

CRN

9210

DAILY LOG

INSTITUTE OF OCEAN SCIENCES
OCEAN PHYSICS

DATE Jun. 14 - 21 92

VESSEL Tully

PROJECT La Perouse / MASS / CRD.

Captain: J. Anderson
Second Officer: _____

First Officer: John Purdie
Third Officer: _____

Cruise Participants/Agencies: O. Physics / O. Ecology
Royal Road Mil. Col.

Scientific Personnel:	Party Chief:				
name	watch	cabin	name	watch	cabin
<u>J. Love</u>	<u>16-20</u>	<u>F</u>	<u>R. Paquet</u>	<u>12-4</u>	<u>B</u>
<u>B. Minkley</u>	<u>4-8</u>	<u>H</u>			
<u>R. Bigham</u>	<u>8-12</u>	<u>G</u>			
<u>D. Tuele</u>	<u>12-4</u>	<u>E</u>			
<u>D. Moore</u>	<u>4-8</u>	<u>D</u>			
<u>C. Ray</u>	<u>8-12</u>	<u>C</u>			

second leg of cruise: Party Chief: _____

third leg of cruise: Party Chief: _____

DATA LOGGING SYSTEM: Unit number: #1 program ver. 1.21
CTD deck unit make: Guildline model: 87107 serial no.: 58610
Computer make: HP model: Vectra serial no.: 2945A07169
monitor make: NEC model: MultiSync serial no.: 2A
printer make: Rebnd model: FR1212-A serial no.: _____

1st CTD make: Guildline model: 8715 serial no.: 58483
temperature sensor model: 87401 serial no.: 57915
coefficients: slope: 1.0000 offset: 0.0000
conductivity sensor model: 87410 serial no.: 58814
coefficients: slope: 1.0000 offset: -0.000160
pressure sensor range: 4500 psi serial no.: _____
coefficients: FSP: 3000 dB offset: 0.0000
transmissometer model: 256 serial no.: 254
coefficients: slope: -2.0014 offset: 100.0275

Comments: _____

2nd CTD make: GUILDLINE model: 8705 serial no.: 53,501
temperature sensor model: 87401 serial no.: 53,237
coefficients: slope: 0.99773 offset: .012
conductivity sensor model: 87410 serial no.: 25474
coefficients: slope: 1.000984 offset: 0.000103
pressure sensor range: _____ psi serial no.: _____
coefficients: FSP: 2000 dB offset: -0.41
transmissometer model: 254 serial no.: 254
coefficients: slope: -2.0014 offset: 100.0275
Comments: _____

WINCHES:

CTD	make: <u>Swann</u>	model: <u>410</u>	serial no.: <u>1433</u>
counter	make: <u>Sytech</u>	model: _____	serial no.: _____
HYDRO	make: <u>Swann</u>	model: <u>410</u>	serial no.: <u>1083</u>
counter	make: <u>Reulis</u>	model: _____	serial no.: _____
Spooling	make: <u>n/a</u>	model: _____	serial no.: _____
Drag	make: <u>Swann</u>	model: <u>331</u>	serial no.: <u>1231</u>
other (Work.)	make: <u>Swann</u>	model: <u>320</u>	serial no.: <u>1207</u>

Salinometer make: n/a 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 I.D.: _____ serial no.: _____
name: _____ module I.D.: _____ serial no.: _____
Comments: _____

ADCP Setup:

Program version: n/a 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: _____

Date
1992

Time
PDT

Jun 14

1505

depart I.O.S. jetty
(T. Juhasz J. Love D. Moore)
(R. Bigham B. Minkler D. Tule)
(C. Roy R. Paget)
all on board

1845

on station CRD 1-B
- problems with ship transducer (noise)
switched to dunking transducer
- ranges 418, 465

1910

- sent release code - received positive
release confirmation

1913

- not sighted on surface.
- sent release again and received positive
release response
- not sighted.
- moved back on station.

1925

- stopped again on station.
- repeated release commands sent from different
- no responses received for positions
range or release
- move immediately on station for
pinger location.

1945

- on station heard strong pinger signals
from both pingers
- mooring has not released yet.
moved off to new location to release again.

