

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2019-023

DATE:

AUG 29

From:

To:

SEPT 9

VESSEL:

TULLY

PROJECT(S):

LA PEROUSSE

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

1062

WaterProperties.ca

**** 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.

Tully Laptop

Data logging computer:

Seasave

Data acquisition program:

SRF model: *11+*

serial number: *0425*

Primary CTD

Make: *SRF* model: *9+* serial number: *506*

Primary temperature serial number: *2023*

Primary conductivity serial number: *1763*

Secondary temperature serial number: *5013*

Secondary conductivity serial number: *3394*

Transmissometer: Model: *1-5kw* s/n: *1185DR*

Transmissometer: Model: *1-5kw* s/n: *1883DC*

Fluorometer: Model: *Seapoint* Cable gain: *3X* s/n: *3640* ☒ P, S or NO pump?

Fluorometer: Model: *SRF* Cable gain: *43* s/n: *3234* ☒ P, S or NO pump?

Oxygen sensor: Model: *SRF* s/n: *70613* Surface PAR? Y / N

PAR sensor: Model: *Biospinus* s/n: *0582350*

Other sensors: s/n: *SRF* or NO pump?

Other sensors: s/n: *SRF* or NO pump?

Other sensors: s/n: *SRF* or NO pump?

Other sensors: s/n: *SRF* 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-rossette casts (e.g., W.E. Ricker)

Rosette Setup:

Number of bottles: _____

Manufacturer: _____

Volume of bottles (litres): _____

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 Kits:

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):

Program: _____

Sampling interval (seconds): _____

Fluorometer sensor serial number: _____

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

ADCP Setup:

Computer time zone: _____

User Exits: _____

Name: _____

Exit points: _____

Name: _____

Exit points: _____

Name: _____

Exit points: _____

Work File: _____

Sampling interval (sec): _____

Bin Length: (2⁴x): _____

Pulse Length: _____

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:

Ocean Sciences Division, Institute of Ocean Sciences

DAILY SCIENCE LOG

Month			August		Year		2019		Vessel			SP TULLY		Cruise ID			
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Latitude	Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Tms/FI Cleaned	Comments		
1	SI	30	02:56	BE	ROS	US	49° 35' 37.0	123° 29' 71.0	129		-	-	MB	☒	Test cast		
			:57	BO			° 39' 38.0	° 29' 71.0		100	-			☐	Fired all bottles		
			03:00	EN			° 39' 38.0	° 29' 69.0			-			☐	@ 200 for integration		
2	SI	30	05:18	BE	ROS	US	48° 35' 03.0	123° 14' 67.0	223		1 - 11	11	MB	☒	Stopped @		
			05:27	BO			° 35' 73.0	° 14' 61.0		231	-			☐	161 on way down		
			05:42	EN			° 34' 76.0	° 14' 64.0			-			☐			
3	SI	30	05:55		NET	-	48° 34' 8.0	123° 14' 56	237		-	-	MG	☐	Bongo		
			06:03				° 34' 8.4	° 14' 67		250	-			☐			
			06:07				° 34' 8.2	° 14' 58			-			☐			
4	JF2	30	11:02	BE	ROS	US	48° 17' 9.7	124° 00' 11	187		12 - 22	11	HA	☒	RBRs on		
			11:05	BO			48° 17' 9.8	124° 00' 15			-			☐			
			11:17	EN			48° 18' 0.2	124° 00' 18			-			☐	RBRs off		
5	JF2	30	11:25	BE	NET	-	48° 18' 0.1	124° 00' 15	184		-		HM/MB	☐			
			11:32	BO			48° 18' 0.1	124° 00' 16		174	-			☐			
			11:36	EN			48° 18' 0.2	124° 00' 16			-			☐			
6	LB01	30	15:53	BE	ROS	US	48° 40' 42	124° 59' 65	32		23 - 33	11		☒	RBR on		
			15:56	BO			48° 40' 44	124° 59' 64		24	-			☐			
			15:59	EN			48° 40' 46	124° 59' 67			-			☐	RBR off		
			:				°	°			-			☐			

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

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)
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Notes:

Bottle Inspection.

#23 was leaking & repaired

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month			August			Year		2019		Vessel		J.A. Tully		Cruise ID		2019-023		Page	
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				
7	LB02	30	16:29	BE	ROS	U.S.	48° 39.04	125° 02.44	54		34-39	6	H.M.	☒	RBR ON				
			16:31	BO			48° 39.06	125° 02.43		47				☐					
			16:36	EN			48° 39.06	125° 02.50						☐	RBR OFF				
8	LB03	30	17:09	BE	ROS	U.S.	48° 37.41	125° 05.70	93		40-	1	H.M.	☐	RBR 2/3 ON				
			17:11	BO			48° 37.42	125° 05.75		87				☐					
			1:14	EN			48° 37.44	125° 05.77						☐	RBR 2/3 OFF				
9	LB04	30	18:16	BE	ROS	U.S.	48° 35.79	125° 08.69	112		41-48	8	H.M.	☐	NO RBR'S				
			18:20	BO			48° 35.79	125° 08.73		102				☐					
			18:28	EN			48° 35.79	125° 08.71						☐					
10	E1	30	19:22	BE	ROS	U.S.	48° 31.78	125° 3.92	118			-	RTP	☒					
			19:26	BO			48° 31.78	125° 03.89		109				☐					
			19:28	EN			48° 31.78	125° 03.89						☐					
	E1	30	19:39	BE	NET	-	48° 31.78	125° 03.82	116				MG	☐					
			19:43	BO			48° 31.78	125° 03.79		115				☐					
			19:45	EN			48° 31.77	125° 3.78						☐					
12	LB05	30	20:45	BE	ROS	U.S.	48° 34.0	125° 11.98	103		49-	1	RTP	☒					
			20:48	BO			48° 33.99	125° 11.99		102				☐					
			20:52	EN			48° 34.00	125° 11.98						☐					
			:				°	°						☐					

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Ocean Sciences Division, Institute of Ocean Sciences

