DAILY SCIENCE LOG BOOK

MISSION NUMBER: 2020-024

DATE: From: 4 May 2021 To: 9 May 2021

VESSEL: Neocaligus

PROJECT(S): SoG Plankton

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

WaterProperties.ca

Captain: Simon Winterburn First Officer: _____

Second Officer: _____ Third Officer: _____

~~Fishing Master~~ Bosun: Jamie Grilz Chief Engineer: Rob

Steward: Dong

Mission Participants / Agencies:

**** Chief Scientist to tape Scientific Personnel section of their cruise plan here ****

This is accessed from your WaterProperties.ca Dashboard or from here:
https://www.waterproperties.ca/requests/cruiseplanview.php?cruiseid=YYYY-NNN

CS: Kelly Young (DFO)

**** 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: _____

Data acquisition program: Seaterm

CTD deck unit make: N/a model: _____ serial number: _____

Primary CTD

Make: SBE model: 25 serial number: 0456

Primary temperature serial number: 5130

Primary conductivity serial number: 3500

Secondary temperature serial number: _____

Secondary conductivity serial number: _____

Transmissometer: _____ Model: _____ serial: _____

Transmissometer: _____ Model: _____ serial: _____

Fluorometer: Model Wetlabs Cable gain: _____ serial: 4185 **P, S or NO** pump?

Fluorometer: Model _____ Cable gain: _____ serial: _____ **P, S or NO** pump?

Oxygen sensor: SBE Model: 43 serial: 3234 (P), **S or NO** pump?

PAR sensor: _____ Model: _____ serial: _____ **Surface PAR? Y / N**

Other sensors: Pressure SBE 29 serial: 0573 **P, S or NO** pump?

Other sensors: _____ serial: _____ **P, S or NO** pump?

Other sensors: _____ serial: _____ **P, S or NO** pump?

Other sensors: _____ serial: _____ **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: _____ serial: _____

Transmissometer: _____ Model: _____ serial: _____

Fluorometer: Model _____ Cable gain: _____ serial: _____ **P, S or NO** pump?

Fluorometer: Model _____ Cable gain: _____ serial: _____ **P, S or NO** pump?

Oxygen sensor: _____ Model: _____ serial: _____ **P, S or NO** pump?

PAR sensor: _____ Model: _____ serial: _____ **Surface PAR? Y / N**

Other sensors: _____ serial: _____ **P, S or NO** pump?

Other sensors: _____ serial: _____ **P, S or NO** pump?

Other sensors: _____ serial: _____ **P, S or NO** pump?

Other sensors: _____ serial: _____ **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 (typical on small launches).

Additional Comments:

_____

_____

_____

_____

Scientific Equipment Used During Cruise
This sheet allows you to enter all of the equipment used while on board. Please use the separate CTD sheet for entry for SBE 9/16/19/25.

Other CTD units:
RBR Serial Number: _____ Sensors: _____

Others:

_____

Plankton Nets:

Bongo/SCOR #1	Frame Size: 56 cm	Mesh: 236 µm	Flowmeter: TSK 7057
Bongo/SCOR #2	Frame Size: _____ cm	Mesh: _____ µm	Flowmeter: _____
_____	Frame Size: _____ cm	Mesh: _____ µm	Flowmeter: _____
_____	Frame Size: _____ cm	Mesh: _____ µm	Flowmeter: _____

Multinet ☐ BIONESS ☐ Neuston ☐ Others: RBR solo D #81

_____

_____

Trawl Gear:
Midwater Trawls: SOG ☐ Highseas ☐ Pelagic ☐ Other: _____

Bottom Trawls: Atlantic Western IIA ☐ Yankee 36 Hard & Soft Bottom ☐ Other: _____

American Shrimp Trawl ☐

Notes:

_____

Trawl Doors: USA Jet ☐ Tyburon ☐ _____

Sounders : Wesmar 380 ☐ Others: _____

Acoustics:
Echosounder #1 _____ Frequencies (KHz): 12 ☐ 18 ☐ 38 ☐ 70 ☐ 120 ☐ 200 ☐

Others: _____

Echosounder #2 _____ Frequencies (KHz): 12 ☐ 18 ☐ 38 ☐ 70 ☐ 120 ☐ 200 ☐

Others: _____

Software & Notes:

_____

Other Gear in Operation:

This page is for any notes or observations

CTD startup: Turn on, put in water + send 10m, wait around 1½ minutes return to surface, wait for another ~30 sec (= 2min total soak) + start cast.
* unless noted for longer

CTD + bottom bottle: Turn on CTD + send to surface. Attach 1.7L Niskin. Send CTD+ to 10m for soak + return to surface to begin cast (2 min or longer start time → longer times noted in log). On recovery → CTD sits at surface as bottle gets removed.

