

CRN

OP 92-15

OCC 9204

DAILY LOG

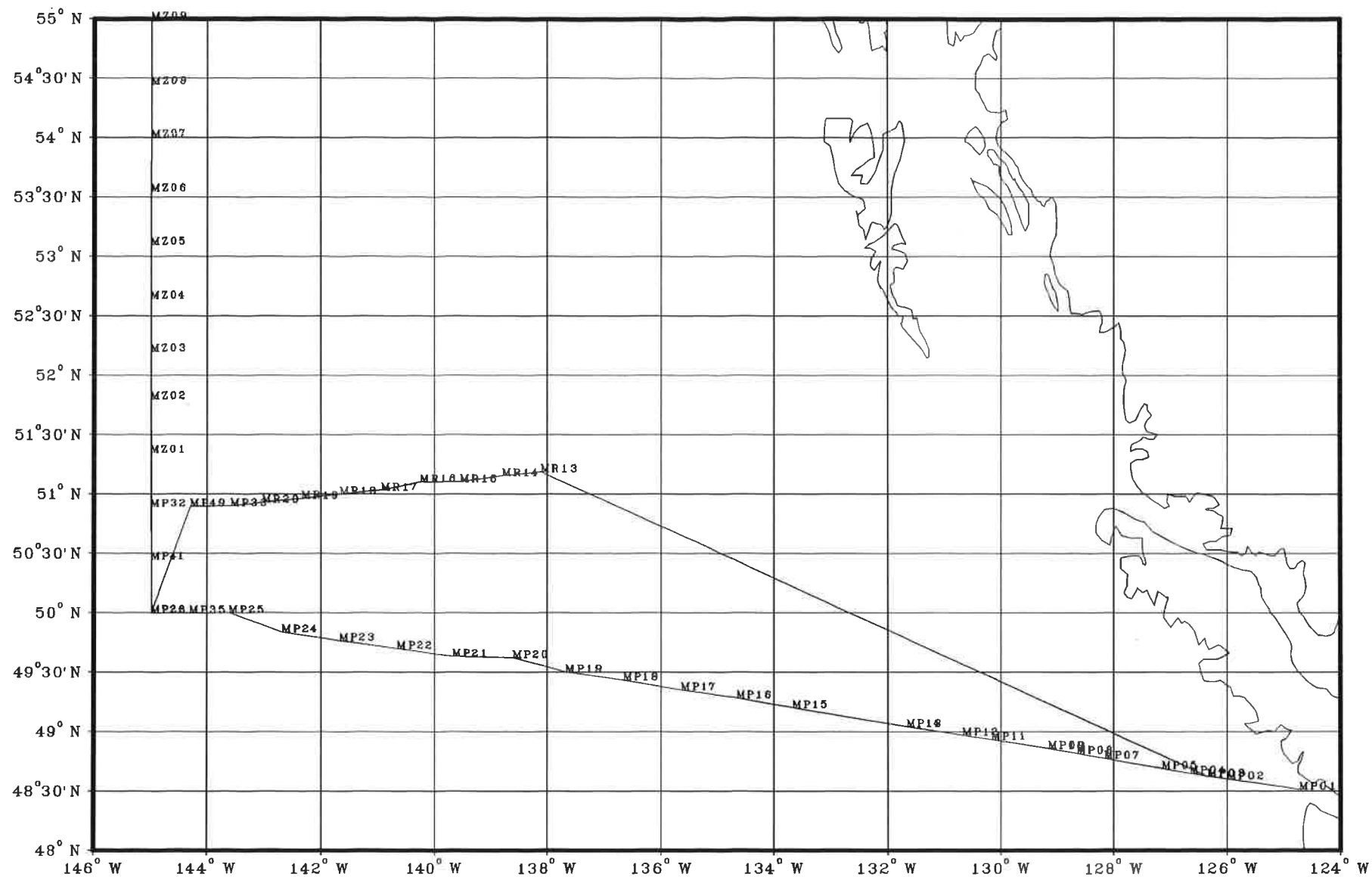
INSTITUTE OF OCEAN SCIENCES
OCEAN PHYSICS

DATE 8 Sept. 92 - 29 Sept. 92

VESSEL J.P. Tully

PROJECT WOCE/PAPA

Cruise 92-15



check MP10
MP14

92-15

Captain: Paul Frost

First Officer: _____

Second Officer: _____

Third Officer: _____

Cruise Participants/Agencies: Ocean Physics/Climate Chemistry/UBCScientific Personnel: Party Chief: Frank Whitney

Name	Watch	Cabin	Name	Watch	Cabin
Reg Bigham		B	Brad McKelvey		G
John Love		D	Hugh McLean		G
Bernard Minkley		E	Diana Varela		F
Tim Soutar		C	Marie Robert		F
Nick Hall-Patch		H			
Marty Davelaar		H			

