

DAILY LOG BOOK

MISSION
NUMBER

2002-20

DATE:

VESSEL:

PROJECT:

From:

to:

SIR WILFRID LAURIER

INSTITUTE OF OCEAN SCIENCES
OCEAN SCIENCES AND PRODUCTIVITY DIVISION
SIDNEY, BC, CANADA

Captain: MARK TAYLOR First Officer: _____
Second Officer: _____ Third Officer: _____

Mission Participants / Agencies: _____

Scientific Personnel: Party Chief: BON VAN HARTDENBERG

Name	Watch	Cabin	Name	Watch	Cabin
<u>FIRST LEG: VICTORIA TO DUTCH HARBOR:</u>					
<u>JOHN NELSON</u>	<u>3</u>	<u>CONTINUE</u>			
<u>KATE DARLING</u>	<u>3</u>	<u>TO CATER BAY</u>			
<u>MICHAEL KUCERA</u>	<u>-</u>	<u>EXIT BARROW</u>			
<u>DUTCH HARBOR TO BARROW:</u>					
<u>BON VAN HARTDENBERG</u>			<u>SARAH RISEMAN</u>		
<u>JACKIE GIREMEIER</u>			<u>AIMEE NEELEY</u>		
<u>JACKIE CLEMENT</u>					
<u>REBECCA PIRIE-LEWY</u>					
<u>KIM HARMON</u>					

Second leg of Mission:			Party Chief:		
Name	Watch	Cabin	Name	Watch	Cabin
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Data logging computer: DELL 2002 M2

Data acquisition program: SEASAVE
CTD deck unit make: SEABIRD model: SBE 11 serial number: 0424

Primary CTD

Make: SEABIRD model: SBE 9 serial number: 0443

Primary temperature serial number: _____

Primary conductivity serial number: _____

Secondary temperature serial number: _____

Secondary conductivity serial number: _____

Transmissometer: SEATECH Model: _____

Fluorometer: Model SEAPoint Cable gain: _____

Oxygen sensor: SEABIRD Model: SBE 43 s/n: #139 P, S or NO pump?

PAR sensor: AO Model: SBE 43 s/n: 0052 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?

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: _____

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: _____ 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?

Other sensors: _____ s/n: _____ P, S or NO pump?

CTD calibration bottle location (height above CTD in metres): _____

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month 07					Year 2002			Ship				Cruise ID			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
06	NP-1	BR 16:34 EN 17:33	USW		1	49° 23.17' N	127° 40.60' W	3224 Ft	Surface	/	/	M. Kieren		Take for DNA 7.15°C	
06	NP-2	BR 19:41	USW		2	49° 38.76' N	128° 32.20' W	2925 Ft	Surface	/	/	M. Kieren		bulk	
06	NP-3	20:22	NET		3	49° 41.8074' N	128° 42.988 W	2327 Ft	100 m	/	1	M. Kieren		John's net, bottle B1 (5m)	
06	NP-3	20:50	NET		4	--	--	--	100 m	/	/	--		Kate's net 14.5°C	
07	NP-4	16:09	NET		5	51° 17.1482' N	134° 18.8791 W	3301 Ft	100 m		1	K. Darling		John's net, sal. bottle B2	
07	NP-4	16:18	NET		6	--	--	--	100 m			K. Darling		Kate's net 13°C	
08	NP-5	16:01	NET		7	52° 48.1785' N	141° 46.5352 W	3778 Ft	100 m		1	K. Darling		John's net, sal. bottle B3	
08	NP-5	16:11	NET		8	--	--	--	100 m			K. Darling		Kate's net 12°C	
09	NP-6	15:10	NET		9	53° 36.7321 N	149° 27.0279 W	3632 Ft	100 m		1	K. Darling		John's net, sal. bottle B4	
09	NP-6	15:19	NET		10	--	--	--	100 m			K. Darling		Kate's net 11°C	
10	NP-7	01:07	NET		11	53° 54.8826 N	152° 38.9651 W	3320	100 m		1	K. Darling		John's net, sal. bottle B5, 11.5°C	
10	NP-8	15:02	NET		12	54° 04.1889 N	157° 34.7781 W	3768	100 m		1	K. Darling		John's net, sal. bottle B6, 11°C	
10	NP-8	15:10	NET		13	--	--	--	100 m			K. Darling		Kate's net	
11	NP-9	01:04	NET		14	54° 06.1743 N	160° 58.9647 W	1772	100 m		1	M. Kieren		John's net, sal. bottle B7, 11.5°C	
11	NP-10	15:02	NET		15	54° 21.0638 N	165° 52.5909 W	316	100 m		1	K. Darling		John's net, sal. bottle B8, 9°C	
11	NP-10	15:10	NET		16	--	--	--	100 m			K. Darling		Kate's net	
12	NP-11	15:26	NET		17	54° 42.9708 N	168° 16.7119 W	1698	100 m		1	K. Darling		John's net, sal. bottle B9, 9.5°C	
12	NP-11	15:38	NET		18	--	--	--	100 m			K. Darling		Kate's net	
13	NP-12	01:20	NET		19	55° 22.3578 N	170° 06.3406 W	2700	100 m		1	K. Darling		John's net, sal. bottle B10, 10°C	

