Dive Plan 4904– May 7, 2017

Port: Jeremy Rich ***Starboard:*** Ashley Grosche ***Pilot:*** Pat Hickey

On Bottom Target: Teddy Bear

Objectives:

- Release LVP at Teddy Bear
- Find site where CV1 was deployed and pick up colonizer
- Move to Crab Spa to check on Vent-SID
- Pick up CV8 at 'Wedding Cake'
- Collect piece of 'Wedding Cake' with Alvinella
- Pick up CV5 at Bio9
- Pick up Crab Trap at Riftia mound near Bio9

Basket List

1. Large biobox
2. 2 small bioboxes
3. 2 medium biobox
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		
CV1	x4535, y78387, hdg195, d2519				

1. On bottom, transit to Teddy Bear
2. Take out wand of LVP
3. Measure T in crack
4. Secure wand in holster
5. Release LVP
6. Find site of CV1 deployment near Teddy Bear (x4535, y78387, hdg195, d2519)
7. For picking up colonizer, move extremely slowly and gently put in small biobox

8. Measure T at point where colonizer was
9. Move to Crab Spa to check on Vent-SID
10. When still no sign of activity, release Vent-SID
11. Proceed to Alvinella mound (Wedding Cake) near Crab Spa and recover CV8
12. For picking up colonizer, move extremely slowly and gently put in medium biobox
13. Measure T at point where colonizer was
14. Collect piece of Wedding Cake and put in one of bioboxes not used for colonizers
15. Measure T of fluids emanating from broken off piece
16. Sample Riftia around Tica (not quite dead yet Riftia)
17. Before collecting Riftia, proceed with following:
    a. Measure T at base of Riftia colony
    b. Make a T measurements at the level of various plumes
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. Move to Bio9 and recover CV5
20. For picking up colonizer, move extremely slowly and gently put in remaining small or medium biobox
21. Measure T at spot where colonizer was
22. Recover Crab Trap at Riftia mound close to Bio9

Alvin Dive 4904-AT37-12
MAY 7, 2017

Pilot: Pat Hickey
Port Observer: Jeremy Rich
Starboard Observer: Ashley Grosche
Notes are a combination of Jeremy Rich's and Ashley Grosche's notes.

GMT	Comments
14:00	Descending to the seafloor
15:25	At seafloor, transiting to Teddy Bear
15:40	Arrival at Teddy Bear near Large Volume Pump (LVP) (x4546, y78368, Hdg332, d2516, temp at LVP inlet is 12°C)
15:47	Taking LVP off axis
15:50	Releasing LVP to surface
16:08	North of Teddy Bear, collecting colonizer CV1-2017 (x4525, y78405, Hdg4, d2516, temp 12°C)
16:35	At *Alvinella* Mound (Wedding Cake) collecting colonizer CV7-2017. Metal screen gone, sulfide growing into colonizer (x4577, y78160, Hdg76, d2511, temp 46°C)
16:40	At *Alvinella* Mound (Wedding Cake) collecting *Alvinella* worms (x4577, y78160, Hdg76, d2511, temp 40-46°C)
16:45	At Tica collecting 8-10 *Riftia* from a dying *Riftia* patch (x4575, y78166, Hdg 138, d2515, temp at base of worm 2°C, temp at plume 3°C)
17:06	At Crab Spa to inspect Vent-SID. It doesn't appear to be working (x4584, y78156, Hdg85, d2505)
17:18	Leaving Crab Spa with Vent-SID to go off axis
17:28	Releasing Vent-SID (x4661, y78139, Hdg41, d2503), heading to Bio9
17:39	At Bio9 collecting colonizer CV5-2017 from white pillar next to black smoker chimney (x4611, y77985, Hdg53, d2510, temp 10.4°C)
17:46	Collecting crab trap (x4622, y77965, Hdg111.5, d2510)
17:49	Near Bio9, collecting 6-8 mussels into biobox (x4622, y77967, Hdg112, d2511)
17:55	At Bio9 attempting to collect large crab with Alvin arm unsuccessfully. Transit to Biovent
18:53	Vent-SID surfaces
19:36	Start ascent to the surface

AT 37-12 Sample Sheet

Alvin Dive# 4904 **Date** 5/7/17 **Logged by** Ashley Grosche

Port Obs. Jeremy **Starboard Obs.** Ashley **Pilot** Pat Hickey

Descend: 14:00 **At Seafloor:** 15:33 **Ascend:** 19:36:25

FLUID SAMPLES — NO Fluid samples taken

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 _____

X

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 _____

LARGE VOLUME Pump Release

Major# (LVP) Time ~~15~~ 43:55 Temp ~~Ext~~ 12°C Vent Teddy Bear

X 4547 Y 78368 Hdg 334 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 16:29:40 Temp 40-46°C Vent Bio 9

X 4577 Y 78160 Hdg 76 Depth 2511 Alt ___ Marker _____(type/#)

Sample type Alvinella worm tubes

Basket location starboard medium

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

Sample # (2) Time 16:46:08 Temp 2°C - 3°C Vent TICA
X 4575 Y 78166 Hdg 139 Depth 2515 Alt ___ Marker _____(type/#)
Sample type Sickly RiftiA (8-10)
Basket location large biobox
Assoc. water sample # _____ Assoc. rock sample # _____ (type) _____
Description of associated fauna &/or type of venting RiftiA, crabs, limpets, mussels

Sample # (3) Time 17:47:39 Temp _____ Vent Bio9 Rift mound
X 4622 Y 77965 Hdg 112 Depth 2510 Alt ___ Marker _____(type/#)
Sample type CRAB Trap
Basket location Big bio box
Assoc. water sample # _____ Assoc. rock sample # _____ (type) _____
Description of associated fauna &/or type of venting Crabs + mussels

