CRN 90-01

DAILY LOG

INSTITUTE OF OCEAN SCIENCES

OCEAN PHYSICS

DATE 9 May

VESSEL Parizeau

PROJECT Papa /

DAILY LOG | OCEAN PHYSICS | INSTITUTE OF OCEAN SCIENCES

YEAR 1990 | MONTH 05 | TIME ZONE UTC (+7) | SHIP Parizeau | CRUISE 90-01 | PAGE 1 OF

DAY	STATION NUMBER	DEPTH SOUNDING (M)	SHIP STOP/START TIME GMT	LATITUDE/LONGITUDE	STD CONSEC. #/DEPTH	STD TIME	HYDRO CONSEC. #/DEPTH	MESSENGER TIME	SALINITY #/CALIBRATION LOOP OR DEPTH	OXYGEN #	SURFACE TEMPERATURE/ SALINITY		NOTES
9			2030										depart IOS
10	JF1		0126						1 / Loop				Loop samples under way
10	JF2		0307						2 / Loop				Loop samples underway
10	JF3		0455						3 / Loop				Loop samples underway
10	JF4		0643						/ /				loop inoperative
10	MP01	115	0834 0849	48345 12530.0	1 113	0842			/	10.276 31.828			loop not working
10	MP02	114	1049 1101	4836.0 12600.0	2 114	1051			/	10.444 31.533			no loop.
10	MP03	823	1241 1318		3 819	1248			/	9.88 31.728			No loop.

SAIL CTF cruise #43 module 104

PARIZEAU — Capt. PAUL FROST.

1st	SURAJ GULATI	4-8
2nd	HOWIE ELLIOT	12-4
3rd	PAT MURPHY	8-12

RON BELLEGAY — Chief technician.

12-4: BERNARD MINKLEY (B)
FRANK WHITNEY (D)

4-8: RON BELLEGAY (A)
LES SPEARING (C)

8-12: REG BIGHAM (G)
TIM SOUTAR (D)

KIETH JOHNSON (B)

RUSSIAN VISITORS:
GALINA PAVLOVA (F)
OLEG IBADULYAYEV (C)
PAVEL TISHCHENKO (E)
ALEX BYCHKOV (E)

GUILDLINE CTD: TERMINAL UNIT MOD 87107 SN 58610
PROBE MOD 8715 SN 53501 (2000 db)
SEATECH TRANSMISSOM. SN 197
BENTHOS PINGER MOD 2216 SN 11121

COMPUTER: HP VECTRA MOD D1430A SN 2945A07169
MONITOR: NEC Multisync 2A
PRINTER: STAR radix-10 plus

WINCH: SERIES 410 SN 1433
SLIP RINGS: SN 42991
WINCH COUNTER: SYTECH MOD B31 SN 87002

CTD PROGRAM VERSION 1.03 UNTIL 90/5/18.
1.01 AFTER 90/5/18.
1.03 ON 90/5/22 AGAIN

SAIL ON C-SAIL; RECORDING ON BERNOULL — NO TRUE WINDS
NO SH SP ≥10kt

CTD Winch Repairs

1. Bypass hose has been damaged by winch shaft
2. Feed rollers require new bearings
3. Diamond gear assembly is worn out. Spooler shifts left & right when cable pressure changes.
4. Variable speed unit requires adjustment as rate of Travel out is not the same as cable coming in. Unit has to be manually adjusted at least twice on each 1500m cast when cable is going out.

1826 L
+ 7
0126 GMT

90/5/9 PDT

1700 – SAIL recording on C: Bernoulli Box, 86.0% free.

1826 – Sta JF1 – underway loops: S, CH, NUT.
1835 – fog begins.
1850 – out of the fog.

NOTES RE. SAIL PROGRAM:
- contrast on monochrome monitors is TERRIBLE
- "speed" registers only when < 10 kt.
- only relative wind speed is shown. We want TRUE wind speed as well.

2342 – Passing JF4 – discovered sea water loop inoperative. Engine room says pump OK.
2349 – B. Minkley down to ER to check
– foul odor in lower lab. Checked earlier by Woody & Tim. No apparent reason.

0006 – Seawater pump working again. Removed bleed valve & removed air from pump.

0355 Sta MP02 mylop as ship pitching too much (SAIL not displaying CTE

0541–0618 MP03 CTD to 319m: Graph blew up when ALT S pressed to stop logging.

0732 Arr. site of P4 sediment trap mooring
0806 Good ranges on mooring.
0807 mooring released.
0818 mooring is up.
0900 Sediment traps onboard.

CTD #6 no data written to disk.

