

CRN

9335

# DAILY LOG

INSTITUTE OF OCEAN SCIENCES  
OCEAN PHYSICS

DATE

Oct. 12 - 22 1993

VESSEL

J.P. Tully

PROJECT

La Perouse / MASS / CRD / JGOFS / Juan de  
Fuca Canyon.

Captain: Al Combs First Officer: B. Pennel

Second Officer: M. Wheeler Third Officer: P. Murphy

Cruise Participants/Agencies: O. Physics + O. Env.

Scientific Personnel: Party Chief: Tom Luhařz

| Name | Watch | Cabin | Name | Watch | Cabin |
|------|-------|-------|------|-------|-------|
|------|-------|-------|------|-------|-------|

see attached

Second leg of cruise: Party Chief:

Third leg of cruise: Party Chief:

Data logging system: Unit number: #2 Program version: 1.26

CTD deck unit make: \_\_\_\_\_ model: 87107 serial no.: 57160

Computer make: HP Vectra model: \_\_\_\_\_ serial no.: \_\_\_\_\_

Monitor make: Nec Multisync 29 model: \_\_\_\_\_ serial no.: \_\_\_\_\_

Printer make: Raven 9102 model: \_\_\_\_\_ serial no.: \_\_\_\_\_

1st CTD make: Guildline model: 8715 serial no.: 58483

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: 2000m serial no.: 78

coefficients: slope: \_\_\_\_\_ offset: \_\_\_\_\_

Comments:

2nd CTD make: Guildline model: 8715 serial no.: 53501  
 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: Swann model: 329 serial no.: 1483  
 counter make: Sytech model: serial no.:  
 HYDRO make: model: 310 serial no.: 1082  
 counter make: Reulis model: serial no.:  
 Spooling make: model: 475 serial no.: 1550  
 Drag make: model: 331 serial no.: 1231  
~~Other Work~~ make: model: 320 serial no.: 1207  
Rosette 329 1233

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

#### Comments:

#### ADCP Setup:

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

#### Comments:

XXXXX = primary watch hours for whatever ongoing work is required, (CTD/Hydro/Nets/Mooring).

..... = "On Call" for additional work, (most likely additional mooring operations).

#### WATCH ASSIGNMENTS

|                   | 08-12 | 12-16 | 16-20 | 20-24 | 00-04 | 04-08 |
|-------------------|-------|-------|-------|-------|-------|-------|
| <u>DAY WORK</u>   |       |       |       |       |       |       |
| John              | XXXXX | XXXXX | ..... |       |       |       |
| Rod               | XXXXX | XXXXX | ..... |       |       |       |
| Tom               | XXXXX | XXXXX | ..... |       |       |       |
| <u>8-12 WATCH</u> |       |       |       |       |       |       |
| Reg               | XXXXX | ..... |       | XXXXX |       |       |
| Doug              | XXXXX | ..... |       | XXXXX |       |       |
| <u>12-4 WATCH</u> |       |       |       |       |       |       |
| Darren            | ..... | XXXXX |       |       | XXXXX |       |
| Marie             |       | XXXXX |       |       | XXXXX |       |
| <u>4-8 WATCH</u>  |       |       |       |       |       |       |
| Bernard           |       |       | XXXXX |       |       | XXXXX |
| Jesse             |       |       | XXXXX |       |       | XXXXX |

#### RESPONSIBILITIES

##### DAY WORK

John 8 hours preparing instruments + on call to trouble shoot systems.  
 Rod 8 hours takes care of sediment traps + mooring operations.  
 Tom 8 hours mooring operations + chief scientist stuff.

##### 8-12 WATCH

Reg 8 hours on CTD watch + on call for additional mooring operations.  
 Doug 8 hours on CTD watch + helps Rod with sediment traps.

##### 12-4 WATCH

Darren 8 hours on CTD watch + on call for additional mooring operations.  
 Marie 8 hours on CTD watch.

##### 4-8 WATCH

Bernard 8 hours on CTD watch + oxygen titrations.  
 Jesse 8 hours on CTD watch.

# CABIN ASSIGNMENTS

## NAME

## CABIN

|                |                 |
|----------------|-----------------|
| Tom            | A               |
| Reg            | F               |
| John           | C               |
| Bernard        | D               |
| Darren         | G               |
| (Kevin Paul    | G) - temporary  |
| Rod            | E               |
| Doug           | H               |
| (Randy Kashino | H) - temporary  |
| Jesse          | B               |
| Marie          | <del>#</del> #5 |

# Cruise 9335

Date      Time  
                 (local)

- 12/10/93      2045
- Depart I.O.S. heading north up inside passage
  - delays to departure were due to repairs to A-frame gyro-compass, and to problems of crewing and provisioning the ship.
  - we end up sailing with A-frame as it is - still torquing on the way out and in with the stbd ram out pacing the port ram
  - set up equipment, start up systems
  - calm, overcast

- 13/10/93      0830
- passing Cape Mudge
  - some fog slowly progress for a short time until app. 0950
  - continue set up + start up.

- 13/10/93      2100
- Pine Island

- 13/10/93      2300
- Eastern Scot Channel

- 14/10/93      0400
- Str. \_\_\_\_\_ plankton haul to 50 m using small net. Entrance to Jervis Sound.
- 0438 start plankton tow at 2 knots.
- 0500 finish plankton tow.

14 00 X.

0600 arrive Port Arthur station

0624 Rozelle call 200 ch for sediment trap water.  
0641 leave station.0815 - on station BPI-Q  
- range 157 m, 197 m, 302 m, 296 m, 290 m.  
ship stopped0819 - sent release command - positive response  
0820 - in sight on surface  
- RCM 8211 came up with missing rotor  
- both instruments were fouled by troller gear, wire line, hooks, flashers.

0840 - all on board - clean equipment + set up new mooring of redeployment on site

1046 - launched BPI-R 0946 PST  
in 101 m water depth  
at  $50^{\circ} 03.736'$   
 $127^{\circ} 53.318'$ 

1105 - heading for mooring J. for deployment.

