

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2020-001

DATE:

From: FEB 17

To: FEB 25

VESSEL:

J. P. TULLY

PROJECT(S):

LINE P + CHATHAM SOUND

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

WaterProperties.ca

Captain: MIKE CORFIELD First Officer: DALE UNRUH
 Second Officer: JOHNATHON BENCKHUYSEN Third Officer: ALEXANDRIA BANNERMAN
 Fishing Master: _____ Chief Engineer: ROGER HADATON

Mission Participants / Agencies:

DFo-Tos, UVic, UBC, U Sask, MUN

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

1st Leg Scientific Personnel: Chief Scientist: MARIE ROBERT 06-18 A

Name	Watch	Cabin	Name	Watch	Cabin
MICHAEL ARYCHUK	DMS/18400 06-18	B			
MARK BELTON	00-12	C			
HUGH MACLEAN	12-24	D			
MICHAEL LIVINGSTON	06-12	E ⁺			
SILE KAFRISSEN	00-06	F			
RACQUELLE MANGAHAS	18-24	F ⁺			
SOPHIE JOHANNESSEN	12-24	G			
DANIELLE CALEB	TH 00-12	G			
IYOTSANAMAN MOHANTA	12-18	H			
XUAN ZHENG	00-06	H			

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: WP #102

Data acquisition program: Seasave

CTD deck unit make: SBE model: 11f serial number: 0425

Primary CTD

Make: SBE model: 9+ serial number: 443

Primary temperature serial number: 4700

Primary conductivity serial number: 3531

Secondary temperature serial number: 4888

Secondary conductivity serial number: 4513

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

Transmissometer: Wetlabs Model: P-STAR s/n: 1883DC

Fluorometer: Model Seapoint Cable gain: 10X s/n: 3640 P S or NO pump?

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

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

PAR sensor: Biospherical Model: QSP2350 s/n: 10613 Surface PAR? Y / N

Other sensors: Altimeter s/n: 62355 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?

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): 10L

Winches:

1. Make: HAW BOLDT Model: _____ Serial #: 17026 Used for: CTD
2. Make: HAW BOLDT Model: _____ Serial #: 1076-01 Used for: TRACE METAL
3. Make: SWANIN Model: _____ Serial #: 329 Serial #: 1482 Used for: BOMMO

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: Seapies Model: V2.362 Kit Number: OXY-2
Make: _____ Model: _____ Kit Number: _____

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

Excellent

Thermosalinograph System (SBE21):

Program: _____ Version: _____ S/N: 0620
Sampling interval (seconds): 30 5?
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:

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Month FEB				Year 2020			Vessel TULLY				Cruise ID 2020.01				
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
01	5103	8	22:38	BE	ROS	V.S.	48° 35.44	123° 30.29	228		1 - 22	22	H.M.	☒ ☒	
			22:42	BO			48° 35.43	123° 30.30		216	-			☐ ☐	
			23:01	EN			48° 35.43	123° 30.29			-			☐ ☐	
02	59	9	01:38	BE	ROS	V.S.	48° 36.92	123° 14.80	236		23 - 35	13	H.M.	☒ ☒	
			01:42	BO			48° 36.73	123° 14.76		229	-			☐ ☐	
			01:57	EN			48° 36.20	123° 14.49			-			☐ ☐	
03	59	9	02:22	BE	NET	-	48° 36.79	123° 14.81	227		-	-	H.M.	☐ ☐	BonGo
			02:30	BO			48° 36.53	123° 14.65	220		-			☐ ☐	
			02:33	EN			48° 36.40	123° 14.59	0		-			☐ ☐	
04	IF1	9	04:47	BE	Loop Set	-	48° 15.95	123° 30.34	143		-		H.M.	☐ ☐	Ldop 5004
05	IF2	9	06:31	BE	NET	-	48° 17.87	123° 59.92	188		-	-	H.M.	☐ ☐	BonGo
			06:38	BO			48° 17.83	123° 59.97		178	-			☐ ☐	
			06:41	EN			48° 17.82	123° 59.95			-			☐ ☐	
06	IF2	9	07:43	BE	GO FLO		48° 17.92	123° 59.83	188		36 - 41	6	M.H.M.	☐ ☐	
			08:06	BO		M.R.	48° 17.91	123° 59.41		165	-			☐ ☐	
			08:34	EN		RE	48° 17.77	123° 59.11			-			☐ ☐	
07	IF2	9	08:52	BE	ROS CTD	-	48° 17.940	123° 59.850	188		-	-	MS	☒ ☐	
			08:55	BO			48° 17.903	123° 59.815		180	-			☐ ☐	
			08:58	EN			48° 17.885	123° 59.780			-			☐ ☐	

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
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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

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Notes:

