

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2019-005

DATE:

From:

May 21 2019

To:

VESSEL:

J.P. Tully

PROJECT(S):

La Perouse

BOOK 1/2

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

WaterProperties.ca

Captain: VICTOR GRADMYR First Officer: SIMON  CLARKS

Second Officer: ALISTAIR BUTT Third Officer: STEPHEN LOWDON

Fishing Master: _____ Chief Engineer: STUART BURNSAW

Mission Participants / Agencies:

DF0-105 UVC

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

1st Leg Scientific Personnel: Chief Scientist: MARIE ROBERT 06-18 A

Name	Watch	Cabin	Name	Watch	Cabin
KELLY YOUNG	00-12	B	MICHAEL LIVINGSTON	12-18	H
MOIRA GARCIA	12-24	C	BRANDON MCNAB	06-12	H
HINA NEMCEK	0X	D			
CHERSEA STANLEY	12-24	D			
GLENN COOPER	00-12	F			
AKASH EASTRI	12-24	F			
PAUDORA GIBB	12-24	G			
ROBYN SAHOTA	00-12	G			
KEVIN YOUNGBLATH	00-12	G			
MATT MILLER	00-12	G			

2nd 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: Tully CTD Laptop
Data acquisition program: Seasave
CTD deck unit make: SBE model: 11+ serial number: 0425

Primary CTD

Make: SBE model: 9+ serial number: 506
Primary temperature serial number: 2023
Primary conductivity serial number: 1763
Secondary temperature serial number: 5013
Secondary conductivity serial number: 3394
Transmissometer: Wetlabs Model: C-Star s/n: 1185 DR
Transmissometer: Wetlabs Model: C-Star s/n: 1883 DG
Fluorometer: Model Seapoint Cable gain: 3X s/n: 3640 P, S or NO pump?
Fluorometer: Model _____ Cable gain: _____ s/n: _____ P, S or NO pump?
Oxygen sensor: SBE Model: 43 s/n: 3234 P, S or NO pump?
PAR sensor: Biospherical Model: QSP2350 s/n: 70613 Surface PAR? Y/N
Other sensors: Altimeter s/n: 62355 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)

Rosette Setup:

Number of bottles: 24
Manufacturer: 105
Volume of bottles (litres): 10L

Winches:

1. Make: _____ Model: _____ Serial #: _____ Used for: _____
2. Make: _____ Model: _____ Serial #: _____ Used for: _____
3. Make: _____ Model: _____ Serial #: _____ Used for: _____

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

Salinometer:

Make: _____ Model: _____ Serial Number: _____
Comments on performance during cruise (comments should also be reflected in the post-cruise report):

Oxygen Kit(s):

Make: SIO Model: _____ Kit Number: 1
Make: _____ Model: _____ Kit Number: _____

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

Thermosalinograph System (SBE21):

Program: ~~SBE21~~ Version: _____ SW: 0620
Sampling interval (seconds): 30
Fluorometer sensor serial number: WS3S-953P

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

ADCP Setup:

Computer time zone: _____ User Exits: Name: _____ Exit points: _____
Sampling interval (sec): _____ Name: _____ Exit points: _____
Bin Length: (2^x): _____ Name: _____ Exit points: _____
Pulse Length: _____ Work File: _____
Buffer (bytes): _____
Gyro Offset: _____

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

CTD Test Cast Information

Test Cast along side? Yes No

Comments _____

Test Cast in Saanich Inlet or other location? Yes No

Comments _____

CTD pressure reading on deck (db), before cast: _____ after cast: _____

Pumps working? Yes (0011) No (0010)

Secondary Temp – Primary Temp: _____
(Average from the mixed region)

Secondary Salinity – Primary Salinity: _____
(Average from the mixed region)

Additional Comments:

Scientific Equipment Used During Cruise

This sheet allows you to enter all of the equipment used while on board. Please use the separate CTD sheet for entry for SBE 9/16/19/25.

Other CTD units:

RBR Serial Number: Sensors:

Others:

Plankton Nets:

Bongo #1 Frame Size: cm Mesh: μm Flowmeter:
Bongo #2 Frame Size: cm Mesh: μm Flowmeter:
Frame Size: cm Mesh: μm Flowmeter:
Frame Size: cm Mesh: μm Flowmeter:

Multinet BIONESS Neuston Others:

Trawl Gear:

Midwater Trawls: SOG Highseas Pelagic Other:

Bottom Trawls: Atlantic Western IIA Yankee 36 Hard & Soft Bottom Other:

American Shrimp Trawl

Notes:

Trawl Doors: USA Jet Tyburon

Sounders : Wesmar 380 Others:

Acoustics:

Echosounder #1 EAG00 Frequencies (KHz): 12 18 38 70 120 200

Others: → SET FOR TRANSDUCERS, I.E. 4.5 m BELOW SURFACE

Echosounder #2 EK60 Frequencies (KHz): 12 18 38 70 120 200

Others:

Software & Notes:

Other Gear in Operation:

- 1.
- 2.
- 3.
- 4.
- 5.

NOTE: For duration of survey, sounder was set to "RANGE" rather than depth. This means readings were from transducer face to bottom, not surface to bottom.

↳ Therefore, all bottom pressure values are 4.5m shallower than actual bottom depth.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 1 of 29

Month <i>May</i>			Year <i>2019</i>			Vessel <i>John P. Tully</i>			Cruise ID <i>2019-005</i>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
<i>1</i>	<i>ST01</i>	<i>22</i>	<i>18:22</i>	<i>BE</i>	<i>ROS</i>		<i>48° 39.520</i>	<i>123° 30.110</i>	<i>172</i>		<i>-</i>	<i>✓</i>	<i>GC.</i>	☒ ☒	<i>Test bottle integrity</i>
			<i>18:27</i>	<i>BO</i>			<i>48° 39.530</i>	<i>123° 30.100</i>		<i>162</i>	<i>-</i>			☐ ☐	<i>No sample collected</i>
			<i>18:31</i>	<i>EN</i>			<i>48° 39.530</i>	<i>123° 30.100</i>			<i>-</i>			☐ ☐	<i>but all bottles fired.</i>
<i>2</i>	<i>59</i>	<i>22</i>	<i>20:29</i>	<i>BE</i>	<i>ROS</i>	<i>VS</i>	<i>48° 36.130</i>	<i>123° 14.720</i>	<i>226</i>		<i>1 - 11</i>	<i>11</i>	<i>CMAN</i>	☒ ☒	
			<i>20:44</i>	<i>BO</i>			<i>48° 36.660</i>	<i>123° 14.670</i>		<i>220</i>	<i>-</i>			☐ ☐	
			<i>20:50</i>	<i>EN</i>			<i>48° 36.460</i>	<i>123° 14.460</i>			<i>-</i>			☐ ☐	
<i>3</i>	<i>59</i>	<i>22</i>	<i>21:14</i>	<i>BE</i>	<i>NET</i>		<i>48° 36.703</i>	<i>123° 14.627</i>	<i>220</i>		<i>-</i>		<i>MC</i>	☐ ☐	
			<i>21:21</i>	<i>BO</i>			<i>48° 36.736</i>	<i>123° 14.665</i>	<i>222</i>	<i>212</i>	<i>-</i>			☐ ☐	
			<i>21:25</i>	<i>EN</i>			<i>48° 36.753</i>	<i>123° 14.666</i>			<i>-</i>			☐ ☐	
<i>4</i>	<i>42</i>	<i>23</i>	<i>05:10</i>	<i>BE</i>	<i>ROS</i>	<i>VS</i>	<i>49° 01.760</i>	<i>123° 26.190</i>	<i>316</i>		<i>12 - 22</i>	<i>11</i>	<i>A</i>	☐ ☐	<i>SPEED@ 200m for ROS TO</i>
			<i>05:17</i>	<i>BO</i>			<i>49° 01.750</i>	<i>123° 26.210</i>		<i>313</i>	<i>-</i>			☐ ☐	<i>CHECK W.O.U.</i>
			<i>05:30</i>	<i>EN</i>			<i>49° 01.710</i>	<i>123° 26.260</i>			<i>-</i>			☐ ☐	
<i>5</i>	<i>42</i>	<i>23</i>	<i>05:44</i>	<i>BE</i>	<i>NET</i>		<i>49° 01.66</i>	<i>123° 26.17</i>	<i>317</i>		<i>-</i>			☐ ☐	<i>BONGO</i>
			<i>05:54</i>	<i>BO</i>			<i>49° 01.66</i>	<i>123° 26.11</i>		<i>307</i>	<i>-</i>			☐ ☐	
			<i>05:59</i>	<i>EN</i>			<i>49° 01.63</i>	<i>123° 26.10</i>			<i>-</i>			☐ ☐	
<i>6</i>	<i>GEO1</i>	<i>23</i>	<i>08:26</i>	<i>BE</i>	<i>NET</i>		<i>49° 15.064</i>	<i>123° 45.141</i>	<i>399</i>		<i>-</i>			☐ ☐	<i>BONGO</i>
			<i>08:31</i>	<i>BO</i>			<i>49° 15.081</i>	<i>123° 45.169</i>		<i>100</i>	<i>-</i>			☐ ☐	
			<i>8:32</i>	<i>EN</i>			<i>49° 15.075</i>	<i>123° 45.165</i>			<i>-</i>			☐ ☐	
			<i>:</i>				<i>°</i>	<i>°</i>			<i>-</i>			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 20 April 2016

