DAILY LOG BOOK

MISSION NUMBER: 2003 - 18

DATE: From: JULY 11, 2003 to: JULY 22, 2003

VESSEL: SIR WILFRID LAURIER

PROJECT:

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

Captain: N. THOMAS First Officer: M. MCCULLAGH

Second Officer: W. MCINDOE Third Officer: R. MARRIOTT

Mission Participants / Agencies: UTENN, UCHARLESTON, NOAA/PMEL, UAF, IOS

Scientific Personnel: Party Chief: JANE EERT

Name	Watch	Cabin	Name	Watch	Cabin
JACKIE GREBMEIER		512			
LEE COOPER		508			
REBECCA PIRTLE-LEVY		644			
ARIANNE BALSOM		644			
PETER LEE		617			
NATHAN GARCIA		617			
SARAH THORNTON		609			
SIGRID SALO		609			
DAVID BROWN		652			

Second leg of Mission: Party Chief:

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: PII - 333

Data acquisition program: SEASAVE

CTD deck unit make: SEABIRD model: SBE-33 serial number:

Primary CTD

Make: SEABIRD model: SBE25 serial number: 0293

Primary temperature serial number: 034115

Primary conductivity serial number: 042607

Secondary temperature serial number:

Secondary conductivity serial number:

Transmissometer: # WETLABS Model: 0.25m path s/n: #139

Fluorometer: Model SEAPOINT Cable gain: 30x0.5 MV/V s/n: 2336 **P, S or (NO) pump?**

Oxygen sensor: SEABIRD Model: SBE-43 s/n: 430052 **(P), S or NO pump?**

PAR sensor: Model: s/n:

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

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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:

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: 12
Manufacturer: OTE & GO (Ocean Test Equip., General Oceanics, IOS) See below for which bottles from which manufacturer
Volume of bottles (litres): 8

Winches:
1. Make: HAWORTH 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: _____

Salinometer: make: _____ model: _____ serial number: _____
Comments: _____

Thermosalinograph System:
Program: _____ Version: _____
Sampling interval (seconds): _____
Fluorometer sensor serial number: _____
Comments: _____

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:
ROSETTE BOTTLES 1
2
3
4
5
6
7
8
9
10
11
12

Notes:

CTD setup with Seaterm or Term 25

internal storage rate	: 8	scans/s	
real time output rate	8	scans/s	
pressure sensor range	: 1500		(1024 m max depth)
pressure temperature comp	: -264		
cond. freq for pump on	: 3200		(2700 will turn pump on in fresh water)
pump delay (s)	: 45		
stop CTD on upcast	: No		
battery type	: Alkaline		
number of external volt.	: 4		
ext volt 0	: Yes		(DO sensor)
ext volt 1	: No		
ext volt 2	: No		
ext volt 3	: Yes		(Bottom Contact switch)
ext volt 4	: Yes		(fluorometer)
ext rdt 5	: Yes		(transmissometer)
ext volt 6	: No		

Communications rates:

CTD on data cable (no deck unit)	4800 baud
CTD with deck unit	9600 baud
CTD to pylon (SBE 32)	4800 baud

Additional comments

CTD physical setup

Pump is SEABIRD ST running at 2000 rpm with DO sensor in path. Measured flow rate was 14.8 ml/s (nominal with T-C duct would be 18) Pressure head was 65cm. ? seems very high? Ben

tubing between the conductivity cell & DO sensor is 10.5" of 3/8" I.D. tygon. This replaced some ~~~ 1/2" ID vinyl tubing ~~ in order to reduce the delay time of water between the C-cell & DO sensor.

Test casts during sea trials June 28 showed odd behavior while CTD was stopped at the bottom of the cast - the temperature signal varied with time while the conductivity showed no variation above the noise level; suggesting that water was not being pumped ~~ through the C-cell at an adequate rate.

Departure Dutch Harbor 1900 July 11.
Note Alaska Ship Supply is full-service ships chandlery

July 12

NMEA Setup

- reason NMEA did not work during seatrials was garbled comm from ship feed.
- once feed was ungarbled (by Gerald!), SBE-33 would interpret only, perhaps 1 in 20 of the RMC strings it is looking for. Seasave would time out on NMEA initialisation.
- feed contained many more string-types, so many that the SBE-33 was unable to process the RMC strings due to data volume
- Solution: on the bridge, feed to the ships network was switched to come from the secondary GPS & this GPS was programmed to feed only RMC, RMB, GGA & GGLL strings. SBE-33 & Seasave now happy with NMEA input
- One ongoing annoyance - when powered on, the SBE-33 defaults to NMEA mode 1 which does not append NMEA data to the CTD hex data. To enable NMEA use Seaterm, turn on SBE-33, type @, then select mode 2, type @ & exit Seaterm leaving deck unit powered on.

