Axial 2015 Cruise Report

Axial Seamount, Juan de Fuca Ridge

R/V Thompson TN327

August 14-29, 2015
JASON Dives J2-820 – J2-826

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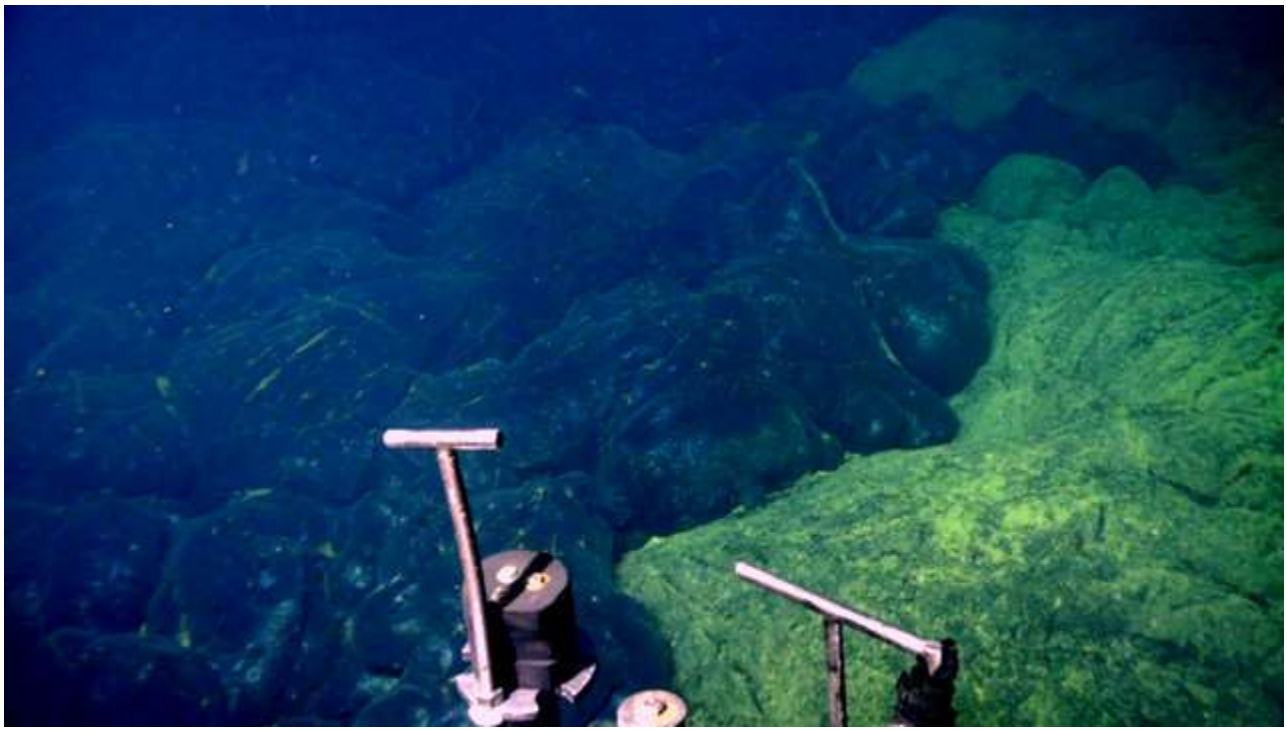

New 2015 lavas on older flow inside Axial's caldera from Jason dive J2-822.

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Axial 2015 Expedition Cruise Report

1 - Expedition Summary

Bill Chadwick, Chief Scientist

Our 2015 expedition to Axial Seamount was very successful. The big excitement this year was our "event response" work related to the April-May 2015 eruption at Axial, in addition to continuing important geophysical, chemical, and biological time-series at this very active submarine volcano. Despite losing 3 full days to bad weather, we managed to complete all our major goals with the skilled support of the R/V Thompson's crew, the ROV Jason and AUV Sentry teams, and our hard-working group of scientists. This research cruise had three interrelated components.

The first component was to make seafloor pressure measurements with ROV Jason at an array of seafloor benchmarks in and around the Axial caldera to continue our long-term time-series of volcanic inflation/deflation. This was accomplished during two long Jason dives, J2-823 and J2-824. We also recovered 3 autonomous bottom pressure recorder (BPR) moorings that had been deployed since the summer of 2013, and so had recorded data during the 2015 eruption. We re-deployed 2 of the 3 BPRs and the third was brought back to Seattle for servicing. The April 2015 eruption was successfully forecast 7-months in advance, based on this long-term inflation/deflation record. This year, AUV Sentry was added on the cruise in order to conduct repeat bathymetric mapping to detect the vertical deformation of the seafloor at Axial, to compliment the seafloor pressure measurements. AUV Sentry repeated some of the tracklines run by MBARI in 2014 (dive 339) and expanded the coverage beyond the caldera to compare with future resurveys (dive 340). This project was led by Scott Nooner and Bill Chadwick, and was funded by the National Science Foundation (NSF).

The second component was to collect fluid and microbial samples from Axial's hydrothermal vents to better understand the chemistry of hydrothermal systems, their microbial communities, and how they change with time. This work continues a long-term time-series and a highlight this year was the successful use of an incubator on the PMEL hot fluid and particle sampler to determine if in-situ experiments on the seafloor produce different results than those in the laboratory. Another important goal was to see how the 2015 eruption had affected Axial's hydrothermal systems. This work was accomplished during Jason dives J2-822 and J2-825, and parts of other dives. This project was led by Dave Butterfield, Jim Holden and Julie Huber and was funded by NOAA/PMEL and the Gordon and Betty Moore Foundation.

The third component was to explore and sample the new lava flows from the 2015 eruption, work that was funded by NSF and NOAA through a RAPID proposal that added 3 days to the cruise. Four of the ROV Jason dives (J2-820, J2-822, J2-825, and J2-826) collected rock, fluid, and biological samples and made visual observations over the 2015 lava flows. AUV Sentry collected high-resolution multibeam bathymetry over the 2015 lava flows during dives 338 and 341 (and water column data during dive 336). We also deployed a RAS mooring with a time-series chemical sampler and a MAPR mooring with temperature and turbidity sensors at different heights above the seafloor on Axial's North Rift Zone. As part of this work, we also conducted 4 CTD tows and 4 CTD casts to determine the distribution of hydrothermal plumes in the water column in the aftermath of the 2015 eruption. In addition, we recovered 1 self-calibrating pressure recorder (SCPR) and recovered and re-deployed 1 ocean-bottom hydrophone (OBH). Lastly, we collected multibeam sonar data with the Thompson's EM302 system over Axial's south rift zone, and found no evidence of eruptive activity there in 2015.

Outreach activities during the cruise were led by our teacher-at-sea, Rachel Teasdale and our videographer Jesse Crowell. While at sea, we made daily posts to our cruise blog: axial2015.blogspot.com, which was mirrored on the OceanScape Network website, in partnership with the Oregon Coast Aquarium. In addition, we made almost-daily Skype calls to shore with west coast science classrooms, a STEM summer camp, and a public audience at the Hatfield Marine Science Center.

As always, 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 ROV Jason and AUV Sentry teams.

2 - Cruise Participants

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Jim Pelowski	Jason group	ROV	
Ben Tradd	Jason group	ROV	
Jim Varnum	Jason group	ROV	
Korey Verhein	Jason group	ROV	
Brandi Murphy	U. Washington	Marine Technician	
Jen Nomura	U. Washington	Marine Technician	

3 - Operations Log

Pacific Time (-7 GMT)	Date/Time GMT	Operation
8/14/2015 09:00	8/14/2015 16:00	Departed Pier 91, Seattle.
8/15/2015 15:38	8/15/2015 22:38	**CTD cast V15A-01**: 45° 16.654'N 129°47.701'W depth=2129
8/15/2015 18:24	8/16/2015 01:24	Elevator deployed: 46° 16.3848'N 129° 47.8110'W depth=2130
8/15/2015 19:50	8/16/2015 02:50	SS Morningstar sailboat deployed. (Tillamook High School project)
8/16/2015 08:25	8/16/2015 15:25	Attempted to release elevator from seafloor (unsuccessful)
8/16/2015 12:22	8/16/2015 19:22	AUV **Sentry Dive 336** launched to explore NRZ lava flow. 46° 4.5288'N 129° 58.2564'W
8/16/2015 15:30	8/16/2015 22:30	Medea launched for 4-hour test dive.
8/16/2015 18:50	8/17/2015 01:50	Medea on deck.
8/17/2015 00:10	8/17/2015 07:10	Begin **Jason Dive J2-820** at NRZ lava mounds.
8/17/2015 08:41	8/17/2015 15:41	End dive J2-820.
8/17/2015 15:05	8/17/2015 22:05	End Sentry dive 336.
8/17/2015 16:45	8/17/2015 23:45	Verified elevator still on bottom.
8/17/2015 17:46	8/18/2015 00:46	**Jason Dive J2-821** (Engineering dive; no navigation).
8/17/2015 18:50	8/18/2015 01:50	Jason successfully released elevator.
8/17/2015 20:20	8/18/2015 03:20	End dive J2-821.
8/17/2015 20:53	8/18/2015 03:53	Elevator on deck.
8/17/2015 22:34	8/18/2015 05:34	**CTD tow T15A-01** Over NRZ thick lava flows. Begin: 46° 8.0784'N 129° 57.4212'W
8/17/2015 22:34	8/18/2015 05:34	CTD tow T15A-01 End: 46° 3.3804'N 130° 0.2892'W
8/18/2015 07:46	8/18/2015 14:46	OBH release code sent and confirmed.
8/18/2015 08:37	8/18/2015 15:37	OBH on deck.
8/18/2015 08:57	8/18/2015 15:57	BPR-South 2 release code sent and confirmed
8/18/2015 09:35	8/18/2015 16:35	BPR-South 2 on deck.
8/18/2015 09:48	8/18/2015 16:48	BPR-South 1 release code sent and confirmed.
8/18/2015 10:36	8/18/2015 17:36	BPR-South 1 on deck.
8/18/2015 11:22	8/18/2015 18:22	SCPR release code sent and no response.
8/18/2015 13:30	8/18/2015 20:30	Stopped pinging on SCPR (no response).
8/18/2015 15:32	8/18/2015 22:32	Start EM302 survey from north to south caldera. Began SOL-68.
8/18/2015 15:43	8/18/2015 22:43	Stopped EM302 survey due to bad data (weather).
8/18/2015 17:45	8/19/2015 00:45	**CTD cast V15A-02** at Vixen. 45° 66.048'N 129° 59.573'W.
8/18/2015 22:12	8/19/2015 05:12	**CTD cast V15A-03** at ASHES. 45° 56.014'N 130° 0.820'W
8/19/2015 14:55	8/19/2015 21:55	**Deployed BPR-South 2**. 45° 54.956'N 129° 59.636'W depth=1538.
8/19/2015 18:05	8/20/2015 01:05	**Deployed OBH** on NRZ. 46° 05.7652N 129° 58.8176W
8/19/2015 20:45	8/20/2015 03:45	CTD tow **T15A-02**. NRZ 2015 flow at NE caldera. Begin: 46° 0.8100'N 130° 1.3302'W
8/20/2015 02:30	8/20/2015 09:30	CTD tow T15A-02 End: 46° 56.5056'N 129° 59.2272'W
8/20/2015 04:20	8/20/2015 11:20	AUV **Sentry Dive 337** begin.
8/20/2015 11:10	8/20/2015 18:10	Sentry recovered.

Pacific Time (-7 GMT)	Date/Time GMT	Operation
8/20/2015 13:00	8/20/2015 20:00	CTD cast **V15A-04** at International District. 45° 55.5768'N 129° 58.7982'W
8/20/2015 16:15	8/20/2015 23:15	Begin **Jason Dive J2-822**.
8/21/2015 08:50	8/21/2015 15:50	AUV **Sentry Dive 338** begin.
8/21/2015 16:04	8/21/2015 23:04	End Jason dive J2-822.
8/21/2015 20:44	8/22/2015 03:44	Sentry recovered.
8/21/2015 00:06	8/21/2015 07:06	Begin EM302 survey. SOL 071.
8/22/2015 05:09	8/22/2015 12:09	End EM302 survey. EOL 081.
8/22/2015 08:09	8/22/2015 15:09	Begin **Jason Dive J2-823** (Pressure Dive).
8/22/2015 17:05	8/23/2015 00:05	AUV **Sentry Dive 339** begin.
8/23/2015 10:49	8/23/2015 17:49	SCPR mooring released by Jason from seafloor on J2-823.
8/23/2015 12:00	8/23/2015 19:00	SCPR on deck.
8/23/2015 17:18	8/24/2015 00:18	AUV Sentry on deck.
8/24/2015 04:05	8/24/2015 11:05	End Jason dive J2-823. (Two MISO instruments, with no data, lost on recovery).
8/24/2015 05:41	8/24/2015 12:41	CTD tow **T15A-03**. NRZ fissure. Start: 46° 1.2564'N 130° 0.4758'W
8/24/2015 08:50	8/24/2015 15:50	CTD tow T15A-03. End: 45° 58.4064'N 130° 1.0398'W
8/24/2015 12:08	8/24/2015 19:08	Begin **Jason Dive J2-824** (2nd Pressure dive).
8/24/2015 14:06	8/24/2015 21:06	AUV **Sentry Dive 340** begin.
8/25/2015 13:31	8/25/2015 20:31	Sentry recovered.
8/25/2015 17:31	8/26/2015 00:31	End Jason dive J2-824.
8/25/2015 22:05	8/26/2015 05:05	CTD tow **T15A-04** Begin: 46° 0.7704'N 130° 1.2504'W
8/26/2015 02:40	8/26/2015 09:40	CTD T15A-04 End: 46° 4.4052'N 129° 59.6556'W
8/26/2015 08:06	8/26/2015 15:06	Begin **Jason Dive J2-825**.
8/26/2015 15:48	8/26/2015 22:48	AUV **Sentry Dive 341** begin.
8/26/2015 16:58	8/26/2015 23:58	BPR-Center release code sent and acknowledged.
8/26/2015 17:46	8/27/2015 00:46	BPR-Center on deck.
8/27/2015 04:00	8/27/2015 11:00	End Jason dive J2-825.
8/27/2015 05:40	8/27/2015 12:40	**BPR-Center** deployed. 45° 57.407N 130° 00.636W
8/27/2015 07:53	8/27/2015 14:53	AUV Sentry on deck.
8/27/2015 09:55	8/27/2015 16:55	**MAPR mooring** deployed. 46° 5.6226'N 129° 58.867'W
8/27/2015 11:50	8/27/2015 18:50	**RAS mooring** deployed. 46° 4.4934'N 129° 59.7102'W
8/27/2015 12:37	8/27/2015 19:37	Begin **Jason Dive J2-826**.
8/28/2015 00:06	8/28/2015 07:06	End Jason Dive J2-826.
8/29/2015 10:00	8/29/2015 17:00	Cruise ends. R/V Thompson arrives at UW Marine Facility pier.

4 - Discipline Summaries

4.1 Geology/Geophysics

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

Scott Nooner, Bill Chadwick, and Glenn Sasagawa

We have made ROV-based pressure measurements with a "mobile pressure recorder" (MPR) 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. In addition, we have deployed autonomous bottom pressure recorder (BPR) moorings that record continuously for 1-3 years at a time. If the MPR measurements are co-located with a BPR, then the MPR data can determine the instrumental drift of a BPR. What is new this year is that for the first time we have deformation results from our expanded array of 9 MPR benchmarks in the caldera, and from 3 BPRs that were located near MPR benchmarks (so their drift can be determined). We were also able to determine the drift of the OOI-BPR at the center of the caldera for the first time (MJ03F-BOTPT01), but we will not be able to constrain the drift on the other two OOI-BPRs (MJ03E and MJ03D) until the next MPR survey. This year's operations included the following:

1) We recovered the three BPRs that were deployed in 2013 and they all had successfully recorded, including during the 2015 eruption. Two of the three BPRs (Center and South2) were turned-around at sea and redeployed at the same positions (see table below). The third BPR (South1) failed on the ship and was returned to Seattle for maintenance.

BPR Deployment Locations (drop positions – not surveyed by Workboat)

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-South2	45	54.959	-129	59.609	45.91599	-129.99348	1540

2) There are now a total of 10 cement benchmarks for the MPR surveys.

Cement Benchmark Locations

AXIAL CEMENT BENCHMARK NAMES	LAT	LON	Depth	LAT DEG	LAT MIN	LON DEG	LON MIN
AX-101 Caldera Center	45.95520	-130.00987	1532	45	57.312	-130	0.592
AX-104 Bag City	45.91617	-129.98950	1534	45	54.970	-129	59.370
AX-105 Pillow Mound	45.86317	-130.00376	1718	45	51.790	-130	0.225
AX-106 Ashes	45.93445	-130.01160	1542	45	56.067	-130	0.696
AX-302 Trevi	45.94642	-129.98378	1522	45	56.785	-129	59.027
AX-303 Marker 33 site	45.93346	-129.98225	1516	45	56.008	-129	58.935
AX-307 Magnesia West	45.94535	-130.00906	1544	45	56.721	-130	0.544
AX-308 BPR-South1	45.93160	-129.99880	1533	45	55.896	-129	59.928
AX-309 RSN-PN	45.93835	-129.97208	1527	45	56.301	-129	58.325
AX-310 IntDist	45.92580	-129.97787	1531	45	55.548	-129	58.672

The MPR measurements provide a precise depth for each benchmark *relative* to the reference site AX-105 (Pillow Mound) that is located ~10 km south of the center of the caldera. This year, the pressure was measured at all the benchmarks during Jason dives J2-823 and J2-824. Dive J2-823 had to be aborted during the MPR survey due to a hydraulic leak on the ram that controls Jason's basket. The dive started at AX-105, did one question-mark-shaped northward traverse to AX-308, and most one one southward traverse; the dive was aborted after the 2nd measurement at AX104. After an 8-hour turn-around to repair Jason, we resumed the MPR survey on dive J2-824. That dive started at AX-106, made repeated measurements at AX-308, and ended at AX-105. Thus, each dive made at least one repeat measurement and made at least one measurement at AX-105. As in previous years, each measurement was made by placing the MPR on top of a benchmark and recording for 20 minutes. Data were recorded in a laptop PC in the Jason control room. The two Paros pressure gauges that we have used in the past (s/n 43535 and 62201) were used again this year. We conducted some fluid sampling for Dave Butterfield during J2-824. The average transit speed for towing Jason from benchmark to benchmark was about 1 knot.

The MPR pressure data were converted to depth then corrected for ocean tides using data collected by our BPR-Center mooring. 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 ± 1.17 cm this year, so the survey did not appear to suffer too much from breaking it up over two dives. Comparing the benchmark depths in 2015 to our previous survey in 2013 shows the following depth changes (which include pre-eruption inflation, co-eruption deflation, and post-eruption re-inflation).

Depth changes from 2013 to 2015 at MPR benchmarks.

BENCHMARK NAME	Depth change (cm)
AX-101 Caldera Center	-93.9
AX-104 Bag City	-54.18
AX-105 Pillow Mound	0.0
AX-106 Ashes	-63.8
AX-302 Trevi	-54.31
AX-303 Marker 33 site	-65.32
AX-307 Magnesia West	-90.93
AX-308 BPR-South1	-79.11
AX-309 RSN-PN	-40.57
AX-310 IntDist	-60.56

3) In addition this year, during Jason dive J2-823, we deployed 6 mini-BPRs on all of the MPR benchmarks that do not have a BPR-mooring or an OOI-cabled-BPR nearby (see table below). The mini-BPRs have small pressure cases and are battery-powered, internally-recording, and must be deployed and recovered by an ROV. They allow us (for the first time) to have both continuous BPR data and campaign-style MPR measurements at every site, and the drift of all BPRs will be able to be removed with the results from the next MPR measurements. The mini-BPRs were built at Scripps by Glenn Sasagawa and Scott Nooner.

BENCHMARK NAME	Mini-BPR	Paros S/N	Paros model	Range (psi)
AX-105 Pillow Mound	Blue-Black #13	132674	46K	6000
AX-106 Ashes	Red-Black #9	127331	43K	3000
AX-302 Trevi	Yellow #6	125331	42K	2000
AX-303 Marker 33 site	Blue #12	132673	46K	6000
AX-307 Magnesia West	Yellow-Black #7	125573	42K	2000
AX-308 BPR-South1	Red #8	127329	43K	3000

Summary

The data from the 2015 MPR survey and the BPRs that were recovered show the following: (1) The pre-eruption inflation rate between the 2011 and 2015 eruptions was variable but generally increased with time. (2) The co-eruption deflation was a maximum of -2.45 m at the center of the caldera and the duration of deflation varied by site but was up to 25 days at BPR-South-1. (3) The post-eruption inflation rate has remained high since the April 2015 eruption, between 60-80 cm/yr. (4) The spatial distribution of deformation seems to be consistent with the magma chamber shape derived from the multi-channel seismic results – that is, cigar shaped with a long-axis similar to that of the caldera and offset to the east side the caldera. (5) All the 3 of our autonomous BPRs and all 3 of the OOI cabled BPRs and the SCPR BPR measured a bell-shaped temperature increase of about 0.7°C followed by a decrease, which lasted about a month. The area of the temperature increase was at least 5 km across. (6) The drift of the OOI-BPR at the caldera center (MJ03F-BOTPT01) can be estimated for the first time by comparing it to the drift-corrected Center-BPR autonomous mooring. Such a comparison suggests the OOI-BPR drift is near zero, but this will have to be confirmed by the next MPR survey, which is a more precise determination. (7) The success of the 2015 eruption forecast and the high inflation rate since the 2015 eruption suggests that the time-period until the next eruption will be short again (perhaps like between the 2011-2015 eruptions). A more specific forecast will have to wait for a more detailed analysis of the data. This work was funded by the National Science Foundation.

4.1.2 – Rock Collections

Jenny Paduan and Bill Chadwick

Twenty-five lava samples of the Axial 2015 flows were collected on *Jason* dives 820 and 826 on the North Rift Zone, dive 822 on the NE caldera floor, and dive 825 on the north caldera rim and Upper North Rift Zone (Table 4.1.2-1, Figures 4.1.2 1-3). The locations of these flows had been identified by comparing multibeam bathymetry data taken before the eruption (R/V *Thompson* TN302 and MBARI Mapping AUV) with data collected after the eruption (EM302 collected on TN326 in July, and AUV *Sentry* multibeam on this cruise). Contacts between younger-looking lavas and older lavas observed on ROV *Jason* dives refined interpretations of mapped flow boundaries (Figure 4.1.2-4).

Samples were collected to achieve a wide spatial distribution along the likely eruptive fissures and across some lava flows, and collected with the ROV manipulator (Figure 4.1.2-4). On board, samples were photographed and described (Table 4.1.2-1) and glass was chipped for electron microprobe analyses for major element composition by Dr. David Clague (MBARI) on shore. The rocks were shipped to Dr. Kenneth Rubin (University of Hawaii) for dating utilizing $^{210}Po/^{210}Pb$ radioactive disequilibrium, which should distinguish when, and for how long, the different fissures and parts of the flows were active.

In addition, particles of volcanic glass (ash) discovered on the AX-101 benchmark in the central caldera were collected as a suction sample (J823-Geo-01; Figure 4.1.2-5 and sieved on shore. The sample is entirely basaltic glass fragments, and is mostly limu o Pele (broken lava bubble walls), with less abundant angular grains and only very rare Pele's hair. This benchmark was deployed in 2010, and no ash was observed on it during the last visit in 2013, so it is likely that these particles were produced by the 2015 eruption, advected with the hot eruption plume, and settled on the benchmark. The largest deposit of ash was found on benchmark AX-101 (by far), and smaller deposits were observed, but not sampled, on benchmarks AX-106, AX-302, AX-307 through AX-310, but were absent from AX-105 and AX-303. Benchmark AX-307 had the second largest deposit. On benchmark AX-104 there was too much bio-film and staining to tell whether there was ash there or not.

A sample of a much older flow was collected from near the Cabled Array primary node as payload ballast on dive J2-823 (J823-ballast). It will be analyzed by electron microprobe to augment existing collections of older flows by Dr. David Clague (MBARI), but as it is not a product of the 2015 eruption, and Po dating will not be performed.

Table 4.1.2-1 Geological Samples

Sample	Date Time	Latitude	Longitude	Depth (m)	Collection Comment	Description Comment	Virtual Van record #
J820-Geo-01	8/17/15 8:35	46.064717	-130.000233	1700.6	Glass rind broken from drained pillow, possibly from older flow; in box 10	Basaltic glass rind ~0.5cm thick. Dark gray interior; aphyric except for rare plag crystals to a few mm size; dark gray. Large vesicle/cavity 1.5cm long otherwise only suggestions of pipe vesicles ~1 cm in. Some of the original glass surface is retained on top surface (plenty of glass still left after manipulator broke off rest of fresh surface). Lower surface smooth no glass; cm-size cooling cracks delineated with orange bacterial mat; remnants of large lava drips. 11x8x3 cm.	48
J820-Geo-02	8/17/15 9:45	46.067200	-129.999285	1705.9	Glass rind from 2015 flow drained lobate; originally rectangular; broke up when dropped into box; in box 9	Glass rind 0.5 cm thick; most of original surface survived; smooth glossy. Interior dark gray; aphyric except for occasional crystals prob plagioclase to ~2mm. Another layer of glass is sandwiched through part of the interior; 0.4 cm thick at most. Only one vesicle/cavity 1.6 cm long. Bottom surface smooth; some drip ribs; not glassy. Orig size 17x14.5x2 cm	158
J820-Geo-03	8/17/15 11:13	46.071948	-129.997726	1722.3	Three separate grabs from same sheet flow of 2015 eruption; into box 7	Glass rind to 2 cm thick in folds; thin top and bottom elsewhere. Rare crystals prob plagioclase in glass and interior; to 2mm size some in clots. Occasional gas vesicles to 4mm; one has orange staining running from it; cracks orange too. Interior dark gray. Original glass surface retained on two larger pieces collected; most shaved off of smaller bud. 11x10x4cm; 8.5x6x4cm; 6.5x3x2.5cm.	324
J820-Geo-08	8/17/15 12:41	46.074910	-129.995107	1718.3	Large glassy basaltic pillow bud from 2015 eruption	Original glassy surface on all faces except where broken; thin to 5mm smooth; exfoliating. Orange bacterial mat/clay in cooling cracks and adhering to glass (latter subsampled by Emily into RNA-later). Piece looks like a ram's head in profile. Interior dark gray. Tiny vesicles throughout with hint of pipe vesicles; concentric ~1cm in; some filled with orange mat/clays. Two broken ends. Occasional crystals prob plagioclase in glass and interior. 20x19x14 cm.	530
J822-Geo-20	8/21/15 10:57	45.956012	-129.994011	1529	Pillow bud from 2015 eruption	Glass rind to 7mm thick, original surface retained in several places. Interior dark gray. Some alteration: lighter gray and orange. Interior hollow pipe, otherwise not vesicular. Sparsely plag phyric as individual crystals and clots. Crystals to 3mm clots to 7mm. Approx 17x15x12 cm if assembled (now in many pieces).	1509

Sample	Date Time	Latitude	Longitude	Depth (m)	Collection Comment	Description Comment	Virtual Van record #
J822-Geo-21	8/21/15 12:17	45.962944	-129.996231	1525	Collapsed shelf from 2015 eruption	Thick glass rind on top 1 cm thick, original smooth surface retained. Interior dark gray. Some orange staining in the cracks. Lava drips, almost glassy on under side of one piece, glass to 2mm thick on underside of other. Occasional vesicles folded in, one oval-shaped to 6mm wide, suggestion of pipe vesicles 1cm in on larger piece. Rare plag crystals 1mm size just below top glass layer; some plag clots appeared when dry to 4mm, also only at top. 2 pieces: 16x9x5.5 cm and 8x5.5x4.5 cm	1662
J822-Geo-22	8/21/15 13:28	45.968029	-130.000914	1540	Glassy crust broken from 2015 lobate flow	Collapsed lobate flow rind. Two layers of glass, one at top is 5mm thick. Antoher is beneath (sandwiched) that by 5mm of gray interior and is 4mm thick, but only on one of the freshly broken surfaces (it is not continuous though the sample). Interior is dark gray. Slightly more plag phyric than other previous samples; most are small (~2mm) except a few clusters (one is 5mm across). Top surface smooth original glass, some cracks. Bottom surface is shelf roof, some finer drips. Orange bacteria or clays in the few cracks. One edge is older altered brown with yellow deposits. Kept only largest piece: 15x12x4.5 cm.	1807
J822-Geo-23	8/21/15 14:55	45.973960	-130.002555	1542	Jumbled sheet flow from 2015 eruption in box 8. Large piece may be source of numerous "volunteers" on the front porch (Scott Nooner).	Original glass surface on all convoluted sides to 1.5 cm thick (and the folds are probably all glass). Interior dark gray. Plagioclase phenocrysts occasional (less sparse than earlier samples but not like south rift zone!) to 5mm. Orange bacteria or clay in cracks on smoother glass surfaces. Probable companion (volunteer) has a large gas cavity curving through the length of sample. In it are broken limu and a bubble inside that hasn't broken (limu within limu). Kept only larger pieces. Largest: 20x12x11 cm. Large volunteer: 19x17x16 cm.	1961
J822-Geo-24	8/21/15 17:48	45.978083	-130.012417	1570	In gas-tights box.	Lots of pieces but none seem to correspond with the framegrab. Note: I am not certain the hand sample piece is the correct sample, and it probably shouldn't be dated. Glassy exterior to 5mm thick; some original surface. Interior dark gray, some lighter gray alteration just underneath the glass. Gas pockets several cm long (longer before it broke up, e.g video and framegrab). Broken surfaces irregular (ie, not pillow wedge jointing). Large plag phencrysts more abundant than the other samples, to 5 mm. White deposits like veins. No bacterial mat remaining , but some orange stain in places where glass broke off.	2219

Sample	Date Time	Latitude	Longitude	Depth (m)	Collection Comment	Description Comment	Virtual Van record #
J822-Geo-25	8/21/15 19:06	45.982984	-130.011110	1579	Lobate pillow shattered into many pieces.	Most original glass peeled off; remaining is ~3mm thick. Interior dark gray, smooth textured with some light gray alteration in outer 1.5 cm. Internal texture is more rough (on broken surfaces). Gas pocket in center 3x1x0.5 cm. Plagioclase phenocrysts similar to R23 to 5mm. Orange bacteria/clays in a few cracks. Kept larger pieces. Reassembled: ~22x13x13 cm.	2327
J823-Geo-01	8/23/15 22:05	45.955300	-130.010000	1531	Glass particles suctioned off of AX-101 benchmark near the center of the caldera	Small glass particles (and limpets). Some limu visible to the naked eye. A smaller amoung also collected on the first pass through at 8/23 07:15	3053; 3496
J823-geo-02 ballast	8/24/15 3:49	45.938352	-129.972100	1526	Glassy layered rock from near RSN primary node	Several layers with glassy margins folded over large gas pockets, some of which are lined with glass, others not. Glass to 7mm thick. Aphyric. Manganese coated, some orange oxidation. 22x19x8 cm.	3620
J825-Geo-10	8/27/15 7:30	46.004373	-130.011241	1534	Pillow lava from 2015 flow; broken from rind of hollow pillow; in box 9	Some of the original glass surface remains; plenty of glass left, 1 cm thick. Pronounced white alteration stains surfaces exposed in cracks to fluids. Rare tiny plag crystals ~1mm. Non-vesicular. Was hollow inside; surface is sugary. 19x17x11 cm.	6117
J825-Geo-11	8/27/15 8:08	46.007604	-130.010630	1550	Collapsed lobate rind from 2015 flow; in box 7	Original glass surface mostly intact, 4 mm thick. 6 more glass layers on one face appear to be drainage shelves adhering (they don't run through the sample, as they would if it had been folded or many thin flows). Sparse plag phenocrysts to 2mm. Two gas vesicles to 1 cm long, oblong. Interior dark gray. Orange and pale gray staining toward bottom of sample. 9x7x5.5 cm.	6187
J825-Geo-12	8/27/15 8:25	46.008645	-130.009763	1556	Broken from roof of collapse in 2015 flow; into gas-tights box	Large lobate rind now in many pieces. Original glass surface survived; smooth with some breadcrusted cracks. Multiple glass layers adhering to one face, and one shelf on the largest piece, are remnants of drainage shelves. Interior dark gray. Gas pockets between shelf layers are large and abundant. Some orange staining on cracks. Bottom side has drips and is almost glassy. Largest pieces: 22x11x9 cm, 18x13x8 cm.	6209
J825-Geo-13	8/27/15 8:44	46.009377	-130.009283	1558	Glassy 2015 pillow near contact in box 10	Original glass layer mostly peeled off, plenty remains, a few mm thick. Interior dark gray, non-vesicular, smooth with some whitish alteration under the glass, more rough sugary interior. Curved lower face is hollow underside of pillow. Some thin lines of orange stain in interior. Sparse, larger plag phenos to 3mm size. 19x11x8 cm.	6244

Sample	Date Time	Latitude	Longitude	Depth (m)	Collection Comment	Description Comment	Virtual Van record #
J825-Geo-14	8/27/15 8:54	46.010664	-130.009092	1567	2015 basalt broken from jumbled sheet flow; into box 8	Complex piece. Glass to 1 cm thick on top (breadcrusted) and edges (smooth). Bottom side hollow gas cavity, smooth, with a piece peeling away like is delaminating. Interior dark gray. Plag phenos more abundant but still occasional, to 3mm. 10x7x4 cm.	6262
J825-Geo-15	8/27/15 9:10	46.011571	-130.010090	1574	2015 jumbled sheet flow near super-highway	Original glass surface partly intact, 5mm thick. Sagged roof glss and remnants of 3 drainage shelves veneer one side. Orange staining in cracks and on veneered side. Interior dark gray. Sparse plag phenos to 3 mm. Underside is disturbed and almost glassy, not a calm shelf. Two large pieces that fit together: 18x11x10 cm plus several smaller pieces.	6287
J825-Geo-16	8/27/15 9:26	46.012318	-130.012170	1578	2015 flow basalt pillow; in box 4	Curved pillow wedge. Glass surface scaly (original surface mostly peeled off), 7mm thick. Interior gray. Large plag phenocryst is 1 cm across; others much smaller and sparse. Some orange clays. Wavy gray deposits on underside. 17x11x10 cm	6309
J825-Geo-17	8/27/15 9:50	46.013463	-130.014934	1582	Elephant trunk from 2015 flow from contact with 2nd outcrop today of 2015 lava; on en echelon fissure system to previous samples	Enormous curved pillow tube. Most glass intact, 1 cm thick; has flowing textures rather than breadcrust. Orange stain abundant on original surface. Interior gray. Pipe vesicles 0.5 cm in from glass. Plag phenos to 3mm across. Hollow straw inside. 30x35x29 cm (the tube is 15 cm diameter). Chippeda bag of glass for Ken Rubin; Bill Chadwick is taking the rock to Newport as we couldn't break it up to fit in a bucket. Estimate weight at 70 lbs.	6346
J826-Geo-08	8/28/15 0:13	46.080111	-129.992412	1727	Upper crust from drained out area with bacterial mat; box 6; 2 pieces	Larger piece: original glass all peeled off, thin snake-skin textured glass remaining. Four glassy layers veneered to one face (residual shelves). Interior dar gray. Plagioclase phenocrysts sparse to 2mm, Orange clays in thin cracks, tan deposit on older faces. Rock is supposed to be from 2015 flow but looks old. Smaller piece has no glass; plag to 4 mm. 12x14x7 cm and 11x8x4.5 cm.	6689
J826-Geo-13	8/28/15 1:48	46.084414	-129.988937	1722	Folded sheet flow from 2015 eruption 400m S of wpt #6; box 7. (Described by video logger as a pillow)	Sheet flow buckled when glass had hardened. Original glass surface conplete, finely breadcrusted, 0.7 cm thick. Beneath glass is whate alteration or deposit. Interior medium gray and convoluted with numerous gas cavities. Small vesicles like ill-defined pipe vesicles ~2 cm in. No phenocrysts visible in the rock but the glass is riddled with plagioclase. 11x8x7.5 cm.	6877

Sample	Date Time	Latitude	Longitude	Depth (m)	Collection Comment	Description Comment	Virtual Van record #
J826-Geo-14	8/28/15 2:39	46.087888	-129.987334	1724	Pillow rind from 2015 flow; in box 9.	Wedge of hollow pillow. Original glass mostly intact and breadcrusted, to 1 cm thick. Interior medium gray. Many sub-mm crystals, a few plag to 1.5 mm. Narrow layer of small pipe vesicles 1 cm in; many small sub-mm vesicles throughout. Tan and light gray alteration/deposits on some joint faces. Bottom surface is rough, textured like drips but sugary, not smooth. 19x11x11 cm.	6961
J826-Geo-15	8/28/15 3:16	46.090661	-129.986150	1738	Pillow with some orange mat in box 8.	Large pillow bud. Some original glass is still present, remaining glass is snake-skin like. Interior dark gray. Tiny pipe vesicles 5mm below glass. Center of bud is also finely vesicular. May have some plag phenos ~1mm, rare. Radial jointing pattern to 3 cm in. 15x12x12 cm.	7034
J826-Geo-16	8/28/15 3:52	46.093756	-129.988791	1749	Large pillow bud from 2015 flow, with bacterial mat. Starboard biobox (after glass shed into boxes 8,9,10)	Lots of original glass peeled off when they tried to squeeze this sample into partitioned mild crate, much of it recovered (tho can't guarantee glass from rock box samples didn't get incorporated; chips for uprobe were taken from the rock itself, as with all the others). Original glass was at least 1 cm thick. What remains is thin snake-skin texture. Pipe vesicles 1 cm below glass, fine. Interior medium gray, finely vesicular. Sparse plag phenocrysts to 3 mm. Radial jointing pattern to 4 cm in. 18x16x14 cm.	7127
J826-Geo-19	8/28/15 4:57	46.094674	-129.988567	1745	Taken next to vent in 2015 flow; sampled at same site as HFS-17 and Major-18; into box 2 on swing arm.	Sheet flow piece. Original glass surface breadcrustey and broken, to 7 mm thick. Interior medium gray, with a glass shelf remnant 1 cm below outer glass, and a little bit of a second 1 cm below that. Tan and light gray alteration on joints. Sparse plag phenocrysts to 5 mm wide separately and in clots. 12.5x11x6 cm.	7279
J826-Geo-20	8/28/15 5:43	46.098564	-129.986663	1771	Large elongate pillow from 2015 flow, broke in 2; in dive weights box. Nav bad after HFS-17	Original glass surface mostly intact, smooth, to 7 mm thick, some fllowing textures. Interir dark gray. Suggestions of tiny pipe vesicles, otherwise non-vesicular. No hollow tube in center. Radial jointing extends to center. Mostly aphyric (might have plag phenos to 2mm). 28x17x16 cm and 20x17x12 cm (gave smaller piece to Rachel Teasdale).	7367

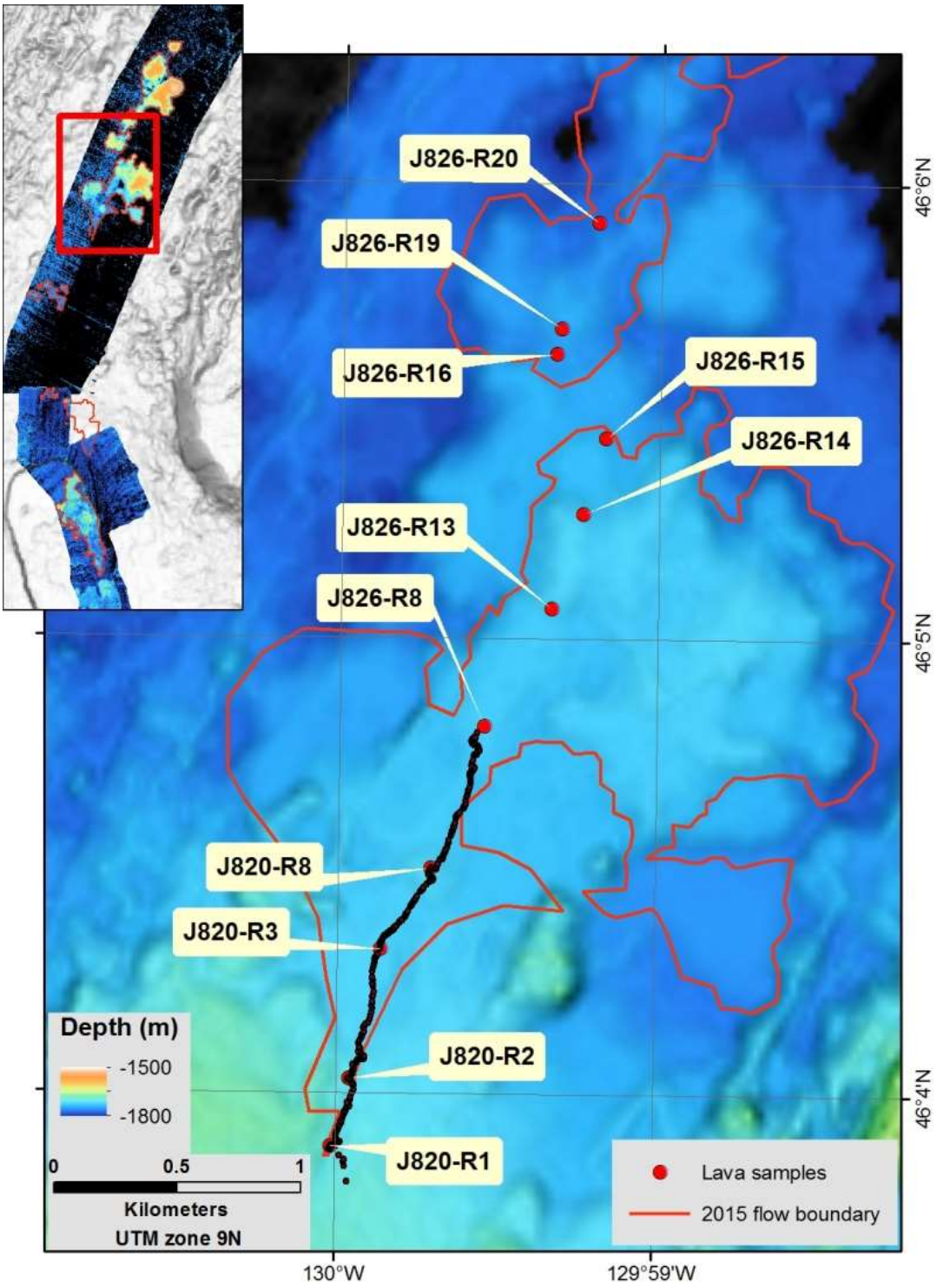

Figure 4.1.2-1 Map showing lava sample collection locations from ROV *Jason* dives J2-820 and J2-826 on the North Rift Zone of Axial Seamount. The flow boundaries (brown lines) were drawn to enclose differences between multibeam bathymetry collected before and after the April 2015 eruption, and still should be considered preliminary. Inset map: The extent of the dive map (red box) is shown on a map showing the differences between multibeam bathymetry data collected before and after the April 2015 eruption. The northern part is the difference between R/V *Thompson* data collected on cruises TN326 (July 2015) and TN300 (September 2013), with colors ranging from dark blue representing no change to orange representing 100 m vertical change. The southern part is the difference between TN326 data and MBARI Mapping AUV data collected in 2006 and 2007 (so also reveals the 2011 flows on the caldera floor), with colors ranging from dark blue representing no change to orange representing 18 m vertical change. The difference maps are superimposed on regional bathymetry in gray-scale.

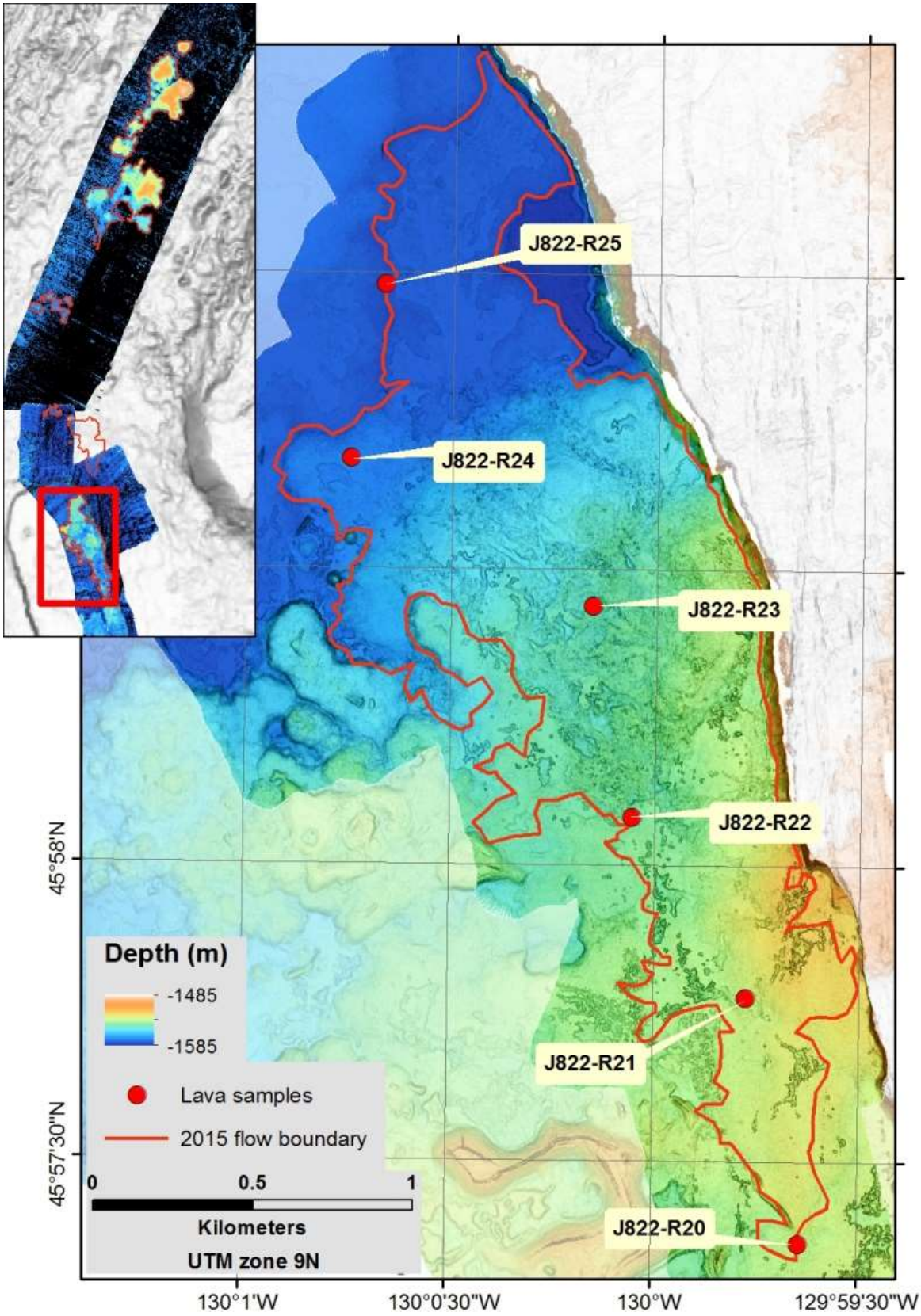

Figure 4.2.1-: Map showing lava sample collection locations from ROV *Jason* dive J2-822 on the northeastern caldera floor of Axial Seamount. Bathymetry data from AUV *Sentry* survey 338 is superimposed over MBARI AUV data collected in prior years, both at 1 m resolution. Flow boundaries and inset map as described for Figure 4.2.1-1.

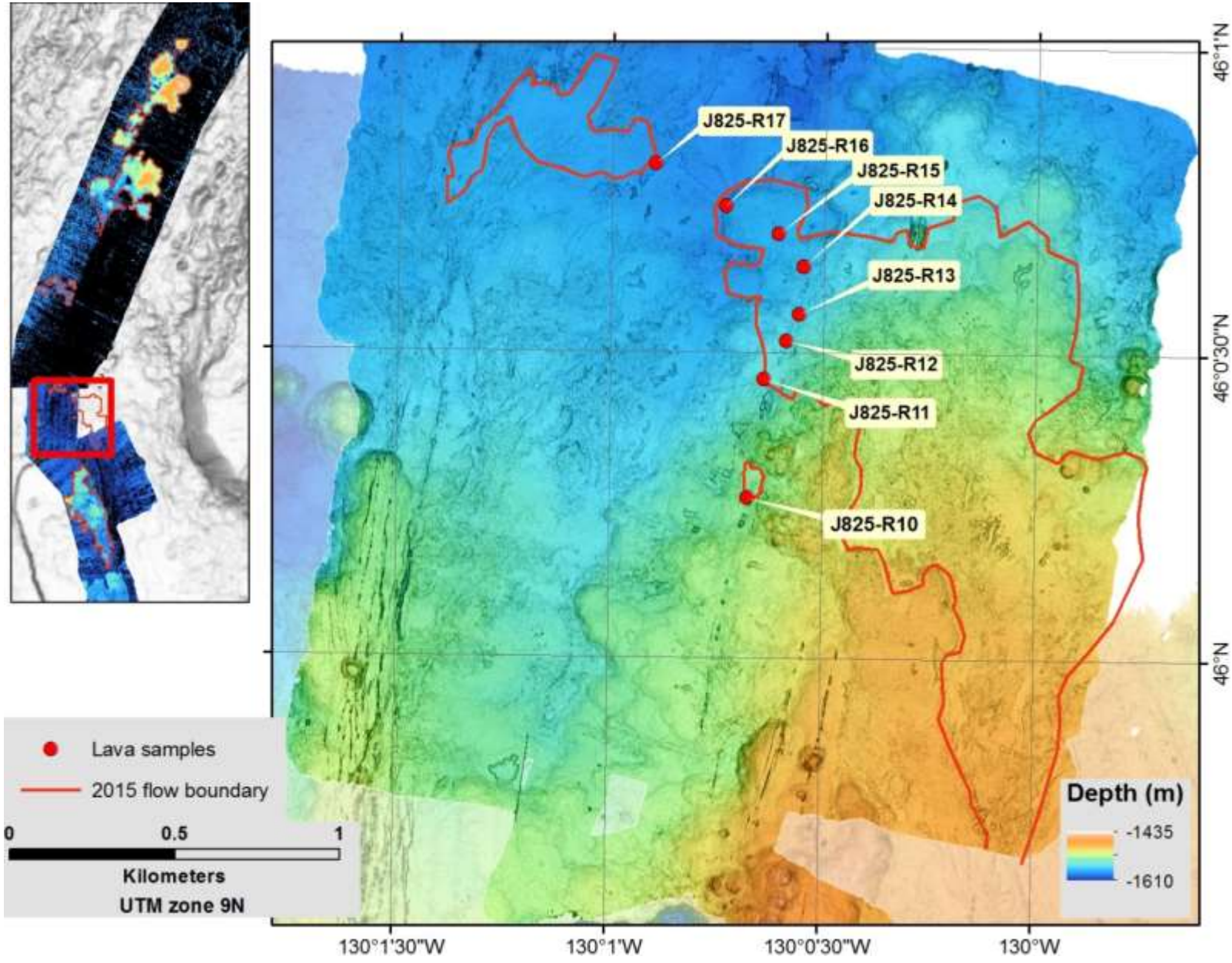

Figure 4.1.2-3 Map showing lava sample collection locations from ROV *Jason* dive J2-825 on the North Rift Zone of Axial Seamount. Bathymetry data from AUV *Sentry* Survey 341 is shown over MBARI AUV data collected in prior years. Flow boundaries and inset map as described for Figure 4.1.2-1.

Figure 4.1.2-4 Framegrab of sample J822-Geo-20 being held in the manipulator. Visible behind the sample is the contact between flows: small lobate pillows of fresh, glossy black lava of the 2015 flow in the foreground, and larger, sediment-dusted bulbous pillows of an older lava flow beyond.

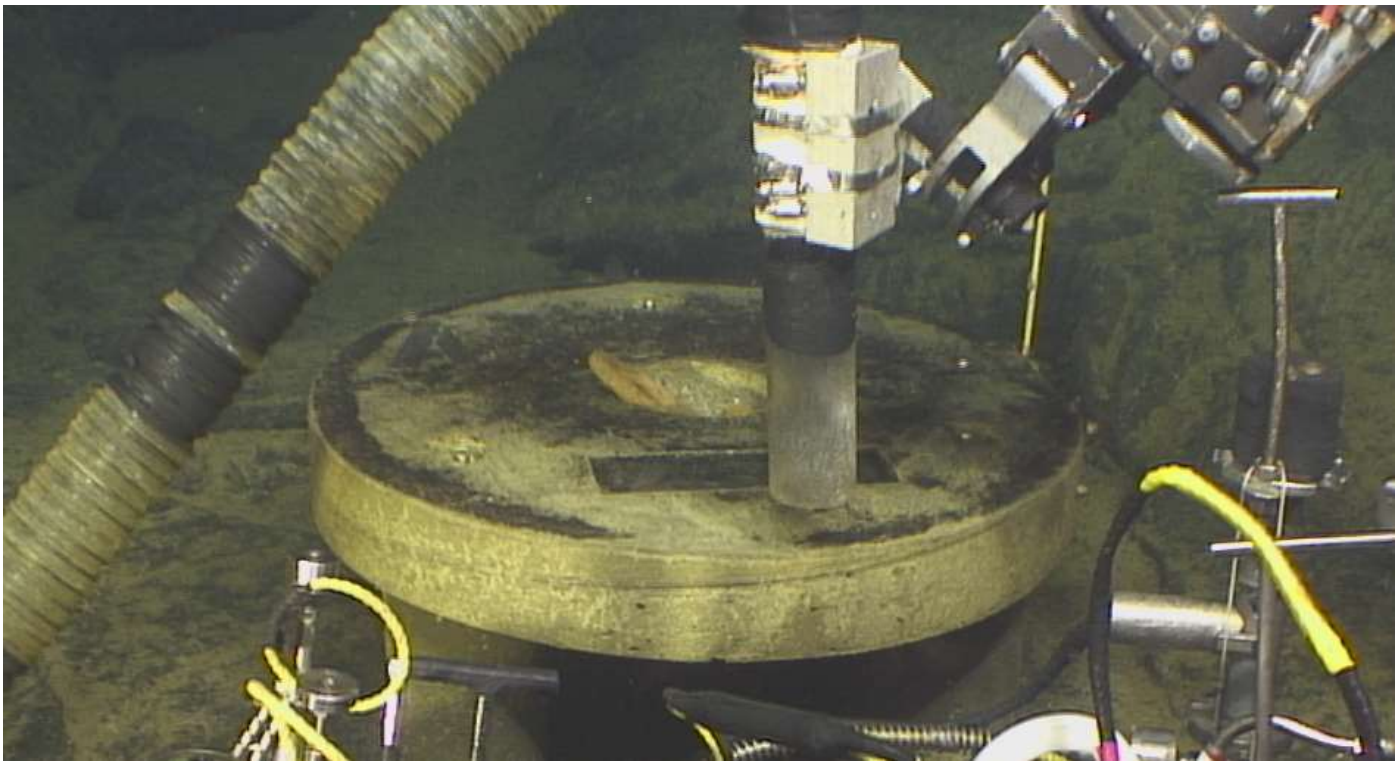

Figure 4.1.2-5 Framegrab of sample J823-Geo-01 being collected from the pressure measurement benchmark AX-101 in the central caldera. The suction sampler held in the manipulator is vacuuming the black particles of volcanic glass (ash), which was mostly limu o Pele, that had settled on the benchmark.

4.1.3 Self-Calibrating Pressure Recorder

Glenn Sasagawa, Scripps Institution of Oceanography

The Self-Calibrating Pressure Recorder (SCPR) is a seafloor bottom pressure recorder with an on-board pressure calibrator. This device is capable of measuring and correcting for the in-situ drift of quartz pressure gauges and thus delivering drift-free bottom pressure time series. The SCPR was first deployed on 7 Sept, 2013 (Cruise TN300), at location 45.93438° North, 130.01178° West, 1541 m depth.

An unsuccessful attempt was made to release the SCPR using a surface acoustic transponder on August 18, 2015. Additional surface communications using the data link acoustic modem were attempted on August 19; the depth of the instrument was beyond the stated range of the modem. The third attempt was made on August 23, using an underwater acoustic data modem on the JASON ROV, during dive J2-823. After some difficulty, the SCPR released its anchor and was recovered at the surface.

An initial review of the data showed valid operation for approximately 14 months. Useful pressure data spanned the interval from 7 Sept 2013 to 28 Feb 2015 (538 days). After this time, the valve connecting the gauges to the seafloor pressure failed in the closed position, likely due to depleted batteries, and the gauges could not measure seafloor pressure. During the deployment, 24 calibrations were performed at 20 day intervals. The calibration system began to fail after 6 Dec 2014, with low battery levels also suspected as to be the cause. The pressure gauges did record gauge temperatures during the entire deployment period, and recorded a temperature anomaly after the 2015 eruption. Recording system error contaminated the record of one of the two gauges after 30 Nov 2014; efforts are underway to correct the data set.

4.2 Hydrothermal Chemistry and Incubator Module

David Butterfield, Ben Larson, Kevin Roe, Ryan Wells

Summary of chemistry goals

Because Axial Seamount is the most robust magmatic/volcanic site on the Juan de Fuca ridge, the scientific community has chosen to make it a long-term observatory site to understand the evolution of hydrothermal processes and how they are influenced by the volcanic eruption cycle. Our group from PMEL, along with colleagues from University of Washington, Oregon State, Marine Biological Laboratory, University of Massachusetts Amherst and other institutions, have explored, sampled, and conducted experiments at Axial nearly every year since 1998. The chemistry group aims to understand what processes control the composition of hydrothermal fluids and their evolution over time, and to link fluid chemistry to geological and biological processes.

Our goals for this cruise were three-fold. 1. Continue the long-term time-series sampling of specific vent sites around Axial Seamount caldera. 2. Investigate and sample new lava flow areas that resulted from the April, 2015 eruption and install time-series monitoring instruments. 3. Conduct in-situ microbial growth experiments with the incubator instrument developed at PMEL and first tested in 2014. Funding for the first goal is provided by NOAA charter ship funds and salary support from PMEL. Funding for the second goal is from a NSF RAPID grant (OCE1546659) add additional NOAA ship and ROV support. Funding for the third goal is provided by a grant from the Moore Foundation Marine Microbiology Initiative.

Our team for this cruise included: Dave Butterfield, leader of the chemistry group and incubator project; Ben Larson, gas chromatography and incubator setup/operation; Kevin Roe, HFPS setup and shipboard sample analysis; Ryan Wells, incubator and HFPS engineering support. In addition to our PMEL group, Chris Algar, Begum Topcuoglu, Emily Reddington, and Jim Holden played important roles in getting the incubator set up, and took care of RNA filtration on HFPS. Nathan Buck and Rachel Spietz took charge of the CTD hydrothermal plume program, and were assisted by Ben Larson.

Long-term time-series sampling

As in previous years, we sought to maximize the number of vent sites sampled for time-series. Our targets included high-temperature (Inferno, Virgin, Hell) and low-temperature (Anemone) vents in the ASHES field, high-T anhydrite vents in the south (Vixen/Casper) and SE caldera (Trevi), high-T vents in the International District vent field (El Guapo, Diva, Castle), and diffuse vents in the SE caldera (Marker 113, Marker 33, Marker N3, Spanish Steps). We collected one Ti major sampler from a 290°C vent at CASM.

Exploration and sampling of the new lava flow on the North Rift Zone

Prior to the start of our cruise, the OOI Maintenance cruise, led by Deborah Kelley and Orest Kawka, conducted multibeam mapping to identify the NRZ lava flows and executed one ROV dive on what appeared to be the thickest lava flow, finding active hydrothermal venting there. We continued the exploration of the new lava flow with additional multi-beam mapping, water column plume surveys, ROV surveys and sampling of rocks and fluids. We collected fluids from four different sites on two distinct lava flows. We installed a time-series chemistry sampler in a 19-20°C vent on the NRZ, and a water-column MAPR mooring nearby to monitor changes in source chemistry and plume properties over the next year. Negotiations are ongoing to retrieve the time-series sampler in 2016.

Sampling instruments.

Our tools included titanium major samplers from WHOI, UCSB-type gas-tights from John Lupton and Marv Lilley, and the Hydrothermal Fluid and Particle Sampler. We were not set up to extract gas-tight samplers on board this year, so we were limited by the total number of pre-evacuated samplers available (10 total). We were limited by space to having 2 or 3 major samplers and 2 or 3 gas-tight samplers on each ROV dive. We had two dedicated dives for the HFPS using the incubator module, and one shared dive with the HFPS installed during the long dive to measure bottom pressure for geodesy, and a final short multi-purpose dive with HFPS to the North Rift Zone. Over the course of the expedition, we took 6 major samplers, 9 gas-tight samples, 8 samples for RNA analysis, 8 samples for *in-situ* incubation experiments, and 38 piston/bag samples with HFPS for chemistry. There was less dive time than hoped for because of poor weather

and ROV repair time, but we nonetheless were able to collect a good set of samples for time-series chemistry around the caldera. Full details of the sample sites are given in the Jason Dive Sample tables section 6.5.

Oxygen Sensor on HFPS

Position 12 on the HFPS was dedicated to an in-situ Seabird (Bellevue, WA) 63 Optical Oxygen sensor. Measurements were taken by switching to valve position 12 and diverting fluid from the HFPS manifold through the O2 sensor. We did not use a pH sensor in 2015. The oxygen sensor on HFPS worked normally throughout the cruise.

Table 4.2-1 Summary of total hydrothermal chemistry samples collected.

Type	# of samples
Majors	6
GTB	9
HFPS bag/piston	38
RNA	8
Incubation	8

Notes on HFPS Performance

HFPS was installed on the first dive J2-820, to the North Rift Zone, but the flush pump failed at depth and we could not operate the sampler. Post-dive troubleshooting showed that the underwater cable joining the flush pump to HFPS PCU was severely corroded, and the pins on the pump housing were also dirty. We replaced the pump cable and cleaned up the pins on the pump. After testing the flush pump and spare, we kept the original flush pump (better volume accuracy and faster pumping). We had no further problems with the flush pump during the cruise. We replaced the sample pump with the spare sample pump following dive 824, after getting poor sample recovery. The spare sample pump worked much better for the last two dives. At the end of the very last dive, it was found that the HFPS intake hose had been cut near the titanium intake nozzle. We believe this happened after sampling was done, but will need to try to verify that from ROV video.

Sample Processing and Analysis

Vent fluid samples for water chemistry were collected from HFPS piston and bag samplers, incubator bag samples, and titanium major samplers. Ben Larson analyzed hydrogen and methane on an SRI 8610 gas chromatograph. 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 single syringe (60-ml, 120-ml, or 2-liter gas syringe), 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. Dave Butterfield analyzed pH (Ross Sureflow pH electrode with NBS buffers) and alkalinity (automated titration with Brinkmann Titrino and Brinkmann electrode). Samples were processed without exposure to air. 30ml bottles were filled slowly from the bottom to overflow and then capped with no head space for pH and alkalinity.

Kevin Roe analyzed hydrogen sulfide, dissolved silica and ammonia on board by spectrophotometry. Samples for dissolved silica were diluted to working analytical range in 0.02N HCl as needed, and kept refrigerated until analyzed. Hydrogen sulfide was measured by methylene blue spectrophotometry. Sub-samples for major elements were filtered through a 0.2 micron syringe filter and stored with no head space in 30ml hdpe bottles. Trace metal samples were transferred to I-Chem hdpe bottles and acidified with ultra-pure HCl (2 microliters/ml). Sulfur isotope samples were stored in 40ml vials with no headspace and 0.5ml of 10% solution of cadmium acetate.

When sample volume was limiting, priority was given to gas, shipboard chemistry, major elements and trace metals.

Sub-samples were taken for cell counts and microbiology experiments on board. In some cases, all, or nearly all of selected water samples went to Jim Holden for on-board culture experiments. Sub-samples for nitrate/nitrite/phosphate analysis on shore were filtered, acidified to pH ~3, purged with N2 gas to remove H2S and then frozen. Selected samples

were filtered and frozen in glass bottles (previously baked at 550C for 6 hours) for Dissolved Organic Carbon analysis. Analysis will be done by the Butterfield lab, except for cell counts by the Holden lab.

Gas-tight samples will be analyzed on shore for He, CO2, H2, CH4 and other gases in the laboratories of Dr. John Lupton (PMEL-Newport) and Dr. Marv Lilley (U.W.).

Our shore-based analytical plan for HFPS 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. Nutrient samples (filtered, acidified, and purged with nitrogen) will be analyzed by either the PMEL nutrient lab or the UW nutrient lab. DOC will be analyzed on selected samples from each vent site.

In addition to processing the samples we collected during this cruise, Kevin Roe also processed the RAS time-series samples recovered in July during the OOI cruise. These samples were first processed on the OOI cruise by Brendan Phillip, Orest Kawka, and Eric Olson. They measured pH and dissolved gases. Kevin measured alkalinity, ammonia and silica during our cruise, and froze aliquots for nitrate/nitrite/phosphate analysis on shore. Our lab will analyze these samples and create a chemistry database for OOI.

HFPS Incubator Module

The newest component of the HFPS, the incubator module, was developed specifically for the Subseafloor Life project, and it represents the most significant expansion of HFPS capabilities since construction of the first prototype over 15 years ago. The incubator was designed and built at PMEL. The main components of a single incubator unit (Fig. 4.2-1) consist of an insulated bottle (shown in purple), which hosts the sample bag and heating rod, a final bottle (shown in silver), which also contains a sample bag, and a titanium shutoff valve situated between the HFPS manifold and incubator bottle.

The incubator is designed to pull in vent fluid using the same intake line, pumps and manifold that are part of the original HFPS framework (described in more detail below). Additional reagents and ^{13}C labeled HCO_3 are loaded with the sample into a thick Kynar bag. Once the bag is filled, the shut off valve is closed to prevent further intake from the manifold. A temperature controller housed in a separate titanium case records incubator temperature from a RTD thermistor situated next to the bag, and maintains a constant temperature at a set point (within ~1 °C) by supplying current to the heating rod inside the incubator based on the thermistor temperature.

Once the incubation has been allowed to run for a pre-determined time, the incubated fluid is pumped from the incubator bag to the final sample bag through a 0.22 micron filter in a housing with a preservative reservoir containing “RNA-Later” (concentrated solution of NH_4SO_4). The filter is the primary result of the experiment and is saved for shore-based analysis in the Huber lab. The incubated fluid was saved for both shipboard and land-based analyses. The remaining liquid in both the incubator and final bottles (make-up liquid surrounding the bags and pumped out during operation to create suction at the bag intake) was also sampled for diagnostic purposes. The chemistry of all incubated fluids and control samples will be determined after the cruise.

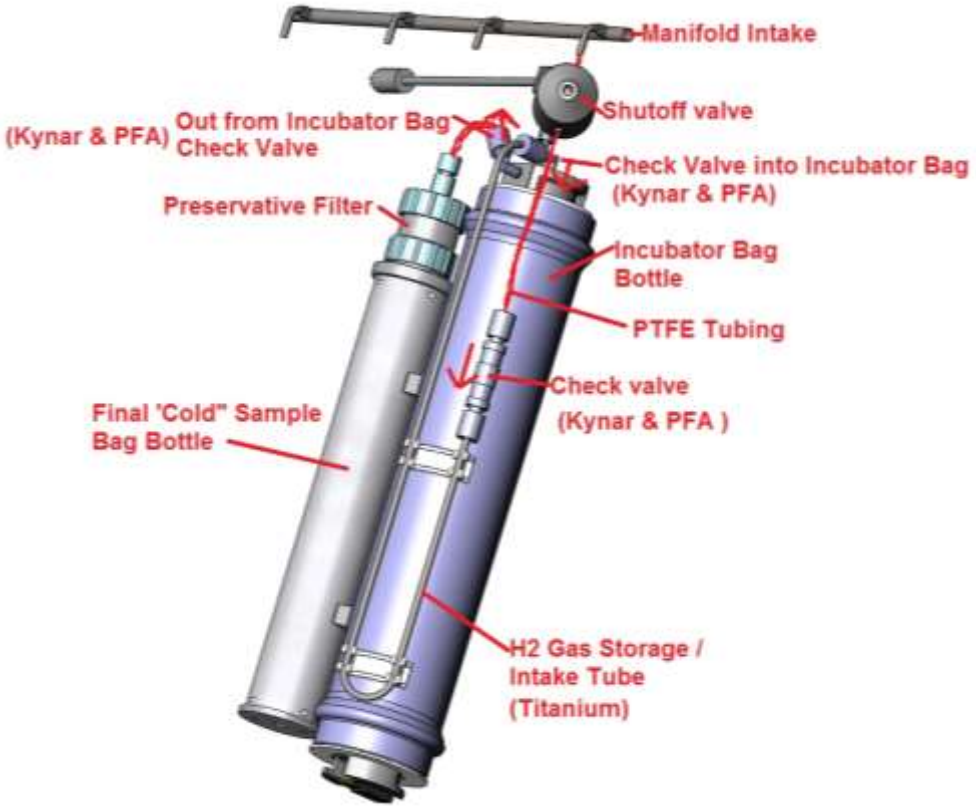

Fig. 4.2-1 Single incubator unit; 4 units fit on one rack

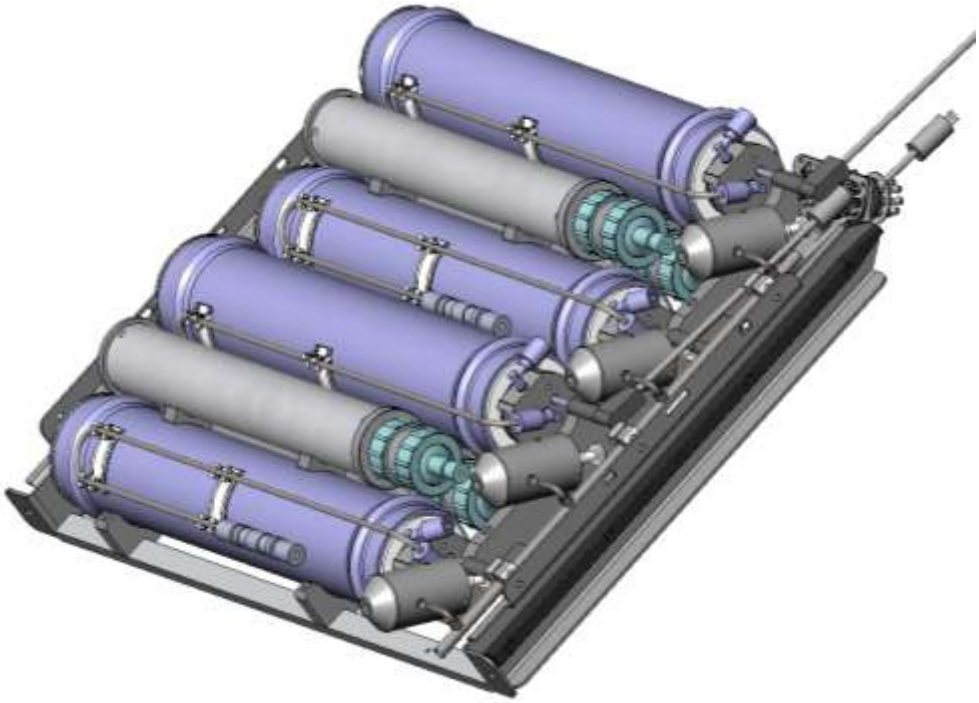

Fig. 4.2-2 Incubator rack, fully loaded and isolated from HFPS frame

Four incubator units can be loaded onto a single rack, (Fig. 4.2-2), allowing for two separate experiments per dive. Each experiment uses 2 units; one loaded with labeled ^{13}C HCO_3 and a control loaded with ^{12}C HCO_3. Based on results from previous years, our strategy in 2015 was to perform replicate experiments at a single site (Marker 33 vent) at 55°C, with two time points per dive (approximately 12 and 18 hours).

Problems encountered in the first deployments of 2014 were eliminated and the incubator appears to have operated exactly as intended this year. This is extremely satisfying, and shows that we have a good design and solid engineering and execution. In 2014, a minor ground fault only allowed us to run two out of the four heated chambers during a dive. This ground fault, related to the internal insulation in the heater rods, was eliminated by unsealing the heating element, heating the surrounding insulation at 100° for 3 days, then resealing the element and insulation, and pressure testing the resealed rod. This process drove out residual moisture and allowed us to run all four heaters at will during the 2015 deployments. Fluid transfer was also a problem in 2014. We re-designed sample bags to improve sealing of the fittings, and determined during pre-dive testing that the bags would seal themselves off during the final fluid transfer out of the primary bag. The solution was to install a perforated Teflon PFA straw through the outlet fitting into the primary incubation bag. In combination with strict attention to all plumbing details, the addition of the straw gave us good fluid transfer. More details of the incubator experiments are given below.

Hydrothermal Fluid Particle Sampler Configuration (HFPS)

Because the configuration of HFPS can change from year to year, we provide some details of how it was set up. Four incubator units can be loaded onto a single rack, (Fig. 4.2-2), allowing for two separate experiments per dive. The incubator rack is paired with a sample rack that can accommodate up to 9 additional samples (Fig. 4.2-3). The standard HFPS intake nozzle was used without any additional attachment/adapter for both incubator and non-incubator configurations.

The incubator module necessitated a different valve configuration. Each incubator unit required 3 valve positions such that when the incubator was fully loaded, 12 valve positions were dedicated to this module. See the table below for HFPS valve assignments used to affect the three incubator functions of initial filling with sample, transferring and preserving the incubated sample, and shutting off the incubator intake (and simultaneously opening the pathway to preserve the sample).

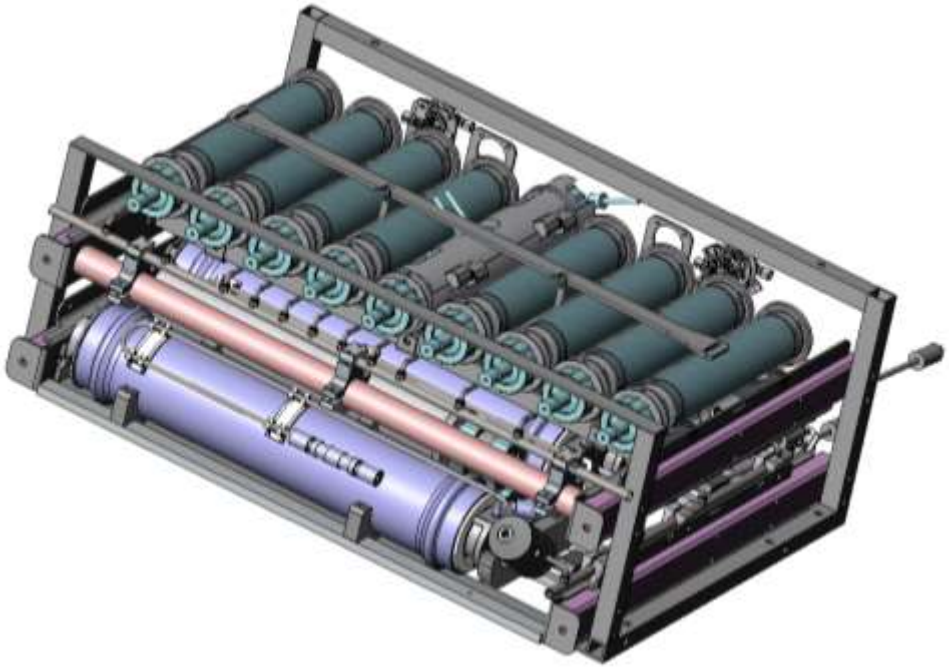

Fig. 4.2-3 Assembled HFPS with sample rack on top, and incubator rack on bottom

Table 4.2-2 HFPS and Incubator Valve Assignments in 2015

HFPS Valve #	Function w Incubator	Function w/o Incubator
1	4-L bag (LVB)	4-L bag (LVB)
2	Unfiltered piston	Unfiltered piston
3	Filtered piston	Filtered piston
4	Unfiltered piston	Unfiltered piston
5	Filtered piston	Filtered piston
6	Unfiltered piston	Unfiltered piston
7	Unfiltered bag	Filtered piston
8	Unfiltered bag	Unfiltered piston
9	Unfiltered bag	Filtered piston
10	RNA filter	RNA filter
11	RNA filter	RNA filter
12	O2 sensor	O2 sensor
13	Fill Inc 1	RNA filter
14	Transfer Inc 1	RNA filter
15	Fill Inc 2	RNA filter
16	Transfer Inc 2	Unfiltered bag (LVB on J824)
17	Fill Inc 3	Filtered bag
18	Transfer Inc 3	Unfiltered bag
19	Fill Inc 4	Filtered bag
20	Transfer Inc 4	Unfiltered bag
21	Shutoff Intake Inc 1	Filtered bag
22	Shutoff Intake Inc 2	Unfiltered bag
23	Shutoff Intake Inc 3	Unfiltered bag
24	Shutoff Intake Inc 4	Unfiltered bag

The incubator module was installed two dives (822 and 825) so the 12 valve positions from 13-24 were assigned to the incubator on those dives, leaving valve positions 1-12 for normal HFPS samples for chemistry and microbiology. We set up a tray of mixed pistons, bags, and RNA filters for incubator dives. Valve position 1 was always assigned to the large volume bag (4-liter) used for microbiology experiments on board (Stable Isotope Probing, or SIP). Valve positions 2 through 6 were assigned to piston samplers. We used a combination of titanium pistons with all-Teflon inlet caps and PVC pistons. Valve positions 7 through 9 were assigned to bag samplers. Valve positions 10 and 11 were assigned to 47mm diameter, 0.2 micron pore size, flat membrane filters in McLane 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. Valve position 12 was assigned to the SBE63 Oxygen sensor. The valve assignments for non-incubator dives are given in Table 4.2-2. Note that we added a second 4-liter LVB in position 16 on dive 824. Plumbing to LVBs and also to the O2 sensor did not go through the multi-port quick-connect fittings.

Incubator Temperature Records

The following plots show the recorded incubator temperatures for both deployments. All 4 chambers were heated on each dive. The plots show the entire duration of the incubations. Red and green lines indicate thermocouple and circuit board set points, respectively. Blue and black data points indicate measured thermocouple and circuit board temperatures, respectively.

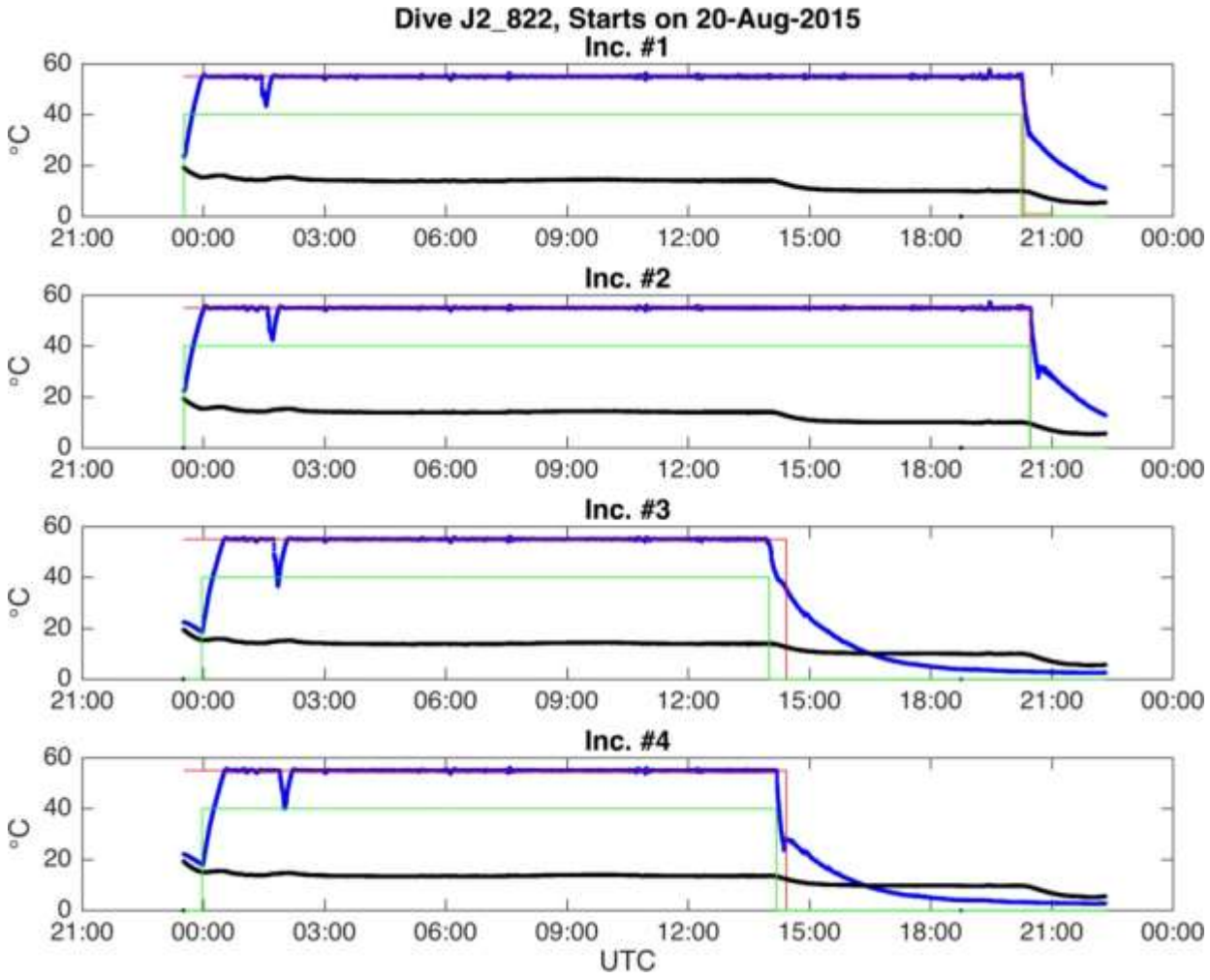

Figure 4.2-4 Temperature record for Jason Dive 822 at Marker 33. All positions heated to 55 °C.

Both thermocouple and circuit board measured temperatures must be lower than their respective set points for current to flow to the heating element. Thus, the heaters can be turned off by lowering the circuit board or thermocouple set point. A dip in measured thermocouple temperature (blue dots) indicates intake of fluid that is cooler than internal incubator water (diffuse fluid typically comes in at <40 °C), and so marks the beginning of the incubation.

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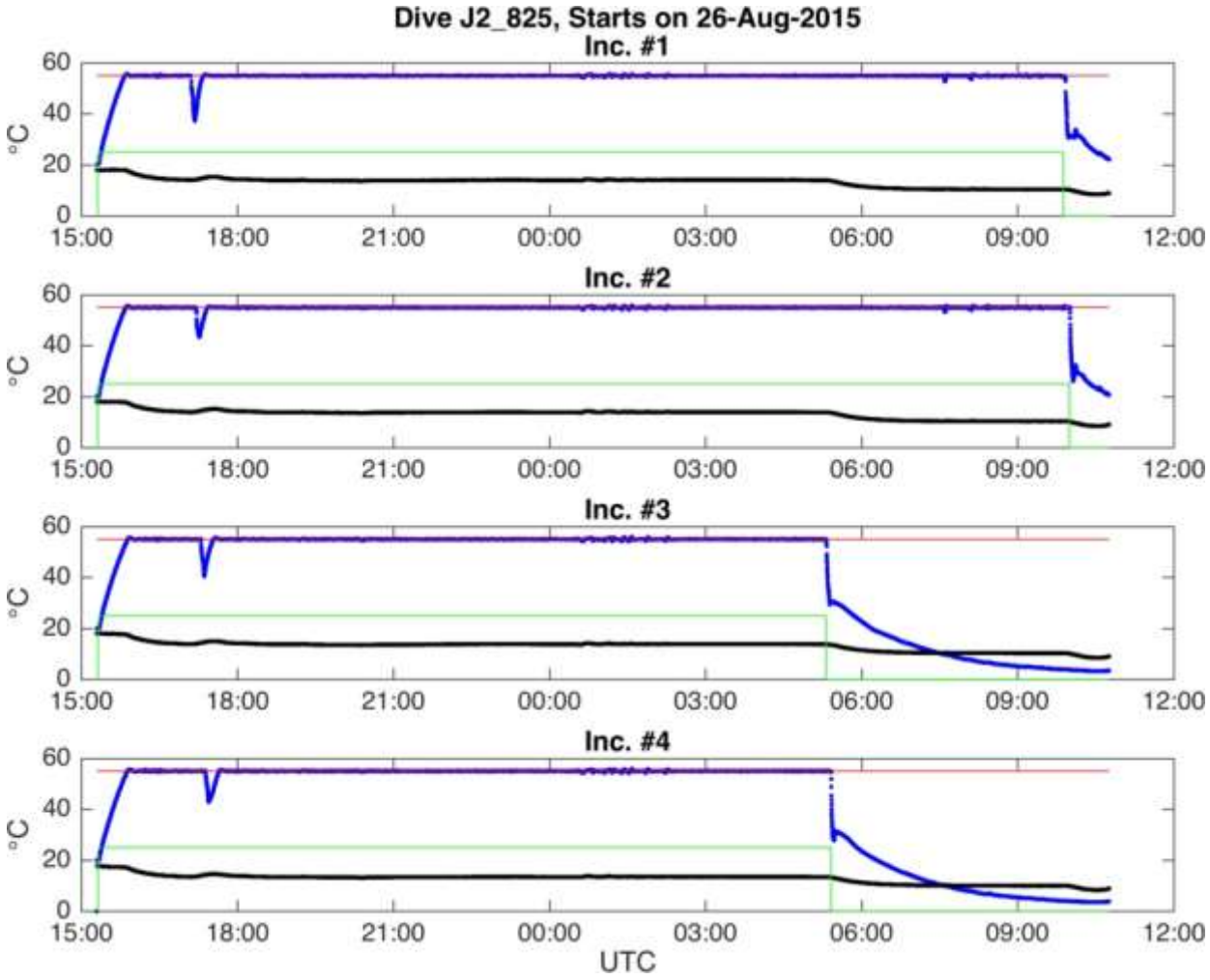


Figure 4.2-5 Temperature Record for Jason Dive 825 at Marker 33. All Positions heated to 55 °C.

Table 4.2-3 summarizes the incubator experiments. The mass of the final bag indicates how much incubated sample was pulled through the RNA preservative filter at the end of the incubation. In general, the final bags were full or nearly full, and the primary incubator bags were empty or nearly empty.

We routinely observed high H_2 concentrations in all final incubator samples (with the bulk of samples ranging from 100-300 uM) owing to the addition of a pocket of H_2 gas at the beginning of an incubation. Conversely, most incubator samples exhibited fairly low CH_4 concentrations (concentrations not yet calculated) compared to coincident fluid samples, possibly reflecting a low rate of autotrophic CH_4 production, or a high rate of heterotrophic CH_4 consumption.

Table 4.2-3: Incubator Experiment Summary

J2-822	**Mrkr 33**						
Incubator ID	**Setpoint**	**Start (UTC) On 8/21/2015**	**Stop (UTC) On 8/21/2015**	**Duration (hours)**	**Mass of final bag (g)**	**Mass in primary bag (g)**	**pH of incubated fluid F=final, 1°=primary**
1 (^{12}C)	55	1:45	20:16	18.5097	685	0	6.18F
2 (^{13}C)	55	1:54	20:28	18.5625	620	180	6.16F, 5.95 (1°)
3 (^{12}C)	55	2:07	13:59	11.8778	406	0	6.08F
4 (^{13}C)	55	2:14	14:12	11.9653	700	0	6.20F
							pH 5.59 in bag 8
J2-825	**Mrkr 33**						
Incubator ID	**Setpoint**	**Start (UTC) On 8/26/2015**	**Stop (UTC) On 8/27/2015**	**Duration (hours)**	**Mass of Final bag (g)**	**Mass in primary bag (g)**	**From final bag**
1 (^{12}C)	55	17:22	9:55	16.5514		65	6.00
2 (^{13}C)	55	17:26	10:00	16.5694	815	27	6.00
3 (^{12}C)	55	17:32	5:19	11.7847	785	0	5.98
4 (^{13}C)	55	17:39	5:24	11.7597	767	125	5.90

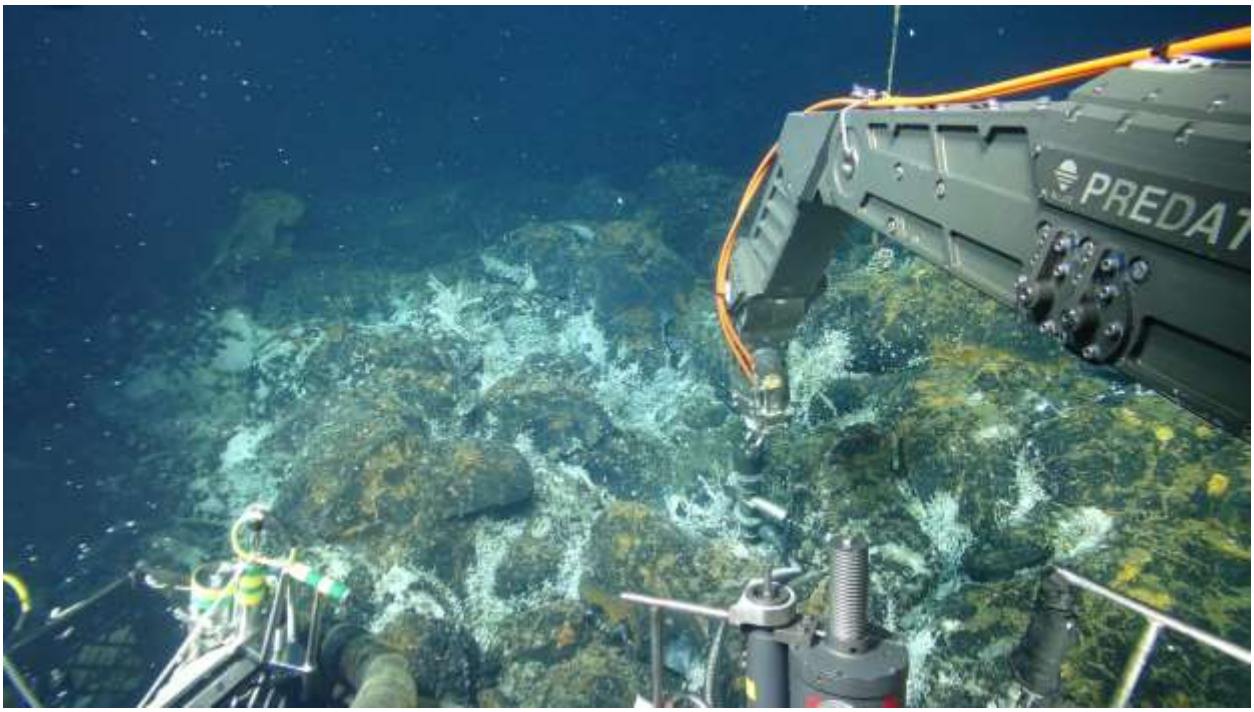


Figure 4.2-6 HD photo of Marker 33 Vent, where all of the incubator experiments were done. Temperatures were ~34C on dive 822 and 40C on dive 825.

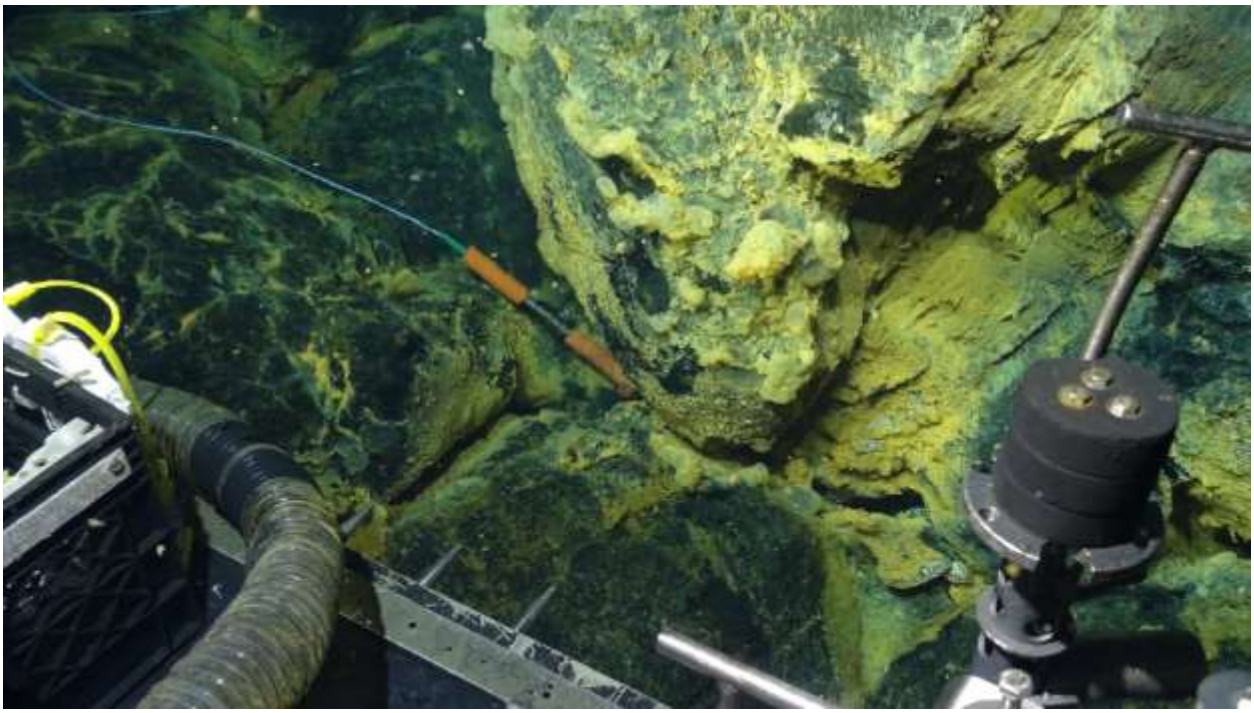


Figure 4.2-7 Low-T vent with orange microbial mat and mucopolysaccharides globules on NRZ new lava flow. RAS intake with temperature recorder installed in crevice, where temperature was 19-20C.

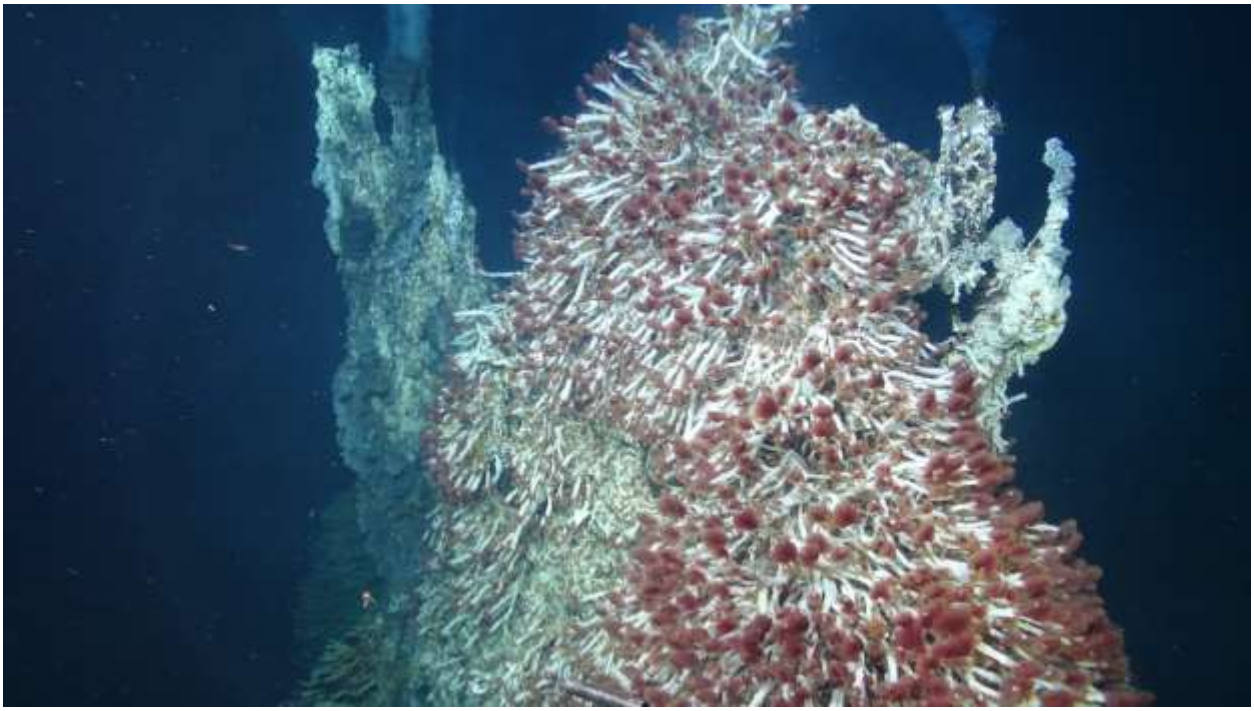


Figure 4.2-8 290°C sulfide chimney at CASM (T&S vent), sampled with Ti major sampler on dive 822. The vent appears very similar to when it was sampled in 2007.

Figure 4.2-9 Top of El Guapo chimney sampled on dive 822. Maximum temperature measured was 323C.

Table 4.2-3: UCSB Titanium Gas-tight and Ti Major Sub-samples for Gas Analysis

Dive	GTB	Sub-sample flask ID	Vent	Vent T	[gas] mmole/kg	GTB tape colors	Dive Sample #
J2-820	white MAJ	flask 15	NRZ	20.9	3.35		J820-Major-04
J2-822	white MAJ	flask 19	CASM	291	40.9		J822-Major-26
J2-826	red MAJ	flask 673	Snowdrift NRZ	5.6	2.23		J826-Major-18
J2-820	gt11		NRZ	20.9	4.25	silver	J820-GTB-05
J2-820	gt17		NRZ	19.6	3.48	white	J820-GTB-07
J2-822	gt18		ElGuapo	318.8	98.9	blk/wht/orange	J822-GTB-11
J2-822	gt6		Diva	275.4	310	yellow	J822-GTB-15
J2-822	gt9		Castle	251.5	114	red	J822-GTB-19
J2-824	gt2		Trevi	241.1	6.66	green	J824-GTB-12
J2-824	gt5		Virgin	200.5	230	black	J824-GTB-06
J2-824	gt7		Vixen	326.4	85.0	red/green	J824-GTB-21
J2-826	gt12		NRZ	35.4	8.42	green/yellow	J826-GTB-12

4.3 Microbiology

Thermophilic Biogeochemical Processes

Jim Holden, University of Massachusetts (Amherst) / Julie Huber, Marine Biological Laboratory / Bob Morris, University of Washington

There was a large contingent of microbiologists participating in and associated with this expedition with the broad goals of 1) determining the effect of the April 2015 eruption on seafloor and water column microbes and viruses, 2) determining the effect of in situ pressure on microbial growth and gene expression and virus production, 3) determining the rates, constraints and protein expression patterns of various functional groups of microbes, and 4) culturing new microbes from the subseafloor and hydrothermal plume. Hydrothermal and near-bottom fluids were collected by *Jason* II from five sites for microbiological studies: Marker 33 (2x), Marker 113, Anemone, Marker 294 along the north rift zone eruptive pillow mounds associated with the 2015 eruption (2x), and Marker 261 also on a separate north rift zone eruptive pillow mound. Hydrothermal plume samples were collected using vertical CTD casts at six sites: ASHES, International District, Vixen/Casper, CASM, central caldera, and background seawater. The following is a list of analyses performed on the collected samples:

- Replicate in situ incubation of diffuse hydrothermal fluids from Marker 33 at 55°C for 12 and 16-18 hours with stable isotope probing (SIP) experiments for community and gene expression analyses, cell culturing, viral counts, and fluid chemistry analyses.
- Shipboard SIP experiments at 55°C from Marker 33 (2x) and Marker 113, and at room temperature and 4°C from background seawater and the hydrothermal plume with concomitant viral enumeration.
- ^{13}C uptake rate experiments at 80°C, 55°C and 30°C from Marker 33 (2x), Marker 113, background seawater, and the hydrothermal plume.
- ^{13}C uptake experiments at 55°C from Marker 33 for nanoSIMS analysis.
- DNA and RNA filter samples from Marker 33 (2x), Marker 113, Anemone, the north rift zone, near-bottom seawater at Marker 113, the hydrothermal plume over ASHES and background seawater for metagenomic (community analysis) and metatranscriptomic (gene expression) profiles.
- Sample preservation for single-cell genomics from Marker 33 (2x), Marker 33, background seawater, and the hydrothermal plume.
- Estimates of the concentrations of methanogens, autotrophic sulfur reducers and heterotrophs that grow at 80°C and 55°C from Marker 33 (2x), Marker 113, Anemone, and the north rift zone new eruption site, as well as the total number of microbes in the sample.
- Microcosm experiments to determine if thermophilic and hyperthermophilic methanogens and heterotrophs grow cooperatively when H_2 concentrations are too low to support methanogen growth.
- Hydrothermal plume and background (outside of caldera) water samples for proteomic protein expression analysis collected via CTD from ASHES, and International District.
- Cell culturing for novel thermophilic and hyperthermophilic microbes from hydrothermal fluids and mesophilic sulfur oxidizers and methylotrophs from hydrothermal fluids and plume water.
- Mat samples collected from the north rift zone eruptive pillow mounds for microscopic and elemental analyses as well as cell cultures for mesophilic microbes.
- Near-bottom seawater was collected from Marker 113 for microbe-particle association studies and for the detection of protozoa.
- Samples were collected by members of the labs of Jim Holden (UMass), Julie Huber (MBL) and Bob Morris (UWash) on board the ship for their own uses as well as for the labs of Lisa Zeigler (Ventner Institute), Kim Juniper (UVic), and Pete Girguis (Harvard).

There was extensive diffuse flow associated with the 2015 eruptive pillow mounds on the north rift zone and extensive coverage of brown bacterial mat on the surfaces of the pillow mounds. There was no new hydrothermal venting or bacterial mats associated with the 2015 lava flow in the NE caldera. The only ‘snow blower’ new eruption vent found was on top of the northern-most eruptive pillow mound on the north rift zone (Marker 261). Previous diffuse vents sites such as Marker 33, Marker 113, Anemone and Boca appeared to be largely unaffected by the eruption. We successfully incubated hydrothermal fluids in situ from Marker 33 at 55°C on two occasions.

4.4 CTD Operations

Nathan Buck, University of Washington Joint Institute for the Study of the Atmosphere and Ocean

CTD operations were conducted during the Axial Seamount 2015 research cruise aboard the R/V Thompson to address three main objectives. First, locate new hydrothermal sources that may have resulted from the April 2015 eruption event. Second, attempt to characterize the size and chemistry of any resulting plumes. Third, sample plumes originating from known areas of hydrothermal venting to determine how their compositions reflect the most recent eruption.

During this cruise a total of 8 CTD casts were conducted – four tow-yos and four vertical casts. Tow tracks and vertical cast locations are detailed in Figure 4.4-1. The equipment used for continuous sampling was provided by the R/V Thompson and consisted of a SBE911 plus CTD and included dual SEBE03 temperature sensors, dual SBE04 conductivity cells, dual SBE43 oxygen sensors and a Valeport VA500 altimeter. Additionally, PMEL supplied auxiliary sensors for optical light backscatter (LBS) and oxidation-reduction potential (ORP). Water samples using 10 liter niskin bottles with internal springs were taken at select depths, chosen based on plume absence or presence as indicated by light backscatter (dNTU) and ORP intensity. Niskin bottles were subsampled for the following: Helium isotopes, methane, hydrogen, dissolved inorganic carbon, nutrients, pH, microbiology, total suspended material, dissolved metals and total dissolvable metals. Cast types, locations, durations and sample inventories are summarized in **Table 4.4-1 (below).**

Lat (deg)-N	Lat (min) N	Long (deg) W	Long (min) W	Start time	End time	pH	3He	H2&CH4	CO2	Nuts	TDMe	DMe	XRF	Bio - Spietz	Comments
46	16.4334	-129	47.7288	15-Aug-2015 22:43	16-Aug-2015 00:49	23	17	9	11	17	17			6	Background cast (Large volume samples were collected for for Holden Lab and R. Spietz)
46	8.0784	-129	57.4212	18-Aug-2015 05:37											
46	3.3804	-130	0.2892		18-Aug-2015 11:34	19	14	11		14	14			10	Tow over North Rift Zone new lava flows (N->S)
45	55.0360	-129	59.5740	19-Aug-2015 00:43	19-Aug-2015 02:11	20	11	6	7	11	11	3	3	6	"Vixen" vent site
45	56.0140	-130	0.8200	19-Aug-2015 05:12	19-Aug-2015 06:35	8	5	5	5	8	5			6	"ASHES" vent site (Large volume samples were collected for for Holden Lab and R. Spietz)
46	0.8100	-130	1.3302	20-Aug-2015 03:49											
46	56.5056	-129	59.2272		20-Aug-2015 09:27	22	16	8	5	16	16				Tow into Axial caldera (N->S)
45	55.5780	-129	58.7994	20-Aug-2015 20:05	20-Aug-2015 21:17	13	9	6	5	9	9	1	1	6	"International District" vent site (Large volume samples were collected for for Holden Lab and R. Spietz)
46	1.2564	-130	0.4758	24-Aug-2015 12:41											
45	58.4064	-130	1.0398		24-Aug-2015 15:50	3				3	3				Tow over new lava flow NE of caldera rim (N->S)
46	0.7728	-130	1.2564	26-Aug-2015 05:05											
46	4.4052	-129	59.6556		26-Aug-2015 09:40	20	14	10	6	14	11				Tow along North Rift Zone (from caldera rim - completes transect with T15A-01 and T15A-02) (S->N)

We combined CTD tows T15A-01, T15A-02 and T15A-04 to construct a complete water column survey over the Northern Rift Zone (NRZ; Figures 4.4-1 and 4.4-2). Plume anomalies with significant LBS signals >0.01 dNTU) were ubiquitous along the transect for nearly the entire length of the NRZ and varied in intensity and extent. Tow T15A-01, which comprises the northernmost segment of the survey and covers the northernmost area of the new lava flows created during the April 2015 eruptive event, had LBS anomalies from the seafloor to a minimum depth of 1500 m with a maximum dNTU of 0.258. Additionally, regions of reduced hydrothermal chemicals were commonly found during the tow (ΔE= -100 mv), especially in the northernmost area**.**

Tow T15A-04 represents the middle section of the survey and had LBS anomalies that extended from the seafloor to a depth of 1360 m. This tow only surveyed two comparably smaller areas of new lava. The southernmost lava flow is overlain by a water column signal with a strong ORP signal (ΔE= -100 mv) and increased backscatter ($dNTU_{max}$= 0.1022).

Tow T15A-02 runs from just north of the caldera rim into the caldera and parallel to the east caldera wall over the southernmost lava flows. Again, dNTU anomalies were found over the entire seafloor reaching to a minimum depth 1350m. The strongest backscatter response occurred within the caldera with a large segment, over 4 km long, where dNTU > 0.12. In addition to increased backscatter there were also several small (ΔE = -25 mv) ORP responses within the caldera.

CTD tow T15A-03 (Figure 4.4-3) was conducted over the axial caldera rim and another area of new flow located to the northeast corner of the caldera. As with the NRZ survey, plume anomalies were prevalent. Notably there were areas of more intense LBS (dNTU > 0.1) and ORP response (ΔE= -100 mv) located in close proximity to the areas of fresh lava flow.

Four vertical casts were also conducted. Specifically, Vixen (V15A02), Ashes (V15A03) and the International District Vent Field (V15A04) were sampled and a background cast (V15A01) was made for comparisons to ambient seawater. T-S diagrams, a useful and easy way to characterize water masses as well as the strength of stratification, from the four casts can be found in Figure 4.4-4. Plots of LBS, ORP (Eh), and the time differential of ORP (dmV/dt) can be found in Figure 4.4-5. The derivative of voltage with respect to time was computed to mitigate the impact of a shifting baseline that occurs as a result of drift and hysteresis effects. By making this computation over 5 second time scales rapid changes in voltages appear as negative peaks and allow for comparisons of absolute voltages between and within casts. Plumes with significant LBS and ORP anomalies were found at all three sites when compared to background.

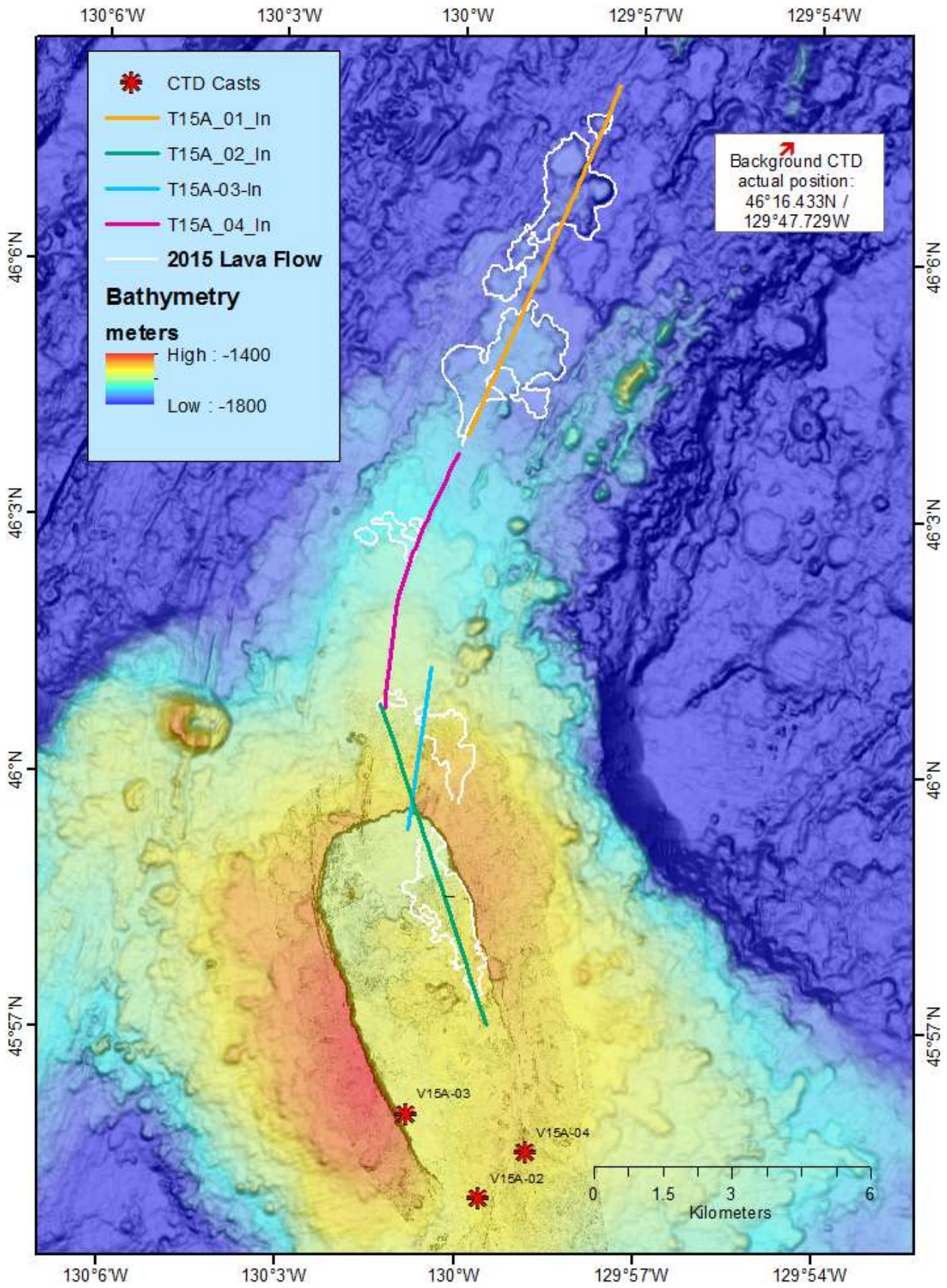


Figure 4.4-1 CTD operations for Axial 2015. Figure courtesy of A. Bobbitt

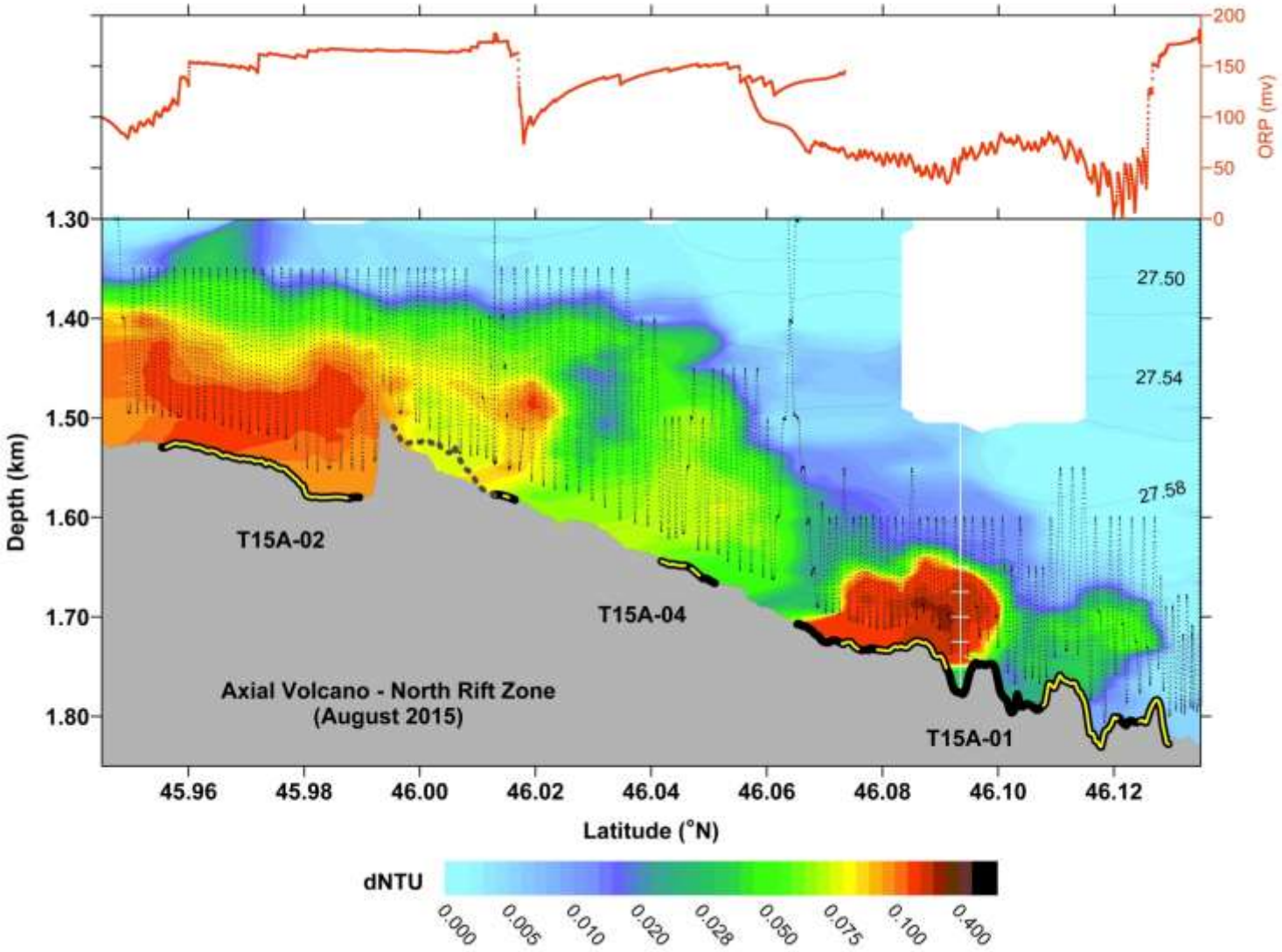


Figure 4.4-2 CTD survey (T15A-01, T15A-02 and T15A-04) of the Axial North Rift Zone and caldera. The top panel is an ORP profile where steep changes in slope indicate regions of reduced chemicals. The bottom panel is an LBS profile over bottom bathymetry where heavy black outlines indicate the extent of new lava flows. Lines of yellow superimposed with the heavy black lines indicate areas where CTD tows intersected new lava. Tow tracks as well as niskin depths are also included and contour values indicate density. Courtesy of S. Walker.

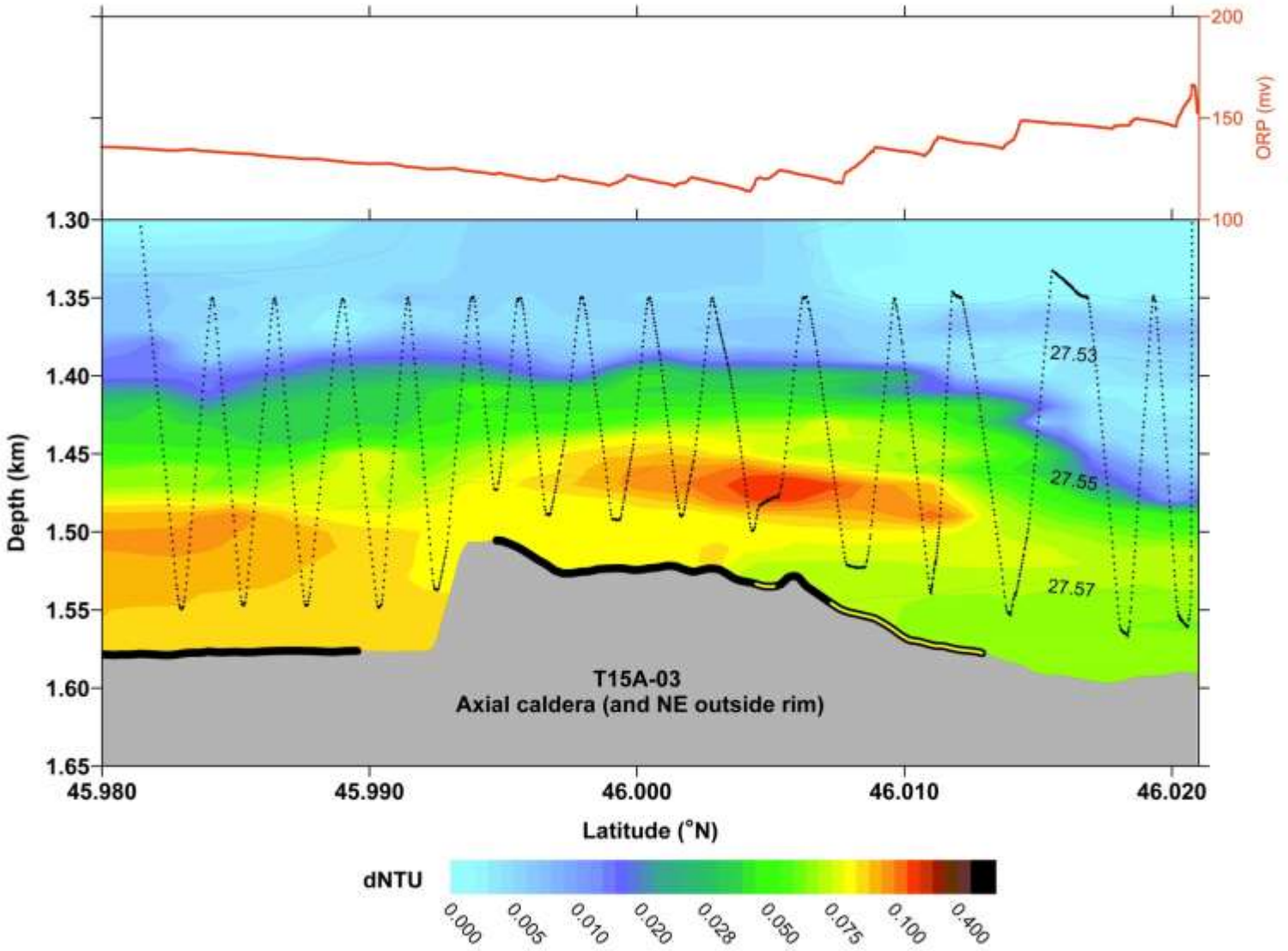


Figure 4.4-3 CTD survey T15A-03. The top panel is an ORP profile where steep changes in slope indicate masses of reduced water. The bottom panel is an LBS profile over bottom bathymetry where heavy black outlines indicate the extent of new lava flows. Lines of yellow found superimposed with the heavy black lines indicate areas where CTD tows intersected new lava. Tow tracks as well as niskin depths are also included and contour values indicate potential density (σt) . Courtesy of S. Walker.

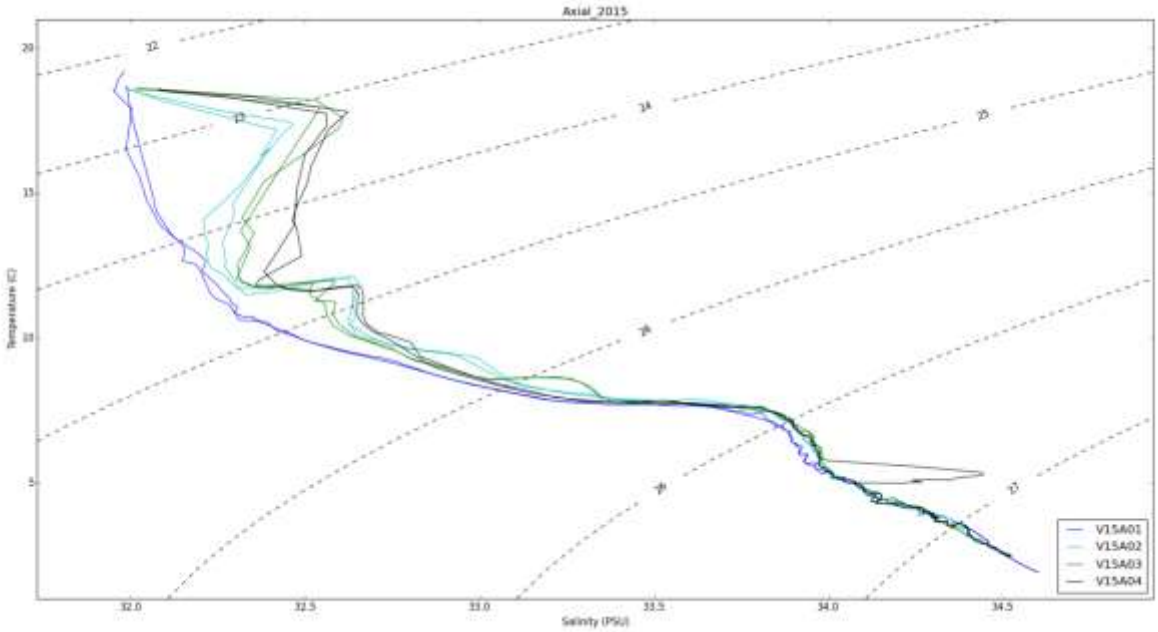


Figure 4.4-4 T-S diagram of vertical casts V15A01 (Background), V15A02 (Vixen), V15A03 (Ashes), V15A04 (International District Vent Field). Contours indicate potential density (σt)

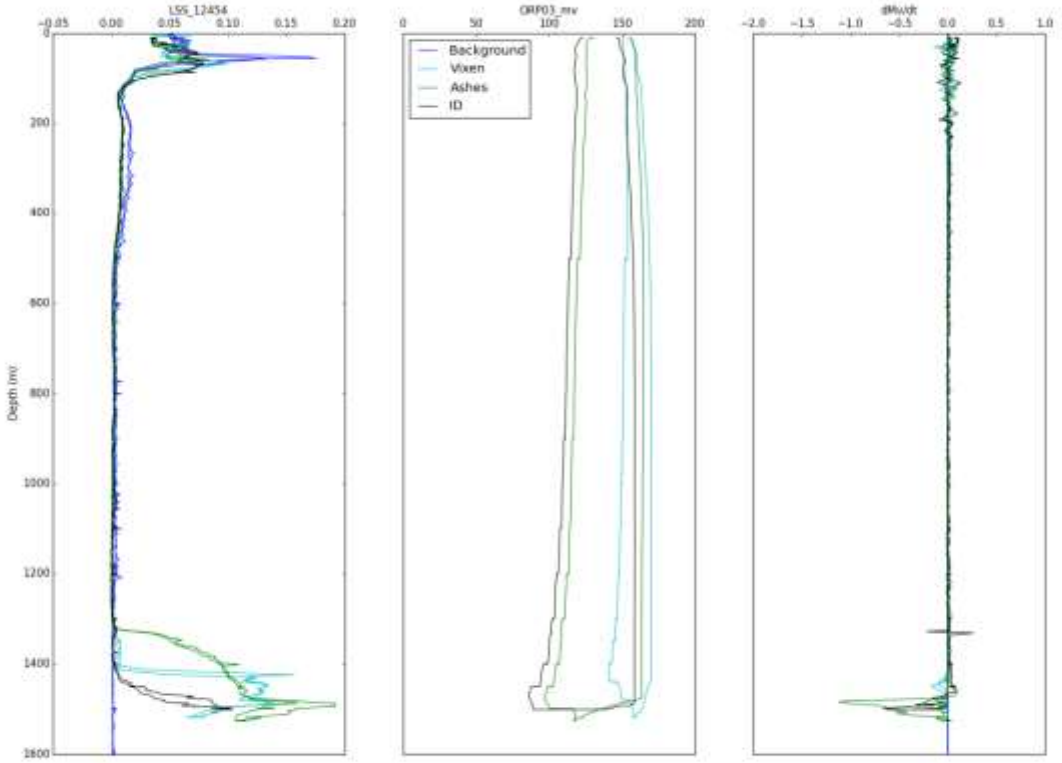


Figure 4.4-5 LSS, ORP, and the time differential of ORP (dmV/dt) plotted with depth for vertical casts V15A01 (Background), V15A02 (Vixen), V15A03 (Ashes), V15A04 (International District Vent Field).

4.5 Moorings

Matt Fowler, Oregon State University

Mooring Operations:

Objectives:

- Recover Ocean Bottom Hydrophone (OBH)
- Recover 3 Bottom Pressure Recorders (BPR)
- Deploy new OBH instrument and platform
- Recover OBH data
- Recover data and re-battery BPRs
- Deploy 3 BPRs
- Deploy MAPR mooring with 5 MAPRs at plume depths
- Deploy RAS mooring

Recoveries:

We recovered the OBH and 2 BPRs during daylight hours on 8/18/15; 1 BPR was recovered on 8/26/15.

The OBH recovery was at 15:37 UTC in rough seas and resulted in the instrument being slammed into the side of the ship before enough tag lines were attached to control the swing. After sufficient tag lines were attached the instrument was successfully recovered. The impact with the ship irreparably damaged the external hydrophone element, and seriously damaged OBH platform. The OBH housing has minor corrosive pitting. The end caps are in generally good condition.

BPR South-1, and BPR South-2 were both recovered without incident at 16:35 and 17:36 UTC. BPR center was left in place for the duration of the pressure dive for calibration purposes, then recovered at 00:46 on 8/26/15

Instrument Turnaround:

Data:

The OBH logged data to 80 GB hard drives for the duration of the 2 year deployment with no resets, and clock drift of 1.3 seconds.

All 3 BPRs logged data for their entire 2 year deployment with no clock errors or system malfunctions.

Instrument Preparation:

The OBH was initialized for deployment with no issues.

BPR South-1 failed to initialize after the battery was changed. The initialization went well, the instrument was responsive while setting the time and date, it formatted the compact flash card used as the storage medium, and executed the “log” command prior to deployment. After the first 7 samples, taken at 15 second intervals, the instrument “froze” 1 minute 45 seconds into logging. Repeated attempts to reset instrument by cycling power, disconnecting and reconnecting the serial cable, and pressing “reset” button had no effect. This instrument will be sent to PMEL Seattle for repair.

BPR South-2 and BPR Center initialized normally for deployment.

No initialization was required for the MAPRs prior to their deployment; all had been set-up in Seattle prior to departure by Sharon Walker.

Deployments:

All deployments were daylight operations. All went as scheduled.

Instrument: OBH

Deployment date and time: 8/20/15 01:05 UTC

Location: 46 05.7652N 129 58.8176W 1766m Workboat surveyed

Release Information:

Serial Number: 33686

Tx and Rx Frequencies: 11.0KHz and 12.0KHz

Enable code: 372432

Disable code: 372457

Release code: 354266

Comments: No mounting hardware was sent with OBH platform. Mounting hardware from recovered OBH didn't fit new platform. The recovered platform was too badly damaged during recovery to reuse. OBH was fitted onto new platform without supporting plastic blocks to isolate the instrument from the platform. Heavy gauge rubber pads were fabricated to provide necessary isolation, however, this system is probably **not as robust as with correct mounting points**. While potential corrosion issue has been minimized, it is **HIGHLY recommended this instrument be recovered in calm conditions, and that it is NOT the first recovery of subsequent cruise**. This is to allow deckforce training with a BPR or similar mooring prior to OBH recovery. **High possibility of losing instrument from the platform if allowed to slam into ship during recovery.**

Instrument: BPR Center

Deployment date and time: 12:40 8/27/15 UTC

Location: 45 57.407N 130 00.636W 1541m depth

Release Information

Serial Number: 46806

Tx and Rx Frequencies: 11.0KHz and 12.0KHz

Enable code: 520475

Disable code: 520504

Release code: 534071

Comments: Anchor plates were incorrectly fabricated. Metal cups on anchor plate were at 18" on center spacing while the BPR platform legs were 20" on center. Only 2 legs were fitted into leg cups and platform was positioned off center of the anchor plate. Otherwise standard deployment. Important to have replacement stainless steel hose clamps to secure the end caps during BPR turn-arounds, and particularly important to ensure that the worm screw on the hose clamps is also stainless steel, as sometimes the clamp is stainless, but not the screw, and these corrode during a deployment.

