL attached), moved it to El Gordo/Mkr151, Sampled (fluid/gas/ sediment) and temperature measurements at El Gordo/Mkr151. Installed the RAS.
2) Escargot: Fluid sampled, diffuse and hot. Suction sampled blue mat.
3) Diva: Fluid and gas sampled. Recovered HOBO 153 and deployed HOBO 135.
4) El Guapo: Fluid sampled in diffuse flow; syringe sample of mat.
5) Sampled high-T vents at the top of El Guapo, (fluid and hand-held gas sample). Captured video and still images of the top of the structure still flaming.
6) Sampled a high-T vent near the base (just S) of El Guapo (fluid).
7) Castle vent: Recover HOBO. Took 1 gas-tight and 1 fluid sample. Deployed HOBO 103.
8) Located AX-310 and began to move it to its final location (dive ended before complete accomplished).

DIVE J2-729 Installation of vent cap at Virgin Vent

Main goals: Deploy vent cap at Virgin vent.

Samples:
Sample Totals: 8 (3 gas/5 bio)

Tasks Accomplished:
1) Located APL elevator.
2) Moved vent cap from elevator to Virgin vent and set down next to vent.
3) Jason moved elevator with donuts and sand bags over to near Virgin vent. Removed donuts and released elevator, leaving sand bags on bottom.
4) Ship recovered elevator.
5) Jason positioned donut, cap and sandbags at Virgin vent.

6) Collected syringe samples of microbial sediment at Virgin.
7) Collected blue mat from Phoenix.
8) Collected gas-tight samples at Hell (2) and Inferno (2) vents; biology samples at Hell and Inferno.
9) Relocated SCPR mooring

DIVE J2-730 Pressure Measurements at Benchmarks (5-day dive)

Main goals: Make pressure measurements at an array of seafloor benchmarks

Samples:
Sample Totals: 24 (17 fluid/3 gas/3 bio/1 geo)

Tasks Accomplished:
1) Conducted 4 rounds of pressure measurements at seafloor benchmarks, repositioned new benchmarks; released glass floats during daytime benchmark visits which were recovered by ship.
2) Deployed Marker 126 at first visit to AX-310.
3) Jason engineering time to observe the RSN-PN.
4) Deployed Marker 136 at second visit to AX-302/202.
5) Deployed Marker 127 at second visit to AX307.
6) Rock sample at second visit to AX-105 (South Pillow Mound).
7) Fluid sampling at Bag City after third visit to AX-104.
8) Observed vent cap at Vixen.
9) Deployed Marker 128 at Casper. Deployed HOBO 102 and 130 at Capser.
10) Recovered MTR 4095 and deployed MTR 3028 at Mkr 33 site (between AX-310 and AX-303 last visits).
11) Fluid and gas sampled at Marker N3 vent between 4th visit of AX-309. Deployed Marker 135, recovered MTR 3332, deployed MTR 4128 (between last visit of AX-309 and AX-302).
12) After last visit to AX-302/202, Fluid and gas sampled Trevi Vent. Recovered HOBO/MISO 104.
13) Fluid sampled Spanish Steps.
14) Sampled red mat at Red Bridges site; took background water sample.
15) North of Trevi took background water sample and 2 biology samples of red mat at Red Bridges.
16) Searched for lost BPR-middle between last visit to AX-307 and AX-106.
17) Visited SCPR and downloaded some data from device.
18) Observed vent cap at Virgin.
19) Recovered Mini-BPR @ AX-308 after last pressure measurement.

DIVE J2-731 Dependable Vent Field Exploration and Sampling

Main goals: Exploration and sampling of high-T and diffuse fluids in recently discovered field on the SE slope of Axial Seamount. Collect sulfide chimney samples. HD video of vent features. Determine how much of the mound features are sulfide vs. basalt.

Samples:
Sample Totals: 23 (14 fluid/3 gas/2 bio/4 geo)

Tasks Accomplished:
1) Explored terrain south of Dependable West sulfide structure.
2) Sampled diffuse flow (Worm-covered diffuser) on Dependable West south side.
3) Traversed east to south side of Dependable sulfide mound. Took basalt sample from SE side.
4) Explored mound in counter-clockwise direction at 1950 depth until facing due west.
5) Climbed up mound on east side and fluid & gas sampled at Weak & Rusty vent. Deployed Marker 142.
6) Further upslope discovered and fluid & gas sampled flanges near top of NW cone of Dependable.
7) Explored top of mound.
8) Below top fluid/gas sampled high-temperature area of small spires.
9) Sampled good flow area at Trusty. Deployed Marker 141.

10) Explored ‘Alp’ area on Dependable near top.
11) Obtained sulfide sample of flange to right of Marker 141.
12) Explored SE cone of Dependable (inactive) and returned to fluid and bio sample NW cone diffuse area.
13) Backed down Dependable mound into valley between it and SE cone and explored Undependable mound. Took sediment sample NE of Undependable.
14) Explored small, extinct sulfide chimneys as generally drove north to Dependable North structure.
15) Took a basalt and sulfide samples from south face of North Dependable.

DIVE J2-732 Installation of vent cap at Trevi

Main goals: Deploy vent cap at Trevi vent (~8 hrs). After that, the remaining ~12 hrs will be used to explore the northern end of the 2011 lava flows.

Samples:
Sample Totals: 5 (2 bio/3 geo)

Tasks Accomplished:
1) Located APL elevator.
2) Removed vent cap from elevator and placed near vent.
3) Moved elevator to Trevi vent. Deployed donut on vent and installed vent cap on donut.
4) Jason released elevator, ship recovered elevator..
5) Jason positioned sandbags around vent cap, took temperature measurements around vent cap and tubes, and did a video survey of vent.
6) Transited to Red Bridges site. Collected syringe samples of red mat and took rock sample.
7) Deployed Marker 143 at Red Bridges site.
8) Explored flow channel west of Red Bridges and northern end of the 2011 lava. Collected rock samples.

6.3 Dive Maps

Bathymetry data on the dive maps was provided by MBARI and is an AUV bathymetric data compilation through 2011 unless otherwise indicated. Dive navigation tracks were provided at sea by WHOI JASON group from USBL navigation post-processed with WHOI renav process which combines USBL and Doppler positioning. Vent and marker positions have been compiled by the PMEL EOI group for over a decade based on the best information available from bathymetry and site visits over numerous years and vehicles. Sample positions were taken from the best observed position from JASON while sitting in one place (cursor position) for most sampling sites (see the sample tables). Maps are displayed with a UTM zone 9 projection using a GIS. Mooring positions are based on surveys using the WorkBoat software after their deployments except for those instruments which were placed or visited at their final location by Jason.

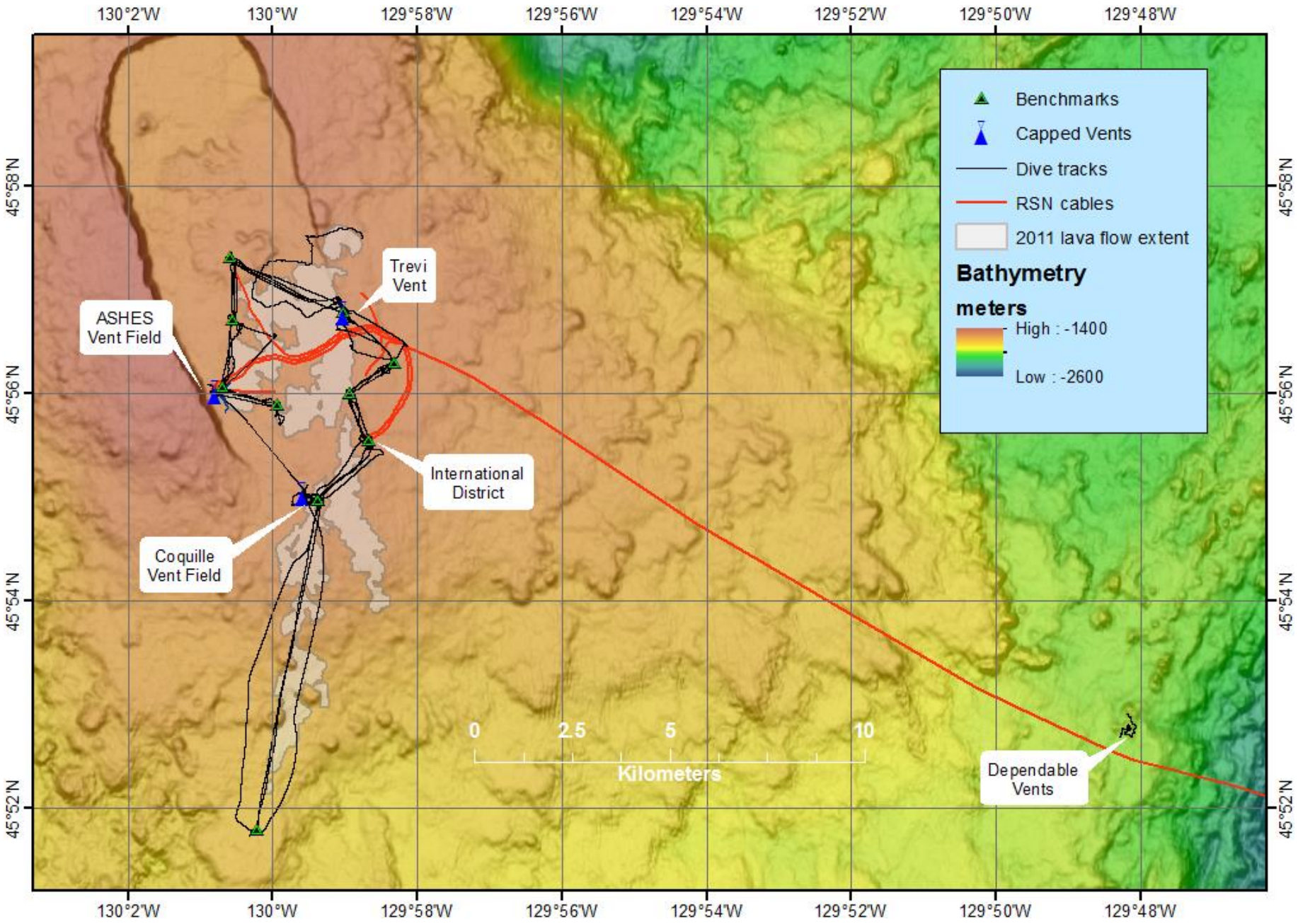


Fig. 6.3-1 Overview of the 2013 expedition dive sites. Bathymetry is from an EM300 data compilation over many years by Susan Merle, gridded at 25 meters.

Fig 6.3-2 Jason dive J2-726 Coquille and ASHES Fluid Sampling. ASHES inset map bathymetry data were shifted +9X/-3Y from the original grids provided by MBARI in 2011 to best fit the vent and marker locations.

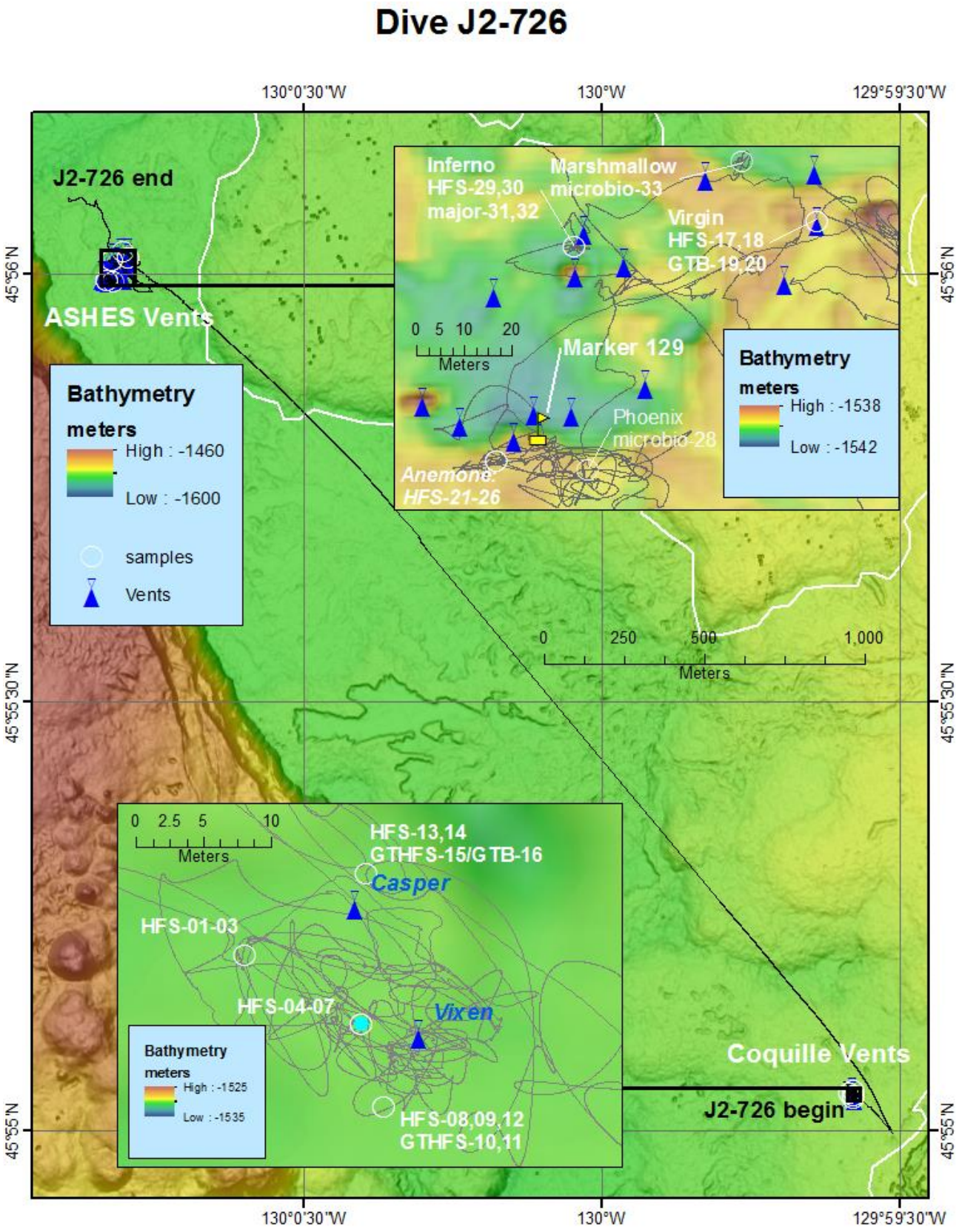


Fig 6.3-3 Jason dive J2-727 Vixen Vent Cap.

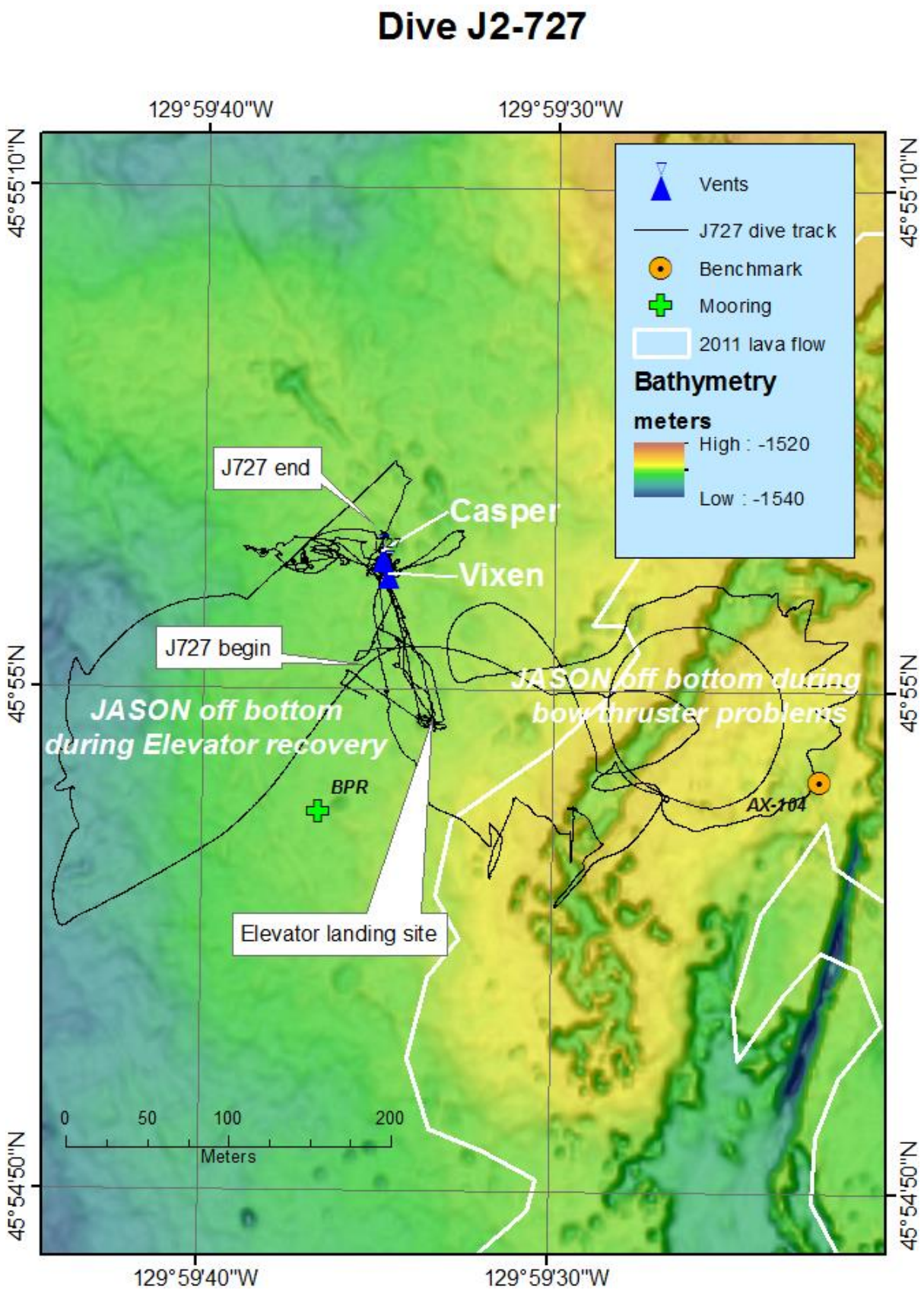


Fig 6.3-4 Jason dive J2-728 International District Fluid Sampling / RAS placement. International District inset map bathymetry data were shifted +9X/-6Y from the original grids provided by MBARI in 2011 to best fit the vent and marker locations.

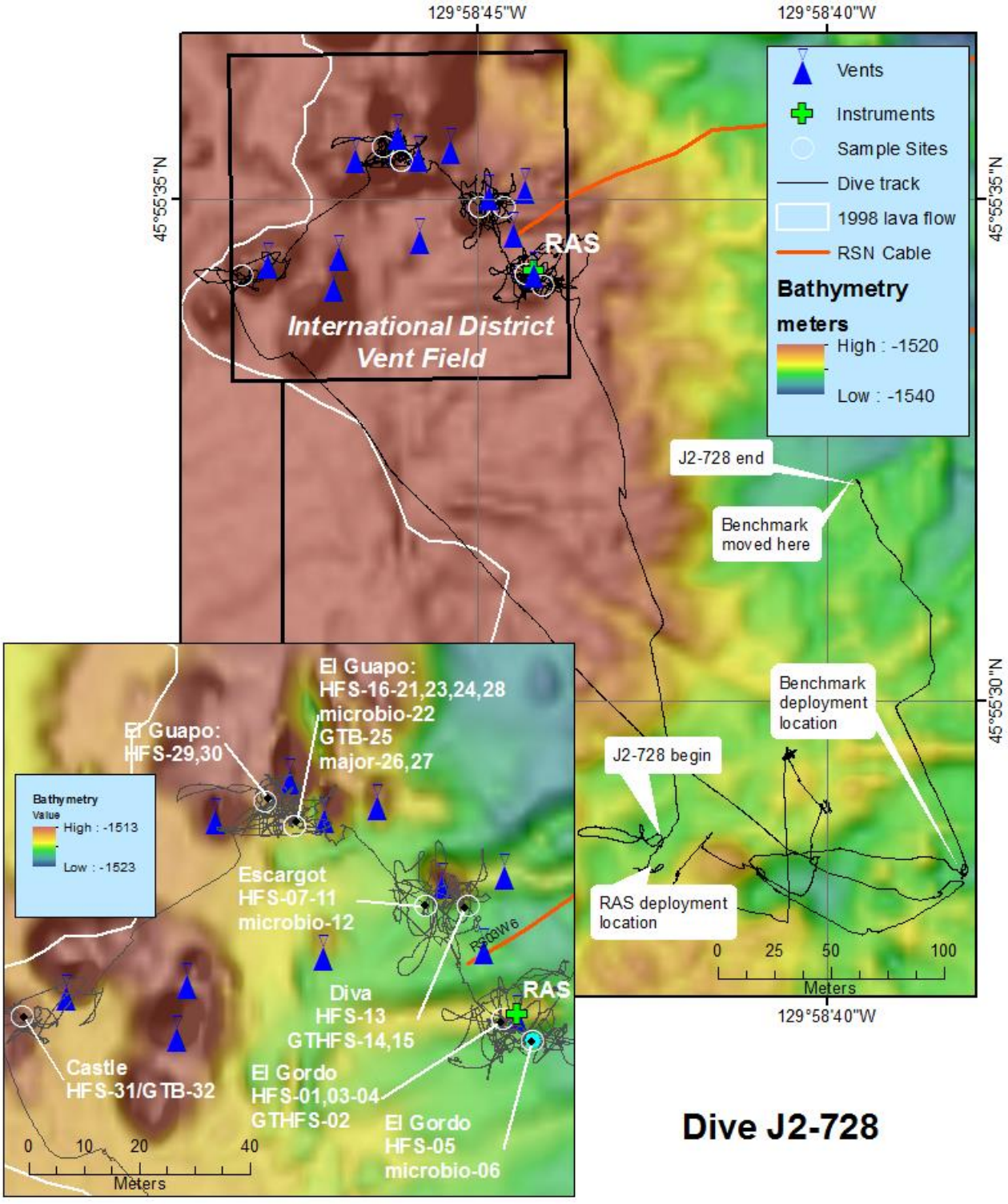


Fig 6.3-5 Jason dive J2-729 ASHES Virgin Vent cap / SCPR Placement. ASHES inset map bathymetry data were shifted +9X/-3Y from the original grids provided by MBARI in 2011 to best fit the vent and marker locations.

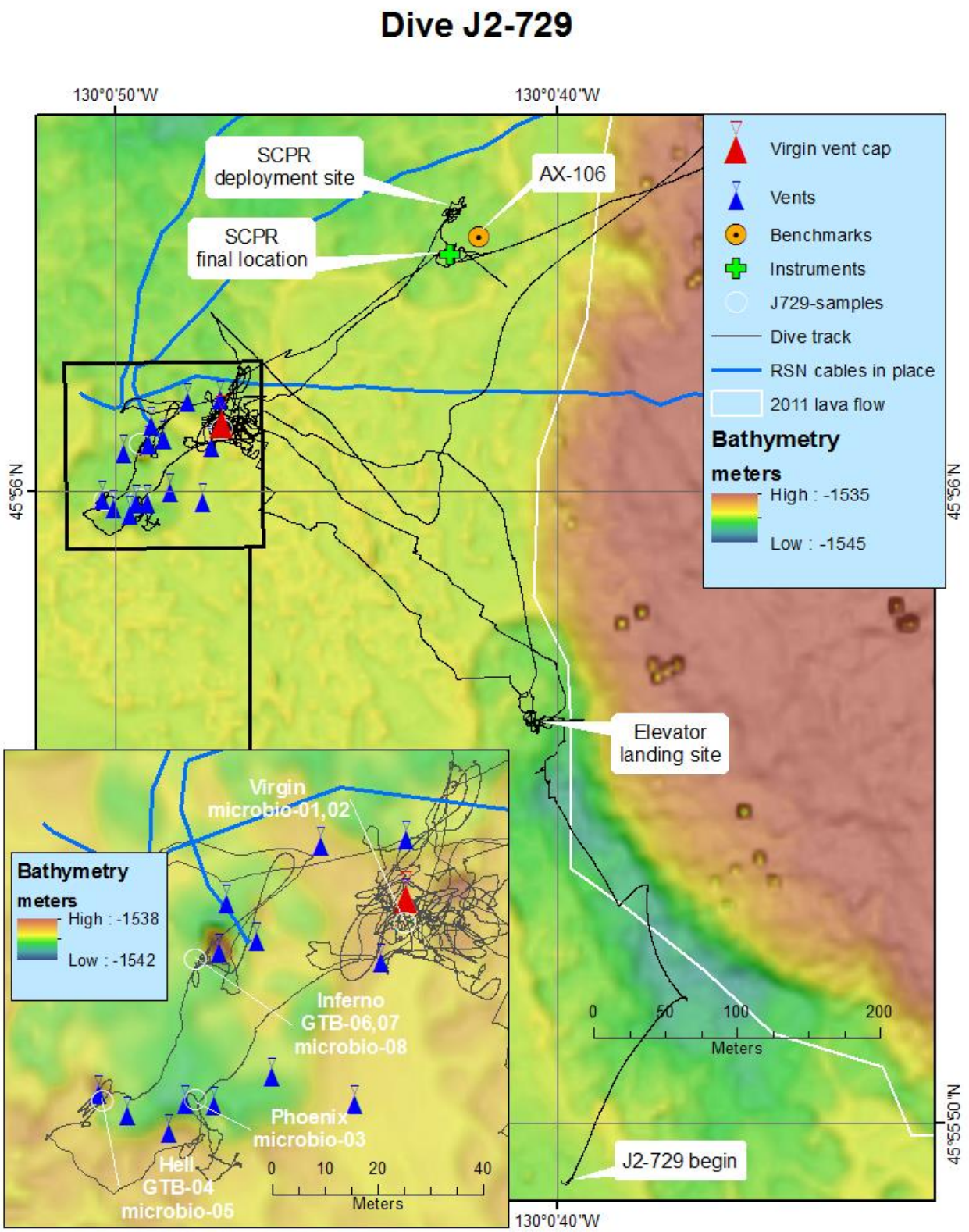


Fig 6.3-6 Jason dive J2-730 Pressure Measurements at Benchmarks**.**

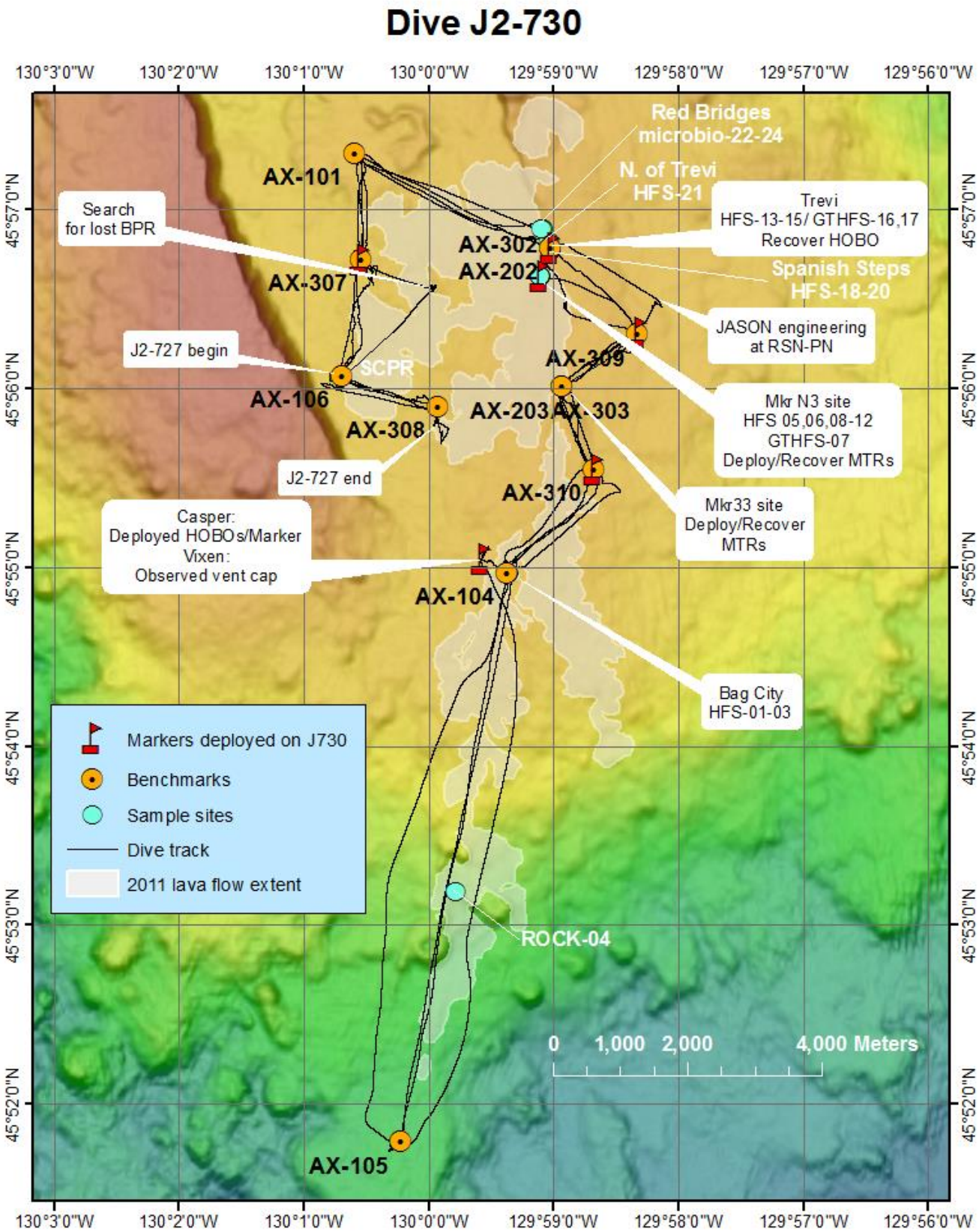


Fig 6.3-7 Jason dive J2-731 Dependable Sulfides Exploration and Sampling. Bathymetry was provided by University of Washington from RSN expedition TN221 (2008) using the Sentry AUV.

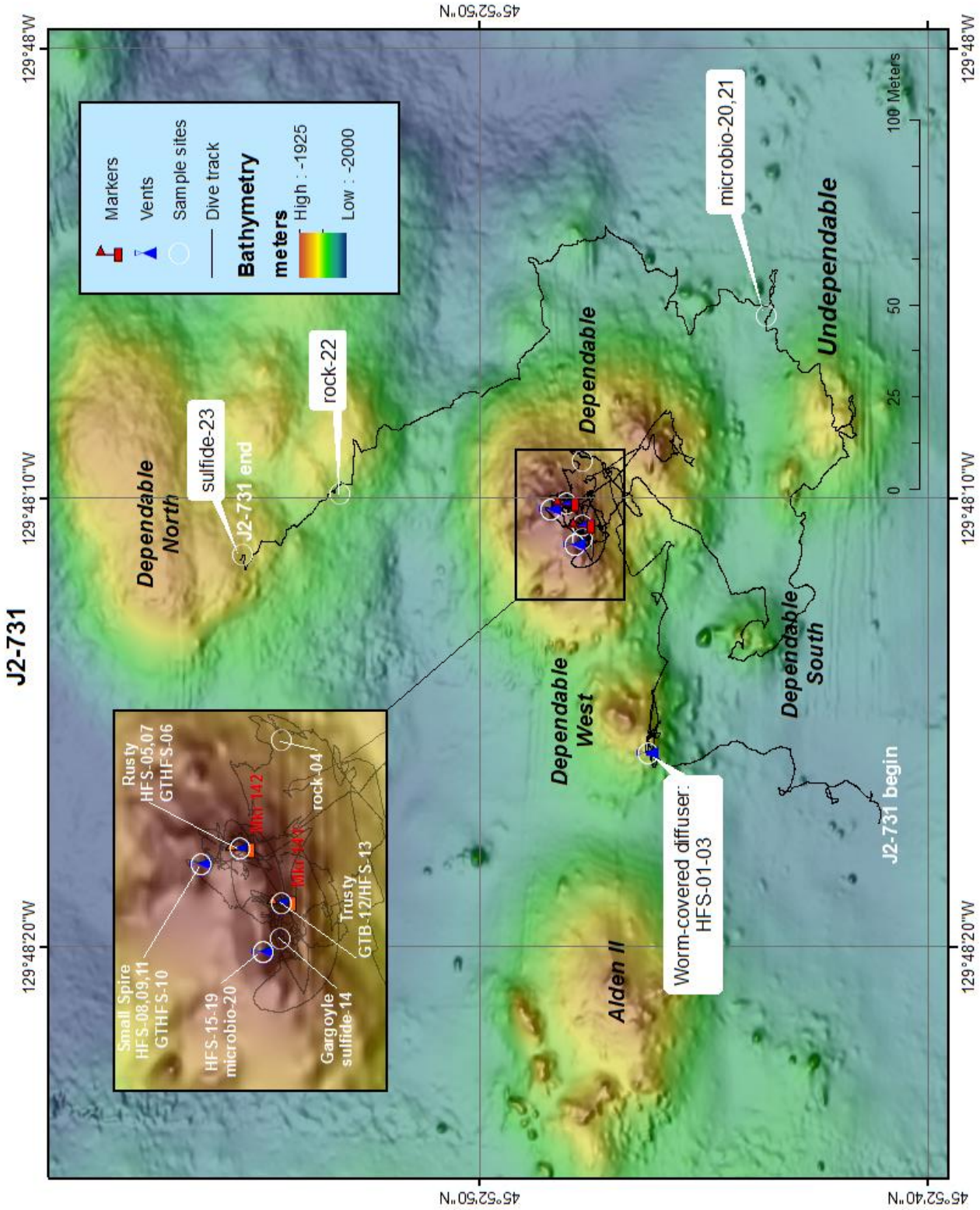
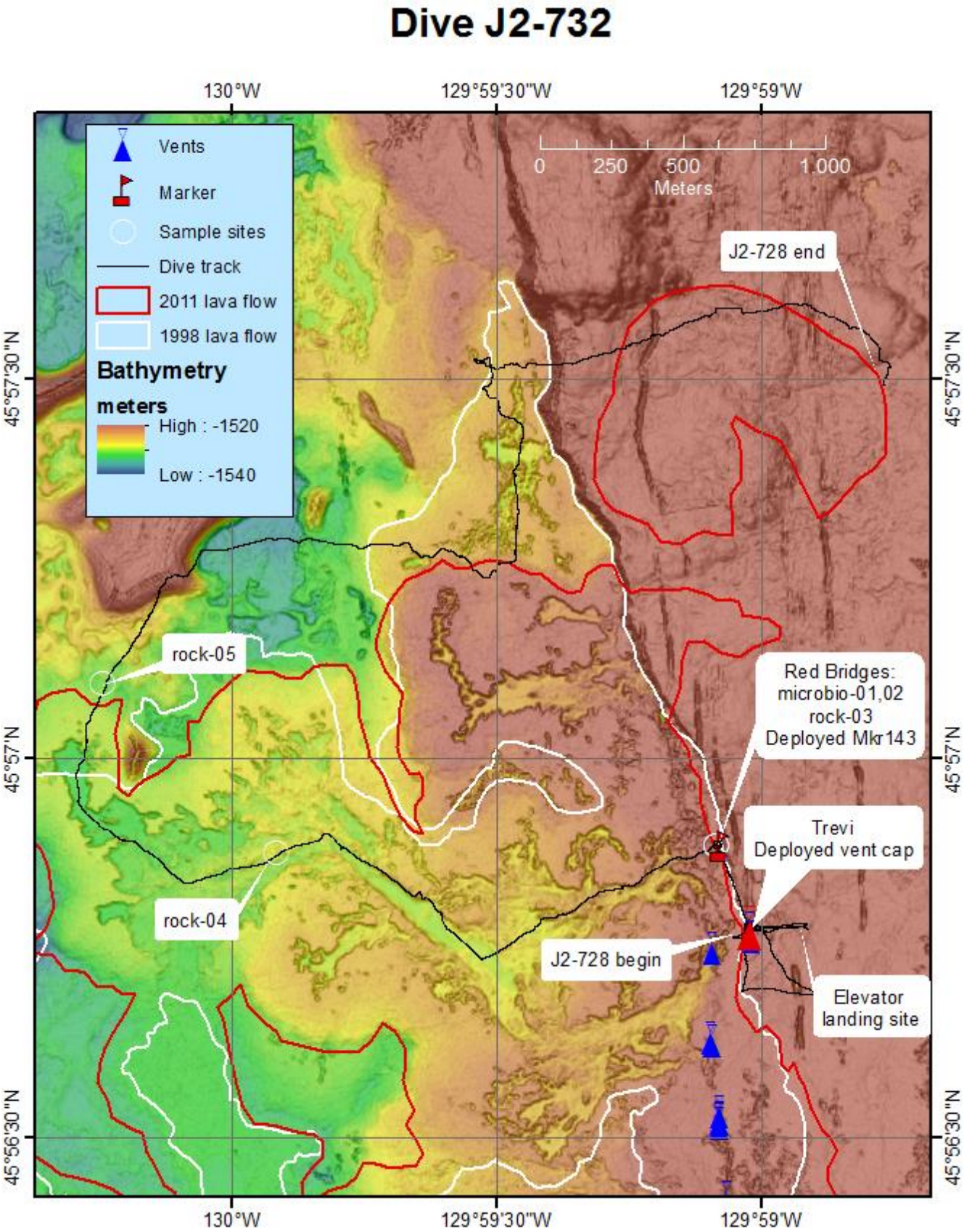


Fig 6.3-8 Jason dive J2-732 Trevi Vent Cap and Exploration of North End 2011 Lava Flow**.**



6.4 Navigation (Markers/Vents)

Andra Bobbitt

Navigation positions for Jason dives in 2013 matched well with previous ROV navigated locations for vents and markers. Positional offsets in the main vent sites (ASHES and International District) were less than 5 meters in X and Y space for most all locations. While sampling in a single area, navigation did drift considerably even after post-processing with Jason RENAV, due to Jason's doppler sonar drifting while the vehicle is stationary on the bottom, giving the false appearance of vehicle movement. Unfortunately, this on-bottom drift is not removed during the Jason RENAV post-processing of the navigation data. Aware of the drift problem during a dive, the data loggers would obtain critical positions (such as sample and instrument locations) by requesting the Jason navigator to place their cursor in the best estimate of the true vehicle location from the scattering of positions displayed on their navigation screen. The latitude and longitude of this 'cursor position' was noted on the logging sheets and used for sample/instrument locations in the cruise report data tables. These 'cursor positions' were used to determine locational offsets between the previous years' positions. The dive maps (section 6.3) of this report displaying Jason's tracklines have not been edited to remove this false drift.

Fig. 6.4-1 Maps showing the Jason's Doppler sonar drifting while the vehicle was stationary during sampling at ASHES (J2-726) and International District (J2-728).

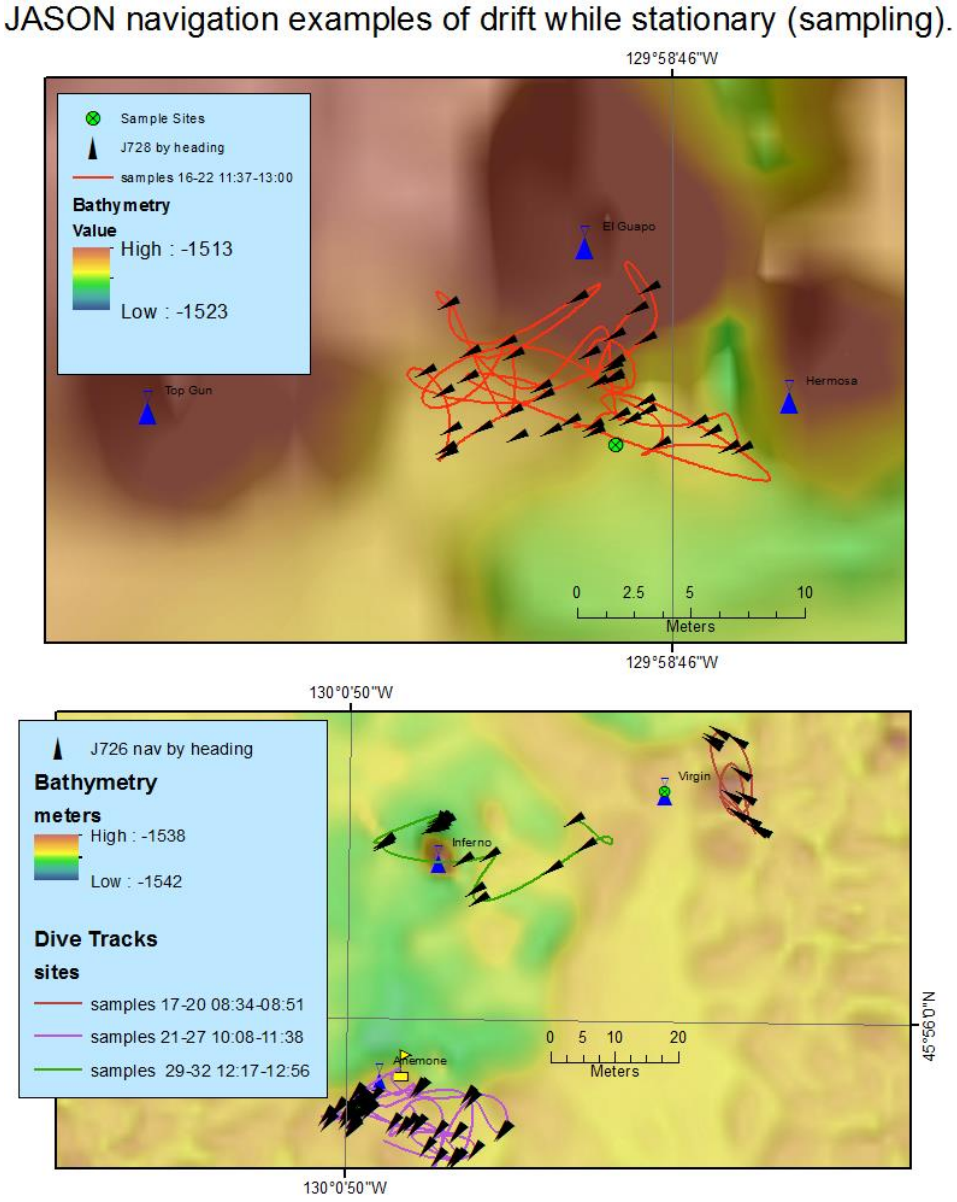


Table 6.4.1 Markers in BOLD were observed during this expedition, remaining markers are listed for reference. Markers listed are sorted by **Area** and then **Marker.**

Marker	Latitude	Longitude	Z	Area	Status	Vent or Benchmark		comments
Mkr135	**45.94370**	**-129.98518**	**1522**	**2011 lava over 98**	**New 2013**	**MkrN3**		**Deployed at post-eruption diffuse MkrN3 site where MTRs were deployed/recovered in 2013. Cursor position. On top of large pillow vv#12253**
Mkr136	**45.94642**	**-129.98379**	**1522**	**2011LavaFlow**	**New 2013**		**AX-302**	**Mrk63 is on old benchmark AX-202 also at this AX-302 site (metal triangle). VV#8714.**
Mkr166	**45.93316**	**-129.98228**	**1520**	**2011LavaFlow**	**ok**	**Marker33 Vent**		**Deployed after 2011 flow. Seen 2013.**
Mkr170	45.92769	-129.98248	1519	2011LavaFlow	ok	Boca		
Mkr63	**45.94639**	**-129.98382**	**1520**	**2011LavaFlow**	**ok**	**Trevi benchmark**	**AX202**	**Attached to metal tripod benchmark that was moved from caldera center to near Trevi vent in 2011.**
Mkr66	**45.93342**	**-129.98228**	**1516**	**2011LavaFlow**	**ok**	**near Marker 33 Vent**	**AX203**	**Attached to metal tripod benchmark that was moved from near AX105 to near Marker33 vent in 2011.**
AX-106	**45.93445**	**-130.01160**	**1542**	**ASHES**	**ok**		**AX-106**	**Cement benchmark AX-106 is ~150 m ENE of ASHES**
Mkr1	**45.93363**	**-130.01358**	**1547**	**ASHES**	**ok**	**Mushroom**		**Deployed 1986 by PiscesIV. Using 2007 vent position.**
Mkr117	45.93331	-130.01334	1546	ASHES		Crack		Marker seen in 1998 (R466)
Mkr121	**45.93355**	**-130.01325**	**1542**	**ASHES**	**ok**	**Gollum**		
Mkr129	**45.93327**	**-130.01374**	**1543**	**ASHES**	**New 2013**	**Anemone**		**Using 2013 sampling/MTR3004 cursor lat/long. VV#1045**
Mkr19	**45.93349**	**-130.01367**	**1547**	**ASHES**	**ok**	**Inferno**		**1998 unreadable due to bio-coating; marker deployed 1996. Spotted 2010 (bucket lid).**
Mkr21	45.93327	-130.01359	1547	ASHES		~5m SW of Styx		
Mkr27	45.93332	-130.01391	1546	ASHES		Hell		Deployed 1986 by PiscesIV. Using 2007 vent position.
Mkr28	45.93328	-130.01362	1547	ASHES		Phoenix		Deployed 1986 by PiscesIV on seafloor. Originally referred to as Hillock Vent. Using 2007 vent position.
Mkr31	45.93363	-130.01358	1547	ASHES		Mushroom		Deployed 1986 by PiscesIV. Using 2007 vent position.
Mkr32	45.93328	-130.01362	1547	ASHES		Phoenix		Deployed 1986 by PiscesIV on side of vent. Originally referred to as Hillock Vent. Using 2007 vent position.

Marker	Latitude	Longitude	Z	Area	Status	Vent or Benchmark		comments
Mkr47	45.93345	-130.01349	1542	ASHES	OK still there 2011	between Gollum-Dave's		
Mkr54	45.93327	-130.01383	1547	ASHES		ROPOS		Deployed 2007 (J2-293) on west edge of ROPOS vent (white diamond)
Mkr64	**45.93356**	**-130.01330**	**1545**	**ASHES**		**Gollum**		
Mkr68	**45.93328**	**-130.01389**	**1542**	**ASHES**		**Medusa-2010**		**Visible 2013 J2-726.**
MkrD	45.93336	-130.01372	1546	ASHES		SE Phoenix		visible J2-293 ('07); nav poor when viewed marker and bucket lid (better when sampling)
MkrI	45.93373	-130.01341	1546	ASHES		Marshmallow		Spotted 2010-1m from vent. Visible J2-293 ('07). Named White Vent originally (R471).
Mrk2	45.93332	-130.01391	1546	ASHES		Hell		Deployed 1986 by PiscesIV on seafloor. Using 2007 vent position.
MrkL	45.93332	-130.01391	1546	ASHES		Hell		Small square foam markers (eyeball) deployed 1998 in hole left by SUAVE sampling. Using 2007 vent position.
observatory platform	**45.93362**	**-130.01389**	**1545**	**ASHES**	**ok**	**West of Inferno**		
Tripod21	45.93357	-130.01329	1547	ASHES	ok	Gollum		
***Hell marker**								***Observed a marker at Hell but did not verify its number. Could be 2/L/27.**
***Inferno marker**								***Observed tiny marker at Inferno but could not read ID. Could be Mkr19.**
Mkr60	**45.95512**	**-130.00989**	**1534**	**CalderaCenter**	**ok**		**AX-101**	**Marker at Caldera Center near AX-101**
Mkr61	**45.95503**	**-130.00989**	**1534**	**CalderaCenter**	**ok**		**AX-101**	**Marker at Caldera Center near AX-101**
Mkr122	45.91717	-129.99290	1534	Coquille		Diffuse vent area		
Mkr128	**45.91745**	**-129.99303**	**1534**	**Coquille**	**New 2013**	**Casper**		**Used Casper position from HOBO 102 deployment. Not a cursor position. VV# 10939**
Mkr57	45.91733	-129.99295	1537	Coquille		Vixen		Deployed 2007. (J2-289) Old mkr57 deployed on R857(04). 2010 repositioned by ~.5m 2007 position over 10m off.
Mkr141	45.87992	-129.80294	**1917**	**Dependable**	**New 2013**	**Trusty**		**Cursor position. Near sampling hole but too hot to place marker anchor in the sampling hole. VV# 15290.**
Mkr142	45.88002	-129.80281	**1919**	**Dependable**	**New 2013**	**Weak & Rusty**		**East side of Dependable. Marker deployed just above the vent sampled; just below and left of a first flange witnessed. Logged nav position (not cursor). VV# 14880.**

Marker	Latitude	Longitude	Z	Area	Status	Vent or Benchmark		comments
Mkr155	**45.94609**	**-129.98365**	**1520**	**E of 1998 & 2011 lava flows (E of Magnesia site)**	**ok**	**Spanish Steps**		**Deployed at new vent (later named Spanish Steps) near Trevi (J2-525). 2013: number not readable.**
Mkr156	45.94628	-129.98371	1520	E of 1998 & 2011 lava flows (E of Magnesia site)	ok	Trevi		Deployed at Trevi (J2-525)
Mkr126	**45.92580**	**-129.97787**	**1531**	**International District**	**New 2013**		**AX-310**	**Using cursor position for location. AX-310 site. VV#7452**
Mkr150	45.92642	-129.97898	1520	International District	ok	Diva		
Mkr151	45.92619	-129.97894	1520	International District	ok	El Gordo		**Could not find marker in 2013.**
Mkr152	45.92655	-129.97937	1517	International District	ok	Hermosa		
Mkr153	45.92650	-129.97920	1517	International District	ok	9m Chimney		
Mkr169	**45.92651**	**-129.97940**	**1519**	**International District**	**ok**	**Hermosa**		**Observed 2013 J2-728.**
MkrN	45.92608	-129.97979	1522	International District	probably gone	Flattop		Not seen 2010. Probably gone.
MkrN5	45.92615	-129.98014	1522	International District	probably gone	Flattop		Didn't see marker in 2007/2010. Gone?
Allison Marker	**45.92608**	**-129.97877**	**1521**	**International District**	**observed in 2013**			**Near El Gordo observed on J2-728 and J2-730. Has a 2010 date on it. Happy Birthday Allison. Mayonnaise container on a rope.**
Marker 12	**45.92572**	**-129.97782**	**1530**	**International District**	**observed in 2013**			**2013: May be something associated with RSN. J730 vv#7362. Near AX-310**
Mkr62	45.92274	-129.98810	1526	Pre-1982 flow (W of 1998 lava)	ok	Mkr113 Vent		Deployed 2007. Site still active (07) but no signs of old marker 113.
Mkr65	**45.91617**	**-129.98950**	**1534**	**Pre-1982 flow (W of 1998 lava)**	**ok**	**Bag City**	**AX-104**	**At Cement benchmark AX-104 near Bag City vent. Survived 2011 eruption.**
Mkr143	**45.94806**	**-129.98465**	**1522**	**Red Mat Bridges**	**New 2013**			**Anchor chain put in red mat surrounded by orange mat near edge of large collapse feature. (Not the sample site which was a nearby pillar). Position from cursor.**
Mkr130	**45.93846**	**-129.97209**	**1527**	**RSN PN**	**New 2013**		**AX-309**	**At RSN Primary Node site and AX-309. Cursor position. VV#7712**
AX-105	**45.86317**	**-130.00375**	**1723**	**SouthPillowMound**	**ok**		**AX-105**	**Cement benchmark AX-105 at S. Pillow Mound site**
Mkr127	**45.94533**	**-130.00913**	**1545**	**West of Magnesia**	**New 2013**		**AX-307**	**Cursor position at AX-307 and Mkr127.**

Marker	Latitude	Longitude	Z	Area	Status	Vent or Benchmark		comments
GhostTrainWheel	45.93208	-129.98407	1519	1998LavaFlow	unknown			Has 1998 date on railroad wheel. Probably old mooring-discovered on R1012-not deployed then. Looks like on edge of 2011 lava flow-not sure if it is still there.
Mkr44	45.92603	-129.98010	1520	1998LavaFlow	probably ok	Village		Sampled on R856 22:45:34. (Added back in 2011-lost off list). Sample R1010 09:17:48.
Smiley marker	45.93326	-129.98178	1517	1998LavaFlow	ok	E of Marker33 vent site		Saw in 2011. It survived the 2011 eruption. Near east edge of 2011 lava flows.
AX-308	45.93160	-129.99880	1533	BPR-South1	**New 2013**			

Table 6.4.2 Vents in BOLD were observed during this expedition, those in bold-italics were observed but not sampled. Remaining vents are listed for reference**.** Vents are sorted by Location then Vent name.

Vent	Latitude	Longitude	Depth	Location	Marker	Type	Comments
Marker33 Vent	45.933200	-129.982268	1524	1998LavaFlow	Mkr166	*diffuse*	Area overrun with 2011 lobate lavas. All markers; RAS; etc. buried. Still some diffuse venting happening. 2011 RAS deployed here. Also Mkr166 and an MTR deployed.
MkrN3 Vent	45.943716	-129.985163	1530	1998LavaFlow	Mkr52	*diffuse*	No previous markers spotted in 2011. Covered in 2011 lava.No blue mat. Still has diffuse flow. No markers.
Village	45.926180	-129.980570	1520	1998LavaFlow	Mkr44	*diffuse*	Not visited in 2010 or 2011. Suspect it is still there post 2011 eruption.
Bag-1	45.916332	-129.989045	1531	2011LavaFlow		*snowblower*	large collapse with large amount of floc coming from snowblower at bottom and pillar is covered in white mat (video highlight)
Bag-2	45.917412	-129.988765	1525	2011LavaFlow		*snowblower*	120 m N of Bag City; big round orifice
Boca	45.927692	-129.982482	1519	2011LavaFlow	Mkr170	*snowblower*	New snowblower vent in 2011 lava. Diffuse snow blower. Rounded shape. Bowl-like.
Cottonball	45.927888	-129.982824	1521	2011LavaFlow		*snowblower*	New vent in 2011 lava. J2-583 traverse to Int'l Dist. Area with white cotton-like mat and orange sediments. NW of Boca Vent.
MBARI-1	45.943873	-129.984953		2011LavaFlow		*snowblower*	snowblower
MBARI-2	45.943813	-129.984906		2011LavaFlow		*snowblower*	snoblower vent from collapsed lobe
MBARI-3	45.940369	-129.984454		2011LavaFlow		*snowblower*	snowblower
MBARI-4	45.924170	-129.982540		2011LavaFlow		*snowblower*	snowblower
Skadi-1	45.923582	-129.982745	1527	2011LavaFlow		*snowblower*	Encountered huge, beautiful snowblower! Looked like the seafloor exploded through the sheet flow. Left marker (“A”) at site. Snow blower "Skadi" - Norse god of snow.
Skadi-2	45.923573	-129.982753	1527	2011LavaFlow		*snowblower*	right next to "Skadi-1" (<1m)
Skadi-3	45.923572	-129.982847	1527	2011LavaFlow		*snowblower*	crack near (~2-3m) Skadi-1 and 2)
Skadi-4	45.923512	-129.982805	1526	2011LavaFlow		*snowblower*	near to Skadi-1 (~3-4 m)
Skadi-5	45.923383	-129.982853	1525	2011LavaFlow		*snowblower*	Big rectangular orifice near (~10 m) Skadi-1.
Snow Globe	45.945844	-129.984892	1521	2011LavaFlow		*snowblower*	Large collapse hole (snowblower) in 2011 lava venting lots of floc and diffuse flow.
Subway	45.942100	-129.984660	1518	2011LavaFlow		*snowblower*	Skylight. A big white hole with a little bit of "lazy floc" and diffuse flow.

Vent	Latitude	Longitude	Depth	Location	Marker	Type	Comments
Subway-1	45.942232	-129.984658	1517	2011LavaFlow		*snowblower*	Snow Blower event for microbial mats R1467_082411_0341_S7
Subway-2	45.942115	-129.984683	1514	2011LavaFlow		*snowblower*	Big orifice; passing over a blizzard blower!
Subway-3	45.942002	-129.984682	1516	2011LavaFlow		*snowblower*	collecting rock sample; placed in the port bio box. bad format for date/time
Anemone	45.933251	-130.013790	1543	ASHES	Mkr129	*diffuse*	Large diffuse venting area at the S end of ASHES field. Less than 10m SW of Phoenix/Ropos sulfide. Anemones and lots of biota present.
Crack	45.933305	-130.013336	1546	ASHES	Mkr117	*diffuse*	Big Johnson (flowmeter) experiment (2001) was deployed here. No venting in 2011 - Marker gone. Marker seen in 1998.
Dave's	45.933523	-130.013829	1547	ASHES		*diffuse*	Very little venting 2011. Believe to be at Dave's in 2010 (no mkr).
Fuzzy Tubeworm Bush	45.933644	-130.013658	1544	ASHES		*diffuse*	Named in 2011. White filamentous bacteria and diverse biota on TW bush. Between Inferno and Mushroom
Gollum	45.933547	-130.013277	1547	ASHES	Mkr121, 64, Tripod21	*diffuse*	Tubeworm bush with diffuse venting. Markers deployed in 2010
Hell	45.933317	-130.013964	1546	ASHES		*sulfide*	Large active sulfide chimney. Marker 68 is 5 m SE. Found on Pisces 1986 dive.
Inferno	45.933561	-130.013674	1547	ASHES		*sulfide*	Large active sulfide chimney. Found on Pisces 1986 dive.
Marshmallow	45.933746	-130.013428	1544	ASHES		*anhydrite*	Small anhydrite vent. Formerly named White Vent (1999 cruise report lists both).
Medusa	45.933280	-130.013894	1547	ASHES	Mkr68	*diffuse*	Mkr-68 is at Medusa. Medusa is just a big tubeworm bush ~5m SE of Hell.
Mushroom	45.933581	-130.013582	1547	ASHES	Mkr1	*sulfide*	Small sulfide vent with tubeworms. Found on Pisces 1986 dive.
Phoenix / Hillock	45.933299	-130.013682	1544	ASHES		*sulfide*	ROPOS11 Jason target. It is actually the position of the small (~2m) sulfide chimney at the S end of ASHES. It looks a bit like a "Phoenix" bird. Originally called Hillock; Verena renamed it Phoenix as it was rising out of the ASHES and grew between 1986-1988.
ROPOS	45.933300	-130.013752	1547	ASHES		*diffuse*	
Styx	45.933350	-130.013541	1544	ASHES	Mkr21 ~5m SW	*diffuse*	Diffuse vent area. This position from 2011 better than previous target. Very little activity in 2011.
Virgin	45.933660	-130.013216	1544	ASHES		*anhydrite*	Anhydrite chimney. Found on Pisces 1986 dive.
Virgin's Daughter	45.933758	-130.013220	1547	ASHES		*anhydrite*	Just north of Virgin - in the general vicinity. Small anhydrites. Still very active in 2006. Pos from Delaney 2010 cruise.

Vent	Latitude	Longitude	Depth	Location	Marker	Type	Comments
Lamphere	45.989337	-130.026562	1576	CASM		*sulfide*	Not active in 1998 R480. Chain placed in 1983 on vent by Tunnicliffe.
Shepherd	45.988868	-130.027200	1580	CASM		*sulfide*	
T&S	45.989153	-130.027168	1583	CASM		*sulfide*	Found 1998.
Casper	45.917414	-129.992989	1538	Coquille		*anhydrite*	Anhydrite chimney, within 10 m of Vixen.
Vixen	45.917327	-129.992946	1537	Coquille	Mkr57	*anhydrite*	Anhydrite chimney within 10 m of Casper vent. Marker laying on ground but noone picked it up. Mkr57? Found 2001. 2007 & 2010 pos within 2m.
Spanish Steps	45.946085	-129.983654	1520	E of 1998 & 2011 lava flows (E of Magnesia site)	Mkr155	*diffuse*	Vent site, tubeworms, and marker still there post-2011 eruption J2-581.
Trevi	45.946276	-129.983713	1520	E of 1998 & 2011 lava flows (E of Magnesia site)	Mkr156	*anhydrite*	Anhydrite chimney. Still there in 2011 after eruption. Mkr63 at AX202 benchmark. Discovered in 2007.
OldFlow	45.936447	-129.981705	1522	E of 1998 & 2011 lava flows (N of Cloud site)		*diffuse*	Just east of the '98 flow in older lava. North of Nascent and Mkr N41. Last visited in 2001 for tubeworm grab. Large old flow area on the edge of the '98 flow.
9m Chimney	45.926536	-129.979273	1518	International District	Mkr153	*sulfide*	2010 nav from bathy & J523 nav. (Mkr153 deployed 2010)
Castle	45.926218	-129.979996	1518	International District		*anhydrite*	Active anhydrite vent at base of large dead sulfide chimney.
Diva	45.926424	-129.978975	1524	International District	Mkr150	*anhydrite*	Anhydrite chimney. 2010 nav from bathy & J523 nav. (Mkr150 deployed 2010)
El Abuelo	45.926241	-129.979715	1516	International District		*sulfide*	Extinct sulfide chimney. 2010 nav from bathy & J523 nav.
El Antiguo	45.926288	-129.979396	1521	International District		*sulfide*	Extinct sulfide chimney. 2010 nav from bathy & J523 nav.
El Gordo	45.926194	-129.978939	1524	International District	Mkr151	*diffuse*	Tubeworm bush. 2010 nav from bathy & J523 nav. (Mkr151 deployed 2009-Alvin)
El Guapo	45.926575	-129.979479	1507	International District		*sulfide*	Large active sulfide chimney. 2010 nav from bathy & J523 nav.
Escargot	45.926409	-129.979119	1520	International District		*sulfide*	Active sulfide chimney. 2010 nav from bathy & J523 nav.
Flattop	45.926154	-129.979735	1522	International District		*sulfide*	Extinct sulfide chimney near Castle. 2010 nav from bathy & J523 nav. (Mkr N5 not seen 2010)
Hermosa	45.926514	-129.979398	1519	International District	Mkr152	*sulfide*	Large active sulfide chimney. 2010 nav from bathy & J523 nav (Mkr152 deployed in 2010)
Tiny Towers	45.926303	-129.979022	1524	International District		*sulfide*	Mini chimneys. 2010 nav from bathy & J523 nav.

Vent	Latitude	Longitude	Depth	Location	Marker	Type	Comments
Top Gun	45.926510	-129.979652	1520	International District		*sulfide*	Large inactive sulfide chimney. 2010 nav from bathy & J523 nav.
91 Vent	46.038600	-130.012420		NorthRiftZone			May be the same as Bob Vent.
Bag City vent	45.916338	-129.989153	1536	Pre-1982 flow (W of 1998 lava)	Mkr36	*diffuse*	Marker and old NeMONet frame not found in 2011.
Bag City	45.91617	-129.98950	1534	Pre-1982 flow (W of 1998 lava)	Mkr65	*diffuse*	HFS sample site in 2013. Near original Bag City vent at the AX-104 benchmark at edge of collapse.
Mkr113 Vent	45.92274	-129.988104	1526	Pre-1982 flow (W of 1998 lava)	Mkr62	*diffuse*	Not visited 2011 post-eruption. Believe it is still there. Marker 62 at site. Vent still very active venting on top and under pillar.
Worm-covered diffuser	45.879512	-129.804358	1941	Dependable West		*diffuse*	Discovered 2013 by RSN cruise. Sampled Axial2013. Hdg. 039. VV# 14450.
Weak & Rusty	45.88002	-129.80281	1919	Dependable	Mkr142	sulfide	Discovered 2013 by RSN cruise. Sampled Axial2013. Hdg. 254. VV# 14880.
Trusty	45.87992	-129.80294	1917	Dependable	Mkr141	sulfide	Discovered 2013 by RSN cruise. Sampled Axial2013. Hdgs 179. VV# 15290.
Small Spires	45.880117	-129.80285	1919	Dependable		*sulfide*	Hdg. 181. Above and to the right of a flange (further right from the Mkr142).
Broken Spire	45.879965	-129.803063	1914	Dependable		*sulfide*	Diffuse flow near a broken chimney to left of Mkr141. Hdg is 068. VV# 15728.

6.5 JASON Samples

125 total samples were collected by JASON on this expedition. The samples were composed of 79 fluid, 20 gas, 18 biology and 8 geology samples.

Table 6.5.1 Samples

J2-726 Samples

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J726-HFS-01	fluid	3m SW of Casper	Diffuse flow in skinny tubeworms and lots of limpets; palm worms and a few anemones.	Large volume bag (LVB) Filtered bag #24. O2 (oxygen) 26C. Oxygen level is 0182 mL/L. pH voltage is 3.334. Tmax=30.6 Tavg=28.5 T2= Vol=4003mL.	Butterfield	9/6 01:35	45° 55.0428'N	129° 59.5838'W	1534	64.1	214
J726-HFS-02	fluid			Filtered bag #22. T max=26.2 Tavg=26.0 T2=16. Vol=650mL.	Butterfield	9/6 01:56	45° 55.0428'N	129° 59.5838'W	1534	64.09	222
J726-HFS-03	fluid			RNA filter #14. Tmax=26.3 Tavg= 25.1 T2= 15.7. Vol=3003mL.	Butterfield	9/6 01:59	45° 55.0428'N	129° 59.5838'W	1534	64.09	227
J726-HFS-04	fluid	~3m W/NW of Vixen	Vigorous diffuse flow with healthy tubeworms; limpets and palmworms.	Filtered bag #18. Tmax=34.1 Tavg=33.9 T2= 21 Vol= 602 mL. pH voltage = 3.181. Oxygen = 0.103mL/L.	Butterfield	9/6 02:29	45° 55.04'N	129° 59.5791'W	1533	128.03	279
J726-HFS-05	fluid			Unfiltered bag #19. Tmax= 34.2 Tavg= 34.0 T2=21. Vol=600mL. pH voltage = 3.181. Oxygen = 0.103mL/L.	Butterfield	9/6 02:35	45° 55.04'N	129° 59.5791'W	1533	128.04	301
J726-HFS-06	fluid			RNA filter #10. Sample may have leaked. Tmax=34.2 Tavg=33.9 T2=21.3. Vol=3000 mL. pH voltage = 3.181. Oxygen = 0.103mL/L.	Butterfield	9/6 02:41	45° 55.04'N	129° 59.5791'W	1533	128.04	312
J726-HFS-07	fluid			RNA filter #11. Sample may have leaked. Tmax= 33.9 Tavg= 33.7 T2= 21.0 Vol=3000mL. pH voltage = 3.181. Oxygen = 0.103mL/L.	Butterfield	9/6 02:57	45° 55.04'N	129° 59.5791'W	1533	128.06	363
J726-HFS-08	fluid	Vixen	Knocked down chimney and sampling directly in the intense flow.	Filtered piston #2 (PF2). Tmax= 333.3 Tavg=319.3 T2= 80 Vol=400 mL. Jason temp probe 344°C	Butterfield	9/6 03:42	45° 55.0367'N	129° 59.5782'W	1534	127.69	459
J726-HFS-09	fluid			Unfiltered piston #3. Tmax= 333.6 Tavg=330.8 T2=80. Vol=400mL. Jason temp probe 344°C.	Butterfield	9/6 03:44	45° 55.0367'N	129° 59.5782'W	1534	127.75	462
J726-GTHFS-10	gas			Port HFS gastight. T=326. Jason temp probe 344°C.	Evans	9/6 03:47	45° 55.0367'N	129° 59.5782'W	1534	127.66	468

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J726-GTHFS-11	gas			Center HFS gastight. T=330. Jason temp probe 344°C.	Evans	9/6 03:48	45° 55.0367'N	129° 59.5782'W	1534	127.65	471
J726-HFS-12	fluid			Unfiltered bag #17. Sample for gold. Tmax=334.9 Tavg= 320.0 T2= 80 Vol= 300mL.	Butterfield	9/6 03:56	45° 55.0367'N	129° 59.5782'W	1534	127.63	485
J726-HFS-13	fluid	Casper	Knocked down chimney and sampling directly in the intense flow.	Filtered piston #4. Tmax=249.8 Tavg=247 T2=30.2 Vol=402mL. Jason temp probe 314°C.	Butterfield	9/6 05:29	* 45° 55.0461'N	129° 59.5789'W	1534	152.14	629
J726-HFS-14	fluid			Unfiltered piston #5. Tmax= 252.9 Tavg=241 T2= 9 Vol= 402 mL. Jason temp probe 314°C.	Butterfield	9/6 05:33	* 45° 55.0461'N	129° 59.5789'W	1534	151.65	634
J726-GTHFS-15	gas			Stbd HFS gastight. Tmax-310 T2=76. (NOTE: Ram did not move but think sample did fire). Jason temp probe 314°C.	Evans	9/6 05:48	* 45° 55.0461'N	129° 59.5789'W	1534	156.11	655
J726-GTB-16	gas			Green gastight bottle #2. Jason temp probe 314°C.	Evans	9/6 05:59	* 45° 55.0461'N	129° 59.5789'W	1534	156.24	678
J726-HFS-17	fluid	Virgin	Chimney fell over. Sampling directly in the intense flow.	Filtered piston #8. Jason T probe 271.8. Tmax=265.2 T2= 90.7 Vol=411mL. (sample pump stopped and restarted during sample a couple of times.)	Butterfield	9/6 08:34	* 45° 56.0119'N	130° 0.7859'W	1544	301.56	762
J726-HFS-18	fluid			Unfiltered piston #9. No good HFS temperature readings. (Same position as sample #17). Jason T probe 271.8.	Butterfield	9/6 08:41	* 45° 56.0119'N	130° 0.7859'W	1544	301.62	773
J726-GTB-19	gas			Red/green gastight bottle #7. Jason T probe 271.8.	Evans	9/6 08:46	* 45° 56.0119'N	130° 0.7859'W	1544	301.66	781
J726-GTB-20	gas			Nude gastight bottle #11. Tried to fire twice becasue the ram wasn't properly positioned the first time. Jason T probe 271.8.	Evans	9/6 08:51	* 45° 56.0119'N	130° 0.7859'W	1544	301.63	788
J726-HFS-21	fluid	Anemone	Small area of diffuse flow with biota(short fat tubeworms; anemones; limpets; palmworms)	Large Volume Bag (LVB) collection #1. 28C. Tmax=30.6 Tavg=28.5 T2=16.2 Vol=4003 mL.	Butterfield	9/6 10:08	* 45° 55.9924'N	130° 0.8295'W	1543	218.68	909
J726-HFS-22	fluid			Filtered bag #20. Tmax=29.1 Tavg=28.2 T2=15.3 Vol=651 mL.	Butterfield	9/6 10:32	* 45° 55.9924'N	130° 0.8295'W	1543	218.83	945
J726-HFS-23	fluid			Unfiltered bag #21. Tmax=30.9 Tavg=-29.2 T2 16.4 Vol=651mL.	Butterfield	9/6 10:36	* 45° 55.9924'N	130° 0.8295'W	1543	218.84	952
J726-HFS-24	fluid			Unfiltered bag #23. Pump stopped and restarted during sample (probe moved) Tmax=35.9 Tavg=34.3 Vol=663mL. Log states only 250 mL in bag when pump stopped.	Butterfield	9/6 10:42	* 45° 55.9924'N	130° 0.8295'W	1543	218.65	965

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J726-HFS-25	fluid			RNA filter #15. Pump lost power and probe drifted out of vent flow. Started flush pum and reinserted probe. Tmax=35.8 Tavg=34.4 T2=n/a Vol=1924mL.	Butterfield	9/6 10:52	* 45° 55.9924'N	130° 0.8295'W	1543	218.64	973
J726-HFS-26	fluid			RNA filter #16. Tmax=56.9 Tavg=54.6 T2=25.9 Vol=3002 mL. O2=0.325 mL/L.	Butterfield	9/6 11:08	* 45° 55.9924'N	130° 0.8295'W	1543	217.74	985
J726-microbio-27	bio			Large green syringe sample in sediment near previous Anemone samples.	Vining	9/6 11:38	* 45° 55.9924'N	130° 0.8295'W	1542	217.62	1038
J726-microbio-28	bio	Phoenix	Sulfide chimney with biota including blue mat.	Biofilm - suction sample of blue mat on lower portion of Phoenix sulfide chimney. Large amount of blue mat in the chamber.	Vining	9/6 11:48	* 45° 55.9913'N	130° 0.8191'W	1543	350.41	1063
J726-HFS-29	fluid	Inferno	Sulfide chimney. Same spire as last year. 3+ m up the chimney.	Spire has good flow.Filtered piston #6. Tmax=300.1 Tavg=299.6 T2=80 Vol=600mL. Tmax=311.3 with Jason temp probe.	Butterfield	9/6 12:17	* 45° 56.0167'N	130° 0.8206'W	1540	237.61	1140
J726-HFS-30	fluid			Unfiltered piston #7. Both pumps stopped so sample restarted at 1225. Tmax=300.3 Tavg=300 T2=78 Vol=657mL. Tmax=311.3 with Jason temp probe.	Butterfield	9/6 12:25	* 45° 56.0167'N	130° 0.8206'W	1540	237.26	1150
J726-Major-31	fluid			White major sampler. Tmax=300.3. Tmax=311.3 with Jason temp probe.	Butterfield	9/6 12:38	* 45° 56.0167'N	130° 0.8206'W	1540	237.7	1167
J726-Major-32	fluid			Yellow major sampler. Tmax=311.3 with Jason temp probe.	Butterfield	9/6 12:56	* 45° 56.0167'N	130° 0.8206'W	1539	259.03	1208
J726-microbio-33	bio	Marshmallow	From the middle of small tubeworm clump.	Small white syringe sample of mixture of sediment and mat.	Vining	9/6 13:27	* 45° 56.0264'N	130° 0.8015'W	1542	289.66	1280

J2-727 Note: No samples were taken on J2-727

J2-728 Samples

J728-HFS-01	fluid	El Gordo	In healthy tube worm clump (mid-level) on the active side (N) of the vent.	Filtered bag #18. Tmax=62.9 Tavg= 61.3 T2=30.0. Vol= 610mL	Butterfield	9/8 05:40	45° 55.5711'N	129° 58.7384'W	1521	182.45	2643
J728-GTHFS-02	gas	El Gordo	In the same worm clump as the first sample but slightly different location. Still N side of vent.	Starboard red-9 GTHFS. T2=64 Tmax=156.	Evans	9/8 05:53	45° 55.5711'N	129° 58.7384'W	1521	177.33	2668

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J728-HFS-03	fluid	El Gordo	Steady flow at base of a few healthy tube worms. Still N side of vent.	RNA filter #10. Tmax=77.3 Tavg= 76.0 T2=35. Vol=3000mL.	Butterfield	9/8 06:03	45° 55.5711'N	129° 58.7384'W	1521	176.14	2714
J728-HFS-04	fluid			RNA Filter #11. Tmax=78.8 Tavg=77.4 T2=34. Vol=3000mL.	Butterfield	9/8 06:21	45° 55.5711'N	129° 58.7384'W	1521	176.13	2739
J728-HFS-05	fluid	El Gordo	Sample from one of the RAS vent cap holes.	Unfiltered bag #19. Tmax=59.1C Tavg=58.8C T2=26C Vol=629mL. Placed the beast nozzle in the vent cap. T1= 54.1C O2= 0.336 mL/L.	Butterfield	9/8 07:46	45° 55.569'N	129° 58.7342'W	1521	168.94	2905
J728-microbio-06	bio	El Gordo	Just underneath a dead tubeworm bush at the top of the vent. A few feet from the RAS vent cap.	Large green syringe of sediment for microbiological studies. The dark material is a solid crust and the white material is a light colored sediment not mat.	Vining	9/8 07:57	45° 55.569'N	129° 58.7342'W	1520	168.54	2927
J728-HFS-07	fluid	Escargot	In the middle of a limpet pile on the "shelf" in very diffuse flow ~2/3 of the way up the chimney.	Filtered bag #22. Tmax=6.6C Tavg=6.5C T2=4.3C Vol=627 mL. O2= 0.327mL/L	Butterfield	9/8 08:30	45° 55.5821'N	129° 58.7494'W	1519	285.63	3023
J728-HFS-08	fluid			Filtered bag #24. Tmax=6.5C Tavg=6.4C T2=4.3C Vol=626mL. O2= 0.327mL/L	Butterfield	9/8 08:34	45° 55.5821'N	129° 58.7494'W	1519	285.63	3023
J728-HFS-09	fluid			RNA filtered bag #d14. Tmax=6.7C Tavg=6.5C T2=4.4C Vol=3001mL. O2= 0.327mL/L.	Butterfield	9/8 08:41	45° 55.5821'N	129° 58.7494'W	1519	286.14	3040
J728-HFS-10	fluid	Escargot	Top of chimney in area of broken off anhydrite spire.	Filtered piston #8. Tmax=264.1 Tavg= 262.1 T2= 73.0 Vol=503mL.	Butterfield	9/8 09:21	45° 55.5821'N	129° 58.7494'W	1517	292.38	3134
J728-HFS-11	fluid			Unfiltered piston #9. Tmax=265.7C Tavg=263.1C T2=70.0C Vol=501 mL.	Butterfield	9/8 09:25	45° 55.5821'N	129° 58.7494'W	1517	292.81	3141
J728-microbio-12	bio	Escargot	East side of the chimney. Blue patch with a streak of limpets going through the middle.	Most likely some warm flow here because of the limpets. Suction of blue mat.	Vining	9/8 09:36	45° 55.5821'N	129° 58.7494'W	1520	83.84	3175
J728-HFS-13	fluid	Diva	Hole at the top of the anhydrite mound that used to be the spire base.	Filtered piston #2. Tmax=271.5 Tavg=271.2 T2=77.8 Vol=201 mL.	Butterfield	9/8 09:55	45° 55.5822'N	129° 58.7435'W	1522	65.89	3235
J728-GTHFS-14	gas			GTHFS port purple-10. Temp has dropped significantly; now about 200C. The flush pump had shut off.	Evans	9/8 10:00	45° 55.5822'N	129° 58.7435'W	1522	65.89	3235
J728-GTHFS-15	gas			GTHFS center orange-16. Tmax= 270.7C.	Evans	9/8 10:05	45° 55.5822'N	129° 58.7435'W	1522	65.85	3255
J728-HFS-16	fluid	El Guapo	In diffuse flow on NE side of chimney 5m up.	Filtered bag #20. Volume Tmax 23.9C Tavg 23.8C T2 11.3C. 626mL.	Butterfield	9/8 11:37	45° 55.5897'N	129° 58.768'W	1515	242.2	3433
J728-HFS-17	fluid			Unfiltered bag #21. Tmax=24.9 Tavg=23.8 T2-11.8. Vol=629mL.	Butterfield	9/8 11:41	45° 55.5897'N	129° 58.768'W	1515	242.11	3439

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J728-HFS-18	fluid			Unfiltered bag #23. Tmax=25.7 Tavg=25.2 T2=12.0. Vol=629mL. O2=0.398 ml/L.	Butterfield	9/8 11:45	45° 55.5897'N	129° 58.768'W	1515	242.01	3447
J728-HFS-19	fluid			Large volume bag (LVB) #1. Vol=4002 mL. Tmax=26.1 Tavg=24.2. T2=11.9.	Butterfield	9/8 11:54	45° 55.5897'N	129° 58.768'W	1515	241.77	3461
J728-HFS-20	fluid			RNA filter #15. Tmax=25.9 Tavg=24.2 T2=11.7. Vol=3001 mL.	Butterfield	9/8 12:13	45° 55.5897'N	129° 58.768'W	1515	241.76	3500
J728-HFS-21	fluid			RNA filter #16. Tmax=25.7 Tavg=24.6 T2=11. Vol=3023mL. 0.3mL/L. pH voltage = 3.024	Butterfield	9/8 12:29	45° 55.5897'N	129° 58.768'W	1515	242.15	3521
J728-microbio-22	bio			Big white syringe sample of brownish mat/biology and anything that gets in there.	Vining	9/8 13:00	45° 55.5897'N	129° 58.768'W	1515	242.43	3563
J728-HFS-23	fluid	El Guapo	In direct flow at "boiling flaming" orifice at top of chimney. 14 m off seafloor. Facing SW.	Filtered piston #4. T=336 at start. Tmax=338.1 Tavg=332 T2=80. Vol=455mL.	Butterfield	9/8 13:22	45° 55.5897'N	129° 58.768'W	1504	246.81	3663
J728-HFS-24	fluid			Unfiltered piston #5. Tmax=339.2 Tavg=326 mL T2~100. Vol=451. Good sample even though the pump was not happy. Actual Tmax was probably 346C. Jason temp reading is 342C after the sample.	Butterfield	9/8 13:27	45° 55.5897'N	129° 58.768'W	1504	247.92	3673
J728-GTB-25	gas			J728-GTB-25 blue-12. Fired in the same orifice as the HFS samples.	Evans	9/8 13:38	45° 55.5897'N	129° 58.768'W	1504	247.47	3699
J728-Major-26	fluid			White major sampler.	Butterfield	9/8 13:45	45° 55.5897'N	129° 58.768'W	1504	247.34	3714
J728-Major-27	fluid			Yellow major sampler.	Butterfield	9/8 13:49	45° 55.5897'N	129° 58.768'W	1504	247.63	3725
J728-HFS-28	fluid			Unfiltered bag #17. Tmax=334.8 Tavg=307 T2=75. Vol=400 mL.	Butterfield	9/8 13:57	45° 55.5897'N	129° 58.768'W	1504	247.95	3741
J728-HFS-29	fluid	El Guapo	Area of venting from tiny black beehives with dense biota. 9 meters up the chimney facing SE.	Filtered piston #6. Tmax=63..3 Tavg=58 Voll=600mL. T2=22.	Butterfield	9/8 14:25	45° 55.5921'N	129° 58.7721'W	1507	146.09	3849
J728-HFS-30	fluid			Unfiltered piston #7. Tmax=56.1 Tavg=54.1 T2=22. Vol=600mL. Oxygen=0.293 mL/L. pH voltage=2.809.	Butterfield	9/8 14:30	45° 55.5921'N	129° 58.7721'W	1507	146.03	3856
J728-HFS-31	fluid	Castle	On ledge near the base in area where the anhydrite chimney was just knocked over and excavated.	Unfiltered piston #3. Tmax= 271.6 Tavg=266 T2=93. Vol=253mL.	Butterfield	9/8 15:22	* 45° 55.5708'N	129° 58.8059'W	1516	26.36	3977
J728-GTB-32	gas			White -17 gastight bottle directly in the orifice where the previous 271deg sample was taken.	Evans	9/8 15:31	* 45° 55.5708'N	129° 58.8059'W	1516	27.8	3999

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J2-729 Samples											
J729-microbio-01	bio	Virgin	Excavated anhydrite mound.	Big white syringe sample of sediment consisting of the anhydrite leveled off when the APL instrument was deployed. Not sure that sample was successful.	Vining	9/9 11:31	* 45° 56.0165'N	130° 0.7931'W	1542	52.58	5095
J729-microbio-02	bio			Big green syringe sample of sed/anhydrite area around vent excavated for APL termal experiment.	Vining	9/9 11:35	* 45° 56.0165'N	130° 0.7931'W	1542	125.73	5115
J729-microbio-03	bio	Phoenix	~2/3 up sulfide chimney with dense biota.	Suction sampled blue mat on older; cooler (orangish) tubeworms and sulfide.	Vining	9/9 12:02	* 45° 55.9981'N	130° 0.82362'W	1544	335.9	5218
J729-GTB-04	gas	Hell	Beehive spigot with intense flow near top (3.4 m up) of sulfide covered in dense biota.	Gastight bottle nude-11 placed in flow of broken-off beehive. Jason temp was 296.5 C.	Evans	9/9 12:32	* 45° 55.9979'N	130° 0.83718'W	1540	252.08	5302
J729-microbio-05	bio	Hell	In little mound with hot fluid beehive spigots just below last sample site.	Small green syringe sample of sediment/biology combination. Great sample full of grey matter.	Vining	9/9 12:34	* 45° 55.9979'N	130° 0.83718'W	1540	252.74	5340
J729-GTB-06	gas	Inferno	Excavated hole from largest beehive in this area (not quite at the top) 2.7 meters up the chimney.	Gastight red-green-7 in the excavated hole (that was formerly a large beehive). Jason temp was 310.9C.	Evans	9/9 13:02	45° 56.0125'N	130° 0.8239'W	1540	261.26	5458
J729-GTB-07	gas			Gastight green-2 in the excavated hole (that was formerly a large beehive). Same position as last sample. Jason temp was 310.9C.	Evans	9/9 13:07	45° 56.0125'N	130° 0.8239'W	1540	261.49	5472
J729-microbio-08	bio	Inferno	Just to the left of the beehives that were sampled earlier.	Small red syringe sample in the sediment underneath the white mat. Just next to the beehives that were sampled earlier (samples 6 and 7).	Vining	9/9 13:11	45° 56.0125'N	130° 0.8239'W	1540	250.51	5500

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J2-730 Samples											
J730-HFS-01	fluid	Bag City	White patch with biota on the edge of the collapse vertical face with fluid coming up. Sitting on the newer lava. Sampling in the old lava.	HFS unfiltered bag #17. Tmax=19.7 Tavg=19.5 T2=11.6 Vol=550 mL.	Butterfield	09/12 23:40	45° 54.9694'N	129° 59.3618'W	1532	312.86	10486
J730-HFS-02	fluid			Filtered bag #18. Start 2341. Tmax=19.9 Tavg=19.6 Vol=550mL.	Butterfield	09/12 23:41	45° 54.9694'N	129° 59.3618'W	1532	312.84	10491
J730-HFS-03	fluid			RNA filter #14. Tmax=20.8 Tavg=20.1 Vol=3012mL. T2=12.2.	Butterfield	09/12 23:45	45° 54.9694'N	129° 59.3618'W	1532	312.54	10495
J730-Rock-04	geo	~80m S of AX-105 South Pillow Mound	Old pillow lava flow (big pillows) with lots of sediment.	Tiny piece of lava rock from old solid pillow flow.	Butterfield	09/13 06:23	45° 53.189'N	129° 59.783'W	1719	55.54	11048
J730-HFS-05	fluid	Marker N3 vent site. Mkr-135 area.	In diffuse flow coming out of a crack between pillows. White floc and thick white mat at sampling site. Pre/post sample readings: Tmax=20C/19.9; O2= 0.133/0.121 mL/L; pH voltage= 2.766/4.379.	Unfiltered bag #19. HFS Tmax= 19.6C Tavg 19.1C T2= 11C Vol=550 mL.	Butterfield	09/13 22:04	45° 56.6218'N	129° 59.1107'W	1522	269.02	12282
J730-HFS-06	fluid			Filtered bag #20. Tmax= 18.9 Tavg= 17.5C T2= 10C Vol= 558mL.	Butterfield	09/13 22:09	45° 56.6218'N	129° 59.1107'W	1522	269.2	12295
J730-GTHFS-07	gas			HFS gastight. Purple-10. T=19.2C	Butterfield	09/13 22:13	45° 56.6218'N	129° 59.1107'W	1522	269.3	12303
J730-HFS-08	fluid			Unfiltered bag #21. Tmax= 19.8C Tavg= 19.7C T2= 11C Vol= 552mL.	Butterfield	09/13 22:21	45° 56.6218'N	129° 59.1107'W	1522	269.03	12314
J730-HFS-09	fluid			Large volume bag (LVB) position #1. Tmax= 20.1C Tavg= 19.6C T2= 11C Vol= 4002mL.	Butterfield	09/13 22:23	45° 56.6218'N	129° 59.1107'W	1522	268.28	12321
J730-HFS-10	fluid			Unfiltered piston #7. Tmax= 20.1C Tavg= 19.5C T2= 11C Vol= 653mL.	Butterfield	09/13 22:41	45° 56.6218'N	129° 59.1107'W	1522	268.25	12371
J730-HFS-11	fluid			RNA filter #10. Vol=3003mL. Tmax=20.1 Tavg=19.7 T2=10.7.	Butterfield	09/13 22:46	45° 56.6218'N	129° 59.1107'W	1522	268.1	12379
J730-HFS-12	fluid			RNA filter #11. Vol=3001 mL. Tmax=20.1 Tavg-19.6 T2=10.8.	Butterfield	09/13 23:02	45° 56.6218'N	129° 59.1107'W	1522	269.46	12410
J730-HFS-13	fluid	Trevi	Jason Tmax=257.9 C. In the direct flow at this small anhydrite mound (anhydrite knocked over).	Filtered piston #2. Tmax=250.4 Tavg=250.0 T2=85. Vol=352mL.	Butterfield	09/14 01:21	45° 56.7759'N	129° 59.0235'W	1520	271.1	12703
J730-HFS-14	fluid			Unfiltered piston #3. Tmax=-250.2 Tavg=250 T2=85 Vol=352 mL.	Butterfield	09/14 01:24	45° 56.7759'N	129° 59.0235'W	1520	271.1	12705
J730-HFS-15	fluid			Filtered piston #4. Tmax=250.2 Tavg=249.9 T2=86. Vol=352mL.	Butterfield	09/14 01:27	45° 56.7759'N	129° 59.0235'W	1520	271.1	12709
J730-GTHFS-16	gas			HFS gastight. Red-center-9. T=250C	Evans	09/14 01:30	45° 56.7759'N	129° 59.0235'W	1520	271.12	12712

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J730-GTHFS-17	gas			HFS gastight. White-stbd-17. T=249C	Evans	09/14 01:31	45° 56.7759'N	129° 59.0235'W	1520	271.12	12716
J730-HFS-18	fluid	Spanish Steps	Little mound of dense biota and good flow - in tubeworm bush. Oxygen = 0.393 mL/L. pH voltage = 3.016.	Filtered piston #9. Tmax=20.0 Tavg=17.8 Vol=700 mL T2=10.	Butterfield	09/14 01:54	45° 56.7651'N	129° 59.0191'W	1519	56.98	12798
J730-HFS-19	fluid			Unfiltered piston #9. Tmax=24.5 Tavg=2.6 T2=12. Vol=720 mL.	Butterfield	09/14 01:58	45° 56.7651'N	129° 59.0191'W	1519	56.96	12808
J730-HFS-20	fluid			RNA filter #15. Tmax=24.6 Tavg=21.3 T2=12. Vol=3000 mL.	Butterfield	09/14 02:07	45° 56.7651'N	129° 59.0191'W	1519	57.62	12822
J730-HFS-21	fluid	North of Trevi	Above sediment-covered older lineated sheet flows. On the edge of the caldera wall. 2-5 meters above the bottom.	Background water sample. Unfiltered bag #23. T2=2.3 Tmax=2.5 Tavg=2.4.	Butterfield	09/14 02:37	45° 56.82'N	129° 59.031'W	1518	344.75	12895
J730-microbio-22	bio	North of Trevi	Eastern edge of a collapse area.	Large green syringe sample of small patch of red mat. Nice sample.	Vining	09/14 04:02	45° 56.8927'N	129° 59.0902'W	1522	167.89	13100
J730-microbio-23	bio			Small red/blue RNA syringe sample of small patch of red mat.	Vining	09/14 04:15	45° 56.8927'N	129° 59.0902'W	1522	215.16	13143
J730-microbio-24	bio	North of Trevi	Eastern edge of a collapse area.	Large white syringe sample of red mat in area south of the last sampling position. Mat is on top of the basalt (compared to orange hydrothermal seds at the bases and cracks).	Vining	09/14 04:30	45° 56.891'N	129° 59.0912'W	1522	137.65	13188

J2-731 Samples

J731-HFS-01	fluid	Dependable West	Worm-covered Diffuser. Dependable West sulfide structure. In diffuse flow near the bottom of a tubeworm patch with white mat and dense biota. Jason T=26C. Oxygen=0.867 mL/L. pH voltage=3.28.	Filtered bag #18. Temperature recording not functioning well. Temp = 22 to 26C. Vol=630mL.	Butterfield	09/15 01:57	45° 52.7707'N	129° 48.2615'N	1941	39.7	14450
J731-HFS-02	fluid			RNA filter #10. Tmax= 25.3 Tavg=24.1 Vol=2991 mL. T2=12. Sample stopped because computer shut down for a minute.	Butterfield	09/15 02:00	45° 52.7707'N	129° 48.2615'N	1941	39.94	14455
J731-HFS-03	fluid			Unfiltered bag #19. Tmax=23.7 Tavg=22.8 Vol=629 mL. T2=12.0.	Butterfield	09/15 02:23	45° 52.7707'N	129° 48.2615'N	1941	39.91	14519
J731-sulfide-04	geo	Dependable	Main Dependable structure - SE Base (west of the saddle).	Thought to be a large chunk of basalt talus but turned out to be sulfide.	Kelley	09/15 03:31	45° 52.7951'N	129° 48.1527'N	1948	304.87	14663

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J731-HFS-05	fluid	Dependable	Rusty Site: Old venting sulfide chimney. Sample position 9 m up; Hdg 256deg. East side of main Dependable structure. Oxygen=0.16	Piston #9 unfiltered. Tmax=56.9 Tavg=47.1 Vol=700 T2=20 J731-HFS-05.	Butterfield	09/15 04:07	45° 52.8013'N	129° 48.1686'N	1922	253.36	14837
J731-GTHFS-06	gas			HFS gastight port blue #12. T=41.	Evans	09/15 04:18	45° 52.8013'N	129° 48.1686'N	1922	253.53	14842
J731-HFS-07	fluid			Filtered piston #8. Tmax=38.6 Tavg=35.2 Vol=628 T2=15. Not convinced that this ran the whole time.	Butterfield	09/15 04:20	45° 52.8013'N	129° 48.1686'N	1922	254.27	14853
J731-HFS-08	fluid	Dependable	Small Spire: Area of good flow on spire. North side of main Dependable structure. Looking south. Above and to the right of Mkr-142. Hdg 181 deg.	Filtered piston #2. Tmax=150.4 Tavg=143.1 Vol=600 T2=60..	Butterfield	09/15 05:35	45° 52.807'N	129° 48.171'N	1919	181.28	15130
J731-HFS-09	fluid			Unfiltered piston #3. Tmax=141.8 Tavg=140.2 Vol=629 mL T2=58.0.	Butterfield	09/15 05:38	45° 52.807'N	129° 48.171'N	1919	181.27	15131
J731-GTHFS-10	gas			HFS gastight center orange-16. T=145.	Evans	09/15 05:43	45° 52.807'N	129° 48.171'N	1919	181.35	15142
J731-HFS-11	fluid			Filtered bag #24. Tmax=163.9 Tavg=161.7 T2=49 Vol=626 mL.	Butterfield	09/15 05:45	45° 52.807'N	129° 48.171'N	1919	181.4	15154
J731-GTB-12	gas	Dependable	Trusty Chimney site: Very small chimney on the north side of main Dependable structure. Jason temp=216.2 deg.	Hand-held gastight bottle - green #2.	Evans	09/15 06:18	45° 52.7952'N	129° 48.1766'N	1917	177.89	15257
J731-HFS-13	fluid			Filtered piston #4. HFS Tmax=183.8 Tavg=175.7 vol=601 T2=56. J731-HFS-13 at Trusty.	Butterfield	09/15 06:26	45° 52.7952'N	129° 48.1766'N	1917	177.72	15278
J731-Sulfide-14	geo	Dependable	Gargoyle site: Area of flanges and visible diffuse venting. Main Dependable structure. Jason temp in flow under the flange is 174C.	Pieces of flange and sulfide for Deb Kelly (UW).	Kelley	09/15 06:57	45° 52.7953'N	129° 48.1818'N	1915	154.19	15381
J731-HFS-15	fluid	Dependable Mound	Area with a little bit of diffuse flow near a broken off chimney. HFS Tmax= 46.8C O2=0.171 ml/L; pH voltage= 4.513.	Filtered bag #20. Tmax= 48.6C Tavg= 47.6C T2= 20C Vol= 654mL.	Butterfield	09/15 09:02	45° 52.7979'N	129° 48.1838'N	1914	68.09	15730
J731-HFS-16	fluid			Unfiltered bag #21. Tmax= 49.2C Tavg= 48.0C T2= 20C Vol= 653mL.	Butterfield	09/15 09:06	45° 52.7979'N	129° 48.1838'N	1914	67.99	15737
J731-HFS-17	fluid			Large volume bag (LVB) #1. Tmax= 50.0C Tavg= 48.8C T2= 22C Vol= 4002mL.	Butterfield	09/15 09:09	45° 52.7979'N	129° 48.1838'N	1914	67.89	15742
J731-HFS-18	fluid			RNA filter #15. Tmax= 53.3C Tavg= 51.2C T2= 21C Vol= 3001mL.	Butterfield	09/15 09:28	45° 52.7979'N	129° 48.1838'N	1914	67.72	15764
J731-HFS-19	fluid			RNA filter #16. Tmax= 53.2C Tavg= 51.5C T2= 21C Vol= 3003mL.	Butterfield	09/15 09:47	45° 52.7979'N	129° 48.1838'N	1914	67.61	15786

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J731-microbio-20	bio	Dependable Mound	A few feet away from prevous sampling area near a broken off chimney. Tmax=2.2C; O2= 1.223 mL/L.	Large white syringe sample of grey sediment with a small patch of white mat on the surface.	Vining	09/15 10:08	45° 52.7979'N	129° 48.1838'N	1913	67.78	15845
J731-microbio-21	bio	Northeast of Undependable	On sedimented seafloor traveling from Undependable to the northeast of the Dependable's SE cone.	Small blue syringe sample of sediment on the seafloor.	Vining	09/15 12:28	45° 52.727'N	129° 48.099'N	1979	77.08	16098
J731-Rock-22	geo	North Dependable	South face of North Dependable: Heavily sedimented huge constructional pillow mound to the north of Dependable dubbed North Dependable.	Collected a couple pieces of oxidized pillow lava for Tito.	Collasius	09/15 13:40	45° 52.8853'N	129° 48.1648'N	1958	34.23	16256
J731-Sulfide-23	geo	North Dependable	South face of North Dependable: Heavily sedimented huge constructional pillow mound to the north of Dependable dubbed North Dependable. Upslope from previous sample.	Piece of pillow lava for Dave Clague	Clague	09/15 13:52	45° 52.9215'N	129° 48.1877'N	1948	322.95	16288

J2-732 Samples

J732-microbio-01	bio	Red Bridges	Skinny pillar in the middle of the collapse with red mat on top.	Large green syringe sample of red mat.	Vining	09/16 05:55	45° 56.8854'N	129° 59.0848'W	1522	249.9	17630
J732-microbio-02	bio			Large white syringe sample of orange sediment adjacent to the red mat.	Vining	09/16 06:01	45° 56.8854'N	129° 59.0848'W	1522	251.13	17649
J732-Rock-03	geo			Freshly exposed basalt from pillar where sediment samples were taken. Piece from top with red mat on it. Very large.	Vining	09/16 06:14	45° 56.8854'N	129° 59.0848'W	1522	251.13	17649

Sample	Type	Site	Site Description	Sample Descriptions	Contact	Date Time	* Corrected position - differs from lat/long in dive log Latitude	Longitude	Depth	heading	Virtual Van#
J732-Rock-04	geo	n/a	Collapse area of glassy and jumbled sheet flows in northern 2011 lavas.	Piece of brittle fragile 2011 lava.	Teasdale	09/16 08:30	45° 56.8764'N	129° 59.9164'W	1530	258.5	18110
J732-Rock-05	geo	n/a	Contact 2011 and older lava flow. Area of intact pillows; lobate flow near collapse edge.	Piece of 2011 lava in area of new lobate flow extending out into old sedimented lineated flow.	Teasdale	09/16 09:25	45° 57.0988'N	130° 0.2452'W	1531	319.28	18470

6.6 Logs

6.6.1 J2-726 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/5/13 23:26:55	45.91723	-129.99290	194.28		2.5		Jason in the water for dive J2-726. Start of Axial 2013 expedition - TN300.	19
9/5/13 23:34:06	45.91723	-129.99290	169.05		2.6		Medea in water	20
9/6/13 00:35:44	45.91723	-129.99290	34.77	6.6	1527.2	1533.8	Jason on bottom	54
9/6/13 00:36:42	45.91731	-129.99298	34.55	4.2	1529.7	1533.9	Looking at lava with some microbial mat.	55
9/6/13 00:37:18	45.91733	-129.99299	34.56	3.3	1530.6	1533.9	Right ahead of us is the vent.	56
9/6/13 00:37:25	45.91734	-129.99299	34.53	3.4	1530.5	1533.9	Looks like the nav is good.	57
9/6/13 00:37:30	45.91734	-129.99299	34.66	3.0	1531.0	1534.0	NAV: Doppler Reset	59
9/6/13 00:39:05	45.91734	-129.99300	34.72	1.8	1532.2	1533.9	We are at Vixen. Lobate-type lava flows with diffuse venting. Small tubeworms in the area.	60
9/6/13 00:40:28	45.91733	-129.99299	34.36	1.8	1532.1	1533.9	Dropping a Jason weight.	62
9/6/13 00:40:40	45.91733	-129.99299	34.36	1.6	1532.3	1533.9	We've stirred up a lot of floc in the water.	63
9/6/13 00:41:34	45.91733	-129.99299	34.84	1.5	1532.4	1533.9	Dropping another weight.	65
9/6/13 00:44:51	45.91732	-129.99300	34.76	1.6	1532.4	1533.9	Still dropping weights here.	69
9/6/13 00:48:11	45.91732	-129.99300	34.62	1.7	1532.3	1534.0	The vehicle is heavy - thinking the Beast is heavier than we thought.	72
9/6/13 00:48:38	45.91732	-129.99298	34.59	1.7	1532.3	1534.0	The pilot cam spare DVD recorder is working now.	73
9/6/13 00:51:21	45.91731	-129.99296	6.53	1.8	1532.3	1534.1	What is that in front of the vent? Red and slimy. A salp?	75
9/6/13 00:51:24	45.91731	-129.99296	6.49	1.8	1532.3	1534.1	Several hdFrameGrabs of the animal.	76
9/6/13 00:53:54	45.91729	-129.99294	6.58	1.7	1532.3	1534.0	Some kind of strange creature (jellyfish-like) near Vixen.	82
9/6/13 00:54:19	45.91730	-129.99294	14.9	1.3	1532.3	1533.6	Moving in close to the vent and looking for the temperature probes.	84
9/6/13 00:55:19	45.91731	-129.99297	56.68	1.5	1532.4	1533.9	Hobo 101 at Vixen straight ahead. It will be recovered.	86
9/6/13 00:55:23	45.91731	-129.99297	56.05	1.5	1532.4	1533.9	Lots of hdFrameGrabs of Vixen.	87
9/6/13 00:56:42	45.91730	-129.99295	79.81	0.7	1533.3	1534.0	Grabbing some HD shots of Vixen with Hobo 104 in the orifice. We believe there is another one buried in there.	96
9/6/13 00:58:55	45.91730	-129.99295	79.78	0.7	1533.3	1534.0	Zooming in on some sad-looking tubeworms.	99
9/6/13 01:00:05	45.91733	-129.99301	83.45	0.7	1533.2	1533.9	HIGHLIGHTS: Recording highlights of Vixen before removing the Hobo temp probe and deploying the APL experiment.	101
9/6/13 01:00:12	45.91734	-129.99301	84.31	0.7	1533.2	1533.9	hdFrameGrabs as well.	102
9/6/13 01:02:41	45.91740	-129.99303	96.8	0.7	1533.3	1534.0	Checking out the yellow-ish "stuff" to the left of the vent.	107
9/6/13 01:03:48	45.91738	-129.99303	96.78	0.7	1533.3	1534.0	Zooming in on scaleworms and limpets on this anhydrite structure.	110
9/6/13 01:04:29	45.91737	-129.99302	96.78	0.7	1533.3	1534.0	Zooming in on the chimney a bit looking at the black smoke pouring out.	111
9/6/13 01:05:27	45.91734	-129.99298	96.76	0.7	1533.3	1534.0	The temperature here was close to 340° C last year.	117
9/6/13 01:05:48	45.91733	-129.99296	96.76	0.7	1533.3	1534.0	Lasers on.	119
9/6/13 01:06:57	45.91730	-129.99293	96.74	0.7	1533.3	1534.0	HIGHLIGHTS stopped.	120
9/6/13 01:07:44	45.91730	-129.99292	96.73	0.7	1533.3	1534.0	Fish floating by.	125
9/6/13 01:08:21	45.91730	-129.99292	96.73	0.7	1533.3	1534.0	Taking framegrabs with the Scorpio camera.	126

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 01:09:51	45.91731	-129.99291	114.93	1.0	1533.1	1534.1	Got plenty of framegrabs now. Time to recover hobo 101. Then will go a short distance to do diffuse fluid sampling. Then will poke around to find buried hobo probe at Vixen. Then do high temp fluid sampling at Vixen.	128
9/6/13 01:12:00	45.91733	-129.99294	114.51	1.0	1533.1	1534.0	RECOVER: Recovering Hobo 101 at Vixen. This one was deployed in 2012.	130
9/6/13 01:13:33	45.91734	-129.99296	114.51	1.0	1533.1	1534.0	Placing the probe in the back of the front drawer.	132
9/6/13 01:14:27	45.91735	-129.99297	114.74	1.0	1533.1	1534.0	Still manipulating the temp probe to fit it in the back of the front basket.	133
9/6/13 01:16:03	45.91734	-129.99298	114.5	1.0	1533.1	1534.0	Vixen looks quite similar to last year.	135
9/6/13 01:16:16	45.91734	-129.99298	114.6	1.0	1533.1	1534.0	Next we will slowly drive to Casper to get a look at that.	136
9/6/13 01:17:17	45.91734	-129.99296	115	0.9	1533.1	1534.1	Casper is about 10 m north of Vixen.	137
9/6/13 01:17:23	45.91734	-129.99296	114.98	1.3	1532.7	1534.0	NAV: Doppler Reset	138
9/6/13 01:18:22	45.91739	-129.99294	33.71	2.9	1530.9	1533.8	Heading across lobate flows with microbial mat in the cracks and sad-looking tubeworms.	140
9/6/13 01:20:47	45.91738	-129.99299	0.93	0.8	1533.0	1533.8	We're debating whether or not this is Casper. It's a little tiny anhydrite vent ahead. It's pretty small.	142
9/6/13 01:20:54	45.91738	-129.99299	0.93	0.8	1533.2	1534.0	HIGHLIGHTS: Casper.	143
9/6/13 01:26:22	45.91735	-129.99304	0.04	0.8	1533.4	1534.2	Panning up and down to get an idea of where all the flow is coming from. The top or at the base? The anemone is about a meter away.	166
9/6/13 01:27:13	45.91734	-129.99305	359.98	1.1	1533.3	1534.4	Last year there was a lot more flow at Vixen than Casper.	168
9/6/13 01:28:58	45.91735	-129.99309	63.65	1.5	1531.9	1533.4	Going to lateral around and find a diffuse area to water sample.	171
9/6/13 01:31:11	45.91742	-129.99312	64.13	0.9	1533.4	1534.3	Looking at this area of diffuse flow. Will fluid sample in this flow.	174
9/6/13 01:31:48	45.91743	-129.99312	64.13	0.7	1533.4	1534.1	Taking framegrabs of the diffuse sampling area.	178
9/6/13 01:35:01	45.91744	-129.99307	64.07	0.8	1533.3	1534.1	HFS pump is on. Setting up to sample at Casper. Not sampling yet.	182
9/6/13 01:35:32	45.91744	-129.99307	64.07	0.8	1533.3	1534.1	Getting pH and oxygen measurements first.	184
9/6/13 01:35:53	45.91744	-129.99307	64.08	0.8	1533.3	1534.0	This will be 2 bag samples and an RNA filter. Still setting up.	185
9/6/13 01:36:44	45.91743	-129.99306	64.09	0.8	1533.3	1534.0	Casper: O2 (oxygen) level is 0.64 ml/L. That's close to the number we were getting on the CTD sensors at the same depth. Good number.	187
9/6/13 01:38:40	45.91741	-129.99301	64.1	0.8	1533.2	1534.0	That was the background oxygen level (0.64 ml/L). Temp in the vent right now is 10C.	190
9/6/13 01:39:12	45.91741	-129.99299	64.1	0.8	1533.2	1534.0	2nd reading is 0.48 ml/L.	191
9/6/13 01:39:30	45.91740	-129.99297	64.1	0.8	1533.2	1534.0	Putting the probe in the diffuse flow farther and will do more measurements.	193
9/6/13 01:39:41	45.91740	-129.99297	64.1	0.8	1533.2	1534.0	Temp is going up. 13C now.	194
9/6/13 01:40:27	45.91738	-129.99294	64.1	0.8	1533.2	1534.0	See cloudy stuff coming out of the clear hose. Temp is now 16C.	197
9/6/13 01:41:40	45.91737	-129.99296	64.11	0.7	1533.2	1534.0	Turning the pump back on for oxygen again in the 16C flow. Oxygen (O2) is 0.313. The hotter the water the lower the oxygen level.	199
9/6/13 01:42:24	45.91737	-129.99300	64.11	0.8	1533.2	1534.0	Remaining in this area of diffuse flow. Dave wants to poke around a bit in this same area and see what he gets.	201

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 01:46:25	45.91737	-129.99307	64.11	0.9	1533.2	1534.2	Temperature now is 26C. We will get more oxygen data here. This position is to the SW of Casper about 10m. 129° 59.5838'W; 45° 55.0428'N. pH voltage=3.334 at 26°C. O2 is 0.182 mL/L.	206
9/6/13 01:47:34	45.91738	-129.99307	64.11	0.8	1533.2	1534.0	SAMPLE: J726-HFS-01 Filtered bag#24.	208
9/6/13 01:49:18	45.91732	-129.99304	64.11	0.9	1533.2	1534.1	129° 59.5838;' 45° 55.0428'. Start at 0147. ~3m SW of Casper. J726-HFS-01.	211
9/6/13 01:51:25	45.91732	-129.99301	64.1	0.9	1533.2	1534.2	Sample in diffuse flow in tubeworm bush. Biota in bush area contains palm worms; limpets or snails (?). Nice diffuse flow.	214
9/6/13 01:52:34	45.91738	-129.99304	64.1	0.9	1533.2	1534.1	Sample finished. Tmax=26.6 Tavg=26.2 T2=15.7. Good tubeworm average area. Vol=650mL	216
9/6/13 01:53:23	45.91742	-129.99310	64.1	0.8	1533.2	1534.0	SAMPLE: J726-HFS-02 Starting filtered bag#22.	218
9/6/13 01:56:48	45.91740	-129.99308	64.09	0.9	1533.2	1534.1	Zooming in to see if these are limpets or snails. Lots of limpets and palm worms. The occasional anemone at the base.	222
9/6/13 01:58:04	45.91738	-129.99308	64.09	0.8	1533.2	1533.9	J726-HFS-02. Tmax=26.2 Tavg=26.0. Vol=650mL.T2=16.	224
9/6/13 01:59:25	45.91737	-129.99310	64.09	0.9	1533.1	1534.1	SAMPLE: HFS J726-HFS-03. RNA filter #14.	227
9/6/13 02:01:31	45.91737	-129.99302	64.08	1.1	1533.1	1534.2	This is a filtered bag sample. It will take about 20 minutes.	231
9/6/13 02:05:36	45.91739	-129.99300	64.08	1.0	1533.1	1534.1	Tons of limpets here. Seeing a scale worm. Skinny but live tubeworms.	236
9/6/13 02:07:54	45.91739	-129.99305	64.08	0.8	1533.1	1533.9	hdFrameGrabs of this area of diffuse flow near Casper.	239
9/6/13 02:13:17	45.91738	-129.99302	64.09	1.0	1533.1	1534.0	Looking at a big anemone here.	249
9/6/13 02:15:14	45.91737	-129.99293	64.09	0.7	1533.1	1533.8	J726-HFS-03 cont. Tmax=26.3 Tavg= 25.1 T2= 15.7. Vol=3003mL. Stop.	252
9/6/13 02:16:33	45.91737	-129.99294	64.09	0.9	1533.0	1534.0	We're going to move now. We're finished in this diffuse flow area.	257
9/6/13 02:17:40	45.91737	-129.99296	64.07	1.0	1533.0	1534.0	Flushing out the pump.	259
9/6/13 02:18:17	45.91737	-129.99296	64.07	0.9	1533.0	1534.0	Next we're going to Vixen to look for warmish water somewhere near the hot vent for more fluid sampling.	260
9/6/13 02:20:27	45.91732	-129.99296	116.21	1.4	1531.9	1533.3	We're close to Vixen now. Can see it in the background. We're looking for some heat flow around the edge.	264
9/6/13 02:22:38	45.91730	-129.99297	127.87	0.8	1533.1	1533.9	HIGHLIGHTS start. Sampling area with healthier tubeworms.	269
9/6/13 02:22:51	45.91730	-129.99297	127.84	0.8	1533.1	1533.9	HIGHLIGHTS stop.	270
9/6/13 02:24:23	45.91734	-129.99298	127.76	0.7	1533.1	1533.8	Setting up to sample HJ726-HFS-04. The last highlights were close to Vixen in diffuse flow with healthy tubeworms; limpets and palmworms.	273
9/6/13 02:26:00	45.91735	-129.99298	128.02	0.7	1533.0	1533.8	Temperature is going up. Temp is 29°C. Going up. It's 30°C now and going up slowly. I think I see a starfish??!!	275
9/6/13 02:26:30	45.91734	-129.99298	128.02	80.0	1533.0	1613.0	We're about a meter away from Vixen.	276
9/6/13 02:29:38	45.91730	-129.99297	128.03	119.6	1533.0	1652.6	SAMPLE: J726-HFS-04. 129° 59.5791 W 45° 55.0400 N. Vixen is due S of us ~3 meters. Start sample. Filtered bag#18.	279
9/6/13 02:31:20	45.91731	-129.99297	128.03	59.5	1533.1	1592.6	Lasers off.	295
9/6/13 02:34:05	45.91732	-129.99294	128.04	0.8	1533.1	1533.9	Still sampling here in this vigorous diffuse flow with palm worms; limpets and healthy looking tubeworms.	298

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 02:35:32	45.91728	-129.99296	128.04	127.3	1533.0	1660.3	J726-HFS-04 finished. Tmax=34.1 Tavg=33.9 T2= 21 Vol= 602 mL. Filtered bag #18	301
9/6/13 02:36:31	45.91727	-129.99296	128.03	0.8	1533.1	1533.9	SAMPLE: J726-HFS-05 Unfiltered bag #19.	303
9/6/13 02:36:50	45.91728	-129.99296	128.04	0.8	1533.1	1533.9	FLUID SAMPLER COMPUTER TIME IS 3 MINUTES AHEAD OF THE JASON UTC COMPUTER TIME.	304
9/6/13 02:37:54	45.91729	-129.99296	128.04	0.8	1533.0	1533.8	There is a fair amount of floc coming out around this vent. Intense fluid flow.	306
9/6/13 02:39:42	45.91729	-129.99297	128.03	0.8	1533.0	1533.8	J726-HFS-05 finished. Tmax= 34.2 Tavg= 34.0 T2=21. Vol=600mL.	309
9/6/13 02:41:21	45.91732	-129.99296	128.04	0.8	1533.1	1533.9	SAMPLE: J726-HFS-06 RNA filter #10. Same position as previous sample near Vixen in diffuse robust flow.	312
9/6/13 02:44:55	45.91731	-129.99297	128.05	0.8	1533.0	1533.8	HIGHLIGHTS start: Looking at Vixen vent in the background.	327
9/6/13 02:45:00	45.91731	-129.99297	128.05	0.8	1533.1	1533.9	Swapping out the HD frame grabber to the brow cam. Getting framegrabs of the starfish.	328
9/6/13 02:48:22	45.91730	-129.99292	128.05	0.8	1533.1	1533.9	Scaleworm with a pycnagonid off to the left of the scaleworm. Also seeing tons of limpets and healthy tubeworm plumes.	346
9/6/13 02:48:48	45.91730	-129.99292	128.06	0.8	1533.1	1533.8	Lots of palm worms in this area as well.	349
9/6/13 02:49:19	45.91730	-129.99292	128.06	0.8	1533.0	1533.8	Still sampling.	351
9/6/13 02:49:31	45.91729	-129.99292	128.06	0.8	1533.0	1533.8	HIGHLIGHTS stop.	352
9/6/13 02:50:39	45.91727	-129.99293	128.05	0.7	1533.0	1533.8	This is a double RNA sample - 2 filters. Doing this one and then will do another one.	354
9/6/13 02:53:48	45.91730	-129.99294	128.06	0.8	1533.0	1533.8	J726-HFS-06 cont. Dave doesn't think this sample is working. It's not slowing down and it should be.	359
9/6/13 02:57:27	45.91739	-129.99307	128.06	0.7	1533.0	1533.8	J726-HFS-06 End. Tmax=34.2 Tavg=33.9 Vol=3000mL. T2=21.3.	363
9/6/13 02:57:59	45.91736	-129.99307	128.06	0.8	1533.0	1533.8	SAMPLE: J726-HFS-07. Start. RNA filter #11.	364
9/6/13 03:01:50	45.91735	-129.99302	128.06	0.8	1533.0	1533.8	Dave is worried about the RNA filters. They should be slowing down - but they aren't.	370
9/6/13 03:07:57	45.91734	-129.99299	128.06	0.8	1533.1	1533.9	There is a possible problem with the RNA filter samples taken so far.	374
9/6/13 03:11:32	45.91736	-129.99300	128.07	0.8	1533.1	1533.9	Changed frame grabber from brow to science cam again.	382
9/6/13 03:14:34	45.91732	-129.99304	128.07	0.7	1533.1	1533.9	J726-HFS-07 stop. Tmax= 33.9 Tavg= 33.7 T2= 21.0 Vol=3000mL.	387
9/6/13 03:17:18	45.91735	-129.99302	128.09	0.7	1533.1	1533.9	HIGHLIGHTS start. Crab in the hot water.	398
9/6/13 03:19:41	45.91734	-129.99298	128.09	0.7	1533.1	1533.9	HFS Oxygen sensor in the area of the last 4 samples (4-7): pH voltage = 3.181. Oxygen = 0.103 mL/L.	405
9/6/13 03:21:20	45.91732	-129.99293	129.59	1.4	1532.1	1533.5	We're moving right up to Vixen and going to do some water sampling on the chimney now.	412
9/6/13 03:23:18	45.91730	-129.99298	127.46	0.7	1532.9	1533.6	Vixen has been 10° degrees or warmer than Casper in the past. Both are low salinity (thus the white anhydrite).	420
9/6/13 03:23:34	45.91729	-129.99298	127.45	0.7	1532.9	1533.6	HIGHLIGHTS start: High temperature reading at Vixen.	421
9/6/13 03:24:42	45.91728	-129.99299	127.44	0.7	1532.9	1533.6	Performing Jason temperature reading.	427
9/6/13 03:25:04	45.91727	-129.99299	127.37	0.7	1532.8	1533.6	Vixen was just knocked over.	429