#14 + 22 have slow leaks. Scavenged a spring from spare rosette, to replace tubing on riser 22 as it was too loose + two pieces tied together which could trap gases + contaminants in loose knot ends.

pl. 5/29

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 2 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>John P. Tully</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
7	GEO1	23	08:40	BE	NET		49° 15.004	123° 45.050	398		-		147	☐ ☐	Bongo
			08:53	BO			49° 15.013	123° 44.967	388		-			☐ ☐	
			09:01	EN			49° 15.017	123° 44.932			-			☐ ☐	
8	GEO1	23	09:12	BE	ROS	JS	49° 14.990	123° 44.860	398		23 - 33	11	GC	☒ ☒	
			09:18	BO			49° 14.980	123° 44.770		394	-			☐ ☐	
			09:34	EN			49° 14.990	123° 44.830			-			☐ ☐	
9	CPF1	23	11:45	BE	NET		49° 21.993	124° 04.962	232		-		147	☐ ☐	Bongo
			11:52	BO			49° 21.792	124° 05.018		222	-			☐ ☐	
			11:56	EN			49° 21.786	124° 05.041			-			☐ ☐	
10	CPF1	23	12:06	BE	ROS		49° 21.840	124° 04.950	232		34 - 46	13	GC	☒ ☒	
			12:10	BO			49° 21.830	124° 04.960		227	-			☐ ☐	
			12:21	EN			49° 21.790	124° 05.010			-			☐ ☐	
11	22	23	15:21	BE	NET		49° 40.211	124° 16.059	350		-		147	☐ ☐	Bongo
			15:24	BO			49° 40.228	124° 16.043		340	-			☐ ☐	
			15:29	EN			49° 40.212	124° 16.020			-			☐ ☐	
12	22	23	15:32	BE	ROS		49° 40.200	124° 15.990	350		47 - 57	11	GC	☒ ☒	
			15:47	BO			49° 40.180	124° 15.960		345	-			☐ ☐	
			16:00	EN			49° 40.180	124° 16.020			-			☐ ☐	
			:				°	°			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 3 of 29

Month <u>MAY</u>			Year <u>2019</u>			Vessel <u>Tully</u>			Cruise ID <u>2019.005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
13	CPF2	23	19:42	BE	NET		49° 28.001	124° 29.984	324		-		MG	☐ ☐	BONGO
			19:52	BO			49° 28.013	124° 29.995		310	-			☐ ☐	
			19:58	EN			49° 28.008	124° 29.993			-			☐ ☐	
14	CPF2	23	20:10	BE	ROS	US	49° 28.990	124° 29.010	320		58-61	4	CS	☒ ☐	
			20:18	BO			49° 28.990	124° 30.010		315	-			☐ ☐	
			20:25	EN			49° 29.990	124° 30.010			-			☐ ☐	
15	12	23	22:39	BE	ROS	US	49° 43.610	124° 40.780	348		62-65	4	CS	☒ ☐	GPSTO SEASAVE
			22:47	BO			49° 43.610	124° 40.780		347	-			☐ ☐	Stopped AUVs
			22:57	EN			49° 43.617	124° 40.809			-			☐ ☐	CAST.
16	12	23	23:02	BE	NET		49° 43.61	124° 40.79	349		-		AS/ML	☐ ☐	BONGO
			23:14	BO			49° 43.61	124° 40.77		338	-			☐ ☐	
			23:18	EN			49° 43.61	124° 40.76			-			☐ ☐	
17	JS	24	10:55	BE		US	50° 29.970	126° 28.410	397		66-76	11	GC	☒ ☐	Bongo cancelled
			10:02	BO			50° 30.010	126° 28.400		396	-			☐ ☐	With 40 knts
			11:19	EN			50° 30.000	126° 28.510			-			☐ ☐	
18	DRF1	24	14:40	DE	DRF		50° 44.024	127° 05.4577			-		GRKKM	☐ ☐	Sponge Bob # 985
19	DRF2	24	14:41	DE	DRF		50° 44.059	127° 05.606			-			☐ ☐	986
20	DRF3	24	14:41	DE	DRF		50° 44.08	127° 05.797			-			☐ ☐	987
21	DRF4	24	14:42	DE	DRF		50° 44.139	127° 05.933			-			☐ ☐	988

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

17:28 23 MAY LOCAL → 17:34
 Start listening for SOGN moony 49°49.06 124°50.38 ~ 3977m

p35/29

17:44 LOCAL → 17:52
 @ 49°49.50 124°50.41

18:04 LOCAL → 18:09
 @ 49°48.98 124°51.98

18:23 LOCAL → 18:25
 @ 49°48.18 124°49.89 ~ 2473m

1840 LOCAL → 1842
 @ 49°46.6500 124°49.9198 ~ 2737 drifting away.

1857 LOCAL → 1858
 @ 49°47.3730 124°47.8682 ~ 590 m

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 4 of 29

Month <u>May</u>				Year <u>2019</u>			Vessel <u>John P. Tully</u>			Cruise ID <u>2019-005</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
22	DRF5	24	16:09:04	DE	DRF		50° 49.977	127° 19.878			-		GRYKM	☐	SpongeBob 989
23	DRF6	24	16:09:05	DE	DRF		50° 50.089	127° 19.924			-		"	☐	" 990
24	DRF7	24	16:09:06	DE	DRF		50° 50.293	127° 19.991			-		"	☐	" 991
25	DRF8	24	16:09:07	DE	DRF		50° 50.387	127° 20.030			-		"	☐	" 992
26	DRF9	24	16:18:43	DE	DRF		50° 54.165	127° 37.340			-		"	☐	" 993
27	DRF10	24	16:18:44	DE	DRF		50° 54.339	127° 37.430			-		"	☐	" 994
28	DRF11	24	16:18:45	DE	DRF		50° 54.300	127° 37.527			-		"	☐	" 995
29	DRF12	24	16:18:46	DE	DRF		50° 54.360	127° 37.631			-		"	☐	" 996
30	CPE1	25	05:30	BE	ROS	-	51° 00.080	127° 50.040	139		-	Ø	CAMP	☐	
			05:35	BO			51° 00.082	° 50.030		133	-			☐	
			05:37	EN			51° 00.080	° 50.050			-			☐	
31	CPE1	25	05:50	BE	NET	-	51° 00.085	127° 50.088	140		-		M6	☐	BONZO
			05:56	BO			51° 00.126	° 50.104		130	-			☐	
			05:59	EN			51° 00.138	° 50.092			-			☐	
32	DRF13	25	06:12	DE	DRF	-	51° 00.189	127° 50.118			-			☐	SpongeBob #1003
33	CS10	25	09:48	BE	NET	-	51° 16.420	128° 19.919	75		-		KY	☐	
			09:51	BO			51° 16.442	128° 19.941		65	-			☐	
			09:52	EN			51° 16.456	128° 19.957			-			☐	
			:				°	°			-			☐	

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

Produced by the Water Properties Group, IOS

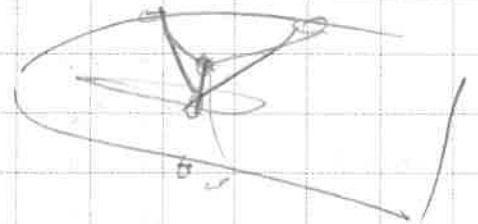
WaterProperties.ca
Version: 20 April 2016

MAY. 24 / 2019

This page is for any notes or observations

Recovery of LBA-1 morning:

- 1) 11:58 Local → 12:00
50°56.8561 127.421766
* BAD CAST →
→ REDEPLOY. →
↳ SWITCHING RANSHING UNIT.
- 2) MULTIPLE TRANSDUCER ISSUES...
- 3) 12:10 → LOCAL → 12:13.
50°56.811 127.42.070
* HIGH TRANSDUCER
1716 m
- 4) 12:23 → LOCAL → 12:24.
50°56.056 127.41.750
→ 894 m.
- 5) 12:34 → LOCAL → 12:35.
50°55.975 127.41.044
→ 466 m.
- 6) 12:43 → LOCAL → 12:44.
50°56.1140 127°41:1501
→ 363 m.