1400 - near station J - searching for bottom  
- selected site 1848 m depth set + adjusted line for ocean depth + s.o.s. correction  
1634 - launched mooring J-R at  $50^{\circ} 07.51'$   
 $128^{\circ} 42.00'$   
in 1847 m on PDD = 1838 m corrected depth

## DAILY LOG

## OCEAN PHYSICS

## INSTITUTE OF OCEAN SCIENCES

YEAR 93

MONTH 10

TIME ZONE

SHIP

Tully

CRUISE

93 35

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 #

T/ 154

D3 152

NOTES

14

1100

plankton haul.

14

602.

5014.90

1341

12808.14

101

1324

Rosette cast for trap water  
salinity very high (40)

14

1843

5006.96

12842.00

102

2353

Rosette at sight of J deploy.

15

557

4938.85

12738.06

103

1756

OR SH NUMBERS  
ORIGINALLY CONSEC. #s  
1 AND 2. REMEMBER  
TO 101 AND 102 TO  
KEEP DE VS. OP  
STATIONS SEPARATE

Oct. 14 cont'd

Time local

- mooring J-R was seen travelling along surface after launch
- submergence of top buoy was not seen. (ship did not steam back along mooring for fear of tangling line in props.)
- mooring was not sighted on surface after  $\frac{1}{2}$  hr surface search.

1700-1800 - completed Rosette cast and Bongo at mooring J-R site.

1800-1830 - ranging and pinger listening at mooring J-R site

- sending code B537 range for 18U

- received various ranges the best being 2562 m and 1764m

- after ranging listened to pinger and received strong pinger signal.
- listened for 3 minutes

# Calibration Data

Date 15/10/93  
comp. # 6  
LJ05

T446 3.252 = 3.254  
T451 3.251 = 3.254  
P2099 1042.1  
Sal = 34.404

## CTD Data

@ 1046. 3.247 34.386  
.007 .018

16/10/93 #13  
LG06

T446 3.522 = 3.524  
T451 3.517 = 3.520  
P2099 955.1  
Sal = 34.285

@ 955.0 3.523 34.346

17/10/93 #14  
LG08

T448 17.248  
T451 17.421  
P2099 2.  
Sal = 34.600

@ 2051 1.910 34.583  
-0.061

Bottle 4.5m above CTD @ 2055  
.017

17/10/93 #16  
LG07

T446 2.526 = 2.528  
T451 2.525 = 2.528  
P2099 = 1502.9  
Sal = 34.517

@ 1503. 2.528 34.487

⊙ .030

17/10/93 #18  
LG06

T446 = 3.605 = 3.607  
T451 = 3.603 = 3.606  
P2099 = 890.1  
Sal = 34.342

@ 893. 3.608 34.341

-0.002 .001

20/10/93 #30  
LJ09

T446 = 14.169 = 14.171  
T451 = 14.166 = 14.170  
P2099 = 26.7  
Sal = 32.200

@ 30.06 14.167 32.182

.003 .018

Friday Oct 15<sup>th</sup>, 0130.

Station LJ01, Cone # 001

CTD cast to 56.4

The program has been started a long time before the CTD really went down, so there will be lots of noise at the surface

CTD on board at 0154.

Hydro cast, 6 bottles to 55 m

0230 Arrive on Station LJ02, Cone # 002

CTD in water @ 0236, to depth: 80.7  
0240 bottom  
0245 on deck

Hydro cast: 7 bottles to 80.0

0337 Arrive on Station LJ03, # 003

CTD in water @ 0340

Start 0340 down to 126.2  
Bottom 0344  
On deck 0350

0633 Sh LJ05 cd. No T448 3252  
T451 3251  
P2099 1042.1

## DAILY LOG

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## INSTITUTE OF OCEAN SCIENCES

YEAR 93 MONTH Oct TIME ZONE UTC SHIP TULLY CRUISE 9335 PAGE OF

| DAY | STATION IDENTIFICATION | DEPTH SOUNDING (m) | SHIP STOP/START TIME              | LATITUDE/ LONGITUDE | STD CONSEC. # | STD TIME | HYDRO CONSEC. # | MESSENGER TIME | HYDRO SALINITY #           | OXYGEN # | CTD #5. SURFACE TEMPERATURE/ SALINITY | LOOP SALINITY # | NOTES                                                    |
|-----|------------------------|--------------------|-----------------------------------|---------------------|---------------|----------|-----------------|----------------|----------------------------|----------|---------------------------------------|-----------------|----------------------------------------------------------|
| 15  | LJ01                   | 58                 | 0828 49°44.341<br>0916 27°02.507  | 1                   | 0844          | 1        | 0910            |                | 1057 11.664<br>1065 31.747 | 1        |                                       |                 | CTD to 56.4<br>Loop #1<br>Hydro 55m O <sub>2</sub> $< 3$ |
| 15  | LJ02                   | 81                 | 0932 49°42.598<br>1007 127°05.423 | 2                   | 0936          | 2        | 0955            |                | 1067 11.826<br>1084 31.745 | 2        |                                       |                 | CTD to 80.7<br>loop #2<br>Hydro 80m                      |
| 15  | LJ03                   | 125                | 1037 49°39.118<br>1051 127°11.225 | 3                   | 1039          |          |                 |                | 11.891<br>32.144           | 3        |                                       |                 | CTD to 126.2<br>loop #3                                  |
| 15  | LJ04                   | 162                | 1125 49°35.60<br>127°16.75        | 4                   | 1137          | 4        | 1203            |                | 1086 11.957<br>1101 32.171 | 4        |                                       |                 | 152.46.                                                  |
| 15  | LJ05                   | 1072               | 1250 49°31.71<br>127°22.50        | 5                   | 1256          |          |                 |                | 12.692<br>32.122           | 5        |                                       |                 | 1064                                                     |
| 15  | LJ05                   |                    | 49°31.72<br>127°22.37             | 6                   | 1318          |          |                 | 6              |                            |          |                                       |                 | calibration file 1047.46.                                |
| 15  |                        | 2528               | 49°03.19<br>127°44.83             | 105                 | 1941          |          |                 |                |                            |          |                                       |                 | ROSETTE AT SEA. TRAP<br>SITE 0: BONGO                    |
| 16  | LG01                   | 50                 | 0741 49°20.503<br>0820 126°35.151 | 7                   | 0751          | 7        | 0808            |                | 1003 12.203<br>1010 31.582 | 6        |                                       |                 | CTD to 53.0<br>Loop #6<br>Hydro cast.                    |
| 16  | LG02                   | 99                 | 0834 49°18.710<br>0910 126°38.135 | 8                   | 0837          | 8        | 0857            |                | 1011 12.648<br>1028 32.093 | 7        |                                       |                 | CTD to 96.6<br>Loop #7<br>Hydro, $< 10^\circ$            |
| 16  | LG03                   | 122                | 0945 49°15.131<br>1018 126°43.780 | 9                   | 1001          |          |                 |                | 12.500<br>32.150           | 8        |                                       |                 | CTD to 120.4<br>Loop #8                                  |
| 16  | LG04                   | 149                | 1046 49°11.324<br>1144 126°49.452 | 10                  | 1052          | 10       | 1132            |                | 1029 12.329<br>1045 32.180 | 9        |                                       |                 | CTD to 147.7<br>Loop<br>Hydro                            |
| 16  | LG05                   | 275                | 1218 49°07.36<br>126°55.28        | 11                  | 1223          |          |                 |                | 12.692<br>32.161           | 10.      |                                       |                 |                                                          |

