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	Х	У
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, y7838	87, hdg195, d25	519		

- 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 <i>Riftia</i> from a dying <i>Riftia</i> 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# 490-	Date $57712$ Sample Log	ged by	Ishley Gr	oshe
Port Obs. Teremy	Starboard Obs.	ley	Pilot Pat	Hickory
Descend: 14,00	At Seafloor: 15:33	As	cend: 19:36	25
	Huid Samples			
Major# Time	Temp ICL	Vent		
XY	Hdg Depth	Alt	Marker	(type/#)
Comments				
<b>Major#</b> Time	Temp ICL	Vent		
XYI	Hdg Depth	Alt	Marker	(type/#)
Comments				
<b>Major#</b> Time	Temp ICL	Vent	· }~ .	
X Y I	Hdg Depth	Alt	Marker	(type/#)
Comments				
	Temp ICL			
	Hdg Depth	Alt	Marker	(type/#)
Comments				
<b>Major#</b> Time	Temp ICL	Vent		
X Y I	Hdg Depth	Ait	Marker	(type/#)
Comments LARGE VULMER	imp Release			
Major#(LVP)Time	5:43:55 Temp TEE 12"	Vent_	Teddy Den	
x 4547 783681	Hdg <u>334</u> Depth	Alt	Marker	(type/#)
Comments	x			

#### **BIOLOGICAL SAMPLES**

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

\_\_\_\_\_ Vent <u>\_\_\_\_\_</u> Bi 0 9 Time 16 2914 (Pemp Sample # 40 Y <u>18/60</u> Hdg <u>76</u> Depth <u>2511</u> Alt Marker (type/#) ΧL Sample type Alvine IIA isemst casing Basket location Star brarc modin

# Page 2 of 6

					rock sample # _				
	I	Description of	associated faun	a &/or type	of venting				
	Sample	# <u>2</u> x <u>455</u> x	r <u>78166</u> Hdg Sample type _	139 SICK	Depth 2515 M RIFFIA	Alt_	Marker	Vent <u>Tick</u> (type/#)	f
					je bioky		(1 )		
		Assoc. water s	sample # associated faun	Assoc a &/or type	of venting_ <u>Rif</u>	ha, cr	_ (type) Wasy [ii	mpets mu	ssels
/	Sample	# <u>(3)</u> x <u>4622</u>	Y 77965Hd	g Ild	Depth <u>25)C</u> Trap	) Alt	Marker	_Vent(type/#)	Rifmond
					p bic boy				
		Assoc water							
		Description of	associated faur	a &/or type	of venting <u></u>	ibs +	mussels		ŝ.
		# (G)	Time 17:50	-Gemp				Vent New	Bio 9
		x 4622			_ Depth 25 ]	Alt_	Marker	(type/#)	
			Sample type	0.					
		Access water			biobox c. rock sample #				
									_
		Description o			o or ronnig				
	Sample	e #	Time	Temp _				Vent	_
	· ·	х	Y Ho	lg	_ Depth	Alt	Marker	(type/#)	
			Sample type						
			Basket locati						
					c. rock sample #				
		Description o	f associated fau	na &/or typ	e of venting				-
	Sample	e #	Time	Temp				Vent	_
	oumpr	X	Y Ho	g	Depth	Alt	Marker _	(type/#)	*
									-
					c. rock sample #				
		Description of	of associated fau	na &/or typ	e of venting				_
	Sampl	o #	Time	Temp				Vent	
	Jampi	X	Y H	dg	Depth	Alt	Marker	(type/#	)