Cast type:

BOT = bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD

USW = sea water loop

MOR = mooring
 NET = net haul
 DRF = drifter

• bottle firing method:

• US = up / stop
 • UN = up / no stop
 • DN = down / no stop

• Time Code

• BE = beginning time of cast
 • BO = bottom time of cast
 • EN = end of cast time

DE = deployment time

MR = messenger release time

RE = recover mooring time

Transmissometer to be cleaned for each cast, do not use Ammonia products

22 March 2002

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Additional comments

SALINITY SAMPLES TAKEN AT SURFACE BY BUCKET AT ZOOPLANKTON NET HAL SITES → LABEL B1 → Bxx

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month JULY					Year 2002			Ship LAURIER				Cruise ID 2002-20			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
13	BS-5	16:50	ROS	US	20	56 40.96	172 37.05	137	130		9	Jm	X	sal sample from 100m (BOT 1) others for DMS filtering	
13	BS-4	17:57	ROS	US	21	56 33.28	172 45.29	210	204	1-200	13		X	stop 30 sec @ 6 zip depths	
13	BS-4	18:20	NET	X	22	56 33.21	172 45.46	218	100		*				
13	BS-3	19:20	ROS	US	23	56 31.50	172 47.62	518	509		12		X		
13	BS-2	20:28	ROS	US	24	56 28.13	172 53.82	1028	1015	1-1000	13		X		
13	BS-1	22:51	NET		25	56 20.3118N	173. 00.2042W	2062	100M		7	K.Dooling	X		
13	BS-1	22:57	NET		26	---	---	---	100M			K.Dooling			
14	BS-1	00:39	ROS		27	56 20.27	173 0.15	2077		1-2000			X		
14	NO BE-1 12A	15:00	NET		28	58° 12.55'	173° 18.75'	109 m	100m			M.Kucera		John's kit	
14	NO BE-1 12A	BE 15:00 EN 16:00	USW		29	58° 21.92'	173° 20.33'	112 m	Surface			M.Kucera			
14	NO BE-2 13B	BE 16:30 EN 17:04	USW		30	58° 35.42'	173° 22.62'	117 m	Surface			M.Kucera		bulk sample	

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→ spray fresh tap water,
use kimwipe

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event #20

Additional comments

First cast @ BS-5 (Sounder failure → no indication until ship's sounder in shallower area!)
 137 m 09:51 56 41.0283 N
 max 138 m to trip alarm 172 37.0646 W bottles closed on upcast after ~30 sec wait at each depth

event 21 - 2nd cast - CAC: multiple BOT (18^L ea sample) so again close on UPGAST (30 sec wait) [WAS PUMP ON? trace looked OK]
 BS-4
 ~200 m
 - missed 75 m → back down after stop @ 50 for 2 BOTs
 - tried automate after setting hook load to 750 kg from 400 → did not lower on deploy
 Lowered in MANUAL mode

event 22 - 3rd cast - (Ship stopped @ 480 m then drifted to 598, brief nudge back to ~510 before cast → very steep!)
 BS-3
 500 m
 - Set hook load from 750 kg down to 600, tried AUTO DEPLOY → not paying out
 • lowered manually by Md. (Bosun)

event 23 - 4th cast - still no-go for auto descent → manual by me - Seas 2-3 m w/ breakers, windy & fog
 BS-2

event 24 - 5th cast - set SCANTROL User function for Automatic / deploy to FLOW from PRESS -
 BS-1
 but when turned to Auto at deck station it refused to go into HOLD mode on pressing F2
 so, another cast where downcast is done on manual - at depth = 2060, press = 2025 (?)
 * increased RETRIEVE speed to 1.5 m/s at 1000 m depth → still "surging" Scantrol wire out = 2025
 * BOT 819 tripped without stopping (around 500 m depth) other doubles (2/depth) after stopping, singles 'on the fly'