2002

- ranges 502 503 501 → 495 m
- sent release with positive release response
- range @ 466 m 456 m 454 428 m
- sent release - still not on surface
- positive release response.

- range @ 413 m.
- range @ 380 m 372 m.

2012

- range @ 339 m
- sent release again + received positive response
- range @ 323 m 316 m 312 m.

- | Date | Time | |
|--------|------|---|
| Jun 14 | 2013 | - range 302 m. |
| | | - sent release. |
| | | - range 281 m 279 m |
| 2015 | | - set up for drag around mooring. |
| 2115 | | - drag line completely out. app 2000 m deployed |
| | | - pulling line back in. |
| 2230 | | - drag completed in darkness unsuccessful |

phoned Bruce Johnson at home, asking how to change CTF module display and ask for CSAIL password. Rebooted computer - unable to get system to display CTF data. Raw data is being logged.

- 2255
- on station to listen.
 - ranges 174 m 185 m 165 m 167 m 150 m
 - strong pinger signals on station
 - conclusion, mooring is still in place.
 - proceed with rest of program - this mooring will be recovered / and/or redeployed on return leg from Seamounts cruise.
 - prep'd CTD + sounder.
 - Port side 12 kHz transducer not functioning properly ie. switching to starboard side solved sounder problems

- Jun 15 0020
- on station CRD1 for CTD.
 - ship has hydraulic control problems ie. switching controls from winch to winch is proving to be a mystery.
 - ie. central A-frame jams in outboard position
 - ie. starboard side CTD winch and A-frame function mutually exclusively (ie one or the other)

Date Time
 PDT

- June 15 1235 - transmissometer is malfunctioning, to be fixed next day.
 - turned off logging of transmissometer data until repair completed.
- 1245 - hyd. acting up. 'A' Frame not able to operate with CTD winch. Talk of Ship Yard in a.m.
- 01:30 - CRD 3 CTD
- 0340 - Done D11A off to D12A 10.1 NM.
- 0434 str D12A, CTD # 6,
 removed transmissometer from CTD.
- 0720 fire alarms went off - false alarm

Transmissometer problem: CTD 58,483

Bulkhead connector on CTD had a bad contact. Made a new splice in transmissometer lead and will replace bulkhead connector on CTD 58,483

Change over to CTD 53501 while repairs are being made.

Note:

53501 CFG File changed all new coefficients entered

Trans working OK 2000 Dbr Depth range.

1138 PDT 15/06/92 SLive

1624 Completed oxygen standardization

$V_b = .0001$

$V_2 = .3576$

Colorimeter used to determine end point.

1130 PDT to 2000 PDT Jun 15 92

-attempted to recover mooring C1-N without success

-initial attempts were at the mooring deployment sight 1130 - 1600 PDT completing a 1 mile radius search pattern with acoustic devices and surface search

-contacted Peter Knott on "Maple Ridge" fishing vessel and received position where he dropped mooring ($48^{\circ}25.25'$ $125^{\circ}21.28'$) app. 6.4 miles to SW proceeded to this position and repeated search without success

-there was not even sufficient acoustic signal to merit a drag for the mooring.

(see C1-N mooring notes for more detail)

