DAILY LOG BOOK

MISSION NUMBER 2002-23

DATE:

VESSEL: From: KUGLUKTUK to: BARROW, AK
CCGS "LOUIS S. ST-LAURENT

PROJECT: JWACS

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

CREW ON BOARD - CABIN ASSIGNMENTS
NORTH CREW

13-Aug-02

Position	Name		Cabin Assignment	Cabin Phone
Commanding Officer	Martin	Marsden	Captain	150
Chief Officer	Dawn	MacEwan		
First Officer	Rodney	Strowbridge	202	152
Second Officer	Wayne	Pelley		
Third Officer	Mike	Scotto	206	154
Chief Engineer	Don	Stortts	Chief Engineer	131
Senior Engineer	Robert	Lyle	411	132
First Engineer	Raymond	Miller	410	
Second Engineer	Oswald	Williston	409	
Third Engineer	Cindy	Rudderham	408	
Electrical Officer	Stephen	Colp	407A	136
Logistics Officer	Bill	Brocklebank	316	317
Electrician	Joe	Lucas	417	323
Boatswain	Blaine	Blinkhorn	420	310
Carpenter	Gary	Morgan	542	431
Leading Seaman	Albert	Sears	540	
Leading Seaman	James	Ayres	534	
Seaman	Daniel J.	Maclean	509	
Seaman	Rico	Amamio	520	
Seaman	Glenn	Drake	538	
Seaman	Daniel	Dunlap	519	
Seaman	Danny	McAleer	507	
Seaman	Robert	Boutlier	541	
Seaman	Christopher	Lawrence	518	
E/R Technician	Jeff	Doane	550	
E/R Technician	Kenneth	Pettipas	552	
E/R Technician	Donald	Lawson	553	
E/R Mechanic	Mike	Gidney	516	
E/R Mechanic	Trevor	Barras	510	
E/R Mechanic	Jeff	Stewart	512	
E/R Mechanic	Bryant	Culhane	548	
E/R Mechanic	Ron	Hynick	514	
E/R Mechanic	Raine	Jones	547	
Chief Cook	Randy	Turner	419	

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): _____

Position	Name		Cabin Assignment	Cabin Phone
Storekeeper	Graham	Weldon	546	
Storekeeper	David	Wallingham	544	
Second Cook	Catherine	Munroe	543	
Second Cook	Danny	Jones	545	
Second Cook	Harvie	McWhirter	529	
Steward	Larry	Royea	532	
Steward	Brad	Purcell	530	
Steward	Bernard	Trainor	531	
Steward	Florence	Carter	524	
Steward	Denise	Jones	522	
Helicopter Pilot	Joseph	Fraser	423	
Helicopter Engineer	Rick	Dain	424	
Electronics Technician	Brian	LeBlanc	422	
Ice Observer	Roger	Provost	425	
Medical Officer	Nathalie	Chartier	317	
Scientific Staff	John	Alikamik	515	
Scientific Staff	Hirokatsu	Uno	311	
Scientific Staff	Emory	Kristof	506	
Scientific Staff	Hiroshi	Sumata	508	
Scientific Staff	Michael	Vecchione	511	
Scientific Staff	Jeremy	Potter	513	
Scientific Staff	Motoyo	Itoh	521	
Scientific Staff	Helen	Johnson	523	
Scientific Staff	Jennifer	Purcell	525	
Scientific Staff	Jennifer	Steinburg	528	
Scientific Staff	Joseph	Illasiak	551	
Scientific Staff	Bon	Van Hardenberg	315	
Scientific Staff	Takishi	Kikuchi	605	
Scientific Staff	David	Huntley	606	
Scientific Staff	Sang	Lee	606	
Scientific Staff	Qing	Zhang	607	
Scientific Staff	Casey	Debenham	608	
Scientific Staff	David	Allen	608	
Scientific Staff	Gerald	Plumley	609	

