DAILY SCIENCE LOG BOOK

MISSION NUMBER: 2015-01

DATE: From: Feb 10th/2015 to: 24 Feb. 2015

VESSEL: J.P. Tully

PROJECT(S): Line P

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

WaterProperties.ca

Captain: VICTOR GRONMYR First Officer: JIM GARRETT
Second Officer: RYAN GURR Third Officer: KEVEN NAPHTALI
~~Fishing Master~~: RYAN BRAIDWOOD
C/E
Mission Participants / Agencies: IOS, BIO, UBC, EC

Scientific Personnel: Chief Scientist: MARIE ROBERT 07-19 A

Name	Watch	Cabin	Name	Watch	Cabin
TEREZA JARNIKOVA	00-06	B	LINDSAY FENWICK	18-24	H
MARK BERTON	00-12	C	MAUREEN SOON	12-18	H
KATHARINE THOMPSON	06-12	D	MICHAEL ARYCHUK	DMS	4
CÉLINE MICHIELS	18-24	D	DOUG YELLAND	12-24	3
LUKE HALPIN	12-18	E			
KOHEN BAUER	00-06	E			
SAM KHEIRANDISH	06-12	F			
RICK NELSON	18-24	F			
GLENN COOPER	pH	G			
KYLE SIMPSON	TM	G			

Second leg of Mission: Chief Scientist:

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: Tully #2
Data acquisition program: Seasave V7
CTD deck unit make: SBE model: 11+ serial number: 0471

Primary CTD
Make: SBE model: 9+ serial number: 506
Primary temperature serial number: 2023
Primary conductivity serial number: 1763
Secondary temperature serial number: 5013
Secondary conductivity serial number: 3394
Transmissometer: Wetlabs C-STAR Model: C-STAR s/n: 1396DR
Fluorometer: Model Seapoint Cable gain: 30X s/n: 3642 (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: 4615
Other sensors: Rinko DO s/n: 062 **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?
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: Hawbolt Model: _____ Serial #: 17026 Used for: LARS
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: 6~~5~~ Serial Number: _____

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

Oxygen Kit(s):
Make: 105 Model: 665 Kit Number: #3
Make: _____ Model: _____ Kit Number: _____

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

Thermosalinograph System (SBE21):
Program: Seasave ~~V~~ Version: 7
Sampling interval (seconds): 30
Fluorometer sensor serial number: 3363

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

ADCP Setup:
Computer time zone: _____
Sampling interval (sec): _____
Bin Length: (2^x): _____
Pulse Length: _____
Buffer (bytes): _____
Gyro Offset: _____

User Exits: Name: _____ Exit points: _____
Name: _____ Exit points: _____
Name: _____ Exit points: _____
Work File: _____

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:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Feb **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

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
11	Test	0237	CE	ROS		1	48 39.76	123 30.09	172		—	24	DY x	✓	24 Tripped@
	1	0240	BO	1			48 39.77	123 30.12		161			RN		surface
		0244	EN				48 39.77	123 30.14							PAR ON
11	Hard59	0500	BE	NET		2	48 36.81	123 14.65	226						Bongo
	1	0506	BO	1			48 36.81	123 14.67		217					
		0509	EN				48 36.81	123 14.65							
11	Hard59	0519	BE	ROS		3	48 36.80	123 14.62	225		1-24	24	MR/DY	✓	
		0524	BO				48 36.78	123 14.62		214					
		0542	EN				48 36.77	123 14.76							
11	JF5	0936	BE	USW	—	4	48 16.120	123 29.95	156	—	Loop JF5	—	MB	—	Loop
1	JF2	1112	BE	ROS	US	5	48 16.01	124 00.11	177		25-48	24	MB	✓	
		1116	BO				48 16.00	124 00.46		177					
		1132	EN				48 16.01	124 00.4							
	JF3	1112	BE	USW	—	6	48 18.00	124 00.29	187	—	Loop JF3	—	MB	—	Loop
	—	1203	BE	NET	—	7	48 18.014	124 00.115	187		—	—	MB	—	Bongo
		12:09	BO				48 18.014	124 00.115	177						
		12:12	EN	MT			48 18.016	124 00.104							
	JF3	15:19	BE	USW	—	8	48 26.94	124 29.97	223		Loop JF3	—	MB	—	Loop
↓	JF4	17:24	BE	USW	—	9	48 32.30	124 59.87	60	—	Loop JF4	—	MB	—	Loop