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9/6/13 03:26:48	45.91728	-129.99297	127.39	0.7	1532.8	1533.6	Jason temperature probe measurement at Vixen - in the orifice that was the chimney.	432
9/6/13 03:28:10	45.91729	-129.99295	127.27	0.8	1532.8	1533.6	Vixen location: 129° 59.5782' 45° 55.0367' T=211°C and probing.....	434
9/6/13 03:29:27	45.91731	-129.99296	127.29	0.7	1532.8	1533.6	Vixen temperature: T=285° and rising.	437
9/6/13 03:30:47	45.91733	-129.99299	127.31	0.8	1532.8	1533.6	The RNA filtered bags were probably leaking...	439
9/6/13 03:30:53	45.91733	-129.99300	127.31	0.8	1532.8	1533.6	HIGHLIGHTS stop.	440
9/6/13 03:31:05	45.91733	-129.99300	127.31	0.7	1532.8	1533.6	Jason Temperature probe: T=344°C at Vixen.	441
9/6/13 03:33:18	45.91734	-129.99300	127.54	0.7	1532.9	1533.6	Putting the HFS wand in the flow now. Haven't started sampling yet.	445
9/6/13 03:34:43	45.91733	-129.99301	127.54	0.7	1532.9	1533.6	The pump went off. Starting the warm-up again. Oops - the pump stopped again.	448
9/6/13 03:37:33	45.91730	-129.99298	127.55	0.7	1532.9	1533.6	The tip is probably clogged.	452
9/6/13 03:38:01	45.91730	-129.99298	127.56	0.7	1532.9	1533.6	Now it seems to be running again. Coming back up. Dave tried a slower rate.	453
9/6/13 03:42:23	45.91731	-129.99296	127.69	0.7	1532.9	1533.6	SAMPLE: J726-HFS-08 Filtered piston #2 (PF2). Start. Tmax= 333.3 Tavg=319.3 T2= 80 Vol=400mL.	459
9/6/13 03:43:53	45.91732	-129.99291	127.75	0.7	1532.9	1533.6	SAMPLE: J726-HFS-09 Unfiltered piston #3. Start.	461
9/6/13 03:45:35	45.91731	-129.99289	127.7	0.7	1532.9	1533.6	J726-HFS-09 cont. Vixen orifice. Tmax= 333.6 Tavg=330.8 T2=80. Vol=400mL. The chimney was knocked over before taking samples 8 and 9.	464
9/6/13 03:47:14	45.91731	-129.99290	127.66	0.7	1532.9	1533.6	SAMPLE: J726-GTHFS-10 port gastight. T=326°. Stop.	468
9/6/13 03:48:24	45.91732	-129.99293	127.65	0.7	1532.9	1533.7	SAMPLE: J726-GTHFS-11 center. Same position in the orifice that used to be Vixen. Fired 03;48:02. T=330°C.	471
9/6/13 03:55:33	45.91735	-129.99297	127.63	0.7	1533.0	1533.7	SAMPLE: J726-HFS-12 Unfiltered bag #17. Sample for gold. Start 0353:20. Tmax=334.9 Tavg=320.0 T2=80 Vol= 300mL. Stop 0354:57	483
9/6/13 03:56:36	45.91736	-129.99296	127.63	0.7	1533.0	1533.7	Will try to locate lost hobo probe here at Vixen. Deployed in 2011. Could not locate it in 2012.	485
9/6/13 04:01:49	45.91732	-129.99292	127.8	0.7	1533.0	1533.8	Watch change.	491
9/6/13 04:05:13	45.91731	-129.99294	128.02	0.7	1533.0	1533.8	hdFrameGrab: RGB.20130906_040513_257.tif	496
9/6/13 04:07:37	45.91733	-129.99295	129.8	0.7	1533.0	1533.8	Moved HOBO probe in basket as it was blocking access.	501
9/6/13 04:07:51	45.91733	-129.99295	130.29	0.7	1533.0	1533.7	Retracting the basket.	502
9/6/13 04:11:03	45.91732	-129.99292	130.26	0.7	1533.0	1533.8	Looking with cameras for missing HOBO before probing.	506
9/6/13 04:17:23	45.91732	-129.99292	130.27	0.7	1533.1	1533.8	JASON watch change.	514
9/6/13 04:19:23	45.91733	-129.99295	130.27	0.7	1533.1	1533.8	Looked up HOBO 147 deployment info and the heading of JASON was 291 when it was deployed. Going to turn around and look.	517
9/6/13 04:20:04	45.91733	-129.99295	144.54	1.0	1532.7	1533.6	HOBO deployed in 2011 on J-581.	518
9/6/13 04:20:30	45.91733	-129.99294	171.13	1.1	1532.7	1533.7	Jason is moving around Vixen to the same heading as the deployment of the HOBO.	520
9/6/13 04:21:48	45.91734	-129.99293	170.83	1.0	1532.7	1533.7	Looking at Vixen at 170 now.	522
9/6/13 04:24:03	45.91733	-129.99289	287.91	1.3	1532.5	1533.7	Coming to 290 and looking with cameras for the missing HOBO.	525

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9/6/13 04:25:30	45.91732	-129.99290	310.07	0.9	1532.8	1533.7	See palm worms and scale worms but no sign of the HOBO.	528
9/6/13 04:31:38	45.91736	-129.99292	302.25	0.7	1533.5	1534.2	Found image of the HOBO deployment in the Virtual Van.	535
9/6/13 04:32:28	45.91736	-129.99293	303.16	0.7	1533.4	1534.2	Excavating the surrounding material to search for the probe. Heading is 303. The probe was suspended in the water to the right at this heading.	537
9/6/13 04:33:25	45.91737	-129.99294	302.41	0.7	1533.4	1534.1	Piece of massive anhydrite removed from area.	539
9/6/13 04:34:46	45.91737	-129.99293	302.81	0.7	1533.4	1534.2	Moving anhydrite blocks off to the right of Vixen to dig deeper.	541
9/6/13 04:38:30	45.91735	-129.99291	302.5	0.7	1533.4	1534.2	Going to let the material clear from the water in order to survey around again with the camera.	546
9/6/13 04:40:13	45.91736	-129.99295	302.53	0.7	1533.4	1534.2	Water has cleared so looking around for any signs of the HOBO.	548
9/6/13 04:40:48	45.91734	-129.99295	302.54	0.7	1533.5	1534.2	Using the brow cam to look down on the area.	550
9/6/13 04:41:12	45.91734	-129.99295	302.55	0.7	1533.4	1534.2	Skinny tube worm and palmworms.	551
9/6/13 04:43:00	45.91733	-129.99294	302.6	0.7	1533.4	1534.2	No sign of HOBO.	554
9/6/13 04:43:18	45.91733	-129.99293	302.63	0.7	1533.5	1534.2	Excavating one more time.	556
9/6/13 04:43:44	45.91734	-129.99292	302.68	0.7	1533.4	1534.2	Piece of blocky anhydrite.	557
9/6/13 04:44:07	45.91735	-129.99291	302.87	0.7	1533.5	1534.3	Probe is officially lost.	558
9/6/13 04:45:56	45.91735	-129.99287	304.58	0.7	1533.4	1534.2	Want to go survey the APL elevator drop site to the west of Vixen. Only 15m away from current location.	561
9/6/13 04:46:23	45.91735	-129.99287	306.81	0.8	1533.2	1534.0	Bearing is 290deg and 15m to the drop site.	563
9/6/13 04:47:23	45.91736	-129.99293	63.01	1.4	1532.4	1533.8	Looking for HOBO again as we leave the site for the elevator drop location.	565
9/6/13 04:49:41	45.91740	-129.99298	72.58	2.0	1532.0	1534.0	On our way to the elevator drop location.	568
9/6/13 04:50:58	45.91737	-129.99306	221.64	2.8	1531.2	1534.0	Flat lobate flows with diffuse flow and tubeworms. Looks good for the elevator drop.	570
9/6/13 04:51:12	45.91736	-129.99302	170.6	2.5	1531.2	1533.8	Dave Dryer says it looks like a great location for the elevator.	571
9/6/13 04:53:18	45.91733	-129.99307	112.75	2.9	1531.2	1534.1	Target for drop is 45° 55.0398 129° 59.5860 from the cursor on the navigator's screen.	575
9/6/13 04:53:46	45.91733	-129.99307	111.5	2.8	1531.2	1534.0	Next location is Casper Vent for sampling.	576
9/6/13 04:54:36	45.91740	-129.99304	67.09	2.8	1531.2	1534.0	Moving to Casper over lobates and tube worms.	578
9/6/13 04:55:49	45.91739	-129.99295	137.5	1.5	1532.7	1534.1	Approaching Casper and going to recover the HOBO here.	580
9/6/13 04:56:41	45.91737	-129.99293	103.4	0.8	1533.6	1534.4	Settling down at Casper for a position to recover the almost buried HOBO.	582
9/6/13 04:57:49	45.91735	-129.99290	103.2	0.8	1533.6	1534.4	Just one edge of the foam block is visible with the probe just visible at the distal end.	584
9/6/13 04:59:57	45.91736	-129.99294	102.89	1.3	1533.1	1534.4	RECOVER: HOBO temp probe 141. JASON has probe in manipulator and will find room in basket to stow it.	588
9/6/13 05:01:18	45.91738	-129.99300	102.46	1.1	1533.2	1534.3	Placing HOBO in aft port side of basket.	591
9/6/13 05:05:57	45.91739	-129.99296	124.32	0.9	1533.5	1534.4	Going to clear the vent to get a clear hole for sampling with the manipulator arm.	596
9/6/13 05:06:17	45.91741	-129.99298	124.11	0.9	1533.6	1534.4	Next going to take a high temperature measurement of the fluid.	597

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9/6/13 05:08:19	45.91758	-129.99321	125.44	0.9	1533.6	1534.4	Probe is in the fluid. Casper has usually been a bit less than Vixen.	601
9/6/13 05:08:35	45.91759	-129.99323	133.13	0.7	1533.7	1534.4	Moving the probe around to see if there is a higher temperature.	602
9/6/13 05:10:05	45.91757	-129.99319	130.53	0.9	1533.7	1534.6	Highest temperature was 313.8 here. Trying one more time.	604
9/6/13 05:11:48	45.91752	-129.99306	151.57	0.7	1533.7	1534.5	Doing a little more excavating to get a clearer reading with the port manipulator.	607
9/6/13 05:12:22	45.91753	-129.99306	150.52	0.7	1533.7	1534.5	Putting probe back into fluid.	609
9/6/13 05:15:05	45.91747	-129.99301	149.71	0.7	1533.8	1534.6	Not getting a good hot temperature.	612
9/6/13 05:16:55	45.91744	-129.99301	151.71	0.7	1533.9	1534.7	Stored the probe. Retrieving the wand for the Beast.	615
9/6/13 05:18:12	45.91749	-129.99307	151.61	0.7	1533.9	1534.7	Placing HFS wand in Casper.	617
9/6/13 05:29:02	45.91744	-129.99295	152.14	0.7	1533.9	1534.6	SAMPLE: J726-HFS-13 filtered piston #4 start at 05:25:50. End at 05:28 Tmax=249.8 Tavg=247 Vol=402mL T2=30.2.	629
9/6/13 05:33:12	45.91735	-129.99286	151.65	0.7	1533.9	1534.7	SAMPLE: J726-HFS-14 unfiltered piston #5 start at 05:30 Tmax= 252.9 Tavg=241 Vol= 402mL T2= 9 End at 05:32.	634
9/6/13 05:48:40	45.91728	-129.99284	156.11	1.1	1534.2	1535.3	SAMPLE: J726-GTHFS-15 STBD at same location at Casper as samples 13-14. Fired. Position of cursor for these samples is 45° 55.0411'N 129°59.5766'W (Had to remove and place probe back in looking for hot water). 05:48 Tmax-310 T2=76.	655
9/6/13 05:49:46	45.91732	-129.99286	156.12	1.1	1534.2	1535.3	NOTE: Ram did not move; retracting.	657
9/6/13 05:50:56	45.91730	-129.99288	156.12	1.1	1534.2	1535.3	Trying to look at the instrument to see if it fired.	660
9/6/13 05:52:13	45.91725	-129.99291	156.12	1.1	1534.2	1535.3	Can see circulating water in tube. Think sample did fire but did not get visual verification.	662
9/6/13 05:52:56	45.91725	-129.99292	156.13	1.1	1534.2	1535.3	Removing the HFS wand from Casper. Going to take a GTB next.	664
9/6/13 05:55:37	45.91724	-129.99288	156.22	1.2	1534.2	1535.4	Retrieving GREEN GTB-2 from the basket.	669
9/6/13 05:56:09	45.91724	-129.99288	156.22	1.2	1534.2	1535.5	Still in the same position at Casper.	670
9/6/13 05:57:19	45.91728	-129.99287	156.23	1.2	1534.2	1535.4	Current shifted at the vent while here.	673
9/6/13 05:58:58	45.91738	-129.99288	156.24	1.2	1534.3	1535.5	SAMPLE: J726-GTB-16 fired at Casper Vent. Green GTB-2.	676
9/6/13 06:00:24	45.91744	-129.99293	156.19	1.4	1534.3	1535.6	Placing GTB back into the basket.	680
9/6/13 06:01:51	45.91743	-129.99298	156.19	1.4	1534.3	1535.7	All done at the Casper and Vixen. Long transit to ASHES vent field.	682
9/6/13 06:06:32	45.91718	-129.99264	156.74	8.7	1525.4	1534.1	Transit to ASHES has begun.	688
9/6/13 06:07:44	45.91711	-129.99250	157.32	25.2	1509.1	1534.3	JASON will be flying mid-water with no view of bottom.	690
9/6/13 06:17:30	45.91723	-129.99233	155.07	112.1	1421.1	1533.2	Moving at .5 kts to ASHES.	692
9/6/13 06:41:28	45.92027	-129.99567	135.64	152.6	1380.5	1533.1	Having problems loading the next underlay map. Still transiting mid-water with altitude of 153m.	693
9/6/13 06:51:38	45.91773	-130.02623	135.04	164.3	1374.3	1538.5	Ship has been given control of navigating and driving to ASHES while working on the problem.	694
9/6/13 07:26:19	45.92958	-130.00684	129.94	86.2	1359.2	1445.4	Underlay problem has been solved. Still transiting to ASHES.	695
9/6/13 07:50:35	45.93293	-130.01194	117.76	130.9	1411.4	1542.3	Ship is in position over ASHES. Waiting for Medea and Jason to get here.	696
9/6/13 07:55:08	45.93329	-130.01272	300.51	47.9	1455.3	1503.2	Going to head toward bottom at ASHES.	697
9/6/13 07:58:55	45.93342	-130.01296	299.86	3.5	1540.2	1543.7	There is the bottom!	699

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 08:00:54	45.93350	-130.01315	300.17	2.0	1542.0	1544.0	NAV: Doppler Reset . WAS A DOPPLER ISSUE DURING THE TRANSIT. WILL NOT USE THAT NAVIGATION ANYWAY.	702
9/6/13 08:01:18	45.93352	-130.01317	300.64	2.0	1541.9	1543.9	Heading for Virgin Mound where we will pick up a HOBO.	704
9/6/13 08:02:57	45.93355	-130.01326	20.35	3.6	1539.3	1542.9	Saw Mkr 121 at Gollum with a few experiments on it.	707
9/6/13 08:03:22	45.93355	-130.01324	44.17	4.6	1538.9	1543.5	Now heading to Virgin. 17m away at 47deg.	709
9/6/13 08:04:51	45.93355	-130.01309	41.95	2.4	1541.4	1543.8	Here is Virgin.	713
9/6/13 08:05:28	45.93357	-130.01307	353.13	2.3	1541.7	1544.0	HOBO #129 is still in position at the vent.	716
9/6/13 08:07:05	45.93368	-130.01313	300.84	1.1	1542.4	1543.5	There is a large frame of some type adjacent to Virgin.	719
9/6/13 08:08:20	45.93364	-130.01313	300.36	0.7	1542.9	1543.7	Videos were restarted at 07:55 as we approached the bottom.	723
9/6/13 08:11:51	45.93364	-130.01313	299.38	0.7	1542.9	1543.7	Retrieving HOBO #139 at Virgin. Chimney fell as instrument was grabbed. HOBO is down in the vent (kind of stuck).	728
9/6/13 08:12:12	45.93365	-130.01315	299.96	0.7	1543.0	1543.7	RECOVER: HOBO temp probe. Retrieved HOBO #129.	729
9/6/13 08:14:07	45.93369	-130.01320	300.05	0.8	1543.0	1543.8	Stowed HOBO in basket near aft center.	732
9/6/13 08:15:21	45.93371	-130.01317	300.26	0.8	1543.0	1543.7	Last time this vent was about 240°.	736
9/6/13 08:16:55	45.93370	-130.01315	301.22	0.8	1543.0	1543.7	Taking temperature with high temperature probe. Temp high was 263.2.	738
9/6/13 08:18:24	45.93374	-130.01323	301.24	0.8	1543.0	1543.8	Moved probe a bit and temperature high was 271.8deg.	742
9/6/13 08:18:45	45.93374	-130.01323	301.32	0.8	1543.0	1543.7	Stowing temperature probe.	743
9/6/13 08:19:53	45.93369	-130.01316	301.34	0.8	1543.0	1543.8	Retrieving the HFS wand from the basket to collect some samples at Virgin.	745
9/6/13 08:34:08	45.93365	-130.01306	301.56	0.8	1543.0	1543.7	SAMPLE: J726-HFS-17 Filtered piston #8. Tmax=265.2 T2= 90.7 Vol=411mL Cursor position: 45° 56.0119'N 130° 0.7859'W (sample pump stopped and restarted during sample a couple of times.)	762
9/6/13 08:34:49	45.93369	-130.01307	301.56	0.8	1543.0	1543.8	NAV: Doppler reset during sample at 08:28. Offset to Virgin target is 19m.	764
9/6/13 08:40:57	45.93373	-130.01307	301.6	0.8	1543.0	1543.8	SAMPLE: J726-HFS-18 Unfiltered piston #9. No good temperature readings. Same position as sample #17).	771
9/6/13 08:41:53	45.93374	-130.01311	301.62	1.1	1543.0	1544.1	Problems with the temperature readings from the Beast on the last 2 samples. No Tavg for #17 and no temperatures for #18. Jason Tmax was 271.8°C.	773
9/6/13 08:42:21	45.93373	-130.01312	301.63	179.2	1543.0	1722.2	Stowing the HFS in the basket.	774
9/6/13 08:42:31	45.93373	-130.01312	301.65	0.7	1543.0	1543.7	Temperature is back on the fluid sampler.	775
9/6/13 08:44:11	45.93365	-130.01309	301.67	175.4	1543.0	1718.4	Next we will take 2 gastights at this site.	777
9/6/13 08:45:06	45.93362	-130.01304	301.66	0.7	1543.0	1543.7	Have GTB Red/Green #7 in arm.	778
9/6/13 08:46:20	45.93361	-130.01303	301.66	0.7	1543.0	1543.7	SAMPLE: J726-GTB-19 Red/Green #7 Fired at Virgin.	781
9/6/13 08:47:17	45.93363	-130.01307	301.67	0.7	1543.0	1543.7	Placing GTB back into the basket.	783
9/6/13 08:51:18	45.93361	-130.01302	301.63	0.7	1543.0	1543.7	SAMPLE: J726-GTB-20 Nude #11 fired at Virgin.	788
9/6/13 08:52:20	45.93364	-130.01307	301.65	96.7	1543.0	1639.7	Tried to fire twice because the ram wasn't properly positioned the first time.	789
9/6/13 08:53:19	45.93367	-130.01308	301.67	0.7	1542.9	1543.6	GTB placed back in basket.	791
9/6/13 08:56:58	45.93364	-130.01311	243.8	2.5	1540.7	1543.2	Transiting to Anemone.	795

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 08:58:49	45.93357	-130.01340	230.92	3.6	1540.9	1544.4	Will do low temp sampling at Anemone then high temp at Inferno.	798
9/6/13 09:00:25	45.93352	-130.01346	248.44	5.4	1538.9	1544.3	O2 sensor on.	801
9/6/13 09:01:21	45.93351	-130.01343	270.29	2.5	1541.5	1544.0	Virgin to Anemone transit Temp= 2.3; O2=0.664 mL/L.	803
9/6/13 09:02:38	45.93352	-130.01344	305.29	4.2	1539.7	1543.9	Large instrument found. Either part of the observatory or a camera system.	805
9/6/13 09:04:31	45.93342	-130.01375	306.64	5.7	1538.7	1544.3	Instrument was the end of the observatory cable at Mushroom.	808
9/6/13 09:05:09	45.93336	-130.01380	264.97	2.3	1542.4	1544.8	Resuming transit to Anemone.	809
9/6/13 09:08:13	45.93313	-130.01353	79.52	3.2	1540.4	1543.6	Coming up on a patch of old tubeworms and limpets.	813
9/6/13 09:11:16	45.93316	-130.01354	109.2	3.0	1540.7	1543.6	Not sure where we are; might have overshot Anemone by a few dozen meters to the south.	818
9/6/13 09:15:09	45.93326	-130.01346	98.47	2.2	1541.6	1543.8	Nav offset is making the transit difficult.	827
9/6/13 09:19:25	45.93321	-130.01358	74.94	1.1	1542.5	1543.7	Dropped a marker - Jason target that is…..	836
9/6/13 09:19:46	45.93321	-130.01358	74.58	1.1	1542.5	1543.7	Still trying to figure out if we are looking at Hell or Phoenix.	837
9/6/13 09:21:17	45.93322	-130.01360	189.25	1.6	1542.4	1544.0	Looking for an MTR which is located at Anemone.	839
9/6/13 09:23:06	45.93321	-130.01374	90.53	1.6	1542.0	1543.6	MTR label is 4099.	842
9/6/13 09:23:22	45.93321	-130.01375	88.02	1.3	1542.1	1543.4	Haven't found it yet.	844
9/6/13 09:27:02	45.93324	-130.01374	100.81	1.6	1543.1	1544.8	Spotted two polypro lines.	848
9/6/13 09:27:46	45.93324	-130.01373	101.13	1.6	1543.1	1544.8	Looks like they are tied to an old shackle. Not the marker.	850
9/6/13 09:39:23	45.93312	-130.01369	222.59	172.8	1542.9	1715.7	Have been searching what we think is Anemone. MTR could not be located.	859
9/6/13 09:40:39	45.93315	-130.01371	282.11	2.0	1541.5	1543.5	Will transit to Hell; which is more recognizable; to make sure we are in the correct place.	861
9/6/13 09:41:29	45.93326	-130.01374	325.93	1.5	1542.3	1543.7	Found marker 68 (near Hell at Medusa).	863
9/6/13 09:42:58	45.93335	-130.01384	334.14	0.7	1543.9	1544.7	Also found MTR 4098 (at Medusa).	865
9/6/13 09:43:24	45.93333	-130.01387	334.08	0.7	1544.0	1544.7	We are at Hell now.	867
9/6/13 09:44:49	45.93325	-130.01389	334.29	0.8	1543.9	1544.7	Were previously looking at Phoenix; the larger chimney.	869
9/6/13 09:46:08	45.93326	-130.01392	334.27	0.8	1543.9	1544.7	RECOVER: Recovering MTR 4098 at Hell. CORRECTION: THIS IS NOT HELL - IT IS MEDUSA; A TUBEWORM BUSH NEAR HELL WITH MKR-68. THE MTRS WERE RECOVERED AND DEPLOYED AT MEDUSA.	871
9/6/13 09:46:20	45.93326	-130.01392	334.29	0.8	1543.9	1544.7	NAV RESET	873
9/6/13 09:47:05	45.93327	-130.01394	334.32	0.9	1543.8	1544.7	DEPLOY: Deploying MTR 3052 at Medusa (same location as MTR just recovered).	874
9/6/13 09:48:19	45.93327	-130.01391	334.46	0.8	1543.9	1544.7	Marker position 130 0.8311 W 45 56.0002 N	877
9/6/13 09:49:25	45.93331	-130.01382	334.21	0.8	1543.9	1544.7	Recovered MTR placed in biobox.	879
9/6/13 09:53:26	45.93321	-130.01382	155.91	1.5	1543.1	1544.5	Now going back to Anemone.	887
9/6/13 09:58:09	45.93321	-130.01371	219.05	93.9	1542.9	1636.7	Trying to find the MTR at Anemone.	891
9/6/13 09:58:45	45.93322	-130.01371	218.88	184.4	1542.9	1727.2	Might be fully encrusted so we are poking around in the tubeworms.	892
9/6/13 09:59:29	45.93321	-130.01371	219.23	182.0	1542.9	1724.9	Fairly certain we are at the right vent.	893
9/6/13 09:59:58	45.93320	-130.01372	218.71	0.8	1542.6	1543.4	Its possible that someone else picked up the MTR.	894

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 10:02:59	45.93319	-130.01374	218.62	0.7	1542.7	1543.4	Will do a large volume HFDS bag here.	898
9/6/13 10:03:40	45.93321	-130.01374	218.63	0.7	1542.6	1543.4	Checking temp of diffuse flow; aiming for 30C.	900
9/6/13 10:03:51	45.93321	-130.01373	218.63	0.7	1542.6	1543.4	Approximately 22C now.	901
9/6/13 10:04:08	45.93322	-130.01372	218.64	0.7	1542.6	1543.4	Climbing slowly; 25C.	902
9/6/13 10:04:54	45.93322	-130.01369	218.64	0.7	1542.7	1543.4	Steady at 28C.	904
9/6/13 10:08:10	45.93313	-130.01367	218.68	158.5	1542.6	1701.2	SAMPLE: Start J726-HFS-21 large volume bag #1.	909
9/6/13 10:09:51	45.93322	-130.01361	218.7	147.9	1542.6	1690.5	Position 130 0.8245W 45 55.9961N	910
9/6/13 10:11:57	45.93317	-130.01354	218.72	166.3	1542.6	1708.9	HIGHLIGHTS have been on for a minute or two.	915
9/6/13 10:12:07	45.93317	-130.01354	218.72	0.7	1542.6	1543.3	HIGHLIGHTS off.	916
9/6/13 10:24:38	45.93323	-130.01384	218.81	0.7	1542.5	1543.3	HIGHLIGHTS start.	933
9/6/13 10:25:38	45.93322	-130.01383	218.82	0.7	1542.5	1543.3	Taking HD video of LVB HFS collection with scale lasers.	935
9/6/13 10:29:44	45.93319	-130.01390	218.82	0.7	1542.5	1543.2	HIGHLIGHTS off.	941
9/6/13 10:31:06	45.93320	-130.01382	218.83	0.7	1542.5	1543.2	Stopped J2726-HFS-21 LVB #1. Tmax=30.6 Tavg=28.5 T2=16.2 Vol=4003 mL.	943
9/6/13 10:32:05	45.93320	-130.01381	218.83	0.7	1542.5	1543.2	SAMPLE: J726-HFS-22 filtered bag #20 start.	945
9/6/13 10:35:15	45.93321	-130.01388	218.85	0.7	1542.4	1543.2	J726-HFS-22 end. filtered bag #20 Tmax=29.1 Tavg=28.2 T2=15.3 Vol=651 mL.	949
9/6/13 10:36:21	45.93320	-130.01388	218.84	0.7	1542.4	1543.2	SAMPLE: J726-HFS-23 unfiltered bag #21 start.	952
9/6/13 10:39:10	45.93319	-130.01390	218.84	0.7	1542.4	1543.1	HIGHLIGHTS on.	955
9/6/13 10:40:58	45.93319	-130.01385	218.54	156.9	1542.4	1699.3	J726-HFS-23 stop. Unfiltered bag #21 Tmax=30.9 Tavg=29.2 T2=16.4 Vol=651mL.	963
9/6/13 10:41:33	45.93318	-130.01385	218.54	100.9	1542.4	1643.3	SAMPLE: J726-HFS-24 start. Unfiltered bag #23.	964
9/6/13 10:42:43	45.93317	-130.01385	218.65	179.9	1542.4	1722.2	Stop J726-HFS-24 unfiltered bag 23.	965
9/6/13 10:43:10	45.93317	-130.01385	218.65	173.9	1542.3	1716.2	Jason lost thrusters and beast probe came out of the vent flow	966
9/6/13 10:43:23	45.93318	-130.01385	218.65	133.8	1542.4	1676.1	Replacing probe	967
9/6/13 10:48:12	45.93321	-130.01383	218.64	118.1	1542.3	1660.4	Restart J726-HFS-24 unfiltered bag 23.	969
9/6/13 10:48:40	45.93322	-130.01380	218.64	179.5	1542.3	1721.8	Had 250 mL pumped into bag when it was stopped.	970
9/6/13 10:51:02	45.93323	-130.01372	218.64	132.4	1542.3	1674.7	Stop J726-HFS-24 unfiltered bag 23 Tmax=35.9 Tavg=34.3 T2=19.4 Vol=663 mL.	972
9/6/13 10:52:11	45.93323	-130.01371	218.64	103.9	1542.3	1646.1	SAMPLE: Start J726-HFS-25 RNA filter #15.	973
9/6/13 11:02:39	45.93320	-130.01386	218.53	0.9	1542.2	1543.1	Stop J726-HFS-25 RNA filter 15.	974
9/6/13 11:02:49	45.93320	-130.01386	217.28	0.7	1542.1	1542.9	Lost power again.	975
9/6/13 11:03:08	45.93319	-130.01386	217.72	0.7	1542.2	1542.9	Probe has drifted out of the vent flow.	976
9/6/13 11:04:17	45.93318	-130.01385	217.74	1.0	1542.2	1543.1	Starting flush pump; trying to replace the probe.	978
9/6/13 11:05:01	45.93319	-130.01384	217.75	1.0	1542.2	1543.1	Now up to 43C.	980
9/6/13 11:06:00	45.93321	-130.01384	217.74	1.0	1542.1	1543.1	Almost to 50C; want to get closer to original temp of about 30C.	982
9/6/13 11:06:55	45.93321	-130.01383	217.74	131.4	1542.1	1673.5	Not going to restart the previous sample.	983
9/6/13 11:08:05	45.93318	-130.01376	217.74	0.9	1542.2	1543.0	J726-HFS-25 RNA filter #15 Tmax=35.8 Tavg=34.4 T2=NA Vol=1924mL.	985
9/6/13 11:08:29	45.93318	-130.01374	217.74	0.9	1542.1	1543.0	SAMPLE: Start J726-HFS-26 RNA filter #16.	987

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 11:09:07	45.93318	-130.01372	217.74	0.9	1542.1	1543.0	Higher temp now; approximately 50C.	988
9/6/13 11:09:33	45.93318	-130.01371	217.74	138.5	1542.1	1680.7	HIGHLIGHTS start.	990
9/6/13 11:15:01	45.93318	-130.01373	217.74	0.9	1542.1	1543.0	HIGHLIGHTS stop.	997
9/6/13 11:20:15	45.93322	-130.01361	217.73	187.8	1542.0	1729.8	Frame grab on Anemone vent with beast probe.	1003
9/6/13 11:24:58	45.93321	-130.01382	217.72	148.3	1542.0	1690.3	Stop J726-HFS-26 RNA filter #16. Tmax=56.9 Tavg=54.6 T2=25.9 Vol=3002 mL.	1007
9/6/13 11:25:33	45.93320	-130.01382	217.71	150.9	1542.0	1692.9	Will take O2 measurement next.	1009
9/6/13 11:27:22	45.93317	-130.01367	217.71	0.9	1542.0	1542.9	T=54.3C O2=0.325 mL/L.	1011
9/6/13 11:28:16	45.93317	-130.01363	217.7	0.9	1542.0	1542.9	Done with HFS sampling at Anemone.	1012
9/6/13 11:28:26	45.93317	-130.01363	217.7	0.7	1542.0	1542.7	Removing beast probe.	1014
9/6/13 11:31:06	45.93315	-130.01369	217.64	0.7	1541.9	1542.7	DEPLOY: MTR 3004 at Anemone.	1019
9/6/13 11:32:07	45.93313	-130.01364	217.63	0.7	1541.9	1542.7	Placing MTR just next to the most vigorous flow.	1022
9/6/13 11:33:04	45.93314	-130.01364	217.67	0.7	1541.9	1542.7	Almost exactly where the previous HFS sample was taken.	1024
9/6/13 11:36:55	45.93315	-130.01360	217.62	95.9	1541.9	1637.8	HIGHLIGHTS start.	1030
9/6/13 11:37:40	45.93314	-130.01363	217.62	74.6	1541.9	1616.5	SAMPLE: J726-microbio-27 in sediment. Large green syringe.	1034
9/6/13 11:39:10	45.93315	-130.01376	217.63	0.8	1541.9	1542.7	Placing syringe back in holster.	1041
9/6/13 11:39:16	45.93316	-130.01376	217.63	0.8	1541.9	1542.6	HIGHLIGHTS stop.	1042
9/6/13 11:40:59	45.93314	-130.01376	217.65	0.7	1541.9	1542.6	DEPLOY: Marker 129 at Anemone.	1045
9/6/13 11:41:18	45.93314	-130.01374	217.66	0.7	1541.9	1542.6	Placed marker just next to the MTR.	1047
9/6/13 11:44:58	45.93318	-130.01368	351.44	1.5	1541.4	1542.9	Moved to Phoenix.	1051
9/6/13 11:45:04	45.93318	-130.01367	351.06	1.4	1541.6	1543.0	Looking for blue mat.	1052
9/6/13 11:45:45	45.93319	-130.01365	352.33	1.4	1542.0	1543.4	Found a large patch on the lower portion of the chimney.	1054
9/6/13 11:45:51	45.93319	-130.01365	352.34	1.3	1542.1	1543.4	HIGHLIGHTS start.	1055
9/6/13 11:46:13	45.93319	-130.01363	352.34	1.3	1542.1	1543.4	Will take a sample using the slurp gun (suction sampler).	1057
9/6/13 11:46:40	45.93319	-130.01361	350.41	0.7	1542.9	1543.7	Getting Jason in position to sample the blue mat.	1059
9/6/13 11:48:22	45.93317	-130.01355	351.4	0.7	1542.8	1543.5	SAMPLE: J726-Microbio-28 with single chamber suction sampler.	1066
9/6/13 11:50:07	45.93320	-130.01356	351.76	0.7	1542.9	1543.6	HIGHLIGHTS stop.	1071
9/6/13 11:50:46	45.93319	-130.01354	351.33	0.7	1542.8	1543.6	Filter seems to have clogged but a large amount of blue mat was pulled into the chamber.	1073
9/6/13 11:51:39	45.93318	-130.01356	351.02	0.7	1542.4	1543.1	We are now moving up the chimney to find a spigot of hot water to sample.	1076
9/6/13 11:52:17	45.93318	-130.01360	351.15	0.7	1542.0	1542.7	Looking at the chimney just to the side of the main vent.	1080
9/6/13 11:52:52	45.93319	-130.01364	2.26	0.7	1541.9	1542.7	Not going to sample here right now; will come back later.	1082
9/6/13 11:53:01	45.93319	-130.01365	359.93	0.7	1541.9	1542.6	Transiting to Inferno next.	1083
9/6/13 11:57:11	45.93338	-130.01363	0.28	2.8	1540.8	1543.6	Forgot to note position of last sample. We were on the south (?) side of the main chimney at Phoenix.	1088
9/6/13 11:58:30	45.93345	-130.01361	359.88	2.8	1540.4	1543.3	Passing some old tubeworm patches in the cracks of bare seafloor.	1091
9/6/13 11:58:49	45.93347	-130.01361	359.71	3.6	1539.6	1543.2	Coming up on Inferno.	1092
9/6/13 11:58:58	45.93348	-130.01360	0.55	4.2	1538.9	1543.1	Passing marker 19.	1093

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 12:00:45	45.93354	-130.01363	358.73	5.5	1538.1	1543.6	Moving to the top of Inferno chimney.	1096
9/6/13 12:01:38	45.93354	-130.01363	340.48	5.1	1538.0	1543.1	Repositioning to the small ledge on the north side to land Jason.	1098
9/6/13 12:04:39	45.93354	-130.01358	237.45	3.1	1540.2	1543.3	HIGHLIGHTS start.	1104
9/6/13 12:05:59	45.93355	-130.01356	237.96	3.2	1540.0	1543.2	Several spires to sample from. Looking at the right one since it has been previously sampled and looks to have more flow.	1108
9/6/13 12:06:19	45.93355	-130.01355	237.9	3.2	1540.0	1543.2	Inserted temp probe and broke most of the spire off.	1110
9/6/13 12:07:37	45.93355	-130.01353	237.74	3.2	1540.0	1543.2	T=290C now. Last year the same spire was 319C.	1112
9/6/13 12:08:28	45.93354	-130.01356	237.76	3.2	1540.0	1543.2	Temp is slowly climbing. Now 309C.	1114
9/6/13 12:09:04	45.93353	-130.01358	237.75	3.2	1540.0	1543.2	HIGHLIGHTS stop.	1115
9/6/13 12:09:44	45.93352	-130.01359	237.76	3.2	1540.0	1543.2	Tmax=311.3 with Jason temp probe.	1120
9/6/13 12:09:58	45.93352	-130.01359	237.84	3.2	1540.0	1543.2	Will start fluid sampling next.	1121
9/6/13 12:11:02	45.93354	-130.01358	237.86	3.2	1540.0	1543.2	Now placing the beast probe into the same vent.	1124
9/6/13 12:12:53	45.93359	-130.01359	237.86	3.2	1540.0	1543.2	Repositioning probe slightly to get higher temp water.	1128
9/6/13 12:15:25	45.93356	-130.01347	237.75	3.2	1540.0	1543.1	Having trouble with the flush pump. Waiting to get a stable flow of water close to 300C.	1132
9/6/13 12:15:46	45.93358	-130.01345	237.76	3.2	1540.0	1543.1	Slowed pump to half speed; seems to be working better.	1133
9/6/13 12:15:54	45.93358	-130.01344	237.77	3.2	1540.0	1543.1	Likely due to a clogged probe tip.	1134
9/6/13 12:16:50	45.93362	-130.01340	237.61	3.2	1539.9	1543.1	SAMPLE: Start J726-HFS-29 filtered piston# 6.	1136
9/6/13 12:20:28	45.93358	-130.01338	237.21	3.2	1539.8	1543.1	Stop J726-HFS-29 filtered piston# 6 Tmax=300.1 Tavg=299.6 T2=80 Vol=600mL.	1141
9/6/13 12:21:04	45.93355	-130.01345	237.22	3.2	1539.8	1543.0	SAMPLE: Start J726-HFS-30 unfiltered piston #7.	1142
9/6/13 12:22:24	45.93350	-130.01360	237.23	3.2	1539.8	1543.0	Stop J726-HFS-30	1145
9/6/13 12:22:54	45.93352	-130.01360	237.23	3.2	1539.8	1543.0	Both pumps stopped. Trying to restart them to continue sampling.	1146
9/6/13 12:24:57	45.93357	-130.01357	237.26	3.2	1539.8	1543.0	Restart J726-HFS-30 filtered piston 7.	1149
9/6/13 12:25:51	45.93356	-130.01363	237.27	3.2	1539.8	1543.0	Temp reading on the sampler software is frozen. We are continuing this sample anyway and assuming the temp hasn't changed too much.	1151
9/6/13 12:28:24	45.93358	-130.01379	237.31	3.2	1539.8	1543.0	Stop J726-HFS-30 filtered piston #7 Tmax=300.3 Tavg=300 T2=78 Vol=657 mL.	1155
9/6/13 12:28:57	45.93358	-130.01379	237.31	3.2	1539.7	1542.9	The previous temp reading are probably not accurate because they froze.	1156
9/6/13 12:30:12	45.93358	-130.01379	237.33	3.2	1539.8	1543.0	Rebooting software to see if that corrects the temp reading and pump problem.	1158
9/6/13 12:37:39	45.93361	-130.01367	237.7	3.3	1539.6	1542.9	SAMPLE: J726-Major-31 with the white major sampler.	1167
9/6/13 12:38:06	45.93361	-130.01367	237.71	3.3	1539.6	1542.9	Placing white major back in the basket.	1168
9/6/13 12:42:19	45.93361	-130.01367	237.7	3.3	1539.6	1542.8	HIGHLIGHTS start.	1183
9/6/13 12:48:00	45.93362	-130.01368	255.72	3.5	1539.4	1542.9	HIGHLIGHTS stop.	1191
9/6/13 12:48:24	45.93362	-130.01368	232.4	3.7	1539.2	1542.9	Repositioning Jason to get a better angle for the major sampler.	1193
9/6/13 12:48:52	45.93361	-130.01368	253.12	3.7	1539.0	1542.7	Couldn't get the major tube into the vent.	1194
9/6/13 12:49:11	45.93361	-130.01368	251.87	3.7	1538.9	1542.7	Jason thrusters lost power again.	1195
9/6/13 12:50:32	45.93360	-130.01369	251.91	3.7	1538.9	1542.6	Attempting to get the major back in correct position at the same vent.	1199

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 12:50:59	45.93361	-130.01368	208.59	4.0	1538.9	1542.9	Lost Jason power again.	1200
9/6/13 12:56:10	45.93361	-130.01368	259.03	3.6	1539.2	1542.8	Looks like the major is correctly positioned back in the vent hole.	1208
9/6/13 12:56:22	45.93361	-130.01368	259.13	3.5	1539.2	1542.8	SAMPLE: J726-Major-32 with the yellow major sampler.	1211
9/6/13 12:58:45	45.93360	-130.01366	259.53	3.5	1539.3	1542.8	Done with fluid sampling at Inferno.	1215
9/6/13 13:01:24	45.93365	-130.01370	306.65	3.1	1540.1	1543.2	Transiting to Fuzzy Tubeworm Bush to recover two MTRs - 3040 and 3041.	1223
9/6/13 13:02:22	45.93367	-130.01368	91.51	1.1	1542.0	1543.2	Can see the two MTRs.	1225
9/6/13 13:02:34	45.93368	-130.01368	88.65	0.7	1542.5	1543.3	Picking up 3041 first.	1226
9/6/13 13:02:59	45.93366	-130.01367	89.26	0.7	1542.6	1543.3	RECOVER: Recovering MTR 3041.	1229
9/6/13 13:04:23	45.93364	-130.01365	92.08	0.7	1542.6	1543.4	DEPLOY: Deploying MTR 3043 at Fuzzy tubeworm bush.	1234
9/6/13 13:06:31	45.93365	-130.01366	90.93	0.7	1542.1	1542.9	Placed the MTR in a crack next to a small tubeworm bush.	1241
9/6/13 13:06:47	45.93366	-130.01366	89.19	1.6	1541.2	1542.7	Now moving to pick up the other MTR.	1242
9/6/13 13:08:33	45.93369	-130.01364	89.91	0.7	1542.3	1543.1	RECOVER: Recovering MTR 3040; placing in biobox.	1245
9/6/13 13:09:57	45.93373	-130.01350	91.13	3.5	1539.0	1542.5	Transiting to Marshmallow to pick up the last MTR and deploy a new one.	1247
9/6/13 13:10:15	45.93374	-130.01345	61.12	3.4	1538.9	1542.4	Will also collect a large syringe sample.	1248
9/6/13 13:12:10	45.93377	-130.01336	287.77	3.0	1539.1	1542.1	Found marker 1. Looks old and is on bare lava with no biology near it.	1252
9/6/13 13:13:14	45.93377	-130.01337	293.6	0.7	1541.6	1542.3	Found MTR 3334 at Marshmallow.	1254
9/6/13 13:13:50	45.93378	-130.01337	293.17	0.7	1541.6	1542.3	RECOVER: Recovering MTR 3334 at Marshmallow.	1256
9/6/13 13:14:13	45.93378	-130.01337	293.56	0.7	1541.6	1542.3	It is encrusted with limpets and white mat.	1257
9/6/13 13:15:20	45.93378	-130.01336	293.48	0.7	1541.5	1542.2	DEPLOY: Deploying MTR 4097 at Marshmallow.	1260
9/6/13 13:17:51	45.93377	-130.01337	288.82	1.3	1541.4	1542.7	Now we'll collect a large syringe sample of sediment/mat from the tubeworm bush.	1263
9/6/13 13:19:51	45.93376	-130.01335	288.89	1.4	1541.5	1542.9	Large red syringe had been triggered accidentally at some point in the dive.	1266
9/6/13 13:21:51	45.93376	-130.01335	288.77	0.8	1541.4	1542.2	Trying to reset it with Jason's claw didn't work.	1269
9/6/13 13:22:34	45.93376	-130.01335	289.04	1.3	1541.4	1542.7	Have to use a small syringe to collect this sample.	1271
9/6/13 13:25:48	45.93378	-130.01336	289.04	0.8	1541.4	1542.3	HIGHLIGHTS start.	1277
9/6/13 13:26:10	45.93377	-130.01336	289.42	95.5	1541.5	1636.9	SAMPLE: J726-Microbio-33 with small white syringe.	1279
9/6/13 13:27:04	45.93377	-130.01336	289.66	0.9	1541.5	1542.3	Placed syringe tube in the middle of the small tubeworm clump. Will get a mixture of mat and sediment.	1280
9/6/13 13:28:27	45.93378	-130.01336	289.63	0.8	1541.3	1542.0	HIGHLIGHTS stop.	1286
9/6/13 13:29:19	45.93378	-130.01336	289.92	1.3	1541.4	1542.7	Syringe stowed in biobox.	1288
9/6/13 13:30:26	45.93377	-130.01337	291.4	1.0	1540.7	1541.6	All dive tasks have been completed.	1291
9/6/13 13:30:43	45.93377	-130.01337	291.42	1.4	1540.3	1541.7	Now we are going to drive around and explore the area.	1292
9/6/13 13:31:18	45.93377	-130.01338	291.36	3.1	1538.6	1541.7	Heading 292 away from Marshmallow.	1294
9/6/13 13:32:06	45.93375	-130.01337	116.33	3.3	1538.5	1541.8	Jim knows of some diffuse venting near Gollum and Crack that he wants to look at.	1295
9/6/13 13:32:27	45.93375	-130.01336	117.35	3.1	1538.6	1541.8	We'll go to Virgin first and the head south.	1297
9/6/13 13:34:03	45.93371	-130.01326	198.35	2.3	1539.8	1542.1	Made it to Virgin. There is a big metal frame on the ground here.	1300

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-726 Dive Comments	Virtual Van #
9/6/13 13:34:32	45.93368	-130.01324	203.65	2.4	1539.5	1541.8	Now heading south. Heading roughly 200.	1302
9/6/13 13:35:25	45.93363	-130.01325	256.96	2.9	1539.1	1542.1	Passing one of Craig Moyer's experiments.	1304
9/6/13 13:35:51	45.93363	-130.01325	261.06	2.1	1540.0	1542.1	Mostly bare lava with some spots of white mat.	1305
9/6/13 13:36:04	45.93363	-130.01325	263.22	1.8	1540.4	1542.1	Reached marker 64 which is Gollum.	1306
9/6/13 13:39:29	45.93356	-130.01333	123.08	1.5	1540.4	1541.9	Continuing to check out diffuse flow at Gollum.	1318
9/6/13 13:40:01	45.93356	-130.01334	122.85	0.7	1541.3	1542.0	Some patches of tubeworms; white and orange mat.	1319
9/6/13 13:42:15	45.93359	-130.01333	122.77	0.7	1541.1	1541.9	Lots of limpets in warmer areas with higher vent flow.	1322
9/6/13 13:42:50	45.93358	-130.01333	122.75	0.7	1541.1	1541.8	Using the Jason temp probe to check Gollum.	1324
9/6/13 13:43:26	45.93358	-130.01332	122.76	0.7	1541.1	1541.8	Fairly diffuse venting; can't tell exactly where the highest flow is.	1327
9/6/13 13:43:38	45.93358	-130.01332	122.71	0.7	1541.1	1541.8	T= 6.2C.	1328
9/6/13 13:45:59	45.93358	-130.01334	122.67	0.7	1541.1	1541.8	Moved probe; T= 26C.	1331
9/6/13 13:46:11	45.93358	-130.01334	122.68	0.7	1541.1	1541.8	Depth 1541; heading 123.	1332
9/6/13 13:47:20	45.93356	-130.01336	157.07	1.2	1540.5	1541.7	We are sitting next to the big iron plate.	1335
9/6/13 13:48:39	45.93351	-130.01339	150.79	0.7	1541.5	1542.3	Just realized that the Lat and Long I have been recording hasn't changed. All positions written here for the last 4 hours are not correct	1337
9/6/13 13:49:28	45.93350	-130.01337	199.18	1.5	1540.1	1541.6	LAT AND LONG ARE NOT CORRECT. HAVE NOT BEEN NOTING CORRECT POSITION FOR PAST 4 HRS	1339
9/6/13 13:50:21	45.93343	-130.01333	175.74	1.5	1540.6	1542.1	Now exploring the area south of Gollum. Mostly bare seafloor.	1342
9/6/13 13:51:09	45.93339	-130.01329	151.6	1.4	1540.6	1542.0	Found the old box cemented on a vent to measure flow. Vent is now inactive.	1343
9/6/13 13:52:10	45.93335	-130.01327	74.33	0.7	1541.7	1542.4	Found a small crack lined with some tubeworms and white mat.	1345
9/6/13 13:52:26	45.93334	-130.01326	74.62	0.7	1541.6	1542.4	A good amount of diffuse flow is visible.	1347
9/6/13 13:52:53	45.93333	-130.01326	74.35	0.7	1541.6	1542.3	Taking temp reading here.	1349
9/6/13 13:54:34	45.93334	-130.01325	73.6	0.7	1541.6	1542.4	Temp is actually pretty high.	1352
9/6/13 13:55:20	45.93335	-130.01327	74.04	0.8	1541.6	1542.3	T= 204C. (???)	1354
9/6/13 13:56:16	45.93336	-130.01328	74.16	0.7	1541.6	1542.3	We are near Crack vent; depth 1542; heading 74.	1355
9/6/13 13:56:46	45.93333	-130.01326	74.16	2.7	1539.3	1542.0	Jason off bottom.	1357
9/6/13 14:00:38	45.93300	-130.01260	123.48	47.9	1493.1	1541.0	Bottom water pH voltage 3.805V; O2 0.656 mL/L.	1361
9/6/13 14:01:55	45.93300	-130.01264	131.63	90.6	1449.9	1540.5	Depth 1475: pH=3.832V; O2=0.654.	1362
9/6/13 14:02:56	45.93300	-130.01269	126.88	118.6	1418.0	1536.6	Depth 1450m: pH=3.835V; O2= 0.644 mL/L.	1364
9/6/13 14:05:17	45.93299	-130.01291	143.54	194.2	1344.1	1538.3	Depth 1375m: pH= 3.837V; O2= 0.593 mL/L.	1365
9/6/13 15:05:33	45.93480	-130.01490	162.16	186.0	1.3	187.3	Jason at surface.	1367
9/6/13 15:06:40	45.93479	-130.01490	160.25	140.4	1.9	142.3	Medea on deck.	1368
9/6/13 15:17:38	45.93349	-130.01292	63.07	184.4	0.3	184.8	Jason on deck.	1369

6.6.2 J2-727 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-727 Dive Comments	Virtual Van #
9/7/13 02:02:25	45.91662	-129.99312	162.22		2.4		Jason in water	1382
9/7/13 02:10:07	45.91662	-129.99312	142.82		1.8		Medea in water	1384
9/7/13 03:08:40	45.91662	-129.99312	131.7	4.5	1528.8	1533.2	Jason on bottom	1409
9/7/13 03:09:03	45.91663	-129.99312	130.98	6.2	1526.9	1533.1	The bottom is in sight. We are at Coquille vent field.	1410
9/7/13 03:11:29	45.91665	-129.99321	130.97	8.3	1525.0	1533.3	Nav screen zoomed in on Medea and Jason positions.	1414
9/7/13 03:11:37	45.91666	-129.99322	130.86	8.3	1524.9	1533.2	Dropping Jason weights.	1415
9/7/13 03:13:26	45.91676	-129.99328	130.5	7.5	1526.1	1533.5	The elevator is about 50m SE of Jason now.	1418
9/7/13 03:14:34	45.91662	-129.99296	123.36	5.9	1527.3	1533.1	Heading SE toward the elevator.	1420
9/7/13 03:15:17	45.91651	-129.99271	117.43	6.1	1526.6	1532.7	Heading over lobate lava flows with microbial mat.	1421
9/7/13 03:15:27	45.91650	-129.99270	119.53	4.4	1528.5	1532.9	See the elevator ahead in the brow cam.	1423
9/7/13 03:18:11	45.91650	-129.99271	120.14	3.8	1529.1	1532.8	Now see the elevator in the science camera.	1431
9/7/13 03:18:55	45.91650	-129.99271	120.16	3.7	1529.1	1532.8	Elevator straight ahead.	1437
9/7/13 03:19:10	45.91650	-129.99271	120.04	3.8	1529.0	1532.8	Zoomed in on the elevator to make sure all is well.	1438
9/7/13 03:19:49	45.91650	-129.99266	119.23	3.1	1529.4	1532.5	Taking HD frame grabs of the elevator.	1441
9/7/13 03:22:23	45.91649	-129.99265	126.85	2.2	1531.6	1533.8	Elevator is sitting on top of lobate / sheet flow. It's standing up just fine.	1446
9/7/13 03:23:00	45.91650	-129.99266	127.26	2.3	1531.6	1533.8	Jason is getting rid of a few more weights.	1447
9/7/13 03:23:43	45.91651	-129.99270	121.77	2.4	1530.3	1532.7	Backing away from the elevator a bit now to get a good view of everything here.	1449
9/7/13 03:25:11	45.91652	-129.99270	128.42	2.8	1530.7	1533.4	Taking a good look around it.	1452
9/7/13 03:26:15	45.91651	-129.99265	151.27	3.0	1531.0	1534.0	HIGHLIGHTS on. Recording the elevator as we move around it and look things over.	1458
9/7/13 03:27:49	45.91649	-129.99260	221.83	1.8	1531.0	1532.8	The blanket is wrapped around a piece of syntactic foam.	1464
9/7/13 03:30:58	45.91652	-129.99265	169.08	2.7	1531.1	1533.8	Bearing and Range from Jason to Vixen Mkr57 is 341 deg 110 m.	1471
9/7/13 03:31:26	45.91652	-129.99266	168.58	2.8	1531.1	1533.9	Zooming in on the connectors on the sphere with the HD science cam.	1474
9/7/13 03:32:57	45.91650	-129.99262	233.18	1.2	1531.8	1533.0	Looks like everything is OK except the "skirt".	1483
9/7/13 03:33:16	45.91650	-129.99262	232.46	1.0	1531.8	1532.8	HIGHLIGHTS stop.	1484
9/7/13 03:34:46	45.91649	-129.99262	234.71	0.8	1532.3	1533.1	Still moving around the elevator to check things out. Want to be sure all is OK.	1488
9/7/13 03:35:53	45.91649	-129.99261	233.38	0.8	1532.3	1533.1	Jason is lifting the skirt to check if all is well.	1490
9/7/13 03:36:30	45.91649	-129.99260	233.31	0.8	1532.2	1533.1	Moving in to cut the straps that are holding the cap down.	1492
9/7/13 03:37:15	45.91648	-129.99260	233.58	0.8	1532.2	1533.0	Jason has a knife and cut one strap.	1493
9/7/13 03:38:26	45.91650	-129.99261	177.72	0.7	1532.1	1532.9	Going in to cut another strap.	1497
9/7/13 03:39:52	45.91649	-129.99259	179.41	0.8	1532.0	1532.8	Got it.	1507
9/7/13 03:40:51	45.91648	-129.99262	62.65	0.9	1531.9	1532.8	Moving around the elevator to cut the last (?) strap.	1509
9/7/13 03:42:20	45.91647	-129.99261	51.21	0.7	1532.3	1533.0	Done with the knife.	1515
9/7/13 03:43:41	45.91647	-129.99261	48.55	0.7	1532.0	1532.7	Stowing the knife in it's holster.	1517
9/7/13 03:46:00	45.91646	-129.99258	327.29	0.7	1532.1	1532.8	HIGHLIGHTS start. Jason will lift the cap off of the elevator.	1520

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-727 Dive Comments	Virtual Van #
9/7/13 03:50:21	45.91646	-129.99258	344.96	1.4	1531.1	1532.5	Grabbed the cap and moving off the deployed instrument. Port arm has it.	1528
9/7/13 03:51:13	45.91646	-129.99258	343.87	1.0	1531.6	1532.6	Cap slid off easily.	1529
9/7/13 03:52:06	45.91644	-129.99258	346.2	3.0	1529.3	1532.3	Range is 119m and bearing is 342 deg to deployment site.	1531
9/7/13 03:52:51	45.91648	-129.99267	349.93	2.8	1529.7	1532.5	HIGHLIGHTS stop.	1533
9/7/13 03:53:50	45.91667	-129.99274	345.17	3.4	1529.5	1532.9	Starting to move Medea as move Jason to target site.	1535
9/7/13 03:59:04	45.91686	-129.99280	345.31	3.5	1529.4	1532.9	Slowly moving to target with a range of 68m.	1542
9/7/13 04:06:44	45.91713	-129.99290	345.31	2.6	1530.6	1533.2	Can barely see bottom with the instrument in front of the vehicle but see lobate flows and some sediments and tubeworm clumps.	1552
9/7/13 04:07:29	45.91718	-129.99293	345	2.7	1530.7	1533.4	Can see Marker 122. Just passing over it.	1554
9/7/13 04:08:09	45.91723	-129.99295	345.1	2.4	1530.7	1533.1	Range is 28m to Vixen site.	1555
9/7/13 04:09:54	45.91733	-129.99297	14.46	2.2	1531.3	1533.5	There is Vixen.	1559
9/7/13 04:10:28	45.91734	-129.99296	13.46	0.8	1532.7	1533.5	Vigorous venting at top of vent.	1562
9/7/13 04:12:06	45.91734	-129.99296	13.53	1.1	1532.3	1533.4	Some of the blanket is caught on the basket.	1564
9/7/13 04:12:34	45.91734	-129.99296	13.03	1.0	1532.3	1533.4	Using manipulator to free the blanket.	1567
9/7/13 04:13:26	45.91734	-129.99296	12.62	0.7	1532.6	1533.4	Setting down the cap on the seafloor next to the vent area.	1569
9/7/13 04:13:54	45.91734	-129.99296	12.61	0.7	1532.6	1533.4	Looking at the connectors with the cameras.	1570
9/7/13 04:15:04	45.91734	-129.99297	16.13	0.9	1532.5	1533.5	Going to spin around the site to look around Vixen.	1578
9/7/13 04:15:39	45.91736	-129.99299	100.78	1.5	1531.6	1533.1	Very vigorous flow and a small hump where the vent was knocked down yesterday.	1581
9/7/13 04:16:15	45.91725	-129.99302	171.47	2.0	1531.3	1533.2	Going back to get one of the donuts from the drop location.	1582
9/7/13 04:16:40	45.91715	-129.99301	170.41	2.4	1531.0	1533.4	Lots of skinny tubeworms in the cracks of the pillows.	1584
9/7/13 04:18:56	45.91700	-129.99301	167.01	2.7	1530.7	1533.4	Waiting for Medea as Jason sits 45m from the drop location.	1587
9/7/13 04:21:16	45.91699	-129.99302	166.97	2.7	1530.7	1533.4	There are clams between the pillows as well as the tube worms.	1590
9/7/13 04:22:01	45.91692	-129.99281	164.34	2.1	1531.2	1533.3	Very tight clusters of biota that becomes scarcer as we move away from Vixen.	1593
9/7/13 04:22:23	45.91686	-129.99271	157.35	2.7	1531.2	1533.9	Bright clump of diffuse venting on edge of collapsed lava tube.	1595
9/7/13 04:23:01	45.91681	-129.99268	154.93	1.9	1530.9	1532.8	Light sediment coating over pillow flow. Few scraggly tube worms.	1596
9/7/13 04:23:46	45.91682	-129.99268	165.04	2.1	1530.7	1532.8	25m from drop site just waiting for Medea.	1599
9/7/13 04:24:36	45.91666	-129.99263	170.9	2.5	1530.3	1532.8	Increased amount of worms and clams here but not as much as Vixen.	1602
9/7/13 04:25:39	45.91662	-129.99262	171.4	2.7	1530.2	1532.9	There is the instrument on top of pillows coated with some sediment but not much biology.	1605
9/7/13 04:25:59	45.91659	-129.99261	171.95	2.3	1530.5	1532.8	Waiting for Medea to get to the final 13 meters.	1606
9/7/13 04:26:46	45.91650	-129.99258	174.62	0.8	1532.1	1532.9	HIGHLIGHTS on. Getting highlights of the donut retrieval.	1609
9/7/13 04:29:05	45.91648	-129.99257	220.03	0.7	1532.5	1533.3	Jason grabbing a donut.	1613
9/7/13 04:30:57	45.91648	-129.99255	223.64	1.7	1531.4	1533.1	Moving donut off the elevator.	1618
9/7/13 04:33:35	45.91652	-129.99251	284.95	1.4	1531.8	1533.2	Donut was a bit stuck on left manipulator at first.	1622
9/7/13 04:34:05	45.91652	-129.99251	300.64	1.3	1531.7	1533.0	HIGHLIGHTS off. Moving back to Vixen with donut.	1623
9/7/13 04:36:32	45.91689	-129.99276	339.08	3.1	1530.0	1533.1	Moving swiftly over the pillows with the donut.	1630
9/7/13 04:36:55	45.91689	-129.99275	340.05	2.8	1530.2	1533.0	Waiting for Medea at 63m away from Vixen.	1631

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9/7/13 04:40:59	45.91705	-129.99284	340.5	3.2	1530.5	1533.6	Moving slowly back toward Vixen.	1636
9/7/13 04:42:10	45.91714	-129.99287	340.12	3.0	1530.3	1533.2	Marker 122 again.	1638
9/7/13 04:42:28	45.91716	-129.99289	340.31	3.3	1530.3	1533.6	Got a frame grab of Marker 122.	1641
9/7/13 04:43:43	45.91725	-129.99295	340.3	3.2	1530.3	1533.4	There is Vixen again.	1643
9/7/13 04:44:40	45.91736	-129.99300	72.55	2.6	1530.7	1533.3	HIGHLIGHTS on. Highlights of donut placement.	1646
9/7/13 04:45:01	45.91738	-129.99296	122.95	1.9	1531.8	1533.7	Placing the donut at Vixen.	1648
9/7/13 04:46:03	45.91738	-129.99296	127.42	1.1	1532.5	1533.6	Donut touch down stirred up a lot of sediment.	1653
9/7/13 04:48:04	45.91737	-129.99298	126.76	1.2	1532.5	1533.7	Donut is centered over the active flow at Vixen.	1658
9/7/13 04:48:48	45.91737	-129.99298	128.07	1.2	1532.5	1533.7	Getting the level out to measure the donut placement.	1660
9/7/13 04:49:56	45.91737	-129.99299	128.25	1.2	1532.5	1533.7	Placing level on the donut rim.	1664
9/7/13 04:50:06	45.91737	-129.99299	127.54	1.2	1532.4	1533.7	hdFrameGrab: RGB.20130907_045006_053.tif	1665
9/7/13 04:52:00	45.91737	-129.99299	127.13	1.2	1532.5	1533.7	Donut not completely flat so will try to push it into the sediment with the manipulator.	1671
9/7/13 04:53:03	45.91737	-129.99300	126.95	1.2	1532.5	1533.6	Level appears to be stuck.	1674
9/7/13 04:53:34	45.91737	-129.99300	127.11	1.1	1532.5	1533.6	Pilots switching from Matt to Corey.	1676
9/7/13 04:55:37	45.91737	-129.99300	127.07	1.2	1532.5	1533.7	HIGHLIGHTS off. Trying to decide what to do about leveling.	1679
9/7/13 04:56:55	45.91738	-129.99301	127.44	1.1	1532.5	1533.6	Going to go back and see if they can grab the entire elevator. If not will put the sandbags in basket and come back to Vixen.	1681
9/7/13 04:57:15	45.91738	-129.99301	126.96	1.1	1532.5	1533.6	Going to remove level off the donut rim.	1682
9/7/13 04:58:56	45.91738	-129.99302	126.76	1.2	1532.4	1533.6	Picking up level and putting it in the basket.	1686
9/7/13 04:59:48	45.91738	-129.99302	126.99	1.1	1532.5	1533.6	Level is in the basket.	1688
9/7/13 05:00:04	45.91738	-129.99302	126.97	1.1	1532.5	1533.7	Heading back to drop site.	1689
9/7/13 05:01:23	45.91738	-129.99303	125.45	1.1	1532.6	1533.7	Need to move Medea.	1693
9/7/13 05:06:33	45.91725	-129.99296	178.18	3.5	1530.1	1533.5	Moving back to elevator.	1701
9/7/13 05:06:41	45.91722	-129.99295	167.18	3.8	1529.7	1533.5	Marker 122 again.	1703
9/7/13 05:07:05	45.91713	-129.99291	170.8	3.6	1529.9	1533.5	Lots of tube worms in the Marker 122 area.	1704
9/7/13 05:08:54	45.91707	-129.99283	169.73	6.6	1526.7	1533.3	Flying high back to elevator location.	1707
9/7/13 05:13:45	45.91680	-129.99291	162.01	6.2	1527.1	1533.3	Smaller patches of diffuse flow.	1713
9/7/13 05:15:16	45.91667	-129.99267	161.7	6.4	1526.7	1533.1	Back at the elevator.	1715
9/7/13 05:17:32	45.91654	-129.99258	161.32	5.3	1527.8	1533.1	NAV: Doppler Reset	1719
9/7/13 05:18:23	45.91648	-129.99256	161.37	7.5	1526.8	1534.3	Waiting for ship and Medea to get into position before approaching the elevator.	1721
9/7/13 05:18:45	45.91648	-129.99255	163.51	7.2	1526.1	1533.3	Going to grab the top loop on the elevator as Jason is hovering over the platform.	1722
9/7/13 05:22:31	45.91645	-129.99256	8.9	5.3	1528.1	1533.4	HIGHLIGHTS on. Trying to grab top loop of elevator.	1728
9/7/13 05:24:15	45.91648	-129.99258	9.31	5.3	1528.1	1533.4	Have the elevator in the arm.	1733
9/7/13 05:25:05	45.91652	-129.99260	8.45	8.3	1525.0	1533.3	Moving ship and Medea to get back to Vixen.	1735
9/7/13 05:27:02	45.91671	-129.99278	316.23	11.7	1521.6	1533.3	Elevator is 15 feet tall.	1738
9/7/13 05:27:20	45.91675	-129.99282	348.07	11.6	1522.1	1533.7	Moving slowly back to Vixen.	1740

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9/7/13 05:28:04	45.91689	-129.99283	346.51	10.0	1523.7	1533.7	Elevator is 170 lbs. with one donut and drop weights.	1741
9/7/13 05:28:21	45.91693	-129.99284	347.63	9.7	1523.8	1533.5	HIGHLIGHTS off. The tape was stop awhile ago.	1743
9/7/13 05:29:51	45.91694	-129.99288	345.41	10.8	1522.8	1533.6	Getting a little swing in the elevator as we move.	1745
9/7/13 05:34:19	45.91682	-129.99319	9.64	11.0	1522.9	1533.9	Waiting for ship and Medea.	1751
9/7/13 05:35:38	45.91685	-129.99313	10.02	11.3	1522.8	1534.1	Jason thinks the instrument is 50-60 lbs. lighter than originally estimated.	1753
9/7/13 05:35:59	45.91689	-129.99309	15.8	9.6	1524.2	1533.8	Starting to move again with the elevator.	1754
9/7/13 05:38:24	45.91695	-129.99306	12.82	9.9	1524.1	1534.0	Just over 40m to Vixen.	1758
9/7/13 05:40:09	45.91716	-129.99290	10.04	11.0	1523.0	1534.0	Can see the site as we are 10m above bottom.	1760
9/7/13 05:41:44	45.91730	-129.99297	80.04	10.3	1523.1	1533.4	Looking for a place to set down the elevator.	1764
9/7/13 05:43:42	45.91730	-129.99287	134.02	9.7	1524.1	1533.8	Debating whether to set it down and the original surveyed location or closer. Going for closer.	1767
9/7/13 05:43:57	45.91730	-129.99288	133.75	9.2	1524.5	1533.7	HIGHLIGHTS on.	1768
9/7/13 05:44:40	45.91731	-129.99288	133.27	6.0	1527.9	1533.8	Positioning the elevator very close to Vixen.	1770
9/7/13 05:45:11	45.91734	-129.99290	132.88	5.6	1528.0	1533.6	HIGHLIGHTS off.	1772
9/7/13 05:45:46	45.91734	-129.99292	119.46	4.1	1529.8	1533.8	Position looks great here for the elevator.	1775
9/7/13 05:46:14	45.91737	-129.99290	120.55	3.3	1530.2	1533.6	Going to lift the remaining donut slightly off the elevator to see if the elevator is still heavy.	1776
9/7/13 05:47:55	45.91736	-129.99290	120.09	1.8	1532.1	1533.9	HIGHLIGHTS on.	1781
9/7/13 05:48:26	45.91736	-129.99293	118.6	2.0	1532.0	1534.0	Picking the donut up.	1783
9/7/13 05:49:21	45.91738	-129.99297	117.65	1.7	1532.3	1534.0	Looks like the elevator is light without the donut.	1786
9/7/13 05:50:26	45.91740	-129.99297	120.3	1.8	1532.1	1533.9	Donut back on the elevator.	1788
9/7/13 05:53:47	45.91737	-129.99297	120.38	1.8	1532.0	1533.8	HIGHLIGHTS off. Estimating the elevator will come to the surface in 35 minutes after release (50-60m/min).	1792
9/7/13 05:55:58	45.91739	-129.99295	120.21	1.8	1532.0	1533.8	Plan is to hold onto elevator with one arm then take donut off with other. Then pull pin to release the elevator.	1795
9/7/13 06:00:43	45.91740	-129.99297	120.33	1.8	1532.0	1533.8	Waiting for ship to move before proceeding with the plan.	1801
9/7/13 06:06:22	45.91739	-129.99296	128.8	0.9	1533.1	1534.0	Bridge has cleared us to proceed.	1808
9/7/13 06:07:34	45.91739	-129.99296	129.4	0.9	1533.1	1534.0	Jason is holding the elevator with STBD manipulator.	1812
9/7/13 06:07:47	45.91739	-129.99296	130.09	0.9	1533.1	1534.0	HIGHLIGHTS on. Grabbing the donut.	1813
9/7/13 06:08:15	45.91739	-129.99297	130.33	1.0	1533.0	1534.0	Donut lifted off the elevator.	1815
9/7/13 06:09:21	45.91741	-129.99300	134.79	0.8	1533.2	1534.0	Pivoting the elevator with the arm. Didn't move how they would want it to go.	1819
9/7/13 06:09:40	45.91741	-129.99301	125.76	0.7	1533.3	1534.1	Trying again.	1821
9/7/13 06:10:32	45.91743	-129.99303	126.62	1.2	1532.7	1533.9	Moving donut off to the side and placing it on seafloor.	1824
9/7/13 06:11:10	45.91744	-129.99303	125.29	1.1	1532.9	1534.0	Getting ready to pull the pin.	1825
9/7/13 06:12:11	45.91744	-129.99303	128.12	1.1	1532.9	1534.0	Pulling the pin.	1827
9/7/13 06:12:36	45.91744	-129.99303	129.79	1.2	1532.8	1534.0	Not quite yet.	1829
9/7/13 06:13:36	45.91745	-129.99302	124.62	1.0	1532.9	1533.9	Elevator is released from the manipulators but pin not released and elevator isn't floating away.	1832

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9/7/13 06:15:45	45.91742	-129.99298	140.53	0.7	1533.4	1534.1	Elevator is very light and moves whenever bumped by manipulators.	1838
9/7/13 06:15:53	45.91742	-129.99298	140.4	0.7	1533.3	1534.1	Using both arms to release the pin.	1839
9/7/13 06:16:15	45.91742	-129.99298	139.56	0.9	1533.3	1534.2	Pin is released and there it goes.	1841
9/7/13 06:16:26	45.91743	-129.99299	141.86	3.2	1530.7	1533.9	Moving Jason and Medea away.	1843
9/7/13 06:16:32	45.91744	-129.99300	169.87	4.1	1529.8	1533.9	HIGHLIGHTS off.	1844
9/7/13 06:16:47	45.91749	-129.99300	161.6	7.3	1526.3	1533.6	Jason coming off the bottom.	1845
9/7/13 06:16:52	45.91751	-129.99300	162.49	7.8	1525.6	1533.3	Not tracking the beacon yet.	1846
9/7/13 06:17:21	45.91761	-129.99293	20.3	9.7	1523.7	1533.4	Tracking the beacon as it rises.	1848
9/7/13 06:17:46	45.91768	-129.99288	18.63	14.8	1518.8	1533.6	Coming up at 64m/min.	1849
9/7/13 06:18:04	45.91776	-129.99284	5.12	14.2	1519.4	1533.6	Elevator should be at surface in 30 minutes.	1850
9/7/13 06:18:56	45.91782	-129.99280	50.83	33.5	1499.8	1533.3	Going to hold Jason about 30m off the bottom.	1852
9/7/13 06:37:30	45.91679	-129.99545	315.87	122.7	1412.8	1535.5	Waiting for elevator to come to the surface for recovery.	1853
9/7/13 06:39:08	45.91639	-129.99546	258.84	125.9	1412.9	1538.8	Should almost be at surface.	1854
9/7/13 06:40:05	45.91627	-129.99555	284.42	125.3	1412.9	1538.2	250m just off the STBD bow.	1855
9/7/13 06:40:57	45.91611	-129.99558	266.78	125.7	1413.2	1538.9	Got a visual of the elevator.	1856
9/7/13 06:42:16	45.91610	-129.99545	294.43	124.8	1413.5	1538.3	Ship is preparing to recover.	1857
9/7/13 06:44:01	45.91581	-129.99547	266.96	125.2	1413.2	1538.4	Jason watch change.	1858
9/7/13 07:05:31	45.91691	-129.99267	275.58	120.8	1412.6	1533.4	Elevator almost on deck.	1859
9/7/13 07:13:29	45.91667	-129.99104	333.63	117.7	1412.8	1530.5	Let video tapes run out while sitting mid-water. Will start tapes when we go back to the bottom.	1860
9/7/13 07:37:37	45.91685	-129.99131	288.67	118.9	1412.7	1531.6	Elevator is on deck but there is a problem with the bow thruster.	1861
9/7/13 08:44:52	45.91696	-129.98934	63.32	117.7	1412.8	1530.4	Still working on the bow thruster.	1862
9/7/13 09:39:07	45.91622	-129.98956	129.18	119.6	1412.8	1532.3	Still working on the bow thruster.	1864
9/7/13 10:44:19	45.91689	-129.99102	312.58	118.4	1412.5	1531.0	Still working on the bow thruster.	1865
9/7/13 11:39:31	45.91597	-129.99242	165.56	106.9	1424.4	1531.2	Bow thruster is back.	1866
9/7/13 11:40:01	45.91598	-129.99246	165.49	103.4	1424.3	1527.8	Going to make our way back to Vixen to continue working on the vent cap.	1867
9/7/13 11:48:00	45.91666	-129.99294	343	4.8	1529.4	1534.3	Bottom is in sight. Restarting video recording.	1869
9/7/13 11:49:24	45.91677	-129.99299	344.11	4.6	1529.8	1534.4	Navigating back to Vixen; approximately 60m away.	1872
9/7/13 11:57:24	45.91732	-129.99299	89.36	2.9	1530.9	1533.9	We have arrived at Vixen. Vent cap ring and elevator are visible.	1881
9/7/13 12:00:24	45.91733	-129.99300	110.78	1.1	1533.0	1534.1	Seafloor under the donut is not perfectly flat. One side is slightly lower and there is a gap a few inches high.	1886
9/7/13 12:00:49	45.91733	-129.99300	112.1	0.7	1533.8	1534.6	Doppler reset at 12:00.	1887
9/7/13 12:01:59	45.91732	-129.99301	112.08	0.7	1533.9	1534.6	Will try to push the NE corner od the donut down into the seafloor with the claw.	1889
9/7/13 12:03:20	45.91731	-129.99302	112.15	0.7	1533.8	1534.6	Donut rocks back and forth but will not stay where we push it.	1892
9/7/13 12:03:50	45.91730	-129.99302	112.09	0.7	1533.8	1534.6	There is a 4-5 degree list on the N to S axis.	1893
9/7/13 12:07:11	45.91734	-129.99291	113.64	1.1	1533.2	1534.3	Moving to pick up sandbags. Will use a few sandbags to help prop up the donut and keep it level.	1898
9/7/13 12:11:28	45.91731	-129.99299	130.96	0.8	1533.7	1534.5	HIGHLIGHTS on.	1906

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9/7/13 12:13:43	45.91734	-129.99305	132.08	0.8	1533.7	1534.4	Placing sandbags under lower rim of the donut to fill the gap.	1915
9/7/13 12:14:06	45.91734	-129.99305	132.07	0.8	1533.6	1534.4	Discussing the best way to go about it.	1916
9/7/13 12:15:26	45.91732	-129.99305	132.12	0.8	1533.6	1534.4	Attempting to hold down one side with the shilling arm and push bags under the donut with the craft.	1919
9/7/13 12:16:19	45.91732	-129.99304	132.03	0.8	1533.6	1534.4	Small tube shaped sandbags were rolling away; trying with some of the large bags.	1921
9/7/13 12:20:26	45.91733	-129.99300	131.51	0.8	1533.5	1534.3	This technique looks like it is working well.	1929
9/7/13 12:21:30	45.91733	-129.99301	131.05	0.8	1533.5	1534.2	Let go of the donut with the Schilling and it stayed in place. No more rocking and it is close to level.	1931
9/7/13 12:22:04	45.91733	-129.99302	131.02	0.8	1533.5	1534.2	One more small gap to fill with a sandbag.	1933
9/7/13 12:23:09	45.91733	-129.99302	131.02	0.8	1533.4	1534.2	Caught a sandbag on the beast probe holder and it tore open. Lost most of the sand.	1937
9/7/13 12:24:40	45.91740	-129.99298	127.7	3.0	1531.0	1534.0	Talking about using a small tube bag to line the inner gap of the donut.	1941
9/7/13 12:25:02	45.91740	-129.99298	131.55	1.1	1532.8	1533.8	Need to go back to the pile and grab more bags.	1942
9/7/13 12:32:09	45.91736	-129.99298	128.82	0.7	1533.3	1534.0	Loading bags.	1953
9/7/13 12:36:57	45.91734	-129.99301	141.52	0.7	1533.3	1534.0	Made it back to the vent.	1960
9/7/13 12:38:03	45.91734	-129.99302	141.56	0.8	1533.2	1534.0	Placing a long tube bag in the donut to see if it will be able to line the inner gap without blocking the vent.	1962
9/7/13 12:40:24	45.91733	-129.99301	141.6	0.7	1533.2	1534.0	Inner bag seems to have blocked the flow that was escaping out under the donut.	1967
9/7/13 12:40:49	45.91732	-129.99301	141.6	0.8	1533.2	1534.0	Placing one more long bag on the inner gap.	1968
9/7/13 12:44:15	45.91732	-129.99298	141.62	0.7	1533.2	1533.9	Placing another tube bag on top of the last one.	1981
9/7/13 12:45:35	45.91732	-129.99297	141.64	0.8	1533.2	1533.9	Pushing down on the donut to check stability. Nothing is moving; looks very stable and little flow is escaping out the bottom.	1984
9/7/13 12:46:06	45.91732	-129.99297	141.64	0.7	1533.2	1533.9	Still slightly off level but not enough to worry about.	1986
9/7/13 12:48:45	45.91732	-129.99299	141.64	0.8	1533.2	1533.9	Using the remaining sandbags we have in the basket to build up further support on the outside edge of the donut.	1991
9/7/13 12:52:34	45.91730	-129.99300	102.59	1.2	1533.2	1534.4	Moving over to the elevator.	1996
9/7/13 12:54:44	45.91731	-129.99302	102.43	110.4	1533.2	1643.6	Rotated the vent cap to get it in a better position.	2000
9/7/13 12:57:18	45.91731	-129.99300	101.2	94.6	1533.2	1627.8	Going to move the vent cap over and place it on top of the donut.	2003
9/7/13 12:58:59	45.91730	-129.99302	101.33	0.8	1533.2	1533.9	Slowly moving it into place.	2005
9/7/13 13:02:10	45.91729	-129.99303	100.3	0.8	1533.2	1533.9	Having difficulties moving the vent cap into place because the skirt is in the way.	2007
9/7/13 13:04:03	45.91738	-129.99318	311.31	9.9	1523.5	1533.5	HIGHLIGHTS off.	2010
9/7/13 13:04:42	45.91747	-129.99337	304.62	15.3	1518.3	1533.6	Lost bow thruster again.	2012
9/7/13 13:05:01	45.91746	-129.99341	285.61	22.4	1511.3	1533.6	Moving Jason up from the bottom.	2013
9/7/13 13:59:12	45.91743	-129.99348	276.95	74.4	1458.3	1532.7	Still fixing the bow thruster.	2014
9/7/13 14:11:03	45.91749	-129.99357	278.42	74.4	1458.3	1532.7	MEGA jelly!	2019
9/7/13 14:30:31	45.91734	-129.99294	234.78	0.7	1532.7	1533.4	We got back on the bottom about 10 minutes ago.	2033

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-727 Dive Comments	Virtual Van #
9/7/13 14:31:27	45.91734	-129.99294	234.78	0.7	1532.6	1533.4	Bow thruster back on line so we're back in business.	2035
9/7/13 14:32:08	45.91734	-129.99294	234.79	0.7	1532.6	1533.4	Vent cap is in place. Jason picking up skirt to look at alignment. All looks good.	2037
9/7/13 14:32:58	45.91734	-129.99294	234.79	0.7	1532.7	1533.4	Correction - bow thruster is not fixed but Jason decided ship control was good enough to finish the job on the bottom.	2039
9/7/13 14:33:23	45.91734	-129.99294	234.79	0.7	1532.6	1533.4	Discussing if there is more positioning that needs to be done.	2041
9/7/13 14:37:16	45.91734	-129.99295	234.81	0.7	1532.6	1533.4	Skirt is back down. Will add a few more sandbags and then we'll be done.	2053
9/7/13 14:37:33	45.91734	-129.99294	237.42	1.4	1531.6	1533.0	Going to back out and get some video and stills.	2055
9/7/13 14:43:20	45.91734	-129.99299	120.89	0.7	1532.6	1533.3	Jason has repositioned. We are looking at it from the side where the pipes are jetting out the fluid.	2086
9/7/13 14:44:24	45.91733	-129.99299	119.97	2.6	1530.3	1532.9	The seal looks good. We can see hot fluid coming out in some places around the donuts but that is better than cold water coming in.	2088
9/7/13 14:45:00	45.91733	-129.99299	119.92	2.0	1530.9	1532.9	The ship thinks the bow thruster is fixed but we won't switch over until we are finished here.	2090
9/7/13 14:45:36	45.91733	-129.99299	119.75	2.0	1530.9	1532.9	Noticed hot water coming out of one of the cap vertical pipes at the top.	2092
9/7/13 14:46:40	45.91733	-129.99299	119.68	2.0	1530.9	1532.9	HIGHLIGHTS on. Highlights have been on since 14:27.	2094
9/7/13 14:49:04	45.91733	-129.99300	113.58	2.0	1531.0	1533.0	We are going to pull the one remaining pin holding up the skirt.	2100
9/7/13 14:49:36	45.91733	-129.99300	113.28	1.9	1531.1	1533.0	Then we may put another sand bag on the skirt.	2103
9/7/13 14:50:15	45.91734	-129.99300	113.6	2.0	1530.9	1533.0	Decided not to pull the pin since it might move the cap.	2104
9/7/13 14:51:06	45.91737	-129.99299	117.48	2.4	1530.9	1533.3	Will now add a sandbag onto the base of the cap.	2107
9/7/13 14:55:44	45.91737	-129.99302	132.7	2.2	1531.0	1533.2	Placed sand bag on base of cap.	2114
9/7/13 14:56:03	45.91740	-129.99299	134.57	1.8	1531.2	1533.0	Going to get another sandbag.	2116
9/7/13 14:56:42	45.91740	-129.99297	136.16	1.2	1532.0	1533.2	HIGHLIGHTS off.	2118
9/7/13 14:59:15	45.91735	-129.99301	235.89	1.8	1531.1	1532.9	Going to put sandbag on cap.	2128
9/7/13 15:00:29	45.91736	-129.99301	235.98	1.9	1531.1	1533.0	Sandbag on cap.	2133
9/7/13 15:01:04	45.91736	-129.99301	235.93	1.7	1531.3	1533.0	HIGHLIGHTS on.	2135
9/7/13 15:07:16	45.91738	-129.99302	235.66	1.6	1531.4	1533.0	OK we are done with the cap. Now just taking some video and stills.	2157
9/7/13 15:11:47	45.91737	-129.99300	217.96	1.5	1531.1	1532.6	Adjusting settings on DSC camera.	2167
9/7/13 15:13:27	45.91736	-129.99299	215.86	1.5	1531.1	1532.6	Going to circle around the top of the cap then circle around the base and we'll be done.	2170
9/7/13 15:13:50	45.91736	-129.99300	196.82	1.7	1531.1	1532.8	DSC camera set in auto mode taking one picture every 10 seconds.	2171
9/7/13 15:18:55	45.91736	-129.99305	142.24	2.1	1531.1	1533.2	Now going to circle around the bottom.	2188
9/7/13 15:20:39	45.91736	-129.99304	177.15	1.9	1531.1	1533.0	Moving the dive weight ropes out of the way.	2193
9/7/13 15:22:40	45.91736	-129.99305	177.31	2.0	1531.2	1533.1	Ropes out of the way.	2196
9/7/13 15:22:55	45.91736	-129.99305	177.11	2.0	1531.1	1533.1	Basket retracted.	2197
9/7/13 15:25:51	45.91736	-129.99307	124.38	1.9	1531.1	1533.0	Ship is now in DP.	2220
9/7/13 15:32:26	45.91738	-129.99306	210.68	1.0	1531.5	1532.5	We're done.	2252
9/7/13 15:32:40	45.91738	-129.99306	210.71	1.0	1531.5	1532.5	HIGHLIGHTS off.	2253

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-727 Dive Comments	Virtual Van #
9/7/13 15:35:12	45.91739	-129.99310	210.64	1.2	1531.5	1532.7	End of science part of dive. Jason will do 2 hours of engineering work then will be on deck by noon local time.	2256
9/7/13 17:47:02	45.91764	-129.99357	328.78	63.0	1470.3	1533.2	Jason off bottom.	2386
9/7/13 19:20:55	45.91648	-129.99302	70.3	173.2	0.0	173.2	Jason out of water at 19:15	2387

6.6.3 J2-728 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 03:02:36	45.92451	-129.97848	179.67		1.34		Jason in water with a beautiful sunset in the background.	2402
9/8/13 04:20:18	45.92451	-129.97848	327.92	2.63	1521.04	1523.7	JASON: Jason on bottom Can see the bottom.	2430
9/8/13 04:21:32	45.92451	-129.97848	327.81	1.65	1523.41	1525.1	Bottom is fragmented and some sediment coating. Very little biology if any.	2433
9/8/13 04:21:42	45.92451	-129.97848	327.45	1.5	1523.44	1524.9	Jason has stirred up the sediment.	2434
9/8/13 04:22:00	45.92451	-129.97848	327.46	1.18	1523.81	1525	Video started at 04:20.	2435
9/8/13 04:22:18	45.92451	-129.97848	327.49	1.18	1523.82	1525	NAV: Doppler Reset	2437
9/8/13 04:23:08	45.92451	-129.97848	23.34	1.28	1524.06	1525.3	Doing some ballasting.	2439
9/8/13 04:23:37	45.92452	-129.97847	26.99	0.89	1524.62	1525.5	Can see more sediment between rocks.	2440
9/8/13 04:24:11	45.92452	-129.97847	27.17	1.73	1523.63	1525.4	Lots of Jason dust while settling.	2442
9/8/13 04:24:51	45.92454	-129.97854	27.24	1.9	1523.64	1525.5	Checking the basket.	2443
9/8/13 04:26:04	45.92453	-129.97851	27.37	2.09	1523.51	1525.6	Removing weight from basket.	2446
9/8/13 04:26:27	45.92453	-129.97850	27.64	2.13	1523.4	1525.5	Removing an additional weight from basket.	2447
9/8/13 04:28:33	45.92455	-129.97843	27.35	2.46	1523.03	1525.5	Removing third weight from basket.	2450
9/8/13 04:31:31	45.92454	-129.97850	91.13	3.19	1523.64	1526.8	Water was clearing up a bit then Jason stirred it up again.	2454
9/8/13 04:32:00	45.92453	-129.97851	92.36	2.94	1523.81	1526.8	Turning on the USBL on the RAS to locate it.	2455
9/8/13 04:33:30	45.92460	-129.97845	91.51	2.46	1524.44	1526.9	Should be 7m away according to navigation.	2458
9/8/13 04:34:07	45.92461	-129.97843	99.56	2.59	1524.19	1526.8	See it in the butt cam!	2460
9/8/13 04:34:40	45.92463	-129.97847	312.33	1.98	1523.31	1525.3	Bottom is flat.	2462
9/8/13 04:34:45	45.92462	-129.97849	326.88	2.56	1523.26	1525.8	There is the RAS!	2463
9/8/13 04:35:11	45.92463	-129.97853	329.27	3.28	1522.86	1526.1	Taking a look at the mooring with the cameras.	2465
9/8/13 04:37:39	45.92465	-129.97871	65.25	0.74	1526.51	1527.3	Looking at the bottom weight.	2470
9/8/13 04:44:37	45.92463	-129.97851	64.33	0.74	1526.5	1527.2	Lifting the RAS to see the drop weights in order to release the pin for the extra weight.	2479
9/8/13 04:45:05	45.92465	-129.97851	64.23	0.74	1526.62	1527.4	One crab under the RAS drop weights.	2481
9/8/13 04:46:14	45.92466	-129.97852	64.32	0.74	1526.65	1527.4	Weights released for the drop weights by pulling the pin.	2483
9/8/13 04:47:44	45.92462	-129.97851	62.72	0.74	1526.61	1527.4	Grabbing the chain below the release pin to carry the RAS to its deployment location. RAS should be about 50lbs in this configuration.	2485
9/8/13 04:48:22	45.92460	-129.97848	62.71	0.74	1526.61	1527.4	Bearing is 347deg and a range of 186m to El Gordo/Marker 151.	2487

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13	04:48:34	45.92460	-129.97848	62.67	0.83	1526.32	1527.2	RAS looked good when we approached with no broken bottles and hoses attached.	2488
9/8/13	04:50:13	45.92468	-129.97837	347.52	3.68	1523.73	1527.4	Flat flows with sediment covering. Sheet flows with moderate sediment covering as we start our transit.	2491
9/8/13	04:50:52	45.92478	-129.97838	345.62	3	1523.43	1526.4	Moving along at 346deg about 4m off the bottom over sheet flows with medium sediment coverage.	2492
9/8/13	04:51:44	45.92486	-129.97840	346.34	3.65	1524.04	1527.7	Heavy sediment coating over sheet flows.	2494
9/8/13	04:54:56	45.92501	-129.97844	344.92	6.09	1520.26	1526.4	Seeing some ropey sheet flow but flying fairly high above the bottom at 7m altitude.	2498
9/8/13	04:55:44	45.92509	-129.97846	346.88	3.3	1521.37	1524.7	Noticing some relief in the sheet flow with a few ridges.	2500
9/8/13	04:56:40	45.92515	-129.97848	346.76	2.94	1521.52	1524.5	Long-legged crab on sheet flow.	2502
9/8/13	04:57:02	45.92518	-129.97846	343.33	2.64	1521.61	1524.3	Big rat tail.	2505
9/8/13	04:58:01	45.92523	-129.97843	347.63	4.49	1520.5	1525	Nice photo of the sheet flow with a fish for scale.	2510
9/8/13	04:58:13	45.92526	-129.97845	345.53	5.74	1519.44	1525.2	Another fish at a small ridge.	2512
9/8/13	04:59:33	45.92543	-129.97854	344.88	4.33	1518.92	1523.3	Great sheet flow forms with sediment.	2514
9/8/13	04:59:48	45.92546	-129.97856	346.95	3.31	1519.19	1522.5	Lots of fish in this area.	2516
9/8/13	05:00:01	45.92549	-129.97857	346.18	4	1518.8	1522.8	Crab and fish.	2518
9/8/13	05:01:30	45.92558	-129.97860	347.81	2.51	1518.65	1521.2	So flat it is very hard to take any frame grab photos without the basket in the frame.	2522
9/8/13	05:02:47	45.92565	-129.97858	347.6	3.56	1518.95	1522.5	Nice lineations with the sediment on the sheet flow.	2525
9/8/13	05:03:51	45.92578	-129.97862	346.69	2.43	1519.82	1522.3	About 50m more to El Gordo.	2528
9/8/13	05:04:47	45.92594	-129.97872	331.47	2.91	1518.82	1521.7	Some small collapse in the flow.	2531
9/8/13	05:06:05	45.92603	-129.97878	331.78	2.81	1518.86	1521.7	Moderate sediment coating in sheet flow as we are stopped waiting for Medea.	2535
9/8/13	05:06:22	45.92608	-129.97877	329.85	2.15	1519.52	1521.7	Marker.	2536
9/8/13	05:06:43	45.92611	-129.97876	332.8	1.31	1520.63	1521.9	Looking at the marker.	2538
9/8/13	05:06:57	45.92612	-129.97877	341.28	1.4	1520.56	1522	2010 Bucket.	2540
9/8/13	05:07:36	45.92614	-129.97884	332.67	3.3	1519.02	1522.3	Aug. 20 Allison marker of sorts.	2542
9/8/13	05:08:27	45.92616	-129.97891	333.14	5.38	1517.08	1522.5	A little staining on ridge. Can see a chimney.	2544
9/8/13	05:08:53	45.92616	-129.97893	333.38	4.58	1517.47	1522.1	This could be it as it is active on one side and dead on the other.	2545
9/8/13	05:09:35	45.92615	-129.97892	314.57	4.59	1516.55	1521.1	Looking for the marker after taking some frame grabs.	2551
9/8/13	05:09:59	45.92616	-129.97887	239.12	4.85	1516.39	1521.2	Marker is on the active side of the vent.	2552
9/8/13	05:10:50	45.92626	-129.97882	208.53	4.19	1516.48	1520.7	Going to put the RAS down so we can look around the vent a bit better.	2554
9/8/13	05:12:34	45.92629	-129.97871	202.07	0.86	1521.9	1522.8	Putting the RAS down on a flatter area north of El Gordo to the NE.	2557
9/8/13	05:13:36	45.92629	-129.97870	203.07	2.46	1520.7	1523.2	Putting a nav target in Jason's nav to pick it up later.	2559
9/8/13	05:13:50	45.92624	-129.97872	204.44	2.69	1519.92	1522.6	Going back to the vent to take a look.	2560
9/8/13	05:14:05	45.92621	-129.97874	200.81	3.38	1518.46	1521.8	Going back to El Gordo but have not seen a marker.	2562
9/8/13	05:15:10	45.92615	-129.97881	191.76	3.61	1518.71	1522.3	Marker was on the white part of the active vent.	2564
9/8/13	05:15:21	45.92615	-129.97884	171.1	3.65	1518.56	1522.2	Blue mat was on one side of the vent.	2565

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 05:15:46	45.92613	-129.97887	125.61	2.81	1518.98	1521.8	Older and inactive on the backside and tilted.	2567
9/8/13 05:16:45	45.92615	-129.97888	126.35	2.49	1519.47	1522	Do not see the marker which was a flat and small piece on polypro line.	2571
9/8/13 05:17:50	45.92618	-129.97889	126.44	2.49	1519.48	1522	Seeing good flow. Worms nearer the base are not very healthy looking.	2576
9/8/13 05:18:29	45.92617	-129.97889	126.61	2.5	1519.51	1522	Activity is fairly similar to the last visit according to Dave.	2578
9/8/13 05:18:45	45.92617	-129.97889	125.79	2.54	1519.5	1522	Getting ready to take some temperature readings with the Jason probe.	2579
9/8/13 05:20:03	45.92616	-129.97883	126.3	2.53	1519.47	1522	See blue mat and tube worms on the active flow.	2583
9/8/13 05:20:21	45.92615	-129.97882	125.94	2.49	1519.49	1522	Tube worms in the active flow look very healthy compared to the worms at the base.	2584
9/8/13 05:20:32	45.92615	-129.97881	126.73	2.51	1519.46	1522	Taking a temperature in good flow with the worms.	2585
9/8/13 05:22:18	45.92614	-129.97880	126.61	2.51	1519.48	1522	No defined orifice but got up to 38.1deg in this worm bush.	2589
9/8/13 05:23:07	45.92616	-129.97888	126.46	2.5	1519.48	1522	Going to move the probe a little lower in this same worm clump on the El Gordo vent.	2591
9/8/13 05:23:19	45.92616	-129.97890	126.5	2.53	1519.48	1522	Put the lasers on the desired target.	2592
9/8/13 05:25:31	45.92616	-129.97896	126.68	2.51	1519.48	1522	Temperature here is 35.1degC. Probe is at base of healthy looking worms and just above the dead-looking worms.	2597
9/8/13 05:25:52	45.92616	-129.97895	126.47	2.51	1519.48	1522	Now will take a temperature at the top clump of healthier looking worms.	2598
9/8/13 05:26:58	45.92617	-129.97895	126.13	2.49	1519.51	1522	These worms do not look as healthy upon closer examination and the temperature was only 5degC.	2601
9/8/13 05:27:59	45.92617	-129.97898	126.77	2.51	1519.44	1522	Going back to the first worm clump and found a higher temperature. High was 53degC.	2604
9/8/13 05:29:19	45.92618	-129.97898	126.33	2.48	1519.53	1522	Going to take some HFS samples at El Gordo.	2607
9/8/13 05:29:37	45.92619	-129.97897	126.44	2.46	1519.52	1522	Stowing the temperature probe.	2608
9/8/13 05:31:17	45.92617	-129.97896	132.56	2.1	1519.9	1522	Sampling location using the cursor is 45deg 55.5711'N 129deg 58.7384'W. Navigation is good.	2611
9/8/13 05:31:48	45.92617	-129.97897	139.66	2.29	1519.69	1522	Jason is retrieving the HFS wand.	2612
9/8/13 05:32:06	45.92617	-129.97897	143.65	2.21	1519.76	1522	Placing the wand in the 53deg water location on El Gordo.	2614
9/8/13 05:33:19	45.92622	-129.97898	147.21	2.11	1519.81	1521.9	See good flow at the intake.	2617
9/8/13 05:34:03	45.92625	-129.97899	151.87	2.05	1519.8	1521.9	Only getting about 11degC here. Will reposition.	2620
9/8/13 05:34:25	45.92625	-129.97898	157.84	1.96	1519.91	1521.9	Nice area of blue mat below wand tip in the dead-looking worms.	2621
9/8/13 05:35:20	45.92623	-129.97897	160.1	1.9	1519.95	1521.9	Moving wand into the largest white-area of the flow.	2623
9/8/13 05:36:17	45.92618	-129.97896	160.75	1.84	1520	1521.8	Hunting for the higher temperature spot seen with the Jason probe.	2625
9/8/13 05:37:39	45.92615	-129.97894	160.11	1.94	1519.93	1521.9	Only getting around 10degC water in these last probes of the flow.	2627
9/8/13 05:38:20	45.92615	-129.97890	160.04	1.91	1519.95	1521.9	Looked like a good spot but only 9.5degC.	2629
9/8/13 05:38:35	45.92615	-129.97888	160.06	1.93	1519.95	1521.9	Pushed a little higher and getting hotter water.	2630
9/8/13 05:38:51	45.92615	-129.97886	160.05	1.93	1519.95	1521.9	Flow looks more vigorous than before.	2631
9/8/13 05:40:16	45.92614	-129.97886	159.9	1.93	1519.95	1521.9	Temperature is leveling off at 63deg.	2636
9/8/13 05:40:30	45.92614	-129.97889	159.92	1.93	1519.96	1521.9	SAMPLE: HFS Taking filtered bag #18 with HFS.	2637
9/8/13 05:41:53	45.92621	-129.97900	159.78	1.93	1519.97	1521.9	**SAMPLE: HFS J728-HFS-01** Taken at El Gordo in healthy tube worm clump (not at top-more mid-level) on the active side of the vent.	2639

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 05:44:06	45.92623	-129.97897	182.45	2.35	1519.45	1521.8	SAMPLE: HFS J728-HFS-01 Tmax=62.9 Tavg= 61.3 vol= 610 T2=25.2 Position is from the cursor 45deg 55.5711'N 129deg 58.7384'W.	2643
9/8/13 05:44:33	45.92623	-129.97898	182.87	2.36	1519.5	1521.9	SAMPLE: HFS T2=30 deg (correction)	2644
9/8/13 05:45:18	45.92624	-129.97899	189.31	2.56	1519.35	1521.9	Wand was pulled out as Jason moved off the vent.	2646
9/8/13 05:46:21	45.92621	-129.97898	189.08	2.58	1519.39	1522	Pilot change from Corey to Matt.	2648
9/8/13 05:47:48	45.92613	-129.97899	176.35	2.04	1519.99	1522	Moving Jason back into position at El Gordo with the HFS wand still in the arm.	2650
9/8/13 05:48:59	45.92614	-129.97899	177.94	2.39	1519.54	1521.9	Putting wand back into the same area as the first sample after the pull-off and waiting to see what the temperature is.	2653
9/8/13 05:50:01	45.92615	-129.97897	177.95	2.3	1519.53	1521.8	Temperature wasn't coming up as fast so will move the probe around a bit again.	2656
9/8/13 05:50:34	45.92614	-129.97896	177.57	2.31	1519.61	1521.9	Found a good spot. Actually it is too hot for the RNA.	2658
9/8/13 05:51:05	45.92613	-129.97896	177.67	2.3	1519.67	1522	Temperature up past 130degC.	2660
9/8/13 05:52:22	45.92614	-129.97895	177.69	2.31	1519.64	1522	Photo not that great.	2663
9/8/13 05:52:58	45.92615	-129.97895	177.77	2.35	1519.64	1522	SAMPLE: GTHFS Location for STBD gas-tight.	2664
9/8/13 05:53:33	45.92616	-129.97897	177.78	2.35	1519.68	1522	SAMPLE: GTHFS Saw it move. J728-GTHFS-02 at El Gordo. Tmax=156	2666
9/8/13 05:54:33	45.92617	-129.97900	177.33	2.36	1519.63	1522	**SAMPLE: GTHFS J728-GTHFS-02** in the hot spot of El Gordo in the same worm clump as the first sample but slightly different location after pull-of. T2=64 Tmax=156	2668
9/8/13 05:55:20	45.92618	-129.97900	177.34	2.36	1519.66	1522	Too hot for RNA sample so moving intake a bit in the same clump of worms on El Gordo.	2670
9/8/13 05:56:34	45.92615	-129.97897	177.34	2.38	1519.64	1522	SAMPLE: GTHFS J728-GTHFS-02 STBD red-9 on El Gordo.	2672
9/8/13 05:57:32	45.92612	-129.97899	177.26	2.36	1519.68	1522	Pilot noticed more flow as moved wand around.	2674
9/8/13 05:58:16	45.92612	-129.97901	176.32	2.35	1519.63	1522	Moving around a bit. See only a very few palm worms.	2676
9/8/13 05:59:24	45.92616	-129.97902	176.01	2.4	1519.61	1522	Stopping HFS pump and restarting it.	2678
9/8/13 06:00:21	45.92617	-129.97900	176.12	2.4	1519.63	1522	Moving wand around looking for the right temperature.	2680
9/8/13 06:01:23	45.92613	-129.97899	176.05	2.41	1519.63	1522	Temperature here is 56deg and rising.	2683
9/8/13 06:03:08	45.92612	-129.97898	176.06	2.4	1519.63	1522	High temperature was 72deg.	2687
9/8/13 06:03:16	45.92612	-129.97898	176.06	2.4	1519.64	1522	SAMPLE: HFS Starting RNA filter.	2688
9/8/13 06:03:57	45.92614	-129.97899	176.07	2.41	1519.65	1522.1	**SAMPLE: HFS J728-HFS-03** RNA filter at El Gordo in the same area as other previous sample but not exactly same spot to get the correct temperature.	2689
9/8/13 06:05:52	45.92615	-129.97898	176.08	2.41	1519.64	1522.1	SAMPLE: HFS J728-HFS-03 RNA #10 Wand in steady flow at base of a few healthy tube worms.	2692
9/8/13 06:14:22	45.92621	-129.97889	176.13	2.41	1519.73	1522.1	SAMPLE: HFS Dave is looking around with the cameras for RAS cover placement while taking the RNA sample.	2705
9/8/13 06:19:39	45.92615	-129.97900	176.14	2.4	1519.75	1522.2	SAMPLE: HFS J728-HFS-03 RNA Filter #10 Tmax=77.3 Tavg= 76.0 vol=3000 T2=35	2714
9/8/13 06:20:08	45.92615	-129.97899	176.13	2.41	1519.76	1522.2	**SAMPLE: HFS J728-HFS-04 RNA #11** starting at El Gordo	2716

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9/8/13 06:20:43	45.92615	-129.97898	176.13	2.4	1519.75	1522.2	SAMPLE: HFS J728-HFS-04 RNA Filter #11 at the same spot as HFS-03 at El Gordo. Did not move at all.	2717
9/8/13 06:22:06	45.92616	-129.97897	176.13	2.41	1519.78	1522.2	SAMPLE: HFS Pump wasn't going so just started now and looks good.	2720
9/8/13 06:26:44	45.92616	-129.97902	176.12	2.4	1519.85	1522.3	SAMPLE: HFS J728-HFS-04 started at 06:21	2726
9/8/13 06:28:06	45.92617	-129.97903	176.12	2.4	1519.85	1522.3	UPDATE: J728-HFS-01 start: 05:40 end:05:44	2729
9/8/13 06:29:17	45.92620	-129.97904	176.12	2.4	1519.87	1522.3	UPDATE J728-GTHFS-02 start/end: 05:53; J728-HFS-03 start 06:03 end at 06:19	2731
9/8/13 06:33:44	45.92617	-129.97899	176.12	2.4	1519.91	1522.3	SAMPLE: HFS Scale worm and some palm worms (very few).	2737
9/8/13 06:35:01	45.92618	-129.97901	176.13	2.4	1519.92	1522.3	SAMPLE: HFS J728-HFS-04 RNA Filter #11 Tmax=78.8 Tavg=77.4 vol=3000 T2=34 Same flow during all samples. Stopped at 06:34.	2739
9/8/13 06:35:44	45.92617	-129.97901	176.09	2.41	1519.92	1522.3	Stowing the probe and will try to place the RAS cover on El Gordo.	2741
9/8/13 06:38:00	45.92618	-129.97897	176.12	2.4	1519.92	1522.3	We have been sampling the active side of El Gordo which is on a ridge after a transit over flat sheet flow to the south. The north side is active (Jason heading is 176deg).	2744
9/8/13 06:38:25	45.92619	-129.97897	176.27	2.38	1519.97	1522.4	Wand is stowed and now retrieving the RAS cap from the basket.	2746
9/8/13 06:39:36	45.92618	-129.97899	176.09	2.44	1519.95	1522.4	Took frame grab of potential site for cover.	2749
9/8/13 06:40:28	45.92618	-129.97900	177.42	2.41	1519.97	1522.4	Lasers on site Dave would like to try for RAS cover.	2752
9/8/13 06:40:41	45.92618	-129.97900	177.41	2.41	1519.96	1522.4	That site looked too dead after closer examination. Looking for other site.	2753
9/8/13 06:41:38	45.92619	-129.97900	177.08	2.29	1520.05	1522.3	Switched cap from one arm to other.	2756
9/8/13 06:42:45	45.92618	-129.97900	177.53	2.36	1520.03	1522.4	Placing cap over the area of the previous samples. Checking to see if it is secure.	2760
9/8/13 06:43:50	45.92618	-129.97898	177.29	2.38	1520.03	1522.4	Getting temperature wand to get a reading in the cap.	2762
9/8/13 06:44:40	45.92618	-129.97897	177.32	2.38	1520.03	1522.4	Taking temperature of the RAS cap.	2767
9/8/13 06:45:15	45.92618	-129.97897	177.33	2.38	1520.03	1522.4	Reading 23degC with the Jason probe.	2769
9/8/13 06:45:55	45.92618	-129.97899	177.31	2.38	1520.06	1522.4	Jason watch change.	2770
9/8/13 06:47:26	45.92619	-129.97907	176.22	2.38	1520.05	1522.4	Need to rotate the cap with the handle pointing uphill.	2773
9/8/13 06:48:01	45.92619	-129.97909	176.23	2.38	1520.04	1522.4	Jason picking up the cap and rotating it with the handle going uphill.	2774
9/8/13 06:48:39	45.92620	-129.97911	176.33	2.36	1520.06	1522.4	Tapping on the cap slightly.	2777
9/8/13 06:49:08	45.92620	-129.97911	176.3	2.36	1520.04	1522.4	Looks like a good placement so now will take a temperature.	2779
9/8/13 06:50:18	45.92619	-129.97912	176.31	2.38	1520.05	1522.4	Taking temperature in RAS cap.	2781
9/8/13 06:50:41	45.92618	-129.97911	176.31	2.44	1520.07	1522.5	Temperature up to 32.6degC.	2782
9/8/13 06:51:14	45.92618	-129.97909	176.35	2.38	1520.07	1522.5	Going to try to take temperature in one of the smaller holes in the cap. Also 32degC. Good temperature.	2784
9/8/13 06:51:44	45.92619	-129.97907	176.38	2.35	1520.12	1522.5	Will go get the RAS now with good placement of the cap.	2785
9/8/13 06:52:15	45.92620	-129.97905	176.39	2.36	1520.1	1522.5	RAS is 22m away at a heading of 60deg.	2787
9/8/13 06:55:55	45.92626	-129.97883	130.59	0.91	1522.41	1523.3	Arrived at the RAS	2791
9/8/13 06:56:12	45.92627	-129.97884	130.34	2.23	1520.87	1523.1	We can see the RSN cable in the back cam	2793
9/8/13 06:57:58	45.92626	-129.97886	282.86	3.59	1520.28	1523.9	One of the bottles is sticking up higher at the top of the RAS	2795
9/8/13 06:58:19	45.92625	-129.97889	282.64	3.61	1520.34	1524	It might be broken or just shifted from landing	2797

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9/8/13 07:00:35	45.92620	-129.97894	282.8	3.63	1520.29	1523.9	Looks like it broke off from the 36 spot and is now sitting on top of some of the neighboring bottles	2800
9/8/13 07:01:50	45.92624	-129.97894	185.87	2.55	1521.24	1523.8	All of the other bottles look intact.	2802
9/8/13 07:02:37	45.92625	-129.97893	169.91	0.78	1523	1523.8	Can still see the RSN cable behind us.	2804
9/8/13 07:02:55	45.92626	-129.97892	169.84	0.9	1522.84	1523.7	Moved back down to the RAS anchor.	2805
9/8/13 07:03:57	45.92626	-129.97885	167.56	1.55	1522	1523.6	Grabbing the chain; going to drag it over to the vent.	2807
9/8/13 07:04:34	45.92625	-129.97883	161.17	2.89	1520.74	1523.6	Lots of orange sediment/floc here in the cracks.	2809
9/8/13 07:05:43	45.92623	-129.97885	168.44	1.68	1521.68	1523.4	Kicked up silt and can't see anything.	2811
9/8/13 07:08:32	45.92619	-129.97903	169.46	1.83	1520.95	1522.8	Passing collapsed lava	2815
9/8/13 07:08:48	45.92619	-129.97903	170.31	1.83	1520.94	1522.8	Arrived at El Gordo	2816
9/8/13 07:09:15	45.92619	-129.97904	169.32	1.63	1521.08	1522.7	The collapsed basalt is an old sheath flow ridge.	2818
9/8/13 07:10:13	45.92620	-129.97905	169.02	3.43	1519.34	1522.8	Deciding on the best placement for the RAS to connect to the vent cap line.	2820
9/8/13 07:12:38	45.92617	-129.97905	169.13	4.34	1518.48	1522.8	Adjusting the RAS a bit and getting ready to pull the fluid line off the RAS to connect with the vent cap.	2823
9/8/13 07:16:40	45.92611	-129.97907	169.06	4.36	1518.52	1522.9	Need to undo one more rubber band holding the line to the RAS frame.	2828
9/8/13 07:18:00	45.92612	-129.97909	168.69	2.23	1520.35	1522.6	Moving into position at the vent.	2830
9/8/13 07:18:43	45.92612	-129.97910	169.29	2.34	1520.22	1522.6	Looking at the keyhole and trying to orient the RAS intake correctly.	2836
9/8/13 07:20:35	45.92611	-129.97902	169.87	2.34	1520.32	1522.7	Good flow coming out of the vent cap keyhole. Can't see any flow escaping out the bottom.	2844
9/8/13 07:23:50	45.92617	-129.97890	169.47	2.33	1520.33	1522.7	Vent cap is surrounded by bushes of dead tubeworms covered with fuzzy white and grey mat.	2849
9/8/13 07:24:15	45.92618	-129.97888	169.47	2.33	1520.29	1522.6	Still can't orient the intake correctly.	2851
9/8/13 07:24:55	45.92620	-129.97887	169.42	2.34	1520.29	1522.6	Lots of limpets covering the dead tubeworms close to the main vent flow.	2852
9/8/13 07:26:00	45.92619	-129.97889	169.33	2.51	1520.24	1522.8	Repositioning Jason slightly to get a better angle.	2854
9/8/13 07:32:29	45.92609	-129.97901	170.13	2.66	1520.23	1522.9	Can't get the correct angle to put the intake into the keyhole. Will try to pick up the cap with one arm and intake with the other; then do the assembly and put everything back on the vent.	2865
9/8/13 07:33:06	45.92610	-129.97901	170.44	2.7	1520.18	1522.9	That plan worked well.	2868
9/8/13 07:33:30	45.92611	-129.97900	170.55	2.68	1520.18	1522.9	The assembly is now back on top of the vent.	2870
9/8/13 07:35:09	45.92614	-129.97898	169.65	2.53	1520.3	1522.8	Intake is being pulled to one side by the RAS fluid line; may try to straighten it.	2876
9/8/13 07:37:53	45.92614	-129.97899	169.84	2.53	1520.33	1522.9	Nudged the intake over and now it looks seated better.	2881
9/8/13 07:41:03	45.92614	-129.97897	167.98	2.06	1520.89	1523	Went back down to the RAS anchor. Will move it a few feet closer to the vent so that the line is not pulling the intake to the side.	2888
9/8/13 07:41:37	45.92614	-129.97896	168.39	1.88	1521.11	1523	Placed the anchor just under the small ledge where the vent cap is sitting.	2889
9/8/13 07:42:15	45.92614	-129.97895	169.77	2.41	1520.58	1523	Looks better now.	2893
9/8/13 07:42:36	45.92613	-129.97893	169.36	2.78	1520.24	1523	Going to do a beast sample from one of the vent cap holes.	2894