Surface bottle: After CTD turned off, attach 5L Niskin to wire + collect surface water. Happens immediately after CTD cast

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month May **Year** 2021 **Vessel** Neocaligus **Cruise ID** 2021-024

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
1	GE01	4	19:59	BE	CTD		49° 15.013	123° 45.415	406		-1	1	KY	☐☑	SAL + nuts lost 0
			19~~20~~:08	BO/MR	BOT		°14.963	°45.413		396	-			☐☐	Bot ~3m above CTD
			19~~20~~:16	EN			°14.945	°45.418			-			☐☐	pHPLC, nut, chl
2	GE01	4	19:18	MR	BOT		°14.930	°45.416	406	0	-2	1		☐☐	NO Sample Net WINCH BROKE
~~3~~	~~GE01~~	~~4~~	:~~25~~	~~BE~~	~~NET~~		~~°15.048~~	~~°45.416~~	~~406~~		-			☐☐	
			:				° .	° .		~~396~~	-			☐☐	
3	CBE2	5	~~19~~ 20:04	BE	CTD		48°44.218	123°34.441	64		-	—		☐☑	lost 1
			19~~20~~:07	BO			48°44.222	123°34.437		54	-			☐☐	
			19~~20~~:08	EN			48°44.221	123°34.437			-			☐☐	
4	CBE2	5	~~19~~ 20:09	BE	NET		48°44.220	123°34.430	64		-			☐☐	accidentally
			19~~20~~:11	BO			48°44.220	123°34.436		54	-			☐☐	dumped sample
			19~~20~~:	EN			° .	° .			-			☐☐	
#5	CBE2	5	~~19~~ 20:27	BE	NET		48°44.223	123°34.436	64		-			☐☐	
			~~19~~ 20:27	BO			48°44.223	123°34.436		54	-			☐☐	
			A ~~20~~:28	EN			48°44.223	123°34.438			-			☐☐	
6	SC-04	5	20:13	BE	CTD		48°43.483	123°25.~~00~~ 028	95		-			☐☑	lost 2
			20:17	BO			48°43.478	123°25.019		85	-			☐☐	
	SC-04	5	20:18	EN			48°43.473	123°25.014			-			☐☐	
7	↑		20:19	MR	BOT		48°43.473	123°25.012		0	-3	1		☐☐	HPLC, nut, chl, Lugols

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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
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MR = Messenger Release Time
RE = Recover Mooring Time

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

Notes: _____

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 17 Feb 2020

This page is for any notes or observations

4 May:

Arrived PBS @ 10am, unloaded + underway 11am.

down 10m + up x 2, around 3 min start for event #1. Attached 1.7L Niskin ~3m above CTD after CTD turned on + to put at surface.

Surface bottle done immediately after CTD switched off. Attached 5L bottle to wire above CTD + fired @ surface

Winch blew a hydrolic seal somewhere in motor while net was just starting down. Recovered net, no sample. Returned to PBS ~13:30, part driven to Sidney for repair. Headed to Sidney to hopefully fix winch + re-start survey from IOS tomorrow.

Downloading CTD data - "scan error" first try, data corrupt? Re-downloaded + looks fine? Sent to Germaine for review.

5 May - sailed to IOS to pickup repaired winch motor. Back on survey 11:15. Doing stations in reverse order, dropping S9 as Line P was there few days ago.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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8	SC-04	5	20:21	BE	NET		48° 43.469	123° 25.001	95		-		KY	☐☐	
			20:22	BO			48° 43.465	123° 24.996		85	-			☐☐	
			20:23	EN			48° 43.461	123° 24.996			-			☐☐	
9	GI-01	5	20:57	BE	CTD		48° 45.851	123° 20.533	65		-	–		☐☑	~~cast~~ 3
		21	~~22~~:00	BO			48° 45.811	123° 20.574		55	-			☐☐	
		21	~~22~~:01	EN			48° 45.811	123° 20.579			-			☐☐	
10	GI-01	5	~~21~~ 22:03	BE	NET		48° 45.837	123° 20.571	65		-			☐☐	
			~~21~~ 22:04	BO			48° 45.830	123° 20.585		55	-			☐☐	
			21:04	EN			48° 45.827	123° 20.590			-			☐☐	
11	56	5	22:41	BE	CTD		48° 46.425	123° 1.544	210		- 4	1		☐☑	~~cast~~ 4
			22:46	BO			48° 46.323	123° 1.566	220	210	- ↓	↓		☐☐	
			22:49	EN			48° 46.297	123° 1.572			-			☐☐	
12	56	5	22:50	MR	BOT		48° 46.260	123° 1.582	2	0	- ↓	↓		☐☐	HPLC, nut, chl
13	46	5	23:57	BE	CTD		48° 51.404	123° 10.846	178		-	1		☐☑	~~cast~~ 5
		6	0:02	BO/MR	BOT		48° 51.356	123° 10.807		168	- 5			☐☐	SAL + nuts
			0:05	EN			48° 51.326	123° 10.766			-			☐☐	HPLC, sal, nuts, chl ↘
14	46	6	0:06	MR	BOT		48° 51.290	123° 10.742	~~178~~	0	- 6	1		☐☐	
15	46	6	0:10	BE	NET		48° 51.433	123° 10.842	178		-			☐☐	
			0:15	BO			48° 51.387	123° 10.801		168	-			☐☐	