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
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RE = Recover Mooring Time

Notes: _____

Transmissometer & Fluorometer are to be cleaned before each cast

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Month FEB **Year** 2015 **Ship** TULLY **Cruise ID** 2015-01

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	P1	1921	BE	ROS	US	10	48 34 54	125 30 13	5		49-51	4	MB	✓	Tripped Nisken #23 to check for leaks
			BO				48 34 55	125 33 14		116					
			EN				48 34 58	125 30 12							
11	P1	19	BE	USW	-	11	48 34 54	125 30 13	117	-	-	-	MRON	-	Celine Loop
	P2	2138	BE	ROS	US	12	48 36.08	125 59 96	115		52-75	24	DY	✓	Maureen's
		2140	BO				48 36.07	126 0.03		106			MS		Cast
		2149	EN				48 36 07	126 0.05							
11	P2			UWS		13	-		115						Celine Loop
11	P2	2200	BE	NET		14	48 36.06	126 00 04	115				DY		
		2204	BO				48 36.07	126 00 02		105					
		2206	EN				48 36.09	126 00 01							
11	P2	2228	BE	ROS	US	15	48 36.05	125 59.97	117		~~76~~ 95	20	DY		DMS Cast
		2231	BO				48 36.05	125 59.98		115					
		2245	EN				48 36.04	126 0.01							
11	P2	2320	BE	ROS	US	16	48 36.01	125 59.97	115		96-103	8	DY		Deep + Celine
		2324	BO				48 36.00	125 59.95							
		2334	EN				48 36.01	125 59.97							
11	P2	2342	DE	DRF		17	48 36.03	126 00.40	117						Sparce Box 115

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✓

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Feb | **Year** 2015 | **Ship** Tully | **Cruise ID** 2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
12	P3	0111	BE	ROS	US	18	48 37.53	126 20.02	807				DY	✓	P 780 S 736? D 770 A 10
		0130	BO				48°37.67	126° 20.23		782	104-127	24			Stop long t @ 720 for 40 w...
		0201	EN				48 37.69	126 20.09							
12	P3-P4	0250	BE	UWS		19									2.7 l/min
		0300	EN				48 38.50	126 32.23	~1200						Plastics Loop
12	P4	0351	BE	ROS	US	20	48 39.01	126 39.97	1310				DY	✓	PAR OFF
		0354	BO				48 39 01	126 39.96		150	128-151	24			Cs cast #1
		0403	EN				48 39.01	126 39.96							(shallow)
12	P4	0437	BE	ROS	US	21	48 39.01	126 39.99	1310				DY	✓	Sam's cast
		0459	BO				48 39.01	126 39.99		1319	152-167	16			B-10 D=1308 P=1322 S=1314
		0527	EN				48 39.01	126 40.00							
12	P4	0612	BE	PUMP		22	48 39.01	126 39.99	1310				KS + DY		Pumping in
		0704	EN				48 39.01	126 39.99		40					chains (1h)
12	P4	0713	BE	Net		23	48 39.01	126 39.99	1310						Bongo 250m
		0721	BO				48 39.01	126 40.00		250					
		0728	EN				48 39.01	126 39.99							
12	P4	0738	BE	Net		24	48 39.01	126 39.99	1310		-	-	MR	-	Bongo to 1200m
		0817	BO				48 39.01	126 39.99		1200					
		0830	EN				48 39.01	126 39.99							

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Notes:

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← File name needs changing
(too much HEX!)

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Ocean Sciences Division, Institute of Ocean Sciences

Month Feb **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

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
12	P4	0908	BE	ROS	US	25	48 39.02	126 39.99	1310		172-195	24	MB	✓	ROSETTE CAST
		0927	BO				48 39.02	126 39.99		1319					
			EN				48 39.02	126 40.06							
12	P4	10:49	BE	ROS	US	26	48 39.02	126 40.00	1310		196-218	23	MB	✓	Celine + Kim CAST
		11:10	BO				48 39.02	126 40.00		1319					
		11:49	EN				48 39.02	126 40.01							
12	P5	13:21	BE	DRF	—	27	48 39.21	126 40.71	1350	-	-	-	MB	-	Sponge Rob #108
12	P6	1725	BE	ROS	US	28	48 44.66	127 40.15	2540		250-253	4	MR	✓	Stop on way to
		17 7	BO				48 44.6	127 40.1							correct spacing
		1834	EN				48 44.66	127 40.15							
12	P7	2111	BE	ROS	US	29	48 46.21	128 10.05	2503				DY	✓	
		2144	BO				48 46.60	128 10.00		2005	284-285	2			
		2216	EN				48 46.61	128 9.96							
13	P8	0035	BE	ROS	US	30	48 48.96	128 39.95	2517				DY	✓	
		0109	BO				48 48.95	128 39.95		2005	286-307	22			
		0203	EN				48 48.98	128 40.07							
13	P8			LOOP		31									Loop CS