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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/Fl Cleaned	Comments	
13	LB06	30	21:36	BE	ROS	US	48° 32.52	125° 15.37	114		50-57	8	RIP	☒		
			21:39	BO			48° 32.249	125° 15.355		105	-			☐		
			21:51	EN			48° 32.25	125° 15.34			-			☐		
14	C1	30	22:28	BE	CTD	-	48° 28.94	125° 15.30	152		-	0	RIP	☒		pump was turned on at 10 m soak
			22:32	BO			48° 28.95	125° 15.31		144	-			☐		
			22:35	EN			48° 28.95	125° 15.32			-			☐		
15	C1	30	22:43	BE	NET	-	48° 28.95	125° 15.32	152		-	1	FIR	☐		
			:	BO			48° 28.95	25° 15.32		145	-			☐		
			22:54	EN			48° 28.94	125° 15.30			-			☐		
16	C2	30	23:38	BE	CTD	-	48° 26.28	125° 09.27	159		-	0	RIP	☒		RBR's turned on
			23:41	BO			48° 26.28	125° 09.23		151	-			☐		
			23:44	EN			48° 26.28	125° 09.20			-			☐		
17	C2	30	23:52	BE	NET	-	° 27	125° 09.20	153		-	1	FL	☐		RBR off left
			23:58	BO			° 26	125° 09.15		155	-			☐		'on' on deck for
			00:01	EN			48° 26.25	125° 08.10			-			☐		~ 10-15 min
18	C3	31	01:11	BE	ROS	US	48° 23.360	125° 20.690	121		-	-	MS	☒		RBR on
			01:14	BO			° 23.360	° 20.690		112	-			☐		RBR off
			01:16	EN			° 23.340	° 20.700			-			☐		On lap #5018
			:				°	°			-			☐		

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DAILY SCIENCE LOG

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Month			August		Year		2019		Vessel		JP / ALY		Cruise ID		2019-023		Page		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	Tms/Fl Cleaned	Comments					
19	C3	31	00:25	BC	NET	-	48° 23.33	125° 20.78	121		-	-	MG	☐						
			00:29	BO			48° 23.35	125° 20.71		115	-	-		☐						
			00:32	GN			48° 23.42	125° 20.67			-	-		☐						
20	LB07	31	01:38	BC	ROS	-	48° 28.690	125° 22.126	155		-	-	MG	☒	RBR on/off					
			01:41	BO			48° 28.700	125° 22.130		147	-	-		☐	REF BOTTLE NOT TAKEN.					
			01:43	GN			48° 28.700	125° 22.130			-	-		☐						
21	LB07	31	02:49	BC	NET		48° 28.70	125° 22.47	155		-	-	MG	☐						
			02:53	BO			48° 28.68	125° 22.20		150	-	-		☐						
			02:59	GN			48° 28.68	125° 22.22			-	-		☐						
22	B8	31	04:16	BC	ROS	-	48° 34.490	125° 30.230	136		-	-	MB	☒	RBR on/off					
			04:19	BO			48° 34.490	125° 30.240		126	-	-		☐						
			04:21	GN			48° 34.490	125° 30.250			-	-		☐						
23	B8	31	04:27	BC	NET		48° 34.45	125° 30.27	135		-	-	MG	☐						
			04:32	BO			°	125° 30.28		130	-	-		☐						
			04:34	GN			48° 34.42	125° 30.29			-	-		☐						
24	B7	31	05:16	BC	ROS	-	48° 31.970	125° 35.660	79		-	-	MB	☒	RBR on/off					
			05:18	BO			° 31.970	° 35.660		70	-	-		☐	LEFT ON > 1 hr.					
			05:19	GN			° 31.960	° 35.6			-	-		☐						
			:				°	°			-	-		☐						

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Ocean Sciences Division, Institute of Ocean Sciences

Month			Year			Vessel			Cruise ID			2019-023			
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							
31	LB11	31	10:59	BE	ROS	U.S.	48° 15.138	125° 47.778	208		81 - 91	11	H.M.N ²	☒	O ₂ Loop # 5031
			11:03	BO			48° 15.128	125° 47.779	200		-			☐	
			11:17	EN			48° 15.127	125° 47.790			-			☐	
32	LB12	31	11:55	BE	ROS	U.S.	48° 12.90	125° 51.80	510		92 - 106	15	H.M.	☐	
			12:04	BO			48° 12.91	125° 51.85			-			☐	
			12:24	EN			48° 12.94	125° 51.80			-	1		☐	1
33	LB13	31	13:02	BE	ROS	U.S.	48° 10.55	125° 56.02	919		107	1	H.M. RIP	☒	RBR ON
			1:08	BO			48° 10.53	125° 56.11		905	-			☐	RBR OFF
			13:05	EN			48° 10.52	125° 56.18			-			☐	
34	LB14	31	14:09	BE	ROS	U.S.	48° 08.49	125° 59.99	1160		108 - 126	19	H.M.	☒	RBRs REMOVED
			14:28	BO			48° 08.50	125° 59.95		1170	-			☐	
			15:07	EN			48° 08.41	126° 00.02			-			☐	
35	LB15	31	16:06	BE	ROS	U.S.	48° 04.41	126° 08.50	1540		127-136	10	H.M.	☒	PROD. CAST
			16:32	BO			48° 04.41	126° 08.46			-			☐	OUT OF ORD
			17:01	EN			48° 04.40	126° 08.40			-			☐	BOTTLE CLOSURES
36	Loop	31	16:08	BE	Loop	—	48° 04.42	126° 08.50	1540	4.5	Loop	1	I.P.	☐	Loop 5036
37	LB16	31	17:57	BE	ROS	U.S.	48° 00.55	126° 16.92	1808		137 - 138	2	H.M.	☒	
			18:27	BO			48° 00.53	126° 16.99		1816	-			☐	
			18:58	EN			48° 00.458	126° 16.936			-			☐	

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Month			August - September		Year		2019		Vessel		J. P. TULLY		Cruise ID		2019-023	
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38	LB16	31	19:07	BE	NET	-	48°00.44	126°16.94	1803		-	-	MB	☐		
			19:17	BO			48°00.43	126°16.93		250	-			☐		
			19:20	EN			48°00.41	126°16.92			-			☐		
39	LB16	31	19:44	BE	NET	UN	48°00.36	126°16.91	1813		-	-	MG	☐	MPS VNH	
			20:39	BO			48°00.27	126°16.86		1505	-			☐		
			21:06	EN			48°00.22	126°16.77			-			☐		
40	178	31	23:37	DE	ARGO	-	48°16.27	126°47.13	2557	0	-	-	MG	☐	ARGO 2	
41	LC12	01	00:11	BE	ROS	VS	48°14.98	126°40.01	2522		-	0	RIP	☒	Started archiving bit late	
			00:56	BO			48°14.99	126°39.99		0547	-		MG	☐	PAR OFF	
			01:37	EN			48°14.98	126°39.99			-			☐		
42	LC12	01	02:13	BE	NET	UN	48°14.96	126°39.91	2524		-	-	MG	☐	MPS VNH	
			03:24	BO			48°14.90	126°39.88		2005	-			☐		
			03:59	EN			48°14.71	126°39.83			-			☐		
43	LC12	01	04:25	BE	NET	-	48°14.68	126°33.84	2503		-	-	MG	☐	3000.0 Basso!	
			04:28	BO			48°14.68	126°39.77		250	-			☐		
			04:33	EN			48°14.67	126°33.81			-			☐		
44	LC11	01	05:47	BE	ROS	VS	48°18.950	126°26.736	1453		139-159	21	MR	☐	ALTIMETER DOWN	
			06:13	BO			°18.935	°26.659		1441	-			☐	KICK ON STOPCO	
			06:51	EN			°18.960	°26.524			-			☐		