~ 1450: Marsh Bay 24 MAY Acoustic sounder calibration
to ~ 1800

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 5 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>John P. Kelly</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
34	CS10	25	10:02	BE	ROS		51° 16.470	128° 19.950	75		/	/	GC	☒	
			10:04	BO			51° 16.470	128° 19.950		65	-			☐	
			10:06	EN			51° 16.480	128° 19.970			-			☐	
35	CS09	25	11:06	BE	NET		51° 12.524	128° 27.861	190		-		RS	☐	BONGO
			11:13	BO			51° 12.541	128° 27.812		180	-			☐	
			11:17	EN			51° 12.549	128° 27.845			-			☐	
36	CS09	25	11:27	BE	ROS		51° 12.550	128° 27.860	190		77-88	12	GC	☒	
			11:31	BO			51° 12.590	128° 27.850		186	-			☐	
			11:47	EN			51° 12.590	128° 27.910			-			☐	
37	CS08	25	12:47	BE	NET		51° 08.501	128° 35.836	142		-		KY	☐	BONGO
			12:52	BO			51° 08.520	128° 35.846		132	-			☐	
			12:55	EN			51° 08.512	128° 35.833			-			☐	
38	CS08	25	13:04	BE	ROS		51° 08.560	128° 35.870	142		/	/	GC	☒	
			13:07	BO			51° 08.570	128° 35.850		137	-			☐	
			13:10	EN			51° 08.500	128° 35.910			-			☐	
39	CS07	25	14:08	BE	NET		51° 04.464	128° 43.926	61		-		KY	☐	BONGO
			14:09	BO			51° 04.460	128° 43.939		51	-			☐	
			14:10	EN			51° 04.471	128° 43.960			-			☐	
			:				°	°			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 6 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>John P</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
40	CS07	25	14:19	BE	ROS		51° 04.490	128° 44.010	61				GL	☒	
			14:21	BO			51° 04.470	128° 44.030		56	-			☐	
			14:22	EN			51° 04.470	128° 44.050			-			☐	
41	DRF14	25	14:30	DE	DRF		51° 04.313	128° 44.571	69				KY/BM	☐	Spongebob #101
42	CS06	25	15:15	BE	NET		50° 59.987	128° 51.599	60		-		RS	☐	Bouco
			15:17	BO			50° 59.986	128° 51.641		51	-			☐	
			15:18	EN			50° 59.986	128° 51.649			89-95	7	GL	☒	
43	CS06	25	15:30	BE	ROS		50° 59.980	128° 51.760	61		-			☐	
			15:32	BO			50° 59.980	128° 51.800		55	-			☐	
			15:39	EN			50° 59.960	128° 51.910			-			☐	
44	CS1B	25	16:57	BE	NET		50° 52.950	128° 40.056	67		-		RS	☐	
			16:59	BO			50° 52.953	128° 40.053		57	-			☐	Bouco
			17:01	EN			50° 52.945	128° 40.064			-			☐	
45	CS1B	25	17:11	BE	ROS		50° 53.010	128° 40.190	68				GL	☒	
			17:13	BO			50° 53.020	128° 40.200		64	-			☐	
			17:14	EN			50° 53.040	128° 40.230			-			☐	
46	CS05	25	19:07	BE	ROS		50° 55.940	129° 00.060	58		-	Ø	Q	☒	
			:09	BO			50° 55.940	129° 00.060		53	-			☐	
			:10	EN			50° 55.950	129° 00.060			-			☐	

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

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 7 of 29

Month <u>MAY / MAI</u>				Year <u>2019</u>		Vessel <u>TULLY</u>				Cruise ID <u>201905</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
47	CSOS	25	19:18	BE	NET	—	50° 55.954	129° 00.070	Sp		-		MG	☐	Bongo
			:21	Bo			° 55.971	° 00.079		46	-			☐	
			:23	EN			° 55.982	° 00.088			-			☐	
48	DRF 15	25	19:27	DE	DRF	—	50° 55.005	129° 00.114			-			☐	
49	CS3B	25	22:05	BE	ROS	—	50° 59.990	129° 26.960	216		-	Ø	Q	☒	→ Held above
			22:10	Bo			° 59.990	° 26.960		210	-			☐	slt for after
			22:14	EN			° 59.990	° 26.960			-			☐	secs for PAR
50	CS3B	25	22:23	BE	NET	—	50° 59.986	129° 26.976	216		-		MG	☐	Bongo
			22:30	Bo			50° 59.998	129° 26.999		206	-			☐	
			22:34	EN			51° 00.005	129° 27.004			-			☐	
51	New ODAS	26	01:19	BE	ROS	—	50° 56.468	129° 58.809	2112		-	Ø	Q	☒	
			01:50	Bo			50° 56.450	129° 58.846		2005	-			☐	
			02:19	EN			50° 56.480	129° 58.890			-			☐	
52	New ODAS	26	02:30	BE	NET	—	50° 56.491	129° 58.857	2112		-		MG	☐	→ ABORTED
			02:38	Bo			50° 56.513	129° 58.970		250	-			☐	→ NET flipped
			02:42	EN			50° 56.577	129° 58.987			-			☐	
53	New ODAS	26	02:52	BE	NET	—	50° 56.571	129° 59.024	2112		-			☐	Bongo
			03:04	Bo			50° 56.673	129° 59.031		250	-			☐	
			03:12	EN			50° 56.700	129° 59.015			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 8 of 29

Month <u>MAY / mai</u>			Year <u>2019</u>			Vessel <u>Tully</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
54	CS04	26	06:40	BE	ROS	US	50°49.160	129°12.970	93		96 - 102	7	CD	☐ ☐	
			06:42	BO			50°49.170	129°12.980		88	-			☐ ☐	
			06:53	EN			50°49.190	129°13.020			-			☐ ☐	
55	CS04	26	07:01	BE	NET		50°49.180	129°12.976	93		-		RS	☐ ☐	BONGO
			07:05	BO			50°49.201	129°12.952		83	-			☐ ☐	
			07:06	EN			50°49.212	129°12.949			-			☐ ☐	
56	DRF 16	26	07:17	DE	DRF		50°49.222	129°12.922	91				KY	☐ ☐	Spongy RB #1004
57	CS03	26	07:59	BE	NET		50°45.523	129°19.959	236		-		RS	☐ ☐	BONGO
			08:07	BO			50°45.550	129°20.027		226	-			☐ ☐	
			08:11	EN			50°45.551	129°20.059			-			☐ ☐	
58	CS03	26	08:21	BE	ROS		50°45.590	129°20.130	236				GC	☒ ☒	
			08:26	BO			50°45.590	129°20.150		233	-			☐ ☐	
			08:30	EN			50°45.580	129°20.170			-			☐ ☐	
59	CS02	26	09:22	BE	NET		50°41.268	129°28.078	1899		-		KY	☐ ☐	Net - instead
			09:32	BO			50°41.271	129°28.267		250	-			☐ ☐	radioing cast
			09:35	EN			50°41.303	129°28.320			-			☐ ☐	
60	CS02	26	09:47	BE	NET		50°41.276	129°27.898	1899		-			☐ ☐	BONGO
			09:55	BO			50°41.356	129°27.169		250	-			☐ ☐	
			10:00	EN			50°41.372	129°27.252			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 9 of 29

