

CCE-P1604 MOCNESS tows

April - May 2016

1 m2 frame, 202-µm mesh, Univ. of Alaska Frame, Univ. of Hawaii nets  
 Frame equipped for only 9 nets

new flowmeter calib (May 2016): 4.36 m/count  
 No strobe used for any tows

HAUL	CYCLE	TOW	DATE	Event No.	START TIME	END TIME	MAX DEPTH	DEPTH INTERVAL	Split	Fixative	Split	Fixative	COMMENTS
1	1	1	22 Apr 2016	39	15:37	17:11	415	50 m	50%	5% Formalin*	50%	95% Ethanol **	✓
2	1	2	23-24 Apr 2016	46	22:56	01:07	416	50 m	50%	5% Formalin*	50%	95% Ethanol **	✓
3	2	1	29 Apr 2016	113	13:20	14:47	417	50 m	50%	5% Formalin*	50%	95% Ethanol **	✓
4	2	2	29-30 Apr 2016	122	22:46	00:06	415	50 m	50%	5% Formalin*	50%	95% Ethanol **	✓
5	2	3	30 Apr 2016	133	13:13	14:20	415	50 m	100%	5% Formalin*	---	---	✓
6	2	4	30 Apr 2016	139 ?	22:39	23:48	415	50 m	100%	5% Formalin*	---	---	✓
7	2	5	1-2 May 2016	171	22:47	0:02	415	50 m	100%	5% Formalin*	---	---	✓
8	3	1	3 May 2016		13:07	14:20	415	50 m	50%	5% Formalin*	50%	95% Ethanol **	✓
9	3	2	3. May. 2016	208	22:32	23:37	415	50 m	50%	5% Formalin*	50%	95% Ethanol **	✓
10	3	3	4. May. 2016		13:05	14:07	418	50 m	100%	5% Formalin*	---	---	✓
11	3	4	4. May. 2016	233	22:32	23:45	408	50 m	100%	5% Formalin*	---	---	✓
12	4	1	7. May. 2016	300	13:06	14:10	214	25 m	50%	5% Formalin*	50%	95% Ethanol **	✓
13	4	2	7. May. 2016	311	22:28	23:22	217	25 m	50%	5% Formalin*	50%	95% Ethanol **	✓
14	4	3	8. May. 2016	327	13:01	14:06	365	50 m, then 25 m	100%	5% Formalin*	---	---	✓
15	4	4	8. May. 2016	336	22:31	23:27	358	50 m, then 25 m	100%	5% Formalin*	---	---	✓

\*buffered w/ sodium tetraborate      \*\*addition of 5 mM NH<sub>4</sub>OH

	Manufacturer	Sensor
Temp	Seabird	2741
Conductivity	"	369
Pressure	"	173
O <sub>2</sub>	"	2945
Transmissometer	Wetlabs	1681
Fluorometer	"	15

MOCNESS time is 1 hr. earlier than actual (local time) for this first tow. (i.e., times in file are 1 hr. earlier than actual PDT)

Haul 1 - Cycle 1 - Tow 1

Cruise CCE-P1604 Date 22 April 2016 Haul # 1 Cycle # 1 Tow # 1

Wind Speed 19 (kts.) Direction 318 (°) Sea State      (ft.)

File Name: Processed HAUL1.PRO Raw     

Start Time ~15:37 (PDT) End Time 16:11 (PDT)

Lat 33.03124 Lat 33.03588

Long 122.9335 Long 122.9929

Event deploy # 39 Event rec. # 40

Pre-deployment checks:

- Flow Meter
- Net Response
- Stepping Motor
- Clean Optical Surface
- Transmissometer
- Fluorometer

Net present  
Strobe (but several LEDs not operating)  
Net Mesh 202  $\mu$ m

Frame Size 1 m<sup>2</sup>

Bottom Depth 4,250 (m) Console Operator Ben Whitmore

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative
0	14:37			981	415	0	50%	5% Form.	50%	95% EtOH
1	15:09	38°		283	399	350		5% Form.		95% EtOH
2	15:15	45°		298	350	301		5% Form.		95% EtOH
3	15:21	45°		326	201	252		5% Form.		95% EtOH
4	15:28	47°		398	252	200		5% Form.		95% EtOH
5	15:36	47°		396	200	152		5% Form.		95% EtOH
6	15:44	49°		387	152	102		5% Form.		95% EtOH
7	15:52	51°		468	102	50		5% Form.		95% EtOH
8	16:01	49°		420	50	0		5% Form.		95% EtOH
9	16:11							5% Form.		95% EtOH
Closed										

Net Confirmation  
NO  
NO  
NO  
NO  
yes  
yes  
yes  
yes  
yes

At Depth Data

wire out 612 (m)  
Time 16:07 (PDT)

Surface Data

Pressure 1.1 (m)  
Temp. 17.55 (°C)  
Salinity 50 ‰ (‰)  
O<sub>2</sub> — (ml/l)  
Fluoresc. 0.8026 (V)  
Trans — (/m)  
Battery 19.1 (V)

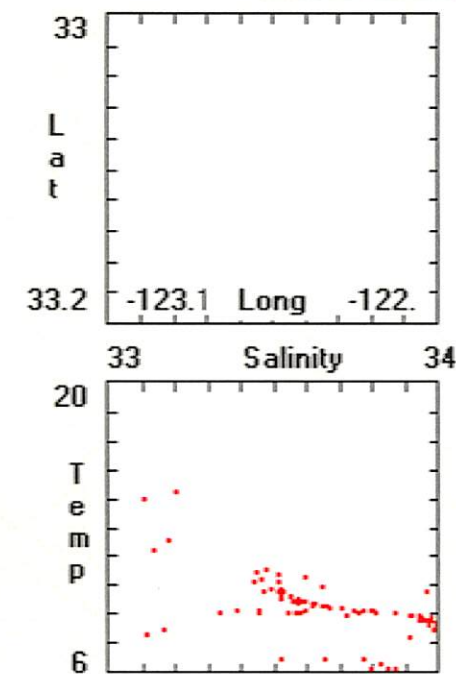
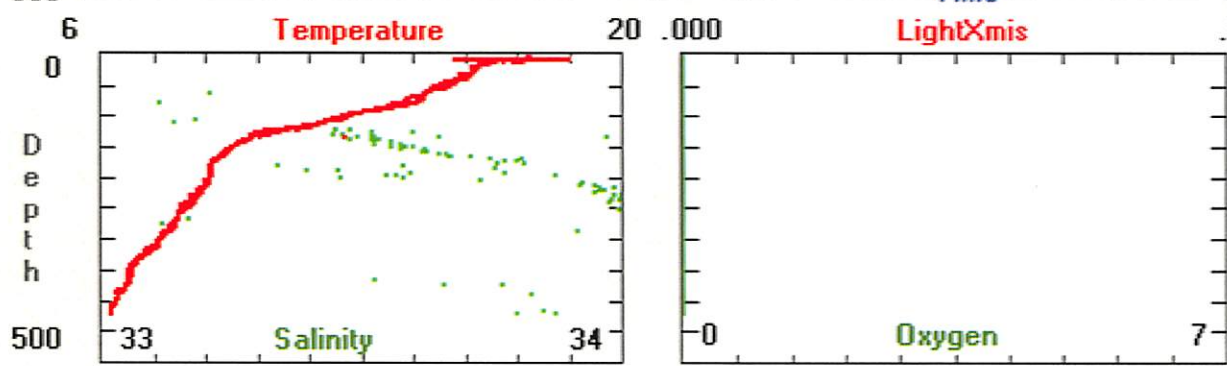
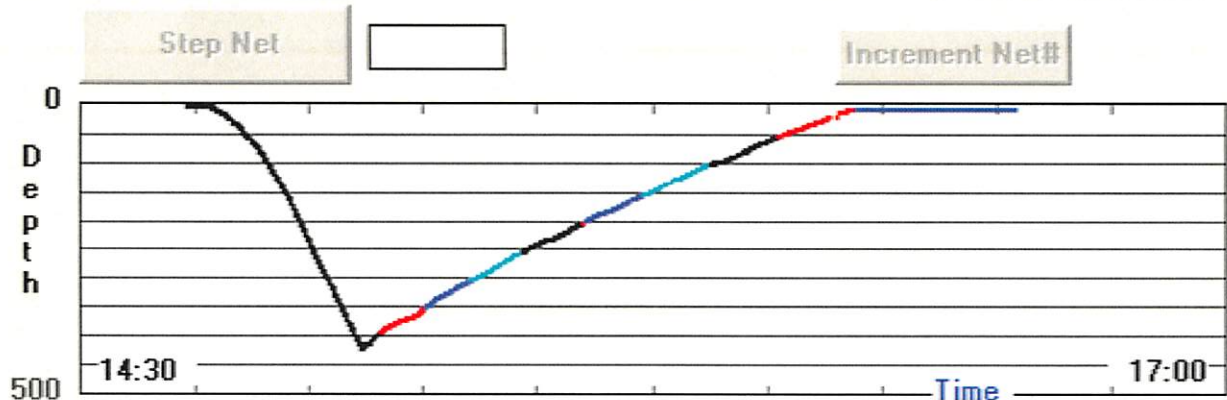
Notes:

De-activated strobe prior to deployment - Many LEDs not functional.  
Started down @ 10 m min<sup>-1</sup>  
Sped up to ~40 m min<sup>-1</sup>  
Net 1 - No net response  
2,3,4,5  
Net # 5 - did get confirmation but incremented net response,  
On net # 7 - Unable to select other so "Net 6" is actually Net 5 module - but recovered  
Angle < 45° - going too slow  
> 45° - " " " fast

- 8 0-50
- 7 50-100
- 6 100-150
- 5 150-200
- 4 200-250
- 3 250-300
- 2 300-350
- 1 350-400
- 0 0-425-400



Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	16:32:32	Net_Num	10	Latitude	33N 2.1725!	Pause Acqui	Reset
Pressure	3.4 m	OpenTime	20.7 min	Longitude	122W 59.21	Baud Rate	2400
Temp	17.87 C	Vol_Filtered	564.9 m3	Net_Dist	235.7 m	Sample Rate	4.0 sec
Salinity	21.79 o/oo	Angle	64 deg	Total_Dist	6121.3 m	Printer	Off
Density	15.218	Flow_Counts	94	Processed File Name	C:\MOCNESS\MOCDATA\HAUL1.PRO		
Oxygen		Hor_Vel	0.0 kts	Raw File Name	C:\MOCNESS\MOCDATA\HAUL1.raw		
Fluoresc.	0.1974 V	Vert_Vel	-0.2 m/min	Acquisition Ended. trys = 7			
LightXmis		Battery	18.9 V				
Irradiance							





4155

Cruise CCE-P1604 Date 4/23/2016 Haul # 2 Cycle # 1 Tow # 2

Wind Speed 10 (kts.) Direction 350 (°) Sea State \_\_\_\_\_ (ft.)

