

DAILY SCIENCE LOG BOOK

MISSION
NUMBER

2015-10

DATE:

From: 18 AUGUST 2015

to: 3 SEPTEMBER 2015

VESSEL:

JOHN P TULLY

PROJECT(S):

LING P

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

WaterProperties.ca

First Officer: TOBY MARSH

Third Officer: JOHANNATION BACKHUYSEN

DFo-10's DFo-10's DFo-10's

Chief Scientist

MARIE ROBERT

0630-1830 A

NAME	Match	Cabin
JANE SHILLER	18-24	B
HUGH MACLEAN	00-12	C
GLENN COOPER	PH	D
MARK BELTON	DMS	D
RICK NELSON	18-24	E
MICHAEL BENTLEY	12-18	E
STEPHEN PAGE	12-24	F
KYLE SIMPSON	TM	F
MIKO FINKE	06-12	G
ARAM GOODWIN	00-06	G
LIANNA TEETER	00-06	H
HANMAN WANG	06-12	H
MOIRA GALBRAITH	06-18	I

Chief Scientist:

Watch

Name

Watch

Cabin

Data acquisition program:

Data acquisition program:

CTD deck unit make:

model:

Serial number:

Primary CTD

SRF

model:

serial number: 0443

Primary temperature serial number:	2106	s/n:	1396DR	P, S or NO pump?
Primary conductivity serial number:	2280	s/n:	3640	P, S or NO pump?
Secondary temperature serial number:	2663	s/n:	0997	P, S or NO pump?
Secondary conductivity serial number:	2754	s/n:	4565	P, S or NO pump?
Transmissometer:	Wetlabs	s/n:	062	P, S or NO pump?
Fluorometer:	Model Secpoint	s/n:	62354	P, S or NO pump?
Oxygen sensor:	SBE	s/n:		P, S or NO pump?
PAR sensor:	BIOOPTICAL	s/n:		P, S or NO pump?
Other sensors:	RINKO DD	s/n:		P, S or NO pump?
Other sensors:	Altimeter, Beuthos	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: _____ Serial number: _____
 Primary conductivity serial number: _____
 Secondary temperature serial number: _____
 Secondary conductivity serial number: _____
 Transmissometer: _____ Model: _____ s/n: _____
 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: _____
 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):

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 Kit(s):

Make: _____ Model: _____ Kit Number: _____
Make: _____ Model: _____ Kit Number: _____

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

Thermosalinograph System (SBE21):

Program: _____ Version: _____
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: _____
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 WIRE JUMPED SHEAVE, HAD TO RE-TERMINATE.

CTD pressure reading on deck (db), before cast: 0099 0.75 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:

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 Kit(s):

Make: SCRIPPS Model: 7 Kit Number: 1
Make: _____ Model: _____ Kit Number: _____

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

Thermosalinograph System (SBE21):

Program: _____ Version: _____
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: _____
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: _____

Guide to cable terminations:

Please read and complete this form before reterminating cable. We have two standard CTD cables in use, nominal .316" and .322". This form specifically addresses these two cables; however, the same considerations apply to using other cables. The specifications for non-standard cables and associated terminations are available from Tom Juhász, IOS room 1221, phone 250.363.6598.

Please identify nominal cable diameter: _____ **Winch:** _____

Actual diameter measurements, two locations in triplicate at termination and approximately 5 metres back from termination.

At cable end:

at 5 metres:

- | | |
|----------------|----------------|
| 1. <u>.322</u> | 1. <u>.322</u> |
| 2. _____ | 2. _____ |
| 3. _____ | 3. _____ |

For comparison, the outer armour measurements of new cable:

Nominal .316" should be .3155 to .3165"

Nominal .322" should be .318 to .326"

Record specifications for other cables: _____ within: _____

The tolerance of the PMI Evergrip termination is tighter and only cables within these limits should be used.

For nominal .316" cable the lowest possible diameter is .309"

For nominal .322" cable the lowest possible diameter is .321"

Describe cable:

Kinks: _____ ✓

Birdcage _____

Rust flaking off cable _____

(flaking, not just looks rusty)

Cable round or oval _____

Does cable have loose outer armour? _____

(Raised wires or space between wires.)

