DAILY LOG BOOK

MISSION NUMBER 2003-31

DATE: From: 22 - 30 Sept to: 2003

VESSEL: JP TULLY

PROJECT: La Perouse, Nestucca, Covariability

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

Captain: J Anderson First Officer: Mike Schuckberg
Second Officer: Grant Samuel Third Officer: Elaine Chan

Mission Participants / Agencies: ICS

Scientific Personnel: Party Chief: D Mackas

Name	Watch	Cabin	Name	Watch	Cabin
D Tuck	8-12	#5			
S King	8-12	B			
M Hennekes	8-12	14			
D Yelland	12-4	F			
D Moore	12-4	G			
T Gschwind	12-4	H			
W Yan	12-4	D			
D Anderson	4-8	#10			
M Galbraith	4-8	E			
K Field	4-8	C			

Second leg of Mission: Party Chief:

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: FS01 ← changed to FS02 on 26 Sept AM
Data acquisition program: Seasave Ver. 5.29b
CTD deck unit make: SBE model: 11plus serial number: 0619

Primary CTD
Make: SBE model: 911plus serial number: 0550 ← changed to 0425 on 26 Sept PM
Primary temperature serial number: 2038
Primary conductivity serial number: 2173
Secondary temperature serial number: 2968
Secondary conductivity serial number: 1729
V_4 Transmissometer: Wetlabs Model: CSTAR s/n: 498DR
V_0 Fluorometer: Model Seapoint Cable gain: 10 x s/n: 2229 **P, S or NO pump?**
V_2 Oxygen sensor: SBE Model: 0043 s/n: 0047 **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?**

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?**
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CTD calibration bottle location (height above CTD in metres):

Rosette Setup:
Number of bottles: _____
Manufacturer: _____ (Ocean Test Equip., General Oceanics, IOS)
Volume of bottles (litres): _____

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: _____

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:

Diameter 0.323
0.323
0.323

Date of cable termination: 2003/9/25

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 at Tom Juhasz's office (room 1221).

Please identify nominal cable diameter: 0.322 **Winch:** 17026

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

At cable end:	at 5 metres:
1. 0.323	**1.** 0.323
2. 0.323	**2.** 0.322
3. 0.323	**3.** 0.323

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: a few
Birdcage no
Rust flaking off cable no (flaking, not just looks rusty)
Cable round or oval no
Does cable have loose outer armour? no
(Raised wires or space between wires.)
Are outer armour wires flattened? no

Remove cable that exhibits these signs of deterioration. To be authorised by Chief Scientist of the cruise, or the winch shop (Tom Juhasz at 250-363-6598).

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

Inner armour to conductor 1 No megger
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" .3410
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) New.
Condition of wires (damaged ends?) _____
Are the wires rusted? _____

Comments:

Guide to cable terminations:

Date of cable termination: 2003/9/26

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 at Tom Juhasz's office (room 1221).

Please identify nominal cable diameter: 0.322 **Winch:** 17026

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

At cable end:	at 5 metres:
1. .321	1. .322
2. .321	2. .321
3. .321	3. .321

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: many
Birdcage no
Rust flaking off cable no (flaking, not just looks rusty)
Cable round or oval no
Does cable have loose outer armour? no
(Raised wires or space between wires.)
Are outer armour wires flattened? no

Remove cable that exhibits these signs of deterioration. To be authorised by Chief Scientist of the cruise, or the winch shop (Tom Juhasz at 250-363-6598).

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 _____

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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) yes
Condition of wires (damaged ends?) no
Are the wires rusted? no

Comments:

After hitting bottom and paying out more cable, the cable was observed to have several bad kinks. Removed about 100 m.

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month SEPT **Year** 2003 **Ship** TULLY **Cruise ID** 2003-31

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
23	SIO1	0240	ROS	BE	1	48 37 03	123 29.92	217		1-11	11	DA		
		0248		BO		48 37.07	123 29.93							
		0302		EN		48 37.09	123 29.95							Changed pressure offset →
23	in transit	05:54	loop #1	-	2	48°27.72	123 12.89			loop #1		S.K.		Sal, chl
23	in transit		loop #2	-	3	48°21.61	128.10.05			loop #2		W.Y		Sal, chl
23	in transit	11:05	loop 3	-	4	48 23.22	124 16.22			loop #3		DA		Loop taken SAL, NUT
23	C2	14:50	loop 4		5	48 25.40	125 7.82			loop #4		SK		Sal, chl, nuts
23	C2	1501	CTD	BE	6	48 25 388	125 07 828	138		12	1			CTD
		1504		BO		48 25 387	125 07 840		125					Loop From 4m Niskin
		1507		EN		48 25 381	125 07 865							
	C2	16:07	NET	BE	7	48 25 397	125 07 812	139						Bongo - 0-130
		1625		EN		48 25 424	125 07 834							
23	C1	1710	NET	BE	8	48 28 913	125 15 234	152						Bongo 0-50 (EL for Rachel Saboaus)
		1714		EN		48 28 945	125 15 185		50					
	C1	1720	Net	BE	9	48 28 002	125 15 229	152						Bongo 0-145m
		1729		EN		48 28 987	125 15 279		145					