File Name: Processed haul2.pao Raw \_\_\_\_\_

Start Time 22:56 (PDT) End Time 01:07 (PDT)

Lat 33 02.81 Lat 33 7.16

Long 122 54.22 Long 122 57.65

Event deploy # 46 Event rec. # 47

Bottom Depth 4255 (m) Console Operator SPN/BMW

Pre-deployment checks:

- Flow Meter
- Net Response
- Stepping Motor
- Clean Optical Surface
- Transmissometer
- Fluorometer

Net Mesh 202  $\mu$ m  
Frame Size 1 m<sup>2</sup>

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Trip Success
0	22:56	60	322	1485	416	Ø	50%	5% Form.	50%	95% EtOH	No
1	23:34	56	199	742	400	351		5% Form.		95% EtOH	No
2	23:50	54	106	389	351	301		5% Form.		95% EtOH	Yes
3	23:58	54	198	777	301	252		5% Form.		95% EtOH	No
4	00:13	52	125	477	252	202		5% Form.		95% EtOH	Yes
5	00:23	55	133	519	202	150		5% Form.		95% EtOH	No
6	00:33	52	145	536	150	101		5% Form.		95% EtOH	No
7	00:44	57	135	490	101	52		5% Form.		95% EtOH	Yes
8	00:54	42	4	465	52	Ø		5% Form.		95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	01:04										

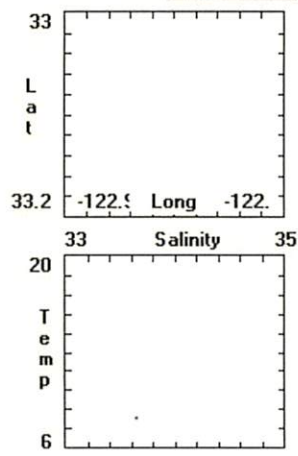
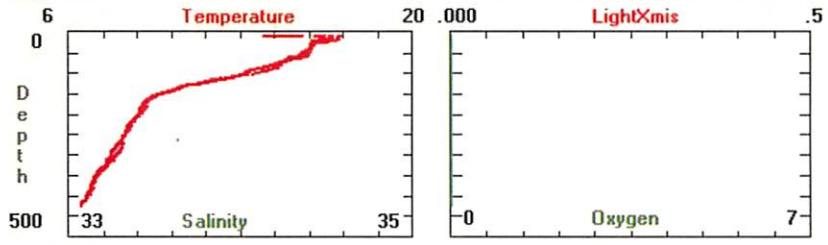
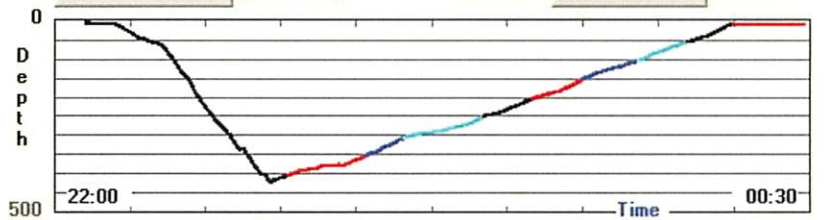
At Depth Data  
wire out 850 (m)  
Time 23:31 (PDT)

Surface Data  
Pressure 3 (m)  
Temp. 14.1 (°C)  
Salinity \_\_\_\_\_ (‰)  
O<sub>2</sub> \_\_\_\_\_ (ml/l)  
Fluoresc. 0.2146 (v)  
Trans \_\_\_\_\_ (m)  
Battery 19.0 (v)

Notes: - New cond probes added -  
Bas on Optics module changed.  
When I closed net 2/opened net 3 the increment net trigger tripped between step 1 + step 2  
\* One net still open  
I confirmed it needed one more step to close  
- Ben

Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	00:29:02	Net_Num	9	Latitude	33N 7.5540	Pause Acqui	Reset
Pressure	3.8 m	OpenTime	13.8 min	Longitude	122W 57.94	Baud Rate	2400
Temp	15.57 C	Vol_Filtered	84.2 m3	Net_Dist	910.2 m	Sample Rate	4.0 sec
Salinity	22.68 o/oo	Angle	64 deg	Total_Dist	10776.5 m	Printer	Off
Density	16.385	Flow_Counts	15	Processed File Name	C:\MOCNESS\HAUL2.PRO		
Oxygen		Hor_Vel	0.0 kts	Raw File Name	C:\MOCNESS\HAUL2.raw		
Fluoresc.	0.1998 V	Vert_Vel	-0.4 m/min	Acquisition Ended. trys = 0			
LightXmis		Battery	18.9 V				
Irradiance							

Step Net  Increment Net#  End Acqui



Cruise CCE-P1604 Date 29 Apr. 2016 Haul # 3 Cycle # 2 Tow # 1

Wind Speed ~20 (kts.) Direction 330 (°) Sea State 6-8 (ft.)

File Name: Processed Haul3.Pro Raw Haul3.RAW

Start Time 13:20 (PDT) End Time 14:47 (PDT)

Lat 33° 33.30' N <sup>33.5584</sup> Lat 33 36.04

Long 122° 7.79' W <sup>122.1327</sup> Long 122 9.6 <sup>122.129</sup>

Event deploy # 113 Event rec. # 114

Bottom Depth 4,034 (m) Console Operator Bmw, CB, MDO

- Pre-deployment checks:
- Flow Meter
  - Net Response
  - Stepping Motor
  - Clean Optical Surface
  - Transmissometer
  - Fluorometer

Net Mesh 202 μm

Frame Size 1 m<sup>2</sup>

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	net indicator
0	13:20	49	285	1193	417	∅	50%	5% Form.	50%	95% EtOH	no
1	13:48	55	72	313	400	352		5% Form.		95% EtOH	yes
2	13:55	55	143	507	352	302		5% Form.		95% EtOH	yes
3	14:06	51	106	390	302	252		5% Form.		95% EtOH	yes
4	14:14	51	81	316	252	199		5% Form.		95% EtOH	yes
5	14:20	47	46	182	199	147		5% Form.		95% EtOH	yes
6	14:24	48	50	211	147	99		5% Form.		95% EtOH	yes
7	14:28	51	98	353	99	51		5% Form.		95% EtOH	yes
8	14:35	37	86	322	51	∅		5% Form.		95% EtOH	yes
9								5% Form.		95% EtOH	
Closed	14:43										

At Depth Data

wire out 779.6 (m)  
Time 13:47 (PDT)

Surface Data

Pressure 9.5 (m)  
Temp. 15.14 (°C)  
Salinity 50.0 (‰)  
O<sub>2</sub> -1.14 (ml/l)  
Fluoresc. 0.23 (v)  
Trans 0.25 (v/m)  
Battery 20.1 (v)

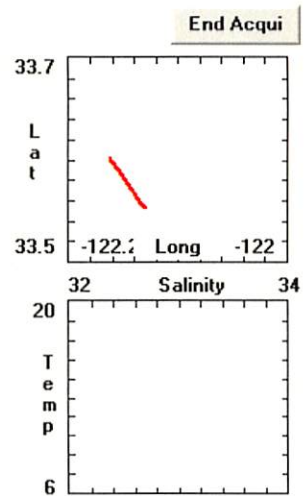
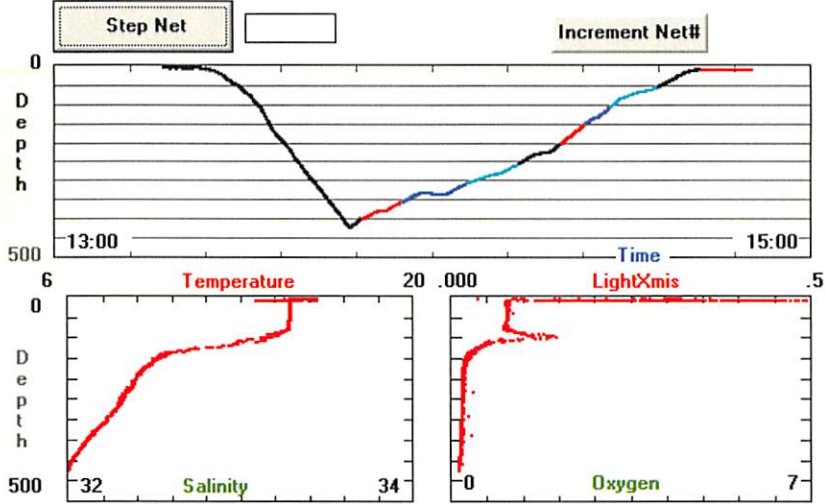
Notes: O<sub>2</sub>, trans, fluor. now

39°-42° - Lifted net frame on A-frame; tripped net while suspended & received net response confirmation.  
increased speed to 40m min<sup>-1</sup>  
Probe Serial #  
Temp | 2741  
Cond | 369  
Pressure | 193  
Oxy | 2945  
Trans | 4681  
Fluor | 15

approx. 5% of net 8 spilled during preservation



Environmental Parameters	Net Operation	Net - Ship Position	Program Settings
Time: 14:50:43	Net_Num: 9	Latitude: 33N 36.207	Pause Acqui: [ ] Reset: [ ]
Pressure: 4.1 m	OpenTime: 7.7 min	Longitude: 122W 9.711	Baud Rate: 2400
Temp: 15.1 C	Vol_Filtered: 143.2 m3	Net_Dist: 378.0 m	Sample Rate: 4.0 sec
Salinity: 50.0 o/oo	Angle: 62 deg	Total_Dist: 6236.9 m	Printer: Off
Density: 37.563	Flow_Counts: 17	Processed File Name: C:\MOCNESS\MOCDATA\HAUL3.PRO	
Oxygen: -1.15 ml/l	Hor_Vel: 0.0 kts	Raw File Name: C:\MOCNESS\MOCDATA\HAUL3.raw	
Fluoresc.: 0.1886 V	Vert_Vel: -0.2 m/min	##MN-11 00 62 1004 02654 2844 589747 290713 196II:I	
LightXmis: 0.1181 /m	Battery: 19.6 V	\$GPRMC,215034.28,A,3336.207724,N,12209.711908,W,1.4,33	
Irradiance: [ ]			





Forensic analysis, 5 Feb. 2020, Mark Ohman & Stephanie Matthews P1604

Reconstructing likely depths of closure of nets for Cycle 2, Tow 2  
(= Haul 4)

- ① Assume that distributions for Cycle 2, Tow 4 (= Haul 6) are accurate.

