

Alvin Dive 4207  
Dive Report  
July 1<sup>st</sup>, 2006

Pilot: Bruce Strickrott  
Port Obs: Tim Shank  
Stbd Obs: Antoin Zafereo

**Time Description**

1350 In water  
1440 400m  
1406 Maggie on- 400m sub turning to port  
1410 580m DLK on and scanning. Electrode #2 (of 2) not good. Electrode 1 better- lots of turbulence  
1427 **x4939 y77681**(bad) 1100m Maggie spin to stbd  
1436 **x4928 y77678**(bad) 1365m scan #77 on E1- bottom temp. 3.1 Echem wand 9°C pH0.208  
1441 **x4713 y77962**(good) 1600m hdg270 to elevator  
1448 1680m- seeing large oxygen signal (786m altitude)  
1452 1800m Imagenix on.  
1454 **x4715 y77682** 1861m. Target is 4676 77586- marker 8  
1502 **x4736 y77589** 2130m  
1507 **x4693 y77536** 2300m  
1511 **x4672 y77534** dropped one weight at 76m alt. heading north- see balls of pump elevator  
1514 **x4671 y77524** dropped second weight and looking for the bottom- should just be a few tens of meters from the pump elevator.  
1515 17 meters off bottom; taking scan 194- noisy electrode- likely just turbulence of moving through the water  
1516 **x4655 y77511** pan & tilt on, lasers on- 11m off bottom- small brachyuran crabs, broken up sheet flow, in the AST- bottom temp is 1.9C.- depth is 2498m and we're heading north- large galatheid and lots of small brachyurans. Our target position x4676 y77586 Mkr8 with elevator.  
1521 fissure off to stbd **x4653 y77520** heading north- on the floor with sheet flow at base of collapses- loads of brachyurans- sheet flow just rolled in these collapses. Not much of a current but floc bits in the water column. Picking up diffuse flow out front. Lots of shimmering water right near where we landed- lots of small brachs, and a small octopus (dropping target). Bruce sees old sulfide- we're heading southeast and now turning to go north. Lots of staining, brachyurans, another small octopus. 2502m. A little bowl with diffuse flow- clear, shimmering fluids, couple of zoarcids, no apparent colonization. Large remnant and we're along strike with it at due north- small amphipod swarm on southern edge of that linear remnant- lots of small brachys- relatively few galatheids- pockets or patches of white covered diffuse flow areas- Bruce sees bright orange "jelly fish" on the left- I don't see it. Another amphipod swarm here. About two or three of these pockets per sub length. Big time chaotic hackely flow here- falls away out to port.

