Dive Plan 4896– April 29, 2017

Port: Stefan Sievert ***Starboard:*** Tjorven Hinzke ***Pilot:*** Jefferson Grau

On Bottom Target: LVP landing site: 9ºN 50.425 104W 17.575

Objectives: Deploy LVP at Crab Spa, take majors, deploy and pick up sandwiches, deploy CV

Basket List

1. Biobox w/ sandwich inserts
2. 3 Majors
3. 2 Small Bioboxes (one with 2 colonizers)
4. T probe

Locations:	**Lat**	**Long**	**m**	**x**	**y**
Pvent	9 50.276	104 17.474	2511	4628	77926
Bio9	9 50.296	104 17.476	2514	4624	77962
Crab Spa MkF	9 50.396	104 17.489	2505	4600	78147
Tica	9 50.406	104 17.490	2505	4598	78165
Teddy Bear	9 50.50	104 17.51	2514		

1. On bottom, transit to LVP location and pick up instrument
2. Move to Crab Spa and position instrument, previously we put in crevice just next to Crab Spa, there are many weight stacks from previous deployments
3. Take 1 major at Crab Spa
4. Remove hose from LVP
    a. Insert wand
    b. Stabilize wand
    c. Measure T at tip of wand with Alvin T probe, should be around 24ºC
5. Move to Alvinella mound, just below Crab Spa
6. Measure T and take major at hottest spot
7. Deploy CV colonizer in 40ºC fluid
8. Measure T on mesh to ensure flow through mesh
9. Deploy 4 sandwiches in Riftia colony nearby in ~10ºC diffuse flow w/ Riftia and mussels

10. Measure T around sandwiches
11. Go to Bio9 to pick up CV2
12. Place it in back biobox.
13. Deploy new CV colonizer at same spot
14. Go to Pvent sandwich site to deploy and collect sandwiches at Marker L and O site
15. Follow detailed protocol provided by Mullineaux lab
16. Proceed to Pvent
17. Find black smoker emitting highT fluids, previously measured 325ºC
18. Pick up mussels and put in front small biobox

Alvin Dive 4896 – AT37-12
APRIL 29, 2017

Pilot: Jefferson Grau
Port Observer: Stefan Sievert
Starboard Observer: Tjorven Hinzke

GMT	Comments
14:10	Descend
15:48	On bottom, neutrally buoyant above seafloor
15:55	off axis, take large volume pump (x4454, y78199, d2505)
16:26	place LVP on Crab Spa on top of old LVP weights (x4605, y78142, d2512)
16:34	fire yellow major at Crab Spa (x4604, y78148, d2506, temp. 24-25 °C; temp with Alvin probe: 23.8 °C)
17:40	place intake nozzle of LVP in Crab Spa opening (x4604, y78142, d2513, temp with Alvin probe: 24.8 °C, checked that no kinks are in hose)
18:10	deploy sandwiches #70, 71, 72, 75 in Riftia and mussel field (d4580, y78138, d2515, temp. 7 °C, ~20 °C in Riftia field, temp at sandwiches: 70: 5-7 °C, 71:7-10 °C, 72: 3.3-4.5 °C, 75: 8-10°C)
18:52	fire black major at Alvinella mound (x4586, y78138, d2512, temp probe of major seems to read 26 °C less (-26 °C offset), reads about 300 °C, Alvin temp probe reads 322 °C)
19:20	deploy colonizer CV6-2017 at Alvinella mound (x4581, y78133, d2517, temp above mesh 20 °C)
20:42	collect sandwiches at P-Vent (sandwich #180-#187, x4613, y77993, d2510, temp ~2 °C (ambient temp)
20:46	deploy 4 new sandwiches at same site (sandwiches #80, 81, 127, 128)
21:00	fire red major at P-Vent black smoker (x4611, y77997, d2511, temp 350)
21:10-21:18	collect old colonizer (CV 2-2017) and deploy new one (CV 5-2017) at Bio9 (x4629, y77994, d2507, temp 7-10 °C)
21:30	end of dive, leave bottom

