

# DAILY SCIENCE LOG BOOK

MISSION  
NUMBER

2014-18

DATE:

From: June 8<sup>th</sup>/14

To: 24 juin 2014

VESSEL:

J.P. Tully

PROJECT(S):

Line P

Water Properties Group  
Fisheries and Oceans Canada  
Institute of Ocean Sciences  
Ocean Sciences Division  
North Saanich, BC, Canada

[WaterProperties.ca](http://WaterProperties.ca)

Captain: MIKE MCCULLAGH First Officer: ZIBIGNIEW CHIMARA  
Second Officer: ROB NUGENT Third Officer: ANTHONY MAGUIRE  
Fishing Master: \_\_\_\_\_ Chief Engineer: ROGER HORTON

Mission Participants / Agencies:

DFO-IOS ; UBC ; NOAA ; UW

**\*\* Chief Scientist to complete section below OR cut and tape from cruise plan \*\***

**1<sup>st</sup> Leg Scientific Personnel:** Chief Scientist: MARIE ROBERT 0630-1830 A

| Name            | Watch | Cabin | Name            | Watch | Cabin |
|-----------------|-------|-------|-----------------|-------|-------|
| NINA SCHUBACK   | 06-12 | B     | MICHAEL CRAIG   | 18-24 | H     |
| MARIELA TUQUERO | 12-18 | B     | STEVE KUNZE     | 06-12 | H     |
| DOUG YELLAND    | 12-24 | C     | MICHAEL ARYCHUK | DHS   | 3     |
| GLENN COOPER    | PH    | D     |                 |       |       |
| CHRIS PAYNE     | 18-24 | D     |                 |       |       |
| MIRKO FLECKEN   | 12-18 | E     |                 |       |       |
| ANDREAS MUELLE  | 00-06 | E     |                 |       |       |
| VICTORIA LAM    | 00-06 | F     |                 |       |       |
| MAUREEN SOON    | 12-18 | F     |                 |       |       |
| MARK BERTON     | 00-12 | G     |                 |       |       |

## 2<sup>nd</sup> Leg Scientific Personnel:

## Chief Scientist:

[illegible]

**\*\* The following 3 pages are VERY IMPORTANT as they document equipment and settings used on board \*\***

These pages are to be completed by the CTD Technician setting up the equipment, the Watch Leader on board, and the Chief Scientist MUST verify that all relevant sections are completed prior to leaving the vessel. *Any mid-cruise changes to be noted by watch leader in the notes.*

Data logging computer: #3

Data acquisition program: Seasave

CTD deck unit make: 11+ model: SBE serial number: 471

#### Primary CTD

Make: SBE model: 9+ serial number: 585

Primary temperature serial number: 4054

Primary conductivity serial number: 1766

Secondary temperature serial number: 4700

Secondary conductivity serial number: 3321

Transmissometer: Wet Labs Model: C-star s/n: 1396DR

Transmissometer: \_\_\_\_\_ Model: \_\_\_\_\_ s/n: \_\_\_\_\_

Fluorometer: Model Seapoint Cable gain: \_\_\_\_\_ s/n: 3642 P S or NO pump?

Fluorometer: Model \_\_\_\_\_ Cable gain: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Oxygen sensor: SBE Model: 43 s/n: 1119 P, S or NO pump?

PAR sensor: Biospherical Model: QSP200L45 s/n: 4615 Surface PAR? Y / N

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

#### Secondary CTD

Make: \_\_\_\_\_ model: \_\_\_\_\_ serial number: \_\_\_\_\_

Primary temperature serial number: \_\_\_\_\_

Primary conductivity serial number: \_\_\_\_\_

Secondary temperature serial number: \_\_\_\_\_

Secondary conductivity serial number: \_\_\_\_\_

Transmissometer: \_\_\_\_\_ Model: \_\_\_\_\_ s/n: \_\_\_\_\_

Transmissometer: \_\_\_\_\_ Model: \_\_\_\_\_ s/n: \_\_\_\_\_

Fluorometer: Model \_\_\_\_\_ Cable gain: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Fluorometer: Model \_\_\_\_\_ Cable gain: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Oxygen sensor: \_\_\_\_\_ Model: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

PAR sensor: \_\_\_\_\_ Model: \_\_\_\_\_ s/n: \_\_\_\_\_ Surface PAR? Y / N

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

Other sensors: \_\_\_\_\_ s/n: \_\_\_\_\_ P, S or NO pump?

CTD calibration bottle location (height above CTD in metres): \_\_\_\_\_

*This also includes the bottle location above the CTD on non-rosette casts (e.g., W.E. Ricker)*



# DAILY SCIENCE LOG

## Ocean Sciences Division, Institute of Ocean Sciences

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| Month <u>JUN</u> |              |     |            | Year <u>2014</u> |            |               | Vessel <u>TULLY</u>    |            |              | Cruise ID <u>2014-18</u> |                       |              |               |                                                              |                     |
|------------------|--------------|-----|------------|------------------|------------|---------------|------------------------|------------|--------------|--------------------------|-----------------------|--------------|---------------|--------------------------------------------------------------|---------------------|
| Event Number     | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method | Positional Information |            | Bottom Depth | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments            |
| 1                | Har059       | 9   | 04:37      | BE               | ROS        | US            | 48° 36.87              | 123° 14.89 | 239          |                          | 1 - 21                | 21           | DY MC         | <input checked="" type="checkbox"/> <input type="checkbox"/> | PAR ON              |
|                  |              |     | 04:42      | BO               |            |               | 48° 36.84              | 123° 14.88 |              | 229                      | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Out of order        |
|                  |              |     | :          | EN               |            |               | .                      | .          |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
| 2                | Har059       | 9   | 04:51      | BE               | ROS        |               | 48° 36.84              | 123° 14.88 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Restart computer    |
|                  |              |     | 05:08      | EN               |            |               | 48° 36.83              | 123° 14.90 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
| 3                | JF1          | 9   | 08:28      | BE               | Loop       | -             | 48° 16.00              | 123° 30.00 | 158          | -                        | -                     | -            | MB            | <input type="checkbox"/> <input type="checkbox"/>            | Loop. NUT SAL 2 CHL |
| 4                | JF2          | 9   | 10:31      | BE               | ROS        | US            | 48° 18.00              | 124° 0.09  | 187          |                          | 22 - 37               | 16           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | MB CAST             |
|                  |              |     | 10:38      | BO               |            |               | 48° 17.99              | 124° 0.10  |              | 177.3                    | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
|                  |              |     | 10:47      | EN               |            |               | 48° 18.04              | 124° 0.13  |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
| 5                | JF2          | 9   | 11:16      | BE               | ROS        | US            | 48° 18.00              | 124° 0.01  | 187          |                          | 38 - 51               | 13           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                     |
|                  |              |     | 11:19      | BO               |            |               | 48° 18.00              | 124° 0.07  |              | 176.6                    | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
|                  |              |     | 11:32      | EN               |            |               | 48° 18.06              | 124° 0.32  |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
| 6                | JF3          | 9   | 13:33      | BE               | Loop       | -             | 48° 27.01              | 124° 30.08 | 223          | -                        | -                     | -            | MB            | <input type="checkbox"/> <input type="checkbox"/>            | Loop NUT SAL 2 CHL  |
| 7                | Miss         | 9   | 14:35      | BE               | ROS        | US            | 48° 31.71              | 124° 44.46 | 186          |                          | 51 - 60               | 10           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | MB CAST             |
|                  |              |     | 14:59      | BO               |            |               | 48° 31.74              | 124° 44.52 |              | 149.4                    | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
|                  |              |     | 14:50      | EN               |            |               | 48° 31.74              | 124° 44.76 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
| 8                | JF4          | 9   | 15:53      | BE               | Loop       | -             | 48° 32.29              | 125° 00.00 | 60           |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Loop NUT SAL 2 CHL  |
|                  |              |     | :          |                  |            |               | .                      | .          |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |
|                  |              |     | :          |                  |            |               | .                      | .          |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                     |

