DAILY SCIENCE LOG BOOK

CRUISE NUMBER 2018-29

DATE: From: 6 APRIL 2018 To: 13 APRIL 2018

VESSEL: CCGS VECTOR

PROJECT(S): STRAIT OF GEORGIA WATER PROPERTIES SURVEY

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

WaterProperties.ca

Captain: ZIBBY CHMARA First Officer: DALE UNRUH

Second Officer: JORDAN FULLEN Third Officer: _____

Fishing Master: MIKE PETRIE Chief Engineer: TIC TRATCH

Mission Participants / Agencies:

_____

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

1st Leg Scientific Personnel: Chief Scientist: PETER CHANDLER

Name	Watch	Cabin	Name	Watch	Cabin
PETER CHANDLER	1	2	HUGH MACLEAN	2	3
CHELSEA STANLEY	1	5	SCOTT ROSE	2	4
STEVE ROMAINE	1	3	NINA NEMCEK	2	5

2nd Leg Scientific Personnel: Chief Scientist: _____

Name	Watch	Cabin	Name	Watch	Cabin

**** 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: Vector Laptop

Data acquisition program: Seasave

CTD deck unit make: SBE model: 11+ serial number: 0619

Primary CTD

Make: SBE model: 9+ serial number: 0443

Primary temperature serial number: 2710

Primary conductivity serial number: 2128

Secondary temperature serial number: 4752

Secondary conductivity serial number: 2399

Transmissometer: Wetlab Model: C-STAR s/n: 1185DR

Transmissometer: _____ Model: _____ s/n: ?

Fluorometer: Model Seapoint Cable gain: 3X s/n: 3641 P, (S) or NO pump?

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

Oxygen sensor: SBE Model: 43 s/n: 0797 (P) S or NO pump?

PAR sensor: Biospherical Model: QSP200L45 s/n: 4565 Surface PAR? (Y) / N

Other sensors: Surface PAR s/n: 20518 P, S or NO pump?

Other sensors: ptt s/n: 0692 P, S or (NO) pump?

Other sensors: altimeter s/n: 62355 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: IOS
Volume of bottles (litres): 10L

Winches:
1. Make: _____ Model: _____ Serial #: _____ Used for: _____
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: _____ 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): SIN 3363
Program: Seasave Version: _____
Sampling interval (seconds): 30
Fluorometer sensor serial number: _____

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

_____

ADCP Setup:
Computer time zone: _____
Sampling interval (sec): _____
Bin Length: (2^x): _____
Pulse Length: _____
Buffer (bytes): _____
Gyro Offset: _____

User Exits: Name: _____ Exit points: _____
Name: _____ Exit points: _____
Name: _____ Exit points: _____
Work File: _____

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

Ocean Sciences Division, Institute of Ocean Sciences

Month APRIL **Year** 2018 **Vessel** VECTOR **Cruise ID** 2018-20

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
1	S1	7	01:41	BE	ROS	US	48° 39.195	123° 30.643	193		1 - 10	10	SR	☑ ☐	
			01:45	BO			° 39.203	° 30.642			-			☐ ☐	
			01:57	EN			° 39.208	° 30.655			-			☐ ☐	
2	SC04	7	02:50	BE	ROS		48° 43.513	123° 25.015	94		-		PR	☑ ☐	
			02:52	BO			° 43.512	° 25.022		90	-			☐ ☐	
			02:54	EN			° 43.512	° 25.027			-			☐ ☐	
3	SC04	7	03:01	BE	NET		48° 43.526	123° 25.022	97		-		ND	☐ ☐	
			03:04	BO			° 43.542	° 25.020		87	-			☐ ☐	20:04 local
			03:05	EN			° 43.546	° 25.016			-			☐ ☐	
4	G1 01	7	03:40	BE	NET		48° 45.870	123° 20.551	66		-		ND	☐ ☐	
			03:42	BO			° 45.876	° 20.543			-			☐ ☐	20:42 local
			03:44	EN			° 45.882	° 20.540			-			☐ ☐	
5	G1-01	7	03:53	BE	ROS		48° 45.850	123° 20.539	65		-		PC	☑ ☐	Lots of J
			:	BO			° .	° 20.546		61	-			☐ ☐	shear - recover
			:	EN			° .	° .			-			☐ ☐	very slowly
6	G1-01	7	04:07	BE	ROS		48° 45.872	123° 20.566	65		-		PR	☐ ☐	
			04:11	BO			° 45.872	° 20.570		60	-			☐ ☐	
			04:12	EN			° 45.887	° 20.572			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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

Notes: _____

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Depart Pat Bay 18:03 6 April 2018 (local)

- ctd cable off sheave @ 51 m depth - redo cast - seems okay
- check cable by hand from 60-20 m from rosette - okay - shiny in places

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Month APRIL **Year** 2018 **Vessel** VECTOR **Cruise ID** 2018-29