Composition: Examining the Tow 2 samples from 0-200m, the composition of the fauna seems <sup>(relatively)</sup> ~~very~~ similar to the fauna in the corresponding 4 samples from Tow 4, 0-200m. Also, the deepest samples (400-350) are similar. Hydrozoan distributions seem to align. ~~Comparing~~ Appearance of Rhizarian ("radiolarian") tests in same vertical strata between Tow 2 and Tow 4.

Biovolume: Comparing biovolumes from Tow 2 (multiplied  $\times 2$  because these were 50% splits), the biovolumes in each of the 4 samples from 200-0m are reasonably consistent between Tow 2 + Tow 4. Same w/ 400-350m. If we consider the biovolume in the <sup>Tow 3</sup> Net 2 sample (multiplied  $\times 2$ ), it is reasonably close to the sum of the biovolumes of the Net 2 + Net 3 samples from Tow 4.

Zooscan: At Cycle 2, the putative Net 8 ("0-0m"), with uncertain volume filtered, leads to highly anomalous ~~&~~ (and elevated) C bromas value at the surface for many taxa. Discount and ignore this "Net 8, 0-0m, 00:00-00:06" sample completely. Therefore the depths assigned to each sample should be the depths on the jar labels, and the Net 8 sample should be eliminated.

Q.E.D.



(photocopy)

Cruise CCE-P1604 Date 29 Apr. 2016 Haul # 4 Cycle # 2 Tow # 2

Wind Speed 25 (kts.) Direction 325 (°) Sea State 8-10 (ft.)

File Name: Processed HAUL4 Raw Haul 4

Start Time 22:46 (PDT) End Time 00:06 (PDT)

Lat 33.5297 Lat ~~33.5297~~

Lat 33.5747

Long 122.0517 Long 122.0547

Event deploy # 122 Event rec. # 123

Net Mesh 202  $\mu$ m

Frame Size 1 m<sup>2</sup>

Bottom Depth 3946 (m) Console Operator BMW, CB, BVW

- Pre-deployment checks:
- Flow Meter
  - Net Response
  - Stepping Motor
  - Clean Optical Surface
  - Transmissometer
  - Fluorometer

PDT

MOLNESS

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net Response
22:46	18:25	42	231	986	415	∅	50%	5% Form.	50%	95% EtOH	NO
23:11	18:51	41	32	150	402	347		5% Form.		95% EtOH	NO
23:15	18:55	51	113	<del>58</del> 426	347	253		5% Form.		95% EtOH	triggered: ~ 31.5m depth
23:26	19:04	56	60	211	253	201		5% Form.		95% EtOH	yes
23:30	19:09	56	55	223	201	150		5% Form.		95% EtOH	yes
23:35	19:13	55	114	352	150	102		5% Form.		95% EtOH	yes
23:42	19:21	61	62	301	102	51	✓	5% Form.		95% EtOH	yes
23:48	19:27	62	126	557	511	∅		5% Form.	✓	95% EtOH	yes
00:00	19:38			557				5% Form.		95% EtOH	
00:00	19:38							5% Form.		95% EtOH	
Closed	19:38										

At Depth Data

Computer (time) wire out 59.2 (m)  
18:46 Time 23:11 (PDT)

Surface Data

Pressure 2.4 (m)  
Temp. 15.12 (°C)  
Salinity 52.0 (‰)  
O<sub>2</sub> -1.15 (ml/l)  
Fluoresc. 0.21 (v)  
Trans 0.08 (m)  
Battery 19.6 (v)

Notes:

\* Time display is 18:27 instead of 22:48 PDT  
 MOLNESS time is 4h 21 min earlier than PDT  
 \* Same sensors as Haul 3  
 \* 18:56 increment: net 2 to 3  
 suspect net hung up from 356-307  
 so we left it open until 250  
 had to stall at 15m depth due to wire slacking  
 in waves.  
 \* net 8 was still open at the surface

(original)

Cruise CCE-P1604 Date 22 Apr 2016 Haul # 4 Cycle # 2 Tow # 2

Wind Speed 25 (kts.) Direction 325 (°) Sea State 5-10 (ft.)

File Name: Processed HA624 Raw 4614

Start Time 22:46 (PDT) End Time 00:06 (PDT)

Lat 33.5297 Lat ~~33.5247~~

Long 122.6517 Long ~~122.6497~~

Event deploy # 122 Event rec. # 123

Bottom Depth 3946 (m) Console Operator BAW, CB, BWW

Pre-deployment checks:

- Flow Meter
- Net Response
- Stepping Motor
- Clean Optical Surface
- Transmissometer
- Fluorometer

Net Mesh 202  $\mu$ m

Frame Size 1 m<sup>2</sup>

PDT

22:46  
23:11  
23:35  
23:35  
23:44  
23:46  
00:00  
00:00

Net Tow Information										
Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative
0	18:25	42	231	986	415	0	50%	5% Form.	50%	95% EtOH
1	18:51	41	32	150	402	4342		5% Form.		95% EtOH
2	18:55	51	113	<del>68</del> 426	347	253		5% Form.		95% EtOH
3	19:04	56	60	211	253	201		5% Form.		95% EtOH
4	19:09	56	55	223	201	150		5% Form.		95% EtOH
5	19:13	50	114	352	150	102		5% Form.		95% EtOH
6	19:21	61	62	301	102	431		5% Form.		95% EtOH
7	19:27	62	126	557	51	0		5% Form.		95% EtOH
8	19:33							5% Form.		95% EtOH
9								5% Form.		95% EtOH
Closed	19:33									

At Depth Data

wire out 542 (m)

Time 23:11 (PDT)

Surface Data

Pressure 0.24 (m)

Temp. 15.13 (°C)

Salinity 36.6 (‰)

O<sub>2</sub> -1.15 (ml/l)

Fluoresc. 0.21 (V)

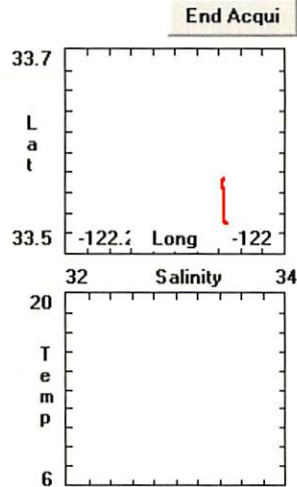
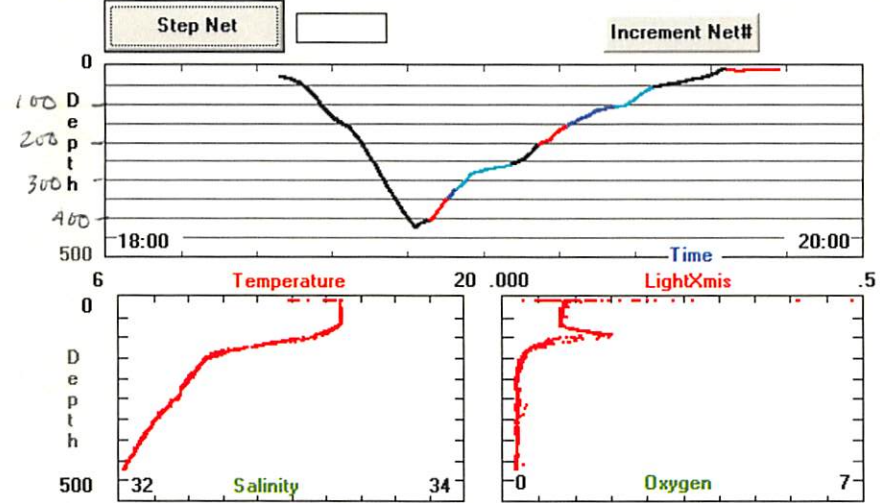
Trans 503 (m)

Battery 176 (v)

Notes:

\* Time deploy is 18:27 instead of 22:45 (PDT)  
 Success this is 4h 21 min earlier than PDT  
 \* Same numbers as haul 3  
 18:16 at surface at net 2 to 3  
 Suspect net hung up from 350-300  
 Same ball of net at 350  
 led to pull net 15 min due to wire sticking  
 net is  
 \* Net 8 was still open after 1h surface

Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	19:47:03	Net_Num	9	Latitude	33N 34.540	Pause Acqui	Reset
Pressure	3.4 m	OpenTime	8.1 min	Longitude	122W 3.266	Baud Rate	2400
Temp	13.23 C	Vol_Filtered	245.6 m3	Net_Dist	361.5 m	Sample Rate	4.0 sec
Salinity	50.0 o/oo	Angle	65 deg	Total_Dist	5290.7 m	Printer	Off
Density	38.01	Flow_Counts	52	Processed File Name	C:\MOCNESS\MOCDATA\HAUL4.PRO		
Oxygen	-1.19 ml/l	Hor_Vel	0.0 kts	Raw File Name	C:\MOCNESS\MOCDATA\HAUL4.raw		
Fluoresc.	0.1904 V	Vert_Vel	0.6 m/min	##MN-08 00 65 0966 02646 2952 613032 293137 193H-I			
LightXmis	0.0793 /m	Battery	19.3 V	\$GPRMC,070822.28,A,3334.540487,N,12203.266857,W,1.8,42			
Irradiance							





Cruise CCE-P1604 Date 30 Apr. 2016 Haul # 5 Cycle # 2 Tow # 3

Wind Speed 25 (kts.) Direction 320 (°) Sea State \_\_\_\_\_ (ft.)