### Event Type:

BOT = Bottle cast (no CTD)  
CTD = Standalone CTD  
ROS = CTD in Rosette  
SET = Fish Set

LOOP = Sea Water Loop  
MOR = Mooring  
NET = Plankton Net Haul  
DRF = Drifter

### Bottle Firing Method:

US = Up / Stop (default)  
UN = Up / No stop  
DN = Down / No stop

Notes:

### Time Code:

BE = Beginning Time of Cast  
BO = Bottom Time of Cast  
EN = End Time of Cast

CTD Transmissometer and Fluorometer to be cleaned before each cast -- do not use Ammonia products

DE = Deployment Time  
MR = Messenger Release Time  
RE = Recover Mooring Time

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# DAILY SCIENCE LOG

## Ocean Sciences Division, Institute of Ocean Sciences

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| Month <u>JUN</u> |              |     |            | Year <u>2014</u> |            |               | Vessel <u>TULLY</u>    |           |              | Cruise ID <u>2014 78</u> |                       |              |               |                                     |                  |
|------------------|--------------|-----|------------|------------------|------------|---------------|------------------------|-----------|--------------|--------------------------|-----------------------|--------------|---------------|-------------------------------------|------------------|
| Event Number     | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method | Positional Information |           | Bottom Depth | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/Fl Cleaned                     | Comments         |
| 9                | P1           | 9   | 18:05      | BE               | ROS        | US            | 48°34.50               | 125°29.95 | 115          |                          | 61-75                 | 15           | ML            | <input checked="" type="checkbox"/> |                  |
|                  |              |     | 18:08      | BO               |            |               | 48°34.51               | 125°29.93 | -            | 102                      | -                     |              |               | <input type="checkbox"/>            |                  |
|                  |              |     | 18:18      | EN               |            |               | 48°34.49               | 125°29.97 |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |
| 10               | P2           | 9   | 20:39      | BE               | ROS        | US            | 48°36.01               | 126°00.01 | 117          |                          | 76-89                 | 14           | DY            | <input type="checkbox"/>            | + P2 LOOP CTD x2 |
|                  |              |     | 20:41      | BO               |            |               | 48°36.03               | 126°00.02 |              | 107                      | -                     |              |               | <input type="checkbox"/>            | DMS CAST         |
|                  |              |     | 20:53      | EN               |            |               | 48°35.96               | 126°00.11 |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |
| 11               | P2           | 9   | 21:02      | BE               | NET        |               | 48°35.99               | 126°00.14 | 117          |                          | -                     |              |               | <input type="checkbox"/>            |                  |
|                  |              |     | 21:06      | BO               |            |               | 48°36.00               | 126°00.13 |              | 107                      | -                     |              |               | <input type="checkbox"/>            |                  |
|                  |              |     | 21:09      | EN               |            |               | 48°36.00               | 126°00.14 |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |
| 12               | P2           | 9   | 21:22      | BE               | ROS        | US            | 48°36.01               | 126°00.16 | 118          |                          | 90-97                 | 8            | MR/DY         | <input checked="" type="checkbox"/> | DEEP CAST        |
|                  |              |     | 21:25      | BO               |            |               | 48°36.01               | 126°00.16 |              | 108                      | -                     |              |               | <input type="checkbox"/>            |                  |
|                  |              |     | 21:32      |                  |            |               | 48°36.01               | 126°00.15 |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |
| 13               | P3           | 9   | 23:12      | BE               | ROS        | US            | 48°37.49               | 126°19.96 | 815          |                          | -                     |              |               | <input checked="" type="checkbox"/> |                  |
|                  |              |     | 23:25      | BO               |            |               | 48°37.47               | 126°19.98 |              | 810                      | 98-117                | 20           |               | <input type="checkbox"/>            |                  |
|                  |              |     | 23:49      | EN               |            |               | 48°37.48               | 126°19.98 |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |
| 14               | P4           | 10  | 01:35      | BE               | Net        |               | 48°38.97               | 126°40.04 | 1324         |                          | -                     |              |               | <input type="checkbox"/>            | Bump to 250      |
|                  |              |     | 01:43      | BO               |            |               | 48°38.96               | 126°40.07 |              | 250                      | -                     |              |               | <input type="checkbox"/>            |                  |
|                  |              |     | :          | EN               |            |               | .                      | .         |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |
|                  |              |     | :          |                  |            |               | .                      | .         |              |                          | -                     |              |               | <input type="checkbox"/>            |                  |

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RE = Recover Mooring Time

Notes:

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| Month <u>JUN</u> |               |               |                  | Year <u>2014</u> |                 | Vessel <u>TULLY</u> |                        |                       |                 | Cruise ID <u>2014-18</u> |                       |              |               |                                                              |                              |
|------------------|---------------|---------------|------------------|------------------|-----------------|---------------------|------------------------|-----------------------|-----------------|--------------------------|-----------------------|--------------|---------------|--------------------------------------------------------------|------------------------------|
| Event Number     | Station Name  | Day           | Time (UTC)       | Time Code        | Event Type      | Firing Method       | Positional Information |                       | Bottom Depth    | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments                     |
| 15               | P4            | 10            | 01:59            | BE               | Net             |                     | 48° 38.97              | 126° 40.06            | 1324            |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Bongo to 1300                |
|                  |               |               | 02:43            | BO               |                 |                     | 48° 38.96              | 126° 40.07            |                 | 1300                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |               |               | :                | EN               |                 |                     | .                      | .                     |                 |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 16               | P4            | 10            | 03:42            | BE               | ROS             | US                  | 48° 39.00              | 126° 40.01            | 1322            |                          | -                     |              | dy            | <input checked="" type="checkbox"/> <input type="checkbox"/> | UBC                          |
|                  |               |               | 04:07            | BO               |                 |                     | 48° 39.00              | 126° 40.00            |                 | 1325                     | 118-133               | 16           |               | <input type="checkbox"/> <input type="checkbox"/>            | PAR off                      |
|                  |               |               | 04:32            | EN               |                 |                     | 48° 39.00              | 126° 39.99            |                 |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 17               | P4            | 10            | 05:11            | BE               | ROS             | US                  | 48° 39.02              | 126° 39.99            | 1320            |                          | -                     |              |               | <input checked="" type="checkbox"/> <input type="checkbox"/> | Plastics                     |
|                  |               |               | 05:38            | BO               |                 |                     | 48° 39.01              | 126° 40.02            |                 | 1323                     | 134-151               | 18           |               | <input type="checkbox"/> <input type="checkbox"/>            | S=1322 P=1322<br>B=10 D=1308 |
|                  |               |               | 06:21            | EN               |                 |                     | 48° 39.03              | 126° 40.04            |                 |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 18               | P4            | 10            | 11:37            | BE               | ROS             | US                  | 48° 38.99              | 126° 40.08            | 1323            |                          | 152-170               | 19           | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                              |
|                  |               |               | 12:02            | BO               |                 |                     | 48° 38.99              | 126° 40.08            |                 | 1321                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |               |               | 12:41            | EN               |                 |                     | 48° 39.04              | 126° 39.98            |                 |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 19               | P4            | 10            | 14:33            | BE               | ROS             | US                  | 48° 38.94              | 126° 40.02            | 1323            |                          | 171-180               | 10           | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> | PAR on <i>Nin</i> Cast       |
|                  |               |               | 14:35            | BO               |                 |                     | 48° 38.93              | 126° 40.00            |                 | 150                      | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |               |               | 14:45            | EN               |                 |                     | 48° 38.92              | 126° 40.96            |                 |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 20               | P4            | 10            | 15:21            | BE               | ROS             | US                  | 48° 38.96              | 126° 39.96            | 1323            |                          | 181-198               | 18           | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> | DMS Cast                     |
|                  |               |               | 15:27            | BO               |                 |                     | 48° 38.99              | 126° 39.93            |                 | 301                      | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | + 2 LOOP Ctl                 |
|                  |               |               | 15:43            | EN               |                 |                     | 48° 39.02              | 126° 39.87            |                 |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| <del>21</del>    | <del>P4</del> | <del>10</del> | <del>15:38</del> | <del>BE</del>    | <del>Loop</del> | <del>-</del>        | <del>48° 38.97</del>   | <del>126° 39.93</del> | <del>1323</del> | <del>-</del>             | <del>-</del>          | <del>-</del> | <del>MR</del> | <input type="checkbox"/> <input type="checkbox"/>            | <del>Loop 2 chl</del>        |

## Event Type:

BOT = Bottle cast (no CTD)  
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=

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| Month        |              |     |            | Year      |            |               | Vessel              |                       |              | Cruise ID    |                       |              |               |                                                              |                             |
|--------------|--------------|-----|------------|-----------|------------|---------------|---------------------|-----------------------|--------------|--------------|-----------------------|--------------|---------------|--------------------------------------------------------------|-----------------------------|
| JUN          |              |     |            | 2014      |            |               | TULLY               |                       |              | 2014-18      |                       |              |               |                                                              |                             |
| Event Number | Station Name | Day | Time (UTC) | Time Code | Event Type | Firing Method | Positional Latitude | Information Longitude | Bottom Depth | Max Pressure | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments                    |
| 21           | P5           | 10  | 18:01      | BE        | ROS        | US            | 48°41.57            | 127°9.94              | 2088         |              | 199 - 202             | 24           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | PAR OFF                     |
|              |              |     | 18:36      | BO        |            |               | 48°41.71            | 127°9.08              |              | 2095         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | 19:22      | EN        |            |               | 48°41.97            | 127°10.20             |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
| 22           | P6           | 10  | 21:45      | BE        | ROS        | US            | 48°44.64            | 127°39.96             | 2547         |              | -                     |              | DY            | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | 22:16      | BO        |            |               | 48°44.60            | 127°39.96             |              | 2005         | -                     |              |               | <input checked="" type="checkbox"/> <input type="checkbox"/> |                             |
|              |              |     | 22:51      | EN        |            |               | 48°44.62            | 127°39.98             |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
| 23           | P7           | 11  | 01:08      | BE        | ROS        | US            | 48°46.64            | 128°9.95              | 2506         |              | -                     |              | DY            | <input checked="" type="checkbox"/> <input type="checkbox"/> | P2500 2=1465<br>B-38 3 2507 |
|              |              |     | 01:58      | BO        |            |               | 48°46.63            | 128°10.15             |              |              | 229 - 252             | 24           |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | 02:54      | EN        |            |               | 48°46.62            | 128°10.25             |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
| 24           | P8           | 11  | 05:11      | BE        | NET        | UN            | 48°49.09            | 128°40.7              | 2521         |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Bouge to 250                |
|              |              |     | 05:22      | BO        |            |               | 48°49.19            | 128°40.11             |              | 250          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | 05:27      | EN        |            |               | 48°49.20            | 128°40.12             |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
| 25           | P8           | 11  | 05:35      | BE        | NET        | UN            | 48°48.99            | 128°40.02             | 2521         |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Bouge to 200                |
|              |              |     | 06:18      | BO        |            |               | 48°49.00            | 128°40.05             |              | 1200         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | :          | EN        |            |               | .                   | .                     |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
| 26           | P8           | 11  | 6:57       | BE        | ROS        | US            | 48°48.99            | 128°40.05             | 2521         |              | 253 - 275             | 23           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                             |
|              |              |     | 7:31       | BO        |            |               | 48°48.97            | 128°39.94             |              | 2005         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | 8:29       | EN        |            |               | 48°49.08            | 128°39.88             |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |
|              |              |     | :          |           |            |               | .                   | .                     |              |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                             |

## Event Type:

BOT = Bottle cast (no CTD)  
CTD = Standalone CTD  
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SET = Fish Set