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This page is for any notes or observations

Some noise in fluorometer @ ~ 1350

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45	LC 10	1	07:33	BE	ROS	—	48° 22. 41	126° 20. 21		1244		—	—	H.M	☒	CTD ONLY
			07:55	BO			48° 22. 42	126° 20. 19			1241	-			☐	
			08:16	EN			48° 22. 42	126° 20. 03				-			☐	
46	LC9/A3	1	08:57	BE	NET	—	48° 25. 89	126° 13. 72		614		—	—	H.M	☐	BoN
			09:06	BO			48° 25. 95	126° 13. 67			250	-			☐	
			09:10	EN			48° 25. 99	126° 13. 68				-			☐	
47	LC09	1	09:22	BE	ROS	US	48° 25. 95	126° 13. 59		601		160 - 180	21	H.M	☒	
			09:34	BO			48° 25. 91	126° 13. 68			604	-			☐	
			09:58	EN			48° 25. 88	126° 13. 54				-			☐	
48	A2	1	10:57	BE	NET	—	48° 22. 64	126° 03. 76		363		-		H.M	☐	BON60
			11:06	BO			48° 22. 67	126° 03. 69			2	-			☐	
			11:11	EN			48° 22. 69	126° 03. 70				-			☐	
49	A2	1	11:23	BE	ROS	—	48° 22. 75	126° 03. 54		357		—	—	H.M	☒	CTD only
			11:30	BO			48° 22. 72	126° 03. 57			352	-			☐	
			11:36	EN			48° 22. 69	126° 03. 64				-			☐	
50	LC08/A1	1	12:33	BE	NET	—	48° 29. 36	126° 07. 09		199		—	—	H.M	☐	BoN
			12:36	BO			48° 29. 37	126° 07. 08			190	-			☐	
			12:40	EN			48° 29. 39	126° 07. 07				-			☐	
			:	:			°	°				-			☐	

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

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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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month			SEPTEMBER		Year		2019		Vessel		IP TULLY		Cruise ID		2019-023	
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	
51	LC08/A1	1	12:52	BE	ROS	U.S	48° 29. 43	126° 07. 08	197		181 - 193	13	H.M.	☒	(HAM) C09	
			:	BO			48° 29. 43	126° 07. 05		19	-			☐		
			13:08	EN			48° 29. 45	126° 07. 00			-			☐		
52	LC 07	1	:	BE	ROS		48° 32. 99	126° 00. 52	126		-	-	H.M.	☒	CTD only	
			13:54	BO			48° 33. 00	126° 00. 51		120	-			☐		
			:	EN			48° 33. 00	126° 00. 50			-			☐		
53	LC 06	1	14:35	BE	NET	-	48° 36. 53	125° 54. 05	91		-	-	H.M.	☐	BONGO	
			:	BO			48° 36. 53	125° 54. 05		80	-			☐		
			14:39	EN			48° 36. 53	125° 54. 05			-			☐		
54	LC 06	1	14:53	BE	ROS	U.S.	48° 36. 51	125° 54. 01	91		194 - 204	16	H.M.	☒	PRO C	
			14:55	BO			48° 36. 52	125° 54. 00		91	-			☐	G2 Loop P5054	
			15:05	EN			48° 36. 55	125° 53. 99			-			☐		
55	Loop	1	15:05	BE	LOOP	-	48° 36. 53	125° 53. 99	91	4.5	5055	-	RIP	☐	Loop 5055	
	LC05	1	15:22	BE	NET	-	48° 39. 84	125° 47. 55	63		-	-	H.M.	☐		
			15:45	BO			48° 39. 84	125° 47. 55		55	-			☐		
			15:46	EN			48° 39. 85	125° 47. 54			-			☐		
57	LC05	1	16:00	BE	ROS	U.S	48° 39. 83	125° 47. 48	63		-	-	H.M.	☒		
			16:02	BO			48° 39. 84	125° 47. 47		54	-			☐		
			16:04	EN			48° 39. 85	125° 47. 47			-			☐		

Transducers and Electrometers to be cleaned before each cast -- do not use Ammonia products

Event Type:
 BOT = Bottle cast (no CTD)
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Bottle Firing Method:
 US = Up / Stop (default)
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 DN = Down / No stop

Time Code:
 BE = Beginning 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

Ocean Sciences Division, Institute of Ocean Sciences

DAILY SCIENCE LOG

Month			Year			Vessel			Cruise ID			2019023			
SEPTEMBER			2019			IP TULLY									
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	Tms/Fl Cleaned	Comments
58	LC04	1	16:45	BE	ROS	U.S	48° 43. 41	125° 40. 85	164		210 - 220	11	H.M.	☒	O ₂ Level & SOS8
			16:48	BO			48° 43. 39	125° 40. 84		155	-			☐	
			16:59	EN			48° 43. 39	125° 40. 81			-			☐	
59	LC03	1	17:41	BE	ROS	—	48° 46. 89	125° 34. 23	141		—	—	H.M.	☒	CTD ONLY
			17:44	BO			48° 46. 90	125° 34. 23		133	-			☐	
			17:47	EN			49° 46. 91	125° 34. 21			-			☐	
60	LC02	1	18:12	BE	ROS	U.S	48° 48. 72	125° 30. 96	109		221 - 228	8	H.M.	☒	
			18:15	BO			48° 48. 73	125° 30. 95		100	-			☐	
			18:23	EN			48° 48. 71	125° 30. 96			-			☐	
61	LC01	1	18:48	BE	ROS	U.S	48° 50. 420	125° 27. 790	96		229 - 236	8		☒	
			18:50	BO			° 50. 410	° 27. 790		87	-			☐	
			18:57	EN			° 50. 400	° 27. 800			-			☐	
62	LD01	1	20:30	BE	ROS	US	49° 00. 39	125° 43. 79	36		237 - 241	5	RIP	☒	R
			20:32	BO			49° 00. 34	125° 43. 85		28	-			☐	
			20:38	EN			49° 00. 12	125° 43. 82			-			☐	
63	LD02	1	21:25	BE	ROS	US	48° 58. 46	125° 46. 93	43		242 - 247	6	RIP	☒	R
			21:27	BO			48° 58. 46	125° 46. 91		35	-			☐	
			21:33	EN			48° 58. 45	125° 46. 91			-			☐	
			:				°	°			-			☐	