Oct. 15

0800

- on station mooring site "G"  
searching for bottom.

1034

- launched mooring "G-R"  
at:  $49^{\circ} 39.018'$ ,  
 $127^{\circ} 38.351'$   
in: 550 m correct water depth.
- mooring took 3.5 min to submerge  
 $500 \text{ m} / 3.5 \text{ min} \approx 150 \text{ m/min}$   
 $2.3 \text{ m/sec.}$
- completed Rosette for samples at G  
site
- completed Bouge
- completed Rosette for filter water.

1230

- head off for mooring "O" site.

1530

- located bottom FDD 2523.5 (draft in)  
corrected to 2510 m  
after s.o.s. correction.
- adjusted line accordingly see mooring notes  
and ran off to deployment start position

1700

- launched mooring "O-R" at  $49^{\circ} 07.465'$   
 $127^{\circ} 44.982'$   
in 2514.5 m corrected for draft +  
speed of sound
- observed descent of mooring 17 min to  
submergence of top buoy =  $2.4 \text{ m/sec.}$   
(2485 m length).

1737

- completed Rosette at "O" site.
- completed bouge at "O" site.

1940

- depart "O" for LGL

16 Oct, 0040

Arrive @ LG01

CTD cast #7 to 53.0

CTD in water 0049

CTD at bottom 0053

CTD on deck 0055

Hydrocast: 5 bottles 6 Plastics (2 @ 30m)  
Wire angle 5°

Leave @ 0120

Station LG02 #8

CTD to 96.6 @ 0140

Hydrocast, wire angle 10°  
8 bottles, 9 Plastics (2 @ 75)

Station LG03, #9

CTD in water @ 0300

CTD at bottom @ 0304 = 120.4

CTD on deck @ 0311

CTD goes down for some meters, then  
back to surface, then go down.

Station LG04, #10,

CTD @ 147.7 @ 0356

CTD on deck @ 0359

LG05 CTD with cal. bottle man at 13:46

T446 3.522 = 3.524

T451 3.517 = 3.520

P2099 955.1

Hydro cast for oxygen samples cancelled as mooring  
is getting moving late.

Oct. 16

- 0730

- on station mooring "F"
- located site with bottom at 2045 (PDD)  
or 2034 corrected.
- app. 1 mile off desired position.

- 0930

- set up complete - some problems with  
sed. trap controller drifting in time.
- moving onto mooring start position
- timer problems may be solved by  
launch time

- 0955

- 1045

- at start position
- mooring completely in water and  
towing to selected site

- 1106

- $48^{\circ} 59.903$  deployed mooring "F-R"
- $127^{\circ} 16.145$  2041 depth PDD  
2030 corrected depth

- 1600

- on station mooring site "S"
- completed Rosette cast
- completed bongo haul

- 1748

- deployment begins

- 1820

- all deployed

- 1824

- $48^{\circ} 47.087$   $127^{\circ} 59.859$  2528 on PDD
- Launch mooring "S-R" = 2515 corrected  
depth.

## LG08 Calib Bottle

| <u>S/N</u> | <u>Temp</u> | <u>Pressure</u> |
|------------|-------------|-----------------|
| T446       | 17.242      |                 |
| T451       | 17.421      |                 |
| P2099      | 1.          | FUCKED          |

-Salinity #13

17 October

0010: Arrive @ station LG07

Com # 15: CTD downcast only, with calibration bottle on it.