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR	92	MONTH	June	TIME ZONE	UTC	SHIP	Tully	CRUISE	9210	PAGE	1 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
			UTC			UTC							
Jun 15	CRD1	65	stopped 0733	48° 23.91' N / 123° 24.15' W	001	0725	/	/	/	/	10.178 / 31.258	/	transmissometer appears to be malfunctioning
	CRD2	68	0756 / 0803	48° 24.08' N / 123° 23.54' W	002	0757	/	/	/	/	10.391 / 31.206	/	
	CRD3	68	0835 / 0842	48° 23.51' N / 123° 24.90' W	003	0836	/	/	/	/	10.113 / 31.264	/	
	CRD4	62	0852 / 0900	48° 24.19' N / 123° 24.81' W	004	0852	/	/	/	/	10.341 / 31.147	/	
	D11A	172	1007 / 1024	48° 13.93' N / 123° 29.97' W	005	1011	/	/	/	/	9.986 / 31.383	/	
15	D12A	175	1134	48° 15.19' N / 123° 44.98' W	6	1138	/	/	/	/	9.880 / 31.661	/	
15	D13A	189	1244 / 1300	48° 17.89' N / 124° 00.10' W	7	1249	/	/	/	/	10.616 / 31.344	/	13-107 6853
15	D14A	191	1358	48° 22.08' N / 124° 15.05' W	8	1425	/	/	/	/	11.015 / 31.203	1.	
15	D15A	238	1530 / 1544	48° 25.98' N / 124° 29.87' W	9	1533	/	/	/	/	11.079 / 31.108	2.	PROCEED TO C1.
16	LA01	258	0514	48° 29.925' N / 124° 43.88' W	10	0525	10	0606	/	1003 / 1022	11.315 / 31.149	3	BOTTLE CAST TO 260 SEE LOG
16	LA02	313	0700 / 0818	48° 26.21' N / 124° 51.36' W	11	0712	11	0800	/	1025 / 1039	10.986 / 31.792	4	CTD 300m / Hydro 310 Loop
	LA03	117	0938 / 0952	48° 22.89' N / 124° 57.82' W	12	0942	/	/	/	/	13.010 / 31.693	5	wire L 10° CTD + Loop

Date Time
PDT

Jun. 15 2000 - leave CI-N mooring site for nearshore end of LA line to complete CTD/Hydro/Fluorometer work.

2225 - STN LA01, CTD to 263 cm,

- Bottle cast to 260 cm.

- ① Chains are far too high.
- ② cannot see water - we need a better positioned light.
- ③ the deck of the chain section is as slippery as ice.
- ④ the winch is very slow going out.
- ⑤ In these calm seas you can smell (and breathe in) fumes from fuel vents.
- ⑥ Bridge cannot see any wire angle under chains - other than that - they're great!

June 16 UTC

0100

- wire angle bad at times
- no light, p.
- no communications to bridge
- have to put mat + step to chains + on chains

LA03

- at station 0940, CTD + Loop

LBAZ 1040

- Bongo to 115m at 1100

Stn LA04 CTD + hydro

Stn LA05 CTD - Bridge had wrong position (12507 instead of 12510.)

JUNE 16 P.d.t.

0744 - LA06 CTD # 15

0816 - Mess. O₂ cast.

0909 - LA07 CTD # 16

0957 - LA08 CTD # 17

1015 - mess, Bottle cast #17 to 235m.

1200 -
- Start LA10 to 900m CTD w/ cal bottle cons 19
- mess sent 1919 UTC @ 5°
- cons 20 cal. file opened @ 1924 closed 1928
- cal. sal. #10

- Therm. T431 = 3.788° 34.350
T446 = 3.784°

- Leave STN 1942

DAILY LOG

OCEAN PHYSICS

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[illegible]

Date Time

Jun. 16 1630 - contacted R. Thowson and apprised him of situation is CI-N hit by fish boat, could not locate + recover, presumed lost and location of future CI mooring is heavily fished at present (6 factory ships + 12 draggers were on site)
- Deployment of mooring CI-0 cancelled.

