

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2019-043

DATE:

From:

8 JUN 2019

To:

11 JUN 2019

VESSEL:

PROJECT(S):

BAYNES Sound

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

WaterProperties.ca

Captain: Rhona Lettice

Second Officer: Celina Radzyk

Fishing Master: _____

First Officer: Brock Tazel

Third Officer: _____

Chief Engineer: John Gibas

Misión Participants / Agencies:

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

1st Leg Scientific Personnel: Chief Scientist: Terry Schindler

[illegible]

2nd Leg Scientific Personnel: _____ **Chief Scientist:** _____

[illegible]

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

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

Data logging computer: 10.249.56.137

Data acquisition program: SEAVIEW

CTD deck unit make: SBC model: SBC 114 serial number: 0619

Primary CTD

Make: SBC model: 9, serial number: 443

Primary temperature serial number: 4888

Primary conductivity serial number: 3531

Secondary temperature serial number: 4700

Secondary conductivity serial number: 4513

Transmissometer: WETLASS Model: C-Star s/n: 95302

Transmissometer: _____ Model: _____ s/n: _____

Fluorometer: Model SEA-BAT Cable gain: 32 s/n: 36612 P S or NO pump?

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

Oxygen sensor: SBC Model: 43 s/n: 3791 P, S or NO pump?

PAR sensor: BROADBENT Model: GP220045 s/n: 4565 Surface PAR? Y / N

Other sensors: PH s/n: 0691 P, S or NO pump?

Other sensors: Altimeter s/n: 43281 P, S or NO pump?

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

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

Secondary CTD

Make: _____ model: _____ serial number: _____

Primary temperature serial number: _____

Primary conductivity serial number: _____

Secondary temperature serial number: _____

Secondary conductivity serial number: _____

Transmissometer: _____ Model: _____ s/n: _____

Transmissometer: _____ Model: _____ s/n: _____

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

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

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

PAR sensor: _____ Model: _____ s/n: _____ Surface PAR? Y / N

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

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

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

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

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

This also includes the bottle location above the CTD on non-rosette casts (e.g., W.E. Ricker)

Rosette Setup:

Number of bottles: 24
Manufacturer: 105
Volume of bottles (litres): 106

Winches:

1. Make: SLAWT Model: 329 Serial #: 1367 Used for: CTD DEPLOYMENT
2. Make: SLAWT Model: 420 Serial #: 1567 Used for: CRAB
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: SCIRPS Model: _____ Kit Number: 2
Make: _____ Model: _____ Kit Number: _____
Comments on performance during cruise (comments should also be reflected in the post-cruise report):

Thermosalinograph System (SBE21):

Program: SEAVUE Version: SN: 2488
Sampling interval (seconds): 30
Fluorometer sensor serial number: NA

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 SATISFACTORY

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: _____

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Month <u>JUNE</u>				Year <u>2019</u>			Vessel <u>VECTOR</u>			Cruise ID <u>2019-043</u>						Page <u>1</u> of <u> </u>	
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments		
							Latitude	Longitude									
1	SI	8	18:30	BE	ROS	US	48° 39.430	123° 29.654	118		1 - 5	-	MB	☒ ☐	TEST - CLOSED		
			18:33	BO			° 39.442	° 29.678		100	-			☐ ☐	12 BOTTLES		
			18:35	EN			° 39.446	° 29.699			-			☐ ☐			
2	BS0.4	9	14:04	BE	GRB		49° 39.110	124° 53.714	45		-		MB/TS	☐ ☐			
			14:05	BO			° 39.112	° 53.713		45	-			☐ ☐			
			14:06	EN			° 39.111	° 53.713			-			☐ ☐			
3	BS0.6	9	14:31	BE	GRB		49° 38.979	124° 53.354	49		-		MB/TS	☐ ☐			
			14:32	BO			° 38.979	° 53.355		49	-			☐ ☐			
			14:34	EN			° 38.981	° 53.353			-			☐ ☐			
4	BS1.3	9	15:04	BE	GRB		49° 37.984	124° 52.279	39		-		MB/TS	☐ ☐			
			:05	BO			° 37.984	° 52.278		39	-			☐ ☐			
			:06	EN			° 37.984	° 52.278			-			☐ ☐			
5	BS1.4	9	15:29	BE	GRB		49° 37.408	124° 51.739	35		-		MB/TS	☐ ☐			
			15:30	BO			° 37.409	° 51.740		35	-			☐ ☐			
			15:31	EN			° 37.409	° 51.738			-			☐ ☐			
6	BS2.0	9	15:57	BE	ROS	US	49° 38.404	124° 53.672	35		13 - 17		MB/TS	☒ ☐			
			15:58	BO			° 38.403	° 53.673		30	-			☐ ☐			
			16:03	EN			° 38.384	° 53.678			-			☐ ☐			
			:				°	°			-			☐ ☐			
Event Type: <u>ROS</u> LOOP = Sea Water Loop Bottle Firing Method: <u>US</u> Time Code: <u>00</u>																	