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

* Charged pressure offset from -1.0 to 0.0

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Month SEPT **Year** 2003 **Ship** **Cruise ID** 2003-31

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
23	C1	1740	ROS	BE	10	48°28.924	125° 15.313	154		13-22	10	SK	✓	
1	1	1745	1	BO		48 28925	125 15306		138.5					
		1757		EN		48 28932	125 15275							
23	C3	1856	CTD	BE	11	48 23447	125 20807	123						
1	1	1858	1	BO		48 23.43	125 20.77		120	23	1			"Loop" from 4m Niskin
		1901		EN		48 23.44	125 20.73							
23	C3	1921	NET	BE	12	48 23.44	125 20.73	123	135	24				0-110 bongo 5°
23	B8 (LCB3)	2145	NET	BE	13	48 34.50	125 30.0	120	50					0-50 bongo for PMA
	B8 (LCB3)	2202	NET	BE	14	48 34.57	125 30.01	120	110					0-110 Bongo
23	B8 (LCB3)	2212	ROS	BE	15	48 34.61	125 30.06	111						
1	1	2217	1	BO	1	48 34.54	125 30.02		108	24-32				
		2229		EN		48 34.50	125 29.84							
23	LOOP 5	2255	LOOP		16	48 33.14	125 32.38	120				DA		Loops take sal, nut chl
23	B7 (LCB4)	2333	ROS	BE	17	48 31.97	125 35.46	79						Loops from 4m Niskin

Cast type:
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• EN = end of cast time
DE = deployment time
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Transmissometer to be cleaned for each cast, do not use Ammonia products

DAILY LOG

Ocean Sciences and Productivity Division

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Month Sept **Year** 2003 **Ship** Tully **Cruise ID** 2003-11

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
23	LCB4	23.36	ROS	BO	17	48 31.94	125 35.39		72	33	1	DA		
"	"	23.39	ROS	EN										
24/8	B7(LCB4)	0000	NET	BO	18	48 31.88	125 35.36							0-75m bongo
24	A2	0241	ROS	BE	19	48 22.63	126 03.70	359		34	1	DA		CM, nut, sal
		0247		BO		48 22.63	126 03.75		350					ERROR LIGHT @ 310m
		0254		EN		48 22.642	126 03.747							some troubles →
	A2	0313	Net	BE	20	48 22.655	126 03.705	361				DT/DLM		
		0325		EN		48 22 514	126 03 213	372	250					Bongo 0-250m
	LC11	0525	NET		not LC11	~~48 48 800~~	126 26 811							0-50 bongo for UVic
24	LC11	0545	ROS	BE	21	48 18902	126 26 764	1470		35-55	21			Error @ 313, 320, 370, 430
1	1	0605	1	BO	1	48 18 859	126 26 760		1493					Data spikes →
1	1	0655		EN	1	48 18812	126 26 756							
24	A4 (LC12)	0810	ROS	BE	22	48.14.993	126 40.026	2524						
1	1	0841	1	BO	1	48 14.980	126 40.044		2005	56-77	22			
		0952		EN		48 14.986	126 40.013							
24	A4(LC12)	1020	Net	BO	23	48 14.98	126 40.0	>2500	258					Bongo 0-250m
	A4	1117	Net	BE	24	48 15.08	126 39.68	72500	250		8 NETS			Night Biomass
				EN		48 16.01	126 37.93							

Cast type:
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USW = sea water loop
MOR = mooring
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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

Troubles → Error light on several times during cast
Tried to trip bottle, got no confirmation
Shut down CTD, restarted CTD and system failed the water sampler confirmation
Rebooted computer, system behaves normally. Stay tuned!