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): _____

Position	Name		Cabin Assignment	Cabin Phone
Scientific Staff	Wayne	Smith	610	
Scientific Staff	Jeremy	Stewart	610	
Scientific Staff	Jane	Eert	421	
Scientific Staff	Linda	White	303	
Scientific Staff	Chen	Bo	617	
Scientific Staff	Michael	Nicholson	612	
Scientific Staff	Salvatore	Ciampa	612	
Scientific Staff	Christopher	Nicholson	405	
Scientific Staff	Paul	Nicklen	614	
Scientific Staff	Michael	Cole	611	
Scientific Staff	Fiona	McLaughlin	301	
Scientific Staff	Kathleen	Crane	310	
Scientific Staff	Bodil	Bluhm	311	
Scientific Staff	Connie	Lovejoy	421	
Scientific Staff	Janet	Barwell-Clarke	302	
Scientific Staff	John	Harris	418	
Scientific Staff	Gillian	Lichota	303	
Scientific Staff	Louise	Timmermans	304	
Scientific Staff	Sheila	Toews	304	
Scientific Staff	Koji	Shimada	308	
Scientific Staff	Russell	Hopcroft	309	
Scientific Staff	Terry	Whitledge	404	
Scientific Staff	Rolf	Gradinger	405	
Scientific Staff	Ian	MacDonald	406	
Scientific Staff	Doug	Sieberg	416	
Scientific Staff	Mary	O'Brien	302	

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): _____

Mission Participants / Agencies: _____

Scientific Personnel: Party Chief: FIONA MCLAUGHLIN

Name	Watch	Cabin	Name	Watch	Cabin
FIONA MCLAUGHLIN					
DOUG SIEBERG					
BON VANHARDENBERG					
MARY O'BRIEN					
LINDA WHITE					
JANET BARWELL-CLARKE					
MARY STEEL					
GILLIAN LICHOTA					

Second leg of Mission: Party Chief: _____

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: DELL-200 S/N 6LP5X
Data acquisition program: SEASAVE WIN32 V. 5.2
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: 4044
Primary conductivity serial number: 2232
Secondary temperature serial number: 4109
Secondary conductivity serial number: 2676
Transmissometer: SEATECH Model: DEEP s/n: 192D *failed
Fluorometer: Model SEAPOINT Cable gain: 30X (0-5) s/n: 2336 **P**, **S** or **NO** pump?
Oxygen sensor: SEABIRD Model: SBE 43 s/n: 0032 **P**, **S** or **NO** pump?
PAR sensor: — Model: _____ s/n: _____
Other sensors: PRESSURE, DIGIQUARTZ s/n: 63507 **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: SEABIRD model: SBE-9 serial number: _____ (JAMSTEC)
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: _____
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: 24
Manufacturer: G.O. W/CAROUSEL HUB (Ocean Test Equip., General Oceanics, IOS)
Volume of bottles (litres): 10 L (BOT)

Winches:
1. Make: _____ model: _____ serial #: _____ used for: _____
2. Make: _____ model: _____ serial #: _____ used for: _____
3. Make: _____ model: _____ serial #: _____ used for: _____
4. Make: _____ model: _____ serial #: _____ used for: _____
5. Make: _____ model: _____ serial #: _____ used for: _____
6. Make: _____ model: _____ serial #: _____ used for: _____
7. Make: _____ model: _____ serial #: _____ used for: _____

Comments: _____

No **Salinometer**: make: _____ model: _____ serial number: _____
Comments: _____

No **Thermosalinograph System**:
Program: _____ Version: _____
Sampling interval (seconds): _____
Fluorometer sensor serial number: _____
Comments: _____

No **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: _____

Comments:
EXCESSIVE AMOUNTS OF GREASE ON CONDUCTING CABLE (CTD) CAUSED DRIPS/STAINS OVER ROSETTE, SAMPLING GEAR, CLOTHES, EQUIPMENT, DECKS

