CRUISE NUMBER 9823

Book 1

DAILY LOG

INSTITUTE OF OCEAN SCIENCES

OCEAN PHYSICS

DATE July 13 - 27, 1998

VESSEL CCGS J. P. Tully

PROJECT Globec / La Perouse

Captain: John Anderson First Officer: Duke Synder

Second Officer: Third Officer:

Cruise Participants / Agencies:

Scientific Personnel: Party Chief: Richard THomson

Name	Watch	Cabin	Name	Watch	Cabin
Rick Thomson			Susan Allen		G
Tom Juhász		B	Jane Eert		
Bernard Mirkley		C	Dana Varela		G
David Spear			Shannan Harris		F
Doug Yelland		17	Beth Barnhart		H
Hugh Maclean		E	Jennifer McKay		F
Dave Garby		E	Lauren Ross		H

Second leg of cruise: Party Chief:

Name	Watch	Cabin	Name	Watch	Cabin
Oxygen kit # 3.					

Data logging system: Unit no.: FS01

Program Name: Seasave 4.229 Program version:

CTD deck unit make: model: serial no.:

Computer make: model: serial no.:

1st CTD make: model: serial no.: 0443

Temperature sensor model: serial no.: 2023 pri

coefficients: slope: offset: 2038 sec

Conductivity sensor model: serial no.: 1729 pri

coefficients: slope: offset: 1762 sec

Pressure sensor range: psi serial no.:

coefficients: FSP: dB offset:

Transmissometer model: SEA TECH serial no.: 182D

coefficients: slope: offset:

Comments:

Fluorometer: Sea Tech

PAR QSP 200 L4S 4495

Lloyds IM0832 0420

Date	Time (PDT)	
		Overcast, Calm; Light Showers
	0930	Depart I.O.S. after some delays due to provisioning, crewing and picking up last minute science equipment.
Jul 14	1030 (approx).	- recovered Saanich Inlet marker buoy on station without incident. - mooring fouled down to app. 10 - 15 m depth with heavy growth of skeleton shrimp, juvenile mussels some seaweed. - fouling was less than anticipated

Proceed to STATION LAØ1. ENTRANCE TO Juan de Fuca St.

TRANSMISSOMETER SN: SEA TECH 182D
FLUOROMETER SN: SEATECH.
CTD: SEABIRD
PAR SENSOR: SN: QSP 200 L43 4495

2100 Complete STN AØ1. Swell & wind from South off coast. Calm inside strait. Overcast. Nutrients, O2, Samples for Rob Ianson.

2200 STN AØ2. DID NOT clear transmissometer prior to cast!
CAST # 2 (= Downcast). DID NOT Change Cast #.
Forgot to start new file at LAØ1. So this station (AØ2) is cast #02.
5 m above bottom.

Cleaned Transmissometer @ STN AØ3.
LINE A during evening. Overcast.

196.1410	10.4558	
196.2069	12.9527	27.8054
196.3236	12.2374	24.2843
196.4690	13.6581	31.4427
.4931	13.7730	27.4632
.5396	14.2568	30.2490
.5938	14.7163	31.4885
.7424	14.9646	31.8260

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YEAR: 1998 | MONTH: JULY | SHIP: TULLY | CRUISE: 9823 | PAGE 1 OF

DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	N LATITUDE	W LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
15 JUL	LA01	ROS	0323	BE	1	48 29 146	124 44 426	10.0800 31.7830	265*	255	1-12	12		TRANSM[illegible] cleaned up down cast
15 JUL	LA02	ROS	0458	BE	2	48 26.39	124 51.29	12.7283 32.0256	305	296	13-23	11		*couldn't see pinger. Pinger worked
15	LA02		0506	BO	3	48 26 828	124 51 218							
15 JUL	LA03	CTD	646	BE	4	48 22.74	124 57.75		110					
	LA03		0650	BO	5.	48 02 740	124 57 720							
15 JUL	LA04	ROS	0746	BE	6.	48° 19.24′	125° 04.35′	11.9516 31.9167	185		24-33	10		
			0749	BO	6	48° 19.19′	125° 4.45′							
			0758	EN	6	48° 19.13′	125° 4.62′							
15 JUL	LA05	CTD	0850	BE	7	48° 15.92′	125° 10.86′		122					
			0853	BO	7	48° 15.90′	125° 10.89′							
			0856	EN	7	48° 15.86′	125° 10.97′							
15 JUL	LA06	ROS	0949	BE	8	48° 12.55′	125° 17.43′	13.4272 31.8168	112		34-40	7		
			0951	BO	8	48° 12.53′	125° 17.51′							
			0958	EN	8	48° 12.51	125° 17.63′							
15 JUL	LA07	CTD	1050	BE	9	48° 09.15′	125° 24.06′		114					PAR sensor removed
			1052	BO	9	48° 09.15′	125° 24.10′							
			1055	EN	9	48° 09.15′	125° 24.14′							

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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15	LA08	ROS	1150	UTC	10	48 05.71	125 30 55	13,6654 32,0837	141	135	41 - 49			
15	LA09	ROS	1257	UTC	11	48 02.37	125 37 06	13, 8877 32.1273	360	350	50 - 63			
15	LA10	ROS	1415		12	47 58 817	125 43 911	14461 32,2077	926	920	64 - 81	18		
15	LB16	ROS	1749	UTC	14	48 00.54	126 16.79	14,7181 32,3518	1850	54	no numbers	10		no oxygen, T-cleaned.
15	LB16	ROS	1857	BE	15	48° 00.59'	126° 16.99'		1790		~~82 - 102~~	~~21~~		T-cleaned. PAR
			1937	BO	15	48° 00.49'	126° 17.13'							bottle firing pylon removed failed
			2030	EN	15									
15	LB15	CTD	2244	BE	16	48° 03.14'	126° 07.27'		1577					Pylon still not working
				BO	16									Removed / Water Damage
				EN	16									
16	LB14	CTD	0121	BE	18	48 07.87	125 59.28		1160					CTD only (pylon disabled)
			0158	EN										
16	LB13	CTD	0304		19	48 10.49	125 55.94		920					CTD only, T-cleaned
			0338	EN		48 10 652	125 56 062							
16	LB12	CTD	0414	BE	20	48 12.92	125 51.87		510	506				CTD only, T-cleaned
			0424	BO										
			0435	EN		4813017	12551640							Dark now

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CAST 12 - STN LA10 - Bottle 12 did not completely seal - ie water came out of valve before vent was opened

Change display to PAR sensor. Fluor parameters 0.0010 - 10.

Bernard - change bin size on ADCP

Probably the Transmissometer was not cleaned LA04 - LA10

Transmissometer was cleaned LB16 just before launch.
A NOTE WAS TAPED TO COMPUTER TO "CLEAN TRANS".
File #13 existed - to be careful used #14 instead.

- Complete 100 m CAST @ LB16 for biological sampling (1130 PDT, July 15)
  NO O2. REDO CAST TO FULL Depth when sampling completed.
  Weather improving. Sun/cloud.
- LB16 deep cast (15) had only 5 bottles closed out of 24 fired & 21 confirmed
- Pylon on Sea Bird Rosette sampler began to fail during cast #2 at LB16.
  There was communication with CTD but no confirmation of Bottle #1
  UNIT had failed completely by LB15. The spare did not communicate - opened end plate and unit was full of water. Boards and case corroded.
  UNIT HAD BEEN used, failed, then put on shelf without examination.

  We replaced Deck UNIT. Still could not get it to respond. Opened up main unit. Trickle of water below 1 or 2 solenoids. Burnt section of one of the boards.

  Bernard/Tom/Rick - take two good solenoids from frazzled unit and replace in main unit. Cleaned up unit.

July 15/98 Rosella story continued -
Phoned Les Spearing around 1700. after failing to contact Sea Bird directly. Les phoned Doug Bennett of Sea Bird in Seattle. They had a unit in stock. willing to prepare it and send it by plane to Victoria. [#425-643-9866]. Asked Captain Andersen to contact "The Rock" in morning and have unit flown out to coast. Our other unit is on Vector with RBM and UBC scientists.

Replaced 2 solenoids. Cleaned unit. [on our way to [B13]

Connected to spare CTD and tested repaired pylon.
- 1st time around firings were random

- 2nd test

#1	not fired.
#2	clicked but lever not opened
#3	all opened.
#4	
#5	
#6	
#7	
#8	clicked not opened.
#9	" " "
#10	" " "
#11	" " "
#12	" " "
#13	opened
#14	clicked not opened.
#15	

test not valid.