AT 37-12 Sample Sheet

Alvin Dive# 4896 **Date** 04-29-17 **Logged by** Sievert
Port Obs. Sievert **Starboard Obs.** Hinzke **Pilot** Grau
Descend 14:03 **At seafloor** 15:45 **Ascend** 21:30

FLUID SAMPLES

Major# yellow Time 16:37 Temp ICL 24°C Vent Crab Spa
X 4603 Y 7814 Hdg 11 Depth 2506 Alt _____ Marker _____(type/#)
Comments T stayed stable

Major# black Time 18:50 Temp ICL ~~[illegible]~~ 300°C Vent Alvinella Mound near Crab Spa
X 4586 Y 7813 Hdg 152 Depth 2512 Alt _____ Marker _____(type/#)
Comments ~26°C initially T probe confirmation 322
– left chamber spring came up late

Major# red Time 20.59 Temp ICL 350°C Vent P vent
X 4611 Y 7749 Hdg 7 Depth 2511 Alt _____ Marker _____(type/#)
Comments

Major# _____ Time _____ Temp ICL _____ Vent _____
X _____ Y _____ Hdg _____ Depth _____ Alt _____ Marker _____(type/#)
Comments

Major# _____ Time _____ Temp ICL _____ Vent _____
X _____ Y _____ Hdg _____ Depth _____ Alt _____ Marker _____(type/#)
Comments

Major# _____ Time _____ Temp ICL _____ Vent _____
X _____ Y _____ Hdg _____ Depth _____ Alt _____ Marker _____(type/#)
Comments

BIOLOGICAL SAMPLES

Take photos before collection, in the claw (if possible), and after collection.
If needed, make sketches with scales.

Sample # _____ Time _____ Temp _____ Vent _____
X _____ Y _____ Hdg _____ Depth _____ Alt ____ Marker _____(type/#)
Sample type _____
Basket location _____

Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting________________________________

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ____
Basket location ____
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting________________________________

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ____
Basket location ____
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting________________________________

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ____
Basket location ____
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting________________________________

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ____
Basket location ____
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting________________________________

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ____
Basket location ____
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting________________________________

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)

Sample type ____
Basket location ____
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting______________________________

ROCK SAMPLES

Take photos before collection and in the claw. If needed, make sketches w/ scales.

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ______________________ Basket location ______________________________
Assoc. water sample # ________ Assoc. biol. sample # ________ (type) ________
Descriptive comments ____

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ______________________ Basket location ______________________________
Assoc. water sample # ________ Assoc. biol. sample # ________ (type) ________
Descriptive comments ____

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ______________________ Basket location ______________________________
Assoc. water sample # ________ Assoc. biol. sample # ________ (type) ________
Descriptive comments ____

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ______________________ Basket location ______________________________
Assoc. water sample # ________ Assoc. biol. sample # ________ (type) ________
Descriptive comments ____

Sample # __________ Time ________ Temp ________________________________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Sample type ______________________ Basket location ______________________________
Assoc. water sample # ________ Assoc. biol. sample # ________ (type) ________
Descriptive comments ____

Note: Found CVP at 15:48

x 4455 y 7819

d 2505 m

Stat moving: 16:01

EXPERIMENT DEPLOYMENTS/RECOVERIES

Take photos before and after deployment or recovery. Make sketches with scales.

Expt ID/# CV? #1 Time 17:41 Temp 24°C Vent Crab Spa
X 4603 Y 7814 Hdg 16 Depth 2506 Alt ____ Marker F (type/#)
Description of associated fauna &/or type of venting _____
Additional assoc. samples: type/ID _____
Additional descriptive comments _____

Expt ID/# CV6-2017 Time 19:22 Temp 3.5°C Vent Alvinella Mound near Crab Spa
X 4583 Y 7813 Hdg 55 Depth 2513 Alt ____ Marker _____ (type/#)
Description of associated fauna &/or type of venting _____
Additional assoc. samples: type/ID _____
Additional descriptive comments then T a mush ~20°C

