

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2015-21

DATE:

From: Sept. 3rd/15

to:

VESSEL:

J.P. Tully

PROJECT(S):

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

WaterProperties.ca

Captain: Mike Confield First Officer: Tony
Second Officer: "Brent" Christopher Seaman Third Officer: John Benckhuysen
Fishing Master: _____

Mission Participants / Agencies: OSD, JVIC UBC

Scientific Personnel:			Chief Scientist: <u>Doug Yelland (D)</u>		
Name	Watch	Cabin	Name	Watch	Cabin
<u>Marie Robert</u>	<u>N-M</u>	<u>A</u>			
<u>Kelly Young</u>	<u>M-N</u>	<u>B</u>			
<u>Glenn Gypar</u>	<u>M-N</u>	<u>C</u>			
<u>Emma Pascoe</u>	<u>M-N</u>	<u>D</u>			
<u>Theresa Venello</u>	<u>N-M</u>	<u>E</u>			
<u>Tamara Fraser</u>	<u>D</u>	<u>F</u>			
<u>Tom Perry</u>	<u>6-12</u>	<u>G</u>			
<u>John Dower</u>	<u>12-6</u>	<u>G</u>			
<u>Robert Izett</u>	<u>12-18</u>	<u>H</u>			
<u>Scott Leic</u>	<u>M-N</u>	<u>H</u>			

Second leg of Mission:			Chief Scientist: _____		
Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: Tully Laptop
Data acquisition program: Seasave
CTD deck unit make: SBE model: 11+ serial number: 0619

Primary CTD
Make: SBE model: 9+ serial number: 443
Primary temperature serial number: 2106
Primary conductivity serial number: 2280
Secondary temperature serial number: 2663
Secondary conductivity serial number: 2754
Transmissometer: Wetlabs Model: C-STAR s/n: 1396DR
Fluorometer: Model Seapoint Cable gain: 3X s/n: 3640 P, S or NO pump?
Oxygen sensor: SBE Model: 43 s/n: 0997 P, S or NO pump?
PAR sensor: BIOSENSORICAL Model: QSP200645 s/n: 4565
Other sensors: Rinke DO s/n: _____ P, S or NO pump?
Other sensors: Altimeter s/n: 62354 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: _____
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: _____
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): _____

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: _____ Model: _____ Kit Number: _____
Make: _____ Model: _____ Kit Number: _____

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

Thermosalinograph System (SBE21):

Program: Seasave Version: 7.21g
Sampling interval (seconds): 30
Fluorometer sensor serial number: W535-953P

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:

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Page 1 of

Month <u>SEPTEMBER</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
4	HAROS9	0404	BE	ROS	—	1	48° 36.81	123° 14.77	232		—	Ø	MR	✓	PAR ON
		0409	BO				48° 36.79	123° 14.75		225					Very # sal down + upcast top 20m
		0413	EN				48° 36.77	123° 14.74							
4	HAROS9	0429	BE	NET		2	48° 36.64	123° 14.69	229		—		MG		BONGO
		0437	BO				48° 36.67	123° 14.67		220					
		0442	EN				48° 36.70	123° 14.66							
4	LBO1	1409	BE	ROS	US	3	48° 40.40	124° 59.47	35		1-5	5	SR	✓	1 Doliid on HPLC
		1410	BO				40.40	59.48		30					
		1415	EN				40.42	59.50							
4	LBO2	1450	BE	ROS	US	4	48° 39.00	125° 2.39	56		6-10	5	SR	✓	Doliid on HPLC
		1452	BO				39.00	2.38		52					
		1500	EN				39.02	2.36							
4	LBO3	1533	BE	ROS	US	5	48° 37.32	125° 5.56	93		11	1	SR	✓	Doliid on HPLC
		1535	BO				37.33	5.55		88					
		1538	EN				37.33	5.53							
4	LBO4	1605	BE	ROS	US	6	48° 35.74	125° 8.64	110		12-18	7	SR	✓	
		1608	BO				35.75	8.66		106					
		1617	EN				35.72	8.65							

Cast Type:

BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set

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

Bottle Firing Method:

US = Up / Stop
 UN = Up / No stop
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Transmissometer & Fluorometer are to be cleaned before each cast

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Notes: _____

DAILY SCIENCE LOG

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Page 2 of

Month <u>Sept</u>				Year <u>2015</u>			Ship <u>Tully</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
4	E1	1702	BE	ROS	/	7	48 31.70	125° 3.70	114		/	/	SR	✓	
		1703	BO				31.70	3.70							
		1706	EN				31.69	3.70							
4	E1	1719	BE	Net		8	48 31.71	125 3.79	116				KY		Bongo
	E1	1723	BO				48 31.71	125 3.82	116	110					
	E2	1726	EN				48 31.70	125 3.82	117						
4	LB05	1821	BE	ROS	US	9	48 33.97	125° 12.02	100		19	1	SR	✓	
		1823	BO				33.97	12.04		96					
		1826	EN				33.98	12.06							
A	LB06	1857	BE	ROS	US	10	48° 32.21	125° 15. 57	113		20-27	8	MR	✓	
		1901	BO				48° 32.21	125° 15. 57		106					
		1912	EN				48° 32.19	125° 15. 58							
4	C1	2022	BE	ROS	-	11	48° 28.72	125° 15. 31	152		-	∅	MR	✓	
		2025	BO				48° 28.72	125° 15. 31		145					
		2028	EN				48° 28.71	125° 15. 32							
A	C1	2039	BE	NET	-	12	48° 28.70	125 15. 34	152		-	-	MG		BONGO
		2045	BO				48° 28.72	125° 15. 36		145					
		2047	EN				48° 28.73	125° 15. 37							

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Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 3 of