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7	58	7	05:41	BE	ROS		48 ° 42.983	123 ° 14.278	330		-		[illegible]	☑ ☐	
			05:47	BO			° 43.009	° 14.317		331	-			☐ ☐	
			05:53	EN			° 43.054	° 14.261			-			☐ ☐	
8	59	7	06:49	BE	NET		48 ° 37.792	123 ° 14.574	232		-		CS	☐ ☐	23:49
			06:57	BO			° 37.797	° 14.544		222	-			☐ ☐	12 ←
			07:01	EN			° 37.794	° 14.535			-			☐ ☐	SAL Forgot to take
9	59	7	07:12	BE	ROS	US	48 ° 37.804	123 ° 14.556	233		11-24		FC	☑ ☐	Stn 59 2018-29 Bot 2
			07:18	BO			° 37.810	° 14.543		231	-	14		☐ ☐	
			07:35	EN			° 37.798	° 14.548			-			☐ ☐	
10	60	7	08:19	BE	ROS		48 ° 33.874	123 ° 12.860	298		-		FC	☑ ☐	Bottle 12+5 had
			08:25	BO			° 33.875	° 12.836		295	-			☐ ☐	new spigot o-rings
			08:31	EN			° 33.888	° 12.824			-			☐ ☐	put in.
11	61	7	09:13	BE	ROS		48 ° 29.23	123 ° 09.24	279	~~275~~	—	—	H.M	☑ ☐	
			09:19	BO			48 ° 29.23	123 ° 09.25		203	-			☐ ☐	
			09:24	EN			48 ° 29.23	123 ° 09.24			-			☐ ☐	
12	70	7	12:34	BE			48 ° 19.248	123 ° 43.261	151		-	/	SR	☑ ☐	
			12:37	BO			° 19.252	° 43.253		144	-			☐ ☐	
			12:39	EN			° 19.254	° 43.254			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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drifters away at station 58 863, 867, 858

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Month April | **Year** 2018 | **Vessel** Vector | **Cruise ID** 2018-29

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13	69	7	13:34	BE	ROS	US	48° 15.607	123° 43.242	179		25-36	12	SR	☑☐	
			13:39	BO			°15.605	°43.244		175	-			☐☐	
			13:55	EN			°15.610	°43.240			-			☐☐	
14	69	7	13:58	BE	DRF		48° 15.604	123° 43.240	179		-		SR	☐☐	DRF# 862,849
15	68	7	14:29	BE	ROS		48° 12.199	123° 43.021	142		-		SR	☑☐	
			14:32	BO			°12.204	°43.020		135	-			☐☐	
			14:35	EN			°12.204	°43.016			-			☐☐	
16	73	7	16:26	BE	ROS		48° 15.006	124° 6.696	162		-		SR	☑☐	
			16:29	BO			°14.998	° 6.674		158	-			☐☐	
			16:32	EN			°14.986	° 6.647			-			☐☐	
17	72	7	17:04	BE	NET		48° 18.600	124° 4.023	189		-		N²	☐☐	
			17:10	BO			°18.615	° 4.042		179	-			☐☐	
			17:14	EN			°18.610	° 4.047			-			☐☐	
18	72	7	17:23	BE	ROS	US	48° 18.596	124° 4.057	189		37-50	14	SR	☐☐	Extra surface bot
			17:26	BO			°18.592	° 4.056		183	-			☐☐	tripped For DIC
			17:43	EN			°18.587	° 4.063			-			☐☐	
19	72	7	17:48	BE	DRF		48° 18.601	124° 4.093	189		-		SR	☐☐	DRF# 851, 852
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	

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Month April | **Year** 2018 | **Vessel** Vector | **Cruise ID** 2018-29

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20	71	7	18:25	BE	ROS		48° 22.202	123° 59.429	110		-	-	SR	☑ ☐	
			18:27	BO			° 22.200	° 59.428		106	-			☐ ☐	
			18:29	EN			° 22.200	° 59.430			-			☐ ☐	
21	105	7	22:00	BE	ROS		48° 10.984	123° 19.062	85		-	-	R	☑ ☐	
			22:02	BO			° 10.988	° 19.091			-			☐ ☐	
			22:03	EN			° 10.988	° 19.092			-			☐ ☐	
22	ADCP	7	22:33	BE	ROS	US	48° 13.992	123° 18.058	120		51 - 60	10		☐ ☐	bottle 5 fantom
			22:35	BO			° 13.987	° 18.057		116	-			☐ ☐	
			22:46	EN			° 13.993	° 18.054			-			☐ ☐	
23	104	7	23:34	BE	ROS		48° 19.029	123° 18.960	83		-	-		☑ ☐	
			23:35	BO			° 20.029	° 17.960		78	-			☐ ☐	
			23:36	EN			° 20.028	° 17.959			-			☐ ☐	
24	67	8	00:16	BE	ROS		48° 22.776	123° 17.970	109		-	-		☐ ☐	chains on
			00:19	BO			° 22.771	° 17.940		97	-			☑ ☐	
			00:21	EN			° 27.762	° 17.921			-			☐ ☐	
25	66	8	01:10	BE			48° 19.302	123° 14.126	101		-	-		☑ ☐	chains on
			01:11	BO			° 19.294	° 14.126		92	-			☐ ☐	
			01:13	EN			° 19.284	° 14.118			-			☐ ☐	
			01:15	DE			48° 19.285	° .			-			☐ ☐	DRIFTERS →

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Notes: _____

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55
NUT
Stn ADCP
2018-29
Bot 5

- waves picking up to 2-3 m - close to Constance Bank

Drifters away: 848 847 Waves 1-3 m

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Month APRIL **Year** 2018 **Vessel** VECTOR **Cruise ID** 2018-29