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10	MP004	1342	1737	48 39.02	005	001	2114	4	2057	10.320				loop at 2003
				126 40.13	1334	1737 1330			2076	31.590	✓			
11	MP05	2120	0618	48 41.59	0006	/		#5	/	10.330				loop samples taken
			0656	127 9.64	1502.6	0620 /		Loop	/	31.809	✓			Computer locked up after cast.
11	MP06	2570	0940	4844.6	7	2		6	2077	10.008				
			1228	12740.0	1500	0942 2500	1124		1057	32.039	✓			
11	MP07	2527	1457	48 46.60	8	/		7	/	9.686				- problem with Starting program - see log.
			1600	128 9.95	1500	1525 /			/	31.896	✓			- loop samples taken
11	MP08	2540	1800	48 49.0	10	/		008	/	9.592				
			1900	128 40.01	1500	1802 /		Loop	/	31.946	✓			loop samples taken
11	MP09	2362	2118	485.42	11			9		9.643				
			2200	12910.04	1500	2122				32.002	✓			
12	MP10	2683	0010	48 53.65	12	/		10		9.465				
			0049	129 40.02	1506	0016 /				32.238	✓			
12	MP11	2778	0300	48 55.99	13	/		11		8.712				
			0339	130 9.90	1502	0305 /				32.546	✓			loops - OK.
12	MP12	3260	0530	48 58.22	14	/		12.		8.953				
			0612	130 39.72	1500	0535 /		Loop		32.556	✓			loops - OK.
12	MP13	3035	1000	4902.63	15			13		8.593				
			1040	13140.07	1510	1003				32.563	✓			
12	MP14	3337	1443	4907.43	16	/		14		8.400				
			1517	132 39.97	1501	1446 /				32.595	✓			loops
12	MP15	3430	1927	4912.0	17	/		15		8.378				loop samples
			2005	13340.0	1503	1930 /				32.592	✓			

10/5/90 Pd.E.

1037 CTD P4 To 1340 m.
- ALT S is not the only ALT that will start logging.

1134 - Start productivity cast - no power to outside elec. receptacles - will use extension cord to lab.

1648 - P4 sediment trap mooring wheels away.

2005 - Incubation drifter Disturbed
2015 - drifter on board - depart for P5.

2320 - P5 - CTD #6 1500 m. loop samples taken.
- screen locked up after 'ALT S' to stop logging.

Stn MP06 CTD #7 went well on down and up cast. At surface ALT S froze system and I had to reboot system.

MAY 11/90

0442 Cast #6 has no data. File opened but not written to.

0802 - CTD No. 008 to - 1500. Aborted cast @ 700 m - brought it back to surface. Not logging. Locked up - Re boot computer - After numerous attempts at starting logging it was inexplicitly successful.

1102 - CTD to 1500 m. loop samples taken.

1418 - Started CTD at MP09 to 1500.
1440 - Loop samples

2005 - Stn MP11 - CTD to 1502 m.
loop samples taken.
Wind 17-20 knts NW.

2235 - Stn MP12 - CTD to 1502 m.
loop samples taken.
wind 18 knts - NW

May 12 1990 Pacific Daylight time

0746 - CTD to 1501 m @ MP14
loops taken
wind 16 knts - NW.

1227 CTD + loop samples at MP 15.
at least 5 dolphins swam around ship (Dahl porpoises?)

1400 lost power in lower lab on circuit L-13-2. Reset breaker (outside cabin ⑥) and moved some equipment to other circuits.

1546 cleared MP then 060553 (1500 m) broken awaiting with 13880.

1715 MP16 loops: S, Chl, ΣCO_2, Nut.
1721 CTD #18 to 1502 m.

1842 0-1000 m hydro cast messenger
1959 1200-3500 m hydro cast messenger

May 13 PDT

1315 MP19 CTD #21
1400 depart sta, heading for mooring.

1744 — 4 cables off MP20 mooring site
1748-1802 — ranging on mooring NETCS-1.
1802 — released anchor
1805 — top cluster of buoys on surface
1908 — set of buoys above release on surface.
2145 — mooring on board.
— spooling winch operated by hand as tailing winch from capstan for upper 2 lines. (Winding winch motor bearing siezed)

CTD program:

~~buffer~~ avg reaches 700 & 900 both logging and idle mode.

Sta HP25 CTD# 28: Transmissometer values low. Check alignment.
pressure reading on deck 2.3 db

if buffer count greater than 99, all other counts look like
700 & 900 values when they are 70 & 90.

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13	MP16	3656	0010	49 16.92	18	0021	3	0142	16	2027	8.148			
				134 39.53	1502		3500			2050	32.584			
13	MP17		0757	49 21.0	19				17		8.476			
			0836	135 39.66	1500	0800					32.619			
13	MP18	3855	1229	49 26.09	20		4		18	2057	8.155			
				136 40.07	1499	1232	3800	1402		2081	32.584			
13	MP19	3946	2015	4929.99	21				19		8.234			
			2058	137 39.73	1500	2017					32.530			
14	MP20	3984	1403	4933.94	22				20		8.549			loop samples.
				138 40.24	1505	1405					32.599			mini at 1545
14	MP20	3984	1505				5	1536						CTD #23 aborted.
							3900							
15	MP21	3840	0419	49 37.86	24				21		9.033			delay as pressure sensor re-connected.
			0554	139 40.79	1500	6520			loop		32.607			
15	MP22	3968	0934	4942.00	25				22		9.139			loop samples.
			1013	140 40.0	1500	0931					32.649			
15	MP23	4069	1355	49 45.94	26				23					screen locked up at bottom of cast.
			1436	141 40.01	1501	1400								
15	MP24	4000	1811	49 50.30	27				24		9.203			re-boot system.
				142 40.05	1502	1817					32.684			loops taken -
15	MP25	4010	2241	50013	28				25		8.897			loop samples.
			2319	143 39.60	1502	2244					32.633			
16	MP35	4166	0150	50 0.35	29				26		9.203			
			0228	144 17.48	1506	0153					32.660			