Event Type:

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

LOOP = Sea Water Loop
MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter
GRB = GRAB

Bottle Firing Method:

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

Notes:

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

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TEST CAST FOR 2019-043. CHANGED OUT WINCH FOLLOWING 2019-050, THAT WAS EXPERIENCING CONNECTIVITY PROBLEMS. DREW SAMPLES FOR EXERCISE PURPOSES. SAMPLES NOT DRAWN UNTIL AFTER LUNCH. SAT ON DECK FOR ~ 1-HR.

SKIPPED #'S 6-12

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Month <u>JUNE</u>			Year <u>2019</u>			Vessel <u>VECTOR</u>			Cruise ID <u>2019-043</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
7	BS55	9	16:23	Be	CRB		49° 36.750	124° 52.074	39		-	-	MB/TS	☐ ☐	GRAB completed
			16:23	Bo			° 36.750	° 52.074		39	-	-		☐ ☐	-TOP OPENED
			16:24	En			° 36.751	° 52.074			-	-		☐ ☐	REDO
8	BS55	9	16:30	Be	CRB		49° 36.750	124° 52.052	39		-	-	MB/TS	☐ ☐	2 nd ATTEMPT
			16:31	Bo			° 36.750	° 52.045		39	-	-		☐ ☐	
			16:32	En			° 36.749	° 52.039			-	-		☐ ☐	
9	BS21	9	16:47	Be	CRB		49° 36.534	124° 52.074	39		-	-	MB/TS	☐ ☐	
			16:48	Bo			° 36.535	° 52.070		39	-	-		☐ ☐	
			16:49	En			° 36.535	° 52.070			-	-		☐ ☐	
10	BS24	9	17:05	Be	CRB		49° 36.297	124° 51.879	29		-	-	MB/TS	☐ ☐	FAILED
			:06	Bo			° 36.298	° 51.879		29	-	-		☐ ☐	GOT ROCKS
			:06	En			° 36.298	° 51.879			-	-		☐ ☐	REDO
11	BS24	9	17:10	Be	CRB		49° 36.299	124° 51.881	29	29	-	-	MB/TS	☐ ☐	2 nd ATTEMPT
			:11	Bo			° 36.299	° 51.881			-	-		☐ ☐	
			:11	En			° 36.299	° 51.881			-	-		☐ ☐	
12	BS52B	9	17:26	Be	CRB		49° 36.220	124° 51.821	30		-	-	MB/TS	☐ ☐	
			:27	Bo			° 36.221	° 51.821		30	-	-		☐ ☐	
			:27	En			° 36.221	° 51.820			-	-		☐ ☐	
			:				° .	° .			-	-		☐ ☐	

