

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2014-01

DATE:

From:	Feb 10 / 14	To:	24 February 2014
J.P. Tully			
LINE P			

VESSEL:

PROJECT(S):

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

WaterProperties.ca

Captain:	Mike McCune	First Officer:	Zachary Chama
Second Officer:	Rob Nugent	Third Officer:	Doug Muckach
Fishing Master:		Chief Engineer:	Robert Holton

Mission Participants / Agencies:

DEO-100 / DEO-310 / VBC / VIC / UM / WHO

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

1st Leg Scientific Personnel:
Chief Scientist: MARIE ROBERT

Name	Watch	Cabin	Name	Watch	Cabin
RACHAEL Emswiler	06-12	B	MIKE Ayrchuk	DM3	G
GREG SIDBACE	12-18	C	MAUREEN SOON	06-12	H
WILLIAM OSTRON	00-06	C	ASHLEY DAVIDSON	18-24	H
NICOLAS ESTRABE	00-06	D	HUGH MACLENN	00-12	A
ARM GOODWIN	18-24	D	DOUG VILLANO	12-24	7
RIKIE NELSON	18-24	E			
GLENN COOPER	PH	E			
ROGER FRANCOS	12-18	F			
SAM KHEIRANDISH	00-06	F			
KYLE SIMPSON	TM	G			

2nd Leg Scientific Personnel: Chief Scientist:

[illegible]

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

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

Data logging computer: _____

Data acquisition program: _____

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

Primary CTD

Make: SBE model: 9+ serial number: 550

Primary temperature serial number: 2710

Primary conductivity serial number: 2128

Secondary temperature serial number: 2374

Secondary conductivity serial number: 3396

Transmissometer: Wetlabs Model: C-Star s/n: 1396DR

Transmissometer: _____ Model: _____ s/n: _____

Fluorometer: Model Seapoint Cable gain: 30x s/n: 2356 P, S or NO pump? P

Fluorometer: Model Wetlabs Cable gain: 13 s/n: 2215 P, S or NO pump? P, S or NO pump?

Oxygen sensor: SBE Model: 43 s/n: 1176 P, S or NO pump? P, S or NO pump?

PAR sensor: BIO-Space Model: QSP200145 s/n: 4615 Surface PAR? Y/N Y

Other sensors: Attimeter s/n: 1204 P, S or NO pump? P, S or NO pump?

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

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

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

Secondary CTD

Make: _____ model: _____ serial number: _____

Primary temperature serial number: _____

Primary conductivity serial number: _____

Secondary temperature serial number: _____

Secondary conductivity serial number: _____

Transmissometer: _____ Model: _____ s/n: _____

Transmissometer: _____ Model: _____ s/n: _____

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

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

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

PAR sensor: _____ Model: _____ s/n: _____ Surface PAR? Y/N _____

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

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

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

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

CTD calibration bottle location (height above CTD in metres): _____

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

Rosette Setup:

Number of bottles: 24
Manufacturer: GO + OTE
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: _____
Sampling interval (seconds): 30s
Fluorometer sensor serial number: 2847

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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Ocean Sciences Division, Institute of Ocean Sciences

