DAILY SCIENCE LOG BOOK

MISSION NUMBER

2015-20

DATE:

From: May 26/15 to: June 6/15

VESSEL:

J.P. Tully

PROJECT(S):

La Perouse WCVI

Book 1/2

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

WaterProperties.ca

Captain: DON GIBSON First Officer: RHOAN LETTAU
Second Officer: RYAN GURR Third Officer: KEVEN NAPHTALI
~~Fishing Master~~ C/C: RYAN BRAIDWOOD
Mission Participants / Agencies: DFO/IOS, UVIC, UBC

Scientific Personnel: Chief Scientist: DOUG YELAND 6-18 D

Name	Watch	Cabin	Name	Watch	Cabin
JOHN DOWER	12-18	B	KENNY SCOZZAFAVA	6-18	4
RON LINDSAY	0-12	C			
MARIE ROBERT	12-24	A			
TAMARA FRASER	0-12	E			
MONIKA PELZ	6-12	E			
KELLY YOUNG	0-12	F			
NINA NEMCEK	6-18	G			
AIDAN NEILL	0-6	H			
ROBERT IZETT	18-24	H			
MOIRA GALBRAITH	12-24	3			

Second leg of Mission: Chief Scientist: _____

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: _____
Data acquisition program: _____
CTD deck unit make: SBE model: 11+ serial number: _____

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: Wetlab 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: 1438 **P**, **S** or **NO** pump?
PAR sensor: Biospherical Model: QSP200L45 s/n: 4565
Other sensors: Altimeter, BENTHOS 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?
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?
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CTD calibration bottle location (height above CTD in metres): _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month MAI **Year** 2015 **Ship** J.P. TULLY **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
27	SAANICH TEST	1813	BE	ROS	US	1	48 39.35	123 28.31	42		—	24		✓	PAR ON TEST 2,4,5,6,8,9,10
		1814	BO				48 39.35	123 28.31		37					all fired @
		1816	EN				48 39.35	123 28.31							surface - many stuck
27	HAR059	2046	BE	ROS	US	2	48 36.95	123 14.74	225		1	1+23	MR	✓	NISKIN 1 USED, ALL
		2051	BO				48 36.94	123 14.73		220					OTHERS CLOSED EXCEPT
		2056	EN				48 36.96	123 14.72							TO TEST
27	HAR059	2115	BE	NET	—	3	48 36.94	123 14.75	223		—		MG		
		2122	BO				48 36.94	123 14.77		212					
		2126	EN				48 36.95	123 14.76							
27	PLASTIC	2313	BE	LOOP	—	4	48 23.78	123 15.57	71	4.5			MG		10 MIN
		2323					23.27	17.55							
28	LOOP	0114	BE	LOOP	—	5	48 17.50	123 38.76	160				MR		1 SAC 2 CHL UNFILT 2 CHL FILT
28	LB01	0708	BE	ROS	US	6	48 40.393	124 59.490	36	26	2-5	4	TF	✓	TF O2 NH3 HPLC RL NUT N*CHL DIC
		0710	BO				48 40.402	124 59.484							
		0713	EN				48 40.409	124 59.483							
28	LB02	0758	BE	ROS	US	7	48 39.083	125 02.302	55	45	6-10	5	TF	X	TF O2 NH3
		0759	BO				48 39.082	125 02.302							
		08:03	NO				48 39.974	125 02.285							

Cast Type:
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NET = Plankton Net Haul
DRF = Drifter
____ = _____

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Transmissometer & Fluorometer are to be cleaned before each cast

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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

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28	LB03	0840	BE	ROS	US	8	48 37.255	125 05.566	95	85	11	1	TF	✓	
		0842	BO				48 37.258	125 05.569							
		0844	EN				did not record								
28	LB04	0911	BE	ROS	US	9	4835.686	125 08.736	111	101	12-18	7	TF	✓	
		0914	BO				48 35.712	125 08.750							
		0921	EN				48 35.694	125 08.782							
28	E1	1027	BE	ROS CTD.	US	10	48 31.805	125 03.956	115	106.4	—	ø	TF	✓	had to wait for traffic to clear at station
		1030	BO				48 31.801	125 03.966							
		1033	EN				48 31.805	125 03.967							
28	E1	10:42	BE	NET	—	11	48°31.7878	125° 03.9737	117		—		KY	✓	
		10:45	BO				48 31.7867	125 03.9631		105					
		10:48	EN				48 31.7911	125 03.9577							
28	LB05	11:41	BE	ROS	US	12	48 34.016	125 12.104	110	100	19	1	TF	✓	don't know if pump was on.
		11:43	BO				4834.006	125 12.144							
		11:46	EN				48 33.986	125 12.184							
28	LOOP@5m	1146	BE	Loop		13	4833.986	125 12.184	110		—		RL	✓	sal. only.
28	LB06	1220	BE	ROS	US	14	48 32.191	125 15.545	115	105	20-26	7	TF	✓	
		1222	BO				48 32.196	125 15.546							started archiving @ 24 meters
		1230	EN				48 32.167	125 15.580							

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							Latitude	Longitude							
28	LOOP 15	12:30		LOOP		15	48 32.158	125 15.592			LOOP 15		RL		taken with Ros 5m
28	C1	13:03	BE	NET	—	16	48° 28.86	125° 15.39	153						
		13:08	BO				48° 28.88	125 15.544		140	—		KY		
		13:10	EN				48° 28.89	125 15.46							
28	C1	13:21	BE	ROS CTD		17	48 28.924	125 15.544	151		—		TF	✓	
		13:23	BO				48 28.915	125 15.568		142					
		13:26	EN				48 28.912	125 15.607							
28	C2	14 14	BE	ROS CTD		18	48 26.214	125 09.397	159				TF	✓	
		14 17	BO				48 26.230	125 09.460		149	—				
		14 20	EN				48 26.231	125 09.504							
28	C2	14:27	BE	NET		19	48 26.22	125 09.52		159	—		KY		
		14:35	BO				48 26.22	125 09.50	149						
		14:37	EN				48 26 22	125 09.50							
28	C3	15 39	BE	ROS CTD		20	48 23.396	125 20.802	122		—	—	TF	✓	
		15 41	BO				48 23.402	125 20.791		112.7					
		15 44	EN				48 23.414	125 20.774	—						
28	C3	15 48	BE	NET		21	48 23.4205	125 20.7293	122	112	—		KY		
		15 52	BO				48 23.4151	125 20.7033							
		15 54	EN				48 23.4130	125 20.6915							

