Dive Plan 4895– April 28, 2017

Port: Horst Felbeck       Starboard: Carolyn Tepolt       Pilot: Pat Hickey

On Bottom Target: Crab Spa 9 50.396  104 17.489  2505

Objectives: Deploy Vent-SID at Crab Spa, take majors, pick up Crab Trap, collect Riftia

Basket List
  1. Large biobox w/ Crab Trap
  2. 3 Majors
  3. 2 Small Bioboxes (one with 2 colonizers)
  4. T probe
  5. Niskin

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 Crab Spa
2. Swap Trap with new one in the biobox regardless if crabs are inside
3. Move to site just below Crab Spa, there is chimney forming
4. Measure T and take major at hottest spot
5. Take sample of Alvinella with sulfide and put in small empty biobox, measure T afterwards
6. Deploy colonizer at structure, ideally in 40ºC flow
7. Measure T after deployment on top of mesh to make sure flow is going through it
8. Move to site with microbial mats identified today, near Crab Spa
9. Put out colonizer in area with microbial mat
10. Measure T after deployment on top of mesh to make sure flow is going through it
11. Sample rocks with microbial mats and put in small biobox that previously had colonizers

12. Move to Bio9

13. Check on colonizer CV2. Take video.

14. Find black smoker emitting highT fluids, previously we measured 350-370ºC

15. Take major

16. Close to Pvent, there is a huge Riftia mount. Good spot for collecting Riftia

17. Before collecting Riftia, proceed with following:
   a. Measure T at base of Riftia clump,
   b. Make a T measurements at plume level

18. Proceed with collection and put worms in large biobox. Make sure worms fit into biobox and nothing sticks out. Don’t fold them!

19. Proceed to Pvent

20. Find black smoker emitting highT fluids, previously measured 325ºC

21. Take major

22. Go off axis and before ascending fire Niskin to get bottom seawater
**Pilot:** Pat Hickey  
**Port Observer:** Horst Felbeck  
**Starboard Observer:** Carolyn Tepolt  
Notes are a mix from both observers

<table>
<thead>
<tr>
<th>GMT</th>
<th>Comments</th>
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<tbody>
<tr>
<td>13:50</td>
<td>in the water</td>
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<tr>
<td>15:10</td>
<td>at the bottom</td>
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<tr>
<td>15:28</td>
<td>deploy first crab trap on a clump of Riftia (x4593, y: 78172, depth 2506, h 159)</td>
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<td>15:37</td>
<td>crushed mussel, put into biobox, facilitating entry of crabs into biobox using sub arm, current status “trap 1, Pat 5 crabs”)</td>
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<tr>
<td>15:46</td>
<td>retrieved crab trap from “dining table”, no crabs inside</td>
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<tr>
<td>15:50</td>
<td>arrived at crab spa</td>
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<td>15:53</td>
<td>green major sample in effluent of big diffuser, (only one spring #1 triggered), ICL 110, basket</td>
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<td></td>
<td>Temp: 190, x:4581 y 78170, h: 83, depth 2512, temp varies within 60 and 190 within very close distances)</td>
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<tr>
<td>16:09</td>
<td>broke off chunks of tube accumulations containing Alvinella, put in small biobox (temp. 18-20, x:4580 y:78170, h 81, d 2511)</td>
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<td>16:26</td>
<td>deploy colonizer on protrusion of large diffuser, difficult because the diffuser slopes are very steep (temp 12 on top of colonizer, fluctuated between 10-40 within short distances, x4582 y78168, h 35, d 2512)</td>
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<td>16:42</td>
<td>arrive at microbial mat area, large area of hairiness), few areas with some flow, anemone at 16:45</td>
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<tr>
<td>16:58</td>
<td>colonizer deployed (03-2017), x4600 y78180, h90,d2505, temp above colonizer 14C)</td>
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<td>17:10</td>
<td>furry rock collected, top of small hairy tower, into biobox (x4604 y 78185, h181,d2505)</td>
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<td>17:14</td>
<td>arrive at Bio9</td>
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<td>17:23</td>
<td>video of previously deployed colonizer (CV 2), white and hairy growth</td>
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<td>17:35</td>
<td>starboard temp probe malfunctioning while in black smoker, port probe shows 291 (far too low, i.e. also malfunctioning)</td>
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<tr>
<td>17:46</td>
<td>second black smoker (temp probes still malfunctioning), white major malfunctions, blue major</td>
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<td>(temp 358, x4606 y 78005, h12, d2511)</td>
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<td>18:04</td>
<td>at P-vent, temp. probe still malfunction, no sample since no major, Pat states P=vent good for sampling with caution), riftia too big for science use, great animal shape</td>
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<tr>
<td>18:35</td>
<td>collect Riftia at Tika, temp. 5.2 head, 28 bottom)</td>
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<td>18:10</td>
<td>Carolyn drives the sub off axis</td>
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<td>19:07</td>
<td>Niskin bottle fired (x4666 y78558, h264, d2507)</td>
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<td>19:20</td>
<td>arrive at M-vent, vent on top is dead, observe fish inside a hole at the bottom of the mound. Marker on adjacent venting area stating “M-vent” is at the wrong place according to Pat, it is on “flea vent”)</td>
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<td>19:37</td>
<td>release weights</td>
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AT 37-12 Sample Sheet