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Month <u>JUNE</u>			Year <u>2019</u>			Vessel <u>VECTOR</u>			Cruise ID <u>2019-043</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
13	BS5.1	9	17:44	BE	GRB	-	49° 36.098	124° 51.715	34		-		MB/TS	☐	
			17:44	BO			° 36.097	° 51.713		34	-			☐	
			17:45	EW			° 36.097	° 51.713			-			☐	
14	BS27	9	17:58	BE	GRB	-	49° 36.050	124° 51.670	37		-		MB/TS	☐	
			17:59	BO			° 36.050	° 51.671		37	-			☐	
			18:00	EW			° 36.047	° 51.672			-			☐	
15	BS5.0	9	18:15	BE	ROS	US	49° 35.867	124° 51.588	42		18-23	6	MB	☒	
			18:16	BO			° 35.864	° 51.588		37	-			☐	
			18:23	EW			° 35.848	° 51.596			-			☐	
16	BS4.1A	9	19:28	BE	GRB	-	49° 36.086	124° 50.804	27		-		MB/TS	☐	
			19:29	BO			° 36.086	° 50.803		27	-			☐	
			19:29	EW			° 36.086	° 50.804			-			☐	
17	BS4.3	9	19:54	BE	GRB	-	49° 35.680	124° 50.844	24		-		MB/TS	☐	
			19:55	BO			° 35.681	° 50.844		24	-			☐	
			19:55	EW			° 35.681	° 50.844			-			☐	
18	BS6.0	9	20:22	BE	GRB		49° 35.628	124° 52.553	28		-		MB/TS	☐	
			20:23	BO			° 35.632	° 52.558		28	-			☐	
			20:23	EW			° 35.633	° 52.559			-			☐	
			:				° .	° .			-			☐	

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Month				Year			Vessel				Cruise ID				
JUNE				2019			VECTOR				2019 - 043				
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
19	BS7.0	9	20:48	BE	GRB	-	49° 34.022	124° 52.323	26		-		MB/TS	☐ ☐	FAIL
			20:48	BO			° 34.020	° 52.324		26	-			☐ ☐	
			20:49	EN			° 34.020	° 52.324			-			☐ ☐	
20	BS7.0	9	20:54	BE	GRB	-	49° 34.020	124° 52.319	26		-	-	MB/TS	☐ ☐	REDO
			20:55	BO			° 34.019	° 52.320		26	-			☐ ☐	
			20:55	EN			° 34.019	° 52.320			-			☐ ☐	
21	BS8.0	9	21:20	BE	ROS	US	49° 34.148	124° 51.565	45		24 - 29	6	MB	☒ ☐	
			21:21	BO			° 34.147	° 51.557		45	-			☐ ☐	
			21:27	EN			° 34.136	° 51.539			-			☐ ☐	
22	BS8.0	9	21:40	BE	GRB	-	49° 34.131	124° 51.563	43		-	-	MB/TS	☐ ☐	FAIL
			21:40	BO			° 34.131	° 51.568		43	-			☐ ☐	
			21:41	EN			° 34.131	° 51.568			-			☐ ☐	
23	BS8.0	9	21:48	BE	GRB	-	49° 34.135	124° 51.581	45		-			☐ ☐	REDO
			21:49	BO			° 34.134	° 51.581		45	-			☐ ☐	
			21:49	EN			° 34.127	° 51.589			-			☐ ☐	
24	BS9.0	9	22:15	BE	GRB		49° 34.304	124° 50.923	22		-			☐ ☐	
			22:16	BO			° 34.301	° 50.918		22	-			☐ ☐	
			22:17	EN			° 34.136	° 51.539			-			☐ ☐	
			:				°	°			-			☐ ☐	

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Month <u>JUNE</u>			Year <u>2019</u>		Vessel <u>VECTOR</u>			Cruise ID <u>2019-043</u>							
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
							Latitude	Longitude							
25	BS 8.1	9	22:49	BE	GRB	-	49° 33.792	124° 51.238	37		-	-	MB/TS	☐	
			22:49	BO			° 33.792	° 51.238		37	-			☐	
			22:50	EW			° 33.792	° 51.239			-			☐	
26	BS 8.2	9	23:06	BE	GRB	-	49° 33.709	124° 51.208	34		-		MB/TS	☐	
			23:07	BO			° 33.706	° 51.215		34	-			☐	
			23:08	EW			° 33.705	° 51.217			-			☐	
27	BS 8.3	9	23:23	BE	GRB	-	49° 33.633	124° 51.154	27		-		MB/TS	☐	EAD
			23:24	BO			° 33.631	° 51.153		27	-			☐	
			23:24	EW			° 33.631	° 51.154			-			☐	
28	BS 8.3	9	23:27	BE	GRB	-	49° 33.630	124° 51.145	27		-		MB/TS	☐	RED O
			23:27	BO			° 33.630	° 51.144		27	-			☐	
			23:28	EW			° 33.629	° 51.142			-			☐	
29	BS 8.4	9	23:45	BE	GRB	-	49° 33.568	124° 51.159	32		-		MB/TS	☐	
			23:46	BO			° 33.572	° 51.160		32	-			☐	
			23:48	EW			° 33.578	° 51.151			-			☐	
30	BS 10	9	00:39	BE	GRB	-	49° 37.026	124° 51.009	20		-		MB/TS	☐	
			00:39	BO			° 37.026	° 51.008		20	-			☐	
			00:40	EW			° 37.026	° 51.008			-			☐	
			:				°	°			-			☐	