3rd Test - hanging pylon vertical

trigger	bottle
1st	none
2nd	#2
3rd	none open
4th	#4
5th	none open
6th	#6
7	#7
8	#8
9	#9 + #3
10	#10
11	#11 + #5
12	#12 + #6
13	#13
14	#14 + #2
15	#15 + #3
16	#16
17	#17
18	#6
19	#19
20	#2
21	#21
22	none
23	#23
24	#24 + #6

shield
o
red 6 o black
o
white

4th Test

trigger	bottle	
1st	none	error
2nd	#2	
3rd	#3	
4	#4	
5	none	click
6	#6	
7	none	click
8	#8 + #2	
9	#3	
10	#10 + #4	
11	#5	
12	#12 + #6	
13	#13	
14	#2	
15	#15	
16	#2 + #3 + #4	
17	#5	
18	#6	
19		
20		
21		
22		
23		
24		

no pattern.
* found RS232 cable loose → repeat test.

5th Test

bottle	
none.	
click	
none.	
click	
#5	
#6	
#7	
click.	
#3	open
#10	
#11 + #5	open

no pattern
no good.
no good

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	N LATITUDE	W LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
16	LB11	CTD	5:06	BG	21	48 15.15	125 47.66		207	202				T-cleaned 5m from bot.
			5:18	EN		48 15.005	125 47.503							
16	LB10	CTD	6:03	BG	22	48 18.49	125 41.23		155	145				T-cleaned (sprayed not rubbed)
			6:13	EN		48 18.435	125 40.901							
16	LB09	CTD	0841	BE	23	48° 21.95'	125° 34.65'	131947 31.6173	160					
			0849	EN		48° 21.89'	125° 34.56'							
16	LB08	CTD	0930	BE	24	48° 25.24'	125° 28.57'		141					
			0938	EN		48° 25.19'	125° 28.43'							
16	LB07	CTD	1022	BE	25	48° 28.49'	125° 21.88'		160					
			1029	EN		48° 28.44'	125° 21.80							
16	LB06	CTD	0435	BE	26				115	110				CTD only Transmissometer cleaned
16	LB05	CTD	0512	BE	27	48 33.96	125 11.95		103					0% cleaned
16	LB04	CTD	0546	BE	28	48 35.52	125 8.51		115	110				0% not cleaned?
16	LB03	CTD	0624	BE	29	48 37.27	125 5.88		96	91				0% cleaned
16	LB02	CTD	0704	BE	30				56	50				0% clean
16	LB01	CTD	0740	BE	31				36	35				0% clean
16	LC01	CTD	1655		32				97	94				T cleaned
			1700											

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STN LB13: To within 5m of bottom. RAIN, overcast

3:38 UTC (8:38 PDT) Rosette back on deck, light rain, some white caps.

STN LB12 Breezy - overcast - drizzle - using lights on A-frame.

STN LB09 WINCH CABLE CAUGHT IN GEARS BECAUSE OF TOO MUCH SLACK. CABLE WAS RETERMINATED

STN LC01 Two low transmission, warm, high fluor. layers at 25m & 40m.
Kept it running while brought on deck to test transmissometer - unfortunately, digital read-out not set - will have to repeat - but data was stored.
- cold, overcast, drizzle, wind moderate from south.

LC02 on deck 0.02 closed steady
65-80 open - not steady - generally decreasing in time - was as high as 88 when first out of water.

LC03 "It feels brighter"

LC05 PAR re-installed on rosette

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16	LCØ2	CTD	1731	BG	33				112	111				T-cleaned
			1737	EN		48 48 730	125 31 140							
16	LCØ3	CTD	1803	BG	34.				125	130				T-cleaned
			1815.	EN		48 47 002	125 34 243.							
16	LCØ4	CTD	1858	BE	35	48° 43.43′	125° 40.82′			166				T-cleaned
			1905	EN		48° 43.32	125° 40.78							
16	LC05	CTD	2009	BE	36	48° 39.75′	125° 47.46′			65				Tclean put PAR back on
			2012			48° 39.71′	125° 47.48′							BONGO
16	LC06	CTD	2114	BE	37	48° 36.25′	125° 53.91′			91				Tclean
			2120	EN		48° 36.23′	125° 53.83′							BONGO
✓	XBT	Survey ✓				✓	✓		✓		temp			
16	003105	XBT	2215		38	48 31.30	125 57.57		119		13.2		2	✓
16	003082	XBT	2235		39	48 29.2	125 54.8		126		13.7		3	✗ failed at 50.
		XBT	2240.		40						1		4	Kugo Y. /3081
16	003087	XBT	2255		41	48° 27.65	125° 52.56		137		13.56		Drop 5	? S/n 3087
16	003080	XBT	2257		42				141				Drop 6	✓
16	003083	XBT	2315		43	48 26.01	125 50.07		141		13.69		7	✓ drop 7 XBT height set to 30 m

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00:50 Whales / (Sei?)

At 1:55 Zulu computer started to respond very slowly after inserting XBT. Therefore rebooted (reset) computer. OK after that.

July 17/98

1300

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16		XBT	23:35		44	48 24.36	125 47.61		148		13.88°c		✓	SN 3088 drop #8
16		XBT	23:55		45	48 22.74	125 45.13		155		14.07°c		✓	SN 3089 drop #9
17		XBT	00:15		46	48 21.03	125 42.56		146		13.99°c		✓	SN 3084 drop #10
17		XBT	00:35		47	48 19.35	125 40.07		146		13.98°c		✓	SN 3079 drop #11
17		XBT	00:56		48	48 17.512	125 37.305		145		14.16°c		✓	SN 3085 drop #12
17		XBT	01:15		49	48 15.90	125 34.90		142		14.19		✓	SN 3078 drop #13
17		XBT	01:35		50	48 14.34	125 32.49		152		14.18	failed	X	SN 199292 drop #14
17		XBT	01:38		51	48 14.07	125 32.12		154		14.18	failed	X	SN 199290 drop #15
17		XBT	01:41		52	4813.81	125 31.79		155		14.18		✓	SN 199281 drop #16
17		XBT	01:55		53	48 12.83	125 30.26		151		14.19	failed	X	SN 199286 drop #17
17		XBT	02:01		54	48 12.40	125 29.61		147		14.16	failed	X	SN 3113 drop #18
17		XBT	02:05		55	48 12.06	125 29.13		147		14.15	failed	X	SN 3109 drop #19
17		XBT	02:08		56	4811.8	125 28.8		146		14.12	failed	X	SN 180698 drop #20
17		XBT	02:14		57	48.11.41	125 28.15		138		14.06	OK after computer reset		drop #21
17		XBT	02:16		58	48 11.25	125 27.87		137		14.05		✓	SN ? drop #22
17		XBT	02:35		59	4809.85	125 25.76		123		14.04		✓	SN 3103 drop #23
17		XBT	02:55		60	4808.58	125 27.04		131		14.11		✓	SN 3108 drop #24
17		XBT	03:14		61	4807.92	125 29.18		144		14.37	✓	✓	SN 3112 drop #25

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66 - CAST HAS FUNNY KINK AT TOP, RAN 67 in case.

69 - rebooted computer.

70 - warming at bottom of mixed layer. North arm of Nitnat.

73 - lots of fish on depth sounder - have been most of watch.

(*) After drop # 73, the ship speed was increased to 8 knots + sampling frequency to 15 minutes.

76 - No drop #39 as computer skipped from 38 to 40 after being rebooted.

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17		XBT	03:35	UTC	62	48 09.60	125 31.62		145		14.40		26	✓ SN 199282
17		XBT	03:55	UTC	63	48 10.97	125 33.64		153		14.46		27	✓ SN 199285
17		XBT	04:14	UTC	64	48 12.32	125 35.58		160		14.46		28	✓ SN 199284
17		XBT	04:35	UTC	65	48 13.83	125 37.79		173		14.41		29	✓ SN 199289
17		XBT	04:55	UTC	66	48 15.19	125 39.74		161		14.34		30	✓ SN 199291
17		XBT	04:57	UTC	67	48 15,38	125 40,06		164		14,35		31	✓ SN 181677
17		XBT	05:14	UTC	68	48 16.62	125 41.85		153		14.35		32	X SN 199288
17		XBT	05:21	UTC	69	4817.04	125 42 50		171		14.35		32	✓ SN 180699
17		XBT	05:24	UTC	70	48 17.38	1254297		187		14.32		33	? SN 180700
17		XBT	05:27	UTC	71	48.1755	125 43 22		170		14.31		34	✓ SN 180697
17		XBT	05:37	UTC	72	48. 18.26	125. 44.23		161		14. 17		35	✓ SN 180696
17		XBT	05:52	UTC	73	48. 19.46	125. 46.05		162		14. 17		36	✓ SN 180695
17		XBT	06:14	UTC	74	48. 21 22	125. 48.58		154		14. 17		37	✓ SN 003104
	*	CHANGED SHIP SPEED TO 8 KNOTS & SAMPLING FREQUENCY TO EVERY 15 min. (FROM 20 min)												
17		XBT	06:29	UTC	75	48. 22.61	125. 50.61		152		14. 17	NO	38	X SN 003107
17		XBT	06:32	UTC	76	48. 22.90	125. 51.07		155		14. 15	#39	40	✓ SN 003111
17		XBT	06:44	UTC	77	48 24.03	125. 52.70		163		14.14		41	✓ SN 003106
17		XBT	06:46	UTC	78	48 24.29	125. 53.05		170		14.15		42	✓ SN 003110