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Month <u>JULY</u>					Year <u>2002</u>			Ship <u>LAURIER</u>				Cruise ID <u>2002-20</u>			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
14	BS-6	20:58	ROS	US	31	59 19.15	173 29.99	108	102	1-100	23			hookload from 500 to 500 still no AUTO-Deploy	
15	BE-13	1:06	NET		32	59° 47.07'N	173° 45.89'W	96m	90m 5100m			H. Kucera		John's net about 90m east	
15	SLIP-1	14:06	ROS	US	33	62 00.63	175 03.45	80	74	5-75	24	Jim		first mud str, 1 sal @ bottom other bott for JG	
15	BE-4	14:33	NET		33	62° 00.6699N	175° 03.5883W.	76.1m	~70m			K. Darling		John's net	
15	BE-4	14:38	NET		34	---	---	---	~70m			K. Darling		Kate's net	
15	SLIP-2	17:00	ROS	US	36	62 02.99	175 12.43	82	75	5-77	24	Jim	✓	BOT 12 did leak, not closed all the way	
15	SLIP-2		MUD											SCATS: 5 GRABS (6?)	
15	SLIP-2	18:20	ROS		37	62 03.01	175 12.43	82	76	77	1	Jim	✓	REDD CAST-PUMPS WERE NOT TURNED ON) 1 SAL @ BOTTOM	
15	SLIP-3	20:55	ROS	US	38	62 23.50	174 34.25	73	66	5-68	21	Jim		(HCH)-	
	SLIP-3		MUD												
16	SLIP-5	00:45	ROS	US	39	62 33.725	173 33.33	67	58	5-58	24	Jim		SAL @ bottom (BOT 1, 60m)	
	SLIP-5		MUD												
16	BE-5	01:24	NET		40	62° 33.7233N	173° 33.3356W.	69				K. Darling		John's net.	
16	SLIP-4	05:10	ROS	US	41	63 01.835	173 27.193	72	67	5-67		Jim	✓		

Cast type:

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USW = sea water loop

MOR = mooring
 NET = net haul
 DRF = drifter

• bottle firing method:

• US = up / stop
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• Time Code

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DE = deployment time

MR = messenger release time

RE = recover mooring time

MUD = GRAB + CORE
 COR = CORE

M = MUD: 5 GRABS + 3 CORES

Transmissometer to be cleaned for each cast, do not use Ammonia products

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Additional comments

Cast @ SLIP-1: Scontrol AUTO only works after wirelength $> 0m$ $\rightarrow$ reset ϕ then used AUTO Deploy @ 1m/s down,
control of stops on retrieve difficult (lag between depth reading and actual stop when pressed)
- closed bottles on upcast (most 2 per depth, 20-30 sec wait between stop & tripping)

SLIP-1: MUD 5 GRAB & 3 CORES

Cast @ SLIP-2: Long wait on deck $\rightarrow$ shut down ACCQ, deck unit off $\rightarrow$ when ship positioned, time-out on NMEA during startup of ACCQ
Second restart OK but poor data $\rightarrow$ realised after cast that pumps were not on $\rightarrow$ redo after mudwork

Cast @ SLIP-3: I set RETRIEVE from 2 (Press) to 1 (Flow) in attempt to stop surging in retrieve cycle
retrieve speed left at 0.5 m/s to facilitate bottle stops - no

note: BOT-12 does not close all the way @ top $\rightarrow$ O-ring too large or Buggy pull too weak

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Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
16	BCS-6	14:10	ROS	US	42	63 51.024	172 23.776	58	49	5-50	20	Jon	✓	(NO MUD)
16	BE-6	14:38	NET		43	63° 51.0095N	172° 23.5373W	56	~45m			K. Darling		
16	BE-6	14:44	NET		44	--	--	--	~45m			K. Darling		
16	UT-BS5	22:59	US		45	64 40.027	169 55.220	48					✓	no NMEA! <u>log values only</u>
	UT-BS5		MUD											
16	UTBS-5	23:39	NET		46	64 40.027	169 55.220	48						
	UTBS-5		MUD											
17	UTBS-2	01:56	ROS	US	47	64 41.042	169 06.210	45					✓	
17	UTBS-2	02:10	Net		48	64 41.042	169 06.210	45						no NMEA! check time in header
	UTBS-2		MUD											
17	UT-BS4	05:30	ROS	US	49	64 57.592	169 52.928	48	39					check Sta name in header!
	UT-BS4		MUD											
17	UT-BS1	08:17	ROS	US	50	64 59.558	169 08.164	47	42					
	UT-BS1		MUD											
next page for Bering Strait section stations														

Additional comments

at UT-BS2 - winch operator dropped rosette hard on deck from small height → popped about half the plungers that hold BOTs below retaining ring - bungee wrapped around all held them in place - no change noticeable in CTD sensors but may be showing later in processing.

after event 49 (UT-BS4) noticed that acquisition computer date was 2001 instead of 2002 !! [also time zone = GMT] adjusted this to UTC 2002 (GMT Zone) at 17 July 06:04 (in case NMEA fails again) [but time shown was PDT!!] for UPLOAD time stamp.