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Notes: _____

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Month Feb	Year 2015	Ship Tully	Cruise ID 2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
13	P8	0218	BE	NET		32	48°48.95	128° 40.17	[illegible]						Bongo 250
|	P8	0230	BO			|	48° 48.97	128° 40.15	2517	250					
|	P8	0235	EN			|	48° 48.98	128° 40.11							
	P8	0243	BE	NET		33	48°48.97	128° 40.11							Bongo to 1200
	P8	0329	BO			|	48° 48.96	128° 40.06		1200					
	P8	0349	EN			|	48° 48.98	128° 40.05							
	SPONGE BOB DEPLOYED	0357	DE	DRF		33.5	48° 48 98	128° 40.19							SPONGE BOB DEPLOYED 109
13	P9	0620	BE	ROS	US	34	48 51.40	129 10.00	2514				MB	✓	
		0653	BO				48 51.38	129 9.98		2005	308-309	3			#9 test fired @ 2005
		0729	EN				48 51.34	129 10.03							
13	P9→P10	[illegible]5	BE	USW	–	35	48 52 52	129 4 76	[illegible]		[illegible]	–	MB	–	Plastic Loop [illegible]
		[illegible]	EN				48 52 69	129 26 [illegible]							Flow rate [illegible]
13	P10	1021	BE	ROS	US	36	48 53 62	129 40 04	2640		310-333	24	MB	✓	Cs Cast + IOS Sampling
		10[illegible]	BO				48 53 62	129 40 08		2005					
		1132	EN				48 53 63	129 [illegible] 07							
13	P11	1411	BE	ROS	US	37	48 56 01	130 10 07	2752		334-335	2	MB	✓	
		1444	BO				48 56 02	130 10 04		[illegible]					
		1516	EN				48 56 03	130 10.06							

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Transmissometer & Fluorometer are to be cleaned before each cast

Notes: __________

This page is for any notes or observations

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Changed out rosette [illegible] mechanism since #9 not firing. Test fired on deck & worked MB *Note test fire pile 35

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Month Feb **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
13	P12	1802	BE	PUMP	-	38	48 58 15	130 39.91	3453		336-338		KS	-	Clean pump TM
		1805	BO				48 58 15	130 39.91		40					
		1809	EN				48 58 15	130 39.91							
13	P12	1905	BE	Bot	Messenger	39	48 58 15	130 39.91	3231		339-342	4	KS	-	Go Flo
		1926	BO				48 58 15	130 39.91		200					
		2020	EN				48 58.13	130 39.90							
13	P12	2132	BE	Ros	US	40	48 58.18	130 39.86	3233		343 → 365	23	[illegible]		Deep Cast
		2226	BO				48 58.21	130 39.86		3271					Refire 125 m
		2338	EN				48 58.21	130 39.99							P=3272 S=3233 D=3221 B-10
14	P12	0101	BE	ROS	US	41	48 58.21	130 39.99	3232				JY		PAR ON
		0107	BO				48 58.21	130 39.99		300	370-393	24			
		0125	EN				48 58.21	130 39.99							PAR OFF
14	P12	[illegible]	BE	BOT		42	48.58.20	130 39.99							Go Flo
		0210	BO				48.58.20	130.39.99		800					
		[illegible]	EN				48.58.21	130.39.99							
14	P12			LOOP		43									Cs Loop
14	P12	0251	BE	Net		44	48 58.21	130.39.98	3233						Bongo 250m
		0302	BO				48 58.21	130.39.99		250					
		0306	EN				48°58.21	130°39.99							

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Notes: __________

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Month Feb **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