90/5/13 PDT

0529 STN MP18 LOOPS: S, ΣCO_2, NUT, chl.
0532 CTD # 20 to 1499 m.
0650 SAIL: 79.4% free on C:
0702 0-1200 m hydro cast messenger.
0815 1500-3800 m cast - messenger
0837 Start up cast.
Messenger lanyard caught under top valve of 2500 m bottle - no good?

1317 MP19 CTD + LOOP. 8-12 Porpoises swam around ship.
1345 Stopped winch for repairs.

90/5/14 PDT

0530 STN MP20 PRIMARY PRODUCTIVITY CAST TO 100 m.
0635 STN MP20 INCUBATOR DEPLOYED.
0700 CTD # 22 to 1505 m.
0800 HYDRO CAST TO 3900 m (800 m & 3900 m)
0800-1430 RIG QEPI-C MOORING.
1445-1651 * DEPLOY QEPI-C NEAR MP20.
1730- PROCEED TOWARDS MP21

* 1651 HRS DEPTH ON EPC 3986 m

2122- CTD aborted, pressure channel not operating
- LAS opened pressure case - plug off pressure sensor @ bottom end - re-connected.
2220- CTD to 1500 m. loops taken -

no data written to disk. File empty →

90/5/15 PDT

0234 Stn MP22 CTD # 25 to 1500m. CTD pressure reading on bottom 1.7 lb.

0655 MP23 #23 loops: S, ΣCO_2, Nut, Chl.

0700 CTD # 26 to 1501 m.
Screen locked up at bottom of cast.
Occasional jellyfish sighted on stn.

0736 lv MP23

1117 - MP24, #24 loops complete.
CTD # 27 to 1500, had to re-boot computer.
Glassy calm, partly sunny.

1541 - 1619 - MP25 loops + CTD.

1630 - cleaned transmissometer lenses with windex and kim wipes.

1850 - Arr MP35. #26 loops: S, Nut, Chl, ΣCO_2

1853 - CTD # 29 to 1506 m
- buffer size below file number gets to 96 max going down; 90 max coming up.
- brown feather drifted by during station

1928 - Lv MP35 for FDSTAR deployment site.

2335 - FDSTAR deployed

-2.5 /m CTD #30

CTDSHELL Program does not plot data

MP26 CTD #33 Computer locked up when ALT S pressed at end of down cast. Disk light was flashing during cast but no data was written to disk. File 90010033.CTD and 90010033.PRN opened but 0 bytes in file.

This is the 3rd time computer failed. To recover from fault, program No 6 L started and ALT S pressed. This puts program in idle mode.

Upcast logged from 400 m.

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16	MP26	4265	1212	50 00.0	30	1217		27		8.426			4239 corrected depth.
				145 00.0	1506					32.685			1478 wire out. OK
16	MP26	4262	2038	50 0.24	31	2042	6	28	2027	8.404	116/		
			2118	144 59.28	1503		4200		2053	32.682	142		
17	MP26	4263	0123	50 0.05	32	0126	7			8.433	143		
			0201	144 59.75	1504		4200			32.675			
17	MP26			50 00.45	33	0927		29					1464 out for 1505 db.
				144 58.37									computer locked up.
					34					8.337			upcast of 33 from 400 db.
										32.667			
18	MP26			4959.36	35	1530		30					
			1610	145 01.03									
18	MP26				36	1547				8.320			upcast. 1500 & 0 db.
										32.658			

90/5/16 PDT

0517 – Stn MP26 CTD #30 to 1506 m; #27 loop samples

0655 – O.Chem incubator away.

0828 – O.Chem Sed. trap mooring released.

1115 – measured sheave on CTD winch : 31.3 cm., 31.3 cm.
– Changed SHEAVE DIA. from 31.1 to 31.3 cm on counter.

1300 – O.Chem (Sed trap #3) mooring on board.
Returning to P26.

1328 – Stn MP26 . # 28 loops: S, Chl, Nut, ΣCO_2
1342 – CTD #31 to 1503 m.
1437 – Incubator disturbed.
1442 – Incubator on board.

1531 – Messenger 0–1200 m hydro cast P26
1657 – Messenger 1500–4200 m hydro cast P26

1826 – MP26 CTD #32 to 1504 m; #29 loops: S, Chl, Nut, ΣCO_2

1930 – Started deep hydro cast with 10 Go-flo samplers 2 m below each Niskin bottle. Samples taken for TCO_2, $^{13}CO_2$, pCO_2, Alk., DOC as well as usual O_2, salinity + nutrients.

