

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2011-02

DATE:

From: 01 FEB 2011

to: 28 FEB 2011

VESSEL:

W.E. RICKER

PROJECT(S):

HIGH SEAS SALMON

Book 2 of 2

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

WaterProperties.ca

Captain: Scott Doan
 Second Officer: Andrew Costa
 Fishing Master: Brent Parkinson

First Officer: Duncan McCallum
 Third Officer: N/A

Mission Participants / Agencies: DO

Scientific Personnel:		Chief Scientist:	John Morris	01-16 FEB
Name	Watch	Cabin	Name	Watch
<u>Yeongha Jung</u>			<u>Mary Thiess</u>	
<u>Tyler Zubkowski</u>				

Second leg of Mission:		Chief Scientist:	Marc Thudel	17-28 FEB
Name	Watch	Cabin	Name	Watch
<u>Yeonha Jung</u>	<u>17-28 FEB</u>		<u>Mary Thiess</u>	<u>17-21 FEB</u>
<u>Strakan Tucker</u>	<u>22-27 FEB</u>			

Data logging computer:

Data acquisition program: _____
 CTD deck unit make: _____ model: _____ serial number: _____

Primary CTD [17-28 FEB]

Make: SBE model: 19 serial number: 1294 1294.com
 Primary temperature serial number: 1294
 Primary conductivity serial number: 1294
 Secondary temperature serial number: _____
 Secondary conductivity serial number: _____
 Transmissometer: n/a Model: n/a s/n: _____
 Fluorometer: Model _____ Cable gain: _____ s/n: _____
 Oxygen sensor: _____ Model: _____ s/n: _____
 PAR sensor: _____ Model: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____

Primary Secondary CTD [17-28 FEB]

Make: SBE model: 25 serial number: 0404 0404.com
 Primary temperature serial number: 4484 Calib. 30DEC10
 Primary conductivity serial number: 3184 Calib. 29DEC10
 Secondary temperature serial number: _____
 Secondary conductivity serial number: _____
 Transmissometer: n/a Model: n/a s/n: _____
 Fluorometer: Model _____ Cable gain: _____ s/n: _____
 Oxygen sensor: _____ Model: _____ s/n: _____
 PAR sensor: _____ Model: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____

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

01-15 FEB 11: Regular 9/11 CTD unit has not returned from annual maintenance at Seabird yet. Therefore, using SBE19 until it comes back (expected for 2nd leg of survey, Feb 17-28). All depths recorded for SBE 19 casts will be based on winch counter readings.

17 FEB 11: SBE 9/11 unit still doesn't work, so using usual backup CTD (SBE25), recently returned from Seabird & newly calibrated. Con file: 0404.con

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB			Year 2011				Ship W.E. RICKER				Cruise ID 2011-02					
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								
15	JF05	1639	BE	CTD		226	48°30.26	124°27.60	114			1	MT	NA	BOT@10m	
		1642	BO				48°30.26	124°27.56		104					(CHL, NUTS & SAL)	
		1644	EN				48°30.23	124°27.50								
		1646	BE	NET		227	48°30.18	124°27.45	114	104						BONGO-VNH
		1702	BE	SET		228	48°29.61	124°24.94	118							TRAWL
15	JF04	1814	BE	CTD		229	48°26.02	124°15.69	110			1			BOT@10m	
		1816	BO				48°26.02	124°15.67		100					(CHL, NUTS & SAL)	
		1818	EN				48°26.04	124°15.65								
		1820	BE	NET		230	48°26.04	124°15.61	110	100						BONGO-VNH
		1836	BE	SET		231	48°25.78	124°14.26	104							TRAWL
15	JF03	1956	BE	CTD		232	48°23.01	124°02.81	102			1	↓		BOT@10m	
		1957	BO				48°23.00	124°02.78		92					(CHL, NUTS & SAL)	
		1959	EN				48°23.00	124°02.78								
		2003	BE	NET		233	48°22.97	124°02.72	102	92						BONGO-VNH
		2020	BE	SET		234	48°22.69	124°01.50	102							TRAWL

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

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB Year 2011 Ship W.E. RICKER Cruise ID 2011-02

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							
15	JF02	2141	BE	CTD		235	48°20.09	123°48.36	127			1	MT	NA	BOT@10m
		2144	BO				48°20.12	123°48.39		117					(CHL, NUTS & SAL)
		2146	EN				48°20.13	123°48.40							
		2150	BE	NET		236	48°20.17	123°48.41	125	115					BONGO-VNH
		2200	BE	SET		237	48°20.06	123°47.44	123						TRAWL
15	JF01	2308	BE	CTD		238	48°18.40	123°40.33	127			1		NA	BOT@10m
		2310	BO				48°18.41	123°40.35		117					(CHL, NUTS & SAL)
		2313	EN				48°18.43	123°40.36							
		2315	BE	NET		239	48°18.41	123°40.34	125	115					BONGO-VNH
		2333	BE	SET		240	48°18.36	123°39.59	118						TRAWL
≡	END of DAY →	1 DAY BREAK IN VICTORIA ←													
17	GSD1	2150	BE	CTD		241	48°21.00	123°18.13	57			1			X X
		2151	BO				48°21.03	123°18.10		47					BOT@10m
		2152	EN				48°21.05	123°18.07							(CHL, NUTS & SAL)
		2155	BE	NET		242	48°21.11	123°18.10	54	44					BONGO-VNH
		2209	BE	SET		243	48°21.37	123°17.95	65						TRAWL

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Notes:

GSO1 Start use of SBE 25 CTD. (SBE 9/11 is still broken, so must use backup.)