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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							
28	LB07	16:39	BE	ROS	US	22	48 28.667	125 22.064	156		27	1	TF	✓	
		16:42	BO				48 28.667	125 22.044		146					
		16:46	EN				48 28.674	125 22.042							
28	LB07	16:54	BO	NET		23	48 28.675	125 22.034	155	145	—	/	KY		
28	B8	18:02	BE	CTD ROS		24	48 34.511	125 30.004	122		—	/	TF	✓	
		18:04	BO				48 34.508	125 29.989		110.4					
		18:07	EN				48 34.498	125 29.965							
28	B8	18:11	BE	NET		25	48 34.4837	125 29.9466	120	111	—	/	KY		
		18:15	BO				48 34.4848	125 29.9578							
		18:17	EN				48 34.4850	125 29.9558							
28	B7	18:58	BE	ROS CTD		26	48° 31.99	125° 35.55	79		—	Ø	MR	✓	
		19:00	BO				48° 31.99	125° 35.55		69					
		19:01	EN				48° 31.99	125° 35.55							
28	B7	19:10	BE	NET		27	48° 31.99	125° 35.52	79		—		MG		
		19:15	BO				48° 31 99	125° 35.52		70					
		19:17	EN				48° 31 98	125° 35.52							
28	LB08	20:19	BE	NET		28	48 25.30	125 28.65	145				MG		
		20:25	BO				48° 25 31	125 28.62							
		20:28	EN				48 25.31	125 28.63							

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							Latitude	Longitude							
28	∠B08	2037	BE	ROS	US	29	48° 25.33	125° 28.67	150		28-36	9	MR	✓	HIGH TP @ surface
		2040	BO				48 25 33	125° 28 67		143					
		2051	EN				48° 25.28	125° 28.70							
28	∠B09	2135	BE	ROS	US	30	48° 21.98	125° 34.74	149		37-45	9	MR	✓	
		2138	BO				48 21.97	125 34.69		140					
		2149	EN				48 21.97	125° 34.65							
28	∠B10	2236	BE	ROS	—	31	48° 18.56	125° 41 34	152		—	Ø	MR	✓	
		2240	BO				48° 18.56	125° 41.33		143					
		2244	EN				48° 18.58	125° 41 33							
28	∠B11	2336	BE	NET		32	48° 15 28	125° 47 58	202				MG		BONGO
		2343	BO				48° 15 27	125° 47 61		190					
		2346	EN				48° 15 25	125° 47 63							
28	∠B11	2357	BE	ROS	US	33	48° 15 26	125° 47 61	203		47-57	11	MR	✓	
		2358	BO				48° 15 25	125 47 61		195					
29		0011	EN				48° 15.19	125° 47.60							
29	∠B12	0046	BE	ROS	US	34	48° 12.88	125° 51.89	505		58-72	15	MR	✓	
		0056	BO				48° 12.89	125° 51.90		505					
		0119	EN				48° 12.89	125 51.87							

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							Latitude	Longitude							
29	LB13	0155	BE	ROS		35	48° 10.61	125° 55.99	905		73	1	MR	✓	A 10 D 900 S 907 P 909
		0212	BO		US		48° 10.61	125° 52.09		90					
		0228	EN				48° 10.62	125° 56.15							
29	LOOP 36	0243	BE	LOOP		36	48° 09.18	125° 58.06	934						2 CHL FILT 1 SAL 2 CHL NON FILT
29	LB14	0300	BE	ROS	US	37	48° 08.51	125° 59.99	1170		74-92	19	MR	✓	
		0322	BO				48° 08.51	126° 00.01		1181					
		0357	EN				48° 08.53	126° 00.02							
29	LB15	0456	BE	ROS	US	38	48° 04.37	126° 08.42	1538		93	1	MR	✓	S 1539 P 1554 A 10 D 1534
		0522	BO				48° 04.31	126° 08.41		1554					
		0548	EN				48° 04.33	126° 08.36							
29	LB16	0706	BE	NET	MPS	39	48° 00.5035	126° 16.9753	1764				KY		MPS
		08:04	BO				48° 00.556	126° 16.964		1750					
		08:45	EN				48° 00.591	126° 16.964							
29	LB16	09:11	BE	ROS	US	40	48° 00.562	126° 17.064	1769		94	1	TF	✓	altimeter did not kick in
		0939	BO				48° 00.575	126° 17.161		1755					
		10:07	EN				48° 00.596	126° 17.094							
	LOOP 41	10:06		LOOP	—	41	48° 00.553	126° 17.098	1763		—	—	RL		LOOP @ 5m 6FT 2 CHL 1 SAL

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29	LC12	13:34	BE	ROS ~~CTD~~	—	42	48 14.941	126 39.862	2520		—	1	TF, DY		First bottle @ 250m for N14 bkrk.
		1407	BO				48 14.95	126 39.93		2005					
		1441	EN				48 14.982	126 39.890							
29	LC12	1450	BE	NET	—	43	48 14.9913	126 39.8892	2522		—		KY		net tangled
		1501	BO				48 15.0715	126 39.0107		250					
		1506	EN				48 15.25	126 40.0310							
29	LC12	1524	BO	NET	—	44	48 15.0596	126 40.0098	2522		—				bongo
		1530	EN				48 15.0652	126 40.0499		250					
29	LC11	1647	BE	ROS	US	45	48 18.916	126 26.654	1428				TF	✓	
		1712	BO				48 18.968	126 26.611		1415	95–113				
		1757	EN				48 19.093	126 26.546							
29	LC10	1928	BE	ROS ~~CTD~~	—	46	48 22.35	126 20.21	1243		—	∅	MR	✓	→
		1950	BO				48 22.38	126 20.14		1241					
		2010	EN				48 22.39	126 20.17							
29	LC09	2109	BE	NET	—	47	48 25.90	126 13 73	612				MG		Bongo.
		2118	BO				48 25 90	126 13.74		250					
		2122	EN				48 25.90	126 13.73							

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Prior to cast 46 the deck unit could not communicate with the water sampler. We kept getting error messages. We switched deck unit (to S/N 0508) with the same result. So we set "Water Carousel" to "None" in the config file and it worked. Doug cast 0046 with "None" and deck unit 0508 while they take the pylon off the spare rosette.

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							Latitude	Longitude							
29	LC09	2132	BE	ROS	US	48	48°25.93	126° 13.72	605		114 - 130	17	MR		PAR ON
		2144	BO				48°25.93	126° 13.73		606					
		2208	EN				48 25 96	126° 13.71							
29	A2	2304	BE	ROS	—	49	48° 22.68	126° 03.87	346		—	Ø	MR	✓	
		2311	BO				48°22.68	126° 03.83		344					
		2316	EN				48° 22.67	126° 03.81							
29	A2	2326	BE	NET	—	50	48° 22.69	126°03.85	350				MG		BONGO
		2337	BO				48° 22.69	126° 03.83		250					
		2342	EN				48° 22.68	126° 03.83							
29	A2	2353	BE	NET	—	51	48° 22.69	126° 03.86	347				MG		Oblique 500µm
30		0004	EN				48° 22.76	126° 03.95							ICHTHOPLANKTON
30	LC08	0113	BO	NET	—	52	48° 29.32	126° 07.03	198				MG		BONGO
		0120	BO				48° 29.33	126° 07.04		190					
		0123	EN				48° 29.33	126° 07.03							
30	LC08	0132	BE	ROS	US	53	48 29.32	126° 07.03	198		131 - 142	12	MR	✓	
		0137	BO				48 29.31	126° 07.03		191					
		0150	EN				48° 29.28	126° 07.06							