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	~~CONSEC SAMPLE #~~	# OF BOTTLES	~~INIT~~ DROP	COMMENTS
17		XBT	06:58	UTC	79	48 25.41	125 54.76		171		14.14		43	✓ SN 178 763
17		XBT	07:00	UTC	80	48 25 63	125 55 04		222		14.14		44	✓ SN 180 693
17		XBT	0715	UTC	81	48 26.97	125 57 00		156		14.12		45	✓ SN 180 692
17		XBT	0730		82	48° 28.30	125 58.96		154		14.14		46	✓ SN 180 691
17		XBT	0742		83	48° 29.42	126 00.64		155		14.03		47	✓ SN 180 690 EOL
17		XBT	0759		84	48° 28.47	126 03 54		181		14.11		48	X SN 180 689 SOL
17		XBT	0801		85	48° 28.17	126 03.36		181		14.11	/	49	✓ SN 194 592
17		XBT	0815		86	48° 26.65	126 01.33		178		14.17		50	X SN 194 591
17		XBT	0817		87	48° 26.41	126° 00.00		178		14.18		51	✓ SN 194 590
17		XBT	0830		88	48° 25.26	125° 59.36		182		14.13		52	✓ SN 194 589
17		XBT	0837		89	48° 24.64	125° 58 48		237		14.17	dud	53	✓ SN 194 588
17		XBT	0843		90	48° 24.10'	125° 57.75		324		14.19	dud	54	✓ SN 194 587
17		XBT	0844		91	48° 23.83'	125° 57.39		397		14.19		55	✓ SN 194 586
17		XBT	0854		92	48° 22.95'	125 56.12		596		14.23		56	✓ SN 194 585
17		XBT	0858		93	48° 22.64'	125° 55.67'		444		14.24		57	✓ SN 194 584
17		XBT	0900		94	48° 22.34'	125° 55.26'		490		14.24		58	✓ SN 194 583
17		XBT	0904		95	48° 21.96	125° 54.74'		556		14.22		59	✓ SN 181 603
17		XBT	0909		96	48° 21.66	125° 54.29		389		14.22		60	✓ SN 194 581

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	SST CONSEC SAMPLE #	# OF BOTTLES	INIT DROP	COMMENTS
17		XBT	0910		97	48° 21.23	125° 53.70		392		14.22		61	X SN 179 596
17		XBT	0914		98	48° 21.03	125° 53.43		291		14.22		62	X SN 178 780
17		XBT	0916		99	48° 20.85	125° 53.17		215		14.21		63	X SN 179 594
17		XBT	0920		100	48° 20.60	125° 52.81		300		14.22		64	? SN 179 593
17		XBT	0923		101	48° 20.31	125° 52.39		252		14.23		65	✓ SN 179 592
17		XBT	0930		102	48° 19.62	125° 51.42		182		14.17		66	✓ SN 179 591
17		XBT	0935		103	48° 18.66	125° 49.38		181		14.19		67	X SN 179 590
17		XBT	0947		104	48° 17.98	125° 49.11		182		14.18		68	✓ SN 179 589
17		XBT	1001		105	48° 16.62	125° 47.21		181		14.14		69	✓ SN 179 588
17		XBT	1004		106	48° 16.44	125° 46.97		183		14.15		70	X SN 179 587
17		XBT	1005		107	48° 16.21	125° 46.64		185		14.17		71	X SN 179 586
17		XBT	1008		108	48° 15.97	125° 46.30		190		14.20		72	✓ SN 179 585
17		XBT	1017		109	48° 15.08	125° 45.00		284		14.19		73	X SN 178 913
17		XBT	1021		110	48° 14.79	125° 44.64		339		14.19		74	✓ SN 178 914
17		XBT	1025		111	48° 14.50	125° 44.27		417		14.20		75	X SN 178 915
17		XBT	1027		112	48° 14.29	125° 43.97		468		14.21		76	✓ SN 178 918
17		XBT	1030		113	48° 14.02	125° 43.56		571		14.22		77	✓ SN 178 916
17		XBT	1034		114	48° 13.70	125° 43.10		638		14.20		78	✓ SN 178 917

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	SST CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
17		XBT	1037		115	48° 13.34	125° 42.60		728		14.20		79	× SN 178 919
17		XBT	1040		116	48° 13.13	125° 42.31		620		14.20		80	✓ SN 178 924
17		XBT	1043		117	48° 12.81	125° 41.86		664		14.21		81	× SN 178 920
17		XBT	1045		118	48° 12.63	125 41.62		631		14.19		82	✓ SN 178 922
17		XBT	1049		119	48° 12.31	125° 41.17		590		14.24		83	× SN 178 923
17		XBT	1051		120	48° 12.14	125° 40.93		522		14.26		84	? SN 178 921
17		XBT	1054		121	48° 11.82	125° 40.45		473		14.28		85	✓ SN 177 456
17		XBT	1058		122	48° 11.51	125° 40.01		261		1430		86	✓ SN 177 457
17		XBT	1115		123	48° 09.82	125° 37.65		168		14.30		87	× SN 177 458
17		XBT	1118		124	48 09.54	125 37.27		165		14.31		88	✓ SN 177 461
17		XBT	1135		125	48 07.93	125 35.02		148		14.31		89	✓ SN 177 460
17		XBT	1155		126	48 06.23	125 32.62		148		14.34		90	✓ end of line SN 177 459
17		XBT	1215		127	48 04.64	125 33.29		168		14.41		91	✓ SN 177 462
17		XBT	1235		128	48 05.71	125 36.77		177		14.45		92	✓ SN 177 463
17		XBT	1255		129	48 07.4	125 39.29		199		14.36		93	✓ SN 177 464
17		XBT	1311		130	48 08.93	125 41.23		334		14.33		94	✓ * SN 177 465
17		XBT	1314		131	48 09.17	125 41.59		305		14.31		95	✓ SN 177 466
17		XBT	1316		132	48 09.39	125 41.91		345		14.30		96	X SN 177 467

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

* drop #94: Depth entered as 3304 m

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	SST SAMPLE #	CONSEC # OF BOTTLES	INIT	COMMENTS
17		XBT	13:19		133	48 09.63	125 42.26		294		14.29		97	✓ SN 199328
17		XBT	13:25		134	4810.14	125 42.98		528		14.30		98	✓ SN 199327
17		XBT	1331		135	48 10.68	125 43.75		421		14.29		99	✓ SN 199326
17		XBT	1339		136	48 11.39	125 44.76		877		14.29		100	✓ SN 199325
17		XBT	1344		137	4811.83	125 45.40		801		14.28		101	✓ SN 199324
17		XBT	1349		138	48 12.27	125 46.00		680		14.30		102	✓ SN 199323
17		XBT	1354		139	48 1267	125 46.59		562		14.29		103	✓ SN 199322
17		XBT	1359		140	48 13.11	125 47.23		431		14.29		104	✓ SN 199321
17		XBT	1403		141	48 13.44	125 47.74		416		14.30		105	X SN 199320
17		XBT	1406		142	48 13.74	125 48.11		362		14.32		106	? SN 199319
17		XBT	1409		143	48 14.00	125 48.47		341		14.32		107	X SN 199318
17		XBT	1413		144	48 14.30	125 4893		318		14.32		108	✓ SN 199317
17		XBT	1418		145	48 14.73	125 49.57		280		14.29		109	X SN 199500
17		XBT	1421		146	4814.98	125 49.9		289		14.27		110	✓ SN 199504
17		XBT	1433		147	4815.97	125 51.40		483		14.22		111	? SN 199508
17		XBT	1436		148	48 16.25	125 51.76		405		14.21		112	✓ SN 199499
17		XBT	14:44		149	48 16.91	125 52.69		379		14.19		113	X SN 199503
17		XBT	14:48		150	4817.27	125 53 20		406		14.19		114	✓ SN 199507

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

150 –
Wind has dropped (about 4 am), no precipitation, a little brighter.