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	P12	0312	BE	Net		45	48°58.21	130°39.98	3235						Forge 1200m
"	"	0352	BO	"		"	48°58.21	130 39.98		1200					
"	"	04 14	EN	"		"	48°58.21	130°39.98							
14	P12	0445	BE	ROS	US	46	48 58.21	130 39.98	3235				DY	✓	Sam & Celine
		0541	BO				48 58.21	130 39.98		3273	394-417	24			P=3273 S=3235 D=3220 B-10
		0650	EN				48 58.21	130 39.99							(still on DY)
14	P12	0656	DE	DRF		47	48 58.19	130 40.01							Sponge Reb 113
14	P13	1126	BE	Ros	US	48	49 2 60	131 39 92	3133		4[illegible]-49	2	[illegible]	✓	
		1159	BO				49 2 59	131 39 93		2005					
		1231	EN				49 2 59	131 39 98							
	P14	1710	BE	[illegible]	US	[illegible]	49 7 40	132 39 94	337		42-443	24	[illegible]	✓	Maureen Case + SAV Sampling
		1809	BO				49 7 40	132 [illegible] 94		3359					
		1911	EN				49 7 40	132 [illegible] 94							
14	P14	1854	BE	Loop	-	50	49 7 40	132 39 94	3316	-	CS Loop	-	[illegible]	-	CS Loop
14	P15	2327	BE			51	49 12.00	133 40.00	3406				[illegible]	✓	
		2359	BO				49 12.01	133 40.07		2005	444-445	2			
15		00	EN				49 12.02	133 40.01							

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Notes: _____

✓

This page is for any notes or observations

p 7.5

Retaped [illegible] showing 95 cast.

[illegible] [illegible] our [illegible] [illegible] [illegible] [illegible] [illegible].

Stopped @ ~1800m on way down to straighten the arc, boomed out

DAILY SCIENCE LOG

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Month Feb	Year 2015	Ship Tully	Cruise ID 2015-01

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15	P16	0504	BE	ROS	US	52	49 17.00	134 40.02	3200	3	446-469	24	DY	✓	CS cast
|	|	0508	BO	|			49 17.00	134 40.02		150	~~470-487~~	~~F4~~			(header may be
|		0515	EN				49 17.00	134 40.02							wrong!)
15	P16	0538	BE	ROS	US	53	49 17.01	134 40.01	~3200				DY	✓	DMS cast
|	|	0544	BO	|			49 17.01	134 40.01		300	470-483	14			
|	|	0602	EN				49 17.01	134 40.01							
15	P16	0632	BE	ROS	US	54	49 17.01	134 40.00	3633				DY/MB	✓	Deep Cast
|	|	0733	BO	|			49 17.01	134 40.01		3683	484-507	24			
|		[illegible]	EN	|			49 17.01	134 40.01							D=3620 S=3633 P=3683 D-10
15	P16	0949	BE	NET	-	55	49 17.01	134 40.01	3632		-	-	MB		BONGO 250
		1000	BO				49 17.01	134 40.01		250					
		1004	EN				49 17.01	134 40.01							
15	P16	1014	BE	PUMP	-	56	49 17.01	134 40.00	3633		508-510	-	K/MB	-	Pumping TM chain
		1030	BO				49 17.01	134 40.01		40					
		1126	EN				49 17.01	134 40.01							
15	P16	1134	BE	Bot(GoFlo)	Msg	57	49 17.01	134 40.01	3632		511 → 514	4	KS/MB	-	GoFlo Zoom
		1148	BO				49 17.01	134 40.01		200					
		1205	EN				49 17.01	134 40.01							