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							Latitude	Longitude							
30	LC07	0240	BE	ROS	—	54	48° 32.96	126° 00.44	127		—	∅	MR	✓	
		0243	BO				48° 32 97	126° 00. 43		121					
		0245	EN				48° 32 97	126° 00. 42							
30	LC06	0336	BE	NET	—	55	48° 36. 42	125° 53. 96	93				MG		BONTO
		0339	BO				48° 36. 44	125° 53. 95		85					
		0341	EN				48° 36. 46	125° 53. 95							
30	LC06	0349	BE	ROS	US	56	48° 36.49	125° 53.95	93		143- 149	7	MR		
		0352	BO				48° 36. 49	125 53.95		84					
		0400	EN				48° 36. 47	125° 53 99							
30	LC05	0446	BE	NET		57	48° 39. 93	125° 47 41	65				MG		BONTO
		0448	BO				48° 39.95	125° 47. 42		55					
		0449	EN				48° 39.95	125° 47. 43							
30	LC05	0458	BE	ROS	—	58	48° 39.97	125° 47. 40	65		—	∅	MR	✓	
		0500	BO				48° 39.97	125° 47. 41		56					
		0501	EN				48° 39,97	125° 47 41							
30	LC04	0547	BE	ROS	US	59	48° 43 37	125° 40. 84	166		150- 159	10	MR	✓	
		0551	BO				48° 43. 36	125° 40. 85		160				.	
		0601	EN				48° 43. 42	125° 40. 87							

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Notes: _____

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month MAY **Year** 2015 **Ship** TULLY **Cruise ID** 2015 20

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							
30	LC03	0647	BE	ROS	—	60	48 46.92	125 34.23	136		—	Ø	MR	✓	
		0650	BO				48 46.94	125 34.21		130					
		0652	EN				48 46.93	125 34.19							
30	LC02	0718	BE	ROS	US	61	48 48.673	125 30.868	110		160-167	8	TF	✓	
		0720	BO				48 48.678	125 30.865		100.5					
		0728	EN				48 48.670	125 30.820							
30	LC04	0806	BE	NET		62	48 50.4666	125 27.804	96		—		KY		fish net
		0816	EN				48 50.6201	125 28.0120		20					
30	LC01	0832	BE	ROS	US	63	48 50.390	125 27.730	96					X	
		0834	BO				48 50.401	125 27.712		87	168-174				
		0841	EN				48 50.404	125 27.658							
30	LOOP64	0940				64	48 55.816	125 36.72	96		—	—	RL	.	
30	LD02	1052	BE	ROS	US	65	48 58.498	125 47.335	41		175-178	4	TF	✓	LD01 cancelled
		1054	BO				48 58.5	125 47.33		31					
		1058	EN				48 58.506	125 47.320							
30	LD02	11:07	BE	NET		66	48°58.528	125°47.25	41.8				KY		Bongo
		11:09	BO				48 58.528	125 47.25		31					
		11:11	EN				4858.53	125 47.23							

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Ocean Sciences Division, Institute of Ocean Sciences

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							Latitude	Longitude							
30	LD03	11 44	BE	ROS	—	67	48 56.579	125 50.580	46		—	ϕ	TF	✓	pump on @5m on downcast
		11 45	BO				48 56.580	125 50.278		36					
		11 46	EN				48 56.579	125 50.274							
30	LD04	1235	BE	ROS	US	68	48 53.164	125 56.987	61		179-183	5	TF	✓	
		1236	BO				48 53.164	125 56.988		53					
		1242	EN				48 53.167	125 56.995							
30	LD04	1248	BE	NET		69	48 53.166	125 56.996	61						Bongo
		1249	BO				48 53.166	125 56.996		51	—		KY		
		1257	EN				48 53.1935	125 56.987							
30	LD05	1340	BE	ROS	—	70	48 49.741	126 03.610	89		—	ϕ	TF	✓	
		1341	BO				48 49.744	126 03.613							
		1343	EN				48 49.750	126 03.610							
30	LD06	1434	BE	ROS	US	71	48 46.216	126 10.178	135		184-191	8	TF	✓	
		1437	BO				48 46.207	126 10.188		126					
		1446	EN				48 46.193	126 10.180							
30	LD07	1534	BE	ROS	US	72	48 42.628	126 16.686	459		—	ϕ	TF	✓	
		1542	BO				48 42.644	126 16.666		455					
		1550	EN				48 42.634	126 16.688							

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Ocean Sciences Division, Institute of Ocean Sciences

Month MAI | **Year** 2015 | **Ship** TULLY | **Cruise ID** 2015-20

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							Latitude	Longitude							
30	LDØ8	1641	BE	ROS	US	73	48°39.193	126 23.308	760		192-208	17	TF	✓	take PAR off after LDØ8
		1656	BO				48°39.229	126 23.268		750					
		1723	EN				48°39.211	126 23.251							
30	LDØ9	1812	BE	ROS	—	74	48°35.662	126° 29.956	1048		—	Ø	TF	✓	PAR OFF.
		1830	BO				48° 35.644	126° 29.958		1038					
		1848	EN				48°35.654	126° 29.965							
30	LDO9	1855	BE	NET	—	75	48 35.66	126 29.97	1048				MR		BONGO
		1903	BO				48 35.66	126 29.98		250					
		1907	EN				48 35.66	126 30 02							
30	LOOP 76	1935	BE	USW	—	76	48 34.02	126 33.19	1354		—		MR		2x FILT CHL INSAL 2x UN-FILT CHL
30	LD10	2002	BE	ROS	—	77	48 32.27	126 36.53	1462		—	Ø	MR	✓	A 10 P 1459
		2028	BO				48 32.28	126 36.50							D 1472 S 1462
		2052	EN				48 32.30	126 36.47							
30	LD11	2141	BE	ROS	US	78	48 28.50	126 42.95	1576		209-228	20	MR	✓	A 9 P 1611
		2208	BO				48 28.75	126 42.88		1611					D 1592 S 1583
		2252	EN				48 28.69	126 42.99							+2 CHL FILT LOOP +2 NON-FILT CHL CUP
30	LDU	2259	BE	NET		79	48 28.69	126.42.98					MG		BONGO
		2308	BO				48 28.69	126.42.99	1583	250					
		2314	EN				48 28.69	126.42.99							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month MAI **Year** 2015 **Ship** TULLY **Cruise ID** 2015 20