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26	65	8	01:56	BE	ROS	US	48° 15.908	123° 9.805	125		61 - 70	10	R	☑ ☐	chains on
			01:58	BO			° 15.898	° 9.798		117	-			☐ ☐	
			02:06	EN			° 15.907	° 9.642			-			☐ ☐	
27	64	8	02:45	BE	ROS		48° 12.776	123° 5.711	108		—	—	R	☑ ☐	chains on
			02:47	BO			° 12.763	° 5.700		97	-			☐ ☐	
			02:48	EN			° 12.748	° 5.687			-			☐ ☐	
28	63	8	03:46	BE	CTD		48° 14.648	122° 58.289	148		—	—	SR/CS	☐ ☐	SBE 25
			03:48	BO			° 14.664	° 58.247		130	-			☐ ☐	
			03:50	EN			° 14.672	° 58.207			-			☐ ☐	
29	54	8	06:59	BE	CTD		48° 26.709	122° 44.260	78		-		SR	☐ ☐	
			07:00	BO			° 26.717	° 44.256		70	-			☐ ☐	
			07:02	EN			° 26.723	° 44.257			-			☐ ☐	
30	53	8	07:55	BE	ROS		48° 33.245	122° 44.888	61		-		SR	☑ ☐	pH cap was
			07:56	BO			° 33.248	° 44.894		56	-			☐ ☐	off for 4 hours+
			07:58	EN			° 33.253	° 44.902			-			☐ ☐	
31	52	8	08:39	BE	ROS		48° 38.936	122° 43.299	90		-		SR	☑ ☐	
			08:41	BO			° 38.940	° 43.307		86	-			☐ ☐	
			08:43	EN			° 38.942	° 43.322			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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Notes: _____

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- weather too rough for operations off aft deck
- deploy 25 for ctd cast off stbd chains. - fluorometer cap left on

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Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
32	51	8	09:54	BE	ROS		48° 46.692	122° 51.527	161		-		SR	☑☑	
			09:57	BO			° 46.728	° 51.508		156	-			☐☐	
			10:00	EN			° 46.762	° 51.533			-			☐☐	
33	57	8	11:18	BE	CTD		48° 44.011	123° 8.148	162		-		SR	☑☑	
			11:22	BO			° 44.003	° 8.151		154	-			☐☐	
			11:24	EN			° 43.993	° 8.153			-			☐☐	
34	56	8	12:06	BE	ROS	US	48° 46.372	123° 1.597	21		74 - 87	14	SR	☑☐	
			12:11	BO			° 46.370	° 1.597			-			☐☐	
			12:29	EN			° 46.352	° 1.583			-			☐☐	
35	56	8	12:31	BE	DRF		48° 46.354	123° 1.580			-		HM	☐☐	DRFs 854/866
36	47	8	13:55	BE			48° 49.265	123° 6.200	185		-		SR	☑☑	
			13:58	BO			° 49.266	° 6.200		178	-			☐☐	
			14:01	EN			° 49.268	° 6.199			-			☐☐	
37	48	8	14:26	BE	ROS		48° 51.403	123° 03.737	225		-			☑☑	
			14:30	BO			48° 51.396	123° 03.736		220	-			☐☐	
			14:34	EN			48° 51.394	° 03.733			-			☐☐	
38	49	8	15:10	BE	ROS		48° 54.991	122° 59.617	133		-			☐☐	
			15:12	BO			° 55.002	° 59.590		129	-			☐☐	
			15:15	EN			° 55.013	° 59.580			-			☐☐	

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39	50	8	15:42	BE	ROS		48° 57.709	122° 56.146	27		/	/	SR	☑ ☐	
			15:43	BO			°57.710	°56.138		24	-			☐ ☐	
			15:44	EN			°57.714	°56.141			-			☐ ☐	
40	44	8	16:31	BE	ROS		48°56.833	123° 6.023	123		-		SR	☑ ☐	
			16:34	BO			°56.862	° 6.007		119	-			☐ ☐	
			16:36	EN			°56.845	° 6.004			-			☐ ☐	
41	45	8	17:04	BE	ROS		48° 53.899	123° 8.460	130		/	/	SR	☑ ☐	NMEA froze
			17:06	BO			°53.911	° 8.439		126	-			☐ ☐	
			17:08	EN			°53.906	° 8.449			-			☐ ☐	
42	46	8	17:34	BE	NET		48° 51.421	123° 10.797	178		-			☐ ☐	
			17:39	BO			°51.419	° 10.797	1	169	-			☐ ☐	
			17:43	EN			°51.419	° 10.798			-			☐ ☐	
43	46	8	17:53	BE	ROS	US	48° 51.415	123° 10.800	179		88 - 99	12	SR	☐ ☐	
			17:56	BO			° 51.414	° 10.801		174	-			☐ ☐	
			18:12	EN			° 51.407	° 10.799			-			☐ ☐	
44	46	8	19:14	BE	DRF		48° 51.409	123° 10.813	179	0	-		AM	☐ ☐	DRF / 838 / 853
45	106	8	19:22	BE	ROS		49° 0.023	123° 13.224	77		—	—		☑ ☐	
			19:24	BO			° 0.024	° 13.225			-			☐ ☐	
			19:26	EN			° 1.032	° 13.207			-			☐ ☐	

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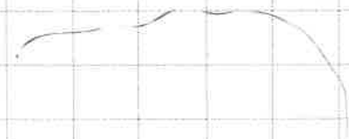