File Name: Processed HAUL5 Raw HAUL5

Start Time 13:13 (PDT) End Time 14:20 (PDT)

Lat 33° 28.67' Lat 33° 30.83'

Long 121° 59.95' Long 122° 1.04'

Event deploy # 133 Event rec. # 134

Bottom Depth 3,934 (m) Console Operator MDO, BMW

- Pre-deployment checks:
- Flow Meter
  - Net Response
  - Stepping Motor
  - Clean Optical Surface
  - Transmissometer
  - Fluorometer

Net Mesh 202 μm

Frame Size 1 m<sup>2</sup>

(No O<sub>2</sub> now)

Net Tow Information

13:13

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Confirmation
0	13:39	41	224	992	415	<del>401</del> 100		5% Form.		95% EtOH	No
1	13:39	47	46	188	401	347		5% Form.		95% EtOH	No
2	13:43	50	49	189	347	300		5% Form.		95% EtOH	Yes
3	13:47	53	42	163	300	249		5% Form.		95% EtOH	No
4	13:51	50		236	249	188		5% Form.		95% EtOH	yes??
5	13:58	52	48	181	188	147		5% Form.		95% EtOH	yes
6	14:01	53	94	337	147	99		5% Form.		95% EtOH	yes
7	14:08	46	84	287	99	51		5% Form.		95% EtOH	yes
8	14:14			246	51	0		5% Form.		95% EtOH	yes
9	14:19							5% Form.		95% EtOH	
Closed											

At Depth Data

wire out 668 (m)  
Time 13:37 (PDT)

Surface Data

Pressure 2.5 (m)  
Temp. 15.1 (°C)  
Salinity 50.0 (‰)  
O<sub>2</sub> — (ml/l)  
Fluoresc. 0.25 (v)  
Trans 0.168 (m)  
Battery 19.3 (v)

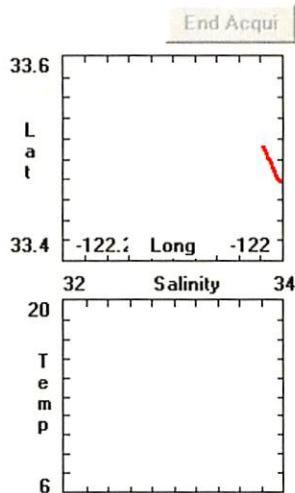
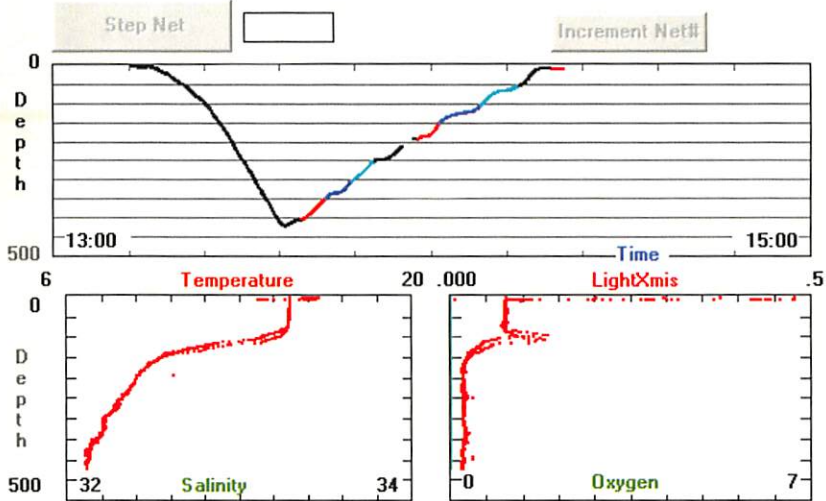
Notes: Removed O<sub>2</sub> probe: options module not producing power. "Unable to query at under water unit @ 209 meters. Communication to deck box failed. Unable to query option module." 13:57

Dropped out @ 209 m.

pressure: 415 m  
temp 6.86 °C  
Fluor 0.2160 V  
Trans 0.0167/m  
Den 39.317  
Salinity 50

Net 5: Uncertain whether confirmation was made [seems it did confirm]  
K Net 4: probability filtered more water than in recorded file. estimate by elapsed time

Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	14:21:15	Net_Num	9	Latitude	33N 30.840	Pause Acqui	Reset
Pressure	3.1 m	OpenTime	1.8 min	Longitude	122W 1.041	Baud Rate	2400
Temp	14.09 C	Vol_Filtered	447.1 m3	Net_Dist	138.0 m	Sample Rate	4.0 sec
Salinity	50.0 o/oo	Angle	15 deg	Total_Dist	4383.7 m	Printer	Off
Density	37.808	Flow_Counts	53	Processed File Name	C:\MOCNESS\MOCDATA\HAUL5.PRO		
Oxygen		Hor_Vel	7.3 kts	Raw File Name	C:\MOCNESS\MOCDATA\HAUL5.raw		
Fluoresc.	0.1600 V	Vert_Vel	0.3 m/min	Acquisition Ended. trys = 1			
LightXmis	0.4240 /m	Battery	19.0 V				
Irradiance							





Cruise CCE-P1604 Date 30 Apr. 2016 Haul # 6 Cycle # 2 Tow # 4

Wind Speed 22 (kts.) Direction 327° Sea State 6-8 (ft.)

File Name: Processed HAUL6.PRO Raw HAUL6.RAW

Start Time 22:39 (PDT) End Time 23:48 (PDT)

Lat 33° 28.52' 33.47945 Lat 33.50144

Long 121° 57.46' 121.9635 Long 121.9967

Event deploy # 139? 141 Event rec. # 140? 142

Bottom Depth 3946 (m) Console Operator MDO, BMW, BVW

Pre-deployment checks:	
<input checked="" type="checkbox"/>	Flow Meter
<input checked="" type="checkbox"/>	Net Response
<input checked="" type="checkbox"/>	Stepping Motor
<input checked="" type="checkbox"/>	Clean Optical Surface
<input checked="" type="checkbox"/>	Transmissometer
<input checked="" type="checkbox"/>	Fluorometer

Net Mesh 202  $\mu$ m

Frame Size 1 m<sup>2</sup>

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative
0	22:39	45	281	1123	415	∅	100	5% Form.		95% EtOH
1	23:08	52	53	227	400	351		5% Form.		95% EtOH
2	23:13	57	61	243	351	300		5% Form.		95% EtOH
3	23:18	57	64	226	300	250		5% Form.		95% EtOH
4	23:23	58	69	228	250	202		5% Form.		95% EtOH
5	23:27	56	78	247	202	152		5% Form.		95% EtOH
6	23:32	58	73	213	152	102		5% Form.		95% EtOH
7	23:37	55	93	296	102	51		5% Form.		95% EtOH
8	23:43			265	51	∅		5% Form.		95% EtOH
9								5% Form.		95% EtOH
Closed	23:48									

confirm Net trip  
No  
No  
No  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes

At Depth Data

wire out 692.5 (m)  
 Time 23:07 (PDT)

Notes: \* Stalled at 40m for a few minutes to correct ship steering issue

Surface Data

Pressure 2.3 (m)  
 Temp. 15.12 (°C)  
 Salinity 50.0 (‰)  
 O<sub>2</sub> — (ml/l)  
 Fluoresc. 0.2146 (v)  
 Trans 0.5449 (m)  
 Battery 19.1 (v)

at depth Unable to query c/w unit 149 m gms  
Pressure 415m Comm to black box c/w unit failed.  
Temp 6.84°C Re-set @ ~ 209 m, on descent  
Salinity 50 MDO intentionally turned off c/w to options module.  
 Fluoresc —  
 Trans —

Cruise CCE-P1604 Date 31 May 2016 <sup>-2 May 2016</sup> Haul # 7 Cycle # 2 Tow # 5

Wind Speed 5 (kts.) Direction 320 (°) Sea State 3-5 (ft.)

File Name: Processed HAUL7.PRO Raw HAUL7.raw

Start Time 22:47 (PDT) End Time 00:02 (PDT)

Lat 33° 26.11' <sup>33.44087</sup> Lat 33° 45.298' <sup>33.4632</sup>

Long 121° 52.26' <sup>121.876</sup> Long 121.90550 <sup>121.9055</sup>

Event deploy # 171 Event rec. # 172

Bottom Depth 3,912 (m) Console Operator MDP, BMW, BVW

- Pre-deployment checks:
- Flow Meter
  - Net Response
  - Stepping Motor
  - Clean Optical Surface
  - Transmissometer
  - Fluorometer

Net Mesh 202  $\mu$ m

Frame Size 1 m<sup>2</sup>

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net response
0	22:47	42	212	998	415	Ø	100	5% Form.		95% EtOH	No
23:19	<del>22:19</del>	48	61	270	400	351		5% Form.		95% EtOH	Yes
23:25	<del>22:25</del>	52	57	238	351	301		5% Form.		95% EtOH	Yes
3 23:29	<del>22:29</del>	51	59	233	301	250		5% Form.		95% EtOH	Yes
4	23:34	50	70	278	250	200		5% Form.		95% EtOH	Yes
5	23:39	47	60	244	200	150		5% Form.		95% EtOH	Yes
6	23:44	56	57	218	150	102		5% Form.		95% EtOH	Yes
7	23:48	51	75	272	102	50		5% Form.		95% EtOH	Yes
8	23:53	50	60	225	50	Ø		5% Form.		95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	23:58										

At Depth Data

wire out 665 (m)  
Time 23:17 (PDT)

Notes: ~~Mo~~ Moocness staying at 3m depth for as much data isn't coming through, ~5min around 22:55

Surface Data

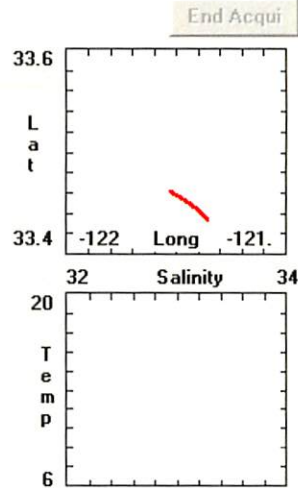
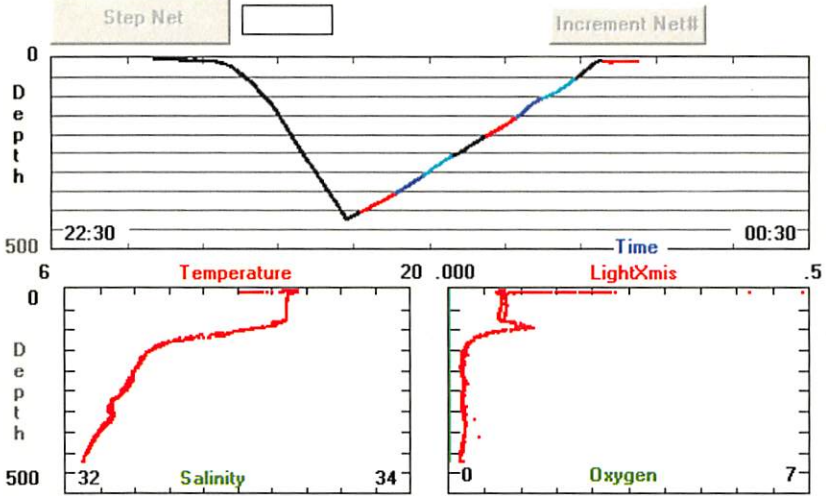
Pressure 2.6 (m)  
Temp. 15.32 (°C)  
Salinity 50.0 (‰)  
O<sub>2</sub> — (m/l)  
Fluoresc. 0.2182 (v)  
Trans 0.0710 (m)  
Battery 19.0 (v)

at depth

Pressure 416  
Temp 6.75  
Salinity 50  
O<sub>2</sub> —  
Fluor 0.2184  
Trans 0.0164/m  
density 34.33



Environmental Parameters	Net Operation	Net - Ship Position	Program Settings
Time: 00:03:19	Net_Num: 9	Latitude: 33N 27.795	Pause Acqui: [Pause Acqui] Reset: [Reset]
Pressure: 3.5 m	OpenTime: 5.3 min	Longitude: 121W 54.33	Baud Rate: 2400
Temp: 13.69 C	Vol_Filtered: 110.5 m3	Net_Dist: 217.8 m	Sample Rate: 4.0 sec
Salinity: 50.0 o/oo	Angle: 64 deg	Total_Dist: 4586.2 m	Printer: Off
Density: 37.904	Flow_Counts: 21	Processed File Name: C:\MOCNESS\HAUL7.PRO	
Oxygen: [ ]	Hor_Vel: 0.0 kts	Raw File Name: C:\MOCNESS\HAUL7.raw	
Fluoresc.: 0.1912 V	Vert_Vel: 0.2 m/min	Acquisition Ended. trys = 0	
LightXmis: 0.0883 /m	Battery: 18.9 V		
Irradiance: [ ]			



Cruise CCE-P1604 Date 3 May 2016 Haul # 8 Cycle # 3 Tow # 1

Wind Speed 12-14 (kts.) Direction 318 (°) Sea State 2-4 (ft.)