Second leg of cruise: Party Chief: _____

Third leg of cruise: Party Chief: _____

Data logging system: Unit number: #1,

Program version: 1.22

CTD deck unit make: _____

model: 87107 serial no.: 58610

Computer make: HP

model: D1430A serial no.: 07169

Monitor make: NEC

model: multi sync 2A serial no.: _____

Printer make: Roland

model: PR1212A serial no.: _____

1st CTD make: _____

model: _____

serial no.: 58483

Temperature sensor

model: _____

serial no.: _____

coefficients: slope: 999539

offset: .0055

Conductivity sensor

model: _____

serial no.: _____

coefficients: slope: 1.00041

offset: .00002

Pressure sensor range: 3000

psi

serial no.: _____

coefficients: FSP: 3000

dB

offset: ϕ

Transmissometer

model: none

serial no.: _____

coefficients: slope: _____

offset: _____

Comments: _____

Rosette 2nd CTD make: Guidline model: 8737 serial no.: 59901
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: serial no.:

WINCHES:

CTD	make: <u>Swann</u>	model: <u>329</u>	serial no.: <u>1482</u>
counter	make: <u>Rerlis</u>	model: <u>8750</u>	serial no.: <u> </u>
HYDRO	make: <u>Swann</u>	model: <u>310</u>	serial no.: <u>1083</u>
counter	make: <u>Rerlis</u>	model: <u>8750</u>	serial no.: <u> </u>
Spooling	make: <u>Swann</u>	model: <u>455</u>	serial no.: <u>1451</u>
Drag	make: <u>Swann</u>	model: <u>331</u>	serial no.: <u>1231</u>
Other	make: <u>Swann</u>	model: <u>330</u>	serial no.: <u>1209</u>

Salinometer make: Guidline model: 8410 serial no.: 59724
IAPSO S&W. BATCH

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 I.D.: serial no.:
Name: module I.D.: serial no.:

Comments:

ADCP Setup:

Program version: number of depth bins:
Time zone: bin length (2^x):
Sampling interval: sec. pulse length:
Blank beyond transmit: pings per ensemble:
Pulse cycle time:
Percent pings good threshold:

Comments:

1424

Search Wile, test rosette

8 Sept 92

pressure 192 all bottles triggered

Max. Rosette descent $\sim 0.7 \text{ m/s} = 42 \text{ m/min}$
 3000m cast $= \frac{3000}{42} = 143 \text{ min} = 2 \text{ h } 23 \text{ min}$

0800

Depart Port Bay.

9 Sept 92

1100

Arr. at McCauley Pt + talk with divers.
 Darren Trele says divers unable to locate mooring
 continue on to Line P

1240

Loop samples for Sal., nutrients + chl at
 JF1

1450

Loop SAMPLES For Sal, Nutrients + chl at
 JF2.

1658

Loop Samples Sal, Nutrients + Chlor
 JF3

1812

stopped listening for "whale" mooring
 48 29.47 134 33.94

shifts stopped to allow us to use Mesotech transducer
 unable to communicate with release.

Hugh McLean + John Lowe also
 check - nothing. Did not attempt release
 as Capt. did not wish to search - short of time.

2002

- Loop Samples, S‰, nit & chlor.
 JF4

Stn MPO1 CTD #001 to

S.

GCTDATA

MP04 Arr 11:01 UTC Salinity, Nutrients Chl_a, O₂ 18

Max wind speed .5 m/sec (very slow)

CTD cast using Guildline # 58483 to
1330 metre. Consec # 4. Lat at End 48.38.89
Long at End 126.37.72

MP04 Time using New Guildline probe
and rosette sample frame.

File:

Depth of probe see sample sheet for Hydro
Info.

Start LAT 48 38 94
LONG 126 39 87

Rosette hard to launch even in calm weather.

Bottle at surface did not trip also bottle at
1000 metre failed to trip

Indication in CTD data did confirm bottle trip.

Large difference in temperature between new CTD probe
and 58483

Very large Ratio error on New CTD
probe

		T ₁	T ₂
1	13.945	13.933	13.926
50	9.227	9.233	9.230
100	7.913	7.899	7.894
150	7.307	7.302	7.300
199	6.966	6.962	6.957
300	6.328	6.327	6.323
399	5.621	5.619	5.615
600	4.531	4.532	4.529
801	3.913	3.912	3.910
1000	3.391	3.396	3.392
1201	3.007	3.009	3.006
1302	2.750	2.756	2.752

DAILY LOG

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YEAR		MONTH		TIME ZONE		SHIP				CRUISE		PAGE / OF	
92		9		UTC		Tully				92-15		1 / 1	
DAY	STATION IDENTIFICATION	DEPTH SOUNDING (m)	SHIP STOP/START TIME	LATITUDE/ LONGITUDE	STD CONSEC. #	STD TIME	HYDRO CONSEC. #	MESSENGER TIME	HYDRO SALINITY #	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	LOOP SALINITY #	NOTES
9	JF01	1946	48 16.06	123 29.85								1.	
9	JF02	2149	48 17.98	123 59.58								2	
9	JF03	2358										3	
10	JF04	0302	48 32.3	125 00.0								4	
10	MP01	135	0452	48 31.48	001	0502				12.382		5	CTD 6 135
10	MP02	120	0722	48 36.08	2	0729				32.398		6	CTD to 116 db.
10	MP03	820	0743	126 00.00						11.069			
10	MP03	820	0855	48 37.49	3	0903				32.241		7	CTD 825 db. on bottom - caught star fish.
10	MP04	1327	0945	126 19.81						13.487			
10	MP04	1327	1101	48 38.95	4	1124				32.077		8	CTD 58,483 to 1332 db. No Roseette. Sal. Niskin ch. data.
10	MP04	1327		126 39.25						13.981			
10	MP04	1327		48 38.78	R	1320	1	1003		32.229			Hydro #1 using Roseette and new CTD probe.
10	MP04	1327	1719	126 39.17				12	1022				
10	MP05	2115	1955	48 41.26	5	1958				16.177		9	long V salinity noisy
10	MP05	2115		127 09.60						32.043			CTD to 2005 db.
10	MP05	2087	2125		6	2044							upcast. no GPS

10 Sept
0022

Stn MPO2 CTD# 2 to 111 db. Loop samples shortened wire from CTD to pinger.
Calm, no wind.

