DAILY SCIENCE LOG BOOK

MISSION NUMBER 2012-04

DATE: From: 5 APRIL 2012 to: 10 APRIL 2012

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: JEFF NEMRAVA First Officer: MATT TAYLOR
Second Officer: STEVE SWIFT Third Officer: _____
Fishing Master: _____

Mission Participants / Agencies: _____

Scientific Personnel: Chief Scientist: PETER CHANDLER

Name	Watch	Cabin	Name	Watch	Cabin
Hugh Maclean	0-12				
Glenn Cooper	0-12				
Scott Rose	12-24				
Kenny Scozzafava	12-24				
Stephen Murphy	0-12				

Second leg of Mission: Chief Scientist: _____

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: #2
Data acquisition program: SEASAVE
CTD deck unit make: SBE model: 11+ serial number: 0425

Primary CTD
Make: SBE model: 9+ serial number: 506
Primary temperature serial number: 2038
Primary conductivity serial number: 3394
Secondary temperature serial number: 4883
Secondary conductivity serial number: 1763
Transmissometer: Wetlabs Model: C-star s/n: 1396DR
Fluorometer: Model Seapoint Cable gain: 10X s/n: 2228 **P, S or NO pump?** (S)
Oxygen sensor: SBE Model: 43 s/n: 1119 **P, S or NO pump?** (P)
PAR sensor: BIO-SPHER Model: _____ s/n: 4601
Other sensors: pH SBE18 s/n: 0692 **P, S or NO pump?** (NO)
Other sensors: _____ s/n: _____ **P, S or NO pump?**
Other sensors: _____ s/n: _____ **P, S or NO pump?**
Other sensors: _____ s/n: _____ **P, S or NO pump?**

Secondary CTD
Make: _____ model: _____ serial number: _____
Primary temperature serial number: _____
Primary conductivity serial number: _____
Secondary temperature serial number: _____
Secondary conductivity serial number: _____
Transmissometer: _____ Model: _____ s/n: _____
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?**
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): _____

Rosette Setup:
Number of bottles: 24
Manufacturer: IOS
Volume of bottles (litres): 10

Winches:
1. Make: SWAN Model: 329 Serial #: 1307 Used for: CTD
2. Make: _____ Model: _____ Serial #: _____ Used for: _____
3. Make: _____ Model: _____ Serial #: _____ Used for: _____

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

Salinometer:
Make: _____ Model: _____ Serial Number: _____

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

Oxygen Kit(s):
Make: IOS Kit #1 Model: _____ Kit Number: _____
Make: _____ Model: _____ Kit Number: _____

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

Thermosalinograph System (SBE21):
Program: _____ Version: _____
Sampling interval (seconds): _____
Fluorometer sensor serial number: _____

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

ADCP Setup:
Computer time zone: _____ User Exits: Name: _____ Exit points: _____
Sampling interval (sec): _____ Name: _____ Exit points: _____
Bin Length: (2^x): _____ Name: _____ Exit points: _____
Pulse Length: _____ Work File: _____
Buffer (bytes): _____
Gyro Offset: _____

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

CTD Test Cast Information

Test Cast along side? Yes ☐ No ☒
Comments _____

Test Cast in Saanich Inlet or other location? Yes ☑ No ☐
Comments _____

CTD pressure reading on deck (db), before cast: _____ after cast: _____

Pumps working? Yes ☑ (0011) No ☐ (0010)

Secondary Temp – Primary Temp: _____
(Average from the mixed region)

Secondary Salinity – Primary Salinity: _____
(Average from the mixed region)

Additional Comments:

DAILY SCIENCE LOG

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Month | **Year** | **Ship** | **Cruise ID** 2012-04