1500Z – 1522P wire depth 225 = 222, 400 = 397

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month AUGUST **Year** 2002 **Ship** LOUIS ST. LAURENT **Cruise ID** 2002-23

Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position Latitude N	Position Longitude W	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
16	AG5	1520	ROS	D↓U	1	70 34.737	122 58.508	650 sound	627	1-24	24		✓	SNOW
16	AG5(2)	2148	ROS	U	2	70 34.56	122 59.45	650 sound		25-42	18		✓	
18	AL05	0350	ROS	D↓U	3	BE 71 9.08	133 56.91	500 sounder		43-66	24		✓	
		0402				BO 71 9.01	133 57.49	511 sounder	500 m					
		0421				EN 71 8.82	133 57.91	517						
18	AL06	0547	ROS	D↓U	4	BE 71 17.33	134 15.11	1000~	945	67-90	24		✓	
		0606				BO 71 17.38	134 15.47	949~						
		0624				EN 71 17.39	134 15.80							
18	AL07	1649	ROS	D↓U	5	BE 71 42.09	134 40.78	Echo 1560		91-114	24		✓	chlamax ~ 55m Tdc-1.2
		1720				BO 71 42.15	134 41.27		1568 m					
		1748				EN 71 42.24	134 41.30							
18	AL07(2)	2057	ROS	U	6	BE 71 42.52	134 44.25	~1600		115-130	16		✓	
		—				BO 71	134		250					
		2117				EN 71 42.61	134 44.32							

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
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DE = deployment time
MR = messenger release time
RE = recover mooring time

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

Additional comments

STN AL07: SETUP ELAC SOUNDER IN CTD LAB : SCALE = 0-2000
thin narrow pulse, Range = 5, range = IV (0-2000), step = 0

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Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
19	ALØ8	0304	ROS	U	7	BE 71 59.11	135 18.67	ELAC 2090	50	131-134	4	[signature]	✓	FOG - HCH samples
		0310				EN 71 59.10	135 18.77							
19	ALØ8	0322	ROS	D&U	8	BE 71 59.09	135 18.94	ELAC 2090		135-158	24	[signature]	X	Winch 1225 = depth 1219 m
		0401				BO 71 59.06	135 19.15		2051					2058 = " 2051 m
		0435				EN 71 59.03	135 19.04							(P=2083)
19	ALØ9	1738	ROS	D	9	BE 72 37.81	136 13.75	ELAC 2600		159-182	24	[signature]	✓	Winch 1000 = depth 1005
		1827				BO 72 37.83	136 13.75	2580	2575					" 2000 = 1993m 1008 fluorom @ deep shows 0.1-0.09
		1909				EN 72 37.84	136 13.63							
19	ALØ9 (2)	2054	ROS	U	10	BE 72 37.63	136 14.34	ELAC 2590		183-194	12	[signature]	✓	Ship reposition to avoid waste disposal
		2124				EN 72 37.85	136 14.51	max depth 75 m						
20	AL1Ø	1556	ROS	D	11	BE 73 29.27	136 59.61	ELAC 3200	3137?	195-218	24	[signature]	✓	- Release attached to rosette frame for test
		1700				BO 73 29.20	136 59.80	3130	3126					* Tsf = 1.0 (weobs)
		1803(?)				EN								range to release: 3161 for Soundsp = 1497

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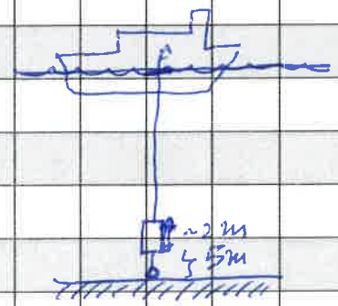
Additional comments

Cast 11: winch = 3016 ≡ 3000 m on SBE9
1600 1595



DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month AUGUST **Year** 2002 **Ship** LOUIS ST-LAURENT **Cruise ID** 2002-23

