

DAILY LOG

CRUISE
NUMBER

2001-06

INSTITUTE OF OCEAN SCIENCES

OCEAN SCIENCES AND PRODUCTIVITY DIVISION

DATE

FEBRUARY 5 - 22 2001

VESSEL

JOHN P TULLY

PROJECT

LINE P - HAIDA EDDY

Cruise 2001-06 **Line P – Haida Eddy**

Cruise notes

- Casts: 1-19, 24-44, 49 done with CTD 0550, configuration file 0550par.con
- Casts: 21-23, 46-48, 52-67 done with CTD 0443
Of those, the "stand alone CTD" casts (21-23, 46-48) were done with configuration file 0443ctd.con, the rosette casts (52-) were done with configuration file 0443fluo.con
- Cast 210600053 is the up-cast of 210600052
- Cable re-terminated after cast 26
- On Line P: station P15 is missing, P26 has 2 casts, and P4, P12, P20, and P26 are rosette casts
- The "Eddy line" has casts ED1 (or EDout) to ED7 (casts 39-48).
- Two pH sensors were used at station P4 (cast 5). One did not work, both are set as "Userpoly".
One pH sensor was used at station P26, shallow cast (cast 37), it was set as Userpoly, and the cap hasn't been taken off the probe therefore the signal is constant.
One pH sensor was used at station ME1, cast 49. It was set at pH, and the trace looks ok. It stayed on until the last cast.

Secondary conductivity sensor serial number: 2023 Calibration date: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____
 Other sensors: _____ s/n: _____

Comments: _____

Captain: MARK TAYLOR First Officer: DAVE MATTHEWS

Second Officer: WAT JANTZEN
Third Officer: BILL DOHERTY

Mission Participants / Agencies: IOS

Scientific Personnel: MARIE ROBERT 8-12.

Name	Watch	Cabin
HUGH MACLEAN	A-B	B
MICHAEL BENTLEY	A-B	C
NES SUTHERLAND	Fe	D
MELISSA CHIERICI	OH	D
WENDY RICHARDSON	NUTS	E
DOUG ANDERSON	12-4	F
KEITH JOHNSON	Fe	G
TIM SOUTAR	B-12	G
MIKE HENRY	12-4	H

Second leg of Mission: Party Chief:

[illegible]

Data logging computer:

Data acquisition program:

CTD deck unit make: SEA-BIRD model: 11 plus serial number: 0509

Primary CTD

Make: SEALED model: 911 + serial number: 0550

Primary temperature sensor serial number: 764 Calibration date:

Primary conductivity sensor serial number: 2374 Calibration date: 6/23/74

Secondary temperature sensor serial number: 2102 Calibration date:

Secondary conductivity sensor serial number: 72668 Calibration date: _____

Other sensors: TRANS WET LAB C-STAR

Other sensors: FLUOROMETEL SEA POINT s/n: 2229

Other sensors: _____
s/n: _____

Other sensors: _____

s/n: _____

Secondary CTD

Make: SEAGLE model: 911 serial number: 0443

Primary temperature sensor serial number: 1729 Calibration date: 1/29

Primary conductivity sensor serial number: 2106 Calibration date: 7/2/06

Secondary temperature sensor serial number: 72128 Calibration date: 7/2/28

Secondary conductivity sensor serial number: 2023 Calibration date: _____

Other sensors: _____ s/n: _____

Other sensors: _____
s/n: _____

Other sensors: _____
s/n: _____

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 at Tom Juhasz's office (room 1221).

Please identify cable diameter: .322 Winch: 1473

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

At cable end: at 5 metres:

1. .320 1. .320
2. .320 2. .320
3. .320 3. .320

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 _____

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 (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 _____

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) _____

Condition of wires (damaged ends?) _____

Are the wires rusted? _____

Comments:

Inner armour looks rusty, reterminating because 1 strand on cable
parted about 10 m from termination
Removed approx 30 m of cable.