CTD in water @ 0016

CTD @ 1783.2 @ 0047 48°59.925; 127°06.834

The cast is stopped with CTD @ bottom

Com # 16: Calibration cast @ 0103

From depth 1507 to 1503

So upcast only

Cast started ~ 2.5 min before messenger arrives in bottle

0133 CTD on board, 48°59.762  
127°06.648

## DAILY LOG

## OCEAN PHYSICS

## INSTITUTE OF OCEAN SCIENCES

| YEAR 93 |                        | MONTH 10           |                      | TIME ZONE UTC           |               | SHIP     |                 | CRUISE 93-35   |                  | PAGE             |                                       | OF              |                                           |
|---------|------------------------|--------------------|----------------------|-------------------------|---------------|----------|-----------------|----------------|------------------|------------------|---------------------------------------|-----------------|-------------------------------------------|
| DAY     | STATION IDENTIFICATION | DEPTH SOUNDING (m) | SHIP STOP/START TIME | LATITUDE/ LONGITUDE     | STD CONSEC. # | STD TIME | HYDRO CONSEC. # | MESSENGER TIME | HYDRO SALINITY # | OXYGEN #         | CTD @ 5 SURFACE TEMPERATURE/ SALINITY | LOOP SALINITY # | NOTES                                     |
| 16      | LG06                   | 996                | 1322                 | 49°03.47<br>127°01.37   | 12            | 1327     |                 |                |                  | 12885<br>32.150  | 11                                    |                 | CTD 994                                   |
| 16      | LG06                   |                    |                      | 49°03.36<br>127°01.01   | 13            | 1350     |                 | 12             |                  |                  |                                       |                 | calibration cast @ 955 db                 |
| 16      | NewSTN                 |                    |                      | 48°59.96<br>127°15.83   | OE<br>106     | 1833     |                 |                |                  |                  |                                       |                 | Site of F' - O.E.F.<br>Rose He            |
| 16      |                        |                    |                      |                         |               |          |                 |                |                  |                  |                                       |                 | Bongo at same site                        |
| 16      | NEWSTN                 |                    |                      | 49°01.31<br>127°16.28   | OE<br>107     | 1932     |                 |                |                  |                  |                                       |                 | site of F' -<br>for water for "S"         |
| 16      | NEWSTN                 |                    |                      |                         | OE<br>108     |          |                 |                |                  |                  |                                       |                 | Site of Sed. trap "S"<br>Rosette<br>Bongo |
| 17      | LG08                   | 2090               | 0500                 | 48°55.25<br>127°13.57   | 14            | 0510     |                 | 13             |                  | 13.616<br>32.140 | 14                                    |                 | Calib bottle @ 2055 m<br>CTD @ 2079 db.   |
| 17      | LG07                   | 1776               | 0710                 | 48°59.511<br>127°07.120 | 15            | 0716     | 15              | 0753           | 1003<br>1040     | 13.124<br>32.145 | 15                                    |                 | CTD to 1783.2<br>hydro<br>loop            |
| 17      | LG07                   |                    |                      | 48°59.60<br>127°06.79   | 16            | 0803     |                 | 0918           | 16               |                  |                                       |                 | 1500 db<br>CALIBRATION CAST               |
| 17      | LG06                   | 936                | 1038                 | 49°03.49<br>127°01.00   | 17            | 1042     |                 |                |                  | 12.727<br>32.168 | 17                                    |                 | CTD to 914.9<br>loop                      |
| 17      | LG06                   |                    |                      | 49°03.64<br>127°00.81   | 18            | 1107     |                 | 1104           | 18               |                  |                                       |                 | CTD at 896<br>calibration file            |
| 17      | LG06                   | 922                |                      | 49°03.91<br>127°01.12   |               |          | 17              | 1209           |                  | 1057<br>1095     |                                       |                 | hydro cast for oxygen                     |

CALIBRATION: CONG # 16-

T446 : 2.526 = 2.528  
T451 : 2.525 = 2.528  
P2099 S 1502.9

Hydrocast : Start 0143, 48°59.740  
127°06, 570  
1684 m

Bottom 0218, 48°59.895  
127°06, 551  
1675 m

1600m Bottom

T 446 : 2.346 = 2.348  
T 451 : 2.345 = 2.348  
P 2099 S 1605.2

---

0340: Cong # 17: Downcast at 4606

0342: CTD in water

CTD had to go to ~20m to flush salinity cell,  
then back to surface. Stays @ surface a long  
time because of wind.

Cong # 18: Upcast only for calibration  
men. sent at 0404.

T446 3.605 = 3.607  
T451 3.603 = 3.606  
P2099 890.1

Oxygen dispenser for alkaline redox found broken.  
Replaced with new unit.

Oct. 17 cont'd

Time local

- 0700  
0710
  - on station moving E03
  - ranging 932, 476 questionable?
  - very noisy - checked if Ram extended
  - blown off station
  - move back on station
  - still very noisy with no reliable ranges
  - listened with pinger receiver and heard both pingers giving strong signals - entire mooring in place + upright.
  - range 476, 661 - questionable?
- 0800
  - moving directly over station + declutching.
- 0810
  - on station declutched
  - no response to range - tried 8, 9, 10 reply frequencies
  - 1255 range } questionable? app 2 cables north  
1370 }
- 0825
  - moving to position app. 2 cables south
  - no ranges
  - very strong pinger signals
  - 1357 questionable range
  - drifting toward position and pingers are getting stronger in mooring likely on position
- 0850
  - send release CDEF - no response
  - send CDFG
  - send CDEF multiple tries - on faint response - not conclusive
- 0855
  - sighted on surface
  - This release requires servicing for transponder circuit problems

Oct 17

Time (local)

0935

- all onboard.
- moving to mooring EOI for recovery

1132

- on station. EOI
- no response on range attempt 2 tries.
- checked with pinger - getting both pingers strong signal
- 394 m
- 339 m good

1200

- moving to 2-3 cables south of station and trying over-side transducer.
- tried all three hull mounted transducers and signal is same - noisy, can barely hear 'release'
- can't get good range.

1210

- 2 cables to south stopped + declutched
- ranging hull (ram) transducer
- trying all frequencies 8, 9, 10 for reply.
- trying over-side transducer.
- back to hull (ram) transducer + received 1 good range. - audio return only, not on triple ranger, at app. 400m

1220.

- send release BCD F
- received 2 faint confirmation responses
- sent multiple release commands
- drifting over mooring position. - continue releasing - monitoring pingers

1248

- 1220 - 1248 drifted from 2 cables south of station to 2 cables north of station directly over position sending multiple release codes and listening with pinger

1248 cont'd

receiver + observers on bridge. All to no avail.

- headed back to station for further acoustic searching + releasing.

1255

- back on station
- did not hear pinger again
- tested pinger receiver by lowering working pinger
- multiple releases + transponds without response

1310

- searching along surface with the expected drift (south to north)
- commenced a 2 nm  $\phi$  star (10 pt.) pattern around mooring site starting with northern leg (direction of drift is Tully had been drifting from south to north.

- 3732

1-604-683-7620

1620

- surface search completed - no luck - back on station, declutched - listening with release transponder and pinger receiver.
- ranging using ram transducer
  - check all reply frequencies
  - no response
- ranging using over-side transducer
  - check all reply frequencies
  - no response

1635

- listening by pinger 1620-1635 no pinger signal

1645

- lower new release + pinger to 80 m to test receiving + command equipment.

- found the new release does not transpond
- pulled it back up #206
- lowered another new release
  - both over-side + ship transducers communicated well with this unit for range + release.
- lowered pinger + received strong signal.

conclusion - our acoustic command units + receivers + transducer though in bad repair seem to be functioning.