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9/8/13 07:44:23	45.92613	-129.97891	168.88	2.56	1520.33	1522.9	Placing the beast nozzle in the vent cap.	2901
9/8/13 07:46:11	45.92615	-129.97889	168.95	2.58	1520.26	1522.8	SAMPLE: HFS Temp is 57.6	2904
9/8/13 07:46:12	45.92615	-129.97889	168.94	2.58	1520.27	1522.9	**SAMPLE: Start J728-HFS-05** unfiltered bag 19	2905
9/8/13 07:48:27	45.92617	-129.97885	169.09	2.58	1520.31	1522.9	SAMPLE: HFS Position: 129 58.7342W 45 55.5690N	2908
9/8/13 07:49:54	45.92614	-129.97889	169.04	2.56	1520.35	1522.9	SAMPLE: HFS STOP J728-HFS-05 unfiltered bag 19 Tmax=59.1C Tavg=58.8C T2=26C Vol=629mL	2910
9/8/13 07:50:42	45.92612	-129.97890	168.98	2.58	1520.38	1523	This is the last HFS to be taken at El Gordo.	2912
9/8/13 07:53:35	45.92618	-129.97883	168.78	2.5	1520.4	1522.9	Going to take a syringe sample of sediment a few feet from the vent cap. Just underneath a dead tubeworm bush at the top of the vent mound/chimney.	2916
9/8/13 07:53:49	45.92618	-129.97883	168.93	2.51	1520.38	1522.9	Dark grey sediment covered with white mat.	2917
9/8/13 07:55:11	45.92615	-129.97884	168.85	2.55	1520.36	1522.9	Temp is probably cooler here. There is some slow diffuse venting nearby but nothing visible within a foot or two.	2920
9/8/13 07:55:26	45.92615	-129.97884	168.74	2.58	1520.31	1522.9	HIGHLIGHTS: KiPro hard drive start	2921
9/8/13 07:57:35	45.92617	-129.97884	168.54	2.61	1520.31	1522.9	SAMPLE: Sed Taking J728-SED-06	2927
9/8/13 07:58:33	45.92616	-129.97885	168.21	2.53	1520.31	1522.8	Used large green syringe for this sample.	2932
9/8/13 07:59:13	45.92615	-129.97885	168.24	2.53	1520.32	1522.9	Sub position is the same as the beast sample just moved 2-3 feet to the left.	2934
9/8/13 08:00:11	45.92615	-129.97884	168.59	2.54	1520.35	1522.9	HIGHLIGHTS: DVD Deck start	2936
9/8/13 08:00:34	45.92615	-129.97884	168.77	2.53	1520.35	1522.9	HIGHLIGHTS: KiPro hard drive stop After looking closer the dark material is a solid crust and the white material is a light colored sediment not mat.	2937
9/8/13 08:01:09	45.92615	-129.97883	168.73	2.53	1520.35	1522.9	Going back tot the vent cap to get an O2 measurement.	2939
9/8/13 08:01:43	45.92615	-129.97883	168.74	2.53	1520.37	1522.9	Should have been done with the last HFS.	2940
9/8/13 08:04:11	45.92615	-129.97884	168.39	2.53	1520.37	1522.9	Temp and oxygen readings are stable. T1= 54.1C O2= 0.336 mL/L.	2944
9/8/13 08:04:48	45.92616	-129.97883	168.47	2.53	1520.31	1522.8	Replacing beast probe. All sampling is done at El Gordo.	2945
9/8/13 08:05:48	45.92617	-129.97883	168.45	3.03	1520.03	1523.1	Moving to Escargot next. Located NW of us.	2947
9/8/13 08:08:43	45.92616	-129.97892	134.2	4.71	1518.57	1523.3	took several picture of the RAS.	2970
9/8/13 08:09:20	45.92618	-129.97897	326.1	4.5	1518.62	1523.1	Background readings: T= 2.3 C O2=0.703 ml/L.	2972
9/8/13 08:10:12	45.92622	-129.97904	324.32	2.68	1520.07	1522.8	Crossing over mostly bare basalt seafloor. Some White mat in the cracks but little other biota.	2974
9/8/13 08:10:42	45.92624	-129.97906	324.46	2.78	1519.96	1522.7	Sediment covering the seafloor as we get closer to the Escargot mound.	2975
9/8/13 08:11:38	45.92625	-129.97907	323.8	4.64	1518.16	1522.8	Arrived at a large chimney but we are unsure which vent it is.	2977
9/8/13 08:12:43	45.92628	-129.97908	312.58	7.88	1513.91	1521.8	Very tall but little life seen so far on it. Mostly dead tubeworms and white mat lower on the chimney.	2981
9/8/13 08:13:18	45.92630	-129.97908	264.19	6.09	1514.8	1520.9	We are definitely at Escargot.	2986
9/8/13 08:14:11	45.92635	-129.97911	245.28	2.8	1518.17	1521	Entire 'head' and body of the snail is covered with white mat. Also a few large patches of blue bat covering the 'shell'.	2988
9/8/13 08:14:39	45.92636	-129.97912	243.79	2.69	1518.54	1521.2	Iron oxide staining across most of the upper chimney.	2989

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 08:15:22	45.92638	-129.97914	244.31	2.85	1518.46	1521.3	Looking for vent flow of any type. Have only seen very faint diffuse flow coming from a dead tubeworm bush.	2991
9/8/13 08:15:35	45.92638	-129.97914	244.16	2.76	1518.46	1521.2	Lots of white mat everywhere.	2992
9/8/13 08:16:23	45.92637	-129.97914	263.6	2.08	1518.64	1520.7	Going to use the temp probe to see what a pile of limpets is sitting on. Want to find at least 25-30C vent fluid.	2994
9/8/13 08:18:18	45.92635	-129.97906	261.69	1.93	1518.84	1520.8	Using Jason's temp probe.	2998
9/8/13 08:19:32	45.92639	-129.97905	261.82	1.91	1518.83	1520.7	Casings of old dead tubeworms everywhere with some live worms interspersed.	3000
9/8/13 08:20:30	45.92641	-129.97906	262.19	1.89	1518.92	1520.8	Temp is around 7C. We'll move around and try to find hotter diffuse flow.	3002
9/8/13 08:22:32	45.92634	-129.97904	252.39	3.06	1517.85	1520.9	Going down lower on the chimney; can't see any shimmer yet.	3006
9/8/13 08:23:15	45.92634	-129.97905	239.24	4.96	1515.84	1520.8	Moving around the other side.	3008
9/8/13 08:24:31	45.92633	-129.97905	286.03	2.1	1518.77	1520.9	Large streaks of white mat near some strong venting. There is a hobo in this orifice. Looks like high temp fluid.	3010
9/8/13 08:25:16	45.92632	-129.97908	285.69	2.23	1518.57	1520.8	We have moved back to the shelf with the limpets. This looks like the only real diffuse flow on the chimney.	3012
9/8/13 08:25:41	45.92632	-129.97910	285.7	2.21	1518.57	1520.8	Getting the beast probe out.	3013
9/8/13 08:26:45	45.92633	-129.97913	285.42	2.16	1518.59	1520.8	Placing probe back into the middle of the limpet pile. Temp is only about 5C.	3015
9/8/13 08:27:09	45.92634	-129.97913	285.45	2.16	1518.6	1520.8	Poking around a bit trying to find the highest temp.	3017
9/8/13 08:28:38	45.92635	-129.97912	285.52	2.19	1518.72	1520.9	Tmax now 6.4C.	3019
9/8/13 08:30:16	45.92633	-129.97911	285.63	2.18	1518.67	1520.9	**SAMPLE: HFS START J728-HFS-07** filtered bag 22	3023
9/8/13 08:32:38	45.92627	-129.97908	285.89	2.18	1518.74	1520.9	Position: 129 58.7494 W 45 55.5821 N.	3026
9/8/13 08:33:40	45.92629	-129.97909	285.91	2.18	1518.74	1520.9	STOP J728-HFS-07 filtered bag 22. Tmax=6.6C Tavg=6.5C T2=4.3C Vol=627 mL.	3028
9/8/13 08:34:31	45.92630	-129.97910	285.92	2.19	1518.8	1521	**SAMPLE: HFS START J728-HFS-08** filtered bag 24.	3030
9/8/13 08:34:45	45.92630	-129.97910	285.93	2.18	1518.72	1520.9	Same position.	3031
9/8/13 08:38:21	45.92631	-129.97917	286.1	2.16	1518.78	1520.9	SAMPLE: HFS STOP J728-HFS-08 filtered bag 24. Tmax=6.5C Tavg=6.4C T2=4.3C Vol=626mL.	3037
9/8/13 08:41:00	45.92628	-129.97920	286.14	2.18	1518.86	1521	SAMPLE: HFS START J728-HFS-09 RNA filter 14.	3040
9/8/13 08:44:27	45.92627	-129.97917	286.06	2.16	1518.87	1521	We have been sampling on a shelf about 2/3 of the way up Escargot's chimney.	3052
9/8/13 08:45:02	45.92629	-129.97916	285.94	2.15	1518.87	1521	For the most part the tubeworms are dead and the most abundant life is limpets and white mat.	3054
9/8/13 08:46:17	45.92634	-129.97914	285.98	2.16	1518.86	1521	There is one large bush of live tubeworms protruding out off the edge of the shelf. All casings are covered in thick white mat.	3057
9/8/13 08:46:58	45.92636	-129.97913	285.98	2.16	1518.86	1521	Some small patches of blue mat hiding under ledges.	3058
9/8/13 08:48:56	45.92639	-129.97916	286.21	2.14	1518.84	1521	HIGHLIGHTS: KiPro hard drive start	3065
9/8/13 08:50:28	45.92641	-129.97922	286.17	2.15	1518.84	1521	**SAMPLE: J278-HFS-09** HFS RNA filter is clogging and slowing down the flow.	3068

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 08:53:41	45.92636	-129.97920	286.15	2.16	1518.86	1521	HIGHLIGHTS: KiPro hard drive stop	3072
9/8/13 08:54:05	45.92635	-129.97920	286.04	2.15	1518.84	1521	HIGHLIGHTS: Switch HD_Framegrabber input from SciCam to BrowCam	3074
9/8/13 08:56:34	45.92633	-129.97915	285.83	2.16	1518.89	1521.1	Taking some video and images to try to calculate the flow rate coming out of the vent based on particulate movement.	3085
9/8/13 08:57:31	45.92636	-129.97914	285.86	2.15	1518.89	1521	SAMPLE: HFS STOP J278-HFS-09 RNA fillter14. Tmax=6.7C Tavg=6.5C T2=4.4C Vol=3001mL.	3087
9/8/13 08:59:12	45.92638	-129.97912	285.92	2.16	1518.97	1521.1	Taking O2 measurement.	3090
9/8/13 09:01:41	45.92641	-129.97908	286.02	2.16	1518.96	1521.1	Temp= 6.5C O2= 0.327mL/L.	3093
9/8/13 09:02:32	45.92640	-129.97913	286.34	2.19	1518.94	1521.1	Done with beast sampling here. Will now go get some high temp fluid from the vent on top of the chimney.	3095
9/8/13 09:04:07	45.92636	-129.97916	235.88	4.59	1516.57	1521.2	HIGHLIGHTS: Switch HD_Framegrabber input from SciCam to BrowCam	3099
9/8/13 09:04:34	45.92636	-129.97916	239.45	4.06	1517.02	1521.1	Looking back where the HOBO is located.	3101
9/8/13 09:05:19	45.92635	-129.97916	289.84	6	1516.55	1522.6	Lots of shimmering and high-ish temp water but its hard to tell exactly where direct flow is emerging.	3103
9/8/13 09:07:13	45.92640	-129.97915	293.02	6.23	1516.52	1522.8	There is a sharp spire poking out of the main chimney that we will try to sample.	3106
9/8/13 09:07:41	45.92640	-129.97915	292.68	6.33	1516.52	1522.9	Tried to get the temp probe into the spire orifice but it all broke away.	3107
9/8/13 09:08:00	45.92640	-129.97915	292.61	6.25	1516.5	1522.8	Now we have a clear opening for the temp probe.	3108
9/8/13 09:08:38	45.92640	-129.97915	292.88	6.03	1516.52	1522.6	The spire was anhydrite.	3110
9/8/13 09:10:42	45.92641	-129.97916	292.82	6	1516.56	1522.6	Some tubeworms growing off to the side of the spire. Looks like there is a narrow zone of warm water that drops off quickly; very little life more that 1-2 feet away from the flow.	3113
9/8/13 09:10:58	45.92641	-129.97917	292.82	6	1516.55	1522.6	Repositioned temp probe.	3114
9/8/13 09:12:27	45.92641	-129.97921	291.99	5.98	1516.55	1522.5	Tmax 271C.	3119
9/8/13 09:13:26	45.92641	-129.97921	291.81	6.03	1516.59	1522.6	Broke off more of the anhydrite. Now there is a large opening for the probe.	3121
9/8/13 09:14:08	45.92641	-129.97920	292.22	6.13	1516.57	1522.7	No spire left; it was friable and has all crumbled away.	3123
9/8/13 09:15:28	45.92640	-129.97919	292.47	6.2	1516.57	1522.8	Temp is still about the same 266C	3125
9/8/13 09:16:34	45.92638	-129.97921	292.65	6.28	1516.53	1522.8	Tmax= 280.1C.	3127
9/8/13 09:16:50	45.92637	-129.97922	292.89	5.41	1516.53	1521.9	Holstering the temp probe.	3128
9/8/13 09:21:45	45.92636	-129.97913	292.38	6.26	1516.49	1522.8	SAMPLE: HFS START J728-HFS-10 filtered piston 8.	3134
9/8/13 09:23:12	45.92645	-129.97914	292.42	6.25	1516.49	1522.7	Still the same lat long as all the other samples at Escargot.	3137
9/8/13 09:24:50	45.92647	-129.97913	292.66	6.33	1516.46	1522.8	**SAMPLE: HFS STOP J728-HFS-10** filtered piston 8. Tmax=264.1 Tavg= 262.1 T2= 73.0 Vol=503.	3139
9/8/13 09:25:14	45.92646	-129.97912	292.81	6.28	1516.46	1522.7	**SAMPLE: HFS START J728-HFS-11** unfiltered piston 9.	3141
9/8/13 09:27:56	45.92643	-129.97913	293.1	6.03	1516.47	1522.5	STOP J728-HFS-11 unfiltered piston 9. Tmax=265.7C Tavg=263.1C T2=70.0C Vol=501 mL.	3145
9/8/13 09:29:21	45.92644	-129.97915	293.37	6.24	1516.57	1522.8	Done with HFS here; stowing beast probe.	3152
9/8/13 09:30:12	45.92642	-129.97915	291.8	8.46	1514.58	1523	Moving up and around to the other side to collect blue mat.	3154

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13	09:32:15	45.92635	-129.97923	87.41	2.86	1519.45	1522.3	Found a large patch in a small alcove covering some dead tubeworms and growing directly on the chimney.	3160
9/8/13	09:32:28	45.92635	-129.97923	93.59	2.5	1519.78	1522.3	No visible vent flow anywhere around here.	3161
9/8/13	09:32:51	45.92634	-129.97922	88.94	2.79	1519.59	1522.4	Will be hard to reach this spot due to some large spires and boulders in the way.	3162
9/8/13	09:33:32	45.92634	-129.97922	81.66	2.39	1519.65	1522	HIGHLIGHTS: KiPro hard drive start	3167
9/8/13	09:34:32	45.92638	-129.97922	85.37	2.55	1519.61	1522.2	Another blue patch just around the corner. There is a streak of limpets going through the middle of this patch in a small crack so there must be some warm flow here.	3169
9/8/13	09:34:52	45.92639	-129.97922	84.34	2.6	1519.55	1522.2	Will use the suction sampler here.	3170
9/8/13	09:35:07	45.92640	-129.97923	84.15	2.49	1519.63	1522.1	Waiting for the floc to settle so we can get a better view.	3172
9/8/13	09:35:46	45.92643	-129.97923	84.3	2.5	1519.58	1522.1	Looking at the East side of the chimney; heading 84.	3173
9/8/13	09:36:29	45.92644	-129.97923	83.84	2.53	1519.54	1522.1	**SAMPLE: Microbio Taking J728-Microbio-12** with suction sampler.	3175
9/8/13	09:37:28	45.92644	-129.97922	81.6	2.56	1519.56	1522.1	Suction is slowing; filter is probably clogged now.	3177
9/8/13	09:38:16	45.92643	-129.97921	80.98	2.53	1519.62	1522.2	HIGHLIGHTS: KiPro hard drive stop	3180
9/8/13	09:43:16	45.92639	-129.97902	27.71	5.23	1518.6	1523.8	Looking closely there were several large patches of limpets and small bunches of tubeworms growing in cracks and overhangs on this wall.	3201
9/8/13	09:43:43	45.92638	-129.97904	22.29	4.55	1518.69	1523.2	There must be some diffuse venting coming up that side that wasn't really visible.	3202
9/8/13	09:43:55	45.92638	-129.97907	48.18	4.44	1518.83	1523.3	Now transiting to Diva.	3203
9/8/13	09:44:23	45.92639	-129.97908	81.1	1.15	1520.37	1521.5	Very small patch of anhydrite with a little spire in the middle.	3205
9/8/13	09:44:29	45.92639	-129.97909	82.86	0.8	1520.49	1521.3	HIGHLIGHTS: KiPro hard drive start	3206
9/8/13	09:44:51	45.92638	-129.97908	63.57	0.74	1521.14	1521.9	HIGHLIGHTS: KiPro hard drive stop Lots of iron staining.	3208
9/8/13	09:45:14	45.92638	-129.97909	66.23	0.74	1520.86	1521.6	HIGHLIGHTS: Switch HD_framegrabber input from BrowCam to SciCam But not much else surrounding this vent.	3211
9/8/13	09:45:52	45.92636	-129.97911	66.38	0.74	1520.83	1521.6	HOBO 153 is visible.	3213
9/8/13	09:46:29	45.92634	-129.97911	66.18	0.74	1520.78	1521.5	Taking a temp measurement of the fluid coming out the top of the central spire.	3215
9/8/13	09:46:53	45.92633	-129.97911	65.9	0.74	1520.75	1521.5	Never mind; the spire was friable and has been completely knocked down.	3216
9/8/13	09:47:31	45.92633	-129.97909	66.01	0.74	1520.78	1521.5	Now taking a reading from the hole at the top of the mound that used to be the spire base.	3218
9/8/13	09:47:59	45.92634	-129.97909	65.99	0.74	1520.77	1521.5	Marker 150 also visible here.	3219
9/8/13	09:48:52	45.92638	-129.97908	65.99	0.74	1520.77	1521.5	Tmax= 268.8C	3222
9/8/13	09:49:14	45.92640	-129.97908	66.09	0.74	1520.78	1521.5	Repositioning probe to see if we can get a higher temp reading.	3224
9/8/13	09:51:31	45.92639	-129.97910	65.95	0.74	1520.79	1521.5	Same temp.	3227
9/8/13	09:51:42	45.92639	-129.97910	66.01	0.74	1520.83	1521.6	Will do 2 gastights and one HFS here.	3228
9/8/13	09:52:31	45.92639	-129.97909	66.03	0.74	1520.8	1521.5	Retrieving beast probe.	3230
9/8/13	09:55:30	45.92642	-129.97912	65.89	0.74	1520.77	1521.5	**SAMPLE: HFS START J728-HFS-13** filtered piston 2.	3235

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 09:56:31	45.92640	-129.97911	65.92	0.74	1520.8	1521.5	STOP J728-HFS-13 filtered piston 2. Tmax=271.5 Tavg=271.2 T2=77.8 Vol=201 mL.	3237
9/8/13 09:58:14	45.92639	-129.97906	65.97	0.74	1520.73	1521.5	SAMPLE: GTHFS Removed beast probe from the vent but we will need it for GTHFS so now it is being put back.	3240
9/8/13 09:59:03	45.92642	-129.97903	65.94	0.74	1520.71	1521.5	Position of Diva samples: 129 58.7435W 45 55.5822N.	3242
9/8/13 10:00:06	45.92646	-129.97903	65.92	0.74	1520.71	1521.5	**SAMPLE: Taking J728-GTHFS-14** port purple 10.	3244
9/8/13 10:00:53	45.92646	-129.97903	65.93	0.74	1520.76	1521.5	SAMPLE: GTHFS Label for previous sample.	3245
9/8/13 10:01:32	45.92644	-129.97903	66.03	0.74	1520.76	1521.5	Temp has dropped significantly; now about 200C. May have a clogged nozzle.	3247
9/8/13 10:01:57	45.92643	-129.97902	66.07	0.74	1520.75	1521.5	Took probe out and shook it around to clear the nozzle; then put it back.	3248
9/8/13 10:02:20	45.92642	-129.97902	66.08	0.74	1520.78	1521.5	The flush pump had turned off; it wasn't a clogged nozzle.	3250
9/8/13 10:04:01	45.92641	-129.97905	66.07	0.74	1520.79	1521.5	Back up to temp.	3252
9/8/13 10:05:09	45.92640	-129.97905	65.85	0.74	1520.82	1521.6	**SAMPLE: GTHFS START J728-GTHFS-15** center orange 16.	3255
9/8/13 10:05:33	45.92640	-129.97904	65.86	0.74	1520.8	1521.5	Tmax= 270.7C	3256
9/8/13 10:05:57	45.92639	-129.97904	65.79	0.74	1520.79	1521.5	Done with fluid sampling here.	3257
9/8/13 10:07:47	45.92639	-129.97906	65.84	0.74	1520.84	1521.6	**DEPLOY:** HOBO temp probe Deploying **HOBO 135** at Diva.	3260
9/8/13 10:08:43	45.92640	-129.97906	65.72	0.74	1520.8	1521.5	Placing HOBO as far into the vent orifice as possible.	3262
9/8/13 10:08:56	45.92640	-129.97907	66.14	0.74	1520.82	1521.6	popped back out when the claw let go.	3263
9/8/13 10:09:58	45.92640	-129.97909	66.36	0.74	1520.86	1521.6	**RECOVER:** HOBO temp probe Recovering **HOBO 153** from Diva.	3265
9/8/13 10:10:57	45.92637	-129.97912	65.97	0.74	1520.81	1521.6	Stowing old HOBO in the basket.	3267
9/8/13 10:18:16	45.92638	-129.97907	32.64	1.43	1521.77	1523.2	Going back to deploying HOBO 135.	3280
9/8/13 10:18:42	45.92637	-129.97907	32.71	1.5	1521.62	1523.1	It fell down the side of the mound so we had to retrieve it.	3281
9/8/13 10:19:35	45.92637	-129.97908	93.47	2.13	1520.26	1522.4	The RSN cable should be directly behind us.	3286
9/8/13 10:20:19	45.92638	-129.97907	31.14	0.78	1522.92	1523.7	Not much to see around this vent. There is a small rock a few feet away that has some old tubeworms.	3288
9/8/13 10:20:57	45.92639	-129.97907	30.58	1.21	1522.27	1523.5	Mostly just iron floc and loose brown sediment down the slopes of the vent and on the seafloor.	3289
9/8/13 10:22:46	45.92639	-129.97911	31.51	1.91	1521.06	1523	Navigating back to the top of the vent mound to insert the HOBO.	3293
9/8/13 10:24:48	45.92633	-129.97912	31.04	1.88	1521.08	1523	Got the HOBO probe to stay in the vent. Looks stable enough.	3298
9/8/13 10:25:00	45.92633	-129.97912	31.05	1.88	1521.08	1523	On to El Guapo.	3299
9/8/13 10:26:32	45.92631	-129.97913	302.92	5.08	1518.63	1523.7	Transit is far enough that the ship will have to move a bit. Bow thrusters are still down so this might take a while.	3302
9/8/13 10:26:53	45.92634	-129.97915	302.91	5.18	1517.27	1522.5	Passing Escargot.	3303
9/8/13 10:28:01	45.92641	-129.97923	290.52	5.39	1517.6	1523	Large patch of white mat in cracks is visible just to the right of Escargot heading 300.	3305
9/8/13 10:28:26	45.92644	-129.97927	290.48	5.45	1517.74	1523.2	This may be 9m but there is no marker here.	3307
9/8/13 10:29:30	45.92650	-129.97935	282.07	4.48	1516.94	1521.4	Large vent chimney now visible directly ahead. Can see marker 153 so this is 9M.	3310

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 10:30:24	45.92650	-129.97935	265.1	3.89	1517.21	1521.1	Chimney is covered with limpets; tubeworms; blue mat; etc. Lots of life all over it.	3313
9/8/13 10:30:56	45.92648	-129.97935	284.47	5.25	1517.14	1522.4	There is diffuse venting all over the chimney.	3315
9/8/13 10:31:35	45.92647	-129.97939	305.53	5.1	1517.14	1522.2	In the past the vent fluid at the top has been hot enough to boil so it looks like a flickering flame.	3317
9/8/13 10:32:53	45.92650	-129.97940	316.34	4.21	1517.29	1521.5	Marker visible ahead; near a series of large spires that have little to no life on them.	3319
9/8/13 10:33:23	45.92651	-129.97939	318.58	4.13	1517.33	1521.5	Big orange thing on one of the spires.	3323
9/8/13 10:34:10	45.92654	-129.97940	318	2.91	1517.79	1520.7	Moving toward the marker in a field of boulders and small spires.	3327
9/8/13 10:34:42	45.92654	-129.97941	317.79	2.49	1517.88	1520.4	Marker 169 so this is Hermosa.	3328
9/8/13 10:35:23	45.92652	-129.97942	327.1	5.53	1515.79	1521.3	Some more life here. Bushes of tubeworms and white mat.	3330
9/8/13 10:35:39	45.92651	-129.97943	327.41	6.01	1515.38	1521.4	That big orange thing looks like a huge anemone.	3331
9/8/13 10:36:27	45.92654	-129.97951	264.66	7.98	1510.36	1518.3	Raising up to clear the spires here and move on to El Guapo; which is much higher.	3333
9/8/13 10:36:47	45.92656	-129.97956	225.44	8.44	1510.3	1518.7	Can see a large wall and chimney directly ahead.	3334
9/8/13 10:37:37	45.92655	-129.97966	211.7	10.11	1508.99	1519.1	Entire chimney is covered with carpets of short tubeworms. Currently at 9.4m altitude; will keep going to the top.	3336
9/8/13 10:39:22	45.92655	-129.97974	210.08	14.04	1505.61	1519.7	Limpets everywhere; as well as different bacterial mats and tubeworms. Small patches of blue mat.	3343
9/8/13 10:39:37	45.92655	-129.97974	209.78	14.38	1505.31	1519.7	Going back down to find some diffuse flow.	3344
9/8/13 10:42:05	45.92656	-129.97964	210.78	13.16	1507.1	1520.3	Chimney is very tall and narrow; completely covered with biology.	3349
9/8/13 10:44:01	45.92655	-129.97959	210.73	13.14	1507.13	1520.3	Waiting for medea and the ship to move into a better position.	3351
9/8/13 10:50:26	45.92649	-129.97958	210.84	13.23	1507.05	1520.3	We're waiting for the HFS laptop to come to life and the ship to move into position.	3362
9/8/13 10:50:39	45.92649	-129.97958	210.81	13.15	1507.13	1520.3	Snapping a few images of the side of El Guapo.	3363
9/8/13 10:53:10	45.92654	-129.97952	211.02	12.71	1508.35	1521.1	Zooming in on El Guapo. See tiny beehive chimneys; sulfide (or palm?) worms; limpets; tubeworms. We're about 12m up the chimney.	3368
9/8/13 10:56:40	45.92651	-129.97954	210.84	12.53	1508.62	1521.2	We are completely without bow thruster now. We're waiting for the ship to get in a better position. It's having trouble holding position.	3373
9/8/13 10:58:09	45.92649	-129.97954	211.04	9.95	1511.29	1521.2	Zooming in and out looking at possible other sampling sites at El Guapo.	3376
9/8/13 11:00:28	45.92650	-129.97955	210.81	10.79	1510.41	1521.2	Laptop is back up and running. Dave cycled the power.	3380
9/8/13 11:03:23	45.92655	-129.97955	210.78	10.75	1510.48	1521.2	Poking around with the Jason temp probe.	3384
9/8/13 11:06:22	45.92657	-129.97953	210.84	10.68	1510.43	1521.1	Jason temp got up to 23C there.	3389
9/8/13 11:14:58	45.92651	-129.97954	207.06	7.75	1511.58	1519.3	Our position here is: 129deg 58.7708' W 45deg 55.5940'N. We are 7.5m up the chimney. The position agrees perfectly with the underlay (even the direction we're facing on the chimney)!!	3398
9/8/13 11:16:27	45.92652	-129.97955	206.95	7.76	1511.56	1519.3	Now we are poking around with the HFS temperature probe.	3401
9/8/13 11:18:29	45.92652	-129.97958	206.31	7.71	1511.56	1519.3	The wand is in a hole in the side of the chimney. Diffuse flow here. Poking around again. See a spot nearby with more flow. Trying that.	3404

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9/8/13 11:22:11	45.92652	-129.97955	207.42	7.6	1511.44	1519	Debating what to do.	3409
9/8/13 11:24:19	45.92654	-129.97951	206.32	7.96	1511.45	1519.4	We're probably going to give up on this spot?? Too cool and not enough flow Dave says.	3412
9/8/13 11:25:10	45.92654	-129.97952	211.02	10.35	1510.01	1520.4	Lots of white mat on this structure. Small chimney-like structure that is deceiving. Looking around and up.	3414
9/8/13 11:28:21	45.92651	-129.97948	216.29	7.91	1512.76	1520.7	Nice color in the brow cam. The HD science cam is sort of muted color.	3418
9/8/13 11:28:52	45.92650	-129.97948	236.52	5.6	1512.73	1518.3	Seeing small tubeworms with nice red plumes. Lots of biota on the chimney.	3419
9/8/13 11:29:20	45.92650	-129.97948	242.64	5.66	1512.67	1518.3	Moving around the chimney now. Facing the SW.	3421
9/8/13 11:33:47	45.92652	-129.97946	242.6	4.83	1513.92	1518.8	Temperature is at 14C and climbing. Still poking around for good diffuse flow. We're now facing SW.	3426
9/8/13 11:35:48	45.92651	-129.97946	242.32	4.83	1513.92	1518.8	Temperature is at 23.7C and climbing.	3430
9/8/13 11:37:08	45.92650	-129.97945	242.2	4.8	1513.88	1518.7	**SAMPLE: HFS J728-HFS-16** started sampling filtered bag 20.	3433
9/8/13 11:40:48	45.92649	-129.97942	242.25	4.81	1513.81	1518.6	Volume 626ml and Tmax 23.9C Tavg 23.8C T2 11.3C	3437
9/8/13 11:41:45	45.92649	-129.97942	242.11	4.81	1513.86	1518.7	**SAMPLE: HFS J728-HFS-17** unfiltered bag 21.	3439
9/8/13 11:44:53	45.92650	-129.97943	242.14	4.81	1513.83	1518.6	J2-HFS-17 cont. Stop. Vol=629mL Tmax=24.9 Tavg=23.8 T2-11.8. El Guapo. 5m up the chimney in diffuse flow.	3443
9/8/13 11:46:02	45.92650	-129.97946	242.01	4.9	1513.81	1518.7	**SAMPLE: HFS J728-HFS-18** Unfiltered bag #23. Started at ~1145.	3447
9/8/13 11:47:53	45.92651	-129.97946	241.7	4.9	1513.81	1518.7	J2-HFS-18 cont. 129deg 58.7680'W 45deg 55.5897'N coordinated for samples 16 and on at this diffuse site on El Guapo.	3449
9/8/13 11:48:37	45.92650	-129.97943	242.04	4.83	1513.75	1518.6	J2-HFS-18 cont. Stop. Vol=629mL Tmax=25.7 Tavg=25.2 T2=12.0.	3451
9/8/13 11:51:33	45.92650	-129.97949	242.03	4.84	1513.82	1518.7	SAMPLE: HFS Getting an oxygen reading next.	3455
9/8/13 11:52:45	45.92652	-129.97953	241.87	4.83	1513.82	1518.7	Oxygen: Temp=25.2 O2=0.398 ml/L.	3457
9/8/13 11:54:24	45.92652	-129.97950	241.77	4.9	1513.79	1518.7	**SAMPLE: HFS Start J728-HFS-19** LVB #1.	3461
9/8/13 11:54:58	45.92651	-129.97950	242	4.81	1513.79	1518.6	J2-HFS-19 cont. This sample will take ~20 min. It's a 3 liter bag.	3462
9/8/13 11:58:24	45.92652	-129.97954	241.93	4.84	1513.75	1518.6	Zoomed in on oxidized sulfide area with older dead-looking tubeworms.	3469
9/8/13 11:59:00	45.92652	-129.97954	241.89	4.9	1513.71	1518.6	Now zooming in on a spot to the left with a bit healthier tubeworms. Red plumes but still a bit straggly.	3470
9/8/13 11:59:42	45.92650	-129.97953	241.99	4.89	1513.73	1518.6	Fuzzy tubeworms. Lots of mat on them. Scaleworms and palmworms.	3472
9/8/13 12:00:09	45.92649	-129.97953	241.88	4.9	1513.72	1518.6	Lots of limpets on the chimney and some palmworms in the vicinity.	3474
9/8/13 12:01:17	45.92649	-129.97953	241.85	4.91	1513.71	1518.6	Right around the sampling site we are seeing palmworms; some healthier fat little tubeworms with nice red plumes. Lots of limpets. Wispy mat.	3476
9/8/13 12:01:56	45.92650	-129.97952	241.73	4.9	1513.7	1518.6	Taking a couple HD grabs of the sampling site. Nice flow coming out here.	3479
9/8/13 12:03:27	45.92653	-129.97947	241.77	4.9	1513.67	1518.6	The flow seems to be seeping out of the chimney. Not any single orifice.	3482
9/8/13 12:03:59	45.92654	-129.97946	241.78	4.9	1513.73	1518.6	Taking a few HD frame grabs of a zoomed out view of the sampling site.	3486
9/8/13 12:05:11	45.92656	-129.97945	242.07	4.9	1513.74	1518.6	The chimney is probably about 1.5 meters across here at 5m up. This is a tall; skinny sulfide. El Guapo.	3489

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9/8/13 12:10:12	45.92655	-129.97946	242.08	4.83	1513.64	1518.5	Something just went wafting by. A piece of wispy mat?	3495
9/8/13 12:11:25	45.92654	-129.97947	241.85	4.9	1513.64	1518.5	J728-HFS-19 cont. Finished 121044. Vol=4002 mL. Tmax=26.1 Tavg=24.2. T2=11.9.	3497
9/8/13 12:13:03	45.92652	-129.97947	241.76	4.9	1513.62	1518.5	**SAMPLE: HFS J728-HFS-20** Start 121238. RNA filter #15.	3500
9/8/13 12:14:41	45.92652	-129.97947	242.05	4.89	1513.6	1518.5	J728-HFS-20 cont. Still in same position on the chimney. Same lat/long since sample 16. 45deg 55.5897'N 129deg 58.7680'W. Z=1514. 5m up the chimney at El Guapo.	3502
9/8/13 12:18:39	45.92653	-129.97948	242.02	4.9	1513.66	1518.6	J728-HFS-20 cont. Still sampling. Same spot.	3507
9/8/13 12:28:37	45.92654	-129.97951	242.02	4.83	1513.56	1518.4	J728-HFS-20 cont. End 122800. Vol=3001 mL Tmax=25.9 Tavg=24.2 T2=11.7.	3519
9/8/13 12:29:53	45.92653	-129.97951	242.15	4.89	1513.53	1518.4	**SAMPLE: HFS J728-HFS-21** RNA filter #16. start 122918.	3521
9/8/13 12:31:15	45.92651	-129.97951	241.84	4.9	1513.48	1518.4	J728-HFS-21 cont. This will be the last fluid sample in this position on El Guapo. Will do a suction sample for Oliver here next.	3524
9/8/13 12:36:36	45.92655	-129.97953	242.2	4.06	1513.43	1517.5	J728-HFS-21 cont. Still sampling.	3530
9/8/13 12:42:14	45.92655	-129.97948	241.98	3.5	1513.42	1516.9	J728-HFS-21 cont. Jim is giving up the watch leader seat and Dave is taking over.	3537
9/8/13 12:46:59	45.92653	-129.97953	242.08	4.84	1513.43	1518.3	J728-HFS-21 stop. 124600. Tmax=25.7 Tavg=24.6 Vol=3023mL T2=11.	3542
9/8/13 12:53:48	45.92653	-129.97947	242.22	4.81	1513.31	1518.1	Samples 16 - 21 were all in the same position on the chimney. O2 measurement here: 0.3mL/L. pH voltage = 3.024 (to be converted to pH later).	3551
9/8/13 12:54:05	45.92652	-129.97947	242.22	4.8	1513.35	1518.2	Stowing the HFS wand for now.	3553
9/8/13 12:55:12	45.92651	-129.97947	242.05	4.89	1513.26	1518.2	Lovely vent site we've been sampling. With wispy white mat small tubeworms; palm worms; limpets.....	3555
9/8/13 12:58:37	45.92650	-129.97948	242.47	4.81	1513.23	1518	SAMPLE: Microbio Setting up with syringe for microbio sample.	3559
9/8/13 13:00:13	45.92650	-129.97948	242.43	4.83	1513.24	1518.1	**SAMPLE: Microbio J728-microbio-22**. Big white syringe sample of brownish mat/biology and anything that gets in there for the OSU pharmacology lab.	3563
9/8/13 13:01:14	45.92650	-129.97949	242.44	4.84	1513.23	1518.1	J728-microbio-22 cont. HDs of sample. Got a little bit of material. Looks like white-ish mat???	3567
9/8/13 13:01:36	45.92650	-129.97951	242.55	4.86	1513.24	1518.1	Stowing the white syringe.	3568
9/8/13 13:02:09	45.92649	-129.97953	242.46	4.86	1513.09	1518	The next work will be on the top of El Guapo. Several smokers on the top. We're heading up now.	3570
9/8/13 13:02:25	45.92650	-129.97954	242	6.6	1510.75	1517.4	Heading up to the top.	3571
9/8/13 13:03:41	45.92649	-129.97962	241.77	8.25	1509.25	1517.5	HIGHLIGHTS: KiPro hard drive start El Guapo coming up.	3581
9/8/13 13:07:34	45.92649	-129.97953	241.77	14.03	1503.84	1517.9	We're at the top of El Guapo. Still appears to be boiling (looks like a flame). We're 14 meters off the bottom according to the altitude.	3608
9/8/13 13:08:41	45.92648	-129.97952	247.35	14.05	1503.87	1517.9	Black smoke coming out of the "flaming" spire. There are a few small sites where flow is pouring out.	3610
9/8/13 13:09:47	45.92648	-129.97953	247.89	14.08	1503.78	1517.9	Have the HFS wand in the flaming spigot. Checking the temperature.	3614

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 13:11:32	45.92649	-129.97954	248.18	14.08	1503.73	1517.8	HFS temperature is at 90C now. Pump restarted. Wand moved.	3624
9/8/13 13:11:47	45.92649	-129.97953	248.25	14.04	1503.75	1517.8	Have the wand in the right spot now. The temp is rising quickly.	3625
9/8/13 13:12:45	45.92650	-129.97951	248.7	14.06	1503.72	1517.8	Temperature is still climbing. Should be over 300C. Thinking of repositioning the wand. Poking around a bit more with intake nozzle.	3629
9/8/13 13:13:21	45.92651	-129.97950	248.4	14.06	1503.73	1517.8	HIGHLIGHTS: KiPro hard drive stop El Guapo top.	3632
9/8/13 13:14:53	45.92652	-129.97947	246.69	14.06	1503.72	1517.8	After the wand was retracted the flow seemed to increase.	3639
9/8/13 13:15:09	45.92652	-129.97947	246.86	14.28	1503.49	1517.8	Clearing out the top of the chimney to try to get better flow.	3641
9/8/13 13:16:21	45.92652	-129.97948	246.85	14.19	1503.64	1517.8	More black smoke pouring out now. Pondering what to do.	3646
9/8/13 13:17:33	45.92651	-129.97950	247.36	14.2	1503.58	1517.8	Seems to be more flow now after a bit of minor excavation.	3650
9/8/13 13:17:45	45.92651	-129.97950	247.87	14.21	1503.57	1517.8	Here comes the wand now and checking the temperature.	3651
9/8/13 13:19:13	45.92650	-129.97951	248.01	14.19	1503.55	1517.7	Poking the probe around. Seems to be coming up well. 250C now.	3658
9/8/13 13:19:22	45.92649	-129.97950	247.85	14.18	1503.58	1517.8	Temp is going up.	3659
9/8/13 13:22:51	45.92650	-129.97951	246.81	14.19	1503.53	1517.7	**SAMPLE: HFS J728-HFS-23** filtered piston #4. T=336 now. Start 132220.	3663
9/8/13 13:23:18	45.92650	-129.97951	246.95	14.18	1503.53	1517.7	J728-HFS-23 cont. We're in the direct flow at the top of El Guapo in the "flame".	3665
9/8/13 13:24:17	45.92651	-129.97951	247.44	14.15	1503.53	1517.7	J728-HFS-23 cont. The flush pump is stopping intermittently	3667
9/8/13 13:25:00	45.92650	-129.97952	247.67	14.14	1503.57	1517.7	J728-HFS-23 cont. stop Tmax=338.1 Tavg=332 Vol=455mL T2=80.	3668
9/8/13 13:25:08	45.92650	-129.97952	247.85	14.15	1503.55	1517.7	Waiting for the temp to come back up again.	3670
9/8/13 13:27:24	45.92648	-129.97951	247.92	14.19	1503.53	1517.7	**SAMPLE: HFS J728-HFS-24** unfiltered piston #5. Start 132655. Can't get the flush pump to keep going so the temp will be lower than the last one.	3673
9/8/13 13:30:00	45.92650	-129.97950	247.11	14.15	1503.49	1517.6	J728-HFS-24 cont. Stop 132855. Tmax=339.2 Tavg=326 Vol=451 mL T2~100. Good samples even though the pump is not very happy right now.	3679
9/8/13 13:30:55	45.92650	-129.97950	247.34	14.15	1503.52	1517.7	The actual Tmax is probably 346. Will do a Jason temperature measurement next.	3681
9/8/13 13:31:55	45.92650	-129.97951	247.13	14.18	1503.51	1517.7	Have the Jason temp probe in there now.	3684
9/8/13 13:33:31	45.92650	-129.97951	247.31	14.18	1503.52	1517.7	Jason temperature probe reading 340 and rising.	3687
9/8/13 13:34:40	45.92650	-129.97950	246.82	14.18	1503.52	1517.7	Jason temp reading is 342.0.	3689
9/8/13 13:34:49	45.92650	-129.97950	246.92	14.16	1503.55	1517.7	Next will take a gastight bottle here.	3690
9/8/13 13:37:34	45.92649	-129.97951	248.27	14.16	1503.51	1517.7	HIGHLIGHTS: KiPro hard drive start J728-GTB-25 blue-12. Preparing to fire in the same orifice as the HFS samples. Looks good. Snapping HD of sample.	3697
9/8/13 13:38:07	45.92649	-129.97951	247.47	14.16	1503.62	1517.8	**SAMPLE: GTB J728-GTB-25** blue-12. Firing 133750.	3699
9/8/13 13:38:16	45.92648	-129.97951	247.52	14.13	1503.63	1517.8	HIGHLIGHTS: KiPro hard drive stop Gastight.	3700
9/8/13 13:39:19	45.92648	-129.97951	248.44	14.15	1503.55	1517.7	Placing the blue gastight back on the vehicle.	3702
9/8/13 13:41:31	45.92649	-129.97951	248.55	14.18	1503.46	1517.6	The RAM on the blue/orange gastight is extended too far so will have to put it back and not use it.	3706
9/8/13 13:42:33	45.92651	-129.97951	247.34	14.33	1503.26	1517.6	Will only do one gastight here. Next will grab the major sampler. In the stbd swing arm.	3708

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9/8/13	13:45:09	45.92653	-129.97950	247.34	14.29	1503.26	1517.6	**SAMPLE: Major J728-major-26** White sampler. 134445 firing. In the flow at top of El Guapo.	3714
9/8/13	13:45:30	45.92652	-129.97950	248.62	14.28	1503.28	1517.6	HIGHLIGHTS: KiPro hard drive start Started highlights a minute ago for the major sample.	3715
9/8/13	13:46:08	45.92652	-129.97950	247.5	14.29	1503.28	1517.6	J728-major-26. Stopped.	3717
9/8/13	13:46:11	45.92652	-129.97950	247.57	14.28	1503.3	1517.6	HIGHLIGHTS: KiPro hard drive stop	3718
9/8/13	13:47:08	45.92652	-129.97950	248.08	14.3	1503.32	1517.6	Will take another major sample here.	3720
9/8/13	13:47:58	45.92651	-129.97950	248.41	14.25	1503.38	1517.6	Retrieving the second major and setting up to sample now.	3721
9/8/13	13:49:44	45.92652	-129.97950	247.63	14.29	1503.34	1517.6	**SAMPLE: Major J729-major-27** from the top of El Guapo just like samples 23 thru 27. Yellow major started at 1349.	3725
9/8/13	13:50:35	45.92651	-129.97949	248.78	14.3	1503.34	1517.6	J729-major-27 yellow major stop 135015.	3727
9/8/13	13:51:25	45.92651	-129.97949	248.18	14.36	1503.28	1517.6	Stowing the major.	3729
9/8/13	13:51:46	45.92651	-129.97949	248.02	14.31	1503.23	1517.5	Dave realized he has one more HFS sample to take up here.	3730
9/8/13	13:53:16	45.92650	-129.97949	248.78	14.23	1503.32	1517.6	Dave thinks the pump is a little happier now that it has cooled down.	3734
9/8/13	13:53:34	45.92650	-129.97948	247.58	14.19	1503.32	1517.5	Placing the wand in the flow at the top of El Guapo (again).	3735
9/8/13	13:55:21	45.92651	-129.97947	248.25	14.21	1503.32	1517.5	Setting up for sample J728-HFS-28. The pump stopped.	3738
9/8/13	13:58:00	45.92651	-129.97952	247.95	14.2	1503.3	1517.5	**SAMPLE: HFS J728-HFS-28** start 135727. Unfiltered bag #17.	3741
9/8/13	13:58:47	45.92651	-129.97955	247.97	14.2	1503.28	1517.5	J728-HFS-28 cont. HD framegrab of sample.	3746
9/8/13	14:00:04	45.92651	-129.97956	248.57	14.23	1503.26	1517.5	J728-HFS-28 cont. 135915 stop. Tmax=334.8 Tavg=307 Vol=400 mL T2=75.	3749
9/8/13	14:00:55	45.92651	-129.97955	248.7	14.23	1503.23	1517.5	Stowing the wand.	3750
9/8/13	14:02:46	45.92653	-129.97951	247.95	14.2	1503.25	1517.5	Stowing the wand.	3753
9/8/13	14:04:14	45.92654	-129.97950	235.54	13.41	1503.69	1517.1	We will proceed down the chimney to the southern base and look for a smoker vent down there to sample.	3758
9/8/13	14:04:17	45.92654	-129.97950	232.12	13.06	1503.99	1517.1	Going down	3759
9/8/13	14:04:32	45.92655	-129.97950	233.99	10.68	1506.37	1517.1	HIGHLIGHTS: KiPro hard drive start	3762
9/8/13	14:06:22	45.92656	-129.97949	238.44	1.93	1515.55	1517.5	The previous samples were facing SW.	3776
9/8/13	14:06:56	45.92654	-129.97948	218.99	1.45	1516.2	1517.7	We're at the base now.	3779
9/8/13	14:07:31	45.92654	-129.97946	186.87	0.96	1516.31	1517.3	We're going to sample a separate structure near El Guapo.	3781
9/8/13	14:08:02	45.92653	-129.97945	186.45	1.13	1516.5	1517.6	See a marker in the distance. What is it?	3783
9/8/13	14:08:32	45.92652	-129.97945	182.18	0.74	1516.63	1517.4	We are seeing Marker169 at Hermosa.	3787
9/8/13	14:09:32	45.92652	-129.97947	182.05	0.74	1516.61	1517.4	The nav looks pretty good. We're about ~5m west of the marker on the navigation.	3789
9/8/13	14:10:23	45.92654	-129.97949	221.24	1.54	1515.96	1517.5	HIGHLIGHTS: KiPro hard drive stop Highlights of the descent down El Guapo and a tour of Hermosa Mkr 169.	3794
9/8/13	14:11:02	45.92656	-129.97952	225.3	3.24	1515.32	1518.6	Heading W/SW toward the base of El Guapo again.	3796
9/8/13	14:11:23	45.92657	-129.97952	206.35	4.8	1515.14	1519.9	We're at the base of El Guapo again.	3799
9/8/13	14:11:38	45.92657	-129.97953	207.22	4.09	1515.28	1519.4	Driving around trying to find Dave's sampling site.	3800
9/8/13	14:12:53	45.92657	-129.97953	192.91	5.25	1510.94	1516.2	Dave is looking for that smoker.	3804

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 14:13:09	45.92657	-129.97953	166.02	3.74	1510.76	1514.5	HIGHLIGHTS: KiPro hard drive start El Guapo near the base (7m up)	3806
9/8/13 14:14:32	45.92657	-129.97953	166.2	7.28	1506.19	1513.5	Moving up the chimney again. Facing due south now.	3813
9/8/13 14:14:41	45.92657	-129.97953	166.34	7.05	1506.44	1513.5	Little tiny beehive here.	3814
9/8/13 14:15:16	45.92657	-129.97951	151.22	7.23	1505.85	1513.1	Dave spots a possible sampling site. Small; skinny beehive.	3816
9/8/13 14:16:01	45.92657	-129.97951	151.51	7.5	1506.09	1513.6	HIGHLIGHTS: KiPro hard drive stop	3817
9/8/13 14:17:01	45.92656	-129.97951	151.4	8.03	1506.15	1514.2	Zooming in on this are of little skinny beehives to find a fluid sampling site.	3821
9/8/13 14:18:29	45.92656	-129.97953	146.15	8.91	1506.73	1515.6	Now we're on the NW (?) side of the chimney - according to the gyro.	3826
9/8/13 14:18:40	45.92656	-129.97953	146.1	8.91	1506.7	1515.6	Dave is taking the temperature here.	3827
9/8/13 14:20:19	45.92655	-129.97954	145.68	8.89	1506.69	1515.6	Here in an area of palmworms; limpets; white bacterial mat. The occasional scaleworm.	3833
9/8/13 14:21:35	45.92653	-129.97953	145.77	8.88	1506.73	1515.6	The temp reading is 9deg.	3835
9/8/13 14:22:16	45.92653	-129.97952	145.58	8.9	1506.65	1515.6	Going over to the left for a look at the tiny black beehive.	3840
9/8/13 14:23:00	45.92654	-129.97952	145.79	8.89	1506.65	1515.5	Dave is back to the right orifice - doing a little excavating.	3841
9/8/13 14:23:13	45.92654	-129.97951	145.77	8.88	1506.68	1515.6	The temperature is coming up. 38C now.	3844
9/8/13 14:25:17	45.92655	-129.97951	145.85	8.89	1506.63	1515.5	129 58.7721 45 56.5921.	3847
9/8/13 14:26:08	45.92653	-129.97952	146.09	8.88	1506.65	1515.5	**SAMPLE: HFS J728-HFS-29** filtered piston #6 Start 1425. Z=1507. We're 9 meters up the chimney facing SE.	3849
9/8/13 14:27:19	45.92652	-129.97952	146.13	8.88	1506.64	1515.5	J728-HFS-26 cont. The navigation looks pretty great. We're at a new site on El Guapo. More diffuse flow here with tiny spigots of more intense flow.	3851
9/8/13 14:28:13	45.92653	-129.97952	146.21	8.86	1506.67	1515.5	J728-HFS-29 cont. Biota include palm worms; limpets; white bacterial mat.	3853
9/8/13 14:29:14	45.92654	-129.97952	146.39	8.89	1506.64	1515.5	J728-HFS-29 cont. CORRECTION to entry at 142719. Should be sample 29. Stop. Tmax=63..3 Tavg=58 Vol=600mL. T2=22.	3855
9/8/13 14:29:59	45.92655	-129.97952	146.03	8.88	1506.65	1515.5	**SAMPLE: HFS J728-HFS-30** unfiltered piston #7. Start.	3856
9/8/13 14:31:24	45.92655	-129.97949	145.85	8.9	1506.69	1515.6	J728-HFS-30 cont. This site is at 1507m 9 meters up. Temp is in between the top measurement and the diffuse site sampled earlier.	3859
9/8/13 14:34:44	45.92656	-129.97937	146.48	8.89	1506.59	1515.5	J728-HFS-30 cont. Stop 1433. Tmax=56.1 Tavg=54.1 Vol=600mL. T2=22.	3865
9/8/13 14:37:06	45.92654	-129.97939	145.77	8.91	1506.59	1515.5	Oxygen reading here 9 m up the chimney: 0.293 mL/L. pH voltage=2.809. Samples 29 and 30 at this spot on the chimney. 45deg 55.5921 129deg 58.7721.	3869
9/8/13 14:37:18	45.92654	-129.97939	145.76	8.91	1506.6	1515.5	Stowing the wand then will move on to Castle.	3870
9/8/13 14:37:51	45.92653	-129.97942	148.5	9.36	1506.19	1515.6	Taking a few HDs at the 3rd sampling site on El Guapo.	3873
9/8/13 14:38:06	45.92653	-129.97942	148.28	9.33	1506.29	1515.6	Will have to move the ship to sample at Castle.	3875
9/8/13 14:39:41	45.92652	-129.97944	234.83	5.41	1507.98	1513.4	We're now 8 m off the bottom not seeing much. Waiting for the ship to move.	3877
9/8/13 14:40:46	45.92650	-129.97944	246.29	8.38	1507.02	1515.4	Top Gun in front of us.	3880
9/8/13 14:41:59	45.92650	-129.97938	246.92	8.46	1506.93	1515.4	Taking a few HD frame grabs of what we think is Top Gun. Not active.	3886

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9/8/13 14:43:51	45.92648	-129.97951	246.87	8.5	1506.9	1515.4	Sitting here in one place while the ship re-positions.	3890
9/8/13 14:45:01	45.92648	-129.97963	247.13	8.46	1506.93	1515.4	Jason watch change. Video watch change.	3892
9/8/13 14:47:46	45.92644	-129.97960	242.29	8.8	1506.89	1515.7	We're moving the ROV now. Matt is at the helm.	3896
9/8/13 14:49:25	45.92624	-129.97992	215.07	1.98	1509.56	1511.5	Castle is up ahead.	3900
9/8/13 14:49:44	45.92622	-129.97994	213.95	3.91	1509.2	1513.1	This is Castle.	3904
9/8/13 14:51:06	45.92617	-129.97996	289.24	10.21	1507.18	1517.4	HIGHLIGHTS: KiPro hard drive start We see the hobo.	3910
9/8/13 14:51:20	45.92617	-129.97995	288.35	10.21	1507.14	1517.4	Taking some highlights here of the top of Castle.	3911
9/8/13 14:51:47	45.92618	-129.97995	288.5	10.19	1507.18	1517.4	Castle has a lot of white mat on the side with the little anhydrite below. That's the source of the heat here.	3913
9/8/13 14:52:04	45.92618	-129.97994	288.41	10.24	1507.14	1517.4	Not any venting at the top. Just near the base on the flange with the anhydrite.	3915
9/8/13 14:53:09	45.92621	-129.97992	288.34	10.15	1507.16	1517.3	HIGHLIGHTS: KiPro hard drive stop	3919
9/8/13 14:53:29	45.92622	-129.97991	288.36	10.23	1507.07	1517.3	Nice images in the brow cam.	3920
9/8/13 14:54:29	45.92623	-129.98002	72.21	5.6	1510.59	1516.2	The navigation is putting us ~10 meters to the east of Castle. We're actually on the west side of the structure looking due east.	3922
9/8/13 14:56:27	45.92615	-129.98006	40.81	2.71	1514.18	1516.9	We're waiting on the ship.	3925
9/8/13 14:59:33	45.92615	-129.98006	40.75	2.51	1514.92	1517.4	**RECOVERED: HOBO 102** Grabbing HOBO at base of Castle. Looks like it was sitting in warm water but had fallen out of the vent.	3929
9/8/13 15:01:25	45.92616	-129.98009	41	2.43	1514.8	1517.2	Stowing HOBO.	3933
9/8/13 15:03:53	45.92616	-129.98008	41.49	2.14	1515.37	1517.5	HIGHLIGHTS: KiPro hard drive start HD highlights on at 15:02.	3936
9/8/13 15:04:24	45.92615	-129.98011	41.65	2.16	1515.34	1517.5	Temp probe seeing as high at 280 C.	3938
9/8/13 15:07:42	45.92617	-129.98009	40.75	2.13	1515.34	1517.5	Still taking temperatures of different areas before sampling.	3942
9/8/13 15:07:55	45.92617	-129.98009	40.78	2.13	1515.34	1517.5	Temp up to 210 C.	3943
9/8/13 15:09:14	45.92616	-129.98010	41.14	2.14	1515.35	1517.5	Knocked over anhydrite chimney and that opened up another vent. Temp up to 240 C.	3946
9/8/13 15:10:18	45.92616	-129.98011	42.89	2.48	1514.9	1517.4	High temp of 273.6. Stowing temp probe.	3948
9/8/13 15:10:32	45.92616	-129.98011	40.32	2.5	1514.9	1517.4	HIGHLIGHTS: KiPro hard drive stop HD highlights off.	3949
9/8/13 15:13:11	45.92616	-129.98007	24.95	3	1514.62	1517.6	Preparing for sampling at Castle.	3957
9/8/13 15:15:21	45.92616	-129.98004	25.96	2.36	1515.14	1517.5	Getting ready to sample at the area where the anhydrite chimney was just knocked over.	3960
9/8/13 15:16:43	45.92617	-129.98002	25.49	2.36	1515.13	1517.5	Pilot is excavating the area a bit more with the port arm-sampler is in the stbd arm.	3962
9/8/13 15:17:04	45.92618	-129.98002	25.67	2.33	1515.17	1517.5	Orifice looks more distinct after.	3964
9/8/13 15:17:13	45.92618	-129.98002	25.83	2.36	1515.14	1517.5	Wand in the orifice.	3965
9/8/13 15:22:10	45.92619	-129.98006	26.36	2.33	1515.17	1517.5	**SAMPLE: HFS J728-HFS-31** Castle Vent high-temperature sample in orifice where anhydrite chimney was knocked over and excavated. Temp 265.8. Starting sample. (Fish laying on chimney). Unfiltered Piston #3.	3977
9/8/13 15:23:03	45.92618	-129.98006	26.04	2.33	1515.18	1517.5	SAMPLE: HFS Pump stopped during sample but is restarted.	3979
9/8/13 15:23:31	45.92618	-129.98007	25.95	2.33	1515.17	1517.5	SAMPLE: HFS Sample stopped.	3980

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9/8/13	15:25:10	45.92618	-129.98010	24.63	2.23	1515.28	1517.5	SAMPLE: HFS Tmax= 271.6 Tavg=266 vol=253 T2=93 J728-HFS-31 Castle Vent at anhydrite flow. Stopped at 15:23.	3983
9/8/13	15:25:37	45.92619	-129.98011	24.62	2.23	1515.27	1517.5	Preparing for GTB sample with last remaining GT for this dive.	3984
9/8/13	15:26:55	45.92618	-129.98013	25.31	3	1514.62	1517.6	Retrieving white #17 GTB from the basket.	3986
9/8/13	15:28:21	45.92618	-129.98012	25	3.51	1514	1517.5	Highlights had been turned off for last sample.	3989
9/8/13	15:29:09	45.92618	-129.98013	28.44	2.36	1515.07	1517.4	Orifice is very distinct as GTB is being positioned for sampling.	3991
9/8/13	15:30:03	45.92619	-129.98015	27.84	2.36	1515.15	1517.5	HIGHLIGHTS: KiPro hard drive start	3995
9/8/13	15:31:21	45.92619	-129.98013	27.8	2.38	1515.25	1517.6	**SAMPLE: GTB Firing J728-GTB-32** at Castle. Ram extended.	3999
9/8/13	15:32:22	45.92619	-129.98012	25.98	3.16	1514.45	1517.6	SAMPLE: GTB J728-GTB-32 directly in the orifice where the previous 271deg sample was taken (#31).	4001
9/8/13	15:32:26	45.92620	-129.98012	25.97	3.09	1514.54	1517.6	HIGHLIGHTS: KiPro hard drive stop	4002
9/8/13	15:32:39	45.92620	-129.98012	25.92	3.15	1514.47	1517.6	Stowing the HFS wand.	4003
9/8/13	15:34:40	45.92620	-129.98012	25.99	3.1	1514.51	1517.6	Retrieving HOBO 103 from the basket.	4006
9/8/13	15:35:57	45.92621	-129.98009	21.01	2.48	1515.3	1517.8	HIGHLIGHTS: KiPro hard drive start Placing	4008
9/8/13	15:36:36	45.92622	-129.98005	21	2.45	1515.3	1517.8	Placing tip of HOBO in the anhydrite orifice that the last 2 samples were taken in.	4011
9/8/13	15:37:07	45.92623	-129.98002	20.88	2.44	1515.3	1517.7	Tip is not going very far into the orifice.	4013
9/8/13	15:37:57	45.92624	-129.97996	21.33	2.55	1515.21	1517.8	Moved HOBO to port arm.	4015
9/8/13	15:38:39	45.92624	-129.97995	21.65	2.53	1515.17	1517.7	Trying to use STBD arm to push down the probe.	4018
9/8/13	15:40:39	45.92617	-129.98002	21.74	2.53	1515.18	1517.7	Trying to use manipulators to secure the tip in the orifice.	4023
9/8/13	15:41:32	45.92617	-129.98002	22.51	2.43	1515.25	1517.7	**DEPLOY:** HOBO temp probe **HOBO 103** end bent at tip so placed in hole while laying against the chimney-looks secure. At Castle.	4026
9/8/13	15:42:30	45.92618	-129.98002	22.87	2.4	1515.27	1517.7	HIGHLIGHTS: KiPro hard drive stop Turned off a minute ago.	4030
9/8/13	15:43:09	45.92619	-129.98004	23.64	2.48	1515.21	1517.7	Done at Castle site and will be exploring to the SE.	4032
9/8/13	15:44:05	45.92619	-129.98007	55.47	3.25	1514.05	1517.3	Heading for deployment of HOBO was 21deg and VV # was 4026.	4036
9/8/13	15:45:23	45.92617	-129.98007	39.63	3.05	1513.97	1517	Taking some photos with Scorpio of the HOBO deployment.	4041
9/8/13	15:48:09	45.92617	-129.98011	38.9	3.08	1513.93	1517	Position with cursor for the samples is 45deg 55.5708'N 129deg 58.8043'W for samples J728-**-31 and 32.	4046
9/8/13	15:51:57	45.92616	-129.98017	38.71	2.98	1513.96	1516.9	We will be heading for the benchmark to reposition it.	4051
9/8/13	15:53:05	45.92616	-129.98021	38.69	3.04	1513.98	1517	This is benchmark AX-310 at International District which was deployed yesterday from the ship.	4054
9/8/13	15:57:01	45.92620	-129.98020	99.69	4.33	1512.81	1517.1	Dropping a weight away from Castle.	4058
9/8/13	15:58:16	45.92612	-129.98014	145.43	3.43	1512.86	1516.3	Large pillows with sediment as we begin transit to drop location.	4061
9/8/13	15:58:47	45.92597	-129.98004	141.75	3.51	1513.81	1517.3	Heavy sediment over pillow flows.	4062
9/8/13	15:59:52	45.92596	-129.97990	135.4	2.25	1513.66	1515.9	Homer #5 is on the benchmark we are retrieving.	4064
9/8/13	16:05:59	45.92562	-129.97949	135.69	2.89	1516.72	1519.6	Nice little ridge with collapse then back into some sheet flow with sediment.	4073
9/8/13	16:07:04	45.92554	-129.97937	135.6	2.86	1517.47	1520.3	Flat flows with good covering of sediment-heavy at times. Small channel.	4077
9/8/13	16:09:11	45.92516	-129.97886	136.49	2.03	1519.64	1521.7	Flow a bit more broken up.	4082

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 16:10:02	45.92508	-129.97876	136.39	1.61	1521.54	1523.2	Just 60m away from target.	4083
9/8/13 16:11:32	45.92493	-129.97854	136.04	2.29	1522.37	1524.7	Jason had incorrect range so actually 80m away.	4087
9/8/13 16:11:54	45.92489	-129.97849	136.11	2.24	1523.44	1525.7	Just came over small ridge into flatter sheet flows with much more sediment.	4088
9/8/13 16:12:45	45.92483	-129.97838	126.78	1.96	1525.87	1527.8	Beautiful striations in the flow.	4091
9/8/13 16:13:09	45.92480	-129.97832	128.15	1.78	1525.52	1527.3	Moving back into more jumbled flow.	4094
9/8/13 16:14:30	45.92468	-129.97808	126.8	1.98	1525.04	1527	Should be about 30m away now.	4097
9/8/13 16:14:47	45.92465	-129.97803	127.19	2.15	1525.04	1527.2	Coming over some flow ridges.	4099
9/8/13 16:15:36	45.92459	-129.97792	112.88	1.79	1524.34	1526.1	Back into flat sheet flows with sediment.	4101
9/8/13 16:16:02	45.92456	-129.97784	113.94	1.95	1525.38	1527.3	Problem with homer.	4102
9/8/13 16:16:43	45.92457	-129.97785	113.19	2.04	1525.21	1527.3	We are at the drop site.	4104
9/8/13 16:18:09	45.92460	-129.97784	113.2	6.93	1520.11	1527	Coming off the bottom slightly to see if sonar can pick up the glass balls on the benchmark.	4107
9/8/13 16:23:57	45.92470	-129.97777	178.84	7.11	1519.27	1526.4	Pivoting Jason every 90deg and scanning with sonar for the glass floats.	4113
9/8/13 16:25:01	45.92471	-129.97778	179.62	7.11	1519.24	1526.4	Scanning at 100m range with the sonar. Have looked all around and not seeing anything with sonar.	4115
9/8/13 16:26:26	45.92472	-129.97779	179.51	7.13	1519.16	1526.3	Jason is 6m off the bottom and the terrain is relatively flat.	4118
9/8/13 16:28:15	45.92472	-129.97778	267.18	5.91	1520.16	1526.1	Changed range on sonar to 50m and turned from south to west for scanning.	4121
9/8/13 16:29:04	45.92471	-129.97778	267.08	6.11	1519.94	1526.1	Good target to the west!	4123
9/8/13 16:30:05	45.92470	-129.97779	316.29	6.1	1520.25	1526.4	Target is at 313deg heading from Jason 14m away.	4125
9/8/13 16:30:47	45.92478	-129.97789	316.43	6.4	1519.28	1525.7	Closing in.	4126
9/8/13 16:31:25	45.92482	-129.97791	318.15	3.66	1521.49	1525.2	We are here but do not see it.	4129
9/8/13 16:35:06	45.92485	-129.97792	98.39	3.66	1521.99	1525.7	Engineers working on getting the Homer information-might only not be displaying on overlay and feed may exist in data (they are working on it).	4134
9/8/13 16:36:56	45.92484	-129.97794	89.58	3.29	1522.14	1525.4	Moving ship to NW.	4136
9/8/13 16:39:34	45.92484	-129.97796	180.83	3.7	1522.44	1526.1	Adjusting the range on sonar to 120m.	4140
9/8/13 16:46:18	45.92466	-129.97794	178.85	3.69	1522.81	1526.5	Moved Jason a bit south to try another location for ranging.	4148
9/8/13 16:47:38	45.92446	-129.97793	179.5	3.46	1522.83	1526.3	Driving over small ridges with sessile biology (older flow).	4150
9/8/13 16:47:56	45.92441	-129.97793	178.87	3.4	1521.81	1525.2	Moved 40m south so far.	4151
9/8/13 16:49:23	45.92445	-129.97822	269.77	3.41	1521.44	1524.9	Jason moving in a search pattern now heading west.	4154
9/8/13 16:53:23	45.92452	-129.97837	91.08	4.2	1520.08	1524.3	Looking east from this western location.	4159
9/8/13 16:56:13	45.92463	-129.97826	118.83	4.2	1519.92	1524.1	Jason pivoting clockwise to look east.	4163
9/8/13 16:59:28	45.92455	-129.97811	120.26	6.75	1520.01	1526.8	Driving east of the target drop position for the benchmark to simulate the drift seen in the RAS deployment versus its actual seafloor pickup position.	4167
9/8/13 17:01:42	45.92453	-129.97804	120.19	7.15	1520.93	1528.1	Need to move ship to the east to get to the new search location.	4170
9/8/13 17:06:28	45.92453	-129.97805	120.65	17.45	1509.76	1527.2	Homer software only expects Homer numbers between 10-99. This is Homer 5 and we also have a Homer 2 to use. Need to figure it out.	4176

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 17:08:51	45.92437	-129.97761	47.21	5.58	1521.19	1526.8	Found Homer in software as #25! It is 35m away.	4179
9/8/13 17:09:41	45.92436	-129.97758	48.83	5.95	1520.84	1526.8	This Homer really is #25 as someone wrote down the wrong number.	4181
9/8/13 17:10:19	45.92443	-129.97738	61.36	5.96	1520.52	1526.5	Homer software only transmits when it sees something.	4183
9/8/13 17:10:23	45.92444	-129.97735	65.54	6.13	1520.5	1526.6	See it!	4184
9/8/13 17:10:48	45.92448	-129.97726	61.39	3.26	1521.11	1524.4	Homer turned off. Very nice flag design.	4185
9/8/13 17:11:44	45.92450	-129.97724	58.83	5.95	1521.28	1527.2	Benchmark looks good. AX-310 to be moved east of the International District vent field.	4187
9/8/13 17:12:36	45.92450	-129.97726	58.18	5.86	1521.49	1527.4	Looks like the benchmark is about 35m to the east of the desired drop position.	4189
9/8/13 17:14:35	45.92448	-129.97733	61.73	5.68	1521.16	1526.8	Going to be moving this to the north. Currently ship is pulling so need to move the ship to the east.	4194
9/8/13 17:15:26	45.92447	-129.97732	62.52	5.44	1521.01	1526.5	Location of AX-310 at drop site is 45deg 55.4719'N 129deg 58.6316'W.	4196
9/8/13 17:17:46	45.92448	-129.97758	103	9.61	1517.37	1527	Waiting for the ship to move into position before going down and getting the benchmark.	4199
9/8/13 17:22:08	45.92457	-129.97783	99.79	9.64	1518.51	1528.2	Still waiting for the ship to move.	4205
9/8/13 17:31:30	45.92458	-129.97802	99.9	5.1	1522.3	1527.4	We will leave the bottom at 1800 (1100 local) to get on the surface at noon (local).	4215
9/8/13 17:33:23	45.92458	-129.97789	99.85	4.43	1523.03	1527.5	Probably not enough time to move this benchmark to its final location as we are still waiting for the ship to move.	4218
9/8/13 17:35:37	45.92459	-129.97773	99.68	4.93	1523.13	1528.1	Ship is having more problems moving since it isn't using the bow thruster.	4221
9/8/13 17:35:53	45.92459	-129.97771	99.73	4.89	1523.19	1528.1	May have lost 6 hours of bottom time due to bow thruster on last dive.	4222
9/8/13 17:36:31	45.92458	-129.97763	100.13	4.43	1523.36	1527.8	Jason is over jumbled sheet flow with sediment as we move slowly east toward the benchmark.	4224
9/8/13 17:38:12	45.92457	-129.97741	99.7	4.28	1522.26	1526.5	Can see benchmark ahead.	4227
9/8/13 17:38:23	45.92457	-129.97738	101.33	4	1522.44	1526.4	Waiting for Medea to catch up.	4228
9/8/13 17:39:55	45.92452	-129.97725	83.53	1.55	1526.65	1528.2	Going to pull the pin to release the weights off the benchmark.	4232
9/8/13 17:41:32	45.92453	-129.97724	217.01	0.74	1528.38	1529.1	HIGHLIGHTS: KiPro hard drive start	4238
9/8/13 17:42:38	45.92453	-129.97725	217.01	0.9	1528.27	1529.2	Pulled the pin.	4245
9/8/13 17:43:20	45.92453	-129.97725	217.01	0.74	1528.35	1529.1	Put pin pull in the basket.	4247
9/8/13 17:44:38	45.92452	-129.97724	217.05	0.79	1528.37	1529.2	Better to grab the instrument from the top of the glass balls and it should weigh 50lbs.	4249
9/8/13 17:45:08	45.92452	-129.97723	218.02	4.1	1524.59	1528.7	Need to move ship to north.	4251
9/8/13 17:45:27	45.92452	-129.97724	218.21	3.45	1525.29	1528.7	Going to grab the chain just below the glass balls.	4252
9/8/13 17:47:15	45.92452	-129.97724	218.19	4.98	1523.75	1528.7	Grabbed the chain and lifting the benchmark off the seafloor.	4259
9/8/13 17:47:18	45.92452	-129.97723	218.29	5.69	1523.18	1528.9	HIGHLIGHTS: KiPro hard drive stop	4260
9/8/13 17:47:44	45.92453	-129.97723	221.04	11.31	1517.38	1528.7	Target for placement is 132m away at 338deg.	4261
9/8/13 17:47:56	45.92453	-129.97722	218.31	10.4	1518.2	1528.6	AX-310 on its way to its final destination.	4262

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-728 Dive Comments	Virtual Van #
9/8/13 17:49:58	45.92465	-129.97729	335.55	8.66	1519.07	1527.7	Ship is moving north and can barely see seafloor in brow cam (sheet flows).	4265
9/8/13 17:54:45	45.92518	-129.97737	336.58	6.96	1520.29	1527.3	Have 65m to go to deployment site.	4271
9/8/13 17:58:08	45.92546	-129.97758	314.88	6.34	1520.71	1527.1	30 more meters to go!	4276
9/8/13 17:59:39	45.92555	-129.97763	314.86	4.25	1523.14	1527.4	Just 20m away.	4278
9/8/13 18:00:40	45.92558	-129.97765	315.31	3.66	1523.64	1527.3	Going to set it down here as the ship is moving further to the west (not good) and we are only 16m away from the target. Will move it later.	4280
9/8/13 18:01:36	45.92561	-129.97766	315.42	0.88	1526.36	1527.2	Setting it down on the seafloor.	4283
9/8/13 18:03:41	45.92557	-129.97762	16.82	4.89	1522.68	1527.6	JASON: Jason off bottom	4288
9/8/13 18:04:27	45.92547	-129.97778	151.97		1514.11		Position for benchmark is 45deg 55.5377'N 129deg 58.6632'W where we will return later to move it to its final position.	4290
9/8/13 18:51:53	45.92552	-129.97783	162.46		101.55		Jason stopped at 100m.	4292
9/8/13 18:57:39	45.92553	-129.97789	184.18		95.24		Medea is almost at the surface.	4293
9/8/13 19:03:22	45.92552	-129.97790	187.09		0.63		Jason is at the surface.	4294
9/8/13 19:05:07	45.92551	-129.97788	188.73		0.14		Medea on deck.	4295
9/8/13 19:11:20	45.92558	-129.97783	201.35		-0.32		JASON: Jason out of water	4296
9/8/13 19:13:18	45.92562	-129.97780	53.87		-0.12		JASON: Jason on deck	4297

6.6.4 J2-729 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 03:00:26	45.93030	-130.01104	183.34	167	0.75	167.75	Jason in water J2-729.	4308
9/9/13 03:03:38	45.93034	-130.01101	174.4	166.54	1.92	168.46	Medea in water	4310
9/9/13 04:07:57	45.93215	-130.01119	357.7	4.94	1538.84	1543.8	Jason on bottom	4329
9/9/13 04:08:54	45.93223	-130.01109	355.72	11.39	1532.94	1544.3	Target is about 30m away on the sonar.	4331
9/9/13 04:09:27	45.93223	-130.01107	357.94	3.85	1540.32	1544.2	Coming back down on the bottom into sedimented pillows.	4333
9/9/13 04:09:47	45.93228	-130.01107	359.61	3.61	1540.54	1544.2	Looks like older area.	4334
9/9/13 04:10:02	45.93233	-130.01107	353.35	3.84	1540.04	1543.9	Lots of sediment between pillows.	4335
9/9/13 04:10:37	45.93234	-130.01107	317.79	5.71	1538.12	1543.8	Large shadow on sonar for this tall elevator.	4337
9/9/13 04:11:05	45.93234	-130.01109	303.61	5.68	1538.27	1544	Elevator in sight.	4339
9/9/13 04:13:17	45.93232	-130.01125	326.21	5.48	1537.2	1542.7	Inspecting the instrument with the cameras.	4350
9/9/13 04:13:26	45.93233	-130.01125	326.31	6.75	1535.97	1542.7	Jason working on ballast.	4351
9/9/13 04:14:58	45.93233	-130.01125	326.09	6.79	1535.88	1542.7	Waiting also for the ship to move west.	4356
9/9/13 04:17:09	45.93233	-130.01124	325.8	6.25	1536.44	1542.7	Did Doppler reset when we reached the bottom.	4361
9/9/13 04:17:28	45.93233	-130.01124	324.42	6.53	1536.19	1542.7	Range to Virgin from here is 215m at 314deg.	4362
9/9/13 04:19:22	45.93233	-130.01113	317.81	7.01	1536.5	1543.5	Getting pulled off site as we need the ship to move west.	4365

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 04:20:53	45.93233	-130.01113	317.87	4	1536.34	1540.3	We are holding above bottom with elevator in view while waiting for the ship.	4367
9/9/13 04:26:04	45.93233	-130.01122	318.04	3.46	1539.11	1542.6	Retrieving the knife from the basket.	4374
9/9/13 04:28:14	45.93231	-130.01122	317.91	3.31	1539.11	1542.4	Getting ready to cut the lines on the APL instrument.	4377
9/9/13 04:28:39	45.93231	-130.01122	317.71	3.4	1539.07	1542.5	Ship is having difficulties due to not using the bow thruster.	4378
9/9/13 04:30:00	45.93233	-130.01095	289.32	10.2	1531.97	1542.2	Got pulled off again so waiting for the ship to move back west.	4380
9/9/13 04:33:45	45.93232	-130.01118	288.27	3.49	1539.07	1542.6	Approaching the elevator again; ship has moved west.	4385
9/9/13 04:36:19	45.93232	-130.01130	38.23	1.96	1540.2	1542.2	Preparing to cut.	4391
9/9/13 04:37:23	45.93233	-130.01132	63.62	2	1540.17	1542.2	Cut one side.	4396
9/9/13 04:41:34	45.93236	-130.01127	193.64	2.05	1540.57	1542.6	Cut off one of the donut straps.	4406
9/9/13 04:42:47	45.93236	-130.01129	171.69	1.76	1540.58	1542.3	Pulling the straps away from the elevator (the ones just cut).	4408
9/9/13 04:44:52	45.93237	-130.01130	131.17	1.48	1540.85	1542.3	HIGHLIGHTS on. Video of cutting the cap strap.	4411
9/9/13 04:45:42	45.93236	-130.01129	131.28	1.44	1540.92	1542.4	HIGHLIGHTS off.	4416
9/9/13 04:45:52	45.93236	-130.01129	131.17	1.5	1540.83	1542.3	All straps for the cap have been cut.	4417
9/9/13 04:46:05	45.93236	-130.01129	131.19	1.38	1540.92	1542.3	Stowing the knife.	4419
9/9/13 04:48:56	45.93231	-130.01125	358.76	1.68	1540.55	1542.2	Ship is going to the east again.	4422
9/9/13 04:49:28	45.93231	-130.01124	358.62	1.56	1540.66	1542.2	Retrieving the cap from the elevator.	4424
9/9/13 04:49:39	45.93231	-130.01124	358.62	1.65	1540.56	1542.2	HIGHLIGHTS on.	4425
9/9/13 04:51:52	45.93229	-130.01123	359.09	1.13	1541.06	1542.2	Grabbing the cap.	4431
9/9/13 04:51:56	45.93229	-130.01123	359.19	1.25	1541	1542.3	HIGHLIGHTS off.	4432
9/9/13 04:52:09	45.93228	-130.01123	356.64	1.4	1541.06	1542.5	Cap is free from elevator.	4434
9/9/13 04:54:38	45.93229	-130.01123	356.96	4.98	1537.35	1542.3	Checking the hold on the instrument. Need the other arm to steady it.	4439
9/9/13 04:55:42	45.93230	-130.01123	356.84	4.98	1537.29	1542.3	Grabbed it by the stbd arm as well now.	4442
9/9/13 04:55:58	45.93231	-130.01121	349.61	4.83	1537.71	1542.5	Ship is moving to the north. Range is 214m to Virgin at 314deg.	4443
9/9/13 04:57:08	45.93247	-130.01108	348.68	3.51	1538.88	1542.4	Hit bottom with instrument-flying too close to bottom.	4446
9/9/13 04:58:06	45.93256	-130.01112	349.46	5	1536.99	1542	Flying at 5m off bottom.	4448
9/9/13 05:03:10	45.93285	-130.01162	307.47	7.15	1534.18	1541.3	Moving along at .3kts and 7m off bottom to Virgin (can't see anything).	4454
9/9/13 05:07:56	45.93309	-130.01200	307.46	7.31	1533.64	1541	The Jason target for Virgin is #37 on their map.	4459
9/9/13 05:08:12	45.93310	-130.01200	307.15	7.14	1533.8	1540.9	Bringing the transit speed up to .4 kts.	4461
9/9/13 05:15:23	45.93356	-130.01281	292.44	7.35	1534.05	1541.4	35m more to go to Virgin.	4469
9/9/13 05:15:47	45.93359	-130.01289	296.5	7.24	1534.19	1541.4	Virgin has the old frame next to it from the NeMO camera platform.	4470
9/9/13 05:17:05	45.93365	-130.01308	273.45	7.3	1533.98	1541.3	20m to go to Virgin as Jason is flying 6.5m off the bottom.	4473
9/9/13 05:17:53	45.93369	-130.01305	273.39	3.48	1537.8	1541.3	Going to set the instrument down on the bottom and then look for Virgin.	4474
9/9/13 05:18:19	45.93370	-130.01307	273.08	2.9	1538.02	1540.9	The bottom here looks a bit rocky.	4476
9/9/13 05:19:37	45.93371	-130.01308	273.54	2.79	1538.31	1541.1	Released port arm and cap swung a bit but other arm still has a good hold.	4478
9/9/13 05:20:56	45.93372	-130.01307	273.22	3.05	1538.15	1541.2	Setting cap on seafloor but doesn't look very flat.	4481
9/9/13 05:24:20	45.93375	-130.01306	273.65	7.34	1534.22	1541.6	Pulled up off bottom and moving a bit west to find a flatter place to set the cap down.	4486
9/9/13 05:26:17	45.93369	-130.01317	274.63	3.59	1536.42	1540	Looks like a small chimney has regrown at Virgin.	4490

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 05:27:40	45.93369	-130.01315	272.53	2.43	1537.62	1540.1	Setting cap down next to Virgin. Can see metal frame on opposite side of Virgin.	4493
9/9/13 05:27:52	45.93370	-130.01312	273.08	4.34	1536.95	1541.3	Cap is set on bottom.	4494
9/9/13 05:28:31	45.93370	-130.01311	273.16	4.78	1536.46	1541.2	Going to take a look at Virgin.	4497
9/9/13 05:29:05	45.93369	-130.01311	274.37	2.86	1538.34	1541.2	Cap is to the east of the vent.	4499
9/9/13 05:31:53	45.93363	-130.01323	10.5	2.81	1538.89	1541.7	Surveying the vent for the cap placement.	4509
9/9/13 05:35:36	45.93359	-130.01328	150.96	2.84	1538.78	1541.6	Marker 121 at Gollum.	4518
9/9/13 05:36:19	45.93358	-130.01323	96.56	2.89	1538.86	1541.8	Took a few frame grabs of Marker 121 and looked like a sediment trap.	4520
9/9/13 05:36:41	45.93359	-130.01321	13.04	3.58	1538.26	1541.8	Surveying the area looking for a flat area to bring the elevator to land.	4521
9/9/13 05:40:02	45.93358	-130.01316	277.6	2.05	1539.14	1541.2	Back at Virgin.	4525
9/9/13 05:40:54	45.93356	-130.01323	275.3	2.13	1539.12	1541.3	Found a smooth area adjacent to this smaller stained area. Going to get a good navigation position to make a target.	4527
9/9/13 05:41:23	45.93357	-130.01323	274.61	1.95	1539.18	1541.1	NAV: Doppler Reset	4529
9/9/13 05:42:01	45.93359	-130.01320	358.17	4.78	1536.35	1541.1	Target position for elevator landing area is 45deg 56.0157'N 130deg 0.7936'W.	4530
9/9/13 05:42:17	45.93360	-130.01316	140.27	6.14	1535.08	1541.2	Going to head back to get elevator.	4532
9/9/13 05:43:25	45.93356	-130.01310	140.37	4.65	1537.1	1541.8	Range is 203m at 130deg to the elevator.	4534
9/9/13 05:44:00	45.93357	-130.01310	140.42	4.7	1536.99	1541.7	Waiting for ship and Medea.	4535
9/9/13 05:47:45	45.93358	-130.01303	140.46	3.19	1538.16	1541.4	Moving to elevator at 200m range.	4540
9/9/13 05:48:22	45.93355	-130.01296	140.67	2.58	1538.77	1541.4	Rubbly flow with many small ridges and sediment. Some intact tubes.	4542
9/9/13 05:49:39	45.93338	-130.01297	139.6	3.04	1538.61	1541.7	Seeing sessile animals on rubbly flow.	4544
9/9/13 05:50:23	45.93334	-130.01292	126.62	2.81	1538.68	1541.5	One fish.	4546
9/9/13 05:51:09	45.93333	-130.01289	127.49	3.35	1538.08	1541.4	Flat flow with sediment as we wait for Medea and ship.	4548
9/9/13 05:53:04	45.93324	-130.01294	117.92	2.75	1538.77	1541.5	A few tubes in otherwise flat flow.	4552
9/9/13 05:53:09	45.93324	-130.01294	117.94	1.9	1539.81	1541.7	A few chain links.	4553
9/9/13 05:53:30	45.93324	-130.01291	118.32	1.98	1539.22	1541.2	Rubbly flow.	4555
9/9/13 05:55:16	45.93318	-130.01270	118.55	4.11	1537.56	1541.7	Great patterns in the sheet flow. Sea star.	4558
9/9/13 05:56:48	45.93318	-130.01264	117.3	2.6	1539.22	1541.8	Another sea star and sea slugs.	4563
9/9/13 05:57:24	45.93318	-130.01262	118.6	1.29	1540.89	1542.2	Waiting for ship and taking some biology photos.	4567
9/9/13 05:58:52	45.93318	-130.01252	122.86	1.88	1540.07	1542	Brittle stars and lots of these cucumber looking animals.	4576
9/9/13 05:59:01	45.93317	-130.01250	117.97	2	1539.88	1541.9	Sheet flow with heavy sediment coating.	4577
9/9/13 05:59:56	45.93309	-130.01243	131.76	2.84	1539.34	1542.2	Skippy peanut butter jar on the seafloor (trash!).	4583
9/9/13 06:00:15	45.93304	-130.01235	134.1	2.06	1539.32	1541.4	Back in jumbled flow.	4585
9/9/13 06:01:42	45.93290	-130.01213	134.83	2.89	1539.25	1542.1	Seeing a lot of sea stars.	4588
9/9/13 06:02:50	45.93280	-130.01202	133.72	3.05	1538.66	1541.7	Small ridge in the sheet flow.	4590
9/9/13 06:02:58	45.93280	-130.01199	133.74	3.5	1538.52	1542	Fish.	4591
9/9/13 06:03:21	45.93277	-130.01198	131.58	2.83	1538.97	1541.8	Rat tail fish.	4595
9/9/13 06:03:50	45.93270	-130.01197	134.43	3.25	1539.02	1542.3	80 meters to go back to elevator.	4596
9/9/13 06:04:20	45.93264	-130.01190	133.86	2.84	1538.86	1541.7	Flattening out of the flow.	4599

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9/9/13 06:04:46	45.93260	-130.01186	133.18	3.09	1538.86	1542	Small ridge again.	4600
9/9/13 06:06:43	45.93252	-130.01150	104.03	3.14	1539.25	1542.4	40m to the elevator as we travel over sedimented sheet flow.	4603
9/9/13 06:07:34	45.93251	-130.01141	142.07	2.73	1539.05	1541.8	Got a visual on the elevator.	4605
9/9/13 06:08:38	45.93244	-130.01130	185.58	5.29	1537.11	1542.4	Approaching the elevator.	4607
9/9/13 06:09:49	45.93237	-130.01128	3.79	5.06	1537.51	1542.6	Coming around to the other side of elevator to grab it and then continue back to Virgin.	4609
9/9/13 06:11:31	45.93235	-130.01125	4.53	5.8	1536.89	1542.7	Have top of elevator in port arm.	4613
9/9/13 06:12:41	45.93234	-130.01125	4.44	8	1534.72	1542.7	Releasing the elevator to drop some more weights.	4615
9/9/13 06:14:14	45.93231	-130.01129	6.05	2.26	1540.64	1542.9	Dropped a weight.	4618
9/9/13 06:14:32	45.93230	-130.01130	6.69	3.24	1539.66	1542.9	Dropping a second weight.	4619
9/9/13 06:14:52	45.93230	-130.01130	5.36	3.11	1539.82	1542.9	Dropping a third weight (double); the other two were singles.	4620
9/9/13 06:15:28	45.93232	-130.01130	11.2	7.31	1535.53	1542.8	Approaching the top of the elevator again.	4622
9/9/13 06:18:28	45.93228	-130.01123	25.27	5.26	1537.59	1542.9	Grabbing the elevator with port arm at the top loop.	4626
9/9/13 06:19:13	45.93227	-130.01124	22.6	4.64	1538.3	1542.9	Lifting elevator of bottom. Not sure about weight.	4629
9/9/13 06:20:47	45.93229	-130.01127	22.47	8.75	1534.49	1543.2	Decided the weight is ok and will head to Virgin 20m off the bottom.	4631
9/9/13 06:21:13	45.93233	-130.01127	13.63	11.25	1532.13	1543.4	Moving the ship to get back to Virgin.	4633
9/9/13 06:22:56	45.93243	-130.01127	355.26	15.2	1528.05	1543.3	Jason is moving the elevator with both donuts still on board.	4635
9/9/13 06:31:16	45.93313	-130.01142	340.98	13.06	1529.28	1542.3	150m back to Virgin to go!	4645
9/9/13 06:41:11	45.93352	-130.01249	275.22	15.29	1526.89	1542.2	Still flying back to Virgin with 60m to go.	4656
9/9/13 06:41:31	45.93353	-130.01252	274.45	15.93	1526.32	1542.3	Watch change time.	4657
9/9/13 06:52:55	45.93360	-130.01310	273.82	4.73	1537.01	1541.7	We are close to Virgin now; dropping down to the seafloor to check our position.	4671
9/9/13 06:53:43	45.93360	-130.01308	273.86	5.63	1536.2	1541.8	Close enough; dropped the elevator.	4673
9/9/13 06:55:23	45.93362	-130.01308	273.4	2.68	1539.25	1541.9	Jason is about 68 lbs. underweighted. Going to pick up some weights or sandbags to help fix that.	4676
9/9/13 06:55:36	45.93362	-130.01309	270.48	2.53	1539.39	1541.9	Need to find them first.	4677
9/9/13 06:56:41	45.93363	-130.01309	267.08	2.7	1539.35	1542.1	Virgin spire is visible in the distance. Maybe a dozen meters away.	4679
9/9/13 07:02:28	45.93365	-130.01307	269.11	100.29	1541.62	1641.9	Going to cut the straps holding the donuts on the elevator.	4686
9/9/13 07:04:08	45.93362	-130.01305	273.91	1.4	1540.72	1542.1	Cut the first strap with Jason's shank.	4689
9/9/13 07:05:08	45.93361	-130.01297	291.78	0.74	1541.94	1542.7	Cut the second strap.	4691
9/9/13 07:07:57	45.93358	-130.01305	304.64	0.74	1541.98	1542.7	HIGHLIGHTS on	4693
9/9/13 07:08:45	45.93357	-130.01305	303.51	0.74	1541.95	1542.7	Grabbing the top donut handle.	4698
9/9/13 07:09:26	45.93356	-130.01303	304.71	156.35	1542.02	1698.4	Moving it off of the elevator.	4700
9/9/13 07:11:28	45.93355	-130.01305	304.03	1.3	1541.76	1543.1	Got the donut completely off the elevator and set it on the ground.	4709
9/9/13 07:11:30	45.93355	-130.01305	304.09	1.34	1541.76	1543.1	HIGHLIGHTS off.	4710
9/9/13 07:13:19	45.93358	-130.01311	335.07	2.29	1539.96	1542.3	Grabbed the opposite handle with Jason's other arm to transport the donut 5 meters to Vixen.	4717
9/9/13 07:13:42	45.93360	-130.01312	321.44	2.58	1539.14	1541.7	VIRGIN not Vixen	4718

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9/9/13 07:15:21	45.93362	-130.01319	290.34	3.06	1538.9	1542	Transiting to the vent; few meters to go.	4721
9/9/13 07:16:10	45.93363	-130.01317	290.59	3.16	1538.94	1542.1	We are going to place this donut on the vent to see how it will sit.	4723
9/9/13 07:17:42	45.93365	-130.01314	302.13	0.74	1541.43	1542.2	HIGHLIGHTS on.	4725
9/9/13 07:18:36	45.93366	-130.01316	297.53	0.74	1541.41	1542.2	Didn't quite get the donut centered on the anhydrite spire. Spire is now rubble.	4727
9/9/13 07:19:57	45.93368	-130.01325	284.58	1.48	1540.34	1541.8	There is a slope across the vent site. Trying to use Jason to push the donut into the slope to help level it out.	4729
9/9/13 07:20:45	45.93365	-130.01329	80.14	2.6	1539.24	1541.8	Accidentally overdid it and pushed the donut all the way off the vent and flipped it over.	4731
9/9/13 07:21:26	45.93365	-130.01332	98.41	0.88	1541.54	1542.4	Repositioning Jason. We floated up quickly after letting go of the donut.	4733
9/9/13 07:22:38	45.93365	-130.01334	91.53	0.89	1541.69	1542.6	Discussing the weight situation.	4735
9/9/13 07:23:28	45.93366	-130.01332	91.43	0.9	1541.69	1542.6	Need to flip the donut over and place it back on the vent.	4738
9/9/13 07:24:15	45.93367	-130.01328	93.5	1.24	1540.98	1542.2	Got it back on and centered.	4741
9/9/13 07:24:16	45.93367	-130.01328	93.32	1.16	1541.08	1542.2	HIGHLIGHTS off.	4742
9/9/13 07:25:42	45.93363	-130.01323	49.94	0.74	1541.94	1542.7	Repositioning to get a good side view. Need to see if it is still sitting at an angle or if there are gaps underneath.	4744
9/9/13 07:26:37	45.93360	-130.01321	49.94	0.95	1541.96	1542.9	Still pretty angled. Going to use the shovels to excavate some sediment from one side and build up the other.	4746
9/9/13 07:27:56	45.93356	-130.01320	44.86	1.05	1541.85	1542.9	Removing the donut.	4748
9/9/13 07:29:28	45.93356	-130.01323	49.76	0.74	1541.92	1542.7	Dragging the donut back and forth across the top of the vent mound seems to have done a good job of leveling it out. Might not need to get the shovel.	4751
9/9/13 07:31:34	45.93353	-130.01329	49.74	0.74	1541.84	1542.6	HIGHLIGHTS off.	4754
9/9/13 07:32:29	45.93353	-130.01329	49.69	0.74	1541.86	1542.6	Can't get it level enough. Going for the shovel/net scoop tool.	4756
9/9/13 07:34:50	45.93356	-130.01322	102.33	0.74	1541.85	1542.6	HIGHLIGHTS on.	4760
9/9/13 07:35:15	45.93355	-130.01320	102.47	0.74	1541.7	1542.4	Seafloor here is very soft and easy to dig.	4762
9/9/13 07:35:36	45.93355	-130.01319	102.78	0.74	1541.82	1542.6	Kicking up a lot of silt so it's tough to see.	4763
9/9/13 07:35:48	45.93355	-130.01318	102.59	0.76	1541.87	1542.6	HIGHLIGHTS off.	4764
9/9/13 07:38:09	45.93358	-130.01318	103.21	0.83	1541.95	1542.8	Scooped some sediment from the high to low side. Waiting for the silt to clear so we can see what it looks like.	4771
9/9/13 07:39:49	45.93362	-130.01318	101.63	0.76	1542.02	1542.8	More excavating.	4773
9/9/13 07:42:27	45.93366	-130.01309	101.14	0.74	1542.03	1542.8	Stowing the shovel.	4777
9/9/13 07:43:07	45.93367	-130.01311	100.69	0.74	1542.06	1542.8	Replacing the donut to see how it looks.	4779
9/9/13 07:44:42	45.93364	-130.01319	104.41	0.75	1542.22	1543	Pretty close now. Will drag the donut around a bit to get it seated and level.	4781
9/9/13 07:46:53	45.93362	-130.01317	354.43	1.84	1541.09	1542.9	Looks good from here. Going to fly around it to see it really is level and sealed on all sides.	4786
9/9/13 07:49:33	45.93360	-130.01314	316.86	1.45	1541.05	1542.5	Discussing donut positioning. The vent is close to the inner edge; not centered.	4791
9/9/13 07:51:26	45.93360	-130.01317	317.37	1.45	1541.04	1542.5	Can't get a good idea of how level the donut is.	4795

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9/9/13 07:51:51	45.93361	-130.01316	314.55	0.74	1541.83	1542.6	Will mess with it a little more then put the cap on to get a better idea.	4796
9/9/13 07:52:37	45.93362	-130.01314	314.46	0.76	1541.85	1542.6	HIGHLIGHTS on.	4798
9/9/13 07:53:16	45.93364	-130.01312	313.94	0.74	1541.82	1542.6	HIGHLIGHTS off.	4800
9/9/13 07:55:11	45.93362	-130.01314	311.54	0.74	1541.77	1542.5	Got the donut centered on the vent and more level.	4803
9/9/13 07:55:53	45.93360	-130.01315	312.21	0.74	1541.79	1542.5	Grabbing some nearby rocks to place under the downhill edge of the donut but they are friable.	4804
9/9/13 07:56:20	45.93359	-130.01316	311.99	0.74	1541.77	1542.5	Got a few solid rocks to put in the gap.	4806
9/9/13 07:56:24	45.93359	-130.01316	313.34	0.74	1541.8	1542.5	HIGHLIGHTS on.	4807
9/9/13 07:59:01	45.93366	-130.01311	308	0.74	1541.79	1542.5	HIGHLIGHTS off.	4811
9/9/13 08:00:35	45.93362	-130.01312	355.8	0.95	1541.99	1542.9	Still placing rocks.	4815
9/9/13 08:03:19	45.93363	-130.01319	355.38	0.74	1542.23	1543	Now going to get the other donut and some sandbags to build up on top of the rocks.	4819
9/9/13 08:04:56	45.93357	-130.01317	247.38	2.15	1539.88	1542	Transiting to the elevator.	4821
9/9/13 08:09:00	45.93348	-130.01301	276.28	0.84	1542.24	1543.1	Removing the second donut from the elevator.	4826
9/9/13 08:10:34	45.93351	-130.01299	276.81	0.8	1542.25	1543.1	Double checking that the elevator won't float away when the donut is fully removed.	4832
9/9/13 08:11:13	45.93351	-130.01301	279.8	0.84	1541.53	1542.4	Looks good; it is still on the bottom.	4834
9/9/13 08:13:35	45.93350	-130.01305	279.52	0.86	1541.67	1542.5	Donut is in the bottom.	4837
9/9/13 08:14:12	45.93353	-130.01303	267.5	0.94	1541.28	1542.2	Now going to drop the sandbags off the elevator using the trapdoor.	4839
9/9/13 08:14:25	45.93354	-130.01302	267.37	1.24	1541.02	1542.3	Just need to find the release pin.	4840
9/9/13 08:15:17	45.93352	-130.01304	21.61	2.49	1540.32	1542.8	Once the bags are released the elevator will rise at 70-80 m/min.	4842
9/9/13 08:18:56	45.93355	-130.01311	348.83	1	1542.17	1543.2	HIGHLIGHTS on.	4847
9/9/13 08:19:28	45.93355	-130.01313	347.61	0.99	1542.23	1543.2	Rotating the elevator to get a better position for release.	4849
9/9/13 08:22:30	45.93357	-130.01305	348.43	0.74	1542.36	1543.1	Released the pin and dropped the sandbags.	4854
9/9/13 08:22:38	45.93357	-130.01304	348.36	0.76	1542.3	1543.1	Elevator took off.	4855
9/9/13 08:23:01	45.93357	-130.01303	348.36	0.74	1542.29	1543	Will take 20-30 min to reach the surface.	4856
9/9/13 08:24:04	45.93360	-130.01306	348.22	0.74	1542.28	1543	Transferring bags to the basket.	4859
9/9/13 08:27:05	45.93354	-130.01304	349.27	195.54	1542.53	1738.1	HIGHLIGHTS off. Stopped at 08:22	4862
9/9/13 08:29:20	45.93380	-130.01312	347.06	9.53	1533.64	1543.2	Coming up off the bottom while the elevator is being recovered.	4865
9/9/13 08:30:23	45.93393	-130.01313	336.09	28.59	1514.33	1542.9	Going to about 1400m depth and holding.	4867
9/9/13 08:43:22	45.93343	-130.01230	321.38	130.02	1411.82	1541.8	Elevator depth is 225m.	4868
9/9/13 09:04:59	45.93374	-130.01163	269.13	129.87	1412.1	1542	Elevator is on deck.	4869
9/9/13 09:09:15	45.93438	-130.01105	318.39	125.34	1411.85	1537.2	Ship is navigating back to the correct position.	4870
9/9/13 09:26:19	45.93463	-130.01065	30.28	127.23	1412.04	1539.3	Still holding about 120m up off the bottom.	4871
9/9/13 09:36:50	45.93438	-130.01181	41.68	67.58	1455.62	1523.2	Heading back down slowly to 80m off the bottom.	4872
9/9/13 09:43:45	45.93385	-130.01310	238.22	3.56	1539.8	1543.4	Bottom is visible.	4875
9/9/13 09:44:07	45.93385	-130.01310	238.03	2.11	1541.44	1543.6	Landed on bottom.	4877
9/9/13 09:44:41	45.93385	-130.01312	237.95	2.34	1541.3	1543.6	Can see the cable off to our left. Hdg 238.	4878
9/9/13 09:46:51	45.93368	-130.01329	124.5	2.31	1541.11	1543.4	Finding our way back to Virgin.	4881

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9/9/13 09:47:16	45.93370	-130.01328	124.45	2.24	1541.33	1543.6	Can see the vent cap directly ahead.	4883
9/9/13 09:47:30	45.93370	-130.01327	121.92	1.48	1542.17	1543.7	Found some dive weights	4884
9/9/13 09:48:22	45.93374	-130.01329	124.85	1.05	1542.72	1543.8	They look a little old but we will still use them.	4886
9/9/13 09:48:57	45.93376	-130.01329	123.97	0.95	1542.81	1543.8	Stowed weights in basket.	4887
9/9/13 09:49:19	45.93377	-130.01331	171.66	2.98	1540.75	1543.7	Now moving back to the vent to place sandbags under and around the donut.	4889
9/9/13 09:49:49	45.93374	-130.01331	108.1	1.2	1541.43	1542.6	HIGHLIGHTS on.	4893
9/9/13 09:51:47	45.93373	-130.01321	25.9	0.74	1542.55	1543.3	Pushing down on the side held up with rocks to see how stable it is. Donut didn't move at all.	4902
9/9/13 09:52:16	45.93373	-130.01320	25.94	0.75	1542.57	1543.3	Will use large sandbags to reinforce the rock supports.	4904
9/9/13 09:54:56	45.93376	-130.01317	26.08	0.74	1542.47	1543.2	HIGHLIGHTS off.	4912
9/9/13 09:55:38	45.93378	-130.01317	23.42	1.24	1541.75	1543	Placed 3 large sandbags on lower slope to make sure the rocks didn't fall downhill.	4914
9/9/13 09:55:53	45.93380	-130.01316	24.56	2.51	1540.49	1543	Will now place the vent cap on the donut.	4915
9/9/13 09:56:04	45.93382	-130.01315	37.38	2.64	1540.41	1543.1	Going to grab the vent cap.	4917
9/9/13 10:01:22	45.93379	-130.01307	91.65	1.05	1542.22	1543.3	Figuring out the best way to grab the vent cap and move it over to the vent.	4924
9/9/13 10:04:07	45.93377	-130.01314	122.83	2.98	1540.2	1543.2	We have lifted the cap up off the bottom and are slowly moving toward the vent.	4928
9/9/13 10:06:49	45.93368	-130.01323	333.15	1.86	1541.06	1542.9	HIGHLIGHTS on.	4932
9/9/13 10:07:53	45.93366	-130.01324	330.1	0.74	1541.86	1542.6	Lowering the vent cap very slowly to allow it to warm up and prevent thermal shock to the instrument.	4935
9/9/13 10:09:46	45.93365	-130.01328	329.67	0.74	1542.06	1542.8	Cap has been lowered into place.	4942
9/9/13 10:10:13	45.93365	-130.01328	330.12	0.74	1542.06	1542.8	Looks stable and there is good flow through it.	4944
9/9/13 10:10:52	45.93363	-130.01327	336.88	2.24	1540.98	1543.2	Moving back to survey the assembly.	4945
9/9/13 10:11:07	45.93363	-130.01327	336.65	2.39	1540.9	1543.3	HIGHLIGHTS off.	4949
9/9/13 10:12:13	45.93363	-130.01324	9.2	2.86	1540.08	1542.9	Will put the rest on the sandbags around the bottom and one on top to make sure nothing moves.	4952
9/9/13 10:20:06	45.93379	-130.01315	194.75	1.06	1542.34	1543.4	HIGHLIGHTS on.	4961
9/9/13 10:21:08	45.93382	-130.01314	195.51	1.15	1542.24	1543.4	Will place a large sandbag on top of the cap on the uphill side.	4963
9/9/13 10:22:10	45.93384	-130.01312	195.69	1.66	1541.43	1543.1	HIGHLIGHTS off.	4965
9/9/13 10:24:34	45.93381	-130.01308	273.08	0.74	1541.92	1542.7	HIGHLIGHTS on.	4973
9/9/13 10:25:26	45.93380	-130.01311	285.53	0.8	1541.95	1542.8	Flying all the way around to make sure it looks good and that they flow is uniform out the exhaust port.	4976
9/9/13 10:25:52	45.93379	-130.01313	285.84	0.88	1541.94	1542.8	Placing a few more sandbags on the lower side.	4977
9/9/13 10:27:13	45.93375	-130.01320	285.74	0.78	1541.97	1542.8	HIGHLIGHTS off.	4981
9/9/13 10:28:55	45.93371	-130.01324	285.96	0.79	1542	1542.8	HIGHLIGHTS on.	4984
9/9/13 10:30:18	45.93368	-130.01326	285.95	0.78	1542.06	1542.8	Looking closely around the interface of the cap; donut; and seafloor for escaping vent fluid.	4987
9/9/13 10:30:32	45.93367	-130.01327	285.21	0.79	1542	1542.8	HIGHLIGHTS off.	4988

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9/9/13 10:30:38	45.93367	-130.01327	285.21	1.06	1541.7	1542.8	Looks good on this side.	4989
9/9/13 10:32:00	45.93362	-130.01333	88.1	1.54	1541.42	1543	Moved to other side. There is a small gap that needs to be filled.	4991
9/9/13 10:32:18	45.93363	-130.01327	84.68	1.44	1541.28	1542.7	Going back to pick up more sandbags.	4993
9/9/13 10:37:43	45.93356	-130.01344	64.65	1.33	1542.3	1543.6	HIGHLIGHTS on.	4999
9/9/13 10:39:26	45.93357	-130.01345	64.65	1.25	1542.3	1543.6	Placing three more sandbags around the donut.	5005
9/9/13 10:40:03	45.93357	-130.01343	64.71	147.04	1542.3	1689.3	Flow out of the instrument still looks good.	5006
9/9/13 10:40:06	45.93357	-130.01343	64.68	147.04	1542.28	1689.3	HIGHLIGHTS off.	5007
9/9/13 10:41:29	45.93355	-130.01334	92.37	2.16	1541.04	1543.2	Need to go grab the other donut and bring it closer so that it is easier to find next year.	5009
9/9/13 10:42:59	45.93354	-130.01326	91.54	1.69	1540.73	1542.4	Jason crew change.	5011
9/9/13 10:48:58	45.93364	-130.01328	12.94	3.03	1540.24	1543.3	Watch standers crew change.	5018
9/9/13 10:50:11	45.93362	-130.01322	13.42	1.18	1543.05	1544.2	Looking at the elevator on the seafloor.	5021
9/9/13 10:51:12	45.93361	-130.01317	13.94	0.74	1543.04	1543.8	We're looking at the cap and sandbags on Virgin. See the old NeMO RAS frame in the foreground.	5023
9/9/13 10:52:15	45.93361	-130.01317	216.38	3.68	1539.6	1543.3	Pulling off the seafloor to get a couple of sandbags.	5025
9/9/13 10:52:30	45.93361	-130.01312	152.42	4.03	1539.33	1543.4	Will put the thermal probe on the device to see it they are generating electricity.	5026
9/9/13 10:53:54	45.93368	-130.01299	196.03	1.38	1541.53	1542.9	We're looking at a pile of sandbags where the elevator was.	5031
9/9/13 10:54:56	45.93366	-130.01301	222.28	0.74	1542.22	1543	Jason is reaching for a sandbag or two.	5033
9/9/13 10:55:32	45.93365	-130.01301	222.32	0.74	1542.23	1543	Jason has a "sandbag purse". It's his "man bag".	5035
9/9/13 10:56:36	45.93363	-130.01302	223.29	1.38	1541.53	1542.9	Will put the Jason thermal (temperature) probe on the radiator and see what it reads.	5037
9/9/13 11:01:26	45.93364	-130.01331	231.13	1.03	1542.31	1543.3	Grabbing some HD snaps of the APL instrument in place.	5045
9/9/13 11:02:24	45.93360	-130.01336	231.27	1.01	1542.32	1543.3	Project Mercury TEG (Thermal Electric Generator) in place at Virgin anhydrite vent.	5047
9/9/13 11:03:02	45.93356	-130.01337	231.28	55.83	1542.3	1598.1	HIGHLIGHTS on. TEG temperature.	5048
9/9/13 11:03:52	45.93353	-130.01338	231.31	130.26	1542.32	1672.6	Jason has the temp probe out and it measuring the heat at the heat sink (where they dump the power that is generated).	5049
9/9/13 11:04:09	45.93352	-130.01337	231.32	112.65	1542.31	1655	Stowing the probe.	5050
9/9/13 11:06:28	45.93353	-130.01330	231.49	0.74	1542.32	1543.1	Moving some of the sandbags around the base of the instrument.	5053
9/9/13 11:06:38	45.93354	-130.01330	231.5	0.84	1542.31	1543.2	HIGHLIGHTS off.	5054
9/9/13 11:08:00	45.93360	-130.01327	231.54	104.11	1542.32	1646.4	Going to take the Jason temp above the heat sink. 4C is ambient.	5056
9/9/13 11:09:07	45.93364	-130.01327	235.45	102.6	1542.27	1644.9	Temperature probe is in place.	5057
9/9/13 11:10:05	45.93365	-130.01327	235.47	0.96	1542.28	1543.2	The temperature is rising. It's up to 5.0 now and climbing. Continuing to climb. We're at 5.9C now.	5059
9/9/13 11:11:21	45.93365	-130.01326	235.49	0.96	1542.29	1543.3	Will measure the temperature of the exit fluid at the top next. The temp at the top of the heat sink is continuing to rise.	5061
9/9/13 11:11:37	45.93365	-130.01326	235.5	0.96	1542.28	1543.2	Temperature got up to 6.5C at the top of the heat sink.	5062

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9/9/13 11:15:19	45.93358	-130.01324	235.56	0.9	1542.3	1543.2	Measuring the temperature at the exhaust. It's 7.2C. 7.4C now. Temp is rising fast. 45C. 48C.	5066
9/9/13 11:15:50	45.93358	-130.01324	235.57	1.44	1542.28	1543.7	Grabbed some frame of the temperature measurement at the exhaust. Got up to 48C.	5067
9/9/13 11:18:19	45.93361	-130.01324	309.08	0.74	1542.12	1542.9	Want to rotate around to the other side of the TEG	5071
9/9/13 11:18:35	45.93362	-130.01323	309.09	0.74	1542.08	1542.8	Casey has taken some Scorpio high def frame grabs.	5072
9/9/13 11:19:01	45.93364	-130.01323	309.09	0.74	1542.09	1542.8	Taking the temperature in the outflow at the top of the TEG. The temperature is rising fast.	5073
9/9/13 11:21:22	45.93362	-130.01319	309.14	0.74	1542.08	1542.8	The temperature is rising. We're at 95.3 now. 96.6. 97.0. 97.3. 97.5 97.6. 98.1. 98.2 was the highest temp.	5081
9/9/13 11:24:25	45.93361	-130.01326	52.72	1.24	1541.3	1542.5	HIGHLIGHTS on. Frame grabs and high def looking at the ends of the pressure compensator.	5087
9/9/13 11:25:55	45.93363	-130.01322	52.77	1.26	1541.24	1542.5	APL operations here are finished.	5090
9/9/13 11:26:39	45.93363	-130.01320	52.75	1.28	1541.16	1542.4	Preparing to sample the excavated anhydrite around the vent cap.	5092
9/9/13 11:28:04	45.93361	-130.01320	52.58	1.15	1541.27	1542.4	**SAMPLE: Microbio J729-microbio-01**. 130 0.7931 45 56.0165 Z=1452. This is Virgin mound covered with the TEG instrument.	5095
9/9/13 11:29:17	45.93360	-130.01325	125.9	0.78	1541.97	1542.8	J729-microbio-01 cont. Sediment sample (seafloor and grey-ish looking anhydrite). Still setting up to sample.	5097
9/9/13 11:31:07	45.93360	-130.01329	125.74	0.74	1542.36	1543.1	HIGHLIGHTS on. J729-microbio-01 cont. Big white syringe sample of sediment consisting of the anhydrite leveled off when the APL instrument was deployed.	5101
9/9/13 11:31:45	45.93361	-130.01327	126.14	0.74	1542.33	1543.1	J729-microbio-01 cont. Doesn't look like anything got in the syringe. Not a successful sample.	5102
9/9/13 11:32:49	45.93362	-130.01325	125.89	0.74	1542.3	1543	Stowing the big white syringe. Sample not successful. Will go for the big green syringe next and try again.	5105
9/9/13 11:33:31	45.93363	-130.01324	125.82	0.74	1542.3	1543	HIGHLIGHTS on. Sampling sed/anhydrite excavated at Virgin for microbiological studies.	5107
9/9/13 11:35:44	45.93364	-130.01321	125.73	0.74	1542.32	1543.1	**SAMPLE: Macrobio J729-microbio-02**. The nozzle is in the sediment. This is the big green syringe. This one looks good.	5115
9/9/13 11:36:06	45.93364	-130.01320	125.72	0.74	1542.31	1543.1	HIGHLIGHTS off. Highlights off.	5117
9/9/13 11:37:14	45.93365	-130.01319	124.88	0.74	1542.36	1543.1	We will head on over to Phoenix to gather some more blue mat for Oliver.	5119
9/9/13 11:37:51	45.93365	-130.01318	124.87	0.74	1542.34	1543.1	Will have to move the ship ~15m to the west.	5120
9/9/13 11:38:16	45.93364	-130.01319	125.03	1.03	1541.75	1542.8	Not sure about the success of sample 1. May be OK.	5122
9/9/13 11:39:12	45.93364	-130.01325	49.14	1.7	1540.65	1542.4	HIGHLIGHTS on.	5131
9/9/13 11:39:49	45.93357	-130.01333	217.97	1.86	1540.77	1542.6	HIGHLIGHTS off.	5132
9/9/13 11:39:59	45.93356	-130.01333	221.56	2.04	1540.8	1542.8	Stopped highlights about a minute ago.	5133
9/9/13 11:40:22	45.93354	-130.01334	222.35	1.79	1540.87	1542.7	Heading SW toward Phoenix over ropey jumbled flow.	5135
9/9/13 11:41:05	45.93353	-130.01339	222.13	1.64	1540.9	1542.5	Marker 121 is ahead. That's Gollum.	5137
9/9/13 11:41:24	45.93351	-130.01343	223.14	1.95	1540.71	1542.7	Marker 64 is not visible from this perspective. Possibly not here?	5138