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Year 2001					Month FEBRUARY			Ship JOHN P TULLY				Cruise I.D. 2001-06		
Day	Station I.D.	Cast Type	Time (UTC)	Time Code	Consec. Number	Latitude	Longitude	Position Code	Bottom Depth	Max Depth	Consec Sample #	# of Bottles	initials	Comments
6	SI03	ROS	2134	BE	1	48 35.58	123 30.06		227					LOOPS TAKEN SHORTLY
			2139	BO	1	48 35.58	123 30.05			222	1-10	10		AFTER THE CAST, 48 35.593 123 30.005 2205
			2154	EN	1	48 35.59	123 30.02							
7	JF1	TAP LOOP	0409			48 15.907	123 30.197		159					T.S. 8.33 SAL 31.33 TAP LOOPS TAKEN
7	JF2	TAP LOOP	0554			48 17.914	124 00.00		166					T.S. 8.27 SAL 31.49 TAP LOOPS TAKEN
7	JF3	TAP LOOP	0832			48 27.124	124 30.740		229					T.S. 8.13 SAL 31.03 TAP LOOPS TAKEN
7	JF4	TAP LOOP	1052			48 32.300	124 59.991		60					T.S. 8.72 SAL 30.85 TAP LOOPS TAKEN
7	P1	CTD	1329	BE	2	48 34.53	125 30.00		115	110	4.3 11	1	HM/MB	T 9.104 S 32.129 TAP LOOPS + ROS LOOPS
7	P2	CTD	1617	BE	3	48 36.00	125 59.90		117					T: 8.35 S: 31.61
7			1621	BO	3	48 35.98	125 59.90			109	4.6 12	1		Tap + Niskin surface sample taken
7			1627	EN	3	48 35.97	125 59.88							
7	P3	CTD	1831	BE	4	48 37.49	126 20.01		810					T: 9.70 S: 32.57 Surface samp Niskin only
			1850	BO	4	48 37.49	126 19.99			810	4.8 13	1		
			1909	EN	4	48 37.51	126 19.96							
7	P4	ROS	2122	BE	5	48 39.03	126 39.96		1315					T: 9.62 S: 32.63 LOGS TAKEN
			2143	BO	5	48 39.03	126 39.99			1312	14-29	16		
			2225	EN	5	48 39.01	126 39.98							
7	P4	BOT	2300	BE	6	48 39.01	126 39.98		1320	1000		10		TRACE METAL GO-FLOS
8				EN										

Cast type:

BOT = otter cast
CTD = CTD
MOR = mooring

ROS = Rosette
NET = net haul
DRF = drifter

USW = sea water loop

Time Code

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8	P4	NET	0352	BE	7	48° 38.988	126° 39.976		1320	150				BONGO to 150m
8	P5	CTD	0622	BE	8	48° 41.48	127° 09.78		2086					Surface sample from Niskin
			0649	BO	8	48° 41.58	127° 09.73			1506	30 (55)	1		T: 8.13 S: 32.49
			0718	EN	8	48° 41.45	127° 09.77							
8	P6	CTD	0956	BE	9	48° 44.641	127° 40.06		2748					
			1024	BO	9	48° 44.54	127° 40.05			1503	31 (2.2)	1		Surface sample from Niskin T: 8.89 S: 32.47
			1053	EN	9	48° 44.55	127° 39.97							
8	P7	CTD	1341	BE	10	48° 46.60	128° 10.05		2508					
			1410	BO	10	48° 46.56	128° 10.06			1502	32 (4.5)	1		NISKIN LOOP T: 8.845 S: 32.479
			1438	EN	10	48° 46.53	128° 09.95							
8	P8	CTD	1722	BE	11	48° 49.01	128° 39.96		2522					Niskin + loop sample
			1752	BO	11	48° 48.88	128° 40.05			1506	33 (4.5)	1		T: 8.74 S: 32.45
			1821	EN	11	48° 49.20	128° 40.00							
8	P9	CTD	2103	BE	12	48° 51.39	129° 10.00		2348					
			2132	BO	12	48° 51.28	129° 09.95			1505	34 (8.0)	1		Niskin loop
			2155	EN	12	48° 51.19	129° 09.86							T: 8.71 S: 32.416
9	P10	CTD	0027	BE	13	48° 53.63	129° 39.93							NISKIN LOOP @ 5m
			0055	BO	13	48° 53.50	129° 39.45				35 (4.6)	1		T: 8.88 S: 32.47
			0123	EN	13	48° 53.29	129° 39.00							