Are outer armour wires flattened? _____

Remove cable that exhibits these signs of deterioration. To be authorised by Chief Scientist of the cruise or the winch shop, Phil Lobb at 250.363.6799.

Megger results by conductor (should be greater than 10,000. meg ohms)

Inner armour to conductor 1 _____

Inner armour to conductor 2 _____

Inner armour to conductor 3 _____

Please identify PMI sleeve used by checking the appropriate blank:

For .316" cable, diameter of inner dimension of sleeve should be .3265" part number 9004897-13, cable diameter range .309" to .320".

For .322" cable, diameter of inner dimension of sleeve should be .3400" part number 9004897-14, cable range .321" to .333".

Sliding the sleeve onto the cable should be difficult. ✓

Evergrip helical Rods:

The part number is 9005-9002 and covers left hand lay cables of diameter range .309" to .333".

Presence of grit on inner surface (yes / no) Y

Condition of wires (damaged ends?) N

Are the wires rusted? N

Comments:

HELICAL RODS S40ETENGED BET WRAP

FOR LABS SYSTEM

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Month <u>Aug</u>				Year <u>2015</u>			Ship <u>TULCY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	HAR059	0045	BE	NET	US	1	48° 36.85	123° 14.86	234				MG		BONGO
		0052	BO				48° 36.88	123° 14.92		238					
		0056	EN				48° 36.90	123° 14.94							
20	HAR059	0123	BE	ROS	US	2	48° 36.89	123° 14.87	231		1-5	5	MR/SP	✓	
		0130	BO				48° 36.98	123° 14.89		222					
		0139	EN				48° 37.13	123° 14.98							
20	JF1	0427	BE	LOOP		3	48.15 84	123 30 00			LOOP		SP		
		0429	EN				48 15 44	123 30 37							
20	JF2	0640	BE	ROS	US	4	48 18.110	124 0.77	186		6-10	5	SP/MG	✓	
		0645	BO				48.18.090	124.0.87		178					
		0654	EN				48.18.040	124.1.120							
20	JF2	0728	BE	NET	US	5	48.18.29	124.19.88	187				SP/MG		BONGO
		0734	BO				48.18.29	124.10.8		180					
		0737	EN				48 18 30	124.02 02							
20	JF3	0959	BE	LOOP		6	48 27 03	124.29 97			LOOP				
20	LB01	1255	BE	ROS	U.S.	7	48° 40.37	124° 59.40	37		12		MR/LT	✓	
		1256	BO				48° 40.37	124° 59.39		31					
		1257	EN				48° 40.38	124° 59.38							

Cast Type:

BOT = Bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD
 SET = Fish Set

USW = Sea Water Loop

MOR = Mooring
 NET = Plankton Net Haul
 DRF = Drifter

Bottle Firing Method:

US = Up / Stop
 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
 DE = Deployment Time
 MR = Messenger Release Time
 RE = Recover Mooring Time

Transmissometer & Fluorometer are to be cleaned before each cast

Produced by the Water Properties Group, IOS

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Month <u>AUGUST</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	LB02	1326	BE	ROS	—	8	48° 39.11	125° 02.47	58		—	—	H.M.	✓	
		1328	BO				48° 39.11	125° 02.47		55					
		1330	EN				48° 39.14	125° 02.49							
20	LB04	1422	BE	ROS	—	9	48° 35.66	125° 08.74	112		—	—	MR	✓	
		1424	BO				48° 35.67	125° 08.75		102					
		1427	EN				48° 35.68	125° 08.75							
20	LB06	1521	BE	ROS	—	10	48° 32.16	125° 15.50	114		—	—	H.M.	✓	
		1523	BO				48° 32.17	125° 15.49							
		1525	EN				48° 32.17	125° 15.49							
20	LB08	1704	BE	ROS		11	48° 25.20	125° 28.65	135		13-15	3	H.M./M.G.	✓	
		1707	BO				48° 25.20	125° 28.66		125					
		1711	EN				48° 25.20	125° 28.67							
20	LB08	17:19	BE	NET		12	48° 25.21	125° 28.68	136						
		17:24	BO				48° 25.19	125° 28.68		130					
		17:27	EN				48° 25.19	125° 28.69							
20	LC04	20:10	BE	ROS	US	13	48° 43.42	125° 40.76	165		16-17	2	SP	✓	
		20:13	BO				48° 43.41	125° 40.76		157					
		20:18	EN				48° 43.41	125° 40.76							