July 12 - Bottom contact switch & cable

- Split cable for SBE-43 DO sensor & bottom contact switch was shipped from Impulse direct to Dutch Harbor so it would arrive in time.
- Bottom contact connector is made 4-pin so is DO sensor but cable had one 4-pin & one 2-pin connector, both female. A conversion cable 2-pin male → 4 pin female was spliced together; the 3 non-ground conductors in the 4-pin connector were combined & connected to the single non-ground conductor in the 2-pin.
- Using conversion cable, DO & bc switch were connected to the CTD. $
- Very strange behaviour in Seasave new-style configuration (can't use old style because of modern O_2 sensor) - Selected 4 voltages to sample

stored voltage		output voltage	
0	–	0	– DO sensor
1	–	3	– BC switch
2	–	4	– fluorometer
3	–	5	transmissometer

This was set up, but would not save - if the saved file was reloaded the BC switch always appeared as stored voltage 0

All times/dates UTC Bottles fired after 30s stop on upcast.

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month July **Year** 2003 **Ship** Sir Wilfrid Laurier **Cruise ID** 2003-18

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
13	BS-1	0147	ROS	BE	001	56°18.67N	172°49.20'W	1642		1-12	12	JE	✓	
		0207		BO		56°18.74'N	172°49.26'W		1998					sal cal @ 150m
		0232		EN		56 18.76	172 49.20							
13	BS-2	0328	ROS	BE	002	56 25.05	172 47.58	1583		13	1	JE		1 salinity cal taken (see over)
		0346		BO		56 25.05	172 47.60		994					curious step in T @ 660 m
		0402		EN		56° 25.07	172° 47.60			2nd bottle fired for seawater				
13	BS-3	0430	ROS	BE	003	56° 28.49	172° 46.76	739		14-25	12	JE	✓	sal cal @ 500m
		0445		BO		56° 28.53	172° 46.75		700					
		0505		EN		56° 28.54	172° 46.76							
13	BS-4	0555	ROS	BE	004	56° 32.64	172° 45.36	246		26	1	JE	✓	1 sal cal @ 100
		0604		BO		56° 32.74	172° 45.37'W		237					
		0609		EN		56° 32.74'N	172° 45.37'W							
13	BS-5	0650	ROS	BE	005	56° 38.65'N	172° 43.98'W	134		27-36	10	JE	✓	sal cal @ 128
		0703		EN		56° 38.63	172° 43.97		128					
13	BS-6	2303	ROS	BE	006	59 19.11'N	172 29.97'W	109		37-48	12	JE	✓	sal cal @ 103
		2320		EN		59 19.22'N	172 30.02 W		103					

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

Additional comments

July 12 BC switch cont

- despite several permutations, no success, so work without BC switch tonight & write to Seabird.

Cast 1 - Bottle 10 had broken nylon shaft + replaced w/ 5l bottle temporarily

Cast 2 - Salinity calibration not taken because bottle air valve was left open.

Cast 3 - Bottle 10 repaired - back to original 10l bottle

- SBE-33 now seems to hold NMEA interface mode when powered off.

- Haworth is making groaning sounds & vibrating at intervals - may be due to new brake pad rubbing.

Cast 5 - Fluorometer maxed out at 4.83 - too much gain?

Bottles closed after 30s stop on upcast All times/dates UTC

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Day	Station Name	Time (UTC)	Cast type	Time Firing Method	Event Number	Position Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
14	SLIP1	1604	ROS	BE	007	62 00.74	175 03.32	84		49-60	12	JE	✓	
		1616		EN		62 00.80	175 03 21		78					
	SLIP2	1919	ROS	BE	008	62 02.97	175 12.08	84		61-72	12	JE	✓	
		1935		EN		03.04	12.33		78					
	NBS mooring	2226	ROS	BE	009	62 04.81	174 59.60	78		73-76	4	JE	✓	CTD after mooring deployment
		2234		EN		62 04.80	174 59.59		78					
15	SLIP3	0053	ROS	BE	010	62° 23.37'N	174° 34.28'W	72		77-88	12	JE		pressure at surface on upcast was 0.1 instead of 1.2
		0110		EN		23.57	34.08		69					
	SLIP5	0513	ROS	BE	011	62° 33.25'N	173° 33.75' W	67		89-100	12	JE	✓	
		0526		EN		33.80'N	33.30'W		64					
	SLIP4	0916	ROS	BE	012	63 01.70'N	173 27.33'W	73		101-112	12	JE		
		0929		EN		01.72	27.04		68					
	BC56	1657	ROS	BE	013	63° 50.86'N	172° 24.14'W	56		113-123	11	JE	✓	extra bottles at Chl max
		1710		EN		50.96	24.29		52					
16	UT-BS5	0130	ROS	BE	014	64° 39.97'N	169° 55.28'W	47		124-135	12	JE	✓	
		0144		EN		39.99'N	169 55.42'W		44					
	UT-BS2	0447	ROS	BE	015	64° 40.92'N	169° 05.94'W	46		136-146	11	JE	✓	
		0458		EN		40.94'N	05.95'W		42					

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• bottle firing method:
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Additional comments