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
05	SI	2250	BE	CTD		1	48 39.25	123 30.21	187		—		SR/R	✓	dual chl. test
		2257	BO				39.21	30.21		100					transmissometer
		2300	EN				39.20	30.20							disconnected
05	SI	2308	BE	ROS	US	2	48° 39.20	123° 30.18	187		1–9	9	R/SR	✓	transmissometer
		2311	BO				48° 39.21	123° 30.18		100					re-connected
		2319	EN				48 39.23	123° 30.18							
06	58	0057	BE	CTD		3	48° 43.10	123° 14.20	334		—			✓	20° wire angle
		0103	BO				48 43.14	123° 14.20		324					
		0110	EN				48 43.18	123 14.29							
6	59	0152	BE	ROS		4	48 37.76	123 14.64	228		10–23		R/SR	✓	
		0158	BO				37.81	14.67		221			RS/BC		
		0212	EN				37.81	14.74							
06	60	0254	BE	CTD		5	48 33.92	123 12.84	304				R/SR	✓	
		0300	BO				33.83	12.87		294					
		0306	EN				33.68	12.86							

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
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
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Time Code:
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Notes: _____

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This page is for any notes or observations

Depart Port Bay - 15h26 5 APRIL 2017 - Sunny + cool

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month April **Year** 2012 **Ship** Vector **Cruise ID** 2012-04

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
6	61	0409	BE	CTD		6	48 29.19	123 9.02	205		—		PC+SR	✓	
		0413	BO				48 29.18	123 8.99		200					
		0417	EN				48 29.17	123 8.99							
6	101	1254	BE	CTD		7	48° 25.40	124° 45.19	236		—		H.M+SM	✓	
		1259	BO				48° 25.37	124° 45.25		215					
		1304	EN				48° 25.34	124° 45.30							
6	102	1341	BE	ROS		8	48° 30.03	124° 44.11	252		24-37	14	H.M+SM	✓	T: 8.48 S: 29.71
		1346	BO				48° 30.03	124° 44.11		245					
		1401	EN				48° 29.92	124° 44.37							
6	103	1451	BE	CTD		9	48° 33.02	124° 43.09	121		—		H.M/S.M/α	✓	T: 8.17 S: 29.26
		1454	BO				48° 33.06	124° 43.19		114					
		1456	EN				48° 33.08	124° 43.28							
6	76	1612	BE	CTD		10	48° 31.37	124° 30.01	88		—		H.M/S.M	✓	T: 8.16 S: 29.72
		1614	BO				48° 31.38	124° 30.14		84					
		1616	EN				48° 31.38	124° 30.22							

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6	75	1646	BE	ROS	U.S.	11	48° 28.24	124° 32.76	220		38-51	14	HM/SM	✓	T: 8.67 S: 29.11
		1650	BO				48° 28.22	124° 32.87		218					
		1705	EN				48° 28.19	124° 33.18							
6	74	1730	BE	CTD		12	48° 25.14	124° 35.57	188		—	—	HM/SM	✓	T: 8.60 S: 28.97
		1737	BO				48° 25.12	124° 35.60		184					
		1740	EN				48° 25.10	124° 35.68							
6	73	2005	BE	CTD		13	48 15.01	124 6.65	161		—		PC/SR	✓	
		2008	BO				48 14.98	124 6.62							
		2011	EN				48 14.95	124 6.55							
6	72	2046	BE	ROS		14	48 18.56	124 3.90	186		52-64		PC/SR	✓	
		2050	BO				18.53	3.75		183					
		2103	EN				18.38	3.24							
6	71	2146	BE	CTD		15	48 22.17	123 59.20	109		—		PC/SR	✓	
		2148	BO				48 22.15	123 59.13		104			KS		
		2150	EN				48 22.12	123 59.08							