Alvin Dive#: 1895  Date: 28 Apr. 2017  Logged by: C. Tepolt
Port Obs.: Host: Helbeck  Starboard Obs.: C. Tepolt  Pilot: P. Hickey

FLUID SAMPLES

Major#  green  Time: 15:53  Temp ICL: 190°C  Vent: Tima Chimney below crab spa
X 4561  Y 78170  Hdg: 83  Depth: 2512  Alt: 0  Marker: (type/#)
Comments: keg varied blu/or 190 depending on probe position

Major#  white  Time: 17:49  Temp ICL: 350°C  Vent: Bioq
X 4606  Y 78005  Hdg: 12  Depth: 2151  Alt: 0  Marker: (type/#)
Comments: Black smoker  NEITHER chimney found here. Bed for blue

Major#  N/A  Time: 18:19  Temp ICL: 290°C  Vent: P-vent
X 4666  Y 77954  Hdg: 358  Depth: 2511  Alt: 0  Marker: (type/#)
Comments: P-vent black smoker * probe prob. reading v. low (as it did on Bioq) - Pit has burned 1360°C in pit.

BIological SAMPLES

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

Sample #: chimney  Time: 16:06  Temp: 18-20°C  Vent: Tima/lew chimney
X 4580  Y 78170  Hdg: 81  Depth: 2511  Alt: 0  Marker: (type/#)
Sample type: Sulfide chimney piece
Basket location: small biobox nearest Alvin
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) ________
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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.*

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<td>Hdg ______ Depth ______ Alt ___ Marker ______ (type/#)</td>
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Sample type

Basket location

Assoc. water sample # _______ Assoc. biol. sample # _______ (type) _______

Descriptive comments

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Sample type

Basket location

Assoc. water sample # _______ Assoc. biol. sample # _______ (type) _______

Descriptive comments
15:15:30  Nice shrimp
15:17:20  Mesodopsis, count
15:32  Crushed vessels to live crabs into biobox
16:51  Mesodopsis swims by cover of green amphipod swarm
17:13  Lead to Bio9
15:23  Video of CVZ colonizer
17:33  Stbd top probe malfunctioned – read 'no data' in monitor
      Switched to port top probe.
      Possible issue of port probe as well – no, it's OK.

1st smoker waxed out @ 290°C, looking for different one
15:47  Diff smoker, same high temp.
      Pat has surveyed his smoker several times; says it
      has always been >300°C. Will check if major ICL
      Major ICL reads 3/4 370°C. Top probe is 2.75.
18:04  At P-Vent, Pat checked smoker for stability; says
      it looks OK.