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							Latitude	Longitude							
4	C2	2144	BE	NET	-	13	48°26.27	125°09.45	159		-	Ø	MG		BONGU NO CTD
		2149	Bo				48°26.27	125°09.43		153					WORK DONE ON LARS SHEAVES, NO CTD.
		2152	EN				48°26.28	125°09.42							
4	C3	2258	BE	NET	-	14	48°23.40	125°20.72	122		-		MG		BONGU
		2303	Bo				48°23.43	125°20.75		117					
		2305	EN				48°23.46	125°20.78							
4	C3	2317	BE	ROS		15	48°23.47	125°20.72	122		-	Ø	MR	✓	TOUCHED BOTTOM?
		2320	Bo				48°23.46	125°20.72		120?					NOPE.
		2324	EN				48°23.44	125°20.73							
5	LB07	0019	BE	ROS	US	16	48°28.70	125°22.15	156		28	1	MR	✓	
		0023	Bo				48°28.72	125°22.22		149					
		0027	EN				48°28.73	125°22.24							
5	LB07	0033	BE	NET	-	17	48°28.79	125°22.27	156				MG/JD		
		0038	Bo				48°28.82	125°22.32		150					
		0040	EN				48°28.81	125°22.33							
5	B8	0144	BE	ROS	-	18	48°34.48	125°30.07	130		-	Ø	MR		
		0146	Bo				48°34.50	125°30.08		117					
		0149	EN				48°34.51	125°30.11							

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Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 4 of

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							Latitude	Longitude							
5	B8	0157	BE	NET		19	48° 34.54	125° 30.12	125		—	—	MG		BONGO.
		0201	BO				48° 34.55	125° 30.14		120					
		0204	EN				48° 34.55	125° 30.17							
5	B7	0246	BE	ROS	—	20	48° 31.94	125° 35.49	80		—	—	MR	✓	
		0248	BO				48° 31.93	125° 35.50		72					
		0250	EN				48° 31.93	125° 35.51							
5	B7	0256	BE	NET		21	48° 31.92	125° 35.54	80		—	—	MG		BONGO
		0259	BO				48° 31.93	125° 35.54		75					
		0300	EN				48° 31.93	125° 35.54							
5	LB08	0408	BE	ROS	US	22	48° 25.27	125° 28.80	153		29-38	10	MR	✓	SEE NOTE ON ROSETTE LOG FOR NUTRIENTS.
		0412	BO				48° 25.26	125° 28.80		147					
		0422	EN				48° 25.27	125° 28.83	151		—	—	MG		BONGO
5	LB08	0430	BE	NET		23	48° 25.29	125° 28.85	150						
		0435	BO				48° 25.31	125° 28.86		145					
		0438	EN				48° 25.31	125° 28.90							
5	LB09	0527	BE	ROS	US	24	48° 21.92	125° 34.74	149		39-47	9	MR	✓	
		0530	BO				48° 21.92	125° 34.73		141					
		0542	EN				48° 21.91	125° 34.71							

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 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 5 of

Month <u>SEPTEMBER</u>			Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-21</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
5	LB10	0630	BE	ROS	US	25	48°18.52	125°41.35	151		48	1	MR	✓	
		0633	BO				48°18.52	125°41.35		144					
		0637	EN				48°18.51	125°41.34							
5	LB11	0724	BE	NET		26	48°15.161	125°47.776	203				KY		
		0731	BO				15.189	47.729		198					
		0735	EN				15.215	47.727							
5	LB11	0748	BE	ROS	US	27	48°15.19	125°47.67	203		49-59	11	SR	✓	
		0753	BO				15.19	47.68							
		0808	EN				15.17	47.59							
5	LB12	0845	BE	ROS	US	28	48°12.89	125°51.90	501		60-74	15	SR	✓	LARS issues @ 420db,
		0855	BO				12.93	51.87							
		0930	EN				12.86	51.88							
5	LB13	1007	BE		US	29	48°10.62	125°56.10	904		75	1	SR	✓	
		1023	BO				10.62	56.13		900				1	
		1039	EN												
5	LB14	1120	BE	ROS	US	30	48°8.60	125°59.98	1157		76-93	18	SR	✓	Had to stop @ 448d
		1147	BO				8.68	126°0.17		1152					for a wire correction
		1237	EN				8.63	0.14							for quite a while

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This page is for any notes or observations

The bottom bottle wasn't tripped, bot 1 was 1000 m, bot 2 had the bot-5 water

DAILY SCIENCE LOG

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Page 6 of

Month <u>Sept</u>				Year <u>2015</u>			Ship <u>Tully</u>				Cruise ID <u>2015-21</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned		Comments
							Latitude	Longitude								
5	LB15	1336	BE	ROS	US	31	48° 4.37	126° 8.41	1532		94	1	SR	✓		
		1405	BO				4.41	8.42		1507						
		1432	EN				4.39	8.40								
5	LB16	1528	BE	ROS	US	32	48° 0.55	126° 16.99	1780		95	1	SR	✓		bot#3 fired
		1559	BO				0.51	16.98		1775						for NH ₄ water
		1633	EN				0.49	16.98								
5	LB164	1640	BE	NET	—	33	48° 6.49	126° 16.98	1780		—	—	KY			MPS
		1745	BO				6.52	16.96		1750						DID NOT TAKE SAFETY OFF → NO SAMPLES
		1815	EN				0.55	16.96								
5	LC1247	2132	BE	ROS		34	48° 14.89	126° 40.05	2511		—	Ø	MR	✓		PAR OFF
		2208	BO				48° 14.81	126° 40.17		2005						WRONG FILE NAME
		2245	EN				48° 14.66	126° 40.29								CALLID 0033
5	A4	0058	BE	NET		35	48° 14.62	126° 40.33	2505				MG			MPS
6		0041	BO				48° 14.98	126° 40.20		2500						
		0132	EN				48° 14.81	126° 40.53								
6	A4	0150	BE	NET		36	48° 14.75	126° 40.44	2509				MG			BONGO
		0158	BO				48° 14.73	126° 40.43		250						
		0202	EN				48° 14.72	126° 40.41								

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WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 7 of