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9/9/13 11:41:32	45.93351	-130.01344	222.89	1.84	1540.8	1542.6	Continuing to the SW.	5139
9/9/13 11:42:14	45.93346	-130.01352	230.93	2.19	1540.68	1542.9	Passing over jumbled lavas with white mat in the cracks and some tubeworms. Tubeworms are small but healthy-looking.	5143
9/9/13 11:42:53	45.93343	-130.01357	230.88	2.39	1540.98	1543.4	The occasional tubeworm clump in the cracks of this lava - which now looks more like a sheet flow.	5144
9/9/13 11:44:02	45.93339	-130.01360	230.75	2.29	1540.76	1543.1	What are we going over now. We think it's the "Big Johnson". We see a cable coming out of it.	5147
9/9/13 11:45:05	45.93335	-130.01363	230.77	2.13	1540.97	1543.1	Continuing on toward the SW heading to Phoenix.	5150
9/9/13 11:45:53	45.93332	-130.01370	230.52	1.85	1541.75	1543.6	The light in the science cam is not go great. The brow cam is beautiful.	5151
9/9/13 11:46:49	45.93326	-130.01370	230.58	1.48	1542.06	1543.5	The lavas here are a bit more lobate.	5153
9/9/13 11:47:45	45.93321	-130.01368	247.86	1.54	1542.55	1544.1	Rattail.	5155
9/9/13 11:48:11	45.93320	-130.01367	238.16	1.59	1542.34	1543.9	Seeing another starfish down here.	5158
9/9/13 11:48:53	45.93319	-130.01364	138.27	2.25	1541.62	1543.9	This is Phoenix ahead of us.	5160
9/9/13 11:49:05	45.93320	-130.01363	120.69	2.6	1541.49	1544.1	We're at Phoenix.	5162
9/9/13 11:49:59	45.93319	-130.01361	88.74	1.86	1540.21	1542.1	Quite a large mound. Some of the structure have beehives with black smoke pouring out.	5167
9/9/13 11:50:15	45.93319	-130.01361	87.42	1.5	1540.64	1542.1	All the structure have dense biota.	5169
9/9/13 11:51:25	45.93318	-130.01365	87.4	1.71	1540.45	1542.2	Bill says the whole structure here is Phoenix. (Formerly Phoenix/Hillock).	5172
9/9/13 11:52:07	45.93316	-130.01368	57.08	1.7	1540.54	1542.2	We're waiting for the ship to get lined up. Nice view of the top of the structure.	5178
9/9/13 11:53:26	45.93318	-130.01371	56.91	1.75	1540.5	1542.3	There are several structure here with many spigots of flow.	5185
9/9/13 11:54:10	45.93318	-130.01372	18.6	2.13	1540.43	1542.6	Moving in closer.	5187
9/9/13 11:54:31	45.93318	-130.01370	335.09	1.44	1541.09	1542.5	HIGHLIGHTS on. Phoenix sulfide structure in the highlights.	5189
9/9/13 11:55:04	45.93320	-130.01369	317.15	1.6	1541.37	1543	Looks like 3 main sulfide structures. Grabbing highlight video and HD frame grabs.	5192
9/9/13 11:56:40	45.93321	-130.01368	317.37	1.46	1541.48	1542.9	Large patch of blue mat here about 3/4 way up the largest structure. We're on the south side of the structure.	5198
9/9/13 11:57:14	45.93321	-130.01368	317.18	1.49	1541.53	1543	Preparing to take a single chamber suction sample of blue mat here for Oliver.	5200
9/9/13 11:58:10	45.93323	-130.01367	317.26	1.53	1541.52	1543.1	This will be sample J729-microbio-03.	5203
9/9/13 11:58:29	45.93323	-130.01367	317.47	1.4	1541.65	1543.1	Moving in for the sample. Have the suction in hand.	5204
9/9/13 12:00:25	45.93325	-130.01370	331.53	1.3	1541.91	1543.2	From this angle it looks more like one big sulfide mound with lots of spigots and a small active extension to the west.	5208
9/9/13 12:00:48	45.93326	-130.01371	331.88	1.15	1542.28	1543.4	Moving in with the suction sampler to this beautiful vent covered in biota.	5209
9/9/13 12:01:40	45.93328	-130.01373	335.48	0.74	1542.87	1543.6	The area we will be sampling looks cooler with blue mat on older; cooler (orangish) tubeworms.	5212
9/9/13 12:02:51	45.93331	-130.01375	335.9	0.74	1542.89	1543.6	**SAMPLE: Macrobio J729-microbio-03**. Suctioning blue mat. Looks like he's getting a good sample.	5218
9/9/13 12:03:48	45.93330	-130.01373	336.03	0.74	1542.87	1543.6	J729-microbio-03. Cursor location: 130 0.8251 45 55.9983 Z=1543.	5220

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9/9/13 12:03:53	45.93330	-130.01372	335.72	0.74	1542.9	1543.6	HIGHLIGHTS off.	5221
9/9/13 12:04:15	45.93328	-130.01372	337.67	0.74	1542.67	1543.4	Looks like Oliver got a good sample.	5223
9/9/13 12:04:46	45.93325	-130.01372	335.47	0.74	1542.92	1543.7	Stowing the sampler.	5224
9/9/13 12:05:21	45.93322	-130.01373	334.46	0.74	1542.87	1543.6	Next we're heading to Hell. Will take a gastight and look for a syringe sample.	5226
9/9/13 12:05:52	45.93320	-130.01375	334.29	0.74	1542.83	1543.6	NAV: Doppler Reset	5227
9/9/13 12:06:57	45.93322	-130.01376	335.19	0.74	1542.94	1543.7	The reset moved the position 10m to the north. The USBL position that Casey gave for the sample earlier was good.	5229
9/9/13 12:07:27	45.93322	-130.01374	332.13	1.96	1540.92	1542.9	So Hell should be about 20m to the west.	5232
9/9/13 12:08:47	45.93323	-130.01371	256.53	2.01	1540.92	1542.9	Took some HD frame grabs of Phoenix as we pulled away.	5238
9/9/13 12:08:57	45.93323	-130.01371	260.31	2.51	1540.44	1543	Turning to the west and heading to Hell.	5239
9/9/13 12:09:28	45.93322	-130.01377	269.69	3.16	1539.39	1542.6	Marker up ahead.	5241
9/9/13 12:09:54	45.93320	-130.01383	267.07	3.08	1539.11	1542.2	Passing over patches of white mat and small tubeworms.	5242
9/9/13 12:10:16	45.93318	-130.01385	269.66	2.74	1539.39	1542.1	We see Inferno in the sonar.	5244
9/9/13 12:11:14	45.93316	-130.01397	310.37	2.5	1540.11	1542.6	Hell is about 3 meters high.	5246
9/9/13 12:11:41	45.93320	-130.01403	301.83	2.59	1541.02	1543.6	Moving toward Hell.	5247
9/9/13 12:11:50	45.93321	-130.01406	280.77	3.51	1540.54	1544.1	See a Marker.	5248
9/9/13 12:11:59	45.93323	-130.01407	266.99	4.05	1539.47	1543.5	Hell is looming ahead in the science cam.	5249
9/9/13 12:12:21	45.93324	-130.01409	253.32	5.38	1538.01	1543.4	Seastar on Hell.	5254
9/9/13 12:12:39	45.93323	-130.01409	253.19	6.2	1537.16	1543.4	Will do a gastight in one of the beehive spigots on the top of Hell.	5255
9/9/13 12:12:52	45.93324	-130.01408	251.87	5.51	1537.78	1543.3	Lots of flow.	5256
9/9/13 12:13:50	45.93326	-130.01403	253.33	4.23	1539.3	1543.5	No markers on the chimney itself.	5267
9/9/13 12:14:46	45.93326	-130.01399	252.59	4.3	1539.27	1543.6	The top of the structure is covered in dense biota. Healthy (short) tubeworms; lots of limpets; and who knows what else. 2 beehive spigots pouring out water.	5272
9/9/13 12:14:58	45.93326	-130.01399	252.54	4.26	1539.26	1543.5	HIGHLIGHTS on. Hell top.	5273
9/9/13 12:16:56	45.93325	-130.01400	252.58	4.31	1539.2	1543.5	Zooming in on the biota beneath the spigots (beehives). Saw a pycnagonid; scaleworm; limpets.).	5291
9/9/13 12:18:02	45.93325	-130.01401	252.14	4.16	1539.23	1543.4	J729-GTB-04 sample coming up in the flow of one of the beehives at the top of Hell.	5293
9/9/13 12:21:36	45.93328	-130.01399	252.08	4.24	1539.26	1543.5	**SAMPLE: GTB J729-GTB-04** nude-11. The beehive broke off. Moving into the flow. Firing at 122050. 130 0.8399 45 55.9961. 3.8 m up the chimney. Z=1540.	5302
9/9/13 12:21:42	45.93328	-130.01399	252.14	4.23	1539.28	1543.5	HIGHLIGHTS off.	5303
9/9/13 12:22:21	45.93327	-130.01400	252.25	4.2	1539.29	1543.5	Next fill take the temperature with the Jason temp probe.	5305
9/9/13 12:24:01	45.93330	-130.01398	253.18	4.26	1539.17	1543.4	J729-GTB-04 temperature reading with the Jason probe. Temperature is rising.	5308
9/9/13 12:24:06	45.93330	-130.01398	253.17	4.26	1539.19	1543.5	NAV: Doppler Reset	5310

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9/9/13 12:26:38	45.93332	-130.01394	253.08	4.28	1539.12	1543.4	J729-GTB-04 cont. Taking the temperature. High so far was 141C. Repositioning. Temp is rising fast after that. Tmax was 296.5C.	5313
9/9/13 12:27:30	45.93330	-130.01395	252.74	4.25	1539.19	1543.4	Next will get a syringe sample on this mound.	5315
9/9/13 12:29:25	45.93329	-130.01397	252.34	4.21	1539.21	1543.4	Probing the mound with spigots for Oliver.	5324
9/9/13 12:32:49	45.93328	-130.01401	253.34	4.39	1539.02	1543.4	**SAMPLE: Microbio J729-microbio-05** Syringe sample of sediment/biology combination in the little mound with the hot fluid beehive spigots.	5331
9/9/13 12:32:53	45.93328	-130.01401	253.17	4.39	1539.03	1543.4	HIGHLIGHTS on.	5332
9/9/13 12:33:06	45.93328	-130.01401	253.04	4.4	1538.99	1543.4	Highlight of syringe sample.	5334
9/9/13 12:34:36	45.93330	-130.01398	252.74	4.38	1539.02	1543.4	J729-microbio-05 cont. Green syringe. Sample taken at 123430.	5340
9/9/13 12:35:35	45.93331	-130.01398	253.08	4.35	1539.06	1543.4	J729-microbio-05 cont. Looks like a great syringe sample full of grey matter.	5345
9/9/13 12:38:09	45.93331	-130.01395	251.67	4.68	1538.56	1543.2	45 56.0133 130 0.8207 Position for samples 4 and 5 at Hell.	5349
9/9/13 12:38:33	45.93331	-130.01394	294.13	4.91	1538.47	1543.4	Seastar on Hell. What is that doing here?	5352
9/9/13 12:39:33	45.93331	-130.01386	37.35	2.11	1541.4	1543.5	Moving over to Inferno next for 2 more gastights and the last syringe sample.	5354
9/9/13 12:40:35	45.93335	-130.01381	28.36	1.34	1542	1543.3	Passing over lavas that look lobate-like. Not much biology.	5356
9/9/13 12:42:42	45.93345	-130.01377	28.16	1.8	1541.81	1543.6	Not-so healthy tubeworms interspersed on these mostly-bare lavas.	5360
9/9/13 12:42:59	45.93347	-130.01376	29.47	1.78	1541.45	1543.2	Lots of sediment in the cracks of this flow. It looks old.	5361
9/9/13 12:43:06	45.93347	-130.01376	29.4	1.61	1541.43	1543	Inferno is looming ahead.	5363
9/9/13 12:43:25	45.93350	-130.01375	28.28	1.59	1541.34	1542.9	Tiny old marker on the bottom. Not legible.	5364
9/9/13 12:43:57	45.93352	-130.01374	28.98	3.95	1539.27	1543.2	We're here. Moving up the chimney that is covered in dense biota.	5367
9/9/13 12:45:11	45.93354	-130.01368	330.55	5.56	1537.52	1543.1	See RSN HD camera in the background on the brow cam. RSN put it in a few weeks ago.	5379
9/9/13 12:45:17	45.93355	-130.01368	318.14	5.46	1537.58	1543	HIGHLIGHTS on. Inferno.	5380
9/9/13 12:45:53	45.93357	-130.01369	245.34	4.83	1538.12	1543	Circling the structure and taking digital still and highlight video.	5384
9/9/13 12:46:42	45.93357	-130.01369	231.18	4.8	1538.52	1543.3	HIGHLIGHTS off. The top here is 4+ meters high. 4.4 is the altitude here.	5391
9/9/13 12:48:33	45.93353	-130.01372	261.2	3.4	1539.69	1543.1	The sulfide chimney has several (5+) beehive spigots. Looks like more fluid coming out of this one than Hell.	5401
9/9/13 12:50:13	45.93352	-130.01373	260.97	3.34	1539.69	1543	Zooming in on worms (probably sulfide worms). Beehive in front. Sad-looking tubeworms. Lots of flow!	5415
9/9/13 12:50:56	45.93350	-130.01373	260.81	3.34	1539.69	1543	Position here is: 130 0.8239 45 56.0125.	5417
9/9/13 12:51:16	45.93350	-130.01373	260.83	3.34	1539.68	1543	Sulfide worms close up. Nice video of the top of Inferno.	5419
9/9/13 12:51:28	45.93350	-130.01373	260.84	3.34	1539.66	1543	HIGHLIGHTS off.	5421
9/9/13 12:52:16	45.93350	-130.01374	260.82	3.35	1539.65	1543	Going in for a Jason temp probe reading over the largest beehive in this area (not quite at the top) Altitude here is 2.7 meters.	5425
9/9/13 12:54:02	45.93353	-130.01372	260.74	3.35	1539.65	1543	Temp rising. 270C; Repositioning a bit. Temperature rising again. Probe right in the beehive.	5430
9/9/13 12:55:16	45.93353	-130.01368	260.79	3.38	1539.69	1543.1	Temp reading. Sulfide worms and white mat in the background. Temp is 291.8C in the beehive.	5436

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 12:55:42	45.93352	-130.01366	260.83	3.38	1539.67	1543.1	The beehive is falling apart a bit while taking the temperature. There it goes.	5437
9/9/13 12:58:13	45.93359	-130.01360	261.36	3.38	1539.67	1543.1	Temperature has passed 300C. 310C and climbing. 310.9C is the high temp here in this spigot.	5446
9/9/13 12:59:50	45.93370	-130.01355	261.32	3.38	1539.64	1543	Tito is doing a bit more excavating before the gastight. Using the temp wand.	5450
9/9/13 12:59:55	45.93371	-130.01354	261.14	3.36	1539.67	1543	Stowing the wand.	5451
9/9/13 13:00:37	45.93372	-130.01352	261.16	3.35	1539.62	1543	Next will take 2 gastights here at Inferno.	5453
9/9/13 13:02:23	45.93369	-130.01350	261.26	3.39	1539.58	1543	**SAMPLE: GTB J729-GTB-06** red-green-7 in the excavated hole (that was formerly a large beehive). Firing 1302. Tmax here was 310.9C.	5458
9/9/13 13:04:41	45.93358	-130.01367	261.3	3.36	1539.53	1542.9	Will take another gastight here as well. Cursor position for these samples at Inferno is: 130 0.8239 45 56.0125 Altitude=2.8m Z=1540m.	5463
9/9/13 13:05:13	45.93356	-130.01370	261.16	3.38	1539.47	1542.9	Unhinging the gastight.	5465
9/9/13 13:07:30	45.93353	-130.01371	261.49	3.39	1539.5	1542.9	**SAMPLE: GTB J729-GTB-07** green-2 gastight bottle in the same position as the previous sample. Fired 1307.	5472
9/9/13 13:09:37	45.93355	-130.01370	261.96	3.44	1539.48	1542.9	Finished with gastight sampling for this dive.	5475
9/9/13 13:10:41	45.93355	-130.01371	261.76	3.25	1539.56	1542.8	Moving in for a syringe sample at Inferno.	5477
9/9/13 13:11:34	45.93354	-130.01371	261.67	3.26	1539.55	1542.8	**SAMPLE: Microbio J729-microbio-08** red syringe sample in the sediment underneath the white mat.	5483
9/9/13 13:12:00	45.93353	-130.01371	261.73	3.31	1539.51	1542.8	HIGHLIGHTS on. Started about a minute ago for microbio syringe sample at Inferno.	5484
9/9/13 13:13:22	45.93354	-130.01370	261.83	3.25	1539.54	1542.8	J729-microbio-08 cont. Going for the sediment under the white; just to the left of the beehives that were sampled earlier. Hard reach for Jason.	5488
9/9/13 13:13:29	45.93354	-130.01370	261.83	3.23	1539.56	1542.8	Need to reposition a bit.	5489
9/9/13 13:15:13	45.93354	-130.01372	249.52	2.99	1539.9	1542.9	J729-microbio-08 cont. Have not taken sample yet. Repositioning so that Jason can use both arms. Still near the 2 beehives (one now gone due to gastight sampling)	5494
9/9/13 13:17:32	45.93355	-130.01371	250.51	3.03	1539.84	1542.9	SAMPLE: Microbio J729-microbio-08 cont. Red syringe sample. Wants the tubeworm debris. Going in for it now. Got something. Looks like a successful sample.	5500
9/9/13 13:17:36	45.93355	-130.01371	250.43	3.03	1539.87	1542.9	HIGHLIGHTS off.	5501
9/9/13 13:18:37	45.93355	-130.01372	248.83	2.88	1539.95	1542.8	All the samples have been taken.	5503
9/9/13 13:19:34	45.93354	-130.01373	248.81	2.89	1539.91	1542.8	Next we will go over to the SKPR mooring. It will take us about a half hour to get there. This mooring is 35 meters tall.	5505
9/9/13 13:20:29	45.93354	-130.01371	249.68	3.75	1539	1542.8	Moving away from the vent now.	5509
9/9/13 13:20:56	45.93353	-130.01369	231.75	3.98	1538.89	1542.9	Moving 190m 050 bearing. Near the benchmark.	5510
9/9/13 13:22:34	45.93349	-130.01366	22.32	3.74	1539.52	1543.3	HD camera pointed at Mushroom.	5519
9/9/13 13:24:03	45.93358	-130.01363	40.14	4.39	1538.52	1542.9	Looking at the RSN HD cam. Has lights; pan and tilt; the orange thing is the cable.	5524
9/9/13 13:24:50	45.93370	-130.01347	36.31	4.01	1538.13	1542.1	Following the cable along the seafloor.	5528

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 13:26:10	45.93374	-130.01377	291.9	2.99	1539.6	1542.6	The cable is not tight. Looks like a long extension cord.	5531
9/9/13 13:26:59	45.93369	-130.01385	311.72	3.74	1538.83	1542.6	We're looking at the junction box now.	5536
9/9/13 13:27:46	45.93369	-130.01372	8.83	3.53	1539.17	1542.7	Still going north.	5539
9/9/13 13:30:28	45.93375	-130.01305	53.81	4.14	1538.45	1542.6	We are following an RSN cable.	5543
9/9/13 13:30:39	45.93375	-130.01301	58.24	4.56	1537.46	1542	Now past it.	5544
9/9/13 13:41:41	45.93456	-130.01174	41.46	16.31	1518.09	1534.4	We are at SCPR mooring. Jason is rising up to have a look at it.	5557
9/9/13 13:42:02	45.93457	-130.01172	44.43	26.07	1516.38	1542.5	We are at the top. Mooring is 25 meters tall.	5558
9/9/13 13:44:12	45.93462	-130.01170	102.77	26.7	1516.27	1543	We need to get Medea over to the side so that we can get to the bottom and work. Will download some data as well.	5563
9/9/13 13:44:48	45.93462	-130.01170	102.83	26.67	1516.29	1543	All floats are floating.	5564
9/9/13 13:45:22	45.93463	-130.01170	102.8	26.74	1516.23	1543	Repositioning the ship so can approach this large mooring.	5566
9/9/13 13:45:59	45.93463	-130.01170	102.78	19.48	1516.27	1535.8	SKPR float.	5568
9/9/13 13:46:30	45.93463	-130.01171	102.77	14.48	1516.29	1530.8	Want to get down and look at the bottom.	5570
9/9/13 13:46:37	45.93462	-130.01171	102.74	24.18	1516.27	1540.5	Powering on the acoustic modem.	5571
9/9/13 13:49:02	45.93460	-130.01177	103.15	17.58	1525.33	1542.9	We're moving down the mooring. HD highlights on.	5574
9/9/13 13:49:59	45.93454	-130.01177	47.25	3.09	1539.84	1542.9	The main thing is that the base has to be level and stable. Bottom in sight.	5579
9/9/13 13:50:14	45.93454	-130.01175	46.79	1.9	1540.95	1542.9	Looking at the mooring itself.	5583
9/9/13 13:50:46	45.93454	-130.01175	46.9	2.16	1540.55	1542.7	Mooring line looks vertical and the package is stable. Have COMS. Ranging on the SCPR. 6m.	5585
9/9/13 13:51:25	45.93453	-130.01176	46.9	2.29	1540.4	1542.7	Going to get x and y tilt etc. from the coms.	5588
9/9/13 13:53:03	45.93452	-130.01179	46.83	2.24	1540.44	1542.7	Zoomed in looking at the instrument.	5602
9/9/13 13:54:13	45.93452	-130.01180	46.89	2.24	1540.48	1542.7	Cursor fix on the SCPR. 130 0.7069 45 56.0626 Z=1541. Alt=1.	5605
9/9/13 13:54:22	45.93452	-130.01180	46.93	2.29	1540.41	1542.7	HIGHLIGHTS off. about 1 minute ago.	5606
9/9/13 13:55:24	45.93451	-130.01180	46.95	2.25	1540.44	1542.7	This SCPR mooring is ~20m NW of the ASHES AXBMRK-106.	5608
9/9/13 13:56:12	45.93451	-130.01179	47.01	2.24	1540.47	1542.7	We don't need to go to the benchmark; at least not yet.	5612
9/9/13 13:56:23	45.93451	-130.01179	47.09	2.25	1540.39	1542.6	Will make sure this is stable enough for Glenn.	5613
9/9/13 13:57:59	45.93455	-130.01181	48.03	2.18	1540.56	1542.7	We're off-level a bit. Will probably try to move the instrument a bit.	5616
9/9/13 13:58:11	45.93456	-130.01180	46.98	1.81	1540.92	1542.7	Will pull off the USBL beacon now.	5618
9/9/13 14:00:40	45.93456	-130.01177	45.4	0.81	1542.72	1543.5	Getting the USBL pinger off the instrument.	5622
9/9/13 14:01:31	45.93455	-130.01177	45.37	0.8	1542.66	1543.5	Removed the pinger from it's PVC holder.	5625
9/9/13 14:03:46	45.93455	-130.01179	45.34	0.8	1542.7	1543.5	Storing the pinger in the front basket near the large syringes.	5628
9/9/13 14:04:42	45.93454	-130.01182	45.34	0.81	1542.66	1543.5	Glenn wants to make sure it's sitting horizontal. Will reposition now.	5630
9/9/13 14:05:12	45.93454	-130.01183	45.33	0.8	1542.66	1543.5	Jason is moving the instrument around now.	5633
9/9/13 14:05:32	45.93455	-130.01184	45.33	0.8	1542.68	1543.5	HIGHLIGHTS on.	5634
9/9/13 14:06:00	45.93455	-130.01183	45.33	0.8	1542.64	1543.4	Checking things out.	5635
9/9/13 14:06:45	45.93456	-130.01182	45.33	0.81	1542.62	1543.4	We're still off-level.	5637
9/9/13 14:07:25	45.93457	-130.01181	45.32	0.8	1542.6	1543.4	Repositioning the SCPR.	5639
9/9/13 14:07:53	45.93458	-130.01180	45.21	0.74	1542.46	1543.2	Going for an "auto level" now.	5640

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 14:08:29	45.93457	-130.01179	45.21	0.74	1542.47	1543.2	HIGHLIGHTS off.	5642
9/9/13 14:09:28	45.93457	-130.01178	45.21	0.74	1542.4	1543.1	Waiting for the poser to come back on.	5644
9/9/13 14:09:46	45.93457	-130.01177	45.21	0.74	1542.4	1543.1	Started auto level (Michael is doing this from his laptop).	5645
9/9/13 14:10:28	45.93457	-130.01176	45.21	0.74	1542.42	1543.2	Were not able to level. No level.	5648
9/9/13 14:11:17	45.93458	-130.01176	45.21	0.74	1542.45	1543.2	Going to pick the instrument up and move it this way a few meters.	5650
9/9/13 14:12:26	45.93457	-130.01174	46.2	1.86	1540.77	1542.6	Want to position the instrument about where Jason just was.	5653
9/9/13 14:12:35	45.93457	-130.01174	46.7	1.39	1541.26	1542.7	Lifting off the bottom and moving back.	5654
9/9/13 14:13:19	45.93455	-130.01174	46.77	0.76	1542.22	1543	Trying a new spot.	5656
9/9/13 14:15:18	45.93457	-130.01174	48.69	0.95	1542.11	1543.1	Jason has the instrument in his claw.	5659
9/9/13 14:15:38	45.93458	-130.01174	48.8	0.93	1542.16	1543.1	Set the instrument down.	5661
9/9/13 14:16:51	45.93457	-130.01175	48.8	0.74	1542.16	1542.9	Doing a reading.	5663
9/9/13 14:17:20	45.93457	-130.01174	48.8	0.74	1542.13	1542.9	X leveled. Y is level. We're there!!	5665
9/9/13 14:18:35	45.93458	-130.01171	48.82	0.9	1542.19	1543.1	Going to begin the auto-calibration sequence now. The tilt looks good.	5668
9/9/13 14:19:30	45.93459	-130.01170	48.82	0.94	1542.2	1543.1	Taking some still of the instrument.	5672
9/9/13 14:23:20	45.93457	-130.01176	48.85	0.74	1542.2	1542.9	Calibrating. This is telling them where things are inside. Will be nice to have it so can have a nice flat starting point.	5681
9/9/13 14:26:13	45.93453	-130.01180	48.1	1.09	1541.46	1542.6	Calibrating cont.	5685
9/9/13 14:26:34	45.93451	-130.01183	140.81	2.81	1539.91	1542.7	In the meantime we're going to go over and look at the benchmark.	5686
9/9/13 14:28:02	45.93439	-130.01176	78.52	2.71	1540.01	1542.7	Heading over to the benchmark. Passing over older lavas.	5688
9/9/13 14:28:24	45.93439	-130.01171	72.24	2.3	1540.21	1542.5	The lava did not touch this benchmark. It was intact in 2011.	5690
9/9/13 14:28:59	45.93438	-130.01161	74.56	2.64	1539.8	1542.4	Benchmark in the background. Scorpio cam is the best.	5691
9/9/13 14:30:55	45.93438	-130.01153	71.64	1.53	1541.04	1542.6	We're at the benchmark now. AX106. Cursor position is: 130 0.6917 45 56.0647 Z=1542m.	5697
9/9/13 14:31:14	45.93438	-130.01155	71.86	1.7	1540.99	1542.7	Waiting to re-establish COMs then it will shut itself off.	5699
9/9/13 14:32:10	45.93433	-130.01176	9.47	4.26	1537.77	1542	Still calibrating. It will take about 9 more minutes. The modem range is 1200 meters.	5703
9/9/13 14:33:07	45.93433	-130.01185	7.04	4.8	1537.62	1542.4	The cursor position for the benchmark was only ~6 meters to the SE of the target.	5705
9/9/13 14:36:58	45.93441	-130.01177	326.16	4.86	1537.84	1542.7	They are having handshaking issues with the modem and instrument. They may not hear it. Because the instruments are talking. (Turned the Jason USBL off).	5709
9/9/13 14:39:00	45.93441	-130.01176	326.15	5.55	1537.07	1542.6	SKPR coms are back on. It's talking now. They are just waiting for it to finish.	5712
9/9/13 14:40:33	45.93442	-130.01175	326.12	5.58	1537.04	1542.6	With the Jason USBL off the SKPR is talking. Will take another minute or two for the calibration.	5715
9/9/13 14:41:43	45.93443	-130.01174	326.17	5.58	1537.03	1542.6	Finished with the calibration.	5717
9/9/13 14:42:30	45.93442	-130.01175	326.06	5.6	1537.08	1542.7	It will be down for 2 years. Collects pressure measurements. Will be calibrating every 9 days. Should collect data for the full 2 years.	5719
9/9/13 14:42:53	45.93441	-130.01175	325.97	5.45	1537.07	1542.5	Finished with the SCPR. Securing the SCPR modem. All is well.	5720

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-729 Dive Comments	Virtual Van #
9/9/13 14:43:58	45.93439	-130.01176	326.03	5.45	1537.06	1542.5	Looks like that is the end of the science portion of this dive. The last 4 hours will be used for Jason engineering time.	5722
9/9/13 14:45:03	45.93438	-130.01175	326.19	5.43	1537.06	1542.5	END OF SCIENCE PORTION OF THE DIVE AT 1445 - ACTUALLY THE END OF THE DIVE. JASON WANTS THE BOW THRUSTERS WORKING PROPERLY FOR THE ENGINEERING PORTION OF ANY DIVE.	5724
9/9/13 14:50:32	45.93413	-130.01150	127.77	16.63	1525.3	1541.9	Jason off bottom	5731
9/9/13 15:43:55	45.93453	-130.01183	148.38		1.09		JASON:Medea on deck That last entry was incorrect...Jason is still in the water!	5734
9/9/13 15:45:46	45.93455	-130.01186	132.86		0.3		Jason out of water Really out of the water now.	5735
9/9/13 15:48:39	45.93457	-130.01186	61.54		-0.07		Jason on deck	5736

6.6.5 J2-730 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/9/13 23:11:32	45.93453	-130.01189	189.47		2.68		Jason in water.	5746
9/9/13 23:14:53	45.93454	-130.01186	144.67		2.65		Medea in water.	5748
9/10/13 00:08:56	45.93179	-129.99815	96.64	97.99	1435.31	1533.3	A Homer #15 is ranging as we descend and it is 106m away and we are 95m off the bottom.	5772
9/10/13 00:10:34	45.93180	-129.99830	101.19	88.57	1444.3	1532.9	We are 85m off bottom and 89m away from the Homer.	5773
9/10/13 00:14:38	45.93191	-129.99915	282.84	41.47	1490.8	1532.3	We are 40m off bottom and homer is 75m away.	5774
9/10/13 00:15:49	45.93189	-129.99915	282.79	16.33	1516.32	1532.7	Smokey here.	5775
9/10/13 00:16:16	45.93188	-129.99917	281.82	5.86	1526.74	1532.6	Went through a visible plume.	5777
9/10/13 00:16:24	45.93188	-129.99917	283.64	2.5	1529.74	1532.2	Jason on bottom. See the bottom.	5778
9/10/13 00:16:58	45.93187	-129.99918	294.73	1.08	1531.56	1532.6	Bottom is a jumbled flow with not much sediment.	5779
9/10/13 00:18:36	45.93193	-129.99929	291.13	2.93	1529.46	1532.4	Landing has stirred up quite a bit of sediment.	5782
9/10/13 00:18:54	45.93193	-129.99929	290.87	3.03	1529.48	1532.5	Videos on at 00:16.	5783
9/10/13 00:19:34	45.93194	-129.99929	290.97	3.11	1529.37	1532.5	Dropping a weight.	5785
9/10/13 00:19:55	45.93194	-129.99928	290.97	3.2	1529.34	1532.5	Jason is now neutral.	5786
9/10/13 00:21:34	45.93189	-129.99925	290.9	4.55	1527.89	1532.4	Dropped another set of weights.	5789
9/10/13 00:25:53	45.93186	-129.99933	165.07	4.48	1528.46	1532.9	Getting our bearing and will search for the benchmark-308 with Homer#15.	5794
9/10/13 00:26:25	45.93185	-129.99935	165.08	4.46	1528.42	1532.9	Moving the ship ~50m south.	5798
9/10/13 00:28:01	45.93177	-129.99940	170.31	5.79	1526.44	1532.2	Jason is starting to move to the south slowly.	5800
9/10/13 00:35:48	45.93165	-129.99906	138.99	2.53	1530.37	1532.9	Looking at the seafloor here in the area of BPR-south1. Moving to the SE.	5809
9/10/13 00:36:28	45.93165	-129.99906	222.21	2.65	1530.42	1533.1	NAV: Lost bottom lock.	5811

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/10/13 00:37:05	45.93165	-129.99906	202.47	2.49	1530.84	1533.3	Still have USBL and now it looks like the Doppler is back.	5815
9/10/13 00:38:52	45.93165	-129.99907	83.77	3.09	1530.35	1533.4	Casey is trouble-shooting the Doppler problem. When that's complete we'll head on over to the benchmark for AX308.	5817
9/10/13 00:39:06	45.93165	-129.99907	76.87	3.19	1530.2	1533.4	Lava swirl.	5819
9/10/13 00:40:28	45.93164	-129.99905	1.52	3.8	1529.27	1533.1	There is a beacon on the benchmark that they can range to.	5821
9/10/13 00:41:39	45.93153	-129.99885	38.5	2.48	1530.69	1533.2	Bill thinks the benchmark is to the east.	5823
9/10/13 00:42:13	45.93153	-129.99884	9.34	2.63	1530.46	1533.1	NAV: Doppler Reset	5825
9/10/13 00:42:24	45.93154	-129.99884	12.36	2.89	1530.24	1533.1	Doppler is back up.	5826
9/10/13 00:42:49	45.93158	-129.99882	12.51	2.34	1530.6	1532.9	We see a reflector in the sonar. Hopefully it's the glass balls.	5827
9/10/13 00:43:39	45.93160	-129.99880	12.52	2.3	1530.64	1532.9	Crazy-looking lavas. Lava swirls are in front of us.	5829
9/10/13 00:45:30	45.93163	-129.99878	12.45	2.3	1530.63	1532.9	We're on the old lava flow.	5832
9/10/13 00:47:44	45.93167	-129.99875	12.54	2.2	1530.73	1532.9	Jason is dropping another dive weight.	5835
9/10/13 00:49:22	45.93165	-129.99882	12.87	2.65	1530.28	1532.9	NAV: Doppler Reset	5840
9/10/13 00:51:24	45.93166	-129.99885	12.43	1.39	1531.67	1533.1	Looking at the jumbled flow. Just sitting here.	5843
9/10/13 00:51:40	45.93168	-129.99884	13.27	1.43	1531.56	1533	Oh my - we are starting to move.	5844
9/10/13 00:51:55	45.93170	-129.99883	12.57	1.65	1531.36	1533	Heading to the north.	5845
9/10/13 00:52:09	45.93171	-129.99881	11.76	1.58	1531.25	1532.8	It's very flat here. No more jumbled flow.	5847
9/10/13 00:52:27	45.93172	-129.99876	14.03	1.41	1531.31	1532.7	Sheet flow with striations. Lots of sediment	5848
9/10/13 00:53:42	45.93178	-129.99866	12.41	1.01	1531.8	1532.8	Seeing a pressure ridge amid this sheet flow.	5851
9/10/13 00:54:17	45.93181	-129.99864	10.63	1.19	1531.57	1532.8	BPR right ahead.	5853
9/10/13 00:54:41	45.93180	-129.99857	12.49	2.3	1530.65	1533	It's about 15m high.	5856
9/10/13 00:55:09	45.93183	-129.99850	14.76	2.08	1530.95	1533	We see the benchmark ahead (at least we see the flag).	5859
9/10/13 00:56:05	45.93188	-129.99843	13.99	1.44	1531.56	1533	Benchmark AX-308 right ahead. It's about 20m east of the BPR.	5863
9/10/13 00:56:32	45.93191	-129.99841	14.01	1.19	1532.02	1533.2	It is sitting at an angle.	5864
9/10/13 00:57:29	45.93194	-129.99837	3.22	1.59	1531.65	1533.2	Zooming in on the benchmark and anchor. Those flags really glow in the dark!	5869
9/10/13 00:59:21	45.93203	-129.99842	332.61	0.74	1533.41	1534.2	The yellow polyline is to remove the anchor chain from the benchmark. The anchor was there to make it fall straight through the water column.	5876
9/10/13 01:00:10	45.93198	-129.99847	338.41	0.84	1533.22	1534.1	The other yellow line is to release the floats.	5879

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/10/13	01:00:33	45.93194	-129.99849	325.7	1.85	1531.82	1533.7	Jason has the benchmark in its claw. We're going to move it to the flat sheet flow area.	5880
9/10/13	01:01:57	45.93165	-129.99859	305.95	5.04	1527.96	1533	Don't want to get it too close to the BPR because of the floats; also will be working around it.	5882
9/10/13	01:04:59	45.93158	-129.99880	301.99	0.74	1532.68	1533.4	We're about 30 m south of the BPR. The approachability is good.	5889
9/10/13	01:06:36	45.93162	-129.99877	244.21	0.75	1532.68	1533.4	Circling the benchmark to take a good look.	5894
9/10/13	01:07:35	45.93163	-129.99879	232.02	0.74	1532.44	1533.2	Still moving around the benchmark - checking things out.	5896
9/10/13	01:09:20	45.93163	-129.99878	223.9	0.74	1532.6	1533.3	Location for this new benchmark AX308 is: 129° 59.9278' W 45° 55.8960' N Z=1533.4m	5899
9/10/13	01:12:34	45.93163	-129.99868	357.68	0.74	1532.65	1533.4	Deployed the TG11 tide gauge next to the benchmark. This will stay here until the end of the 5+ day dive. (TG11 is the model number).	5907
9/10/13	01:13:04	45.93164	-129.99866	357.69	0.74	1532.63	1533.4	Jason is going to pull the other pin and release the glass balls (mooring).	5908
9/10/13	01:14:21	45.93166	-129.99869	357.71	0.74	1532.64	1533.4	When Jason tugged on the poly pro line it moves the benchmark. Don't want that to happen after the pressure measurement.	5913
9/10/13	01:15:55	45.93160	-129.99876	357.73	0.74	1532.59	1533.3	Looks like a tie wrap attached to the mooring line. Zooming in to see what it is.	5915
9/10/13	01:16:28	45.93158	-129.99876	357.73	0.74	1532.59	1533.3	HIGHLIGHTS off.	5917
9/10/13	01:16:55	45.93157	-129.99874	357.74	0.74	1532.58	1533.3	Have been taping highlights.	5918
9/10/13	01:17:38	45.93156	-129.99869	356.6	0.74	1532.23	1533	HIGHLIGHTS on. Ready to pull the poly pro line.	5921
9/10/13	01:17:46	45.93156	-129.99869	356.62	0.74	1532.26	1533	It's done.	5922
9/10/13	01:18:02	45.93156	-129.99869	356.63	0.74	1532.23	1533	HIGHLIGHTS off.	5923
9/10/13	01:19:53	45.93109	-129.99871	182.6	3.99	1529.37	1533.4	So now Jason is going to just come off of the bottom to allow the ship to maneuver. Need to recover the mooring glass balls. Will probably take about an hour.	5926
9/10/13	01:21:14	45.93068	-129.99884	185.55	15.1	1518.52	1533.6	15 meters off the bottom.	5929
9/10/13	02:02:27	45.92824	-129.99841	173.8	111.14	1418.6	1529.7	The balls have been on the surface for about 15 minutes. We're waiting for the ship to come back toward the ROV.	5931
9/10/13	02:33:28	45.93114	-129.99893	356.41	3.19	1529.12	1532.3	The ship is not moving the way it should. The mooring balls have been on board since 0151.	5934
9/10/13	02:33:41	45.93113	-129.99895	356.22	3.03	1529.03	1532.1	We're back on the bottom. Finally.	5935
9/10/13	02:34:54	45.93128	-129.99888	355.28	3.46	1529.35	1532.8	We're 40m south of the benchmark and moving north.	5937
9/10/13	02:36:05	45.93146	-129.99882	358.31	2.75	1529.3	1532.1	Traveling over lobate/jumbled flow.	5940
9/10/13	02:36:56	45.93158	-129.99880	353.15	3.06	1528.82	1531.9	There's the benchmark flag.	5941
9/10/13	02:38:17	45.93162	-129.99862	272.38	1.66	1530.44	1532.1	HIGHLIGHTS on	5949
9/10/13	02:39:29	45.93166	-129.99857	270.57	1.03	1531.59	1532.6	We're at AX-308-BPR-South-1 new benchmark. We did not have a benchmark at this position in the caldera in the past.	5951
9/10/13	02:40:09	45.93167	-129.99855	270.56	0.99	1531.56	1532.6	Jason is going in to grab the MPR pressure sensor.	5953

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9/10/13	02:41:38	45.93165	-129.99854	270.27	0.74	1531.55	1532.3	Brand new pressure cases. Have 2 different gauges. One was built for OOI and strapped it on top of ours. Borrowed it to calibrate it with ours and increase the number of measurements at each site.	5954
9/10/13	02:42:28	45.93162	-129.99855	270.55	0.75	1531.56	1532.3	MPR pressure sensor being placed on the benchmark. It should fit nicely in the slot on the benchmark.	5956
9/10/13	02:43:34	45.93160	-129.99860	270.09	1	1531.53	1532.5	It should fit right in the depression on the benchmark. Positioning.	5966
9/10/13	02:44:45	45.93161	-129.99867	270.18	0.76	1531.52	1532.3	HIGHLIGHTS off. Looks like the pressure sensor is in place.	5971
9/10/13	02:45:36	45.93162	-129.99869	270.18	1.04	1531.53	1532.6	**PRESSURE: Start AX-308**	5974
9/10/13	02:46:20	45.93162	-129.99869	270.19	0.76	1531.49	1532.3	Started pressure measurement here at AX-308-BPR-South1.	5976
9/10/13	02:47:00	45.93160	-129.99869	270.2	0.74	1531.51	1532.3	Watch changes for everyone. (Bill to Scott watch leaders); etc.	5977
9/10/13	03:00:09	45.93154	-129.99866	270.38	1.04	1531.33	1532.4	Each pressure measurement will take approximately 20 minutes.	5992
9/10/13	03:06:03	45.93151	-129.99873	270.44	1.04	1531.34	1532.4	PRESSURE: End	5998
9/10/13	03:06:27	45.93151	-129.99873	270.44	117.83	1531.32	1649.2	Done with the measurement and ready to pick up instrument.	6000
9/10/13	03:07:52	45.93148	-129.99874	271.14	0.74	1531.32	1532.1	Instrument lifted off benchmark.	6002
9/10/13	03:09:15	45.93148	-129.99874	271.1	0.74	1531.29	1532	Pressure device placed back in basket and secured.	6005
9/10/13	03:10:07	45.93149	-129.99872	271.1	0.74	1531.3	1532	Ready to go to next benchmark at ASHES (AX-106).	6007
9/10/13	03:11:03	45.93150	-129.99870	286.18	3.63	1527.89	1531.5	Range to AX-106 is 1050m. Jason pulling off bottom for transit.	6008
9/10/13	03:13:41	45.93175	-129.99871	348.85	4.19	1526.95	1531.1	There is the BPR.	6012
9/10/13	03:14:08	45.93178	-129.99873	349.13	8.36	1522.68	1531	This is BPR South-1.	6014
9/10/13	03:15:02	45.93178	-129.99874	350.39	16.28	1514.38	1530.7	Looks taller than 15m.	6017
9/10/13	03:15:55	45.93178	-129.99878	349.57	17.38	1513.41	1530.8	Navigation is spot-on for the BPR location.	6020
9/10/13	03:26:33	45.93231	-130.00020	299.46	4.64	1529.29	1533.9	Transit to ASHES.	6032
9/10/13	03:26:56	45.93238	-130.00037	292.9	4.23	1529.77	1534	Can see some fairly large in place pillows within the otherwise level flow.	6033
9/10/13	03:29:07	45.93253	-130.00053	304.46	4.46	1530.84	1535.3	Now moving over very large pillows. Only brow camera has a view.	6037
9/10/13	03:34:05	45.93251	-130.00162	283.2	5.19	1535.51	1540.7	Looks like the flow has changed to a flatter flow but really hard to see with the dim brow cam.	6043
9/10/13	03:37:11	45.93226	-130.00204	289.44	4.35	1536.48	1540.8	Some pressure ridges and swirls. A lot of sediment and really flat now.	6047
9/10/13	03:37:39	45.93231	-130.00223	289.17	4.26	1535.8	1540.1	Large ridge then big pillow flows.	6048
9/10/13	03:40:43	45.93220	-130.00287	287.96	5.53	1535.98	1541.5	Great ridge on the sonar coming up.	6052
9/10/13	03:41:25	45.93225	-130.00309	288.41	5.65	1536.44	1542.1	Right now moving over heavy-sedimented pillow flows.	6054
9/10/13	03:47:27	45.93258	-130.00443	288.09	5.05	1539.37	1544.4	Something interesting in cameras-pit?	6061
9/10/13	03:48:11	45.93252	-130.00457	285.21	4.63	1537.37	1542	Bigger pillows and sediment coverage.	6063
9/10/13	03:49:05	45.93255	-130.00488	288.15	4.68	1533.89	1538.6	Looks like large-round pillows (crab).	6065
9/10/13	03:56:03	45.93301	-130.00680	287.88	5.29	1529.59	1534.9	Great sheet flow in cameras with swirls and lines.	6072
9/10/13	04:05:00	45.93375	-130.00932	288.51	4.01	1529.85	1533.9	OOI cable sighted on the bottom.	6082

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9/10/13 04:14:50	45.93436	-130.01162	26.68	3.16	1538.71	1541.9	Found the next benchmark.	6093
9/10/13 04:15:56	45.93441	-130.01154	65.78	2.65	1539.46	1542.1	This AX-106! We made it.	6095
9/10/13 04:16:09	45.93441	-130.01153	65.82	2.76	1539.3	1542.1	Retrieving pressure instrument from basket.	6097
9/10/13 04:20:26	45.93446	-130.01147	87.03	0.74	1541.36	1542.1	Placing device on benchmark.	6105
9/10/13 04:22:28	45.93445	-130.01147	87.34	0.74	1541.32	1542.1	Seems like there is something in the indentation-not sitting flat in the black area.	6110
9/10/13 04:24:17	45.93441	-130.01150	87.15	0.74	1541.32	1542.1	Taking frame grab photos of its placement.	6116
9/10/13 04:24:51	45.93440	-130.01150	87.49	0.74	1541.39	1542.1	**PRESSURE: Start AX-106**.	6117
9/10/13 04:25:47	45.93440	-130.01150	87.42	0.74	1541.37	1542.1	NAV: Doppler Reset	6119
9/10/13 04:43:19	45.93441	-130.01161	87.1	0.74	1541.36	1542.1	Almost done with AX-106.	6139
9/10/13 04:45:17	45.93440	-130.01162	87.42	0.74	1541.38	1542.1	PRESSURE: End	6142
9/10/13 04:46:10	45.93440	-130.01161	87.57	0.74	1541.26	1542	Picking up pressure device from benchmark.	6146
9/10/13 04:47:59	45.93441	-130.01162	87.35	0.74	1541.3	1542	Pressure device on the basket and secured.	6148
9/10/13 04:48:28	45.93442	-130.01162	88.02	0.74	1541.36	1542.1	Going to turn Jason toward the SCPR and receive data for 4-5 minutes.	6150
9/10/13 04:49:26	45.93447	-130.01168	38.2	1.8	1540.16	1542	Backing Jason up and turning left to be in good position for receiving data from SCPR.	6152
9/10/13 04:50:11	45.93447	-130.01169	312.63	2.43	1539.72	1542.2	Heading is 312 and waiting for SCPR to sync for data.	6154
9/10/13 04:50:19	45.93447	-130.01169	312.64	2.38	1539.79	1542.2	Takes 1-2 minutes to sync.	6155
9/10/13 04:52:34	45.93448	-130.01169	312.6	2.41	1539.75	1542.2	Getting communication from SCPR.	6158
9/10/13 04:53:07	45.93447	-130.01170	312.55	2.43	1539.75	1542.2	Can see SCPR on cameras.	6161
9/10/13 05:02:38	45.93452	-130.01175	312.53	2.43	1539.74	1542.2	One more minute for SCPR. Also now testing the Beast for a few minutes (powered on).	6174
9/10/13 05:08:58	45.93443	-130.01176	312.44	2.38	1539.76	1542.1	All done with SCPR data download-looks good. The Beast looks good but is still testing as we get underway.	6181
9/10/13 05:09:18	45.93443	-130.01176	312.4	2.4	1539.74	1542.1	Next stop is AX-307 Magnesia West.	6183
9/10/13 05:09:44	45.93443	-130.01175	312.05	2.4	1539.75	1542.2	Range of 1284m at a heading of 6deg.	6184
9/10/13 05:12:28	45.93451	-130.01138	34.54	1.94	1540.47	1542.4	Sonar shows a very flat area ahead and seeing sheet flows with some white staining.	6188
9/10/13 05:13:12	45.93450	-130.01136	34.47	1.45	1541.09	1542.5	Frame grabs of the white staining on top of sheet flow.	6192
9/10/13 05:13:28	45.93450	-130.01136	34.23	1.73	1540.81	1542.5	Setting up to drive north.	6193
9/10/13 05:14:31	45.93452	-130.01136	34.34	28.35	1513.51	1541.9	Coming up to clear the SCPR mooring height.	6195
9/10/13 05:24:23	45.93578	-130.01109	5.63	40.43	1500.66	1541.1	Going closer down to the bottom as we have made some progress north.	6196
9/10/13 05:27:27	45.93598	-130.01081	8.62	3.03	1538.91	1541.9	Can see some bottom of pillow flows with sediment.	6200
9/10/13 05:27:42	45.93604	-130.01077	13.4	4.51	1537.39	1541.9	Done testing the Beast so powering down.	6201
9/10/13 05:28:08	45.93611	-130.01067	9.76	3.54	1538.12	1541.7	Flat sheet flows with sediment. According to nav we are just west of the new flow.	6203

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9/10/13 05:31:02	45.93637	-130.00997	10.27	3.96	1538.75	1542.7	Very close to edge of flow but still looks like older pillows with sediment.	6206
9/10/13 05:35:09	45.93663	-130.00971	9.99	4.01	1538.96	1543	Contact.	6212
9/10/13 05:35:18	45.93665	-130.00967	11.53	3.54	1538.71	1542.3	Looks like this could be a lava contact.	6213
9/10/13 05:35:53	45.93674	-130.00958	11.16	3.79	1538.16	1542	Looks like brow camera had best view as science camera didn't have a good view.	6215
9/10/13 05:36:44	45.93685	-130.00938	10.43	4.2	1537.74	1541.9	Flying over pillows with sediment (little).	6217
9/10/13 05:37:08	45.93686	-130.00936	11.41	4.21	1537.63	1541.8	Earlier view definitely looked like dark vs. light contact.	6219
9/10/13 05:38:03	45.93698	-130.00922	2.2	3.69	1537.92	1541.6	Looks like more sediment here.	6220
9/10/13 05:39:37	45.93732	-130.00908	7.3	2.56	1537.98	1540.5	These look old (or is sediment of this amount normal?).	6225
9/10/13 05:40:11	45.93745	-130.00901	4.99	2.01	1537.86	1539.9	Large pillow flow.	6228
9/10/13 05:40:42	45.93750	-130.00899	8.37	2.35	1537.45	1539.8	Nav says this should be the new flow.	6230
9/10/13 05:41:27	45.93755	-130.00898	3.72	2.06	1537.14	1539.2	Striated pillows.	6233
9/10/13 05:42:29	45.93772	-130.00894	6.15	2.6	1536.68	1539.3	Rat tail hanging out.	6237
9/10/13 05:44:29	45.93790	-130.00899	4.73	2.76	1535.68	1538.4	Still flying over big pillows.	6242
9/10/13 05:48:14	45.93876	-130.00895	7.34	3.69	1535.07	1538.8	The pilot would like to name this Corey's flow.	6250
9/10/13 05:49:00	45.93889	-130.00908	19.48	3.2	1535.31	1538.5	Still over new flow according to nav.	6252
9/10/13 05:55:11	45.93982	-130.00946	2.44	2.95	1534.22	1537.2	Big lava tube.	6268
9/10/13 05:56:18	45.94008	-130.00944	3.98	3.43	1531.96	1535.4	Crab.	6272
9/10/13 05:57:46	45.94037	-130.00940	6.05	2.13	1533.32	1535.5	Came close to the bottom and could see some fuzziness on the lava.	6275
9/10/13 05:59:48	45.94081	-130.00944	3.53	2.68	1532.9	1535.6	290m to go to the benchmark.	6278
9/10/13 06:00:20	45.94091	-130.00942	2.43	2.76	1533.47	1536.2	Coming up to the alleged contact.	6280
9/10/13 06:00:53	45.94099	-130.00942	0.54	2.18	1534.57	1536.8	Still in new flow according to nav.	6281
9/10/13 06:01:26	45.94109	-130.00948	2.9	2.4	1535.17	1537.6	Fish.	6284
9/10/13 06:04:52	45.94158	-130.00955	1.1	2.3	1536.71	1539	On the bottom.	6290
9/10/13 06:04:57	45.94160	-130.00955	0.96	2.56	1536.93	1539.5	Big pillows.	6291
9/10/13 06:06:11	45.94192	-130.00960	0.66	2.03	1539.37	1541.4	Contact.	6299
9/10/13 06:06:40	45.94204	-130.00961	0.13	2.98	1539.47	1542.5	Went from big pillows to a distinct jumbled flow.	6301
9/10/13 06:06:57	45.94209	-130.00962	0.66	3.01	1539.26	1542.3	Went from new to old.	6302
9/10/13 06:07:11	45.94216	-130.00963	3.16	2.36	1539.81	1542.2	Old sheet flows.	6304
9/10/13 06:07:35	45.94226	-130.00966	359.19	2.78	1541.04	1543.8	Thick and flat flows.	6306
9/10/13 06:08:15	45.94238	-130.00967	0.29	2.79	1541.06	1543.9	Looks new.	6310
9/10/13 06:08:37	45.94244	-130.00967	358.21	2.9	1540.33	1543.2	Looks like some fingers of new flow with old sheet flow next to it.	6312
9/10/13 06:09:15	45.94253	-130.00967	0.02	3.01	1540.55	1543.6	Sonar shows the sheet flows and the new flows of pillow to the right.	6314
9/10/13 06:09:45	45.94260	-130.00967	2.31	2.84	1541.06	1543.9	Brow cam had good view of that last contact.	6316
9/10/13 06:10:31	45.94280	-130.00968	359.2	3.95	1539.75	1543.7	Cool lip of sheet flow.	6318
9/10/13 06:10:38	45.94282	-130.00969	359.81	3.06	1539.16	1542.2	Back into jumbled flow.	6319

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/10/13	06:11:34	45.94312	-130.00971	2.79	2.71	1538.36	1541.1	Seeing many more sessile animals in the jumbled flow.	6321
9/10/13	06:12:35	45.94340	-130.00973	3.7	2.65	1539.67	1542.3	285m to go to the next benchmarks.	6324
9/10/13	06:13:33	45.94362	-130.00971	3.51	2.51	1540.94	1543.5	That is benchmark AX-307.	6326
9/10/13	06:14:47	45.94391	-130.00972	2.28	2.68	1540.46	1543.1	Jumbled sheet flows and animals.	6328
9/10/13	06:15:11	45.94398	-130.00975	1.16	3.49	1540.45	1543.9	Ledge of sheet flow.	6332
9/10/13	06:16:15	45.94420	-130.00977	1.73	3.1	1538.22	1541.3	Quite a few sea stars.	6334
9/10/13	06:17:56	45.94450	-130.00975	6.67	1.76	1539.81	1541.6	This benchmark is going to be moved over to the flat area off to the west of the drop location.	6336
9/10/13	06:18:45	45.94466	-130.00973	3.51	2.46	1540.41	1542.9	AX-307 has a Homer but we do not know its number.	6338
9/10/13	06:19:05	45.94470	-130.00973	3.85	2.45	1541.27	1543.7	Going to try some of the Homer numbers that we suspect it could be.	6340
9/10/13	06:19:20	45.94475	-130.00973	3.82	2.45	1541.38	1543.8	Sheet flows.	6341
9/10/13	06:19:48	45.94482	-130.00972	6.45	2.51	1541.19	1543.7	Within 120m of the drop position so trying to start the Homer.	6343
9/10/13	06:20:10	45.94487	-130.00971	3.48	2.48	1540.47	1543	45 did not work. Trying 51 for the Homer.	6346
9/10/13	06:20:44	45.94499	-130.00972	4.65	2.7	1540.26	1543	That didn't work so trying 85.	6347
9/10/13	06:21:03	45.94507	-130.00974	3.93	2.7	1540.72	1543.4	Moving over sheet flows.	6349
9/10/13	06:21:19	45.94514	-130.00974	3.71	2.89	1540.49	1543.4	Trying Homer 45 again.	6351
9/10/13	06:21:57	45.94525	-130.00973	4.45	3.36	1540.31	1543.7	Big sheet flows. 75m from drop location.	6352
9/10/13	06:22:24	45.94536	-130.00972	4.08	3.45	1539.97	1543.4	Trying numbers in the 80's for the Homer.	6355
9/10/13	06:22:53	45.94545	-130.00972	3.57	3.29	1539.95	1543.2	Coming into jumbled flow-boundary between both.	6356
9/10/13	06:24:00	45.94565	-130.00975	5.61	2.85	1539.45	1542.3	Homer 81-89 did not work.	6358
9/10/13	06:24:28	45.94573	-130.00972	3.42	3.03	1539.35	1542.4	Within 35m of the drop location.	6360
9/10/13	06:24:57	45.94580	-130.00975	2.59	3.14	1539.6	1542.7	Looking for the benchmark with sonar.	6361
9/10/13	06:25:44	45.94581	-130.00976	3.09	2.96	1539.43	1542.4	Last dropped benchmark was 100m to the east of its dropped location.	6363
9/10/13	06:26:39	45.94595	-130.00991	330.8	3.35	1539.46	1542.8	Cycling through the 90 #'s for the Homer while driving and scanning with the sonar.	6365
9/10/13	06:27:41	45.94600	-130.00994	330.21	3.4	1539.61	1543	Glass floats only 5m above bottom so haven't have much luck seeing it with the sonar.	6367
9/10/13	06:27:58	45.94600	-130.00994	330.31	3.44	1539.6	1543	Brow camera has 2 sheet flows adjacent.	6368
9/10/13	06:29:50	45.94592	-130.00995	4.67	3.49	1539.62	1543.1	Homer 17 is on this benchmark. It is 87m away to the west.	6371
9/10/13	06:30:28	45.94592	-130.00993	4.65	3.4	1539.64	1543	NAV: Doppler Reset	6373
9/10/13	06:32:42	45.94605	-130.00996	217.28	3.66	1539.4	1543.1	Should be at 217deg and 90m ahead.	6376
9/10/13	06:35:56	45.94609	-130.00991	217.08	3.69	1539.37	1543.1	Need to move the ship to the west to go find the benchmark.	6380
9/10/13	07:05:45	45.94549	-130.00948	75.33	3.49	1540.37	1543.9	Rope on the seafloor	6412
9/10/13	07:06:09	45.94552	-130.00943	75.88	3.1	1540.8	1543.9	Possibly part of an old mooring	6415
9/10/13	07:07:12	45.94555	-130.00924	76.44	3.04	1540.49	1543.5	Benchmark is in sight.	6417
9/10/13	07:08:10	45.94556	-130.00918	77.49	3.15	1540.3	1543.5	20m away; heading 77deg.	6419

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9/10/13 07:11:30	45.94556	-130.00915	76.95	3.06	1539.92	1543	This area is fairly rough; not ideal for placing the benchmark.	6426
9/10/13 07:12:11	45.94557	-130.00911	75.93	2.73	1539.19	1541.9	We will need to look around and find a suitable flat spot.	6428
9/10/13 07:13:41	45.94557	-130.00903	115.37	1.91	1541.92	1543.8	Mounds of collapsed lava pillows everywhere.	6430
9/10/13 07:14:40	45.94557	-130.00902	116.91	0.76	1541.57	1542.3	Arrived at the benchmark and will pull the pin to drop the weights.	6432
9/10/13 07:14:57	45.94557	-130.00902	116.8	0.81	1541.53	1542.3	After that we should be able to move it around easily.	6433
9/10/13 07:17:48	45.94553	-130.00910	116.52	2.3	1539.96	1542.3	Picking up the benchmark and moving to find a flat spot.	6442
9/10/13 07:19:47	45.94533	-130.00910	178.92	0.74	1543.62	1544.4	Found an area with very smooth flows.	6445
9/10/13 07:20:04	45.94534	-130.00910	178.86	0.74	1543.58	1544.3	Placing the benchmark here.	6446
9/10/13 07:22:51	45.94533	-130.00912	179.46	0.74	1543.62	1544.4	Going to take a pressure measurement now.	6452
9/10/13 07:27:19	45.94535	-130.00906	179.43	0.74	1543.65	1544.4	Pressure recorder is in position.	6461
9/10/13 07:27:23	45.94535	-130.00906	179.43	0.74	1543.66	1544.4	**PRESSURE: Start AX-307.**	6462
9/10/13 07:47:59	45.94533	-130.00906	179.69	0.74	1543.8	1544.5	PRESSURE: End	6483
9/10/13 07:49:36	45.94534	-130.00904	179.71	0.74	1543.82	1544.6	Stowing the pressure recorder.	6486
9/10/13 07:51:21	45.94536	-130.00898	47.3	1.59	1542.34	1543.9	We are done here. Now transiting north about 1km to AX-101.	6489
9/10/13 07:51:29	45.94539	-130.00897	39.31	1.75	1542.42	1544.2	Jason off bottom.	6490
9/10/13 07:52:47	45.94550	-130.00899	357.6	3.33	1539.5	1542.8	Polypro line from our anchor is on the bottom.	6492
9/10/13 07:54:48	45.94541	-130.00886	153.95	4.31	1537.83	1542.1	Spinning Jason around to be dragged backwards to the next benchmark.	6497
9/10/13 07:57:09	45.94519	-130.00857	136.71	45.84	1497.59	1543.4	Moving Jason up to about 60m so we don't hit anything during the transit.	6500
9/10/13 08:54:34	45.95365	-130.00855	163.87	48.64	1483.45	1532.1	Still in transit. 145m to go; heading 166deg.	6501
9/10/13 09:07:11	45.95512	-130.00956	178.72	3.6	1528.51	1532.1	Video logging restarted.	6508
9/10/13 09:07:29	45.95512	-130.00958	251.52	2.95	1528.67	1531.6	The dvds had run out while in transit.	6509
9/10/13 09:07:41	45.95513	-130.00960	312.98	3.16	1528.53	1531.7	Jason on bottom.	6510
9/10/13 09:08:26	45.95517	-130.00963	322.81	3.05	1528.65	1531.7	Target is 30m away.	6512
9/10/13 09:10:08	45.95531	-130.00990	240.27	2.23	1530.27	1532.5	Seafloor is barren here. Just lobate lava with some light sediment accumulated in the cracks.	6515
9/10/13 09:10:40	45.95526	-130.00991	228.73	2.89	1529.65	1532.5	Marker 61 is ahead of us.	6516
9/10/13 09:10:57	45.95526	-130.00991	227.42	1.98	1530.59	1532.6	Benchmark is to the left a few meters.	6517
9/10/13 09:11:32	45.95526	-130.00991	227.87	1.83	1530.71	1532.5	Extending the basket.	6519
9/10/13 09:13:47	45.95526	-130.00990	227.37	1.98	1530.53	1532.5	Picking up the pressure recorder.	6522
9/10/13 09:15:41	45.95523	-130.00992	234.9	0.74	1532.22	1533	Placing pressure recorder on the benchmark.	6525

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9/10/13	09:19:23	45.95522	-130.00993	234.8	0.79	1532.25	1533	PRESSURE: Start It is difficult to get the recorder into the correct position without the cable being in the way.	6532
9/10/13	09:20:01	45.95522	-130.00993	234.88	0.76	1532.24	1533	Got the recorder seated on the benchmark.	6533
9/10/13	09:20:50	45.95522	-130.00994	235.19	0.74	1532.29	1533	We haven't started recording yet; ignore previous start entry.	6535
9/10/13	09:20:54	45.95522	-130.00994	235.21	0.74	1532.29	1533	**PRESSURE: Start AX-101.**	6536
9/10/13	09:36:26	45.95527	-130.01003	235.25	0.74	1532.38	1533.1	Small brittle stars are all over the benchmark.	6566
9/10/13	09:40:13	45.95528	-130.01004	235.17	0.74	1532.41	1533.2	PRESSURE: End	6571
9/10/13	09:40:34	45.95527	-130.01004	235.11	0.74	1532.35	1533.1	Recovering and stowing the pressure recorder.	6572
9/10/13	09:41:40	45.95528	-130.00999	236.4	2.03	1530.82	1532.9	Backing away from the benchmark and coming off the bottom.	6574
9/10/13	09:42:13	45.95528	-130.00999	236.04	2.03	1530.86	1532.9	Jason off bottom.	6576
9/10/13	09:45:07	45.95526	-130.00993	131.08	2.46	1530.45	1532.9	Beginning transit to AX-302 now; 2300m at a heading of 114 deg.	6580
9/10/13	11:46:20	45.94657	-129.98290	83.3	2	1516.47	1518.5	Jason on bottom.	6589
9/10/13	11:48:54	45.94669	-129.98271	85.96	4.15	1513.51	1517.7	AX202 was buried in the 2011 flow. We dropped AX302 with homer 15 (range of 75m) to the east of Trevi. We're looking for it now. Will place the benchmark and then do pressure measurement.	6592
9/10/13	11:49:53	45.94668	-129.98249	86.08	3.46	1515.05	1518.5	In 2011 we picked up an old metal benchmark and brought it to Trevi to make the pressure measurement.	6594
9/10/13	11:50:23	45.94669	-129.98255	1.65	3.69	1514.82	1518.5	This time we will do 2 measurements here. One on the old metal benchmark and one on the new cement benchmark.	6596
9/10/13	11:50:51	45.94668	-129.98266	1.03	4.03	1514.26	1518.3	Looking for the benchmark.	6597
9/10/13	11:51:28	45.94668	-129.98266	1.03	5.51	1512.66	1518.2	We're moving the ship and Jason to the west now because the Homer range indicates the benchmark is west of us.	6599
9/10/13	11:52:22	45.94663	-129.98270	282.61	2.83	1515.68	1518.5	Jumbled lavas here.	6601
9/10/13	11:53:06	45.94667	-129.98279	282.9	1.63	1516.25	1517.9	NAV: Doppler Reset	6604
9/10/13	11:55:03	45.94669	-129.98280	282.39	1.26	1517.91	1519.2	Switched from the doppler they use in the water column (300 kHz) to the doppler they use on the bottom (1200 kHz).	6606
9/10/13	11:55:31	45.94669	-129.98276	276.42	1.14	1517.08	1518.2	The seafloor is jumbled and very rugged here.	6609
9/10/13	11:55:58	45.94671	-129.98269	279.55	2.84	1515.65	1518.5	We're still east of the 2011 flow Bill says.	6610

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9/10/13 11:56:53	45.94674	-129.98257	280.77	2.21	1516.41	1518.6	Trevi was not buried in 2011. Magnesia was and that's where the old benchmark was. We decided to put the benchmark at Trevi after that because it was out of the new lava flow area.	6612
9/10/13 11:57:49	45.94678	-129.98244	284.18	3.19	1515.8	1519	We're up on the east rim where the caldera wall gradually disappears. At 1516 meters.	6614
9/10/13 11:59:23	45.94674	-129.98247	281.72	1.88	1517.26	1519.1	Not much biota on these jumbled up lava flows. See the occasional sea cucumber below.	6617
9/10/13 11:59:51	45.94677	-129.98255	283.23	2.05	1516.85	1518.9	Oh my it's sea cucumber heaven.	6619
9/10/13 12:01:21	45.94681	-129.98286	282.55	2.58	1516.18	1518.8	Moving to the west now at a fairly decent clip. Still in search of the benchmark. The range on the homer is decreasing.	6628
9/10/13 12:02:58	45.94688	-129.98301	283.04	3.63	1515.23	1518.9	Casey commented that it's not very flat here for placing a benchmark. Bill assures him it's flatter at Trevi.	6630
9/10/13 12:04:30	45.94689	-129.98318	282.83	3.09	1516.02	1519.1	Correction: HOM=15 means that the homer ID number is 15. The range is ~40m now. (all this on the Medea cam screen)	6633
9/10/13 12:06:15	45.94684	-129.98356	284.36	2.55	1517.15	1519.7	Lava swirls here at the edge of the caldera wall.	6636
9/10/13 12:06:48	45.94678	-129.98364	248.66	2.44	1518.12	1520.6	The terrain dropped off suddenly.	6638
9/10/13 12:07:05	45.94674	-129.98366	226.81	2.05	1518.11	1520.2	We went over a step.	6640
9/10/13 12:07:42	45.94671	-129.98373	268.95	4.66	1519.46	1524.1	Pretty dramatic step down.	6643
9/10/13 12:08:23	45.94666	-129.98375	93.79	5.53	1517.53	1523.1	See the mooring and benchmark behind Jason in the buttcam.	6646
9/10/13 12:09:05	45.94668	-129.98366	109.48	5.53	1517.69	1523.2	Now it's ahead of us. Looking good. BMRK-302.	6649
9/10/13 12:09:48	45.94670	-129.98360	152.8	1.66	1517.96	1519.6	Will want to move this to the AX-202 benchmark.	6660
9/10/13 12:10:58	45.94670	-129.98362	149.14	0.74	1519.11	1519.9	It did not land well at all. It's at about a 45 degree angle. All does seem to be intact.	6668
9/10/13 12:11:12	45.94670	-129.98362	149.11	0.74	1519.11	1519.9	Jason released the pin holding the drop weight.	6670
9/10/13 12:11:54	45.94670	-129.98364	149.14	0.74	1519.05	1519.8	Next will pick it up and move it to the S/SE about 30m.	6671
9/10/13 12:12:25	45.94670	-129.98365	150.76	2.3	1517.53	1519.8	Jason has the benchmark and mooring in its claw and will move it to Trevi area.	6674
9/10/13 12:12:52	45.94667	-129.98364	174.01	3.8	1514.73	1518.5	Bye bye anchor. Anchors away - the benchmark.	6675
9/10/13 12:13:16	45.94665	-129.98363	177.19	2.95	1515.41	1518.4	The benchmark target is about 10m to the N/NW of Trevi vent.	6677
9/10/13 12:13:41	45.94662	-129.98364	175.77	3.89	1514.89	1518.8	Moving toward the AX-202-Trevi target now.	6678

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9/10/13 12:15:05	45.94655	-129.98371	177.89	3.83	1515.04	1518.9	Looking at striated sheet flow on the seafloor beneath us now. Not as jumbled - but maybe that's just because we're 6m off the bottom.	6681
9/10/13 12:15:36	45.94656	-129.98369	176.09	3.83	1515.04	1518.9	Sounds like we will release the glass balls about 0630 this morning.	6682
9/10/13 12:17:18	45.94648	-129.98382	178.19	6.11	1515.41	1521.5	Looks like the old benchmark and its marker are just ahead of us.	6685
9/10/13 12:18:16	45.94642	-129.98385	176.72	1.83	1519.29	1521.1	Zooming in on the old-style metal benchmark and white marker#63.	6690
9/10/13 12:18:49	45.94642	-129.98387	172.79	0.74	1520.54	1521.3	HIGHLIGHTS on.	6696
9/10/13 12:19:16	45.94642	-129.98388	172.8	0.74	1520.71	1521.5	Looking at the older generation benchmark on the left and the new heavy-duty benchmark on the right.	6698
9/10/13 12:20:26	45.94642	-129.98389	171.97	0.74	1520.61	1521.4	Jason has set the new benchmark AX302 in place on the seafloor beside the old metal benchmark with marker 63 attached.	6703
9/10/13 12:20:34	45.94642	-129.98388	172.58	0.95	1520.65	1521.6	Still positioning the new benchmark.	6704
9/10/13 12:21:45	45.94644	-129.98388	176	0.98	1520.17	1521.2	Jason is moving the benchmark slightly.	6710
9/10/13 12:22:15	45.94645	-129.98387	174.36	0.8	1520.79	1521.6	The lava flow here is more sheet-like; at least not as jumbled.	6712
9/10/13 12:23:01	45.94647	-129.98382	175.6	5.8	1515.19	1521	Jason is maneuvering to take out a wrap in the tether.	6715
9/10/13 12:23:13	45.94648	-129.98382	76.76	5.53	1515.56	1521.1	HIGHLIGHTS off.	6717
9/10/13 12:23:59	45.94643	-129.98378	250.19	4.48	1516.49	1521	Jason has stirred up a lot of seafloor sediments. We're off the bottom 5m now. Tether management.	6718
9/10/13 12:25:39	45.94641	-129.98377	254.18	0.94	1520.76	1521.7	Contemplating the benchmark position.	6723
9/10/13 12:26:29	45.94641	-129.98378	254.18	0.76	1520.75	1521.5	Going to move it back from the edge a bit.	6725
9/10/13 12:27:18	45.94642	-129.98378	254.18	0.76	1520.75	1521.5	We're going to do the pressure measurement on AX-202 on the old metal benchmark first. Then will move the new benchmark into place.	6727
9/10/13 12:27:51	45.94642	-129.98379	254.2	0.75	1520.74	1521.5	Jason is moving in to pick up the sensor.	6728
9/10/13 12:28:58	45.94642	-129.98379	254.63	0.74	1520.73	1521.5	Grabbing the loop and picking up the double sensor package.	6730
9/10/13 12:29:42	45.94641	-129.98380	256.69	0.75	1520.75	1521.5	The old version of benchmark doesn't have the nice slot for the sensor deployment like the new ones do.	6733
9/10/13 12:31:29	45.94640	-129.98383	265.88	0.84	1520.69	1521.5	The sensor has been place on the old benchmark. Looks good.	6745

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9/10/13 12:31:55	45.94640	-129.98383	265.88	0.84	1520.71	1521.6	**PRESSURE: Start AX-202** Trevi old benchmark start 123150.	6746
9/10/13 12:32:40	45.94640	-129.98380	266.87	0.79	1520.71	1521.5	Pressure measurement started at AX-202 old metal benchmark.	6748
9/10/13 12:48:33	45.94642	-129.98382	266.92	0.79	1520.62	1521.4	Still recording the pressure measurement.	6767
9/10/13 12:49:31	45.94641	-129.98379	266.94	0.8	1520.63	1521.4	3 more minutes.	6769
9/10/13 12:52:42	45.94639	-129.98374	266.95	0.76	1520.6	1521.4	PRESSURE: End	6773
9/10/13 12:53:36	45.94640	-129.98376	266.96	0.79	1520.57	1521.4	Bill and Scott save each measurement to a specific file so he actually switched files about a minute ago.	6775
9/10/13 12:53:46	45.94640	-129.98376	266.97	0.79	1520.58	1521.4	Pressure sensor back on the vehicle.	6776
9/10/13 12:54:15	45.94641	-129.98378	266.96	0.79	1520.57	1521.4	Next will remove the new benchmark a bit - into its final position.	6779
9/10/13 12:55:36	45.94642	-129.98380	227.09	0.84	1520.73	1521.6	Will leave the old benchmark right where it is. Sort of a back-up plan for the "next eruption".	6781
9/10/13 12:56:00	45.94642	-129.98379	227.12	0.85	1520.71	1521.6	Will now maneuver the new AX302 benchmark to its final position. Refining it.	6782
9/10/13 12:58:59	45.94643	-129.98376	226.61	0.79	1520.73	1521.5	USBL fix position here (the cursor) is: 129 59.0273 45 56.7850 Z=1521.5. That position is ~3m N/NE of the target position for AX302 (and AX202).	6786
9/10/13 12:59:59	45.94643	-129.98375	226.62	0.79	1520.69	1521.5	The pressure sensor is in place on the new benchmark. The new benchmark is in it's final position.	6800
9/10/13 13:00:33	45.94643	-129.98376	226.63	0.81	1520.67	1521.5	Zooming in to make sure the sensor is in the groove.	6802
9/10/13 13:01:07	45.94642	-129.98376	226.63	0.8	1520.68	1521.5	Nudging the sensor to make sure it is in the proper place.	6804
9/10/13 13:01:40	45.94643	-129.98378	226.64	0.81	1520.67	1521.5	**PRESSURE: Start AX302.**	6807
9/10/13 13:02:17	45.94643	-129.98379	226.65	0.81	1520.66	1521.5	Start measurement at AX302-Trevi.	6809
9/10/13 13:04:12	45.94643	-129.98377	226.66	0.8	1520.63	1521.4	The pressure sensor measurement is taking place. The mooring balls are still attached.	6812
9/10/13 13:08:26	45.94641	-129.98380	226.69	0.81	1520.67	1521.5	During pressure measurement at AX-302-Trevi. On a flat flow - sort of a ledge.	6822
9/10/13 13:22:30	45.94638	-129.98380	226.66	0.81	1520.58	1521.4	PRESSURE: End of pressure measurements here at "Trevi".	6837
9/10/13 13:23:16	45.94639	-129.98381	226.66	0.79	1520.58	1521.4	Picking up the sensor (off of BMRK-302) and placing it in the cradle.	6840

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/10/13 13:25:10	45.94642	-129.98381	226.71	0.83	1520.59	1521.4	Jason is going in for the polypro line to release the moorings.	6845
9/10/13 13:25:54	45.94642	-129.98380	226.71	0.81	1520.6	1521.4	HIGHLIGHTS on. Unwinding the polypro wrapped around the mooring line.	6846
9/10/13 13:27:19	45.94641	-129.98377	226.69	0.81	1520.58	1521.4	Worried the benchmark may move when the mooring line is pulled.	6851
9/10/13 13:29:56	45.94642	-129.98378	227.38	0.75	1520.61	1521.4	Have the other claw on the benchmark to hold it in place when we pull the pin. Will first move the ship a bit to make sure that Medea is out of the way and won't get hit by a glass ball.	6855
9/10/13 13:31:08	45.94641	-129.98376	227.73	0.75	1520.59	1521.3	The mooring line has been detached from the benchmark. They are heading to the surface.	6860
9/10/13 13:31:44	45.94640	-129.98376	228.95	0.74	1520.56	1521.3	The ship does not need to move. Would like the ship to get in the position to recover the mooring balls.	6861
9/10/13 13:32:04	45.94639	-129.98376	228.95	0.74	1520.56	1521.3	Will hopefully fly by Trevi vent when Jason backs away from the vent.	6862
9/10/13 13:32:44	45.94636	-129.98371	152.37	3.6	1517.12	1520.7	HIGHLIGHTS on. Highlights as we pull away from this benchmark site.	6867
9/10/13 13:33:42	45.94625	-129.98371	222.93	1.35	1518.47	1519.8	We are above Trevi now. An area of a small anhydrite mound. The hobo is in place in the flow.	6882
9/10/13 13:33:59	45.94625	-129.98371	208.51	1.61	1518.48	1520.1	There is one main anhydrite and several smaller spigots.	6884
9/10/13 13:34:10	45.94625	-129.98371	208.65	1.61	1518.44	1520.1	The flow looks pretty intense.	6886
9/10/13 13:34:37	45.94626	-129.98372	208.82	1.61	1518.44	1520.1	There is a jellyfish in the brow cam.	6887
9/10/13 13:35:05	45.94627	-129.98372	209.1	2.04	1518.02	1520.1	HD snaps of Trevi.	6892
9/10/13 13:35:08	45.94627	-129.98373	209.69	2.7	1517.46	1520.2	HIGHLIGHTS off.	6893
9/10/13 13:36:01	45.94608	-129.98392	210.95	6.35	1516.32	1522.7	The next task is to recover the mooring balls. That will probably take an hour or so. Will be off the bottom for 45 minutes or so.	6895
9/10/13 14:45:18	45.94138	-129.98166	326.37	68.7	1445.02	1513.7	Jason is still 69 meters above the bottom. Looks like we're getting close to the next benchmark position.	6898
9/10/13 14:46:37	45.94118	-129.98164	333.28	68.6	1445.1	1513.7	About 1/2 hour more travel through the water column till we reach AX-309-RSN location. Will have to deploy that benchmark.	6899
9/10/13 15:25:03	45.93928	-129.97657	272.04	64.75	1449.05	1513.8	Switched dive underlays maps and we are south of the RSN node but west of the benchmark.	6900

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9/10/13 15:26:50	45.93922	-129.97614	271.09	63.08	1452.1	1515.2	Medea's location is near the RSN cable so we may try to take a look at it with Jason.	6901
9/10/13 15:29:47	45.93911	-129.97537	43.21	58.75	1458.94	1517.7	Looks like we may have gone past before getting down to the bottom for a look.	6902
9/10/13 15:32:14	45.93900	-129.97434	89.41	48.79	1471.29	1520.1	Ship is at target location for benchmark and Jason/Medea are on their way.	6903
9/10/13 15:33:46	45.93895	-129.97392	87.12	18.58	1503	1521.6	This benchmark should have Homer #80 on it.	6904
9/10/13 15:34:34	45.93892	-129.97378	87	5.11	1517.04	1522.2	There is the bottom.	6906
9/10/13 15:34:59	45.93892	-129.97375	87.26	3.85	1518.58	1522.4	Homer turned on and it is 138m ahead.	6907
9/10/13 15:35:30	45.93892	-129.97359	89.76	2.95	1519.27	1522.2	Bottom looks like pillows with sediment in between.	6909
9/10/13 15:35:37	45.93892	-129.97354	88.57	4	1518.63	1522.6	Going over a ridge.	6910
9/10/13 15:36:33	45.93890	-129.97310	88.01	2.36	1521.2	1523.6	Some truncated pillows with a drop-off.	6914
9/10/13 15:36:52	45.93889	-129.97296	88.02	2.55	1523.27	1525.8	Jumbled sheet flow.	6915
9/10/13 15:37:30	45.93890	-129.97266	88.01	2.39	1524.02	1526.4	Now 60m from Homer over jumbled flow.	6917
9/10/13 15:38:21	45.93889	-129.97235	85.79	3.65	1523.05	1526.7	50m from Homer and needing Medea to come a bit further east (almost end of our tether).	6919
9/10/13 15:38:54	45.93889	-129.97233	83.71	3.63	1522.41	1526	Waiting for Medea with 32m more until the Homer.	6920
9/10/13 15:42:15	45.93889	-129.97230	52.46	4.65	1522.29	1526.9	Homer is 25m ahead with Jason's heading of 52deg.	6925
9/10/13 15:49:13	45.93890	-129.97237	52.49	4.44	1522.73	1527.2	Still waiting for Medea with Homer 29m away. Looking at jumbled sheet flow below.	6933
9/10/13 15:51:57	45.93893	-129.97229	52.37	4.06	1523.16	1527.2	Moving ahead toward Homer/benchmark.	6936
9/10/13 15:54:44	45.93897	-129.97217	73.92	4.28	1522.91	1527.2	There it is! AX-309 is sitting in jumbled flow very near target drop location. (We are still waiting for Medea to get closer).	6940
9/10/13 15:58:17	45.93904	-129.97203	76.75	4.38	1522.83	1527.2	Would like to move the benchmark to the south where it would appear to be smoother terrain.	6947
9/10/13 15:59:40	45.93906	-129.97198	118.19	1.05	1526.17	1527.2	Getting ready to release the drop anchor off the benchmark.	6949
9/10/13 16:00:50	45.93905	-129.97198	113.58	0.74	1526.12	1526.9	Pin removed and free of anchor which already has a sea star on it.	6953
9/10/13 16:01:11	45.93905	-129.97198	113.93	0.78	1526.13	1526.9	Leaving the release pin at the site.	6955
9/10/13 16:02:51	45.93905	-129.97197	122.8	70.81	1526.17	1597	Grabbing the benchmark by the red line to move it.	6956
9/10/13 16:03:47	45.93901	-129.97196	156.83	1.51	1524.91	1526.4	Heading due south for smoother ground.	6960
9/10/13 16:04:03	45.93900	-129.97195	155.2	1.23	1525.4	1526.6	Benchmark weighs 50lb in water.	6962
9/10/13 16:05:12	45.93900	-129.97201	155.32	2.49	1523.71	1526.2	Moving south with the benchmark.	6965

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/10/13 16:06:05	45.93890	-129.97203	187.37	2.39	1524.42	1526.8	Moving over jumbled flow.	6966
9/10/13 16:06:29	45.93884	-129.97206	187.87	2.64	1524.31	1527	Benchmark was only 30m north of the drop target.	6968
9/10/13 16:06:35	45.93882	-129.97207	188.01	2.84	1523.87	1526.7	Gnarly terrain.	6969
9/10/13 16:07:23	45.93873	-129.97211	224.97	4.81	1521.05	1525.9	Moving the ship south. Want to move SW from here.	6971
9/10/13 16:09:28	45.93871	-129.97208	225.48	4.75	1520.39	1525.1	NAV: Doppler Reset Large target ahead on sonar.	6974
9/10/13 16:09:50	45.93871	-129.97206	226.24	4.78	1520.31	1525.1	Substantial shadow on sonar.	6975
9/10/13 16:12:29	45.93863	-129.97208	244.46	4.61	1520.62	1525.2	Looks like a big rock but hard to see from here.	6981
9/10/13 16:16:07	45.93851	-129.97203	240.98	1.26	1524.69	1526	Moving away from big rock to look for smooth site.	6987
9/10/13 16:16:17	45.93849	-129.97203	224.37	1.54	1524.81	1526.4	Here is a big of flat sheet flow.	6988
9/10/13 16:16:38	45.93848	-129.97204	224.11	1.6	1524.71	1526.3	HIGHLIGHTS on. Small flat place that is just perfect for the benchmark.	6989
9/10/13 16:17:31	45.93850	-129.97208	222.08	0.74	1525.74	1526.5	Getting ready to place the benchmark at its new home.	6991
9/10/13 16:18:10	45.93850	-129.97208	220.08	0.74	1525.85	1526.6	A little to the left from here.	6995
9/10/13 16:18:27	45.93850	-129.97208	221.4	0.74	1525.85	1526.6	Awesome spot.	6997
9/10/13 16:20:13	45.93850	-129.97211	183.71	0.74	1526.19	1526.9	Rotating the benchmark for better measuring.	7000
9/10/13 16:20:17	45.93850	-129.97211	184.73	0.74	1526.02	1526.8	HIGHLIGHTS off.	7001
9/10/13 16:21:23	45.93851	-129.97211	209.65	0.76	1525.95	1526.7	Beast sampler right in the middle of the HD frame grabs.	7004
9/10/13 16:21:32	45.93851	-129.97211	209.52	0.78	1525.95	1526.7	The flag is now free of the line.	7005
9/10/13 16:22:55	45.93851	-129.97210	209.02	0.98	1526	1527	Plan is to take measurement; put a marker down; get a good lat/long; release glass floats.	7008
9/10/13 16:23:03	45.93851	-129.97210	209.03	0.98	1525.98	1527	Setting device on benchmark.	7009
9/10/13 16:24:27	45.93850	-129.97209	210.41	0.74	1525.95	1526.7	Adjusting the position on the benchmark to align in the black landing zone.	7013
9/10/13 16:27:07	45.93849	-129.97207	209.77	0.74	1525.95	1526.7	Position looks good.	7019
9/10/13 16:27:18	45.93849	-129.97207	209.7	0.74	1525.95	1526.7	Ship is still heading west and needs to stop.	7020
9/10/13 16:27:21	45.93849	-129.97207	209.7	0.79	1525.98	1526.8	**PRESSURE: Start AX309.**	7021
9/10/13 16:27:44	45.93849	-129.97207	207.12	0.78	1525.98	1526.8	PRESSURE: End	7022
9/10/13 16:28:05	45.93849	-129.97208	208.36	0.74	1525.98	1526.7	***Device bumped off so will need to reposition and start measurement again.***	7023
9/10/13 16:29:42	45.93850	-129.97211	210.37	1.68	1524.5	1526.2	Determined benchmark is tilted at 17deg so need to reposition it before measuring. Lack of ship's bow thruster is costing us maneuvering and time.	7027

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9/10/13 16:29:57	45.93850	-129.97211	209.01	1.94	1524.27	1526.2	Putting pressure device back into basket in order to move the benchmark.	7028
9/10/13 16:31:30	45.93864	-129.97218	278.93	7.48	1518.38	1525.9	Jason had to pull up and wait for the ship to get in better position.	7031
9/10/13 16:35:45	45.93863	-129.97274	265.53	4.75	1521.78	1526.5	Looking for a better benchmark location as the flat area was actually sloped.	7037
9/10/13 16:36:44	45.93862	-129.97272	99.55	5.25	1521.13	1526.4	Jason spinning around but didn't see anything flat looking at this location.	7039
9/10/13 16:37:27	45.93854	-129.97245	101.63	4.45	1522.33	1526.8	Driving over jumbled flow again with some ridges.	7041
9/10/13 16:37:49	45.93851	-129.97229	101.29	5.33	1520.91	1526.2	Sonar doesn't show anything flat here. Ridges and shadows.	7042
9/10/13 16:38:18	45.93853	-129.97219	109.93	1.23	1525.22	1526.5	There it is again and from this angle the benchmark is definitely tilted.	7044
9/10/13 16:39:29	45.93852	-129.97218	109.08	0.74	1525.91	1526.7	Picking up benchmark again.	7047
9/10/13 16:39:58	45.93852	-129.97218	103.41	0.81	1526.04	1526.9	Moving it over slightly to the flatter-more sedimented patch just adjacent to old spot.	7049
9/10/13 16:40:47	45.93851	-129.97216	167.48	0.74	1526.2	1526.9	Backing up and looking at its placement.	7051
9/10/13 16:42:58	45.93853	-129.97215	246.78	0.74	1526.39	1527.1	This looks like a better-flatter spot. Retrieving pressure device.	7056
9/10/13 16:43:24	45.93853	-129.97214	246.77	0.74	1526.39	1527.1	Placing device on benchmark.	7058
9/10/13 16:43:55	45.93853	-129.97212	246.77	0.74	1526.4	1527.1	Tilts on device are now only a few degrees.	7061
9/10/13 16:43:58	45.93853	-129.97212	246.77	0.74	1526.39	1527.1	**PRESSURE: Start AX309.**	7062
9/10/13 16:44:31	45.93853	-129.97211	246.77	0.74	1526.38	1527.1	Really starting the first pressure measurement at AX-309 at the RSN site.	7064
9/10/13 16:45:10	45.93853	-129.97210	246.77	0.74	1526.35	1527.1	NAV: Doppler Reset	7066
9/10/13 16:45:44	45.93853	-129.97209	247.03	0.74	1526.4	1527.1	Position at this site is 45deg 56.3121'N -129deg 58.3272'W.	7067
9/10/13 16:46:14	45.93853	-129.97210	247.04	0.74	1526.41	1527.2	That position was from the cursor after the Doppler reset.	7069
9/10/13 17:00:14	45.93845	-129.97208	247.94	0.8	1526.4	1527.2	Moving the ship 20m south while measuring for about 4 more minutes.	7085
9/10/13 17:03:40	45.93848	-129.97205	247.96	0.78	1526.41	1527.2	PRESSURE: End	7089
9/10/13 17:04:33	45.93847	-129.97205	247.98	0.79	1526.42	1527.2	PRESSURE: End	7091
9/10/13 17:04:51	45.93847	-129.97205	248.08	0.8	1526.4	1527.2	Actually stopped a little bit after (was waiting for the pilot).	7092
9/10/13 17:05:00	45.93847	-129.97205	248.1	0.8	1526.4	1527.2	Picking up pressure device and will stow.	7093
9/10/13 17:07:05	45.93848	-129.97201	329.5	1.71	1524.48	1526.2	Pulling Jason a little away in order to get at the basket better.	7096

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9/10/13 17:07:31	45.93850	-129.97206	68.76	3.61	1522.92	1526.5	Could drop the marker on a nearby high spot for better visibility.	7098
9/10/13 17:09:04	45.93851	-129.97203	143.27	0.74	1526.28	1527	HIGHLIGHTS off.	7102
9/10/13 17:09:22	45.93851	-129.97204	65.91	0.74	1526.47	1527.2	Didn't log the highlight start (not an exciting clip).	7104
9/10/13 17:11:21	45.93846	-129.97205	55.42	1.19	1526.61	1527.8	Next Jason will deploy a marker at this site. Looking for a marker in the port biobox.	7108
9/10/13 17:12:06	45.93847	-129.97205	55.45	0.89	1526.6	1527.5	Grabbed Marker 130 from the box.	7110
9/10/13 17:12:45	45.93847	-129.97206	55.49	1.25	1526.6	1527.9	**DEPLOY: Mkr 130.** Marker placed adjacent to the benchmark.	7111
9/10/13 17:13:26	45.93846	-129.97208	55.48	1.25	1526.56	1527.8	Mkr130 at benchmark AX-309 at the RSN primary node.	7115
9/10/13 17:14:41	45.93845	-129.97209	55.47	1.25	1526.62	1527.9	Position is 45deg 56.3077'N 129deg 58.3251'W with the cursor after the marker was deployed.	7117
9/10/13 17:15:09	45.93845	-129.97209	55.46	1.25	1526.58	1527.8	Next the glass floats will be released (last ones took 23 minutes to get to the surface).	7118
9/10/13 17:16:00	45.93845	-129.97209	55.45	1.25	1526.59	1527.8	Waiting on ship's deck crew for 10 minutes to get ready for float recovery.	7119
9/10/13 17:17:24	45.93845	-129.97210	55.43	1.23	1526.59	1527.8	For pin release Jason will hold benchmark with one arm and pull pin with other.	7122
9/10/13 17:18:05	45.93845	-129.97211	55.37	0.74	1526.58	1527.3	Jason is carefully preparing for release.	7123
9/10/13 17:18:17	45.93846	-129.97211	55.31	0.74	1526.58	1527.3	Port arm is pressing down on benchmark-no movement detected.	7125
9/10/13 17:18:48	45.93846	-129.97211	55.38	0.74	1526.59	1527.3	Starboard arm will unravel the pin cord.	7126
9/10/13 17:19:50	45.93848	-129.97211	55.47	0.74	1526.6	1527.3	Trying to break the rubber bands without releasing the pin.	7128
9/10/13 17:20:06	45.93848	-129.97211	55.45	0.74	1526.6	1527.3	That is tape not a rubber band.	7130
9/10/13 17:20:48	45.93849	-129.97210	55.41	0.74	1526.57	1527.3	Decided to leave the tape and just pull the pin when ready. Calling bridge.	7131
9/10/13 17:21:08	45.93849	-129.97211	55.41	0.74	1526.58	1527.3	Bridge says good to go.	7133
9/10/13 17:21:19	45.93849	-129.97211	55.39	0.74	1526.56	1527.3	HIGHLIGHTS on. Pulling the pin.	7134
9/10/13 17:22:06	45.93848	-129.97211	55.38	0.74	1526.56	1527.3	All poised to pull and only 10 minutes left on video tape.	7136
9/10/13 17:23:10	45.93847	-129.97212	55.37	0.74	1526.57	1527.3	Benchmark did move a little before but not sure if it was the vehicle of the benchmark.	7139
9/10/13 17:23:28	45.93848	-129.97212	55.34	0.74	1526.59	1527.3	Released.	7140
9/10/13 17:23:45	45.93848	-129.97212	55.31	0.74	1526.58	1527.3	Dropping the pin cord.	7142
9/10/13 17:24:11	45.93848	-129.97211	55.22	0.74	1526.57	1527.3	HIGHLIGHTS off. Stowing arm.	7144
9/10/13 17:24:19	45.93848	-129.97211	55.21	0.74	1526.57	1527.3	Stowing other (port) arm.	7145

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9/10/13 17:24:30	45.93848	-129.97211	55.2	0.78	1526.58	1527.4	Ship is moving for recovery.	7146
9/10/13 17:24:45	45.93848	-129.97211	55.22	1.35	1525.25	1526.6	Jason coming off bottom.	7148
9/10/13 17:25:37	45.93860	-129.97205	20.74	9.43	1516.57	1526	Debate if the benchmark moved or not-could have just been the vehicle.	7152
9/10/13 17:27:25	45.93875	-129.97196	18.23	27.63	1497.33	1525	Strapping the pressure device down in the basket.	7155
9/10/13 17:48:54	45.93700	-129.97306	5.93	59.58	1461.71	1521.3	Floats are on the surface.	7156
9/10/13 18:02:57	45.93633	-129.97489	236.7	55.05	1463.73	1518.8	Floats are on deck.	7157
9/10/13 18:05:12	45.93652	-129.97471	250.24	55.17	1463.74	1518.9	Next benchmark is 836m away at 241deg. AX-303 at Mkr33 site (Mkr33 is long gone-site is still called Mkr33).	7158
9/10/13 18:09:05	45.93712	-129.97452	308.81	57.67	1463.23	1520.9	Do not know the Homer number on this benchmark.	7159
9/10/13 18:33:07	45.93631	-129.97541	46.46	54.71	1463.68	1518.4	Ship should be on site in15 minutes.	7160
9/10/13 19:09:42	45.93358	-129.98209	107.74	1.96	1514.17	1516.1	Just acquired homer 45 for the new benchmark at Marker 33.	7167
9/10/13 19:10:06	45.93357	-129.98209	107.68	1.93	1514.21	1516.1	Jason on bottom.	7169
9/10/13 19:10:37	45.93357	-129.98207	120.7	1.83	1514.05	1515.9	Settled on bottom; will start looking for the benchmark.	7170
9/10/13 19:11:08	45.93358	-129.98204	54.56	2.06	1513.87	1515.9	We landed on a mound of lava pillows with some white mat and tubeworms.	7172
9/10/13 19:11:27	45.93359	-129.98204	87.23	2.33	1513.95	1516.3	The benchmark should be SW of us.	7173
9/10/13 19:13:02	45.93356	-129.98226	217	2.1	1513.79	1515.9	We will be looking for an old steel benchmark first; then will pick up the new one and bring it back to the same spot.	7176
9/10/13 19:13:28	45.93351	-129.98237	217.56	1.95	1513.54	1515.5	This is all fresh lava.	7178
9/10/13 19:13:44	45.93350	-129.98241	226.62	1.89	1513.75	1515.6	Spotted the old metal benchmark.	7179
9/10/13 19:14:47	45.93349	-129.98240	62.15	2.5	1513.44	1515.9	Benchmark says marker 66.	7181
9/10/13 19:16:57	45.93374	-129.98243	330.42	2.38	1512.83	1515.2	Still moving across the new flow.	7185
9/10/13 19:17:23	45.93377	-129.98245	327.87	0.74	1514.58	1515.3	Found the new benchmark laying on its side.	7187
9/10/13 19:19:09	45.93379	-129.98246	330.4	0.8	1514.57	1515.4	Pulling the pin to detach the weight.	7192
9/10/13 19:19:51	45.93377	-129.98242	329.67	0.78	1514.64	1515.4	Now we need to find a float spot to place the benchmark; will be hard to do with all the new lava pillows.	7193
9/10/13 19:20:36	45.93371	-129.98232	332.69	2.51	1512.7	1515.2	Haven't seen any flat spot so far in this area.	7195
9/10/13 19:24:30	45.93340	-129.98211	188.84	0.74	1515.31	1516.1	Found a large flat pillow that will probably be stable enough.	7201
9/10/13 19:26:31	45.93336	-129.98218	358.19	1.54	1514.55	1516.1	Seems stable and level; flying around to see all sides. Looks great.	7204

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9/10/13 19:30:23	45.93335	-129.98221	329.97	1.51	1514.24	1515.8	HIGHLIGHTS on.	7211
9/10/13 19:31:21	45.93325	-129.98220	328.99	1.76	1514.25	1516	Moving back to the metal benchmark to take a pressure measurement.	7213
9/10/13 19:36:08	45.93336	-129.98201	330.29	0.74	1515.35	1516.1	Placing the pressure recorder.	7219
9/10/13 19:36:11	45.93335	-129.98201	330.29	0.74	1515.32	1516.1	HIGHLIGHTS off.	7220
9/10/13 19:38:24	45.93330	-129.98210	330.31	0.74	1515.39	1516.1	HIGHLIGHTS on.	7226
9/10/13 19:39:38	45.93334	-129.98214	330.35	0.74	1515.4	1516.1	Cable is pulling the recorder sideways. Need to move closer to get more slack.	7228
9/10/13 19:40:59	45.93337	-129.98219	330.38	0.74	1515.45	1516.2	Got it in the right spot.	7230
9/10/13 19:41:09	45.93337	-129.98220	330.39	0.74	1515.42	1516.2	HIGHLIGHTS off.	7232
9/10/13 19:41:17	45.93337	-129.98220	330.39	0.74	1515.45	1516.2	**PRESSURE: Start AX-203.**	7233
9/10/13 19:51:14	45.93347	-129.98223	330.53	0.74	1515.51	1516.3	There is a small amount of flow visible in this area.	7249
9/10/13 19:51:36	45.93347	-129.98222	330.53	0.74	1515.53	1516.3	Some patches of limpets and white mat.	7250
9/10/13 19:51:54	45.93347	-129.98221	330.53	0.74	1515.51	1516.3	This might throw off the pressure measurements a little bit.	7251
9/10/13 20:01:18	45.93348	-129.98230	330.57	0.74	1515.56	1516.3	PRESSURE: End	7264
9/10/13 20:02:26	45.93347	-129.98229	330.48	0.74	1515.56	1516.3	Now to take a measurement on the new benchmark- AX303.	7266
9/10/13 20:02:50	45.93346	-129.98228	330.48	0.74	1515.57	1516.3	HIGHLIGHTS on.	7267
9/10/13 20:03:01	45.93346	-129.98228	330.48	0.74	1515.57	1516.3	Stowing the pressure recorder.	7268
9/10/13 20:03:14	45.93346	-129.98227	330.1	0.74	1515.47	1516.2	Ambient temp here is 4.6C.	7270
9/10/13 20:05:18	45.93351	-129.98224	174	0.74	1515.32	1516.1	Moving to the new benchmark.	7273
9/10/13 20:07:22	45.93349	-129.98227	175.19	0.74	1515.66	1516.4	Placing pressure recorder.	7276
9/10/13 20:10:26	45.93346	-129.98225	174.99	0.74	1515.66	1516.4	**PRESSURE: Start AX-303.**	7281
9/10/13 20:30:34	45.93346	-129.98226	175.02	0.74	1515.82	1516.6	PRESSURE: End	7303
9/10/13 20:33:51	45.93341	-129.98217	175.1	0.74	1515.77	1516.5	Stowing the pressure recorder.	7307
9/10/13 20:33:56	45.93341	-129.98217	175.03	0.74	1515.78	1516.5	HIGHLIGHTS on.	7308
9/10/13 20:35:11	45.93344	-129.98215	175.5	2.14	1513.92	1516.1	HIGHLIGHTS off. Next we will release the benchmark's floats and recover them at the surface.	7311
9/10/13 20:38:13	45.93342	-129.98213	174.44	0.75	1515.92	1516.7	The polypro release line is wrapped around the float cable. Need to untangle it all before trying to release the floats.	7315
9/10/13 20:44:24	45.93342	-129.98231	173.8	0.74	1516.07	1516.8	Pulling the pin.	7322
9/10/13 20:44:51	45.93341	-129.98234	173.78	0.74	1516.04	1516.8	Floats have been released.	7323
9/10/13 20:44:54	45.93340	-129.98235	173.87	0.74	1516.06	1516.8	HIGHLIGHTS off.	7324
9/10/13 20:47:52	45.93391	-129.98231	358.9	9.64	1505.87	1515.5	Beginning transit to AX-310. 1km at 159 heading.	7328

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9/10/13 20:48:48	45.93410	-129.98225	357.01	26.28	1488.95	1515.2	Never mind; we are waiting to recover the floats. Probably 45 min until we start the transit.	7330
9/10/13 21:28:18	45.93363	-129.98161	334.37	69.4	1447.92	1517.3	Still transiting to AX-310.	7331
9/10/13 21:49:12	45.93034	-129.98016	3.22	75.89	1431.39	1507.3	Almost halfway there.	7332
9/10/13 22:18:32	45.92531	-129.97794	334.1	20.32	1508.09	1528.4	Dropping down to the bottom.	7334
9/10/13 22:22:35	45.92484	-129.97763	355.5	2.86	1525.08	1527.9	Jason on bottom.	7339
9/10/13 22:23:09	45.92486	-129.97762	355.58	1.23	1526.01	1527.2	Exact location of the new benchmark AX-310 is not known.	7341
9/10/13 22:24:00	45.92492	-129.97764	355.77	2.09	1525.71	1527.8	It was moved part of the way towards the final installation site but we don't know where it ended up.	7342
9/10/13 22:25:06	45.92498	-129.97763	356.02	2.28	1525.78	1528.1	Big rattail fish. Probably about 6 ft. long.	7345
9/10/13 22:33:01	45.92545	-129.97777	8.06	4.31	1525.49	1529.8	Still moving to where we think the benchmark is.	7353
9/10/13 22:33:16	45.92547	-129.97777	8.04	3.85	1525.66	1529.5	It should be close to the RSN node.	7355
9/10/13 22:33:42	45.92552	-129.97776	7.1	3.03	1525.85	1528.9	Benchmark is in sight. 13 m away.	7356
9/10/13 22:36:17	45.92562	-129.97776	327.66	2.63	1527.12	1529.8	It is sitting upslope from a large flat area of sheath flow; we'll move it about 15-20m to the left where it looks flat.	7360
9/10/13 22:37:39	45.92572	-129.97782	339.8	2.08	1528.16	1530.2	Marker 12 is directly ahead. Might be something for the RSN.	7362
9/10/13 22:38:31	45.92571	-129.97782	342.61	0.74	1529.89	1530.6	Setting benchmark down to check for level.	7365
9/10/13 22:40:15	45.92571	-129.97781	343.21	76.9	1530.03	1606.9	Looks ok from here; we're going to fly around to check it from all angles.	7368
9/10/13 22:43:13	45.92572	-129.97783	342.8	1.56	1528.66	1530.2	That position wasn't stable enough; trying again in another spot.	7370
9/10/13 22:44:34	45.92578	-129.97788	345.88	1.16	1529.18	1530.3	There is a small mound a few meters away that might work better. It doesn't have as many ridges so the benchmark might sit better.	7372
9/10/13 22:48:31	45.92580	-129.97791	291.68	0.74	1529.84	1530.6	Looks like AX-BMRK-310 is in its new resting place near the International District on striated sheet flow. We're ~100m SE of the International District.	7381
9/10/13 22:50:35	45.92581	-129.97792	289.99	0.74	1529.8	1530.5	Jason is going in to pick up the pressure sensor. Will place it on the new benchmark.	7386
9/10/13 22:51:56	45.92581	-129.97791	289.71	0.75	1529.77	1530.5	The sensor is not in the correct spot. Needs to get moved back a bit.	7389
9/10/13 22:52:41	45.92582	-129.97790	290.09	0.81	1529.78	1530.6	Just a little nudge please.	7391
9/10/13 22:53:17	45.92582	-129.97788	290.19	0.74	1529.76	1530.5	It doesn't look like it is quite seeded. Jason is picking it up again.	7394

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9/10/13 22:55:43	45.92583	-129.97783	289.96	0.74	1529.79	1530.5	Scaleworm just drifted by. Still manipulating the sensor. It does not want to sit in the "groove".	7398
9/10/13 22:56:57	45.92583	-129.97781	289.87	0.74	1529.8	1530.5	Going to lift the sensor up off the benchmark and look in the tray.	7400
9/10/13 22:58:27	45.92582	-129.97780	289.83	0.74	1529.72	1530.5	We need a whisk broom.	7404
9/10/13 22:59:18	45.92582	-129.97780	289.89	0.74	1529.76	1530.5	Setting the sensor down again. Having trouble getting the front edge in the groove.	7406
9/10/13 23:01:05	45.92581	-129.97782	291.38	0.74	1529.79	1530.5	Got the sensor in the tray.	7413
9/10/13 23:01:40	45.92581	-129.97783	291.45	0.74	1529.79	1530.5	**PRESSURE: Start AX-310.**	7415
9/10/13 23:02:52	45.92580	-129.97785	291.48	0.74	1529.84	1530.6	Recording pressure here at AX-310 IntDist.	7417
9/10/13 23:05:03	45.92580	-129.97789	291.22	0.74	1529.71	1530.5	Location for this new benchmark AX-310 IntDist) is: 129 58.6722 W 45 55.5480 N. Z=1530.6 (1531m).	7421
9/10/13 23:05:22	45.92580	-129.97789	291.14	0.74	1529.7	1530.4	Huge rattail in front of Jason.	7423
9/10/13 23:13:18	45.92584	-129.97786	291.09	0.74	1529.63	1530.4	2 huge rattails in a row. What's going on here?	7433
9/10/13 23:16:32	45.92584	-129.97783	291.42	0.74	1529.74	1530.5	Three huge rattails. It's a rattail convention.	7439
9/10/13 23:21:05	45.92583	-129.97782	291.53	0.74	1529.56	1530.3	PRESSURE: End	7445
9/10/13 23:22:18	45.92583	-129.97783	289.76	0.74	1529.73	1530.5	Stowing the pressure sensor. Finished up with the first measurement at AX-310 International District.	7448
9/10/13 23:23:19	45.92583	-129.97784	290.86	0.74	1529.56	1530.3	Next will deploy a marker here.	7450
9/10/13 23:23:46	45.92583	-129.97785	291.46	0.74	1529.56	1530.3	**DEPLOY: Marker 126** next to the benchmark (AX-310).	7452
9/10/13 23:24:53	45.92583	-129.97786	289.84	0.74	1529.64	1530.4	Next task is to let the mooring free. The cotter pin is holding on to the poly pro line.	7454
9/10/13 23:26:04	45.92583	-129.97788	290.01	0.74	1529.67	1530.4	This could be tricky.	7456
9/10/13 23:27:26	45.92583	-129.97790	292.5	0.75	1529.55	1530.3	HIGHLIGHTS on.	7461
9/10/13 23:27:50	45.92583	-129.97790	292.82	0.74	1529.58	1530.3	The pin is pulled and the mooring is on the way to the surface.	7462
9/10/13 23:29:32	45.92581	-129.97801	288.34	9.75	1520.56	1530.3	HIGHLIGHTS off. We're lifting off.	7470
9/11/13 01:23:32	45.91641	-129.98878	252.47	12.66	1518.34	1531	Testing out the new keyboard James supplied. Nice.	7475
9/11/13 01:23:58	45.91638	-129.98885	253.04	4.64	1526.63	1531.3	Jason on bottom. Bottom in sight.	7476
9/11/13 01:24:29	45.91630	-129.98897	262.39	3.21	1528.17	1531.4	Looking at the bottom in the brow cam. Can't see much in the Sci cam yet.	7478
9/11/13 01:24:36	45.91630	-129.98901	264.36	4.9	1528.82	1533.7	NAV: Doppler Reset	7479
9/11/13 01:25:12	45.91628	-129.98914	260.24	5.55	1528.12	1533.7	Collapse ahead. Lots of microbial stuff in the water.	7481

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9/11/13 01:25:47	45.91623	-129.98920	259.61	2.63	1528.67	1531.3	Seeing the lava contact here. New little tubeworms between the pillows on the new lava.	7482
9/11/13 01:26:52	45.91616	-129.98925	256.93	3.29	1528.08	1531.4	The lava here looks new but there are sure a lot of tubeworms here. It has been 2 years since the eruption.	7484
9/11/13 01:27:27	45.91615	-129.98934	258.17	4.3	1527.35	1531.7	Benchmark in sight.	7487
9/11/13 01:29:27	45.91614	-129.98947	337.09	2	1529.65	1531.7	Have not been taping this since we arrived on the bottom.	7490
9/11/13 01:30:28	45.91616	-129.98948	339.63	0.74	1531.09	1531.8	HIGHLIGHTS on. Highlights on.	7495
9/11/13 01:30:53	45.91617	-129.98947	339.64	0.74	1531.1	1531.8	There are worms growing on the benchmark. There's also bacterial mat on the benchmark.	7496
9/11/13 01:31:11	45.91617	-129.98947	339.64	0.74	1531.09	1531.8	There must be some warm water coming up along the edge.	7498
9/11/13 01:32:16	45.91618	-129.98945	339.74	0.74	1531.07	1531.8	Got lots of framegrabs and turned on the highlights tape.	7508
9/11/13 01:32:22	45.91618	-129.98945	339.73	0.74	1531.09	1531.8	We're logging video now.	7509
9/11/13 01:33:25	45.91616	-129.98947	339.72	0.74	1531.01	1531.8	We are at AX104-Bag City.	7513
9/11/13 01:33:41	45.91615	-129.98948	339.7	0.74	1531.03	1531.8	There is a lot of cloudy water rising up out of the collapse below.	7514
9/11/13 01:34:35	45.91613	-129.98952	339.74	0.74	1531.05	1531.8	Picking up the sensor and putting it on the sensor.	7516
9/11/13 01:35:50	45.91612	-129.98953	339.72	0.74	1530.97	1531.7	Zooming in to see the placement of the sensor. Jason is manipulating it.	7518
9/11/13 01:37:31	45.91614	-129.98953	339.72	0.74	1530.96	1531.7	Manipulating the sensor a bit. Needs to goo back a bit.	7522
9/11/13 01:38:38	45.91615	-129.98953	339.48	0.75	1531.05	1531.8	Grabbing frames of AX-104 Bag City with the sensor in place.	7529
9/11/13 01:38:42	45.91615	-129.98953	339.47	0.74	1531.07	1531.8	**PRESSURE: Start AX-104.**	7530
9/11/13 01:39:11	45.91615	-129.98954	339.49	0.75	1531.05	1531.8	HIGHLIGHTS off.	7532
9/11/13 01:42:19	45.91614	-129.98957	339.51	0.74	1531.03	1531.8	This upper level where the benchmarks are is NOT new lava.	7536
9/11/13 01:43:47	45.91612	-129.98960	339.54	0.74	1531.06	1531.8	Lots of cloudy water coming out here. RSN people found a snow blower near here (Bag1 target).	7538
9/11/13 01:43:54	45.91612	-129.98960	339.53	0.74	1530.98	1531.7	NAV: Doppler Reset	7539
9/11/13 01:55:31	45.91618	-129.98947	339.61	0.75	1530.97	1531.7	Still taking the pressure measurement.	7561
9/11/13 01:57:47	45.91617	-129.98947	339.61	0.75	1530.94	1531.7	The old benchmark in the distance has marker-65 on it.	7564
9/11/13 01:58:11	45.91617	-129.98946	339.61	0.75	1530.94	1531.7	PRESSURE: End	7566