35

		Assoc water				rock sample #				
						of venting				
						_				
	ROCK	SAMPLES,-	-NO R	lech	- Sar	voles Taker	$\sim$			
1						law. If needed,		sketches v	v/ scal	es.
	Sample	#	Time		Temp				_Vent	
						Depth				
		Sample type				Basket location _				
		Assoc. water	sample # _		_ Assoc.	biol. sample #		(type)		
1		Descriptive c	omments							
	Sample	#	Time		Temp				_ Vent	
		Х	Υ	Hdg		Depth	Alt	Marker		_(type/#)
		Sample type				Basket location _				
		Assoc. water	sample # _		_ Assoc.	biol. sample #		(type)		
		Descriptive c	omments							
	Sample									
						Depth				
						Basket location _				
						biol. sample #				
		Descriptive c	omments							
	Sample	#	Time		Temn				Vent	
	oumpic					Depth				
						Basket location _				
						_ biol. sample #				
	Sample	#	Time		Temp				Vent	
		Х	Υ	_ Hdg		Depth	Alt	Marker		_(type/#)
		Sample type	and the state of t			Basket location _				
		Assoc. water	sample # _		Assoc.	biol. sample #		_ (type)		
C		Descriptive c	comments							



Page 4 of 6

### EXPERIMENT DEPLOYMENTS/RECOVERIES

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

Vent Nath Expt ID/# Depth (type/#) Hda 🚺 Marker enni Description of associated fauna &/or type of venting 11/moets ( in common while orgh Additional assoc. samples: type/ID Additional descriptive comments 629: 40emp 4()-46 Vent CA -aultTime Expt ID/# Hdg 76 Depth 2511 Alt Marker X 48++ Y 7816 (type/#) ( long + while Description of associated fauna &/or type of venting FILGments counter marker white third maid ventive neerh-Famoo Additional assoc. samples: type/ID bruch Sylfide cn ninna PCF mussels alvnol Additional descriptive comments On to Timel 7: 10:21 Temp 2°C Vent (Vab SpA pt ID/# 56 Hdg 85 Depth 2305 Alt Marker (type/#) Х Description of associated fauna &/or type of venting Additional assoc. samples: type/ID \_\_\_\_\_ Additional descriptive comments \_\_\_\_ Time 17:28.2 Temp 20 Vent *A* Expt ID/# Y 18134 Hdg 41 Depth X 462 (type/#) Description of associated fauna &/or type of venting\_KeleAS eguling now to Biog Additional assoc. samples: type/ID Additional descriptive comments 5-2017 ime 17:41-STemp 10.41 Vent Biu9 Expt ID/# Y + FMSL Hdg 6 Depth 2500 61 Alt Marker (type/#) Х Description of associated fauna &/or type of venting WMP ion place smaller chimney. Colonner A Additional assoc. samples: type/ID \_\_\_\_\_ Uhat hem 14+ Additional descriptive comments

# MARKERS DEPLOYED

ni.

$\sim$	Time	Marker type		Marke	r#	
	XY					
	Reason/ assoc. sa					
	Comments					
	Time					
	XY	Hdg	Depth	Alt	Marker	(type/#)
ne N	Reason/ assoc. sa	mple(s)				
P. 0	Comments					
100	Time	Marker type		Marker	•#	
Cer	XY	Hdg	Depth	Alt	Marker	(type/#)
-	Reason/ assoc. sa					
	Comments					

# ADDITIONAL NOTES:

		110-	11		AT 37-12 S	ample Sheet	t		0
	Alvin Dive	# <u>490</u>	94	Da	ate <u>5/7/17</u>	Logged I	v J	eremy.	Rich
	Port Obs.	Jerem	Ria	h	Starboard Ob	s. Achler G	roscho	Pilot Pa	+ Hickory
SMT	Descend:	1400	/	A	t Seafloor: <u>/</u> 5	725	Asc	cend: 19	37
	FLUID SAN								
					Temp IC				
					Depth _				(type/#)
	Comments .								
	Major#		Time		Temp ICI	1	Vent		
	х	Y		Hda	Depth _		v ent	Marker	
									(type/#)
	-								9
	Major#		Time		Temp ICI		Vent_		
					Depth _				
	Maior#		Time		Temp ICI		Vont		
					Depth _				
					Deptil _				(type/#)
					Temp ICL				
					Depth _				(type/#)
	comments _								•
	Major#		Time _		Temp ICL		Vent		
					Depth _				
	Comments								(-) [- ] [-] [-] [-] [-] [-] [-] [-] [-] [-