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							Latitude	Longitude							
6	LC11	0336	BE	ROS	US	37	48°18.97	126°26.67	1444		96-114	19	MR	✓	P: 1475 S: 1444
		0404	Bo				48°18.95	126°26.70		1475					D: 1457 A: 10
		0449	EN				48°18.90	126°26.67							
6	LC10	0547	BE	ROS	-	38	48°22.54	126°20.22	1235		-	Ø	MR	✓	P: 1243 S: 1240 D: 1229 A: 10
		0614	Bo				48°22.45	126°20.21		1243					
		0642	EN				48°22.36	126°20.24							
7	LC09/ A3	0119	BE	ROS	US	39	48°25.83	126°13.74	613		115-131	17	MR	✓	PAR ON
		0131	Bo				48°25.83	126°13.80							
		0156	EN				48°25.81	126°13.85							
7	LC09/A3	0203	BE	NET	-	40	48°25.81	126°13.87	632				MG		BONGO
		0214	Bo				48°25.75	126°13.93		250					
		0218	EN				48°25.87	126°13.96							
7	A2	0319	BE	ROS	-	41	48°22.68	126°03.81	351		-	Ø	MR	✓	
		0326	Bo				48°22.67	126°03.85		347					
		0332	EN				48°22.69	126°03.87							
7	A2	0338	BE	NET	-	42	48°22.69	126°03.88	348				MG		
		0346	Bo				48°22.70	126°03.88		250					
		0351	EN				48°22.73	126°03.88							

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WaterProperties.ca
Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 8 of

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							Latitude	Longitude							
7	LC08	0453	BE	ROS	US	43	48° 29.40	126° 07.07	200		132-142	11	MR	✓	
		0457	BO				48° 29.39	126° 07.06		192					
		0510	EN				48° 29.40	126 07.01							
7	LC08	0519	BE	NET	-	44	48 29.39	126 7.02	198				MS		Bongo
		0525	BO				48 29.39	126 7.05		190					
		0528	EN				48 29.39	126 7.06							
7	LC07	0621	BE	ROS	✓	45	48° 32.94	126° 00.52	127		-	Ø	MR	✓	
		0624	BO				48° 32.94	126° 00.51		119					
		0626	EN				48° 32.95	126° 00.50							
7	LC06	0716	BE	NET		46	48° 36.480	125° 53.980	92		/	/	KY		Bongo
		0719	BO				36.490	54.000		87					
		0721	EN				36.500	54.020							
7	LC06	0809	BE	ROS		47	48° 36.53	125° 54.02	92		143-149	7	SR	✓	
		0811	BO				36.53	54.02		82					
		0820	EN				36.55	54.04							
7	LC05	0917	BE	NET		48	48° 39.980	125° 47.490	63		/	/	KY		Bongo
		0919	BO			48	39.970	47.470		57					
		0921	EN				39.960	47 470							

Cast Type:

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USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

____ = _____

Bottle Firing Method:

US = Up / Stop
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Notes:

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Transmissometer & Fluorometer are to be cleaned before each cast

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 9 of

Month <u>Sept</u>				Year <u>2015</u>			Ship <u>Tully</u>			Cruise ID <u>2015-21</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
7	LC05	0938	BE	ROS	/	49	48° 39.95	125° 47.48	63		/	/	SR	✓	
		0940	BO				39.96	47.48		53					
		0944	EN				39.96	47.48							
7	LC04	1026	BE	ROS	US	50	48° 43.43	125° 40.78	165		150-159	10	SR	✓	
		1030	BO				43.44	40.78		155					
		1042	EN				43.53	40.76							
7	LC03	1127	BE	ROS	/	51	48° 47.00	125° 34.21	134		/	/	SR	✓	
		1129	BO				47.02	34.23		124					
		1132	EN				47.02	34.25							
7	LC02	1203	BE	ROS	US	52	48° 48.72	125° 30.91	108		160-167	8	SR	✓	
		1206	BO				48.73	30.90		98					
		1214	EN				48.74	30.90							
7	LC01	1248	BE	ROS	US	53	48° 50.49	125° 27.74	94		168-174	7	SR	✓	
		1251	BO				50.50	27.74		84					
		1300	EN				50.51	27.80							
7	LD02	1435	BE	NET		54	48° 58.45	125° 47.09	43						
		1437	BO				48° 54.45	125° 47.07		38					
		1439	EN				48° 58.45	125° 47.07							

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 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 10 of

Month <u>SEPTEMBER</u>		Year <u>2015</u>		Ship <u>Tully</u>		Cruise ID <u>2015-21</u>									
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
7	L002	1449	BE	ROS		55	48° 58.43	125° 47.06	43		175-179	5	SR	✓	
		1450	BO				58.43	47.06		33					
		1457	EN				58.43	47.07							
7	L004	1559	BE	NET		56	48° 53.18	125° 57.02	63						
		1602	BO				48 53.17	125 57.00		58					
		1604	EN				48 53.17	125 57.00							
7	L004	1614	BE	ROS		57	48 53.21	125 57.060	63		180-184	5	GC	✓	
		1615	BO				48 53.21	125 57.07		53					
		1621	EN				48 53.21	125 57.18							
		RETERMINATED		CABLE REMOVED		~300 m OFF WIRE									
7	L601	2014	BE	ROS	US	58	49° 20.53	126° 35.08	53		185-189	5	MR	✓	
		2015	BO				49° 20.53	126° 35.09		43					
		2021	EN				49° 20.50	126° 35.08							
7	L602	2046	BE	NET		59	49° 18.75	126° 38.11	99m				HC		Bongo
		2051	BO				49° 18.72	126° 38.10		95m					
		2053	EN				49° 18.72	126° 38.10							
7	L602	2101	BE	ROS	US	60	49° 18.69	126° 38.09	99		190-196	7	MR	✓	
		2103	BO				49° 18.68	126° 38.10		91					
		2111	EN				49° 18.71	126° 38.16							

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 WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 11 of