Figure 4.5.1 BPR anchor plate.

Instrument: BPR South-2

Deployment date and time: 21:55 8/19/15 UTC

Location: 45 54.956N 129 59.609W 1538m depth

Release Information

Serial Number: 32673

Tx and Rx Frequencies: 11.0KHz and 12.0KHz

Enable code: 667237

Disable code: 667252

Release code: 650364

Comments: Anchor plates were incorrectly fabricated. Metal cups on anchor plate were at 18” on center spacing while the BPR platform legs were 20” on center. Only 2 legs were fitted into leg cups and platform was positioned off center of the anchor plate. Otherwise standard deployment. Important to have replacement stainless steel hose clamps to secure the end caps during BPR turn-arounds, and particularly important to ensure that the worm screw on the hose clamps is also stainless steel, as sometimes the clamp is stainless, but not the screw, and these corrode during a deployment.

Instrument: MAPR mooring

Deployment date and time: 16:55 8/27/15 UTC

Location: 46 05.607N 129 58.889W 1780m depth

Release Information

Serial Number: 34472

Tx and Rx Frequencies: 11.0KHz and 12.0KHz

Enable code: 272432

Disable code: 272457

Release code: 253141

Comments: No capstan was available for deployment. To avoid excessive uncontrollable tension developing while mounting 5 MAPRs at 25m intervals, while streaming the mooring out, the 250m jacketed wire was attached to float package secured to the deck and lowered over the side. After the top 150m was hung off the side of the ship, the MAPRs were mounted at 30m, 55m, 80m, 105m and 130m above the anchor. The target depth for the anchor was 1780m. After all MAPRs were mounted on the 250m jacketed wire hanging over side of ship, the bottom of the jacketed wire was attached to the anchor. The float package was deployed using the ship's crane and NOAA quick release. The ship repositioned 60m to be over target drop point, and stretch out the float/250m jacketed wire prior to deployment of the anchor using ship's crane and NOAA quick release. Calm seas permitted a very safe, smooth, controlled deployment without a capstan.

Instrument: RAS mooring

Deployment date and time: 16:50 8/27/15 UTC

Location: 46 04.488N 129 59.712W 1717m depth

Release Information: NONE – ROV Pull Pin release

Comments: Jason dropped descent weight and moved RAS into position at hydrothermal vent and placed intake tube into vent.

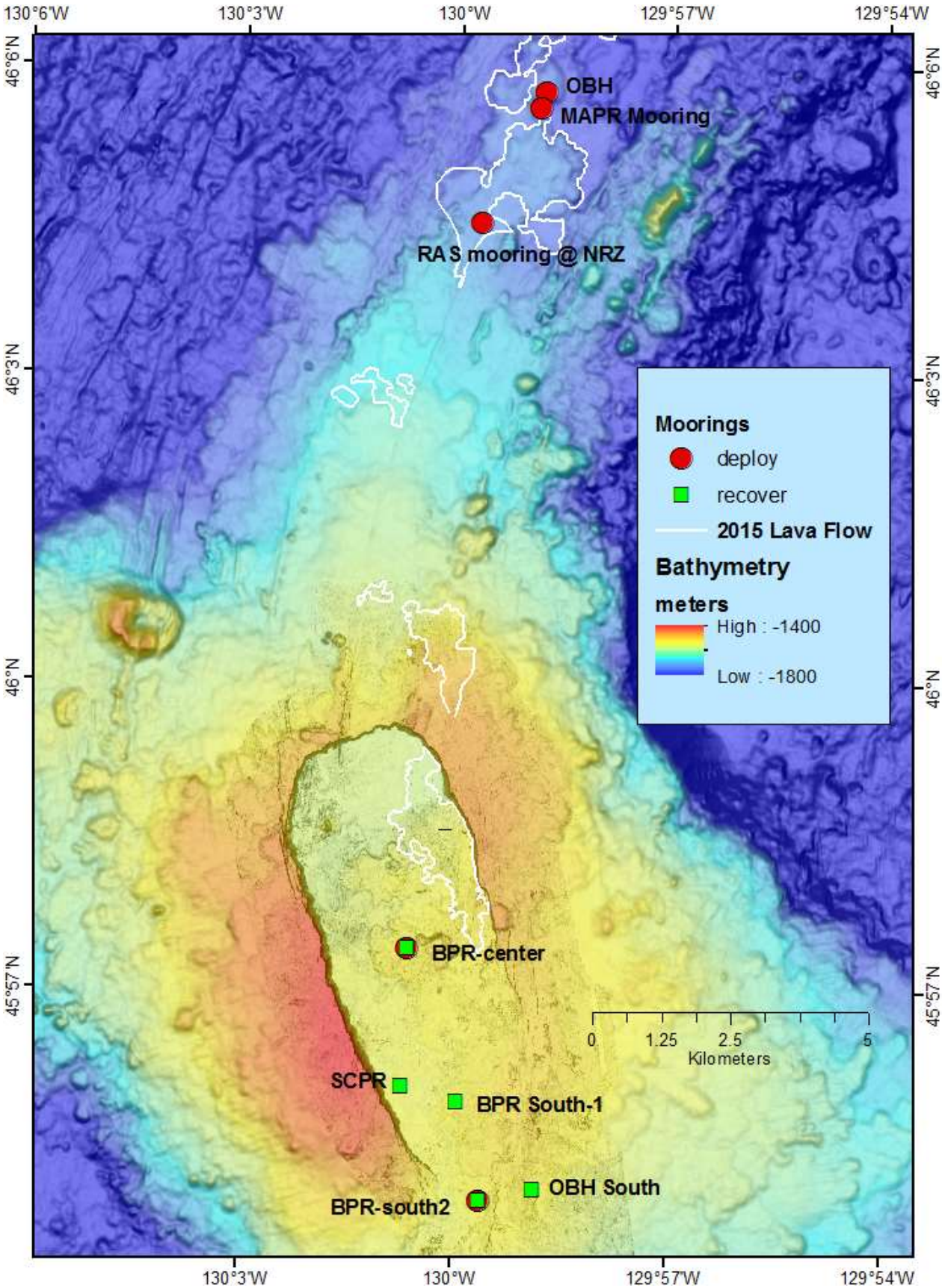
Table 4.5-1 Mooring Recoveries

Instrument	Deployed	Recovered (UTC)	Depth	Latitude	Longitude
Surveyed positions unless otherwise indicated.					
BPR Center	5-Sep-13	26-Aug-15	1541	45.95678	-130.01060
BPR South-1	5-Sep-13	18-Aug-15	1540	45.93181	-129.99876
BPR South-2	5-Sep-13	18-Aug-15	1540	45.91599	-129.99348
OBH South	9-Sep-13	18-Aug-15	1539	45.91769	-129.98085
SCPR	7-Sep-13	18-Aug-15	1541	45.93438	-130.01178

Table 4.5-2 Mooring Deployments

Instrument	Deployed (UTC)	Depth	Latitude	Longitude	Notes
Surveyed positions unless otherwise indicated.					
OBH	8/20/15 1:05	1766	46.09609	-129.98029	There was no OBH-S in 2011
BPR-center	8/27/15 12:40	1541	45.95678	-130.01060	~200 m NNW of AX-101
BPR-south2	8/19/15 21:55	1538	45.91593	-129.99348	~160 m SSW of Vixen, ~320 m W of AX-304
RAS: final position and depth after ROV placement					
RAS mooring @ NRZ	8/27/15 16:50	1716	46.07470	-129.99505	NRZ with Mkr-294
MAPR Mooring	8/27/15 16:55	1780	46.09345	-129.98148	NRZ

Figure 4.5-1 Moorings Deployed and Recovered



4.6 Mapping

4.6.1 AUV Sentry Mapping

Jenny Paduan and Bill Chadwick

Goals
There were four goals of the AUV *Sentry* dives during this cruise: (1) Repeat the bathymetry tracklines across the caldera collected by the MBARI mapping AUV in 2014 to document depth changes due to volcanic deformation and tie the AUV bathymetry to the seafloor pressure measurements being conducted this year, (2) expand the AUV bathymetric mapping coverage beyond the caldera to serve as a baseline for repeat mapping for deformation monitoring in future years, (3) collect high-resolution bathymetry over as many of the 2015 lava flows as possible, and (4) simultaneously collect water column MAPR data over the 2015 lava flows to augment the CTD plume mapping. The MAPR data collection was successful, but will require on-shore data analysis, so is not discussed further here.

Methods
The AUV *Sentry* multibeam sonar mapping dives were conducted such that: (1) the survey altitude was 65 meters, (2) the survey speed was ~1.8 knots, (3) the line spacing of the survey tracklines was 160 meters. This yielded a lateral resolution of about 1.5 meters. Dive durations were generally 24 hours or less.

The AUV *Sentry* was made six dives during this cruise (dives 336-341). Four of those missions successfully recorded multibeam sonar data (338-341). During the first two dives (336 and 337) a newly installed Reson sonar receive head was found to have the wrong firmware installed by the vendor, which caused the multibeam sonar data that it collected to be unusable. The surveys were designed by Expedition Leader Dana Yoerger after consultation with Bill Chadwick (Chief Scientist), and David Clague and David Caress (MBARI). Vehicle configurations, sensor performance, vehicle statistics, and post-dive summaries are detailed in the operations report “Sentry Operations Report for the Chadwick/NEMO 2015 Cruise.”

The multibeam mapping sonar on the vehicle is a Reson 7125 400 kHz multibeam sonar. Sidescan sonar data were also collected during the dives and a MAPR instrument supplied by NOAA/PMEL was also integrated into the *Sentry* logging system. USBL updates were given periodically throughout each mission when the AUV was with range of the ship and these incorporated into the AUV navigation in post-processing. LBL tracking was used to monitor the vehicle's progress but not used in the navigation processing.

The software package MB-System was used for additional post processing of the bathymetry data, including incorporating the vehicle navigation and attitude sensor data with the sonar data, applying a roll bias of -0.6 degrees, a timelag constant of 0.125 sec, tide correction with the OSU Tidal Prediction Software (OTPS) model, and ping editing. Tide correction using OOI BPR data has yet to be done. The vertical offset between the Paroscientific depth sensor and the multibeam on the vehicle has not been corrected. Navigation adjustment to accommodate for lateral drift of the vehicle was done with the MB-System program mbnavadjust separately for each survey, using fully edited, OTPS tide and roll-bias corrected data. However, the surveys have not yet been tied to any EM302 or ROV fixes, nor to each other, and therefore the data for each survey are floating in X, Y, and Z relative to only that survey. With those caveats, maps of differences between these surveys and previous bathymetry data are still preliminary.

Summary of Dives 336 and 337
Sentry dive 336 was the longest during the cruise (28.5 hours) and was meant to collect multibeam bathymetry (and MAPR water column data) over the two largest of the 2015 lava flows on Axial’s North Rift Zone. The multibeam sonar did not work properly during this dive, but MAPR data were successfully collected.

Sentry336 launch position: 46 4.531’N 129 58.248’W
8/16 1722 UTC: Sentry in water
8/17 2201 UTC: Sentry on deck

Sentry dive 337 was a short (~7 hours) test dive south of the ASHES vent site to test whether the attempted fixes of the multibeam sonar had been successful (they had not) and to flying it up and down the caldera wall to test the new bottom following software in Sentry that would be needed during the later deformation surveys (this was successful)

Sentry337 launch position: 45 56.242’N 130 0.813’W
8/20 1121 UTC: Sentry in water

8/20 1833 UTC: Sentry on deck

Mapping the 2015 lava flows

Mapping of portions of the 2015 flows was conducted with the AUV *Sentry* on surveys 338 and 341. Mapping of the flows deeper on the North Rift Zone was attempted on the failed survey 336, but there was not time to repeat that survey during this cruise.

Survey 338 covered the NE caldera floor where differencing between TN326 and MBARI Mapping AUV data indicated there was a new flow. The survey was co-located with the latter part of ROV *Jason* dive J2-822, which was in the water concurrently. It began in the SE corner, drove crossing lines, "mowed the lawn" over the area from the caldera wall at the east to beyond the southern, northern, western edges of the 2015 flow, and finished in the NW. Altitude for the entire survey was 65 m for 1.5 meter resolution data. The flow contacts observed on the *Jason* dive correspond well with the mapped differences in bathymetry data collected before and after the 2015 eruption (Fig.4.6.1-1 and see Fig. 4.1.2-4).

Sentry338 launch position: 45 58.569'N 129 59.994'W
8/21 1558 UTC: Sentry in water
8/22 0338 UTC: Sentry on deck

Survey 341 started near the center of the caldera (where the ship and ROV *Jason* were at the time), climbed the east wall of the caldera and flew northward just E of the rim on the flank. It then "mowed the lawn" on the Upper North Rift Zone over the small patches of the 2015 flow detected in difference mapping between TN326 and MBARI AUV data, and on the north caldera rim, where a CTD tow this cruise indicated a plume. The survey was co-located with ROV *Jason* dive J2-825, which was in the water concurrently. Altitude flown was 65 m for 1.5 meter resolution data.

Sentry341 launch position: 45 57.694'N 130 0.515'W
8/26 2349 UTC: Sentry in water
8/27 1450 UTC: Sentry on deck

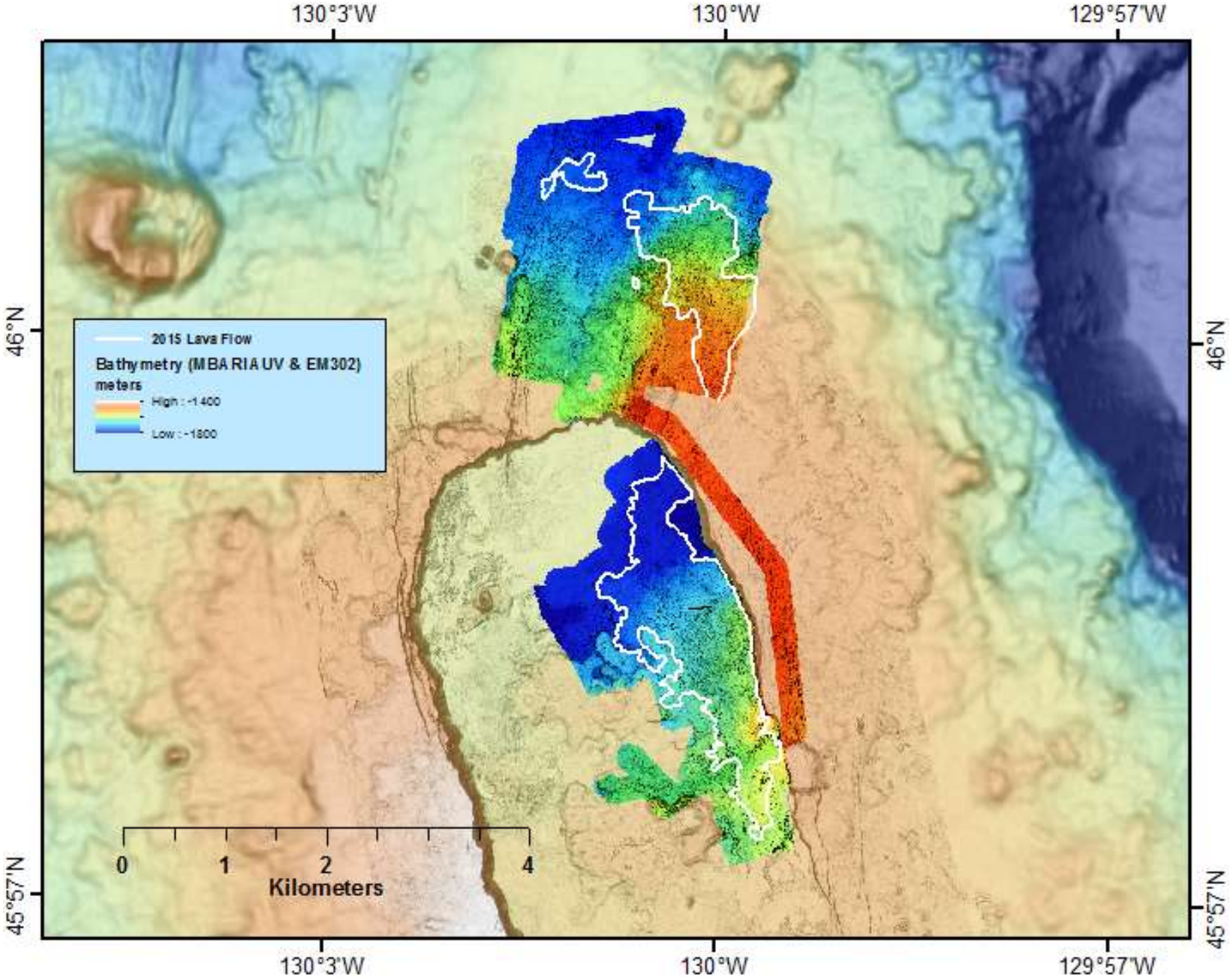


Fig. 4.6.1-1 AUV Sentry mapping surveys 338 and 341 overlaid on bathymetry data previously collected with MBARI AUV and R/V Thompson. Sentry 338 survey was focused on the NRZ lava flows, north of the caldera rim. Sentry 341 survey began inside the caldera and the eastern portion of the NRZ new lava flow.

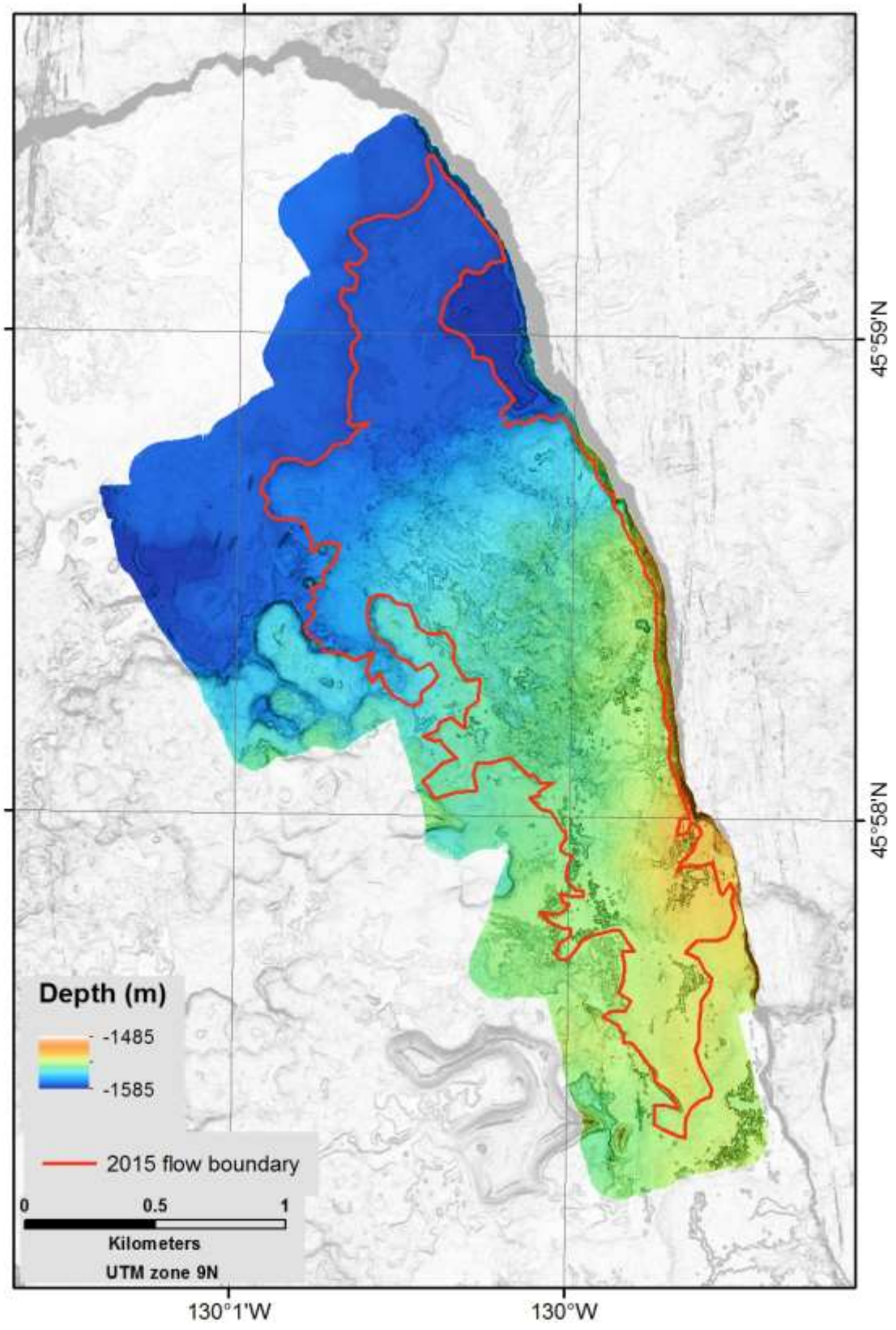


Fig. 4.6.1-2 Colored bathymetric grid of Sentry Dive 338 in Axial's caldera. Red outlines of the 2015 lava flows and superimposed on a slope map of regional bathymetry.

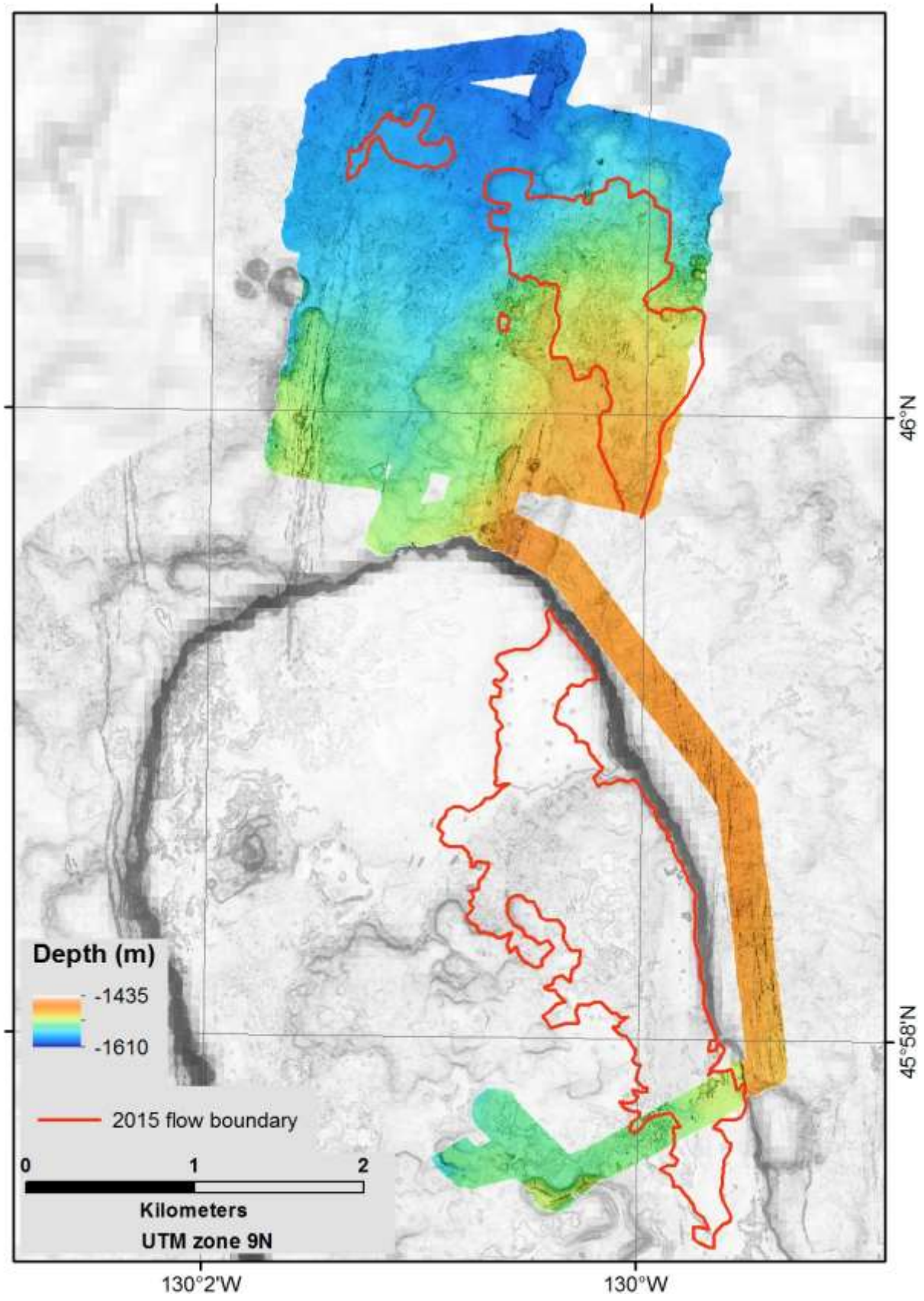


Fig. 4.6.1-3 Colored bathymetric grid of Sentry Dive 341 in Axial caldera and the eastern portion of the North Rift Zone. Red outlines of the 2015 lava flows and superimposed on a slope map of regional bathymetry.

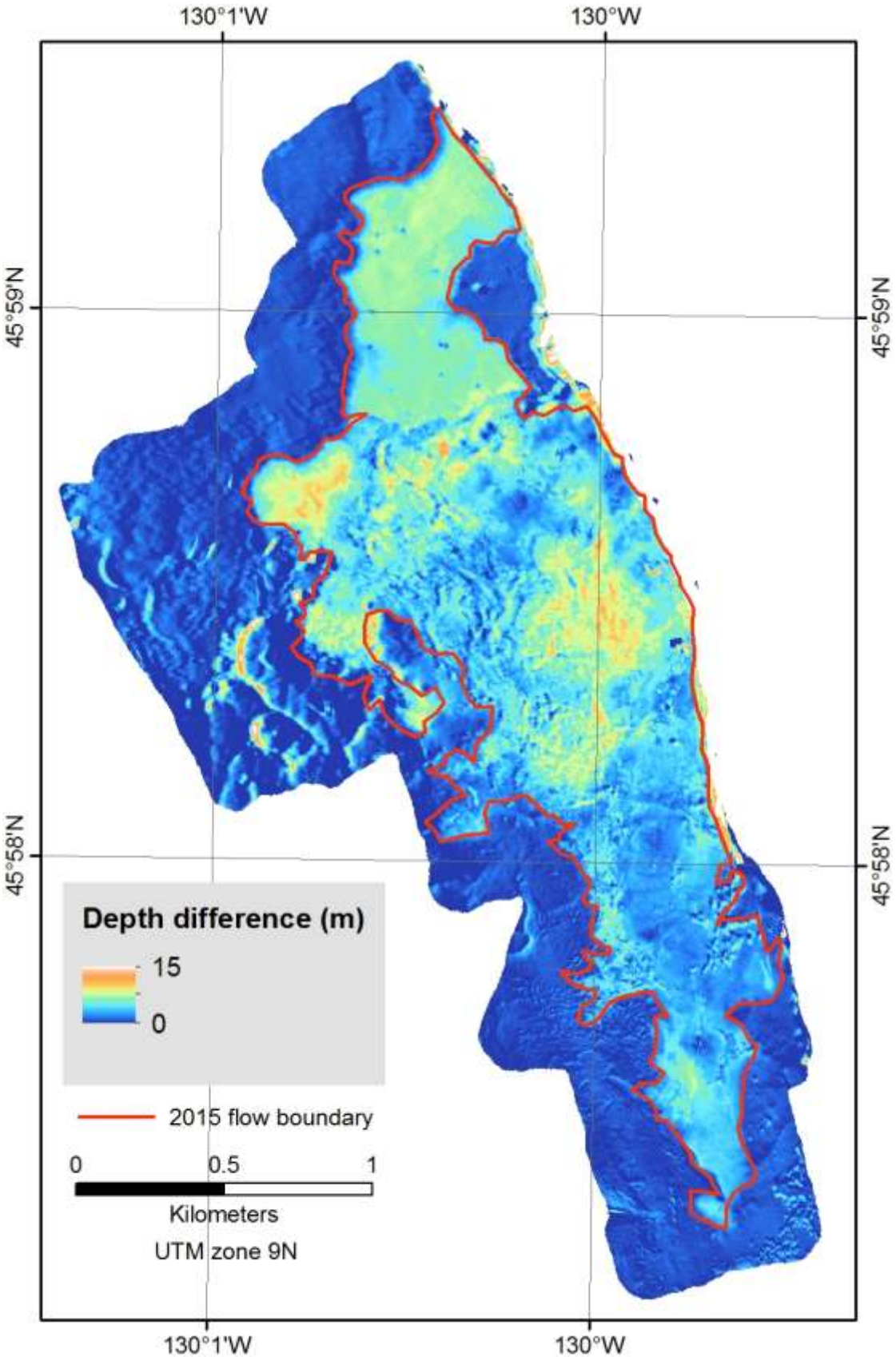


Fig. 4.6.1-4 Map of bathymetric depth differences between 2015 AUV Sentry data and a compilation of MBARI's AUV data collected through 2011. Difference data was used to construct the 2015 flow boundary line depicted in red.

Deformation study

Two multibeam sonar surveys by AUV *Sentry* ran patterns across the caldera designed for extracting vertical deformation of the volcano. These surveys continue a time series begun with the MBARI Mapping AUV and complement the time series of pressure measurements at seafloor benchmarks and with BPRs on the seafloor. The inflation detected with a survey by the MBARI Mapping AUV in the summer of 2014 (described in the MBARI 2014 Annual Report: http://www.mbari.org/news/publications/ar/2014ann_rpt.pdf), compared with a post-2011 eruption survey in 2011, showed a net uplift of 1.8 m at the center of the caldera over the 3-year period. This was consistent with rate of inflation observed in 2013 by the pressure measurement of ~ 60 cm/yr. This information was important in the successful forecast of the April 2015 eruption.

Survey 339 (Fig. 4.6.1-2) repeated a pattern over the caldera floor that the MBARI Mapping AUV ran in 2014 and 2011, and also flew over the pressure measurement benchmarks that ROV *Jason* was visiting during the concurrent dives J2-823 and J2-824, to directly compare with those measurements. Altitude for deformation part of the survey was 65 m for 1.5 meter lateral resolution. At the end of the survey a test pattern was run (while waiting for the ship to get into range for rendezvous), in which the *Sentry* flew at 65 m altitude, and then at 110 m and higher altitudes with narrower beam angles so coverage should be the same, to test whether outer beam-forming artifacts could be reduced.

Sentry339 launch position: 45 55.568'N 129 58.605'W
8/23 0006 UTC: Sentry in water
8/24 0019 UTC: Sentry on deck

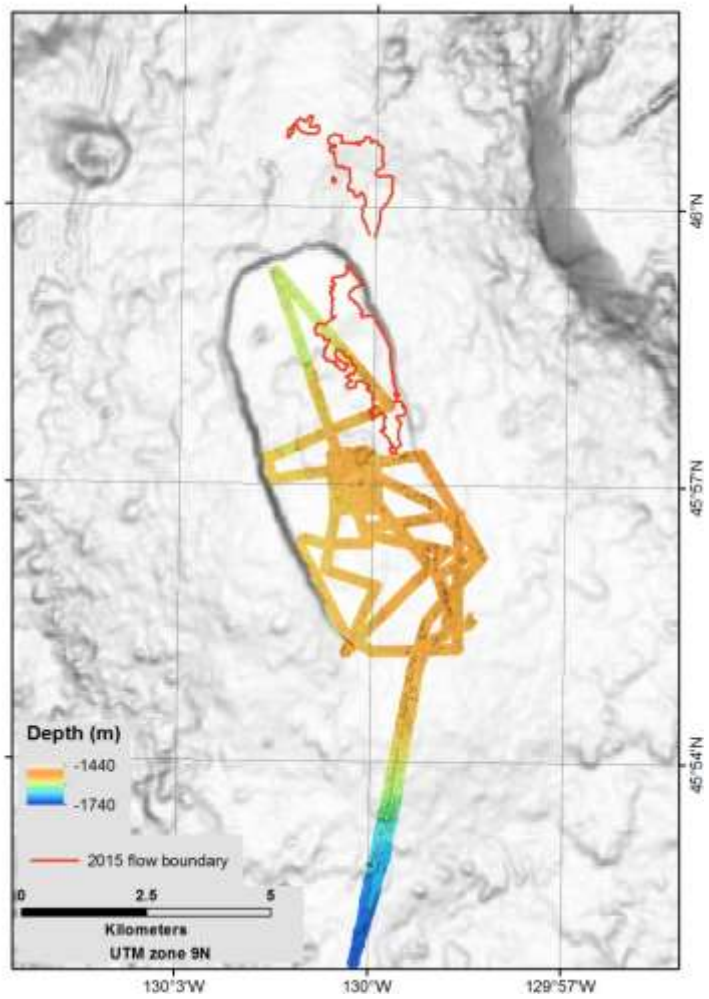


Fig. 4.6.1-2 Map of bathymetry data from AUV Sentry survey 339, superimposed on a slope map of regional bathymetry. Boundaries of lava flows erupted in 2015 are shown (red lines) for reference. Map shown at the same scale as 4.6.1-3.

Survey 340 (Fig. 4.6.1-3) was designed to establish a new pattern for future repeat mapping, which increases the lateral extent of the deformation measurements to enable a more three-dimensional analysis of the dynamics of the volcano. The new pattern is a large 3-triangle array that includes the flanks as well as the caldera, with crossings over the center of the caldera. The altitude for the survey was 65 m for 1.5 meter lateral resolution data.

Sentry340 launch position: 45 55.834'N 130 1.214'W
8/24 2106 UTC: Sentry in water
8/25 2029 UTC: Sentry on deck

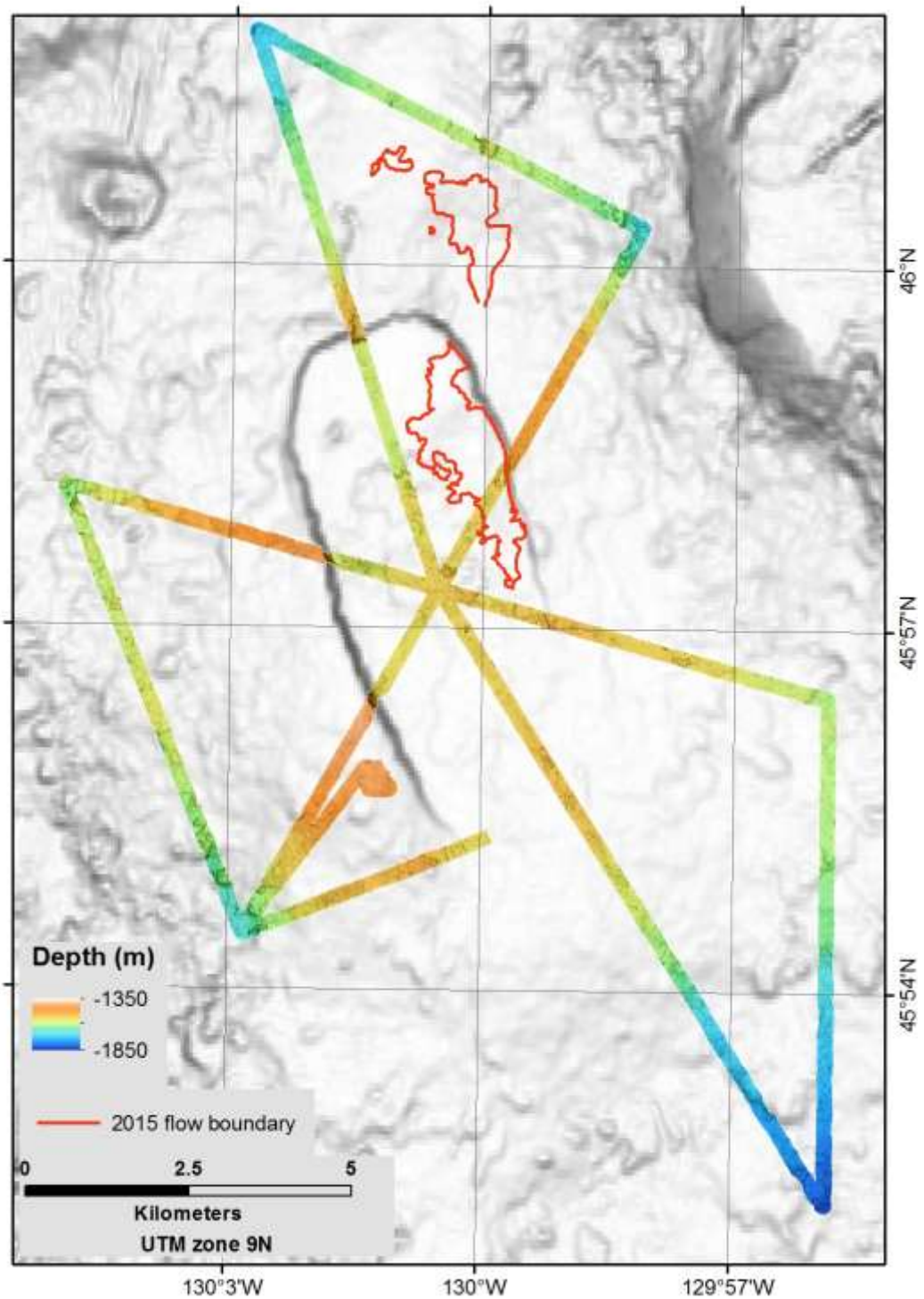


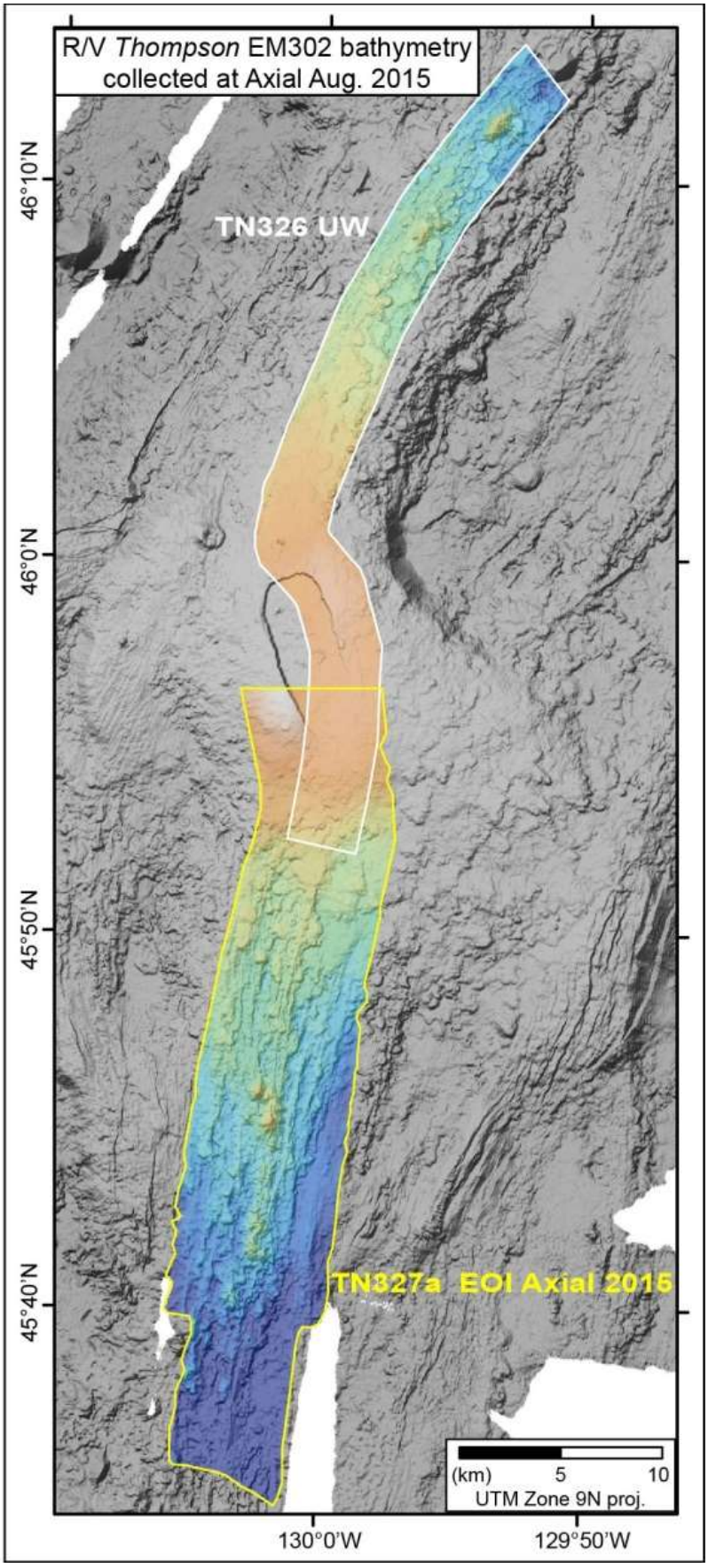
Fig. 4.6.1-3 Map of bathymetry data from AUV Sentry survey 340, superimposed on a slope map of regional bathymetry. Boundaries of lava flows erupted in 2015 are shown (red lines) for reference. Map shown at the same scale as 4.6.1-2.

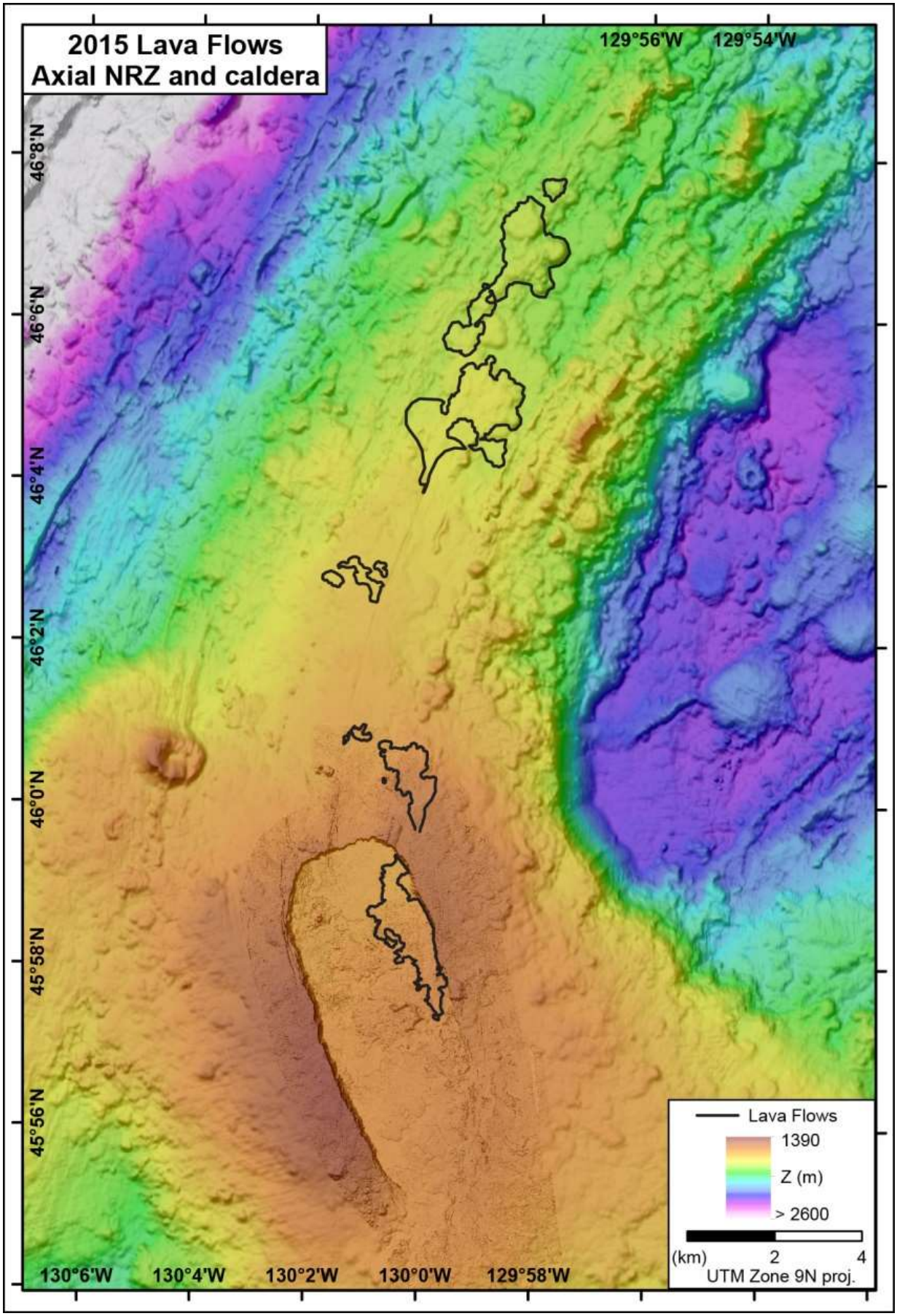
4.6.2 EM302 Multibeam Mapping

Susan G. Merle, OSU

The focus of multibeam mapping during the TN327a (Axial 2015) expedition on the R/V *Thompson* was to re-survey the south rift zone (SRZ) at Axial to determine whether or not the 2015 eruption produced lava flows south of the caldera. The north rift zone (NRZ) had been mapped on the previous University of Washington expedition, TN326 (2015). Deb Kelly was expedition leader for TN326 and Brendan Philip processed those data. Surface differencing was performed on the NRZ data, comparing bathymetry collected on TN326 and TN300 (2013), revealing numerous large lava flows extending to 15 kilometers north of the caldera rim. There were no significant surface differences in the data on the SRZ when comparing data from TN327a and an earlier bathymetry compilation. Those results indicate that there was no lava extruded south of the caldera during the 2015 eruption. During the expedition Jenny Paduan discovered thinner flows in the caldera and north of the caldera rim when surface differencing was performed between the data collected on TN326 and the MBARI AUV data (see section 4.6.1).

276 km^2 were mapped on the SRZ during TN327a. Additional data were collected during the transit and while working in the caldera area. Those data are not included in the calculation, or the final data that will be submitted to NGDC (now NCEI), as they were not planned surveys and ship speed was usually above optimal survey speed.


R/V *Thompson* EM302 bathymetry
collected at Axial Aug. 2015
TN326 UW
TN327a EOI Axial 2015
46°10'N
46°0'N
45°50'N
45°40'N
130°0'W
129°50'W
(km) 5 10
UTM Zone 9N proj.


2015 Lava Flows
Axial NRZ and caldera
129°56'W
129°54'W
46°8'N
46°6'N
46°4'N
46°2'N
46°0'N
45°58'N
45°56'N
130°6'W
130°4'W
130°2'W
130°0'W
129°58'W
Lava Flows
1390
Z (m)
> 2600
(km)
2
4
UTM Zone 9N proj.

4.7 Outreach and Education

Rachel Teasdale, California State University - Chico

Outreach and Education Activities Rachel Teasdale, California State University - Chico

Ship-to-shore Skype calls to classrooms:
Ten ship-to-shore Skype calls were completed from R/V Thompson to K-12 and university classrooms school classrooms in Oregon and California (the home states of PI Chadwick and outreach coordinator Teasdale, respectively). Skype calls were to High School science classes (3); Junior High School classrooms (3) and to the visitor center auditorium at the Hatfield Marine Science Center (HMSC) in Newport Oregon, and to two summer camps in Newport Oregon. In several cases, teachers hosted the Skype calls in auditoriums to have 3 or more classes attend the interaction with scientists on board the research cruise. As such, we estimate that with approximately 30 students per single class plus the combined classes, there were approximately 323 students participating in the calls plus an addition 35 members of the public at the HMSC visitor center. The Axial 2015 blog (axial2015.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 Research Scientists and Co-PI's Dave Butterfield (UW), Bill Chadwick (OSU-NOAA) and Jim Holden (UMass) talk with approximately 90 school children in rural Marysville, California from R/V Thompson during the 2015 Axial Seamount expedition.

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

Examples of letters from school children are included at the end of the Outreach summary.

Educational Cruise Blog:
http://axial2015.blogspot.com

Blog entries were posted at least daily, from just prior to the cruise through the final entry posted the day we arrived in port, making a total of 24 blog entries created and posted. Blogs describe the scientific teams and the research conducted onboard, with background information to help readers better understand the geologic setting and significance of Axial Seamount. Videos were embedded in 11 blogs to introduce scientists explaining their research, the instruments and experiments to do their work, as well as videos that help illustrate life on board the R/V Thompson. Videos also expand on blog entries to show how work with AUV *Sentry* progress to developing sea floor maps and how collecting samples with ROV *Jason* continues on board the ship and in preparation for further analyses in labs onshore. 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. Skype participants were encouraged to follow the blog before and after the Skype events. There were 7798 hits to the blog recorded, the most popular blog entries were "The Science Team," which was created from information submitted by 15 (of 19) science team members on the cruise, describing their professional backgrounds, preparation for their careers and their goals for the cruise. Other popular blogs were (in descending order) "Introduction" to the cruise, "2015 Eruption", "Pressure Dive", and "Facilitating Science." Most hits to the blog from the United States, Canada and Turkey (which corresponds to countries of origin for researchers on board) with additional hits from other countries in smaller numbers. The Axial 2015 cruise blog was mirrored on the OceanScape Network web site (http://oceanscape.aquarium.org/), an outreach and education site created by the Oregon Coast Aquarium.

Blog videos were created at sea by Jesse Crowell in association with Saskia Madlener and 77th Parallel Productions.

Table 4.7-1 Outreach Skype Participants

#	Date	Time	Teacher Contact	Grade/Group Info	Science Interest	School	Class info	# students
1	**Fri Aug 14**	**10-10:45**	Tracy Crews	Native American Kids Camp	Marine Science	Ocean/HMSC Newport, OR	Mid School	10
2	**Tues Aug 18**	**1-1:45 pm**	Tracy Crews	Girls Engineering/ Marine Camp	Marine Science	Ocean/HMSC, Newport OR	Mid School	18
3	**Weds Aug 19**	**8:00-9:00**	Dave Atkinson	HS (AP classes)	Geology, Biology, Physics	Lindhurst HS, Marysville CA	HS/2-3 classes	90
4	**Thurs Aug 20**	**2:05-2:40pm**	MaryAnne Pella Donnelly	Junior HS-Gate	GATE Life Sci	Chico Jr HS, CA	Jr HS/ 1 class	30
5	**Sat Aug 22**	**1:30-2:00**	Bill Hanshumaker	Public visitors		Hatfield Marine Science Center OR	General public	35
6	**Mon Aug 24**	**8:50-9:45**	Tom George	HS	Earth Sci	Pleasant Valley HS CA	HS/ 1 class	30
7	**Tues Aug 25**	**8:45-9:35**	Ray Barber	HS	Chem/Biol	Pleasant Valley HS CA	HS/ 1 class	30
8	**Weds Aug 26**	**9-9:50**	Rachel Teasdale	University	Mineralogy & Lithology + Dept Geological/ Environmental Science	CSU, Chico CA	Ugrad/ 1 class + open to dept	25
9	**Thurs Aug 27**	***8:30-9:30***	Casey Link	5, 6, 7	all Biol, Earth, Chem	Chrysalis Charter School, Redding CA	60	60
10	**Fri Aug 28**	**8:55-9:45**	Kelly Coombe	Junior HS		Marsh Jr HS, Chico CA	7th Grade/ 1 class	30
							Total Skype Participants	358

Examples of letters from school children:

Chico Junior High School
280 Memorial Way
Chico, CA 95926
(530) 891-3066

August 26, 2015

Dear Dr. Holden and Dr. Chadwick,

Thank you so much for taking the time to facilitate a web conference with my students. They were very impressed that "real" scientists took the time to speak to them, and to do so while out in the field. We really enjoyed the experience.

We look forward to additional opportunities and would love to speak via Skype again, from your lab or out in the field, if you have the time and willingness.

Again, thank you.

Respectfully,

Mary Anne Pella-Donnelly

Mary Anne Pella-Donnelly

Chico Junior High School

Dear Jim Holden,

Thank you so much for having a chat with our class! I learned so many things like there are 55 people on the ship and that you have engineers on the ship. I also learned that ROV's that the ship uses are as big as a mini van! I thought they were only at least as big as a side table. It was actually intresting to find out that everytime an underwater volcano deflates or inflates it doesn't cause a tsunami. I also thought it was cool that interested crabs climbed on the eq equipment. A question that I have is that how long are the trips usually out at sea?

Sincerly,
Sophia L.

Dear Dr. Chadwick and Dr. Holden,

Thank you for talking with us and answering all our questions! I learn a lot, including that there is an underwater volcano that is a "wired volcano", and that there are worms that have no mouth or stomach and get all their nutrients from chemicals that come from Axial Seamount. I also learned that there are robots that can go under the ocean and collect lava samples, such as Jason and Century. Some interesting things that I learned about Axial Seamount are that there is worms that live there that grow to be 8 feet called tube worms, and that there are crabs with really long legs that just climb over all the stuff.

Are tube worms found any other place?

Sincerely, EmileeB

Dear Bill & Jim,

The Skype call we made was a success. It was nice to actually talk and ask questions to real scientists. I learned a ton of stuff, I learned that there living organisms that can actually live without having a stomach and a mouth. It is also cool to know that you can control a robot under water from a mile away! But probably the most interesting was the fact that you have a cable that is a mile long! That is just insane! Another thing that I learned is that organisms can actually withstand that intense heat. A question that I have is is that is the axial seamount apart of the ring of fire?

Sincerely,
Desi Hawkins, CJHS student

Dear Bill Chadwick and Jim Holden,

Thank you for spending your time answering our questions. I learned lots of interesting information. I was very surprised when I heard that the Jason robot was as big as a mini van. It was very interesing to hear that the worms inhabited the lava tubes in a month. I heard that europe was developing some of the same technology that you use, so would the volcano that they use become a wired volcano.

Sincerely,
Mia

Dr. Chadwick and Dr. Holden,

Thank you for taking the time to answer the questions from our class. It was an amazing experience to get to talk to live scientists who are in the ocean researching. I learned that shrimp don't have eyes. I thought everyone had eyes. I also learned alot about undersea volcanoes. I didn't know anything about those before. I also learned about Tubeworms and how they live off of bacteria sacks inside of them. I had no idea they could get up to 3 feet long in Mexico? That is also one thing I found interesting. I also found it interesting that there were different crews for a.m. and p.m. shifts. Thats alot of people. You have to be super dedicated to the subject, so My question is did you always love Science or did you develope that passion later in life?

Sincerely,
-Anna Cu.

4.8 Hydrothermal Vent Fluid Temperature Recorders

Miniature temperature recorders (MTRs) are processed by Sharon Walker at NOAA/PMEL/EOI in Seattle, WA. The high-temperature recorders (MISO and HOBO) are processed by Bill Chadwick at OSU/CIMRS in Newport, OR.

Vent / Marker	Instrument	Dive Deployed	Dive Recovered	Comments	Hdg	VV#
RECOVERED						
Anemone vent	MTR 3317	J2-788	**J2-824**	Deployed 2014: little crack left of marker	150	10709
Casper	MISO 104	J2-788	**J2-824**	Deployed 2014: at base of marker	53	5620
Castle	MISO 101	J2-786	**J2-822**	Deployed 2014	21	2259
Marker 113 Vent	MTR 3201	J2-791	**J2-824**	deployed 2014: Mkr 62 not found	11	15031
Mkr-33 Site	MTR 3197	J2-790	**J2-822**	Deployed 2014	239	12271
Trevi	HOBO 153	J2-790	**J2-824**	Deployed 2014. Vent cap here in 2013, so no HOBO then	90	13934
Vixen	MISO 129	J2-788	**J2-824**	deployed 2014	102	5452
DEPLOYED						
Anemone vent	MTR 3043	**J2-824**		In nest of worms to right of flow/sampling site	177	4249
Castle	MISO 141	**J2-822**		In anhyhdrite.	320	1445
Marker 113 Vent	MTR 3173	**J2-824**		In 2015 sampling site.	323	5044
Mkr-33 Site	MTR 3052	**J2-825**		***See comments below***	270	5674
Trevi	MISO 101	**J2-824**		Same location as recovered 2014 HOBO	201	4683
Vixen	MISO 103	**J2-824**		In main orifice of Vixen.	211	5254
Diva	MISO 102	**J2-822**		Top of anhydrite mound; different heading than sampling but same location.	217	1368
Snow drift (NRZ)	MTR 4127	**J2-826**		With Marker 261 where fluids and mat were sampled on 2015 lava	357	6767

Mkr 33 comments: *MTR deployed in orifice sampled on J2-822 with white floc coming out of hole. MTR 3028 was initially deployed on J2-822, but then recovered on J2-825 because it did not have a marker float making it difficult to see. On J2-825, MTR 3052 was deployed with a marker float in the same location described for MTR3028 on J2-822.*

Note: MISO's 130 and 135 were lost during the recovery of dive J2-823

5 - Imagery

1. Automated Video Recordings
1716 clips comprising 1.8 TB

Three 1080i camera streams (brow camera, pilot camera, science camera) were recorded to hard drive---based video files. Raw videos are MPEG Transport Stream (.ts) files compressed (output rate was 6000 kbps) using the h.264 codec. Image resolution is 1920x1080 pixels. These are playable using open source video players such as VLC, mplayer, or totem. Filenames include camera name and start timestamp. Automated clip duration was set at 15 minutes. In addition to the video files, metadata broadcast in real---time on the Jason network was captured to subtitle files (.srt format). There are four subtitle files to choose from, each of which can produce a line of text overlain on the video. A fifth file captures the metadata in timestamped stanzas. Filenames are timestamped simultaneously (within milliseconds) of the video file.

Subtitle file 1: UTC time, real time latitude, real time longitude, heading, depth.
Subtitle file 2: vehicle ID, cruise ID, lowering ID, date
Subtitle file 3: localX, localY, roll, pitch, altitude
Subtitle file 4: origin latitude, origin longitude, UTM zone

These components were merged into a Matroska container file (.mkv). Components are provided in subdirectories.

2. High-Definition video highlights
164 clips comprising 276 GB
Direct---to---hard disk recordings of important moments were made from high definition video. The Jason data processor copied them to hard drives provided by the chief scientist. He also renamed the clips so that they indicate lowering ID, start time, and stop time. A summary listing of the clips is in the Documentation section. The recordings were compressed in real time using the ProRes422 family of codecs. They can be played back on your computer using video player software: examples include QuickTime player and appropriately compiled versions of the open source software VLCplayer. They can be edited using Final Cut or Adobe Premiere. The recording includes time code that is synchronized to the same time reference as the other logging computers in the Jason system. Post---processing guidance is offered in a white paper (Morin, 2010) that is available on the NDSF web site.

> *"HD Stills and Video Enhancement Techniques for the NDSF HD Camera Using Photoshop and Final Cut", M. Morin, http://www.whoi.edu/page.do?pid=51119*

Table 5-1 Video Highlights

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-820	1BTK243	2015/08/17 09:38	2015/08/17 09:41	Scicam	Octopus
J2-820	1BTK244	2015/08/17 09:51	2015/08/17 09:53	Scicam	Transition from old to new lava
J2-820	1BTK245	2015/08/17 09:53	2015/08/17 09:56	PilotCam	Transition from old to new lava and an octopus
J2-820	1BTK246	2015/08/17 11:10	2015/08/17 11:14	SciCam	Collection of J820-Geo-03 from sheet flow
J2-820	1BTK247	2015/08/17 11:56	2015/08/17 11:58	SciCam	Two worms in jumbled 2015 lava w/ white filamentous bacterial mat
J2-820	1BTK248	2015/08/17 12:03	2015/08/17 12:04	SciCam	New worm? Looks like a cross between palm worm and sulfide worm
J2-820	1BTK249	2015/08/17 13:36	2015/08/17 13:39	SciCam	Fissure – South of waypoint 5
J2-820	1BTK250				throwaway clip
J2-822	1BTK251	2015/08/20 23:14	2015/08/20 23:16	SciCam	Launch and Submersion
J2-822	1BTK252	2015/08/20 00:54	2015/08/20 00:58	SciCam	Marker 33 Vent, temperature probing
J2-822	1BTK253	2015/08/20 01:11	2015/08/20 01:17	SciCam	Looking around Marker 33 Vent
J2-822	1BTK254	2015/08/20 04:59	2015/08/20 05:51	SciCam	Looking at top of El Guapo
J2-822	1btk255	2015/08/20 05:02	2015/08/20 05:02	SciCam	Still at El Guapo
J2-822	1BTK256	2015/08/20 05:35	2015/02/20 05:38	SciCam	Sampling El Guapo with HFS, note worms around vent
J2-822	1BTK257	2015/08/20 06:14	2015/02/20 06:15	SciCam	Sampling Diva
J2-822	1BTK258	2015/08/20 06:27	2015/02/20 06:28	SciCam	Measuring Diva with Hobo #102
J2-822	1BTK259	2015/08/20 07:04	2015/08/20 07:06	SciCam	Castle Vent, measuring temp
J2-822	1BTK260	2015/08/20 07:08	2015/08/20 07:09	SciCam	Flushing HFS pump at Castle
J2-822	1BTK261	2015/08/20 07:14	2015/08/20 07:16	SciCam	Sampling HFS, piston #4 at Castle
J2-822	1BTK262	2015/08/20 07:24	2015/08/20 07:25	SciCam	sampling HFS, GTB Red #9 at Castle
J2-822	1BTK263	2015/08/20 07:30	2015/08/20 07:33	SciCam	deployment of HOBO 141 at Castle, first arm
J2-822	1BTK264	2015/08/20 07:34	2015/08/20 07:36	SciCam	deployment of HOBO 141 at Castle, second arm

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-822	1BTK265	2015/08/20 07:46	2015/08/20 07:48	SciCam	arriving at El Gordo and looking at instruments
J2-822	1BTK266	2015/08/20 10:37	2015/08/20 10:40	SciCam	contact zone between 2015 and older flow near Waypoint #1
J2-822	1BTK267	2015/08/20 10:57	2015/08/20 11:02	SciCam	sample GEO 20 contact West of Waypoint 1
J2-822	1BTK268	2015/08/20 11:28	2015/08/20 11:30	SciCam	2015 Exploded Lobes
J2-822	1BTK269	2015/08/20 11:54	2015/08/20 11:55	SciCam	Contact
J2-822	1BTK270	2015/08/20 11:59	2015/08/21 12:02	SciCam	Traversing edge of the flow
J2-822	1BTK271	2015/08/21 12:10	2015/08/21 12:12	SciCam	attempt at sample, abort due to crumbling
J2-822	1BTK272	2015/08/21 12:15	2015/08/21 12:19	SciCam	Sample GEO-21
J2-822	1BTK273	2015/08/21 12:45	2015/08/21 12:50	SciCam	Western Edge of flow
J2-822	1BTK274	2015/08/21 13:04	2015/08/21 13:06	SciCam	Pillars and Shelf at eastern channel edge
J2-822	1BTK275	2015/08/21 13:10	2015/08/21 13:12	SciCam	Lava pillars
J2-822	1BTK276	2015/08/21 13:13	2015/08/21 13:14	SciCam	Lava pillars continued
J2-822	1BTK277	2015/08/21 13:20	2015/08/21 13:21	SciCam	Pillars and Roof
J2-822	1BTK278	2015/08/21 13:24	2015/08/21 13:29	SciCam	Contact and Skylight; Sample GEO-22
J2-822	1BTK279	2015/08/21 14:01	2015/08/21 14:02	SciCam	Crab!
J2-822	1BTK280	2015/08/21 14:18	2015/08/21 14:20	SciCam	lava pillars and mat
J2-822	1BTK281	2015/08/21 15:24	2015/08/21 15:28	SciCam	dropped a weight
J2-822	1BTK282	2015/08/21 15:42	2015/08/21 15:44	SciCam	Landed, looking at lavas that Begum landed on, jelly!
J2-822	1BTK283	2015/08/21 15:47	2015/08/21 15:51	SciCam	Begum picking up rock, rock is really crumbly, falls apart when touched
J2-822	1BTK284	2015/08/21 16:11	2015/08/21 16:12	SciCam	Island of old lavas surrounded by new lava
J2-822	1BTK285	2015/08/21 16:31	2015/08/21 16:33	SciCam	Old lava contact new lava
J2-822	1BTK286	2015/08/21 17:05	2015/08/21 17:06	SciCam	Several areas of new and old lava contact
J2-822	1BTK287	2015/08/21 17:26	2015/08/21 17:27	SciCam	Sediment covered new lobate flow

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-822	1BTK288	2015/08/21 17:42	2015/08/21 17:42	SciCam	Accidentally hit record before sampling.
J2-822	1BTK289	2015/08/21 17:47	2015/08/21 17:49	SciCam	Heavily microbial-mat coated and sedimented new lobate flow sample, GEO-24 at Wp 5
J2-822	1BTK290	2015/08/21 18:14	2015/08/21 18:16	SciCam	Contact between old and new flow. Heading northeast along contact
J2-822	1BTK291	2015/08/21 18:16	2015/08/21 18:23	PilotCam	Contact between old and new flow. Heading northeast along contact
J2-822	1BTK292	2015/08/21 21:21	2015/08/21 21:28	SciCam	T&S vent in CASM field
J2-822	1BTK293	2015/08/21 21:28	2015/08/21 21:31	SupScorpio	Sampling T&S vent with Major
J2-822	1BTK294	2015/08/21 21:31	2015/08/21 21:35	PilotCam	Sampling T&S vent with Major
	1BTK295				throwaway clip
J2-823	1BTK296	2015/08/22 15:07	2015/08/22 15:11	SciCam	Jason launch
J2-823	1BTK297	2015/08/22 16:38	2015/08/22 16:41	SciCam	Deploying miniBPR #13 blue/black at AX-105 benchmark
J2-823	1BTK298	2015/08/22 16:42	2015/08/22 16:47	SciCam	Pressure recorder at AX-105 benchmark
J2-823	1BTK299	2015/08/22 20:58	2015/08/22 20:13	SciCam	Pressure recorder at AX-104 (Mkr-65) benchmark
J2-823	1BTK300	2015/08/23 01:07	2015/08/23 01:13	SciCam	Pressure recorder at AX-303 (Mkr-66) benchmark
J2-823	1BTK301	2015/08/23 02:36	2015/08/23 02:40	SciCam	Pressure recorder at AX-309 (Mkr-130) benchmark
J2-823	1BTK302				throwaway clip
J2-823	1Btk303				throwaway clip
J2-823	1btk304	2015/08/23 04:22	2015/08/23 04:26	SciCam	Benchmark AX-302 (mkr63); place P recorder
J2-823	1btk305	2015/08/23 04:48	2015/08/23 04:52	SciCam	Installing mini-BPR at AX-302 (yellow)
J2-823	1BTK306	2015/08/23 06:52	2015/08/23 06:54	SciCam	Benchmark AX 101, starting P recorder placement
J2-823	1BTK307	2015/08/23 10:21	2015/08/23 10:24	SciCam	Copepod vs. brittlestar
J2-823	1BTK308	2015/08/23 11:06	2015/08/23 11:08	SciCam	SCPR
J2-823	1BTK309	2015/08/23 11:18	2015/08/23 11:20	SciCam	Leaving bottom, observing SCPR mooring float
J2-823	1BTK310	2015/08/23 13:03	2015/08/23 13:05	SciCam	Approaching AX-308

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-823	1BTK311	2015/08/23 13:34	2015/08/23 13:37	SciCam	Mini BPR #8 placement at AX-306 and departure
	1BTK312				throwaway clip
J2-823	1BTK313	2015/08/23 15:52	2015/08/23 15:54	SciCam	Second pressure recorder at AX-106 benchmark
J2-823	1BTK314	2015/08/23 20:02	2015/08/23 20:03	SciCam	J2-823-GEO-1, suction sample of “ash” at AX-101 benchmark
J2-823	1BTK315	2015/08/23 20:03	2015/08/23 20:05	SciCam	More J2-823-GEO-1, suction sample of “ash” at AX-101 benchmark
J2-823	1BTK316	2015/08/24 01:51	2015/08/24 01:53	SciCam	Rat Tail investigating BPR
J2-823	1BTK317	2015/08/24 03:21	2015/08/24 03:24	SciCam	Placing, measuring MPR at AX309
J2-823	1BTK318	2015/08/24 05:03	2015/08/24 05:11	SciCam	Placing blue Mini BPR; placing, measuring MPR at AX303
J2-823	1BTK319	2015/08/24 06:41	2015/08/24 06:46	SciCam	Placing and recording MPR at AX 310
J2-824	1BTK320	2015/08/24 19:06	2015/08/24 19:09	BrowCam	Jason launch J2-824
J2-824	1BTK321	2015/08/24 21:27	2015/08/24 21:33	SciCam	Inferno
J2-824	1BTK322	2015/08/24 21:14	2015/08/25 21:15	SciCam	Approaching Virgin
J2-824	1BTK323	2015/08/25 22:18	2015/08/01 22:20	SciCam	Virgin
J2-824	1BTK324	2015/08/24 22:23	2015/08/01 22:25	SciCam	Virgin Take 2.
J2-824	1BTK325	2015/08/24 22:46	2015/08/24 22:48	SciCam	Virgin vent before sampling
J2-824	1BTK326	2015/08/24 22:52	2015/08/24 22:53	SciCam	HFS sample at Virgin vent
J2-824	1BTK327	2015/08/24 23:03	2015/08/24 23:05	SciCam	GTB sample at Virgin
J2-824	1BTK328	2015/08/24 23:12	2015/08/24 23:13	SciCam	Phoenix
J2-824	1BTK329	2015/08/24 23:15	2015/08/24 23:17	SciCam	Anemone
J2-824	1BTK330	2015/08/24 23:19	2015/08/24 23:19	SciCam	Jason temperature in chimlet at Anemone
J2-824	1BTK331	2015/08/24 23:44	2015/08/24 23:46	SciCam	HFS sampling at Anemone
J2-824	1BTK332	2015/08/25 00:16	2015/08/25 00:17	SciCam	Placing the MTR 3043 at Anemone
J2-824	1BTK333	2015/08/25 00:22	2015/08/25 00:23	SciCam	Leaving Anemone

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-824	1BTK334	2015/08/25 00:50	2015/08/25 00:51	SciCam	MPR placement at AX-106
J2-824	1BTK335	2015/08/25 04:12	2015/08/25 04:17	SciCam	Placing MPR at AX-307 (also says Mkr 127)
J2-824	1BTK336	2015/08/25 05:57	2015/08/25 06:11	SciCam	Placing MPR recording at AX 101
J2-824	1BTK337	2015/08/25 08:15	2015/08/25 08:16	SciCam	Placing MPR recording at AX 302
J2-824	1BTK338	2015/08/25 08:41	2015/08/25 08:44	SciCam	Spanish Steps over to Trevi
J2-824	1BTK339	2015/08/25 09:16	2015/08/25 09:19	SciCam	Spanish Steps fly by
J2-824	1BTK340	2015/08/25 11:01	2015/08/25 11:02	SciCam	AX-303 MPR placement
J2-824	1BTK341	2015/08/25 12:57	2015/08/25 12:59	SciCam	AX-308 MPR placement
J2-824	1BTK342	2015/08/25 14:49	2015/08/25 14:51	SciCam	Arriving at Mkr 113 vent site
J2-824	1BTK343	2015/08/25 15:00	2015/08/25 15:03	SciCam	HFS sample at Mkr 113 vent site
J2-824	1BTK344	2015/08/25 15:14	2015/08/25 15:15	SciCam	Worms and other life at Mkr113 vent site
J2-824	1BTK345	2015/08/25 15:24	2015/08/25 15:26	SciCam	Clam beds at Mkr113.
J2-824	1BTK346	2015/08/25 15:56	2015/08/25 15:57	SciCam	More worms and diffuse flow at Mkr 113
J2-824	1BTK347	2015/08/25 16:00	2015/08/25 16:02	SciCam	Anemone at Mkr 113
J2-824	1BTK348	2015/08/25 16:52	2015/08/25 16:53	SciCam	Overview of Mkr113 to compare to previous years (short clip)
J2-824	1BTK349	2015/08/25 17:06	2015/08/25 17:09	SciCam	Overview of Mkr113 to compare to previous years (good clip)
J2-824	1BTK350	2015/08/25 17:55	2015/08/25 17:55	SciCam	Crab with Brittlestars
J2-824	1BTK351	2015/08/25 18:01	2015/08/25 18:04	SciCam	Vixen smoker with HOBO Mkr 129
J2-824	1BTK352	2015/08/25 18:15	2015/08/25 18:17	SciCam	J2-824-GTB 21 (green/red #?) sample at Vixen
J2-824	1BTK353	2015/08/25 18:19	2015/08/25 18:20	SciCam	HFS sample at Vixen
J2-824	1BTK354	2015/08/25 18:30	2015/08/25 18:32	SciCam	Deploying HOBO at Vixen
J2-824	1BTK355	2015/08/25 18:42	2015/08/25 18:43	SciCam	Vigorous flow at Vixen
J2-824	1BTK356	2015/08/25 18:47	2015/08/25 18:48	SciCam	Arrival at Casper, Chimney

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-824	1BTK357	2015/08/25 18:50	2015/08/25 18:52	SciCam	Recovering HOBO MIS0-104
J2-824	1BTK358	2015/08/25 18:54	2015/08/25 18:55	SciCam	Temperature probe and flow at Casper, T=298.0
J2-824	1BTK359	2015/08/26 02:01	2015/08/26 02:06	SciCam	Benchmark at South Pillow Mound.
	1BTK360				throwaway clip
J2-825	1BTK361	2015/08/26 16:33	2015/08/26 16:35	SciCam	Beast Temp Probe at Marker 33 vent
J2-825	1BTK362	2015/08/26 18:28	2015/08/26 18:32	SciCam	Beast wand at mkr-33 (166) HFS sampling
J2-825	1BTK363	2015/08/26 18:41	2015/08/26 18:43	SciCam	Floc from vent at mkr- 33 vent while sampling (HFS8)
J2-825	1BTK364	2015/08/26 20:16	2015/08/26 20:17	SciCam	Boca flyby
J2-825	1BTK365	2015/08/26 07:28	2015/08/15 07:32	SciCam	New lava contact
J2-825	1BTK366	2015/08/26 07:36	2015/08/26 07:36	SciCam	Kelp-like thing
J2-825	1BTK367	2015/08/26 08:00	2015/08/26 08:03	SciCam	Contact with new lava again
J2-825	1BTK368	2015/08/26 09:49	2015/08/26 09:50	SciCam	Contact with new lava again
J2-825	1BTK369	2015/08/26 11:02	2015/08/26 11:05	SciCam	Jason recovery (at night) – at the surface still in the water
J2-825	1BTK370	2015/08/26 11:08	2015/08/26 11:10	SciCam	Jason recovery (at night) – but powered off too soon!
J2-826	1BTK371	2015/08/27 19:34	2015/08/27 19:39	SciCam	Jason launch J2-826
J2-826	1BTK372	2015/08/27 21:09	2015/08/27 21:10	SciCam	Marker 294 highlight
J2-826	1BTK373	2015/08/27 21:21	2015/08/27 21:23	SciCam	Installing RAS
J2-826	1BTK374	2015/08/27 22:35	2015/08/27 21:38	SciCam	Installing RAS – 2 (imploded bottle)
J2-826	1BTK375	2015/08/27 22:58	2015/08/27 23:00	SciCam	White floc
J2-826	1BTK376	2015/08/27 23:23	2015/08/27 23:24	SciCam	Leaving RAS deployment site, headed to WPT 5
J2-826	1BTK377	2015/08/27 23:27	2015/08/27 23:32	SciCam	transiting to waypoint 5, venting, tubeworms
J2-826	1BTK378	2015/08/27 23:32	2015/08/27 23:35	SciCam	Fissure – South of waypoint 5
J2-826	1BTK379	2015/08/27 23:45	2015/08/27 23:47	SciCam	End of fissure, some venting

Dive Number	KiPro HD recorder name	Start time (log)	End time (log)	Camera Source (BrowCam, SciCam, PilCam,SupScorp)	Notes of Activity or Feature in Clip
J2-826	1BTK380	2015/08/27 23:49	2015/08/27 23:51	SciCam	Small fissure
J2-826	1BTK381	2015/08/28 00:00	2015/08/28 00:09	SciCam	Thick bacterial mat with venting
J2-826	1BTK382	2015/08/28 00:20	2015/08/28 00:23	SciCam	Suctioning bacterial mat from 2015 flow near waypoint 5
J2-826	1BTK383	2015/08/28 00:34	2015/08/28 00:36	SciCam	Unfiltered Piston #2 sample from 2015 flow near wpt. 5
J2-826	1BTK384				throwaway clip
J2-826	1BTK385	2015/08/28 01:31	2015/08/28 01:33	SciCam	Transiting to waypoint 6
J2-826	1BTK386	2015/08/28 01:40	2015/08/28 01:42	SciCam	Attempting j826-GEO -13 sample
J2-826	1BTK387	2015/08/28 02:12	2015/08/28 02:16	SciCam	Jumbled 2015 lava flow
J2-826	1BTK388	2015/08/28 02:29	2015/08/28 02:33	SciCam	Geo sample attempt. 25 meters S-SE of wpt 7
J2-826	1BTK389	2015/08/28 03:15	2015/08/28 03:18	SciCam	J2-826-GEO-15, small pillow near wpt 8
J2-826	1BTK390	2015/08/28 03:27	2015/08/28 03:28	SciCam	Contact between 2015 lava and old lava
J2-826	1BTK391	2015/08/28 03:41	2015/08/28 03:41	SciCam	Quick clip from old to new contact
J2-826	1BTK392	2015/08/28 03:52	2015/08/29 03:52	SciCam	J2-826-GEO-16, round lava bud from base of pillow near wpt 10
J2-826	1BTK393	2015/08/28 04:08	2015/08/28 04:10	SciCam	Thick microbial mat on new flow
J2-826	1BTK394	2015/08/28 04:11	2015/08/28 04:13	SciCam	Bright white areas of mat with shimmering water venting
J2-826	1BTK395	2015/08/28 04:30	2015/08/28 04:31	SciCam	Same vent but from broader view
J2-826	1BTK396	2015/08/28 04:32	2015/08/28 04:34	SciCam	Close-up of white flocs coming off of vent
J2-826	1BTK397	2015/08/28 04:38	2015/08/28 04:39	SciCam	J2-826-HFS-17 sampling. Unfiltered piston #4
J2-826	1BTK398	2015/08/28 04:50	2015/08/28 04:51	SciCam	J2-826-major-18, Red
J2-826	1BTK399	2015/08/28 04:53	2015/08/28 04:55	SciCam	Rock sample at new vent, too big, threw away
J2-826	1BTK400	2015/08/28 04:57	2015/08/28 04:59	SciCam	J2-826-GEO-19, small rock sample near new vent
J2-826	1BTK401	2015/08/28 05:14	2015/08/28 05:15	SciCam	Flyover at WPT 11
J2-826	1TBK402	2015/08/28 05:42	2015/08/28 05:43	SciCam	J2-826-GEO-20, pillow broke into two pieces in basket

6 – JASON

Compiled by Andra Bobbitt, OSU CIMRS

6.1 Jason Dive Statistics:

Dive	Start/Launch	Start Data	End Data	End/On Deck	Line/Area/Site	Data Time (Hrs:Mns)	Bottom Time (Hrs:Mns)
J2-820	2015/08/17 07:10	2015/08/17 08:20	2015/08/17 14:02	2015/08/17 15:41	North Rift Zone	5:42	8:31
J2-821	2015/08/18 00:46	2015/08/18 02:01	2015/08/18 02:07	2015/08/18 03:23	North Rift Zone	0:06	2:37
J2-822	2015/08/20 23:15	2015/08/21 00:41	2015/08/21 21:35	2015/08/21 23:04	M33-International District	20:54	23:49
J2-823	2015/08/22 15:08	2015/08/22 16:24	2015/08/24 09:06	2015/08/24 11:07	Benchmark Pressure Readings	40:42	43:59
J2-824	2015/08/24 19:08	2015/08/24 21:15	2015/08/26 02:27	2015/08/26 03:31	Benchmark Pressure Readings	29:12	32:23
J2-825	2015/08/26 15:05	2015/08/26 16:15	2015/08/27 09:58	2015/08/27 11:11	M33 vent- Boca vent - North Caldera	17:43	20:06
J2-826	2015/08/27 19:37	2015/08/27 20:48	2015/08/28 05:52	2015/08/28 07:06	North Rift Zone	9:04	11:29
					TOTAL:	123:23	142:54

6.2 Jason Dive Summaries

DIVE J2-820 North Rift Zone

Main goals: Rock sampling and fluid sampling on the new lava flows

Samples:
8 total; 4 geology; 2 fluid; 2 gas

Tasks Accomplished:
1) Explored North Rift Zone 2015 lava flow. Dive started just south of the southern of the two thick NRZ lava flows and traversed from south to north along the apparent eruptive fissure, from waypoints 1-4. Documented various thicknesses of the flow and some contacts between old/new lavas. Went to the summit of the thickest lava mound in this portion of the 2015 flow. Observed eruptive mat, glassy flows but no hydrothermal flow.
2) Sampled lavas and venting fluids spatially distributed along eruptive fissure during traverse from south to north.

DIVE J2-822 Fluid Sampling at Mkr-33 Site and International District & Sampling 2015 Flows

Main goals: (1) Fill Beast incubator at Marker33 site; (2) Sample fluids at International District vents; (3) Sample 2015 lava flows in NE Caldera

Samples:
26 total; 17 fluid; 6 geology; 3 gas

Tasks Accomplished:
1) Filled Beast incubator, 4 samples, at Marker 33 Site (Mkr-166), then large-volume-bag and 5 other fluid samples.
2) At Marker 33 Site, Recovered MTR 3197; Deployed MTR 3028

3) Transit to International District with bottom in site but at high speed, no stopping.
4) Sampled vent fluids at these International District vents:
El Guapo (1 GTB, 1 Major, 2 HFS), Diva (1 GTB, 2 HFS), Castle (1 GTB, 1 HFS)
5) Deployed HOBO 102 at Diva vent
6) At Castle vent, recovered HOBO 101 and deployed HOBO 141
7) Examined El Gordo with RAS and other OOI instruments.
8) Transited in water column to NE Caldera 2015 lava flow area (WP1), began at old/new contact.
9) Collected 6 rock samples of 2015 lava flows in NE Caldera during transit through waypoints 1-6.
10) No observable hydrothermal venting in the new lavas.
11) Deployed Mkr-246 and Mkr-275 near waypoint #5 and at J822-Geo-24 sample site; deployed markers 240, 242 and 260 at J822-Geo-25 sample site for ROV weight management, not navigation purposes.
12) At CASM, observed Shepherd and T&S vent areas and took one major sample at T&S.

DIVE J2-823 Benchmark Pressure Measurements

Main goals: (1) Made pressure measurements at seafloor benchmarks and transited in the water column between sites; making 2 transects and will collect Reson multibeam at 100 m altitude during transits of the 1st transect; (2) Deployed 6 mini-BPRs (5 lbs. each) at selected benchmarks; (3) Attempt to release and recover the SCPR mooring, (4) Sample vent fluids at selected sites on the last pressure transect, (5) Recover & deploy HOBO and MTR temp probes

Samples:
2 total; 2 geology

Tasks Accomplished:
1) Pressure measurements at seafloor benchmarks. Almost two transects in the order in the table below (S->N, then N->S, with last measurement at AX-104)) before Jason hydraulic leak.
2) Deployed mini-BPRs at AX-105, AX-303, AX-302, AX-307, AX-106, and AX-308
3) Sampled some dust off the AX-101 benchmark with suction sampler, speculating the particles were ash from the eruption.
4) Collected multibeam sonar @ 100 m altitude during transits of 1st transect.
5) Successfully communicated with SCPR at close range and released mooring to surface
6) Took one geology sample near AX-309 benchmark for ballast.

DIVE J2-824 Finish Pressure Measurements & Fluid Sampling

Main goals: (1) Finish pressure measurements at seafloor benchmarks; (2) Sample vent fluids at selected sites, (3) Recover & deploy HOBO and MTR temp probes.

Samples:
24 total: 21 fluid; 3 gas.

Tasks Accomplished:
1) ASHES: Sampled fluids at Inferno (3 HFS), Virgin (2 HFS, 1 GTB), and Anemone (3 HFS). Recovered MTR 3317 and deployed MTR 3043 at Anemone.
2) Pressure measurements: AX-106, AX-308, AX-307, AX-101, AX-302.
3) Trevi: Recovered HOBO 153; Sampled 2 HFS and one GTB; Deployed HOBO-101; Viewed Spanish Steps.
4) Pressure measurement: AX-303, AX-308
5) Mkr 113 Vent: Sampled 8 HFS. Deployed MTR 3173 and recovered MTR 3201.
6) Vixen: Recovered MISO 129. 2 HFS and one GTB sampled; Deployed HOBO 103.
7) Casper: Recovered MISO 104. One HFS
8) Pressure measurement: AX-104, AX-105.

DIVE J2-825 Incubator sample at Mkr-33 Site and North Rim exploration

Main goals: (1) Fill Beast incubator at Marker 33, (2) Visit Boca vent, (3) Transit to BPR-Center, release and recover, (4) Transit to north caldera rim explore for hydrothermal vents and sample 2015 lava flows

Samples:
17 total: 9 HFS and 8 geology.

Tasks Accomplished:
1) Mkr-33 Vent site: Filled Beast incubator (4), LVB and 3 other HFS samples. Deployed MTR 3052 and recovered MTR 3028 (replaced MTR deployed on J2-823 which didn't have a float and was difficult to see)
2) Boca: took temperature reading only, no sampling.
3) Transited to BPR-Center and waited while deploying Sentry.
4) Release and recover BPR-Center.
5) Transited to North Caldera Rim Waypoints
6) Collected 8 rock samples from 2015 lava flows.

DIVE J2-826 North Rift Zone 2015 Lava Flows

Main goals: Rock sampling and fluid sampling on the 2015 lava flows

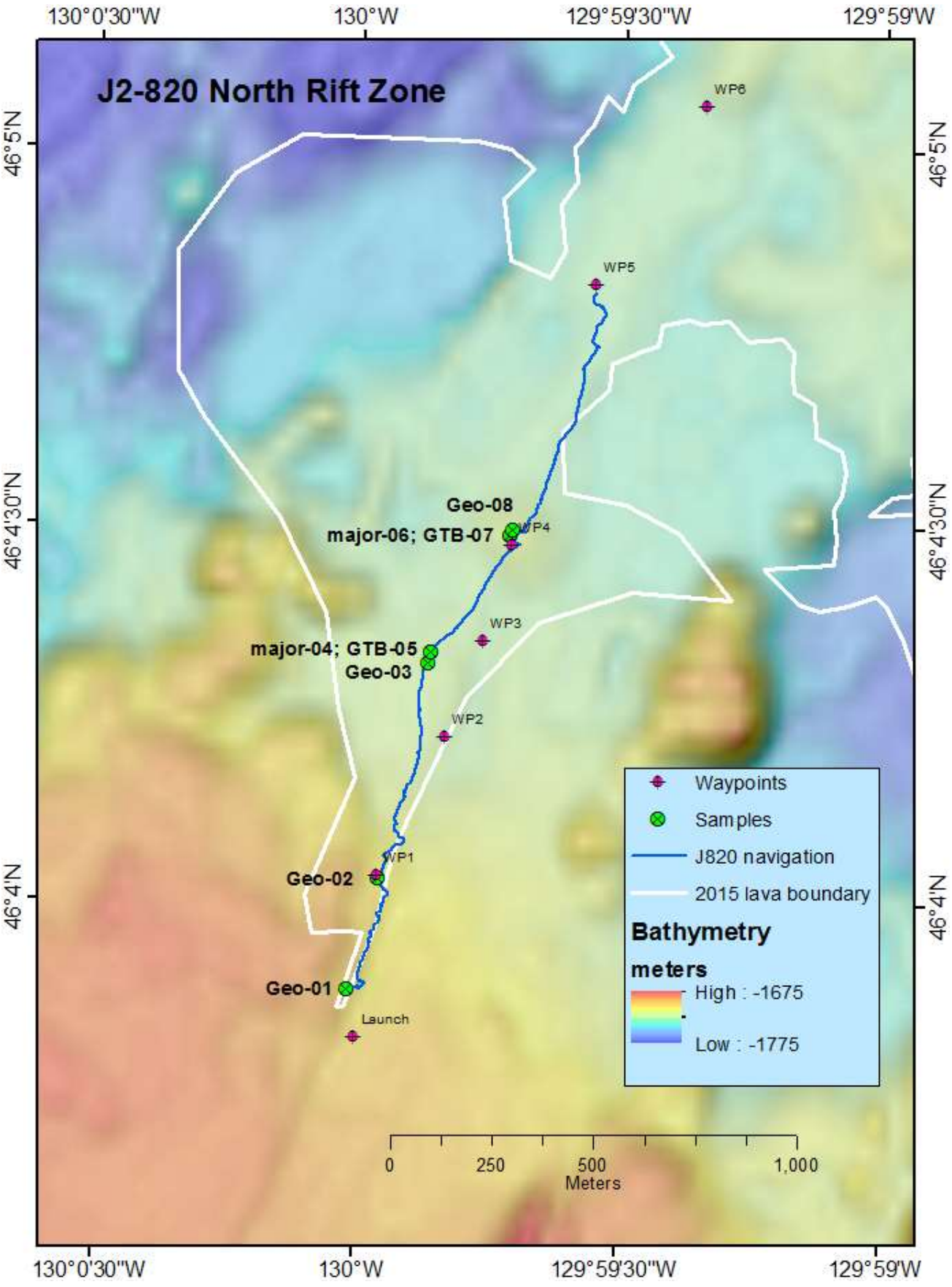
Samples:
20 total: 11 HFS, 7 geology, 1 gas, 1 biology

Tasks Accomplished:
1) Deployed Mkr-294 at RAS deployment site on, previously sampled on J2-820.
2) Took samples at the RAS/Mkr-294 site. Repositioned the RAS from its deployment site to the Mkr-294 location.
3) Explored North Rift Zone 2015 lava flows from RAS site heading toward WP-5. Dive is resuming where J2-820 left off (WP4) on the southern of the two thick NRZ lava flows. Traversed from south to north along the apparent eruptive fissure (WP-9 was eliminated from the transit).
4) Sampled orange bacterial mat, fluids and lava just before reaching WP-5. Deployed Mkr-261 in thick mat site, named Snowdrift.
5) Continued lava sampling near waypoints distributed along eruptive fissure during traverse from south to north.
6) Sampled lava and fluids at site emitting floc with shimmering water in lava mound, near WP-11.
7) Finished dive just before WP-12 with a lava sample.

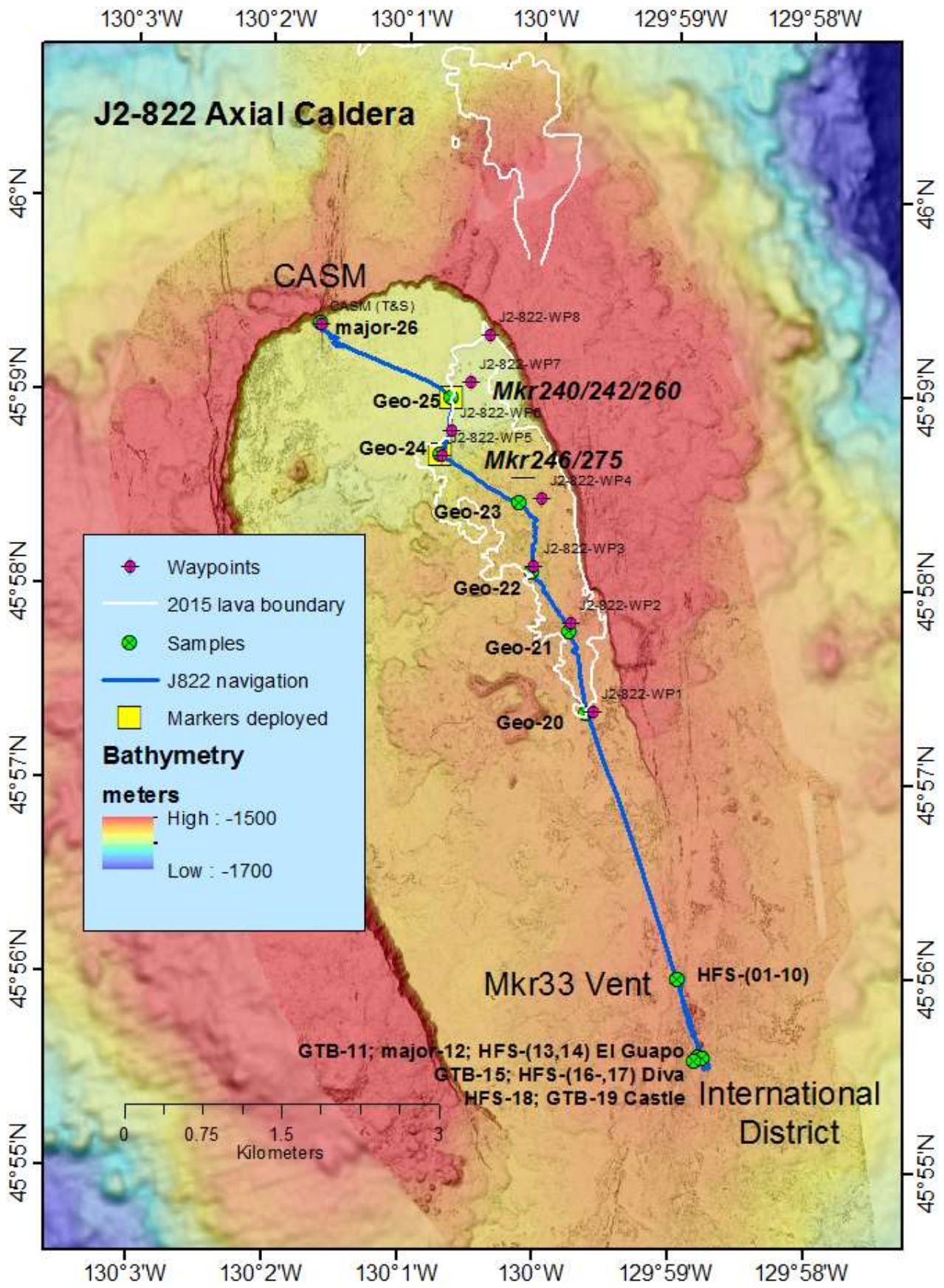
6.3 Dive Maps

Bathymetry data on the dive maps was provided by MBARI and is a compilation of AUV bathymetric data collected through 2011 unless otherwise indicated. Dive navigation data were provided at sea by WHOI JASON group utilizing USBL navigation data post-processed using the WHOI renav process which combines the USBL data and Doppler positioning information. Vent and marker positions have been compiled by the PMEL EOI group for numerous years based on the best information available from bathymetry and site visits spanning many years and vehicles. Sample positions were taken from the best observed position from JASON while sitting in one place during the dive (cursor position provided by the Jason navigator) for most sampling sites (see the sample tables). Maps are displayed with a UTM zone 9 projection using ArcMap GIS. Mooring positions are drop positions, except for the OBH mooring which was surveyed using the WorkBoat software, and except for the RAS mooring which was repositioned on the seafloor by Jason.

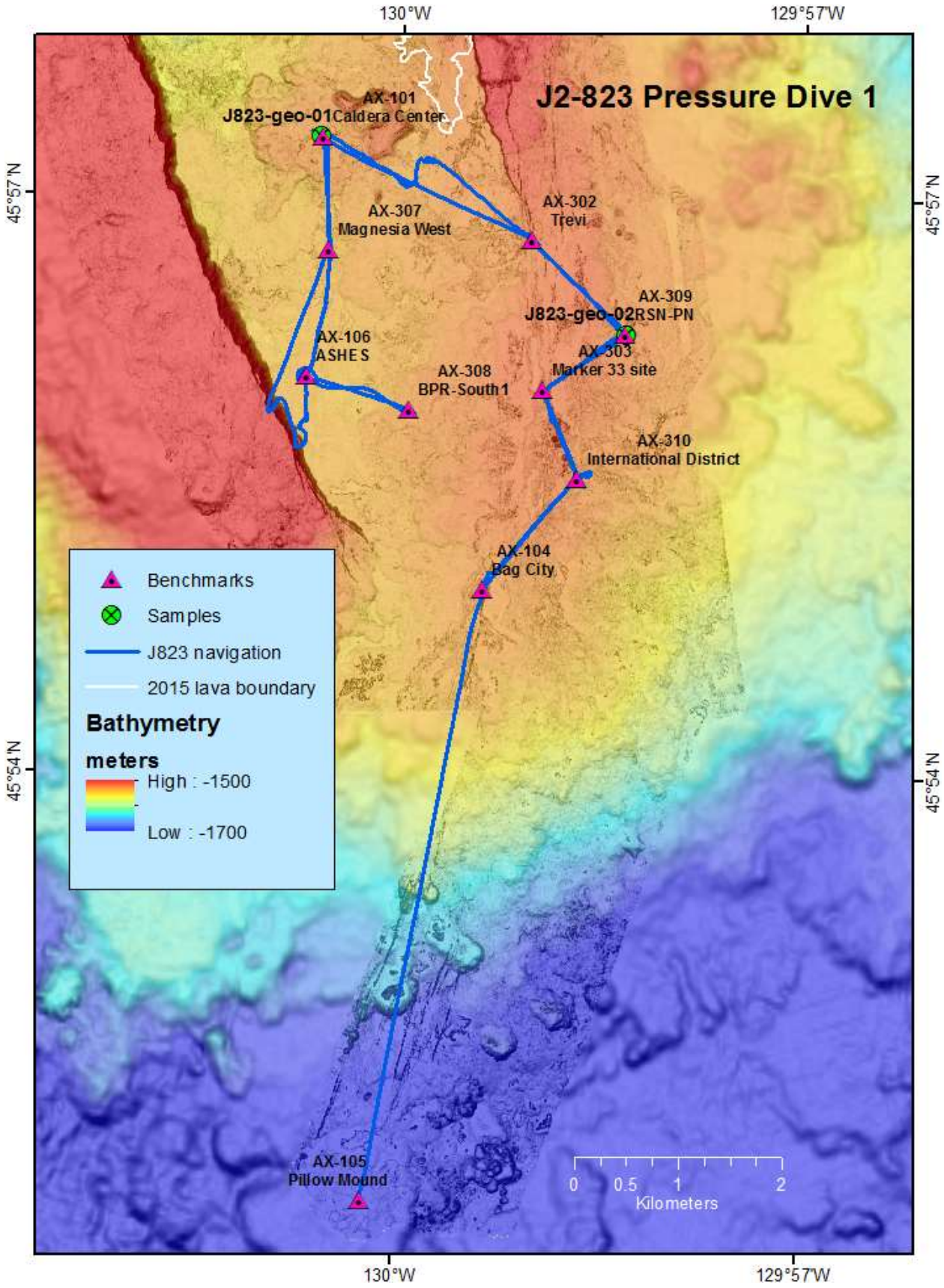
6.3.1 J2-820


J2-820 North Rift Zone
130°0'30"W
130°W
129°59'30"W
129°59'W
46°5'N
46°4'30"N
46°4'N
WP6
WP5
WP4
WP3
WP2
WP1
Launch
Geo-08
major-06; GTB-07
major-04; GTB-05
Geo-03
Geo-02
Geo-01
Waypoints
Samples
J820 navigation
2015 lava boundary
Bathymetry
meters
High : -1675
Low : -1775
0
250
500
1,000
Meters

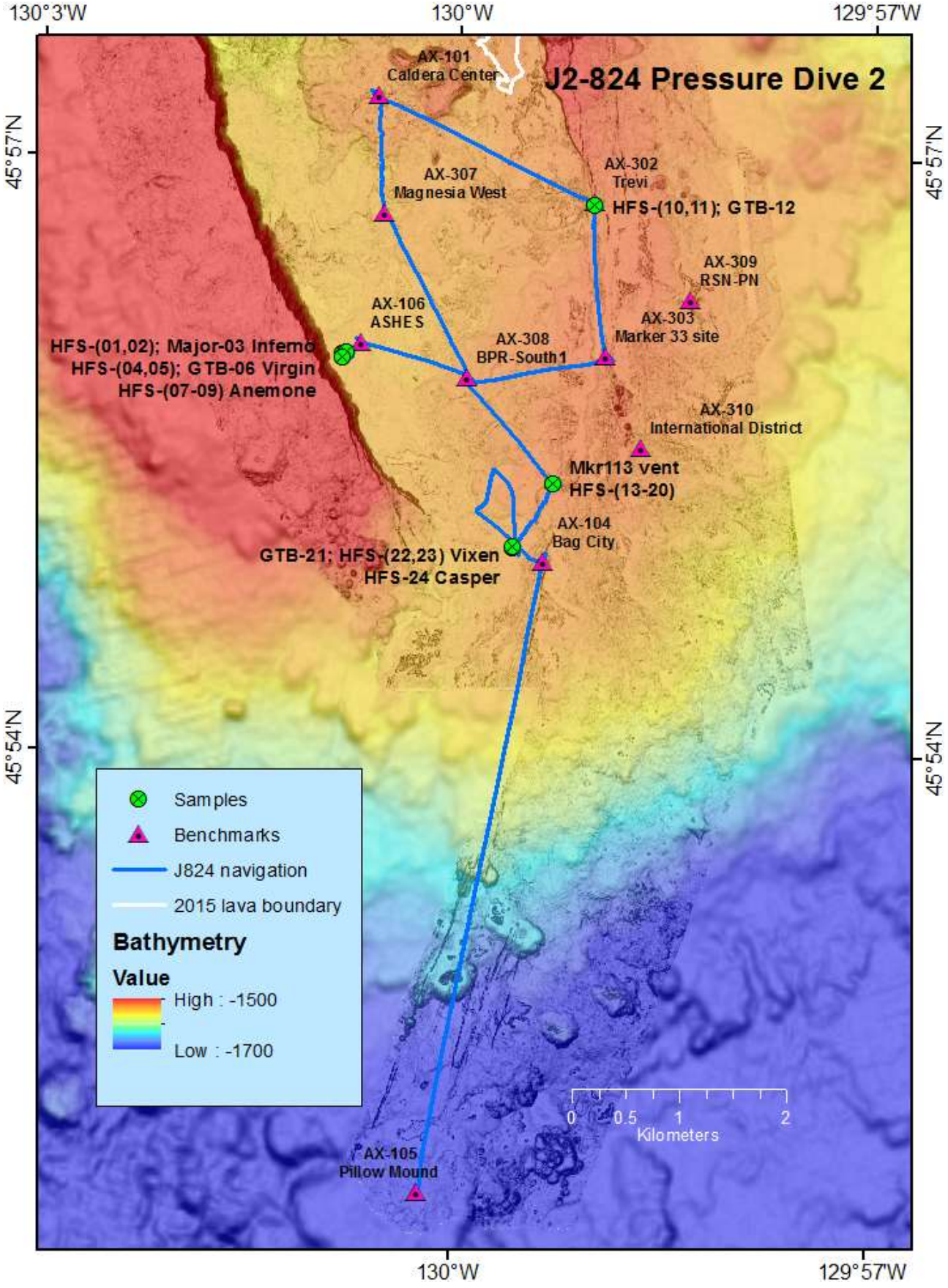
6.3.2 J2-822


J2-822 Axial Caldera
CASM
CASM (T&S)
major-26
J2-822-WP8
J2-822-WP7
Mkr240/242/260
Geo-25
J2-822-WP6
J2-822-WP5
Geo-24
Mkr246/275
J2-822-WP4
Geo-23
J2-822-WP3
Geo-22
J2-822-WP2
Geo-21
J2-822-WP1
Geo-20
Waypoints
2015 lava boundary
Samples
J822 navigation
Markers deployed
Bathymetry
meters
High : -1500
Low : -1700
Mkr33 Vent
HFS-(01-10)
GTB-11; major-12; HFS-(13,14) El Guapo
GTB-15; HFS-(16-,17) Diva
HFS-18; GTB-19 Castle
International District
0
0.75
1.5
3
Kilometers
130°3'W
130°2'W
130°1'W
130°W
129°59'W
129°58'W
46°N
45°59'N
45°58'N
45°57'N
45°56'N
45°55'N

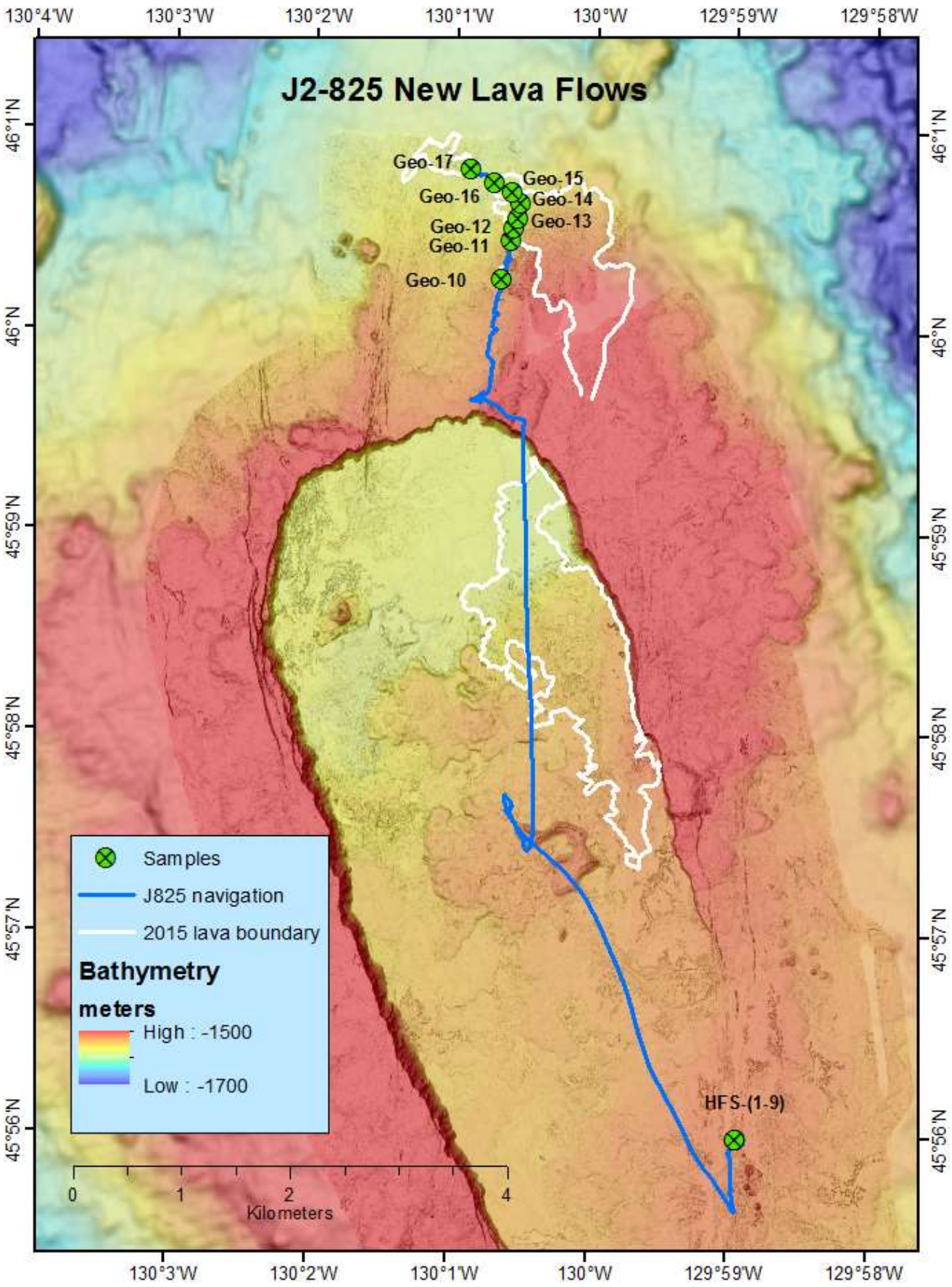
6.3.3 J2-823


J2-823 Pressure Dive 1
130°W
129°57'W
45°57'N
45°54'N
AX-101
J823-geo-01Caldera Center
AX-307
Magnesia West
AX-302
Trevi
AX-309
J823-geo-02RSN-PN
AX-106
ASHES
AX-303
Marker 33 site
AX-308
BPR-South1
AX-310
International District
AX-104
Bag City
AX-105
Pillow Mound
Benchmarks
Samples
J823 navigation
2015 lava boundary
Bathymetry
meters
High : -1500
Low : -1700
0
0.5
1
2
Kilometers

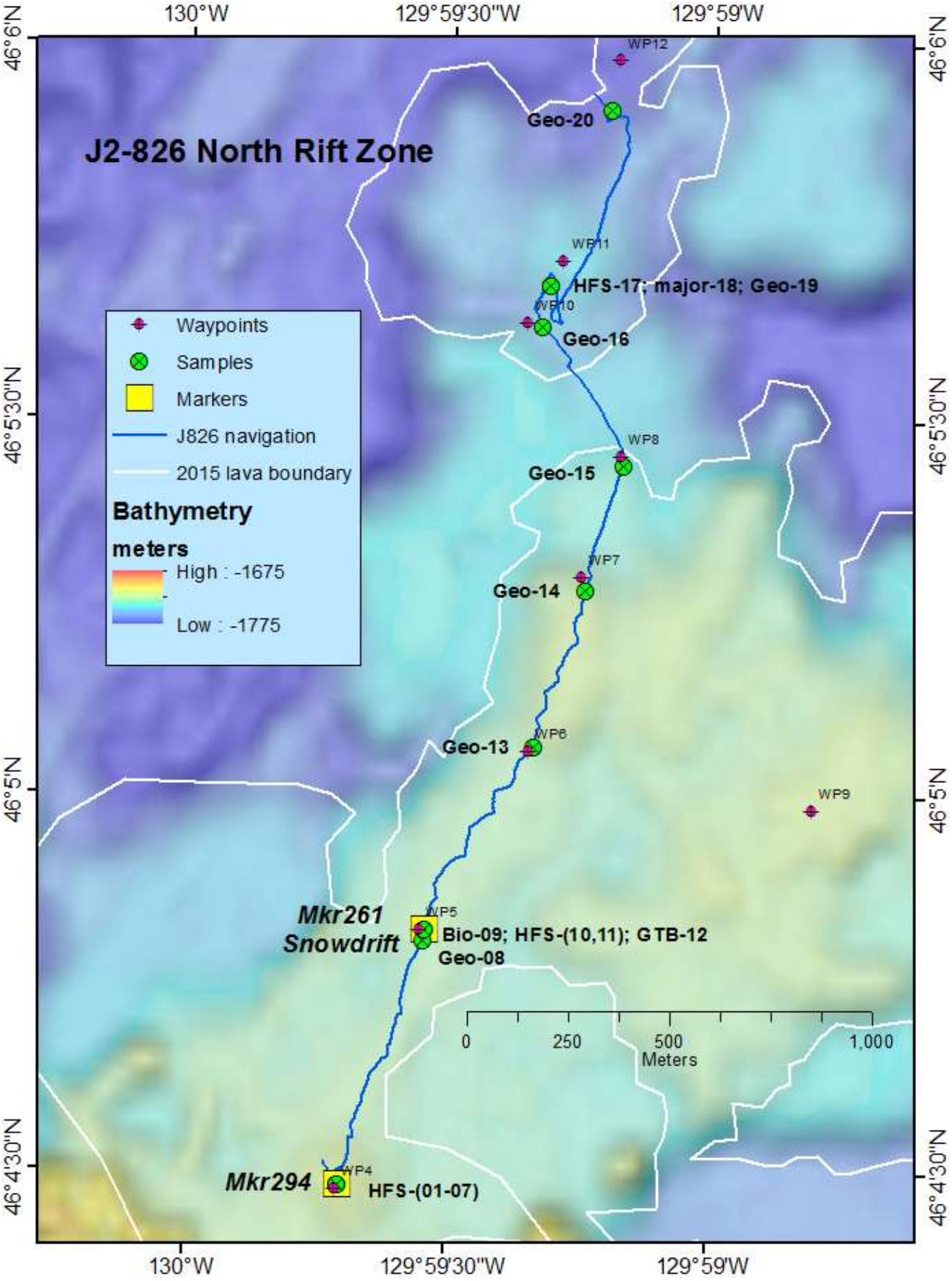
6.3.4 J2-824


J2-824 Pressure Dive 2
130°3'W
130°W
129°57'W
45°57'N
45°54'N
AX-101
Caldera Center
AX-307
Magnesia West
AX-302
Trevi
HFS-(10,11); GTB-12
AX-309
RSN-PN
AX-106
ASHES
AX-303
Marker 33 site
HFS-(01,02); Major-03 Inferno
HFS-(04,05); GTB-06 Virgin
HFS-(07-09) Anemone
AX-308
BPR-South1
AX-310
International District
Mkr113 vent
HFS-(13-20)
AX-104
Bag City
GTB-21; HFS-(22,23) Vixen
HFS-24 Casper
AX-105
Pillow Mound
Samples
Benchmarks
J824 navigation
2015 lava boundary
Bathymetry
Value
High : -1500
Low : -1700
0
0.5
1
2
Kilometers

6.3.5 J2-825


J2-825 New Lava Flows
Geo-17
Geo-16
Geo-15
Geo-14
Geo-13
Geo-12
Geo-11
Geo-10
HFS-(1-9)
Samples
J825 navigation
2015 lava boundary
Bathymetry
meters
High : -1500
Low : -1700
0
1
2
4
Kilometers
130°4'W
130°3'W
130°2'W
130°1'W
130°W
129°59'W
129°58'W
46°1'N
46°N
45°59'N
45°58'N
45°57'N
45°56'N

6.3.6 J2-826


J2-826 North Rift Zone
130°W
129°59'30"W
129°59'W
46°6'N
46°5'30"N
46°5'N
46°4'30"N
WP12
Geo-20
WP11
HFS-17; major-18; Geo-19
WP10
Geo-16
WP8
Geo-15
WP7
Geo-14
WP6
Geo-13
WP9
WP5
Mkr261
Snowdrift
Bio-09; HFS-(10,11); GTB-12
Geo-08
WP4
Mkr294
HFS-(01-07)
Waypoints
Samples
Markers
J826 navigation
2015 lava boundary
Bathymetry
meters
High : -1675
Low : -1775
0
250
500
1,000
Meters

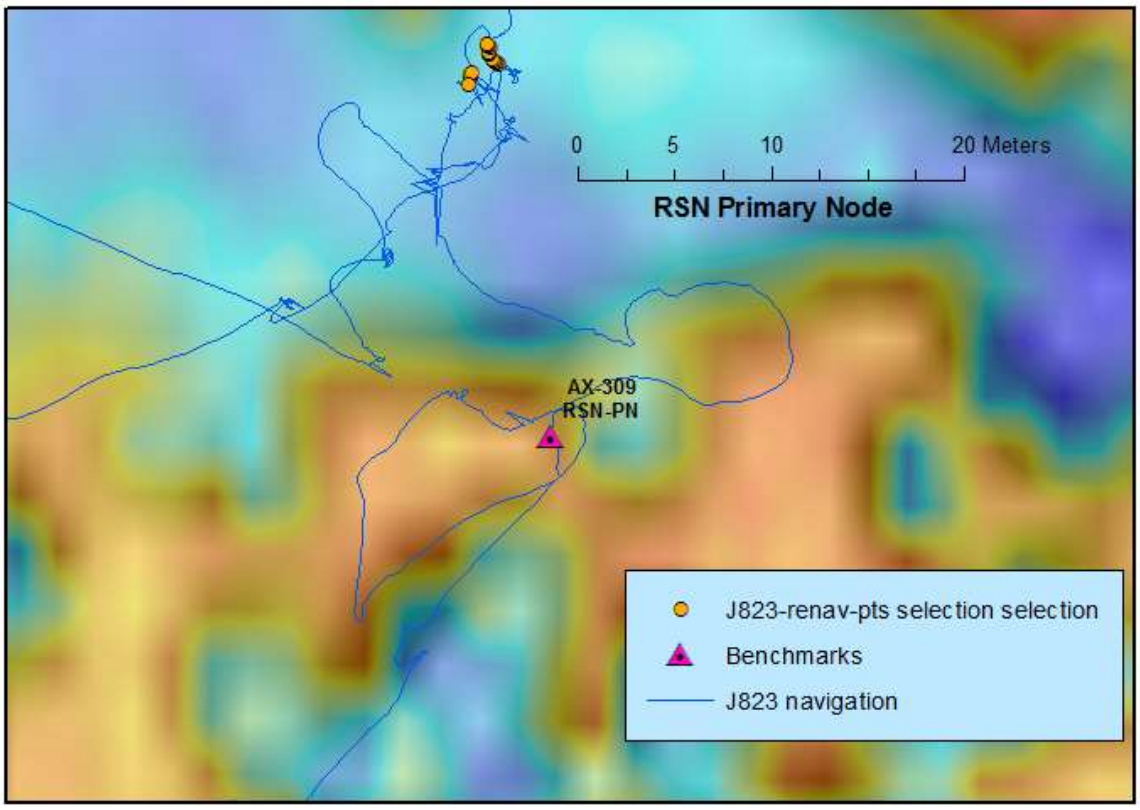
6.4 Navigation (Markers)

Navigation positions for 2015 Jason dives were slightly more offset than observed during the 2013 dives at Axial. Offset distances ranged from 5 meters up to 20 meters with most offsets over 10 meters compared to offsets of 5 meters of less in 2013. Positions were generally to the NW compared to historic positions. Jason navigators noted the offsets in Table 6.4-1 for various locations on a number of dives. Post-dive maps indicate these logged offsets were consistent with other navigational offsets to previously visited seafloor locations. Figure 6.4-1 shows the offsets for the RSN Primary Node benchmark which had the largest offset noted between two visits. The figure also includes offsets at the International District observed while sampling 3 vents as well as the navigator logged offset while conducting the pressure measurement at the nearby benchmark. The underlying MBARI bathymetric grid was consistent with the 2015 navigation for the RSN-PN site as the benchmark is located in a collapsed area. The historic position for AX-309 plots on top of a uncollapsed pillar/bridge area. Future analysis of the 2015 navigation and bathymetry may necessitate updating positions for various benchmarks, markers and vents to reduce dive time spent looking for historic sites.

Table 6.4-1 Navigation offsets noted by Jason navigator during dives and logged into the Virtual Van.

Location	Dive	Offset (meters)	Bearing (degrees)	Notes
AX-309	J823	14	340	1st pressure measurement
AX-309	J823	20	340	2nd pressure measurement
AX-310	J823	8	310	pressure measurement
AX-105	J823	12	280	pressure measurement
AX-302	J823	5	340	pressure measurement
Diva	J822	14	260	sampling
Mkr113 vent	J824	14	279	sampling
Vixen	J824	10	300	sampling

Figure 6.4-1 Maps showing navigational offsets at the RSN Primary Node site and International District. 2015 navigation was offset to the NW and ranged over 10 meters from historic positions of the vents and benchmarks see Table 6.4-1.



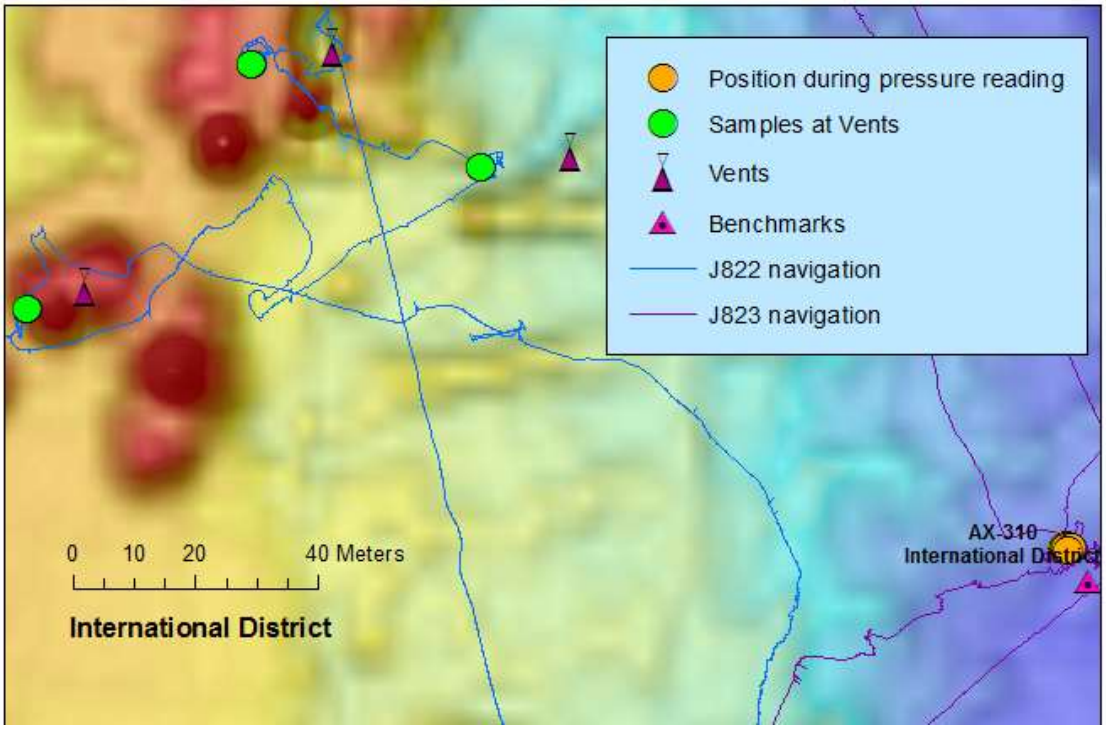


Table 6.4-2 Markers deployed and viewed in 2015. Markers in italics were deployed in 2015 by Jason on TN327 and by ROPOS on TN326 Markers in bold were seen during the TN327 dives, the few that are not were specifically mentioned in the log were at benchmarks or were the UW expedition markers at the NRZ. Positions for pre-2015 deployed markers have not been corrected for any offsets observed in 2015.

Marker	Latitude	Longitude	Z	Location	Vent	Deployed	Benchmark	comments
AX-105	45.86317	-130.00375	1723	South Pillow Mound			AX-105	Cement benchmark AX-105 at S. Pillow Mound site
AX-106	45.93445	-130.01160	1542	ASHES		J2-522	AX-106	Cement benchmark AX-106 is ~150 m ENE of ASHES
Mkr63	45.94639	-129.98382	1520	2011 Lava Flow	Trevi benchmark		AX202	Attached to metal tripod benchmark that was moved from caldera center to near Trevi vent in 2011. Seen 2015.
Mkr66	45.93342	-129.98228	1516	2011 Lava Flow	near Marker 33 Vent		AX203	Attached to metal tripod benchmark that was moved from near AX105 to near Marker33 vent in 2011. Seen 2015.
Mkr136	45.94642	-129.98379	1522	2011 Lava Flow		J730	AX-302	Mrk63 is on old benchmark AX-202 also at this AX-302 site (metal triangle). VV#8714. Seen 2015.
Mkr127	45.94533	-130.00913	1545	West of Magnesia		J730	AX-307	Cursor position at AX-307 and Mkr127. Seen 2015.
Mkr130	45.93846	-129.97209	1527	RSN PN		J730	AX-309	At RSN Primary Node site and AX-309. Cursor position. VV#7712. Seen 2015.
Mkr126	45.92580	-129.97787	1531	International District		J730	AX-310	Using cursor position for location. AX-310 site. VV#7452
Mkr166	45.93316	-129.98228	1520	2011 Lava Flow	Marker33 Vent			Deployed after 2011 flow. Seen 2013 & 2015.
Mkr121	45.93355	-130.01325	1542	ASHES	Gollum	J2-521		Seen 2015.
Mkr129	45.93327	-130.01374	1542	ASHES	Anemone	J726		Using 2013 sampling/MTR3004 cursor lat/long. VV#1045
Mkr31	45.93363	-130.01358	1547	ASHES	Mushroom			Deployed 1986 by Pisces IV. Using 2007 vent position.
Mkr47	45.93345	-130.01349	1542	ASHES	between Gollum-Dave's			Seen 2015 J2-824.
Mkr64	45.93356	-130.01330	1545	ASHES	Gollum	J2-293		Seen 2015.
Mkr122	45.91717	-129.99290	1534	Coquille	Diffuse vent area	J2-520		Seen 2015.

Marker	Latitude	Longitude	Z	Location	Vent	Deployed	Benchmark	comments
Mkr150	45.92642	-129.97898	1520	International District	Diva			Seen 2015.
Mkr153	45.92650	-129.97920	1517	International District	9m Chimney			Seen 2015.
Mkr-246	*45.97808*	*-130.01242*	*1570*	*NE Caldera*		*J822*		*At J822-geo-24 sample site near WP5.*
Mkr-275	*45.97808*	*-130.01242*	*1570*	*NRZ*		*J822*		*At J822-geo-24 sample site near WP5.*
Mkr240	*45.98298*	*-130.01111*	*1579*	*NRZ*		*J822*		*At J822-geo-25 sample site between WP6-WP7 (ROV weight management)*
Mkr242	*45.98298*	*-130.01111*	*1579*	*NRZ*		*J822*		*At J822-geo-25 sample site between WP6-WP7 (ROV weight management)*
Mkr260	*45.98298*	*-130.01111*	*1579*	*NRZ*		*J822*		*At J822-geo-25 sample site between WP6-WP7 (ROV weight management)*
Mkr294	*46.07469*	*-129.99505*	*1716*	*NRZ*		*J826*		*RAS location on NRZ. Sampled on J820 and J826.*
Mkr-K	*46.11133*	*-129.97217*	*1752*	*NRZ*		*R1863*		*Marks venting area on top of the North Rift Zone 2015 lava flow (TN326/ROPOS)*
Mkr-UW	*46.11476*	*-129.96307*	*1756*	*NRZ*		*R1863*		*Marks venting area on top of the North Rift Zone 2015 lava flow (TN326/ROPOS)*
Mkr261	*46.08035*	*-129.99235*	*1727*	*NRZ*		*J826*		*NRZ Snowdrift. Thick eruptive (orange-white) mat on way to WP5 in 2015 on new lava. Area of big collapse. Sampled in cracks with intense flow. MTR 4127 deployed at site.*

6.5 JASON Samples

97 total samples were collected by JASON on this expedition. The samples were composed of 60 fluid, 9 gas, 1 biology and 27 geology samples. Dive maps show the collection locations for each dive.