Day	Station Name	Time (UTC)	Cast type	Firing Method	~~Event~~ Number	Position Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
21	AL10 (2)	1325	ROS		12	BE 73 29.30	137 0.03	~~3200~~ 3185		219-242	24		✓	chged 4 bott during Down Cast 4 m Staircase @ ~~bottom~~ depth (m)
		1431				BO 73 29.19	137 0.52		3126 m!					Wire max ~ 3130
		1542				EN								
22	AL10(3)	1331	ROS	U	13	BE 73 26.94	136 49.18	~3170	1000m	243-266	24		✓	Tsfc = -1.0 Chla max=52m Tmax 0.49 @ 405 db
		1426 (?)				EN								
23	SB01	1847	ROS	U	14	BE 72 33.48	140 59.82	~3220		266A,	24		✓	Tsfc = -1.2 Chla max 52m transmisso change signal
		1952				BO 72 33.59	140 59.93		~~3366~~	267-289				
		2112				EN 72 33.59	140 59.41							
23	SB01 (2)	23 48	ROS	U	15	BE 72 35.55	140 52.30	~3220	791 m	290-313	24	Helen	✓	Tsfc = -1.2 Chla max 52m Transmissometer not functioning
		00 36				EN 72 35.51	140 52.13							
~~24~~ 23	SB01(3)	01:36	ROS	U	16	BE 72 35.92	140 49.08		300dbar		24	IToH		Chla max 53m Transmissometer not functioning
		01:59				EN 72 35.91	140 49.04							

Cast type:
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• bottle firing method:
• US = up / stop
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Transmissometer to be cleaned for each cast, do not use Ammonia products

Additional comments

Aug 22 – I replaced the little rubber tube piece (to protect the line on the Rosette bungees) with pieces of Duct + electrical tape since it appears they have been negatively affecting proper bottle closure. Bottom Spigot on # 23 was damaged + completely replaced. I changed the top bungee cord on # 15 + tightened up the top bungee on Bottle # 24 with a knot because it was starting to fray.

– I checked all small screws on the bottle lids to ensure tightness.

Sheila Toews.

DAILY LOG — Ocean Sciences and Productivity Division — **INSTITUTE OF OCEAN SCIENCES**

Month AUGUST **Year** 2002 **Ship** LOUIS S. ST-LAURENT **Cruise ID** 2002-23

Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position: Latitude	Position: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
25	RVB1	00:06	CTD		17	BE 72'6.94"N	139'48.43"W	~2800	2760m					Bear just before start! surface temp -1.0
						BOT 72'6.94N	139'47.99"W				2	Jenny		Tripped 2 bottles chlorop. max @ 48 m for bio only
		0145				END 72'6.96N	139'47.83"W							
														~~no transmissometer~~
25	SBØ2	2140	ROS	U	18	BE 72 44.32	145 01.98	~3550	3468m (3534 dbar)	338-361	24	[signature]	X	
		2257				Bo 72 44.79	145 01.84							
		2321				EN 72 45.27	145 01.19							
														~~Polar bear before cast~~
26	SBØ3	1620	ROS	U	19	BE 74 14.01	148 22.19	~3850	100m		13	[signature]	X	Chla max ~48 m 3000 dbar = 2960 wire out
		1703				EN 74 13.90	148 22.33							
														Surface Temp -1.1 °C
26	SB03(2)	1720	ROS	U	20	74 13.92	148 22.42	3850	3398m (3565dbar)	368-391		W / CTD 270 / 272 245 / 247 220 / 222 46 / 49	W / CTD 1000 / 998 791 / 790 595 / 592 495 / 494	Chl max 47 m ~~274~~ spike to Ø @ ~2830 db fluor spike @ 2459 m. 2000 m winch = 1994 m depth 1483 = 1479
		1839				74 13.97	148 22.81							
		2000				EN 74 14.07	148 22.96							
27	NW08	1639	ROS	U	21	BE 76 46.62	148 57.55	3880	3499m (3494 dbar)		24	Ben		T sfc -1.3 Chla max 42m W 3014 = 3000 m CTD ~~3046~~ dbar 3429 = 3409 = 3494 dbar
		1752				Bo 76 46.72	148 57.30							
		1914				EN 76 46.74	148 57.09							