No event # assigned to LC11 0-50m bongo - to avoid renumbering rosette labels. Next Sample → 0116

LC11 - Errors @ 300-430m / 1150
Data spikes on files 19 & 21, 22 seems clean
Spikes are indicative of power shorts. Re-connected and checked termation and 4 to 2 convertor. These seem ok. Suspect cable

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 Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
24	LC7	1524	ROS	BE	25	48 32.984	126 00 482	128		78-86	9			
		1529	"	BO		4832.981	12600.474		117					
		1540	"	EN		4832.975	126 00 428							
	LC8	1638	CTD	BE	26	48 29 436	126 07 109	199		87	1			
	"	1643		BO		4829 428	126 07 099		189					Niskin @ 4m
	"	1648		EN		4829 431	126 07 090							
	LC8(A1)	1700	NET	BE	27	4829.457	126 07078	198						0-190 Bongo
	"	1713		EN		4829.431	126 07.035		190					
24	LC9(A3)	1802	NET	BE	28	48 25.988	126 13.689	611						0-250 bongo
	"	1815	"	EN		48 25.906	126 13.610		250					
	LC9(A3)	1835	ROS	BE	29	48 25.916	126 13.711	614						Error Alarm 323m 453m
	"	1850	"	BO		4825 891	126 13.616		609	88-104	17			Crash @ bottom bottle trip
	"	1921	"	EN		48 25.892	126 13.373							reboot x 2
24	AA/LC12	2154	NET	BE	30	48 14.99	126 39.91	72500	250		7 NETS			BIONESS
				EN		48 15.74	126 38.70							

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MR = messenger release time
RE = recover mooring time

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

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

Month SEPT. **Year** 2003 **Ship** J.P. Tully **Cruise ID** 2003-31

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
24	loop 6 intransit	00:17	loop		31	48 25.98	126 15.89	—	—	loop 6	—	SK	-	nuts, sal, 2chl from loop
25	LC06	02:19	CTD	BE	32	48 36.41	125 54.01	92						Noticed jelly strands *
		02:22	|	BO		48 36.36	125 53.97		86	105	1	DA	✓	
		02:25		EN		48 36.37	125 54.00							
25	LC6(B6)	0246	NET	EN	33	48 36.41	125 54.11	92	85					Bongo VNH 0-85m
25	LC5(B5)	0348	NET		34	4839.978	125 47.382	65						Bongo VNH 0-60
	|		|		|		|						
	LC05	0402	ROS	BE	35	4839902	125 47 428	64		106-113	8			Duplicates 2m depths rosette
	|	0404	|	BO	|	4839913	125 47 424	|	55					
		0411		EN		4839958	125 47 404							
	LC03	0537	CTD	BE	36	4847.004	125 34.225			114	1			loop nuts, sal, 2chl/4m Niskin
		0541	|	BO	|	4846963	125 34 307							
		0544		EN		4846927	125 34 291							
	LC01	0642	ROS	BE	37	48 50 408	125 27 806	98						
		0647	|	BO	|	48 50450	125 27 872		94	115-122	8			
		0656		EN		48 50430	125 27 893							

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

Month SEPTEMBER **Year** 2003 **Ship** J.P. TULLY **Cruise ID** 2003-31

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	LD02	0852	CTD	BE	38	48 58.348	125 47.072	44						
1	1	0856	1	BO	1	48 58.340	125 47.075		40					5m "loop"
		0858		EN		48 58.340	125 47.074							
25	LD02	0913	NET	BO	39	48° 58.363	125° 47.095	44	35					Bongo for UVC (Pawa)
25	LD02	0922	NET	BO	40	48° 58.363	125° 47.095	44	35					Bongo to 35m.
25	LD04	1036	NET	BO	41	48 53.184	125° 56.022	63	52					Bongo to 52m (Pawa)
1	1		NET.	BO	42	48. 53.198	125. 56.961	63	52					Bongo to 52m
25	LD04	1113	~~CTD~~ ROS	BE	43	48 53.20	125 56 97	61						4m bottle
		1115		BO		48 53 20	125 56 97		55	123	1	DA		
		1118		EN.		48 53 19	125 56 95							Retrieinated Winch →
25	LG01	1722		BE	44	49 20 509	126 35 056	53		124 - 129	6			
		1724		BO		49 20 526	126 35 078	49 21 @ 126	39					
		1731		EN		49 20 531	126 35 063							
	LG02	18:35	Net	BE	45	49 18.770	126 ~~38.139~~			130 - 137				
					45	49 18.787	126 38.141							
25	LG02	1910	ROS	BE	46	49 19.721	126 38.088	101		130 - 137	8			
1	1	1913	1	BO	1	49 18.720	126 38.110		96					
		1923		EN		49 18.712	126 38.155							