151 –
steel front part fell on floor

XBT SURVEY / CANYONS

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT drop	COMMENTS
17		XBT			151	48 18.08	125 54.36		247		14.21		115	Failed SN199 498
17		XBT	14:58		152	48 18.18	125 54.52		252		14.21		116	✓ ?
17		XBT	15:08		153	48 19 01	125 55 76		454		14.22		117	X SN 199497
17		XBT	15:11		154	48 19 21	125 56.02		482		14.22		118	X SN 199 501
17		XBT	15:13		155	48 1942	125 56 30		526		14.21		119	✓ SN 199 505
17		XBT	15:19		156	48 1989	125 56.94		648		14.21		120	✓ SN 199 506
17		XBT	15:25		157	48 2041	125 57.64		586		14.21		121	✓ SN 178 886
17		XBT	15:30		158	4820.88	125 58.29		783		14.26		122	✓ SN 178 887
17		XBT	15:42		159	48 21 93	125 59 75		434		14.20		123	✓ SN 178 888
17		XBT	15:51		160	48 22.67	126 00 84		402		14.19		124	✓ SN 178 885
17		XBT	16:00		161	48 23 39	126 01.87		246		14.20		125	✓ SN 178 884
17		XBT	16:11		162	48 24 31	126.03.19		197		14.17		126	✓ SN 178 883
17		XBT	16:26		163	48 25.52	126 04.98		216		14.24		127	✓ SN 178 881
17		XBT	16:36		164	48 26.36	126 06.18		230		14.25		128	✓ SN 178 882
17		XBT	16:46		165	48 26 48	126 07.36		240		14.23		129	X SN 178 879
17		XBT	16:50		166	48.26.26	126.07.74		252		14.24		130	✓ SN 178 878
17		XBT	16:58		167	48 25.8	126 08.67		300		14.27		131	✓ SN 178 880
17		XBT	17:15		168	48 24.85	126 10.75		429		14.31		132	✓ SN 178 877

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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INTAKE Temp/loop

DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE (2)	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
17		XBT	1718		169	48 24.40	126 11.07		427		14.33	133	✓	SN 199715 It was recalled
17		XBT	1727		170	48 24.16	126 11.76		—		14.36	134	✓	SN 199714 AT CORNER
17		XBT	1745		171	48 22.55	126 09.41		458		14.42	135	✓	SN 199713
17		XBT	1759		172	48 21.43	126 07.79		441		14.44	136	✓	SN 199718
17		XBT	1812		173	48 20.37	126 06.25		566		14.49	137	X	SN 199717 X
17		XBT	1814		174	48 20.22	126 06.02		599		14.50	138	✓	SN 199716
17		XBT	1828		175	48 18.92	126 04.14		778		14.57	139	(✓)	SN 199721 terminated
17		XBT	1832		176	48 18.66	126 03.75		807		14.60	140	✓	SN 199 720
17		XBT	1844		177	48 17.73	126 02.38		827		14.70	141	✓	SN 199 719
17		XBT	1849		178	48 17.31	126 01.78		651		14.71	142	✓	SN 199 724
17		XBT	1900		179	48 16.51	126 00.65		693		14.71	143	X	SN 199 723
17		XBT	1904		180	48 16.20	126 00.19		672		14.71	145	✓	SN 199 722
17		XBT	1915		189	48 15.30	125 58.88		700		14.76	146	✓	SN 179 356
17		XBT	1930		190	48 13.98	125 57.07		715		14.77	147	✓	SN 179 352
17		XBT	1935		191	48 13.60	125 56.54		823		14.79	148	✓	SN 179 348
17		XBT	1940		192	48 13.18	125 55.93		465		14.76	149	✓	SN 179 355
17		XBT	1945		193	48 13.21	125 54.77		584		14.73	150	X	SN 179 351
17		XBT	1947		194	48 13.28	125 54.40		545		14.72	151	✓	SN 179 351

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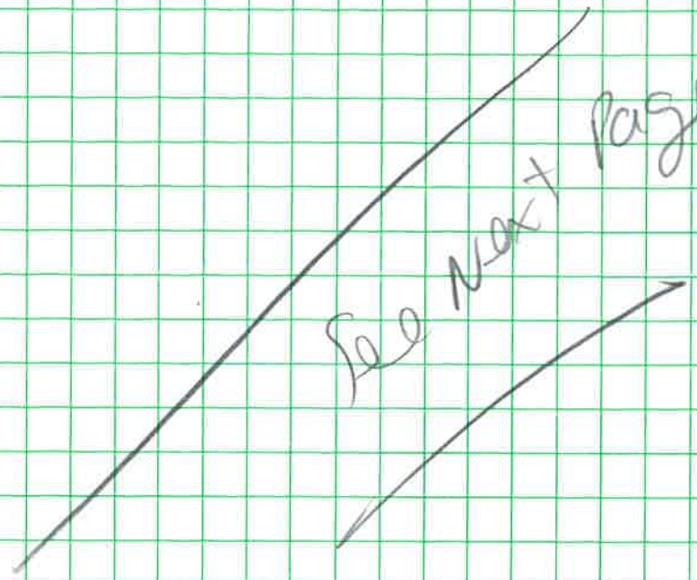
* XBT drop dates in the computer for drops 2-147 are out by 1 day 15th should be 16th, 16th should be 17th.

- XBT Survey terminated mid-way through LINE 5 (final line), Proceed to Port Renfrew to pick up Pilot (1830 PDT, July 17)



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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	W LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT DROP	COMMENTS
17		XBT	1800		195	48° 13.96	125° 51.33		398		14,68	152	✓	SN 179 347
17		XBT	1815		196	48° 15 00	125° 46.46		309		14.61	153	✓	SN 179 346
17		XBT	1830		197	48 16.09	125° 41.90		162		14 49	154	✓	SN 179 350
17		XBT	1845		198	48° 17 29	125° 37.10		142		14.24	155	×	SN 179 354
17		XBT	1847		199	48° 17 44	125 36 54		138		14.21	156	✓	SN 179 353
	PROCEED TO PORT Renfrew to pick up SEA BIRD WATER SAMPLER Pylon. Met Les Spearns at government WHARF (by the pub) @ 1830. PDT [Ship arrived @ 1800 PDT].													
	PROCEED TO STATION LC01 for UBC Monitoring STATION. Scheduled arrival = 2300 PDT													
	Thermal winds in Port San Juan. Sunny. Fog in the Straits													
18	LC01	ROS MY	0550 0602	BE EN	200	48 50.44	125 27.62	✓	94	91m CTD 88m bot	82-88	7		≤5m above bottom T-Cleared
18	LC02	ROS MY	0641	BE	201	48 48.63	125 31.33	✓	105.	103m CTD 99m bot	89-95	7		
18	LC03	CTD	See card											

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

July 17 1800 starting with stn# 195 / drop # 152 leave survey lines & head for Port Renfrew

XBT Survey NOTE: 32 FAILED OR WERE SUSPECT OUT OF A TOTAL OF 156 profiles
Failure Rate ≈ 20%.

NB: Tom + Phil – Winch #1307 – has loose spooling sheave – wobbles on axle, workable but requires repair.
- the clutch dog engaging lever cannot be pinned! * ← Also true of #1482!
- the gear change cautionary plate is "reverse" has to be replaced.
- vertical guide rollers are missing top plate.
- level wind drive chain misaligned and binding.

LC#8: Overcast, calm. BOARD TO 199 m – NEW Rylon working fine.

LC#9: Incubation station. Surface samples based on irradiance (PAR values). SANDPIPERS ONBOARD – resting during Arctic → Chile

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	N LATITUDE	W LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
18	LC03	CTD	0744	BE	202	48° 46.96	125° 34.76'		132		—			
			0751	EN		48° 46.95	125° 35.10'							
18	LC05	CTD	0905	BE	203	48° 39.87'	125° 47.81'		65		—			
			0908	EN		48° 39.85'	125° 47.94'							
18	LC04	ROS	1128	BE	204	48 43.72	125 41.81	✓	170		96-107	22		non-standard depths, multiple bottles @ some depths
			1146	EN		48 43.70	125 41.87							
18	LC06	NET	1305	BE	205	48°36.572'	125°54.110'		94		—			BONGO (2ND at this station this cruise)
	LC06	CTD		BE	206	48 36.44	125 54.12		93	91	\			CTD only
18	LC07	ROS	1428		207	48 32.87	126 0.39	✓	128	125	108-115	8		
18	LC08	ROSI	1542		208	48°29.39	126° 06.99	✓	200		116-126	10		~~Bongo~~ Rosette
			1521		209	48°29.5'	126° 07.1		199					Tagged bottom Bongo with weight
18	LC09	NET			210	48°25.98	126° 13.36			591				BONGO/Tom/Rick
		ROS	1706		211	48 25.96	126 13.48	✓			127-140			INCUBATION STATION
18	LC10	ROS	1914	BE	212	48° 22.39'	126° 20.19'	✓	1250		141-145			surface → bottom → 400m
18	LC10	ROS	1955	BE	213			✓			146-154			accidentally stopped at 400m 400m → surface
			2014	EN		48° 22.95	126 20.05'							

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

LD 10 – Vent was found open when drew water from bottle #13.

drop 159

2	14.68
26.0	14.11
35	13.82
38	13.36
41.	11.46
45	10.66
62	9.44
91	8.72
178	7.36
339	5.43
467	5.16
469	~~5.83~~