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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							
08	JF2	9	08:58	BE	Loop	-	48° 17.885	123° 59.780	188	5	5008	-	MB	☐	Loop 5008 ^{2-cell 125K 14500}
9	JF3	9	11:34	BE	Loop	-	48° 26.91	124° 29.82	227	5	5009	-	MB	☐	Loop 5009
10	JF4	9	13:36	BE	Loop	-	48° 32.30	124° 59.83	59	5	5010	-	MB	☐	Loop 5010
11	^{net} JF4	9	15:32	DE	MOR	-	48° 33.12	125° 00.45	40	-	-	-	MB	☐	CAITLIN'S ACUSTIC MODLINE DEGRADED
12	P1	9	17:43	BE	ROS	US	48° 34.490	125° 30.020	122		42 - 45	4	MB	☒	
			17:45	BO			° 34.480	° 30.030		118	-			☐	
			17:49	EN			° 34.	° 30.			-			☐	
13	P2	9	20:06	BE	ROS	U.S.	48° 35.98	128° 59.93	119		46 - 56	11	H.M.	☒	DMS CAST
			20:08	BO			48° 35.98	128° 59.91			-			☐	
			20:22	EN			48° 35.93	128° 59.93			-			☐	
14	P2	9	20:32	BE	NET	-	48° 35.93	125° 59.91	119		-	-	H.M.	☐	BONGO
			20:36	BO			48° 35.93	125° 59.91		110	-			☐	
			20:38	EN			48° 35.92	125° 59.94			-			☐	
15	P2	9	20:58	BE	ROS	U.S.	48° 35.87	125° 59.95	119		57 - 67	11	H.M.	☒	DEEP CAST
			21:00	BO			48° 35.87	125° 59.93		109	-			☐	
			21:09	EN			48° 35.88	125° 59.97			-			☐	
16	P3	9	23:16	BE	ROS	U.S.	48° 37.36	126° 20.00	835		68 -	1	H.M.	☒	
			23:30	BO			48° 37.33	126° 20.15		833	-			☐	
			23:46	EN			48° 37.31	126° 20.23			-			☐	

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17	P4	10	02:05	BE	ROS	U.S.	48° 39.08	126° 39.63	1320		69 - 87	19	H.M.	☒ ☒	DMS CAST
			02:11	BO			48° 39.13	126° 39.58		300	-			☐ ☐	
			02:33	EN			48° 39.21	126° 39.33			-			☐ ☐	
18	P4	10	03:50	BE	ROS	US	48° 38.97	126° 39.94	1322		88 - 106	19	M.L.	☒ ☒	DEEP CAST
			04:13	BO			48° 38.96	126° 39.90		1316	-			☐ ☐	S 1332 P 1315 A 9 D 1301
			04:5	EN			48° 39.05	126° 39.94			-			☐ ☐	
19	P4	10	05:10	BE	GO FLO	MSG	48° 39.07	126° 39.90	1320		107 - 111	5	D.C.	☐ ☐	GO FLO 3
			05:53	BO			48° 39.17	126° 39.95		855	-			☐ ☐	
			06:24	EN			48° 39.33	126° 39.98			-			☐ ☐	
20	P4	10	06:36	BE	NET	—	48° 39.29	126° 40.06	1312		—		H.M.	☐ ☐	BONGO
			06:45	BO			48° 39.37	126° 40.07		250	-			☐ ☐	
			06:49	EN			48° 39.42	126° 40.04			-			☐ ☐	
21	P4	10	06:56	BE			48° 39.52	126° 40.01	1312		-			☐ ☐	Bongo
			07:55	BO	NET	—	48° 39.95	126° 39.97		1200	-		M.B.	☐ ☐	
			07:56	EN			48° 40.21	126° 39.92			-			☐ ☐	
22	P4	10	08:27	BE	GO FLO	MSG	48° 38.96	126° 39.92	1311		112 - 117	6	M.B.	☐ ☐	SHALLOW GO-FLO
			08:51	BO			48° 38.99	126° 40.02		305	-			☐ ☐	
			09:13	EN			48° 39.03	126° 40.03			-			☐ ☐	
			:				°	°			-			☐ ☐	

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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
23	P4	10	10:38	BE	ROS	US	48° 39.005	126° 39.995	1311	1250	118 - 131	14	MB	☒ ☐	Regulate CR
			10:58	BO			° 39.016	° 39.955			-			☐ ☐	
			11:24	EN			° 38.987	° 39.949			-			☐ ☐	
24	P4	10	14:29	BE	ROS	US	48° 38.970	126° 39.940	1320		132 - 141	10	MB	☐ ☒	PRODUCTIVITY
			14:32	BO			° 38.970	° 39.970		150	-			☐ ☐	
			14:37	EN			° 39.040	° 39.920			-			☐ ☐	
25	P5	10	17:46	BE	ROS	US	48° 41.450	127° 9.850	2115		142 - 145	4	MB	☒ ☐	SAFETY STORAGE
			18:18	BO			° 41.430	° 9.770		2005	-			☐ ☐	1 Loop 5025 Inlet, 15m
			18:52	EN			48° 41.47	127° 09.82			-			☐ ☐	2 chl,
26	P6	10	21:23	BE	ROS	US	48° 44.55	127° 39.90	2573		146 -	1	H.M.	☒ ☒	
			21:57	BO			48° 44.48	127° 40.00		2005	-			☐ ☐	
			22:31	EN			48° 44.43	127° 40.21			-			☐ ☐	
27	P7	11	00:51	BE	ROS	US	48° 46.56	128° 09.99	2531		147 -	1	H.M.	☒ ☒	+1 Loop 5027 Inlet, 2 chl - 1 sal @ 5m
			01:25	BO			48° 46.36	128° 10.10		2005	-			☐ ☐	
			01:59	EN			48° 46.53	128° 10.30			-			☐ ☐	
28	P8	11	04:11	BE	ROS		48° 49.03	128° 39.86	2544		148 - 171	24	H.M.	☒ ☒	
			04:46	BO			48° 48.96	128° 39.82		2005	-			☐ ☐	
			05:43	EN			48° 49.04	128° 39.58			-			☐ ☐	
			:				°	°			-			☐ ☐	