Table 6.5.1 Samples

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J2-820 Samples											
J820-Geo-01	geo	NRZ	Southern end of main eruption on NRZ. Close to eruptive fissure - West side.	Angular basaltic lava rind broken from drained pillow. Probably 2015.	Paduan	8/17/15 8:34	46.06472	-130.00023	1701	274	48
J820-Geo-02	geo	NRZ	East side of the eruptive fissure. Less eruptive mat.	3 pieces of basaltic lava. Thin rectangular large glassy rind from 2015 flow drained lobate.	Paduan	8/17/15 9:47	46.06720	-129.99929	1705	74	158
J820-Geo-03	geo	NRZ	Lavas with yellow-ish eruptive mat coating	3 separate grabs from same jumbled sheet flow on pressure ridge. Basaltic 2015 flow.	Paduan	8/17/15 11:15	46.07195	-129.99773	1722	359	324
J820-Major-04	fluid	NRZ	Area of yellowish intermittent mat and diffuse flow from small crack in drain-out surface.	White major water sample Tmax=20.9C in diffuse flow.	Butterfield	8/17/15 11:30	46.07219	-129.99768	1723	346	356
J820-GTB-05	gas	NRZ		Silver #11 GTB at same location as major-04. Tmax=20.9C in diffuse flow.	Lupton	8/17/15 11:34	46.07219	-129.99768	1723	346	361
J820-Major-06	fluid	NRZ	Top of mound between pillows covered in white bacterial mat in diffuse flow.	Red major #22. Tmax=19.6C in diffuse flow.	Butterfield	8/17/15 12:27	46.07480	-129.99520	1717	310	498
J820-GTB-07	gas	NRZ		White gtb #17. Tmax=19.6C in diffuse flow. Same position as major-06.	Lupton	8/17/15 12:34	46.07480	-129.99520	1717	307	515

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J820-Geo-08	geo	NRZ	On top of mound that is mainly lobate with some pillows. White bacterial mat and eruptive mat covers pillows	Large basaltic pillow bud from 2015 flow. Covered in eruptive mat.	Paduan	8/17/15 12:41	46.07491	-129.99511	1717	48	530
J2-822 Samples											
J822-HFS-01	fluid	Mkr-33 Vent site	Small tubeworm bush with (skinny stalks and red plumes0 good flow and some white floc coming out of flow.	inc #1. Start 0126.Tmax=32.3C Tavg=28.3C.. Vol=1250ml. Closed at 0202. 18 hours on seafloor.	Butterfield	8/21/15 1:26	45.93325	-129.98236	1517	244	893
J822-HFS-02	fluid	Mkr-33 Vent site		inc #2. Start 0135. Tmax=34.8 Tavg=33.4. Vol=1250ml. Closed at 0204. 18 hours on seafloor.	Butterfield	8/21/15 1:35	45.93325	-129.98236	1517	244	907
J822-HFS-03	fluid	Mkr-33 Vent site		Inc #3. Stop 0142. Tmax=35.3 Tavg=33.9. Vol=1250ml. Closed 0205. 12 hours on seafloor.	Butterfield	8/21/15 1:45	45.93325	-129.98236	1517	244	918
J822-HFS-04	fluid	Mkr-33 Vent site		Inc #4. Stop 0201. Tmax=33.6 Tavg=33.1C. Vol=1250ml. Closed 0206. 12 hours on seafloor.	Butterfield	8/21/15 1:54	45.93325	-129.98236	1517	244	928
J822-HFS-05	fluid	Mkr-33 Vent site		Large volume bag #1 (lvb) No filters on the lvbs. Stop 0230. Vol=4000ml Tmax=33.7 Tavg=33.1 T2=14.	Butterfield	8/21/15 2:09	45.93325	-129.98236	1517	244	954
J822-HFS-06	fluid	Mkr-33 Vent site		Unfiltered bag #7. Stop 0236. Tmax=33.2 Tavg=33.0 Vol=650ml. T2=14.	Butterfield	8/21/15 2:32	45.93325	-129.98236	1517	244	974
J822-HFS-07	fluid	Mkr-33 Vent site		Unfiltered bag #8. Stop 0241. Tmax=34.6 Tavg=34.0 T2=15. Vol=650ml.	Butterfield	8/21/15 2:37	45.93325	-129.98236	1517	244	978
J822-HFS-08	fluid	Mkr-33 Vent site		Unfiltered bag #9. Stop 0246.Tmax=35.7 Tavg=35.5 T2=15. Vol=-650. O2=0.202 reading	Butterfield	8/21/15 2:42	45.93325	-129.98236	1517	244	983

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J822-HFS-09	fluid	Mkr-33 Vent site		RNA #11 start. Stop 0309. Tmax=35.1 Tavg=34.3 T2=14. Vol=3001ml.	Huber Holden	8/21/15 2:53	45.93325	-129.98236	1517	244	995
J822-HFS-10	fluid	Mkr-33 Vent site		RNA #10. Stop 0328. Tmax=36.5 Tavg=35.6 T2=15 Vol=3000ml.	Huber Holden	8/21/15 3:11	45.93325	-129.98236	1517	244	1009
J822-GTB-11	gas	El Guapo	15m high sulfide chimney. Int'l Dist. High flow; not boiling	Gastight (orange-black #7) from the top of chimney. Tmax=323C. Sample ~2 in. into chimney top.	Lupton	8/21/15 5:23	45.92655	-129.97965	1502	96	1238
J822-major-12	fluid	El Guapo		Major sampler red-yellow #22 placed into the same hole as sample 11 but there is less chimney because a small portion broke off during previous sample.	Butterfield	8/21/15 5:23	45.92655	-129.97965	1502	96	1247
J822-HFS-13	fluid	El Guapo		Unfiltered piston #2. Stop 1540. Tmax=317.1 Tavg=no good T2=100 Vol=550ml.	Butterfield	8/21/15 5:37	45.92655	-129.97965	1502	96	1281
J822-HFS-14	fluid	El Guapo		Filtered piston #3. Stop 0545. Tmax=318.8 Tavg-no good T2=100 Vol=550. Pump got too hot during sampling.	Butterfield	8/21/15 5:42	45.92655	-129.97965	1502	96	1291
J822-GTB-15	gas	Diva	In high flow at top of anhydrite mound	Gastight yellow #11 in the top of the anhydrite mound where the Jason probe measured 279C.	Lupton	8/21/15 6:09	45.92640	-129.97916	1519	110	1339
J822-HFS-16	fluid	Diva		Filtered piston #5. Stop 0617. Tmax=275.2 Tavg=274.8 T2=85 Vol=210ml.	Butterfield	8/21/15 6:15	45.92640	-129.97916	1519	110	1350
J822-HFS-17	fluid	Diva		Unfiltered piston #6. Start 0617. Tmax=275.4 Tavg=275.3 T2=88 Vol=250ml.	Butterfield	8/21/15 6:17	45.92640	-129.97916	1519	110	1355
J822-HFS-18	fluid	Castle	Tall sulfide chimney with anhydrite vent. JasonT=273.9C	Piston #4 (filtered or unfiltered?). Stop 0718. Tmax=251.5 T2=77.6; Tavg=250.8 Vol=253 ml. In anhydrite vent.	Butterfield	8/21/15 7:17	45.92618	-129.98012	1519	319	1430

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J822-GTB-19	gas	Castle		Red gas-tight #9. In anhydrite vent.	Lupton	8/21/15 7:17	45.92618	-129.98012	1519	319	1438
J822-geo-20	geo	NE Cald	2015 lava flow	2 small pieces of same pillow bud. Glass exterior. At southern contact (WP1 area). Thin flow here.	Paduan	8/21/15 10:58	45.95601	-129.99401	1529	64	1509
J822-geo-21	geo	NE Cald	2015 lava flow	Edge of collapse in this lobate flow. Grabbing collapse shelf with shiny glass surface. 2 small pieces of collapse shelf.	Paduan	8/21/15 12:17	45.96294	-129.99623	1525	19	1662
J822-geo-22	geo	NE Cald	2015 lava flow	Piece of the roof shelf. It's a large piece. Broke it. Shiny glass surface of this roof feature. (S of WP3)	Paduan	8/21/15 13:28	45.96803	-130.00091	1540	324	1807
J822-geo-23	geo	NE Cald	2015 lava flow next to mat.	Intact pillow-esque piece of lava but only the crust broke off. Some glass.	Paduan	8/21/15 14:54	45.97396	-130.00256	1542	342	1961
J822-geo-24	geo	NE Cald	2015 lava flow in eruptive mat. (Mkrs 246 & 275)	Pre-broken rubbly lava bits in sedimented flow. (At WP5)	Paduan	8/21/15 17:47	45.97808	-130.01242	1570	30	2219
J822-geo-25	geo	NE Cald	2015 lava flow along contact	Lava sample in area where there may be 3 generations of lavas. Darkest looking lava.	Paduan	8/21/15 19:12	45.98298	-130.01111	1579	51	2327
J822-Major-26	fluid	T&S Spires	CASM Sulfide chimney	White major sample in active sulfide chimney covered in dense tubeworms and tons of other biota.	Butterfield	8/21/15 21:30	45.98921	-130.02719	1572	344	2435
J2-823 Samples											
J823-geo-01	geo	AX-101	Caldera center benchmark	Suction sample of particles on the AX-101 benchmark (concentrated on the rim) - probably volcanic ash from the 2015 eruption. Sample added to on second visit of pressure readings.	Paduan	8/23/2015 07:15; 22:02	45.95525	-130.01003	1532	240	3053; 3496

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J823-geo-02	geo	AX-309	Near the RSN primary node.	Rock sample at AX-309. Location is due S of the benchmark a few meters. Collected from pile at collapse face on sheet flow - for ballast. Old lava (not 2015 flow).	Paduan	8/24/15 3:48	45.93835	-129.97200	1526	213	3620
J2-824 Samples											
J824-HFS-01	fluid	Inferno	Near the top at the base of a small beehive.	Unfiltered piston #2. Tmax=230.4 Tavg=222C T2=80 Vol=700ml Stop= 2154.	Butterfield	8/24/15 21:49	45.93352	-130.01379	1538	149	4025
J824-HFS-02	fluid	Inferno		Unfiltered Bag #24. Tmax=225.4C Tavg=209C T2=70C Vol=550ml. Stop 2158.	Butterfield	8/24/15 21:54	45.93352	-130.01379	1538	149	4029
J824-Major-03	fluid	Inferno		White Major; Fired: 22:06. Same location. Tmax=244.4C Jason Tmax=220C.	Butterfield	8/24/15 21:49	45.93352	-130.01379	1538	148	4037
J824-HFS-04	fluid	Virgin	Jason Tmax=258C In anhydrite orifice after knocked over. Vigorous flow.	Filtered piston #3. Stop 2256. Tmax=200.5C Tavg=194C Vol=400ml. T2=76C.	Butterfield	8/24/15 22:54	45.93366	-130.01334	1541	90	4097
J824-HFS-05	fluid	Virgin		Unfiltered piston #4. Start 2257. Virgin vent. Stop 2300. Tmax=198C Tavg=196C Vol=400ml T2=77C.	Butterfield	8/24/15 22:57	45.93366	-130.01334	1541	90	4102
J824-GTB-06	gas	Virgin		Gastight Black #18. Tmax with the beast was 200.5C. With Jason was 258C.	Lupton	8/24/15 23:04	45.93366	-130.01334	1541	89	4112
J824-HFS-07	fluid	Anemone	In tubeworms and other dense biota near the base of the MTR. Temp varies. HFS O2=0.467ml/L.	Unfiltered bag #22. Stop 2347. Tmax=20.5C Tavg=19.7C Vol=938ml. T2=10C.	Butterfield	8/24/15 23:42	45.93318	-130.01387	1541	178	4211
J824-HFS-08	fluid	Anemone		Filtered bag #21. Stop 2352. Tmax=20.4C Tavg=17.9C Vol=755ml T2=8.5C.	Butterfield	8/24/15 23:48	45.93318	-130.01387	1541	178	4221

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J824-HFS-09	fluid	Anemone		RNA filter #10. This will be 4500ml. Stop 0011. Tmax=19.6C Tavg=16.6C T2=8.5C Vol=3905ml.	Huber Holden	8/24/15 23:53	45.93318	-130.01387	1541	178	4236
J824-HFS-10	fluid	Trevi	Anhydrite mound (no chimney here this year). JasonT=240.5C.	Filtered piston #5. Tmax=241.2C Tavg=241.0C Vol=403ml T2=~70C.	Butterfield	8/25/15 8:54	45.94620	-129.98376	1518	201	4667
J824-HFS-11	fluid	Trevi		Unfiltered piston #8. Tmax=241.2C Tavg=241.1C Vol=451ml T2=~72C.	Butterfield	8/25/15 8:57	45.94620	-129.98376	1518	201	4671
J824-GTB-12	gas	Trevi		Green gastight. HFS Tmax for samples was 241.2C.	Lupton	8/25/15 9:04	45.94620	-129.98376	1518	201	4679
J824-HFS-13	fluid	Mkr 113 vent	In diffuse flow <1m from collapse edge in crack with dense biota - mainly limpets but some tubeworms and palmworms. O2=0.178 at 25C. JasonT=21.7.	Large volume bag (lvb) #1. 1531 stop. Tmax=25.5C Tavg=25.4C Vol=5000ml T2=5.6C.	Butterfield	8/25/15 15:08	45.92277	-129.98829	1520	322	4908
J824-HFS-14	fluid	Mkr 113 vent		Filtered Bag#17. Stop 1540. Tmax=25.2C Tavg=25.2C Vol=750ml T2=5.7C.	Butterfield	8/25/15 15:33	45.92277	-129.98829	1520	323	4939
J824-HFS-15	fluid	Mkr 113 vent		Unfiltered Bag #18. Stop 1544. Tmax=25.2C Tavg=25.1C Vol=900ml T2=6.4C.	Butterfield	8/25/15 15:40	45.92277	-129.98829	1520	324	4947
J824-HFS-16	fluid	Mkr 113 vent		RNA filter #11. Stop 1608. Tmax=25.3C Tavg=25.3C Vol=4500ml T2=6.4C.	Huber Holden	8/25/15 15:46	45.92277	-129.98829	1520	324	4956
J824-HFS-17	fluid	Mkr 113 vent	In diffuse flow <1m from collapse edge in crack with dense biota - mainly limpets but some tubeworms and palmworms. O2=.145ml/l at 25.5C stabilized.	RNA filter #13. Stop 1624. Tmax=25.4C Tavg=25.3C Vol=3500ml T2=6.7C.	Butterfield	8/25/15 16:08	45.92277	-129.98829	1520	324	4990

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J824-HFS-18	fluid	Mkr 113 vent	In diffuse flow <1m from collapse edge in crack with dense biota - mainly limpets but some tubeworms and palmworms.	Filtered Bag #19. Stop 1634. Tmax=25.5C Tavg=25.4C Vol=750ml T2=6.4C.	Butterfield	8/25/15 16:31	45.92277	-129.98829	1520	323	5011
J824-HFS-19	fluid	Mkr 113 vent		Ambient vent-area fluid ~1m above the vent. LVB #16. Stop 1646. Tmax=3.1C Tavg=2.9C Vol=1970ml T2=2.5C.	Butterfield	8/25/15 16:37	45.92277	-129.98829	1520	322	5026
J824-HFS-20	fluid	Mkr 113 vent	In diffuse flow <1m from collapse edge in crack with dense biota - mainly limpets but some tubeworms and palmworms - sample ended as Jason left vent site.	Ambient vent-area fluid. HFS wand tip in port forward compartment on the basket. RNA Filter #14. Stop 1711. Tmax=3.2C Tavg=2.6C Vol=4660ml T2=2.5C.	Huber Murdock	8/25/15 16:47	45.92277	-129.98829	1520	323	5036
J824-GTB-21	gas	Vixen	Anhydrite mound with small grayish-black chimney. Intense flow. Knocked over for sampling. JasonT=326.4C.	Green/Red gastight bottle.	Lupton	8/25/15 18:16	45.91739	-129.99308	1533	211	5223
J824-HFS-22	fluid	Vixen		Unfiltered piston #6. Stop 1623.Tmax=324.6C Tavg=321.1C T2=100C Vol=450ml.	Butterfield	8/25/15 18:21	45.91739	-129.99308	1533	210	5236
J824-HFS-23	fluid	Vixen		Filtered piston #9. Stop 1826. Tmax=325.7C Tavg=325.1C T2=92C Vol=450ml.	Butterfield	8/25/15 16:24	45.91739	-129.99308	1533	212	5245
J824-HFS-24	fluid	Casper	Anhydrite mound with larger grayish black chimney. Knocked over for sampling. Intense flow.	Filtered Piston #7. Stop 1901. Tmax=297.7C Tavg=297.4C Vol= 453ml T2= 93C.	Butterfield	8/25/15 18:59	45.91744	-129.99313	1532	88	5299

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J2-825 Samples											
J825-HFS-01	fluid	Mkr-33 Vent	Small tubeworm bush with (skinny stalks and red plumes0 good flow and some white floc coming out of flow. Same site as J2-822.	Inc #1. Valve position 13. Closed 1711. Tmax=40.6C Tavg=40.5C Vol=800ml T2=22C. (1810-1815 closed valves)	Butterfield	8/26/15 17:06	45.93316	-129.98222	1516	246	5520
J825-HFS-02	fluid	Mkr-33 Vent		Inc #2. Valve position 15. Closed 1716. Tmax=40.5C Tavg=40.4C T2=23C Vol=850ml. (1810-1815 closed valves)	Butterfield	8/26/15 17:13	45.93316	-129.98222	1516	246	5530
J825-HFS-03	fluid	Mkr-33 Vent		Inc #3. Valve position 17. Closed 1722. Tmax=40.4C Tavg=40.4C Vol=850ml T2=22C. (1810-1815 closed valves)	Butterfield	8/26/15 17:18	45.93316	-129.98222	1516	246	5542
J825-HFS-04	fluid	Mkr-33 Vent		Inc #4 Valve position 19. Closed 1727. Tmax=40.5C Tavg=40.3C T2=22C Vol=850ml. (1810-1815 closed valves)	Butterfield	8/26/15 17:23	45.93316	-129.98222	1516	246	5547
J825-HFS-05	fluid	Mkr-33 Vent		Filtered bag #9. Stop 1736. Tmax=40.6C Tavg=40.C5 T2=22C Vol=750ml. Large floc explosion during this sample.	Butterfield	8/26/15 17:30	45.93316	-129.98222	1516	245	5557
J825-HFS-06	fluid	Mkr-33 Vent		LVB #1. Stop 1755. Tmax=40.7C Tavg=40.6C T2=22.7C Vol=4000ml.	Butterfield	8/26/15 17:38	45.93316	-129.98222	1516	245	5583
J825-HFS-07	fluid	Mkr-33 Vent		Unfiltered bag #8. Tmax=40.4C Tavg=40.3C vol=800ml T2=21C.	Butterfield	8/26/15 18:33	45.93316	-129.98222	1516	249	5637
J825-HFS-08	fluid	Mkr-33 Vent		Unfiltered bag #7. Stop 1842. Tmax=40.6C Tavg=4 0.4C Vol=800ml T2=21C.	Butterfield	8/26/15 18:38	45.93316	-129.98222	1516	249	5644
J825-HFS-09	fluid	Mkr-33 Vent		RNA filter #10. Stop 1908. Tmax=40.9C Tavg=40.7C Vol=4002ml T2=21C.	Huber Holden	8/26/15 18:43	45.93316	-129.98222	1516	249	5651

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J825-Geo-10	geo	NRZ	Contact. Lava is glossy black with thick white deposit under glass on broken surface.	Chunk of 2015 lava from contact in an old fissure. Broken from rind of hollow pillow.	Paduan	8/27/15 7:30	46.00437	-130.01121	1534	4	6117
J825-Geo-11	geo	NRZ	Sheet flow @WP10.	Small chunk mostly glass from sheet flow in 2015 lava.	Paduan	8/27/15 8:06	46.00760	-130.01016	1550	351	6187
J825-Geo-12	geo	NRZ	Pillars and roof collapse area	2015 lava piece with large glassy rind broken from roof of collapse.	Paduan	8/27/15 8:23	46.00865	-130.00976	1556	11	6209
J825-Geo-13	geo	NRZ	Near contact	Pillow bud from 2015 lava near contact in area of thin flow.	Paduan	8/27/15 8:44	46.00938	-130.00928	1558	203	6244
J825-Geo-14	geo	NRZ	Just W of WP11	Piece of 2015 lava broken from jumbled sheet flow.	Paduan	8/27/15 8:55	46.01066	-130.00909	1567	309	6262
J825-Geo-15	geo	NRZ	Inflated cracked lobate surface	Piece of 2015 lava broken from inflated lobate flow.	Paduan	8/27/15 9:10	46.01157	-130.01009	1574	314	6287
825-Geo-16	geo	NRZ	Inflated lobate flow near WP12	Piece of 2015 lava broken from bulbous pillow.	Paduan	8/27/15 9:26	46.01232	-130.01217	1578	329	6309
J825-Geo-17	geo	NRZ	Near contact with small sponges on old lava. Near WP13.	Enormous pillow bud from 2015 flow near contact.	Paduan	8/17/15 9:52	46.01346	-130.01493	1582	278	6346
J2-826 Samples											
J826-HFS-01	fluid	Mkr-294 on NRZ	NRZ lobate and pillow lava. Diffuse flow with eruptive mat. RAS. (sampled on J820). O2=0.522ml/L	Unfiltered Bag #18. Stop 2140 Tmax=19.9C Tavg=18.9C Vol=600ml T2=3C	Butterfield	8/27/15 21:37	46.07469	-129.99505	1716	296	6460
J826-HFS-02	fluid	Mkr-294 on NRZ		Filtered (?) Bag #19. Stop 2145. Tmax=20.0C Tavg=19.1C Vol=600ml T2=3C.	Butterfield	8/27/15 21:41	46.07469	-129.99505	1716	296	6465
J826-HFS-03	fluid	Mkr-294 on NRZ		Unfiltered Bag #20. Stop 2150. Tmax=19.7C Tavg=19.1C Vol=600ml T2=3C.	Butterfield	8/27/15 21:46	46.07469	-129.99505	1716	296	6474
J826-HFS-04	fluid	Mkr-294 on NRZ		Piston #7 Stop 2157. Tmax=20.0 Tavg=19.3 Vol=600ml T2=3.0.	Butterfield	8/27/15 21:54	46.07469	-129.99505	1716	296	6480

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J826-HFS-05	fluid	Mkr-294 on NRZ		Unfiltered Piston #8. Stop 2202. Tmax=19.0C Tavg=18.2C Vol=600ml T2=3.1C.	Butterfield	8/27/15 21:59	46.07469	-129.99505	1716	296	6481
J826-HFS-06	fluid	Mkr-294 on NRZ		Unfiltered Piston #6. Stop 2206. Tmax=19.5 Tavg=18.9 Vol=600ml T2=3.0.	Butterfield	8/27/15 22:03	46.07469	-129.99505	1716	296	6484
J826-HFS-07	fluid	Mkr-294 on NRZ		RNA filter #14. Stop 2229. Tmax=19.8C Tavg=17.9C Vol=3029ml T2=3.0C.	Huber Holden	8/27/15 22:08	46.07469	-129.99505	1716	296	6493
J826-Geo-08	geo	NRZ. Near WP5.	Area of lava pillars and roof features at edge of collapse. Thick eruptive mat in area.	A piece of pillar roof in the 2015 flow. Orange staining on the roof and some eruptive mat.	Paduan	8/28/15 0:10	46.08011	-129.99241	1729	306	6689
J826-Bio-09	bio	NRZ. Snowdrift Mkr-261	Area of thick eruptive mat and diffuse flow - 2015 lava flow.	Suction sample of fluffy orangish "eruptive" bacterial mat - and probably some volcanic glass too.	Holden	8/28/15 0:22	46.08035	-129.99235	1729	359	6715
J826-HFS-10	fluid	NRZ. Snowdrift Mkr-261		Unfiltered piston #2. Stop 0036. Tmax=35.4C Tavg=35.3C Vol=600ml T2=7.4C.	Butterfield	8/28/15 0:33	46.08035	-129.99235	1727	358	6747
J826-HFS-11	fluid	NRZ. Snowdrift Mkr-261		Filtered piston #3. Stop 0041. Tmax=35.4C Tavg=35.2C Vol=600ml. T2=7.4C.	Butterfield	8/28/15 0:37	46.08035	-129.99235	1727	358	6754
J826-GTB-12	gas	NRZ. Snowdrift Mkr-261		Gastight (green-yellow?) in the same orifice as the last 2 samples. Tmax was 35.4C.	Lupton	8/28/15 0:45	46.08035	-129.99235	1727	358	6764
J826-Geo-13	geo	NRZ. 400m S of WP6	Area of lobate and pillow lavas. Not much mat.	Piece of rind from hollow pillow - 2015 flow.	Paduan	8/28/15 1:48	46.08441	-129.98894	1722	70	6877
J826-Geo-14	geo	NRZ. 25m SSE of WP7	Area of broad lobates with pillows here and there.	Piece of pre-broken hollowed out pillow rind - from the 2015 flow.	Paduan	8/28/15 2:31	46.08789	-129.98733	1724	25	6961

Sample	Type	Site	Site Description	Sample Description	Contact	Date Time	latitude	longitude	Depth	Heading	Virtual Van #
J826-Geo-15	geo	NRZ. Near WP8	Area of pillows with bacterial staining at their bases.	From the base of large pillow with orange coating - from the 2015 flow.	Paduan	8/28/15 3:15	46.09066	-129.98615	1738	346	7034
J826-Geo-16	geo	NRZ. SSE of WP10	Area of lobates and pillow buds.	Small round pillow lava bud with some mat from the base of a larger pillow - from the 2015 flow.	Paduan	8/28/15 3:52	46.09376	-129.98879	1749	325	7127
J826-HFS-17	fluid	NRZ. Between WP10 and WP11	Area of pillow lavas with lots of white flock emitting from a crack with shimmering water. O2=.98ml/L	Unfiltered piston #4. Stop 0449. Tmax=5.6C Tavg=5.3C T2=2.2CVol=602ml.	Butterfield	8/28/15 4:45	46.09467	-129.98857	1745	54	7248
J826-Major-18	fluid	NRZ. Between WP10 and WP11		Red major fluid sample at the same location. Tmax was 5.6C.	Butterfield	8/28/15 4:51	46.09467	-129.98857	1745	54	7257
J826-Geo-19	geo	NRZ. Between WP10 and WP11		Small piece of pillow lava with lots of glass (mat-covered)- taken next to the fluid sampling site.	Paduan	8/28/15 4:58	46.09467	-129.98857	1745	45	7279
J826-Geo-20	geo	NRZ. ~150m S of WP12	Black lobate flow.	Piece of lobate bud with some of the glass peeled off but much remains intact. Position is approx.	Paduan	8/28/15 5:43	46.09856	-129.98666	1771	233	7367

6.5 JASON Dive Logs

The Jason Dive Logs in this report have been edited and are no longer identical to the archived records contained in the Jason Virtual Van. The Virtual Van (VV) number is provided as a tool for searching the online records for more information and imagery.

6.6-1 J2-820 Dive log

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
10	8/17/2015	07:10:27			218.3	0.8	0.7	1.6	Jason in water J820 Dive
11	8/17/2015	07:11:26			156.7	2.3	2.4	4.8	J820 Dive plan is as follows: Rock sampling and fluid sampling on the new lava flows.
12	8/17/2015	07:13:20			164.2	185.0	3.6	188.6	We have HFS sampler; Suction sampler hose; 3 Gas-tights; 2 Major samplers; Rock sampling box with 6 spaces.
13	8/17/2015	07:15:28			166.0	165.0	29.2	194.2	J820 tasks: Explore NRZ2015 lava flows; starting from south of southern of two thick NRZ flows.
14	8/17/2015	07:16:17			164.9	153.3	45.7	199.0	We will traverse from south to north along eruptive fissure; Sample lavas and vent fluid along the ride.
15	8/17/2015	07:18:04			170.8	146.1	53.2	199.3	Deployment Location: NRZ 2015 lava flows: 130d 00.00'W and 46d 03.82'N.
16	8/17/2015	07:18:38			167.8	160.9	59.5	220.4	In the Port Swing Arm: Rock sampling box (6 spaces)
17	8/17/2015	07:19:09			165.9	149.1	68.6	217.7	On all dives: Jason high temp probe; Beast HFS; O2 sensor
18	8/17/2015	07:19:28			167.9	161.6	74.9	236.5	Starboard Swing Arm: Biobox with markers.
19	8/17/2015	07:20:19			168.1	145.4	92.7	238.1	Basket: HFS sampler intake; Suction sampler hose; 3 Gastights 2 Majors; Rock Sampling Box (4 spaces).
21	8/17/2015	08:06:20			136.4	167.0	1406.5	1573.4	Still descending.
24	8/17/2015	08:11:59			119.1	122.0	1578.5	1700.4	NAV: Doppler Reset and test framegrab.
28	8/17/2015	08:17:59	46.06459	-130.00024	339.5	56.6	1642.8	1699.4	The Jason depth overlay is now on.
30	8/17/2015	08:20:46	46.06465	-130.00029	340.3	1.9	1698.6	1700.5	Jason on bottom.
31	8/17/2015	08:22:01	46.06466	-130.00029	340.2	2.0	1698.5	1700.5	Inflated lobate flow. Bacterial mat in down-cam.
33	8/17/2015	08:22:43	46.06466	-130.00029	340.2	2.0	1698.4	1700.4	Removing one drop weight from basket
35	8/17/2015	08:24:57	46.06468	-130.00024	349.8	0.8	1700.4	1701.1	Setting down to take a closer look at the flow. Bacterial mat coating most surfaces. Probably the 2015 flow.
36	8/17/2015	08:25:48	46.06469	-130.00024	349.9	0.8	1700.3	1701.1	Close-up view of yellow bacterial mat.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
38	8/17/2015	08:27:52	46.06469	-130.00024	349.9	0.8	1700.3	1701.1	Science cam is now controllable; previous close-up was with the pilot's cam.
40	8/17/2015	08:28:33	46.06469	-130.00024	350.0	1.1	1700.2	1701.3	Considering where to collect a rock.
42	8/17/2015	08:30:05	46.06470	-130.00023	330.5	0.8	1701.1	1701.8	Flow is a mix of more intact lobate pillows (background) and hackly sheet flow (foreground). Both have bacterial coat.
43	8/17/2015	08:30:55	46.06470	-130.00023	330.1	0.8	1701.1	1701.9	Trying to sample lava with stbd manipulator. Too fragile.
44	8/17/2015	08:31:35	46.06471	-130.00023	320.5	1.9	1700.2	1702.1	More bacterial mat is present in cracks at base of lobate pillows.
46	8/17/2015	08:32:19	46.06475	-130.00023	273.8	1.2	1700.1	1701.3	Approaching a drained pillow lobe to try to sample rind.
48	8/17/2015	08:34:08	46.06475	-130.00023	274.6	0.8	1700.6	1701.4	SAMPLE: geo J820-Geo-01 angular rind of drained pillow.
49	8/17/2015	08:35:44	46.06474	-130.00022	276.1	0.8	1700.6	1701.4	J2-820-Geo-01 went into partition #10 (stbd milk crate).
51	8/17/2015	08:37:25	46.06474	-130.00021	276.1	0.8	1700.6	1701.4	Sampple 1 location: 46d 3.883' 130d 0.014'. Z=1700.6m
53	8/17/2015	08:39:30	46.06477	-130.00013	23.8	2.5	1698.5	1701.0	Turning east to look for fissure.
54	8/17/2015	08:39:59	46.06477	-130.00006	20.2	2.7	1698.7	1701.4	Fissure in sight. Many drained out pillow lobes. The last sample was very close to the fissure.
56	8/17/2015	08:40:06	46.06476	-130.00004	19.4	2.7	1699.0	1701.7	At edge of fissure.
57	8/17/2015	08:40:49	46.06478	-129.99997	307.9	10.1	1701.0	1711.1	Fissure is 9.5m deep so far.
58	8/17/2015	08:41:25	46.06477	-129.99989	91.6	8.4	1704.4	1712.7	At other side of fissure. Bacterial mat thick in places.
59	8/17/2015	08:41:33	46.06477	-129.99989	83.2	8.3	1703.7	1712.0	Drainbacks on upper edge of fissure.
60	8/17/2015	08:41:50	46.06475	-129.99988	80.2	8.3	1702.1	1710.4	Drips inside of lobate at top (close-up).
62	8/17/2015	08:42:33	46.06473	-129.99986	53.2	7.9	1700.2	1708.1	The two top edges of the fissure are at the same depth.
63	8/17/2015	08:43:25	46.06478	-129.99980	70.2	3.0	1701.9	1704.9	Heading NNE along east side of fissure. This is probably the eruptive fissure.
64	8/17/2015	08:43:55	46.06479	-129.99978	69.8	2.0	1702.2	1704.3	Sample J2-820-Geo-01 was on the W side of the fissure just a few meters away from it (but we hadn't seen it yet.)
66	8/17/2015	08:45:34	46.06488	-129.99965	14.0	2.9	1707.4	1710.2	Driving along jumbled sheet flow covered with yellow bacterial mat.
68	8/17/2015	08:47:11	46.06492	-129.99981	15.5	5.2	1708.3	1713.5	En echelon fissure system. We just came up on one to the W of the earlier one. Narrower than previous.
69	8/17/2015	08:47:55	46.06497	-129.99987	340.4	7.3	1699.9	1707.2	Crossing fissure. 9m deep. Sheets exposed on W side.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
71	8/17/2015	08:49:00	46.06508	-129.99988	2.1	1.7	1699.9	1701.6	Yellow bacterial mat in all the cracks of the lava surface.
73	8/17/2015	08:50:15	46.06516	-129.99985	19.3	1.2	1700.7	1702.0	Drained lobate pillows near the fissure. Thin rinds.
74	8/17/2015	08:50:39	46.06518	-129.99984	18.9	2.1	1700.3	1702.4	Some Scorpio pics just taken.
75	8/17/2015	08:51:41	46.06527	-129.99982	351.2	2.3	1700.8	1703.1	Fissure widens and is a complex some 30m wide (as interpreted from sonar).
77	8/17/2015	08:52:16	46.06530	-129.99980	15.9	1.1	1700.5	1701.6	Driving along edge of fissure; heading 356.
78	8/17/2015	08:53:20	46.06536	-129.99974	15.5	3.8	1702.1	1706.0	Sheet flow is not so broken up here; no hackly morphology; thin rinds on drained lobates.
80	8/17/2015	08:54:41	46.06546	-129.99971	2.2	1.5	1702.2	1703.7	Looking at broken plates of sheet flow. Still driving along W edge of fissure. Thick bacterial mat.
82	8/17/2015	08:56:28	46.06557	-129.99963	334.6	4.7	1702.3	1706.9	Sheet flow is smooth outwards from the fissure; broken at edge of fissure where it collapsed back in.
83	8/17/2015	08:57:45	46.06567	-129.99954	314.0	5.6	1703.5	1709.2	Collapsed broad lobate sheet.
85	8/17/2015	08:58:54	46.06573	-129.99959	317.1	2.3	1702.2	1704.4	Ropy jumbled chaotic sheet flow; still at edge of fissure.
87	8/17/2015	09:00:07	46.06574	-129.99957	319.7	2.1	1702.3	1704.4	NAV: Doppler Reset. Sitting on bottom; doppler is about 10m off.
88	8/17/2015	09:01:28	46.06584	-129.99955	15.2	2.3	1701.3	1703.6	Yellow snow everywhere.
90	8/17/2015	09:03:45	46.06595	-129.99950	14.9	1.4	1702.8	1704.2	Lobate pillow.
92	8/17/2015	09:04:05	46.06595	-129.99950	14.7	1.4	1702.6	1704.0	Sea fan that blew in a circle???
93	8/17/2015	09:05:45	46.06596	-129.99951	15.0	1.5	1702.8	1704.3	Is this an old surface?
95	8/17/2015	09:07:18	46.06597	-129.99951	28.8	0.9	1703.7	1704.6	Picking up temperature probe.
97	8/17/2015	09:08:46	46.06597	-129.99951	29.2	0.9	1703.6	1704.5	Background temp 2.2C.
99	8/17/2015	09:10:51	46.06599	-129.99951	77.2	1.2	1703.2	1704.4	2.5C; 2.65C highest. Looking for another spot to measure.
101	8/17/2015	09:12:44	46.06599	-129.99951	79.6	0.8	1703.7	1704.4	Next crevice had no temperature anomaly. Stowing temperature probe.
102	8/17/2015	09:13:48	46.06599	-129.99949	75.8	1.4	1702.9	1704.3	We start moving again.
104	8/17/2015	09:14:08	46.06600	-129.99946	29.3	1.1	1703.0	1704.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
105	8/17/2015	09:14:08	46.06600	-129.99946	29.3	1.1	1703.0	1704.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
106	8/17/2015	09:14:08	46.06600	-129.99946	29.3	1.1	1703.0	1704.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
107	8/17/2015	09:14:20	46.06602	-129.99945	30.1	1.1	1703.2	1704.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
108	8/17/2015	09:14:38	46.06604	-129.99941	29.2	1.0	1703.6	1704.6	Driving north along the fissure.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
110	8/17/2015	09:16:19	46.06616	-129.99936	21.5	1.1	1704.5	1705.6	Sonar is picking up the wide fissure.
111	8/17/2015	09:16:54	46.06619	-129.99932	17.8	1.4	1704.9	1706.3	The fissure sides seems to be 10m apart.
113	8/17/2015	09:18:05	46.06625	-129.99922	15.7	3.2	1709.5	1712.7	The fissure is getting narrower in the sonar.
114	8/17/2015	09:18:22	46.06628	-129.99921	10.7	5.0	1709.1	1714.1	The water got really milky. We might be able to sample soon.
115	8/17/2015	09:19:47	46.06637	-129.99928	13.2	7.0	1703.2	1710.2	The fissure pinched at that one stop.
118	8/17/2015	09:22:12	46.06654	-129.99915	25.3	1.6	1702.8	1704.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
119	8/17/2015	09:22:15	46.06655	-129.99915	21.5	2.1	1702.8	1704.9	We went by a coral so this part is old. (Not sure about that).
120	8/17/2015	09:22:27	46.06657	-129.99914	20.4	0.8	1703.2	1704.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
121	8/17/2015	09:22:39	46.06658	-129.99915	359.7	1.1	1703.4	1704.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
122	8/17/2015	09:22:39	46.06658	-129.99915	359.7	1.1	1703.4	1704.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
124	8/17/2015	09:24:03	46.06663	-129.99912	31.7	1.2	1706.4	1707.6	We see venting. Frame grab of that.
125	8/17/2015	09:24:32	46.06663	-129.99912	44.9	0.8	1706.8	1707.6	We will take a temperature measurement.
126	8/17/2015	09:24:58	46.06664	-129.99911	44.9	0.8	1706.8	1707.6	A crack in the buckled sheet flow. That is where we see the venting.
129	8/17/2015	09:28:18	46.06664	-129.99911	45.3	0.8	1706.8	1707.6	The temperature reading: 13.21C.
131	8/17/2015	09:30:08	46.06664	-129.99911	44.9	0.8	1706.8	1707.5	NAV: Doppler Reset
132	8/17/2015	09:30:28	46.06664	-129.99911	44.9	0.8	1706.8	1707.6	We will move on and try to find a better place to sample for venting.
134	8/17/2015	09:32:21	46.06664	-129.99911	41.8	1.8	1705.8	1707.6	A smooth sheet flow.
137	8/17/2015	09:36:07	46.06695	-129.99908	359.4	1.6	1705.3	1706.9	We are on our way to WP1.
138	8/17/2015	09:36:38	46.06698	-129.99914	348.3	1.7	1705.5	1707.2	Lineated sheet flow.
139	8/17/2015	09:36:49	46.06700	-129.99916	348.3	1.7	1705.5	1707.3	We are in a channel system now.
140	8/17/2015	09:36:56	46.06701	-129.99916	348.7	1.6	1705.6	1707.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
141	8/17/2015	09:37:04	46.06702	-129.99917	348.4	1.5	1705.7	1707.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
143	8/17/2015	09:38:51	46.06714	-129.99930	347.9	1.0	1705.2	1706.3	HIGHLIGHTS: HD highlights start Octopus on lobate flow.
147	8/17/2015	09:40:30	46.06715	-129.99930	347.8	1.1	1705.1	1706.2	Lobate pillows look more glossy to left with less bacterial mat. Octopus in threatening pose.
148	8/17/2015	09:41:34	46.06717	-129.99933	36.6	1.3	1705.2	1706.5	HIGHLIGHTS: HD highlights stop. Contact. New flow is the glossy lobes.
149	8/17/2015	09:41:54	46.06719	-129.99931	72.9	0.8	1705.8	1706.6	input BrowCam (port 2) routed to output FrmGrb1

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									(port 1)
151	8/17/2015	09:42:41	46.06719	-129.99931	74.7	0.8	1706.0	1706.7	Looking at clean surface of glassy lobate.
152	8/17/2015	09:43:42	46.06719	-129.99930	74.8	0.8	1705.9	1706.7	Going to try to sample thin rind of broken lobate pillow. Pretty sure this is part of 2015 flow.
153	8/17/2015	09:43:55	46.06719	-129.99930	74.5	0.8	1705.9	1706.7	Very fragile.
155	8/17/2015	09:44:16	46.06719	-129.99930	74.3	0.8	1706.0	1706.7	First attempt broke up.
156	8/17/2015	09:45:23	46.06719	-129.99930	74.5	0.8	1705.9	1706.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
158	8/17/2015	09:46:48	46.06719	-129.99929	74.5	0.8	1705.9	1706.6	**SAMPLE: geo J820-Geo-02**. Thin rectangular large glassy rind of broken lobate pillow in partition near waypoint #1. It broke into pieces.
160	8/17/2015	09:48:14	46.06719	-129.99929	74.3	0.8	1705.9	1706.7	J820-Geo-02 sample location: 46d 4.032' -129d 59.9571' Z=1705m. From 2015 eruption.
162	8/17/2015	09:50:31	46.06718	-129.99934	66.0	1.7	1704.9	1706.7	Pilot change. Going to go back and collect HD footage of contact.
163	8/17/2015	09:50:57	46.06717	-129.99935	65.0	0.8	1705.7	1706.5	Contact of old lava surrounded with 2015 lava.
164	8/17/2015	09:51:27	46.06717	-129.99935	64.6	0.9	1705.7	1706.6	HIGHLIGHTS: Footage of contact between flows. Bringing basket in.
166	8/17/2015	09:52:26	46.06716	-129.99934	64.0	0.8	1706.0	1706.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
167	8/17/2015	09:52:29	46.06716	-129.99934	64.0	0.8	1706.0	1706.7	Clean shot from science cam and framegrabs of contact.
168	8/17/2015	09:53:22	46.06716	-129.99934	64.0	0.8	1706.0	1706.8	input PilotCam (port 3) routed to output KiPro (port 4)
170	8/17/2015	09:54:02	46.06715	-129.99938	81.3	1.7	1704.8	1706.4	HIGHLIGHTS: From pilot's cam; looking at contact between old and 2015 flows.
171	8/17/2015	09:55:28	46.06715	-129.99930	73.5	1.1	1705.6	1706.6	Didn't hit Enter for the HD stop on science cam so it is on the same VV line as HD start of pilots cam. We are now filming the pilot cam in HD.
172	8/17/2015	09:55:44	46.06715	-129.99930	73.0	0.9	1705.5	1706.4	Octopus close-up.
174	8/17/2015	09:56:40	46.06715	-129.99931	73.9	1.0	1705.5	1706.4	Graneledone or benthoctopus.
175	8/17/2015	09:56:52	46.06715	-129.99931	73.8	0.9	1705.5	1706.4	HIGHLIGHTS: HD highlights stop
176	8/17/2015	09:57:43	46.06716	-129.99929	72.6	2.2	1704.6	1706.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
178	8/17/2015	09:58:18	46.06720	-129.99923	32.9	2.6	1703.7	1706.2	Heading toward waypoint #2; leaving waypoint #1.
179	8/17/2015	09:59:12	46.06728	-129.99918	25.8	1.1	1705.3	1706.5	On 2015 lava. Lobate pillows with thin rinds; bacterial mat in cracks and holes.
180	8/17/2015	09:59:34	46.06730	-129.99916	25.3	1.3	1705.6	1706.9	Broad collapsed lobate crust.
182	8/17/2015	10:00:37	46.06739	-129.99912	25.3	1.6	1706.2	1707.8	Lineated flow to left of thin crusted broken lobates.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
183	8/17/2015	10:01:23	46.06745	-129.99910	24.8	0.8	1706.9	1707.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
184	8/17/2015	10:01:29	46.06745	-129.99910	25.5	0.8	1706.9	1707.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
185	8/17/2015	10:01:39	46.06746	-129.99910	25.3	0.9	1707.0	1707.9	Kipuka of older flow including sea pen surrounded with young lava.
187	8/17/2015	10:02:27	46.06751	-129.99908	25.3	0.9	1707.1	1708.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
188	8/17/2015	10:02:36	46.06752	-129.99906	25.3	0.9	1707.3	1708.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
189	8/17/2015	10:02:48	46.06753	-129.99905	23.9	1.1	1707.4	1708.5	More kipukas in small thin lobate dribbles; coral on older lava.
190	8/17/2015	10:02:57	46.06754	-129.99904	23.9	0.8	1707.6	1708.4	No wonder the difference map is thin here.
191	8/17/2015	10:03:45	46.06759	-129.99903	25.2	1.0	1708.1	1709.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
193	8/17/2015	10:04:05	46.06762	-129.99903	24.9	0.8	1708.2	1709.1	Old lava is dusted with sediment but there isn't enough to core. Many kipukas among little dribbles of fresh lava.
194	8/17/2015	10:04:10	46.06762	-129.99902	25.2	0.8	1708.3	1709.1	input SciCam (port 1) routed to output FrmGrb1 (port 1)
195	8/17/2015	10:04:10	46.06762	-129.99902	25.2	0.8	1708.3	1709.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
196	8/17/2015	10:04:59	46.06768	-129.99905	14.2	1.5	1708.0	1709.4	Down-cam shows we are still at the contact; science cam has only old lava now.
197	8/17/2015	10:05:25	46.06769	-129.99909	22.7	0.8	1708.1	1708.8	Another octopus. Contact.
199	8/17/2015	10:06:03	46.06774	-129.99905	22.4	1.5	1707.5	1709.0	Old lava in both science and down camera.
200	8/17/2015	10:07:34	46.06781	-129.99888	22.1	1.8	1708.9	1710.7	input Usr2 Ch19 (port 6) routed to output FrmGrb2 (port 2)
201	8/17/2015	10:07:44	46.06782	-129.99886	23.0	0.9	1709.4	1710.3	input Usr1 Ch23 (port 5) routed to output FrmGrb2 (port 2)
202	8/17/2015	10:07:55	46.06783	-129.99885	22.8	1.3	1710.1	1711.3	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
204	8/17/2015	10:08:02	46.06784	-129.99884	23.0	1.4	1710.3	1711.7	Trying to framegrab from down-cam. 2015 lava in sight again (contact).
205	8/17/2015	10:08:03	46.06784	-129.99884	23.2	1.4	1710.3	1711.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
206	8/17/2015	10:08:25	46.06787	-129.99883	23.1	1.2	1710.9	1712.1	Lost science cam from framegrabber when we switched to User2 camera.
207	8/17/2015	10:08:28	46.06787	-129.99883	23.1	1.1	1711.0	1712.1	input SciCam (port 1) routed to output FrmGrb2 (port 2).

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
208	8/17/2015	10:09:00	46.06790	-129.99880	23.2	1.1	1710.8	1711.9	Science cam rendering as color bars. It is back now.
209	8/17/2015	10:09:21	46.06791	-129.99877	23.3	1.1	1711.2	1712.4	input Usr1 Ch23 (port 5) routed to output FrmGrb2 (port 2)
210	8/17/2015	10:09:29	46.06792	-129.99876	22.6	1.2	1711.5	1712.7	input Usr2 Ch19 (port 6) routed to output FrmGrb2 (port 2)
211	8/17/2015	10:09:46	46.06792	-129.99872	22.5	1.2	1711.6	1712.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
213	8/17/2015	10:10:04	46.06794	-129.99867	22.3	0.8	1712.2	1713.0	Passing across jumbled patch to large lineated sheet flow.
214	8/17/2015	10:10:23	46.06793	-129.99862	22.8	0.9	1713.4	1714.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
215	8/17/2015	10:10:48	46.06794	-129.99853	23.7	2.0	1713.5	1715.5	Guessing this is old sheet flow (?) but it has bacterial growth down in all the cracks.
216	8/17/2015	10:10:54	46.06795	-129.99852	22.9	1.9	1713.8	1715.7	Fissure ahead.
217	8/17/2015	10:11:12	46.06798	-129.99848	16.7	1.2	1714.5	1715.6	Deep and wide fissure.
218	8/17/2015	10:11:47	46.06800	-129.99847	12.3	4.8	1714.8	1719.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
219	8/17/2015	10:11:54	46.06800	-129.99846	11.7	3.4	1714.6	1718.0	West edge of fissure is broken sheet flow.
220	8/17/2015	10:11:58	46.06800	-129.99846	13.7	1.3	1714.7	1716.0	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
222	8/17/2015	10:12:20	46.06803	-129.99847	12.7	1.3	1714.6	1715.8	Don't see any new flow down in the bottom of fissure nor on the rims.
223	8/17/2015	10:12:31	46.06806	-129.99848	14.1	1.5	1714.6	1716.1	input SciCam (port 1) routed to output FrmGrb1 (port 1)
224	8/17/2015	10:13:24	46.06812	-129.99864	12.5	1.6	1712.7	1714.4	Turned away from fissure again heading 12 degrees.
226	8/17/2015	10:14:24	46.06821	-129.99868	21.1	0.9	1712.3	1713.2	Driving along outline of flow from difference map but all we see is bacterial mat covered old lava (?).
227	8/17/2015	10:14:25	46.06821	-129.99868	20.9	0.9	1712.2	1713.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
228	8/17/2015	10:14:45	46.06823	-129.99874	21.2	3.3	1710.7	1714.0	input SciCam (port 1) routed to output FrmGrb1 (port 1)
229	8/17/2015	10:14:56	46.06826	-129.99876	23.6	2.8	1711.1	1713.9	Pressure ridge in sheet flow. Bacterial mat covering cracked edges.
231	8/17/2015	10:16:08	46.06837	-129.99870	20.7	1.6	1712.5	1714.1	Approaching fissure again.
232	8/17/2015	10:16:23	46.06838	-129.99868	19.6	0.8	1713.0	1713.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
233	8/17/2015	10:16:31	46.06838	-129.99868	351.3	0.8	1713.1	1713.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
234	8/17/2015	10:16:55	46.06838	-129.99868	333.4	1.1	1714.1	1715.2	Thicker yellow bacterial mat.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
235	8/17/2015	10:17:13	46.06839	-129.99868	330.0	1.3	1713.9	1715.2	Close-up of clear shimmering fluid emanating from crack.
236	8/17/2015	10:17:45	46.06839	-129.99868	316.4	0.9	1714.3	1715.2	Flush pump is not working.
238	8/17/2015	10:18:17	46.06839	-129.99868	317.0	0.9	1714.3	1715.2	We still will get a temperature measurement with the Jason probe.
240	8/17/2015	10:21:04	46.06839	-129.99868	316.6	0.9	1714.3	1715.2	The temperature isn11.65C.
242	8/17/2015	10:22:04	46.06838	-129.99868	316.6	0.9	1714.3	1715.2	We will try to restart the fluid sampler and see if the flush pump will work.
243	8/17/2015	10:22:15	46.06838	-129.99868	316.5	0.9	1714.3	1715.2	The Jason probe reads 19C at this spot.
244	8/17/2015	10:23:42	46.06838	-129.99868	316.1	0.9	1714.3	1715.2	The Jason temp probe now reads 22C.
246	8/17/2015	10:24:49	46.06838	-129.99868	316.1	0.9	1714.3	1715.2	The flush pump is not working so we won't be sampling from this site. We will keep moving.
248	8/17/2015	10:27:31	46.06857	-129.99874	27.0	1.2	1714.0	1715.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
249	8/17/2015	10:27:44	46.06858	-129.99873	28.9	1.1	1714.1	1715.2	Thick bacterial mat and there is shimmering.
250	8/17/2015	10:27:45	46.06858	-129.99873	28.9	1.3	1713.9	1715.2	input SciCam (port 1) routed to output FrmGrb1 (port 1)
252	8/17/2015	10:28:29	46.06868	-129.99868	26.0	1.8	1714.3	1716.1	This is all diffuse fluid venting at this site.
254	8/17/2015	10:30:10	46.06879	-129.99861	295.0	2.0	1716.7	1718.6	Still visible venting here.
255	8/17/2015	10:31:07	46.06884	-129.99859	12.6	1.8	1716.0	1717.8	We will get out of the direction of the fissure and go north into the middle. We won't be going to WP2 and WP3.
256	8/17/2015	10:31:28	46.06887	-129.99859	12.9	0.8	1716.1	1717.0	Not going to WP2 and WP3.
258	8/17/2015	10:33:03	46.06893	-129.99850	12.5	1.7	1718.1	1719.8	Lineated lava channel.
259	8/17/2015	10:33:06	46.06894	-129.99849	13.8	1.6	1718.1	1719.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
260	8/17/2015	10:33:18	46.06895	-129.99848	13.9	2.1	1717.7	1719.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
261	8/17/2015	10:33:18	46.06895	-129.99848	13.9	2.1	1717.7	1719.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
263	8/17/2015	10:35:54	46.06915	-129.99848	13.6	1.1	1717.8	1718.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
265	8/17/2015	10:36:03	46.06915	-129.99846	12.9	1.3	1717.9	1719.3	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
267	8/17/2015	10:38:31	46.06927	-129.99838	10.4	2.6	1718.2	1720.8	Increasing the ship's speed from 0.3 knot to 0.4 knots.
268	8/17/2015	10:39:48	46.06933	-129.99826	10.9	1.1	1720.4	1721.6	Jumbled sheet flow.
272	8/17/2015	10:44:49	46.06975	-129.99806	8.8	1.3	1721.5	1722.9	Lineated sheet flow - Not sure if it is old or young.
275	8/17/2015	10:48:41	46.07006	-129.99799	22.7	1.8	1720.4	1722.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
276	8/17/2015	10:49:48	46.07013	-129.99798	4.4	1.1	1721.9	1722.9	input SciCam (port 1) routed to output KiPro (port 4)
279	8/17/2015	10:52:41	46.07036	-129.99797	34.9	1.0	1721.3	1722.3	Glossy lobates. may have crossed contact.
282	8/17/2015	10:56:22	46.07078	-129.99801	2.1	2.3	1720.1	1722.4	input SciCam (port 1) routed to output FrmGrb1 (port 1)
283	8/17/2015	10:56:22	46.07078	-129.99801	2.1	2.3	1720.1	1722.4	input SciCam (port 1) routed to output FrmGrb2 (port 2)
284	8/17/2015	10:56:22	46.07078	-129.99801	2.1	2.3	1720.1	1722.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
285	8/17/2015	10:56:33	46.07081	-129.99801	2.2	1.3	1720.4	1721.7	Shift change.
286	8/17/2015	10:56:57	46.07082	-129.99802	1.2	0.8	1721.6	1722.3	Passing to the W of waypoint 2 - staying in the area where the mapping showed the difference.
288	8/17/2015	10:58:39	46.07099	-129.99803	1.8	1.0	1721.6	1722.7	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
289	8/17/2015	10:59:09	46.07104	-129.99804	2.1	1.7	1721.5	1723.1	Debating whether or not the lavas we're passing over are fresh.
290	8/17/2015	10:59:34	46.07104	-129.99804	2.0	2.1	1721.1	1723.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
291	8/17/2015	10:59:34	46.07104	-129.99804	2.0	2.1	1721.1	1723.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
293	8/17/2015	11:01:52	46.07127	-129.99805	3.2	2.3	1720.9	1723.1	Jumbled flows. Jenny is convinced the lavas are new. Thick mat that appears to be eruptive but could be deceiving.
295	8/17/2015	11:03:03	46.07139	-129.99799	2.3	1.8	1721.1	1722.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
296	8/17/2015	11:03:03	46.07139	-129.99799	2.3	1.8	1721.1	1722.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
297	8/17/2015	11:03:03	46.07139	-129.99799	2.3	1.8	1721.1	1722.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
298	8/17/2015	11:03:03	46.07139	-129.99799	2.3	1.8	1721.1	1722.9	input SciCam (port 1) routed to output FrmGrb2 (port 2)
300	8/17/2015	11:04:23	46.07154	-129.99795	2.1	1.7	1719.0	1720.7	Jumbled lavas with a patch of orange.
301	8/17/2015	11:05:07	46.07162	-129.99793	1.3	2.7	1718.9	1721.7	The ship has paused so that will give us a chance to pick up a rock shortly.
302	8/17/2015	11:05:27	46.07166	-129.99792	2.0	3.0	1719.3	1722.2	Zooming in on some of the lavas with the science cam.
303	8/17/2015	11:05:46	46.07169	-129.99792	1.8	2.8	1719.3	1722.2	Could be flock in the water. A shrimp just swam by.
304	8/17/2015	11:05:54	46.07170	-129.99791	2.3	2.3	1719.3	1721.6	The water appears a bit milky.
306	8/17/2015	11:06:28	46.07177	-129.99791	0.4	1.2	1720.1	1721.3	The shrimp are not vent shrimp. Probably a mysid of some sort?

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
307	8/17/2015	11:07:29	46.07185	-129.99785	2.1	2.0	1719.8	1721.8	This looks like bacterial mat. Has more of a white color than what we saw previously (which has a yellowish-orangish tone - we call it "eruptive mat").
312	8/17/2015	11:10:06	46.07195	-129.99775	359.5	1.3	1722.3	1723.6	Zooming in to gather a sample at a pressure ridge in jumbled sheet flow.
313	8/17/2015	11:10:11	46.07195	-129.99775	359.5	1.3	1722.3	1723.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
314	8/17/2015	11:10:28	46.07195	-129.99775	358.3	1.3	1722.3	1723.6	Bacterial mat in places and some clear shimmering fluid in the area.
315	8/17/2015	11:10:50	46.07195	-129.99775	358.3	1.3	1722.3	1723.6	Lavas have a yellow-ish mat covering them.
316	8/17/2015	11:11:03	46.07195	-129.99774	358.5	1.2	1722.2	1723.4	Recording for sample 3.
318	8/17/2015	11:12:10	46.07195	-129.99774	359.1	1.3	1722.2	1723.5	Positioning to take the sample. Contemplating where to grab a piece of this jumbled flow on this pressure ridge.
319	8/17/2015	11:12:20	46.07195	-129.99774	359.1	1.3	1722.2	1723.4	Highlights on the science cam.
320	8/17/2015	11:12:55	46.07195	-129.99774	359.1	1.2	1722.2	1723.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
321	8/17/2015	11:12:55	46.07195	-129.99774	359.1	1.2	1722.2	1723.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
322	8/17/2015	11:13:14	46.07196	-129.99773	359.2	1.2	1722.2	1723.4	Grabbed a large piece of lava. It's too big. Most of it went tumbling.
324	8/17/2015	11:14:33	46.07196	-129.99773	359.2	1.2	1722.2	1723.4	**SAMPLE: geo J820-geo-03**. Tiny chunk of sheet flow. Remnant of much larger piece. Going into box 7. Has some glass on it. Will try to get a bit more.
325	8/17/2015	11:14:50	46.07196	-129.99773	359.2	1.2	1722.2	1723.5	HIGHLIGHTS: HD highlights stop
326	8/17/2015	11:15:53	46.07195	-129.99773	359.3	1.2	1722.3	1723.5	Going in for another piece of this lava. All of these pieces are going into box 7 and will be called one sample
328	8/17/2015	11:17:45	46.07195	-129.99772	359.6	1.2	1722.1	1723.3	J820-geo-03 position: 46d 4.31685' 129d 59.86355 Z=1722.2m.
329	8/17/2015	11:17:50	46.07195	-129.99772	359.6	1.2	1722.1	1723.3	NAV: Doppler Reset
331	8/17/2015	11:18:49	46.07196	-129.99772	0.4	2.2	1721.3	1723.5	We're about 154m WSW of Waypoint 3.
333	8/17/2015	11:20:26	46.07208	-129.99771	38.6	2.0	1721.6	1723.6	3 grabs of jumbled sheet flow - pretty sure they are from 2015 lava.
335	8/17/2015	11:21:18	46.07212	-129.99771	38.8	1.3	1722.4	1723.6	We're moving the ship to waypoint 4.
338	8/17/2015	11:23:26	46.07221	-129.99765	351.1	0.8	1722.9	1723.7	These lavas are different. We're in a drain-out surface that is pretty flat with lineations that have yellowish mat.
339	8/17/2015	11:23:42	46.07221	-129.99765	347.0	0.8	1723.1	1723.8	input SciCam (port 1) routed to output FrmGrb1 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									1)
340	8/17/2015	11:23:42	46.07221	-129.99765	347.0	0.8	1723.1	1723.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
342	8/17/2015	11:24:06	46.07220	-129.99765	347.6	0.8	1723.1	1723.9	There is some pretty good flow here in this small crack.
343	8/17/2015	11:25:00	46.07220	-129.99765	347.1	0.8	1722.9	1723.7	This area has yellowish intermittent mat. Pulling out the wand to take the temp here in this area of diffuse flow.
344	8/17/2015	11:25:09	46.07220	-129.99765	347.1	0.8	1722.9	1723.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
345	8/17/2015	11:25:18	46.07220	-129.99765	347.2	0.8	1722.9	1723.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
347	8/17/2015	11:26:43	46.07220	-129.99765	347.0	0.8	1722.9	1723.7	Taking the temp here: 17.29C - the highest temp so far.
348	8/17/2015	11:27:38	46.07220	-129.99765	347.1	0.8	1722.9	1723.7	20C and climbing... Pieces of yellowish floc coming off the rocks. 20.9C was the highest T recorded.
349	8/17/2015	11:27:45	46.07220	-129.99765	347.1	0.8	1722.9	1723.7	Going in for a major sample here.
350	8/17/2015	11:27:46	46.07220	-129.99765	347.0	0.8	1722.9	1723.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
352	8/17/2015	11:28:24	46.07220	-129.99765	346.8	0.8	1722.9	1723.7	input SciCam (port 1) routed to output FrmGrb1 (port 1)
353	8/17/2015	11:28:24	46.07220	-129.99765	346.8	0.8	1722.9	1723.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
355	8/17/2015	11:30:45	46.07220	-129.99765	346.3	0.8	1722.9	1723.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
356	8/17/2015	11:30:52	46.07220	-129.99765	346.2	0.8	1723.0	1723.7	**SAMPLE: major J820-major-04**. White major sample. 46d 4.33155' 129d 59.86083. Z=1723m. Area of diffuse flow in a crack in this drain-out surface.
357	8/17/2015	11:30:55	46.07220	-129.99765	346.2	0.8	1723.0	1723.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
358	8/17/2015	11:31:42	46.07220	-129.99765	346.1	0.8	1723.0	1723.7	Pieces of yellow eruptive mat are floating around - dislodged during sampling.
361	8/17/2015	11:34:08	46.07220	-129.99765	346.6	0.8	1722.9	1723.7	**SAMPLE: GTB J820-gtb-05**. Silver #11 gastight in same location as previous sample. Tmax=20.9C.
362	8/17/2015	11:34:31	46.07220	-129.99765	346.6	0.8	1722.9	1723.6	J820-gtb-05 cont. Taken.
363	8/17/2015	11:35:12	46.07220	-129.99766	346.5	0.8	1723.0	1723.7	Stashing the silver-11 gtb. 20.9C.
364	8/17/2015	11:35:33	46.07220	-129.99765	346.3	0.8	1722.9	1723.6	Going to cycle the power to the beast one more time.
366	8/17/2015	11:36:54	46.07219	-129.99764	349.7	2.1	1722.1	1724.2	We're finished sampling here. We are due W of waypoint 3 ~140m. Will now move on to waypoint 4.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
368	8/17/2015	11:38:37	46.07232	-129.99758	30.5	1.8	1722.5	1724.3	Lineated sheet flows here. Striations with eruptive mat.
369	8/17/2015	11:38:52	46.07234	-129.99755	30.6	1.8	1722.6	1724.4	In the middle of the channel system.
370	8/17/2015	11:39:22	46.07236	-129.99753	30.9	1.9	1722.5	1724.4	Sharp edge here and now back into the broad lobate lavas.
372	8/17/2015	11:40:28	46.07241	-129.99745	40.6	1.2	1722.6	1723.7	Bright yellowish eruptive mat on these lavas with quite a bit of diffuse flow.
373	8/17/2015	11:40:39	46.07243	-129.99742	39.6	1.5	1722.3	1723.8	The mat is getting thicker.
374	8/17/2015	11:40:58	46.07244	-129.99740	39.2	1.8	1721.9	1723.7	Moving over large broad lobate flows.
375	8/17/2015	11:41:42	46.07248	-129.99733	38.9	2.5	1721.2	1723.7	Debating whether or not this is new or old lava. Not sure.
377	8/17/2015	11:42:30	46.07251	-129.99726	38.5	2.9	1720.6	1723.5	This is probably a little pit at the top coming up.
378	8/17/2015	11:42:43	46.07253	-129.99723	39.0	2.8	1720.8	1723.7	Moving over little pits.
379	8/17/2015	11:42:52	46.07254	-129.99721	38.7	2.6	1720.9	1723.5	The fluid sampler started running.
380	8/17/2015	11:42:58	46.07255	-129.99720	38.7	2.5	1720.9	1723.4	Yippee!
381	8/17/2015	11:43:12	46.07256	-129.99718	38.7	2.7	1720.8	1723.4	Jumbled up lavas in this area of small pits.
382	8/17/2015	11:43:54	46.07257	-129.99713	36.0	2.4	1721.1	1723.6	HFS stopped. Dave is messing with it trying to get it up and going.
384	8/17/2015	11:44:51	46.07259	-129.99714	322.0	3.4	1721.5	1724.8	Collapse edge here.
385	8/17/2015	11:45:18	46.07259	-129.99710	50.5	1.9	1722.0	1723.9	This is not as large a collapse edge as the ones we see in the caldera.
386	8/17/2015	11:45:27	46.07259	-129.99710	43.6	1.7	1722.2	1723.9	Mat down in the bottom of the collapse.
388	8/17/2015	11:46:48	46.07265	-129.99699	67.9	2.2	1724.3	1726.5	Now we're moving into jumbled flows again. Little white patches are clumps of mat.
389	8/17/2015	11:47:10	46.07266	-129.99697	67.6	1.7	1724.3	1726.0	Seeing reflective surfaces. We're thinking this is young lava.
390	8/17/2015	11:47:14	46.07266	-129.99696	68.2	1.7	1724.2	1725.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
391	8/17/2015	11:47:27	46.07266	-129.99695	68.1	1.8	1724.1	1725.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
392	8/17/2015	11:47:27	46.07266	-129.99695	68.1	1.8	1724.1	1725.9	input SciCam (port 1) routed to output FrmGrb2 (port 2)
394	8/17/2015	11:48:09	46.07270	-129.99694	67.6	1.6	1723.8	1725.4	Brisingid (sea star) on the lavas. They can move so it does not mean these lavas are old.
395	8/17/2015	11:48:34	46.07271	-129.99693	97.8	0.8	1723.6	1724.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
396	8/17/2015	11:48:39	46.07271	-129.99693	107.1	0.8	1723.5	1724.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
397	8/17/2015	11:48:45	46.07271	-129.99693	138.2	1.0	1723.3	1724.3	We're looking at a broad lobe with broken up small

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									pillar-like feature.
398	8/17/2015	11:49:07	46.07272	-129.99691	169.5	0.8	1723.1	1723.8	It looks like there is fresher blacker stuff inside this pillar-like structure.
400	8/17/2015	11:50:08	46.07278	-129.99683	39.8	1.8	1722.4	1724.2	Lobates coming up. Some of this is intact; some of it is collapsed; some is down in the drain-out. Bill thinks this is all the same flow.
401	8/17/2015	11:51:43	46.07291	-129.99667	36.4	2.8	1722.3	1725.1	Moving over lobate lavas. Working our way toward the shallowest part of this section.
403	8/17/2015	11:53:12	46.07299	-129.99658	36.7	3.7	1721.5	1725.2	The mat is getting thicker.
404	8/17/2015	11:53:49	46.07300	-129.99655	36.8	4.1	1720.9	1725.0	So far everything we've seen is pretty fluid morphology. We haven't seen any large pillow mounds yet.
406	8/17/2015	11:55:06	46.07312	-129.99639	39.6	2.4	1724.6	1726.9	So far we've seen: broad lobes; drainouts; lineated surfaces; jumbled flows.
407	8/17/2015	11:55:11	46.07313	-129.99638	37.5	2.5	1724.8	1727.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
408	8/17/2015	11:55:17	46.07313	-129.99637	32.1	2.4	1725.3	1727.6	input SciCam (port 1) routed to output FrmGrb1 (port 1)
409	8/17/2015	11:55:17	46.07313	-129.99637	32.1	2.4	1725.3	1727.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
410	8/17/2015	11:55:23	46.07314	-129.99637	14.6	5.3	1725.6	1730.9	Going over a fissure? Or a collapse?
411	8/17/2015	11:56:02	46.07321	-129.99633	35.6	2.6	1725.9	1728.4	The lavas are really jumbled here. Probably just between pressure ridges.
413	8/17/2015	11:56:36	46.07323	-129.99630	72.5	1.3	1726.5	1727.8	White filamentous bacteria here on top of the yellow eruptive mat.
414	8/17/2015	11:56:46	46.07323	-129.99629	78.1	1.2	1726.7	1727.9	There are tubeworms in there!!
415	8/17/2015	11:57:42	46.07323	-129.99629	94.5	0.9	1727.3	1728.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
416	8/17/2015	11:57:47	46.07323	-129.99629	94.6	0.9	1727.3	1728.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
417	8/17/2015	11:57:48	46.07323	-129.99629	94.5	0.9	1727.3	1728.2	HIGHLIGHTS: HD highlights start Debating when the tubeworms got here. Looking at tubeworms. They are 5cm long at the most.
419	8/17/2015	11:58:12	46.07324	-129.99629	94.6	0.9	1727.3	1728.2	Going to take a temperature measurement here.
420	8/17/2015	11:58:31	46.07324	-129.99629	94.8	0.9	1727.3	1728.1	Dropping a target here.
421	8/17/2015	11:59:04	46.07330	-129.99626	44.7	2.4	1724.3	1726.8	NAV: Tubeworms target.
422	8/17/2015	11:59:20	46.07338	-129.99621	39.3	1.9	1724.1	1726.0	We're just going to keep on going because the ship is in motion.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
424	8/17/2015	12:00:12	46.07358	-129.99606	37.4	1.3	1725.3	1726.6	Target was "Tubeworm"s in jumbled new lavas with white filamentous bacterial mat.
425	8/17/2015	12:00:32	46.07362	-129.99602	38.3	1.5	1725.5	1727.0	There was another polychaete in there.
426	8/17/2015	12:01:14	46.07363	-129.99599	54.0	1.7	1726.2	1727.8	More white bacterial mat and shimmer here - plus lots of yellow eruptive mat. Bag creatures in the cracks.
427	8/17/2015	12:01:25	46.07363	-129.99600	84.2	0.8	1726.5	1727.2	Diffuse flow here.
428	8/17/2015	12:01:42	46.07364	-129.99600	78.7	1.0	1725.8	1726.8	Shimmer.
429	8/17/2015	12:01:55	46.07367	-129.99599	59.1	2.4	1724.6	1726.9	We've stirred up lots of floc.
431	8/17/2015	12:02:27	46.07376	-129.99593	42.3	2.0	1725.0	1727.1	More and more white patches with flow as we move up slope.
432	8/17/2015	12:02:41	46.07376	-129.99592	40.7	0.9	1725.6	1726.5	Holes in these lobes with warm water coming out.
433	8/17/2015	12:03:01	46.07377	-129.99592	38.4	0.8	1725.8	1726.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
434	8/17/2015	12:03:03	46.07377	-129.99592	38.4	0.8	1725.8	1726.5	More tubeworms and perhaps a palm worm?
435	8/17/2015	12:03:11	46.07377	-129.99592	38.4	0.8	1725.8	1726.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
436	8/17/2015	12:03:52	46.07377	-129.99592	38.4	0.8	1725.8	1726.5	Long palm worms (?) with really long gills and tubes. Different looking than what we've seen in the past.
438	8/17/2015	12:04:44	46.07378	-129.99592	38.5	0.8	1725.9	1726.6	HIGHLIGHTS: Long-gilled worms that look like a cross between a palm worm and a sulfide worm. Bright red gills.
439	8/17/2015	12:05:04	46.07378	-129.99592	41.2	1.5	1724.7	1726.2	Colonization going on here.
440	8/17/2015	12:05:15	46.07381	-129.99589	41.4	2.8	1723.2	1726.0	We have to move on because the ship is moving.
441	8/17/2015	12:05:21	46.07383	-129.99586	41.9	2.0	1723.2	1725.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
442	8/17/2015	12:05:26	46.07385	-129.99585	41.6	2.6	1723.3	1725.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
443	8/17/2015	12:05:28	46.07386	-129.99584	41.1	2.4	1723.4	1725.7	The morphology is starting to look more like pillows here.
445	8/17/2015	12:07:28	46.07414	-129.99558	41.7	2.1	1719.8	1721.9	Small pillow-ish thick mat on this lobate surface. A bit more pillow-like.
446	8/17/2015	12:07:51	46.07420	-129.99551	41.9	2.5	1718.8	1721.2	HFS is still not working.
448	8/17/2015	12:08:09	46.07426	-129.99545	41.6	2.1	1718.0	1720.1	Small pillows now on top of this lobate flow.
449	8/17/2015	12:08:17	46.07429	-129.99543	36.5	3.0	1717.1	1720.1	The eruptive mat is really thick here.
450	8/17/2015	12:09:01	46.07442	-129.99528	37.6	1.9	1716.9	1718.8	The lobes are starting to broaden a bit.
451	8/17/2015	12:09:59	46.07450	-129.99512	38.3	1.8	1717.1	1719.0	Climbing up this mound toward waypoint 4.
453	8/17/2015	12:10:21	46.07452	-129.99507	37.9	2.2	1716.8	1719.0	Lobate flows.
454	8/17/2015	12:10:38	46.07453	-129.99504	38.0	2.3	1717.0	1719.3	"Puffy" lobates.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
455	8/17/2015	12:11:14	46.07456	-129.99497	37.8	1.1	1717.0	1718.1	Now into more broad lobes.
456	8/17/2015	12:11:37	46.07457	-129.99495	37.7	1.6	1716.9	1718.5	Haven't seen anything that looks volcanoclastic or explosive.
458	8/17/2015	12:12:16	46.07459	-129.99491	40.2	0.9	1718.0	1718.9	We're getting close to the top of this mound. Haven't seen any flow.
459	8/17/2015	12:12:26	46.07459	-129.99490	39.2	1.0	1718.0	1719.0	Thicker mat here.
460	8/17/2015	12:12:54	46.07459	-129.99490	19.5	1.5	1717.8	1719.2	The eruptive mat is thick up here in this area of "puffy lobate flows.
461	8/17/2015	12:12:55	46.07459	-129.99490	19.0	1.5	1717.8	1719.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
462	8/17/2015	12:13:00	46.07460	-129.99490	20.2	1.1	1717.9	1719.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
463	8/17/2015	12:13:11	46.07462	-129.99493	335.3	1.0	1718.0	1719.1	We are going to move north a bit with Jason and keep the ship parked.
464	8/17/2015	12:13:22	46.07462	-129.99494	329.6	0.9	1718.2	1719.1	Looking around the top of this mound.
466	8/17/2015	12:14:02	46.07462	-129.99498	343.3	2.2	1716.5	1718.8	A few little pillows sticking out. Black glass exposed here and there under this thick mat.
467	8/17/2015	12:15:04	46.07469	-129.99507	351.0	0.9	1717.7	1718.5	Very thick yellow-ish eruptive mat here at the top of this mound.
468	8/17/2015	12:15:30	46.07470	-129.99507	342.4	0.9	1717.7	1718.6	See a little bit of shimmer here and white filamentous bacteria between some of these lobes.
470	8/17/2015	12:16:03	46.07473	-129.99512	345.3	1.7	1716.6	1718.3	More white mat ahead.
471	8/17/2015	12:16:45	46.07476	-129.99515	336.8	1.2	1716.8	1718.0	White filamentous mat - more ahead so will proceed a bit further.
472	8/17/2015	12:17:01	46.07477	-129.99516	340.1	1.0	1717.0	1718.0	More tubeworms here.
473	8/17/2015	12:17:18	46.07477	-129.99516	340.5	1.2	1716.8	1718.0	Bag creatures.
474	8/17/2015	12:17:28	46.07477	-129.99517	340.7	1.0	1716.7	1717.7	Shiny black lava exposed here.
475	8/17/2015	12:17:45	46.07478	-129.99518	340.8	2.0	1716.2	1718.2	This looks like a spot with pretty good flow here.
476	8/17/2015	12:17:46	46.07478	-129.99518	340.8	2.0	1716.2	1718.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
477	8/17/2015	12:17:51	46.07478	-129.99518	340.6	1.7	1716.2	1717.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
479	8/17/2015	12:18:07	46.07479	-129.99519	328.2	1.0	1716.9	1717.9	Some filamentous bacterial mat here.
480	8/17/2015	12:18:30	46.07479	-129.99519	309.1	0.8	1717.3	1718.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
481	8/17/2015	12:18:35	46.07479	-129.99519	309.1	1.4	1717.3	1718.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
482	8/17/2015	12:18:52	46.07479	-129.99519	309.1	34.4	1717.2	1751.7	Pillow here covered in bacterial mat. Fairly good flow coming out from between these pillows.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
483	8/17/2015	12:19:50	46.07479	-129.99520	311.0	1.0	1717.2	1718.2	Have the temperature probe out and checking between these pillows in white bacterial mat.
484	8/17/2015	12:19:58	46.07479	-129.99520	311.0	1.1	1717.2	1718.3	NAV: Doppler Reset
486	8/17/2015	12:21:08	46.07480	-129.99520	309.8	1.5	1717.2	1718.7	15C and rising. 16.8C.
487	8/17/2015	12:21:32	46.07480	-129.99520	309.8	1.5	1717.2	1718.7	Moving the temp probe slightly to get a higher temp if possible. 16.8C.
488	8/17/2015	12:21:42	46.07480	-129.99520	309.7	1.5	1717.2	1718.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
489	8/17/2015	12:21:47	46.07480	-129.99520	309.7	1.5	1717.2	1718.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
490	8/17/2015	12:21:54	46.07480	-129.99520	309.7	1.5	1717.2	1718.7	We're up on top of the highest mound in this section.
492	8/17/2015	12:23:49	46.07480	-129.99520	309.7	1.5	1717.2	1718.7	Temp is still climbing. 19.2C; 19.5C.
494	8/17/2015	12:25:37	46.07480	-129.99520	309.6	1.5	1717.4	1718.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
495	8/17/2015	12:25:52	46.07480	-129.99520	309.6	0.9	1717.4	1718.3	Temp 19.6C is the highest temp so for. We're going to take the remaining major and gastight here.
497	8/17/2015	12:27:24	46.07480	-129.99520	308.4	0.8	1717.3	1718.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
498	8/17/2015	12:27:35	46.07480	-129.99521	306.9	1.4	1717.3	1718.7	**SAMPLE: Major J820-major-06** Red #22. Sample right down in the hole between these 2 pillows.
500	8/17/2015	12:28:23	46.07480	-129.99521	306.9	1.4	1717.3	1718.7	J820-major-06 cont. Fired. 46d 4.48813' 129d 59.71221. Z=1717m.
501	8/17/2015	12:28:55	46.07479	-129.99521	306.8	1.4	1717.3	1718.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
502	8/17/2015	12:29:02	46.07479	-129.99521	306.9	1.5	1717.3	1718.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
503	8/17/2015	12:29:47	46.07479	-129.99521	306.8	1.7	1717.3	1719.0	J820-major-06 cont. Firing. Tmax=19.6C. Top of this mound at waypoint 4.
505	8/17/2015	12:30:12	46.07479	-129.99521	307.0	1.4	1717.3	1718.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
506	8/17/2015	12:30:18	46.07479	-129.99521	307.0	1.4	1717.3	1718.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
507	8/17/2015	12:30:28	46.07479	-129.99521	307.1	1.4	1717.3	1718.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
508	8/17/2015	12:30:34	46.07479	-129.99521	307.1	1.4	1717.3	1718.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
509	8/17/2015	12:31:00	46.07479	-129.99521	307.1	1.4	1717.3	1718.7	Sample site is at the top of the mound between 2 pillows - one covered in white bacterial mat the other has white mat in the creases of the pillow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
510	8/17/2015	12:31:01	46.07479	-129.99521	307.1	1.4	1717.3	1718.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
511	8/17/2015	12:31:23	46.07479	-129.99521	307.1	1.4	1717.3	1718.7	Diffuse flow here 19.6C.
513	8/17/2015	12:32:33	46.07479	-129.99521	307.1	1.9	1717.3	1719.1	input SciCam (port 1) routed to output FrmGrb2 (port 2)
514	8/17/2015	12:33:39	46.07479	-129.99521	307.2	1.5	1717.3	1718.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
515	8/17/2015	12:34:01	46.07479	-129.99521	307.2	1.5	1717.3	1718.8	**SAMPLE: GTB J820-gtb-07** white #17 gastight sample. Done. Same location.
517	8/17/2015	12:35:03	46.07479	-129.99521	307.3	1.6	1717.3	1718.9	J820-gtb-07 cont. Same location as sample 6. 46d 4.48813' 129d 59.71221. Z=1717m.
518	8/17/2015	12:35:57	46.07479	-129.99521	310.3	0.8	1717.1	1717.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
520	8/17/2015	12:36:25	46.07480	-129.99520	319.0	0.8	1717.1	1717.8	Will continue to waypoint 5 and 6 and then continuing over to WP9 depending on the time.
521	8/17/2015	12:37:02	46.07480	-129.99519	319.1	0.8	1717.0	1717.8	Going to try to get a rock sample here before we proceed.
523	8/17/2015	12:38:13	46.07477	-129.99517	12.1	1.3	1716.5	1717.8	Rock shopping for something from the top of this mound that is mainly lobate with some pillows.
524	8/17/2015	12:38:52	46.07484	-129.99513	3.4	1.3	1717.5	1718.8	More lobate flows.
525	8/17/2015	12:39:11	46.07488	-129.99511	11.4	1.0	1717.9	1718.9	Coming on an area with more white filamentous bacterial mat.
526	8/17/2015	12:39:57	46.07489	-129.99509	48.7	0.8	1718.4	1719.1	Going try to grab this pillow lobe here. It's covered in eruptive mat.
528	8/17/2015	12:40:29	46.07489	-129.99509	49.7	0.8	1718.4	1719.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
529	8/17/2015	12:40:37	46.07489	-129.99509	48.3	0.8	1718.4	1719.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
530	8/17/2015	12:41:20	46.07489	-129.99508	48.0	0.8	1718.3	1719.1	**SAMPLE: geo J820-geo-08** sample. Going for this little pillow lobe (bud). Dislodged it.
532	8/17/2015	12:42:38	46.07489	-129.99507	47.8	0.8	1718.3	1719.1	J820-geo-08 cont. Large piece of pillow lobe covered in eruptive mat. Went in the gastight box.
533	8/17/2015	12:43:58	46.07488	-129.99503	49.2	2.9	1716.1	1719.0	J820-geo-08 cont.. 46d 4.49462 129d 59.70639' Z=1716.5m.
535	8/17/2015	12:44:16	46.07487	-129.99500	73.5	2.8	1716.3	1719.1	Ready to move onward to waypoint 5 at 0.4 kts.
539	8/17/2015	12:50:12	46.07486	-129.99474	20.8	1.2	1718.4	1719.5	Moving now. The mat seems a bit thinner here. "Puffy" lobate flows here.
540	8/17/2015	12:50:13	46.07486	-129.99474	20.8	1.2	1718.4	1719.5	Moving now. The mat seems a bit thinner here. "Puffy" lobate flows here.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
541	8/17/2015	12:51:12	46.07487	-129.99473	23.4	1.7	1717.9	1719.6	Pulling out the temp wand to be ready to use it on moments notice.
543	8/17/2015	12:52:07	46.07490	-129.99474	22.4	0.8	1719.3	1720.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
544	8/17/2015	12:52:27	46.07490	-129.99474	22.0	0.8	1719.2	1720.0	Looks like gelatinous goo. Polychaete swimming around.
545	8/17/2015	12:52:55	46.07494	-129.99474	22.8	1.6	1718.8	1720.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
546	8/17/2015	12:53:46	46.07502	-129.99469	22.2	2.1	1719.8	1721.9	Moving again. Heading to WP5. We're following along where we believe the eruption happened along the "buried?" fissure.
548	8/17/2015	12:54:13	46.07506	-129.99464	21.8	2.3	1720.1	1722.4	The eruptive mat is getting thicker again. Moving over lobate and pillow lavas.
550	8/17/2015	12:57:35	46.07524	-129.99445	29.9	1.2	1722.6	1723.8	Continuing over these lobate flows with eruptive mats.
552	8/17/2015	12:59:11	46.07536	-129.99438	30.6	2.1	1724.0	1726.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
553	8/17/2015	12:59:26	46.07539	-129.99436	30.1	1.9	1724.1	1726.0	Less mat in an area with a combination of lobates and pillows. On the north flank of the mound heading NNE to WP5.
554	8/17/2015	12:59:47	46.07542	-129.99434	29.8	2.0	1725.1	1727.0	Can see more of the black glassy lava now.
556	8/17/2015	13:01:15	46.07550	-129.99429	30.7	1.6	1725.5	1727.1	We're approaching the area where it is debatable whether is old or new (mbari vs eoi interp).
557	8/17/2015	13:01:48	46.07552	-129.99425	30.0	2.2	1725.7	1727.9	The seafloor here still looks like it is newly erupted.
559	8/17/2015	13:02:17	46.07556	-129.99424	30.4	1.3	1726.7	1727.9	Seeing more of the black shiny lavas with eruptive mat in the cracks and covering most surfaces.
560	8/17/2015	13:02:28	46.07557	-129.99424	30.0	1.1	1726.7	1727.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
562	8/17/2015	13:04:34	46.07579	-129.99413	28.2	2.2	1726.0	1728.3	Now the mat is getting a little thicker. Mostly lobate here. Haven't seen any pillows in awhile.
563	8/17/2015	13:05:24	46.07587	-129.99409	29.0	1.5	1726.9	1728.5	The flow looks like it is getting thinner.
564	8/17/2015	13:05:38	46.07590	-129.99409	28.9	1.1	1727.4	1728.5	Lobate flow with little pillows interspersed.
565	8/17/2015	13:05:42	46.07591	-129.99409	28.2	1.1	1727.5	1728.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
566	8/17/2015	13:05:53	46.07593	-129.99408	28.2	1.5	1727.1	1728.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
569	8/17/2015	13:08:18	46.07616	-129.99396	21.6	2.1	1727.3	1729.4	A little more eruptive mat here and some larger pillows on this flow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
570	8/17/2015	13:09:25	46.07624	-129.99393	21.3	1.6	1728.0	1729.6	We're right on the edge of the mbari outline. All the lavas we have gone over appear to be new lavas so these flows are most-likely connected.
572	8/17/2015	13:10:04	46.07627	-129.99391	21.2	1.7	1728.0	1729.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
573	8/17/2015	13:10:12	46.07628	-129.99390	21.1	1.1	1728.2	1729.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
574	8/17/2015	13:10:32	46.07631	-129.99389	20.5	1.6	1728.0	1729.6	Correction. We are now coming on the S edge of the mbari outline. If correct we should see a contact coming up.
575	8/17/2015	13:11:02	46.07638	-129.99385	19.3	1.6	1728.0	1729.6	The flow is thinner here - less eruptive mat. More pillows less lobate.
576	8/17/2015	13:11:12	46.07639	-129.99384	21.1	1.7	1727.9	1729.5	It's a mix of lobate and pillows here.
577	8/17/2015	13:11:52	46.07647	-129.99382	20.9	1.2	1728.6	1729.8	Still seeing eruptive mat. Black glass visible as well.
579	8/17/2015	13:12:44	46.07648	-129.99379	21.5	2.0	1727.6	1729.6	Between WP4 and WP5 - much closer to WP4 here heading north.
580	8/17/2015	13:14:00	46.07662	-129.99375	21.4	1.5	1728.4	1729.9	Zooming in with the sci cam. Haven't seen any hydrothermal flow. The lavas still appear to be 2015 flow.
582	8/17/2015	13:15:24	46.07680	-129.99368	18.7	1.4	1727.5	1728.9	Shiny looking lavas here with thin eruptive mat coating.
584	8/17/2015	13:16:25	46.07686	-129.99367	12.3	1.0	1728.4	1729.5	Some broken-up rock here. Not sure why. Perhaps an exploded pillow.
585	8/17/2015	13:16:33	46.07686	-129.99366	8.5	1.0	1728.3	1729.3	Little explosion here??
586	8/17/2015	13:16:37	46.07686	-129.99366	2.2	1.2	1728.4	1729.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
587	8/17/2015	13:16:44	46.07687	-129.99365	0.4	1.3	1728.1	1729.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
588	8/17/2015	13:16:56	46.07690	-129.99363	4.0	1.8	1727.9	1729.7	Broken up pieces surrounded by intact lavas.
589	8/17/2015	13:17:12	46.07692	-129.99361	23.2	1.9	1728.0	1729.9	Big pillow and smaller pillows scattered around.
590	8/17/2015	13:17:32	46.07695	-129.99356	22.6	2.1	1728.1	1730.2	Bunches of pillows in a row.
592	8/17/2015	13:18:02	46.07703	-129.99347	20.2	1.8	1728.8	1730.7	So far the 2015 flow is continuous.
593	8/17/2015	13:19:42	46.07718	-129.99330	22.8	2.1	1728.5	1730.5	Black shiny spot exposed.
595	8/17/2015	13:20:27	46.07722	-129.99326	23.2	1.1	1729.0	1730.1	We're skirting along the eastern edge of the eoi interpretation of the flow boundary.
596	8/17/2015	13:20:55	46.07723	-129.99323	22.1	1.4	1728.9	1730.3	Still looks like new lava here with a thin coating of eruptive mat. Have NOT seen any contacts.
598	8/17/2015	13:22:37	46.07734	-129.99316	21.7	2.2	1728.0	1730.2	More bright yellow mat here. Lobate flows here not as "puffy" as on top of the mound.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
599	8/17/2015	13:23:05	46.07737	-129.99315	23.3	1.6	1728.6	1730.2	Occasionally see spots where the black glossy lava is exposed under the eruptive mat.
601	8/17/2015	13:24:49	46.07760	-129.99312	13.7	2.0	1727.9	1729.9	Going to bump up the speed to 0.5 kts - from 0.4 kts to hope to get to WP5. Will look for contacts along the way.
602	8/17/2015	13:25:25	46.07765	-129.99309	14.4	1.1	1729.0	1730.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
603	8/17/2015	13:25:35	46.07766	-129.99309	15.5	1.1	1729.0	1730.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
604	8/17/2015	13:25:47	46.07768	-129.99309	14.8	1.2	1729.0	1730.2	It looks like the flow is connected. We haven't seen any contacts.
606	8/17/2015	13:26:06	46.07771	-129.99308	15.7	0.9	1729.5	1730.4	We also have not seen any venting - probably because the flow is thinner and cooled quicker.
607	8/17/2015	13:26:49	46.07778	-129.99307	17.0	0.9	1729.1	1730.1	We're starting to be able to see more of the glassy lava below.
609	8/17/2015	13:28:25	46.07789	-129.99302	10.9	1.9	1728.1	1730.0	Still on 2015 lavas - have not seen any contacts.
610	8/17/2015	13:28:54	46.07797	-129.99298	13.6	1.7	1728.0	1729.7	Tito has called that we come off the bottom at 7am PST. Will see how far we can get.
612	8/17/2015	13:30:06	46.07814	-129.99293	15.6	2.4	1727.3	1729.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
613	8/17/2015	13:30:22	46.07819	-129.99291	14.4	2.1	1726.9	1728.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
614	8/17/2015	13:30:24	46.07819	-129.99291	14.9	1.9	1726.9	1728.9	Lots more floc in the water now. Large yellow eruptive floc and possibly snow-blower looking.
615	8/17/2015	13:30:53	46.07825	-129.99290	17.0	0.9	1728.1	1729.0	Eruptive mat is thicker here. Seeing lots of spots of shiny black lavas poking out of the mat.
616	8/17/2015	13:31:25	46.07829	-129.99292	344.4	1.6	1727.4	1729.0	Lobate flow here. Some patches have really thick mat.
617	8/17/2015	13:31:29	46.07830	-129.99292	350.0	2.0	1726.8	1728.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
618	8/17/2015	13:31:31	46.07830	-129.99291	352.6	2.0	1726.8	1728.8	Collapse lobe.
619	8/17/2015	13:31:45	46.07833	-129.99291	356.3	1.7	1727.1	1728.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
621	8/17/2015	13:32:14	46.07841	-129.99290	7.4	2.9	1726.0	1728.9	Thick-blobs of mat in the water. Thinking there must be a snow-blower here.
622	8/17/2015	13:32:29	46.07845	-129.99291	8.0	3.2	1725.4	1728.6	Coming up on large collapse area. Can see it in the sonar.
623	8/17/2015	13:32:47	46.07849	-129.99293	328.4	2.7	1725.7	1728.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
624	8/17/2015	13:32:55	46.07851	-129.99293	356.6	2.0	1726.2	1728.2	input PilotCam (port 3) routed to output FrmGrb1 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									1)
626	8/17/2015	13:34:06	46.07858	-129.99286	52.1	1.1	1726.8	1727.9	Looks like we could be seeing part of the eruptive fissure? It's quite deep. 5 meters deep?
627	8/17/2015	13:34:29	46.07861	-129.99281	51.0	2.0	1726.0	1728.1	On the edge of this collapse/fissure?
628	8/17/2015	13:35:17	46.07866	-129.99277	20.9	0.9	1726.8	1727.7	Tons of floc in the water here.
629	8/17/2015	13:35:25	46.07868	-129.99276	22.7	1.4	1726.3	1727.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
630	8/17/2015	13:35:31	46.07869	-129.99275	21.4	1.5	1726.3	1727.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
631	8/17/2015	13:35:43	46.07869	-129.99274	24.4	1.4	1726.9	1728.2	NAV: Fissure target dropped.
633	8/17/2015	13:36:55	46.07877	-129.99268	32.4	3.6	1726.3	1730.0	HIGHLIGHTS: Fissure? area. Looks like some drain-out along the edge of the fissure.
635	8/17/2015	13:38:09	46.07884	-129.99260	28.1	9.1	1726.3	1735.5	Sci cam highlights are rolling. Fissure!!
636	8/17/2015	13:39:30	46.07889	-129.99255	27.7	1.5	1726.7	1728.2	Can't really see into the fissure. There is venting going on at this eastern edge on top of the jumbled lobates here.
637	8/17/2015	13:39:37	46.07891	-129.99253	27.4	1.4	1726.7	1728.1	Shrimp.
639	8/17/2015	13:40:12	46.07894	-129.99252	27.9	10.3	1726.4	1736.7	HIGHLIGHTS: HD highlights stop Fissure on the way to WP5.
640	8/17/2015	13:41:05	46.07897	-129.99250	29.2	4.6	1726.3	1730.9	The ship is at WP5 now.
641	8/17/2015	13:41:27	46.07897	-129.99248	61.3	10.4	1725.6	1736.0	Medea is having some issues with the tether.
642	8/17/2015	13:41:28	46.07897	-129.99247	61.3	10.5	1725.6	1736.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
643	8/17/2015	13:41:34	46.07897	-129.99247	61.7	7.9	1725.4	1733.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
645	8/17/2015	13:42:50	46.07909	-129.99261	330.8	1.4	1727.0	1728.4	We're looking at the fissure. We're at the mbari lava flow bound - but it's clear that the lavas were continuous between WP4 and WP5.
646	8/17/2015	13:42:54	46.07909	-129.99262	331.1	1.0	1727.3	1728.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
647	8/17/2015	13:42:59	46.07910	-129.99263	329.4	0.9	1727.6	1728.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
648	8/17/2015	13:43:45	46.07923	-129.99260	340.2	1.9	1727.0	1728.9	Moving again.
650	8/17/2015	13:44:48	46.07947	-129.99251	6.2	2.0	1727.4	1729.4	Moving over lobates with eruptive mat.
651	8/17/2015	13:45:15	46.07950	-129.99246	4.7	3.0	1725.9	1728.9	More pillows and more mat. Appears to be getting thicker - which makes sense because we are going up this pillow ridge.
653	8/17/2015	13:46:10	46.07951	-129.99236	28.8	0.9	1727.4	1728.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
654	8/17/2015	13:46:19	46.07952	-129.99236	35.9	1.6	1726.9	1728.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
655	8/17/2015	13:46:49	46.07957	-129.99235	37.9	1.1	1727.2	1728.3	The lobes are getting thicker and so is the eruptive mat. Some pillows amongst the mat.
656	8/17/2015	13:47:02	46.07958	-129.99233	34.5	1.8	1726.4	1728.1	We are going to look for a rock to sample.
657	8/17/2015	13:47:18	46.07962	-129.99231	38.4	2.2	1726.2	1728.4	Will stow the temp probe so we can pick up a rock or two.
659	8/17/2015	13:48:03	46.07964	-129.99229	40.3	2.0	1725.9	1728.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
660	8/17/2015	13:48:18	46.07964	-129.99229	40.8	1.8	1726.2	1728.0	There is some white mat here as well as the yellowish eruptive mat.
661	8/17/2015	13:48:18	46.07964	-129.99229	40.8	1.8	1726.2	1728.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
662	8/17/2015	13:48:30	46.07964	-129.99229	42.0	1.2	1727.1	1728.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
663	8/17/2015	13:48:33	46.07964	-129.99229	46.6	1.2	1727.0	1728.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
664	8/17/2015	13:49:24	46.07968	-129.99222	54.5	1.2	1727.4	1728.7	Looking around for a nice little lobe to sample.
665	8/17/2015	13:49:45	46.07970	-129.99222	49.9	3.0	1725.2	1728.3	Moving on looking for the perfect rock....
666	8/17/2015	13:49:46	46.07970	-129.99222	44.9	3.2	1725.2	1728.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
667	8/17/2015	13:49:53	46.07970	-129.99222	44.7	2.7	1725.8	1728.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
669	8/17/2015	13:51:07	46.07983	-129.99229	344.0	1.6	1726.8	1728.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
670	8/17/2015	13:51:40	46.07983	-129.99231	23.1	0.8	1727.5	1728.3	Still moving along over lobate flows with eruptive mat.
672	8/17/2015	13:52:05	46.07984	-129.99232	26.8	1.4	1726.8	1728.2	Going in for the sample now. Balls of mat in the water column.
673	8/17/2015	13:53:26	46.07985	-129.99233	36.2	1.1	1728.0	1729.1	Lobate flow with small pillows covered in eruptive mat. Going to sample here.
676	8/17/2015	13:56:33	46.07988	-129.99231	42.4	0.9	1727.7	1728.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
677	8/17/2015	13:56:38	46.07988	-129.99231	42.6	0.9	1727.8	1728.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
678	8/17/2015	13:57:06	46.07988	-129.99232	17.0	0.8	1727.8	1728.6	**SAMPLE: Geo J820-geo-09** Sampling the edge of this lobate flow with eruptive mat. Looking for a piece we can grab.
680	8/17/2015	13:58:41	46.07992	-129.99247	317.7	2.4	1725.8	1728.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
681	8/17/2015	13:58:48	46.07992	-129.99250	314.2	2.6	1725.5	1728.2	J820-geo-09 DID NOT HAPPEN. NO SAMPLE.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
682	8/17/2015	13:59:01	46.07994	-129.99254	316.4	1.9	1725.9	1727.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
683	8/17/2015	13:59:31	46.07999	-129.99262	344.1	1.5	1726.4	1727.9	The mat up here is really thick. The thickest we've seen so far. Covering these lobate lavas.
685	8/17/2015	14:00:07	46.08007	-129.99265	354.8	1.8	1726.7	1728.4	The mat here is incredibly thick.. Shimmering water here.
686	8/17/2015	14:00:53	46.08012	-129.99262	355.7	2.9	1725.2	1728.1	We're about 40m south of waypoint 5. Shimmer and super-thick mat - orange and whiter mat.
687	8/17/2015	14:01:33	46.08012	-129.99260	352.0	4.2	1724.1	1728.4	We're at the edge of a collapse pit here. Lava pillar in the background.
689	8/17/2015	14:02:14	46.07970	-129.99293	7.7	6.3	1725.6	1731.8	Super scorpio stills of the lava pillars and roof.
690	8/17/2015	14:02:49	46.07969	-129.99286	9.4	9.7	1718.0	1727.7	No more samples. We're leaving the bottom.
694	8/17/2015	15:09:43	46.07988	-129.99279	169.3	199.5	100.3	299.8	Jason at 100m preparing for recovery.
696	8/17/2015	15:17:40	46.07988	-129.99279	175.8	2.1	-0.2	1.9	Jason on surface.
697	8/17/2015	15:19:30	46.07988	-129.99279	168.2	0.8	0.2	1.0	Medea on deck.
698	8/17/2015	15:40:02	46.07988	-129.99279	180.8	0.8	-0.2	0.6	Jason out of water
699	8/17/2015	15:41:28	46.07988	-129.99279	179.2	0.8	-0.2	0.5	Jason on deck End J2-820.

6.6-2 J2-822 Dive log

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
743	8/20/2015	23:05:14					0.9		Predives going on for J2-822.
744	8/20/2015	23:15:43					0.9		Jason in water Start of dive J2-822.
747	8/20/2015	23:18:10					2.3		input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
748	8/20/2015	23:18:10					2.3		input PilotCam (port 3) routed to output FrmGrb1 (port 1)
749	8/20/2015	23:19:08					2.5		Medea in water
750	8/20/2015	23:21:35					27.2		Deployment location: Mkr-33 Vent. 45d 55.990' 129d 58.937' Z=1520m
751	8/20/2015	23:23:19					60.5		Main goals: 1) Fill Beast incubator at Mkr-33 Vent. 2) Sample fluids at International District vents. 3) Sample 2015 flows in NE Caldera.
752	8/20/2015	23:24:07					82.5		Basket: HFS sampler intake; Suction sampler hose; 3 gastight samplers; 2 major samplers; Rock sampling box.
753	8/20/2015	23:24:25					91.7		On all dives: Jason high-temp probe; Beast; O2

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									sensor.
754	8/20/2015	23:24:41					99.1		Port swing arm: Rock sampling box.
755	8/20/2015	23:24:51					102.6		Stbd swing arm: biobox with markers.
756	8/20/2015	23:25:24					111.2		Tasks: 1) Fill Beast incubator at Mkr-33 Vent (Mkr-166) then large-volume bag.
757	8/20/2015	23:26:06					112.4		Tasks cont: 2) At Mkr-33: Recover MTR 3197; Deploy MTR 3028.
758	8/20/2015	23:26:28					115.0		Tasks cont: 3) Transit to International District (as fast as possible).
759	8/20/2015	23:27:31					142.8		input BrowCam (port 2) routed to output FrmGrb1 (port 1)
760	8/20/2015	23:28:57					192.6		Tasks cont: 4) Samp0levent fluids at these Intl District vents: El Guapo (1 gtb; 2 majors) Diva (1gtb); Castle (1gtb).
761	8/20/2015	23:29:33					211.9		Tasks cont: 5) Deploy MISO (103 or 141) at Diva.
762	8/20/2015	23:30:10					225.4		Tasks cont: 6) At Castle vent: Recover MISO 101 and deploy MISO 103 or 141.
763	8/20/2015	23:30:41					235.7		Tasks cont: 7) Transit in water column to NE Caldera WP1 - follow Waypoints 1 - 8.
764	8/20/2015	23:30:43					236.0		input PilotCam (port 3) routed to output FrmGrb1 (port 1)
765	8/20/2015	23:30:53					241.5		input BrowCam (port 2) routed to output FrmGrb1 (port 1)
766	8/20/2015	23:31:11					249.5		Tasks cont: 8) Collect rock samples of 2015 lava flows in NE Caldera during transit.
767	8/20/2015	23:31:34					261.1		Tasks cont: 9) Look for hydrothermal vents and scout possible locations for RAS deployment.
768	8/20/2015	23:31:50					268.2		Tasks cont: 10) If time permits visit CASM vent field.
769	8/20/2015	23:50:40					789.7		Heading down. Testing the incubators and HFS
770	8/21/2015	00:03:29					785.0		Tivey twist clockwise starting.
771	8/21/2015	00:04:00					785.0		Twist starting now.
772	8/21/2015	00:06:39					785.1		Twist stop.
773	8/21/2015	00:06:51					785.0		Note the start was the second time.
774	8/21/2015	00:06:54					785.0		Start twist.
775	8/21/2015	00:07:06					785.1		This is the second Tivey twist.
776	8/21/2015	00:09:52					785.0		Stop twist.
777	8/21/2015	00:10:17					785.8		Success with the wraps coming off.
778	8/21/2015	00:14:30					806.3		Heading back down.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
779	8/21/2015	00:39:02				50.8	1466.7	1517.5	Going down to the bottom. 120 m to go
781	8/21/2015	00:41:05	45.93313	-129.98232	358.6	1.2	1516.7	1517.9	Jason on bottom
782	8/21/2015	00:41:41	45.93318	-129.98235	358.8	0.8	1516.8	1517.6	Here we are at Mkr-33 Vent.
783	8/21/2015	00:41:46	45.93318	-129.98235	358.4	0.9	1516.7	1517.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
784	8/21/2015	00:41:52	45.93318	-129.98234	358.8	1.2	1516.3	1517.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
786	8/21/2015	00:42:07	45.93320	-129.98235	346.4	1.3	1516.5	1517.8	Looks great! Lots of white bacterial mat. The maker is sitting right in the middle (Mkr-166).
787	8/21/2015	00:42:34	45.93321	-129.98237	357.7	0.8	1516.9	1517.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
788	8/21/2015	00:42:38	45.93321	-129.98236	359.5	1.1	1516.4	1517.5	We're looking at a weight next to the marker.
789	8/21/2015	00:42:45	45.93321	-129.98236	359.5	1.3	1516.2	1517.5	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
790	8/21/2015	00:42:45	45.93321	-129.98236	5.3	1.3	1516.2	1517.5	input SciCam (port 1) routed to output FrmGrb2 (port 2)
791	8/21/2015	00:43:34	45.93322	-129.98241	10.6	0.8	1516.9	1517.6	It was cloudy (murky) when we got here.
792	8/21/2015	00:43:49	45.93322	-129.98242	3.8	0.8	1516.8	1517.6	What is the red thing? A salp?
793	8/21/2015	00:43:57	45.93322	-129.98242	4.0	0.8	1516.8	1517.6	Dave is mic'd up.
795	8/21/2015	00:44:18	45.93322	-129.98241	3.6	0.8	1516.9	1517.6	We've stirred up a lot of floc in the water.
796	8/21/2015	00:44:58	45.93322	-129.98242	4.1	0.8	1516.8	1517.6	Working on the nav. Waiting for a doppler reset.
797	8/21/2015	00:45:36	45.93322	-129.98242	4.1	0.8	1516.8	1517.6	The water was somewhat murky when we got here but we've stirred up the bottom.
799	8/21/2015	00:46:46	45.93322	-129.98240	2.3	0.8	1516.8	1517.5	White bacterial mat on some of the lava in the center of the venting area.
800	8/21/2015	00:47:06	45.93322	-129.98239	2.5	1.0	1516.9	1517.9	Looks like an elevator weight at the base of MKr-166.
801	8/21/2015	00:47:22	45.93322	-129.98239	2.8	1.1	1516.6	1517.7	The vent appears a bit "whiter" than last year.
803	8/21/2015	00:48:29	45.93321	-129.98239	2.6	1.0	1516.5	1517.5	There is another smaller marker here. It is a MTR marker and says "3197".
804	8/21/2015	00:48:36	45.93321	-129.98239	2.7	0.9	1516.6	1517.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
805	8/21/2015	00:49:46	45.93321	-129.98239	2.8	1.2	1516.4	1517.6	input SciCam (port 1) routed to output FrmGrb2 (port 2)
806	8/21/2015	00:50:00	45.93321	-129.98239	2.7	1.2	1516.3	1517.6	Zooming in on some tubeworms and flow with floc coming out.
808	8/21/2015	00:50:05	45.93321	-129.98239	2.6	1.3	1516.3	1517.6	Tubeworms look healthy.
809	8/21/2015	00:50:28	45.93321	-129.98239	2.7	1.3	1516.2	1517.5	NAV: Doppler Reset

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
810	8/21/2015	00:51:16	45.93321	-129.98240	2.5	1.4	1516.2	1517.6	We're going to poke around and find a good spot for the intake then sit there and sample for a couple hours.
811	8/21/2015	00:51:27	45.93320	-129.98240	2.7	1.5	1516.1	1517.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
812	8/21/2015	00:51:38	45.93321	-129.98240	2.7	1.4	1516.1	1517.5	Going in for the Jason temp probe.
813	8/21/2015	00:51:51	45.93320	-129.98240	2.6	1.4	1516.1	1517.5	input SciCam (port 1) routed to output FrmGrb2 (port 2)
815	8/21/2015	00:52:15	45.93320	-129.98239	3.7	1.0	1516.6	1517.6	HIGHLIGHTS: HD highlights start at Marker 33 vent site.
816	8/21/2015	00:53:39	45.93322	-129.98238	3.7	0.8	1517.0	1517.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
817	8/21/2015	00:53:39	45.93322	-129.98238	3.7	0.8	1517.0	1517.8	input SciCam (port 1) routed to output FrmGrb1 (port 1)
818	8/21/2015	00:53:56	45.93322	-129.98238	3.7	0.8	1517.0	1517.7	Temperature readings coming up.
820	8/21/2015	00:54:25	45.93322	-129.98238	3.2	0.8	1517.0	1517.7	Zooming in on this tubeworm bush for a temp reading.
821	8/21/2015	00:54:42	45.93322	-129.98238	3.2	0.8	1517.0	1517.8	Highlights actually starting now.
822	8/21/2015	00:54:53	45.93322	-129.98238	3.2	0.8	1517.0	1517.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
823	8/21/2015	00:54:58	45.93322	-129.98238	3.2	0.8	1517.0	1517.7	input SciCam (port 1) routed to output FrmGrb1 (port 1)
824	8/21/2015	00:55:04	45.93322	-129.98238	3.2	0.8	1517.0	1517.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
825	8/21/2015	00:55:07	45.93322	-129.98238	3.2	0.8	1517.0	1517.7	White floc rising out of tubeworm bush. Quite strong flow.
826	8/21/2015	00:55:13	45.93322	-129.98238	3.2	0.8	1517.0	1517.7	input SciCam (port 1) routed to output FrmGrb1 (port 1)
828	8/21/2015	00:56:17	45.93322	-129.98237	2.8	0.8	1517.0	1517.7	It is hotter this year than last. 27.5C and rising. Still going up. 27.7C was Tmax in this small tubeworm bush.
829	8/21/2015	00:56:36	45.93322	-129.98237	2.8	0.8	1517.0	1517.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
830	8/21/2015	00:56:41	45.93322	-129.98237	4.5	0.8	1517.0	1517.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
831	8/21/2015	00:56:53	45.93322	-129.98238	3.5	1.3	1516.5	1517.8	Moving to the next tubeworm bush. Don't see a lot of flow there.
832	8/21/2015	00:56:53	45.93322	-129.98238	3.5	1.1	1516.5	1517.6	input SciCam (port 1) routed to output FrmGrb1 (port 1)
833	8/21/2015	00:56:53	45.93322	-129.98238	1.2	1.1	1516.5	1517.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
834	8/21/2015	00:57:23	45.93322	-129.98238	1.2	0.8	1517.1	1517.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
835	8/21/2015	00:57:34	45.93322	-129.98238	1.2	0.8	1517.1	1517.9	Dave is panning around for the highlights - wants to get the "Lay of the land".
836	8/21/2015	00:57:41	45.93322	-129.98238	1.2	0.8	1517.1	1517.9	input SciCam (port 1) routed to output FrmGrb2 (port 2)
837	8/21/2015	00:58:00	45.93322	-129.98238	1.2	0.8	1517.1	1517.9	HIGHLIGHTS: HD highlights stop
839	8/21/2015	00:58:19	45.93322	-129.98238	2.5	0.8	1517.1	1517.9	2.7C in this spot. Not hot.
840	8/21/2015	00:58:53	45.93322	-129.98238	2.4	0.8	1517.1	1517.9	Checking the temp at the base of the MR next.
841	8/21/2015	00:58:58	45.93322	-129.98238	2.4	1.2	1516.7	1517.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
842	8/21/2015	00:58:58	45.93322	-129.98238	1.2	1.2	1516.7	1517.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
844	8/21/2015	01:00:37	45.93322	-129.98237	1.2	0.8	1517.1	1517.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
845	8/21/2015	01:01:06	45.93322	-129.98237	1.2	0.8	1517.1	1517.9	Moving in for a temp at the base of the MTR. 4.5C.
847	8/21/2015	01:02:30	45.93322	-129.98236	1.2	0.8	1517.1	1517.9	Now we have 9.3C at the MTR and rising. 10.3; 11.5; 11.95C at the MTR.
848	8/21/2015	01:02:56	45.93322	-129.98236	1.1	0.8	1517.1	1517.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
849	8/21/2015	01:03:08	45.93322	-129.98236	1.1	0.8	1517.1	1517.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
850	8/21/2015	01:03:18	45.93322	-129.98236	305.4	0.9	1517.1	1518.0	Going to take the temp behind the tubeworm bush.
851	8/21/2015	01:03:59	45.93323	-129.98234	302.0	2.1	1515.8	1517.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
852	8/21/2015	01:04:00	45.93324	-129.98234	293.4	2.0	1515.8	1517.7	Have to re-position for that.
854	8/21/2015	01:04:08	45.93324	-129.98234	286.6	1.8	1515.8	1517.6	input SciCam (port 1) routed to output FrmGrb2 (port 2)
855	8/21/2015	01:04:15	45.93324	-129.98233	251.7	1.7	1515.9	1517.6	Getting some good shots with the brow cam.
856	8/21/2015	01:04:25	45.93324	-129.98236	249.6	1.3	1516.2	1517.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
857	8/21/2015	01:04:30	45.93325	-129.98236	244.9	1.3	1516.3	1517.6	input SciCam (port 1) routed to output FrmGrb1 (port 1)
858	8/21/2015	01:05:16	45.93325	-129.98236	244.3	0.8	1516.9	1517.7	This place is quite a lot "whiter" than last year. Seems to be more flow.
859	8/21/2015	01:05:44	45.93324	-129.98236	243.9	0.8	1517.2	1517.9	The tubeworm bush with all the flow looks like the prime spot to sample.
861	8/21/2015	01:06:05	45.93324	-129.98236	244.1	0.8	1517.2	1517.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
862	8/21/2015	01:06:31	45.93324	-129.98236	244.1	0.8	1517.1	1517.9	The incubator chambers are already heated up. Turned them on toward the surface.
863	8/21/2015	01:06:33	45.93324	-129.98236	244.1	0.8	1517.1	1517.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
864	8/21/2015	01:07:40	45.93324	-129.98235	244.1	0.8	1517.1	1517.9	input SciCam (port 1) routed to output FrmGrb2 (port 2)
865	8/21/2015	01:07:55	45.93324	-129.98235	244.0	0.8	1517.1	1517.9	We're seeing the striped pattern on the video monitor. Going to get Scotty.
868	8/21/2015	01:10:31	45.93323	-129.98235	244.1	0.8	1517.1	1517.8	Firing up the incubator.
869	8/21/2015	01:10:52	45.93323	-129.98235	244.1	0.8	1517.0	1517.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
870	8/21/2015	01:11:15	45.93323	-129.98235	244.1	0.8	1517.1	1517.8	The flush exhaust on the Beast is working.
872	8/21/2015	01:12:08	45.93323	-129.98235	244.1	0.8	1517.0	1517.8	HIGHLIGHTS: HD highlights start Bill is driving the sci video right now while Dave is setting up the incubator.
873	8/21/2015	01:12:56	45.93323	-129.98235	244.1	0.8	1517.1	1517.8	Dave has the wand in the center of the tubeworm bush.
874	8/21/2015	01:13:18	45.93323	-129.98235	244.1	0.8	1517.1	1517.8	Zoomed way in. 18C now.
876	8/21/2015	01:14:25	45.93323	-129.98235	243.9	0.8	1517.1	1517.8	Filamentous bacterial mat on the marker line.
877	8/21/2015	01:15:43	45.93323	-129.98236	243.9	0.8	1517.0	1517.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
878	8/21/2015	01:15:56	45.93323	-129.98236	243.9	0.8	1517.0	1517.8	Temp is rising 21C and rising. 27.9C. 28.0C.
880	8/21/2015	01:16:25	45.93323	-129.98236	243.9	0.8	1517.0	1517.8	Bill is still recording HD. Looking around. White bacterial blobs on the rocks.
881	8/21/2015	01:16:57	45.93323	-129.98236	243.9	0.8	1517.0	1517.8	Limpets all over the place here. Some rather sad looking tubeworms scattered about.
882	8/21/2015	01:17:17	45.93324	-129.98236	243.9	0.8	1517.0	1517.8	HIGHLIGHTS: HD highlights stop
885	8/21/2015	01:20:20	45.93323	-129.98235	243.9	0.8	1517.0	1517.7	Setting up for the incubator sample. Tmax got up to 27C. Right now we're at 24C.
886	8/21/2015	01:20:55	45.93323	-129.98235	243.9	0.8	1517.0	1517.7	The wand is pushed into a small tubeworm bush with good flow and some white floc coming out.
887	8/21/2015	01:22:00	45.93323	-129.98235	243.9	0.8	1517.0	1517.7	Tmax was 28.5C in this little tubeworm bush nestled in the lava rock with small white floc blobs surrounding it.
889	8/21/2015	01:22:31	45.93323	-129.98235	243.9	0.8	1517.0	1517.7	Tubeworms are not looking too bad here; but not the best either. Skinny tubes and pretty red plumes.
891	8/21/2015	01:25:58	45.93323	-129.98235	243.9	0.8	1517.0	1517.7	Made sure each of the bags were open.
893	8/21/2015	01:27:10	45.93323	-129.98235	243.9	0.8	1516.9	1517.7	**SAMPLE: HFS J822-HFS-01** inc#1. At Mkr-33 Vent. Start 0126.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
895	8/21/2015	01:28:55	45.93324	-129.98235	243.9	0.8	1516.8	1517.6	This sample will take a while at 200 ml / min. They will collect 900 ml in each incubator bag.
896	8/21/2015	01:29:18	45.93324	-129.98235	243.9	0.8	1516.9	1517.6	The incubator sample has to be on the seafloor for 18 hours.
898	8/21/2015	01:30:28	45.93324	-129.98235	243.8	0.8	1516.9	1517.6	J822-HFS-01 inc #1 cont. Z=1517m. Location: 45.933248d 129.982362d.
899	8/21/2015	01:31:07	45.93324	-129.98235	243.8	0.8	1516.9	1517.6	We will be sampling here for several hours.
900	8/21/2015	01:31:17	45.93324	-129.98235	243.8	0.8	1516.9	1517.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
901	8/21/2015	01:31:27	45.93324	-129.98235	243.7	0.8	1516.9	1517.6	There are some palm worms interspersed among the tubeworms at this sample site.
903	8/21/2015	01:33:29	45.93324	-129.98235	243.5	0.8	1516.8	1517.6	They are going to over-pump the bag. It seems to be slowing down.
904	8/21/2015	01:33:47	45.93324	-129.98235	243.5	0.8	1516.8	1517.5	The incubator fill has stopped.
906	8/21/2015	01:34:36	45.93324	-129.98234	243.2	0.8	1516.8	1517.5	J822-HFS-01 inc #1. Debating if it is full or not.
907	8/21/2015	01:35:54	45.93324	-129.98234	243.2	0.8	1516.8	1517.5	**SAMPLE: HFS J822-HFS-02** inc#2. Start 0135.
909	8/21/2015	01:37:50	45.93324	-129.98234	243.4	0.8	1516.8	1517.6	Still pumping. It's going well now.
912	8/21/2015	01:40:21	45.93324	-129.98234	243.1	0.8	1516.7	1517.5	Limpets above the sampling site.
914	8/21/2015	01:43:13	45.93324	-129.98234	243.1	0.8	1516.8	1517.5	Temp is 34C. Pumped 1250 ml on inc sample #2.
915	8/21/2015	01:43:37	45.93324	-129.98234	243.1	0.8	1516.7	1517.5	Inx #2 Tmax=34.8 Tavg=33.4.
917	8/21/2015	01:44:29	45.93324	-129.98234	243.1	0.8	1516.7	1517.4	Inc #1 Tmax=32.3 Tavg=28.3C.
918	8/21/2015	01:45:14	45.93324	-129.98234	243.2	0.8	1516.7	1517.5	**SAMPLE: HFS J822-HFS-03** inc#3. Start. Same place.
920	8/21/2015	01:46:47	45.93324	-129.98234	243.6	0.8	1516.7	1517.5	The temperature dropped fast. It goes down while the bag is filling and when it stops pumping it will go up.....
922	8/21/2015	01:48:51	45.93324	-129.98234	243.6	0.8	1516.7	1517.5	Filling incubator #3. Same exact spot as previous 2 samples.
925	8/21/2015	01:52:11	45.93324	-129.98234	243.8	0.8	1516.6	1517.4	J822-HFS-03 cont. Stop 0142. Tmax=35.3 Tavg=33.9.
926	8/21/2015	01:54:03	45.93325	-129.98234	243.7	0.8	1516.7	1517.4	input SciCam (port 1) routed to output Mon19 In (port 6)
928	8/21/2015	01:54:12	45.93325	-129.98234	243.8	0.8	1516.6	1517.4	**SAMPLE: HFS J822-HFS-04** inc #4. Start 0154. Same exact location; orifice; as previous incubator samples.
930	8/21/2015	01:56:26	45.93325	-129.98234	243.8	0.8	1516.6	1517.4	So they will cook for the next 12 hours; another for 18 hours. Will check their temps every 1 hour.
931	8/21/2015	01:57:40	45.93325	-129.98234	243.8	0.8	1516.6	1517.4	7 am local will be the stopping time for the first incubator. (1400 UTC)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
933	8/21/2015	01:58:16	45.93325	-129.98233	243.9	0.8	1516.6	1517.4	2 incubators will go for 12 hours and 2 will go for 18 hours; percolating on the seafloor.
934	8/21/2015	01:59:08	45.93325	-129.98233	243.9	0.8	1516.6	1517.4	So incubators 1 and 2 will "cook" 18 hours and incubators 3 and 4 will cook 12 hours.
936	8/21/2015	02:00:09	45.93325	-129.98233	243.9	0.8	1516.6	1517.4	There is still quite a lot of the yellowish mat here (and it's not eruptive).
937	8/21/2015	02:01:22	45.93325	-129.98233	243.9	0.8	1516.6	1517.4	J822-HFS-04 inc #4 stop. Tmax=33.6 Tavg=33.1C.
938	8/21/2015	02:02:03	45.93325	-129.98233	243.9	0.8	1516.6	1517.4	We are finished filling up the incubators. Next have to close the inlet bags.
940	8/21/2015	02:02:19	45.93324	-129.98233	243.9	0.8	1516.6	1517.3	Doing the shut-offs now. Will see some clear water come out of the outlet.
941	8/21/2015	02:02:55	45.93324	-129.98233	244.0	0.8	1516.6	1517.3	Closing off inc #1 inlet valve.
942	8/21/2015	02:03:20	45.93324	-129.98233	244.0	0.8	1516.6	1517.3	Have a ground fault.
943	8/21/2015	02:03:49	45.93324	-129.98233	244.0	0.8	1516.6	1517.3	Got the P1 sudden obstruction (which is a good thing). The valve closed and the pump made the pump stop.
945	8/21/2015	02:04:18	45.93324	-129.98233	244.0	0.8	1516.6	1517.3	Closing incubator #2.
946	8/21/2015	02:04:41	45.93324	-129.98233	244.0	0.8	1516.6	1517.3	Pump shut off for inc#2.
947	8/21/2015	02:05:25	45.93324	-129.98232	244.0	0.8	1516.6	1517.3	Closing incubator #3 valve.
949	8/21/2015	02:06:43	45.93324	-129.98232	244.0	0.8	1516.6	1517.3	Closing incubator #4 valve.
951	8/21/2015	02:08:06	45.93324	-129.98232	244.0	0.8	1516.5	1517.3	There are probably as many palm worms in this bunch of biota where we are sampling as tubeworms.
952	8/21/2015	02:08:36	45.93324	-129.98232	244.0	0.8	1516.6	1517.3	Finished filling the incubator. Next will fill up some other samples from the exact same orifice. Not moving.
954	8/21/2015	02:10:08	45.93324	-129.98232	243.9	0.8	1516.5	1517.3	**SAMPLE: HFS J822-HFS-05** large volume bag #1 (lvb) Start 0209. Will collect 4000ml. This sample will take 20 minutes.
956	8/21/2015	02:13:56	45.93324	-129.98234	243.9	0.8	1516.5	1517.2	Zoomed in on some scale worms. Just looking around while taking this lvb sample.
958	8/21/2015	02:15:52	45.93324	-129.98234	243.9	0.8	1516.5	1517.2	Zoomed in on limpets and white mat coating the lava rock. See scale worm on this black rock.
960	8/21/2015	02:16:23	45.93324	-129.98234	243.9	0.8	1516.5	1517.2	Scale worms; tube worms; palm worms and limpets so far at this site.
961	8/21/2015	02:16:30	45.93324	-129.98234	244.0	0.8	1516.5	1517.2	Slowly pumping away.
967	8/21/2015	02:26:05	45.93324	-129.98234	243.8	0.8	1516.4	1517.1	J822-HFS-05 lvb #1 cont. Still filling.
968	8/21/2015	02:27:07	45.93324	-129.98234	243.8	0.8	1516.4	1517.1	Large volume bags have NO filter; unlike the RNA filters are 3000 ml. We will also take a couple of them here.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
971	8/21/2015	02:30:33	45.93324	-129.98234	243.9	0.8	1516.3	1517.0	J822-HFS-05 lvb #1 cont.
972	8/21/2015	02:31:20	45.93324	-129.98234	243.9	0.8	1516.3	1517.0	J822-HFS-05 Stop 0230. Vol=4000ml Tmax=33.7 Tavg=33.1 T2=14.
974	8/21/2015	02:32:25	45.93324	-129.98234	243.9	0.8	1516.3	1517.0	**SAMPLE: HFS J822-HFS-06** unfiltered bag #7. Start 0232.
977	8/21/2015	02:36:21	45.93324	-129.98234	243.9	0.8	1516.3	1517.0	J822-HFS-06 cont. Stop 0236. Tmax=33.2 Tavg=33.0 Vol=650ml. T2=14.
978	8/21/2015	02:37:24	45.93324	-129.98234	244.1	0.8	1516.2	1517.0	**SAMPLE: HFS J822-HFS-07** unfiltered bag #8. Start 0237.
981	8/21/2015	02:41:24	45.93324	-129.98235	244.0	0.8	1516.2	1517.0	J822-HFS-07 cont. Stop 0241. Tmax=34.6 Tavg=34.0 T2=15. Vol=650ml.
983	8/21/2015	02:42:17	45.93324	-129.98235	244.0	0.8	1516.2	1516.9	**SAMPLE: HFS J822-HFS-08** Unfiltered bag #9. Start 0242.
986	8/21/2015	02:46:24	45.93324	-129.98235	244.0	0.8	1516.2	1516.9	J822-HFS-08 cont. End.
987	8/21/2015	02:46:48	45.93324	-129.98235	244.1	0.8	1516.1	1516.9	Tmax=35.7 Tavg=35.5 T2=15. Vol=-650.
988	8/21/2015	02:47:00	45.93324	-129.98235	244.0	0.8	1516.1	1516.9	Taking an 02 reading.
990	8/21/2015	02:48:11	45.93324	-129.98235	244.0	0.8	1516.2	1516.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
991	8/21/2015	02:48:11	45.93324	-129.98235	243.9	0.8	1516.2	1516.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
994	8/21/2015	02:52:37	45.93324	-129.98234	243.7	0.8	1516.1	1516.8	O2=0.202 reading.
995	8/21/2015	02:53:44	45.93324	-129.98234	243.7	0.8	1516.1	1516.8	**SAMPLE: HFS J822-HFS-09** RNA #11 start.
997	8/21/2015	02:55:01	45.93324	-129.98235	243.7	0.8	1516.1	1516.8	J822-HFS-09 exact same location.
1003	8/21/2015	03:04:07	45.93324	-129.98235	243.7	0.8	1516.0	1516.8	J822-HFS-09 The start time for the sample was 0253.
1006	8/21/2015	03:09:53	45.93324	-129.98234	243.8	0.8	1516.0	1516.7	J822-HFS-09 Stop.
1008	8/21/2015	03:10:18	45.93324	-129.98234	243.7	0.8	1516.0	1516.8	J822-HFS-09 Tmax=35.1 Tavg=34.3 T2=14. Vol=3001ml.
1009	8/21/2015	03:11:04	45.93324	-129.98234	243.7	0.8	1516.0	1516.7	**SAMPLE: HFS J822-HFS-10** Start. RNA #10.
1011	8/21/2015	03:11:21	45.93324	-129.98234	243.7	0.8	1516.0	1516.7	J822-HFS-10 start at 0311.
1018	8/21/2015	03:23:01	45.93324	-129.98234	243.7	0.8	1515.9	1516.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
1019	8/21/2015	03:23:01	45.93324	-129.98234	243.7	0.8	1515.9	1516.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
1023	8/21/2015	03:28:14	45.93324	-129.98234	243.7	0.8	1515.8	1516.6	J822-HFS-10 stop.
1024	8/21/2015	03:28:43	45.93324	-129.98234	243.7	0.8	1515.8	1516.6	J822-HFS-10 Tmax=36.5 Tavg=35.6 T2=15 vol=3000.
1025	8/21/2015	03:28:51	45.93324	-129.98234	243.7	0.8	1515.8	1516.6	Last sample for this location.
1026	8/21/2015	03:30:00	45.93324	-129.98234	243.9	0.8	1515.8	1516.6	input SciCam (port 1) routed to output FrmGrb2 (port 2)
1028	8/21/2015	03:30:08	45.93324	-129.98234	243.9	0.8	1515.9	1516.6	input BrowCam (port 2) routed to output FrmGrb2