0155

Stn MPO3 CTD to 805 db. CTD on bottom. Sounder key programme switch turned on accidentally - sounder stopped recording.
Maximum winch speed is 0.7 m/min.
White starfish caught on top of CTD cage.

MPO4: CTD cast to ~1330 m. Winch only capable of 0.5-0.6 m/sec.

Rosette cast to ~1330 m. Only 11 of 13 bottles tripped. Possibly 0 and 1000 m missed?
8737 CTD - conductivity/sal. values are high (to 37 psu)

- tilt sensors on Rosette rarely indicated over 10° in either direction.

Maximum X-tilt

-11 to +16 degrees

Maximum Y-tilt

0 to 29° degrees

1255

Stn MPO5

Engineers looking at pitch control and hydraulics CTD winch can now do 1.5 m/min.
Ship unable to maneuver, very large wave angle.
775 db winch stopped, wire taken in to 645 db, cast resumed. CTD stopped at 2000 db, unable to see pinger on sounder.
New roll of paper put in sounder.

CTD# 6, upcast. Bad data at 1330 db Temp most warmer, salinity lower.

968 slowed to 1.0 m/min. Data noisy 1000 to 920 db.
Temperature sensor malfunctioning!

1423

CTD on deck.

CTD 58483

Temperature Sensor lead had split in outer rubber casing.

Sensor lead replaced (water in sensor outer body)

After repair ^{Probe} sensor still did not operate

Probe electronics checked and a large spot (about size of penny) of corrosion found on temperature card.

Electronics card cleaned 4 or 5 components had to be removed including trim pots to get at the corrosion. One +12 volt circuit run was eaten away, do not know how the board functioned to this point.

All sensor plugs and receptacles cleaned

Probe returned to Service at Consec # 7

Consec 5 and 6 will have bad Data

Even the cast 1 thr 4 may have suspect temperature data.

Stone

CTD temperature sensor had split in insulation jacket
salt water in top of sensor. John redid splice but then
found conduction inside fish on temperature card. Had to
remove several components to clean card. (see previous page)

St. MP07 done with required fish.

11 Sept

0000

MP08 CTD #8 to 2536 db.
loop samples.

0056

CTD onboard.

MP010

CTD #10

2663 M

1342 UTC

Very good agreement in depth reading on
sounder and STD probe ± 5 db.

Very good weather 6/10 cloud mild temp
approx 1 metre swell.

MP011

17 Sept.

MPD 12 = 8737 CTD with Rosette.

- couple of test casts, at 1 m/sec and 1.3 m/s to determine Rosette's movement.
- very little ^{variation} ~~movement~~ in z -axis at either speed. -1 to +5° one peak at +15°
- little difference between either speed of descent for y -axis
~~both tended to tilt~~
- tilts were generally 20° ± 5° (tending towards CTD locations) with occasional maximums toward 30°+ - one at +45°
- y -tilt was generally under 20° for ascent and was more stable.

[Although winch indicated 1.3 m/s, GCTD program gave 1 m/s as rate of descent]

- recorded cast was 1.3 m/s to 1800 meters, 1 m/s thereafter.
- salinity indication on GCTD was radically different on ascent from descent - changed at ~ 2200 dBar on upcast. No change in temperature, and dummy loads in ~~and~~ place of conductivity cell read correctly, so conductivity cell is working correctly?

(#17) = 3 sampling bottles did not fire; ~~one~~ the lanyards hung up ^{on one}. Though they were released at the pylon
= two others (positions 18 & 19) didn't release at all