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9/11/13 01:58:24	45.91617	-129.98946	339.61	0.74	1530.94	1531.7	This benchmark went in in 2010.	7567
9/11/13 01:59:23	45.91617	-129.98944	339.57	0.76	1530.93	1531.7	Retrieving the pressure sensor. Will stow it on Jason.	7569
9/11/13 01:59:49	45.91617	-129.98943	338.32	0.74	1530.9	1531.6	We want to taka a few minutes to poke around before we leave.	7570
9/11/13 01:59:53	45.91617	-129.98943	338.33	0.74	1530.94	1531.7	HIGHLIGHTS on.	7571
9/11/13 02:00:58	45.91618	-129.98952	27.86	3.28	1529.47	1532.8	Want to look around into the collapse and then peak at the Bag City field.	7573
9/11/13 02:01:21	45.91620	-129.98954	80.17	2.79	1529.65	1532.4	Lots of murkiness in the water and the lavas are blacker.	7575
9/11/13 02:02:05	45.91623	-129.98957	112.81	1.99	1530.21	1532.2	The 2011 lavas are fresh and dark. They didn't quite get up the platform.	7581
9/11/13 02:03:55	45.91624	-129.98962	113.39	0.74	1531.73	1532.5	Going down. Looking at the 2011 lavas. Could be snails or limpets? Most likely snails. Tiny snails.	7593
9/11/13 02:04:39	45.91624	-129.98958	113.3	0.74	1531.71	1532.5	The venting is coming up out of the collapse - not the new lava.	7601
9/11/13 02:05:11	45.91625	-129.98954	113.32	0.74	1531.71	1532.5	There are some red plumes (covered in wispy bac mat) on the tubeworms.	7603
9/11/13 02:06:58	45.91627	-129.98948	153.62	2.33	1529.75	1532.1	130 0.2212 45 51.7977 Cursor position of the benchmark at Bag City.	7611
9/11/13 02:07:39	45.91627	-129.98947	150.63	0.74	1531.7	1532.4	Zooming in on the limpets hanging on the tubeworms.	7620
9/11/13 02:10:29	45.91627	-129.98946	150.28	0.74	1531.81	1532.6	Looking at these tubeworms and diffuse flow. Lots of thick mat on the worms. The 2011 lava is below this ledge.	7648
9/11/13 02:16:20	45.91623	-129.98933	126.3	3.43	1527.44	1530.9	We're up top again and will drive ahead and look at the vent field. Traversing back to where Bag City vent field used to be.	7667
9/11/13 02:18:52	45.91617	-129.98922	188.64	2.86	1529.88	1532.7	We're passing over lots of tubeworm bushes. Lots of bright white areas that are probably venting.	7682
9/11/13 02:19:09	45.91617	-129.98922	200.08	2.23	1530.96	1533.2	Grotto.	7685
9/11/13 02:19:41	45.91617	-129.98923	197.94	1.09	1531.81	1532.9	Grey things are massively broken off and weathered.	7690
9/11/13 02:20:00	45.91617	-129.98923	198.14	1.24	1531.79	1533	Limpets are just hanging down.	7692
9/11/13 02:21:29	45.91617	-129.98919	198.25	1.09	1531.79	1532.9	Still looking around this area on the edge of the collapse.	7700
9/11/13 02:22:09	45.91614	-129.98917	199.52	2.69	1529.77	1532.5	HIGHLIGHTS off.	7708

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9/11/13 02:25:01	45.91662	-129.98886	22.08	14.05	1516.29	1530.3	We're now off for the 4 hour transit to the South Pillow Mound AX-105 benchmark.	7717
9/11/13 06:49:34	45.86385	-130.00662	288.86	193.4	1523.28	1716.7	We are back in the Jason van and have 200m to get to the bottom and 126m to the target benchmark at the South Pillow Mound.	7719
9/11/13 06:53:08	45.86360	-130.00613	273.22	89.62	1623.72	1713.3	100m to bottom and 90m to target.	7720
9/11/13 07:03:25	45.86303	-130.00418	65.43	3.91	1713.98	1717.9	Jason on bottom.	7729
9/11/13 07:04:30	45.86313	-130.00388	64.06	3.66	1713.48	1717.1	Benchmark is in sight.	7731
9/11/13 07:04:58	45.86311	-130.00388	63.09	3.66	1713.37	1717	This is AX-105.	7732
9/11/13 07:06:09	45.86308	-130.00386	63.17	3.64	1713.35	1717	Picking up the pressure recorder.	7735
9/11/13 07:08:33	45.86307	-130.00377	355.71	0.76	1716.85	1717.6	Placing the recorder on the benchmark.	7740
9/11/13 07:09:11	45.86308	-130.00376	355.62	1.01	1716.94	1718	Got it set first try!	7747
9/11/13 07:09:28	45.86308	-130.00376	355.56	0.79	1716.95	1717.7	**PRESSURE: Start AX-105.**	7749
9/11/13 07:30:10	45.86304	-130.00373	354.39	0.74	1717.02	1717.8	PRESSURE: End	7774
9/11/13 07:30:32	45.86304	-130.00373	354.4	0.76	1716.97	1717.7	Retrieving pressure recorder.	7775
9/11/13 07:30:46	45.86304	-130.00373	354.36	0.76	1716.97	1717.7	Stowing it.	7776
9/11/13 07:32:15	45.86306	-130.00371	354.25	0.89	1717.07	1718	Starting the long transit back to AX-104.	7779
9/11/13 07:37:49	45.86261	-130.00393	206.89	32.99	1683.72	1716.7	Jason on bottom.	7785
9/11/13 07:38:01	45.86256	-130.00396	205.99	37.29	1680.06	1717.4	Jason off bottom.	7787
9/11/13 07:38:42	45.86252	-130.00398	194.75	56.9	1660.35	1717.3	Transit to AX-104 is 5870m at 11 deg heading.	7788
9/11/13 11:44:11	45.91511	-129.98945	32.33	2.85	1529.87	1532.7	Jason on bottom.	7791
9/11/13 11:45:20	45.91530	-129.98939	30.1	2.68	1529.65	1532.3	Here at Bag City area again for our second pressure reading here.	7793
9/11/13 11:46:52	45.91558	-129.98943	29.1	2.43	1530.26	1532.7	Jumbled lavas below us.	7797
9/11/13 11:47:57	45.91567	-129.98944	31.53	2.31	1530.26	1532.6	We're right on the edge of the lava flow boundary on the nav screen. These lavas look old.	7799
9/11/13 11:49:36	45.91580	-129.98923	28.76	1.96	1530.19	1532.2	Jogging to the right to look at the eruptive fissure where the 2011 lava probably came out.	7804
9/11/13 11:49:56	45.91586	-129.98920	31.03	1.55	1530.44	1532	HIGHLIGHTS on.	7808
9/11/13 11:50:54	45.91598	-129.98916	29.12	2.53	1529.6	1532.1	The drop is pretty deep. Can see the other side on the right of the screen.	7812
9/11/13 11:51:16	45.91604	-129.98914	28.85	3.1	1528.99	1532.1	The map is right on.	7814
9/11/13 11:51:53	45.91613	-129.98916	27.59	2.86	1528.99	1531.9	See some tubeworms down in the fissure.	7815
9/11/13 11:52:33	45.91605	-129.98933	6.21	2.59	1528.96	1531.6	Back to the west .It looks speckled like it has some snails on it. Probably on newer lava here.	7817

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9/11/13	11:53:31	45.91612	-129.98944	349.95	1.98	1529.39	1531.4	Will look for a contact. The tubeworm bushes get bigger and bigger to the west. Hard to figure out where the new lava is. Maybe not newer lava on the upper level.	7819
9/11/13	11:53:39	45.91613	-129.98944	336.37	1.61	1529.85	1531.5	Benchmark ahead.	7820
9/11/13	11:53:45	45.91613	-129.98944	341.67	1.59	1529.88	1531.5	HIGHLIGHTS off.	7822
9/11/13	11:54:08	45.91614	-129.98945	341.53	1.43	1529.86	1531.3	Moving in on the benchmark.	7824
9/11/13	11:55:58	45.91617	-129.98942	342.13	0.74	1530.93	1531.7	Parked at the benchmark.	7828
9/11/13	11:56:49	45.91616	-129.98941	342.4	0.78	1530.92	1531.7	HIGHLIGHTS on. Putting the sensor on the benchmark.	7830
9/11/13	11:57:16	45.91615	-129.98941	342.54	0.74	1530.92	1531.7	Picking up the sensor.	7832
9/11/13	11:57:34	45.91614	-129.98941	342.57	0.74	1530.9	1531.6	Placing the sensor on the benchmark.	7833
9/11/13	11:57:47	45.91614	-129.98942	342.55	0.74	1530.9	1531.6	Zooming in.	7834
9/11/13	11:58:53	45.91614	-129.98943	342.69	0.74	1530.92	1531.7	Vent fish just swam by.	7836
9/11/13	11:59:42	45.91617	-129.98944	342.71	0.74	1530.96	1531.7	Zooming in to look at the placement.	7838
9/11/13	12:00:09	45.91618	-129.98944	342.7	0.74	1530.93	1531.7	Placement looks good.	7840
9/11/13	12:00:13	45.91618	-129.98944	342.7	0.74	1530.93	1531.7	HIGHLIGHTS off.	7841
9/11/13	12:00:51	45.91619	-129.98944	342.7	0.74	1530.96	1531.7	Lots of murky water in the area.	7842
9/11/13	12:00:55	45.91619	-129.98944	342.71	0.74	1530.96	1531.7	**PRESSURE: Start AX-104.**	7843
9/11/13	12:02:28	45.91617	-129.98940	342.71	0.74	1530.94	1531.7	Zooming in with the brow on the bacmat on the benchmark.	7848
9/11/13	12:04:31	45.91619	-129.98942	342.69	0.74	1530.97	1531.7	The tilt is 4 degrees different than last time. Zooming in to take a look.	7851
9/11/13	12:05:34	45.91620	-129.98942	342.68	0.74	1530.96	1531.7	PRESSURE: End	7853
9/11/13	12:06:12	45.91619	-129.98942	342.66	0.74	1530.95	1531.7	***Will start again. Tilt on one edge is different than last time. Going to pick it up and make sure it is seated properly.***	7855
9/11/13	12:07:15	45.91617	-129.98941	342.68	0.74	1530.98	1531.7	Nudging the sensor.	7860
9/11/13	12:09:18	45.91615	-129.98942	342.71	0.74	1531	1531.7	That looks better.	7863
9/11/13	12:09:24	45.91615	-129.98942	342.71	0.74	1531	1531.7	**PRESSURE: Start AX-104.**	7864
9/11/13	12:09:52	45.91616	-129.98943	342.71	0.74	1531	1531.7	Thinking that it may not have been in there correctly the first time. Started again.	7865
9/11/13	12:10:53	45.91617	-129.98944	342.72	0.74	1530.99	1531.7	See the old benchmark and marker 65 in the background. This new benchmark is AX-104 at Bag City.	7867
9/11/13	12:14:05	45.91616	-129.98940	342.73	0.74	1530.98	1531.7	HD grabs of the sensor in place.	7873
9/11/13	12:24:19	45.91613	-129.98939	342.8	0.74	1530.97	1531.7	Where are all the fish?	7885
9/11/13	12:26:28	45.91614	-129.98945	342.8	0.74	1531.01	1531.8	Wispy mat on this darker piece of lava. Bill assures Susan the dark lava is not new lava.	7890

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9/11/13 12:28:25	45.91616	-129.98944	342.81	0.74	1531.03	1531.8	This flow here is the next youngest flow to 1998. The first sidescan surveys were in 1982 and it looked this flow was already here. It's older than that.	7893
9/11/13 12:29:40	45.91617	-129.98941	342.81	0.74	1531.01	1531.8	All the flows in the caldera are younger than 800 years. The average recurrence interval is 15 years.	7895
9/11/13 12:29:43	45.91617	-129.98941	342.81	0.74	1531	1531.7	PRESSURE: End	7896
9/11/13 12:30:40	45.91620	-129.98942	342.8	0.74	1531.01	1531.8	Jason is picking up the sensor.	7899
9/11/13 12:31:12	45.91622	-129.98943	342.81	0.74	1530.98	1531.7	Placing the sensor in its holder on the basket.	7901
9/11/13 12:32:00	45.91623	-129.98944	342.82	0.74	1530.99	1531.7	Finished with pressure reading on AX-104.	7902
9/11/13 12:33:02	45.91622	-129.98945	330.43	3.09	1528.35	1531.4	Lifting off.	7904
9/11/13 12:33:07	45.91621	-129.98946	279.43	4.49	1526.97	1531.5	Jason off bottom.	7906
9/11/13 12:34:47	45.91584	-129.98994	226.89	15.75	1517.21	1533	Heading toward AX-310-IntDist.	7908
9/11/13 13:51:42	45.92532	-129.97813	47.59	10.94	1515.03	1526	We're approaching the International District benchmark. Still not seeing bottom.	7914
9/11/13 13:52:05	45.92505	-129.97781	35.81	7	1519.39	1526.4	Jason on bottom. Bottom in sight.	7915
9/11/13 13:52:24	45.92540	-129.97805	41.55	6.05	1521.77	1527.8	At least it's in sight on the brow cam.	7917
9/11/13 13:53:02	45.92552	-129.97799	42.14	5.13	1523.76	1528.9	Lava swirls on the seafloor.	7918
9/11/13 13:53:40	45.92559	-129.97793	43.39	2.68	1526.27	1529	Lots of sediment on this older lava.	7923
9/11/13 13:54:18	45.92566	-129.97788	44.02	2.65	1526.42	1529.1	Lavas are sheet flow; ropey combo; with striations.	7925
9/11/13 13:55:00	45.92574	-129.97777	43.12	2.64	1526.57	1529.2	There is a bucket lid marker at the benchmark.	7926
9/11/13 13:55:13	45.92577	-129.97771	43.09	3.18	1526.48	1529.7	Big rattail ahead.	7929
9/11/13 13:55:22	45.92578	-129.97768	44.75	3.33	1526.46	1529.8	RSN cable ahead.	7930
9/11/13 13:56:23	45.92584	-129.97779	41.17	2.96	1526.42	1529.4	Looking for AX310-IntDist benchmark.	7934
9/11/13 13:56:37	45.92583	-129.97781	112.24	2.94	1526.2	1529.1	Probably to the east.	7935
9/11/13 13:56:52	45.92581	-129.97785	113.84	2.65	1526.46	1529.1	There it is.	7937
9/11/13 13:57:49	45.92579	-129.97786	313.13	2.61	1526.9	1529.5	There is the benchmark and new marker we deployed Marker 126 here at AX-310 benchmark.	7940
9/11/13 13:59:01	45.92582	-129.97787	288.38	0.74	1528.97	1529.7	Jellyfish under Medea.	7943
9/11/13 13:59:30	45.92582	-129.97787	286.9	0.89	1528.84	1529.7	Going in to grab the pressure sensor.	7945
9/11/13 13:59:45	45.92582	-129.97787	286.31	0.74	1528.71	1529.5	Placing the sensor on the benchmark.	7946
9/11/13 14:00:56	45.92580	-129.97790	286.87	0.8	1528.74	1529.5	Nudging the sensor. Picked it up and putting it back down.	7948
9/11/13 14:02:08	45.92578	-129.97789	287.16	0.74	1528.76	1529.5	Still maneuvering the sensor. Not in toward the front.	7951
9/11/13 14:04:28	45.92584	-129.97788	287.25	0.94	1528.79	1529.7	Having a bit of difficulty placing the sensor in the proper spot.	7954

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9/11/13 14:05:47	45.92582	-129.97789	286.74	0.89	1528.78	1529.7	Moving Jason to the left a bit so the cable is not so tight.	7956
9/11/13 14:06:03	45.92581	-129.97789	288.26	0.76	1528.94	1529.7	Sensor back in the basket.	7957
9/11/13 14:07:03	45.92577	-129.97788	289.41	0.84	1528.47	1529.3	One big rattail in the view.	7959
9/11/13 14:08:47	45.92576	-129.97784	287.68	0.74	1528.79	1529.5	Taking the sensor off the basket and placing it on the benchmark again.	7962
9/11/13 14:10:16	45.92576	-129.97785	288.33	0.89	1528.79	1529.7	Zooming in to look at the placement.	7968
9/11/13 14:11:04	45.92576	-129.97785	288.34	0.74	1528.81	1529.6	Still fiddling with the placement of the sensor on the benchmark.	7970
9/11/13 14:11:12	45.92575	-129.97785	288.26	0.74	1528.8	1529.5	**PRESSURE: Start AX-310.**	7972
9/11/13 14:11:51	45.92576	-129.97785	288.37	0.74	1528.78	1529.5	Starting pressure measurement at AX310-IntDist.	7973
9/11/13 14:14:14	45.92577	-129.97780	288.35	0.74	1528.75	1529.5	The sensor is sitting better this time than last time.	7977
9/11/13 14:15:04	45.92576	-129.97780	288.4	0.74	1528.71	1529.5	Have taken lots of HD frame grabs of the position of the sensor on the benchmark.	7981
9/11/13 14:29:08	45.92578	-129.97788	288.15	0.74	1528.7	1529.4	PRESSURE: End	7998
9/11/13 14:29:45	45.92578	-129.97789	287.91	0.74	1528.69	1529.4	Pressure measurement cut a couple minutes short. Breakfast calls and distracted us.	7999
9/11/13 14:30:06	45.92578	-129.97790	288.09	0.76	1528.75	1529.5	Jason is going in for the grab. Removing the sensor from the benchmark.	8000
9/11/13 14:31:19	45.92578	-129.97789	288.65	0.74	1528.79	1529.5	Sensor on the basket. Next stop will be Marker-33 site.	8004
9/11/13 14:32:10	45.92575	-129.97788	207.61	4.01	1525.19	1529.2	Jason off bottom. Pulling away from this site.	8009
9/11/13 15:10:46	45.93116	-129.98056	157.68	59.71	1454.21	1513.9	27m to go to Mkr133 site at benchmarks 303 and 203.	8012
9/11/13 15:13:15	45.93153	-129.98085	154.87	60.62	1453.38	1514	12m from benchmark but 63m above the bottom.	8013
9/11/13 15:14:52	45.93186	-129.98112	143.13	62.32	1446.38	1508.7	We are not 12m from the target-bad entry.	8014
9/11/13 15:16:16	45.93193	-129.98140	287.06	38.99	1467.69	1506.7	Jason is 175m from AX-303.	8015
9/11/13 15:19:20	45.93257	-129.98197	7.58	32.83	1483.97	1516.8	Jason has crossed the lava contact boundary but we are 35m above the bottom.	8016
9/11/13 15:21:19	45.93291	-129.98196	4.54	6.93	1509.59	1516.5	10m above the bottom.	8018
9/11/13 15:21:30	45.93291	-129.98197	4.78	1.96	1514.74	1516.7	There is the bottom.	8019
9/11/13 15:21:40	45.93291	-129.98197	7.13	1.81	1515.02	1516.8	Pillow flow in the new lava flow.	8020
9/11/13 15:22:56	45.93304	-129.98213	5.21	1.8	1513.94	1515.7	Some large pockets of sediment in places between pillows.	8023
9/11/13 15:23:39	45.93309	-129.98231	328.98	2.34	1513.3	1515.6	Pillows.	8025
9/11/13 15:24:54	45.93323	-129.98238	22.8	2.49	1513.03	1515.5	Some staining near the marker 166. Mkr166.	8029

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9/11/13 15:26:00	45.93337	-129.98231	44.74	1.98	1513.22	1515.2	Moving over west to the Mkr33 site.	8031
9/11/13 15:26:09	45.93339	-129.98228	48.31	2.1	1513.19	1515.3	Here it is.	8034
9/11/13 15:26:47	45.93344	-129.98229	20.71	1.41	1513.82	1515.2	Two measurements at this site AX-303 and AX-203.	8038
9/11/13 15:27:16	45.93344	-129.98229	24.27	0.84	1514.43	1515.3	Going to measure at AX-203 (Mkr66) first.	8040
9/11/13 15:28:31	45.93345	-129.98229	20.8	0.74	1514.77	1515.5	Retrieving the pressure device from the basket.	8043
9/11/13 15:28:43	45.93345	-129.98230	20.66	0.74	1514.74	1515.5	HIGHLIGHTS on.	8044
9/11/13 15:29:48	45.93345	-129.98230	20.65	0.74	1514.78	1515.5	Old metal benchmarks are only 10-15lbs under water so they are bumped easily (not good).	8046
9/11/13 15:30:10	45.93345	-129.98230	20.63	1.09	1514.74	1515.8	Have device and placing on the benchmark.	8048
9/11/13 15:31:37	45.93346	-129.98230	20.81	0.76	1514.8	1515.6	**PRESSURE: Start AX-203.**	8052
9/11/13 15:31:42	45.93346	-129.98230	20.8	0.76	1514.74	1515.5	HIGHLIGHTS off.	8053
9/11/13 15:36:49	45.93345	-129.98228	20.75	0.84	1514.79	1515.6	NAV: Doppler Reset	8059
9/11/13 15:51:43	45.93341	-129.98224	20.81	0.76	1514.62	1515.4	PRESSURE: End	8075
9/11/13 15:51:57	45.93341	-129.98224	20.72	0.74	1514.57	1515.3	Picking up device and moving over to AX-303.	8076
9/11/13 15:56:00	45.93343	-129.98220	197.62	0.74	1514.79	1515.5	HIGHLIGHTS on.	8084
9/11/13 15:56:20	45.93343	-129.98220	197.62	0.74	1514.83	1515.6	Moving device on to the benchmark at AX-303.	8086
9/11/13 15:59:20	45.93344	-129.98224	197.6	0.74	1514.84	1515.6	**PRESSURE: Start AX-303.**	8093
9/11/13 15:59:30	45.93344	-129.98224	197.61	0.74	1514.77	1515.5	Placement looked good.	8094
9/11/13 15:59:51	45.93343	-129.98224	197.6	0.74	1514.75	1515.5	HIGHLIGHTS off.	8095
9/11/13 16:06:22	45.93343	-129.98223	197.67	0.74	1514.82	1515.6	NAV: Doppler Reset	8104
9/11/13 16:09:38	45.93344	-129.98221	197.71	0.74	1514.75	1515.5	Smoke wafting over \Medea's camera's view.	8108
9/11/13 16:20:13	45.93345	-129.98222	197.84	0.74	1514.67	1515.4	PRESSURE: End	8120
9/11/13 16:20:29	45.93345	-129.98222	197.87	0.74	1514.66	1515.4	Retrieving device and done with this location.	8121
9/11/13 16:23:03	45.93347	-129.98222	198.81	3.66	1511.6	1515.3	Leaving the site and heading for AX-309 at the RSN primary node.	8125
9/11/13 16:23:37	45.93347	-129.98222	198.58	3.69	1511.4	1515.1	Strapping down the pressure device before heading over.	8127
9/11/13 16:24:30	45.93347	-129.98221	198.53	3.73	1511.56	1515.3	Ship needs to change the heading to move to the next site which is 956m away at a heading of 058.	8129
9/11/13 16:26:40	45.93352	-129.98203	84.08	2.11	1513.26	1515.4	Moving out at 086 and waiting for Medea.	8133
9/11/13 16:29:30	45.93355	-129.98210	37.76	2.59	1512.64	1515.2	Small tubeworm clumps in the pillows.	8138
9/11/13 16:30:11	45.93360	-129.98209	22.05	2.94	1512.77	1515.7	Moving over pillows.	8141
9/11/13 16:31:06	45.93361	-129.98209	65.97	2.85	1512.52	1515.4	Tube worms look fairly healthy.	8145
9/11/13 16:32:19	45.93365	-129.98205	66.38	2.8	1512.47	1515.3	Tubeworms in the new flow.	8149
9/11/13 16:34:01	45.93381	-129.98192	51.96	2.93	1512.73	1515.7	Hoping to see the edge of the new flow but might just skirt it before having to pull up.	8153

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/11/13 16:34:37	45.93385	-129.98187	54.07	2.81	1513.15	1516	Collapsed pillow.	8157
9/11/13 16:35:14	45.93388	-129.98181	53.96	2.86	1512.96	1515.8	Great collapse feature and drain back.	8162
9/11/13 16:36:25	45.93402	-129.98168	42.97	3.83	1513.38	1517.2	Pillar.	8169
9/11/13 16:36:33	45.93405	-129.98166	45.37	3.64	1513.51	1517.2	That is pillar.	8170
9/11/13 16:37:15	45.93418	-129.98143	49.12	4.94	1512.39	1517.3	Nice pillars.	8173
9/11/13 16:38:26	45.93422	-129.98135	49.69	4.7	1510.91	1515.6	Close to edge of new flow but not obvious if we crossed the contact or not with all the drain outs and collapse.	8176
9/11/13 16:43:28	45.93477	-129.98046	46.73	2.81	1514.66	1517.5	Still near the bottom as we head over to AX-309 over older flow. Medea is going through plumes of smoke.	8185
9/11/13 16:44:12	45.93483	-129.98033	45.34	2.53	1514.6	1517.1	Seems a bit murky in the water.	8188
9/11/13 16:48:10	45.93526	-129.97958	46.16	3.76	1515.18	1518.9	Lots of sediment and older pillows.	8194
9/11/13 16:48:18	45.93528	-129.97955	46.1	4.18	1515.28	1519.5	Pillar.	8196
9/11/13 16:48:51	45.93534	-129.97946	45.16	4.28	1514.47	1518.8	Pillars and collapse.	8199
9/11/13 16:49:28	45.93541	-129.97938	45.61	4.18	1513.36	1517.5	More smoke in Medea camera.	8201
9/11/13 16:52:13	45.93564	-129.97871	47.85	3.99	1514.72	1518.7	Pillars.	8209
9/11/13 16:52:40	45.93567	-129.97859	46.08	2.65	1515	1517.7	Lots of smoke here.	8211
9/11/13 17:00:54	45.93652	-129.97652	56.35	4.15	1514.44	1518.6	Ship is doing a heading change.	8223
9/11/13 17:07:59	45.93739	-129.97451	50.06	5.08	1516.32	1521.4	Sheet flows.	8235
9/11/13 17:09:33	45.93749	-129.97430	49.68	4.71	1517.79	1522.5	Sonar shows a big sheet flow area with some ridges or outcrops to the sides.	8238
9/11/13 17:10:17	45.93764	-129.97398	50.7	5.68	1517.25	1522.9	Coming up to a jumbled flow ridge.	8241
9/11/13 17:10:43	45.93773	-129.97381	48.21	5.16	1516.91	1522.1	170m to go to benchmark AX-309.	8242
9/11/13 17:11:13	45.93772	-129.97382	48.54	4.61	1517.04	1521.7	Ship is at the target.	8244
9/11/13 17:13:12	45.93794	-129.97340	49.53	4.01	1517.64	1521.7	Waiting for Medea to get to the site.	8247
9/11/13 17:13:22	45.93797	-129.97334	50.21	5.18	1517.36	1522.5	Over pillows with sediment.	8248
9/11/13 17:13:50	45.93803	-129.97321	50.4	4.99	1518.1	1523.1	Moving over a drop-off.	8249
9/11/13 17:15:12	45.93810	-129.97294	49.52	4.48	1518.1	1522.6	Big drop.	8255
9/11/13 17:15:43	45.93818	-129.97276	53.81	4.54	1522.29	1526.8	Jumbled sheet flow.	8256
9/11/13 17:18:18	45.93843	-129.97216	76.69	5.55	1519.88	1525.4	There is the benchmark AX-309.	8260
9/11/13 17:20:23	45.93843	-129.97198	255	5.06	1519.89	1525	Waiting for Medea.	8265
9/11/13 17:21:40	45.93846	-129.97200	249.06	4.91	1521.21	1526.1	Retrieving the pressure device from the basket.	8267
9/11/13 17:26:02	45.93848	-129.97206	249.4	0.74	1525.93	1526.7	HIGHLIGHTS on.	8273
9/11/13 17:26:27	45.93848	-129.97206	249.41	0.96	1525.89	1526.9	Setting the device on the benchmark.	8275
9/11/13 17:28:25	45.93848	-129.97207	249.44	0.96	1525.88	1526.8	HIGHLIGHTS off.	8278
9/11/13 17:28:56	45.93848	-129.97207	249.46	0.96	1525.98	1526.9	**PRESSURE: Start AX-309.**	8280
9/11/13 17:29:27	45.93848	-129.97207	249.48	0.96	1525.89	1526.9	NAV: Doppler Reset	8282

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9/11/13 17:51:59	45.93847	-129.97213	236.29	0.74	1525.76	1526.5	Benchmark did not move but the instrument did as Jason moved.	8306
9/11/13 17:52:13	45.93847	-129.97212	229.41	0.74	1525.91	1526.7	The benchmark did get nicked as it was touched by Jason.	8308
9/11/13 17:52:41	45.93847	-129.97213	229.43	0.74	1525.93	1526.7	Was not pulled by Medea-do not know why it was pulled off.	8309
9/11/13 17:54:44	45.93847	-129.97212	229.46	0.74	1525.89	1526.6	May have been pulled by Medea as it was right above Jason.	8312
9/11/13 17:56:06	45.93847	-129.97211	229.48	0.74	1525.91	1526.7	Looks like some floc in water after bump. Fish got in Jason thrusters and that is what pulled us off the site.	8316
9/11/13 17:56:13	45.93847	-129.97211	229.49	0.74	1525.91	1526.7	Big fish in thrusters is not good.	8318
9/11/13 17:56:27	45.93847	-129.97210	229.49	0.74	1525.94	1526.7	Photos of dead fish next to benchmark and now the brittle stars are having a great meal.	8319
9/11/13 17:57:05	45.93847	-129.97209	229.5	0.74	1525.91	1526.7	Purple electric tape.	8322
9/11/13 17:57:29	45.93847	-129.97209	229.5	0.74	1525.93	1526.7	There was no floc in the water just fish pieces and parts.	8324
9/11/13 17:57:42	45.93847	-129.97209	229.51	0.74	1525.93	1526.7	Now a shrimp came by for a meal.	8325
9/11/13 17:58:20	45.93847	-129.97208	229.52	0.74	1525.91	1526.7	HIGHLIGHTS on.	8329
9/11/13 17:59:43	45.93847	-129.97206	229.53	0.74	1525.85	1526.6	Jason was driving down at the site when it sucked in the fish through the thrusters.	8332
9/11/13 18:00:32	45.93847	-129.97206	229.54	0.74	1525.86	1526.6	Extended measurement due to interruption.	8335
9/11/13 18:01:33	45.93848	-129.97205	229.54	0.74	1525.9	1526.6	PRESSURE: End	8340
9/11/13 18:01:57	45.93848	-129.97205	229.55	0.74	1525.92	1526.7	HIGHLIGHTS off.	8341
9/11/13 18:02:39	45.93848	-129.97205	229.56	0.74	1525.89	1526.6	Retrieving the pressure device off the benchmark.	8344
9/11/13 18:06:14	45.93848	-129.97205	229.46	0.74	1525.86	1526.6	Power was limited on Jason so jaws wouldn't open due to the driving after fish incident.	8349
9/11/13 18:06:33	45.93848	-129.97206	229.46	0.74	1525.91	1526.7	Picked up device and putting on the basket.	8350
9/11/13 18:07:29	45.93848	-129.97206	229.51	0.74	1525.88	1526.6	Strapping down the device in the basket.	8353
9/11/13 18:07:54	45.93847	-129.97206	230.62	0.74	1525.86	1526.6	Next a short break from the benchmark tour to visit the RSN Primary Node nearby.	8354
9/11/13 18:08:09	45.93849	-129.97205	230.08	3.16	1522.76	1525.9	Pulling off bottom.	8356
9/11/13 18:09:46	45.93848	-129.97205	230.2	2.76	1523.25	1526	The RSN node is just over 300m away.	8358
9/11/13 18:10:40	45.93860	-129.97213	356.21	4.15	1521.47	1525.6	Saw the remainder of the fish go through the thrusters.	8360
9/11/13 18:11:37	45.93870	-129.97210	24.06	4.43	1520.77	1525.2	Ship is going to make a heading correction and move to the RSN at .5kts.	8362

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9/11/13 18:16:50	45.93886	-129.97196	27.22	2.53	1524.04	1526.6	Entered target 97 for the RSN primary node location in Jason navigation.	8368
9/11/13 18:17:38	45.93889	-129.97193	26.37	2.63	1523.68	1526.3	That is target 87 for RSN PN3B. (correction-not 97 it is 87)	8370
9/11/13 18:18:30	45.93889	-129.97194	26.51	2.88	1523.42	1526.3	New pilot Scott Nooner.	8372
9/11/13 18:19:21	45.93898	-129.97188	26.93	4.75	1521.15	1525.9	Pillows and collapse.	8374
9/11/13 18:20:47	45.93914	-129.97174	28.8	3.41	1519.06	1522.5	Large collapse and drain outs.	8377
9/11/13 18:23:49	45.93936	-129.97127	28.21	2.54	1521.56	1524.1	Great lava forms with collapsed pillows and flows.	8389
9/11/13 18:25:11	45.93951	-129.97111	29.74	4.51	1521.26	1525.8	Pillar.	8397
9/11/13 18:26:01	45.93962	-129.97098	27.59	2.48	1520.54	1523	Soft coral.	8403
9/11/13 18:27:31	45.93978	-129.97086	27.52	2.35	1520.97	1523.3	About another 150m to go to the RSN primary node.	8406
9/11/13 18:28:10	45.93987	-129.97079	26.72	1.53	1521.45	1523	Sea star on basalt pillow.	8412
9/11/13 18:29:14	45.93999	-129.97072	26.81	1.14	1522.98	1524.1	Skin on pillow.	8415
9/11/13 18:30:35	45.94014	-129.97062	26.79	1.34	1522.88	1524.2	Round pillow balls.	8418
9/11/13 18:32:28	45.94033	-129.97048	26.75	2.28	1521.93	1524.2	Large pillows (some striated).	8425
9/11/13 18:33:29	45.94043	-129.97041	26.59	1.34	1523.66	1525	Flow almost looks like overlapping types with gray-large pillows surrounded by blacker smaller pillows.	8427
9/11/13 18:34:20	45.94050	-129.97036	26.55	2.59	1522.33	1524.9	Sea cucumber like things with the appendages (sorry don't know name).	8432
9/11/13 18:34:54	45.94051	-129.97035	25.7	1.76	1523.98	1525.7	Fish (smarter than last one as it is running away).	8434
9/11/13 18:35:24	45.94056	-129.97032	24.12	2.28	1523.33	1525.6	Switched back to pilot Corey.	8436
9/11/13 18:36:30	45.94072	-129.97018	28.96	2.41	1525.4	1527.8	About 35m from node.	8438
9/11/13 18:37:35	45.94087	-129.97013	5.68	1.8	1526.15	1528	Scorpio camera set on auto photo take.	8441
9/11/13 18:38:52	45.94097	-129.97016	35.71	2.49	1525.4	1527.9	Sonar has target to right.	8444
9/11/13 18:39:06	45.94097	-129.97016	42.2	2.35	1525.51	1527.9	Straight ahead to target on sonar.	8445
9/11/13 18:39:22	45.94097	-129.97016	43.09	2.56	1525.43	1528	Lava swirl.	8448
9/11/13 18:40:33	45.94097	-129.97015	44.61	2.49	1525.41	1527.9	Looks like the box is 40m ahead on sonar.	8450
9/11/13 18:41:40	45.94104	-129.97004	45.69	2.66	1524.96	1527.6	Flatter pillow flow.	8452
9/11/13 18:42:08	45.94108	-129.96997	43.78	2.5	1525.21	1527.7	30m ahead on sonar. Big shadow on target.	8454
9/11/13 18:42:22	45.94110	-129.96993	48.54	2.45	1525.44	1527.9	There is a marker.	8455
9/11/13 18:42:29	45.94111	-129.96992	48.52	2.41	1525.47	1527.9	HIGHLIGHTS on.	8456
9/11/13 18:42:35	45.94112	-129.96990	49.36	2.5	1525.43	1527.9	There it is.	8457
9/11/13 18:43:13	45.94118	-129.96982	41.05	2.79	1524.88	1527.7	Taking a look at the RSN primary node.	8462
9/11/13 18:44:11	45.94122	-129.96977	41.4	2.9	1525.26	1528.2	Taking a lot of photos of the node.	8467

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/11/13 19:01:58	45.94124	-129.96974	124.97	0.74	1527.27	1528	Landed on the node to make sure Jason's arm will be able to grab the lines stored inside.	8532
9/11/13 19:02:25	45.94124	-129.96973	124.96	0.76	1527.29	1528.1	Can't reach with the Kraft arm.	8534
9/11/13 19:05:01	45.94124	-129.96975	125.03	0.75	1527.33	1528.1	Shilling will probably be able to do it. Will take some work to position the sub correctly to reach the connectors.	8541
9/11/13 19:09:26	45.94124	-129.96980	123.66	1.51	1526.59	1528.1	Trying another technique to reach in.	8555
9/11/13 19:39:07	45.94130	-129.96987	324.11	1.04	1527.18	1528.2	Moved over to look at one of the cables.	8608
9/11/13 19:40:43	45.94132	-129.96988	323.91	1.13	1527.09	1528.2	HIGHLIGHTS off.	8612
9/11/13 19:42:18	45.94133	-129.96989	323.91	1.03	1527.19	1528.2	Done checking out the RSN stuff.	8615
9/11/13 19:45:21	45.94120	-129.96962	119.55	7.54	1520.67	1528.2	Beginning transit to AX-302. 1230m at 297 deg heading.	8621
9/11/13 19:45:26	45.94119	-129.96960	119.22	8.74	1519.59	1528.3	Jason off bottom.	8622
9/11/13 20:57:47	45.94654	-129.98337	248.14	3.58	1515.89	1519.5	Jason on bottom.	8633
9/11/13 20:59:22	45.94641	-129.98370	206.51	3.48	1516.16	1519.6	Benchmark AX-302 is in sight.	8636
9/11/13 21:00:00	45.94641	-129.98371	218.14	4	1516.04	1520	Old metal benchmark AX-202 is next to it.	8637
9/11/13 21:00:23	45.94641	-129.98372	218.07	4.1	1515.89	1520	Picking up the pressure recorder.	8639
9/11/13 21:04:26	45.94640	-129.98378	232.5	0.74	1519.79	1520.5	Placing recorder on the benchmark.	8646
9/11/13 21:06:55	45.94641	-129.98378	235.36	0.74	1519.74	1520.5	**PRESSURE: Start AX-302.**	8654
9/11/13 21:26:10	45.94639	-129.98373	230.54	0.74	1519.91	1520.7	PRESSURE: End	8676
9/11/13 21:28:19	45.94638	-129.98374	247.42	0.74	1519.88	1520.6	Now taking a measurement on the old metal benchmark 63.	8679
9/11/13 21:30:45	45.94638	-129.98374	247.15	0.74	1519.8	1520.5	**PRESSURE: Start AX-202.**	8683
9/11/13 21:50:13	45.94642	-129.98370	247.08	0.74	1519.9	1520.6	PRESSURE: End	8705
9/11/13 21:50:31	45.94642	-129.98370	247.14	0.74	1519.88	1520.6	Stowing the pressure recorder.	8706
9/11/13 21:52:27	45.94642	-129.98370	246.28	1.36	1519.26	1520.6	We are going to leave a marker here.	8709
9/11/13 21:53:38	45.94641	-129.98371	246.51	1.43	1519.29	1520.7	HIGHLIGHTS on.	8711
9/11/13 21:55:06	45.94639	-129.98373	246.47	1.51	1519.22	1520.7	**DEPLOY: Marker 136** from the port biobox.	8714
9/11/13 21:57:37	45.94640	-129.98373	173.88	3.53	1517.18	1520.7	Beginning transit to AX-101.	8721
9/11/13 21:58:02	45.94641	-129.98367	108.03	5	1515.67	1520.7	2260 m at 295 deg heading.	8722
9/11/13 21:58:16	45.94640	-129.98360	108.34	4.34	1513.72	1518.1	Jason off bottom.	8724
9/11/13 23:45:35	45.95483	-130.00928	311.84	24.55	1504.43	1529	Getting close to AX-101 Caldera Center.	8727
9/11/13 23:45:48	45.95486	-130.00931	312.39	18.45	1510.6	1529.1	Still in the water column with Jason.	8728
9/11/13 23:46:53	45.95513	-130.00960	310.81	5.41	1525.64	1531.1	Jason on bottom. bottom in sight.	8730
9/11/13 23:47:39	45.95512	-130.00971	307.87	2.76	1527.54	1530.3	Heavily sedimented seafloor here. Ropey jumbled lavas.	8733
9/11/13 23:49:32	45.95519	-130.00989	292.78	3.36	1529.31	1532.7	The marker is ahead. Marker south of benchmark is Mkr-60.	8737

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/11/13 23:50:21	45.95522	-130.00991	238.39	4.53	1528.39	1532.9	AX101 is right ahead. Mkr-60 goes back to 2000 when the original benchmarks went out.	8739
9/11/13 23:51:33	45.95521	-130.00993	238.49	0.91	1531.85	1532.8	Lots of sediment. The benchmark has our old flag (orange) with a white stem.	8742
9/11/13 23:52:08	45.95522	-130.00993	238.07	0.74	1532.39	1533.1	A solitary fish lurking in the background.	8745
9/11/13 23:52:36	45.95523	-130.00993	237	0.8	1532.37	1533.2	Jason is unfastening the sensor.	8746
9/11/13 23:53:23	45.95524	-130.00994	237.85	0.74	1532.37	1533.1	Grabbing the sensors by the handle and moving the package to the benchmark.	8748
9/11/13 23:53:42	45.95524	-130.00994	237.78	0.75	1532.31	1533.1	Placing the sensor package on AX101 Caldera Center benchmark.	8749
9/11/13 23:55:44	45.95522	-130.00992	237.77	0.76	1532.28	1533	Moving the sensor around. The pressure is on Tito.	8753
9/11/13 23:57:26	45.95519	-130.00993	237.88	0.74	1532.42	1533.2	Looks like the sensor is in place. Bill says the tilt is off. Need to reposition.	8760
9/11/13 23:58:03	45.95519	-130.00994	237.91	0.79	1532.41	1533.2	Sensor just fell on its side. Whoops.	8761
9/11/13 23:58:39	45.95519	-130.00994	238.43	1.06	1532.36	1533.4	The sensor is laying on its side on the benchmark.	8763
9/11/13 23:58:51	45.95519	-130.00994	238.16	0.79	1532.47	1533.3	Jason has it righted now.	8764
9/11/13 23:59:09	45.95519	-130.00994	237	0.83	1532.51	1533.3	Putting the sensor back in the tripod to get a better grip.	8766
9/12/13 00:00:20	45.95520	-130.00993	237.46	0.74	1532.45	1533.2	Going in for the second attempt.	8768
9/12/13 00:01:21	45.95521	-130.00993	237.53	0.74	1532.45	1533.2	That looks good. But as Jason tries to let go it starts to fall. hmm	8772
9/12/13 00:02:09	45.95522	-130.00993	237.82	0.74	1532.47	1533.2	Jason appears to be sitting on the benchmark correctly now.	8774
9/12/13 00:02:16	45.95522	-130.00993	237.82	0.74	1532.57	1533.3	Tilt numbers look just right.	8775
9/12/13 00:03:18	45.95522	-130.00994	237.85	0.74	1532.53	1533.3	**PRESSURE: Start AX-101.**	8777
9/12/13 00:04:03	45.95521	-130.00994	237.88	0.74	1532.53	1533.3	Starting pressure measurement at AX101-Caldera center.	8778
9/12/13 00:06:20	45.95520	-130.00996	237.98	0.74	1532.61	1533.4	We're sitting here doing the pressure measurement.	8784
9/12/13 00:21:29	45.95522	-130.00995	238.31	0.74	1532.56	1533.3	Still doing the pressure measurement for a couple more minutes.	8810
9/12/13 00:23:23	45.95520	-130.00995	238.33	0.74	1532.55	1533.3	PRESSURE: End	8813
9/12/13 00:23:53	45.95520	-130.00994	237.76	1.03	1532.47	1533.5	Finished with the measurement here at AX=101 Caldera Center. Z=1533.	8815
9/12/13 00:24:13	45.95521	-130.00994	237.76	1.03	1532.47	1533.5	Corey is at the controls now. Going in to grab the sensor.	8817
9/12/13 00:24:15	45.95521	-130.00994	237.76	0.76	1532.49	1533.3	Good job.	8818

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 00:25:30	45.95521	-130.00995	237.1	0.74	1532.55	1533.3	The sensor is in the holster.	8825
9/12/13 00:25:57	45.95521	-130.00995	237.36	0.74	1532.58	1533.3	All tucked in the holster.	8826
9/12/13 00:26:45	45.95524	-130.00994	347.81	4.83	1527.99	1532.8	Jason off bottom. Heading to AX307-Magnesia West. Will be over and hour.	8828
9/12/13 01:23:27	45.94621	-130.00848	190.07	5.85	1535.7	1541.6	Jason on bottom. Bottom in sight.	8835
9/12/13 01:23:59	45.94604	-130.00851	189.23	3.74	1540.92	1544.7	NAV: Doppler Reset	8836
9/12/13 01:24:09	45.94600	-130.00852	189.88	3.3	1541.53	1544.8	Nice and flat here.	8838
9/12/13 01:24:34	45.94593	-130.00855	190.47	2.99	1541.96	1545	We are near AX307-Magnesia West.	8839
9/12/13 01:25:02	45.94586	-130.00856	191.88	2.9	1539.67	1542.6	Were first of flat sheet flow and now we are moving over jumbled flow.	8840
9/12/13 01:25:08	45.94585	-130.00858	213.4	3.06	1539.46	1542.5	Looks like the edge of a lava flow.	8842
9/12/13 01:26:21	45.94572	-130.00876	205.8	1.3	1542.27	1543.6	These lavas have some sea cucumbers on them. Iron Magnesium and silica are the main components of basalt.	8844
9/12/13 01:26:28	45.94571	-130.00877	207.34	1.43	1542.44	1543.9	Basalt tends to be fluid.	8845
9/12/13 01:27:38	45.94559	-130.00886	208.08	3.16	1540.62	1543.8	Very rugged seafloor here. Jumbled.	8847
9/12/13 01:27:57	45.94555	-130.00891	207.07	1.9	1541.05	1543	Seastar on the lava.	8848
9/12/13 01:28:19	45.94551	-130.00897	206.47	2.43	1541.04	1543.5	Moving toward the benchmark target.	8850
9/12/13 01:29:24	45.94543	-130.00906	261.04	1.71	1542.49	1544.2	Back on striated sheet flows.	8855
9/12/13 01:29:35	45.94541	-130.00907	216.99	1.76	1542.27	1544	To the right are jumbled slows.	8856
9/12/13 01:29:48	45.94539	-130.00906	223.24	2.21	1542.37	1544.6	The benchmark is just ahead.	8858
9/12/13 01:31:46	45.94535	-130.00912	175.52	1.49	1543.08	1544.6	The benchmark still has its mooring line.	8871
9/12/13 01:32:03	45.94535	-130.00911	174.77	1.5	1543.27	1544.8	AX307 benchmark straight ahead.	8872
9/12/13 01:34:41	45.94534	-130.00910	173.97	0.74	1544.35	1545.1	Placing the pressure sensors on the benchmark. AX307.	8876
9/12/13 01:35:28	45.94534	-130.00911	173.92	0.74	1544.38	1545.1	The sensor is in place on the benchmark. That was good.	8881
9/12/13 01:36:34	45.94534	-130.00913	173.94	154.27	1544.25	1698.5	Things look good.	8885
9/12/13 01:37:08	45.94534	-130.00915	173.94	0.74	1544.31	1545.1	**PRESSURE: Start AX-307.**	8887
9/12/13 01:39:09	45.94535	-130.00914	173.94	0.74	1544.37	1545.1	We're hanging out here for 20 minutes.	8889
9/12/13 01:45:13	45.94537	-130.00911	173.92	0.74	1544.24	1545	Target latitude/longitude from the cursor position: 130°0.5476W 45° 56.7196N Z=1545m.	8904
9/12/13 01:47:13	45.94537	-130.00913	173.92	0.74	1544.28	1545	The measurement moves on and on.....	8908
9/12/13 01:52:45	45.94536	-130.00914	173.9	0.74	1544.11	1544.9	Casey says they saw black smoke in the water 60 m up; Trevi area. Maybe we can check it out on our next go-around.	8915
9/12/13 01:55:43	45.94539	-130.00916	173.75	85.51	1544.25	1629.8	Going for the marker. Going to deploy a marker here near BMRK-307. Deploying Marker 127.	8918
9/12/13 01:55:51	45.94539	-130.00916	173.74	46.61	1544.26	1590.9	HIGHLIGHTS on.	8919

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 01:56:58	45.94539	-130.00915	173.73	110.08	1544.27	1654.4	**DEPLOY: Marker 127** deployed at benchmark 307 (Magnesia West).	8923
9/12/13 01:57:05	45.94538	-130.00915	173.74	157.68	1544.19	1701.9	PRESSURE: End	8924
9/12/13 01:57:40	45.94537	-130.00917	173.73	115.95	1544.19	1660.1	Retrieving the pressure sensor and putting it in the cradle on the basket.	8925
9/12/13 01:59:16	45.94534	-130.00917	173.72	122.75	1544.19	1666.9	Sensors stashed in the cradle. Tucking it in. Looks good.	8926
9/12/13 02:00:10	45.94533	-130.00914	173.72	120.48	1544.19	1664.7	Next task is to release the mooring balls.	8930
9/12/13 02:00:49	45.94532	-130.00910	245.71	0.93	1543.34	1544.3	Jason is moving around to the other side of the benchmark.	8932
9/12/13 02:02:24	45.94534	-130.00908	244.53	0.8	1544.24	1545	Stbd arm is holding down the benchmark. The port arm pulled the pin. Mooring is on its way to the surface.	8937
9/12/13 02:03:32	45.94540	-130.00909	191.5	3.13	1541.32	1544.5	Lifting off the bottom.	8942
9/12/13 02:04:02	45.94529	-130.00915	194.23	4.93	1539.19	1544.1	Will now recover the mooring balls at the surface; then head down to AX-106 ASHES.	8943
9/12/13 02:56:11	45.94457	-130.00689	14.59	84.71	1452.26	1537	Need to turn Jason around to have the best exposure to the modem to talk to the SCPR.	8949
9/12/13 03:01:21	45.94378	-130.00755	7.82	55.76	1485.95	1541.7	Trying to position Jason under Medea in order to drive the optimal heading instead of being towed.	8950
9/12/13 03:02:59	45.94347	-130.00771	204.16	45.27	1494.86	1540.1	Facing south now.	8951
9/12/13 03:06:42	45.94302	-130.00802	204.75	47.66	1494.46	1542.1	Range of this modem is 1200m. No communication yet.	8952
9/12/13 03:24:14	45.94079	-130.01002	218.4	44.94	1492.85	1537.8	Got a communication from the SCPR! Says it is 700+ meters away from Jason.	8953
9/12/13 03:32:59	45.93874	-130.01021	201.42	53.44	1488.84	1542.3	Ship is doing a large heading change to port.	8954
9/12/13 03:37:36	45.93786	-130.01025	189.94	52.53	1488.79	1541.3	Seeing a lot of jellyfish in the water (flying over 50m above bottom).	8955
9/12/13 03:43:36	45.93636	-130.01026	183.46	52.61	1489.06	1541.7	SCPR is talking-working fine.	8956
9/12/13 03:48:48	45.93560	-130.01078	204.6	53.36	1488.75	1542.1	Moving the ship to avoid the SCPR mooring.	8957
9/12/13 03:54:43	45.93436	-130.01160	330.96	44.62	1488.76	1533.4	Stopping the ship's movement. Waiting for Medea and Jason to catch up.	8958
9/12/13 03:55:35	45.93432	-130.01163	335.57	35.87	1505.26	1541.1	Heading down to the bottom	8960
9/12/13 03:55:41	45.93432	-130.01163	335.9	11.48	1508.38	1519.9	Video started.	8961
9/12/13 03:56:05	45.93433	-130.01164	336.4	22.22	1518.54	1540.8	Try to maintain this heading (336) on Jason toward the SCPR for data transmission.	8962
9/12/13 03:57:04	45.93434	-130.01167	338.6	4.75	1537.38	1542.1	Bottom again! Pillows with sediment.	8964

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 03:57:52	45.93435	-130.01162	334.96	2.75	1538.9	1541.7	Only 12m from the benchmark.	8966
9/12/13 03:59:24	45.93438	-130.01155	320.48	5.45	1536.46	1541.9	There is the benchmark.	8969
9/12/13 04:03:04	45.93445	-130.01156	71.35	2.03	1539.84	1541.9	Retrieving pressure device from basket.	8974
9/12/13 04:05:02	45.93445	-130.01155	71.71	0.74	1541.63	1542.4	There are 3 brittle stars on the landing zone-need some housekeeping.	8977
9/12/13 04:06:13	45.93445	-130.01156	71.67	2.31	1539.73	1542	Started to place device on benchmark to clean off brittle stars but got pulled off.	8980
9/12/13 04:06:24	45.93444	-130.01158	71.57	3.71	1538.29	1542	Ship wandered.	8981
9/12/13 04:08:00	45.93444	-130.01162	76.5	4.43	1537.86	1542.3	Waiting for the ship to move back to position.	8983
9/12/13 04:08:13	45.93443	-130.01167	47.65	3.86	1537.99	1541.9	Turning Jason toward the SCPR while waiting.	8985
9/12/13 04:15:46	45.93442	-130.01158	349.1	3.75	1538.16	1541.9	Moving back to benchmark.	8993
9/12/13 04:15:53	45.93442	-130.01158	349.13	3.79	1538.18	1542	Waiting for Medea now.	8994
9/12/13 04:16:27	45.93442	-130.01158	349.22	3.9	1538.1	1542	Great data from SCPR right now. 29m away with Jason at 349deg.	8996
9/12/13 04:19:01	45.93441	-130.01159	348.94	3.95	1538.14	1542.1	Done with SCPR data transmission.	8999
9/12/13 04:19:17	45.93443	-130.01159	37.23	4.11	1538.05	1542.2	Approaching the benchmark.	9001
9/12/13 04:19:42	45.93446	-130.01158	69.96	3.61	1538.37	1542	SCPR modem off.	9002
9/12/13 04:23:16	45.93445	-130.01156	73.36	0.74	1541.4	1542.1	Placing device on the benchmark (will try to scare away the sea stars).	9007
9/12/13 04:23:54	45.93445	-130.01156	73.36	0.74	1541.39	1542.1	Setting the device down and lifting up but the sea stars are still there.	9008
9/12/13 04:25:18	45.93445	-130.01156	73.76	0.74	1541.38	1542.1	Using port arm to scrape off the sea stars. Not working very well.	9011
9/12/13 04:27:51	45.93444	-130.01155	73.91	0.74	1541.34	1542.1	Sea stars are gone! (Only one arm cut off).	9021
9/12/13 04:28:17	45.93444	-130.01155	73.9	0.74	1541.32	1542.1	Took some frame grabs of "Larry was Here" for R/V Atlantis.	9023
9/12/13 04:28:45	45.93444	-130.01155	73.91	0.74	1541.3	1542	Cable was caught on post on basket.	9024
9/12/13 04:29:42	45.93443	-130.01155	73.93	0.74	1541.38	1542.1	Need to move Jason a bit to position the device.	9026
9/12/13 04:30:40	45.93443	-130.01156	73.7	0.74	1541.25	1542	This is benchmark AX-106 at Ashes.	9028
9/12/13 04:31:25	45.93443	-130.01156	73.71	0.74	1541.24	1542	Now placing device on the benchmark AX-106.	9030
9/12/13 04:31:38	45.93443	-130.01156	73.74	0.74	1541.27	1542	Placement looks good.	9032
9/12/13 04:31:45	45.93443	-130.01156	73.77	0.8	1541.26	1542.1	**PRESSURE: Start AX-106.**	9033
9/12/13 04:51:39	45.93449	-130.01156	73.59	0.78	1541.07	1541.9	PRESSURE: End	9055
9/12/13 04:51:49	45.93449	-130.01156	73.58	0.74	1541.07	1541.8	Done with this measurement as AX-106.	9056
9/12/13 04:52:17	45.93449	-130.01156	73.58	0.74	1541.13	1541.9	Bumped the flag and it made a cloud of debris.	9058
9/12/13 04:52:22	45.93449	-130.01156	73.57	0.74	1541.08	1541.8	Picked up the device.	9059
9/12/13 04:53:06	45.93449	-130.01156	73.56	0.74	1541.06	1541.8	Stowed device on basket.	9061
9/12/13 04:53:51	45.93450	-130.01158	72.98	2.86	1538.88	1541.7	Moving off the bottom and securing the device on the basket.	9063

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13	04:54:19	45.93450	-130.01158	72.92	2.83	1538.92	1541.8	Will head next to AX-308 at BPR South 1 location.	9065
9/12/13	04:57:33	45.93460	-130.01216	289.32	32.47	1508.54	1541	Smoke in the water.	9069
9/12/13	04:58:38	45.93461	-130.01223	289.3	61.75	1479.34	1541.1	Lots of smoke here.	9070
9/12/13	05:52:00	45.93209	-130.00251	296.83	109.31	1430.43	1539.7	Flew up at over 100m over the bottom to the next benchmark.	9071
9/12/13	05:59:00	45.93160	-130.00121	277.67	94.3	1435.09	1529.4	Just under 200m to go to the benchmark AX-308.	9072
9/12/13	06:04:08	45.93140	-129.99941	77.89	40.52	1489.9	1530.4	The ship is positioned for the benchmark.	9073
9/12/13	06:04:14	45.93140	-129.99940	77.65	37.66	1491.77	1529.4	Jason is driving to the bottom.	9074
9/12/13	06:05:34	45.93143	-129.99926	78.72	3.74	1526.8	1530.5	Bottom in sight.	9076
9/12/13	06:05:58	45.93143	-129.99920	77.1	2.68	1527.65	1530.3	Video started.	9077
9/12/13	06:07:12	45.93148	-129.99886	78.46	4.58	1525.97	1530.6	There is the benchmark.	9080
9/12/13	06:07:42	45.93153	-129.99878	73.51	3.41	1527.14	1530.6	There is AX-308.	9084
9/12/13	06:08:25	45.93156	-129.99871	67.11	3.09	1527.26	1530.4	Can see the tide gauge as well.	9087
9/12/13	06:08:58	45.93155	-129.99865	35.15	1.35	1529.37	1530.7	Ship is pulling NE and need it back on target.	9088
9/12/13	06:11:04	45.93154	-129.99864	25.66	1.26	1529.05	1530.3	Picking up the pull pin from the glass float release.	9095
9/12/13	06:13:24	45.93154	-129.99863	274.14	0.83	1529.74	1530.6	Settling on bottom in position for measurements.	9100
9/12/13	06:13:59	45.93154	-129.99864	274.18	0.79	1529.69	1530.5	Put pull pin next to tide gauge.	9101
9/12/13	06:14:11	45.93154	-129.99864	274.06	0.74	1529.84	1530.6	Retrieving device from basket at AX-308.	9103
9/12/13	06:14:37	45.93154	-129.99864	274.08	0.74	1529.82	1530.6	This is BPR-South1 at AX-308.	9104
9/12/13	06:16:45	45.93154	-129.99866	273.16	0.74	1529.86	1530.6	Placing device on benchmark AX-308.	9107
9/12/13	06:18:19	45.93154	-129.99867	273.77	0.74	1529.89	1530.6	In position on benchmark.	9110
9/12/13	06:18:25	45.93154	-129.99867	273.51	0.74	1530	1530.7	**PRESSURE: Start AX-308.**	9111
9/12/13	06:26:47	45.93159	-129.99861	273.75	0.74	1529.89	1530.6	Ship is heading south and need it back moving over the site.	9120
9/12/13	06:39:01	45.93157	-129.99869	273.83	0.74	1529.84	1530.6	PRESSURE: End	9134
9/12/13	06:39:16	45.93157	-129.99869	273.11	0.74	1529.8	1530.5	Done with AX-308.	9136
9/12/13	06:39:26	45.93158	-129.99869	273.26	0.74	1529.77	1530.5	Retrieving the device off the benchmark.	9137
9/12/13	06:42:01	45.93159	-129.99869	273.69	0.74	1529.88	1530.6	Device in the basket.	9140
9/12/13	06:43:11	45.93159	-129.99868	274.55	2.54	1527.98	1530.5	Strapping down the pressure device in the basket.	9143
9/12/13	06:44:30	45.93159	-129.99868	274.56	2.58	1527.99	1530.6	Getting ready to go back to AX-106 at ASHES.	9145
9/12/13	06:45:13	45.93159	-129.99868	274.64	2.6	1527.98	1530.6	Jason watch change.	9147
9/12/13	07:51:02	45.93433	-130.01146	323.32	11.94	1527.88	1539.8	Bottom is in sight.	9153
9/12/13	07:52:36	45.93428	-130.01142	68	5.61	1535.51	1541.1	Jason on bottom. Benchmark is in sight.	9156
9/12/13	07:52:41	45.93428	-130.01142	67.9	5.73	1535.35	1541.1	Jason on bottom.	9157

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13	07:53:26	45.93431	-130.01147	66.28	5.96	1535.08	1541	Picking up the pressure recorder and moving into position at the benchmark.	9159
9/12/13	07:58:58	45.93440	-130.01158	66.39	0.76	1540.62	1541.4	**PRESSURE: Start AX-106.**	9167
9/12/13	08:18:30	45.93442	-130.01156	66.26	0.75	1540.74	1541.5	PRESSURE: End	9191
9/12/13	08:19:49	45.93442	-130.01159	66.17	2.38	1538.95	1541.3	Picking up the pressure recorder and moving off the bottom.	9193
9/12/13	08:22:26	45.93444	-130.01161	66.15	3.06	1538.42	1541.5	Jimmy is developing his signature move for instrument deployment and recovery.	9197
9/12/13	08:23:27	45.93443	-130.01161	274.54	2.5	1538.53	1541	Leaving AX-106. Now transiting to AX-307; 1200m away at 9 deg heading.	9199
9/12/13	08:23:33	45.93442	-130.01162	234.74	3.24	1537.71	1541	Jason off bottom.	9200
9/12/13	09:33:39	45.94527	-130.00910	352.95	9.46	1533.96	1543.4	Benchmark in sight.	9207
9/12/13	09:36:49	45.94544	-130.00916	177.61	4.85	1538.21	1543.1	This is benchmark 307. Marker 127 is right next to it.	9211
9/12/13	09:37:27	45.94544	-130.00916	177.53	4.93	1538.19	1543.1	Picking up pressure recorder and moving into position at the benchmark.	9214
9/12/13	09:39:59	45.94541	-130.00921	176.98	0.74	1542.94	1543.7	Placing pressure recorder on the benchmark.	9218
9/12/13	09:41:34	45.94538	-130.00917	176.95	0.74	1542.9	1543.6	**PRESSURE: Start AX-307.**	9224
9/12/13	10:01:10	45.94539	-130.00913	176.87	0.74	1543.02	1543.8	PRESSURE: End	9246
9/12/13	10:01:22	45.94538	-130.00913	176.86	0.74	1543.05	1543.8	Stowing the pressure recorder.	9247
9/12/13	10:02:28	45.94540	-130.00914	177.6	1.45	1541.87	1543.3	Moving off the bottom.	9249
9/12/13	10:04:59	45.94542	-130.00913	216.29	1.18	1541.96	1543.1	Beginning transit to AX-101. 1100 m away; 357 deg heading.	9253
9/12/13	10:54:12	45.95313	-130.00960	172.79	82.1	1451.19	1533.3	We're on our way to AX-101 Caldera Center.	9257
9/12/13	10:58:15	45.95431	-130.00957	353.7	38.77	1490.92	1529.7	Descending.	9258
9/12/13	10:59:41	45.95452	-130.00960	352.46	6.6	1521.55	1528.2	Jason on bottom.	9260
9/12/13	10:59:53	45.95458	-130.00961	354.3	5.76	1523.12	1528.9	Bottom in sight on brow cam.	9261
9/12/13	11:00:59	45.95481	-130.00962	355.97	3.08	1524.85	1527.9	Lava swirl. Ropey lavas on sheet flow.	9265
9/12/13	11:01:28	45.95491	-130.00962	356.11	2.76	1524.93	1527.7	Sedimented seafloor with various lavas.	9267
9/12/13	11:02:22	45.95500	-130.00967	355.09	1.58	1527.08	1528.7	Sea cucumbers on this older sedimented lava.	9269
9/12/13	11:02:59	45.95505	-130.00965	355.26	0.86	1528.91	1529.8	Flat terrain here.	9270
9/12/13	11:03:10	45.95506	-130.00965	355.82	0.74	1528.88	1529.6	NAV: Doppler Reset	9272
9/12/13	11:05:34	45.95520	-130.00990	242.11	1.85	1529.8	1531.7	Zooming in on AX-101 benchmark at the caldera center.	9279
9/12/13	11:05:41	45.95520	-130.00990	245.75	1.65	1530.07	1531.7	Odd fish.	9280
9/12/13	11:06:56	45.95520	-130.00992	243.16	1.04	1531.47	1532.5	Here we are again. At the caldera center. Heavily sedimented.	9284
9/12/13	11:07:55	45.95519	-130.00991	243.19	0.76	1531.55	1532.3	Jason is taking the sensor out of the cradle.	9286
9/12/13	11:08:53	45.95518	-130.00991	243.18	0.74	1531.54	1532.3	Poised to position the sensor on the benchmark.	9290

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 11:10:18	45.95517	-130.00992	243.14	0.74	1531.54	1532.3	The sensor wants to fall over on this benchmark - again just like last time. There are worms on there.	9295
9/12/13 11:10:54	45.95517	-130.00992	243.14	0.74	1531.57	1532.3	The sensor wants to topple over.	9296
9/12/13 11:12:26	45.95518	-130.00992	243.15	0.75	1531.52	1532.3	There is something going on at this benchmark. The sensor wants to topple over - again.	9299
9/12/13 11:12:55	45.95518	-130.00991	243.15	0.74	1531.56	1532.3	**PRESSURE: Start AX-101.**	9300
9/12/13 11:13:45	45.95519	-130.00990	243.16	0.74	1531.54	1532.3	Jason is holding on to the sensor to keep it from toppling over.	9304
9/12/13 11:14:21	45.95519	-130.00990	243.16	0.74	1531.56	1532.3	Having the 2 sensors (one on top of the other).	9306
9/12/13 11:22:17	45.95517	-130.00994	243.27	0.74	1531.57	1532.3	Grabbing frames of the sensor on the benchmark.	9324
9/12/13 11:22:43	45.95516	-130.00993	243.28	0.74	1531.56	1532.3	When we take the sensor out of the groove will try setting it on the benchmark to see if it tips.	9325
9/12/13 11:23:38	45.95515	-130.00990	243.3	0.76	1531.53	1532.3	The tipping problem could be confounded by the "double decker" sensors.	9327
9/12/13 11:26:50	45.95517	-130.00988	243.33	0.74	1531.54	1532.3	This entire measurement Jason has been holding the polypro loop at the top of the sensors to keep it from toppling over.	9331
9/12/13 11:27:52	45.95517	-130.00989	243.34	0.74	1531.58	1532.3	Going to trouble shoot the "tipping point" after this pressure reading.	9333
9/12/13 11:31:06	45.95518	-130.00989	243.36	0.74	1531.63	1532.4	Bill is grabbing the microphone.	9337
9/12/13 11:33:06	45.95516	-130.00987	243.38	0.74	1531.64	1532.4	PRESSURE: End	9343
9/12/13 11:33:53	45.95517	-130.00985	243.18	0.89	1531.63	1532.5	Jason is going to mess around with the cable a bit to see if that is the issue.	9345
9/12/13 11:34:57	45.95517	-130.00985	242.83	1.18	1531.58	1532.8	Holding the top cable to prevent it from moving.	9348
9/12/13 11:35:29	45.95517	-130.00987	242.4	1.15	1531.62	1532.8	Next will set it on the benchmark on the flat part to see if that's the issue.	9350
9/12/13 11:36:11	45.95516	-130.00989	242.44	0.98	1531.6	1532.6	Moving the sensors to the flat part. It still wants to tip.	9353
9/12/13 11:36:38	45.95516	-130.00991	242.52	0.89	1531.6	1532.5	Moving it to the back of the benchmark now. It still wants to tip.	9354
9/12/13 11:37:39	45.95515	-130.00993	242.72	0.99	1531.64	1532.6	The benchmark itself is tilted about 5 - 10 degrees. It seems to be enough to tip over the double decker sensor.	9356
9/12/13 11:37:53	45.95515	-130.00993	242.94	0.96	1531.64	1532.6	Sensor is back in its cradle on the ROV.	9357
9/12/13 13:28:04	45.94752	-129.98834	99.24	1.75	1523.47	1525.2	We're travelling to Trevi. The ship is transiting so slow that they are moving within the bottom.	9372

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9/12/13 13:28:54	45.94745	-129.98814	101.96	2.14	1522.72	1524.9	Correction: The ship is now moving "within the bottom" - the ROV is travelling close to the bottom.	9374
9/12/13 13:29:15	45.94740	-129.98804	102.77	2.55	1522.23	1524.8	We're moving over 2011 lava. Looks like right now we're on top of an uncollapsed lobate section.	9376
9/12/13 13:29:46	45.94731	-129.98792	104.47	1.98	1522.67	1524.7	Should be coming over the main channel to the west of the eruptive fissures.	9377
9/12/13 13:30:10	45.94727	-129.98779	96.02	2.88	1521.91	1524.8	Passing over the channel right now. The bathymetry is right on.	9379
9/12/13 13:30:25	45.94728	-129.98770	98.78	2.15	1522.51	1524.7	We're at the edge of the channel right now.	9380
9/12/13 13:31:01	45.94727	-129.98748	99.04	2.43	1522.17	1524.6	Running along the edge of the channel now and will be crossing it shortly.	9384
9/12/13 13:32:20	45.94730	-129.98715	102.51	1.24	1524.04	1525.3	This whole area was flooded with lava and drained out to the west. This edge/channel is jumbled lava.	9390
9/12/13 13:32:29	45.94730	-129.98711	97.72	1.53	1524.45	1526	Dropping out in front of us.	9391
9/12/13 13:33:29	45.94726	-129.98682	97.29	1.98	1526.08	1528.1	The mat on the lava we are seeing looks hydrothermal.	9395
9/12/13 13:34:05	45.94720	-129.98665	100.37	4.11	1521.38	1525.5	We're on a little island of uncollapsed lavas.	9399
9/12/13 13:34:47	45.94720	-129.98644	95.6	2.4	1522.9	1525.3	We're in the channel now.	9401
9/12/13 13:35:53	45.94719	-129.98612	98.51	4.03	1525	1529	Down in the channel. Striated sheet flow.	9405
9/12/13 13:36:03	45.94719	-129.98612	98.27	6.86	1521.92	1528.8	On the edge of the collapse. Going up.	9406
9/12/13 13:36:09	45.94718	-129.98609	99.47	7.84	1520.58	1528.4	HIGHLIGHTS on.	9408
9/12/13 13:36:33	45.94718	-129.98596	97.19	3.06	1520.57	1523.6	Coming up the edge of the channel collapse area onto the inflated lavas again.	9409
9/12/13 13:37:13	45.94718	-129.98577	98.1	1.73	1521.37	1523.1	See some hydrothermal (?) mat in the collapse areas.	9411
9/12/13 13:37:27	45.94718	-129.98570	95.49	1.9	1521.11	1523	We're on a peninsula; dropping into another channel.	9412
9/12/13 13:38:17	45.94722	-129.98544	96.69	3.89	1522.4	1526.3	We are coming upon the eruptive fissure according to the map.	9417
9/12/13 13:38:56	45.94722	-129.98530	101.27	6.29	1521.25	1527.5	Looks like another step up to uncollapsed lavas.	9419
9/12/13 13:39:42	45.94721	-129.98513	96.85	3.16	1519.35	1522.5	A sky light here.	9428
9/12/13 13:40:09	45.94726	-129.98500	95.08	3.24	1519.12	1522.4	Coming upon another channel soon.	9435
9/12/13 13:40:37	45.94728	-129.98493	97.14	2.88	1521.33	1524.2	Lava pillars with a "roof".	9438
9/12/13 13:41:28	45.94728	-129.98486	103.53	4.21	1519.9	1524.1	A pillar just toppled.	9446
9/12/13 13:41:51	45.94729	-129.98479	97.04	2.56	1519.6	1522.2	Wow. An arch below up. Swiss cheese lava.	9448

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9/12/13 13:43:00	45.94740	-129.98461	96.69	1.88	1520.46	1522.3	Lava comes out fast and covers everything and then starts to drain out downslope. Crust on top. Fluid interior that drains out. It all collapses as that drains out (except the edges - pillars).	9452
9/12/13 13:43:59	45.94746	-129.98454	65.58	1.5	1520.48	1522	Where there were channels before there are channels now. It uses the old topography. The 2011 eruptive fissures were almost in the same place as previous fissures.	9457
9/12/13 13:44:21	45.94750	-129.98455	69.07	1.55	1520.61	1522.2	We're coming up on the contact according to the map.	9460
9/12/13 13:44:53	45.94754	-129.98452	41.82	1.8	1520.65	1522.5	Staining on the pillows.	9461
9/12/13 13:45:10	45.94755	-129.98448	43.76	1.3	1520.76	1522.1	This is where hot water was coming out.	9463
9/12/13 13:45:23	45.94755	-129.98445	43.88	2.61	1519.69	1522.3	Contact. This looks older.	9466
9/12/13 13:45:50	45.94756	-129.98437	70.39	5.88	1516.17	1522.1	We're going up the caldera wall edge. Lots more sediment on these older lavas that did not get covered.	9467
9/12/13 13:45:59	45.94756	-129.98433	73.47	4.76	1516.1	1520.9	Climbing up the wall.	9468
9/12/13 13:46:38	45.94765	-129.98429	56.4	4.55	1515.61	1520.2	HIGHLIGHTS off.	9473
9/12/13 13:46:56	45.94769	-129.98427	57.2	5.16	1515.28	1520.4	Looking around here at the caldera rim.	9474
9/12/13 13:47:05	45.94769	-129.98427	67.64	3.31	1515.28	1518.6	Rattail.	9475
9/12/13 13:47:31	45.94767	-129.98429	129.58	2.28	1516.08	1518.4	We're at the smoke in the water target.	9477
9/12/13 13:47:56	45.94761	-129.98432	124.85	4.36	1516.24	1520.6	Turning toward Trevi.	9480
9/12/13 13:48:35	45.94751	-129.98433	141.68	3.44	1517.2	1520.6	Passing over thick sediments.	9482
9/12/13 13:48:53	45.94747	-129.98433	144.33	2.68	1518.54	1521.2	We're coming upon a big fissure	9483
9/12/13 13:49:13	45.94743	-129.98433	165.01	1.98	1519.9	1521.9	The fissure could be related to the caldera wall.	9485
9/12/13 13:49:34	45.94741	-129.98437	174.29	1.68	1519.95	1521.6	Contact. New lava on old.	9488
9/12/13 13:50:02	45.94736	-129.98438	174.11	1.65	1521.03	1522.7	New lavas under us.	9490
9/12/13 13:50:45	45.94733	-129.98425	175.34	3.35	1519.07	1522.4	The water is really murky here.	9494
9/12/13 13:51:01	45.94730	-129.98424	163.76	3.29	1519.19	1522.5	Really murky.	9495
9/12/13 13:51:23	45.94728	-129.98424	162.11	1.63	1521.09	1522.7	Contact!!	9500
9/12/13 13:51:40	45.94726	-129.98423	156.21	1.41	1521.05	1522.5	Young 2011 lavas lapping up on the older lavas.	9503
9/12/13 13:52:10	45.94725	-129.98422	156.69	1.11	1521.56	1522.7	No mistaking that contact.	9509
9/12/13 13:53:15	45.94724	-129.98411	111.64	2.19	1518.48	1520.7	We were traversing south along the contact. Now are turning to the east to pass over a big fissure on the old flow.	9515
9/12/13 13:54:07	45.94725	-129.98405	95.1	1.16	1518.17	1519.3	Tunnel ahead. Tunnel of lava love.	9519
9/12/13 13:54:31	45.94724	-129.98405	80.93	0.91	1518.57	1519.5	Arches - Tito wants to call it "Jason's arch".	9523

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9/12/13 13:55:36	45.94727	-129.98396	79.32	1.95	1516.02	1518	Jason's coming over the other side. Looks like we're coming to the edge of the fissure we see in the bathymetry.	9532
9/12/13 13:56:40	45.94726	-129.98377	51.38	1.81	1519.29	1521.1	This seems older here although the lavas in the bottom look younger than what we just saw.	9536
9/12/13 13:57:52	45.94734	-129.98364	86.09	4.5	1516.83	1521.3	We're in the big fissure. Almost at another smoke in the water target.	9540
9/12/13 13:58:26	45.94732	-129.98362	134.03	1.23	1517.63	1518.9	Beautiful older striated lavas. Heavily sedimented.	9544
9/12/13 13:59:37	45.94718	-129.98374	161.61	1.85	1519.34	1521.2	Traveling south through the big fissure toward the benchmark target.	9547
9/12/13 14:00:34	45.94704	-129.98377	173.5	1.9	1519.79	1521.7	We didn't see much black smoke at the target.	9550
9/12/13 14:00:40	45.94703	-129.98377	172.35	1.83	1520.06	1521.9	Salp?	9551
9/12/13 14:01:14	45.94699	-129.98378	173.8	1.38	1520.6	1522	Pillows at the edges of these lobates.	9554
9/12/13 14:01:29	45.94698	-129.98378	173.53	1.36	1520.9	1522.3	Bill saw a sculpin (fathead).	9555
9/12/13 14:02:52	45.94687	-129.98372	166.33	1.86	1520.85	1522.7	Jason is about 60m to the north of the target.	9558
9/12/13 14:04:23	45.94679	-129.98367	145.66	2.4	1519.67	1522.1	East edge of the fissure ahead.	9565
9/12/13 14:05:05	45.94675	-129.98364	156.5	2.18	1518.95	1521.1	We're traveling south along the eastern edge of this fissure that appears to be ~3 meters deep; maybe more.	9566
9/12/13 14:05:57	45.94671	-129.98364	128.45	3.06	1520.36	1523.4	Looks like lava has filled this in the past and drained out because we can see ledges in the wall here.	9572
9/12/13 14:06:57	45.94667	-129.98364	130.66	2.71	1520.26	1523	Approaching the southern end of this fissure - which turns into the caldera wall at that point.	9576
9/12/13 14:07:27	45.94665	-129.98363	137.28	3.45	1518.76	1522.2	Not as steep up ahead - but a definite rise to the east.	9579
9/12/13 14:08:54	45.94659	-129.98369	211.16	3.29	1517.44	1520.7	Turning to the SW. Still moving through tithe fissure. We're approaching the end of the fissure.	9588
9/12/13 14:09:29	45.94659	-129.98377	205.02	2.49	1518.5	1521	The fissure and caldera wall merge here. Wall to the east.	9592
9/12/13 14:09:58	45.94657	-129.98382	173.19	3.45	1518.69	1522.1	Down on the floor now.	9594
9/12/13 14:10:04	45.94655	-129.98382	174.83	3.35	1518.81	1522.2	These lavas look old.	9595
9/12/13 14:11:35	45.94643	-129.98371	192.35	0.8	1519.39	1520.2	Trevi benchmark right ahead. It's sitting on a platform here. The benchmark with a view.	9606
9/12/13 14:12:12	45.94641	-129.98369	231.53	0.74	1519.59	1520.3	Getting some nice imagery here.	9613
9/12/13 14:12:45	45.94642	-129.98369	231.54	1.04	1519.24	1520.3	We will be doing 2 measurements here. (Old and new benchmarks).	9616

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9/12/13 14:14:02	45.94644	-129.98373	231.76	0.74	1520.07	1520.8	Ahead we have the old benchmark (Bmrk-202) with Mkr-63. AX-302 and Mkr-136 to the right.	9619
9/12/13 14:14:48	45.94645	-129.98376	231.73	0.74	1520.01	1520.8	Grabbing the pressure sensors for a reading on AX-302-Trevi.	9621
9/12/13 14:15:23	45.94645	-129.98375	231.78	0.74	1520.07	1520.8	Sensor on the benchmark.	9624
9/12/13 14:15:38	45.94645	-129.98375	231.76	0.74	1520.05	1520.8	This marker is flat.	9627
9/12/13 14:16:03	45.94644	-129.98372	231.78	0.74	1520.07	1520.8	That was beautiful. First attempt.	9628
9/12/13 14:16:20	45.94643	-129.98370	231.83	0.74	1520.09	1520.8	**PRESSURE: Start AX-302.**	9631
9/12/13 14:16:47	45.94643	-129.98366	231.84	0.74	1520.09	1520.8	Pressure reading at AX302-Trevi.	9632
9/12/13 14:32:56	45.94640	-129.98378	232.19	0.74	1520.13	1520.9	This reading is almost finished.	9651
9/12/13 14:36:55	45.94639	-129.98375	232.28	0.74	1520.18	1520.9	PRESSURE: End	9656
9/12/13 14:37:25	45.94638	-129.98374	232.28	0.74	1520.14	1520.9	Done with the first reading here. Finished pressure sensor reading at the new benchmark AX-302-Trevi.	9658
9/12/13 14:37:50	45.94637	-129.98373	232.29	0.74	1520.13	1520.9	Jason is going in for the grab. Got it.	9660
9/12/13 14:39:06	45.94636	-129.98370	232.32	0.74	1520.12	1520.9	Moving over to the little metal benchmark. AX202 with Marker 63. This benchmark has been down here since 2000. 13 years on the seafloor. Not looking too bad when you think of that.	9662
9/12/13 14:40:45	45.94638	-129.98369	246.91	0.95	1519.98	1520.9	Picking up the pressure sensor package and placing it on the old benchmark.	9668
9/12/13 14:41:25	45.94639	-129.98369	247.11	0.74	1519.99	1520.7	The sensor is in place.	9673
9/12/13 14:41:38	45.94639	-129.98369	247.12	0.78	1519.99	1520.8	Looking at the tilt measurements.	9675
9/12/13 14:42:32	45.94639	-129.98368	247.15	0.74	1519.97	1520.7	Moving the sensors a little closer to the edge.	9677
9/12/13 14:42:52	45.94639	-129.98368	247.05	0.74	1520	1520.7	**PRESSURE: Start AX-202.**	9678
9/12/13 14:43:17	45.94639	-129.98368	247.08	0.74	1520.03	1520.8	Pressure sensor reading at AX202; the old benchmark at Trevi.	9680
9/12/13 14:43:45	45.94639	-129.98368	247.08	0.74	1519.98	1520.7	Actually not right at Trevi. The vent is ~20m to the SE.	9681
9/12/13 14:45:41	45.94639	-129.98366	247.03	0.74	1519.99	1520.7	Shift change.	9684
9/12/13 14:45:58	45.94639	-129.98366	247.04	0.74	1520.01	1520.8	Jason shift change in progress.	9688
9/12/13 15:03:11	45.94640	-129.98376	247.49	0.74	1519.78	1520.5	PRESSURE: End	9708
9/12/13 15:03:32	45.94639	-129.98377	247.2	0.74	1519.76	1520.5	Done at the AX-302 Trevi site.	9709
9/12/13 15:03:47	45.94639	-129.98377	247.38	0.74	1519.75	1520.5	Retrieving the device from the benchmark.	9710
9/12/13 15:04:08	45.94638	-129.98377	245.6	2.21	1517.98	1520.2	Lifting off the site.	9712
9/12/13 15:05:04	45.94637	-129.98380	244.83	2.56	1517.53	1520.1	Pressure device is in the basket.	9713
9/12/13 15:05:44	45.94638	-129.98380	244.69	2.55	1517.61	1520.2	Device strapped down.	9715
9/12/13 15:06:08	45.94638	-129.98380	244.69	2.6	1517.54	1520.1	Next benchmark is 1300m away at 134deg from here (AX-309).	9717

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 15:06:56	45.94640	-129.98374	193.47	2.49	1517.45	1519.9	Next site is the RSN Primary Node location with AX-309.	9724
9/12/13 15:07:09	45.94640	-129.98370	129.81	2.55	1517.48	1520	Jumbled sheet flow with a lot of sediment.	9726
9/12/13 15:07:59	45.94631	-129.98361	133.96	2.53	1515.03	1517.6	Following along a small ridge.	9727
9/12/13 15:09:25	45.94623	-129.98352	132.73	1.39	1517.76	1519.2	Heading south over large sheet flow area.	9730
9/12/13 15:09:59	45.94619	-129.98345	132.67	1.59	1518.99	1520.6	See bright white marks perpendicular to the sheet flow lineations.	9732
9/12/13 15:10:30	45.94615	-129.98339	132.96	1.25	1519.48	1520.7	White patches more sporadic.	9735
9/12/13 15:12:05	45.94599	-129.98316	133.23	2.86	1518.09	1521	Just sheet flows with sediment.	9740
9/12/13 15:12:49	45.94591	-129.98304	133.13	2.96	1518.18	1521.1	Very flat.	9742
9/12/13 15:13:41	45.94583	-129.98291	133.33	2.84	1518.18	1521	Over more jumbled flow with relief.	9745
9/12/13 15:14:54	45.94573	-129.98273	133.44	2.89	1516.78	1519.7	Pillow forms with sediment.	9749
9/12/13 15:15:29	45.94568	-129.98265	133.2	2.51	1516.8	1519.3	Large gray pillows interspersed with darker smaller pillows.	9752
9/12/13 15:16:22	45.94560	-129.98253	132.47	2.66	1515.33	1518	Sonar shows coming up to a drop-off.	9755
9/12/13 15:16:32	45.94558	-129.98251	133.08	2.61	1515.17	1517.8	There is the drop off.	9757
9/12/13 15:16:55	45.94555	-129.98246	132.65	2.74	1514.66	1517.4	Spectacular crack.	9760
9/12/13 15:17:22	45.94549	-129.98238	134.06	2.59	1516.15	1518.7	Looks like at least 20m wide on sonar.	9762
9/12/13 15:17:43	45.94543	-129.98230	134.08	6.15	1515.99	1522.1	The other side. Pillow flow.	9764
9/12/13 15:18:52	45.94526	-129.98213	134.83	3.7	1514	1517.7	The crack we just flew over was the northern extent of the crack on the MBARI bathy map.	9768
9/12/13 15:19:53	45.94516	-129.98188	134.08	3.78	1513.77	1517.6	Pillow flow and sediment.	9771
9/12/13 15:21:40	45.94495	-129.98146	133.34	3.15	1513.56	1516.7	Fish.	9776
9/12/13 15:23:12	45.94481	-129.98122	133.54	2.41	1513.51	1515.9	Another fish.	9780
9/12/13 15:24:26	45.94462	-129.98098	133.9	2.33	1513.53	1515.9	Crab.	9784
9/12/13 15:24:48	45.94456	-129.98090	133.31	1.88	1513.53	1515.4	Cool collapsed pillow.	9786
9/12/13 15:25:43	45.94442	-129.98068	132.89	1.8	1513.21	1515	Fish in collapsed pillow.	9790
9/12/13 15:26:06	45.94436	-129.98059	133.91	1.84	1513.22	1515.1	Seems to be quite a few fish here. (rat tail)	9791
9/12/13 15:26:14	45.94434	-129.98055	133.98	1.83	1513.17	1515	Crab again.	9794
9/12/13 15:29:02	45.94417	-129.97973	133.04	4.74	1511.22	1516	Should be approaching a RSN cable.	9799
9/12/13 15:29:25	45.94407	-129.97962	133.36	4.48	1511.19	1515.7	Cable.	9803
9/12/13 15:29:53	45.94398	-129.97949	131.86	4.14	1511.55	1515.7	That was the first of three cables to cross in this area.	9805
9/12/13 15:30:12	45.94391	-129.97938	133.29	3.96	1511.39	1515.4	Pillows and fish.	9808
9/12/13 15:30:31	45.94386	-129.97929	134.03	4.19	1510.99	1515.2	Some larger lava tubes.	9809
9/12/13 15:31:12	45.94375	-129.97913	133.3	3.4	1511.12	1514.5	Cable.	9811
9/12/13 15:31:43	45.94369	-129.97904	133.96	3.25	1511.09	1514.3	Cable and fish.	9816
9/12/13 15:32:05	45.94365	-129.97898	133.02	3.26	1511.07	1514.3	That was cable #2. One more to cross.	9817
9/12/13 15:34:07	45.94339	-129.97859	133.79	2.6	1511.12	1513.7	Big hole with collapse.	9822

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 15:34:54	45.94327	-129.97841	133.52	2.96	1511.05	1514	Cable.	9825
9/12/13 15:36:21	45.94307	-129.97813	133.96	3.65	1510.16	1513.8	That was the last of the three parallel cables. Jason will cross the cable running perpendicular before the benchmark as well.	9831
9/12/13 15:36:29	45.94305	-129.97809	134.47	4.48	1510.12	1514.6	Drop off.	9833
9/12/13 15:37:20	45.94295	-129.97782	135.39	7.04	1510.14	1517.2	Other side.	9836
9/12/13 15:38:18	45.94280	-129.97746	129.74	3.68	1510.16	1513.8	Flag.	9839
9/12/13 15:38:44	45.94272	-129.97732	131.89	3.9	1509.81	1513.7	Doesn't look like that flag was attached to anything. Could have broken off of something.	9841
9/12/13 15:39:14	45.94269	-129.97720	132.35	3.2	1510.02	1513.2	Pillows and tubes.	9843
9/12/13 15:47:23	45.94129	-129.97511	133.68	4.75	1511.6	1516.4	Fish.	9858
9/12/13 15:48:27	45.94109	-129.97484	133.18	6.03	1511.6	1517.6	Cable.	9860
9/12/13 15:48:56	45.94100	-129.97472	133.8	4.19	1511.64	1515.8	That was the perpendicular cable.	9863
9/12/13 15:49:14	45.94093	-129.97468	138.24	6.26	1511.69	1518	Should come upon another cable as well.	9865
9/12/13 15:49:48	45.94083	-129.97460	132.17	2.84	1515.96	1518.8	Striated pillow photo.	9867
9/12/13 15:50:01	45.94078	-129.97453	133.67	3.48	1515.73	1519.2	Striated.	9868
9/12/13 15:50:34	45.94068	-129.97438	133.54	3.6	1515.71	1519.3	Big tubes.	9872
9/12/13 15:51:08	45.94060	-129.97426	135.2	4.03	1515.77	1519.8	Cable.	9874
9/12/13 15:57:16	45.93939	-129.97294	148.85	4.39	1522.79	1527.2	Big sheet flow and very flat.	9884
9/12/13 15:59:18	45.93900	-129.97269	150.05	3.95	1522.43	1526.4	Jumbled sheet flow.	9889
9/12/13 16:00:58	45.93886	-129.97222	146.88	4.61	1522.42	1527	Ship is too far east with 50m to go to benchmark.	9892
9/12/13 16:01:44	45.93864	-129.97210	162.27	3.78	1522.71	1526.5	Fish and cucumber-like animals.	9895
9/12/13 16:02:12	45.93854	-129.97207	162.47	4.24	1522.15	1526.4	There it is.	9897
9/12/13 16:03:14	45.93842	-129.97203	235.44	1.5	1525.02	1526.5	Benchmark is on a small piece of flat sheet flow surrounded by jumbled flow.	9903
9/12/13 16:03:29	45.93843	-129.97202	252.62	1.86	1524.83	1526.7	Going to move the marker a little bit away from the sampling side of the benchmark.	9904
9/12/13 16:04:06	45.93843	-129.97201	248.6	0.75	1526.26	1527	Marker is currently adjacent and just at the SE quadrant of the front of the sampling side of the benchmark.	9905
9/12/13 16:05:07	45.93843	-129.97201	248.84	0.75	1526.19	1526.9	Moved the marker to the NE quadrant.	9909
9/12/13 16:05:26	45.93843	-129.97200	248.65	0.78	1526.28	1527.1	Marker is still adjacent to the benchmark.	9912
9/12/13 16:05:54	45.93843	-129.97200	248.83	0.74	1526.27	1527	Release pin and marker are together.	9913
9/12/13 16:07:21	45.93843	-129.97194	275.27	1.2	1524.51	1525.7	Jason pulling away from the site. Waiting for Medea to set-up.	9916
9/12/13 16:13:51	45.93814	-129.97184	314.66	7.2	1519.36	1526.6	Shrimp flew by.	9926
9/12/13 16:15:04	45.93831	-129.97199	318.84	3.64	1519.45	1523.1	Small bridge between 2 collapse features.	9930
9/12/13 16:18:27	45.93841	-129.97203	4.84	4.86	1521.42	1526.3	Here is the hole that it is in.	9935
9/12/13 16:19:00	45.93841	-129.97199	309.54	4.26	1520.3	1524.6	There it is-under Jason.	9936

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13	16:19:34	45.93845	-129.97203	246.03	2.18	1524.43	1526.6	It is very close to the edge of the wall that forms the hole.	9938
9/12/13	16:19:55	45.93846	-129.97204	245.09	2.49	1524.22	1526.7	Ship and Medea are in good position.	9939
9/12/13	16:20:32	45.93848	-129.97205	244.63	2.44	1524.06	1526.5	Unstrapping the device.	9941
9/12/13	16:22:33	45.93851	-129.97202	242.92	1.13	1525.47	1526.6	Moving toward the benchmark with the device.	9944
9/12/13	16:24:01	45.93849	-129.97202	238.26	0.74	1526.32	1527.1	This is the fish-incident site and there is no longer any remnants of the thruster-chewed fish anymore.	9946
9/12/13	16:24:48	45.93848	-129.97202	238.2	0.74	1526.28	1527	Placing device on benchmark AX-309.	9948
9/12/13	16:26:54	45.93850	-129.97205	238.26	0.74	1526.29	1527	Position looks good.	9952
9/12/13	16:27:39	45.93850	-129.97205	238.73	0.74	1526.25	1527	**PRESSURE: Start AX-309.**	9954
9/12/13	16:50:10	45.93849	-129.97209	238.48	0.74	1526.23	1527	PRESSURE: End	9978
9/12/13	16:50:24	45.93849	-129.97209	238.4	0.74	1526.25	1527	Knocked the device off the benchmark but the benchmark didn't move.	9979
9/12/13	16:50:33	45.93849	-129.97209	238.39	0.74	1526.23	1527	It is resting on the benchmark.	9980
9/12/13	16:50:44	45.93850	-129.97209	238.37	0.74	1526.23	1527	That is the second fall for the device on this dive.	9981
9/12/13	16:51:04	45.93850	-129.97208	238.37	0.74	1526.23	1527	Retrieving the device off the benchmark.	9982
9/12/13	16:51:41	45.93850	-129.97207	238.36	0.74	1526.23	1527	Device on the basket.	9984
9/12/13	16:51:55	45.93851	-129.97206	238.35	0.74	1526.21	1527	Bow thruster on ship is not sounding good.	9985
9/12/13	16:52:19	45.93851	-129.97205	238.48	0.74	1526.21	1527	Pulling off the site.	9987
9/12/13	16:56:15	45.93855	-129.97203	239.15	0.98	1525.54	1526.5	Strapping the device to the basket.	9993
9/12/13	16:57:34	45.93853	-129.97201	239.13	1.05	1525.55	1526.6	Next benchmark is Mkr33 site with AX-303 and AX-203. It is 971m away.	9995
9/12/13	17:01:58	45.93824	-129.97255	237.8	5.66	1520.42	1526.1	Pilot switch.	10001
9/12/13	17:08:18	45.93819	-129.97327	238.96	9.38	1516.86	1526.2	Ship is headed for the next site.	10010
9/12/13	17:11:29	45.93795	-129.97380	239.23	5.08	1517.81	1522.9	Flat sheet flows.	10014
9/12/13	17:13:48	45.93780	-129.97449	240.01	4.06	1518.46	1522.5	More relief in the sheet flow.	10018
9/12/13	17:14:21	45.93774	-129.97463	240.77	2.79	1518.99	1521.8	Big tubes.	10022
9/12/13	17:14:50	45.93769	-129.97479	241.2	1.7	1519.15	1520.9	Heading for Mkr33 site and 2 benchmarks (AX-203 and AX-303).	10023
9/12/13	17:14:59	45.93767	-129.97483	241.47	1.85	1518.99	1520.8	Jumbled flow.	10025
9/12/13	17:16:52	45.93750	-129.97535	241.16	2.58	1518.16	1520.7	Flat sheet flow.	10030
9/12/13	17:17:41	45.93742	-129.97555	241.79	3.31	1516	1519.3	Some collapse areas.	10034
9/12/13	17:18:22	45.93735	-129.97572	239.1	1.94	1516.74	1518.7	Collapse and remnant pillow.	10037
9/12/13	17:18:30	45.93732	-129.97576	237.79	1.83	1516.83	1518.7	Old flow.	10039
9/12/13	17:19:55	45.93708	-129.97607	232.07	2.99	1515.67	1518.7	Collapse and drain.	10043
9/12/13	17:21:06	45.93693	-129.97629	229.93	3.03	1514.63	1517.7	Pillar.	10046
9/12/13	17:21:37	45.93693	-129.97629	229.9	3.03	1514.63	1517.7	Something on the seafloor. Crab eating something.	10048

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 17:22:25	45.93678	-129.97645	228.46	3.99	1514.15	1518.1	Ship is bringing bow into the wind.	10051
9/12/13 17:24:05	45.93647	-129.97697	231.87	2.61	1515.28	1517.9	Great collapse features.	10054
9/12/13 17:24:40	45.93633	-129.97711	225.68	2.34	1515.13	1517.5	Wow collapse.	10059
9/12/13 17:26:42	45.93585	-129.97763	222.54	3.75	1516.95	1520.7	Jelly.	10065
9/12/13 17:31:34	45.93485	-129.97898	225.14	4.66	1514.3	1519	Beautiful frame grabs of the collapse with pillars and holes.	10086
9/12/13 17:32:21	45.93465	-129.97929	225.79	4.1	1516.06	1520.2	Back over sheet flows.	10090
9/12/13 17:32:30	45.93461	-129.97935	225.24	4.95	1515.3	1520.3	Ship is on station and waiting for Jason and Medea.	10091
9/12/13 17:32:41	45.93456	-129.97943	225.29	4.41	1515.68	1520.1	Flat sheet flow with a lot of sediment.	10092
9/12/13 17:33:11	45.93445	-129.97960	224.82	2.7	1515.15	1517.9	More collapse.	10096
9/12/13 17:34:07	45.93429	-129.97985	227.3	2.9	1515.41	1518.3	Pillow flow with collapse.	10101
9/12/13 17:34:43	45.93419	-129.98003	222.84	1.31	1516.41	1517.7	Lots of sediment between pillows.	10105
9/12/13 17:37:33	45.93398	-129.98086	236.91	2.48	1513.96	1516.4	Pillow flow.	10112
9/12/13 17:38:21	45.93382	-129.98125	238.8	2.24	1513.28	1515.5	Orange hydrothermal sediment.	10116
9/12/13 17:38:35	45.93377	-129.98136	237.98	2.2	1513.5	1515.7	Probably 1998 flow.	10118
9/12/13 17:39:05	45.93368	-129.98160	237.68	1.24	1514.41	1515.7	Drain out.	10121
9/12/13 17:39:11	45.93367	-129.98163	238.42	4.56	1515.13	1519.7	Big pillows.	10123
9/12/13 17:39:37	45.93366	-129.98174	238.39	1.94	1516.24	1518.2	Bathtub rings.	10126
9/12/13 17:41:17	45.93352	-129.98206	235.22	3.14	1512.43	1515.6	Tubeworms...must be in the newer flow.	10133
9/12/13 17:41:35	45.93353	-129.98204	235.58	4.44	1511.26	1515.7	There is the benchmark.	10134
9/12/13 17:43:13	45.93348	-129.98223	207.88	3.78	1511.28	1515.1	Mkr66 at Mkr33 site at benchmark AX-303 and AX-203. All clear.	10139
9/12/13 17:48:46	45.93345	-129.98231	180.14	0.74	1514.58	1515.3	Lifting pressure device from basket. Will take measurement at AX-303 first then do AX-203.	10147
9/12/13 17:50:23	45.93341	-129.98225	179.96	0.74	1514.56	1515.3	Device on benchmark AX-303.	10150
9/12/13 17:51:04	45.93339	-129.98223	180.1	0.74	1514.57	1515.3	Going to give the device a little nudge to see if just square in the landing area.	10152
9/12/13 17:51:59	45.93339	-129.98220	180.03	0.74	1514.54	1515.3	**PRESSURE: Start AX-303.**	10157
9/12/13 18:12:27	45.93345	-129.98220	179.99	0.74	1514.54	1515.3	PRESSURE: End	10180
9/12/13 18:12:57	45.93345	-129.98220	179.98	0.74	1514.54	1515.3	Done at AX-303 and going to move over to the old benchmark here (AX-203).	10181
9/12/13 18:14:35	45.93347	-129.98228	139.89	3.18	1511.23	1514.4	There is AX-203 and we need to be on the other side for the measurement.	10184
9/12/13 18:15:20	45.93342	-129.98231	36.11	2.81	1511.84	1514.7	The orientation for doing the measurements at these 2 benchmarks is opposite directions so have to fly around a bit.	10186

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 18:18:10	45.93343	-129.98224	336.8	0.81	1513.98	1514.8	Ship is getting blown east and having trouble getting back west.	10190
9/12/13 18:19:32	45.93344	-129.98222	336.79	0.88	1513.89	1514.8	Holding off putting the device on the benchmark while ship is figuring out position.	10192
9/12/13 18:20:31	45.93344	-129.98222	336.71	0.89	1513.95	1514.8	Ship is moving west so going to place device on AX-203 at Mkr66.	10195
9/12/13 18:22:50	45.93344	-129.98225	337.72	0.74	1514.43	1515.2	Device is in position and ship has moved back west.	10199
9/12/13 18:22:56	45.93344	-129.98225	337.74	0.74	1514.47	1515.2	**PRESSURE: Start AX-203.**	10200
9/12/13 18:30:38	45.93344	-129.98221	337.79	0.74	1514.48	1515.2	Can see shimmer in the flow adjacent to the benchmark.	10211
9/12/13 18:32:19	45.93346	-129.98224	337.79	0.74	1514.53	1515.3	Temperature is 4.0deg on overlay and had been 3.9deg before this site.	10216
9/12/13 18:36:13	45.93342	-129.98225	337.79	0.74	1514.48	1515.2	Quite a bit of flow around the benchmark.	10229
9/12/13 18:40:01	45.93344	-129.98226	337.8	0.74	1514.44	1515.2	Jellyfish floated by benchmark.	10234
9/12/13 18:43:15	45.93343	-129.98224	337.81	0.74	1514.47	1515.2	PRESSURE: End	10239
9/12/13 18:43:51	45.93343	-129.98224	337.83	0.74	1514.48	1515.2	After retrieving the device Jason will take a quick temperature measurement at some of the observed flow here.	10240
9/12/13 18:44:04	45.93343	-129.98224	337.83	0.74	1514.48	1515.2	Device off of benchmark AX-203.	10241
9/12/13 18:44:28	45.93342	-129.98224	337.85	0.74	1514.49	1515.2	Device in basket.	10243
9/12/13 18:45:11	45.93342	-129.98224	337.85	0.74	1514.47	1515.2	Device strapped down.	10245
9/12/13 18:47:03	45.93343	-129.98221	337.86	0.74	1514.53	1515.3	Watch change.	10247
9/12/13 18:47:16	45.93343	-129.98221	337.86	0.74	1514.5	1515.2	Going to take a few temperature measurements.	10249
9/12/13 18:47:44	45.93342	-129.98222	337.89	0.74	1514.44	1515.2	Grabbing the wand.	10250
9/12/13 18:47:55	45.93342	-129.98222	337.89	0.74	1514.49	1515.2	HIGHLIGHTS on.	10251
9/12/13 18:48:56	45.93340	-129.98223	338.22	0.74	1514.5	1515.2	Trying to zoom in with Scorpio camera as we can't see with science camera.	10253
9/12/13 18:51:15	45.93342	-129.98222	338.34	0.74	1514.46	1515.2	9.6 degrees in the diffuse flow between the pillows.	10257
9/12/13 18:52:39	45.93343	-129.98225	340.37	5.61	1509.12	1514.7	Now moving to AX-310; 911 meters at 158 deg heading.	10259
9/12/13 19:55:19	45.92622	-129.97768	176.31	3.79	1526	1529.8	We are on the bottom; 50m away from target.	10266
9/12/13 19:58:30	45.92585	-129.97779	210.9	4.75	1523.24	1528	Benchmark is in sight.	10271
9/12/13 20:01:38	45.92577	-129.97782	278.11	2.23	1526.75	1529	Picked up the pressure recorder and we are now moving to the benchmark.	10275
9/12/13 20:04:45	45.92580	-129.97784	288.36	0.93	1527.63	1528.6	**PRESSURE: Start AX-310.**	10279
9/12/13 20:19:02	45.92576	-129.97786	293.3	1.46	1527.24	1528.7	PRESSURE: End	10295

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/12/13 20:21:43	45.92575	-129.97785	291.14	3.8	1525.3	1529.1	The ship pulled us away from the benchmark 15 minutes into the measurement. This was probably enough time so we'll move on.	10299
9/12/13 20:21:53	45.92576	-129.97785	289.21	3.74	1525.35	1529.1	Stowed the pressure recorder.	10300
9/12/13 20:26:25	45.92620	-129.97759	48.23	6.79	1522.57	1529.4	Now going to AX-104. 1431 meters at 219 deg heading.	10306
9/12/13 22:26:41	45.91627	-129.98946	160.81	2.34	1529.73	1532.1	Jason on bottom; benchmark is in sight.	10313
9/12/13 22:27:56	45.91619	-129.98947	55.03	4.15	1528.53	1532.7	This area has a lot of life; patches of tubeworms and limpets and white all over the seafloor.	10315
9/12/13 22:29:05	45.91619	-129.98946	54.83	4.4	1528.42	1532.8	Picking up the pressure recorder.	10318
9/12/13 22:30:22	45.91619	-129.98945	54.82	4.24	1528.48	1532.7	Will take a measurement at the cement benchmark AX-104 first; then take one on the old metal benchmark.	10321
9/12/13 22:34:18	45.91617	-129.98939	340.74	2.83	1528.44	1531.3	Waiting for the ship to move into position so we don't get pulled off the benchmark again.	10326
9/12/13 22:36:14	45.91618	-129.98941	339.31	0.74	1530.5	1531.2	Placing recorder on the benchmark.	10329
9/12/13 22:37:48	45.91618	-129.98941	339.43	0.74	1530.58	1531.3	This benchmark fell through the roof a collapsed lava pillow so it is at an angle. Getting the recorder to stay upright is difficult.	10331
9/12/13 22:40:06	45.91618	-129.98942	339.99	0.74	1530.52	1531.3	Tubeworm casings on the benchmark might be keeping the recorder from sitting correctly Tried to scrape some of them away with the claw.	10334
9/12/13 22:42:32	45.91617	-129.98943	339.35	0.74	1530.58	1531.3	Still won't stay upright.	10338
9/12/13 22:48:13	45.91612	-129.98941	339.23	0.74	1530.6	1531.3	**PRESSURE: Start AX-104.**	10345
9/12/13 22:49:08	45.91611	-129.98940	339.31	0.74	1530.67	1531.4	Started at 22:44	10346
9/12/13 23:00:25	45.91623	-129.98943	339.59	0.74	1530.62	1531.4	Grabbed some HD stills of the pressure sensor on the benchmark.	10375
9/12/13 23:01:21	45.91623	-129.98944	340.19	0.74	1530.56	1531.3	This benchmark is AX104-BagCity	10377
9/12/13 23:03:02	45.91623	-129.98944	341	0.74	1530.56	1531.3	Only 1 measurement here - even though there are 2 benchmarks here.	10379
9/12/13 23:04:04	45.91622	-129.98944	340.79	0.74	1530.64	1531.4	PRESSURE: End	10381
9/12/13 23:04:25	45.91621	-129.98945	340.73	0.74	1530.69	1531.4	Jason is removing the pressure sensor from AX104 benchmark.	10383
9/12/13 23:05:55	45.91620	-129.98945	340.73	0.74	1530.78	1531.5	Placing the benchmark in the cradle. Finished up with the measurement here. Next task: fluid sampling at BagCity.	10385
9/12/13 23:06:29	45.91619	-129.98944	340.68	1.75	1529.66	1531.4	Lift off. Here comes Dave.	10387
9/12/13 23:07:06	45.91618	-129.98945	341.23	1.4	1530.09	1531.5	At the edge of the collapse.	10390

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9/12/13 23:08:16	45.91625	-129.98952	118.64	1.7	1531.06	1532.8	We're over the ledge to the west of the benchmark. Going over the ledge.	10394
9/12/13 23:08:31	45.91626	-129.98950	118.72	1.91	1530.63	1532.5	Contact here.	10395
9/12/13 23:09:26	45.91626	-129.98948	102.75	1.03	1532.08	1533.1	NAV: Doppler Reset	10401
9/12/13 23:10:33	45.91626	-129.98951	80.93	0.74	1532.08	1532.8	Scraggly-looking tubeworm with wispy white mat.	10404
9/12/13 23:10:49	45.91626	-129.98951	80.93	0.74	1532.07	1532.8	Looking for venting.	10405
9/12/13 23:11:47	45.91633	-129.98949	127.64	1.78	1530.36	1532.1	Lateraling to the left (north). Moving around a pillar-like structure.	10408
9/12/13 23:12:42	45.91635	-129.98944	137	1.96	1530.44	1532.4	Area with more biology here. Wispy white mat.	10412
9/12/13 23:13:38	45.91638	-129.98943	134.64	1.24	1532	1533.2	At the base of this little pillar could be shimmer.	10418
9/12/13 23:14:01	45.91639	-129.98943	134.64	1.24	1532.05	1533.3	There's a bit of shimmer coming out of this crack at the base of this solitary pillar.	10419
9/12/13 23:14:23	45.91640	-129.98943	134.64	1.24	1531.93	1533.2	Some healthy red plumes on these little tubeworms.	10421
9/12/13 23:15:36	45.91642	-129.98943	134.61	1.24	1532	1533.2	Bringing out the wand to check the temperature here. Looks like lots of tiny snails or limpets on this new (2011) lava.	10427
9/12/13 23:15:47	45.91642	-129.98943	134.61	1.24	1531.98	1533.2	The wand is in the crack with diffuse flow.	10428
9/12/13 23:16:01	45.91642	-129.98943	134.61	1.24	1532	1533.2	Doesn't look very hot here.	10429
9/12/13 23:16:18	45.91643	-129.98943	134.61	1.24	1531.97	1533.2	The temperature is locked up? Dave's working on it.	10431
9/12/13 23:16:51	45.91643	-129.98943	134.6	1.23	1532.01	1533.2	The HFS is "sleepy". It's starting to wake up and the temp is coming up.	10432
9/12/13 23:17:04	45.91643	-129.98943	134.6	1.24	1532.01	1533.3	8 degrees now.	10433
9/12/13 23:18:05	45.91643	-129.98943	134.59	1.23	1531.98	1533.2	Little tiny tubeworms with red plumes. Limpets on the rocks.	10436
9/12/13 23:18:20	45.91643	-129.98943	134.59	1.23	1531.98	1533.2	Poked the wand farther in. Temp went down.	10438
9/12/13 23:18:40	45.91643	-129.98943	134.59	1.23	1531.98	1533.2	The ship is taking off. Medea is getting pulled.	10439
9/12/13 23:18:58	45.91643	-129.98943	134.59	1.24	1532	1533.2	Moved the probe off to the right a bit. Going up slowly. It's 7.8 degrees now.	10440
9/12/13 23:19:49	45.91642	-129.98943	134.51	2.25	1529.85	1532.1	Pulling out because the ship is pulling us.	10443
9/12/13 23:20:07	45.91641	-129.98943	134.49	4.45	1527.56	1532	Moving back from this overhang.	10444
9/12/13 23:20:17	45.91641	-129.98943	134.55	5.88	1526.2	1532.1	Will wait for it to stabilize.	10446
9/12/13 23:21:54	45.91627	-129.98924	132.43	6.08	1525.32	1531.4	Waiting for the ship to settle down.	10448
9/12/13 23:23:46	45.91598	-129.98923	193.16	4.14	1527.57	1531.7	We're heading south trying to get closer to Medea.	10451
9/12/13 23:27:45	45.91599	-129.98928	343.11	3.48	1528.06	1531.5	Dave is not particular about where we sample. Could be anywhere in here.	10460

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9/12/13 23:27:57	45.91601	-129.98930	343.19	3.16	1528.15	1531.3	This looks like new lava here with tubeworms interspersed.	10461
9/12/13 23:29:34	45.91610	-129.98935	316.82	0.74	1530.73	1531.5	We see a white patch here. Can see the shimmer in the Scorpio cam.	10467
9/12/13 23:30:20	45.91611	-129.98935	314.81	153.77	1530.82	1684.6	Lots of shimmer in the Scorpio cam. Do not see much in the HD cam.	10470
9/12/13 23:30:37	45.91611	-129.98935	314.07	66.81	1530.89	1597.7	Bringing in the wand for a temperature reading.	10471
9/12/13 23:30:52	45.91611	-129.98935	313.21	120.35	1530.89	1651.2	6 degrees and going up.	10472
9/12/13 23:32:50	45.91613	-129.98934	313.11	99.74	1530.84	1630.6	10C was the highest reading. Moving the wand a bit.	10475
9/12/13 23:33:15	45.91613	-129.98934	313.07	97.59	1530.92	1628.5	Open hole area here. What's the temp here?	10476
9/12/13 23:33:48	45.91614	-129.98934	313	157.9	1530.88	1688.8	Temperature is coming up. 10C now.	10479
9/12/13 23:34:04	45.91614	-129.98934	312.99	84.02	1530.98	1615	Oxygen sensor here. Good spot. 14C now and rising.	10480
9/12/13 23:34:23	45.91615	-129.98934	312.97	77.95	1530.88	1608.8	Area with limpets; little skinny tubeworms with red plumes.	10481
9/12/13 23:36:37	45.91617	-129.98934	312.95	158.52	1530.98	1689.5	Oxygen=0.272mL/L. pH voltage=3.37.	10485
9/12/13 23:38:38	45.91618	-129.98935	312.86	96.23	1530.97	1627.2	**SAMPLE: HFS J730-HFS-01** unfiltered bag #17. Cursor position: 129 59.3618W 45 54.9694'N. Z=1532m. Start 233730.	10486
9/12/13 23:40:24	45.91620	-129.98936	312.82	134.29	1530.9	1665.2	J730-HFS-01 cont. Our heading is 313. We're sampling in a white patch on the new lava flow. Lobate lavas here with interspersed small tubeworms; mat; limpets.	10488
9/12/13 23:40:28	45.91620	-129.98936	312.84	134.29	1530.99	1665.3	J730-HFS-01 stop.	10489
9/12/13 23:40:58	45.91620	-129.98937	312.82	83.05	1531.02	1614.1	SAMPLE: HFS J730-HFS-01 cont Tmax=19.7 Tavg=19.5 T2=11.6 Vol=550 mL.	10490
9/12/13 23:41:32	45.91621	-129.98937	312.84	80	1530.96	1611	**SAMPLE: HFS J730-HFS-02.** Filtered bag #18. Start 2341.	10491
9/12/13 23:41:53	45.91621	-129.98938	312.83	121.3	1530.9	1652.2	J730-HFS-02 cont. Same position in this diffuse flow.	10492
9/12/13 23:43:07	45.91623	-129.98939	312.45	176.84	1530.94	1707.8	Correction: sampling on the older lava on the edge of the collapse. We're looking at a vertical face with fluid coming up. We're probably sitting on the newer lava. Sampling in the old lava.	10493
9/12/13 23:45:33	45.91626	-129.98942	312.55	184.64	1530.9	1715.5	J730-HFS-02 cont. stop.	10494
9/12/13 23:46:02	45.91626	-129.98942	312.54	178.24	1531.06	1709.3	**SAMPLE: HFS J730-HFS-03** start. RNA filter #14. Start 234530.	10495