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6	70	2302	BE	CTD		16	48 19.14	123 43.19	156		—		PC/SR	✓	
		2305	BO				48 19.10	123 43.16		151					
		2307	EN				48 19.04	123 43.10							
6	69	23 37	BE	ROS		17	48 15.50	123 43.09	172		65 - 76	12	PC/SR	✓	
		23 41	BO				1535	42.98		168			KS		
		23 53	EN				1503	42.50							
7	68	0031	BE	CTD		18	48 11.91	123 42.93	135		—		PC/SR	✓	
		0033	BO				48 11.89	123 42.88		129					
		0035	EN				48 11.87	123 42.84							
7	105	0223	BE	CTD		19	48 11.03	123 19.07	87		—		PC/SR	✓	
		0225	BO				48 11.03	123 19.07		82					
		0226	EN				48 11.03	123 19.09							
7	ADCP	0251	BE	ROS		20	48 13.96	123 18.10	118		77-86	10	PC/SR	✓	rosette bumped
		0255	BO				13.96	18.14		114					A-frame on launch
		0303	EN				13.97	18.22							

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7	104	0351	BE	CTD		21	48 19.96	123 18.25	87		—		PC/SR	✓	
		0353	BO				48 19.96	123 18.28		83					
		0354	EN				48 19.96	123 18.32							
7	67	0433	BE	CTD		22	48 22.81	123 18.14	10		—		PC/SR	✓	
		0434	BO				48 22.81	123 18.15							
		0436	EN				48 22.81	123 18.16							
7	66	0520	BE	CTD		23	48 19.23	123 14.25	102		—		PC/SR	✓	
		0521	BO				48 19.22	123 14.32		98					
		0523	EN				48 19.21	123 14.37							
7	65	0600	BE	ROS		24	48 15.86	123 9.90	126		87-96	10	R/SR	✓	
		0602	BO				48 15.80	123 9.90		122			KS/GC		
		0611	EN				48 15.60	123 9.80							
7	64	0642	BE	CTD		25	48 12.82	123 5.87	109		—		PC/SR	✓	
		0644	BO				48 12.81	123 5.86		104					
		0646	EN				48 12.80	123 5.86							

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Month APRIL **Year** 2012 **Ship** VECTOR **Cruise ID** 2012-04

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
7	63	0729	BE	CTD		26	48° 14.62	122° 58.52	154		—	—	HM/SM	✓	T: 7.87 S: 30.10
		0732	BO				48° 14.66	122° 58.48		142					
		0735	EN				48° 14.69	122° 58.47							
7	62	0834	BE	ROS		27	48° 22.80	123° 02.56	148		97-107	11	HM/SM	✓	T: 7.74 S: 30.11
		0837	BO				48° 22.81	123° 02.61		143					
		0847	EN				48° 22.93	123° 02.63							
7	54	1018	BE	CTD		28	48° 26.62	122° 44.36	78		—	—	HM/SM	✓	T: 7.63 S: 29.84
		1020	BO				48° 26.61	122° 44.36		75					
		1022	EN				48° 26.62	122° 44.37							
7	53	1104	BE	CTD		29	48° 33.24	122° 44.94	58		—	—	HM/SM	✓	T: 7.65 S: 29.82
		1106	BO				48° 33.24	122° 44.93		57					
		1107	EN				48° 33.28	122° 44.93							
7	52	1144	BE	CTD		30	48° 39.93	122° 43.30	86		—	—	HM/SM.	✓	T: 7.60 S: 29.93
		1146	BO				48° 39.95	122° 43.22		82					
		1148	EN				48° 39.96	122° 43.18							

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7	51	1259	BE	CTD		31	48° 46.73	122° 51.59	164		—	—	H.M/S.M	✓	T: 7.63 S: 29.65
		1302	BO				48° 46.71	122° 51.60		160					
		1305	EN				48° 46.69	122° 51.61							
7	56	1403	BE	ROS		32	48° 46.39	123° 01.64	212		108-121	14	HM/SM	✓	T: 7.69 S: 29.05
		1407	BO				48° 46.27	123° 01.70		213					
		1420	EN				48° 46.03	123° 01.93							
7	57	1451	BE	CTD		33	48° 43.96	123° 08.13	162		—	—	H.M/SM	✓	T: 7.56 S: 30.11
		1454	BO				48° 43.94	123° 08.24		161					
		1457	EN				48° 43.91	123° 08.33							
7	47	1637	BE	CTD		34	48° 49.27	123° 06.14	183		—	—	H.M/SM	✓	T: 7.96 S: 27.39
		1640	BO				48° 49.26	123° 06.11		179					
		1643	EN				48° 49.21	123° 05.99							
7	48	1710	BE	CTD		35	48° 51.66	123° 03.16	215		—	—	H.M/SM		T: 7.82 S: 28.43
		1713	BO				48° 51.64	123° 03.09		201					
		1717	EN				48° 51.57	123° 03.03							