- EOI if I believe what I heard is now drifting - the Argos should confirm this  
or
- I do not believe what I heard and EOI was not there at all.  
or
- with no results from Argos + surface search EOI is still on site.

Oct 17 cont'd

- 1800
  - acoustics test over
  - EOI operations (recovery over until 1 here from Argo)
  - prepare to deploy new EOI app. 1/2 mile S.E. along 100 m contour line.
- 1939
  - launched EOI-R at 1839 PST position  $49^{\circ}16.913'$   $126^{\circ}35.833'$  in 102 m corrected depth.
- 1952
  - proceed to pick up Randy Kashino app. 2200-2300 in Tofino (government jetty)

Oct. 18

0235 Arrive at station LD01 for CTD and hydrocast.

0245 CTD in water

0249 CTD @ 32.9

025 CTD on deck

Cons. #20. No file has been created with Cons #19. So NO #19.

0327 Station LD02, Cons #21

0332 CTD in water

0334 CTD @ 46.1, Hit the bottom. No good trace on the sounder.

0337 CTD on deck

18 Oct.

plankton 0405 48 58.62 125 46.68

Sh. LD04

CTD to

hydro

plankton to 60 m.

One plankton cup  
screens are clogged

oxygen flask 1027 broken

- 0800 - on station conventional waverider for recovery
- 0840 - recovery completed without incident
  - buoy very difficult to hook onto having only 2 small round bar lifting bails on side
  - lifting bails are not rated for load and look weak.
- 0845 - called to Bob Lake to get him to call up Argos. to search for 3732
- 1042 - Bob Lake calls back re Argos and 3732 is not transmitting on surface.
- 1103 - recovered, serviced, & redeployed conventional waverider buoy.  
49 02.20 125 47.970
- 1314 - launched Wavec buoy  
49 01.80 125 48.70
- 1357 - launched directional Waverider  
49 01.499 125 47.802

Oct 18 cont'd.

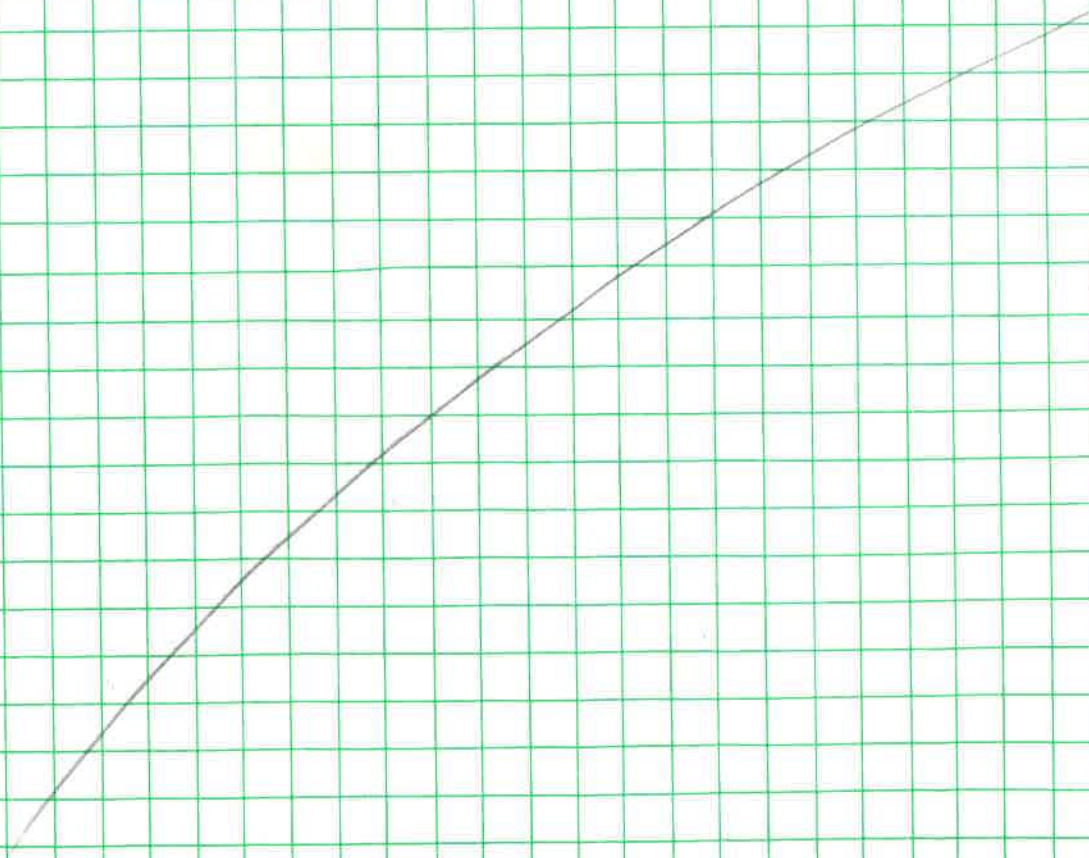
- 1435 - launched RWT-R in 34 m  
at 49 01.899 125 48.101
- 1607 - returned to Tofino to drop  
Randy off.  
-small boat dispatched to Tofino
- 1800 local. -depart Tofino for LD-Line to  
finish CTD's & Hydro's.

1932 (UTC) Sh LDO5

Transmissometer lens dirty. Data reading 60% T  
instead of 90%. Cleaned lens after cast with  
Cottee Re-nu.

Sh LDO9 (0000 to 0400, mist)  
CTD hit bottom, double ring.

Washed mud out of CTD nose cone.