Cast type:
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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
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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 Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
29	NW07	21:43	ROS	U	22	BE 75' 53.02	153' 8.59	~3900	3401/4m	416-439	24			Tsfc = -1.2 No transmiss.
		22:56				BO 75' 53.00	153 8.62							chlorophyll max 38m
						EN 75 5313	153 07.24			BOT 20 NOT PROPERLY CLOSED				Pressure spikes at ~1300m ~1400m ~1550m
30		0008												Spikes in CAST
														winch 3401m winch counter failed
30	NW07(2)	0119	ROS	U	23	BE 75 5505	152 56.28	~3900			24			chla max ~50m
		0146				BO 75 54.98	152 55.95	1479m (1500db)						Tmax = 0.86 @ 395m
		02:31				EN 75 54.94	152 55.21						BOT	21 NOT CLOSED
30	NW07(3)	0402	ROS	U	24	75 54.95	152 50.86	3900m	988m		24			Chl max 42m
		0422				75 54.92	152 50.73							
		0447				75 54.92	152 50.73							
30	NW07(4)	14:23	ROS	U	25	76 3.67	152 35.67	3900m	1000m	488-511	24	Helin		chloro. max 42m
		14:41				76 3.62	152 35.19							Tmax = 0.91 @ 36.5m
		15:06				76 3.58	152 35.02							
30	NW06	19:11	ROS	U	26	BE 75' 55.09"N	155' 1.87"W	3900m	3400m	512-517	~~24~~ 14	ITOH		chla max 46m
		20:26				BO 75' 55.14"N	155' 2.19"W							Tmax=1.03@34m
		21:29				EN 75' 55.19"N	155' 1.89"W							Tsurface = -1.4
														spikes in fluorometer and oxygen at regular interval (62m apart) (no spikes after Pz3290)

Cast type:
BOT = bottle cast, no CTD
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ROS = Rosette plus CTD
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Transmissometer to be cleaned for each cast, do not use Ammonia products

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Month AUGUST/SEPT **Year** 2002 **Ship** LOUIS S ST-LAURENT **Cruise ID** 2002-23

Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
31	NWØ5	1425	ROS	U	27	BE 75 56.72	155 38.04	2080	2050m (2082 dbar)	518-541	24			down: Tsfc = -1.1 Tmax = 1.15 @ ~340 m; no spikes; wire 2068 – max 2082, depth 2050
		1504				BO 75 56.50	155 38.21							
		15:54				EN 75 55.92	155 38.30							Chla max = 32 m
01	NWØ4	1610	ROS CTD	U	28	BE 75 59.90	155 48.37	1590	1554		8	Sm		Tsfc = -1.4. Chla max ≈ 40m; NMEA incorrect from deck unit! Transmisso #139 installed
		1640				BO 75 59.80	155 48.29							
		1707				EN 75 59.50	155' 47.72							
01	NWØ3	1747	ROS	U	29	BE 75' 59.08	156' 11.32	1220						Chla max ≈ 35m; Tmax = 1.06 @ 350 m
		1812				~~156' 11.32~~ ~~75 58.71~~ BO 156 12.19			1223					
		1856				EN 75 58.34	156 13.12							
01	NWØ2	2009	CTD ~~ROS~~	~~dn~~	30	BE 75 59.93	156 38.78	1080	~~976~~ m					Tsfc = -1.4 Tmax 0.85 @ 350 m; Chl max = 32 m; transm. slight drift w/depth
		2028				BO 75 59.90	156 38.80							
		20:43				EN 75 59.92	156 38.89							
01	NW01(1)	2124	ROS		31	BG 75 56.97	157 1.73	~800	surf	590-593	4	Helen		Tsfc = -1.35; 4 bottles tripped @ surface