1951011

Month <u>FEBRUARY</u>			Year <u>2014</u>			Vessel <u>TULLY</u>			Cruise ID <u>2014-01</u>						Page <u>1</u> of <u> </u>	
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments	
							Latitude	Longitude								
1	Haro 59	11	06:46	BE	ROS	US	48° 36.99	123° 14.89	232		-					
			06:50	BO			48° 37.00	123° 14.91					DY MR	☒		
			07:05	EN			48° 37.11	123° 14.98		220	1-24	24		☐		
2	JF1	11	10:25	BE	Loop		48° 16.07	123° 29.95	136		-			☐		
3	JF2	11	13:00	BE	ROS	U.S.	48° 18.02	123° 59.92	187	175	25-42	18	H.M.	☐	Loop - Sea/Chl/NO3	
			13:04	BO			48° 18.01	123° 59.92					H.M.	☒	T: 7.10 S: 3.92	
			:	EN			48° 18.00	123° 59.93			-			☐		
4	JF2	11	13:47	BE	ROS	U.S.	48° 17.99	123° 59.97	188		43-55	13	A.M.	☒	T: 7.10 S: 3.92	
			13:51	BO			48° 18.00	123° 59.96		178	-			☐		
			14:07	EN			48° 18.02	123° 59.96			-			☐		
5	JF3	11	16:31	BE	Loop	-	48° 26.97	124° 29.93	224		-			☐		
6	JF4	11	18:53	BE	Loop	-	48° 32.29	124° 59.98	64		-		H.M.	☐	Loop	
7	P1	11	21:19	BE	ROS	US	48° 34.52	125° 30.34	138		-		H.M.	☐	Loop	
			21:23	BO			48° 34.53	125° 30.31			-	21	DY	☐		
			21:40	EN			48° 34.62	125° 30.21			56-76			☐		
8	P1		21:40	BE	Loop		48° 34.62	125° 30.21			-			☐		
9	P2	12	00:04	BE	ROS	US	48° 36.07	126° 0.01	115		-			☐	Cs loop	
			0:07	BO			48° 36.11	125° 59.97			-		DY	☐	Days cast	
			:	EN			48° 36.15	125° 59.79		100	77-90	14		☐	out of order	

Event Type:

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

Bottle Firing Method:

US = Up / Stop (default)
UN = Up / No stop
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Notes:

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Month				Year			Vessel				Cruise ID					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments	
10	P2	12	00:20		LOOP		48° 36.0497	125° 59.989	115		-			☐ ☐	Cs Loop	
11	P2	12	00:37		Net		48° 36.281	125° 59.965	115	105	-			☐ ☐	Bongo	
11	P2	12	00:59	BE	ROS	US	48° 36.21	125° 59.79	115		-			☐ ☐	Bongo	
			01:03	BO			48° 36.22	125° 59.82		103	91-98	8	DYMR	☒ ☒	large vertical excursions	
			01:13	EN			48° 36.20	125° 59.73			-			☐ ☐		
12	P3	12	02:59	BE	ROS	US	48° 37.51	126° 19.91	811		-			☐ ☐	PAR CFF i	
			03:13	BO			48° 37.55	126° 19.92		807	-			☐ ☐	#24 net trip	
			03:40	EN			48° 37.61	126° 19.99			99-122	24		☐ ☐	(too fast on moor?)	
13	P4	12	05:33	BE	ROS	US	48° 39.05	126° 39.90	1317		-			☒ ☒	UBC cast	
			05:54	BO			48° 39.05	126° 39.77		1304	123-128	16		☐ ☐		
			06:20	EN			48° 39.17	126° 39.46			-			☐ ☐		
14	P4	12	07:08	BE	ROS	US	48° 39.03	126° 40.01			-			☒ ☒	Cesium all cast	
			07:16	BO			48° 39.04	126° 39.97		300	139-162	24		☐ ☐		
			07:33	EN			48° 39.02	126° 39.87			-			☐ ☐		
15	P4	12	08:25	BE	NET		48° 39.06	126° 40.08	1320		-			☐ ☐	Bongo	
			08:25	BO			48° 39.06	126° 40.08		250	-			☐ ☐		
			09:37	EN			48° 39.03	126° 40.10			-			☐ ☐		
			:				°	°			-			☐ ☐		
			:				°	°			-			☐ ☐		

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Notes:

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Month			Year			Vessel				Cruise ID					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
16	P4	12	09:15	BE	ROS	U.S.	48° 38.99	126° 40.25	1331		163 - 186	24	H.M.	☒ ☒	PLASTICS - CCB10M
			09:22	BO			48° 38.97	126° 40.37		300	-			☐ ☐	
			09:40	EN			48° 38.94	126° 40.50			-			☐ ☐	
17	P4	12	09:55	BE	TM		48° 38.94	126° 40.50	1319	40	187 - 190	-	K.S.	☐ ☐	pumping chains
			11:49	EN			48° 39.03	126° 39.86			-			☐ ☐	!
18	P4	12	12:03	BE	ROS	U.S.	48° 38.90	126° 39.88	1321		191 - 209	19	H.M.	☒ ☒	
			12:28	BO			48° 38.83	126° 39.91		1328	-			☐ ☐	
			13:11	EN			48° 38.86	126° 39.86			-			☐ ☐	
19	P4	12	14:26	BE	ROS	U.S.	48° 39.03	126° 39.94	1335		210 - 228	19	H.M.	☒ ☒	DMS CAS
			14:53	BO			48° 39.00	126° 39.97			-			☐ ☐	
			14:58	EN			48° 39.00	126° 39.94			-			☐ ☐	
20	P5	12	17:36	BE	ROS	U.S.	48° 41.50	127° 09.92	2092		229 - 230	2	M.R.	☐ ☒	
			18:13	BO			48° 41.48	127° 09.96		2005	-			☐ ☐	
			18:58	EN			48° 41.51	127° 10.00			-			☐ ☐	
21	P6	12	21:30	BE	ROS	U.S.	48° 44.60	127° 40.04	2548		-		D.V.	☒ ☒	
			22:09	BO			48° 44.64	127° 40.46		2005	231 - 232	2		☐ ☐	
			:	EN			° .	° .			-			☐ ☐	
			:				° .	° .			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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Month <u>Feb</u>			Year <u>2014</u>			Vessel <u>Tully</u>			Cruise ID <u>2014-01</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
22	P7	13	01:11	BE	ROS	US	48° 46.52	128° 10.08	2506		-		DY	☒ ☒	
			02:02	BO			48° 46.43	128° 10.24		2530	233-256	24		☐ ☐	
			03:00	EN			48° 46.38	128° 10.84			-			☐ ☐	
23	P8	13	:	BE	NET	US	.	.			-		DY	☐ ☐	Deploy to 250m
			05:45	BO			48° 48.159	128° 39.821	(260)	250	-			☐ ☐	
			05:49	EN			48° 48.885	128° 39.859			-			☐ ☐	
24	P8	13	:		Cshoop		48° 48.49	128° 39.80			-			☐ ☐	Cs loop
25	P8	13	06:16	BE	ROS	US	48° 48.92	128° 40.07	2522		-		DY	☒ ☒	10s cast
			06:49	BO			48° 48.45	128° 40.28			257-278	22		☐ ☐	
			07:50	EN			48° 47.52	128° 40.45			-			☐ ☐	
26	P10	13	19:07	BE	ROS	US	48° 53.78	129° 40.13	2648		281-300	20	H.M	☒ ☒	CESION CAST ^{CS} _{TYPE C}
			19:48	BO			48° 53.90	129° 40.22		2005	-		MR	☐ ☐	
			20:31	EN			48° 51.19	129° 40.82			-			☐ ☐	
27	P10	13	20:49	DE	DRF		48° 54.805	129° 42.822			-			☐ ☐	Deploy Ago #72
28	P12	14	00:42	BE	ROS	US	48° 58.13	130° 39.98	3230		-		DY	☒ ☒	2ms cast
			00:57	BO			48° 58.01	130° 39.86		300	301-317	17		☒ ☒	Very rough
			01:14	EN			48° 57.81	130° 39.59			-			☐ ☐	(stopping due
29	P12	14	01:30		Loop		48° 57.01	130° 39.59			-			☐ ☐	to wind)
			:				.	.			-			☐ ☐	CS Loop P12