Month <u>SEPTEMBER</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
7	LG03	2155	BE	ROS	-	61	49°15.00	126°43.80	120		-	Ø	MR	✓	
		2157	Bo				49°15.01	126°43.80		112					
		2159	EN				49°15.01	126°43.80							
7	LG04	2252	BE	ROS	US	62	49°11.39	126°49.27	144		197-205	9	MR	✓	
		2255	Bo				49°11.40	126°49.22		136					
		2306	EN				49°11.40	126°49.16							
7	LG04	2313	BE	NET		63	49°11.46	126°49.11	142				MG		BONCO
		2318	Bo				49°11.46	126°49.07	1	135					
		2321	EN				49°11.45	126°49.04							
8	LG05	0018	BE	ROS	-	64	49°7.46	126°55.01	262		-	Ø	DY	✓	
		0024	Bo				49°7.48	126°54.97		254					
		0031	EN				49°7.50	126°54.89							
8	LG06	0132	BE	ROS	US	65	49°03.48	127°01.04	932		206-222	17	MR	✓	
		0150	Bo				49°03.39	127°00.97	929	928					15 OFF BOT.
		0221	EN				49°03.30	127°01.05							5/6 slope
8	LG07	0314	BE	ROS	-	66	48°59.38	127°07.06	1755		-	Ø	MR	✓	PAR OFF
		0347	Bo				48°59.39	127°07.08		1771					
		0416	EN				48°59.41	127°07.08							

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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 12 of

Month <u>SEPTEMBER</u>			Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-21</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
8	L607	0423	BE	NET		67	48°59.39	127°07.12	1755		—		MG		Bongo
		0432	Bo				48°59.30	127°06.98		250					
		0437	EN				48°59.28	127°06.96							
8	L608	0545	BE	ROS	—	68	48°55.30	127°13.24	2059		—	Ø	MR	✓	
		0622	Bo				48°55.31	127°13.23		2075					
		0657	EN				48°55.32	127°13.25							
8	L609	0756	BE	NET		69	48°51.22	127°19.44	2049						Bongo
		0805	Bo				48°51.22	127°19.44		250	—		GC		
		0808	EN				48°51.21	127°19.44							
8	L609	0819	BE	ROS	US	70	48°51.19	127°19.35	2050		223-228	6	GC	—	Start time from bridge, forget to write down on start.
		0904	Bo				48°51.21	127°19.28		2065					
		0944	EN				48°51.17	127°19.33							
8	L609	0957	BE	NET		71	48°51.188	127°19.344	2048				K-J		MPS
		11:25	Bo				48°51.201	127°19.354		2010					
		12:05	EN				48°51.216	127°19.367							
8	L709	1615	BE	ROS		72	49°16.12	127°47.23	2482		—	Ø	GC	✓	WRONG DEPTH IN HEADER
		1648	Bo				49°16.07	127°47.25		2005					
		1722	EN				49°16.12	127°47.25							

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WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 13 of

Month <u>September</u>				Year <u>2015</u>			Ship <u>Tull</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
<u>7</u>	<u>LJ09</u>	<u>17:29</u>	<u>BE</u>	<u>NET</u>		<u>73</u>	<u>49° 16.09</u>	<u>127° 47.23</u>	<u>2482</u>				<u>KY/HE</u>		<u>MPS</u>
		<u>1904</u>	<u>BO</u>				<u>49° 16.03</u>	<u>127° 47.33</u>		<u>2460</u>					
		<u>19:51</u>	<u>EN</u>				<u>49° 16.04</u>	<u>127° 47.32</u>							
<u>8</u>	<u>LJ09</u>	<u>20:11</u>	<u>BE</u>	<u>NET</u>		<u>74</u>	<u>49° 16.19</u>	<u>127° 47.42</u>	<u>2481 m</u>						<u>Bongo</u>
		<u>20:20</u>	<u>BO</u>				<u>49° 16.11</u>	<u>127° 47.40</u>		<u>250</u>					
		<u>20:25</u>	<u>EN</u>				<u>49° 16.08</u>	<u>127° 47.40</u>							
<u>8</u>	<u>LJ08</u>	<u>2122</u>	<u>BE</u>	<u>ROS</u>	<u>-</u>	<u>75</u>	<u>49° 20.16</u>	<u>127° 40.90</u>	<u>1708</u>		<u>-</u>	<u>Ø</u>	<u>MR</u>	<u>✓</u>	
		<u>2152</u>	<u>BO</u>				<u>49° 20.07</u>	<u>127° 40.79</u>		<u>1731</u>					
		<u>2220</u>	<u>EN</u>				<u>49° 20.09</u>	<u>127° 40.69</u>							
<u>8</u>	<u>LJ07</u>	<u>2309</u>	<u>BE</u>	<u>ROS</u>	<u>-</u>	<u>76</u>	<u>49° 23.97</u>	<u>127° 34.63</u>	<u>1798</u>		<u>-</u>	<u>Ø</u>	<u>MR</u>	<u>✓</u>	
		<u>2342</u>	<u>BO</u>				<u>49° 23.94</u>	<u>127° 34.57</u>		<u>1814</u>					
<u>9</u>		<u>0012</u>	<u>EN</u>				<u>49° 23.94</u>	<u>127° 34.58</u>							
<u>9</u>	<u>LJ06</u>	<u>0101</u>	<u>BE</u>	<u>ROS</u>	<u>-</u>	<u>77</u>	<u>49° 27.89</u>	<u>127° 28.46</u>	<u>1025</u>		<u>-</u>	<u>Ø</u>	<u>MR</u>	<u>✓</u>	<u>D: 1038 P: 1030</u>
		<u>0120</u>	<u>BO</u>				<u>49° 27.90</u>	<u>127° 28.42</u>		<u>1050</u>					<u>S: 1025 A 9.4</u>
		<u>0138</u>	<u>EN</u>				<u>49° 27.95</u>	<u>127° 28.45</u>							
<u>9</u>	<u>LJ06</u>	<u>0145</u>	<u>BE</u>	<u>NET</u>	<u>-</u>	<u>78</u>	<u>49° 27.95</u>	<u>127° 28.46</u>	<u>1025</u>		<u>-</u>	<u>-</u>	<u>MG</u>		<u>BONGO</u>
		<u>0154</u>	<u>BO</u>				<u>49° 27.95</u>	<u>127° 28.48</u>		<u>250</u>					
		<u>0158</u>	<u>EN</u>				<u>49° 27.95</u>	<u>127° 28.52</u>							