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									(port 2)
1029	8/21/2015	03:30:15	45.93324	-129.98234	243.9	0.8	1515.8	1516.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
1030	8/21/2015	03:30:16	45.93324	-129.98234	243.7	0.8	1515.8	1516.6	Stowing the HFS sampler intake.
1031	8/21/2015	03:31:58	45.93324	-129.98234	243.6	0.8	1515.8	1516.6	Next the MTR will be placed in the same spot that these samples were taken.
1033	8/21/2015	03:32:23	45.93324	-129.98234	243.6	0.8	1515.8	1516.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
1034	8/21/2015	03:32:34	45.93324	-129.98234	243.8	0.8	1515.8	1516.6	input SciCam (port 1) routed to output FrmGrb1 (port 1)
1035	8/21/2015	03:33:23	45.93324	-129.98234	243.7	0.8	1515.8	1516.5	Ten HFS samples were taken at this site-Mkr33 vent at Marker 166.
1037	8/21/2015	03:35:05	45.93324	-129.98234	243.7	0.8	1515.8	1516.5	MTR 3028 placed at the site. It does not have a marker but just a loop.
1038	8/21/2015	03:35:31	45.93324	-129.98234	243.7	0.8	1515.7	1516.5	Going to take some good imagery of the site since it doesn't have a foam marker. Heading is 243. Depth 1515m.
1040	8/21/2015	03:36:30	45.93324	-129.98234	243.7	0.8	1515.7	1516.5	The MTR is due east of the base of Mkr-166 in a tubeworm cluster.
1041	8/21/2015	03:36:43	45.93324	-129.98234	243.7	0.8	1515.7	1516.5	If marker disappears there is the big clump of weights next to the marker.
1042	8/21/2015	03:37:44	45.93324	-129.98234	243.7	0.8	1515.8	1516.5	RECOVER: MTR temp probe MTR3197 has been recovered from Mkr-33 vent at the base of Marker 166.
1044	8/21/2015	03:39:48	45.93324	-129.98234	243.5	0.8	1515.8	1516.5	Missed hitting the DEPLOY hot key for the MTR 3028 deployment.
1046	8/21/2015	03:41:13	45.93324	-129.98234	243.8	0.8	1515.7	1516.5	Attempting to wind up the marker line to keep it out of the view for the remainder of the dive.
1049	8/21/2015	03:44:25	45.93324	-129.98235	244.5	0.8	1515.7	1516.5	Placing the recovered MTR 3197 in the rock box in compartment #9. Sticking up in the view.
1051	8/21/2015	03:46:11	45.93324	-129.98234	244.7	1.7	1514.5	1516.3	NAV: Doppler Reset to cursor as we leave the site.
1052	8/21/2015	03:47:46	45.93324	-129.98230	244.7	1.5	1514.6	1516.2	Leaving this site and heading to the International District at the El Guapo vent.
1054	8/21/2015	03:48:36	45.93325	-129.98226	76.9	1.4	1514.7	1516.1	Bearing 164 and about 800 meters to the site. No stopping and .3 kts is the desired speed.
1055	8/21/2015	03:49:01	45.93323	-129.98226	160.6	1.5	1514.7	1516.2	Looking over pillow flows with yellow sediment in between the mounds.
1056	8/21/2015	03:49:28	45.93322	-129.98229	163.6	1.4	1514.8	1516.2	The MTR is definitely in the way of the view as we turned.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1057	8/21/2015	03:49:49	45.93320	-129.98228	162.3	1.1	1515.1	1516.2	New bottom cam has a great view of the pillows underneath Jason.
1059	8/21/2015	03:50:38	45.93315	-129.98230	164.7	1.1	1514.9	1516.0	Recording of bottom camera isn't an option.
1060	8/21/2015	03:50:47	45.93314	-129.98229	163.8	1.4	1514.7	1516.1	flying over the 2011 lava flow.
1061	8/21/2015	03:51:46	45.93302	-129.98225	165.6	1.6	1514.9	1516.5	Endless pillow lava flow.
1062	8/21/2015	03:52:02	45.93300	-129.98224	164.9	1.1	1515.0	1516.1	Crab coming into view.
1064	8/21/2015	03:52:50	45.93291	-129.98221	163.6	1.4	1515.3	1516.7	Big pillows with cracked surfaces. Larger pillows.
1066	8/21/2015	03:54:33	45.93288	-129.98220	163.8	1.8	1515.4	1517.2	Waiting for Medea.
1067	8/21/2015	03:55:12	45.93280	-129.98216	163.9	2.5	1515.2	1517.7	Some collapse features now.
1068	8/21/2015	03:55:28	45.93276	-129.98215	164.1	2.7	1515.2	1517.8	Pillars and collapse with more dusting of sediment here.
1069	8/21/2015	03:55:49	45.93270	-129.98212	163.7	2.6	1515.4	1518.1	Large pillars.
1071	8/21/2015	03:56:20	45.93265	-129.98211	163.0	2.5	1515.9	1518.4	Going over a collapsed feature with interesting squarish pillars.
1072	8/21/2015	03:57:24	45.93257	-129.98209	164.7	1.5	1516.0	1517.5	Large pillars and very big collapsed area.
1074	8/21/2015	03:58:30	45.93246	-129.98209	163.6	3.8	1515.1	1518.8	Picking up the speed to get down to International District.
1075	8/21/2015	03:58:45	45.93244	-129.98209	164.2	1.6	1515.1	1516.6	Looks like Roman arches in some places.
1077	8/21/2015	04:00:57	45.93226	-129.98207	164.0	3.7	1515.1	1518.8	Speed has been stepped up to .5 kts. and flying a bit higher over the collapsed area.
1078	8/21/2015	04:01:41	45.93219	-129.98205	165.0	1.8	1515.1	1516.9	The pillars seem to be over 4m tall as we fly over.
1080	8/21/2015	04:03:39	45.93201	-129.98199	163.6	4.0	1518.0	1522.0	Can see some hard returns in the sonar about 12-13m ahead.
1082	8/21/2015	04:04:25	45.93194	-129.98197	164.8	4.8	1518.0	1522.8	Bottom is not as visible as before even though altitude is ~4m.
1083	8/21/2015	04:04:45	45.93191	-129.98195	163.8	3.4	1519.1	1522.6	The bottom cam almost looks more like a sheet flow.
1084	8/21/2015	04:05:00	45.93189	-129.98195	163.7	2.8	1519.8	1522.6	Sheet flow confirmed in cameras.
1085	8/21/2015	04:05:15	45.93187	-129.98194	165.1	2.7	1519.8	1522.5	Coming up to a crack or fissure.
1087	8/21/2015	04:06:34	45.93172	-129.98189	165.3	1.5	1519.1	1520.6	Some pressure ridges or pillows on east edge of the sheet flow.
1088	8/21/2015	04:07:33	45.93160	-129.98186	165.7	1.8	1518.6	1520.4	Jumbled flow transition.
1089	8/21/2015	04:08:03	45.93151	-129.98182	165.0	3.1	1516.7	1519.8	A remnant pillar and now into collapsed area.
1091	8/21/2015	04:08:56	45.93129	-129.98175	164.6	2.9	1516.1	1519.0	Fish.
1092	8/21/2015	04:09:14	45.93123	-129.98174	163.5	4.5	1515.8	1520.3	Big pillar. Looks bigger on top than at its base.
1094	8/21/2015	04:11:00	45.93103	-129.98165	162.4	4.0	1515.1	1519.1	Looks a bit smoky in this region of pillars and collapse.
1096	8/21/2015	04:12:33	45.93086	-129.98158	163.3	4.6	1515.1	1519.7	Flying over pillars and collapse still.
1098	8/21/2015	04:14:21	45.93069	-129.98150	163.9	4.1	1515.4	1519.5	Looks like some red staining in the bottom camera.
1099	8/21/2015	04:14:39	45.93064	-129.98149	164.0	3.5	1515.3	1518.8	Great view of collapse edge and some pillars under

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									the sheet flow.
1100	8/21/2015	04:15:33	45.93055	-129.98144	166.2	1.0	1515.5	1516.5	Windows in the sheet flow down into the collapse.
1102	8/21/2015	04:16:07	45.93050	-129.98141	163.7	1.2	1515.4	1516.6	Lots of yellow sediments over the sheet flow about half way to El Guapo.
1103	8/21/2015	04:16:36	45.93044	-129.98139	163.7	1.1	1515.5	1516.7	Striations in the flow and heavy staining in between cracks/crevices.
1104	8/21/2015	04:17:24	45.93039	-129.98137	163.0	1.3	1515.5	1516.8	Flow has some more pillow-like features and ridges.
1105	8/21/2015	04:17:56	45.93033	-129.98134	163.9	1.7	1514.6	1516.3	Fish and big sediment pits.
1107	8/21/2015	04:18:23	45.93027	-129.98131	162.9	2.0	1513.5	1515.5	Crab.
1108	8/21/2015	04:18:45	45.93020	-129.98128	163.8	1.6	1511.9	1513.5	Pillows more prominent.
1109	8/21/2015	04:19:12	45.93012	-129.98124	163.7	1.2	1511.8	1513.1	Drained out tubes and pillows with a lot of yellow.
1110	8/21/2015	04:19:36	45.93005	-129.98122	164.0	1.3	1511.7	1513.0	Back into sheet flows.
1111	8/21/2015	04:19:44	45.93003	-129.98121	164.3	2.5	1511.9	1514.4	Crab sitting in the sheet flow.
1112	8/21/2015	04:19:58	45.92997	-129.98119	164.1	2.5	1512.3	1514.8	Fairly heavily sediment.
1114	8/21/2015	04:20:08	45.92993	-129.98118	164.4	2.6	1512.0	1514.7	Many crabs in this spot (3).
1115	8/21/2015	04:21:09	45.92971	-129.98108	162.9	2.4	1514.0	1516.4	More crabs on the sheet flow.
1116	8/21/2015	04:21:27	45.92967	-129.98107	163.5	3.1	1512.7	1515.7	Two crabs are in a stand-off.
1118	8/21/2015	04:22:21	45.92958	-129.98105	164.0	3.9	1510.0	1513.9	Now in pillows with broken skins in places.
1119	8/21/2015	04:23:43	45.92953	-129.98103	163.5	3.5	1506.3	1509.9	Very large pillow on top of flow with a crab.
1120	8/21/2015	04:24:02	45.92950	-129.98102	163.6	3.4	1506.3	1509.8	Range 305m now.
1122	8/21/2015	04:24:26	45.92949	-129.98101	163.2	3.5	1506.6	1510.1	Bearing 164 and range of 300m.
1123	8/21/2015	04:24:40	45.92947	-129.98102	162.0	4.7	1505.0	1509.6	Large basaltic mounds of pillows.
1124	8/21/2015	04:25:24	45.92938	-129.98100	161.8	3.9	1496.4	1500.3	Fissure between pillow mound.
1125	8/21/2015	04:25:42	45.92930	-129.98095	164.1	1.8	1497.3	1499.2	On top and speeding over pillow flows.
1127	8/21/2015	04:26:53	45.92902	-129.98083	162.4	11.2	1504.7	1515.9	Lost view in cameras as altitude is over 10m.
1128	8/21/2015	04:27:59	45.92879	-129.98067	165.7	9.4	1506.4	1515.8	Bottom coming into view again. Looks like dusty pillows.
1131	8/21/2015	04:31:20	45.92858	-129.98058	165.1	5.1	1511.6	1516.7	Dave thinks there is smoke in the water here.
1133	8/21/2015	04:32:14	45.92846	-129.98053	164.7	3.1	1514.0	1517.1	Coming up to a large mound on the bathymetry map as we fly over a collapse area.
1134	8/21/2015	04:32:29	45.92841	-129.98052	164.5	3.8	1514.8	1518.6	Pilot Jimmy also feels there is smoke in the water.
1135	8/21/2015	04:32:40	45.92839	-129.98050	164.5	2.5	1515.2	1517.7	Just went over a bridged pillar.
1136	8/21/2015	04:33:04	45.92837	-129.98043	163.2	1.2	1515.7	1517.0	Windows and pillars and bridges in the collapsed sheet flow.
1137	8/21/2015	04:33:58	45.92829	-129.98033	165.4	0.8	1516.4	1517.1	On a ridge of sheet flow with collapse on either side.
1139	8/21/2015	04:34:43	45.92825	-129.98026	164.4	2.6	1516.5	1519.0	Looking into edge of collapse on to the sheet flow.
1140	8/21/2015	04:35:34	45.92822	-129.98020	164.4	1.9	1515.3	1517.2	Coming into a pillow flow after the sheet and collapse

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									area.
1142	8/21/2015	04:36:23	45.92817	-129.98016	164.8	1.4	1514.0	1515.4	Large pillow with an elongated or tubular shape.
1143	8/21/2015	04:37:25	45.92808	-129.98012	163.9	2.2	1515.2	1517.4	Pillows have flattened to more of a sheet flow appearance.
1144	8/21/2015	04:37:45	45.92805	-129.98009	165.0	1.6	1515.7	1517.3	Starting to see collapsed areas again.
1146	8/21/2015	04:38:30	45.92795	-129.98002	165.2	0.9	1516.4	1517.2	Large fish.
1147	8/21/2015	04:38:47	45.92792	-129.98000	164.6	1.9	1515.8	1517.7	Sea cucumber.
1148	8/21/2015	04:39:16	45.92786	-129.97998	164.4	3.4	1513.2	1516.7	Smaller pillows with a lot of sediment. Some bigger pillows and tubes.
1149	8/21/2015	04:39:47	45.92782	-129.97996	164.8	2.6	1510.8	1513.4	All the incubators at still at a stable 55degC.
1151	8/21/2015	04:40:09	45.92778	-129.97996	164.2	3.6	1508.4	1512.0	Mixed sizes of pillows.
1152	8/21/2015	04:40:57	45.92766	-129.97990	163.9	1.5	1505.9	1507.4	Pillows are elongating and more tubular.
1154	8/21/2015	04:43:25	45.92758	-129.97984	164.2	1.3	1507.4	1508.7	Waiting for Medea and the ship to catch up.
1156	8/21/2015	04:45:29	45.92749	-129.97978	165.0	0.8	1509.5	1510.2	Some different types of sea stars.
1158	8/21/2015	04:46:11	45.92744	-129.97975	163.7	1.6	1511.2	1512.9	Crabs and sea stars and cucumbers.
1159	8/21/2015	04:47:46	45.92737	-129.97970	165.3	1.2	1515.1	1516.3	100m to go until El Guapo and the speed has been reduced when the ship took over driving.
1161	8/21/2015	04:49:22	45.92727	-129.97964	163.3	3.7	1512.9	1516.6	Looks more sedimented..
1163	8/21/2015	04:50:11	45.92716	-129.97960	180.4	3.6	1513.6	1517.2	Large pillows with fissures or cracks.
1164	8/21/2015	04:50:50	45.92708	-129.97957	169.4	3.5	1512.4	1515.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
1165	8/21/2015	04:51:54	45.92688	-129.97949	169.7	2.8	1513.4	1516.1	Heavily sedimented pillows.
1167	8/21/2015	04:52:17	45.92679	-129.97946	203.1	3.3	1513.2	1516.5	Pillows stretching into tubes.
1168	8/21/2015	04:53:04	45.92669	-129.97945	194.8	3.4	1512.9	1516.2	El Guapo should be ahead.
1169	8/21/2015	04:53:31	45.92662	-129.97950	194.5	3.1	1513.4	1516.5	10m ahead to El Guapo.
1170	8/21/2015	04:53:40	45.92662	-129.97950	195.1	3.2	1513.5	1516.7	NAV: Doppler Reset
1171	8/21/2015	04:54:00	45.92661	-129.97951	195.1	3.0	1513.5	1516.6	Looks like some anhydrite dead ahead. Small little chimney on top.
1173	8/21/2015	04:55:08	45.92656	-129.97945	213.8	5.0	1513.8	1518.8	At Escargot and Marker 153.
1174	8/21/2015	04:55:12	45.92656	-129.97945	219.1	5.4	1513.9	1519.3	That is Mkr 153.
1175	8/21/2015	04:55:24	45.92655	-129.97946	218.9	4.9	1513.6	1518.5	Moving over to El Guapo.
1177	8/21/2015	04:56:47	45.92656	-129.97955	268.8	3.6	1513.8	1517.3	Getting bearing on all the chimneys here.
1178	8/21/2015	04:56:54	45.92657	-129.97956	269.4	3.5	1513.8	1517.3	Moving over to the right.
1179	8/21/2015	04:57:19	45.92657	-129.97958	270.0	3.7	1513.5	1517.3	This looks like El Guapo.
1180	8/21/2015	04:57:39	45.92657	-129.97959	270.5	5.8	1511.4	1517.2	Moving up the chimney.
1181	8/21/2015	04:58:02	45.92657	-129.97960	270.5	6.9	1509.9	1516.8	Lots of worms covering the sides.
1183	8/21/2015	04:58:11	45.92657	-129.97961	270.7	8.0	1508.9	1516.9	Still climbing up the chimney.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1184	8/21/2015	04:58:40	45.92657	-129.97963	263.2	11.8	1504.8	1516.7	Anhydrite chimney near the top. Reddish on the sides and whiter as we near the top.
1185	8/21/2015	04:59:03	45.92656	-129.97963	264.1	13.3	1503.3	1516.7	There is the smoking top of El Guapo. Very handsome indeed.
1186	8/21/2015	04:59:11	45.92657	-129.97964	266.0	13.1	1503.3	1516.5	Vigorous smoke.
1187	8/21/2015	04:59:24	45.92657	-129.97963	266.2	13.2	1503.3	1516.5	HIGHLIGHTS: HD highlights start
1188	8/21/2015	04:59:40	45.92657	-129.97963	266.0	13.1	1503.4	1516.5	Taking highlights of the top of El Guapo.
1190	8/21/2015	05:00:09	45.92656	-129.97963	264.3	12.8	1503.4	1516.1	Black beehive near the top with a large smoker on the top. It is not flaming.
1191	8/21/2015	05:00:47	45.92656	-129.97963	266.4	12.9	1503.6	1516.4	Lasers are on during the highlights.
1192	8/21/2015	05:01:32	45.92656	-129.97962	273.4	10.5	1503.4	1513.9	HIGHLIGHTS: HD highlights stop
1193	8/21/2015	05:01:49	45.92656	-129.97963	273.4	12.8	1503.5	1516.3	HIGHLIGHTS: HD highlights start
1194	8/21/2015	05:02:03	45.92656	-129.97962	274.5	12.8	1503.8	1516.6	Highlights back on without any zooming by scientist.
1196	8/21/2015	05:02:31	45.92656	-129.97963	278.5	12.9	1503.7	1516.6	Lush red worms near the top with multiple black smokers at the top.
1197	8/21/2015	05:02:54	45.92656	-129.97962	278.2	12.7	1503.8	1516.5	HIGHLIGHTS: HD highlights stop
1198	8/21/2015	05:03:08	45.92656	-129.97962	299.9	12.8	1503.6	1516.5	Pilot is setting up for sampling.
1199	8/21/2015	05:04:02	45.92656	-129.97963	299.7	14.6	1503.5	1518.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1201	8/21/2015	05:04:06	45.92656	-129.97963	301.2	14.3	1503.4	1517.7	Would like to sample the lower orifice at the base of the top-skinny chimney.
1202	8/21/2015	05:04:21	45.92656	-129.97963	301.2	13.3	1503.4	1516.7	The MTR float from Mkr-33 vent is annoyingly in the view.
1203	8/21/2015	05:04:56	45.92656	-129.97963	300.6	13.3	1503.5	1516.7	First will take a temperature reading with the Jason probe.
1205	8/21/2015	05:06:41	45.92656	-129.97963	300.7	13.2	1503.4	1516.7	Placing probe into hole with black smoke.
1206	8/21/2015	05:07:25	45.92655	-129.97963	300.6	13.2	1503.4	1516.6	Very small hole. Temperature is rising over 250degC.
1207	8/21/2015	05:07:38	45.92655	-129.97963	300.9	13.2	1503.4	1516.6	Dave is expecting 330deg so Jimmy is going to excavate a bit.
1209	8/21/2015	05:08:20	45.92655	-129.97963	300.8	14.4	1503.5	1517.9	Braking open the hole a bit. The probe is better placed down in the hole.
1210	8/21/2015	05:09:09	45.92655	-129.97963	300.7	13.2	1503.4	1516.6	Temperature is just 263deg so will try to make a bigger hole.
1211	8/21/2015	05:09:44	45.92655	-129.97963	300.7	13.2	1503.4	1516.6	Chimney is fairly hard but Jimmy is making progress in enlarging it.
1212	8/21/2015	05:10:00	45.92655	-129.97963	300.7	13.2	1503.4	1516.6	Probe back into bigger hole.
1214	8/21/2015	05:10:22	45.92656	-129.97963	300.8	13.2	1503.4	1516.6	input SciCam (port 1) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1215	8/21/2015	05:10:44	45.92656	-129.97963	300.8	13.2	1503.4	1516.6	Still only 215degC. Will excavate/probe around some more.
1216	8/21/2015	05:11:04	45.92656	-129.97963	300.8	13.2	1503.4	1516.6	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
1217	8/21/2015	05:11:04	45.92656	-129.97963	300.9	13.2	1503.4	1516.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1218	8/21/2015	05:11:45	45.92656	-129.97963	301.0	13.2	1503.4	1516.6	Not as much flow coming out of the black beehive to the right.
1220	8/21/2015	05:12:06	45.92656	-129.97962	292.5	13.2	1503.4	1516.6	The hole is still very small.
1221	8/21/2015	05:13:16	45.92657	-129.97961	251.4	13.2	1503.3	1516.5	Going to move Jason around to get to the other black smoker in hopes of a higher temperature reading.
1222	8/21/2015	05:13:32	45.92658	-129.97963	182.0	14.2	1503.1	1517.4	Swinging around counter-clockwise.
1224	8/21/2015	05:15:32	45.92655	-129.97965	97.1	12.1	1503.0	1515.1	Initial heading was 300 and have some around to 096.
1225	8/21/2015	05:15:44	45.92656	-129.97964	96.3	12.2	1502.9	1515.1	Does not appear to be boiling but there is quite a bit of flow coming out.
1227	8/21/2015	05:16:20	45.92656	-129.97964	96.5	12.3	1502.8	1515.0	Trying to get right down the tall chimney on the top.
1228	8/21/2015	05:16:46	45.92656	-129.97964	96.5	12.3	1502.7	1515.1	This is the biggest flow on El Guapo. Broke off some of the top.
1229	8/21/2015	05:17:07	45.92656	-129.97964	96.0	12.3	1502.8	1515.1	In the top and over 300degC.
1230	8/21/2015	05:17:45	45.92656	-129.97964	96.8	12.3	1502.7	1515.1	The tip of the wand is about 2 inches into the chimney and it hit something hard.
1232	8/21/2015	05:18:26	45.92656	-129.97964	96.7	12.4	1502.8	1515.1	High temperature is 323degC. Looks stable at that temperature.
1233	8/21/2015	05:18:50	45.92656	-129.97964	96.6	12.3	1502.8	1515.1	Touching the side of the chimney and seems somewhat solid.
1234	8/21/2015	05:18:59	45.92656	-129.97964	96.5	12.3	1502.8	1515.1	Stowing the temperature probe.
1235	8/21/2015	05:19:37	45.92656	-129.97963	96.7	12.3	1502.8	1515.0	Going to do a gastight sample first.
1237	8/21/2015	05:21:46	45.92656	-129.97964	96.3	12.4	1502.7	1515.1	Getting gas-tight orange-black #7 from the basket.
1239	8/21/2015	05:23:04	45.92656	-129.97964	96.9	12.4	1502.7	1515.0	**SAMPLE: GTB J822-GTB-11** from the top chimney on El Guapo. The chimney moved when tip placed inside. Fired.
1240	8/21/2015	05:23:44	45.92656	-129.97964	96.7	12.4	1502.7	1515.1	J822-GTB-11 taken from the top of El Guapo and the chimney collapsed when instrument removed.
1242	8/21/2015	05:24:35	45.92656	-129.97964	96.3	12.3	1502.7	1515.1	Placed the sampler in the basket. Waiting for a position for this sample.
1243	8/21/2015	05:25:21	45.92656	-129.97964	96.5	12.3	1502.7	1515.0	Depth is 1502 and the heading is 096.
1244	8/21/2015	05:25:52	45.92656	-129.97964	96.6	12.3	1502.7	1515.0	Next will be a major.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1246	8/21/2015	05:26:35	45.92656	-129.97964	96.3	12.3	1502.7	1515.0	Location 45.926548 -129.979648 is the location for this sample and the next one.
1247	8/21/2015	05:27:44	45.92656	-129.97964	96.5	12.3	1502.7	1515.0	**SAMPLE: Major J822-major-12** Red-Yellow 22 placed into the same hole but there is less chimney. See exhaust from snorkel. Fired.
1249	8/21/2015	05:28:16	45.92656	-129.97964	96.7	12.4	1502.7	1515.1	Sample -GTB-11 was orange-black #7.
1250	8/21/2015	05:28:48	45.92656	-129.97964	96.5	12.4	1502.7	1515.1	Can see the major filling.
1251	8/21/2015	05:29:22	45.92656	-129.97964	96.4	12.3	1502.7	1515.0	Position for these samples was from the cursor.
1252	8/21/2015	05:29:44	45.92656	-129.97964	96.4	12.3	1502.7	1515.0	Chimney collapsed after the sample was full.
1253	8/21/2015	05:29:53	45.92656	-129.97964	96.8	12.3	1502.7	1515.0	Placing major back into the basket.
1255	8/21/2015	05:30:20	45.92656	-129.97964	96.6	12.3	1502.7	1515.0	Next will be some fluid sampling with the Beast.
1256	8/21/2015	05:30:42	45.92656	-129.97964	96.7	12.4	1502.7	1515.1	Only one major is going to be used here instead of the planned two.
1257	8/21/2015	05:31:03	45.92656	-129.97964	96.7	12.4	1502.7	1515.0	Placing the HFS probe into the same orifice but there is now even less if any chimney remaining.
1258	8/21/2015	05:31:12	45.92656	-129.97964	95.8	12.4	1502.6	1515.0	Heading and depth and location all remain the same.
1259	8/21/2015	05:31:20	45.92655	-129.97964	95.8	12.5	1502.6	1515.1	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
1260	8/21/2015	05:31:20	45.92655	-129.97964	95.8	12.5	1502.6	1515.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
1261	8/21/2015	05:31:21	45.92655	-129.97964	95.5	12.5	1502.6	1515.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1262	8/21/2015	05:31:25	45.92655	-129.97964	95.7	12.5	1502.6	1515.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
1263	8/21/2015	05:31:31	45.92655	-129.97964	96.2	12.5	1502.6	1515.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1265	8/21/2015	05:32:33	45.92655	-129.97964	96.1	12.4	1502.6	1515.1	Probe is not that deep into the hole.
1266	8/21/2015	05:32:50	45.92655	-129.97964	95.9	12.5	1502.6	1515.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
1267	8/21/2015	05:32:54	45.92655	-129.97964	96.1	12.5	1502.6	1515.1	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
1268	8/21/2015	05:33:04	45.92655	-129.97964	96.2	12.5	1502.6	1515.1	Very high flow but maybe not boiling.
1269	8/21/2015	05:33:06	45.92655	-129.97964	96.3	12.4	1502.6	1515.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1270	8/21/2015	05:33:15	45.92655	-129.97964	96.3	12.4	1502.6	1515.1	HFS temperature is at 317degC and looks stable.
1271	8/21/2015	05:33:16	45.92655	-129.97964	96.2	12.4	1502.6	1515.1	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
1272	8/21/2015	05:33:26	45.92655	-129.97964	96.3	12.4	1502.6	1515.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1273	8/21/2015	05:33:41	45.92655	-129.97964	96.3	12.5	1502.6	1515.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1274	8/21/2015	05:33:41	45.92655	-129.97964	96.3	12.5	1502.6	1515.0	input SciCam (port 1) routed to output FrmGrb1 (port 1)
1275	8/21/2015	05:33:41	45.92655	-129.97964	96.4	12.5	1502.6	1515.0	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
1276	8/21/2015	05:33:59	45.92655	-129.97964	96.5	12.4	1502.6	1515.0	Temperature is going down because the pump stopped.
1278	8/21/2015	05:34:57	45.92655	-129.97964	96.4	12.4	1502.6	1514.9	Pump is on and the temperature is rising again.
1279	8/21/2015	05:35:20	45.92656	-129.97964	96.2	12.4	1502.6	1515.0	HIGHLIGHTS: HD highlights start Taking highlight of HFS sampler in the sampling hole.
1281	8/21/2015	05:37:36	45.92656	-129.97964	96.0	12.5	1502.5	1515.0	**SAMPLE: HFS J822-HFS-13** unfiltered piston #2. Start.
1282	8/21/2015	05:38:00	45.92656	-129.97964	96.2	12.5	1502.5	1515.0	Started at 0537 with a steady temperature.
1284	8/21/2015	05:38:31	45.92656	-129.97964	96.1	12.5	1502.5	1515.0	J822-HFS-13 pump is not happy during the sample.
1285	8/21/2015	05:39:00	45.92656	-129.97964	96.2	12.5	1502.5	1515.0	HIGHLIGHTS: HD highlights stop
1286	8/21/2015	05:39:07	45.92656	-129.97964	96.3	12.4	1502.5	1515.0	Highlights were turned off a lite while ago.
1288	8/21/2015	05:40:18	45.92656	-129.97964	96.2	12.4	1502.5	1515.0	SAMPLE: HFS J822-HFS-13 cont. Seeing exhaust from the beast.
1289	8/21/2015	05:40:26	45.92656	-129.97964	96.3	12.4	1502.6	1515.0	SAMPLE: HFS J822-HFS-13 stopped.
1290	8/21/2015	05:40:56	45.92656	-129.97964	96.4	12.5	1502.5	1515.0	J822-HFS-13 Tmax=317.1 Tavg=no good T2=100 vol=550.
1291	8/21/2015	05:41:46	45.92656	-129.97964	96.2	12.4	1502.5	1514.9	**SAMPLE: HFS J822-HFS-14** filtered piston #3 start.
1292	8/21/2015	05:42:03	45.92656	-129.97964	96.2	12.4	1502.5	1514.9	J822-HFS-14 same location and hole.
1295	8/21/2015	05:44:57	45.92656	-129.97964	97.0	12.4	1502.6	1515.0	SAMPLE: HFS J822-HFS-14 Stopped. (Pump got too hot during the sample)
1296	8/21/2015	05:45:29	45.92656	-129.97964	97.0	12.4	1502.6	1515.0	J822-HFS-14 Tmax=318.8 Tavg-no good T2=100 vol=550.
1297	8/21/2015	05:45:43	45.92656	-129.97964	96.8	12.4	1502.6	1515.0	Done sampling at El Guapo.
1298	8/21/2015	05:45:48	45.92656	-129.97964	96.2	12.4	1502.6	1515.0	Stowing the HFS wand.
1300	8/21/2015	05:46:23	45.92656	-129.97964	96.2	12.4	1502.6	1515.0	Going to use Jason probe again to check the temperature.
1302	8/21/2015	05:48:13	45.92656	-129.97963	96.4	12.5	1502.6	1515.1	Probe is basically in the same spot as sampling hole.
1303	8/21/2015	05:49:26	45.92656	-129.97964	96.4	12.5	1502.7	1515.1	High temperature is 319.9 at this spot.
1304	8/21/2015	05:49:47	45.92656	-129.97964	97.0	12.5	1502.7	1515.1	Adjusting probe in the same hole to see if the temperature is the same.
1306	8/21/2015	05:50:52	45.92655	-129.97964	97.6	12.4	1502.7	1515.1	Probe broke out of hole before temperature stabilized. Stowing the probe.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1307	8/21/2015	05:51:46	45.92655	-129.97965	135.0	12.2	1502.9	1515.1	Next will go to Diva about 50m away next to Escargot.
1309	8/21/2015	05:53:12	45.92655	-129.97960	299.1	6.7	1504.7	1511.5	Since we were not at the bottom it looks like the LBL is tracking well so no reason to do a doppler reset at this time.
1310	8/21/2015	05:53:51	45.92653	-129.97957	298.2	4.3	1510.3	1514.6	Moving down El Guapo at a heading of 298.
1312	8/21/2015	05:54:59	45.92648	-129.97950	289.0	8.0	1512.8	1520.7	Heading over to Diva. Nav is tracking well within 3-4 m of LBL.
1313	8/21/2015	05:55:23	45.92648	-129.97949	171.4	5.5	1515.3	1520.8	Older dead sulfide chimneys.
1315	8/21/2015	05:56:37	45.92643	-129.97940	110.9	1.9	1518.6	1520.6	12m ahead according to nav.
1316	8/21/2015	05:57:15	45.92641	-129.97931	110.1	3.9	1517.2	1521.0	This is Escargot.
1317	8/21/2015	05:57:23	45.92642	-129.97930	111.5	4.3	1516.8	1521.1	There is an instrument on top of Escargot.
1318	8/21/2015	05:57:55	45.92642	-129.97921	111.8	3.0	1518.5	1521.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
1320	8/21/2015	05:58:06	45.92641	-129.97918	111.3	2.0	1518.6	1520.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
1321	8/21/2015	05:58:06	45.92641	-129.97918	109.7	2.0	1518.6	1520.6	input SciCam (port 1) routed to output FrmGrb1 (port 1)
1322	8/21/2015	05:58:23	45.92640	-129.97916	111.5	1.1	1519.2	1520.2	There is Diva and the Marker.
1323	8/21/2015	05:58:41	45.92640	-129.97915	110.4	0.9	1518.9	1519.9	Can see the node beyond at this heading. No cables visible here.
1324	8/21/2015	06:00:00	45.92640	-129.97914	110.4	0.8	1519.2	1520.0	14m at 260deg is the offset between our underlay and the current navigation.
1326	8/21/2015	06:01:12	45.92640	-129.97914	110.5	0.8	1519.1	1519.9	First we are doing a Jason temperature probe. No visible orifice.
1327	8/21/2015	06:01:27	45.92640	-129.97914	110.5	0.8	1519.2	1519.9	Poking straight down into the anhydrite mass.
1329	8/21/2015	06:03:27	45.92640	-129.97915	110.5	0.8	1519.1	1519.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
1330	8/21/2015	06:03:43	45.92640	-129.97915	110.6	0.8	1519.1	1519.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
1332	8/21/2015	06:05:16	45.92640	-129.97915	110.5	0.8	1519.1	1519.9	High temperature with Jason probe is 279degC.
1333	8/21/2015	06:05:36	45.92640	-129.97915	110.5	0.8	1519.1	1519.9	Incubator switched off briefly then back on. All good.
1334	8/21/2015	06:05:52	45.92640	-129.97915	110.5	0.8	1519.2	1519.9	Stowing the probe.
1336	8/21/2015	06:06:32	45.92640	-129.97915	110.5	0.8	1519.2	1519.9	Will do a gastight sample first then the Beast.
1337	8/21/2015	06:07:21	45.92640	-129.97915	110.5	0.8	1519.2	1519.9	Retrieving GTB Yellow-11 from the basket.
1339	8/21/2015	06:09:24	45.92640	-129.97915	110.8	0.8	1519.1	1519.9	**SAMPLE: GTB J822-GTB-15** Yellow #11 at Diva in the top of the anhydrite mound where the Jason probe measured 279degC. Fired.
1341	8/21/2015	06:10:50	45.92640	-129.97914	110.5	0.8	1519.2	1519.9	Position is 45.926401 -129.979163 for sampling at Diva. Depth is 1519 and heading is 110. Position from

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									cursor.
1342	8/21/2015	06:11:19	45.92640	-129.97914	110.6	0.8	1519.1	1519.9	Diva is the gassiest vent at Axial. 5x's as much gas volume as liquid volume when you get to the surface.
1343	8/21/2015	06:11:39	45.92640	-129.97914	110.4	0.8	1519.2	1519.9	Stowed the sampler in the basket.
1345	8/21/2015	06:12:30	45.92640	-129.97914	110.4	0.8	1519.1	1519.9	Next will be some HFS samples.
1346	8/21/2015	06:13:07	45.92640	-129.97914	110.4	0.8	1519.1	1519.9	Positioning the HFS wand into the anhydrite mound.
1347	8/21/2015	06:13:54	45.92640	-129.97914	110.4	0.8	1519.2	1519.9	HIGHLIGHTS: HD highlights start Highlights of Diva sampling.
1349	8/21/2015	06:14:26	45.92640	-129.97914	110.4	0.8	1519.2	1519.9	Measuring temperature with HFS at Diva. Continuing to rise.
1350	8/21/2015	06:15:16	45.92640	-129.97915	110.4	0.8	1519.1	1519.9	**SAMPLE: HFS J822-HFS-16** Filtered piston #5. Started.
1351	8/21/2015	06:15:59	45.92640	-129.97915	110.4	0.8	1519.1	1519.9	J822-HFS-16 in the high flow at the top of the anhydrite mound at Diva.
1353	8/21/2015	06:16:55	45.92640	-129.97915	110.4	0.8	1519.1	1519.9	J822-HFS-16 Stop. Filtered piston #5.
1354	8/21/2015	06:17:23	45.92640	-129.97915	110.4	0.8	1519.1	1519.9	J822-HFS-16 Tmax=275.2 Tavg=274.8 T2=85 vol=210.
1355	8/21/2015	06:17:57	45.92640	-129.97915	110.4	0.8	1519.1	1519.9	J822-HFS-17 Unfiltered piston #6 Started.
1357	8/21/2015	06:18:36	45.92640	-129.97915	110.5	0.8	1519.1	1519.9	**SAMPLE: HFS J822-HFS-17** Unfiltered piston #6 Started at 06:17. At Diva in the same spot as previous sample at Diva.
1358	8/21/2015	06:19:26	45.92640	-129.97915	110.4	0.8	1519.1	1519.9	J822-HFS-17 Stopped. Temperature was very steady.
1359	8/21/2015	06:19:54	45.92640	-129.97915	110.5	0.8	1519.1	1519.9	J822-HFS-17 Tmax=275.4 Tavg=275.3 T2=88 vol=250.
1361	8/21/2015	06:20:06	45.92640	-129.97915	110.2	0.8	1519.1	1519.9	Stowing the wand in the holster.
1362	8/21/2015	06:21:29	45.92640	-129.97915	110.3	0.8	1519.1	1519.9	Retrieving HOBO 102 from the basket.
1364	8/21/2015	06:23:18	45.92640	-129.97916	213.8	2.1	1518.2	1520.3	Jason is moving around Diva to find a good location for the HOBO.
1366	8/21/2015	06:24:28	45.92642	-129.97913	216.9	1.6	1519.4	1521.0	Heading for sampling was 110deg. Good view of Mkr 150 from here at 214deg.
1367	8/21/2015	06:25:03	45.92642	-129.97913	217.0	1.6	1519.3	1521.0	Placing HOBO intake on top of anhydrite mound in sample sampling location but a different heading.
1368	8/21/2015	06:25:42	45.92641	-129.97913	216.9	1.6	1519.3	1521.0	**DEPLOY: HOBO** temp probe Heading is 216 and probe is laying nicely on the bottom.
1369	8/21/2015	06:26:03	45.92641	-129.97913	216.8	1.6	1519.3	1520.9	Going to position the tip of the probe ever so slightly to get it directly into the flow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1371	8/21/2015	06:27:19	45.92641	-129.97913	216.9	1.6	1519.4	1521.0	Probe tip right in the flow and instrument looks stable. Getting some good framegrabs of the deployment.
1372	8/21/2015	06:27:25	45.92641	-129.97913	217.1	1.6	1519.3	1520.9	Frame_Grab:
1373	8/21/2015	06:27:46	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
1374	8/21/2015	06:27:57	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
1375	8/21/2015	06:28:03	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
1377	8/21/2015	06:28:07	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	input SciCam (port 1) routed to output FrmGrb1 (port 1)
1380	8/21/2015	06:28:23	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	Amazing deployment.
1381	8/21/2015	06:28:30	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
1382	8/21/2015	06:28:36	45.92641	-129.97913	217.2	1.6	1519.4	1521.0	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
1383	8/21/2015	06:28:41	45.92641	-129.97913	217.2	1.6	1519.4	1521.0	Brow camera has the best view of the deployment.
1384	8/21/2015	06:28:41	45.92641	-129.97913	217.3	1.6	1519.4	1521.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
1387	8/21/2015	06:30:11	45.92641	-129.97913	217.1	1.6	1519.4	1521.0	Castle is 80m from here. The next sampling site will be Castle.
1391	8/21/2015	06:36:20	45.92632	-129.97930	244.0	2.9	1517.9	1520.7	Heading 230deg over to Castle. Will be sampling on the north side at the base in an anhydrite mound.
1394	8/21/2015	06:42:02	45.92632	-129.97968	230.2	2.2	1517.5	1519.7	Lobate flow with lots of sediments on the way to Castle.
1396	8/21/2015	06:43:14	45.92628	-129.97977	231.0	3.1	1516.0	1519.1	Large pillows and tubes.
1397	8/21/2015	06:43:43	45.92625	-129.97980	246.3	5.0	1512.6	1517.6	Base of a sulfide here.
1399	8/21/2015	06:44:47	45.92619	-129.97986	242.9	7.2	1506.4	1513.6	Some anhydrite here. This is Flat top.
1400	8/21/2015	06:44:58	45.92617	-129.97988	243.4	7.3	1505.3	1512.5	Still headed for Castle.
1405	8/21/2015	06:52:45	45.92620	-129.98013	320.8	2.5	1515.5	1518.0	At Castle (anhydrite) heading 320; looking at the HOBO 101. There is no marker here.
1406	8/21/2015	06:52:45	45.92620	-129.98013	320.8	2.5	1515.5	1518.0	At Castle (anhydrite) heading 320; looking at the HOBO 101. There is no marker here.
1407	8/21/2015	06:53:48	45.92620	-129.98013	320.8	2.6	1515.5	1518.1	No Doppler reset necessary.
1410	8/21/2015	06:57:40	45.92620	-129.98012	320.3	2.5	1515.5	1518.1	Grabbing HOBO 141 from basket.
1412	8/21/2015	06:58:20	45.92620	-129.98012	320.2	2.5	1515.5	1518.0	On north side of Castle looking at a small chimney on a spur.
1413	8/21/2015	06:59:46	45.92620	-129.98012	320.5	2.5	1515.5	1518.0	HOBO 101 looks like it has fallen out of the hole.
1414	8/21/2015	07:00:03	45.92620	-129.98012	320.4	2.5	1515.5	1518.0	**RECOVER: HOBO** temp probe HOBO 101 from

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									Castle.
1416	8/21/2015	07:01:09	45.92620	-129.98012	320.6	2.6	1515.5	1518.0	Placing HOBO 101 in basket where HOBO 141 was.
1418	8/21/2015	07:02:25	45.92620	-129.98012	320.3	2.6	1515.4	1518.0	Close-up of shimmering water
1420	8/21/2015	07:04:05	45.92620	-129.98012	320.6	2.6	1515.4	1518.0	Positioning Jason temperature probe over hole; not the same hole the HOBO was supposed to have been in up on the chimney.
1422	8/21/2015	07:06:48	45.92620	-129.98013	320.1	2.6	1515.5	1518.0	273.19C at Castle small orifice.
1424	8/21/2015	07:08:58	45.92620	-129.98013	320.1	2.6	1515.5	1518.0	Flushing the Beast.
1426	8/21/2015	07:10:50	45.92620	-129.98013	319.3	2.5	1515.5	1518.0	Highlights were taken until 07:09 of HOBO recovery.
1430	8/21/2015	07:17:30	45.92620	-129.98013	319.4	2.5	1515.5	1518.0	**SAMPLE: HFS J822-HFS-18** at Castle piston #4 unclear if filtered or unfiltered START.
1432	8/21/2015	07:18:50	45.92620	-129.98013	319.7	2.5	1515.5	1518.0	SAMPLE: HFS J822-HFS-18 STOPPED.
1434	8/21/2015	07:20:09	45.92620	-129.98013	319.4	2.5	1515.5	1518.0	Tmax = 251.5; T2 = 77.6; Avg. temp = 250.8; Volume = 253 ml.
1436	8/21/2015	07:23:29	45.92619	-129.98013	319.4	2.5	1515.5	1518.0	Cursor position J822-HFS-18 45d 55.571'N -129d 58.807'W
1438	8/21/2015	07:24:54	45.92619	-129.98013	319.6	2.5	1515.5	1518.0	**SAMPLE: GTB J822-GTB-19** Red gas-tight #9 at Castle. Jason temp probe at this site is 273.9
1439	8/21/2015	07:25:41	45.92619	-129.98013	319.9	2.5	1515.5	1518.0	Sample looked good.
1445	8/21/2015	07:35:43	45.92619	-129.98014	319.3	2.5	1515.6	1518.1	**DEPLOY: HOBO** temp probe HOBO 141 deployed at Castle into orifice we sampled from; below where HOBO 101 had been.
1447	8/21/2015	07:36:19	45.92618	-129.98014	318.6	2.5	1515.5	1518.0	Trying to anchor HOBO 141 a little better in hole.
1448	8/21/2015	07:37:58	45.92616	-129.98014	318.5	3.2	1514.7	1517.9	Lifting off from Castle.
1450	8/21/2015	07:38:43	45.92618	-129.98014	323.7	7.6	1510.3	1517.9	Ascending Castle chimney.
1451	8/21/2015	07:39:18	45.92622	-129.98008	41.3	9.0	1508.6	1517.6	Heading over to El Gordo.
1453	8/21/2015	07:40:11	45.92630	-129.98010	134.8	3.0	1512.1	1515.1	Pillow lavas.
1454	8/21/2015	07:41:33	45.92628	-129.97985	105.4	3.5	1513.3	1516.8	Chimney in view possibly El Abuelo. (Last entry "lavas")
1456	8/21/2015	07:43:07	45.92621	-129.97953	99.8	2.7	1517.8	1520.6	Pillow lavas becoming sheet flow.
1457	8/21/2015	07:43:13	45.92620	-129.97952	99.4	3.2	1517.7	1520.9	Lineated sheet flow.
1459	8/21/2015	07:44:29	45.92618	-129.97932	68.0	3.6	1517.6	1521.1	Faulted ropy flow.
1460	8/21/2015	07:45:59	45.92617	-129.97915	58.3	1.0	1518.4	1519.4	Coming up on El Gordo. RAS sampler and other instruments in view.
1462	8/21/2015	07:47:25	45.92615	-129.97911	5.1	2.0	1519.1	1521.1	Mass spec seems to be OK (not overgrown).
1464	8/21/2015	07:48:19	45.92616	-129.97907	6.1	2.4	1519.3	1521.8	Close up of bottom of the RAS.
1465	8/21/2015	07:49:40	45.92616	-129.97912	27.7	3.8	1517.5	1521.2	RAS inlet still in place.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1467	8/21/2015	07:51:02	45.92615	-129.97907	110.8	19.3	1500.3	1519.6	Leaving International District. Will transit along eastern caldera to WPT #1 in 2015 flow. Sentry about to be deployed.
1469	8/21/2015	08:04:45	45.92556	-129.97866	154.9	118.0	1201.9	1319.9	Transiting up in the water column.
1470	8/21/2015	08:04:45	45.92556	-129.97866	161.7	118.0	1201.9	1319.9	Transiting up in the water column.
1471	8/21/2015	08:09:32	45.92557	-129.97884	163.8	113.2	1201.7	1314.9	Transiting at 1200 m depth.
1472	8/21/2015	08:12:13	45.92557	-129.97894	169.4	112.9	1201.8	1314.7	No hanging out in the water column for Sentry to be deployed.
1473	8/21/2015	08:18:28	45.92556	-129.97908	168.3	80.8	1201.9	1282.7	Not deploying Sentry.
1474	8/21/2015	08:19:58	45.92557	-129.97910	159.3	112.6	1201.9	1314.4	Starting transit for 3.5 km at 341o toward WP1.
1475	8/21/2015	08:45:50	45.92964	-129.98086	159.5	128.9	1178.9	1307.8	Transiting.
1476	8/21/2015	10:06:35	45.94971	-129.99059	165.1	43.1	1279.0	1322.1	Still transiting. 300 m from WP1.
1477	8/21/2015	10:13:39	45.95172	-129.99180	166.5	81.9	1300.6	1382.5	NAV: Doppler Reset
1478	8/21/2015	10:14:05	45.95184	-129.99187	150.8	78.7	1300.5	1379.2	Depth 1300 m still transiting
1479	8/21/2015	10:31:54	45.95561	-129.99386	327.1	61.7	1467.5	1529.2	Dropping down under the ship. We may settle out a little ways from the waypoint but that's OK.
1481	8/21/2015	10:34:52	45.95591	-129.99413	25.4	2.4	1526.8	1529.2	Jason on bottom
1482	8/21/2015	10:35:51	45.95597	-129.99410	69.6	3.4	1525.2	1528.6	To west of the waypoint by about 75m near the contact. Yellow mat/clays in cracks in lava.
1484	8/21/2015	10:36:32	45.95602	-129.99406	68.5	1.2	1527.6	1528.9	Looks like new lava. Will drive E to try to find the contact.'
1485	8/21/2015	10:37:42	45.95601	-129.99398	69.2	0.9	1528.3	1529.1	HIGHLIGHTS: HD highlights start Contact between old and new flows. Outline and map seem well located.
1487	8/21/2015	10:38:34	45.95602	-129.99398	62.8	0.9	1528.3	1529.3	Looking at contact between 2015 and older flows.
1489	8/21/2015	10:40:34	45.95605	-129.99401	119.5	1.3	1528.1	1529.5	HIGHLIGHTS: HD highlights stop Lateralling to get clear of our dust.
1491	8/21/2015	10:42:22	45.95605	-129.99401	119.9	0.8	1528.6	1529.3	Swapping pilots.
1493	8/21/2015	10:45:39	45.95606	-129.99401	131.2	0.9	1528.3	1529.2	Going to try to move the marker float out of the way.
1495	8/21/2015	10:47:43	45.95605	-129.99400	131.6	0.9	1528.3	1529.3	Wrapping the marker's line around the rear major water bottle's nozzle to get it away from the camera.
1499	8/21/2015	10:51:29	45.95605	-129.99400	130.9	0.9	1528.3	1529.2	Contact
1501	8/21/2015	10:53:15	45.95604	-129.99400	136.4	0.9	1528.3	1529.2	Our housekeeping with the marker is complete.
1502	8/21/2015	10:53:43	45.95605	-129.99400	165.4	1.0	1528.3	1529.2	The MTR has been moved to the gastight box.
1505	8/21/2015	10:56:11	45.95602	-129.99399	65.6	0.8	1528.7	1529.4	WP 1 here at a contact.
1506	8/21/2015	10:57:22	45.95602	-129.99398	65.5	0.8	1528.7	1529.4	Trying to grab a small pillow here at the contact W of WP1. Too big.
1507	8/21/2015	10:57:37	45.95602	-129.99398	65.2	0.8	1528.6	1529.4	HIGHLIGHTS: HD highlights start

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1509	8/21/2015	10:58:34	45.95602	-129.99398	64.0	0.8	1528.6	1529.4	**SAMPLE: geo J822-geo-20**. Small piece of a pillow bud into box 10. New lava.
1511	8/21/2015	11:00:50	45.95602	-129.99398	64.0	0.8	1528.7	1529.4	J822-geo-20. Location 45.956012 129.994011. Z= 1529. 2 small pieces of same pillow bud. Glass exterior. At contact. Z=1529. NE Cald 2015 lava.
1512	8/21/2015	11:00:55	45.95602	-129.99398	64.0	0.8	1528.7	1529.4	HIGHLIGHTS: HD highlights stop
1513	8/21/2015	11:01:19	45.95602	-129.99398	64.4	0.8	1528.7	1529.4	That sample was at a contact.
1515	8/21/2015	11:02:46	45.95603	-129.99398	36.2	1.1	1528.0	1529.1	Dropping a dive weight after taking geo sample.
1516	8/21/2015	11:03:03	45.95603	-129.99399	28.6	1.2	1527.9	1529.1	We are going to move the ship to the north now.
1517	8/21/2015	11:03:52	45.95606	-129.99401	349.8	1.5	1527.4	1528.9	Southern contact of the 2015 lava flow. Seeing some white bacterial mat.
1519	8/21/2015	11:04:27	45.95608	-129.99402	348.8	0.8	1528.5	1529.3	Probably thin flow here because the depth differences are small. Interspersed new and old lava here.
1521	8/21/2015	11:05:10	45.95610	-129.99403	346.6	1.4	1528.0	1529.3	Shrimp.
1523	8/21/2015	11:06:22	45.95622	-129.99406	346.7	1.8	1527.2	1529.0	Moving over this contact area. Getting into the majority of new lava. Older large pillows interspersed.
1524	8/21/2015	11:07:02	45.95628	-129.99407	346.3	1.9	1526.7	1528.7	As we move forward there is still a lot of floc in the water.
1525	8/21/2015	11:07:26	45.95631	-129.99408	346.3	1.2	1526.5	1527.7	This is all new here. The pillows have a rougher surface and trap a bit more sediment so appear older.
1526	8/21/2015	11:07:58	45.95634	-129.99411	346.3	1.8	1526.0	1527.7	Orange staining between the pillow lobes. Thin coating of mat on the pillows.
1528	8/21/2015	11:09:21	45.95640	-129.99414	346.9	2.0	1525.4	1527.3	Frame grabbing from pilot and sci cam.
1529	8/21/2015	11:09:42	45.95642	-129.99415	335.6	1.7	1525.4	1527.1	The flow is getting thicker here.
1531	8/21/2015	11:10:08	45.95643	-129.99418	345.7	1.2	1525.5	1526.6	Little pillow that looks exploded here. It is probably a small collapse here.
1532	8/21/2015	11:10:39	45.95647	-129.99418	345.2	1.2	1525.2	1526.4	Small collapse and explosion here. Yellow staining between the pillows.
1533	8/21/2015	11:11:20	45.95654	-129.99418	344.8	2.0	1524.3	1526.3	The water is murky here. Lots of floc.
1535	8/21/2015	11:13:14	45.95667	-129.99420	345.9	1.0	1524.3	1525.4	Lobate lavas here with pillows. No shimmering water yet.
1536	8/21/2015	11:13:23	45.95668	-129.99420	345.8	1.2	1524.0	1525.2	Another broken pillow.
1537	8/21/2015	11:13:49	45.95671	-129.99421	347.1	1.0	1523.6	1524.7	The flow is getting thicker here. No older lavas visible anymore. This is all 2015 lava.
1539	8/21/2015	11:14:37	45.95677	-129.99425	338.9	1.1	1523.7	1524.8	Big broad lobe that has collapsed.
1540	8/21/2015	11:15:50	45.95683	-129.99426	340.2	1.9	1522.6	1524.5	Broad lobes here - fluid lavas with small collapses here and there.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1542	8/21/2015	11:17:18	45.95698	-129.99431	340.2	1.8	1523.1	1524.9	Moving over lobate lavas with some yellow staining between the pillow-like features.
1544	8/21/2015	11:18:26	45.95711	-129.99433	339.8	1.2	1522.7	1523.9	Smooth surface that is shiny is generally called lobate. There can be individual buds on the surface. Pillows are more striated.
1545	8/21/2015	11:18:47	45.95714	-129.99434	348.4	1.5	1522.7	1524.2	Bill hasn't seen a pillow flow in a while.
1546	8/21/2015	11:19:19	45.95719	-129.99435	348.3	1.5	1522.9	1524.4	Lobate flow here. We haven't seen any eruptive mat here.
1548	8/21/2015	11:20:21	45.95727	-129.99436	351.9	1.6	1522.7	1524.3	Collapse explosion.
1549	8/21/2015	11:21:59	45.95741	-129.99443	352.2	1.6	1522.4	1524.1	Nice still shots from the super scorpio.
1551	8/21/2015	11:22:31	45.95746	-129.99442	344.3	1.4	1522.6	1524.0	The water is getting milkier.
1552	8/21/2015	11:22:56	45.95751	-129.99445	343.7	1.2	1523.1	1524.2	Lobes are black and shiny with yellow staining between the lobes.
1553	8/21/2015	11:23:54	45.95764	-129.99451	344.1	1.7	1522.4	1524.1	Interspersed broken lobes.
1555	8/21/2015	11:24:21	45.95772	-129.99455	344.9	1.5	1522.5	1524.0	Big blow-out or this lava lobe.
1556	8/21/2015	11:24:59	45.95779	-129.99458	344.3	1.4	1522.7	1524.1	The down-looking camera shows how shiny the lavas are.
1557	8/21/2015	11:25:28	45.95784	-129.99457	344.1	1.1	1522.8	1523.9	Still lobates here with small buds. Shiny black lava.
1559	8/21/2015	11:27:26	45.95806	-129.99462	344.3	1.7	1522.2	1523.9	Another explosion area. Broken up.
1560	8/21/2015	11:27:39	45.95808	-129.99463	344.2	1.7	1522.0	1523.7	HIGHLIGHTS: HD highlights start Sci cam.
1561	8/21/2015	11:27:57	45.95811	-129.99464	344.3	2.0	1521.7	1523.8	Shrimp.
1563	8/21/2015	11:28:43	45.95816	-129.99465	346.8	1.7	1522.1	1523.8	Looking at lobate lavas.
1564	8/21/2015	11:29:03	45.95819	-129.99467	346.9	2.1	1521.8	1523.8	Small explosion areas. Another one coming up.
1565	8/21/2015	11:29:59	45.95829	-129.99469	346.9	1.9	1522.2	1524.1	Larger collapse here but still just a collapsed lobe - not a large area.
1567	8/21/2015	11:30:30	45.95834	-129.99470	346.9	1.5	1522.2	1523.7	Flows are more jumbled up here. More little pieces of the lobes popped out.
1568	8/21/2015	11:30:44	45.95836	-129.99471	346.5	1.5	1522.5	1524.0	HIGHLIGHTS: HD highlights stop
1569	8/21/2015	11:30:56	45.95838	-129.99471	348.5	1.2	1522.7	1523.8	Taking super scorpio stills along the way.
1570	8/21/2015	11:31:48	45.95847	-129.99476	347.6	1.1	1522.4	1523.4	More collapsed lobes. Little busted up "blisters" on the lobes.
1572	8/21/2015	11:32:34	45.95853	-129.99475	347.9	1.4	1522.5	1524.0	Broken up lobes interspersed on this new; shiny 2015 lava. Not much staining and no "eruptive" mat.
1573	8/21/2015	11:33:36	45.95870	-129.99482	347.5	1.4	1523.0	1524.3	The deflation here happened in the first day or two but it continued for ~11 days.
1574	8/21/2015	11:34:01	45.95877	-129.99483	347.5	1.2	1523.1	1524.3	The seismometers in the caldera were recording sounds in the NRZ for a couple weeks at the end of April; early May.

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1576	8/21/2015	11:34:07	45.95879	-129.99483	347.9	1.2	1523.3	1524.5	The lavas here are 4 months old.
1577	8/21/2015	11:35:17	45.95893	-129.99485	347.5	1.5	1522.8	1524.3	Still lots of floc in the water.
1578	8/21/2015	11:35:47	45.95899	-129.99486	347.7	1.7	1522.4	1524.1	We haven't seen anything that looks like an eruptive feature. Just big lobate sheet flow.
1580	8/21/2015	11:36:56	45.95914	-129.99484	346.2	1.9	1522.3	1524.1	The source is where the flow is shallowest. Lava flows downhill.
1581	8/21/2015	11:37:06	45.95916	-129.99484	347.3	1.6	1522.4	1524.0	No visible venting yet.
1583	8/21/2015	11:38:25	45.95928	-129.99488	347.0	1.1	1522.8	1523.9	Rattail.
1584	8/21/2015	11:38:52	45.95932	-129.99488	347.0	1.8	1522.6	1524.4	Collapse holes in the lobes.
1586	8/21/2015	11:40:51	45.95950	-129.99495	347.2	1.3	1523.0	1524.3	Inflated lobate lavas with some orang-ish staining in the cracks between the lobes. No visible flow yet.
1587	8/21/2015	11:41:28	45.95955	-129.99495	347.0	1.3	1523.2	1524.5	No fluid flow yet.
1589	8/21/2015	11:42:31	45.95960	-129.99495	347.5	2.3	1522.7	1525.1	Swapping out pilots here. James is taking over for Scott.
1590	8/21/2015	11:44:03	45.95978	-129.99498	347.3	2.4	1522.9	1525.3	The floc is getting much thicker. We must be coming on some venting nearby.
1592	8/21/2015	11:44:32	45.95985	-129.99498	347.7	3.0	1521.9	1524.9	The lavas in the downward looking cam are still black and glossy with no eruptive mat.
1593	8/21/2015	11:45:44	45.96003	-129.99501	347.6	1.7	1523.0	1524.7	Big collapse here. This is the largest collapse we've seen so far.
1595	8/21/2015	11:47:01	45.96019	-129.99503	347.5	1.5	1523.5	1525.0	Zooming in on the lobate flow. Still no eruptive mat. Shiny black lava here.
1598	8/21/2015	11:51:57	45.96080	-129.99516	347.6	1.2	1523.9	1525.0	We're about 400m south of WP2.
1600	8/21/2015	11:52:34	45.96088	-129.99518	347.5	1.3	1524.2	1525.6	Shiny lava lobes continuing on. Not much change. The flow is not thick enough for eruptive mat.
1601	8/21/2015	11:52:48	45.96091	-129.99518	348.0	1.3	1524.3	1525.6	Just yellow staining between the lava lobes.
1602	8/21/2015	11:53:15	45.96094	-129.99522	346.9	2.1	1523.6	1525.7	Old pillow popping up between the new lobes. The flow is thin here.
1603	8/21/2015	11:53:35	45.96098	-129.99524	346.9	1.7	1524.2	1525.9	Contact
1604	8/21/2015	11:53:44	45.96099	-129.99524	347.9	1.4	1524.1	1525.5	Here comes a larger contact.
1605	8/21/2015	11:53:57	45.96102	-129.99524	347.6	0.8	1524.4	1525.3	Older lavas interspersed.
1606	8/21/2015	11:54:04	45.96103	-129.99525	347.7	0.9	1524.7	1525.6	HIGHLIGHTS: HD highlights start Contact
1608	8/21/2015	11:54:34	45.96106	-129.99524	352.9	1.2	1524.6	1525.8	Start contrast between the older lava pillows and new flow.
1609	8/21/2015	11:55:10	45.96106	-129.99526	2.3	1.7	1524.4	1526.1	NAV: Doppler Reset
1610	8/21/2015	11:55:29	45.96106	-129.99529	356.2	2.1	1523.9	1526.0	NAV: Navigator target Contact.
1611	8/21/2015	11:55:50	45.96109	-129.99530	351.9	2.6	1523.6	1526.2	HIGHLIGHTS: HD highlights stop
1613	8/21/2015	11:56:15	45.96112	-129.99532	343.3	2.3	1524.8	1527.2	Moving to the west to find the edge of the flow again.

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1614	8/21/2015	11:56:30	45.96113	-129.99535	343.5	2.3	1524.6	1526.8	We're moving over older lavas now. NOT the 2015 flow.
1615	8/21/2015	11:56:49	45.96114	-129.99540	343.5	2.6	1525.2	1527.8	Lots of sediment on these older lavas.
1616	8/21/2015	11:56:58	45.96114	-129.99542	343.4	1.8	1525.9	1527.7	Collapse ahead.
1617	8/21/2015	11:57:18	45.96114	-129.99548	342.8	2.0	1525.8	1527.8	Can see the collapse in the MBARI AUV data underlay.
1618	8/21/2015	11:57:28	45.96115	-129.99551	343.5	1.9	1525.8	1527.8	Sea cucumbers on the older lavas.
1619	8/21/2015	11:57:38	45.96116	-129.99553	343.2	1.6	1526.0	1527.6	Coming upon a large collapse feature.
1620	8/21/2015	11:57:55	45.96117	-129.99557	344.7	1.1	1526.3	1527.3	Still in older lava moving west.
1622	8/21/2015	11:58:35	45.96120	-129.99568	344.4	2.1	1525.8	1527.9	Moving over older lobate flow.
1623	8/21/2015	11:59:03	45.96124	-129.99575	347.2	2.1	1526.6	1528.7	Contact again.
1624	8/21/2015	11:59:15	45.96127	-129.99577	351.8	1.7	1526.6	1528.4	NAV: Navigator target Contact.
1625	8/21/2015	11:59:28	45.96130	-129.99577	355.4	1.4	1526.8	1528.2	Beautiful contact here between old and 2015 flow.
1627	8/21/2015	12:00:08	45.96139	-129.99575	28.1	1.5	1526.4	1527.9	Here on the edge of the flow. There is 2015 flow to the west of the older flow.
1628	8/21/2015	12:01:19	45.96149	-129.99568	66.5	2.0	1525.7	1527.7	HIGHLIGHTS: HD highlights start Contact. Older flow to the east of the 2015 lavas. There is a large kipuka of older lava in the center of this newer flow.
1629	8/21/2015	12:01:47	45.96149	-129.99563	69.5	1.7	1526.0	1527.7	Now we're back into the newer lavas right on the edge of this older flow.
1630	8/21/2015	12:01:59	45.96149	-129.99561	73.8	1.6	1525.9	1527.6	Interspersed older and 2015 lavas.
1632	8/21/2015	12:02:32	45.96146	-129.99552	74.9	2.0	1524.7	1526.7	Large new 2015 pillow.
1633	8/21/2015	12:02:55	45.96146	-129.99544	348.2	1.8	1524.3	1526.1	HIGHLIGHTS: HD highlights stop
1634	8/21/2015	12:03:28	45.96155	-129.99539	348.9	1.2	1524.5	1525.7	Looks like we're totally back in the new lava.
1636	8/21/2015	12:04:14	45.96176	-129.99545	345.2	1.6	1523.5	1525.2	Heading toward WP2.
1637	8/21/2015	12:05:41	45.96203	-129.99569	344.6	1.1	1525.4	1526.5	Now in all new lavas.
1639	8/21/2015	12:06:12	45.96209	-129.99580	344.1	1.4	1526.1	1527.4	Moving over lobate flow with yellow staining between the lobes. Black shiny lava no eruptive mat. No explosions for a while.
1640	8/21/2015	12:06:37	45.96214	-129.99586	343.4	1.8	1526.1	1527.9	No shimmering water still.... Some orange sediment between the lobes throughout.
1641	8/21/2015	12:06:43	45.96215	-129.99587	344.3	1.5	1526.2	1527.6	Little fish.
1642	8/21/2015	12:07:19	45.96224	-129.99590	344.3	1.5	1526.6	1528.1	Zooming in on fragments on these lobes. Not broken up so not sure why we see them.
1643	8/21/2015	12:07:25	45.96225	-129.99590	344.1	1.6	1526.5	1528.1	Black shiny lava lobes.
1645	8/21/2015	12:09:04	45.96245	-129.99600	344.6	1.2	1527.1	1528.3	Broken up lobes and murkier water.
1646	8/21/2015	12:09:13	45.96246	-129.99601	344.2	1.2	1526.9	1528.1	Getting into jumbled flow here.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1647	8/21/2015	12:09:35	45.96249	-129.99602	344.8	2.0	1526.9	1528.8	This looks totally different. Jumbled flow rather than lobate now.
1648	8/21/2015	12:09:55	45.96249	-129.99602	346.6	2.0	1526.8	1528.8	We're going to stop here and sample some lava.
1650	8/21/2015	12:10:24	45.96255	-129.99603	335.7	1.4	1527.2	1528.6	All of a sudden we are in jumbled flow.
1651	8/21/2015	12:10:40	45.96260	-129.99606	337.4	1.6	1526.8	1528.4	HIGHLIGHTS: HD highlights start: Crazy-looking jumbled lavas.
1653	8/21/2015	12:12:42	45.96262	-129.99608	335.0	0.8	1527.6	1528.4	Grabbing a piece of jumbled lava. Fragile. It crumbled. Black shiny lava. Too fragile to sample. Moving on.
1654	8/21/2015	12:12:48	45.96262	-129.99608	340.3	0.9	1527.5	1528.3	HIGHLIGHTS: HD highlights stop
1655	8/21/2015	12:13:10	45.96268	-129.99611	348.6	1.5	1526.7	1528.3	Moving over jumbled lavas.
1656	8/21/2015	12:13:27	45.96272	-129.99613	336.3	1.8	1526.4	1528.3	Lots of floc in the water.
1658	8/21/2015	12:14:29	45.96289	-129.99619	336.1	2.0	1526.6	1528.6	Mixed-up jumbled lavas here. Chaotic flow.
1659	8/21/2015	12:14:47	45.96291	-129.99620	339.1	2.3	1526.0	1528.3	Tether management.
1660	8/21/2015	12:15:27	45.96294	-129.99622	349.1	1.4	1526.6	1528.0	Collapse here. Looks like we're getting into lobates here. We're on the edge of jumbled/lobate flows.
1662	8/21/2015	12:17:46	45.96295	-129.99623	349.1	19.2	1527.7	1546.9	**SAMPLE: Geo J822-geo-21**. Edge of collapse in this lobate flow. Grabbing collapse shelf. Small piece of collapse shelf. Into box 9.
1663	8/21/2015	12:18:59	45.96295	-129.99623	349.1	37.0	1527.7	1564.8	J822-geo-21 cont. Grabbing another small piece of this collapse shelf. Shiny glass on this fist-size piece. Into box 9.
1664	8/21/2015	12:19:07	45.96295	-129.99623	246.5	185.3	1527.7	1713.1	NAV: Doppler Reset
1665	8/21/2015	12:20:01	45.96294	-129.99622	286.3	4.3	1523.8	1528.1	J822-geo-21 cont. 45.962944 129.996231 Z=1525.
1667	8/21/2015	12:20:05	45.96295	-129.99622	335.2	4.0	1523.6	1527.6	HIGHLIGHTS: HD highlights stop
1668	8/21/2015	12:21:02	45.96298	-129.99623	335.5	1.3	1526.8	1528.1	J822-geo-21 cont. Sample ~80m SW of WP2.
1669	8/21/2015	12:21:23	45.96300	-129.99625	333.7	3.0	1524.7	1527.7	Will continue on over new lobate lavas with small collapse features.
1670	8/21/2015	12:21:47	45.96304	-129.99627	335.6	1.9	1525.4	1527.3	Now lobes are more coherent. Out of the jumble and collapse.
1672	8/21/2015	12:23:19	45.96316	-129.99632	334.1	1.3	1525.2	1526.5	Going to head toward WP 3 - will not hit WP2 - will travel to the west of it.
1673	8/21/2015	12:23:45	45.96317	-129.99633	334.8	1.5	1525.2	1526.7	A lot of these lobes here are hollow with little collapse holes on top.
1675	8/21/2015	12:24:13	45.96317	-129.99633	335.2	1.4	1525.2	1526.7	We're waiting for the ship now.
1677	8/21/2015	12:26:49	45.96326	-129.99638	335.0	1.8	1524.2	1526.0	Moving again.
1678	8/21/2015	12:27:24	45.96333	-129.99642	334.5	2.2	1524.5	1526.7	Tiny collapse in lobe.
1681	8/21/2015	12:31:11	45.96346	-129.99650	328.3	1.8	1525.2	1527.0	Hanging out waiting for ship; Medea and Jason to all get lined up.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1682	8/21/2015	12:31:57	45.96350	-129.99652	329.3	1.5	1525.4	1526.8	We're moving again. Heading to WP3 on the western edge of the flow. Moving north.
1684	8/21/2015	12:32:55	45.96355	-129.99657	329.0	1.4	1525.5	1526.8	Shiny lobate flows.
1686	8/21/2015	12:34:44	45.96364	-129.99665	328.9	1.6	1525.8	1527.5	More lobate flow here.
1688	8/21/2015	12:36:15	45.96377	-129.99677	328.9	1.6	1526.1	1527.7	Large lobes here.
1689	8/21/2015	12:36:45	45.96376	-129.99678	328.2	2.0	1526.0	1528.0	Black shiny lobates.
1691	8/21/2015	12:38:53	45.96386	-129.99692	328.9	1.3	1526.6	1527.9	The CTD saw a plume here (lots of NTU). No methane and hydrogen here; but there was a lot of methane and hydrogen on the NRZ flow.
1692	8/21/2015	12:39:33	45.96392	-129.99697	329.3	2.0	1526.8	1528.8	Explosion and breccia here. Individual lobes burst(?).
1694	8/21/2015	12:40:07	45.96398	-129.99702	329.1	1.3	1527.8	1529.1	There are a few pillows interspersed among this lobate flow.
1695	8/21/2015	12:41:47	45.96415	-129.99716	327.9	1.5	1529.0	1530.5	Floc in the water - but not really milky. Seemed thicker earlier.
1696	8/21/2015	12:42:04	45.96418	-129.99721	327.9	1.3	1529.0	1530.3	Moving over lobate flow.
1698	8/21/2015	12:42:38	45.96424	-129.99729	327.7	1.9	1529.6	1531.6	The flow is pretty thin here. No sign of warm water.
1699	8/21/2015	12:43:13	45.96431	-129.99736	328.9	1.9	1529.6	1531.4	Jumbled flow all of a sudden.
1701	8/21/2015	12:44:18	45.96441	-129.99747	327.8	1.9	1529.3	1531.2	Lobate; jumbled transition. This part must have been flowing faster - probably in the channel. Gets all bulldozed and jumbled up and shoved into piles.
1702	8/21/2015	12:44:41	45.96444	-129.99750	327.8	0.8	1530.3	1531.0	Lobate on the sides of the channel and jumbled in the middle of the channel? Speculating here.
1703	8/21/2015	12:44:48	45.96445	-129.99750	344.8	0.8	1530.4	1531.1	Crazy looking lavas.
1704	8/21/2015	12:45:02	45.96445	-129.99752	328.7	0.8	1530.1	1530.8	Right here may be a channel edge.
1705	8/21/2015	12:45:11	45.96445	-129.99754	318.3	1.1	1530.0	1531.1	Going back into lobates.
1706	8/21/2015	12:45:31	45.96443	-129.99759	4.6	1.7	1529.4	1531.1	Contact - small kipuka of older lava.
1707	8/21/2015	12:45:52	45.96445	-129.99763	325.3	1.5	1530.2	1531.7	NAV: Navigator target Contact.
1709	8/21/2015	12:46:26	45.96448	-129.99763	347.2	1.5	1530.0	1531.5	Going to follow the contact for a bit - still heading north.
1710	8/21/2015	12:46:35	45.96450	-129.99762	13.0	1.8	1529.7	1531.5	We're at the western edge of the flow it appears.
1711	8/21/2015	12:46:56	45.96453	-129.99757	348.0	1.8	1529.3	1531.1	2015 lava lobe on top of older lavas.
1713	8/21/2015	12:48:27	45.96470	-129.99759	336.3	2.2	1528.1	1530.2	There could be newer lava to the west of us. Probably the collapse to the west is filled in with new lava but we don't know.
1714	8/21/2015	12:48:42	45.96472	-129.99760	328.5	1.7	1528.3	1530.0	Jumbled 2015 lavas at the edge of older flow.
1715	8/21/2015	12:49:15	45.96470	-129.99767	327.7	1.8	1528.4	1530.2	Lobate flow - very thin at this contact.
1716	8/21/2015	12:49:39	45.96473	-129.99774	328.5	1.4	1529.1	1530.4	Little holes in the lava lobes.
1717	8/21/2015	12:49:47	45.96474	-129.99776	327.9	1.2	1529.0	1530.2	Back into jumbled lavas here.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1719	8/21/2015	12:50:11	45.96477	-129.99781	328.2	1.7	1528.9	1530.7	Striated to jumbled lavas here.
1720	8/21/2015	12:50:40	45.96482	-129.99788	328.6	1.4	1528.9	1530.3	Can tell lobates have been broken up.
1721	8/21/2015	12:50:47	45.96483	-129.99789	328.7	1.3	1529.1	1530.4	HIGHLIGHTS: HD highlights stop
1722	8/21/2015	12:51:09	45.96485	-129.99794	329.0	0.9	1529.9	1530.7	Striated and jumbled lavas.
1723	8/21/2015	12:52:02	45.96491	-129.99798	328.2	1.6	1529.5	1531.1	Lobates coming up - drain-out shelfs at the edge of the collapse.
1725	8/21/2015	12:52:24	45.96494	-129.99801	334.3	1.3	1529.6	1530.9	Back into lobate 2015 lava.
1726	8/21/2015	12:52:57	45.96499	-129.99805	334.0	1.7	1529.8	1531.5	Small hole in lava lobe. Lobe popped out.
1728	8/21/2015	12:54:11	45.96506	-129.99810	334.0	1.2	1530.3	1531.6	Moving over new lobates with an older lava pillow poking through.
1729	8/21/2015	12:54:55	45.96511	-129.99815	334.7	2.0	1529.9	1531.9	Another older pillow poking up - not completely buried by the 2015 flow.
1730	8/21/2015	12:55:14	45.96513	-129.99817	333.3	1.3	1530.9	1532.2	The flow is thin here.
1731	8/21/2015	12:55:50	45.96517	-129.99822	334.7	1.4	1530.9	1532.4	Coming upon a couple of large pillows on top of the lobate flow.
1732	8/21/2015	12:56:04	45.96519	-129.99823	334.6	1.6	1530.8	1532.4	Exploded lobe.
1734	8/21/2015	12:56:26	45.96523	-129.99825	188.9	1.8	1530.9	1532.7	Another pillow on top of the lobate flow. All 2015 flow.
1735	8/21/2015	12:57:03	45.96524	-129.99827	329.1	2.8	1529.9	1532.6	One old pillow sticking up surrounded by 2015 flow.
1736	8/21/2015	12:57:29	45.96527	-129.99828	328.3	1.4	1531.5	1532.8	Here and there can see older flow kipukas (usually a pillow here and there) amongst the 2015 flow.
1738	8/21/2015	12:58:15	45.96534	-129.99837	329.3	0.9	1532.9	1533.8	Pillows from the 2015 flow.
1739	8/21/2015	12:59:22	45.96543	-129.99843	328.7	0.8	1534.0	1534.8	Seeing "windows" of older flow under the 2015 lobates here. Contact.
1741	8/21/2015	13:00:10	45.96547	-129.99846	328.7	1.2	1534.4	1535.6	We're approaching an area of collapse in the MBARI map. We'll see if it is in-filled with the 2015 flow.
1742	8/21/2015	13:00:57	45.96552	-129.99851	326.7	1.8	1534.0	1535.8	Can see the edge of the collapse coming up.
1743	8/21/2015	13:01:33	45.96556	-129.99858	327.3	1.3	1536.0	1537.2	Lineated flows on the floor of the old collapse.
1745	8/21/2015	13:02:06	45.96559	-129.99864	342.7	1.8	1535.1	1536.9	Part of upper crust and all the rest if collapsed.
1746	8/21/2015	13:02:24	45.96565	-129.99869	349.0	1.3	1535.8	1537.1	Lineated sheet flow now.
1747	8/21/2015	13:02:44	45.96571	-129.99871	342.4	1.3	1536.0	1537.3	We're in some kind of a channel here.
1748	8/21/2015	13:03:15	45.96580	-129.99877	338.5	1.6	1535.5	1537.1	Jumbled lavas and lineated sheet flows here in the channel (old collapse area).
1749	8/21/2015	13:03:54	45.96592	-129.99886	335.9	0.9	1536.2	1537.2	Big flat sheet flow here.
1751	8/21/2015	13:04:07	45.96596	-129.99890	21.7	1.2	1536.4	1537.6	Can see the edge of the channel to the east.
1752	8/21/2015	13:04:16	45.96597	-129.99892	17.2	1.6	1536.7	1538.3	Great images.
1753	8/21/2015	13:04:51	45.96601	-129.99898	21.2	1.4	1536.7	1538.1	Channel edge with collapse area to the west.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1754	8/21/2015	13:05:13	45.96602	-129.99898	355.5	0.8	1537.6	1538.4	HIGHLIGHTS: HD highlights start Pillars and shelf. Yellow staining on the lavas.
1755	8/21/2015	13:05:45	45.96604	-129.99898	332.4	2.1	1536.1	1538.2	Pillars and shelf at eastern channel edge.
1757	8/21/2015	13:06:10	45.96609	-129.99903	317.4	1.1	1535.7	1536.8	Coming up over the shelf and back on lobates again. Out of the channel now.
1758	8/21/2015	13:06:16	45.96609	-129.99905	324.0	1.0	1535.8	1536.8	HIGHLIGHTS: HD highlights stop
1759	8/21/2015	13:07:11	45.96621	-129.99921	323.1	2.0	1534.9	1536.9	We will probably be going in and out of the pillar/shelf morphology as we drive through the older (pre 2015) channel.
1760	8/21/2015	13:07:28	45.96624	-129.99925	323.7	1.2	1535.8	1537.0	Lobate lavas with the occasional broken lobe.
1761	8/21/2015	13:08:01	45.96629	-129.99931	315.2	1.4	1535.2	1536.6	Large collapse off to the west in the sonar. Not seeing it in the video.
1763	8/21/2015	13:08:35	45.96629	-129.99944	331.6	1.1	1535.7	1536.8	Here comes the large collapse feature.
1764	8/21/2015	13:09:23	45.96631	-129.99949	331.5	0.8	1538.5	1539.2	Pillar and roof structures with more of the bright yellow staining on the roof and pillars.
1765	8/21/2015	13:09:44	45.96632	-129.99949	336.3	3.2	1536.0	1539.2	We're in the middle of the old channel.
1767	8/21/2015	13:10:48	45.96647	-129.99960	349.1	1.7	1536.3	1538.0	We're actually more toward the eastern edge of the old collapse feature.
1768	8/21/2015	13:11:27	45.96649	-129.99957	5.7	3.0	1537.1	1540.1	HIGHLIGHTS: HD highlights start Gorgeous lava pillars here. Some solo pillars. Pillars and roof structure as well.
1769	8/21/2015	13:11:39	45.96650	-129.99956	20.0	3.7	1536.1	1539.8	New lava pillars here.
1770	8/21/2015	13:12:00	45.96655	-129.99952	17.3	1.2	1535.3	1536.5	Moving on.
1772	8/21/2015	13:12:05	45.96657	-129.99951	12.3	1.3	1535.7	1537.0	HIGHLIGHTS: HD highlights stop
1773	8/21/2015	13:12:14	45.96660	-129.99951	343.6	1.6	1535.1	1536.8	Skylight.
1774	8/21/2015	13:12:29	45.96667	-129.99953	348.7	1.5	1535.4	1536.9	Lobate lava flows now.
1775	8/21/2015	13:13:21	45.96685	-129.99956	345.6	1.9	1535.8	1537.8	Traveling over lobate flow now. All 2015 lava.
1776	8/21/2015	13:13:32	45.96688	-129.99956	47.4	1.5	1536.3	1537.8	Coming on another hole with a pillar.
1778	8/21/2015	13:14:16	45.96691	-129.99959	331.9	3.2	1536.8	1540.1	HIGHLIGHTS: HD highlights start Solo 2015 pillar.
1779	8/21/2015	13:14:52	45.96695	-129.99968	335.3	1.4	1536.2	1537.6	The flow on top of the collapse is all black and shiny.
1780	8/21/2015	13:14:55	45.96696	-129.99969	329.8	1.4	1536.4	1537.8	HIGHLIGHTS: HD highlights stop
1781	8/21/2015	13:15:41	45.96705	-129.99983	326.6	1.5	1536.5	1538.1	Moving on over glassy-looking lobates with explosion holes.
1782	8/21/2015	13:15:50	45.96707	-129.99985	326.1	1.0	1536.9	1537.9	Still no visible flow.
1784	8/21/2015	13:16:13	45.96711	-129.99986	30.5	0.8	1537.3	1538.1	That's "fluid" flow that we're not seeing. Still no eruptive mat.
1785	8/21/2015	13:16:29	45.96713	-129.99984	320.4	0.8	1537.3	1538.2	Another collapse pit here.
1787	8/21/2015	13:19:35	45.96736	-130.00028	319.2	1.5	1536.2	1537.7	Moving over more lobates with a little collapse here

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									and there.
1788	8/21/2015	13:19:45	45.96737	-130.00032	303.1	2.7	1537.2	1540.0	Collapse with pillars and roof.
1790	8/21/2015	13:20:14	45.96735	-130.00038	276.1	2.8	1537.0	1539.8	HIGHLIGHTS: HD highlights start More pillars and roof collapse area.
1791	8/21/2015	13:21:05	45.96733	-130.00047	280.2	3.5	1536.0	1539.5	HIGHLIGHTS: HD highlights stop
1792	8/21/2015	13:21:30	45.96735	-130.00054	351.6	1.4	1536.4	1537.8	Out of the collapse and back on lobates.
1794	8/21/2015	13:22:14	45.96743	-130.00058	351.6	1.6	1536.3	1537.9	We're going to slow the ship down and look for a place to sample when things settle out.
1795	8/21/2015	13:23:04	45.96759	-130.00063	353.2	1.7	1537.1	1538.8	The ship is approaching WP3. Jason is still ~100m south.
1796	8/21/2015	13:23:56	45.96774	-130.00066	351.4	1.0	1538.4	1539.4	Thick orange staining between the lobes.
1798	8/21/2015	13:24:26	45.96782	-130.00071	30.8	1.4	1538.6	1540.0	We're on the edge of the flow.
1799	8/21/2015	13:24:44	45.96784	-130.00072	295.6	1.3	1538.9	1540.1	NAV: Navigator target Contact.
1800	8/21/2015	13:25:19	45.96790	-130.00074	14.9	0.8	1539.3	1540.1	Contact. 2015 lobate flow over older jumbled lava.
1801	8/21/2015	13:25:43	45.96794	-130.00079	20.9	1.7	1539.6	1541.4	The orange staining has increased on the new flow.
1802	8/21/2015	13:25:50	45.96795	-130.00080	326.2	2.4	1539.3	1541.7	Collapse here.
1803	8/21/2015	13:26:02	45.96798	-130.00081	324.8	1.3	1539.7	1540.9	Skylight in the new flow.
1805	8/21/2015	13:26:54	45.96802	-130.00091	324.5	1.6	1540.2	1541.8	Coming upon a pillar/roof feature. Will sample the roof shelf if possible.
1807	8/21/2015	13:28:29	45.96802	-130.00092	323.1	1.6	1540.0	1541.6	**SAMPLE: Geo J822-geo-22**. Grabbing a piece of the roof shelf. It's a large piece. Broke it. Shiny glass surface of this roof feature.
1808	8/21/2015	13:28:59	45.96803	-130.00092	321.5	2.4	1539.2	1541.5	J822-geo-22. Went into compartment 7.
1809	8/21/2015	13:29:48	45.96809	-130.00107	320.9	2.4	1540.0	1542.4	SAMPLE: Geo J822-geo-22 cont. 45.968029 130.000914. Z=1540m.
1811	8/21/2015	13:30:12	45.96813	-130.00115	329.4	1.0	1541.0	1542.0	Moving on now. Last sample was close to waypoint 3.
1812	8/21/2015	13:30:46	45.96815	-130.00118	10.1	2.8	1539.8	1542.6	Looks like the crust is sagging here.
1813	8/21/2015	13:31:19	45.96818	-130.00120	8.0	2.5	1539.4	1541.8	J822-geo-22 was a medium-size piece of roof.
1814	8/21/2015	13:31:32	45.96822	-130.00119	5.6	2.1	1539.7	1541.7	Now we're in lineated sheet flow.
1816	8/21/2015	13:32:08	45.96828	-130.00112	5.4	0.9	1539.4	1540.3	Going from lineated sheet flow to lobates to jumbled lavas - all very quickly.
1817	8/21/2015	13:32:19	45.96830	-130.00111	7.4	0.9	1539.4	1540.3	Jumbled up mess of lava here.
1818	8/21/2015	13:33:40	45.96845	-130.00109	6.8	0.9	1538.9	1539.7	Coming upon another collapse feature here.
1820	8/21/2015	13:34:44	45.96851	-130.00107	6.8	1.6	1543.1	1544.7	Moving over jumbled flow. Now at the edge of a channel. Lots more orangish sediment.
1822	8/21/2015	13:36:26	45.96855	-130.00105	6.8	2.1	1542.9	1545.0	Now we're seeing much thicker orangish mat - it looks more like eruptive mat than what we've seen earlier.

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1823	8/21/2015	13:36:51	45.96855	-130.00105	6.9	2.1	1542.9	1545.0	The mat is thicker here and covering most of the surface of the lava.
1824	8/21/2015	13:37:22	45.96857	-130.00104	7.9	1.0	1543.4	1544.4	Local little pockets at least of eruptive mat.
1826	8/21/2015	13:38:48	45.96869	-130.00099	6.8	1.1	1543.4	1544.5	We're in an area of jumbled lavas with a thin coating of "eruptive mat".
1827	8/21/2015	13:39:20	45.96869	-130.00100	6.7	0.9	1543.3	1544.3	Losing a dive weight.
1829	8/21/2015	13:40:25	45.96872	-130.00099	7.2	2.9	1541.4	1544.3	Less mat here. More floc in the water. Bill thinks it hasn't changed.
1830	8/21/2015	13:40:48	45.96874	-130.00099	11.2	2.0	1541.8	1543.7	Not seeing the "eruptive" mat now.
1831	8/21/2015	13:41:51	45.96879	-130.00098	10.3	2.7	1540.5	1543.2	Strange-looking feature - Probably a tumbled piece of jumbled lava that is not as broken up as the rest.
1833	8/21/2015	13:42:07	45.96883	-130.00099	2.1	1.6	1540.2	1541.8	Moving on over more jumbled 2015 flow.
1834	8/21/2015	13:44:01	45.96904	-130.00096	2.3	1.4	1538.8	1540.2	More jumbled lavas.
1836	8/21/2015	13:44:45	45.96910	-130.00097	3.2	1.6	1539.2	1540.8	Small deep collapse feature here.
1837	8/21/2015	13:45:39	45.96919	-130.00093	5.0	2.1	1537.8	1539.8	Moving along over the new flow. Shiny lavas. Jumbled.
1839	8/21/2015	13:47:51	45.96939	-130.00092	4.6	1.0	1538.2	1539.2	Still in the old channel feature moving over jumbled 2015 lavas.
1841	8/21/2015	13:48:50	45.96945	-130.00086	2.3	3.0	1539.0	1542.0	Moving into another collapse roof/pillar type topography.
1842	8/21/2015	13:49:31	45.96955	-130.00086	3.1	1.4	1537.6	1538.9	Jumbled shiny lavas on cop of the collapse.
1843	8/21/2015	13:49:51	45.96959	-130.00086	3.1	0.9	1539.1	1539.9	Rugged terrain here. Jumbled up mess.
1845	8/21/2015	13:51:28	45.96971	-130.00087	359.4	1.8	1538.8	1540.7	More collapse and jumbled flow within this older channelized area.
1846	8/21/2015	13:51:37	45.96973	-130.00087	359.9	1.7	1538.9	1540.6	Bacterial mat?
1848	8/21/2015	13:52:44	45.96985	-130.00086	14.0	1.5	1539.5	1541.0	We're sure we're in the 2015 flow. A little bit of mat here and there.
1849	8/21/2015	13:53:36	45.96995	-130.00082	16.1	1.1	1538.6	1539.6	We're continuing on here over jumbled new lava.
1851	8/21/2015	13:54:53	45.97009	-130.00086	359.9	2.4	1539.0	1541.4	Going to pump on inc#3. Moving the water from the incubator to the sample bag (position #18).
1852	8/21/2015	13:55:17	45.97011	-130.00087	359.5	1.9	1539.5	1541.4	Heading over more jumbled flow..... Occasional yellow patches.
1853	8/21/2015	13:55:47	45.97014	-130.00089	359.5	0.8	1540.0	1540.7	Getting the view of the beast for the incubator to sample bag transfer.
1854	8/21/2015	13:55:57	45.97015	-130.00090	0.2	0.8	1539.9	1540.7	Crazy jumbled-up lava.
1856	8/21/2015	13:56:33	45.97021	-130.00091	24.1	2.5	1539.3	1541.8	Starting transfer of inc#3 to sample bag.
1858	8/21/2015	13:58:49	45.97045	-130.00076	39.0	0.8	1540.4	1541.2	Moving over another collapse..
1859	8/21/2015	13:59:00	45.97045	-130.00075	41.6	0.8	1541.6	1542.4	White bacterial mat here.
1860	8/21/2015	13:59:34	45.97046	-130.00074	355.6	2.8	1539.9	1542.7	NAV: Navigator target White mat. Don't see any fluid

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									flow though.
1861	8/21/2015	13:59:49	45.97049	-130.00071	6.7	2.2	1539.7	1541.9	Just a small patch of mat.
1863	8/21/2015	14:00:22	45.97058	-130.00069	7.2	1.6	1538.1	1539.7	Rattail.
1864	8/21/2015	14:00:33	45.97061	-130.00069	9.7	1.2	1538.0	1539.2	Still on jumbled flow.
1865	8/21/2015	14:00:56	45.97064	-130.00063	7.9	2.0	1538.2	1540.2	Crab on jumbled flow.
1866	8/21/2015	14:01:24	45.97067	-130.00063	1.5	1.5	1538.8	1540.2	Zooming in on crab.
1867	8/21/2015	14:01:50	45.97066	-130.00063	1.6	2.4	1538.0	1540.3	HIGHLIGHTS: HD highlights start Crab on jumbled flow.
1868	8/21/2015	14:01:56	45.97067	-130.00063	3.9	3.2	1537.0	1540.2	HIGHLIGHTS: HD highlights stop
1870	8/21/2015	14:02:33	45.97071	-130.00062	350.7	1.2	1537.8	1539.0	Moving on heading north.
1871	8/21/2015	14:02:49	45.97074	-130.00063	349.1	1.7	1537.4	1539.0	Here comes another collapse area.
1872	8/21/2015	14:03:45	45.97082	-130.00066	349.6	1.0	1538.8	1539.8	We are seeing slight evidence of some white mat occasionally.
1873	8/21/2015	14:04:05	45.97087	-130.00068	349.6	1.7	1539.1	1540.8	More jumbled lavas. We've been in the jumbled lavas for a while now.
1875	8/21/2015	14:05:52	45.97109	-130.00072	4.9	2.3	1540.9	1543.2	Here we come into more of a channel.
1877	8/21/2015	14:06:26	45.97114	-130.00072	4.7	2.3	1539.9	1542.2	We're actually seeing some white bacterial mat here. We're on jumbled lavas interspersed with lobates.
1878	8/21/2015	14:06:53	45.97118	-130.00072	7.5	1.9	1539.1	1541.0	Seeing the occasional patch of bac mat.
1879	8/21/2015	14:07:13	45.97123	-130.00071	5.5	1.6	1538.6	1540.2	Small collapse edge to the east.
1880	8/21/2015	14:07:54	45.97132	-130.00068	5.3	1.1	1539.4	1540.5	Restarting - continuing to pump.
1882	8/21/2015	14:08:46	45.97146	-130.00067	4.9	2.0	1539.1	1541.2	Seeing lobates over the jumbled slow.
1883	8/21/2015	14:09:28	45.97154	-130.00067	8.5	2.2	1538.9	1541.1	Going to change course and head to a point 200m west of WP4.
1886	8/21/2015	14:10:21	45.97160	-130.00072	11.7	0.8	1540.9	1541.7	Eruptive mat here.
1887	8/21/2015	14:11:05	45.97165	-130.00070	13.3	2.0	1539.5	1541.5	Completed the transfer for inc#3. Incubator #3 off.
1888	8/21/2015	14:11:21	45.97167	-130.00067	13.5	1.5	1539.2	1540.7	More eruptive mat patches but it is very thin and very interspersed.
1889	8/21/2015	14:11:33	45.97169	-130.00065	13.1	1.9	1539.0	1540.9	Turning incubator #4 now.
1891	8/21/2015	14:12:09	45.97174	-130.00060	12.0	2.0	1538.9	1540.9	Starting the transfer of inc #4 to position 20 bag.
1892	8/21/2015	14:12:42	45.97183	-130.00055	312.1	2.3	1539.3	1541.6	Looks like there is more floc in the water now.
1894	8/21/2015	14:14:44	45.97189	-130.00072	320.5	2.1	1541.0	1543.1	We see a little bit of mat here. Very little.
1895	8/21/2015	14:14:49	45.97189	-130.00072	315.5	2.6	1540.4	1543.1	Pillar.
1896	8/21/2015	14:15:34	45.97197	-130.00082	321.7	1.6	1540.2	1541.8	Lobate to broken up roof structure.
1897	8/21/2015	14:15:42	45.97199	-130.00083	319.3	1.5	1540.0	1541.5	Edge of a collapse.
1898	8/21/2015	14:16:00	45.97203	-130.00084	320.1	2.0	1540.1	1542.0	Now we're over jumbled lavas again.
1900	8/21/2015	14:16:28	45.97209	-130.00084	321.2	1.6	1539.8	1541.4	Crab.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1901	8/21/2015	14:16:48	45.97214	-130.00085	321.6	1.5	1539.7	1541.3	Now we're in a lobate patch.
1902	8/21/2015	14:17:03	45.97217	-130.00086	37.2	1.5	1539.7	1541.1	Shiny lobates moving into jumbled.
1904	8/21/2015	14:18:14	45.97238	-130.00073	80.5	1.8	1538.3	1540.2	Small patches of white bac mat here and there - but not much.
1905	8/21/2015	14:18:33	45.97240	-130.00061	22.5	2.6	1538.9	1541.5	See what may be ash (gray sandy looking sed) on top of the lobate flow.
1906	8/21/2015	14:19:11	45.97248	-130.00050	23.6	1.4	1541.0	1542.5	Pressure point doming up. Lobate lava is broken up.
1907	8/21/2015	14:19:25	45.97250	-130.00049	356.5	0.9	1540.9	1541.9	Now back in jumbled flow. Lava pillar and roof.
1908	8/21/2015	14:19:41	45.97251	-130.00049	326.8	1.2	1541.3	1542.5	HIGHLIGHTS: HD highlights start Lava pillars and roof.
1910	8/21/2015	14:20:29	45.97256	-130.00046	328.0	2.6	1539.4	1541.9	Orange staining at the edge of collapse.
1911	8/21/2015	14:20:37	45.97257	-130.00049	330.8	2.1	1539.3	1541.4	Back in jumbled lavas.
1912	8/21/2015	14:20:41	45.97258	-130.00050	317.1	1.6	1539.5	1541.0	HIGHLIGHTS: HD highlights stop
1913	8/21/2015	14:20:57	45.97260	-130.00058	319.3	1.6	1539.7	1541.2	Jumbled lavas on the edge of the collapse.
1914	8/21/2015	14:21:07	45.97262	-130.00063	313.8	1.5	1539.8	1541.4	Jumbled lavas turning into lobates.
1915	8/21/2015	14:21:49	45.97269	-130.00082	312.2	2.5	1539.0	1541.5	Collapse edge back up into lobates.
1917	8/21/2015	14:22:52	45.97278	-130.00105	312.6	1.7	1540.2	1541.9	Looks like there is a lot of ashy sediment on top of the lobates (appears like white/gray particles).
1918	8/21/2015	14:23:48	45.97283	-130.00118	313.6	1.9	1540.1	1542.1	Incubator #4 has stopped transferring water. 1234ml.
1920	8/21/2015	14:25:04	45.97289	-130.00127	310.2	1.3	1540.2	1541.5	Some staining here.
1921	8/21/2015	14:25:57	45.97293	-130.00130	309.7	1.6	1540.8	1542.5	Seeing small patch of eruptive mat here.
1923	8/21/2015	14:27:34	45.97302	-130.00137	324.7	3.1	1541.6	1544.7	Still in jumbled lavas.
1924	8/21/2015	14:28:04	45.97303	-130.00137	324.7	3.2	1541.2	1544.5	Looking at a rock with iron-staining.
1926	8/21/2015	14:29:00	45.97306	-130.00138	324.2	2.2	1541.0	1543.2	Salp?
1927	8/21/2015	14:29:26	45.97306	-130.00138	324.5	2.1	1541.1	1543.2	We're stalled here. Not sure why.
1929	8/21/2015	14:31:03	45.97308	-130.00141	325.0	1.5	1540.9	1542.4	Taking an oxygen sensor reading from the HFS.
1930	8/21/2015	14:31:06	45.97308	-130.00141	324.1	1.3	1541.2	1542.5	Moving again.
1932	8/21/2015	14:32:15	45.97316	-130.00150	325.3	1.2	1541.3	1542.5	Tons of jumbled lava.
1933	8/21/2015	14:32:42	45.97319	-130.00153	325.7	1.3	1541.6	1542.9	Staining on the jumbled lavas.
1934	8/21/2015	14:33:07	45.97322	-130.00158	324.1	0.9	1542.1	1543.0	Coming on another patch of yellow-stained lava. Thicker mat here.
1935	8/21/2015	14:33:35	45.97325	-130.00163	325.5	2.6	1540.5	1543.1	Some orange mat - but very thin coating.
1936	8/21/2015	14:34:03	45.97331	-130.00170	325.6	1.6	1540.9	1542.4	Crab.
1938	8/21/2015	14:34:42	45.97337	-130.00175	326.8	0.9	1541.4	1542.3	Looking like lots of staining here on this jumbled topographic high.
1939	8/21/2015	14:35:03	45.97341	-130.00179	295.7	2.2	1540.0	1542.2	Collapse on the north side.
1940	8/21/2015	14:35:23	45.97344	-130.00184	302.0	1.7	1541.5	1543.2	White mat to the left.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
1941	8/21/2015	14:35:32	45.97344	-130.00185	301.4	1.1	1542.0	1543.1	No evidence of hydrothermal flow.
1943	8/21/2015	14:36:24	45.97347	-130.00185	276.2	2.2	1541.9	1544.1	Jumbled lavas and a collapse. area.
1948	8/21/2015	14:44:29	45.97379	-130.00230	320.3	2.1	1542.8	1544.8	Still transiting over jumbled new flow.
1949	8/21/2015	14:44:47	45.97381	-130.00232	324.1	1.9	1542.5	1544.4	Watch change.
1952	8/21/2015	14:48:14	45.97388	-130.00243	324.4	0.9	1542.8	1543.7	Driving west at 324deg over jumbled flow while waiting for Sentry to launch.
1953	8/21/2015	14:49:10	45.97390	-130.00244	341.7	0.8	1543.7	1544.4	Some yellow staining on lava edges.
1954	8/21/2015	14:50:03	45.97392	-130.00247	341.2	2.1	1542.5	1544.6	Exploded pillows with some collapsed pillows and exposed glassy lava surfaces.
1956	8/21/2015	14:50:21	45.97391	-130.00250	341.6	1.5	1542.8	1544.3	Looking around for a good rock sample while standing by for Sentry launch.
1958	8/21/2015	14:52:18	45.97398	-130.00254	341.8	1.4	1542.7	1544.1	Looking at pieces of jumbled flow next to yellow deposit for sampling. Speculate that it will be fragile.
1960	8/21/2015	14:54:30	45.97398	-130.00254	340.8	1.4	1542.6	1544.1	Grabbing at more intact pillow-esque piece but only crust broke off.
1961	8/21/2015	14:55:14	45.97398	-130.00254	340.7	1.5	1542.5	1544.0	**SAMPLE: Geo J822-GEO-23** Found a piece in sediment. Looks good with some glass crust.
1963	8/21/2015	14:56:25	45.97398	-130.00254	340.7	1.4	1542.6	1544.0	Placing sample in the front rock box in compartment 8. A little bit too large for the box.
1964	8/21/2015	14:57:53	45.97398	-130.00254	340.7	1.4	1542.6	1544.0	45.973960 -130.002555 is the location from the cursor for this sample. Sample broke a bit while going into the box but most in.
1966	8/21/2015	14:58:26	45.97398	-130.00254	341.4	1.5	1542.4	1543.8	We are just west of the modified waypoint #4 while waiting for the Sentry launch. Will be heading to we 5 after launch.
1967	8/21/2015	14:58:34	45.97398	-130.00254	327.5	1.5	1542.2	1543.8	NAV: Doppler Reset to cursor.
1968	8/21/2015	14:59:43	45.97403	-130.00261	328.3	0.8	1541.9	1542.7	Moving over more jumbled flow with some staining. Very rough in appearance.
1970	8/21/2015	15:01:04	45.97412	-130.00267	327.2	0.9	1543.0	1543.9	Underlay map has Jason going over collapsed area and seems to match rather well.
1972	8/21/2015	15:03:48	45.97421	-130.00276	327.3	1.9	1543.4	1545.3	The Jason bottom cam has a great close-up view of the new lavas but it is not recordable.
1974	8/21/2015	15:04:24	45.97421	-130.00280	328.0	2.2	1543.6	1545.7	Remnant pressure ridge in the jumbled flow. No defined pillars.
1976	8/21/2015	15:06:12	45.97425	-130.00288	327.4	0.9	1544.8	1545.7	More staining along a higher relief spot.
1977	8/21/2015	15:06:55	45.97427	-130.00286	327.6	0.8	1545.2	1546.0	Sentry needs another 15 minutes before launching.
1979	8/21/2015	15:09:42	45.97425	-130.00286	160.4	1.2	1544.7	1545.9	Stirred up some sediments when spinning around to 160deg. The view is about the same with jumbled

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									flow.
1981	8/21/2015	15:11:20	45.97416	-130.00278	161.3	2.3	1543.4	1545.6	More concentrated patches of sediment in the new lavas.
1983	8/21/2015	15:13:44	45.97407	-130.00268	72.7	1.4	1543.1	1544.5	Collapsed areas within the jumble.
1985	8/21/2015	15:14:22	45.97407	-130.00261	72.9	2.2	1542.0	1544.2	Solid glass and new lava.
1986	8/21/2015	15:14:50	45.97408	-130.00258	71.2	2.0	1541.7	1543.7	A few pieces of smoother flow within the jumble. Almost tube-like.
1988	8/21/2015	15:15:20	45.97408	-130.00258	73.2	2.1	1541.6	1543.6	Layers of lava like many skins.
1989	8/21/2015	15:16:00	45.97411	-130.00258	72.8	2.0	1541.3	1543.2	Area here looks like many thin layers of flow that broke and collapsed over and over.
1991	8/21/2015	15:17:17	45.97415	-130.00259	200.8	2.6	1540.8	1543.4	No Sentry launch. Cancelled. We will then head to WP #5.
1992	8/21/2015	15:18:00	45.97413	-130.00263	216.6	2.3	1540.2	1542.5	850m bearing 366deg to the next waypoint.
1994	8/21/2015	15:18:33	45.97413	-130.00266	302.4	2.3	1541.0	1543.3	Speed starting at .2 and see if we can reach .5.
1996	8/21/2015	15:21:49	45.97415	-130.00283	301.9	1.0	1542.8	1543.8	The heading is not 366 (doesn't exist) but 302deg.
1998	8/21/2015	15:22:22	45.97415	-130.00286	302.1	0.8	1543.8	1544.6	Stopping ship as Sentry launch should not be cancelled. Dana is on his way to confer with the Bridge.
2000	8/21/2015	15:24:38	45.97414	-130.00286	301.8	2.1	1541.9	1544.0	Parked over jumbled flow while waiting for news on Sentry.
2002	8/21/2015	15:26:07	45.97417	-130.00303	302.1	2.6	1543.2	1545.8	Nothing very different to say about this new jumbled flow with some sediment.
2004	8/21/2015	15:28:08	45.97416	-130.00304	301.0	2.1	1543.8	1545.8	Sentry should be ready to go in 30 minutes.
2005	8/21/2015	15:28:13	45.97416	-130.00304	301.7	2.1	1543.8	1545.8	Dropping a weight.
2006	8/21/2015	15:29:26	45.97416	-130.00305	301.8	2.7	1543.2	1545.9	Pulling in the basket. Then dropped the weight.
2010	8/21/2015	15:34:11	45.97413	-130.00304	300.5	1.3	1544.0	1545.3	Correcting the highlights log which appears to have wrong dates. Dates were increasing incrementally.
2011	8/21/2015	15:34:44	45.97412	-130.00304	302.4	1.6	1543.4	1545.0	New pilot in the seat....Begum.
2012	8/21/2015	15:35:01	45.97411	-130.00305	271.5	1.6	1543.4	1545.0	Ship is parked at this location while waiting for the Sentry launch.
2014	8/21/2015	15:37:34	45.97409	-130.00314	335.3	2.4	1543.6	1546.1	Pilot Begum is spinning around viewing the new lava flow.
2017	8/21/2015	15:40:09	45.97412	-130.00318	343.4	2.1	1544.6	1546.7	Landing on the seafloor with a good view of this taller piece of jumble.
2018	8/21/2015	15:41:06	45.97412	-130.00317	342.1	2.2	1544.2	1546.4	One lonely shrimp flying by.
2019	8/21/2015	15:41:53	45.97412	-130.00318	345.1	0.9	1545.5	1546.4	Landed!

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2021	8/21/2015	15:42:57	45.97412	-130.00318	343.8	1.2	1545.1	1546.3	HIGHLIGHTS: HD highlights start Looking at the lavas that Begum landed on.
2022	8/21/2015	15:43:19	45.97411	-130.00317	2.7	1.9	1544.5	1546.4	Coming off the bottom.
2024	8/21/2015	15:44:39	45.97412	-130.00314	17.6	1.9	1544.5	1546.3	Next task is to try picking up a rock.
2025	8/21/2015	15:45:52	45.97414	-130.00314	17.3	0.8	1545.6	1546.3	HIGHLIGHTS: HD highlights stop Landing back on the bottom.
2027	8/21/2015	15:46:38	45.97414	-130.00314	17.8	0.8	1545.6	1546.3	Going to try with the Schilling.
2028	8/21/2015	15:47:43	45.97413	-130.00315	18.4	0.8	1545.6	1546.3	HIGHLIGHTS: HD highlights start Rock sampling work.
2030	8/21/2015	15:49:41	45.97413	-130.00315	15.6	0.8	1545.5	1546.3	Touched a piece of lava and it fell off before getting caught.
2032	8/21/2015	15:50:07	45.97413	-130.00315	14.3	0.8	1545.5	1546.3	Trying again. This is harder than the pilots make it look.
2033	8/21/2015	15:50:48	45.97413	-130.00316	13.7	0.8	1545.5	1546.3	Pieces of the lava are breaking off when touched.
2034	8/21/2015	15:51:31	45.97413	-130.00316	14.1	0.8	1545.5	1546.3	HIGHLIGHTS: HD highlights stop
2035	8/21/2015	15:51:48	45.97413	-130.00316	14.1	0.8	1545.5	1546.3	Bringing the arm back in.
2037	8/21/2015	15:52:37	45.97413	-130.00316	338.5	0.8	1545.4	1546.2	Coming off the bottom as Begum is done excavating new lavas.
2038	8/21/2015	15:53:12	45.97412	-130.00317	264.3	0.8	1545.1	1545.8	Taking a look around.
2040	8/21/2015	15:55:45	45.97411	-130.00323	67.1	1.8	1544.8	1546.6	Looking around the jumbled flow and sediments.
2043	8/21/2015	15:58:21	45.97413	-130.00311	77.5	2.0	1544.6	1546.6	One of the sediment patches appears to be a small chute.
2044	8/21/2015	15:58:31	45.97413	-130.00310	24.1	1.5	1544.8	1546.3	Sentry has been deployed.
2045	8/21/2015	15:59:26	45.97414	-130.00311	338.4	1.2	1544.8	1546.0	Ship was heading off to port during launch.
2046	8/21/2015	16:00:03	45.97416	-130.00313	337.6	1.2	1544.7	1545.9	Just saw the dive weight on top of the lavas that was released while waiting for the launch.
2048	8/21/2015	16:01:26	45.97418	-130.00317	264.0	2.7	1544.1	1546.8	Changing Jason's heading to 270deg and will begin to drive forward.
2050	8/21/2015	16:02:05	45.97416	-130.00327	262.1	2.7	1544.1	1546.9	Heading off to waypoint #5.
2051	8/21/2015	16:02:24	45.97416	-130.00327	227.3	2.8	1544.0	1546.9	Changing pilot back to Jimmy. Great job Begum.
2053	8/21/2015	16:04:31	45.97413	-130.00329	300.0	1.8	1545.0	1546.8	Short lines of sediment between the jumble.
2054	8/21/2015	16:06:00	45.97412	-130.00337	300.2	0.8	1545.6	1546.4	Small bright patches of yellow sediment.
2057	8/21/2015	16:08:12	45.97413	-130.00337	303.1	0.8	1545.6	1546.4	Ship has stabilized and ready to head on to waypoint #5.
2058	8/21/2015	16:08:30	45.97413	-130.00337	303.7	0.8	1545.6	1546.4	Heading is 302deg to WP#5.
2059	8/21/2015	16:09:02	45.97413	-130.00338	303.8	0.8	1545.7	1546.5	It is about 800m to WP#5.
2061	8/21/2015	16:10:57	45.97416	-130.00349	303.9	0.8	1546.4	1547.1	HIGHLIGHTS: HD highlights start Jumbled flow. Looks like a small patch of older lavas.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2063	8/21/2015	16:12:17	45.97417	-130.00350	303.5	0.8	1546.2	1547.0	Very small island of older lavas surrounded by new lava.
2064	8/21/2015	16:12:35	45.97417	-130.00350	303.9	0.8	1546.0	1546.7	HIGHLIGHTS: HD highlights stop
2065	8/21/2015	16:13:13	45.97420	-130.00359	303.2	1.7	1544.3	1546.0	That was a very small Kipuka.
2067	8/21/2015	16:14:07	45.97421	-130.00368	303.4	1.9	1544.2	1546.0	Seeing another very small piece of older looking lava embedded into the new flow.
2069	8/21/2015	16:16:17	45.97434	-130.00405	303.9	0.9	1545.9	1546.8	Flow here is a bit more sheet like.
2070	8/21/2015	16:16:28	45.97434	-130.00407	303.2	0.8	1546.7	1547.4	Definitely a sheet flow area with some jumble.
2071	8/21/2015	16:16:42	45.97436	-130.00410	302.9	0.8	1547.2	1548.0	Back into the jumble.
2072	8/21/2015	16:17:49	45.97438	-130.00420	302.8	1.0	1548.5	1549.6	Back into sheet flow.
2074	8/21/2015	16:19:32	45.97443	-130.00437	303.2	2.3	1548.1	1550.3	Sheet flow transitioning into jumble.
2076	8/21/2015	16:21:28	45.97446	-130.00444	303.6	2.4	1547.2	1549.6	Back over sheet flows.
2078	8/21/2015	16:22:38	45.97454	-130.00463	303.9	1.7	1547.7	1549.4	Sheets are not as smooth with some pressure ridges.
2080	8/21/2015	16:24:57	45.97471	-130.00485	302.4	1.8	1548.4	1550.2	Still driving over sheet flows.
2082	8/21/2015	16:26:45	45.97481	-130.00511	304.7	2.0	1548.2	1550.2	Some ropey structure in the sheet flow and jumbles.
2085	8/21/2015	16:30:27	45.97498	-130.00558	302.8	1.4	1548.8	1550.2	More jumbled structure within sheet flow.
2086	8/21/2015	16:30:38	45.97498	-130.00560	302.8	1.3	1548.7	1550.0	Definitely transitioned to jumble.
2087	8/21/2015	16:31:41	45.97504	-130.00576	347.6	1.2	1547.8	1549.0	Contact with older flow.
2088	8/21/2015	16:31:51	45.97504	-130.00576	56.0	1.4	1547.9	1549.3	Small island kipuka.
2090	8/21/2015	16:32:41	45.97505	-130.00580	315.6	0.9	1548.9	1549.8	Small brittle stars on the bottom camera.
2091	8/21/2015	16:32:59	45.97505	-130.00582	301.0	1.4	1548.3	1549.7	HIGHLIGHTS: HD highlights start Documenting the old-new contact.
2092	8/21/2015	16:33:21	45.97505	-130.00583	300.5	2.0	1547.7	1549.7	The new flow has more of a flat pillow look to it. Lost nav here.
2093	8/21/2015	16:33:28	45.97506	-130.00585	301.8	1.8	1548.0	1549.8	HIGHLIGHTS: HD highlights stop
2094	8/21/2015	16:34:00	45.97510	-130.00595	301.9	1.5	1548.7	1550.1	Lobate flow with small sediment between pillows.
2096	8/21/2015	16:34:38	45.97514	-130.00611	301.5	1.0	1549.1	1550.1	About 475m from the waypoint.
2097	8/21/2015	16:34:44	45.97516	-130.00614	300.5	1.2	1549.4	1550.6	Small Kipukas again.
2098	8/21/2015	16:34:56	45.97517	-130.00619	301.5	1.7	1549.2	1550.9	Going fairly fast over the lobate flow.
2099	8/21/2015	16:35:15	45.97519	-130.00628	301.0	1.2	1550.1	1551.2	Collapse area.
2100	8/21/2015	16:35:22	45.97520	-130.00631	300.0	0.9	1550.4	1551.3	Looking at the other side of the collapse pit.
2101	8/21/2015	16:35:45	45.97523	-130.00639	301.1	3.3	1549.2	1552.5	Pit looked like it was several meters across.
2102	8/21/2015	16:35:57	45.97524	-130.00644	301.0	1.7	1549.7	1551.4	Back on top of lobate flow.
2104	8/21/2015	16:36:06	45.97525	-130.00647	303.7	0.8	1550.4	1551.2	Over a collapse area again.
2105	8/21/2015	16:36:58	45.97531	-130.00658	301.3	1.6	1551.3	1552.9	Bottom of the collapse area.
2106	8/21/2015	16:37:06	45.97533	-130.00660	302.5	2.3	1550.7	1552.9	Jumbled flow.
2107	8/21/2015	16:37:58	45.97540	-130.00671	302.4	1.2	1551.7	1552.9	More sheet-like flow but broken up in places.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2109	8/21/2015	16:39:05	45.97548	-130.00690	303.3	2.6	1550.3	1553.0	More collapsed areas with jagged flow.
2110	8/21/2015	16:39:52	45.97555	-130.00704	302.7	1.2	1550.6	1551.8	Transition back to more sheet-like flow.
2112	8/21/2015	16:40:44	45.97563	-130.00718	302.2	2.7	1550.8	1553.5	Broken skins of the sheet flow.
2113	8/21/2015	16:41:06	45.97567	-130.00725	301.4	3.0	1549.3	1552.4	Moving over a jumbled collapsed area with sheet flows at base.
2114	8/21/2015	16:41:24	45.97570	-130.00732	301.4	4.0	1549.4	1553.4	Nice skin of the sheet flow view.
2115	8/21/2015	16:41:49	45.97573	-130.00741	302.7	1.4	1550.4	1551.8	Can see more of the collapse to stbd.
2117	8/21/2015	16:42:39	45.97580	-130.00758	299.1	2.4	1551.5	1553.9	Jumbled sheet flow.
2118	8/21/2015	16:43:28	45.97586	-130.00773	302.1	3.3	1550.9	1554.2	Coming up to collapse edge.
2120	8/21/2015	16:44:05	45.97590	-130.00784	301.6	1.5	1550.8	1552.3	On top of the flow again with areas of collapse.
2121	8/21/2015	16:44:25	45.97593	-130.00788	301.3	2.9	1551.1	1554.0	Ropes of sheet folded over.
2122	8/21/2015	16:45:09	45.97598	-130.00800	302.2	0.8	1552.5	1553.3	Lobate flow top. Looked like small island of older flow. Going fast so hard to see.
2123	8/21/2015	16:45:33	45.97601	-130.00804	303.0	1.0	1553.1	1554.1	Many skins of the lobates are broken and collapsed.
2125	8/21/2015	16:46:26	45.97607	-130.00808	301.8	1.9	1552.6	1554.5	Ship has taken control again as ship moving off west.
2126	8/21/2015	16:46:52	45.97608	-130.00810	302.3	1.6	1553.9	1555.5	Touched bottom on the sheet flow.
2127	8/21/2015	16:47:19	45.97610	-130.00814	302.2	1.9	1553.5	1555.4	Moving again over the lobate flow.
2129	8/21/2015	16:48:44	45.97621	-130.00831	302.9	1.8	1555.4	1557.2	Sheet flow coming up to edge of a collapse.
2131	8/21/2015	16:50:18	45.97632	-130.00849	301.4	0.9	1556.6	1557.5	Broken skins of lobates within the solid-looking flow (not so thick or solid).
2132	8/21/2015	16:50:51	45.97633	-130.00851	302.2	1.1	1556.7	1557.8	Slabs of new lobate skins.
2134	8/21/2015	16:52:15	45.97638	-130.00861	302.2	1.2	1556.9	1558.1	Flow is very uniform.
2135	8/21/2015	16:53:08	45.97642	-130.00869	301.5	1.2	1557.2	1558.4	More jumbled with smaller collapsed lobates.
2137	8/21/2015	16:54:40	45.97652	-130.00894	301.0	1.0	1558.4	1559.4	Back over lobate flow.
2138	8/21/2015	16:55:30	45.97656	-130.00907	301.5	1.2	1558.9	1560.1	Some broken lobes.
2139	8/21/2015	16:55:42	45.97657	-130.00910	301.6	1.2	1559.2	1560.4	Larger patch of sediment.
2141	8/21/2015	16:56:11	45.97660	-130.00919	300.6	2.3	1560.0	1562.3	Skins of sheet flows.
2142	8/21/2015	16:57:50	45.97663	-130.00933	302.0	0.8	1561.6	1562.4	263m to the waypoint #5.
2144	8/21/2015	16:58:39	45.97666	-130.00941	301.1	1.4	1561.6	1563.0	Lobate flow is flattened but some tube forms evident.
2146	8/21/2015	17:00:10	45.97671	-130.00956	302.2	1.1	1561.9	1563.0	Consistent flow of lobates with collapsed lobes.
2149	8/21/2015	17:05:05	45.97697	-130.00993	301.5	2.0	1564.4	1566.3	We are seeing several areas of new old contact
2150	8/21/2015	17:05:28	45.97698	-130.00997	301.6	1.7	1564.8	1566.5	HIGHLIGHTS: HD highlights start Old-new contacts in a fairly large area.
2151	8/21/2015	17:05:44	45.97699	-130.00998	301.6	1.3	1564.8	1566.1	Lobates.
2152	8/21/2015	17:05:48	45.97699	-130.00999	301.3	1.4	1564.7	1566.1	NAV: Doppler Reset
2154	8/21/2015	17:06:17	45.97700	-130.01003	301.3	2.1	1564.4	1566.5	NAV: Doppler Reset Nav looks more realistic.
2155	8/21/2015	17:06:28	45.97701	-130.01006	301.2	1.8	1564.3	1566.1	Older flow is very jagged and new flow consists of