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Month FEBRUARY				Year 2014		Vessel TULLY				Cruise ID 2014-01						Page 5 of	
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments		
							Latitude	Longitude									
30	P14	14	14:18	BE	ROS	U.S.	49° 07.38	132° 39.97	2716		320 - 321	2	H.7	☒ ☒	CHL + HPLC		
			14:56	Bo			49° 07.35	132° 39.97		2005	-			☐ ☐			
			15:36	EN			49° 07.27	132° 39.93			-			☐ ☐			
31	P15	14	20:39	BE	ROS	US	49° 12.02	133° 40.00	3403		322 - 323	2+22	MR	☒ ☒	22 NISKINS @ 2000 for AMC. NO SIN		
			21:25	Bo			49° 11.41	133° 40.04		2012	-			☐ ☐	NOT IN CUE FILE		
			22:11	EN			49° 10.96	133° 40.24			-			☐ ☐	check depth in head		
32	P16	15	03:27	BE	ROS	US	49° 11.08	133° 40.84			-			☐ ☐	pressure spike?		
			03:34	Bo			49° 17.03	134° 39.88	3623		324 - 346			☐ ☐	Argo 124		
			03:54	EN			49° 16.98	134° 39.70			-			☐ ☐	DMS Cast		
							49° 16.89	134° 39.34			-			☐ ☐	PAR off (dark)		
33	P16	15	:		CsLoop		.	.			-			☐ ☐			
34	P16	15	04:35	BE	ROS	US	49° 16.96	134° 39.82	3623		347 370	24	MR 107	☒ ☒	Cs loop		
			05:44	Bo			49° 16.42	134° 38.33		3673m	-			☐ ☐	Deep cast		
			07:21	EN			49° 15.62	134° 36.46			-			☐ ☐			
35	P20	17	05:34	BE	ROS	US	49° 34.08	138° 39.95	3945		-			☐ ☐			
			06:45	Bo			49° 33.85	138° 40.24			-			☐ ☐			
			08:16	EN			49° 33.95	138° 40.48		4023	371-394	24	07	☒ ☒	4023 03951 53972 A 10		
36	P20	17	:		CsLoop		.	.			-			☐ ☐			
37	P20	17	08:25	BE	PUMPTM	-	49° 33.92	138° 40.44	3950	40	395 -	-	KS	☐ ☐	CsLoop TM Pump		

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Cast 31: pressure spike 90 ↓ 105 ↓ + a few more

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Month <u>FEBRUARY</u>				Year <u>2014</u>		Vessel <u>TULLY</u>				Cruise ID <u>2014-01</u>					
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
38	P20	17	09:54	BG	ROS	U.S.	49° 33.54	138° 40.28	3930		398 - 416	17	H.M.	☒ ☒	DMS CAST
			10:00	BO			49° 33.56	138° 40.20		300	-			☐ ☐	
			10:19	EN			49° 33.65	138° 40.03			-			☐ ☐	
39	P21	17	16:09	BG	ROS	U.S.	49° 38.09	139° 40.06	3939		415 - 434	20	H.M.	☒ ☒	CS CAST
			16:47	BO			49° 38.08	139° 40.12		2005	-			☐ ☐	
			17:27	EN			49° 38.22	139° 40.17			-			☐ ☐	
40	P21	17	17:30		LOOP		49° 38.22	139° 40.17	3939		-			☐ ☐	
41	P26	19	15:34	BG	ROS	U.S.	49° 59.97	144° 59.93	4260		-	24	H.M.	☒ ☒	CS loop (0 m)
			15:37	BO			49° 59.92	144° 59.97		150	462-485			☐ ☐	ARRUM
			15:44	EN			49° 59.87	144° 59.95			-			☐ ☐	
42	P26	19	19:24		LOOP		50° 00.02	144° 59.94	4224	0	-		H.M.	☐ ☐	Loop for CS
43	P26	19	19:28	BG	ROS	U.S.	49° 59.99	144° 59.96	4226		490 - 513	24	H.M./DY	☒ ☒	DEEP CAST
			20:45	BO			49° 59.98	144° 59.99		4316	-			☐ ☐	D 4236 Δ 10 P 4316 S 4226
			22:15	EN			49° 59.97	145° 00.03			-			☐ ☐	
44	P26	19	22:35	BG	CHAINS	-	49° 59.95	145° 00.06		35	459 - 461		K.S.	☐ ☐	TH PUMP
			23:20	EN			49° 59.98	144° 59.93			-			☐ ☐	
45	P26	19	23:25	BG	CHAINS	MSG	49° 59.98	144° 59.93		200	-	4	K.S.	☐ ☐	TH GO-FLW
			23:55	BO			50° 0.0	145° 0.18			-			☐ ☐	
		20	00:20	EN			50° 0.03	144° 59.82			-			☐ ☐	

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Notes:

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Month <u>February</u>			Year <u>2014</u>		Vessel <u>Tully</u>		Cruise ID <u>2014-01</u>								
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
46	P26	20	00:18	BE	ROS	US	50° 0.05	144° 59.90	4225		-			☒	PAR ON
			00:25	BO			50° 0.05	144° 59.88		300	518-540	23		☐	DM S Cast
			00:44	EN			50° 0.03	144° 59.81			-			☐	
47	P26	20	01:25	BE		MSG	49° 59.93	144° 59.93	4225	800	591-594	4	KS	☒	Deep GoFlo
			02:00	BO			50° 00.00	144° 59.97			-			☐	
			02:25	EN			50° 00.00	144° 59.96			-			☐	
48	P26	20	02:28	BE	ROS	US	50° 00.00	144° 59.93	4225		-			☐	
			02:33	BO			50° 00.00	144° 59.92		200	541-564	24	MR	☒	Cesium cast
			02:41	EN			49° 59.99	144° 59.90			-			☐	PAR OFF
49	P26	20	03:15	BE	ROS	US	49° 59.96	144° 59.87	4225		-			☐	
			03:48	BO			49° 59.98	144° 59.99			435-458	24	MR	☒	UBC - C. cast
			04:27	EN			49° 59.78	144° 59.78			-			☐	
50			04:36	Dep	DRF		49° 59.69	144° 59.33			-			☐	Argo 123
51			04:44				49° 59.64	144° 59.59			-			☐	EC 133199
52			04:46				49° 59.62	144° 57.49			-			☐	EC 133206
53	KA P25	20	08:50	BE	Loop		49° 53.63	143° 43.11			-		H.M	☐	MICRO PLASTICS
			09:00	EN			49° 53.47	143° 40.01			-			☐	
54	P25		09:22		Loop		49° 53.21	143° 33.79			-			☐	Loop CS
55	P24		12:51		Loop		49° 49.389	142° 31.363			-			☐	Loop CS

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Month <u>FEBRUARY</u>			Year <u>2014</u>			Vessel <u>TULLY</u>			Cruise ID <u>2014.01</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
56	P 23	20	15:53	BG	ROS	U.S.	49° 45. 96	141° 39. 93	4124		565 - 568	4	H.M.	☒ ☒	MUT CAST + Loop
			16:12	BO			49° 45. 84	141° 40. 00		1005	-			☐ ☐	
			16:33	EN			49° 45. 73	141° 39. 95			-			☐ ☐	
57	P 23	20	16:35		Loops		49° 45. 73	141° 39. 95			-			☐ ☐	Loop GS
58	P 22	20	20:09	DE	DRF		49° 42. 24	140° 41. 56	4108	—	—	—	W.O.	☐ ☐	GLIDER #361
59	P 22	20	20:22	BE	ROS	US	49° 42. 02	140° 39. 99	4129		-		DY	☒ ☒	+Loop
			20:41				49° 42. 19	140° 39. 91	3854	1005	569-570	2		☐ ☐	WRONG DEPTH
			21:01				49° 42. 34	140° 39. 89			-			☐ ☐	
60	Loop 60	21	00:30		LOOP		49° 39. 55	139° 43. 71			-			☐ ☐	Sal Chl x2 Nuts x2
62		21	04:15		DRF	RE	49° 37. 10	138° 46. 40			-			☐ ☐	GLIDER P/V
63		21	04:35		DRF	DE	49° 37. 14	138° 46. 45			-			☐ ☐	EC Drifter
64	Loop 64	21	06:38		Loop		49° 33. 30	139° 9. 93			-			☐ ☐	sal, chl x2, Nul.
65	P 19	21	08:30	BG	ROS	U.S.	49° 30. 04	137° 39. 94	3909		571 - 572	2	H.M.	☒ ☒	
			08:48	BO			49° 30. 18	137° 39. 89		1005	-			☐ ☐	
			09:08	EN			49° 30. 38	137° 39. 81			-			☐ ☐	
66	P 19	21	08:34		Loop		49° 30. 06	137° 39. 92	3909	—	—	—	R.M.	☐ ☐	Loop GS
67	P 18	21	13:06	BG	ROS	U.S.	49° 26. 35	136° 40. 39	3817		573 - 590	18	H.M.	☒ ☒	HALC/CHL + NICO
			13:24	BO			49° 26. 54	136° 40. 30		1005	-			☐ ☐	(LOOK @ FLUORESCENCE FROM
			13:51	EN			49° 26. 78	136° 40. 17			-			☐ ☐	640m Down)