Cast Type:
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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
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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 Feb **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
15	P16	12:13	BE	MET	-	58	49° 17.01 N	134° 40.01 W	3633		-	-	MB	-	Bongo Ross
		1252	BO				49° 17.01 N	134° 40.01 W		1200					
		13 11	EN				49° 17.01 N	134° 40.01 W							
15	P16	1319	BE	Bio(GoFlo)	Mes	59	49 17 01	134 40 01	3633		515	4	KS/MB	-	GoFlo to 800
		1350	BO				49 17 01	134 40 01		800					
		1427	EN				49 17 01	134 40 01							
15	P16	14:35	BE	ROS	US	60	49 17 01	134 40 01	3633		519 - 542	24	MB	✓	6 Cast
		14 43	BO				49 17 01	134 40 01		500					
		14:[illegible]	EN				49 17 01	134 40 01							
15	P16	15:[illegible]	BE	DRF	-	61	49 16 99	134 40 02	3640	-	-	-	MB	-	Sponge Bob #111
15	P16-P17	1552	BE	USW	-	62	49 17 97	134 53 14	3188	-	P16-P17 plastic loop	-	MB	-	Flow cont 16/[illegible] plastic loop
		1607	EN				49 18 23	134 55 82							
15	P17	1859	BE	ROS	US	63	49 21 01	135 40 13	3667		543 → 566	24	MB/DY	✓	Markers & JOS
		2003	BO				49.20.95	135 40.17		3764					[illegible]
		2124	EN				49 20.95	135 40.22							P= 3764 D= ~~3698~~ 3698 S: 3701 A: 9.5
16	P18	0238	BE	ROS	US	64	49 26.03	136 40.04	3832				DY		
		0313	BO				49 25.95	136 39.87		2005	567-568	2			
		0346	EN				49 26.03	136 39.82							

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Notes: ____________________

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p 9.5

Stop @ 500m on way down to straighten wire, buoyed up, Stop @ 200m on way down straighten wire soon up.
Water mass change ~ 2900 m.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Feb **Year** [illegible] **Ship** [illegible] **Cruise ID** [illegible]

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
16	P4	10:11	BE	[illegible]	US	65	49 29.99	137 40.11	[illegible]		569→570	2	[illegible]	✓	[illegible] clash
		10:45	BO			66	49 29.95	137 40.16		2005					on way up @ ~1200m, restarted
		11:39	EN				49 29.92	137 40.10							took down to 1500m
16	P20	18:20	BE	Ros	US	67	49 34.06	138 40.07	3966		571→594	24	[illegible]/DY	✓	[illegible]
		19:16	BO				49 34.06	138 40.07		4025					P= 4025 D= 3950
		2052	EN				49 34.06	138 40.07							S= 3966 A= 115
16	P20	2110	DE	PUMP		68	49 34.0	138 40.0	3965						
		2245	EN				49 34.00	138 40.06		40					Chains TM
16	P20	2249	BE	BOT		69	49 33.99	138 40.06	3965						
		2259	BO				49 33.99	138 40.07		200					TM Go-flos
		2310	EN				49 33.99	138 40.10							
16	P20	2323	BE	ROS	US	70	49 33.99	138 40.14	3961				DY	✓	DWLS
		2328	BO				49 33.97	138 40.16		300	602-615	14			PAR ON
		2346	EN				49 33.93	138 40.16							
16	P20	2358	BE	Net		71	49 33.92	138 40.23	3964					—	Bongo 250m
17		0008	BO				49 33.90	138 40.25		250					
		0014	EN				49 33.90	138 40.20							

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Time Code:
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- RE = Recover Mooring Time

Transmissometer & Fluorometer are to be cleaned before each cast

Notes: ___

Trial test flag, whe[illegible] I were computer crashed, don't think it worked, restarted computer and test [illegible] down to 1500m, named new file 0065-2 (changed to 66)

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month	February	Year	2015	Ship	Tully	Cruise ID	2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
17	P20	0016	BE	Net		72	48 33.88	138 40.19	3964				[illegible]		Bongo to 1200
		0101	BO				48 33.88	138 40.18		1200					
		0122	EN				48 33.88	138 40.18							
17	P20	0130	BE	Bot		73	48 33.88	138 40.18	3964						GoFlos
		0158	BO				48 33.88	138 40.18		800					
		0230	EN				48 33.88	138 40.18							
17	P20	0235	De	Drif		74	49° 33 88	138° 40 29							Spongebob 117
	P20	0235	De	Drif		75	49 33 88	138 40 29							EC #1 133249
17	P21	0612	BE	ROS	US	76	49 37.98	139 40.05	3959				[illegible]	✓	Cs cast to
		0646	BO				49 38.00	139 39.96		2005	620-643	24			300m
		0723	EN				49 39.02	139 40.05							
17	Loop 77 P21→P22	0840	BE	USW	-	77	49 39 45	140 1 62	3946	-	Loop 77	-	MB	-	1 Sal 1 2 Chl
17	P22	[illegible]	BE	Ros	US	78	49 [illegible] 0[illegible]	140 [illegible]	3893		[illegible]	4	MB	✓	Not Dai[illegible] [illegible]
		[illegible]	BO				49 [illegible] 05	14[illegible] [illegible] 94		2005					
		12 07	EN				49 [illegible] 05	1[illegible] [illegible] 90							
17	Loop 79 P22→P23	1430	BE	USW	-	79	49 41 77	141 20 31	3990		Loop 79	-	MB	-	1 Sal 1 2 Chl
17	P23	1546	BE	Ros	-	80	49 46 03	[illegible] 4[illegible] 03	40[illegible]		6[illegible] - 6[illegible]	24	MB	✓	
		1619	BO				49 45 98	37 94		[illegible]					
		1652	EN				[illegible] 46 01	[illegible] 39 83							