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9	P11	CTD	0423	BE	14	48° 56.02	130° 09.83		2756					T: 8.67 S: 32.46 NISKIN SAMPLE
			0453	BO	14	48° 56.01	130° 09.82			1507	36 (4.3)	1		
			0515	EN	14	48° 56.02	130° 09.98							
9	P12	ROS	0752	BE	15	48° 58.18	130° 39.95		3233					Surface sample from loop (top) + On Niskin
			0851	BO	15	48° 58.28	130° 40.02			3279	37-60	24		T: 8.63 S: 32.46
			1021	EN	15	48° 58.25	130° 39.92							extra bottle fired depth?
9	P12	BO		BE	16					1000		10		Pumping & GoFlo's / Fe
				EN	16									
9	P12	NET	1435	BE	17	48° 58.25	130° 39.87		3225	150				BONGO TO 150m
			1445	EN	17	48° 58.18	130° 39.98							
9	P13	CTD	2234	BE	18	49° 02.61	131° 40.00		3002					T: 8.83 S: 32.4379
			2307	BO	18	49° 02.61	131° 39.82			1507	61 (4.5)	1		
			2343	EN	18	49° 02.62	131° 40.00							
10	P14	CTD	0602	BE	19	49° 07.53	132° 39.89		3312					T: 8.62 S: 32.46 Niskin surface
			0635	BO	19	49° 07.70	132° 39.63			1506	62 (5.1)	1		It's snowing!!! ☺
			0706	EN	19	49° 08.13	132° 39.52							
10	P15	LOOP		Loop		49° 11.925	133° 40.13	WIND	35+	SEA STATE	20' +	DRIVE THRU		T: 8.53 LOOPS TAKEN S: 32.40
10			1628			49° 12.856	133° 55.913							
	THERMOSACINOGRAPH				PUMP	OFF FOR ~10 MINUTES				T° shift after that. T° lower.				

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at station P16: too rough to do a rosette cast, so we put the transmissometer on 2nd CTD # 0443 and will use that CTD with no rosette at least until station P19 inclusive. So all surface samples will come from the loop tap. Bongo tow also cancelled @ P16.

P19: Back to CTD in rosette. 0550 PAR CON is used. Primary CTD. 0550 is again being used.

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←	SEE	NOTE				CHANGED	CTDs							
10	P16	Go-Fls	~2100	BE	20	49° 17.30	134° 41.23							
11				EN	20									
11	P16	CTD	0306	BE	21	49° 17.54	134° 41.06		3560					Loops taken T: 7.82
			0339	BO	21	49° 17.54	134° 40.71			1500				Xmeter not good at all...
			0405	EN	21	49° 17.53	134° 40.58							Big swell in
11	P17	CTD	0958	BE	22	49° 20.96	134° 40.03		3318					T: 7.91 S: 32.58
			1035	BO	22	49° 21.02	135° 39.98			1503				Loops taken
			1102	EN	22	49° 21.04	135° 39.99							Transducer still
														Spiking - needs new cable
11	P18	CTD	1553	BE	23	49° 26.01	136° 39.87		3822					Transducer was fine !!
			1624	BO	23	49° 26.04	136° 39.86			1507				Surface samples taken
			1651	EN	23	49° 26.07	136° 39.87							Run top and go. Fls 5m
														Pressure spike
11	P19	CTD	2123	BE	24	49° 30.04	137° 39.32		3915					Back to 0550 PAR, COM
			2154	BO	24	49° 30.07	137° 40.05			1505	63 (S.3)	1		0550 CTD IN ROSETTE
			2223	EN	24	49° 30.03	137° 40.02							T: 7.40
12	P20	NET	0245	EN	25	49° 34.09	139° 40.059		3949	150				S: 32.55
														BONGO