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Month <u>FEBRUARY</u>			Year <u>2014</u>			Vessel <u>TULLY</u>			Cruise ID <u>2014-01</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
69	P19	21	13:47	BG	Loop		49° 26.74	136° 40.15	3816	—	—	—	R.H.	☐ ☐	Loop SS
69	P17	21	18:01	BG	ROS	U.S.	49° 21.04	135° 39.97	3626		591-592	2	H.M.	☒ ☒	
			18:20	BO			49° 20.99	135° 40.14		1005	-			☐ ☐	
			18:40	EN			49° 21.01	135° 40.17			-			☐ ☐	
70	P13	22	10:03	BG	ROS	U.S.	49° 02.59	131° 39.99	3007		593-594	2	H.M.	☒ ☒	
			10:21	BO			49° 02.60	131° 39.95		1005	-			☐ ☐	
			10:42	EN			49° 02.61	131° 39.91			-			☐ ☐	
71	P13	22	10:50	BG	DRF	—	49° 02.53	131° 39.71	3008	—	—	—	H.M.	☐ ☐	DRIFTER 126
72	P12	22	14:42	BG	ROS	U.S.	48° 58.11	130° 39.93	3232		595-610	16	H.M.	☒ ☒	SAMS CAST
			15:16	BO	.		48° 58.14	130° 39.89		2000	-			☐ ☐	
			15:54	EN			48° 58.18	130° 39.98			-			☐ ☐	
73	P12	22	16:05	BG	PUMP	—	48° 58.20	130° 39.97	3230	35m	-		K.S.	☐ ☐	T.M. PUMPING
			17:02	EN			48° 58.19	130° 39.90			-			☐ ☐	
74	P12	22	17:12	BG	ROS	U.S.	48° 58.16	130° 39.91	3231		637-660	24	H.M.	☒ ☒	NICOS CAST
			17:29	BO			48° 58.16	130° 39.94		1000	-			☐ ☐	
			17:55	EN			48° 58.18	130° 39.96			-			☐ ☐	
75	P12	22	18:50	BG	ROS	U.S.	48° 58.20	130° 40.00	3230		614-636	1240	H.M./dy	☒ ☒	DEEP CAST
			19:48	BO			48° 58.19	130° 39.99			-	23		☐ ☐	D 3227 S 3231 D 3221 A 10
			20:58	EN			48° 58.23	130° 39.93			-			☐ ☐	

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Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Depth	Max Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
76	P12	22	21:15	BO			48°58.08	130°40.01	3230		-			☐ ☐	UBC in situ pump
			22:35	BO			°	°						☐ ☐	
		23	02:05	BE			°	°		3000	661-666			☐ ☐	
			03:15	EN			°	°			-			☐ ☐	
77	P12	23	03:29	BE	Net	US	48°58.16	130°40.01		250	-			☐ ☐	
			03:33	BO			48°58.19	130°40.08			-			☐ ☐	25m go to 25m
			03:37	EN			48°58.17	130°40.13			-			☐ ☐	
78	P11	23	05:45	BE	ROS	US	48°56.03	13°9.91	2755		-			☒ ☒	Computer
			:	BO			°	°		1005	-			☐ ☐	Crash
			:	EN			°	°			-			☐ ☐	- restart cast
79	P11	23	06:04	BE	ROS	US	48°55.99	130°10.01	2755		-			☐ ☐	
			06:16	BO			48°55.98	130°9.98		1805	637-638	2		☐ ☐	
			06:29	EN			48°55.99	130°9.97			-			☐ ☐	
80	U P 11	23	07:10	BE	Loop		48°55.14	129°58.75	2780	-	-	-	H.M.	☐ ☐	PLASTICS - Loop
			07:20	EN			48°54.91	129°56.05			-			☐ ☐	
81	P-6	23	14:44	BE	Loop		48°43.56	127°39.90	2551		-			☐ ☐	Cs Loop
82	P5	23	16:31	BE	ROS	U.S.	48°41.45	127°10.04	2098		671-694	24	H.M.	☒ ☒	NICO + ARRAM CAST
			17:14	BO			48°41.55	127°10.19		2102	-			☐ ☐	
			17:53	EN			48°41.57	127°10.03			-			☐ ☐	

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