CTD 215

14.33
14.00
13.52
12.00
11.25
10.41
9.02
8.47
7.24
5.83
5.06
5.06

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
18	LC11	ROS	2114	BE	214	48 19.00	126 26.64	✓	1390	1427	155 - 174	20		
			2231	EN		48 19.60	126 26.39							
19	LD11	CTD	0012	BE	215	48 28.77	126 43.02	✓	1584	1612				CTD only. Cast to within 10 mab
				EN							0100 UTC		XBT	179345; launched during upcast @ 500 m.
~~19~~	~~LD10~~	~~CTD 02~~			~~216~~	~~48°~~	~~126°~~				drops 157, 158, 159		XBT	179349:
													XBT	169015
19	LD10	ROS	0159	BE	216	48 32.20	126 36.47	✓	1474		175 - 194	20		O_2 only
														SALINITY: Bottom 2
19	LD09	ROS	0400		217	48°35.53	126°29.84	✓	1084		195 - 212	18		T-cleaned, as usual.
					MONITORING STATION									
19	LD08	CTD	0547		218	48°39.20	126°23.52		795		—			CTD only / 10 mab
		NOTE: Need to fix O-RING ON Bottle #13 / Fixed!												
19	LD07	ROS	0705	BE	219	48° 42.82'	126° 17.00'	✓	590	581	213 - 228	16		MONITOR STATION.
			0737	EN		48° 43.19'	126° 17.64'							
19	LD06	ROS	0830	BE	220	48° 46.07'	126° 10.25'	✓	137	127	229 - 236	8		MONITOR
			0841	EN		48° 45.97'	126° 10.17'							
19	LD05	CTD	0930	BE	221	48° 49.63'	126° 3.60'		91		—			
			0935	EN		48° 49.61'	126° 3.56'							

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
19	LD04	BONGO		BE	222				62					
				EN										
19	LD04	ROS	1045	BE	223	48° 53.06'	125° 56.96'	✓	62		237-242	6		Monitoring
			1052	EN		48° 52.96'	125° 56.92'							
19	LD03	CTD	1146	BE	224	48 56.46	125 50.42		45	44	—			CTD only chl a 20m filtered only 460 ml
			1150	EN		48 56.44	125 50.28							
19	LD02	ROS	1226	BE	225	48 58.22	125 46.99	✓	42	39	243-247	5		monitor No chl a taken
19	LD02	NET	1240	BE	226	48 58.47	125 46.97		42	38				Bongo
19	LD01	ROS	1321	BE	227	49 00.13	125 43.79	✓	35	30	248-251	4		Monitoring
19	LE02	CTD	1458	BE	228	49 04.28	126 04.64		57	54				
			1459	BO		"								
				EN		49 04.35	126 04.63							
19	LF01	ROS	1622	BE	229	49. 14 89	126 14 52	✓	33	33	252-254	3		No surface O_2 taken.
19	LF02	ROS	16:49	BE	230	49. 13 34	126 16.54	✓	48	43	255-260	5		{ CTD right at surface for sample
19	LF03	ROS	17 49	BO	231	49 09 75	126 22.09	✓	88	85	261-267	7		Tripped 2 bottles @ surface
	LF03	ROS	17:53	EN	231	49° 09.91'	126° 22.10'				*	Kept logging		as brought Rosette through surface water.
19	LF04	ROS	18:47	BO	232	49° 06 02	126° 27.64	✓	128	120	268-275	8		Depth scale on computer only to 100m.
19	LF05	ROS	1942	BE	233	49 01.96	126 33.02	✓	154		276-284	9		

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
19	LF06	ROS	2046	BE	234	48 58.18	126 38.77	✓	450		285-299	15		CTD touched bottom
			21:21	EN		48 58.00	126 38.16							
19	LF07	ROS	22:13	BE	235	48 53.86	126 44.89	✓	710	731	300-316	17		
			22:56	EN		48 53.66	126 44.24							
19	LF08	ROS	2355	BE	236	4849.95	126 51.16	✓	1200	1212	317-335	19		PAR sensor taken off
20	LF08		0053	EN		4850.116	126 51.786							
20	LF09	ROS	01:41	BE	237	48 45.85N	12657.01W	✓	1460		336-356	21		ONLY SAL SAMPLES LABELLED AS LF09
				EN										
20	LF10	CTD	05:32	BE	238	4834.05	127 29.54		2600	2591	—	0		
			07:12	EN		4834.66	127 29.41							
20	LF11	CTD	0957	BE	239	48° 22.61'	128 00.06		2571 altim	2592 dBar	—	0		T-cleaned
			1120	EN		48 23.12	127 59.40							
20	LF12	CTD	1355	BE	240	48 09.960	128 29.826		2572	2577	—	0		Salinity Spike @ 400m down
			1511	EN		48° 10.66	128° 30.77							
PROCEED TO ENDEAVOUR RIDGE MAIN VENT 47°57.5 129°05.5W (2200 m) Sunny, wind 10-15 knots, west														
0830 - Bit of a "fuss" about ship moving out of SAR zone 2. Although our latitude is acceptable, we are more														
than 30 miles offshore! Tough to do science if we are constrained to within 30 miles of the														
coast.														

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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WASP Redeployment calibration

TIME 1826 UTC July 20/98

47 57.51

129 05.53

Sounder depth = 2175 m.

TIME Computer =

TIME WASP =

@ 1000 m depth decrease fall speed to 1/2 m/s @ 1830:49 on Computer clock

[Fall speed was 1.5+ m/s]

@ 1200 m depth increase fall rate to 1.0 m/s from 0.5 m/s

@ 1400 m 18:49:00 (switch) to 0.5 m/s

P= 1500 m 18:51:30 @ 0.5 m/s

1600 m 18:54:00 @ 0.5 m/s

STOP @ 1750 m. New file #2 ADD Transmissometer lead on

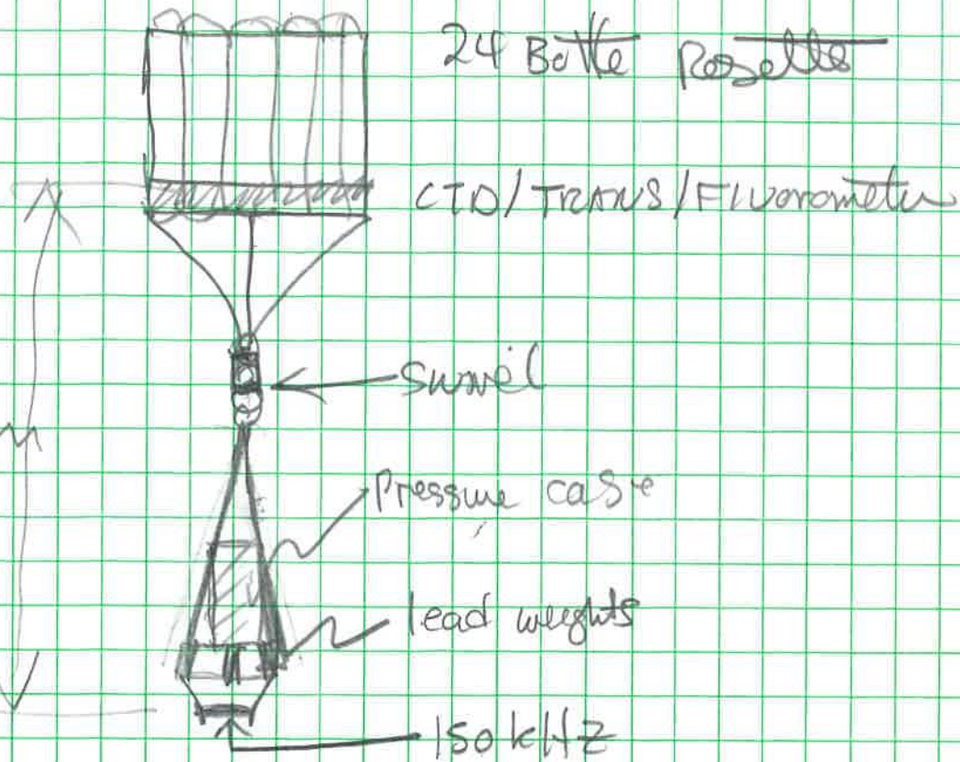
1745 m New file #3 Change depth scale!

HINT OF Plume @ 1880 m.

Bottom = 2200 m = P. Bottles every 25 m on way up. Every 25 m NOTE: Because of station-keeping, the transmissometer upcast tracks the downcast.

Plume upper boundary ≅ 1890 m (upcast)

MAIN VENT SITE



upcast @ End. Ridge.

#15 = 1825 m
16 = 1742 m.
17 = 1500 m
18 = 1000 m
19 = 500 m
20 = 250 m
21 = 100 m
22 = 60 m Chl-max
23 = 30 m
24 = surface

Oxygen at ALL
Nutrients (NH_4) @ ALL
POC/PON } 2151, 2000
TOC/TON }

20 July 15:20 PDT depart Endeavour Ridge for line "L"

20 July 1514 PDT -deployed mooring ER-WASP-2 at 47° 57.510'
129° 05.541'
-depths erratic between 2137 - 2163 m depth
-using a sound velocity profile from Stn P. for speed of sound correction.