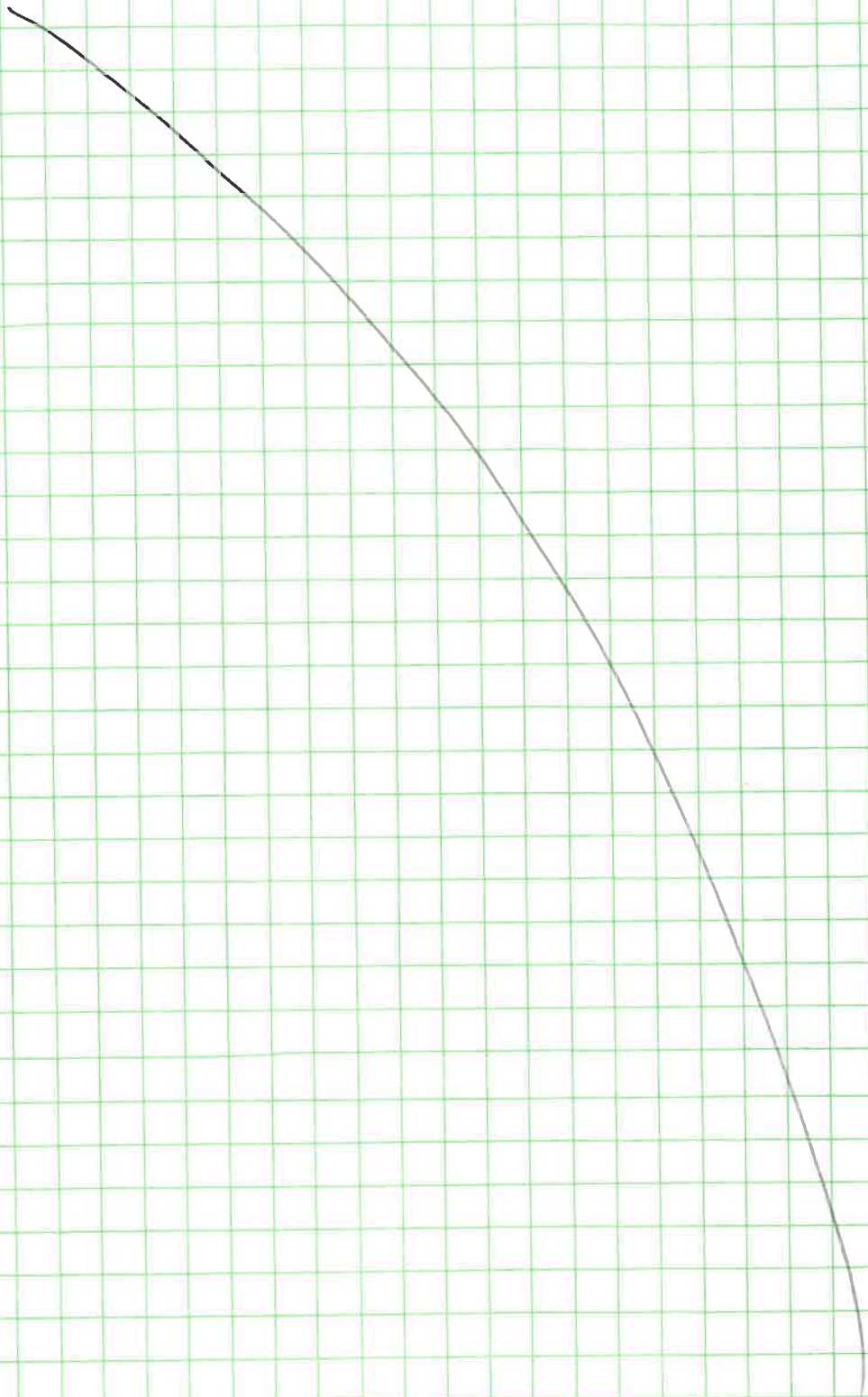
2029 - LBØ3 CTD to 90 m.

2102 - LBØ4 CTD to 114 m.

2117. - # 24 - O₂ Cast to 105 m.

2153 - CTD #25 to 100 m.

ans #18 error round 320



June 17 Pressure offset in CTD 53501 -20 db

0000 - do not know why so changed CTD probe to 58483

no transmissometer on 58483.

SL

0130 - arrived at LBOB lots of traffic in area

0330 - Leave STN LBO9 CTD/Hydro 150m

0847 - Stn LB13 - CTD # 035.

Stn LB13 - Calibration bottle - file No. 36
Temps.

4.133 4.129 34.263

0900 - Stn complete - proceeding to mooring A1.

1138 - recovered mooring A1-N on station without incident

1602 - deployed mooring A1-O at $48^{\circ}31.834$
in 500 m (corrected depth) $126^{\circ}12.235$

- Repair Niskin bottles 20 m and 300 m
to prevent further leaking.