Cast Type:

BOT = Bottle cast, no CTD
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Month <u>AUG</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	LC02	21:49	BE	ROS		14	48 48 76	125 30.94	110			0	SP	✓	
		21:52	BO				48 48 77	125 30.94		100					
		21:54	EN				48 48 76	125 30.96							
20	LC01	22:27	BE	ROS	VS	15	48 50 71	125 27.71	96		18	1	SP		
		22:30	BO				48 50 48	125 27.70		87					
		22:33	EN				48 50 48	125 27.69							
21	P1	02:30	BE	ROS	VS	16	48 34 510	125 29.890	112		19-25	7	SP	✓	
		02:32	BO				48 34 510	125 29.870		103					
		02:42	EN				48 34 510	125 29.860							
21	P1	02:32	BE	USW	—	17	48 34 53	125 29.86			—	—	SP12N		LOOP FOR CESIUM 602
21	P2	05:32	BE	ROS		18	48 35 92	126 0.07	116		26-39	14	SP	✓	
		05:35	BO				48 35 90	126 0.1		106					
		05:47	EN				48 35.86	126 0.2							
21	P2	05:32	BE	USW		19	48 35 92	126 0.07							LOOP FOR CESIUM
21	P2	06:02	BE	NET		20	48 35 85	126 00 30	116						
		06:08	BO				48 35 86	126 00 39		110					
		06:11	EN				48 35 84	126 00 50							

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— = —

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Notes:

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Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
21	P2	0628	BE	ROS	US	21	48 35.800	126 0.72	116		40-47	8	SP	✓	
		0631	BO				48 35.77	126 0.8		105					
		0640	EN				48 35.73	126 0.78							
21	P3	0849	BE	ROS	US	22	48 37.53	126° 19.950	75582		48-53	6	H.M.	✓	
		0906	BO				48° 37.50	126° 20.02		811					
		0925	EN				48° 37.50	126° 20.01							
21	P4	1140	BE	ROS	U.S	23	48 38.99	126° 39.96	1313		54-77	24	H.M.	✓	CESIUM CAST
		1145	BO				48° 38.97	126° 39.99		150					
		1152	EN				48° 39.00	126° 39.99							
21	P4	1230	BE	ROS	U.S	24	48 38.99	126° 39.97	1313		78-85	8	H.M.	✓	LIGHT CAST
		1232	BO				48° 38.99	126° 39.98		23					
		1239	EN				48° 38.99	126° 39.98							
21	P4	1350	BO	TMPUP -		25	48 39.03	126.39.95		40	86-88	Pump	A.S	—	TMPUP
		1505	EN				48 39 98	126 39.99							
21	P4	1511	BE			26	48 39 98	126° 39.99	1313		89-112	24	H.M.	✓	MIKO GASES
		1517	BO				48 38.99	126° 39.99		250					
		1542	EN				48 38.94	126 40.07							

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UN = Up / No stop
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Notes:

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Transmissometer & Fluorometer are to be cleaned before each cast

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Month <u>AUGUST</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
21	P4	16:32	BE	NET		27	48° 39.00	126° 40.00	1313		—	—	H.M. / MG		BONGO
		16:42	BO				48 39.02	126 39.94		250					
		16:47	EN				48 39.00	126 39.95							
21	P4	17:09	BO	ROS		28	48° 39.00	126° 39.94	1331		113-131	19	H.M.	✓	PAR STILL ON
		17:32	BO				48° 38.99	126° 40.00		1321					Deep cast
		18:14	EN				48° 38.99	126° 39.99							
21	P4	18:25	BE	NET		29	48 38.96	126 40.00	1311						
		19:15	BO				48 39.04	126 39.96		1300					
		19:37	EN				48 39.03	126 39.90							
21	P4	20:50	BE	ROS	VS	30	48 38.97	126 40.06	1323		132-154	23	SP	✓	JADE ROSETTE
		21:13	BO				48 38.94	126 40.07		1322					PAR OFF.
		21:49	EN				48 39.00	126 40.04							
21	P4	22:25	BE	ROS	VS	31	48 39.01	126 39.98	1311		179-195	17	SP	✓	PAR ON
		22:33	BO				48 38.99	126 40.01		300					DMS Cast.
		22:56	EN				48 38.94	126 40.07							
21	P4	23:29	BE	ROS	VS	32	48 38.94	126 39.96	1314		155-178	24	SP	✓	cesium cast
		23:41	BO				48 38.93	126 40.01		500					
		23:59	EN				48 38.95	126 40.07							