DAILY LOG

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Month					Year			Ship			Cruise ID			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
17	BRS-1	1331	ROS*	US	51	65 38.995	168 13.113	40	35		18	Jim	✓	fog, strong currents 1-2 m waves NO MUD ↑
17	BRS-1	14:00	NET		52	65 38.9	168 13.1	40						
17	BRS-2	1448	ROS	US	53	65 39.947	168 24.002	53	47		6	Jim	✓	
17	BRS-3	1532	ROS*	US	54	65 40.840	168 33.943	53	45			Jim		
17	BRS-4	1630	ROS	US	55	65 41.972	168 43.013	52	45		7	Jim	✓	
17	BRS-5	1716	ROS		56	65 43.052	168 53.956	50	44		20	Jim	x	
17	BRS-5	17:34	NET		57	65 43.05	168 53.96		40m			Mike		John's net
17	BE-7	17:40	NET		58	-11-	-11-	-11-	40m			Mike		Rate's net
17	UTN-1	2356	ROS	US	59	66 42.635	168 23.924	34	29		14			mud after bongo
			MUD											
18	UTN-1	00:26	Net		60	66 42.635	168 23.924	34	30					bongo 236u

Additional comments

Before BPS-1: tightened set screws in upper caps of BOTs - replaced 2 missing screws from spare cap in parts box

→ SUNSHINE ! first time since Butch Harbor - still windy (~ 20 km/h), lumpy surface, small waves (~ 1 m)
bingy snapped after setup: metal crimp came off shock cord - replaced crimp, no injuries---

after heading north of Bering Strait (towards UTA-1)

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						Latitude	Longitude							
18	UTN-2	0300	ROS	US	61	67 03.103	168 43.603	47	41		17	Jim	✓	HCH Str
	UTN-2		MUD											
18	UTN-3	0542	ROS	US	62	67 19.989	168 59.582	51	44		20	Jim	✓	
	UTN-3		MUD											
18	UTN-4	0738	ROS	US	63	67 30.038	168 54.768	51	44		20	Jim	✓	bungy repair BOT#2 bottom = WHALES (on the horizon?)
			MUD											
18	UTN-5	1012	ROS	US	64	67 40.22	168 57.46	52	45		22	Jim	✓	
			MUD											
18	UTN-6	1240	ROS	US	65	67 44.152	168 26.320	51	44		20	Jim	✓	1-sal BOT#5 35m depth
			MUD											
18	UTN-7	1547	ROS	US	66	68 00:00	168 55-65	59	59		19	Jim	✓	
18	UTN-7	16:14	NET		67	67° 59.947N	168° 55.9848W.	53.4	42m			KDaly		
18	BE-8	16:21	NET		68	---	---	---	---			KDaly		
19	BD-6	0313	ROS	US	69	69 11.912	166 08.741	31	26		13	Jim	✓	BOTTOM VALVE ON BOT#3 BROKEN?
19	BD-6	0343	Net		70	69 11.912	166 08.74	31	26					

Cast type:

BOT = bottle cast, no CTD
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USW = sea water loop
 MOR = mooring
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bottle firing method:
 • US = up / stop
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Time Code

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Transmissometer to be cleaned for each cast, do not use Ammonia products

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Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
19	CKS-1	1805	ROS	US	71	70 37.020	161 05.687	34	28		8	JN	✓	replaced another bungy
19	CKS-1	18:18	NET		72	--	--	29.6	~23			K. Darling		
19	CA-1	18:23	NET		73	--	--	29.6	~23			K. Darling		
19	IT-1	23:42	Net		74	70°41.17N	161°05.687	40				JN		
20	BD-7	1440	ROS	US	75	71 09.686	158 23.382	49	42		18	JN	✓	
20	BD-8	1951	ROS	US	76	71 18.228	156 59.444	52	46		6	JN	✓	
20	BD-7	14:40	Net		77	71°09.686	158°23.382	49	44			JN		
			Net		78	71°18.229N	156°59.434W	2417	4015			JN		
21	IT-2	14:00	Net		78	71°04.3N	153°06.66W	17	15			JN		
22	IT-3	01:00	Net		79	70°39.721	149 32.136	17	17			JN		
22	IT-4	015:00	net		80	70°14.3	146 03.61	21	21			JN		