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

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Bottle Firing Method:
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Notes:

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month			Year		Vessel		Cruise ID		2019-023						
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							
64	LD02	1	21:43	BE	NET	✓	48° 58.46	125° 46.86	44		-	✓	NG	□□	
			21:44	BO			48° 58.46	125° 46.86		40	-			□□	
			21:45	EN			48° 58.45	125° 46.85			-			□□	
65	LD03	1	22:23	BE	ROS	US	48° 56.63	125° 50.40	4		-	②	RIP	✓□	
			22:24	BO			48° 56.62	125° 50.40		40	-			□□	
			22:36	EN			8° 56.6	125° 50.40			-			□□	
66	LD04	1	22:15	BE	ROS	US	48° 53.21	125° 57.01	63		248-252-5	5	RIP	□□	
			23:17				48° 53.2	125° 57.01		55	-			□□	
			23:24	EN			48° 53.19	5° 57.03			-			□□	
67	LD04	1	23:32	B	NET	✓	48° 53.9	125° 57.04	64		-	✓	NG	□□	
			23:34	BO			48° 53.20	125° 57.02		58	-			□□	
			23:39	EN			4° 53.18	125° 56.97			-			□□	
68	LD05	2	00:18	BE			48° 49.70	126° 3.63	91		-	0	RIP	✓□	RBR's on
			00:20	BO			48° 49.70	126° 3.63		83	-			□□	
			00:22	EN			48° 49.63	126° 3.64			-			□□	
69	LD06	2	01:03	BE	ROS	US	48° 46.110	126° 10.170	137		253-262	9	MB	✓□	RBR on/off
			01:06	BO			° 46.110	° 10.161		129	-			□□	
			01:16	EN			° 46.130	° 10.160			-			□□	
			:				°	°			-			□□	

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DN = Down / No stop

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MR = Messenger Release Time
RE = Recover Mooring Time

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month			Year			Vessel		Cruise ID				Page 12 of 12		
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
70	LD07	2	02:03	BE	ROS	-	48° 42.641 126° 16.742	460		-	-	MR	☐	
			02:11	BO			48° 42.650 126° 16.746		465	-	-		☐	
			02:19	EN			48° 47.660 126° 16.760			-	-		☐	
71	LD08	2	03:04	BE	ROS	US	48° 39.13 126° 23.37	770		263-279	17	MG	☒	RBR OFF
			03:18	BO			48° 39.17 126° 23.35		765	-	-		☐	RBR ON
			03:48	EN			48° 39.25 126° 23.37			-	-		☐	RBR OFF
72	LD09	2	04:32	BE	ROS	-	48° 35.711 126° 30.047	1047		-	-	MR	☒	
			04:49	BO			48° 35.718 126° 29.996		1050	-	-		☐	
			05:05	EN			48° 35.711 126° 30.027			-	-		☐	RBR TAKEN OFF
73	LD09	2	05:14	BE	NET	-	48° 35.68 126° 30.02	1050		-	-	MG	☐	Bongo Bongo.
			05:23	BO			48° 35.60 126° 30.00		250	-	-		☐	
			05:27	EN			48° 35.59 126° 29.96			-	-		☐	
74	LD10	2	06:14	BE	ROS	-	48° 32.21 126° 36.53	1474		-	-	MG	☒	CIL MAX @ 50m ↓
			06:41	BO			48° 32.25 126° 36.45		1477	-	-		☐	
			07:03	EN			48° 32.24 126° 36.51			-	-		☐	
75	LD11	2	07:51	BE	NET	-	48° 28.71 126° 42.96	1593		-	-	H.7/11M	☐	BON
			08:00	BO			48° 28.71 126° 43.04		250	-	-		☐	
			08:04	EN			48° 28.70 126° 43.05			-	-		☐	
			:	:			° °			-	-		☐	
Event Type: LOOP = Sea Water Loop Bottle Firing Method: Time Codes														

Event Type: LOOP = Sea Water Loop
BOT = Bottle cast (no CTD)
CTD = Standalone CTD
ROS = CTD in Rosette
SET = Fish Set

Bottle Firing Method:
US = Up / Stop (default)
UN = Up / No stop
DN = Down / No stop

Time Code:
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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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Ocean Sciences Division, Institute of Ocean Sciences

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Month			September			Year		2019		Vessel		JP TULLY		Cruise ID		2019-023		of		Page 13	
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						
76	LD11	2	08:15	BE	ROS	U.S.	48° 28.89	126° 43.05	1543		200 - 302	23	H.M.	☒							
			08:43	BO			48° 28.72	12° 43.05		1609	-			☐							
			09:26	EN			48° 28.72	126° 43.00			-			☐							
77	-	2	09:37	BE	NET	-	48° 28.80	126° 43.99	1593		-		H.M./M.M.	☐	DEEP BONGO						
			10:11	BO			48° 28.74	126° 43.06		1000	-			☐							
			10:27	EN			48° 28.70	1° 43.17			-			☐							
78	LG 09	2	14:03	BE	NET	-	48° 51.25	127° 19.44	2057		-		H.M./M.M.	☐	BONGO						
			14:11	BO			48° 51.26	127° 19.39	2057	250	-			☐							
			14:16	EN			48° 51.25	127° 19.32			-			☐							
79	LG 09	2	14:30	BE	ROS	US	48° 51.24	127° 19.33	2056		303 - 314	12	H.M.	☒	CTD ONLY						
			15:05	BO			48° 51.21	127° 19.31		2065	-			☐							
			15:41	EN			48° 51.20	127° 19.37			-			☐							
80	LG 09	2	15:46	BE	NET	-	48° 51.20	127° 19.40	2056		-		R.P./M.M.	☐	DEEP BONGO						
			16:20	BO			48° 51.17	127° 19.41		1000	-			☐							
			16:36	EN			48° 51.17	127° 19.42			-			☐							
81	LG 08	2	17:11	BE	ROS	-	48° 55.32	127° 13.20	2064		-		H.M.	☒	CTD ONLY						
			17:50	BO			48° 55.29	127° 13.27		2072	-			☐							
			18:2	EN			48° 55.31	127° 13.25			-			☐							
			:	:			°	°			-			☐							

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 SET = Fish Set

LOOP = Sea Water Loop
 MOR = Mooring
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 DRF = Drifter

Bottle Firing Method:
 US = Up / Stop (default)
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 DN = Down / No stop