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29	P8	11	05:55	BE	BOT	MR	48°49.08	128°39.37	2543		-		DC	☐ ☐	Go FLO Sook
			05:11	BO			48°49.08	128°39.37		190	-			☐ ☐	
			06:51	EN			48°49.05	128°39.23			-			☐ ☐	
30	P8	11	06:59	BE	NET	—	48°49.03	128°39.28	2545		-	—	H.M.	☐ ☐	BOTGO
			07:07	BO			48°49.06	128°39.26		250	-			☐ ☐	
			07:12	EN			48°49.04	128°39.26			-			☐ ☐	
31	P9	11	09:41	BE	ROS	US	48°51.427	129°9.976	2376		172-	1	MB	☒ ☐	+ Loop 1st run
			10:14	BO			°51.400	°10.025		2005	-			☐ ☐	2xCH 1xSAL
			10:46	EN			°51.383	°9.990			-			☐ ☐	
32	P10	11	13:41	BE	ROS	US	48°53.580	129°39.990	2669		173-	1	MB	☒ ☐	
			14:14	BO			°53.550	°40.000		2005	-			☐ ☐	
			14:46	EN			°53.610	°40.110			-			☐ ☐	
33	P10→P11	11	16:09	BE	Loop	-	48°54.79	129°55.04			5033-	-	MB	☐ ☐	2xCH 1xSAL Loop
34	P11	11	17:37	BE	ROS	US	48°56.010	130°9.900	2781		174-	1	MB	☒ ☐	+ Loop 5034 UNDERWAY
			18:10	BO			°56.010	°9.990		2005	-			☐ ☐	CAST NAME 2020-00324
			18:44	EN			°55.940	°10.120			-			☐ ☐	
35	P12	11	21:22	BE			48°58.17	130°39.88	3264		175-192	18	H.M.	☒ ☒	DRIS CAST
			21:28	BO			48°58.18	130°39.96		300	-			☐ ☐	
			21:47	EN			48°58.15	130°39.83			-			☐ ☐	

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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
36	P12	11	21:55	BE	BOT	MR	48° 58.13	130° 39.76	3264		193-197	5	DC	☐ ☐	Go FLO 3
			22:11	BO			48° 58.12	130° 39.69		150	-			☐ ☐	
			22:25	EN			49° 58.08	130° 39.68			-			☐ ☐	
37	P12	11	22:41	BE	ROS	U.S.	48° 58.10	130° 39.60	3264		198-221	24	H.M.	☐ ☐	DEEP CAST
			23:35	BO			48° 57.97	130° 39.69		3277	-			☐ ☐	PAR-OFF
			00:55	EN			48° 57.72	130° 39.82			-			☐ ☐	
38	P12	12	01:47	BE	BOT		48° 58.09	130° 40.04	3264		222-226	5	A.C.	☐ ☐	FLO of Go
			02:19	BO			48° 58.07	130° 40.06		800	-			☐ ☐	
			02:44	EN			48° 57.94	130° 40.08			-			☐ ☐	
39	P12	12	02:56		ROS		48° 57.93	130° 40.04	3304		227-236	10	H.M.	☒ ☒	PAR ON
			02:58				48° 57.92	130° 40.05		150	-			☐ ☐	PROD. CAST
			03:05				48° 57.91	130° 40.05			-			☐ ☐	
40	P12	12	03:18	BE	NET		48° 57.89	130° 40.06	3070		-			☐ ☐	Bongo 0-250m
			03:26	BO			48° 57.93	130° 40.09		250	-			☐ ☐	
			03:30	EN			48° 57.94	130° 40.08			-			☐ ☐	
41	P13	12	07:43	BE	ROS CTD		49° 02.62	131° 39.87	3122		237-	1	H.M./MB	☒ ☒	1 Lap 5041
			08:17	BO			49° 02.65	131° 39.66		2065	-			☐ ☐	
			08:48	EN			49° 2.65	131° 39.87			-			☐ ☐	
			:				°	°			-			☐ ☐	

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

Notes:

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

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p65/19

Event 39. Loop sample: DIC/AIK for SUNA nitrate/pH sensor calibration. Sample #5039. Sophie for Andrea Fassbender.

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Month <u>FEBRUARY</u>			Year <u>2020</u>			Vessel <u>1044</u>			Cruise ID <u>2020-001</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
42	P14	12	12:48	BE	ROS	US	49° 7.380	132° 40.000	3345		238 - 261	24	MS	☒ ☐	PAR OFF
			13:41	BO			49° 7.390	132° 40.030		3358	-			☐ ☐	D = 3306 P = 3362 A = 8.5 S = 3344
			14:57	EN			49° 7.400	132° 40.120			-			☐ ☐	
43	P15	12	18:37	BE	ROS	US	49° 12.050	133° 39.910	3431		262-	1	MS	☒ ☐	PARLOW + Loop 5043
			19:10	BO			° 12.020	° 39.900		2005	-			☐ ☐	
			19:42	EN			° 12.020	° 39.870			-			☐ ☐	
44	P16	12	23:46	BE	ROS	U.S.	49° 17.02	134° 39.77	3659		263 - 275	13	H.M.	☒ ☒	DMS to 200mm
			23:50	BO			49° 16.99	134° 39.73		200	-			☐ ☐	
		13	00:09	EN			49° 16.93	134° 39.65			-			☐ ☐	
45	P16	13	00:18	BE	BOT	MR	49° 16.86	134° 39.48	3660		276 - 290	5	DC	☐ ☐	Go FLO's
			00:34	BO			49° 16.77	134° 39.28		150	-			☐ ☐	
			00:47	EN			49° 16.67	134° 39.17			-			☐ ☐	
46	P16	13	01:47	BE	ROS	U.S.	49° 16.91	134° 39.85	3661		291 - 304	24	H.M.	☐ ☐	DEEP CAST
			02:49	BO			49° 16.57	134° 39.93		3694	-			☐ ☐	PAR OFF
			04:15	EN			49° 16.07	134° 40.32			-			☐ ☐	
47	P16	13	05:14	BE	BOT	MR	49° 17.04	134° 40.10	3660		305 - 309	5	DC	☐ ☐	Go FLO
			05:43	BO			49° 17.06	134° 40.27		900	-			☐ ☐	
			06:11	EN			49° 17.04	134° 40.34			-			☐ ☐	
			:				°	°			-			☐ ☐	