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							Latitude	Longitude							
30	LD11	2341	BE	NET	UN	80	48 28.69	126 42.98	1583				MG/DY		MPS
31		0045	BO				48 28.69	126 42.99		1570					
		0125	EN				48° 28.69	126° 42.99							
31	LG09	0532	BE	ROS	—	81	48°51.06	127°19.26	2051		—	∅	MR	✓	A: 10 P: 2067
		0608	BO				48°51.18	127°19.38							D: 2039 S: 2030
		0643	EN				48°51.19	127°19.39							
31	LG09	0653	BE	NET	~~MAS~~	82	48 51.1907	127 19.3880	2051		—		KY		MPS
		0817	BO		UN		48 51.189	127 19.387		2000					
		0857	EN				48 51.188	127 19.389							
31	LG09	0919	BE	NET		83	48 51.1890	127 19.3870	2049		—		KY		bounced
		0926	BO				48 51.1909	127 19.3838		250					
		0931	EN				48 51.1899	127 19.3860							
31	LG08	1025	BE	ROS	—	84	48 55.240	127 13.348	2059		—	∅	TF	✓	Alt: 9.6 Press: 2072
		1058	BO				48 55.243	127 13.375							Depth: 2095 sounder: 2059
		1132	EN				48 55.258	127 13.390							
31	LG07	1228	BE	ROS	-	85	48 59.406	127 07.108	1753		—	∅	TF	✓	Alt: 9.2 Press: 1764
		1257	BO				48 59.406	127 07.116							Depth: 1740 sounder: 1752
		1326	EN				48 59.413	127 07.178							stopped @ 98m down to get cable to vertical
															Ran charged fluorometer 3x cable

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month May **Year** 2015 **Ship** Tully **Cruise ID** 2015-20

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							
31	LG07	1330	BE	NET	UN	86	48° 59.4101	127° 07.1272	1752		—	—	KY		bongo
		1338	BO				48° 59.4003	127° 07.1214		250					
		1342	EN				48° 59.3951	127° 07.1153							
31	LG06	1435	BE	ROS	US	87	49 03.366	127 01.051	939		229-245	17	TF	✓	Alt: 9.0 Press: 948
		1451	BO				49 03.360	127 01.027							Depth: 939 sounder: 938
		1521	EN				49 03.367	127 00.996							
31	LG05	1608	BE	ROS	—	88	49 07.420	126 55.330	274		—	∅	TF	✓	Alt: 8.6 Press: 266
		1613	BO				49 07.416	126 55.296							Depth: 265 sounder: 273
		1618	EN				49 07.415	126 55.277							
31	LG04	1711	BE	ROS	US	89	49 11.401	126 49.411	144		246-254	9	TF	✓	PAR on.
		1715	BO				49 11.402	126 49.430							Alt: 10 Press: 138
		1725	EN				49 11.399	126 49.411							Depth: 137 sounder: 145
31	LG04	1730	BE	NET	UN	90	49 11.388	126 49.418	145		—	—	KY		bongo
		1734	BO				49 11.391	126 49.421		135					
		1736	EN				4911.391	126 49.419							
31	LG03	1822	BE	ROS	—	91	49 15.035	126 43.788	120		—	∅	TF	✓	Alt: 10 Press: 111
		1824	BO				49 15.030	126 43.793							Depth: 111 sounder: 120
		1827	EN				49 15.031	126 43.798							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month May **Year** 2015 **Ship** Tully **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
31	LG02	1912	BE	ROS	US	92	49 18.61	126 38.18	101		255-261	7	MR	✓	
		1915	BO				49 18.60	126 38.17		92					
		1923	EN				49 18.61	126 38.18							
31	LG02	1929	BE	Net		93	49.18.60	126°38.19							Bongo
		1934	BO				49.18.61	126°38.18							
		1935	EN				49.18.67	126°38.17							
31	LG01	2006	BE	ROS	US	94	49 20.44	126 35.07	56		262-266	5	MR	✓	
		2008	BO				49 20.44	126 35.07		46					
		2013	EN				49 20.43	126 35.09							
31	LG→LJ	20:40	BE	Net		95	49° 22.98	126° 38.68	57				MG/KS/JD		Fish tow just off Nootka Sound ~2.5 knots with current
		20:51	EN				49° 23.21	126° 39.03							
31	LG→LJ	21:00	BE	Net		96	49° 23.57	126° 39.47	58				MG/KS/JD		
		21:10	EN				49° 23.99	126° 39.86							
31	LOOP 97	2241	BE	USW	—	97	49 34.82	126 54.72	53						2 CHL FILT 1 SALT 2 CHL NON-FILT
31	LJ01	2346	BE	ROS	—	98	49°44.23	127°02.42	60		—	Ø	MR		
		2348	BO				49°44.23	127°02.40		49					
		2349	EN				49°44.23	127°02.39							

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Notes: _____

Event 95 → Fish tow

@ 20:41 sped up by approximately 0.5 knot. Wire angle @ about 20° - Cycling between 60 m to 40 m with winch Up cast @ 0.5 m/s and down cast 0.5 m/s. Average speed around 3 knots for duration of tow.

Net out of water @ 20:53 → 49° 23.28 N
126° 39.15 W

Event 96 → Fish tow

Began @ about 2.8 knots. Same method as above. Net out of water @ 21:11 49° 24.05
126° 39.92

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUNE | **Year** 2015 | **Ship** TULLY | **Cruise ID** 2015-20

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							
01	LJ02	00:15	BE	ROS	US	99	49° 42.65	127° 5.18	81		267	1	N²	✓	
		00:17	BO				49° 42.64	127° 5.17		71					
		00:20	EN				49 42.64	127° 5.17							
01	LJ02	0026	BE	NET	—	100	49 42.63	127° 05.24	81				MG		BONGO
		0029	BO				49 42.62	127° 05.26		75					
		00 30	EN				49 42 62	127° 05.28							
01	LJ03	0114	BE	ROS	—	101	49° 39.16	127° 11.08	124		—	Ø	MR	✓	
		0117	BO				49° 39.16	127° 11.06		114					
		0119	EN				49 39.17	127° 11 05							
01	LJ04	0201	BE	ROS	—	102	49° 35.60	127° 16.73	157		—	Ø	MR	✓	NISKIN 1 CLOSED
		0205	BO				49° 35 63	127° 16 70		144					@ 5 BUT NO CTD FILE WRITTEN
		0209	EN				49° 35.63	127° 16. 70							
01	LJ04	0214	BE	NET	—	103	49° 35 60	127° 16. 79					MG		BONGO
		0217	BO				49° 35.60	127° 16.83	156	145					
		0220	EN				49° 35.59	127° 16.87							
01	LJ05	0302	BE	ROS	US	104	49° 31 68	127° 22.37	1055		268	1	MR	✓	A 9.5 P 1057
		0321	BO				49 31 70	127° 22 32		1057					D 10.5 P 1053
		0338	EN				49° 31,70	127° 22. 35							