Time Code:
 BE = Beginning Time of Cast
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 DE = Deployment Time
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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month			Year		Vessel		Cruise ID		Page		of			
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
82	LG07	2	19:06	BE	NET	—	48° 59.49	127° 07.22	1791	—	—	MG	☐	Bongo
			19:15	BO			48° 59.49	127° 07.29		250			☐	
			19:19	EM			48° 59.51	127° 07.31					☐	
83	LG07	2	20:13	BE	ROS	—	48° 59.46	127° 07.16	1757	—	—	RIP/NB	☒	CD only
			20:43	BO			48° 59.39	127° 07.23	1764				☐	Alt net - read bottom - 10
			21:12	EM			48° 59.45	127° 07.28					☐	
84	LG06	2	21:59	BE	ROS	US	49° 03.50	127° 01.13	957	315-331	17	RIP	☒	RBR's ans.
			22:18	BO			49° 03.49	127° 01.18	969				☐	Alt net - showed bottom - 10
			22:55	EM			49° 03.49	127° 01.23					☐	
84	Loop	2	22:54	BE	Loop	—	49° 03.49	127° 01.23		5064	Loop	MG	☐	Loop 1500, 1200, 2000
85	LG05	2	23:39	BE	ROS	—	49° 07.38	126° 55.35	279	—	0	RIP	☒	CTD only
			23:44	BO			49° 07.41	126° 55.345	278				☐	RBR's turned on
			23:49	EM			49° 07.41	126° 55.386					☐	
86	LG04	2	00:35	BE	ROS	US	49° 11.270	126° 49.380	147	332-341	10	MS	☒	
			00:37	BO			49° 11.260	126° 49.380					☐	
			00:48	EM			49° 11.280	126° 49.380					☐	
87	LG04	2	00:56	BE	NET	—	49° 11.27	126° 49.37	146	—	—	MG	☐	Bongo
			1:01	BO			49° 11.27	126° 49.37	140				☐	
			1:04	EM			49° 11.27	126° 49.37					☐	

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Notes:

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month		Year		Vessel		Cruise ID									
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
88	L503	3	01:45	BE	ROS	-	49° 14.950	126° 43.700	122		-	-	MB	☒	RBC on/off
			01:47	BO			° 14.950	° 43.700		113	-			☐	
			01:49	EN			° 14.940	° 43.710			-			☐	
89		3	02:31	BE	ROS	US	49° 18.636	126° 38.168	100		342-349	8	MB	☒	RBC on/off
			02:33	BO			° 18.640	° 38.173		91	-			☐	O2 Loop # 5089
			02:40	EN			° 18.634	° 38.19			-			☐	
90	L507	3	03:06	BE	NET	-	NA° .	° .			-	-	MB	☐	
			03:08	BO			° .	° .	100	95	-			☐	ne +
			03:10	EN			49° 18.71	126° 38.52			-			☐	
91	Underway from L502	3	03:15	BE	F	+	49° 18.77	126° 30.72	100		-	-	MB	☐	
			03:30	EN			49° 18.96	126° 39.39	101	10	-			☐	
92	L505	3	06:32	BE	ROS	US	49° 31.600	127° 22.570	1070		350	1	MB	☒	RBC on/off
			06:44	BO			49° 31.60	127° 22.56		1669	-			☐	
			07:00	EN			49° 3.61	127° 22.55			-			☐	
93	L506	3	07:46	BE	NET	-	49° 27.93	127° 28.54	1018		-	-	MB	☐	Bongo
			07:56	BO			49° 27.83	127° 28.49		250	-			☐	
			08:00	EN			49° 27.73	127° 28.47			-			☐	
			:				° .	° .			-			☐	
			:				° .	° .			-			☐	

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Notes:

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DAILY SCIENCE LOG

Cruise ID 2019-023

Month			Year		Vessel		Cruise ID		Cruise ID		Cruise ID		Cruise ID		Cruise ID		Cruise ID	
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Latitude	Positional Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments	Trns/Fl Cleaned	Comments	
94	L506	3	08:12	BE	ROS	US	49° 27. 84	127° 28. 59	1044		351 - 368	18	H M	☒	RBR'S on	☒	RBR'S on	
			08:30	BO			49° 27. 91	127° 28. 57						☐	RBR'S OFF	☐	RBR'S OFF	
			08:59	EN			49° 27. 91	127° 28. 50						☐	RBR'S REMOVED	☐	RBR'S REMOVED	
95	LBP88	3	12:28	BE	NGT		49° 40. 53	128° 16. 79	2075					☐	BONGO	☐	BONGO	
			12:38	BO			49° 40. 61	128° 16. 75		250				☐		☐		
			12:42	EN			49° 40. 62	128° 16. 73						☐		☐		
96	LBP88	3	12:53	BE	ROS		49° 40. 64	128° 16. 79	2075					☒	CTD ONLY	☒	CTD ONLY	
			13:29	BO			49° 40. 67	128° 16. 83		2085				☐		☐		
			14:03	EN			49° 40. 60	128° 16. 83						☐		☐		
97	LBP88	3	14:13	BE	NGT		49° 40. 60	128° 16. 86	2075				A S/H M	☐	DEEP BONGO	☐	DEEP BONGO	
			14:49	BO			49° 48. 70	128° 16. 88		1000				☐		☐		
			15:05	EN			49° 40. 75	128° 16. 75						☐		☐		
98	LBP707	3	16:37	BE	NGT		49° 52. 48	128° 11. 19	2083					☐		☐		
			16:45	BO			49° 52. 48	128° 11. 28		250				☐		☐		
			16:49	EN			49° 52. 57	128° 11. 29						☐		☐		
99	LBP70	3	17:15	BE	ROS	US	49° 52. 40	128° 11. 21	2184		369 - 390	22	H M	☒	O ₂ Lab # 5099	☒	O ₂ Lab # 5099	
			17:53	BO			49° 52. 43	128° 11. 18		2214				☐		☐		
			18:47	EN			49° 52. 456	128° 11. 188						☐		☐		
99	LBP700		18:47	BE	LOOP		49° 52. 456	128° 11. 188	2194	4.5	LOOP		RIP	☐	Not C/L / Z C/L	☐	Not C/L / Z C/L	