Month May			Year 2019			Vessel TULLY			Cruise ID 2019-005						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
61	CS02	26	12:08	BE	ROS	US	50° 41.360	129° 27.850	1895		103-125	23	GC	☒	
			12:41	BO			50° 41.400	129° 28.230		1909	-			☐	
			13:48	EN			50° 41.380	129° 28.920			-			☐	
62	CS02	26	:				°	°			-			☐	Restarted computer
63	CS02	26	:	EN			°	°			-			☐	software. Error still
64	CS02	26	14:32	BE	ROS	US	50° 41.280	129° 27.890	1900		126-141	16	GC	☒	Final all bottles
			14:42	BO			50° 41.300	129° 28.010		250	-			☐	to test trigger. need.
			14:58	EN			50° 41.350	129° 28.290			-			☐	+ comms.
65	CS01	26	16:11	BE	NET		50° 34.806	129° 41.385	2105		-			☐	
			16:20	BO			50° 34.813	129° 41.471		250	-			☐	
			16:24	EN			50° 34.817	129° 41.511			-			☐	
66	CS01	26	16:32	BE	ROS		50° 34.840	129° 41.620	2107				GC	☒	All systems fixed to test system @ 2005
			17:06	BO			50° 34.820	129° 41.940		2005	-	(24)		☐	No faults or error codes after firing bottles!
			17:32	EN			50° 34.830	129° 42.100			-			☐	
67	CS00	26	19:02	BE	ROS	US	50° 27.660	129° 55.000	2172		-			☐	
			19:38	BO			50° 27.660	129° 55.026		2005	142-161	20	CJ	☐	
			20:28	EN			50° 27.630	129° 55.160			-			☐	
			:				°	°			-			☐	
			:				°	°			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

Wire jumped shive + damaged end of evergrip. Cut off damaged ends to make smooth. Still enough evergrip to be safe. Was going to replace but clevis was seized on + would have meant a loss of 4hrs to redo termination. Wrapped exposed evergrip ends with tape to make smooth. Will keep an eye on it going forward. Error @ 500meters when trying to fire bottle 125. Error FFFFFFFF Unsupported modem message: 1 06 2D 06 from SBR carousel.

tried firing other Niskins as rosette was returning to surface, still have "FFF..." error but allowing bottles to be fired @ 381m (sample 124, bottle 22), bottles 8-21 done after on way up

bottle 22 did not fire

Pylon swapped out just in case that is the issue. Original pylon s/n: 3249530-0676. New pylon s/n: 3218377-0215.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 10 of 29

Month <u>MAY</u>				Year <u>2019</u>			Vessel <u>Tully</u>			Cruise ID <u>2019-025</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
68	C500	26	20:42	BE	NET	—	50°27.65	129°55.07	2171		-		MH	☐ ☐	BONCO
			20:56	BO			50°27.654	129°55.095		252	-			☐ ☐	
			21:51	EN			50°27.662	129°55.058			-			☐ ☐	
69	C500	26	21:58	BE	NET	—	50°27.687	129°55.112	2172		-		MH	☐ ☐	MPS
			23:00	BO			50°27.687	129°55.036		2005	-			☐ ☐	
			23:44	BE			50°27.644	129°55.0622			-			☐ ☐	
70	J122	27	02:37	BE	ROS	UN	50°39.810	129°17.370	1520		-	Ø	Q	☒ ☐	→ Depth of
			03:02	BO			50°39.830	129°17.470		1506	-	(24)		☐ ☐	bottom increased
			03:24	EN			50°39.830	129°17.500			-			☐ ☐	a lot during cast
71	J122	27	03:33	BE	NET	—	50°39.832	129°17.512	1530		-		MH	☐ ☐	BONCO
			03:45	BO			50°39.841	129°17.526		250.	-			☐ ☐	
			03:50	EN			50°39.843	129°17.535			-			☐ ☐	
72	LQ03	27	05:02	BE	ROS	UN	50°39.720	129°01.960	1270		-	Ø	Q	☒ ☐	- Altimeter
			05:25	BO			50°39.720	129°01.980		1244	-	(24)		☐ ☐	would not
			05:46	EN			50°39.720	129°01.980			-			☐ ☐	fix → stopped
73	LQ03	27	06:55	BE	NET	—	50°39.676	129°01.977	1243		-		MH	☐ ☐	1244
			06:09	BO			50°39.710	129°01.994		250	-			☐ ☐	BONCO
			06:14	EN			50°39.724	129°01.996			-			☐ ☐	
			:				.	.			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

P10.5/29

→ J122 → Fired all bottles on way up to check pylon. all bottles fired + no error messages.

→ LQ03 → Sounder could not decide on a bottom depth (1240-1270) → went to 1244 + altimeter would not grab. Decided to stop there to be safe.

→ LQ03 → fired all bottles for pylon check → all fired no problem.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 11 of 29

Month <u>MAY</u>			Year <u>2019</u>			Vessel <u>TULLY</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
74	LDOS-CPE2	27	06:25	BE	NET	—	50°39.772	127°01.681	12/2		-		ML	☐ ☐	Newton
			06:30	EN			50°39.847	127°01.875			-			☐ ☐	tau
75	DRF17	27	06:35	DE	DRF	—	50°39.804	127°00.684			-			☐ ☐	Spongebob +100s
76	CPE2	27	08:08	BE	NET	✓	50°43.009	128°39.784	122		-		KY	☐ ☐	
			08:11	BO			50°43.043	128°39.858		112	-			☐ ☐	
			08:13	EN			50°43.063	128°39.867			-			☐ ☐	
77	CPE2	27	08:27	BE	ROS		50°42.970	128°39.830	122		-	0	GL	☒ ☐	
			08:29	BO			50°43.010	128°39.820		117	-			☐ ☐	
			08:31	EN			50°43.030	128°39.830			-			☐ ☐	
78	LBP1	27	13:30	BE	ROS		50°04.860	127°52.970	48		-	0	GL	☒ ☐	
			13:31	BO			50°04.850	127°52.980		44	-	(24)		☐ ☐	
			13:34	EN			50°04.850	127°53.000			-			☐ ☐	
79	LBP2	27	13:54	BE	NET		50°03.994	127°54.2149	95		-		KY	☐ ☐	
			13:58	BO			50°04.0281	127°54.2478		85	-			☐ ☐	
			14:00	EN			50°04.0231	127°54.2593			-			☐ ☐	
80	LBP2	27	14:01	BE	ROS		50°04.050	127°54.290	92		-			☐ ☐	
			14:12	BO			50°04.280	127°54.280		88.3	-	0	GL	☒ ☐	
			14:14	EN			50°04.080	127°54.260			-			☐ ☐	
			:				°	°			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

spongeBOB @ 1Q03

This page is for any notes or observations ✓

50°

129°

p11.5 / 29

net @ SURF

23:25:10

50' 39, 7720

129° 01, 6810

Reterminated conducting wrench wire to Inpulse 9 pin. New clevis + Bungee. Tested trigger mechanism on deck + sensors. All operating okay. No spikes seen in data.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 12 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>JP Tully</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
81	LBP3	27	14:31	BE	NET		50°03.183	127°55.316	162		-		KY	☐ ☐	
			14:37	BO			50°03.231	127°55.324		154	-			☐ ☐	
			14:40	EN			50°03.268	127°55.325			-			☐ ☐	
82	LBP3	27	14:47	BE	ROS	US	50°03.350	127°55.330	154		162 - 182	21	GC	☒ ☒	
			14:52	BO			50°03.350	127°55.330		149	-			☐ ☐	
			15:06	EN			50°03.370	127°55.460			-			☐ ☐	
83	LBP4	27	15:49	BE	ROS		50°01.320	127°58.060	1057		-	0	GC	☒ ☒	Had to stop down
			16:10	BO			50°01.230	127°58.200		1134	-		KY	☐ ☐	desert 198 down to
			16:29	EN			50°01.200	127°58.230			-			☐ ☐	large outward lead.
84	LBP5	27	16:55	BE	NET		49°59.891	127°59.866	1275		-		KY	☐ ☐	
			17:04	BO			49°59.888	127°59.865		250	-			☐ ☐	
			17:09	EN			49°59.890	127°59.865			-			☐ ☐	
85	LBP5	27	17:17	BE	ROS		49°59.900	127°59.860	1270		183 - 201	19	GC	☒ ☒	
			17:35	BO			49°59.900	127°59.880		1277	-			☐ ☐	
			18:17	EN			49°59.900	127°59.870			-			☐ ☐	
86	LBP6	27	19:04	BE	ROS		49°56.175	128°05.480	800		-	0		☐ ☐	
			19:20	BO			49°56.183	128°05.484		790	-			☐ ☐	
			19:34	EN			49°56.180	128°05.480			-			☐ ☐	
			:				°	°			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