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Transmissometer & Fluorometer are to be cleaned before each cast

Notes: ___

Produced by the Water Properties Group, IOS

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Version: 7 July 2014

DAILY SCIENCE LOG

Month Feb	**Year** 2015	**Ship** Tully	**Cruise ID** 2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
17	P24	2038	BE	ROS	US	81	49 50.27	142 40.09	~~4400~~				DY	✓	
		2111	BO				49 50.39	142 40.09	3987	2005	672-673	2			
		2146	EN				49 50 36	142 40.24							
17	P24	2032		LOOP		82	49 50.25	142 40.03	4400						Cs loop
17	P24	2152	Dep	Drift		83	49 50.40	142 40.37	3987						EC drifter 133250
17	P25	0155	BE	ROS	US	84	49 59.97	143 36.30	4148				DY	✓	
		0228	BO				50 0.01	143 36.39		2005	674-675	2			
		0301	EN				50 0.03	143 36.57							
18	P35	0612	BE	ROS	US	85	49 59.88	144 18.26	4150				DY	✓	cups on
		0645	BO				49 59.84	144 18.27		2005	676-677	2			
		0719	EN				49 59.86	144 18.30							
18	P26	1019	BE	Ros	US	86	49 59 99	144 59 96	4260		678 → 701	24	MB	✓	PLASTICS CAST
		1130	BO				49 59 99	144 59 98		4315					
		1257	EN				49 59 99	144 59 98							
18	P26	1326	BE	Ros	US	87	49 59 99	144 59 99	4251		[illegible]	4	MB	✓	Cs Cast
		1334	BO				49 59 99	144 59 99		500					
		1347	EN				49 59 99	144 59 99							

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Notes: ______________________________

Produced by the Water Properties Group, IOS

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Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

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
18	P26	1403	BE	Trace Pump		88	49 59 99	144 59 99	4250		726-732	7	MB/Maureen	-	UBC pumps
		1444	BO				49 59 99	144 59 99		1015					
		1630	BE				49 59 99	144 59 99							
		1730	EN				49 59 99	144 59 99							
18	P26	18.15	BE	ROS	US	89	49 59 99	145 0 00	4251		741-753	14	MB	✓	Maureen Cast
		18:32	BO				49 59 98	145 0 01		1000					
		18 54	EN				49 59 99	144 59 99							
18	P26	19 05	BE	Pumping	-	90	49 59 99	145 0 00	4257						
		1925	BO				49 59 99	145 0 00			733-735	3			TM pumping
		1956	EN				49 59 99	145 0.00		40			DY	✓	DMS cast
18	P26	2150	BE	ROS	US	91	~~49~~50 0.01	144 59.98	4252						
		2155	BO				50 0.00	144 59.98		300	754-767	14			
		2213	EN				49 59 99	144 59 99							
18	P26	1956	BE	Pump		92	49 59.99	145 0.0	4252						Pumping for UBC
		2108	EN				49 59.99	145 0.0		40	839	1			
18	P26	2248	BE	ROS	US	93	49 59.99	144 59.99	4252				DY	✓	Deep Cast
19		0004	BO				49 59.99	145 0.00		4316	768-791	24			P=4316 S=4252
		0136	EN				49 59.99	145 0.00							D=4236 B~10

Transmissometer & Fluorometer are to be cleaned before each cast

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Time Code:
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Notes: ___

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 7 July 2014

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month	Feb	Year	2015	Ship	Tully	Cruise ID	2015-01