17 MAY 0245 Finished Niskin/Go-flo casts.

90/5/17 PDT

0400 - 1200 Tests of Oceano acoustic releases and Benthos transponders to 4000 m on hydro wire at P26.

1300 Water from 500m taken to fill sediment trap bottles.

1440 - 1630 Deployed 3 sediment traps plus water pump at P26. Traps at 200, 1000 + 3800 m. pump just below 1000 m trap.

1800 - 1930 TRITIUM CAST to 800 m. T ± 5‰ ok

1930 - 0320 Tests of Oceano acoustic releases and Benthos transponders to 4000 m on hydro wire at P26.

90/5/18 PDT

0830 Sh P26 CTD # 35. Wind 25 knots, seas increasing program traffic count remains 90.
ALT S locked up system, buffer 92, time display updating comp number displayed.
File on D and E drives empty. Reloaded program from disk, operated upcast (cast #36)

1250 Sh MP41 CTD worked fine. Used ALT key to reset program.
Winch wire does not lay well enough to bring cast in at 1½ m/sec.

1655 At MP32 #32 Loops: S, ZCO_2, Nut, Chl.
1659 CTD # 38 to 1500 m.
SAL: 69.2% free on C:
— Screen/computer locked up at surface on up-cast when ALT S'd. buffer 81
1742 Lv MP32 → clock still updating
Also noticed that when screen locks up, salinity digit appears on left border of screen.

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18	MP41	4267	1950	50 26.69	37	1952			31		8.127			loop samples.
			2039	145 00.19							32.695			
18	MP32	4268	2355	50 54.25	38	2359			32		7.711			
			0042	145 1.62	1500						32.682			
19	MZ01	4175	0358	51 20.83	39				33		7.828			running CTD old version 101. - loops
			0444	145 027	1503	0405					32.667			
19	MZ02	3850	0731	51 47.51	40	0737			34		7.602	✓		1541 mm out for 1502 √6
				145 02.49	1502						32.667			
19	MZ03	4090	1057	52 11.92	41	1105			35		7.520	✓		
			1143	144 59.97	1505						32.680			
19	MZ04	4073	1427	52 39.08	42	1433			36		7.255	✓		log on upcast 43, then erase.
			1511	144 59.89	1503						32.683			
19	MZ05	4095	1803	53 06.07	43				37		7.214	✓		
			1842	144 59.79	1502	1807					32.683			loops ✓
19	MZ06	4067	2130	53 32.93	44	2131			38		7.44	✓		1585 mm and. Trans data questioned on downcast.
			2218	145 00.53	45						32.688			upcast logged.
20	MZ07	4039	0103	54 00.05	46				39		7.334			
			0152	145 00.01	1502	0105					32.701			
20	MZ08	4123	0435	54 26.77	49				40		7.391	✓		consec #?
			0523	144 59.90	1503.2	0443					32.761			
20	MZ09	4057	1702	54 59.94	50		8	1842	41		7.520			loops ✓
				145 0.16	2002	1706	4000				32.679			
20	MZ09	4053	2140	55 01.23	51	2141			42		7.255			LOOP ✓
				145 00.69	52						32.683			

May 18/90

2105 – CTD MZ01 – 1503 using "old" version no uptrace unless logging.

2144 – leave Stn.

May 19/90

0038 Sh MZ02 had kink in wire – had been pulled through winch rollers.
depth changed from 3850 & 3600 during cast.

pulled CTD on deck and removed several small loops in cable, straightened transmissometer on CTD.

0357 Ar Stn MZ03 #35 loops: S, NH, Chl, ECO2.

0405 CTD #41 to 1505 m (Program ver. 1.01)
Many jellyfish.

0443 Lv MZ03.

0733 CTD No. 42 to 1503 m. (program ver 1.01)
loops

0811 – Proceed to next Stn.

1107 – CTD No 43 to 1502 m
loops taken
wind 0-0 knts, low swells from west.
partly sunny.

1142 – Proceed to next Stn.

1203 cleaned transmissometer lens. Air value 92.3

1428 Sh MZ06 no wind, sunny. Loops.
Trans. data on down profile (not realistic). Decided to log up cast to check. Up profile normal. Cleaned transmissometer lens with isopropanol. Air value 92.8

1803 Ar MZ07 #39 loops: S, Chl, NH, ECO2

1805 CTD #46 to 1502 m.

1852 Lv MZ07.

2130 – Ar MZ08 #40 loops.
CTD #49 to 1502 m. Pressure sensor not indicating – re-do cast from surface.
Cast #47 and #48 have header info. only – erase previous attempt!

May 20 1990 P.d. time

0300 - On station MZ09
0530 - Bottle cast for productivity / C14
0630 - drifting incubator launched.
0800 - preparing for sediment trap mooring.
0932 - sediment trap mooring - deployed.
1006 - CTD # 50 to 2002 m.
Loopes # 41.

Bottle cast 0 - 1200, 1500 & 4000 m.
CTD & 1500 m. Down cast had temperature and transmissivity spike at 50 m. Did not show on logged upcast.

1527 depart MZ09 (AG station) for station Papa.