Event Type:

BOT = Bottle cast (no CTD)
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SET = Fish Set

LOOP = Sea Water Loop

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Notes:

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- RESTART OF SEASAVE REQUIRED, GOT HUNG UP @ START; ACQUIRING DATA...

p7.5/19

- SPIKE IN FLUOROMETER @ SRF GOING DOWN

Event 44. Loop sample: DIC/AIK for calibration of SUNA nitrate/pH sensor, sample #5044. Sophie for Andrea Fassbender

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Month FEBRUARY			Year 2020			Vessel TULLY			Cruise ID 2020-01						
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							
48	P16	13	06:23	BE	ROS	U.S.	49° 17.06	134° 40.32	3660		320-3A	10	H.M.	☐	PROD CAST
			06:26	BO			49° 17.06	134° 40.31		150	-			☐	
			06:32	EN			49° 17.03	134° 40.30			-			☐	
49	P16	13	06:42	BE	NET		49° 17.09	134° 40.30	3660		-			☐	BONGO
			06:51	BO			49° 17.14	134° 40.36		250	-			☐	
			06:55	EN			49° 17.17	134° 40.39			-			☐	
50	P17	13	12:44	BE	ROS	US	49° 21.000	135° 39.990	3849		320-	1	MB	☒	+ Low 5.50
			13:16	BO			° 21.000	° 40.020		2005	-			☐	
			13:46	EN			° 21.000	° 40.010			-			☐	
51	P17→P18	13	14:50	BE	Loop	-	49° 21.72	135° 49.41	3552	-	5051	-	MB	☐	Loop
52	P18-P19	14	05:03	BE	Loop	-	49° 28.58	137° 18.26	3918	-	5052		H.M.	☐	Loop
53	P19	14	07:13	BE	ROS	U.S.	49° 30.04	137° 39.86	3948		321	1	H.M.	☒	
			07:30	BO			49° 30.09	137° 39.86		1000	-			☐	
			07:48	EN			49° 30.15	137° 39.93			-			☐	
54	P20	14	13:29	BE	ROS	US	49° 34.000	138° 39.970	3986		322-331	10	MB	☒	PRODUCTIVITY
			13:32	BO			° 33.980	° 39.970		150	-			☐	
			13:38	EN			° 33.920	° 39.980			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	

Event Type:

BOT = Bottle cast (no CTD)
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ROS = CTD in Rosette
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DRF = Drifter
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Bottle Firing Method:

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

Notes:

Time Code:

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

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

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Produced by the Water Properties Group, IOS

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Month <u>FEBRUARY</u>				Year <u>2020</u>		Vessel <u>TULLY</u>				Cruise ID <u>2020-001</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							
55	P20	14	13:53	BE	NET	-	49° 33.97	138° 39.90	3986		-	-	MB	☐	Burbo 280
			14:02	BO			49° 33.89	138° 39.92		250	-			☐	
			14:07	EN			49° 33.86	138° 39.94			-			☐	
56	P20	14	14:46	BE	BOT	MSR	49° 33.77	138° 39.89	3986		332 - 336	5	DC	☐	Go-Flow SHALOW
			15:05	MR			49° 33.67	138° 39.75			-			☐	
			15:26	EN			49° 33.56	138° 39.71			-			☐	
57	P20	14	16:14	BE	ROS	US	49° 33.942	138° 39.979	3956		337 - 360	24	MB	☒	P: 4025 A: 10 D: 3957 S: 3956 Chg End 3959 DEEP CAST
			17:16	BO			49° 33.990	138° 39.920		4025	-			☐	
			18:39	EN			49° 33.97	138° 39.85			-			☐	
58	P20	14	18:51	BE	BOT	MR	49° 34.01	138° 39.98	3958		361 - 365	5	RM	☐	Go-Flow DEEP
			19:12	BO/MR			49° 34.01	138° 39.98		800	-			☐	
			19:44	EN			49° 33.94	138° 39.98			-			☐	
59	P20	14	20:10	BE	ROS		49° 34.08	138° 39.81	3958		366 - 378	13	H.M.	☒	AMS CAST
			20:14	BO			49° 34.09	138° 39.78		200	-			☐	
			20:32	EN			49° 34.09	138° 39.77			-			☐	
	P21		:		REG TERMINATION						-			☐	Bulk water for Sophie + 5m bottle + LOOP net, 5m
60	P21	15	03:08	BE	ROS		49° 37.97	139° 39.92	3952		379 - 383	5	H.M.	☒	↓
			03:44	BO			49° 37.75	139° 40.21		2005	-			☐	
			04:19	EN			49° 37.57	139° 40.37			-			☐	

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Time Code:

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

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p9.5/19

Chg Sound Probe Run control → Feb 2019 P26 Sound Probe
then change to constant speed of sound of 1490 m/s