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Day	Station I.D.	Cast Type	Time (UTC)	Time Code	Consec. Number	Latitude	Longitude	Position Code	Bottom Depth	Max Depth	Consec Sample #	# of Bottles	initials	Comments
12	P20	ROS	0300	BE	26	49 34 10	138 40 02		3948					Loops taken
		ROS	0416	BO	26	49 34.03	138 40.07			4002	64-87	24		T: 7.49 S: 32.605
		ROS	0615	EN	26	49 34 08	138 40.05							Reterminated cable
12	P20	BOT	0630	BE	27	49 34 08	138 40.05		3950					Go Flo's & Pumping
	P20	BOT	1346	EN	27	49 33 88	138 40.36			1000				Fe & PRIMARY PROD.
	CABLE RE-TERMINATED AFTER P20 ROSENET CAST.													
12	P21	CTD	1802	BE	28	49 38.03	139 40.00		3942					Surface sample Niskin
			1834	BO	28	49 38.03	139 40.01			1505	88 (4.3)	1		T: 7.42 S: 32.601
			1904	EN	28	49 38.03	139 40.09							
13	P22	CTD	0006	BE	29	49 42 03	140 39.92		3879				HM/MS	
			0032	BO	29	49 42 02	140 39.96			1501	89 (3.6)	1		
			0055	EN	29	49 41 98	140 40.01							
13	P23	CTD	0549	BE	30	49 45.97	141 40.00		4032					T: 6.57 S: 32.57
			0622	BO	30	49 45.92	141 39.96			1506	90 (4.1)	1		Surface sample Niskin
			0649	EN	30	49 45.91	141 39.87							
13	P24	CTD	1139	BE	31	49 50.22	142 39.90		3971					T: 6.35 S: 32.54
			1209	BO	31	49 50.22	142 40.01				91 (4.2)	1		
			1238	EN	31	49 50.23	142 40.00							Loops taken TAP + NISKIN
		↻												

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* Reterminated cable, approx 30 m. cut off D.A.
1 strand approx 10m from termination had parted

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13	P25	CTD	1720	BC	32	50° 00.07	143° 36.25		4127		92 (3.4)	1		T: 6.24 S: 32.57
			1749	BO	32	50° 00.03	143° 36.25			1507				Surface sample Niskin
			1818	CN	32	50° 00.02	143° 36.21							
13	P35	CTD	2138	BE	33	50° 00.07	144° 18.21		4128					T: 6.18 S: 32.57
			2214	BO	33	50° 00.02	144° 18.21			1513	93	1		Surface sample → Niskin
			2241	EN	33	50° 00.08	144° 18.29							
14	P26	ROS	0225	BC	34	50° 00.88	145° 00.21		4228					T: 6.21 S: 32.60
		ROS	0356	BO	34	50° 00.64	145° 00.00			4310	94-117	24		Surface Niskin Loop
		ROS	0553	EN	34	49° 59.99	144° 59.99							
14	P26	BOT	0600	BC	35	49° 59.99	144° 59.99		4228					
			1230	EN	35	50° 00.022	144° 59.99			1000		10		FC CAST & PUMPING
14	P26	NET	1250	BC	36	49° 59.91	145° 00.018			150				BONGO
14	P26	ROS	1314	BC	37	49° 59.98	145° 00.01		4228					POL / PRIMARY PRODUCTIVITY
		ROS	1347	BO	37	50° 00.00	145° 00.00			1500	118-134	17		CAST to 1500 -
		ROS	1439	EN	37	50° 00.02	144° 59.98							
14	P26	DRF	1630			50° 01.40	144° 58.77							0830 LOCAL DEPLOY PROD. DRF
14	P26	DRF	2230			50° 01.14	145° 01.42							1430 LOCAL RECOVERED PROD. DRF
15	Loop 1	Loop	0005			50° 11.358	144° 44.667		4186					Loop 1
15	Loop 2	Loop	0402			50° 37.66	144° 11.96		4803'					Loop 2 T: 6.16