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Month APRIL **Year** 2018 **Vessel** VECTOR **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
46	107	8	20:01	BE	ROS		48° 58.418	123° 18.022	180		—	—	PC	☑ ☐	
			20:05	BO			° 58.403	° 18.028		176	-			☐ ☐	
			20:08	EN			° 58.406	° 18.044			-			☐ ☐	
47	107	8	20:10	DE	DRF		48° 58.419	123° 18.069	181		-		CS	☐ ☐	SCT/841/844
48	43	8	21:06	BE	ROS		49° 0.178	123° 30.089	195		—	—	PC	☑ ☐	
			21:08	BO			° 0.181	° 30.126		190	-			☐ ☐	
			21:11	EN			° 0.188	° 30.152			-			☐ ☐	
49	42	8	21:39	BE	NET		49° 01.766	123° 26.268	318		-			☐ ☐	
			21:48	BO			° 01.808	° 26.249		308	-			☐ ☐	
			21:53	EN			° 01.796	° 26.202			-			☐ ☐	
50	42	8	22:05	BE	ROS	US	49° 01.774	123° 26.183	317		100 - 115	16	PC	☑ ☐	
			22:08	BO			° 01.800	° 26.147		313	-			☐ ☐	
			22:31	EN			° 01.794	° 26.196			-			☐ ☐	
51	41	8	23:20	BE	ROS		49° 03.300	123° 22.338	243		—	—	PC	☑ ☐	
			23:24	BO			° 03.278	° 22.322		239	-			☐ ☐	
			23:30	EN			° 03.289	° 22.307			-			☐ ☐	
52	41	8	23:47	BE	NET		49° 03.296	123° 22.320	240		-		CS	☐ ☐	
			23:54	BO			° 03.300	° 22.292			-			☐ ☐	
			23:58	EN			° 03.299	° 22.247			-			☐ ☐	

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Chelsea overboard: recovered by kisbee ring on stbd side ;

- recovered by kisbee ring 2 ?05
- overboard over stbd side < 1 minute
- checked by Mike, assess ankle + hand
- hot shower, tea

- vessel was stopped on station working on deploying scoop net when A-frame was moved out the rosette moved out also (not enough slack in line to rosette) - rosette pushed Chelsea over stern
- lost hard hat and toque

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Month APRIL | **Year** 2018 | **Vessel** VECTOR | **Cruise ID** 2018-29

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53	108	9	00:22	BE	ROS		49° 4.430	123° 19.060	88		—	—	PC	☑ ☐	
			00:25	BO			° 4.438	° 19.063		82	-			☐ ☐	
			00:27	EN			° 4.440	° 19.049			-			☐ ☐	
54	108	9	00:28	DE	DRF		49° 4.440	123° 19.020	80		-		CS	☐ ☐	Drifter 200 S/N away x 2
55	37	9	01:30	BE			49° 13.606	123° 20.609	210		—	—	PC	☑ ☐	
			01:33	BO			° 13.610	° 20.729		207	-			☐ ☐	
			01:37	EN			° 13.613	° 20.747			-			☐ ☐	
56	38	9	02:10	BE	ROS		49° 12.046	123° 26.341	305		—	—	PC	☑ ☐	
			02:16	BO			° 12.013	° 26.414		300	-			☐ ☐	
			02:21	EN			° 12.008	° 26.417			-			☐ ☐	
57	38	9	02:26	BE	NET		49° 12.030	123° 26.395	304		-			☐ ☐	
			02:34	BO			° 11.991	° 26.395			-			☐ ☐	
			02:40	EN			° 11.989	° 26.371			-			☐ ☐	
58	38	9	02:43	DE	DRF		49° 12.000	123° 26.466	304		116-132	17		☐ ☐	847/842/840
59	39	9	03:16	BE	ROS	US	49° 9.814	123° 33.022	373		-			☑ ☐	
			03:22	BO			° 9.790	° 33.012		368	-			☐ ☐	
			03:43	EN			° 9.835	° 32.984			-			☐ ☐	
			:				° .	° .			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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Month APR **Year** 2018 **Vessel** VECTOR **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
60	40	9	04:16	BE	ROS		49°08.662	123°36.740	136		-	✓	PC	☑ ☐	
			04:20	BO			°08.659	°36.755		135	-			☐ ☐	
			04:22	EN			°08.658	°36.756			-			☐ ☐	
61	40	9	04:26	BE	NET		49°08.653	123°36.762	139		-		CS	☐ ☐	
			04:30	BO			°08.645	°36.764		129	-			☐ ☐	
			04:33	EN			°08.643	°36.764			-			☐ ☐	
62	GEO1	9	05:29	BE	NET		49°14.961	123°44.952	400		-		CS	☐ ☐	size fraction net
			05:40	BO			°14.970	°44.936		395	-			☐ ☐	
			05:46	EN			°14.992	°44.923			-			☐ ☐	
63	GEO1	9	05:51	BE	NET		49°15.003	123°44.913	400		-		CS	☐ ☐	std net
			06:02	BO			°15.014	°44.894		395	-			☐ ☐	
			06:08	EN			°15.004	°44.883			-			☐ ☐	
64	GEO1	9	06:20	BE	ROS	US	49°14.981	123°44.896	400		133-135	3	PC	☐ ☐	interesting sig top signal @ 50m
			06:28	BO			°14.995	°44.873		395	-			☐ ☐	
			06:37	EN			°15.010	°44.897			-			☐ ☐	
65	26	9	07:09	BE	ROS		49°14.318	123°50.840	255		-	✓	SR	☐ ☐	
			07:13	BO			°14.314	°50.842		250	-			☐ ☐	
			07:18	EN			°14.315	°50.840			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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Month April | **Year** 2018 | **Vessel** Vector | **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
66	27	9	07:56	BE	ROS	US	49° 19 .093	123° 48 .040	347		136 -151	16	SR	☑ ☐	
			08:03	BO			° 19 .102	° 48 .028		343	-			☐ ☐	
			08:26	EN			° 19 .103	° 48 .026			-			☐ ☐	
67	27	9	08:28	BE	DRF		49° 19 .108	123° 48 .059	347	0	-		HM	☐ ☐	ORF/843/850
68	28	9	09:08	BE	ROS		49° 24 .102	123° 45 .344	136		-		SR	☑ ☐	
			09:11	BO			° 24 .098	° 45 .346		132	-			☐ ☐	
			09:13	EN			° 24 .097	° 45 .348			-			☐ ☐	
69	28	9	09:17	BE	NET		49° 24 .087	123° 45 .355	136		-		N^2	☐ ☐	
			09:22	BO			° 24 .080	° 45 .362		126	-			☐ ☐	
			09:24	EN			° 24 .080	° 45 .366			-			☐ ☐	
70	CPF1	9	10:51	BE	NET		49° 22 .027	124° 05 .099	245		-		N^2	☐ ☐	pH cap was left off
			11:00	BO			° 22 .022	° 05 .075		235	-			☐ ☐	
			11:04	EN			° 22 .028	° 05 .088			-			☐ ☐	
71	CPF1	9	11:12	BE	ROS	US	49° 22 .037	124° 05 .080	246		-		SR	☑ ☐	
			11:17	BO			° 22 .038	° 05 .074		243	-			☐ ☐	
			11:24	EN			° 22 .036	° 05 .094			-			☐ ☐	
72	1	9	12:03	BE	ROS		49° 20 .291	124° 12 .078	249		-		SR	☑ ☐	
			12:08	BO			° 20 .282	° 12 .012		245	-			☐ ☐	
			12:12	EN			° 20 .274	° 11 .962			-			☐ ☐	