## **BIOLOGICAL SAMPLES**

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

Sample # \_\_\_\_\_ Time <u>1640</u> Temp <u>46°C</u> Vent <u>Wedding Cake</u> x <u>4577</u> y <u>78/60</u> Hdg <u>76</u> Depth <u>25/1</u> Alt Marker (type/#) Sample type <u>Wall of Alvivella Mound</u> Basket location Medium Starboard

Assoc	. water sample #	Assoc.	rock sample #		_ (type)			
Descr	ption of associated fai	una &/or type	of venting	-				
0			Plume	2°C				
Sample # <u>K</u>	<u> Hig</u> Time <u>1645</u> 75 у <u>78/66</u> н	Temp	base ?	300		Vent	Tica	aneq
x 45	75 Y 78/66 H	dg <u>138</u>	Depth 2515	Alt	Marker		(type/#)	-
	Sample type	<u> </u>	-10 RIH	ha u	sere Sam	pled	from	
	Basket locat	ion	in dyir	ng r	iftia 1	Datch	î.	
Assoc	water sample #	Assoc.	rock sample #	~	_ (type)			
	ption of associated fau							
A.a.	(							
Sample # _///	155els_Time 1744	 Temp				Vent	rear B	109
x 46	22 Y 7796 H	dg 112	Depth 2511	Alt	Marker		(type/#)	-
1	Sample type	6-8	mussell	les				
			je biobo					
Assoc	water sample #							
	ption of associated fau							
1755 - 1	Hempted to co	llect lan	ige cras u	ija AI	vinarmo	and v	Re no	table to
Sample #	Time	Temp	~			_Vent	Catch	one.
X	Y H	dg	Depth	Alt	Marker		_(type/#)	VIRig
	Sample type					-		PRATUIN
	water sample #							
Descri	ption of associated fau	ina &/or type	of venting					
	Time							
X	Y H						_(type/#)	
	Basket locat							
	water sample #					the second se		
Descri	otion of associated fau	na &/or type	of venting					
Sample #	Time	Τ				×		
	Time							
×	Y H							
Assoc			rook oomale #					
	water sample #							
Desch	otion of associated fau	na avui type (						
Sample #	Time	Temp				Vent		
	YH						(type/#)	

D	2	CC	
Page	- 5	OT 6	
1 usu	2	OI U	

		Sample ty	/pe						
			1.						
					rock sample #				
	Description of	associated	fauna	&/or type @	of venting				
	SAMPLES								
Take p	hotos befor	e collectio	n and	in the cl	law. If needed,	make s	sketches w	// scale	<del>9</del> 5.
								Mart	
Sample	#	Time		Temp		A 11	Maulcan	_ vent _	(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(
	Х	Υ	Hdg_		Depth	Alt	_ Marker		_(type/#)
	Sample type				Basket location _		()		
1					biol. sample #				
	Descriptive c	omments							
Sample	;#	Time		Temp				_ Vent	
	Χ	Υ	Hdg		Depth	Alt	Marker		_(type/#)
	Sample type				Basket location _				
	Assoc. water	sample # _		Assoc.	biol. sample #		(type)		
	Descriptive c	omments							
Sample	e #	Time		Temp _				_ Vent	
	Χ	Υ	_ Hdg		Depth	_ Alt	Marker _		_(type/#)
	Sample type				Basket location				
	Assoc. water	sample # _		Assoc.	biol. sample #		(type)		
	Descriptive of	comments _							
								2017 Da 144	
Sampl	e #	Time		Temp _				Vent	
	Χ	Υ	_ Hdg	-	_ Depth	_ Alt	Marker _		_(type/#)
	Sample type				Basket location				
	Assoc. wate	r sample # _		Assoc	. biol. sample # _		_ (type)		
	Descriptive	comments _							
Sampl	e #	Time		Temp _				Vent	
	Χ	Υ	_ Hdg		_ Depth	_ Alt	Marker _		_(type/#)
	Sample type	9			Basket location				
					. biol. sample # _				
	Descriptive	comments _							