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Additional comments

* Reterminated winch # 17026. Removed 500 m of cable

DAILY LOG

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Month Sept **Year** 2003 **Ship** Tully **Cruise ID** 2003-31

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	LG03	2015	~~CTD~~ ROS	BE	47	49 14.980	126 42.705	123						
1	1	2018	1	BO	1	49 14.982	126 43.698		120	138	1			4 m loop
1	1	2022	1	EN	1	49 14.921	126 43.717							
25	LG04	2116	ROS	BE	48	49 11.292	126 49.357	146						
1	1	2119	1	BO	1	49 11.287	126 49.334		141	139-148	10			
		2131		EN		49 11.263	126 49.266							
25	LG04	240	NET		49	49 11.257	126 49.366	146	135					BONGO to 135 m
25	LG05	2241	~~CTD~~ ROS	BE	50	49 7.396	126 55.272	275						
1	1	2245	1	BO	1	49 7.424	126 55.231		268	149	1			"Loop" @ 4 m
		2249		EN		49 7.434	126 55.20							
25	loop #7	23:23	in transit loop	—	51	49 4.51	126 59.65	—	—	loop 7	—	SK	—	loop 2chl, nuts, sal.
26	LG06	00:05	ROS	BE	52	49 03.49	127 01.09	941					✓	
		00:21		BO		49 03.48	127 01.11		947	150	1	DA		"Loop" - 4m chl, nuts, sal
		00:57		EN		49 02.00	127 02.89							
26	LG07	01:35	ROS	BE	53	48 59.29	127 07.21	1729						
		01:58		BO		48 59.18	127 07.22		1730	151-154	20	DA		Water sampler failure →
				EN										

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Additional comments

* Only tripped first 4 bottles

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month Sept **Year** 2003 **Ship** Tully **Cruise ID** 2003-31

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
26	LG07	2:14	Net	BO	54	48 59.347	127 09.109							
				EN		48 59.372	127.07.155							
26	LG07	0333	Ros	BE	55	4859.370	127 07.145			155-170	16			Second Cast LG07
		0340	"	BO		4859365	12707144							
				EN		48 59 38[illegible]	127 07180							
26	LG08	0503	CTD	BE	56	48°55.282	127°13.261	2100	2075?	171	1			Oxy not plotting, #s displayed
	"	0530	"	BO	"	48°55.290	127°13,273							
	"	0557	"	EN	"	48 55.29	127 13,277							2 bottle trips at surface - "Invalid commence" at 1st trip
26	LG09	0655	ROS	DE	57	48 51.17	127 19.379	2059		172-192	21			
"	"	0724	"	BO	"	48 51.208	127 19.414		2067					no contours (see notes)
	"	0831	"	EN	"	48 51.200	127 19.384	2059						
	LG09	0848	NET		58	48 51.216	127 19.419		250					BONGO TO 250m.
26	loop#9 in transit	14:42	loop#9	—	59	~~47~~ 49.79	127 59.54	—	—	loop 9	—	—	—	switch acq comp. →
26	LBP 8	1724		BE	60	49 48565	128 16836	2075						
		1756		BO		48.69	16794		2087	193				
		1833		EN		48649	16789							
														4m Diskin

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Additional comments

Station LG09

- NO$_3$ confirm on fire using software (Bottles #1 & 2 - 2067m & 2000m)
- used deck unit button for bottle 3 (1500m) - appeared to work
- Seasave not transmitting to underwater unit
  - is receiving
  - even command to shut off pump not received by U/W

- Switched acquisition computer from FSO1 to FSO2

Sept 26 LBP8 - CTD / did bottle trip test using Windows Software
Loop Niskin = bottle #24

2087 ✓
2050 ✓

DAILY LOG

Ocean Sciences and Productivity Division

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Month SEPT **Year** 2003 **Ship** Tully **Cruise ID** 2003-31