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
20	ER01	ROS			241	47°57.49	129 05.52	✓			357-380	24		bottle #1 did not close
		WASP	WASP	transducer about 3m below CTD. when about 30m of site.										
	Forgot to print TRANS value. Stop winch @ 1750 m. Start new file.													
20	ER01		18:59		242	47 57.49	12905,48	✓						
	LI		19:00	BE	243	47 57.49	129 05.48							ADD 20 to reactout @ 1752m
	Bottles @ 25 m on upcast to 1875 m;													@ 1745m. Had to change depth scale
			20 40	EN	243	47. 57.476	129 05.460							
21	LL10	CTD	0200	BE	244	48 30.09	128 51.48		2156	2050				861 shot 20
			0332	EN		48 29.46	128 50.96							pause @ 1850' to straighten wire - started up clear of bottom
21	LL08	CTD	1130	BE	245	49 36.74?	128 22.61?		2310	2313				
	"		1217	BO		49 37.04	128 22.64							
			1255	EN		49 37.49	128 22.50							
21	LBP7	ROS	1503	1	246	49 52.44	129 11.13	✓	2204		381-402	22		
21	LBP7	NET	1653	BE	247	49 52.43	128 11.14		2184	250				Bongo
21	LBP6	ROS	1900	BE	248	49 56.30	128 05.51	✓	750	720	403-419	17		T - cleaned as always
			1834	EN		49 56.74	128 05.72							
21	LBP5	ROS	1922	BE	249	50° 00.04'	127° 59.97'	✓	1280	1285	420-438	19		
				EN		50° 00.43'	128° 00.37'							

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243 Surfacing of WMP. → ~~20:31:56~~ 20:39:57 on computer clock.

Bottle #1 DID NOT CLOSE.

Bottle #24 - Surface sample - maybe contaminated with diesel

246 Wind 30-35 knots. NW, Surface Current from South

Incubation depths = 0 (x2), 5 (x2), 10 (x1), 20 (x2), 30 (x1) & 40 m (x2).

ROSETTE LOG

MISSION ID: 9223
STATION NAME: [illegible]

UTC DATE y/m/d: 92[illegible]/20
CAST NUMBER: 241/242/243

SHIP: Tully

Niskin No.	Sample No.	OXY. Flask,	OXY. Temp.	Sample Depth	ROSETTE OPERATION Trip pressure	Confirmed Salinity	Samples taken: SAL	OXY	NUT	CHL	ALK	C13	TCO	PON	TON	TOC	Transmission
✓1	357				2193		✓		✓								
✓2	358				2176		✓		✓								
✓3	359				2151		✓		✓					✓	✓	✓	91.28
✓4	360				2125				✓							✓	91.23
✓5	361				2100				✓								91.25
✓6	362				2077												91.20
✓7	363				2051												90.57
✓8	364				2025									✓		✓	90.47
✓9	365				2000									✓	✓	✓	90.42
✓10	366				1975												90.72
✓11	367				1950												90.81
✓12	368				1926												90.86
✓13	369				1901												91.55
✓14	370				1875									✓		✓	91.84
✓15	371				1926										✓	✓	91.24
✓16	372			1700	1743		✓									✓	91.34
✓17	373			1500	1500		✓										91.84
✓18	374			1000	1001		✓							✓			91.79
✓19	375			500	500		✓										91.79
✓20	376			250	250									✓			91.45
✓21	377			100	98					✓				✓			91.01
✓22	378			60 CM	49					✓				✓			86
✓23	379			30	30					✓				✓			
✓24	380			0	2			✓	✓	✓				✓			

Comments: Bottle 1 [illegible]

ENTERED BY:
CHECKED BY:

Bottom Depth:

Cast # down:
Cast # up:

Time	LOC	UTC
Begin:		
Bottom:		
End:		

START POSITION (GPS)
LAT:
LONG:

BOTTOM POSITION (GPS)
LAT:
LONG:

END POSITION (GPS)
LAT:
LONG:

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
21	LBP05	NET	2054	EN	250	49° 59.97'	127° 59.91'		1280	250				
21	LBP04	ROS	2127	BE	251	50 01.46'	127 58.16'	✓	1036	1028	439 - 457	19		PAR Sensor on.
			2218	EN		50 01.96'	127 58.40'							extra bottle @ 90m
21	LBP03	ROS	2300	BE	252	50 03.20	127 55.32	✓	165	150	458 - 466	9		
			2315	EN		50 03.23	127 54.89							
21	LBP03	NET	2320		253									
22	LBP02	ROS	00:00	BE	254	50 4.08 N	127 54.29 W	✓	88		467 - 472	6		
			00:12	EN		50 4.20 N	127 54.11 W							
22	LBP01	ROS	00:42	BE	255	50° 4.85 N	127° 52.96 W	✓	50		473 - 477	5		
			00:47	EN		"	"							
22	LM01	CTD	02:10	BE	256	50° 12.71 N	127° 57.48 W		83					
			02:17	EN										
22	LM01A	CTD	02:42	BE	257	50 10.99	128 00.54		86					
			02:52	EN										
22	LM02	ROS	03:21	BE	258	5009.04	12808.78	✓	160		478 - 486	9		
			03:40	EN		5009.12	12803.63							
22	LM03	ROS	04:26	BE	259	5005.37	12810.17	✓	1130		487 - 505	19		PAR sensor OFF
			04:52	BOT										

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259 Foggy, cold & windy.

JULY 22/98 @ 1030 PDT
STATION LL04: There is a major trans MINIMUM around 150m that we have taken POC/PON Chlorophyll and other samples in SAMPLES below (175m), in (150m) and above (50m) max. Diana, 3 BOTTLE SAMPLES.

LL05 1130 PDT. Big fog cloud sitting over Brooks Peninsula. Low cloud, fog over some of the mountains in Brooks region otherwise clear skies. Last night, just before the evening fog developed "big time" in the marine boundary layer, when we were on line MP a very narrow band of cloud formed near the mid-height of Brooks north, extending seaward past Solander Island. It lasted about 1 hour just before sunset before dissipating.

Winds still 30-35 knots at LL05.

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
22	LM03	ROS	05:26	EN	259	5005.80	12810.76	✓			487-505	19		
22	LM04	CTD	06:15	BE	260	5001.78	12816.73		1933	1928				
			0719	EN		50 02 17'	128° 17.08'							
22	LBP02	NET		BE	261									Bongo
22	LBP2	ROS	1200	DE	262	50 4.25	127 54.39	✓	92	88	506-522	17		Incubation cast
22	LL01	ROS	1334	BE	263	50 2.21	127 34.46	✓	70	64	523-528	6		6th bottle not fired.
			1345	EN		50 2.45	127 34.50					1		Sample 528 Not Taken
22	LL02	ROS	1424	BE	264	4959.42	127 44.07	✓	130	125	529-536	8		
			1437	EN		49 59.59	127 44.11							
22	LL03	ROS	15:22	BE	265	4955.76	127 50.09	✓	557	554	537-552	16		BOTTLE #11 VENT WAS LEFT OPEN.
			15:57	EN		4956.04	127 50.23							
22	LL04	ROS	16:40	BE	266	495207	127 56.40	✓	1025	1020	553-570	18		NW 35 kts gusting 40 knots. PAR off
			17:35	EN		4951.89	127 59.86							
22	LL05	ROS	18:13	BE	267	4948.36	12802.73	✓	1720		571-591	21		
			18:41	BO										
			1926	EN		49° 49.35'	128° 03 41'							
22	LK08	CTD	2133	BE	268	4931.59	127 58.61		2357	2355				GPS LOST FOR UNKNOWN PERIOD OF TIME PRIOR
			2245	EN										TO CAST.

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STN LJ07. Seas continue to build. Sea fog developing. A few 4m+ wave sets. Still problems with CoastGuard SAR vessel. Scientific requirements Captain drafted a letter to Rock regarding the fact that we have to stay north of Estevan Pt until tomorrow MIDNIGHT.

LJ04 Step like structures in salinity and to a lesser extent temperature Did not track exactly on way back up TS?

Complete J-line. Arrive LG03 @ 0700 PDT for incubation station. Fog in morning. Winds still strong. Proceed to second incubation station at LG07. Few people at BF - even ship's officers 'ate'.