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YEAR	92	MONTH	9	TIME ZONE	UTC	SHIP	Tully	CRUISE	9215	PAGE	2	OF		
DAY		STATION IDENTIFICATION	DEPTH SOUNDING (m)	SHIP STOP/START TIME	LATITUDE/ LONGITUDE	STD CONSEC. #	STD TIME	HYDRO CONSEC. #	MESSENGER TIME	HYDRO SALINITY #	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	LOOP SALINITY #	NOTES
10-11		MP06	2570	2349 0100	48°49.29 127°40.300							10		8737 CTD alone to 2560 d Bar.
11		MP07	2535	0315 0454	48°46.809 128°10.383	7	0347					11		Change CTD using #58483 - OK.
11		MP08	2547	0700 0758	48°48.99 128°39.69	8	0703					12		CTD to 2536 db. 4849.43 12839.84
11		MP09	2372	0959 11:00	48°51.53 129°09.80	9	1003					13		CTD to 2383 db 4851.94 12910.02
11		MP10	2663	1257 1407	48°53.70 129°40.09	10	1306					14		DR No GPS POSITION WHEN ON STATION
11		MP11	2785	1612 1720	48°56.022 130°09.940	11	1615					15		Sounder 2663 CTD 2663 Program locked up in the way up,
11		MP12	3325	1930	48°59.62 130°44.00		1945	2 2030	13 1003	32 1033		16		ROSETTE CAST to 3000 db
11		MP12	3263	2332	48°58.29 130°40.08	12	2334							
12		MP13	3039	0610 0720	49°02.585 131°39.740	13	0614					17		CTD to 3000 db
12		MP14	3325	1147 1303	49°07.352 132°40.157	14	1154					18		CTD to 3000 db Loop Sample taken CTD
12		MP14	3325	1303	49°07.96 132°41.50	15	1251							up cast last 400 m to check noise through thermocline
12		MP15	3430	1712	49°12.11 133°40.11	16	1718					19		

MP12 Depth of Probe 3000 m.
Wire out 3461 m

Down cast

CTD cast 58483

	58483 ¹		Now Probe (copper thermometer)	
Surface	16.171		16.027	
50m	10.111	<	10.270	
100m	8.234	<	8.315	(Thermistor 1)
200m	6.315	<	6.459	
300m	5.520	—	5.520	(5.534)
400m	4.778	>	4.735	(4.752)
500m	4.491	>	4.448	(4.463)
600m	4.197	>	4.077	(4.090)
700m	3.905	>	3.838	(3.853)
800m	3.664	>	3.596	
900m	3.428	>	3.404	(3.420)
1000m	3.254	>	3.203	(3.218)
1100m	3.051	>	2.998	(3.014)
1200m	2.870	>	2.818	(2.832)
1300m	2.692	>	2.648	(2.658)
1400m	2.534	>	2.505	(2.520)
1500m	2.409	>	2.378	(2.391)
1600m	2.287	>	2.283	(2.295)
1700m	2.182	<	2.187	(2.200)
1800m	2.065	<	2.085	(2.097)
1900m	2.002	<	2.013	(2.024)
2000m	1.946	<	1.951	(1.961)
2100m	1.886	<	1.891	(1.900)
2200m	1.852	>	1.845	(1.855)
2300m	1.817	>	1.789	(1.798)
2400m	1.765	>	1.758	(1.767)
2500m	1.724	<	1.729	(1.737)
2600m	1.702	---	1.700	(1.708)
2700m	1.672	>	1.666	(1.674)
2800m	1.651	<	1.656	(1.663)
2900m	1.651		1.650	(1.659)
3000m			1.649	(1.658)
2590				
25m	15.809		15.724	(15.723)

MP14 Con #14 May have been too fast
through the thermocline noise on
Salinity trace.

Con #15 Up cast from 400 m to surface
at a slower rate (looks better trace)

Well mixed water to 40 metre

CALIBRATION

CTD AT 23M

15.857

T₁

15.854

MP14

T₂

15.854

PROBE RATIO 0.95625

SAL CALC PROBE 32.566

SALINITY BOTTLE #20

32.4245

Sh MP16 digital thermometers

#2 32.03 dB 2.633 (too high) - regular CTD
registered 1.

#22 5.0 dB 10.599

MP16

New CTD

Probe

Conductivity cell was rebuilt after MP12

Conductivity and temperature now agree
with CTD probe 58.423

- relatively calm
- bottle sample command at 1200m did not register on display; had to be repeated.
- all bottles worked this time. Top of pylon had been thoroughly rinsed with fresh water several hours before

+22 10.599

+2 2.633

MP17

CTD wash broke binding causing drum to surge.
Setup hose to cool down the band.

depth of start 3544, ~~at end of station 3~~

0139 Depart Stn 4921.85 13540.54.

MP18

Arr Stn

1240

Depth

3857 m

Sounder

Depart

14:00

MP19

CTD + loop sampling

MP20

ISSB Released QEP1-F mooring in 20-25 kt winds.

14 Sept

MP20 CTD #22 to 3000 m
0040 on board 49 38.31 / 138 35.40
steaming back to position

3791.2

3942.7

bottom 3957 on scanner
3800 m of mine out.

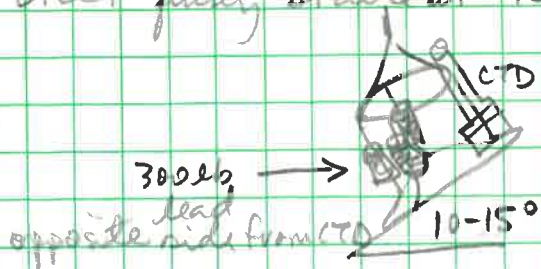
0445

49 35.80 138 39.46

complete bottle cast of 3200, 3400, 3600, and 3800 m

0839

Rosette w/ 300 lb lead (300 lb removed) deployed in
~ 5 kt wind. Line unweighted through first 500 m,
lowering at between 0 - 0.5 m/sec.
Below ~ 500, descent rate smoother at 1 m/s, and
tilt fairly stable at 10-15° away from CTD.