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S: 32.62

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Day	Station I.D.	Cast Type	Time (UTC)	Time Code	Consec. Number	Latitude	Longitude	Position Code	Bottom Depth	Max Depth	Consec Sample #	# of Bottles	initials	Comments
15	Loop 3	Loop	0800			51 01.68	143 40.65		3831					T: 6.26 Loop 3 S: 32.62
15	Loop 4	Loop	1200			51 26.481	143 09.767		?					T: 6.33 Loop 4 S: 32.76
	Re-start thermosalinograph @ 1540 UTC, Feb 15. (Stopped on it's own). File 21060009.													
15	Loop 5	Loop	1600			51 49.47	142 37.75		?					Loop 5 T: 6.24 S: 32.63
15	Loop 6	Loop	2000			52 13.49	142 07.38		4966					T: 5.97 S: 32.64
16	Loop 7	Loop	0008			52 39.661	141 32.167		?					T: 5.93 S: 32.66
16	Loop 8	Loop	0400			53 04.87	140 54.09		3640					T: 6.00 S: 32.69
16	Loop 9	Loop	0800			53 33.07	140 20.16		3572					T: 5.98 S: 32.66
16	Loop 10	Loop	1157			53 48.137	139 30.980		3504					T: 5.96 S: 32.69
16	ED OUT	NET	1225	BE	38	53 48.02	139 30.07		3505	150				BONGO
16	ED OUT	ROS	1250	BE	39	53 48.01	139 30.03		3505					T: 5.96 S: 32.68 No Loops
		ROS	1336	BO	39	53 48.07	139 30.01			2001	135-152	18		
		ROS	1430	EN	39	53 47.84	139 29.95							
16	ED out (1)	Go-Flot	1615	BE	40				3503					Iron go-flot
			1815	EN	40	53 47.88	139 29.94							
16	ED out (1)	NET	1838	BO	41	53 47.828	139 29.970							Re-do bongo bc no flowmeter 1st time.
16	ED 2	CTD	2111	BE	42	53 47.99	139 00.11		3429		153	1		T: 6.47 S: 32.70
		CTD	2151	BO	42	53 48.03	138 59.89			2005				LOOP FROM NISKIN
		CTD	22	EN	42	53 48.	138 59.98							

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FOR CAST EDS : switch to CTD 0443, no rosette.

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17	Loop 11	Loop	0007			053 47 96	138 38 078							T: 6.98 S: 32.67
17	ED3	CTD	0047	BE	43	53 48 03	138 30 02		3301					surface sample from mooring
		CTD	0123	BO	43	53 48 06	138 29 99			2007	153 A	1		T: 7.03 S: 32.64
		CTD	0158	EN	43	53 48.01	138 29 90							
17	ED4/IN	ROS	0422	BE	44	53 48.04	138 00 10		3313					T: 6.86 S: 32.65
		ROS	0505	BO	44	53 47.97	138 00.02			2007	154 171	18		LOOP SAMPLE
		ROS	0557	EN	44	53 48.02	138 00 09							
17	ED4 IN	Bongo	1035		45	53 48.00	138 00.13			150				
17	Loop 12	Loop	1600			53 56 974	138 53.105		3371					Loop 12 T: 6.08 S: 32.69
17	Loop 13	Loop	1817			53 52.086	138 38.648		3141					Loop 13 T: 6.74 S: 32.63
17	Loop 14	Loop	2000			53 34.88?	138 11.94?		?					Loop 14 T: 6.80 S: 32.66
17	Loop 15	Loop	2200			53 51.89	137 59.94		?					Loop 15 T: 7.00 S: 32.59
18	Loop 16	Loop	0001			53 49 18	137 40.38		3330?					Loop 16 T: 7.15 S: 32.59
* 18	ED5	CTD	0124	BE	46	53 47.92	137 29.79		3233					CTD 0443
			0213	BO		53 47.78	137 29.48			2005				Loop TAKEN
			0235	EN		53 47 80	137 29 49							T: 7.03 S: 32.68
18	ED6	CTD	0539	BE	47	53 48.00	137 00.06		3219					T: 6.92 S: 32.67
			0619	BO	47	53 47.92	136 59.94			2009				Loops TAKEN
			0653	EN	47	53 47.97	136 59.98							