p12.5 / 29

* Header on file might say station name LBP3 instead what it should say LBP4

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 13 of 29

33.78 chd rx => DWD cast

Month <u>MAY</u>			Year <u>2019</u>			Vessel <u>TULLY</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
87	LBP7	27	20:22	BE	ROS	US	49° 52.38	128° 11.140	2187		202 - 221	20	AS	☒ ☐	
			20:55	BO			49° 52.390	128° 11.170		2005	-			☐ ☐	
			21:47	EN			49° 52.390	128° 11.180			-			☐ ☐	
88	LBP7	27	21:56	BE	NET	/	49° 52.39	128° 11.15	2183		-		MS	☐ ☐	BONGO
			22:17	BO			49° 52.39	128° 11.16		200	-			☐ ☐	
			22:20	EN			49° 52.38	128° 11.17			-			☐ ☐	
89	LBP8	27	23:08	BE	ROS	US	49° 48.590	128° 16.750	2070		222-223	2	AS	☒ ☐	
			:	BO			49° 48.580	128° 16.790		2004.03	-			☐ ☐	
			00:12	EN			49° 48.570	128° 16.780			-			☐ ☐	
90	UBP8	28	00:43	BE	NET	-	49° 48.580	128° 16.793	2070		-		MS	☐ ☐	MPS
			01:24	BO			49° 48.584	128° 16.791		1000	-			☐ ☐	
			01:46	EN			° .578	° .817			-			☐ ☐	
91	LOOP91	28	04:44	BE	LOOP	-	49° 31.82	127° 38.93	910	0	509-1		AS	☐ ☐	2 CHL 1 SAL
92	L556	28	5:06	BE	ROS	US	49° 27.792	127° 28.668	1049		224 - 226	3	AS	☒ ☐	
			5:56	BO			49° 27.761	127° 28.638		1044	-			☐ ☐	
			6:17	EN			49° 27.710	127° 28.530	1086		-			☐ ☐	
93	L106	28	06:30	BE	NET	/	49° 27.702	127° 28.535	1091		-		MS	☐ ☐	BONGO
			06:41	BO			49° 27.678	127° 28.542		250	-			☐ ☐	
			06:47	EN			49° 27.655	127° 28.553			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 14 of 29

Month <u>May</u>				Year <u>2019</u>			Vessel <u>John P. Tully</u>			Cruise ID <u>2019-005</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
94	LS05	28	07:41	BE	ROS		49 ° 31.570	127 ° 22.650	1074		227-229	0	GC	☒ ☒	
			08:02	BO			49 ° 31.580	127 ° 22.770		1075	-			☐ ☐	
			08:20	EN			49 ° 31.580	127 ° 22.910			-			☐ ☐	
95	LS04	28	09:15	BE	NET		49 ° 35.495	127 ° 17.005	156		-			☐ ☐	
			09:22	BO			49 ° 35.532	127 ° 17.070		146	-			☐ ☐	
			09:24	EN			49 ° 35.556	127 ° 17.092			-			☐ ☐	
96	LS04	28	09:36	BE	ROS	US	49 ° 35.490	127 ° 16.850	156		227-229	3	GC	☒ ☒	Loop 2x CHL 1 Seal
			09:40	BO			49 ° 35.510	127 ° 16.860		153	-			☐ ☐	
			09:46	EN			49 ° 35.550	127 ° 16.880			-			☐ ☐	
97	Loop	28	10:13	BE			49 ° 37.642	127 ° 13.623			5097		RS	☐ ☐	Underway Loop 2x CHL 1 Seal
98	LS03	28	10:35	BE	ROS		49 ° 39.150	127 ° 11.140	120		227-229	0	GC	☒ ☒	
			10:37	BO			49 ° 39.110	127 ° 11.140		118	-			☐ ☐	
			10:39	EN			49 ° 39.080	127 ° 11.140			-			☐ ☐	
99	LS02	28	11:25	BE	NET		49 ° 42.747	127 ° 05.329	76		-		KY	☐ ☐	
			11:27	BO			49 ° 42.772	127 ° 05.396		66	-			☐ ☐	
			11:29	EN			49 ° 42.788	127 ° 05.420			-			☐ ☐	
100	LS02	28	11:40	BE	ROS	US	49 ° 42.890	127 ° 05.430	76		230-232	3	GC	☒ ☒	
			11:42	BO			49 ° 42.900	127 ° 05.450		72	-			☐ ☐	
			11:47	EN			49 ° 42.880	127 ° 05.470			-			☐ ☐	

Event Type:

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

LOOP = Sea Water Loop
MOR = Moring
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

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 15 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>John P. Tully</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
101	L501	28	12:18	BE	ROS		49° 44.350	127° 02.750	56		-	0	GC	☐ ☐	
			12:20	BO			49° 44.360	127° 02.760		52	-			☐ ☐	
			12:21	EN			49° 44.360	127° 02.780			-			☐ ☐	
102	Loop.	28	07:11	BE	LOOP		49° 29.810	126° 50.850			5102		RS	☐ ☐	2xCHL, 1 sal.
103	LG01	28	15:36	BE	ROS		49° 20.430	126° 35.210	55		233-237	5	GC	☒ ☒	
			15:37	BO			49° 20.420	126° 35.220		51	-			☐ ☐	
			15:43	EN			49° 20.380	126° 35.260			-			☐ ☐	
104	LG02	28	16:09	BE	Net		49° 18.771	126° 38.216	96		-		Ky/RS	☐ ☐	
			16:13	BO			49° 18.784	126° 38.331		86	-			☐ ☐	
			16:14	EN			49° 18.787	126° 38.700			-			☐ ☐	
105	LG02	28	16:23	BE	ROS		49° 18.860	126° 38.300	96		238-255	18	GC	☒ ☒	Bottle 1 didn't fire
			16:26	BO			49° 18.860	126° 38.310		91	-			☐ ☐	due to lanyard in
			16:36	EN			49° 18.760	126° 38.460			-			☐ ☐	wrong location.
106	LG03	28	17:32	BE	ROS		49° 15.110	126° 43.790			⊙		GC	☒ ☒	Blown by hydraulic
107	LG04	28	18:33	BE	NET		49° 11.311	126° 49.333	141		-		RS	☐ ☐	
			18:38	BO			49° 11.431	126° 49.142		131	-			☐ ☐	
			18:41	EN			49° 11.462	126° 49.037			-			☐ ☐	
			:				°	°			-			☐ ☐	
			:				°	°			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

P15.5 129

Ch1 Filtered in air for extended period of time (~70 minutes)

Line on hars head dog accumulator @ beginning of cast. Rosette brought aboard immediately. Able to close bottles 1-11 before rosette passed through hydraulic fluid surface slide. When rosette on deck closed remaining bottles by hand + covered GTD sensors + trigger mechanism with garbage bags.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 16 of 29

Month <u>MAY / MAI</u>			Year <u>2019</u>			Vessel <u>TULLY</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
108	LG04	28	19:08	BE	ROS	US	49°11.360	126°49.110	137		256-264	9	W	☒	→
			19:11	B			49°11.350	126°49.090		134	-			☐	
			19:21	EN			49°11.330	126°49.050			-			☐	
109	LG04	28	19:30	BE	NET	✓	49°11.189	126°49.251	139	18-0	-		MG	☐	Newton tow
			19:41	EN			49°10.823	126°49.760			-			☐	Leaving LG04
110	LG05	28	20:23	BE	ROS	✓	49°07.400	126°55.280	270		-	(24)	AS	☐	→
			20:29	BO			49°07.403	126°55.282		265	-			☐	
			20:34	EN			49°07.410	126°55.270			-			☐	
111	LG06	28	21:29	BE	ROS	US	49°03.450	127°01.210	979		265-281	17	W	☒	
			21:44	BO			°03.410	°01.280		982	-			☐	
			22:15	EN			°03.402	°01.310			-			☐	
112	LG06	28	22:32	BE	NET	✓	49°03.42	127°01.29	982		-		MG	☐	BONGO
			22:43	BO			49°03.419	127°01.294		250	-			☐	
			22:49	EN			49°03.431	127°01.277			-			☐	
113	LG06	28	22:57	BE	NET	✓	49°03.304	127°01.460			-			☐	Newton tow
			23:08	EN			49°02.864	127°02.001			-			☐	
114	LG07	28	23:50	BE	ROS	✓	48°59.380	127°07.160	1776		-		CS/N2	☐	
			00:14	BO			48°59.380	127°07.180		1766	-			☐	
			00:40	EN			48°59.380	127°07.220			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