Expt ID/# CV2-2017 Time 21:10 Temp _____ Vent Prent
X 4629 Y 7799 Hdg 355 Depth 2508 Alt ____ Marker _____ (type/#)
Description of associated fauna &/or type of venting _____
Recovery into small biobox
Additional assoc. samples: type/ID _____
Additional descriptive comments _____

Expt ID/# CV5-2017 Time 21:18 Temp 10°C On mush Vent Prent
X 4629 Y 7799 Hdg 355 Depth 2508 Alt ____ Marker _____ (type/#)
Description of associated fauna &/or type of venting _____
Additional assoc. samples: type/ID _____
Additional descriptive comments _____

Expt ID/# Sandwiches Time 18-15-18:21 Temp 4.5-10°C Vent Riftia/mussel colony near Crab Spa
X 4580 Y 7813 Hdg 29 Depth 2516 Alt ____ Marker _____ (type/#)
Description of associated fauna &/or type of venting _____
Deployed numbers 70-75
Additional assoc. samples: type/ID _____
Additional descriptive comments _____

EXPERIMENT DEPLOYMENTS/RECOVERIES

Take photos before and after deployment or recovery. Make sketches with scales.

Expt ID/# Sandwiches Time 20:43 Temp ambient ~2°C Vent C-O Mk near P vent
X 4614 Y 7799 Hdg 103 Depth 2510 Alt ____ Marker C-O (type/#)
Description of associated fauna &/or type of venting
recovered sandwiches # 180 – 187; deployed sandwiches # 80, 81, 127, 128
Additional assoc. samples: type/ID
Additional descriptive comments

Expt ID/# ________ Time ________ Temp ________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Description of associated fauna &/or type of venting
Additional assoc. samples: type/ID
Additional descriptive comments

Expt ID/# ________ Time ________ Temp ________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Description of associated fauna &/or type of venting
Additional assoc. samples: type/ID
Additional descriptive comments

Expt ID/# ________ Time ________ Temp ________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Description of associated fauna &/or type of venting
Additional assoc. samples: type/ID
Additional descriptive comments

Expt ID/# ________ Time ________ Temp ________ Vent ________
X ________ Y ________ Hdg ________ Depth ________ Alt ____ Marker ________(type/#)
Description of associated fauna &/or type of venting
Additional assoc. samples: type/ID
Additional descriptive comments

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AT 37-12 Sample Sheet

Alvin Dive# 4896 **Date** 29.04.17 **Logged by** Tjorven Hinzke
Port Obs. Stefan Sievert **Starboard Obs.** Tjorven Hinzke **Pilot** Jefferson Grau
Descend: 14:03 **At Seafloor:** 15:48 **Ascend:** 21:30

FLUID SAMPLES

Major# 1 (yellow) Time 16:34 Temp ICL 24-25 Vent Crab Spa
X 4604 Y 78148 Hdg ____ Depth 2506 Alt ____ Marker ____ (type/#)
Comments ____

temp with Alvin temp. probe: 322

Major# black Time 18:53 Temp ICL reads ~ 300 (but see comment) Vent Aviruella mount)
X 4586 Y 78138 Hdg ____ Depth 2512 Alt ____ Marker ____ (type/#)
Comments temp probe seems to have offset -> reads 26°C less (?)
Esprings of major move very slowly in beginning, then faster

Major# red Time 21:00 Temp ICL 350 Vent black smoker @ P-vent
X 4611 Y 77997 Hdg ____ Depth 2511 Alt ____ Marker ____ (type/#)
Comments works well

Major# ____ Time ____ Temp ICL ____ Vent ____
X ____ Y ____ Hdg ____ Depth ____ Alt ____ Marker ____ (type/#)
Comments ____

Major# ____ Time ____ Temp ICL ____ Vent ____
X ____ Y ____ Hdg ____ Depth ____ Alt ____ Marker ____ (type/#)
Comments ____

Major# ____ Time ____ Temp ICL ____ Vent ____
X ____ Y ____ Hdg ____ Depth ____ Alt ____ Marker ____ (type/#)
Comments ____

BIOLOGICAL SAMPLES

Take photos before collection, in the claw (if possible), and after collection.
If needed, make sketches with scales.