- Lava remnant over to the right- fissure off to the left- about half a sub length away.  
Cannot see the bottom of the fissure.
- 1525 **x4679 y77571** depth total 2504m- more diffuse flow throughout this area- coming into the area and now at the pump elevator- lots of shimmering water out to port. Not seeing any apparent colonists- at TamTown- as we are heading north- TamTown is just east of the fissure that is off to the right- now running echem scan 207- lots of noise just sitting in the holster.
- 1534 **x4669 y77594** hdg010 2504m at marker 8- recovering Arco Trap from the “center” of TamTown, tried to close the trap, and placed in biobox on elevator- the biobox closest to the pump.
- 1550 **x4669 y77594** hdg010 2504m – recovered the more western Arco Trap (trap closest to the pump hose- “AJ1”) and place in biobox more distal to the pump on the elevator
- 1601 scan 222-224 sulfide peak
- 1610 **x4664 y77592** 2504 hdg333, both Arco traps in bioboxes on the elevator- the trap in the center of the TamTown activity was placed directly next to the pump and the trap a little further away, went into the more distal biobox- diagonally from the pump.
- 1612 releasing elevator
- 1617 elevator’s away
- 1624 deploying/positioning control TAMS #3, #5, #22.
- 1639 **x4663 y77660** Hdg135 2504m Deployed Round stainless steel screen (Round) in TamTown near marker 11
- 1641 **x4663 y77660** Hdg135 2504m Deployed TAM 21 in TamTown near marker 11
- 1642 **x4663 y77660** Hdg135 2504m Deployed TAM 16 in TamTown near marker 11
- 1644 **x4663 y77660** Hdg135 2504m Deployed TAM 12 in TamTown near marker 11
- 1647 **x4663 y77660** Hdg135 2504m Deployed TAM 11 in TamTown near marker 11
- 1649 **x4663 y77660** Hdg135 2504m Deployed TAM 14 in TamTown near marker 11. So TAMS are grouped: 11, 12, 13, 14, 16, 21 and CV4; also 1, 7, 8, and 9 are together; in the control area is 3, 5, 22, and another one where the marker didn’t float up (perhaps #4)
- 1705-1737 E-chemistry at TAMS locations and in crack with TAM13. Conducted scans on the mesh, below the mesh, and on the edge or lip of the basalt above where Tevnia was colonizing. The chemistry was remarkably different in these habitats. Poly-sulfides were observed as well as transient oxygen in lower temperatures. Saw up to 19°C in high sulfide scans- see attached table of scans performed.
- 1740 Heading to elevator leaving Mkr 8 “TamTown” site
- 1758 **x4597 y77639** Insect under tow
- 1828 Insect deployment- problem with bungee; placed white vemco with electrode immediately adjacent to Tevnia imaged in the 3-chip video – largest Tevnia observed during the dive. Then placed the Blue vemco with electrode deep in a crack where we measured in-situ chemistry with the E-chem wand. Immediately adjacent to the blue electrode, we place the red and the yellow- the red was sandwiched between meshes of the TAMS and the yellow was placed adjacent to the mesh of one of the TAMS. The number on the TAMS involved needs to be recovered from video. I’ll construct a map when I get back.
- 1920 Insect deployed after some difficulty with both the length of the copper tubes- too long. Had to position the elevator further away.

- 1924 **x4651 y77591** hdg155 2504m Sample #3 one rock broke into two just above 19°C fluid orifice scanned using echem probe. Placed in clear biobox in two pieces. Sample was just above where we were scanning- had colonists on it. We then moved to the north to look at the black smokers and take water samples. We transited approx. 8 meters and there are multiple spires low to the seafloor just like Io Vent was- all appear to be beehives- perhaps 10 or more spires, none more than 1.5m in height. The chimneys have alvinellids on them, but not on where the true beehives are- to the southern end are 4 more spires with a circular base of sulfide adjacent to these is a carpet of alvinellids- there are several of these (have digital pics of this). Tape recorder not working.....
- 1935 **x4646 y77607** hdg090 2505m Tried to excavate an orifice but getting temperatures to be consistent is very difficult. The high-T probe is NOT working- not grounded...but not working. Some sulfide with worms on it fell next to the basket, so Bruce picket it up and place it in aft chambers. So, sample #4 grab of worms off sulfide that fell down when trying to sample active orifice on “Io Vent”. Place this grab in aft gray biobox. Still could not get a high consistent temperature- so went and looked for another black smoker in the area- transited south about 30 to 40 meters and only found diffuse flow in patches, another amphipod swarm on the top of a remnant. Also saw a well-defined fissure 20 meters south of the Mkr 8 area- connects with a fissure running perpendicular to the north-south trend of the primary fissure.
- 2017 **x4639 y77606** hdg155 2504m. Looking at the northern side of vent. Hi-T probe not working...it’s not grounded so don’t know what the problem is. Taking **white** major-no Temp reading during the draw- the right hand bottle came all the way back- bottles fired separately and the port springs did not come back all the way.
- 2022 **x4639 y77606** hdg155 2504m. Firing **black** major pair- getting 322°C to 291°C and about 268 during the draw. Both springs back.
- 2028 **x4639 y77606** hdg155 2504m. Sampling with **blue** pair and seeing max ICL temp of 375°C about 374°C during the draw. Both springs back.
- 2030 **x4639 y77606** hdg155 2504m. Gastight white in 375°C orifice- heard fire.
- 2034 **x4639 y77606** hdg155 2504m. Gastight black in 375°C orifice- did NOT hear fire.
- 2037 **x4639 y77606** hdg155 2504m. Gastight red in 375°C orifice- heard fire.
- 2044 **x4639 y77606** Hdg155 2504m. At “Io” vent about 8 meters north of TamTown; ICL temp. 375°C. Deployed Res Probe in the orifice that was water sampled (used filename 4207- confirmed instrument was logging using the ICL loop- saw 4 lines of data.
- 2048 **x4639 y77606** Hdg155 2504m. Deployed HOBO probe #23 in vent orifice, and recovered the empty crab trap that was ~6 meters south of the “Io” Vents. We then turned to transit south until time reached 2110. We transited about 300m and saw all new flows, sheet in the bottom of the AST, scalloped east wall with numerous archways and lava tubes- fresh lobates on top- stunning. This morphology very different from that just south of P Vent where there are small steps down the wall with black sheet flow pouring down the steps. Diffuse activity was not spotted south of about 30 meters past the hi-T vent sampled. At the end of the dive, was coming into another active area as the water appeared murky with increasing amounts of floc.
- 2114 **x4702 y77269** 2476m Weights away.