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9/12/13 23:46:57	45.91627	-129.98942	312.56	89.11	1531.04	1620.2	HFS-j730-02 (out of order) filtered bag #18. Tmax=19.9 Tavg=19.6 Vol=550mL.	10496
9/12/13 23:48:00	45.91628	-129.98942	312.55	85.35	1530.94	1616.3	We are collecting the RNA filter now. This is a longer sample. He will try to get 3000mL if possible.	10497
9/12/13 23:48:18	45.91629	-129.98942	312.58	186.58	1530.92	1717.5	The ship is holding station pretty well right now.	10499
9/12/13 23:49:30	45.91630	-129.98941	312.55	126.09	1530.93	1657	We are to the west of the benchmark somewhere - probably in a bit of an alcove (thus the NW heading) along the eastern edge of this collapse. 2011 lava beneath us sampling on the older flow.	10500
9/12/13 23:50:30	45.91630	-129.98940	312.56	158.66	1530.94	1689.6	J730-HFS-03 cont. Lots of murky water in this area.	10501
9/12/13 23:53:41	45.91630	-129.98936	312.57	114.12	1531.07	1645.2	730-HFS-03 cont. It looks like we're north of the benchmark. Bag-1 snowblower that Delaney found is just to the east of us.	10502
9/12/13 23:55:36	45.91628	-129.98935	312.65	138.77	1530.98	1669.8	Still debating if we are on old or new lava.	10503
9/12/13 23:55:42	45.91628	-129.98935	312.65	49.58	1530.99	1580.6	Not sure of that.	10504
9/13/13 00:02:30	45.91622	-129.98935	312.73	139.78	1531.05	1670.8	730-HFS-03 cont. Tmax=20.8 Tavg=20.1 Vol=3012mL. T2=12.2. Sample finished ~1 min ago.	10508
9/13/13 00:03:52	45.91623	-129.98935	312.78	183.19	1531.04	1714.2	Oxygen re-check for last 3 samples: 0.14 mL/L Temp=20.6 pH voltage = 3.36.	10509
9/13/13 00:04:08	45.91623	-129.98935	312.82	134.62	1531.02	1665.6	We can stow the wand now. The next task is to head to Vixen.	10510
9/13/13 00:04:22	45.91623	-129.98935	312.73	114.53	1530.96	1645.5	Stowing the wand.	10514
9/13/13 00:05:35	45.91624	-129.98935	312.76	189.13	1531.03	1720.2	Finished sampling at the diffuse site - Bag City.	10515
9/13/13 00:05:52	45.91624	-129.98935	312.76	129.27	1531.1	1660.4	We will be leaving here soon.	10516
9/13/13 00:06:38	45.91624	-129.98935	312.78	130.87	1531.09	1662	Vixen is 325m from here. About 20-25 minutes from now.	10517
9/13/13 00:07:08	45.91625	-129.98935	316.68	1.26	1530.23	1531.5	Vixen and Casper are to the west and slightly north. We will be traveling along the bottom over there.	10518
9/13/13 00:07:39	45.91624	-129.98936	293.82	2.89	1528.82	1531.7	New lava down in the collapse and tubeworm all along the edge.	10525
9/13/13 00:08:56	45.91617	-129.98939	294.43	2.06	1529.46	1531.5	We were a little bit north of the benchmark during our sampling. Just like the nav said.	10529
9/13/13 00:10:23	45.91616	-129.98948	296.07	2.86	1529.81	1532.7	We are traveling over the new lava now.	10534
9/13/13 00:10:27	45.91616	-129.98948	295.54	2.78	1529.93	1532.7	What is that?	10535

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 00:10:42	45.91616	-129.98949	296.17	1.91	1530.82	1532.7	Weird looking lava feature.	10537
9/13/13 00:11:22	45.91615	-129.98948	296.14	2.38	1530.42	1532.8	Dark parts are glass and grey is solid (not glassy). Sort of looks like a fat short pillar.	10540
9/13/13 00:12:13	45.91614	-129.98954	295.84	1.63	1530.73	1532.4	Now we're passing over the 2011 lava.	10543
9/13/13 00:12:45	45.91615	-129.98958	296.88	1.94	1531.1	1533	Zooming in on the new lavas. Nice pillow ahead and weird pillar. Little tiny snails.	10546
9/13/13 00:13:31	45.91612	-129.98965	296.46	1.66	1531.22	1532.9	Shiny pillows up against the weird tilted pillar.	10553
9/13/13 00:13:50	45.91611	-129.98966	295.93	1.29	1531.39	1532.7	Jumbled mess here of pillars; new lavas.	10555
9/13/13 00:14:25	45.91610	-129.98965	282.02	1.35	1531.03	1532.4	The pillars look to be older with the new lavas lapping up around the base.	10559
9/13/13 00:14:38	45.91609	-129.98964	279.46	1.88	1530.75	1532.6	Driving from Bag City to Vixen over 2011 lavas here.	10560
9/13/13 00:14:57	45.91609	-129.98970	279.6	3.2	1529.5	1532.7	The 2011 lavas are filling tin the collapse with some islands of older lava.	10561
9/13/13 00:16:00	45.91610	-129.98986	280.46	1.9	1529.63	1531.5	Shiny lava pillows.	10570
9/13/13 00:16:43	45.91615	-129.98992	294.04	1.61	1529.99	1531.6	A possible contact here with newer lavas on the left?? Not sure.	10576
9/13/13 00:17:00	45.91617	-129.98993	294.16	1.59	1530.18	1531.8	This lava is more sedimented now.	10577
9/13/13 00:17:35	45.91621	-129.99000	293.96	2.59	1529.16	1531.8	It's complicated. We're in the area with the next youngest flow to the 1998 lavas.	10580
9/13/13 00:18:15	45.91624	-129.99007	293.09	1.96	1529.94	1531.9	Contact? Lobes on the left there look newer.	10586
9/13/13 00:19:07	45.91631	-129.99017	296.21	2.11	1529.1	1531.2	Sea cucumber.	10592
9/13/13 00:19:12	45.91632	-129.99018	293.87	2.49	1529.12	1531.6	New lava here?	10594
9/13/13 00:21:56	45.91648	-129.99053	293.99	1.86	1528.73	1530.6	Black pillows with some hydrothermal staining at bases.	10598
9/13/13 00:22:09	45.91650	-129.99059	294.14	1.74	1528.46	1530.2	Drop off.	10601
9/13/13 00:22:35	45.91658	-129.99074	295.56	4.38	1528.19	1532.6	Pillar in the collapse feature that matches bathymetry.	10604
9/13/13 00:23:03	45.91663	-129.99085	292.41	2.36	1527.69	1530.1	Still seeing staining.	10607
9/13/13 00:24:04	45.91671	-129.99107	294.31	2.24	1528.62	1530.9	Still looks new.	10611
9/13/13 00:24:23	45.91674	-129.99106	293.01	2.43	1528.73	1531.2	Fish. Waiting a bit for Medea.	10615
9/13/13 00:24:43	45.91677	-129.99109	295.22	2.09	1529.1	1531.2	Contact	10616
9/13/13 00:24:48	45.91677	-129.99111	294.52	2.04	1529.03	1531.1	Old new contact.	10617
9/13/13 00:25:02	45.91679	-129.99115	292.48	2.11	1528.96	1531.1	Black pillows overlaying gray sheet flow.	10618
9/13/13 00:25:36	45.91684	-129.99127	295.56	2	1529.63	1531.6	Now on older.	10624
9/13/13 00:25:45	45.91685	-129.99130	296.32	2.44	1529.38	1531.8	Collapse and drain out.	10625
9/13/13 00:27:06	45.91693	-129.99146	293.41	2.08	1529.73	1531.8	Collapse and pillars.	10631
9/13/13 00:27:17	45.91695	-129.99150	291.66	2.04	1530.03	1532.1	Still looks like staining.	10633
9/13/13 00:30:26	45.91713	-129.99160	287.65	2.09	1530.11	1532.2	Flatter pillow flow.	10643

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 00:31:03	45.91716	-129.99173	267.41	3.25	1529.22	1532.5	125m to Vixen.	10644
9/13/13 00:31:57	45.91726	-129.99180	273.57	2.66	1530.01	1532.7	Lots of cucumber-like animals.	10648
9/13/13 00:34:47	45.91727	-129.99214	272.03	3.03	1530.25	1533.3	Massive pillow flow. with sessile biology.	10654
9/13/13 00:34:55	45.91727	-129.99215	271.28	3.05	1530.19	1533.2	100m to go to Vixen.	10655
9/13/13 00:35:45	45.91726	-129.99213	269.73	2.69	1530.36	1533.1	Waiting for Medea and ship (which just stopped moving west).	10657
9/13/13 00:39:14	45.91724	-129.99203	272.44	2.64	1530.56	1533.2	Backing up a bit while waiting for the ship to go west.	10662
9/13/13 00:41:18	45.91724	-129.99212	266.88	2.84	1530.28	1533.1	Pilot change.	10666
9/13/13 00:42:57	45.91719	-129.99215	266.62	1.76	1531.31	1533.1	Still in massive pillow flow with sessile biology.	10670
9/13/13 00:43:41	45.91716	-129.99219	266.88	1.88	1531.43	1533.3	Appears to be orange hydrothermal staining at the bases of some pillows. Sediment (white) on top of pillows.	10672
9/13/13 00:44:23	45.91716	-129.99225	267.35	1.69	1531.6	1533.3	Rounder pillows.	10675
9/13/13 00:44:57	45.91712	-129.99226	267.21	1.74	1531.51	1533.3	Rat tail fish.	10678
9/13/13 00:45:14	45.91712	-129.99228	268.18	2.26	1531.37	1533.6	75m from Vixen.	10680
9/13/13 00:47:18	45.91723	-129.99246	268.16	1.63	1532.37	1534	Tube worms and some shells at pillow base.	10686
9/13/13 00:48:02	45.91724	-129.99250	267.06	1.53	1532.52	1534.1	3 rat tails together.	10690
9/13/13 00:49:04	45.91724	-129.99254	267.64	1.34	1532.69	1534	Ship almost moved west enough as we slowly approach Vixen at 50m away.	10692
9/13/13 00:49:21	45.91725	-129.99258	267.5	2.41	1532.18	1534.6	Lots of staining on flatter pillow flow.	10694
9/13/13 00:49:49	45.91726	-129.99265	266.78	2.29	1531.72	1534	Lots of shells at Coquille.	10695
9/13/13 00:49:53	45.91726	-129.99266	267.15	2.16	1531.83	1534	Tube worms.	10696
9/13/13 00:50:49	45.91728	-129.99276	267.7	1.8	1532.15	1534	NAV: Doppler Reset	10699
9/13/13 00:51:06	45.91730	-129.99279	275.09	3.3	1530.74	1534	There is the vent cap at Vixen.	10701
9/13/13 00:53:06	45.91738	-129.99295	204.85	1.74	1532.02	1533.8	HIGHLIGHTS on.	10709
9/13/13 00:53:36	45.91739	-129.99296	193.36	1.35	1532.42	1533.8	Lots of anhydrite on the APL instrument. Looks like little tiny anhydrite nozzles forming on the outlet.	10713
9/13/13 00:53:56	45.91738	-129.99298	169.45	1.68	1532.5	1534.2	The horizontal flow has decreased.	10715
9/13/13 00:54:49	45.91736	-129.99299	148.8	0.74	1533.49	1534.2	There is a chimney growing off the syntactic flow.	10722
9/13/13 00:55:05	45.91736	-129.99299	150.1	0.74	1533.55	1534.3	Look at all the little chimlets.	10724
9/13/13 00:55:27	45.91735	-129.99299	150.09	0.74	1533.55	1534.3	Water is coming out of the 3 uprights. Diffuse flow coming out everywhere.	10728
9/13/13 00:55:45	45.91735	-129.99299	150.12	0.74	1533.53	1534.3	It's leaning.	10733
9/13/13 00:56:00	45.91735	-129.99299	150.09	0.74	1533.5	1534.2	It's also coming out of the base.	10736
9/13/13 00:56:17	45.91735	-129.99299	150.11	0.74	1533.47	1534.2	Missing the plastic shield. It's rated to 2000C.	10738

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 00:57:04	45.91737	-129.99299	150.07	0.84	1533.53	1534.4	There is water coming out of all the vertical uprights.	10746
9/13/13 00:58:15	45.91739	-129.99297	150.26	0.74	1533.57	1534.3	This is the way to form anhydrite chimneys. Put something over the flow. There are now numerous chimneys on the structure.	10752
9/13/13 00:59:19	45.91738	-129.99297	150.12	0.74	1533.58	1534.3	There was flow going out one of the pipes that is not pushing out much now. The flow is coming out all over .	10759
9/13/13 01:00:24	45.91737	-129.99297	150.14	0.74	1533.57	1534.3	Looks like little chimlet-type growths on the output.	10765
9/13/13 01:01:01	45.91738	-129.99294	210.79	2.16	1531.58	1533.7	Just did a major data dump from this one and the one at Virgin. So it's collecting data.	10767
9/13/13 01:01:12	45.91737	-129.99291	233	1.49	1532.46	1534	Don't see flow coming out the top of the pipes.	10769
9/13/13 01:02:46	45.91734	-129.99296	332.12	0.75	1533.78	1534.5	Lots of little chimlets coming off the platform.	10790
9/13/13 01:03:13	45.91734	-129.99296	332.11	0.78	1533.79	1534.6	Really black chimneys.	10794
9/13/13 01:03:32	45.91734	-129.99297	332.1	0.75	1533.79	1534.5	Lots of bacterial floc stirred up by the	10796
9/13/13 01:03:38	45.91734	-129.99297	332.1	0.79	1533.77	1534.6	cont. by the ROV.	10797
9/13/13 01:04:21	45.91733	-129.99299	332.1	0.74	1533.77	1534.5	There is a chimney growing along the side. Wow??	10803
9/13/13 01:05:11	45.91734	-129.99301	332.08	0.74	1533.79	1534.5	Anhydrite growing along this pipe. to the syntactic foam.	10808
9/13/13 01:06:59	45.91733	-129.99296	332.05	0.74	1533.79	1534.5	The APL device seems to be slanted as well.	10820
9/13/13 01:08:15	45.91734	-129.99296	332.02	0.74	1533.72	1534.5	There is anhydrite growing on the outlet nozzles.	10836
9/13/13 01:10:04	45.91733	-129.99296	332.63	0.74	1533.83	1534.6	Looks like the flotation will all be gone next time they return.	10846
9/13/13 01:10:14	45.91733	-129.99296	332.63	0.74	1533.78	1534.5	HIGHLIGHTS off.	10850
9/13/13 01:10:20	45.91733	-129.99296	332.62	0.74	1533.78	1534.5	Highlights off.	10851
9/13/13 01:12:46	45.91731	-129.99300	333.7	0.74	1533.81	1534.6	This instrument has been down here about a week. The float packs are disintegrating. It is covered in white anhydrite and some black(beehive-like) chimneys.	10856
9/13/13 01:17:52	45.91732	-129.99301	53.79	0.9	1533.55	1534.5	Lifting off. Pulling away from the vent cap at Vixen. Moving on in again.	10871
9/13/13 01:18:36	45.91732	-129.99300	52.5	0.74	1533.61	1534.4	Small anhydrite chimneys everywhere on this structure. Mostly black chimneys. Lots of white anhydrite on the cap.	10874

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 01:20:14	45.91731	-129.99299	52.48	0.74	1533.6	1534.3	This is a harsh environment. It almost looks like the big black chimney went right up through the float pack.	10880
9/13/13 01:21:50	45.91732	-129.99297	52.46	0.74	1533.58	1534.3	This chimney looks like the Vixen on the seafloor. Only much taller.	10889
9/13/13 01:23:40	45.91733	-129.99298	52.44	0.74	1533.57	1534.3	We want Medea to get around the other side because we don't want the tether wrapping around the vent cap structure..	10894
9/13/13 01:24:28	45.91735	-129.99300	105.56	1.45	1532.72	1534.2	Medea zoom on the contraption.	10899
9/13/13 01:24:58	45.91736	-129.99299	139.69	1.35	1532.93	1534.3	Zooming in on the tips for Jeff.	10900
9/13/13 01:26:04	45.91735	-129.99302	141.27	0.88	1533.64	1534.5	Zooming in on the 5 outlets to see if they all have anhydrite growth on them. Looks like they all have it.	10903
9/13/13 01:28:05	45.91731	-129.99305	141.38	0.85	1533.66	1534.5	Getting a look around it with the HD cam. Looks like the one on the far right does not have much flowing out of it.	10908
9/13/13 01:28:49	45.91730	-129.99304	140.37	1.46	1532.75	1534.2	Zooming away from the vent cap.	10911
9/13/13 01:29:38	45.91734	-129.99304	39.9	2.81	1531.29	1534.1	Heading toward Vixen now to deploy a couple Hobos in the vent. That is the only anhydrite that will be available. We have 1 at Castle already.	10913
9/13/13 01:29:50	45.91735	-129.99304	40.1	2.05	1532.01	1534.1	NAV: Doppler Reset	10915
9/13/13 01:30:57	45.91742	-129.99306	34.02	3.63	1529.94	1533.6	Cute little tubeworms.	10927
9/13/13 01:31:33	45.91741	-129.99309	164.22	3.63	1530.23	1533.9	Tito is looking for Casper.	10929
9/13/13 01:32:25	45.91732	-129.99311	161.92	1.59	1532.6	1534.2	This is it. The chimney fall off. It was hard to see.	10932
9/13/13 01:33:00	45.91731	-129.99311	162.82	0.74	1533.88	1534.6	Will deploy 2 hobos and a marker here at Casper.	10934
9/13/13 01:34:03	45.91730	-129.99313	162.8	0.74	1533.84	1534.6	Jason is going in for a grab of the marker in the front of the biobox.	10937
9/13/13 01:34:51	45.91730	-129.99314	162.78	0.74	1533.81	1534.6	**DEPLOY: Marker 128** off to the side of the mound at Casper.	10939
9/13/13 01:35:28	45.91729	-129.99315	162.88	0.74	1533.79	1534.5	Next will deploy 2 hobos right in the intense flow here.	10943
9/13/13 01:36:22	45.91728	-129.99315	162.86	0.74	1533.85	1534.6	**DEPLOY:** HOBO temp probe **HOBO 102** being deployed at Casper anhydrite.	10945
9/13/13 01:36:52	45.91728	-129.99315	162.85	0.74	1533.85	1534.6	Excavating the hold a bit more.	10947
9/13/13 01:38:27	45.91731	-129.99311	162.85	0.74	1533.83	1534.6	Now it looks like the flow is coming out of 2 areas. Hobo 102 being placed in the flow.	10950
9/13/13 01:39:15	45.91734	-129.99307	162.84	0.74	1533.85	1534.6	Pulled the basket out of the way so he can see better. The nozzle is not in the hole right now.	10954

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9/13/13 01:42:22	45.91741	-129.99300	162.65	0.74	1533.83	1534.6	Still deploying the hobo 102..... C	10962
9/13/13 01:44:42	45.91746	-129.99300	162.86	0.74	1533.85	1534.6	He's grabbing it by the wand now and going for the hold.	10966
9/13/13 01:45:50	45.91749	-129.99299	162.85	0.74	1533.85	1534.6	Poised over the hole. Here we go.	10969
9/13/13 01:46:36	45.91749	-129.99298	162.85	0.74	1533.81	1534.6	That looks alright. Hobo 102 is possibly in the flow. Not very far - if at all.	10972
9/13/13 01:47:21	45.91748	-129.99298	162.84	0.74	1533.78	1534.5	Going for hobo 130.	10974
9/13/13 01:49:19	45.91742	-129.99299	162.87	0.74	1533.85	1534.6	**DEPLOY:** Placing **HOBO 130** in the orifice. That one looks good.	10979
9/13/13 01:50:22	45.91742	-129.99298	162.4	0.74	1533.7	1534.4	That was that. At least one of those hobos is in the orifice at Casper - possibly both.	10987
9/13/13 01:50:51	45.91747	-129.99293	20.43	4.5	1529.56	1534.1	Jason off bottom.	10994
9/13/13 01:51:12	45.91752	-129.99289	33.83	6.55	1527.07	1533.6	Next stop - South pillow mound about 4 hours from now.	10996
9/13/13 05:41:55	45.86514	-130.00042	33.07	156.1	1431.41	1587.5	Ship is at the AX-105 benchmark site.	11001
9/13/13 05:51:49	45.86320	-130.00206	32.65	69.07	1649.74	1718.8	Ship went south and now west of the benchmark. Jason and Medea are east of the site.	11002
9/13/13 05:52:42	45.86310	-130.00219	54.33	63.67	1655.72	1719.4	Ship is 150m due west and Jason is 100m due east of the benchmark.	11003
9/13/13 05:57:22	45.86252	-130.00341	252.47	51.23	1665.78	1717	Ship is having a difficult time without a bow thruster even though there is no wind.	11004
9/13/13 05:58:19	45.86256	-130.00384	303.42	49.28	1666.82	1716.1	Jason is about 80 m due south of the benchmark target.	11005
9/13/13 05:58:59	45.86273	-130.00414	304.29	50.96	1666.6	1717.6	Ship's stern is almost 200m to the southwest of the benchmark.	11006
9/13/13 06:04:45	45.86229	-130.00535	282.02	4.9	1709.99	1714.9	There is the bottom.	11009
9/13/13 06:04:56	45.86231	-130.00535	314.18	6.04	1708.81	1714.9	Pillow flow with a lot of sediment.	11010
9/13/13 06:05:43	45.86256	-130.00509	58.98	6.55	1710.69	1717.2	Jason is 150m SW of the benchmark.	11012
9/13/13 06:06:52	45.86267	-130.00496	58.6	7	1710.6	1717.6	Ship is still west and south of target by at least 150m.	11014
9/13/13 06:13:29	45.86293	-130.00502	57.36	5.09	1712.71	1717.8	Pillow flow with some big tubes.	11025
9/13/13 06:15:52	45.86305	-130.00485	56.96	3.58	1714.9	1718.5	Soft coral.	11029
9/13/13 06:16:36	45.86309	-130.00479	55.37	1.11	1718.18	1719.3	Landed on the bottom while waiting for the ship.	11033
9/13/13 06:17:02	45.86307	-130.00479	55.52	1.08	1718.13	1719.2	Poking around with the manipulator.	11035
9/13/13 06:18:13	45.86305	-130.00479	57.79	0.76	1718.04	1718.8	Fairly solid pillow here.	11038
9/13/13 06:20:20	45.86309	-130.00471	61.99	0.74	1718.18	1718.9	Ship is going to make a big heading change of 40deg to stbd.	11043
9/13/13 06:21:02	45.86306	-130.00473	53.09	0.74	1718.32	1719.1	Rocks here are very solid with no loose pieces.	11044

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9/13/13	06:23:12	45.86293	-130.00475	55.54	0.74	1718.29	1719	**SAMPLE:** Rock Super tiny rock from seafloor. **J730-ROCK-04**. From old pillow flow south of the benchmark (about 80m).	11048
9/13/13	06:23:57	45.86293	-130.00470	75.2	2.21	1716.44	1718.7	Sample taken while waiting for the ship to get into position at the benchmark.	11049
9/13/13	06:24:19	45.86300	-130.00453	80.03	1.91	1716.78	1718.7	Heading over to benchmark.	11052
9/13/13	06:24:57	45.86307	-130.00430	82.58	2.34	1715.68	1718	Big pillows in flow with more tube-like feature.	11053
9/13/13	06:25:10	45.86309	-130.00423	80.15	3.1	1714.94	1718	Sheet flow.	11055
9/13/13	06:26:12	45.86315	-130.00398	81.38	3.29	1714.13	1717.4	Circular features in flow.	11060
9/13/13	06:26:34	45.86321	-130.00387	61.9	2.6	1714.63	1717.2	Flat sheet flow with cracks. There is the benchmark.	11061
9/13/13	06:27:11	45.86322	-130.00380	356.95	1.95	1715.13	1717.1	Sheet flow...	11063
9/13/13	06:27:34	45.86319	-130.00381	356.15	2.1	1714.96	1717.1	Saw the fissure briefly nearby.	11066
9/13/13	06:28:08	45.86315	-130.00383	356.19	2.01	1715.05	1717.1	Unstrapping the device.	11067
9/13/13	06:29:15	45.86309	-130.00385	356.11	2.06	1714.97	1717	Using the port arm instead on this placement of the pressure device.	11070
9/13/13	06:36:45	45.86310	-130.00388	3.15	163.18	1717.13	1880.3	**PRESSURE: Start AX-105.**	11083
9/13/13	06:37:06	45.86310	-130.00387	3.14	189.56	1717.13	1906.7	At South Pillow Mound benchmark AX-105.	11084
9/13/13	06:40:22	45.86312	-130.00383	2.43	0.74	1716.99	1717.7	NAV: Doppler Reset	11088
9/13/13	06:42:45	45.86312	-130.00380	2.57	0.74	1716.9	1717.6	Watch change.	11091
9/13/13	06:47:32	45.86311	-130.00377	2.32	0.74	1716.8	1717.5	Arm is hovering over loop in case we are pulled off this location.	11096
9/13/13	06:56:15	45.86317	-130.00378	5.23	1.01	1716.76	1717.8	PRESSURE: End	11107
9/13/13	06:56:54	45.86315	-130.00380	3.89	1.96	1715.27	1717.2	Stowing the pressure recorder and moving off the bottom.	11108
9/13/13	07:05:14	45.86246	-130.00440	191.76	58.05	1658.02	1716.1	Starting transit to AX-104. 6021 meters at 11 deg heading.	11117
9/13/13	10:51:03	45.91590	-129.98904	9.12	8.98	1522.87	1531.9	Jason on bottom. Bottom in sight.	11126
9/13/13	10:51:19	45.91596	-129.98903	9.18	5.36	1526.23	1531.6	We're at Bag City - again.....	11128
9/13/13	10:52:40	45.91579	-129.98913	24.84	5.99	1527.48	1533.5	Will be making pressure measurements at AX-104 benchmark.	11131
9/13/13	10:52:55	45.91582	-129.98910	24.61	7.3	1526.89	1534.2	NAV: Doppler Reset	11132
9/13/13	10:53:18	45.91583	-129.98906	25.82	3.5	1527.46	1531	Looking at the bottom.	11134
9/13/13	10:54:23	45.91583	-129.98909	24.57	3.58	1527.37	1531	We're not quite there. Working our way to the north.	11136
9/13/13	10:55:57	45.91589	-129.98909	24.98	1.38	1529.18	1530.6	Pretty much here in place.	11138
9/13/13	10:56:12	45.91591	-129.98909	25.31	1.59	1528.96	1530.6	It will be a few minutes while the ship changes its heading.	11140
9/13/13	10:56:46	45.91591	-129.98910	27.66	2.03	1528.79	1530.8	Lava pillars and collapse.	11147

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9/13/13 10:57:08	45.91591	-129.98907	28.02	0.81	1529.79	1530.6	Bill wants to see this lava pillar.	11148
9/13/13 10:58:54	45.91578	-129.98893	26.61	3.31	1527.67	1531	Contact.	11155
9/13/13 10:59:55	45.91563	-129.98876	34.71	3.54	1527.69	1531.2	The ship is changing heading and will pull Medea with it.	11158
9/13/13 11:00:03	45.91565	-129.98873	41.55	3.03	1528.14	1531.2	Now we're over older lavas.	11159
9/13/13 11:00:25	45.91566	-129.98864	36.43	2.29	1528.95	1531.2	2011 lavas overlapping older flow.	11163
9/13/13 11:01:00	45.91569	-129.98852	39.36	3.3	1527.93	1531.2	Contacts. Island of older lava.	11169
9/13/13 11:01:39	45.91574	-129.98840	38.89	2.41	1528.48	1530.9	We're SE of the marker near the contact boundary (on the map).	11171
9/13/13 11:02:27	45.91581	-129.98829	34.97	2.59	1528.19	1530.8	We're traveling NE. More contacts.	11175
9/13/13 11:02:50	45.91584	-129.98829	11.51	2.7	1527.9	1530.6	The 2011 flow is intermittently draped over the older flow.	11176
9/13/13 11:04:14	45.91599	-129.98827	11.87	2.93	1527.63	1530.6	More young lavas here - but the older lavas peak out here and there.	11183
9/13/13 11:04:40	45.91603	-129.98825	10.54	1.9	1528.56	1530.5	Crab ahead.	11185
9/13/13 11:05:09	45.91605	-129.98825	11.14	1.79	1528.76	1530.6	Crab on new shiny lava.	11190
9/13/13 11:06:16	45.91615	-129.98832	10.56	2.06	1528.29	1530.4	Collapse? explosion?? blocks?	11194
9/13/13 11:06:47	45.91618	-129.98841	12.23	2.06	1527.9	1530	Hole in a lava lobe.	11199
9/13/13 11:07:39	45.91615	-129.98850	3.28	2.19	1527.86	1530.1	Collapse here. Perfectly broad lava lobe that collapsed.	11206
9/13/13 11:09:41	45.91640	-129.98887	341.43	2.05	1527.27	1529.3	On the map we see lots of collapse below.	11212
9/13/13 11:10:25	45.91643	-129.98892	313.91	1.46	1528.21	1529.7	Archway with plates. Lots of really broad lobes that have drained out.	11217
9/13/13 11:10:57	45.91648	-129.98895	246.8	3.49	1528.32	1531.8	This is the new lava. Very odd.	11220
9/13/13 11:11:11	45.91648	-129.98895	220.9	2.78	1529.18	1532	We must be on the edge of the collapse.	11223
9/13/13 11:11:59	45.91648	-129.98895	255.15	2.71	1527.75	1530.5	Jason garage. Almost hollow lobes on the top.	11229
9/13/13 11:12:15	45.91648	-129.98894	282.64	3.56	1528.44	1532	Crazy lavas here.	11232
9/13/13 11:13:01	45.91649	-129.98891	283.13	1.85	1529.99	1531.8	Pillar with vertical crack.	11236
9/13/13 11:13:29	45.91649	-129.98892	281.65	2.36	1529.72	1532.1	We're on the edge of an inflated flow in pillars. Lots of broken jumbled lavas below.	11240
9/13/13 11:13:44	45.91649	-129.98893	282.26	3.5	1528.64	1532.1	Coming up over the ledge now.	11242
9/13/13 11:14:08	45.91648	-129.98895	315.45	3.58	1527.88	1531.5	We're in the new lavas. Just north of Bag-1.	11243
9/13/13 11:15:22	45.91651	-129.98912	84.36	0.74	1529.11	1529.9	Dangerous??	11249
9/13/13 11:19:13	45.91645	-129.98908	199.67	5.03	1526.69	1531.7	Tubeworms on the way.	11259
9/13/13 11:20:30	45.91629	-129.98921	215.94	2.61	1527.25	1529.9	Traveling over fields of tubeworms interspersed in the lava cracks.	11264
9/13/13 11:20:37	45.91628	-129.98923	214.79	2.69	1527.36	1530.1	NAV: Doppler Reset	11266
9/13/13 11:21:11	45.91619	-129.98929	214.77	2.48	1527.66	1530.1	Benchmark in sight.	11272

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9/13/13	11:21:55	45.91609	-129.98932	278.26	3.49	1526.82	1530.3	Benchmark(s) in sight. Marker 65 is on the old benchmark. It's looking pretty tough.	11275
9/13/13	11:22:38	45.91604	-129.98941	332.37	1.51	1528.95	1530.5	AX-104 benchmark.	11280
9/13/13	11:23:44	45.91602	-129.98942	332.37	1.56	1528.89	1530.5	He's staring at Tito. The fish likes him.	11283
9/13/13	11:26:12	45.91607	-129.98941	331.48	1.8	1528.54	1530.3	We're waiting on the ship a bit because it's having trouble holding station.	11288
9/13/13	11:26:57	45.91612	-129.98946	46.27	4.54	1526.68	1531.2	We're off to the west now. Sort of on the edge.	11291
9/13/13	11:28:23	45.91628	-129.98930	39.49	4.71	1526.39	1531.1	Pulled away from the benchmark. The ship is having a hard time.	11296
9/13/13	11:29:54	45.91638	-129.98926	54.99	1.79	1528.54	1530.3	Contact here.	11299
9/13/13	11:30:55	45.91642	-129.98926	158.46	3.3	1526.7	1530	The bridge is trying to bring the ship back south but having troubles.	11301
9/13/13	11:32:17	45.91647	-129.98927	156.2	0.95	1529.68	1530.6	New lava pouring over this lava pillar.	11313
9/13/13	11:32:39	45.91647	-129.98927	156.25	0.94	1529.68	1530.6	Beautiful shot of lava contact.	11317
9/13/13	11:34:12	45.91650	-129.98927	145.29	0.96	1529.88	1530.8	Huge pillows.	11345
9/13/13	11:34:42	45.91654	-129.98933	143.09	3.48	1526.51	1530	Lava dripping over older lava arch. Pretty spectacular.	11349
9/13/13	11:35:11	45.91661	-129.98940	154.81	2.89	1527.25	1530.1	The ship is going the wrong way.	11351
9/13/13	11:37:23	45.91688	-129.98949	355.9	1.76	1527.93	1529.7	This is going to be a while. The ship is having a hard time maneuvering without the bow thruster.	11354
9/13/13	11:37:52	45.91691	-129.98953	356.39	1.5	1527.76	1529.3	The bridge has changed their heading. Maybe that will work.	11355
9/13/13	11:39:55	45.91703	-129.98976	355.45	1.78	1527.74	1529.5	We're getting farther from the benchmark.	11359
9/13/13	11:40:06	45.91704	-129.98979	356.31	1.28	1527.91	1529.2	The ship has finally made a turn to the south.	11360
9/13/13	11:40:47	45.91705	-129.98987	356.88	1.43	1527.54	1529	The edge of another collapse.	11363
9/13/13	11:43:48	45.91713	-129.99000	94.68	1.6	1530.62	1532.2	Wandering around here in no-mans-land..... still waiting on the ship...	11371
9/13/13	11:55:49	45.91651	-129.98959	183.12	1.45	1529.04	1530.5	Coming back to benchmark.	11389
9/13/13	11:58:00	45.91634	-129.98952	155.31	2.1	1528.85	1531	NAV: Doppler Reset.	11392
9/13/13	11:58:42	45.91627	-129.98949	160.64	1.88	1529.41	1531.3	Benchmark in sight.	11394
9/13/13	11:59:34	45.91621	-129.98950	132.45	3.81	1528.07	1531.9	We're back!! The ship is still struggling.	11399
9/13/13	11:59:54	45.91618	-129.98949	93.01	3	1528.77	1531.8	Murky water being the benchmark.	11400
9/13/13	12:00:32	45.91615	-129.98945	357.85	2.75	1528.65	1531.4	He doesn't have any control over the ship position.	11402
9/13/13	12:02:02	45.91617	-129.98941	334.45	1.59	1529.01	1530.6	The bridge says that they have no control over the ship. He was using the wind to steer the boat. There's no wind.	11404
9/13/13	12:03:44	45.91623	-129.98943	335.85	1.21	1529.58	1530.8	The benchmark is right below us.	11408
9/13/13	12:04:18	45.91621	-129.98942	329.54	1.85	1528.86	1530.7	Pulling away from the benchmark; again.	11410

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9/13/13 12:07:06	45.91589	-129.98910	201.52	5.35	1528.76	1534.1	We're back at the collapse - again.	11413
9/13/13 12:09:07	45.91579	-129.98925	214.84	1.64	1529.69	1531.3	Contact.	11416
9/13/13 12:10:11	45.91573	-129.98936	215.42	0.96	1530.54	1531.5	Crab again.	11421
9/13/13 12:11:49	45.91558	-129.98936	210.95	0.78	1531.02	1531.8	New lava over old. Black shiny lobes.	11425
9/13/13 12:12:52	45.91544	-129.98931	246.99	7.44	1531.71	1539.2	Collapse edge....	11427
9/13/13 12:14:20	45.91522	-129.98957	244.84	1.51	1530.43	1531.9	Probably another half hour at least until we get back to the benchmark.	11430
9/13/13 12:17:58	45.91536	-129.99003	345.78	2.13	1530.42	1532.6	More of the same mania. Just circling around. We've been here before.	11434
9/13/13 12:19:50	45.91560	-129.99034	346.26	1.83	1529.07	1530.9	New pillows over older lava.	11438
9/13/13 12:26:48	45.91617	-129.99039	346.9	3.04	1527.03	1530.1	Hole in big lobe.	11447
9/13/13 12:27:15	45.91620	-129.99035	343.9	2.25	1528.08	1530.3	We've seen all this before. Back to small tubeworms among the lavas.	11449
9/13/13 12:29:16	45.91619	-129.98996	3.42	2.83	1527.84	1530.7	Working our way back on over to the benchmark again. West to east this time.	11452
9/13/13 12:30:53	45.91618	-129.98979	1.58	3.48	1528.08	1531.6	The ship overshot the mark.	11454
9/13/13 12:37:48	45.91637	-129.98925	359.93	3.78	1527.21	1531	Getting close to the marker.	11462
9/13/13 12:38:21	45.91632	-129.98928	2.78	3.01	1527.89	1530.9	The bridge has changed their heading. This time it's ~30 degrees.	11464
9/13/13 12:39:59	45.91620	-129.98933	223.16	3.48	1527.04	1530.5	We're back at the benchmark. Hopefully not just a fleeting glimpse.	11466
9/13/13 12:41:22	45.91611	-129.98940	338.14	1.34	1529.63	1531	Coming down close to the benchmark.	11471
9/13/13 12:42:38	45.91613	-129.98941	338.17	0.74	1530.43	1531.2	We're going for it. Will see what we can get.	11473
9/13/13 12:43:15	45.91613	-129.98942	337.75	0.84	1530.04	1530.9	Jason is going in for the grab.	11476
9/13/13 12:43:34	45.91613	-129.98938	71.16	2.95	1527.65	1530.6	Not happening.	11477
9/13/13 12:44:42	45.91613	-129.98912	66.66	4.5	1527.46	1532	The bridge just can't hold station without the bow thrusters.	11479
9/13/13 12:46:17	45.91614	-129.98895	63.68	4.9	1527.31	1532.2	The ship is going to try again.	11482
9/13/13 12:47:05	45.91613	-129.98875	61.5	3	1527.84	1530.8	Here we go again; off to the east this time.	11483
9/13/13 12:48:03	45.91616	-129.98860	78.81	5.43	1527.55	1533	We arrived here at the benchmark 2 hours ago. The ship has been trying to get on station and hold it ever since.	11485
9/13/13 12:48:35	45.91617	-129.98863	101.82	3.13	1529.86	1533	At the western edge of another collapse.	11488
9/13/13 12:51:20	45.91655	-129.98840	31	3.31	1526.9	1530.2	We're going to give it one more try and then move on to the next site.	11493
9/13/13 12:53:33	45.91705	-129.98836	21.25	1.83	1527.23	1529.1	Still moving over new lavas. Heading north.	11496
9/13/13 12:54:57	45.91729	-129.98843	22.41	2.09	1527.39	1529.5	Shiny black lava.	11499
9/13/13 13:00:50	45.91728	-129.98862	187.12	2.1	1526.95	1529.1	Ship overshot it again.	11506

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9/13/13	13:04:52	45.91698	-129.98885	191.3	2.6	1526.21	1528.8	The ship is taking off again. Not having much luck here..	11511
9/13/13	13:09:37	45.91639	-129.98930	189.05	2.23	1527.94	1530.2	The Jason guys have high hopes this round might be the one.	11517
9/13/13	13:12:17	45.91612	-129.98939	309.79	3.64	1527.87	1531.5	We're back at the benchmark. Again. Hopefully this time will be the one.	11522
9/13/13	13:13:08	45.91612	-129.98942	339.74	0.88	1529.99	1530.9	Moving in on the benchmark. Again.	11524
9/13/13	13:14:05	45.91612	-129.98942	341.66	0.74	1530.5	1531.2	Putting the sensor on the benchmark.	11527
9/13/13	13:14:33	45.91612	-129.98942	341.66	0.74	1530.5	1531.2	The sensor wants to tip.	11530
9/13/13	13:15:12	45.91611	-129.98942	341.67	0.74	1530.5	1531.2	Jason is maneuvering the sensor package on top of the benchmark.	11532
9/13/13	13:15:24	45.91611	-129.98942	341.67	0.74	1530.48	1531.2	Looks like it's in there. Jason is holding the package.	11533
9/13/13	13:15:31	45.91611	-129.98942	341.67	0.74	1530.48	1531.2	**PRESSURE: Start AX-104.**	11534
9/13/13	13:16:02	45.91610	-129.98941	341.68	0.74	1530.46	1531.2	Yeah. We're actually doing the pressure measurement!! Hold your breath for 20 minutes.	11535
9/13/13	13:20:55	45.91614	-129.98942	341.75	0.74	1530.53	1531.3	We tried to get on station for 2.5 hours. The lack of bow thruster is not boding well. That was brutal.	11542
9/13/13	13:22:07	45.91612	-129.98937	341.76	0.74	1530.54	1531.3	Now the ship is holding position. What changed? Perhaps the person on the bridge??	11544
9/13/13	13:22:26	45.91612	-129.98937	341.77	0.74	1530.55	1531.3	Something changed.	11546
9/13/13	13:26:53	45.91613	-129.98942	341.79	0.9	1530.55	1531.5	Jason has been holding on to the pressure case this whole time. When he let goo it moved a bit.	11555
9/13/13	13:27:02	45.91613	-129.98941	341.79	0.74	1530.54	1531.3	Jason let go now.	11556
9/13/13	13:33:03	45.91616	-129.98938	341.82	0.86	1530.57	1531.4	That was the most highly anticipated measurement of the cruise. Almost done.	11563
9/13/13	13:34:10	45.91614	-129.98934	341.82	0.74	1530.63	1531.4	Maybe they are using the bow thruster???	11566
9/13/13	13:35:06	45.91613	-129.98936	341.82	0.89	1530.64	1531.5	PRESSURE: End	11567
9/13/13	13:35:18	45.91613	-129.98937	341.82	0.74	1530.6	1531.3	Wow - we're finished.	11569
9/13/13	13:35:58	45.91613	-129.98939	341.83	0.83	1530.61	1531.4	That's the last pressure sensor measurement at AX-104 Bag City.	11571
9/13/13	13:36:07	45.91613	-129.98939	341.82	0.8	1530.62	1531.4	Storing the sensor.	11572
9/13/13	13:36:22	45.91613	-129.98940	341.82	0.74	1530.6	1531.3	1390 meters to the next reading.	11575
9/13/13	13:37:28	45.91613	-129.98940	341.82	0.8	1530.77	1531.6	Moving away from this site. Yippee.	11577
9/13/13	13:38:05	45.91607	-129.98942	219.47	5.5	1525.5	1531	Jason off bottom.	11582
9/13/13	14:51:30	45.92548	-129.97773	0.73	2.35	1526.17	1528.5	Bottom in site near AX-310.	11586
9/13/13	14:52:42	45.92552	-129.97775	337.85	2.61	1525.41	1528	Ship is 70m south of the benchmark.	11588

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9/13/13 14:54:11	45.92560	-129.97783	358.75	3.58	1525.41	1529	Looking for Mkr 126 for AX-310 at the International District area.	11591
9/13/13 14:54:31	45.92563	-129.97783	3.46	3.39	1525.66	1529.1	Jason is 30m from the target and is currently south of it.	11592
9/13/13 14:56:16	45.92567	-129.97784	357.15	3.74	1525.4	1529.1	NAV: Doppler Reset.	11597
9/13/13 14:58:30	45.92565	-129.97785	356.84	3.81	1525.41	1529.2	Been sitting on jumbled sheet flow with sediment.	11600
9/13/13 14:59:04	45.92564	-129.97785	357.05	3.81	1525.27	1529.1	There was not a doppler reset.	11601
9/13/13 15:02:41	45.92562	-129.97786	357.15	3.7	1525.47	1529.2	Having problem with the Jason navigation while waiting for the ship to come into better position.	11606
9/13/13 15:03:32	45.92569	-129.97787	357.03	4	1525.25	1529.3	There is the benchmark ahead.	11608
9/13/13 15:06:55	45.92572	-129.97789	356.63	3.54	1525.47	1529	Ship is making progress in the right direction and the stern is almost over the benchmark.	11614
9/13/13 15:06:58	45.92572	-129.97789	356.77	3.46	1525.51	1529	Waiting for Medea.	11615
9/13/13 15:07:43	45.92572	-129.97789	356.78	3.61	1525.4	1529	Retrieving pressure device from basket as we approach the benchmark slowly.	11617
9/13/13 15:11:37	45.92576	-129.97788	289.06	0.74	1528.78	1529.5	Placing device on benchmark.	11625
9/13/13 15:17:15	45.92573	-129.97789	289.42	0.74	1528.81	1529.6	**PRESSURE: Start AX-310.**	11633
9/13/13 15:19:32	45.92573	-129.97786	289.29	0.74	1528.82	1529.6	We are at AX-310 benchmark.	11636
9/13/13 15:36:01	45.92586	-129.97781	290.07	0.74	1528.77	1529.5	PRESSURE: End Ship is moving too far south and almost at end of this measurement.	11653
9/13/13 15:36:12	45.92586	-129.97781	289.61	0.74	1528.73	1529.5	That was not the end...not END.	11655
9/13/13 15:37:09	45.92584	-129.97781	289.89	0.74	1528.86	1529.6	PRESSURE: End	11656
9/13/13 15:37:18	45.92584	-129.97781	290	0.74	1528.84	1529.6	That was really the end!	11658
9/13/13 15:38:10	45.92582	-129.97781	292.99	0.74	1528.69	1529.4	Picking up device from AX-310.	11660
9/13/13 15:38:34	45.92578	-129.97775	290.61	3.81	1525.72	1529.5	Stowing device in the basket as we pull away from the benchmark.	11661
9/13/13 15:39:56	45.92565	-129.97791	71.85	5.48	1523.64	1529.1	Getting ship headed to the next site at AX-303/AX-302 at Mkr33 site.	11663
9/13/13 15:40:40	45.92564	-129.97790	70.37	5.9	1523.32	1529.2	Ship is 890m from next benchmark.	11665
9/13/13 15:41:02	45.92563	-129.97790	70.68	5.99	1523.39	1529.4	Device in basket.	11666
9/13/13 15:43:58	45.92559	-129.97811	338.49	4.39	1523.4	1527.8	Device strapped down.	11670
9/13/13 15:44:43	45.92554	-129.97828	350.08	1.24	1523.33	1524.6	Moving over old pillow flow.	11672
9/13/13 15:45:06	45.92554	-129.97835	347.79	2.81	1520.66	1523.5	Ridge.	11673
9/13/13 15:45:38	45.92562	-129.97841	344.14	2.18	1521.25	1523.4	Pressure ridge with sheet flow and sediment on top.	11675
9/13/13 15:46:54	45.92594	-129.97862	344.61	3.43	1520.63	1524.1	Pillows.	11680
9/13/13 15:47:47	45.92602	-129.97873	343.21	2.19	1520.6	1522.8	Mayonnaise marker container with a rope (saw it before).	11684

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9/13/13 15:49:06	45.92603	-129.97875	343.75	0.98	1521.54	1522.5	Happy Birthday marker!	11693
9/13/13 15:49:49	45.92611	-129.97881	344.66	3.64	1519.48	1523.1	Thank you Allison for deploying this Happy Birthday marker (other side says Allison).	11697
9/13/13 15:50:39	45.92627	-129.97893	343.73	3.16	1519.92	1523.1	Cable.	11701
9/13/13 15:51:22	45.92627	-129.97903	346.03	2.98	1519.77	1522.8	End of cable and marker at vent.	11706
9/13/13 15:51:35	45.92628	-129.97903	342.5	3.21	1519.65	1522.9	HIGHLIGHTS on.	11707
9/13/13 15:52:33	45.92634	-129.97908	347.8	22.75	1499.27	1522	RAS at El Gordo Mkr151.	11709
9/13/13 15:52:57	45.92646	-129.97914	344.2	18.53	1502.6	1521.1	HIGHLIGHTS off.	11710
9/13/13 15:57:59	45.92707	-129.97958	347.37	4.79	1505.91	1510.7	Flying over large structure.	11718
9/13/13 15:58:11	45.92710	-129.97960	349.43	1.7	1509.5	1511.2	Pillows again.	11720
9/13/13 15:59:24	45.92741	-129.97976	347.96	4.5	1512.95	1517.5	Big pillows and some tube forms. Big tube.	11722
9/13/13 16:01:35	45.92782	-129.97994	347.23	6.29	1510.9	1517.2	Flew over a fissure of some other drop-off seen on the sonar.	11727
9/13/13 16:02:32	45.92796	-129.98001	349.24	4.19	1513.45	1517.6	Flatter pillow flow with large structure ahead in sonar.	11730
9/13/13 16:04:03	45.92824	-129.98020	346.38	2.79	1514.69	1517.5	Collapsed features.	11736
9/13/13 16:05:30	45.92857	-129.98046	348.75	3.21	1514.28	1517.5	Large area of collapse structures with some pillars.	11743
9/13/13 16:05:57	45.92865	-129.98048	349.98	8.43	1508.98	1517.4	Climbing pillow mound/ridge.	11744
9/13/13 16:06:47	45.92886	-129.98056	349.52	6.45	1502.41	1508.9	Over mound in bathymetry map.	11748
9/13/13 16:07:59	45.92908	-129.98065	347.37	10.76	1508.16	1518.9	Other side of wall.	11750
9/13/13 16:08:19	45.92911	-129.98068	347.31	10.91	1504.06	1515	Sheared off pillows.	11755
9/13/13 16:09:08	45.92925	-129.98073	347.57	5.26	1495.6	1500.9	Small crack.	11759
9/13/13 16:09:32	45.92933	-129.98078	349.3	4.38	1494.47	1498.9	Going downhill on north side of this mound.	11761
9/13/13 16:11:00	45.92958	-129.98090	348.73	5.46	1508.98	1514.4	Starting to flatten out.	11763
9/13/13 16:11:36	45.92975	-129.98097	349.3	3.65	1511.94	1515.6	Jumbled flow on other side.	11765
9/13/13 16:12:03	45.92990	-129.98104	349.67	3.58	1510.56	1514.1	Sheets and jumble.	11767
9/13/13 16:12:39	45.93001	-129.98107	349.38	3.6	1511	1514.6	Sea cucumbers.	11771
9/13/13 16:14:18	45.93036	-129.98122	347.91	2.7	1513.83	1516.5	Exposed pillow skins and drain out.	11779
9/13/13 16:14:49	45.93046	-129.98126	347.17	1.98	1514.91	1516.9	Exposed collapse with pillars.	11781
9/13/13 16:15:49	45.93055	-129.98130	348.06	1.91	1514.72	1516.6	Coming over larger ridge of collapse.	11787
9/13/13 16:15:59	45.93059	-129.98132	347.68	1.76	1514.97	1516.7	Big pillars.	11789
9/13/13 16:19:28	45.93133	-129.98168	348.11	2.19	1516.48	1518.7	Jumbled flow and cucumber..	11809
9/13/13 16:20:42	45.93161	-129.98180	348.68	1.51	1520.09	1521.6	Sheet flow.	11813
9/13/13 16:20:53	45.93163	-129.98179	350.34	0.74	1520.25	1521	Pressure ridge.	11814
9/13/13 16:22:09	45.93181	-129.98197	347.17	1.18	1519.93	1521.1	Swirl.	11820
9/13/13 16:23:10	45.93190	-129.98208	347.93	5.45	1514.31	1519.8	Pillar.	11825
9/13/13 16:23:53	45.93207	-129.98215	347.8	4.55	1514.5	1519.1	Lots of pillars and collapse.	11830

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9/13/13 16:24:49	45.93225	-129.98221	349.48	3.68	1515.57	1519.3	Large area of pillars-spectacular!	11838
9/13/13 16:26:41	45.93240	-129.98228	25.59	3.26	1514.08	1517.3	Ship is 25m from the next benchmark.	11847
9/13/13 16:28:39	45.93273	-129.98201	32.4	3.98	1514.37	1518.4	Pillow flow.	11854
9/13/13 16:29:05	45.93280	-129.98197	18.89	3.43	1514.4	1517.8	Pillows surrounded by pillows.	11857
9/13/13 16:29:15	45.93283	-129.98197	19.61	2.88	1513.92	1516.8	Pillar surrounded by pillow flow.	11859
9/13/13 16:31:54	45.93305	-129.98207	341.51	3.34	1513.09	1516.4	Flying shrimp.	11864
9/13/13 16:32:05	45.93305	-129.98207	341.53	3.33	1513.11	1516.4	Pillow flow.	11865
9/13/13 16:33:29	45.93310	-129.98216	336.72	3.39	1512.74	1516.1	Fish.	11869
9/13/13 16:34:10	45.93311	-129.98218	339.56	1.64	1514.64	1516.3	Fat head sculpin.	11873
9/13/13 16:35:00	45.93312	-129.98219	342.43	2.31	1513.8	1516.1	Ship is almost in position over benchmark site.	11879
9/13/13 16:35:36	45.93318	-129.98212	350.54	4.89	1511.36	1516.3	Near Mkr33 vent and some anchor debris.	11882
9/13/13 16:35:52	45.93324	-129.98209	1.7	4.63	1511.38	1516	Venting (diffuse).	11884
9/13/13 16:36:41	45.93338	-129.98217	338.73	4.15	1512.04	1516.2	There is the benchmark and marker at AX-303.	11887
9/13/13 16:37:25	45.93345	-129.98217	223.46	2.96	1512.92	1515.9	AX-203 and AX-303 at Mkr 66 at the Mkr33 site area.	11890
9/13/13 16:39:13	45.93342	-129.98210	183.46	1.53	1514.19	1515.7	Retrieving device from basket.	11893
9/13/13 16:42:23	45.93341	-129.98210	183.4	1.74	1513.99	1515.7	Ship is not settled in this position-can't hold it here.	11897
9/13/13 16:43:27	45.93344	-129.98214	183.32	1.66	1514.04	1515.7	Putting pressure device back in basket.	11899
9/13/13 16:44:23	45.93345	-129.98220	184.84	3.74	1511.72	1515.5	Ship is over at Mkr33 vent site at Mkr 166 so going over to recover the MTR and deploy another one.	11901
9/13/13 16:45:00	45.93328	-129.98222	181.32	2.75	1512.96	1515.7	Heading to vent site.	11902
9/13/13 16:45:19	45.93324	-129.98225	182.46	3.5	1512.07	1515.6	There it is.	11904
9/13/13 16:46:07	45.93321	-129.98230	193.39	1.89	1513.71	1515.6	Mkr 166 and can see the MTR.	11905
9/13/13 16:46:33	45.93321	-129.98228	204.25	1.33	1514.64	1516	Some old anchors and pull pins.	11907
9/13/13 16:47:30	45.93321	-129.98228	207.61	0.74	1515.57	1516.3	Swinging out port biobox.	11910
9/13/13 16:47:51	45.93321	-129.98228	207.58	0.74	1515.53	1516.3	Grabbing the MTR.	11911
9/13/13 16:48:04	45.93321	-129.98229	207.58	0.74	1515.51	1516.3	Crusty MTR with some bio growth.	11912
9/13/13 16:49:35	45.93320	-129.98230	205.18	0.74	1515.51	1516.3	Grabbing MTR3028 from biobox.	11916
9/13/13 16:49:40	45.93320	-129.98230	205.18	0.74	1515.47	1516.2	Each arm has an MTR.	11917
9/13/13 16:50:19	45.93320	-129.98229	204.48	0.74	1515.47	1516.2	**DEPLOY:** Placing **MTR3028** in the diffuse flow.	11920
9/13/13 16:51:44	45.93321	-129.98238	267.86	7.81	1508.06	1515.9	**RECOVER:** Looks like the MTR3028 is in the same place as **MTR 4095** that was just taken out (but is still in the STBD arm).	11925
9/13/13 16:52:03	45.93319	-129.98253	263.85	5.59	1509.52	1515.1	Driving over to the benchmark.	11926
9/13/13 16:53:30	45.93313	-129.98295	258.7	2.39	1512.55	1514.9	Ship has moved far west of the site.	11929
9/13/13 16:54:29	45.93313	-129.98296	258.86	2.41	1512.49	1514.9	MTR4095 was put in the biobox as we pulled away-not in the stbd arm.	11931

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9/13/13 16:58:15	45.93310	-129.98298	258.77	2.48	1512.49	1515	Wind is 2kts.	11936
9/13/13 17:00:01	45.93308	-129.98299	258.69	2.49	1512.51	1515	Waiting for the ship.	11939
9/13/13 17:00:40	45.93308	-129.98301	258.79	2.46	1512.46	1514.9	Needless to say but we did not drive over to the benchmark. We are west waiting for the ship to come back to the site.	11941
9/13/13 17:02:58	45.93313	-129.98301	258.71	2.51	1512.43	1514.9	Ship is changing heading.	11944
9/13/13 17:09:38	45.93312	-129.98293	258.67	2.29	1512.43	1514.7	Ship is making eastward progress.	11952
9/13/13 17:10:13	45.93311	-129.98287	89.2	2.01	1512.79	1514.8	Jason is heading over to the site.	11954
9/13/13 17:10:22	45.93311	-129.98281	83.17	2.14	1512.76	1514.9	Pillow flows.	11955
9/13/13 17:10:44	45.93310	-129.98265	84.9	2.06	1513.05	1515.1	Diffuse venting.	11956
9/13/13 17:11:06	45.93309	-129.98251	82.74	1.66	1513.65	1515.3	Some old weights.	11958
9/13/13 17:11:38	45.93312	-129.98242	83.94	1.31	1513.86	1515.2	There is Mkr166 at Mkr33 site.	11961
9/13/13 17:11:45	45.93312	-129.98239	83.77	1.83	1513.77	1515.6	Taking a peak at the mtrs.	11962
9/13/13 17:12:09	45.93313	-129.98236	82.05	0.93	1514.78	1515.7	This is MTR3028.	11966
9/13/13 17:12:34	45.93314	-129.98236	74.72	0.98	1514.85	1515.8	Can see shimmering water at base of MTR.	11970
9/13/13 17:12:51	45.93315	-129.98235	64.54	0.76	1514.94	1515.7	It is down in the hole where the other MTR is.	11972
9/13/13 17:15:12	45.93315	-129.98227	65.37	0.74	1515.31	1516.1	Switched to brow cam frame grab.	11992
9/13/13 17:15:21	45.93315	-129.98227	65.37	0.74	1515.34	1516.1	HIGHLIGHTS: Switch HD_Framegrabber input from SciCam to BrowCam.	11993
9/13/13 17:15:24	45.93315	-129.98227	65.37	0.74	1515.28	1516	HIGHLIGHTS: Switch HD_framegrabber input from BrowCam to SciCam.	11994
9/13/13 17:15:51	45.93314	-129.98227	65.37	0.74	1515.3	1516	Taking pictures while switching was going on-late on the log entry.	11995
9/13/13 17:16:21	45.93318	-129.98221	36.71	3.19	1512.58	1515.8	Moving Jason toward the benchmark area again.	11997
9/13/13 17:16:42	45.93322	-129.98219	3.3	2.88	1512.54	1515.4	Ship has moved east and stern is about 25m to the SE of the benchmark.	11998
9/13/13 17:17:37	45.93325	-129.98222	2.72	2.4	1513.04	1515.4	There is the benchmark.	12000
9/13/13 17:19:34	45.93339	-129.98213	296.01	2.98	1512.75	1515.7	Need to turn 180deg for the pressure device placement.	12004
9/13/13 17:20:32	45.93341	-129.98219	183.5	2.68	1512.66	1515.3	Lining up in front of the benchmark.	12006
9/13/13 17:21:05	45.93341	-129.98220	183.63	2.59	1512.7	1515.3	Picking up the device.	12007
9/13/13 17:21:21	45.93341	-129.98221	183.71	2.64	1512.69	1515.3	Going to measure AX-303 first.	12009
9/13/13 17:23:24	45.93340	-129.98220	183.34	0.74	1514.87	1515.6	Placing device on benchmark AX-303.	12013
9/13/13 17:23:59	45.93340	-129.98220	183.29	0.74	1515.04	1515.8	Device looks good.	12015
9/13/13 17:24:21	45.93341	-129.98220	183.26	0.74	1514.96	1515.7	**PRESSURE: Start AX-303.**	12017
9/13/13 17:24:38	45.93341	-129.98220	183.26	0.74	1514.97	1515.7	We made it here! Taking measurement.	12018
9/13/13 17:25:01	45.93341	-129.98221	183.25	0.74	1515.01	1515.8	Ship is heading SW-want to stop and go back to NE while measuring.	12019
9/13/13 17:27:46	45.93340	-129.98219	183.18	0.74	1514.88	1515.6	Jason is starting to get pulled.	12023

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9/13/13 17:27:53	45.93340	-129.98219	183.17	0.74	1514.89	1515.6	Might need to grab it and go.	12024
9/13/13 17:27:59	45.93340	-129.98219	183.17	0.74	1514.92	1515.7	Claw is ready to grab.	12025
9/13/13 17:28:57	45.93338	-129.98221	183.19	6.35	1508.75	1515.1	***PRESSURE: End Had to grab the device after only a few minutes of measuring. Ship and Medea are moving the wrong way and near end of tether.***	12027
9/13/13 17:31:14	45.93299	-129.98240	316.09	8.89	1506.69	1515.6	Putting device back into the basket as the ship is still not able to come back to benchmark.	12031
9/13/13 17:31:56	45.93299	-129.98239	316.88	3.94	1506.84	1510.8	In the basket.	12032
9/13/13 17:35:04	45.93306	-129.98261	317.05	2.55	1512.52	1515.1	Not making much progress with the ship.	12036
9/13/13 17:36:22	45.93305	-129.98259	317.3	2.68	1512.4	1515.1	NAV: Doppler Reset	12039
9/13/13 17:38:59	45.93293	-129.98265	59.89	2.4	1512.43	1514.8	Waiting for ship to come back east. We are about 30m SW of Mkr33 site at Mkr166.	12042
9/13/13 17:39:55	45.93295	-129.98257	60.75	2.41	1512.69	1515.1	Moving Jason over to the Mkr33 site while waiting for the ship.	12044
9/13/13 17:41:10	45.93291	-129.98263	60.02	2.66	1512.45	1515.1	Old weight.	12048
9/13/13 17:41:51	45.93289	-129.98271	59.87	2.6	1512.4	1515	Some kind of weight used as a jack on an old temperature device (from Corey).	12049
9/13/13 17:42:58	45.93287	-129.98284	59.78	2.83	1512.37	1515.2	Ship is making progress to the east.	12051
9/13/13 17:44:21	45.93297	-129.98297	55.09	2.43	1512.18	1514.6	Didn't make it to Mkr33 site at all.	12054
9/13/13 17:48:47	45.93317	-129.98288	61.51	2.13	1512.54	1514.7	Moving Jason once again.	12059
9/13/13 17:49:14	45.93326	-129.98285	59.3	2.23	1512.72	1515	Staining.	12062
9/13/13 17:50:49	45.93338	-129.98249	71.05	2.71	1512.25	1515	Jason is about 20m from benchmark.	12065
9/13/13 17:51:02	45.93338	-129.98243	73.34	2.06	1512.73	1514.8	There it is.	12066
9/13/13 17:51:19	45.93340	-129.98238	71.7	1.6	1513.49	1515.1	Benchmarks in sight.	12068
9/13/13 17:52:11	45.93340	-129.98229	34.07	2.03	1513.1	1515.1	Heading for AX-303 first (again).	12070
9/13/13 17:54:13	45.93346	-129.98226	187.09	4.04	1511.24	1515.3	Basket out to grab pressure device.	12073
9/13/13 17:55:10	45.93347	-129.98224	187.18	4.34	1511.22	1515.6	Have device in arm.	12075
9/13/13 17:56:23	45.93348	-129.98223	187.59	2.85	1512.81	1515.7	Ready to land this on the benchmark-all is in position.	12077
9/13/13 17:58:34	45.93343	-129.98226	186.16	0.74	1515.05	1515.8	Placing device on AX-303.	12080
9/13/13 18:01:53	45.93345	-129.98219	186.19	0.76	1515.06	1515.8	Device in position.	12086
9/13/13 18:02:54	45.93345	-129.98222	186.25	0.76	1515.11	1515.9	**PRESSURE: Start AX-303.**	12089
9/13/13 18:22:46	45.93342	-129.98223	186.1	0.74	1514.95	1515.7	PRESSURE: End	12110
9/13/13 18:23:23	45.93343	-129.98220	185.87	0.74	1514.88	1515.6	All done with AX-303. Next up is AX-203 adjacent to this one.	12112
9/13/13 18:23:56	45.93345	-129.98220	185.75	2.45	1513.15	1515.6	Device off benchmark and just in arm to move.	12113
9/13/13 18:26:14	45.93343	-129.98219	333.78	0.74	1514.87	1515.6	Approaching AX-203.	12117
9/13/13 18:27:59	45.93343	-129.98221	337.94	0.76	1515.06	1515.8	On the benchmark.	12119

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9/13/13 18:28:10	45.93343	-129.98222	337.94	0.76	1514.98	1515.7	Good placement.	12122
9/13/13 18:28:59	45.93343	-129.98224	337.97	0.76	1515	1515.8	**PRESSURE: Start AX-203.**	12123
9/13/13 18:30:24	45.93344	-129.98227	337.97	0.76	1514.96	1515.7	Measuring at AX-203 (old metal benchmark) at the Mkr33 site.	12126
9/13/13 18:44:04	45.93343	-129.98231	338.01	1	1514.87	1515.9	Watch change.	12140
9/13/13 18:48:43	45.93344	-129.98223	338.01	1	1514.82	1515.8	PRESSURE: End	12146
9/13/13 18:49:51	45.93342	-129.98222	338.01	0.76	1514.86	1515.6	PRESSURE: End	12148
9/13/13 18:51:02	45.93336	-129.98222	337.4	3.48	1511.68	1515.2	Leaving the bottom and beginning transit to AX-309	12150
9/13/13 18:51:57	45.93334	-129.98221	223.16	3.74	1511.54	1515.3	943 meters at 56 deg bearing.	12152
9/13/13 20:00:26	45.93852	-129.97198	240.76	2.13	1524.2	1526.3	Landing on the bottom and picking up the pressure recorder.	12168
9/13/13 20:00:50	45.93851	-129.97199	240.88	0.75	1525.63	1526.4	Moving into position at benchmark AX-309.	12169
9/13/13 20:05:53	45.93849	-129.97197	240.44	0.75	1526.11	1526.9	**PRESSURE: Start AX-309.**	12179
9/13/13 20:25:09	45.93847	-129.97204	240.42	0.74	1526.07	1526.8	PRESSURE: End	12199
9/13/13 20:25:31	45.93848	-129.97204	240.42	0.74	1526.02	1526.8	Stowing the pressure recorder.	12201
9/13/13 20:32:15	45.93854	-129.97246	265.29	2.83	1523.74	1526.6	Moving off bottom and beginning transit to Marker N3 for fluid sampling.	12217
9/13/13 21:24:56	45.94313	-129.98095	102.8	69.5	1444.97	1514.5	Powering beast up.	12221
9/13/13 21:25:08	45.94314	-129.98100	103.04	69.5	1444.98	1514.5	We are almost at the target.	12222
9/13/13 21:35:16	45.94363	-129.98410	274.63	5.73	1513.1	1518.8	After sitting for 24 hrs.; O2= 0.8 mL/L. Pumping brought it to 0.696 mL/L and pH voltage 3.653.	12227
9/13/13 21:35:43	45.94364	-129.98412	274.4	1.55	1518	1519.6	Bottom is in sight.	12228
9/13/13 21:36:20	45.94365	-129.98422	275.19	1.81	1518.42	1520.2	Seafloor is mainly lobate lava with light sediment accumulation in the cracks.	12230
9/13/13 21:36:51	45.94365	-129.98427	275.16	1.7	1518.14	1519.8	No macrofauna present yet.	12231
9/13/13 21:38:25	45.94372	-129.98457	269.87	1.74	1519.09	1520.8	Lots of particulates in the water column here.	12234
9/13/13 21:39:20	45.94373	-129.98466	268.16	1.38	1519.11	1520.5	Arrived at a collapse area.	12236
9/13/13 21:40:19	45.94372	-129.98482	267.96	2.28	1518.27	1520.6	Still at least 30m from target. No signs of venting yet.	12238
9/13/13 21:40:50	45.94370	-129.98491	267.06	3.03	1519.25	1522.3	White mat visible in the distance.	12241
9/13/13 21:41:37	45.94368	-129.98497	270.11	4.81	1518.21	1523	Large collapse features.	12244
9/13/13 21:42:13	45.94367	-129.98502	270.22	1.96	1519.46	1521.4	We can see markers in the distance. Looks like an MTR float.	12246
9/13/13 21:42:53	45.94366	-129.98505	273.4	1.18	1520.02	1521.2	Seafloor is now covered in white and greenish brown bacterial mat.	12247
9/13/13 21:44:27	45.94365	-129.98504	269.3	0.74	1520.76	1521.5	We will place an MTR and marker here.	12250
9/13/13 21:46:41	45.94369	-129.98511	270.01	0.74	1520.73	1521.5	**DEPLOY: Marker 135.** Placing marker 135 on top of a large pillow.	12253

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 21:48:06	45.94372	-129.98513	268.35	0.74	1520.7	1521.4	Heading 269 deg; marker and vent are directly in front of us.	12255
9/13/13 21:49:33	45.94372	-129.98512	269.28	0.74	1520.64	1521.4	**RECOVER:** MTR temp probe Picked up **MTR 3332** and put in port biobox.	12258
9/13/13 21:51:54	45.94370	-129.98517	269.45	0.74	1520.71	1521.5	Placing beast probe in the flow; which is fairly diffuse coming out of a wide depression/crack.	12262
9/13/13 21:54:01	45.94369	-129.98519	268.99	0.74	1520.9	1521.6	Trying to find the highest temp to place the MTR.	12267
9/13/13 21:57:32	45.94370	-129.98515	268.7	0.81	1520.77	1521.6	Some white floc coming out of the vent; the crack walls are covered in thick white mat as well.	12272
9/13/13 22:00:34	45.94372	-129.98513	268.83	0.75	1520.86	1521.6	Tmax= 19.8C so far.	12276
9/13/13 22:02:59	45.94372	-129.98511	269.06	0.74	1520.73	1521.5	Tmax=20C; O2= 0.133 mL/L; pH voltage= 2.766.	12279
9/13/13 22:04:22	45.94374	-129.98508	269.02	0.74	1520.69	1521.4	**SAMPLE: HFS Starting J730-HFS-05** unfiltered bag 19.	12282
9/13/13 22:06:18	45.94370	-129.98512	269.15	0.74	1520.71	1521.5	HIGHLIGHTS: Switch HD_Framegrabber input from SciCam to BrowCam. Depth1521	12286
9/13/13 22:06:24	45.94370	-129.98512	269.16	0.74	1520.72	1521.5	HIGHLIGHTS on.	12287
9/13/13 22:06:39	45.94369	-129.98513	269.16	0.74	1520.71	1521.5	HIGHLIGHTS off.	12290
9/13/13 22:08:02	45.94370	-129.98515	269.19	0.74	1520.69	1521.4	SAMPLE: HFS Stop J730-HFS-05 unfiltered bag 19. Tmax= 19.6C Tavg 19.1C T2= 11C Vol=550.	12293
9/13/13 22:08:46	45.94372	-129.98516	269.2	0.74	1520.71	1521.5	**SAMPLE: HFS Start J730-HFS-06** filtered bag 20.	12295
9/13/13 22:09:57	45.94374	-129.98518	269.23	0.74	1520.73	1521.5	Location for all N3 samples is 129 59.1107W 45 56.6218N. Depth 1521.5 m; heading 269 deg.	12297
9/13/13 22:11:22	45.94372	-129.98517	269.26	0.74	1520.77	1521.5	SAMPLE: HFS Stop J730-HFS-06 filtered bag 20. Tmax= 18.9 Tavg= 17.5C T2= 10C Vol= 558mL.	12300
9/13/13 22:13:14	45.94373	-129.98517	269.3	0.74	1520.78	1521.5	**SAMPLE: GTHFS Starting J730-GTHFS-07** purple-10. Tmax=19.2C	12303
9/13/13 22:14:31	45.94372	-129.98518	269.28	0.74	1520.71	1521.5	Temp has dropped slightly; we will move a few inches to the left where it looks like the flow is stronger.	12306
9/13/13 22:17:08	45.94369	-129.98518	269.21	0.74	1520.81	1521.6	Still poking around to find higher temp water. Around 17C here.	12311
9/13/13 22:18:53	45.94369	-129.98519	269.03	0.74	1520.78	1521.5	**SAMPLE: HFS Start J730-HFS-08** unfiltered bag 21.	12314
9/13/13 22:21:28	45.94375	-129.98515	268.17	0.74	1521.96	1522.7	SAMPLE: HFS Stop J730-HFS-08 unfiltered bag 21. Tmax= 19.8C Tavg= 19.7C T2= 11C Vol= 552mL.	12319
9/13/13 22:23:07	45.94373	-129.98519	268.28	0.74	1521.28	1522	**SAMPLE: Start J730-HFS-09** large volume bag (LVB) position 1.	12321

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 22:28:43	45.94371	-129.98523	268.64	0.74	1520.7	1521.4	HIGHLIGHTS: Switch HD_framegrabber input from BrowCam to SciCam.	12330
9/13/13 22:29:25	45.94372	-129.98528	268.67	0.74	1520.7	1521.4	Looking around for scaleworms that only colonize new eruption sites.	12332
9/13/13 22:30:28	45.94372	-129.98534	268.79	0.74	1520.71	1521.5	Lots of other scaleworms are present; but not the post-eruptive species.	12334
9/13/13 22:32:30	45.94373	-129.98528	268.71	0.74	1520.71	1521.5	HIGHLIGHTS on.	12348
9/13/13 22:35:51	45.94373	-129.98519	268.55	0.74	1520.75	1521.5	Lots of filamentous white mat and light brown aggregations that look like mucopolysaccharide. Might be the remainder of the eruptive mat seen here previously.	12357
9/13/13 22:37:56	45.94373	-129.98521	268.19	0.74	1520.77	1521.5	Good amount of venting coming from breaks in the pillows all around this area.	12364
9/13/13 22:40:32	45.94373	-129.98523	268.25	0.74	1520.82	1521.6	SAMPLE: HFS Stop J730-HFS-09 large volume bag position 1. Tmax= 20.1C Tavg= 19.6C T2= 11C Vol= 4002mL.	12369
9/13/13 22:41:29	45.94376	-129.98521	268.25	0.74	1520.91	1521.7	**SAMPLE: HFS Start J730-HFS-10** unfiltered piston 07.	12371
9/13/13 22:45:51	45.94374	-129.98512	268.17	0.74	1520.82	1521.6	SAMPLE: HFS Stop J730-HFS-10 unfiltered piston 07. Tmax= 20.1C Tavg= 19.5C T2= 11C Vol= 653mL.	12377
9/13/13 22:46:14	45.94374	-129.98512	268.1	0.74	1520.82	1521.6	**SAMPLE: Start J730-HFS-11** RNA filter 10.	12379
9/13/13 22:49:31	45.94370	-129.98517	268.37	0.74	1520.9	1521.6	SAMPLE: HFS J730-HFS-11 cont. Sitting here sampling at Mkr N3 Vent with Marker-135 in the background (deployed earlier on this dive).	12386
9/13/13 22:50:27	45.94369	-129.98519	268.29	0.74	1520.87	1521.6	This vent used to be a huge area of blue mat. Now there is a brown mat (that looks a lot like the eruptive mat) covering the new lava.	12390
9/13/13 22:50:42	45.94369	-129.98520	268.27	0.74	1520.88	1521.6	No sign of the blue mat of old anywhere we see.	12391
9/13/13 22:53:08	45.94364	-129.98519	268.26	0.75	1520.96	1521.7	The MTR is not in place here yet. It's hanging in the port arm. Will deploy it after sampling.	12394
9/13/13 22:53:25	45.94364	-129.98519	268.47	0.74	1520.91	1521.7	HIGHLIGHTS off. The highlights were on for 20 minutes.	12396
9/13/13 22:53:40	45.94365	-129.98519	268.33	0.74	1520.95	1521.7	There was a watch change in there. Forgot about the highlights.	12397
9/13/13 23:01:10	45.94376	-129.98513	268.92	0.74	1521.01	1521.8	J730-HFS-11 cont. Stop 230020. Vol=3003mL. Tmax=20.1 Tavg=19.7 T2=10.7.	12408
9/13/13 23:02:16	45.94377	-129.98516	269.46	0.74	1520.95	1521.7	**SAMPLE: HFS J730-HFS-12** RNA filter #11. Start 230210.	12410

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 23:02:48	45.94377	-129.98518	269.39	0.74	1520.96	1521.7	The pump didn't go for some reason. Going to try to wake it up.	12411
9/13/13 23:03:21	45.94377	-129.98521	269.55	0.74	1520.93	1521.7	Restarted at 1200252. Sample J730-HFS-12 RNA filter #11.	12413
9/13/13 23:05:52	45.94376	-129.98528	269.11	0.74	1521.07	1521.8	Bill has confirmed that we are looking at the eruptive mat; but it has been all worked over by organisms.	12418
9/13/13 23:07:33	45.94376	-129.98527	268.6	0.74	1520.99	1521.7	Vent fish just swam by in the background.	12422
9/13/13 23:18:03	45.94375	-129.98513	268.23	0.74	1521.12	1521.9	J730-HFS-12 cont. Sampling site: Good diffuse flow coming up between pillows in white mat.	12434
9/13/13 23:19:40	45.94374	-129.98515	268.53	0.74	1521.09	1521.8	J730-HFS-12 cont. 231855 stop. Vol=3001 mL. Tmax=20.1 Tavg-19.6 T2=10.8.	12437
9/13/13 23:20:23	45.94375	-129.98516	268.55	0.74	1521.11	1521.9	Going to take another oxygen reading here at this sampling site at N3.	12439
9/13/13 23:21:21	45.94377	-129.98517	268.09	0.74	1521.15	1521.9	Pumping for O2 measurement. Samples 5 - 12 are all in the same spot (more or less).	12441
9/13/13 23:22:03	45.94378	-129.98518	268.21	0.74	1521.13	1521.9	Oxygen reading is 0.121 mL/L. pH= 4.379 volts. T=19.9.	12442
9/13/13 23:23:13	45.94379	-129.98520	268.55	0.74	1521.11	1521.9	Ready to remove the wand and store it.	12445
9/13/13 23:24:52	45.94376	-129.98524	269.51	0.74	1521.14	1521.9	Grabbing the beast wand. Holstering it.	12447
9/13/13 23:27:03	45.94375	-129.98520	268.55	0.74	1521.14	1521.9	**DEPLOY: MTR 4128** at Marker N3 vent. Placed in the same spot as the one that was recovered. Scaleworms in that hole.	12450
9/13/13 23:27:46	45.94375	-129.98517	268.63	0.74	1521.11	1521.9	There are 2 species of scaleworms: blood red on white mat. Those on the brown mat are pink and bigger with big scales (and a dot in the middle of their back).	12452
9/13/13 23:28:36	45.94376	-129.98516	267.58	0.74	1521.54	1522.3	Next we are off to Trevi vent or benchmark. We prefer to do the benchmark.	12454
9/13/13 23:28:52	45.94376	-129.98516	268.25	0.74	1521.39	1522.1	Jason is pulling away.	12455
9/13/13 23:29:42	45.94377	-129.98518	267.74	0.74	1521.22	1522	Jim wants to get an oxygen reading off the bottom and flush out the pump.	12457
9/13/13 23:30:29	45.94378	-129.98520	175.72	4.34	1517.28	1521.6	Oxygen reading 0.713 ml/L pH=4.633. T=2.5 (background - but still near the bottom).	12459
9/13/13 23:30:33	45.94378	-129.98519	127.27	5.65	1516.04	1521.7	Jason off bottom.	12460
9/13/13 23:32:00	45.94395	-129.98519	15.6	3.58	1517.98	1521.6	Traveling along the bottom right now. Over fresh lavas.	12462
9/13/13 23:33:09	45.94394	-129.98517	20.88	3.96	1518.11	1522.1	We're only going 300m to the Trevi benchmark.	12464
9/13/13 23:34:46	45.94404	-129.98527	21.08	3.06	1518.93	1522	Looking at some eruptive mat on this new lava.	12467

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/13/13 23:35:12	45.94411	-129.98527	20.87	3.18	1519.13	1522.3	Swapping out the navigation UPS (universal power system?).	12469
9/13/13 23:36:45	45.94421	-129.98529	21.25	2.34	1520.55	1522.9	Lots of thick red mat here.	12475
9/13/13 23:37:38	45.94424	-129.98526	21.64	2.35	1520.36	1522.7	Great hole in this lobate flow.	12483
9/13/13 23:37:50	45.94426	-129.98526	20.93	2.34	1520.28	1522.6	Still lots of mat on the flow up north.	12484
9/13/13 23:38:36	45.94433	-129.98522	22.52	3.03	1521.28	1524.3	The lava flow looks really different up here than down south. Really thick hydrothermal sediments here (just like after 1998).	12486
9/13/13 23:39:12	45.94437	-129.98519	21.25	1.81	1520.54	1522.4	Really thick hydrothermal sediments.	12489
9/13/13 23:40:28	45.94444	-129.98512	24	3.13	1519.1	1522.2	Fluffy thick yellowish/orangish hydrothermal mat.	12492
9/13/13 23:41:15	45.94451	-129.98502	24.41	2.96	1518.78	1521.7	Little rattail on the bottom	12496
9/13/13 23:44:23	45.94480	-129.98466	23.46	2.93	1519.8	1522.7	3+ meters off the seafloor.	12501
9/13/13 23:45:05	45.94487	-129.98455	21.84	1.89	1520.38	1522.3	Less sediment on the pillows here.	12502
9/13/13 23:45:09	45.94488	-129.98454	22.36	2.03	1520.39	1522.4	What happened??	12503
9/13/13 23:45:31	45.94492	-129.98450	21.92	2.48	1520.12	1522.6	We ought to be coming up on the edge of the 2011 lava in about 30 meters.	12505
9/13/13 23:47:00	45.94507	-129.98430	21.65	2.23	1520.43	1522.7	Still orangish/yellowish hydrothermal seds between the pillows - but decreasing dramatically.	12508
9/13/13 23:47:46	45.94514	-129.98419	21.9	2.05	1520.71	1522.8	Approaching the lava contact on the map underlay. Don't see it yet.	12510
9/13/13 23:48:57	45.94524	-129.98404	21.21	2.43	1520.68	1523.1	We're at the contact. Really close to the map boundary.	12516
9/13/13 23:49:39	45.94531	-129.98398	21.74	1.71	1520.42	1522.1	We're climbing up the remnants of the caldera wall. Striated. lavas here.	12520
9/13/13 23:50:03	45.94535	-129.98395	23.09	1.46	1520.69	1522.2	We're actually in a channel where lava was flowing down into the caldera.	12523
9/13/13 23:50:29	45.94541	-129.98393	21.94	2.06	1520.42	1522.5	Coming upon heavily sedimented seafloor. Can barely see the lava here.	12526
9/13/13 23:50:39	45.94542	-129.98393	22.26	2.29	1520.22	1522.5	Thick sediments.	12529
9/13/13 23:51:11	45.94549	-129.98391	21.5	2.26	1520.9	1523.2	Probably just super flat seafloor - and old thick sediments.	12531
9/13/13 23:52:23	45.94556	-129.98382	21.81	2.21	1520.5	1522.7	Less sediment again. This flow is flat - but ropey.	12534
9/13/13 23:53:21	45.94561	-129.98366	21.82	2.8	1519.91	1522.7	We're still in that channel feature.	12536
9/13/13 23:54:23	45.94570	-129.98352	22.11	2.7	1519.77	1522.5	Lineated sheet flow (not striated).	12539
9/13/13 23:55:27	45.94585	-129.98340	23.2	2.54	1519.42	1522	Back in the thick sediment going up this old channel.	12542

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9/13/13	23:57:24	45.94606	-129.98320	25.06	3.2	1518.01	1521.2	Moving up the channel. We're coming to a ridge in front of us on the sonar. Will take the western path.	12547
9/13/13	23:57:45	45.94608	-129.98315	21.34	2.96	1518.26	1521.2	The ridge is in front of us.	12550
9/13/13	23:58:46	45.94618	-129.98317	21.99	4.14	1516.96	1521.1	Traveling over this bulbous ridge. The benchmark is to our NW.	12554
9/13/13	23:58:55	45.94619	-129.98321	22.08	3.66	1517.46	1521.1	Jason is changing direction now.	12555
9/13/13	23:59:11	45.94623	-129.98326	23.8	3.34	1517.62	1521	The lava here looks like pavement with lots of sediment.	12559
9/13/13	23:59:33	45.94628	-129.98332	11.16	3.05	1518.05	1521.1	We're almost due east of Trevi vent now.	12560
9/14/13	00:01:04	45.94634	-129.98370	290.32	4.53	1514.21	1518.7	We're in the neighborhood of Trevi.	12565
9/14/13	00:01:22	45.94638	-129.98376	257.87	4.48	1513.85	1518.3	Trevi in the background.	12569
9/14/13	00:02:07	45.94644	-129.98383	298.49	2.59	1516.28	1518.9	There it is.	12570
9/14/13	00:02:36	45.94650	-129.98385	242.79	1.91	1517.55	1519.5	Approaching the marker and benchmarks at Trevi site.	12574
9/14/13	00:03:55	45.94647	-129.98388	247.14	1.53	1518.85	1520.4	Going to measure at the old metal benchmark first (Mkr 63).	12579
9/14/13	00:04:48	45.94645	-129.98386	246.88	0.78	1520.05	1520.8	This is the AX-202 benchmark.	12581
9/14/13	00:06:39	45.94642	-129.98380	247.25	0.96	1520.07	1521	Piece of lava that is missing-seems like the missing piece should be here to put back.	12585
9/14/13	00:06:57	45.94643	-129.98380	247.28	0.78	1520.07	1520.9	Some sponges were growing on the edge of the missing block.	12586
9/14/13	00:07:39	45.94644	-129.98381	247.54	0.79	1520.07	1520.9	Unstrapping and retrieving the device from the basket.	12588
9/14/13	00:09:30	45.94646	-129.98382	247.48	0.85	1520.06	1520.9	Cables are under the device-trying to twist to get them out of the way.	12591
9/14/13	00:10:03	45.94646	-129.98382	247.5	0.76	1520.1	1520.9	Device in place without wires.	12592
9/14/13	00:10:14	45.94646	-129.98382	247.5	0.78	1520.09	1520.9	**PRESSURE: Start AX-202.**	12594
9/14/13	00:10:46	45.94645	-129.98381	247.5	1	1520.09	1521.1	This is measurement on AX-202.	12595
9/14/13	00:11:05	45.94645	-129.98381	247.49	1.01	1520.09	1521.1	Arm is in position in case ship pulls Jason off site.	12596
9/14/13	00:27:32	45.94644	-129.98376	247.13	0.74	1520.1	1520.8	Ship has been holding steady at this site.	12615
9/14/13	00:30:21	45.94641	-129.98386	247.18	0.74	1520.14	1520.9	PRESSURE: End	12619
9/14/13	00:31:26	45.94639	-129.98388	243.43	0.74	1519.97	1520.7	Finished with the first measurement on the old benchmark AX-202. Next will move on to the new benchmark AX-3002--Trevi.	12622
9/14/13	00:31:38	45.94640	-129.98388	242.49	0.98	1519.46	1520.4	Positioning the ROV for the next measurement.	12623
9/14/13	00:33:53	45.94641	-129.98386	240.45	1.75	1520.12	1521.9	Placing the sensors on AX-302.	12626
9/14/13	00:34:05	45.94641	-129.98387	240.45	1.85	1520.15	1522	Tito is steadying the sensor.	12627

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9/14/13 00:34:51	45.94642	-129.98387	240.47	1.83	1520.16	1522	That's good says Scott.	12631
9/14/13 00:34:55	45.94642	-129.98387	240.47	1.83	1520.16	1522	**PRESSURE: Start AX-302.**	12632
9/14/13 00:35:22	45.94643	-129.98387	240.47	1.98	1520.16	1522.1	The sensor is just sitting there so happy.	12634
9/14/13 00:54:30	45.94645	-129.98373	240.77	88.91	1520.59	1609.5	PRESSURE: End	12652
9/14/13 00:55:17	45.94645	-129.98376	240.77	1.74	1520.53	1522.3	Removing the pressure sensor from the benchmark.	12654
9/14/13 00:56:19	45.94642	-129.98381	240.77	1.7	1520.46	1522.2	Stowing the sensors in the cradle.	12656
9/14/13 00:57:19	45.94639	-129.98385	240.77	1.69	1520.53	1522.2	Next task is fluid sampling at Trevi and Spanish Steps.	12658
9/14/13 01:01:11	45.94635	-129.98390	159.05	3.84	1516.89	1520.7	NAV: Doppler Reset	12664
9/14/13 01:03:14	45.94628	-129.98395	210.34	2.16	1516.98	1519.1	Trevi in sight.	12667
9/14/13 01:04:00	45.94625	-129.98397	210.02	0.81	1518.57	1519.4	Another white mound is ~5 m SE of Trevi. First want to recover HOBO out of Trevi.	12668
9/14/13 01:05:46	45.94622	-129.98394	210.05	0.74	1519.48	1520.2	**RECOVER: HOBO 104** temp probe Grabbing the hobo first. Recovering hobo 104.	12672
9/14/13 01:07:43	45.94626	-129.98385	243.07	0.74	1518.97	1519.7	Going to take a temperature measurement here first with the Jason probe.	12676
9/14/13 01:09:43	45.94630	-129.98376	271.1	0.85	1519.22	1520.1	Retrieving the Jason temp probe.	12679
9/14/13 01:10:19	45.94630	-129.98376	271.11	0.85	1519.22	1520.1	Placing the temp probe close to the vent orifice.	12682
9/14/13 01:11:00	45.94631	-129.98376	271.11	129.84	1519.22	1649.1	Jason temperature: 203C.	12685
9/14/13 01:11:32	45.94630	-129.98375	271.1	125	1519.22	1644.2	Temperature is rising: 220C.	12686
9/14/13 01:12:17	45.94629	-129.98372	271.09	130.19	1519.24	1649.4	There it went. The temp probe is now in the hole where the largest anhydrite was (which is actually pretty tiny).	12689
9/14/13 01:13:48	45.94624	-129.98371	271.15	176.04	1519.2	1695.2	Jason temp: 255C and rising. 257.9 C is the highest temp so far.	12690
9/14/13 01:15:17	45.94623	-129.98377	271.14	174.77	1519.2	1694	Moved the Jason temp probe again. Looks like 257.9 may be it. One more time: The hottest temp was 257.9 C.	12691
9/14/13 01:15:42	45.94624	-129.98379	271.13	1.03	1519.22	1520.3	Stowing the Jason temp probe.	12692
9/14/13 01:16:32	45.94625	-129.98381	271.12	1.03	1519.28	1520.3	Here comes the HFS wand.	12694
9/14/13 01:17:10	45.94624	-129.98382	271.12	108.58	1519.29	1627.9	Looks like a good spot right in the direct flow at this small anhydrite mound with intense flow.	12697
9/14/13 01:18:06	45.94623	-129.98381	271.11	135.51	1519.22	1654.7	SAMPLE: HFS J730-HFS-13 will be the next sample. Waiting for the temperature to rise.	12698
9/14/13 01:18:25	45.94623	-129.98380	271.11	106.7	1519.24	1625.9	Little sulfide worms (or palm worms) on this anhydrite.	12699

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 01:21:47	45.94630	-129.98361	271.1	54.64	1519.24	1573.9	SAMPLE: HFS J730-HFS-13 setting up. The pump gets hot and it stops. Location here is: -129.9837 45.94627. Z=1520m 129 59.0235' W 45 56.7759' N.	12701
9/14/13 01:22:58	45.94631	-129.98358	271.1	61.73	1519.27	1581	**SAMPLE: HFS J730-HFS-13** start Filtered piston #2. Started a minute or so ago.	12703
9/14/13 01:23:40	45.94632	-129.98356	271.1	118.2	1519.27	1637.5	J730-HFS-13 Start time is 0121. Stop 0123. Tmax=250.4 Tavg=250.0 T2=85. Vol=352mL.	12704
9/14/13 01:24:21	45.94634	-129.98355	271.1	176	1519.29	1695.3	**SAMPLE: HFS J730-HFS-14** Unfiltered piston #3. Start 0124.	12705
9/14/13 01:26:06	45.94634	-129.98361	271.1	180.52	1519.29	1699.8	J730-HFS-14 cont. Some palm worms and some scaleworms here.	12707
9/14/13 01:26:29	45.94633	-129.98362	271.1	180.52	1519.25	1699.8	J730-HFS-14 Stop 0126. Tmax=-250.2 Tavg=250 T2=85 Vol=352 mL.	12708
9/14/13 01:27:16	45.94631	-129.98366	271.1	113.25	1519.27	1632.5	**SAMPLE: HFS J730-HFS-15** Filtered piston #4. Start 0127.	12709
9/14/13 01:28:37	45.94628	-129.98371	271.11	123.29	1519.28	1642.6	J730-HFS-15 cont. These scaleworms are really red. Tiny little gray tubeworms around the edges.	12710
9/14/13 01:29:10	45.94627	-129.98373	271.11	166.39	1519.27	1685.7	J730-HFS-15 cont. stop 012847. Tmax=250.2 Tavg=249.9 T2=86. Vol=352mL.	12711
9/14/13 01:29:55	45.94626	-129.98376	271.12	185.5	1519.31	1704.8	**SAMPLE: GTHFS J730-GTHFS-16** Center red-9 T=250C. Tripped.	12712
9/14/13 01:31:39	45.94626	-129.98377	271.12	45.56	1519.31	1564.9	**SAMPLE: GTHFS J730-GTHFS-17** starboard white-17. Stopped 0131. T=249.	12716
9/14/13 01:31:53	45.94626	-129.98377	271.13	118.08	1519.32	1637.4	That's it for fluid sampling at this sight.	12717
9/14/13 01:32:49	45.94626	-129.98377	271.17	1.03	1519.33	1520.4	Retracting the HFS wand.	12718
9/14/13 01:32:58	45.94625	-129.98377	271.17	1.03	1519.33	1520.4	Stowing the wand in its holder.	12719
9/14/13 01:34:16	45.94624	-129.98378	276.06	0.76	1518.74	1519.5	NAV: Doppler Reset	12722
9/14/13 01:34:41	45.94621	-129.98376	55.59	2.68	1517.06	1519.7	Off the seafloor here and going to look at the white patch on the seafloor behind us.	12723
9/14/13 01:35:55	45.94621	-129.98372	57.42	36.42	1519.1	1555.5	HIGHLIGHTS on. Moving in on the white patch with tubeworms. It's a perfect little rock pile.	12732
9/14/13 01:38:00	45.94621	-129.98372	57.41	28.87	1519.14	1548	Little rock pile mound next to Trevi with lots of biota. Palm worms tubeworms; limpets; lots of flow.. Those look like sulfide worms. Looks like a small anhydrite spire.	12735
9/14/13 01:38:03	45.94620	-129.98372	57.4	29.19	1519.13	1548.3	HIGHLIGHTS off.	12736
9/14/13 01:38:29	45.94619	-129.98371	106.52	2.69	1516.55	1519.2	Moving over to Spanish Steps next.	12740

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 01:40:25	45.94611	-129.98369	136.51	2.01	1517.65	1519.7	Are we at Spanish Steps? This is it. There is a marker here. Can't see the number.	12749
9/14/13 01:41:08	45.94610	-129.98370	38.58	1.96	1517.84	1519.8	The marker is pretty fuzzy.	12752
9/14/13 01:41:20	45.94611	-129.98369	30.94	1.48	1517.99	1519.5	Beautiful blue mat on the side of this mound.	12756
9/14/13 01:42:21	45.94612	-129.98370	58.62	1.78	1517.94	1519.7	Dense biota here.	12761
9/14/13 01:42:36	45.94611	-129.98370	58.43	1.76	1517.97	1519.7	Lasers on. Where are they?	12762
9/14/13 01:43:11	45.94610	-129.98369	58.73	1.76	1517.94	1519.7	Really healthy tubeworms near the bottom to the left of the blue mat.	12767
9/14/13 01:44:02	45.94609	-129.98365	58.23	1.79	1517.93	1519.7	Looking for the best flow.	12771
9/14/13 01:45:01	45.94606	-129.98362	56.71	1.86	1517.84	1519.7	This is a beautiful little mound of dense biota and good flow.	12776
9/14/13 01:45:11	45.94606	-129.98362	56.63	1.83	1517.87	1519.7	Have the wand out and checking the temperature.	12778
9/14/13 01:46:10	45.94605	-129.98364	57.02	1.84	1517.88	1519.7	Moving the wand around a bit to get a higher temp. The last one was only 6 degrees.	12784
9/14/13 01:47:10	45.94606	-129.98368	57.19	1.85	1517.87	1519.7	In a crevasse..... moving the wand again. Trying to find a good flow area.	12786
9/14/13 01:49:22	45.94616	-129.98386	56.67	1.8	1518	1519.8	Moving the wand again. Right into the palm worm clump.	12790
9/14/13 01:51:32	45.94607	-129.98388	56.45	1.8	1517.93	1519.7	Going to try in the tubeworm bush.	12793
9/14/13 01:54:48	45.94602	-129.98396	56.98	1.84	1517.87	1519.7	**SAMPLE: HFS J730-HFS-18** Filtered piston #8. In tubeworm bush. Start 0154.	12798
9/14/13 01:55:12	45.94602	-129.98398	57.66	1.81	1517.87	1519.7	NAV: Doppler Reset	12800
9/14/13 01:56:23	45.94602	-129.98399	57.58	1.81	1517.92	1519.7	J730-HFS-18 cont. Must be Mkr-155 there all covered with mat. Z=1529m Hdg=56 deg.	12802
9/14/13 01:58:05	45.94602	-129.98392	57.36	1.83	1517.93	1519.8	J730-HFS-18 This position is 25m SW of the old position. 129 59.0161 45 56.7656. CORRECTED LAT/LONG: 129 59.0191 45 56.7651	12804
9/14/13 01:58:41	45.94603	-129.98389	57.38	1.8	1517.93	1519.7	J730-HFS-18 cont. Tmax=20.0 Tavg=17.8 Vol=700 mL T2=10.	12806
9/14/13 01:59:59	45.94606	-129.98381	56.96	1.81	1517.88	1519.7	**SAMPLE: HFS J730-HFS-19** Unfiltered piston #9. Start ~015830. Same position. THAT POSITION IS WAY OFF FROM THE UNDERLAY. ABOUT 20 METERS SW OF OUR NAV TARGET.	12808
9/14/13 02:02:34	45.94610	-129.98369	56.75	1.8	1517.79	1519.6	J730-HFS-19 cont. POSITION CORRECTION. PUT IT BACK WHERE THE MARKER IS.	12812

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 02:03:24	45.94608	-129.98371	56.78	1.81	1517.81	1519.6	J730-HFS-19 cont. Tmax=24.5 Tavg=2.6 T2=12. Vol=720 mL.	12814
9/14/13 02:04:36	45.94606	-129.98377	56.5	1.83	1517.79	1519.6	Next we will do an oxygen sensor reading.	12816
9/14/13 02:05:15	45.94606	-129.98379	56.59	1.83	1517.78	1519.6	CORRECTED LAT/LONG: 129 59.0191 45 56.7651	12818
9/14/13 02:06:03	45.94606	-129.98379	56.38	1.81	1517.81	1519.6	Oxygen = 0.393 mL/L. pH voltage =3.016.	12819
9/14/13 02:07:29	45.94603	-129.98380	57.62	1.8	1517.82	1519.6	**SAMPLE: HFS J730-HFS-20**. RNA filter #15. Here in the same position as the previous samples.	12822
9/14/13 02:08:42	45.94601	-129.98383	55.65	1.8	1517.8	1519.6	J730-HFS-20 cont. Zoomed in on this healthy tubeworm bush. Nice red plumes. Some palm worms in there as well as limpets; blue mat to the right of bush.	12829
9/14/13 02:10:23	45.94602	-129.98380	55.73	1.8	1517.8	1519.6	HIGHLIGHTS on. Pycnagonids in the blue mat. Scaleworms at well.	12834
9/14/13 02:10:37	45.94603	-129.98379	55.78	1.8	1517.81	1519.6	Highlights of this tubeworm bush.	12835
9/14/13 02:11:33	45.94605	-129.98378	55.33	1.83	1517.82	1519.7	HIGHLIGHTS off. J730-HFS-20 cont.	12840
9/14/13 02:17:21	45.94604	-129.98376	55.55	1.81	1517.82	1519.6	HIGHLIGHTS on. J730-HFS-20 cont.	12852
9/14/13 02:19:25	45.94600	-129.98384	55.54	1.8	1517.85	1519.7	Highlight video of this tubeworm bush with sulfide worms. They're scrapping Small tubeworms. Lots of limpets. Big white scaleworm.	12857
9/14/13 02:21:13	45.94601	-129.98380	55.56	1.8	1517.87	1519.7	Looking at the biota here in the tubeworm bush we are sampling water from.	12863
9/14/13 02:22:31	45.94603	-129.98379	55.43	1.81	1517.84	1519.7	HIGHLIGHTS off.	12865
9/14/13 02:23:28	45.94603	-129.98377	55.88	1.78	1517.89	1519.7	J730-HFS-20 stop 0222. Tmax=24.6 Tavg=21.3 T2=12. Vol=3000 mL.	12867
9/14/13 02:27:53	45.94609	-129.98372	49.38	6.23	1512.95	1519.2	Moving out of here now toward the Red Mat target. Will collect some red mat for Oliver next..	12873
9/14/13 02:30:18	45.94626	-129.98345	51.76	3.15	1516.25	1519.4	Traveling over lineated seafloor with sediment.	12877
9/14/13 02:32:04	45.94639	-129.98366	357.02	4.48	1515.76	1520.2	Sediment covering these older lineated sheet flows.	12879
9/14/13 02:33:34	45.94646	-129.98388	345.27	3.84	1518.54	1522.4	Looks like new lavas here.	12882
9/14/13 02:35:10	45.94653	-129.98395	344.7	4.55	1517.97	1522.5	Tito is teaching Rick to drive Jason.	12885
9/14/13 02:35:47	45.94654	-129.98389	348.06	3.43	1518.96	1522.4	Orange staining on this lava.	12890
9/14/13 02:38:46	45.94692	-129.98404	344.75	4.16	1516.29	1520.5	**SAMPLE: HFS J730-HFS-21** Background water sample. Unfiltered bag #23. Start 0237. Z=2-5 meter range. Quite rugged terrain here. We're on the edge of the caldera wall.	12895

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9/14/13	02:41:08	45.94716	-129.98397	345.43	4.28	1516.43	1520.7	J730-HFS-21 cont. Still taking background sample. North of Trevi 45 56.820 129 59.031 USBL fix at end of sample. T2=2.3 Tmax=2.5 Tavg=2.4. Our altitude varied from 2 to 6 meters.	12898
9/14/13	02:43:51	45.94735	-129.98409	346.94	2.03	1517.31	1519.3	Can't see the bottom in the HD sci cam.	12903
9/14/13	02:44:37	45.94742	-129.98402	347.95	2.09	1516.42	1518.5	The bottom is back. We're not on new lavas according to the underlay map. Sediment between the pillows here. Don't see much biology though.	12905
9/14/13	02:44:50	45.94744	-129.98402	348.58	2.5	1516.08	1518.6	Jason shift change.	12906
9/14/13	02:48:53	45.94772	-129.98415	338.77	3.24	1514.84	1518.1	Great contact of the old lava and older lava.	12913
9/14/13	02:52:41	45.94811	-129.98413	346.75	2.83	1514.67	1517.5	Right at the fissure.	12918
9/14/13	02:53:02	45.94817	-129.98416	342.16	3.55	1514	1517.6	At the south end of the fissure on the bathymetry map.	12919
9/14/13	02:55:50	45.94838	-129.98427	325.84	3.3	1512.68	1516	Pillows and collapse.	12923
9/14/13	02:57:58	45.94859	-129.98443	327.49	5.4	1511.85	1517.3	Heading to the red mat target.	12926
9/14/13	02:58:47	45.94867	-129.98451	281.37	1.3	1516.68	1518	Large sheet flow with orange sediment.	12928
9/14/13	02:58:57	45.94867	-129.98453	293.83	1.28	1517.02	1518.3	Looking for coke-can red mat.	12929
9/14/13	02:59:20	45.94865	-129.98456	285.53	1.23	1517.12	1518.4	Very thick hydrothermal sediment.	12931
9/14/13	03:01:21	45.94872	-129.98457	265.99	6.46	1512.11	1518.6	Jason and ship are at target site with Medea trying to catch up.	12935
9/14/13	03:01:43	45.94874	-129.98457	265.76	6.53	1512.1	1518.6	Earlier sighting of the red mat was on bare basalt. This is all sediment.	12936
9/14/13	03:03:07	45.94880	-129.98458	265.39	4.63	1514.04	1518.7	Target was from Dave Clague a few weeks ago probably on the MBARI ship.	12938
9/14/13	03:04:03	45.94881	-129.98468	266.21	3.51	1514.27	1517.8	Heading west toward new flow boundary.	12940
9/14/13	03:04:50	45.94879	-129.98479	265.84	3.54	1517.27	1520.8	There are some pillows with sediment.	12942
9/14/13	03:05:05	45.94878	-129.98481	265.28	2.35	1518.86	1521.2	Still in old flow.	12943
9/14/13	03:05:18	45.94879	-129.98484	278	2.19	1519.35	1521.5	Old/new flow.	12945
9/14/13	03:05:38	45.94879	-129.98489	276.97	1.95	1519.82	1521.8	Driving on to some new flow with sediment.	12948
9/14/13	03:06:46	45.94877	-129.98496	276.21	0.99	1520.77	1521.8	There is mat between the pillows.	12951
9/14/13	03:10:23	45.94874	-129.98523	268.82	1.75	1519.4	1521.2	Coming up on a fissure or collapse.	12959
9/14/13	03:11:02	45.94871	-129.98530	285.83	2.79	1518.1	1520.9	It is a collapse feature.	12962
9/14/13	03:11:35	45.94869	-129.98526	91.09	3.84	1517.08	1520.9	Turning around 180deg to head east back to red mat target.	12964
9/14/13	03:11:42	45.94869	-129.98523	89.66	3.99	1517.14	1521.1	There is our plume.	12965
9/14/13	03:13:13	45.94870	-129.98510	81.68	3.65	1517.29	1520.9	Chadwick just brought a photo showing the red mat on top of the new lava with the orange hydrothermal staining at pillow bases.	12968

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 03:13:30	45.94871	-129.98504	81.46	3.85	1516.66	1520.5	Photo looks like the collapse area.	12969
9/14/13 03:13:39	45.94871	-129.98502	81.7	4.24	1516.09	1520.3	Back over heavy stained area.	12970
9/14/13 03:14:17	45.94872	-129.98507	270.14	5.79	1514.66	1520.5	Jason making another U-turn to head back west to the collapse area.	12973
9/14/13 03:15:08	45.94874	-129.98531	268.14	3.09	1518.13	1521.2	Back into collapse area.	12974
9/14/13 03:16:37	45.94885	-129.98529	230.32	2.96	1518.26	1521.2	Huge collapse area.	12980
9/14/13 03:18:00	45.94889	-129.98527	232.74	2.23	1518.99	1521.2	Scanning around looking for red mat in this collapse area.	12983
9/14/13 03:18:16	45.94889	-129.98526	232.47	2.19	1519.01	1521.2	Jason is north of the area we just visited before the U-turn.	12985
9/14/13 03:18:46	45.94890	-129.98523	232.46	2.23	1518.97	1521.2	White mat in the orange hydrothermal sediment.	12986
9/14/13 03:23:57	45.94886	-129.98498	232.26	2	1519.1	1521.1	Not much collapse here.	12992
9/14/13 03:24:14	45.94883	-129.98501	231.18	2.26	1518.97	1521.2	Coming up on another large collapse feature.	12994
9/14/13 03:25:34	45.94881	-129.98514	266.97	2.8	1520.07	1522.9	Great bridge over collapse.	13000
9/14/13 03:26:16	45.94881	-129.98515	106.28	2.41	1518.44	1520.9	Scanning and turning all different directions over the collapse area looking for red mat.	13003
9/14/13 03:27:44	45.94860	-129.98502	86.24	2.98	1517.83	1520.8	Using bathymetry map to drive across bridges and it is working out well (good match between map and nav).	13008
9/14/13 03:28:32	45.94847	-129.98508	238	1.83	1519.73	1521.6	Inside large collapse.	13011
9/14/13 03:29:33	45.94853	-129.98514	270.47	3.89	1520.28	1524.2	Lava bridge (fairly wide).	13018
9/14/13 03:31:43	45.94860	-129.98529	259.14	2.09	1519.45	1521.5	Fold in lava.	13027
9/14/13 03:37:49	45.94869	-129.98529	283.57	5.01	1518.9	1523.9	At the edge of an underlay map so loading the one to the north to explore that region.	13037
9/14/13 03:42:38	45.94871	-129.98528	25.2	3.41	1517.57	1521	New map loaded and driving north looking for red mat.	13043
9/14/13 03:43:14	45.94882	-129.98523	349.9	4.98	1518.41	1523.4	Still driving over collapse area.	13046
9/14/13 03:44:45	45.94885	-129.98553	184.38	3.31	1517.14	1520.5	Turning back south to drive along collapse.	13054
9/14/13 03:47:03	45.94855	-129.98539	140.09	5.56	1518.73	1524.3	This area of collapse doesn't have the same amount of orange sediment as the collapse area toward the eastern edge of the collapse area (where we were).	13060
9/14/13 03:47:36	45.94846	-129.98525	133.57	2.5	1518.75	1521.3	Heading east toward the other side of the collapse.	13063
9/14/13 03:49:47	45.94827	-129.98486	125.38	3.18	1518.25	1521.4	Moving further south.	13071
9/14/13 03:55:41	45.94828	-129.98479	167.09	0.74	1521.09	1521.8	HIGHLIGHTS: Switch HD_Framegrabber input from SciCam to BrowCam. Found a small patch of red mat and will try to sample with syringe.	13084

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 03:56:10	45.94829	-129.98478	167.4	0.74	1521.18	1521.9	Retrieving the green big syringe from basket.	13086
9/14/13 03:57:58	45.94833	-129.98474	167.37	0.84	1521.13	1522	Jaws on stbd arm were a little stuck but are opening now.	13089
9/14/13 03:58:59	45.94834	-129.98470	167.45	0.74	1521.11	1521.9	Have the green syringe.	13091
9/14/13 03:59:19	45.94835	-129.98468	167.53	0.74	1521.05	1521.8	HIGHLIGHTS on.	13094
9/14/13 03:59:42	45.94835	-129.98467	167.71	0.78	1521.09	1521.9	Syringe is in place.	13097
9/14/13 04:00:41	45.94834	-129.98463	167.89	0.75	1521.1	1521.9	**SAMPLE: Microbio J730-microbio-22** at a small patch of red mat.	13100
9/14/13 04:00:47	45.94834	-129.98462	167.94	0.75	1521.1	1521.9	Nice sample.	13102
9/14/13 04:02:43	45.94833	-129.98459	167.3	0.74	1521.03	1521.8	SAMPLE: Microbio Position for the sample is 45 56.8927N 129deg 59.0902'W	13105
9/14/13 04:04:51	45.94833	-129.98462	166.89	0.74	1520.98	1521.7	HIGHLIGHTS off. Position was the cursor after the sample from a good Jason position.	13108
9/14/13 04:05:37	45.94833	-129.98464	166.6	0.74	1520.93	1521.7	We are south and west of the original Red Mat target. About 45m away.	13110
9/14/13 04:07:11	45.94833	-129.98466	166.2	0.74	1520.9	1521.6	Retrieving the small blue-red syringe from the basket.	13114
9/14/13 04:07:41	45.94832	-129.98465	165.96	0.74	1520.88	1521.6	Preparing to take a second sample here.	13116
9/14/13 04:11:48	45.94832	-129.98460	165.73	1.81	1519.96	1521.8	Repositioning Jason for a better sample angle.	13129
9/14/13 04:14:32	45.94824	-129.98468	214.79	0.8	1521.2	1522	The syringe is in position with the port arm and the stbd will pull the plunger.	13139
9/14/13 04:15:23	45.94822	-129.98472	214.84	0.81	1521.15	1522	**SAMPLE: Microbio J730-microbio-23** at the same patch of red mat as the previous sample.	13142
9/14/13 04:15:42	45.94822	-129.98472	215.16	0.74	1521.18	1521.9	SAMPLE: Microbio Can see sampler fill with red mat. J79-microbio-23.	13143
9/14/13 04:17:12	45.94822	-129.98474	215.87	0.76	1521.16	1521.9	Highlights had been on during the sampling.	13149
9/14/13 04:20:33	45.94821	-129.98490	221.83	1.89	1519.54	1521.4	HIGHLIGHTS: Switch HD_framegrabber input from BrowCam to SciCam. Highlights were turned off as well.	13153
9/14/13 04:21:46	45.94812	-129.98506	247.14	3.44	1519.89	1523.3	Looking at some of the other bridges to the south-west for more mat.	13156
9/14/13 04:23:56	45.94822	-129.98480	44.77	3.4	1518.54	1521.9	Heading back north.	13161
9/14/13 04:24:25	45.94825	-129.98471	132.07	2.95	1518.86	1521.8	Coming over large patch of hydrothermal sediment and no collapse.	13163
9/14/13 04:24:33	45.94823	-129.98471	169.37	2.85	1518.85	1521.7	Turning south again.	13164
9/14/13 04:24:49	45.94821	-129.98474	190.85	1.74	1520.04	1521.8	Lots of red here.	13165
9/14/13 04:25:03	45.94820	-129.98475	188.77	1.09	1520.67	1521.8	Major red mat deposit.	13166
9/14/13 04:25:31	45.94819	-129.98477	150.75	1.14	1520.5	1521.6	HIGHLIGHTS on.	13171

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 04:26:39	45.94818	-129.98481	137.57	0.74	1521.33	1522.1	Brittle star on basalt next to bright red mat. Orange mat adjacent to the red mat on top of flow.	13175
9/14/13 04:26:52	45.94818	-129.98482	137.57	0.95	1521.28	1522.2	Preparing to sample with last syringe.	13176
9/14/13 04:28:32	45.94818	-129.98486	137.68	0.74	1521.26	1522	Retrieving the white syringe (large) sampler from basket.	13180
9/14/13 04:30:19	45.94818	-129.98489	137.92	0.8	1521.25	1522.1	**SAMPLE: Microbio J730-microbio-24** at large red mat area south of the last sample position. Mat is on top of the basalt (compared to orange hydrothermal at bases and cracks).	13185
9/14/13 04:30:59	45.94818	-129.98490	137.65	0.74	1521.22	1522	SAMPLE: Microbio Had to fire a second time to get the sample to fill (did not fill on first firing). Fired and filled.	13188
9/14/13 04:33:07	45.94819	-129.98492	138.14	0.74	1521.27	1522	SAMPLE: Microbio Position for this sample J730-microbio-24 is 45deg 56.8910 129deg 59.0912'W	13191
9/14/13 04:33:25	45.94819	-129.98491	138.18	0.74	1521.26	1522	White syringe J730-microbio-24.	13193
9/14/13 04:33:45	45.94819	-129.98490	138.07	0.74	1521.25	1522	Going to fly over this site to take a look at red mat area.	13195
9/14/13 04:35:03	45.94824	-129.98487	138.12	4.43	1517.04	1521.5	Second sample was due SW of the small red mat sample (22 and 23) by about 20m.	13198
9/14/13 04:35:31	45.94826	-129.98485	137.71	1.96	1519.88	1521.8	Flew up from site and then will fly over.	13200
9/14/13 04:37:12	45.94823	-129.98473	138.31	1.48	1520.35	1521.8	Need to be close to the seafloor to distinguish the red mat from the orange.	13206
9/14/13 04:37:32	45.94822	-129.98471	138.2	1.56	1520.27	1521.8	From further up-the sediment looks brownish.	13208
9/14/13 04:39:21	45.94816	-129.98469	137.44	1.88	1520.42	1522.3	Moving out of red mat area into more orange sediment. Then panned over to red on the edges.	13219
9/14/13 04:41:01	45.94815	-129.98478	114.52	4.13	1519.74	1523.9	Great brow cam images.	13230
9/14/13 04:43:16	45.94811	-129.98484	115.79	2.89	1521.69	1524.6	WOW-look at the red mat!	13251
9/14/13 04:45:26	45.94811	-129.98488	150.28	1.39	1522.3	1523.7	This spectacular area is just south of the last sample area. Cursor position is 45deg 56.8858 129deg 59.0925'W.	13262
9/14/13 04:45:32	45.94811	-129.98489	150.34	1.39	1522.35	1523.7	HIGHLIGHTS: Switch HD_Framegrabber input from SciCam to BrowCam.	13263
9/14/13 04:46:37	45.94811	-129.98489	150.43	1.23	1522.54	1523.8	Use these sample positions with the cursor position here to estimate the area of the red mat.	13273