Monday July 14

Welldeck activities after SKIP1 & SKIP2
4 - Van Veen grabs
3 - Haps cores
hand towed Zooplankton net sample

NBS mooring deployment @ 2200

CTD 009 hit bottom @ 78 db pressure in 82 m water

Tuesday July 15

013 P at surface going down 1.5 db up 0.5

014 P at surface 0.6 up - 0.0

015 P at surface ↓ 0.3 ↑ 0.0

All times/dates UTC

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16	UT-BS4	0846	ROS	BE	016	64° 57.52'N	169° 52.90'W	50		147-158	12	JE	✓	
		0858		EN		57.43'	52.97'		47					
	UT-BS1	1208	ROS	BE	017	64° 59.57'N	169 08.22'W	50		159-170	12	JE		hit bottom at P=45
		1224		EN		59.51	08.10		45					
	BRS 1	1908	ROS	BE	018	65° 39.04'N	168° 13.01'W	40		171-179	9	JE	✓	Bottle 3 did not fire
		1920		EN		39.04	12.98		36					checked-ok on deck.
	BRS2	2009	ROS	BE	019	65° 40.03'N	168° 23.91'W	52		180-189	10	JE	✓	
		2022		EN		40.02'N	168° 23.92		45					
	BRS3	2121	ROS	BE	020	65° 40.86'N	168° 33.97'W	52		190-200	11	JE	✓	
		2135		EN		40.86	33.92'W		48					
	BRS4	2234	ROS	BE	021	65° 41.95'	168° 42.87'	52		201-211	11	JE		pressure spike 10→5m.
		2244		EN		41.96	42.92		48					
16	BRS5	2347	ROS	BE	022	65 42.96	168 53.84	50		212-222	11	JE	✓	
		2357		EN		65 43.00	168 53.93		45					
18	UTN-1	0355	ROS	BE	023	66 42.47	168 23.97	34		223-231	9	JE	✓	BC switch OK
		0405		EN		42.51	23.93		29					DO out.
	UTN-2	1214	ROS	BE	024	66 03.09	168 44.08	45		232-242	11	JE	✓	DO working
		1225		EN		03.19	43.85		39					

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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

cast-016 p at surface ↓ 1.5 ↑ 0.7
-017 1.0 1.0

July 18 Stop at Little Dinarade Island for small boat water survey for outfall contamination
-018 added bottom contact switch
changed sound speed profile in Simrad to 1458 m/s instead of 1500 based on BRS profiles
DO sensor did not work with new cable

External voltages :

0	DO	as expected
1	free	
2	free	
3	BC	
4	FL	
5	XMISS	

on deck DO channel appeared to be working so suspect cable

18/07/2003 leak. Reseated both ends of DO cable. Perhaps a glitch - no sign of wetness in connectors.
0716 - Hydro boom broken - likely motor trouble
1210 Stan traced problem to short in power cable - operation from power pack for now.
1400 - fixed - Solenoid in power box was fried.

All dates/times UTC

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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
18	UTN-3	1410	ROS	BE	025	67° 19.85'	168° 59.77'	50		243-254	12	JE	~	P@0 ↓1.5 ↑0.9
		1421		EN		19.95'	59.92		45					
	UTN-4	1614	ROS	BE	026	67° 30.13'	168 54.75'	50		255-266	12	JE	✓	P@0 ↓1.5 ↑0.5
		1629		EN		67° 30.15	54.71		45					
	UTN-5	1816	ROS	BE	027	67 40.21	168 57.41	50		267-278	12	JE	✓	P@0 ↓0.9 ↑0.9
		1827		EN		67 40.22	168 57.38		45					
	UTN-6	2122	ROS	BE	028	67 44.24	168 26.64	49		279-290	12	JE	✓	P@0 ↓1.5 ↑0.8
		2135		EN		44.21	26.37		45					
19	UTN-7	0011	ROS	BE	029	67 59.87'N	168° 55.19'W	57		291-302	12	JE	✓	P@0 ↓1.8 ↑0.8
		0023		EN		59.98	55.81		53					
	BD-6	0950	ROS	BE	030	69° 11.75'N	166° 08.81'W	30		303-308	6	JE	✓	pause@10m to straighten wire
		1004		EN		12.12'N	08.67'W		27					
	CKS-1	2319	ROS	BE	031	70° 37.03'N	161° 05.78'W	34		309	1	JE	✓	Sal cal@ 28m
		2324		EN		37.05	05.62		28					
20	BD-7	0444	ROS	BE	032	71° 09.26'N	158° 24.26'W	46		310	1	JE	✓	Sal cal @ 41
		0453		EN		09.52	23.78		43					Sdup
	BD-8	0721	ROS	BE	033	71 17.94	157 00.06	47		311	1	JE	✓	Sal cal @ 41
		0726		EN		17.94	156 59.90		42					

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Additional comments

18/07/2003 – Checked calibration of CTD sensors – had values from 2001! Fixed for cast 025.