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB				Year 2011			Ship W.E. RICKER				Cruise ID 2011-02				
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							
17	G502	2343	BE	CTD		244	48°28.55	123°13.75	77			1	MT	NA	BOT@10m
		2344	BO				48°28.53	123°13.75		67					(CHL, NUTS & SAL)
		2346	EN				48°28.51	123°13.76							
		2349	BE	NET		245	48°28.48	123°13.80	72	62					BONGO-VNH
18		0005	BE	SET		246	48°29.06	123°14.25	78						TRAWL
18	G503	0107	BE	CTD		247	48°34.26	123°14.45	200			1			BOT@10m
		0110	BO				48°34.23	123°14.41		190					(CHL, NUTS & SAL)
		0114	EN				48°34.19	123°14.38							
		0117	BE	NET		248	48°34.20	123°14.38	197	150					BONGO-VNH
		—	BE	SET		249	CANCELLED →								TRAWL
≡ END of DAY															
18	G504	1506	BE	CTD		250	48°36.61	123°30.02	213			1			BOT@10m
		1509	BO				48°36.60	123°30.00		203					(CHL, NUTS & SAL)
		1513	EN				48°36.60	123°30.00							
		1517	BE	NET		251	48°36.60	123°29.99	214	150					BONGO-VNH
		1538	BE	SET		252	48°37.27	123°30.12	201						TRAWL

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Notes:

This page is for any notes or observations

G503: Trawl cancelled — too dark.

batt. 12.6v

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Ocean Sciences Division, Institute of Ocean Sciences

Month FEB				Year 2011			Ship W.E. RICKER				Cruise ID 2011-02				
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							
18	GS05	1701	BE	CTD	253		48°44.59	123°35.32	59			1	MT	NA	BOT@10m
		1703	BO				48°44.60	123°35.30		49					(CHL, NUTS & SAL)
		1704	EN				48°44.61	123°35.30							
		1707	BE	NET	254		48°44.65	123°35.26	60	50					BONGO-VNH
		1759	BE	SET	255		48°44.38	123°34.47	73						TRAWL
18	GS06	1903	BE	CTD	256		48°42.77	123°27.32	51			1			BOT@10m
		1904	BO				48°42.79	123°27.31		41					(CHL, NUTS & SAL)
		1906	EN				48°42.79	123°27.30							
		1909	BE	NET	257		48°42.82	123°27.26	51	41					BONGO-VNH
		1924	BE	SET	258		48°43.37	123°26.06	54						TRAWL
18	GS07	2039	BE	CTD	259		48°43.94	123°16.07	125			1	↓		BOT@10m
		2041	BO				48°43.96	123°16.07		115					(CHL, NUTS & SAL)
		2043	EN				48°44.00	123°16.04							
		2046	BE	NET	260		48°44.04	123°16.02	110	100					BONGO-VNH
		2102	BE	SET	261		48°44.62	123°16.40	95						TRAWL

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Notes:

GS05: Delay between CTD and tow - waiting for radar tech to arrive

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Ocean Sciences Division, Institute of Ocean Sciences

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
18	GS08	2232	BE	CTD		262	48°51.75	123°24.42	38			1	MT	NA	BOT@10m
		2233	BO				48°51.75	123°24.42		28					(CHL, NUTS & SAL)
		2234	EN				48°51.75	123°24.42							
		2237	BE	NET		263	48°51.74	123°24.38	38	28					BONGO-VNH
		2251	BE	SET		264	48°52.23	123°25.24	34						TRAWL
18	GS09	2347	BE	CTD		265	48°55.95	123°30.71	57			1			BOT@10m
		2348	BO				48°55.96	123°30.70		47					(CHL, NUTS & SAL)
		2350	EN				48°55.97	123°30.70							
		2353	BE	NET		266	48°55.99	123°30.67	46	36					BONGO-VNH
19		0006	BE	SET		267	48°56.47	123°31.69	50						TRAWL
≡	END OF DAY														
19	GS10	1503	BE	CTD		268	48°51.94	123°35.32	200			1			BOT@10m
		1506	BO				48°51.95	123°35.35		190					(CHL, NUTS & SAL)
		1510	EN				48°51.94	123°35.36							
		1515	BE	NET		269	48°51.94	123°35.36	200	150					BONGO-VNH
		1535	BE	SET		270	48°52.62	123°36.24	193						TRAWL

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 DRF = Drifter
 _____ = _____

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

Time Code:
 BE = Beginning Time of Cast
 BO = Bottom Time of Cast
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Transmissometer to be cleaned before each cast, do not use Ammonia products
 Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 16 April 2010