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									lobates.
2156	8/21/2015	17:06:42	45.97702	-130.01008	301.4	1.8	1564.4	1566.2	HIGHLIGHTS: HD highlights stop
2157	8/21/2015	17:07:23	45.97704	-130.01013	301.5	1.3	1566.0	1567.3	Looking at primarily new flow again with some small older kipukas.
2159	8/21/2015	17:08:15	45.97707	-130.01023	301.4	1.4	1566.5	1567.9	Lobate flow with sediment around the lobates.
2160	8/21/2015	17:08:55	45.97709	-130.01029	300.8	1.0	1567.2	1568.2	Larger looking lobates.
2162	8/21/2015	17:10:53	45.97717	-130.01052	301.6	1.8	1567.8	1569.6	More sheet flow appearance here.
2163	8/21/2015	17:11:10	45.97719	-130.01056	302.9	2.8	1567.8	1570.6	Pieces of collapse.
2164	8/21/2015	17:12:02	45.97728	-130.01070	302.9	1.3	1568.6	1570.0	Frame_Grab:
2166	8/21/2015	17:12:07	45.97729	-130.01071	302.6	1.5	1568.8	1570.2	Frame_Grab:
2167	8/21/2015	17:12:46	45.97734	-130.01081	303.2	1.5	1569.4	1570.9	Fairly uniform flattened lobate flow.
2169	8/21/2015	17:15:50	45.97751	-130.01127	303.5	1.1	1571.2	1572.2	Still flying over lobate flows.
2171	8/21/2015	17:17:13	45.97759	-130.01139	303.3	1.5	1571.4	1572.9	Just noticed in the hardcopy sample log files that samples were numbered wrong. THIS HAS BEEN CORRECTED IN THE LOG (but can't correct it in the virtual van).
2172	8/21/2015	17:17:29	45.97761	-130.01143	303.0	1.7	1571.5	1573.2	Skipped sample sheet 21-29 and started logging on sample 31. (CORRECTED NOW)
2173	8/21/2015	17:17:52	45.97762	-130.01148	303.0	2.1	1571.0	1573.1	Changing the last 3 sample numbers in the cruise report and permanent record.
2175	8/21/2015	17:19:51	45.97770	-130.01176	303.7	1.7	1570.7	1572.4	So Geo-(31; 32; 33) will be changed to Geo-(21; 22; 23). Sample GEO-20 is correctly named. (DONE)
2177	8/21/2015	17:20:23	45.97772	-130.01182	302.6	1.7	1570.8	1572.5	Next sample will be sample #24.
2178	8/21/2015	17:20:39	45.97773	-130.01186	303.1	1.3	1571.3	1572.6	Some longer lobates with tube forms.
2179	8/21/2015	17:20:54	45.97774	-130.01190	303.5	1.1	1571.3	1572.4	Ship is in position and waiting for Medea and Jason to catch up to the waypoint #5.
2181	8/21/2015	17:22:45	45.97783	-130.01214	317.0	1.8	1570.4	1572.1	NAV: Doppler Reset
2183	8/21/2015	17:24:18	45.97791	-130.01218	317.8	1.2	1570.6	1571.8	At the waypoint in lobate flow with thin sediment coating.
2184	8/21/2015	17:24:50	45.97795	-130.01224	317.8	2.0	1569.8	1571.8	Much more sediment here.
2185	8/21/2015	17:25:02	45.97797	-130.01227	317.5	2.0	1569.7	1571.7	Looks like snow covered lobate flow.
2186	8/21/2015	17:25:36	45.97801	-130.01235	317.4	1.6	1569.7	1571.3	Very float looking and white.
2188	8/21/2015	17:26:33	45.97809	-130.01242	316.5	1.8	1569.6	1571.3	HIGHLIGHTS: HD highlights start Looking at the flow at WP#5.
2189	8/21/2015	17:27:11	45.97815	-130.01240	9.9	2.0	1569.9	1571.8	HIGHLIGHTS: HD highlights stop
2191	8/21/2015	17:28:15	45.97816	-130.01241	353.8	1.7	1569.7	1571.4	Less sediment from this side but still coating the flattened lobate flow.
2193	8/21/2015	17:30:19	45.97814	-130.01243	359.5	1.6	1569.9	1571.4	Not much payload left to collect rocks.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2194	8/21/2015	17:31:02	45.97813	-130.01243	359.5	0.8	1571.0	1571.7	Going to pull out the basket to see if any of the samples could be made smaller to save some weight.
2197	8/21/2015	17:34:33	45.97812	-130.01243	358.2	0.8	1570.7	1571.5	Trying to remove a piece of rock that fell into the basket in front of majors.
2198	8/21/2015	17:34:46	45.97812	-130.01243	358.3	0.8	1570.5	1571.3	The removal of that piece didn't give much to the payload.
2200	8/21/2015	17:37:10	45.97812	-130.01241	5.2	0.9	1570.6	1571.5	Moving off the bottom and bringing the basket back in.
2201	8/21/2015	17:38:02	45.97811	-130.01243	6.9	0.8	1570.8	1571.5	Looking for a rock sampling opportunity.
2203	8/21/2015	17:38:43	45.97811	-130.01245	11.7	1.7	1569.7	1571.5	Heavy coating on these lavas but the bottom camera is showing glimpses of fresh glass.
2204	8/21/2015	17:39:30	45.97811	-130.01246	12.8	1.3	1570.3	1571.7	Looking at some pre-broken rubbly bits for sampling.
2206	8/21/2015	17:41:24	45.97812	-130.01246	33.0	0.9	1570.6	1571.5	Pulling out stbd swing arm that contains the markers.
2207	8/21/2015	17:41:52	45.97812	-130.01246	32.0	1.1	1570.6	1571.7	Moving off bottom to get the stbd biobox to come all the way around.
2209	8/21/2015	17:42:10	45.97812	-130.01245	31.8	1.1	1570.6	1571.7	Lots of bacterial mat here.
2210	8/21/2015	17:42:35	45.97812	-130.01245	31.6	1.1	1570.6	1571.7	Opening biobox.
2211	8/21/2015	17:43:22	45.97811	-130.01247	31.6	1.1	1570.6	1571.7	Going to trade some markers for a sample. Will offload the markers to gain a few pounds.
2213	8/21/2015	17:44:05	45.97809	-130.01247	31.2	1.1	1570.6	1571.7	One marker ejected from the biobox.
2214	8/21/2015	17:44:25	45.97808	-130.01247	30.9	1.2	1570.6	1571.7	Second marker ejected Mkr-246.
2216	8/21/2015	17:47:10	45.97811	-130.01245	30.4	1.2	1570.6	1571.8	Biobox has been stowed.
2217	8/21/2015	17:47:23	45.97811	-130.01246	30.4	1.2	1570.6	1571.8	HIGHLIGHTS: HD highlights start Sampling a rock.
2219	8/21/2015	17:48:14	45.97811	-130.01245	30.4	1.2	1570.6	1571.8	SAMP**LE: Geo J822-GEO-24** Rock at WP#5 in sedimented flow.
2220	8/21/2015	17:48:28	45.97811	-130.01245	30.9	1.2	1570.6	1571.8	Depth is 1570 and heading is 030.
2221	8/21/2015	17:48:53	45.97811	-130.01246	30.9	1.2	1570.6	1571.8	Placing sample in the gastight box forward position.
2222	8/21/2015	17:49:07	45.97811	-130.01246	30.1	1.2	1570.6	1571.8	Next will unfurl the markers being left behind.
2223	8/21/2015	17:49:31	45.97811	-130.01246	30.1	1.2	1570.6	1571.8	First is Mkr-246 and is unleashed.
2224	8/21/2015	17:49:39	45.97811	-130.01246	31.5	1.2	1570.6	1571.8	**DEPLOY: marker** (#246)
2225	8/21/2015	17:49:48	45.97811	-130.01246	31.7	1.2	1570.6	1571.8	HIGHLIGHTS: HD highlights stop
2227	8/21/2015	17:50:08	45.97811	-130.01246	32.6	1.3	1570.5	1571.8	Second marker is in a hole.
2228	8/21/2015	17:50:36	45.97810	-130.01244	31.8	1.2	1570.5	1571.7	It is really down in a hole in the lobates.
2229	8/21/2015	17:51:27	45.97810	-130.01244	31.9	0.8	1570.5	1571.4	This may be the thickest part of the flow and why we see the mat.
2230	8/21/2015	17:51:44	45.97810	-130.01244	32.6	0.8	1570.6	1571.3	Deployed Mkr-275. Abandoning trying to get it out of the hole.
2232	8/21/2015	17:52:28	45.97810	-130.01243	32.0	0.9	1570.6	1571.5	Position for the sample and the marker deployment is: 45.978083 -130.012417.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2234	8/21/2015	17:53:42	45.97810	-130.01243	32.6	2.5	1569.2	1571.7	**DEPLOY: marker** Mkr-275 also deployed out of the hole after all.
2238	8/21/2015	17:54:47	45.97814	-130.01239	24.5	2.1	1569.3	1571.4	Markers 246 and 275 deployed at the WP#5 sampling site where Geo-24 was taken in the new flow.
2239	8/21/2015	17:55:30	45.97822	-130.01231	25.3	1.9	1569.9	1571.8	Heading to WP#6 now.
2240	8/21/2015	17:56:01	45.97826	-130.01226	23.9	1.0	1571.0	1572.0	Looks like a solid lobate flow with much less sediment here.
2242	8/21/2015	17:57:41	45.97835	-130.01217	24.4	1.1	1570.6	1571.7	Heading 026 to WP#6.
2244	8/21/2015	17:58:44	45.97841	-130.01207	25.1	1.5	1570.1	1571.5	Plan is to head toward the waypoint but looking for the contact.
2245	8/21/2015	17:58:58	45.97842	-130.01204	24.6	1.8	1569.9	1571.6	Once the contact is found we will follow the contact to the north.
2246	8/21/2015	17:59:44	45.97851	-130.01196	24.2	2.5	1570.3	1572.8	Can see Sentry in the sonar off to the east.
2248	8/21/2015	18:00:27	45.97855	-130.01193	25.6	0.8	1571.4	1572.2	Less sediment than before in this area of lobate flow.
2249	8/21/2015	18:01:02	45.97860	-130.01190	24.1	1.4	1571.2	1572.6	Fish.
2250	8/21/2015	18:01:28	45.97863	-130.01187	24.2	1.0	1571.0	1572.0	Came over a slight ridge onto more lobate flow.
2253	8/21/2015	18:04:47	45.97881	-130.01191	22.7	2.0	1572.2	1574.1	Ship is over the proposed contact line as Jason catches up.
2254	8/21/2015	18:05:27	45.97886	-130.01189	24.5	1.7	1571.8	1573.5	Still over completely new lava.
2256	8/21/2015	18:07:24	45.97899	-130.01185	25.3	0.8	1572.1	1572.9	Looks like less than 50m to the contact if you go by the underlay.
2258	8/21/2015	18:09:03	45.97909	-130.01179	25.0	0.8	1573.2	1574.0	Bottom bump.
2260	8/21/2015	18:11:53	45.97935	-130.01164	23.1	1.4	1573.2	1574.6	Still over new lobate flow.
2262	8/21/2015	18:13:01	45.97951	-130.01159	23.6	1.3	1575.7	1577.0	Looking for the contact.
2263	8/21/2015	18:13:31	45.97953	-130.01158	352.9	2.6	1575.2	1577.7	Jason should be at the contact.
2264	8/21/2015	18:13:46	45.97953	-130.01159	0.4	2.0	1575.0	1576.9	Contact!
2265	8/21/2015	18:14:00	45.97954	-130.01158	1.6	2.7	1575.1	1577.8	Want to follow this contact.
2267	8/21/2015	18:14:11	45.97955	-130.01156	30.3	2.9	1575.3	1578.2	HIGHLIGHTS: HD highlights start Looking at the contact
2268	8/21/2015	18:14:17	45.97957	-130.01155	50.8	2.7	1575.5	1578.1	Contact line is running NE.
2269	8/21/2015	18:14:41	45.97961	-130.01147	61.5	1.6	1577.8	1579.4	Heading is 031 as follow the contact. Sentry is flying to the east at 65m above bottom.
2270	8/21/2015	18:15:06	45.97962	-130.01141	20.9	1.8	1577.6	1579.5	Heading is at 050.
2271	8/21/2015	18:15:32	45.97969	-130.01133	23.7	3.3	1576.8	1580.2	Turning more due north now along the contact.
2273	8/21/2015	18:16:05	45.97977	-130.01124	14.9	2.4	1577.9	1580.3	HIGHLIGHTS: HD highlights stop Stopping to see if can record pilot cam.
2274	8/21/2015	18:16:21	45.97981	-130.01122	12.2	2.4	1577.5	1579.8	HIGHLIGHTS: HD highlights start Recording pilot cam on highlights following the contact to the north.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2275	8/21/2015	18:16:36	45.97984	-130.01119	14.0	1.9	1577.7	1579.6	The old flow is a lobate flow as well but highly sedimented.
2276	8/21/2015	18:16:56	45.97989	-130.01118	13.9	3.2	1576.9	1580.1	New flow is lobate as well.
2279	8/21/2015	18:18:44	45.98014	-130.01125	338.6	2.8	1578.1	1580.8	Sentry should be behind us now.
2280	8/21/2015	18:18:57	45.98017	-130.01128	3.4	3.4	1577.4	1580.8	Easy to follow contact.
2281	8/21/2015	18:19:52	45.98025	-130.01134	2.4	3.6	1576.9	1580.5	Bottom camera again has the best view.
2284	8/21/2015	18:22:50	45.98034	-130.01132	1.3	2.5	1578.6	1581.0	Structure of the two flows is very similar.
2285	8/21/2015	18:23:04	45.98039	-130.01134	1.7	2.4	1578.7	1581.1	HIGHLIGHTS: HD highlights stop
2286	8/21/2015	18:23:40	45.98047	-130.01139	0.3	2.3	1578.7	1581.0	Following the contact almost due north.
2289	8/21/2015	18:26:07	45.98062	-130.01142	0.9	2.7	1578.8	1581.5	Waiting for ship to move north.
2290	8/21/2015	18:27:59	45.98066	-130.01140	1.1	2.4	1578.7	1581.1	Moving again to the north along the contact.
2292	8/21/2015	18:28:44	45.98070	-130.01141	3.2	3.1	1578.3	1581.4	Going to speed up the northward progress.
2293	8/21/2015	18:29:29	45.98075	-130.01140	14.5	2.6	1578.5	1581.1	New lobates lapping up against the old lobates.
2295	8/21/2015	18:31:56	45.98111	-130.01132	341.0	3.0	1577.9	1580.9	Moving 0344 along the contact.
2297	8/21/2015	18:32:07	45.98111	-130.01132	339.7	3.2	1577.7	1580.9	That is moving 344 along the contact.
2301	8/21/2015	18:38:14	45.98154	-130.01119	5.9	2.3	1578.1	1580.4	Moving along the contact.
2303	8/21/2015	18:40:28	45.98175	-130.01108	30.3	1.9	1578.8	1580.7	Still moving up north along the contact.
2306	8/21/2015	18:44:44	45.98188	-130.01104	18.7	2.7	1578.6	1581.3	We stopped moving right now; there is a shift change.
2312	8/21/2015	18:54:33	45.98269	-130.01116	11.7	2.2	1578.7	1580.8	We started going up north again.
2314	8/21/2015	18:57:23	45.98281	-130.01119	12.0	2.3	1579.0	1581.3	Still along the contact.
2317	8/21/2015	19:01:10	45.98296	-130.01117	11.7	1.0	1580.1	1581.1	We took some frame grabs here because we think there might be three generations of lava flow.
2318	8/21/2015	19:01:59	45.98296	-130.01117	18.9	1.1	1580.0	1581.2	We are taking a rock sample from here. From the darker looking lava that we think is the newest.
2320	8/21/2015	19:02:53	45.98298	-130.01113	51.7	0.8	1580.0	1580.8	We are going to take a rock sample from here.
2322	8/21/2015	19:04:31	45.98298	-130.01113	51.3	0.8	1579.9	1580.7	The rock is very fragile.
2324	8/21/2015	19:06:11	45.98298	-130.01112	50.9	0.8	1579.9	1580.7	We are trying to find a rock that has more glass.
2325	8/21/2015	19:06:25	45.98298	-130.01112	50.8	0.8	1580.0	1580.7	This looks good.
2326	8/21/2015	19:06:38	45.98298	-130.01112	49.2	0.8	1580.0	1580.7	We are trying to get frame grabs.
2327	8/21/2015	19:07:56	45.98298	-130.01113	49.1	1.0	1579.6	1580.6	**SAMPLE: Geo J822-Geo-25** The newest looking lava flow. It will be put to left wing arm rock box # 6
2332	8/21/2015	19:12:44	45.98298	-130.01113	49.1	1.1	1579.5	1580.6	The location is 45 58. 97901- 130 0.66658.
2333	8/21/2015	19:12:56	45.98298	-130.01112	52.5	0.8	1579.9	1580.6	We also dumped all the markers here at this site.
2334	8/21/2015	19:13:18	45.98298	-130.01112	54.6	0.9	1580.1	1580.9	**DEPLOY: marker** Marker 240; 242 and 260 were dumped at this location.
2337	8/21/2015	19:16:39	45.98300	-130.01116	347.7	1.9	1578.8	1580.7	We started moving north again along the contact.
2338	8/21/2015	19:17:31	45.98301	-130.01121	318.5	2.4	1578.4	1580.8	We are leaving the contact and moving to CASM.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2339	8/21/2015	19:17:53	45.98301	-130.01123	306.5	2.4	1578.5	1580.9	We will go as fast as we can to check out CASM.
2341	8/21/2015	19:18:11	45.98302	-130.01122	306.9	2.6	1578.2	1580.7	We won't be going all the way to WP7.
2342	8/21/2015	19:19:44	45.98304	-130.01132	305.5	1.5	1578.9	1580.4	We will leave the bottom and go as fast as we can to CASM.
2344	8/21/2015	19:20:37	45.98306	-130.01138	170.6	5.0	1574.9	1579.9	Jason off bottom.
2346	8/21/2015	19:40:33	45.98390	-130.01293	96.6	118.5	1454.0	1572.5	We are on our way to CASM.
2347	8/21/2015	19:53:49	45.98499	-130.01636	92.6	142.8	1431.5	1574.4	12 minutes to CASM.
2350	8/21/2015	20:12:52	45.98666	-130.02246	96.0	138.9	1433.6	1572.5	We are still on our way to CASM.
2351	8/21/2015	20:13:10	45.98668	-130.02255	92.8	139.3	1434.2	1573.5	We are going to stop the incubators for the last time point now.
2352	8/21/2015	20:13:30	45.98671	-130.02264	95.3	139.3	1433.9	1573.3	Jason is still off bottom.
2353	8/21/2015	20:14:14	45.98676	-130.02285	93.7	139.8	1434.4	1574.2	We will shut down Inc#1 first.
2354	8/21/2015	20:15:02	45.98683	-130.02305	91.1	133.6	1440.5	1574.1	Inc #1 is now off.
2355	8/21/2015	20:16:28	45.98697	-130.02341	90.4	125.9	1448.8	1574.7	We are starting the transfer from Inc #1 now.
2356	8/21/2015	20:18:01	45.98708	-130.02380	89.2	116.1	1456.1	1572.2	We don't see the usual shimmer we see when we make the transfer from the incubator.
2357	8/21/2015	20:18:14	45.98709	-130.02383	88.7	107.2	1456.6	1563.8	But that could be because the Jason is moving.
2358	8/21/2015	20:18:31	45.98711	-130.02387	88.1	115.5	1456.3	1571.9	The temperature in the incubator is dropping so that is a good sign.
2359	8/21/2015	20:19:31	45.98718	-130.02409	83.9	112.8	1459.9	1572.7	Jason is beginning to come down. We are almost at CASM.
2360	8/21/2015	20:19:52	45.98722	-130.02414	72.6	107.8	1464.9	1572.7	We are still transferring from Inc #1.
2361	8/21/2015	20:25:14	45.98732	-130.02543	73.1	53.0	1521.7	1574.7	We can see the shimmering from the Inc#1 which means the transfer works.
2362	8/21/2015	20:25:27	45.98730	-130.02545	75.0	50.7	1524.6	1575.3	We are still transferring from Inc#1.
2363	8/21/2015	20:27:35	45.98728	-130.02549	75.6	14.0	1561.9	1575.8	Inc #1 transfer is done.
2365	8/21/2015	20:28:10	45.98729	-130.02548	77.0	1.8	1574.3	1576.1	We now turned off Inc #2
2366	8/21/2015	20:28:12	45.98729	-130.02548	78.4	1.5	1574.5	1576.0	Jason on bottom
2367	8/21/2015	20:28:49	45.98727	-130.02543	75.9	4.2	1571.6	1575.9	We started the transfer for Inc #2.
2368	8/21/2015	20:29:05	45.98727	-130.02540	65.2	2.3	1573.9	1576.2	The temperature is falling steadily for Inc #2.
2369	8/21/2015	20:29:51	45.98730	-130.02529	63.0	3.2	1571.2	1574.3	We are headed to fissure and we will drive north.
2372	8/21/2015	20:33:05	45.98743	-130.02504	240.2	2.6	1572.5	1575.0	We are trying to find TS vent.
2376	8/21/2015	20:39:08	45.98747	-130.02514	44.4	1.7	1573.8	1575.5	We are still transferring #2.
2377	8/21/2015	20:39:23	45.98747	-130.02513	9.4	1.4	1574.0	1575.4	And also trying to find TS and Shepherd vents.
2379	8/21/2015	20:41:11	45.98752	-130.02521	357.3	1.4	1574.0	1575.3	Inc#2 transfer is done.
2380	8/21/2015	20:41:30	45.98753	-130.02526	356.7	1.2	1573.8	1575.1	We are still trying to find either Shepherd or TS vents
2382	8/21/2015	20:42:06	45.98755	-130.02529	16.0	2.1	1572.9	1575.0	Shepherd and TS are in the fissure so we are looking

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									around for them.
2383	8/21/2015	20:42:43	45.98757	-130.02526	18.6	1.1	1574.0	1575.1	NAV: Doppler Reset
2384	8/21/2015	20:43:50	45.98757	-130.02527	18.1	0.9	1574.4	1575.3	NAV: Doppler Reset
2386	8/21/2015	20:44:04	45.98757	-130.02528	17.0	1.6	1573.7	1575.3	The last Doppler Reset was the right one.
2388	8/21/2015	20:44:56	45.98757	-130.02548	256.8	2.0	1572.9	1574.8	We are on the east side of the fissure.
2389	8/21/2015	20:45:37	45.98751	-130.02558	250.8	1.8	1574.0	1575.8	We need to cross the fissure to find the vents.
2393	8/21/2015	20:51:49	45.98760	-130.02583	351.4	2.1	1572.6	1574.7	We don't have a good idea where we are. We will go north and get an idea.
2395	8/21/2015	20:52:39	45.98767	-130.02573	42.0	1.4	1573.6	1575.0	We are trying to get to a fixed point and navigate ourselves.
2397	8/21/2015	20:55:18	45.98784	-130.02544	20.7	1.5	1573.7	1575.2	We are still going up north to see if we will find the vents.
2398	8/21/2015	20:55:42	45.98787	-130.02539	21.0	1.3	1573.7	1574.9	The nav map we have has marks for these vents but the same map shows the caldera wall south of those.
2400	8/21/2015	20:56:11	45.98788	-130.02531	346.3	1.4	1574.0	1575.5	So we are not sure if the map of caldera wall or the markers for vents are wrong on the map.
2401	8/21/2015	20:57:47	45.98795	-130.02528	346.3	4.6	1570.7	1575.3	Still going up north.
2403	8/21/2015	20:58:30	45.98797	-130.02547	346.3	1.5	1573.2	1574.7	Still going north.
2404	8/21/2015	20:58:46	45.98798	-130.02552	347.5	1.9	1572.7	1574.6	We are trying to reach the caldera wall to navigate ourselves.
2406	8/21/2015	21:01:15	45.98804	-130.02569	319.0	1.4	1572.0	1573.4	We are going towards the original positions of the vents.
2408	8/21/2015	21:02:36	45.98796	-130.02596	318.5	1.5	1572.3	1573.8	We still haven't seen the fissure yet.
2410	8/21/2015	21:04:06	45.98797	-130.02612	317.5	1.5	1571.1	1572.6	Still on our way to the original positions of the vents.
2411	8/21/2015	21:05:28	45.98808	-130.02607	307.3	1.4	1572.8	1574.1	Still on the same course.
2413	8/21/2015	21:07:33	45.98821	-130.02617	297.3	0.9	1573.8	1574.7	Now we have a better map from the Jason Nav and it shows that we are south of the vents.
2415	8/21/2015	21:08:26	45.98820	-130.02620	345.3	1.1	1573.7	1574.8	We are 120 m south of the vents.
2417	8/21/2015	21:10:18	45.98824	-130.02642	280.8	3.4	1570.2	1573.7	Still going towards the vents.
2419	8/21/2015	21:12:10	45.98839	-130.02658	326.0	1.9	1570.8	1572.7	Still going north towards the vents.
2421	8/21/2015	21:14:07	45.98853	-130.02680	329.8	1.4	1572.4	1573.8	Going north towards the vents.
2422	8/21/2015	21:15:36	45.98860	-130.02698	277.7	1.6	1573.4	1574.9	We have 50 m to Shepherd vent.
2423	8/21/2015	21:15:45	45.98859	-130.02701	269.6	1.7	1573.4	1575.1	We are going northwest.
2425	8/21/2015	21:16:09	45.98859	-130.02707	309.5	2.5	1572.7	1575.2	We saw the Caldera wall at the Sonar.
2426	8/21/2015	21:17:28	45.98869	-130.02727	260.6	2.9	1574.4	1577.3	We are crossing over the fissure.
2428	8/21/2015	21:18:32	45.98871	-130.02738	5.3	3.7	1581.9	1585.6	Now we are very close to Shepherd. We drive north.
2429	8/21/2015	21:19:47	45.98886	-130.02730	3.6	2.4	1578.7	1581.1	Here we are.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2430	8/21/2015	21:19:53	45.98887	-130.02730	7.0	2.6	1578.6	1581.1	We see the tubeworms.
2432	8/21/2015	21:20:26	45.98896	-130.02728	345.3	3.7	1578.0	1581.6	That is the Shepherd vent area.
2433	8/21/2015	21:21:37	45.98912	-130.02730	346.5	4.7	1578.7	1583.3	Here we are for T&S.
2434	8/21/2015	21:21:51	45.98915	-130.02732	343.3	4.1	1577.6	1581.7	This is the T&S vent area.
2435	8/21/2015	21:21:59	45.98917	-130.02731	333.9	4.1	1577.5	1581.6	Highlights on.
2437	8/21/2015	21:22:15	45.98919	-130.02729	301.6	5.0	1575.9	1580.8	Not much going on the first chimney.
2438	8/21/2015	21:22:41	45.98922	-130.02727	304.6	4.7	1571.8	1576.5	There is venting on the second chimney.
2439	8/21/2015	21:22:47	45.98923	-130.02727	309.9	4.9	1571.9	1576.8	Here we have a black smoker.
2440	8/21/2015	21:23:03	45.98923	-130.02728	345.0	5.7	1571.6	1577.4	We will sample a major at this chimney.
2441	8/21/2015	21:23:53	45.98923	-130.02730	341.6	7.7	1571.9	1579.5	Our old positions is 18 m north of 2015 position.
2443	8/21/2015	21:25:09	45.98923	-130.02729	344.0	7.0	1572.2	1579.2	We are now taking a temp measurement.
2444	8/21/2015	21:25:17	45.98923	-130.02729	343.8	7.5	1572.2	1579.7	This is T&S vent.
2445	8/21/2015	21:25:26	45.98923	-130.02729	343.9	7.0	1572.2	1579.2	Jason probe is going in.
2447	8/21/2015	21:26:59	45.98923	-130.02729	343.9	7.5	1572.2	1579.7	The temp: 290C.
2448	8/21/2015	21:27:04	45.98923	-130.02729	343.5	7.5	1572.2	1579.7	Tmax: 291C.
2449	8/21/2015	21:27:58	45.98923	-130.02729	343.8	7.0	1572.2	1579.2	Now we will get a location for T&S vent that we want to sample as well.
2451	8/21/2015	21:28:24	45.98923	-130.02729	343.4	7.0	1572.2	1579.2	Highlights off.
2453	8/21/2015	21:30:30	45.98923	-130.02729	343.5	7.5	1572.2	1579.7	**SAMPLE: Major J822-Major-26** T&S vent the active chimney Temp:291C Location: 45 59.35275 -130 1.63117.
2454	8/21/2015	21:30:45	45.98923	-130.02729	343.5	7.5	1572.2	1579.6	This is the white Major.
2455	8/21/2015	21:31:11	45.98923	-130.02730	343.5	7.4	1572.2	1579.6	The depth 1572.2m for J822-Major- 26.
2457	8/21/2015	21:32:20	45.98923	-130.02730	343.6	7.5	1572.2	1579.7	We saw the smoke coming out from the Major's exhaust.
2458	8/21/2015	21:32:46	45.98923	-130.02730	324.1	7.1	1572.2	1579.3	Tubeworms sulfide worms white filamentous bacterial mat next to the beehive.
2459	8/21/2015	21:34:04	45.98923	-130.02729	324.1	6.9	1572.0	1578.9	Now that we have our Major sample we are ready to leave the bottom.
2461	8/21/2015	21:34:11	45.98923	-130.02730	239.5	6.2	1572.1	1578.3	We are taking frame grabs as we leave.
2462	8/21/2015	21:34:42	45.98926	-130.02729	226.1	5.1	1572.9	1578.0	The tubeworms all over.
2463	8/21/2015	21:34:47	45.98927	-130.02729	274.9	4.9	1573.1	1578.0	It looks amazing.
2464	8/21/2015	21:35:19	45.98923	-130.02715	294.7	3.4	1573.3	1576.7	It looks like a buffalo.
2465	8/21/2015	21:35:25	45.98922	-130.02715	284.5	3.6	1573.2	1576.8	We are leaving now.
2466	8/21/2015	21:35:41	45.98920	-130.02715	186.6	5.0	1571.1	1576.0	Jason off bottom
2469	8/21/2015	22:48:06	45.98934	-130.02722	169.9	144.8	96.8	241.6	Test of remote logging.
2470	8/21/2015	22:52:21	45.98936	-130.02725	162.5	186.9	44.1	231.0	45 m depth

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2471	8/21/2015	22:54:28	45.98937	-130.02723	170.7	199.2	19.3	218.4	Beast is turned off.
2472	8/21/2015	22:55:59	45.98936	-130.02723	164.6	2.1	-0.3	1.9	Jason at surface.
2473	8/21/2015	22:56:27	45.98936	-130.02723	166.1	195.4	0.2	195.6	Jason at surface.
2474	8/21/2015	22:56:35	45.98936	-130.02723	162.2	195.4	-0.2	195.2	Medea being recovered.
2475	8/21/2015	22:56:50	45.98936	-130.02723	163.1	195.4	-0.3	195.1	Medea on deck.
2476	8/21/2015	22:57:25	45.98936	-130.02723	149.7	195.4	0.0	195.4	Jason driving toward ship.
2477	8/21/2015	23:02:01	45.98936	-130.02723	168.9	160.0	0.7	160.7	Ship's hull in view.
2478	8/21/2015	23:02:17	45.98936	-130.02723	253.0	191.7	-0.8	190.9	Jason out of water
2479	8/21/2015	23:04:01	45.98936	-130.02723		1.1	-0.8	0.3	Jason on deck

6.6-3 J2-823 Dive log

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2482	8/22/2015	14:59:23			247.8		0.1		Jason Dive J2-823 Pressure Dive at Axial Seamount.
2483	8/22/2015	15:08:02			242.0		-0.1		Jason off deck.
2484	8/22/2015	15:09:35			205.1		-0.1		Jason in water Begin J2-823 at Axial Seamount Pressure Dive.
2485	8/22/2015	15:13:17			153.5		1.3		Medea in water
2486	8/22/2015	15:14:41			153.7		3.5		Heading down.
2487	8/22/2015	15:15:42			153.1		40.4		Deployment location: Benchmark AX-105 45deg 51.790 -130deg 0.225 depth=1723.
2488	8/22/2015	15:16:12			153.8		40.7		Main Goals: 1-Make pressure measurements at seafloor benchmarks and transit in water column between sites.
2489	8/22/2015	15:16:39			153.4		39.3		We will make 3 transects.
2490	8/22/2015	15:16:58			154.2		39.9		2) Deploy 6 mini-BPRs at selected benchmarks.
2491	8/22/2015	15:17:09			152.7		41.2		3) Attempt to release and recover the SCPR mooring.
2492	8/22/2015	15:17:22			152.7		43.1		4) Sample vent fluids at selected sites on the last pressure transect.
2493	8/22/2015	15:17:33			152.9		45.6		5) Recover and deploy HOBO and MTR temp probes.
2494	8/22/2015	15:18:24			152.6		58.3		Basket for this dive: HFS-fluid-sampler intake; Suction sampler host; 3 gastight samplers; 2 Major samplers; Rock sampling box (4 spaces); 2 HOBO temp probes; 3 MTRs.
2495	8/22/2015	15:18:46			146.7		66.5		On all dives: Jason high-temp probe; Beast-HFS; O2 sensor.
2496	8/22/2015	15:18:58			147.6		68.8		Port Swing-arm: 2 HOBO temp probes.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2497	8/22/2015	15:19:15			148.0		69.7		Starboard Swing Arm: Biobox with 6 mini-BPRs.
2498	8/22/2015	15:20:54			147.3		82.9		Also on SCPR acoustic modem.
2499	8/22/2015	15:21:43			144.7		95.4		Tasks: 1) Pressure measurements at seafloor benchmarks (20 min each). Three transects in the order (S->N; N->S; S->N).
2500	8/22/2015	15:22:14			146.2		102.1		2) Deploy mini-BPRs at AX-105; AX-303; AX-302; AX-307; AX-106; AX-308.
2501	8/22/2015	15:22:54			147.6		110.5		3) Attempt to release and recover SCPR mooring (near AX-106 at ASHES).
2502	8/22/2015	15:24:04			144.9		111.3		4) During last transect collect vent fluids at: Vixen/Casper (1 GT each); Mkr113 vent (LVB; 1 Major); MkrN3 vent; Trevi (GT); Spanish Steps (1 Major); and selected vents at ASHES.
2503	8/22/2015	15:28:33	45.79231	-130.02464	145.6		221.8		5) During last transect recover/deploy HOBOs at Vixen; Casper; Trevi; Virgin (deploy-only) and MTRs at Mkr113; MkrN3 and some at ASHES.
2505	8/22/2015	16:13:19	45.79236	-130.02469	142.5	57.8	1560.6	1618.3	NAV: Doppler Reset.
2507	8/22/2015	16:15:48	45.79242	-130.02486	147.2	88.5	1629.3	1717.7	Less than 100m to the bottom.
2508	8/22/2015	16:16:22	45.79243	-130.02488	147.7	89.8	1627.9	1717.7	input PilotCam (port 3) routed to output Mon19 In (port 6)
2509	8/22/2015	16:16:26	45.79243	-130.02488	147.4	54.7	1627.8	1682.5	input SciCam (port 1) routed to output Mon19 In (port 6)
2510	8/22/2015	16:16:32	45.79243	-130.02488	147.5	89.8	1627.9	1717.7	input PilotCam (port 3) routed to output Mon19 In (port 6)
2511	8/22/2015	16:16:37	45.79243	-130.02488	147.1	89.7	1627.9	1717.6	input SciCam (port 1) routed to output Mon19 In (port 6)
2513	8/22/2015	16:24:57	45.86308	-130.00407	181.0	7.8	1710.3	1718.1	There is the bottom.
2514	8/22/2015	16:25:40	45.86310	-130.00407	181.3	3.3	1714.9	1718.2	Same navigation offset as last dive. About 10m to the west.
2515	8/22/2015	16:26:03	45.86310	-130.00407	181.2	3.8	1714.4	1718.2	There is some anchor remains from the deployment of the cement benchmark.
2517	8/22/2015	16:26:40	45.86310	-130.00407	181.2	3.4	1714.8	1718.1	Benchmark should be just to the east.
2518	8/22/2015	16:26:47	45.86310	-130.00407	181.6	2.1	1716.0	1718.1	Jelly.
2519	8/22/2015	16:27:15	45.86310	-130.00407	181.0	0.8	1717.3	1718.1	Close-up of the anchor chain for the deployment.
2521	8/22/2015	16:28:32	45.86310	-130.00407	181.0	1.5	1716.7	1718.2	Bringing out the basket .
2523	8/22/2015	16:30:09	45.86310	-130.00407	180.7	1.4	1716.7	1718.2	Grabbing a weight and dropping it near the old anchor chains.
2524	8/22/2015	16:31:15	45.86310	-130.00405	99.7	1.6	1716.8	1718.4	Turning east to see if the benchmark is right there.
2526	8/22/2015	16:33:10	45.86311	-130.00391	66.3	2.1	1716.3	1718.4	There is the crack.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2527	8/22/2015	16:33:26	45.86313	-130.00393	36.9	3.4	1714.8	1718.2	There is the benchmark!
2528	8/22/2015	16:34:01	45.86317	-130.00390	349.6	3.0	1715.2	1718.1	AX-105 is very happy to see us - this is a lonely spot.
2530	8/22/2015	16:34:59	45.86320	-130.00389	357.9	0.8	1717.5	1718.2	Settling Jason down at the benchmark.
2532	8/22/2015	16:37:35	45.86320	-130.00389	359.3	0.8	1717.5	1718.2	Preparing to deploy a mini-BPR also called a SIO-BPR. This is mini-BPR #13.
2534	8/22/2015	16:38:19	45.86320	-130.00388	358.8	0.8	1717.5	1718.2	This is mini-BPR#13 Blue/black.
2535	8/22/2015	16:38:34	45.86320	-130.00389	359.7	0.8	1717.4	1718.2	HIGHLIGHTS: HD highlights start
2537	8/22/2015	16:40:33	45.86320	-130.00389	359.6	0.8	1717.4	1718.2	**DEPLOY: SIO-BPR** Mini-BPR #13 Blue/black deployed on the AX-105 benchmark and positioned out of the way of the pressure recorder. This is the South Pillow Mound site.
2538	8/22/2015	16:41:29	45.86320	-130.00389	359.0	0.8	1717.4	1718.2	HIGHLIGHTS: HD highlights stop- retrieving the pressure recorder from the basket.
2539	8/22/2015	16:41:55	45.86320	-130.00389	358.9	0.8	1717.4	1718.2	The pressure recorder connector should be positioned to the left on the benchmark.
2541	8/22/2015	16:42:26	45.86320	-130.00389	359.1	0.8	1717.4	1718.2	HIGHLIGHTS: HD highlights start
2542	8/22/2015	16:43:23	45.86320	-130.00389	359.3	0.8	1717.4	1718.1	Placing recorder on the benchmark.
2544	8/22/2015	16:45:27	45.86320	-130.00389	359.0	0.8	1717.4	1718.1	The base of the recorder seems to be shorter than last time. Placing the base plate at the right edge of the depression on the benchmark.
2546	8/22/2015	16:46:49	45.86320	-130.00390	359.1	0.8	1717.4	1718.1	Nudging the instrument to leave a little space next to the right edge of the depression on the benchmark.
2547	8/22/2015	16:47:35	45.86320	-130.00390	359.1	0.8	1717.4	1718.2	Deciding that it would be better to center the instrument in the land pad space. Looks good.
2548	8/22/2015	16:47:38	45.86320	-130.00390	359.1	0.8	1717.4	1718.2	HIGHLIGHTS: HD highlights stop
2550	8/22/2015	16:48:18	45.86320	-130.00390	359.0	0.8	1717.4	1718.2	Going to push the mini-BPR a bit more out of the way so it doesn't touch the recorder at all.
2551	8/22/2015	16:49:32	45.86320	-130.00390	359.0	0.8	1717.4	1718.1	New position of the mini-BPR is good.
2552	8/22/2015	16:49:40	45.86320	-130.00390	359.0	0.8	1717.4	1718.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2553	8/22/2015	16:49:52	45.86320	-130.00390	359.0	0.8	1717.4	1718.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2554	8/22/2015	16:49:53	45.86320	-130.00390	359.1	0.8	1717.4	1718.1	PRESSURE: Start
2560	8/22/2015	16:59:20	45.86320	-130.00389	358.9	0.8	1717.3	1718.1	Position of the AX-105 is 45.863194 and -130.003898. Offset is 12m at 280 from the underlay.
2562	8/22/2015	17:01:41	45.86320	-130.00389	358.9	0.8	1717.3	1718.1	That position was from the cursor.
2567	8/22/2015	17:10:01	45.86320	-130.00390	358.8	0.8	1717.3	1718.0	PRESSURE: End Done with this measurement at AX-105.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2568	8/22/2015	17:10:05	45.86320	-130.00390	358.8	0.8	1717.3	1718.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2570	8/22/2015	17:10:40	45.86320	-130.00390	358.9	0.8	1717.3	1718.0	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2571	8/22/2015	17:10:45	45.86320	-130.00390	358.9	0.8	1717.3	1718.0	Retrieving the recorder from the benchmark.
2572	8/22/2015	17:11:23	45.86320	-130.00390	359.0	0.8	1717.3	1718.0	Placing the recorder in the basket.
2573	8/22/2015	17:11:26	45.86320	-130.00390	359.0	0.8	1717.3	1718.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2575	8/22/2015	17:12:06	45.86320	-130.00390	358.5	0.8	1717.3	1718.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2576	8/22/2015	17:12:52	45.86318	-130.00390	354.9	2.2	1715.9	1718.1	Arm stowed and we're off to AX-104 at Bag City. 6 km transit.
2577	8/22/2015	17:13:34	45.86319	-130.00390	357.0	2.6	1715.4	1718.0	Bearing to next benchmark is 011.
2579	8/22/2015	17:15:11	45.86315	-130.00398	236.1	3.9	1714.0	1717.9	Transit will be about 3 hours to the next benchmark.
2582	8/22/2015	18:52:10	45.88376	-129.99852	196.2	159.9	1445.4	1605.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
2585	8/22/2015	20:52:29	45.91580	-129.98941	4.2	2.5	1529.2	1531.7	Bottom in sight
2586	8/22/2015	20:53:18	45.91585	-129.98940	2.8	2.0	1529.9	1531.9	Approaching benchmark AX-104 (Bag City).
2588	8/22/2015	20:54:50	45.91614	-129.98938	313.0	1.7	1529.3	1531.0	Bacterial mat in clumps on cracks in lobate pillows.
2589	8/22/2015	20:55:22	45.91622	-129.98949	313.5	1.7	1529.2	1530.9	Benchmarks in sight.
2590	8/22/2015	20:55:33	45.91623	-129.98951	320.1	1.3	1529.6	1530.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
2591	8/22/2015	20:55:33	45.91623	-129.98951	320.1	1.3	1529.6	1530.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2592	8/22/2015	20:55:38	45.91623	-129.98951	328.5	1.2	1529.7	1530.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2593	8/22/2015	20:55:49	45.91623	-129.98951	338.6	0.9	1530.0	1531.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2594	8/22/2015	20:56:05	45.91623	-129.98952	338.0	1.1	1529.9	1531.0	Looking at AX104 stenciled on round benchmark plate.
2596	8/22/2015	20:56:53	45.91623	-129.98952	337.0	1.0	1530.0	1531.0	Triangular benchmark is off to the right.
2597	8/22/2015	20:57:33	45.91623	-129.98951	337.7	0.8	1530.3	1531.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2599	8/22/2015	20:58:23	45.91623	-129.98951	337.4	0.8	1530.3	1531.0	HIGHLIGHTS: HD highlights start
2600	8/22/2015	20:58:40	45.91623	-129.98951	337.3	0.8	1530.3	1531.1	At benchmark AX-104.
2601	8/22/2015	20:59:48	45.91624	-129.98951	337.5	0.9	1530.2	1531.0	Placing pressure recorder on circular benchmark.
2603	8/22/2015	21:01:09	45.91624	-129.98951	337.6	0.8	1530.2	1531.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2604	8/22/2015	21:01:13	45.91624	-129.98951	337.6	0.8	1530.2	1531.0	input PilotCam (port 3) routed to output FrmGrb2 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									2)
2606	8/22/2015	21:03:19	45.91623	-129.98951	337.6	0.9	1530.2	1531.1	Adjusting position of pressure recorder on benchmark.
2609	8/22/2015	21:06:55	45.91623	-129.98952	343.8	0.8	1530.2	1531.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2610	8/22/2015	21:07:00	45.91623	-129.98952	343.7	0.8	1530.2	1531.0	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2612	8/22/2015	21:09:08	45.91623	-129.98952	344.1	0.8	1530.2	1531.0	NAV: Doppler Reset
2613	8/22/2015	21:09:57	45.91623	-129.98952	344.1	0.8	1530.2	1531.0	Pressure recorder base is shorter than the notch. Clear shimmering water visible.
2616	8/22/2015	21:13:06	45.91623	-129.98952	344.0	0.9	1530.2	1531.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2617	8/22/2015	21:13:11	45.91623	-129.98952	344.1	0.9	1530.2	1531.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2618	8/22/2015	21:13:23	45.91623	-129.98952	343.6	0.9	1530.1	1531.1	HIGHLIGHTS: HD highlights stop
2619	8/22/2015	21:13:42	45.91623	-129.98952	343.9	0.8	1530.2	1531.0	Bill is happy with the recorder's position.
2620	8/22/2015	21:14:01	45.91623	-129.98952	344.0	0.9	1530.2	1531.0	PRESSURE: Start
2622	8/22/2015	21:14:48	45.91623	-129.98952	344.0	0.9	1530.2	1531.0	File 1508222113.ax104
2627	8/22/2015	21:23:12	45.91623	-129.98952	343.9	0.9	1530.3	1531.1	Tubeworms (Ridgeia ?); pycnogonids; a chiton; and a lots of limpets.
2629	8/22/2015	21:25:55	45.91623	-129.98952	343.8	0.8	1530.3	1531.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2631	8/22/2015	21:26:12	45.91623	-129.98952	343.9	0.9	1530.3	1531.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2633	8/22/2015	21:29:40	45.91623	-129.98952	343.8	0.8	1530.3	1531.1	input PilotCam (port 3) routed to output Mon19 In (port 6)
2634	8/22/2015	21:29:54	45.91623	-129.98952	343.7	0.8	1530.3	1531.1	input SupScorpio (port 4) routed to output Mon19 In (port 6)
2635	8/22/2015	21:29:59	45.91623	-129.98952	343.7	0.8	1530.3	1531.1	input SciCam (port 1) routed to output Mon19 In (port 6)
2636	8/22/2015	21:30:05	45.91623	-129.98952	343.9	0.8	1530.3	1531.1	input BrowCam (port 2) routed to output Mon19 In (port 6)
2639	8/22/2015	21:32:53	45.91623	-129.98953	343.8	0.8	1530.3	1531.2	Internal temp of MPR has increased 0.2C.
2641	8/22/2015	21:34:54	45.91623	-129.98953	343.8	0.8	1530.3	1531.1	input SciCam (port 1) routed to output Mon19 In (port 6)
2642	8/22/2015	21:35:14	45.91623	-129.98953	343.8	0.9	1530.3	1531.2	PRESSURE: End
2643	8/22/2015	21:35:27	45.91623	-129.98953	343.8	0.8	1530.3	1531.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2644	8/22/2015	21:35:32	45.91623	-129.98953	344.1	0.8	1530.3	1531.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2646	8/22/2015	21:36:06	45.91623	-129.98952	343.8	0.8	1530.3	1531.1	Starting transit file 1508222134.transit.
2647	8/22/2015	21:36:24	45.91623	-129.98952	344.1	0.8	1530.3	1531.2	input SciCam (port 1) routed to output FrmGrb1 (port 1)
2648	8/22/2015	21:36:24	45.91623	-129.98952	344.1	0.8	1530.3	1531.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2649	8/22/2015	21:37:26	45.91620	-129.98955	23.0	2.8	1529.2	1532.0	21:35 pressure recorder is back on the vehicle and secured. Transit will be to AX-310 (Mkr-126).
2650	8/22/2015	21:37:29	45.91619	-129.98956	43.7	2.6	1529.3	1531.9	Off bottom.
2654	8/22/2015	22:34:28	45.92408	-129.98022	219.4	145.0	1375.4	1520.4	That was wrong. We are approaching International District benchmark AX-310. We are going to launch Sentry after the pressure measurement.
2656	8/22/2015	22:49:50	45.92577	-129.97818	234.9	3.6	1525.6	1529.2	Jason on bottom
2658	8/22/2015	22:50:18	45.92579	-129.97815	79.5	1.2	1526.9	1528.1	Here in the area of the international district. Striated lavas.
2659	8/22/2015	22:50:27	45.92579	-129.97813	77.6	1.8	1527.2	1529.0	OOI instrument.
2660	8/22/2015	22:50:48	45.92579	-129.97810	84.3	2.1	1527.1	1529.3	Seismometer on the left - maybe a junction box on the right.
2661	8/22/2015	22:50:49	45.92579	-129.97809	82.1	2.3	1527.0	1529.3	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2662	8/22/2015	22:50:59	45.92580	-129.97806	85.0	2.8	1526.8	1529.5	Looking at the OOI cable on the seafloor here.
2663	8/22/2015	22:51:06	45.92580	-129.97802	85.0	2.4	1527.2	1529.6	Rattail.
2664	8/22/2015	22:51:24	45.92581	-129.97795	87.8	1.6	1528.2	1529.8	Sedimented striated sheet flow here.
2665	8/22/2015	22:51:31	45.92582	-129.97793	64.2	1.6	1528.3	1529.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2666	8/22/2015	22:51:45	45.92584	-129.97788	65.3	1.9	1527.8	1529.7	OOI Junction box.
2667	8/22/2015	22:51:57	45.92585	-129.97786	87.6	1.5	1528.1	1529.6	The benchmark is on this lineated surface.
2668	8/22/2015	22:52:03	45.92586	-129.97785	93.5	1.3	1528.4	1529.7	See bucket lid #12.
2670	8/22/2015	22:52:51	45.92584	-129.97787	356.2	0.9	1529.2	1530.1	Bill sees the benchmark. It's not far from the junction box.
2671	8/22/2015	22:53:11	45.92585	-129.97789	357.8	1.3	1528.4	1529.8	This is SE of the International District vent field.
2672	8/22/2015	22:53:20	45.92587	-129.97789	1.3	1.8	1527.9	1529.6	Stirred up a bunch of sediment.
2673	8/22/2015	22:53:35	45.92589	-129.97790	290.9	2.0	1527.7	1529.7	Another OOI instrument.
2674	8/22/2015	22:53:49	45.92588	-129.97790	248.3	1.9	1527.9	1529.8	Benchmark in the super scorpio.
2676	8/22/2015	22:54:19	45.92585	-129.97792	283.4	1.5	1528.4	1529.9	We're parked here in front of the benchmark; AX-310
2677	8/22/2015	22:55:16	45.92585	-129.97792	284.4	1.0	1528.8	1529.7	The resolution of the measurements are about a centimeter; relative depth for the whole survey.
2678	8/22/2015	22:55:34	45.92585	-129.97792	284.1	1.0	1528.7	1529.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2680	8/22/2015	22:56:19	45.92585	-129.97792	283.7	0.9	1528.7	1529.7	There are 3 BPRs on the cable.
2681	8/22/2015	22:56:34	45.92585	-129.97792	283.5	1.0	1528.7	1529.7	Picking up the pressure sensor and setting it on the benchmark.
2682	8/22/2015	22:57:15	45.92585	-129.97792	283.5	1.0	1528.7	1529.7	Scott is placing the instrument on the cement benchmark.
2683	8/22/2015	22:57:40	45.92585	-129.97792	283.4	1.0	1528.7	1529.7	Tapping it into place now.
2685	8/22/2015	22:58:20	45.92585	-129.97792	283.5	1.0	1528.7	1529.7	That looks pretty good. Need to center it.
2686	8/22/2015	22:58:35	45.92585	-129.97792	283.5	1.0	1528.7	1529.7	That looks good.
2687	8/22/2015	22:59:08	45.92585	-129.97792	283.7	1.0	1528.7	1529.7	The base plate looks a little shorter than the one last year. It used to fit perfectly.
2689	8/22/2015	23:00:29	45.92585	-129.97792	283.9	1.0	1528.7	1529.7	Beginning the 20 minute pressure reading.
2690	8/22/2015	23:01:57	45.92585	-129.97792	283.9	1.0	1528.7	1529.7	This is the third measurement. We started at the South Pillow Mound; then on to Bag City; and now at the Int'l District.
2692	8/22/2015	23:03:44	45.92585	-129.97792	284.0	1.0	1528.8	1529.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2694	8/22/2015	23:04:11	45.92585	-129.97792	284.0	1.0	1528.8	1529.7	Filename: 1508222259.ax310 for this reading at the Int'l District.
2695	8/22/2015	23:05:46	45.92585	-129.97792	284.0	1.0	1528.8	1529.7	Tons of small brittle-stars on the seafloor visible in the downward-looking camera.
2697	8/22/2015	23:07:28	45.92585	-129.97792	284.0	1.0	1528.8	1529.7	Zoomed in and took a few frame grabs.
2698	8/22/2015	23:07:40	45.92585	-129.97792	284.0	1.0	1528.8	1529.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2700	8/22/2015	23:08:16	45.92586	-129.97792	284.0	1.0	1528.8	1529.7	Getting some Super Scorpio frame grabs as well.
2702	8/22/2015	23:10:13	45.92586	-129.97792	284.2	1.0	1528.8	1529.7	Zooming in on the brittle stars at the base of the benchmark.
2703	8/22/2015	23:11:20	45.92585	-129.97792	284.2	1.0	1528.8	1529.7	Zooming in on something else. It's a little snail.
2704	8/22/2015	23:12:01	45.92585	-129.97792	284.2	1.0	1528.8	1529.8	Zooming in on shell fragments.
2706	8/22/2015	23:12:45	45.92585	-129.97792	284.3	1.0	1528.8	1529.7	Shrimp checking us out.
2707	8/22/2015	23:13:21	45.92585	-129.97792	284.2	1.0	1528.8	1529.8	Shrimp cruising around the vehicle.
2712	8/22/2015	23:20:10	45.92585	-129.97792	284.3	1.0	1528.8	1529.8	Stop reading.
2713	8/22/2015	23:21:06	45.92585	-129.97792	284.4	1.0	1528.8	1529.8	Finished up collecting data.
2714	8/22/2015	23:21:43	45.92585	-129.97792	284.0	1.0	1528.8	1529.8	Did not use the pressure hot key. Whoops.
2715	8/22/2015	23:21:59	45.92585	-129.97792	284.1	0.9	1528.9	1529.8	Putting the sensor back in its cradle on the basket.
2717	8/22/2015	23:22:40	45.92585	-129.97792	284.6	0.9	1528.9	1529.8	Glenn snuck a Scripps sticker on the back of the sensor. Huh? They built them.
2718	8/22/2015	23:23:11	45.92585	-129.97790	284.6	2.7	1527.4	1530.1	Backing away from the benchmark.
2719	8/22/2015	23:23:28	45.92585	-129.97791	284.6	2.6	1527.6	1530.1	NAV: Doppler Reset

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2721	8/22/2015	23:24:23	45.92585	-129.97791	284.3	3.2	1527.0	1530.1	Rattail hanging out.
2723	8/22/2015	23:27:16	45.92585	-129.97791	284.6	5.1	1525.1	1530.1	Waiting here to find out what Sentry is doing. Anticipating a launch.
2727	8/22/2015	23:33:31	45.92550	-129.97742	136.6	18.2	1510.8	1529.0	Sentry just finished their pre-dive and are aiming for a 5pm launch.
2729	8/22/2015	23:35:09	45.92535	-129.97727	132.3	28.7	1499.5	1528.2	USBL position: 45.925852 129.977920m.
2730	8/22/2015	23:35:54	45.92535	-129.97727	126.2	28.7	1499.6	1528.3	We're just going to hang here until they launch Sentry. We're off the bottom.
2734	8/23/2015	00:56:40	45.93261	-129.98182	159.5	112.7	1400.1	1512.8	Approaching Mkr-33 benchmark (AX-303). Still off the bottom.
2736	8/23/2015	01:04:51	45.93344	-129.98224	52.5	2.6	1514.1	1516.7	Jason on bottom
2737	8/23/2015	01:05:17	45.93346	-129.98219	55.6	2.1	1514.6	1516.8	The benchmark is a little north of Mkr-33 Vent site.
2738	8/23/2015	01:05:27	45.93347	-129.98217	32.6	2.4	1514.7	1517.0	Rattail.
2739	8/23/2015	01:06:02	45.93348	-129.98214	154.8	2.1	1514.8	1516.9	The lavas here are now quite sedimented with biota and tubeworm patches.
2741	8/23/2015	01:06:25	45.93344	-129.98209	143.7	2.4	1515.1	1517.5	Clarification: Sediment on the seafloor; plus biota.
2742	8/23/2015	01:06:38	45.93343	-129.98208	175.6	1.9	1515.5	1517.4	Traveling over patches of white bacterial mat and tubeworms.
2743	8/23/2015	01:07:09	45.93347	-129.98214	303.0	2.3	1514.9	1517.1	Getting our bearings. Stirred up a lot of sediment.
2744	8/23/2015	01:07:20	45.93347	-129.98219	293.1	2.0	1515.1	1517.1	The benchmark is right ahead.
2745	8/23/2015	01:07:53	45.93348	-129.98224	276.3	1.7	1515.1	1516.8	HIGHLIGHTS: HD highlights start Approaching the benchmark.
2747	8/23/2015	01:08:11	45.93351	-129.98225	214.6	1.9	1514.9	1516.8	We see the old benchmark in the distance.
2748	8/23/2015	01:08:38	45.93350	-129.98228	183.6	1.0	1515.7	1516.7	Patches of tubeworms here and there. Sediment on the lavas.
2749	8/23/2015	01:09:44	45.93350	-129.98227	185.0	0.8	1516.0	1516.7	Parked in front of the benchmark. Going for the pressure sensor.
2750	8/23/2015	01:10:05	45.93349	-129.98227	184.9	0.8	1516.0	1516.8	The benchmark is also sedimented.
2752	8/23/2015	01:10:38	45.93349	-129.98227	184.9	0.8	1515.9	1516.7	Grabbing the sensor here at AX-303; Mkr-33 benchmark.
2753	8/23/2015	01:11:18	45.93349	-129.98227	184.5	0.8	1516.0	1516.7	Placing the pressure sensor on the benchmark.
2754	8/23/2015	01:11:51	45.93349	-129.98227	184.4	0.8	1516.0	1516.8	Making some minor adjustments to the sensor position.
2756	8/23/2015	01:12:36	45.93349	-129.98227	184.3	0.8	1516.0	1516.8	PRESSURE: Start Nudging the sensor head.
2757	8/23/2015	01:12:52	45.93349	-129.98227	184.3	0.8	1516.0	1516.7	Zooming in.
2758	8/23/2015	01:13:26	45.93349	-129.98227	184.1	0.8	1516.0	1516.8	PRESSURE: Start Pressure sensor reading at Mkr-33 benchmark AX-303.
2759	8/23/2015	01:13:54	45.93349	-129.98227	184.1	0.8	1516.0	1516.8	HIGHLIGHTS: HD highlights stop

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2761	8/23/2015	01:14:20	45.93349	-129.98227	184.1	0.8	1516.0	1516.8	NAV: Doppler Reset
2762	8/23/2015	01:15:01	45.93349	-129.98227	184.1	0.8	1516.0	1516.8	1508230113.ax303 file name for this pressure reading.
2764	8/23/2015	01:16:35	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	Zooming in on the sensor and snapping some HD framegrabs.
2765	8/23/2015	01:17:36	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2766	8/23/2015	01:17:36	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2767	8/23/2015	01:17:36	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
2768	8/23/2015	01:17:48	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	Bill is zooming around looking at the biota.
2770	8/23/2015	01:18:14	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	Limpets and scaleworms.
2771	8/23/2015	01:19:01	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	Going to turn off the USBL for a minute to help Sentry's nav.
2772	8/23/2015	01:19:40	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	More limpets and bac mat.
2773	8/23/2015	01:19:52	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	White filamentous bac mat.
2775	8/23/2015	01:20:49	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	Looking around the area near the benchmark.
2776	8/23/2015	01:21:07	45.93349	-129.98227	184.2	0.8	1516.0	1516.8	Lots of tiny limpets on the lobes.
2782	8/23/2015	01:30:47	45.93349	-129.98227	184.3	0.8	1516.0	1516.8	Zooming in on the benchmark to see if there is any ash on it. Hard to tell.
2783	8/23/2015	01:31:13	45.93349	-129.98227	184.3	0.8	1516.0	1516.8	Zooming in with the super scorpio to check for ash on the benchmark.
2784	8/23/2015	01:31:24	45.93349	-129.98227	184.3	0.8	1516.0	1516.8	Couple more minutes for this sensor reading.
2786	8/23/2015	01:33:06	45.93349	-129.98227	184.3	0.8	1516.0	1516.8	PRESSURE: End
2787	8/23/2015	01:34:05	45.93350	-129.98226	184.4	0.9	1515.9	1516.7	Finished up here. Storing the pressure sensor in its cable.
2789	8/23/2015	01:34:16	45.93350	-129.98226	185.0	2.4	1514.3	1516.7	Jason off bottom
2790	8/23/2015	01:34:57	45.93338	-129.98232	199.2	7.0	1509.6	1516.7	Next stop AX-209 at the RSN primary node. ~ 1 km to the NE.
2793	8/23/2015	02:30:06	45.93836	-129.97212	34.0	3.3	1521.1	1524.4	Jason on bottom
2794	8/23/2015	02:31:00	45.93834	-129.97220	112.3	6.7	1521.1	1527.7	We're have near the benchmark. Haven't seen it yet. We're looking at a pillar and roof structure.
2795	8/23/2015	02:31:17	45.93830	-129.97221	98.1	5.2	1522.3	1527.4	We don't see the benchmark yet.
2797	8/23/2015	02:32:08	45.93833	-129.97207	52.8	2.0	1521.9	1523.9	Beautiful area of pillars and roofs. Lots of floc in the water.
2798	8/23/2015	02:32:59	45.93838	-129.97193	75.5	1.6	1522.5	1524.1	Looking for AX-309 in the area of the RSN primary node.

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2799	8/23/2015	02:33:27	45.93842	-129.97200	287.4	2.1	1522.3	1524.4	This area is older than the 2011 lava flow. It is to the east of the 2011 flow.
2801	8/23/2015	02:34:47	45.93850	-129.97215	14.4	2.7	1524.4	1527.1	It's in the collapse area - not on top of the inflated roof area.
2802	8/23/2015	02:35:30	45.93852	-129.97211	249.8	1.6	1525.8	1527.5	The benchmark is sitting in this area of striated sheet flow. Heavily sedimented. Sort of chaotic lavas here and there.
2804	8/23/2015	02:36:06	45.93852	-129.97211	248.1	0.8	1527.1	1527.8	We don't see the primary node - it's nearby; but not that near...
2805	8/23/2015	02:37:02	45.93852	-129.97211	248.2	0.8	1527.1	1527.9	HIGHLIGHTS: HD highlights start Going in to grab the pressure sensor.
2806	8/23/2015	02:37:22	45.93852	-129.97211	248.1	0.8	1527.1	1527.9	Correction to earlier entry. This is AX-309.
2808	8/23/2015	02:38:40	45.93852	-129.97212	248.1	0.8	1527.1	1527.9	Brittle stars all over the benchmark. Got rid of the brittle star under the sensor.
2809	8/23/2015	02:38:49	45.93852	-129.97212	248.1	0.8	1527.1	1527.9	No biology interfering with the geophysics.
2810	8/23/2015	02:39:10	45.93852	-129.97212	248.1	0.8	1527.1	1527.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
2811	8/23/2015	02:39:11	45.93852	-129.97212	248.1	0.8	1527.1	1527.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
2812	8/23/2015	02:39:17	45.93852	-129.97212	248.1	0.8	1527.1	1527.8	PRESSURE: Start AX309 near the RSN primary node.
2813	8/23/2015	02:39:43	45.93852	-129.97212	248.1	0.8	1527.1	1527.9	Letting go of the sensor with Jason.
2814	8/23/2015	02:40:01	45.93852	-129.97212	248.1	0.8	1527.1	1527.9	HIGHLIGHTS: HD highlights stop
2816	8/23/2015	02:40:27	45.93852	-129.97212	248.1	0.8	1527.1	1527.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
2817	8/23/2015	02:40:36	45.93852	-129.97212	248.1	0.8	1527.1	1527.8	The file name for this pressure sensor reading: 1508230239.AX309
2818	8/23/2015	02:41:35	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Brittle stars in action. They can really move.
2821	8/23/2015	02:45:24	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Jason shift change.
2822	8/23/2015	02:45:30	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Scott is in the pilot chair.
2823	8/23/2015	02:45:55	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Zoomed in on something that looked like a squat lobster - but there are none of those here. So what is it?
2824	8/23/2015	02:46:01	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Shift change.
2829	8/23/2015	02:52:07	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Offset of navigation at this location is about 20m at 340deg from the historical benchmark position.
2830	8/23/2015	02:53:36	45.93853	-129.97212	248.0	0.8	1527.1	1527.8	Lots of flock floating by at this site which matches the large amount of sediment on the lavas.
2833	8/23/2015	02:57:51	45.93853	-129.97213	248.0	0.8	1527.0	1527.8	Note that the pressure recording started at 02:39.

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2835	8/23/2015	03:00:03	45.93853	-129.97213	248.0	0.8	1527.0	1527.8	PRESSURE: End recording at AX-309 at the RSN-PN.
2837	8/23/2015	03:01:09	45.93853	-129.97213	248.0	0.8	1527.0	1527.8	Retrieving the pressure instrument from the benchmark.
2838	8/23/2015	03:01:38	45.93853	-129.97213	248.0	0.8	1527.0	1527.8	Benchmark in the basket.
2840	8/23/2015	03:02:09	45.93853	-129.97213	248.0	0.8	1527.0	1527.8	NAV: Doppler Reset
2841	8/23/2015	03:02:50	45.93854	-129.97212	249.5	1.0	1526.5	1527.4	Lifting off the seafloor.
2842	8/23/2015	03:03:21	45.93857	-129.97211	299.9	2.6	1524.9	1527.5	Bearing 314 and range 1262m to the next benchmark.
2844	8/23/2015	03:05:21	45.93861	-129.97219	314.1	2.3	1525.0	1527.2	Rubbly looking sheet flow as we pull off the benchmark.
2845	8/23/2015	03:05:24	45.93861	-129.97220	314.3	2.3	1525.0	1527.3	Two fish.
2846	8/23/2015	03:05:40	45.93861	-129.97221	313.1	2.2	1525.1	1527.3	Looks like a pressure ridge.
2848	8/23/2015	03:06:19	45.93863	-129.97225	315.0	3.2	1523.5	1526.7	Ship is moving and here we go to AX-302 near Trevi.
2849	8/23/2015	03:07:30	45.93875	-129.97247	314.2	2.9	1524.8	1527.8	About 65 minutes to the benchmark.
2851	8/23/2015	03:08:40	45.93877	-129.97249	312.2	1.8	1525.8	1527.6	Sheet flow with less sediment.
2852	8/23/2015	03:09:48	45.93890	-129.97268	316.1	2.2	1524.3	1526.5	Sheet flow has gotten smoother.
2854	8/23/2015	03:10:32	45.93896	-129.97277	314.1	2.0	1524.9	1526.9	Back over a bit more jumbled flow.
2855	8/23/2015	03:11:35	45.93902	-129.97286	311.3	2.6	1524.3	1526.9	Heavy sediment and sheet flow.
2858	8/23/2015	03:14:21	45.93915	-129.97300	316.1	3.5	1523.4	1526.9	Climbing over a collapse ridge.
2859	8/23/2015	03:14:49	45.93918	-129.97304	315.5	6.4	1519.8	1526.2	More lobate flow on top of the collapse.
2860	8/23/2015	03:15:26	45.93926	-129.97314	317.5	2.8	1521.5	1524.3	Fairly heavy sedimented lobate flow.
2862	8/23/2015	03:17:08	45.93936	-129.97332	314.2	3.0	1520.7	1523.8	Larger pillows and some tubes with heavy sediment.
2864	8/23/2015	03:19:46	45.93966	-129.97375	318.5	3.3	1517.9	1521.2	Mixed sizes of larger pillows and some tubes as we climb higher.
2865	8/23/2015	03:20:01	45.93969	-129.97379	313.7	3.0	1518.1	1521.2	RSN equipment.
2866	8/23/2015	03:20:03	45.93969	-129.97380	313.5	3.0	1518.2	1521.2	Frame_Grab:
2868	8/23/2015	03:20:19	45.93969	-129.97381	315.0	2.9	1518.4	1521.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
2869	8/23/2015	03:20:37	45.93970	-129.97380	314.5	3.2	1518.0	1521.2	Cluster of instruments with sandbags and cable.
2870	8/23/2015	03:20:39	45.93971	-129.97380	316.2	3.4	1517.9	1521.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
2871	8/23/2015	03:20:51	45.93974	-129.97384	318.3	3.7	1517.2	1520.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
2872	8/23/2015	03:20:54	45.93975	-129.97385	319.0	3.7	1517.2	1520.9	Following the cable.
2873	8/23/2015	03:20:56	45.93975	-129.97386	318.5	3.6	1517.2	1520.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
2874	8/23/2015	03:21:39	45.93983	-129.97404	315.6	3.2	1516.9	1520.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2875	8/23/2015	03:21:43	45.93983	-129.97405	313.8	3.4	1517.0	1520.5	Another instrument on the RSN.
2876	8/23/2015	03:22:00	45.93985	-129.97407	314.8	4.3	1516.0	1520.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
2877	8/23/2015	03:22:00	45.93985	-129.97407	314.8	4.3	1516.0	1520.3	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
2878	8/23/2015	03:22:05	45.93985	-129.97409	314.2	4.8	1515.4	1520.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
2880	8/23/2015	03:22:07	45.93986	-129.97409	315.2	5.2	1514.9	1520.1	Secondary or primary node here. Camera.
2881	8/23/2015	03:22:13	45.93986	-129.97412	312.1	5.6	1514.5	1520.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
2882	8/23/2015	03:22:32	45.93987	-129.97421	317.3	5.9	1514.0	1519.9	Dropped a target at this location of the node and camera.
2883	8/23/2015	03:23:05	45.93996	-129.97435	315.2	5.3	1514.4	1519.7	Target name is RSN Node
2884	8/23/2015	03:23:16	45.93999	-129.97439	314.0	5.2	1514.5	1519.7	Following cable as we continue.
2887	8/23/2015	03:27:09	45.94022	-129.97473	316.8	2.3	1515.8	1518.1	Lobate flow.
2888	8/23/2015	03:27:46	45.94031	-129.97486	316.9	2.5	1515.0	1517.4	Collapse area in the flow...big window.
2889	8/23/2015	03:27:58	45.94034	-129.97490	317.0	2.4	1515.1	1517.5	Seeing more collapse areas.
2891	8/23/2015	03:29:28	45.94060	-129.97525	314.7	2.7	1514.3	1517.0	Back to intact lobate flow.
2893	8/23/2015	03:30:48	45.94079	-129.97553	315.0	3.0	1513.5	1516.5	Several larger pillows.
2894	8/23/2015	03:31:59	45.94085	-129.97563	314.7	2.2	1513.6	1515.8	Large fish.
2897	8/23/2015	03:35:24	45.94120	-129.97620	315.2	2.3	1512.5	1514.8	Some small collapse areas within the lobates.
2898	8/23/2015	03:35:43	45.94124	-129.97625	314.8	1.8	1512.8	1514.6	Fish.
2900	8/23/2015	03:36:15	45.94128	-129.97632	314.1	2.0	1512.7	1514.7	Lobates and sediment again with no collapse.
2901	8/23/2015	03:37:11	45.94136	-129.97645	314.3	2.2	1512.7	1514.9	Flatter-more linear tube shapes.
2903	8/23/2015	03:39:40	45.94161	-129.97681	314.4	3.0	1511.1	1514.1	Crossing over a large collapse area which matches the underlay very nicely.
2904	8/23/2015	03:39:52	45.94165	-129.97686	315.5	3.9	1511.4	1515.2	Large pillars in the collapse.
2906	8/23/2015	03:40:46	45.94180	-129.97704	316.6	6.2	1510.8	1517.0	Nice bridge feature.
2907	8/23/2015	03:41:54	45.94201	-129.97725	317.6	5.2	1511.6	1516.7	Still flying over the collapse area and another arch.
2909	8/23/2015	03:43:09	45.94219	-129.97746	314.7	2.6	1511.8	1514.4	Coming up onto the lobate flow with the collapse feature to stbd.
2911	8/23/2015	03:44:29	45.94225	-129.97756	314.4	2.3	1511.8	1514.0	Small collapse area.
2912	8/23/2015	03:45:10	45.94231	-129.97765	314.7	2.5	1511.8	1514.2	Coming to edge of collapse again.
2913	8/23/2015	03:45:48	45.94237	-129.97775	313.9	3.3	1511.9	1515.1	Over the collapse.
2915	8/23/2015	03:46:19	45.94243	-129.97786	315.4	2.4	1512.1	1514.5	Bridge on to the lobate.
2916	8/23/2015	03:47:07	45.94249	-129.97800	313.1	2.2	1512.3	1514.5	Alternating lobate flows with collapsed areas.
2917	8/23/2015	03:47:53	45.94250	-129.97815	313.6	1.7	1512.6	1514.3	Large collapse hole.
2920	8/23/2015	03:50:35	45.94279	-129.97868	314.5	2.2	1512.3	1514.5	Lobates and sediment.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2922	8/23/2015	03:52:32	45.94304	-129.97913	314.7	3.0	1512.2	1515.2	There is more cable for the RSN.
2924	8/23/2015	03:55:38	45.94345	-129.97973	316.7	2.6	1513.7	1516.2	Some larger tubes in the lobate flow.
2925	8/23/2015	03:55:59	45.94351	-129.97981	315.0	2.8	1514.1	1517.0	More cable for the RSN.
2927	8/23/2015	03:57:20	45.94373	-129.98008	316.0	3.6	1512.1	1515.7	More cable and looks like we will follow this a bit.
2928	8/23/2015	03:57:30	45.94376	-129.98012	315.9	3.8	1512.0	1515.8	Nope the cable is taking off to the west.
2930	8/23/2015	03:58:45	45.94395	-129.98034	314.3	5.5	1510.1	1515.6	Here is the cable again trending SW-NE.
2931	8/23/2015	03:59:53	45.94403	-129.98046	311.2	5.4	1510.1	1515.6	Criss-crossing the cable as we approach the next benchmark about 240m away.
2933	8/23/2015	04:01:21	45.94412	-129.98059	315.1	2.3	1513.3	1515.6	Collapse area. Pillars.
2934	8/23/2015	04:01:32	45.94415	-129.98062	314.9	2.5	1513.3	1515.8	Roman arches.
2936	8/23/2015	04:02:38	45.94430	-129.98085	314.6	1.9	1513.5	1515.4	Following along a collapse edge.
2937	8/23/2015	04:03:25	45.94438	-129.98096	314.7	2.1	1513.6	1515.7	Back on more intact flow.
2938	8/23/2015	04:04:05	45.94446	-129.98106	314.7	2.2	1513.6	1515.8	Collapse area to east.
2940	8/23/2015	04:04:50	45.94456	-129.98118	314.5	1.9	1514.1	1516.1	Collapse window.
2942	8/23/2015	04:07:51	45.94481	-129.98163	312.5	1.8	1515.3	1517.1	Lobates and lobates.
2944	8/23/2015	04:08:08	45.94483	-129.98167	315.1	1.9	1515.5	1517.4	Fish.
2945	8/23/2015	04:09:04	45.94487	-129.98180	314.6	1.8	1515.8	1517.6	Crab.
2946	8/23/2015	04:10:01	45.94494	-129.98195	314.5	2.3	1516.1	1518.4	More sediment between pillows.
2948	8/23/2015	04:10:26	45.94499	-129.98203	314.6	2.3	1516.0	1518.3	Fish.
2949	8/23/2015	04:11:15	45.94511	-129.98219	314.5	2.0	1515.7	1517.7	Large feature to port (fissure?)
2950	8/23/2015	04:11:53	45.94518	-129.98231	315.4	11.1	1516.5	1527.5	Crossing a fissure.
2952	8/23/2015	04:12:23	45.94528	-129.98244	315.4	6.3	1516.1	1522.4	Other side of the fissure.
2953	8/23/2015	04:13:33	45.94542	-129.98266	314.5	3.1	1515.5	1518.5	Approaching Spanish Steps and Trevi with the benchmark just beyond.
2955	8/23/2015	04:14:45	45.94556	-129.98286	314.0	2.2	1517.7	1519.9	Lobates and sediment.
2956	8/23/2015	04:15:36	45.94569	-129.98301	314.2	2.6	1517.7	1520.3	Heavily sedimented area.
2957	8/23/2015	04:15:40	45.94570	-129.98302	314.7	2.6	1517.7	1520.3	Sheet flow.
2959	8/23/2015	04:17:00	45.94589	-129.98322	327.1	2.2	1519.1	1521.4	Fish.
2961	8/23/2015	04:18:21	45.94612	-129.98339	326.5	1.3	1519.8	1521.1	Following lineated sheet flow. Looks like we will be 50m due east of Spanish Steps.
2962	8/23/2015	04:19:00	45.94620	-129.98346	320.3	1.6	1519.6	1521.1	Panning to the west a bit.
2963	8/23/2015	04:19:44	45.94630	-129.98357	320.9	3.3	1516.4	1519.7	Orange sediment with pressure ridge on the west. Small mound with a little staining.
2964	8/23/2015	04:19:54	45.94633	-129.98359	325.3	3.3	1515.8	1519.1	Passing due west of Trevi.
2967	8/23/2015	04:20:36	45.94642	-129.98369	324.9	1.9	1516.3	1518.3	Coming up along a fault or fissure.
2968	8/23/2015	04:21:04	45.94645	-129.98375	278.5	1.5	1517.3	1518.8	There is the benchmark.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
2969	8/23/2015	04:21:31	45.94645	-129.98380	277.9	2.3	1517.8	1520.1	Looks like the navigation target is about the same as today's navigation.
2971	8/23/2015	04:22:21	45.94646	-129.98384	244.9	1.4	1519.1	1520.5	Marker 63 at Benchmark AX-302 at Trevi.
2972	8/23/2015	04:23:20	45.94646	-129.98385	245.0	1.0	1519.5	1520.5	Mkr-63 is attached to the old triangular benchmark.
2973	8/23/2015	04:23:50	45.94646	-129.98385	245.5	0.9	1519.5	1520.4	5m 340 offset between target and actual.
2975	8/23/2015	04:24:35	45.94646	-129.98385	245.4	0.9	1519.5	1520.4	Retrieving the pressure instrument and placing it on the benchmark.
2976	8/23/2015	04:24:55	45.94646	-129.98385	245.2	1.0	1519.5	1520.4	Adjusting the placement on the benchmark.
2977	8/23/2015	04:25:08	45.94646	-129.98385	245.1	0.9	1519.5	1520.4	HIGHLIGHTS: HD highlights start Highlights on for a bit.
2978	8/23/2015	04:25:32	45.94646	-129.98385	245.2	1.0	1519.5	1520.4	Placement looks good.
2979	8/23/2015	04:25:52	45.94646	-129.98385	245.2	1.0	1519.5	1520.4	PRESSURE: Start AX-302.
2981	8/23/2015	04:26:07	45.94646	-129.98385	245.1	1.0	1519.5	1520.4	File name is 1508230425.ax302.
2982	8/23/2015	04:26:28	45.94646	-129.98385	245.1	1.0	1519.5	1520.4	HIGHLIGHTS: HD highlights stop
2984	8/23/2015	04:29:00	45.94646	-129.98385	245.2	1.0	1519.5	1520.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
2985	8/23/2015	04:29:08	45.94646	-129.98385	245.2	1.0	1519.4	1520.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
2995	8/23/2015	04:47:28	45.94646	-129.98385	245.2	1.0	1519.4	1520.3	HIGHLIGHTS: HD highlights stop Done. AX-302.
2996	8/23/2015	04:47:46	45.94646	-129.98385	245.2	1.0	1519.3	1520.3	Next a mini-BPR will be deployed.
2998	8/23/2015	04:48:25	45.94646	-129.98385	245.1	1.0	1519.3	1520.3	Removing the pressure instrument from the benchmark.
2999	8/23/2015	04:49:49	45.94646	-129.98386	244.1	1.0	1519.3	1520.3	The stbd biobox is coming around.
3001	8/23/2015	04:50:13	45.94646	-129.98386	244.1	1.0	1519.3	1520.3	Biobox is open.
3002	8/23/2015	04:50:52	45.94646	-129.98386	243.9	1.1	1519.3	1520.3	Looks like Yellow #6 is the lucky BPR.
3003	8/23/2015	04:51:35	45.94646	-129.98387	245.2	1.0	1519.3	1520.3	Placing Yellow#6 mini-BPR on the benchmark.
3004	8/23/2015	04:51:50	45.94646	-129.98387	244.8	1.0	1519.3	1520.3	**DEPLOY: SIO-BPR** Yellow #6 at AX-305.
3005	8/23/2015	04:51:54	45.94646	-129.98387	244.8	1.0	1519.3	1520.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3006	8/23/2015	04:51:59	45.94646	-129.98387	244.5	1.0	1519.3	1520.3	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
3008	8/23/2015	04:52:04	45.94646	-129.98387	244.5	1.0	1519.3	1520.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3009	8/23/2015	04:52:53	45.94646	-129.98387	244.3	1.0	1519.3	1520.3	Stowing biobox.
3010	8/23/2015	04:53:08	45.94646	-129.98388	244.4	1.0	1519.4	1520.3	Nice photo of the benchmark and mini-BPR.
3012	8/23/2015	04:54:11	45.94644	-129.98390	198.3	4.5	1515.6	1520.1	Next benchmark is at 295deg and 2247m to AX-101 (Caldera Center).
3013	8/23/2015	04:54:52	45.94633	-129.98375	114.0	4.0	1514.7	1518.8	There are white mounds with worms.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3015	8/23/2015	04:57:30	45.94610	-129.98309	119.7	21.8	1497.3	1519.1	Picking up speed over to AX-101. Estimated arrival time is 06:40.
3016	8/23/2015	04:57:51	45.94608	-129.98303	118.5	28.1	1492.7	1520.8	Jason will be towed so its heading is 180deg opposite the direction it will be towed.
3017	8/23/2015	04:58:01	45.94607	-129.98301	118.7	30.0	1490.7	1520.7	We are off the bottom and no logging.
3018	8/23/2015	06:26:30	45.95472	-130.00902	117.0	190.9	1336.4	1527.4	We are arriving at the Central Caldera AX-101 benchmark but are holding off the bottom since Sentry is passing nearby.
3019	8/23/2015	06:28:25	45.95482	-130.00921	116.4	185.9	1343.1	1529.0	Looks like Sentry will be far enough off our path to head on down to the bottom.
3022	8/23/2015	06:41:15	45.95523	-130.00986	128.3	3.3	1528.6	1531.9	Jason on bottom
3023	8/23/2015	06:42:00	45.95524	-130.00987	128.3	3.3	1528.6	1531.9	Shift change.
3026	8/23/2015	06:44:19	45.95526	-130.00990	128.4	3.0	1528.6	1531.6	NAV: Doppler Reset
3027	8/23/2015	06:44:42	45.95525	-130.00991	146.2	3.3	1528.5	1531.8	We are very close to the navigation point for this benchmark.
3029	8/23/2015	06:47:05	45.95511	-130.00989	203.2	5.3	1525.8	1531.2	We are now looking for AX-101 benchmark.
3030	8/23/2015	06:47:18	45.95513	-130.00994	203.0	5.7	1526.0	1531.7	Looking around.
3032	8/23/2015	06:48:13	45.95517	-130.01002	344.0	3.3	1528.6	1531.9	There it is.
3034	8/23/2015	06:51:08	45.95525	-130.01003	241.0	0.8	1531.1	1531.9	We will now deploy pressure instrument at AX-101 .
3036	8/23/2015	06:52:49	45.95525	-130.01004	240.4	0.8	1531.1	1531.9	Deploying at AX-101 now.
3037	8/23/2015	06:54:01	45.95525	-130.01004	240.5	0.8	1531.0	1531.8	PRESSURE: Start Pressure recording starts: 6:53.
3040	8/23/2015	06:56:18	45.95525	-130.01004	240.4	0.8	1531.0	1531.8	We got a frame grab of how well we are centered.
3041	8/23/2015	06:57:43	45.95525	-130.01004	240.5	0.8	1531.0	1531.8	The last entry was wrong. The pressure measurement is still going.
3051	8/23/2015	07:14:25	45.95525	-130.01003	240.3	0.8	1531.0	1531.8	PRESSURE: End 7:14.
3052	8/23/2015	07:14:40	45.95525	-130.01003	240.2	0.8	1530.9	1531.8	We are now done with AX101 measurement.
3053	8/23/2015	07:15:31	45.95525	-130.01003	240.3	0.8	1531.0	1531.8	**SAMPLE: Geo J823-geo-01**. We are going to try to sample some of the dust on the benchmark.
3055	8/23/2015	07:16:37	45.95525	-130.01003	240.3	0.8	1531.0	1531.8	J823-geo-01 cont. We will use the slurp sampler to get some of this dust.
3056	8/23/2015	07:16:50	45.95525	-130.01003	240.4	0.8	1531.0	1531.8	Sampling now J823-geo-01 suctioning volcanic ash(?) off the benchmark.
3057	8/23/2015	07:17:08	45.95525	-130.01003	240.5	0.8	1531.0	1531.8	Zoomed in on the Sci cam to see the suction.
3059	8/23/2015	07:18:34	45.95525	-130.01003	240.2	0.8	1531.0	1531.8	This much sampling is good.
3060	8/23/2015	07:18:51	45.95525	-130.01003	240.4	0.8	1531.0	1531.8	We will now leave to go to AX-307 (West Magnesia).
3061	8/23/2015	07:19:43	45.95525	-130.01002	240.1	3.2	1528.7	1531.9	Jason off bottom
3062	8/23/2015	07:19:57	45.95525	-130.01002	240.3	5.4	1526.5	1531.9	Transit for approximately for an hour.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3066	8/23/2015	08:18:33	45.94543	-130.00892	357.2	4.7	1538.4	1543.1	Jason on bottom
3067	8/23/2015	08:19:08	45.94542	-130.00893	310.8	3.4	1539.4	1542.7	We are now going to AX-307 for a pressure reading.
3069	8/23/2015	08:20:27	45.94537	-130.00907	280.9	2.8	1541.1	1543.8	Here is the benchmark.
3070	8/23/2015	08:20:49	45.94538	-130.00914	290.1	1.9	1541.9	1543.8	We are very close to the navigation point.
3071	8/23/2015	08:21:31	45.94542	-130.00919	190.8	1.7	1541.9	1543.6	We will also deploy a mini-BPR at this site.
3074	8/23/2015	08:25:20	45.94540	-130.00919	173.6	0.8	1543.1	1543.9	PRESSURE: Start We will try to make the placement better.
3076	8/23/2015	08:26:23	45.94540	-130.00919	173.5	0.8	1543.1	1543.9	We placed it again and now giving a little push to place it in the center.
3077	8/23/2015	08:27:04	45.94540	-130.00919	173.5	0.8	1543.1	1543.8	It is sitting up on the back a little so we are moving a bit more.
3078	8/23/2015	08:27:10	45.94540	-130.00919	173.5	0.8	1543.1	1543.8	It looks better.
3080	8/23/2015	08:28:06	45.94540	-130.00919	173.5	0.8	1543.1	1543.9	Much better. We will start the pressure now.
3081	8/23/2015	08:28:14	45.94540	-130.00919	173.5	0.8	1543.1	1543.9	PRESSURE: Start 8:28
3084	8/23/2015	08:29:24	45.94540	-130.00919	173.5	0.8	1543.1	1543.9	NAV: Doppler Reset
3095	8/23/2015	08:49:16	45.94540	-130.00919	173.7	0.8	1543.1	1543.9	PRESSURE: End 8:49 Ended the pressure recording.
3096	8/23/2015	08:49:32	45.94540	-130.00919	173.7	0.8	1543.1	1543.9	We will now deploy a Mini-BPR here.
3099	8/23/2015	08:53:48	45.94540	-130.00919	173.6	0.8	1543.0	1543.8	**DEPLOY: SIO-BPR** J823-SIO-BPR 7 from biobox.
3101	8/23/2015	08:55:32	45.94540	-130.00919	173.7	0.8	1543.1	1543.8	We are now happy with the placement of the J823-SIO-BPR 7.
3103	8/23/2015	08:56:39	45.94539	-130.00918	142.1	4.3	1539.4	1543.6	We are now heading to AX-106 (ASHES).
3104	8/23/2015	08:56:43	45.94538	-130.00916	123.1	5.0	1538.8	1543.8	Jason off bottom
3108	8/23/2015	10:08:02	45.93484	-130.01134	13.7	5.7	1536.2	1542.0	Jason on bottom
3109	8/23/2015	10:09:08	45.93479	-130.01135	217.7	3.0	1539.1	1542.1	We are going towards AX-106.
3112	8/23/2015	10:12:24	45.93450	-130.01169	137.4	2.0	1540.0	1542.0	Here we are.
3113	8/23/2015	10:12:51	45.93448	-130.01167	118.7	1.5	1540.6	1542.1	We are now at Benchmark AX-106 east of ASHES.
3116	8/23/2015	10:16:08	45.93445	-130.01165	73.9	0.8	1541.2	1541.9	We will take a pressure reading here.
3117	8/23/2015	10:17:42	45.93445	-130.01165	73.7	0.8	1541.1	1541.9	Great placing.
3119	8/23/2015	10:19:00	45.93446	-130.01165	73.8	0.8	1541.1	1541.9	PRESSURE: Start Pressure reading started: 10:18.
3120	8/23/2015	10:19:21	45.93446	-130.01165	73.8	0.8	1541.1	1541.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3121	8/23/2015	10:19:26	45.93446	-130.01165	73.9	0.8	1541.1	1541.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3124	8/23/2015	10:22:12	45.93446	-130.01165	73.7	0.8	1541.1	1541.9	Fight among species (Brittle star leg and little scaleworm? or amphipod?).
3125	8/23/2015	10:22:48	45.93446	-130.01165	73.7	0.8	1541.1	1541.9	Brittle star is being eaten.
3126	8/23/2015	10:23:51	45.93446	-130.01165	73.7	0.8	1541.1	1541.9	Highlights is on for this interesting incident.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3128	8/23/2015	10:24:11	45.93446	-130.01165	73.7	0.8	1541.1	1542.0	Highlights off.
3130	8/23/2015	10:26:35	45.93446	-130.01166	73.7	0.8	1541.1	1542.0	We tried to contact SCPR but we can't talk to it yet.
3131	8/23/2015	10:26:51	45.93446	-130.01166	73.6	0.8	1541.1	1542.0	SCPR is not communicating.
3132	8/23/2015	10:27:31	45.93446	-130.01166	73.6	0.8	1541.1	1542.0	Trial 1 to communicate with SCPR didn't work.
3133	8/23/2015	10:27:48	45.93446	-130.01166	73.6	0.8	1541.1	1542.0	We are trying again now: 10:27
3135	8/23/2015	10:28:08	45.93446	-130.01165	73.6	0.8	1541.1	1542.0	The pressure reading is still going.
3136	8/23/2015	10:28:59	45.93446	-130.01165	73.6	0.8	1541.1	1542.0	NAV: Doppler Reset
3137	8/23/2015	10:29:39	45.93446	-130.01165	73.6	0.8	1541.1	1542.0	We will know if we can communicate with SCPR in 5 minutes.
3138	8/23/2015	10:29:59	45.93446	-130.01165	73.6	0.8	1541.1	1542.0	We will now deploy a mini-BPR here at AX- 106 east of ASHES.
3140	8/23/2015	10:31:11	45.93446	-130.01166	73.6	0.8	1541.1	1542.0	We will wait for the pressure reading to be done before we deploy mini-BPR.
3142	8/23/2015	10:32:12	45.93446	-130.01166	73.6	0.8	1541.2	1542.0	No comms with SCPR again.
3143	8/23/2015	10:32:31	45.93446	-130.01166	73.6	0.8	1541.2	1542.0	We are trying again for the third time to communicate with SCPR.
3146	8/23/2015	10:37:12	45.93446	-130.01166	73.5	0.8	1541.2	1542.0	End Trial 3 for SCPR comm didn't work.
3147	8/23/2015	10:37:24	45.93446	-130.01166	73.5	0.8	1541.2	1542.0	2 minutes until the pressure reading stops.
3148	8/23/2015	10:37:50	45.93446	-130.01165	73.5	0.8	1541.2	1542.0	We couldn't communicate with SCPR at this time.
3150	8/23/2015	10:38:07	45.93446	-130.01165	73.5	0.8	1541.2	1542.0	We are waiting for pressure reading to end before we deploy a mini-BPR.
3151	8/23/2015	10:39:18	45.93446	-130.01165	73.4	0.8	1541.1	1542.0	PRESSURE: End 10:39 End of reading.
3154	8/23/2015	10:42:42	45.93446	-130.01165	73.8	0.9	1541.1	1542.0	**DEPLOY: SIO-BPR** Deployed SIO-BPR #9 at AX-106.
3155	8/23/2015	10:42:57	45.93446	-130.01165	73.5	0.9	1541.1	1542.0	This is Red/Black marked BPR#9.
3157	8/23/2015	10:45:18	45.93447	-130.01165	81.4	0.8	1541.1	1541.9	Repositioning the Mini-BPR #9.
3158	8/23/2015	10:45:52	45.93447	-130.01166	81.6	0.8	1541.2	1542.0	We will now transit to AX-308 (area of S BPR that has been recovered).
3160	8/23/2015	10:47:21	45.93449	-130.01170	77.0	4.6	1537.5	1542.1	Before we do that we will try to find the SCPR mooring.
3161	8/23/2015	10:47:52	45.93450	-130.01172	198.7	4.0	1538.1	1542.0	We will visit the mooring. It should be 10m southwest.
3163	8/23/2015	10:49:22	45.93438	-130.01175	274.1	0.8	1541.1	1541.9	Looking for SCIPR mooring.
3165	8/23/2015	10:50:32	45.93434	-130.01178	293.8	1.5	1540.7	1542.2	Seafloor is covered with brittle stars here as well.
3166	8/23/2015	10:51:03	45.93435	-130.01183	283.4	1.7	1540.9	1542.6	Lots of "mat" but Bill says it's sediment on the lavas here.
3168	8/23/2015	10:52:12	45.93429	-130.01189	359.2	1.4	1540.6	1542.0	The target is SW of the SCIPR.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3169	8/23/2015	10:53:05	45.93440	-130.01187	44.4	2.5	1540.1	1542.6	100 pound Olympic weight with a frame on top roughly 36 inches across - that's what would have been left behind if the mooring released on its own.
3172	8/23/2015	10:57:38	45.93420	-130.01171	231.7	1.4	1540.4	1541.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3175	8/23/2015	11:01:22	45.93439	-130.01207	254.1	1.9	1540.3	1542.2	Still searching for the SCPR mooring. VV from 2013 shows it on a little white circular base.
3176	8/23/2015	11:01:32	45.93441	-130.01208	248.9	2.1	1540.1	1542.2	Sentry is to the NW of us along the wall.
3178	8/23/2015	11:02:22	45.93438	-130.01209	215.5	1.7	1540.5	1542.2	The mooring was 20m to the SW of the benchmark.
3179	8/23/2015	11:03:37	45.93448	-130.01202	325.8	2.3	1539.9	1542.1	So far not seeing the SCPR mooring.
3181	8/23/2015	11:04:43	45.93459	-130.01192	324.6	2.2	1540.4	1542.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3182	8/23/2015	11:04:52	45.93459	-130.01192	324.5	2.3	1540.1	1542.4	We see the SCPR ahead.
3183	8/23/2015	11:05:11	45.93459	-130.01193	324.0	2.3	1540.3	1542.5	There is SCPR! Yippee.
3184	8/23/2015	11:05:41	45.93462	-130.01192	324.0	2.4	1540.1	1542.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3185	8/23/2015	11:05:47	45.93462	-130.01192	322.1	2.0	1540.4	1542.5	Glass spheres are ~10m up. Going to get some visuals on it. Could be the batteries are just dead.
3187	8/23/2015	11:06:10	45.93463	-130.01193	324.6	1.0	1541.5	1542.4	This was deployed in 2013. Not stuck in lava.
3188	8/23/2015	11:06:11	45.93463	-130.01193	323.7	0.9	1541.5	1542.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3189	8/23/2015	11:06:25	45.93463	-130.01193	321.0	0.8	1541.9	1542.6	It looks fine from this angle.
3190	8/23/2015	11:06:48	45.93463	-130.01193	326.6	0.8	1541.8	1542.5	HIGHLIGHTS: HD highlights start SCPR images. Zooming in on the instrument.
3191	8/23/2015	11:07:21	45.93463	-130.01193	326.8	0.8	1541.8	1542.5	Doesn't appear to be far off the old target.
3193	8/23/2015	11:08:31	45.93462	-130.01192	326.7	0.8	1541.8	1542.5	Glenn just made communication with the SCPR.
3194	8/23/2015	11:08:47	45.93462	-130.01192	326.8	0.8	1541.8	1542.5	He's going to talk to it quick.
3195	8/23/2015	11:08:52	45.93462	-130.01192	326.7	0.8	1541.8	1542.5	HIGHLIGHTS: HD highlights stop
3196	8/23/2015	11:09:55	45.93462	-130.01191	326.6	0.8	1541.8	1542.5	Setting up to communicate with the SCPR pressure mooring.
3198	8/23/2015	11:10:47	45.93461	-130.01191	326.6	0.8	1541.8	1542.5	Zooming in on the mooring with the pilot cam.
3199	8/23/2015	11:11:41	45.93461	-130.01190	326.7	0.8	1541.8	1542.5	Zooming in and taking a good look.
3201	8/23/2015	11:12:06	45.93460	-130.01190	326.7	0.8	1541.8	1542.5	There may be a lit of ash in the groove in the sphere on the mooring.
3202	8/23/2015	11:12:32	45.93460	-130.01190	326.4	0.8	1541.8	1542.5	Looking at what could be ash on the mooring base. Hard to tell what it is.
3204	8/23/2015	11:14:10	45.93460	-130.01189	326.6	0.8	1541.8	1542.6	Location: 45.934588 130.011890 Z=1536m.
3205	8/23/2015	11:14:58	45.93459	-130.01189	326.7	0.8	1541.8	1542.5	There are a few brittle stars on the mooring as well.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3206	8/23/2015	11:15:01	45.93459	-130.01189	326.6	0.8	1541.8	1542.5	NAV: Doppler Reset
3208	8/23/2015	11:16:16	45.93459	-130.01189	326.5	0.8	1541.8	1542.6	Bill says the brittle stars are always here - just so small you don't really notice them.
3209	8/23/2015	11:17:20	45.93459	-130.01189	326.6	0.8	1541.8	1542.6	We're about 20m NW of the benchmark.
3211	8/23/2015	11:18:31	45.93459	-130.01189	322.8	0.8	1541.6	1542.5	We will proceed to AX-308 (to the SE).
3212	8/23/2015	11:19:02	45.93459	-130.01189	322.3	4.2	1538.3	1542.5	AX308 is at the S BPR1 position.
3213	8/23/2015	11:19:38	45.93458	-130.01188	324.1	9.9	1532.7	1542.6	Looking at the mooring floats.
3215	8/23/2015	11:20:48	45.93456	-130.01187	329.4	27.7	1514.4	1542.1	The top of the mooring.
3216	8/23/2015	11:20:53	45.93455	-130.01186	326.6	28.9	1513.3	1542.2	HIGHLIGHTS: HD highlights stop
3217	8/23/2015	11:21:08	45.93457	-130.01187	325.9	33.1	1509.0	1542.1	Everything is intact on the SCPR.
3218	8/23/2015	11:22:33	45.93473	-130.01206	354.7	56.1	1485.4	1541.4	The next benchmark is 1 km to the SE. About 1 hour away.
3219	8/23/2015	11:23:47	45.93485	-130.01222	343.0	74.6	1467.5	1542.0	There is not a BPR at the next benchmark anymore. We recovered it.
3220	8/23/2015	11:24:30	45.93482	-130.01218	338.9	95.7	1446.6	1542.3	We won't be re-deploying a mooring (BPR south). It died on the bench this trip. We will be putting a mini-BPR there this cruise.
3221	8/23/2015	12:57:40	45.93160	-129.99894	26.4	7.7	1524.4	1532.1	Jason is still above the bottom - coming up on benchmark 308 (where the south BPR was located - it was recovered earlier in the cruise).
3223	8/23/2015	12:59:08	45.93162	-129.99893	27.0	4.8	1527.4	1532.2	Jason on bottom
3224	8/23/2015	12:59:38	45.93168	-129.99890	27.3	2.9	1529.1	1531.9	Area of lobate flows with lots of sediment.
3226	8/23/2015	13:00:29	45.93169	-129.99889	25.1	6.3	1525.4	1531.7	Getting our bearings.
3227	8/23/2015	13:01:44	45.93170	-129.99886	84.1	2.2	1529.7	1531.9	Holothurians.
3229	8/23/2015	13:02:28	45.93168	-129.99883	141.9	2.1	1529.4	1531.5	There is the benchmark ahead in the sci cam.
3230	8/23/2015	13:02:51	45.93166	-129.99881	139.3	2.2	1529.5	1531.6	Approaching the benchmark.
3231	8/23/2015	13:03:20	45.93165	-129.99882	150.2	2.5	1529.4	1531.9	There is no marker here but the little flag with reflective tape stands out.
3232	8/23/2015	13:03:39	45.93165	-129.99881	180.8	2.9	1529.0	1531.8	HIGHLIGHTS: HD highlights start Approach to Bmrk AX-308.
3234	8/23/2015	13:04:51	45.93161	-129.99877	268.1	1.7	1530.6	1532.3	This benchmark is in the south-center caldera (where the S BPR used to be).
3235	8/23/2015	13:05:03	45.93161	-129.99877	264.2	1.6	1530.6	1532.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3236	8/23/2015	13:05:16	45.93161	-129.99877	261.8	0.8	1531.4	1532.2	This benchmark looks fairly clean. Some brittle stars.
3237	8/23/2015	13:05:25	45.93161	-129.99877	264.4	1.0	1531.2	1532.2	It's sitting on an inflated lobate.
3238	8/23/2015	13:05:29	45.93161	-129.99877	263.1	1.0	1531.2	1532.3	HIGHLIGHTS: HD highlights stop
3240	8/23/2015	13:06:09	45.93160	-129.99877	267.5	0.8	1531.6	1532.3	input PilotCam (port 3) routed to output FrmGrb1 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
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3241	8/23/2015	13:06:28	45.93161	-129.99878	253.8	1.1	1530.9	1531.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3242	8/23/2015	13:06:53	45.93161	-129.99878	272.2	1.1	1530.9	1532.1	Moving in on the benchmark.
3243	8/23/2015	13:07:19	45.93161	-129.99879	273.6	1.1	1531.0	1532.1	A couple brittle stars have settled into the pressure sensor groove on the benchmark.
3245	8/23/2015	13:08:03	45.93161	-129.99879	273.4	0.9	1531.2	1532.1	We are going to deploy a mini BPR here also.
3246	8/23/2015	13:08:07	45.93161	-129.99879	273.2	0.9	1531.2	1532.1	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3247	8/23/2015	13:08:18	45.93161	-129.99879	273.4	0.9	1531.2	1532.1	Shooing the brittle stars out of the depression in the benchmark.
3248	8/23/2015	13:08:31	45.93161	-129.99879	273.4	1.0	1531.1	1532.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3249	8/23/2015	13:08:31	45.93161	-129.99879	273.3	1.0	1531.1	1532.1	Pressure sensor in the claw.
3250	8/23/2015	13:09:19	45.93161	-129.99879	264.0	1.6	1530.3	1531.8	AX-308 - brittle star shooing.
3252	8/23/2015	13:10:09	45.93161	-129.99879	255.6	0.8	1531.1	1531.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3253	8/23/2015	13:10:25	45.93161	-129.99880	255.9	0.8	1531.1	1531.9	Still holding the sensor with the Jason claw.
3254	8/23/2015	13:10:39	45.93161	-129.99880	255.3	0.8	1531.1	1531.9	Clear of brittle stars.
3255	8/23/2015	13:11:10	45.93161	-129.99880	255.6	0.8	1531.1	1531.9	All brittle stars have fled the depression - with their arms intact. Whew.
3256	8/23/2015	13:11:30	45.93161	-129.99880	255.4	0.8	1531.1	1531.9	Placing the pressure sensor in the groove on the benchmark.
3257	8/23/2015	13:11:36	45.93161	-129.99880	255.6	0.8	1531.1	1531.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3259	8/23/2015	13:12:07	45.93161	-129.99880	255.6	0.8	1531.1	1531.9	Nudging the sensor into place.
3260	8/23/2015	13:12:37	45.93161	-129.99880	255.9	0.8	1531.2	1531.9	Looks good.
3261	8/23/2015	13:12:40	45.93161	-129.99880	256.0	0.8	1531.2	1531.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3262	8/23/2015	13:13:03	45.93161	-129.99880	256.2	0.8	1531.2	1531.9	PRESSURE: Start AX-308 pressure sensor reading.
3263	8/23/2015	13:13:40	45.93161	-129.99880	256.4	0.8	1531.1	1531.9	The file name for this reading is: 1508231312.ax308.
3264	8/23/2015	13:13:49	45.93161	-129.99880	256.3	0.8	1531.2	1531.9	20 minute reading started.
3266	8/23/2015	13:14:59	45.93161	-129.99879	256.2	0.8	1531.2	1531.9	Brittle stars moving about on the benchmark.
3267	8/23/2015	13:15:19	45.93161	-129.99879	256.1	0.8	1531.2	1531.9	Snapping some super scorpio frame grabs.
3268	8/23/2015	13:15:48	45.93161	-129.99879	255.9	0.8	1531.1	1531.9	A brittle star is already climbing around on the pressure sensor.
3270	8/23/2015	13:16:37	45.93161	-129.99879	255.9	0.8	1531.2	1531.9	The BPR is in the stbd biobox. It will be set on top of the benchmark.
3274	8/23/2015	13:23:33	45.93161	-129.99879	256.1	0.8	1531.2	1531.9	Will place the mini-BPR after this sensor reading.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3275	8/23/2015	13:23:52	45.93161	-129.99879	256.3	0.8	1531.2	1531.9	This is the end of the first transect - and the beginning of the second.
3279	8/23/2015	13:28:40	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3280	8/23/2015	13:28:50	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	Getting some framegrabs of this before we pull it up.
3281	8/23/2015	13:28:54	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3282	8/23/2015	13:28:57	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3283	8/23/2015	13:29:51	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3285	8/23/2015	13:30:52	45.93161	-129.99880	256.2	0.8	1531.2	1531.9	There's a crab walking in on the bottom-looking camera. All you can see if his legs. That was weird.
3286	8/23/2015	13:31:44	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	The bottom cam is just behind the basket. Where is that crab?
3288	8/23/2015	13:32:51	45.93161	-129.99880	256.4	0.8	1531.2	1531.9	NAV: Doppler Reset
3289	8/23/2015	13:33:06	45.93161	-129.99880	256.5	0.8	1531.2	1532.0	The position of this benchmark is pretty good.
3290	8/23/2015	13:33:23	45.93161	-129.99880	256.7	0.8	1531.2	1531.9	PRESSURE: End Finished up here at AX-308.
3291	8/23/2015	13:33:29	45.93161	-129.99880	256.7	0.8	1531.2	1532.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3292	8/23/2015	13:33:41	45.93161	-129.99880	256.7	0.8	1531.3	1532.0	Next will deploy a mini-BPR here.
3293	8/23/2015	13:33:54	45.93161	-129.99880	256.9	0.8	1531.2	1532.0	Stowing the pressure sensor in its cradle.
3295	8/23/2015	13:35:07	45.93161	-129.99879	257.3	0.8	1531.2	1532.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3296	8/23/2015	13:35:14	45.93161	-129.99879	256.8	0.8	1531.2	1532.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3297	8/23/2015	13:35:19	45.93161	-129.99879	256.5	0.8	1531.1	1531.9	PRESSURE: Start Deploying the mini-BPR. Opening up the port swing box and grabbing the mini-BPR.
3298	8/23/2015	13:35:37	45.93161	-129.99879	256.8	0.8	1531.2	1532.0	Setting the mini-BPR on the benchmark.
3299	8/23/2015	13:35:53	45.93161	-129.99879	256.4	0.8	1531.2	1532.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3301	8/23/2015	13:36:03	45.93161	-129.99879	257.1	0.8	1531.1	1532.0	Perfect placement just above the AX lettering on the benchmark.
3302	8/23/2015	13:36:03	45.93161	-129.99879	257.1	0.8	1531.1	1532.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3303	8/23/2015	13:36:22	45.93161	-129.99879	256.7	0.8	1531.1	1532.0	Deployed mini-BPR #8 (green and red).
3304	8/23/2015	13:36:57	45.93163	-129.99874	257.4	2.6	1529.5	1532.1	There's the crab. It's moving in on the benchmark.
3305	8/23/2015	13:37:23	45.93161	-129.99869	163.6	6.5	1525.5	1532.0	HIGHLIGHTS: HD highlights stop That's a huge crab. Close to the benchmark.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3306	8/23/2015	13:37:29	45.93161	-129.99867	116.2	6.9	1525.1	1532.0	Jason off bottom
3307	8/23/2015	13:37:46	45.93158	-129.99858	129.9	7.1	1525.2	1532.3	Heading back to benchmark 106 east of ASHES.
3308	8/23/2015	13:37:55	45.93154	-129.99852	129.2	7.5	1524.9	1532.4	Traveling in the water column.
3310	8/23/2015	13:39:01	45.93135	-129.99813	129.8	16.1	1516.5	1532.6	That's the completion of 1 transect - 2 to go. All good.
3311	8/23/2015	15:39:36	45.93439	-130.01217	262.7	25.8	1517.3	1543.1	The mini-BPR deployed was RED #8 (green is the jacket on all of the BPRs)
3313	8/23/2015	15:41:28	45.93443	-130.01185	264.1	25.7	1516.8	1542.6	NAV: Doppler Reset Setting to USBL.
3316	8/23/2015	15:44:05	45.93443	-130.01162	261.7	5.6	1536.9	1542.5	Back on the bottom.
3317	8/23/2015	15:44:40	45.93444	-130.01162	264.2	2.5	1540.3	1542.8	There is some leftover line on the seafloor and weights.
3318	8/23/2015	15:45:13	45.93444	-130.01162	264.6	3.0	1539.8	1542.9	Last time at this site we were just a few meters north of the marker.
3319	8/23/2015	15:45:47	45.93444	-130.01162	264.5	2.7	1540.3	1543.0	Marker/benchmark.
3321	8/23/2015	15:46:25	45.93444	-130.01161	262.7	3.6	1539.0	1542.6	Jason has lost one of the vertical thrusters due to a ground fault.
3322	8/23/2015	15:47:11	45.93444	-130.01161	305.4	2.2	1540.5	1542.7	Swinging around clockwise.
3323	8/23/2015	15:47:18	45.93444	-130.01161	338.2	2.2	1540.4	1542.6	There it is!
3324	8/23/2015	15:47:29	45.93445	-130.01160	358.7	2.2	1540.4	1542.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3325	8/23/2015	15:47:46	45.93445	-130.01161	358.2	2.2	1540.4	1542.6	At AX-106 (E of ASHES) again for its second measurement.
3327	8/23/2015	15:49:21	45.93451	-130.01162	70.7	1.1	1541.6	1542.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3328	8/23/2015	15:49:33	45.93450	-130.01162	71.4	1.1	1541.6	1542.7	Mini-BPR red-black #9 is resting nicely on the benchmark label.
3330	8/23/2015	15:50:31	45.93450	-130.01161	70.6	1.0	1541.6	1542.7	Preparing for the measurement.
3331	8/23/2015	15:51:26	45.93450	-130.01161	70.5	1.1	1541.6	1542.6	HIGHLIGHTS: HD highlights start Instrument on benchmark.
3333	8/23/2015	15:52:13	45.93451	-130.01161	70.7	1.1	1541.6	1542.6	Benchmark in slot and now sliding it along to center it.
3334	8/23/2015	15:52:26	45.93451	-130.01161	70.7	1.1	1541.6	1542.6	Looks good.
3335	8/23/2015	15:52:37	45.93451	-130.01161	70.7	1.1	1541.6	1542.6	HIGHLIGHTS: HD highlights start AX-106 begin.
3336	8/23/2015	15:52:56	45.93451	-130.01161	70.8	1.1	1541.6	1542.6	1508231552.ax106 is the data file.
3337	8/23/2015	15:53:48	45.93451	-130.01160	70.8	1.1	1541.6	1542.6	HIGHLIGHTS: HD highlights stop
3348	8/23/2015	16:13:03	45.93451	-130.01160	70.3	1.1	1541.5	1542.6	HIGHLIGHTS: HD highlights stop AX-106 end of recording.
3349	8/23/2015	16:13:24	45.93451	-130.01161	70.2	1.1	1541.5	1542.6	Retrieving the recorder.
3350	8/23/2015	16:13:50	45.93451	-130.01161	70.6	1.0	1541.6	1542.6	Recorder in the basket.
3352	8/23/2015	16:14:18	45.93451	-130.01161	72.2	1.6	1541.3	1542.9	Next is the SCPR release so the ship is being sent south to the site.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3353	8/23/2015	16:15:43	45.93450	-130.01164	71.6	3.9	1538.8	1542.7	The ship is being moved to be out of the way of the mooring's release.
3354	8/23/2015	16:16:02	45.93450	-130.01166	145.8	4.0	1538.7	1542.7	Vehicle has to be pointed at the mooring for the release.
3357	8/23/2015	16:18:08	45.93432	-130.01170	178.7	3.8	1538.9	1542.7	The SCPR mooring is to the NW of the benchmark.
3358	8/23/2015	16:18:24	45.93430	-130.01170	179.7	3.3	1539.0	1542.2	Moving ship south of the site so the mooring will come up in front of the ship.
3362	8/23/2015	16:25:26	45.93387	-130.01173	178.4	3.5	1539.2	1542.6	RSN cable crossing
3369	8/23/2015	16:37:30	45.93240	-130.01171	180.3	4.5	1537.6	1542.1	Power to the modem for the release.
3370	8/23/2015	16:37:45	45.93242	-130.01171	34.3	4.9	1537.0	1541.8	Turning Jason to face the SCPR.
3373	8/23/2015	16:41:22	45.93200	-130.01173	357.1	5.3	1537.0	1542.3	Ship is about 320m south of the SCPR and will move further south once it is released.
3374	8/23/2015	16:41:31	45.93199	-130.01173	356.4	4.8	1537.5	1542.3	Still waiting to hear from the SCPR with the modem.
3376	8/23/2015	16:42:30	45.93185	-130.01174	354.0	6.1	1536.7	1542.8	NAV: Doppler Reset To USBL.
3377	8/23/2015	16:43:00	45.93179	-130.01174	354.5	3.9	1537.7	1541.7	Failed to sync this time.
3378	8/23/2015	16:43:13	45.93174	-130.01173	359.0	5.5	1536.3	1541.9	Coming up 20m off the bottom.
3380	8/23/2015	16:44:17	45.93153	-130.01172	0.4	20.8	1521.3	1542.1	Jason is approximately 320m away from the SCPR.
3381	8/23/2015	16:44:40	45.93146	-130.01173	358.2	25.5	1516.5	1542.0	We are at 20m above bottom.
3383	8/23/2015	16:47:14	45.93099	-130.01174	1.1	25.6	1516.7	1542.3	Sync failed for the second time. Attempting to communicate again.
3385	8/23/2015	16:49:32	45.93095	-130.01175	357.5	24.8	1517.5	1542.3	Communication has been established and it says we are 417m away from the SCPR.
3388	8/23/2015	16:52:07	45.93058	-130.01162	357.3	25.5	1517.4	1542.9	Sending the burn command.
3389	8/23/2015	16:52:19	45.93058	-130.01162	357.7	25.3	1517.6	1542.9	Should take 5-10 minutes to finish the burn.
3391	8/23/2015	16:54:25	45.93058	-130.01161	358.0	25.3	1517.6	1542.9	Burn wire active.
3393	8/23/2015	16:56:45	45.93058	-130.01161	358.0	25.3	1517.6	1542.9	Range is 450m at 2 minutes of the burn. Should still be on the bottom.
3395	8/23/2015	16:58:48	45.93058	-130.01161	357.9	25.3	1517.6	1542.9	Still burning.
3400	8/23/2015	17:06:46	45.93058	-130.01161	357.9	25.3	1517.6	1542.9	12 minutes into the burn and it has not released.
3401	8/23/2015	17:07:53	45.93058	-130.01161	357.9	25.3	1517.6	1542.9	Resending the burn commands.
3406	8/23/2015	17:15:06	45.93058	-130.01161	357.9	25.2	1517.6	1542.8	Still on the bottom.
3409	8/23/2015	17:18:15	45.93058	-130.01160	358.0	25.2	1517.6	1542.8	Not released but acknowledged the burn.
3413	8/23/2015	17:24:41	45.93058	-130.01160	358.0	25.2	1517.6	1542.8	Lost communication with SCPR.
3414	8/23/2015	17:25:42	45.93058	-130.01160	358.1	25.2	1517.6	1542.8	Still can range it at 450m away.
3417	8/23/2015	17:29:22	45.93058	-130.01160	358.1	25.3	1517.6	1542.9	Communication is back with SCPR.
3423	8/23/2015	17:38:47	45.93058	-130.01160	358.0	25.2	1517.6	1542.7	Initiated another burn.
3429	8/23/2015	17:49:22	45.93058	-130.01161	358.1	25.2	1517.6	1542.7	Looks like it released!

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3431	8/23/2015	17:50:21	45.93061	-130.01162	0.8	25.2	1517.6	1542.7	Range is 485m.
3432	8/23/2015	17:53:06	45.93117	-130.01162	0.9	53.1	1489.2	1542.2	Estimate it will take 40 minutes to be on the surface.
3433	8/23/2015	18:00:10	45.93074	-130.01180	25.2	196.7	1344.9	1541.6	Lost modem communication with SCPR-could be shielded.
3436	8/23/2015	20:28:21	45.94543	-130.00917	113.9	2.0	1541.8	1543.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3437	8/23/2015	20:28:44	45.94544	-130.00913	147.4	2.0	1542.0	1543.9	At AX-307 (W of Magnesia - way west….)
3439	8/23/2015	20:29:02	45.94543	-130.00911	178.1	2.0	1542.1	1544.1	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
3440	8/23/2015	20:29:09	45.94543	-130.00912	175.8	1.8	1542.3	1544.1	input SciCam (port 1) routed to output FrmGrb2 (port 2)
3441	8/23/2015	20:29:28	45.94543	-130.00912	176.6	1.3	1542.9	1544.2	Lineated sheet flow
3443	8/23/2015	20:31:25	45.94543	-130.00912	177.0	0.8	1543.7	1544.4	input SciCam (port 1) routed to output FrmGrb1 (port 1)
3444	8/23/2015	20:31:25	45.94543	-130.00912	177.0	0.8	1543.7	1544.4	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3445	8/23/2015	20:31:46	45.94543	-130.00912	177.0	0.8	1543.7	1544.4	Looking at the pressure recorder that was left on our first pass through here of the dive.
3447	8/23/2015	20:32:32	45.94543	-130.00912	176.8	0.8	1543.6	1544.4	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3448	8/23/2015	20:32:54	45.94543	-130.00912	176.5	0.8	1543.7	1544.4	Manipulator grabbing our pressure sensor to place on the benchmark.
3449	8/23/2015	20:33:09	45.94543	-130.00911	176.5	0.8	1543.6	1544.3	NAV: Doppler Reset
3450	8/23/2015	20:33:46	45.94543	-130.00911	176.2	0.8	1543.6	1544.3	Positioning the pressure sensor on the benchmark.
3452	8/23/2015	20:34:03	45.94543	-130.00911	176.0	0.8	1543.6	1544.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3453	8/23/2015	20:34:32	45.94543	-130.00911	176.6	0.8	1543.6	1544.3	Sensor positioned.
3454	8/23/2015	20:34:33	45.94543	-130.00911	176.5	0.8	1543.6	1544.4	input SciCam (port 1) routed to output FrmGrb2 (port 2)
3455	8/23/2015	20:34:52	45.94543	-130.00911	176.6	0.8	1543.6	1544.3	PRESSURE: Start
3456	8/23/2015	20:35:19	45.94543	-130.00911	176.6	0.8	1543.6	1544.4	Pressure measurement at AX-307 (Mkr 127)
3458	8/23/2015	20:36:26	45.94543	-130.00911	176.9	0.8	1543.6	1544.3	Filename 1508232034.AX307
3459	8/23/2015	20:37:52	45.94543	-130.00912	176.6	0.8	1543.6	1544.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3461	8/23/2015	20:38:08	45.94543	-130.00912	176.5	0.8	1543.6	1544.3	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
3469	8/23/2015	20:53:58	45.94543	-130.00912	176.9	0.8	1543.6	1544.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
3471	8/23/2015	20:54:06	45.94543	-130.00912	176.5	0.8	1543.7	1544.4	PRESSURE: End

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3472	8/23/2015	20:54:28	45.94543	-130.00912	176.5	0.8	1543.7	1544.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
3473	8/23/2015	20:55:06	45.94543	-130.00912	176.8	0.8	1543.7	1544.5	Returning pressure recorder to Jason porch.
3474	8/23/2015	20:56:02	45.94531	-130.00911	178.8	5.4	1539.1	1544.5	Moving north toward AX-101 in the central caldera.
3477	8/23/2015	21:53:48	45.95518	-130.00976	135.1	13.2	1518.8	1531.9	15 meters from the benchmark.
3479	8/23/2015	21:54:56	45.95527	-130.00981	205.6	3.7	1528.9	1532.5	Bottom in sight.
3480	8/23/2015	21:55:05	45.95525	-130.00982	206.7	3.4	1529.1	1532.5	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
3481	8/23/2015	21:55:49	45.95519	-130.00989	261.8	4.0	1528.1	1532.0	Marker in sight.
3483	8/23/2015	21:56:14	45.95523	-130.00997	302.8	3.6	1528.7	1532.3	Benchmark in sight.
3484	8/23/2015	21:56:32	45.95526	-130.00998	268.0	3.4	1529.0	1532.4	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3485	8/23/2015	21:56:43	45.95527	-130.00998	241.9	3.6	1528.8	1532.4	input SciCam (port 1) routed to output FrmGrb1 (port 1)
3486	8/23/2015	21:56:53	45.95527	-130.00999	240.5	3.5	1528.9	1532.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3487	8/23/2015	21:57:16	45.95526	-130.00999	239.0	3.1	1529.4	1532.5	At AX-101. This is the benchmark that was suction sampled for volcanic ash last time around.
3489	8/23/2015	21:58:15	45.95526	-130.01000	235.6	1.0	1531.5	1532.5	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3490	8/23/2015	21:58:21	45.95526	-130.01000	233.4	1.1	1531.4	1532.5	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
3491	8/23/2015	21:58:50	45.95526	-130.01000	234.8	1.1	1531.4	1532.5	Photos taken with the SuperScorpio camera.
3493	8/23/2015	22:01:50	45.95526	-130.01000	234.4	1.1	1531.5	1532.5	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3495	8/23/2015	22:02:19	45.95526	-130.01000	233.9	1.0	1531.5	1532.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3496	8/23/2015	22:02:40	45.95526	-130.01000	233.9	1.1	1531.4	1532.5	**SAMPLE: Geo J823-Geo-01** suction sample of particles (ash?) on the benchmark AX-101 surface. Added to previous suction at the same site and material.
3497	8/23/2015	22:02:46	45.95526	-130.01000	234.0	1.1	1531.4	1532.5	HIGHLIGHTS: HD highlights start
3500	8/23/2015	22:04:07	45.95527	-130.01000	234.0	1.1	1531.4	1532.5	Lots of black particles being sucked up; particles are concentrated at the rim of benchmark.
3501	8/23/2015	22:05:46	45.95527	-130.01000	234.5	1.1	1531.4	1532.5	Suctioning ended.
3502	8/23/2015	22:05:48	45.95527	-130.01000	234.3	1.1	1531.4	1532.5	HIGHLIGHTS: HD highlights stop
3504	8/23/2015	22:07:24	45.95527	-130.01000	235.0	1.1	1531.4	1532.5	Official benchmark location: 45.9552 -130.01
3505	8/23/2015	22:07:27	45.95527	-130.01000	234.7	1.1	1531.4	1532.5	input BrowCam (port 2) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3506	8/23/2015	22:07:33	45.95527	-130.01000	234.7	1.1	1531.4	1532.5	PRESSURE: Start
3508	8/23/2015	22:08:14	45.95527	-130.01000	234.1	1.1	1531.5	1532.5	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
3509	8/23/2015	22:08:36	45.95527	-130.01000	234.0	1.1	1531.5	1532.5	Hit start a tiny bit early. Filename: 1508232207.ax101.
3514	8/23/2015	22:16:10	45.95526	-130.01000	233.6	1.1	1531.5	1532.6	Note that the sample we just took is being added to particles suctioned here the first time through.
3521	8/23/2015	22:28:42	45.95526	-130.00998	233.7	1.1	1531.5	1532.6	PRESSURE: End
3522	8/23/2015	22:29:12	45.95526	-130.00997	233.9	1.1	1531.6	1532.6	Putting the sensor back onto the porch.
3524	8/23/2015	22:30:10	45.95528	-130.00995	237.4	6.0	1526.3	1532.3	Leaving AX-101. Heading toward a rendezvous with Sentry and the next benchmark.
3526	8/24/2015	01:30:40	45.94659	-129.98377	157.4	88.2	1432.7	1520.9	Still transiting to Trevi benchmark AX-302.
3527	8/24/2015	01:33:25	45.94651	-129.98372	167.6	15.0	1479.0	1494.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3528	8/24/2015	01:33:38	45.94651	-129.98372	170.1	35.0	1484.9	1519.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3530	8/24/2015	01:35:20	45.94650	-129.98372	188.8	2.0	1516.7	1518.7	Jason on bottom
3531	8/24/2015	01:35:41	45.94650	-129.98372	296.2	1.2	1516.7	1517.9	Here in the vicinity of AX-301 benchmark (Trevi area).
3533	8/24/2015	01:36:10	45.94648	-129.98378	227.5	2.7	1517.2	1519.9	There's the benchmark - right in front of us. Not even on the bottom a minute before we found it.
3534	8/24/2015	01:36:53	45.94646	-129.98384	219.2	3.8	1517.2	1521.0	The benchmark is right on the edge of the caldera wall.
3535	8/24/2015	01:37:35	45.94645	-129.98388	222.4	0.8	1520.2	1521.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3537	8/24/2015	01:38:10	45.94645	-129.98388	219.3	0.8	1520.1	1520.9	Approaching the benchmark. There is a mini-BPR here sitting on the benchmark; deployed earlier on this dive.
3538	8/24/2015	01:38:42	45.94645	-129.98388	219.5	0.9	1520.0	1520.9	Grabbing the pressure sensor handle and setting it on the benchmark.
3539	8/24/2015	01:39:53	45.94645	-129.98388	219.3	0.9	1520.0	1520.9	Positioning the pressure sensor in the groove on the benchmark.
3541	8/24/2015	01:40:25	45.94645	-129.98388	219.3	0.9	1520.0	1520.9	Zooming in to position it perfectly.
3542	8/24/2015	01:40:52	45.94645	-129.98388	219.0	0.9	1520.1	1520.9	PRESSURE: Start AX-302 pressure sensor reading.
3543	8/24/2015	01:40:55	45.94645	-129.98388	219.2	0.9	1520.0	1520.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3544	8/24/2015	01:41:05	45.94645	-129.98388	219.1	0.9	1520.0	1520.9	NAV: Doppler Reset
3545	8/24/2015	01:41:26	45.94645	-129.98388	218.9	0.9	1520.1	1520.9	2 little pressure sensors all in a row.
3548	8/24/2015	01:44:59	45.94645	-129.98388	219.1	0.9	1520.0	1520.9	The pressure sensor in the background (green) is the "mini BPR".