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 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 14 of

Month <u>SEPTEMBER</u>			Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-21</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
9	LJ05	0247	BE	ROS	-	79	49'31.69	127'22.49	1059		-	Ø	MR	✓	
		0309	Bo				49'31.66	127'22.54		1066					
		0327	EN				49'31.60	127'22.56							
9	LJ04	0418	BE	ROS	-	80	49'35.49	127'16.99	162		-	Ø	MR	✓	
		0420	Bo				49'35.48	127'17.00		154					
		0423	EN				49'35.48	127'17.00							
9	LJ04	0429	BE	NET	-	81	49'35.49	127'17.01	162		-	-	MR	-	BONGO
		0437	Bo				49'35.45	127'17.01		155					
		0439	EN				49'35.44	127'17.01							
9	LJ03	0531	BE	ROS	-	82	49'39.08	127'11.16	126		-	Ø	MR	✓	
		0533	Bo				49'39.07	127'11.16		117					
		0536	EN				49'39.07	127'11.15							
9	LJ02	0629	BE	ROS	-	83	49'42.60	127'05.31	83		-	Ø	MR	✓	
		0631	Bo				49'42.60	127'05.29		73					
		0633	EN				49'42.60	127'05.29							
9	LJ02	0639	BE	NET		84	49'42.60	127'05.24	83				MR		BONGO
		0643	Bo				49'42.57	127'05.21		75					
		0646	EN				49'42.56	127'05.20							

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WaterProperties.ca
Version: 7 July 2014

Notes:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 15 of

Month <u>September</u>				Year <u>2015</u>			Ship <u>T-16</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
9	L501	7:16	BE	ROS	—	85	49° 44.32	127° 2.53	61		—	0	GC	✓	
		7:18	BO				49° 44.33	127° 2.53		58					
		7:19	EN				49° 44.33	127° 2.50							
9	LBP1	11:49	BE	ROS		86	50° 4.82	127° 52.78	50		—	0	GC	✓	
		11:50	BO				50° 4.81	127° 52.79		42					
		11:52	EN				50° 4.80	127° 52.80							
9	LBP2	12:15	BE	ROS		87	50° 4.62	127° 54.32	90		—	0	GC	✓	
		12:17	BO				50° 4.10	127° 54.35		85					
		12:21	EN				50° 4.15	127° 54.35							
9	LBP2	12:32	BE	NET		88	50° 4.00	127° 54.16	96		—		KY		Bongo
		12:35	BO				50° 3.99	127° 54.11		35					
		12:37	EN				50° 4.00	127° 54.01							
9	LBP3	12:56	BE	NET		89	50° 3.18	127° 55.27	164		—		KY		Bongo
		13:03	BO				50° 3.15	127° 55.36		154					
		13:06	EN				50° 3.18	127° 55.41							
9	LBP3	13:18	BE	ROS	US	90	50° 3.25	127° 55.36	165		229-238	10	GC	✓	
		13:21	BO				50° 3.26	127° 55.44							
		13:34	EN				50° 3.35	127° 55.49							

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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 16 of

Month <u>Sept</u>				Year <u>2015</u>			Ship <u>Tully</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
9	LBP4	1407	BE	ROS	US	91	50° 1.44	127° 58.16	1010		—	0	GC/DY	✓	Bad swell on beam
		1430	BO				50° 1.42	127° 58.32		1109					
		1451	EN				50° 1.42	127° 58.29							
9	LBP5	1529	BE	NET		92	50° 0.02	128° 0.16	1280				Ky		Bongo
		1538	BO				50° 0.06	128° 0.38		250					
		1543	EN				50° 0.012	128° 0.50							
9	LBP5	1605	BE	ROS	US	93	50° 0.10	128° 0.100	1277		239-257	19	GC	✓	*Route went down to →
		1644	BO				50° 0.22	128° 0.52		1295					
		1724	EN				50° 0.34	128° 0.850							
9	LBP6	2047	BE	ROS	—	94	49° 56.31	128° 05.57	740		—	0	MR	✓	PAR ON
		2102	BO				49° 56.33	128° 05.54		738					
		2116	EN				49° 56.33	128° 05.53							
9	LBP7	2214	BE	ROS	US	95	49° 52.38	128° 11.15	2182		258-277	20	MR	✓	PAR OFF
		2249	BO				49° 52.40	128° 11.08		2005					
		2343	EN				49° 52.38	128° 11.11							
9	LBP7	2348	BE	NET		96	49° 52.39	128° 11.11	2185				MR		
10		0004	BO				49° 52.37	128° 11.18		250					
10		0009	EN				49° 52.37	128° 11.20							

Cast Type:

BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set

USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

— =

Bottle Firing Method:

US = Up / Stop
 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

Transmissometer & Fluorometer are to be cleaned before each cast

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125 meters but swell on beam + sat @ 125 for ~15 mins. Brought to surface + then re-started down cast. Still archiving under same data file. Scan count @ 20700 for new downcast @ 1619.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 17 of