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21	MP49	4030	1850 1943	50 54.31 144 17.39	53	1902	/	/	43	/	7.893 32.648	✓	
22	MP33	3660	0308 0355	50 54.14 143 34.37	54 1500	0309	/	/	44	/	8.172 32.660	✓	
22	MR20	3618	0605 0647	50 55.95 143 1.10	55 1502	0609	/	/	45	/	8.462 32.654	✓	
22	MR19	3930	0920 1[illegible]2	50 57.81 142 20.37	56 700	0922	/	✓	46		8.344 32.660		Cast 57 garbage.
	MR19		1042		58	0957						✓	
22	MR18	3892	1321	51 00.09 141 38.90	59 1503	1322	/		47	NO DATA			Program locked up on bottom ALTS. Data file not closed.
22	MR18		1405		61	1343		✓			8.614 32.647		DATA LOGGED ON UPCAST.
22	MR17	3868	1640	51.204 140 56.11	62 1502	1643	/		48		8.860 32650		
22	MR17		1723		63	1706	/						up cast recording
22	MR16	3775	2000 2050	51 04.0 140 14.0	64	2002	/		49		9.100 32.616		
23	MR15	3005	0028 0109	51 05.98 139 29.89	65	0031	/		50		9.423 32.583		
23	MR14	2910	0353 0432	51°9.05 138 47°83	68	0356	/		51		9.704 32.495		#66 and #67 garbage.

May 21 1990 (Pacific daylight time)

1150 Stopped on Stn 49 - MR49.
1202 CTD # 52.

1555 Begin recovery of FDSTAR 50°32.67'N 44°5.19'W
1620 FDSTAR on board.
2008 Stop on Stn MR33
2009 CTD to 1500 m.
loops taken, # 44
in 14 min the sounder shows an increase of 120 m in depth (in calm conditions)
- very steep bottom profile.
2055 - Lv. Stn.

pm 1105 - Stop on MR20
pm 1109 - CTD # 55 to 1502 m.
- loops, # 45 taken. / wind speed 0.000 knts
pm 1147 - leave Stn.

90/5/22 PDT

0239 Stn MR19 CTD #56. Program crashed at 700 m Deep I.O. error. Read data from fish as data error light flashed.
greased all sensor plugs. Running new CTD program. Bridge was using teletype during cast #56.
Bridge transmitted during upcast - Data error light flashed. Teletype may have caused computer lockup on Line P platforms outbound.
Cons # 58 has good data, #57 is garbage.
Note We are using CTD Program version 1.83 (latest version) again.

0624 Arr MR18. #47 Loops: S Chl, Nut, ECO_2
CTD #59 — Rt S at bottom of cast
locked up computer. Rebooted and changed cons. # to 60
CTD # 61 — upcast recorded.
Program went from idle table display (after Rt S at end of #61) to CTD-on-no-logging mode shn top of old graph.

90/5/22 PDT

0940 - Arrive on Stn MR
0943 - Start CTD #62 to 1502 m.
Loops, #48.
Recorded upcast #63.
1025 - Lv. Stn.

1306 Stn MR16 Using version 10B of CTD program. ALTS at bottom of cast locked up computer. Pressed RESET on deck unit. Computer back light came on, screen started to update.

Removed feed rollers from CTD winch & got bearing part number (FAG 6206 RS). The left roller bearings are corroded. Rollers are not aligned properly. The space at bottom is less than ¼ tap and proper adjustment for wire size not possible.

1728 Arr Stn. MR15. #50 loops: S, Chl, Nut, Sal.
1731 CTD #65 to 1503 m. (ALTS accepted without problems)
1809 Lv MR15

2053 Arrive Stn MR14.
2056 CTD to 1501 m. Consec #68, loops taken ✓
Computer would start to log (for 1-2 sec.) then go off. Finally stayed on.
2132 Depart MR14

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23 May

0018 Stn MR13 CTD locked up & depth passed. Reset button. System OK.
Bottle cast 0-1050 1200 & 3660 m. Reset secondary counter reset stuff while counting down from 3660.
0425 Lv MR13

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YEAR 1990 | MONTH 05 | TIME ZONE UTC (+7) | SHIP Parizeau | CRUISE 90-01 | PAGE OF