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Month <u>JUNE</u>				Year <u>2019</u>			Vessel <u>VECTOR</u>				Cruise ID <u>2019-043</u>				
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
31	BS11	10	01:04	BE	ROS	US	49° 32.172	124° 50.510	41		30-35	6	MB	☒	
			01:05	BO			° 32.171	° 50.512		35	-			☐	
			01:11	EN			° 32.161	° 50.513			-			☐	
32	BS11	10	01:25	BE	GRB	-	49° 32.176	124° 50.513	41		-		MB/TS	☐	WAYPOINTS
			01:26	BO			° 32.177	° 50.513		41	-			☐	WRONG SAYS BS12
			01:26	EN			° 32.177	° 50.513			-			☐	
33	BS12	10	01:51	BE	GRB	-	49° 32.383	124° 50.114	38		-		MB/TS	☐	WAYPOINTS
			01:52	BO			° 32.383	° 50.109		38	-			☐	WRONG SAYS BS11
			01:52	EN			° 32.384	° 50.106			-			☐	
34	BS15	10	14:05	BE	GRB	-	49° 30.604	124° 49.331	23		-		MB/TS	☐	
			14:05	BO			° 30.604	° 49.332		23	-			☐	
			14:06	EN			° 30.604	° 49.332			-			☐	
35	BS14	10	14:30	BE	ROS		49° 31.055	124° 48.688	47		36-41	6	MB	☒	
			14:32	BO		US	° 31.062	° 48.696		43	-			☐	
			14:37	EN			° 31.070	° 48.702			-			☐	
36	BS14	10	14:51	BE	GRB		49° 31.091	124° 48.721	47		-		MB/TS	☐	
			14:52	BO			° 31.092	° 48.719		47	-			☐	
			14:53	EN			° 31.093	° 48.717			-			☐	
			:				° .	° .			-			☐	

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Month <u>June</u>				Year <u>2009</u>			Vessel <u>VECTOR</u>				Cruise ID <u>2009-043</u>					Page <u>7</u> of <u> </u>	
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information		Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments		
37	BS13	10	15:10	BC	CRB	.	49° 31.324	124° 48.467	45		-	-	MB	☐ ☐			
			15:10	BO			° 31.324	° 48.467		45	-			☐ ☐			
			15:11	EN			° 31.324	° 48.467			-			☐ ☐			
38	BS17	10	15:42	BC	ROS	US	49° 29.081	124° 46.251	51		42 - 48	7	MB	☒ ☐			
			15:43	B			° 29.079	° 46.246		46	-			☐ ☐			
			15:52	EN			° 29.065	° 46.218			-			☐ ☐			
39	BS49	10	16:12	BC	ROS	US	49° 28.768	124° 45.570	65		-		MB	☒ ☐			
			16:13	BO			° 28.769	° 45.571		60	-			☐ ☐			
			16:15	EN			° 28.772	° 45.572			-			☐ ☐			
40	BS49	10	16:17	BC	CRB		49° 28.776	124° 45.583	65		-		MB	☐ ☐			
			16:17	BO			° 28.776	° 45.583		65	-			☐ ☐			
			16:18	EN			° 28.776	° 45.583			-			☐ ☐			
41	BS50	10	16:38	BC	CRB	.	49° 28.665	124° 45.250	82		-			☐ ☐			
			16:39	BO			° 28.664	° 45.251		82	-			☐ ☐			
			16:39	EN			° 28.662	° 45.253			-			☐ ☐			
42	BS20	10	17:12	BC	ROS		49° 28.337	124° 44.825	42		49 - 54	6	MB	☒ ☐			
			17:13	BO		US	° 28.334	° 44.822		36	-			☐ ☐			
			17:18	EN			° 28.332	° 44.813			-			☐ ☐			
			:				°	°			-			☐ ☐			
Event Type: LOOP = Sea Water Loop Bottle Firing Method: Firing Method:																	