- 2.5 Knot winds
- released bottle #19 accidentally on launch
- thermistor #1 reading 140 mK high (seepage into connector)
- #3, #12, #15 bottles did not fire.

1648

moving wheels "let go"
49 33.38 / 138 38.28

YEAR	1992	MONTH	09	TIME ZONE	UTC	SHIP	TULLY	CRUISE	9215	PAGE	3 OF		
DAY	STATION IDENTIFICATION	DEPTH SOUNDING (m)	SHIP STOP/START TIME	LATITUDE/ LONGITUDE	STD CONSEC. #	STD TIME	HYDRO CONSEC. #	MESSENGER TIME	HYDRO SALINITY #	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	LOOP SALINITY #	NOTES
12	MP15	3430	1835	49°13.29 133°41.14	17	1830		20		15.854 15.854			CALIBRATION BOTTLE AT 20 M
12	MP16	3660	2236	49°16.99 134°39.81	18	2239						21	
13	MP16	3660	0120 0323	49°17.68 134°42.94			3	0214	33 54	1045 1079			NEW CTD Rosette
13	MP17	3544	0711 0839	49°21.12 135°39.17	19	0718						22	CTD to 3003 Jb 49°21.45 135°40.10
13	MP18	3775	1240 1400	49°25.97 136°40.19	20	1242						23	
13	MP19	3950	1757 1907	49°30.123 137°39.964	21	1800						24	
14	MP20	3985		49°37.215 138°36.456	22	0623						25	49°38.03 138°35.74 CTD to 3000 Jb
14	MP20		1539	49°34.474 138°39.710			4a	09:37 to 10:44	55 74	1072 1049			New CTD & Rosette
	MP20	3957	1145	49°35.80 138°39.46	-	-	4b		75 78	1045 1048			Hydro cast w/10L NISKINS 3200-3800 m
15	MP21	3980	0423 0543	49°37.985 139°40.024	23	0429						26	T _{surf} = 14.151
15	MP22		0930	49°41.93 140°37.77	24	0934						27	CTD to 3004 Jb 49°42.10 140°40.43
15	MP23		1440 1552	49°46.00 141°40.065	25	1441						28	T _{surf} = 13.796

Mooring of QEP1-G

92 09 14

Start deployment at 1505 PDT

RCM4 #432 in at 15:13 200 m

RCM4 # 6462 in at 15:24 600 m

RCM4 # 5361 in at 15:50 1500 m

RCMS # 8730 in at 16:09 2200 m

RCMS # V900 in at 16:25 3000 m

Anchor away at 1649

POSITION OF MOORING 49 33 185
138 38 209

DEPTH SOUNDING 3989 m

CHANNEL 71 STOPPED XMITTING 1610

15 Sept.

0237 Stn MP22
Sounder not working, intermittent rapid travel of pens.

0308 CTD at 3003 m

0340 CTD onboard 49 42.30 140 40.78

0740 Stn MP23

SOUNDER STILL NOT WORKING - STYLUS SCAN OUT OF WACK

SOUND IS NOW WORKING

Scum

0740

60 = 40 L

MP23

Sounder is working OK

Depth at end of Dredge 1550

Lat $49^{\circ}46.209$

at end of cast.

Long $141^{\circ}40.780$

1249

Sh MP24

CTD, loop samples

1327

CTD at 3000m 49 50.02 142 40.33

1356

CTD onboard 49 50.00 142 40.79

Tide gauge transmitter float.

1401

Deploy Sh.

18:03

CTD MP25

50 00 015

143 35 966

CTD to 3000m

16 Sept0230 Begin deployment of FDA - drifting trap
line (1000m) at50 02.91N
144 57.905W

0350 FDA in with 9 traps attached at

50 02.87 N
144 57.87 W

0600 Prod casts to 100m @ 50 00.12N

0700 NET TOW to 100m → 145 00.21W

0743 - INCUBATOR

FREE DRIFTER

49° 59.101

145° 02.913

0815

Communicated with Sediment trap mooring at

49 58. N, 145 7.95 W

17 Sept

0021 (PDT) start CTD cast of MP26

CTD 6 3000 lb

0106

4959.26 14459.89

17 Sept.

0903 UTC - Rosette & CTD cast.

- start at under 0.5 m/s, tried 1 m/s at 150 dBar, then
much x2 y shift; back to 0.5 m/s at 200 dBar

0.7 m/s

400 dBar

1 m/s

600 dBar

400 lbs

on Rosette

(top view)

weights



CTD

[x 2 y shifts not tolerated beyond $\pm 20^\circ$]

- down to 500 dBar, slight leaving caused
nearly immediate shift in tilt sensors

- at 1900 and 2200 dBar, cable and pulley
drifted to starboard side of A-frame.
Compensation required from bridge.

- on return cast, tensioner registered similarly
to previous casts, but block settled within
five feet of deck unless winch speed kept
to 0.2 m/s for first 1000 m of return
cast.

- bungees have lost elasticity?

- program jammed up at 219 m down cast
and 2880 m up cast

- needed to switch deck unit off
and on - didn't need to restart
program.

(also had problem getting probe to respond
initially.)

- bottle sampling command didn't work at 800 m,
needed to be repeated.