## DAILY LOG

## OCEAN PHYSICS

## INSTITUTE OF OCEAN SCIENCES

YEAR 93

MONTH 10

TIME ZONE UTC

SHIP TULLY

CRUISE 9335

PAGE OF

| DAY | STATION IDENTIFICATION | DEPTH SOUNDING (m) | SHIP STOP/START TIME | LATITUDE/LONGITUDE | STD CONSEC. # | STD TIME | HYDRO CONSEC. # | MESSENGER TIME | HYDRO SALINITY # | OXYGEN # | CTD @ 500m SURFACE TEMPERATURE/ SALINITY | LOOP SALINITY # | NOTES                                  |
|-----|------------------------|--------------------|----------------------|--------------------|---------------|----------|-----------------|----------------|------------------|----------|------------------------------------------|-----------------|----------------------------------------|
| 18  | LD001                  | 33                 | 0936 49°00.049       | 20                 | 0948          | 20       | 1003            |                | 1108             | 10.520   | 19                                       |                 | CTD to 32.9<br>loop #20<br>Hydro.      |
|     |                        |                    | 1009 125°43.794      |                    |               |          |                 |                | 1111             | 31.670   |                                          |                 |                                        |
| 18  | LD002                  | 40                 | 1027 48°58.342       | 21                 | 1032          | 21       | 1046            |                | 1113             | 11.261   | 20                                       |                 | CTD to 46.1<br>loop, Hydro<br>Net Haul |
|     |                        |                    | 125°46.984           |                    |               |          |                 |                | 1119             | 31.704   |                                          |                 |                                        |
| 18  | LD003                  | 48                 | 1138 48°56.54        | 22                 | 1143          |          |                 |                |                  | 10.468   | 21                                       |                 | CTD to 45.6                            |
|     |                        |                    | 125°50.25            |                    |               |          |                 |                |                  | 31.636   |                                          |                 |                                        |
| 18  | LD004                  | 64                 | 1230 48°53.22        | 23                 | 1235          | 23       | 1248            |                | 1120             | 10.350   | 22                                       |                 | CTD to 64.                             |
|     |                        |                    | 125°57.06            |                    |               |          |                 |                | 1127             | 31.776   |                                          |                 |                                        |
| 19  | LD005                  | 93                 | 0238 48°49.48        | 24                 | 0241          |          |                 |                |                  | 11.434   | 23                                       |                 | CTD to 90 db.                          |
|     |                        |                    | 0250 126°03.85       |                    |               |          |                 |                |                  | 32.226   |                                          |                 |                                        |
| 19  | LD006                  | 133                | 0322 48°46.40        | 25                 | 0329          |          |                 |                |                  | 1109.3   | 24                                       |                 | CTD to 130 m                           |
|     |                        |                    | 0335 126°09.72       |                    |               |          |                 |                |                  | 32.246   |                                          |                 |                                        |
| 19  | LD007                  | 445                | 0425 48°42.71        | 26                 | 0428          | 26       | 0503            |                | 1108             | 11.241   | 25                                       |                 | CTD to 463 m<br>(sounder said 428 m)   |
|     |                        |                    | 126°16.55            |                    |               |          |                 |                | 1126             | 32.367   |                                          |                 |                                        |
| 19  | LD008                  | 800                | 045 48°39.11         | 27                 | 0613          | 27       | 0739            |                | 1128             | 10.825   | 26                                       |                 | CTD to 800 m<br>Hydro, < 20' 750 m     |
|     |                        |                    | 0818 126°23.66       |                    |               |          |                 |                | 1067             | 32.400   |                                          |                 |                                        |
| 19  | LD009                  | 1065               | 0855 48°35.683       | 28                 | 0901          | 28       | 1039            |                | 1068             | 10.977   | 27                                       |                 | CTD to 1058.4<br>loop Hydro, < 5'      |
|     |                        |                    | 1119 126°30.043      |                    |               |          |                 |                | 1105             | 32.339   |                                          |                 |                                        |
| 20  | LD009                  | 2475               | 0720 49°15.886       | 29                 | 0729          |          |                 |                |                  | 14.266   | 28                                       |                 | CTD to 2003.8<br>Calibration bottle    |
|     |                        |                    | 127°47.118           |                    |               |          |                 |                |                  | 32.220   |                                          |                 |                                        |
| 20  | LD009                  | 30                 | 49°15.149            | 30                 | 0859          |          | 0900            |                |                  |          | 30                                       |                 | CALIBRATION CAST<br>AT 30 m            |
|     |                        |                    | 0906 127°46.495      |                    |               |          |                 |                |                  |          |                                          |                 |                                        |
| 20  | LD008                  | 1750               | 0942 49°19.983       | 31                 | 0949          | 31       | 1209            |                | 31               | 10.03    | 30                                       |                 | CTD to 1870.9<br>loop Hydro            |
|     |                        |                    | 1320 127°40.884      |                    |               |          |                 |                | 33               | 10.39    |                                          |                 |                                        |

Oct. 19

Time local

- 0800

- on station E03 for deployment

- 1025

- Ready to deploy

1027

Meter 3506 in water.

1030

Meter 432 Logger #93 chain 1339

1033

Meter 6357 in water  
6506 in water

1048 Launch

49 04 826

126 57 088

- in 502 m corrected depth

1050

- depart for E01

- established a search pattern to north of position for pinger & release search

1242

- starting search for E01 see attached pattern

1245

-(#1+0) 49 17.485

126 36.676

range on 8 662m

662m = 654m distance

683m = 675m = .4m

- heard 2 pingers. - good signal.

1300

-(#1+1)

- pinger, if any, single signal very faint. = no pinger

- range 1331 = 1327 = .71  
1365 = = .73

1310

-at (5+1)

1320

at (5+1) Very strong transpond reply,  
 @ 1745 m. Release went into  
 1/sec, 30 sec ping mode on 3 occasions  
 as if it was signalling a release  
 sequence. Probably the down EOL.  
 No pingers heard on this position.  
 -called office + confirmed that 3732 has not  
 transmitted

1352

-at (3+6)

-range 1797 = .97 nm  
 1782 =

-multiple transponds (release at EOL-R)

-2 faint pinger responds

-the release on EOL-R had a peculiar  
 characteristic of going into a multiple  
 response mode to transpond even on  
 predeployment bench test.

1405

-at (1+2)

-range - no response

-2320 2323 = 1.25 nm

2447 + drifting to north.

2443 = 1.32 nm

-no pinger signals

1419

-at (1+3)

-ranges - no ranges

-no pingers

1433

-at (3+5)

-range 2555 2558 = 1.4 nm

-no pingers

-created new position 4+6

-1452

- no pingers.