File Name: Processed HAUL8.PRO Raw Haul8.raw

Start Time 13:07 (PDT) End Time 14:20 (PDT)

Lat 34° 44.42' Lat 34° 45.85'

Long 121° 16.07' Long 121° 18.24'

Event deploy # 197 Event rec. # 198 Net Mesh 202  $\mu$ m Frame Size 1 m<sup>2</sup>

Bottom Depth 630 (m) Console Operator CAB, BVW

Pre-deployment checks:  
 Flow Meter  
 Net Response  
 Stepping Motor  
 Clean Optical Surface  
 Transmissometer  
 Fluorometer

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net confirmation
0	13:07	49	231	1038	415	0	50	5% Form.	50	95% EtOH	NO
1	13:35	50	94	391	400	351	↓	5% Form.	↓	95% EtOH	NO
2	13:42	44	102	436	351	300	↓	5% Form.	↓	95% EtOH	YES
3	13:51	42	52	235	300	250	↓	5% Form.	↓	95% EtOH	YES
4	13:56	43	47	212	250	200	↓	5% Form.	↓	95% EtOH	YES
5	14:00	37	46	219	200	149	↓	5% Form.	↓	95% EtOH	YES
6	14:04	46	29	119	149	98	↓	5% Form.	↓	95% EtOH	YES
7	14:06	53	75	286	98	51	↓	5% Form.	↓	95% EtOH	YES
8	14:12	54	104	385	51	4	↓	5% Form.	↓	95% EtOH	
9	14:19							5% Form.		95% EtOH	
Closed											

At Depth Data Notes: 310m STW 2.1kn

wire out 735 (m) 46m STW 2.9kn

Time 13:33 (PDT)

Surface Data Bottom @ 4m pressure, net broke surface

Pressure 1.6 (m) 412.1

Temp. 13.40 (°C) 6.13

Salinity — (‰) —

O<sub>2</sub> — (ml/l) —

Fluoresc. 0.243 (V) 0.2096

Trans 0.601 (m) 0.0152

Battery 19.2 (v) 19.0

**Environmental Parameters**

Time: 14:20:55  
 Pressure: 3.3 m  
 Temp: 12.61 C  
 Salinity: 50.0 o/oo  
 Density: 38.152  
 Oxygen:   
 Fluoresc.: 1.0096 V  
 LightXmis: 0.4726 /m  
 Irradiance:

**Net Operation**

Net\_Num: 9  
 OpenTime: 1.2 min  
 Vol\_Filtered: 37.0 m3  
 Angle: 0 deg  
 Flow\_Counts: 7  
 Hor\_Vel: 0.0 kts  
 Vert\_Vel: 0.0 m/min  
 Battery: 18.9 V

**Net - Ship Position**

Latitude: 34N 45.846  
 Longitude: 121W 18.24  
 Net\_Dist: 50.7 m  
 Total\_Dist: 4370.2 m

**Program Settings**

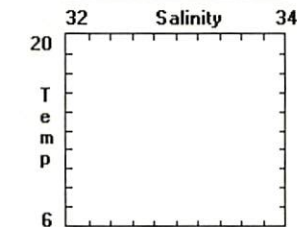
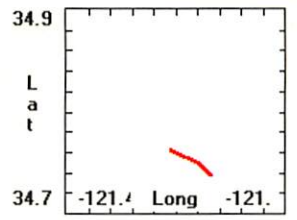
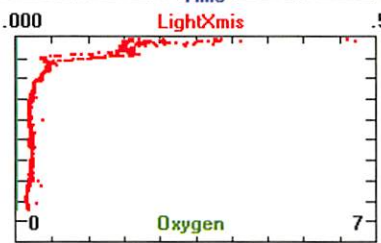
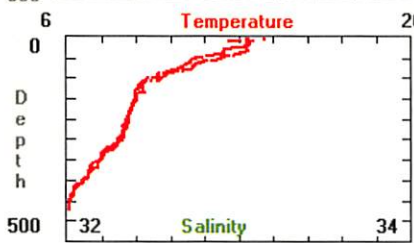
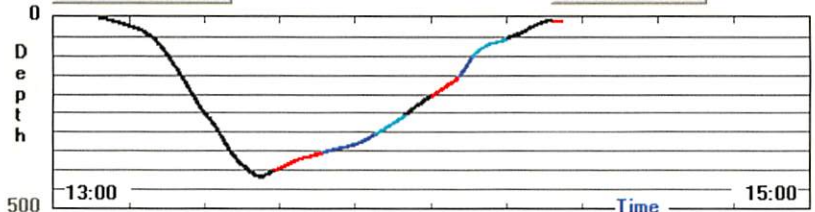
Pause Acqui:    
 Baud Rate: 2400  
 Sample Rate: 4.0 sec  
 Printer:

Processed File Name: C:\MOCNESS\MOCDATA\HAUL8.PRO  
 Raw File Name: C:\MOCNESS\MOCDATA\HAUL8.raw  
 Acquisition Ended. trys = 0

Step Net

Increment Net#

End Acqui





Cruise CCE-P1604 Date 3 May 2016 Haul # 9 Cycle # 3 Tow # 2

Wind Speed 10 (kts.) Direction 320 (°) Sea State 2-4 (ft.)

File Name: Processed HAUL9.PRO Raw HAUL9.RAN

Start Time 2232 (PDT) End Time 23:37 (PDT)

Lat 34° 41.24' 34.68737 Lat 34.68737

Long 121° 15.27' 121.2542 Long 121.28760 34.69753

Event deploy # 208 Event rec. # 209 121.2876

Bottom Depth 656 (m) Console Operator ~~MD~~, BMW, BVW

Pre-deployment checks:  
 Flow Meter  
 Net Response  
 Stepping Motor  
 Clean Optical Surface  
 Transmissometer  
 Fluorometer

Net Mesh 202  $\mu$ m  
 Frame Size 1 m<sup>2</sup>

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative
0	22:32	34	125	644	415	0	50%	5% Form.	50%	95% EtOH
1	22:55	40	42	210	400	351		5% Form.		95% EtOH
2	23:00	40	48	236	351	300		5% Form.		95% EtOH
3	23:05	43	45	207	300	249		5% Form.		95% EtOH
4	23:09	40	42	188	249	200		5% Form.		95% EtOH
5	23:13	51	53	229	200	151		5% Form.		95% EtOH
6	23:18	48	59	246	151	100		5% Form.		95% EtOH
7	23:22	48	55	239	100	49		5% Form.		95% EtOH
8	23:27	52	61	264	49	0		5% Form.		95% EtOH
9	?							5% Form.		95% EtOH
Closed	23:32									

Net Confirmation

No  
 No  
 No  
 Yes  
 Yes  
 Yes  
 Yes  
 Yes  
 Yes

At Depth Data

wire out 592 (m)  
 Time 22:53 (PDT)

Surface Data

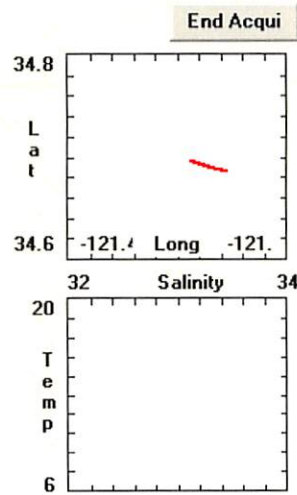
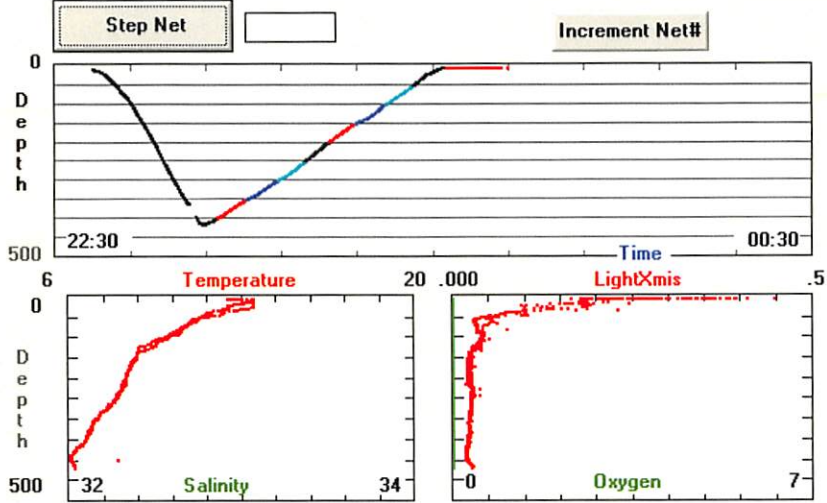
Pressure 2.2 (m)  
 Temp. 13.45 (°C)  
 Salinity 50 (‰)  
 O<sub>2</sub> — (ml/l)  
 Fluoresc. 0.2814 (V)  
 Trans 0.2729 (V)  
 Battery 18.9 (V)

Notes:

Re-taped cod end collars before tow; showing signs of abrasion/wear (esp. Net 0, 5, 6, 8) esp. Net 0.  
 @ 22:51  
 396.8m<sup>2</sup> communication to deck box failed resumed acquisition cannot talk to UW unit  
 at depth  
 Pres. 414m  
 Temp 6.24°C  
 Sal 50.0  
 FL 0.2120  
 Trans 0.0279  
 Bat 18.8V

Environmental Parameters Net Operation Net - Ship Position Program Settings

Time	23:42:01	Net_Num	9	Latitude	34N 41.829'	Pause Acqui	Reset
Pressure	3.5 m	OpenTime	9.6 min	Longitude	121W 17.28	Baud Rate	2400
Temp	12.72 C	Vol_Filtered	83.7 m3	Net_Dist	204.7 m	Sample Rate	4.0 sec
Salinity	50.0 o/oo	Angle	63 deg	Total_Dist	3432.3 m	Printer	Off
Density	38.128	Flow_Counts	15	Processed File Name	C:\MOCNESS\HAUL9.PRO		
Oxygen		Hor_Vel	0.0 kts	Raw File Name	C:\MOCNESS\HAUL9.raw		
Fluoresc.	0.2008 V	Vert_Vel	-0.5 m/min	##MN-06 00 63 0449 02652 2475 619671 289145 188##I			
LightXmis	0.1655 /m	Battery	18.8 V	\$GPRMC,064113.28,A,3441.829003,N,12117.288577,W,0.4,18			
Irradiance							



Cruise CCE-P1604 Date 4 May 2016 Haul # 10 Cycle # 3 Tow # 3

Wind Speed 5-8 (kts.) Direction 120° Sea State 2-3 (ft.)