DAY	STATION NUMBER	DEPTH SOUNDING (M)	SHIP STOP/START TIME	LATITUDE/LONGITUDE	STD CONSEC. #/DEPTH	STD TIME	HYDRO CONSEC. #/DEPTH	MESSENGER TIME	SALINITY #/CALIBRATION LOOP OR DEPTH	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	XXX		NOTES
23	MR13	3678	0018	51 10.92	69	0721	9	0838	52	1042	9.561	✓		
			1125	138 05.93	1508		3660			2021	32.472			
23	MR12	3664	1414	51 13.01	70	1416			53		9.237	✓		
			1453	137 22.88	1507						32.469			
23	MR11	3651	1756	51 14.93	71	1758			54		9.147	✓		
			1833	36 40.20	1509						32.464			
23	MR10	3656	2150	51 16.93	72	2151			55		9.205	✓		
			2233	135 57.63	1510						32.450			
24	MR09	3515	0145	51 18.98	73	0147	10	0304	56	1040	8.716	✓		salinity 220 to 243
				135 15.05	1502		3400			1065	32.465			
24	MR08	3368	0846	51 21.19	74	0847			57		9.149	✓		
			0930	134 32.67	1510						32.331			
24	MR07	3211	1253	51 23.50	75	1255			58		9.263	✓		
			1335	133 49.56	1505						32.332			
24	MR06	3020	1653	51° 25.40	76	1654			59	/	9.175	✓		
			1729	133° 6.75	1501						32.421			
24	MJ05	2760	2034	51 27.48	77	2037			60		9.766	✓		
			2120	132 23.96	1504						32.442			
24	MJ04	2564	2309	51 35.61	78	2311			61		10.237			
			2350	132 6.49	1502						32.213			
25	MJ03	2320	0116	51 43.54	79	0119	11	0303	62	1092	10.506			salinity 244 to 265
			0500	131 49.94	1503		2280			2018	32.186			
25	MJ2A	2065	0542	51 47.47	80	0544			63	/	10.380			
			0621	131 40.89	1501						32.195			

90/5/23 PDT

0714 Arr Stn MR12. #53 loops: S, Chl, Nut, ΣCO_2
0716 CTD #70 to 1507 m.
SAHL 60.7‰ FREE ON C:
0750 LV MR12.

1056 - arrive Stn MR11
1058 - Start Stn MR11.
loops taken #54.
1133 - leave Stn MR11.
1345 - sited 2 whales (?), 1 identified as a Sperm Whale, with blowhole forward on the head and spout shooting forward.

1450 Stn MR10 Surface and 7 knots.
No wire angle. 1526 wire out for 1512 db.
ALT S, worked properly at depth but not at surface.
Pressed Reset button.

1845 Arr MR9 #56 Loops: S, Chl, Nut, ΣCO_2
1847 CTD # 73 to 1502 m
Bottle cast to 3400 ← Why 3400 deb? The bottom was 3515.

90/5/24 PDT
0145 Stn MR08. Loop samples, CTD # 74 to 1510.

0553 Arr Stn MR7 #58 Loops: S, Chl, Nut, ΣCO_2
0555 CTD # 75 to 1505 m
Control S locked up CTD; reset button unlocked it.
0635 Lv MR7.

0953 Arrive Stn MR06
#59 loops ✓
0954 CTD to 1501 m.
1029 Depart Stn MR06.

1334 Stn MJ05 CTD and loop samples.

1609 Arr Stn MJ04. #61 loops: S, Chl, Nut, ΣCO_2
1611 CTD #78 to 1502 m
1650 Lv MJ04

90/5/24 PDT

1816 Arr Stn MJ03 #62 loops: S, Chl, Nut, ΣCO_2
1819 CTD # 79 to 1503 m.

2003 messenger, 0 - 2280 m HYDRO CAST.
messenger had hung up below 400 m bottle - 500 m to 2280 lowered again.
2037 - messenger sent 500 → 2280.
2115 - Cast complete.
2125 - Test to 500 m complete, chains in.

1042 Stop on Stn MJ3A.
1044 CTD to 1500 m.
loops taken #63.
1121 - Depart Stn.

DAILY LOG — OCEAN PHYSICS — INSTITUTE OF OCEAN SCIENCES

YEAR 1990 | MONTH MAY (05) | TIME ZONE UTC (+7) | SHIP PARIZEAU | CRUISE 9001 | PAGE OF

DAY	STATION NUMBER	DEPTH SOUNDING (M)	SHIP STOP/START TIME	LATITUDE/LONGITUDE	STD CONSEC. #/DEPTH	STD TIME	HYDRO CONSEC. #/DEPTH	MESSENGER TIME	SALINITY #/CALIBRATION LOOP OR DEPTH	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	KKX		NOTES
MAY														
25	MJ02	2115	0707	51 51.6	81	0711			64	9.571				
			0754	131 32.0	1505					32.302	✓			
	MJ1A	1880	0850	51 55.67	82	0851			65	9.979				1555m wire out.
			0931	131 22.67	1509					32.233	✓			
25	MJ01	639	1105	5159.95	83	1108			66	9.840				
			1128	131 13.95	634					32.260	✓			
25	MJ00	79	1203	5202.01	84	1206			67	8.814				
			1213	131 10.23	88					32.443	✓			
25	M088	2039	2333	51 41.68	85	2334			68	8.817				
			0018	131 13.64	1500					32.467	✓			
26	MI03	2465	0203	51 23.23	86	0203			69	10.013				Loop salinity only Henceforth.
			0241	131 13.96	1502					32.245	✓			
26	M089	2580	0445	51°33.5	87	0448			70	10.299				
			2226	131° 11.09	1506					32.122	✓			loop sample ✓
26	MH05	2635		5043.09	88	0747			71	9.746				WIND 30 kt.
			0831	131 08.27	1509					32.292	✓			1558 wire out.
26	MG05	2045	1208	50 24.48	90	1211			72	9.532				#89 garbage
			1254	130 37.11	1505					32.401	✓			
27	A03	1310	1824	48 40.11	91	1833			73	10.780				48 40.02 / 126 38.29 Low trans signal @ 250 m
			1914	126 38.66	92					32.508	✓			

90/5/25 PDT

0405 Arr. MJ01 #66 loops: S, Chl, Nut, E_{coa}
0408 CTD # 83 to 634 m
0428 Lv. MJ01.

0533 Arr MJ00 #67 loops: S, Chl, Nut, E_{coa}
0506 CTD # 84 to 85 m : Reset to end cast)
0513 Lv MJ00.

0547-0557 Set biological sampling gear.