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Month APRIL | **Year** 2018 | **Vessel** VECTOR | **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
73	2	9	12:44	BE	ROS	US	49°24.118	124° 9.349	276		155-169	15	SR	☑ ☐	
			12:48	BO			49°24.114	124° 9.354		273	-			☐ ☐	
			13:08	EN			°24.115	° 9.360			-			☐ ☐	
74	25	9	14:03	BE	ROS		49°27.690	124° 7.528	303		-	/	SR	☑ ☐	
			14:09	BO			°27.695	° 7.519		300	-			☐ ☐	
			14:15	EN			°27.701	° 7.535			-			☐ ☐	
75	24	9	14:39	BE	ROS		49°30.314	124° 6.050	428		-	/	SR	☑ ☐	
			14:45	BO			°30.307	° 6.041		424	-			☐ ☐	
			14:53	EN			°30.300	° 6.036			-			☐ ☐	
76	24	9	14:59	BE	NET		49°30.306	124° 6.037	425		-		N2	☐ ☐	
			15:15	BO			°30.296	° 6.028		415	-			☐ ☐	
			15:22	EN			°30.293	° 6.035			-			☐ ☐	
77	22	9	16:42	BE	NET		49°40.223	124° 16.275	350		-		N2	☐ ☐	
			16:54	BO			°40.237	° 16.270		340	-			☐ ☐	
			17:00	EN			°40.242	° 16.260			-			☐ ☐	
78	22	9	17:15	BE	ROS		49°40.228	124° 16.200	354		170-172	3		☐ ☐	
			17:23	BO			°40.230	° 16.196		349	-			☐ ☐	
			17:32	EN			°40.225	° 16.164			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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Month APRIL **Year** 2018 **Vessel** VECTOR **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
79	20	9	18:55	BE	ROS		49 °47.213	124 °32.244	301		—	—	PC	☑ ☐	
			19:01	BO			°47.189	°32.218		301	-			☐ ☐	
			19:06	EN			°47.174	°32.201			-			☐ ☐	
80	20+	9	19:35	DE	DRF		49 °49.188	124 °37.372			-		PC	☐ ☐	865/855
81	18	9	21:23	BE	ROS		49 °59.204	124 °58.885	142		-		PC	☑ ☐	
			21:26	BO			°59.206	°58.868		138	-			☐ ☐	
			21:28	EN			°59.210	°58.862			-			☐ ☐	
82	17	9	21:57	BE	ROS		49 °58.835	125 °04.285	261		-		PC	☑ ☐	
			22:02	BO			°58.828	°04.314		260	-			☐ ☐	
			22:06	EN			°58.816	°04.286			-			☐ ☐	
83	17	9	22:07	DE	DRF		49 °58.810	125 °04.283			-			☐ ☐	839/845
84	QU39	9	22:36	BE	NET		50 °01.805	125 °05.520	270		-			☐ ☐	
			22:44	BO			°01.812	°05.481		260	-			☐ ☐	
			22:49	EN			°01.813	°05.468			-			☐ ☐	
85	QU39	9	22:57	BE	ROS	US	50 °01.792	125 °05.506	271		173-175	3		☐ ☐	
			23:02	BO			°01.790	°05.504		267	-			☐ ☐	
			23:09	EN			°01.804	°05.492			-			☐ ☐	
			:				° .	° .			-			☐ ☐	
			:				° .	° .							