File Name: Processed HAUL10.PRO Raw HAUL10.RAW

Start Time 13:05 (PDT) End Time 14:17 (PDT)

Lat 34° 34.79' Lat 34.59991

Long 121° 13.68' Long 121.2399

Event deploy # 223 Event rec. # 223.1 Net Mesh 202  $\mu$ m Frame Size 1 m<sup>2</sup>

Bottom Depth 909 (m) Console Operator MDO, BMW

Pre-deployment checks:

- Flow Meter
- Net Response
- Stepping Motor
- Clean Optical Surface
- Transmissometer
- Fluorometer

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net response
0	13:05	40	169	785	418	0	100	5% Form.		95% EtOH	No
1	13:29	46	58	295	400	350		5% Form.		95% EtOH	No
2	13:35	48	46	213	350	360		5% Form.		95% EtOH	Yes
3	13:40	46	47	217	300	249		5% Form.		95% EtOH	Yes
4	13:44	43	45	210	249	200		5% Form.		95% EtOH	Yes
5	13:49	42	48	217	200	151		5% Form.		95% EtOH	Yes
6	13:53	47	49	225	151	100		5% Form.		95% EtOH	Yes
7	13:58	50	54	230	100	50		5% Form.		95% EtOH	Yes
8	14:02	45	66	260	50	0		5% Form.		95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	14:07										

At Depth Data

wire out 594 (m)  
Time 13:25 (PDT)

Surface Data

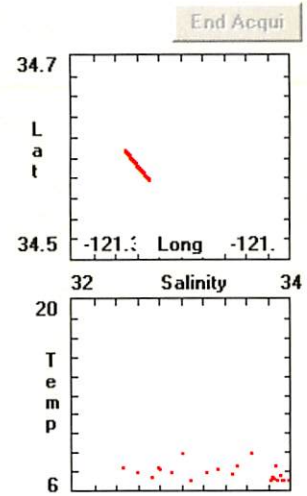
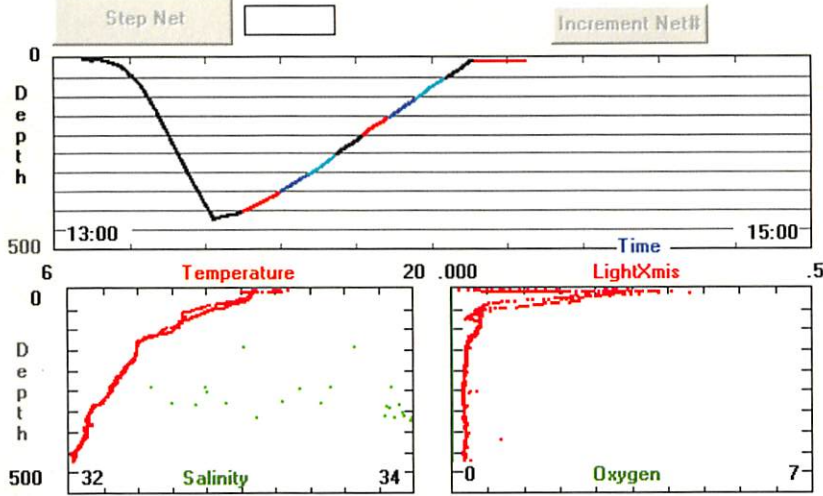
Pressure 1.9 (m)  
Temp. 13.59 (°C)  
Salinity 50.0 (‰)  
O<sub>2</sub> — (ml/l)  
Fluoresc. 0.0586 (V)  
Trans 0.0957 (1/m)  
Battery 19.1 (v)

Notes:

92m at depth held at depth ~ 408m  
Pres 419.5m while checked something on winch  
Temp 6.23°C ~ 3min hold time  
sal 34.16 o/po  
Den 26.863  
Fl 0.2188 V  
Trans 0.0179 /m  
Bat 19V



Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	14:15:11	Net_Num	9	Latitude	34N 36.497	Pause Acqui	Reset
Pressure	3.3 m	OpenTime	7.8 min	Longitude	121W 14.97	Baud Rate	2400
Temp	14.56 C	Vol_Filtered	155.8 m3	Net_Dist	449.2 m	Sample Rate	4.0 sec
Salinity	28.18 o/oo	Angle	63 deg	Total_Dist	3921.7 m	Printer	Off
Density	20.809	Flow_Counts	31	Processed File Name	C:\MOCNESS\MOCDATA\HAUL10.PRO		
Oxygen		Hor_Vel	0.0 kts	Raw File Name	C:\MOCNESS\MOCDATA\HAUL10.raw		
Fluoresc.	0.0848 V	Vert_Vel	-0.4 m/min	Acquisition Ended. trys = 0			
LightXmis	0.0457 /m	Battery	18.8 V				
Irradiance							



Cruise CCE-P1604 Date 4 May 2016 Haul # 11 Cycle # 3 Tow # 4

Wind Speed 2-4 (kts.) Direction 100 (°) Sea State 1-2 (ft.)

File Name: Processed HAUL11.PRO Raw HAUL11.RAW

Start Time 2232 (PDT) End Time 23:45 (PDT)

Lat 34° 33.16' 34.5514 Lat 34.50546

Long 121° 10.38' 121.1738 Long 121.2061

Event deploy # 233 Event rec. # 234 Frame Size 1 m<sup>2</sup>

Bottom Depth 958 (m) Console Operator MNO, BMW

Pre-deployment checks:

- Flow Meter
- Net Response
- Stepping Motor
- Clean Optical Surface
- Transmissometer
- Fluorometer

Net Mesh 202 μm

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net response
0	22:32	49	276	1129	408	0	100	5% Form.		95% EtOH	No
1	23:05	58	77	282	398	350		5% Form.		95% EtOH	No
2	23:10	59	80	262	350	300		5% Form.		95% EtOH	No
3	23:15	58	79	240	300	251		5% Form.		95% EtOH	Yes
4	23:20	56	83	259	251	200		5% Form.		95% EtOH	Yes
5	23:25	58	80	248	200	151		5% Form.		95% EtOH	Yes
6	23:29	57	90?	276	151	101		5% Form.		95% EtOH	Yes
7	23:35	57	73	238	101	50		5% Form.		95% EtOH	Yes
8	23:39	51	75	296	50	0		5% Form.		95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	23:45										

At Depth Data

wire out 866 (m)  
Time 23:04 (PDT)

Notes: \* Split Net 8

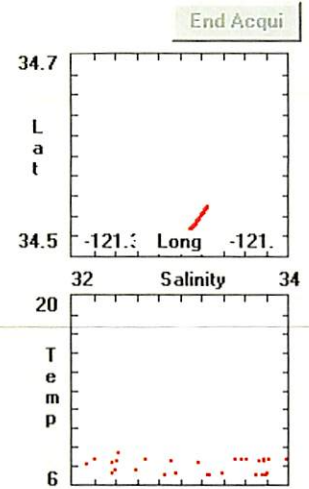
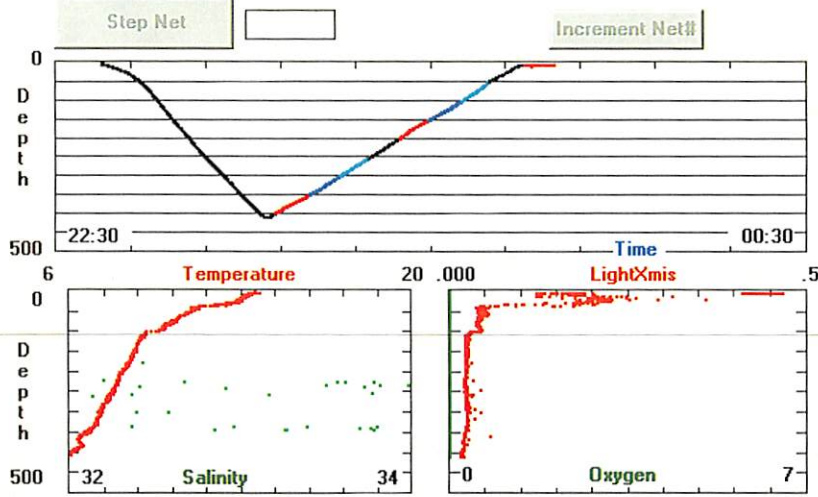
Surface Data

Pressure 6.9 (m)  
Temp. 13.21 (°C)  
Salinity 50 (‰)  
O<sub>2</sub> 38.025 (ml/l)  
Fluoresc. 0.2916 (V)  
Trans 0.2276 (V)  
Battery 19.0 (V)

at depth  
Pres 408 m  
Temp 6.06 °C  
Sal 34.00 ‰  
Den 26.799  
Fl 0.2140 V  
Trans 0.0195 /m  
pH 18.8 V

*bc*

Environmental Parameters	Net Operation	Net - Ship Position	Program Settings
Time: 23:50:01	Net_Num: 9	Latitude: 34N 30.289	Pause Acqui: <input type="button" value="Pause Acqui"/> <input type="button" value="Reset"/>
Pressure: 2.9 m	OpenTime: 4.6 min	Longitude: 121W 12.39	Baud Rate: 2400
Temp: 13.34 C	Vol_Filtered: 89.6 m3	Net_Dist: 297.3 m	Sample Rate: 4.0 sec
Salinity: 27.9 o/oo	Angle: 64 deg	Total_Dist: 5777.1 m	Printer: Off
Density: 20.834	Flow_Counts: 16	Processed File Name: C:\MOCNESS\MOCDATA\HAUL11.PRO	
Oxygen: <input type="text"/>	Hor_Vel: 0.0 kts	Raw File Name: C:\MOCNESS\MOCDATA\HAUL11.raw	
Fluoresc.: 0.1946 V	Vert_Vel: -0.2 m/min	Acquisition Ended. trys = 0	
LightXmis: 0.4136 /m	Battery: 18.7 V		
Irradiance: <input type="text"/>			





Cruise CCE-P1604 Date 7 May 2016 Haul # 12 Cycle # 4 Tow # 1

Wind Speed 6-8 (kts.) Direction 180° (°) Sea State 1-3 (ft.)