← KINK IN WIRE - RETERMINATION (JUMPED UPPER SHIVE) APPROX. 5m CUT OUT

5060

SAL

P21

2020-001

LOOP m

bot 1

→ FOUND WITH NO INSERT OR TOP 18 FEB 2020 → DISCARDED

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Month <u>FEBRUARY</u>				Year <u>2020</u>		Vessel <u>TULLY</u>				Cruise ID <u>2020-01</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
61	P22	15	08:41	BE	ROS	U.S.	49° 41.992	140° 39.910	3892		384-407	24	MB	☒	PAR - OFF
			09:47	BO			° 41.980	° 40.016		3977	-			☐	A=10 P=3976 D=3906 S=3896
			11:08	EN			° 41.986	° 40.038			-			☐	
62	P23	15	15:55	BE	ROS	US	49° 45.960	141° 39.980	4043		408-413	6	MB	☒	+Loop SOG2
			16:26	BO			° 45.840	° 40.000		2005	-			☐	SALINITY STORAGE
			17:00	EN			° 45.850	° 39.950			-			☐	120m ~ 33 PSU
63	P24	15	21:46	BE	ROS	US	49° 50.22	142° 39.78	3977		414-437	24	AM	☒	
			22:49	BO			49° 50.17	142° 39.62		4044	-			☐	
			00:16	EN			49° 49.94	142° 39.27			-			☐	
64	EDDY	16	:	BE	BOT	-	° .	° .	4091		438-442	5	DC	☐	PAR ON
			:	BO			° .	° .		150	-			☐	GO FLOS
			02:59	EN	0259		49° 53.92	142° 59.86			-			☐	
65	EDDY	16	03:08	BE	ROS	U.S.	49° 53.93	142° 59.91	4081		443-466	24	H.M	☒	
			03:42	BO			49° 53.92	142° 59.73		2005	-			☐	
			04:38	EN			49° 53.86	142° 59.79			-			☐	
66	EDDY	16	04:54	BE	BOT	-	49° 53.86	142° 59.79	4091		467-471	5	DC	☐	GO FLOS
			05:18	BO			49° 53.80	142° 59.77		800	-			☐	
			5:47	EN			49° 53.81	142° 59.69			-			☐	
			:				° .	° .			-			☐	

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Notes:

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Month <u>FEBRUARY</u>			Year <u>2020</u>			Vessel <u>TULLY</u>			Cruise ID <u>2020-01</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
67	EDDY	16	06:02	BE	NET	-	49° 53.85	142° 59.63	4080		-	-	H.M.	☐ ☐	BONGO
			06:10	BO			49° 53.85	142° 59.59		250	-			☐ ☐	
			06:15	EN			49° 53.89	142° 59.58			-			☐ ☐	
68	P25	16	09:30	BE	ROS	U.S.	49° 55.951	143° 36.224	4135		472-487	16	MB	☒ ☐	
			10:04	BO			50° 0.016	° 36.198		2005	-			☐ ☐	
			10:46	EN			50° 0.100	° 36.212			-			☐ ☐	
69	P35	16	14:31	BE	ROS	US	49° 59.977	144° 18.094	4140		488-503	16	MB	☒ ☐	
			15:05	BO			° 55.862	° 18.071		2005	-			☐ ☐	
			15:45	EN			° 55.701	° 18.173			-			☐ ☐	
70	P26	16	19:14	BE	ROS	US	49° 59.950	144° 59.960	4237		504-516	13	MB	☒ ☐	DMT CAST
			19:18	BO			° 59.930	144° 59.990		200	-			☐ ☐	PAR ON
			19:33	EN			° 59.940	145° 0.000			-			☐ ☐	
71	P26	16	20:20	BO	ROS	U.S.	49° 59.93	144° 59.91	4240		517-540	24	H.M.	☒ ☒	DEEP CAST →
			21:35	BO			49° 59.72	144° 59.68		4316	-			☐ ☐	PAR OFF
			23:11	EN			49° 59.64	144° 59.66			-			☐ ☐	
72	P26	16	23:18	BE	BOT	-	49° 59.66	144° 59.66	4240		541-546	6	DC	☐ ☐	GO FLOS
			23:46	BO			49° 59.60	144° 59.60		900	-			☐ ☐	
			00:19	EN			49° 59.60	144° 59.60			-			☐ ☐	
			:				°	°			-			☐ ☐	

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Produced by the Water Properties Group, IOS

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Try to adjust sounder again, speed of sound constant @ 1493 m/s.

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Month FEBRUARY				Year 2020		Vessel TULLY			Cruise ID 2020-01						
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
73	P26	17	01:07	BE	ROS	U.S.	50° 00. 01	144° 59. 96	4220		547-561	15	H.M.	☒ ☒	CHEM CAST
			01:14	BO			49° 59. 99	144° 59. 96	4250	400	-			☐ ☐	
			01:35	EN			49° 59. 97	144° 59. 86			-			☐ ☐	
74	P26	17	01:45	BE	GO FLO	MR	49° 59. 98	144° 59. 76	4259	150	562-566	5	DC	☐ ☐	GO-FLOS
			2:00	BO			49° 59. 99	144° 59. 66			-			☐ ☐	
			02:13	EN			49° 59. 96	144° 59. 57			-			☐ ☐	
75	P26	17	02:22	BE	NET	-	49° 59. 98	144° 59. 52	4260		-	-	H.M.	☐ ☐	BONGO
			02:31	BO			50° 00. 01	144° 59. 47		250	-			☐ ☐	
			02:36	EN			50° 00. 02	144° 59. 47			-			☐ ☐	
76	P26	17	02:43	BE	NET	-	50° 00. 01	144° 59. 40	4260		-	-	H.M.	☐ ☐	DOGP BONGO
			03:20	BO			49° 59. 99	144° 59. 15		1200	-			☐ ☐	
			03:39	EN			50° 00. 01	144° 58. 97			-			☐ ☐	
77	P26	17	04:33	BE	ROS	U.S.	50° 00. 03	144° 59. 78	4250		567-576	10	H.M.	☒ ☒	PROD CAST
			04:36	BO			50° 00. 04	144° 59. 77		150	-			☐ ☐	
			04:41	EN			50° 00. 04	144° 59. 72			-			☐ ☐	
78	P26	17	04:48	BE	BOT	-	50° 00. 03	144° 59. 61	4250		577-579	3	DC	☐ ☐	GO FLO (BULK)
			04:59	BO			50° 00. 00	144° 59. 59		35	-			☐ ☐	
			05:04	EN			49° 59. 99	144° 59. 49			-			☐ ☐	
			:				°	°			-			☐ ☐	