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7	49	1750	BE	CTD		36	48° 54.97	122° 59.59	130		—	—	HM/SM	✓	T: 7.65 S: 29.91
		1752	BO				48° 54.98	122° 59.57		126					
		1755	EN				48° 54.98	122° 59.55							
7	50	1823	BE	CTD		37	48° 57.68	122° 56.10	24		—	—	HM/SM		T: 7.90 S: 29.61
		1824	BO				48° 57.68	122° 56.09		21					
		1824	EN				48° 57.68	122° 56.08							
7	44	1921	BE	CTD		38	48 56.68	123 5.90	118		—	—	PC/SR	✓	T: S:
		1923	BO				48 56.68	123 5.90		113					
		1925	EN				48 56.67	123 5.87							
7	44	1935	BE	CTD		39	48 56.70	123 5.98							Dual fluorometers
		1938	BO				48 56.66	123 5.96							
		1945	EN				48 56.64	123 5.95							
	45	2008	BE			40	48 53.87	123 8.34							Dual Fluorometers
		2011	BO				48 53.81	123 8.36							
		2013	EN				48 53.79	123 8.36							

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7	45	2022	BE	CTD		41	48 53.85	123 8.43	127		—		PC/SR	✓	Back to just the Seapoint Fluorometer
		2024	BO				48 53.82	123 8.43		122					
		2027	EN				48 53.79	123 8.42							
7	46	2050	BE	ROS	US	42	48 51.40	123 10.88	179		122-133	12	PC/SR		
		2053	BO				48 51.36	123 11.02		176					
		2105	EN				48 51.25	123 11.27							
7	106	2214	BE	CTD		43	49 0.99	123 13.24	75		—		PC/SR	✓	
		2216	BO				49 1.00	123 13.21		70					
		2218	EN				49 1.01	123 13.20							
7	107	2249	BE	CTD		44	48 58.44	123 18.04	18		—		PC/SR	✓	
		2252	BO				48 58.42	123 18.07							
		2256	EN				48 58.42	123 18.11							
7	43	2352	BE	CTD		45	49 0.18	123 30.12	191		—		PC/SR	✓	
		2356	BO				49 0.19	123 30.15		186					
		2359	EN				49 0.20	123 30.15							

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MR = Messenger Release Time
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Transmissometer to be cleaned before each cast, do not use Ammonia products

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Version: 16 April 2010

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month APRIL **Year** 2012 **Ship** VECTOR **Cruise ID** 2012 04

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	42	00 32	BE	ROS	US	46	49 1.79	123 26.22	320		134 - 149	16	PC/SR	✓	T: 10.8°C
		00 39	BO				1.73	26.19		315			KS/GC		
		00 56	EN				1.55	26.11							
8	41	0145	BE	CTD		47	49 3.28	123 22.30	244		—		PC/SR	✓	
		0149	BO				49 3.24	123 22.32		240					
		0153	EN				49 3.19	123 22.36							
8	108	0229	BE	CTD		48	49 4.35	123 19.12	99		—		PC/SR	✓	
		0231	BO				49 4.31	123 19.09		95					
		0233	EN				49 4.27	123 19.07							
8	37	0400	BE	CTD		49	49 13.52	123 20.73	216		—		PC/SR	✓?	The rosette was brought back on board briefly but trans not cleaned again
		0404	BO				49 13.50	123 20.74		211					
		0408	EN				49 13.49	123 20.74							
							01	38							
	38	0449	BE	CTD		50	49 12.01	123 26.38	308				PC/SR	✓	
		0454	BO				49 11.99	123 26.35		302					
		0500	EN				49 11.98	123 26.32							

