

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2016-08

Book 1/2

DATE:

From: 16 AUGUST 2016

To: (24 AUG 2016....)

VESSEL:

JOHN 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: KENT REID

Second Officer: ANDREW BACAKSHIN

Fishing Master: _____

First Officer: KEVIN MCKEZHANE

Third Officer: BRUCE KUTZER

Chief Engineer: MARTIN LEMOND

Mission Participants / Agencies:

DF0-100 ; DF0-310 ; VIC ; VBC ; NOAA-DSU

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

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

Name	Watch	Cabin	Name	Watch	Cabin
STEVE ROMAINE	00-12	B	JADE SHILLER	18-24	H
MICHAEL ARVCHUK	0MS. ASD	C	MOIRA GALBRAITH	12-24	3
GLENN COOPER	PH	D			
KRISTA KULCZYCKI	00-06	E			
SARA ZEIDAN	12-18	E			
ROBERT IZETT	00-06	F			
RIK NELSON	06-12	F			
THERESA VENELLO	06-12	G			
AMANDA TIMMERMAN	12-18	G			
SARA HEIMLICH	18-24	H			

2nd Leg Scientific Personnel: Chief Scientist: _____

[illegible]

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

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

Data logging computer: Tully Laptop

Data acquisition program: Seagave

CTD deck unit make: SBE model: 11+ serial number: 0425

Primary CTD

Make: SBE model: 9+ serial number: 443

Primary temperature serial number: 4752

Primary conductivity serial number: 2280

Secondary temperature serial number: 2710

Secondary conductivity serial number: 2754

Transmissometer: Wetlabs Model: C-SVTR s/n: 1185DR

Transmissometer: Model: s/n:

Fluorometer: Model Seapoint Cable gain: 3X s/n: 3460 ☒ S or NO pump?

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

Oxygen sensor: SBE Model: 43 s/n: 0997 P, ☒ S or NO pump?

PAR sensor: Biospherical Model: QSP2350 s/n: 70613 Surface PAR? Y/☒ N

Other sensors: Altimeter s/n: 62354 P, S or NO pump?

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

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

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
Volume of bottles (litres): 10

Winches:

1. Make: HAWBOLDT Model: _____ Serial #: 17127 Used for: CTD/ROSETTE
2. Make: HAWBOLDT Model: _____ Serial #: 17020 Used for: MULTINET
3. Make: SWANN Model: 329 Serial #: 1482 Used for: BOWDO

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

#17027: MAJOR COUPLING PROBLEMS SET 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: SEAPIPS Model: _____ Kit Number: 2
Make: _____ Model: _____ Kit Number: _____

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

LOTS OF PROBLEMS SET CRUISE REPORT

Thermosalinograph System (SBE21):

Program: SEASAVE Version: 7.23.2
Sampling interval (seconds): 30
Fluorometer sensor serial number: WETLABS WS3S-953P

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

GOOD! FLUO VALUES?

ADCP Setup:

Computer time zone: UTC User Exits: Name: _____ Exit points: _____
Sampling interval (sec): _____ Name: _____ Exit points: _____
Bin Length: (2ⁿx): _____ 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: 0.6 after cast: 0.3 CAST 0068

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:

Miskim 21

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Month <u>August</u>				Year <u>2016</u>		Vessel <u>TJ4</u>				Cruise ID <u>2016-08</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
0001	SI	17	20:22	BE	ROS	US	48° 39.600	123° 30.230	176	166	-	24	MG SR	☒ ☐	test cast. →
			20:29	BO			48° 39.590	123° 30.320			-			☐ ☐	
			20:33	EN			48° 39.60	123° 30.32			-			☐ ☐	
002	HAR059	17	22:26	BE	ROS	US	48° 36.85	123° 17.79	232		1 - 19	19	MG	☒ ☐	Stop at 160 →
		17	22:36	BO			48° 36.95	123° 14.83		208	-			☐ ☐	L° LARGE 225M OUT
		17	23:08	EN			48° 38.01	123° 15.55			-			☐ ☐	
003	HAR059	17	23:22	BE	NET	✓	48° 37.69	123° 15.2977	183		-		MG	☐ ☐	
		17	23:29	BO			48° 37.91	123° 15.3449		175	-			☐ ☐	
		17	23:32	EN			48° 37.95	123° 15.3405			-			☐ ☐	
4	JF1	18	02:30	BE	LOOP	✓	48° 15.95	123° 30.0709		4.5	-	—	MG	☐ ☐	INPUT ISAL 2 CHL A
5	Loop5	18	03:36	BE	Loop	✓	48° 16.59	123° 45.35			-	—	ROS	☐ ☐	2x gases
6	JF2	18	04:39	BE	ROS	US	48° 17.95	124° 00.04	187		20 - 36	17	MG	☒ ☐	Loop @ 5M BOTTLE
			04:43	BO			48° 17.96	124° 00.07		178	-			☐ ☐	INPUT ISAL 2 CHL 2 GAS
			05:01	EN			48° 17.98	124° 00.18			-			☐ ☐	
7	JF2	18	05:27	BE	NET		48° 18.0487	124° 00.1048	187		-			☐ ☐	
		18	05:34	BO			48° 18.0837	124° 00.1794		182	-			☐ ☐	
		18	05:37	EN			48° 18.0763	124° 00.2226			-			☐ ☐	
8	JF3	18	08:01	BE	Loop	✓	48° 27.00	124° 30.00	224	4.5	-	—	SM	☐ ☐	loop salinity, chl x 2
9	JF4	18	10:46	BE	Loop	—	48° 32.30	125° 00.02	64	4.5	-		KK	☐ ☐	loop each.