DAILY LOG

OCEAN PHYSICS

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YEAR 1992

MONTH 06

TIME ZONE UTC

SHIP

Tully

CRUISE 9210

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DAY	STATION IDENTIFICATION	DEPTH SOUNDING (m)	SHIP STOP/START TIME	LATITUDE/LONGITUDE	STD CONSEC. #	STD TIME	HYDRO CONSEC. #	MESSANGER TIME	HYDRO SALINITY #	OXYGEN #	SURFACE TEMPERATURE/ SALINITY	LOOP SALINITY #	NOTES
17	LB01	40.7	0120 48 40.109 124 59.29	21	0125	21	?		1003 12.427 1008 31.213				O ₂ cast to 30m
17	LB02	61.0	0224 48 38.87 0320 125 02.56	22	0303	22	?		1009 11.446 1016 31.308				
17	LB03	92	0327 48 37.38 0339 125 05.59	23	0329				11.426 31.391				
17	LB04	114	0400 48 35.88 0430 125 08.685	24	0402	24	0417 0425		1017 11.813 1028 31.607		12		O ₂ Cast to 105 m.
17	LB05	106	0450 48 33.94 125 12.033	25	0453				13.196 31.742				
17	LB06	120	0520 48 32.20 0550 125 15.51	26	0523	26	0540		1029 13.315 1036 31.824		13		CTD to 115 m.
17	LB07	161	0624 48 28.600 125 21.95	27	0626				12.815 31.884				-15db pressure offset
17	LB07	154	0730 48 28.56 125 22.43	28	0723				13.020 31.795				repeat station change to CTD 58-083
17	LB08	125	0829 48 25.26 0905 125 28.69	29	0835	29	0856		1038 11.689 1047 31.431		14		Hydro - 120 m CTD - 116 m mess 0856 63°
17	LB09	153	0945 48 21.92 1021 125 34.85	30	0947	30	1010		1048 12.147 1058 31.760		15		CTD - 153 m Hydro - 150 mess 1010 UTC
17	LB10	156	1107 48 18.46 1116 125 41.05	31	1109	/			13.305 31.845				CTD to 156
17	LB11		1155 48 15.13 125 47.67	32	1200	32	1223		1060 13.390 1080 31.818		16		CTD to 213 hydro 208 m

LC08 Hydro and bongo net haul.
Hydro to 550 m. net.

LC07 Temperature channel reads 44°C
pressure bad.
The only channel working was the
transmission channel.

Changed CTD to spare unit # 58483

This CTD probe is not wired for
transmission so will not use this
channel. First file with new CTD probe
is # 40

LC06 - CTD # 41

- Program bombed after cast finished,
other computer also bombed - power
glitch?

LC05 - CTD

- Bottom finding pinger was serviced
 - batteries good
 - transducer oil had air bubbles in it.
- Pinger receiver was repaired
 - had broken power lead in side electronics box.

DAILY LOG

OCEAN PHYSICS

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YEAR 92

MONTH 6

TIME ZONE UTC

SHIP Tully

CRUISE 92-10

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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

17	LB12		1351	48 12.69	33	1400	33	1444		1082	12.933	17		CTD to 510
				125 51.81						2005	31.897			Or cast to 500
17	LB13	826	1534	48 10.51							13.563			CALIBRATION BOTTLE
				125 55.785	34	1541					31.974			program aborted - 120m
17	LB13			48 10.44							13.557			
				125 55.681	35	1547					31.987			
	LB13	CALIBR	48 10.42											
		FILE 1620.	125 55.54	36						34.263				
18	LC09	610	0115	48 25.93				?		1003	13.311			mess. @ 1605:30
				126 13.66	37	0121	37			1027	31.971	18		file started @ 1609:06
			0338	48 29.35						1028	Bad			Hydro + Bongo.
18	LC08	198		126 07.24	38	0341	38	0400		1040	Data			PLANKTON HAUL
			0500	48 32.844						1042				TO 195 m.
18	LC07			126 00.286	39	0513	39	2235		1050		19		CTD NO GOOD.
				48 32.937										CHANGE PROBES
18	LC07			126 00.297	40	0558					13.311			new CTD, NO thermo.
			0637	48 36.415							31.749			sema OK.
18	LC06			125 53.871	41	0640					13.056			BONGO.
			0753	48 39.94							31.683			
18	LC05		0819	125 47.45	42	0756					13.238			CTD 63.3m
											31.723			BONGO 55m
18	LC04	170	0904	48 43.45	43	0904	43	0925		1051	12.885			CTD 171m
			0946	125 40.78						1063	31.592	20		Hydro 0° WIRE ANGLE
18	LC03	134	1015	48 46.00	44	1019					12.949			CTD 134
			1026	125 34.34							31.551			