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
26	LBP7	1940	CTD/R	BE	61	49 52.369	127 11.185	2186		194-215	22			
"	"	2006	"	BO	"	49 52.357	128 11.020		2000					
"	"	2058	"	EN	"	49 52.164	128 11.658							
	LBP7	2121	NET	BO	62	49.52.323	128. 11.351	"	50					BONGO FOR RANT
		2137	NET.	BO	63	49.52.095	128 11.458	"	250					BONGO TO 250 m.
26	LBP6	2245	CTD	BE	64	49 56.159	128 5.513							
"	"		"	BO	"	49 56.026	128 05.89		2069					Data Error light @ 450m
				EN										Hit Bottom @ 895
27	LBP5	0051	NET	EN	65	49 59.87	128 00.21	1200						0-250 bongo
27	LBP5	0221	ROS	BE	66	49 59.97	127 59 95	1282						
		0240		BO		49 59.93	127 59 .78		1270	216-235				NMEA TIME LOCAL ON SCREEN DISPLAY
				EN										ERROR LIGHT ON UPCAST @ 430m
27	LBP4	0434		BE	67	50 01 456	127 57 776	900?		236				
		0450		BO		50 01 450	127 57 332		915		Niskin Loop @ 4m			
		0503		EN		5001 416	127 57 256							
														Switch deck units, replaced 4 to 2 pin converter

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Additional comments

* Switch from clock unit 0619 to 0H25
  Replaced 4 to 2 pin connector.

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 Latitude	Position Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
27	LBP3	0555	CTD/R.	BE	68	50 03.212	127 55.174	164						0-50 bongo for UVic
				BO	68				159	237-247	11			0-165
				EN	68									
	LBP3		NET	BO	69	50 03.201	127 55.154		164					~~Bongo~~ ~~0-50~~ TO 160
			NET	BO	70	50 03.20	127 55.15		50					BONGO TO 50 (RAWA)
27	LBP2	0726	NET	BO	71	50 04.005	127 54.224							
27	LBP2	0752	CTD	BE	72	50 4.012	127 54.190	95		Niskin Loop	@ 4 m			
1	1	0754	1	BO	1	50 4.014	127 54.188		91	237				
		0757		EN	1	50 4.013	127 54.192			248				
27	LBP1	0825	CTD	BE	73	50 4.813	127 52.835			Niskin Loop	@ 4 m			
1	1	0825	1	BO		50 4.816	127 52.825			~~238~~				
		0828		EN		50 4.802	127 52.858			249				
27	LOOP 9	1102	LOOP9		74	50 10.72	128 20.52	?		LOOP				LOOP SAL, NUT, CHL x2
27	loop10	15:47	loop10	—	75	50 32.87	129 15.60			loop	4b			,31 sal nut chl x2
27	WHALE	2000	MOR		76	50 57.496	129 59.609		2110					whale mooring deploy
27	ODAS	2214	Net	BE	77	50 53.88	129 59.41	2000	250					Biomass - Day
		2249		EN		50 53.32	129 58.78							- 3 NETS TRIPPED - REDO
28	ODAS.	2400	NET	BE	78	50 52.15	129 57.80	2000	250					- 8 NET
		0030		EN		50 53.85	129 57.05							

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DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month Sept **Year** 2003 **Ship** Tully **Cruise ID** 2003-31

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
28	ODAS	2:10	ROS	BE	79	50 53.11	130 00.31	1420 2140						
	|	2:31	|	BO		50 53.08	130 00.48		1396	256-271	22	DA		
	|		|	EN									
	|	03:45	NET	BE	80	5052864	13000815		250					0-250 bongo
	|		|	EN		|	|						
28	ODAS	0445	NET	BE	81	50 52.04	129 58.11		250					Night BIONESS @ ODAS
28	ODAS	0506	(BIONESS)	EN	81	50 53.30	129 57.69							
28	CS1	0814	CTD	BE	82	50 34.512	129 41.453	2115		272				loop 4m Zchl, nut, sal
|	|	0844	|	BO	|	50 34.913	129 41.450		2005					
|	|	0916	|	EN	|	50 34.928	129 41.491							
28	CS1	0930	NET		83	50 34.983	129 41.457	2107	50					Bongo to 50m (Rain)
28	CS1	0953	NET		84	50 34.949	129 41.328	2107	250					Bongo to 250m
	CS02	1132	NET		85									Bongo to 250m
	CS2	1159	ROS	BE	86	50 41.28	129 28 041	1800?						
		1240		BO		50 41 34	129 27 97		1900	273-294	22			
		1333		EN		50 41.28	129 28.50							

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Additional comments

Event #79 – Rosette bottle #8 ~~vent open~~ top cap not sealed

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month Sept **Year** 2003 **Ship** Tully **Cruise ID** 2003-31