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

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

Loop 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

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

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month			September		Year		2019		Vessel		F.R. Tully		Cruise ID		2019-023	
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	
100	LBP6	3	19:29	BE	ROS	—	49° 56.12	128° 05.40	900		—	0		☒	CTD only	
			19:45	BO			9° 56.09	128° 05.7	(15)	924	-			☐	end 10	
			20:00	EN			49° 56.07	128° 05.50			-			☐		
101	LBP5	3	20:43	BE	ROS	S	50° 0.00	128° 0.00	1284		391-40	20	RTF	☒		
			21:05	BO			49° 59.99	128° 0.02		1284	-			☐		
			21:44	EN			50° 0.01	128° 0.05			-			☐		
102	LBP5	3	21:49	BE	NET	—	50° 00.06	128° 00.02	1286		—	—	MG	☐		
			22:00	BO			50° 00.09	128° 00.04		250	-			☐		
			22:05	EN			50° 00.11	128° 00.05			-			☐		
103	LBP4	3	22:31	BE	ROS	US	50° 1.46	127° 58.097	1012		—	0	MB	☒	RBR on	
			22:49	BO			50° 1.46	127° 58.16		1032	-			☐		
			23:07	EN			° 01.	127° .2			-			☐		
104	LBP3	3	23:35	BE	NET	—	50° 03.20	127° 55.35	168		-		MG	☐		
			23:41	BO			50° 03.23	127° 55.43		160	-			☐		
			23:44	EN			50° 03.24	127° 55.45			-			☐		
105	LBP3	3	23:55	E	ROS	US	50° 03.26	127° 55.47	165		411-431	21		☒		
		4	00:00	BO			° .	° .		157	-			☐	for 150 LBP	
		4	00:16	EN			50° 03.26	127° 55.57			-			☐	O ₂ Loop # 5105	
			:				° .	° .			-			☐		

Event Type:
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DRF = Drifter

Bottle Firing Method:
US = Up / Stop (default)
UN = Up / No stop
DN = Down / No stop

Time Code:
BE = Beginning 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

WILLY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month		Year			Vessel			Cruise ID							
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	Tms/FI Cleaned	Comments
106	LBPZ	4	00:39	BE		/	50° 04. 00	127° 54. 27	97		-	-	RG	☐	
			00:43	BO			50° 04. 00	°		90	-	-		☐	
			00:44	EN			50° 04. 00	127° 54. 28			-	-		☐	
107	LBPZ	4	01:06	E	ROS		50° 04. 055	127° 54. 206	92		-	-	MB	☒	
			01:07	BO			50° 04. 056	127° 54. 216		84	-	-		☐	
			01:09	EN			50° 04. 050	1° 54. 229			-	-		☐	
108	LBP1	4	01:29	BE	ROS	-	50° 04. 810	127° 52. 810	51		-	-	MB	☒	
			01:31	BO			50° 04. 810	27° 52. 810		44	-	-		☐	
			01:32	BO			50° 04. 810	127° 52. 810			-	-		☐	
109	Underway Drift	4	04:38	BE	NET	/	50° 28. 32	128° 24. 07	185		-	-	MG	☐	NEUSTON
			04:53	EN			50° 28. 79	128° 24. 65		10	-	-		☐	
110	CBEZ	4	06:37	BE	ROS	-	50° 43. 020	128° 39. 760	125		-	-	MB	☒	TEST BOTTLE #1
			06:40	BO			50° 43. 010	128° 39. 750		118	-	-		☐	0.5m (WBC)
			06:43	EN			50° 43. 000	128° 39. 760			-	-		☐	
111	CPEZ	4	06:50	BE	NET	/	50° 43. 00	128° 39. 75	125		-	-	MG	☐	
			06:55	BO			5° 42. 99	128° 39. 72		120	-	-		☐	
			06:57	EN			50° 42. 99	128° 39. 70			-	-		☐	
112	DRIF01	4	08:08	BE	DRF		50° 47. 22	128° 55. 57	92		-	-	H.M	☐	ARF # 1016
113	DRIF02	4	08:45	B	DRF		50° 41. 00	128° 53. 01	212		-	-	H.M	☐	DRF # 1051

Event Type:
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 DRF = Drifter

Bottle Firing Method:
 US = Up / Stop (default)
 UN = Up / No stop
 DN = Down / No stop

Time Code:
 BE = Beginning Time of Cast
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DAILY SCIENCE LOG

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Month			Year			Vessel			Cruise ID						
Event Number	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Latitude	Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/FI Cleared	Comments
114	LQ03	4	09:28	B6	ROS	✓	50° 39.73	129° 01.97	1346		-	-	H.M.	☒	CTD ONLY
			09:51	B6			50° 39.71	129° 01.96		1326	-	-		☐	
			10:13	EN			50° 39.71	129° 01.98			-	-		☐	
115	LQ03	4	10:22	B6	NET	-	50° 39.69	129° 02.07	1345		-	-	MM/N ²	☐	B6
			10:31	B6			50° 39.68	129° 00.16		250	-	-		☐	
			10:35	EN			50° 39.67	129° 00.70			-	-		☐	
116	SI22	4	11:42	B6	ROS	-	50° 39.80	129° 17.37	1420		-	-	H.M.	☒	CTD ONLY
			12:06	B6			50° 39.74	129° 17.42		1465	-	-		☐	
			12:30	EN			50° 39.71	129° 17.47			-	-		☐	
117	SI22	4	12:39	B6	NET	-	50° 39.70	129° 17.47	1427		-	-	MM/N ²	☐	B6NGO
			12:48	B6			50° 39.68	129° 17.56		250	-	-		☐	
			12:52	EN			50° 39.66	129° 17.62			-	-		☐	
118	CS01	4	14:43	BE	ROS	-	50° 34.99	129° 41.49	2103		-	-	H.M.	☐	CTA ONLY
			15:21	B6			50° 34.97	129° 41.58	2	2115	-	-		☐	MA7 B6-MISLABLEP
			15:56	EN			50° 34.89	129° 41.62			-	-		☐	SI22 in FILE
119	CS01	4	16:04	B6	NET	-	50° 34.90	129° 41.60	2103		-	-	N ² /ASRA	☐	B6NGO
			16:13	B6			50° 34.84	129° 41.67		250	-	-		☐	
			16:17	EN			50° 34.81	129° 41.71			-	-		☐	
			:				°	°			-	-		☐	

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 SET = Fish Set

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Bottle Firing Method:
 US = Up / Stop (default)
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 DN = Down / No stop

Time Code:
 BE = Beginning Time of Cast
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SET = Fish Set