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Produced by the Water Properties Group, IOS

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Notes:

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Month <u>FEBRUARY</u>				Year <u>2020</u>			Vessel <u>TULLY</u>				Cruise ID <u>2020-01</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								
79	P 26	17	05:18	BC	DRI	—	50° 00.00	144° 59.95	4266	—	1 -	—	H.M	☐ ☐	CEMENT SPONGE BOB PROTOTYPE 7.1 #1040	
80	PA-013	17	06:37	BC	ROS	U.S.	50° 07.74	144° 48.47	4211		580 - 593	4	H.M	☒ ☒	RE BOOT	
			06:43	BO			50° 07.68	144° 48.48		350	-			☐ ☐	COMPUTER & SENSITIVE	
			06:53	EN			50° 07.63	144° 48.44			-			☐ ☐		
81	DIC Loop & SUNA	17	07:15	BE	Loop		50° 09.29	144° 46.02			5081-			☐ ☐	Under way, leaving PA-013, DIC - Sophie	
82	UNDERWAY	17	11:26	BC	Loop	-	50° 32.91	143° 53.97	4017	-	5082-	-	MB	☐ ☐	Loop underway	
83	Loop	18	00:11	BC	Loop	-	51° 46.06	140° 28.93	3761		5083		H.M	☐ ☐	Loop underway	
84	Loop	18	09:25	BC	Loop	-	52° 35.09	138° 14.96	3507	-	5084-	-	MB	☐ ☐	" "	
85	Loop	18	22:42	BC	Loop	-	53° 41.69	135° 08.81	2770		5085		H.M	☐ ☐	Loop underway	
86	DFX3	19	16:42	BC	ROS	US	54° 28.80	132° 18.09	367		584 - 607	24	MB	☒ ☐		
			16:45	BO			° 28.81	° 17.91		360	-			☐ ☐		
			17:07	EN			° 28.79	° 17.44			-			☐ ☐		
87	Loop P-DIC	19	:	BC	Loop	US	54° 26.08	131° 29.36		Loop	-	18	SJ	☐ ☐	Under way, leaving DIXI-DIC for SUNA, Sophie	
88	CH 3	20	00:15	BC	ROS	US	54° 41.43	130° 55.73	536		608 - 626	19	H.M	☒ ☒		
			00:26	BO			54° 41.44	130° 55.92		526	-	*	*	☐ ☐	* →	
			00:48	GC	Loop		54° 41.50	130° 55.22			-			☐ ☐	Touched Bottom	
89	CH 2	20	02:08	BC	ROS	US	54° 39.82	130° 38.36	305		627 - 644	18	H.M	☒ ☒		
			02:13	BO			54° 39.83	130° 38.43		303	-			☐ ☐		
			02:31	EN			54° 39.85	130° 38.69			-			☐ ☐		

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LOOP = Sea Water Loop
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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

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P135/19

REBOOTED ADCP BECAUSE OF NAN ERROR.

2041 UTZ 19 FEB: RESTARTED ADCP.

FROM THIS STATION ON (AFTER CH 3) NO 10m DIP AT BEGINNING OF CAST 30s@SURFACE AND THEN DOWN

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month FEBRUARY				Year 2020			Vessel TULLY				Cruise ID 2020-01				
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
40	CH 1	20	03:28	BE	ROS	U.S.	54° 41. 67	130° 27. 20	608		645-662	18	H.M.	☒ ☒	
			03:40	BO			54° 41. 61	130° 27. 32			-			☐ ☐	
			04:04	EN			54° 41. 56	130° 27. 65			-			☐ ☐	
91	CH1	20	04:18	BE	NET	-	54° 41. 49	130° 27. 80	609		-		H.M.	☐ ☐	BONGO
			04:36	BO			54° 41. 51	130° 27. 74		600	-			☐ ☐	
			4:45	EN			54° 41. 55	130° 27. 71			-			☐ ☐	
92	CH6	20	05:49	BE	ROS	U.S.	54° 34. 92	130° 31. 91	246		663-673	11	H.M.	☒ ☒	2 m DELAY in
			05:55	BO			54° 34. 94	130° 31. 93		245	-			☐ ☐	DOWNCAST? (0551)
			06:10	EN			54° 35. 01	130° 31. 94			-			☐ ☐	
93	CH 5	20	09:30	BE	ROS	U.S.	54° 33. 69	130° 37. 68	144		674-687	14	H.M.	☒ ☒	
			09:33	BO			° 33. 68	° 37. 69		139	-			☐ ☐	
			09:44	EN			° 33. 66	° 37. 69			-			☐ ☐	
94	CH4	20	11:30	BE	ROS	US	54° 32. 52	130° 43. 50	92		688-694	7	MR	☒ ☐	NO DEP 1 min @ SRF
			11:32	BO			° 32. 52	° 43. 49		87	-			☐ ☐	
			11:40	EN			° 32. 49	° 43. 56			-			☐ ☐	
95	CH8	20	12:30	BE	ROS	US	54° 31. 237	130° 35. 020	138		695-708	14	MR	☒ ☐	NO DEP
			12:32	BO			° 31. 240	° 35. 018		133	-			☐ ☐	1 min @ SRF
			12:42	EN			° 31. 210	° 35. 028			-			☐ ☐	
			:				°	°			-			☐ ☐	