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Bottle Firing Method:
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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	39	0541	BE	ROS	US	51	49 9.37	123 32.94	384		150-166	17	RE/EP/KS		replace fluorometer
		0550	BO				9.32	32.88		377					10x with 3x cable
		0607	EN				9.31	32.80							
8	40	0701	BE	CTD		52	49° 08.53	123° 36.02	158		—	—	HM/GC	✓	T: 8.63 S: 27.24
		0704	BO				49° 08.53	123° 36.02		137					
		0707	EN				49° 08.51	123° 36.81							
8	26	0837	BE	CTD		53	49° 14.29	123° 50.76	256		—	-	HM/SM	✓	T: 7.89 S: 28.8
		0842	BO				49° 14.32	123° 50.73		254					
		0846	EN				49° 14.32	123° 50.68							
8	27	0926	BE	ROS	U.S.	54	49° 19.09	123° 48.02	354		167-182	16	HM/SM/GC	✓	T: 8.40 S: 26.20
		0932	BO				49° 19.07	123° 48.02		341					
		0950	EN				49° 19.07	123° 48.14							
8	28	1031	BE	CTD		55	49° 24.11	123° 45.35	134		—	—	HM/SM	✓	T: 8.36 S: 26.94
		1034	BO				49° 24.09	123° 45.36		129			GC		
		1036	EN				49° 24.07	123° 45.37							

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high fluorescence, close to 15, replace 10x cable LTL 3x cable
range 0-15 0-50

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	24	1213	BE	CTD		56	49° 30.32	124° 05.95	428		—	—	HM/SM/GC	✓	T: 8.59 S: 27.93
		1221	BO				49° 30.32	124° 05.92		420					
		1228	EN				49° 30.33	124° 05.91							
8	25	1252	BE	CTD		57	49° 27.70	124° 07.48	291		—	—	HM/SM	✓	T: 7.97 S: 28.16
		1258	BO				49° 27.66	124° 07.47		294					
		1303	EN				49° 27.63	124° 07.42							
8	2	1335	BE	ROS		58	49° 24.10	124° 09.28	279		183-198	16	HM/SM	✓	T: 7.96 S: 27.35
		1340	BO				49° 24.10	124° 09.26		274					
		1355	EN				49° 24.10	124° 09.18							
8	1	1428	BE	CTD		59	49° 20.31	124° 12.07	248		—	—	HM/SM	✓	T: 8.39 S: 28.33
		1432	BO				49° 20.33	124° 12.06		246					
		1437	EN				49° 20.33	124° 12.05							
8	4	1528	BE	CTD		60	49° 24.49	124° 22.07	344		—	—	HM/SM	✓	T: 8.23 S: 28.01
		1534	BO				49° 24.49	124° 22.08		339					
		1541	EN				49° 24.50	124° 22.06							

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Month APRIL **Year** 2012 **Ship** VECTOR **Cruise ID** 2012-04

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	3	1601	BE	ROS		61	49° 26.60	124° 20.18	323		199- 214	16	HM/SM	✓	T: 8.78 S: 28.22
		1607	BO				49° 26.60	124° 20.19		317					NO OXY
		1623	EN				49° 26.60	124° 20.18							
8	5	1712	BE	CTD		62	49° 27.38	124° 30.81	316		—	—	HM/SM	✓	T: 8.32 S: 28.72
		1717	BO				49° 27.38	124° 30.86		308					
		1723	EN				49° 27.33	124° 30.93							
8	6	1757	BE	ROS		63	49° 30.59	124° 27.81	190		215- 227		HM/SM	✓	T: 7.96 S: 28.89
		1801	BO				49° 30.59	124° 27.80		185					
		1812	EN				49° 30.57	124° 27.77							
8	7	1845	BE	CTD		64	49° 34.37	124° 24.21	350		—	—	HM/SM	✓	T: 8.40 S: 28.61
		1853	BO				34.37	24.19		343					
		1858	EN				34.36	24.19							
8	8	1952	BE	CTD		65	49 39.23	124 33.01	334				~~RE~~/SR	✓	T: 8.40
		1957	BO				39.24	33.01		330					
		2002	EN				39.24	33.02							