DAILY SCIENCE LOG

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Month			September			Year		2019		Vessel			S.P. Tully		Cruise ID			2019-023	
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	CS00	4	17:43	BE	NET	—	50° 27.67	129° 55.18	2177		—	—	RIP/MM	☐	BONGO				
			17:53	BO			50° 27.50	129° 55.31		250	-			☐					
			17:50	EN			50° 27.47	129° 55.28			-			☐					
121	CS00	4	18:10	BE	ROS	U.S.	50° 27.62	129° 55.13	2175		432-453	22	MM/MB	☒	S=2177 P=2187 D=2158 A=10				
			18:47	BO			50° 27.694	129° 55.163		2186	-			☐	FIRAD BOT 1 @ 2188				
			19:38	CH			50° 27.726	129° 55.279			-			☐	USC BOT 33 @ 2000 O2 LOG 15.521				
122	CS00	4	19:47	BE	NET		50° 27.78	129° 55.39	2178		-			☐	MPS HNH				
			21:01	BO			50° 27.92	129° 55.60			-			☐					
			21:37	EN			50° 28.66	129° 55.65		2085	-			☐					
123	CS02	5	00:29	BE	ROS	US	50° 41.330	129° 28.010	1904		454-474	21	MB	☒	Hold up @ 50m				
			00:59	BO			° 41.288	° 28.003		1911	-			☐	FOR CUBE				
			01:19	EN			° 41.230	° 27.950			-			☐					
124	CS02	5	01:58	BE	NET	/	50° 41.24	129° 27.92	1903		-		MG	☐	BONGO				
			02:06	BO			50° 41.24	129° 27.94		250	-			☐					
			02:11	EN			50° 41.24	129° 27.96			-			☐					
125	CS02	5	07:30	BE	ROS	US	50° 41.233	129° 27.977	1907		475-483	9	MB	☒	ABORT				
			:	BO			° .	° .		150	-			☐	NEED TO				
			:	EN			° .	° .			-			☐	GREASE HEAD				
			:				° .	° .			-			☐					

Event Type:
 BOT = Bottle cast (no CTD)
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 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
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 RE = Recover Mooring Time

Notes:

Collect 5m loop sample @ 5m #5121, passed 175m on way up, back down to 75m.

DAILY SCIENCE LOG

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Month		September		Year		2019		Vessel		SF		Cruise ID		2019-023	
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
126	CS02	5	02:42	BE	ROS	US	50° 41.220	129° 27.991	1904		575-583	9	MS	☒	Sample #'s
			02:45	BO			50° 41.212	129° 28.000		150	-			☐	wrong on labels
			02:53	GW			50° 41.195	129° 28.034			-			☐	
127	CS03	5	03:55	BE	ROS		50° 45.50	129° 20.17	242		-	-	MG	☒	
			04:02	BO			50° 45.46	129° 20.28		244	-			☐	
			04:07	EN			50° 45.47	129° 20.31			-			☐	
128	CS03	5	04:21	BE	NET		50° 45.58	129° 20.19	240		-	-	MG	☐	BONGO
			04:30	BO			50° 45.62	129° 20.22		235	-			☐	
			04:34	EN			50° 45.63	129° 20.21			-			☐	
129	CS04	5	05:34	BE	ROS	US	50° 49.180	129° 13.110	94		484-492	9	MS	☒	
			05:38	BO			° 49.190	° 13.110		85	-			☐	
			05:45	EN			° 49.200	° 13.180			-			☐	
130	CS04	5	5:57	RE	NET	-	° 49.262	° 13.261			-	-	MG	☐	BONGO
			5:59	BO			° 49.320	° 13.310			-			☐	
			6:04	GW			° 49.343	° 13.328			-			☐	
13	ODAS _{new}	5	09:39	BE	NET		50° 56.42	129° 58.69	2109		-		MM/NZ	☐	SHALLOW
			09:46	BO			50° 56.44	129° 58.75		25	-			☐	
			09:52				50° 56.45	129° 58.74			-			☐	
			:				°	°			-			☐	

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Bottle Firing Method:
US = Up / Stop (default)
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DN = Down / No stop

Time Code:
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Notes:

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Month		September		Year		2019		Vessel		SF TULLY		Cruise ID		2019-023	
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	Tms/FI Cleaned	Comments
126	CS02	5	02:42	BE	ROS	US	50° 41.220	129° 27.991	1904		575-583	9	MS	☒	Sample #'s
			02:45	BO			50° 41.212	129° 28.000		150	-			☐	wrong on labels
			02:53	GW			50° 41.195	129° 28.034			-			☐	
127	CS03	5	03:55	BE	ROS		50° 45.50	129° 20.17	242		-	-	MG	☒	
			04:2	BO			50° 45.46	129° 20.28		244	-			☐	
			04:7	EN			50° 45.47	129° 20.31			-			☐	
128	CS03	5	04:21	BE	NET		50° 45.58	129° 20.19	240		-	-	MG	☐	BONGO
			04:30	BO			50° 45.62	129° 20.22		235	-			☐	
			04:34	EN			50° 45.63	129° 20.21			-			☐	
129	CS04	5	05:34	BE	RO	US	50° 49.180	129° 13.110	94		14-2	9	MS	☒	
			05:38	BO			50° 49.190	129° 13.110		85	-			☐	
			05:45	EN			50° 49.200	129° 13.180			-			☐	
130	CS04	5	5:57	RE	NET	-	50° 49.262	129° 13.261			-	-	MG	☐	BONGO
			5:59				50° 49.320	129° 13.310			-			☐	
			6:04	GW			50° 49.343	129° 13.328			-			☐	
	ODAS (new)	5	09:39	BE	NET		50° 56.42	129° 58.69	2109		-	-	MM/NZ	☐	SHALLOW BONGO (250)
			09:46	BO			50° 56.44	129° 58.75		250	-			☐	
			09:52	E			50° 56.45	129° 58.74			-			☐	
			:				50° 56.45	129° 58.74			-			☐	

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Notes:

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DAILY SCIENCE LOG

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Month			Year			Vessel			Cruise ID						
SEPTEMBER			2019			J.P. TULLY			2019-023						
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
132	ODAS (new)	5	10:06	BE	ROS	U.S	50° 56.43	129° 58.73	2113	-	493	1	H.M.	☒	NUY CHLXZ HPLC+Z
			10:43	BO			50° 56.46	129° 58.71		2123	-			☐	
			11:19	EN			50° 56.45	129° 58.76			-			☐	
133	ODAS (new)	5	11:26	BE	NET	-	50° 56.48	129° 58.75	2117		-	-	H.M./N2	☐	Deep Bongo (1000m)
			12:03	BO			50° 56.67	129° 58.80		1000	-			☐	
			12:18	EN			50° 56.70	129° 58.87			-			☐	
134	CS3B	5	14:40	BE	ROS	-	50° 59.96	129° 26.992	220		-	-	H.M.	☒	
			14:44	BO			50° 59.97	129° 27.00		212	-			☐	
			14:48	EN			50° 59.98	129° 27.00			-			☐	
135	CS3B	5	14:57	BE	NET	-	51° 00.01	129° 27.02	220		-	-	RIP	☐	Bongo
			15:05	BO			57° 00.03	129° 26.93		210	-			☐	
			15:00	EN			57° 00.03	129° 26.94			-			☐	
136	DRF	5	16:49	BE	DRF	-	51° 05.96	129° 06.68	136	-	-		H.M.	☐	DRF # 1015
137	Loop	5	16:50	BE	Loop-5137	-	51° 05.94	129° 06.52	136		-		RIP	☐	Loop 5137
138	Z+DRF	5	17:57	BE	DRF	-	50° 56.61	129° 01.05	74		-		H.M.	☐	DRF # 1052
139	CS05	5	18:09	BE	ROS	-	50° 56.02	129° 00.12	63		-	-	H.M.	☒	CTA ONLY
			18:10	BO			50° 56.04	129° 00.12		54	-			☐	CTD Header file
			18:11	EN			50° 56.05	129° 00.12			-			☐	may have been
			:				°	°			-			☐	mislabeled as CS1B