## LOOP = Sea Water Loop

MOR = Mooring  
NET = Plankton Net Haul  
DRF = Drifter

## Bottle Firing Method:

US = Up / Stop (default)  
UN = Up / No stop  
DN = Down / No stop

## Notes:

## Time Code:

BE = Beginning Time of Cast  
BO = Bottom Time of Cast  
EN = End Time of Cast

## CTD Transmissometer and Fluorometer to be cleaned before each cast -- do not use Ammonia products

DE = Deployment Time  
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| Month <u>JUN</u> |              |     | Year <u>2014</u> |           |            | Vessel <u>TULLY</u> |                        |            | Cruise ID <u>2014-18</u> |              |                       |              |               |                                                              |                                |
|------------------|--------------|-----|------------------|-----------|------------|---------------------|------------------------|------------|--------------------------|--------------|-----------------------|--------------|---------------|--------------------------------------------------------------|--------------------------------|
| Event Number     | Station Name | Day | Time (UTC)       | Time Code | Event Type | Firing Method       | Positional Information |            | Bottom Depth             | Max Pressure | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments                       |
|                  |              |     |                  |           |            |                     | Latitude               | Longitude  |                          |              |                       |              |               |                                                              |                                |
| 27               | P9           | 11  | 11:00            | BE        | US         | US                  | 48° 51.38              | 129° 10.02 | 2348                     |              | 276-277               | 2            | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                                |
|                  |              |     | 11:43            | BO        |            |                     | 48° 51.26              | 129° 10.03 |                          | 2384         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
|                  |              |     | 12:23            | BE        |            |                     | 48° 51.36              | 129° 10.18 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
| 28               | P10          | 11  | 14:41            | BE        | ROS        | US                  | 48° 53.62              | 129° 39.92 | 2642                     |              | 278-279               | 2            | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> | THOUSANDS OF VERTICALLY WATER  |
|                  |              |     | 15:16            | BO        |            |                     | 48° 53.58              | 129° 39.93 |                          | 2005         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | SURFACE LOOKS GREEN + SUN FISH |
|                  |              |     | 15:49            | EN        |            |                     | 48° 53.60              | 129° 39.96 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | BIG # b/w SALS TOP 100         |
| 29               | P11          | 11  | 17:59            | BE        | ROS        | US                  | 48° 56.00              | 130° 10.16 | 2753                     |              | 280-281               | 2            | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> | FEW VERTICALLY                 |
|                  |              |     | 18:30            | BO        |            |                     | 48° 56.09              | 130° 10.14 |                          | 2005         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
|                  |              |     | 19:05            | EN        |            |                     | 48° 56.16              | 130° 10.13 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
| 30               | P12          | 11  | 21:18            | BE        | PUMPS      |                     | 48° 58.17              | 130° 40.13 | 3230                     |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | UBC in situ pump               |
|                  |              |     | 22:27            | BO        |            |                     | 48° 58.16              | 130° 39.82 |                          | 3000         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
|                  |              | 12  | 01:02            | BE        |            |                     | 48° 58.06              | 130° 40.22 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
|                  |              | 12  | 01:58            | EN        |            |                     | 48° 58.03              | 130° 40.30 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |
| 31               | P12          | 12  | 02:11            | BE        | ROS        | US                  | 48° 58.21              | 130° 39.99 | 3229?                    |              | -                     |              |               | <input checked="" type="checkbox"/> <input type="checkbox"/> | Deep 105 cast                  |
|                  |              |     | 03:10            | BO        |            |                     | 48° 58.24              | 130° 40.00 |                          | 3274         | 288-310               | 23           |               | <input type="checkbox"/> <input type="checkbox"/>            | P=3274 S=3230 D=3222 B=10      |
|                  |              |     | 04:28            | EN        |            |                     | 48° 58.31              | 130° 40.01 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Sal Loop @ 5m                  |
| 32               | P12          | 12  | 05:42            | BE        | NET        |                     | 48° 58.26              | 130° 39.94 | 3230                     |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Boys bottle time               |
|                  |              |     | 05:52            | BO        |            |                     | 48° 58.33              | 130° 39.97 |                          | 250          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | Boys 250                       |
|                  |              |     | 06:00            | EN        |            |                     | 48° 58.33              | 130° 40.01 |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                |

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Notes:



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| Month <u>JUN</u> |              |     | Year <u>2014</u> |           |            | Vessel <u>TULLY</u> |                     |                       | Cruise ID <u>2014-18</u> |              |                       |              |               |                                                              |                                                     |
|------------------|--------------|-----|------------------|-----------|------------|---------------------|---------------------|-----------------------|--------------------------|--------------|-----------------------|--------------|---------------|--------------------------------------------------------------|-----------------------------------------------------|
| Event Number     | Station Name | Day | Time (UTC)       | Time Code | Event Type | Firing Method       | Positional Latitude | Information Longitude | Bottom Depth             | Max Pressure | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments                                            |
| 33               | P12          | 12  | 06:04            | BE        | Net        |                     | 48° 58.33           | 130° 40.08            | 3230                     |              | —                     | —            | D/MB          | <input type="checkbox"/> <input type="checkbox"/>            | Range to 1200                                       |
|                  |              |     | 06:42            | BO        |            |                     | 48° 58.55           | 130° 40.23            |                          | 1200         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
|                  |              |     | 07:03            | EN        |            |                     | 48° 58.59           | 130° 40.35            |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
| 34               | P12          | 12  | 07:34            | BE        | ROS        | US                  | 48° 58.65           | 130° 40.34            | 3231                     |              | 311 - 326             | 16           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | lots of <i>velesia</i><br><i>Velthellus</i> in situ |
|                  |              |     | 08:09            | BO        |            |                     | 48° 58.66           | 130° 40.37            |                          | 2005         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | UBC Cast                                            |
|                  |              |     | 08:49            | EN        |            |                     | 48° 58.71           | 130° 40.33            |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
| 35               | P12          | 12  | 13:02            | BE        | ROS        | US                  | 48° 58.20           | 130° 40.00            | 3228                     |              | 327 - 350             | 24           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | UBC CAST                                            |
|                  |              |     | 13:20            | BO        |            |                     | 48° 58.70           | 130° 40.04            |                          | 1500         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
|                  |              |     | 13:47            | EN        |            |                     | 48° 58.18           | 130° 40.00            |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
| 36               | P12          | 12  | 14:41            | BE        | ROS        | US                  | 48° 58.12           | 130° 40.00            | 3228                     |              | 351 - 365             | 15           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | Plankton                                            |
|                  |              |     | 14:43            | BO        |            |                     | 48° 58.12           | 130° 39.99            |                          | 150          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
|                  |              |     | 14:56            | EN        |            |                     | 48° 58.18           | 130° 40.14            |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
| 37               | P12          | 12  | 15:06            | BE        | ROS        |                     | 48° 58.13           | 130° 40.13            | 3229                     |              | 366 - 371             | 6            | MB            | <input type="checkbox"/> <input type="checkbox"/>            | UBC in-situ pump                                    |
|                  |              |     | 15:50            | BO        |            |                     | 48° 58.18           | 130° 40.22            |                          | 1914         | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
|                  |              |     | :                | BE        |            |                     | .                   | .                     |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
|                  |              |     | 19:48            | EN        |            |                     | 48° 58.66           | 130° 40.69            |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
| 38               | P12          | 12  | 20:12            | BE        | ROS        | US                  | 48° 58.19           | 130° 40.25            | 3229                     |              | -                     |              | DY            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                                                     |
|                  |              |     | 20:18            | BO        |            |                     | 48° 58.10           | 130° 40.34            |                          | 300          | 372 - 389             | 18           |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |
|                  |              |     | 20:35            | EN        |            |                     | 48° 58.29           | 130° 40.47            |                          |              | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                                     |

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— = —

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Notes:

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| Month <u>JUN</u> |              |     |            | Year <u>2014</u> |            | Vessel <u>TULLY</u> |                     |                       |              | Cruise ID <u>2014-18</u> |                       |              |               |                                                              |                                        |
|------------------|--------------|-----|------------|------------------|------------|---------------------|---------------------|-----------------------|--------------|--------------------------|-----------------------|--------------|---------------|--------------------------------------------------------------|----------------------------------------|
| Event Number     | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method       | Positional Latitude | Information Longitude | Bottom Depth | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments                               |
| 39               | P14          | 13  | 08:12      | BC               | ROS        | US                  | 49° 7.41            | 132° 37.99            | 3313         |                          | 390 - 391             | 2            | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | PAR OFF                                |
|                  |              |     | 08:17      | BO               |            |                     | 49° 7.39            | 132° 40.11            |              | 2005                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
|                  |              |     | 09:22      | BO               |            |                     | 49° 7.34            | 132° 40.18            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
| 40               | P14-P15      | 13  | 10:27      | BE               | Loop       | -                   | 49° 7.97            | 132° 51.62            | 3723         | -                        | 392-                  | -            | MB            | <input type="checkbox"/> <input type="checkbox"/>            | 10min @ 6L/min<br>PLASTICS, UNDEGRADED |
| 41               | P15          | 13  | 14:47      | BE               | ROS        | US                  | 49° 11.95           | 133° 39.88            | 3398         |                          | 393 - 407             | 15           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | LIGHT CAST PAR ON                      |
|                  |              |     | 14:51      | BO               |            |                     | 49° 11.96           | 133° 39.87            |              | 150                      | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
|                  |              |     | 15:05      | EN               |            |                     | 49° 11.94           | 133° 39.91            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
| 42               | P15          | 13  | 15:44      | BE               | ROS        | US                  | 49° 11.99           | 133° 39.93            | 3397         |                          | 408 - 409             | 2            | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | PAR OFF                                |
|                  |              |     | 16:25      | BO               |            |                     | 49° 12.03           | 133° 39.96            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
|                  |              |     | 17:07      | EN               |            |                     | 49° 11.99           | 133° 39.79            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | \$                                     |
| 43               | P16          | 13  | 21:56      | BE               | ROS        |                     | 49° 17.05           | 134° 39.90            | 3624         |                          | -                     |              | DY            | <input checked="" type="checkbox"/> <input type="checkbox"/> | PMS cast                               |
|                  |              |     | 22:03      | BO               |            |                     | 49° 17.00           | 134° 39.83            |              | 300                      | 410-427               | 18           |               | <input type="checkbox"/> <input type="checkbox"/>            | Syringes had been ON                   |
|                  |              |     | 22:25      | EN               |            |                     | 49° 16.94           | 134° 39.80            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | PAR ON                                 |
| 44               | P16          | 13  | 22:44      | DE               | NET        |                     | 49° 16.98           | 134° 39.85            | 3624         |                          | -                     |              | DY            | <input type="checkbox"/> <input type="checkbox"/>            | Bongo 250m                             |
|                  |              |     | 22:54      | BO               |            |                     | 49° 16.99           | 134° 39.89            |              | 250                      | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
|                  |              |     | 23:01      | EN               |            |                     | .                   | .                     |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                                        |
| 45               | P16          | 13  | 23:08      | BE               | ROS        | US                  | 49° 17.04           | 134° 39.90            | 3624         |                          | 428 - 451             | 24           | MR            | <input checked="" type="checkbox"/> <input type="checkbox"/> | PAR OFF                                |
|                  |              |     | 00:36      | BO               |            |                     | 49° 17.04           | 134° 40.07            |              | 3684                     | -                     |              | DY            | <input type="checkbox"/> <input type="checkbox"/>            | DEEP CAST                              |
|                  |              |     | 02:14      | EN               |            |                     | 49° 16.94           | 134° 40.20            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | P=3684 13-10<br>D=3624 S=3623          |

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=

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|------------------|--------------|-----|------------|------------------|------------|---------------|---------------------|-----------------------|--------------|--------------------------|-----------------------|--------------|---------------|--------------------------------------------------------------|------------------------------|
| Event Number     | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method | Positional Latitude | Information Longitude | Bottom Depth | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                              | Comments                     |
| 46               | P16          | 13  | 02:50      | BE               | NET        | UN            | 49° 17.03           | 134° 40.07            | 3622         |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | MPS 2000m                    |
|                  |              |     | 04:13      | BO               |            |               | 49° 17.00           | 134° 40.12            |              | 2005                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |              |     | 05:04      | EN               |            |               | 49° 17.05           | 134° 40.16            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 47               | P16          | 14  | 05:19      |                  | DRIF       | DE            | 49° 17.06           | 134° 40.25            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | NOAA 116087                  |
| 48               | P17          | 14  | 10:20      | BE               |            |               | 49° 20.99           | 135° 40.00            | 3712         |                          | 452-453               | 2            | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                              |
|                  |              |     | 10:59      | BO               |            |               | 49° 21.00           | 135° 40.01            |              | 2005                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |              |     | 11:34      | EN               |            |               | 49° 20.98           | 135° 39.02            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 49               | P18          | 14  | 16:40      | BE               |            |               | 49° 25.99           | 136° 39.99            | 3816         |                          | 454-477               | 24           | MB            | <input checked="" type="checkbox"/> <input type="checkbox"/> | 705+103 cast                 |
|                  |              |     | 17:21      | BO               |            |               | 49° 25.97           | 136° 39.94            |              | 2005                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |              |     | 18:14      | EN               |            |               | 49° 26.02           | 136° 39.95            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 50               | P18          | 14  | 18:20      | BE               | DRIF       | -             | 49° 26.02           | 136° 40.03            | 3817         | -                        | -                     | -            | MB            | <input type="checkbox"/> <input type="checkbox"/>            | NOAA 116086                  |
| 51               |              | 14  | 22:20      |                  | LOOP       |               | 49° 29.23           | 137° 28.35            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            | LOOPST Sal cast?             |
| 52               | P19          | 14  | 23:22      | BE               | ROS        | US            | 49° 29.34           | 137° 40.03            | 3910         |                          | -                     |              |               | <input checked="" type="checkbox"/> <input type="checkbox"/> |                              |
|                  |              |     | 23:56      | BO               |            |               | 49° 29.98           | 137° 40.11            |              | 2005                     | 478-479               | 2            |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |              | 15  | 00:29      | EN               |            |               | 49° 29.97           | 137° 40.26            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
| 53               | P20          | 15  | 05:18      | BE               | ROS        | US            | 49° 34.04           | 138° 39.98            | 3946         |                          | -                     |              | DY/MB         | <input type="checkbox"/> <input type="checkbox"/>            | Deep Cast                    |
|                  |              |     | 06:41      | BO               |            |               | 49° 34.07           | 138° 40.00            |              | 4023                     | 480-503               | 24           |               | <input type="checkbox"/> <input type="checkbox"/>            | D=3952 B=10<br>P=4024 S=3947 |
|                  |              |     | 08:14      | EN               |            |               | 49° 34.06           | 138° 39.96            |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |
|                  |              |     | :          |                  |            |               | °                   | °                     |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/>            |                              |