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Month APRIL | **Year** 2018 | **Vessel** VECTOR | **Cruise ID** 2018-25

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
86	16	10	23:47	BE	ROS	US	49° 57.698	125° 08.732	154		176-186	11	PE	☑ ☐	
			23:50	BO			°57.701	°08.729		150	-			☐ ☐	
			00:00	EN			°57.661	°08.758			-			☐ ☐	
87	15	10	01:00	BE	ROS		49° 51.628	125° 01.632	125		—	—	PE	☑ ☐	
			01:03	BO			°51.620	°01.628		120	-			☐ ☐	
			01:04	EN			°51.617	°01.621			-			☐ ☐	
88	14	10	01:20	BE	NET		49° 52.994	124° 59.583	311		-		CS	☐ ☐	size fractionation
			01:29	BO			°52.980	°59.480		305	-			☐ ☐	
			01:34	EN			°52.975	°59.487			-			☐ ☐	
89	14	10	01:40	BE	NET		49° 52.968	124° 59.500	311		-			☐ ☐	regular net tow
			01:48	BO			°52.969	°59.529		305	-			☐ ☐	
			01:53	EN			°52.972	°59.547			-			☐ ☐	
90	14	10	02:01	BE	ROS	US	49° 52.987	124° 59.563	311		187-201	15		☑ ☐	
			02:07	BO			°52.993	°59.590		307	-			☐ ☐	
			02:21	EN			°53.011	°59.626			-			☐ ☐	
91	13	10	02:54	BE	ROS		49° 55.315	124° 55.235	230		—	—		☑ ☐	
			02:58	BO			°55.325	°55.228		230	-			☐ ☐	
			03:02	EN			°55.300	°55.252			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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BE = Beginning Time of Cast
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Month APRIL | **Year** 2018 | **Vessel** VECTOR | **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
92	12	10	04:40	BE	NET		49 °43.602	124 °40.800	352		-		CS	☐☐	
			04:50	BO			°43.605	°40.790		345	-			☐☐	
			04:55	EN			°43.608	°40.783			-			☐☐	
93	12	10	05:03	BE	ROS	US	49 °43.606	124 °40.804	354		202-217	16	PC	☑☐	
			05:10	BO			°43.602	°40.813			-			☐☐	
			05:28	EN			°43.604	°40.776			-			☐☐	
94	11	10	06:02	DE	ROS		49 °42.373	124 °43.399	298		—	—	PC	☑☐	
			06:13	BO			°42.362	°43.442		296	-			☐☐	
			06:17	EN			°42.343	°43.454			-			☐☐	
95	11	10	06:21	DE	NET		49 °42.381	124 °43.414	298		-		CS	☐☐	
			06:29	BO			°42.411	°43.446		285	-			☐☐	
			06:33	EN			°42.412	°43.471			-			☐☐	
96	10	10	07:01	BE	ROS		49 °40.699	124 °47.318	97		—	—	ER	☑☐	
			07:03	BO			°40.694	°47.317		93	-			☐☐	
			07:05	EN			°40.691	°47.312			-			☐☐	
97	9	10	08:00	BE	ROS		49 °35.488	124 °38.302	170		218-238	12	SD	☑☐	
			08:04	BO			°35.485	°38.300		165	-			☐☐	
			08:20	EN			°35.483	°38.293			-			☐☐	
98	4	10	08:22	BE			°35.491	124 °38.296			-			☐☐	DRF/860/861