1000-1300 Anthony Is ⚓

1400 Recover biological sampling gear. -- NFF.

1633 Arr Stn M088 #68 loops: S, Chl, $EC0_2$, Nut.
1634 CTD # 85 to 1500 m.
Many pieces of fucus and small old kelp drifted by during cast.
Wind sqwd ~20 kt. on stn. -- SAIL shows 3-6 kt.
1718 Lv M088.
14.6 Mb free on E: (Sunnadil)

1903 Arr MI03 #69 Loop salinity ONLY.
1903 CTD # 86 to 1502 m.
wind: 20 kt, 128°.
At 1918:00, CTD Computer read 0216:54 (during cast)
At 1919:00, SAIL computer read 0219:18
ie CTD VECTRA computer is: 1 min 6 sec slow
SAIL computer is: 18 sec fast.
A few pieces of fucus drifted by during cast.
1941 Lv MI03.

2145 Arrived Stn M089, wind 24/25 kts & lumpy.
2148 CTD # 87 to 1506.6 m.
Loop samples
2226 depart Stn.

DAILY LOG — OCEAN PHYSICS — INSTITUTE OF OCEAN SCIENCES

YEAR 1990	MONTH May	TIME ZONE UTC (-7)	SHIP	CRUISE 90-01	PAGE OF

DAY	STATION NUMBER	DEPTH SOUNDING (M)	SHIP STOP/START TIME	LATITUDE/LONGITUDE	STD CONSEC. #/DEPTH	STD TIME	HYDRO CONSEC. #/DEPTH	MESSENGER TIME	SALINITY #/CALIBRATION LOOP OR DEPTH	OXYGEN #	SURFACE TEMPERATURE/ SALINITY KKX		NOTES
27	MA2B	452	1951	48 45.26	93	1953			74	10.957			computer time slow by 00:01:45
			20[illegible]	126 31.87	448					31.992	✓		468 m out.
27	MA02	176	2046	48 50.24	94	2048			75	10.974			reset computer clock.
			2055	126 25.18	175					31.929	✓		
27	MA1B	134	2134	48 55.22	95	2136			76	11.033			
			2142	126 17.91	132					31.916	✓		
27	MA01	85	2216	4900.04	96	2218			77	10.844			
			2223	126 11.59	87					32.057	✓		
27	MA0B	55	2250	4903.76	97	2253			78	10.897			
			2257	126 05.86						32.003	✓		
27	MA00	37	2328	49 7.98	98	2329			79	11.537			LORAN NOT ACCURATE RADAR POSITION. —
			2335	126 0.37	41					31.707	✓		
28	M0AB	107	0107	49 11.01	99	0109			80	10.917			
			0115	126 29.87	110					32.075	✓		
28	MB00	32	0254	49 29.92	100	0259			81	11.297			
			0305	126 35.93	37					31.731	✓		loop ✓
28	MB01	105	0413	49°21.89	101	0415			82	10.849			
			0420	126°47.77	109					32.124	✓		
28	MB1A	145	0501	49 16.76	102	0503			83	10.574			
			0510	126 54.60	150					32.043	✓		
28	MB02	300	0552	49° 11.98	103	0553			84	10.861			
			0604	127° 1.83	295					31.991	✓		
28	MB2A	1175	0647	49°6.92	104	0648			85	10.878			
			0723	127° 8.45	1175					31.925	✓		

90/5/26 PDT

- 0430: Seawater loop drawing a lot of air.
- ship's speed reduced to 6-7 kt.

0508 - Arr Stn MG05 Loop sal #7.

0511 - CTD # 89 to 1505 m: Recd CTD at top of up cast.
wind 25 kt @ 137°.

0554 - Lvs MG05.

MF05 ME05
- missed because of bad weather:
winds 25-35 kt, large seas.

90/5/27 PDT

1124 - arrive MA03.
replace weight with pinger.

1133 - CTD No. 91 - MA03 to 1300 m.

* Transmissivity went from 90 down to 87 @ about 250 m, recovered by 350 m. Subsequent wrap around shows some reduction in signal.

#92 Upcast also showed less trans. between 270 - 370 db.

1516 CTD cast to 82 m at MA01. Loop sal.

MB00	1954 - 2005	CTD # 100. 37 m.	loop. - mod swell
MB01	2113 - 2120	CTD # 101. 109 m.	loop. - mod swell
MB1A	2201 - 2210	CTD # 102. 150 m.	loop - light fog. light swell.
MB02	2253 - 2304	CTD # 103 300 m.	loop. - dusk.