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							Latitude	Longitude							
1	LJ06	0421	BE	ROS	—	105	49°27.92	127°28.46	1016		—	∅	MR	✓	PAR OFF
		0440	BO				49°27.90	127°28.52		1048					A 10 P 1049
		0458	EN				49°27.85	127°28.52							D 1037 S 1017
1	LJ06	0504	BE	NET	—	106	49°27.86	127°28.59	1020		—		MG		BONGO
		0514	BO				49°27.87	127°28.59		250					
		0518	EN				49°27.88	127°28.55							
1	LJ07	0604	BE	ROS	—	107	49°23.96	127°34.62	1800		—	∅	MR/TF	✓	A: 10 P: 1814
		0635	BO				49°23.94	127°34.64							D: 1749 S: 1500
		0704	EN				49 23.948	127 34.600							
1	LOOP108	0713	BE	USW	—	108	49 23.574	127 35.282	1800				RL		2x Pitt CHL 1x SAL 2x unfilt CHL
1	LJ08	0753	BE	ROS	US	109	49 20.114	127 40.894	[illegible]		269	1	TF	✓	A: 10 P: 1744
		0822	BO				49 20.100	127 40.942							D: 1722 S: 1719
		0850	EN				49 20.147	127 40.829							
1	LJ09	09:38	BE	NET	UN	110	49 16.085	127 47.266	2482		—		KY		BONGO
		0946	BO				49 16.101	127 47.255		250					
		0950	EN				49 16.101	127 47.263							
1	LJ09	1002	BE	ROS	US	111	49 16.138	127 47.210	2482		—	∅	TF	✓	A: 10 P: 2508
		1044	BO				49 16.108	127 47.237							D: 2472 S: 2481
		11	EN				49 16.	127 47.							

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							Latitude	Longitude							FILT
1	Loop 112	13:58	BE	VWS		112	49 35.464	128 4.858	2300				KY		transiting, SAL + CHL
1	LBP8	1547	BE	NET	UN	113	49 48.521	128 16.726	2065		—		KY		MPS
		17:12	BO				49 48 518	128 16 729		2000					
		1755	EN				49 48.519	128 16.727							
1	LBP 8	18 15	BE	ROS	—	114	49 48.518	128 16.727	2067		—		TF	✓	Fired bottle for Nanoce - no sample -
		1848	BO				49°48.52	128°16.73		2085					A: 10 P: 2085
		1919	EN				49°48.52	128°16.73							D: 2057 S: 2067
1	LBP7	2005	BE	ROS	US	115	49°52.34	128°11.15	2185		270-289	20	MR	✓	
		2039	BO				49°52.33	128°11.13		2005					
		2130	EN				49°52.35	128°11.17							
1	LBP7	2135	BE	NET	—	116	49°52.36	128°11.18	2180	250			MG		
		2145	BO				49°52.37	128°11.18							
		2150	EN				49°52.38'	128°11.18'							
1	LBP6	2240	BE	ROS	—	117	49°56.15	128°05.57	790		—	Ø	MR	✓	3x Fluo cable clamp →
		2254	BO				49° 56.15	128° 05.68	783	805					
		2307	EN				49°56.14	128°05.66							humpback whale feeding nearby
1	LBP5	2356	BE	ROS	US	118	49°59.95	128°00.24	1275		290-308	19	MR	✓	@ 200-175 NOTICED
2		0018	BO				49 59.97	128 0.13		1280					BOLT BACKING OUT OF
		00 SP	EN				49°59.95	128°00.02							LOCKING MECHANISM

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

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

Notes: _____

After (?) cast 85 the 3x fluo cable was replaced since the signal was very spiky. Today Nina noticed that the fluo signal mirrored the oxy signal. It turns out that the fluo cable was put in backwards. So files 86 to 115 will have no good fluo data.

(Cable reversed - fixed for Event 117)

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month June **Year** 2015 **Ship** Tully **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	LBP5	0105	BE	Net		119	49 59.95	127 59.99	1272				MG		Bongo to 250
		0113	BO				49 59.94	127 59.98		250					
		0117	EN				49 59.94	127 59.97							→
2	LBP4	0225	BE	ROS	–	120	50 01.40	127 58.16	1030		–	Ø	MR	✓	Sounder really
		0243	BO				50 01.41	127 58.18		1057					jumpy, 1010-1052
		0259	EN				50 01.39	127 58.16							A 10 P 1052 S 1012 D 1046
2	LBP3	0329	BE	ROS	US	121	50 03.23	127 55.34	165		309-318	10	MR	✓	
		0332	BO				50 03.22	127 55.34		158					
		0343	EN				50 03.23	127 55.34							
2	LBP3	0346	BE	NET	–	122	50°03.23	127°55.32	165						
		0352	BO				50° 3.23	127° 55.33		154					
		0357	EN				50° 3.24	127° 55.39							
2	LBP2	0422	BE	ROS	–	123	50 04.02	127 54.21	98		–	Ø	MR	✓	Pump on deck
		0425	BO				50 04.02	127 54.21		89					archiving
		0426	EN				50 04.03	127 54.22							
2	LBP2	0432	BE	NET	–	124	50 04.03	127 54.22	98				MG		Bongo
		0435	BO				50 04.02	127 54.24		87					
		0438	EN												

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Transmissometer & Fluorometer are to be cleaned before each cast

Notes: _____

a bolt broke on the ∠1RS load. Delay of ~55 min. between ∠BP5 and ∠BP4

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUIN | **Year** 2015 | **Ship** TULLY | **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	LBP1	0459	BE	ROS	—	125	50°04.77	127°52.84	55		—	Ø	MR	✓	
		0501	BO				50°04.78	127°52.84		43					
		0501	EN				50°04.78	127°52.84							
2	LBP1 →	0829	BE	NET	—	126	50 24.826	128 09.800	102		—	—	KY		larval fish tow West of Quatsino Sound
	CPE2	0842	EN				50 24.706	128 09.413		50					50-35m Vaya 352
2	CPE2	1143	BE	ROS	—	127	50 42.976	128 40.074	125		—	Ø	TF	✓	
		1145	BO				50 42.976	128 40.085		115					
		1147	EN				50 42.978	128 40.081							
2	CPE2	1153	BE	NET	UN	128	50 42.971	128 40.074	124				KY		Bongo
		1157	BO				50 42.982	128 40.077		113					
		1159	EN				50 42.988	128 40.075							
2	LOOP29	12:17	BE	USW		129	50 43.51	128 43.08					RL		transiting sal x1 filt CHL x2, unfilt CHL x2.
2	LQ03	1341	BE	ROS	—	130	50 39.683	129 01.961	?1235		—	Ø	TF	✓	P 1297 S 1250 D 1282 Δ 10
		1404	BO				50 39.68	129 02.03		1297					steep slope?
		1425	EN				50 39.70	129 02.12							
2	LQ03	1431	BE	NET	—	131	50°39.70	129°02.11	1310	~~250~~ ~~1279~~	—		KY		Bongo
		1437	BO				50°39.71	129°02.07							
		14:44	EN				50°39.75	129 02.09							

Cast Type:
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Time Code:
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RE = Recover Mooring Time