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3549	8/24/2015	01:45:25	45.94645	-129.98389	218.9	0.9	1520.0	1520.9	Zooming in on the possible ash around the edges of the benchmark. It is black and really looks like ash.
3551	8/24/2015	01:47:24	45.94645	-129.98389	219.1	0.9	1520.0	1520.9	The cement benchmarks are 150 pounds.
3552	8/24/2015	01:47:48	45.94645	-129.98389	219.2	0.9	1520.1	1520.9	Hydroids on the flag line.
3554	8/24/2015	01:48:54	45.94645	-129.98389	218.9	0.9	1520.1	1520.9	Not sure they are hydroids but they are a stalked animal.
3555	8/24/2015	01:49:11	45.94645	-129.98389	219.1	0.8	1520.1	1520.9	The numbers on the markers are getting covered with mat and biota.
3556	8/24/2015	01:49:55	45.94645	-129.98389	219.1	0.9	1520.1	1520.9	More sea stars on the seafloor - not as many as at the AX-307 earlier.
3558	8/24/2015	01:50:10	45.94645	-129.98389	219.0	0.9	1520.1	1520.9	Zooming in and out on Mkr-136.
3559	8/24/2015	01:50:35	45.94645	-129.98388	219.0	0.9	1520.1	1520.9	Rattail is interested in the pressure sensor especially the mini BPR.
3560	8/24/2015	01:51:18	45.94645	-129.98388	218.9	0.9	1520.1	1520.9	HIGHLIGHTS: HD highlights start Rattail enamored with the whole situation.
3562	8/24/2015	01:52:08	45.94645	-129.98388	218.7	0.9	1520.1	1520.9	Rattail hanging around the area. Bill is following it with the sci cam.
3563	8/24/2015	01:53:20	45.94645	-129.98388	218.9	0.9	1520.1	1520.9	HIGHLIGHTS: HD highlights stop
3564	8/24/2015	01:53:34	45.94645	-129.98388	218.6	0.9	1520.1	1520.9	Shrimp.
3566	8/24/2015	01:54:10	45.94645	-129.98388	219.0	0.9	1520.1	1520.9	Backstroking shrimp.
3569	8/24/2015	01:59:08	45.94645	-129.98388	219.5	0.9	1520.1	1521.0	AX-302 data file: 1508240140.ax302
3571	8/24/2015	02:00:19	45.94645	-129.98388	218.9	0.9	1520.1	1520.9	PRESSURE: End AX-302 pressure sensor reading finished.
3572	8/24/2015	02:00:47	45.94646	-129.98388	219.2	0.8	1520.1	1520.9	Placing the sensor in the cradle.
3573	8/24/2015	02:01:24	45.94646	-129.98389	236.8	2.8	1518.4	1521.2	Jason off bottom
3575	8/24/2015	02:02:28	45.94668	-129.98421	314.6	6.5	1516.5	1522.9	Out of here. Next stop AX-309 at the RSN primary node. Another hour or so.
3576	8/24/2015	03:15:53	45.93843	-129.97219	112.9	6.4	1517.6	1524.0	There's the bottom.
3578	8/24/2015	03:17:02	45.93849	-129.97224	51.1	4.9	1521.0	1525.8	There is the marker and benchmark at AX-309 at the RSN primary node.
3579	8/24/2015	03:17:24	45.93849	-129.97220	42.9	2.6	1523.3	1525.8	This benchmark does not have a mini BRP on it.
3580	8/24/2015	03:17:31	45.93848	-129.97218	41.5	1.0	1523.0	1524.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3581	8/24/2015	03:17:35	45.93847	-129.97217	37.0	1.1	1522.9	1524.0	NAV: Doppler Reset To USBL.
3582	8/24/2015	03:17:37	45.93847	-129.97217	35.3	1.1	1522.8	1523.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3584	8/24/2015	03:18:17	45.93848	-129.97212	300.6	1.4	1522.7	1524.0	Offset with marker target is 340deg at 14 m.
3585	8/24/2015	03:18:50	45.93853	-129.97214	241.6	3.2	1523.9	1527.1	This is the second visit to AX-309 on this dive.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3587	8/24/2015	03:20:07	45.93851	-129.97214	245.4	0.8	1527.1	1527.8	Jason settled on bottom in front of the benchmark.
3588	8/24/2015	03:20:55	45.93851	-129.97214	249.4	1.4	1527.1	1528.5	Small adjustment on the landing. Marker 130 at benchmark AX-309.
3589	8/24/2015	03:21:07	45.93851	-129.97214	249.4	0.9	1527.1	1528.0	Retrieving the pressure instrument from the basket.
3590	8/24/2015	03:21:59	45.93851	-129.97214	250.3	0.8	1527.0	1527.7	Placing instrument on the benchmark.
3592	8/24/2015	03:22:08	45.93851	-129.97214	249.7	0.8	1527.0	1527.7	HIGHLIGHTS: HD highlights start
3593	8/24/2015	03:23:05	45.93852	-129.97214	249.9	0.8	1527.0	1527.8	Nudging the instrument in the landing pad.
3594	8/24/2015	03:23:16	45.93852	-129.97214	249.9	0.8	1527.0	1527.7	And a little more in the other direction.
3595	8/24/2015	03:23:36	45.93852	-129.97214	250.0	0.8	1527.0	1527.8	PRESSURE: Start AX-309 begin.
3596	8/24/2015	03:23:51	45.93852	-129.97214	249.9	0.8	1527.0	1527.7	1508240323.ax309 is the data file.
3598	8/24/2015	03:24:06	45.93852	-129.97214	250.1	0.8	1527.0	1527.7	HIGHLIGHTS: HD highlights stop
3602	8/24/2015	03:30:37	45.93852	-129.97214	249.9	0.8	1527.0	1527.7	Fish approaching.
3603	8/24/2015	03:30:58	45.93852	-129.97214	249.9	0.8	1527.0	1527.7	Taking some framegrabs of the approaching fish.
3605	8/24/2015	03:32:26	45.93852	-129.97214	249.8	0.8	1527.0	1527.7	Frame_Grab:
3612	8/24/2015	03:44:37	45.93851	-129.97214	250.0	0.8	1526.9	1527.7	PRESSURE: End AX-309 end.
3613	8/24/2015	03:45:41	45.93851	-129.97214	250.0	1.1	1526.9	1528.0	Retrieving the instrument off the benchmark.
3614	8/24/2015	03:45:57	45.93851	-129.97214	250.1	0.8	1526.9	1527.7	Pressure instrument in the basket.
3616	8/24/2015	03:46:40	45.93850	-129.97212	246.0	1.1	1525.9	1526.9	Next benchmark is AX-303 at Mrk-33 Vent where we also will deploy a mini-BPR.
3617	8/24/2015	03:47:18	45.93849	-129.97211	215.4	0.8	1526.0	1526.8	Looking for a rock to pick up for some extra ballast.
3618	8/24/2015	03:47:44	45.93849	-129.97211	214.6	1.0	1525.9	1526.9	This wasn't taken for a science purpose.
3620	8/24/2015	03:48:21	45.93849	-129.97211	212.9	1.1	1525.9	1526.9	Looks like a piece of collapse from the overlying flow near the benchmark.
3621	8/24/2015	03:48:56	45.93849	-129.97211	215.0	1.1	1525.9	1527.0	**SAMPLE: Geo J823-geo-02** Flat plate-like pieces all around here. No round lobates.
3622	8/24/2015	03:49:30	45.93849	-129.97211	210.4	6.7	1520.7	1527.4	J2-823-GEO-02 taken from pile of rubble at base of collapse in sheet flow area.
3627	8/24/2015	03:49:36	45.93848	-129.97213	210.2	7.1	1520.1	1527.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3628	8/24/2015	03:49:36	45.93848	-129.97213	210.2	7.1	1520.1	1527.2	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
3629	8/24/2015	03:49:36	45.93848	-129.97213	210.2	7.1	1520.1	1527.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3630	8/24/2015	03:49:36	45.93848	-129.97213	210.2	7.1	1520.1	1527.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3632	8/24/2015	03:50:46	45.93841	-129.97226	207.3	4.4	1519.6	1524.0	Looks like layers of lava. Use the benchmark position for this ballast sample.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3633	8/24/2015	03:51:10	45.93841	-129.97226	209.1	3.9	1520.4	1524.2	Ship was moving and Jason had to take off quickly after the sample was grasped in the claws.
3634	8/24/2015	03:51:33	45.93841	-129.97226	209.3	4.3	1520.0	1524.3	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3635	8/24/2015	03:52:01	45.93841	-129.97226	209.4	5.3	1518.9	1524.2	Range 970m bearing is 280deg to next benchmark.
3637	8/24/2015	03:53:55	45.93838	-129.97238	236.7	2.6	1521.4	1524.0	J2-823-GEO-02 sample was taken due south of the benchmark by a few meters. (Jason turned left after the benchmark).
3639	8/24/2015	03:54:46	45.93830	-129.97258	238.5	1.8	1522.4	1524.2	J2-823-GEO-02 old lava taken for ballast.
3640	8/24/2015	03:55:44	45.93825	-129.97270	237.0	5.0	1522.2	1527.2	Driving with barely a bottom view. Looks like a flat lobate flow with a lot of sediment.
3641	8/24/2015	03:55:48	45.93824	-129.97271	237.8	5.1	1522.2	1527.4	Flat sheet flow now.
3643	8/24/2015	03:57:02	45.93818	-129.97290	232.8	6.8	1521.4	1528.3	Speeding the transit up to .5m/sec.
3644	8/24/2015	03:57:16	45.93817	-129.97293	240.0	5.7	1522.7	1528.4	Should be just under an hour to the next benchmark.
3645	8/24/2015	03:57:23	45.93817	-129.97295	240.9	6.3	1521.8	1528.2	Large collapse area in the lobate flow.
3649	8/24/2015	04:03:15	45.93798	-129.97336	235.8	3.2	1520.7	1523.9	Lobate and sediment flow.
3650	8/24/2015	04:03:22	45.93797	-129.97339	238.1	3.2	1520.8	1524.0	Old lavas.
3653	8/24/2015	04:07:34	45.93782	-129.97373	234.1	3.2	1520.7	1523.9	Flying over sheet flows.
3655	8/24/2015	04:09:16	45.93776	-129.97387	235.7	3.1	1520.7	1523.8	Sheet flow with sediment.
3657	8/24/2015	04:10:15	45.93774	-129.97391	235.6	2.8	1520.6	1523.3	A little bit of pilot training.
3658	8/24/2015	04:10:56	45.93770	-129.97398	240.7	2.6	1521.0	1523.6	Crab.
3659	8/24/2015	04:11:16	45.93767	-129.97406	238.7	1.9	1521.0	1522.9	Striated sheet flow with a lot of sediment.
3661	8/24/2015	04:13:46	45.93741	-129.97460	235.1	2.2	1520.7	1523.0	Pressure ridge with breaks in the sheet flow. Lobates and long tubes now.
3663	8/24/2015	04:14:09	45.93742	-129.97459	236.6	2.2	1520.9	1523.0	Pilot training over. Another pilot change.
3664	8/24/2015	04:14:19	45.93742	-129.97459	233.9	2.3	1520.6	1523.0	Long tubes.
3665	8/24/2015	04:15:15	45.93735	-129.97468	240.2	2.4	1520.6	1523.0	Crab. Broken plates of flattened lobes.
3666	8/24/2015	04:15:37	45.93733	-129.97472	235.2	2.8	1520.1	1522.9	Swirls and tubes and lobates and sheet. Wish I had a comma.
3667	8/24/2015	04:15:43	45.93733	-129.97474	237.9	1.9	1520.1	1522.0	Crab.
3669	8/24/2015	04:16:20	45.93727	-129.97486	238.9	3.1	1518.7	1521.8	Larger lobates with sediment.
3670	8/24/2015	04:17:13	45.93718	-129.97505	237.9	2.5	1517.9	1520.4	Very large and intact lobate flow.
3672	8/24/2015	04:18:13	45.93706	-129.97523	235.7	2.4	1517.3	1519.7	Starting to see some collapsed rubes with windows.
3673	8/24/2015	04:19:03	45.93697	-129.97532	235.0	2.0	1517.5	1519.4	Increase in collapsed lobes.
3674	8/24/2015	04:19:06	45.93696	-129.97533	234.0	2.1	1517.4	1519.5	Fish.
3676	8/24/2015	04:20:04	45.93690	-129.97545	237.3	2.6	1516.5	1519.1	Large collapsed area.
3677	8/24/2015	04:20:39	45.93683	-129.97557	237.8	3.0	1516.2	1519.2	Remnant bridge to lobate flow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3678	8/24/2015	04:21:13	45.93675	-129.97569	236.8	2.5	1516.4	1518.9	Pillars in the collapsed area.
3679	8/24/2015	04:21:48	45.93672	-129.97584	236.0	4.5	1516.4	1520.9	Remnant piece of lobate flow.
3681	8/24/2015	04:22:14	45.93665	-129.97594	238.9	3.9	1517.6	1521.5	Bottom of collapse area has sheet flow appearance.
3682	8/24/2015	04:22:46	45.93660	-129.97606	236.9	5.0	1516.8	1521.8	Layers of lava on the pillars. Two crabs on the pillar.
3684	8/24/2015	04:24:12	45.93655	-129.97631	236.2	5.3	1516.0	1521.3	Arches and pillars in the collapse.
3685	8/24/2015	04:25:35	45.93642	-129.97644	236.0	6.5	1515.3	1521.8	Coming up on a higher edge-could be the other side of this large collapsed area.
3686	8/24/2015	04:25:53	45.93639	-129.97645	235.5	7.1	1514.8	1521.9	Up high and can only faintly see the layered pillars below.
3689	8/24/2015	04:29:30	45.93601	-129.97700	235.7	3.3	1518.0	1521.4	Bottom cam shows ropey sheet flow.
3691	8/24/2015	04:31:38	45.93581	-129.97732	236.0	3.4	1517.2	1520.5	Sheet flow and sediment.
3693	8/24/2015	04:33:03	45.93574	-129.97756	236.4	3.9	1517.4	1521.3	Broken up area within the sheet flow.
3694	8/24/2015	04:33:36	45.93567	-129.97766	233.8	4.7	1516.3	1521.0	Lobates and collapse.
3695	8/24/2015	04:33:54	45.93563	-129.97771	236.1	3.7	1516.0	1519.7	Big collapse area with arches holding up the lobate flow.
3697	8/24/2015	04:34:37	45.93556	-129.97786	237.6	4.5	1516.0	1520.5	More pillars and arches in the collapse.
3698	8/24/2015	04:35:21	45.93553	-129.97801	235.5	3.8	1516.9	1520.8	More arches holding up the lobates. The Villa!
3700	8/24/2015	04:37:00	45.93533	-129.97830	236.5	2.6	1517.4	1520.0	In and out of collapse with arches/pillars and lobates. All heavily sedimented.
3701	8/24/2015	04:37:49	45.93526	-129.97845	235.3	4.7	1516.3	1520.9	Another "villa" feature of arches holding up the roof of lobates.
3703	8/24/2015	04:39:23	45.93518	-129.97867	235.6	3.9	1515.6	1519.6	Back on top of lobates after a collapse area.
3705	8/24/2015	04:40:28	45.93504	-129.97881	236.0	3.1	1515.7	1518.8	Collapse area again.
3706	8/24/2015	04:40:57	45.93497	-129.97891	235.1	2.6	1516.1	1518.7	Roman holiday here with another villa although this was shorter arches.
3707	8/24/2015	04:41:09	45.93495	-129.97895	237.7	2.6	1516.2	1518.8	Crab.
3709	8/24/2015	04:42:48	45.93481	-129.97937	237.2	2.7	1516.0	1518.7	Moonscape of arches and pillars.
3710	8/24/2015	04:43:35	45.93472	-129.97949	237.0	3.5	1517.6	1521.2	Sheet flow with a lot of sediment.
3712	8/24/2015	04:45:01	45.93458	-129.97981	238.3	2.8	1518.5	1521.2	Swirls in the sheet flow.
3713	8/24/2015	04:45:28	45.93453	-129.97988	235.1	4.7	1515.8	1520.5	Coming back to arches holding up the lobate flow.
3715	8/24/2015	04:46:36	45.93445	-129.98009	236.6	2.6	1516.2	1518.7	More intact lobates with smaller collapsed windows.
3717	8/24/2015	04:48:43	45.93426	-129.98049	237.1	2.7	1515.5	1518.2	Folded sheet flow.
3718	8/24/2015	04:49:29	45.93416	-129.98066	236.0	3.2	1515.0	1518.3	Sedimented flattened lobate flow.
3720	8/24/2015	04:50:13	45.93411	-129.98079	238.0	3.3	1515.0	1518.3	Larger pillows.
3721	8/24/2015	04:50:54	45.93405	-129.98094	237.8	2.6	1514.5	1517.1	Flattened tubes and sediment.
3722	8/24/2015	04:51:26	45.93401	-129.98106	238.1	2.2	1514.5	1516.7	Staining between lobes.
3723	8/24/2015	04:51:48	45.93397	-129.98115	236.4	2.5	1514.4	1516.9	Sediment looks different and brighter.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3725	8/24/2015	04:52:43	45.93384	-129.98131	235.3	3.7	1513.7	1517.4	Seeing collapsed features again.
3726	8/24/2015	04:53:46	45.93374	-129.98149	237.4	2.4	1514.3	1516.6	Sediment lost brightness-just looks like snow.
3728	8/24/2015	04:54:06	45.93371	-129.98156	236.3	3.2	1513.5	1516.7	Coming over large collapse area.
3729	8/24/2015	04:55:00	45.93358	-129.98178	236.4	4.8	1513.5	1518.3	Bottom of this collapse is rounded lobates coated in sediment.
3731	8/24/2015	04:56:25	45.93344	-129.98204	235.5	3.7	1512.8	1516.5	Seeing white staining in the rocks.
3732	8/24/2015	04:58:02	45.93333	-129.98208	284.0	2.7	1513.9	1516.6	Abundance of white in between the rocks. Could have crossed over into the 2011 lavas but couldn't see a distinct contact.
3734	8/24/2015	04:58:40	45.93332	-129.98218	271.8	2.6	1513.7	1516.3	This is the 2001 lavas near the Mkr-33 benchmark site.
3736	8/24/2015	05:01:00	45.93341	-129.98228	351.6	2.4	1514.0	1516.4	NAV: Doppler Reset There is the benchmark in the new lavas AX-303.
3737	8/24/2015	05:01:09	45.93342	-129.98227	343.9	2.3	1513.9	1516.2	NAV: Doppler Reset to USBL.
3739	8/24/2015	05:02:08	45.93350	-129.98226	220.0	2.1	1514.1	1516.3	There is the Marker behind the benchmark at Mkr-33 vent. Marker 66 at Mkr-33 vent.
3740	8/24/2015	05:02:18	45.93351	-129.98227	192.3	2.0	1514.0	1516.0	Rattail hanging out near the benchmark.
3741	8/24/2015	05:03:07	45.93349	-129.98229	185.9	0.8	1515.3	1516.1	Setting down in front of the benchmark.
3742	8/24/2015	05:03:58	45.93349	-129.98229	185.4	0.8	1515.4	1516.2	On the bottom. Taking out the STBD biobox.
3744	8/24/2015	05:04:08	45.93349	-129.98229	185.4	0.8	1515.4	1516.2	Going to deploy a mini-BPR here.
3745	8/24/2015	05:04:52	45.93349	-129.98229	185.4	0.8	1515.4	1516.2	This should be mini-BPR blue #12 in the stbd biobox.
3747	8/24/2015	05:06:58	45.93348	-129.98229	187.6	0.8	1515.4	1516.1	**DEPLOY: SIO-BPR** Blue #12 mini-BPR at AX303 Mkr-33 vent benchmark.
3748	8/24/2015	05:07:34	45.93348	-129.98228	186.6	0.8	1515.4	1516.1	Closing the biobox.
3749	8/24/2015	05:07:58	45.93348	-129.98228	187.2	0.8	1515.4	1516.1	Retrieving the pressure instrument.
3751	8/24/2015	05:08:06	45.93348	-129.98228	187.4	0.8	1515.4	1516.1	Placing the instrument on the benchmark.
3752	8/24/2015	05:08:17	45.93348	-129.98228	187.4	0.8	1515.4	1516.1	HIGHLIGHTS: HD highlights start Been on for awhile.
3753	8/24/2015	05:08:52	45.93348	-129.98228	187.4	0.8	1515.4	1516.1	Zooming in to look at the placement of the instrument on the benchmark.
3755	8/24/2015	05:10:39	45.93348	-129.98228	186.9	0.8	1515.4	1516.1	Adjusting the placement. Looks good.
3756	8/24/2015	05:11:01	45.93348	-129.98228	186.7	0.8	1515.4	1516.1	PRESSURE: Start AX-303 at Mkr-33 vent.
3757	8/24/2015	05:11:22	45.93348	-129.98228	186.8	0.8	1515.4	1516.1	1508240510.ax303 is the data file.
3758	8/24/2015	05:11:28	45.93348	-129.98228	186.9	0.8	1515.4	1516.1	HIGHLIGHTS: HD highlights stop
3759	8/24/2015	05:11:58	45.93348	-129.98228	187.0	0.8	1515.4	1516.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3761	8/24/2015	05:12:03	45.93348	-129.98228	186.9	0.8	1515.4	1516.1	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
3762	8/24/2015	05:12:10	45.93348	-129.98228	186.9	0.8	1515.4	1516.1	input PilotCam (port 3) routed to output FrmGrb2 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									2)
3772	8/24/2015	05:31:14	45.93349	-129.98228	186.7	0.8	1515.2	1516.0	Frame_Grab:
3773	8/24/2015	05:31:35	45.93349	-129.98228	186.7	0.8	1515.2	1516.0	PRESSURE: End AX-303 end at Mkr-33 vent.
3775	8/24/2015	05:32:05	45.93349	-129.98229	186.7	0.8	1515.2	1516.0	PRESSURE: End Actual end. AX-303.
3776	8/24/2015	05:32:38	45.93349	-129.98229	186.7	0.8	1515.2	1516.0	Retrieving instrument from benchmark and placing it on the basket.
3777	8/24/2015	05:33:35	45.93349	-129.98229	186.7	0.8	1515.2	1516.0	Next stop will be AX-310 at the International District.
3779	8/24/2015	05:35:23	45.93345	-129.98221	160.3	2.4	1513.6	1516.0	Off bottom and on the way. Bearing 158deg and range of 942 meters.
3780	8/24/2015	05:35:44	45.93339	-129.98221	158.8	2.6	1513.7	1516.3	Flying over glassy lavas with white staining.
3782	8/24/2015	05:37:07	45.93328	-129.98224	158.0	2.4	1513.8	1516.2	Bright white stained patches.
3784	8/24/2015	05:38:36	45.93319	-129.98204	157.7	3.3	1513.7	1517.0	Looks like lobate flow and can still see white staining in bottom camera.
3785	8/24/2015	05:39:47	45.93309	-129.98198	157.5	3.2	1513.5	1516.7	Seeing some kipukas in the bottom camera.
3787	8/24/2015	05:41:39	45.93287	-129.98193	157.1	4.3	1513.4	1517.8	Should still be in 2011 flow but hard to see traveling this fast and high.
3788	8/24/2015	05:41:50	45.93286	-129.98190	156.5	4.7	1513.4	1518.1	Lobate flows.
3790	8/24/2015	05:42:43	45.93279	-129.98180	159.1	6.6	1513.8	1520.4	Crossing collapse.
3792	8/24/2015	05:45:51	45.93244	-129.98188	157.7	6.8	1513.6	1520.4	Barely see a tall pillar sticking out of a collapse area.
3793	8/24/2015	05:46:02	45.93242	-129.98186	158.1	5.2	1513.6	1518.8	Should be near the contact of old and 2011 lava.
3798	8/24/2015	05:53:12	45.93154	-129.98148	158.8	5.0	1511.6	1516.6	Passing over large collapsed area with only some big pillars in the bottom camera view.
3801	8/24/2015	05:56:23	45.93118	-129.98133	158.5	6.9	1512.7	1519.6	Only view is still in the bottom camera and seeing collapse and pillars.
3803	8/24/2015	05:58:17	45.93077	-129.98117	160.8	6.2	1505.8	1512.0	Seeing much heavier sediment coating over old lavas.
3804	8/24/2015	05:59:08	45.93071	-129.98103	158.3	2.6	1503.9	1506.5	Lobate flow with huge crack or fissure.
3805	8/24/2015	05:59:59	45.93066	-129.98090	159.0	2.0	1503.8	1505.8	Old lobates.
3808	8/24/2015	06:02:23	45.93032	-129.98061	158.4	5.8	1501.9	1507.7	Over a crack or collapse but can't see much.
3811	8/24/2015	06:07:48	45.92960	-129.98016	158.4	3.1	1507.9	1511.0	Could be old sheet flows.
3813	8/24/2015	06:09:29	45.92946	-129.98010	157.8	4.7	1507.9	1512.6	Seeing crabs in the bottom cam. Long-legged crabs.
3816	8/24/2015	06:13:57	45.92886	-129.97978	157.3	3.8	1512.8	1516.6	Flying over pillows and lobates.
3818	8/24/2015	06:14:45	45.92870	-129.97967	158.4	2.1	1516.7	1518.8	Fish.
3819	8/24/2015	06:15:06	45.92863	-129.97962	158.3	2.1	1516.1	1518.2	Large lobate flow with light sediment.
3820	8/24/2015	06:15:35	45.92860	-129.97959	152.0	2.6	1515.8	1518.3	Medium sediment-not all that light.
3823	8/24/2015	06:18:26	45.92835	-129.97942	158.4	2.2	1517.0	1519.1	Lobates and lobates.
3825	8/24/2015	06:20:13	45.92803	-129.97926	159.3	1.7	1519.4	1521.0	Larger pillows.
3826	8/24/2015	06:21:03	45.92786	-129.97919	159.1	2.9	1519.6	1522.5	Looks like a small crack.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3828	8/24/2015	06:22:32	45.92762	-129.97905	158.8	4.4	1519.8	1524.2	Getting close to the benchmark-maybe 15 minutes.
3831	8/24/2015	06:26:21	45.92732	-129.97884	159.1	1.7	1524.4	1526.2	Rougher looking flow.
3832	8/24/2015	06:26:26	45.92730	-129.97884	160.6	2.0	1524.2	1526.2	Fish.
3833	8/24/2015	06:27:17	45.92719	-129.97875	158.9	1.4	1524.0	1525.4	Sediment and sheet flow.
3834	8/24/2015	06:27:27	45.92717	-129.97874	157.2	1.3	1524.3	1525.6	Crab.
3836	8/24/2015	06:28:08	45.92710	-129.97870	158.9	2.8	1523.8	1526.6	Collapse area of sheet flow.
3837	8/24/2015	06:29:04	45.92695	-129.97860	161.8	2.4	1526.1	1528.5	Heavy sediment on sheet flow.
3838	8/24/2015	06:29:16	45.92692	-129.97860	158.8	2.5	1526.0	1528.4	Looks like snow.
3839	8/24/2015	06:29:57	45.92685	-129.97854	160.2	2.3	1525.4	1527.7	Broken plates of sheet flow.
3841	8/24/2015	06:30:23	45.92680	-129.97850	157.2	2.0	1525.2	1527.2	Striated sheet flow.
3842	8/24/2015	06:31:30	45.92666	-129.97840	156.9	2.6	1524.3	1526.8	RSN cable! Getting closer.
3844	8/24/2015	06:32:31	45.92652	-129.97829	160.5	1.3	1524.5	1525.8	Jagged looking flow. Crab and fish.
3845	8/24/2015	06:33:30	45.92638	-129.97828	158.2	1.9	1524.2	1526.1	Fish.
3847	8/24/2015	06:34:28	45.92624	-129.97823	157.8	2.3	1523.7	1526.0	Fish
3848	8/24/2015	06:35:17	45.92623	-129.97823	157.9	2.0	1524.0	1525.9	Looks like sea cucumber on the bottom camera.
3850	8/24/2015	06:36:22	45.92613	-129.97821	157.5	1.9	1524.4	1526.4	Broken plates of sheet flow.
3851	8/24/2015	06:36:29	45.92611	-129.97820	159.8	2.6	1524.6	1527.2	Fish.
3852	8/24/2015	06:36:52	45.92605	-129.97818	158.3	1.8	1524.5	1526.3	Some pillows at the base of the sheet flow.
3853	8/24/2015	06:37:35	45.92595	-129.97809	161.2	2.1	1525.5	1527.6	Pillows and sediment.
3854	8/24/2015	06:37:49	45.92590	-129.97807	156.8	2.2	1525.7	1527.9	Back into sheet flow and there is the benchmark!
3856	8/24/2015	06:38:06	45.92587	-129.97803	164.9	2.8	1525.7	1528.5	And some cable right next to it.
3857	8/24/2015	06:38:28	45.92587	-129.97795	211.1	3.5	1525.1	1528.6	This is AX-310 at International District.
3858	8/24/2015	06:39:18	45.92583	-129.97794	281.9	2.3	1527.0	1529.3	Fish in front of the instrument. In our way.
3859	8/24/2015	06:40:02	45.92583	-129.97796	293.9	1.1	1527.7	1528.9	Setting Jason down in front of benchmark AX-310.
3861	8/24/2015	06:40:09	45.92583	-129.97796	292.8	1.3	1527.6	1528.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3862	8/24/2015	06:40:15	45.92583	-129.97796	292.6	1.2	1527.7	1528.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3863	8/24/2015	06:40:35	45.92583	-129.97796	288.6	1.2	1527.7	1528.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3864	8/24/2015	06:40:56	45.92583	-129.97796	293.0	1.1	1527.8	1528.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
3865	8/24/2015	06:40:56	45.92583	-129.97796	293.0	1.1	1527.8	1528.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3866	8/24/2015	06:41:05	45.92583	-129.97796	287.6	1.3	1527.6	1528.9	Retrieving the instrument from the basket.
3867	8/24/2015	06:41:12	45.92583	-129.97796	287.4	1.3	1527.6	1528.9	NAV: Doppler Reset Set to USBL.
3868	8/24/2015	06:41:50	45.92583	-129.97796	288.9	1.3	1527.6	1528.8	HIGHLIGHTS: HD highlights start

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3870	8/24/2015	06:42:45	45.92583	-129.97797	288.4	1.3	1527.6	1528.8	Offset at this site is 8m at 310deg from the target position.
3872	8/24/2015	06:43:12	45.92583	-129.97797	288.6	1.3	1527.6	1528.8	Instrument on benchmark.
3873	8/24/2015	06:43:41	45.92583	-129.97797	288.6	1.3	1527.6	1528.8	On the platform but giving it a nudge to the left. Looks good.
3874	8/24/2015	06:43:44	45.92583	-129.97797	288.6	1.3	1527.6	1528.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3875	8/24/2015	06:43:59	45.92583	-129.97797	288.5	1.3	1527.6	1528.8	PRESSURE: Start AX-310 begin.
3877	8/24/2015	06:44:21	45.92583	-129.97797	288.7	1.3	1527.6	1528.8	1508240643.ax310 is the data file.
3887	8/24/2015	07:03:29	45.92584	-129.97796	288.3	1.3	1527.5	1528.7	PRESSURE: End
3889	8/24/2015	07:03:56	45.92584	-129.97796	288.2	1.2	1527.5	1528.7	PRESSURE: End 7:03. End of AX-310.
3891	8/24/2015	07:04:44	45.92584	-129.97796	288.9	1.2	1527.5	1528.7	We will transit to AX-104.
3892	8/24/2015	07:04:59	45.92584	-129.97795	291.4	2.3	1526.6	1529.0	Jason off bottom
3897	8/24/2015	08:32:52	45.91636	-129.98941	0.0	3.1	1526.6	1529.7	Jason on bottom
3898	8/24/2015	08:33:07	45.91635	-129.98941	279.4	2.9	1527.2	1530.0	We are now going to find AX-104 (Bag City area).
3900	8/24/2015	08:34:13	45.91625	-129.98949	239.2	3.1	1527.0	1530.0	Here we are.
3903	8/24/2015	08:38:18	45.91622	-129.98955	343.0	0.8	1529.3	1530.1	We are now placing the instrument.
3904	8/24/2015	08:39:34	45.91621	-129.98955	343.6	0.8	1529.3	1530.1	NAV: Doppler Reset
3907	8/24/2015	08:43:54	45.91621	-129.98955	343.4	0.8	1529.3	1530.1	This is the final placement.
3909	8/24/2015	08:44:20	45.91621	-129.98955	343.3	0.8	1529.3	1530.1	PRESSURE: Start 8:44 begin
3920	8/24/2015	09:05:17	45.91621	-129.98955	343.6	0.8	1529.3	1530.1	PRESSURE: End 9:05 stopped.
3922	8/24/2015	09:06:40	45.91621	-129.98955	339.9	2.1	1528.2	1530.3	Jason off bottom
3923	8/24/2015	09:06:49	45.91621	-129.98954	353.2	4.1	1526.2	1530.3	Transit to AX-105 (South pillow mound).
3924	8/24/2015	09:07:14	45.91633	-129.98957	350.2	4.1	1526.7	1530.8	This will take approximately 4 hours.
3926	8/24/2015	09:58:47	45.91253	-129.99079	13.9	141.5	1258.8	1400.3	Hydraulic leak on Jason vehicle beginning recovery to deck. Event called some time ago
3927	8/24/2015	10:30:07	45.91251	-129.99077	81.1	143.0	500.5	643.5	Vehicle at 500m and ascending
3928	8/24/2015	10:44:33	45.91249	-129.99079	149.9	150.2	200.1	350.3	Vehicle at 200m and ascending.
3929	8/24/2015	10:50:49	45.91249	-129.99079	140.0	159.7	100.6	260.3	Vehicle at 100m and ascending. Science basket is extended out. T4 is not stowed. This is the dive where the hobos in the left swing arm were lost on the ascent (Hobos 130 and 135).
3930	8/24/2015	10:57:16	45.91249	-129.99079	141.3	150.2	5.3	155.4	Jason on surface
3931	8/24/2015	10:58:11	45.91249	-129.99079	138.6	150.2	-0.6	149.6	Medea on deck
3932	8/24/2015	11:04:46	45.91252	-129.99077	62.0	0.8	-0.7	0.1	Frame_Grab:
3933	8/24/2015	11:04:50	45.91252	-129.99077	56.7	0.8	0.2	0.9	Jason out of water Jason snubbed in recovery crane.
3934	8/24/2015	11:05:14	45.91252	-129.99077	56.7	0.8	0.2	0.9	Vehicle power secured

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3935	8/24/2015	11:07:12	45.91252	-129.99077	56.7	0.8	0.2	0.9	Jason on deck

6.6-4 J2-824 Dive log

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
3937	8/24/2015	19:08:49			353.5		-0.3		Jason in water Launch dive J2-824 continuation of pressure dive
3938	8/24/2015	19:09:47			351.1		1.0		input SciCam (port 1) routed to output KiPro (port 4)
3939	8/24/2015	19:11:56			347.4		1.0		Medea in water
3940	8/24/2015	19:24:57			298.1		154.1		Jason Dive J824: Deployment location is ASHES. 45 55.995 and -130 00.827 X=1543 m.
3941	8/24/2015	19:25:37			293.0		173.9		Main goals: 1. Finish pressure measurements at seafloor benchmarks.
3942	8/24/2015	19:26:12			290.7		188.8		Main goals: 2. Sample vent fluids at selected sites. 3. Recover and deploy HOBO and MTR probes.
3943	8/24/2015	19:26:52			289.1		208.5		Basket for this dive has HFS samples intake Suction sampler hose; 3 GTBs; 2Majors.
3944	8/24/2015	19:27:25			285.1		225.5		Basket cont: Rock sampling box with 4 spaces 2 HOBO temp probes 3MTRs.
3945	8/24/2015	19:27:52			282.5		239.1		Port Swing arm is empty. Starboard swing arm biobox is empty.
3946	8/24/2015	19:29:10			272.6		276.6		Tasks: 1. Fluid sampling at ASHES in order: Virgin(beast) Inferno(beast) Anemone(LVB and others) Hell(beast).
3947	8/24/2015	19:30:24			277.6		312.0		Tasks cont: Anemone(LVB and others) Hell if we have time (beast).
3948	8/24/2015	19:31:22			280.2		339.7		Tasks cont: Only 2 hours allowed for fluid sampling at ASHES.
3949	8/24/2015	19:32:35			280.4		376.2		Tasks cont: Recover MTRs at ASHES if we can. Deploy up to 2 replacement MTRs.
3950	8/24/2015	19:33:30			281.2		404.0		Tasks cont: Deploy 2 MTR replacements.(Save 1 MTR for Mkr113).
3951	8/24/2015	19:34:44			275.5		441.1		Tasks cont: 2. Pressure measurements at AX106-308-101-302-303-308-104-105.
3952	8/24/2015	19:35:09			276.7		453.2		Tasks cont: We are skipping AX309 and 310 and repeating 308.
3953	8/24/2015	19:38:43			269.4		555.4		Tasks cont: 3. Fluid sampling during the pressure

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									transect: Trevi(1GT)
3954	8/24/2015	19:39:09			268.3		567.1		Tasks cont: Spanish steps(1 Major). Deploy and Recover hobo at Trevi. Mkr113: 1LVB and 1 Major.
3957	8/24/2015	19:40:04			265.5		592.4		Tasks cont: Deploy and Recover MTR @ Mkr113. Vixen/Casper(1GT each).
3959	8/24/2015	19:40:40			265.8		609.6		Deploy and Recover a HOBO at Casper; Recover HOBO from Vixen.
3960	8/24/2015	19:41:08			266.3		622.8		Tasks cont: Sentry will launch when Jason on bottom. Sentry will be recovered when Jason is at AX104.
3962	8/24/2015	20:15:21			234.3	97.8	1442.7	1540.5	NAV: Doppler Reset
3966	8/24/2015	21:15:09	45.93326	-130.01283	170.8	5.4	1536.7	1542.1	Jason on bottom
3969	8/24/2015	21:18:14	45.93321	-130.01272	261.9	2.9	1539.2	1542.1	We are going to Inferno vent first.
3970	8/24/2015	21:19:11	45.93326	-130.01282	303.4	2.9	1538.8	1541.7	On our way to Inferno.
3972	8/24/2015	21:20:49	45.93345	-130.01317	301.4	2.7	1539.0	1541.8	We will sample piston Major and a bag from Inferno.
3974	8/24/2015	21:22:53	45.93358	-130.01327	297.4	2.7	1539.1	1541.8	This we are seeing is Virgin.
3975	8/24/2015	21:23:10	45.93356	-130.01330	282.2	2.1	1539.6	1541.7	We will go to Inferno first and then come back to Virgin.
3977	8/24/2015	21:24:39	45.93350	-130.01339	231.5	3.6	1538.5	1542.0	We just saw Gollum with marker 121.
3978	8/24/2015	21:24:54	45.93350	-130.01345	271.6	4.0	1537.7	1541.7	Now we see Marker 64.Still at Gollum.
3979	8/24/2015	21:25:28	45.93354	-130.01356	295.3	4.2	1538.0	1542.1	What we see now is Mushroom.
3981	8/24/2015	21:26:08	45.93358	-130.01364	239.5	3.8	1538.7	1542.5	We see OOI instruments at Mushroom.
3982	8/24/2015	21:26:50	45.93360	-130.01374	191.8	3.4	1539.1	1542.5	Here is Inferno.
3983	8/24/2015	21:27:18	45.93355	-130.01376	198.7	5.5	1536.9	1542.4	HIGHLIGHTS: HD highlights start Of Inferno.
3985	8/24/2015	21:28:07	45.93353	-130.01379	199.4	4.7	1538.1	1542.8	We will now do fluid sampling at Inferno.
3986	8/24/2015	21:30:01	45.93352	-130.01382	151.2	3.2	1539.5	1542.8	First we will take a Jason temp measurement at the top and maybe from the venting we see at the side.
3988	8/24/2015	21:30:21	45.93352	-130.01382	151.2	4.3	1538.5	1542.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3989	8/24/2015	21:30:30	45.93352	-130.01382	150.9	4.6	1538.2	1542.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3990	8/24/2015	21:31:00	45.93352	-130.01382	151.0	4.4	1538.4	1542.8	We are trying to tell which one has more flow.
3992	8/24/2015	21:32:49	45.93352	-130.01381	149.4	4.6	1538.2	1542.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
3993	8/24/2015	21:33:47	45.93352	-130.01381	149.9	4.6	1538.3	1542.9	Measuring the temperature now with Jason probe.
3995	8/24/2015	21:35:00	45.93352	-130.01381	149.5	4.6	1538.2	1542.8	NAV: Doppler Reset
3996	8/24/2015	21:35:12	45.93352	-130.01380	151.4	4.5	1538.2	1542.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
3997	8/24/2015	21:35:27	45.93352	-130.01380	150.3	4.4	1538.4	1542.8	We weren't stable enough to take a reading.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									Repositioning Jason.
3999	8/24/2015	21:37:08	45.93352	-130.01380	150.1	4.4	1538.4	1542.8	Taking a temp reading with Jason probe from Inferno.
4000	8/24/2015	21:37:48	45.93352	-130.01380	150.1	4.4	1538.3	1542.7	Temp reading: 243C.
4002	8/24/2015	21:38:08	45.93352	-130.01380	150.1	4.4	1538.4	1542.8	We will take another reading from the same area.
4003	8/24/2015	21:39:10	45.93352	-130.01380	150.1	4.4	1538.4	1542.8	Temp reading: 225C.
4005	8/24/2015	21:40:14	45.93352	-130.01380	150.1	4.4	1538.3	1542.7	Now we placed it deeper and the reading is 241C.
4006	8/24/2015	21:41:04	45.93352	-130.01380	149.9	4.4	1538.4	1542.8	Now we are switching to Beast and we will sample from this hole with 241-243C flow.
4007	8/24/2015	21:41:14	45.93352	-130.01380	149.9	4.4	1538.4	1542.8	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
4008	8/24/2015	21:41:26	45.93352	-130.01380	149.9	4.4	1538.4	1542.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4011	8/24/2015	21:44:24	45.93352	-130.01380	149.2	4.3	1538.4	1542.7	Temp reading with beast probe: 174C.
4012	8/24/2015	21:44:39	45.93352	-130.01380	149.1	4.3	1538.4	1542.7	We will jam the sampler a little deeper.
4013	8/24/2015	21:45:11	45.93352	-130.01380	149.5	4.3	1538.4	1542.7	Temp reading with Beast probe: 170C.
4015	8/24/2015	21:46:34	45.93352	-130.01380	149.1	4.3	1538.3	1542.7	Temp reading with Beast probe: 178C.
4017	8/24/2015	21:48:04	45.93352	-130.01380	148.8	4.3	1538.3	1542.7	Moving the probe a little left. We will break the front part.
4018	8/24/2015	21:48:09	45.93352	-130.01380	149.0	4.3	1538.4	1542.7	Boom.
4019	8/24/2015	21:48:35	45.93352	-130.01380	149.5	4.3	1538.4	1542.7	Now we will get another reading with Beast probe: 175C.
4020	8/24/2015	21:48:42	45.93352	-130.01380	149.5	4.3	1538.4	1542.7	Still going up: 200C.
4021	8/24/2015	21:49:06	45.93352	-130.01380	149.2	4.3	1538.4	1542.7	Going up: 220C. We will sample from here.
4025	8/24/2015	21:54:55	45.93352	-130.01380	149.3	4.3	1538.4	1542.7	**SAMPLE: HFS J824-HFS-01** Unfiltered piston #2. Start:21:49 Tmax: 230.4 Tavg: 222C t2: 80 Vol: 700ml Stop: 21.54. At Inferno.
4027	8/24/2015	21:57:50	45.93352	-130.01380	149.4	4.3	1538.4	1542.7	The location for sampling: Lat: 45.933516 Long: -130.013792 Z= 1538.
4029	8/24/2015	21:59:01	45.93351	-130.01380	148.8	4.3	1538.4	1542.7	**SAMPLE: HFS J824-HFS-02** Unfiltered Bag #24. Start: 21:54 Tmax: 225.4C Tavg:209C T2:70C Vol:550C Stop: 21.58.
4030	8/24/2015	21:59:16	45.93351	-130.01380	148.9	4.3	1538.4	1542.7	We will do a Major sampler here at same location.
4031	8/24/2015	21:59:45	45.93351	-130.01380	148.6	4.3	1538.4	1542.7	J824-HFS-01 and J824-HFS-02 are from the same location.
4034	8/24/2015	22:02:42	45.93351	-130.01379	148.8	4.3	1538.5	1542.8	Major We are trying to get the Beast sampler out of the way to take a Major sample.
4037	8/24/2015	22:06:53	45.93352	-130.01378	148.6	4.3	1538.4	1542.8	**SAMPLE: Major J824-Major-03** White Major; Fired: 22:06. Location same as first 2 samples.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4038	8/24/2015	22:07:28	45.93352	-130.01378	148.4	4.3	1538.5	1542.8	Location: 45.933516 -130.013792.
4040	8/24/2015	22:08:53	45.93352	-130.01378	148.3	4.4	1538.4	1542.8	J824-Major-03 Tmax=244C Z= 1538 Heading:148
4042	8/24/2015	22:10:08	45.93352	-130.01378	148.6	4.3	1538.4	1542.8	Moving to Virgin.
4045	8/24/2015	22:14:04	45.93366	-130.01341	89.6	2.9	1538.9	1541.8	Here we are at Virgin.
4046	8/24/2015	22:15:45	45.93364	-130.01333	87.5	2.5	1538.9	1541.4	We will take a Jason temp measurement first at Virgin.
4050	8/24/2015	22:20:02	45.93366	-130.01334	85.7	0.8	1541.3	1542.0	We are having an issue with the jaw of Jason.
4051	8/24/2015	22:20:27	45.93366	-130.01334	85.9	0.9	1541.3	1542.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4053	8/24/2015	22:22:22	45.93366	-130.01334	85.7	1.0	1541.3	1542.3	We are trying to fix the problem.
4054	8/24/2015	22:22:39	45.93366	-130.01334	85.8	0.9	1541.3	1542.2	In the meantime we are observing the vent.
4055	8/24/2015	22:23:10	45.93366	-130.01334	85.8	0.8	1541.3	1542.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4056	8/24/2015	22:23:47	45.93366	-130.01334	86.0	1.1	1541.3	1542.4	HIGHLIGHTS: HD highlights start
4058	8/24/2015	22:24:36	45.93366	-130.01334	85.9	1.1	1541.3	1542.4	We are taking a close look at the flow with Sci cam.
4059	8/24/2015	22:25:02	45.93366	-130.01334	86.1	0.8	1541.3	1542.0	In the meantime we are trying to fix the problem with the arm and the jaw of Jason.
4061	8/24/2015	22:26:23	45.93366	-130.01334	86.1	0.8	1541.3	1542.1	HIGHLIGHTS: HD highlights stop
4062	8/24/2015	22:27:16	45.93366	-130.01334	86.2	0.8	1541.3	1542.1	NAV: Doppler Reset
4067	8/24/2015	22:35:01	45.93365	-130.01333	87.2	3.8	1537.7	1541.5	Jason off bottom to calibrate the Jason arm.
4068	8/24/2015	22:35:12	45.93365	-130.01333	87.2	3.8	1537.7	1541.5	This calibration will take approx. 20min.
4069	8/24/2015	22:35:20	45.93365	-130.01333	87.2	3.8	1537.7	1541.5	Then we will continue sampling.
4073	8/24/2015	22:40:29	45.93366	-130.01333	87.2	3.8	1537.7	1541.5	We will go back to Virgin now.
4074	8/24/2015	22:41:22	45.93366	-130.01334	86.7	3.5	1537.9	1541.4	The calibration of the arm is over.
4075	8/24/2015	22:41:32	45.93366	-130.01335	87.6	1.9	1539.3	1541.2	Jason on bottom.
4078	8/24/2015	22:42:56	45.93367	-130.01333	89.2	0.8	1541.3	1542.1	Now taking a temp measurement with Jason probe.
4080	8/24/2015	22:44:20	45.93366	-130.01333	89.3	0.8	1541.3	1542.0	We knocked over the chimney to get a better reading. Temp: 231C.
4081	8/24/2015	22:45:53	45.93366	-130.01334	89.5	0.8	1541.3	1542.0	Jason temp probe in the vent at Virgin. Lots of flow.
4083	8/24/2015	22:46:16	45.93366	-130.01334	89.4	0.8	1541.3	1542.0	Jason Tmax=258.0 at Virgin.
4084	8/24/2015	22:47:00	45.93366	-130.01334	89.2	0.8	1541.3	1542.0	Shift change.
4086	8/24/2015	22:48:38	45.93366	-130.01334	88.9	0.8	1541.3	1542.1	HIGHLIGHTS: HD highlights stop
4087	8/24/2015	22:49:45	45.93366	-130.01334	88.8	0.8	1541.3	1542.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4088	8/24/2015	22:49:52	45.93366	-130.01334	89.0	1.0	1541.3	1542.3	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4090	8/24/2015	22:50:08	45.93366	-130.01334	89.1	0.8	1541.3	1542.1	Preparing to sample at Virgin.
4091	8/24/2015	22:50:44	45.93366	-130.01334	89.2	0.8	1541.3	1542.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4092	8/24/2015	22:51:31	45.93366	-130.01334	89.5	0.8	1541.3	1542.1	Setting up to sample.
4094	8/24/2015	22:52:56	45.93366	-130.01334	89.5	0.8	1541.3	1542.1	Flushing. Preparing for filtered piston #3 sample.
4095	8/24/2015	22:53:40	45.93366	-130.01334	89.5	0.8	1541.3	1542.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4097	8/24/2015	22:54:04	45.93366	-130.01334	89.5	0.8	1541.3	1542.0	**SAMPLE: HFS J824-HFS-04.** Filtered piston #3 at Virgin. Really vigorous flow. Start 2254.
4099	8/24/2015	22:56:30	45.93366	-130.01334	89.5	0.8	1541.2	1541.9	J824-HFS-04. Location: 45.933657 130.013338 Z=1541 Hdg 90deg.
4100	8/24/2015	22:56:55	45.93366	-130.01334	89.5	0.8	1541.2	1542.0	J824-HFS-04 stop 2256. Tmax=200.5 Tavg=194 Vol=400ml. T2=76.
4102	8/24/2015	22:59:09	45.93366	-130.01333	89.6	0.8	1541.2	1542.0	**SAMPLE: HFS J824-HFS-05** Unfiltered piston #4. Start 2257. Virgin vent.
4104	8/24/2015	23:00:25	45.93366	-130.01333	89.4	0.8	1541.3	1542.0	J824-HFS-05 cont. Stop 2300. Tmax=198 Tavg=196 Vol=400ml T2=77.
4105	8/24/2015	23:00:30	45.93366	-130.01333	89.4	0.8	1541.3	1542.0	Stowing the beast.
4106	8/24/2015	23:00:53	45.93366	-130.01333	89.5	0.8	1541.3	1542.0	Will take a gastight bottle next.
4108	8/24/2015	23:02:42	45.93366	-130.01333	89.3	0.8	1541.3	1542.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4109	8/24/2015	23:02:55	45.93366	-130.01333	89.3	0.8	1541.3	1542.1	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4110	8/24/2015	23:03:16	45.93366	-130.01333	89.3	0.8	1541.3	1542.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4112	8/24/2015	23:04:13	45.93366	-130.01333	89.3	0.8	1541.3	1542.1	**SAMPLE: GTB J824-GTB-06** at Virgin. Black #18. Fired at 2304. Tmax with the beast was 200.5C. With Jason was 258C.
4113	8/24/2015	23:04:44	45.93366	-130.01334	89.1	0.8	1541.3	1542.1	Stowing the gastight. Finished sampling here at Virgin.
4114	8/24/2015	23:04:50	45.93366	-130.01334	89.6	0.8	1541.4	1542.1	Next will head to Anemone.
4115	8/24/2015	23:05:34	45.93366	-130.01334	89.7	0.8	1541.4	1542.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4116	8/24/2015	23:05:51	45.93366	-130.01334	88.3	1.5	1540.3	1541.8	Will leave this hot anhydrite mound (Virgin) and head to diffuse venting area at the S side of ASHES (Anemone).
4118	8/24/2015	23:06:02	45.93365	-130.01335	149.6	2.2	1539.7	1541.9	Lifting off.
4119	8/24/2015	23:07:17	45.93358	-130.01341	223.3	2.1	1540.0	1542.1	Passing Mkr-121 at Gollum. See a left over settling plate on the seafloor.
4120	8/24/2015	23:07:35	45.93355	-130.01341	226.3	2.5	1539.8	1542.3	Gollum right below us.
4122	8/24/2015	23:08:03	45.93350	-130.01342	226.4	2.3	1539.8	1542.2	Gollum is a diffuse vent. Passed Mkr-64 at Gollum.
4123	8/24/2015	23:08:18	45.93348	-130.01341	206.5	1.8	1540.5	1542.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4124	8/24/2015	23:08:19	45.93348	-130.01341	209.2	1.9	1540.4	1542.3	Railroad wheel (old RAS anchor).
4125	8/24/2015	23:08:39	45.93343	-130.01345	220.9	1.9	1540.3	1542.2	Small patches of dirty-looking mat.
4126	8/24/2015	23:09:08	45.93339	-130.01350	220.2	1.7	1540.5	1542.2	Very small patches of iron oxide mounds.
4127	8/24/2015	23:09:58	45.93332	-130.01358	222.4	1.6	1540.3	1541.9	Lots of white bacterial mat in the cracks here.
4129	8/24/2015	23:11:01	45.93330	-130.01367	223.8	0.8	1541.9	1542.7	The diffuse area is larger now. Tubeworms and bacterial mat. Some brownish-yellow sediment (floc).
4130	8/24/2015	23:11:21	45.93329	-130.01368	224.1	1.1	1541.6	1542.7	See something on the seafloor here. Not sure what.
4131	8/24/2015	23:11:30	45.93328	-130.01369	223.9	1.5	1541.6	1543.0	Moving over diffuse venting.
4132	8/24/2015	23:11:54	45.93327	-130.01371	244.0	1.1	1541.8	1542.8	1 tubeworm covered with filamentous bacterial mat.
4134	8/24/2015	23:12:20	45.93326	-130.01374	219.0	1.8	1541.1	1542.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4135	8/24/2015	23:12:22	45.93326	-130.01375	219.2	1.8	1541.1	1542.9	Coming upon Phoenix. Small sulfide chimney with lots of tubeworms.
4136	8/24/2015	23:12:48	45.93323	-130.01378	321.7	2.4	1539.9	1542.3	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4137	8/24/2015	23:12:55	45.93321	-130.01379	304.0	2.7	1539.4	1542.1	Phoenix looks great. Black smoke coming out near the base.
4138	8/24/2015	23:13:10	45.93317	-130.01382	258.8	3.4	1538.7	1542.1	Little marker.
4139	8/24/2015	23:13:26	45.93315	-130.01385	260.7	2.3	1539.8	1542.1	We are approaching Anemone vent.
4140	8/24/2015	23:13:58	45.93313	-130.01388	297.2	3.2	1538.9	1542.1	Still looks active. We want to sample in the brightest white patch where the marker and MTR are presently.
4142	8/24/2015	23:14:13	45.93314	-130.01387	292.9	3.1	1538.9	1542.1	It seems to be turning into more and more of a mound each year.
4143	8/24/2015	23:14:13	45.93314	-130.01387	292.7	3.3	1538.9	1542.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4144	8/24/2015	23:14:38	45.93318	-130.01388	201.8	2.9	1539.0	1541.8	HIGHLIGHTS: HD highlights start Phoenix.
4145	8/24/2015	23:14:46	45.93318	-130.01389	172.7	2.1	1539.4	1541.4	HIGHLIGHTS: HD highlights stop When?
4146	8/24/2015	23:14:54	45.93318	-130.01390	176.8	1.1	1540.3	1541.4	HIGHLIGHTS: HD highlights start Anemone.
4147	8/24/2015	23:15:29	45.93318	-130.01390	176.4	0.8	1541.2	1542.0	The MTR marker is covered with limpets.
4148	8/24/2015	23:15:50	45.93318	-130.01390	176.6	0.8	1541.2	1542.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4149	8/24/2015	23:15:50	45.93318	-130.01390	176.6	0.8	1541.2	1542.0	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4151	8/24/2015	23:16:08	45.93318	-130.01390	176.5	0.8	1541.3	1542.0	Lots of tubeworms and limpets. White filamentous bacterial mat. Palm worms and tubeworms.
4152	8/24/2015	23:16:28	45.93318	-130.01390	176.3	0.8	1541.2	1542.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4153	8/24/2015	23:16:32	45.93318	-130.01390	176.3	0.8	1541.3	1542.0	input PilotCam (port 3) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4154	8/24/2015	23:16:34	45.93318	-130.01390	176.3	0.8	1541.2	1542.0	Scaleworms grazing the mat.
4155	8/24/2015	23:17:07	45.93318	-130.01390	176.3	0.8	1541.3	1542.0	Looks like little tiny spires (chimlets) are growing.
4156	8/24/2015	23:17:16	45.93318	-130.01390	176.3	0.8	1541.2	1542.0	HIGHLIGHTS: HD highlights stop
4157	8/24/2015	23:17:49	45.93318	-130.01390	176.3	0.8	1541.2	1542.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4158	8/24/2015	23:17:52	45.93318	-130.01390	176.6	0.8	1541.1	1541.9	Jason temperature probe here in the little chimlets and at the base of the MTR line.
4159	8/24/2015	23:17:56	45.93317	-130.01390	176.4	0.8	1540.9	1541.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4161	8/24/2015	23:18:11	45.93317	-130.01390	176.6	0.8	1541.0	1541.8	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4162	8/24/2015	23:18:21	45.93317	-130.01390	176.7	0.8	1541.2	1541.9	Lots of fuzzy floc on the surrounding rocks.
4163	8/24/2015	23:18:33	45.93317	-130.01390	177.2	1.0	1541.2	1542.2	Can see the anemones in the down-looking camera.
4164	8/24/2015	23:18:44	45.93317	-130.01390	177.1	1.0	1541.2	1542.1	Vent fish.
4165	8/24/2015	23:19:40	45.93317	-130.01390	177.1	0.8	1541.1	1541.9	HIGHLIGHTS: HD highlights start Jason temperature probe in chimlet.
4166	8/24/2015	23:19:48	45.93317	-130.01390	177.1	0.8	1541.2	1541.9	HIGHLIGHTS: HD highlights stop
4168	8/24/2015	23:20:49	45.93317	-130.01390	177.0	0.8	1541.2	1542.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4169	8/24/2015	23:21:58	45.93317	-130.01391	177.1	0.8	1541.1	1541.9	The temperature is rising. 80; 110; 113; 115.7C Stop temperature probe in chimlet.
4171	8/24/2015	23:22:16	45.93317	-130.01391	177.1	0.8	1541.1	1541.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4172	8/24/2015	23:22:48	45.93317	-130.01391	177.1	0.8	1541.1	1541.9	Next will take temperature at the base of the MTR in these tubeworms. Lots of palm worms and limpets.
4174	8/24/2015	23:24:14	45.93317	-130.01391	178.1	0.8	1541.2	1542.0	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4175	8/24/2015	23:24:18	45.93317	-130.01391	178.1	0.8	1541.2	1542.0	Going in again for the temperature in this tubeworm bush at the base of the MTR.
4176	8/24/2015	23:24:20	45.93317	-130.01391	178.1	0.8	1541.2	1542.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4177	8/24/2015	23:24:51	45.93317	-130.01391	178.1	0.8	1541.3	1542.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4178	8/24/2015	23:24:56	45.93317	-130.01391	178.1	0.8	1541.3	1542.0	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4179	8/24/2015	23:25:02	45.93317	-130.01391	178.1	0.8	1541.3	1542.1	Jason temperature = 34.3C in the tubeworm bush at the base of the MTR.
4181	8/24/2015	23:26:23	45.93317	-130.01390	178.0	0.8	1541.3	1542.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4182	8/24/2015	23:26:34	45.93317	-130.01390	179.3	0.8	1541.4	1542.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4183	8/24/2015	23:26:34	45.93317	-130.01390	179.3	0.8	1541.4	1542.1	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4184	8/24/2015	23:27:04	45.93317	-130.01390	181.0	0.8	1541.4	1542.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4185	8/24/2015	23:27:04	45.93317	-130.01390	181.0	0.8	1541.4	1542.2	Preparing to sample. J824-HFS-07 Unfiltered bag #22. Looking for ~25 - 30C for the sample. Not started.
4187	8/24/2015	23:27:14	45.93317	-130.01390	181.0	0.8	1541.4	1542.2	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4189	8/24/2015	23:28:12	45.93317	-130.01390	181.1	0.8	1541.4	1542.2	J824-HFS-07 cont. Temperature is rising. T=40 and rising. T=52C. Possibly too hot for Jim's sample. Will reposition. It's 60C now.
4190	8/24/2015	23:28:47	45.93317	-130.01390	181.2	0.8	1541.4	1542.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4191	8/24/2015	23:28:52	45.93317	-130.01390	181.2	0.8	1541.4	1542.2	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4192	8/24/2015	23:28:59	45.93317	-130.01390	181.2	0.8	1541.4	1542.2	J824-HFS-07 cont. Temp is dropping now after repositioning. 21C.
4194	8/24/2015	23:30:32	45.93317	-130.01389	177.1	0.8	1541.5	1542.2	J824-HFS-07 cont. Haven't started the sample yet. Still positioning the wand.
4195	8/24/2015	23:31:03	45.93318	-130.01389	178.3	0.8	1541.5	1542.4	The animals seem to be living in a mixture of hot and cold water.
4196	8/24/2015	23:31:28	45.93318	-130.01389	178.4	0.9	1541.5	1542.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4197	8/24/2015	23:31:36	45.93318	-130.01389	178.4	0.9	1541.5	1542.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4199	8/24/2015	23:32:29	45.93318	-130.01389	178.4	0.9	1541.5	1542.4	J824-HFS-07 cont. Repositioned again. Now to the right of the marker. .... Still repositioning.
4201	8/24/2015	23:34:35	45.93318	-130.01389	178.5	0.8	1541.5	1542.2	J824-HFS-07 cont. Still haven't started the sample. Doing an oxygen reading before collecting the water.
4202	8/24/2015	23:35:14	45.93318	-130.01389	178.6	0.8	1541.5	1542.3	Fetching Ben Larson for the O2 reading. Have not started the sample yet.
4204	8/24/2015	23:36:04	45.93318	-130.01389	178.6	0.8	1541.5	1542.2	Ben has arrived. The O2 sensor is on. O2 Marqardt sensor test.
4205	8/24/2015	23:37:42	45.93318	-130.01389	178.4	0.9	1541.5	1542.4	O2 Marqardt sensor test. T=~20C.
4208	8/24/2015	23:41:07	45.93318	-130.01389	178.4	0.8	1541.5	1542.2	O2 Marqardt sensor stopped. No info available at this time. Collected 6 spectra.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4210	8/24/2015	23:42:17	45.93318	-130.01389	178.4	0.8	1541.4	1542.2	J824-HFS-07 cont. Oxygen sensor on the beast got down to 0.467ml/L. Still have not started the actual fluid sample.
4211	8/24/2015	23:43:16	45.93318	-130.01389	178.5	0.9	1541.5	1542.3	**SAMPLE: HFS J824-HFS-07** Start 2342. Unfiltered bag #22. The actual water sampling happening now.
4212	8/24/2015	23:43:51	45.93318	-130.01389	178.4	0.8	1541.5	1542.2	Looks like the MTR slid down the mound and is at the base of it now.
4215	8/24/2015	23:46:04	45.93318	-130.01389	178.4	0.9	1541.5	1542.3	HIGHLIGHTS: HD highlights start During sample J824-HFS-07 at Anemone.
4216	8/24/2015	23:46:15	45.93318	-130.01389	178.4	0.8	1541.5	1542.2	HIGHLIGHTS: HD highlights stop About 2 minutes of highlights.
4217	8/24/2015	23:47:38	45.93318	-130.01389	178.5	0.9	1541.5	1542.3	J824-HFS-07 cont. Unfiltered bag #22. Stop 2347. Tmax=20.5 Tavg=19.7 Vol=938ml. T2=10.
4219	8/24/2015	23:48:41	45.93318	-130.01389	178.5	0.9	1541.5	1542.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4220	8/24/2015	23:48:46	45.93318	-130.01389	178.5	0.9	1541.5	1542.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4221	8/24/2015	23:48:52	45.93318	-130.01389	178.5	0.9	1541.5	1542.4	**SAMPLE: HFS J824-HFS-08** filtered bag #21. Start 2348:30.
4223	8/24/2015	23:51:20	45.93318	-130.01389	178.4	0.9	1541.5	1542.4	J824-HFS-08 cont. This sample is for chemistry. 45.933177 130.013868. Z=1541 Hdg 178.
4225	8/24/2015	23:52:22	45.93318	-130.01389	178.5	0.9	1541.5	1542.4	J824-HFS-08 cont. stop 2352:51. Tmax=20.4 Tavg=17.9 Vol=755ml T2=8.5.
4229	8/25/2015	00:00:09	45.93318	-130.01389	178.3	0.9	1541.5	1542.4	Frame_Grab:
4230	8/25/2015	00:00:09	45.93318	-130.01389	178.3	0.9	1541.5	1542.4	Frame_Grab:
4236	8/25/2015	00:10:45	45.93318	-130.01389	178.2	0.8	1541.6	1542.5	**SAMPLE: HFS J824-HFS-09** RNA filter #10. Start 2353. This will be 4500ml. Vent about 3/4m tall. Sample Stop 0011.
4237	8/25/2015	00:11:42	45.93318	-130.01389	176.8	0.8	1541.7	1542.4	J824-HFS-09 RNA filter #10. Tmax=19.6 Tavg=16.6 T2=8.5 vol=3905.
4238	8/25/2015	00:11:58	45.93318	-130.01389	176.8	0.8	1541.6	1542.4	Removing sampler and giving it a shake to clean it up before stowing.
4240	8/25/2015	00:12:18	45.93318	-130.01389	176.9	0.8	1541.6	1542.4	Next need to pickup the MTR. Should be MTR3317.
4241	8/25/2015	00:12:56	45.93318	-130.01389	176.8	0.8	1541.6	1542.4	**RECOVER: MTR** temp probe 3317. The MTR is at the base of Anemone to the left of the sampling flow site.
4242	8/25/2015	00:13:56	45.93318	-130.01389	177.2	0.8	1541.6	1542.3	Holding the recovered MTR in the stbd manipulator and grabbing the one to be deployed in the left.
4244	8/25/2015	00:14:34	45.93317	-130.01389	177.2	0.8	1541.5	1542.3	Don't want the MTR in the chimney water but just next to it.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4245	8/25/2015	00:15:18	45.93317	-130.01389	177.2	0.8	1541.5	1542.3	It is to the right of the chimlets to right of the flow. Might be to hot here. This is MTR 3043
4246	8/25/2015	00:15:44	45.93317	-130.01389	177.3	0.8	1541.5	1542.2	Moving the MTR further to the right away from the main flow. Now putting it in the cluster of palm worms.
4248	8/25/2015	00:16:15	45.93317	-130.01389	177.3	0.8	1541.5	1542.2	That doesn't look stable there. Moving it again.
4249	8/25/2015	00:16:45	45.93317	-130.01389	177.2	0.8	1541.5	1542.3	**DEPLOY: MTR** 3043 temp probe Set it down in the front of the flow but now pushing it into the nest of worm to the right of the flow and sampling site.
4250	8/25/2015	00:17:10	45.93317	-130.01389	177.1	0.8	1541.6	1542.4	This is where the old MTR used to be before it rolled down the vent.
4252	8/25/2015	00:19:09	45.93318	-130.01389	176.1	1.8	1540.1	1541.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4253	8/25/2015	00:19:41	45.93318	-130.01389	176.1	1.7	1540.1	1541.8	The recovered MTR is still in the stbd manipulator.
4255	8/25/2015	00:20:20	45.93318	-130.01389	176.1	1.8	1540.1	1541.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4256	8/25/2015	00:20:20	45.93318	-130.01389	176.1	1.8	1540.1	1541.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4257	8/25/2015	00:21:57	45.93319	-130.01389	176.2	1.8	1540.1	1541.8	Placing MTR3317 in the stbd biobox.
4259	8/25/2015	00:22:11	45.93319	-130.01389	176.2	1.7	1540.1	1541.8	Heading to AX-106 benchmark for pressure readings.
4260	8/25/2015	00:23:07	45.93320	-130.01388	139.0	1.9	1539.8	1541.7	HIGHLIGHTS: HD highlights start Leaving Anemone.
4261	8/25/2015	00:23:39	45.93323	-130.01386	58.8	2.1	1539.7	1541.8	HIGHLIGHTS: HD highlights stop
4262	8/25/2015	00:23:50	45.93324	-130.01386	62.4	2.0	1539.9	1541.9	Zoomed in on Phoenix.
4263	8/25/2015	00:24:00	45.93326	-130.01386	61.3	2.3	1540.2	1542.5	Lots of smoke coming from Phoenix.
4265	8/25/2015	00:24:04	45.93327	-130.01385	61.9	2.3	1540.3	1542.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4266	8/25/2015	00:26:00	45.93350	-130.01360	51.4	1.5	1541.3	1542.8	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4268	8/25/2015	00:26:23	45.93353	-130.01357	50.7	2.1	1540.7	1542.7	Travelling across the east side of ASHES. Heading to AX-106.
4269	8/25/2015	00:26:40	45.93355	-130.01354	49.3	2.9	1539.7	1542.6	Little iron oxide puff with a dive weight.
4270	8/25/2015	00:27:29	45.93360	-130.01349	50.2	2.8	1539.5	1542.4	Passing Mkr-47 I believe.
4272	8/25/2015	00:28:28	45.93367	-130.01361	353.9	3.4	1539.8	1543.2	Still in the main ASHES field but not much going on - the east side.
4273	8/25/2015	00:28:51	45.93365	-130.01366	256.2	2.1	1541.1	1543.3	RSN cable near Mushroom.
4274	8/25/2015	00:29:04	45.93362	-130.01366	271.8	1.8	1541.3	1543.1	Mushroom looks good. Lots of biota.
4275	8/25/2015	00:29:26	45.93361	-130.01367	286.8	1.3	1541.3	1542.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4276	8/25/2015	00:29:31	45.93361	-130.01367	286.9	1.3	1541.3	1542.6	input SciCam (port 1) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4278	8/25/2015	00:30:08	45.93367	-130.01366	292.8	2.5	1540.7	1543.2	RSN video camera. It was replaced recently so it should be up and working now.
4279	8/25/2015	00:31:42	45.93371	-130.01351	56.0	1.0	1541.2	1542.2	Approaching a small marker. It's probably Mkr-31.
4280	8/25/2015	00:31:59	45.93371	-130.01348	76.2	1.4	1540.6	1542.0	Passing over a little anhydrite. It's probably Marshmallow.
4282	8/25/2015	00:32:21	45.93369	-130.01341	81.8	1.9	1540.4	1542.3	Marshmallow was really vigorous flow.
4283	8/25/2015	00:32:36	45.93369	-130.01335	91.5	1.6	1540.6	1542.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4284	8/25/2015	00:32:39	45.93369	-130.01333	90.9	2.3	1540.1	1542.4	Virgin coming up. Hot fluid pouring out.
4285	8/25/2015	00:32:46	45.93369	-130.01331	90.0	2.8	1539.6	1542.4	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4287	8/25/2015	00:33:35	45.93366	-130.01325	65.1	2.4	1540.4	1542.8	Correction: Sandbags and donut left here in 2013 by the thermal energy group.
4288	8/25/2015	00:33:58	45.93367	-130.01318	51.7	2.0	1540.3	1542.4	Another sandbag.
4290	8/25/2015	00:35:05	45.93376	-130.01306	57.9	2.3	1540.1	1542.4	Out of ASHES and heading toward the AX-106 benchmark east of ASHES.
4291	8/25/2015	00:35:17	45.93376	-130.01305	55.7	2.2	1540.2	1542.4	Cable on the port side.
4293	8/25/2015	00:36:09	45.93381	-130.01295	52.9	2.4	1540.2	1542.6	Patches of yellowish mat on the seafloor.
4294	8/25/2015	00:37:10	45.93388	-130.01284	51.5	1.8	1540.3	1542.1	Jumbled up mess of lava. Lots of brittle stars on the lavas.
4295	8/25/2015	00:37:37	45.93391	-130.01278	51.8	1.7	1540.5	1542.2	Holothurians on this jumbled lobate lava flow.
4297	8/25/2015	00:38:21	45.93395	-130.01268	52.0	2.2	1540.6	1542.7	We are 100 meters SW of the benchmark.
4299	8/25/2015	00:40:30	45.93406	-130.01244	51.7	1.1	1541.3	1542.3	Sea star.
4302	8/25/2015	00:45:40	45.93435	-130.01188	55.9	1.1	1541.7	1542.8	Passing a holothurian sticking up on its hind legs (if it had any legs).
4304	8/25/2015	00:46:09	45.93438	-130.01182	55.9	1.2	1541.7	1542.9	On our way to the benchmark NE of ASHES. Passing over lobate lavas now.
4305	8/25/2015	00:46:32	45.93439	-130.01180	55.5	0.8	1542.4	1543.2	Rattail; starfish; shrimp.
4306	8/25/2015	00:47:15	45.93439	-130.01181	55.9	0.9	1542.2	1543.1	We're on old lava here. Lots of sediment and biota.
4307	8/25/2015	00:47:49	45.93441	-130.01176	55.8	2.2	1541.0	1543.2	An anchor to the right.
4308	8/25/2015	00:47:58	45.93442	-130.01175	56.4	2.3	1540.9	1543.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4309	8/25/2015	00:48:01	45.93442	-130.01174	56.2	2.4	1540.8	1543.2	The benchmark up ahead.
4311	8/25/2015	00:48:24	45.93444	-130.01171	61.2	2.9	1540.1	1543.0	There it is. Approaching the benchmark from the west.
4312	8/25/2015	00:48:53	45.93445	-130.01168	67.9	1.9	1541.2	1543.0	There is no marker associated with this benchmark. Only the highly reflective flag.
4313	8/25/2015	00:49:15	45.93445	-130.01167	68.6	1.0	1541.8	1542.8	More hydroids on the flag rope.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4314	8/25/2015	00:49:52	45.93446	-130.01167	68.4	0.8	1542.1	1542.9	AX-106 says "Larry was here". He was an AB on the ship when it was deployed.
4316	8/25/2015	00:50:25	45.93446	-130.01167	67.9	0.8	1542.1	1542.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4317	8/25/2015	00:50:30	45.93446	-130.01167	68.0	0.8	1542.1	1542.9	HIGHLIGHTS: HD highlights start AX-106 pressure reading procedure.
4318	8/25/2015	00:51:14	45.93446	-130.01167	68.0	0.8	1542.1	1542.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4319	8/25/2015	00:51:18	45.93446	-130.01167	67.8	0.8	1542.1	1542.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4320	8/25/2015	00:51:26	45.93446	-130.01167	67.9	0.8	1542.0	1542.8	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4321	8/25/2015	00:51:41	45.93446	-130.01167	68.0	0.8	1542.0	1542.8	Grabbing the sensor and placing it in the groove on the benchmark. There is a mini-BPR here as well.
4322	8/25/2015	00:51:56	45.93446	-130.01167	68.0	0.8	1542.1	1542.8	Sensor placed.
4323	8/25/2015	00:52:01	45.93446	-130.01167	68.0	0.8	1542.0	1542.8	HIGHLIGHTS: HD highlights stop
4325	8/25/2015	00:52:10	45.93446	-130.01167	68.0	0.8	1542.1	1542.8	PRESSURE: Start AX106
4326	8/25/2015	00:52:46	45.93446	-130.01167	68.0	0.8	1542.0	1542.8	1508250051.ax106 file name for this pressure readings east of ASHES.
4327	8/25/2015	00:52:48	45.93446	-130.01167	68.0	0.8	1542.1	1542.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4330	8/25/2015	00:56:18	45.93446	-130.01166	68.1	0.8	1542.1	1542.8	Grabbing frames of ash on the benchmark. All times we have seen it is on the outer edge of the benchmark.
4331	8/25/2015	00:56:24	45.93446	-130.01166	68.1	0.8	1542.1	1542.8	Lots of brittle stars.
4332	8/25/2015	00:57:19	45.93446	-130.01166	68.2	0.8	1542.1	1542.8	Taking some HD grabs with the super scorpio.
4335	8/25/2015	01:01:54	45.93446	-130.01165	68.3	0.8	1542.1	1542.9	Done playing with the sci-cam. Bill is zooming in on a star fish.
4337	8/25/2015	01:03:06	45.93445	-130.01165	68.1	0.8	1542.1	1542.8	Have been looking at sea stars; brittle stars and hydroids.
4339	8/25/2015	01:04:27	45.93445	-130.01165	68.4	0.8	1542.1	1542.9	Back to looking at the 2 pressure sensors on the benchmark at AX-106. One is a mini-BPR (green). The other is our pressure sensor.
4341	8/25/2015	01:07:27	45.93445	-130.01165	68.6	0.8	1542.1	1542.9	5 more minutes for this reading. This will be the last reading here at AX-106 during this expedition.
4344	8/25/2015	01:11:11	45.93445	-130.01165	68.4	0.8	1542.1	1542.9	PRESSURE: End
4346	8/25/2015	01:11:20	45.93445	-130.01165	68.4	0.8	1542.1	1542.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4347	8/25/2015	01:11:26	45.93445	-130.01165	68.4	0.8	1542.1	1542.9	Stowing and going.... Next will head to AX-308.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4348	8/25/2015	01:11:44	45.93445	-130.01166	68.3	0.8	1542.2	1542.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4350	8/25/2015	01:12:01	45.93445	-130.01166	68.9	1.5	1541.6	1543.1	We have mixed up the order of the readings a bit because we will not be able to go to all the benchmarks.
4351	8/25/2015	01:12:10	45.93445	-130.01168	69.0	2.3	1540.8	1543.1	Jason off bottom
4352	8/25/2015	01:12:24	45.93447	-130.01170	40.9	4.1	1539.1	1543.2	Transit to AX-308.
4354	8/25/2015	02:09:27	45.93178	-129.99899	286.9	56.4	1475.5	1531.8	Closing in on the benchmark at AX-308. Still in the water column.
4355	8/25/2015	02:11:34	45.93169	-129.99895	154.0	5.5	1527.0	1532.4	Jason on bottom The BPR mooring is not here anymore. We recovered it this dive. It died when Matt was getting it ready to redeploy. It won't go back out this year.
4356	8/25/2015	02:11:41	45.93169	-129.99895	154.1	3.6	1528.9	1532.5	Now Jason is on the bottom.
4358	8/25/2015	02:12:22	45.93162	-129.99884	166.8	1.3	1531.1	1532.5	The AX-308 benchmark is right in front of us. Great navigation.
4359	8/25/2015	02:13:27	45.93158	-129.99880	267.1	1.3	1531.5	1532.8	Zooming in on the benchmark. There is a mini-BPR parked on the benchmark.
4360	8/25/2015	02:13:36	45.93158	-129.99880	266.5	1.0	1531.7	1532.8	Settling in to do the pressure reading.
4362	8/25/2015	02:14:53	45.93158	-129.99880	267.2	0.8	1532.0	1532.8	Jason grabbing the sensor out of its cradle.
4363	8/25/2015	02:15:40	45.93158	-129.99880	267.2	0.8	1532.0	1532.8	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4364	8/25/2015	02:15:47	45.93158	-129.99880	267.3	0.8	1532.0	1532.8	Need to shoo the brittle stars out of the groove on the benchmark before the final placement.
4365	8/25/2015	02:15:56	45.93158	-129.99880	267.3	0.8	1532.0	1532.8	Positioning the sensor.
4367	8/25/2015	02:16:04	45.93158	-129.99880	267.3	0.8	1532.0	1532.8	PRESSURE: Start
4368	8/25/2015	02:16:23	45.93158	-129.99881	267.4	0.8	1532.0	1532.8	AX-308 pressure sensor reading.
4369	8/25/2015	02:17:16	45.93158	-129.99881	267.3	0.8	1532.0	1532.8	AX-308 pressure reading file: 1508250215.ax308
4370	8/25/2015	02:18:01	45.93158	-129.99881	267.3	0.8	1532.0	1532.8	Little rattail under the vehicle - seen in the bottom cam.
4372	8/25/2015	02:19:32	45.93158	-129.99881	267.3	0.8	1532.0	1532.8	Zoomed in on the benchmark.
4374	8/25/2015	02:20:02	45.93158	-129.99881	267.3	0.8	1532.0	1532.8	There is ash on the back edge of this benchmark too.
4375	8/25/2015	02:20:15	45.93158	-129.99881	267.3	0.8	1532.0	1532.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4376	8/25/2015	02:21:01	45.93158	-129.99880	267.1	0.8	1532.0	1532.8	A cluster of sea stars beneath the benchmark - and everywhere else.....
4378	8/25/2015	02:22:39	45.93158	-129.99880	267.1	0.8	1532.0	1532.8	This benchmark was put out in 2013 so not as many hydroids on the line.
4379	8/25/2015	02:22:52	45.93158	-129.99880	267.1	0.8	1532.0	1532.8	Pretty hydroids.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4380	8/25/2015	02:22:58	45.93158	-129.99880	267.1	0.8	1532.0	1532.8	A worm of some type.
4381	8/25/2015	02:23:03	45.93158	-129.99880	267.1	0.8	1532.0	1532.8	More hydroids.
4382	8/25/2015	02:24:01	45.93158	-129.99880	267.2	0.8	1532.0	1532.8	The benchmark at ASHES was put out in 2010 and it was covered in hydroids - not as healthy looking as these.
4384	8/25/2015	02:24:11	45.93158	-129.99880	267.1	0.8	1532.0	1532.8	The hydroids here have more room to spread out.
4386	8/25/2015	02:26:28	45.93158	-129.99880	267.3	0.8	1532.0	1532.8	That's only speculation by the logger.
4387	8/25/2015	02:26:33	45.93158	-129.99880	267.3	0.8	1532.0	1532.8	Big red shrimp.
4388	8/25/2015	02:27:07	45.93158	-129.99880	267.3	0.8	1532.0	1532.8	Great big huge shrimp.
4390	8/25/2015	02:28:31	45.93159	-129.99880	267.3	0.8	1532.0	1532.8	The little rattail is still under us. What is it doing?
4391	8/25/2015	02:29:57	45.93159	-129.99880	267.4	0.8	1532.0	1532.8	The mini-BPRs will be out here for 2 years.
4396	8/25/2015	02:36:03	45.93159	-129.99880	267.5	0.8	1532.0	1532.8	PRESSURE: End
4397	8/25/2015	02:37:08	45.93158	-129.99880	267.5	0.8	1532.0	1532.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4398	8/25/2015	02:37:25	45.93158	-129.99880	267.3	0.8	1532.0	1532.9	Picking up the sensor and will return it to the cradle.
4399	8/25/2015	02:37:34	45.93158	-129.99880	267.2	0.8	1532.1	1532.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4400	8/25/2015	02:37:34	45.93158	-129.99880	267.2	0.8	1532.1	1532.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4401	8/25/2015	02:37:34	45.93158	-129.99880	267.2	0.8	1532.1	1532.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4402	8/25/2015	02:37:46	45.93158	-129.99880	267.2	0.8	1532.1	1532.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4404	8/25/2015	02:38:37	45.93158	-129.99880	267.2	0.8	1532.1	1532.9	Placing the sensor in the cradle.
4405	8/25/2015	02:39:59	45.93158	-129.99879	216.7	2.3	1530.3	1532.6	Jason off bottom
4407	8/25/2015	02:40:55	45.93158	-129.99877	150.6	2.8	1530.0	1532.8	Actually still looking at the bottom.
4408	8/25/2015	02:41:38	45.93149	-129.99868	152.5	6.0	1526.4	1532.4	Next stop AX-307 (called W Magnesia). It will be about 1.5 hours.
4409	8/25/2015	02:41:42	45.93147	-129.99867	170.3	7.5	1525.2	1532.6	Jason off bottom
4411	8/25/2015	04:02:17	45.94471	-130.00834	139.1	53.8	1489.9	1543.6	NAV: Doppler Reset
4412	8/25/2015	04:02:17	45.94471	-130.00834	139.1	53.8	1489.9	1543.6	NAV: Doppler Reset
4414	8/25/2015	04:07:02	45.94535	-130.00918	139.4	22.2	1523.0	1545.1	Jason is ready to go back down to the seafloor at the AX-307 site.
4416	8/25/2015	04:08:08	45.94536	-130.00918	138.4	11.9	1533.2	1545.1	Jimmy noticed the HFS wand is not in its proper holster in the basket.
4417	8/25/2015	04:08:33	45.94536	-130.00918	138.8	4.8	1540.2	1545.0	Bottom in site.
4418	8/25/2015	04:08:48	45.94537	-130.00919	146.8	3.7	1541.4	1545.2	The benchmark is directly below us.
4419	8/25/2015	04:09:32	45.94539	-130.00916	166.6	3.7	1541.3	1545.0	Basket is coming out.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4421	8/25/2015	04:10:06	45.94539	-130.00917	172.2	2.6	1542.5	1545.1	Approaching the benchmark at West Magnesia AX-307.
4422	8/25/2015	04:10:46	45.94538	-130.00918	177.4	1.2	1544.0	1545.2	There is also a marker here. Mkr-127.
4424	8/25/2015	04:12:06	45.94538	-130.00918	175.1	0.8	1544.5	1545.2	HIGHLIGHTS: HD highlights start Retrieving the instrument from the basket.
4425	8/25/2015	04:12:52	45.94539	-130.00918	175.2	0.8	1544.4	1545.2	Placing the instrument on the benchmark.
4426	8/25/2015	04:13:13	45.94539	-130.00918	175.2	0.8	1544.4	1545.2	A few brittle stars and one underneath.
4427	8/25/2015	04:13:23	45.94539	-130.00918	175.1	0.8	1544.4	1545.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4428	8/25/2015	04:14:00	45.94539	-130.00918	175.1	0.8	1544.4	1545.3	The brittle star is no longer a problem.
4430	8/25/2015	04:14:09	45.94539	-130.00918	175.1	0.8	1544.4	1545.2	Centering the instrument in the landing pad.
4431	8/25/2015	04:15:49	45.94539	-130.00918	175.2	0.8	1544.4	1545.2	Position looks good but pressing down on top and it wobbles.
4432	8/25/2015	04:16:00	45.94539	-130.00918	175.2	0.8	1544.5	1545.2	Must be a brittle star or something underneath still.
4434	8/25/2015	04:16:15	45.94539	-130.00918	175.1	0.8	1544.4	1545.2	Picking up the instrument.
4435	8/25/2015	04:16:47	45.94539	-130.00918	175.2	0.8	1544.4	1545.2	There was a star underneath which has now escaped.
4436	8/25/2015	04:16:54	45.94539	-130.00918	175.1	0.8	1544.4	1545.2	Repositioning on the pad.
4437	8/25/2015	04:17:01	45.94539	-130.00918	175.2	0.8	1544.4	1545.2	Looks good.
4438	8/25/2015	04:17:13	45.94539	-130.00918	175.1	0.8	1544.4	1545.2	PRESSURE: Start AX-307 begin.
4439	8/25/2015	04:17:30	45.94539	-130.00918	175.1	0.8	1544.4	1545.2	1508250417.ax307 is the data file name.
4444	8/25/2015	04:24:36	45.94539	-130.00919	174.9	0.8	1544.4	1545.2	This site seems very desolate and lonely out on the sediment covered sheet flow.
4449	8/25/2015	04:32:53	45.94539	-130.00919	174.8	0.8	1544.4	1545.2	Looks like a ring of ash on the edges of this benchmark AX-307.
4450	8/25/2015	04:33:21	45.94539	-130.00919	174.8	0.8	1544.4	1545.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4451	8/25/2015	04:33:28	45.94539	-130.00919	174.8	0.8	1544.4	1545.2	Framegrab of the brittle stars and ash on the benchmark.
4452	8/25/2015	04:33:28	45.94539	-130.00919	174.8	0.8	1544.4	1545.2	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
4456	8/25/2015	04:38:34	45.94539	-130.00918	174.8	0.8	1544.4	1545.2	PRESSURE: End Finished at AX-307 W. Magnesia benchmark.
4457	8/25/2015	04:38:46	45.94539	-130.00918	174.8	0.8	1544.4	1545.2	Retrieving the pressure instrument from the benchmark.
4458	8/25/2015	04:39:14	45.94539	-130.00918	174.8	0.8	1544.4	1545.2	Next site is AX-101 at Caldera Center. Placing instrument back in the basket.
4460	8/25/2015	04:40:14	45.94540	-130.00919	175.8	2.8	1542.3	1545.1	Next site is at bearing 357 and range 1.1km to AX-101.
4461	8/25/2015	04:40:19	45.94540	-130.00918	203.0	3.7	1541.4	1545.1	Lifting off and on our way.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4462	8/25/2015	04:40:26	45.94541	-130.00919	214.3	4.9	1540.1	1545.0	Retracting the basket.
4464	8/25/2015	04:42:59	45.94558	-130.00917	357.1	4.4	1539.3	1543.8	What is that? Old anchor and old benchmark perhaps.
4466	8/25/2015	04:44:33	45.94559	-130.00917	357.0	5.0	1538.8	1543.8	Lava flows and sediment. Waiting for the ship and Medea to get underway.
4467	8/25/2015	04:45:26	45.94563	-130.00917	354.1	2.1	1541.0	1543.2	Crumpled sheet flow.
4469	8/25/2015	04:46:40	45.94574	-130.00916	353.6	1.2	1542.2	1543.4	Jagged flow and crab.
4470	8/25/2015	04:47:27	45.94584	-130.00915	359.1	1.8	1542.6	1544.4	Smoother and tending toward lineated sheet flow.
4471	8/25/2015	04:47:57	45.94592	-130.00918	356.9	1.3	1542.3	1543.6	Many sea cucumbers.
4473	8/25/2015	04:48:33	45.94602	-130.00920	358.5	2.1	1541.8	1543.8	Coming up on a lobate flow.
4474	8/25/2015	04:48:58	45.94610	-130.00920	357.6	1.8	1542.6	1544.4	Lobates were just at edge of a collapse and now seeing sheet flow again.
4475	8/25/2015	04:49:25	45.94615	-130.00921	357.9	2.0	1542.5	1544.5	Small pressure ridge of jumble and back into flat sheet flow.
4476	8/25/2015	04:49:39	45.94617	-130.00921	355.1	1.6	1543.0	1544.6	Fish.
4478	8/25/2015	04:51:06	45.94633	-130.00931	357.5	2.0	1543.2	1545.2	Small channels in sheet flow.
4479	8/25/2015	04:51:48	45.94641	-130.00937	356.2	2.8	1541.6	1544.5	Edge of sheet flow transitioning into jumbled and jagged area.
4481	8/25/2015	04:53:16	45.94658	-130.00943	355.8	2.2	1542.3	1544.5	Smoother sheet flow.
4484	8/25/2015	04:56:39	45.94683	-130.00945	356.7	1.1	1541.8	1542.9	Pillows.
4485	8/25/2015	04:57:05	45.94688	-130.00944	358.1	1.7	1541.1	1542.8	Lobate flow opens up to collapse area.
4487	8/25/2015	04:59:28	45.94716	-130.00948	357.2	1.1	1541.6	1542.7	Lobate flows with quite a bit of sediment.
4489	8/25/2015	05:01:43	45.94738	-130.00948	357.7	1.0	1541.4	1542.4	Edge of lobate flow into collapse area.
4491	8/25/2015	05:02:09	45.94744	-130.00948	357.0	2.6	1541.6	1544.2	Arch and bridge with lobates on top.
4492	8/25/2015	05:03:09	45.94760	-130.00947	358.1	1.4	1542.0	1543.4	Many animals on the high spots above the collapse probably catching the current.
4493	8/25/2015	05:03:29	45.94766	-130.00946	357.8	1.9	1542.7	1544.6	Back into flat sheet flow and sediment at bottom of collapse
4494	8/25/2015	05:03:56	45.94772	-130.00946	358.4	1.5	1540.9	1542.4	Also quite a few sea stars.
4496	8/25/2015	05:04:57	45.94790	-130.00948	358.0	1.8	1540.7	1542.5	Nice long bridge of lobates in the collapse that we are following.
4498	8/25/2015	05:06:15	45.94811	-130.00947	359.0	4.6	1540.3	1544.9	Edge of flow above the collapse.
4499	8/25/2015	05:06:53	45.94820	-130.00946	358.1	1.2	1541.1	1542.3	Heavily sedimented at the top of this flattened lobate flow.
4500	8/25/2015	05:07:03	45.94820	-130.00946	358.0	1.3	1541.0	1542.3	Increasing the ship speed slightly.
4502	8/25/2015	05:09:36	45.94838	-130.00947	357.6	1.2	1541.3	1542.5	Larger pillows in intact flow.
4504	8/25/2015	05:11:26	45.94860	-130.00950	357.7	1.0	1541.4	1542.4	Lobate pockets filled with sediment.
4506	8/25/2015	05:13:07	45.94877	-130.00949	357.6	1.1	1541.5	1542.6	Coming up to an edge of collapse in the lobate flow with some exposed tubes.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4508	8/25/2015	05:14:15	45.94884	-130.00949	357.7	2.4	1542.2	1544.6	Flat and sedimented sheet flow.
4509	8/25/2015	05:14:38	45.94890	-130.00949	357.4	3.3	1541.3	1544.6	Here is the far side of the collapse with lobates on top.
4510	8/25/2015	05:15:23	45.94899	-130.00948	357.8	1.5	1541.1	1542.6	Big tubes.
4512	8/25/2015	05:16:14	45.94911	-130.00948	359.2	3.7	1540.4	1544.1	Large sea star.
4513	8/25/2015	05:17:00	45.94929	-130.00949	356.7	4.0	1540.6	1544.6	Coming up to edge of collapse with large tubes and pillow flow.
4515	8/25/2015	05:18:06	45.94964	-130.00946	357.7	2.2	1540.6	1542.8	Lobates and sediment with large pillows and tubes. Fish.
4516	8/25/2015	05:18:15	45.94968	-130.00948	357.2	2.1	1540.8	1542.9	Broken skins on pillows.
4518	8/25/2015	05:20:57	45.95024	-130.00966	358.8	1.8	1536.0	1537.8	More sediment and flattening out.
4519	8/25/2015	05:21:20	45.95033	-130.00965	358.7	2.0	1535.4	1537.3	Anemone.
4521	8/25/2015	05:22:14	45.95042	-130.00962	357.3	2.3	1534.5	1536.8	Ship is traveling at .6m/sec.
4523	8/25/2015	05:24:56	45.95055	-130.00961	357.8	2.0	1535.6	1537.6	Glassier looking lava with heavy sediment.
4525	8/25/2015	05:26:02	45.95086	-130.00955	2.2	2.7	1531.9	1534.6	Lots of pillow and tubes and sediment.
4527	8/25/2015	05:28:08	45.95139	-130.00960	358.9	3.9	1530.2	1534.1	Quite an extensive flow of large pillows and tubes.
4529	8/25/2015	05:31:30	45.95196	-130.00951	358.6	2.3	1529.6	1531.9	Flow is flattening so seeing more sediment.
4532	8/25/2015	05:34:55	45.95218	-130.00963	5.5	3.7	1527.4	1531.1	Sheet flow.
4534	8/25/2015	05:36:21	45.95234	-130.00984	356.8	1.9	1528.9	1530.8	More lobate features.
4535	8/25/2015	05:37:43	45.95258	-130.00983	357.8	1.6	1530.3	1531.8	Striations in some sheets and back to lobates.
4537	8/25/2015	05:39:03	45.95288	-130.00978	2.1	1.9	1531.6	1533.6	Larger tubes and pillows.
4539	8/25/2015	05:40:12	45.95318	-130.00974	2.3	2.7	1533.0	1535.8	Large sediment feature with pillows at edge. Super flat sheet flow.
4540	8/25/2015	05:41:36	45.95339	-130.00974	358.3	3.0	1531.9	1534.9	Crossing a channel of sheet flow and lobates on the edge.
4542	8/25/2015	05:43:31	45.95367	-130.00967	2.7	2.2	1532.1	1534.3	Following an edge of sheet flow to the east and pillow to the west.
4543	8/25/2015	05:43:42	45.95372	-130.00966	6.0	2.6	1531.6	1534.2	Extra large pillows and tubes.
4545	8/25/2015	05:45:00	45.95399	-130.00975	1.5	2.9	1530.1	1533.1	Cracked pillows and striated skins.
4547	8/25/2015	05:46:18	45.95422	-130.00974	0.1	1.6	1531.1	1532.7	Almost at Caldera Center. Lots of sediment and big pillows.
4549	8/25/2015	05:48:46	45.95460	-130.00972	0.6	2.4	1528.0	1530.4	Sheet flow with lots of sediment. Small pressure ridge.
4550	8/25/2015	05:48:55	45.95462	-130.00972	358.5	2.1	1527.7	1529.8	Super flat sheet flow and heavily sedimented.
4551	8/25/2015	05:49:50	45.95472	-130.00973	359.7	1.5	1528.2	1529.7	Crossing large flow channel that matches great with the underlay map.
4552	8/25/2015	05:50:00	45.95474	-130.00974	0.3	1.4	1528.2	1529.7	NAV: Doppler Reset to USBL.
4554	8/25/2015	05:51:29	45.95498	-130.00982	355.2	3.0	1526.2	1529.2	Still crossing flat sheet flow channel matching with navigation bathymetry map.
4556	8/25/2015	05:52:26	45.95514	-130.00983	0.3	3.8	1526.7	1530.5	Dropped off an edge.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4557	8/25/2015	05:53:02	45.95516	-130.00984	357.7	3.1	1529.0	1532.0	Shrimp.
4559	8/25/2015	05:54:21	45.95524	-130.00992	279.1	4.6	1528.6	1533.2	There is a marker and a benchmark.
4560	8/25/2015	05:54:36	45.95524	-130.00994	279.4	4.2	1528.3	1532.5	Another marker to the east 5m.
4561	8/25/2015	05:54:57	45.95524	-130.00996	265.3	3.7	1528.9	1532.6	This is Caldera Center at AX-101.
4562	8/25/2015	05:55:23	45.95524	-130.00996	256.5	3.3	1529.2	1532.6	The reflective flag was 'flying' away from Jason and not as easily spotted.
4563	8/25/2015	05:55:28	45.95524	-130.00996	244.1	3.0	1529.5	1532.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4564	8/25/2015	05:55:28	45.95524	-130.00996	244.1	3.0	1529.5	1532.5	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
4565	8/25/2015	05:55:34	45.95524	-130.00997	244.9	2.8	1529.8	1532.6	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4566	8/25/2015	05:55:39	45.95524	-130.00997	243.3	2.4	1530.1	1532.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4567	8/25/2015	05:55:51	45.95525	-130.00998	249.6	1.9	1530.7	1532.6	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4568	8/25/2015	05:55:58	45.95526	-130.00999	244.7	2.0	1530.8	1532.8	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4570	8/25/2015	05:56:25	45.95526	-130.00999	249.3	1.1	1531.7	1532.7	Jason is approaching the benchmark.
4571	8/25/2015	05:56:59	45.95526	-130.00999	244.8	0.8	1532.1	1532.9	Still a bit of ash left on the benchmark after it was suctioned on its last visit.
4572	8/25/2015	05:57:23	45.95526	-130.00999	244.7	0.8	1532.0	1532.7	Retrieving the pressure instrument from the basket.
4577	8/25/2015	05:58:16	45.95526	-130.00999	244.0	0.8	1531.9	1532.7	Placing instrument on benchmark but there is a brittle star refusing to vacate.
4578	8/25/2015	05:58:54	45.95526	-130.00999	243.7	0.8	1531.9	1532.7	It will not leave.
4580	8/25/2015	06:00:18	45.95526	-130.00999	244.0	0.8	1531.9	1532.7	Looks like the instrument is in the landing zone but needs to be centered. Getting a nudge.
4581	8/25/2015	06:00:55	45.95526	-130.00999	243.5	0.8	1531.9	1532.7	Doesn't look right so will adjust again.
4582	8/25/2015	06:01:11	45.95526	-130.00999	243.7	0.8	1531.9	1532.7	Now it is aligned properly.
4583	8/25/2015	06:01:41	45.95526	-130.00999	243.8	0.8	1531.9	1532.6	PRESSURE: Start AX-101 begin.
4585	8/25/2015	06:02:05	45.95526	-130.00999	243.9	0.8	1531.9	1532.7	15082506001.ax101 is the data file.
4590	8/25/2015	06:11:16	45.95526	-130.01000	244.0	0.8	1531.8	1532.6	HIGHLIGHTS: HD highlights stop Highlight ran a bit long on this one.
4597	8/25/2015	06:23:21	45.95526	-130.00999	244.2	0.8	1531.8	1532.5	HIGHLIGHTS: HD highlights stop AX-101 end. Caldera Center.
4598	8/25/2015	06:23:29	45.95526	-130.00999	244.3	0.8	1531.8	1532.5	Done at this site.
4599	8/25/2015	06:23:57	45.95526	-130.00999	244.2	0.8	1531.8	1532.5	Picking up the instrument.
4601	8/25/2015	06:24:22	45.95526	-130.00999	244.1	0.8	1531.8	1532.6	Stowing pressure instrument in the basket.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4602	8/25/2015	06:24:51	45.95526	-130.00998	247.9	1.3	1531.4	1532.7	Lifting off the bottom.
4603	8/25/2015	06:25:45	45.95532	-130.01006	306.6	4.3	1528.3	1532.6	Next site is AX-302 at Trevi. Heading 116 and range is 2272m.
4605	8/25/2015	06:26:31	45.95546	-130.01034	304.9	5.7	1526.2	1531.9	Jason will go into tow mode. About 1.5 hours.
4608	8/25/2015	08:11:56	45.94650	-129.98367	225.9	1.9	1515.6	1517.5	Bottom is in sight. Heading toward AX-302 Trevi.
4610	8/25/2015	08:12:10	45.94647	-129.98373	222.9	3.5	1516.0	1519.5	NAV: Doppler Reset
4611	8/25/2015	08:13:38	45.94633	-129.98382	234.3	1.2	1518.5	1519.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4612	8/25/2015	08:13:47	45.94633	-129.98382	235.7	0.8	1519.2	1520.0	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4613	8/25/2015	08:14:01	45.94633	-129.98382	235.1	0.8	1519.1	1519.8	At Trevi.
4615	8/25/2015	08:14:56	45.94633	-129.98381	234.8	0.8	1519.0	1519.7	HIGHLIGHTS: HD highlights start
4616	8/25/2015	08:15:37	45.94633	-129.98381	234.8	0.8	1518.9	1519.7	Placing pressure sensor on benchmark.
4618	8/25/2015	08:16:16	45.94633	-129.98381	234.8	0.8	1518.9	1519.7	Sensor in place. AX-302 Trevi.
4619	8/25/2015	08:16:38	45.94633	-129.98381	234.9	0.8	1518.9	1519.7	HIGHLIGHTS: HD highlights stop
4620	8/25/2015	08:16:51	45.94633	-129.98381	234.9	0.8	1518.9	1519.7	PRESSURE: Start AX-302
4621	8/25/2015	08:17:26	45.94633	-129.98380	234.8	0.8	1518.9	1519.7	AX-302 filename: 1508250816.ax302
4622	8/25/2015	08:17:55	45.94633	-129.98380	234.9	0.8	1518.9	1519.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4624	8/25/2015	08:18:03	45.94633	-129.98380	234.8	0.8	1518.9	1519.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4626	8/25/2015	08:20:20	45.94633	-129.98380	234.9	0.8	1518.9	1519.6	AX-302 Looking around: at old benchmark at markers at flag.
4628	8/25/2015	08:22:48	45.94632	-129.98380	234.9	0.8	1518.9	1519.6	AX-302 Marker 63.
4629	8/25/2015	08:22:59	45.94632	-129.98379	234.9	0.8	1518.9	1519.6	NAV: Doppler Reset
4632	8/25/2015	08:27:44	45.94633	-129.98379	235.0	0.8	1518.8	1519.6	On a vast lineated sheet flow; collapsed and broken up.
4635	8/25/2015	08:31:04	45.94634	-129.98379	235.1	0.8	1518.8	1519.6	Edge of caldera in view.
4640	8/25/2015	08:37:31	45.94633	-129.98380	235.0	0.8	1518.8	1519.5	PRESSURE: End AX-302
4642	8/25/2015	08:38:37	45.94633	-129.98380	234.8	0.8	1518.8	1519.6	Retrieving pressure sensor from benchmark (AX-302).
4644	8/25/2015	08:40:08	45.94631	-129.98372	141.2	3.1	1516.4	1519.5	Moving toward the Trevi vent.
4645	8/25/2015	08:40:34	45.94626	-129.98367	163.5	2.7	1515.5	1518.1	Bacterial mat amongst jumbled lava.
4646	8/25/2015	08:40:40	45.94625	-129.98367	165.4	2.3	1515.6	1517.9	HIGHLIGHTS: HD highlights start
4647	8/25/2015	08:41:11	45.94623	-129.98367	99.0	3.1	1515.3	1518.3	Spanish Steps in view. Sulfide mound with tubeworms.
4649	8/25/2015	08:42:21	45.94622	-129.98376	165.0	1.8	1517.0	1518.8	Trevi in view. Low mound with anhydrite chimney venting clear fluid.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4650	8/25/2015	08:43:21	45.94621	-129.98374	201.8	1.1	1517.9	1519.0	A background O2 measurement has been ongoing on the Beast: Background oxygen=0.611 ml/L
4651	8/25/2015	08:43:31	45.94621	-129.98374	201.8	1.0	1518.0	1519.0	HIGHLIGHTS: HD highlights stop
4653	8/25/2015	08:45:00	45.94621	-129.98374	202.7	1.1	1517.9	1519.0	Retrieving HOBO; knocked over small chimney.
4654	8/25/2015	08:45:18	45.94621	-129.98374	201.8	1.1	1517.9	1519.0	HOBO tube stuck in the orifice.
4655	8/25/2015	08:45:33	45.94621	-129.98375	201.7	1.0	1518.0	1519.0	The HOBO sleeve has slipped.
4656	8/25/2015	08:45:47	45.94621	-129.98374	201.7	1.1	1517.9	1519.0	RECOVER: HOBO 153 temp probe.
4658	8/25/2015	08:46:44	45.94621	-129.98375	201.5	1.1	1517.9	1519.0	Grabbed Jason temperature probe.
4659	8/25/2015	08:47:21	45.94621	-129.98375	201.5	1.1	1517.9	1519.0	Positioning temperature probe in same orifice that HOBO was in.
4661	8/25/2015	08:49:47	45.94621	-129.98375	201.4	1.1	1517.9	1519.0	Trevi Jason T=240.5C. Cursor position: 45.946195 -129.983756 Depth= 1518m.
4663	8/25/2015	08:51:08	45.94621	-129.98375	201.4	1.1	1517.9	1519.0	Preparing to take HFS water sample.
4665	8/25/2015	08:52:20	45.94621	-129.98376	201.3	1.1	1517.9	1519.0	Flushing HFS.
4667	8/25/2015	08:54:21	45.94621	-129.98376	201.4	1.1	1517.8	1518.9	**SAMPLE: HFS J824-HFS-10**. Trevi START Piston #5 filtered.
4669	8/25/2015	08:56:11	45.94621	-129.98376	201.3	1.1	1517.8	1518.9	J824-HFS-10 Trevi P5 END
4670	8/25/2015	08:56:47	45.94621	-129.98376	201.3	1.1	1517.9	1518.9	Tmax= 241.2 Tavg=241.0 Volume 403ml T2 about 70.
4671	8/25/2015	08:57:14	45.94621	-129.98376	201.3	1.1	1517.9	1519.0	**SAMPLE: HFS J824-HFS-11**. Trevi unfiltered Piston #8 START
4673	8/25/2015	08:59:16	45.94621	-129.98375	201.2	1.1	1517.8	1518.9	J824-HFS-11 END
4675	8/25/2015	09:00:02	45.94621	-129.98375	201.2	1.1	1517.8	1518.9	J824-HFS-11 Tmax = 241.2 Tavg 241.1 Volume 451 ml T2 about 72C.
4679	8/25/2015	09:04:25	45.94621	-129.98374	201.4	1.1	1517.9	1518.9	**SAMPLE: GTB J824-GTB-12** is Green GTB at Trevi. Same lat/long as previous cursor position. Into orifice the HOBO was in.
4681	8/25/2015	09:06:32	45.94621	-129.98374	201.3	1.0	1517.9	1518.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4682	8/25/2015	09:06:59	45.94621	-129.98374	201.3	1.1	1517.8	1518.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4683	8/25/2015	09:07:36	45.94621	-129.98374	201.4	1.1	1517.8	1518.9	**DEPLOY: HOBO** temp probe Deploying HOBO-101 at Trevi into same orifice the other HOBO came out of and we just sampled from.
4685	8/25/2015	09:08:56	45.94621	-129.98375	201.7	1.1	1517.8	1518.9	HOBO body swung away from vehicle like a weather vane.
4686	8/25/2015	09:09:26	45.94621	-129.98375	201.5	1.0	1517.8	1518.9	But the wand is staying in the orifice (HOBO-101)
4688	8/25/2015	09:10:46	45.94622	-129.98375	201.5	1.1	1517.8	1518.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4690	8/25/2015	09:12:03	45.94622	-129.98376	201.9	1.1	1517.8	1518.9	**RECOVER: HOBO** temp probe HOBO 153 from Trevi being stowed with remaining HOBO-103 (yet to be deployed) on sample drawer.
4691	8/25/2015	09:12:48	45.94623	-129.98376	201.7	1.1	1517.8	1518.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4693	8/25/2015	09:14:34	45.94624	-129.98377	202.1	0.8	1518.0	1518.8	Working to secure the HOBOs on the sample drawer.
4695	8/25/2015	09:16:18	45.94625	-129.98378	201.7	1.4	1517.5	1518.8	Leaving Trevi. Heading back toward Spanish Steps.
4696	8/25/2015	09:16:50	45.94624	-129.98374	141.8	2.7	1515.8	1518.5	HIGHLIGHTS: HD highlights start Spanish Steps.
4697	8/25/2015	09:17:53	45.94622	-129.98372	113.6	2.1	1516.1	1518.2	At Spanish Steps: small chimney venting clear fluid and covered with Ridgeia.
4699	8/25/2015	09:18:03	45.94621	-129.98373	86.0	1.9	1516.2	1518.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4700	8/25/2015	09:18:09	45.94621	-129.98373	72.5	1.9	1516.2	1518.1	Circling Spanish Steps.
4701	8/25/2015	09:18:13	45.94620	-129.98373	64.9	1.9	1516.2	1518.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4702	8/25/2015	09:19:03	45.94619	-129.98369	318.4	2.3	1516.1	1518.4	A solo palm worm is at the top of the chimney.
4703	8/25/2015	09:19:34	45.94621	-129.98368	266.0	1.8	1516.2	1517.9	Close up of tubeworms and clear shimmering water at Spanish Steps.
4704	8/25/2015	09:19:48	45.94622	-129.98367	305.2	2.3	1515.7	1518.0	HIGHLIGHTS: HD highlights stop
4706	8/25/2015	09:20:44	45.94620	-129.98368	354.2	4.6	1513.4	1518.0	Leaving Spanish Steps. Heading to AX-303.
4710	8/25/2015	10:27:49	45.93344	-129.98244	232.8	2.1	1512.2	1514.3	Nearing AX-303.
4712	8/25/2015	10:29:10	45.93348	-129.98252	222.4	1.8	1512.2	1514.0	Crossing lobate pillows.
4714	8/25/2015	10:30:38	45.93339	-129.98256	139.5	1.8	1512.1	1514.0	NAV: Doppler Reset Bacterial mat between pillows.
4718	8/25/2015	10:31:14	45.93341	-129.98245	65.4	1.8	1512.3	1514.0	The water is quite murky here.
4721	8/25/2015	10:34:38	45.93346	-129.98226	44.1	0.8	1513.5	1514.2	Looking for the benchmark.
4723	8/25/2015	10:37:58	45.93354	-129.98205	16.4	1.6	1513.7	1515.3	Tubeworms and a rattail.
4726	8/25/2015	10:40:07	45.93348	-129.98229	248.2	1.8	1512.6	1514.4	Hunting for the benchmark.
4734	8/25/2015	10:48:31	45.93361	-129.98242	15.9	1.2	1512.8	1513.9	Wandering around looking for Mkr-33 benchmark. Can't find it.
4735	8/25/2015	10:49:29	45.93356	-129.98223	132.5	1.5	1513.0	1514.5	Andra's notes state the benchmark is 3m north of where the nav says it is.
4737	8/25/2015	10:50:24	45.93355	-129.98212	284.6	2.0	1513.5	1515.5	The depth of the benchmark is 1516.
4738	8/25/2015	10:50:43	45.93356	-129.98218	292.4	1.5	1513.3	1514.9	Still looking.
4739	8/25/2015	10:51:17	45.93361	-129.98226	344.1	1.3	1513.2	1514.5	Going to try to locate the vent now.
4741	8/25/2015	10:53:47	45.93335	-129.98200	131.9	1.6	1513.8	1515.4	We stirred up a lot of floc.
4743	8/25/2015	10:54:37	45.93323	-129.98206	223.7	1.4	1513.9	1515.2	More bacterial mat patches here.
4744	8/25/2015	10:55:54	45.93313	-129.98229	302.0	1.7	1513.5	1515.2	We're at the vent now. Mkr-33 vent here.
4746	8/25/2015	10:56:53	45.93323	-129.98228	7.0	1.7	1513.1	1514.8	The vent is ~ 5m W of the nav target.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4747	8/25/2015	10:57:04	45.93327	-129.98226	5.6	1.7	1513.0	1514.7	The benchmark is dead ahead.
4748	8/25/2015	10:57:13	45.93330	-129.98225	6.7	2.0	1512.8	1514.8	There it is.
4749	8/25/2015	10:57:32	45.93334	-129.98225	342.3	1.2	1513.7	1514.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4750	8/25/2015	10:57:53	45.93334	-129.98224	314.3	1.3	1513.3	1514.6	We are approaching Mkr-33 benchmark AX-303.
4752	8/25/2015	10:58:12	45.93336	-129.98224	273.0	1.3	1513.7	1515.0	The benchmark is about 10m south of the nav target.
4753	8/25/2015	10:58:35	45.93336	-129.98225	236.0	0.9	1513.8	1514.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4754	8/25/2015	10:58:48	45.93336	-129.98224	244.7	1.5	1513.3	1514.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4755	8/25/2015	10:58:56	45.93336	-129.98223	239.6	2.0	1512.8	1514.8	We see Mkr-66 in the background.
4756	8/25/2015	10:59:15	45.93337	-129.98221	160.6	2.1	1512.7	1514.8	Patches of bacterial mat.
4757	8/25/2015	10:59:51	45.93339	-129.98223	205.5	1.5	1513.4	1514.9	The numbers on the frame grabber are reversed. 2 is on 1 and 1 is on 2.
4759	8/25/2015	11:00:04	45.93338	-129.98225	201.5	1.7	1513.2	1514.9	Moving in on the benchmark.
4760	8/25/2015	11:00:49	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	We have arrived. Parked in front of the benchmark.
4761	8/25/2015	11:00:49	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4762	8/25/2015	11:01:29	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	Grabbing the sensor.
4763	8/25/2015	11:01:54	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	HIGHLIGHTS: HD highlights start AX-303. Pressure sensor on the benchmark.
4765	8/25/2015	11:02:22	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	Nudging the sensor into place.
4766	8/25/2015	11:02:29	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	Looks perfect.
4767	8/25/2015	11:02:35	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	PRESSURE: Start
4768	8/25/2015	11:02:46	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4769	8/25/2015	11:03:06	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	Filename: 1508251102.ax303
4771	8/25/2015	11:04:39	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	The MPR (mobile pressure recorder) is in the foreground. That's what we call the pressure sensor.
4772	8/25/2015	11:04:55	45.93337	-129.98225	194.0	0.8	1514.2	1514.9	The other sensor (green) is the mini-BPR.
4773	8/25/2015	11:05:52	45.93337	-129.98225	194.1	0.8	1514.2	1514.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
4775	8/25/2015	11:06:42	45.93337	-129.98225	194.1	0.8	1514.2	1514.9	The nav fixes are placing the benchmark about 10m south of the target.
4776	8/25/2015	11:06:48	45.93337	-129.98225	194.1	0.8	1514.2	1514.9	NAV: Doppler Reset
4778	8/25/2015	11:08:20	45.93337	-129.98225	194.1	0.8	1514.2	1514.9	Cursor position for the benchmark: 45.933376 129.982243 Z=1514. Hdg 194.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4780	8/25/2015	11:10:37	45.93337	-129.98225	194.1	0.8	1514.2	1514.9	No visible ash on this benchmark. Doesn't have that rim around the outside of mat.
4781	8/25/2015	11:11:11	45.93337	-129.98225	194.1	0.8	1514.2	1514.9	May be some on the surface of the benchmark. There is a little ash on the edge of the benchmark (right side).
4782	8/25/2015	11:12:01	45.93337	-129.98225	194.1	0.8	1514.2	1515.0	Snaps of the 2 pressure recorders - all in a row.
4785	8/25/2015	11:15:16	45.93337	-129.98226	194.2	0.8	1514.2	1514.9	New nav system for Jason - homegrown at WHOI.
4790	8/25/2015	11:23:04	45.93338	-129.98226	194.2	0.8	1514.2	1514.9	PRESSURE: End
4792	8/25/2015	11:23:40	45.93338	-129.98226	194.2	0.8	1514.2	1515.0	The sensor is in the cradle. Tucking it in.
4794	8/25/2015	11:24:12	45.93338	-129.98225	195.2	2.3	1512.6	1514.9	Jason off bottom
4799	8/25/2015	12:54:27	45.93156	-129.99875	318.6	18.3	1512.6	1530.9	Looks like we are almost there.
4800	8/25/2015	12:55:11	45.93151	-129.99873	337.1	4.4	1526.7	1531.1	Jason on bottom
4801	8/25/2015	12:55:25	45.93150	-129.99876	299.4	3.3	1527.7	1531.0	Benchmark right here. Straight down on it. No searching.
4803	8/25/2015	12:56:14	45.93151	-129.99876	293.0	2.3	1528.8	1531.0	We're about 25m south of the target.... We need a doppler reset. The acoustic position is right on the benchmark.
4804	8/25/2015	12:56:22	45.93151	-129.99877	292.4	1.9	1529.4	1531.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
4805	8/25/2015	12:56:36	45.93151	-129.99877	297.7	1.2	1530.1	1531.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4806	8/25/2015	12:56:36	45.93151	-129.99877	297.7	1.2	1530.1	1531.3	input SciCam (port 1) routed to output FrmGrb2 (port 2)
4807	8/25/2015	12:57:17	45.93151	-129.99877	304.3	0.8	1530.5	1531.3	Setting up for AX-308 pressure measurement at what used to be the S BPR-1. The BPR is not there anymore.
4808	8/25/2015	12:57:35	45.93151	-129.99877	304.2	0.8	1530.4	1531.3	Using the port manipulator this time.
4809	8/25/2015	12:57:53	45.93152	-129.99877	304.0	0.8	1530.4	1531.3	Setting the sensor on the benchmark.
4811	8/25/2015	12:58:35	45.93152	-129.99877	303.7	0.8	1530.4	1531.3	PRESSURE: Start AX-308
4812	8/25/2015	12:58:46	45.93152	-129.99877	303.9	0.9	1530.4	1531.3	NAV: Doppler Reset
4813	8/25/2015	12:59:17	45.93152	-129.99877	303.9	0.9	1530.4	1531.3	AX-308 pressure sensor reading.
4814	8/25/2015	12:59:22	45.93152	-129.99877	303.9	0.8	1530.4	1531.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4816	8/25/2015	13:00:20	45.93152	-129.99877	304.1	0.8	1530.4	1531.3	File name: 1508251258.ax308
4817	8/25/2015	13:00:35	45.93152	-129.99877	304.1	0.8	1530.4	1531.3	20 minute pressure reading.
4818	8/25/2015	13:01:03	45.93152	-129.99877	304.1	0.8	1530.4	1531.3	Lively brittle stars on the benchmark.
4819	8/25/2015	13:01:24	45.93152	-129.99877	304.3	0.8	1530.4	1531.3	HIGHLIGHTS: HD highlights stop 1259. (Started at 1257)
4820	8/25/2015	13:01:51	45.93151	-129.99877	304.5	0.9	1530.4	1531.3	Not much going on out here. No evidence of venting

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									at all.
4822	8/25/2015	13:02:10	45.93151	-129.99877	304.3	0.8	1530.4	1531.3	Super scorpio shots of the benchmark; pressure sensor and brittle stars.
4823	8/25/2015	13:02:46	45.93151	-129.99877	304.1	0.8	1530.5	1531.3	There is a little bit of ash on this benchmark around the rim.
4824	8/25/2015	13:03:01	45.93151	-129.99877	304.0	0.8	1530.5	1531.3	Brittle stars all in a row.
4833	8/25/2015	13:19:14	45.93152	-129.99879	304.2	0.8	1530.5	1531.4	PRESSURE: End
4834	8/25/2015	13:19:37	45.93152	-129.99879	304.6	0.9	1530.5	1531.4	Finished up here with the pressure sensor reading at AX-308.
4835	8/25/2015	13:19:55	45.93152	-129.99879	305.0	0.8	1530.6	1531.4	Putting the sensor back to bed in its cradle.
4837	8/25/2015	13:21:06	45.93155	-129.99887	302.1	5.9	1525.3	1531.2	Jason off bottom
4838	8/25/2015	13:21:34	45.93157	-129.99897	303.5	12.6	1518.6	1531.2	Next task will be fluid sampling at Mkr-113 vent site. No pressure readings there (no benchmark).
4840	8/25/2015	13:22:18	45.93162	-129.99916	308.0	23.8	1507.6	1531.3	We will travel ~ 1km to the SE.
4842	8/25/2015	14:36:12	45.92284	-129.98852	135.5	20.7	1500.2	1520.9	Next stop is Mkr-113.
4843	8/25/2015	14:36:49	45.92278	-129.98845	121.4	18.3	1502.4	1520.7	Doing an O2 measurement right now. The beast is awake and stirring.
4845	8/25/2015	14:38:05	45.92274	-129.98832	88.8	6.1	1514.5	1520.6	Still in the water column.
4846	8/25/2015	14:38:11	45.92274	-129.98832	87.4	4.4	1516.2	1520.6	Jason on bottom
4847	8/25/2015	14:38:31	45.92274	-129.98830	88.6	3.1	1517.4	1520.6	We're sitting about 20 meters west of Mkr-113 vent site.
4848	8/25/2015	14:38:45	45.92274	-129.98829	72.7	3.7	1517.1	1520.7	Will head to the vent for some fluid sampling.
4849	8/25/2015	14:39:07	45.92274	-129.98829	76.0	3.3	1517.5	1520.8	Here on the edge of a collapse.
4851	8/25/2015	14:40:50	45.92280	-129.98801	94.5	1.7	1519.0	1520.7	Following this roof structure to Mkr-113 vent site.
4852	8/25/2015	14:41:30	45.92280	-129.98801	93.6	1.7	1519.0	1520.7	Watch change - of course. Just before we get to the vent site.
4854	8/25/2015	14:42:13	45.92281	-129.98801	93.6	1.7	1519.0	1520.7	Scale worm in the sci cam.
4855	8/25/2015	14:43:01	45.92281	-129.98801	93.7	1.6	1519.1	1520.6	Collapse area here. We're sitting on the "roof" changing out pilots.
4857	8/25/2015	14:44:34	45.92282	-129.98802	91.2	1.8	1519.0	1520.8	NAV: Doppler Reset USBL reset
4858	8/25/2015	14:45:58	45.92275	-129.98813	217.4	1.8	1520.0	1521.8	There is no marker here at Mkr113 Vent.
4860	8/25/2015	14:46:03	45.92274	-129.98814	217.7	3.0	1519.4	1522.4	Venting ahead.
4861	8/25/2015	14:46:31	45.92270	-129.98818	216.6	3.0	1520.3	1523.3	Long tubes at this diffuse site which is nearby the main feature.
4862	8/25/2015	14:46:36	45.92270	-129.98818	219.4	3.5	1519.8	1523.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
4863	8/25/2015	14:46:42	45.92269	-129.98819	218.1	3.8	1519.4	1523.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4864	8/25/2015	14:46:49	45.92268	-129.98821	216.7	1.6	1519.1	1520.7	Going to continue on to see if there is a bigger area.
4865	8/25/2015	14:47:13	45.92266	-129.98823	236.9	2.5	1518.3	1520.7	The main site is a bigger site next to a collapse.
4867	8/25/2015	14:48:35	45.92270	-129.98833	336.1	1.8	1518.9	1520.7	Looking NW for the site. Here is another cluster of tubes. A marker of sorts ahead.
4868	8/25/2015	14:48:48	45.92273	-129.98834	331.1	3.5	1519.2	1522.7	Here is the MTR marker so this must be the site.
4869	8/25/2015	14:49:17	45.92275	-129.98832	331.5	3.8	1519.1	1522.9	The MTR is where the site was sampled last year.
4870	8/25/2015	14:49:32	45.92276	-129.98830	332.9	3.9	1519.2	1523.1	Doesn't look as vigorous as last year. Not as much white.
4871	8/25/2015	14:49:56	45.92277	-129.98829	322.0	3.5	1519.4	1522.9	HIGHLIGHTS: HD highlights start Sampled in this cluster before and where the MTR is.
4873	8/25/2015	14:50:32	45.92277	-129.98829	317.4	3.9	1519.0	1522.9	Going to poke around in this spot and a few areas to find the best flow and temperature.
4874	8/25/2015	14:50:58	45.92277	-129.98830	319.1	2.7	1520.1	1522.9	The MTR site is just to the left of where we are setting up here.
4875	8/25/2015	14:51:25	45.92277	-129.98830	319.6	2.9	1520.0	1522.9	Lots of palm and tube worms in this portion of the venting.
4876	8/25/2015	14:51:49	45.92277	-129.98830	319.6	2.9	1520.0	1522.9	HIGHLIGHTS: HD highlights stop We are at the crack on the right hand side of the diffuse flow.
4878	8/25/2015	14:52:17	45.92277	-129.98830	319.7	2.9	1520.0	1522.9	Retrieving the temperature probe.
4879	8/25/2015	14:53:49	45.92277	-129.98830	319.9	2.9	1520.0	1522.9	Probe is in the edge of the worm clump and only was 3.8degC.
4881	8/25/2015	14:54:08	45.92277	-129.98830	319.9	2.9	1520.0	1522.9	Moving to the left and same.
4882	8/25/2015	14:54:32	45.92277	-129.98830	319.9	3.0	1520.0	1522.9	Moved down a bit and up to 4.4deg.
4883	8/25/2015	14:54:52	45.92277	-129.98830	319.9	3.0	1520.0	1522.9	Moved probe to center of worm clump. Not seeing much shimmer at all. Temperature is rising.
4884	8/25/2015	14:55:34	45.92277	-129.98830	319.9	3.0	1520.0	1522.9	Probed is fairly down in the clump of worms.
4886	8/25/2015	14:56:13	45.92277	-129.98830	319.8	3.0	1520.0	1522.9	O2 sensor up to .611 ml/l for background while wand is in the basket.
4887	8/25/2015	14:56:40	45.92277	-129.98830	319.8	3.0	1520.0	1522.9	Moved the probe further in the worm and crack and is over 20deg.
4888	8/25/2015	14:57:19	45.92277	-129.98830	319.8	3.0	1520.0	1523.0	21.7deg was the highest in this spot.
4889	8/25/2015	14:57:53	45.92277	-129.98830	319.4	3.0	1520.0	1523.0	Moving the probe a little further down (closer to Jason) and not getting a higher temperature.
4891	8/25/2015	14:59:24	45.92277	-129.98830	319.2	2.9	1520.0	1522.9	Scooted over a little to the left and down. Turning on the O2 sensor on the Beast.
4892	8/25/2015	14:59:56	45.92277	-129.98830	319.1	3.0	1520.0	1522.9	Tmax at this spot in the worms is 21.92deg at this site.
4893	8/25/2015	15:00:00	45.92277	-129.98830	319.0	2.9	1520.0	1522.9	Stowing the wand.
4895	8/25/2015	15:00:08	45.92277	-129.98830	319.1	2.9	1520.0	1522.9	Looks good for HFS sampling.