renamed to
40 in order to
merge with CTD

Jun. 18, 92

- 1141 recovered mooring E03-N without
PDT incident on station.
- 1141 sent release code
- 1244 mooring all on board.
- prepare new mooring E03-O for deployment
- 1557 launched mooring E03-O in 500m water
(corrected depth)
at $49^{\circ} 04.94' N$ $126^{\circ} 57.67' W$ (GPS)
- proceeded to mooring E01-N for recovery.
- 1811 - released mooring E01-N without incident
PDT on station
 - top instrument 8833 was damaged
vane bent and scratched by wire
 - top buoy was badly dented
(this buoy is no longer suitable for
subsurface deployment).
 - ORESS28B #2000
- prepared new mooring for redeployment
- 2028 - launched mooring E01-O in 90m
PDT of water (corrected depth)
at:
 $49^{\circ} 19.175' N$ $126^{\circ} 36.998' W$
- proceed with LG line CTDs
- Not ship issued for A1-O, E03-O, E01-O
- fishing vessel Cape James calls - caught C1-N in net
could not recover - cut mooring away $48^{\circ} 28.92' N$ $125^{\circ} 12.58' W$
having recovered only top buoy + binger.

- 1041 PST Jun 18, recovered mooring F03-N without incident
Rcm 4 1210 PST OUT WATER #640 on station

Rcm 4 1212 PST OUT OF WATER #731

TR 1215 - 1217 PST OUT WATER #261

Rcm 4 1220 PST OUT WATER #8830

Rcm 4 1244 PST OUT WATER #8831

LG01 - Back to CTD #53501

2117 - CTD to 51 m. #. 47.

2146 - CTD #48 bombed @ 49 m. - "Device IO error."

2153 - CTD #49 to 97 m. OK.

2244 - CTD #50 bombed @ 39 m. "Device t.o. error"
- CTD #51 bombed @ start.

Upon investigation John L. found short at
"crushed spot" in cable. New splice to
be made by BGM.

0015 - Splice complete
all ok on cast cons. 50

0820 - ON STN LG04 CTD - 140m + Loop

LG07 Calibration Sample	T446	2.089	34.566
salinity #26.	T431	2.094	
CTD @ 172706		2.079	34.623

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OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR 92

MONTH JUNE

TIME ZONE UTC

SHIP Tully

CRUISE 9210

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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	LC02	114	1045 1116	48 48 66 125 31 13	45	1050	45	1106				12.396 31.629	21	O ₂ can & 105 HYDRO WIRE ANGLE 120
18	LC01	91	1138	48 50.49 125 27.76	46	1141	46	1200				12.521 31.606		CTD hit bottom bottle can & 85 m
19	LG01		0421	NO GPS J.L.	47	0417						12.295 32.090		changed back to CTD 53501 with Trans.
19	LG02		0444	49 18.684 126 37.973	48	0446						NO DATA		COMPUTER LOCKED UP AT 49.1 m. - RADIO?
19	LG02		0459	49 18.669 126 37.728	49	0453						12.631 32.096	22	CAST OK (TO 97.1 m) LOOP #.
19	LG03		0540	49 14.879 126 43.669	50	0544	ERASED					32.096		BOMBED AT 394
19	LG03	117	0730 0740	49 14.87 126 43.55	50	0733	/	/	/	/	/	12.646 31.984	/	CTD - 120m
19	LG04	146	0819 0829	49 11.26 126 49.42	51	0821	/	/	/	/	/	12.216 32.154	23	CTD - 140m LOOP
19	LG05	250	0913 0925	49 07.35 126 55.35	52	0913	/	/	/	/	/	12.347 31.997	/	CTD - 230
19	LG06	/	1033 1106	48 03.48 127 01.16	53	1034	/	/	/	/	/	13.115 32.077	24	bad wire angle Loop
19	LG07	1795	1153	48 59.79 127 07.20	54	1156						13.056 32.029	25	CTD - 868 212-300m
19	LG07		1302	48 59.51 127 07.03	55	1233						2.076 34.623		calibration file 1727db

1226 26
34.566

Time PDT Date Jun. 19, 92

1325 - recovered. BP1-N without incident on station.