Transmissometer & Fluorometer are to be cleaned before each cast

Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month June **Year** 2015 **Ship** Tully **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	JI22	1555	BE	ROS	—	132	50 39.774	129 17.507	1515		—	ø	TF	✓	sounder = 1382
		1621	BO				50 39.802	129 17.440		pressure = 1443					↙ bottom rose during cast depth @ end of cast = 1380
		1644	EN				50 39.863	129 17.404							
2	JI22	1651	BE	NET	UN	133	50 39.844	129 17.312	1373		—	—	KY		Bongo
		1659	BO				50 39.831	129 17.323		250					
		1704	EN				50 39.838	129 17.351							
2	CS00	2006	BE	ROS	US	134	50°27.83	129°55.10	2170		319-338	20	MR	✓	→
		2039	BO				50°27.76	129°55.10		200					
		2133	EN				50 27.70	129°55.08							
2	CS00	2139	BE	NET		135			2168						Bongo to 200m
		21:49	BO				50°27.69	129°55.11		250					
		21:53	EN				50°27.69	129°55.11							
2	CS00	2209	BE	Net	UN	136	50 27.70	129 55.10	2168						MPS to 2000
		2341	BO				27.70	55.10		2150					
3		0018	EN				27.70	55.10							
3	CS01	0152	BE	ROS	—	137	50°34.86	129°41.51	2100		—	ø	MR	✓	
		0227	BO				50°34.88	129°41.47		2005					
		0300	EN				50°34.97	129 41.61							

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

Time Code:
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Notes: _____

Transmissometer & Fluorometer are to be cleaned before each cast

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

Cast 0134: after closing 500 dbar Niskin, went back down to 526 because of winch spooling issues.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUIN **Year** 2015 **Ship** TULLY **Cruise ID** 2015 20

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							
3	CS01	0309	BE	NET	—	138	50°34.89	129°41.66	2104				MR	—	BONGO
		0317	BO				50°34.82	129°41.62		250					
		0322	EN				50°34.79	129°41.60							
3	LOOP 139	0330	BE	USW	—	139	50°34.85	129°41.34	2104						2 CHL FILT 1 SALT 2 CHL UNFILT
3	CS02	0440	BE	ROS	US	140	50°41.32	129°28.01	1893		339-358	20	MR	✓	
		0511	BO				50°41.34	129°28.11		1909					+2 CHL FILT LOOP 2 CHL UNFILT
		0604	EN				50°41.20	129°28.21							
3	CS02	0609	BE	NET	—	141	50°41.20	129°28.23	1902						
		0617	BO				50°41.30	129°28.26		250					
		0622	EN				50°41.21	129°28.32							
3	CS03	0717	BE	ROS		142	50 45.661	129 19.914	236		—	ϕ	TF	✓	
		0721	BO				50 45.667	129 19.934		227					
		0725	EN				50 45.662	129 19.930							
3	CS03	0730	BE	NET		143	50 45.648	129 19.909	236		—	—	KY		Bongo
		0737	BO				50 45.666	129 19.921		225					
		0741	EN				50 45.696	129 19.934							
3	CS04	0827	BE	ROS		144	50 49.223	129 12.970	97		359-365		TF	✓	
		0829	BO				50 49.217	129 12.964		88					
		0835	EN				50 49.226	129 12.967							

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Transmissometer & Fluorometer are to be cleaned before each cast

Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUIN **Year** 2015 **Ship** TULLY **Cruise ID** 2015-20

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							
3	CS04	0840	BE	NET		145	50°49.22	129°12.96	97		—		KY		Bongo
		0843	BO				50°49.23	129° 12.96		86					
		0844	EN				50°49.22	129° 12.96							
3	Loop 146	09:15	BE	LOOP		146	50° 49.86	129 17.57					RL		2 CHL different, Salt 2 CHL matched.
3	new ODAS	1217	BE	ROS		147	50 56.264	129 58.832	2104		—	ϕ	TF	✓	
		1256	BO				50 56.278	129 58.834		2121					stopped at 894 m on downcast to check wire. Stopped at 1359 m on upcast + unspooled a bit too
		1335	EN				50 56.381	129 58.798							
3	new ODAS	1340	BE	NET		148	50 56.381	129 58.798	2100		—	—	KY		Bongo
		1348	BO				50 56.382	129 58.796		250					
		1353	EN				50 56.381	129 58.796							
3	new ODAS	1404	BE	NET		149	50 56.381	129 58.798	2100		—	—	KY		MPS
		15:29	BO				50 56.407	129 58.819		2005					
		16:10	EN				50 56.407	129 58.819							
3	CS3B	1844	BE	ROS		150	51° 00.05	129 26.98	220		—	ϕ	TF	✓	
		18 48	BO				51° 00.02	129 26 95		210			MR		
		1852	EN				51°00.00	129 26 94							
3	CS3B	1858	BE	NET	—	151	51°00.00	129° 26.94	218				MR		
		1906	BO				51°00.01	129° 26.93		210	—				BONGO
		1910	EN				50 59.97	129 26.92							

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Bottle Firing Method:
US = Up / Stop
UN = Up / No stop
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Time Code:
BE = Beginning Time of Cast
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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

Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUNE **Year** 2015 **Ship** J P TULLY **Cruise ID** 2015-20

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							
3	LOOP152	2025	BE	LOOP	/	152	50 57.27	129°07.70	110	4.5	/		MG		2 UNFILERED CHL ISAL 2 FILTERED
3	CS05	2059	BE	ROS	/	153	50°55.95	128 59.94	65		/	/	MR	✓	
		2101	BO				50°55.94	128°59.94		56					
		2102	EN				50°55.94	128°59.63							
3	CS05	2108	BE	NET	/	154	50°55.94	128°59.87	65				MG		BONGO
		2110	BO				50°55.92	128°59.86		60					
		2125	EN				50°55.91	128°59.86							
3	CS1B	2234	BE	ROS	—	155	50°53.06	128°40.04	75		—	Ø	MR	✓	PAR ON
		2236	BO				50°53.06	128°40.04		67					
		2237	EN				50°53.05	128°40.05							
3	CS1B	2240	BE	NET	—	156	50°53.06	128° 40.09	75						
		2243	BD				50°53.06	128° 40.10		70					
		2245	EN				50°53.07	128° 40.11							
4	CS06	0001	BE	ROS	US	157	50°59.97	128°51.86	65		366-371	6	MR	✓	
		0004	BO				50°59.97	128°51.85		56					
		0011	EN				50°59.89	128°51.96							
4	CS06	0035	BE	NET	—	158	50°59.99	128°51.96	65						
		0038	BO				51°00.004	128°51.96		60					
		0040	EN				51°00.01	128°51.97							

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Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUN **Year** 2015 **Ship** TULLY **Cruise ID** 2015-20

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	CS07	0135	BE	ROS	–	159	51°04.48	128°44.11	64		–	Ø	MR	✓	
		0137	BO				51°04.47	128°44.09		55					
		0138	EN				51°04.47	128°44.08							
4	CS07		BE	NET	–	160	51°04.48	128°44.01	64				MG		BONGO
		0144	BO				51°04.48	128°43.98		59					
		0145	EN				51°04.48	128°43.96							
4	CS08	0236	BE	ROS	–	161	51°08.37	128°35.96	141		–	Ø	MR	✓	
		0239	BO				51°08.39	128°35.99		132					
		0241	EN				51°08.38	128°36.01							
4	CS08	0249	BE	NET	–	162	51°08.30	128°35.97	140				MG		BONGO
		0253	BO				51°08.29	128°35.96		130					
		0256	EN				51°08.28	128°35.95							
4	CS09	0351	BE	ROS	US	163	51°12.41	128°27.95	193		372-382	11	MR	✓	Start arriving before [illegible]
		0355	BO				51°12.41	128°27.96		185					
		0406	EN				51°12.41	128°28.02							
4	CS09	0410	BE	NET	–	164	51°12.40	128°28.02	193						
		0417	BO				51°12.41	128°28.03		185					
		0420	EN				51°12.41	128°28.05							