Event Type:

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

LOOP = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter
 — =

Bottle Firing Method:

US = Up / Stop (default)
 UN = Up / No stop
 DN = Down / No stop

Notes:

Time Code:

BE = Beginning Time of Cast
 BO = Bottom Time of Cast
 EN = End Time of Cast

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

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

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Cast 0001 all Niskins closed @ surface, just to test, no sample.

Cast	0002:	NISKIN	2	CLOSED	@	128	(125)
		NISKIN	3	"	"	200	
		"	4	"	"	175	
		"	5	"	"	150	

Then they as should be.

- CTD computer infected with virus or something. No internet (but netvark), task bar at bottom gone, windows key not working. Cannot install anti-virus software from USB stick, spy bot won't work. Able to get windows malware removal to work, Avast AV to work and finally removed problem ~ JFZ. Computer now fully scanned. The AV software on the computer had been removed, hence the infection.

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Month <u>August</u>				Year <u>2016</u>		Vessel <u>T-114</u>				Cruise ID <u>2016-03</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							
10	P1	18	12:44	BE	ROS	US	48° 34.430	125° 30.000	118		37-40	4	SR	☒	APLL > 8.1
			12:47	BO			48° 34.47	125° 29.96		114	-			☐	COOPS CHL & 2 SALV
			12:53	EN			48° 34.44	125° 29.92			-			☐	NOT x1 NO DO
11	P1	18	12:47	BE			48° 34.47	125° 29.96			-			☐	for Rich
12	P2	18	15:13	BE	ROS	US	48° 35.97	125° 59.97	115		41-43	8		☒	loop for CS
			15:17	BO			48° 35.95	125° 59.95		105	-			☐	1 SAL 2 CHL 1 NDI
			15:26	EN			48° 35.90	125° 59.90			-			☐	
13/14	P2	18	15:37	BE	NET	-	48° 35.884	125° 59.7184	115		-			☐	Net-Bongo
			15:41	BO			48° 35.8628	125° 59.6945		110	-			☐	(for tag)
			15:44	EN			48° 35.84	125° 59.6967			-			☐	
14/15	P2	18	15:52	BE	NET	-	48° 35.7297	125° 59.6395	115		-			☐	Net-Bongo
			15:57	BO			48° 35.7156	125° 59.6316		100	-			☐	(UVIC)
			15:59	EN			48° 35.6930	125° 59.6314			-			☐	
15/16	P2	18	15:18	BE	Loop	-	48° 35.97	125° 59.97	115	4.5	-			☐	for Rich.
16	P2	18	16:07	BE	ROS	US	48° 35.60	125° 59.57	114		49-62	14	MR	☒	pms
			16:09	BO			48° 35.58	125° 59.57		100	-			☐	
			16:22	EN			48° 35.52	125° 59.55			-			☐	
			:				°	°			-			☐	
			:				°	°			-			☐	

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Month <u>August</u>				Year <u>2016</u>			Vessel <u>Tully</u>			Cruise ID <u>2016-08</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
17	P3	18	18:49	BE	ROS	US	48° 37.49	126° 19.87	810		63 -	1	SL/MG	☒ ☐	BULLET CAUGHT →
			19:03	BO			48° 37.48	126° 19.86		798	-			☐ ☐	IN HEX AS 18
			19:19	EN			48° 37.49	126° 19.80			-			☐ ☐	
18	P4	18	21:14	BE	ROS	US	48° 39.04	126° 39.88	1310		64 - 87		MG	☒ ☐	IN HEX AS 18 CS
			21:16	BO			48° 39.05	126° 39.87		150	-			☐ ☐	CESSION → RICK
			21:26	EN			48° 39.03	126° 39.89			-			☐ ☐	
19	P4	18	21:25	BE	LOOP		48° 39.04	126° 39.89	1309	4.5	-		SARA	☐ ☐	FOR RICK (200)
20	P4	18	21:56	BE	ROS	US	48° 39.09	126° 39.85	1314		88 - 102		MG	☒ ☐	DMS CAST
			22:00	BO			48° 39.00	126° 39.83		300	-		AMANDA	☐ ☐	2 CHL LOOPS @ 5m
			22:25	EN			48° 39.03	126° 39.88			-			☐ ☐	
21	P4	18	22:34	BE	NET	✓	48° 39.01	126° 39.88	1310		-		MG	☐ ☐	BONGO
			22:44	BO			48° 39.00	126° 39.92		250	-			☐ ☐	
			22:49	EN			48° 39.02	126° 39.92			-			☐ ☐	
22	P4	18	23:39	BE	NET	UN	48° 38.99	126° 39.99	1315		-		MG	☐ ☐	MPS
		19	00:44	BO			48° 39.29	126° 39.80		1200	-			☐ ☐	
			01:12	EN			48° 39.36	126° 39.68			-			☐ ☐	
23	P4	19	02:59	BE	ROS	US	48° 39.09	126° 39.87	1301		103 - 121		GC	☒ ☐	Deep Cast
			03:21	BO			48° 39.13	126° 39.84		1301	-			☐ ☐	ROSC →
			04:04	EN			48° 38.98	126° 39.93			-			☐ ☐	LOOPS 15m NET 2 GAS

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/ BOLTS A BIT LOOSE ALLOWING BULLET TO STOP ON AN ANGLE WHICH THEN CAUGHT ON ONE OF THE TEETH
BRAKE IMPROPERLY RELEASING CATCHING ONE SIDE OF BULLET
- IS THE WIRE GREASE BUILDING UP IN THE NUT?