- ranges 2640

- created 4+7

$$2631 = 1.42 \text{ nm}$$

-1510

-at (4+7)

-range 2090 2110

$$= 1.14 \text{ nm}$$

-no pinger.

-1534

-at (1+4)

-no ranges

-no pinger

-1552

-at (1+5)

-no ranges

-no pingers

-1601

-at (1+6)

-no pingers

-no ranges

-1620

-at (1+7)

-no pingers

-no ranges.

-in searching for E01 and calling up Argos for 3732  
it was discovered that mooring "G" witness

#20920 is on surface at:

$$\begin{array}{r} 49.569 \quad 127.591 \quad 292/1701 - 292/1658 \\ = 49 \text{ } 34.14 \quad 127 \text{ } 35.46 \end{array}$$

-1629

-at (3+0)

-no ranges

-no pingers.

-1649

-at (5+7)

-no ranges

-no pinger.

-1709

-at (3+2)

-no ranges

-no pingers

- 1731

- at (5+4)  
- no ranges  
- no pinger

- 1749

- at (3+4)  
- no ranges  
- no pinger.

- 1803

- at (5+2)  
- ranges 2312 = 1.25 nm  
2308  
- no pinger 2345

- an unexplored cocked hat appeared at a position called (6+6) app  $3\frac{1}{4}$  nm west of (4+6) - off to check here.

- attempted to connect to Service Argos by Inmarsat on ship

- this was not successful we did not have modem line for Model 100

- my computer it seems has a hardware fault in modem.

- called Service Argos to get information before deciding to go after "G" - R.  
- PRN for 3732 and 20920.

- 1844

- at (6+6)  
- no ranges  
- no pinger

- 1904

- at (H+1)  
- range 1209, 1230 = .7 nm.  
- no pinger

- contacted Service Argos again - got positions from day 290 - 293 good quality fixes  
see attached

Oct. 19 cont'd

- 1930

- departed EOI for LJ-Line  
offshore end.

Oct 20

- 0018 Arrive @ LJ09

CTD + calibration, Cons #29 : Downcast only.

0029 CTD in water

0114 CTD @ 2003.8

Cons #30 : Log at 30 m  
for calibration bottle.

Tripped @ 0900:36 UTZ (0200:36)

|             |        |          |
|-------------|--------|----------|
| CALIBRATION | T446   | 14.169 = |
|             | T451   | 14.166 = |
|             | P20995 | 26.7     |

Leave @ 0206

0240 : Station LJ08

0248 : CTD in water

0340 : CTD @ 1870.9, 49° 19.538

127° 40.254

Bottle cent. to 2000 m bottom shallowed to 1800.  
salinity samples taken from 1200, 1500 and 2000.

0620 depart station for drifting mooring.

Oct 20 cont'd

Time local

0800

- on station last transmission from busy 49 35.52 127 40.68
- getting position update from I.O.S.

I.O.S position 49.660 127.595 293/0428 Z  
Argos 49°39'36" 127°35'42" "

- there are several fishing vessel visible.
- another position being processed

0900

- moving toward the above position & surface searching.

0930

- arrived at 49.660 127.595
- followed a course from here parallel to the drift we experienced earlier this morning. i.e. to NNE
- ask for new update

1000

- no new update - fog setting in
- visibility down to 2 - 2.5 m.
- receive new update from I.O.S. - no change from Argos

(1 mi)  
good

asked that we contact local fish boats working area  
class 0 49.767 127.614 293/1637 Z

- alter course to this 0937 local
- fog lifting to app. 5 mi vis.

1020

- sighted on surface
- turned out to be fish floats marking fish gear

1046

- on site last (1637 Z) fix from Argos
- altering to north parallel to observed drift track
- visibility 1 - 1.5 miles

set up Oceano deck unit to range on mooring assuming release is with drifting package.

- gave John + Doug the range code for AR191 96U - 6981

1130

- called in to I.O.S. for another update.
- no change

- got update from Service Argos

class 0      49.782    127.654    293/18182  
= 1118/local

- altering course to this position.
- visibility going in & out from as low as 1 nm to 5 nm

1200

- on position - set up star search pattern centred on position + allowance for expected drift to N & W.  
pattern diameter is 4 nm with 12 arms @ 30° interval.

1310

- called Argos for new position
- none available yet, new one in approx 30-45 min.

1338

- 4 glass balls, trap, steel buoys all sighted on surface.
- 48° 48, 420'  
127° 42, 360'

1440

- all on board recovered
- no damage to lines, buoy argos, etc.
- RCM4 → Trans cable chattered away

- \* NB - release hook was released
- "T" bar rotated.
- possibly our old problem with Ocean's has occurred.
- prepare for redeployment
- the mooring survived its 3 day stay on surface very well and was easily reassembled. - RCM Trans and Tracer were checked that they are operating

Oct. 20 cont'd

Time (local)

1717

- checked with Argos to verify if any buoys were on surface
- list of Inlitturss buoys in water.

last Tx on day 293

|       |       |                                      |
|-------|-------|--------------------------------------|
| 3732  | EOI-Q | None                                 |
| 3733  | BPI-R | None                                 |
| 7361  | EOI-R | None                                 |
| 7067  | EOB-R | 19 Oct. (292) 1700Z (deployed 1800Z) |
| 7362  | JF3-Q | None                                 |
| 3735  | AI-Q  | None                                 |
| 20919 | J     | None                                 |
| 20920 | G     | 20 Oct. (293) 1820Z (on deck)        |
| 20921 | O     | 15 Oct. 2300Z                        |
| 20922 | F     | 16 Oct. ?                            |
| 20923 | S     | 17 Oct. 0100Z                        |

1800

- on station mooring site "G" for second deployment

1847

- launched "G-R-2" at  
49° 39.01' 127° 38.36'  
in 551 m corrected depth
- observed buoys submerge from ship.

1900

- depart for LC-Line.

---

Oct. 21

0625

depart from LC line after doing only two CTO's at sites LC04 and LC05.