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MR = Messenger Release Time
RE = Recover Mooring Time

Transmissometer & Fluorometer are to be cleaned before each cast

Notes: _____

DAILY SCIENCE LOG BOOK

MISSION NUMBER: 2015-20

DATE: From: 26 MAY 2015 to: 7 JUNE 2015

VESSEL: J.P. TULLY

PROJECT(S): LA PEROUSE WCVI

Book 2/2

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

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUIN | **Year** 2015 | **Ship** TULLY | **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
4	CS10	0510	BE	ROS	–	165	51° 16.53	128 20.06	81		–	Ø	MR	✓	
		0512	BO				51° 16.54	128 20 04		70					
		0514	EN				51° 16.56	128 20 03							
4	CS10	0520	BE	NET	–	166	51 16.64	128 20.10	80		–		MG		
		0523	BO				51 16.63	128 20.09		75					
		0525	EN				51 16.63	128 20.07							
4	SS3	0932	BE	ROS	US	167	51 15.001	129 21.234	291		383	1	TF	✓	fired btl 1 @ 284 m but not needed
		0937	BO				51 14.990	129 21.232		284					will draw water from bottle 2 @ 5 m
		0944	EN				51 14.996	129 21.229							
4	SS3	0948	BE	NET	UN	168	51 14.988	129 21.225	291		–	–	KY		Bongo
		0956	BO				51 14.973	129 21.232		250					
		1001	EN				51 14.993	129 21.254							
4	LOOP 169	1009	BE	LOOP	–	169	51 14.99	129 21.03					RL		2 chl filtered [illegible] 15 [illegible] 2 chl unfiltered
4	SS4	1141	BE	ROS	US	170	51 20.962	129 00.061	240		384		TF	✓	fluorometer downcast looks odd - something stuck in cell?
		1145	BO				51 20.960	129 00.070		234					
		1151	EN				51 20.930	129 00.102							
4	SS4	1156	BE	NET	UN	171	51 20.9101	129 00.0315	240		–		KY		Bongo
		1202	BO				51 20.9201	129 00.0210		230					
		1206	EN				51 20.926	129 00.035							

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Bottle Firing Method:
- US = Up / Stop
- UN = Up / No stop
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Time Code:
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- RE = Recover Mooring Time

Transmissometer to be cleaned before each cast, do not use Ammonia products

Notes: ________

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month June **Year** 2015 **Ship** Tully **Cruise ID** 2015-20

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	SS5	1424	BE	NET	UN	172	51 27.877	128 29.919	198		/		KY		Bongo
		1431	BO				51 27.885	128 29.928		188					
		1434	EN				51 27.88	128 29.91							
4	SS5	1442	BE	ROS	US	173	51 27.874	128 29.920	198		385	1	TF	✓	
		1446	BO				51 27.871	128 29.936		190					
		1450	EN				51 27.880	128 29.942							
4	SS6	1704	BE	ROS	US	174	51 20.004	127 59.986	176		386	1	TF	✓	
		1707	BO				51 20.011	128 00.001		167					
		1712	EN				51 20.017	128 00.025							
4	SS6	1719	BE	NET	UN	175	51 20.047	127 59.976	176		—	—	KY		Bongo
		1724	BO				51 20.062	127 59.960		155					
		1727	EN				51 20.072	127 59.953							
4	SS7	1852	BE	ROS	US	176	51 24.738	127 47.591	123		387	1	TF	✓	
		1854	BO				51 24.739	127 47.592		113					
		1857	EN				51 24.745	127 47.592							
4	SS7	1903	BE	NET	UN	177	51 24.73	127 47.59	123				MG		Bongo.
		1907	BO				51 24.73	127 47.59		115					
		1909	EN				51 24 73	127 47.59							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUIN **Year** 2015 **Ship** TULLY **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
4	UBC7	1954	BE	ROS	-	178	51° 29.96	127° 48.92	159		—	ø	MR	✓	
		1957	BO				51° 29.96	127° 48.93		150					
		2000	EN				51° 29.96	127° 48.94							
4	UBC7	2011	BE	NET		179	51° 29.97	127° 48.96	158				MG		BONGO
		2016	BO				51° 29.96	127° 48.98		153					
		2019	EN				51° 29.96	127° 48.99							
4	Ri 1	2124	BE	ROS	—	180	51° 26.45	127° 38.36	307		—	ø	MR	✓	
		2129	BO				51° 26.46	127° 38.37		300					
		2134	EN				51° 26.47	127° 38.36							
4	Ri 1	2139	BE	NET	-	181	51° 26.47	127° 38.35	309				MG		BONGO
		2149	BO				51° 26.46	127° 38.33		300					
		2155	EN				51° 26.45	127° 38.34							
4	Ri 2	2242	BE	ROS	US	182	51° 31.19	127° 33.62	328		388-393	6	MR	✓	UVIC MINE
		2249	BO				51° 31.19	127° 33.66		321					
		2300	EN				51° 31.17	127° 33.60							
4	Ri 2	2308	BE	NET	-	183	51° 31.14	127° 33.58	325				MG		BONGO
		2319	BO				51° 31.15	127° 33.59		320					
		2325	EN				51° 31.15	127° 33.59							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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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	Ri 2	2337	BE	NET		184	51° 31.16	127° 33.56	325				MG		MPS
		2350	BO				51° 31.17	127° 33.52		315					
		2356	EN				51° 31.17	127° 33.50							
5	Ri 3	0047	BE	ROS	—	185	51° 35.83	127° 32.25	325		—	Ø	MR	✓	
		0053	BO				51° 35.82	127° 32.22		319					
		0058	EN				51° 35.80	127° 32.20							
5	Ri 3	0003	BE	NET	—	186	51° 35.79'	127° 32.19'	325						BONGO
		0015	BO				51° 35.79'	127° 32.20'		320					
		0020	EN				51° 35.76'	127° 32.21'							
5	Ri 4	0202	BE	ROS	—	187	51° 38.92	127° 26.85	297		—	Ø	MR		
		0208	BO				51° 38.92	127° 26.90		290					
		0213	EN				51° 38.94	127° 26.89							
5	Ri 4	0218	BE	NET	—	188	51° 38.93	127° 26.99	297				MG		BONGO
		0228	BO				51° 38.97'	127° 27.04'		290					
		0233	EN				51° 38.99	127° 27.08							
5	Ri 5	0315	BE	ROS	—	189	51° 40.68	127° 20.05	199		—	Ø	MR		
		0318	BO				51° 40.69	127° 20.06		191					
		0322	EN				51° 40.68	127° 20.07							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JUN **Year** 2015 **Ship** TULLY **Cruise ID** 2015-20