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

Notes: _____

* including + previous to event 10, UTC time was 1 hour off → corrected now (+ corrected all wrong times for 1-10)

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15	46	5	0:17	EN	NET		49° 51.371	123° 10.779	8		-		KY	☐☐	
16	108	6	14:40	BE	CTD		49° 4.416	123° 19.129	89		-	—		☐☑	cast 6 →
			14:43	BO			49° 4.365	123° 19.124		79	-			☐☐	
			14:44	EN			49° 4.360	123° 19.124			-			☐☐	
17	41	6	15:00	BE	CTD		49° 3.294	123° 22.333	244		-			☐☐	cast 7
			15:06	BO			49° 3.234	123° 22.332		234	-			☐☐	
			15:09	EN			49° 3.208	123° 22.321			-			☐☐	
18	41	6	15:13	BE	NET		49° 3.332	123° 22.304	244		-			☐☐	
			15:18	BO			49° 3.298	123° 22.294		234	-			☐☐	
			15:20	EN			49° 3.276	123° 22.279			-			☐☐	
19	42	6	15:42	BE	CTD		49° 1.807	123° 26.214	320		-			☐☑	cast 8
			15:49	BO			49° 1.758	123° 26.235		310	-			☐☐	
			15:54	EN			49° 1.733	123° 26.234			-			☐☐	
20	42	6	15:55	MR	BOT		49° 1.727	123° 26.240		0	- 7	1		☐☐	
21	42	6	16:00	BE	NET		49° 1.826	123° 26.218	320		-			☐☐	
			16:07	BO			49° 1.792	123° 26.215		310	-			☐☐	
			16:15	EN			° .	° .			-			☐☐	didn't get end lat/long
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	

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Notes: _____

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 17 Feb 2020

Heading to Steveston for night. - long day, tied up 1930
Start 7am

→ event 16: CTD partially came out of water after 10m soak, left @ surface extra 20 seconds

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month May | **Year** 2021 | **Vessel** Neocaligus | **Cruise ID** 2021-024

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information: Latitude	Positional Information: Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
22	38	6	17:21	BE	CTD		49° 11.984	123° 26.333	308		-		KY	☐☑	2 min 30 sec soak
			17:28	BO			49° 12.010	123° 26.388		298	-			☐☐	~~cast~~ 9
			17:32	EN			49° 12.028	123° 26.425			-			☐☐	
23	38	6	17:36	BE	NET		49° 11.974	123° 26.353	308		-			☐☐	
			17:41	BO			49° 11.979	123° 26.390		298	-			☐☐	
24	39	6	18:22	BE	CTD		49° 9.785	123° 32.961	375		-			☐☑	~~cast~~ 10
			18:30	BO			49° 9.821	123° 32.985		365	-			☐☐	
			18:36	EN			49° 9.846	123° 33.009			-			☐☐	
25	39	6	18:37	MR	BOT		49° 9.858	123° 33.017	375	0	- 8	1		☐☐	
26	40	6	19:16	BE	CTD		49° 8.575	123° 36.798	155		-			☐☑	~~cast~~ 11
			19:20	BO			49° 8.591	123° 36.839		145	-			☐☐	
			19:22	EN			49° 8.598	123° 36.855			-			☐☐	
27	40	6	19:28	BE	NET		49° 8.608	123° 36.706	150		-			☐☐	
			19:29	BO			49° 8.618	123° 36.726		1480	-			☐☐	
			19:31	EN			49° 8.627	123° 36.743			-			☐☐	
28	27	6	20:49	BE	CTD		49° 19.106	123° 47.947	347		-			☐☑	~~cast~~ 12
			20:56	BO/MR	BOT		49° 19.157	123° 47.997		~~337~~ 337	- 9	1		☐☐	bottle 3m above CTD
			21:03	EN			49° 19.190	123° 48.044			-			☐☐	
29	27	6	21:05	MR	BOT		49° 19.243	123° 48.097		0	- 10	1		☐☐	