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 04:49:19	45.94809	-129.98480	150.68	3.91	1520.48	1524.4	HIGHLIGHTS: Switch HD_framegrabber input from BrowCam to SciCam. Taking more pictures than logging comments as the pictures are worth more words.	13301
9/14/13 04:49:41	45.94809	-129.98477	149.97	4.1	1520.21	1524.3	HIGHLIGHTS off. Will photo document as we leave this site.	13303
9/14/13 04:50:02	45.94807	-129.98474	150.09	2.08	1519.94	1522	Have a 2km transit to the next benchmark at AX-307 (Center).	13304
9/14/13 04:50:54	45.94805	-129.98474	135.2	1.73	1520.06	1521.8	MBARI target was 60m off from where this mat was found.	13311
9/14/13 04:54:59	45.94792	-129.98423	1.16	1.78	1519.88	1521.7	Actually target position from MBARI was 72 meters from the big Red Bridges area. Use cursor position 45deg 56.8858'N 129deg 59.0925'W for Red Bridges.	13324
9/14/13 04:55:22	45.94795	-129.98424	4.32	1.71	1520.07	1521.8	Heading due north as we leave site to AX-307. Waiting for ship to move north.	13327
9/14/13 04:58:54	45.94846	-129.98458	5.8	1.61	1520.6	1522.2	Red mat disappears about where we took the first sample.	13336
9/14/13 04:59:01	45.94848	-129.98458	6.04	1.54	1520.7	1522.2	Contact.	13337
9/14/13 04:59:06	45.94850	-129.98457	3.16	1.25	1520.65	1521.9	New-old lava contact.	13338
9/14/13 05:00:07	45.94860	-129.98454	356.03	2.25	1519.24	1521.5	Lots of sediment as we approach the original red mat target from MBARI.	13342
9/14/13 05:01:03	45.94868	-129.98455	354.84	1.31	1518.24	1519.6	That was probably 1998 flow on top of older flow. Nav did not have us on the 2011 flow.	13345
9/14/13 05:01:11	45.94869	-129.98455	353.7	1.54	1517.87	1519.4	Orange sediment again.	13348
9/14/13 05:01:30	45.94874	-129.98453	355.66	2.24	1516.28	1518.5	Mound of orange sediment-at the top.	13349
9/14/13 05:02:03	45.94874	-129.98454	84.73	9.04	1508.37	1517.4	Layback over to the next site. No more bottom views.	13351
9/14/13 05:02:25	45.94874	-129.98453	86.9	17.35	1499.92	1517.3	1941m to AX-101.	13353
9/14/13 05:03:28	45.94870	-129.98463	99.51	52.88	1463.44	1516.3	Going to AX-101 Caldera Center not AX-307.	13354
9/14/13 05:06:28	45.94875	-129.98502	89.27	100.19	1419.84	1520	2060m to AX-101 Axial Caldera Center. Bearing is 290deg.	13355
9/14/13 05:07:06	45.94875	-129.98516	86.8	98.39	1419.76	1518.2	Ship is 1826m from AX-101 (Jason is further away).	13356
9/14/13 06:31:21	45.95511	-130.00933	268.9	5.81	1526.53	1532.3	There is the bottom.	13360
9/14/13 06:31:54	45.95511	-130.00939	270.04	4.33	1527.43	1531.8	HIGHLIGHTS: DVD Deck start	13361
9/14/13 06:32:14	45.95512	-130.00949	268.06	2.61	1528.73	1531.3	That is not highlights starting just the regular videos.	13363
9/14/13 06:32:20	45.95511	-130.00953	269.53	2.78	1528.9	1531.7	Big pillows and sediment (old).	13364

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13	06:32:48	45.95548	-130.00986	269.6	2.7	1528.44	1531.1	Jason has about 50m to go to benchmark.	13365
9/14/13	06:32:57	45.95540	-130.00986	269.37	2.63	1528.29	1530.9	NAV: Doppler Reset	13366
9/14/13	06:33:15	45.95523	-130.00985	268.25	4.09	1527.28	1531.4	There is the benchmark.	13368
9/14/13	06:34:07	45.95519	-130.00985	245.56	4.01	1527.09	1531.1	AX-101 at Caldera Center.	13369
9/14/13	06:34:46	45.95524	-130.00985	245.31	3.86	1527.16	1531	Retrieving the device from the basket.	13371
9/14/13	06:36:31	45.95525	-130.00981	244.96	3.81	1527.2	1531	The strap won't go over the post because the hobo wand is in the way.	13374
9/14/13	06:36:59	45.95526	-130.00981	245.06	3.85	1527.19	1531	Basket coming back in.	13375
9/14/13	06:38:09	45.95526	-130.00980	244.49	0.98	1530.09	1531.1	Sea star is in the landing zone again.	13377
9/14/13	06:39:41	45.95527	-130.00978	243.96	0.74	1530.8	1531.5	Another sea star on edge of coming in as well.	13382
9/14/13	06:40:30	45.95526	-130.00978	243.92	0.74	1530.76	1531.5	Sea Star made it out.	13384
9/14/13	06:40:36	45.95526	-130.00978	243.93	0.74	1530.78	1531.5	It did lose a leg.	13385
9/14/13	06:40:57	45.95525	-130.00978	243.93	0.74	1530.81	1531.6	**PRESSURE: Start AX-101.**	13386
9/14/13	06:44:25	45.95523	-130.00988	243.99	0.74	1530.75	1531.5	Watch change.	13392
9/14/13	07:01:27	45.95524	-130.00973	244.31	0.74	1530.66	1531.4	PRESSURE: End	13410
9/14/13	07:07:08	45.95522	-130.00990	12.42	2.29	1528.56	1530.9	Pressure recorder has been stowed and we are moving off the bottom to begin transit to AX-307.	13416
9/14/13	08:09:44	45.94497	-130.00984	255.51	3.45	1539.01	1542.5	Bottom is in sight.	13424
9/14/13	08:17:25	45.94529	-130.00921	70.37	3.89	1538.8	1542.7	Benchmark is in sight approximately 10m away.	13433
9/14/13	08:17:57	45.94529	-130.00921	70.51	3.93	1538.76	1542.7	Picking up the pressure recorder.	13434
9/14/13	08:21:44	45.94536	-130.00910	176.45	0.74	1542.15	1542.9	Putting the pressure recorder in place.	13439
9/14/13	08:22:22	45.94536	-130.00910	176.55	0.74	1542.12	1542.9	The arm went crazy for a bit. It's fine now.	13441
9/14/13	08:24:30	45.94536	-130.00913	176.64	0.78	1542.11	1542.9	**PRESSURE: Start AX-307.**	13444
9/14/13	08:45:06	45.94535	-130.00902	176.06	0.74	1542.05	1542.8	PRESSURE: End	13467
9/14/13	08:45:22	45.94535	-130.00901	176.39	0.74	1542.02	1542.8	Stowing pressure recorder.	13469
9/14/13	08:46:39	45.94537	-130.00900	177.44	1.46	1540.98	1542.4	Now we're going on a BPR hunt. Beginning transit to it's last known location. 786m away at 113 deg bearing.	13471
9/14/13	09:36:30	45.94271	-129.99978	264.77	2.28	1531.94	1534.2	Approaching lost BPR coordinates	13483
9/14/13	09:37:06	45.94271	-129.99972	237.49	2.61	1531.54	1534.2	Bottom in sight	13484
9/14/13	09:40:04	45.94289	-129.99956	80.58	4.79	1529.33	1534.1	NAV: Doppler Reset	13488
9/14/13	09:51:30	45.94253	-129.99987	134.32	3.99	1529.31	1533.3	Sonar scanning didn't show anything resembling a BPR or floats.	13501
9/14/13	09:52:51	45.94244	-129.99990	173.64	2.09	1531.7	1533.8	Now we'll start N-S search pattern to scan the area where the BPR was originally deployed.	13503
9/14/13	09:54:16	45.94230	-129.99984	172.39	2.05	1531.23	1533.3	Doppler reset.	13506
9/14/13	09:57:27	45.94256	-129.99994	0.48	2.25	1530.91	1533.2	We are traveling along a distinct boundary between a sheath flow and lobate/pillow lava.	13513

Date-Time		Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13	10:04:25	45.94257	-129.99994	180.59	2.3	1530.77	1533.1	Now traveling down the sheath flow 'runway' to see if the BPR was carried downstream.	13521
9/14/13	10:07:13	45.94234	-129.99965	29.48	2.53	1530.83	1533.4	Now going back to the edge of the flow where the BPR might have been trapped.	13525
9/14/13	10:10:50	45.94286	-129.99972	1.07	2.26	1531.5	1533.8	Traversing a large pillow field. Still no sign of the BPR.	13529
9/14/13	10:11:36	45.94291	-129.99973	84.67	2.28	1531.72	1534	We've reached a spot where the old lava is visible along with new pillows.	13531
9/14/13	10:11:56	45.94291	-129.99968	86.91	1.99	1531.83	1533.8	Turning around to go back into the new flow.	13532
9/14/13	10:18:16	45.94253	-129.99951	359.83	1.75	1532.85	1534.6	Still crossing a mixture of old and new pillows.	13540
9/14/13	10:20:15	45.94267	-129.99950	40.89	2.45	1531.49	1533.9	Giving up on the BPR locating/recovery mission. Starting transit to AX-106 to continue pressure measurements.	13543
9/14/13	10:23:53	45.94283	-129.99917	76.02	52.98	1479.57	1532.6	Distance to AAX-106 is 1300m; bearing 226 deg.	13546
9/14/13	11:19:29	45.93602	-130.00963	53.37	46.43	1490.07	1536.5	Still off the bottom but getting close to AX-106 ASHES benchmark.	13547
9/14/13	11:24:52	45.93478	-130.01079	260.3	24.6	1514.05	1538.7	NAV: Doppler Reset	13549
9/14/13	11:26:15	45.93463	-130.01113	235.82	6	1535.05	1541.1	Jason on bottom. Bottom in sight.	13552
9/14/13	11:27:08	45.93451	-130.01131	233.37	4.65	1535.91	1540.6	This site is near the lava contact but it must be behind us because we're looking at old lavas here.	13553
9/14/13	11:28:09	45.93441	-130.01146	283.82	4.24	1536.58	1540.8	NAV: Doppler Reset	13557
9/14/13	11:28:21	45.93442	-130.01150	285.6	3.34	1536.8	1540.1	We see the benchmark in the distance.	13560
9/14/13	11:28:43	45.93441	-130.01157	307.89	4.25	1537.05	1541.3	There is AX106- ASHES.	13561
9/14/13	11:29:58	45.93444	-130.01168	57.65	5.33	1535.8	1541.1	There is no marker here and we have used them all on this dive - so none this year.	13563
9/14/13	11:30:55	45.93446	-130.01167	75.05	1.75	1539.13	1540.9	We're on the older lava here.	13566
9/14/13	11:31:35	45.93445	-130.01164	76.55	0.74	1540.62	1541.4	Sea cucumbers in this area.	13569
9/14/13	11:31:52	45.93445	-130.01163	76.69	0.74	1540.59	1541.3	HIGHLIGHTS on.	13570
9/14/13	11:32:10	45.93444	-130.01161	76.91	0.74	1540.56	1541.3	Highlights of AX-106 pressure sensor reading process.	13571
9/14/13	11:32:44	45.93443	-130.01158	77.32	0.74	1540.55	1541.3	Jason is grabbing the sensor package.	13573
9/14/13	11:33:19	45.93442	-130.01156	77.34	0.74	1540.55	1541.3	Setting the sensor on the benchmark.	13576
9/14/13	11:34:43	45.93440	-130.01155	77.38	0.74	1540.54	1541.3	Looking at the sensor in the groove on the benchmark.	13582
9/14/13	11:34:58	45.93440	-130.01155	77.4	0.74	1540.55	1541.3	Lifting up the sensor and brittle stars went flying.	13583
9/14/13	11:35:48	45.93439	-130.01153	77.48	0.74	1540.6	1541.3	Now that the brittle stars are gone the sensor is sitting there fine.	13591
9/14/13	11:35:51	45.93439	-130.01153	77.48	0.74	1540.6	1541.3	HIGHLIGHTS off.	13592

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 11:36:15	45.93438	-130.01152	77.48	0.74	1540.6	1541.3	AX-106 pressure reading here NE of ASHES vent field.	13594
9/14/13 11:36:19	45.93438	-130.01152	77.43	0.74	1540.51	1541.3	**PRESSURE: Start AX-106.**	13595
9/14/13 11:40:33	45.93447	-130.01153	77.8	0.78	1540.72	1541.5	Zoomed in on the cord. Looks like a little crab and some hydroids.	13602
9/14/13 11:41:25	45.93446	-130.01155	77.79	0.99	1540.74	1541.7	The furry flag.	13607
9/14/13 11:42:25	45.93444	-130.01156	77.82	0.98	1540.75	1541.7	Bill is zooming around the area here. First the flag; then a rattail; now back to the benchmark.	13612
9/14/13 11:50:10	45.93441	-130.01149	77.84	0.78	1540.77	1541.6	Michael is gong to try to communicate with the SCPR close to here (to the NW).	13620
9/14/13 11:52:00	45.93442	-130.01143	77.84	0.99	1540.77	1541.8	We will sit here on a different heading and try to communicate with the Self Calibrating Pressure Recorder (SCPR) after this pressure reading at the benchmark.	13623
9/14/13 11:54:22	45.93442	-130.01141	77.82	0.99	1540.79	1541.8	The reading we are performing now - and have been recording since 2000 - are with the MPR (Mobile Pressure Recorder).	13627
9/14/13 11:56:12	45.93443	-130.01147	77.81	1	1540.78	1541.8	PRESSURE: End	13630
9/14/13 11:58:04	45.93445	-130.01155	77.81	0.99	1540.83	1541.8	The sensor is in its cradle. Finished up here.	13632
9/14/13 11:58:46	45.93446	-130.01156	77.86	0.96	1540.88	1541.8	Will now turn Jason to the north to hone in on the SCPR so that Michael can download some data.	13634
9/14/13 12:01:31	45.93451	-130.01153	313.95	2.68	1538.48	1541.2	Our heading is north now. Will sit here so Michael (Scripps) can download data from the SCPR.	13639
9/14/13 12:21:28	45.93442	-130.01162	314.04	2.76	1538.5	1541.3	Still here downloading SCPR data.	13663
9/14/13 12:22:22	45.93443	-130.01161	314.02	2.79	1538.5	1541.3	Finished with SCPR mooring data download.	13665
9/14/13 12:22:32	45.93443	-130.01160	325.49	2.78	1538.5	1541.3	Next we are heading to Virgin at ASHES.	13666
9/14/13 12:23:19	45.93445	-130.01159	285.35	2.75	1538.51	1541.3	Jason transit to Virgin: 152m bearing 230.	13668
9/14/13 12:28:44	45.93436	-130.01133	182.01	3.53	1537.16	1540.7	Moving along the bottom to ASHES.	13674
9/14/13 12:29:32	45.93439	-130.01139	235.51	2.28	1538.26	1540.5	Lava swirl ahead of us.	13676
9/14/13 12:32:29	45.93406	-130.01158	239.45	3.3	1537.99	1541.3	Crazy-looking lavas.	13680
9/14/13 12:33:19	45.93401	-130.01165	237.68	4.06	1537.25	1541.3	The bottom is out of sight for a minute.	13682
9/14/13 12:33:31	45.93400	-130.01165	238.28	3.51	1537.82	1541.3	Back down near the bottom. New pilot Rick in training.	13683
9/14/13 12:35:08	45.93389	-130.01180	239.06	3.4	1537.96	1541.4	Colonial animal (salp?).	13689
9/14/13 12:36:35	45.93376	-130.01193	238.98	3.16	1538.18	1541.3	Looking at the RSN cable on the seafloor. Looks like an extension cord.	13694
9/14/13 12:39:35	45.93368	-130.01225	238.87	3.59	1537.42	1541	Traveling over old lava with sediment; especially in the crevasses.	13698

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 12:39:50	45.93367	-130.01227	238.6	2.85	1538.3	1541.2	These lavas are jumbled; sort of confusing.	13699
9/14/13 12:40:26	45.93362	-130.01232	238.23	4	1536.94	1540.9	Virgin is due west ~60 meters.	13701
9/14/13 12:42:40	45.93339	-130.01261	287.98	3.76	1537.5	1541.3	Looking at this jumbled lavas with sediment in the low areas.	13704
9/14/13 12:43:52	45.93344	-130.01273	294.6	2.85	1538.04	1540.9	NAV: Doppler Reset	13707
9/14/13 12:45:09	45.93357	-130.01293	306.91	2.73	1538.29	1541	Sandbags in the distance. We must be close now.	13709
9/14/13 12:46:01	45.93359	-130.01297	306.34	4.85	1535.57	1540.4	We see the APL vent cap in the background.	13713
9/14/13 12:46:45	45.93361	-130.01303	307.43	3.66	1537.5	1541.2	Dave Dyer is in the chief seat now.	13716
9/14/13 12:46:57	45.93362	-130.01306	307.55	3.48	1537.45	1540.9	HIGHLIGHTS on.	13717
9/14/13 12:47:08	45.93363	-130.01308	306.41	2.45	1538.01	1540.5	Approaching the device.	13720
9/14/13 12:47:33	45.93364	-130.01311	306.53	2.36	1538.59	1541	There is an anhydrite chimney sitting on top of the power unit.	13725
9/14/13 12:47:53	45.93364	-130.01312	306.57	2.33	1538.86	1541.2	Not as much coming out from around the base.	13728
9/14/13 12:48:14	45.93365	-130.01312	306.67	1.99	1539.06	1541.1	The anhydrite chimney sitting on the central coils.	13731
9/14/13 12:49:07	45.93365	-130.01312	303.4	0.74	1540.42	1541.2	This vent cap looks much better than the one at Vixen.	13736
9/14/13 12:49:46	45.93365	-130.01311	303.37	0.74	1540.42	1541.2	The float packs don't have any anhydrite on them. Looks like the flow is coming out the middle - more focused than the other.	13738
9/14/13 12:50:33	45.93365	-130.01312	303.34	0.74	1540.42	1541.2	There is some flow coming out here. Between the 2 donuts??	13745
9/14/13 12:50:58	45.93365	-130.01313	303.32	0.74	1540.42	1541.2	The flow is coming out of the gap between the donuts here.	13747
9/14/13 12:51:50	45.93367	-130.01315	303.3	0.74	1540.42	1541.2	The only place we see anhydrite chimneys is on top of the exhaust (coils in center).	13751
9/14/13 12:53:17	45.93369	-130.01314	246.43	0.78	1540.29	1541.1	Moving 90 degrees around it.	13764
9/14/13 12:53:26	45.93368	-130.01313	240.74	0.74	1539.92	1540.7	New view. Zooming in.	13765
9/14/13 12:54:22	45.93368	-130.01311	246.05	0.86	1540.09	1541	Can see that the flow is definitely coming out between the donuts.	13771
9/14/13 12:55:48	45.93365	-130.01307	279.16	1.18	1539.24	1540.4	There are 2 anhydrite chimneys on top of the exhaust.	13777
9/14/13 12:56:14	45.93364	-130.01308	300.71	0.81	1540.24	1541.1	There is anhydrite on top of the shield. Some on the yellow mooring balls as well.	13780
9/14/13 12:57:28	45.93365	-130.01312	301.24	0.74	1540.32	1541.1	Zoomed in on "heat dissipating load bank. Where they throw away the energy after they create it.	13787
9/14/13 12:57:41	45.93365	-130.01313	301.24	0.74	1540.32	1541.1	HIGHLIGHTS off.	13789

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 12:58:04	45.93366	-130.01314	301.23	0.74	1540.31	1541.1	Jason is measuring the temp at the heat dissipating load bank now.	13790
9/14/13 12:59:08	45.93366	-130.01316	301.23	0.74	1540.33	1541.1	The temp is rising. 6.2 degrees and stable now. Ambient temp was 4.	13794
9/14/13 12:59:49	45.93366	-130.01316	301.23	0.74	1540.35	1541.1	Measuring the temp on the resistor closer to us. T=5.1.	13797
9/14/13 13:00:54	45.93366	-130.01318	301.23	0.74	1540.34	1541.1	Going to pull it off the radiator 3 or 4 inches to make sure the temp rise isn't just the flow in the area. T=4.4 and dropping.	13799
9/14/13 13:01:49	45.93367	-130.01320	301.22	0.74	1540.37	1541.1	Temp away from the radiator is 4.0 (Dave Dyer says that's ambient).	13801
9/14/13 13:03:23	45.93368	-130.01319	301.23	0.74	1540.38	1541.1	There is a ton of flow coming out of the exhaust. The anhydrite chimneys were knocked off and now Jason is taking the temp.	13810
9/14/13 13:03:51	45.93368	-130.01318	301.22	0.74	1540.41	1541.2	The temp was only 98 degrees when it was installed. It's now ~240 degrees.	13811
9/14/13 13:04:24	45.93368	-130.01317	301.22	0.74	1540.41	1541.2	The flow coming out of the exhaust is much more than it was when the cap was installed.	13815
9/14/13 13:05:07	45.93368	-130.01316	301.22	0.74	1540.42	1541.2	You're getting a better seal and better back pressure so the flow has increased is the consensus.	13816
9/14/13 13:06:07	45.93369	-130.01316	301.22	0.74	1540.41	1541.2	Anhydrite is probably (?) growing under the cap and focusing the flow?" T=239C at the top of the exhaust.	13820
9/14/13 13:06:54	45.93368	-130.01316	301.21	0.74	1540.42	1541.2	Moving the probe to the other side of the exhaust to determine if the flow is coming out equally along the top.	13822
9/14/13 13:08:38	45.93366	-130.01316	301.2	0.74	1540.52	1541.3	Temp reading is 222C. It looks like the anhydrite is not growing in the exhaust - but on top of it.	13829
9/14/13 13:08:58	45.93366	-130.01317	301.2	0.74	1540.47	1541.2	Will now swing around and take a look at another side of the package.	13830
9/14/13 13:09:57	45.93366	-130.01317	301.2	0.74	1540.45	1541.2	They want to read the labels on the connectors. Zoomed in.	13835
9/14/13 13:10:57	45.93367	-130.01314	301.19	0.74	1540.47	1541.2	T97?? LC4??	13840
9/14/13 13:11:24	45.93367	-130.01313	301.19	0.74	1540.45	1541.2	LC1 is the upper oil-filled panel (compensated panel).	13842
9/14/13 13:11:32	45.93367	-130.01312	301.19	0.74	1540.47	1541.2	LC4 is lower compensated panel.	13843
9/14/13 13:14:14	45.93365	-130.01317	12.88	1.29	1540.18	1541.5	Manufacturing defect in the lower compensation panel. It's separating.	13855

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 13:14:40	45.93365	-130.01318	12.81	1.28	1540.22	1541.5	Pile of anhydrite at the base of the compensator.	13858
9/14/13 13:15:01	45.93365	-130.01320	12.8	1.29	1540.2	1541.5	LC1 on the upper oil filled panel.	13860
9/14/13 13:18:32	45.93370	-130.01334	152.16	0.98	1540.18	1541.2	Zooming in on the top edge of the top panel.	13876
9/14/13 13:19:15	45.93370	-130.01333	152.12	0.98	1540.18	1541.2	Super 88 tape.	13879
9/14/13 13:20:54	45.93369	-130.01327	152.94	0.74	1540.75	1541.5	Just a wrinkle. Can't get the numbers off that plug.	13885
9/14/13 13:21:39	45.93369	-130.01324	166.77	1.03	1540.29	1541.3	No flow coming out the bottom on this side.	13889
9/14/13 13:25:28	45.93366	-130.01315	311.17	0.78	1540.53	1541.3	Tito think the white tape reads TC9.	13908
9/14/13 13:25:42	45.93366	-130.01315	311.16	0.78	1540.53	1541.3	The upper right screen is the camera on the arm.	13909
9/14/13 13:26:14	45.93365	-130.01313	311.15	0.78	1540.53	1541.3	The upper right monitor is the camera on the port arm.	13912
9/14/13 13:27:57	45.93365	-130.01307	311.63	0.74	1540.54	1541.3	Looks like the label on this epoxy panel is probably LC3.	13915
9/14/13 13:29:01	45.93366	-130.01309	311.87	0.74	1540.53	1541.3	HIGHLIGHTS off.	13919
9/14/13 13:30:06	45.93367	-130.01314	338.11	1.28	1540.24	1541.5	The plan is to bring a couple sandbags over and try to plug the area where the flow is coming out between the donuts.	13921
9/14/13 13:31:29	45.93366	-130.01317	47.18	2.79	1538.18	1541	Looking around for the sandbags.	13925
9/14/13 13:32:09	45.93360	-130.01313	57.7	1.63	1539.33	1541	There are the sandbags.	13926
9/14/13 13:33:22	45.93360	-130.01305	254.47	1.09	1540.79	1541.9	Going in to grab the sandbags. They will put them on the porch.	13929
9/14/13 13:34:37	45.93361	-130.01305	254.84	1.11	1540.79	1541.9	Loading the sandbags on the porch.	13931
9/14/13 13:36:38	45.93361	-130.01307	254.99	0.95	1540.81	1541.8	Jason is gathering up the sandbags and putting them on the porch.	13936
9/14/13 13:38:28	45.93361	-130.01308	253.38	117.85	1540.98	1658.8	Tito's cleaning up the seafloor here. Picking up all the sandbags.	13940
9/14/13 13:39:35	45.93361	-130.01309	249.21	1.35	1539.86	1541.2	There - all clean. Thanks Tito and Jason. That mess of sandbags is gone and will be placed at the base of the vent cap	13943
9/14/13 13:41:44	45.93367	-130.01329	322.5	0.74	1540.58	1541.3	Jason is back at the cap. Will place the sandbags at the base where the flow is escaping between the donuts.	13952
9/14/13 13:42:44	45.93367	-130.01331	322.47	0.74	1540.56	1541.3	Grabbing a sandbag.	13954
9/14/13 13:43:08	45.93367	-130.01332	322.46	0.74	1540.58	1541.3	HIGHLIGHTS on.	13955
9/14/13 13:44:06	45.93366	-130.01331	322.38	0.74	1540.56	1541.3	Placing the sandbags in the area where flow is escaping between the donuts.	13958
9/14/13 13:45:06	45.93366	-130.01328	322.39	0.74	1540.58	1541.3	Flow is still escaping.	13962
9/14/13 13:47:11	45.93365	-130.01319	322.37	0.74	1540.6	1541.3	Still placing the sandbags around the flow.	13967

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 13:49:28	45.93365	-130.01313	322.32	0.74	1540.62	1541.4	Still pulling sandbags off the porch.	13972
9/14/13 13:49:32	45.93365	-130.01313	322.3	0.74	1540.62	1541.4	HIGHLIGHTS off.	13973
9/14/13 13:50:32	45.93365	-130.01314	322.16	0.74	1540.65	1541.4	All the sandbags are tucked in around the vent cap.	13979
9/14/13 13:52:30	45.93366	-130.01324	298.41	5.76	1535.64	1541.4	Yeah. Done with that vent cap at Virgin. Next task: Off to the last stop AX-308-BPR-South1 benchmark.	13985
9/14/13 13:53:14	45.93367	-130.01350	293.24	8.63	1533.04	1541.7	Transit off the bottom just in time for breakfast.	13987
9/14/13 15:00:36	45.93157	-129.99884	330.66	2.78	1528.65	1531.4	Back on the bottom. Pillow flow with sediment.	13992
9/14/13 15:01:18	45.93157	-129.99883	118.91	3.06	1528.52	1531.6	Looking for AX-308 benchmark.	13994
9/14/13 15:01:39	45.93154	-129.99883	169.88	2.93	1528.45	1531.4	Large channels of sediment.	13995
9/14/13 15:02:21	45.93151	-129.99870	104.96	3.41	1528.41	1531.8	Kicked up a lot of sediment.	13997
9/14/13 15:02:42	45.93152	-129.99861	60.14	2.83	1528.76	1531.6	There it is. AX-308 benchmark and the mini-BPR.	13998
9/14/13 15:03:16	45.93153	-129.99854	293.96	1.06	1530.48	1531.5	This is the last pressure measurement on this expedition!	14000
9/14/13 15:04:20	45.93155	-129.99856	285.4	1.8	1529.75	1531.6	This is BPR South1 location with AX-308 benchmark and temporarily the mini-BPR.	14002
9/14/13 15:04:35	45.93155	-129.99856	285.36	1.76	1529.8	1531.6	Unstrapping the device.	14003
9/14/13 15:05:32	45.93156	-129.99858	285.33	1.85	1529.76	1531.6	Device out of basket and preparing to put on to the benchmark.	14005
9/14/13 15:08:54	45.93157	-129.99865	280.48	0.8	1530.98	1531.8	Checking placement-looks good.	14017
9/14/13 15:09:30	45.93157	-129.99866	280.44	0.81	1530.97	1531.8	**PRESSURE: Start AX-308.**	14019
9/14/13 15:29:51	45.93155	-129.99857	280.39	0.8	1531.07	1531.9	PRESSURE: End	14040
9/14/13 15:29:58	45.93155	-129.99857	280.42	0.8	1531.04	1531.8	Ended it.	14041
9/14/13 15:30:19	45.93155	-129.99856	280.74	0.86	1531.04	1531.9	The epic pressure dive is coming to a close.	14043
9/14/13 15:31:15	45.93155	-129.99855	280.39	0.8	1531.03	1531.8	Removing device from benchmark.	14045
9/14/13 15:32:29	45.93154	-129.99854	281.96	1.99	1529.72	1531.7	Device in basket.	14048
9/14/13 15:33:36	45.93154	-129.99854	281.83	2.18	1529.39	1531.6	Strapped down.	14050
9/14/13 15:35:00	45.93158	-129.99860	138.19	1.14	1530.43	1531.6	Picking up the mini-BPR next.	14052
9/14/13 15:37:07	45.93157	-129.99866	139.89	0.84	1530.92	1531.8	Need to move the non-sample rock out of the BPR's milk crate (non-sample from Virgin after last visit to view the APL cap).	14056
9/14/13 15:38:57	45.93157	-129.99872	139.15	0.8	1530.88	1531.7	Putting the non-sample in the other milk crate with the syringes.	14062
9/14/13 15:40:01	45.93158	-129.99874	139.99	0.91	1530.88	1531.8	Putting the mini-BPR in the roomy crate now (rock-free zone).	14064
9/14/13 15:40:53	45.93158	-129.99875	139.99	0.96	1530.88	1531.8	Strapping down the mini-BPR in its crate.	14067
9/14/13 15:42:15	45.93159	-129.99875	139.52	0.84	1530.83	1531.7	Picking up a pull-pin and putting it in the crate (tidying up the area).	14072
9/14/13 15:43:21	45.93159	-129.99874	139.35	0.79	1530.86	1531.7	Put pin-pull loop over t-handle of fluid sampler.	14075
9/14/13 15:44:32	45.93160	-129.99872	139.32	0.74	1530.95	1531.7	Jason will do some engineering work until the recovery at noon (local time).	14077
9/14/13 15:46:15	45.93162	-129.99869	139.6	0.8	1530.97	1531.8	NAV: Doppler Reset	14080
9/14/13 17:56:00	45.93153	-129.99876	15.64	2.24	1529.14	1531.4	Grabbing a weight from the basket.	14210
9/14/13 17:56:10	45.93153	-129.99876	15.12	2.09	1529.31	1531.4	Dropping a double-weight.	14211

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-730 Dive Comments	Virtual Van #
9/14/13 18:03:43	45.93112	-129.99889	188.68	9.03	1522.96	1532	Jason off bottom.	14220
9/14/13 18:53:56	45.93085	-129.99922	186.82		98.38		Waiting for Medea.	14223
9/14/13 18:54:52	45.93085	-129.99922	191.38		98.36		Jason holding at 100m and waiting for ship to setup.	14224
9/14/13 19:02:45	45.93085	-129.99921	170.27		23.95		Big jelly almost at surface.	14227
9/14/13 19:03:50	45.93085	-129.99922	186.7		8.14		Jason on surface.	14228
9/14/13 19:05:08	45.93085	-129.99921	179.26		-0.41		Medea on surface.	14229
9/14/13 19:05:14	45.93085	-129.99921	180.29		-0.34		Medea on deck.	14230
9/14/13 19:11:10	45.93085	-129.99923	205.33		-0.32		Jason out of water	14231
9/14/13 19:13:43	45.93088	-129.99918	96.96		-0.88		Jason on deck	14232

6.6.6 J2-731 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/14/13 23:44:58	45.89029	-129.78311	256.04		0.77		JASON: Jason in water	14236
9/14/13 23:48:51	45.89028	-129.78306	170.25		9.74		JASON: Medea in water	14238
9/15/13 00:58:53	45.87809	-129.80469	352.48	2.56	1990.99	1993.6	JASON: Jason on bottom	14267
9/15/13 00:59:09	45.87809	-129.80468	354.09	2.13	1991.47	1993.6	Heavily sedimented in this area.	14269
9/15/13 00:59:14	45.87809	-129.80468	353.74	1.99	1991.56	1993.6	NAV: Doppler Reset	14271
9/15/13 01:01:10	45.87814	-129.80463	353.57	1.48	1992.19	1993.7	Obviously we're not in the caldera anymore. Really thick yellowish sediments.	14275
9/15/13 01:01:33	45.87813	-129.80462	353.48	1.48	1992.19	1993.7	Scaleworm in HD cam. We're at 1980m. Jason is dropping weights.	14277
9/15/13 01:02:17	45.87813	-129.80460	353.44	1.63	1992.03	1993.7	Sediment cloud rose where the dive weights were dropped.	14279
9/15/13 01:02:40	45.87813	-129.80460	353.49	1.76	1991.93	1993.7	Thick sediment haze.	14281
9/15/13 01:10:47	45.87837	-129.80466	331.34	5.94	1987.61	1993.6	Large sulfide chimney right ahead of us. Looks like it has no flow. Corals and hydroids on this one.	14299
9/15/13 01:11:23	45.87838	-129.80464	331.31	5.86	1987.67	1993.5	This dead chimney is ~6 meters high.	14303
9/15/13 01:12:51	45.87839	-129.80461	331.22	5.88	1987.63	1993.5	Corrected the underlay map. All is good now.	14305
9/15/13 01:13:15	45.87840	-129.80458	337.98	6.28	1987.38	1993.7	We're probably at one of those small dimples on the map which are probably all chimneys.	14307
9/15/13 01:13:58	45.87844	-129.80454	1.03	4.73	1988.86	1993.6	We're going to check if the next blip in the map is another chimney.	14308
9/15/13 01:14:44	45.87854	-129.80454	6.15	3.08	1989.52	1992.6	Casey thinks he sees something in the Medea cam.	14310
9/15/13 01:16:30	45.87870	-129.80458	6.77	3.1	1988.39	1991.5	Heading over heavily sedimented flat seafloor now.	14315
9/15/13 01:17:14	45.87870	-129.80459	7.29	2.66	1988.56	1991.2	Little mound here. Looks like bioturbation on this mound.	14318
9/15/13 01:18:25	45.87867	-129.80462	5.16	2.16	1988.61	1990.8	We're waiting on the ship.	14320
9/15/13 01:20:35	45.87862	-129.80440	5.98	4.14	1987.1	1991.2	There are a number of mounds in this area.	14324
9/15/13 01:21:27	45.87863	-129.80435	7.29	3.55	1987.34	1990.9	Anemone on the seafloor laying in these deep sediments.	14326
9/15/13 01:22:07	45.87864	-129.80434	6.77	3.18	1987.42	1990.6	The little round black ball is probably an urchin.	14329

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 01:23:04	45.87868	-129.80432	6.77	2.4	1987.31	1989.7	Zooming in on chunks of rock on the seafloor.	14332
9/15/13 01:23:35	45.87870	-129.80432	6.65	1.69	1987.73	1989.4	There are lots of little mounds out here that look like large mole burrows (obviously not moles...)	14334
9/15/13 01:26:13	45.87884	-129.80435	7.33	2.28	1985.8	1988.1	Corals or a hydroids??? Some kind of pretty thing. Some kind of fishy-amphipod.	14342
9/15/13 01:26:45	45.87888	-129.80433	6.87	2.35	1984.45	1986.8	Sea urchin. Brittle stars.	14347
9/15/13 01:27:04	45.87891	-129.80431	7.62	2.33	1984.08	1986.4	It's a big sedimented mound.	14348
9/15/13 01:27:55	45.87900	-129.80429	6.34	2.84	1981.87	1984.7	We're climbing up this hill.	14350
9/15/13 01:28:31	45.87904	-129.80431	8.35	5.76	1978.16	1983.9	Large sulfide chunks ahead.	14354
9/15/13 01:29:29	45.87914	-129.80436	23.25	4.75	1975.71	1980.5	These are large sulfide blocks ahead.	14358
9/15/13 01:30:26	45.87923	-129.80441	22.96	7.66	1968.76	1976.4	Jason is probably about 20m farther north than the map shows. The map should be moved 20 meters to the south.	14361
9/15/13 01:30:52	45.87928	-129.80443	23.56	7.85	1964.69	1972.5	Bulbous sulfide structures.	14363
9/15/13 01:31:09	45.87930	-129.80442	24.35	7.64	1962.91	1970.6	HIGHLIGHTS on.	14364
9/15/13 01:31:54	45.87934	-129.80444	23.27	6.83	1958.44	1965.3	Huge sulfide we're climbing up. The depth of the venting targets was 1949m.	14366
9/15/13 01:32:16	45.87935	-129.80444	18.34	7.59	1957.29	1964.9	Continuing to climb up this huge sulfide structure.	14369
9/15/13 01:32:40	45.87937	-129.80444	18.71	9.51	1953.86	1963.4	Something white on this sulfide. Small areas. Mineral cement.	14370
9/15/13 01:32:55	45.87938	-129.80444	18.04	12.03	1951.2	1963.2	This is a super steep structure.	14372
9/15/13 01:33:21	45.87940	-129.80443	18.43	10.05	1947.75	1957.8	The brow cam puts us in about the area of the venting targets.	14375
9/15/13 01:33:42	45.87941	-129.80443	18.11	4.36	1946.07	1950.4	This thing is huge. We see white stuff in the Scorpio van.	14376
9/15/13 01:34:40	45.87944	-129.80441	345	8.88	1943.94	1952.8	The map seems to be right on now. Looks like tubeworms and possibly limpets.	14386
9/15/13 01:34:53	45.87944	-129.80440	347.48	8.16	1943.79	1952	White hydrothermal mat and some shimmer.	14388
9/15/13 01:36:55	45.87952	-129.80437	35.04	6.08	1940.03	1946.1	Looks like more shimmer here with tubeworms (old yellow dead ones) and small white worms in shimmering clump.	14400
9/15/13 01:38:17	45.87951	-129.80435	41.61	5.83	1940.29	1946.1	The summit of this chimney was 1938 meters. We're on the top of this structure facing the NE.	14408
9/15/13 01:39:45	45.87950	-129.80439	41.67	6	1940.36	1946.4	Beautiful old sulfide with tubeworms; palmworms; scaleworms; limpets.	14411
9/15/13 01:42:01	45.87947	-129.80444	41.45	6.2	1940.31	1946.5	Going in for a temperature reading. Near the bottom of the tubeworm patch. 12C and rising. 14C; 17C; 19C. 19.5C at the bottom of the bush. Moving the probe up to the center of the bush.	14417
9/15/13 01:42:42	45.87946	-129.80442	41.64	6.01	1940.34	1946.4	Warmer now. There are sulfide worms in this bush also.	14421
9/15/13 01:43:31	45.87946	-129.80440	41.75	6.25	1940.35	1946.6	Jason temperature probe: 23 and rising.	14423
9/15/13 01:43:36	45.87946	-129.80439	41.53	6.25	1940.38	1946.6	HIGHLIGHTS off.	14424
9/15/13 01:46:39	45.87952	-129.80429	39.77	6.3	1940.29	1946.6	Jason Temperature was 23 C and rising. Worm-covered diffuse vent on Dependable West mound.	14429
9/15/13 01:47:21	45.87952	-129.80426	39.55	6.51	1940.29	1946.8	The mineral surface under here is very hard. Not anhydrite for sure. It's most likely sulfide.	14431

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9/15/13 01:49:05	45.87948	-129.80426	39.37	6.31	1940.29	1946.6	temp up to 25C.	14433
9/15/13 01:50:30	45.87947	-129.80426	39.69	6.26	1940.3	1946.6	Oxygen measurement 0.867 ml/L	14436
9/15/13 01:50:52	45.87948	-129.80425	39.57	6.26	1940.3	1946.6	This whole sulfide structure is called "Dependable West".	14437
9/15/13 01:52:09	45.87950	-129.80422	39.68	6.48	1940.31	1946.8	pH voltage=3.218. Temperature was 26C last time Dave called it.	14439
9/15/13 01:54:20	45.87950	-129.80416	39.59	6.3	1940.33	1946.6	We're on a plateau here. We're not at the top. So that fits with the map.	14445
9/15/13 01:57:18	45.87949	-129.80402	39.7	6.34	1940.37	1946.7	SAMPLE: HFS J731-HFS-01. Filtered bag #18. Sampling in this tubeworm bush on Dependable West. Z=1941m.	14450
9/15/13 01:58:50	45.87949	-129.80397	39.84	6.31	1940.35	1946.7	J731-HFS-01 cont. No temperature recording. oops. T~22.9 it's stuck at the moment. Temp now is 26C Temp = 22 to 26C. Vol=630mL.	14452
9/15/13 02:00:52	45.87948	-129.80402	39.94	6.51	1940.37	1946.9	SAMPLE: HFS J731-HFS-02. RNA filter #10. Sampling in the tubeworm bush on Dependable West.	14455
9/15/13 02:04:53	45.87948	-129.80430	40.04	6.4	1940.36	1946.8	Frame grabbed when the lasers are on	14461
9/15/13 02:06:42	45.87949	-129.80440	39.92	6.3	1940.36	1946.7	Temp is 24C and pretty stable.	14465
9/15/13 02:07:04	45.87949	-129.80441	39.83	6.29	1940.34	1946.6	J731-HFS-02 cont.	14466
9/15/13 02:12:01	45.87949	-129.80430	39.94	6.53	1940.35	1946.9	Saw scaleworms; sulfide worms in their tubes (sulfacola (sp?)) They are browner in color. Palmworms are usually more red.	14477
9/15/13 02:13:43	45.87952	-129.80427	39.6	6.39	1940.32	1946.7	Tubeworm (Ridgia); lots of limpets. Scaleworm crawling around in there. This scaleworm has longer legs like the embleyai.	14484
9/15/13 02:15:24	45.87950	-129.80424	39.76	6.33	1940.33	1946.7	There is a gigantic palm worm! Really long and skinny.	14491
9/15/13 02:15:35	45.87950	-129.80424	39.75	6.4	1940.35	1946.8	HIGHLIGHTS on.	14492
9/15/13 02:16:06	45.87949	-129.80424	39.87	6.39	1940.37	1946.8	Crazy long skinny palm or sulfide worms.	14493
9/15/13 02:16:28	45.87949	-129.80425	39.7	6.33	1940.39	1946.7	Lots of scaleworms with long legs.	14497
9/15/13 02:17:17	45.87950	-129.80426	39.78	6.53	1940.37	1946.9	Fat scaleworms. Crusty limpets?	14500
9/15/13 02:17:48	45.87950	-129.80426	39.96	6.4	1940.37	1946.8	Temp is stable at 24.9C.	14503
9/15/13 02:17:54	45.87950	-129.80426	39.84	6.35	1940.36	1946.7	Fighting scaleworms.	14504
9/15/13 02:18:30	45.87950	-129.80426	39.87	6.34	1940.37	1946.7	Fighting scaleworms hiding under pycnagonids.	14507
9/15/13 02:19:15	45.87951	-129.80426	40.03	6.55	1940.38	1946.9	Dave has the cm scale on the long worm. It's more than 10cm.	14510
9/15/13 02:20:42	45.87952	-129.80427	40.02	6.55	1940.4	1947	J731-HFS-02 cont. Tmax= 25.3 Tavg=24.1 Vol=2991 mL. T2=12. That sample stopped because Dave's computer shut down for a minute.	14512
9/15/13 02:21:18	45.87952	-129.80429	39.87	6.4	1940.41	1946.8	Beautiful images in the brow cam.	14514
9/15/13 02:21:39	45.87953	-129.80431	39.74	6.48	1940.35	1946.8	HIGHLIGHTS off.	14515
9/15/13 02:23:27	45.87952	-129.80437	39.88	6.39	1940.35	1946.7	SAMPLE: HFS J731-HFS-03 Unfiltered bag #19. In this diffuse flow area on a massive sulfide (Dependable West).	14518
9/15/13 02:23:31	45.87952	-129.80437	39.91	6.4	1940.35	1946.8	In the scorpio we're seeing a patch of bacterial mat.	14519
9/15/13 02:25:51	45.87952	-129.80431	39.86	6.46	1940.33	1946.8	This sampling site is dubbed: "Worm-covered Diffuser" on Dependable West sulfide. 129 48.2615 45 52.7707 Z=1941 Alt=8.2m	14522
9/15/13 02:26:37	45.87952	-129.80429	40.03	6.33	1940.36	1946.7	J731-HFS-03 cont. Tmax=23.7 Tavg=22.8 Vol=629 mL. T2=12.0.	14524

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9/15/13 02:27:38	45.87951	-129.80428	41.68	6.4	1940.38	1946.8	Casey's fix call: 129 48.2663' 45 52.7736. The second position for this sampling site. Not sure which is correct (decided it was probably the first lat/long).	14526
9/15/13 02:28:13	45.87951	-129.80427	41.6	6.44	1940.33	1946.8	Those positions are for samples 1 - 3 at "Worm-covered Diffuser".	14529
9/15/13 02:28:42	45.87951	-129.80426	41.61	6.95	1940.34	1947.3	We were in the same place the whole time so only 1 of those 2 positions is correct.	14530
9/15/13 02:28:45	45.87951	-129.80426	41.58	6.89	1940.4	1947.3	Stowing the wand.	14531
9/15/13 02:33:26	45.87945	-129.80426	56.65	12.5	1940	1952.5	This sulfide structure is covered in an orangish-yellowish mat.	14540
9/15/13 02:34:05	45.87946	-129.80423	25.37	8.38	1940.09	1948.5	We want to climb to the top of this feature. We're not sure if we're	14541
9/15/13 02:34:11	45.87947	-129.80424	24.56	8.71	1939.69	1948.4	HIGHLIGHTS on.	14544
9/15/13 02:35:25	45.87947	-129.80420	339.42	11.94	1939.14	1951.1	We're getting a good look at Dependable West sulfide.	14549
9/15/13 02:35:45	45.87946	-129.80419	339.5	12.35	1938.95	1951.3	There is another streak of venting going up toward the top of this thing. East of where we sampled.	14550
9/15/13 02:41:33	45.87951	-129.80423	8.31	0.74	1937.65	1938.4	Our navigation is putting us about 10 meters to the S/SW of where we are according to the map.	14572
9/15/13 02:43:33	45.87950	-129.80425	8.72	0.74	1937.26	1938	Our nav was putting us ~12 to 15 m S/SW of the features on the map.	14575
9/15/13 02:44:25	45.87950	-129.80420	44.41	3.58	1935.94	1939.5	HIGHLIGHTS off.	14578
9/15/13 02:51:19	45.87944	-129.80338	137.01	21.1	1943.6	1964.7	We are going to fly through the water down to the saddle (gap) at Dependable then will climb up east slope of Dependable (the big one).	14586
9/15/13 02:59:37	45.87966	-129.80316	57.63	8.4	1943.3	1951.7	Seeing a bit of the bottom	14595
9/15/13 03:00:16	45.87969	-129.80308	59.86	11.5	1937.54	1949	Mainly sediment and old sulfides-very tall structure.	14597
9/15/13 03:01:42	45.87969	-129.80287	54.81	14.9	1928.17	1943.1	Nav and bathy offsets have us coming up to a wall not a valley.	14599
9/15/13 03:02:01	45.87970	-129.80286	54.93	17.08	1924.48	1941.6	Stopping and using sonar to image the valley that we want to travel through.	14600
9/15/13 03:03:04	45.87974	-129.80275	55.9	18.55	1923.39	1941.9	Driving at 1924 and no obstacles in front of Jason.	14602
9/15/13 03:10:59	45.87965	-129.80282	336.54	24.18	1923.24	1947.4	Structure is 30m ahead of Jason on sonar and holding at 1924m with 22m altitude.	14611
9/15/13 03:18:25	45.87977	-129.80261	332	29.77	1923.18	1953	Waiting for vehicles before heading to bottom.	14619
9/15/13 03:19:09	45.87976	-129.80260	333	20.79	1932.51	1953.3	Descending slowly.	14620
9/15/13 03:19:19	45.87975	-129.80260	333.06	16.96	1936.23	1953.2	At 1933 and didn't see peak behind Jason.	14622
9/15/13 03:20:39	45.87981	-129.80255	332.71	8.28	1945.24	1953.5	At 1945m and seeing big sulfide chunks.	14624
9/15/13 03:20:52	45.87982	-129.80255	332.97	5.85	1947.51	1953.4	Very steep mound.	14625
9/15/13 03:22:12	45.87987	-129.80253	295.85	6.38	1946.13	1952.5	Want to follow contour around the base of the structure going toward the north. 1945m.	14628
9/15/13 03:22:22	45.87989	-129.80253	300.11	3.63	1946.11	1949.7	Big sulfide chunks.	14629
9/15/13 03:23:00	45.87993	-129.80251	299.93	4.2	1946.02	1950.2	Could be some talus now with the sulfides.	14631
9/15/13 03:23:57	45.87993	-129.80251	294.01	3.46	1946.36	1949.8	Would like to pick up a piece of talus looking rock.	14633
9/15/13 03:25:27	45.87995	-129.80249	276.82	2.16	1947.04	1949.2	Looks like mainly sulfides and can't get the sharp piece that could be talus.	14636

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9/15/13 03:25:36	45.87995	-129.80249	277.86	2.33	1946.93	1949.3	Looking for piece.	14637
9/15/13 03:26:26	45.87993	-129.80249	303.43	2.25	1947.3	1949.6	Maybe basalt talus with hydrothermal sediment but can't tell until we pick up a piece.	14640
9/15/13 03:26:57	45.87992	-129.80249	303.79	2.49	1947.02	1949.5	Picking up a piece with port arm.	14641
9/15/13 03:27:26	45.87991	-129.80250	304.79	2.41	1947.06	1949.5	Dropped but it is still there.	14644
9/15/13 03:28:30	45.87988	-129.80252	305.58	2.5	1946.94	1949.4	Outside of the arm range and a lot heavier to pick up and keep.	14646
9/15/13 03:28:53	45.87987	-129.80253	305.33	2.54	1947.05	1949.6	Trying the angular rock.	14647
9/15/13 03:29:28	45.87986	-129.80254	305.4	2.46	1947.01	1949.5	Too big to keep.	14652
9/15/13 03:30:04	45.87986	-129.80254	305.91	2.48	1947.08	1949.6	Looks like a chunk of basalt.	14657
9/15/13 03:31:16	45.87988	-129.80253	305.12	2.39	1947.08	1949.5	Looks like about 13lbs so going to keep it.	14662
9/15/13 03:31:55	45.87990	-129.80253	304.87	2.45	1947.06	1949.5	SAMPLE: Rock J731-rock-04 from the SE side of Dependable at 1947m. Placed in the port milk crate.	14663
9/15/13 03:34:09	45.87995	-129.80251	299.68	4.49	1946.11	1950.6	SAMPLE: Rock J731-rock-04 (cont). Cursor position is 45 52.7951 129deg 48.1527	14667
9/15/13 03:34:51	45.87997	-129.80250	299.61	4.39	1945.81	1950.2	Still driving counter-clockwise around base of Dependable at the 1947 contour.	14669
9/15/13 03:35:28	45.87999	-129.80249	293.25	5.1	1945.68	1950.8	Sharp talus looking pieces with a lot of hydrothermal sediment.	14671
9/15/13 03:36:22	45.87998	-129.80251	279.66	4.94	1945.54	1950.5	Looks like basalt as well.	14677
9/15/13 03:36:43	45.87998	-129.80252	272.12	4.68	1945.52	1950.2	Jason is almost facing due west as we go around Dependable.	14678
9/15/13 03:38:20	45.87995	-129.80259	273.5	4.61	1943.8	1948.4	We will got straight uphill facing this direction.	14681
9/15/13 03:38:39	45.87994	-129.80259	273.62	4.16	1943.74	1947.9	Climbing upslope from 1944m. Top of Dependable is 1911m.	14682
9/15/13 03:39:31	45.87996	-129.80261	273.26	5.06	1940.5	1945.6	Larger piece of talus after quite a bit of sediment.	14686
9/15/13 03:40:18	45.87998	-129.80262	271.91	3.66	1939.4	1943.1	Looks like fluid sampler has wrong dive number in the file. Dive was logging as J-730.	14688
9/15/13 03:40:22	45.87998	-129.80262	273.34	3.66	1939.43	1943.1	Holothurian.	14689
9/15/13 03:40:43	45.87998	-129.80262	273.28	3.86	1939.06	1942.9	HFS is now logging as J2-731.	14690
9/15/13 03:42:37	45.88001	-129.80260	272.96	5.04	1938.11	1943.2	Climbed up 5m from start. Seeing a lot of crinoids on the rocks.	14699
9/15/13 03:43:13	45.88002	-129.80261	273.57	5.04	1937.06	1942.1	Large wall of rock .	14701
9/15/13 03:43:47	45.88003	-129.80261	273.43	4.34	1937.12	1941.5	Facing into the wall of structure as we rise up.	14703
9/15/13 03:45:07	45.88004	-129.80261	274.76	4.34	1937.12	1941.5	Some current coming around with the leaning crinoids.	14713
9/15/13 03:46:49	45.88004	-129.80261	273.94	4.36	1935.34	1939.7	Continuing to climb.	14715
9/15/13 03:47:55	45.88004	-129.80262	277.06	5.08	1933.66	1938.7	Some kind of white sea star.	14723
9/15/13 03:48:31	45.88003	-129.80263	277.53	7.73	1930.6	1938.3	Top of a piece of a spire but there is more up.	14726
9/15/13 03:48:38	45.88003	-129.80264	277.54	7.89	1930.41	1938.3	Bottle brush corals.	14728
9/15/13 03:49:46	45.88000	-129.80269	277.68	8.35	1929.67	1938	Still at 1931m and top is supposed to be at 1911m.	14735
9/15/13 03:50:59	45.88000	-129.80273	277.32	9.61	1927.31	1936.9	HIGHLIGHTS on.	14745
9/15/13 03:51:09	45.88000	-129.80273	277.44	8.05	1927.5	1935.6	Some kind of soft coral.	14748
9/15/13 03:53:21	45.87999	-129.80270	277.39	6.35	1927.08	1933.4	HIGHLIGHTS off.	14776
9/15/13 03:53:28	45.87999	-129.80270	276.52	8.46	1926.36	1934.8	Beautiful white corals.	14777

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9/15/13 03:54:05	45.87999	-129.80270	276.3	8.59	1925.09	1933.7	Driving over a local high and will continue to climb up the target to the west. 1925m at this high.	14780
9/15/13 03:55:05	45.87999	-129.80277	277.17	6.96	1924.52	1931.5	Steep talus slope with lots of sediment. Sharp edges.	14782
9/15/13 03:55:12	45.87999	-129.80277	277.2	7.88	1923.59	1931.5	Starting to climb from 1925 m.	14783
9/15/13 03:56:46	45.88002	-129.80281	277.32	8.19	1920.81	1929	Looks like old sulfide chimney.	14786
9/15/13 03:57:12	45.88003	-129.80282	260.24	6.53	1921.03	1927.6	It is venting!	14792
9/15/13 03:58:17	45.88004	-129.80284	256.25	6.41	1921	1927.4	Depth is 1922m.	14796
9/15/13 03:58:46	45.88004	-129.80286	256.12	6.34	1921.06	1927.4	Going to take a temperature reading here.	14797
9/15/13 04:00:06	45.88003	-129.80292	256.43	6.3	1921.12	1927.4	Weak and Rusty Vent at Dependable. Cursor position is 45deg 52.8013'N 129 48.1686'W.	14800
9/15/13 04:00:46	45.88002	-129.80295	256.03	6.43	1921.04	1927.5	Heading is 256.4 and depth is 1921.8 with altitude of 9m (hanging on the east side of Dependable).	14801
9/15/13 04:01:09	45.88002	-129.80296	256.03	6.43	1921	1927.4	This site was due west of the local high we climbed up before driving a bit more west to then start climbing.	14803
9/15/13 04:03:10	45.88000	-129.80293	256.23	6.43	1921	1927.4	Temperature high was 65deg.	14811
9/15/13 04:03:25	45.87999	-129.80293	256.2	6.43	1921	1927.4	Good temperature for a HFS sample.	14812
9/15/13 04:03:42	45.87999	-129.80293	256.18	6.44	1920.91	1927.4	HIGHLIGHTS on.	14814
9/15/13 04:03:56	45.87998	-129.80293	256.93	6.41	1920.96	1927.4	Preparing for beast sample.	14815
9/15/13 04:07:44	45.87988	-129.80291	254.02	6.18	1920.85	1927	SAMPLE: HFS Weak and Rusty Vent at east side of Dependable. Location is cursor position 45deg 52.8013'N 129deg 48.1686'W. J731-HFS-05 (RUSTY!!) Start.	14820
9/15/13 04:08:42	45.87989	-129.80289	253.84	6.26	1920.83	1927.1	SAMPLE: HFS J731-HFS-05 not started yet-just pumping water to get temperature reading.	14822
9/15/13 04:11:17	45.87988	-129.80284	253.7	6.14	1920.85	1927	SAMPLE: HFS J731-HFS-05 Moving tip as temperature not as high. Still pumping water.	14827
9/15/13 04:12:58	45.87985	-129.80277	253.54	6.15	1920.81	1927	SAMPLE: HFS J731-HFS-05 O2 sensor=.16 Piston #9 unfiltered. Start.	14829
9/15/13 04:14:31	45.87988	-129.80278	253.06	6.1	1920.81	1926.9	HIGHLIGHTS off. J731-HFS-05 Weak and Rusty vent at east side of Dependable.	14833
9/15/13 04:16:00	45.87995	-129.80283	253.28	6.14	1920.81	1927	SAMPLE: HFS J731-HFS-05 Stop.	14835
9/15/13 04:16:32	45.87997	-129.80283	253.36	6.14	1920.77	1926.9	SAMPLE: HFS Tmax=56.9 Tavg=47.1 vol=700 T2=20 J731-HFS-05.	14837
9/15/13 04:16:58	45.87998	-129.80282	253.51	6.15	1920.78	1926.9	Wiggled the probe a bit as the temperature had come down.	14838
9/15/13 04:17:36	45.87999	-129.80280	253.53	6.15	1920.79	1926.9	Port blue #12 GTHFS will be used next.	14840
9/15/13 04:18:03	45.88000	-129.80278	253.53	6.15	1920.79	1926.9	SAMPLE: GTHFS J731-GTHFS-06 Fired port blue #12. Fired.	14842
9/15/13 04:18:42	45.88002	-129.80276	253.55	6.15	1920.81	1927	SAMPLE: GTHFS J731-GTHFS-06 T=41 same vent at Weak and Rusty but did wiggle the probe.	14843
9/15/13 04:19:05	45.88003	-129.80275	253.55	6.15	1920.81	1927	Piston #8 is next.	14845
9/15/13 04:19:40	45.88004	-129.80274	253.67	6.14	1920.78	1926.9	SAMPLE: HFS J731-HFS-07 Piston #8 Filtered. Same exact place at Weak and Rusty.	14846

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 04:23:02	45.88008	-129.80283	254.04	6.14	1920.77	1926.9	SAMPLE: HFS J731-HFS-07 stopped.	14852
9/15/13 04:24:00	45.88009	-129.80286	254.27	6.11	1920.83	1926.9	SAMPLE: HFS J731-HFS-07 Tmax=38.6 Tavg=35.2 vol=628 T2=15. Not convinced that this ran the whole time.	14853
9/15/13 04:24:06	45.88009	-129.80287	254.26	6.13	1920.83	1927	Done sampling at this site.	14855
9/15/13 04:24:46	45.88010	-129.80286	254.14	6.23	1921.08	1927.3	Got pulled away from vent.	14856
9/15/13 04:25:29	45.88010	-129.80284	253.74	6.35	1920.93	1927.3	Want to put a marker by the vent.	14858
9/15/13 04:25:43	45.88011	-129.80284	253.82	6.49	1920.91	1927.4	Putting HFS wand back in basket.	14859
9/15/13 04:27:45	45.88011	-129.80278	253.9	6.5	1920.98	1927.5	Going to deploy the marker in front of the gas-tight milk crate. Should be #142.	14863
9/15/13 04:27:54	45.88011	-129.80278	253.93	6.69	1920.93	1927.6	It is 142!	14864
9/15/13 04:36:46	45.88006	-129.80280	254.1	9.38	1918.02	1927.4	DEPLOY: Marker 142 deployed at Weak and Rusty vent on the east side of Dependable. Deployed just above sampling vent at 1918.8m depth. Vent was as 1921.4m.	14880
9/15/13 04:37:57	45.88007	-129.80279	284.14	9.96	1917.66	1927.6	DEPLOY: marker Vent sample site is below and another vent appears to be above the marker. Marker #142.	14883
9/15/13 04:38:19	45.88007	-129.80278	284.11	9.73	1917.96	1927.7	Moved over to the right to the larger venting-appearing area.	14886
9/15/13 04:38:29	45.88007	-129.80278	283.97	9.73	1917.94	1927.7	Very colorful vent.	14888
9/15/13 04:39:45	45.88008	-129.80275	283.9	9.25	1917.97	1927.2	Blue mat in Scorpio camera.	14894
9/15/13 04:41:33	45.88007	-129.80278	297.71	8.81	1919.01	1927.8	Flange formation. Worms; crabs; scale worms; palm worms.	14911
9/15/13 04:41:41	45.88007	-129.80279	300.3	8.08	1919.18	1927.3	Could be first flange structure at Axial.	14912
9/15/13 04:41:51	45.88007	-129.80280	297.77	7.74	1919.54	1927.3	Highlights have been on.	14913
9/15/13 04:42:21	45.88007	-129.80283	298.52	5.78	1919.8	1925.6	Sloped corrugated surface.	14918
9/15/13 04:43:24	45.88007	-129.80286	297.76	5.8	1919.82	1925.6	Super colorful.	14930
9/15/13 04:44:12	45.88007	-129.80286	281.87	6.64	1919.9	1926.5	Ripples in flange!	14938
9/15/13 04:44:55	45.88006	-129.80285	281.74	6.55	1919.99	1926.5	Upside down birdbath that is over-flowing.	14945
9/15/13 04:46:34	45.88006	-129.80284	281.6	6.54	1919.97	1926.5	WOW structure just above the last sample site and just to the right and slightly above Marker 142.	14962
9/15/13 04:47:14	45.88003	-129.80287	281.8	6.74	1920.05	1926.8	1920.8m depth while looking at the flange at 281deg heading.	14966
9/15/13 04:48:16	45.88004	-129.80286	281.55	7.19	1920.07	1927.3	Getting temperature probe.	14970
9/15/13 04:49:08	45.88005	-129.80286	272.83	7.08	1920.16	1927.2	As we circle around to the right can see other venting continuing.	14973
9/15/13 04:51:00	45.88007	-129.80285	248.62	6.6	1919.95	1926.6	Moving around closer to the flange for temperature probe.	14981
9/15/13 04:52:07	45.88010	-129.80284	226.61	5.69	1919.89	1925.6	HIGHLIGHTS off.	14986
9/15/13 04:52:16	45.88010	-129.80284	230.6	6.16	1919.94	1926.1	Stopped highlights to break up the clip.	14987
9/15/13 04:53:22	45.88010	-129.80283	248.33	5.31	1920.34	1925.7	HIGHLIGHTS on.	14990
9/15/13 04:53:39	45.88010	-129.80283	248.21	5.31	1920.29	1925.6	Turned highlights on for temperature measurement.	14991
9/15/13 04:54:06	45.88011	-129.80282	243.92	4.91	1920.58	1925.5	HIGHLIGHTS off.	14993
9/15/13 04:54:30	45.88011	-129.80282	244.1	4.88	1920.66	1925.5	Too tight to sample with Jason probe.	14994
9/15/13 04:56:11	45.88011	-129.80281	311.45	6.96	1919.74	1926.7	Height of flange is 1920.5.	14998
9/15/13 04:59:07	45.88004	-129.80284	288.73	8.31	1918.95	1927.3	Trying to find a way to sample the flange. Came up a little higher.	15004

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 04:59:32	45.88003	-129.80284	274.95	7.63	1919.33	1927	Going back down and see a ring of white where the water is flowing.	15006
9/15/13 05:02:08	45.87997	-129.80286	275.08	8.3	1919.31	1927.6	Super hot water in the flange. 125deg high so far.	15014
9/15/13 05:03:42	45.87995	-129.80287	275.16	7.18	1919.39	1926.6	HIGHLIGHTS on.	15017
9/15/13 05:04:51	45.87994	-129.80286	275.94	7.99	1919.37	1927.4	High 127.6deg this time.	15020
9/15/13 05:05:36	45.87995	-129.80285	275.15	7.35	1919.41	1926.8	146.9deg the high this time.	15022
9/15/13 05:06:43	45.87996	-129.80284	275.16	7.6	1919.38	1927	148.5deg is the high temperature. Probably not stable enough position for a water sample.	15024
9/15/13 05:06:49	45.87996	-129.80284	275.17	7.63	1919.39	1927	HIGHLIGHTS off.	15025
9/15/13 05:06:59	45.87996	-129.80284	275.15	7.61	1919.39	1927	Trying to figure out how to sample.	15026
9/15/13 05:10:58	45.88003	-129.80279	275.2	7.64	1919.5	1927.1	HIGHLIGHTS on.	15034
9/15/13 05:12:05	45.88004	-129.80278	273.44	7.81	1919.63	1927.4	Going to hold on to the wall with the port arm (or at least going to try).	15041
9/15/13 05:12:08	45.88004	-129.80278	273.4	7.83	1919.6	1927.4	HIGHLIGHTS off.	15042
9/15/13 05:14:37	45.88003	-129.80281	239.13	9.08	1916.99	1926.1	Looking for smoker at top of structure.	15048
9/15/13 05:14:45	45.88002	-129.80281	238.4	6.53	1916.74	1923.3	Above the flange there is no smoker.	15049
9/15/13 05:15:05	45.88002	-129.80281	239.46	9.21	1917.02	1926.2	There is more spires beyond this one.	15052
9/15/13 05:15:59	45.88001	-129.80282	238.4	9.86	1914.92	1924.8	Could be more flange on this structure.	15056
9/15/13 05:16:17	45.88002	-129.80283	271.03	10.64	1914.34	1925	Hot water on edge.	15060
9/15/13 05:16:35	45.88003	-129.80283	287.05	7.8	1912.96	1920.8	Still climbing.	15063
9/15/13 05:17:26	45.88002	-129.80284	285	4.01	1910.42	1914.4	Jason is at 1910m. This is the top-nothing on sonar .	15070
9/15/13 05:17:58	45.88001	-129.80286	284.34	4.78	1910.99	1915.8	Want to get position of the top.	15073
9/15/13 05:20:52	45.88001	-129.80289	283.79	5.05	1911.76	1916.8	Peak position is 45deg 52.7980'N ' 129 48.1729 'W 1912.7m depth while parked on the top.	15077
9/15/13 05:21:09	45.88001	-129.80288	284.57	4.93	1911.12	1916.1	That position was with the cursor while parked at the top for a few a minute.	15079
9/15/13 05:22:38	45.88001	-129.80287	244.63	11.14	1914.96	1926.1	Coming back down and seeing another ledge.	15084
9/15/13 05:23:31	45.88001	-129.80287	225.72	5.24	1916.68	1921.9	Continuing down and to the right (counter-clockwise) to the original flange site.	15088
9/15/13 05:23:59	45.88001	-129.80286	212.3	2.56	1917.18	1919.7	Good flow coming out of this small spire.	15090
9/15/13 05:24:40	45.88002	-129.80284	175.24	6.6	1917.92	1924.5	Above the flange area at 1917-18m depth.	15094
9/15/13 05:27:11	45.88007	-129.80286	176.13	12.74	1916.96	1929.7	Going to try to fluid sample in the small spires area.	15101
9/15/13 05:30:29	45.88009	-129.80285	181.08	4.26	1917.94	1922.2	Probe is not too far in. Checking HFS flow and temperature.	15112
9/15/13 05:34:53	45.88011	-129.80285	181.2	3.41	1917.82	1921.2	SAMPLE: HFS J731-HFS-08 starting. Piston #2 filtered. Start.	15122
9/15/13 05:36:43	45.88012	-129.80285	181.27	4.05	1917.81	1921.9	SAMPLE: HFS Depth here is 1918.6 Heading is 181.2. We are above and to the right of the flange and further right from the marker.	15125
9/15/13 05:37:37	45.88013	-129.80284	181.27	4.26	1917.8	1922.1	SAMPLE: HFS J731-HFS-08 Filtered piston #2 at a small spire.	15127
9/15/13 05:38:24	45.88013	-129.80284	181.28	4.05	1917.8	1921.9	SAMPLE: HFS Done. Tmax=150.4 Tavg=143.1 vol=600 T2=60. J731-HFS-08.	15130
9/15/13 05:38:41	45.88014	-129.80284	181.27	4.26	1917.79	1922.1	SAMPLE: J731-HFS-09 HFS Unfiltered Piston #3. J731-HFS-09 start.	15131

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 05:40:57	45.88015	-129.80284	181.31	4.3	1917.81	1922.1	SAMPLE: HFS Position for this sample is 45deg 52.80701 129 48.1 looking due south on the big spire at a depth of 1918.6	15134
9/15/13 05:41:51	45.88015	-129.80284	181.4	4.26	1917.83	1922.1	Position is 45deg 52.8070N 129deg 48.1710'W at Dependable.	15136
9/15/13 05:42:14	45.88015	-129.80284	181.37	4.04	1917.85	1921.9	SAMPLE: HFS J731-HFS-09 stop	15138
9/15/13 05:42:45	45.88015	-129.80284	181.39	4.06	1917.87	1921.9	SAMPLE: HFS J731-HFS-09 Tmax=141.8 Tavg=140.2 vol=629 T2=58.0	15139
9/15/13 05:43:19	45.88015	-129.80284	181.35	4.25	1917.85	1922.1	SAMPLE: J731-GTHFS-10 GTHFS center orange-16 at same exact spot. Triggered.	15141
9/15/13 05:43:55	45.88015	-129.80285	181.36	4.25	1917.85	1922.1	SAMPLE: GTHFS Pump came off so it is good. J731-GTHFS-10 is the sample. T=145.	15143
9/15/13 05:45:00	45.88015	-129.80285	181.34	4.25	1917.81	1922.1	SAMPLE: HFS Filtered bag #24 start.	15145
9/15/13 05:45:38	45.88014	-129.80286	181.33	4.26	1917.79	1922.1	SAMPLE: HFS J731-HFS-11 Filtered bag #24 at the same small spire with the wand in the same spot (temperature came up at start of sample).	15147
9/15/13 05:48:21	45.88012	-129.80288	181.4	4.26	1917.82	1922.1	SAMPLE: HFS J731-HFS-11 stop	15152
9/15/13 05:49:08	45.88011	-129.80289	181.4	4.24	1917.85	1922.1	J731-HFS-11 Filtered bag #24 Tmax=163.9 Tavg=161.7 T2=49 vol=626.	15154
9/15/13 05:49:32	45.88010	-129.80290	181.32	4.05	1917.83	1921.9	Done at this little spire.	15155
9/15/13 05:50:34	45.88009	-129.80291	181.42	4.01	1917.87	1921.9	Flange structure to the right (looks like a dome with a little spire on top).	15157
9/15/13 05:51:00	45.88008	-129.80291	181.38	3.96	1917.93	1921.9	Flange structure is to the left-not the right!!!!	15158
9/15/13 05:52:15	45.88005	-129.80295	190.03	11.44	1915.05	1926.5	Flying up and moving right a bit.	15161
9/15/13 05:52:48	45.88004	-129.80296	175.61	12.31	1913.63	1925.9	Going around the structure counter-clockwise.	15163
9/15/13 05:53:06	45.88003	-129.80296	175.94	12.58	1914.5	1927.1	Nothing very attractive there.	15166
9/15/13 05:53:24	45.88003	-129.80295	160.81	8.49	1913.99	1922.5	Looks like a solid cap on top of these.	15168
9/15/13 05:54:24	45.88001	-129.80296	153.15	7.54	1913.9	1921.4	Shimmer behind these spires-looks like behind and hard to get to.	15174
9/15/13 05:54:46	45.88001	-129.80297	151.74	5.81	1912.56	1918.4	Coming toward the top again as we continue to move around the structure.	15175
9/15/13 05:55:00	45.88000	-129.80297	153.48	8.5	1911.84	1920.3	View of the top.	15178
9/15/13 05:55:28	45.87998	-129.80298	145.73	13.55	1909.24	1922.8	Bright looking venting beyond us.	15181
9/15/13 05:57:02	45.87995	-129.80299	125.01	5.2	1918.81	1924	HIGHLIGHTS on.	15190
9/15/13 05:57:37	45.87995	-129.80300	125.01	6.19	1917.74	1923.9	Palm worms.	15196
9/15/13 05:57:48	45.87995	-129.80299	125.23	6.71	1917.16	1923.9	Some venting at the top of this one.	15197
9/15/13 05:58:04	45.87995	-129.80299	124.96	6.78	1917.16	1923.9	Dead spires in background.	15200
9/15/13 05:59:44	45.87994	-129.80298	155.04	6.41	1916.4	1922.8	This site is near the ROPOS anhydrite location but it is deeper (1917 vs. 1913).	15205
9/15/13 05:59:54	45.87994	-129.80298	154.97	6.44	1916.42	1922.9	Going to use temperature probe first.	15206
9/15/13 06:01:02	45.87995	-129.80296	173.7	5.21	1916.28	1921.5	Lots of blue mat just above the white sample target.	15212
9/15/13 06:01:39	45.87996	-129.80295	174.4	4.86	1916.74	1921.6	Bumped and stirred up some dust.	15213
9/15/13 06:03:36	45.87999	-129.80293	177.7	5.38	1916.23	1921.6	Got pulled off when probe touched.	15216
9/15/13 06:04:08	45.87999	-129.80292	177.66	5.34	1916.18	1921.5	These structures were a lot harder than expected and pushed us off the vent when tried to stick in probe.	15218

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 06:05:39	45.87999	-129.80292	177.62	5.33	1916.18	1921.5	This site was 113deg. Going to try the larger flow site just below in the sci camera.	15223
9/15/13 06:07:25	45.87998	-129.80292	177.56	5.34	1916.17	1921.5	Broke 200!	15228
9/15/13 06:09:48	45.87994	-129.80294	177.61	5.41	1916.09	1921.5	Temperature level-off at 216.2deg.	15231
9/15/13 06:10:52	45.87993	-129.80294	177.69	5.38	1916.21	1921.6	Putting probe away.	15233
9/15/13 06:12:04	45.87992	-129.80295	177.94	5.38	1916.07	1921.5	Going to take one gas-tight and a fluid sample here.	15236
9/15/13 06:12:46	45.87992	-129.80295	177.91	5.36	1916.1	1921.5	Hand-held gas-tight out of the basket here.	15237
9/15/13 06:13:23	45.87992	-129.80295	177.93	5.39	1916.04	1921.4	Removing GTB green-2 from the basket.	15239
9/15/13 06:18:19	45.87997	-129.80293	177.9	5.38	1916.02	1921.4	SAMPLE: GTB J731-GTB-12 Taking sample at the 216deg temperature site. Can see the holes made from the temperature probe.	15255
9/15/13 06:19:17	45.87997	-129.80293	177.89	3.94	1915.98	1919.9	SAMPLE: GTB J731-GTB-12 green-2 in the hole from the temperature probe (seen on pilot and other cameras).	15257
9/15/13 06:19:32	45.87997	-129.80293	177.9	5.38	1915.97	1921.4	SAMPLE: GTB Ram retracted.	15258
9/15/13 06:22:39	45.87996	-129.80294	177.76	5.35	1915.96	1921.3	Chimney is on the north side of the big chimney and is called Trusty. Very small.	15262
9/15/13 06:26:50	45.87994	-129.80296	177.7	5.33	1915.93	1921.3	SAMPLE: HFS J731-HFS-13 at Trusty and same as J731-GTB-12. Started. z=1916.8 Heading is 177.8. Moved probe around a bit to get higher temperature. Filtered piston #4. (Tube worm next to probe).	15268
9/15/13 06:27:40	45.87994	-129.80296	177.7	4.78	1915.93	1920.7	SAMPLE: HFS Location is 45 52.7952 -129 48.1766 with the cursor for Trusty. J731-HFS-13.	15270
9/15/13 06:28:08	45.87994	-129.80296	177.7	5.33	1915.94	1921.3	Tube worms are not very common right here-really had to look for this one.	15272
9/15/13 06:29:40	45.87995	-129.80296	177.71	5.34	1915.95	1921.3	SAMPLE: HFS J731-HFS-13 stopped at Trusty.	15276
9/15/13 06:30:14	45.87995	-129.80295	177.72	5.35	1915.93	1921.3	SAMPLE: HFS Tmax=183.8 Tavg=175.7 vol=601 T2=56. J731-HFS-13 at Trusty.	15278
9/15/13 06:30:34	45.87996	-129.80295	177.72	3.99	1915.94	1919.9	Done at Trusty. Same position for the samples here (same hole).	15279
9/15/13 06:30:44	45.87996	-129.80295	177.72	5.34	1915.93	1921.3	Stow the wand.	15280
9/15/13 06:32:33	45.87997	-129.80294	178.85	4.96	1915.89	1920.9	Want to put a marker out at Trusty. Will try to grab the front one in the port milk crate (141).	15283
9/15/13 06:33:04	45.87997	-129.80294	179.15	4.78	1915.88	1920.7	Marker 141 out of the basket.	15285
9/15/13 06:34:16	45.87998	-129.80293	178.97	5.35	1915.91	1921.3	DEPLOY: Marker 141 deployed at Trusty. Can't be in the holes sampled because too hot (will melt).	15290
9/15/13 06:34:55	45.87998	-129.80294	179.51	7.73	1913.89	1921.6	Position for Trusty is 45 52.7952'N 129deg 48.1766'W and depth was 1916.8.	15291
9/15/13 06:35:21	45.87995	-129.80295	192.89	3.86	1912.32	1916.2	Driving ahead at 178deg to the 'Alp' looking area.	15294
9/15/13 06:35:38	45.87993	-129.80296	194.89	5.11	1910.72	1915.8	There are the 2 horns we looked at on the top.	15295
9/15/13 06:36:27	45.87992	-129.80297	217.52	3.06	1911.63	1914.7	Looks like a good place for diffuse flow as there are a lot of worms here.	15299
9/15/13 06:36:42	45.87992	-129.80297	216.87	2.93	1911.87	1914.8	Lots of blue mat here as well.	15301

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 06:39:34	45.87992	-129.80303	148.45	7.53	1913.27	1920.8	Driving around the top of Dependable again looking for good diffuse flow for Jim Holden.	15316
9/15/13 06:40:33	45.87992	-129.80304	141.93	6.83	1914.96	1921.8	Mini flange here.	15324
9/15/13 06:40:57	45.87991	-129.80304	140.98	6.51	1914.94	1921.5	HIGHLIGHTS on.	15329
9/15/13 06:41:19	45.87991	-129.80304	140.94	6.79	1914.97	1921.8	Great flange images on Scorpio.	15332
9/15/13 06:41:30	45.87990	-129.80304	141.04	7.56	1914.93	1922.5	This flange looks easier to sample than the other one.	15333
9/15/13 06:42:34	45.87988	-129.80305	141.86	6.06	1914.58	1920.6	Looking around at this flange with highlights and then will want to sample.	15343
9/15/13 06:44:19	45.87988	-129.80307	141.11	7.4	1915.05	1922.5	HIGHLIGHTS off. This flange area is near the ROPOS anhydrite site.	15354
9/15/13 06:44:39	45.87987	-129.80307	140.9	8.13	1915.08	1923.2	Jason is looking SE near the top.	15355
9/15/13 06:46:45	45.87987	-129.80308	141.19	6.31	1915.18	1921.5	Watch change.	15359
9/15/13 06:47:12	45.87987	-129.80308	141.07	6.4	1915.15	1921.6	Turning lasers on to measure the flange size.	15361
9/15/13 06:48:49	45.87989	-129.80308	141.19	8.56	1914.74	1923.3	HIGHLIGHTS on. Flange is about 15cm across.	15364
9/15/13 06:49:29	45.87990	-129.80308	141.15	10.73	1914.51	1925.2	HIGHLIGHTS off.	15366
9/15/13 06:49:57	45.87991	-129.80308	141.14	11.34	1914.54	1925.9	Marker 141 is off to port.	15367
9/15/13 06:54:00	45.87994	-129.80301	156.82	8.73	1913.73	1922.5	Still looking at a flange area that we are going to call Gargoyle.	15373
9/15/13 06:55:00	45.87994	-129.80299	156.73	8.33	1913.42	1921.8	Getting ready to take a sulfide sample for Deb Kelly.	15375
9/15/13 06:55:25	45.87994	-129.80298	158.97	8.04	1913.61	1921.7	Positioning the stbd biobox under the flange we'll try to break off.	15377
9/15/13 06:55:31	45.87994	-129.80298	158.09	7.96	1913.59	1921.6	HIGHLIGHTS on.	15378
9/15/13 06:56:11	45.87995	-129.80298	157.86	7.99	1913.59	1921.6	Position for this sample is 45 52.7953 129 48.1818	15380
9/15/13 06:56:43	45.87996	-129.80298	154.19	7.8	1913.64	1921.4	SAMPLE: J731-Sulfide-14 Sulfide Now taking sample.	15381
9/15/13 06:57:26	45.87997	-129.80298	155.48	8.95	1913.67	1922.6	That flange was pretty friable and most of it broke apart without getting in the biobox.	15383
9/15/13 06:58:13	45.87997	-129.80297	155.23	9.06	1913.7	1922.8	Some other material from just above the flange also fell in the biobox.	15385
9/15/13 06:59:17	45.87997	-129.80298	154.77	11.25	1913.71	1925	Using the brow cam to look in the box; doesn't look like there is much solid rock but there is some powder in there.	15387
9/15/13 07:02:26	45.87994	-129.80299	160.35	7.48	1913.92	1921.4	Looking around to the left at hdg 129. Found a large ledge with sediment; several types of bacterial mat; and sulfide worms.	15400
9/15/13 07:03:07	45.87993	-129.80300	161.38	7.51	1913.97	1921.5	Using the ledge as an anchor to continue breaking off some of the previous flange.	15402
9/15/13 07:03:23	45.87993	-129.80301	159.31	7.54	1913.97	1921.5	Now the rock is extremely hard and wecan't break any more off.	15403
9/15/13 07:04:55	45.87992	-129.80303	159.71	7.49	1913.91	1921.4	One more attempt to break off more rock from this flange.	15407
9/15/13 07:06:45	45.87990	-129.80307	159.87	7.44	1913.87	1921.3	Tried just below the last grab but it is friable here as well. Didn't get any material into the biobox.	15414
9/15/13 07:07:33	45.87990	-129.80307	160.02	7.58	1913.92	1921.5	Managed to get a nice big piece.	15416
9/15/13 07:07:50	45.87989	-129.80307	159.96	7.58	1913.9	1921.5	Tried to drop it into the box but missed by an inch.	15417
9/15/13 07:08:27	45.87989	-129.80308	156.96	7.34	1913.84	1921.2	Will try one more time to get sulfide from this area.	15419

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9/15/13 07:12:11	45.87988	-129.80306	157.71	7.54	1913.76	1921.3	Can't seem to find an area where the rock can be broken off but not too friable.	15428
9/15/13 07:13:07	45.87988	-129.80305	157.55	7.53	1913.75	1921.3	Some of the pieces previously broken off have landed on the basket. Trying to pick them up and get them into the biobox.	15430
9/15/13 07:14:21	45.87988	-129.80304	157.94	7.51	1913.77	1921.3	There are flanges and visible diffuse venting across the entire face of this chimney.	15432
9/15/13 07:14:52	45.87988	-129.80303	157.96	7.51	1913.75	1921.3	High biodiversity; there is something growing on almost every surface here.	15433
9/15/13 07:15:22	45.87988	-129.80303	157.47	8.41	1913.76	1922.2	Got a small piece of sulfide into the biobox.	15435
9/15/13 07:17:54	45.87988	-129.80301	158.26	7.5	1913.77	1921.3	Got another piece of sulfide into the biobox. All those pieces are from the same area and will have the same sample name - sulfide-14.	15440
9/15/13 07:18:27	45.87989	-129.80301	159.04	7.79	1913.74	1921.5	Taking a temp measurement of the diffuse flow underneath the flange.	15442
9/15/13 07:21:11	45.87989	-129.80301	157.88	7.46	1913.78	1921.2	Tmax= 120C.	15446
9/15/13 07:22:37	45.87989	-129.80302	157.78	7.45	1913.77	1921.2	Repositioned the temp probe. New Tmax= 174C.	15449
9/15/13 07:25:33	45.87985	-129.80305	157.72	7.5	1913.75	1921.3	Stowed the stbd biobox.	15453
9/15/13 07:26:02	45.87985	-129.80305	155.32	8.73	1912.82	1921.6	Now we will move up the chimney looking for diffuse venting for Jim to get a water sample.	15455
9/15/13 07:27:28	45.87981	-129.80305	162.72	9.23	1911.04	1920.3	large patches of blue and white mat growing across old dead tubeworms.	15463
9/15/13 07:27:45	45.87980	-129.80305	162.61	9.11	1910.92	1920	Lots of diffuse flow coming up from below.	15464
9/15/13 07:29:43	45.87977	-129.80303	162.67	8.64	1911.03	1919.7	We want to find water at least 20C.	15470
9/15/13 07:30:12	45.87977	-129.80302	162.62	7.61	1911.16	1918.8	This area is all dead tubeworm carpets covered with white and blue mat.	15472
9/15/13 07:31:29	45.87976	-129.80300	136.76	6.5	1910.65	1917.2	Patches of long filamentous yellow/orange mat growing in a bare area at the top of the chimney.	15474
9/15/13 07:31:41	45.87977	-129.80299	109.02	3.98	1910.4	1914.4	We are at the very top of this spire.	15475
9/15/13 07:33:48	45.87981	-129.80295	337.46	15.31	1910.64	1926	We have come down on the other side of the ridge on top of the chimney.	15478
9/15/13 07:34:26	45.87981	-129.80295	316.67	12.78	1911.06	1923.8	Patches of white mat with shimmering water are visible but it is hard to tell exactly where the flow is coming from.	15480
9/15/13 07:35:04	45.87981	-129.80293	318.7	2.16	1912.1	1914.3	Carpets of orange mat are covering most of this side.	15482
9/15/13 07:35:25	45.87982	-129.80292	316.22	1.85	1912.27	1914.1	Some palmworms here but very few.	15483
9/15/13 07:36:04	45.87983	-129.80290	324.43	3.34	1912.43	1915.8	Some small spires here but they are probably over 100C which is too hot.	15485
9/15/13 07:42:02	45.87989	-129.80279	313.47	16.34	1909.88	1926.2	This are is not great so we will move to another peak on the large structure; to the SW.	15492
9/15/13 07:42:57	45.87990	-129.80278	313.62	16.54	1909.82	1926.4	We'll drop down to a small valley between the peak we are on and the smaller cone to the SW.	15493
9/15/13 07:51:23	45.87954	-129.80247	142.89	13.73	1930.75	1944.5	Arrived at the SE cone.	15503
9/15/13 07:52:37	45.87950	-129.80241	173.05	7.69	1931.03	1938.7	THE PREVIOUS few entries were talking about the SE cone; NOT SW.	15505
9/15/13 07:52:45	45.87949	-129.80240	177.52	8.03	1930.91	1938.9	Mega crab on a spire.	15506

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9/15/13 07:53:09	45.87948	-129.80241	178.75	8.06	1930.96	1939	We are on the NW corner of this cone.	15509
9/15/13 07:54:06	45.87939	-129.80254	129.08	7.95	1930.62	1938.6	It looks barren here. No worms or mats of any kind; only rock and sediment.	15514
9/15/13 07:55:32	45.87936	-129.80250	129.97	8.25	1925.62	1933.9	Small patches of dead tubeworms with a little bit of white mat; no venting seen anywhere.	15517
9/15/13 07:56:00	45.87935	-129.80251	137.68	8.41	1925.77	1934.2	We are at the top of this spire.	15519
9/15/13 07:56:43	45.87934	-129.80250	135.63	9.04	1927.23	1936.3	Spire location is 45 52.7667N 129 48.1469W.	15521
9/15/13 07:57:21	45.87933	-129.80250	124.72	8.41	1927.5	1935.9	There is another spire a few meters away; also completely barren.	15523
9/15/13 07:57:41	45.87933	-129.80250	122.95	8.91	1927.74	1936.7	No flow of any kind is visible.	15524
9/15/13 07:58:41	45.87934	-129.80248	123.42	7.23	1927.94	1935.2	We'll continue to move NE to see if there is anything of interest on the rest of this cone.	15526
9/15/13 07:59:36	45.87938	-129.80242	131.01	10.03	1929.02	1939.1	Lots of old dead spires covered in brown/tan sediment.	15528
9/15/13 08:00:00	45.87936	-129.80244	171.17	8.34	1929.55	1937.9	Some orange streaking but it doesn't look biological.	15529
9/15/13 08:01:19	45.87936	-129.80245	270.79	14.99	1929.75	1944.7	More large dead spires; some stained yellowish. Probably oxidized sulfur.	15536
9/15/13 08:11:26	45.87936	-129.80230	267.54	16.4	1929.69	1946.1	Still moving around this cone.	15548
9/15/13 08:13:27	45.87941	-129.80225	311.96	11.83	1929.61	1941.4	Can't find any life on this cone so we will move around the N side back to the main Dependable cone.	15555
9/15/13 08:16:35	45.87967	-129.80260	314.97	8.98	1931.26	1940.2	Arrived back at the main feature.	15559
9/15/13 08:18:08	45.87969	-129.80263	314.86	8.39	1931.55	1939.9	The SE side of this cone is also pretty barren but some white mat is visible in spots.	15562
9/15/13 08:21:30	45.87982	-129.80272	314.76	6.95	1926.78	1933.7	Moving upslope across boulders covered with red and orange sediment; also very thin white tubeworms.	15566
9/15/13 08:24:02	45.87990	-129.80278	315.25	12.74	1913.02	1925.8	Continuing up a barren rock face. Some orange and red staining.	15573
9/15/13 08:24:24	45.87992	-129.80278	305.72	12.66	1912.26	1924.9	This entire SE quadrant traverse has been dead.	15574
9/15/13 08:25:43	45.87995	-129.80280	293.58	9.13	1913.02	1922.2	Nearing the top bad everything is still dead.	15580
9/15/13 08:26:05	45.87997	-129.80280	314.22	7.58	1913.55	1921.1	A few patches of white mat with shimmering water is visible.	15582
9/15/13 08:26:35	45.87999	-129.80278	307.26	8.19	1916.03	1924.2	We have reached the site of the first sample; where marker 142 was placed.	15583
9/15/13 08:26:54	45.88001	-129.80279	312.3	6.65	1916.2	1922.9	HIGHLIGHTS on.	15584
9/15/13 08:28:14	45.88005	-129.80279	259.63	7.44	1917.95	1925.4	There is a large flange covered in dead tubeworm carpet and blue mat. Also red and orange bacterial mat.	15588
9/15/13 08:29:23	45.88007	-129.80282	223.63	8.13	1918.33	1926.5	Several large yellow/orange beehives here.	15595
9/15/13 08:30:19	45.88006	-129.80282	193.77	9.35	1918.13	1927.5	We are continuing to traverse E around the main feature.	15600
9/15/13 08:33:16	45.88002	-129.80283	180.6	6.53	1918.43	1925	This area is covered in life.	15620
9/15/13 08:35:27	45.87998	-129.80284	173.02	9.1	1914.72	1923.8	Moving away from the spire area and towards a large steep face covered in orange mat.	15637

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9/15/13 08:37:12	45.87994	-129.80283	171.94	10.84	1913.32	1924.2	We may have found an area of diffuse flow that will work for water samples.	15648
9/15/13 08:37:32	45.87993	-129.80284	171.99	10.9	1912.31	1923.2	Never mind it looks fairly hot.	15649
9/15/13 08:40:03	45.87991	-129.80282	114.47	11.33	1912.88	1924.2	White bottlebrush coral on this face.	15659
9/15/13 08:40:35	45.87989	-129.80283	136.1	10.9	1913.1	1924	Starfish!	15660
9/15/13 08:40:55	45.87989	-129.80283	138.53	10.59	1913.25	1923.8	We are back to Marker 141.	15661
9/15/13 08:44:14	45.87979	-129.80289	120.13	7.55	1912.72	1920.3	Looks like a huge chimney broke halfway up and fell on its side.	15680
9/15/13 08:47:22	45.87978	-129.80298	70.86	5.43	1912.76	1918.2	We have spotted an area with a little bit of diffuse flow. Going to check it out and see if the temp is in the right range.	15693
9/15/13 08:50:44	45.87979	-129.80309	68.67	5.03	1912.98	1918	Tmax= 57C.	15708
9/15/13 08:51:16	45.87980	-129.80311	68.69	4.98	1913.04	1918	This will have to work since we haven't been able to find anything better.	15710
9/15/13 08:51:41	45.87980	-129.80312	68.53	4.99	1913	1918	Placing the beast probe in this small vent.	15711
9/15/13 09:01:19	45.87999	-129.80317	68.14	5.05	1912.87	1917.9	SAMPLE: HFS Tmax= 46.8C O2=0.171 ml/L; pH voltage= 4.513.	15728
9/15/13 09:02:26	45.87998	-129.80316	68.09	5.04	1912.87	1917.9	SAMPLE: HFS Start J731-HFS-15 filtered bag 20.	15730
9/15/13 09:03:57	45.87996	-129.80314	68.05	5.04	1912.87	1917.9	Position is 45 52.7979N 129 48.1838W.	15732
9/15/13 09:05:19	45.87995	-129.80313	68.01	5.01	1912.87	1917.9	Stop J731-HFS-15 filtered bag 20. Tmax= 48.6C Tavg= 47.6C T2= 20C Vol= 654mL.	15735
9/15/13 09:06:08	45.87994	-129.80312	67.99	5.05	1912.84	1917.9	SAMPLE: HFS Start J731-HFS-16 unfiltered bag 21.	15737
9/15/13 09:09:10	45.87992	-129.80310	67.92	5.08	1912.79	1917.9	SAMPLE: HFS Stop J731-HFS-16 unfiltered bag 21. Tmax= 49.2C Tavg= 48.0C T2= 20C Vol= 653mL.	15741
9/15/13 09:09:59	45.87992	-129.80309	67.89	5.06	1912.82	1917.9	SAMPLE: HFS Start J731-HFS-17 large volume bag position1.	15742
9/15/13 09:27:30	45.87992	-129.80298	67.7	5.05	1912.77	1917.8	SAMPLE: HFS Stop J731-HFS-17 large volume bag position1. Tmax= 50.0C Tavg= 48.8C T2= 22C Vol= 4002mL.	15762
9/15/13 09:28:44	45.87991	-129.80297	67.72	5.01	1912.77	1917.8	SAMPLE: HFS Start J731-HFS-18 RNA filter 15.	15764
9/15/13 09:46:14	45.87994	-129.80302	67.62	5.01	1912.72	1917.7	Stop J731-HFS-18 RNA filter 15. Tmax= 53.3C Tavg= 51.2C T2= 21C Vol= 3001mL.	15784
9/15/13 09:47:20	45.87993	-129.80305	67.61	4.99	1912.72	1917.7	SAMPLE: HFS Start J731-HFS-19 RNA filter 16.	15786
9/15/13 10:02:30	45.87990	-129.80296	67.63	5.05	1912.61	1917.7	SAMPLE: HFS Stop J731-HFS-19 RNA filter 16. Tmax= 53.2C Tavg= 51.5C T2= 21C Vol= 3003mL.	15804
9/15/13 10:03:24	45.87991	-129.80295	67.48	4.98	1912.7	1917.7	Done with fluid sampling at this vent; will now collect some sediment a few feet away from the vent.	15806
9/15/13 10:06:52	45.87995	-129.80289	67.01	5	1912.69	1917.7	HIGHLIGHTS on. Taking J731-SED-20. Grey sediment with a small patch of white mat on the surface.	15810
9/15/13 10:07:39	45.87996	-129.80287	67.03	5.03	1912.63	1917.7	Tmax=2.2C; O2= 1.223 mL/L	15812
9/15/13 10:08:20	45.87997	-129.80286	67.04	5.03	1912.63	1917.7	SAMPLE: Microbio J731-SED-20.	15814
9/15/13 10:13:37	45.88002	-129.80276	67.13	4.95	1912.7	1917.7	Pushrod was pressed on the syringe but it didn't fire. The release pin might have seized.	15821
9/15/13 10:15:00	45.88002	-129.80276	67.17	4.94	1912.72	1917.7	This was the large green syringe. Going to use the white syringe to collect the same sediment.	15823

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9/15/13 10:15:19	45.88002	-129.80275	67.17	4.93	1912.71	1917.6	HIGHLIGHTS off.	15826
9/15/13 10:16:15	45.88001	-129.80275	67.24	4.95	1912.7	1917.7	Stbd claw is not opening and closing reliably. This has been an ongoing problem.	15828
9/15/13 10:18:48	45.87999	-129.80276	67.37	5.03	1912.62	1917.7	SAMPLE: Microbio J731-SED-20 second attempt with white syringe.	15834
9/15/13 10:27:20	45.87991	-129.80293	67.78	4.89	1912.68	1917.6	SAMPLE: Sed The large white syringe seized as well so now we have to use a the small yellow syringe.	15845
9/15/13 10:35:13	45.87988	-129.80302	68.33	4.91	1912.7	1917.6	SAMPLE: Microbio J731-SED-20. The holstered large white syringe just fired. Must have been the plunger release mechanism that froze up.	15856
9/15/13 10:36:23	45.87988	-129.80302	28.45	6.26	1911.1	1917.4	Done with all sampling at this site. Now we will move up and around the cone to see what else is here and find a good spot to collect blue mat.	15858
9/15/13 10:37:38	45.87987	-129.80303	341.21	13.93	1911.3	1925.2	We are near the top of the chimney now. Mostly brown and grey sediment with some red/orange staining but not a lot of life.	15866
9/15/13 10:39:49	45.87986	-129.80300	329.62	11.51	1910.59	1922.1	Large white and grey feature up ahead. Some venting coming up from the bottom of a series of lobate flanges.	15878
9/15/13 10:42:43	45.87984	-129.80295	335.93	16.25	1911.26	1927.5	We are back to the area with large bare boulders and basically no life on the S side.	15884
9/15/13 10:44:59	45.87981	-129.80294	336.06	21.34	1911.39	1932.7	Jason watch change.	15887
9/15/13 10:53:06	45.87969	-129.80281	336.53	5.63	1937.71	1943.3	We're heading along the bottom to Dependable South.	15897
9/15/13 10:53:17	45.87968	-129.80280	336.48	5.96	1937.97	1943.9	Sea Pen on the bottom.	15899
9/15/13 10:54:47	45.87962	-129.80274	271.27	5.41	1941.11	1946.5	Backing down Dependable main chimney. Heading for Dependable South.	15902
9/15/13 10:55:58	45.87959	-129.80266	202.15	3.76	1944.15	1947.9	We're in the valley between Dependable and Dependable SE-cone. Heading S/SW.	15904
9/15/13 10:59:55	45.87937	-129.80289	213.48	3.29	1952.96	1956.3	We're heading SW over sulfide rock and sedimented seafloor.	15909
9/15/13 11:00:06	45.87937	-129.80290	195.87	3.9	1953.48	1957.4	Not much to look at here.	15911
9/15/13 11:00:47	45.87931	-129.80294	186.29	2.9	1956	1958.9	We're at the SW portion of Dependable SE cone.	15912
9/15/13 11:05:55	45.87902	-129.80333	231.77	2.85	1973.97	1976.8	In the sonar image we are down in the low between a couple big sulfides. Heading to the SW toward a chimney that UW said was extinct.	15918
9/15/13 11:07:34	45.87891	-129.80336	231.46	2.49	1975.38	1977.9	We're on the east side of Dependable South.	15921
9/15/13 11:11:44	45.87879	-129.80344	263.45	7.64	1969.57	1977.2	So starting to head up Dependable South. Sulfide blocks and lots of sediment.	15927
9/15/13 11:13:24	45.87877	-129.80354	267.72	5.75	1965.3	1971.1	Starfish.	15932
9/15/13 11:14:37	45.87877	-129.80353	266.5	7.23	1963.72	1971	Dropping a weight.	15934
9/15/13 11:15:53	45.87879	-129.80357	302.45	8.49	1960.5	1969	Little corals on the top of this sulfide.	15937
9/15/13 11:17:31	45.87880	-129.80357	334.29	9.41	1958.63	1968	Big old extinct spire here 13+ meters up. Some tiny (probably very old) white corals. No action here.	15946
9/15/13 11:18:13	45.87883	-129.80354	351.64	6.73	1963	1969.7	Moving toward the northern peak on Dependable South.	15948

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 11:18:52	45.87891	-129.80358	323.23	6	1963.76	1969.8	That peak is looming in front of us.	15949
9/15/13 11:20:00	45.87893	-129.80367	326.01	4.01	1963.72	1967.7	It also looks dead. Has some pretty pink corals at the top. No sign of venting. The small white corals are present here as well.	15955
9/15/13 11:20:54	45.87894	-129.80368	21.8	11.75	1963.43	1975.2	Something else big is looming right ahead.	15957
9/15/13 11:21:52	45.87899	-129.80374	23.26	15.86	1963.05	1978.9	This structure is 14+ feet high. No sign of venting.	15961
9/15/13 11:21:56	45.87900	-129.80374	23.29	15.7	1963.3	1979	NAV: Doppler Reset	15962
9/15/13 11:24:07	45.87899	-129.80377	131.15	16.03	1962.94	1979	Next task is to head to the southeast to the unexplored sulfide mound without a name.	15967
9/15/13 11:25:35	45.87895	-129.80378	139.38	13.61	1964.5	1978.1	Moving over the top of Dependable South. Can't see much.	15969
9/15/13 11:26:15	45.87888	-129.80376	141.32	9.69	1962.88	1972.6	Pretty low light. Not much to see but big sulfide blocks.	15972
9/15/13 11:26:24	45.87887	-129.80375	139.97	9.25	1962.85	1972.1	Heading SE.	15973
9/15/13 11:26:54	45.87885	-129.80374	139.36	7.96	1960.18	1968.1	Will travel over 100 meters to the southeast.	15974
9/15/13 11:27:29	45.87885	-129.80373	139.17	9.95	1956.87	1966.8	Passing Dependable South southern spire. Sea cucumber and lots of small white corals.	15979
9/15/13 11:32:22	45.87853	-129.80345	138.75	4.21	1975.32	1979.5	We're flying above the bottom about 5 meters. Coming down now. 4 m altitude.	15986
9/15/13 11:32:43	45.87850	-129.80341	139.45	3.25	1977.83	1981.1	Sedimented bottom in sight.	15987
9/15/13 11:34:27	45.87851	-129.80333	87.33	1.74	1979.41	1981.2	We still seem to have the 20 meter offset. We're farther south of the base of Dependable South on the map - but we really just got to the bottom.	15991
9/15/13 11:34:54	45.87854	-129.80332	87.29	1.81	1978.94	1980.8	Moving over thick sediments. Not much to look at here.	15993
9/15/13 11:40:48	45.87856	-129.80300	98.83	8.35	1967.82	1976.2	Starting to go up the side of the south cone.	16000
9/15/13 11:42:25	45.87857	-129.80293	97.99	8.51	1960.85	1969.4	There is a big chimney at 12m on this cone.	16004
9/15/13 11:42:50	45.87855	-129.80291	98.41	9.71	1959.4	1969.1	There is orange mat on the sides of chimney.	16005
9/15/13 11:44:40	45.87854	-129.80287	143.56	5.83	1955.68	1961.5	Undependable's northwest cone ahead of us. Dubbing this entire sulfide structure "Undependable".	16012
9/15/13 11:45:56	45.87858	-129.80289	99.28	11.28	1955.77	1967.1	Odd light brown staining on this spire that is 15 meters high. There is another cone behind us.	16016
9/15/13 11:46:02	45.87859	-129.80289	96.91	12.25	1955.37	1967.6	No sign of venting here.	16018
9/15/13 11:47:25	45.87857	-129.80272	143.78	9.08	1953.12	1962.2	Coming upon another peak in "Undependable's NW cone".	16021
9/15/13 11:47:41	45.87856	-129.80270	143.68	7.03	1952.22	1959.3	We're at the tippy top of the NW cone now.	16022
9/15/13 11:48:34	45.87849	-129.80272	144.42	4.66	1953.77	1958.4	Remnant cones?	16031
9/15/13 11:50:42	45.87839	-129.80259	119.3	8.94	1955.06	1964	We'll next head to the sop of the main structure here on "Undependable sulfide mound".	16035
9/15/13 11:53:04	45.87830	-129.80253	119.12	8.31	1948.77	1957.1	This thing is huge. This SW side of the structure does not show signs of hydrothermal activity.	16039
9/15/13 11:54:38	45.87831	-129.80248	118.88	5.2	1949.8	1955	Not seeing a whole lot here. More of this light brown staining (or perhaps it is just broken off pieces of sulfide.	16042

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 11:56:39	45.87833	-129.80238	119.46	6.45	1949.23	1955.7	This structure does not appear to be hydrothermally active - at least not so far.	16045
9/15/13 11:59:42	45.87826	-129.80230	100.64	5.25	1948.38	1953.6	Putting a Jason target in here called Undependable Spire. Z=1948m.	16051
9/15/13 12:00:11	45.87825	-129.80227	99.46	2.46	1950.37	1952.8	Not sure if we are at the top of this structure of not. Will head to the northeast on this structure now.	16053
9/15/13 12:00:34	45.87823	-129.80228	77.58	1.68	1951.52	1953.2	Don't see anything else in the sonar.	16054
9/15/13 12:02:31	45.87825	-129.80214	75.97	0.74	1955.98	1956.7	Really oxidized spires that look like old chimlets. Some light colored mineralization (?).	16063
9/15/13 12:02:49	45.87825	-129.80215	73.26	1	1955.92	1956.9	Lots of this Undependable cone looks like lava - especially here at the top.	16064
9/15/13 12:03:09	45.87826	-129.80216	74.09	0.8	1956	1956.8	Blacker rock under these sediments up here.	16067
9/15/13 12:03:50	45.87827	-129.80218	22.51	0.91	1955.16	1956.1	Ochre-colored mineralization up here on the top of Undependable.	16069
9/15/13 12:04:15	45.87827	-129.80217	346.02	4.04	1952.95	1957	Looking at basalt covered with sediment.	16072
9/15/13 12:05:24	45.87825	-129.80224	327.32	9.65	1946.36	1956	The top of this structure should be less than 1930 meters so we probably have not seen all of it.	16074
9/15/13 12:08:28	45.87837	-129.80231	120.94	5.66	1950.71	1956.4	We're at the top of Undependable. I was confusing this with the SE cone of Dependable.	16078
9/15/13 12:28:22	45.87879	-129.80169	77.08	189.88	1978.12	2168	SAMPLE: Microbio J731-Microbio-21 small blue syringe. Taking a syringe sample from the sediment on our way from Undependable to North East.	16098
9/15/13 12:41:29	45.87895	-129.80157	354.64	9.34	1968.37	1977.7	Isolated chimneys in sight.	16114
9/15/13 12:42:01	45.87899	-129.80152	355.19	8.18	1968.73	1976.9	The one we just passed is 9m high.	16115
9/15/13 12:43:32	45.87908	-129.80158	356.55	6.46	1968.42	1974.9	Lots of extinct chimneys out here.	16119
9/15/13 12:44:10	45.87915	-129.80160	330.57	3.68	1972.5	1976.2	Isolated; old sulfide chimneys out here on the sediment.	16121
9/15/13 12:44:36	45.87919	-129.80164	332.83	3.66	1972.04	1975.7	So all the little bumps we see in the sonar are probably chimneys.	16122
9/15/13 12:46:11	45.87924	-129.80175	298.49	4.31	1969.99	1974.3	Heading to the north checking out the "bumps" in the bathymetry. Looking for hot water action.	16125
9/15/13 12:47:01	45.87929	-129.80169	357.29	5.48	1969.33	1974.8	Sulfide blocks on the seafloor on the SW side of the large Dependable mound (SE cone).	16128
9/15/13 12:49:46	45.87939	-129.80158	325.88	4.09	1974.27	1978.4	More of the same. Sulfide boulders on the sedimented seafloor. No biology to speak of.	16132
9/15/13 12:51:47	45.87935	-129.80151	96.75	2.78	1975.89	1978.7	Turning to the east to see if we can capture that isolated chimney to the NE of us. Hard to tell with the nav offset.	16135
9/15/13 12:52:44	45.87934	-129.80138	76.12	5.13	1975.85	1981	Sulfide chimney with corals and hydroids.	16140
9/15/13 12:53:35	45.87934	-129.80136	76.27	8	1972.94	1980.9	NAV: THAT PUTS US 20 METERS S/SW OF THE FEATURE ON THE MAP.	16144
9/15/13 12:54:55	45.87934	-129.80139	61.37	4.09	1976.75	1980.8	Looks like part of this chimney have fallen off. It has holes in it. Pretty pink and white corals on the chimney.	16149
9/15/13 12:55:22	45.87937	-129.80141	23.9	3.95	1976.99	1980.9	Heading north.	16152
9/15/13 12:56:52	45.87947	-129.80137	352.59	2.94	1979.58	1982.5	Back on the sedimented seafloor at the eastern side of "Dependable".	16154

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 12:59:29	45.87960	-129.80123	8.38	4	1978.67	1982.7	Little extinct chimneys. This one is 5 meters tall.	16159
9/15/13 12:59:34	45.87961	-129.80123	8.17	3.99	1978.72	1982.7	Continuing north.	16160
9/15/13 12:59:58	45.87962	-129.80121	8.2	3.63	1979.29	1982.9	Pillow lavas on the seafloor.	16163
9/15/13 13:00:28	45.87965	-129.80119	8.15	3.3	1977.8	1981.1	Pillows on the seafloor.	16167
9/15/13 13:01:00	45.87967	-129.80118	7.66	4.04	1976.49	1980.5	No sulfides here. Old weathered pillows scattered on the seafloor.	16169
9/15/13 13:01:12	45.87968	-129.80118	7.99	5.06	1975.41	1980.5	No bugs for Begum.	16172
9/15/13 13:03:09	45.87978	-129.80112	10.38	5.25	1969.81	1975.1	Bizarre old basalt feature with odd-twisted pillows. This structure is 6 meters high.	16178
9/15/13 13:03:19	45.87978	-129.80114	10.66	4.71	1970.36	1975.1	No sulfide on this one.	16180
9/15/13 13:03:32	45.87978	-129.80116	359.41	5.21	1969.56	1974.8	Old weathered pillows make up this little mound.	16181
9/15/13 13:04:37	45.87984	-129.80118	0.63	2.06	1971.53	1973.6	That was probably the mound to the NE of Dependable SE peak. It's pillow basalt mound. No sulfide on this one.	16183
9/15/13 13:05:02	45.87987	-129.80119	359.61	2.21	1972.62	1974.8	The mound we just passed over was a pillow mound - no sulfide.	16186
9/15/13 13:06:25	45.87990	-129.80118	2.2	2.15	1973.55	1975.7	Thick sediments with scatter pillows exposed.	16188
9/15/13 13:10:17	45.88018	-129.80133	2.46	2.79	1979.53	1982.3	Traveling over more pillows on the seafloor - in deep sediments.	16193
9/15/13 13:13:41	45.88018	-129.80159	265.3	5.96	1972.25	1978.2	Bizarre cracked open drained-out feature.	16199
9/15/13 13:14:16	45.88017	-129.80165	266.01	6.14	1969.4	1975.5	More sediment and small pillow mounds.	16201
9/15/13 13:19:15	45.88037	-129.80205	302.81	5.91	1970.75	1976.7	We're on the NE side of Dependable sulfide structure. Down here it's pillow basalts.	16208
9/15/13 13:21:47	45.88059	-129.80212	328.74	5.56	1975.83	1981.4	Now we are seeing sulfide blocks overlaid on pillow lavas.	16212
9/15/13 13:26:48	45.88105	-129.80236	347.03	6.78	1960.49	1967.3	We're now starting to climb up the big mound to the north of "Dependable". Dubbing it "North Dependable" - if it hasn't already been named that.	16221
9/15/13 13:27:41	45.88114	-129.80233	347.27	8.79	1952.82	1961.6	Huge pillow mounds. Crazy old draped pillows. Climbing up this heavily sedimented pillow mound.	16225
9/15/13 13:28:10	45.88115	-129.80233	344.84	4.36	1951.65	1956	No sign of hot water.	16227
9/15/13 13:28:18	45.88115	-129.80233	345.39	4.29	1951.4	1955.7	The pillows have gotten smaller.	16228
9/15/13 13:28:42	45.88119	-129.80237	359.45	5.04	1949.93	1955	Corals up ahead.	16230
9/15/13 13:30:18	45.88130	-129.80248	35.54	3.25	1951.64	1954.9	This is a huge pillow mound. Heavily sedimented.	16234
9/15/13 13:31:46	45.88134	-129.80244	8.6	1.91	1952.18	1954.1	A couple of sea cucumbers. One pink and one long and white. Also seeing some small white corals.	16238
9/15/13 13:33:58	45.88141	-129.80269	357.08	5.04	1953.91	1959	We're almost to the top of this pillow mound on the southern end of "Dependable North".	16242
9/15/13 13:34:39	45.88144	-129.80270	14.42	2.36	1955.7	1958.1	Pillows upon pillows.	16244
9/15/13 13:35:03	45.88145	-129.80273	35.62	2.78	1955.82	1958.6	Strange-looking starfish.	16249
9/15/13 13:35:33	45.88146	-129.80274	30.96	2.23	1957.01	1959.2	Tito needs some ballast so he's going to collect a pillow sample.	16250
9/15/13 13:40:06	45.88145	-129.80275	34.23	2.11	1957.01	1959.1	SAMPLE: J731-rock-22. Grabbing a couple pieces of this pillow lava for Tito. Z=1958m. Oxidized.129 48.1648' W 45 52.8853'N.	16256

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-731 Dive Comments	Virtual Van #
9/15/13 13:40:45	45.88146	-129.80273	85.7	4.28	1954.48	1958.8	Continuing up this pillow mound.	16258
9/15/13 13:42:58	45.88172	-129.80295	333.66	3.7	1957.32	1961	Old pillows. This mound seems to be entirely pillow lavas. Heavily sedimented and old; old; old.	16263
9/15/13 13:44:16	45.88179	-129.80307	3.44	3.25	1953.8	1957.1	These are constructional pillow mounds. Bill says it doesn't look ancient - hard to say how old it is. Doesn't look like it's millions of years old.	16266
9/15/13 13:45:12	45.88188	-129.80305	1.42	3.76	1949.45	1953.2	Corals and sea cucumbers on the pillows.	16272
9/15/13 13:47:06	45.88200	-129.80321	8.96	3.19	1946.79	1950	Yellowish oxidized sediments out here.	16276
9/15/13 13:48:48	45.88203	-129.80314	323.58	1.44	1946.87	1948.3	SAMPLE: Rock Going to pick up a rock for Dave Clague to try to get some idea about the chemistry of this structure.	16280
9/15/13 13:48:55	45.88203	-129.80314	323.62	1.41	1946.93	1948.3	Brittle star.	16281
9/15/13 13:51:29	45.88202	-129.80314	322.95	1.23	1947.13	1948.4	SAMPLE: Rock J731-rock-23. Grabbing a piece of this lava which wants to crumble. Oxidized piece of pillow lava. Stored in the gastight box.	16288
9/15/13 13:54:00	45.88203	-129.80314	324.34	1.3	1947.16	1948.5	J731-rock-23 cont. Z=1948m. 129 48.1877 W 45 52.92155' N. Picking up another nice chunk of pillow lava. This will all be one sample.	16294
9/15/13 13:55:38	45.88205	-129.80311	324.48	2.98	1943.24	1946.2	Still scooting along the bottom.	16299
9/15/13 13:55:44	45.88206	-129.80313	322.13	3.89	1942.93	1946.8	JASON: Jason off bottom	16300
9/15/13 13:58:18	45.88206	-129.80312	320.99	3.56	1942.76	1946.3	End of bottom time on J731.	16304
9/15/13 14:02:14	45.88165	-129.80312	184.57	82.64	1871.54	1954.2	recording pH and oxygen on HFS during ascent	16307
9/15/13 15:05:15	45.88157	-129.80328	126.19		4.19		Medea on surface.	16312
9/15/13 15:05:49	45.88157	-129.80328	132.92		-0.14		Jason on surface.	16313
9/15/13 15:07:08	45.88156	-129.80329	165.32		-0.31		Medea on deck.	16314
9/15/13 15:14:33	45.88156	-129.80330	182.85		-0.73		JASON: Jason out of water Jason out of water.	16315
9/15/13 15:16:13	45.88159	-129.80327	88.39		-0.71		JASON: Jason on deck	16316