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Month April **Year** 2018 **Vessel** Vector **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
99	8	10	08:58	BE	ROS		49 °39.313	124 ° 33.017	340		/	/	SR	☑ ☐	
			09:06	BO			°39.312	°33.017		335	-			☐ ☐	
			09:12	EN			°39.319	°33.023			-			☐ ☐	
100	7	10	10:03	BE	ROS		49 °34.404	124 °24.198	353		/	/	SR	☑ ☐	
			10:09	BO			°34.400	°24.179		349	-			☐ ☐	
			10:14	EN			°34.403	°24.169			-			☐ ☐	
101	6	10	10:49	BE	ROS	US	49 °30.612	124 °27.774	194		239 - 251		SR	☑ ☐	
			10:52	BO			°30.619	°27.763		189	-			☐ ☐	
			11:09	EN			°30.616	°27.793			-			☐ ☐	
102	5	10	11:38	BE	ROS		49 °27.986	124 °30.010	329		/	/	SR	☑ ☐	
			11:44	BO			°27.995	°30.014		324	-			☐ ☐	
			11:49	EN			°27.931	°29.992			-			☐ ☐	
103	CPF2	10	11:55	BE	NET		49 °27.964	124 °29.969	329		/	/	N2	☐ ☐	
			12:07	BO			°27.990	°29.934		316	-			☐ ☐	
			12:12	EN			°27.982	°29.936			-			☐ ☐	
104	3		13:33	BE	ROS	US	49 °26.645	124 °20.269			252 - 267	16	SR	☑ ☐	
			13:39	BO			°26.620	°20.273	323		-			☐ ☐	
			14:00	EN			°26.639	°20.242		318	-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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Month April | **Year** 2018 | **Vessel** Vector | **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
105	4	10	14:25	BE	ROS		49° 24.529	124° 22.127	344		-		ER	☑☐	
			14:31	BO			°24.523	°22.124		339	-			☐☐	
			14:36	EN			°24.524	°22.122			-			☐☐	
106	BS17	10	16:21	BE	NET		49° 28.998	124° 46.003	61		-		CS	☐☐	
			16:22	BO			°28.996	°46.000		55	-			☐☐	
			16:23	EN			°28.995	°46.001			-			☐☐	
107	BS17	10	16:31	BE	ROS	US	49° 29.010	124° 45.974	61		-		ER	☑☐	
			16:33	BO			°29.018	°45.972		56	-			☐☐	
			16:42	EN			°29.006	°45.993			-			☐☐	
108	STA 5	11	14:39	BE	ROS	U.S	49° 35.84	124° 51.58	40		-	12	H.M	☑☐	SUTHERLAND
			14:39	BO			49° 35.94	124° 51.58		5	-			☐☐	BAINES SOUND
			14:40	EN			49° 35.94	124° 51.59			-			☐☐	
109	BS4	11	09:58	BE	GRAB		49° 36.2056	124° 50.3966	23		-		EH	☐☐	
110	BS4.5	11	10:14	BE	GRAB		49° 36.0131	124° 51.0287	35		-		EH	☐☐	
111	BS5	11	10:31	BE	GRAB		49° 35.8403	124° 51.5646	44		-		EH	☐☐	
112	BS5.5	11	10:45	BE	GRAB		49° 36.7453	124° 52.0377	39		-		EH	☐☐	
113	BS6	11	10:57	BE	GRAB		49° 35.6375	124° 52.5971	27		-		EH	☐☐	
114	BS5.1	11	11:13	BE	GRAB		49° 36.0817	124° 51.7503	32		-		EH	☐☐	
115	BS5.2	11	11:20	BE	GRAB		49° 36.2313	124° 51.8347	27		-		EH	☐☐	

PDT

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Month APRIL | **Year** 2018 | **Vessel** VECTOR | **Cruise ID** 2018-29

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
PDT 116	BS 5.3	11	12 :55	BE	GRAB		49 ° 36 .4287	124 ° 51 .9508	40		-		EH	☐☐	
117	BS 5.2 B	11	13 :20	BE	GRAB		49 ° 36 .2217	124 ° 51 .8197	30		-		EH	☐☐	
118	BS 4.1	11	13 :30	BE	GRAB		49 ° 36 .0814	124 ° 50 .8025	28		-		EH	☐☐	Rock - only grab
119	BS 4.1	11	13 :49	BE	GRAB		49 ° 36 .0830	124 ° 50 .7789	27		-		EH	☐☐	Redo b/c of rock
120	BS 4.2	11	14 :00	BE	GRAB		49 ° 36 .0528	124 ° 50 .7501	28		-		EH	☐☐	
121	BS 4.3	11	14 :12	BE	GRAB		49 ° 35 .6674	124 ° 50 .8659	26		-		EH	☐☐	
122	BS 8.1	11	15 :04	BE	GRAB		49 ° 33 .7754	124 ° 51 .2583	42		-		EH	☐☐	
123	BS 8.2	11	15 :17	BE	GRAB		49 ° 33 .7026	124 ° 51 .2201	38		-		EH	☐☐	
124	BS 8.3	11	15 :27	BE	GRAB		49 ° 33 .6291	124 ° 51 .1820	36		-		EH	☐☐	
125	BS 8.4	11	15 :40	BE	GRAB		49 ° 33 .5814	124 ° 51 .1119	32		-		EH	☐☐	
126	BS 1.1	12	07 :18	BE	GRAB		49 ° 39 .3219	124 ° 54 .6026	23		-		EH	☐☐	
127	BS 1.2	12	07 :28	BE	GRAB		49 ° 39 .3254	124 ° 54 .9203	25		-		EH	☐☐	
128	Z	12	14 :45	BC	ROS	—	49 ° 38 .42	124 ° 53 .60	33		-	—		☐☐	TOUCHED BOTTOM
			14 :46	BO			49 ° 38 .42	124 ° 53 .67			-			☐☐	CTD ONLY
			14 :	EN			49 ° 38 .	124 ° 53 .			-			☐☐	
PDT 129	BS 2	12	07 :58	BE	GRAB		49 ° 38 .4751	124 ° 53 .6907	37		-		EH	☐☐	
130	5	12	15 :28	BC	ROS	—	49 ° 35 .83	124 ° 51 .57	43		-	—		☐☐	CTD ONLY
			15 :30	BO			49 ° 35 .83	124 ° 51 .57		37	-			☐☐	
			15 :31	EM			49 ° 35 .83	124 ° 51 .59			-			☐☐	