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4896	8/25/2015	15:00:32	45.92277	-129.98830	319.1	2.9	1520.0	1522.9	Retrieving the Beast wand.
4897	8/25/2015	15:00:56	45.92277	-129.98830	319.2	3.0	1520.0	1523.0	HIGHLIGHTS: HD highlights start Placing beast in the sampling site.
4898	8/25/2015	15:01:53	45.92277	-129.98830	318.6	2.9	1520.0	1522.9	Wand is inserted into the same location of the flow where the Jason temperature was just taken. <1m from collapse edge in dense biota - mainly limpets but some tubeworms and palmworms. Not as healthy looking as in 2014.
4900	8/25/2015	15:02:08	45.92277	-129.98830	318.6	3.0	1520.0	1522.9	Looks good with T=21.7 on the Jason probe.
4901	8/25/2015	15:03:10	45.92277	-129.98830	318.6	3.0	1520.0	1523.0	O2 went down to .4 and falling.
4902	8/25/2015	15:03:41	45.92277	-129.98830	322.3	3.0	1519.9	1523.0	HIGHLIGHTS: HD highlights stop
4904	8/25/2015	15:04:25	45.92277	-129.98830	322.4	3.0	1519.9	1522.9	Marquardt O2 sampler test.
4906	8/25/2015	15:06:49	45.92276	-129.98830	322.4	3.0	1520.0	1523.0	Reading of Marquardt is O2 =.178 at 25degC
4908	8/25/2015	15:08:35	45.92276	-129.98830	322.4	3.0	1520.0	1523.0	**SAMPLE: HFS J824-HFS-13** Start 1507 LVB#1.
4909	8/25/2015	15:08:47	45.92276	-129.98830	322.4	3.0	1520.0	1523.0	Actual start time is 1508.
4911	8/25/2015	15:10:08	45.92277	-129.98830	322.4	3.0	1520.0	1523.0	Location for the sample is 45.922766 -129.988291 and depth 1520. J824-HFS-13.
4912	8/25/2015	15:10:53	45.92277	-129.98830	322.5	3.0	1520.0	1523.0	Offset from original marker location is 14m at 279deg.
4915	8/25/2015	15:14:19	45.92277	-129.98830	322.5	3.0	1520.0	1523.0	HIGHLIGHTS: HD highlights start Worms in the limpets highlight.
4916	8/25/2015	15:14:36	45.92277	-129.98830	322.5	3.0	1520.0	1523.0	Can see some shimmer in the flow.
4917	8/25/2015	15:15:05	45.92277	-129.98830	322.5	3.0	1520.0	1523.0	HIGHLIGHTS: HD highlights stop
4920	8/25/2015	15:18:02	45.92277	-129.98830	322.9	3.0	1520.0	1523.0	J824-HFS-13 nice close-up framegrabs of palm worms.
4922	8/25/2015	15:21:43	45.92277	-129.98830	323.0	3.0	1520.1	1523.0	Peaceful worms in this section of the diffuse flow.
4924	8/25/2015	15:23:19	45.92277	-129.98829	323.0	3.0	1520.1	1523.0	Bottom camera shows Jason hanging over the edge of the collapse with a clump of long tubeworms at the edge.
4926	8/25/2015	15:24:40	45.92277	-129.98829	323.0	3.0	1520.0	1523.0	From this angle the MTR anchor to the left looks like it is in a smaller concentration of worms and flow.
4927	8/25/2015	15:25:19	45.92277	-129.98829	323.0	3.0	1520.1	1523.0	HIGHLIGHTS: HD highlights start Zooming in on the clams and highlights.
4928	8/25/2015	15:25:46	45.92277	-129.98829	323.0	3.0	1520.1	1523.0	The clams look like they are hugging the edge of a little rise along the limpet and worm diffuse flow line.
4930	8/25/2015	15:26:04	45.92277	-129.98829	323.0	3.0	1520.0	1523.0	HIGHLIGHTS: HD highlights stop. This crack follows along to the left to where the MTR is anchored.
4931	8/25/2015	15:27:58	45.92277	-129.98829	323.0	3.0	1520.1	1523.1	Most vigorous flow appears to be where the long tubeworms are hanging out.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4933	8/25/2015	15:28:09	45.92277	-129.98829	323.0	3.0	1520.1	1523.1	Clams look like they have a more marginal flow.
4935	8/25/2015	15:31:05	45.92277	-129.98829	323.0	3.0	1520.1	1523.1	The long skinny piece was a tentacle of something hiding and moved when approached.
4936	8/25/2015	15:31:28	45.92277	-129.98829	323.0	3.0	1520.1	1523.1	J824-HFS-13 Stop.
4937	8/25/2015	15:31:45	45.92277	-129.98829	323.1	3.0	1520.1	1523.1	J824-HFS-13 Tmax=25.5 Tavg=25.4 vol=5000 T2=5.6.
4939	8/25/2015	15:33:23	45.92277	-129.98829	323.0	3.0	1520.1	1523.1	**SAMPLE: HFS J824-HFS-14** Filtered Bag#17 Start 1533.
4940	8/25/2015	15:33:48	45.92277	-129.98829	323.1	3.0	1520.1	1523.1	This is the exact same location as the LBV sample at Mkr113 Vent.
4945	8/25/2015	15:40:06	45.92276	-129.98829	323.7	3.0	1520.1	1523.1	J824-HFS-14 Stop 1540.
4946	8/25/2015	15:40:43	45.92276	-129.98829	324.1	3.0	1520.1	1523.1	Tmax=25.2 Tavg=25.2 vol=750 T2=5.7 for J824-HFS-14
4947	8/25/2015	15:40:56	45.92276	-129.98829	324.1	3.0	1520.1	1523.1	**SAMPLE: HFS J824-HFS-15** Unfiltered Bag #18 Start 1540.
4948	8/25/2015	15:41:15	45.92276	-129.98829	324.1	3.0	1520.1	1523.1	That is Unfiltered Bag #18 J824-HFS-15.
4953	8/25/2015	15:44:57	45.92277	-129.98829	324.0	3.0	1520.1	1523.1	J824-HFS-15 Stop 1544.
4954	8/25/2015	15:45:18	45.92277	-129.98829	324.0	3.0	1520.1	1523.1	Tmax=25.2 Tavg=25.1 vol=900 T2=6.4 for J824-HFS-15.
4956	8/25/2015	15:46:05	45.92277	-129.98829	324.0	3.0	1520.1	1523.1	**SAMPLE: HFS J824-HFS-16** RNA filter #11 Start 1546.
4957	8/25/2015	15:46:27	45.92277	-129.98829	324.0	3.0	1520.1	1523.2	Same exact location for J824-HFS-16.
4963	8/25/2015	15:56:29	45.92277	-129.98829	324.0	3.0	1520.2	1523.1	HIGHLIGHTS: HD highlights start Looking at a relatively vigorous flow of tubeworms to the right of the current sampling area.
4964	8/25/2015	15:56:47	45.92277	-129.98829	324.0	3.0	1520.2	1523.1	Higher concentration of palm worms as well.
4965	8/25/2015	15:57:18	45.92277	-129.98829	324.0	2.9	1520.2	1523.1	Healthy looking worms.
4966	8/25/2015	15:57:46	45.92277	-129.98829	324.0	3.0	1520.2	1523.1	Tubeworms are definitely in the vigorous part of the flow.
4967	8/25/2015	15:57:50	45.92277	-129.98829	323.9	3.0	1520.2	1523.2	HIGHLIGHTS: HD highlights stop
4969	8/25/2015	15:58:31	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Littering of clams on the edges of the diffuse flow and limpet/worm concentrations.
4970	8/25/2015	15:59:11	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Some very tall tubeworm clumps just beyond this sampling site.
4971	8/25/2015	15:59:45	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Orange mat and slime close-ups.
4973	8/25/2015	16:00:29	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	A few anemones next to the largest clam concentration.
4974	8/25/2015	16:00:48	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	HIGHLIGHTS: HD highlights start Anemone highlights.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
4975	8/25/2015	16:01:13	45.92277	-129.98829	323.4	3.0	1520.2	1523.1	Not seeing much flow here but happy anemones and some clams.
4977	8/25/2015	16:02:04	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	HIGHLIGHTS: HD highlights stop
4978	8/25/2015	16:03:03	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Close-up of the anchor of the MTR.
4979	8/25/2015	16:03:55	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Following along the line of venting back to our current sampling area.
4981	8/25/2015	16:05:21	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	The long and skinny worms are alive that are just beyond the sampling area. Site looks less vigorous than last year.
4983	8/25/2015	16:06:27	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
4984	8/25/2015	16:06:27	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4985	8/25/2015	16:06:27	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
4986	8/25/2015	16:06:40	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	input SciCam (port 1) routed to output FrmGrb1 (port 1)
4987	8/25/2015	16:06:40	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
4989	8/25/2015	16:08:02	45.92277	-129.98829	323.5	3.0	1520.2	1523.1	J824-HFS-16 Stop 1608. Tmax=25.3 Tavg=25.3 vol=4500 T2=6.4.
4990	8/25/2015	16:08:40	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	**SAMPLE: HFS J824-HFS-17** RNA filter #13 Start 1608.
4991	8/25/2015	16:08:49	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	Same location at Mkr113 Vent.
4992	8/25/2015	16:10:00	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	Have a little more time for sampling here while the Skype call is occurring. Need the ship to maintain this heading.
4994	8/25/2015	16:10:38	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	J824-HFS-17 An additional RNA sample for the microbiologists.
4995	8/25/2015	16:11:18	45.92277	-129.98829	323.5	3.0	1520.2	1523.2	Here comes a fish to check out the sampling.
5003	8/25/2015	16:24:40	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	J824-HFS-17 Stop 1624.
5004	8/25/2015	16:25:00	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Tmax=25.4 Tavg=25.3 vol=3500 T2=6.7. J824-HFS-17
5005	8/25/2015	16:25:21	45.92277	-129.98829	323.4	3.0	1520.2	1523.2	Checking the O2 sensor now.
5008	8/25/2015	16:29:08	45.92277	-129.98829	323.3	3.0	1520.3	1523.2	HFS sensor O2=.15 and still going down a bit.
5010	8/25/2015	16:30:34	45.92277	-129.98829	323.0	3.0	1520.2	1523.2	HFS O2=.145ml/l at 25.5degC stabilized.
5011	8/25/2015	16:31:27	45.92277	-129.98829	323.0	3.0	1520.3	1523.2	**SAMPLE: HFS J824-HFS-18** Filtered Bag #19 Start 1631.
5012	8/25/2015	16:31:51	45.92277	-129.98829	323.0	3.0	1520.2	1523.2	Same exact location after the O2 sample and previous Mkr113 Vent samples.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5015	8/25/2015	16:34:29	45.92277	-129.98829	323.0	3.0	1520.2	1523.2	J824-HFS-18 Stop 1634.
5016	8/25/2015	16:35:07	45.92277	-129.98829	322.9	3.0	1520.2	1523.2	J824-HFS-18 Tmax=25.5 Tavg=25.4 vol=750 T2=6.4.
5017	8/25/2015	16:35:22	45.92277	-129.98829	322.7	3.0	1520.2	1523.2	Pulling up HFS wand about 1m above this sampling location.
5018	8/25/2015	16:35:50	45.92277	-129.98829	322.6	3.0	1520.3	1523.2	Flushing out the sampler above the vent.
5020	8/25/2015	16:36:18	45.92277	-129.98829	322.6	3.0	1520.3	1523.2	Looks like some material at the end of the wand still. Close-up.
5021	8/25/2015	16:36:27	45.92277	-129.98829	322.6	2.9	1520.3	1523.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5022	8/25/2015	16:36:36	45.92277	-129.98829	322.5	3.0	1520.3	1523.2	Shaking the wand with the pump off.
5023	8/25/2015	16:36:48	45.92277	-129.98829	322.4	3.0	1520.3	1523.3	Good amount of debris came off the wand.
5024	8/25/2015	16:37:00	45.92277	-129.98829	322.4	3.0	1520.3	1523.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5025	8/25/2015	16:37:04	45.92277	-129.98829	322.4	3.0	1520.3	1523.2	Turning the pump back on.
5026	8/25/2015	16:37:38	45.92277	-129.98829	322.4	3.0	1520.3	1523.3	**SAMPLE: HFS J824-HFS-19** LVB #16 Start 1637.
5028	8/25/2015	16:38:02	45.92277	-129.98829	322.4	3.0	1520.3	1523.3	Ambient vent-area water for Sheryl Bolton (Murdock).
5029	8/25/2015	16:39:04	45.92277	-129.98829	322.4	3.0	1520.3	1523.2	The wand is about a meter above the diffuse flow sampling site at Mkr113 Vent.
5034	8/25/2015	16:46:04	45.92278	-129.98829	322.5	3.0	1520.3	1523.2	J824-HFS-19 Stop 1646.
5035	8/25/2015	16:46:31	45.92278	-129.98829	322.5	3.0	1520.3	1523.3	J824-HFS-19 Tmax=3.1 Tavg=2.9 vol=1970 T2=2.5
5036	8/25/2015	16:47:57	45.92278	-129.98829	322.5	3.0	1520.3	1523.3	**SAMPLE: HFS J824-HFS-20** RNA Filter #14 Start 1647.
5038	8/25/2015	16:48:13	45.92278	-129.98829	322.5	3.0	1520.3	1523.3	This is another ambient water sample.
5039	8/25/2015	16:48:43	45.92278	-129.98829	322.5	3.0	1520.3	1523.3	Going to leave the HFS wand laying across the basket while retrieving the MTR.
5040	8/25/2015	16:49:22	45.92278	-129.98829	322.8	3.0	1520.2	1523.3	Wand tip is in the port forward compartment of the basket while taking the ambient sample.
5042	8/25/2015	16:51:09	45.92278	-129.98829	323.2	3.1	1520.2	1523.3	Going to put the new MTR where we just sampled instead of where the old MTR needs to still be retrieved.
5044	8/25/2015	16:51:45	45.92278	-129.98829	323.1	3.1	1520.2	1523.3	**DEPLOY: MTR** temp probe Have the MTR3173 and placing it in the sampling site.
5046	8/25/2015	16:52:25	45.92278	-129.98829	323.0	3.0	1520.3	1523.3	Can't reach it with this arm to tap it down. MTR 3173 at Mkr113 vent. Jason has not moved so use the sample lat/long.
5047	8/25/2015	16:52:54	45.92278	-129.98829	323.1	2.9	1520.4	1523.3	Now tapping it down with the stbd arm. Looks like the same spot as we were sampling.
5048	8/25/2015	16:53:03	45.92278	-129.98829	323.1	3.0	1520.3	1523.3	input PilotCam (port 3) routed to output FrmGrb1 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									1)
5049	8/25/2015	16:53:06	45.92278	-129.98829	321.6	3.0	1520.3	1523.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5050	8/25/2015	16:53:24	45.92277	-129.98830	320.6	3.0	1520.2	1523.2	HIGHLIGHTS: HD highlights start Now will move over to the old MTR .
5051	8/25/2015	16:53:48	45.92277	-129.98832	335.7	3.1	1520.4	1523.5	HIGHLIGHTS: HD highlights stop
5053	8/25/2015	16:54:28	45.92277	-129.98832	333.0	3.0	1520.4	1523.5	Picking up the old MTR at Mkr-113 Vent.
5054	8/25/2015	16:55:18	45.92277	-129.98832	332.8	3.0	1520.4	1523.4	Opening the stbd biobox to place the MTR into. There is the other MTR that was already recovered.
5055	8/25/2015	16:55:34	45.92277	-129.98832	332.7	3.0	1520.4	1523.5	**RECOVER: MTR** temp probe MTR 3201 at Mkr-113 Vent.
5056	8/25/2015	16:55:52	45.92277	-129.98832	333.2	3.1	1520.4	1523.4	Place MTR 3201 in the stbd biobox.
5058	8/25/2015	16:56:14	45.92277	-129.98833	333.6	3.1	1520.4	1523.5	Will zoom in with camera at the MTR location.
5059	8/25/2015	16:56:51	45.92276	-129.98833	333.9	3.1	1520.4	1523.5	Long line on the MTRs has the foam marker sticking a bit out of the biobox.
5060	8/25/2015	16:57:35	45.92276	-129.98833	333.8	3.0	1520.4	1523.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5062	8/25/2015	16:58:21	45.92276	-129.98833	331.5	4.2	1519.4	1523.6	Lifting off the bottom.
5063	8/25/2015	16:58:42	45.92275	-129.98833	331.1	4.7	1518.9	1523.6	Pulling the basket in.
5064	8/25/2015	16:59:10	45.92276	-129.98833	331.1	4.7	1518.9	1523.6	Pulling...caps key operator error.
5065	8/25/2015	16:59:57	45.92275	-129.98833	331.3	4.7	1518.9	1523.6	Bringing the biobox over to tidy things up.
5067	8/25/2015	17:00:34	45.92275	-129.98833	330.8	4.8	1519.0	1523.8	2 MTR floats sticking out of box.
5068	8/25/2015	17:01:37	45.92276	-129.98833	330.4	4.8	1518.9	1523.7	While holding the bungee to the box with the port arm moving the float into the box with the stbd arm.
5070	8/25/2015	17:02:41	45.92276	-129.98833	329.8	4.8	1518.9	1523.7	Slipping it in the narrow opening.
5071	8/25/2015	17:03:07	45.92276	-129.98833	330.4	4.8	1518.9	1523.7	Grabbing the second MTR float and doing the same procedure.
5073	8/25/2015	17:04:10	45.92276	-129.98833	330.0	4.9	1518.9	1523.7	Slipping the float into the crack of the biobox. Pushed the first float further in.
5074	8/25/2015	17:04:28	45.92276	-129.98833	330.2	4.9	1518.9	1523.7	History made with the first double-reverse Jack In The Box!
5075	8/25/2015	17:05:01	45.92276	-129.98833	329.5	4.9	1518.8	1523.7	Completely closed the biobox with tidy MTRs. They can't escape now.
5077	8/25/2015	17:06:09	45.92276	-129.98833	323.2	4.7	1518.9	1523.5	HIGHLIGHTS: HD highlights start
5078	8/25/2015	17:06:39	45.92277	-129.98830	322.7	4.4	1519.0	1523.4	Highlights of the MTR recovery site and panning to the right over the crack with diffuse venting.
5079	8/25/2015	17:07:11	45.92276	-129.98829	327.9	3.5	1519.9	1523.4	Good overview of the venting at Mkr-113 Vent. There is the new MTR deployment location at this year's

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									sampling site.
5080	8/25/2015	17:07:27	45.92277	-129.98828	330.0	3.4	1520.0	1523.4	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5081	8/25/2015	17:07:40	45.92276	-129.98828	331.0	3.5	1519.9	1523.4	Moving further along to the right and seeing the cascade of worms down the side of the venting site.
5082	8/25/2015	17:07:55	45.92276	-129.98828	326.8	2.8	1520.7	1523.5	Getting a good view of the lip below the sampling site and now moving to the left.
5084	8/25/2015	17:08:06	45.92276	-129.98829	330.2	2.1	1521.4	1523.5	There are some old weights.
5085	8/25/2015	17:08:29	45.92275	-129.98830	336.5	2.4	1521.0	1523.4	Long tube worms reaching out of the lip and flow in the crack.
5086	8/25/2015	17:08:49	45.92275	-129.98832	4.0	2.5	1521.1	1523.6	Off to the side below the old MTR site seeing vigorous flow with long tube worms and palm worms.
5087	8/25/2015	17:09:26	45.92276	-129.98834	38.5	3.1	1520.8	1523.9	Crab and long worms. Orange mat is very bright.
5088	8/25/2015	17:09:44	45.92275	-129.98836	348.1	3.1	1520.5	1523.5	On the lip next to worms are larger concentrations of limpets.
5090	8/25/2015	17:10:05	45.92274	-129.98836	244.5	3.2	1520.2	1523.4	Heading off to the next sampling site of Vixen.
5091	8/25/2015	17:10:38	45.92271	-129.98841	210.1	3.8	1519.6	1523.3	To the right the collapse feature has no venting as it arches out into the collapse.
5092	8/25/2015	17:10:51	45.92268	-129.98844	211.0	2.0	1519.4	1521.4	As move away from the site the venting ceases.
5093	8/25/2015	17:11:05	45.92267	-129.98845	210.9	2.4	1519.4	1521.8	J824-HFS-20 Stop.
5094	8/25/2015	17:11:52	45.92257	-129.98853	212.3	4.2	1519.4	1523.6	J824-HFS-20 Ambient water. Tmax=3.2 Tavg=2.6 vol=4660 T2=2.5 RNA filter #14.
5095	8/25/2015	17:11:59	45.92255	-129.98855	211.6	1.7	1519.5	1521.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5097	8/25/2015	17:12:08	45.92252	-129.98856	212.1	1.3	1520.0	1521.3	That sample ended as we pulled away from the Mkr-113 Vent site.
5098	8/25/2015	17:12:54	45.92240	-129.98863	210.1	2.0	1519.7	1521.7	Heading 210deg to Vixen with less than 700m to go.
5099	8/25/2015	17:13:09	45.92238	-129.98863	208.3	1.5	1519.6	1521.2	Moving over large pillow flow with sediment coating.
5100	8/25/2015	17:13:54	45.92237	-129.98860	209.9	1.9	1519.7	1521.6	Waiting for ship and Medea to start the move south.
5102	8/25/2015	17:14:31	45.92236	-129.98862	210.9	1.7	1519.5	1521.2	Recording O2 while transiting.
5103	8/25/2015	17:14:54	45.92237	-129.98862	214.1	1.3	1519.9	1521.2	Going to put the HFS wand back into its holster after the ambient water sample.
5104	8/25/2015	17:15:39	45.92236	-129.98861	211.7	1.3	1520.0	1521.3	HFS wand is back in its home on the basket.
5106	8/25/2015	17:16:19	45.92236	-129.98861	211.6	1.4	1520.0	1521.4	The target list has a Mkr62 at the Mkr-113 Vent but it is no longer there. No markers on the basket to replace it.
5107	8/25/2015	17:17:27	45.92234	-129.98863	212.3	1.3	1520.1	1521.4	Long tubes and pillows.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5109	8/25/2015	17:18:55	45.92217	-129.98879	211.1	1.9	1520.1	1522.0	Pillows in the bottom camera are glistening.
5110	8/25/2015	17:19:04	45.92215	-129.98882	217.8	2.1	1520.1	1522.2	Collapsed pillow.
5112	8/25/2015	17:21:20	45.92197	-129.98898	211.3	1.7	1521.1	1522.9	Fish.
5113	8/25/2015	17:21:32	45.92194	-129.98899	213.0	2.0	1521.3	1523.4	Tops of pillows coated in sediment.
5114	8/25/2015	17:21:42	45.92192	-129.98900	212.1	2.8	1521.0	1523.7	Long tube with a crab nearby.
5115	8/25/2015	17:21:49	45.92190	-129.98901	212.7	2.6	1521.2	1523.8	Cracked pillows.
5119	8/25/2015	17:27:05	45.92151	-129.98917	213.5	2.5	1522.2	1524.7	Moving along to Vixen over lobate flow.
5120	8/25/2015	17:27:14	45.92148	-129.98919	216.7	4.0	1522.3	1526.3	Crossing a crack or collapse area.
5121	8/25/2015	17:27:50	45.92141	-129.98920	224.1	2.7	1521.7	1524.3	Getting into more collapse features.
5123	8/25/2015	17:28:30	45.92139	-129.98917	215.0	2.5	1522.1	1524.6	Looking ahead over a bridge of lobate flow with a larger collapse area to either side.
5124	8/25/2015	17:28:41	45.92137	-129.98918	209.2	2.5	1522.2	1524.7	Arches on the edge.
5125	8/25/2015	17:28:53	45.92135	-129.98921	210.4	4.2	1521.9	1526.0	Fragile looking bridge.
5127	8/25/2015	17:30:05	45.92119	-129.98947	211.0	2.7	1522.2	1524.9	Moving up on to uncollapsed flow.
5128	8/25/2015	17:30:44	45.92113	-129.98956	217.6	2.9	1522.3	1525.2	Lavas may look glassy in the bottom camera but this is not the 2011 flow.
5130	8/25/2015	17:32:25	45.92095	-129.98967	211.6	3.3	1523.4	1526.6	Coming over a larger collapse area which matches the underlying bathymetry map well.
5131	8/25/2015	17:32:40	45.92090	-129.98972	211.3	4.3	1523.4	1527.7	Fish on top of the lobate flow.
5133	8/25/2015	17:35:08	45.92080	-129.98981	211.6	2.9	1523.5	1526.5	Waiting for ship and Medea.
5134	8/25/2015	17:35:40	45.92074	-129.98988	213.5	1.7	1524.9	1526.7	Moving along and over a collapse again.
5136	8/25/2015	17:36:36	45.92059	-129.98997	212.5	1.8	1524.8	1526.6	Following collapse edge.
5137	8/25/2015	17:37:14	45.92052	-129.99000	212.5	1.5	1525.3	1526.8	Wavy line of sheet flow at top of the collapse.
5138	8/25/2015	17:37:31	45.92047	-129.99004	211.8	1.6	1525.2	1526.8	Lonely pillar close to the edge of the remnant flow.
5141	8/25/2015	17:38:27	45.92031	-129.99014	211.1	0.9	1526.1	1527.0	Fish.
5142	8/25/2015	17:38:34	45.92030	-129.99015	211.8	1.2	1526.1	1527.3	Sea cucumber.
5144	8/25/2015	17:41:01	45.91997	-129.99035	212.6	1.3	1526.0	1527.4	Coming to edge of the lobate flow to port.
5145	8/25/2015	17:41:10	45.91995	-129.99036	212.2	1.5	1525.7	1527.2	Collapsed area with arches and pillars.
5146	8/25/2015	17:41:54	45.91982	-129.99044	211.4	5.1	1525.6	1530.7	Roman temple.
5148	8/25/2015	17:42:11	45.91976	-129.99048	209.3	4.8	1525.6	1530.4	Beautiful collapse features.
5149	8/25/2015	17:42:23	45.91973	-129.99050	200.0	3.9	1525.7	1529.6	Rounded arch.
5151	8/25/2015	17:44:27	45.91965	-129.99067	211.8	1.1	1526.1	1527.2	The top of these flows look so solid but give you pause for thought for exploring new flows on land.
5152	8/25/2015	17:44:55	45.91960	-129.99076	211.8	1.1	1526.1	1527.2	On top of the lobate flow. Sea stars.
5153	8/25/2015	17:45:47	45.91945	-129.99098	211.9	1.7	1526.1	1527.8	Fairly solid lobate flow.
5155	8/25/2015	17:46:16	45.91938	-129.99109	211.1	1.7	1526.7	1528.3	Some larger pillows that are rounded.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5156	8/25/2015	17:46:21	45.91937	-129.99110	210.3	1.8	1526.7	1528.5	Fish.
5157	8/25/2015	17:46:50	45.91930	-129.99117	211.6	1.7	1527.3	1528.9	Pillows becoming a bit more elongated. Big ones in between small sized lobates.
5158	8/25/2015	17:47:23	45.91921	-129.99125	209.9	1.5	1527.4	1529.0	More flattened flow with less distinct pillows.
5159	8/25/2015	17:47:38	45.91917	-129.99129	211.4	1.4	1528.0	1529.5	Fish.
5160	8/25/2015	17:47:52	45.91913	-129.99132	211.0	1.0	1528.0	1529.0	Back into big tubes and pillows.
5162	8/25/2015	17:48:07	45.91910	-129.99135	211.1	1.5	1528.2	1529.7	Rounded pillows with cracked surfaces.
5164	8/25/2015	17:50:25	45.91875	-129.99167	211.0	1.9	1531.4	1533.4	Extensive uniform lobate flow. Fish.
5167	8/25/2015	17:54:33	45.91827	-129.99215	212.0	2.4	1531.4	1533.8	About 100m more to go to Vixen and still over lobate flow with a lonely crab.
5168	8/25/2015	17:55:33	45.91825	-129.99217	211.7	2.2	1531.6	1533.7	HIGHLIGHTS: HD highlights start Long-legged crab.
5169	8/25/2015	17:55:52	45.91824	-129.99218	213.1	2.1	1531.6	1533.6	HIGHLIGHTS: HD highlights stop
5171	8/25/2015	17:56:38	45.91814	-129.99222	210.3	1.6	1531.9	1533.5	Flattened tubes with sediment.
5173	8/25/2015	17:58:40	45.91781	-129.99268	211.9	3.5	1531.4	1534.9	Starting to come into the venting area with clams and tube worms.
5174	8/25/2015	17:58:51	45.91779	-129.99272	212.3	2.6	1531.1	1533.7	NAV: Doppler Reset To USBL.
5175	8/25/2015	17:59:17	45.91772	-129.99282	212.2	2.4	1530.9	1533.3	Seeing small clumps of tube worms and clams in the cracks of the pillows.
5177	8/25/2015	18:00:14	45.91756	-129.99296	211.1	1.8	1531.7	1533.4	More extensive tubeworm clumps.
5178	8/25/2015	18:00:44	45.91748	-129.99303	208.5	1.9	1531.6	1533.4	Collapse area with tube worms on top. Many tubeworm clusters.
5179	8/25/2015	18:01:00	45.91745	-129.99305	207.6	2.5	1531.0	1533.5	Titanium donut from APL vent cap.
5180	8/25/2015	18:01:38	45.91740	-129.99309	204.8	2.7	1530.9	1533.6	There is a marker. It is Marker 122 and there is the HOBO #129.
5181	8/25/2015	18:01:54	45.91738	-129.99309	204.0	2.1	1531.5	1533.5	Hobo #129 is at Vixen.
5183	8/25/2015	18:02:10	45.91738	-129.99309	202.0	1.6	1531.9	1533.5	There is the vent. No chimney this time.
5184	8/25/2015	18:02:31	45.91738	-129.99310	205.1	1.4	1532.2	1533.6	HOBO wand looks like it is still in the flow.
5185	8/25/2015	18:02:41	45.91738	-129.99310	203.3	1.4	1532.4	1533.8	HIGHLIGHTS: HD highlights start Impressive flow.
5186	8/25/2015	18:03:02	45.91737	-129.99309	207.9	1.0	1532.4	1533.4	Small chimney at the top but very small.
5187	8/25/2015	18:03:23	45.91737	-129.99309	207.1	1.0	1532.4	1533.4	Zooming in to the HOBO wand tip and view of the chimlet.
5188	8/25/2015	18:03:30	45.91737	-129.99309	207.2	1.0	1532.4	1533.4	This is Vixen.
5189	8/25/2015	18:03:43	45.91737	-129.99309	207.2	1.0	1532.4	1533.4	Leftover material from the vent cap.
5191	8/25/2015	18:04:13	45.91737	-129.99310	207.5	1.1	1532.5	1533.5	HIGHLIGHTS: HD highlights stop
5192	8/25/2015	18:04:29	45.91737	-129.99309	211.6	1.0	1532.4	1533.4	45.917391 -129.993076 is the position for Vixen.
5193	8/25/2015	18:04:54	45.91737	-129.99309	212.0	0.8	1533.1	1533.9	Offset from the original target is 10m at 300deg.
5194	8/25/2015	18:04:58	45.91737	-129.99309	211.0	0.8	1532.9	1533.6	Setting up for sampling.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5195	8/25/2015	18:05:29	45.91737	-129.99309	211.0	0.8	1532.9	1533.6	The Vixen position will be the sampling location lat/long.
5196	8/25/2015	18:05:31	45.91737	-129.99309	210.9	0.8	1532.9	1533.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5197	8/25/2015	18:05:42	45.91737	-129.99309	210.7	0.8	1532.8	1533.5	Retrieving the HOBO.
5198	8/25/2015	18:05:46	45.91737	-129.99309	210.7	0.8	1532.8	1533.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5200	8/25/2015	18:06:08	45.91737	-129.99309	210.7	0.8	1532.8	1533.6	**RECOVER: HOBO** temp probe This is a MISO. MISO-129.
5201	8/25/2015	18:06:35	45.91737	-129.99309	210.7	0.8	1532.8	1533.6	When pulled from the vent it broke off the chimlet cap. Setting it alongside the vent while sampling and will put in the basket later.
5202	8/25/2015	18:06:53	45.91737	-129.99309	210.6	0.8	1532.8	1533.5	Retrieving the Jason temperature probe.
5203	8/25/2015	18:07:19	45.91737	-129.99309	210.4	0.8	1532.8	1533.6	Probe tip in the orifice.
5204	8/25/2015	18:07:34	45.91737	-129.99309	210.5	0.8	1532.8	1533.5	Temperature is rising quickly but probe moved out of the hole.
5205	8/25/2015	18:07:49	45.91737	-129.99309	210.8	0.8	1532.8	1533.5	Placing probe back into the main flow.
5206	8/25/2015	18:07:59	45.91737	-129.99309	210.8	0.8	1532.8	1533.5	Temperature rising very quickly.
5208	8/25/2015	18:09:00	45.91737	-129.99308	210.8	0.8	1532.8	1533.6	Vixen temperature this year is 326.4deg. Not boiling but has before.
5209	8/25/2015	18:09:16	45.91737	-129.99308	211.0	0.8	1532.8	1533.6	Moving the wand around a bit move and going in further.
5211	8/25/2015	18:10:12	45.91737	-129.99308	210.6	0.8	1532.8	1533.5	Temperature is now 320deg so using the Tmax=326.4.
5212	8/25/2015	18:10:18	45.91737	-129.99308	210.5	0.8	1532.8	1533.5	Done with the Jason probe.
5213	8/25/2015	18:11:32	45.91737	-129.99308	210.4	0.8	1532.8	1533.6	Remaining gastight bottle is the aft one listed as green/red but that doesn't correspond to the master list.
5214	8/25/2015	18:11:51	45.91737	-129.99308	210.4	0.8	1532.8	1533.6	Green #2 was already taken and there is a red #9. Need to figure out after basket comes aboard.
5216	8/25/2015	18:12:06	45.91737	-129.99308	210.5	0.8	1532.8	1533.6	Definitely looks like green/red tape on the handles.
5217	8/25/2015	18:12:27	45.91737	-129.99307	210.6	0.8	1532.8	1533.6	GTB is caught on something in the basket.
5218	8/25/2015	18:13:22	45.91738	-129.99307	210.7	0.8	1532.8	1533.6	Vent looks very smoky in the background while working on releasing the GTB.
5220	8/25/2015	18:15:03	45.91738	-129.99307	210.7	0.8	1532.8	1533.6	Got it from the basket.
5221	8/25/2015	18:15:14	45.91738	-129.99307	210.7	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights start
5223	8/25/2015	18:16:55	45.91738	-129.99307	210.7	0.8	1532.8	1533.5	**SAMPLE: GTB J824-GTB-21** Wand is in the center of the vent flow at Vixen. Tmax=326.4 In the opening of the hole. Fired.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5224	8/25/2015	18:17:01	45.91738	-129.99307	210.7	0.8	1532.8	1533.5	SAMPLE: GTB Fired.
5225	8/25/2015	18:17:22	45.91738	-129.99307	210.6	0.8	1532.8	1533.5	Retracting. J824-GTB-21 at Vixen.
5226	8/25/2015	18:17:26	45.91738	-129.99307	210.7	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights stop
5228	8/25/2015	18:18:13	45.91738	-129.99307	210.7	0.8	1532.8	1533.5	Placing gastight back into the basket and securing.
5229	8/25/2015	18:18:42	45.91738	-129.99307	210.5	0.8	1532.8	1533.6	Next will be fluid sampling.
5230	8/25/2015	18:19:43	45.91737	-129.99307	210.2	0.8	1532.8	1533.5	HFS wand in the Vixen flow.
5232	8/25/2015	18:20:04	45.91737	-129.99307	210.2	0.8	1532.8	1533.5	Location for the GTB is the Vixen location 45.917391 -129.993076 and for the forthcoming HFS samples.
5233	8/25/2015	18:20:47	45.91737	-129.99308	210.2	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights stop
5234	8/25/2015	18:20:51	45.91737	-129.99308	210.2	0.8	1532.8	1533.6	HIGHLIGHTS: HD highlights start
5235	8/25/2015	18:21:00	45.91737	-129.99308	210.2	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights stop Short highlight of the wand position.
5236	8/25/2015	18:21:34	45.91737	-129.99308	210.2	0.8	1532.8	1533.5	**SAMPLE: HFS J824-HFS-22** Piston #6 unfiltered. Start 1821.
5237	8/25/2015	18:21:45	45.91737	-129.99308	210.2	0.8	1532.8	1533.5	Checking the back view of the Beast for flow.
5239	8/25/2015	18:22:19	45.91737	-129.99308	210.2	0.8	1532.7	1533.5	J824-HFS-22 Piston #6 unfiltered. Temperature is stable at 321deg.
5240	8/25/2015	18:22:31	45.91737	-129.99308	210.2	0.8	1532.7	1533.5	Missed the SAMPLE hotkey at the start.
5242	8/25/2015	18:23:39	45.91737	-129.99308	212.0	0.8	1532.7	1533.5	J824-HFS-22 Piston #6 unfiltered. Stop 1623.
5244	8/25/2015	18:24:03	45.91737	-129.99308	212.1	0.8	1532.7	1533.5	Tmax=324.6 Tavg=321.1 T2=100 vol=450 J824-HFS-22 Piston #6 unfiltered.
5245	8/25/2015	18:24:33	45.91737	-129.99309	211.7	0.8	1532.7	1533.5	**SAMPLE: HFS J824-HFS-23** Piston #9 filtered Start 1624.
5246	8/25/2015	18:24:41	45.91737	-129.99309	211.6	0.8	1532.7	1533.5	Same location of course.
5248	8/25/2015	18:26:56	45.91737	-129.99309	211.5	0.8	1532.7	1533.4	J824-HFS-23 Stop 1826. Tmax=325.7 Tavg=325.1 T2=92 vol=450.
5251	8/25/2015	18:29:18	45.91737	-129.99309	211.6	0.8	1532.8	1533.6	Moved MISO129 next to the vent while retrieving HOBO 103 from the basket.
5253	8/25/2015	18:30:20	45.91737	-129.99309	211.4	0.8	1532.8	1533.6	Placing HOBO 103 at Vixen.
5254	8/25/2015	18:31:59	45.91737	-129.99309	211.4	0.8	1532.8	1533.5	**DEPLOY: HOBO** temp probe Positioned HOBO 103 intake into the main orifice at Vixen.
5256	8/25/2015	18:32:10	45.91737	-129.99309	211.4	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights stop
5257	8/25/2015	18:32:19	45.91737	-129.99309	211.3	0.8	1532.8	1533.6	Highlights started at 1830.
5259	8/25/2015	18:34:19	45.91737	-129.99309	211.5	0.8	1532.8	1533.5	Doing some basket rearranging with Trevi's HOBO and its long intake wand.
5260	8/25/2015	18:35:48	45.91737	-129.99309	211.4	0.8	1532.8	1533.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5262	8/25/2015	18:36:35	45.91737	-129.99309	211.4	0.8	1532.8	1533.5	Placing the Trevi HOBO back into the basket in a

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									better position.
5263	8/25/2015	18:37:31	45.91737	-129.99309	211.3	0.8	1532.8	1533.5	**RECOVER: HOBO** temp probe Picking up Vixen's HOBO to place into the basket now. (MISO 129).
5264	8/25/2015	18:37:47	45.91737	-129.99309	211.3	0.8	1532.8	1533.5	MISO 129 has the pyrite on the wand tip...fool's gold.
5266	8/25/2015	18:39:55	45.91737	-129.99308	211.3	0.8	1532.8	1533.5	Securing the HOBO/MISOs in the basket.
5268	8/25/2015	18:41:44	45.91737	-129.99308	211.3	0.8	1532.8	1533.5	Flow is very vigorous in the background at Vixen.
5270	8/25/2015	18:42:08	45.91737	-129.99308	211.3	0.8	1532.8	1533.5	Taking a look at the HOBO just deployed at Vixen to make sure it is secure with the wand in the orifice.
5271	8/25/2015	18:42:44	45.91737	-129.99308	211.3	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights start Close-up of the intake on the HOBO at Vixen.
5272	8/25/2015	18:43:02	45.91737	-129.99308	211.3	0.8	1532.8	1533.5	HIGHLIGHTS: HD highlights stop
5273	8/25/2015	18:43:15	45.91737	-129.99308	211.0	0.8	1532.5	1533.3	Ready to move over to Casper.
5276	8/25/2015	18:47:13	45.91743	-129.99314	110.7	1.4	1532.5	1533.9	We are at Casper.
5277	8/25/2015	18:47:19	45.91743	-129.99314	106.3	1.4	1532.4	1533.7	HIGHLIGHTS: HD highlights start
5279	8/25/2015	18:48:22	45.91743	-129.99313	87.5	0.8	1532.9	1533.7	HIGHLIGHTS: HD highlights stop
5281	8/25/2015	18:49:05	45.91743	-129.99313	87.5	0.8	1532.9	1533.6	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5282	8/25/2015	18:49:21	45.91743	-129.99313	87.5	0.8	1532.9	1533.6	We will take a temp measurement with Jason probe. Then we will sample a piston here.
5284	8/25/2015	18:50:29	45.91743	-129.99312	87.2	0.8	1532.8	1533.6	We will also recover a HOBO.
5285	8/25/2015	18:51:22	45.91743	-129.99312	87.3	0.8	1532.8	1533.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5287	8/25/2015	18:52:25	45.91743	-129.99312	87.9	0.8	1532.8	1533.6	**RECOVER: HOBO** temp probe MISO-104 recovered.
5288	8/25/2015	18:53:42	45.91743	-129.99312	90.0	0.8	1532.9	1533.6	Now we are taking a temp probe.
5290	8/25/2015	18:55:35	45.91743	-129.99312	87.6	0.8	1532.8	1533.5	Now we are taking a temp reading: 297.94C.
5292	8/25/2015	18:56:15	45.91743	-129.99312	87.3	0.9	1532.8	1533.6	Temp reading: 298.00C. 45.917444 129.993128
5294	8/25/2015	18:58:34	45.91742	-129.99312	87.8	0.8	1532.8	1533.5	input SciCam (port 1) routed to output FrmGrb1 (port 1)
5295	8/25/2015	18:58:34	45.91742	-129.99312	87.8	0.8	1532.8	1533.5	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5296	8/25/2015	18:59:10	45.91742	-129.99312	87.8	0.8	1532.7	1533.5	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5299	8/25/2015	19:02:30	45.91744	-129.99311	87.6	0.8	1532.6	1533.4	**SAMPLE: HFS J824-HFS-24** Filtered Piston #7 Start: 18:59 End:19.01 Tmax:297.7 Tavg:297.4 Z=1532.8 Vol: 453ml T2: 93C.
5301	8/25/2015	19:02:53	45.91744	-129.99312	86.9	0.8	1532.7	1533.5	We are done with sampling at Casper.
5303	8/25/2015	19:04:07	45.91743	-129.99312	87.0	0.8	1532.8	1533.6	We will now recover Sentry so we will wait here.
5307	8/25/2015	19:14:13	45.91677	-129.99246	151.5	85.9	1445.6	1531.5	Jason off bottom To wait for Sentry recovery.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5308	8/25/2015	20:33:08	45.92104	-129.99660	318.4	131.3	1399.8	1531.1	Sentry is out of the water.
5309	8/25/2015	20:33:08	45.92104	-129.99660	318.4	131.3	1399.8	1531.1	Sentry is out of the water.
5310	8/25/2015	20:33:23	45.92102	-129.99661	316.8	131.4	1399.8	1531.2	We will now transit to AX-104.
5312	8/25/2015	21:36:33	45.91626	-129.98980	109.6	1.7	1528.9	1530.6	Bottom in sight at AX-104
5313	8/25/2015	21:37:49	45.91619	-129.98961	98.8	2.1	1529.1	1531.3	Looking for the benchmark.
5315	8/25/2015	21:39:19	45.91611	-129.98939	332.0	2.5	1528.4	1530.9	Benchmark AX-104 in front of us.
5316	8/25/2015	21:39:52	45.91611	-129.98939	332.3	2.3	1528.5	1530.8	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5318	8/25/2015	21:40:20	45.91611	-129.98939	350.9	0.9	1529.9	1530.8	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5319	8/25/2015	21:40:58	45.91611	-129.98940	358.0	0.8	1530.1	1530.8	Set down at AX-104.
5320	8/25/2015	21:41:18	45.91611	-129.98940	357.3	0.8	1530.1	1530.8	NAV: Doppler Reset
5321	8/25/2015	21:41:59	45.91612	-129.98939	357.3	0.8	1530.0	1530.8	Placing pressure recorder on benchmark AX-104.
5323	8/25/2015	21:42:28	45.91612	-129.98939	357.2	0.8	1530.0	1530.8	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5324	8/25/2015	21:42:39	45.91612	-129.98939	357.1	0.8	1530.0	1530.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5325	8/25/2015	21:42:46	45.91612	-129.98939	357.2	0.8	1530.0	1530.8	Placement good.
5326	8/25/2015	21:43:07	45.91612	-129.98939	357.0	0.8	1530.0	1530.8	PRESSURE: Start 21:42 Begin.
5329	8/25/2015	21:46:45	45.91612	-129.98939	356.5	0.8	1530.1	1530.8	NAV: Doppler Reset
5330	8/25/2015	21:47:41	45.91612	-129.98939	356.5	0.8	1530.1	1530.8	Location: 45.916126 -130.989406.
5333	8/25/2015	21:50:58	45.91612	-129.98939	356.4	0.8	1530.1	1530.8	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
5334	8/25/2015	21:51:04	45.91612	-129.98939	356.4	0.8	1530.0	1530.8	input SciCam (port 1) routed to output FrmGrb1 (port 1)
5338	8/25/2015	21:57:40	45.91612	-129.98940	356.3	0.8	1530.1	1530.8	We are looking at the biology at the site.
5342	8/25/2015	22:03:39	45.91612	-129.98940	356.1	0.8	1530.1	1530.8	PRESSURE: End 22:03 end.
5345	8/25/2015	22:04:57	45.91612	-129.98939	355.8	2.8	1527.9	1530.7	Now we are going to go to AX-105.
5346	8/25/2015	22:05:01	45.91612	-129.98940	355.6	3.8	1527.0	1530.8	Jason off bottom
5349	8/26/2015	01:48:54	45.86347	-130.00362	207.3	114.3	1470.5	1584.8	We're almost at the benchmark at the South Pillow Mound AX-105.
5350	8/26/2015	01:49:01	45.86346	-130.00362	209.7	153.2	1472.7	1625.8	Still in the water column.
5352	8/26/2015	02:00:03	45.86323	-130.00371	227.5	1.4	1718.2	1719.6	Jason on bottom
5354	8/26/2015	02:03:06	45.86308	-130.00384	20.7	0.8	1717.9	1718.7	We came down right on top of the benchmark. This one looks all shiny and new.
5355	8/26/2015	02:03:31	45.86308	-130.00384	20.8	0.8	1717.9	1718.7	Shrimp and brittle star in the center of the benchmark.
5356	8/26/2015	02:03:41	45.86308	-130.00384	20.8	0.8	1717.9	1718.7	Grabbing the sensor and deploying it.
5358	8/26/2015	02:04:13	45.86308	-130.00383	20.8	0.8	1717.9	1718.6	AX-105 benchmark. Placing the sensor.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5359	8/26/2015	02:05:00	45.86309	-130.00383	20.8	0.8	1717.9	1718.6	NAV: Doppler Reset Looks good. Starting pressure reading.
5360	8/26/2015	02:05:05	45.86309	-130.00383	20.8	0.8	1717.9	1718.7	PRESSURE: Start
5362	8/26/2015	02:07:17	45.86309	-130.00383	20.8	0.8	1717.9	1718.7	Filename: 1508260204.ax105
5364	8/26/2015	02:09:31	45.86309	-130.00383	20.8	0.8	1717.9	1718.7	Limpets on the pressure sensor. Did they fall off the hobo?
5366	8/26/2015	02:11:00	45.86309	-130.00383	20.8	0.8	1717.9	1718.7	Not sure what the pattern is on top of the sensor either. Limpet trails? No - we don't think so because nothing on the side.
5367	8/26/2015	02:11:06	45.86309	-130.00383	20.8	0.8	1717.9	1718.7	Leaping limpets?
5368	8/26/2015	02:11:46	45.86308	-130.00383	20.8	0.8	1717.9	1718.7	Big red shrimp just swam by.
5370	8/26/2015	02:13:19	45.86308	-130.00383	20.8	0.8	1717.9	1718.7	Scale worms?
5372	8/26/2015	02:14:08	45.86308	-130.00382	20.8	0.8	1717.9	1718.7	Great big jellyfish (clear-ish). Didn't get him.
5377	8/26/2015	02:23:32	45.86308	-130.00382	20.7	0.8	1718.0	1718.7	Almost finished here. The sediment is quite thick on this 2011 flow where the benchmark site. 1998 lava is down in the fissure.
5379	8/26/2015	02:25:15	45.86308	-130.00382	20.7	0.8	1718.0	1718.7	Correction: The pillow mound formed in 1998 - and the 1998 lava is in the fissure. The lavas the benchmark is sitting on is an older flow.
5380	8/26/2015	02:25:33	45.86308	-130.00382	20.7	0.8	1718.0	1718.8	PRESSURE: End
5382	8/26/2015	02:26:12	45.86308	-130.00382	20.8	0.8	1718.0	1718.8	Putting the sensor in the cradle. That's it for here.
5383	8/26/2015	02:26:33	45.86308	-130.00382	21.1	0.9	1717.5	1718.4	Powering up the beast so can do an oxygen reading.
5384	8/26/2015	02:27:20	45.86310	-130.00386	18.6	16.2	1702.1	1718.3	Jason off bottom
5385	8/26/2015	02:27:53	45.86325	-130.00381	22.0	22.1	1696.3	1718.5	End of bottom time for dive J2-824.
5387	8/26/2015	03:14:27	45.86374	-130.00407	354.5	195.5	101.0	296.5	Jason at 100m.
5388	8/26/2015	03:22:46	45.86373	-130.00406	43.2	195.5	-0.6	194.9	Jason on the surface.
5390	8/26/2015	03:23:44	45.86373	-130.00406	34.1	150.2	-0.7	149.5	Medea on surface.
5391	8/26/2015	03:24:24	45.86373	-130.00406	33.2	2.6	-0.7	1.9	Medea on deck.
5392	8/26/2015	03:29:39	45.86371	-130.00405	88.8	153.3	-1.2	152.1	Jason out of water
5393	8/26/2015	03:31:38	45.86369	-130.00406	124.3	153.3	-1.0	152.3	Jason on deck

6.6-5 J2-825 Dive log

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5398	8/26/2015	15:05:13			81.07		-0.72		Jason off deck
5399	8/26/2015	15:06:33			7.19		-0.63		JASON: Jason in water
5400	8/26/2015	15:08:56			355.15		0.99		JASON: Medea in water

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5401	8/26/2015	15:10:30			354.39		18.28		J2-825 Deployment Location: Mkr-33 Vent 45 deg 55.990 -129deg 58.397' depth=1520
5402	8/26/2015	15:10:49			355.82		26.16		Main Goals: 1) Fill Beast incubator at Mkr-33 Vent.
5403	8/26/2015	15:11:12			358.78		30.98		2) Visit Boca Vent (Mkr-170)
5404	8/26/2015	15:11:43			358.39		36.53		3) Transit to BPR-Center and release/recover.
5405	8/26/2015	15:12:14			1.36		42.64		4) Transit to north caldera rim and explore for hydrothermal vents and sample 2015 lava flows
5406	8/26/2015	15:12:54			6.52		50.17		Basket for this dive: HFS Fluid Sampler intake; Suction sampler hose; 1 gastight sampler; 2 Majors; rock sampling box.
5407	8/26/2015	15:13:12			6.13		53.57		On all dives: Jason high-temperature probe; Beast-Incubator; O2 sensor.
5408	8/26/2015	15:13:54			9.33		61.11		Port swing arm: Rock sampling box. Stbd swing arm: 5 markers.
5409	8/26/2015	15:14:17			1.12		64.83		Tasks: 1) Fill Beast incubator at Mkr-33 Vent (Mkr-166) and large volume bag.
5410	8/26/2015	15:14:31			0.24		66.58		2) Transit to Boca Vent and possibly sample.
5411	8/26/2015	15:14:44			1.24		68.16		3) Transit (in water column) to BPR-Center
5412	8/26/2015	15:14:51			1.84		68.87		4) Deploy Sentry
5413	8/26/2015	15:15:01			1.52		69.96		5) Release/recover BPR-Center.
5414	8/26/2015	15:15:18			0.33		72.09		6) Transit (in water column) to North Caldera Rim waypoints
5415	8/26/2015	15:15:27			1.11		73.14		7) Look for hydrothermal vents for sampling.
5416	8/26/2015	15:15:40			1.38		74.69		8) Collect rock samples of any 2015 lava flows encountered.
5417	8/26/2015	15:16:26			2.46		79.62		Lots of life in the water at this depth.
5418	8/26/2015	15:18:16			3.99		93.98		Incubator power on.
5419	8/26/2015	15:18:44			8.31		97.43		All stop at 100m.
5420	8/26/2015	15:19:07			7.22		108.13		Diving.
5421	8/26/2015	15:21:56			12.06		163.26		Turned on incubators heaters to preheat to 55deg.
5422	8/26/2015	15:34:43			358.02		569.51		Incubator is at 40deg.
5423	8/26/2015	16:04:34			328.78	87.76	1426.17	1513.9	100m from the target depth.
5424	8/26/2015	16:04:34			328.78	87.76	1426.17	1513.9	100m from the target depth.
5425	8/26/2015	16:13:01			328.58	30.7	1484.53	1515.2	NAV: Doppler Reset
5426	8/26/2015	16:13:01			328.58	30.7	1484.53	1515.2	NAV: Doppler Reset
5428	8/26/2015	16:14:22	45.93334	-129.98231	328.72	15.59	1500.03	1515.6	20m to target depth.
5429	8/26/2015	16:14:55	45.93334	-129.98231	327.47	3.74	1511.82	1515.6	There is the bottom.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5430	8/26/2015	16:15:19	45.93335	-129.98233	327.98	2.1	1513.56	1515.7	Landed in lobates with a patch of white staining to stbd.
5431	8/26/2015	16:15:38	45.93334	-129.98233	328.32	2.38	1513.26	1515.6	Frame_Grab:
5434	8/26/2015	16:19:17	45.93345	-129.98228	320.9	2.09	1513.18	1515.3	Driving toward the staining which is closer to the benchmark site and not the vent.
5435	8/26/2015	16:19:29	45.93344	-129.98227	220.98	2.29	1513.14	1515.4	Turning around and heading south to the vent.
5436	8/26/2015	16:19:56	45.93336	-129.98231	205.72	2.23	1513.56	1515.8	Driving along staining toward the vent site.
5438	8/26/2015	16:20:15	45.93330	-129.98236	205.88	2.11	1513.45	1515.6	Shiny black lavas and out of the stained area.
5439	8/26/2015	16:21:10	45.93315	-129.98242	174.09	2.1	1513.77	1515.9	There is a larger stained area as we approach.
5440	8/26/2015	16:21:20	45.93314	-129.98241	122.79	1.99	1513.75	1515.7	There is some debris.
5441	8/26/2015	16:21:46	45.93314	-129.98233	107.88	1.65	1514.24	1515.9	There is the marker at the vent. Mkr-166 at Mkr-33 vent.
5443	8/26/2015	16:22:38	45.93312	-129.98228	84.97	1.39	1514.47	1515.9	Looking for the MTR since they want to sample in the exact spot as the last dive.
5444	8/26/2015	16:22:38	45.93312	-129.98228	84.97	1.39	1514.47	1515.9	input PilotCam (port 3) routed to output KiPro (port 4)
5445	8/26/2015	16:22:38	45.93312	-129.98228	84.97	1.39	1514.47	1515.9	input SciCam (port 1) routed to output KiPro (port 4)
5446	8/26/2015	16:22:39	45.93312	-129.98228	84.97	1.39	1514.47	1515.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5447	8/26/2015	16:22:45	45.93311	-129.98228	86.28	1.43	1514.46	1515.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
5448	8/26/2015	16:22:52	45.93311	-129.98227	81.54	1.65	1514.43	1516.1	It was a small tube worm bush.
5452	8/26/2015	16:29:02	45.93314	-129.98223	237.36	2.06	1514.07	1516.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5453	8/26/2015	16:29:10	45.93314	-129.98223	239.64	1.44	1514.73	1516.2	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5454	8/26/2015	16:29:19	45.93314	-129.98224	232.98	1.01	1515.2	1516.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5457	8/26/2015	16:32:18	45.93313	-129.98224	246.81	0.89	1515.49	1516.4	Searching for the sampling spot.
5458	8/26/2015	16:32:37	45.93313	-129.98224	246.86	0.89	1515.49	1516.4	First will do a Jason temperature probe.
5459	8/26/2015	16:33:03	45.93313	-129.98224	246.52	0.88	1515.49	1516.4	Found the newly deployed MTR and it will be a challenge to find it on a return visit without a foam marker.
5460	8/26/2015	16:33:46	45.93313	-129.98224	246.1	0.93	1515.44	1516.4	HIGHLIGHTS: HD highlights start Not using the Jason probe-going to use the Beast probe.
5462	8/26/2015	16:34:33	45.93313	-129.98224	245.55	0.89	1515.46	1516.4	Probe is in the bush and looking for the deep part of the crack. Temperature is going up.
5463	8/26/2015	16:34:50	45.93313	-129.98224	245.55	0.89	1515.46	1516.4	This is the spot.
5464	8/26/2015	16:35:07	45.93313	-129.98224	245.52	0.9	1515.46	1516.4	HIGHLIGHTS: HD highlights stop

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5465	8/26/2015	16:35:23	45.93312	-129.98224	245.48	0.9	1515.45	1516.4	Smokey fluids coming out of the exhaust.
5466	8/26/2015	16:35:57	45.93312	-129.98224	245.47	0.89	1515.45	1516.3	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5468	8/26/2015	16:36:44	45.93312	-129.98224	245.39	0.9	1515.45	1516.4	Temperature is up to 40deg.
5469	8/26/2015	16:37:15	45.93312	-129.98224	245.09	0.91	1515.45	1516.4	Last time it was just around 35deg.
5470	8/26/2015	16:37:37	45.93312	-129.98224	245.12	0.9	1515.47	1516.4	Turning on the O2 sensor.
5472	8/26/2015	16:38:18	45.93312	-129.98225	245.18	0.9	1515.47	1516.4	O2 reading will be first.
5474	8/26/2015	16:40:44	45.93312	-129.98226	245.23	0.9	1515.45	1516.4	All incubators are at 55deg.
5475	8/26/2015	16:40:57	45.93312	-129.98226	245.16	0.9	1515.46	1516.4	Ship is getting pulled off station with a squall.
5477	8/26/2015	16:43:06	45.93312	-129.98228	245.34	0.89	1515.49	1516.4	O2 is still going down.
5479	8/26/2015	16:44:45	45.93312	-129.98230	245.44	0.88	1515.51	1516.4	Stopped the O2 sensor.
5480	8/26/2015	16:45:38	45.93313	-129.98231	245.66	0.9	1515.51	1516.4	Pulling out the wand.
5481	8/26/2015	16:45:56	45.93313	-129.98230	244.02	1.74	1514.64	1516.4	Tested the Marquardt sensor.
5483	8/26/2015	16:46:04	45.93314	-129.98229	248.13	2.05	1514.08	1516.1	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5484	8/26/2015	16:46:05	45.93315	-129.98228	248.13	2.05	1514.08	1516.1	Pulled off the site.
5485	8/26/2015	16:46:18	45.93317	-129.98223	252.44	2.59	1513.41	1516.0	Waiting for the ship to stabilize in the squall.
5486	8/26/2015	16:46:32	45.93318	-129.98217	247.6	3.54	1512.94	1516.5	Being pulled to the east.
5487	8/26/2015	16:47:15	45.93319	-129.98200	250.64	3.73	1513.1	1516.8	O2 sensor got down to .108.
5489	8/26/2015	16:48:17	45.93321	-129.98181	250.43	4.99	1513.02	1518.0	Over some lines of staining in the vicinity of where the Smiley marker should be.
5491	8/26/2015	16:51:49	45.93312	-129.98170	247.59	4.7	1513.35	1518.1	Waiting for ship and Medea to move back to the site.
5493	8/26/2015	16:53:44	45.93310	-129.98179	270.96	3.65	1513.43	1517.1	Jason is driving due west to the site.
5494	8/26/2015	16:53:53	45.93310	-129.98182	269.65	3.98	1513.35	1517.3	Seeing a large patch of staining.
5496	8/26/2015	16:54:19	45.93309	-129.98189	269.7	3.75	1513.43	1517.2	Tube worms.
5497	8/26/2015	16:55:24	45.93310	-129.98207	271.96	3.55	1513.49	1517.0	Nearing the end of this line of staining.
5498	8/26/2015	16:56:02	45.93310	-129.98216	271.15	3.6	1513.24	1516.8	Getting close to the site as see some mooring debris.
5500	8/26/2015	16:56:51	45.93312	-129.98224	240.14	3.06	1513.3	1516.4	There is the site and marker (markers really help!). Mkr-166.
5501	8/26/2015	16:57:19	45.93313	-129.98228	245.69	2.56	1513.81	1516.4	Approaching the sampling site.
5503	8/26/2015	16:58:38	45.93312	-129.98230	245.01	1.24	1515.17	1516.4	Frame_Grab:
5504	8/26/2015	16:58:43	45.93312	-129.98230	244.96	1.28	1515.13	1516.4	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5505	8/26/2015	16:59:25	45.93312	-129.98230	244.98	1.29	1515.19	1516.5	Frame_Grab:
5506	8/26/2015	16:59:48	45.93312	-129.98230	244.95	1.24	1515.2	1516.4	Here is the tubeworm clump for sampling again.
5508	8/26/2015	17:00:08	45.93312	-129.98230	245.03	1.28	1515.17	1516.5	Flow looks fairly strong here.
5509	8/26/2015	17:01:46	45.93312	-129.98229	244.97	1.25	1515.21	1516.5	Looks like the ship is steady.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5510	8/26/2015	17:01:52	45.93312	-129.98229	244.5	1.06	1515.45	1516.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5511	8/26/2015	17:02:01	45.93312	-129.98229	244.2	0.84	1515.66	1516.5	Jason settling on bottom to prepare for sampling.
5513	8/26/2015	17:02:18	45.93312	-129.98229	246.33	0.84	1515.72	1516.6	HFS wand is still in STBD manipulator.
5514	8/26/2015	17:03:09	45.93313	-129.98229	246.01	0.88	1515.61	1516.5	input SciCam (port 1) routed to output FrmGrb1 (port 1)
5515	8/26/2015	17:03:13	45.93313	-129.98229	245.88	0.86	1515.62	1516.5	Placing wand in the bush and crack.
5516	8/26/2015	17:03:45	45.93313	-129.98229	245.65	0.85	1515.62	1516.5	Temperature is rising.
5517	8/26/2015	17:03:48	45.93313	-129.98229	245.62	0.85	1515.62	1516.5	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
5519	8/26/2015	17:04:18	45.93313	-129.98229	245.64	0.86	1515.62	1516.5	input SciCam (port 1) routed to output FrmGrb1 (port 1)
5520	8/26/2015	17:05:41	45.93313	-129.98229	245.32	0.85	1515.62	1516.5	**SAMPLE: HFS J825-HFS-01** Start Incubator #1. 1705.
5522	8/26/2015	17:06:30	45.93313	-129.98229	245.4	0.85	1515.62	1516.5	Temperature 40.5 degrees.
5523	8/26/2015	17:06:49	45.93313	-129.98229	245.61	0.86	1515.64	1516.5	J825-HFS-01 1706 Actual start.
5524	8/26/2015	17:07:08	45.93313	-129.98229	245.54	0.86	1515.62	1516.5	Temperature dropping when starting the fill.
5525	8/26/2015	17:07:35	45.93313	-129.98229	245.56	0.86	1515.62	1516.5	This is in the same sampling site as J2-822 at Mkr-33 vent.
5527	8/26/2015	17:08:46	45.93313	-129.98229	245.62	0.85	1515.62	1516.5	Sampling location 45.933160 -129.982219 for J2-285 at Mkr-33 vent from the cursor.
5529	8/26/2015	17:11:30	45.93313	-129.98229	245.63	0.85	1515.65	1516.5	J825-HFS-01 Stop 1711 filled.
5530	8/26/2015	17:11:53	45.93313	-129.98229	245.65	0.85	1515.64	1516.5	**SAMPLE: HFS J825-HFS-02** Incubator #2 Start.
5532	8/26/2015	17:13:12	45.93313	-129.98229	245.57	0.86	1515.65	1516.5	J825-HFS-02 has just started.
5533	8/26/2015	17:13:55	45.93313	-129.98229	245.4	0.86	1515.67	1516.5	J825-HFS-01 Tmax=40.6 Tavg=40.5 vol=800 T2=22.
5535	8/26/2015	17:14:21	45.93313	-129.98229	245.43	0.86	1515.66	1516.5	Sampling occurring faster than able to record in order.
5536	8/26/2015	17:14:36	45.93313	-129.98229	245.56	0.86	1515.66	1516.5	J825-HFS-02 Incubator #2 is valve position #15.
5537	8/26/2015	17:15:47	45.93313	-129.98229	245.49	0.86	1515.67	1516.5	Note the start times for both of the first samples had a later start time than the Sample hotkey.
5539	8/26/2015	17:16:42	45.93313	-129.98229	245.73	0.86	1515.65	1516.5	J825-HFS-02 Stop 1716.
5540	8/26/2015	17:17:08	45.93313	-129.98229	245.78	0.86	1515.67	1516.5	J825-HFS-02 Tmax=40.5 Tavg=40.4 T2=23 vol=850.
5542	8/26/2015	17:18:05	45.93313	-129.98230	245.69	0.85	1515.66	1516.5	**SAMPLE: HFS J825-HFS-03** Start 1718 Incubator #3 valve 17.
5544	8/26/2015	17:21:54	45.93313	-129.98230	245.36	0.89	1515.66	1516.6	J825-HFS-03 Stop 1722.
5546	8/26/2015	17:22:19	45.93313	-129.98230	245.56	0.88	1515.66	1516.5	J825-HFS-03 Tmax=40.4 Tavg=40.4 vol=850 T2=22. for Incubator #3.
5547	8/26/2015	17:23:09	45.93313	-129.98229	245.7	0.86	1515.67	1516.5	**SAMPLE: HFS J825-HFS-04** Incubator #4 Start 1723.
5548	8/26/2015	17:23:21	45.93313	-129.98229	245.63	0.86	1515.69	1516.6	Incubator #4 is valve #19.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5551	8/26/2015	17:27:18	45.93313	-129.98229	245.69	0.86	1515.68	1516.5	J825-HFS-04 Stop 1727.
5552	8/26/2015	17:27:44	45.93313	-129.98229	245.55	0.86	1515.68	1516.5	J825-HFS-04 Tmax=40.5 Tavg=40.3 T2=22 vol=850.
5553	8/26/2015	17:27:51	45.93313	-129.98229	245.69	0.86	1515.69	1516.6	All incubators have been filled.
5555	8/26/2015	17:29:38	45.93313	-129.98229	245.49	0.86	1515.69	1516.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5557	8/26/2015	17:30:23	45.93313	-129.98229	245.42	0.88	1515.68	1516.6	**SAMPLE: HFS J825-HFS-05** Filtered bag #9 (large floc explosion during sampling) Start 1730.
5558	8/26/2015	17:30:25	45.93313	-129.98229	245.42	0.88	1515.7	1516.6	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5559	8/26/2015	17:32:03	45.93312	-129.98229	245.42	0.86	1515.72	1516.6	J825-HFS-05 Pump didn't start right away and was restarted.
5562	8/26/2015	17:35:36	45.93312	-129.98230	245.59	0.86	1515.71	1516.6	J825-HFS-05 Stop 1736. (First 3 incubator bottles are back up to 55deg.)
5564	8/26/2015	17:37:34	45.93312	-129.98230	245.34	0.88	1515.7	1516.6	J825-HFS Tmax=40.6 Tavg=40.5 T2= 22 vol=750.
5566	8/26/2015	17:38:10	45.93312	-129.98230	245.32	0.88	1515.7	1516.6	**SAMPLE: HFS J825-HFS-06** LVB Large volume bag #1 Start 1738.
5568	8/26/2015	17:40:34	45.93312	-129.98230	245.16	0.89	1515.69	1516.6	J825-HFS-06 is LVB #1 (wrong sample #1 in previous comment) J825-HFS-06.
5569	8/26/2015	17:41:13	45.93312	-129.98230	245.37	0.86	1515.7	1516.6	The MTR is nestled right next to the sampling hole but is really difficult to see just 2 days after deployment.
5570	8/26/2015	17:41:44	45.93312	-129.98230	245.39	0.86	1515.72	1516.6	The heading is 245.
5572	8/26/2015	17:42:20	45.93312	-129.98230	245.43	0.86	1515.72	1516.6	Depth is 1515.7 and can see Mkr-166 and weight pile just to the right of this heading.
5573	8/26/2015	17:42:46	45.93312	-129.98230	245.29	0.88	1515.7	1516.6	Maybe we should drop a marker next to the MTR?
5578	8/26/2015	17:49:32	45.93312	-129.98230	245.54	0.88	1515.73	1516.6	Instead of a new marker-going to move the old marker to the MTR.
5579	8/26/2015	17:49:57	45.93312	-129.98230	245.61	0.86	1515.74	1516.6	The old marker is adjacent to the weight stack and getting good frame grabs.
5581	8/26/2015	17:50:16	45.93312	-129.98229	245.48	0.88	1515.72	1516.6	The move would only be one meter and easier than deploying a new marker.
5582	8/26/2015	17:51:41	45.93312	-129.98229	245.28	0.88	1515.73	1516.6	Ship is getting blown off again. Looking straight at the marker in its current position.
5583	8/26/2015	17:52:01	45.93312	-129.98229	245.31	0.88	1515.72	1516.6	J825-HFS-06 LVB#1 needs about 3 more minutes.
5585	8/26/2015	17:52:15	45.93312	-129.98229	245.44	0.86	1515.72	1516.6	Frame_Grab:
5586	8/26/2015	17:52:58	45.93312	-129.98228	245.63	0.85	1515.75	1516.6	The current marker is due north and would be moved 1m south if we decide to reposition it.
5588	8/26/2015	17:55:18	45.93312	-129.98227	245.33	0.85	1515.75	1516.6	J825-HFS-06 Stop 1755.
5589	8/26/2015	17:56:00	45.93312	-129.98226	245.43	0.85	1515.76	1516.6	J825-HFS-06 Tmax=40.7 Tavg=40.6 T2=22.7

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									vol=4000ml.
5591	8/26/2015	17:56:19	45.93312	-129.98226	245.78	0.85	1515.75	1516.6	Ship is having to change heading. Wand coming out.
5592	8/26/2015	17:56:27	45.93312	-129.98226	245.93	0.84	1515.76	1516.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5593	8/26/2015	17:56:43	45.93312	-129.98225	244.89	1.3	1515.33	1516.6	NAV: Doppler Reset
5594	8/26/2015	17:57:04	45.93312	-129.98229	274.31	1.79	1514.67	1516.5	Coming off site while ship stabilized at its new heading.
5595	8/26/2015	17:57:27	45.93314	-129.98243	276.55	1.86	1514.16	1516.0	Jason is moving west out of the stained area into lobates.
5597	8/26/2015	17:58:07	45.93318	-129.98269	284.89	1.74	1513.75	1515.5	Still seeing some white stained areas between the lobates.
5598	8/26/2015	17:58:52	45.93321	-129.98277	100.15	1.91	1513.31	1515.2	Jason spinning around back to the east and looking at the stained area again. About 50m to the west.
5599	8/26/2015	17:59:53	45.93325	-129.98269	100.73	2.34	1513.27	1515.6	Ship/Medea and Jason all heading back to the Mkr-33 vent sampling site.
5601	8/26/2015	18:00:12	45.93325	-129.98269	100.55	2.41	1513.2	1515.6	Stowing wand in the holster.
5602	8/26/2015	18:00:13	45.93325	-129.98269	100.55	2.41	1513.2	1515.6	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5603	8/26/2015	18:00:19	45.93325	-129.98269	100.56	2.43	1513.17	1515.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5608	8/26/2015	18:09:02	45.93327	-129.98268	101.09	2.45	1513.15	1515.6	Instead of moving Mkr-166 one meter we may swap out MTRs. The one in the basket has a float. The other will be a very short deployment.
5610	8/26/2015	18:10:45	45.93325	-129.98266	110.96	2.33	1513.14	1515.5	Closing the valves for the incubators.
5612	8/26/2015	18:13:59	45.93314	-129.98243	109.32	2.26	1513.58	1515.8	Heading back to the venting site. Over the stained area about 20m away.
5614	8/26/2015	18:14:33	45.93314	-129.98244	109.35	2.19	1513.63	1515.8	Valves are all closed now.
5615	8/26/2015	18:15:07	45.93313	-129.98242	109.84	2.14	1513.89	1516.0	Crab.
5616	8/26/2015	18:15:20	45.93312	-129.98238	108.6	2.4	1513.64	1516.0	There is the marker again.
5617	8/26/2015	18:15:47	45.93308	-129.98233	108.81	2.24	1513.79	1516.0	Passing the marker and spinning left to the correct heading for sampling.
5621	8/26/2015	18:21:50	45.93312	-129.98218	101.31	3.51	1512.77	1516.3	Waiting for Medea and ship to settle into position.
5623	8/26/2015	18:23:06	45.93313	-129.98223	265.27	3.01	1513.62	1516.6	Spinning around 180deg to the vent and marker.
5624	8/26/2015	18:23:17	45.93313	-129.98227	263.23	2.36	1514.15	1516.5	Moving back to the Mkr-33 vent.
5626	8/26/2015	18:25:51	45.93312	-129.98233	244.85	0.84	1515.78	1516.6	Winds were up to 32knts during the squall.
5628	8/26/2015	18:26:25	45.93314	-129.98233	245.19	0.9	1515.77	1516.7	There is a long line with a loop in the background which may be the release pin for the old RAS deployment.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5630	8/26/2015	18:28:12	45.93314	-129.98235	250.06	0.76	1515.85	1516.6	There is rock in front of the sampling crack that is obscuring the MTR a bit but it still needs swapping or marking.
5631	8/26/2015	18:28:28	45.93314	-129.98235	249.8	0.75	1515.85	1516.6	Setting up for HFS sampling. Retrieving the wand.
5632	8/26/2015	18:28:46	45.93314	-129.98235	250.02	0.75	1515.85	1516.6	HIGHLIGHTS: HD highlights start Third time the wand is going into this crack and tubeworm bush.
5633	8/26/2015	18:29:15	45.93314	-129.98235	248.64	0.8	1515.85	1516.7	Beast wand is in the crack.
5635	8/26/2015	18:31:03	45.93314	-129.98234	248.65	0.83	1515.81	1516.6	Wand is in but not bottoming out on substrate. About 40deg and still stabilizing.
5637	8/26/2015	18:32:39	45.93313	-129.98233	248.88	0.81	1515.78	1516.6	**SAMPLE: HFS J825-HFS-07** Start 1833 Unfiltered Bag #8.
5638	8/26/2015	18:33:08	45.93313	-129.98232	248.91	0.81	1515.78	1516.6	This is the same crack and tubeworm bush but the 3rd wand deployment due to ship being pulled by squalls.
5639	8/26/2015	18:33:15	45.93313	-129.98232	248.72	0.83	1515.81	1516.6	HIGHLIGHTS: HD highlights stop
5642	8/26/2015	18:37:06	45.93311	-129.98230	248.47	0.81	1515.81	1516.6	J825-HFS-07 Stop 1837. (Another mini-floc discharge while sampling). Heading is slightly different this time.
5643	8/26/2015	18:37:24	45.93311	-129.98230	248.49	0.8	1515.81	1516.6	J825-HFS-07 Tmax=40.4 Tavg=40.3 vol=800 T2=21.
5644	8/26/2015	18:37:53	45.93311	-129.98230	248.5	0.8	1515.82	1516.6	**SAMPLE: HFS J825-HFS-08** Unfiltered Bag #7 Start 1838.
5646	8/26/2015	18:40:01	45.93311	-129.98231	248.49	0.8	1515.81	1516.6	There are clams here which we don't recall from previous years.
5648	8/26/2015	18:41:59	45.93312	-129.98232	248.51	0.8	1515.8	1516.6	HIGHLIGHTS: HD highlights start Floc and white mat.
5650	8/26/2015	18:42:50	45.93312	-129.98232	248.56	0.81	1515.79	1516.6	J825-HFS-08 Unfiltered Bag #7 End 1842. Tmax: 40.6 Tavg:4 0.4 volume:800 t2:21C
5651	8/26/2015	18:43:32	45.93313	-129.98232	248.56	0.8	1515.79	1516.6	**SAMPLE: HFS J825-HFS-09** RNA filter #10 Start: 1843.
5653	8/26/2015	18:45:45	45.93314	-129.98233	248.66	0.8	1515.78	1516.6	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5654	8/26/2015	18:45:52	45.93314	-129.98233	248.65	0.81	1515.78	1516.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5665	8/26/2015	19:04:55	45.93314	-129.98233	249.01	0.81	1515.77	1516.6	NAV: Doppler Reset
5668	8/26/2015	19:09:27	45.93313	-129.98234	249	0.81	1515.75	1516.6	J825-HFS-09 RNA filter #10 End 1908 Tmax: 40.9 Tavg:40.7 Volume: 4002 T2:21.
5670	8/26/2015	19:10:06	45.93312	-129.98234	249.08	0.8	1515.75	1516.6	Now we will recover the bad MTR 3028 that we can't really see and put a new one.
5672	8/26/2015	19:12:56	45.93313	-129.98234	251.34	0.84	1515.7	1516.5	**RECOVER: MTR** temp probe MTR 3028.
5674	8/26/2015	19:14:35	45.93313	-129.98234	251.31	0.91	1515.7	1516.6	**DEPLOY: MTR** temp probe We deploy MTR 3052 at MKR33 vent site.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5676	8/26/2015	19:16:33	45.93313	-129.98232	251.14	0.79	1515.81	1516.6	Now we will transit to Boca Vent.
5677	8/26/2015	19:17:31	45.93312	-129.98230	182.4	3.06	1513.16	1516.2	JASON: Jason off bottom
5683	8/26/2015	19:24:08	45.93330	-129.98278	173.53	1.44	1513.83	1515.3	Transit to Boca vent.
5691	8/26/2015	19:39:56	45.93201	-129.98302	222.7	2.06	1516.39	1518.5	Transit to Boca is very interesting. 2011 Lava drainage.
5695	8/26/2015	19:45:55	45.93126	-129.98284	176.97	0.76	1519.37	1520.1	A spiral.
5699	8/26/2015	19:51:11	45.93061	-129.98282	180.92	1.41	1519.48	1520.9	Sea cucumber.
5706	8/26/2015	20:02:54	45.92905	-129.98266	153.42	1.54	1516.76	1518.3	As we get closer to eruptive fissure we start to see venting.
5714	8/26/2015	20:16:34	45.92762	-129.98245	158.87	1.14	1516.52	1517.7	We are at Boca.
5715	8/26/2015	20:17:16	45.92762	-129.98244	202.05	0.75	1516.93	1517.7	HIGHLIGHTS: HD highlights start We are getting frame grabs and highlights at BOCA vent field.
5716	8/26/2015	20:17:29	45.92762	-129.98244	202.12	0.8	1516.88	1517.7	HIGHLIGHTS: HD highlights stop
5717	8/26/2015	20:17:53	45.92762	-129.98245	152.93	1.23	1516.38	1517.6	We will take temp readings of the fluid flow.
5719	8/26/2015	20:18:25	45.92761	-129.98244	151.78	0.75	1516.93	1517.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5720	8/26/2015	20:18:32	45.92761	-129.98244	151.4	0.75	1516.91	1517.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5722	8/26/2015	20:21:06	45.92761	-129.98244	151.14	0.75	1516.87	1517.6	Temp reading: 6.0C
5724	8/26/2015	20:22:05	45.92761	-129.98244	151.39	0.75	1516.85	1517.6	NAV: Doppler Reset
5725	8/26/2015	20:22:45	45.92761	-129.98242	230.3	1.71	1516.41	1518.1	We will get a reading of the second vent.
5726	8/26/2015	20:23:05	45.92761	-129.98242	245.05	1.01	1516.68	1517.7	That has a narrower opening which might be easier to get a reading and sample.
5727	8/26/2015	20:23:57	45.92761	-129.98242	242.5	1.01	1516.66	1517.7	Temp reading: 5.0C.
5729	8/26/2015	20:24:13	45.92761	-129.98242	242.42	1.01	1516.7	1517.7	We will not be sampling. It is too cold to sample.
5730	8/26/2015	20:24:56	45.92761	-129.98241	242.2	1.05	1516.68	1517.7	We are now headed to BPR at the center of caldera.
5732	8/26/2015	20:26:31	45.92753	-129.98240	169.08	4.25	1513.53	1517.8	This will take a couple of hours transit.
5733	8/26/2015	20:27:07	45.92742	-129.98237	167.75	11.84	1505.97	1517.8	JASON: Jason off bottom
5735	8/26/2015	22:48:44	45.95205	-129.99963	146.52	92.12	1322.99	1415.1	We're approaching the BPR benchmark AX-101 at the caldera center. Still above the bottom and will be for a while.
5736	8/26/2015	22:49:29	45.95222	-129.99976	150.17	106.54	1322.96	1429.5	The plan is to park here and deploy Sentry. After that is accomplished we will go down to the bottom and release the BPR-Center.
5737	8/26/2015	22:50:12	45.95237	-129.99988	151.47	135.34	1322.98	1458.3	Will have to wait in the water column until that is recovered - then will transit in the water column to the north caldera rim waypoints.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5738	8/27/2015	04:29:30	45.99134	-130.00850	156.69	93.2	1376.37	1469.6	Going over the north caldera rim with Jason 100m above bottom after a long transit.
5739	8/27/2015	04:37:33	45.99254	-130.00835	118.88	63.28	1402.76	1466.0	NAV: Doppler Reset
5740	8/27/2015	04:38:39	45.99268	-130.00843	90.21	52.57	1413.71	1466.3	The waypoints are guidelines that don't need to be hit exactly.
5741	8/27/2015	04:39:11	45.99275	-130.00856	68.72	44.81	1421.66	1466.5	Ship's position is such that we will head toward waypoint #2 from our current configuration of ship/Medea/Jason.
5742	8/27/2015	04:39:29	45.99276	-130.00862	68.53	38.71	1428.01	1466.7	We will be past waypoint #1.
5743	8/27/2015	04:41:36	45.99279	-130.00905	66.31	20.73	1445.78	1466.5	20m to bottom.
5745	8/27/2015	04:43:00	45.99279	-130.00905	64.5	5.55	1460.98	1466.5	There is the bottom.
5746	8/27/2015	04:43:25	45.99279	-130.00905	66.01	2.18	1464.57	1466.8	Fish and sheet-like flow with sediment.
5747	8/27/2015	04:43:36	45.99279	-130.00905	67.7	1.55	1465.23	1466.8	Definitely sheet flow.
5749	8/27/2015	04:44:38	45.99278	-130.00908	258.23	2.4	1464.98	1467.4	Spinning left to head west.
5750	8/27/2015	04:45:29	45.99281	-130.00917	266.38	2.21	1464.36	1466.6	Doesn't look very fresh here.
5751	8/27/2015	04:45:58	45.99281	-130.00923	267.51	1.28	1464.93	1466.2	Collapse feature and fish.
5753	8/27/2015	04:46:12	45.99280	-130.00927	268.21	0.91	1465.19	1466.1	Crinoids and crabs.
5754	8/27/2015	04:46:37	45.99279	-130.00935	266.65	1.81	1464.31	1466.1	Very flat with 2 fish.
5755	8/27/2015	04:47:02	45.99278	-130.00947	266.71	1.53	1464.87	1466.4	Some pits and a small fissure.
5756	8/27/2015	04:47:12	45.99279	-130.00953	267.15	1.43	1465.17	1466.6	Transitioning to pillows.
5757	8/27/2015	04:47:27	45.99280	-130.00960	268.11	2.84	1464.44	1467.3	Coming over a ridge of pillow with a lot fish. Lots of biota.
5758	8/27/2015	04:47:47	45.99281	-130.00966	266.76	3.83	1462.62	1466.5	Tremendous amount of fish and big boulder hill.
5760	8/27/2015	04:48:18	45.99281	-130.00972	267.38	3.99	1460.99	1465.0	Big cucumber and more fish.
5761	8/27/2015	04:48:41	45.99280	-130.00978	267.34	3.46	1459.07	1462.5	Top of the boulder pile of pillows.
5762	8/27/2015	04:49:13	45.99279	-130.00988	266	3.06	1457.04	1460.1	Seems hazy water.
5763	8/27/2015	04:49:45	45.99282	-130.00988	264.19	2.68	1457.23	1459.9	Small debris slides in the pillows or dark debris on the pillow sides.
5765	8/27/2015	04:51:04	45.99290	-130.01000	267.35	2.53	1458.03	1460.6	There definitely is a darker covering between the pillows-could it possibly be ash?
5766	8/27/2015	04:51:24	45.99291	-130.01005	266.11	1.61	1458.81	1460.4	Visibility isn't very good.
5767	8/27/2015	04:51:38	45.99291	-130.01008	265.86	1.79	1459.28	1461.1	Crabs and fish and crinoids.
5768	8/27/2015	04:51:49	45.99291	-130.01010	266.72	1.11	1459.48	1460.6	Seeing sea stars on the bottom camera.
5770	8/27/2015	04:52:16	45.99291	-130.01015	266.96	1.74	1459.34	1461.1	Topping another pillow ridge.
5771	8/27/2015	04:52:52	45.99291	-130.01021	265.55	0.9	1459.95	1460.9	Filter feeders on the top of the boulders.
5772	8/27/2015	04:53:00	45.99292	-130.01022	267.21	1.19	1460.12	1461.3	Ship speed is .39m/s.
5773	8/27/2015	04:53:52	45.99291	-130.01032	266.8	1.45	1462.34	1463.8	Going to pick up the speed to .5m/s.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5775	8/27/2015	04:54:15	45.99293	-130.01034	298.92	1.59	1462.81	1464.4	Visibility is still poor.
5777	8/27/2015	04:54:54	45.99302	-130.01046	299.07	1.65	1466.51	1468.2	Flying over large pillows cascading down this hill.
5778	8/27/2015	04:55:16	45.99306	-130.01053	298.69	2.48	1468.05	1470.5	Harder to see when going down the hill and murky water.
5779	8/27/2015	04:55:21	45.99307	-130.01055	297.98	1.93	1469.1	1471.0	Fish.
5781	8/27/2015	04:56:25	45.99317	-130.01069	298.78	0.75	1474.28	1475.0	Still heading down the pillow hill.
5782	8/27/2015	04:57:26	45.99325	-130.01087	297.37	0.76	1478.37	1479.1	Very murky water with smoother flow and less pillows.
5783	8/27/2015	04:57:38	45.99327	-130.01090	297.55	1.2	1479.01	1480.2	Still appears to have some dark deposits around the pillow bases.
5785	8/27/2015	04:58:23	45.99332	-130.01098	296.86	0.84	1480.49	1481.3	Many brittle stars on the bottom camera on a close approach.
5786	8/27/2015	04:59:31	45.99347	-130.01101	300.55	2	1480.73	1482.7	Approaching waypoint #3 where an apparent fissure is seen in the bathymetry.
5787	8/27/2015	04:59:49	45.99351	-130.01107	299.26	1.83	1482.08	1483.9	Smoother flow and much murkier water.
5788	8/27/2015	05:00:01	45.99352	-130.01110	299.32	0.75	1484.08	1484.8	Sheet flow.
5790	8/27/2015	05:00:25	45.99355	-130.01115	299.14	0.75	1485.78	1486.5	Lots of sediment and flat.
5791	8/27/2015	05:00:34	45.99357	-130.01117	298.91	0.98	1485.86	1486.8	Approaching a line of pillows.
5792	8/27/2015	05:01:25	45.99367	-130.01131	299.82	3.95	1481.62	1485.6	Pillows are dominating as we go up the small hills on the navigation map.
5793	8/27/2015	05:01:37	45.99367	-130.01135	298.88	5.04	1479.71	1484.8	Large pillows and some elongated with sediment.
5795	8/27/2015	05:02:14	45.99371	-130.01145	298.4	3.13	1477.94	1481.1	Top of a pillow hill with black deposits again between the pillows-ash?
5796	8/27/2015	05:02:49	45.99373	-130.01146	298.51	2.21	1478.74	1481.0	NAV: Doppler Reset
5797	8/27/2015	05:03:11	45.99375	-130.01150	299.15	0.95	1480.18	1481.1	Slowing the ship down a bit as we near the fissure target.
5798	8/27/2015	05:03:38	45.99377	-130.01160	299.12	1.06	1481.92	1483.0	Going down the other side of the pillow hill.
5799	8/27/2015	05:03:51	45.99378	-130.01165	300.43	1.58	1482.73	1484.3	The black sediment appears somewhat sparkly on the bottom camera.
5801	8/27/2015	05:04:12	45.99378	-130.01165	298.91	1.81	1482.75	1484.6	The sediment looks similar to the ash collected on the benchmark.
5802	8/27/2015	05:05:29	45.99389	-130.01187	299.87	2.4	1487.74	1490.1	Over a pile of pillows.
5804	8/27/2015	05:06:18	45.99397	-130.01207	297.58	1.46	1491.41	1492.9	Still black deposits in the pillows bottoms.
5805	8/27/2015	05:06:39	45.99399	-130.01213	298.02	2.13	1493.49	1495.6	Going down hill again and losing forward visibility. The butt camera shows the pillow hill.
5806	8/27/2015	05:07:01	45.99402	-130.01221	297.82	1.2	1497.54	1498.7	Sediment on this side of the hill looks lighter and not ashy.
5807	8/27/2015	05:07:30	45.99404	-130.01229	299.28	1.69	1498.17	1499.9	Down on to the flats and primarily sheet flow.
5809	8/27/2015	05:08:19	45.99407	-130.01238	299.42	1.08	1499.75	1500.8	A few lonely pillows in the flow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5810	8/27/2015	05:09:19	45.99410	-130.01248	299	0.75	1500.85	1501.6	Flat and less animals but here is a fish.
5811	8/27/2015	05:09:38	45.99410	-130.01250	299.03	0.99	1501.04	1502.0	Many brittle stars in the bottom camera.
5813	8/27/2015	05:10:29	45.99416	-130.01259	299.27	1.06	1502.15	1503.2	Coming up to a few dispersed pillows.
5814	8/27/2015	05:10:52	45.99417	-130.01263	299.51	1.44	1502.28	1503.7	Seeing burrow holes in the bottom camera.
5815	8/27/2015	05:11:07	45.99418	-130.01267	300.35	1.25	1502.51	1503.8	Edge of a pillow flow.
5816	8/27/2015	05:11:28	45.99420	-130.01273	298.3	1.45	1502.08	1503.5	Very small ridge of pillow and then flat again.
5817	8/27/2015	05:11:57	45.99421	-130.01280	298.95	1.29	1502.94	1504.2	Another edge of pillows.
5819	8/27/2015	05:12:58	45.99425	-130.01292	298.29	1.2	1503.62	1504.8	Flattening again with dispersed pillows and sheet flow.
5820	8/27/2015	05:13:32	45.99427	-130.01297	298.9	1.44	1504.36	1505.8	Some dark looking sediments.
5822	8/27/2015	05:14:13	45.99429	-130.01302	299.1	1.38	1504.33	1505.7	Larger pillow flow going slightly downhill.
5823	8/27/2015	05:15:07	45.99434	-130.01314	298.8	1.4	1505.23	1506.6	Getting closer to the area where the CTD had the big LSS signal.
5824	8/27/2015	05:16:01	45.99439	-130.01326	299.77	1.68	1506.91	1508.6	Going downhill again and pillows stop with a sheet flow. Flat and sediment.
5826	8/27/2015	05:16:30	45.99437	-130.01335	298.15	2.63	1507.8	1510.4	Black sediment not as readily apparent in the sheet flow.
5827	8/27/2015	05:17:04	45.99438	-130.01343	299.04	1.66	1509.18	1510.8	Water is getting murkier.
5828	8/27/2015	05:17:23	45.99438	-130.01345	298.92	1.39	1509.44	1510.8	Some pillow ridges in the flatter flow.
5830	8/27/2015	05:18:57	45.99438	-130.01346	312.02	1.35	1509.43	1510.8	Stopping incubator #3.
5831	8/27/2015	05:19:09	45.99438	-130.01346	312.26	1.43	1509.31	1510.7	The heater is off.
5832	8/27/2015	05:19:56	45.99434	-130.01347	212.08	1.34	1509.47	1510.8	Some orange anemones in the pillows.
5834	8/27/2015	05:20:21	45.99431	-130.01349	208.55	1.36	1509.99	1511.4	Flat flows.
5835	8/27/2015	05:20:54	45.99425	-130.01352	210.25	1.61	1510.51	1512.1	Stripes of dark and light sediment.
5836	8/27/2015	05:21:27	45.99419	-130.01359	227.02	2.2	1511.52	1513.7	Sheet flows forever.
5837	8/27/2015	05:21:54	45.99416	-130.01364	233.77	1.85	1511.73	1513.6	Crab.
5839	8/27/2015	05:22:17	45.99412	-130.01368	222.25	1.66	1512.3	1514.0	Coming up to a pile of rocks. Jagged-not pillows.
5840	8/27/2015	05:22:30	45.99410	-130.01368	210.2	2.06	1512.62	1514.7	Fish.
5841	8/27/2015	05:22:50	45.99409	-130.01368	222.33	1.25	1513.37	1514.6	Visibility is getting worse from Medea.
5843	8/27/2015	05:24:08	45.99420	-130.01381	309.26	1.95	1512.48	1514.4	Flat sheet flows with some jagged rocks in piles.
5844	8/27/2015	05:24:19	45.99422	-130.01383	308.37	1.84	1512.45	1514.3	Dark and light stripes of sediment.
5845	8/27/2015	05:24:33	45.99423	-130.01386	308.23	1.74	1512.46	1514.2	Incubator #3 transferred fine.
5846	8/27/2015	05:24:50	45.99426	-130.01389	312.14	1.28	1513.22	1514.5	Jagged ridge of rock.
5847	8/27/2015	05:25:06	45.99427	-130.01391	309.36	1.14	1513.58	1514.7	Incubator #4 turned off and transferring.
5848	8/27/2015	05:25:45	45.99429	-130.01401	281.4	0.91	1515.45	1516.4	Transferred.
5850	8/27/2015	05:26:12	45.99429	-130.01410	277.37	1.46	1516.38	1517.8	Flat and murky.
5851	8/27/2015	05:26:31	45.99429	-130.01417	274.87	1.64	1516.69	1518.3	Here is an edge of something.
5852	8/27/2015	05:26:51	45.99430	-130.01422	276.03	2.29	1515.89	1518.2	Just a jagged line of rock and then sheet flow on the

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									other side.
5853	8/27/2015	05:27:49	45.99427	-130.01437	289.29	1.56	1517.74	1519.3	Going to head further west before turning to the NE back to the fissure line.
5854	8/27/2015	05:27:57	45.99427	-130.01441	289.09	1.8	1517.54	1519.3	Still sheet flow.
5856	8/27/2015	05:28:28	45.99425	-130.01453	288.98	1.78	1518.5	1520.3	No evidence of hydrothermal activity.
5857	8/27/2015	05:29:07	45.99425	-130.01470	289.84	2.16	1518.54	1520.7	Small ridge of lava.
5858	8/27/2015	05:29:24	45.99424	-130.01475	289.6	1.5	1519.21	1520.7	Incubator #4 transferred well.
5859	8/27/2015	05:29:44	45.99425	-130.01479	335.86	1.4	1519.7	1521.1	Jagged lava with a crab.
5861	8/27/2015	05:30:03	45.99427	-130.01479	8.86	1.73	1519.01	1520.7	Going to head to waypoint #5 to the north.
5862	8/27/2015	05:31:20	45.99438	-130.01458	50.19	1.13	1519.58	1520.7	More of the same with lots of sediment and occasional jagged lava rocks.
5863	8/27/2015	05:31:51	45.99439	-130.01452	70.24	2.39	1518.46	1520.9	Heading 066 to the next waypoint.
5865	8/27/2015	05:32:12	45.99441	-130.01445	68.74	1.58	1518.23	1519.8	About 175m to the next target.
5866	8/27/2015	05:32:22	45.99441	-130.01441	69.09	2.26	1517.98	1520.2	Long stripes of sediment.
5868	8/27/2015	05:34:15	45.99447	-130.01424	68.06	2.13	1517.26	1519.4	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5869	8/27/2015	05:34:24	45.99446	-130.01424	68.46	2.03	1517.31	1519.3	Could be ripples of ash.
5870	8/27/2015	05:34:25	45.99446	-130.01423	68.41	1.98	1517.36	1519.3	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5871	8/27/2015	05:34:33	45.99445	-130.01422	64.91	2.05	1517.32	1519.4	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5872	8/27/2015	05:34:39	45.99444	-130.01422	68.9	2.2	1517.04	1519.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5873	8/27/2015	05:34:45	45.99444	-130.01421	69.62	2.01	1517.22	1519.2	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5874	8/27/2015	05:34:51	45.99444	-130.01421	68.49	1.85	1517.46	1519.3	Anemone.
5875	8/27/2015	05:35:15	45.99444	-130.01417	69.07	1.71	1517.7	1519.4	Hole in the sediment.
5876	8/27/2015	05:35:25	45.99444	-130.01416	66.37	1.36	1517.8	1519.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5877	8/27/2015	05:35:28	45.99445	-130.01416	66.89	1.43	1517.78	1519.2	Pit in the flow.
5878	8/27/2015	05:35:37	45.99445	-130.01413	69.19	1.33	1517.39	1518.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5879	8/27/2015	05:35:43	45.99445	-130.01412	67.91	1.33	1517.29	1518.6	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5880	8/27/2015	05:35:44	45.99445	-130.01412	68.18	1.29	1517.26	1518.6	Looks old.
5881	8/27/2015	05:36:02	45.99446	-130.01409	69.35	1.53	1516.74	1518.3	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5883	8/27/2015	05:36:31	45.99451	-130.01408	67.28	2	1516.1	1518.1	Some boulders but the black does seem sparkly.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5884	8/27/2015	05:36:41	45.99450	-130.01407	67.55	2.04	1515.81	1517.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5885	8/27/2015	05:36:50	45.99449	-130.01406	67.68	2.39	1515.47	1517.9	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5886	8/27/2015	05:37:06	45.99447	-130.01404	68.19	2.6	1515.51	1518.1	Still following stripes of sediment.
5887	8/27/2015	05:37:26	45.99444	-130.01401	67.25	1.93	1515.36	1517.3	Occasional billows.
5888	8/27/2015	05:37:37	45.99443	-130.01399	68.46	2.04	1515.11	1517.2	Occasional pillows.
5889	8/27/2015	05:37:53	45.99442	-130.01397	67.94	1.76	1514.96	1516.7	Large anemone.
5891	8/27/2015	05:38:13	45.99441	-130.01394	68.08	1.69	1514.77	1516.5	A few lava pillows.
5892	8/27/2015	05:39:03	45.99452	-130.01385	66.81	2.85	1513.02	1515.9	Coming up a mound of pillows.
5893	8/27/2015	05:39:30	45.99460	-130.01378	68.19	3.11	1511.31	1514.4	Seeing black deposits in between the pillows again but not as pronounced as before.
5894	8/27/2015	05:39:44	45.99466	-130.01377	68.62	3.29	1510.94	1514.2	Flattening out again with some stripes of sediment.
5896	8/27/2015	05:40:09	45.99474	-130.01375	68.3	4.56	1510.8	1515.4	Rockier now with more lobates or pillows.
5897	8/27/2015	05:40:58	45.99478	-130.01364	68.41	1.98	1510.7	1512.7	Climbing a pillow mound.
5898	8/27/2015	05:41:26	45.99475	-130.01359	68.01	1.95	1509.79	1511.7	Crab.
5899	8/27/2015	05:41:54	45.99472	-130.01354	68.18	1.68	1508.95	1510.6	More sediment stripes.
5901	8/27/2015	05:42:50	45.99465	-130.01344	69.43	2.25	1507.5	1509.8	Coming up onto a pillow patch.
5902	8/27/2015	05:43:22	45.99471	-130.01335	68.78	2.39	1506.14	1508.5	Stripes and sediment again.
5904	8/27/2015	05:44:12	45.99490	-130.01329	68.22	2.35	1507.33	1509.7	Approaching waypoint #5 where we may cross a fissure.
5905	8/27/2015	05:45:11	45.99499	-130.01324	65.59	0.9	1510.41	1511.3	Sediment but no stripes with some pillow lavas poking through.
5906	8/27/2015	05:46:02	45.99494	-130.01318	68.54	1.3	1508.44	1509.7	Climbing a pillow hill.
5908	8/27/2015	05:46:18	45.99492	-130.01315	67.98	1.78	1507.45	1509.2	Flattened pillows with a lot of sediment.
5909	8/27/2015	05:46:33	45.99491	-130.01312	67.95	1.51	1507.27	1508.8	Some larger pillows.
5910	8/27/2015	05:47:22	45.99486	-130.01304	67.2	1.51	1506	1507.5	Seeing more stripes again between pillows.
5911	8/27/2015	05:47:45	45.99485	-130.01299	68.15	2.3	1504.5	1506.8	Climbing over a hill or ridge.
5912	8/27/2015	05:47:55	45.99486	-130.01295	69.09	2.1	1504.34	1506.4	Line of pillows.
5914	8/27/2015	05:48:16	45.99489	-130.01290	68.82	1.6	1504.01	1505.6	Seeing some tube forms and pillows on top.
5915	8/27/2015	05:49:02	45.99499	-130.01279	70.19	2.03	1504.15	1506.2	Back into some dark and light sediment and a fissure in the sonar.
5916	8/27/2015	05:49:12	45.99500	-130.01276	70.84	2.03	1503.74	1505.8	Coming up on a fissure now.
5917	8/27/2015	05:49:24	45.99501	-130.01272	69.21	1.81	1503.45	1505.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
5918	8/27/2015	05:49:33	45.99502	-130.01269	44.03	1.66	1503.66	1505.3	Looking along the fissure.
5919	8/27/2015	05:49:37	45.99502	-130.01269	24.24	1.46	1503.79	1505.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5920	8/27/2015	05:49:46	45.99504	-130.01266	11.83	1.36	1503.81	1505.2	Not a lot of action inside the fissure but it is fairly deep.
5921	8/27/2015	05:49:47	45.99504	-130.01266	11.83	1.36	1503.81	1505.2	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
5922	8/27/2015	05:49:57	45.99506	-130.01265	1.44	3.79	1503.63	1507.4	input SciCam (port 1) routed to output FrmGrb1 (port 1)
5924	8/27/2015	05:50:05	45.99509	-130.01264	0.49	2.2	1503.6	1505.8	input SupScorpio (port 4) routed to output FrmGrb2 (port 2)
5925	8/27/2015	05:50:10	45.99510	-130.01264	0.87	1.99	1503.7	1505.7	Following along the fissure due north.
5926	8/27/2015	05:50:28	45.99517	-130.01264	0.77	1.39	1505.25	1506.6	Looks shallower here and is now disappearing.
5927	8/27/2015	05:50:48	45.99520	-130.01264	0.27	0.94	1505.61	1506.6	Some pillows at the top and now a flatter flow.
5928	8/27/2015	05:51:34	45.99530	-130.01266	0.27	0.94	1507.91	1508.9	Heavy sediment and flat with occasional rocks poking up.
5930	8/27/2015	05:52:12	45.99535	-130.01258	1.24	2.25	1506.59	1508.8	Fissure should reappear as we approach waypoint #6.
5931	8/27/2015	05:52:46	45.99538	-130.01247	0.72	1.53	1506.14	1507.7	Stripes of sediment but predominately black.
5932	8/27/2015	05:52:57	45.99540	-130.01246	358.92	1.51	1506.12	1507.6	Looks like more ash here.
5933	8/27/2015	05:53:09	45.99542	-130.01246	0.24	1.53	1506.4	1507.9	Flat sediment.
5935	8/27/2015	05:54:30	45.99548	-130.01249	1.54	1.81	1507.04	1508.9	Striped sediments and now not as black.
5936	8/27/2015	05:55:04	45.99556	-130.01251	0.3	1.41	1509.08	1510.5	Water is still murky.
5937	8/27/2015	05:55:23	45.99561	-130.01250	0.36	1.56	1509.26	1510.8	Here is a small ridge and can see pillows again...this is the fissure.
5938	8/27/2015	05:55:52	45.99567	-130.01248	359.98	2.26	1508.95	1511.2	It disappeared again but there is a ridge of block rocks with flat sediment on either side.
5940	8/27/2015	05:57:04	45.99568	-130.01248	0.36	1.48	1509.97	1511.5	Waiting for ship and Medea.
5941	8/27/2015	05:57:36	45.99570	-130.01248	0.34	1.63	1510.05	1511.7	Driving north.
5943	8/27/2015	05:58:24	45.99575	-130.01247	6.03	0.76	1511.74	1512.5	Bottom camera shows some flattened tubes and pillows with sediment.
5944	8/27/2015	05:59:45	45.99583	-130.01243	6.05	0.75	1513.78	1514.5	Flat with occasional pillows.
5946	8/27/2015	06:00:11	45.99585	-130.01242	6.02	0.75	1514.45	1515.2	Sea star.
5947	8/27/2015	06:00:26	45.99587	-130.01241	5.85	0.75	1514.87	1515.6	Some larger pillows.
5948	8/27/2015	06:00:38	45.99588	-130.01241	6.22	1.04	1514.69	1515.7	Heavily sedimented.
5949	8/27/2015	06:01:02	45.99591	-130.01239	6.41	0.93	1515.25	1516.2	Line of pillows to the north.
5950	8/27/2015	06:01:50	45.99595	-130.01238	7.05	0.91	1515.38	1516.3	Crack to the left on the sonar.
5952	8/27/2015	06:02:04	45.99597	-130.01241	6.26	1.36	1515.63	1517.0	Moving left.
5953	8/27/2015	06:03:11	45.99606	-130.01250	10.19	2.86	1514.87	1517.7	Some kind of pillow ridge but the fissure has disappeared.
5954	8/27/2015	06:03:23	45.99610	-130.01250	5.84	1.76	1515.76	1517.5	So murky.
5955	8/27/2015	06:03:50	45.99620	-130.01248	7.37	2.7	1516.98	1519.7	Following a crack but hard to see with the visibility.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5957	8/27/2015	06:04:26	45.99629	-130.01243	6.19	2.54	1518.89	1521.4	Following the crack but nothing looks fresh or new. Crab.
5958	8/27/2015	06:04:54	45.99637	-130.01242	10.63	2.46	1517.38	1519.8	Still above the crack as it narrows.
5959	8/27/2015	06:05:33	45.99647	-130.01239	6.1	2.84	1520.38	1523.2	Not seeing anything in the bottom on the bottom camera.
5960	8/27/2015	06:05:41	45.99649	-130.01239	6.7	2.15	1520.31	1522.5	Fissure has widened up.
5961	8/27/2015	06:05:55	45.99653	-130.01238	4.56	2.21	1520.36	1522.6	Crab hanging on the wall.
5963	8/27/2015	06:06:45	45.99658	-130.01238	5.77	2.38	1521.77	1524.2	This crack will eventually die out and step over to the west.
5964	8/27/2015	06:07:44	45.99664	-130.01236	6.56	2.23	1522.85	1525.1	Fissure is a bit wider here.
5966	8/27/2015	06:08:10	45.99667	-130.01234	6.21	2.68	1523.15	1525.8	No hydrothermal activity.
5967	8/27/2015	06:08:29	45.99670	-130.01233	0.16	2.76	1523.43	1526.2	Poor visibility.
5968	8/27/2015	06:08:48	45.99674	-130.01232	0.6	2.28	1524.57	1526.9	Crab on the wall.
5969	8/27/2015	06:09:06	45.99677	-130.01232	0.55	1.83	1525.29	1527.1	Can see directly down the crack in the bottom camera and no fresh lavas.
5970	8/27/2015	06:09:14	45.99678	-130.01232	359.71	2.48	1525.25	1527.7	Fissure narrowed.
5971	8/27/2015	06:09:43	45.99682	-130.01231	0.28	2.28	1525.78	1528.1	Some pillow on top of the crack to stbd.
5972	8/27/2015	06:10:03	45.99683	-130.01231	0.6	1.8	1525.84	1527.6	Pillows tumbling into the crack.
5974	8/27/2015	06:10:59	45.99689	-130.01230	1.71	1.81	1525.55	1527.4	Crack is narrow with pillow on either side.
5975	8/27/2015	06:11:24	45.99692	-130.01228	359.55	1.33	1525.36	1526.7	Looking at the bottom of the fissure still.
5976	8/27/2015	06:11:31	45.99693	-130.01228	1.06	2.5	1525.36	1527.9	Tube truncated across the fissure.
5978	8/27/2015	06:12:06	45.99699	-130.01226	0.44	1.19	1525.42	1526.6	Fissure has widened up.
5979	8/27/2015	06:12:54	45.99707	-130.01226	0.48	2.79	1526.07	1528.9	Lava curling along the crack.
5980	8/27/2015	06:12:58	45.99708	-130.01225	359.23	2.66	1526	1528.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
5981	8/27/2015	06:13:01	45.99708	-130.01225	1.07	2.7	1525.85	1528.6	Narrowed again.
5982	8/27/2015	06:13:09	45.99709	-130.01224	1.52	2.79	1525.54	1528.3	Older flow at bottom of the crack.
5983	8/27/2015	06:13:29	45.99713	-130.01224	0.49	2.63	1525.19	1527.8	Left side is higher than the right side of the fissure.
5984	8/27/2015	06:13:55	45.99717	-130.01222	0.67	2.39	1525.07	1527.5	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
5986	8/27/2015	06:14:08	45.99718	-130.01220	0.22	2.44	1525.08	1527.5	Fissure looks like it will widen up again.
5987	8/27/2015	06:14:44	45.99724	-130.01221	0.65	1.64	1525.44	1527.1	Or is it disappearing-no looks like there is more sediment.
5989	8/27/2015	06:16:34	45.99739	-130.01213	1.05	3.89	1522.81	1526.7	Fissure is disintegrating as we will transition over to the west and the next waypoint.
5990	8/27/2015	06:17:12	45.99747	-130.01215	310.24	2.78	1522.07	1524.9	Fissure has ended so heading over to the west.
5991	8/27/2015	06:17:23	45.99748	-130.01217	312.86	1.2	1522.85	1524.1	Flat flow with sediment.
5992	8/27/2015	06:17:55	45.99751	-130.01225	307.74	2.2	1523.3	1525.5	Striped sediment again.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
5994	8/27/2015	06:19:49	45.99756	-130.01231	310.95	2.13	1523.09	1525.2	Flat flow.
5996	8/27/2015	06:20:53	45.99762	-130.01236	310.64	1.61	1522.85	1524.5	Heavy sediment and predominately lighter.
5997	8/27/2015	06:21:57	45.99766	-130.01246	310.73	1.46	1523.68	1525.1	Small ridge of old collapse.
5999	8/27/2015	06:22:05	45.99766	-130.01247	310.74	1.15	1524.01	1525.2	Fish.
6000	8/27/2015	06:22:15	45.99766	-130.01248	310.13	1.15	1524.27	1525.4	input SciCam (port 1) routed to output FrmGrb1 (port 1)
6001	8/27/2015	06:22:30	45.99767	-130.01248	310.62	1.78	1523.88	1525.7	See lips of lava along the edges.
6002	8/27/2015	06:23:04	45.99771	-130.01253	310.18	1.75	1523.33	1525.1	Flat sediments with striping.
6004	8/27/2015	06:25:00	45.99781	-130.01257	310.81	1.39	1524.33	1525.7	Looks like the fissure is on the sonar.
6005	8/27/2015	06:25:28	45.99783	-130.01262	311.08	1.98	1524.16	1526.1	Following flat flow with occasional lavas protruding.
6006	8/27/2015	06:25:57	45.99787	-130.01271	309.58	1.76	1524.61	1526.4	Small hill and approaching a the crack on the sonar.
6008	8/27/2015	06:26:10	45.99788	-130.01274	310.52	2.18	1524.51	1526.7	Jagged looking lavas.
6009	8/27/2015	06:26:38	45.99792	-130.01281	310.16	2.69	1523.64	1526.3	Here is the crack.
6010	8/27/2015	06:27:16	45.99794	-130.01286	346.64	3.38	1523.52	1526.9	Going to follow this crack northward.
6011	8/27/2015	06:27:33	45.99797	-130.01289	359.66	3.7	1523.3	1527.0	Water is still murky.
6013	8/27/2015	06:28:10	45.99807	-130.01290	353.81	3.46	1524.26	1527.7	Fairly narrow fissure.
6014	8/27/2015	06:28:50	45.99813	-130.01290	356.19	4.9	1525.68	1530.6	Disappearing a bit-not as distinct.
6015	8/27/2015	06:29:08	45.99816	-130.01290	12.72	3.25	1525.47	1528.7	Looks like it filled in a bit there and is now opening up again.
6016	8/27/2015	06:29:52	45.99824	-130.01288	9.77	4.51	1525.78	1530.3	Jagged walls on either side of the fissure.
6018	8/27/2015	06:30:22	45.99831	-130.01288	10.45	1.56	1524.58	1526.1	No hydrothermal activity or shiny black lavas here.
6019	8/27/2015	06:30:36	45.99834	-130.01288	10.07	3.39	1524.18	1527.6	Fissure disappeared again.
6020	8/27/2015	06:31:24	45.99840	-130.01285	10.06	3.03	1524.41	1527.4	Hard to see with this cloudy water.
6022	8/27/2015	06:32:12	45.99848	-130.01276	8.74	3.25	1526.12	1529.4	A lot of sediment around the fissure and it is light in color.
6023	8/27/2015	06:32:18	45.99849	-130.01276	8.2	3.26	1526.21	1529.5	Looks really old.
6024	8/27/2015	06:32:37	45.99853	-130.01275	8.69	3.91	1526.1	1530.0	Coming over a ridge within the crack feature.
6025	8/27/2015	06:32:45	45.99855	-130.01274	9.55	4.81	1526.14	1531.0	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
6026	8/27/2015	06:32:46	45.99855	-130.01274	9.12	4.94	1526.1	1531.0	Wall of jagged rock.
6027	8/27/2015	06:33:13	45.99860	-130.01274	8.77	1.79	1526.45	1528.2	Coming back over the ridge and into the fissure again.
6028	8/27/2015	06:33:21	45.99861	-130.01274	8.9	1.81	1526.25	1528.1	A bit wider here.
6029	8/27/2015	06:33:38	45.99864	-130.01274	9.43	2.74	1526.29	1529.0	Heavily sedimented.
6031	8/27/2015	06:34:16	45.99871	-130.01273	5.08	4.65	1527.23	1531.9	Coming over another bridge across the fissure.
6032	8/27/2015	06:34:19	45.99872	-130.01274	5.42	4.59	1527.4	1532.0	NAV: Doppler Reset
6033	8/27/2015	06:35:01	45.99880	-130.01273	5.89	1.64	1527.47	1529.1	Seems to be a series of these blocks across the fissure.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6034	8/27/2015	06:35:34	45.99886	-130.01271	5.37	1.71	1529.06	1530.8	Jagged edges on both sides.
6035	8/27/2015	06:35:47	45.99888	-130.01271	5.12	3.53	1528.39	1531.9	Coming over another wall across the fissure.
6036	8/27/2015	06:36:02	45.99891	-130.01270	5.38	3.18	1527.46	1530.6	Matches the bathymetry map really well.
6038	8/27/2015	06:36:41	45.99899	-130.01267	5.33	4.31	1527.18	1531.5	Large wall with some tubes and pillows.
6039	8/27/2015	06:36:51	45.99902	-130.01267	4.19	3.68	1526.57	1530.3	Fissure almost completely buried.
6040	8/27/2015	06:37:06	45.99904	-130.01266	5.06	2.84	1525.87	1528.7	Heavy sediment sheet flow.
6041	8/27/2015	06:37:18	45.99906	-130.01266	5.26	2.68	1525.98	1528.7	Can see fissure appearing to open up ahead.
6042	8/27/2015	06:37:46	45.99910	-130.01265	5.11	1.48	1526.81	1528.3	Here is an opening in the fissure again.
6044	8/27/2015	06:38:23	45.99915	-130.01265	5.25	3.05	1527.69	1530.7	Left side of fissure more prominent.
6045	8/27/2015	06:38:37	45.99917	-130.01265	5.4	1.59	1528	1529.6	Large cucumber in the crack.
6046	8/27/2015	06:38:51	45.99918	-130.01264	5.08	1.09	1528.2	1529.3	Fissure about to be buried again.
6047	8/27/2015	06:39:21	45.99921	-130.01263	5.1	0.99	1528.42	1529.4	Buried as we climb over a ridge.
6048	8/27/2015	06:39:57	45.99926	-130.01262	5.39	0.88	1528.67	1529.6	Can see some of the flow here and looked like smoother sheets and less jagged.
6050	8/27/2015	06:40:15	45.99929	-130.01261	5.18	0.75	1529.92	1530.7	Fish.
6054	8/27/2015	06:46:31	45.99972	-130.01242	7.97	2.66	1525.57	1528.2	Traversing pyroclastic sediment with old jumbled flow pressure mounds sticking up.
6056	8/27/2015	06:49:58	46.00001	-130.01209	357.61	1.8	1524.89	1526.7	jumbled sheet flow sticking up through thick sediments
6058	8/27/2015	06:50:09	46.00002	-130.01208	327.35	1.13	1525.04	1526.2	Skate and rattail.
6060	8/27/2015	06:53:18	46.00027	-130.01201	339.17	1.64	1523.6	1525.2	Collapse pit buried in sediment; pressure ridges.
6062	8/27/2015	06:55:12	46.00044	-130.01235	19.46	0.78	1528.08	1528.9	Edge of the fissure. No fresh lava at the bottom.
6064	8/27/2015	06:56:20	46.00076	-130.01229	4.6	3.54	1528	1531.5	Following along the fissure at 0.5 knots.
6065	8/27/2015	06:56:48	46.00089	-130.01224	3.54	2.83	1526.76	1529.6	Pillow lavas but not fresh.
6067	8/27/2015	06:58:08	46.00118	-130.01207	359.28	1.28	1524.17	1525.5	Sediments surrounding bulbous pillows.
6068	8/27/2015	06:59:43	46.00134	-130.01194	3.81	0.89	1524.34	1525.2	Large crab and stars. Drained and bulbous pillows.
6070	8/27/2015	07:00:35	46.00136	-130.01197	43.77	1.21	1524.65	1525.9	Close up of drained pillow.
6072	8/27/2015	07:02:07	46.00146	-130.01167	339.98	1.58	1521.7	1523.3	Large dust storm we didn't make?
6073	8/27/2015	07:02:43	46.00151	-130.01179	320.36	2.16	1521.85	1524.0	Thick sediments with occasional lava outcropping; bulbous pillows in distance.
6074	8/27/2015	07:03:22	46.00155	-130.01199	252.57	2.01	1523.95	1526.0	Bulbous pillows cucumber.
6075	8/27/2015	07:03:32	46.00153	-130.01204	264.07	1.09	1524.74	1525.8	Approaching fissure.
6076	8/27/2015	07:04:02	46.00156	-130.01216	347.61	4.68	1523.34	1528.0	Pillow mound and brisingid.
6078	8/27/2015	07:04:22	46.00168	-130.01214	8.29	1.8	1524.25	1526.1	Small fracture has broken the pillows.
6079	8/27/2015	07:05:01	46.00188	-130.01213	15.61	1.55	1524.62	1526.2	Another fracture; thick sediments.
6080	8/27/2015	07:05:33	46.00199	-130.01206	7.72	1.3	1525.08	1526.4	Following fracture; larger fissure is on our right.
6082	8/27/2015	07:06:10	46.00209	-130.01199	17.55	2.98	1527.68	1530.7	No fresh lava in this fissure; lots of talus.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6083	8/27/2015	07:06:50	46.00224	-130.01196	3.97	2.08	1527.19	1529.3	Bulbous pillows.
6085	8/27/2015	07:09:00	46.00256	-130.01185	355.97	2.39	1525.91	1528.3	Bulbous pillows; all are manganese encrusted and sedimented. Many stars crabs and rattails.
6087	8/27/2015	07:10:07	46.00267	-130.01172	49.51	1.99	1524.32	1526.3	Bulbous pillows. Waypoint 8 is to the west of us.
6088	8/27/2015	07:10:37	46.00271	-130.01168	51.41	1.94	1523.64	1525.6	Anthomastus.
6090	8/27/2015	07:12:04	46.00280	-130.01181	344.72	1.08	1526.1	1527.2	Continuing north to waypoint 9. Old bulbous pillows.
6091	8/27/2015	07:13:08	46.00289	-130.01176	5.47	0.91	1527.3	1528.2	Still old bulbous pillows in thick sediment.
6093	8/27/2015	07:14:19	46.00306	-130.01163	34	1.7	1527.42	1529.1	Old bulbous pillows in sediment.
6094	8/27/2015	07:15:19	46.00318	-130.01166	29.85	1.34	1529.18	1530.5	Zig-zagging north-west. Still old bulbous pillows and sediment.
6095	8/27/2015	07:15:49	46.00325	-130.01159	32.29	2.15	1529.25	1531.4	Exploded pillow.
6097	8/27/2015	07:17:50	46.00335	-130.01138	86.24	1.15	1530.33	1531.5	Large crab.
6099	8/27/2015	07:18:58	46.00335	-130.01130	97.8	1.53	1529.2	1530.7	Bulbous pillows.
6101	8/27/2015	07:20:49	46.00355	-130.01157	337.92	2.09	1531.34	1533.4	Fissure again.
6102	8/27/2015	07:21:02	46.00358	-130.01155	0.59	1.18	1532.9	1534.1	Water is more milky here.
6103	8/27/2015	07:21:35	46.00365	-130.01154	288.35	6.53	1533.15	1539.7	Truncated pillows on wall of fissure.
6104	8/27/2015	07:21:58	46.00369	-130.01150	7.51	4.75	1533.23	1538.0	The truncated pillows were bulbous and lobate pillows.
6106	8/27/2015	07:22:30	46.00374	-130.01141	12.71	2.63	1533.91	1536.5	Pillow talus.
6107	8/27/2015	07:23:52	46.00381	-130.01146	348.33	1.48	1532.28	1533.8	NAV: Doppler Reset Edge of fracture. Truncated pillows and jumbled flow that spilled in. Not fresh.
6109	8/27/2015	07:24:47	46.00390	-130.01134	24.55	4.33	1531.11	1535.4	Jumbled flow; old.
6110	8/27/2015	07:25:47	46.00406	-130.01127	12.19	1.78	1531.95	1533.7	Sediments and jumbled flow and pillows; still heading north. Sentry is about a kilometer from us.
6112	8/27/2015	07:27:51	46.00432	-130.01121	0.82	2.26	1535.46	1537.7	Following the fissure; chaotic jumbled sheet flow in here.
6114	8/27/2015	07:28:05	46.00432	-130.01123	359.36	1.59	1535.04	1536.6	Contact! Fresh black lava!
6115	8/27/2015	07:29:09	46.00437	-130.01119	6.11	1.79	1535.85	1537.6	We are in old fissure; this lava is glossy black with thick white deposit under glass on broken surface.
6117	8/27/2015	07:30:04	46.00438	-130.01118	4.4	1.75	1535.82	1537.6	**SAMPLE: Geo J825-Geo-10** Chunk of 2015 lava from contact.
6118	8/27/2015	07:30:33	46.00438	-130.01118	4.44	1.73	1535.82	1537.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6119	8/27/2015	07:32:00	46.00452	-130.01115	6.87	1.19	1533.85	1535.0	Going into box 9. 46.004373 -130.001241 1534m depth North Rift Zone.
6121	8/27/2015	07:32:19	46.00456	-130.01115	10.27	1.24	1533.72	1535.0	Some bacterial growth in cracks.
6122	8/27/2015	07:32:42	46.00458	-130.01116	103.3	0.86	1534	1534.9	Collapsed lobate with some drainage shelves.
6123	8/27/2015	07:32:57	46.00458	-130.01115	110.38	0.75	1534.6	1535.4	input PilotCam (port 3) routed to output FrmGrb1 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
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6124	8/27/2015	07:32:57	46.00458	-130.01115	110.38	0.75	1534.6	1535.4	input SciCam (port 1) routed to output FrmGrb1 (port 1)
6125	8/27/2015	07:33:43	46.00460	-130.01102	36.88	2.04	1532.89	1534.9	Another collapse; bacterial mat is yellow in cracks.
6126	8/27/2015	07:34:02	46.00466	-130.01101	0.18	1.43	1533.51	1534.9	Lobate flow.
6128	8/27/2015	07:34:12	46.00468	-130.01100	313.26	0.75	1534.13	1534.9	Red tubeworms and white bacterial mat.
6129	8/27/2015	07:34:58	46.00467	-130.01102	261.8	0.78	1534.55	1535.3	Siphonophore? draped on the flow. Red tentacles.
6130	8/27/2015	07:36:30	46.00468	-130.01101	263.24	79.59	1534.51	1614.1	Drift kelp frond? Broke when we grabbed it; one end seems attached to a rock. Still don't know what it is.
6131	8/27/2015	07:36:46	46.00472	-130.01101	344.81	3.09	1532.59	1535.7	Continuing north.
6132	8/27/2015	07:37:30	46.00498	-130.01107	345.72	1.79	1533.06	1534.9	Collapses in lobate sheet flow of 2015.
6134	8/27/2015	07:38:05	46.00518	-130.01100	34.25	2.84	1532.29	1535.1	On old flow again.
6135	8/27/2015	07:38:51	46.00521	-130.01081	95.78	1.96	1532.34	1534.3	Heading back to the fissure to see if we can find the young flow again; old lavas are bulbous pillows.
6136	8/27/2015	07:39:00	46.00519	-130.01081	155.08	1.65	1533.38	1535.0	Contact!
6137	8/27/2015	07:39:30	46.00512	-130.01076	74.67	1.88	1533.04	1534.9	Dribbles of 2015 pillows over sediments.
6138	8/27/2015	07:39:48	46.00508	-130.01074	109.1	1.6	1533.24	1534.8	Contact is veering off to the east.
6140	8/27/2015	07:40:08	46.00513	-130.01072	359.66	3.14	1531.91	1535.1	Leaving the young flow and continuing north.
6141	8/27/2015	07:40:19	46.00517	-130.01075	359.21	2.63	1532.22	1534.9	A small patch of young flow on our left.
6142	8/27/2015	07:40:42	46.00529	-130.01074	1.44	3.01	1530.58	1533.6	Old bulbous pillows here.
6143	8/27/2015	07:41:19	46.00548	-130.01071	0.57	3.11	1524.6	1527.7	Old bulbous pillows.
6145	8/27/2015	07:42:27	46.00572	-130.01084	356.6	3.49	1527.26	1530.8	Old large bulbous pillows. Waypoint 9 is still north of us. Water is milky.
6146	8/27/2015	07:43:26	46.00583	-130.01065	45.79	2.8	1526.89	1529.7	Large bulbous old pillows.
6147	8/27/2015	07:44:01	46.00579	-130.01052	39.23	1.79	1526.73	1528.5	NAV: Doppler Reset
6149	8/27/2015	07:44:41	46.00584	-130.01045	24.13	1.96	1527.42	1529.4	Old large bulbous pillows.
6150	8/27/2015	07:45:51	46.00596	-130.01031	2.65	0.95	1533.26	1534.2	Sedimented old pillow flow.
6152	8/27/2015	07:46:11	46.00599	-130.01031	2.79	1.86	1534.23	1536.1	Drifting northeast of our intended track.
6153	8/27/2015	07:46:42	46.00605	-130.01032	1.8	1.63	1535.03	1536.7	Old large bulbous pillows.
6154	8/27/2015	07:47:13	46.00611	-130.01040	312.22	3.41	1530.56	1534.0	Zagging NW again over old bulbous pillows on steep mound.
6156	8/27/2015	07:48:31	46.00615	-130.01061	335.01	0.75	1530.33	1531.1	Pillow mound rises to the west of us; AUV map seems correctly located.
6157	8/27/2015	07:48:56	46.00619	-130.01058	16.87	1.06	1533.06	1534.1	Now descending old pillow mound.
6159	8/27/2015	07:50:07	46.00634	-130.01037	20.54	0.8	1537.39	1538.2	Large bulbous and cracked pillows with thick sediment between.
6161	8/27/2015	07:52:22	46.00667	-130.01047	9.98	0.94	1544.29	1545.2	Bulbous old pillows.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6162	8/27/2015	07:53:18	46.00671	-130.01045	9.81	2.9	1543.21	1546.1	Old flow is more jumbled here.
6164	8/27/2015	07:54:51	46.00688	-130.01026	33.39	1.83	1542.76	1544.6	Paralleling fissure over old bulbous pillows and heavy sediments.
6166	8/27/2015	07:56:09	46.00705	-130.01039	281.51	1.38	1548.74	1550.1	Ship and Medea have been directed more westerly so we can drift west too on our northward trek toward waypoint 9 and the new flow.
6167	8/27/2015	07:56:32	46.00708	-130.01048	295.84	1.35	1550.68	1552.0	Old lava pillar in collapsed are. Fallen pillars. Sedimented.
6168	8/27/2015	07:57:17	46.00709	-130.01055	290.71	2.98	1550.09	1553.1	Colonnade of tall lava pillars in old collapsed channel system.
6169	8/27/2015	07:57:32	46.00710	-130.01057	296.13	2.74	1550.62	1553.4	Ghostly pillars. Beautiful scenery!
6170	8/27/2015	07:58:00	46.00712	-130.01054	24.99	2.51	1550.48	1553.0	Cathedral terrain
6172	8/27/2015	07:58:04	46.00713	-130.01054	29.74	2.29	1550.45	1552.7	NAV: Doppler Reset
6173	8/27/2015	07:58:53	46.00721	-130.01043	23.53	2.76	1550.59	1553.4	Drainage shelves on walls of collapse.
6174	8/27/2015	07:59:51	46.00731	-130.01037	29.26	1.45	1548.96	1550.4	Many drainage shelves.
6175	8/27/2015	08:00:02	46.00733	-130.01037	26.32	0.75	1550.17	1550.9	Contact with 2015 lavas!
6177	8/27/2015	08:00:39	46.00738	-130.01033	45.53	1.24	1551.4	1552.6	Still down in the old collapsed area. Small lobate pillow dribbles. Bacterial mat.
6178	8/27/2015	08:00:57	46.00742	-130.01030	42.73	2.04	1550.04	1552.1	Jumbled low of old flow next to the new flow.
6179	8/27/2015	08:01:19	46.00747	-130.01029	39.53	2.03	1549.87	1551.9	Bacteria in cracks.
6181	8/27/2015	08:02:26	46.00754	-130.01021	24.53	0.75	1550.74	1551.5	Puffy lobate pillows in 2015 flow.
6182	8/27/2015	08:03:12	46.00754	-130.01022	24.16	0.75	1551.13	1551.9	We are at waypoint 10 right where the flow boundary shapefile is drawn.
6183	8/27/2015	08:04:00	46.00758	-130.01016	350.71	0.75	1550.65	1551.4	Looking at a likely sampling spot.
6185	8/27/2015	08:04:56	46.00759	-130.01017	348.03	0.75	1550.72	1551.5	Attempting to collect lava but it is very crunchy.
6187	8/27/2015	08:06:37	46.00759	-130.01015	350.69	1.38	1549.83	1551.2	**SAMPLE: Geo J825-Geo-11** Small chunk mostly glass from sheet flow in 2015 lava. In box 11.
6189	8/27/2015	08:08:42	46.00831	-130.01001	5.4	7.48	1545.6	1553.1	J825-Geo-11 Cursor position 46.007604 -130.010163 (last position should have been decimal degrees too!)
6190	8/27/2015	08:08:53	46.00837	-130.00999	5.04	9.8	1543.25	1553.1	Coming off bottom because Sentry is headed right at us!
6191	8/27/2015	08:09:18	46.00842	-130.00996	4.5	20.74	1532.17	1552.9	J825-Geo-11 was at 1550m depth.
6192	8/27/2015	08:09:40	46.00843	-130.00993	3.61	33.58	1519.5	1553.1	J825-Geo-11 went into box 7 not 11.
6193	8/27/2015	08:11:15	46.00849	-130.00977	5.09	85.46	1467.07	1552.5	We are now at 75 m altitude whereas Sentry is flying at 65m altitude.
6194	8/27/2015	08:11:49	46.00849	-130.00972	4.45	105.06	1447.11	1552.2	We are now at 100m altitude.
6195	8/27/2015	08:13:53	46.00846	-130.00962	4.18	128.3	1419.5	1547.8	Sentry is nearing us at 16 meters away.
6196	8/27/2015	08:15:11	46.00850	-130.00961	7.13	148.11	1401.02	1549.1	Sentry is crossing just ahead of us; we at 150m

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									altitude.
6197	8/27/2015	08:16:03	46.00859	-130.00982	3.97	151.43	1400.42	1551.9	Danger has passed.
6198	8/27/2015	08:16:56	46.00855	-130.00987	3.82	72.52	1419.01	1491.5	Descending again.
6200	8/27/2015	08:20:47	46.00848	-130.00978	3.99	1.25	1552.87	1554.1	Bottom in sight.
6201	8/27/2015	08:21:22	46.00851	-130.00977	7.5	1.69	1552.56	1554.3	Ropy sheet flow collapsed and crumbled.
6202	8/27/2015	08:21:29	46.00852	-130.00975	8.5	1.81	1552.38	1554.2	Contact again with old flow.
6203	8/27/2015	08:21:51	46.00859	-130.00972	8.33	1.78	1551.33	1553.1	Glossy black 2015 more bulbous pillows.
6205	8/27/2015	08:22:34	46.00865	-130.00976	10.78	2.58	1554.18	1556.8	Collapsed flow.
6206	8/27/2015	08:23:04	46.00865	-130.00976	12.02	3.09	1553.74	1556.8	Large roof of collapse with pillars beneath.
6207	8/27/2015	08:23:15	46.00866	-130.00976	10.21	2.98	1553.9	1556.9	Collecting a sample of the roof of this collapse.
6209	8/27/2015	08:24:41	46.00866	-130.00976	10.78	1.08	1555.69	1556.8	**SAMPLE: Geo J825-Geo-12** Broken from roof of collapse.
6210	8/27/2015	08:25:30	46.00866	-130.00976	15.87	0.76	1556	1556.8	J825-Geo-12 taking piece from bottom of collapse. Large rind.
6212	8/27/2015	08:26:52	46.00866	-130.00976	15.12	0.76	1556.08	1556.8	J825-Geo-12 Going into gastights box. Broke into 3 main pieces. Cursor position 46.008645 -130.009763 Depth 1556.
6213	8/27/2015	08:26:59	46.00866	-130.00976	12.9	1.8	1554.95	1556.8	Dropping a weight.
6214	8/27/2015	08:27:20	46.00870	-130.00973	14.62	0.98	1553.33	1554.3	Lifting out of collapse pit and proceeding north.
6215	8/27/2015	08:27:43	46.00874	-130.00972	12.78	1.14	1553.89	1555.0	J825-Geo-12 was from 2015 flow about 100m north of Geo-11.
6217	8/27/2015	08:28:05	46.00876	-130.00973	55.39	0.75	1554.93	1555.7	White alteration exposed on broken edges of collapsed.
6218	8/27/2015	08:28:57	46.00881	-130.00970	31.15	1.81	1553.86	1555.7	Ropy peanut butter texture of lava that flowed in the gas pocket of collapsed lobate flow.
6219	8/27/2015	08:29:24	46.00882	-130.00969	31.34	1.58	1554.01	1555.6	More collapse pit margins.
6221	8/27/2015	08:30:15	46.00889	-130.00966	31.12	1.04	1555.69	1556.7	Broken up lobate sheet.
6222	8/27/2015	08:30:56	46.00889	-130.00966	30.66	1.71	1555.12	1556.8	No bacterial mat; white alteration under glass and some orange staining.
6223	8/27/2015	08:31:33	46.00894	-130.00961	29.97	1.35	1554.79	1556.1	Glossy surfaces on small pillow dribbles.
6225	8/27/2015	08:32:12	46.00898	-130.00958	29.89	1.56	1555.31	1556.9	Shallow collapsed lobate.
6226	8/27/2015	08:32:25	46.00899	-130.00956	30.6	1.61	1555.26	1556.9	Contact with old lava; this a very thin flow.
6227	8/27/2015	08:32:58	46.00900	-130.00958	333.99	1.39	1554.65	1556.0	On old lava now; had been mapped as within 2015 flow; we are a little east of the fissure.
6229	8/27/2015	08:34:11	46.00906	-130.00961	351.07	2.74	1554.98	1557.7	Back onto the fresh lava; old lava visible to west of fissure too; the fresh lava is only down in the old fissure filling it.
6230	8/27/2015	08:34:21	46.00907	-130.00959	30.69	1.83	1556.44	1558.3	Water is milky here.