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Notes: _____

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30	28	6	21:36	BE	CTD		49° 24.085	123°45.259	136		-		KY	☐☑	Cast 13
			21:40	BO			49° 24.129	123° 45.282		126	-			☐☐	
			21:42	EN			49° 24.137	123° 45.293			-			☐☐	
31	28	6	21:43	BE	NET		49° 24.144	123° 45.296	136		-			☐☐	
			21:45	BO			49° 24.156	123° 45.305		126	-			☐☐	
			21:47	EN			49° 24.159	123° 45.310			-			☐☐	
32	24	6	23:19	BE	CTD		49° 30.308	124° 5.940	426		-			☐☑	Cast 14
			23:28	BO			49° 30.317	124° 5.977		416	-			☐☐	
			23:34	EN			49° 30.337	124° 6.004			-			☐☐	
33	24	6	23:39	BE	NET		49° 30.287	124° 5.955	426		-			☐☐	
			23:49	BO			49° 30.304	124° 6.030		416	-			☐☐	
			23:55	EN			49° 30.308	124° 6.059			-			☐☐	
34	IS-2	7	14:24	BE	CTD		49° 38.197	124° 4.987	30		-			☐☑	Cast 15
			14:27	BO	NET		49° 38.194	124° 4.983		24	-			☐☐	
			14:27	EN			49° 38.192	124° 4.983			-			☐☐	
35	IS-2	7	14:28	BE	NET		49° 38.191	124° 4.980	30		-			☐☐	
			14:29	BO			49° 38.191	124° 4.980		24	-			☐☐	
			14:29	EN			° .191	° .980			-			☐☐	
			:				° .	° .			-			☐☐	

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

Notes: _____

Heading to Pender Harbor for overnight - tied up 1800

DAILY SCIENCE LOG

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36	22	7	15:23	BE	CTD		49° 40.206	124° 16.287	354		-	1	KY	☐☑	~~cast~~ 16 →
			15:31	BO/MR	BOT		49° 40.217	124° 16.309		344	- 11			☐☐	bottle @ 341m
			15:38	EN			49° 40.225	124° 16.320			-			☐☐	
37	22	7	15:39	MR	BOT		49° 40.223	124° 16.321	354	0	- 12	1		☐☐	
38	22	7	15:41	BE	NET		49° 40.222	124° 16.322	354		-			☐☐	
			15:49	BO			49° 40.214	124° 16.316		344	-			☐☐	
			15:54	EN			49° 40.218	124° 16.335			-			☐☐	
39	20	7	17:17	BE	CTD		49° 47.214	124° 32.303	308		-			☐☑	~~cast~~ 17
			17:24	BO			49° 47.212	124° 32.270		298	-			☐☐	
			17:20	EN			49° 47.204	124° 32.232			-			☐☐	
40	12 ~~22~~	7	18:49	BE	CTD		49° 43.643	124° 40.829	356		-			☐☑	~~cast~~ 18
			18:56	BO			49° 43.673	124° 40.825		346	-			☐☐	
			19:01	EN			49° 43.689	124° 40.847			-			☐☐	
41	12	7	19:02	MR	BOT		49° 43.696	124° 40.847	356	0	- 13	1		☐☐	
42	12	7	19:06	BE	NET		49° 43.570	124° 40.767	356		-			☐☐	
			19:13	BO			49° 43.582	124° 40.784		346	-			☐☐	
			19:18	EN			49° 43.605	124° 40.803			-			☐☐	
43	11	7	19:39	BE	CTD		49° 42.390	124° 43.341	301		-			☐☑	~~cast~~ 19
			19:45	BO			49° 42.417	124° 43.325		291	-			☐☐	

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Notes: _____

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 17 Feb 2020

event 36 - attached 1.7L Niskin at end of 10m sock; extra 45 seconds to 2 min start

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month May **Year** 2021 **Vessel** Neocaligus **Cruise ID** 2021-024

Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information Latitude	Positional Information Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
43	11	7	19:50	EN	CTD		49° 42.422	124° 43.325	301		-		KY	☐☐	~~437 Bo~~
44	11	7	19:57	BE	NET		49° 42.429	124° 43.323	301	291	-			☐☐	
			19:57	BO			49° 42.441	124° 43.320			-			☐☐	
			20:02	EN			49° 42.462	124° 43.309			-			☐☐	
45	9	7	20:53	BE	CTD		49° 35.503	124° 38.306	169		-			☐☑	~~Fast~~ 20
			20:57	BO			49° 35.491	124° 38.300		159	-			☐☐	
			21:00	EN			49° 35.494	124° 38.301			-			☐☐	
46	9	7	21:00	MR	BOT		49° 35.495	124° 38.301	169	0	- 14	1		☐☐	
47	BS-11	7	22:26	BE	CTD		49° 29.001	124° 45.989	61		-			☐☑	~~Fast~~ 221
			22:28	BO			49° 29.008	124° 45.990		51	-			☐☐	
			22:29	EN			49° 29.008	124° 45.991			-			☐☐	
48	BS-11	7	22:30	MR	BOT		49° 29.008	124° 45.992	61	0	- 15	1		☐☐	
49	BS-11		22:31	BE	NET		49° 29.012	124° 45.997	61		-			☐☐	
			22:32	BO			49° 29.017	124° 45.997		51	-			☐☐	
			22:33	EN			49° 29.021	124° 45.999			-			☐☐	
50	CPF2	7	23:46	BE	CTD		49° 27.995	124° 30.016	329		-			☐☑	~~Fast~~ 223
			23:53	BO			49° 27.989	124° 29.978		319	-			☐☐	
			:58	EN			49° 27.990	124° 29.951			-			☐☐	
			:				° .	° .			-			☐☐	

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

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

Notes: _____

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 17 Feb 2020

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51	CPF2	7	23:59	BE	NET		49° 27.990	124° 29.945	329		-		KY	☐☐	
		8	0:06	BO			49° 28.004	124° 29.907		319	-			☐☐	
			0:11	EN			49° 28.021	124° 29.892			-			☐☐	
52	6	8	0:33	BE	CTD		49° 30.589	124° 27.815	193		-			☐☑	Last 283
			0:38	BO			49° 30.625	124° 27.784		183	-			☐☐	
			0:40	EN			49° 30.649	124° 27.776			-			☐☐	
53	6	8	0:41	MR	BOT		49° 30.654	124° 27.773	193	0	- 16	1		☐☐	
54	3	8	14:32	BE	CTD		49° 26.611	124° 20.250	325		-			☐☑	Last 24
			14:38	BO			49° 26.613	124° 20.185		315	-			☐☐	
			14:43	EN			49° 26.618	124° 20.136			-			☐☐	
55	3	8	14:44	MR	BOT		49° 26.617	124° 20.111	325	0	- 17	1		☐☐	
56	2	8	15:30	BE	CTD		49° 24.100	124° 9.309	278		-			☐☑	Last 25
			15:37	BO			49° 24.077	124° 9.276		268	-			☐☐	
			15:41	EN			49° 24.060	124° 9.248			-			☐☐	
57	2	8	15:42	MR	BOT		49° 24.056	124° 9.247		0	- 18	1		☐☐	
58	CPF1	8	16:05	BE	CTD		49° 22.008	124° 5.013	245		-			☐☑	Last 26
			16:11	BO			49° 21.976	124° 4.975		235	-			☐☐	
			16:15	EN			49° 21.958	124° 4.964			-			☐☐	
			:				° .	° .			-			☐☐	

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This page is for any notes or observations

→ Anchored off Lasqueti ~ 6pm
→ on water 8 May 7am

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59	CPF1	8	16:18	BE	NET		49° 22.046	124° 4.980	245		-		KY	☐☐	
			16:23	BO			49° 22.034	124° 4.955		235	-			☐☐	
			16:26	EN			49° 22.019	124° 4.954			-			☐☐	
60	GEO1	8	18:01	BE	CTD		49° 15.007	123° 45.017	405		-			☐☑	tideline @ stn 60 at 27
			18:09	BO			49° 15.031	123° 45.057		395	-			☐☐	
			18:15	EN			49° 15.041	123° 45.068			-			☐☐	
~~60~~61	GEO1	8	18:16	MR	BOT		49° 15.044	123° 45.069	405	0	- 19	1		☐☐	
62	GEO1	8	18:23	BE	NET		49° 15.009	123° 45.008	405		-			☐☐	
			18:32	BO			49° 15.032	123° 45.056		395	-			☐☐	
			18:37	EN			49° 15.044	° 45.072			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	
			:				° .	° .			-			☐☐	

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end @ RBS, unload 13:00 + drive back LOS.