19:03  Niskins shot Nicole, 78558 d = 2507 h = 264

End of dive – went to M-vent area, found Flea Vent or
Robin's Roost (labeled M-vent by prev. cruise – Pat says
they labeled the wrong vent since we were in the ASC +
M-vent is at the top)
EXPERIMENT DEPLOYMENTS/RECOVERIES

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

Expt ID/#: #3
deply
Time: 15:19:45

Temp: Temp
Vent: Tica/Deco spu

X: 45933
Y: 71423
Hdg: 290
Depth: 2500
Alt: 0
Marker: (type/#)

Description of associated fauna &/or type of venting:

Trap on top of Riftia
bed - 1 end free, 1 end on Riftia

Additional assoc. samples: type/ID:
Riftia, M. nodosus, Byth. nea. Cer

Additional descriptive comments:

Trap on top of Riftia - new location

Expt ID/#: #4
behavi
Time: 15:46
Temp: Temp
Vent: Tica/crab spn/dining table

X: ???
Y: ???
Hdg: ???
Depth: ???
Alt: ???
Marker: (type/#)

Description of associated fauna &/or type of venting:

"Dining table"

Additional assoc. samples: type/ID:

Additional descriptive comments:

Expt ID/#: #5
coloriz
Time: 16:30
Temp: 12
Vent: Tica/new chimney

X: 4582
Y: 78160
Hdg: 38
Depth: 2512
Alt: 0
Marker: (type/#)

Description of associated fauna &/or type of venting:

Sulfide, sulfur chimney

Additional assoc. samples: type/ID:

Additional descriptive comments:

Expt ID/#: #6
coloriz
Time: 16:30
Temp: 12-18
Vent: Tica/microbial mat

X: 4600
Y: 78180
Hdg: 90
Depth: 2505
Alt: 0
Marker: 03-2017 (type/#)

Description of associated fauna &/or type of venting:

Microbial mat aun. Seca
Crustacea. mussel. barnes. Feeding, noncos - but sparse

Additional assoc. samples: type/ID:

Additional descriptive comments:

Expt ID/#: #7
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:
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:
AT 37-12 Sample Sheet

Alvin Dive# 4895 Date 4/28/14 Logged by HORST FELDECK
Port Obs. H Starboard Obs. CYN Pilot

FLUID SAMPLES

Major# Open Time 16:00 Temp ICL 29.0 Vent large differential tide
X Y Hdg Depth Alt Marker (type/#)
Comments might come up (open #1) open #2 does met fins

Major# Time 17:00 Temp ICL 29.6 Vent B 3 0
X Y Hdg Depth Alt I Marker (type/#)
Comments

Major# Time 17:45 Temp ICL 35.8(w) 37.0(blue) Vent 3 0
X Y Hdg Depth Alt I Marker (type/#)
Comments did not fire (double white)

Major# Time 18:06 Temp ICL 29.0 2 Vent P 0
X Y Hdg Depth Alt I 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 # 1 Time 16:10 Temp see above Vent Teko
X Y Hdg Depth Alt Marker (type/#)
Sample type Flannelfish
Basket location distant flash light
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 ______________________________

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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 ______________________________________________________

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# EXPERIMENT DEPLOYMENTS/RECOVERIES

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

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<td>15:30</td>
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<td>TIRF</td>
<td>Deployed</td>
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X ______ Y ______ Hdg ______ Depth ______ Alt _____ Marker ______ (type/#)  
Reason/ assoc. sample(s) ____________________________________________________  
Comments __________________________________________________________________  

**ADDITIONAL NOTES:**

15:25 deploy web
15:48 retrieved at 150 ft
Temp probe read 2°C below window
17:14 to Bio 9
17:26 video of colonies
17:29 Bio 9 black marker
went to 14 - went to fish in 170' and vent w. marker near pleased with result
1/2 myis
4-6 calves
& 8 partia
Addelle crabs
deployed 2 colonizers
video of west colonizers
MISKIN
1 funny rock from main area