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
23	LJ08	ROS	00:28	BE	269	49° 20.22 N	127° 40.93W	✓	1706	1700	592-612	21		
			?	EN										
23	LJ07	ROS	02:32	BE	270	49° 24.18N	127° 34.80W	✓	1805	1793	613-633	21		
			03:40	EN		49 24.85	127 35.42							
23	LJ05	ROS	04:58	BE	271	49 31.68	127 22.45	✓	1060	1050	634-651	18		
			05:47	EN		4932.06	127 22.92							
23	LJ04	ROS	06:30	BE	272	49 35.48	127 16.79	✓	166-	155-	652-660	9		
			06:48	EN		4935.70	127 17.00							
23	LJ03	ROS	0734	BE	273	49° 39 28'	127° 11 39'	✓	128		661-668	8		
			0745	EN		49° 39.43'	127° 11.43'							
23	LJ02	ROS	0831	BE	274	49° 42.65'	127° 05.40'	✓	86		669-674	6		
			0840	EN		49° 42.73'	127° 05.54'							
23	LJ01	ROS	0909	BE	275	49° 44.92'	127° 02.79'	✓	63	57	675-680	6		
			0918	EN		49 44.50'	127° 02.86'							
23	LG03	ROS	14:07	BE	276	49° 15.01 N	126 43.56W	✓	123		681-694			INCUBATION/D16
			14:24	EN		49° 15.00	126 46.68							
23	LG03	NET			277									BONGO

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
23	LG07	ROS	1719	BE	278	4859.48	127 07.32	✓	1762	1759	695-710	16		
			1814	EN		4859.90	127 08.24							
23	LG07	ROS	1845	BE	279	4859.87	127 07.18	✓	1762	50	711-721	11		PAR Sensor on productivity sampling
			1858											PAR Sensor OFF
23	LG07	NET		BE	280				1762	250				BONGO
23	LG08	CTD	2015	BE	281	48° 55.28'	127° 13.41'		2064	2076	—			
				EN										
23	LG08	NET	2200?		282					250				BONGO PAR SENSOR ON
23	LG06	ROS	23:12	BE	283	49° 3.52	127° 1.49	✓	1006	1052	772-739			5m off Bottom
24			0003	EN		49 3.39	127°1.99							very thick aggregation of zoops @ 10m
24	LG05	ROS	0126	BE	284	4907.46	126°55.45	✓	280	256	740-752			
			0147	EN		4907.58	126°55.59'							
24	LG05	NET	0157	BE	285	49 07.63	126 55.57		283	250				Bongo
24	LG04	ROS	2.54	BE	286	4911.40	126 49.53	✓	146	140	753-761	9		
			300	EN		4911.57	126 49.54							
24	LG03 (B)	ROS	0349	BE	287	4915.03	126 43.67	✓	120	117	762-769	8		
			0404	EN		4915 20	126 43.86							

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

-10 m Niskin was full of zoops (sp?) -sample filtered to 500 ml jar - formalin

CRUISE NUMBER 9823

BOOK 2

DAILY LOG

INSTITUTE OF OCEAN SCIENCES

OCEAN PHYSICS

DATE: JULY 13-27, 1998

VESSEL: CCGS J.P. TULLY

PROJECT: GLOBEC / LA PEROUSE

2nd CTD make:_____ model:_____ serial no.:_____

Temperature sensor model:_____ serial no.:_____

coefficients: slope:_____ offset:_____

Conductivity sensor model:_____ serial no.:_____

coefficients: slope:_____ offset:_____

Pressure sensor range:_____psi serial no.:_____

coefficients: FSP:_____dB offset:_____

Transmissometer model:_____ serial no.:_____

coefficients: slope:_____ offset:_____

Winches:

1. make:_____ model:_____ serial no.:_____ use:_____
2. make:_____ model:_____ serial no.:_____ use:_____
3. make:_____ model:_____ serial no.:_____ use:_____
4. make:_____ model:_____ serial no.:_____ use:_____
5. make:_____ model:_____ serial no.:_____ use:_____
6. make:_____ model:_____ serial no.:_____ use:_____
7. make:_____ model:_____ serial no.:_____ use:_____

Salinometer: make:_____ model:_____ serial no.:_____

SAIL System:

Program version:_____ Time zone:_____

Sampling interval:_____sec

CTF module no.:_____serial no.:_____

Remote temperature model:_____ serial no.:_____

Flow sensor model:_____ serial no.:_____

Other sensors: (special for this cruise)

Name:_____ module ID:_____ serial no.:_____

Name:_____ module ID:_____ serial no.:_____

Name:_____ module ID:_____ serial no.:_____

Comments:_____

ADCP Setup:

Program version:_____ number of depth bins:_____

Time zone:_____ bin length (2x):_____

Sampling interval:_____sec pulse length:_____

Blank beyond transmit:_____ pings per ensemble:_____

Pulse cycle time:_____

% pings good threshold:_____

Comments: Panasonic rubber mounted FIV-70-0003
for model Ruven PR-2418 (vendor no. FSR 228J)

DAILY LOG

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
24	LG02A	CTD	4:31	BE	288	49 16.88	126 40.69		116	112	—	0		
				EN		49 16.98	126 40.82							
24	LG02	ROS	5:06	BE	289	49 18.69	126 38.00	✓	103	95	770-776			
			5:18	EN		49 18.75	126 38.08							
24	LG01A	CTD	5:47	BE	290	49 19.58	126 36.46	✓	83	76		0		
			5:56	EN		49 19.66	126 36.54							
24	LG01	ROS	6:16		291	4920.53	126 35.00	✓	56		777 - 781	5		
					NOOTKA SOUND CANCELLED									
24	BS01	ROS	1750	BE	292	4854.27	125 23.64	✓	57		782-805	24		
24	BS01	NET		BE	293									Bongo in Barkley Sound
25	NBS2	NET	0009	BE	294	48 25.52	125 55.29		260	250				Bongo 250m
		NET			295									
		XBT	0035		296	48 25.50	125 55.43		272					Bongo 50m
		CTD	00:47	BE	297	48 25.46	125 55.37		270	268	—			14.8°; SN 169019 203
			00:55	EN		48°25.40	125° 55.22							
	intransit	XBT	0114		298	48° 25.62	125° 52.54		152					
	NBC1	ROS	1:31	BE	299	48° 26.11	125° 50.19	✓	138	130	806-814			T = 14.52°C ; SN = 169017 204
		XBT	0131		300	48° 26.11	125° 50.19		138					- Maybe NBC2 on ROS header
														T = 14.41°C SN 16832 205

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - dritter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Between LG02A & LG02 Lots of Ash on the sounder
and again approaching LG01A

2335 PDT July 23. CANCELLED NOOTKA SOUND STATIONS, It was a 1½ hour run to Nootka Light and 1½ hour back, we had to leave Nootka Light by 0230, running on 2 engines, TO be at Ucluelet by 0900.

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS	
25	in transit	XBT	2:03		301	48° 23.8	125° 50.0		150					T°C = 14.46	206
	NBP2	CTD	2:22		302	48° 22.20	125 50.24		150						
	↓	XBT	2:24		303	48° 22.20	125 50.24		150					T°C = 14.61	207
	in transit	XBT	2:43		304	48° 23.4	125° 51.91		158					T°C = 14.62	208
	NBC2	XBT	2:54		305	48° 24.3	125° 53.27		171					T°C = 14.70 SN 169021	209
		XBT	2:57		306	48° 24.37	125° 53.32		171					T°C = 14.71 SN 169025	210
25	in transit	XBT	3:33		308	48° 24.950	125° 54.380		169		14.68		✓	SN 169023	211
	in transit	XBT	0340		309	48 25.550	125 55.96		170		14.70	FAILED		169022	212
	NBC2	ROS	0302		307	48 24.35	125 53.40	✓	171	164	815-824	(late entry)			
	in transit	XBT			310.	48 26.446	125 56.653		163		14.69			SN 169020	213
	in transit	XBT			311	48 28.42	125 59.40		156		14.65		?	SN 194541	214
	in transit	XBT			312	48 28.68	125 59.75		156		14.61.		✓	SN 194542	215
25	NBA2	XBT			313	48 29.09	126 00.31		155		14.61		✓	SN 194543	216
	in transit	XBT			314	48 28.8	126 02.5		173		15.06.	FAILED		SN 194544	217
	in transit	XBT	4:26		315.	48 28.56	126 02.75		177		15.10		✓	SN 194537	218
	NBA3	CTD	4:33		316.	48 28.30	126 03.53		183	177				FISH ON DEPTH SOUNDER	
	just after	XBT			317	48 28.300	126 03.485		184		14.69		✓	SN 194538	219
	in transit	XBT	4:56		318	48 27.20	126 02.15		182		14.72		✓	SN 194539	220

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

at run
318 More fish, lots on sounder

DAILY LOG

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS	
25	In transit	XBT	5:08		319	48 25.63	126.00.10		1821	1516.		✓		SN 194533	221
	almost at NBB3	XBT	5:17		320	48.24.47	12558.44		253	15.07		✓		SN 194534	222
	NBB3	ROS	0527	BE	321	48 24.24	12558.12	✓	298.	296.	825-837	13			
	as leaving stn NBB3	XBT	5:51		322	48 24.396	125 .095		268	14.85				SN 181602	223
	MID	XB	6:04		323	48 23.623	125. 57.020		384	14.86				SN 194535	224
25	NBC3	XBT			324	48 22.813	125 56.005		567	14.8j			✓	SN 194536	225
25	NBC3	ROS	6:24	BE	325	48 22.74	125 55.98	✓	515	552	838-853	16			
25	MID	XBT	0724		326	48 21.7	125 54.6		435	14.4			✓	SN 199305	226
25	NBD3	XBT	0736		327	48 20.88	125 53.35		217	14.7			✓	SN 199306	227
25	NBD3	ROS	0744	BE	328	48 20.59	125° 5331	✓	305	304	854-866	13			
			0806	EN		48° 20.47'	125° 5337'								
25	MID	XBT	0833		329	48 19.36	125 51.14		182	14.71			✓	SN 199307	228
25	NBE3	XBT	0892		330	48 18.54	125 50.08		182	14.70			✓	SN 199310	229
25	NBE3	CTD	0857	BE	331	48° 1796'	125° 4962'		182	177	—			traffic avoidance ...	
			0905	EN		48° 17.89'	125° 49.64'								
25	MID	XBT	0944		332	48° 1721	125° 50 14		323	14.73			✓	SN 199309	230
25	NBE4	XBT	1002		333	48° 16 193	125° 51.607		429	1506			✓	SN 199308	231