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
5	Ri 5	0325	BE	NET	—	190	51° 40.66	127° 20 12	200				MG		BONGO
		0332	BO				51° 40.65	127° 20.15							
		0335	EN				51° 40 66	127° 20 17							
5	Ri 6	0401	BE	ROS	—	191	51° 40. 48	127° 17.03	143		—	Ø	MR	✓	
		0404	BO				51° 40. 48	127° 17. 01		131					
		0407	EN				51° 40. 47	127° 17. 02							
5	Ri 6	0416	BE	NET	-	192	51° 40 52	127° 17. 06	145				MG		BONGO
		0421	BO				51° 40. 51	127° 17. 08		135					
		0423	EN				51° 40. 50	127° 17. 08							
~~05~~ 05	CPE 1	10,20	BE	ROS	-	193	50 59.941	127 49.966	142		—	Ø	TF	✓	
		1023	BO				50 59. 944	127 49. 942		148					
		1026	EN				50 59. 940	127 49. 936							
~~05~~ 05	CPE 1	1031	BE	NET		194	50 59. 945	127 49. 948	157		—		KY		Bongo
		1036	BO				50 59. 940	127 49. 964		146					
		1039	EN				50 59. 934	127 49. 975							
~~05~~ 05	LOOP 195	11:08	BE	LOOP		195	5058.06	127.46.338				-	RL		?
~~05~~ 05	Small boat	work		- Sea Lice tows around			Bell, Doyle +	Dixon Is/s.			outside Port Hardy				
	0730 - 0910														

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month June **Year** 2015 **Ship** TULLY **Cruise ID** 2015-20

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	Kelsey Bay	22:48	BE	NET	/	196	50°24.32	125°57.16							surface tow
		22:58	EN				50°24.21	125°57.04		60					
6	14	0548	BE	ROS	US	197	49°53.01	124°59.68	313		394	1	MR	✓	Depth: 303+10
		0554	BO				49°53.04	124° 59.71		306					wrong depth in header →
		0601	EN				49°53.03	124°59.47							
6	14	0606	BE	NET	–	198	49° 53.04	124° 59.77	313				MG		BONGO
		0618	BO				49° 53.06	124° 59.79		305					
		0623	EN				49° 53.09	124° 59.79							
6	11	0810	BE	ROS	US	199	49 42.391	124 43.390	299		395	1	TF	✓	altimeter was bouncing around on downcast so winch stopped ~250m before proceeding to bot-10
		0816	BO				49 42.390	124 43.390		292					
		0822	EN				49 42.386	124 43.404							fired btls 1+2 @ surface for Down. cal. Sal. + chl/par
6	11	0827	BE	NET	UN	200	49 42.394	124 43.386	299		–		KY		
		0837	BO				49 42.391	124 43.386		289					Bongo
		0842	EN				49 42.389	124 43.402							
6	CPF2	1037	BE	ROS	US	201	49 27.926	124 30.005	325		396	1	TF	✓	
		1043	BO				49 27.930	124 30.004		319					
		1050	EN				49 27.929	124 30.000							

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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 16 April 2010

Acoustic sounder (EK60) was re-started during cast 197

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month June **Year** 2015 **Ship** Tully **Cruise ID** 2015-20

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							
6	CPF2	1055	BE	NET	UN	202	49 27.931	124 30.009	350		—		KY		Bongo
		11:05	BO				49 27.939	124 29.996		315					
		11:11	EN				49 27.931	124 30.038							
6	CPF1	1306	BE	ROS	US	203	49 21.978	124 05.071	243		397	1	TF	✓	
		1310	BO				49 21.984	124 05.065		236					
		1315	EN				49 22.001	124 05.053							
6	CPF1	1319	BE	NET	UN	204	49 21.998	124 05.056	244		—		KY		
		1325	BO				49 22.001	124 05.054		233					
		1329	EN				49 22.004	124 05.043							
6	22	1558	BE	ROS	US	205	49 40.168	124 16.316	349		398		TF	✓	
		1604	BO				49 40.169	124 16.328		344					
		1611	EN				49 40.174	124 16.326							
6	22	1615	BE	NET	UN	206	49 40.183	124 16.316	351		—		KY		Bongo
		1626	BO				49 40.187	124 16.302		342					
		1632	EN				49 40.193	124 16.262							
6	24	1756	BE	ROS	US	207	49 30.238	124 05.992	423		399		TF	✓	
		1804	BO				49 30.232	124 05.932		417					
		1812	EN				49 30.238	124 05.908							

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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							
6	24	1815	BE	NET	UN	208	49 30.240	124 05.895	426		—		KY		Bongo
		1828	BO				49 30.249	124 05.886		411					depth=420 @bottom
		1834	EN				49 30.250	124 05.885							
6	28	2011	BE	ROS	US	209	49° 24.13	123° 45.30	132		400	1	MR	✓	Depth: 121 +10
		2014	BO				49° 24.12	123° 45.29							
		2017	EN				49 24.11	123 45.30							
6	28	2023	BE	NET	UN	210	49° 24.10	123° 45.30	132				MG		Bongo
		2027	BO				49° 24.10	123° 45.30		128					
		2029	EN				49° 24.10	123° 45.31							
6	GEO1	2132	BE	ROS	US	211	49° 14.96	123° 44.99	396		401-402	2	MR	✓	Depth: 386 +10
		2140	BO				49° 14.95	123° 44.99		390					
		2149	EN				49° 14.95	123° 45.00							
6	GEO1	2157	BE	NET	UN	212	49° 14.96	123° 45.01	396				MG		Bongo
		2211	BO				49° 14.96	123° 44.99		390					
		2217	EN				49° 14.96	123° 44.96							
6	GEO1	2237	BE	NET		213	49 14.93	123 44.92	397				MG/DY		MPS
		2253	BO				49° 14.93	123 44.90		390					
			EN												

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7	38	0037	BE	ROS	US	214	49°12.07	123°26.37	304		403	1	MR	✓	Depth: 294
		0043	BO				49°12.08	123°26.39		297					
		0049	EN				49°12.10	123°26.36							
7	38	0056	BE	NET	UN	215	49°12.11	123°26.36	304				MG		BONGO
		0106	BO				49°12.10	123°26.37		298					
		0111	EN				49°12.11	123°26.33							
7	41	0222	BE	ROS	US	216	49°03.32	123°22.29	238		404	1	MR	✓	NISKIN 2-24 closed on way up, only #1 sampled.
		0227	BO				49°03.32	123°22.28		232					Depth: 230 +10
		0231	EN				49°03.34	123°22.29							
7	41	0236	BE	NET		217	49°03.33	123°22.32	240				MG		BONGO
		0244	BO				49°03.35	123°22.32		230					
		0248	EN				49°03.35	123°22.29							

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