- bottle did not fire at positions 9, 21, 32

- #19 was held open by a thermometer lanyard !!

DAILY LOG

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YEAR	92		MONTH	9		TIME ZONE	UTC		SHIP	Tully				CRUISE	90-15		PAGE	4 OF	
DAY	STATION IDENTIFICATION	DEPTH SOUNDING (m)	SHIP STOP/START TIME	LATITUDE/ LONGITUDE	STD CONSEC #	STD TIME	HYDRO CONSEC #	MESSENGER TIME	HYDRO SALINITY #	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	LOOP SALINITY #	NOTES						
15	MP24	4007	1949	49°50.25 142°39.66	26	1951						29	CTD @ 3000 ↓ 49°50'02" 142°40.33"						
16	MP25	4159	0108	50°00'02" 143°35'99"	27	0108						30	143°36'50" END CAST DOWN 50°00'24"						
16	MP35	4169	0518	49°59.860 144°18.129	28	0520						32	END CAST DOWN } 13.203 49°59.444 } at 144°18.559 } 0556 } 7m						
												33	3000 GO FLO 34.651						
												34	2500 34.620						
												35	3700 34.675						
17	P26		0719	49°58.50 145°00.56			SA	0420	99	1032		36	Bottle cast 3200 @ 4200						
17	P26		0721		30	0721			104	1043		36	CTD @ 3000 ↓ no GPS						
17	P26		0903	49°58.44 144°59.41			SB	1000 1142	79 78	1003 1031			CTD - Rosette to 3000 d Bar.						
17	P26											37	32.332 GO FLO @ 25 m						
17	P26											38	32.648 C FLO @ 50 m						
17	P26											39	32.695 GO FLO @ 100 m						
17	P26											40	32.537 GO FLO @ 75 m						
18	MP41		0118	50°26'943 144°59'98"	31	0122						41	50 26 090 14500 556						

17 Sept

1455

stopped sampling using GO-FLO's due to weather
Wind 30-35 knots
Depart for 2 Line CTD stations.

19 Sept

1100 arrive M209. Weather too rough to recover mooring.

1308 Sh M209 CTD #37 to 3000 db.

1409 CTD onboard 54 59.88 14500.94
Wind 31 knots.

Trace metal sampling using 30 liter GO-FLU bottles.

1600 Light profile.

Trace metal casts + ^{15}N prod. cast to ~100m in 30 kt winds.

1900 Hove to til 0400, hoping for calmer seas.

20 Sept

0400 Winds ~ 20 kt. Returned to station.

0421 Started hydro cast to 4000m.

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OCEAN PHYSICS

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YEAR		MONTH		TIME ZONE		SHIP		CRUISE		PAGE		OF	
92		SEPT		UTC		TULLY		92-15		5		OF	
DAY	STATION IDENTIFICATION	DEPTH SOUNDING (m)	SHIP STOP/START TIME	LATITUDE/ LONGITUDE	STD CONSEC #	STD TIME	HYDRO CONSEC #	MESSENGER TIME	HYDRO SALINITY #	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	LOOP SALINITY #	NOTES
18	P32	0533	50°53.710		0536								End of cast 50°53.510 145°01.801
		0649	145°00.390	032								042	
18	MZ01	0928	5120.96										CTD 63007 @ 1071.
		1047	145°00.45	33	0938							43	5121.08 145°01.14
18	MZ02	3873	1334	5148.015	34	1341						44	CTD to 3000
		1445	145°00.013										End. Lat 5147.958
18	MZ03	4070	1720	52°12.042									END 52°11.854
		1825	145°00.112	35	1719							45	145°00.293
18	MZ04	4083	2120	5238.80	36	2123						46	5238.52 145°00.48
			4500.22										@ 2158 3003.06
18/19	MZ04	4090	2240	52°38.11	R		6A	2232	105	1003			CTD - Rosette 3000.06
		0010	145°01.105						124	1032			
19	MZ04		5237.19				6B	2239	125	1033			Bottle cast 3200 & 4000
			145°03.47						129	1038			
18	MZ04												HYDRO CAST START 1020
													DOWN @ 1940
19	MZ09		2000	5459.78	37	2008						47	CTD 63000.5 @ 2039
				14469.76									5459.72 145°00.24
19	MZ09			5459.95								48	GO FLOW @ 1830 mess.
				145°00.53								51	@ 1855/1947 on deck
20	MZ09	4060	1120	55°00.07011	/		7A	1239	150	1072			Deep hydro cast
				145°01.00711					154	1084			3200-4000 m
20	MZ09	4060	1825	54°59.94		1829	7B	1925	130	1045			CTD Rosette
				144°59.41					149	1069			

(204)

Rosette cast - still 400 lb. of weight

3rd bungee line used to increase tensioning effect of wire and to compensate for stretched older bungee lines.