## DAILY LOG

## OCEAN PHYSICS

## INSTITUTE OF OCEAN SCIENCES

YEAR 1993

MONTH 10

TIME ZONE UTC

SHIP Tull

CRUISE 92-25

|      |    |
|------|----|
| PAGE | 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                     |
|-----|------------------------|--------------------|----------------------|---------------------|---------------|----------|-----------------|----------------|------------------|----------|-------------------------------|-----------------|---------------------------|
| 21  | LC04                   | 171                | 1124                 | 4843.61             | 32            | 1138     | 32              |                | 1003             | 10.913   | 34                            |                 | CTD to 168 db.            |
|     |                        |                    |                      | 12541.21            |               |          |                 |                | 1020             | 32.359   |                               |                 | NUTRIENTS.                |
| 21  | LC05                   | 65                 | 1310                 | 4840.19             | 33            | 1314     |                 |                |                  | 10820    | 35                            |                 | CHLOROPHYLL (0.20, 30.50) |
|     |                        |                    | 1321                 | 12547.03            |               |          |                 |                |                  | 32414    |                               |                 | CTD to 63.                |
| 22  | LC01                   | 91                 | 0722                 | 48°50.551           | 35            | 0736     | 35              | 0804           | 1003             | 9.799    | 36                            |                 | CTD to 79.2               |
|     |                        |                    | 0823                 | 125°27.596          |               |          |                 |                | 1014             | 32.105   |                               |                 | loop Hydro, Nut, Chlo     |
| 22  | LC02                   | 106                | 0840                 | 48°48.833           | 36            | 0847     |                 |                |                  | 9.884    | 37                            |                 | CTD to 109.1              |
|     |                        |                    |                      | 125°30.899          |               |          |                 |                |                  | 32.295   |                               |                 | loop,                     |
| 22  | CRD1                   | ✓                  |                      | 4824.06             | 37            | 2347     |                 |                |                  | 9.728    | 38                            |                 | CTD to 66 db.             |
|     |                        |                    |                      | 12324.12            |               |          |                 |                |                  | 31293    |                               |                 |                           |
| 23  | CRD2                   | ✓                  |                      | 4824.13             | 38            | 0004     |                 |                |                  | 9.723    | 39                            |                 |                           |
|     |                        |                    |                      | 12323.46            |               |          |                 |                |                  | 31200    |                               |                 |                           |
| 23  | CRD3                   | ✓                  | 0019                 | 4823.50             | 39            | 0020     |                 |                |                  | 9.693    | 40                            |                 |                           |
|     |                        |                    | 0026                 | 12324.33            |               |          |                 |                |                  | 31.386   |                               |                 |                           |
| 23  | CRD4                   | ✓                  | 0035                 | 4824.19             | 40            | 0037     |                 |                |                  | 9.690    | 41                            |                 |                           |
|     |                        |                    |                      | 12324.82            |               |          |                 |                |                  | 31.427   |                               |                 |                           |

Oct. 21 cont'd

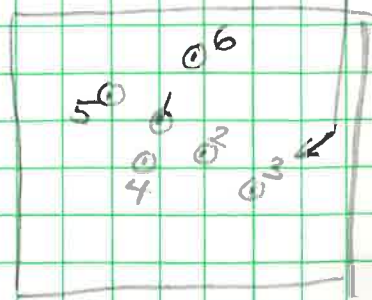
Time local

- 0805 <sup>near</sup>  
- ~~on~~ station A1 for recovery.  
- moving to station      568 m      540 m  
                                 529 m      = 172 m  
                                 530 m  
- stopped on stn      487 m  
  drifting off      490      = 98 m  
                         498  
                         500      = 178 m
- 0825  
  0826      - sent ABCF - received positive response  
                 - sighted on surface.
- 0835      out of water      7732      184 meter  
                 - clean up + prepare launch of A1-R.
- 1138      - deploy A1-R @  $48^{\circ} 32.048'$   
                                  $126^{\circ} 12.346'$   
                                 in 499.5 m corrected  
                                 depth
- 1200      - depart for mooring JF3  
                 - gale warning forecast for south coast
- 1533      - arrive JF3 mooring  
                 - ranging      211 m      = 67 m  
                                 211 m  
                                 211 m  
                                 209 m  
                 - drifting over station until we are far  
                 enough away 222, 227, 248, 240
- 1545      - sending ABEG positive response
- 1546      - sighted on surface.
- 1700      - ready to redeploy.

Oct. 21 cont'd.

Time local

- 1826 - launched JF3-R in 220 m depth  
at 48 15.618 125 12.151
- 1835 - setting up for C1-R on deck  
- heading off to C1 for acoustic  
listening to locate bottom  
portion of mooring.
- 2013 (1) - on station mooring C1-Q  
- no ranges  
- no pingers  
- position of 1st Argos transmission  
is 48° 28.50' 125° 12.06' ←  
- moving 1 mi off deployed strn toward  
1st Tx strn.
- 2043 (2) - 48 28.940' 125 13.450  
- no pinger  
- no ranges
- 2103 (3) - 48 28.56 125 12.17 ←  
- no pinger  
- no ranges
- 2130 (4) - 48 28.44 125 15.18  
- no ranges  
- no pinger.
- 2140 (5) - 48 29.57 125 16.08  
- no ranges  
- no pinger
- 2210 (6) - 48 30.31 125 15.06  
- no ranges  
- no pinger



Oct. 21 cont'd.

Time local.

Oct 22

0021: Arrive @ LCO1

0038: Lower the CTD: CONS #35.

There are no Cons #34: The deck unit was OFF and Bernoulli out.

0040 CTD @ 79.2

We went far from the bottom: not able to see the pinger: the sounder was disconnected!

0044 CTD on deck

Hydrocast. to 85 m.

---

0140 Arrive @ LCO2 #36

0156 CTD on deck

0202 CTD done, no hydrocast done because of the weather. Stop all work

0800

- 50 kt winds heavy seas
- work cancelled through night
- deployment of CI cancelled for safety reasons
- we head in Juan de Fuca Strait, to complete work at CRD station

Oct. 22, 93

Time local

- 1533 - 2 cables off station stopped for release. CRDI-D
- 1535 - ranging 318 m = 314 m distance  
315 m  
315 m
- 1536 - sending BCEH - response positive.  
- sighted on surface
- 1641 - launched CRDI-E  
in 57 m depth at  
48° 23.954  
123° 24.162

CRDI CRD t