LG04:

- RATTLE SOAPED UP prior to cast to try to get rid of any residual hydraulic fluid
 - went to 50m & back to rinse
- DECK WAS RINSED WITH SOAP TO REMOVE HYD. FLUID DURING CAST. SURFACE LODICED CLEAN, BUT IF ANY SAMPLES READ WOULD, IT WOULD BE WHY

LG05: all Niskins closed because oil still dripping from LARS head

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 17 of 29

Month <u>MAY / MAI</u>				Year <u>2019</u>			Vessel <u>TULLY</u>			Cruise ID <u>2017-005</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
115	LG08	29	01:29	BE	ROS	—	48° 55.280	127° 13.210	2062		-	6	CS	☒ ☐	
			02:03	BO			48° 55.250	127° 13.320		2055	-			☐ ☐	
			02:32	EN			48° 55.270	127° 13.290			-			☐ ☐	
116	LG09	29	03:20	BE	NET	—	48° 51.189	127° 19.371	2051		-		MG	☐ ☐	BONCLO
			03:30	BO			48° 51.185	127° 19.383		250	-			☐ ☐	
			03:34	EN			48° 51.187	127° 19.390			-			☐ ☐	
117	LG09	29	03:47	BE	ROS	US	48° 51.190	127° 19.430	2054		-		AS	☐ ☐	Loop 1xSL 2xCHL
			04:17	BO			48° 51.255	127° 19.627		2005	282-283	2		☐ ☐	
			04:47	EN			48° 51.250	127° 19.730			-			☐ ☐	
118	Loop5718	29	08:01	BE	LOOP		48° 30.145	126° 45.234			5718	1	GC/CH	☐ ☐	2xSL, 1Sal
119	LD11	29	08:21	BE	NET		48° 28.668	126° 42.959	1595		-			☐ ☐	
			08:30	BO			48° 28.699	126° 43.019		250	-		KY	☐ ☐	
			08:35	EN			48° 28.695	126° 43.032			-			☐ ☐	
120	LD11	29	08:44	BE	ROS		48° 28.700	126° 42.970	1584		284-303	20	GL	☐ ☐	
			09:12	BO			48° 28.700	126° 42.970		1594	-			☐ ☐	
			09:36	EN			48° 28.760	126° 43.030			-			☐ ☐	
121	LD10	29	10:47	BE	ROS		48° 32.180	126° 36.650	1470		-	0	GC	☒ ☐	Replaced 49+411
			11:12	BO			48° 32.160	126° 36.680		1477	-			☐ ☐	Test O-rings.
			11:35	EN			48° 32.170	126° 36.730			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 18 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>John P. Tully</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
122	LD09	29	12:22	BE	NET		48° 35.727	126° 30.140	1042		-		1cy ²	☐ ☐	
			12:32	BO			48° 35.734	126° 30.271		250.	-			☐ ☐	
			12:36	BN			48° 35.757	126° 30.357			-			☐ ☐	
123	LD09	29	12:42	BE	ROS	US	48° 35.710	126° 30.350	1048		304 - 313	10	GC	☒ ☒	
			13:01	BO			48° 35.700	126° 30.410		1053	-			☐ ☐	
			13:21	BN			48° 35.67	126° 30.47			-			☐ ☐	
124	LD08	29	14:17	BE	ROS	US	48° 39.210	126° 23.490	770		314 - 330	17	GC	☒ ☒	
			14:30	BO			48° 39.180	126° 23.500		772	-			☐ ☐	
			14:58	BN			48° 39.170	126° 23.650			-			☐ ☐	
125	LD07*	29	15:45	BE	ROS		48° 43.550	126° 19.770	501		-	0	GC	☒ ☒	
			15:55	BO			48° 43.540	126° 19.730		521	-			☐ ☐	
			16:04	BN			48° 43.570	126° 19.720			-			☐ ☐	
126	LD07*	29	16:17	BE	NET		48° 43.65	126° 19.49	592		-		CS/1cy	☐ ☐	HORIZONTAL MPS
			16:38	BO			48° 43.918	126° 18.967		475	-			☐ ☐	
			17:04	BN			48° 44.417	126° 18.161			-			☐ ☐	
127	LD06	29	18:01	BE	ROS		48° 46.240	126° 10.230	133		331 - 338	8	GC	☒ ☒	
			18:04	BO			48° 46.260	126° 10.230		129	-			☐ ☐	
			18:14	BN			48° 46.270	126° 10.200			-			☐ ☐	
			:				°	°			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

P18.5 / 29

* Slightly off from original position to avoid whale fishery in progress.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 19 of 29

Month MAY				Year 2019			Vessel TULUY			Cruise ID 2019-05					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
128	LD05	29	19:01	BE	ROS	—	48°49.680	126°03.570	86		—	—	W	☒	
			19:03	B			48°49.680	126°03.580		81.6	-			☐	
			19:05	EN			48°49.680	126°03.580			-			☐	
129	LD04	29	19:52	BE	ROS	US	48°53.140	125°57.030	57		339-343	5	W	☒	
			19:54	B			48°53.140	125°57.040		53.3	-			☐	
			19:59	EN			48°53.150	125°57.070			-			☐	
130	LD04	29	20:08	BE	NET	✓	48°53.16	125°57.10	58		-		MG	☐	Bongo
			20:10	B			48°53.18	125°57.09		52	-			☐	
			20:11	EN			48°53.18	125°57.10			-			☐	
131	LD03	29	20:59	BE	ROS	—	48°56.640	125°50.340	41		—	—	W	☒	
			21:00	B			48°56.660	125°50.330		37.43	-			☐	
			21:01	EN			48°56.660	125°50.320			-			☐	
132	LD02	29	21:31	BE	ROS	US	48°58.400	125°47.010	37		344-348	5	W	☒	→
			21:33	B			48°58.410	125°47.020		32.7	-			☐	
			21:38	EN			48°58.430	125°47.040			-			☐	
133	LD02	29	21:43	BE	NET	—	48°58.444	125°47.034	37		-		MG	☐	Bongo
			21:44	B			48°58.447	125°47.034		32	-			☐	
			21:45	EN			48°58.446	125°47.034			-			☐	
			:				°	°			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

P19.5 / 29

LD02 → Bottle 1 (Botm-10) did not fire. Wkt @ 32m and had a bottle @ 30m. (Bottle 2) which
did fire. NOOKED UP TO BOT 24 SO MISFIRE

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 20 of 29

Month <u>May</u>			Year <u>2019</u>		Vessel <u>TULLY</u>		Cruise ID <u>2019-005</u>								
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
134	LD01	29	22:16	BE	ROS	US	49° 00. 146	125° 43.726	34		349-352	4	AS	☒	+LOOP
			22:17	BO			49° 00. 146	125° 43.732		248	-			☐	2xCHL 1SAL
			22:21	EN			49° 00. 150	125° 43.740			-			☐	
135	Loop LD01	29	22:20	BE	LOOP		49° 00. 150	125° 43.740			5134			☐	1SAL 2CHL
136	LC01	30	00:37	BE	ROS	US	48° 50. 440	125° 27. 680	90		353-359	7	CS	☒	
			00:39	BO			° 50 440	° 27. 680		857	-			☐	
			:	EN			° 50 460	° 27. 700			-			☐	
137	Loop LC01	30	00:44	BE	Loop	-	48° 50. 450	125° 27. 690			5136		MG	☐	1SAL 2CHL
138	LC02	30	01:17	BE	ROS	US	48° 48. 680	125° 30. 950	101		360-367	8	AS	☒	
			01:19	BO			48° 48. 680	125° 30. 960		101	-			☐	
			01:28	EN			48° 48. 680	125° 30. 970			-			☐	
139	LC03	30	01:56	BE	ROS	-	48° 46. 990	125° 34. 220	131		-	-	AS	☒	
			01:59	BO			48° 46. 990	125° 34. 210		126	-			☐	
			02:01	EN			48° 46. 990	125° 34. 220			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 21 of 29