**Alvin Dive 4207**  
**Dive Report**

June 27<sup>th</sup>, 2006

Dive Number: 4207

Date: July 1, 2006

Pilot  
Bruce Strickrott

Port observer  
Tim Shank

Starboard Observer  
Antoin Zebakas

SITE	GMT	X,Y	DLK Elect rode #	Scan #	CV	Vide o inter nal*	Comments / Biosampling / BioDeployment
Water column	1409		1	1-4	1uA		Electrode looks great, noisy- temp is 5C higher on wand
Water column	1416		2	5-30	1uA		650m-810m- not good; electrode bad
Water column	1417		1	31-34	1uA		Decided to stay on electrode 1
Water column	1418		1	35-40	10uA		830m-930m
Water column	1421-1506		1	41-165	1uA		Some O2 in the 80s; peaks in the 160s
Water column	1507-1508	4700 77544	2	166-173	1uA		Trying electrode 2 again- better but not good
Water column	1508-1517		1	174-200	1uA		Trying electrode 2 again- better but not good
On bottom	1518	4664 77513	1	201-203	1uA		Landing site
On bottom	1520	4664 77513	2	204	1uA		Not good- electrode done for the day
On bottom	1521	4664 77513	1	205	1uA		noisy
At Mkr 8 station in holster	1530	4668 77593	1	215-220	1uA		noisy
At Mkr 8 station in holster	1602	4666 77596	1	222-231	1uA		High sulfidee w/mkr 11 out front and port of port of basket
Above TAM12	1645-1710	4666 77596	1	232-245	1uA		While deploying TAMS

At TAM14	1710-1715	4666 77596	1	246-273	1uA		Poly-sulfides at 11°C?
At TAM14	1715-1720	4666 77596	1	274-282	1uA		Poly-sulfides? Split peaks may just mean a lot of sulfide; intermittent O2
Above TAMS	1720	4666 77596	1	283-345	1uA		Lost Poly-sulfides at 19°C? High sulfide; pH 0.129
Above TAMS	1736	4666 77596	1	346-365	1uA		Transient peaks at 14.5°C
Edge of collapse lip above flow and TAMS	1737	4666 77596	1	366-369	1uA		Polysulfides!!!!???
At Insect Elevator in holster	1756	4666 77596	1	370-371	1uA		Background at Insect Landing site
TamTown	1806	4666 77596	1	372-385	1uA		Background at TamTown
At elevator	1851	4666 77596	1	386-	1uA		Sulfide peak; deploying Insect