Month			Year				Ship				Cruise ID				
SEPTEMBER			2015				TULLY				2015-21				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
10	LBP8	0103	BE	ROS	-	97	49°48.53	128°16.64	2065		—	Ø	MR	✓	
		0148	BO				49°48.32	128°16.78		2006					
		0225	EN				49°48.27	128°16.98							
10	LBP8	0231	BE	NET	-	98	49°48.27	128°16.99	2067				MG		BONGO
		0242	BO				49°48.23	128°17.11		250					
		0246	EN				49°48.24	128°17.13							
10	CS01	11:16	BE	ROS	-	99	50°34.82	129°41.52	2103		—	Ø	GC	✓	
		11:56	BO				50°34.88	129°41.57		2120					
		12:30	EN				50°34.85	129°41.50							
10	CS01	12:43	BE	NET	-	100	50°34.89	129°41.51	2100		—	Ø	KY		Bongo
		12:52	BO				50°34.77	129°41.70		250					
		12:56	EN				50°34.71	129°41.72							
10	CS01	13:18	BE	NET		101	50°34.86	129°41.62	2101				KY		MPS
		14:50	BO				50°35.273	129°40.817		2050					
		15:38	EN				50°35.457	129°40.788							
10	CS02	17:11	BE	NET		102	50°41.39	129°28.04	1894				KY		Bongo
		17:21	BO				50°41.36	129°28.10		250					
		17:25	EN				50°41.34	129°28.11							

Cast Type:

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 SET = Fish Set

USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

Bottle Firing Method:

US = Up / Stop
 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

Transmissometer & Fluorometer are to be cleaned before each cast

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WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 18 of

Month <u>September</u>			Year <u>2015</u>			Ship <u>Tully</u>			Cruise ID <u>2015-21</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
10	CS02	17:39	BE	ROS	US	103	50° 41' 34"	129° 28' 04"	1897		278-297	20	GC	✓	
		18:11	BO				50° 41' 24"	129° 28' 08"		1911					
		1903	EN				50° 41' 34"	129° 27' 87"							
10	LOOP104	1950	BE	USW	—	104	50° 40' 80"	129° 19' 04"	1089				MR		2xCHL 1xSAL
10	LQ03	2112	BE	ROS	—	105	50° 39' 78"	129° 01' 92"	1296		—	Ø	MR	✓	
		2135	BO				50° 39' 78"	129° 02' 01"		1341					
		2158	EN				50° 39' 74"	129° 02' 11"							
10	LQ03	22:05	BE	NET	—	106	50° 39' 75"	129° 02' 12"	1296				MG		Bongo
		22:15	BO				50° 39' 78"	129° 02' 15"		250 m					
		22:20	EN				50° 39' 80"	129° 02' 12"							
10	CS03	2359	BE	NET		107	50° 45' 63"	129° 19' 91"	216?		—		MG		BONGO
11		0006	BO				50° 45' 63"	129° 19' 98"		210					
		0009	EN				50° 45' 61"	129° 20' 03"							
11	CS03	0015	BE	ROS		108	50° 45' 60"	129° 20' 07"	236?		—	Ø	MR		
		0020	BO				50° 45' 59"	129° 20' 10"	238	231					
		0023	EN				50° 45' 61"	129° 20' 09"							
11	CS04	0129	BE	ROS	US	109	50° 49' 46"	129° 13' 14"	96		298-304	7	MR	✓	PAR ON
		0131	BO				50° 49' 46"	129° 13' 15"		87					
		0138	EN				50° 49' 47"	129° 13' 15"							

Cast Type:

BOT = Bottle cast, no CTD
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USW = Sea Water Loop

MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter

Bottle Firing Method:

US = Up / Stop
UN = Up / No stop
DN = Down / No stop

Time Code:

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Transmissometer & Fluorometer are to be cleaned before each cast

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WaterProperties.ca
Version: 7 July 2014

Notes:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 19 of

Month <u>SEPTEMBER</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
11	CS04	0145	BE	NET		110	50° 49.46	129° 13.19	97						BONGO
		0148	Bo				50° 49.46	129° 13.24		90					
		0150	EN				50° 49.46	129° 13.26							
11	CS3B	0331	BE	ROS	-	111	50° 59.99	129° 26.88	217		-	0	MR	✓	
		0336	Bo				50° 59.98	129° 26.89		210					
		0341	EN				50° 59.98	129° 26.88							
11	CS3B	0347	BE	NET		112	50° 59.98	129° 26.89	217				MG		BONGO
		0355	Bo				50° 59.94	129° 26.98		210					
		0359	EN				50° 59.94	129° 27.00							
11	CS05	0605	BE	ROS		113	50° 56.03	128° 59.95	64		-	0	MR	✓	
		0606	Bo				50° 56.02	128° 59.96		56					
		0607	EN				50° 56.01	128° 59.96							
11	CS05	0614	BE	NET		114	50° 55.99	129° 00.00	64				MG		BONGO
		0616	Bo				50° 56.01	128° 59.96		60					
		0617	EN				50° 56.02	128° 59.94							
11	CS1B	0758	BE	ROS		115	50° 53.00	128° 40.03	74		-	0	GC	✓	
		0800	Bo				50° 53.00	128° 40.03		65					
		0801	EN				50° 53.01	128° 40.01							
															Haul to redo cast, forgot to archive 1st time.

Cast Type:

BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 NET = Plankton Net Haul
 ROS = Rosette plus CTD
 SET = Fish Set

USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
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Bottle Firing Method:

US = Up / Stop
 UN = Up / No stop
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Notes:

Time Code:

BE = Beginning Time of Cast DE = Deployment Time
 BO = Bottom Time of Cast MR = Messenger Release Time
 EN = End Time of Cast RE = Recover Mooring Time

Transmissometer & Fluorometer are to be cleaned before each cast

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WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 20 of

