

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2010-36

DATE:

From: 20 JULY to: 17 AUGUST 2010

VESSEL:

J. P. TULLY

PROJECT(S):

OCEAN ACIDIFICATION - BOOK 1

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

WaterProperties.ca

Captain: ANDY OLIVE First Officer: DON GIBSON
Second Officer: SHANE LOVAGE Third Officer: BRENDON
Fishing Master: _____

Mission Participants / Agencies: IOS/NOAA/UBC/UWIC/

Scientific Personnel:

Chief Scientist: DEBBY JANSON

Name	Watch	Cabin	Name	Watch	Cabin
MARKIE ROBERT		A	GLENN COOPER		F
JANET BARWELL-CLARKE		A	MARIOS LAGUNAS		F
LAURIE SURANEK		B	DEBBY JANSON		G
TANIA BURR		C	TAN BEVERIDGE		H
ELENA RAMIREZ		C	WILEY EVANS		H
ELIZABETH ASHER			HUGH MACLEAN		crew/elec
MELISSA HENNEKES		D	MARTY DAVELAAR	D	crew/elec
CYNTHIA PEACOCK	N	D			
NINA NEMCEK	D	E			
CHRISTINA SCHALLENBERG		E			

Second leg of Mission:

Chief Scientist: DEBBY JANSON

Name	Watch	Cabin	Name	Watch	Cabin
ERIC KUNZE			MARIOS LAGUNAS		F
CHRIS MACKAY		A	DEBBY JANSON		G
KEVIN BARTLETT		B	DEBBY JANSON		H
ELENA RAMIREZ		C	WILEY EVANS		H
ELIZABETH ASHER		C	HUGH MACLEAN		crew/elec
MELISSA HENNEKES		D	MARTY DAVELAAR		crew/elec
CYNTHIA PEACOCK		D	TANIA BURR		G
NINA NEMCEK		E	JANSON		
CHRISTINA SCHALLENBERG		E	JANET BARWELL-CLARKE		A
GLENN COOPER		F			

Data logging computer:

Data acquisition program: Seasave, V 7.18 C

CTD deck unit make: SBE model: 11+ serial number: 0424

Primary CTD

Make: SEA-BIRD model: 911 serial number: 0506

Primary temperature serial number: 2449

Primary conductivity serial number: 1764

Secondary temperature serial number: 2038

Secondary conductivity serial number: 3394

Transmissometer: _____

Model: WETLAB s/n: 1005 DR

Fluorometer: Model SEAPOINT Cable gain: 3 + 0.5 s/n: 2345 P, S or NO pump?

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

PAR sensor: BIO SPHERICAL/LICOR Model: _____

Other sensors: ALTIMETER s/n: 4694

Other sensors: _____ s/n: 1024 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: PIT - SBE s/n: 180692 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: _____

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

PAR sensor: _____ Model: _____ 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?

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

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

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JULY			Year 2010			Ship TULLY			Cruise ID 2010-36						
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							
21	SA	1841	BO	ROS	US	1	48° 39.00	123° 30.07	183		1-24	24	MR/GC	✓	PAR + pH ON Close all NISK @ surface to test
		1845	BO				48° 38.99	123° 30.08		175					
		1854	EN			2	48° 38.96	123° 30.08							Computer closing 1st NISK
22	SG-42	0042	BE	ROS	US	3	49° 09.05	123° 25.58	248		25-45	21	H.M.	✓	
		0049	BO				49° 09.11	123° 25.48		235					
		0107	EN				49° 09.22	123° 25.17							
22	CPE1	2226	BE	ROS	US	4	51° 00.09	127° 49.93	139		46-69	24	H.M.	✓	USER INPUT BOTTLER FIRE
		2229	BO				51° 00.07	127° 49.96		130					
		2246	EN				50° 59.95	127° 50.23							
22	CPE1	2330	BE	NET		5	50° 60.00	127° 50.23	140	130		-	H.M.	TB	BONGO
		2340	EN				50° 60.00	127° 50.23							
23	QCS1	0929	BE	ROS	US	6	52° 14.99	129° 03.00	170		70-91	22	MR	✓	OXY WEIRD ON ↑
		0933	BO				52° 15.02	129° 03.01		160					+LOOP FOR O,S,N,C
		0956	EN				52° 15.00	129° 03.00							→

This page is for any notes or observations

Oxygen sensor very low on upcast, looks like something wrong

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JULLET				Year 2010			Ship TULLY				Cruise ID 2010-30				
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							
23	QCS2	1157	BE	ROS	US	7	52° 08.97	129° 29.99	206						
		1202	BO				52° 08.97	129° 29.98		195	92-100	910	MR	✓	
		1211	EN				52° 08.95	129° 30.03							
23	QCS2	1251	BE	ROS	US	8	52° 09.03	129° 30.03	205					✓	
		1255	BO				52° 09.02	129° 30.02		195	102-123	22			
		1317	EN				52° 08.99	129° 30.09							
23	QCS2	13:28	BE	NOT		9	52° 08.98	129° 29.95	205						Will have to redo.
		13:46	BO				52° 08.87	129° 29.86		195					DNA Bouge
		13:49	EN				52° 08.87	129° 29.88							
23	QCS3	1506	BE	ROS		10	52° 03.02	129° 43.72	112				MR	✓	
		1509	BO				52° 03.01	129° 43.68		102	-	Ø			
		1510	EN				52° 03.02	129° 43.69							
23	QCS4	1653	BE	TH ROS	UN	11	51° 55.25	129° 58.18	140				IB/ER		TRACE METAL ROSETTE
		1701	BO				51° 55.24	129° 58.15		107	124-135	12			
		1712	EN				51° 55.24	129° 58.13							
23	QCS4	1722	BE	ROS		12	51° 55.26	129° 58.15	141				MR/IB	✓	
		1726	BO				51° 55.28	129° 58.18		130	136-154	19			
		1743	EN				51° 55.34	129° 58.07							

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JULY				Year 2010			Ship TULLY			Cruise ID 2010-36					
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							
23	QCS4	17:54	BE	NET		13	51 55.23	129 58.30	141				M.R.		DNA Bongo.
		17:58	BO				51 55.24	129 58.03		130					
		18:01	EN				51 55.28	129 57.96							
23	QCS5	19:34	BE	ROS CTD		14	51° 49.91	130° 13.67	206		—	—	H.m.	✓	
		19:34	BO				51° 49.91	130° 13.63		200					
		19:47	EN				51 49.92	130° 13.55							
23	QCS6	22:23	BE	ROS CTD		15	51 42.46	130 37.42	902				D.I	✓	
		22:39	BO				51 42.34	130 37.30		890	—				
		22:53	EN				51 42.34	130 37.23							
24	QCS7	00:09	BE	NET		16	51° 37.20	130° 46.05	1063	250			H.m.		BONGO
		00:12	EN				51° 37.24	130° 45.91							
24	QCS7	01:27	BE	ROS	U.S.	17	51° 37.19	130° 46.16	1043		155-178	24	H.m.	✓	REMOVED PAR
		01:45	BO				51° 37.13	130° 46.15		1065					
		02:23	EN				51° 37.17	130° 46.03							
24	QCS7	02:35	BE	ROS	U.S.	18	51 37.002	130 46.160							TMCAST South Bongo @ 50m.
			BO												
		03:19	EN				51 37.217	130 46.117		Cable jammed in stowage, damaged cable,					cast aborted.

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Month JULY				Year 2010			Ship TULLY				Cruise ID 2010-36				
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	QCS 8	0453	BE	CTD ^{ROS}		19	51° 34.33	130° 55.84	1322		—	—	H.M.	✓	DEPTH SOUNDER NOT WORKING PROPERLY
		0517	BO				51° 34.31	130° 56.00		1600					
		0542	EN				51° 34.25	130° 55.94							- pH SENSOR OFF
24	QCS 9	0902	BE	ROS		20	51° 18.61	131° 31.79	2320				MR	✓	
		0935	BO				51° 18.59	131° 31.76		2340	—	Ø			
		1010	EN				51° 18.59	131° 31.77							
24	QCS10	1348	BE	ROS	US	21	51° 01.20	132° 10.77	2727				MR	✓	PAR ON
		1354	BO				51° 01.20	132° 10.79		300	179-190	12			BIOLOGY ROSETTE
		1404	EN				51° 01.21	132° 10.80	2725						= 0654 local
24	QCS10	1455	BE	TMR	UN	22	51° 01.205	132° 10.784	2725				FB/ER		
		1606	BO				51° 01.208	132° 10.798		1805 2000	191-202	12			191-200, 19201, 19202
			EN												
24	QCS10	1807	BO	ROS		23	51° 01.18	132° 10.91	2730				MR/HM	✓	PAR OFF
		1851	BO				51° 01.25	132° 10.92		2757	201-222				
		1951	EN				51° 01.33	132° 10.86							
24	QCS10	2003	BE	NET		24	51° 01.~	132	2730				H.M.		BONGOS (DNA)
		2012	BO				51° 01.27	132° 10.90		250	—				
		2020	EN				51° 01.32	132° 10.99							

Month JULY				Year 2010			Ship TULLY				Cruise ID 2010-36				
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	HG 6	0633	BE	ROS	US	25	52° 11. 98	133° 27. 05	2738		223-246	24	H.M.	✓	
		0731	BO				52° 12. 00	133° 26. 98		2765			MR		
			EN												
25	HG 6	0849	BE	NET		26	52° 11. 98	133° 26. 29	2736		-		MR		
		0857	BO				52° 11. 968	133° 27. 087		250					25m bongo. DUA
		0901	EN				52° 11. 960	133° 27. 146	2738						
25	HG 6	0950	BE	TMR	UN	27	52° 11. 980	133° 27. 019	2734		247-258	12	MR	n/a	
		1035	BO				52° 12. 007	133° 26. 996		1808					
		1135	EN				52° 11. 999	133° 26. 998	2735						
25	HG 5	1421	BE	ROS		28	52° 23. 97	133° 00. 00	2797		-	-	MR	✓	CHL MAX ~ 32 TRANSMISSOMETER FUZZY BELOW 1700m
		1512	BO				52° 23. 99	132° 59. 98		2825					
		1556	EN				52° 23. 98	133° 00. 00							
25	HG 4	1743	BE	ROS	US	29	52° 32. 97	132° 42. 03	2920				MR	✓	PAR ON
		1750	BO				52° 33. 00	132° 41. 99		250	259-269	11			
		1800	EN				52° 32. 98	132° 42. 01							PAR OFF
25	HG 4	1843	BE	ROS	US	30	52° 33. 77	132° 43. 02	2920		270-290	21	H.M.	✓	
		1932	BO				52° 33. 75	132° 42. 94		2953					COMPUTER CRASH
		2043	EN			31	52° 33. 74	132° 43. 00							→

COMPUTER FROZE WHEN FIRING BOTTLE 13 (150m) RE BOOT / SWITCH CAROUSEL TO USER MODE, RETRIGGER 13 AND
CARRY ON WITH UP CAST - FORGOT TO TURN ON PUMP FOR CAST 31 (150m → 0)

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Month <u>JULY</u>			Year <u>2010</u>			Ship <u>TULLY</u>			Cruise ID <u>2010-36</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	HG 3	2221	BE	ROS	—	32	52° 38.98	132° 27.01	1910		—	—	H.M.	✓	
		2250	BO				52° 38.94	132° 27.00		1912					
		2317	EN				52° 38.97	132° 27.03							
26	HG 2	00:34	BE	ROS	V.S	33	52° 43.16	132° 17.87	1570					✓	COMPUTER CRASHED
		0105	BO				52° 43.19	132° 17.99		1617	291-307	15	H.M.		
			EN			34/35									AGAIN & AGAIN
26	HG 1	0300	BE	ROS	V.S	36	52° 45.65	132° 13.48	~400		308-321	14	H.M.	✓	
		0310	BO				52° 45.65	132° 13.41							NO CRASH?
		0328	GN				52° 45.67	132° 13.43							
26	HG 1	0357	BO	NET		37	52° 45.59	132° 13.53	1000						DNA BONGO
		0405	EN				52° 45.62	132° 13.54		250					
27	W1	1000	BE	ROS		38	56° 16.96	134° 56.38	151				MR/TB	✓	
		1005	BO				56° 16.97	134° 56.39		140	—	∅			PAR ON / PH ON
		1008	EN				56° 16.98	134° 56.38							
27	W2	1100	BE	TMR	UN	39	56° 15.180	135° 01.505	153		322-333	10	MR/ER		
		1108	BO				56° 15.174	135° 01.463		127					
		~ 1122	EN				56° 15.211	135° 01.457	153						
27	W2	1149	BO	NET		40	56° 15.214	135° 01.485	153		—	∅	MR/TB		DNA BONGO
		1152	EN				56° 15.212	135° 01.459	153	1410					

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

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- crashed at surface before logging any data but D.I. forgot to start archiving data right away. ;

AGAIN - @ 125m REBOOT TO FILE 34 @ 20m REBOOT TO FILE 35 - CRASHED AGAIN @ SURFACE

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

DAILY SCIENCE LOG				Ocean Sciences Division, Institute of Ocean Sciences											
Month JULIET				Year 2010			Ship TULLY			Cruise ID 2010-36					
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							
														✓	
27	W2	1207	BE	ROS	US	41	56°15.17	135°01.59	152						
		1212	Bo				56°15.18	135°01.57		142	334-357	24	MR		
		1230	EN				56°15.16	135°01.54							
27	W3	1338	BE	ROS		42	56°12.50	135°07.90	177				MR	✓	CHL MAX ~ 8?
		1343	Bo				56°12.51	135°07.85		165	—	∅			
		1347	EN				56°12.53	135°07.80							
27	W4	1428	BE	ROS		43	56°09.78	135°14.60	288				MR	✓	
		1435	Bo				56°09.78	135°14.56		280	—	∅			
		1440	EN				56°09.78	135°14.56							
27	W5	1525	BE	ROS	US	44	56°07.06	135°21.23	308				MR	✓	
		1532	Bo				56°07.06	135°21.25		300	358-376	19			
		1552	EN				56°07.05	135°21.24							
27	W6	1640	BE	ROS		45	56°04.36	135°27.99	566				MR/TB	✓	→
		1651	Bo				56°04.38	135°27.98		560	—	∅			
		1700	EN				56°04.37	135°27.97							
27	W7	1741	BE	NET		46	56°01.62	135°34.45	794.		—	∅		—	
		1747	Bo				56°01.63	135°34.48		250					
		1753	EN				56°01.63	135°34.49							

Bottle Firing Method:

Time Code:

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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:
BE = Beginning Time of Cast
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Transmissometer to be cleaned before each cast, do not use Ammonia products

Cast 45: Computer froze @ surface while communicating with CTD. Turned deck unit off and the computer worked ???

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Month				Year			Ship			Cruise ID					
JULIET				2010			TULLY			2010-36					
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							
27	W7	1808	BE	ROS	US	47	56° 01.62	135° 34.46	796		377-398	22	MR	✓	
		1829	BO				56° 01.62	135° 34.47		796					
		1902	EN				56° 01.63	135° 34.44							
27	W7	1911	BE	THR	U.N	48	56° 01.65	135° 34.44	799		399-410	12	1.B/R.		
		1929	BO				56° 01.65	135° 34.41		712					
			EN												
27	W8	2043	BE	ROS	U.S	49	55° 59.036	135° 41.32			411-433	23	H.M	✓	PAR OFF / PH OFF
		2100	BO				55° 59.03	135° 41.38		1300					
		2143	EN				55° 59.02	135° 41.41							
27	W9	2253	BE	ROS	—	50	55° 54.20	135° 52.73	2244		—		H.M	✓	
		2327	BO				55° 54.19	135° 52.76		2250					
		2358	EN				55° 54.12	135° 52.85							
28	W10	0200	BE	ROS	—	51	55° 44.81	136° 16.44	2659		—		H.M	✓	
		0239	BO				55° 44.72	136° 16.56		2687					
		0316	EN				55° 44.66	136° 16.72							
28	W11	0524	BE	ROS	—	52	55° 33.03	136° 41.88	2857		—		H.M	✓	
		0608	BO				55° 33.01	136° 42.01		2893					
		0649	EN				55° 33.02	136° 41.99							
28	W11	0657		DRF		53	55° 33.02	136° 42.04	2857						ARGO FLOAT 4503

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

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

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DRF = Drifter

THR = TRACER METAL

Bottle Firing Method:

US = Up / Stop

UN = Up / No stop

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Time Code:

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EN = End Time of Cast

DE = Deployment Time

MR = Messenger Release Time

RE = Recover Mooring Time

Notes:

Produced by the Water Properties Group, IOS

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Month <u>JULY</u>				Year <u>2010</u>			Ship <u>JOHN P TULLY</u>				Cruise ID <u>2010-36</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	W12	1035	BE	TMR	UN	54	55 18.548	137 09.042	2815				IB/ER MR/TB		→
		1149	Bo				55 18.604	137 09.121		2009	456-467	12			
		1336	EN				55	137							
28	W12	1401	Bo	Net		55	55 18.572	137 09.163	2815				MR/TB		DNA
		1405	EN				55 18.582	137 09.155		250	-	-			
28	W12	1519	BE	ROS	US	56	55 18.71	137 08.98	2808				MR/TB	✓	PAR ON →
		1525	Bo				55 18.69	137 08.98		150	468-479	12			
		1536	EN				55 18.64	137 09.03							PAR OFF
28	W12	1612	BE	ROS	US	57	55 18.60	137 09.00	2810				MR/TB	✓	SAMPLE # OUT OF SEQUENCE! →
		1712	Bo				55 18.58	137 09.01		2860	434-455	22			
		1825	EN				55 18.54	137 09.04							
											480				
28	Loop 7	21:51		USW			54 48.68	136 37.84							Sol, CLK x2, Net
28	Loop 8	2338		USW			54 32.57	136 21.08							DIC/ALK, OXY
29	Loop 9	0210		USW			54 9.91	135 57.73							"
29	DE9	04:50	Bo	Net		58	53° 48.18	135° 36.20	2860				HM DI		DNA
		05:03	EN				53° 48.05	135° 36.31							

Cast Type:

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 ROS = Rosette plus CTD
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USW = Sea Water Loop

MOR = Mooring

NET = Plankton Net Haul

DRF = Drifter

TMR = Trawl/Moored Trawl

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

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 06 March 2008

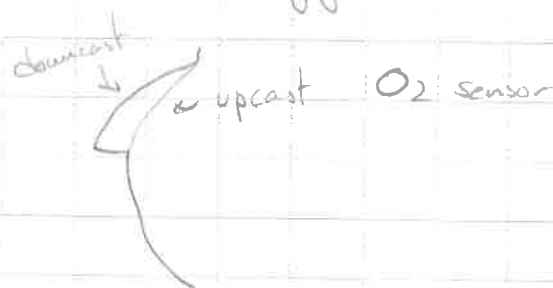
Notes:

Before cast 54: (Day 103 Pos)

Had to reboot @ beginning. Deck unit was stuck on 0.0.0.0.0.0.0. Changed deck unit. No luck. Got High. Cut termination, no luck, kept blowing fuses. Worked with cheater cable, so CTD + Deck Unit ok. Tried other winch, no luck. Finally after 4.5 hours w/ Vaughn too, cut slip-ring cable to realise that splice just down from the connection was full of water and corroded. Luck! MR

Cast 56. Started cast, forgot pumps. Dn to 10, back up, then pumps, then down. MR

Cast 57. Something weird happened w/ oxygen sensor ↓ ~ 750 dbar, big shift. MR
Not much in T or S.



DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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DAILY SCIENCE LOG				Ocean Sciences Division, Institute of Ocean Sciences											
Month <u>July</u>				Year <u>2010</u>			Ship <u>CCES John P. Tully</u>			Cruise ID <u>2010-36</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							
29	DE9	0535	BE	TMR	UN	59	53°48.352	135°35.781	2857		504-515	12	13/ER	✓	
		0624	BO				53°48.194	135°35.788		2007					
		0728	EN				53°48.341	135°35.967							
29	DE9	0757	BE	ROS	US	60	53°48.23	135°36.08	2858				MR	✓	
		0849	BO				53°48.24	135°36.09		2890	480-503	24			
		1002	EN				53°48.40	135°36.14							
29	DE8	1206	BE	ROS	—	61	53°53.67	135°06.56	2632				MR	✓	
		1258	BO				53°53.74	135°06.54		2661	—	∅	+TB		
		1339	EN				53°53.65	135°06.50							
29	DE8	1348	DE	DRF	—	62	53°53.74	135°06.49	2632		—				Argo 4508
29	DE7	1540	BE	ROS		63	53°59.98	134°40.76	2773						
		1628	BO				53°59.98	134°40.80		2803	—	∅	TB	✓	
		1718	EN				53°59.96	134°40.83							
29	DE6	1918	BE	ROS		64	54°06.47	134°15.28	23632		516-528		HM,DI	✓	PAR ON
		19:21	BO				54°06.51	134°15.22		150					
		19:31	EN				54°06.54	134°15.28							
29	DE6	2016	EN	ROS		65	54°06.43	134°15.29	2363				HM,DI		PAR OFF
		2050					54°06.45	134°15.16		2390					
		2122					54°06.44	134°15.12							
Transmissometer to be cleaned before each cast, do not use Ammonia products															

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

Cast Type:

BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SST = 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

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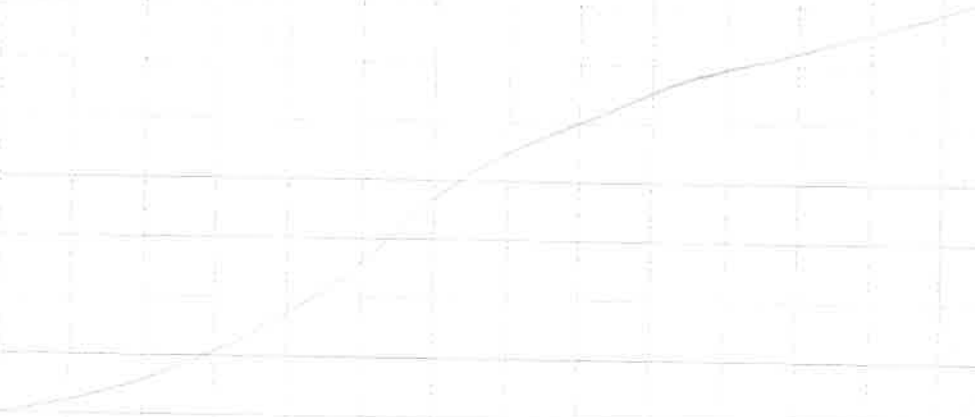
DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JULY				Year 2010				Ship TULLY				Cruise ID 2010-36			
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							
29	DE5	22:30	BE	ROS	U.S.	66	54° 09.50	134° 02.26	1811		529-549	21	H.M.	✓	computer froze and reboot
		23:00	BO				54° 09.50	134° 02.23		1820					when losing communication
			EN												
30	DE4	0052	BE	TMR	UN	67	54° 12.722	133° 49.428	444		550-561	12	IB/ER		PARON pH on
		0106	BO				54° 12.681	133° 49.514		425					↓ ↓
			EN												
29	DE4	0141	BE	ROS	US	68	54° 12.81	133° 49.51	440		562-582	21	H.M./A.L.	✓	
		0148	BO				54° 12.80	133° 49.51							
		0212	EN				54° 12.77	133° 49.53							
30	DE4	0224	BE	NET		69	54° 12.79	133° 49.30	440				H.M.		
		0240	EN				54° 12.75	133° 49.29							
30	DE3	0334	BE	ROS		70	54° 15.76	133° 37.04	279		—		H.M.	✓	
		0338	BO				54° 15.73	133° 37.02		270					
		03	EN				54° 15.	133° 37.							
30	DE2	04:40	BO	NET		71	54° 19.20	133° 24.11	380				H.M.		BONGO DNA
		04:59	EN				54° 19.24	133° 24.06							
30	DE2	05:09	BE	ROS		72	54° 19.27	133° 23.93	390		583-601		DI		
		05:15	BO				54° 19.23	133° 23.91		395					
		05:35	EN				54° 19.21	133° 23.94	405						

This page is for any notes or observations

bottom bottle (1) doesn't appear in Bot. fire seg. or screen. although it appeared to fire.



DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month JULLET				Year 2010			Ship TULLY			Cruise ID 2010-36					
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	DE2	06:01	BE	TMR		73	54° 19.21	133° 24.03			602-613		1B/ER		
		06:10	BO				54° 19.	133° 24.01		335					
		06:26	EN				54° 19.18	133° 24.04							
30	DE1	0800	BE	ROS		74	54° 23.88	133° 02.173	200		-	Ø	TB	✓	
		0805	BO				54° 23.88	133° 02.229		190					
		0809	EN				54° 23.87	133° 02.227							
30	DE0	10:41	BE	ROS		75	54° 25.48	132° 17.91	336				TB		
		10:48	BO				54° 25.48	132° 17.91		322	614-637	24		✓	
		11:14	EN				54° 25.48	132° 17.94							
30	ASN	17:50	BE	ROS		76	53° 55.93	131° 04.01	73		638-650	13	TB	✓	wrong depth in header
		17:52	BO				53° 55.92	131° 04.03		60					
		18:06	EN				53° 55.93	131° 04.04							
	Loop 12			USW			53° 43.21	131° 13.23							SAL/CHL/2AL/0XY/NO3
	Loop 13			USW			53° 22.25	131° 35.84							" " " " "
31	HSC	00:03	BE	ROS		77	53° 12.12	131° 02.74	52		651-663	13	D.I.		
		00:12	BO				53° 12.12	131° 02.74		45					
		00:22	EN				53° 12.12	131° 02.74	51						

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>JULY/AUG</u>		Year <u>2010</u>		Ship <u>TULLY</u>		Cruise ID <u>2010-36</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							
31	HSI	0721	BE	ROS	US	78	52° 37.99	131° 22.31	81				MR	✓	
		0723	BO				52° 37.99	131° 22.28		75	664-679	16			
		0735	EN				52° 37.97	131° 22.24							
31	HSS	0946	BE	ROS	US	79	52° 22.83	131° 03.95	123		680-691	12	TB	✓	
		0948	BO				52° 22.81	131° 03.96		111					
		1001	EN				52° 22.77	131° 03.95							
31	AQ1	1537	BE	ROS	US	80	52° 49.83	130° 37.99	101				MR	✓	+LOOP CHK, NUT, SAL, OXY
		1540	BO				52° 49.83	130° 38.00		91	692-703	12			
		1552	EN				52° 49.84	130° 38.01							
31	AQ2	1807	BE	ROS	US	81	52° 59.48	130° 07.47	230				MR	✓	
		1812	BO				52° 59.46	130° 07.49		221	704-726	23			
		1833	EN				52° 59.48	130° 07.55							
<u>Aug</u> 01	QCS 7	0525	BE	TAR	UN	82	51° 37.62	130° 46.17	1060		727-738	12	16/162		SPEGOTS ON #8, 11 REPLACED
		0534	BO				51° 37.175	130° 46.220		1055					ONLY PH OFF
			EN				51	130							
01	QACS 8	1619	BE	ROS	US	83	50° 05.99	130° 02.97	1965				MR	✓	Biology Rosette
		1622	BO				50° 05.99	130° 02.96		100	739-750	12			
		1630	EN				50° 05.97	130° 02.97							

Cast Type:

BOT = Bottle cast, no CTD
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 NET = Plankton Net Haul
 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
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 EN = End Time of Cast

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

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DAILY SCIENCE LOG

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Month <u>Aug</u>				Year <u>2010</u>			Ship <u>TULLY</u>				Cruise ID <u>2010-36</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							
1	OACSB	1650	BE	TMR	UN	84	50° 06.001	130° 02.985	1961		761-762	12	HM/ER		
		1734	BO				50° 06.007	130° 02.982		1850					
		1850	EN				50° 05.992	130° 02.996							
1	OACS 8	1910	BE	ROS	US	85	50° 06.01	130° 03.00	1963		763-786	24	HM/DI	✓	PARZ OFF
		1938	BO				50° 05.98	130° 03.04		1979					
		20126	EN				50° 06.01	130° 02.98							
		20146	BE	NET		86	50° 06.02	130° 03.06	1963				HM.		BONGO / DNA
1	OACS 8	2051	EN				50° 06.03	130° 03.02		250					
1	Loop 16		USW	Loop		-	50° 14.72	129° 42.38							O ₂ /NUTS/SAL/CHL
2	OCS 7	00:09	BE	ROS		87	50° 22.92	129° 23.97	1920		CTD only		HM DI	✓	
		0041	BO				50° 22.88	129° 24.06		1941					
		0112	EN				50° 22.87	129° 23.99							
2	OCS 6	02:23	BE	ROS		88	50° 28.77	129° 11.96	1996				HM/DI	✓	
		0254	BO				50° 28.76	129° 11.99	1996	2008	-	φ			
		0321	EN				50° 28.78	129° 11.98							
2	OACS 5	0434	BE	ROS		89-91	50° 34.50	129° 00.07	1859		787-810	24	HM/DI	✓	*
		0505	BO				50° 34.51	129° 00.15		1875					
		0608	EN				50° 34.49	129° 00.07	1860						
				N											

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 DRF = Drifter
 =

Bottle Firing Method:

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Notes:

Time Code:

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 MR = Messenger Release Time
 RE = Recover Mooring Time

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

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This page is for any notes or observations

*computer crashed twice - both times when bottles were being fired (bottles 16 and 17)
turned deck unit off - cursor came back - restarted ~~file~~ data archiving

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>April</u>				Year <u>2010</u>		Ship <u>T-116</u>		Cruise ID <u>2010-36</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							
2	OACS4	0659	BE	NET		92	50° 36.89	128° 54.03	1270	250	—	0	TM-MR	—	Recy. ^
			Bo												
		0714	EN				50° 36.91	128° 54.02							
2	OACS4	0745	BE	TMR	UN	93	50° 36.916	128° 53.778	1270		811-822	12	1B/ER		
		0823	Bo				50° 36.952	128° 54.044		1155					
		0913	EN				50° 37.057	128° 54.147					MR/TB	✓	PH ON
2	OACS4	0930	BE	ROS	US	94	50° 36.88	128° 53.94	1250						
		0956	Bo				50° 36.93	128° 53.96		1200	823-844	22			→
		1037	EN			95	50° 36.93	128° 53.94					MR	✓	
2	OACS3	1138	BE	ROS	—	96	50° 39.05	128° 49.74	232						
		1144	Bo				50° 39.07	128° 49.73		220	—	0			
		1151	EN				50° 39.12	128° 49.71					MR	✓	PAR ON
2	OACS2	1223	BE	ROS	US	97	50° 40.77	128° 45.55	189						
		1228	Bo				50° 40.76	128° 45.58		175	845-864	20			
		1246	EN				50° 40.76	128° 45.55							
2	OACS2	1259	BE	TMR	UN	98	50° 40.791	128° 45.554	175		865-876	12	1B/ER		
		1306	Bo				50° 40.781	128° 45.573		165					
		1330	EN				50° 40.806	128° 45.543							

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

Cast Type:

BOT = Bottle cast, no CTD
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 ROS = Rosette plus CTD

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

Bottle Firing Method:

US = Up / Stop
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Time Code:

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Cast 95/96: Comp. Rize when closing NISK 17, 5 dbw. PR
No reboot, just turn off deck unit + start new file

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>Aug</u>				Year <u>2010</u>			Ship <u>TULLY</u>			Cruise ID <u>2010-36</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							
2	OACSI-CPE1	1428	BE	NET		99	50° 42.97	128° 40.22	125				TBMR		DNA
		1431	BO				50° 42.97	128° 40.23		115					
		1435	EN				50° 42.96	128° 40.26							
2	OACSI-CPE1	1452	BE	ROS	US	100	50° 43.01	128° 40.20	124				ML	✓	
		1456	BO				50° 43.01	128° 40.19		115	877-900	24			
		1511	EN				50° 43.00	128° 40.20							
3	BP1	0139	BE	ROS	US	101	50° 04.82	127° 52.77	51		901-909	9	HM/D1	✓	
		0142	BO				50° 04.77	127° 52.84		46					
		0148	EN				50° 04.74	127° 52.89							
3	BP2	0217	BE	ROS	US	102	50° 04.05	127° 54.20	96		910	1	HM/D1	✓	
		0219	BO				50° 04.05	127° 54.22		90					
		0221	EN				50° 04.07	127° 54.22							
3	BP3	0231	BO	NET		103	50° 03.23	127° 55.51	170						
		0249	EN				50° 03.29	127° 55.63		150					
3	BP3	0318	BE	ROS		104	50° 03.23	127° 55.33	165		923-942	20	HM/D1	✓	
		0321	BO				50° 03.22	127° 55.33		155					
		0339	EN				50° 03.36	127° 55.37							

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Bottle Firing Method:

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Notes: _____

Time Code:

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

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DAILY SCIENCE LOG

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Month			Year			Ship			Cruise ID						
A00T			2010			TULLY			2010-36						
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							
03	BP3	1603	BE	ROS	US	105	50°03.15	127°55.34	169				MR/TB	✓	
		1607	BO				50°03.16	127°55.34		160	943-951	9			
		1616	EN				50°03.18	127°55.31							
03	BP4	1656	BE	ROS	-	106	50°01.37	127°58.12	?				MR/TB	✓	PH AND PAR OFF
		1718	BO				50°01.42	127°58.07		1055	—	Ø			
		1735	EN				50°01.43	127°58.13							
3	BP5	1759	BE	ROS	US	107/08	49°59.98	127°59.96	1274				MR/TB	✓	
		1826	BO				49°59.98	127°59.97		1277	952-973	22			
		1915	EN				50°00.00	127°59.98	1275				HM/DE		COMPUTER FREEZE @ 70-REBOOT
3	BP5	1924	BE	NET		108	49°59.99	127°59.99	1275						
3	BP5	2000	BE	TMR	UN	109	50°00.025	127°59.95	1275		974-985	12	IB/ER		
		2030	BO				50°00.057	127°59.992		1206					
		2056	EN												
4	Loop 20	0436		LOOP			49°33.97	127°40.90							O ₂ /NUT/SAL/CHL YZ
4	Loop 21	1240		LOOP			49°46.25	127°44.71					TB		O ₂ /NUT/SAL/CHL XZ
4	Loop 22	1729		LOOP									MR		O ₂ /NUT/SAL/CHL/DIC
4	Loop 23	1753		LOOP			49°55.4813	127°46.2873					MR		O ₂ -NUT-SAL-CHL-DIC
4	Loop 24	1824		LOOP			49°50.02	127°52.16	1126				MR		O, N, S, C, D
4	Loop 25	1859		LOOP			49°43.99	127°58.52					TB		O, N, S, C, D

Cast Type:

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

USW = Sea Water Loop
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Transmissometer to be cleaned before each cast, do not use Ammonia products

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This page is for any notes or observations

Back to LBP3 @ 0900 local after SAR call

DAILY SCIENCE LOG

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Month <u>August</u>				Year <u>2010</u>			Ship <u>Tully</u>			Cruise ID <u>2010-36</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
4	60026	1930		Loop			49° 39.00	128° 03.59	1878				H.M.		ONS CD
4	Loop 27	2306		Loop			49° 35.03	127° 36.39	612		O ₂ = 1338		H.M.		ONS CD
5	BP6	0226	BE	ROS	-	110	49° 56.14	128° 05.55	771					✓	CTD ONLY
		0240	BO				49° 56.15	128° 05.71		791		Ø			
		0251	EN				49° 56.20	128° 05.80							
5	BP7	0549	BE	ROS	V.S	111/	49° 52.41	128° 11.21	2176		986-1009	24	H.M./A.I.	✓	SPIGOS IN SAL
		0624	BO			113	49° 52.39	128° 11.18		2216					→
		0723	EN				49° 52.39	128° 11.17							
5	BP7-	0347	BE	TMR	V.N.	112	49° 52.42	128° 11.105	2170		1010-1021	12	IB/ER		
		0438	BO				49° 52.459	128° 11.244		2007					
		0538	EN				49° 52.535	128° 11.155	2178						
5	BP7	0752	BE	NET	-	114	49° 52.405	128° 11.196	250						Bongo
		0801	BO				49° 52.415	128° 11.218							
		0806	EN				49° 52.473	128° 11.191							
5	BP8	0859	BE	ROS	-	115	49° 48.58	128° 16.74	2065				MR	✓	
		0941	BO				49° 48.60	128° 16.81		2080	-	Ø			→
		1020	EN				49° 48.58	128° 16.81							
5	BP9	1152	BO	NET	-	116	49° 40.27	128° 30.00	2175						DNA Bongo
		1156	EN				49° 40.18	128° 30.01		250					

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

Cast Type:

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 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
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 RE = Recover Mooring Time

Produced by the Water Properties Group, IOS

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 Version: 06 March 2008

Cast 0111: Froze @ 30 dbar ↑, NISK 16. End cast is 0113.
Froze again @ 0 when closing last (NISKIN #14). MK

BP8 cast 0115: O₂ sensor shows negative values - 900 1000 dbar MK

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>Aug</u>				Year <u>2010</u>			Ship <u>TULLY</u>			Cruise ID <u>2010-36</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
5	BP9	1213	BE	ROS	US	117	49 40.19	128 30.02	2134				MR	✓	PAR ON
		1215	BO				49 40.19	128 30.03		100	1022-1034	13			
		1224	EN				49 40.18	128 29.98							PAR OFF
5	BP9	1252	BE	TNR	UN	118	49 40.197	128 32.022	2141			12	18/ER		
		1428	BO				49° 40.201	128° 29.986		2082	1035-1046				
		1542	EN				49 40.171	128 29.960							
5	BP9	1552	BE	ROS	US	119	49 40.17	128 29.95	2145				MR	✓	NO ALT? →
		1627	BO				49 40.21	128 29.96		2170	1047-1066	20			
		1719	EN				49 40.22	128 29.95							
5	LOOP 28	1944		LOOP			49 34.69	127 54.39					N ²		O ₂ , N, S, DIC, CHL
5	Loop 29	2128		LOOP			49 29.63	127° 26.32					HM		O ₂ , N, S, DIC, CHL
5	Loop 30	2206		LOOP			49 27.53	127° 15.89					N ²		" " " " "
6	G 1	0108	BE	ROS		120	49° 20.49	126° 35.03	57		—		HM	✓	PAR / PH ON
		0109	BO				49° 20.47	126° 35.03		50					
		0110	EN				49° 20.47	126° 35.03							
6	G 2		BE	ROS		121	49° 18.73	126° 38.18	101		1067-1079		D.I.		
			BO				49° 18.74	126° 38.18		90					
			EN				49° 18.77	126° 38.18	101						

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 =

Bottle Firing Method:
 US = Up / Stop
 UN = Up / No stop
 DN = Down / No stop
Notes:

Time Code:
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 EN = End Time of Cast
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Transmissometer to be cleaned before each cast, do not use Ammonia products

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This page is for any notes or observations

Cast 119: CTD depth is 2140, sounder says 2145, no altimeter? MR
Finally hooked in, alt = 27

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month AUG				Year 2010			Ship Tully			Cruise ID 200-36					
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	G2	01:57	BO	NET		122	49° 18.79	126° 38.14	100		—	—	H.M.	—	BONGO
		02:07	EN				49° 18.83	126° 38.17							
6	G3	02:51	BE	ROS	—	123	49° 14.99	126° 43.68	126		1097			✓	CTD - Bot @ 5. #1097
		02:53	BO				49° 14.96	126° 43.72		118					
		02:55	EN				49° 14.98	126° 43.76							
6	G4	03:56	BE	ROS	U.S	124	49° 11.29	126° 49.22	146		1080-1096	17	H.M/D.I.	✓	
		03:59	BO				49° 11.29	126° 49.20		136					
		04:15	EN				49° 11.31	126° 49.23							
6	G4	03:38	BE	NET		125	49° 11.24	126° 49.36	146						DNA BONGO
		03:45	EN				49° 11.28	126° 49.30							
6	G5	05:06	BE	TMR		126	49 07.330	126 55.248	277		1098-1109	12	ER/IB		
		05:23	BO				49 07.352	126 55.301		255					
		05:37	EN				49 07.334	126 55.238							
6	G5	05:47	BE	ROS		127	49° 07.36	126° 55.27	274		1110-1124	15	H.M/D.I.	✓	
		05:52	BO				49° 07.35	126° 55.26		265					
		06:09	EN				49° 07.35	126° 55.22							
6	G6	06:58	BE	ROS	—	128	49° 03.46	127° 01.14	947		—	Ø		✓	PAR OFF
		07:13	BO				49° 03.47	127° 01.20		958					COMP FROZE @ START
		07:35	EN				49° 03.49	127° 01.19							

Cast Type:
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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
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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

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 21 of

Month <u>ADOT</u>				Year <u>2010</u>			Ship <u>TULLY</u>				Cruise ID <u>2010-36</u>					Page <u>21</u> of <u> </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									
6	G7	0837	BE	ROS	US	129	48°59.33	127°07.24	1753				MR	✓	PH sensor OFF		
		0912	BO				48°59.36	127°07.23		1760	1125-1148	24					
		1009	EN				48°59.38	127°07.22									
6	G7	1020	BE	TMR	UN	130	48°59.391	127°07.232	1752				KS/ER				
		1113	BO				48°59.391	127°07.243		1708	1149-1160	12					
		1239	EN				48°59.404	127°07.199									
6	G7	1253	BE	NET		131	48°59.39	127°07.20	1756				TB		Bongo Reg.		
		1302	BO				48°59.38	127°07.21		250							
		1306	EN				48°59.39	127°07.21									
6	G8	1400	BE	ROS	—	132	48°55.26	127°13.15	2059		—	Ø	TB/MR	✓			
		1437	BO				48°55.28	127°13.30		2070							
		1513	EN				48°55.30	127°13.31									
6	G2	1804	BE	ROS	US	133	48°36.01	127°42.02	2115				MR	✓	PAR ON		
		1807	BO				48°35.99	127°42.03		100	1161-1172	12					
		1816	EN				48°35.97	127°42.10									
		1824	BE	NET		134	48°36.03	127°41.95		250					DNA		
		1829	BO				48°36.00	127°41.80									
		1833	EN				48°35.99	127°41.72									
Cast Type: USW = Sea Water Loop Bottle Firing Method: Time Code:																	

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

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

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 Version: 06 March 2008

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>AUGUST</u>				Year <u>2010</u>			Ship <u>TULLY</u>				Cruise ID <u>2010</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							
6	G9	1853	BE	ROS	US	135	48° 36.00	127° 41.88	2110		1173-1194	22	HM/D.L.	✓	PAR - OFF
		1935	BO				48° 35.95	127° 42.34							
		2038	EN				48° 35.69	127° 42.69							
6	G9	2047	BE	TMR	UN	136	48° 35.875	127° 42.774	2359						
		2140	BO				48° 35.888	127° 43.131		2003	1195-1206	12	13/EL		
		2237	EN				48° 35.771	127° 43.481							
7	Loop	0103		Loop 31			48° 17.34	127° 26.83	2608		—		HM/MLP.		O ₂ , S, N, DIC/ALK/CHL
7	Loop	0200		Loop 32			48° 21.915	127° 24.59	2594				"		O ₂ , S, N, DIC/ALK/CHL
7	Loop	0303		Loop 33			48° 31.96	127° 22.98	2570				"		O ₂ , S, N, DIC/ALK/CHL
7	Loop	0402		Loop 34			48° 41.74	127° 21.07	2542				"		O ₂ , S, N, CHL, DIC/ALK
7	Loop	0501		Loop 35			48° 51.03	127° 19.46	2053				"		O ₂ , S, N, CHL, DIC/ALK
7	Loop	0601		Loop 36			49° 00.35	127° 17.69	1944				"		O ₂ , S, N, CHL, DIC/ALK
7	Loop	0701		Loop 37			49° 09.51	127° 16.80	1502				MR MD		O ₂ , S, N, CHL, DIC/ALK
7	Loop	0807		Loop 38			49° 19.18	127° 14.80	789				"		O ₂ , S, N " DIC/ALK
7	Loop 38	0901		Loop			49° 27.41	127° 13.07	176				MR		"
7	L53	1015	BE	ROS	US	137	49° 39.11	127° 11.16	124					✓	
		1018	BO				49° 39.12	127° 11.15		115	1207-1220	14			
		1030	EN				49° 39.13	127° 11.13							

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 DRF = Drifter

____ = _____

Bottle Firing Method:

US = Up / Stop
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Notes:

Time Code:

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

Produced by the Water Properties Group, IOS

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 Version: 06 March 2008

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>Aug</u>				Year <u>2010</u>			Ship <u>TULLY</u>				Cruise ID <u>2010-36</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
7	LJ4	1121	BE	ROS	US	138	49°35.50	127°16.90	160		1221-1244	24	TBMR	✓	
			BO							150					
		1142	EN				49°35.51	127°16.73							
7	LJ5	1238	BE	ROS	US	139	49°31.64	127°22.53	1060				MRTB	✓	→
		1256	BO				49°31.64	127°22.52		1050	1245-1262	18			
		1326	EN				49°31.59	127°22.52							
7	Loop 40	1459		UWS	—	—	49°30.99	127°29.70	1083				MR		DIL OXY WAT SAL CHL
7	loop 41	1558		UWS	—	—	49°32.07	127°23.61	915				TB		DONSC
7	Loop 42	1700		UWS	—	—	49°25.87	127°30.64	1436				MR		1)
7	Loop 43	1756		UWS	—	—	49°33.07	127°41.99	888				TB		DONSC
7	Loop 44	1904		UWS			49°40.59	127°27.22	495				H.M.		O, N, S, CHL (210.00)
7	Loop 45	2010		UWS			49°33.84	127°16.60	413				H.M.		O, N, S, CHL, "
7	Loop 46	2100		UWS	—	—	49°26.92	127°17.25	659				H.M.		O, N, S, CHL, "
7	loop 47	2355		UWS			49°05.70	126°54.56	315						
8	Loop 48	0108		UWS			48°57.46	126°40.75							
8	Loop 49	0204		UWS			48°51.17	126°30.30	201						O, N, S, CHL
8	C7	04:45	BE	ROS	U.S	140	48°32.88	126°0.59	130		1263-1278	16	H.M./O.I.	✓	
		04:48	BO				48°32.88	126°0.60		119					
		05:03	EN				48°32.86	126°0.64	131						

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Cast 139: NISK 19→24: all closed @ 0 m but not sampled.
Closed before long steam. MR

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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DAILY SCIENCE LOG				Ocean Sciences Division, Institute of Ocean Sciences											
Month <u>August</u>				Year <u>200</u>			Ship <u>Tully</u>			Cruise ID <u>2010-36</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
8	C7	0519	BE	TMR	UN	141	48° 32.890	126° 00.617	130		1279-1280	12	MS/EN/LS		
		0526	BO												
		0540	EN												
8	C6	0624	BO	ROS	-	142	48° 36.45	125° 54.00	91		-	-			CTD ONLY
		0626	BO				48° 36.47	125° 54.01		85					pH AND PAR ON
		0628	EN				48° 36.48	125° 54.01							
8	C6	0639	BO	NET	-	143	48° 36.53	125° 54.00	91						DATA BONGO
		0642	EN				48° 36.53	125° 53.99		75					
8	LC5	0727	BE	ROS	-	144	48° 39.96	125° 47.41	65			Ø	MR	✓	
		0729	BO				48° 39.93	125° 47.44		55	-				
		0730	EN				48° 39.92	125° 47.45							
8	LC4	0819	BE	ROS		145	48° 43.43	125° 40.88	167		1291-1308	18	MR	✓	oopsym... pH cap left on
		0823	BO				48° 43.44	125° 40.92		157					
		0840	EN				48° 43.53	125° 40.93							
8	LC3	0929	BE	ROS	-	146	48° 47.01	125° 34.30	134		-	Ø	MR	✓	
		0932	BO				48° 47.00	125° 34.30		125					
		0934	EN				48° 47.02	125° 34.30							

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Bottle Firing Method:

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

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month				Year			Ship				Cruise ID				
A00T				2010			TULLY				2010-36				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
8	LC2	1002	BE	ROS	—	147	48° 48.66	125° 30.91	109					✓	
		1004	BO				48° 48.66	125° 30.91		100	—	Ø	MR		
		1006	EN				48° 48.68	125° 30.90							
8	LC1	1039	BE	ROS	WS	148	48° 50.44	125° 27.66	90		1309-1336	22	TB	✓	closed bottles 23+24
		1040	BO				48° 50.44	125° 27.64		80					to ensure all bottles
		1055	EN				48° 50.45	125° 27.56							were closed for steam
9	BC1	0014	BE	VMP		149	48° 22.4858	125° 54.8492	457						
			EN				48° 22.6724	125° 55.2480							
9	BC1	10:26	BE	ROS		150	48° 22.42	125° 55.06	456		1331-1343	13	DITB	✓	
		10:35	BO				48° 22.48	125° 55.01	440	435					
		10:55	EN				48° 22.51	125° 55.05	428						
9	C7	12:15	BE	ROS		151	48° 32.90	126° 00.52	126		Ø	—	D.I.	✓	
		12:18	BO				48° 32.90	126° 00.51		115					
		12:21	EN				48° 32.92	126° 00.48							
9	C8	13:05	BE	ROS		152	48° 29.45	126° 07.04	196		Ø	—	TB	✓	
		13:08	BO				48° 29.45	126° 07.04		185					
		13:12	EN				48° 29.46	126° 07.05							
9	C9	05:52	BE	NET		153	48° 25.90	126° 13.59	586				TB		surface tow last
			EN				48° 25.89	126° 12.92							20 m. Reg.

DAILY LOG BOOK

MISSION
NUMBER

2010-36

DATE:

From: 20 JULY to: 17 AUGUST 2010

VESSEL:

J.P. TULLY

PROJECT:

OCEAN ACIDIFICATION

- BOOK 2

INSTITUTE OF OCEAN SCIENCES
OCEAN SCIENCES AND PRODUCTIVITY DIVISION
SIDNEY, BC, CANADA

Captain: _____
 Second Officer: _____
 First Officer: _____
 Third Officer: _____

Mission Participants / Agencies:

Scientific Personnel: _____
Name _____
Party Chief: _____
W. L. _____

[illegible]

Second leg of Mission:

Party Chief:

[illegible]

Data logging computer:

Data acquisition program: SCASQUE 11718 (
aging computer.

CTD deck unit make: SEASON V718 model: CB serial number: 0476

Primary CTD

Make: SCABED

Make: SCABED model: 9 serial number: 0506

Primary temperature serial number: 2449

Primary conductivity serial number: 1764

Secondary temperature serial number: 2036

Secondary conductivity serial number: 3294

Transmissometer:

Transmissometer: _____ Model: WT1A8 s/n: 1005 ΔR
Fluorometer: Model _____

Transmissometer: _____ Model: WETLAB s/n: 1005 DR
 Fluorometer: Model SEAPOINT Cable gain: 3x0.5 s/n: 2345
 Oxygen sensor: SBE 1 Model: 17 s/n: 2345 P, S or NO pump?

Oxygen sensor:	Model:	s/n:	P, S or NO pump?
SAE		2503	
PAR sensor:	Model:	43	
Booster, CAL 2100		1176	

Other sensors: AI TIME Model: 4694 s/n: 4694

Owner sensors: AL-TIME-EE s/n: 1024 P, S or NO pump?

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

Panel sensors: 44-586 r, S or NO pump? _____
 Other sensors: _____ s/n: 0692 P, S or NO pump? _____

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

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

Buoy CTD

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

Secondary CTD

Make: _____ model: _____ serial number: _____
 Primary temperature serial number: _____

primary temperature serial number: _____ model: _____

primary conductivity serial number:

secondary temperature serial number:

Secondary conductivity serial number:

transmissometer: _____
Model: _____

fluorometer: Model _____
 Model: _____
 Cable gain: _____

Model: _____
Cable gas _____
oxygen sensor: _____

Model: _____

AR sensor: _____

Model: _____

Model: _____
 other sensors: _____

Other sensors:

other sensors:

ther sensors:

540

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

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month <i>AUGUST</i>				Year <i>2010</i>			Ship <i>TULLY</i>				Cruise ID <i>2010-36</i>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	#of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
9	C9	1428	BE	ROS	VS	154	48° 25.900	126° 13.650	610						no sample #1366, N2O
		1440	BO				48° 25.915	126° 13.681		602	1344-1366	23	N ²	Y	fired twice .. oops!
		1512	EN				48° 25.902	126° 13.685							
9	C9	1521	BE	TMR		155	48° 25.91	126° 13.68	600		1367-1378	12	ER, CS, JM		
		1536	BO				48° 25.91	126° 13.68							
			EN												
9	C10	1702	BE	ROS		156	48° 22.42	126° 20.14	1240		Ø	—	TB	Y	PAR+PH off.
		1723	BO				48° 22.40	126° 20.16		1200					
		1744	EN				48° 22.41	126° 20.14							
9	C11	1833	BE	ROS		157	48° 18.99	126° 26.68	1470		Ø	—	TB ^{HM}	Y	
		1858	BO				48° 18.98	126° 26.66		1456					
		1921	EN				48° 19.03	126° 26.69							
9	BC2	2112	BE	VMP		158	48° 18.4744	126° 03.4164	933.7						
10	BC2		EN	VMP			48° 18.	126° 03.25	823						
10	BC2	09:55	BE	ROS		159	48° 18.76	126° 05.37	866		1379-1394				PAR ON
		10:07	BO				48° 18.73	126° 05.45	865	860			D/TB		* altimeter did not
		10:38	EN				48° 18.69	126° 05.72	883						kick in sonar steady
10	LOOP 50	1149		USW			48° 17.21	126° 19.89							-OXY -ONLY

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flow to underway fluorometer back on @ 4:40 local on Aug 16th. Not sure how long it
was off but it wasn't flowing after Wiley had cleaned flow-meter.

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month <i>AUGUST</i>				Year <i>2010</i>			Ship <i>TULLY</i>				Cruise ID <i>2010-36</i>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	#of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
10	LC12	1329	BE	ROS	US	160	48° 15.02	126° 39.95	2520		1395-1404 (1427-1428)	12	TB	✓	Biol Rosette
		1331	BO				48° 15.05	126° 39.93		100					
		1341	EN				48° 15.01	126° 40.05							
10	LC12	1401	BO	NET		161	48° 15.09	126° 40.01			—	—	TB/N ²		DNA Bow G-0
		1405	EN				48° 15.13	126° 39.94		250					162 taken when latch on lars froze.
10	LC12	1445	BE	ROS	US	162	48° 15.04	126° 40.00	2512		1405-1426	22	N ² /TB		didn't archive on 162
		1529	BO			164	48° 15.11	126° 40.00		2537					→
		1645	EN				48° 15.06	126° 40.14							
10	LC12	1702	BE	TMR	UN	165	48° 15.000	126° 40.021	2520		1429-1440	12	ER		
		1757	BO				48° 14.902	126° 40.057		2010					
			EN												
10	BC3		BE	VMP		166	48° 19.80N	126° 01.27W	910						PAR/PA ON →
11	BC3	10:08					48° 19.90	126° 01.29							
11	BC3	10:19	BE	ROS		167	48° 19.87	126° 02.53	890		1441-1458				altimeter didn't kick in. Sander bounding quite a bit
		10:39	BO				48° 19.84	126° 02.62	930	915					
		11:12	EN				48° 19.81	126° 02.68	945						
11	MLO	1554	BE	ROS	US	168	47° 51.51	125° 10.47	240		1459-1482	24	TB		
		1559	BO				47° 51.52	125° 10.46		230					
		1624	EN				47° 51.48	125° 10.27							

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- PAR-OFF

→ computer froze @ bottle firing @ 400 m, turned off deck unit, and powered back on, restarted event #164, re-fired bottle 10 and resumed cast.

20:51 10/8/10

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Ocean Sciences and Productivity Division

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
11	WH 1	2247	BE	ROS	U.S.	169	47° 08.47	124° 23.98	50		1483-1493	11	H.A.	✓	
		2249	BO			170	47° 08.47	124° 24.02		43					COMPUTER FREEZE W
		2302	EN			171	47° 08.51	124° 24.11							3 FILES on 1 CAST
11	WH 1	2315	BO	NET	-	172	47° 08.41	124° 24.62							BONGO
		2320	EN				47° 08.41	124° 24.62							
1	WH 2	0010	BE	ROS	-	173	47° 08.35	124° 33.37	73		—	-	H.A.	✓	
		0012	BO				47° 08.34	124° 33.38		67					
		0013	EN				47° 08.32	124° 33.39							
12	WH 3	0105	BE	ROS	U.S.	174	47° 08.44	124° 41.49	104		1494-1510	17		✓	COMPUTER FREEZE
		0107	BO			175	47° 08.44	124° 41.48		100					
		0122	EN				47° 08.45	124° 41.50							
12	WH 4	0214	BE	ROS	-	176	47° 08.46	124° 50.68	143					✓	
		0217	BO				47° 08.45	124° 50.71		138	—				
		0219	EN				47° 08.46	124° 50.71							
12	WH 5	0316	BE	TRR	UN	177	47° 08.490	124° 58.743			1511-1522	12			
		0321	BO				47° 08.485	124° 58.779							
		0332	EN				47° 08.476	124° 58.863							

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12	WH5	0339	BO	ROS		178	47° 08.46	124° 58.76	252		1523-1543	21	H.M.	✓	
		0344	BO				47° 08.46	124° 58.77		245					
		0404	EN				47° 08.47	124° 58.75							
12	WH5	0438	BO	NET		179	47° 08.54	124° 58.74	240	230	—	—	H.M.		BONGO
		0442	EN				47° 08.56	124° 58.76							
12	WH6	0540	BO	ROS		180	47° 08.45	125° 03.92	1102		—		H.M.	✓	PAR/pH OFF
		0600	BO				47° 08.47	125° 03.95		1127					
		0621	EN				47° 08.49	125° 03.90							
12	WH7	0726	BE	ROS		181	47° 08.45	125° 15.29	1520		—	—	TR/DI	✓	Saunders not giving depth
		0757	BO				47° 08.44	125° 15.33		1500					
		0812	EN				47° 08.47	125° 15.33							
12	WH7	0840	BE	TMR		182	47° 08.457	125° 15.364	1530		1544-1555	12	ER		
		0931	BO				47° 08.56	125° 15.37		1455					
		1048	EN				47° 08.46	125° 15.38							
12	WH8	1211	BE	ROS		183	47° 08.45	125° 30.14	1696		—	—	TB		Saunders altimeter working well.
		1239	BO				47° 08.47	125° 30.14		1700					
		1324	EN				47° 08.45	125° 30.15							

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	#of Bottles	Watch Keepers	Trans. Cleaned	Comments	
12	WH9	1706	BE	ROS	US	184/185	47° 08.46	126° 12.05	2500		1556-1567 1589	12	TB	✓	comp freeze on H1 4.	
		1709	BO				47° 08.47	126° 12.05		100						
		1721	EN				47° 08.47	126° 11.94								
12	WH9	18:14	BE	ROS	US	186	47° 08.46	126° 12.00	2502		1568-1588	21	DH/HM	✓		
		1909	BO				47° 08.45	126° 11.98								
		1931	EN				47° 08.46	126° 12.07	/							
13	A13	0119	BO	HET		187	47° 21.02	126° 47.98	2541	250			H.M./N.M.		BONGOTDNA	
		0129	EN				47° 21.02	126° 47.98								
13	A13	0146	BE	ROS		188/189	47° 21.01	126° 48.00			1590-1613	24	H.M./N.M.	✓	comp freeze 52026	
		0231	BO				47° 20.99	126° 48.02								
		0340	EN				47° 21.02	126° 48.01								
13	A13	0354	BE	THR	UN	190	47° 21.035	126° 48.018	2540		1614-1625	12	ER			
		0445	BO				47° 21.010	126° 48.033		2010						
		0554	EN				47° 21.023	126° 48.027								
13	A13	0606	BE	DRF		191	47° 21.05	126° 47.99	2541		-		H.M.		ARGOS 4509	
13	A12	0939	BE	ROS		192	47° 41.96	126° 11.91	1570		Ø			✓		
		1010	BO				47° 41.98	126° 11.97		1575					altimeter read 45	
			EN				47° 42.00	126° 12.01							@ 15750.7	
															max depth was 1555	

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Month				Year				Ship				Cruise ID				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	#of Bottles	Watch Keepers	Trans. Cleaned	Comments	
13	A11	1246	BE	ROS	-	193	47°53.96	125°54.02	1542		∅	-	TB	✓		
		1322	BO				47°53.99	125°53.99		1540						
		1352	EN				47°53.99	125°54.04								
13	A11	14:06	BE	ROS	US	194-195	47°54.00	125°54.02	1540		1626-1640	13	TB		BIOL. ROS.	
		14:10	BO				47°54.00	125°54.02		100					PAR ON	
		14:22	EN				47°54.01	125°54.06								
13	A10		BE	TMR	UN	196	47°59.102	125°43.384	910		1641-1652	12	ER			
			BO				47°59.021	125°43.378		851						
			EN				47°59.045	125°43.227								
13	A10	17:00	BE	ROS		197-8	47°59.02	125°43.42	908		1653-1672	20	TB, DI		PH ON	
		17:16	BO				47°59.03	125°43.39		913						
		17:54	EN				47°59.03	125°43.39								
13	A9	1846	BE	ROS		199/200	48°02.34	125°36.81	346		1673-1692	20	H.M.	✓	COMPUTER FROZE	
		1850	BO				48°02.33	125°36.84								
		1913	EN				48°02.31	125°36.85								
13	A9	1923	BE	TMR		201	48.02.312	125°36.856	349		1693-1704	12	ER			
		1932	BO				48.02.294	125°36.898		310						
		1943	EN				48.02.316	125°36.889								

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Month				Year			Ship				Cruise ID				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
13	A 9	20:09	BO	NET	—	202	48° 02.34	125° 36.93	350	250	—	—	H.M.		BONGO (R)
		20:13	EN				48° 02.34	125° 36.91							
13	A 8	20:57	BE	ROS	—	203	48° 05.74	125° 30.40	141		φ		H.M.	✓	CALLED A7 in FILE
		21:00	BO				48° 05.73	125° 30.42		142					SHOULD BE A8
		21:02	EN				48° 05.75	125° 30.41							FILE # 202 (NOT 203)
13	A 7	21:48	BE	ROS	U.S	204/205	48° 09.15	125° 23.85	115		1705-1721	17	H.M.	✓	COMPUTER FROZE
		21:50	BO			206	48° 09.16	125° 23.87		110					Twice
		22:06	EN				48° 09.16	125° 23.92							
13	A 7	22:20	BE	TMR	UN	207	48° 09.181	125° 23.929	115		1722-1733	12	E.R.		
		22:22	BO				48° 09.189	125° 23.928		90					
		22:29	EN												
13	A 6	23:31	BE	ROS	—	208	48° 12.69	125° 17.06	114				H.M.	✓	
		23:35	BO				48° 12.70	125° 17.06		108					
		23:37	EN				48° 12.69	125° 17.06							
14	A 5	00:23	BE	ROS	U.S	209/210	48° 16.15	125° 10.36	121		1734-1748	15	H.M.	✓	COMPUTER FROZE
		00:26	BO			211	48° 16.13	125° 10.39		116					
		00:43	EN				48° 16.10	125° 10.43							
14	A 5	00:55	BE	TMR	UN	212	48° 16.043	125° 10.678							
		01:01	BO				48° 16.046	125° 10.679							

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14	A5	0108	EN	TMR	UN	212	48° 15.975	125° 10.756	120	105	1749-1760	12	ER			
14	A4	0155	BO	ROS	US	213	48° 19.34	125° 04.16	203		—	—	H.M.	✓	* CHANGED OUT Pilon	
		0200	BO				48° 19.32	125° 04.21		180					TO CTD CABLE	
		0203	EN				48° 19.32	125° 04.20								
14	A4	0219	BO	NET		214	48° 19.322	125° 04.2403			—	—	H.M.		BONGO	
		0222	EN				48° 19.3245	125° 04.2375								
14	A3	0305	BO	ROS	US	215	48° 22.08	124° 57.66	111		1761-1774	14	H.M.	✓	computer freeze	
		0308	BO			216	48° 22.90	124° 57.65								
		0322	EN				48° 22.88	124° 57.74								
14	A3	0350	BO	NET		217	48° 22.928	124° 57.690	111		—	—	H.M.		BONGO	
		0352	EN				48° 22.926	124° 57.699								
14	A2	0520	BO	ROS		218	48° 26.34	124° 51.52	300		—	—	H.M.			
		0529	BO				48° 26.34	124° 51.57		290						
		0535	EN				48° 26.34	124° 51.58								
14	A2	0556	BO	NET		219	48° 26.40	124° 51.76			—	—	H.M.		BONGO (ANA)	
		0600	EN				48° 26.42	124° 51.81								
14	A1	0703	BO	ROS	US	220	48° 29.21	124° 43.76	263		1775-1791	17	TB	?	comp crash btl 2.	
		0709	BO			221	48° 29.19	124° 43.78		253						
		0742	EN				48° 29.17	124° 43.69								

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Cast 220/221 bottle @ 200m
computer froze on btl 2 so turned deck unit on & off. Didn't turn pumps back on 3 started
going to the surface. Fired bottles 2, 3, 4, 5 & realized pumps were off so turned pump on
and went back down to 200 to make sure we had the CTD data then went
back to 100 to continue bottle firing sequence.

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14	A9.5	1240	BE	ROS	US	222	48° 0.04	125° 39.96	633		1792-1804	13	TB	✓	went to 10 from bottom on alt.
		1254	BP				48° 00.01	125° 40.00		642					
		1320	EN				48° 59.97	125° 40.03							
14	A9.5		BE	VMP		223					—	Ø			
			EN												
14			BE	VMP			47° 59.98	125° 40.06							
15	A9.5	0131	EN	VMP			48° 00.52	125° 40.03							
15	A9.5	0200	BE	TMR		224	48° 00.65	125° 40.10	610		—	—	ER		12 bottles fired to sink no samples taken.
		—	BO			—	—	—		300					
		0223	EN				48° 00.73	125° 40.05							
15	JF2	11:52	BE	ROS	US	225	48° 18.02	124° 00.01	186		1805-1823	19	D.L.TB	✓	
		11:56	BO				48° 18.02	124° 00.02		175					
		12:11	EN				48° 18.02	124° 00.01	185						

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