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| Month <u>JUN</u> |              |     |            | Year <u>2014</u> |            | Vessel <u>TULU</u> |                        | Cruise ID <u>2014-18</u> |              |              |                       |              |               |                                     |                |
|------------------|--------------|-----|------------|------------------|------------|--------------------|------------------------|--------------------------|--------------|--------------|-----------------------|--------------|---------------|-------------------------------------|----------------|
| Event Number     | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method      | Positional Information |                          | Bottom Depth | Max Pressure | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                     | Comments       |
|                  |              |     |            |                  |            |                    | Latitude               | Longitude                |              |              |                       |              |               |                                     |                |
| 54               | P20          | 15  | 9:24       | BE               | NET        | —                  | 49° 33.97              | 138° 39.96               | 3947         |              | —                     | —            | MB            | <input type="checkbox"/>            | Bottle         |
|                  |              |     | 9:34       | BO               |            |                    | 49° 33.99              | 138° 39.96               | 3948         | 250          | -                     |              |               | <input type="checkbox"/>            |                |
|                  |              |     | 9:38       | EN               |            |                    | 49° 33.97              | 138° 39.99               |              |              | -                     |              |               | <input type="checkbox"/>            |                |
| 55               | P20          | 15  | 9:53       | BE               | NET        | —                  | 49° 33.98              | 138° 39.99               | 3948         |              | —                     | —            | MB            | <input type="checkbox"/>            | Bottle RBR off |
|                  |              |     | 10:40      | BO               |            |                    | 49° 33.96              | 138° 40.27               | 3948         | 1200         | -                     |              |               | <input type="checkbox"/>            |                |
|                  |              |     | 11:00      | EN               |            |                    | 49° 33.91              | 138° 40.44               |              |              | -                     |              |               | <input type="checkbox"/>            |                |
| 56               | P20          | 15  | 14:02      | BE               | ROS        | US                 | 49° 34.01              | 138° 40.00               | 3946         |              | 504-521               | 18           | MB            | <input checked="" type="checkbox"/> | DMS CAST       |
|                  |              |     | 14:07      | BO               |            |                    | 49° 34.02              | 138° 39.99               |              | 305          | -                     |              |               | <input type="checkbox"/>            | 2 CH Loop      |
|                  |              |     | 14:26      | EN               |            |                    | 49° 34.04              | 138° 40.03               |              |              | -                     |              |               | <input type="checkbox"/>            |                |
| 57               | P20          | 15  | 15:11      | BE               | ROS        | US                 | 49° 34.01              | 138° 39.98               | 3946         |              | 522-536               | 15           | MB            | <input checked="" type="checkbox"/> | LIGHT CAST     |
|                  |              |     | 15:15      | BO               |            |                    | 49° 34.01              | 138° 39.95               |              | 150          | -                     |              |               | <input type="checkbox"/>            |                |
|                  |              |     | 15:27      | EN               |            |                    | 49° 33.98              | 138° 39.99               |              |              | -                     |              |               | <input type="checkbox"/>            |                |
| 58               | P20          | 15  | 15:30      | BE               | DR         | —                  | 49° 34.03              | 138° 40.07               | 3945         |              | —                     | —            | MB            | <input type="checkbox"/>            | NOAA: 116085   |
| 59               | P20          | 15  | 15:33      | BE               | DR         | —                  | 49° 34.06              | 138° 40.18               | 3945         |              | —                     | —            | MB            | <input type="checkbox"/>            | EC: 133203     |
| 60               | P21          | 15  | 20:03      | BE               | ROS        | US                 | 49° 38.011             | 139° 39.43               | 3939         |              |                       |              | BY            | <input checked="" type="checkbox"/> |                |
|                  |              |     | 20:39      | BO               |            |                    | 49° 38.06              | 139° 39.95               |              | 2005         | 537-539               | 3            |               | <input type="checkbox"/>            |                |
|                  |              |     | 21:18      | EN               |            |                    | 49° 38.04              | 139° 39.93               |              |              | -                     |              |               | <input type="checkbox"/>            |                |
|                  |              |     | :          |                  |            |                    | .                      | .                        |              |              | -                     |              |               | <input type="checkbox"/>            |                |
|                  |              |     | :          |                  |            |                    | .                      | .                        |              |              | -                     |              |               | <input type="checkbox"/>            |                |

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Notes:

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Ocean Sciences Division, Institute of Ocean Sciences

| Month <u>June</u> |              |     |            | Year <u>2012</u> |            | Vessel <u>Tully</u> |                        | Cruise ID <u>2014-18</u> |              |              |                       |              |               |                                     | Page <u>10</u> of <u>    </u>       |  |
|-------------------|--------------|-----|------------|------------------|------------|---------------------|------------------------|--------------------------|--------------|--------------|-----------------------|--------------|---------------|-------------------------------------|-------------------------------------|--|
| Event Number      | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method       | Positional Information |                          | Bottom Depth | Max Pressure | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                     | Comments                            |  |
|                   |              |     |            |                  |            |                     | Latitude               | Longitude                |              |              |                       |              |               |                                     |                                     |  |
| 61                | P22          | 16  | 01:50      | BE               | ROS        | US                  | 49° 41.93              | 140° 40.05               | 3925         |              | -                     |              |               | <input checked="" type="checkbox"/> |                                     |  |
|                   |              |     | 02:31      | BO               |            |                     | 49° 41.87              | 140° 40.17               |              | 2005         | 540-541               | 2            |               | <input type="checkbox"/>            |                                     |  |
|                   |              |     | 03:11      | EN               |            |                     | 49° 41.83              | 140° 40.32               |              |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |
| 62                | P22          | 16  | 03:17      | DE               | DRF        |                     | 49° 41.89              | 140° 40.46               | 3925         |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |
| 63                | P22          | 16  | 03:18      | DE               | DRF        |                     | 49° 41.89              | 140° 40.64               | 3925         |              | -                     |              | MC            | <input type="checkbox"/>            | NOAA 116084                         |  |
| 64                | P23          | 16  | 07:20      | BE               | ROS        | US                  | 49° 46.03              | 141° 39.87               | 4031         |              | 542-543               | 2            | MC            | <input checked="" type="checkbox"/> | NOAA 116083                         |  |
|                   |              |     | 07:56      | BO               |            |                     | 49° 46.05              | 141° 39.84               |              |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |
|                   |              |     | 08:31      | EN               |            |                     | 49° 46.03              | 141° 39.76               |              |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |
| 65                | P24          | 16  | 14:08      | BE               | ROS        | US                  | 49° 50.24              | 142° 39.93               | 3966         |              | 544-549               | 6            | MC            | <input checked="" type="checkbox"/> | PH CRAB TMENT<br>2 Chl + 1 Scl Loop |  |
|                   |              |     | 14:44      | BO               |            |                     | 49° 50.17              | 142° 39.94               |              | 2005         | -                     |              |               | <input type="checkbox"/>            |                                     |  |
|                   |              |     | 15:22      | EN               |            |                     | 49° 50.16              | 142° 39.87               |              |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |
| 66                | P24          | 16  | 03:30      | BE               | DRIF       | -                   | 49° 50.30              | 142° 40.16               | 3965         | -            | -                     | -            | MC            | <input type="checkbox"/>            | EC: 133193                          |  |
| 67                | P24          | 16  | 03:31      | BE               | DRIF       | -                   | 49° 50.30              | 142° 40.16               | 3965         | -            | -                     | -            | MC            | <input type="checkbox"/>            |                                     |  |
| 68                | P25          | 16  | 21:22      | BE               | ROS        | US                  | 50° 0.07               | 143° 36.23               | 4125         |              | -                     |              |               | <input type="checkbox"/>            | NOAA: 116273                        |  |
|                   |              |     | 21:53      | BO               |            |                     | 50° 0.08               | 143° 36.17               |              | 2005         | 550-553               | 24           |               | <input type="checkbox"/>            |                                     |  |
|                   |              |     | 22:31      | EN               |            |                     | 50° 0.07               | 143° 36.11               |              |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |
| 69                | P35          | 17  | 03:27      | BE               | ROS        | US                  | 50° 0.00               | 144° 18.15               | 4128         |              | -                     |              |               | <input checked="" type="checkbox"/> |                                     |  |
|                   |              |     | 04:05      | BO               |            |                     | 49° 59.82              | 144° 18.10               |              | 2005         | 574-575               | 2            |               | <input type="checkbox"/>            |                                     |  |
|                   |              |     | 04:17      | EN               |            |                     | 49° 59.70              | 144° 18.25               |              |              | -                     |              |               | <input type="checkbox"/>            |                                     |  |