Month <u>September</u>			Year <u>2015</u>			Ship <u>Tully</u>			Cruise ID <u>2015-21</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
11	CS1B	0809	BE	NET		116	50° 53.01	128° 40.02	74		—	—	KY		Bongo
		0811	BO				50° 53.02	128° 40.00		69					
		0812	EN				50° 53.02	128° 40.01							
11	CS06	0936	BE	NET		117	50° 59.96	128° 51.81	65		—	—	KY		Bongo
		0939	BO				50° 59.95	128° 51.82		60					
		0940	EN				50° 59.93	128° 51.83							
11	CS06	0950	BE	ROS	US	118	50° 59.99	128° 51.88	65		305-310	6	GC	✓	
		0952	BO				50° 59.98	128° 51.89		56					
		0957	EN				50° 59.88	128° 51.92							
11	CS07	1059	BE	ROS		119	51° 4.52	128° 44.15	64		—	φ	GC	✓	
		1100	BO				51° 4.52	128° 44.15		55					
		1102	EN				51° 4.51	128° 44.15							
11	CS07	1108	BE	NET		120	51° 4.51	128° 44.12	64				KY		Bongo
		1111	BO				51° 4.51	128° 44.12		58					
		1112	EN				51° 4.51	128° 44.13							
11	CS08	1202	BE	ROS		121	51° 8.52	128° 36.01	142		—	φ	GC	✓	
		1205	BO				51° 8.51	128° 36.03		134					
		1207	EN				51° 8.52	128° 36.00							

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Time Code:

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EN = End Time of Cast
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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 21 of

Month <u>SEPTEMBER</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
11	CS08	1217	BE	NET		122	51° 08.53	128° 35.95	142		—	—	KY		
		1222	BO				51° 08.47	128° 36.02		137					
		1225	EN				51° 08.45	128° 36.06							
11	CS09	1322	BE	NET		123	51° 12.47	128° 28.06	192						
		1328	BO				51° 12.47	128° 28.09		137					
		1332	EN				51° 12.48	128° 28.07							
11	CS09	1341	BE	ROS	US	124	51° 12.48	128° 28.06	192		311-321	11	GC	—	
		1345	BO				51° 12.49	128° 28.00		155					
		1400	EN				51° 12.50	128° 28.02							
11	CS10	1456	BE	ROS		125	51° 16.53	128° 19.93	78		—	Ø	GC	✓	
		1457	BO				51° 16.53	128° 19.93		70					
		1459	EN				51° 16.52	128° 19.92							
11	CS10	1505	BE	NET		126	51° 16.53	128° 19.94	78				KY		Bongo
		1508	BO				51° 16.53	128° 19.95		73					
		1510	EN				51° 16.53	128° 19.96							
11	SS3	1933	BE	ROS		127	51° 15.00	129° 21.21	290		—	Ø	MR	✓	
		1939	BO				51° 15.00	129° 21.21		284					
		1944	EN				51° 15.00	129° 21.20							

Cast Type:

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— =

Bottle Firing Method:

US = Up / Stop

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EN = End Time of Cast

DE = Deployment Time

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Transmissometer & Fluorometer are to be cleaned before each cast

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 WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 22 of

Month <u>SEPTEMBER</u>			Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-21</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
11	SS3	19:49	BE	NET		128	51° 14.99	129° 21.20	290				MG		BONGO
		20:04	Bo				51° 15.02	129° 21.20		235					
		20:09	EN				51° 15.03	129° 21.18							
11	SS4	2155	BE	ROS	—	129	51° 20.96	129° 00.02	240		—	0	MR	✓	
		22:01	Bo				51° 20.97	129° 00.04		230					
		22:06	EN				51° 20.96	129° 00.08							
11	SS4	22:13	BE	NET		130	51° 20.95	129° 00.08	239						
		22:20	Bo				51° 20.95	129° 00.12		235					Bonger
		22:24	EN				51° 20.97	129° 00.12							
12	SS5	0045	BE	ROS	—	131	51° 27.98	128° 30.03	199		—	0	MR	✓	
		0048	Bo				51° 27.98	128° 30.04		191					
		0052	EN				51° 27.97	128° 30.06							
12	SS5	0058	BE	NET		132	51° 27.98	128° 30.09	198				MG		BONGO
		0105	Bo				51° 28.02	128° 30.06		192					
		0109	EN				51° 28.04	128° 30.09							
12	SS6	0334	BE	ROS	—	133	51° 20.01	127° 59.97	176		—	0	MR	✓	
		0338	Bo				51° 20.06	127° 59.93		168					
		0341	EN				51° 20.10	127° 59.89							

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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 23 of

Month <u>SEPTEMBER</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
12	SS6	0347	BE	NET		134	51° 20.10	127° 59.95	175				MG		Bongo
		0353	BO				51° 20.10	127° 59.98		170					
		0356	EN				51° 20.10	128° 00.01							
12	SS7	0518	BE	ROS	-	135	51° 24.67	127° 47.58	123		-	Ø	MR	✓	
		0522	BO				51° 24.67	127° 47.56		115					
		0525	EN				51° 24.67	127° 47.56							
12	SS7	0528	BE	NET		136	51° 24.66	127° 47.55	123				MG		Bongo
		0532	BO				51° 24.66	127° 47.56		118					
		0535	EN				51° 24.66	127° 47.60							
12	UB67	0627	BE	ROS		137	51° 29.96	127° 49.03	157		-	Ø	MR	✓	Depth in water?
		0630	BO				51° 29.98	127° 49.03		150					
		0634	EN				51° 29.98	127° 49.01							
12	UB7	0638	BE	NET		138	51° 29.99	127° 49.01	160				MG		Bongo
		0643	BO				51° 30.00	127° 49.00		155					
		0646	EN				51° 30.01	127° 49.00							
12	RI1	0800	BE	ROS		139	51° 26.48	127° 38.30	315				GC	✓	
		0805	BO			139	51° 26.48	127° 38.31		304.8					
		0810	EN				51° 26.47	127° 38.29							

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WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 24 of