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6231	8/27/2015	08:34:44	46.00910	-130.00955	24.84	2.26	1556.53	1558.8	Lineated sheet flow here just in the old fissure; bounded by old lava.
6232	8/27/2015	08:35:47	46.00920	-130.00955	25.76	1.4	1557.36	1558.8	Jumbled sheet flow at edge of fissure edge.
6234	8/27/2015	08:36:12	46.00923	-130.00952	27.64	1.13	1557.89	1559.0	Contact; contrast between 2015 lava and the old channel edge.
6235	8/27/2015	08:36:38	46.00924	-130.00951	27.07	0.75	1558.19	1558.9	Broken up sheet flow in 2015 lava.
6236	8/27/2015	08:37:02	46.00924	-130.00946	27.57	1.26	1557.89	1559.2	More jumbled flow here.
6237	8/27/2015	08:37:58	46.00929	-130.00943	27.46	1.19	1558.4	1559.6	Jumbled sheet flow of 2015 eruption.
6240	8/27/2015	08:40:09	46.00940	-130.00923	34.11	1.15	1558.4	1559.6	Very thin flow here; contact again.
6242	8/27/2015	08:43:03	46.00936	-130.00927	101.18	0.75	1558.79	1559.5	Trying to collect a sample of 2015 pillow lavas right at the contact.
6244	8/27/2015	08:44:30	46.00936	-130.00927	203.07	3.14	1556.43	1559.6	**SAMPLE: Geo J825-Geo-13** Pillow bud into box 10; 2015 lava near contact.
6245	8/27/2015	08:44:34	46.00935	-130.00928	210.43	3.99	1555.52	1559.5	NAV: Doppler Reset
6246	8/27/2015	08:45:18	46.00954	-130.00927	358.52	4.48	1557.94	1562.4	J825-Geo-13 Cursor position 46.009377 -130.009283 1558 m depth.
6247	8/27/2015	08:45:57	46.00977	-130.00924	4.25	1.86	1562.32	1564.2	Continuing north; going to cut the corner a little to the west of waypoint 11.
6249	8/27/2015	08:46:37	46.01000	-130.00918	4.49	1.83	1562.14	1564.0	Still on 2015 lava; it didn't really end back there that was just a thin edge.
6250	8/27/2015	08:46:50	46.01007	-130.00915	5.01	2.1	1563.03	1565.1	Jumbled flow here of 2015 lava.
6251	8/27/2015	08:47:37	46.01022	-130.00911	4.62	1.06	1563.99	1565.1	Jumbled sheet flow of 2015 lava. Becoming more inflated and collapsed lobate terrain.
6253	8/27/2015	08:48:42	46.01031	-130.00909	6.57	1.09	1564.2	1565.3	Traversing inflated broad lobates of 2015 flow.
6254	8/27/2015	08:49:37	46.01032	-130.00907	6.64	0.75	1564.58	1565.3	Dropping another weight.
6256	8/27/2015	08:50:59	46.01041	-130.00902	6.37	0.75	1566.18	1566.9	Broad lobate pillows of 2015 flow; no signs of fluid flow.
6257	8/27/2015	08:51:08	46.01043	-130.00902	3.33	0.94	1565.84	1566.8	Jumbled flow here.
6258	8/27/2015	08:52:01	46.01052	-130.00892	6.66	1.05	1564.79	1565.8	Jumbled flow.
6260	8/27/2015	08:54:01	46.01063	-130.00908	309.16	0.75	1567.33	1568.1	On jumbled flow of 2015 lava; will try to get a sample.
6262	8/27/2015	08:55:33	46.01064	-130.00908	308.65	0.81	1567.29	1568.1	**SAMPLE: Geo J825-Geo-14** broken from jumbled sheet flow; into box 8.
6264	8/27/2015	08:56:29	46.01071	-130.00919	310.64	0.9	1566.83	1567.7	J825-Geo-14 Cursor position: 46.0106643 -130.009092 1567m.
6265	8/27/2015	08:57:17	46.01079	-130.00936	311.02	1.69	1567.53	1569.2	J825-Geo-14 was collected just west of waypoint 11 in 2015 flow.
6267	8/27/2015	08:58:07	46.01088	-130.00951	311.63	1.06	1570.44	1571.5	Heading now toward waypoint 12 to NW; should be staying on 2015 flow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6268	8/27/2015	08:58:35	46.01091	-130.00957	311.72	0.9	1570.67	1571.6	Smaller lobate and bulbous pillows; 2015 flow.
6269	8/27/2015	08:59:31	46.01098	-130.00969	311.81	1.25	1571.46	1572.7	Kipuka of old lava jumbled sheet flow surrounded by 2015 lobate pillow lava.
6270	8/27/2015	08:59:48	46.01100	-130.00970	310.89	1.45	1571.71	1573.2	Cracked lobate.
6272	8/27/2015	09:00:12	46.01102	-130.00972	311.65	1.29	1571.4	1572.7	Some clays or bacterial mat in cracks.
6273	8/27/2015	09:00:50	46.01104	-130.00974	311.53	1.13	1571.6	1572.7	Just the one isolated place; not obvious fluid flow any more here.
6274	8/27/2015	09:02:03	46.01112	-130.00974	313.31	0.76	1572.09	1572.9	Inflated lobate surface; some more orange bacteria or clays here in cracks.
6276	8/27/2015	09:03:03	46.01115	-130.00982	311.37	1.28	1571.88	1573.2	Appears more like bacterial mat than clay; thicker but still only in a few cracks.
6278	8/27/2015	09:04:09	46.01119	-130.00992	309.33	1.55	1571.81	1573.4	Inflated lobate surface of 2015 lava.
6279	8/27/2015	09:05:45	46.01121	-130.01012	322.98	1.9	1573.06	1575.0	Lava whorl and ropy surface on the 2015 lava.
6281	8/27/2015	09:06:09	46.01121	-130.01021	326.87	2.61	1572.38	1575.0	Lineated sheet flow.
6282	8/27/2015	09:06:18	46.01121	-130.01021	316.64	2.29	1572.75	1575.0	Superhighway of lava.
6283	8/27/2015	09:07:54	46.01139	-130.01002	345.71	1.76	1572.34	1574.1	Jumbled margin to lineated channel.
6285	8/27/2015	09:09:12	46.01159	-130.01010	314.8	0.75	1573.78	1574.5	Inflated lobate surface is cracked.
6287	8/27/2015	09:10:09	46.01158	-130.01010	314.38	0.75	1573.79	1574.5	**SAMPLE: Geo J825-Geo-15** broken from 2015 inflated flow.
6288	8/27/2015	09:10:13	46.01158	-130.01010	314.38	0.75	1573.8	1574.6	NAV: Doppler Reset
6290	8/27/2015	09:12:19	46.01167	-130.01029	305.98	2.15	1572.05	1574.2	J825-Geo-15 cursor position 46.011571 -130.010090 1574 m. Going into Box 2; it became much smaller and a volunteer is on the edge.
6291	8/27/2015	09:12:50	46.01172	-130.01037	1.97	1.38	1573.81	1575.2	Crossing lineated sheet flow cracked by further inflation.
6292	8/27/2015	09:13:55	46.01187	-130.01071	307.14	2.03	1572.32	1574.4	Inflated lobate surface of 2015 lava.
6294	8/27/2015	09:15:15	46.01201	-130.01107	305.04	0.81	1574.36	1575.2	Inflated lobate surface of 2015 lava.
6297	8/27/2015	09:18:18	46.01205	-130.01133	293.57	0.93	1574.93	1575.9	Smaller pillows and inflated lobates of 2015 flow.
6298	8/27/2015	09:19:59	46.01209	-130.01150	293.88	1.98	1574.68	1576.7	Inflated lobate surface of 2015 flow; orange clay in isolated spot.
6300	8/27/2015	09:21:07	46.01214	-130.01161	292.78	1.54	1574.36	1575.9	More staining or bacterial mat here.
6301	8/27/2015	09:21:21	46.01216	-130.01160	266	1.11	1574.82	1575.9	No obvious fluid flow.
6302	8/27/2015	09:22:01	46.01218	-130.01169	291.32	1.85	1573.49	1575.3	Orange clays; 2015 lobates.
6304	8/27/2015	09:23:19	46.01227	-130.01196	287.32	1.11	1575.28	1576.4	Inflated lobate flow.
6306	8/27/2015	09:24:42	46.01232	-130.01214	306.83	0.86	1577.14	1578.0	We are about 50m from the contact at the end of this part of the 2015 flow.
6307	8/27/2015	09:24:53	46.01232	-130.01215	325.72	0.8	1577.4	1578.2	Bulbous pillow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6309	8/27/2015	09:26:25	46.01233	-130.01216	328.79	0.75	1577.48	1578.2	**SAMPLE: Geo J825-Geo-16** Broken from pillow of 2015 flow; very large piece will try to break up.
6310	8/27/2015	09:27:40	46.01233	-130.01217	324.97	0.75	1577.35	1578.1	J825-Geo-16 Cursor position: 46.012318 -130.012170 1578m depth; into box 4 on swing arm.
6311	8/27/2015	09:27:43	46.01233	-130.01217	324.99	1.31	1576.77	1578.1	NAV: Doppler Reset
6313	8/27/2015	09:28:09	46.01236	-130.01221	324.78	1.33	1578.34	1579.7	J825-Geo-16 Broke the sample into a manageable size before it went into the box.
6314	8/27/2015	09:28:25	46.01241	-130.01228	301.35	2.33	1579.77	1582.1	Contact ahead.
6315	8/27/2015	09:28:36	46.01242	-130.01231	306.1	1.03	1581.67	1582.7	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
6316	8/27/2015	09:28:43	46.01243	-130.01235	304.31	1.7	1581.47	1583.2	Should be leaving this flow for a couple hundred meters.
6317	8/27/2015	09:28:43	46.01243	-130.01235	304.31	1.7	1581.47	1583.2	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
6318	8/27/2015	09:28:57	46.01245	-130.01242	307.5	3.46	1581.31	1584.8	Sediments on old sheet flow.
6319	8/27/2015	09:29:59	46.01255	-130.01271	311.91	3.26	1579.79	1583.1	Old lobate pillows. Traversing to NW toward waypoint 13 and the next outcrop of 2015 lava.
6321	8/27/2015	09:30:44	46.01263	-130.01271	306.92	1.89	1581.12	1583.0	Old lobate pillows lightly dusted with sediment. Huge rattail just passed.
6322	8/27/2015	09:31:39	46.01267	-130.01277	308.19	2.05	1581.01	1583.1	Jumbled sheet flow. Old lava.
6324	8/27/2015	09:33:02	46.01281	-130.01295	314.21	2.43	1581.63	1584.1	Jumbled sheet flow; old lava.
6325	8/27/2015	09:33:45	46.01285	-130.01299	318.51	2.38	1581.96	1584.3	Light dusting of sediment doesn't fully obscure lineated sheet flow underneath.
6327	8/27/2015	09:35:11	46.01295	-130.01307	327.42	1.8	1582.3	1584.1	Lineated and jumbled old sheet flow.
6329	8/27/2015	09:36:36	46.01298	-130.01327	295.12	1.44	1582.25	1583.7	Jumbled old sheet flow.
6331	8/27/2015	09:38:34	46.01298	-130.01352	293.14	1.55	1581.64	1583.2	Lobate sheet flow. Almost half way across old flow toward other outcrop of new lava.
6332	8/27/2015	09:39:53	46.01302	-130.01382	294.44	2	1581.68	1583.7	More bulbous pillows in old flow.
6334	8/27/2015	09:41:01	46.01296	-130.01396	292	3.46	1580.21	1583.7	Collapsed lobate pillow in old flow.
6336	8/27/2015	09:42:27	46.01311	-130.01418	296.19	3.63	1580.15	1583.8	Broad lobates and smaller pillows in old flow.
6338	8/27/2015	09:44:59	46.01317	-130.01452	291.15	2.21	1580.56	1582.8	Lobate old flow.
6339	8/27/2015	09:46:01	46.01324	-130.01459	293.23	1.26	1580.96	1582.2	Still crossing old lobate flow toward another outcrop of 2015 lava.
6341	8/27/2015	09:47:11	46.01340	-130.01464	296.27	2.51	1579.35	1581.9	Yellow bacterial mat and lots of small sponges on old lava as we approach contact with young flow.
6342	8/27/2015	09:48:02	46.01344	-130.01494	296.79	2.83	1578.78	1581.6	Contact with young lavas.
6344	8/27/2015	09:48:16	46.01346	-130.01495	273.99	0.84	1581.08	1581.9	HIGHLIGHTS: HD highlights start Contact

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6346	8/27/2015	09:50:38	46.01346	-130.01494	278.02	0.9	1581.61	1582.5	HIGHLIGHTS: HD highlights stop J825-Geo-17 Enormous pillow bud from 2015 flow;
6347	8/27/2015	09:51:44	46.01346	-130.01494	277.94	0.96	1581.48	1582.4	**SAMPLE: Geo J825-Geo-17** going into Biobox on starboard swing arm.
6349	8/27/2015	09:52:21	46.01346	-130.01494	278.56	0.8	1581.53	1582.3	J825-Geo-17 There's a lot of markers in the biobox so we aren't going to put it there.
6350	8/27/2015	09:53:21	46.01346	-130.01494	278.19	0.81	1581.42	1582.2	J825-Geo-17 Setting it on the sample drawer next to the gastights box. Near waypoint 13.
6352	8/27/2015	09:54:09	46.01346	-130.01494	278.32	0.75	1581.36	1582.1	J825-Geo-17 Cursor position: 46.013463 -130.014934 1582m depth; dropping some weights.
6354	8/27/2015	09:55:24	46.01346	-130.01494	278.26	0.75	1581.31	1582.1	J825-Geo-17 Spiral pillow is lovely!
6355	8/27/2015	09:55:37	46.01347	-130.01494	278.43	0.75	1581.33	1582.1	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
6356	8/27/2015	09:55:41	46.01347	-130.01494	277.72	0.75	1581.3	1582.1	Started transferring incubator #1 J825-HFS-01.
6358	8/27/2015	09:56:17	46.01346	-130.01494	276.95	0.75	1581.24	1582.0	J825-Geo-17 is resting on box for dive weights.
6359	8/27/2015	09:57:25	46.01345	-130.01494	271.45	2.1	1579.2	1581.3	J825-Geo-17 is from the very edge of the next outcrop of 2015 lava flow where it contacts the lobate flow we'd been crossing.
6361	8/27/2015	09:58:18	46.01352	-130.01498	248.6	2.94	1577.98	1580.9	Driving into flow a little further.
6362	8/27/2015	09:58:42	46.01348	-130.01494	148.85	2.8	1577.98	1580.8	JASON: Jason off bottom
6363	8/27/2015	09:59:54	46.01333	-130.01485	145.31	33.89	1546.63	1580.5	Transfer finished Incubator-1 J825-HFS-01.
6364	8/27/2015	10:00:34	46.01332	-130.01489	145.26	49.73	1530.52	1580.3	Starting transferring incubator #2 J825-HFS-02.
6365	8/27/2015	10:04:58	46.01312	-130.01485	149.23	109.64	1387.92	1497.6	Transfer finished incubator #2 J825-HFS-02.
6366	8/27/2015	10:05:13	46.01311	-130.01484	148.18	134.83	1378.66	1513.5	869 ml on that last transfer.
6367	8/27/2015	10:06:36	46.01311	-130.01480	143.62	118.73	1336.88	1455.6	Another dive weight dropped.
6368	8/27/2015	10:43:27	46.01313	-130.01478	82.94	152.8	101.6	254.4	Jason at 100m
6369	8/27/2015	10:55:51	46.01316	-130.01480	1.9	162.92	96.24	259.2	Coming up.
6371	8/27/2015	10:58:53	46.01316	-130.01480	2.29	162.92	60.83	223.8	Tons of swimming creatures. Phyto and zoo plankton?
6372	8/27/2015	11:02:47	46.01316	-130.01480	4.52	0.75	-0.58	0.2	Jason on the surface.
6373	8/27/2015	11:03:37	46.01316	-130.01480	2.77	155.57	-0.35	155.2	Medea out of the water.
6374	8/27/2015	11:03:49	46.01316	-130.01480	1.78	155.57	-0.6	155.0	Medea on deck.
6375	8/27/2015	11:05:42	46.01316	-130.01480	359.77	0.75	-0.08	0.7	HIGHLIGHTS: HD highlights stop
6376	8/27/2015	11:09:10	46.01316	-130.01480	1.29	0.9	0.01	0.9	HIGHLIGHTS: HD highlights start Jason coming on board - from Jason's perspective.
6377	8/27/2015	11:09:54	46.01315	-130.01478	41.95	1.51	-1.09	0.4	HIGHLIGHTS: HD highlights stop
6378	8/27/2015	11:10:18	46.01314	-130.01478	53.18	1.51	-1.08	0.4	JASON: Jason out of water
6379	8/27/2015	11:11:05	46.01313	-130.01478	89.45	1.51	-1.05	0.5	JASON: Jason on deck

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6380	8/27/2015	11:11:10	46.01313	-130.01478	89.45	1.51	-1.05	0.5	End of dive.

6.6-6 J2-826 Dive log

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6383	2015/08/27	19:30:04			0				Jason dive J2-826 on Axial North Rift Zone 2015 lava flows
6384	2015/08/27	19:30:18			0				Deployment location is on the RAS mooring deployment site
6385	2015/08/27	19:30:44			35.12				Which is also the location of the second fluid sampling site on J2-820.
6386	2015/08/27	19:31:01			46.02				Main goals are rock sampling and fluid sampling on the 2015 lava flows.
6389	2015/08/27	19:37:56			352.29				Jason in water.
6390	2015/08/27	19:40:16			319.37		1.57		Basket for this dive: HFS sampler; suction sampler hose; 1 GT; 2 Majors; Rock sampling box(4 spaces).
6391	2015/08/27	19:40:33			321.34		0.68		Port Swing Arm: Rock sampling box (6 spaces)
6392	2015/08/27	19:40:59			323.96		0.81		On all dives: Jason high temp probe; Beast-HFS; O2 sensor.
6393	2015/08/27	19:41:07			324.13		0.77		Medea in water
6394	2015/08/27	19:41:26			323.93		0.78		Starboard Swing Arm: BioBox with Markers.
6395	2015/08/27	19:41:58			319.34		8.16		Tasks: 1.Dive on RAS deployment position=2nd Major sample position from J820 dive.
6396	2015/08/27	19:42:29			321.38		19.77		Tasks: 2. Explore North Rift Zone 2015 lava flows following Waypoints.
6397	2015/08/27	19:43:17			317.66		34.43		Dive is resuming where J820 left off(WP4) on the southern of the two thick NRZ lava flows.
6398	2015/08/27	19:43:48			315.87		41.07		We will traverse from south to north along eruptive fissure.
6399	2015/08/27	19:44:25			313.37		50.67		Tasks: 3. Sample lavas and venting fluids spatially distributed along eruptive fissure during traverse.
6400	2015/08/27	19:44:36			312.49		53.26		Get as far as we can northward.
6401	2015/08/27	20:48:02	46.07521	-129.99552	164.4	15.29	1707.41	1722.7	20m to bottom.
6403	2015/08/27	20:48:30	46.07520	-129.99552	164.79	5.15	1717.74	1722.9	Jason on bottom
6404	2015/08/27	20:49:34	46.07520	-129.99552	165.41	3.26	1720.27	1723.5	NAV: Doppler Reset
6405	2015/08/27	20:49:51	46.07519	-129.99551	163.05	2.74	1720.35	1723.1	Now we will find the vent that we took the Major sample at J820 dive.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6409	2015/08/27	20:55:41	46.07483	-129.99507	168.47	2.34	1715.21	1717.6	NAV: Doppler Reset
6412	2015/08/27	20:58:18	46.07469	-129.99504	318.63	2.04	1714.47	1716.5	This might be the vent we are looking for.
6415	2015/08/27	21:02:57	46.07468	-129.99503	307.51	1.06	1716.25	1717.3	NAV: Doppler Reset
6416	2015/08/27	21:03:07	46.07467	-129.99503	307.51	0.96	1716.24	1717.2	Temp reading: 17C.
6417	2015/08/27	21:03:58	46.07467	-129.99503	306.31	0.96	1716.24	1717.2	We looked at the log from previous dive and we think this is the vent we sampled with the red major.
6419	2015/08/27	21:04:20	46.07468	-129.99503	306.3	0.95	1716.23	1717.2	We are now taking another temp reading: 18.43C.
6420	2015/08/27	21:05:07	46.07469	-129.99503	307.12	0.98	1716.24	1717.2	We are convinced that this is the place.
6421	2015/08/27	21:05:22	46.07469	-129.99503	307.08	0.96	1716.23	1717.2	We will deploy a marker here to recognize the vent later.
6424	2015/08/27	21:09:58	46.07473	-129.99503	306.09	1.35	1715.36	1716.7	**DEPLOY: marker** Mkr294 deployed.
6426	2015/08/27	21:10:25	46.07473	-129.99503	305.74	1.34	1715.37	1716.7	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
6427	2015/08/27	21:11:07	46.07473	-129.99503	306.03	1.33	1715.39	1716.7	This is the vent we sampled Red Major at J2-820. We will bring RAS to this vent(Mkr294).
6428	2015/08/27	21:11:33	46.07472	-129.99502	305.42	2.14	1714.45	1716.6	The highest temp we read there is 18.7C.
6429	2015/08/27	21:11:45	46.07472	-129.99502	305.36	2.95	1713.91	1716.9	Leaving now to go and get RAS.
6431	2015/08/27	21:13:45	46.07471	-129.99529	295.38	3.63	1713.03	1716.7	Here is the RAS.
6433	2015/08/27	21:15:23	46.07475	-129.99536	299.46	0.75	1717.22	1718.0	We will grab the blue rope.
6436	2015/08/27	21:18:06	46.07474	-129.99538	299.6	0.75	1717.18	1717.9	We will grab the RAS by the anchor and we will take it to Mkr294.
6438	2015/08/27	21:20:27	46.07470	-129.99514	290.48	5.16	1711.85	1717.0	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
6439	2015/08/27	21:20:34	46.07471	-129.99513	289.66	5.04	1711.89	1716.9	input PilotCam (port 3) routed to output FrmGrb2 (port 2)
6440	2015/08/27	21:21:00	46.07471	-129.99507	282.8	4.93	1711.99	1716.9	Right over Mkr294.
6441	2015/08/27	21:21:28	46.07469	-129.99506	295.58	2.01	1714.49	1716.5	HIGHLIGHTS: HD highlights start
6444	2015/08/27	21:23:20	46.07470	-129.99508	294.33	0.94	1716.2	1717.1	We will position the RAS at the vent.
6445	2015/08/27	21:23:47	46.07470	-129.99508	294.33	0.94	1716.19	1717.1	We will do same fluid sampling before we deploy RAS intake.
6449	2015/08/27	21:28:59	46.07471	-129.99506	299.04	1	1716.24	1717.2	We are measuring the temperature before sampling here.
6450	2015/08/27	21:29:11	46.07471	-129.99506	299.45	0.75	1716.18	1716.9	We've got 18.7C here with Jason probe.
6451	2015/08/27	21:29:29	46.07471	-129.99506	299.61	0.75	1716.12	1716.9	We want to get a good reading with the Beast temp probe before we sample.
6453	2015/08/27	21:31:37	46.07471	-129.99506	296.41	0.75	1716.12	1716.9	The reading is 13C and rising.
6455	2015/08/27	21:33:41	46.07471	-129.99506	296.41	0.75	1716.1	1716.9	Beast measures the temperature to be 19.5C at this location.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6456	2015/08/27	21:33:58	46.07471	-129.99506	296.4	0.75	1716.11	1716.9	We are now taking O2 measurement.
6458	2015/08/27	21:35:37	46.07471	-129.99505	296.4	0.75	1716.1	1716.9	O2 measurement: 0.522ml/L O2
6460	2015/08/27	21:37:33	46.07471	-129.99505	296.43	0.75	1716.07	1716.8	**SAMPLE: HFS** J826-HFS-01 Unfiltered Bag #18 Start: 2137.
6462	2015/08/27	21:38:34	46.07471	-129.99505	296.43	0.75	1716.09	1716.8	J826-HFS-01 Unfiltered Bag #18 Location: 46. 074691 -129.995045 Z=1716m.
6464	2015/08/27	21:41:25	46.07471	-129.99505	296.43	0.75	1716.07	1716.8	J826-HFS-01 Unfiltered Bag #18 End: 2140 Tmax: 19.9C Tavg:18.9C Volume:600ml T2:3C
6465	2015/08/27	21:41:57	46.07471	-129.99505	296.44	0.75	1716.05	1716.8	**SAMPLE: HFS** J826-HFS-02 Filtered Bag #19 Start:2141
6468	2015/08/27	21:45:37	46.07471	-129.99505	296.45	0.75	1716.02	1716.8	J826-HFS-02 Unfiltered Bag #19 Same location End:2145 Tmax:20.0C Tavg:19.1C Vol:600 T2:3C.
6471	2015/08/27	21:46:47	46.07471	-129.99505	296.45	0.75	1716.05	1716.8	**SAMPLE: HFS** J826-HFS-03 Unfiltered Bag #20 Start: 2146.
6474	2015/08/27	21:51:24	46.07471	-129.99505	296.47	0.75	1716.01	1716.8	J826-HFS-03 Unfiltered Bag #20 End: 2150 Tmax:19.7Tavg:19.1 Vol:600 T2:3C.
6477	2015/08/27	21:54:35	46.07471	-129.99505	296.43	0.75	1716	1716.8	**SAMPLE: HFS** J826-HFS-04 Filtered Piston #7 Start: 2154.
6480	2015/08/27	21:58:09	46.07471	-129.99505	296.44	0.75	1715.97	1716.7	J826-HFS-04 Filtered Piston #7 End: 2157 Tmax: 20.0 Tavg:19.3 Vol:600ml T2:3.0
6481	2015/08/27	21:59:12	46.07471	-129.99504	296.43	0.75	1715.97	1716.7	**SAMPLE: HFS** J826-HFS-05 Unfiltered Piston #8 Start: 2159.
6484	2015/08/27	22:03:15	46.07471	-129.99504	296.43	0.75	1715.94	1716.7	J826-HFS-05 Unfiltered Piston #8 End: 2202 Tmax: 19.0 Tavg:18.2 Vol:600 T2:3.1.
6485	2015/08/27	22:03:59	46.07471	-129.99504	296.43	0.75	1715.92	1716.7	**SAMPLE: HFS** J826-HFS-06 Unfiltered Piston #6 Start: 2203.
6487	2015/08/27	22:05:15	46.07471	-129.99504	296.42	0.75	1715.91	1716.7	There might be a leak in the Beast. The samples downstream of the pistons are probably leaking.
6488	2015/08/27	22:05:40	46.07471	-129.99504	296.42	0.75	1715.91	1716.7	That might be the reason behind very low T2 temperatures.
6490	2015/08/27	22:06:12	46.07471	-129.99504	296.42	0.75	1715.9	1716.7	So the filtered and unfiltered bags are probably leaking.
6491	2015/08/27	22:07:14	46.07471	-129.99504	296.41	0.75	1715.9	1716.7	J826-HFS-06 Unfiltered Piston #6 End: 2206 Tmax:19.5 Tavg:18.9 Vol:600 T2:3.0.
6493	2015/08/27	22:08:27	46.07471	-129.99504	296.41	0.75	1715.9	1716.7	**SAMPLE: HFS** J826-HFS-07 RNA filter #14 Start 2208.
6506	2015/08/27	22:30:08	46.07472	-129.99504	295.7	0.75	1715.83	1716.6	J826-HFS-07 RNA filter #14 End:2229 Tmax:19.8 Tavg:17.9 Vol:3029 T2:3.0.
6507	2015/08/27	22:31:18	46.07472	-129.99504	295.69	0.75	1715.83	1716.6	Done with the Beast.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6508	2015/08/27	22:31:23	46.07472	-129.99504	295.69	0.75	1715.81	1716.6	Time to install the RAS.
6510	2015/08/27	22:33:25	46.07471	-129.99505	298.53	0.84	1715.83	1716.7	We will take the intake and wedge it in the hole we were sampling from.
6512	2015/08/27	22:34:51	46.07471	-129.99506	284.19	2.16	1714.06	1716.2	HIGHLIGHTS: HD highlights start
6513	2015/08/27	22:35:44	46.07471	-129.99506	283.94	2.16	1714.03	1716.2	One of the bottles in the RAS exploded.
6514	2015/08/27	22:35:52	46.07471	-129.99506	283.75	2.15	1714.05	1716.2	The cap is obviously off.
6517	2015/08/27	22:38:14	46.07471	-129.99506	283.9	2.15	1713.99	1716.1	HIGHLIGHTS: HD highlights stop
6519	2015/08/27	22:39:23	46.07471	-129.99506	283.52	2.14	1714	1716.1	We got rid off the loose cap as it was stuck on the RAS.
6521	2015/08/27	22:40:50	46.07471	-129.99506	283.59	2.14	1714	1716.1	We will now place the RAS intake.
6526	2015/08/27	22:48:13	46.07472	-129.99504	287.69	0.75	1715.77	1716.5	Positioning the RAS intake in this hole.
6527	2015/08/27	22:48:29	46.07472	-129.99504	287.69	0.75	1715.77	1716.5	The marker here is Mkr294 at the RAS site.
6528	2015/08/27	22:48:35	46.07472	-129.99504	287.7	0.75	1715.78	1716.5	Done with the RAS deployment.
6529	2015/08/27	22:48:53	46.07472	-129.99504	287.7	0.75	1715.78	1716.5	NAV: Doppler Reset
6530	2015/08/27	22:49:37	46.07472	-129.99503	302.83	0.75	1715.52	1716.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6531	2015/08/27	22:49:47	46.07472	-129.99503	302.24	1.06	1715.76	1716.8	Position for Mkr-294 RAS site: 46.074691 129.995045 Z=1716m.
6532	2015/08/27	22:49:48	46.07472	-129.99503	302.32	0.75	1715.77	1716.5	input SciCam (port 1) routed to output FrmGrb1 (port 1)
6534	2015/08/27	22:50:07	46.07472	-129.99503	302.48	0.75	1715.76	1716.5	Snapping some frame grabs of the RAS intake.
6535	2015/08/27	22:50:26	46.07472	-129.99503	325.69	0.83	1715.72	1716.6	Bag creatures above the intake.
6536	2015/08/27	22:50:42	46.07472	-129.99503	325.69	0.8	1715.73	1716.5	Scaleworm just swam by.
6538	2015/08/27	22:52:14	46.07472	-129.99504	325.69	1.13	1715.73	1716.9	This site is covered in eruptive mat. Not much biology besides the eruptive mat and some patches of white mat.
6539	2015/08/27	22:52:30	46.07472	-129.99504	325.69	1.13	1715.71	1716.8	Correction: There is tons of MICRO biology here says Chris.
6540	2015/08/27	22:53:23	46.07472	-129.99505	324.5	0.96	1715.68	1716.6	Taking some super Scorpio and sci cam HD pics of the marker and the surrounding lobate flow covered in eruptive mat.
6541	2015/08/27	22:53:53	46.07473	-129.99504	322.81	1.43	1714.75	1716.2	The water here is milky.
6543	2015/08/27	22:55:10	46.07479	-129.99509	309.67	0.75	1715.83	1716.6	Thick eruptive mat on the rocks.
6544	2015/08/27	22:55:28	46.07479	-129.99509	310.54	0.78	1715.84	1716.6	Jason pulled ahead ~ 8m to the NNW.
6545	2015/08/27	22:55:48	46.07479	-129.99509	310.87	0.79	1715.89	1716.7	Going to take a fluid sample next.
6547	2015/08/27	22:56:07	46.07479	-129.99509	310.76	0.75	1715.83	1716.6	Zooming around searching for the perfect mat.
6549	2015/08/27	22:58:14	46.07481	-129.99510	321.13	1.33	1715.1	1716.4	Reconsidering whether of not will take a sample here.
6550	2015/08/27	22:58:21	46.07481	-129.99510	348.75	1.74	1714.67	1716.4	Looking around.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6551	2015/08/27	22:59:08	46.07485	-129.99508	18.56	2.16	1714.59	1716.8	HIGHLIGHTS: HD highlights start Floc in the water and eruptive mat. Some white mat here also. In the area of the RAS - slightly to the north.
6552	2015/08/27	22:59:57	46.07488	-129.99509	18.07	2.73	1714.07	1716.8	We're finished up here and will head up to WP5 north of here.
6554	2015/08/27	23:00:05	46.07488	-129.99509	18.15	2.81	1714.02	1716.8	HIGHLIGHTS: HD highlights stop
6555	2015/08/27	23:00:57	46.07495	-129.99507	19.7	0.91	1716.34	1717.3	Moving over lobate slow with thick patches of eruptive mat.
6558	2015/08/27	23:04:06	46.07505	-129.99498	20.17	1.63	1716.04	1717.7	The flow is not that thick here but it is continuous at this time.
6559	2015/08/27	23:04:28	46.07506	-129.99499	19.56	1.56	1715.76	1717.3	Eruptive mat with some black patches on this lobate flow.
6561	2015/08/27	23:07:08	46.07481	-129.99506	189.19	1.85	1714.72	1716.6	We forgot the USBL beacon on the RAS. Have to go back and get it.
6562	2015/08/27	23:07:40	46.07473	-129.99508	150.84	1.69	1714.55	1716.2	The RAS is ahead.
6564	2015/08/27	23:08:05	46.07471	-129.99510	124.71	2.9	1713.34	1716.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6565	2015/08/27	23:08:22	46.07471	-129.99509	127.17	2.78	1713.41	1716.2	Zooming in on the USBL beacon.
6566	2015/08/27	23:08:51	46.07471	-129.99509	126.96	2.68	1713.45	1716.1	There is a small pull pin on the beacon.
6567	2015/08/27	23:09:06	46.07471	-129.99509	127.15	2.69	1713.43	1716.1	Jason pulled the pin.
6568	2015/08/27	23:09:34	46.07472	-129.99510	129.13	3.05	1713.39	1716.4	The beacon is in Jason's hand.
6569	2015/08/27	23:09:56	46.07474	-129.99517	214.25	4.29	1712.05	1716.3	Moving back from the RAS.
6572	2015/08/27	23:12:40	46.07513	-129.99484	39.25	1.43	1716.73	1718.2	Holding the USBL in the claw until we catch up with Medea.
6574	2015/08/27	23:14:40	46.07523	-129.99477	35.33	2.66	1717.18	1719.8	Stowing the beacon in with the gastights.
6575	2015/08/27	23:14:54	46.07523	-129.99477	35.38	2.79	1717.05	1719.8	Bungee'ing it in.
6577	2015/08/27	23:16:49	46.07523	-129.99477	35.55	2.68	1717.18	1719.9	Decided against putting the USBL in with the gastights. Going in with the markers?
6578	2015/08/27	23:17:29	46.07524	-129.99477	35.48	2.68	1717.17	1719.9	Debating what to do with the beacon.
6580	2015/08/27	23:18:20	46.07524	-129.99477	35.38	2.68	1717.17	1719.9	Doing some housekeeping.
6582	2015/08/27	23:20:07	46.07524	-129.99477	33.11	2.78	1717.14	1719.9	Strapping a bungee around the USBL in the gastight box.
6583	2015/08/27	23:20:36	46.07524	-129.99477	35.44	2.75	1717.17	1719.9	Closing up the stbd biobox with the markers.
6585	2015/08/27	23:22:19	46.07528	-129.99475	36.05	2.38	1718.66	1721.0	Moving on north now.
6586	2015/08/27	23:22:53	46.07539	-129.99472	24.26	2.44	1720.4	1722.8	Our first dive ended at WP5 but were unable to get a rock sample there. Will do that this dive and get a suction sample.
6587	2015/08/27	23:23:34	46.07547	-129.99471	16.56	2.89	1721.33	1724.2	HIGHLIGHTS: HD highlights start Leaving RAS site heading to WP5.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6588	2015/08/27	23:23:59	46.07552	-129.99472	17.28	2.6	1722.01	1724.6	HIGHLIGHTS: HD highlights stop
6590	2015/08/27	23:25:06	46.07563	-129.99472	18.39	1.78	1723.32	1725.1	Now into more sheet-looking lavas.
6591	2015/08/27	23:25:21	46.07567	-129.99472	18.67	1.81	1723.41	1725.2	and moving back into lobate flows here.
6593	2015/08/27	23:26:05	46.07576	-129.99471	13.45	2.84	1723.02	1725.9	Crab on the thick eruptive mat.
6594	2015/08/27	23:26:39	46.07576	-129.99470	45.2	2.58	1723.15	1725.7	Waiting for Medea to catch up.
6595	2015/08/27	23:27:37	46.07575	-129.99472	42.65	0.75	1725.18	1725.9	HIGHLIGHTS: HD highlights start Sitting here in a patch of lobate lavas with eruptive mat.
6596	2015/08/27	23:27:43	46.07575	-129.99472	42.64	0.75	1725.16	1725.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6597	2015/08/27	23:27:43	46.07575	-129.99472	42.64	0.75	1725.16	1725.9	input SciCam (port 1) routed to output FrmGrb1 (port 1)
6598	2015/08/27	23:27:52	46.07575	-129.99472	42.59	0.76	1725.09	1725.9	HIGHLIGHTS: HD highlights stop
6600	2015/08/27	23:29:05	46.07572	-129.99461	28.73	1.9	1723.64	1725.5	No evidence of venting.
6601	2015/08/27	23:29:29	46.07573	-129.99459	13.97	2.65	1723.21	1725.9	Not seeing any brittle stars in the downward-looking cam. Did they get fried?
6602	2015/08/27	23:29:34	46.07575	-129.99459	16.14	2.41	1723.52	1725.9	Moving on.
6604	2015/08/27	23:30:49	46.07588	-129.99459	16.56	1.58	1724.38	1726.0	We see a bit of venting here. Tiny tubeworms here.
6605	2015/08/27	23:31:16	46.07589	-129.99460	11.62	0.89	1725.53	1726.4	HIGHLIGHTS: HD highlights start Tiny tubeworms and intense flow here. with white bacterial mat.
6606	2015/08/27	23:31:32	46.07589	-129.99460	11.32	0.83	1725.6	1726.4	NAV: Navigator target Tiny tubeworms.
6608	2015/08/27	23:32:25	46.07591	-129.99461	13.47	2.39	1724.44	1726.8	Beautiful jumbled up lavas here in this area of intense flow and tiny tubeworms. Eruptive and white mat.
6609	2015/08/27	23:32:30	46.07592	-129.99461	13.55	2.63	1724.33	1727.0	Edge of a collapse here.
6610	2015/08/27	23:32:54	46.07601	-129.99462	12.88	2.44	1724.97	1727.4	There is venting all along this collapse area.
6611	2015/08/27	23:33:00	46.07602	-129.99462	13.25	2.51	1725.29	1727.8	This is a fissure here.
6612	2015/08/27	23:33:17	46.07606	-129.99460	18.17	2.03	1725.92	1728.0	NAV: Navigator target Fissure.
6613	2015/08/27	23:33:50	46.07612	-129.99455	29.62	2.25	1726.66	1728.9	We are still south of WP 5 moving up this fissure with drain out shelves and pillars.
6615	2015/08/27	23:34:53	46.07624	-129.99450	18.51	2.34	1727.88	1730.2	We're in a fissure here. New lobate lava flow on the floor and pillars on the sides.
6616	2015/08/27	23:35:32	46.07628	-129.99448	31.04	1.73	1728.6	1730.3	HIGHLIGHTS: HD highlights stop
6617	2015/08/27	23:35:50	46.07631	-129.99446	49.64	1.99	1728.26	1730.3	Big hole in the pillar wall - hollowed out lobe.
6619	2015/08/27	23:36:14	46.07638	-129.99443	42.84	2.26	1728.36	1730.6	Little "cave" in the fissure wall.
6620	2015/08/27	23:37:22	46.07653	-129.99431	26.58	2.09	1728.55	1730.6	Traveling north along this fissure. The wall is probably 4-ish meters high.
6621	2015/08/27	23:37:48	46.07659	-129.99428	26.07	2.05	1728.22	1730.3	Moving along to the north.

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6622	2015/08/27	23:38:02	46.07662	-129.99429	2.18	3.74	1726.16	1729.9	Going to take a look at the top surface. It's new lava on the fissure floor.
6624	2015/08/27	23:38:29	46.07664	-129.99430	2.81	5.13	1724.44	1729.6	Broken pillow lobes on the edge of the fissure. This is new on the roof of the collapse as well.
6625	2015/08/27	23:38:51	46.07666	-129.99430	9.55	1.65	1724.23	1725.9	The altimeter says this is 5 meters above the flow of the fissure.
6626	2015/08/27	23:39:06	46.07669	-129.99428	10.57	1.56	1724.35	1725.9	Lobates here.
6627	2015/08/27	23:39:23	46.07672	-129.99425	24.49	1.74	1724.25	1726.0	Coming on a sheet-like feature. Inflated lobes.
6629	2015/08/27	23:40:20	46.07681	-129.99420	26.15	1.39	1724.52	1725.9	James is going to fly now.
6630	2015/08/27	23:41:45	46.07694	-129.99414	28.49	1.85	1724.05	1725.9	Moving over lobate flows. Figure to the stbd side (east).
6632	2015/08/27	23:42:47	46.07708	-129.99408	29.18	2.06	1724.1	1726.2	This area is the thinner part between WP 4 and WP 5. Still have the fissure to the right.
6633	2015/08/27	23:43:21	46.07714	-129.99405	30.18	1.73	1724.31	1726.0	NAV: Navigator target Beggars canyon (the fissure on the NRZ).
6634	2015/08/27	23:44:00	46.07720	-129.99399	29.42	1.89	1724.33	1726.2	Want to fly along the edge of the fissure and see where it peters out.
6636	2015/08/27	23:45:00	46.07731	-129.99385	29.02	1.8	1725.18	1727.0	Can see the fissure ahead in the sci cam.
6637	2015/08/27	23:45:36	46.07738	-129.99378	31.1	3.18	1723.34	1726.5	Seeing some stalked corals here so must be older. Even though it is covered in eruptive mat it has got to be older.
6639	2015/08/27	23:46:10	46.07743	-129.99371	24.08	3.7	1722.71	1726.4	The northern edge of the fissure here.
6640	2015/08/27	23:46:55	46.07748	-129.99366	60.82	2.98	1723.28	1726.3	Looks like there is some venting - just bacterial mat.
6641	2015/08/27	23:47:16	46.07749	-129.99363	73.28	3.74	1723.14	1726.9	There's a little bit of shimmer here at the northern end of the fissure.
6642	2015/08/27	23:47:22	46.07749	-129.99362	71.68	3.99	1723.19	1727.2	HIGHLIGHTS: HD highlights stop
6643	2015/08/27	23:47:36	46.07750	-129.99358	72.24	2.73	1723.28	1726.0	NAV: Navigator target Canyon End.
6644	2015/08/27	23:47:46	46.07751	-129.99355	69.68	3.66	1722.98	1726.6	There is lots of flow here.
6646	2015/08/27	23:48:46	46.07767	-129.99350	28.6	1.6	1724.53	1726.1	This certainly is great. Skylight and small fissure here.
6647	2015/08/27	23:49:27	46.07777	-129.99348	26.41	2.06	1723.97	1726.0	Skylights and small fissure-like hollow cavity.
6648	2015/08/27	23:49:52	46.07780	-129.99343	27.71	2.5	1724.01	1726.5	The crack continues here.
6650	2015/08/27	23:50:09	46.07782	-129.99341	26.59	2.3	1723.83	1726.1	This is wild!
6651	2015/08/27	23:51:50	46.07812	-129.99333	18.66	2.45	1724.29	1726.7	HIGHLIGHTS: HD highlights stop A minute ago or so.
6653	2015/08/27	23:52:18	46.07820	-129.99330	19.93	1.3	1725.54	1726.8	No much mat here but should start to get thicker as we head north from here.
6654	2015/08/27	23:53:07	46.07827	-129.99325	18.1	2.69	1725.06	1727.8	Shimmer here too.
6655	2015/08/27	23:53:22	46.07830	-129.99324	33.4	2.41	1725.18	1727.6	Not much eruptive mat - at least not as much as previously.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6657	2015/08/27	23:54:15	46.07844	-129.99318	33.76	2.3	1725.99	1728.3	Moving over lobate flow.
6658	2015/08/27	23:55:26	46.07852	-129.99305	32.35	1.64	1726.12	1727.8	DVCam monitor turned on by the video logger.
6659	2015/08/27	23:55:57	46.07861	-129.99308	14.21	1.36	1726.77	1728.1	The mat is starting to thicken up.
6661	2015/08/27	23:56:20	46.07866	-129.99309	12.71	1.41	1726.98	1728.4	Still not very thick.
6662	2015/08/27	23:56:48	46.07872	-129.99309	13.51	1.84	1726.75	1728.6	Moving over lobate and small pillow buds here.
6663	2015/08/27	23:57:29	46.07881	-129.99309	13.85	1.69	1727.1	1728.8	Starting to head up the hill.
6664	2015/08/27	23:57:40	46.07884	-129.99309	15.41	2.14	1727.13	1729.3	More pillows now sitting on top of the lobate surface.
6666	2015/08/27	23:58:55	46.07903	-129.99303	21.21	2.16	1727.53	1729.7	Lobates here. Moving on toward WP5.
6667	2015/08/27	23:59:39	46.07915	-129.99298	18.83	1.65	1727.23	1728.9	On our way to WP5.
6669	2015/08/28	00:00:57	46.07928	-129.99295	20.54	2.63	1726.81	1729.4	Still lobate flows here with small pillows here and there.
6670	2015/08/28	00:01:13	46.07934	-129.99293	19.15	2.64	1726.99	1729.6	Not a huge amount of floc on the rocks.
6671	2015/08/28	00:01:49	46.07944	-129.99289	19.96	2.16	1726.9	1729.1	Fish here.
6673	2015/08/28	00:03:19	46.07968	-129.99276	20.7	2.16	1726.87	1729.0	Coming on an area with thicker mat.
6674	2015/08/28	00:03:58	46.07972	-129.99268	18.87	2.06	1725.94	1728.0	HIGHLIGHTS: HD highlights start Getting into some really thick eruptive mat.
6676	2015/08/28	00:04:07	46.07972	-129.99268	18.27	1.81	1726.15	1728.0	There must be some flow in the area.
6677	2015/08/28	00:04:44	46.07974	-129.99269	23.25	1.79	1726.24	1728.0	Really thick eruptive mat here with flow.
6678	2015/08/28	00:05:03	46.07976	-129.99266	24.25	1.95	1725.75	1727.7	We will do a suction sample of this mat eventually.
6679	2015/08/28	00:05:19	46.07979	-129.99264	23.66	2.38	1725.48	1727.9	Thick blobs of the mat floating by.
6680	2015/08/28	00:06:01	46.07987	-129.99258	24.37	2.13	1725.96	1728.1	Highlights have been running since we got to this area of thick orange-white mat.
6682	2015/08/28	00:06:48	46.08002	-129.99250	29.06	2.81	1724.73	1727.5	We're going to continue on.
6683	2015/08/28	00:06:54	46.08004	-129.99248	29.4	3.14	1724.36	1727.5	Coming to a large collapse area.
6684	2015/08/28	00:07:12	46.08010	-129.99243	28.18	5.25	1725.52	1730.8	Lava pillars at the collapse edge.
6685	2015/08/28	00:07:40	46.08010	-129.99243	17.83	5.31	1727.1	1732.4	input BrowCam (port 2) routed to output FrmGrb2 (port 2)
6687	2015/08/28	00:08:12	46.08011	-129.99241	23.24	5.04	1727.05	1732.1	The mat on the roof is not as thick. Because it's not sitting on the warm seafloor.
6688	2015/08/28	00:08:25	46.08011	-129.99240	41	6.04	1726.83	1732.9	Yellow-staining.
6689	2015/08/28	00:10:03	46.08012	-129.99240	40.22	5.78	1727.1	1732.9	**SAMPLE: Geo** J826-geo-08. Grabbing a piece of this pillar roof feature. In the 2015 flow. Orange staining on the roof and some eruptive mat.
6691	2015/08/28	00:10:56	46.08012	-129.99240	40.7	5.75	1727.14	1732.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6692	2015/08/28	00:10:56	46.08012	-129.99240	40.7	5.75	1727.14	1732.9	input SciCam (port 1) routed to output FrmGrb2 (port 2)
6693	2015/08/28	00:11:16	46.08012	-129.99240	40.6	5.78	1727.12	1732.9	J826-geo-08 cont. Fairly large of upper crust of

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									drained-out area.
6695	2015/08/28	00:12:08	46.08013	-129.99240	40.16	6.36	1726.48	1732.8	J826-geo-08 cont. Location: 46.080111 129.992412 Z=1727. Hdg 306.
6696	2015/08/28	00:13:09	46.08032	-129.99238	357.38	2.09	1725.29	1727.4	Will move ahead to catch up with Medea then try to make J826-geo-08 a little smaller.
6697	2015/08/28	00:13:56	46.08034	-129.99236	356.6	1.45	1726.4	1727.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6699	2015/08/28	00:14:36	46.08034	-129.99236	359.63	0.83	1726.92	1727.8	Dropped J826-geo-08.
6700	2015/08/28	00:15:02	46.08035	-129.99236	358.16	0.84	1726.9	1727.7	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6701	2015/08/28	00:15:25	46.08035	-129.99236	358.31	0.8	1726.92	1727.7	Picking J826-geo-08 back up. It hasn't gotten any smaller yet.
6702	2015/08/28	00:16:03	46.08035	-129.99236	358.49	0.83	1726.87	1727.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6704	2015/08/28	00:16:07	46.08035	-129.99236	358.44	0.81	1726.87	1727.7	J826-geo-08 broke up. Looking for one of the glassy parts of it to keep.
6706	2015/08/28	00:18:20	46.08035	-129.99236	359.09	0.99	1726.81	1727.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6707	2015/08/28	00:18:20	46.08035	-129.99236	359.09	0.99	1726.81	1727.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6708	2015/08/28	00:18:35	46.08035	-129.99236	359.04	0.98	1726.84	1727.8	J826-geo-08 framegrab. Has glass. Going into swing arm box #6. Two pieces.
6709	2015/08/28	00:19:14	46.08035	-129.99237	359.04	0.95	1726.87	1727.8	NAV: Doppler Reset
6711	2015/08/28	00:20:11	46.08035	-129.99237	359.18	0.93	1726.89	1727.8	HIGHLIGHTS: HD highlights start
6712	2015/08/28	00:20:35	46.08035	-129.99237	359.3	0.95	1726.85	1727.8	Suction sample the orange bacterial mat.
6713	2015/08/28	00:21:18	46.08035	-129.99236	359.4	1.01	1726.78	1727.8	**SAMPLE: Bio** Start J826-bio-09 probably will have volcanic glass too.
6714	2015/08/28	00:21:40	46.08035	-129.99236	359.25	0.95	1726.86	1727.8	J826-bio-09 is fluffy orange bacterial mat.
6715	2015/08/28	00:22:04	46.08035	-129.99236	359.42	1.01	1726.81	1727.8	J826-bio-09 Shimmering water is here; lava underneath is glassy black 2015 flow.
6717	2015/08/28	00:23:00	46.08035	-129.99236	359.38	0.99	1726.82	1727.8	J826-bio-09 still suctioning. Lots of glass is shedding from the lava underneath.
6718	2015/08/28	00:23:19	46.08035	-129.99236	359.42	1	1726.78	1727.8	J826-bio-09 stop suctioning.
6719	2015/08/28	00:23:22	46.08035	-129.99236	359.46	0.98	1726.75	1727.7	HIGHLIGHTS: HD highlights stop
6720	2015/08/28	00:23:47	46.08035	-129.99236	359.62	1.03	1726.72	1727.8	Pilot swap.
6722	2015/08/28	00:24:28	46.08035	-129.99236	359.47	1.01	1726.74	1727.8	J826-bio-09 resume suctioning bacterial mat.
6723	2015/08/28	00:24:51	46.08035	-129.99236	358.89	1.01	1726.78	1727.8	J826-bio-09 is near Waypoint #5.
6725	2015/08/28	00:26:15	46.08035	-129.99237	357.58	0.98	1726.84	1727.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6726	2015/08/28	00:26:24	46.08035	-129.99237	357.6	0.98	1726.85	1727.8	Continuing to suction in this spot.
6727	2015/08/28	00:26:43	46.08035	-129.99236	357.59	0.98	1726.86	1727.8	Done suctioning.
6728	2015/08/28	00:27:08	46.08035	-129.99237	357.74	0.99	1726.83	1727.8	See a rock on the porch and would like to knock it off. Rock is gone.
6730	2015/08/28	00:28:11	46.08035	-129.99237	358	0.95	1726.9	1727.9	Position for sample 46.080352 -129.992351 from the cursor. Depth is 1727 and altitude of 2.
6731	2015/08/28	00:28:44	46.08035	-129.99237	357.92	0.91	1726.95	1727.9	We are at about waypoint #5 where the first dive ended. Seeing some shimmering water.
6732	2015/08/28	00:29:09	46.08035	-129.99237	357.94	0.93	1726.95	1727.9	Holes between the lobes where shimmering water is seen.
6733	2015/08/28	00:29:44	46.08035	-129.99237	357.93	0.93	1726.95	1727.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6734	2015/08/28	00:29:56	46.08035	-129.99237	357.93	0.94	1726.92	1727.9	Moving the RAS dome from the top of the front rock box and is setting in the gastight box.
6735	2015/08/28	00:30:01	46.08035	-129.99237	357.97	0.98	1726.87	1727.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6736	2015/08/28	00:30:03	46.08035	-129.99237	357.93	0.95	1726.9	1727.9	Looking in the cracks for shimmer.
6738	2015/08/28	00:30:23	46.08035	-129.99237	357.87	1.01	1726.81	1727.8	Large crack directly in front of the basket.
6739	2015/08/28	00:30:37	46.08035	-129.99237	357.82	0.98	1726.83	1727.8	Also another spot to the right and nearer the basket.
6740	2015/08/28	00:30:49	46.08035	-129.99237	357.83	0.99	1726.83	1727.8	Going to measure the temperature with the Beast probe.
6741	2015/08/28	00:31:19	46.08035	-129.99237	357.85	1	1726.75	1727.8	Looks like the larger crack in front of the basket and above where the suction sample was taken.
6742	2015/08/28	00:31:25	46.08035	-129.99237	357.85	1	1726.78	1727.8	Temperature in the crack is going up.
6744	2015/08/28	00:32:30	46.08035	-129.99237	357.85	1	1726.75	1727.8	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6745	2015/08/28	00:32:32	46.08035	-129.99237	357.85	1	1726.73	1727.7	Intake is down the crack and the temperature is 33.6deg and still rising.
6746	2015/08/28	00:33:23	46.08035	-129.99237	357.86	1.01	1726.81	1727.8	This is the same location as the suction sample.
6747	2015/08/28	00:33:57	46.08035	-129.99237	357.84	1	1726.82	1727.8	**SAMPLE: HFS** J826-HFS-10 Unfiltered piston #2 Start 0033.
6749	2015/08/28	00:34:36	46.08035	-129.99237	357.87	1	1726.8	1727.8	HIGHLIGHTS: HD highlights start J826-HFS-10
6750	2015/08/28	00:35:24	46.08035	-129.99237	357.86	1	1726.8	1727.8	J826-HFS-10 Taken in crack adjacent to the right of suction sample near waypoint #5.
6752	2015/08/28	00:36:12	46.08035	-129.99237	357.89	1	1726.81	1727.8	HIGHLIGHTS: HD highlights stop J826-HFS-10
6753	2015/08/28	00:36:59	46.08035	-129.99237	357.86	0.98	1726.82	1727.8	J826-HFS-10 Stop 0036. Tmax=35.4 Tavg=35.3 vol=600 T2=7.4.
6754	2015/08/28	00:37:52	46.08035	-129.99237	357.89	1.01	1726.82	1727.8	**SAMPLE: HFS** J826-HFS-11 Start 0037. Filtered

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									piston #3.
6757	2015/08/28	00:41:40	46.08035	-129.99237	357.9	0.98	1726.84	1727.8	This is an area of intense flow with max temperature of 35.4C.
6759	2015/08/28	00:42:40	46.08035	-129.99236	357.89	0.98	1726.83	1727.8	J826-HFS-11 cont. Stop 0041. Tmax=35.4 Tavg=35.2 Vol=600ml. T2=7.4.
6760	2015/08/28	00:43:18	46.08035	-129.99236	357.81	1	1726.79	1727.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6761	2015/08/28	00:43:25	46.08035	-129.99236	357.82	1	1726.79	1727.8	Stowing the wand of the beast. Will take a gastight in this hole.
6763	2015/08/28	00:44:40	46.08035	-129.99236	357.81	1.01	1726.79	1727.8	We're ~20m east of WP5.
6764	2015/08/28	00:45:58	46.08035	-129.99236	357.74	0.98	1726.85	1727.8	**SAMPLE: GTB** J826-GTB-12. In the same orifice as the last 2 samples. Tmax was 35.4. Fired at 0045.
6766	2015/08/28	00:46:59	46.08035	-129.99236	357.67	1.01	1726.8	1727.8	We're going to deploy a marker here in this area of thick orangish-whitish mat with intense flow.
6767	2015/08/28	00:47:40	46.08035	-129.99236	357.65	0.99	1726.83	1727.8	**DEPLOY: MTR** temp probe MTR 4127 in the hold where the last 4 samples were taken. 2 pistons 1 gastight and a suction sample.
6768	2015/08/28	00:47:51	46.08035	-129.99236	357.69	0.98	1726.87	1727.9	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6770	2015/08/28	00:48:34	46.08035	-129.99236	357.71	1.01	1726.8	1727.8	The MTR is in the hole. Heading is 357 and depth is 1728.
6771	2015/08/28	00:49:46	46.08035	-129.99236	359.18	0.98	1726.87	1727.9	**DEPLOY: marker** Mkr261 in this area of thick mat right above the marker.
6773	2015/08/28	00:50:19	46.08035	-129.99236	359.14	0.95	1726.92	1727.9	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6774	2015/08/28	00:51:49	46.08035	-129.99236	359.15	0.95	1726.92	1727.9	Heading is 360. 1727 depth. The MTR is just a half meter S of the marker. The temperature here was 35.7.
6776	2015/08/28	00:52:19	46.08035	-129.99236	359.11	0.94	1726.93	1727.9	We're dubbing this venting area "Snowdrift". Here at Mkr261 with the MTR 4127.
6777	2015/08/28	00:54:03	46.08039	-129.99239	10.22	3.23	1724.06	1727.3	Heading north now toward WP6.
6779	2015/08/28	00:54:08	46.08040	-129.99239	19.77	2.8	1724.33	1727.1	Collapse right ahead.
6780	2015/08/28	00:54:38	46.08049	-129.99235	33.13	6.3	1724.36	1730.7	Another collapse.
6781	2015/08/28	00:55:18	46.08060	-129.99228	34.11	2.91	1724.43	1727.3	The collapse roofs do not have the super thick eruptive mat (hollow beneath them so can cool quicker).
6782	2015/08/28	00:55:25	46.08062	-129.99227	33.46	2.53	1724.89	1727.4	The collapse is 3-4 m deep.
6783	2015/08/28	00:55:44	46.08068	-129.99225	33.83	1.98	1725.36	1727.3	Lots of small collapse pits with thin crust.
6784	2015/08/28	00:55:55	46.08072	-129.99224	33.78	1.75	1725.37	1727.1	Thick mat in this area of broad lobate flow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6786	2015/08/28	00:56:41	46.08083	-129.99219	33.31	1.59	1726.49	1728.1	Really thick mat here again. Not quite as thick as at Snowdrift - but close.
6787	2015/08/28	00:57:46	46.08086	-129.99218	33.16	1.09	1726.87	1728.0	Pausing here to let Medea catch up.
6789	2015/08/28	00:58:08	46.08086	-129.99218	33.14	1.1	1726.83	1727.9	Zoomed in on this thick mat on the lobes.
6790	2015/08/28	00:58:31	46.08087	-129.99218	33.43	1.05	1726.84	1727.9	Don't see any evidence of flow.
6791	2015/08/28	00:58:46	46.08089	-129.99217	32.83	1.34	1726.73	1728.1	Continuing on to the north toward WP6.
6794	2015/08/28	01:02:26	46.08097	-129.99212	34.6	1.56	1726.58	1728.1	Continuing on.
6796	2015/08/28	01:04:12	46.08112	-129.99201	33.4	1.49	1726.71	1728.2	The mat is not as thick here.
6797	2015/08/28	01:04:46	46.08120	-129.99202	32.29	1.56	1726.73	1728.3	Moving over lobate flow; which is what most of the flow appears to be.
6798	2015/08/28	01:05:00	46.08122	-129.99203	32.32	1.19	1726.96	1728.2	Smallish pillow buds interspersed within the lobes.
6800	2015/08/28	01:06:21	46.08137	-129.99206	32.14	1.11	1726.73	1727.8	We're seeing the shadow of Jason's port arm in the sci cam.
6801	2015/08/28	01:06:56	46.08137	-129.99206	32.79	1.01	1726.75	1727.8	Moving the port arm so that it is not casting a shadow.
6802	2015/08/28	01:07:15	46.08139	-129.99204	32.68	1.19	1726.83	1728.0	Less mat as we climb up this flow.
6803	2015/08/28	01:07:42	46.08143	-129.99199	33.56	1.53	1726.66	1728.2	Big pillow ahead.
6805	2015/08/28	01:08:32	46.08151	-129.99195	50.56	1.38	1726.89	1728.3	More inflated lobates now.
6806	2015/08/28	01:08:40	46.08152	-129.99194	49.74	1.28	1726.75	1728.0	Some pillows as well.
6807	2015/08/28	01:09:41	46.08164	-129.99181	50.04	1.5	1726.34	1727.8	Orange mat between the lobes and some staining on the surface. A bit of eruptive mat here and there.
6809	2015/08/28	01:11:19	46.08184	-129.99160	48.84	1.59	1726.34	1727.9	Now we're getting into more of the mat.
6810	2015/08/28	01:11:34	46.08187	-129.99156	49.8	2.09	1726.37	1728.5	Some large pillows interspersed among the lobes.
6812	2015/08/28	01:12:15	46.08190	-129.99145	48.58	2.14	1726.68	1728.8	Thin mat here.
6813	2015/08/28	01:12:52	46.08194	-129.99134	49.42	1.16	1727.34	1728.5	Moving along toward the north.
6814	2015/08/28	01:13:23	46.08196	-129.99125	51.14	1.88	1726.55	1728.4	Black fish.
6815	2015/08/28	01:13:46	46.08198	-129.99118	50.94	2.04	1726.61	1728.7	The lobes flattened out here a bit.
6817	2015/08/28	01:14:20	46.08202	-129.99109	49.67	1.89	1726.66	1728.6	Back into lobates with small pillow buds here and there.
6818	2015/08/28	01:14:47	46.08210	-129.99109	48.11	1.25	1727.53	1728.8	There is a it of floc blobs in the water occasionally.
6819	2015/08/28	01:15:06	46.08213	-129.99108	47.46	1.73	1727.2	1728.9	Large pillows here and there.
6821	2015/08/28	01:16:18	46.08229	-129.99104	46.85	1.5	1727.15	1728.7	This is an area with slightly thicker mat and some large pillows interspersed.
6822	2015/08/28	01:17:11	46.08242	-129.99099	47.05	1.56	1727.72	1729.3	We haven't seen any venting in a while.
6823	2015/08/28	01:17:38	46.08248	-129.99096	49.66	1.4	1727.49	1728.9	Broken lobes here and there.
6824	2015/08/28	01:17:55	46.08252	-129.99095	49.56	1.98	1727.12	1729.1	The occasional large pillow amongst the lobates.
6826	2015/08/28	01:18:56	46.08263	-129.99094	29.03	2.33	1726.62	1729.0	We haven't seen any signs of venting for a while.
6827	2015/08/28	01:19:06	46.08263	-129.99093	30	2.05	1726.6	1728.7	Also haven't seen any collapse features for a while.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6828	2015/08/28	01:19:52	46.08267	-129.99083	29.59	1.23	1727.06	1728.3	Light dusting of mat on the flow.
6830	2015/08/28	01:20:23	46.08272	-129.99074	29.92	1.44	1727.04	1728.5	Broader lobes again. These are more fluid than the smaller lobes.
6831	2015/08/28	01:21:20	46.08283	-129.99057	31.58	1.46	1727.09	1728.6	The farther the lavas go from the vent the more they slow down and cool.
6832	2015/08/28	01:22:02	46.08289	-129.99043	30.25	1.68	1727.29	1729.0	A thicker coat of eruptive mat here.
6834	2015/08/28	01:22:26	46.08292	-129.99034	30.18	1.68	1727	1728.7	We don't see any shimmer but the mat has become thicker.
6835	2015/08/28	01:23:40	46.08305	-129.99020	37.01	0.99	1727.17	1728.2	Zooming in on the mat. Patches of black lava are poking out here and there.
6837	2015/08/28	01:24:48	46.08322	-129.99020	36.46	1.51	1727.27	1728.8	More pillow-y lavas here.
6839	2015/08/28	01:26:14	46.08344	-129.99018	39.99	1.56	1727.3	1728.9	Moving north.
6841	2015/08/28	01:28:42	46.08353	-129.98973	37.87	3.01	1725.55	1728.6	The mat is thicker here.
6843	2015/08/28	01:30:07	46.08375	-129.98955	40.5	2.03	1726.51	1728.5	The mat is quite thick here. Coating the rocks. Fuzzy.
6844	2015/08/28	01:30:44	46.08384	-129.98953	39.16	2.38	1725.65	1728.0	There is a collapse off to the left.
6845	2015/08/28	01:31:53	46.08400	-129.98948	40.75	2.54	1725.55	1728.1	HIGHLIGHTS: HD highlights start Area of thick mat in broad lobate lavas.
6847	2015/08/28	01:32:59	46.08413	-129.98939	40.67	1.61	1726.5	1728.1	The mat is thinning out a bit.
6848	2015/08/28	01:33:12	46.08414	-129.98937	39.53	2.1	1726.29	1728.4	HIGHLIGHTS: HD highlights stop
6849	2015/08/28	01:33:41	46.08418	-129.98929	41.36	1.76	1726.17	1727.9	Swirly lavas with depression.
6850	2015/08/28	01:33:59	46.08420	-129.98927	41.16	1.63	1726.49	1728.1	Back over lobates.
6852	2015/08/28	01:34:21	46.08422	-129.98926	41.33	1.2	1726.85	1728.1	Coming upon an area of pillows.
6853	2015/08/28	01:35:19	46.08425	-129.98914	41.11	2.54	1725.41	1728.0	Pillows with not much mat at all.
6855	2015/08/28	01:37:02	46.08433	-129.98899	42.79	2.16	1723.53	1725.7	Pillows.
6856	2015/08/28	01:37:29	46.08435	-129.98898	11.52	2.78	1722.87	1725.7	Resetting the DP of the ship.
6857	2015/08/28	01:37:57	46.08434	-129.98901	17.87	3.29	1722.73	1726.0	Looking for a piece of lava to sample here.
6859	2015/08/28	01:38:10	46.08435	-129.98902	39.27	2.89	1723.03	1725.9	Bill has spotted a little lava lobe that might do the trick.
6860	2015/08/28	01:38:51	46.08437	-129.98902	116.33	0.98	1724.3	1725.3	Settling in a grab a little piece of one of these pillows.
6862	2015/08/28	01:40:19	46.08436	-129.98902	116.76	78.51	1724.5	1803.0	Going in for a grab of this pillow lobe.
6863	2015/08/28	01:40:47	46.08436	-129.98902	114.48	1.09	1724.1	1725.2	HIGHLIGHTS: HD highlights start During attempted sample of a pillow bud.
6865	2015/08/28	01:42:06	46.08436	-129.98901	106.5	0.75	1724.63	1725.4	HIGHLIGHTS: HD highlights stop
6866	2015/08/28	01:42:15	46.08436	-129.98901	106.5	0.75	1724.65	1725.4	NAV: Doppler Reset
6867	2015/08/28	01:43:20	46.08437	-129.98900	108.98	1.01	1723.64	1724.7	Did not get that attempted sample.
6868	2015/08/28	01:43:50	46.08439	-129.98897	94.06	1.6	1723.22	1724.8	Looking around for another rock.
6870	2015/08/28	01:44:49	46.08441	-129.98895	89.11	1.74	1722.84	1724.6	We're looking around for another sample site.
6871	2015/08/28	01:45:08	46.08441	-129.98893	63.5	1.29	1723.04	1724.3	See a broken pillow here that should be easier to

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									sample.
6872	2015/08/28	01:45:18	46.08442	-129.98894	66.04	1.35	1723.02	1724.4	Pillow rind coming up - we hope.
6874	2015/08/28	01:46:27	46.08441	-129.98893	77.92	0.88	1723.7	1724.6	James is using the port arm to go in for the sample.
6876	2015/08/28	01:48:32	46.08441	-129.98893	78.43	0.89	1723.66	1724.6	**SAMPLE: Geo** J826-geo-13. Grabbing a piece of pillow ring. in this area of pillows and lobates.
6877	2015/08/28	01:49:18	46.08441	-129.98893	78.48	0.88	1723.7	1724.6	J826-geo-13. The pillow that this rind came from was hollow. 2015 flow.
6879	2015/08/28	01:50:31	46.08441	-129.98893	79.61	0.89	1723.69	1724.6	J826-geo-13. Sample went into rock box 7. Don't see any fluid coming out.
6880	2015/08/28	01:51:59	46.08453	-129.98892	44.84	2	1720.95	1723.0	J826-geo-13 cont. Position: 46.084414 129.988937. Z=1722. Hdg=70
6882	2015/08/28	01:52:09	46.08455	-129.98892	46.04	1.58	1720.91	1722.5	Location is ~400m south of WP6.
6883	2015/08/28	01:53:22	46.08465	-129.98892	32.83	2.09	1720.05	1722.1	We should be climbing up now. First have to wait for the ship to get going.
6885	2015/08/28	01:54:35	46.08465	-129.98892	32.81	2.2	1719.97	1722.2	Fish.
6886	2015/08/28	01:55:08	46.08465	-129.98892	32.85	2.2	1719.96	1722.2	Rattails ahead.
6887	2015/08/28	01:55:40	46.08465	-129.98892	32.75	2.18	1719.98	1722.2	That rattail looks really dark - but its probably just lack of sub light.
6889	2015/08/28	01:57:55	46.08473	-129.98885	32.59	1.43	1720.42	1721.9	Pretty thick mat here again.
6891	2015/08/28	01:58:26	46.08478	-129.98884	28.8	2	1720.26	1722.3	We're about 50m NE of WP6.
6892	2015/08/28	01:58:52	46.08483	-129.98882	28.55	1.74	1720.71	1722.5	Lava swirl and lineated inflated lobate.
6893	2015/08/28	01:59:05	46.08485	-129.98881	28.72	1.35	1720.79	1722.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6894	2015/08/28	01:59:08	46.08485	-129.98880	28.51	1.44	1720.82	1722.3	Lineations on the pillows too.
6895	2015/08/28	01:59:44	46.08490	-129.98878	24.89	2.51	1719.91	1722.4	Lobates and pillows here.
6897	2015/08/28	02:01:27	46.08502	-129.98887	20.5	0.93	1721.79	1722.7	Pillows here.
6898	2015/08/28	02:01:49	46.08505	-129.98888	22.15	1.04	1722.57	1723.6	We're getting into more of a pillow morphology here.
6899	2015/08/28	02:02:00	46.08507	-129.98887	22.14	1.46	1722.78	1724.2	Pillows on top of inflated lobates.
6901	2015/08/28	02:02:45	46.08513	-129.98880	22.51	2.01	1722.54	1724.6	Drained out pillow. You could see where it flowed out.
6902	2015/08/28	02:03:24	46.08520	-129.98871	21.99	2.08	1721.46	1723.5	Bulbous lobes of lava.
6904	2015/08/28	02:04:43	46.08528	-129.98859	29.49	2.35	1722.29	1724.6	We're getting into a bit thicker flow now - according to the difference map.
6905	2015/08/28	02:04:59	46.08532	-129.98857	28.57	2.41	1721.52	1723.9	We haven't seen any venting in quite some time.
6907	2015/08/28	02:06:42	46.08547	-129.98857	34.05	2.75	1721.02	1723.8	The mat is getting thicker here.
6908	2015/08/28	02:07:04	46.08551	-129.98858	30.16	3.1	1720.19	1723.3	Odd looking elongate pillow.
6909	2015/08/28	02:07:10	46.08553	-129.98858	29.57	3.8	1719.83	1723.6	Weird looking pillows here.
6910	2015/08/28	02:07:33	46.08557	-129.98858	30.24	2.46	1720.14	1722.6	input PilotCam (port 3) routed to output FrmGrb1 (port

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									1)
6911	2015/08/28	02:07:40	46.08558	-129.98858	28.84	2.51	1719.97	1722.5	Now we're getting back into lobates with smaller pillows.
6913	2015/08/28	02:08:14	46.08566	-129.98859	28.58	2.53	1720.19	1722.7	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6914	2015/08/28	02:08:32	46.08567	-129.98856	29.02	1.83	1720.31	1722.1	No pillows here. All lobates.
6915	2015/08/28	02:09:05	46.08572	-129.98848	28.2	1.89	1719.85	1721.7	Where is the venting?
6916	2015/08/28	02:09:32	46.08576	-129.98841	28.32	2.23	1718.92	1721.2	Lobates flows are wide here.
6918	2015/08/28	02:10:13	46.08581	-129.98831	29.01	2.13	1719.29	1721.4	The eruptive mat is getting thicker.
6919	2015/08/28	02:10:58	46.08587	-129.98825	27.33	1.04	1720	1721.0	Slabs on the broad lobes.
6920	2015/08/28	02:11:03	46.08588	-129.98824	27.69	1.33	1720.06	1721.4	Lots of mat.
6922	2015/08/28	02:12:14	46.08596	-129.98818	36.94	1.39	1720.23	1721.6	Jumbled flow ahead.
6923	2015/08/28	02:13:07	46.08604	-129.98821	38.34	4.48	1717.26	1721.7	HIGHLIGHTS: HD highlights start Jumbled flow after a long time of lobates and the occasional pillows.
6924	2015/08/28	02:13:31	46.08611	-129.98821	36.54	4.05	1716.48	1720.5	Broken up slabs on the edge of this fissure(?).
6925	2015/08/28	02:13:43	46.08615	-129.98819	37.84	3.75	1716.77	1720.5	Could it be a fissure?
6926	2015/08/28	02:13:58	46.08618	-129.98817	37.87	2.94	1716.92	1719.9	The texture of these lavas is very different than what we have been seeing.
6928	2015/08/28	02:14:34	46.08622	-129.98812	44.49	2.54	1716.41	1719.0	Jumbled up mess of lavas here.
6929	2015/08/28	02:14:48	46.08623	-129.98809	49.23	1.71	1716.86	1718.6	Off to the right (east) is a slope.
6930	2015/08/28	02:15:08	46.08626	-129.98806	40.48	1.68	1717.22	1718.9	This is kind of like that inflated structure in the middle of the caldera with these cracks.
6931	2015/08/28	02:15:59	46.08638	-129.98803	37.41	2.23	1717.69	1719.9	2015 lava - different type of inflated lava.
6933	2015/08/28	02:16:27	46.08643	-129.98797	45.36	2.26	1717.54	1719.8	Jumbled up viscous lavas that formed this weird texture.
6934	2015/08/28	02:16:55	46.08651	-129.98792	47.72	2.91	1716.89	1719.8	It reminds Bill of tumuli. Domed up and cracked down the middle.
6935	2015/08/28	02:17:07	46.08654	-129.98790	41.17	3.68	1716.76	1720.4	We haven't seen this type of lava at Axial before.
6936	2015/08/28	02:17:49	46.08664	-129.98780	66.37	2.59	1719.11	1721.7	The eruptive mat covers all of this.
6937	2015/08/28	02:18:02	46.08666	-129.98777	70.04	2.2	1719.3	1721.5	It's a little bit fuzzy and covers all the lava here.
6939	2015/08/28	02:18:21	46.08667	-129.98773	69.51	3.06	1718.64	1721.7	Now we're back into the really broad lobes - leaving that spiny lava.
6940	2015/08/28	02:19:33	46.08684	-129.98758	57.69	1.69	1718.95	1720.6	Mat and lobates. Collapse in the background.
6942	2015/08/28	02:21:21	46.08709	-129.98769	41.36	2.3	1719.25	1721.6	We're going back into spiny lava. A'a like lavas
6943	2015/08/28	02:21:29	46.08711	-129.98770	41.9	2.81	1720.01	1722.8	Seeing a bit of white staining.
6945	2015/08/28	02:22:12	46.08720	-129.98771	52.15	3.1	1720.66	1723.8	A'a lavas are really broken up rubbly surface. Not smooth at all.
6946	2015/08/28	02:23:06	46.08729	-129.98763	51.81	4.08	1718.38	1722.5	Bizarre-looking lava formations.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6947	2015/08/28	02:23:29	46.08734	-129.98760	51.41	2.25	1716.67	1718.9	We would like to get a piece of this odd-looking lava.
6949	2015/08/28	02:24:07	46.08738	-129.98753	44.95	1.88	1718.77	1720.7	Back in lobates again.
6950	2015/08/28	02:24:11	46.08738	-129.98752	44.69	2.43	1718.6	1721.0	Did not get our sample.
6951	2015/08/28	02:25:07	46.08748	-129.98746	25.88	2.28	1719.02	1721.3	Lobates and pillows here.
6953	2015/08/28	02:26:16	46.08772	-129.98741	32.46	1.86	1721.32	1723.2	The mat seems to be thinner now than it was earlier.
6954	2015/08/28	02:26:33	46.08773	-129.98737	31.93	1.83	1721.71	1723.5	Moving over broad lobates with pillows here and there.
6956	2015/08/28	02:28:34	46.08787	-129.98734	23.42	1.13	1723.88	1725.0	Going to try to grab a piece of this hollowed out pillow.
6957	2015/08/28	02:29:12	46.08788	-129.98734	24.13	0.83	1724.37	1725.2	Going to grab a piece of this pre-broken partially hollowed out pillow.
6958	2015/08/28	02:29:48	46.08788	-129.98734	24.61	0.88	1724.38	1725.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6960	2015/08/28	02:31:00	46.08789	-129.98733	24.25	0.85	1724.38	1725.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6961	2015/08/28	02:31:09	46.08789	-129.98733	24.83	0.88	1724.39	1725.3	**SAMPLE: Geo** J826-geo-14. Piece of pre-broken hollowed out pillow. Trying to break it up because that's quite a large piece.
6963	2015/08/28	02:32:59	46.08789	-129.98733	26.64	0.89	1724.39	1725.3	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6964	2015/08/28	02:33:09	46.08789	-129.98733	26.52	0.89	1724.39	1725.3	J826-geo-14. ~25m SSE of WP7. Trying to get a smaller piece.
6965	2015/08/28	02:33:36	46.08789	-129.98733	26.43	0.93	1724.38	1725.3	HIGHLIGHTS: HD highlights stop J826-geo-14. cont.
6967	2015/08/28	02:34:37	46.08789	-129.98733	26.71	0.91	1724.35	1725.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6969	2015/08/28	02:36:36	46.08789	-129.98733	23.39	1.41	1723.7	1725.1	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6970	2015/08/28	02:36:59	46.08789	-129.98733	25.1	0.75	1724.43	1725.2	J826-geo-14 cont. Lava has a coating of eruptive mat on it - not very thick.
6972	2015/08/28	02:39:36	46.08789	-129.98734	24.79	0.81	1724.36	1725.2	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
6973	2015/08/28	02:39:39	46.08789	-129.98734	25.18	0.8	1724.38	1725.2	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
6975	2015/08/28	02:41:05	46.08789	-129.98734	25.17	0.8	1724.32	1725.1	J826-geo-14 cont. Pillow rind. Good sized rock. Went into box 9. Z=1724. Hdg=25.
6976	2015/08/28	02:41:12	46.08789	-129.98734	25.13	0.78	1724.33	1725.1	NAV: Doppler Reset
6978	2015/08/28	02:42:33	46.08788	-129.98734	25.11	0.81	1724.3	1725.1	J826-geo-14 cont. Location: 46.087888 129.987334.
6979	2015/08/28	02:43:45	46.08789	-129.98734	24.82	0.8	1724.33	1725.1	Shift change.
6983	2015/08/28	02:49:02	46.08803	-129.98728	23.46	1.79	1725.71	1727.5	Heading onward to waypoint #8.
6984	2015/08/28	02:49:18	46.08806	-129.98727	22.72	1.25	1726.47	1727.7	Snowy and fuzzy new lava pillows.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
6985	2015/08/28	02:49:29	46.08807	-129.98726	22.96	0.75	1726.8	1727.6	Long tubes.
6986	2015/08/28	02:50:04	46.08812	-129.98725	23.11	2.54	1726.3	1728.8	Heading downhill over the pillows and tubes.
6988	2015/08/28	02:51:49	46.08836	-129.98726	22.39	2.28	1732.36	1734.6	Seems to have flattened out a bit but still pillows.
6990	2015/08/28	02:52:38	46.08850	-129.98722	21.85	2.49	1733.92	1736.4	Looking like the flow is turning into smaller and flatter lobates with some large pillows.
6991	2015/08/28	02:53:22	46.08860	-129.98719	22.02	2.54	1735.19	1737.7	The angle of light on the bottom camera makes the big pillows look gray and the smaller lobates a darker black.
6992	2015/08/28	02:53:45	46.08864	-129.98717	22.04	1.43	1735.43	1736.9	Particles are floating up to the Medea camera.
6994	2015/08/28	02:54:11	46.08870	-129.98715	22.01	2.2	1735.8	1738.0	Lobates and pillows.
6995	2015/08/28	02:54:27	46.08873	-129.98714	22.52	2.29	1735.45	1737.7	Some staining at the pillow bases.
6996	2015/08/28	02:55:44	46.08883	-129.98711	21.55	3.09	1734.61	1737.7	Sea snot.
6998	2015/08/28	02:56:54	46.08883	-129.98711	21.88	3.1	1734.62	1737.7	The upcoming WP8 is on the map as a new lava contact. We shall see.
7001	2015/08/28	03:00:40	46.08899	-129.98702	24.31	2.2	1734.93	1737.1	Solid pillow flow.
7002	2015/08/28	03:01:26	46.08918	-129.98691	22.2	2.66	1734.87	1737.5	Pillows are flattening out.
7004	2015/08/28	03:02:09	46.08934	-129.98682	22.16	2.08	1734.51	1736.6	Lots of sediment.
7005	2015/08/28	03:02:26	46.08938	-129.98680	21.62	1.8	1734.7	1736.5	Coming up to a collapse area.
7006	2015/08/28	03:03:11	46.08949	-129.98676	22	4.5	1733.9	1738.4	Maybe it is a ridge. Seeing slabs of flow on the broken edge top.
7007	2015/08/28	03:03:41	46.08957	-129.98673	24.04	2.44	1735.11	1737.6	Left side of the ridge is cracked and breaking downhill.
7008	2015/08/28	03:03:58	46.08961	-129.98672	22.63	2.76	1734.19	1737.0	Top is heavily sedimented.
7010	2015/08/28	03:04:46	46.08974	-129.98665	22.33	4.19	1734.64	1738.8	Everything is heavily coated with mat.
7011	2015/08/28	03:05:11	46.08979	-129.98661	21.62	2.33	1734.11	1736.4	Flat flow with heavy sediment.
7012	2015/08/28	03:05:27	46.08979	-129.98662	22.5	2.55	1734	1736.6	Heavy mat sediment.
7013	2015/08/28	03:05:35	46.08979	-129.98662	21.94	2.33	1734.22	1736.6	Waiting for Medea.
7015	2015/08/28	03:06:24	46.08981	-129.98661	17.07	2.26	1734.23	1736.5	Small mound to port.
7016	2015/08/28	03:06:52	46.08987	-129.98659	17.81	1.63	1734.69	1736.3	Orange mat coating most everything.
7017	2015/08/28	03:07:18	46.08992	-129.98657	16.26	2.3	1734.77	1737.1	More lobates with a bit less mat .
7018	2015/08/28	03:08:00	46.09000	-129.98652	17.71	1.94	1734.84	1736.8	Flat slabs of lobates oozing over the low relief and staining in the cracks.
7020	2015/08/28	03:09:11	46.09008	-129.98647	17.62	1.25	1735.63	1736.9	Flow is getting into more pillow forms.
7021	2015/08/28	03:09:39	46.09011	-129.98645	18.03	0.75	1735.96	1736.7	Climbing a slight incline.
7023	2015/08/28	03:10:47	46.09016	-129.98644	17.33	0.91	1736.27	1737.2	Heavy bacterial mats in the cracks with large pillows on top.
7025	2015/08/28	03:12:10	46.09026	-129.98641	17.52	1.23	1736.25	1737.5	Pillows with bacterial staining at their bases.
7026	2015/08/28	03:12:39	46.09034	-129.98638	17.33	2.14	1735.93	1738.1	Less mat on top of these pillow and all appears

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									darker.
7027	2015/08/28	03:12:56	46.09041	-129.98634	18.04	2.76	1735.81	1738.6	Some very large pillows.
7028	2015/08/28	03:13:24	46.09053	-129.98629	17.81	2.14	1736.78	1738.9	Dark pillows.
7029	2015/08/28	03:13:58	46.09062	-129.98622	19.33	2.59	1737.53	1740.1	That could be an older piece but hard to tell.
7031	2015/08/28	03:14:25	46.09065	-129.98618	354.05	1.54	1738.43	1740.0	Looking for a sample near WP8.
7032	2015/08/28	03:14:41	46.09065	-129.98618	345.79	0.89	1739.06	1740.0	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
7033	2015/08/28	03:14:52	46.09065	-129.98618	346.4	0.84	1739.13	1740.0	Still looks like orange mat coating the pillow lavas.
7034	2015/08/28	03:15:24	46.09065	-129.98618	346.25	0.88	1739.17	1740.1	Looking for a rock sample.
7035	2015/08/28	03:15:46	46.09065	-129.98618	346.25	0.86	1739.17	1740.0	Trying to grab a smaller piece at the base of the large pillow.
7037	2015/08/28	03:16:37	46.09065	-129.98618	346.32	1.2	1738.83	1740.0	**SAMPLE: Geo** J826-geo-15 from under the large pillow with orange sediment coating.
7038	2015/08/28	03:16:55	46.09065	-129.98618	345.4	1.41	1738.65	1740.1	Good photos.
7039	2015/08/28	03:17:35	46.09065	-129.98618	346.03	1.39	1738.63	1740.0	J826-geo-15 placing it in the basket box in compartment 8. Some fragments of glass fell into the other compartments.
7041	2015/08/28	03:18:46	46.09065	-129.98618	345.72	1.46	1738.63	1740.1	J826-geo-15 cont. A lot went of glass went into box #7. 46.090661 -129.986150 is the cursor location for this sample.
7042	2015/08/28	03:19:06	46.09066	-129.98618	346.15	1.33	1738.68	1740.0	HIGHLIGHTS: HD highlights start Rock collection 0315-0318.
7043	2015/08/28	03:19:09	46.09066	-129.98618	346.11	1.4	1738.59	1740.0	HIGHLIGHTS: HD highlights stop
7044	2015/08/28	03:19:42	46.09070	-129.98619	347.48	1.99	1737.73	1739.7	Sample was just before WP8 in the new lava.
7046	2015/08/28	03:20:08	46.09083	-129.98622	349.29	2.53	1739.78	1742.3	No obvious change in the lavas yet.
7047	2015/08/28	03:20:19	46.09087	-129.98622	348.13	2.51	1740.06	1742.6	Looking for the contact.
7048	2015/08/28	03:20:38	46.09096	-129.98621	350.54	2.31	1741.22	1743.5	Water is murky here.
7049	2015/08/28	03:20:58	46.09102	-129.98621	348.93	1.89	1743.25	1745.1	Still looks new.
7050	2015/08/28	03:21:31	46.09104	-129.98621	349.12	2.33	1743.31	1745.6	This looks like it could be a mix of lava but hard to tell.
7051	2015/08/28	03:21:38	46.09104	-129.98621	348.86	2.29	1743.35	1745.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
7052	2015/08/28	03:21:59	46.09104	-129.98622	331.46	2.18	1743.28	1745.5	The larger pillows are lighter and there are darker-smaller pillows mixed around.
7053	2015/08/28	03:22:03	46.09104	-129.98622	321.83	2.19	1743.32	1745.5	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
7055	2015/08/28	03:22:08	46.09104	-129.98622	325.38	2.19	1743.28	1745.5	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
7056	2015/08/28	03:22:53	46.09105	-129.98623	324.92	2.26	1743.28	1745.5	Moving forwarded after waiting for Medea.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7057	2015/08/28	03:23:45	46.09106	-129.98624	325.41	4.03	1741.48	1745.5	Rising up for a broader look.
7059	2015/08/28	03:25:41	46.09107	-129.98624	324.65	2.99	1742.32	1745.3	Moving forward again.
7061	2015/08/28	03:26:28	46.09117	-129.98633	325.99	2.95	1741.39	1744.3	Larger pillows are lighter with dark surrounding.
7062	2015/08/28	03:26:51	46.09126	-129.98639	325.93	2.38	1742.49	1744.9	Maybe a mix of flow styles and ages. Contact.
7063	2015/08/28	03:27:15	46.09134	-129.98645	324.2	2.78	1743.02	1745.8	This is old now. The smaller rocks were the newer flow which was clear in the bottom camera.
7064	2015/08/28	03:27:54	46.09149	-129.98661	327.2	2.13	1743.47	1745.6	HIGHLIGHTS: HD highlights stop
7065	2015/08/28	03:28:04	46.09152	-129.98664	324.62	3.63	1742.71	1746.3	Older pillow flow.
7067	2015/08/28	03:28:35	46.09153	-129.98664	325.85	3.15	1742.87	1746.0	The transition at the contact was a mixed flow of older and larger pillows with darker-newer-smaller lobates at the bases.
7068	2015/08/28	03:29:37	46.09153	-129.98664	325.18	3.28	1742.79	1746.1	Grabbing a dive weight or two. Trying to put one back.
7069	2015/08/28	03:30:03	46.09152	-129.98663	325.11	3.28	1742.77	1746.1	Got just one now.
7071	2015/08/28	03:30:10	46.09152	-129.98663	324.93	3.34	1742.74	1746.1	Weight away.
7072	2015/08/28	03:30:46	46.09152	-129.98663	325.03	3.41	1742.7	1746.1	Heading to WP10 (skipping #9) and should cross a contact old-new.
7073	2015/08/28	03:31:48	46.09157	-129.98667	327.3	3.16	1743.57	1746.7	Moving along again over the older flow.
7075	2015/08/28	03:32:27	46.09171	-129.98678	324.42	2.51	1745.22	1747.7	Pillows and lobates with no bacterial mat.
7076	2015/08/28	03:32:53	46.09180	-129.98684	325.32	1.86	1745.29	1747.2	Tall creature.
7077	2015/08/28	03:32:58	46.09181	-129.98685	323.22	2.16	1745.11	1747.3	Fish.
7078	2015/08/28	03:33:34	46.09192	-129.98695	324.86	1.96	1744.64	1746.6	Seeing a few of the stalked filter feeders.
7080	2015/08/28	03:34:24	46.09207	-129.98707	324.35	2.56	1743.54	1746.1	Pillows flattening to a more sheet-like appearance of slabs.
7081	2015/08/28	03:35:17	46.09216	-129.98717	324.5	1.1	1744.96	1746.1	Many of the tall stalks-sea whips?
7082	2015/08/28	03:35:42	46.09219	-129.98720	324.22	1.65	1745.03	1746.7	Long tubes cascading on top of each other.
7084	2015/08/28	03:36:48	46.09234	-129.98734	324.39	1.56	1745.52	1747.1	Gray sediment dusting the pillows and tubes.
7085	2015/08/28	03:37:22	46.09241	-129.98744	324.3	2.15	1745.18	1747.3	Some very large pillows.
7086	2015/08/28	03:37:43	46.09247	-129.98747	324.49	2.63	1744.92	1747.6	Smaller lobates in between the big pillows.
7087	2015/08/28	03:37:53	46.09249	-129.98749	321.4	2.91	1744.65	1747.6	Filter feeding biota.
7089	2015/08/28	03:38:05	46.09252	-129.98753	324.69	2.23	1744.61	1746.8	Crab.
7090	2015/08/28	03:39:02	46.09262	-129.98764	323.23	1.11	1745.93	1747.0	Flattened looking pillows.
7092	2015/08/28	03:40:18	46.09275	-129.98783	323.92	1.06	1746.8	1747.9	Approaching a potential contact according to the underlay map.
7093	2015/08/28	03:40:32	46.09278	-129.98786	322.13	2.03	1747.15	1749.2	Still old-round pillows.
7094	2015/08/28	03:41:01	46.09285	-129.98796	322.37	2.39	1748.82	1751.2	Scott things this looks like bacterial mat. New flow was not obvious.
7095	2015/08/28	03:41:06	46.09286	-129.98797	323.73	2.03	1749.31	1751.3	HIGHLIGHTS: HD highlights start
7096	2015/08/28	03:41:14	46.09288	-129.98799	322.68	2.51	1749.6	1752.1	HIGHLIGHTS: HD highlights stop

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7097	2015/08/28	03:41:30	46.09289	-129.98800	324.56	3.31	1748.99	1752.3	Small fissure to stbd.
7098	2015/08/28	03:41:38	46.09290	-129.98799	326.23	3.24	1749.07	1752.3	View of fissure in brow cam.
7099	2015/08/28	03:42:04	46.09290	-129.98800	324.78	3.15	1749.22	1752.4	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
7101	2015/08/28	03:42:17	46.09291	-129.98798	323.48	3.3	1749.39	1752.7	The bottom camera really showed how the sediment became bacterial mat and underlying glassy lava.
7102	2015/08/28	03:43:38	46.09307	-129.98796	324.87	1.55	1751.28	1752.8	This looks older could have been a finger of new lava.
7103	2015/08/28	03:43:46	46.09309	-129.98799	324.3	2.08	1751.8	1753.9	Sea stars in the bottom camera so old again.
7104	2015/08/28	03:44:01	46.09312	-129.98802	324.74	2.31	1752.37	1754.7	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
7106	2015/08/28	03:44:07	46.09313	-129.98804	324.58	2.05	1752.39	1754.4	Looks like here is another contact with a change in color and structure.
7107	2015/08/28	03:44:17	46.09315	-129.98806	324.95	1.73	1752.58	1754.3	Definitely in the bottom camera it is a contact.
7108	2015/08/28	03:44:32	46.09318	-129.98809	325.31	1.6	1752.8	1754.4	Bases of pillows have staining.
7109	2015/08/28	03:44:40	46.09319	-129.98811	324.3	1.58	1752.71	1754.3	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
7110	2015/08/28	03:45:14	46.09324	-129.98818	324.11	1.06	1752.46	1753.5	Very dark flow with the larger pillows having staining at their bases.
7112	2015/08/28	03:46:11	46.09332	-129.98827	324.03	1.99	1751.65	1753.6	Older pillows on top with staining from newer lavas under? Turtle shell looking piece.
7113	2015/08/28	03:46:29	46.09335	-129.98829	324.72	1.76	1751.11	1752.9	Flow is turning completely dark now.
7114	2015/08/28	03:46:53	46.09339	-129.98833	325.01	1.91	1750.94	1752.9	Large tube to port.
7115	2015/08/28	03:47:26	46.09345	-129.98839	324.68	1.16	1750.59	1751.8	Darker lavas on top of gray lavas.
7116	2015/08/28	03:48:03	46.09349	-129.98844	325.59	1.21	1750.26	1751.5	Seeing some sea stars on these rocks.
7118	2015/08/28	03:48:27	46.09353	-129.98850	324.25	1.34	1749.2	1750.5	Massive and thicker with cracks of staining.
7119	2015/08/28	03:48:50	46.09358	-129.98856	324.91	1.55	1748.87	1750.4	Seeing some layers of flow on exposed edges.
7120	2015/08/28	03:49:20	46.09364	-129.98862	324.64	1.03	1749.16	1750.2	Long tubes of thick flow.
7121	2015/08/28	03:50:02	46.09371	-129.98871	324.83	1.85	1748.82	1750.7	Blown out hole from a pillow.
7123	2015/08/28	03:50:25	46.09375	-129.98875	324.99	1.05	1748.8	1749.9	Square and angular pieces from the blown out pillows.
7124	2015/08/28	03:51:10	46.09383	-129.98882	324.23	1.55	1749.13	1750.7	Heading to WP11 which is one of the larges differences in bathymetry.
7126	2015/08/28	03:52:09	46.09385	-129.98886	325.08	0.76	1750.33	1751.1	Not seeing any loose pieces here. Trying to sample a lava bud.
7127	2015/08/28	03:52:42	46.09385	-129.98886	324.68	0.79	1750.35	1751.1	**SAMPLE: Geo** J826-geo-16 got a bud off a pillow.
7128	2015/08/28	03:52:55	46.09386	-129.98886	324.27	1.98	1748.75	1750.7	From the new flow at WP10.
7129	2015/08/28	03:53:53	46.09401	-129.98896	324.63	1.74	1749.94	1751.7	Sample location is 46.093756 -129.988791. Got it on the run.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7131	2015/08/28	03:54:18	46.09409	-129.98901	323.4	2.84	1750.52	1753.4	Sample is still in the manipulator as Jason was pulled by Medea as we traverse the new flow.
7132	2015/08/28	03:54:44	46.09408	-129.98901	325.1	2.99	1750.55	1753.5	Placing J826-geo-16 in compartment 10 of the sample box. It is too big.
7134	2015/08/28	03:56:30	46.09408	-129.98902	324.6	2.91	1750.55	1753.5	Pieces of it have fallen into box #9 and #8. Does not fit in the rock box so it is not in #10.
7135	2015/08/28	03:57:06	46.09410	-129.98903	325.06	3.14	1750.74	1753.9	There will be some pieces of this in box #10 J826-geo-16.
7136	2015/08/28	03:57:25	46.09410	-129.98903	324.7	3.1	1750.72	1753.8	STBD biobox is out.
7137	2015/08/28	03:57:36	46.09410	-129.98903	324.64	3.13	1750.71	1753.8	Worried a lot of the glass was knocked off the sample.
7138	2015/08/28	03:57:51	46.09410	-129.98903	324.7	3.13	1750.73	1753.9	Looks like some glass still on the rock when spun around.
7140	2015/08/28	03:58:11	46.09410	-129.98903	324.62	3.08	1750.77	1753.9	Opening the stbd biobox where there should only be one marker left.
7141	2015/08/28	03:58:46	46.09410	-129.98903	325.06	3.14	1750.71	1753.9	Placed gently in the stbd biobox.
7142	2015/08/28	03:59:53	46.09410	-129.98903	325.25	3.14	1750.68	1753.8	J826-geo-16 is a round lava bud taken from the base of a larger pillow in the new flow near WP10.
7144	2015/08/28	04:00:13	46.09410	-129.98903	325.35	3.71	1750.07	1753.8	Heading to WP11 at 030deg.
7145	2015/08/28	04:01:30	46.09414	-129.98907	309.36	3.83	1749.58	1753.4	Moving forward.
7147	2015/08/28	04:02:07	46.09422	-129.98904	31.42	2.7	1749.94	1752.6	Should be climbing up a large new flow mound.
7148	2015/08/28	04:02:25	46.09426	-129.98901	30.83	2.5	1749.5	1752.0	Staining under big pillows.
7149	2015/08/28	04:02:55	46.09433	-129.98895	30.93	1.86	1749.45	1751.3	See some exposed glass under the mat coating.
7150	2015/08/28	04:03:32	46.09440	-129.98890	30.81	1.89	1748.92	1750.8	Lots of floc in the water.
7152	2015/08/28	04:04:07	46.09444	-129.98887	31.15	1.73	1748.99	1750.7	Striations in the pillows and long tubes.
7153	2015/08/28	04:04:47	46.09450	-129.98883	30.71	1.45	1748.44	1749.9	Fuzzy coated lobates.
7155	2015/08/28	04:06:54	46.09452	-129.98881	30.08	1.04	1748.72	1749.8	Waiting for ship and Medea.
7156	2015/08/28	04:07:34	46.09454	-129.98880	30.59	1.46	1748.46	1749.9	Slowly moving ahead.
7158	2015/08/28	04:08:43	46.09462	-129.98876	26.9	2.04	1747.58	1749.6	input BrowCam (port 2) routed to output FrmGrb1 (port 1)
7159	2015/08/28	04:08:55	46.09463	-129.98875	29.34	2.39	1747.31	1749.7	Some brighter areas of staining .
7160	2015/08/28	04:09:19	46.09467	-129.98875	30.24	3.03	1746.35	1749.4	Lots of bacterial mat covering the lavas completely.
7162	2015/08/28	04:09:39	46.09471	-129.98872	30.23	1.94	1746.58	1748.5	Heavy coated lavas but no shimmering water.
7163	2015/08/28	04:09:52	46.09475	-129.98871	30.77	1.66	1747.05	1748.7	HIGHLIGHTS: HD highlights stop
7165	2015/08/28	04:10:06	46.09478	-129.98870	30.9	1.68	1746.88	1748.6	Less coating now but that was an area of thick mat.
7166	2015/08/28	04:10:20	46.09480	-129.98868	32.5	1.98	1746.26	1748.2	Still approaching WP11.
7167	2015/08/28	04:10:41	46.09485	-129.98865	31.19	2.51	1745.48	1748.0	Bright staining again in the rocks ahead.
7168	2015/08/28	04:10:54	46.09487	-129.98864	30.76	2.78	1744.6	1747.4	Very white staining not yellow.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7169	2015/08/28	04:11:00	46.09487	-129.98862	29.84	2.68	1744.27	1747.0	HIGHLIGHTS: HD highlights start
7170	2015/08/28	04:11:13	46.09488	-129.98860	31.03	2.63	1744.1	1746.7	Not seeing any shimmer in the white.
7171	2015/08/28	04:11:39	46.09489	-129.98859	31.2	2.14	1744.97	1747.1	Now seeing some water in the cracks with a little shimmer.
7173	2015/08/28	04:12:07	46.09490	-129.98859	31.93	1.96	1745.12	1747.1	White pulsing-rounded mat.
7174	2015/08/28	04:12:50	46.09490	-129.98860	31.22	2.13	1745.02	1747.2	Some of the mat further from the crack are staring to get fuzzy looking instead of rounded bulbs.
7175	2015/08/28	04:13:18	46.09491	-129.98860	31.77	2.06	1745.02	1747.1	Very thick globules in the deep part of the crack.
7176	2015/08/28	04:13:32	46.09491	-129.98860	31.78	2.08	1745	1747.1	HIGHLIGHTS: HD highlights stop
7178	2015/08/28	04:14:38	46.09491	-129.98860	32.18	2.11	1744.99	1747.1	Floc explosion.
7179	2015/08/28	04:14:55	46.09491	-129.98861	31.15	2.95	1744	1747.0	Need to stop the ship and Medea.
7180	2015/08/28	04:15:01	46.09491	-129.98861	29.7	3.43	1743.53	1747.0	Lifted off the site.
7181	2015/08/28	04:15:40	46.09491	-129.98860	30.32	5.38	1741.07	1746.5	input SupScorpio (port 4) routed to output FrmGrb1 (port 1)
7182	2015/08/28	04:15:42	46.09491	-129.98861	29.58	5.9	1740.53	1746.4	The other rocks nearby have gray globules coating the rocks with bacterial mat.
7184	2015/08/28	04:16:09	46.09490	-129.98860	30.32	7.65	1738.68	1746.3	More staining up ahead as well but can't stop for sample until ship stops.
7185	2015/08/28	04:16:36	46.09494	-129.98856	27.51	6.13	1737.31	1743.4	White mat is starting to get more filaments as it gets longer.
7186	2015/08/28	04:16:54	46.09493	-129.98856	31	7.7	1735.64	1743.3	At a fissure .
7187	2015/08/28	04:17:10	46.09493	-129.98855	30.53	6.96	1735.35	1742.3	See the white mat area in the bottom camera.
7188	2015/08/28	04:17:35	46.09491	-129.98855	28.84	7.08	1735.26	1742.3	Ship is moving back toward site.
7189	2015/08/28	04:17:51	46.09490	-129.98853	30.88	6.23	1735.3	1741.5	Sonar clearly shows the fissure trending to the NW from the current heading.
7191	2015/08/28	04:18:38	46.09488	-129.98849	30.58	5.28	1735.3	1740.6	Bottom camera shows the base of the fissure. Lots of floc in the water.
7193	2015/08/28	04:20:11	46.09476	-129.98845	28.68	5.83	1735.24	1741.1	Ship has pulled back to the site and Medea is on the way.
7195	2015/08/28	04:23:39	46.09435	-129.98835	28.98	3.53	1737.67	1741.2	Moving back down to the bottom with a very large fissure now in front of use.
7196	2015/08/28	04:24:04	46.09429	-129.98835	25.78	3.13	1737.91	1741.0	Large globs of white bacterial mat are floating by.
7198	2015/08/28	04:26:04	46.09406	-129.98830	29.82	3.03	1738.81	1741.8	Bottom camera is looking down the fissure and there is white mat at the bottom of the fissure.
7200	2015/08/28	04:26:16	46.09404	-129.98830	27.78	3.31	1738.88	1742.2	Seeing staining on the fissure walls as well.
7201	2015/08/28	04:26:34	46.09401	-129.98829	26.68	4.85	1738.66	1743.5	nput BrowCam (port 2) routed to output FrmGrb1 (port 1)
7202	2015/08/28	04:27:06	46.09395	-129.98828	26.88	6.1	1738.7	1744.8	Moving backward to the site with good views of the

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									fissure.
7203	2015/08/28	04:27:44	46.09390	-129.98828	26.25	7.1	1738.63	1745.7	Larger patch of shite staining on the fissure edge.
7205	2015/08/28	04:28:07	46.09389	-129.98827	28.95	5.06	1740.83	1745.9	Seeing shimmer in the white cracks.
7206	2015/08/28	04:28:24	46.09387	-129.98827	28.93	5.45	1740.63	1746.1	Backing away from the fissure edge.
7207	2015/08/28	04:28:37	46.09386	-129.98827	25.57	5.74	1741.01	1746.8	Rocks are coated in gray mat.
7208	2015/08/28	04:29:39	46.09382	-129.98825	30.25	2.55	1744.59	1747.1	Here is a large crack of white mat.
7210	2015/08/28	04:30:07	46.09382	-129.98823	30.63	2.89	1744.13	1747.0	Looking for some good flow. This is not it.
7211	2015/08/28	04:30:19	46.09382	-129.98823	30.41	2.76	1744.23	1747.0	Gray and orange mat.
7212	2015/08/28	04:31:14	46.09384	-129.98823	47.69	2.38	1744.94	1747.3	Looks like the last good frame grab.
7213	2015/08/28	04:31:17	46.09385	-129.98823	51.38	2.64	1744.86	1747.5	HIGHLIGHTS: HD highlights start
7214	2015/08/28	04:31:45	46.09386	-129.98823	56.73	2.78	1744.27	1747.1	HIGHLIGHTS: HD highlights stop Approaching the sampling site. Just lost heading reference on the USBL. Latitude/Longitude may be inaccurate.
7216	2015/08/28	04:32:38	46.09386	-129.98822	55.72	1.58	1745.68	1747.3	There is the spot.
7217	2015/08/28	04:32:52	46.09387	-129.98822	55.83	2.26	1745.26	1747.5	Lots of white flock emitting from the crack with shimmering water.
7218	2015/08/28	04:32:56	46.09387	-129.98822	55.68	2.24	1745.26	1747.5	HIGHLIGHTS: HD highlights stop
7219	2015/08/28	04:33:10	46.09387	-129.98822	55.51	2.31	1745.24	1747.6	HIGHLIGHTS: HD highlights start Actually highlights on again.
7220	2015/08/28	04:33:22	46.09387	-129.98822	55.19	2.39	1745.16	1747.6	Setting up for sampling.
7221	2015/08/28	04:33:24	46.09387	-129.98822	55.3	2.35	1745.18	1747.5	HIGHLIGHTS: HD highlights stop
7222	2015/08/28	04:33:33	46.09387	-129.98822	55.59	2.35	1745.19	1747.5	First will get a temperature reading.
7223	2015/08/28	04:33:57	46.09388	-129.98821	55.37	2.36	1745.17	1747.5	Collapse of mat in front of the crack while waiting.
7225	2015/08/28	04:34:12	46.09388	-129.98821	55.89	2.38	1745.18	1747.6	Jason temperature probe is out.
7226	2015/08/28	04:34:27	46.09389	-129.98821	55.9	2.36	1745.21	1747.6	Lots of bacterial mat in the water after the collapse of mat.
7227	2015/08/28	04:34:48	46.09389	-129.98821	55.14	2.29	1745.2	1747.5	Probe is deep in the crack.
7228	2015/08/28	04:35:20	46.09390	-129.98821	54.86	2.31	1745.21	1747.5	Not very warm. Barely above ambient.
7229	2015/08/28	04:35:26	46.09390	-129.98821	54.92	2.34	1745.21	1747.6	Going up slowly.
7231	2015/08/28	04:36:20	46.09391	-129.98822	54.43	2.3	1745.23	1747.5	Probing around a bit. Tmax=5.90 with the Jason probe.
7232	2015/08/28	04:37:38	46.09391	-129.98822	53.84	2.36	1745.21	1747.6	Position here is 46.094674 -129.988567 from the cursor when first arriving at the site. We now have a navigation problem.
7233	2015/08/28	04:37:49	46.09391	-129.98822	53.98	2.38	1745.22	1747.6	Have the HFS wand in the crack now.
7235	2015/08/28	04:38:37	46.09391	-129.98823	54.32	2.35	1745.24	1747.6	HIGHLIGHTS: HD highlights start J826-HFS-17 not started yet.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7236	2015/08/28	04:39:10	46.09391	-129.98823	54.04	2.31	1745.25	1747.6	Not getting a good temperature reading there so moved slightly and it is going up.
7237	2015/08/28	04:39:30	46.09391	-129.98823	54.05	2.33	1745.24	1747.6	O2 is going down and temperature is going up.
7238	2015/08/28	04:39:36	46.09391	-129.98823	54.02	2.31	1745.26	1747.6	HIGHLIGHTS: HD highlights stop
7240	2015/08/28	04:40:09	46.09391	-129.98823	54.01	2.33	1745.26	1747.6	Temperature is leveling at 5.3deg.
7241	2015/08/28	04:40:16	46.09391	-129.98823	54	2.33	1745.24	1747.6	Taking O2 reading first.
7242	2015/08/28	04:40:28	46.09391	-129.98823	53.98	2.33	1745.26	1747.6	Getting exhaust out of Beast.
7244	2015/08/28	04:42:08	46.09390	-129.98823	53.99	2.31	1745.29	1747.6	This location is about halfway between WP10 and WP11.
7245	2015/08/28	04:43:23	46.09389	-129.98823	53.98	2.31	1745.29	1747.6	O2 is still dropping.
7247	2015/08/28	04:44:16	46.09389	-129.98823	54.15	2.34	1745.29	1747.6	O2=.98ml/l at this site.
7248	2015/08/28	04:45:25	46.09389	-129.98823	54.1	2.33	1745.27	1747.6	**SAMPLE: HFS** J826-HFS-17 Unfiltered piston #4 Start 0445.
7249	2015/08/28	04:45:38	46.09389	-129.98823	54.09	2.33	1745.3	1747.6	This is in the exact position of the O2 reading.
7252	2015/08/28	04:48:36	46.09388	-129.98821	53.78	2.31	1745.32	1747.6	J826-HFS-17 cont. Stop 0449. Tmax=5.6 Tavg=5.3 T2=2.2 vol=602.
7253	2015/08/28	04:48:54	46.09388	-129.98821	53.86	2.33	1745.31	1747.6	Next will do a major sample.
7254	2015/08/28	04:49:18	46.09388	-129.98820	54.04	2.34	1745.27	1747.6	Stowing the HFS wand.
7256	2015/08/28	04:50:34	46.09388	-129.98819	54	2.35	1745.29	1747.6	J826-Major-18 Red at the same location.
7257	2015/08/28	04:51:01	46.09387	-129.98819	54.37	2.36	1745.26	1747.6	**SAMPLE: Major** J826-Major-18 Red Fired now.
7258	2015/08/28	04:51:10	46.09387	-129.98819	54.39	2.41	1745.26	1747.7	See the piston coming up and the bottle is filling.
7259	2015/08/28	04:51:16	46.09387	-129.98819	54.35	2.35	1745.29	1747.6	HIGHLIGHTS: HD highlights stop
7260	2015/08/28	04:51:45	46.09387	-129.98819	54.31	2.4	1745.27	1747.7	J826-Major is still filling. (Missed the hot key).
7261	2015/08/28	04:51:56	46.09387	-129.98819	54.36	2.4	1745.26	1747.7	J826-Major has stopped filling.
7263	2015/08/28	04:53:08	46.09386	-129.98819	54.21	2.31	1745.39	1747.7	Want to collect a small rock at this same site.
7264	2015/08/28	04:53:58	46.09386	-129.98820	54.8	2.18	1745.29	1747.5	SAMPLE: Geo J826-geo-19 was taken just to the left of the sampling crack and is coated in mat. Very crumbly.
7266	2015/08/28	04:54:20	46.09386	-129.98821	54.53	2.23	1745.33	1747.6	Has glassy black coating and is just over 10cm across.
7267	2015/08/28	04:55:01	46.09385	-129.98824	52.3	3.3	1743.95	1747.3	This will be the last accurate position from the sample location as afterward the USBL went out.
7268	2015/08/28	04:55:13	46.09385	-129.98825	52.76	3.33	1743.89	1747.2	Opening the port biobox.
7269	2015/08/28	04:55:47	46.09385	-129.98826	52.76	3.33	1743.91	1747.2	J826-geo-19 is too big for the box so dropping this sample.
7270	2015/08/28	04:55:59	46.09385	-129.98827	52.56	3.39	1743.8	1747.2	HIGHLIGHTS: HD highlights stop NOTE that rock was dropped and not a sample.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7272	2015/08/28	04:57:07	46.09385	-129.98830	44.17	2.41	1745.19	1747.6	Looking for something smaller. Can see where that previous rock was taken as move back right over the major sample site.
7273	2015/08/28	04:57:35	46.09385	-129.98832	44.68	2.55	1745.12	1747.7	Going back to the same location as the previous piece but a smaller chunk that broke off. Doesn't have enough glass.
7274	2015/08/28	04:57:38	46.09385	-129.98832	44.63	2.58	1745.08	1747.7	Dropped that piece as well.
7275	2015/08/28	04:57:46	46.09385	-129.98833	44.7	2.54	1745.12	1747.7	HIGHLIGHTS: HD highlights start
7276	2015/08/28	04:57:58	46.09385	-129.98834	45.4	2.54	1745.15	1747.7	Going for a more freshly mat-coated piece.
7278	2015/08/28	04:58:11	46.09386	-129.98835	45.48	2.49	1745.16	1747.7	That piece has more glass.
7279	2015/08/28	04:58:46	46.09386	-129.98838	45.44	2.51	1745.12	1747.6	**SAMPLE: Geo** Has some glass but not a lot. Looks ok. J826-geo-19 really this time.
7280	2015/08/28	04:59:02	46.09386	-129.98840	45.46	2.5	1745.15	1747.7	Putting it in the port rock box in #2 slot.
7281	2015/08/28	04:59:34	46.09387	-129.98843	45.53	2.43	1745.2	1747.6	Piece was taken just to the left of the HFS and Major sampling crack. Rock was covered in mat.
7283	2015/08/28	05:01:50	46.09393	-129.98853	45.65	2.39	1745.2	1747.6	Octans nav system is not accepting the ship heading position. Octans is sending the string but software not accepting.
7285	2015/08/28	05:02:30	46.09396	-129.98854	45.66	2.39	1745.21	1747.6	Navigation won't be very accurate from here on out. Distance from Medea to Jason is still good.
7286	2015/08/28	05:03:58	46.09404	-129.98854	45.61	2.41	1745.2	1747.6	The position used for the sample was good and the last good position we can rely upon.
7288	2015/08/28	05:05:00	46.09411	-129.98851	25.62	3.1	1744.27	1747.4	Heading for WP12 at a heading of 030.
7290	2015/08/28	05:06:09	46.09421	-129.98839	29.69	2.85	1743.42	1746.3	Seeing the write stained area adjacent the fissure again.
7291	2015/08/28	05:06:19	46.09423	-129.98836	29.62	2.91	1743.38	1746.3	Doppler is the best guess for navigation right now.
7292	2015/08/28	05:06:29	46.09425	-129.98834	30.36	2.6	1743.48	1746.1	The ship position is also accurate.
7293	2015/08/28	05:07:03	46.09431	-129.98828	31.13	1.74	1743.99	1745.7	Broken lava tube that is hollow.
7294	2015/08/28	05:07:17	46.09434	-129.98825	30.42	2.33	1743.28	1745.6	About 36 minutes to WP12.
7295	2015/08/28	05:07:35	46.09438	-129.98821	29.83	2.8	1742.21	1745.0	Moving over the fissure.
7297	2015/08/28	05:09:29	46.09464	-129.98797	29.77	2.73	1738.41	1741.1	Slowly going over the fissure.
7299	2015/08/28	05:10:12	46.09479	-129.98787	30.71	3.53	1738.04	1741.6	Very large fissure.
7300	2015/08/28	05:10:54	46.09491	-129.98777	33.61	2.14	1739.78	1741.9	Very jagged edges along the fissure.
7302	2015/08/28	05:13:16	46.09530	-129.98744	31.58	1.24	1746.28	1747.5	Looking down the fissure in the bottom cam.
7303	2015/08/28	05:13:30	46.09534	-129.98740	30.69	1.71	1746.8	1748.5	More white staining on the other side of the fissure .
7304	2015/08/28	05:13:33	46.09534	-129.98739	29.74	1.85	1746.95	1748.8	HIGHLIGHTS: HD highlights start
7305	2015/08/28	05:14:02	46.09539	-129.98735	26.14	2.21	1746.66	1748.9	HIGHLIGHTS: HD highlights stop
7307	2015/08/28	05:14:30	46.09543	-129.98731	30.24	1.85	1746.83	1748.7	Seeing quite a bit of white staining and looking at

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
									shimmering water.
7308	2015/08/28	05:14:43	46.09544	-129.98731	30.4	1.55	1747.15	1748.7	Trying for major.
7309	2015/08/28	05:15:24	46.09548	-129.98731	30.69	0.85	1747.76	1748.6	Navigation is not good but the water is.
7311	2015/08/28	05:16:16	46.09563	-129.98717	29.85	1.68	1746.6	1748.3	Sample not taken yet. Traveling with the major in the manipulator and will try to sample on the fly.
7312	2015/08/28	05:17:21	46.09582	-129.98707	27.39	1.86	1746.87	1748.7	Travelling at .5m/min Will not be able to sample. NO SAMPLE.
7313	2015/08/28	05:17:46	46.09589	-129.98705	31.6	1.15	1747.68	1748.8	input PilotCam (port 3) routed to output FrmGrb1 (port 1)
7314	2015/08/28	05:17:51	46.09591	-129.98704	30.19	1.4	1747.63	1749.0	Flying over pillows with some thin-exploded ones.
7316	2015/08/28	05:18:24	46.09607	-129.98698	27.94	1.29	1748.69	1750.0	The white mat and shimmering water was near fissure near WP11.
7317	2015/08/28	05:19:08	46.09617	-129.98695	26.61	1.54	1750.14	1751.7	Jason position is ok using Doppler.
7318	2015/08/28	05:20:01	46.09629	-129.98690	30.69	2.5	1750.36	1752.9	New lavas of large pillows with some mat at pillow bases.
7320	2015/08/28	05:20:11	46.09632	-129.98689	30.52	1.65	1751.27	1752.9	Striated pillows.
7321	2015/08/28	05:21:02	46.09644	-129.98684	30.79	1.28	1752.36	1753.6	Staining at pillow bases.
7322	2015/08/28	05:21:26	46.09649	-129.98683	30.03	1.53	1752.03	1753.6	Tubular pillows.
7324	2015/08/28	05:22:16	46.09660	-129.98680	29.08	1	1753.41	1754.4	Broken pillow skins and staining at bases.
7325	2015/08/28	05:22:37	46.09663	-129.98679	29.49	1.34	1753.96	1755.3	Pillows look massive.
7326	2015/08/28	05:23:53	46.09676	-129.98668	30.63	0.78	1756.12	1756.9	Moving toward WP12 and may cross a contact new-old-new.
7328	2015/08/28	05:24:19	46.09682	-129.98664	32.1	1.69	1756.18	1757.9	Smaller pillows that appear darker.
7329	2015/08/28	05:25:03	46.09692	-129.98655	33.06	0.8	1757.42	1758.2	Pillows look glassier without their mat coating.
7331	2015/08/28	05:26:36	46.09711	-129.98641	30	1.69	1759.74	1761.4	Moving downhill over large pillow flow.
7332	2015/08/28	05:26:49	46.09716	-129.98639	30.76	1.85	1761.27	1763.1	Seeing some smaller lobates between the larger pillows.
7333	2015/08/28	05:27:53	46.09730	-129.98633	30.67	1.79	1762.63	1764.4	Very dark lava here.
7335	2015/08/28	05:28:32	46.09741	-129.98628	30.68	1.24	1764.2	1765.4	Smaller lavas appear much blacker against the larger pillows.
7336	2015/08/28	05:28:39	46.09743	-129.98627	29.89	1.21	1764.17	1765.4	Staining at the bases.
7337	2015/08/28	05:28:52	46.09746	-129.98625	31.05	1.7	1764.58	1766.3	Seeing buds of dark lava coming out of the bigger pillows.
7338	2015/08/28	05:30:02	46.09765	-129.98613	28.52	1.95	1766.5	1768.5	Bringing out the basket.
7340	2015/08/28	05:30:14	46.09769	-129.98611	30.42	2.55	1766.79	1769.3	Will not make it to WP12 and get a rock sample.
7341	2015/08/28	05:30:30	46.09771	-129.98611	30.19	2.86	1767.08	1769.9	Smaller lobates between the bigger pillows here.
7342	2015/08/28	05:30:41	46.09773	-129.98612	30.3	2.53	1767.31	1769.8	Returning the major into the basket. No major sample.
7343	2015/08/28	05:31:03	46.09774	-129.98615	30.94	1.25	1767.98	1769.2	Shrimp.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7344	2015/08/28	05:31:15	46.09775	-129.98616	29.32	1.45	1767.97	1769.4	Looking for rock sample.
7345	2015/08/28	05:31:49	46.09779	-129.98617	31.51	2.78	1766.15	1768.9	Cresting over a larger tube in the smaller lobates.
7347	2015/08/28	05:32:29	46.09789	-129.98614	32.48	2.21	1766.19	1768.4	Lots of staining at the base of these pillows.
7348	2015/08/28	05:33:14	46.09799	-129.98613	31.69	2.86	1766.3	1769.2	Could be new flow fingered into old flow. Hard to tell if it is the camera angle or old-new.
7350	2015/08/28	05:34:12	46.09809	-129.98619	30.54	2.99	1769.01	1772.0	Looks black and glassy here with staining at bases of pillows.
7351	2015/08/28	05:35:34	46.09828	-129.98618	33.43	2.73	1765.04	1767.8	Long tube.
7353	2015/08/28	05:36:08	46.09837	-129.98618	28.02	2.06	1766.53	1768.6	Still glassy lavas in bottom camera.
7354	2015/08/28	05:37:03	46.09843	-129.98625	34.45	1.78	1767.27	1769.1	Discussing the best method to get a good position for the sample.
7355	2015/08/28	05:37:56	46.09843	-129.98633	34.82	0.91	1768.48	1769.4	Stopped.
7357	2015/08/28	05:38:07	46.09842	-129.98636	34.56	1.85	1767.73	1769.6	Bottom touch and now moving forward.
7358	2015/08/28	05:39:47	46.09842	-129.98647	46.9	1.26	1768.93	1770.2	Looking for a good rock sample and discussing where to put it in the basket in case it is large.
7360	2015/08/28	05:40:44	46.09840	-129.98657	208.83	1.4	1770.24	1771.6	Ship is holding at the black 2015 flow line on the underlay about 150m south of WP12.
7361	2015/08/28	05:41:03	46.09839	-129.98660	227.08	1.65	1770.7	1772.4	Settling down in smaller black lobate flow.
7362	2015/08/28	05:41:25	46.09838	-129.98662	235.72	1.28	1771.36	1772.6	A blown-out pillow and parte with some glassy black lobes next to it.
7363	2015/08/28	05:41:42	46.09838	-129.98664	238.29	1.21	1771.39	1772.6	That was pillow and parts...
7364	2015/08/28	05:42:01	46.09837	-129.98666	239.7	1.35	1771.29	1772.6	Want a glassy piece.
7366	2015/08/28	05:42:08	46.09837	-129.98667	240.21	1.45	1771.26	1772.7	HIGHLIGHTS: HD highlights start
7367	2015/08/28	05:43:27	46.09835	-129.98675	233.17	1.21	1771.26	1772.5	**SAMPLE: Geo** J826-geo-20 piece of bud that some of the glass peeled off but much remains intact.
7368	2015/08/28	05:43:54	46.09834	-129.98676	232.3	1.53	1771.25	1772.8	J826-geo-20 is 10cm across but is much longer.
7370	2015/08/28	05:44:22	46.09834	-129.98678	232.21	1.5	1771.26	1772.8	Making room in the basket by dropping some more weights.
7371	2015/08/28	05:45:34	46.09833	-129.98682	232.52	1.33	1771.19	1772.5	Cursor position is 46.098564 -129.986663 based on the ship's position and Jason's position relative to the ship.
7372	2015/08/28	05:46:04	46.09833	-129.98683	232.16	1.29	1771.2	1772.5	Dropped some weight from behind the gastight basket.
7374	2015/08/28	05:46:23	46.09832	-129.98683	231.95	1.64	1771.16	1772.8	Removing an additional weight.
7375	2015/08/28	05:46:33	46.09832	-129.98684	231.96	1.34	1771.18	1772.5	Want to put the rock where the dive weights were.
7376	2015/08/28	05:47:53	46.09832	-129.98685	231.25	1.58	1771.23	1772.8	J826-geo-20 is in the weight area and broke into 2 pieces when dropped.
7378	2015/08/28	05:48:14	46.09833	-129.98685	238.25	3.94	1768.91	1772.9	Lifting off bottom and bringing in the basket.

VV	Date	Time	Latitude	Longitude	Heading	Altitude	Vehicle Depth	Total Depth	Dive Comments
7379	2015/08/28	05:48:25	46.09835	-129.98684	218.45	5.55	1767.58	1773.1	Two minutes left.
7380	2015/08/28	05:49:41	46.09846	-129.98674	238.18	6.81	1767.62	1774.4	Using the STBD arm to hold down the Avtrak.
7382	2015/08/28	05:50:12	46.09851	-129.98674	314.79	10.66	1763.76	1774.4	Jason has left the bottom.
7383	2015/08/28	05:50:18	46.09852	-129.98674	314.67	12	1762.65	1774.7	Power to O2 sensor.
7384	2015/08/28	05:50:38	46.09857	-129.98678	314.69	15.39	1759.58	1775.0	Jason off bottom
7390	2015/08/28	05:52:08	46.09784	-129.98720	313.71	3.63	1770.88	1774.5	Can still see the bottom.
7391	2015/08/28	05:52:16	46.09776	-129.98718	311.54	3.19	1770.92	1774.1	Premature lift off.
7392	2015/08/28	05:52:39	46.09766	-129.98709	318.89	6.78	1767.65	1774.4	Jason off bottom Really coming off bottom now.
7393	2015/08/28	06:45:13	46.09530	-129.98797	30.06	138.68	230.4	369.1	input BrowCam (port 2) routed to output KiPro (port 4)
7394	2015/08/28	06:51:40	46.09512	-129.98857	45.4	169.44	89.04	258.5	Power off to Beast and O2.
7395	2015/08/28	06:54:40	46.09643	-129.98738	56.87	151.21	50.91	202.1	Jellies.
7396	2015/08/28	06:57:51	46.09636	-129.98759	53.32	181.04	-0.73	180.3	Jason on surface.
7397	2015/08/28	06:59:24	46.09636	-129.98759	51.15	158.61	-0.81	157.8	Medea on deck.
7398	2015/08/28	07:04:25	46.09636	-129.98759	87.08	165.99	-1.29	164.7	Jason out of water
7399	2015/08/28	07:06:15	46.09636	-129.98759	134.21	1.73	-1.06	0.7	Jason on deck

This version of the 2015 cruise report can be found at:

http://www.pmel.noaa.gov/eoi/pdfs/Axial2015-Cruise-Report-with-logs.pdf

A version without the logs is available at:

http://www.pmel.noaa.gov/eoi/pdfs/Axial2015-Cruise-Report-no-logs.pdf