Month MAY			Year 2019			Vessel TULLY			Cruise ID 2019-205						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
140	LC04	30	02:46	BE	NET	-	48°43.405	125°40.804	162		-		MG	☐	Bow Gun
			02:52	BO			°43.426	°40.840		155	-			☐	
			02:55	EN			°43.432	°40.838			-			☐	
141	LC04	30	03:05	BE	ROS	US	48°43.48	125°40.820	162		368-378	11	QJ	☒	
			03:08	BO			48°43.496	125°40.820		159	-			☐	
			03:19	EN			48°43.480	125°40.830			-			☐	
142	LC05	30	04:03	BE	ROS	-	48°39.960	125°47.370	64		9378-9378	1	QJ	☒	BTLE COTWAY
			04:05	BO			48°39.950	125°47.360		62	-			☐	→
			04:07	EN			48°39.960	125°47.370			-			☐	
143	LC05	30	04:15	BE	NET	-	48°40.019	125°47.409	600		-		MG	☐	Bow Gun
			04:16	BO			48°40.079	125°47.423		55	-			☐	
			04:17	EN			48°40.032	125°47.427			-			☐	
144	LC06	30	05:12	BE	NET	-	48°36.478	125°53.956	88		-		MG	☐	Bow Gun
			05:16	BO			48°36.500	125°53.972		80	-			☐	
			05:17	EN			48°36.506	125°53.962			-			☐	
145	LC06	30	05:27	BE	ROS	-	48°36.510	125°53.970	88		379-385	7	QJ	☒	
			05:29	BO			48°36.810	125°53.980		84.5	-			☐	
			05:37	EN			48°36.480	125°53.980			-			☐	
146	Loop LC06	30	05:36	BE	Loop	-	48°36.480	125°53.980			5145			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

p21.5 /29

⇒ Forgot To Pick Zoops for JUN @ L604 So took a CHL-MAX @ L605 & picked from L605 BONGIO. ASSIGNED SAMPLE # "9378" AS L606 WAS ALREADY LABELED.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 22 of 29

Month MAY			Year 2019			Vessel TULLY			Cruise ID 2019-005						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
147	LC07	30	06:25	BE	ROS	-	48° 30.930	126° 00.630	124		-	-	CL	☒	
			06:27	BO			48° 30.930	126° 00.630		119	-			☐	
			06:30	EN			48° 30.940	126° 00.610			-			☐	
148	LC08	30	07:25	BE	NET		48° 29.354	126° 07.073	196		-		LYZ	☐	
			07:33	BO			48° 29.376	126° 07.101		186	-			☐	
			07:35	EN			48° 29.401	126° 07.106			-			☐	
149	LC08	30	07:43	BE	ROS		48° 29.450	126° 07.110	194		386-396	11	GC	☒	
			07:47	BO			48° 29.460	126° 07.080		191	-			☐	
			08:00	EN			48° 29.520	126° 07.100			-			☐	
150	A2	30	08:57	BE	NET		48° 22.657	126° 03.708	355		-		MM/RS	☐	
			09:06	BO			48° 22.749	126° 03.707		250	-			☐	
			09:11	EN			48° 22.759	126° 03.676			-			☐	
151	A2	30	09:18	BE	ROS		48° 22.760	126° 03.660	347		-	0	GC	☒	
			09:24	BO			48° 22.760	126° 03.620		345	-			☐	
			09:30	EN			48° 22.760	126° 03.600			-			☐	
152	LC09	30	10:31	BE	NET		48° 25.894	126° 13.605	601		-		LY/RS	☐	
			10:40	BO			48° 25.890	126° 13.652		780	-			☐	
			10:45	EN			48° 25.904	126° 13.670			-			☐	
			:				°	°			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 23 of 29

Month <u>May</u>			Year <u>2019</u>			Vessel <u>John P. Kelly</u>			Cruise ID <u>2019-005</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
153	LC09	30	10:52	BE	ROS	US	48° 25.900	126° 13.640	601		397-414	18	GC	☒ ☒	
			11:00	BO			48° 25.890	126° 13.620		601	-			☐ ☐	
			11:28	EN			48° 25.910	126° 13.580			-			☐ ☐	
154	LC10	30	12:20	BE	ROS	US	48° 22.340	126° 20.030	1235		/	0	GC	☒ ☒	Had to stop cast mid way due to wire angle
			12:42	BO			48° 22.360	126° 20.110		1238	-			☐ ☐	
			13:02	EN			48° 22.360	126° 20.260			-			☐ ☐	
155	LC11	30	13:47	BE	ROS		48° 18.870	126° 26.660	1450		-		KY	☐ ☐	cast for Michael
			13:52	BO			48° 18.870	126° 26.660		150	415-424	10		☐ ☐	
			13:58	EN			48° 18.880	126° 26.680			-			☐ ☐	
156	LC11	30	14:23	BE	ROS		48° 18.930	126° 26.590	1430		425-443	19	GC	☒ ☒	
			14:50	BO			48° 18.930	126° 26.580		1453	-			☐ ☐	
			15:31	EN			48° 18.970	126° 26.650			-			☐ ☐	
157	LC12	30	16:45	BE	NET		48° 14.980	126° 39.973	2458		-		RS/KY	☐ ☐	
			16:55	BO			48° 14.953	126° 39.974		250	-			☐ ☐	
			16:59	EN			48° 14.955	126° 39.973			-			☐ ☐	
158	LC12	30	17:10	BE	NET		48° 14.957	126° 39.969	2411		-		KY/MM	☐ ☐	MPS vertical tow
			18:34	BO			48° 14.959	126° 39.964		2005	-			☐ ☐	
			:	EN			48°	126°			-			☐ ☐	
			:				°	°			-			☐ ☐	

Event Type:

BOB = 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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 24 of 29

Month MAY				Year 2019		Vessel SP TULLY		Cruise ID 2019-005							
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information LatitudeLongitude		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
159	LC12	30	19:38	BE	ROS	US	48° 14.990	126° 40.000	2520		-	0	AS	☒	
		30	20:12	BO			48° 15.010	126° 39.980		2005	-			☐	
		30	20:48	EN			48° 15.030	126° 39.930			-			☐	
160	LB16	30	23:02	BE	NET	UN	48° 02.083	126° 19.066	1712		-		CS	☐	MOCNESS
			23:36	BO			48° 01.24	126° 17.41		750	-			☐	
		31	00:16	EN			48° 01.72	126° 16.21			-			☐	
161	LB16	31	00:59	BE	ROS	US	48° 00.660	126° 17.170	1752		444-444	1	AS	☒	
			01:23	BO			48° 00.680	126° 17.160		1754	-			☐	
			01:51	EN			48° 00.660	126° 17.140			-			☐	
162	LB16	31	02:03	BE	NET	/	48° 0.68	126° 17.11	1756		-			☐	BONGO
			02:18	BO			48° 00.700	126° 17.121		250	-		MG	☒	
			02:22	EN			48° 00.702	126° 17.119			-			☐	
163	LB15	31	03:24	BE	ROS	US	48° 04.520	126° 08.590	1556		445-445	1	AS	☒	
			03:49	BO			48° 04.530	126° 08.580		1567	-			☐	
			04:13	EN			48° 04.570	126° 08.640			-			☐	
164	LB14	31	05:11	BE	ROS	US	48° 08.460	125° 59.980	1174		440-463	18	AS	☒	
			05:29	BO			48° 08.460	125° 59.990		1180	-			☐	
			06:03	EN			48° 08.440	125° 59.930			-			☐	
			:				°	°			-			☐	

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

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

Notes:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Book 1/2
Page 25 of 29