File Name: Processed HAUL12.PRO Raw HAUL12.RAW

Start Time 13:06 (PDT) End Time 14:10 (PDT)

Lat 34.49348 34° 29.6' Lat 34.46527

Long 120.73430 120° 44.0' Long 120.71420

Event deploy # 306 Event rec. # 301

Bottom Depth 248 - initial depth (m) Console Operator BW, MD  
352 - final depth

Pre-deployment checks:  
 Flow Meter  
 Net Response  
 Stepping Motor  
 Clean Optical Surface  
 Transmissometer  
 Fluorometer

Net Mesh 202 μm  
34° 27.92'  
 Frame Size 1 m<sup>2</sup>  
120° 42.85'

*Towing SE-ward*

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative
0	13:06	51	206	733	214	∅	50	5% Form.	50	95% EtOH
1	13:27	54	88	356	201	176		5% Form.		95% EtOH
2	13:34	50	72	291	176	150		5% Form.		95% EtOH
3	13:40	52	46	186	150	124		5% Form.		95% EtOH
4	13:44	51	45	172	124	102		5% Form.		95% EtOH
5	13:47	55	87	318	102	76		5% Form.		95% EtOH
6	13:53	50	90	327	76	51		5% Form.		95% EtOH
7	13:59	50	80	296	51	26		5% Form.		95% EtOH
8	14:05	57	64	244	26	∅		5% Form.		95% EtOH
9								5% Form.		95% EtOH
Closed	14:09									

*Net confirmed*  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes

At Depth Data

wire out 385 (m)  
 Time 13:24 (PDT)

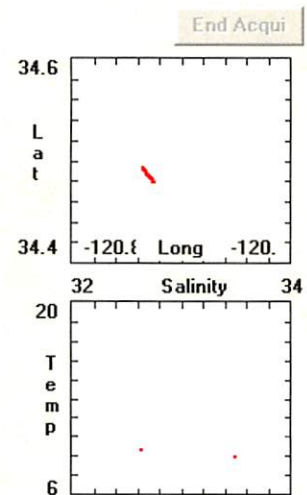
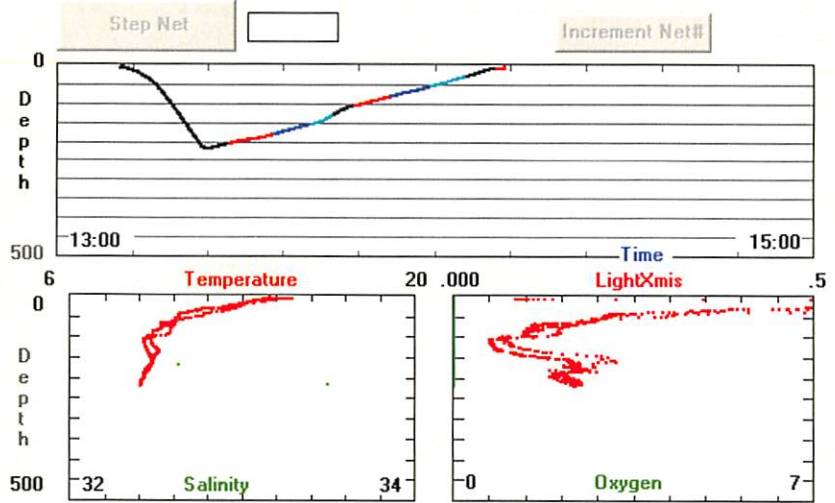
Notes: \_\_\_\_\_

Surface Data

Pressure 2.8 (m)  
 Temp. 11.07 (°C)  
 Salinity 50.0 (‰)  
 O<sub>2</sub> — (ml/l)  
 Fluoresc. 0.1366 (V)  
 Trans 1.2982 (m)  
 Battery 19.1 (V)

P 214m  
T 8.86C  
S 50‰  
385m 12.864  
3  
Fl 0.2126V  
Trans 0.1677/m  
Batt 18.5V

Environmental Parameters	Net Operation	Net - Ship Position	Program Settings
Time: 14:11:26	Net_Num: 9	Latitude: 34N 28.846	Pause Acqui: <input type="button"/> Reset: <input type="button"/>
Pressure: 2.2 m	OpenTime: 1.5 min	Longitude: 120W 43.49	Baud Rate: 2400
Temp: 14.3 C	Vol_Filtered: 45.6 m3	Net_Dist: 0.1 m	Sample Rate: 4.0 sec
Salinity: 25.0 o/oo	Angle: 1 deg	Total_Dist: 1707.0 m	Printer: Off
Density: 18.416	Flow_Counts: 9	Processed File Name: C:\MOCNESS\MOCDATA\HAUL12.PRO	
Oxygen: <input type="text"/>	Hor_Vel: 0.3 kts	Raw File Name: C:\MOCNESS\MOCDATA\HAUL12.raw	
Fluoresc.: 1.0294 V	Vert_Vel: 0.6 m/min	Acquisition Ended. trys = 0	
LightXmis: 0.1028 /m	Battery: 18.7 V		
Irradiance: <input type="text"/>			





Cruise CCE-P1604 Date 7 May 2016 Haul # 13 Cycle # 4 Tow # 2

Wind Speed 2-4 (kts.) Direction 340° (°) Sea State 1-2 (ft.)

File Name: Processed HAUL13.PRO Raw HAUL13.RAW

Start Time 22:28 (PDT) End Time 23:22 (PDT)

Lat 34° 31.2' 34.5183 Lat 34° 29.979'

Long 120° 45.8' 120.7625 Long 120° 45.18' 34.49892

Event deploy # 311 Event rec. # 312 120.7529 Frame Size 1 m<sup>2</sup>

Bottom Depth 226.7 - initial (m) Console Operator BMW, MDO

Pre-deployment checks:  
 Flow Meter  
 Net Response  
 Stepping Motor  
 Clean Optical Surface  
 Transmissometer  
 Fluorometer

Towing  
SEward

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net response
0	22:28	43	135	662	217	Ø	50	5% Form.	50	95% EtOH	Yes
1	22:46	45	33	160	202	176	↓	5% Form.	↓	95% EtOH	Yes
2	22:50	43	44	208	176	151	↓	5% Form.	↓	95% EtOH	Yes
3	22:54	51	48?	263	151	125	↓	5% Form.	↓	95% EtOH	Yes
4	22:59	50	44	189	125	101	↓	5% Form.	↓	95% EtOH	Yes
5	23:03	48	60	256	101	76	↓	5% Form.	↓	95% EtOH	Yes
6	23:08	44	50	229	76	50	↓	5% Form.	↓	95% EtOH	Yes
7	23:13	46	46	205	50	26	↓	5% Form.	↓	95% EtOH	Yes
8	23:17	54	52	222	26	Ø	↓	5% Form.	↓	95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	23:22										

At Depth Data

wire out 314 (m)  
 Time 22:42 (PDT)

Notes: \_\_\_\_\_

at depth

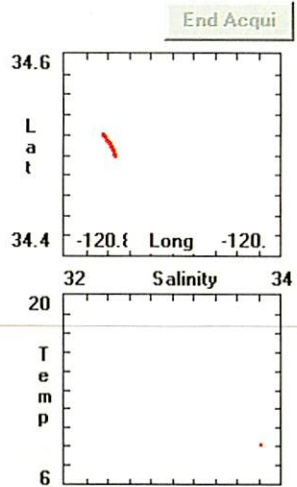
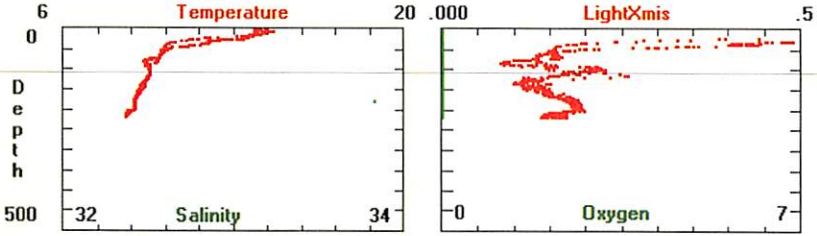
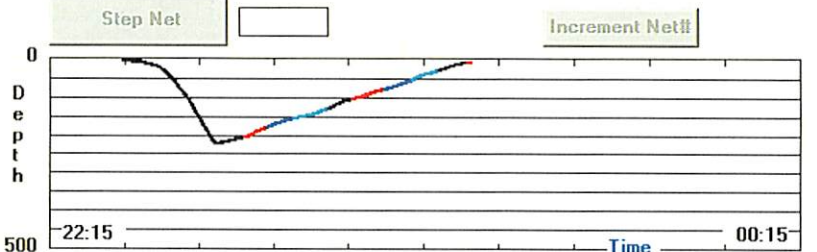
Surface Data

Pressure 2.6 (m)  
 Temp. 14.41 (°C)  
 Salinity 50.0 (‰)  
 O<sub>2</sub> — (ml/l)  
 Fluoresc. 0.4894 (V)  
 Trans 1.0383 (m)  
 Battery 18.8 (v)

Pres 217 m  
 Temp 8.59 °C  
 Sal 27.62  
 Fl 0.2690 V  
 Trans 0.1427/m  
 Batt 18.7 V



Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	23:22:39	Net_Num	9	Latitude	34N 29.9791	Pause Acqui	Reset
Pressure	4.5 m	OpenTime	0.4 min	Longitude	120W 45.18	Baud Rate	2400
Temp	14.58 C	Vol_Filtered	21.3 m3	Net_Dist	18.2 m	Sample Rate	4.0 sec
Salinity	24.37 o/oo	Angle	39 deg	Total_Dist	2568.3 m	Printer	Off
Density	17.877	Flow_Counts	4	Processed File Name	C:\MOCNESS\MOCDATA\HAUL13.PRO		
Oxygen		Hor_Vel	1.8 kts	Raw File Name	C:\MOCNESS\MOCDATA\HAUL13.raw		
Fluoresc.	0.5382 V	Vert_Vel	-1.2 m/min	Acquisition Ended. trys = 0			
LightXmis	1.1897 /m	Battery	18.5 V				
Irradiance							



Cruise CCE-P1604 Date 8 May 2016 Haul # 14 Cycle # 4 Tow # 3

Wind Speed 6-8 (kts.) Direction 310 (°) Sea State 1-3 (ft.)