PDT

- prepared new mooring BP1-O

1628 - redeployed BP1-O in 100m of water
PDT at:

50° 03.71'N 127° 53.75'W.

- Not. Ship issued.

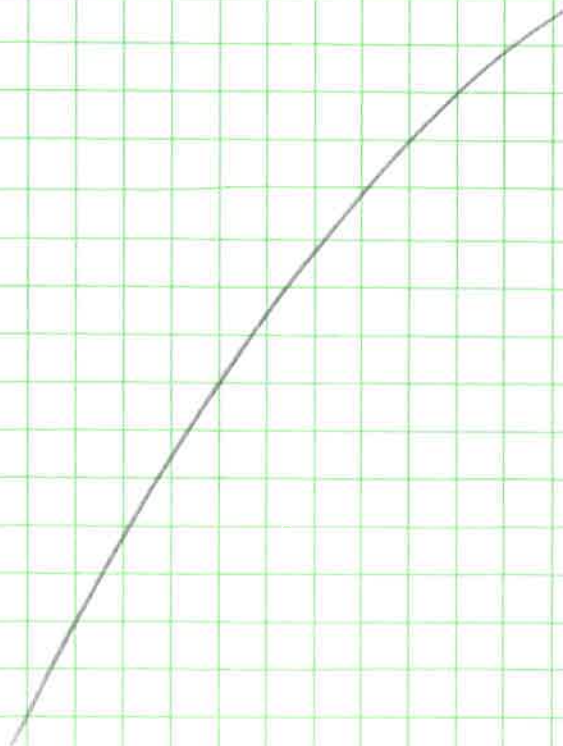
1640 - depart for C1-N where Cape James
reported contact with mooring and cutting it
away 48° 28.92'
125° 12.58'

- the intention is ~~to recover mooring~~ to recover mooring
by dragging it necessary.

Jun. 20 92

Time PDT

- 1105 - on station mooring CI-N at position reported by "Cape James" fishing vessel. (see recovery notes)
- received ranges and pinger signal
- 1120 - recovered mooring with exception of top buoy and pinger known to be in possession of Cape James
- contacted Cape James to pick up equipment they had
- 1305 - picked up buoy and destroyed pinger battery from fishing vessel.
- 1315 - check out oil spill reported in area located + sample surface slick.
- bucket samples taken
- absorbent cloth dipped into slick.
- 1400 - depart oil slick site for stn A2 plankton net stn.



0530 - LD08 CTD & Cal. Cons # 58
- cal. @ 600m
- mess sent 0553 30
- File opened at 0557 Cons # 59
- File closed at 0559

0610 - Temperature °

T431 = 4.472 Sal = 34.180
T446 = 4.468

DAILY LOG

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YEAR 92			MONTH June		TIME ZONE UTC		SHIP Tully			CRUISE 9210		PAGE 5 OF 5		INSTITUTE OF OCEAN SCIENCES	
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		
20	LD06	140	0926 0940	48 46 14 126 10 12	56	0933	/	/	/	13.630 32.057	26		CTD 139m LOOP		
20	LD07	525	1021 1103	48 42.69 126 16.70	57	1046	/	/	/	13.517 32.019	27		CTD 524m LOOP Hydr. problems		
20	LD08	777	1228	48 39 10 126 23 30	58	1236				12.978 32.036	28		CTD 760m LOOP		
20	LD08	600	1309	48 39.35 126 23.21	59	1257	1253	29 34.180	/	/	4.464 34.220	29	CTD cal bottle @ 596 db angle 3°		
20	LCB6	371	2350	48 22 70 126 03 65	60	2353		/	/	14.153 32.058	30		CTD and Bongo. Stn # A2		
21	LCB4	80	0235	48 32 02 125 35 49	61	0239				12.477 31.532	31		CTD and Bongo Stn B7		
21	LCB3	127	0338	48 34 43.2 125 29.895	62	0341				12.926 31.580	32		CTD and Bongo 126.6m Stn B8		
21	LBA1	127	0515 0605	48 31.665 125 3.957	63	0548				11.786 31.454	33		CTD to 118. Bongo Plankton haul @ 0600		