Event Type:

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

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

Bottle Firing Method:

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

Time Code:

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

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

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

Notes:

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Month <u>JUNE</u>			Year <u>2019</u>			Vessel <u>VECTOR</u>			Cruise ID <u>2019-043</u>						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
43	BS21	10	17:41	BE	GRB	-	49° 28.588	124° 44.620	32		-		MB/TS	☐	
			17:42	BO			° 28.588	° 44.618		32	-			☐	
			17:42	EW			° 28.587	° 44.617			-			☐	
44	BS22	10	18:27	BE	ROS	US	49° 28.279	124° 41.794	42		55-59	5	MB	☒	
			18:28	BO			° 28.279	° 41.792		37	-			☐	
			18:32	EW			° 28.276	° 41.762			-			☐	
45	BS22	10	19:15	BE	GRB	-	49° 28.287	124° 41.705	44		-		MB/TS	☐	
			19:16	BO			° 28.286	° 41.699		44	-			☐	
			19:17	EW			° 28.286	° 41.698			-			☐	
46	BS23	10	19:48	BE	ROS	-	49° 27.731	124° 39.966	58		-		MB	☒	
			19:50	BO			° 27.725	° 39.961		54	-			☐	
			19:56	EW			° 27.725	° 39.964			-			☐	
47	BS23	10	20:08	BE	GRB	-	49° 27.722	124° 39.928	59		-		MB/TS	☐	
			20:08	BO			° 27.723	° 39.928		59	-			☐	
			20:09	EW			° 27.723	° 39.928			-			☐	
48	BS41	10	20:42	BE	GRB	-	49° 32.553	124° 43.609	78		-		MB/TS	☐	
			20:43	BO			° 32.554	° 43.609		78	-			☐	
			20:44	EW			° 32.554	° 43.609			-			☐	
			:				° .	° .			-			☐	

Event Type:

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Bottle Firing Method:

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Notes:

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Month <u>JUNE</u>				Year <u>2019</u>			Vessel <u>VECTOR</u>				Cruise ID <u>2019-043</u>				
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleaned	Comments
49	BS42	10	21:09	BE	GRB		49° 28.456	124° 43.977	75		-		MB/TS	☐ ☐	
			21:09	BO			° 28.457	° 43.977		75	-			☐ ☐	
			21:10	EN			° 28.457	° 43.977			-			☐ ☐	
50	BS43	10	21:26	BE	GRB		49° 28.405	124° 44.315	76		-		MB/TS	☐ ☐	
			21:27	BO			° 28.405	° 44.315		76	-			☐ ☐	
			21:28	EN			° 28.405	° 44.315			-			☐ ☐	
51	BS44	10	21:44	BE	GRB		49° 28.289	124° 44.452	36		-		MB/TS	☐ ☐	
			21:45	BO			° 28.289	° 44.452		36	-			☐ ☐	
			21:45	EN			° 28.289	° 44.452			-			☐ ☐	
52	BS45	10	22:15	BE	GRB		49° 28.387	124° 45.091	45		-		MB/TS	☐ ☐	
			22:16	BO			° 28.387	° 45.091		45	-			☐ ☐	
			22:16	EN			° 28.388	° 45.091			-			☐ ☐	
53	BS46	10	22:39	BE	GRB		49° 28.433	124° 45.326	73		-		MB/TS	☐ ☐	
			22:40	BO			° 28.436	° 45.325		73	-			☐ ☐	
			22:42	EN			° 28.435	° 45.327			-			☐ ☐	
54	BS47	10	23:00	BE	GRB		49° 28.542	124° 45.683	59		-		MB/TS	☐ ☐	
			23:01	BO			° 28.542	° 45.684		59	-			☐ ☐	
			23:02	EN			° 28.542	° 45.684			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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