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m) / SST	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS	
25	NBE4	CTD	10:19	BE	334	48 16.12	125 51.82		432			—			
			10:24	EN		48 16.06	125 51.84								
25	MID	XBT			335	48 17 30	125 53 23		399	15.00		X		SN 199 313	232
25	MID	XBT			336	48 17 55	125 53 58		293	15.01		✓		SN 199 312	233
25	NB04	XBT	1056		337	48 18 47	125 54 93		294	15.00		✓		SN 199 311	234
25	NB04	CTD	11:04	BE	338	48° 18.70	125 55.30		349					hit bottom.	
25	Enhanced	XBT	11:33		339	48° 19.91	125° 56.95		625					T= 14.82 ; SN = 19934	235
25	NBC4	XBT	11:48		340	48° 21.17	125° 58.75		700					T=14.82 ; SN=199315	236
25	NBC4	ROS	12:00	BE	341	48° 21.21	125° 58.83	✓	720		867-883				
			12:36	EN		48° 21.25	125° 58.47								
25	in transit	XBT	12:56		342	4822 265	12600.411		445					T = 14.78 ; SN = 19536	237
			12:58		343	4822.453	12600.567		475					T= 14.73 ; SN= 198572	238
25	NBB4	XBT	13:10		344	48 23.41	126 02.03		278					T= 14.65 ; SN = 198567	239
	NBB4	CTD	13:25		345	48° 23.55	126° 01.89		250						
25	NBB4	NET	13:40		346	48 23.43	126 02.06		290					Bongo	
25	NBB4	NET	14:00		347	dit	"		"					Bongo 50-0 m	
	in trans	XBT			348	48°24.201'	126 04.12							T=14.711 SN=198566	240
	in trans	XBT	1436		349	48 25.10	126 06.25							T=14.67 SN=198561	241

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS	
25	NBA4	XBT	1452		350	48° 25.98	126° 08.27		280					T= 14.61 SN198562	142
	NBA4	CTD	1503	BOT	351				280	268					
	NBA4	NET			352										
	.	NET			353										
	TRANSIT	XBT	1557		354	48 25.45	126 09.36		337	T=14.63			✓	SN198865	143
25	NBA5	XBT			355	48 24.34	126 11.71		621		14.80	✓	LOST THIS DATA DUE TO FULL DISK	SN195563	
	NBA5	CTD	1644	EN	356				632	619					
	NBA5	XBT	1648		357	48 24.72	126 11.87		526		14.82	LOST	FAILED	SN198564	
	NBA5	XBT			358	48 24.57	126 11.90		635		14.83	LOST	FAILED	SN198568	
	NBA5	XBT	17:00		359	4823.97	126 11.87		671	DROP #1	14.94	ON FLOPPY	✓	SN198571	201
	in transit	XBT	1714		360	48 23.14	126 10.35		523	#2	15.00		FAILED	SN198570	
	"		17:16		361	48 22.95	126 10.04		491	#3	15.01		✓	SN198569	202
	in transit	XBT	17:27		362	48 21.60	126 08.02		442	#4	15.14	LOST	YUK	SN198364	
	in transit	XBT			363	48 20.90	126 07.05		474	?	15.18	LOST	YUK	SN198365	
	in transit	XBT	1739		364	similar	→			#1			✓	SN198366	1
	in transit	CTD	18:04	EN	365				540	555					
	in transit	XBT	18:17		366	48 19.74	126 05.04		633	#2	15.24		YUK	SN198367	2
		XBT	18:20		367	48 19.26	126 04.52		712		15.25		YUK	SN198356	3

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

NRA4 July 25/98 0800 PDT: Sunny & warm. NW winds moderate but moderate NW swell, probably associated with strong NW winds to the north yesterday.

CTD + BONGO [2 x] + x BT

Speech switch counter failed due to saltwater on display circuit board.

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
25	transit almost NBC5	XBT	18:23		368	48 18.90	126 04.07		787	15:27=TEMP DROP		#4	✓	SN 199533
		XBT	18:27		369	48 18.59	126 03.65		816	15.26		#5	✓	SN 198360
25	NBC5	ROS	1850	BO	370	48° 18.59'	126° 03 35'		1012	992	884-901	18		PAR SENSOR IS ON
			1921	EN		48° 18 86'	126° 03.23'							
25	MID1	XBT	1947		371	48 17 237	126° 01 615		625	15.4		#6	✓	SN 198 359
	MID2	XBT	1958		372	48 15 915	125 59 725		688	15 4		#7	✓	SN 198 363
	MID3	XBT	2007		373	48° 14.62	125° 57.83		566	15.4		#8	✓	SN 198 362
25	NBE5	XBT	2016		374	48° 13.85	125° 55,96		793	15 4		#9	✓	SN 198 358
25	NBE5	CTD	2025	BE	375	48° 13.28'	125° 56.76'		768	713				
			2047	EN		48° 13 53'	125° 55 82'							
25	MID1	XBT	2108		376	48° 15.023	125° 55.49		624	15.4		#10	X	SN 198357
25	MID 1	XBT	2110		377	48° 15, 427	125° 55.47		586	15.3		#11	✓	SN 198 361
25	MID2	XBT	2119		378	48° 16.69	125° 55.41		432	15, 1		#12	✓	SN 199 534
25	NBD4	XBT	2131		379	48 16.56	125 55, 24		302	15.3		#13	✓	SN 199 535
25	NBD4	CTD	2138	BE	380	48° 18 74'	125° 55.36		350	340				
			2149	EN		48° 18 85	125° 55 28							
25	NBD4	NET	2200	BE	381	48 18 92'	125 55 11'		375	250				BONGO
25	NBD4	NET	2219	BE	382	48° 18.97'	125° 55 05'		377	50				BONGO

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m) / BT	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
25	MID	XBT	2234		383	48 16.69	125 54.19		287	15.3		#14	✓	SN 199 538
25	NBD3	XBT	2238		384	48° 18.67'	125° 53.25'		211	15.3		#15	✓	SN 199 537
25	NBD3	CTD	2244	BE	385	48° 18.71'	125° 53.22'		208	186				
			2250	EN		48 18.77'	125° 53.16'							
25	NBD3	NET		BE	386					250				BONGO
25	NBD3	NET		BE	387					50				BONGO
	Proceed to Juan de Fuca Strait west stations (CTDS),													
	Warm, Sunny, Light NW winds													
26	JFW6	CTD	5:31	BE	388	48 24.02	124 32.57		142	132				Nbtl reader wrong Save JFW2 in SeaSave
	JFW5	CTD	5:56	BE	389	48 25.03	124 31.99		209	204				
	JFW4	CTD	6:43	BE	390	48 27.29	124 30.81		227	44				Zig-zaggy salinity - reran
	JFW4	CTD	6:51	BE	391				227	225				
			0659	EN		48° 27.09'	124° 30.68'							
26	JFW3	CTD	0729	BE	392	48° 28.70	124° 29.37		209	201				
			0739	EN										

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN - end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
26	JFW 2	CTD	0807	BE	393	48° 30.15	124° 28.72		141					
			0813	EN		48 30.10	129 28.52							
26	C1	NET		DE	394	48 28.765	125 03.377		146					
26	C1	ROS	1156	BE	395	48 28.93	125 03 64		154	148	902 - 917	16		
			1212	EN		482912	12503.70							
26	JFC 4	CTD	447	BE	396	48° 20.64	124° 12.38		193	191		Ø		

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

TIME CODE - BE - beginning time of cast; BO - bottom time of cast; EN- end of cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Date	Time PDT	
July 26	1019	on station VF2C-A for recovery - range 290 m, 292 m, 299 m
	1023	- sent BCDF for 314 received positive response 292 282 280 ranges 265 = rising mooring.
	1025	- sighted on surface
	1030	- all on board - ADCP guard ring should have a second ring level with the bottom of the transducers. - pinger, XF, Argos and VHF all came on board working - the poly lifting bridles seem to have abraided the paint off the buoy where they touched it and swayed in the current.
		- the Genexxa headset for the acoustic command unit failed - in fact it wasn't repaired since the last time - the volume switch on the right ear piece is loose - neither microphone works - rather one is intermittent.
		- IO 1090 206 gives a very weak transponder response - barely audible. (relative to normal response from other releases).