Month <u>September</u>			Year <u>2015</u>				Ship <u>Tully</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
12	RT1	0818	BE	NET		140	51° 26.40	127° 38.25	323		—	—	KY		Bongo
		0831	BO				51° 26.39	127° 38.31		315					
		0837	EN				51° 26.39	127° 38.36							
12	RT2	0916	BE	ROS	US	141	51° 31.28	127° 33.59	330		322-326	6	GC	✓	
		0922	BO				51° 31.27	127° 33.63		325					
		0933	EN				51° 31.24	127° 33.68							
12	RT2	0936	BE	NET		142	51° 31.24	127° 33.62	330				KY		Bongo
		0950	BO				51° 31.26	127° 33.54		325					
		0956	EN				51° 31.26	127° 33.49							
12	CPE1	1523	BE	ROS	—	143	51° 0.01	127° 50.06	142		—	—	GC	✓	
		1525	BO				51° 0.00	127° 50.08		136					
		1528	EN				51° 0.02	127° 50.06							
12	CPE1	1535	BE	NET		144	50° 59.98	127° 50.11	140				KY		Bongo
		1540	BO				51° 00.03	127° 50.22		135					
		1542	EN				51° 00.06	127° 50.25							
13	14	1609	BE	ROS	US	145	49° 52.94	124° 59.60	312		327	1	GC	✓	
		1615	BO				49° 52.94	124° 59.61		304					
		1621	EN				49° 52.95	124° 59.61							

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Notes:

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Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 25 of

Month <u>September</u>				Year <u>2015</u>			Ship <u>Tully</u>			Cruise ID <u>2015-21</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
13	14	1628	BE	NET		146	49° 52.96	124° 59.59	312			/	KY		Bongo
		1640	BO				49° 52.98	124° 59.58		306					
		1645	EN				49° 52.98	124° 59.56							
13	11	1823	BE	ROS	US	142	49° 42.36	124° 43.31	300		328	1	GC	✓	
		1829	BO				49° 42.38	124° 43.28		290					
		1834	EN				49° 42.38	124° 43.28							
13	11	1840	BE	NET		148	49° 42.35	124° 43.33	296				KY/mc		Bongo
		1852	BO				49° 42.38	124° 43.27		290					
		1857	EN				49° 42.39	124° 43.22							
13	CPF2	2048	BE	ROS	US	149	49° 27.92	124° 30.05	325		329	1	MR	✓	
		2057	BO				49° 27.92	124° 30.01		319					
		2104	EN				49° 27.90	124° 29.98							
13	CPF2	2109	BE	NET		150	49° 27.89	124° 29.98	325				MG		Bongo
		2122	BO				49° 27.89	124° 29.96		320					
		2127	EN				49° 27.89	124° 29.98							
13	CPF1	2333	BE	ROS	US	151	49° 21.81	124° 05.07	240		330	1	MR	✓	
		2338	BO				49° 21.80	124° 05.09	250	243					
		2343	EN				49° 21.79	124° 05.09							

Cast Type:

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 ROS = Rosette plus CTD
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USW = Sea Water Loop
 MOR = Mooring
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 DRF = Drifter

Bottle Firing Method:

US = Up / Stop
 UN = Up / No stop
 DN = Down / No stop

Notes: _____

Time Code:

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Transmissometer & Fluorometer are to be cleaned before each cast

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DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2015-21

DATE:

From:

3 SEPT 2015

to:

14 SEPT 2015

VESSEL:

JOHN P TULLY

PROJECT(S):

LA PEROUSSE

BOOK 2/2

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

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Page 26 of

Month <u>SEPTEMBER</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
13	CPF 1	2349	BE	NET	-	152	49° 21.79	124° 05.09	251				MG		
		2357	BO				49° 21.79	124° 05.11	255	245					
14		0001	EN				49° 21.78	124° 05.13							
14	22	0238	BE	ROS	US	153	49° 40.13	124° 16.27	350		331	1	MR	✓	
		0246	BO				49° 40.14	124° 16.23		344					
		0253	EN				49° 40.14	124° 16.20							
14	22	0300	BE	NET		154	49° 40.12	124° 16.21	350				MG		BONGO
		0311	BO				49° 40.12	124° 16.20		345					
		0318	EN				49° 40.13	124° 16.20							
14	24	0436	BE	NET		155	49° 30.21	124° 05.87	427						
		0449	BO				49° 30.25	124° 05.88		420					
		0456	EN				49° 30.27	124° 05.93							
14	24	0503	BE	ROS	US	156	49° 30.25	124° 05.89	428		332	1	MR	✓	
		0511	BO				49° 30.24	124° 05.95		417					
		0520	EN				49° 30.22	124° 05.99							
14	28	0704	BE	ROS	US	157	49° 24.11	123° 45.23	135		333	1	GC	✓	
		0706	BO				49° 24.12	123° 45.21		125					
		0708	EN				49° 24.10	123° 45.21							

Cast Type:

BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set

USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

Bottle Firing Method:

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Page 27 of

Month <u>September</u>				Year <u>2015</u>			Ship <u>Tully</u>				Cruise ID <u>2015-21</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
14	28	716	BE	NET		158	49° 24.03	123° 45.16	137				KY		Bongo
		0721	BO				49° 24.07	123° 45.17		129					
		0723	EN				49° 24.08	123° 45.19							
14	GEO1	0835	BE	NET		159	49° 14.93	123° 44.94	400				KY		Bongo
		0845	BO				49° 14.93	123° 44.92		395					
		0852	EN				49° 15.00	123° 44.90							
14	GEO1	0901	BE	ROS	US	160	49° 15.03	123° 44.85	400		334-354	21	GC	✓	
		0910	BO				49° 14.98	123° 44.79		393					
		0940	EN				49° 15.01	123° 44.60							
14	GEO1	0945	BE	NET	US	161	49° 15.01	123° 45.04	400				KY		MPS
		10:01	BO				49° 14.995	123° 44.956		383					
		10:11	EN				49° 15.013	123° 44.937							
14	38	1150	BE	ROS	US	162	49° 12.03	123° 26.40	305		355	1	GC	✓	
		1157	BO				49° 12.03	123° 26.42		299					
		1204	EN				49° 12.00	123° 26.48							
14	38	1210	BE	NET		163	49° 12.01	123° 26.48	303				KY		Bongo
		1223	BO				49° 12.09	123° 26.42		298					
		1228	EN				49° 12.09	123° 26.41							

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Page 28 of [illegible]

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