6.6.7 J2-732 Dive Log

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/15/13 19:06:41	45.93012	-130.01933	189.07	164.31	0.9	165.21	Jason in water	16319
9/15/13 19:06:57	45.93013	-130.01931	154.1	0.74	0.9	1.64	Medea in water	16320
9/15/13 20:06:37	45.94627	-129.98195	331.42	3.66	1514.96	1518.62	Bottom and APL elevator are in sight.	16338
9/15/13 20:06:42	45.94628	-129.98198	329.16	3.55	1515.25	1518.8	Jason on bottom.	16339
9/15/13 20:07:55	45.94629	-129.98200	329.26	2.35	1516	1518.35	Everything looks good on the elevator. The skirt is intact.	16341
9/15/13 20:09:33	45.94634	-129.98199	258.66	1.08	1517.04	1518.12	First the upper elevator straps need to be cut to release the donuts.	16346
9/15/13 20:10:23	45.94636	-129.98201	227.43	1.38	1517.36	1518.74	Correction; upper straps are holding the vent cap down. Lower straps secure the donuts.	16348
9/15/13 20:12:17	45.94637	-129.98199	215.84	0.74	1518.16	1518.9	Deploying Jason's prison shank.	16351

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/15/13 20:13:17	45.94635	-129.98195	263.69	1.08	1516.99	1518.07	Moving around to cut the straps on the opposite side.	16353
9/15/13 20:16:03	45.94635	-129.98203	345.31	0.74	1518.1	1518.84	The seafloor in this area is a jumbled pile of lava flow but is relatively flat so the elevator is standing upright.	16357
9/15/13 20:16:43	45.94635	-129.98203	345.09	0.74	1518.07	1518.81	The springs in the elevator legs seem to work well on this terrain.	16358
9/15/13 20:17:21	45.94635	-129.98203	345.26	0.74	1518.1	1518.84	All the straps are cut and the knife is stowed.	16360
9/15/13 20:19:09	45.94636	-129.98199	354.09	2.55	1516.21	1518.76	Preparing to remove the vent cap from the elevator. We are dumping some ballast weight to make sure Jason is able to lift the cap.	16363
9/15/13 20:23:21	45.94635	-129.98201	355.15	1.58	1516.86	1518.44	Picking up the upper vent cap assembly.	16368
9/15/13 20:27:11	45.94632	-129.98216	264.54	4.63	1514.52	1519.15	Transiting to Trevi with the vent cap. 120 to go; hdg 271 deg.	16374
9/15/13 20:28:20	45.94631	-129.98229	272.96	4.05	1514.04	1518.09	HD FRAMEGRABS HAVE NOT BEEN WORKING. At least for the beginning of this dive. Software was restarted and now they are being recorded.	16376
9/15/13 20:44:20	45.94633	-129.98359	274.25	1.58	1516.25	1517.83	Arrived at the vent site and are doing a quick survey of the area to see where the cap and donuts should be placed.	16396
9/15/13 20:46:26	45.94632	-129.98361	267.09	1.38	1516.89	1518.27	Most of this area is rough and rocky which is not ideal to put the cap on.	16399
9/15/13 20:47:02	45.94632	-129.98361	266.9	1.36	1516.93	1518.29	We've located a small flat patch covered in sediment that looks good.	16400
9/15/13 20:47:47	45.94631	-129.98361	269.21	1.4	1517.02	1518.42	Vent cap has been placed on the bottom. Seems flat and stable.	16402
9/15/13 20:49:10	45.94622	-129.98369	278.88	5.2	1513.68	1518.88	Now we will go get the elevator.	16405
9/15/13 20:49:44	45.94617	-129.98371	279.62	5.49	1513.27	1518.76	There is no marker at the vent we thought was Trevi but there should be one here.	16406
9/15/13 20:50:52	45.94606	-129.98395	245.31	5.65	1516.33	1521.98	Need to confirm our location when we get back.	16408
9/15/13 20:51:19	45.94605	-129.98412	275.35	5.46	1516.52	1521.98	From picking up the elevator.	16410
9/15/13 20:57:20	45.94623	-129.98369	81.29	3.84	1515.54	1519.38	Doing a flyby of the Trevi site.	16422
9/15/13 20:57:48	45.94624	-129.98367	5.69	3.39	1515.44	1518.83	We can see two small white mounds and are not sure which one is Trevi. No markers so far.	16423
9/15/13 20:58:33	45.94624	-129.98370	321.8	0.74	1518.35	1519.09	The shorter of the two mounds looks like it has stronger flow so that must be it.	16428
9/15/13 20:59:44	45.94624	-129.98355	93.21	2.64	1515.66	1518.3	Ok now we're pretty sure the short mound is Trevi because it has two orifices - the main flow and one a foot or so off to the side.	16430

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/15/13 21:00:17	45.94623	-129.98343	87.19	3.45	1516.86	1520.31	During installation we'll try to get both orifices within the donut.	16432
9/15/13 21:15:36	45.94631	-129.98213	78.46	5.03	1511.77	1516.8	Elevator is in sight.	16448
9/15/13 21:19:50	45.94634	-129.98197	3.38	4.66	1513.96	1518.62	Grabbing the elevator by the top handle but it is difficult to lift. Need to use both arms.	16458
9/15/13 21:22:21	45.94635	-129.98195	273.78	9.25	1509.26	1518.51	Transiting to Trevi.	16463
9/15/13 21:37:47	45.94633	-129.98349	257.71	8.46	1511.29	1519.75	Vents are in sight. Dropping down to the seafloor slowly with the elevator.	16479
9/15/13 21:39:26	45.94637	-129.98359	278.3	4.76	1513.3	1518.06	Elevator is on the bottom and we have let go.	16483
9/15/13 21:40:59	45.94638	-129.98355	198.22	4.11	1514.28	1518.39	Elevator has settled and looks stable; not perfectly upright but close.	16485
9/15/13 21:41:24	45.94634	-129.98357	212.25	2.15	1515.51	1517.66	Going to pick up the weights we had dropped earlier.	16487
9/15/13 21:47:26	45.94636	-129.98363	272.49	0.75	1517.34	1518.09	Moving back to the elevator to cut the straps holding the donut down.	16503
9/15/13 21:51:31	45.94636	-129.98365	94.92	1.4	1518.16	1519.56	Elevator is standing on three legs due to the uneven terrain but still seems stable.	16517
9/15/13 21:52:17	45.94636	-129.98364	94.48	1.35	1518.16	1519.51	All the straps have been cut.	16520
9/15/13 21:53:43	45.94636	-129.98363	102.46	3.79	1515.72	1519.51	The donut is packed with sandbags that need to be pulled out before removing the donut from the elevator.	16523
9/15/13 21:56:17	45.94639	-129.98352	270.51	1.26	1516.9	1518.16	Resting Jason's basket on the edge of the elevator to maintain position. Doesn't seem to be moving the elevator at all.	16527
9/15/13 21:59:07	45.94633	-129.98363	273.61	1.25	1516.73	1517.98	Transferring sandbags to the basket.	16531
9/15/13 22:00:34	45.94627	-129.98357	235.39	3.06	1514.73	1517.79	Moving over to the vent to drop off sandbags.	16536
9/15/13 22:03:08	45.94620	-129.98364	321.45	3.14	1515.59	1518.73	Going back to get more sandbags.	16544
9/15/13 22:06:38	45.94635	-129.98372	342.89	3.54	1515.62	1519.16	Remaining bags from inside the donut have been transferred to the basket and now we are moving back to the vent.	16548
9/15/13 22:07:01	45.94632	-129.98374	212.66	3.31	1516.29	1519.6	Passing benchmark AX-302.	16549
9/15/13 22:10:14	45.94624	-129.98371	1.79	1.83	1516.78	1518.61	Next we'll pick up the donut and do a test fit on the vent.	16554
9/15/13 22:16:45	45.94635	-129.98373	90.87	1.53	1518.06	1519.59	Trying to position the sub in the best place to pick up the donut.	16562
9/15/13 22:17:46	45.94635	-129.98371	91.62	1.69	1517.92	1519.61	Sitting on the seafloor seems to work better than resting on the elevator.	16567
9/15/13 22:18:17	45.94636	-129.98373	77.25	4.3	1515.49	1519.79	Got the donut with both arms and now we're moving it over to the vent.	16569

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9/15/13 22:20:08	45.94630	-129.98377	177.08	4.25	1514.97	1519.22	HIGHLIGHTS start.	16578
9/15/13 22:21:05	45.94630	-129.98375	181.14	1.25	1518.38	1519.63	Doing a test fit to see if we need to do any excavating before placing the donut.	16580
9/15/13 22:23:50	45.94630	-129.98375	135.26	154.52	1518.73	1673.25	The vents are not directly on top of the mound but down one side a bit so when centered the donut is leaning significantly.	16589
9/15/13 22:24:24	45.94630	-129.98374	135.29	123.27	1518.8	1642.07	Doing a little excavating and pushing the donut back and forth to level off the top.	16591
9/15/13 22:25:09	45.94631	-129.98374	135.52	170.82	1518.82	1689.64	There was also some flow escaping under the upslope side of the donut.	16593
9/15/13 22:27:47	45.94630	-129.98375	131.7	0.8	1518.48	1519.28	Upper right in our view seems high but better than before. Needs more work to get level.	16599
9/15/13 22:28:58	45.94631	-129.98369	244.8	0.95	1517.83	1518.78	The upper part of the mound is relatively hard and resistant to excavation. We'll likely need to place sandbags around the lower edge to get the don't level.	16601
9/15/13 22:29:55	45.94629	-129.98365	300.06	0.93	1517.87	1518.8	The flow is centered well right now and seems to be contained well by the donut.	16605
9/15/13 22:29:58	45.94629	-129.98365	310.1	0.76	1517.98	1518.74	HIGHLIGHTS stop.	16606
9/15/13 22:34:38	45.94628	-129.98364	327.37	1.75	1517.19	1518.94	Excavating some more material from the high side with the claw.	16612
9/15/13 22:37:45	45.94631	-129.98359	125.72	0.99	1518.35	1519.34	Pushing the donut around some more to work it deeper into the sediment and hopefully level it out.	16619
9/15/13 22:41:56	45.94630	-129.98365	98.41	3.31	1516.76	1520.07	Circling around the donut to see how it looks from other angles.	16625
9/15/13 22:42:34	45.94630	-129.98366	98.57	3.36	1516.69	1520.05	Jason watch change.	16628
9/15/13 22:48:13	45.94632	-129.98363	133.69	0.74	1518.8	1519.54	Trying to level the vent cap over Trevi.	16636
9/15/13 22:48:20	45.94632	-129.98363	133.54	0.74	1518.79	1519.53	Jason is going to give it a nudge.	16637
9/15/13 22:48:37	45.94631	-129.98362	134.05	0.83	1518.75	1519.58	Still not level	16639
9/15/13 22:48:52	45.94631	-129.98362	133.87	0.79	1518.78	1519.57	HIGHLIGHTS start.	16640
9/15/13 22:49:29	45.94631	-129.98362	134.37	0.81	1518.71	1519.52	This could take a while from the looks of it.	16642
9/15/13 22:49:47	45.94631	-129.98362	133.49	0.74	1518.77	1519.51	Jason is nudging it again - this time in the other direction.	16643
9/15/13 22:52:13	45.94631	-129.98372	132.97	111.45	1518.78	1630.23	They think that it looks good.	16648
9/15/13 22:52:29	45.94631	-129.98373	133.13	0.74	1518.82	1519.56	HIGHLIGHTS stop.	16650
9/15/13 22:52:41	45.94631	-129.98374	133.13	161.31	1518.84	1680.15	They like the looks of it.	16651
9/15/13 22:53:11	45.94631	-129.98375	133.12	0.74	1518.8	1519.54	The next idea is to put some sandbags on the downhill side.	16653

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9/15/13 22:54:10	45.94627	-129.98376	133.08	2.04	1517.04	1519.08	Jason is moving over to the sandbags.	16655
9/15/13 22:57:16	45.94625	-129.98373	100.53	0.74	1518.47	1519.21	Placing the sandbags on the Jason porch.	16659
9/15/13 23:01:17	45.94625	-129.98374	79.45	2.9	1516.23	1519.13	Jason is lifting off and heading back to Trevi with the sandbags.	16664
9/15/13 23:02:56	45.94631	-129.98378	106.16	1.58	1518.02	1519.6	Moving around the donut preparing to place the sandbags.	16666
9/15/13 23:03:37	45.94631	-129.98377	108.7	0.74	1518.64	1519.38	HIGHLIGHTS start.	16668
9/15/13 23:07:07	45.94634	-129.98374	107.09	0.79	1518.59	1519.38	TREVI: Placing sandbags at the base of the donut.	16678
9/15/13 23:09:45	45.94633	-129.98373	106.92	0.8	1518.59	1519.39	Moving the camera around Trevi. Want to place another sandbag near the handle. Here at TREVI.	16685
9/15/13 23:10:35	45.94630	-129.98371	106.91	0.8	1518.6	1519.4	HIGHLIGHTS stop.	16692
9/15/13 23:12:14	45.94629	-129.98369	106.9	0.8	1518.59	1519.39	Going to travel to the elevator and decide if we want to move it closer.	16695
9/15/13 23:14:30	45.94632	-129.98372	105.98	0.79	1518.59	1519.38	Repositioning one of the bags.	16699
9/15/13 23:14:40	45.94633	-129.98373	80.65	3.04	1517.06	1520.1	Moving out to looks for the elevator.	16700
9/15/13 23:14:57	45.94636	-129.98373	69.36	4.5	1514.87	1519.37	There it is to the left of the vent cap apparatus.	16701
9/15/13 23:15:09	45.94637	-129.98371	69.7	2.85	1515.53	1518.38	We've been placing sandbags around the donut at Trevi.	16703
9/15/13 23:15:20	45.94638	-129.98369	69.59	2.51	1516.14	1518.65	Next will move the elevator = perhaps??	16704
9/15/13 23:16:37	45.94640	-129.98367	60.41	1.81	1517.55	1519.36	Preparing to release the elevator.	16709
9/15/13 23:18:39	45.94640	-129.98369	60.42	1.96	1517.41	1519.37	The elevator will take about 25 minutes to get to the surface.	16713
9/15/13 23:21:45	45.94643	-129.98370	60.38	1.89	1517.4	1519.29	The elevator is on its way to the surface.	16719
9/15/13 23:23:01	45.94639	-129.98386	175.76	4.36	1514.19	1518.55	Moving back to the donut at Trevi.	16722
9/15/13 23:24:41	45.94595	-129.98385	175.75	13.51	1506.35	1519.86	We're coming off the bottom because the ship has to maneuver to get the elevator. We're 10m off the bottom and still moving up.	16725
9/15/13 23:26:24	45.94561	-129.98388	198.38	35.74	1485.91	1521.65	We will be taking a brief break in the logging action. Stay tuned.	16727
9/15/13 23:57:52	45.94464	-129.98142	151.12	82.01	1433.42	1515.43	We're still waiting for the elevator. It's on the surface. Jason is still off the bottom.	16728
9/16/13 00:00:38	45.94483	-129.98161	125.77	82.84	1433.46	1516.3	The deck crew have hooked the elevator.	16729
9/16/13 00:02:25	45.94493	-129.98185	117.16	83.32	1433.36	1516.68	Bringing the elevator on deck.	16730
9/16/13 00:03:29	45.94496	-129.98198	119.9	83.35	1433.4	1516.75	Elevator safely on the deck.	16731
9/16/13 00:13:47	45.94512	-129.98234	124.7	83.42	1433.42	1516.84	Lighted jellyfish captured on Scorpio camera.	16739
9/16/13 00:16:49	45.94517	-129.98251	145.12	83.62	1433.4	1517.02	Ship is headed back to Trevi area.	16740
9/16/13 00:18:01	45.94528	-129.98261	149.14	69.27	1448.48	1517.75	Medea is headed back to the site as well.	16741

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9/16/13 00:19:32	45.94555	-129.98286	324.26	54.92	1463.79	1518.71	Jason just did a 180deg turn to drive back to the site instead of being pulled.	16742
9/16/13 00:22:02	45.94615	-129.98325	328.61	39.39	1479.05	1518.44	Jason has joined Medea (it is just underneath and visible on the camera).	16743
9/16/13 00:23:31	45.94616	-129.98324	328.7	13.71	1506.91	1520.62	20m off the bottom and about the same distance to the vent cap.	16745
9/16/13 00:23:40	45.94620	-129.98326	328.82	10.53	1509.95	1520.48	NAV: Doppler Reset	16746
9/16/13 00:23:52	45.94621	-129.98330	328.24	6.93	1513.55	1520.48	Bottom in sight.	16747
9/16/13 00:24:14	45.94622	-129.98338	328.64	5.94	1514.56	1520.5	Looks like sheet flow and sediment.	16749
9/16/13 00:24:44	45.94622	-129.98350	268.39	4.65	1515.32	1519.97	There are the mounds.	16750
9/16/13 00:25:14	45.94624	-129.98358	315.59	3.49	1514.64	1518.13	There is the vent cap.	16752
9/16/13 00:25:43	45.94625	-129.98367	300.89	3.93	1515.44	1519.37	Now you can see Trevi vent with its donut on.	16754
9/16/13 00:27:47	45.94628	-129.98376	307.61	0.84	1518.42	1519.26	The donut looks not very level.	16757
9/16/13 00:28:11	45.94627	-129.98379	11.35	1.7	1517.63	1519.33	Circling around the vent.	16759
9/16/13 00:31:25	45.94627	-129.98380	74.39	0.74	1519.08	1519.82	The donut looks a bit tilted. Tito is discussing that with the guys.	16763
9/16/13 00:33:09	45.94627	-129.98379	347	0.76	1518.84	1519.6	It's at quite an angle. They would like to push it.	16774
9/16/13 00:33:21	45.94627	-129.98379	346.99	0.74	1518.84	1519.58	Jason will try to level the donut.	16775
9/16/13 00:34:37	45.94627	-129.98378	354.4	0.74	1518.78	1519.52	Jason gave the donut a good shove. Looks a bit better now.	16782
9/16/13 00:37:01	45.94630	-129.98373	76.94	1.74	1518.01	1519.75	Going to start over here. The sandbags will be pulled away from the donut and will start fresh.	16785
9/16/13 00:39:47	45.94625	-129.98384	74.12	0.74	1519.11	1519.85	It's deceiving looking at the donut. It depends which camera you're looking in.	16791
9/16/13 00:40:48	45.94626	-129.98383	74.08	0.74	1519.1	1519.84	Going in with the sandbags again.	16793
9/16/13 00:42:01	45.94625	-129.98380	336.2	1.21	1517.73	1518.94	The plan is to put sandbags on the back side to level it.	16798
9/16/13 00:43:47	45.94626	-129.98379	335.07	0.74	1518.63	1519.37	Going in for sandbags to prop up the down-leaning side.	16802
9/16/13 00:46:35	45.94627	-129.98376	294.63	94.73	1518.49	1613.22	Jason is placing the sandbags close to the base of the donut.	16805
9/16/13 00:48:15	45.94628	-129.98376	295.2	0.74	1518.5	1519.24	The bags are fiberglass - good to 600 degrees C. They won't burn up.	16808
9/16/13 00:49:28	45.94627	-129.98378	298.28	0.9	1518.54	1519.44	Jason is using the port arm to elevate the donut and stuffing the sandbags under the donut with the stbd arm.	16810
9/16/13 00:49:35	45.94627	-129.98378	298.27	72.12	1518.5	1590.62	HIGHLIGHTS start.	16811
9/16/13 00:51:21	45.94627	-129.98378	298.59	0.74	1518.44	1519.18	One of the sandbags is in place under the donut.	16816

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9/16/13 00:52:17	45.94628	-129.98375	298.39	0.74	1518.42	1519.16	Pushing the donut out of the way so that the sandbags can be place under it.	16818
9/16/13 00:53:52	45.94628	-129.98375	298.59	0.74	1518.4	1519.14	This is a delicate operation. That is looking much better already.	16821
9/16/13 00:54:18	45.94627	-129.98377	298.52	0.74	1518.33	1519.07	Going to fly around the donut and see how well it is balanced.	16824
9/16/13 00:55:43	45.94627	-129.98385	91.13	2.5	1517.78	1520.28	It looks a lot more level.	16830
9/16/13 00:55:53	45.94628	-129.98386	111.46	1.85	1517.87	1519.72	Maybe not?	16831
9/16/13 00:58:14	45.94629	-129.98381	143.62	183.14	1519.11	1702.25	Jason is continuing to try to steady the donut.	16835
9/16/13 00:59:35	45.94630	-129.98373	141.46	198.53	1519.14	1717.67	Jason is moving the sandbags back into place.	16837
9/16/13 01:00:38	45.94631	-129.98375	141.4	148.9	1519.12	1668.02	Jason just touched the donut. It's really tippy.	16838
9/16/13 01:01:16	45.94630	-129.98378	141.41	57.87	1519.18	1577.05	Highlights were turned off at 0056.	16840
9/16/13 01:03:37	45.94627	-129.98382	125.72	1.18	1518.24	1519.42	Zooming in to look at the flow.	16842
9/16/13 01:04:07	45.94626	-129.98383	70.72	2.3	1518.16	1520.46	Circling the vent to get a look at the donut.	16846
9/16/13 01:05:55	45.94629	-129.98378	253.68	0.74	1518.56	1519.3	It's looking much better now.	16852
9/16/13 01:06:53	45.94629	-129.98376	254.04	44.72	1518.99	1563.71	Repositioning the donut to capture the flow.	16854
9/16/13 01:07:28	45.94629	-129.98375	253.99	127.72	1519.05	1646.77	Oops. The donut tipped and fell down slope again.	16856
9/16/13 01:08:20	45.94629	-129.98376	254.01	100.79	1519.02	1619.81	Tito (Jason) moved the donut back into place.	16857
9/16/13 01:11:22	45.94626	-129.98377	27.19	2.95	1516.52	1519.47	Going in for more sand bags.	16870
9/16/13 01:14:41	45.94635	-129.98378	150.1	0.74	1518.28	1519.02	Jason is picking up some sand bags to stuff around the base of the donut.	16877
9/16/13 01:19:15	45.94638	-129.98365	130.89	0.96	1518.48	1519.44	Jason is shaking the sandbags to get the oxidized sediments off.	16883
9/16/13 01:21:10	45.94638	-129.98374	130.71	0.9	1518.59	1519.49	NAV: Doppler Reset	16886
9/16/13 01:21:39	45.94637	-129.98379	183.82	3.5	1515.18	1518.68	Jason has grabbed a half dozen sand bags and is heading over to Trevi and the donut again.	16887
9/16/13 01:22:40	45.94630	-129.98388	116.9	1.41	1517.72	1519.13	Trevi is sitting on quite a mound - more apparent from a distance.	16892
9/16/13 01:24:34	45.94628	-129.98385	110.3	0.74	1519	1519.74	Jason is removing the sand bags from the vehicle and placing them around the base of the donut - again.	16897
9/16/13 01:26:17	45.94630	-129.98383	111.84	0.74	1518.94	1519.68	Tucking the smaller sand bags around the donut base.	16900
9/16/13 01:28:23	45.94628	-129.98372	110.76	0.74	1518.99	1519.73	Continuing to pile sand bags around the base of the donut.	16904
9/16/13 01:30:27	45.94625	-129.98376	110.15	0.74	1518.97	1519.71	Kicked up a bit of dust with that one.	16907
9/16/13 01:32:37	45.94632	-129.98383	110.18	0.74	1518.95	1519.69	Placing more sandbags.	16910
9/16/13 01:33:38	45.94631	-129.98384	47.48	1.48	1517.97	1519.45	Looking around the donut.	16915

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/16/13 01:34:20	45.94630	-129.98380	23.23	0.74	1519.1	1519.84	Looking over the situation.	16919
9/16/13 01:35:24	45.94627	-129.98376	23.35	0.74	1519.16	1519.9	More sand bag placing. It continues.	16922
9/16/13 01:45:13	45.94628	-129.98377	22.95	0.74	1519.27	1520.01	Continuing to manipulate the donut. Seeing if it is stable.	16934
9/16/13 01:46:26	45.94629	-129.98372	285.97	1.2	1517.91	1519.11	Twirling around the donut again.	16937
9/16/13 01:49:39	45.94632	-129.98367	70.07	2.68	1517.31	1519.99	Getting more sand bags.	16942
9/16/13 01:50:22	45.94634	-129.98368	167.55	0.74	1518.4	1519.14	The sediments in this area are really orange (oxidized basalt).	16944
9/16/13 01:51:32	45.94634	-129.98369	147.22	0.74	1518.9	1519.64	Picking up more sandbags and loading them on the Jason porch.	16947
9/16/13 01:55:10	45.94636	-129.98363	148.21	0.83	1518.8	1519.63	Going in for the sand bags. Grabbing big and small.	16952
9/16/13 01:55:44	45.94636	-129.98362	144.79	1.6	1517.92	1519.52	Heading back to Trevi to lay some more sand bags.	16953
9/16/13 01:58:19	45.94629	-129.98369	59.28	0.76	1519.42	1520.18	Back at Trevi and placing more sand bags.	16960
9/16/13 02:00:33	45.94627	-129.98377	58.57	0.93	1519.41	1520.34	Looking at where flow is escaping. Bringing in the bags.	16963
9/16/13 02:06:30	45.94626	-129.98376	345.05	0.74	1519.27	1520.01	Placed another small bag in the donut ring.	16976
9/16/13 02:07:34	45.94629	-129.98377	354.92	4.05	1516.38	1520.43	Ben says to point the pipes so that they shoot up hill.	16979
9/16/13 02:07:47	45.94631	-129.98377	14.38	6.98	1515.17	1522.15	Going over to pick up the cap structure.	16980
9/16/13 02:09:18	45.94633	-129.98360	126.05	3.68	1516.32	1520	Preparing to grab the cap structure. Casey is discussing the process.	16986
9/16/13 02:11:28	45.94632	-129.98360	234.16	1.04	1517.41	1518.45	Going in for the grab of the cap structure. It weighs 105 pounds.	16991
9/16/13 02:11:48	45.94632	-129.98361	233.78	0.75	1517.42	1518.17	Bringing in the stbd arm as well.	16992
9/16/13 02:13:27	45.94632	-129.98365	232.58	0.75	1517.4	1518.15	Maybe not. Have the cap structure in the port arm. Here come the stbd arm as well.	16996
9/16/13 02:13:53	45.94631	-129.98365	232.27	1.06	1517.4	1518.46	Still trying to use the stbd arm too. Got a grip now.	16997
9/16/13 02:15:14	45.94624	-129.98370	267.27	2	1517.31	1519.31	HIGHLIGHTS start.	17000
9/16/13 02:15:43	45.94624	-129.98371	268.33	2.09	1517.03	1519.12	In position to lower the cap on the donut over Trevi anhydrite.	17001
9/16/13 02:17:35	45.94627	-129.98373	268.4	1.45	1517.62	1519.07	Waiting for the "dust" to settle.	17004
9/16/13 02:18:28	45.94628	-129.98369	268.61	1.36	1517.66	1519.02	Lots of sediments; anhydrite; etc. was stirred up. Have to wait for the view to clear.	17006
9/16/13 02:19:38	45.94630	-129.98365	295.43	0.85	1518.95	1519.8	Holding the cap structure with both Jason arms. Will set it down on the donut next.	17008

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9/16/13 02:21:41	45.94634	-129.98360	295.46	0.91	1518.97	1519.88	Placed the cap on the donut. There is a definite lean to the structure. Hopefully it can be righted a bit.	17013
9/16/13 02:22:42	45.94633	-129.98359	301.85	0.74	1518.71	1519.45	Jason is going in with the stbd claw.	17014
9/16/13 02:22:47	45.94633	-129.98359	294.84	1.13	1519.01	1520.14	HIGHLIGHTS stop.	17015
9/16/13 02:23:00	45.94632	-129.98360	291.66	0.74	1519.12	1519.86	Have let go of the cap structure.	17016
9/16/13 02:24:06	45.94630	-129.98364	288.86	0.74	1518.97	1519.71	The structure is tilted. Not sure if something has to be done or not.	17019
9/16/13 02:24:09	45.94630	-129.98365	272.49	0.74	1519.03	1519.77	Having a look.	17020
9/16/13 02:25:31	45.94629	-129.98374	182.16	0.74	1519.79	1520.53	Looks pretty good when facing due south (hdg 182).	17025
9/16/13 02:25:48	45.94629	-129.98375	182.21	0.76	1519.81	1520.57	Jason is going in to nudge the cap a bit.	17026
9/16/13 02:27:04	45.94630	-129.98374	181.94	0.79	1519.69	1520.48	It is pretty easy to move.	17030
9/16/13 02:27:47	45.94629	-129.98373	181.97	0.74	1520.09	1520.83	CORRECTION: THE CAP STRUCTURE HAS NOT YET BEEN PLACED ON THE DONUT OVER TREVI.	17032
9/16/13 02:28:57	45.94624	-129.98375	182.01	0.74	1520.06	1520.8	THE BIG MOMENT APPROACHES. THE CAP STRUCTURE WILL BE PLACED ON THE DONUT OVER THE VENT. WAITING....	17034
9/16/13 02:30:13	45.94620	-129.98379	183.52	2.28	1518.38	1520.66	Jason has the cap in both arms. Moving in over the donut.	17040
9/16/13 02:30:17	45.94620	-129.98380	183.73	2.39	1518.31	1520.7	HIGHLIGHTS start.	17041
9/16/13 02:30:42	45.94621	-129.98380	182.57	1.75	1518.95	1520.7	The big moment!	17046
9/16/13 02:31:26	45.94623	-129.98381	89.34	2.01	1518.91	1520.92	Not quite. Jason wants to rotate around. Has stirred up more seafloor muck.	17050
9/16/13 02:31:42	45.94624	-129.98380	88.02	1.74	1519.06	1520.8	Waiting for visibility to improve.	17051
9/16/13 02:33:57	45.94628	-129.98376	84.92	0.94	1519.82	1520.76	The cap structure is poised.	17061
9/16/13 02:34:12	45.94627	-129.98376	83.81	0.94	1519.77	1520.71	Nicely done.	17063
9/16/13 02:34:35	45.94627	-129.98375	83.58	0.86	1519.78	1520.64	He has moved it into place.	17064
9/16/13 02:34:50	45.94626	-129.98374	84.64	0.83	1519.82	1520.65	Letting go with both arms now.	17067
9/16/13 02:35:22	45.94625	-129.98372	84.98	0.83	1519.82	1520.65	Still manipulating the cap on the donut.	17069
9/16/13 02:36:45	45.94625	-129.98372	39.72	1.65	1518.27	1519.92	Wow. Great job Tito. That was not easy	17075
9/16/13 02:36:49	45.94624	-129.98372	21.51	1.74	1518.23	1519.97	Looks pretty good.	17076
9/16/13 02:37:22	45.94625	-129.98372	0.99	0.74	1519.46	1520.2	There is good flow coming out of the tubes.	17084
9/16/13 02:38:46	45.94626	-129.98374	1.03	0.74	1519.56	1520.3	Zooming in on the base to look for diffuse flow. Could just be coming up through the sediments.	17089
9/16/13 02:39:11	45.94625	-129.98374	1.01	0.74	1519.54	1520.28	Zooming around the vent cap structure.	17092
9/16/13 02:40:02	45.94624	-129.98373	1.01	0.74	1519.59	1520.33	There is a bit of a gap between the donut and the vent cap.	17094

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9/16/13 02:40:44	45.94624	-129.98370	291.16	0.74	1519.01	1519.75	Jason is zooming around the vent cap. It's not quite on the donut totally.	17096
9/16/13 02:41:41	45.94621	-129.98370	276.69	0.74	1518.86	1519.6	The fit over the donut is not quite perfect. They want to look around a bit and go from there.	17098
9/16/13 02:42:37	45.94623	-129.98374	180.71	0.84	1520.07	1520.91	Zooming in. Need to push the cap off the handle on the donut.	17103
9/16/13 02:43:25	45.94625	-129.98376	180.71	0.88	1520.07	1520.95	The cap needs to go away from us a bit.	17105
9/16/13 02:43:49	45.94626	-129.98376	180.7	0.88	1520.03	1520.91	Jason is going in for the grab.	17107
9/16/13 02:45:01	45.94628	-129.98374	180.69	0.86	1520.06	1520.92	May want to fly around to the other side.	17109
9/16/13 02:45:13	45.94628	-129.98374	180.69	0.85	1520.05	1520.9	Jason shift change. Matt is taking over for Tito now.	17111
9/16/13 02:45:47	45.94628	-129.98374	180.69	0.86	1520.05	1520.91	HIGHLIGHTS stop.	17112
9/16/13 02:46:17	45.94628	-129.98375	180.68	0.86	1520.07	1520.93	Still need to make sure that the cap is sitting on the donut without too much flow escaping.	17114
9/16/13 02:49:31	45.94628	-129.98386	332.8	0.74	1519.2	1519.94	Seeing some leakage when looking at 332deg.	17118
9/16/13 02:50:19	45.94627	-129.98385	332.8	0.74	1519.2	1519.94	The 2 donuts look offset a bit so the top one needs to come left at this angle.	17120
9/16/13 02:53:21	45.94628	-129.98376	332.73	0.74	1519.22	1519.96	HIGHLIGHTS start. Using the 2 arms to realign the 2 donuts.	17127
9/16/13 02:54:08	45.94627	-129.98376	332.65	0.86	1519.21	1520.07	The donut came toward Jason on that move.	17130
9/16/13 02:55:04	45.94627	-129.98378	332.64	0.85	1519.2	1520.05	There still is flow coming out after realignment.	17136
9/16/13 02:59:06	45.94629	-129.98382	78.42	1.21	1519.35	1520.56	Looking at 042 where the mismatch is between the donuts.	17153
9/16/13 02:59:17	45.94629	-129.98382	84.86	1.39	1519.33	1520.72	HIGHLIGHTS stop.	17155
9/16/13 03:00:41	45.94633	-129.98383	82.74	1.38	1519.28	1520.66	Jason will try to realign from this angle (the donuts).	17159
9/16/13 03:02:53	45.94638	-129.98378	82.87	1.36	1519.36	1520.72	The seal looks better. Now going to add some more sand bags.	17165
9/16/13 03:06:52	45.94632	-129.98380	72.5	1.06	1519.22	1520.28	Moving around to the right.	17175
9/16/13 03:08:44	45.94630	-129.98382	71.45	0.76	1519.83	1520.59	Getting another sand bag for this side.	17178
9/16/13 03:11:49	45.94626	-129.98382	71.75	0.74	1519.8	1520.54	Going to put another bag along the donut seal.	17186
9/16/13 03:18:37	45.94629	-129.98374	322.9	0.74	1519.32	1520.06	Fixing a leak at hdg 322 by nudging the top donut again.	17206
9/16/13 03:21:35	45.94625	-129.98373	322.86	0.81	1519.31	1520.12	Ready to drop the skirt. Need to not move the cap to disturb the donut seal.	17212
9/16/13 03:21:38	45.94625	-129.98373	322.85	1.49	1519.31	1520.8	HIGHLIGHTS start.	17213
9/16/13 03:22:34	45.94627	-129.98372	322.87	0.74	1519.34	1520.08	Will hold the instrument with the other arm while pulling the pin for the skirt release with the other (stbd).	17216

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9/16/13 03:24:29	45.94628	-129.98373	322.81	0.78	1519.31	1520.09	One side of skirt released.	17224
9/16/13 03:24:45	45.94628	-129.98372	322.8	0.74	1519.31	1520.05	HIGHLIGHTS stop.	17225
9/16/13 03:25:53	45.94626	-129.98371	323.66	0.74	1519.27	1520.01	Now will do reverse: pull with port and hold with stbd arms.	17227
9/16/13 03:26:54	45.94627	-129.98373	323.59	0.74	1519.31	1520.05	HIGHLIGHTS start.	17232
9/16/13 03:27:22	45.94627	-129.98374	323.56	0.8	1519.29	1520.09	Pulling second pin.	17236
9/16/13 03:27:29	45.94628	-129.98375	323.56	0.74	1519.29	1520.03	HIGHLIGHTS stop. Saggy skirt now.	17237
9/16/13 03:29:00	45.94628	-129.98377	322.56	0.74	1519.25	1519.99	Going to get a load of sand bags to seal things up better before dropping the skirt.	17240
9/16/13 03:30:02	45.94627	-129.98374	296.95	0.74	1519.05	1519.79	Flying away from cap and going to the sand bag stash.	17242
9/16/13 03:30:49	45.94627	-129.98378	352.94	1.85	1518.46	1520.31	Can see a big gap on this side (350deg).	17245
9/16/13 03:34:22	45.94637	-129.98367	151.57	1.7	1517.91	1519.61	Here are some sand bags.	17251
9/16/13 03:34:51	45.94636	-129.98368	140.5	1.2	1518.99	1520.19	The target for the sand bags was way off (relationship to the benchmarks is much further east).	17252
9/16/13 03:35:54	45.94636	-129.98368	141.56	1.58	1518.52	1520.1	Loading up with sand bags and dropping a weight.	17254
9/16/13 03:36:31	45.94636	-129.98368	141.62	1.4	1518.64	1520.04	NAV: Doppler Reset	17256
9/16/13 03:36:59	45.94635	-129.98369	141.91	1.43	1518.66	1520.09	Moving Jason nav target to this location of the sand bags after a doppler reset.	17257
9/16/13 03:39:18	45.94635	-129.98370	144.96	1.89	1517.99	1519.88	Loaded up and moving back to the vent cap.	17261
9/16/13 03:40:06	45.94638	-129.98368	144.65	2.18	1517.99	1520.17	Nope-just moving Jason back to get at more sand bags.	17263
9/16/13 03:42:59	45.94636	-129.98366	144.74	1.58	1518.54	1520.12	Got a full load but there was one left lurking under the basket.	17266
9/16/13 03:43:25	45.94636	-129.98366	144.62	1.39	1518.83	1520.22	Actually there are two.	17268
9/16/13 03:44:22	45.94636	-129.98366	144.64	1.41	1518.78	1520.19	One more left but buried by sediment and one fell out of the basket (it is full).	17270
9/16/13 03:45:48	45.94635	-129.98366	177.35	1.09	1518.89	1519.98	Trevi should be due south.	17272
9/16/13 03:46:31	45.94632	-129.98370	208.31	1.28	1518.99	1520.27	Heading back to Trevi.	17274
9/16/13 03:50:27	45.94627	-129.98376	209.33	0.74	1519.59	1520.33	Nudged donuts again to align.	17283
9/16/13 03:50:37	45.94627	-129.98376	209.43	0.74	1519.57	1520.31	Ready to pull another skirt pin.	17284
9/16/13 03:53:37	45.94629	-129.98373	208.75	0.74	1519.6	1520.34	Nudging again with stbd arm.	17289
9/16/13 03:55:30	45.94630	-129.98374	208.27	0.74	1519.59	1520.33	Holding with stbd and pushing with port.	17297
9/16/13 03:57:13	45.94628	-129.98377	209.04	0.74	1519.69	1520.43	Going to sand bag from this angle (209deg).	17303
9/16/13 03:58:48	45.94627	-129.98378	208.57	0.74	1519.65	1520.39	Getting a sand bag.	17305

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9/16/13 04:00:06	45.94627	-129.98378	207.7	0.76	1519.55	1520.31	Putting a bag on the far left side from this heading near by instrument handle on the top donut.	17308
9/16/13 04:00:39	45.94627	-129.98378	231.54	0.74	1519.64	1520.38	Moving around left.	17309
9/16/13 04:01:29	45.94627	-129.98378	254.83	0.79	1519.66	1520.45	Tiny red animal will get a bag on top of them.	17312
9/16/13 04:03:54	45.94630	-129.98373	272.34	0.74	1519.5	1520.24	Looks good on this side-as good as it gets.	17319
9/16/13 04:04:08	45.94630	-129.98372	243.14	1	1519.48	1520.48	Spinning around to right to look at it from all sides.	17321
9/16/13 04:07:05	45.94625	-129.98377	45.17	0.74	1519.61	1520.35	This handle area is still leaking at 045deg heading.	17330
9/16/13 04:07:43	45.94626	-129.98375	46.64	0.74	1519.57	1520.31	Leaking in two places-at handle with draped bag and then just around to right at other handle.	17332
9/16/13 04:10:35	45.94627	-129.98376	34.17	0.93	1519.49	1520.42	Nudged again with stbd arm. And again.	17337
9/16/13 04:11:22	45.94627	-129.98377	33.86	0.95	1519.45	1520.4	Nudged enough-going to pull the skirt down.	17340
9/16/13 04:14:15	45.94625	-129.98376	33.81	0.9	1519.51	1520.41	Gently pulling the skirt down.	17346
9/16/13 04:18:41	45.94629	-129.98377	34.74	1.15	1519.39	1520.54	Putting a sandbag on top of cap where blanket has been revealed.	17352
9/16/13 04:18:46	45.94629	-129.98377	34.8	1.13	1519.37	1520.5	HIGHLIGHTS start.	17353
9/16/13 04:21:11	45.94626	-129.98375	34.56	1.1	1519.33	1520.43	Putting second sand bag on top.	17358
9/16/13 04:21:49	45.94626	-129.98376	37.34	0.89	1519.5	1520.39	Pulled back.	17359
9/16/13 04:23:10	45.94626	-129.98375	52.75	0.74	1519.69	1520.43	Back putting the second sand bag on top.	17362
9/16/13 04:23:53	45.94627	-129.98376	53.37	0.74	1519.81	1520.55	Going to put one more sand bag on top of cap.	17363
9/16/13 04:25:59	45.94629	-129.98376	52.74	0.74	1519.77	1520.51	HIGHLIGHTS stop.	17366
9/16/13 04:29:46	45.94630	-129.98371	271.19	0.74	1519.69	1520.43	HIGHLIGHTS start.	17371
9/16/13 04:30:51	45.94631	-129.98370	271.24	2.09	1519.65	1521.74	Pulling more skirt down.	17372
9/16/13 04:35:09	45.94631	-129.98370	271.58	134.79	1519.78	1654.57	Going to put a sand bag on this side to hold down the skirt. This the east side of the cap.	17378
9/16/13 04:35:24	45.94630	-129.98370	271.57	172.1	1519.72	1691.82	HIGHLIGHTS stop.	17379
9/16/13 04:39:00	45.94631	-129.98375	270.65	0.95	1519.66	1520.61	Placing another skirt sand bag to the left of the first one at the same heading (270).	17386
9/16/13 04:42:30	45.94629	-129.98372	336.07	0.96	1519.01	1519.97	Moving around to the left for more skirt sand bag placements.	17395
9/16/13 04:44:10	45.94629	-129.98375	16.69	0.74	1519.76	1520.5	Pulling out some more skirt from this side (016). Bumped cap with stbd arm.	17398
9/16/13 04:47:07	45.94630	-129.98379	54.26	0.74	1520.28	1521.02	Swinging around to left again.	17402
9/16/13 04:48:27	45.94631	-129.98378	51.33	0.74	1520.32	1521.06	Pulling out more skirt from 051deg.	17404
9/16/13 04:49:18	45.94631	-129.98378	51.14	0.74	1520.3	1521.04	Getting out some sand bags to hold the skirt down.	17406
9/16/13 04:50:22	45.94630	-129.98376	50.59	0.74	1520.38	1521.12	Sand bag on at 051deg.	17408

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9/16/13 04:53:31	45.94629	-129.98376	50.82	0.74	1520.2	1520.94	Putting another sand bag on top of instrument from this side.	17415
9/16/13 04:56:11	45.94628	-129.98373	49.89	0.74	1520.14	1520.88	Taking a temperature at the top where observed flow is coming out.	17419
9/16/13 04:56:27	45.94628	-129.98373	49.95	0.74	1520.15	1520.89	Ambient is 3.9deg.	17420
9/16/13 04:57:22	45.94628	-129.98373	49.92	0.74	1520.12	1520.86	High temperature was 6.5deg.	17424
9/16/13 04:58:23	45.94627	-129.98374	49.53	0.74	1520.21	1520.95	Probing again at the flow on top and temperature was only 5.3deg.	17426
9/16/13 04:58:56	45.94627	-129.98374	49.92	0.74	1520.18	1520.92	Going to take a temperature at the flow out of the pipes.	17427
9/16/13 05:02:43	45.94625	-129.98371	12.43	0.74	1520.18	1520.92	Temperature out of tubes is 92.7 out of silver pipe.	17437
9/16/13 05:03:28	45.94625	-129.98372	12.26	0.74	1520.21	1520.95	Probing again at silver pipe. Temperature is 100.3deg.	17439
9/16/13 05:05:11	45.94625	-129.98370	12.31	0.74	1520.15	1520.89	Temperature here is 116.4eg at silver one the furthest away from us.	17442
9/16/13 05:05:46	45.94626	-129.98367	12.27	0.74	1520.13	1520.87	Now doing insulated pipe furthest away from us. Temperature here is 108.1deg.	17443
9/16/13 05:06:29	45.94627	-129.98367	12.3	0.74	1520.2	1520.94	Done with temperature readings. Stowing the wand.	17445
9/16/13 05:07:05	45.94626	-129.98371	8.7	1.83	1519.01	1520.84	HIGHLIGHTS start.	17447
9/16/13 05:07:19	45.94626	-129.98373	11.07	2.35	1518.27	1520.62	HIGHLIGHTS stop.	17449
9/16/13 05:07:31	45.94626	-129.98374	11.09	2.23	1518.5	1520.73	Cleaning up the basket before taking the good fly-away photos.	17450
9/16/13 05:08:11	45.94625	-129.98377	11.27	2.26	1518.48	1520.74	Pulling in the basket.	17452
9/16/13 05:08:47	45.94625	-129.98378	10.97	2.34	1518.35	1520.69	HIGHLIGHTS start.	17453
9/16/13 05:10:19	45.94625	-129.98373	11.2	2.35	1518.29	1520.64	HIGHLIGHTS stop.	17459
9/16/13 05:10:30	45.94625	-129.98373	11.48	2.4	1518.22	1520.62	All done with the vent cap at Trevi.	17460
9/16/13 05:11:47	45.94622	-129.98366	336.4	2.8	1517.55	1520.35	Going to Red Bridges target in Jason navigation. 224m away at 336deg heading.	17462
9/16/13 05:13:40	45.94655	-129.98390	335.12	9.25	1513.24	1522.49	Want to approach the site by driving the contact up to the north.	17465
9/16/13 05:14:14	45.94670	-129.98398	336.21	8.83	1513.46	1522.29	Coming back down to the bottom after getting underway.	17467
9/16/13 05:15:24	45.94686	-129.98403	334.84	4	1517.54	1521.54	There is the bottom. We are quite a bit ahead of Medea.	17469
9/16/13 05:18:18	45.94687	-129.98410	335.51	4.4	1517.11	1521.51	Barely looking at the bottom. Hard to tell but probably jumbled flow.	17473
9/16/13 05:20:14	45.94690	-129.98407	336.09	4.38	1517.03	1521.41	Waiting for Medea.	17476

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/16/13 05:20:46	45.94695	-129.98409	336.65	4.55	1516.89	1521.44	Old jumble flow.	17477
9/16/13 05:21:03	45.94705	-129.98414	335.02	4.14	1516.99	1521.13	Coming up on flatter flow with more sediment.	17479
9/16/13 05:21:21	45.94713	-129.98419	337.38	5.69	1517.57	1523.26	Flow boundary.	17480
9/16/13 05:21:27	45.94715	-129.98421	336.22	6.09	1517.55	1523.64	Contact old-new!	17481
9/16/13 05:21:41	45.94718	-129.98422	336.29	3.71	1519.61	1523.32	Only in the brow cam. Coming closer.	17483
9/16/13 05:21:48	45.94719	-129.98423	336.49	3.43	1520.31	1523.74	Great contact.	17484
9/16/13 05:21:59	45.94720	-129.98424	337.12	3.29	1520.39	1523.68	Going to drive the contact.	17487
9/16/13 05:22:13	45.94723	-129.98424	335.32	2.03	1521.41	1523.44	Black new pillow flow next to jumble flow.	17490
9/16/13 05:22:27	45.94727	-129.98425	337.04	2.34	1521.12	1523.46	2011 and really old lava.	17492
9/16/13 05:23:11	45.94735	-129.98430	337.62	4.24	1519.35	1523.59	Lots of smoke in water.	17495
9/16/13 05:24:24	45.94740	-129.98433	336.55	3.99	1519.46	1523.45	Very distinct boundary. Nav shows us on 1998 flow contact with old.	17497
9/16/13 05:24:37	45.94742	-129.98436	336.01	3.83	1519.81	1523.64	Getting sparser pillows with a few islands of old.	17498
9/16/13 05:25:32	45.94750	-129.98442	338.02	3.39	1519.99	1523.38	Driving the contact northward.	17503
9/16/13 05:25:55	45.94750	-129.98441	335.12	3.41	1520.08	1523.49	This looks like 1998 and 2011 flow contact here.	17505
9/16/13 05:26:33	45.94753	-129.98441	337.08	3.1	1520.21	1523.31	Going slow as we wait for Medea.	17507
9/16/13 05:26:49	45.94758	-129.98444	337.2	3.28	1519.99	1523.27	Some old collapsed pillows.	17510
9/16/13 05:27:20	45.94767	-129.98450	337	2.89	1519.89	1522.78	All new here.	17515
9/16/13 05:27:30	45.94769	-129.98452	335.36	3.75	1519.59	1523.34	Starting into some collapse out of the contact edge.	17516
9/16/13 05:28:38	45.94770	-129.98452	336.2	8.93	1513.94	1522.87	Came off the bottom a bit.	17518
9/16/13 05:29:11	45.94774	-129.98455	338.78	2.96	1519.74	1522.7	As we moved further into the new flow and away from the contact-the collapse started. Then pulled up.	17520
9/16/13 05:29:20	45.94776	-129.98456	337.59	3.1	1519.67	1522.77	New flow with a lot of sediment.	17522
9/16/13 05:30:10	45.94789	-129.98463	336.91	3.04	1519.97	1523.01	Red mat beginning.	17525
9/16/13 05:30:28	45.94792	-129.98464	337.11	1.83	1520.8	1522.63	Seeing some collapse as well.	17527
9/16/13 05:30:46	45.94793	-129.98464	336.69	1.03	1521.67	1522.7	HIGHLIGHTS start.	17529
9/16/13 05:31:05	45.94795	-129.98467	336.64	1.5	1521.23	1522.73	Window into the collapse.	17532
9/16/13 05:31:29	45.94796	-129.98473	336.31	2.78	1521.31	1524.09	We are about 25m south of last dive's contact.	17534
9/16/13 05:31:53	45.94800	-129.98472	337.19	1.65	1520.85	1522.5	Driving the red mat area-trying to keep it in sight.	17536
9/16/13 05:32:57	45.94814	-129.98466	336.57	1.85	1520.77	1522.62	Due west of the red bridges site from the previous dive.	17542
9/16/13 05:33:15	45.94816	-129.98467	338.37	1.55	1521.04	1522.59	Mapping out extent of the red mat.	17545
9/16/13 05:34:06	45.94819	-129.98469	253.28	2.95	1519.45	1522.4	HIGHLIGHTS stop. As turned east the sediment thickened and no mat.	17548
9/16/13 05:34:22	45.94819	-129.98474	255.73	2.14	1520.43	1522.57	Turning back to the collapse area.	17550
9/16/13 05:35:41	45.94815	-129.98486	183.83	3.23	1519.48	1522.71	This should be between 1998 and 2011 flows but closer to 2011.	17553

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9/16/13 05:36:07	45.94807	-129.98485	186.24	3.71	1521.52	1525.23	Turned south to the previous red bridges target.	17555
9/16/13 05:37:05	45.94804	-129.98476	76.18	3.89	1521.28	1525.17	HIGHLIGHTS start.	17559
9/16/13 05:37:47	45.94803	-129.98474	77.26	3.66	1521.52	1525.18	Back at Red Bridges target.	17562
9/16/13 05:40:17	45.94811	-129.98471	143.81	1.59	1521.1	1522.69	Taking imagery of the red mat site and collapse.	17573
9/16/13 05:42:41	45.94806	-129.98473	264.02	1.44	1520.93	1522.37	Going to drive around the edge of this large collapse opening.	17583
9/16/13 05:44:12	45.94805	-129.98475	243.54	0.74	1521.94	1522.68	Red mat on top of pillars.	17592
9/16/13 05:45:52	45.94805	-129.98473	242.94	0.78	1522.02	1522.8	HIGHLIGHTS start. Going to try to sample the red mat on top of this skinny pillar.	17599
9/16/13 05:46:16	45.94805	-129.98473	251.09	0.76	1521.94	1522.7	HIGHLIGHTS stop. Oops-a little bump of the pillar.	17602
9/16/13 05:48:52	45.94811	-129.98477	250.82	0.74	1522.03	1522.77	Parked on the pillar.	17611
9/16/13 05:49:34	45.94812	-129.98477	250.26	0.79	1521.87	1522.66	Amazing pilot driving to land on this skinny pillar in the middle of the collapse with red mat on top.	17615
9/16/13 05:49:38	45.94812	-129.98477	250.31	0.79	1521.82	1522.61	HIGHLIGHTS start.	17616
9/16/13 05:50:14	45.94812	-129.98477	249.49	0.76	1521.79	1522.55	Plan is to take 2 large syringe samples here. One of the red and one of the adjacent orange.	17618
9/16/13 05:51:28	45.94812	-129.98476	249.62	0.74	1521.83	1522.57	Retrieving Green syringe first.	17620
9/16/13 05:55:32	45.94813	-129.98477	249.9	0.83	1521.75	1522.58	**SAMPLE: Microbio J732-microbio-01** large syringe sample of red mat with Green sampler at Red Bridges. On top of a skinny pillar in the middle of a large collapse feature.	17630
9/16/13 05:56:38	45.94812	-129.98477	249.71	0.78	1521.79	1522.57	Saw hose bend as put in sampler to close off.	17632
9/16/13 05:56:55	45.94812	-129.98476	249.82	0.78	1521.75	1522.53	Lat/long position is within 4m of Red Bridges target.	17633
9/16/13 05:57:00	45.94812	-129.98476	249.78	0.78	1521.81	1522.59	HIGHLIGHTS stop.	17634
9/16/13 05:57:40	45.94811	-129.98476	250.08	0.79	1521.85	1522.64	Next would like a sample of the adjacent orange material on top of the skinny pillar.	17636
9/16/13 05:59:40	45.94811	-129.98475	249.97	0.79	1521.82	1522.61	Temporarily stowing the green syringe in the stbd milk crate with the dive weights (the bungee on the white sampler was in the way).	17640
9/16/13 06:00:13	45.94810	-129.98474	250.01	0.85	1521.78	1522.63	Retrieving the white syringe sampler from the basket.	17642
9/16/13 06:00:26	45.94810	-129.98474	250.07	0.88	1521.77	1522.65	HIGHLIGHTS start. Positioning for the orange sediment sample.	17643
9/16/13 06:01:28	45.94809	-129.98471	251.13	1.36	1521.26	1522.62	**SAMPLE: Microbio J732-microbio-02** White syringe sample of orange sediment at the pillar.	17649

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9/16/13 06:03:29	45.94808	-129.98470	251.36	1.21	1521.34	1522.55	Position for samples is 45deg 56.8854'N -129 59.0848'W 1522m depth (position from cursor while sampling on pillar).	17652
9/16/13 06:05:12	45.94809	-129.98471	251.2	1.06	1521.43	1522.49	Freshly exposed basalt from the pillar visible under the sample site.	17655
9/16/13 06:06:07	45.94809	-129.98473	251.26	1.14	1521.39	1522.53	Going to try to take a sample of the freshly exposed rock that Jason knocked off while sampling the mat at the top of the pillar.	17657
9/16/13 06:10:01	45.94811	-129.98475	251.11	2.11	1520.38	1522.49	Swung out biobox to store sample in.	17661
9/16/13 06:11:25	45.94809	-129.98472	254.65	1.66	1520.99	1522.65	Coming in for a rock sample off the top of the pillar.	17664
9/16/13 06:13:57	45.94810	-129.98477	254.93	0.74	1522	1522.74	J732-rock-03 from pillar where sediment samples were taken. Piece from top with red mat on it. Very large.	17671
9/16/13 06:14:15	45.94809	-129.98476	256.17	0.74	1521.99	1522.73	Too big for biobox.	17674
9/16/13 06:15:28	45.94806	-129.98472	256.15	0.74	1522	1522.74	Put the chopped off piece of sample back on the top of the pillar.	17678
9/16/13 06:15:53	45.94806	-129.98472	256.33	0.89	1521.81	1522.7	Cutting sample on top of biobox. Took out large piece and dropped to bottom of collapse.	17679
9/16/13 06:16:06	45.94805	-129.98472	256.18	0.74	1521.99	1522.73	Going to go back for the piece on the pillar to put in the biobox.	17681
9/16/13 06:16:56	45.94806	-129.98473	256.24	0.74	1521.96	1522.7	This is the same piece that was broken off the larger sample in order to fit in the biobox.	17684
9/16/13 06:17:47	45.94806	-129.98474	255.32	0.76	1521.92	1522.68	**SAMPLE: J732-rock-03** Rock.	17688
9/16/13 06:18:38	45.94807	-129.98473	255.39	0.78	1522.08	1522.86	SAMPLE: Rock Grabbed a second piece from the top (smaller) and put in the biobox.	17692
9/16/13 06:19:10	45.94806	-129.98473	255	0.76	1521.79	1522.55	SAMPLE: Rock Grabbed a third piece of the same top of pillar (has more orange on it).	17696
9/16/13 06:19:22	45.94806	-129.98473	255.04	0.88	1521.73	1522.61	All the same sample-just broken into pieces to fit in the box.	17697
9/16/13 06:20:18	45.94806	-129.98473	255.11	0.76	1521.84	1522.6	Stowing the biobox.	17699
9/16/13 06:21:29	45.94808	-129.98476	254.98	0.81	1521.8	1522.61	Left some red and orange on top of the sampled pillar.	17701
9/16/13 06:22:35	45.94814	-129.98477	340.29	3.33	1518.99	1522.32	Going to look for a good place to put a marker in the red mat area.	17704
9/16/13 06:23:00	45.94817	-129.98476	323.25	3.68	1520.18	1523.86	Marker needs to put in a more stable-looking place with red mat.	17705
9/16/13 06:24:34	45.94815	-129.98472	281.76	1.39	1521.1	1522.49	Going to grab a marker to have it ready to deploy.	17708
9/16/13 06:25:40	45.94812	-129.98469	281.95	1.44	1521.13	1522.57	Grabbed Marker 143 out of the basket.	17710

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9/16/13 06:26:20	45.94810	-129.98466	180.59	1.08	1521.22	1522.3	Can see red at the base of the collapse when the roof caved in.	17714
9/16/13 06:26:54	45.94808	-129.98462	173.9	1.04	1521.22	1522.26	Extensive orange then turning to red mat.	17715
9/16/13 06:27:55	45.94806	-129.98462	182.14	1.11	1521.11	1522.22	**DEPLOY: Marker 143** Deployed in red mat surrounded by orange sediment. Marker 143.	17718
9/16/13 06:29:35	45.94806	-129.98463	181.91	1.04	1521.2	1522.24	DEPLOY: marker Position for Marker is 1522m depth 45deg 56.8837'N 129deg 59.0788'W from the cursor.	17723
9/16/13 06:31:08	45.94809	-129.98463	267.86	2.04	1519.49	1521.53	Next going to do some geology exploring 500m westerly on the bottom with Jason.	17729
9/16/13 06:32:15	45.94811	-129.98470	266.98	3.51	1518.69	1522.2	Want to drive in the channel feature due west.	17731
9/16/13 06:32:32	45.94811	-129.98472	231.23	3.46	1518.8	1522.26	Moving over collapse.	17732
9/16/13 06:33:01	45.94810	-129.98478	246.15	3.65	1520.22	1523.87	Over large collapse feature.	17733
9/16/13 06:35:27	45.94808	-129.98489	245.5	4.93	1519.39	1524.32	No red mat anymore-just on the boundary.	17739
9/16/13 06:36:51	45.94800	-129.98499	245.98	5.54	1518.96	1524.5	Top of collapse with no red mat. Still have orange sediment between pillows.	17742
9/16/13 06:37:54	45.94796	-129.98506	245.5	5.04	1516.93	1521.97	Manipulator test by Elisa.	17745
9/16/13 06:40:02	45.94795	-129.98519	246.07	5.39	1517.17	1522.56	HIGHLIGHTS start.	17756
9/16/13 06:40:46	45.94794	-129.98525	246.06	5.34	1517.07	1522.41	HIGHLIGHTS stop.	17758
9/16/13 06:42:22	45.94790	-129.98537	245.91	4.98	1517.34	1522.32	Moving over pillows with less orange sediment but sill in collapse features. Bit high to see well.	17762
9/16/13 06:43:34	45.94788	-129.98543	246.07	4.26	1518.44	1522.7	Watch change.	17764
9/16/13 06:44:27	45.94787	-129.98541	246.14	2.65	1520.26	1522.91	Over collapse feature.	17766
9/16/13 06:44:38	45.94787	-129.98542	246.21	4.35	1520.86	1525.21	No colorful sediment.	17768
9/16/13 06:45:28	45.94784	-129.98548	246.27	4.51	1521.18	1525.69	Want to follow this collapse feature from the bottom as it widens.	17771
9/16/13 06:46:08	45.94782	-129.98552	246.19	2.86	1523.22	1526.08	At the bottom of the collapse.	17774
9/16/13 06:46:44	45.94780	-129.98557	246.34	2.41	1523.12	1525.53	Jumbled flow and could be roof structures.	17776
9/16/13 06:47:05	45.94780	-129.98560	245.95	2.51	1523.2	1525.71	Avoid going under arches.	17779
9/16/13 06:47:18	45.94780	-129.98561	246.15	2.55	1522.88	1525.43	Great flow on bottom.	17781
9/16/13 06:47:39	45.94779	-129.98566	245.8	1.28	1523.81	1525.09	Sheet flow at bottom.	17783
9/16/13 06:47:56	45.94779	-129.98569	245.86	2.04	1523.23	1525.27	2011 flow in the collapse channel.	17785
9/16/13 06:48:17	45.94779	-129.98575	248.8	4.29	1522.24	1526.53	There is the top and side of the channel.	17787
9/16/13 06:49:08	45.94783	-129.98592	247.36	3.95	1523.47	1527.42	Sides of channel as following it westward.	17790
9/16/13 06:49:29	45.94783	-129.98598	247.7	2.81	1523.95	1526.76	Brow camera can see the flow channel at bottom.	17792
9/16/13 06:52:55	45.94771	-129.98633	246.24	1.83	1524.19	1526.02	Traversing jumbled sheath flow.	17797
9/16/13 06:53:06	45.94770	-129.98636	244.91	2.7	1524.63	1527.33	Surfing the lava downslope.	17799

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9/16/13 06:56:49	45.94729	-129.98720	243.87	1.16	1523.29	1524.45	Following the edge of the collapse along the northern edge of a main channel oriented east to west.	17803
9/16/13 06:59:49	45.94720	-129.98761	256.36	2.63	1526.63	1529.26	The upper side of this edge (right) is lobate/pillows and the lower side (left) is jumbled sheath flow. Heading 255 deg	17808
9/16/13 07:00:13	45.94720	-129.98766	255.43	1.21	1526.7	1527.91	Moving down into the channel. Still mainly jumbled flow.	17810
9/16/13 07:05:18	45.94713	-129.98795	255.14	2.44	1526.37	1528.81	Continuing down the flow channel.	17816
9/16/13 07:08:25	45.94711	-129.98824	255.51	2.11	1525.34	1527.45	That's a rock.	17820
9/16/13 07:08:37	45.94710	-129.98824	255.82	2.08	1525.37	1527.45	A recent rock.	17821
9/16/13 07:11:55	45.94699	-129.98860	253.24	3.5	1524.04	1527.54	Terrain is much rougher here. Some small collapse features.	17827
9/16/13 07:14:24	45.94683	-129.98898	248.52	2.06	1525.69	1527.75	Following a large crack in the seafloor.	17832
9/16/13 07:15:08	45.94678	-129.98908	245.37	1.8	1526.49	1528.29	Some large rattails.	17837
9/16/13 07:18:29	45.94658	-129.98951	244.58	1.73	1527.13	1528.86	Still following the flow channel. Extra jumbled here.	17843
9/16/13 07:19:53	45.94653	-129.98978	244.95	1.2	1525.53	1526.73	We are at the eastern end of a little channel within the main channel.	17845
9/16/13 07:20:16	45.94651	-129.98984	244.81	2.38	1525.58	1527.96	There is an intact pillow right in the middle of the jumbled lava.	17847
9/16/13 07:20:33	45.94650	-129.98987	268.08	2.36	1525.87	1528.23	Large arch in the right.	17848
9/16/13 07:21:43	45.94650	-129.98999	274.28	2.13	1525.64	1527.77	There is a big collapse pit on the upper edge of the flow channel.	17855
9/16/13 07:22:34	45.94650	-129.99013	276.66	2.44	1525.16	1527.6	The channel wall is vertical and at least a few meters high here.	17857
9/16/13 07:22:52	45.94650	-129.99017	263.36	2.56	1526.87	1529.43	Now we have come out in a large smooth sheath flow.	17858
9/16/13 07:24:49	45.94638	-129.99033	240.39	2.54	1529.35	1531.89	You can see where two crusts separated and a new perpendicular flow cut across them.	17865
9/16/13 07:29:09	45.94621	-129.99061	242.3	2.13	1529.34	1531.47	Coming to another intersection of jumbled and sheath flow. Large spirals have formed in the flow.	17873
9/16/13 07:30:16	45.94616	-129.99080	241.34	1.1	1529.68	1530.78	Now we are on the other side of the flat sheath flow channel where it meets jumbled lava.	17882

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/16/13 07:31:28	45.94605	-129.99104	240.99	1.33	1528.35	1529.68	This flow channel existed pre-2011 eruption and the new lava used the same channel but only deposited half a meter in the bottom. Must have been flowing very quickly.	17884
9/16/13 07:36:03	45.94575	-129.99167	242.16	2.25	1528.6	1530.85	Coming up to another large smooth channel.	17894
9/16/13 07:36:12	45.94573	-129.99171	242.87	2.45	1528.76	1531.21	This one is very flat and wide.	17895
9/16/13 07:36:56	45.94569	-129.99183	241.05	2.7	1529.75	1532.45	At least 50m according to the map.	17896
9/16/13 07:39:08	45.94559	-129.99216	303.37	2.35	1529.63	1531.98	Turning our course to 300 deg to follow the center of this large flow channel.	17905
9/16/13 07:40:33	45.94558	-129.99216	299.94	0.74	1530.95	1531.69	Some tubular lava here. We'll try to grab a piece of it.	17908
9/16/13 07:41:23	45.94558	-129.99216	299.85	0.89	1530.93	1531.82	The lava tubes are extremely delicate; basically glass. Picking up an intact piece might not be possible.	17912
9/16/13 07:42:53	45.94571	-129.99233	308.52	2.13	1529.67	1531.8	Can't get a piece; even with grip force 1 the tubes exploded wherever we touched them.	17922
9/16/13 07:43:46	45.94587	-129.99258	310.41	1.85	1529.33	1531.18	Saw a large ray on the bottom.	17926
9/16/13 07:47:17	45.94625	-129.99323	307.6	2.03	1529.52	1531.55	Still following this big main channel.	17935
9/16/13 07:48:17	45.94633	-129.99332	317.02	1.51	1530.28	1531.79	Moving to the right channel edge ~20m away to see if there are bathtub rings on the channel walls.	17937
9/16/13 07:48:53	45.94640	-129.99338	320.23	1.13	1530.37	1531.5	Rings would indicated that the channel was full of lava and slowly drained out.	17938
9/16/13 07:50:09	45.94661	-129.99344	11.53	4.19	1526.76	1530.95	The edge is a mixture of jumble and large collapsed roofs.	17942
9/16/13 07:50:59	45.94667	-129.99358	316.13	2.41	1529.62	1532.03	Not a very defined edge so we'll move down the flow a bit to see if we can find a vertical wall that would show rings.	17943
9/16/13 07:55:06	45.94695	-129.99404	336.8	3.96	1527.47	1531.43	The edge is still a mixture of collapse features and jumble.	17953
9/16/13 07:55:18	45.94698	-129.99405	335.14	3.4	1526.4	1529.8	Moving up the wall to see what is on top.	17954
9/16/13 07:55:28	45.94701	-129.99408	334.68	2.59	1525.78	1528.37	Still jumbly up here.	17955
9/16/13 07:56:22	45.94703	-129.99419	306.42	2.14	1525.95	1528.09	Can't find any lobate flow.	17957
9/16/13 07:56:47	45.94700	-129.99421	306.32	2.31	1527.42	1529.73	Moving back down into the channel.	17958
9/16/13 07:58:00	45.94705	-129.99446	313.07	2.19	1529.82	1532.01	High up on the edge the lava is very jumbled and as you move down into the channel it becomes more linear sheath flow.	17960

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9/16/13 08:07:54	45.94768	-129.99572	314.82	2.89	1529.26	1532.15	Still following the main channel.	17978
9/16/13 08:12:24	45.94804	-129.99656	311.09	0.74	1531.7	1532.44	Two big spider crabs eating a dead jellyfish.	17997
9/16/13 08:12:32	45.94804	-129.99656	310.68	0.74	1531.97	1532.71	HIGHLIGHTS start.	17998
9/16/13 08:16:18	45.94802	-129.99655	311.25	0.74	1532	1532.74	Looks delicious.	18047
9/16/13 08:16:31	45.94803	-129.99654	312.29	0.74	1531.77	1532.51	HIGHLIGHTS stop.	18049
9/16/13 08:16:57	45.94807	-129.99660	315.69	2.31	1529.75	1532.06	Moving on down the channel.	18053
9/16/13 08:18:51	45.94836	-129.99701	291.48	1.65	1529.69	1531.34	We are reaching the end of this channel. The flow is getting a ropelike appearance.	18061
9/16/13 08:19:05	45.94836	-129.99702	264.47	1.66	1529.56	1531.22	Now it is mostly jumbled flow.	18064
9/16/13 08:19:38	45.94834	-129.99706	251.65	2	1529.6	1531.6	Another big crab running for the jellyfish.	18068
9/16/13 08:21:03	45.94828	-129.99719	252.86	1.13	1529.77	1530.9	Lots of ropey flow here.	18082
9/16/13 08:21:17	45.94826	-129.99720	253.08	1.11	1530.01	1531.12	In between lineated and jumbled flow.	18083
9/16/13 08:26:24	45.94804	-129.99817	259.44	2.06	1529.5	1531.56	Lots of big spider crabs around here.	18093
9/16/13 08:27:59	45.94795	-129.99845	258.83	0.91	1531.2	1532.11	Big sheets of glassy collapsed flow here.	18100
9/16/13 08:28:17	45.94796	-129.99845	260.83	0.9	1531.18	1532.08	We're going to try to pick a piece u up but it is very fragile.	18102
9/16/13 08:28:58	45.94795	-129.99845	259.72	0.84	1531.22	1532.06	The lava is extremely brittle and hard to grab.	18103
9/16/13 08:29:25	45.94795	-129.99846	257.55	0.89	1531.13	1532.02	Got a solid piece.	18107
9/16/13 08:30:05	45.94795	-129.99846	258.5	0.89	1531.16	1532.05	**SAMPLE: Rock Collecting J732-Rock-04** and placing it in the basket.	18110
9/16/13 08:31:43	45.94774	-129.99891	260.11	2.26	1529.37	1531.63	Location 45 56.8764'N 129 59.9164'W depth 1530m.	18113
9/16/13 08:31:55	45.94770	-129.99898	257.5	1.45	1529.89	1531.34	This was a piece of the 2011 lava flow.	18114
9/16/13 08:32:54	45.94764	-129.99936	259.84	0.85	1530.43	1531.28	Crossing very jumbled sheath flow that has been pushed up into low ridges.	18116
9/16/13 08:36:31	45.94751	-130.00026	267.89	1.39	1533.17	1534.56	Seems like we were traveling along a ridge of jumbled lava. There is still some of the smooth sheath flow down to the right.	18128
9/16/13 08:37:59	45.94746	-130.00036	223.02	2.18	1531.52	1533.7	We are now in a big sinkhole where the entire channel bottom has collapsed a few meters.	18135
9/16/13 08:39:10	45.94745	-130.00047	242.37	2.44	1531.16	1533.6	The crust is think here; at least half a meter.	18153
9/16/13 08:41:54	45.94728	-130.00125	255.66	1.59	1530.09	1531.68	Extra crunchy out here.	18164
9/16/13 08:43:25	45.94729	-130.00159	295.64	1.59	1530.82	1532.41	Two big rattails and a spider crab.	18176
9/16/13 08:44:06	45.94738	-130.00174	304.39	1.71	1531.47	1533.18	Changing course slightly from 270 to 305 deg.	18178
9/16/13 08:47:10	45.94780	-130.00238	314.78	0.95	1532.57	1533.52	This area is a mix of hilly jumble and sections of laminar sheath flow.	18185
9/16/13 08:47:47	45.94785	-130.00247	315.28	0.99	1532.83	1533.82	Now back to a more open and flat sheath crosscut by narrow ropey flow.	18186

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9/16/13 08:50:15	45.94807	-130.00293	313.85	1.79	1531.91	1533.7	More collapsed laminar sheet flow. Looks like a broken highway.	18203
9/16/13 08:55:20	45.94825	-130.00359	311.43	4.13	1528.81	1532.94	This is another area where the entire channel floor has collapsed straight down.	18224
9/16/13 08:55:45	45.94829	-130.00369	309.79	2.03	1529.26	1531.29	Now moving into an area of lobate flow.	18227
9/16/13 08:56:55	45.94835	-130.00379	164.96	2.59	1531.58	1534.17	Just reached the edge of a big ledge about 3.5 m high with smooth sheath flow below.	18233
9/16/13 08:57:50	45.94836	-130.00380	167.22	2.7	1531.28	1533.98	Lots of big pockets on the face of this edge.	18242
9/16/13 08:57:52	45.94836	-130.00380	167.56	2.58	1531.5	1534.08	HIGHLIGHTS start.	18243
9/16/13 08:58:30	45.94837	-130.00382	168.25	2.66	1531.44	1534.1	All the layers of previous flows are visible here.	18246
9/16/13 08:59:50	45.94839	-130.00386	343.2	2.61	1531.32	1533.93	HIGHLIGHTS stop.	18264
9/16/13 09:06:50	45.94914	-130.00482	356.17	0.74	1533.57	1534.31	Found a dumbo octopus!	18365
9/16/13 09:07:47	45.94919	-130.00484	356.8	1.56	1532.46	1534.02	HIGHLIGHTS stop.	18380
9/16/13 09:08:31	45.94941	-130.00488	353.8	2.28	1531.58	1533.86	Lots of small swirls in the lava here.	18388
9/16/13 09:09:02	45.94957	-130.00492	354.93	2.04	1531.58	1533.62	Lava is getting more and more folded at the nose of the flow.	18390
9/16/13 09:09:21	45.94966	-130.00492	2.52	1.8	1531.98	1533.78	This is where all the lava was piling up at the end of the channel.	18392
9/16/13 09:12:43	45.95014	-130.00464	359.1	0.74	1530.74	1531.48	Nearing the edge of a collapsed lobe.	18405
9/16/13 09:14:18	45.95034	-130.00459	356.41	4.24	1528.34	1532.58	A pillar is poking up out of the floor.	18414
9/16/13 09:14:40	45.95039	-130.00459	358.98	1.56	1529.48	1531.04	Some collapse features and intact pillows around here.	18416
9/16/13 09:18:24	45.95083	-130.00450	357.83	1.36	1529.55	1530.91	Flow is much more lobate in this area.	18434
9/16/13 09:24:04	45.95147	-130.00406	317.94	0.74	1532.3	1533.04	We have arrived at a contact point between the 2011 (left) and older lava (right).	18463
9/16/13 09:24:28	45.95147	-130.00406	319.9	0.74	1532.09	1532.83	HIGHLIGHTS start.	18467
9/16/13 09:24:52	45.95148	-130.00405	320.12	0.74	1532	1532.74	We are going to take a rock sample here if it isn't too brittle to pick up.	18468
9/16/13 09:25:35	45.95149	-130.00404	319.28	0.74	1532	1532.74	**SAMPLE: Rock Taking sample J732-Rock-05** and placing in the basket.	18470
9/16/13 09:26:32	45.95151	-130.00403	313.28	2.73	1529.86	1532.59	Position here is 45 57.0988'N 130 0.2452'W depth 1531.2m.	18472
9/16/13 09:27:39	45.95170	-130.00396	3.7	2.56	1530.5	1533.06	Looks like little rivers of new lobate flow extending out into old sediment covered lineated flow.	18479
9/16/13 09:27:57	45.95175	-130.00391	6.84	2.16	1530.54	1532.7	Lots of big pillows here.	18483
9/16/13 09:28:19	45.95182	-130.00387	11.37	1.93	1531.07	1533	HIGHLIGHTS stop.	18492
9/16/13 09:29:19	45.95198	-130.00374	9.4	1.84	1530.47	1532.31	A few small white starts and holothurians here.	18497
9/16/13 09:33:00	45.95258	-130.00309	16.07	2.78	1525.91	1528.69	We are coming up to a large uplifted structure.	18524

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9/16/13 09:37:23	45.95315	-130.00263	13.06	1.36	1526.72	1528.08	Lots of macrobiota on the slopes of this big hill.	18554
9/16/13 09:38:46	45.95320	-130.00254	13.57	1.49	1526.85	1528.34	Spotted a patch of white mat on top of black discolored sediment.	18565
9/16/13 09:39:12	45.95329	-130.00250	15.63	1.88	1527.42	1529.3	The patch is probably microbial and is surrounded by brittle stars.	18567
9/16/13 09:40:51	45.95360	-130.00233	13.94	2.4	1525.83	1528.23	This slope is mainly large pillows.	18570
9/16/13 09:42:04	45.95375	-130.00227	28.49	3.25	1519.86	1523.11	Now it is mainly jumbled lava.	18576
9/16/13 09:42:26	45.95381	-130.00219	24.05	3.68	1518.75	1522.43	Everything here is covered in a thick layer of tan sediment.	18577
9/16/13 09:45:08	45.95402	-130.00172	21.89	2.94	1516	1518.94	Now we are in an area of sheath flow with several large parallel cracks.	18590
9/16/13 09:46:06	45.95400	-130.00153	22.45	2.8	1518.56	1521.36	We are looking north up the SE slope.	18595
9/16/13 09:47:40	45.95420	-130.00123	2.13	1.89	1527.61	1529.5	The crust here is very thick and has uplifted and cracked to make these big sheets forming the slope.	18599
9/16/13 09:49:02	45.95444	-130.00108	2.77	3.11	1533.34	1536.45	Now we are on the edge of a tumulus with a large drop off to the east.	18603
9/16/13 09:49:23	45.95450	-130.00103	1.26	2.05	1535.12	1537.17	There are many tumuli in this area.	18605
9/16/13 09:53:17	45.95461	-130.00003	68.01	2.78	1534.87	1537.65	There is a white object on the bottom. It is aluminum foil.	18618
9/16/13 09:53:36	45.95464	-129.99990	65.01	2.46	1534.35	1536.81	More foil off to the left.	18619
9/16/13 09:56:06	45.95475	-129.99928	67.16	1.23	1536.12	1537.35	Mega rattail that won't get out of the way.	18642
9/16/13 09:56:30	45.95476	-129.99919	69.98	1.91	1535.95	1537.86	Still climbing the face of this hill. Now the flow is jumbled.	18643
9/16/13 09:58:09	45.95482	-129.99878	97.63	1.7	1536.95	1538.65	The lava here must be hundreds of years old.	18646
9/16/13 10:00:02	45.95483	-129.99839	92.37	1.95	1537.05	1539	There is deep sediment accumulation up on top of this hill.	18648
9/16/13 10:02:48	45.95474	-129.99793	93.12	1.64	1531.52	1533.16	LOCATION UPDATE. For the past ~15 min at least we have not been on the big hill but actually crossed over to the east and have been climbing up out of a valley next to the hill.	18655
9/16/13 10:03:09	45.95475	-129.99788	91.9	2.06	1531.52	1533.58	More collapse features here.	18660
9/16/13 10:05:18	45.95482	-129.99754	94.47	1.73	1532.77	1534.5	This area has completely collapsed; leaving a forest of pillars.	18671
9/16/13 10:05:57	45.95481	-129.99749	92.47	2.6	1532.39	1534.99	Big red/pink anemone on one of the pillars.	18682
9/16/13 10:07:41	45.95478	-129.99730	93.05	2.1	1532.79	1534.89	Huge crinoid on top of another pillar.	18702
9/16/13 10:09:36	45.95472	-129.99686	91.03	1.65	1532.24	1533.89	We area heading straight east to find the 1998-2011 contact zone.	18711
9/16/13 10:10:46	45.95470	-129.99668	93.16	2.16	1531.79	1533.95	More big pillows.	18716

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9/16/13 10:11:22	45.95470	-129.99660	92.64	1.71	1531.35	1533.06	This might be 1998 flow but we didn't see a contact with older flow.	18719
9/16/13 10:12:22	45.95470	-129.99645	92.46	1.66	1530.29	1531.95	Very little sediment on the pillows so they are probably new (1998).	18721
9/16/13 10:16:54	45.95469	-129.99555	91.57	2.19	1526.68	1528.87	We should be near the contact now.	18735
9/16/13 10:22:08	45.95473	-129.99451	93.95	2.3	1524.68	1526.98	We have come up the edge of a deep collapse in the middle of a lobate field.	18744
9/16/13 10:23:56	45.95452	-129.99422	99.94	2.95	1527.27	1530.22	The bottom has dropped out about 30m in a big collapse area.	18748
9/16/13 10:25:03	45.95441	-129.99405	98.27	2.16	1527.92	1530.08	Looks like 2011 lava down in the bottom of this collapse pit.	18755
9/16/13 10:25:41	45.95445	-129.99396	99.91	2.83	1526.78	1529.61	This is definitely a contact.	18756
9/16/13 10:27:52	45.95441	-129.99376	107.5	2.93	1523	1525.93	The new lava is big pillows and lobate flow.	18777
9/16/13 10:29:13	45.95454	-129.99351	110.65	2.11	1523.72	1525.83	There are a lot of sponges on the old lava; but they usually grow on older lava than what 1998 flow would be.	18780
9/16/13 10:29:44	45.95461	-129.99341	112.66	1.8	1523.23	1525.03	So there is still a small possibility that the dark new looking lava is actually 1998 flow.	18781
9/16/13 10:31:51	45.95452	-129.99305	112.74	2.14	1523.86	1526	We made it to another contact; still moving SE at 112 deg. along the northern edge of the 2011 flow.	18789
9/16/13 10:33:15	45.95443	-129.99284	112.41	1.75	1524.16	1525.91	Lots of new pillows along our right and old pillows and collapses to the left.	18798
9/16/13 10:34:42	45.95438	-129.99266	146.77	2.51	1523.38	1525.89	Still seeing sponges on the old lava; so this may be where the 2011 lava exceeded 1998 flow and the contact is really between old and 2011 lava.	18807
9/16/13 10:35:46	45.95424	-129.99250	147.19	2.29	1521.79	1524.08	This is all new flow- lobate and pillows.	18812
9/16/13 10:37:28	45.95409	-129.99229	140.1	2.31	1521.07	1523.38	Still traveling SE at 140 deg along the new flow.	18817
9/16/13 10:48:15	45.95427	-129.99161	4.37	2.48	1521.26	1523.74	We're on 2011 pillows and at the edge of the 2011 flow boundary. We will continue north along the collapse. Then we will move east onto the caldera wall.	18836
9/16/13 10:53:10	45.95430	-129.99123	5.16	1.21	1521.58	1522.79	We are moving north now. Still on 2011 flow. Should be moving into the 1998 flow soon.	18843
9/16/13 10:56:34	45.95435	-129.99111	3.07	1.69	1522.35	1524.04	Still on 2011 flow. Pillows pillows.	18849
9/16/13 10:58:00	45.95440	-129.99111	3.66	0.99	1523	1523.99	Nice and dark pillows with hardly any sediment.	18851
9/16/13 10:59:36	45.95451	-129.99111	3.07	1.79	1522.4	1524.19	Lots of "stuff" in the water. It's very murky.	18854
9/16/13 11:00:22	45.95456	-129.99113	3.31	1.93	1522.47	1524.4	We're at the edge of the collapse.	18857

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9/16/13 11:00:42	45.95457	-129.99112	2.27	2.71	1522.16	1524.87	This is the older lava now. There are sponges on it.	18859
9/16/13 11:01:01	45.95455	-129.99111	1.71	3.54	1520.71	1524.25	We're not sure what flow this is now. Where was the contact?	18860
9/16/13 11:01:27	45.95461	-129.99108	2.18	3.86	1521.94	1525.8	Bill thinks it's got to be older than 1998 flow to have sponges on it.	18862
9/16/13 11:01:37	45.95462	-129.99108	2.56	4.31	1522.28	1526.59	Really murky water here.	18863
9/16/13 11:02:37	45.95470	-129.99109	3.04	6.83	1522.92	1529.75	In the collapse. Lava roof with pillows below.	18866
9/16/13 11:03:05	45.95473	-129.99109	3.59	5.54	1523.22	1528.76	Sponges on top of this lava.	18869
9/16/13 11:05:03	45.95487	-129.99108	5.91	3.03	1522.57	1525.6	After the 1998 eruption there was an older flow around Bag City. From the sidescan we knew it was at least 10 years older and didn't have any sponges.	18872
9/16/13 11:05:13	45.95489	-129.99108	2.58	3.5	1522.25	1525.75	Bill thinks the sponges taka long time to grow.	18873
9/16/13 11:06:05	45.95496	-129.99108	3.38	2.04	1523.43	1525.47	This flow is not super old because there is not a lot of sediment on it.	18876
9/16/13 11:06:15	45.95497	-129.99107	20.95	3.69	1523.74	1527.43	In the collapse now.	18877
9/16/13 11:06:25	45.95497	-129.99107	41.43	4.56	1523.4	1527.96	Pretty lava arch.	18879
9/16/13 11:07:55	45.95508	-129.99106	2.74	2.84	1522.64	1525.48	Collapse in skylight.	18882
9/16/13 11:08:33	45.95516	-129.99106	3.59	2.95	1522.47	1525.42	This is looking heavily sedimented.	18884
9/16/13 11:10:41	45.95535	-129.99103	2.57	2.86	1522.73	1525.59	Little hole in the lava roof.	18888
9/16/13 11:11:22	45.95540	-129.99102	2.88	3.04	1522.59	1525.63	Sponges on the lava here. Pillows turned into lobate lavas.	18891
9/16/13 11:14:56	45.95581	-129.99108	1.91	3.91	1524.8	1528.71	Singular old twisted pillar. Golf ball size sponges on this pillar.	18902
9/16/13 11:15:09	45.95586	-129.99108	2.07	4.48	1525.94	1530.42	That pillar was ~3 meters high.	18904
9/16/13 11:15:46	45.95596	-129.99108	0.5	3.35	1526.53	1529.88	We're in the bottom of the collapse Bill says.	18905
9/16/13 11:15:58	45.95598	-129.99108	359.38	5.23	1525.09	1530.32	Now we're climbing up a lobe.	18906
9/16/13 11:18:43	45.95625	-129.99115	358.49	6.05	1523.31	1529.36	Starfish on the top of these pillars.	18914
9/16/13 11:20:26	45.95641	-129.99108	14.86	3.98	1522.39	1526.37	Lava arch.	18920
9/16/13 11:20:35	45.95644	-129.99105	20.17	5.79	1522.24	1528.03	Coming back down into another collapse.	18921
9/16/13 11:22:04	45.95663	-129.99098	1.7	1.96	1527.6	1529.56	Jumbled lavas here.	18925
9/16/13 11:22:17	45.95665	-129.99098	1.84	2.39	1527.49	1529.88	We're in the bottom of the collapse.	18927
9/16/13 11:25:57	45.95700	-129.99089	1.96	6.09	1522.68	1528.77	Jumbled lavas at the bottom of this arch and pillar complex. Collapsed material.	18932
9/16/13 11:26:08	45.95702	-129.99088	1.47	5.16	1522.52	1527.68	This is looking pretty old. Lots of sponges.	18934
9/16/13 11:26:27	45.95707	-129.99087	3.82	2.74	1522.58	1525.32	The lava looks weathered. Not many sponges though.	18935

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9/16/13 11:26:45	45.95711	-129.99085	1.26	2.36	1523.06	1525.42	Bill doesn't think this is 1998 lavas because of the sponges.	18937
9/16/13 11:27:25	45.95720	-129.99087	1.99	4.39	1525.07	1529.46	These pillars are ~4 meters high.	18939
9/16/13 11:27:53	45.95724	-129.99088	1.02	0.74	1527.33	1528.07	Crab convention. There are 4 of them here.	18943
9/16/13 11:28:42	45.95729	-129.99090	1.9	2.3	1526.87	1529.17	Crab congregation. What are they waiting for?	18947
9/16/13 11:29:31	45.95733	-129.99094	1.53	1.36	1527.66	1529.02	These are spider crabs.	18950
9/16/13 11:29:55	45.95735	-129.99097	2.01	2.53	1526.72	1529.25	Lots of little sponges on this lava.	18951
9/16/13 11:30:02	45.95736	-129.99099	356.04	2.41	1526.4	1528.81	Jumbled lavas.	18952
9/16/13 11:30:46	45.95740	-129.99106	2.54	5.4	1522.34	1527.74	Lava pillars and arch.	18958
9/16/13 11:32:06	45.95748	-129.99130	314.89	5.53	1522.51	1528.04	Climbing out of the collapse now.	18962
9/16/13 11:32:32	45.95750	-129.99141	314.11	3.05	1522.2	1525.25	We are now moving to the NW. We want to see what that contact looks like.	18963
9/16/13 11:32:39	45.95751	-129.99145	314.61	2.98	1522.22	1525.2	It should be even older to the west.	18964
9/16/13 11:33:19	45.95754	-129.99155	325.37	3.68	1521.5	1525.18	Bill is convinced that this is not 1998 flow. It was hard to distinguish the flows from the sidescan data (it was close to nadir).	18966
9/16/13 11:35:15	45.95773	-129.99162	329.45	2.35	1523.17	1525.52	Sea cucumbers and rattail	18970
9/16/13 11:35:53	45.95781	-129.99165	331.39	2.58	1523.11	1525.69	About 50m to the lava flow boundary.	18971
9/16/13 11:36:12	45.95786	-129.99166	330.86	2.01	1523.74	1525.75	The map shows us on 1998 lavas but these lavas are probably older than that.	18973
9/16/13 11:36:24	45.95788	-129.99166	330.98	2.13	1523.84	1525.97	Little starfish.	18974
9/16/13 11:38:03	45.95792	-129.99189	328.79	1.98	1524.54	1526.52	Now we're back in the pretty pillows. Round and smaller.	18977
9/16/13 11:38:45	45.95795	-129.99197	334.88	2.1	1524.34	1526.44	These lavas have lots of sponges and brittle stars on them.	18981
9/16/13 11:39:21	45.95801	-129.99200	337.53	3.13	1523.37	1526.5	We're approaching the "1998" lava boundary on the map. Want to see a contact soon. These are not 1998 lavas though.	18983
9/16/13 11:39:32	45.95804	-129.99201	338.11	3.68	1523.32	1527	Rattail.	18984
9/16/13 11:40:12	45.95811	-129.99209	336.42	3.03	1523.51	1526.54	The topography is moving up slightly.	18986
9/16/13 11:40:22	45.95811	-129.99210	336.65	2.76	1523.59	1526.35	We are at the lava flow boundary on the map.	18987
9/16/13 11:41:53	45.95815	-129.99207	336.32	2.19	1524.48	1526.67	Tiny brittle stars on these lavas but not a lot of sponges.	18992
9/16/13 11:42:08	45.95816	-129.99205	338.43	2.33	1524.57	1526.9	There are a few little sponges - but fewer than earlier.	18994
9/16/13 11:44:52	45.95842	-129.99183	358.55	2.8	1523.95	1526.75	Little lava pillows.	18998
9/16/13 11:45:58	45.95858	-129.99185	358.8	3.14	1524.86	1528	Waiting for Medea to move to the west with the ship.	19000

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9/16/13 11:46:09	45.95861	-129.99186	356.64	2.6	1525.3	1527.9	Zooming in on these lavas again.	19002
9/16/13 11:46:26	45.95863	-129.99188	357.56	2.5	1524.78	1527.28	Seeing brittle stars but not many/any sponges here.	19003
9/16/13 11:46:36	45.95865	-129.99188	358.56	3.08	1524.52	1527.6	Not as many brittle stars as earlier.	19004
9/16/13 11:46:47	45.95867	-129.99190	358.25	3.14	1524.56	1527.7	The occasional very small sponge.	19005
9/16/13 11:48:09	45.95879	-129.99190	358.19	2.63	1524.53	1527.16	It seems if anything this lava is younger than what we were traveling over. There are less sponges and brittle stars on this flow.	19010
9/16/13 11:48:34	45.95879	-129.99193	358.27	2.09	1524.54	1526.63	Larger pillows here as well.	19012
9/16/13 11:48:53	45.95879	-129.99194	357.86	1.75	1524.31	1526.06	The contact was not really recognizable.	19013
9/16/13 11:49:10	45.95879	-129.99195	358.37	2.33	1523.96	1526.29	Really round pillows in places.	19016
9/16/13 11:49:38	45.95877	-129.99200	357.72	2.25	1523.8	1526.05	Small brittle stars on these lavas. The occasional larger star fish. Not much for sponges.	19017
9/16/13 11:50:47	45.95875	-129.99209	358.11	1.88	1523.91	1525.79	There are a few sponges here and there. Lots of small brittle stars.	19021
9/16/13 11:51:09	45.95874	-129.99212	357.46	2.21	1523.35	1525.56	Coming upon a pit in the sonar and on the map.	19023
9/16/13 11:52:35	45.95868	-129.99219	357.17	2.29	1523.17	1525.46	That pit is to the west of us.	19025
9/16/13 11:52:55	45.95867	-129.99221	353.9	1.61	1523.49	1525.1	The pillows are not as rounded her. More lobate inflated flows.	19026
9/16/13 11:53:21	45.95867	-129.99227	355.13	2.19	1522.96	1525.15	Less pillows - more lobate here.	19028
9/16/13 11:54:18	45.95874	-129.99239	329.6	3.66	1521.47	1525.13	The edge of that pit is just ahead.	19031
9/16/13 11:54:33	45.95878	-129.99241	329.53	2.83	1521.69	1524.52	Lava arch ahead.	19033
9/16/13 11:54:55	45.95877	-129.99237	326.66	3.19	1521.58	1524.77	Zooming in on these lavas with tiny brittle stars.	19035
9/16/13 11:56:36	45.95867	-129.99218	1.4	3.6	1522.22	1525.82	We are going to turn to the east now. Will travel up the caldera wall to the 2011 lava flow and fissure on the east rim.	19039
9/16/13 11:57:09	45.95868	-129.99215	0.81	3.76	1522.25	1526.01	We never really saw a defined lava flow boundary heading west. Now we are turning to the east.	19041
9/16/13 12:02:04	45.95859	-129.99147	89.87	2.73	1523.33	1526.06	NAV: Doppler Reset	19047
9/16/13 12:04:09	45.95865	-129.99136	89.61	2.71	1522.9	1525.61	Heading east. Went from pillows into these smaller pillow-type lobes. No obvious lava boundary.	19050
9/16/13 12:05:27	45.95865	-129.99118	89.41	2.24	1522.75	1524.99	Jumbled lavas on this inflated area.	19052
9/16/13 12:06:35	45.95866	-129.99108	90.02	2.03	1523	1525.03	No sponges to speak of. Actually some tiny sponges and brittle stars. Weird sea cucumber.	19055
9/16/13 12:07:10	45.95865	-129.99102	90.74	1.83	1522.83	1524.66	Collapse feature coming up with lava arch.	19057
9/16/13 12:08:14	45.95860	-129.99094	90.21	1.66	1522.81	1524.47	Zoomed in on the lavas on the top of this arch.	19062

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9/16/13 12:09:53	45.95858	-129.99080	89.79	1.6	1522.97	1524.57	Going to check if the ship can go a little faster.	19064
9/16/13 12:10:47	45.95861	-129.99078	90.14	1.46	1523.17	1524.63	Asked the ship to speed up a bit. He's going to kick it up a bit.	19066
9/16/13 12:12:05	45.95866	-129.99071	89.73	2.29	1522.45	1524.74	Coming upon another collapse area on the map and on the seafloor.	19069
9/16/13 12:13:22	45.95866	-129.99057	90.47	2.33	1522.19	1524.52	The caldera wall is coming up ahead. It's only about 20m high here Bill says.	19073
9/16/13 12:13:47	45.95866	-129.99054	90.09	2.45	1521.96	1524.41	Still on the caldera floor.	19075
9/16/13 12:14:29	45.95866	-129.99050	90.21	1.81	1522.64	1524.45	The caldera wall appears like a horizontal line in the sonar.	19077
9/16/13 12:16:35	45.95864	-129.99035	309.12	4.28	1519.81	1524.09	The lava flow boundary up this far north is determined by ship EM302 data. The AUV data does not extend this far north.	19080
9/16/13 12:17:22	45.95864	-129.99027	85.08	3.7	1520.41	1524.11	The tether has a wrap in it. Jason has spun around to take the wrap out.	19082
9/16/13 12:18:00	45.95864	-129.99018	87.43	2.24	1521.72	1523.96	Collapse to the north. We're on jumbled lobate-like lavas here.	19083
9/16/13 12:18:49	45.95864	-129.99008	85.9	4.05	1519.59	1523.64	Lots of brittle stars on this lava.	19086
9/16/13 12:19:22	45.95864	-129.98997	87.52	5.25	1517.46	1522.71	HIGHLIGHTS start. Talus at the base of the caldera wall.	19088
9/16/13 12:19:50	45.95864	-129.98993	87.64	10.89	1511.35	1522.24	Climbing up the caldera wall.	19091
9/16/13 12:19:55	45.95864	-129.98992	87.96	11.78	1510.5	1522.28	Quite the vertical rise.	19092
9/16/13 12:20:25	45.95864	-129.98987	87.23	16.76	1504.92	1521.68	Pillows in place on the wall. Plus massive lobates etc.	19095
9/16/13 12:21:00	45.95864	-129.98981	86.72	8	1500.13	1508.13	We went up a vertical face with a step back then up another vertical face.	19097
9/16/13 12:22:03	45.95863	-129.98970	87.06	16.78	1487.39	1504.17	We're at the top now. The climb was about 30 meters.	19105
9/16/13 12:22:18	45.95864	-129.98968	86.98	4	1487.16	1491.16	Sedimented lavas at the top of the wall.	19107
9/16/13 12:22:41	45.95866	-129.98965	87.08	2.41	1487.95	1490.36	Sediment on top of the wall. At least a meter thick sediments.	19108
9/16/13 12:23:04	45.95868	-129.98961	87.48	2.21	1488.05	1490.26	Heading east to see the 2011 lavas on top of these thick sediments.	19110
9/16/13 12:23:53	45.95868	-129.98950	86.67	1.83	1488.04	1489.87	Crack in the earth. Pillows in the bottom. About 2 meters deep.	19113
9/16/13 12:24:03	45.95868	-129.98948	87.37	2.31	1488.04	1490.35	Continuing over thick sediments.	19115
9/16/13 12:24:28	45.95868	-129.98941	86.94	2.51	1487.39	1489.9	Another crack here.	19117
9/16/13 12:25:23	45.95866	-129.98934	98.24	5.96	1484.42	1490.38	Spinning around again to get the loop out of the tether.	19119

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9/16/13 12:26:25	45.95866	-129.98926	90.13	3.61	1486.1	1489.71	Continuing to the east now.	19121
9/16/13 12:27:39	45.95873	-129.98907	91.56	2.14	1487.54	1489.68	Thick orange/brown/tan sediment up here on the caldera rim. We're out of the caldera on the east side	19123
9/16/13 12:29:37	45.95878	-129.98884	91.51	1.75	1488.9	1490.65	The occasional sponge on the sediments.	19128
9/16/13 12:29:47	45.95878	-129.98882	90.73	1.49	1489.2	1490.69	There are intermittent cracks in the sediments.	19129
9/16/13 12:32:13	45.95883	-129.98858	91.28	0.85	1491.62	1492.47	Black rattail acting odd.	19133
9/16/13 12:33:09	45.95885	-129.98847	90.87	1.43	1491.52	1492.95	Maybe the rattail wasn't any blacker than usual - just looked that way against the sediments.	19136
9/16/13 12:35:11	45.95889	-129.98823	91.42	2.05	1492.95	1495	Another crack in the sedimented seafloor.	19141
9/16/13 12:35:45	45.95889	-129.98817	91.39	2.01	1493.36	1495.37	~100 meters from the eruptive fissure.	19142
9/16/13 12:37:42	45.95898	-129.98792	92.73	2.11	1495.02	1497.13	"Sinkholes" in the sedimented seafloor.	19147
9/16/13 12:38:37	45.95898	-129.98779	90.99	2.28	1496.02	1498.3	The fissures are visible in the sonar. We could be coming upon the flow boundary.	19149
9/16/13 12:39:11	45.95899	-129.98771	91.3	2.58	1496.09	1498.67	Lava fissure below. This is the northern-most end of the fissure.	19153
9/16/13 12:39:31	45.95900	-129.98766	92.5	2.33	1496.32	1498.65	Don't see any new lava in that fissure.	19155
9/16/13 12:40:30	45.95906	-129.98754	89.49	1.39	1498.2	1499.59	Coming upon a bigger fissure in ~75 meters.	19157
9/16/13 12:41:00	45.95907	-129.98749	88.27	1.2	1498.73	1499.93	Rattail that looks gray - not black.	19158
9/16/13 12:41:11	45.95907	-129.98748	87.94	1.31	1498.7	1500.01	HIGHLIGHTS start.	19161
9/16/13 12:41:27	45.95908	-129.98747	88.96	1.43	1498.63	1500.06	Wow! That's a contact if I ever saw one.	19163
9/16/13 12:41:52	45.95908	-129.98744	89.03	1.16	1498.67	1499.83	Shiny black lava overlaying these thick sediments.	19167
9/16/13 12:42:33	45.95912	-129.98740	88.39	1.66	1498.54	1500.2	Narrow tongue of new sediments.	19171
9/16/13 12:43:04	45.95912	-129.98735	89.26	1.94	1498.45	1500.39	Correction: Narrow tongue of new lavas. More beyond this sedimented area.	19173
9/16/13 12:43:37	45.95912	-129.98729	88.83	2.26	1498.33	1500.59	This must be the eruptive fissure.	19178
9/16/13 12:44:34	45.95914	-129.98717	89.28	4.8	1497.59	1502.39	That fissure is deep (The altitude is increasing. It's 2.5 meters deep.	19183
9/16/13 12:44:56	45.95916	-129.98711	82.2	2.83	1497.57	1500.4	New lobate lavas up here.	19186
9/16/13 12:45:26	45.95917	-129.98704	81.56	1.69	1498.69	1500.38	The bottom got black. Glassy-looking lavas up here.	19188
9/16/13 12:45:45	45.95917	-129.98698	82.12	3.33	1498.06	1501.39	Lava pillar up here.	19191
9/16/13 12:46:23	45.95921	-129.98691	82.63	3.26	1499.4	1502.66	We're going to follow this flow to its northern edge.	19194
9/16/13 12:46:48	45.95923	-129.98687	80.91	3	1499.69	1502.69	These lavas are more like ropey sheet lavas now - drained out.	19195
9/16/13 12:47:49	45.95929	-129.98680	81.48	2.71	1499.89	1502.6	HIGHLIGHTS stop.	19197
9/16/13 12:48:15	45.95929	-129.98677	81.92	3.2	1499.37	1502.57	Lava arch.	19200

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9/16/13 12:49:05	45.95929	-129.98670	82.67	2.89	1498.98	1501.87	Beautiful lava arch here up on the caldera rim. Seems odd seeing these feature up here.	19204
9/16/13 12:49:49	45.95931	-129.98666	81.69	2.51	1499.57	1502.08	The drain out is not very deep. Looks like a meter or less.	19207
9/16/13 12:50:06	45.95930	-129.98663	82.55	0.98	1500.15	1501.13	Broken off pillow tube.	19210
9/16/13 12:50:52	45.95928	-129.98653	95.75	2.8	1499.39	1502.19	Area of lava pillars; arches and broken jumbled lavas at the base.	19215
9/16/13 12:51:04	45.95928	-129.98650	96.57	3.09	1499.17	1502.26	Passing over an inflated lava lobe.	19218
9/16/13 12:51:41	45.95930	-129.98643	95.75	3.35	1499.22	1502.57	Lineated sheet flow to the north of this inflated area.	19219
9/16/13 12:51:57	45.95931	-129.98639	96.33	3.25	1499.29	1502.54	Now over lineated sheet flow.	19221
9/16/13 12:53:18	45.95938	-129.98625	95.78	2.2	1499.48	1501.68	Back in an area of inflated lava lobes. Fissure to the right.	19227
9/16/13 12:54:28	45.95942	-129.98613	95.47	2.83	1500.17	1503	Inflated lobate and lineated sheet lavas.	19231
9/16/13 12:54:36	45.95942	-129.98613	95.54	2.61	1500.41	1503.02	Now we're on the sheet lavas.	19232
9/16/13 12:55:18	45.95944	-129.98608	95.77	1.45	1501.75	1503.2	Lineated sheet flows are always in the floor of a collapse.	19235
9/16/13 12:58:11	45.95955	-129.98581	90.2	1.75	1500.04	1501.79	Back over lobate lavas.	19240
9/16/13 12:58:43	45.95956	-129.98573	73.37	2.21	1499.92	1502.13	Still moving north. We're in a more lobate lava flow environment now.	19241
9/16/13 13:01:37	45.95967	-129.98527	73.04	1.79	1500.94	1502.73	A window here? The lava may have gone under the sediment there.	19247
9/16/13 13:02:11	45.95967	-129.98517	76.09	2.44	1500.52	1502.96	We're coming upon the lava flow boundary.	19250
9/16/13 13:02:26	45.95970	-129.98516	74.37	2.5	1500.51	1503.01	Contact.	19253
9/16/13 13:02:44	45.95971	-129.98513	75.03	3.09	1500.18	1503.27	Going to drive along this contact heading northeast.	19254
9/16/13 13:02:53	45.95971	-129.98509	77.39	2.83	1500.52	1503.35	HIGHLIGHTS start.	19256
9/16/13 13:03:11	45.95970	-129.98505	75.67	2.31	1500.94	1503.25	Thinner lavas up here.	19259
9/16/13 13:03:25	45.95969	-129.98503	76.85	2.45	1500.67	1503.12	Crazy contact .	19260
9/16/13 13:03:48	45.95971	-129.98495	74.98	3.06	1500.26	1503.32	The lavas are thinning.	19262
9/16/13 13:04:31	45.95978	-129.98485	74.26	2.88	1500.75	1503.63	Collapse area here.	19268
9/16/13 13:05:01	45.95984	-129.98481	74.05	3.88	1500.85	1504.73	Want to drive along the contact boundary so turning more to the left (north).	19270
9/16/13 13:05:27	45.95988	-129.98477	78.03	2.56	1501.15	1503.71	Little islands of sediment here and there.	19273
9/16/13 13:05:35	45.95988	-129.98476	84.16	2.55	1501.11	1503.66	Collapse ahead.	19275
9/16/13 13:05:46	45.95988	-129.98474	86.5	3.09	1500.55	1503.64	HIGHLIGHTS stop.	19276
9/16/13 13:06:04	45.95989	-129.98463	84.66	2.61	1501.13	1503.74	Vent fish just swam by.	19278
9/16/13 13:07:02	45.95989	-129.98437	84.33	1.96	1501.65	1503.61	We're heading toward the northern boundary here.	19280

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/16/13 13:07:12	45.95989	-129.98435	86.13	1.95	1501.77	1503.72	This flow is thin with holes in it.	19282
9/16/13 13:07:47	45.95988	-129.98423	86.67	3.06	1501.05	1504.11	Sedimented area here surrounded by new lava.	19285
9/16/13 13:09:08	45.95985	-129.98398	83.99	3.4	1501.88	1505.28	This is the northern contact. Looks like the lava flowed under the sediments here.	19291
9/16/13 13:09:40	45.95976	-129.98395	87.4	3.26	1501.01	1504.27	Looking to the east now at the edge of the flow. The contact boundary is off by only about 50 meters.	19293
9/16/13 13:09:51	45.95976	-129.98393	84.07	3	1501.24	1504.24	Going to try to follow the contact.	19294
9/16/13 13:10:18	45.95978	-129.98384	85.18	2.61	1501.49	1504.1	The contact appears to be about 50m to the south of the boundary on the map.	19298
9/16/13 13:11:05	45.95977	-129.98368	83.3	2.46	1501.79	1504.25	Collapse feature in these lobates.	19301
9/16/13 13:11:36	45.95979	-129.98361	83.77	2.59	1501.67	1504.26	Pockets of sediment in the new flow.	19303
9/16/13 13:12:35	45.95980	-129.98336	82.62	2.96	1501.77	1504.73	At the edge it seems like the sediment is on top of the lava.	19306
9/16/13 13:13:00	45.95981	-129.98331	82.73	2.1	1502.76	1504.86	Coming on an older fissure up ahead.	19307
9/16/13 13:13:15	45.95982	-129.98326	84.04	2.79	1502.18	1504.97	Beautiful glassy-looking lavas.	19310
9/16/13 13:14:25	45.95985	-129.98310	83.54	2.51	1502.54	1505.05	Odd lava-tongue surrounded by sediment.	19316
9/16/13 13:14:34	45.95986	-129.98307	83.15	2.83	1502.54	1505.37	Contact area. Sediment over the new lava????	19317
9/16/13 13:15:00	45.95986	-129.98299	83.6	3.35	1501.8	1505.15	Odd little lava collapse feature.	19320
9/16/13 13:15:11	45.95986	-129.98296	83.61	3.39	1501.49	1504.88	New lava over sediments here not very thick.	19322
9/16/13 13:15:41	45.95988	-129.98288	84.41	3.15	1501.96	1505.11	Coming up on a big old fissure feature in the lav.	19324
9/16/13 13:16:45	45.95995	-129.98265	83.76	2.59	1505.17	1507.76	Crabs on new lava.	19330
9/16/13 13:17:03	45.95996	-129.98261	83.44	3.2	1506	1509.2	Lava and sediments interspersed. More lava than sediment.	19331
9/16/13 13:17:58	45.95997	-129.98244	84.04	3.4	1505.44	1508.84	Edge of the fissure coming up in the sonar.	19333
9/16/13 13:18:18	45.95998	-129.98239	84	2.95	1506	1508.95	Hollow lava lobe.	19336
9/16/13 13:19:04	45.95996	-129.98219	85.07	3.35	1505.55	1508.9	Lavas and sediments interspersed.	19338
9/16/13 13:19:42	45.95996	-129.98202	83.56	3.98	1504.42	1508.4	We're now out of the new flows.	19340
9/16/13 13:19:53	45.95996	-129.98197	83.77	3.2	1504.84	1508.04	Back in the sediments.	19341
9/16/13 13:20:14	45.95995	-129.98190	84.21	2.94	1505.42	1508.36	Fissure-feature ahead.	19345
9/16/13 13:20:54	45.95989	-129.98178	84.73	2.86	1505.99	1508.85	Another crack ahead.	19348
9/16/13 13:22:21	45.95978	-129.98149	108.97	1.74	1508.38	1510.12	Moving to the east and we want to turn to the south.	19351
9/16/13 13:23:09	45.95973	-129.98133	121.77	1.94	1507.42	1509.36	Over thick sediments now. Crack coming up.	19353
9/16/13 13:23:57	45.95968	-129.98109	120.95	2.53	1506.43	1508.96	Older pillows in the fissure.	19355
9/16/13 13:24:58	45.95958	-129.98085	119.06	2.63	1506.12	1508.75	Big sea star laying on the sediments here.	19358
9/16/13 13:25:24	45.95957	-129.98078	120.34	2.05	1506.66	1508.71	Black fishes.	19361

Date-Time	Latitude	Longitude	Heading	Altitude	ROV Depth	Total Depth	J2-732 Dive Comments	Virtual Van #
9/16/13 13:27:25	45.95943	-129.98059	139.95	2.43	1507.44	1509.87	Can see pillows down in these cracks in the sediments. They are older than the 2011 lavas Bill says.	19366
9/16/13 13:32:34	45.95897	-129.97966	178.41	2.1	1509.48	1511.58	That fissure must have been the eastern edge of the 2011 lava flow in the north.	19372
9/16/13 13:33:37	45.95883	-129.97967	181.83	2.41	1511.56	1513.97	HIGHLIGHTS start. Contact ahead.	19375
9/16/13 13:34:36	45.95872	-129.97957	182.14	3.64	1512.28	1515.92	There is sediment on top of the lava flow boundary. The lava bulldozed up under the sediments for a couple meters on the edge.	19380
9/16/13 13:35:18	45.95869	-129.97938	182.3	3.78	1512.56	1516.34	Right on the southern edge of that inflated area.	19383
9/16/13 13:35:32	45.95867	-129.97936	181.77	3.21	1514.13	1517.34	Closer to the bottom here.	19384
9/16/13 13:36:10	45.95860	-129.97932	181.55	2.76	1514.26	1517.02	Here it looks like 2011 lavas over an older flow that is sedimented.	19389
9/16/13 13:36:35	45.95858	-129.97934	182.61	2.5	1514.36	1516.86	Older lava flow that is sedimented overlaid with 2011 lavas.	19391
9/16/13 13:37:05	45.95852	-129.97939	198.77	3.59	1513.95	1517.54	Older flow 2011 CONTACT!	19395
9/16/13 13:37:30	45.95844	-129.97939	200.72	4.16	1512.82	1516.98	2011 pillow lavas over older flow.	19398
9/16/13 13:38:58	45.95825	-129.97953	187.6	2.73	1514.3	1517.03	CONTACT - 2011 pillows up against older jumbled lava that is heavily sedimented.	19405
9/16/13 13:39:17	45.95821	-129.97951	176.63	3.21	1514.29	1517.5	HIGHLIGHTS stop.	19408
9/16/13 13:39:43	45.95820	-129.97949	178.8	2.06	1515.59	1517.65	Stubby tiny pillars.	19410
9/16/13 13:40:58	45.95817	-129.97956	178.02	1.89	1515.74	1517.63	Stubby older lava pillars.	19420
9/16/13 13:41:29	45.95817	-129.97956					We lost some of the fibers in the tether - but not all of them.	19422
9/16/13 13:42:10	45.95817	-129.97956					We will be coming up now.	19424
9/16/13 13:42:30	45.95817	-129.97956					Jason off bottom	19425
9/16/13 13:44:04	45.95817	-129.97956					They have no telemetry to the vehicle. They lost the fiber optics. They still have some power (the lights). This will be an interesting recovery. They actually recovered the vehicle sucessfully.	19428
9/16/13 16:46:57	45.95822	-129.97955	36.06				Jason on deck at 15:47	19568