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DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Year 2001					Month FEBRUARY			Ship JOHN P TULLY				Cruise I.D. 2001-06		
Day	Station I.D.	Cast Type	Time (UTC)	Time Code	Consec. Number	Latitude	Longitude	Position Code	Bottom Depth	Max Depth	Consec Sample #	# of Bottles	initials	Comments
18	Loop 17	Loop	0800			53 48.05	136 46.62		3467					T: 6.63 S: 32.45 Loop 17
18	ED7	CTD	0951	BE	44	53 48.02	136 30.07		3112					
18	ED7	CTD	1037	30	49	53 48.00	136 30.00			1505				T: 7.05 S: 32.611 Loop 18
18	ED7	CTD	1113	EN	48	53 48.02	136 29.98							
18	Loop 18	Loop	1158			53 47.96	136 24.89		?					Loop 18 T: 7.14 S: 32.60
18	Loop 19	Loop	1349			53 47.87	135 59.19							Loop 19 T: 7.53 S: 32.54
18	Loop 20	Loop	1600			53 40.323	135 34.419		?					Loop 20 T: 7.54 S: 32.54
18	Loop 21	Loop	2004			53 26.95	134 47.80		2700					Loop 21 T: 7.82 S: 32.53
19	Loop 22	Loop	0001			53 13.21	133 58.55		2850					Loop 22 T: 8.04 S: 32.39
19	Loop 23	Loop	0400			52 56.625	133 04.215		2425					Loop 23 T: 8.19 S: 32.40
19	ME1	ROS	0527	BO	49	52 52.17	132 47.95		1578					T: 8.15 S: 32.38
			0556	BO	49	52 52.18	132 47.96			1502	172-187	16		Loops + surface CTD
			0642	EN	49	52 52.18	132 48.00							0550 PAR.com * ME1 - CTD switch
19	ME1	BONCO	1100	BE	50	52 52.22	132 48.10			150m				0443 FLuo.com
19	ME1	NEUSTON	11:15	BE	51	52 51.51	132 47.04							NEUSTON Tow
19	ME1	NEUSTON	11:30	EN	51	52 51.10	132 46.10			SURFACE				15m @ 3kts
19	Loop 24	Loop	1400			52 37.90	132 22.69			2 HR AFTER LEAVING STA.				Loop @ 6 AM.
19	Loop 25	Loop	1600			52 25.71	132 03.22		1800					T: 8.98 S: 32.34
19	Loop 26	Loop	1800			52 12.67	131 41.37		1462					T: 8.02 S: 32.34

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* ME1 switch back to 0550 CTD in rosette. 0550PAR.COM used.

After ME1, put 0443 CTD in rosette to get calibration samples. 0443FLOW.COM used.