File Name: Processed HAUL14.PRO Raw HAUL14.RAW

Start Time 13:01 (PDT) End Time 14:06 (PDT)

Lat 34° 29.46' Lat 34 31.513

Long 120° 46.23' Long 120 49.65

Event deploy # 327 Event rec. # 328 Net Mesh 202  $\mu$ m Frame Size 1 m<sup>2</sup>

Bottom Depth 395 - initial (m) Console Operator MDO, BMW, BVW

Pre-deployment checks:  
 Flow Meter  
 Net Response  
 Stepping Motor  
 Clean Optical Surface  
 Transmissometer  
 Fluorometer

Net Tow Information

474m  
350  
300  
250  
200  
150  
100  
50  
25  
0

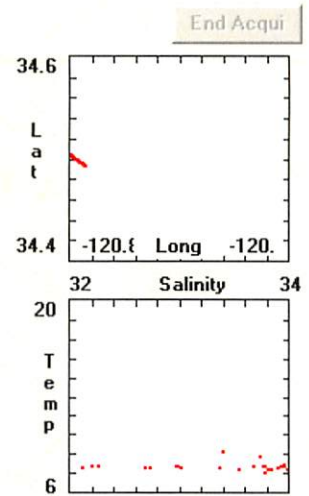
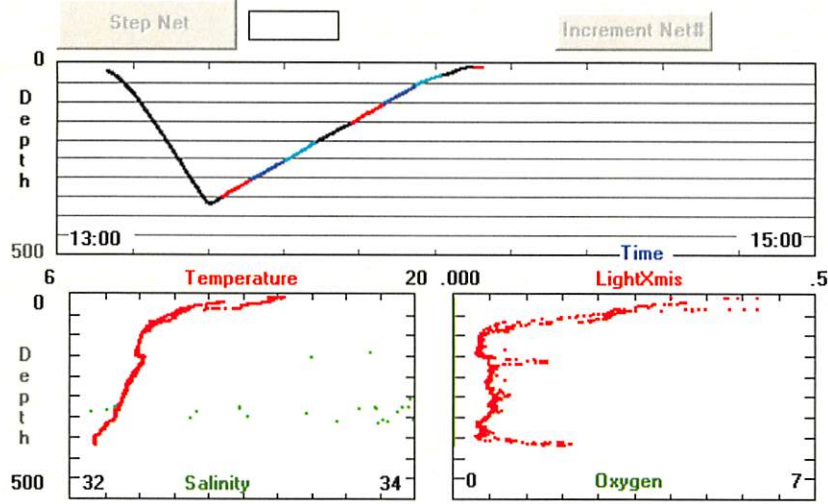
Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Response
0	13:01	42	184	832	365	0	100	5% Form.		95% EtOH	NO
1	13:26	51	55	229	350	301		5% Form.		95% EtOH	Yes
2	13:30	52	75	283	301	251		5% Form.		95% EtOH	Yes
3	13:36	54	68	251	251	200		5% Form.		95% EtOH	Yes
4	13:41	54	78	292	200	151		5% Form.		95% EtOH	Yes
5	13:47	54	78	276	151	101		5% Form.		95% EtOH	Yes
6	13:52	60	81	279	101	50		5% Form.		95% EtOH	Yes
7	13:57	58	57	199	50	26		5% Form.		95% EtOH	Yes
8	14:01	56	72	263	26	0		5% Form.		95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	14:06										

At Depth Data  
 wire out 598 (m)  
 Time 13:24 (PDT)

Surface Data  
 Pressure 1.0 (m)  
 Temp. 14.61 (°C)  
 Salinity 50.0 (‰)  
 O<sub>2</sub> - (m/l)  
 Fluoresc. 0.2016 (v)  
 Trans 0.9974 (m)  
 Battery 18.8 (v)

Notes:  
 Initial: 395 m  
13:08 - 414 m 13:37 - 413 m  
 at depth 13:57 422  
P. 365 m  
T 20.2 °C  
Sal 34.2 ‰  
Fl 0.2196 V  
Trans 0.1618/m  
Batt 18.6 V

Environmental Parameters	Net Operation	Net - Ship Position	Program Settings
Time: 14:07:52	Net_Num: 9	Latitude: 34N 31.518	Pause Acqui: <input type="button"/> Reset: <input type="button"/>
Pressure: 2.2 m	OpenTime: 1.3 min	Longitude: 120W 49.66	Baud Rate: 2400
Temp: 14.24 C	Vol_Filtered: 15.7 m3	Net_Dist: 122.7 m	Sample Rate: 4.0 sec
Salinity: 26.09 o/oo	Angle: 7 deg	Total_Dist: 5467.8 m	Printer: <input type="button"/> Off
Density: 19.268	Flow_Counts: 4	Processed File Name: C:\MOCNESS\MOCDATA\HAUL14.PRO	
Oxygen: <input type="text"/>	Hor_Vel: 0.0 kts	Raw File Name: C:\MOCNESS\MOCDATA\HAUL14.raw	
Floresc.: 0.1730 V	Vert_Vel: 0.2 m/min	Acquisition Ended. tries = 0	
LightXmis: 1.0956 /m	Battery: 18.4 V		
Irradiance: <input type="text"/>			





TESTED MOCNESS

LED boards

LED'S  
8 May 2016  
~ 1630

	1	2	3	4	5	6	7	8	9	10	11	12
Upper Row	-	-	-	-	-	-	-	-	-	-	-	-
	0	3	3	2	0	0	1	3	<del>3</del> 0	<del>3</del> 3	3	0
Lower Row	0	0	1	0	1	1	2	2	1	0	2	1

# LED's (out of 4) flashing

Each board has 4 LED'S.

No board had 4 LED'S illuminated

- 9/24 LED'S did not function at all
- 6/24 LED boards showed 1 LED strobing
- 4/24 LED boards " 2 LED strobing
- 5/24 LED boards " 3 LED strobing

Upper bar of LED'S dimmed when decreased amplitude; lower bar seems unchanged. Upper bar of LED'S did not increase amplitude after it was re-set to original values.

Experimented w/  
Δ stroke software  
settings

TEST MOENESS  
LED'S - 8 May 2016  
v16.30

	TRIAL #						
	1	2	3	4	5	6	7
Pulse width	40	40	40	40	2	250	40
Max Δ period/s	99	20	5	99	99	99	99
Amplitude						(auto reset to 99)	
Flash Rate	500	500	500	2000	500	2500	500
Period (ms-min 100)							
		not noticeably dimmer	top bar responded bottom unchanged	Noticably slower	prob. slower pulse width	bottom bar o.k.	Top bar very dim

	TRIAL #	
	8	9
Pw	40	40
Amp	5	99
Flash rate	500	500
	upper only 2 LEDs on lower - dimmer than before but not as dim as upper	top bar weaker than before
		800
		5.29
		90.0
		83.0

Cruise CCE-P1604 Date 8 May 2016 Haul # 15 Cycle # 4 Tow # 4

Wind Speed 10-12 (kts.) Direction 310° Sea State 1-3 (ft.)

File Name: Processed HAUL15.PRO Raw HAUL15.RAW

Start Time 22:31 (PDT) End Time 23:27 (PDT)

Tow toward west

Lat 34° 31.45' 34.52424 Lat 34° 31.517

Long 120° 48.92' 120.8155 Long 120° 51.41 34.52475

Pre-deployment checks:

- Flow Meter
- Net Response
- Stepping Motor
- Clean Optical Surface
- Transmissometer
- Fluorometer

Net Mesh 202  $\mu$ m

Event deploy # 336 Event rec. # 337 Frame Size 1 m<sup>2</sup>

Bottom Depth 394 - initial (m) Console Operator MDO, BMW

Net Tow Information

Net	Time Open	Angle	Flow Counts	Volume Filtered (m <sup>3</sup> )	Max Depth (m)	Min Depth (m)	Split	Fixative	Split	Fixative	Net response
0	22:31	45	146	699	358	∅	100	5% Form.		95% EtOH	No
350 1	22:52	47	52	234	350	301		5% Form.		95% EtOH	No
300 2	22:56	46	50	219	301	250		5% Form.		95% EtOH	Yes
250 3	23:01	47	50	214	250	200		5% Form.		95% EtOH	Yes
200 4	23:05	50	51	204	200	149		5% Form.		95% EtOH	Yes
150 5	23:09	50	66	253	149	101		5% Form.		95% EtOH	Yes
100 6	23:14	47	60	243	101	51		5% Form.		95% EtOH	Yes
50 7	23:19	49	44	180	51	26		5% Form.		95% EtOH	Yes
25 8	23:22	49	52	215	26	∅		5% Form.		95% EtOH	Yes
9								5% Form.		95% EtOH	
Closed	23:27										

At Depth Data

wire out 559 (m)  
Time 22:50 (PDT)

Notes: 22:32 - 395 m; 22:54 422.82m

Surface Data

Pressure 2.2 (m)  
Temp. 14.92 (°C)  
Salinity 50.0 (‰)  
O<sub>2</sub> - (ml/l)  
Fluoresc. 0.4980 (V)  
Trans 0.8095 (m)  
Battery 18.5 (V)

at depth  
P 358 m  
T 7.03 °C  
S 34.2 ‰  
Fl 0.2198 V  
Trans 0.1448 /m  
Batt 18.3 V

Net zero caught within itself





Environmental Parameters		Net Operation		Net - Ship Position		Program Settings	
Time	23:27:35	Net_Num	9	Latitude	34N 31.5171	Pause Acqui	Reset
Pressure	4.1 m	OpenTime	0.5 min	Longitude	120W 51.41	Baud Rate	2400
Temp	14.04 C	Vol_Filtered	26.8 m3	Net_Dist	37.9 m	Sample Rate	4.0 sec
Salinity	50.0 o/oo	Angle	39 deg	Total_Dist	4042.8 m	Printer	Off
Density	37.82	Flow_Counts	5	Processed File Name	C:\MOCNESS\MOCDATA\HAUL15.PRO		
Oxygen		Hor_Vel	1.5 kts	Raw File Name	C:\MOCNESS\MOCDATA\HAUL15.raw		
Fluoresc.	0.5774 V	Vert_Vel	-0.8 m/min	Name	Acquisition Ended. trys = 0		
LightXmis	1.0553 /m	Battery	18.3 V				
Irradiance							