CABT NOT RECORDING, BROUGHT BACK UP TO RESET - USE SAME HEX + EVENT NUMBER

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Month <u>AUGUST</u>			Year <u>2016</u>			Vessel <u>JP TULLY</u>			Cruise ID <u>2016-08</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
24	P4	19	09:01	BE	ROS	US	48° 39.45	126° 40.11	1291	500	122-145	24	SR	☒ ☐	Cesium cast
			09:11	BO			48° 39.47	126° 40.12			-			☐ ☐	
			09:25	EN			48° 39.47	126° 40.10			-			☐ ☐	
25	P4	19	10:02	BE	ROS	US	48° 39.511	126° 40.201	1296		146-161	24	SR	☒ ☐	UVC cast
			10:26	BO			48° 39.509	126° 40.310		1304	-			☐ ☐	
			10:54	EN			48° 39.510	126° 40.211			-			☐ ☐	
26	P4	19	11:21	BE	ROS	US	48° 39.510	126° 40.110	1292		162-175	18	SR	☒ ☐	Ammonia ⁺⁺ cast
			11:30	BO			48° 39.510	126° 40.100		250	-			☐ ☐	(forgot to archive, so back to surface from 5m)
			11:50	EN			48° 39.540	126° 40.140			-			☐ ☐	
27	P5	19	14:32	BE	ROS	US	48° 41.490	127° 10.030	2084		180-191	12	SR	☒ ☐	☺
			15:09	BO			48° 41.500	127° 9.978		2005	-			☐ ☐	
			15:54	EN			48° 41.500	127° 9.960			-			☐ ☐	
28	P6	19	18:46	BE	ROS	US	48° 44.61	127° 39.96	2545		192-	1	SR	☒ ☐	☺
			19:22	BO			48° 44.67	127° 40.09		2005	-			☐ ☐	
			19:57	EN			48° 44.70	127° 40.18			-			☐ ☐	
29	P7	19	22:19	BE	ROS	US	48° 46.64	128° 09.97	3207		193-	1	GC	☒ ☐	
			22:51	BO			48° 46.69	128° 09.98		2005	-			☐ ☐	
			23:23	EN			48° 46.82	128° 10.25			-			☐ ☐	
			:				.	.			-			☐ ☐	

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X RBR data downloaded after P5

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Month August				Year 2016			Vessel Tully			Cruise ID 2016-08					
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
30	P8	20	01:48	BE	ROS	US	48° 48.94	128° 39.96	3263		194 - 217	24	GC	☒ ☐	20XY TR SAT NUT 2CHL 20XY
			02:24	BO			48° 49.03	128° 40.07		2005	-			☐ ☐	
			03:18	EN			48° 49.06	128° 40.16			-			☐ ☐	
31	P9	20	06:54	BE	ROS	US	48° 51.250	129° 9.980	3417		218 - 229	12	SR	☒ ☐	!!
			07:31	BO			48° 51.312	129° 10.315		2005	-			☐ ☐	
			08:15	EN			48° 51.450	129° 10.480			-			☐ ☐	
32	Loop32	20	09:42	BE	Loop		48° 52.523	129° 26.321			-		SR	☐ ☐	Sal. net, 2x, chl.
33	P10	20	11:10	BE	ROS	US	48° 53.590	129° 39.810	3352		230 - 253	24	SR	☒ ☐	Cesium
			11:15	BO			48° 53.600	129° 39.870		200	-			☐ ☐	
			11:23	EN			48° 53.640	129° 39.960			-			☐ ☐	
34	P10	20	11:49	BE	ROS	US	48° 53.740	129° 40.090	3352	2005	254 - 277	24	SR	☒ ☐	Cesium Deep
			12:26	BO			48° 53.740	129° 40.090			-			☐ ☐	cast
			13:07	EN			48° 53.740	129° 40.090			-			☐ ☐	
35	P11	20	15:57	BE	ROS	US	48° 55.933	130° 9.914	2750	2005	278 - 289	12	SR	☒ ☐	
			16:32	BO			48° 56.062	130° 9.977			-			☐ ☐	Computer reboot
			:	EN			.	.			-			☐ ☐	~350m from
36	P11	20	17:11	BE	ROS		48° 56.023	130° 9.950	2752	339	-		SR	☒ ☒	Surface, cont.
			17:24	EN			48° 56.020	130° 9.990			-			☐ ☐	as event 36
			:				.	.			-			☐ ☐	to surface