DAILY LOG

Ocean Sciences and Productivity Division

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Year 2001					Month February			Ship J.P. Tully				Cruise I.D. 2001-06		
Day	Station I.D.	Cast Type	Time (UTC)	Time Code	Consec. Number	Latitude	Longitude	Position Code	Bottom Depth	Max Depth	Consec Sample #	# of Bottles	initials	Comments
19	LOOP 27	LOOP	2000			52 00.78	131 20.70		908					T: 8.96 S: 32.21 LOOP TAKEN
19	ME2	ROS	2231	BE	52	51 48.10	130 59.98		1372					
19	ME2	ROS	2301	BO	52/53	51 48.10	130 59.91			1429	188-203	16		T: 8.27 S: 32.32 Loop Taken
19	ME2	ROS	2348	EN	53	51 48.08	130 59.96							
20	ME2	BOT	0030	BE	54	51 48.09	130 59.96							GO FLO's FOR Fe
20	ME2	NET	0125	BE	55	51 48.12	130 59.98			150				BONGO
20	LOOP 28	LOOP	0401			51 41.17	130 24.27							T: 8.42 S: 32.28
20	LOOP 29	LOOP	0800			51 27.96	129 22.58		90					T: 7.98 S: 31.93
20	SP5	ROS	1036	BE	56	51 20.99	128 47.07		222					
20	SP5	ROS	1045	BO	56	51 21.00	128 47.04			214	204-212	9		T: 7.93 S: 31.74
20	SP5	ROS	1057	EN	56	51 20.98	128 47.02							
20	SP5	BONGO	1121	BE	57	51 21.02	128 47.14		150					
20	SP5	Neuston	1150	BE	58	51 21.03	128 47.14							NEUSTON
20	SP5	Neuston	1215	EN	58	51 21.29	128 45.50							
20	RI 1	ROS	1706	BE	59	51 26.41	127 38.13		330					T: 7.86 S: 31.24
			1717	BO	59	51 26.41	127 38.11			321	213-226	14		
			1741	EN	59	51 26.41	127 38.11							

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Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Year 2001					Month FEBRUARY			Ship JOHN P TULLY				Cruise I.D. 2001-06		
Day	Station I.D.	Cast Type	Time (UTC)	Time Code	Consec. Number	Latitude	Longitude	Position Code	Bottom Depth	Max Depth	Consec Sample #	# of Bottles	initials	Comments
20	Ri 2	CTD	1831	BE	60	51° 31.25	127° 33.61		333					T: 7.89 S: 31.18
			1839	BO	60	51° 31.25	127° 33.62			326	227	1		Surface sample Niskin
			1846	EN	60	51° 31.24	127° 33.60							
20	Ri 3	CTD	1931	BE	61	51° 35.91	127° 32.10		330?					Surface sample Niskin
			1939	BO	61	51° 35.90	127° 32.08			308	228	1		T: 7.95 S: 31.35
			1947	EN	61	51° 35.91	127° 32.09							
20	Ri 4	ROS	2042	BE	62	51° 38.93	127° 26.62		299					surf sample Niskin
			2050	BO	62	51° 38.92	127° 26.63			292	229-241			T: 7.92 S: 30.36
			2110	EN	62	51° 38.89	127° 26.58							
20	Ri 5	CTD	2158	BE	63	51° 40.70	127° 19.81		200					surf sample Niskin
			2203	BO	63	51° 40.71	127° 19.81			192	242	1		T: 8.23 S: 30.92
			2208	EN	63	51° 40.71	127° 19.83							
21	Ri 7	CTD	0026	BE	64	51° 46.74	127° 23.58		238		243	1		T: 7.65 S: 29.68
			0030	BO	64	51° 46.73	127° 23.58			230	243	1		SURFACE NISKIN @ 5m
			0034	EN	64	51° 46.72	127° 23.58							
21	Ri 8	CTD	0114	BE	65	51° 50.77	127° 21.70		143		244	1		T: 8.27 S: 30.10
		CTD	0118	BO	65	51° 50.77	127° 21.71			135				
		CTD	0122	EN	65	51° 50.77	127° 21.71							

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Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

[illegible]

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