Sample # ____ Time ____ Temp ____ Vent ____
X ____ Y ____ Hdg ____ Depth ____ Alt ____ Marker ____ (type/#)
Sample type ____
Basket location ____

EXPERIMENT DEPLOYMENTS/RECOVERIES

Take photos before and after deployment or recovery. Make sketches with scales.

x 4605
y 78142
d 2512

Expt ID/# 1 Time 15:52 Temp ____ Vent ____
X 4454 Y 78193 Hdg ____ Depth 2505 Alt ____ Marker ____(type/#)
Description of associated fauna &/or type of venting off axis → grab LVP (grabbed 15:55) → head over to Crab Spa → 16:26 placed @ Crab Spa on top of old weights
Additional assoc. samples: type/ID ↳ 7.40? nozzle in vent opening
Additional descriptive comments (temp probe: 24.8 °C, red pinks in hose)

Expt ID/# 2 Time 16:43 (~~16:34~~) Temp 23.8 (~~24.25 °C~~) Vent Crab Spa
X 4604 Y 78148 Hdg ____ Depth 2506 Alt ____ Marker ____(type/#)
(x 4604, y 78142, d 2513)
Description of associated fauna &/or type of venting Major @ Crab Spa (yellow)
Additional assoc. samples: type/ID temp. comparison
Additional descriptive comments ____

Expt ID/# 3 Time 18:10 Temp 6-10' ~20 in Riftia Vent ____
X 4580 Y 78138 Hdg ____ Depth 2515 Alt ____ Marker ____(type/#)
Description of associated fauna &/or type of venting temp measurement for placing sandwiches
Additional assoc. samples: type/ID ____
Additional descriptive comments ____

Expt ID/# 4 Time 18:18 Temp ~~4~~ 7 Vent ____
X 4580 Y 78138 Hdg ____ Depth 2515 Alt ____ Marker ____(type/#)
Description of associated fauna &/or type of venting deploy sandwich #7*0 (Riftia + mussel field) 71, 72, 75
Additional assoc. samples: type/ID sandwich 7*0 ~~8~~, 71, 72, 75
Additional descriptive comments temp. measurements*: 72 - 3.3, 4 °C, 4.5 °C
71 - ~~6~~ 7 - 10 °C, 70 - 7 °C - 5 °C, 6 °C - 7 °C, 75 - 10, 8* - 9 °C

Expt ID/# ~~4~~ 5 Time 19:20 Temp ~35 Vent Alvinella mount
X 4581 Y 78133 Hdg ____ Depth 2513 (↳ surroundings) Alt 5* Marker ____(type/#)
Description of associated fauna &/or type of venting deploy colonizer CVG-2012
Additional assoc. samples: type/ID ~~[illegible]~~ 7A2
Additional descriptive comments ____

*above mesh: ~ 20 °C

temp @ black smoker (P Vent)
X 4611 Y 77997 d 2511 20:52
~ 330 °C

MARKERS DEPLOYED

Time ________ Marker type ________ Marker # ________
X ______ Y ______ Hdg ______ Depth ______ Alt ___ Marker ______(type/#)
Reason/ assoc. sample(s) ________________
Comments ________________

Time ________ Marker type ________ Marker # ________
X ______ Y ______ Hdg ______ Depth ______ Alt ___ Marker ______(type/#)
Reason/ assoc. sample(s) ________________
Comments ________________

Time ________ Marker type ________ Marker # ________
X ______ Y ______ Hdg ______ Depth ______ Alt ___ Marker ______(type/#)
Reason/ assoc. sample(s) ________________
Comments ________________

ADDITIONAL NOTES:

picking up sandwiches at P-Vent:
~~put heat sandwiches~~

187 – 1,85 °C
184 – 1.98 °C
186 – ambient
~~185~~
183 – ambient

other labels: not readable
↳ measure temp around; => all ambient

185 23 °C

X 4613
Y 77593

depth = 2510

20:42 done

↳ 180-187 in inserts in biobox

deploy new ~~colonizers~~ sandwiches (same coordinates, 20:46) – 80, 128, 127, 81