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Transmissometer & Fluorometer are to be cleaned before each cast

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Notes:

1948 UTC, 21 AUG

Acoustic Sounder re-started, 2015-10 directory, MR

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Month <u>Aug</u>			Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-10</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
22	P5	0301	BE	ROS	US	33	48° 41.40	127° 10.07	2090		189-91	3	SP	✓	PAR OFF
		0344	BO				48° 41.26	127° 10.36		2005					
		0428	EN				48° 41.11	127° 10.49							
22	P6	0722	BE	ROS	U.S.	34	48° 44.61	127° 40.00	2541		199-205	7	H.M.	✓	ARMY CAST
		0757	BO				48° 44.61	127° 39.98		2005					
		0836	EN				48° 44.60	127° 40.00							
22	P7	1119	BE	ROS	U.S.	35	48° 46.62	128° 09.91	2501		206-207	2	H.M.	✓	700-ACCIDENTAL CHASE UP TO 640-THEN BACK DOWN
		1156	BO				48° 46.59	128° 09.95		2005					
		1230	EN				48° 46.58	128° 09.97							
22	P8	1507	BE	NET	-	36	48° 48.99	128° 39.96	2514				HM/MG		BONGO TO 250
		1517	BO							250					
		1522	EN												
22	P8	1513		Co Loop		37	48° 48.99	128° 39.97							Co Loop 60L
22	P8	1531	BE	NET		38	48° 48.98	128° 39.92	2514						Bongo to 1200
		1621	BO							1200					
		1644	EN				48° 49.00	128° 39.90							
22	P8	1701	BE	ROS	US	39	48° 49.01	128° 39.95	2514		208-229	22	H.M.		
		1735	BO				48° 49.02	128° 39.96		2005					
		1837	EN				48° 49.00	128° 39.97							

Cast Type:

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 DRF = Drifter

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Bottle Firing Method:

US = Up / Stop
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Month <u>Aug</u>			Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-10</u>						
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
22	P9	21:15	BE	ROS		40	48 51.46	129 9.87	2335				SP	✓	PAR Cast
		21:17	BO				48 51.44	129 9.87		150					-brought PAR out of water at start/end of cast
		21:21	EN				48 51.43	129 9.87							
22	P9	21:36	BE	ROS	VS	41	48 51.45	129 9.90	2336		230-253	24	SP	✓	AML Cast
		22:10	BO				48 51.43	129 9.94		2006					PAR OFF
		22:49	EN				48 51.41	129 9.93							
23	P10	01:21	BE	ROS	VS	42	48 53.61	129 39.98	2638						Cesium Cast 1/2
		01:56	BO				48 53.64	129 39.91		2005	254-267	14	SP	✓	
		02:36	EN				48 53.67	129 39.84							
23	P10	03:01	BE	ROS	VS	43	48 53.76	129 39.85	2659		268-285	18	SP	✓	Cesium Cast 2/2
		03:05	BO				48 53.73	129 39.88		150					
		03:11	EN				48 53.74	129 39.87							
23	P11	05:59	BE	ROS	VS	44	48 56.00	130 9.89	2751		286-309	24	SP/HM	✓	AML Cast
		06:44	BO				48 55.86	130 9.89		2005					
		07:21	EN				48 55.94	130 09.97							
23	P12	09:51	BE	ROS	U.S.	45	48 58.16	130 39.09	3233		310-317	8	H.M.	✓	LIANNAS CAST
		09:58	BO				48 58.16	130 40.01		150					
		10:08	EN				48 58.19	130 40.00							
23	P12	10:15	BE	Go-FLW		46	48 57.15	130 40.00	3233	800	318-321	4	K.S.H.M.		GC/FLW inclusions

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NET = Plankton Net Haul

DRF = Drifter

— =

Bottle Firing Method:

US = Up / Stop

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Month <u>Aug</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
23	P12	11:00	BO	GOFLOW	USG	46	48 58.20	130 40.00	3233	800	318-321	4	K.S.H.M.	-	
23	P12	11:55	EN			46	48 58.20	130 40.00	3233	800	318-321	4	K.S.H.M.	-	
23	P12	1229	BE	ROS	U.S.	47	48° 58.20	130° 39.99	3234		322-344	23	H.M.	✓	SEE LOG SHEET
		1328	BO				48° 58.19	130° 39.93		3276					NO DOWDCAST
		14:44	EN				48° 58.18	130° 39.97							Deep cast
23	P12	1515	BE	GOFLOW	USG	48	48.58.24	130 40.00	3232	50	345-348		K.S.	-	
		1600	BO												
		1613	EN				48 58.19	130° 39.96							
23	P12	16:21	BO	NET	-	49	48.58.19	130.39.98	3233				M.G.H.M.		
		1631	BO				48° 58.20	130° 40.01		250					
		1637	EN				48° 58.20	130° 40.01							
23	P12	1649	BO	ROS	US	50	48 58.18	130° 39.99	3235		349-372	24	H.M.		NICO'S CAST
		1655	BO				48° 58.20	130° 39.97		250					PAR OM
		1721	EN				48° 58.19	130° 39.96							
23	P12	1740	BO	MPS		51	48° 58.20	130° 39.98	3235				M.G.		MULTI-NET
		1931	BO				48 58.22	130 39.98		3005					
		2019	EN				48 58.22	130 40.04							
23	P-12	1825		CsLoop		52	4858.19	130 39.99					RI		Cs-loop.

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Month <u>Aug</u>				Year <u>2015</u>			Ship <u>TULLY</u>			Cruise ID <u>2015-10</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
23	P12	21:26	BE	ROS	US	53	48° 58.16	130° 40.12	3238		373-389	17	SP	✓	PAR ON
		21:32	BO				48 58.16	130 40.13		300					
		21:55	EN				48 58.16	130 40.11							
23	P12		BE	BOT	MR	54	48 58.16	130 40.11	3238	SP - see below					GO-FLO 300m
			BO												
			EN												
23	P12	22:06	BE	GO FLO	MES	54	48.58.17	130.40.11	3238	300	390-393	4	K.S.		GO-FLO
		22:35	BO				48.58.11	130.40.14							
		22:50	EN				48.58.03	130.40.10							
23	P12	23:05	BE	ROS	US	55	48 58.11	130 40.17	3238	? should be deeper			SP	✓	PAR OFF
		00:05	BO				48 58.16	130 40.15		3238	390-414				suspect ctd hook!
		01:08	EN				48 58.18	130 40.26							bottom confirmed!
24	P13	06:06	BE	ROS	US	56	49 2.62	131 39.99	3152		415-438	24	SP	✓	AML CAST
		06:41	BO				49 2.61	131 39.97		2005					
		07:19	EN				49° 02.61	131° 39.93							
24	P14	12:05	BE	ROS	U.S.	57	49° 07.36	132° 39.98			439-440	2	HR	✓	
		12:39	BO				49° 07.39	132° 39.96							
		13:12	EN				49° 07.39	132° 40.00							
24	LOOP 58	14:37	BO	USW	-	58	49° 08.69	132° 36.93	3315		~ 8 FLOPS		HR		

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Month <u>AUGUST</u>				Year <u>2015</u>			Ship <u>Tully</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
24	P15	1817	BE	ROS	US	59	49° 12.01	133° 40.00	3407		441-464	24	Wn/SP	✓	
		1855	BO				49° 12.04	133° 39.99		2005					
		1941	EN				49° 12.07	133° 40.39							
24		2100	BE	ROS	-	60	49 13.2	133 54.57	4255			0	SP	✓	PAR Cast
		2104	BO				49 13.21	133 54.66		150					21:09:25 Ambient PAR
		2109	EN				49 13.23	133 54.68							
25	P16	0048	BE	ROS	US	61	49 17.02	134 39.96	3632						2 loops for chl
		0053	BO				49 17.03	134 40.05		300	465-481	17	SP	✓	
		0115	EN				49 17.03	134 40.08							
25	P16	0206	BE	ROS	US	62	49 17.06	134 40.1	3633						
		0215	BO				49 17.07	134 40.12		500			SP	✓	PAR ^{sensor} removed
		0231	EN				49 17.09	134 40.17							
25	P16	0242	BE	NET	UN	63	49 17.04	134 40.09	3633				MG		MULTI-NET.
		0435	BO				49 16.60	134 39.93		3000					
		0531	EN				49 16.69	134 40.60							
25	P16	06:05	BE	Go-Flow		64	49-16.97	134-40.75	3631	50	506-509	4	KS	-	GO-FLOW
			BO												
		0635	EN				49 17.30	134 41.05							
26															