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
19	P26	0145	BE	Pumps		94	49 59.99	145 00.00	4252						UBC Insitu
		0307	BO				"	"		3600					pumping
		0528	BE				"	"							
		0644	EN										DY	✓	Sam
19	P26	0654	BE	ROS	US	95	49 59.99	145 0.00	4252		799-814	16	DY/MB		
|	|	0727	BO	|		|	"	"		2000					
|		08 03	EN				49 59 99	144 59 99							
19	P26	820	BE	NET	-	96	49 59 99	144 59 99	4252		-	-	MB	-	Bongo 250
		829	BO				|	|		250					
		833	EN				↓	↓							
19	P26	856	BE	NET	-	97	49 59 99	145 00 00	4252		-	-	MB	-	Bongo 1200
		9:37	BO				49 59 99	145 00 00	4252	1200					
		9:59	EN				↓	↓							
19	P26	1025	BE	ROS	US	98	49 59 99	144 59 99	4252		815→838	24	MB	✓	Ocean - Kongsberg
		1136	BO				49 59 98	144 59 99		4315					P: 4318 B: 4237 S: 4252 A: 11.5
		1306	EN				49 59 99	144 59 99							
19	P26	1318	BE	Go-Flo	Mss.	99	49 59 98	144 59 99	4251		736-739	4	KS/MB	-	Shallow Go-Flow
		13 40	BO				49 59 98	144 59 98		220					
		1355	EN				49 59 99	145 0 00							

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Notes: ____________

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Feb	Year 2015	Ship Tully	Cruise ID 2015-01

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
19	P26	1425	BE	[illegible]	Mes	100	49 59 99	145 0 00	4251		840-843	4	KS/MR	-	[illegible]
		1450	BO				49 59 98	144 59 99		800					
		1520	EN				49 59 98	144 59 99							
19	P26	1533	BE	ROS	US	101	49 59.99	145 00.00	4252		844-862	24	MR	✓	Cesium 150
		1536	BO				49·59.99	145 00.00		150					
		1544	EN				49 59.99	145 00.00							
19	P26	1550	DE	DRF		102	[illegible] 98	145 00 93	4252						[illegible] 118
19	P26	1552	DE	DRF		103	49·59.97	144 59.87	4252						[illegible] 133251
19	DRF	2037	DE	DRF	✓	104	49·59.71	143' 59.05	~4100					}	18 m drogue 102
		2037													surface [illegible]
		2037													bob [illegible]
		2038					49 59.69	143 49.97							bob 112
		2040					66	88							bob 116
		2041					63	82							bob 115
		42					60	77							DAVIS 98 Surface 90
		43					58	72							Bob 114
		44					49 59.56	143' 49.68							[illegible] 122
		45					55	63							Bob 124
		46					55	60							surface 95 drogue 106

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Notes:

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p 15.5

Davis 92 damaged on deployment.

~ 30 knot winds,

~ 5-6 m waves + big swells

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FÉVRIER **Year** 2015 **Ship** TULLY **Cruise ID** 2015-01

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							
19	DRF	2048	DE	DRF		104	49°59.52	143°49.53	~4100						Bob 128
		2050					49°59.50	143°49.47							Bob 127
		2051					49°59.47	143°49.41							Bob 119
		2052					49°59.45	143°49.36							DAVIS 93 SURFACE 99
		2053					49°59.42	143°49.30							Bob 130
		2053					49°59.41	143°49.25							Bob 123
		2054					49°59.39	143°49.22							Bob 121
		2056					49°59.38	143°49.19							DROGUE 105 Surface 100
		2057					49°59.37	143°49.13							Bob 126
		2058					49°59.34	143°49.09							Bob 129
		2059					49°59.33	143°49.05							Bob 125
		2100					49°59.31	143°49.01							DAVIS 91 X Surface 94
		2101					49°59.30	143°48.97							Bob 120
		2103					49°59.28	143°48.93							Bob 137
		2103					49°59.26	143°48.87							Bob 140
		2104					49°59.24	143°48.83							Drogue 104 surface 101
		2106					49°59.21	143°48.77							Bob 132
		2107					49°59.19	143°48.74							Bob 131
		2108					49°59.17	143°48.69							Bob 136

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Notes: _____

p16.5

DAVIS 91. MAST BROKE IN HALF WHEN HIT THE WATER

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEVRIER **Year** 2015 **Ship** TULLY **Cruise ID** 2015 01