Notes: _____

This page is for any notes or observations

batt. 12.5v

G510: Had to re-do water sample b/c bottle didn't trip on first attempt.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB			Year 2011				Ship W.E. RICKER				Cruise ID 2011-02				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
19	GS11	1634	BE	CTD		271	48°56.27	123°40.36	100			1	MT	NA	BOT @ 10m
		1636	BO				48°56.26	123°40.38		90					(CHL, NUTS & SAL)
		1638	EN				48°56.25	123°40.38							
		1640	BE	NET		272	48°56.24	123°40.38	101	91					BONGD-VNH
		1658	BE	SET		273	48°56.71	123°41.13	95						TRAWL - SURFACE
19	GS12	1746	BE	CTD		274	48°59.15	123°43.16	72			1			BOT @ 10m
		1747	BO				48°59.15	123°43.17		62					(CHL, NUTS & SAL)
		1749	EN				48°59.14	123°43.18							
		1751	BE	NET		275	48°59.13	123°43.19	69	59					BONGD-VNH
		1807	BE	SET		276	48°59.87	123°43.25	64						TRAWL - SURFACE
19	GS13	1928	BE	CTD		277	49°06.61	123°46.39	49			1			BOT @ 10m
		1930	BO				49°06.63	123°46.42		39					(CHL, NUTS & SAL)
		1931	EN				49°06.63	123°46.42							
		1934	BE	NET		278	49°06.64	123°46.42	46	36					BONGD-VNH
		1948	BE	SET		279	49°06.13	123°45.57	57						TRAWL - SURFACE

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- DRF = Drifter
- =

Bottle Firing Method:

- US = Up / Stop
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Notes:

Time Code:

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GS13: Winch operator did not stop @ 39m. CTD may have touched bottom.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB				Year 2011				Ship W.E. RICKER				Cruise ID 2011-02				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments	
							Latitude	Longitude								
19	GS14	21 10	BE	CTD		280	49°07.16	123°44.30	52			1	MT	NA	BOT @ 10m	
		21 11	BO					49°07.16	123°44.31		42					(CHL, NUTS & SAL)
		21 12	EN					49°07.16	123°44.32							
		21 15	BE	NET			281	49°07.18	123°44.37	50	40					BONGO-VNH
		21 29	BE	SET			282	49°06.54	123°43.66	50						TRAWL - SURFACE
19	GS15	22 16	BE	CTD		283	49°03.69	123°40.42	74			1			BOT @ 10m	
		22 18	BO					49°03.69	123°40.43		64					(CHL, NUTS & SAL)
		22 19	EN					49°03.70	123°40.44							
		22 22	BE	NET			284	49°03.13	123°40.44	75	65					BONGO-VNH
		22 37	BE	SET			285	49°03.03	123°39.74	50						TRAWL - SURFACE
20	GS16	02 24	BE	CTD		286	48°48.49	123°04.47	113			1	↓		BOT @ 10m	
		02 26	BO					48°48.48	123°04.47		103					(CHL, NUTS & SAL)
		02 28	EN					48°48.46	123°04.46							
		02 30	BE	NET			287	48°48.48	123°04.45	114	104					BONGO-VNH
		01 39	BE	SET			288	48°49.90	123°08.80	165						TRAWL - SURFACE
= END of DAY																

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Notes:

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GS16: Ops conducted out of order. Fish first, then bongo, CTD. Consecutive numbers not changed.

batt 12.4v

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	GS17	1504	BE	CTD		289	48°51.95	123°11.95	171			1	MT	NA	BOT@10m
		1507	BO				48°51.91	123°11.94		161					(CHL, NUTS & SAL)
		1510	EN				48°51.91	123°11.92							
		1515	BE	NET		290	48°51.91	123°11.94	173	150					BONGO-VNH
		1534	BE	SET		291	48°52.27	123°12.83	183						TRAWL - SURFACE
20	GS18	1652	BE	CTD		292	48°55.93	123°20.93	182			1			BOT@10m
		1655	BO				48°55.94	123°20.82		172					(CHL, NUTS & SAL)
		1658	EN				48°55.96	123°20.74							
		170	BE	NET		293	48°55.96	123°20.73	186	150					BONGO-VNH
		1719	BE	SET		294	48°56.26	123°21.15	187						TRAWL @ 15m
20	GS19	1837	BE	CTD		295	49°00.09	123°29.99	185			1	↓		BOT@10m
		1840	BO				49°00.11	123°29.93		175					(CHL, NUTS & SAL)
		1844	EN				49°00.14	123°29.89							
		1847	BE	NET		296	49°00.16	123°29.83	204	150					BONGO-VNH
		1905	BE	SET		297	49°00.78	123°30.11	202						TRAWL - SURFACE

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Notes:

GS17: Trouble with CTD leading under ship during cast. Stopped near surface during up cast until CTD was clear. Niskin bottle did not trip on 1st attempt. Re-deployed to 15m and tripped.

GS18: Drifting @ 1.5-2 kts.

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							Latitude	Longitude							
20	GS20	2018	BE	CTD		298	49°06.99	123°34.95	227			1	MT	NA	BOT @ 10m
		2022	BO				49°06.98	123°34.88		217					(CHL, NUTS & SAL)
		2026	EN				49°06.97	123°34.85							
		2029	BE	NET		299	49°06.98	123°34.80	224	150					BONGO-VNH
		2048	BE	SET		300	49°06.97	123°33.33	240						TRAWL @ 30m
20	GS21	2141	BE	CTD		301	49°07.11	123°28.88	328			1			BOT @ 10m
		2146	BO				49°07.12	123°28.77		250					(CHL, NUTS & SAL)
		2150	EN				49°07.14	123°28.69							
		2155	BE	NET		302	49°07.15	123°28.53	323	150					BONGO-VNH
		2213	BE	SET		303	49°06.54	123°27.87	309						TRAWL-SURFACE
20	GS22	2323	BE	CTD		304	49°00.04	123°23.82	269			1	V		BOT @ 10m
		2327	BO				49°00.07	123°23.73		250					(CHL, NUTS & SAL)
		2332	EN				49°00.11	123°23.69							
		2334	BE	NET		305	49°00.12	123°23.64	262	150					BONGO-VNH
		2352	BE	SET		306	48°59.78	123°22.68	243						TRAWL @ 15m

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

GS21: Spigot on Niskin not fully closed, lost most of the sample. Niskin reset & redeployed.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB		Year 2011				Ship W.E. RICKER				Cruise ID 2011-02					
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	GS23	0049	BE	CTD		307	49°00.06	123°16.95	163			1	MT	NA	BOT@10m
		0052	BO				49°00.08	123°16.93		153					(CHL, NUTS & SAL)
		0055	EN				49°00.11	123°16.94							
		0057	BE	NET		308	49°00.12	123°16.91	162	150					BONGO-VNH
21	GS24	0154	BE	CTD		309	49°07.00	123°21.04	146			1			BOT@10m
		0156	BO				49°07.04	123°21.04		136					(CHL, NUTS & SAL)
		0159	EN				49°07.09	123°21.03							
		0203	BE	NET		310	49°07.11	123°20.96	145	135					BONGO-VNH
≡ END of DAY															
21	GS25	1510	BE	CTD		311	49°12.89	123°23.95	279			1	↓		BOT@10m
		1514	BO				49°12.90	123°24.03		250					(CHL, NUTS & SAL)
		1519	EN				49°12.92	123°24.09							
		15	BE	NET		312	49°12.	123°24	280	150					BONGO-VNH
		1542	BE	SET		313	49°13.52	123°25.65	289						TRAWL-SURFACE

Cast Type:
 BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set
 USW = Sea Water Loop
 MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

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

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

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

Notes:

GS23&24: No trawl - too close to shipping lanes.

batt: 11.7v

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB			Year 2011				Ship W.E. RICKER			Cruise ID 2011-02						
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	GS26	1643	BE	CTD		314	49°18.06	123°31.01	164			1	MT	NA	BOT@10m	
		1646	BO					49°18.07	123°31.00		154					(CHL, NUTS & SAL)
		1649	EN					49°18.09	123°31.00							
		1651	BE	NET			315	49°18.11	123°31.02	161	150					BONGO-VNH
		1710	BE	SET			316	49°17.52	123°30.93	185						TRAWL-SURFACE
21	GS27	1811	BE	CTD		317	49°12.03	123°31.88	349			1			BOT@10m	
		1816	BO					49°11.98	123°31.86		250					(CHL, NUTS & SAL)
		1820	EN					49°11.96	123°31.82							
		1823	BE	NET			318	49°11.93	123°31.79	348	150					BONGO-VNH
		1848	BE	SET			319	49°12.42	123°32.83	351						TRAWL @ 15m
21	GS28	2024	BE	CTD		320	49°17.97	123°43.93	260			1			BOT@10m	
		2029	BO					49°17.97	123°43.88		250					(CHL, NUTS & SAL)
		2034	EN					49°17.97	123°43.86							
		2037	BE	NET			321	49°17.96	123°43.84	279	150					BONGO-VNH
		2054	BE	SET			322	49°17.33	123°43.71	302						TRAWL @ 30m

Cast Type:
 BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set
 USW = Sea Water Loop
 MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

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

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

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

Notes:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB		Year 2011				Ship W.E. RICKER				Cruise ID 2011-02						
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	GS29	2153	BE	CTD		323	49°12.19	123°42.31	354			1	MT	NA	BOT@10m	
		2158	BO				49°12.19	123°42.22		250					(CHL, NUTS & SAL)	
		2202	EN				49°12.20	123°42.15								
		2206	BE	NET		324	49°12.22	123°42.10	347	150						BONGO - VNH
			BE	SET		325										TRAWL @ 0m
≡ END of DAY																
22	GS30	1646	BE	CTD		326	49°16.33	123°47.77	396			1	MT	NA	Bot@10m	
		1650	BO				49°16.31	123°47.79		250					(CHL - NUTS + SAL)	
		1655	EN				49°16.26	123°47.78								
		1657	BE	NET		327	49°16.22	123°47.79	370	150					Bongo - VNH	
		1722	BE	SET		328	49°16.93	123°47.55							TRAWL @ 0m	
22	GS31	1840	BE	CTD		329	49°21.44	123°52.28	386			1	MT	NA	Bot@10m	
		1845	BO				49°21.43	123°52.31		250					(CHL - NUTS + SAL)	
		1850	EN				49°21.40	123°52.35								
		1851	BE	NET		330	49°21.46	123°52.35	392	150					Bongo - VNH	
		1916	BE	SET		331	49°21.51	123°53.35							TRAWL @ 15m	

Cast Type:
 BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set
 USW = Sea Water Loop
 MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

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

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

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

Notes:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month <u>FEB</u>		Year <u>2011</u>			Ship <u>W.E. RICKER</u>				Cruise ID <u>2011-02</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								
22	GS32	2036	BE	CTD		332	49° 21.71	124° 05.06	230			1	MT	NA	Bot @ 10m	
		2040	BO				49° 21.69	124° 05.08		220					(CHL, NUTS, + SAL)	
		2044	EN				49° 21.65	124° 05.08								
		2049	BE	NET		333	49° 21.65	124° 05.09	256	150						BONGO-VNH
		2112	BE	SET		334	49° 21.75	124° 06.32								TRAWL @ 0m
22	GS33	2201	BE	CTD		335	49° 22.98	124° 11.56	339			1	MT	NA	Bot @ 10m	
		2205	BO				49° 22.98	124° 11.56		250					(CHL, NUTS + SAL)	
		2210	EN				49° 22.97	124° 11.55								
		2212	BE	NET		336	49° 22.97	124° 11.54	338	150						BONGO-VNH
		2233	BE	SET		337	49° 22.76	124° 12.61								TRAWL @ 30m
22	GS34	2333	BE	CTD		338	49° 22.01	124° 19.41	133			1	MT	NA	Bot @ 10m	
		2335	BO				49° 22.01	124° 19.41		120					(CHL, NUTS + SAL)	
		2338	EN				49° 21.99	124° 19.45								
		2339	BE	NET		339	49° 22.00	124° 19.43	132	122						BONGO-VNH
23		0000	BE	SET		340	49° 22.14	124° 20.44							TRAWL @ 0m	

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

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

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

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

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

Notes:

This page is for any notes or observations

GS32 DRIFTING @ 1 Knot

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month FEB				Year 2011				Ship WE. RICKER			Cruise ID 2011-02					
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	GS35	0218	BE	CTD		341	49° 24.41	124° 35.21	35			1	MT	NA	Bot @ 10m	
		0218	BO					49° 24.41	124° 35.20		30				(CHL, NUTS, SAL)	
		0219	EN					49° 24.41	124° 35.20							
		0224	BE	NET			342	49° 24.41	124° 35.20							Bongo - VNH
		0234	BE	SET		343	49° 23.16	124° 31.45							Trawl @ 15m	
≡ END OF DAY.																
23	GS36	1502	BE	CTD		344	49° 42.86	124° 39.86	336			1	MT	NA	Bot @ 10m	
		1506	BO					49° 42.82	124° 39.83		250				(CHL, NUTS, SAL)	
		1512	EN					49° 42.75	124° 39.80							
		1513	BE	NET			345	49° 42.74	124° 39.80	330	150					Bongo - VNH
		1526	BE	SET			346	49° 42.14	124° 38.82							Trawl @ 0m
23	GS37	1634	BE	CTD		347	49° 38.96	124° 31.20	317			1	MT	NA	Bot @ 10m	
		1639	BO					49° 38.94	124° 31.22		250				(CHL, NUTS, SAL)	
		1644	EN					49° 38.91	124° 31.22		150					
		1645	BE	NET			348	49° 38.90	124° 31.23	320	150					Bongo - VNH
		1708	BE	SET			349	49° 38.46	124° 30.48							Trawl @ 15m

Cast Type:

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

USW

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

Bottle Firing Method:

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

Time Code:

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

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

Notes:

Produced by the Water Properties Group, IOS

WaterProperties.ca
 Version: 16 April 2010

G535 TOWED FIRST, Then CTD + BONGO. DID NOT CHANGE the CONSECUTIVE #.

G536 Drifting @ ~1 knot

G537 tow was put short due to mechanical problems (hydraulics).

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB			Year 2011				Ship W.E. RICKER				Cruise ID 2011-02					
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	GS38	1821	BE	CTD		350	49° 34.89	124° 24.44	316			1	MT	NA	Bot @ 10m	
		1826	BO					49° 34.90	124° 24.49		250					(CHK, NUTS, SAL)
		1833	EN					49° 34.87	124° 24.53							
		1835	BE	NET			351	49° 34.87	124° 24.56	326	150					Bongo-VNH
		1857	BE	SET			352	49° 34.64	124° 25.61							Trawl @ 15m
23	GS39	2017	BE	CTD		353	49° 31.84	124° 35.04	52			1	MT	NA	Bot @ 10m	
		2018	BO					49° 31.84	124° 35.02		45					(CHK, NUTS, SAL)
		2019	EN					49° 31.83	124° 35.01							
		2022	BE	NET			354	49° 31.84	124° 35.02	53	43					Bongo-VNH
		2039	BE	SET			355	49° 32.39	124° 35.85							Trawl @ 0m
23	GS40	2146	BE	CTD		356	49° 35.16	124° 43.80	76			1	MT	NA	Bot @ 10m	
		2147	BO					49° 35.15	124° 43.80		70					(CHK, NUTS, SAL)
		2149	EN					49° 35.16	124° 43.81							
		2152	BE	NET			357	49° 35.19	124° 43.84	76	66					Bongo-VNH
		2210	BE	SET			358	49° 35.86	124° 44.32							Trawl @ 30m

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

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

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

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

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

Notes:

GS38: ship drifted, rearranged its position. Leading under ship.
while the CTD was @ 125m.

→ switch may have been off

GS40: drifting @ 0.5-0.8 knots.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB				Year 2011				Ship W.E. RICKER				Cruise ID 2011-02				
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	GS41	2342	BE	CTD		359	49°44.52	124°49.63	131			1	MT	NA	Bot. @ 10m	
		2345	BO					49°44.53	124°49.65		125					(CHL, NUTS, SAL)
		2347	EN					49°44.54	124°49.67							
		2350	BE	NET			360	49°44.55	124°49.69	130	120					Bongo-VNH
24		0011	BE	SET		361	49°45.00	124°50.59							TRAWL @ 0m	
24	GS42	0129	BE	CTD		362	49°49.86	124°57.72	175			1	MT	NA	Bot. @ 10m	
		0132	BO					49°49.88	124°57.77		176					(CHL, NUTS, SAL)
		0135	EN					49°49.90	124°57.81							
		0137	BE	NET			363	49°49.93	124°57.84	175	150					Bongo-VNH
		0158	BE	SET			364	49°50.49	124°58.77							TRAWL @ 15m
≡	END OF DAY															
24	GS43	1502	BE	CTD		365	50°31.33	124°59.42	7600			1	MT	NA	Bot. @ 10m	
		1506	BO					50°31.33	124°59.46		250					(CHL, NUTS, SAL)
		1512	EN					50°31.35	124°59.52							
		1514	BE	NET			366	50°31.36	124°59.51	7600	150					Bongo-VNH
		1542	BE	SET			367	50°31.00	125°00.73							TRAWL @ 0m

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

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

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

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

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

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

Notes:

This page is for any notes or observations

GS42: drifting @ ~0.8 knots.

GS43: drifting @ ~0.8 knots

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB

Year 2011

Ship W.E. RICKER

Cruise ID 2011-02

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	GS44	1636	BE	CTD		368	50° 27.81	125° 05.20	635			1	MT	NA	Bst @ 10m	
		1640	BO					50° 27.81	125° 05.19		250					(CHL, NUTS, SAL)
		1645	EN					50° 27.81	125° 05.21							
		1647	BE	NET			369	50° 27.82	125° 05.23	635	150					Bongo - VNH
		1711	BE	SET			370	50° 26.62	125° 06.81							TRAWL @ 15m
24	GS45	1816	BE	CTD		371	50° 20.96	125° 07.31	530			1	MT	NA	Bst @ 10m	
		1820	BO					50° 20.97	125° 07.34		250					(CHL, NUTS, SAL)
		1826	EN					50° 21.03	125° 07.42							
		1829	BE	NET			372	50° 21.05	125° 07.47	473	150					BONGO-VNH
		1850	BE	SET			373	50° 20.62	125° 06.81							TRAWL @ 0m
24	GS46	2002	BE	CTD		374	50° 16.19	124° 58.68	475			1	MT	NA	Bst @ 10m	
		2006	BO					50° 16.21	124° 58.65		250					(CHL, NUTS, SAL)
		2011	EN					50° 16.17	124° 58.59							
		2014	BE	NET			375	50° 16.15	124° 58.51	465	150					Bongo - VNH
		2036	BE	SET			376	50° 16.72	124° 57.97							Trawl @ 30m

Cast Type:

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

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

Bottle Firing Method:

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

Time Code:

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

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

Notes:

GS45: drifted at > 1 knot. (≈ 1.4)

GS46: drifting @ > 1 knot. Ship position ~~was~~ readjusted.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month FEB			Year 2011				Ship W.E. RICKER				Cruise ID 2011-02					
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	GS47	2144	BE	CTD		377	50° 17.97	124° 51.48	492			1	MT	NA	Bot @ 10m	
		2148	BO				50° 17.97	124° 51.49		250					(CHL, SAL, NUTS)	
		2152	EN				50° 17.98	124° 51.51								
		2156	BE	NET		378	50° 17.97	124° 51.51	491	150						Bongo - VNH
		2216	BE	SET		379	50° 18.00	124° 50.49								TRAWL @ 0m
24	GS48	2317	BE	CTD		380	50° 18.54	124° 42.50	353			1	MT	NA	Bot @ 10m	
		2322	BO				50° 18.60	124° 42.57		250					(CHL, SAL, NUTS)	
		2325	EN				50° 18.63	124° 42.57								
		2327	BE	NET		381	50° 18.63	124° 42.56		150						Bongo - VNH
		2349	BE	SET		382	50° 18.18	124° 41.92								TRAWL
25	GS49	0129	BE	CTD		383	50° 08.93	124° 45.18	515			1	MT	NA	Bot @ 10m	
		0133	BO				50° 08.93	124° 45.17		250					(CHL, NUTS, SAL)	
		0137	EN				50° 08.92	124° 45.19								
		0143	BE	NET		384	50° 08.97	124° 45.17		150						Bongo - VNH
		0201	BE	SET		385	50° 08.33	124° 45.66								TRAWL @ 0m
≡	END of day															

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

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

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

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

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

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

Notes:

This page is for any notes or observations

GS48: drifting @ 0.4-0.8 knots

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month <u>FEB</u>		Year <u>2011</u>			Ship <u>W.E. RICKER</u>			Cruise ID <u>2011-02</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	G550	1502	BE	CTD		386	50° 06.14	125° 04.80	157			1	MT	NA	Bst @ 10m (CHL, NUTS, SAL)	
		1504	BO				50° 06.10	125° 04.80		150						
		1508	EN				50° 06.03	125° 04.83								
		1510	BE	NET		387	50° 06.02	125° 04.85	184	150						Bongo - VNH
		1534	BE	SET		388	50° 05.26	125° 05.18								Trawl @ 0m
25	G551	1643	BE	CTD		389	49° 58.11	125° 04.82	265			1	MT	NA	Bst @ 10m (CHL, NUTS, SAL)	
		16	BO				49° 58.11	125° 04.82		250						
		1652	EN				49° 58.14	125° 04.84								
		1654	BE	NET		390	49° 58.15	125° 04.84	262	150						Bongo - VNH
		1716	BE	SET		391	49° 57.61	125° 04.43								Trawl @ 13m
	G552	1821	BE	CTD		392	49° 52.44	124° 59.02	297			1	MT	NA	Bst @ 10m (CHL, NUTS, SAL)	
		1825	BO				49° 52.44	124° 59.06		250						
		1830	EN				49° 52.43	124° 59.08								
		1833	BE	NET		393	49° 52.42	124° 59.08	295	150						Bongo - VNH
		1855	BE	SET		394	49° 52.53	124° 57.66								Trawl @ 0m

Cast Type:
 BOT = Bottle cast, no CTD
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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

Notes:

G550: drifting @ ~1 knot.

G551: missed the bottom time + coordinates as I received a phone call from Coast Guard at the time.

G552: drifting @ ~0.8 knot

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							Latitude	Longitude								
25	G553	1959	BE	CTD		395	49° 53.24	124° 52.08	240			1	MT	NA	Bot @ 10m	
		2003	BO					49° 53.23	124° 52.10		235					(CHK, NUTS, SAL)
		2007	EN					49° 53.22	124° 52.15							
		2011	BE	NET			396	49° 53.20	124° 52.16	250	150					Bongo-VNH
		2035	BE	SET			397	49° 52.28	124° 51.79							Trawl @ 30m
25	G554	2134	BE	CTD		398	49° 47.74	124° 48.51	339			1	MT	NA	Bot @ 10m	
		2138	BO					49° 47.72	124° 48.51		250					CHK, NUTS, SAL
		2142	EN					49° 47.71	124° 48.51							
		2144	BE	NET			399	49° 47.70	124° 48.51	339	150					Bongo-VNH
		2205	BE	SET			400	49° 48.00	124° 47.25							Trawl @ 0m
25	G555	2321	BE	CTD		401	49° 49.51	124° 35.21	273			1	MT	NA	Bot @ 10m	
		2325	BO					49° 49.52	124° 35.17		250					(CHK, NUTS, SAL)
		2329	EN					49° 49.52	124° 35.06							
		2331	BE	NET			402	49° 49.52	124° 35.06	271	150					Bongo-VNH
		2351	BE	SET			403	49° 48.82	124° 34.21							Trawl @ 15m

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Notes: _____

This page is for any notes or observations

GS55: drifted at $> 1 \mu\text{rot}$.

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments	
							Latitude	Longitude								
26	GS56	0043	BE	CTD		404	49°45.87	124°29.41	309			1	MT	NA	Bot @ 10m	
		0048	BO					49°45.89	124°29.44		250					(CHL, NUTS, SAL)
		0052	EN					49°45.90	124°29.45							
		0054	BE	NET			405	49°45.90	124°29.46	309	150					Bongo - VNH
		0147	BE	SET			406	49°45.62	124°28.63							Trawl @ 0m
= END of day																
26	GS57	1457	BE	CTD		407	49°39.52	123°14.33	215			1	MT	NA	Bot @ 10m	
		1501	BO					49°39.55	123°14.33		210					(CHL, NUTS, SAL)
		1506	EN					49°39.57	123°14.36							
		1508	BE	NET			408	49°39.61	123°14.37	212	150					Bongo - VNH
		1532	BE	SET			409	49°38.99	123°14.20							Trawl @ 0m
26	GS58	1641	BE	CTD		410	49°33.02	123°16.22	138			1	MT	NA	Bot @ 10m	
		1643	BO					49°33.04	123°16.22		130					(CHL, NUTS, SAL)
		1646	EN					49°33.10	123°16.23							
		1648	BE	NET			411	49°33.13	123°16.23	130	120					Bongo - VNH
		1709	BE	SET			412	49°32.78	123°16.34							Trawl @ 15m

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Notes:

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G556: CTD + Bongo done before dinner. Tow done after dinner.

G557: drifting @ $\approx 1.2 - 1.4$ knot.

G558: drifting @ $1.2 - 1.4$ knot.

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Month FEB				Year 2011				Ship W.E. RICKER				Cruise ID 2011-02				
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							Latitude	Longitude								
26	G559	1810	BE	CTD		413	49°28.36	123°18.21	237			1	MT	NA	Bot @ 10m	
		1814	BO					49°28.39	123°18.22		230					(CHL, SAL, NUTS)
		1819	EN					49°28.41	123°18.22							
		1820	BE	NET			414	49°28.41	123°18.22	237	150					Bongo - VNH
		1842	BE	SET			415	49°28.99	123°18.53							Trawl @ 0m
26	G560	1950	BE	CTD		416	49°32.94	123°22.88	215			1	MT	NA	Bot @ 10m	
		1953	BO				49°32.96	123°22.86		210					(CHL, NUTS, SAL)	
		1957	EN				49°32.97	123°22.83								
		1959	BE	NET			417	49°32.97	123°22.82	215	150					Bongo - VNH
		2022	BE	SET			418	49°32.70	123°23.50							Trawl @ 30m
26	G561	2147	BE	CTD		419	49°25.18	123°28.37	91			1	MT	NA	Bot @ 10m	
		2149	BO				49°25.18	123°28.37		85					(CHL, SAL, NUTS)	
		2150	EN				49°25.18	123°28.36								
		2153	BE	NET			420	49°25.19	123°28.36	90	80					Bongo - VNH
		2212	BE	SET			421	49°25.19	123°27.17							Trawl @ 0m

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Notes:

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Month FEB				Year 2011				Ship W.E. RICKER			Cruise ID 2011-02					
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	GS62	0128	BE	CTD		422	49°23.36	123°41.32	162			1	MT	NA	Bot @ 10m	
		0131	BO					49°23.37	123°41.31		155					(CHL, NUTS, SHL)
		0134	EN					49°23.37	123°41.29							
		0136	BE	NET			423	49°23.36	123°41.26	162	150					Borgo - VNA
		0158	BE	SET			424	49°23.49	123°42.30							Trawl @ 15m
≡ END of day																
27	GS63	1500	BE	CTD		425	49°42.16	124°17.97	187			1	MT	NA	Bot @ 10m	
		1503	BO					49°42.16	124°17.96		180					(CHL, NUTS, SHL)
		1507	EN					49°42.17	124°17.95							
		1509	BE	NET			426	49°42.18	124°17.95	179	150					Borgo - VNA
		1533	BE	CTD			427	49°41.63	124°17.22							Trawl @ 0m
27	GS64	1649	BE	CTD		428	49°36.27	124°09.96	227						Bot @ 10m	
		1653	BO					49°36.28	124°09.94		220					(CHL)
		1653	EN					49°36.30	124°09.93							
		1700	BE	NET			429	49°36.30	124°09.93	210	150					Borgo - VNA
		1721	BE	SET			430	49°35.77	124°09.46							Trawl @ 15m

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G562: drifting @ ≈ 0.5 knot.

G564 CTD may have touched the bottom. Drifted from a maximum depth of 227m to 210m. CTD went down to 220m.

G564 No Nutrients or Salinity bottles
tubes

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments	
							Latitude	Longitude								
27	GS65	1837	BE	CTD		431	49° 29.43	124° 04.17	180			1	MT	NA	Bot @ 10m	
		1840	BO					49° 29.45	124° 04.12		170					(CHL, SAL, NUTS)
		1844	EN					49° 29.46	124° 04.11							
		1846	BE	NET		432	49° 29.45	124° 04.12	178	150						Bongo - VNH
		1908	BE	SET		433	49° 29.03	124° 03.16								Haul @ 0m
27	GS66	2021	BE	CTD		434	49° 24.30	123° 58.00	366			1	MT	NA	Bot @ 10m	
		2025	BO					49° 24.30	123° 57.95		250					(CHL)
		2029	EN					49° 24.31	123° 57.92							
		2031	BE	NET		435	49° 24.30	123° 57.92	411	150						Bongo - VNH
		2053	BE	SET		436	49° 24.21	123° 56.68								Haul @ 30m
27	GS67	2213	BE	CTD		437	49° 19.91	123° 45.75	297			1	MT	NA	Bot @ 10m	
		2217	BO					49° 19.94	123° 45.67		250					(CHL, SAL)
		2222	EN					49° 19.92	123° 45.65							
		2224	BE	NET		438	49° 19.92	123° 45.60	280	150						Bongo - VNH
		2246	BE	SET		439	49° 19.49	123° 46.02								Haul @ 0m
=	EN of Cruise															

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Notes:

GS65: Drifting @ 0.5-1.0 Knot

GS66: No nutrient tubes, No Salinity bottle
Drifting @ 1 Knot.

GS67: No nutrient tubes
Drifting @ 0.5-1.0 Knot.

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							Latitude	Longitude							

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Produced by the Water Properties Group, IOS
WaterProperties.ca
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