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Month		Year		Ship		Cruise ID									
AUGUST		2015		TULLY		2015-10									
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
25	P16	06:40	BE	NET		65	49° 17.30	134° 41.06	3633				MG/JS		BONGE
		06:52	BO				49° 17.32	134° 41.06		250					
		06:55	EN				49° 17.35	134° 41.09							
25	P16	07:20	BE	GO FLO	WCH	66	49 17.02	134 39.93	3633	200	510-513	4	KS		Go FLO
		07:33	BO												
		07:45	EN				49 16.98	134 39.93	3632						
25	P16	08:15	BE	GO FLO	WCH	67	49 16.96	134 39.90	3632	800	514-517		KS/HM		Go FLO
		08:44	BO												
		09:15	EN				49.17.07	134 39.99	3631				KS/HM		
25	P16	10:04	BE	ROS	U.S.	68	49° 17.02	134° 39.94	3631		518-525	8	H.M/L.T.	✓	LIANNA CAST
		10:06	BO				49 17.02	134 39.95							
		10:16	EN				49° 17.00	134° 39.90							
25	P16	11:52	BE	ROS	U.S.	69	49° 16.95	134° 39.88	3630		526-549	24	H.M/P.H.	✓	CESIUM CAST
		11:55	BO				49° 16.96	134° 39.89		150					
		12:05	EN				49° 16.99	134° 39.90							
25	P16	12:37	BE	ROS	U.S.	70	49° 16.97	134° 39.95	3630		550-573	24	H.M.	✓	DEEP CAST
		13:43	BO				49° 17.02	134° 40.11		3685					
		15:27	EN				49° 17.07	134° 39.96							

Cast Type:
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MOP = Mooring

Bottle Firing Method:

Time Code:

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ACOUSTICS RESTARTED AT 16:52 UTC 2015-08-25

NOT SURE WHEN IT STOPPED - LOST GPS - BUT AT LEAST A DAY PROBABLY 2

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Month <u>AUGUST</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
25	P17	19:49	BE	ROS		71	49 21.01	135 39.92	3640			0	SP	✓	PAR ON
		19:52	BO				49 21.02	135 39.89		150					PAR Cast-
		19:56	EN				49 21.04	135 39.86							no bottles fired
25	P17	20:05	BE	ROS	US	72	49 21.01	135 39.87	3640						PAR OFF
		20:40	BO				49 21.04	135 39.89		2005	574-597	24	SP	✓	AML Cast
		21:19	EN				49 21.02	135 39.88							
26	P18	01:57	BE	ROS	US	73	49 26.01	136 39.95	3832		598-603	6	SP	✓	ARM CAST
		02:32	BO				49 26.04	136 39.95		2005					loop 2xchl 1x sal.
		03:17	EN				49 26.01	136 40.00							
26	P19	07:52	BE	ROS	US	74	49° 30.00	137° 40.11	3926		604-627	24	H.M.	✓	AML CAST
		08:26	BO				49° 29.98	137° 40.09		2005					
		09:04	EN				49° 30.01	137° 40.15							
26	P20	13:59	BE	ROS	US	75	49° 34.01	138° 40.02	3963		628-635	8	H.M.	✓	
		14:03	BO				49° 34.00	138° 40.03		150					
		14:10	EN				49° 34.00	138° 40.02							
26	P20	14:45	BE	GoFlo		76	49° 34.09	138° 40.03	3963				HS/HM	-	Go FLO
		14:57	BO				49° 34.11	138 39.97		75					
		15:11	GO				49 34.08	138 40.09							

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Bottle Firing Method:

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Notes:

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Month <u>AUGUST</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
26	P20	1522	BE	NET		77	49° 34.03	138° 40.05	3963		—		MG/H.M.	—	BONGO
		1528	BO				49° 34.06	138° 40.01		250					
		1538	EN				49° 34.07	138° 39.97							
26	P20	1550	BE	Go Fo		78	49° 34.09	138° 39.93	3960						
		1606	BO				49° 34.05	138° 40.05							
		1616	EM				49° 34.04	138° 40.02							
26	P20	1626	BO	ROS		79	49° 34.01	138° 40.06	3960		642-665	24	H.M.	✓	DEEP CAST
		1736	BO				49° 34.10	138° 40.16		4015					A: 20 S 3965 P: 4013 D 3944
		1915	EM				49° 34.03	138° 40.06							
26	P20	2002	BE	NET		80	49° 34.02	138° 40.00	3964				MG		BONGO to 1300
		2049	BO				49° 34.34	138° 39.72		1300					
		2111	EN				49° 34.52	138° 39.77							
26	P20	2125	BE			81	49° 34.42	138° 39.75	3962	300	666-668		KS		
		2145	BO				49° 34.43	138° 39.79							
		2205	EN				49° 34.45	138° 39.88							
26	P20	2211	BE	ROS	US	82	49° 34.46	138° 39.87	3963				SP		PAR ON
		2221	BO				49° 34.49	138° 39.93		800					
		2309	EN				49° 34.43	138° 39.90							

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Month <u>AUG</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
26	P20	1315	BE	GO FLO	MSH	83	49.34.41	138.39.87	3962	800	690-692	3	KS	—	—
							49.34.50	138.39.93							
							49.34.65	138.39.98							
27	LOOP 84	1458	BE	USW		84	49.47.01	142.07.24	4016				MR		
27	P24	1715	BE	ROS		85	49.50.23	142.39.96	3986						
		1751	BO				49.50.19	142.39.99		2005	693-716	24	H.M.	✓	AML CAST
		1828	EN				49.50.22	142.39.96							
27	P24	1719	BE	Loop		86	49.50.23	142.39.98	3986	Loop			RN		Cesium Loop
27	P24	1820	BE	Loop		87	49.50.21	142.39.99	3986	Loop		1	K.S.		TANK (1000?)
		21:40	EN	Loop		—	49.58.13	143.25.71	4182	Loop		1	KS		" "
27	P25	22:48	BE	ROS	US	88	50.0.04	143.36.27	4147		—	1	SP	✓	PAR ON
		2251	BO				50.0.04	143.36.27		150					bottle for nise water for Lianna but not assigned ID.
		2255	EN				50.0.05	143.36.27							
27	P25	22:47		Loop		89	50.0.05	143.36.27	4145						Cesium Loop
27	P25	23:07	BE	ROS	US	90	50.0.06	143.36.30	4145		717-740	24	SP	✓	Calibration Cast
		2341	BO				50.0.04	143.36.29		2005					
		0017	EN				50.0.05	143.36.41							

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Month <u>AUG</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
28	P26	0646		GoFlo	mess	91	49° 59.96	144° 59.91	4252	75		3	KB		
28	P26	0704	BG	ROS	U.S.	92	50° 00.03	144° 59.95	4250		744-767	24	H.M./R.H.	✓	Cesium CAST
		0713	BO				50° 00.01	144° 59.98		560					
		0727	EN				50° 00.02	145° 00.01							
28	P26	0740	BG	GoFlo	mess	43	50° 00.00	145° 00.00	4250	100	768-770	3	K.J.H.	-	Go Flo
		0757	BO				50° 00.05	145° 00.10							
		0810	EN				50° 00.07	145° 00.06							
28	P26	0820	BG	ROS	U.S.	94	50° 00.01	145° 00.02	4250		771-794	24	H.M./N.H.	✓	N.H.'s CAST
		0825	BO				50° 00.00	145° 00.02		250					
		0848	EN				50° 00.01	144° 59.95							
28	P26	0903	BG	GoFlo	mess	95	49° 59.98	145° 00.00	4250		795-797	3	H.M./K.S.	-	Go Flo
		0915	BO				50° 00.01	144° 59.99		300					
		0940	EN				50° 00.03	144° 59.96							
28	P26	1015	BG	GoFlo	mess	96	49° 59.99	144° 59.92	4250						
		1039	BO				50° 00.01	144° 59.96		800	745-800	3	H.M./K.S.	-	Go Flo
		1110	EN				50° 00.00	144° 59.98							
28	P26	11:32	BG	NET	-	97	49° 59.98	145° 00.00	4250			-	H.M.	-	BONGO
		11:42	BO				50° 00.11	145° 00.00		250					
		11:46	EN				50° 00.02	145° 00.01							