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Ocean Sciences Division, Institute of Ocean Sciences

Month | **Year** | **Ship** | **Cruise ID**

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	9	2044	BE	CTD		66	49 35 49	124 38 .30	167				PC/SR	✓	transmissimeter
		2046	BO				49 35.48	124 38.28							
		2049	EN				49 35.47	124 38.28							
8	9	2055	BE	ROS	U/S	67	49 35.47	124 38.29	167				PC/SR		dual fluorometers
		2100	BO				49 35.47	124 38.29		161					
		2111	EN				49 35.44	124 38.32							
8	10	2208	BE	CTD		68	49 40.69	124 47.29	95				PC/SR	✓	
		2210	BO				49 40.69	124 47.29		90					
		2212	EN				49 40.70	124 47.29							
8	11	2235	BE	CTD		69	49 42.39	124 43.42							
		2239	BO				49 42.40	124 43.41							OOPS!
		2244	EN				49 42.39	124 43.41							
	12	2300	BE	ROS		70	49 43.58	124 40.81	356				PC/SR	✓	
		2306	BO				43.59	40.81		349					
		2322	EN				43.55	40.80							

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- restart cast to change .con file
- replace transmissometer with WetLabs fluorometer on rosette cast 30 s stops
  compare with Seapoint + 3x cable

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Month April **Year** 2012 **Ship** Vector **Cruise ID** 2012-04 **Page** 15 **of** ____

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
9	13	0052	BE	CTD		71	49 55.29	124 55.19	235		—		PC/SR	✓	
		0056	BO				49 55.30	124 55.20		231					
		0100	EN				49 55.31	124 55.21							
9	14	0128	BE	ROS	US	72	49 52.99	124 59.61	316		256-270	15	PC/SR	✓	
		0135	BO				53.00	59.59		310					
		0149	EN				53.00	59.61							
9	15	0228	BE	CTD		73	49 51.59	125 1.58	128		—		PC/SR	✓	
		0230	BO				49 51.59	125 1.56		123					
		0232	EN				49 51.58	125 1.49							
9	21	0349	BE	CTD		74	50 2.03	125 13.59	88		—		PC/SR	✓	
		0351	BO				2.14	13.68		83					
		0352	EN				2.22	13.75							
9	16	0455	BE	ROS		75	49 57.69	125 8.79	155		271-281	11	PC/SR	✓	T: 7.6
		0458	BO				57.67	8.79		152					strong tidal flow
		0507	EN				57.65	9.17							

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Month APRIL **Year** 2012 **Ship** VECTOR **Cruise ID** 2012 04

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
9	17	0539	BE	CTD		76	49 58.79	125 4.34	267		—		PC/SR	✓	
		0543	BO				58.77	4.32		262					
		0548	EN				58.76	4.32							
9	18	0621	BE	CTD		77	49 59.18	124 58.95	147		—		PC/SR	✓✓	
		0624	BO				59.16	58.95		143					
		0626	EN				59.15	58.95							
9	19	0711	BE			78	50°01.19	124° 52.91	283		—	—	HM/SM	✓	T: 8.26 S: 28.15
		0716	BO				50° 01.21	124° 52.89		265					
		0722	EN				50° 01.20	124° 52.88							
9	20	0931	BE			79	49° 47.21	124° 32.30	310		—	—	HM/SM	✓	T: 7.82 S: 28.28
		0937	BO				49° 47.22	124° 32.31		306					
		0944	EN				49° 47.23	124° 32.31							
9	22	1107	BE			80	49° 40.20	124° 16.31	353		—		HM/SM	✓	T 7.99 S: 28.11
		1113	BO				49° 40.18	124° 16.31		348					
		1120	EN				49° 40.17	124° 16.30							

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This page is for any notes or observations

Annie Pat Bay 12h00 local April 9, via Acadie Pass