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Notes:

DAILY SCIENCE LOG

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Month			SEPTEMBER			Year		2019		Vessel			JA TULLY		Cruise ID				2019-023	
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					
140	CS05	5	18:17	BE	NET	-	50° 56.06	129° 00.04	63		-	-	AS/RIP	☐	BONGO					
			:	BO			50° 56.07	129° 00.01		55	-			☐						
			18:24	EN			50° 56.08	129° 00.04			-			☐						
141	CS1B	5	20:05	B-	ROS	-	50° 53.00	128° 39.97	72		-	0	RIP	☒						
			20:07	BO			50° 52.99	128° 39.96		64	-			☐						
			20:09	N			50° 52.98	128° 39.97			-			☐						
142	CS1B	5	20:18	BE	NET		50° 53.01	128° 40.00	72		-		MG/RIP	☐	Bonso					
			:				° . .	° . .		65	-			☐						
			20:21	EN			50° 53.02	128° 40.01			-			☐						
		5	21:		ROS	US	° . .	° 5.7	66		494-501	8	KI	☒	On Loop # 5143					
			21:45	BO			50° 59.88	128° 51.71		56	-			☐						
			21:53				5° 5.8	8° 5.			-			☐						
144	CS06	5	22:02	BE	NET		50° 59.87	128° 51.73	65		-	-	MG	☐	BONGO					
			22:05	BO			50° 59.87	128° 51.74		60	-			☐						
			22:06	EN			50° 59.86	128° 51.73			-			☐						
145	CS07	5	23:01	BE	ROS	-	51° 04.44	128° 44.09	65		-	0	RIP	☒						
			23:03	BO			51° 04.44	128° 44.11		57	-			☐						
			23:04	EN			51° 04.44	128° 44.11			-			☐						
			:				° . .	° . .			-			☐						

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Notes:

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DAILY SCIENCE LOG

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Month	Station Name	Day	Time (UTC)	Time Code	Event Type	Firing Method	Positional Information	Latitude	Longitude	Bottom Pressure	Max Cast Pressure	Sample Serial Numbers	# of Bottles	Watch Keepers	Trns/Fl Cleaned	Comments
SEPTEMBER																
146	CS07	5	23:12	BE	NET	-	51° 04' 47.2	128° 44' 04.9	65			-	-	MC	☐	Good
			23:14	BO			04° 47.8	44° 07.4			60	-			☐	
			23:16	EN			04° 48.7	44° 07.7				-			☐	
147	CS08	6	00:10	BE	ROS	-	51° 08' 47	128° 36' 01	145			-		RI	☒	
			00:13	BO			51° 08' 47	128° 36' 00			136	-			☐	
			00:16	EN			51° 08' 48	128° 36' 00				-			☐	
148	CS08	6	00:24	BE	NET	-	51° 08' 47.5	128° 36' 03.3	145			-		MB	☐	Good
			:28	BO			51° 08' 47	128° 36' 05			140	-			☐	
			00:31	EN			51° 08' 49	128° 36' 03				-			☐	
149	CS09	6	01:23	BE	NET	-	51° 12' 45	128° 28' 04	196			-			☐	
			01:29	BO			51° 12' 45	128° 28' 14			190	-		MB	☐	Good Bongo!!!
			01:33	EN			51° 12' 46	128° 28' 18				-			☐	
150	CS09	6	01:44	BE	ROS	US	51° 12' 45.7	128° 28' 25.8	197			502-514	13	MB	☒	
			01:48	BO			12° 45.6	28° 28.2			189	-			☐	
			01:50	EN			12° 46.1	28° 30.1				-			☐	
151	CS10	6	02:56	BE	ROS	-	51° 10' 18.1	128° 20' 22.8	82			-		MB	☒	
			02:59	BO			16° 48.7	20° 24.8			75	-			☐	
			03:01	EN			16° 49.0	20° 26.0				-			☐	
			:				°	°				-			☐	

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Month			SEPTEMBER		Year		2019		Vessel		JP TULLY		Cruise ID		2019-023	
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	
152	CS10	6	03:08	BE	NET	✓	51° 16.50	128° 20.26	83		-	-	MG	☐	3*4*0!	
			03:10	30			51° 16.51	128° 20.27		78	-	-		☐		
			03:12	EN			51° 16.51	128° 20.28			-	-		☐		
153	SS1	6	09:12	BE	ROS	U.S	51° 12.01	129° 59.86	400		515-518	4	H.M.	☒		
			09:21	BO			51° 12.02	129° 59.89		400	-	-		☐		
			09:31	EN			51° 12.01	129° 59.92			-	-		☐		
154	SS2	6	10:46	BE	ROS	✓	51° 13.01	129° 43.00	585		-	-	H.M.	☐	CTD ONLY	
			10:51	BO			51° 13.03	129° 43.05		579	-	-		☐		
			11:07	EN			51° 13.05	129° 43.07			-	-		☐		
155	SS3	6	12:45	BE	ROS	U.S	51° 15.00	129° 21.30	291		519-522	4	H.M.	☒		
			12:51	BO			51° 15.01	129° 21.29		283	-	-		☐		
			12:59	EN			51° 15.03	129° 21.33			-	-		☐		
156	SS4	6	14:39	BE	ROS	✓	51° 20.90	129° 00.04	240		-	-	H.M.	☒	CTD ONLY	
			14:44	BO			51° 21.00	129° 00.02		232	-	-		☐		
			14:48	EN			51° 21.00	129° 00.00			-	-		☐		
157	SS4	6	14:53	BE	NET	✓	51° 21.02	129° 00.01	240		-	-		☐	BONGO	
			15:03	BO			51° 21.04	129° 00.06		230	-	-		☐		
			15:06	EN			51° 21.04	129° 00.07			-	-		☐		
			:				°	°			-	-		☐		

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