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							
19	DRF	2109	DE	DRF		104	49 59.15	143 48.63							DRIFT 92 Surface 97
		2110					49 59.12	143 48.56							Bob 135
		2111					49 59.09	143 48.52							Bob 144
		2112					49 59.07	143 48.49							bob 134
		2113					49 59.06	143 48.47							DROGUE 103
		2114					49 59.03	143 48.41							bob 139
		2115					49 59.02	143 48.37							bob 138
	✓	2116					49 59.01	143 48.33							bob 133
19		22:20		—	—	105	49 58 06	143 35 51					RJ		CS Surf loop
20		7:44		—	—	106	49 49 32	141 37 56					RJ		CS Surf loop.
20	P21→P20	11010	BE	USW	-	107	49 38 86	139 37 26	4017	-	Loop 107	-	MB	-	Loop 1 Sal 2 Chl
20	P20→P19	21:14	BE	USW	-	108	49 32 17	138 0 55	3969	-	Loop 108	-	MB	-	Loop Sal Chl
20	Loop 109 P20→P19	21:31	BE	USW	-	109	49 31 [illegible]	137 55 [illegible]	[illegible]	-	Loop 109	-	MB	-	Photos Loop 109
20	CS Loop	22:30				110	49 30 405	137 39 18	3923						CS Loop
21	CS Loop	01:59				111	49 26 09	136 39 32	3823						CS Loop
21	Loop 112	5:12	BE	USW	-	112	49 2 47	131 59 91	331	-	Loop 112	-	MB	-	Loop 1 Sal 2 Chl
21	Loop 113	6:20				113	48 59 95	113 59 95	2969		Loop 113	-	MB	-	Loop 1 Sal 2 Chl
22	CS Loop	13:13				114	48 44.11	127 39 32	2540						CS Loop

Cast Type:
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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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Notes: _____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB | **Year** 2015 | **Ship** [illegible] | **Cruise ID** 2015-01

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
22	P5	1538	BE	ROS	US	115	48 41 51	127 9 77	2079		868-869	2	MS	✓	
		1611	BO				48 4 51	127 9 58		2005					
		1645	EN				48 1 44	127 9 61							
22	[illegible]	[illegible]	[illegible]	US	-	[illegible]	48 [illegible]	[illegible]	[illegible]	-	[illegible]	-	[illegible]	-	[illegible]
22	[illegible]	[illegible]	[illegible]	US	-	[illegible]	[illegible]	[illegible]	[illegible]	-	[illegible]	-	[illegible]	-	[illegible]
		1804	[illegible]				[illegible]	[illegible]							TURTLE SIGHTING
22	P4	1917	BE	ROS	US	118	48 39 02	126 40 02	1308		248-262	24	MS	✓	
		1925	BO				48 39 02	126 40 01		500					
		1937	EN				48 38 99	126 39 99							
22	P4	2009	BE	ROS	US	119	48 38 99	126 39 99	1314				DM	✓	DMS
		2015	BO				48 38.99	126 39.99		300					
		2033	EN				48 38.99	126 39.99			263-279	17			
22	P4	2115	BE	BOT	US	120			1315				KS/DM		GO Flo to 175m
			BO							175					
		2140	EN				48 38 99	126 39 99							
22	P4	2149	BE	ROS	US	121	48 38.99	126 39.99	1315				DM	✓	PAR OFF
		2212	BO				48 38.99	126 39.99			243-262	870 21			P=1321 S=1318 D=1306 B-10
		2249	EN				48 39.01	126 40.02							
~~23~~	~~P3.5~~			BOT		122									

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Feb **Year** 2015 **Ship** Tully **Cruise ID** 2015-01

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
~~23~~ 22	P4	2300	BE	BOT	MC	122	48 38 95	126 38.95	1315	800			KS/SY		
1	1		BO	1	1										
1		2354	EN	1			48 38.95	126 38.49							
~~23~~	~~P25~~	~~0020~~		~~BOAT~~		~~123~~	~~48 38.39~~	~~126 39.66~~	~~1147~~	~~Surf~~	~~886-890~~	5	KS		~~small boat sampling~~
23	P3	01:30	BE	In-Situ pump		123	48°37.51	126° 20.01	808	750	879-895	7 pumps			Cancelled
		02:00	BO												UBC
		0426	BE				48 37.51	126 20.01							pumps
		0500	EN												

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