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| Month <u>June</u> |              |     |            | Year <u>2014</u> |            |               | Vessel <u>Tully</u>    |            |              | Cruise ID <u>2014-18</u> |                       |              |               |                                     |                    |
|-------------------|--------------|-----|------------|------------------|------------|---------------|------------------------|------------|--------------|--------------------------|-----------------------|--------------|---------------|-------------------------------------|--------------------|
| Event Number      | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method | Positional Information |            | Bottom Depth | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                     | Comments           |
|                   |              |     |            |                  |            |               | Latitude               | Longitude  |              |                          |                       |              |               |                                     |                    |
| 70                | P35          | 17  | 04:54      | BE               | DRF        |               | 49° 59.64              | 144° 18.52 |              |                          | -                     |              | ALC           | <input type="checkbox"/>            | 116272 NOAA        |
| 71                | P35          | 17  | 04:55      | DE               | DRF        |               | 144° 59.66             | 144° 18.63 |              |                          | -                     |              | ALC           | <input type="checkbox"/>            | 116271 DRF Pops    |
| 72                | P26          | 17  | 12:35      | BE               | ROS        | US            | 50° 0.01               | 144° 59.93 | 4247         |                          | 6000-623              | 24           | MB            | <input checked="" type="checkbox"/> | Deep CAST          |
|                   |              |     | 13:54      | BO               |            |               | 50° 0.00               | 144° 59.95 |              | 4318                     | -                     |              |               | <input type="checkbox"/>            | D=4236 B=10        |
|                   |              |     | 15:27      | EN               |            |               | 49° 59.99              | 144° 59.95 |              |                          | -                     |              |               | <input type="checkbox"/>            | P=4318 S=4241      |
| 73                | P26          | 17  | 16:00      | BE               | LVP        |               | 49° 59.977             | 144° 59.94 | 4226         |                          | 624-629               |              |               | <input type="checkbox"/>            | bottom pumped 216m |
|                   |              |     | 16:35      | EN               |            |               | °                      | °          |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |
|                   |              |     | :          |                  |            |               | °                      | °          |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |
| 74                | P26          | 17  | 21:32      | BE               | ROS        | US            | 50° 0.05               | 144° 59.96 | 4223         |                          | -                     |              |               | <input checked="" type="checkbox"/> | PAX net            |
|                   |              |     | 21:38      | BO               |            |               | 50° 0.04               | 144° 59.96 |              | 300                      | 630-647               | 18           |               | <input type="checkbox"/>            | DMS Cast           |
|                   |              |     | 21:56      | EN               |            |               | 49° 59.99              | 144° 59.87 |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |
| 75                | P26          | 17  | 22:30      | BE               | LVP        |               | °                      | °          | 4225         | 350                      | -                     |              |               | <input type="checkbox"/>            | UBC visit          |
|                   |              |     | 22:55      | EN               |            |               | 50° 00.14              | 145° 00.14 |              |                          | 648-133               |              |               | <input type="checkbox"/>            | jumps              |
|                   |              | 18  | 01:02      | BE               |            |               | 50° 00.08              | 145° 00.10 |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |
|                   |              |     | 01:17      | EN               |            |               | 50° 0.09               | 145° 0.06  |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |
| 76                | P26          | 18  | 01:43      | BE               | NET        |               | 50° 0.12               | 145° 0.04  | 4225         |                          | -                     |              |               | <input type="checkbox"/>            | Bouge to 250       |
|                   |              |     | 01:58      | BO               |            |               | 50° 0.18               | 145° 0.08  |              | 250                      | -                     |              |               | <input type="checkbox"/>            |                    |
|                   |              |     | 02:06      | EN               |            |               | 50° 0.14               | 144° 59.89 |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |
|                   |              |     | :          |                  |            |               | °                      | °          |              |                          | -                     |              |               | <input type="checkbox"/>            |                    |