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						Latitude	Longitude							
23	IT5	1:00	bongo		81	70° 06.93	142° 46.71	24	24			JN		
23	IT6	15:00	bongo		82	69° 39.78	140° 53.45	19	19			JN		
23	IT7	22:00	bongo		83	69° 37.99N	138° 36.60	124	124			JN		
23	CA-2	22:10	net		84	--	--	124	100			KDarling		SST ~ 10°C.
24	IT8	15:48	bongo		85	69° 29.03N	138° 49.89	86	86			JN		
25	IT-9	1:32	bongo		86	69° 30.44°	137° 21.92	52	52			JN		
25	CA-3	1:40	net		87	--	--	--	47			KDarling		
25	IT-10	17:00	h2o samp		88	69° 46.9	135° 31.42	8m	8m		1	JN		sal sample of surface H ₂ O
28	IT-11	1:00	bongo		89	70° 38.96	127° 42.62W	115	100		1	JN		sal sample
28	IT-12	1:00	h2o sample		90	"	"	115	100		1	JN		sal sample

Cast type: USW = sea water loop • bottle firing method: • Time Code
 BOT = bottle cast, no CTD MOR = mooring • US = up / stop • BE = beginning time of cast DE = deployment time
 CTD = CTD without Rosette NET = net haul • UN = up / no stop • BO = bottom time of cast MR = messenger release time
 ROS = Rosette plus CTD DRF = drifter • DN = down / no stop • EN = end of cast time RE = recover mooring time

Transmissometer to be cleaned for each cast, do not use Ammonia products

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DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month					Year			Ship				Cruise ID			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
28	CA-4	1:00	net		91	20° 38.96 N	127° 42.62 W	115	100			KDaling			
28	IT-12	16:00	bongo		92	20° 39.31	128° 16.29 W	118	118		1	JN		sal sample	
29	IT-13	1:30	bongo		93	20° 27.97	127° 21.1 W	115	115		1	JN		sal sample	
29	CA-5	1:36	net		94	--	--	115	100			KDaling			
29	IT-14	14:15	bongo		95	21° 07.56	125° 02.41	325	325		1	JN		sal sample	
29	CA-6	14:21	net		96	--	--	325	100			KDaling			
29	IT-15	23:30	bongo		97	21° 45.89 N	125° 09.29	197	100			JN			
31	IT-16	15:09	bongo		98	21° 14.06 N	121° 25.56	75	70		1	JN		sal sample	
31	CA-7	15:15	net		99	--	--	75	70			KDaling			
31	IT-17	22:30	bongo		100	21° 52.68	119° 52.87 W	115	100		1	JN		sal sample	

Cast type:

- BOT = bottle cast, no CTD
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- ROS = Rosette plus CTD

USW = sea water loop

- MOR = mooring
- NET = net haul
- DRF = drifter

bottle firing method:

- US = up / stop
- UN = up / no stop
- DN = down / no stop

Time Code

- BE = beginning time of cast
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Month					Year			Ship				Cruise ID		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
01	IT-18	15:00	bongo		101	70°43.938	118°02.408	211	100		1			sal sample
01														
01	CA-8	15:08	net		102	--	--	--	--			KDabing		
02	IT-19	22:37	bongo		103	70°55.19	119°58.17	220	100		1	JN		sal sample
02	CA-9	22:43	net		104	--	--	--	--			KDabing		
03	IT-20	15:00	bongo		105	70°04.033	124°00.995	103	100		1	JN		sal sample
03	CA-10	15:06	net.		106	--	--	--	--			KDabing		
05	IT-21	14:30	bongo		107	69°51.627	125°33.52	47	42		1	JN		sal sample
07	IT-22	15:00	bongo		108	69°54.394	121°21.106	295	100		1	JN		sal sample
07	CA-11	15:06	net		109	--	--	--	--			KDabing		
08	IT-23	01:25	bongo		110	69°19.67	119°17.69	60	55			JN		

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Month					Year			Ship				Cruise ID		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
08	IT-24	15:30	bongo		111	69° 19.67	119° 17.69	147	100		1	JN		sal sample
08	IT-25	01:00	bongo		112	68° 40.999	113° 42.238	34	30		1	JN		sal sample
09	IT-26	15:30	bongo		113	68 04.486	114° 17.454	208	100		1	JN		sal sample
10	IT-27	1502	bongo		114	68° 26.77	111° 25.46	258	100		1	JN		sal sample
10	IT-28	01:10	net		115	68° 45.239	108° 27.647	132	100		1	JN		sal sample
11	IT-29	1500	net		116	68° 59.82	105° 34.20	76	70		1	JN		sal sample

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