Sample # (4) Time 17:50-67 Temp _____ Vent Near Bio 9
X 4622 Y 77967 Hdg 113 Depth 2511 Alt ___ Marker _____(type/#)
Sample type mussels
Basket location Big biobox
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 _____

X

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 —NO Rock Samples Taken

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

X

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 ______

EXPERIMENT DEPLOYMENTS/RECOVERIES

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

Expt ID/# CV1-2017 Time 16:13:26 Temp 12°C Vent North of Teddy Bear
X 4525 Y 78405 Hdg N Depth 2519 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting limpets, fish, shimmering fluids (in canyon) white crabs, ;)
Additional assoc. samples: type/ID ___
Additional descriptive comments ___

Expt ID/# CV7-2017 Time 16:29:40 Temp 40-46° Vent ~~[illegible]~~ TICA
X 4577 Y 78160 Hdg 76 Depth 2511 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting Filaments (long + white) on columnar + marker, white fluid, rapid venting, newly-formed
Additional assoc. samples: type/ID brown sulfide on top of chimney
Additional descriptive comments on top of alvinella mound, mussels @ the base

That location

Expt ID/# Vent-SID Time 17:10:21 Temp 2°C Vent Crab Spa
X 4584 Y 78156 Hdg 85 Depth 2505 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting ___
Additional assoc. samples: type/ID ___
Additional descriptive comments ___

Expt ID/# Vent-SID Time 17:28:20 Temp 2°C Vent off axis
X 4661 Y 78139 Hdg 41 Depth 2503 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting Release of Vent SID (Heading now to Bio9)
Additional assoc. samples: type/ID (surface 18:53)
Additional descriptive comments ___

Expt ID/# CV5-2017 Time 17:41:53 Temp 10.4°C Vent Bio9
X 4611 Y 77986 Hdg 61 Depth 2509 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting white pillar very close to black smoker chimney. Colonies of different phyla than what Pat remembers
Additional assoc. samples: type/ID ___
Additional descriptive comments ___

MARKERS DEPLOYED

None 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# 4904 **Date** 5/7/17 **Logged by** Jeremy Rich
Port Obs. Jeremy Rich **Starboard Obs.** Ashley Grosche **Pilot** Pat Hickey
GMT **Descend:** 1400 **At Seafloor:** 1525 **Ascend:** 1937

FLUID SAMPLES

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 ____

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 1640 Temp 46°C Vent Wedding Cake
X 4577 Y 78160 Hdg 76 Depth 2511 Alt ____ Marker ____(type/#)
Sample type Wall of Alvinella mound
Basket location Medium starboard

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

Sample # Riftia Time 1645 Temp Plume 2°C base 3°C Vent Tica area
X 4575 Y 78166 Hdg 138 Depth 2515 Alt ____ Marker ________(type/#)
Sample type 8-10 Riftia were sampled from
Basket location ~~the~~ dying riftia patch
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting ________

Sample # Mussels Time 1749 Temp ________ Vent near Bio 9
X 4622 Y 7796 Hdg 112 Depth 2511 Alt ____ Marker ________(type/#)
Sample type 6-8 mussells
Basket location large biobox
Assoc. water sample # ________ Assoc. rock sample # ________ (type) ________
Description of associated fauna &/or type of venting ________

1755 - Attempted to collect large crab with Alvin arm and were not able to catch one. ↓ at Bio 9

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 ____________________

EXPERIMENT DEPLOYMENTS/RECOVERIES

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

Expt ID/# Large volume pump Time 1541 Temp 12°C Vent Teddy Bear
X 4546 Y ~~78368~~ 78368 Hdg 332 Depth 2516 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting Took T at same location as LVP inlet
Additional assoc. samples: type/ID ___
Additional descriptive comments 1540 at ~~Eb~~ Teddy Bear, 1547 taking LVP off axis 1550 Released LVP to surface

Expt ID/# CV1 Time 1608 Temp 12°C Vent north of Teddy Bear
X 4525 Y ~~78405~~ 78405 Hdg 4 Depth 2519 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting Collected colonizer and took temp
Additional assoc. samples: type/ID ___
Additional descriptive comments ___

Expt ID/# CV8 Time ~~1624~~ 1635 Temp 46°C Vent Wedding Cake
X 4577 Y 78160 Hdg 76 Depth 2511 Alt ___ Marker ___(type/#)
~~Description of associated fauna &/or type of venting~~ Colonizer on top of wedding Cake heavily colonized.
~~Additional assoc. samples: type/ID~~ 1629 collecting colonizer. Pat is attempting to put marker in box as it is heavily colonized as well. Metal screen gone, sulfide rock growing into colonizer
~~Additional descriptive comments~~

Expt ID/# Vent SID Time ___ Temp ___ Vent Crab Spa
X ___ Y ___ Hdg ___ Depth ___ Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting 1706 at Crab Spa to inspect Vent-SID, It's not working. 1718 leaving crab spa with Vent-SID to go off axis
Additional assoc. samples: type/ID Inlet was secured in ICL holster.
Additional descriptive comments 1728 Vent SID released

Expt ID/# CV5 Time 1739 Temp 10.4°C Vent Bio9
X 4611 Y 77985 Hdg 53 Depth 2510 Alt ___ Marker ___(type/#)
Description of associated fauna &/or type of venting Put in small port side box
Additional assoc. samples: type/ID ___
Additional descriptive comments ___

Crab trap time 1746 temp near Bio9 — crab trap collected
x 4622 y 77965 Hdg 111.5 d 2510

MARKERS DEPLOYED

Time 1745 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: