

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2011-11

DATE:

From: 28 Nov 2011

to:

VESSEL:

VECTOR

PROJECT(S):

STRAIT OF GEORGIA / JUAN DE FUCA
WATER PROPERTIES SURVEY

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

WaterProperties.ca

Captain: KENT REID
 Second Officer: COUN
 Fishing Master: _____
 First Officer: IAN CAMPBELL
 Third Officer: _____

Mission Participants / Agencies:

[illegible][illegible]

Data logging computer: VECTOR P10
Data acquisition program: SEASAVE v7
CTD deck unit make: S&C model: 911 serial number: 0425

Primary CTD

Make: SBE model: 9 serial number: 20111 MAIN

Primary temperature serial number: 2106

Primary conductivity serial number: 1764

Secondary temperature serial number: 2710

Secondary conductivity serial number: 2128

Transmissometer: Model: CNELS 610 s/n: 1185 DR

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

Oxygen sensor: Model: 5843 s/n: 5097 P, S or NO pump?

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

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

Other sensors: pH s/n: 0692 P, S or NO pump?

Other sensors: PAR s/n: 4601 P, S or NO pump?

Other sensors: S PAR s/n: 16504 P, S or NO pump?

Secondary CTD

Make: _____ model: _____ serial number: _____

Primary temperature serial number: _____

Primary conductivity serial number: _____

Secondary temperature serial number: _____

Secondary conductivity serial number: _____

Transmissometer: _____ Model: _____ s/n: _____

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

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

PAR sensor: _____ Model: _____ s/n: _____

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

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

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

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

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Month <i>Nov</i>				Year <i>2011</i>			Ship <i>VECTOR</i>				Cruise ID <i>2011-11</i>				
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	SI	23:41	BE	ROS	US	1	48° 39.13	123° 30.60	184		1-9	9			find bottles 1-18
		23:43	BO				39.13	30.60		101					
		23:52	EN				39.13	30.60							
29	58	0142	BE	CTD		2	48° 42.98	123° 14.30	332						
		0148	BO				48° 42.98	123° 14.28		330	—	—	HM/MH/KS	✓	T: 8.42 S: 30.81
			EN				48° 42.97	123° 14.27							
29	59	0232	BE	ROS	V-S	3	48° 37.75	123° 14.60	228		10-23	14	HM/MH/KS	✓	T: 8.45 S: 30.35
		0237	BO				48° 37.74	123° 14.58		220					
		0253	EN				48° 37.76	123° 14.57							
29	60	0353	BE	CTD		4	48° 33.89	123° 12.81	298		—	—	HM/MH/KS	✓	T: 8.41 S: 30.63
		0358	BO				48° 33.89	123° 12.81		293					
		0404	EN				48° 33.89	123° 12.81							
29	61	0449	BE	CTD		5	48° 29.21	123° 09.17	267		—	—	HM/MH/KS		T: S:
		0454	BO				48° 29.21	123° 09.16							
		0459	EN				48° 29.21	123° 09.16							

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

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Depart Pat Bay 15h15 local time - calm, sunny → overcast

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Month Nov				Year 2011			Ship VECTOR				Cruise ID 2011-11					
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	101	1253	BE	CTD		6	48 25.48	124 45.10	240				PDG	✓		T: 9.93 S: 30.32
		1258	BO				25.64	44.99		232						
		1303	EN				25.77	44.88								
29	102	1340	BE	ROS	US	7	48 29.97	124 43.98	257		24-37		PDG			T: 10.07 S: 29.99
		1347	BO				29.95	43.97		243						
		1403	EN				29.95	43.64								
29	103	1515	BE	CTD		8	48 32.99	124 43.02	120				PDG	✓		T: 10.2 S: 30.3
		1518	BO				32.98	43.03		112						
		1521	EN				32.98	43.02								
29	76	1622	BE	CTD		9	48 31.40	124 30.09	89				PDG	✓		T: 9.02 S: 29.31
		1625	BO				31.37	30.10		81						
		1626	EN				31.38	30.08								
29	75	1707	BE	ROS		10	48 28.22	124 32.83	223		38-51		PDG	✓		T: 9.87 S: 29.77
		1712	BO				28.20	32.85		215						no oxygen samples
		1727	EN				28.13	32.99								

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- weight on - altimeter steady @ 6.6 - likely interference from weight

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Month <u>Nov</u>				Year <u>2011</u>			Ship <u>VECTOR</u>				Cruise ID <u>2011-11</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	74	1810	BE	CTD		11	48° 25.09	124° 35.63	185				PD+G	✓	T: S:
		1814	BO				25.09	35.64		175					
		1818	EN				25.07	35.63							
29	73	2053	BE	CTD		12	48° 15.00	124° 06.70	160		—	—	H.M./M.H./K.S.	✓	T: 10.04 S: 29.66
		2057	BO				48° 15.00	124° 06.68		160					
		2100	EN				48° 15.01	124° 06.67							
29	72	2138	BE	ROS	VS	13	48° 18.63	124° 03.99	187		52-64	13	H.M./M.H./K.S.	✓	T: 9.30 S: 30.27
		2142	BO				48° 18.62	124° 04.01		183					
		2157	EN				48° 18.55	124° 03.98							
29	71	2247	BE	CTD		14	48° 22.19	123° 59.36	108		—	—	H.M./M.H./K.S.	✓	T: 9.45 S: 30.30
		2249	BO				48° 22.18	123° 59.36		108					
		2252	EN				48° 22.19	123° 59.36							
30	76	0011	BE	CTD		15	48° 19.17	123° 43.15	153		—	—	H.M./M.H./K.S.	✓	T: 9.74 S: 29.52
		0014	BO				48° 19.17	123° 43.11		151					
		0017	EN				48° 19.16	123° 43.09							

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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							
30	69	0414	BE	ROS	V.S.	16	48° 15.60	123° 43.20	176		65-76	12	HM/MH/KS	✓	T: 9.80 S: 29.80
		0418	BO				48° 15.61	123° 43.22		174					
		0432	EN				48° 15.58	123° 43.22							
30	68	0504	BE	CTD		17	48° 12.23	123° 43.07	136		—	—	HM/MH/KS	✓	T: 9.80 S: 29.82
		0507	BO				48° 12.22	123° 43.07		136					
		0510	EN				48° 12.21	123° 43.08							
30	105	0718	BE	CTD		18	48° 10.99	123° 19.04	83				HM/MH/KS	✓	T: 9.18 S: 30.57
		0720	BO				48° 11.00	123° 19.06		82					
		0722	EN				48° 11.00	123° 19.06							
30	ADCP	0753	BE	ROS		19	48 13.97	123 18.06	118		77-86	10	PC/AS/GC	✓	T: 8.66 S: 30.99
		0756	BO				13.96	18.05		113					
		0806	EN				13.96	18.06							
30	104	0850	BE	CTD		20	48 20.03	123 18.06	83				PC/DS/GC	✓	T: 8.55 S: 30.89
		0857	BO				19.99	17.99		79					Tair: 6.3
		0858	EN				19.99	18.00							

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Month				Year				Ship				Cruise ID							
Nov				2011				VECTOR				2011-11							
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	67	09 29	BE	CTD		21	48 22.77	123 18.09	105				R/DK/GC	✓	T: 8.38 S: 30.97				
		09 34	BO				22.77	18.12		103					Tair: 6.2				
		09 35	EN				22.76	18.12											
30	66	10 10	BE	CTD		22	48 19.31	123 14.10	100				R/DK/GC	✓	T: 8.76 S: 30.93				
		10 13	BO				19.31	14.10		96					Tair: 6.6				
		10 15	EN				19.30	14.09											
30	65	10 48	BE	ROS		23	48 15.91	123 9.78	123		87-96	10	R/DK/GC	✓	T: 9.06 S: 30.60				
		10 54	BO				15.91	9.84		120					Tair: 6.6				
		11 03	EN				15.93	9.82											
30	64	11 36	BE	CTD		24	48 12.87	123 5.76	103				R/DK/GC	✓	T: 8.92 S: 30.76				
		11 39	BO				12.87	5.76		99					Tair: 6.5				
		11 41	EN				12.86	5.66											
30	63	12 16	BE	CTD		25	48 14.56	122 58.50	151				R/DK/GC	✓	T: 9.01 S: 30.55				
		12 20	BO				14.58	58.52		148					Tair: 6.5				
		12 24	EN				14.56	58.51											

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Month <u>Nov</u>				Year <u>2011</u>			Ship <u>VECTOR</u>					Cruise ID <u>2011-11</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								
30	62	13 31	BE	ROS	US	26	48 22.77	123 2.66	150		97-107	11	R/BS/α	✓	T: 8.71	S: 30.93
		13 35	BO				22.81	2.65		145					Tair: 6.5	
		13 45	EN				22.86	2.53								
30	54	15 06	BE	CTD		27	48 26.62	122 44.33	80				R/BS/α	✓	T: 8.39	S: 30.33
		15 08	BO				26.62	44.33		75						
		15 10	EN				26.63	44.34								
30	53	15 49	BE	CTD		28	48 33.12	122 44.95	60				R/BS	✓	T: 8.42	S: 30.27
		15 51	BO				33.17	44.98		55					Tair: 6.25	
		15 53	EN				33.21	45.00								
30	52	16 29	BE	CTD		29	48 38.85	122 43.33	85				R/BS	✓	T: 8.42	S: 30.23
		16 32	BO				38.90	43.26		80					Tair: 6.26	
		16 33	EN				38.95	43.21								
30	51	17 41	BE	CTD		30	48 46.69	122 51.60	163				R/BS	✓	T: 8.46	S: 29.30
		17 45	BO				46.69	51.59		158					Tair: 6.35	
		17 48	EN				46.72	51.64								

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- a spot of sunshine!

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Month <u>Nov</u>				Year <u>2011</u>			Ship <u>VECTOR</u>				Cruise ID <u>2011-11</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							
30	57	19 11	BE	CTD		31	48° 43.95	123° 08.02	160			14	RE/BS	✓	T: 8.59 S: 29.93
		19 16	BO				43.95	8.03		156					Tair: 8.9
		19 19	EN				43.95	8.04							
30	56	20 17	BC	ROS	US	32	48° 46.36	123° 01.62	215		108-122	15	HM/HM/KS	✓	T: 8.31 S: 27.89
		20 21	BO				48° 46.34	123° 01.63							
		20 37	EN				48° 46.37	123° 01.61							
30	47	21 29	BC	CTD		33	48° 49.31	123° 06.17	185		—	—	HM/HM/KS	✓	T: 7.55 S: 24.84
		21 32	BO				48° 49.31	123° 06.16		183					
		21 36	EN				48° 49.31	123° 06.14							
30	48	22 01	BC	CTD		34	48° 51.68	123° 03.20	228		—	—	HM/HM/KS	✓	T: 8.40 S: 28.91
		22 06	BO				48° 51.68	123° 03.19		221					
		22 10	EN				48° 51.70	123° 03.17							
30	49	22 40	BC	CTD		35	48° 55.01	122° 59.62	130		—	—	HM/HM/KS	✓	T: 8.63 S: 29.66
		22 43	BO				48° 54.99	122° 59.62		130					
		22 46	EN				48° 55.00	122° 59.63							

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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								
30	56	2305	BE	CTD		36	48° 56.78	122° 57.43	23		-	-	HM/MH/KS	✓	T: 8.52 S: 30.11	
		2307	BO				48° 56.78	122° 57.43		23						
		2308	EN				48° 56.78	122° 57.44								
30	44	2349	BE	CTD		37	48° 56.81	123° 06.08	118		-	-	HM/MH/KS	✓	T: 8.56 S: 29.75	
		2352	BO				48° 56.81	123° 06.08		117						
		2355	EN				48° 56.81	123° 06.09								
1	45	0022	BE	CTD		38	48° 53.87	123° 08.38	128		-	-	HM/MH/KS	✓	T: 7.90 S: 26.69	
		0025	BO				48° 53.87	123° 08.36		125						
		0027	EN				48° 53.88	123° 08.37								
1	46	0134	BE	ROS		39	48° 51.40	123° 10.74	178		123-135	13	HM/MH/KS	✓	T: 7.71 S: 25.28	
		0138	BO				48° 51.36	123° 10.77								
		0151	EN				48° 51.38	123° 10.78								
1	106	0300	BE	CTD		40	49° 01.01	123° 13.19	75		-	-	HM/MH/KS	✓	T: 8.39 S: 29.82	
		0302	BO				49° 01.00	123° 13.19		75						
		0303	EN				49° 01.01	123° 13.20								

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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							
1	107	0337	BE	CTD		41	48° 58.36	123° 17.94	181		—	—	HM/MH/KS	✓	T: 7.99 S: 26.63
		0340	BO				48° 58.35	123° 17.94		177					
		0344	EN				48° 58.37	123° 17.95							
1	43	0440	BE	CTD		42	49° 00.19	123° 30.10	196		—	—	HM/MH/KS	✓	T: 7.25 S: 23.78
		0443	BO				49° 00.17	123° 30.16		192					
		0447	EN				49° 00.16	123° 30.17							
1	42	0516	BE	ROS	U.S.	43	49° 01.80	123° 26.24	320		136-151	16	HM/MH/KS	✓	T: 6.95 S: 21.41
		0522	BO				49° 01.79	123° 26.26		316					
		0540	EN				49° 01.81	123° 26.27							
1	41	0624	BE	CTD		44	49° 03.29	123° 22.28	241		—	—	HM/MH/KS	✓	T: 7.25 S: 24.42
		0628	BO				49° 03.28	123° 22.29		238					
		0633	EN				49° 03.28	123° 22.29							
1	108	0659	BE	CTD		45	49° 04.37	123° 19.13	95		—	—	HM/MH/KS	✓	T: 7.76 S: 25.12
		0701	BO				49° 04.34	123° 19.16		96					
		0703	EN				49° 04.35	123° 19.16							

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

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Ocean Sciences Division, Institute of Ocean Sciences

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Month				Year			Ship		Cruise ID			Page 10 of			
DEC				2011			VECTOR		2011-11						
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	37	0813	BE	CTD		46	49 13.61	123 20.69	212		—	—	RE/DS	✓	T: 8.33 S: 27.10
		0818	BO				13.58	20.71		210					Tair: 4.5
		0822	EN				13.54	20.74							
1	38	0852	BE	CTD		47	49 11.99	123 26.39	306				RE/DS	✓	T: 8.04 S: 26.83
		0859	BO				12.02	26.44		303					
		0905	EN				12.02	26.51							
1	39	0944	BE	ROS	US	48	49 9.38	123 33.01	385		152-168	17	RE/DS/GC	✓	T: 7.6 S: 27.11
		0953	BO				9.40	33.03		378					Tair: 4.6
		1014	EN				9.37	32.97							
1	40	1044	BE	CTD		49	49 8.59	123 36.75	154				RE/DS/GC	✓	T: 7.81 S: 27.61
		1051	BO				8.59	36.80		148					Tair: 5.0
		1053	EN				8.57	36.80							
1	26	1205	BE	CTD		50	49 14.31	123 50.78	261				RE/DS	✓	T: 8.05 S: 27.75
		1212	BO				14.34	50.71		255					Tair: 4.8
		1217	EN				14.37	50.64							

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remote readout on winch	350	300	250	200	175	150	125	on deck	1.06
readout on console	353	302	251	201	176	151	126		

	O ₂	FR	T	S
range	2-7	0-10	5-15	24-34
	1	2	2	1

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Month DEC				Year 2011			Ship VECTOR				Cruise ID 2011-11					Page 11 of	
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	27	12 51	BE	ROS	US	51	49 19.12	123 47.96	345		169-184	16	R/DS/OC	✓	T: 7.53 S: 27.08		
		13 00	BO				19.12	48.07		342					Tair 4.5		
		13 17	EN				19.10	48.13									
1	28	14 00	BE	CTD		52	49 24.11	123 45.31	135				R/DS	✓	T: 8.0 S: 27.4		
		14 04	BO				24.10	45.32		131							
		14 06	EN				24.09	45.32									
1	24	15 37	BE	CTD		53	49 30.31	124 5.99	430				R/DS	✓	T: 8.0 S: 27.7		
		15 47	BO				30.31	6.00		422					Tair 4.6		
		15 55	EN				30.31	6.00									
1	25	16 18	BE	CTD		54	49 27.71	124 7.50	290				R/DS	✓	T: 7.8 S: 27.6		
		16 25	BO				27.72	7.51		283							
		16 30	EN				27.73	7.54									
1	2	16 59	BE	ROS	US	55	49 24.11	124 9.33	283		185-199	15	R/DS	✓	T: 7.7 S: 27.5		
		17 05	BO				24.12	9.31		274							
		17 20	EN				24.17	9.26									

Cast Type:

USW = Sea Water Loop

Bottle Firing Method:

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Month				Year			Ship					Cruise ID				
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	1	1749	BE	CTD		56	49 20.28	124 12.12	245					R/DS	✓	T: 8.1 S: 27.9
		1755	BO				20.29	12.12		242						
		1800	EN				20.32	12.14								
1	4	1850	BE	CTD		57	49 24.50	124 22.07	348					R/DS	✓	T: 8.1 S: 28.5
		1859	BO				24.50	22.03		343						
		1905	EN				24.50	22.00								
1	3	1923	BE	ROS	US	58	49 26.60	124 20.18	325			200-215	16	R/DS	✓	T: 8.01 S: 28.3
		1931	BO				26.62	20.20		320						
		1949	EN				49° 26.61	124° 20.24								
1	5	2038	BE	CTD		59	49° 27.37	124° 30.86	316			—	—	AM/MH/AS	✓	T: 8.28 S: 28.32
		2044	BO				49° 27.39	124° 30.86		313						
		2050	EN				49° 27.39	124° 30.86								
1	6	2120	BE	ROS	US	60	49° 30.58	124° 27.73	197			216-228	13	AM/MH/AS	✓	T: 8.08 S: 28.13
		2124	BO				49° 30.58	124° 27.74								
		2137	EN				49° 30.55	124° 27.76								

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Month		Year		Ship		Cruise ID								
Dec		2011		VECTOR		2011-11								
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	7	2210	BE	CTD		61	49° 34.40	124° 24.11	356					
		2217	BO				49° 34.40	124° 24.14		349		HM/mu/ks	✓	T: 8.06 S: 28.03
		2223	EN				49° 34.41	124° 24.12						
1	8	2312	BE	CTD		62	49° 39.31	124° 32.99	340			HM/mu/ks	✓	T: 8.14 S: 28.19
		2318	BO				49° 39.30	124° 33.03		335				
		2324	EN				49° 39.30	124° 33.03						
2	9	0000	BE	ROS	U.S.	63	49° 35.48	124° 38.36	176		229-240	12	HM/mu/ks	✓
		0003	BO				49° 35.47	124° 38.33						T: 8.09 S: 28.37
		0016	EN				49° 35.45	124° 38.29						
2	10	0111	BE	CTD		64	49° 40.71	124° 47.27	96				HM/mu/ks	✓
		0113	BO				49° 40.71	124° 47.26		94				T: 8.13 S: 28.47
		0115	EN				49° 40.71	124° 47.24						
2	11	0149	BE	CTD		65	49° 42.43	124° 43.35	303				HM/mu/ks	✓
		0154	BO				49° 42.42	124° 43.33		297				T: 8.05 S: 28.62
		0200	EN				49° 42.41	124° 43.35						

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Month Dec				Year 2011			Ship VECTOR				Cruise ID 2011-11				
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	12	0220	BE	ROS	US	66	49° 43.62	124° 40.79	356		241-256	16	HM/MH/KS	✓	T: 8.13 S: 28.32
		0226	BO				49° 43.63	124° 40.77		351					
		0245	EN				49° 43.61	124° 40.72							
2	20	0349	BE	CTD	-	67	49° 47.20	124° 32.30	312		—	—	HM/MH/KS	✓	T: 7.79 S: 27.34
		0355	BO				49° 47.18	124° 32.28		311					
		0400	EN				49° 47.18	124° 32.26							
2	22	0534	BE	CTD		68	49° 40.19	124° 16.21	352		—	—	HM/MH/KS	✓	T: 7.94 S: 27.13
		0541	BO				49° 40.18	124° 16.19		348					
		0548	EN				49° 40.19	124° 16.23							
2	15	0906	BE	CTD		69	49 51.61	124 1.59	128		—	—	R/S/GC	✓	T: 8.2 S: 28.9
		0908	BO				51.61	1.59		125					Tair: 4.9
		0910	EN				51.61	1.60							
2	14	0927	BE	ROS	US	70	49 53.02	124 59.64	316		257-271	15	R/S/GC	✓	T: S:
		0934	BO				53.02	59.63		310					
		0951	EN				53.00	59.76							

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Month <u>DEC</u>				Year <u>2011</u>			Ship <u>VECTOR</u>			Cruise ID <u>2011-11</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	13	10 27	BE	CTD		71	49 55.31	124 55.20	238				R/DS	✓	T: 7.9 S: 28.2
		10 32	BO				55.30	55.26		227					
		10 36	EN				55.31	55.23							
2	19	11 39	BE	CTD		72	50 1.21	124 52.90	280				R/DS	✓	T: 7.9 S: 27.6
		11 46	BO				1.20	52.92		265					Tair: 4.7
		11 51	EN				1.20	52.91							
2	18	12 28	BE	CTD		73	49 59.20	124 58.88	141				R/DS	✓	T: 7.8 S: 27.7
		12 32	BO				59.19	58.86		140					Tair: 5.2
		12 34	EN				59.19	58.85							
2	17	13 00	BE	CTD		74	49 58.81	125 4.30	265				R/DS	✓	
		13 07	BO				58.81	4.30		260					
		13 12	EN				58.81	4.24							
2	16	13 39	BE	ROS		75	49 57.71	125 8.79	155		272-282	11	R/DS	✓	T: 8.0 S: 28.5
		13 43	BO				57.72	8.78		152					
		13 53	EN				57.70	8.79							

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This page is for any notes or observations

altimeter shows 5m from bottom, cap left on pH sensor

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Month DEC				Year 2011			Ship VECTOR			Cruise ID 2011-11					
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	21	1536	BE	CTD		76	50 2.05	125 13.61	81					✓	T: 8.36 S: 28.99
		1539	BO				1.96	13.52		79					Tair: 8.3
		1540	EN				1.88	13.45							
2	OKISALLO CHADIER	1915	BE	CTD		77	50 17.46	125 20.38	117				R	✓	
		1918	BO				17.46	20.39		115					
		1920	EN				17.46	20.41							
2	OKI CH	1915	DE			78	plankton tow			Maria, Melissa + Mike					
		1945	RE												
2	OKI CH	2015	DE			79	plankton tow			Maria, Melissa, Kenny + Mike					
		2045	RE												
2	OKI CH	2022	BE	CTD78		80	50 18.65	125 16.84	122				R	✓	
		2026	BO				18.62	16.78		120					
		2028	EN				18.58	16.73							

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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							
2	Johnstone	2346	BE	CTD79		81	50 20.29	125 27.89	319				RE	✓	
		2352	BO				20.27	27.89		305					
		2357	EN				20.28	27.89							
3	Nodules	1615	DE			82	plankton tow		Monia, Peter + Nathan						
		1935	RE												
		1730 lost													
		1300 lost													
3	Nodules	2100	DE			83	plankton tow		Monia, Melissa, Kenney + Corey						
4		0100	RE												
		1700 lost													
3	Nodules	2107	BE	CTD80		84	50 24.74	125 19.46	286				RE	✓	T: 8.25 S: 28.85
		2112	BO				24.69	19.51		280					
		2117	EN				24.66	19.52							
3	Frederick	2140	BE	CTD81		85	50 26.90	125 18.11	296				RE	✓	
	Ann	2147	BO				26.83	18.14		295					
		2152	EN				26.81	18.22							

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9:37 PM

23 16

15-15

8 h

8 h

3 25

9:25

7:25