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	Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
PDT	131	4.4	12	08:45	BE	GRAB		49 ° 35.6457	124 ° 51.2229	40		-		EH	☐☐	
	132	8	12	16:05	BE	ROS		49 ° 34.14	124 ° 51.57	47	43	-	—	H.M.	☐☐	CTD ONLY
				16:07	BO			49 ° 34.14	124 ° 51.59			-			☐☐	
				16:09	EN			49 ° 34.14	124 ° 51.59			-			☐☐	
PDT	133	BS8	12	09:14	BE	GRAB		49 ° 34.1347	124 ° 51.5978	48		-		EH	☐☐	
	134	11	12	16:36	BE	ROS		49 ° 32.18	124 ° 51.48	43		-	—	H.M.	☐☐	CTD ONLY
				16:37	BO			49 ° 32.19	124 ° 51.46		40	-			☐☐	
				16:39	EN			49 ° 32.19	124° 51.46			-			☐☐	
PDT	135	BS11	12	09:44	BE	GRAB		49 ° 32.1882	124 ° 50.4566	44		-		EH	☐☐	
	136	14	12	17:12	BE	ROS		49 ° 31.07	124° 48.70	47		-	—	H.M.	☐☐	CTD ONLY
				17:14	BO			49 ° 31.07	124° 48.69		44	-			☐☐	
				17:15	EN			49 ° 31.07	124° 48.69			-			☐☐	
PDT	137	BS14	12	10:20	BE	GRAB		49 ° 31.0716	124 ° 48.6935	49		-		EH	☐☐	
	138	17	12	17:46				49 ° 29.00	124° 46.00	61		-		H.M	☐☐	CTD ONLY
				17:47				49 ° 29.00	124 ° 45.99		57	-			☐☐	
				17:49				49 ° 29.00	124 ° 45.99			-			☐☐	
PDT	139	BS17	12	10:54	BE	GRAB		49 ° 29.0042	124 ° 46.0054	62		-		EH	☐☐	
				:				° .	° .			-			☐☐	
				:				° .	° .			-			☐☐	

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Month	Year	Vessel	Cruise ID

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
140	Z0	12	18 : 14	BG	ROS		49° 29 . 31	124° 44 . 84	39		-	—	H.M	☐☐	CTD ONLY
			18 : 15	BO			49° 29 . 31	124° 44 . 84		36	-			☐☐	
			18 :	EN			49° .	124° .			-			☐☐	
RECAST	WITH	BUMP	18 : 17	BE			49° 28 . 31	124° 44 . 84	39		-			☐☐	
			18 : 18	BO			49° 28 . 31	124° 44 . 84		36	-			☐☐	RECAST
			18 : 19	EN			49° 28 . 31	124° 44 . 85			-			☐☐	
141	BS 20	12	11 : 24	BE			49° 28 . 3114	124° 44 . 8527	41		-		EH	☐☐	
142	P 50 (DEEP)	12	19 : 38	BG			49° 28 . 64	124° 45 . 24	88		-		H.M.	☐☐	CTD ONLY
			19 : 39	BO			49° 28 . 64	124° 45 . 23		5?	-			☐☐	DEEP HOLE
			19 : 41	EN			49° 28 . 64	124° 45 . 23			-			☐☐	
143	BS 50	12	12 : 48	BE	GRAB		49° 28 . 6571	124° 45.2406	87		-		EH	☐☐	
144	BS 41	12	13 : 07	BE	GRAB		49° 28 . 5438	124° 43 . 6412	40		-		EH	☐☐	
145	BS 42	12	13 : 20	BE	GRAB		49° 28 . 4516	124° 44 . 0097	42		-		EH	☐☐	
146	BS 43	12	13 : 32	BE	GRAB		49° 28 . 3964	124° 44.3208	42		-		EH	☐☐	
147	BS 44	12	13 : 44	BE	GRAB		49° 28 . 2749	124° 44.4732	37		-		EH	☐☐	
148	BS 45	12	14 : 03	BE	GRAB		49° 28 . 3863	124° 45 . 1208	48		-		EH	☐☐	
149	BS 46	12	14 : 18	BE	GRAB		49° 28 . 4399	124° 45 . 3352	79		-		EH	☐☐	
150	BS 47	12	14 : 38	BE	GRAB		49° 28 . 5486	124° 45 . 6830	62		-		EH	☐☐	
151	BS 48	12	14 : 51	BE	GRAB		49° 28 . 6866	124° 46 . 0076	48		-		EH	☐☐	

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STA. 20 - CAST TO 36m, FORGOT PUMPS, BROUGHT TO SURFACE, TURNED PUMPS ON AND RECAST WITHOUT ENDING "NO PUMP CAST", BOTH CASTS ON ONE FILE

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Month	Year	Vessel	Cruise ID

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DT	152	BS 49	12	15 : 03	BE	GRAB		49 ° 28 . 7425	124 ° 45 . 5718	70		-		EH	☐ ☐	
	153	22	13	00 : 50	BE	ROS		49 ° 28 . 28	124 ° 41 . 71	43		-	—		☐ ☐	CTD ONLY
				00 : 52	BO			49 ° 28 . 28	124 ° 41 . 71		40	-			☐ ☐	
				00 : 53	EN			49 ° 28 . 27	124 ° 41 . 71			-			☐ ☐	
DT	153	BS 22	12	18 : 05	BE	GRAB		49 ° 28 . 27	124 ° 41 . 71		45	-		T.S.	☐ ☐	GRAB
	154	23	13	01 : 18	BE	ROS		49 ° 27 . 78	124 ° 39 . 92	59		-	—	H.M	☐ ☐	CTD ONLY
				01 : 19	BO			49 ° 27 . 78	124 ° 39 . 94			-			☐ ☐	
				01 : 21	EN			49 ° 27 . 79	124 ° 39 . 94			-			☐ ☐	
DT	155	BS 23	12	18 :	BE	GRAB		49 ° 27 . 78	124 ° 39 . 93			-		T.S.	☐ ☐	GRAB
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	
				:				° .	° .			-			☐ ☐	

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