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DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month SEPTEMBER **Year** 2002 **Ship** LOUIS S. ST-LAURENT **Cruise ID** 2002 - 23

Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
01	NW01 (2)	21-36	ROS	U	32	BE 75° 57.17	157° 2.06	~800m	790	566 - 589	24	Helen		Bottom not reached.
		22.12				EN 75° 57.54	157° 2.27							
02	NW01(3)	0211	ROS	U	33	75 59.13	156 52.39	~850	868		24	JM & Moloto		Chla max ≈ 34 m T$_{sfc}$ ≈ −1.4
		0228				75 59.10	156 52.23							T$_{max}$ = 0.83 °C @ 360 m (390 m)
		0257				75 58.99	156 50.97							
03	NA05(1)	14[illegible]	ROS	U	34	BE 74° 21.[illegible]	162 [illegible]	~1450	100	618 - 623	16	Helen		T$_{surf}$ = −0.83 Chloro max = 40 m
		14406				EN 74° 21.60	162° 10.84							
03	NA05(2)	1509	ROS	U	35	BE 74° 21.76	162 11.14	~1450	1436	624 - 647	24	Helen		wire out & temp wire = 1404.3 m
		1537				BO 74° 21.81	162 11.63							Chlorophyll max 40 m
		1628				EN 74° 22.13	162 12.62							
03	NA05(3)	1850	ROS	U	36	BE 74 23.17	162 14.05	~1450	800 dbar	648 -	24	Bob		CAST AFTER MOORING DEPLOY Chla max ~45m T$_{sfc}$ = 0.8
		1904				BO 74 23.20	162 13.85		801 dbar					
		19=22				EN 74 23.31	162 13.94							

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03	NA06	2103	CTD	V	37	BE 74 31.17	162 8.42	~1650m	1632 m		0			chl max : 50 m
		2132				BOT 74 31.20	162 8.38							
		2156				EN 74 31.20	162 8.37							
03	NA07	~~03~~=01	ROS		38	BE 74°40.77	161° 49.51	~1900m			24			T$_{stc}$ = -0.9 chla max = 48
		2340				BOT 74 40.65	161 49.40		1846 m					(FEW SPIKES)
04		00=29				EN 74°40.45	161 49.66							
04	NA08	0130	CTD		39	BE 74 49.70	161 38.13	~1950						T$_{stc}$ = -1.0 chla max = 45
		0206				BOT 74 49.6	(61 38.37		1940 m (3)		0			(FEW SPIKES)
		0238				EN 74 49.5	161 38.82							
04	NWR02	1513	ROS		40	BE 74 29.2	158 01.35	~1550	stc		8			BOT did not close → fired extra bottle (depth in header wrong)
04	NWR02 (2)	1538	ROS		41	BE 74 29.47	158 0.77	~1505			24			T$_{stc}$ = -0.8 chla max = 42
		1605				74 29.51	158 0.81		1518 m					T max = 1.08 @ 380m
		16=49				74°29.49	158' 0.83		depth 1518					wire out max = 1518

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05	NA09(1)	00:35	ROS	U	42	BE 75 9.34	160° 11.88	1963 (~2000m)	1958	721-744	24	Helen	✓	Tsurf = -0.99 Chloro max = 41m Tmax = 0.8 @ ~400m Wire out = 1965
		01:12				BO 75° 9.31	160° 11.87							
		01:51				EN 75° 9.33	160° 11.63							
05	NA09(2)	02:56	ROS	U	43	BE 75° 9.34	160 12.02	1963m	450	745-768	24	Hagy	No	Tsurf = -1.05 chl max at 45db
		03:07				BO 75 9.38	160 12.01							
		03:33				EN 75 9.59	160 12.25							
05	NA05(4)	1605	ROS	D	44	BE 74 20.41	162 19.38	~1500	SFC ONLY	769	7	Ron		Tsfc = -0.6

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