90/5/27 PDT

1628 Arr Stn MA00. #79 Loop salinity.
1629 CTD #98 to 41 m.
1635 Lvs MA00

Took Benthos finger apart (bottom was 1/8" out of pressure sleeve), tightened rods + connectors, reassembled.

1807 Arr Stn MOAB #80 loop sal.
1809 CTD #99 to 110 m
1815 Lvs MOAB

MB00 -> MB02 see previous page.

2348 - MB2A to 1175 m.
- installed new roll of paper in EPC.

90/5/28 PDT

Sh MB03
0151 complete CTD
0156 Started bottle cast to 1620 m
0220 Seal feeding in hydro light.
0242 0-300 hydro cast messages.
0316 400-1620 hydro cast messages.
0352 Lvs MB03

0435 Arr MB3A #87 Loop sal.
0437 CTD #106 to 1503 m (Reset CTD to close file)
0520 Lvs MB3A
0520 51.6% free on C: SAIL.

0559 Arr MB04 #88 Loop sal.
0606 CTD #107 to 1506 m (Reset CTD to close file)
NOTE - features on transmissometer profile at 500-600 m consistent with MB3A profile.
Buffer values had a ZERO stuck on it they looked like 100 — 920 rather than 10 - 92. (Both on down and up casts)
Salinity from 860-830 m on upcast was 0.1 ‰ low.
0659 Lvs MB04 (Installed new roll of paper in WC.)

DAILY LOG | OCEAN PHYSICS | INSTITUTE OF OCEAN SCIENCES

YEAR	MONTH	TIME ZONE	SHIP	CRUISE	PAGE OF
1990	MAY	UTC	PARIZEAU	9001	

DAY	STATION NUMBER	DEPTH SOUNDING (M)	SHIP STOP/START TIME	LATITUDE/LONGITUDE	STD CONSEC. #/DEPTH	STD TIME	HYDRO CONSEC #/DEPTH	MESSENGER TIME	SALINITY #/CALIBRATION LOOP OR DEPTH	OXYGEN #	SURFACE TEMPERATURE/ SALINITY		NOTES
28	MB03	1630	0800	4902.04	105	0803	12	0942	86	1040	11.088		1611 SAL 266 - 286
			1052	12715.19	1642		1620			1062	31.912		1660m wire out
28	MB3A	2080	1135	48 56.80	106	1137	/		87		11.002		
			1220	127 22.03	1503		/				32.042		
28	MB04	2306	1259	48 51.74	107	1300	/		88		10.971		
			1339	127 28.81	1506		/				32.076		
28	MB05	2570	1454	48°41.80	108	1455	/		89		10 899		
			1534	127°42.43	1502		/				32 e19		
28	MB06	2570	1652	48 32.00	109	1654	/		90		10.204		
			1726	127 56.04	1503		/				32.168		
28	MB07	2600	1845	48 21.61	110	1846	/		91		10.691		
			1925	128 9.48			/				32.188		
28	MA05	2620	2304	48 20.26	111	2307	/		92		11.199		
			2347	127 5.90	1504		/				32.153		
29	MA04	2188	0055	48 30.23	112	0059	/		93		11.927		
			0140	126 52.46	1502		/				32.060		
29	MA3B	1500	0354	48 36.2N	113	0356			94		11.248		probe hit bottom.
			0410	126 44.2W	1500						32.062		

90/5/28 pdt

0754 - arrive MB05
0755 - CTD # 108 to 1502 m.
loop 5‰ ± 89 wind 0.000 knots.
0834 - proceed.

0952 - arrive MB06
0954 - CTD # 109 to 1503 m.
loop #90.
1026 - depart Stn.

1145 - arrive MB07.
1146 - CTD # 110 to

1604 - Arr MA05 #92 loop salinity
1607 - CTD # 111 to 1504 m
(there's still an extra zero on the bottle count number like there was this morning).
1647 - Lv MA05

1755 ARR MA04 #93 LOOP SALINITY.
1759 - CTD # 112 TO 1501 m.

1840 - Lv. MA04

1914 wheels away on Ocean Test Mooring North.
Sounder depth 2531 m
Correction = * 0.99267 + 5 → 2517 m
Position = 48° 27.55' N * 126° 52.46' W
LC: 29097.6, 41384.8 ± 0.05'N, 0.28'E
Releases: top — 47 RNG. 9612 REL. 9611
xpndr — 44591 D000
mid — 20U B541 B542
bottom — 96U 6981 6982

90/5/28 pdt

1952 Wheels away on Oceano Test Mooring South.
Sounder depth 2530 m
Correction: * 0.99267 + 5 → 2516 m.
Position: 48° 27.16'N 126° 52.38'W
LC: 29094.5, 41385.6 ± 0.05'N, 0.28'E
Releases: top — 17U RNG. B535 REL. B536
xpndr — 41191 D000
mid — 94U 6977 6978
bottom — 18U B537 B538

90/5/29 pdt

0800 - 1130 — Testing of Oceano parallel release bracket on deck.

1500 — All IOS.