# EXPERIMENT DEPLOYMENTS/RECOVERIES

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

Expt ID/# Time 1541 Temp 12°C Vent Teldy Blan
$X \underline{4546} Y \underline{78366} Hdg \underline{332} Depth \underline{25/6} Alt Marker (type/#)$
Description of 2836 and found 8 /arthurs of venting Table Table Cause Locale
Description of associated fauna &/or type of venting Took Tat same location
co LVP inlet
Additional assoc. samples: type/ID
Additional descriptive comments 1540 at B: Teddy Bear, 1547 taking LVP dfaxis 1550 Released LVP to surface
Expt ID/# CV1 Time 1608 Temp 12°C Vent north of Teddy Bear
X <u>4525</u> Y <b>#8405</b> Hdg <u>4</u> Depth <u>2519</u> Alt <u>Marker</u> (type/#)
Description of associated fauna &/or type of venting <u>Collected</u> colonizer and took
Hmp
Additional assoc. samples: type/ID
Additional descriptive comments
1635
Expt ID/# CV8 Time The Temp 46 C Vent Nedding Cake
Expt ID/# <u>CV8</u> Time <u>TEEP</u> Temp <u>46°C</u> Vent <u>Wedding</u> Cake x <u>4577</u> y <u>78/60</u> Hdg <u>76</u> Depth <u>25/1</u> Alt Marker (type/#)
Description of associated fauna &/or type of venting Colonizer on top of wedding
Linke heavily colonized.
Additional assoc samples: type/ID 16 29 collecting colonizer. Patis
Additional descriptive comments attempting to put marker in box as it is
heavily colonized as well. Metal screen gove, sul phile rack growing into colonizer
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 Chibspa with Vent-SID to go offaxis
Additional assoc. samples: type/ID Inlet was secured in ICL holster.
Additional descriptive comments 1728 Vent SID released
Expt ID/# <u>CV5</u> Time <u>1739</u> Temp <u>10.4°C</u> Vent <u>Bio9</u>
X <u>4611</u> Y <u>77985</u> Hdg <u>53</u> Depth <u>2570</u> Alt <u>Marker</u> (type/#)
X <u>4611</u> Y <u>777985</u> Hdg <u>53</u> Depth <u>2570</u> Alt Marker (type/#) Description of associated fauna &/or type of venting <u>Put in small port side box</u>
Additional assoc. samples: type/ID
Additional descriptive comments
Crab trap time 1746 temp near Bio9 - crab trap
Crib trap time 1746 temp near Bio9 - crab trap × 4622 y 77965 Hdg 111.5 d 2510 collected
/ <i>U</i>

### MARKERS DEPLOYED

Time <u>174</u>	<u>5</u> Ma	arker type		Marker #		
Reason/ asso	c. sample(s)					
XY	Y	Hdg	_ Depth	Alt	Marker	(type/#)
Reason/ asso	c. sample(s)		х. 			
Comments						
Time	me Marker type			Marker #		_
XX	ť	Hdg	_ Depth	Alt	Marker	_(type/#)
Reason/ asso	c. sample(s)					
Comments _						
	X Y Reason/ asso Comments X Y Reason/ asso Time X Y Reason/ asso	XY Reason/ assoc. sample(s) Comments Time Ma X Y Reason/ assoc. sample(s) Comments Time Ma X Y Reason/ assoc. sample(s)	X Y Hdg   Reason/ assoc. sample(s)   Comments   Time Marker type   X Y Hdg   Reason/ assoc. sample(s)   Comments   Time Marker type   X Y Hdg   Reason/ assoc. sample(s)   Reason/ assoc. sample(s)	X Y Hdg Depth   Reason/ assoc. sample(s)   Comments   Time Marker type   X Y Hdg Depth   Reason/ assoc. sample(s)   Comments   Time Marker type   Time Marker type   Reason/ assoc. sample(s)   Time Y Hdg Depth   Reason/ assoc. sample(s)	X Y Hdg Depth Alt   Reason/ assoc. sample(s)   Comments   Time Marker type Marker #   X Y Hdg Depth Alt   Reason/ assoc. sample(s)   Comments   Time Marker type Marker #   X Y Hdg Depth Alt   Marker type Marker #	Time Marker type Marker #     X Y Hdg Depth Alt Marker     Reason/ assoc. sample(s)

## ADDITIONAL NOTES:

/