1810 Rosette onboard.

2800 Calibration Sample

Temp Rosette Thermometers

T₁ (572) 1.640

T₂ (451) 1.643

New GUIDLINE Probe

Guideline	Copper	=	1.645
	T ₁	=	1.654
	T ₂	=	1.645

Note: Conductivity sensor failed at 1500 m

This was a test cell from Guideline with

NORPRENE RUBBER connecting sensor arms

Physics 58483 probe on previous cast
2800 m

Temp	=	1.651
RATIO	=	0.73364
SAL	=	34.789

CALIBRATION BOTTLE

34.642

- probably too much swell for a stable cast

- originally out at 0.3 m/s; lower block bouncing into upper block; sea cable going slack then tightening

x-tilt 0-24°

y-tilt 0 to -6°

- at 500m down speed increased to 1.5m/s to try to damp surges but both x and y tilts "flatted out" at $+45^\circ$ and -45° respectively
- at 700m, backed off to 1m/s x occasionally to $+45^\circ$ y occasionally to -45°
- by 1000m x to 20° mostly 9-12° y to -20° mostly -6 to -8°
- 2700m probe lost all power. Reset by restarting deck unit and leaving program running
- power lost again on upcast at 2988m.
- noted that stress on bungees varied little whether Rosette was stopped on upcast or winch was pulling.

209

T572 1.606° @ 2802db bottle #2.

T451 1.610° 2802db

CTD Cu Thermometer read 1.612° at that depth

- a fairly predictable cast

- started at 0.5m/s to 1200m then 0.7m/s
- used a 0.8m/s max speed from 2000m on down

- tilts were under $+15^\circ$ for x and y but occasional excursions to x $+25^\circ$ and y $+15^\circ$ occurred when ship hit a swell

- on upcast, tried to keep max reading of on tensioner under 3.0

3000m	- 0.3m/s
2800m	- 0.4m/s
2270m	- 0.5m/s
1800m	- 0.6m/s

- some swells pushed tilt sensors to maximum readings
- #5 hung up and #19 didn't fire

20/9/92

On route to M208 changed over to
58483 CTD cleaned conductivity cell

Acid washed with 10% HCl this cleaned
off the hard build up of deposit that had
formed on one of electrodes.

Cell then rinsed with soap solution

Show

CALIBRATION Bottle on wine above CTD probe

3000 M

Probe	Sal	34.800
Probe	Ratio	0.7339
Probe	Temp	1.571

Bottle Data

T1	1.661
T2	1.658

Bottle. SALINITY SAMPLE
34.6402

0.003

0.003

0.000

21 Sept

0210 Stn M206 CTD + loop samples
Running, wind 24 knots,

M205 CTD + loop samples

Rain wind ~ 25 knots

Reset computer clock, (1 1/2 min slow)

22 Sep 0112 Start CTD profile at P26

0300 Start ROSETTE cast at P26. Rosette

now has 300 lb on frame and 200 lb on
bridle hanging about 5m below the Rosette. Tilt
angles on Rosette are very good, not exceeding 46° on
either axis. Light winds + swell.

0348 at depth 5000.79 14458.74

descent 0.5 m/s to 100m
0.7 m/s to 400m
~ 1 m/s to 3000m

ascent 0.4 m/s to 2000m
0.5 m/s to 1600m
0.8 m/s to surface

2600 to 3100 at 3000m
1900 to 2600 at 2000m

1600-2000 at 1000m

buoyed transducer

0800 Prep for Grappling

0830 Start deploying grappling gear

0900 Weathermap shows strong winds by morning -
about grappling effort.

YEAR	MONTH	TIME ZONE	SHIP	CRUISE	PAGE	OF							
92	9	UTC		92-15	6								
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21	MZ08	4127	0047	48°26.82 144°59	38							52	Restart. 01.35 Messenger on at 2500
21	MZ08	4127		54°26.82 144°59.70	39	0148				T ₁ 1.661 T ₂ 1.658		53	CALIBRATION FILE
21	MZ07		0457	54°00.32									
			0620	144°59.59	40	0503						54	54°00.799 } end of cast 144°59.172 }
21	MZ06		0907	53°32.99									
			1017	144°59.85	41	0910						55	CTD 3003 @ 0946 144°59.86 53°33.63
21	MZ05	4109	1305	53°06.17									
			1420	145°00.01	42	1317	on board					56	@13:49 End cast LAT 53°06.350 LONG 144°59.868
22	MP26		0812	50°00.07									
				144°59.78	43	0822	1420 UTC					57	@ 50°00.22 144°59.23
22	MP26	4265	1000	50°00.41									
			1210	144°58.63	\	1000	8A 1047	155 1045					CTD/ROSETTE
22	MP26	"											
							8B 1416	174 1069					little cast 3200-4200
								175 1072					Go FLOW @ 3900 + 4200
								180 1086				58	
22	MP26		0551	49°58.02								60	Go FLOW + PROB. CASTS
			0833	145°00.84								63	
24	MP26		0430									64	Go FLOW 1500/100/750 500/300/100/25
												↓	
25	MP49		0407	50°53.863									
			0529	144°17.353	44	0413							50°53.828 } end. 144°17.651 }
25	MP33		0808	50°54.01									
			0914	143°34.71	45	0811						66	3000db @ 0842 5054.12 143°35.24

22 Sep 92

TRAP DEPLOYMENT

2007 SINGLE MARK 7-21 SEDIMENT TRAP
DEPLOYED 500 M FROM BOTTOM

POSITION: 50 04.079 N
144 59.969 W (GPS HAB).

50 04.059 N
144 59.980 W (GPS BRIDGE).