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
28	CS03	14 54	ROS	BE	87	50 45 52	129 20 . 14	241						
		1459		BO		50 45 53	129 20.13		230	295	1	DA		
		1505		EN		50 45 55	129 20.10							
28	CS03	15:17	Net	BE	88	50 45.621	129 19.994	226	200					
		15:31		EN		50 45.628	129 20.004							
28	CS04	16:26	Net	BO	89	50 49.26	129 13.028	94						
		16:30		EN		50 49.269	129 13.032							
28	CS04	16:45	ROS	BE	90	50 49.194	129 13.100	97.	88	296-303	8	SK.	✓	
		16:50		BO										
		16:59		EN		50 49.272	129 13.157							
NOTE: LOOP SALINOMETER GIVING BAD DATA ~1500-1700 UTC, PROBABLY A JELLYFISH PIECE IN CELL. STOPPED FLOW & BACK-FLUSHED → FIX														
28	CS05	18:18	Net	BE	91	50 55.997	128 59.993	64	55	304-305	2.	SK		loop at 4m Salnts, ch12
		18:21		BO		50 55.985	128 59.990							surface bottle for CDOM.
		18:25		EN		50.55.996	128 59.963							
	CS05	1836	Net		92	50 56.002	128 59.970	64	60					bongo
28	CS06	1943	Net		93	51 0.035	128 51.946	67						bongo
28	CS06	1957	ROS	BE	94	51 00.00	128 52.070	67		306-312				
1	1	1959	1	BO	1	50 54.996	128 52.073		64					
		2006		EN		51 0.000	128 52.084							

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DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month SEPTEMBER **Year** 2003 **Ship** J. P. TULLY **Cruise ID** 2003-31

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
28	CS07	2111	CTD	BE	95	51 4.478	128 44.054	67						
〃	〃	2113	〃	BO	〃	51 4.490	128 44.076		63	313	1			Loop @ 4 m (Chl, Nut, Sal)
		2115		EN		51 4.464	128 44.107							
	CS07	2126	NET	BO	96	51 4.492	128 44.040	67	60					BONGO. to 64 m
28	CS08	2231	NET	BO	97	51 08.482	128 35.963	145	135					BONGO TO 135 m
28	CS08	2246	CTD/R	BE	98	51 8.485	128 36.064	145						
〃	〃	2249	〃	BO	〃	51 8.449	128 36.070		142	314-323	10			
〃	〃	2301	〃	EN	〃	51 08.38	128 35.99							
29	CS09	0008	CTD/R	BE	99	51 12 47	128 28.03	195						
〃		0012		BO		51 12 44	128 28.04		185	324	1	DA		
〃		0017		EN		51 12 46	128 28.01							
〃	CS09	0032	NET	EN	100	51 12.49	128 28.02	195	50					0-50m for VNH UVic
〃	CS09	0038	NET	BE	101	51 12.49	128 28.03	195	190					0-190
〃	〃	0054	〃	EN	〃	51 12.50	128 28.07							
29	CS10	0159	NET		102	51 16 58	128 20.04	99	75					

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29	CS10	0212	ROS	BE	103	51 16.61	128 20.08	79						
		0214		BO		51 16.62	128 20.13			325-331	7	DA		
		0222		EN		51 16.77	128 20.30							
			NET											
29	CPE1	0535	ROS	BE	104	50 59.965	127 50.05							
	|	0541	|	BO	|	50 59.91	127 50.18							
	|	0553	|	EN	|	50 59.74	127 50.59							
	|	0610	NET	BO	105	50 59.95	127 50.1	135	130					0-130 VN4
	|	0620	NET	EN	106	"	"	135	50					0-50 obl for Malaspina
29	QCS5	0902	NET		107	50 49.407	127 21.560	158	148					Range to 148
29	QCS5	0921	ROS	BE	108	50 49.420	127 21.604	158						
|	|	0925	|	BO	|	50 49.416	127 21.588		148	342-350	9	DH		
|	|	0937	|	EN	|	50 49.429	127 21.607							
29	QCS3	1044	CTD	BE	109	50 43.754	127 14.982	210						
|	|	1048	|	BO	|	50 43.754	127 14.964		207	351	1			4m "loop"
|	|	1053	|	EN	|	50 43.754	127 14.968							

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						Latitude	Longitude							
29	QCS 1	1255	ROS	BE	110	50 40.07	126 46.30	159						
		1300		BO		50 40.05	126 46.32			352 - 360	9	DA		
		1313		EN		50 39.98	126 46.32							
29	JS 1	1426	CTD/R	BE	111	50 33.01	126 45.98	459						
				BO		50 33.01	126 45.99		450	361	1	DA		
				EN		50 33.01	126 49.99							

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