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Month			Year			Vessel			Cruise ID						
AUGUST			2016			JPTULLY			2016-08						
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
37	P12	20	19:56	BE	ROS	US	48° 58.28	130° 39.86	3233		290 - 304	15	MG	☒ ☐	241L @ 5m
			20:01	BO			48° 58.29	130° 39.88		300	-			☐ ☐	DMS
38			20:26	EN			48° 58.32	130° 40.01			-			☐ ☐	
37	P12	20	20:38	BE	NET		48° 58.49	130° 39.95	3023	250	-		MG	☐ ☐	Bongo
			20:47	BO			48° 58.48	130° 39.96			-			☐ ☐	
			20:51	EN			48° 58.52	130° 39.99			-			☐ ☐	
39*	P12	20	21:05	BE	ROS	US	48° 58.49	130° 39.83	3236		305 - 327	23	MR/LAC	☒ ☐	PAR OFF, JUP CAST
			22:02	BO			48° 58.59	130° 40.21		3278	-			☐ ☐	D 8225 P 3278 A 8.9 S 3235
			23:27	EN			48° 58.87	130° 40.11			-			☐ ☐	2 GAS 100% 1 SAL 20% 1 20% 1
40	P12	21	01:21	BE	NET	UN	48° 58.33	130° 39.93	3234		-		MG	☐ ☐	MPS
			03:34	BO			48° 58.74	130° 40.25		3005	-			☐ ☐	
			04:35	EN			48° 58.88	130° 40.22			-			☐ ☐	
41	P12	21	05:14	BE	ROS	US	48° 58.13	130° 39.89	3234		323 - 343	16	Gte	☒ ☐	PAR ON OTHER SIDE
			05:48	BO			48° 58.21	130° 39.97		2000	-			☐ ☐	UBC Cast.
			06:29	EN			48° 58.25	130° 40.02			-			☐ ☐	
42	P12	21	08:05	BE	ROS		48° 58.270	130° 39.870	3235		344 - 358	15	MR	☒ ☐	Amanda and
			08:10	BO			48° 58.260	130° 39.870		250	-			☐ ☐	associates (++)
			08:32	EN			48° 58.330	130° 39.990			-			☐ ☐	cast
43	Loop 43	21	10:30	BE	Loop		48° 59.734	130° 59.003	3112		-		SR2	☐ ☐	2x chl, 1 sal, 1 nut

Event Type:

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

LOOP = Sea Water Loop

MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter

Bottle Firing Method:

US = Up / Stop (default)
UN = Up / No stop
DN = Down / No stop

Time Code:

BE = Beginning Time of Cast
BO = Bottom Time of Cast
EN = End Time of Cast

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

DE = Deployment Time

MR = Messenger Release Time

RE = Recover Mooring Time

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 14 February 2013

Notes:

Loop samples Sal x1, Nut x1, OxyLab x2, OxyT x2 and gases. * File name is called 2016-08-0038.hcx. Should have been 2016-08-0039.hcx

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>August</u>			Year <u>2016</u>			Vessel <u>Tully</u>			Cruise ID <u>2016-03</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							
44	P13	21	13:51	BE	ROS	US	49° 2.530	131° 40.020	3032		359-370	12	sn	☒ ☐	☺
			14:25	BO			49° 2.680	131° 40.080		2005	-			☐ ☐	
			15:09	EN			49° 2.780	131° 39.960			-			☐ ☐	
45	P14	21	20:27	BE	ROS	US	49° 07.45	132° 39.87	3316		371-	1	MG	☒ ☐	2 OXY TR SAL NUT 2CHL 2 OXY L
			21:02	BO			49° 07.48	132° 40.06		2005	-			☐ ☐	
			21:34	EN			49° 07.54	132° 40.22			-			☐ ☐	
46	LOOP 46	21	22:06	BE	Underway Loop	✓	49° 07.80	132° 43.95	3326	5	-	8	MG	☐ ☐	Robert Underway 2 OXY lab
47	LOOP 47	22	01:06	BE	LOOP	✓	49° 09.36	133° 20.91	3292	45	-		MG	☐ ☐	SAL NUT 2CHL
48	P15	22	02:57	BE	ROS	US	49° 11.99	133° 40.01	3408		372-	1	MG	☒ ☐	
			03:30	BO			49° 11.98	133° 40.15		2005	-			☐ ☐	
			04:07	EN			49° 12.03	133° 40.15			-			☐ ☐	
49	Loop 49	22	01:19	BE	LOOP		49° 15.824	134° 30.268	3116		-		sn	☐ ☐	SAL NUT, 2CHL
50	P16	22	10:09	BE	ROS		49° 16.950	134° 39.970	3332	500	373-396	24	sn	☒ ☐	Cesium Cast
			10:20	BO			49° 16.980	134° 39.970	3633		-			☐ ☐	WRONG DEPTH IN HDR
			10:34	EN			49° 17.000	134° 39.970			-			☐ ☐	
51	P16	22	11:00	BE	ROS		49° 16.999	134° 39.965	3279	250	397-411	15	sn	☒ ☐	Armanda +
			11:05	BO			49° 17.010	134° 39.960	3633		-			☐ ☐	Cast
			11:23	EN			49° 16.980	134° 40.004			-			☐ ☐	WRONG DEPTH IN HDR
			:				°	°			-			☐ ☐	

Event Type:

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

LOOP = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter
 — =

Bottle Firing Method:

US = Up / Stop (default)
 UN = Up / No stop
 DN = Down / No stop

Notes:

Time Code:

BE = Beginning Time of Cast
 BO = Bottom Time of Cast
 EN = End Time of Cast

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

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 14 February 2013

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>August</u>			Year <u>2016</u>			Vessel <u>Tully</u>			Cruise ID <u>2016-02</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/Fl Cleaned	Comments
52	P16	22	11:38	BE	NET	/	49° 16.99	134° 40.01	3348	250	-		SN	☐	Bongo 250m
			11:48	BO			49° 16.98	134° 40.05	3633		-			☐	
			11:53	EN			49° 17.02	134° 40.09			-			☐	
53	P16	22	12:04	BE	NET	/	49° 17.06	134° 40.00	3348	1200	-		SN	☐	Bongo 1200m
			12:42	BO			49° 17.21	134° 40.27	3633		-			☐	
			13:03	EN			49° 17.21	134° 40.38			-			☐	
54	P16	22	13:33	BE	ROS	US	49° 17.03	134° 39.97	3633		412-435	24	SR	☒	Deep Cast, BUCKLE ON
			14:41	BO			49° 17.01	134° 39.97		3685	-			☐	PAR off
			16:08	EN			49° 17.04	134° 39.87			-			☐	D 3623 S 3633
55	P16	22	17:11	BE	ROS	US	49° 16.980	134° 39.960	3631	150	436-459	24	SN	☒	A 9.28 P 3685
			17:15	BO			49° 16.970	134° 39.940			-			☐	PAR on, bucket
			17:22	EN			49° 16.960	134° 39.940			-			☐	Cesium off
56	P16	22	17:46	BE	ROS	US	49° 16.950	134° 40.050	3632	300	460-474	15	SN	☒	DMS cast
			17:52	BO			49° 16.950	134° 40.100			-			☐	
			17:5	EN			49° 17.000	134° 40.130			-			☐	
57	LOOP57	22	20:32	BE	LOOP	/	49° 17.28	135° 13.24	3644	4.5	-	-	MG	☐	SAL NUS 2CHL
58	P17	22	22:26	BE	ROS		49° 21.05	135° 39.96	3664		475-492	18	MG	☒	NISKIN COMP: SPRING → TUBES
			22:59	BO			49° 21.04	135° 39.98		2005	-			☐	
			23:46	EN			49° 21.06	135° 40.07			-			☐	

Event Type:

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

LOOP = Sea Water Loop

MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter
=

Bottle Firing Method:

US = Up / Stop (default)
UN = Up / No stop
DN = Down / No stop

Notes:

Time Code:

BE = Beginning Time of Cast
BO = Bottom Time of Cast
EN = End Time of Cast

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

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

Produced by the Water Properties Group, IOS

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This page is for any notes or observations

- 1 SAL INUT 2 OXY 2 OXY TR

2 CHL

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month Aug			Year 2016			Vessel JP GOULY			Cruise ID 2016-08						
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
59	P18	23	04:49	BE	ROS	US	49° 26.00	136° 39.79	3834		493-	1	MG	☒ ☐	20XV 2 OXY TR 1SAL 1NUS 2CHL
			05:21	BO			49° 25.98	136° 39.83		2005	-			☐ ☐	
			05:54	EN			49° 25.97	136° 39.88			-			☐ ☐	
60	P19	23	10:42	BE	ROS	US	49° 29.950	137° 35.970	3928	2005	494-505	12	SR	☒ ☐	
			11:22	BO			49° 29.980	137° 35.960			-			☐ ☐	
			12:05	EN			49° 30.000	137° 35.960			-			☐ ☐	
61	Loop P19	23	10:45	BE	Loop		49° 29.968	137° 35.933			-		SR	☐ ☐	For Rick. - 60L
62	Loop 62	23	13:25	BE	Loop		49° 31.492	137° 57.696	3967		-		SR	☐ ☐	20L CTD SAL, NUT, 2X CHL
63	P20	23	17:59	BE	ROS	US	49° 34.040	138° 39.990	3964	300	506-520	15	SR	☒ ☐	DMS Cast
			18:06	BO			49° 34.010	138° 39.980			-			☐ ☐	2 CHL Loop
			18:26	EN			49° 34.020	138° 39.990			-			☐ ☐	Robert took oxy loops right now. (not at deep cast)
64	P20	23	18:35	BE	NET	✓	49° 34.029	138° 40.062	3964	250	-		MG	☐ ☐	Bongo UNH
			18:44	BO			49° 33.98	138° 40.02			-			☐ ☐	
			18:49	EN			49° 33.98	138° 40.02			-			☐ ☐	PAR OFF BUCKET ON
65	P20	23	19:48	BE	ROS	US	49° 34.10	138° 39.94	3965		521-544	24	MG	☒ ☐	Deep Cast
			20:59	BO			49° 34.06	138° 39.93		4023	-			☐ ☐	D 3950 A 10.8 S 3965 P 4023
			22:31	EN			49° 33.96	138° 39.85			-			☐ ☐	NUT SAL dms
66	P20	23	23:34	BE	NET	UN	49° 33.98	138° 39.78	3967		-		MG	☐ ☐	MPS
		24	01:52	BO			49° 33.98	138° 40.00		3005	-			☐ ☐	

Event Type:

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

LOOP = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter
 =

Bottle Firing Method:

US = Up / Stop (default)
 UN = Up / No stop
 DN = Down / No stop

Notes:

Time Code:

BE = Beginning Time of Cast
 BO = Bottom Time of Cast
 EN = End Time of Cast

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

DE = Deployment Time
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Produced by the Water Properties Group, IOS

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 Version: 14 February 2013

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>AUGUST</u>				Year <u>2016</u>		Vessel <u>JP TULLY</u>				Cruise ID <u>2016-08</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
66	P20	24	02:51	EN	NET		49°33.97	138°39.92			-		MG	☐ ☐	
67	P20 LOOP	24	01:10	BE	LOOP	/	49°33.91	138°39.91	3967	4.5	-	/	RICK	☐ ☐	^{cesium} 60L FOR RICK
68	P20	24	03:04	BE	ROS	—	49°34.02	138°39.93	3967		—	Ø	MR	☒ ☐	PAC ON
			03:07	BO			49°34.02	138°39.91		150	-			☐ ☐	PAC CAST FOR AMANDA
			03:13	EN			49°33.97	138°39.92			-			☐ ☐	READING ON DEEP? BT: 0.6 0.3 →
69	P20	24	03:56	BE	NET	/	49°34.02	138°40.02	3966		-		MG	☐ ☐	BONGO DEEP
			04:41	BO			49°33.97	138°39.89		1200	-			☐ ☐	
			05:03	EN			49°33.93	138°39.97			-			☐ ☐	
70	P20	24	08:00	BE	ROS		49°34.050	138°39.890	3964		545-559	15	SR	☒ ☐	Productivity cast
			:	BO			°	ABORTED		250	-			☐ ☐	→
			:	EN			°	ABORTED		(B)	-			☐ ☐	
70A	P20	24	08:03	BE	ROS		49°34.040	138°39.820	3964		545-559	15	SR	☐ ☐	Productivity cast
			08:17	BO			49°34.050	138°39.830		250	-			☐ ☐	
			:	EN			°	ABORTED!!		ABANDON - Forget to Archive				☐ ☐	
71	P20	24	08:28	BE	ROS		49°34.040	138°39.780	3965		545-559	15	SR	☐ ☐	Productivity cast
			08:36	BO			49°34.040	138°39.770		250	-			☐ ☐	3rd time is the
			08:44	EN			49°34.020	138°39.730			-			☐ ☐	charm.
	P20	24	:				Forget pump on	°			-			☐ ☐	
			:				°				-			☐ ☐	

Event Type:

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

LOOP = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter
 — =

Bottle Firing Method:

US = Up / Stop (default)
 UN = Up / No stop
 DN = Down / No stop

Notes:

Time Code:

BE = Beginning Time of Cast
 BO = Bottom Time of Cast
 EN = End Time of Cast

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

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Produced by the Water Properties Group, IOS

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Recorded from on deck to on deck

- Couldn't see DOZ on plot $\Rightarrow$ returned to surface, started at 70A, also no latitude showed in NMEA window
- Reboot computer $\Rightarrow$ try event 71.

$\Rightarrow$ Recovered rosette, reset bottle 1. Back down again in next log book
NOT A GOOD START TO THE WATCH

This page is for any notes or observations

ROSETTE

BOTTLES

COATED METAL
WHITE SPRING

NISKIN
1 2 4 6 8 → 12

BLACK SPRING

3 14 → 16

NO COATING
METAL SPRING

13

SILICON

17 → 24

BLACK TUBING

5, 7

PREVIOUS JUNE 2015

NISKIN

5 USED TO BE WHITE SPRING

15 USED TO BE RUBBER TUBING BLACK

17-24 USED TO BE COATED SPRING WHITE/BLACK

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month <u>August</u>				Year <u>2016</u>			Ship <u>Tully</u>			Cruise ID <u>2016-08</u>					
Day ☞	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	* Event * Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
24	P20	0851	BE	ROS	US	72	49 34.013	138 39.702	3965		545-555	15	SN	/	UUU
		0857	BO				49 34.004	138 39.674		250					
		0914	EN				49 34.040	138 39.650							
24	Loop73	1122	BE	Loop	/	73	49 35.433	139 07.758	3749	4.5	—	/	SN		sal, nat, 2xchl
24	P21	1345	BE	ROS	US	74	49 38.030	139 40.060	3559	200	560-583	24	SN	/	U Cesium
		1349	BO				49 38.060	139 40.050							
		1359	EN				49 38.110	139 39.560							
24	P21	1419	BE	ROS	US	75	49 38.000	139 40.090	3559		584-607	24	SN	/	Deep Cast - Cesium
		1454	BO				49 38.020	139 40.060		2005					+IOS Cast
		1531	EN				49 38.020	139 40.030							
24	P22	1954	BE	ROS	US	76	49 41.98	140 39.96	3902		608-631	24	MG	✓	INUT 1CHL ^{20X4 TR} 20X4 L
		2028	BO				49 41.99	140 40.00		2005					SALINITY CALIBRATION
		2105	EN				49 41.97	140 39.95							PLUS STANDARD x2
24	Loop 77	2345	EN	Loop	/	77	49 44.12	141 16.25	4001	4.5	—	/	MG	✓	INUT 1SAL 2CHL
25	P23	0131	BE	ROS	US	78	49 46.00	141 39.93	4053		632-643	12	MG	✓	
		0207	BO				49 45.99	141 39.88		2005					
		0252	EN				49 45.98	141 39.94							

Downloaded RBR data (2nd time downloaded); Reset RBR.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month August			Year 2016				Ship Tully			Cruise ID 2016-08					
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							
25	P24	0710	BE	ROS	US	79	49 50.260	142 39.950	3986	2005	644	1	SN	✓	4 + Loop samples
		0753	BO				49 50.210	142 40.000							Sal, nut, chl x2, Oxy-Tr, x2
		0818	EN				49 50.190	142 39.900							
25	P24	0720	BE	Loop	—	80	49 50.270	142 39.950	3986						60L Cesium Loop (Rich)
25	P25	1224	BE	ROS	US	81	50 0.040	143 36.360	4144		645-656	12	SN	✓	→
		1300	BO				50 0.020	143 36.310		2005					
		1347	EN				50 0.030	143 36.320							
25	Loop82	1502	BE	Loop	—	82	50 0.263	143 53.369	4097				SN		INUT ISAL 2 CHL
25	P35	1649	BE	ROS	US	83	50 0.020	144 18.200	4151	2005	657	1	SN	✓	
		1724	BO				50 0.000	144 18.110							
		1756	EN				50 0.020	144 18.180							
25	P26	2053	BE	ROS	US	84	50°00.11	144° 59.91	4253		658-681	24	MG	✓	
		2056	BO				50°00.10	144° 59.89		150					
		2104	EN				50° 00.08	144° 59.88							
25	P26	2130	BE	ROS	US	85	50°00.04	144° 59.96	4252	500	682-704	23	MG	✓	2CHL
		2138	BO				50°00.06	144° 59.99							
		2207	EN				49° 59.99	144° 59.99							

• Winch making funny rubbing noise - maybe brake rubbing during upcast.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>AUGUST</u>				Year <u>2016</u>			Ship <u>J P Tully</u>				Cruise ID <u>2016-08</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
25	P26	2252	BE	ROS	US	86	49° 59.98	144° 59.97	4252		705-728	24	MG	✓	PAR OFF 2 BUCKETS
26		0003	BO				49° 59.91	145 00.04		4318					NOT SAL CASES 2016 DEEP CAST 2016 → 54252 4318 A 10 B 4238
		0117	EN				49 59.89	145 00.12		907					
26	P26	0536	BE	ROS	UN	87	49.59.89	144 59.97	4252						→
		0551	EN				49 59.89	144 59.98		907					
26	P26	0650	BE	ROS	US	88	49 59.960	144 59.990	4252		705-728	24	MG	✓	DEEP CAST
		0806	BO				50 0.040	145 0.010		4317					NOT SAL CASES 2016 54251.83 P 4317.5 A 138 D 4232.83
		0940	EN				50 0.010	144 59.980							
26	P26	1059	BE	NET		89	49 59.938	144 59.946	4251						Bongo VNH
		1100	BO				49 59.983	144 59.944		250					
			EN												PAR on MR.
26	P26	1205	BE	ROS		90	49 59.970	145 0.000	4251		769-786	18	SR	✓	VVU (Amended 11)
		1210	BO				49 59.950	144 59.980		250					Productivity Cast
		1234	EN				50 0.000	144 59.980							
26	P26	1356	BE	ROS		91	49 59.960	145 0.120	4251		729-752	24	SR	✓	Cesium Cast
		1406	BO				49 59.990	145 0.070		500					
		1419	EN				50 0.010	145 0.080							

Cast Type:

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

USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter
 =

Bottle Firing Method:

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

Notes:

Time Code:

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

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 06 March 2008

This page is for any notes or observations

0086 Deep cast: winch stopped (by itself) @ 1765 uplast. STARTED AGAIN AND SHELLED PROBLEMS
US → 1500 UN-1250 + 1000 THEN 800 TO SURFACE AFTER REPAIRS @ 1500M

ALL STOP @ 907M HOLD FOR REPAIRS FILE 86 CLOSED

FILE 87 FROM GPTMUP BOTTLES FIRED ON THE FLY

CLUTCH BLEW UP SHIP HAD PARTS
4 HOUR REPAIR JOB

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>AUGUST</u>				Year <u>2016</u>			Ship <u>JP TULLY</u>				Cruise ID <u>2016 - 08</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
26	NRS02	1815	MR	MOR	/	92	50° 14.296	145° 08.9181	~4248			/	MG	/	Release mooring. 6-7 CALS S
		1908	BW				50° 14.769	145° 08.940		~450					BOAT IN WATER
		1935	RB				50° 14.784	145° 09.586							HYDROPHONE BOUY ON BOARD
		2117	RE				50° 14.746	145° 10.093							ALL OF THE ACOUSTIC REL MOORING ON BOARD
26	NRS02	2224	DE	MOR	/	93	50° 14.662	145° 02.487	4248	~450		/	MG	/	DROP BUOY
27		0346	EN				50° 15.001	145° 09.302							ANCHOR AWAY
27	P26	0212	BE	ROS	US	94	49° 59.93	145° 00.01	4252		753-768	16	MG	✓	URC CAST
		0244	BO				49° 59.92	145° 00.00		2000					
		0319	EN				49° 59.93	145° 00.06							
27	P26	0333	BE	NET	/	95	49° 59.93	145° 00.07	4252				MG		BOWAO
		0426	BO				50° 00.08	145° 00.12		1500					
		0450	EN				50° 00.10	145° 00.32	L						
27	PA-010	0544	BE	ROS	US	96	50° 01.47	144° 52.64	4230		787-789	3	MG	✓	MOORING CRL18
		0553	BO				50° 01.47	144° 52.66		500					UVIC OXY ON AR
		0607	EN				50° 01.47	144° 52.72							
27	P25	11:18	BE	Loop	/	97	49 55 59	143 35 97	4112	4.5			RI		Cs loop 602
27	Loop98	1416	BE	Loop	/	98	49 52.415	142 50.132	3994	4.5			SA		PRESUMED 1 SAL INUT 2CHL
28	Loop99	0736	BE	LOOP	/	99	49 32.66	138 22.33	3985	4.5			MG	✓	1 SAL INUT 2CHL
28	Loop100	1355	BE	Loop		100	49 25.562	136 48.128	3833				SA		SAL INUT CH1 x 2

Cast Type:

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USW = Sea Water Loop

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 DRF = Drifter

Bottle Firing Method:

US = Up / Stop
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Notes:

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

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ALL TIMES UTC 26 AUG

This page is for any notes or observations

1602 STOP ADCP, PUT ALL SOUNDERS IN PASSIVE MODE. (1625 Rec off)

TRY	LISTEN	SD	145	09	16	Notes
1 st	TRY	145519	145	09.8969	1611	6 cables to the W
2 nd		15.0962	145	09.5240	1623	
3 rd		15.0614	145	09.3032	1639	
4 th		14.9778	145	08.9363	1659	RIGHT ON TOP
5 th		14.9657	145	08.9313	1718	RIGHT ON TOP, OTHER GEAR → CONTACT!
6 th		14.9656	145	09.4357	1728	2.5 cables off to W. → CONTACT
7 th		15.3036	145	08.9023	1736	4 cables NORTH
8 th		14.8635	145	08.0916	1747	EAST
9 th		14.4702	145	09.1099	1803	5 cables S

27 AUG

THINK THE ANCHOR WENT OVER PREMATURELY -

TRY	SD	145	09	Time
1 st	15.1532	145	09.3104	0014
2	15.2089	145	09.339	0020
3	15.2227	145	09.328	0024
0027	ADCP ALL SOUNDERS IN ACTIVE MODE			
	SD 15.16	145	09.42	

BRIDGE/SARA DETERMINE APPROX 200M FROM ORIGINAL SITE
 ~ 100 M OFF LOCATION TRANSDUCER/COMPUTER DID
 NOT RECEIVE A REPLY
 NO REPLY - PULL UP + USE BRIDGE LOCATION

0058 28 AUG 2016 ADCP WAS SHUT DOWN RESTARTED @ 0215 28 AUG 2016 CAUSE UNKNOWN

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>Aug</u>				Year <u>2016</u>			Ship <u>TULLY</u>				Cruise ID <u>2016-08</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
28	P18	14:26	Loop	Loop		101	49 25.05	136 39.87	3838				RI		60L loop/20 e loop
	Loop 104	1351	BE			102	48 52.931	129 34.853	2552				SL		Sci. net, ch 1, 2
29	P8	1659	BE	ROS		103	48 49.050	128 39.990	2517	1500	790-803	19	SW	/	
		1725	BO				48 49.000	128 40.020							
		1810	EN				48 49.010	128 40.010							
29	P8	1805	BE	Loop		104	48 49.010	128 40.010	2517						For Rick
29	P8	18:17	BE	NET		105	48°48.9926	128°39.9882	2518		/				Bongo VNH 250m
		18:27	BO				48°48.9959	128°39.9892		250			MG		
		18:32	EN				48°49.0019	128°39.9912							
29	P8	18:40	BE	NET		106	48°48.9933	128°39.9987	2518	1200	/		MG		Bongo VNH 1200m
		19:22	BO				48°48.960	128°40.142		1200					
		19:41	EN				48°48.907	128°40.139							
29	Loop 107	21:10	EN	Loop	/	107	48°46.94	128°15.25	2451	4.5	/	2	R1		Robot - random spin of the moment No loop
29	Loop 108	23:04	EN	loop	/	108	48°44.50	127°42.00	2540	4.5	/	2	R1		" "
30	Loop 109	00:54	EN	loop	/	109	48°41.79	127°10.20	2083	4.5	/	2	R1		" "
30	P4	02:48	BE	NET		110	48°38.9499	126°40.2369	1328		/		MG		Bongo
		02:56	BO				48°38.8864	126°40.2733		250					
		03:01	EN				48°38.8616	126°40.2594							

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1943 / TIME FROM ERROR MESSAGES ON SOUNDER
ADCP 75 OFF, AGAIN BACK ON AT 0152

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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[illegible]

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