~2200 Trans Metals P26

23 Sep ~0100 Prod. cast P26

0200. Winds to 35-40 kt stopped sampling.
Spent day riding out storm

24 Sept 0430 Begun T.M. sampling P26

0830 Left P26 to recover FDA

1030-1130 Recovered FDA trap line with some
rope angles up to 30-40°.

1230 TM casts at P26 (UBC)

WP # 127 WP 49

137

Rosette weighted with 300 lb.
on frame & 200 lb on
pendulum underneath

- with ship movement at 1500m
on upcast, γ -tilt of
+15 to +20°. Squall
starting to blow up.

25 Sept

PDTT

0111 Str MP33 CTD and loop samples
Wind 22 knots, moderate swell.

0214 CTD onboard

0320 Travelled over seamount, depth 899 m
position 50 54.89 143 18.12

MR19 : Same (funny) T trace on the way up than
on the way down.

1135 MR18 CTD + loop samples

1240 CTD onboard 50 59.63 141 39.81

1518 CTD at MR17

1917 ROSETTE CAST to 3000 db at MR16. Rosette
bumped on deployment, loosening 1 NISKIN (likely a
cracked support). When the Rosette returned to the
surface, 2 or 3 Niskins were loose, one lying on the
frame + 2 flopping away. During recovery, the Rosette
thumped the stern, causing additional damage to bottles.

5 NISKINS were badly damaged. Deep ^{Hydro}cast cancelled.
Digital thermometers at 2800 db 1.630, 1.633

0225 Str MR15 CTD + loop Wrong Str in file
Pinger on wire

0345 CTD to 3000 db, 285 db above bottom.
on board 51 06.37 139 32.73

DAILY LOG

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OCEANOGRAPHICS															INSTITUTE OF OCEAN SCIENCES														
YEAR 92		MONTH 9		TIME ZONE UTC		SHIP Tully		CRUISE 92-15		PAGE 7		OF																	
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25	MR20	3719	1119	50°55.86	46	1127						67	Loop samples End 50°55.80 143.00 753																
25	MR19		1500	50°57.839	47	1501						68	50°57.790 } end 1536 142°19.800 }																
25	MR18	3900	1831	50°59.979	48	1835						69	Loops taken ✓ @ 1911 5059.86 14139.59																
25	MR17	3875	2218	51°01.96	49	2223						70	@ 22:59 510149 14055.40																
26	MR16	3760	0217	51°04.27			0302	181 1045				71	CTD/Rosette 25kt winds Low ✓																
26	MR16			51°06.172	50	0527						—	CTD ALONE 51°06.216 } END 0603 140°15.575 }																
26	MR15	3127	0925	51°06.11	51	0936						72	pinger on with CTD @ 1011 5106.10 13931.89																
26	MR14	2800 3000 *	1338	51°09.161	52	1342						73	Loop end. Pinger on wire → 2940 m * See not on depth.																
26	MR13	3685	1715	51°11.226	53	1723						74	51°11.369 } END 1757 138°07.200 }																
29	MP03	845	0030	48°37.24	54	0033						75	CTD 83306.																
29	MP03	820	0042	48°37.29	55							/	15m above bottom. upward.																
			0057	126 20 100																									

26 Sept

MR 14

Very poor sonar trace

Looks like side of a mountain with multiple echoes.

Depth on Cruise sheet 1800 m but at GPS position depth is 2850 - 3200 m

Very poor ping trace. Could not see the bottom signal at any time from the Ping. With headphones I could hear the bottom signal phase # 4 at end of ping sweep (3000 m).

5

1244 depart from line R, heading for MPO5 to return to station

Coupled the two CTD probes together.

Feeding power to probes through common sea cable.

2328 UTC 26/09/92



The two probe bodies are connected as follows

White New probe Ground
Black " " Supply

Green old probe Ground

Red old probe Supply

900103

900339

900237

900079

870516

821047

796698

804245

784474

786764

795870

794084

794133

790223

779855

771648

765325

754519

754418

5	13.684	32.197	13.691	32.052	13.691	13.686
10	13.684	32.204	13.692	32.055	13.690	13.687
15	13.678	32.203	13.683	32.055	13.688	13.683
20	13.665	32.205	13.675	32.056	13.667	13.665
30	12.095	32.341	11.910	32.222	12.200	12.179
50	9.509	32.514	9.331	32.385	9.416	9.412
75	7.943	32.855	7.933	32.733	7.938	7.940
100	7.759	33.364	7.689	33.314	7.724	7.724
125	6.604	33.546	6.533	33.411	6.547	6.549
150	6.476	33.768	6.535	33.642	6.525	6.526
175	6.755	33.913	6.740	33.809	6.765	6.767
200	6.564	34.006	6.565	33.869	6.569	6.571
250	6.449	34.098	6.406	33.949	6.422	6.421
300	6.201	34.133	6.184	33.987	6.200	6.200
400	5.603	34.185	5.578	34.030	5.601	5.601
500	5.104	34.239	5.083	34.084	5.111	5.112
600	4.693	34.297	4.677	34.142	4.694	4.695
800	3.922	34.451	3.917	34.303	3.930	3.930
830	3.895	34.459	3.891	34.309	3.898	3.899

827

H = physics and.