Month <u>MAY</u>				Year <u>2019</u>			Vessel <u>TULY</u>			Cruise ID <u>2019-005</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
165	LB13	31	06:24	BE	ROS	US	48° 10.550	125° 56.100	916		464 - 464	1	JS	☒	
			06:59	BO			48° 10.560	125° 56.150		916	-			☐	
			07:16	EN			48° 10.560	125° 56.160			-			☐	
166	LB12	31	07:54	BE	ROS	US	48° 12.920	125° 51.830	502		465 - 479	15	GC	☒	
			08:03	BO			48° 12.910	125° 51.840		501	-			☐	
			08:26	EN			48° 12.910	125° 51.930			-			☐	
167	LB11	31	09:03	BE	NET		48° 15.175	125° 47.686	201		-		RS	☐	
			09:10	BO			48° 15.200	125° 47.674		191	-			☐	
			09:14	EN			48° 15.218	125° 47.685			-			☐	
168	LB11	31	09:20	BE	ROS	US	48° 15.230	125° 47.680	201		480 - 490	11	GC	☒	
			09:24	BO			48° 15.220	125° 47.630		197	-			☐	
			09:37	EN			48° 15.210	125° 47.570			-			☐	
169	LB10	31	10:28	BE	ROS	US	48° 18.560	125° 41.340	148		491-	1	GC	☒	
			10:31	BO			48° 18.550	125° 41.330		144	-			☐	
			10:35	EN			48° 18.560	125° 41.350			-			☐	
170	LB09	31	11:26	BE	ROS	US	48° 22.010	125° 34.890	144		492 - 500	9	KY	☒	
			11:30	BO			48° 22.000	125° 34.910		140	-			☐	
			11:40	EN			48° 22.000	125° 34.920			-			☐	
			:				.	.			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 20 April 2016

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2019-005

DATE:

From: 21 May 2019

To:

VESSEL:

JP Tully

PROJECT(S):

La Perouse

Book 2/2

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

WaterProperties.ca

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month <u>May</u>				Year <u>2019</u>		Vessel <u>Tully</u>				Cruise ID <u>2019-005</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
171	LB08	31	12:30	BE	NET		48° 25.249	125° 28.199	148		-		KY/RS	☐ ☐	
			12:36	BO			48° 25.269	125° 28.895		137	-			☐ ☐	
			12:39	EN			48° 25.286	125° 28.945			-			☐ ☐	
172	LB08	31	12:50	BE	ROS	DS	48° 25.260	125° 28.690	137		501 - 510	10	GC	☒ ☐	
			12:54	BO			48° 25.280	125° 28.690		131	-			☐ ☐	
			13:04	EN			48° 25.310	125° 28.740			-			☐ ☐	Loop 2xCHL, 15ch
173	B7	31	14:15	BE	ROS	DS	48° 32.080	125° 35.480	73		511 - 521	11	GC	☒ ☐	Notice on back of #2
			14:18	BO			48° 32.140	125° 35.480		69	-			☐ ☐	not used or sample
			14:25	EN			48° 32.170	125° 35.570			-			☐ ☐	
174	B7	31	14:33	BE	NET		48° 32.047	125° 35.677	73		-		KY/JHM	☐ ☐	Change #12 nistkin
			14:36	BO			48° 32.075	125° 35.716		63	-			☐ ☐	internal O-ring
			14:38	EN			48° 32.093	125° 35.723			-			☐ ☐	
175	CM	31	16:14	BE	ROS		48° 23.060	125° 48.330	145		-	0	GC	☒ ☐	
			16:17	BO			48° 23.080	125° 48.320		141	-			☐ ☐	
			16:19	EN			48° 23.090	125° 48.310			-			☐ ☐	
176	CM	31	16:23	BE	MOR		48° 23.094	125° 48.313	145		-			☐ ☐	Catfish & Hoopie Acoustic
177	B8	31	18:06	BE	NET		48° 34.474	125° 30.000	120		-			☐ ☐	
			18:09	BO			48° 34.496	125° 30.054		158	-			☐ ☐	
			18:11	EN			48° 34.504	125° 30.069			-			☐ ☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 14 February 2013

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 27 of 29

Month May				Year 2019			Vessel John P Tully			Cruise ID 2019 005					
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
178	B58	31	18:19	BE	ROS		48° 34.570	125° 30.040	113		-	0	GC	☒ ☐	
			18:21	BO			48° 34.520	125° 30.040		109	-			☐ ☐	
			18:24	EN			48° 34.520	125° 30.060			-			☐ ☐	
179	LBO7	31	19:21	BE	ROS	US	48° 28.710	125° 22.120	150		S22-S22	1	CS	☒ ☐	
			19:30	BO			48° 28.750	125° 22.110			-			☐ ☐	
			19:33	EN			48° 28.760	125° 22.120			-			☐ ☐	
180	LBO7	31	19:46	BE	NET		48° 28.761	125° 22.268	150		-		MG	☐ ☐	
			19:54	BO			48° 28.763	125° 22.275		141	-			☐ ☐	
			19:57	EN			48° 28.751	125° 22.294			-			☐ ☐	
181	C3	31	20:45	BE	ROS	-	48° 23.480	125° 20.740	118		-	-	CS	☒ ☐	
			20:47	BO			48° 23.470	125° 20.730		114	-			☐ ☐	
			20:49	EN			48° 23.460	125° 20.710			-			☐ ☐	
182	C3	31	20:55	BE	NET	-	48° 23.450	125° 20.700	118		-	-	MG	☐ ☐	
			21:02	BO			48° 23.448	125° 20.708		110	-			☐ ☐	
			21:04	EN			48° 23.443	125° 20.702			-			☐ ☐	
183	C2	31	22:09	BE	ROS	-	48° 26.240	125° 09.120	155		-	-	CS	☒ ☐	
			22:12	BO			48° 26.220	125° 09.110		152	-			☐ ☐	
			22:14	EN			48° 26.220	125° 09.110			-			☐ ☐	
			:				.	.			-			☐ ☐	

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 28 of 29

Month MAY / June			Year 2019			Vessel TULLY			Cruise ID 2019-005						
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
184	C2	31	22:22	BE	NET	—	48° 26.205	125° 09.139	155		—	—	ML	☐	BONUS
			22:23	BO			48° 26.176	125° 09.116		150	-			☐	
			22:33	EN			48° 26.197	125° 09.114			-			☐	
185	LB06	31	23:50	BE	ROS	US	48° 32.010	125° 15.540	110		523-530	3	CS	☒	
			23:52	BO			48° 32.090	125° 15.530		105	-			☐	
			00:00	EN			48° 32.090	125° 15.550			-			☐	
186	LB06	1	00:09	BE	NET	—	48° 32.13	125° 15.56	110		-			☐	BONUS —
			00:12	BO			° 32.12	° 15.55		105	-			☐	BONUS
			00:14	EN			° 32.14	° 15.57			-			☐	
187	LB05	1	00:46	BE	ROS	US	48° 34.010	125° 11.970	96		531-531	1	MR	☒	
			00:48	BO			° 34.000	° 11.980		92	-			☐	
			00:51	EN			° 34.000	° 11.970			-			☐	
188	LB04	1	01:21	BE	ROS	US	48° 35.670	125° 08.710	107		532-538	7	CS	☒	
			01:23	BO			48° 35.670	125° 08.710		102	-			☐	
			01:30	EN			48° 35.650	125° 08.770			-			☐	
189	LB03	1	02:00	BE	ROS	US	48° 37.290	125° 05.590	89		539-539	1	CS	☒	
			02:02	BO			48° 37.300	125° 05.590		84	-			☐	
			02:04	EN			48° 37.310	125° 05.600			-			☐	
			:				°	°			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 14 February 2013

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Book 2 of 2

Page 29 of 29

Month <u>JUNE</u>			Year <u>2019</u>			Vessel <u>TULLY</u>			Cruise ID <u>20A-005</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
190	LB02	1	02:35	BE	ROS	US	48° 38.760	125° 02.410	52		S40-S44	5	02	☒	
			02:36	BO			° 38.760	° 02.410		47	-			☐	
			02:41	UN			° 38.970	° 02.390			-			☐	
191	LB01	1	03:07	BE	ROS	US	48° 40.390	124° 59.430	31		S45-S49	5	02	☒	
			03:07	BO			° 40.390	° 59.420		26	-			☐	
			03:11	UN			° 40.380	° 59.430			-			☐	
			:				° .	° .			-			☐	
	CALIBRATION OF 120 kHz IN COCOS Bay, ~ 2.5 h						° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 14 February 2013