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Month <u>AUGUST</u>				Year <u>2015</u>			Ship <u>TULLY</u>				Cruise ID <u>2015-10</u>					
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned		Comments
							Latitude	Longitude								
28	P26	1215	BE	ROS	U.S.	98	50° 00.01	144° 59.93	4250		801-808	8	H.M./L.T.	✓		LIANNA CAST
		1218	BO				50° 00.00	144° 59.95								
		1226	EN				49° 59.99	145° 00.01								
28	P26	1406	BE	ROS	U.S.	99	50° 00.02	145° 00.02	4250		809-832	24	H.M.	✓		DEEP CAST
		1527	BO				50° 00.00	144° 59.97		4306						A 20 S 4249 P 4305 D 4225
		1708	EN				50° 00.00	145° 00.05								
28	P26	1725	BE	HET	-	100	50 0.02	145 0.07	4256				M.G.	-		DEEP ECHO
		1801	BO				50 0.13	145 0.32		1300						
		1821	EN				50 0.22	145 0.41								
28	P26	1856	BE	ROS	U.S.	101	49 59.99	145 0.10	4250		833-856	24	SP	✓		CGSium CAST
		1901	BO				50. 0.03	145 0.07		150						
28	P26	1911	EN				50 0.07	145 0.03								
		1941	BE	ROS	US	102	50 0.05	144 59.97	4187		876-892	17	SP	✓		DMIS Port
		1946	BO				50 0.01	145 0.00		300						27 loop for chl.
		2011	EN				50. 0.04	144 59.99								
28	P26	2106	BE	ROS	US	103	50. 0.11	145 0.04	4252		861-896	20	SP	✓		max depth changed to 1000m due to high seas. Jade/Niko
		2123	BO				50. 0.10	145 0.03		1000						
		2148	EN				50 0.13	145 0.05								
29	D23	2247		CSloop		104	50 00 04	143 36 27	4057				RJ			CS Loop

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Month <u>Aug</u>				Year <u>2015</u>			Ship <u>TVLLY</u>				Cruise ID <u>2015-10</u>				
Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
29	Loop105	1628	BE	USW	-	105	49°30'44"	141°06'47"	4057				MR		2 CTD 1 SA
30	P22	0131	BE	ROS	US	106	49°42.01	140°39.85	3895		897-898	2	SP	✓	
		0150	BO				49°42.01	140°39.85		1005					
		0212	EN				49°42.01	140°39.87							
30	P21	0553	BE	ROS	US	107	49°38.20	139°40.15	3960		913-936	24	SP	✓	Cs Cast
		0556	BO				49°38.24	139°40.14		150					only 1 cast to 150m
		0605	EN				49°38.29	139°40.18							due to weather (skipped 2000m run)
30	Loop108	1434	BE	USW		108	49°22.21	137°35.19	3910						
30	Cs Loop	18:10		loop		109	49°18'18"	136°39'55"	3848				RI		Cs loop 60d
31	Cs loop	10:32		loop		110	49°05'97"	132°42'62"	3324				RI		Cs loop 60d
31	P13	1500	BE	ROS		111	49°02.63	131°39.98	3013		993-960	24	H.M.		ADAM/2000m run
		1551	BO				49°02.60	131°39.96	B-20 =	3660					A 20 P 3000 D 3014
		1650	EN				49°02.61	131°39.99							
1	P6	10:55		Cs loop		112	48°43.86	127°40'15"					RI		Cs loop 60d
1	P6			GoF/w	BE	113	48°38'74"	126°39'81"							
					BO		48°38'74"	126°39'81"							
					EN		48°38'66"	126°39'82"							
	P6			GoF/w	BE	114	48°39.05	126°39'73"							

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