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DRF = Drifter
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P145/19

- WERE JUMPED SHIVÉ, RETERMINATED →, CHANGED FUSE IN DECKUNIT, WORKING. MUST HAVE KINKED ELECTRICAL SPLICE WHEN RECONNECTING, REDO ELECTRICAL TERMINATION → WORKING.
- HYDRAULIC ISSUE WITH LARS, DELAY ~ 1 HR.

DAILY SCIENCE LOG

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Month <u>FEBRUARY</u>			Year <u>2020</u>			Vessel <u>TULU</u>			Cruise ID <u>2020-001</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
96	CHAT3	20	13:03	BE	ROS	US	54° 31.640	130° 32.680	162		709-721	13	MB	☒ ☐	No DIP
			13:06	BO			° 31.650	° 32.660		157	-			☐ ☐	
			13:15	EN			° 31.620	° 32.620			-			☐ ☐	
97	CH10	20	14:19	BE	ROS	US	54° 26.873	130° 39.199	84		722-728	7	MB	☒ ☐	No DIP
			14:21	BO			° 26.873	° 39.192		80	-			☐ ☐	
			14:27	EN			° 26.852	° 39.169			-			☐ ☐	
98	CH13	20	15:02	BE	ROS	US	54° 23.160	130° 38.920	156		729-738	10	MB	☒ ☐	No DIP
			15:05	BO			° 23.190	° 38.890		153	-			☐ ☐	
			15:16	EN			° 23.290	° 38.920			-			☐ ☐	
99	CH12	20	15:47	BE	ROS	US	54° 23.710	130° 33.990	140		739-752	14	MB	☒ ☐	No DIP
			15:49	BO			° 23.713	° 33.972		140	-			☐ ☐	
			15:59	EN			° 23.720	° 33.924			-			☐ ☐	
100	CH17	20	16:29	BE	ROS	US	54° 20.610	130° 33.356	91		753-760	8	MB	☒ ☐	No DIP
			16:31	BO			° 20.610	° 33.350		86	-			☐ ☐	
			16:38	EN			° 20.610	° 33.340			-			☐ ☐	
101	CH16	20	17:27	BE	ROS	US	54° 19.858	130° 37.471	215		761-774	14	MB	☒ ☐	No DIP
			17:30	BO			° 19.860	° 37.440		210	-			☐ ☐	
			17:42	EN			° 19.880	° 37.400			-			☐ ☐	
			:				°	°			-			☐ ☐	

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Month <u>FEBRUARY</u>			Year <u>2020</u>			Vessel <u>JP TULLY</u>			Cruise ID <u>2020-001</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
102	CH15	20	18:16	BE	ROS	US	54° 18.420	130° 42.420	195		775-786	12	MB	☒	No Dip.
			18:20	BO			° 18.430	° 42.370	195		-			☐	
			18:33	EN			° 18.430	° 42.350			-			☐	
103	CH14	20	19:20	BE	ROS	US	54° 20.534	130° 49.613	135		787-799	13	MB	☒	No Dip
			19:22	BO			° 20.530	° 49.590	127		-			☐	
			19:32	EN			° 20.540	° 49.590			-			☐	
104	HECS 8	20	20:47	BE	ROS	US	54° 23.25	131° 05.64	123		800-917	18	H.M.	☒	NO DIP
			20:49	BO			54° 23.28	131° 05.66	117		-			☐	
			21:01	EN			54° 23.36	131° 05.87			-			☐	
105	HECS 8	20	21:22	BE	HCT	-	54° 23.18	131° 05.48	110		-	-	H.M.	☐	BONGO
			21:27	BO			54° 23.16	131° 05.55			-			☐	
			21:27	EN			54° 23.17	131° 05.56			-			☐	
106	HECS 7	20	23:32	BE	ROS	U.S.	54° 13.88	131° 02.41	126		818-930	13	H.M.	☒	NO DIP
			23:35	BO			54° 13.91	131° 02.44	115		-			☐	
			23:45	EN			54° 13.91	131° 02.36			-			☐	
107	CHAT 2	21	01:36	BE	ROS	US	54° 16.18	130° 46.76	187		931-947	17	H.M.	☒	NO DIP
			01:39	BO			54° 16.17	130° 46.76			-			☐	
			01:53	EN			54° 16.12	130° 46.93			-			☐	
			:				°	°			-			☐	