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| Month <u>June</u> |              |     |            | Year <u>2014</u> |            | Vessel <u>Tully</u> |                        | Cruise ID <u>2014-18</u> |              |              |                       |              |               |                                     |                                  |
|-------------------|--------------|-----|------------|------------------|------------|---------------------|------------------------|--------------------------|--------------|--------------|-----------------------|--------------|---------------|-------------------------------------|----------------------------------|
| Event Number      | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method       | Positional Information |                          | Bottom Depth | Max Pressure | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                     | Comments                         |
|                   |              |     |            |                  |            |                     | Latitude               | Longitude                |              |              |                       |              |               |                                     |                                  |
| 77                | P26          | 18  | 02:42      | BE               | ROS        | US                  | 50° 0.01               | 144° 59.93               | 4225         |              | -                     |              |               | <input checked="" type="checkbox"/> |                                  |
|                   |              |     | 03:40      | BO               |            |                     | 50° 0.04               | 145° 0.04                |              | 3000         | 654-665               | 12           |               | <input type="checkbox"/>            |                                  |
|                   |              |     | 04:36      | EN               |            |                     | 50° 0.03               | 145° 0.05                |              |              | -                     |              |               | <input type="checkbox"/>            |                                  |
| 78                | P26          | 18  | 07:21      | BE               | ROS        | US                  | 49° 59.99              | 144° 59.96               | 4225         |              | 666-683               | 18           | MB            | <input checked="" type="checkbox"/> | Andreas' cast                    |
|                   |              |     | 07:56      | BO               |            |                     | 49° 59.99              | 144° 59.97               |              | 2005         | -                     |              |               | <input type="checkbox"/>            |                                  |
|                   |              |     | 08:34      | EN               |            |                     | 50° 0.04               | 145° 0.04                |              |              | -                     |              |               | <input type="checkbox"/>            |                                  |
| 79                | P26          | 18  | 16:39      | BE               | MOR        |                     | 50° 03.24              | 144° 46.707              | 4193         |              | -                     |              | AM            | <input type="checkbox"/>            | Depth taken 1hr after deployment |
| 80                | PAC08        | 18  | 20:16      | DE               |            |                     | 50° 03.0825            | 144° 53.4728             |              | 4204         | -                     |              |               | <input type="checkbox"/>            | 1485 m/s                         |
|                   | PAC08        | 18  | 21:03      | BE               | ROS        |                     | 50° 3.27               | 144° 53.02               | 4203         |              | -                     |              |               | <input checked="" type="checkbox"/> | PAR on                           |
|                   |              |     | 21:09      | BO               |            |                     | 50° 3.27               | 144° 53.01               |              | 300          | 684-686               | 3            |               | <input type="checkbox"/>            |                                  |
|                   |              |     | 21:17      | EN               |            |                     | 50° 3.28               | 144° 53.00               |              |              | -                     |              |               | <input type="checkbox"/>            |                                  |
| 81                | PAC07        | 18  | 23:04      | BE               | ROS        |                     | 50° 7.61               | 144° 48.83               | 4189         |              | -                     |              |               | <input checked="" type="checkbox"/> |                                  |
|                   |              |     | 23:10      | BO               |            |                     | 50° 7.61               | 144° 48.81               |              | 300          | 684-686               | 3            |               | <input type="checkbox"/>            |                                  |
|                   |              |     | 23:18      | EN               |            |                     | 50° 7.60               | 144° 48.83               |              |              | -                     |              |               | <input type="checkbox"/>            |                                  |
| 82                | PA-007       |     | 23:40      | BE               | MOR        |                     | 50° 07.58              | 144° 48.65               | 4188         |              | -                     |              |               | <input type="checkbox"/>            | CONFIRMED RELEASE                |
|                   |              |     | 00:53      |                  |            |                     | 50° 08.44              | 144° 48.72               |              |              | -                     |              |               | <input type="checkbox"/>            | Buoy on Deck                     |
| 83                | P26          | 18  | 11:40      | BE               | ROS        | US                  | 50° 0.03               | 144° 59.90               | 4225         |              | 576-599               | 24           | MB            | <input checked="" type="checkbox"/> | PAR OFF PLASTICS DEEP CAST       |
|                   |              |     | 12:57      | BO               |            |                     | 50° 0.01               | 144° 59.96               |              | 4317         | -                     |              |               | <input type="checkbox"/>            |                                  |
|                   |              |     | 14:39      | EN               |            |                     | 49° 59.99              | 144° 59.93               |              |              | -                     |              |               | <input type="checkbox"/>            |                                  |

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| Month <u>June</u> |              |     |            | Year <u>2014</u> |            | Vessel <u>Tully</u> |                        |            |              | Cruise ID <u>2014-18</u> |                       |              |               |                                                   |                          |
|-------------------|--------------|-----|------------|------------------|------------|---------------------|------------------------|------------|--------------|--------------------------|-----------------------|--------------|---------------|---------------------------------------------------|--------------------------|
| Event Number      | Station Name | Day | Time (UTC) | Time Code        | Event Type | Firing Method       | Positional Information |            | Bottom Depth | Max Pressure             | Sample Serial Numbers | # of Bottles | Watch Keepers | Trns/FI Cleaned                                   | Comments                 |
| 84                | P26          | 19  | 14:57      |                  | NET        |                     | 49° 59.9369            | 144° 59.93 | 4225         |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | MPS 3000                 |
|                   |              |     | 16:53      |                  |            |                     | 49° 59.82              | 144° 59.95 |              | 3000                     | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |
|                   |              |     | 17:54      |                  |            |                     | 49° 59.59              | 145° 00.18 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |
| 85                | P26          | 19  | 18:03      |                  | DRF        |                     | 49° 59.88              | 145° 00.19 | 4225         |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | 133202                   |
| 86                | P26          | 19  | 18:05      |                  |            |                     | 49° 59.86              | 145° 00.03 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | 116270                   |
| 87                | P26          | 19  | 18:07      |                  |            |                     | 49° 59.85              | 144° 59.84 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | 116159                   |
| 88                | P26          | 19  | 18:08      |                  |            |                     | 49° 59.82              | 144° 59.68 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | TOM'S DRIFTER 3          |
| 89                | P26          | 19  | 18:10      |                  |            |                     | 49° 59.80              | 144° 59.55 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | " 4i                     |
| 90                | Loop 90      | 20  | 14:43      | BE               | Loop       | -                   | 49° 38.84              | 140° 03.61 | 3908         |                          | -                     |              | MB            | <input type="checkbox"/> <input type="checkbox"/> | 1 SAL 2 CHL              |
| 91                | Loop 91      | 20  | 23:10      | BE               | Loop       | -                   | 49° 30.65              | 138° 05.92 | 3958         |                          | -                     |              | MB            | <input type="checkbox"/> <input type="checkbox"/> | 1 SAL 2 CHL              |
| 92                | P20-P21      | 20  | 23:25      | BE               | Loop       | -                   | 49° 30.33              | 138° 02.27 | 3955         | -                        | 687                   | -            | MB            | <input type="checkbox"/> <input type="checkbox"/> | PLASTICS 10 min @ 6L/min |
| 93                | Loop 93      | 21  | 16:57      | BE               | Loop       | -                   | 49° 12.67              | 134° 00.22 | 3352         | -                        | -                     | -            | MB            | <input type="checkbox"/> <input type="checkbox"/> | 1 SAL 2 CHL              |
| 94                | P14-P15      | 21  | 20:32      | BE               | PUMPS      |                     | 49° 09.82              | 133° 20.49 | 3297         |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> | Testing pumps UBC        |
|                   |              |     | 20:48      | EN               |            |                     | 49° 09.81              | 133° 20.42 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |
|                   |              |     | 21:15      | BE               |            |                     | 49° 09.78              | 133° 20.34 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |
|                   |              |     | 21:29      | EN               |            |                     | 49° 09.75              | 133° 20.17 |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |
| 95                | Loop 95      | 22  | 14:33      | BE               | Loop       | -                   | 48° 49.81              | 129° 23.10 | 2774         |                          | -                     |              | MR            | <input type="checkbox"/> <input type="checkbox"/> | 11.0 KTS 1 SAL 2 CHL     |
|                   |              |     | :          |                  |            |                     | ° .                    | ° .        |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |
|                   |              |     | :          |                  |            |                     | ° .                    | ° .        |              |                          | -                     |              |               | <input type="checkbox"/> <input type="checkbox"/> |                          |

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