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Month <u>FEBRUARY</u>			Year <u>2020</u>			Vessel <u>TULLY</u>			Cruise ID <u>2020-01</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
108	CH 20	21	02:30	BE	ROS	US	54° 13.54	130° 43.03	155		848-857	10	HM	☒ ☒	
			02:33	BO			54° 13.51	130° 43.06		150	-			☐ ☐	
			02:44	EN			54° 13.50	130° 43.93			-			☐ ☐	
109	CH 19	21	11:11	BG	ROS	US	54° 15.190	130° 35.630	75		853-868	11	MB	☒ ☒	No DEP
			11:13	BO			54° 15.210	130° 35.580		70	-			☐ ☐	
			11:21	EN			54° 15.220	130° 35.550			-			☐ ☐	
110	PRI4274	21	12:41	BE	ROS	US	54° 13.550	130° 21.190	37		869-878	10	MB	☒ ☒	No DEP
			12:42	BO			° 13.541	° 21.174		31	-			☐ ☐	
			12:47	EN			° 13.534	° 21.130			-			☐ ☐	
111	CH23	21	13:16	BE	ROS	US	54° 11.460	130° 23.510	103		879-886	8	MB	☒ ☐	No DEP
			13:18	BO			° 11.450	° 23.530		97	-			☐ ☐	
			13:27	EN			° 11.470	° 23.510			-			☐ ☐	
112	CHAT1	21	13:53	BE	ROS	US	54° 12.070	130° 27.480	107		887-905	19	MB	☒ ☐	No DEP
			13:54	BO			° 12.070	° 27.520			-			☐ ☐	
			14:03	EN			° 12.030	° 27.590			-			☐ ☐	
113	CH25	21	14:37	BE	ROS	US	54° 8.880	130° 26.240	118		906-918	13	MB	☒ ☐	No DEP
			14:40	BO			° 8.890	° 26.230			-			☐ ☐	
			14:50	EN			° 8.920	° 26.230			-			☐ ☐	
			:				°	°			-			☐ ☐	

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month <u>FEBRUARY</u>			Year <u>2020</u>		Vessel <u>SP TULLY</u>			Cruise ID <u>2020-001</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
114	CH26	21	15:16	BE	ROS	US	54° 8.800	130° 21.460	64		919-925	7	MB	☒ ☐	No DEP
			15:17	BO			° 8.800	° 21.450		57	-			☐ ☐	
			15:23	EN			° 8.800	° 21.450			-			☐ ☐	
115	CH27	21	15:58	BE	BOAT	.	54° 6.601	130° 16.230	44	-	936-939	4	MB	☐ ☐	SAMPLES OUT OF ORDER. →
			19:42	EN			53° 58.60	130° 11.53			(940 not collected)			☐ ☐	BOAT LAUNCH SKENA
116	CH27	21	16:11	BE	ROS	US	54° 6.630	130° 16.350	48		926-935	10	MB	☒ ☐	No DEP
			16:12	BO			° 6.640	° 16.350		43	-			☐ ☐	
			16:18	EN			° 6.630	° 16.370			-			☐ ☐	
117	CH29	21	16:44	BE	ROS	US	54° 5.410	130° 19.290	137		941-948	8	MB	☒ ☐	No DEP
			16:47	BO			° 5.401	° 19.286		132	-			☐ ☐	MA16C ~2m OFF
			16:55	EN			° 5.410	° 19.310			-			☐ ☐	LOST ALT. BOTTOM?
118	MP55	21	17:26	BE	ROS	US	54° 4.230	130° 16.180	111		949-960	12	MB	☒ ☐	No DEP
			17:28	BO			° 4.250	° 16.180		105	-			☐ ☐	
			17:36	EN			° 4.310	° 16.190			-			☐ ☐	
119	CH31	21	18:24	BE	ROS	US	54° 1.910	130° 14.060	90		961-969	9	MB	☒ ☐	No DEP
			18:25	BO			° 1.951	° 14.096		83	-			☐ ☐	
			18:33	EN			° 2.039	° 14.177			-			☐ ☐	
			:				° .	° .			-			☐ ☐	
			:				° .	° .			-			☐ ☐	

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P18.5/19

Event # 115

Boat samples in Skeena River estuary: #936 (R1) $54^{\circ}12.994'N / 129^{\circ}50.623'W$, #937 (R2) $54^{\circ}12.709'N / 129^{\circ}54.052'W$,
#938 (R3) $54^{\circ}09.391'N / 130^{\circ}00.930'W$, #939 (R4) $54^{\circ}07.525'N / 130^{\circ}07.144'W$. #940 Not collected. Particles, DOC, TOC, CDOM, $\delta^{18}O$, nutrients.

DELAY: CHANGING SHEARED BOLT ON LARS HEAD.

DAILY SCIENCE LOG

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Month FEBRUARY				Year 2020			Vessel JP TULLY			Cruise ID 2020-001					
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
120	OGC1150	21	19:09	BC	ROS	US	53°59.310	130°12.480	128		976-977	10	MB	☒	No DCP
			19:12	BO			53°59.332	130°12.503		128	-			☐	
			19:21	EN			53°59.356	130°12.509			-			☐	
121	UNDERWAY	22	15:11	BC	LOOP	-	51°19.490	127°52.634	107	-	5121-	-	MB	☐	UNDERWAY LOOP
122		22	15:52	BC	Loop	-	51°12.38	127°56.02	107	-	5122-		S.J.	☐	SOPHIE'S LOOP
123	CPE1	22	18:21	BC	ROS	US	51°00.40	127°49.99			980-	1	DC	☒	+Loop 5125
			18:24	BO			51°00.50	127°50.01	145	135	-			☐	
			18:29	EN			51°00.50	127°50.050			-			☐	
124	CPE1	22	18:35	BE	NET	-	51°00.06	127°49.98			-	-		☐	BONGO
			18:41	BO			51°00.03	127°49.88	155	138	-			☐	
			18:44	EN			50°59.99	127°49.79			-			☐	
125	POWELL RIVER	23	21:20	RE	MOL		49°49.53	124°32.62			-			☐	RECOVER VIKING BOOY
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	

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