

CRUISE
NUMBER

96-12

DAILY LOG

INSTITUTE OF OCEAN SCIENCES

OCEAN PHYSICS

DATE

June 17-28, 1996

VESSEL

J. P. Tully

PROJECT

ENDEAVOUR RIDGE FLUXES

Captain: John ANDERSON First Officer: ART GOODING (4-8)
12-4 Second Officer: SIMON DOCKRILL Third Officer: BILL DOHERTY (8-12)

Cruise Participants / Agencies: _____

Scientific Personnel: Party Chief: RICK THOMPSON

Name	Watch	Cabin	Name	Watch	Cabin
Rick Thompson		A	PASCAL POUSSAET		H
Jim Cowen		G	SARA ROBICHAUD		A
MIRIAM BERTRAM		D	XIYUAN WEN		F
REG BIGHAM		C			
GEORGE CHASE		E			
KEIR COLBO		B			
DON MCGEE		E			
CLARKE MESMAN		B			
BERNARD MINKLEY		ELE			
Steve Mitaly		ELE			

Second leg of cruise: Party Chief: _____

Name	Watch	Cabin	Name	Watch	Cabin
Brian Heesterman	chief engineer				
Rick Horbas	2nd				
Don Larvin	3rd				

Data logging system: Unit no.: _____

Program Name: _____ Program version: _____

CTD deck unit make: _____ model: _____ serial no.: _____

Computer make: _____ model: _____ serial no.: _____

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

Temperature sensor model: _____ serial no.: 57915

coefficients: slope: _____ offset: _____

Conductivity sensor model: _____ serial no.: 58814

coefficients: slope: _____ offset: _____

Pressure sensor range: _____ psi serial no.: _____

coefficients: FSP: 3000 dB offset: _____

Transmissometer model: _____ serial no.: 598

coefficients: slope: _____ offset: _____

Comments: Camera Trans 192 D

JUNE 14: Friday PM LOAD WINCHES FOLLOWING
RETURN OF MACKAS WEST COAST CRUISE
Other Equipment

JUNE 15/16 Load UH equipment. Xi Yuan, Jms, Mimi
arrive PM SATURDAY

JUNE 17 COMPLETE LOADING. TRACE MISSING MASKIN
BOTTLES (30 l) + Xi Yuan's pressure cases to
Honolulu.

JUNE 18: 0400 Depart for Colwood Fuelling
Dock. SAVE 89/2, Load 200,000 l @ 50,000 l/row.
Await arrival of UH equipment from
Canadian.

Arrive Colwood fuelling jetty @ 0815 PDT

UH equipment delivered to ship around 1230
Complete fuelling and Depart jetty @ 1400 PDT.
Windy in Strait 20+ knot west. Small Craft
Warning. Sunny but cool day. 17-20°C Vancouver.

JUNE 19: TIME ZONE +7

CONDUCT SAMPLING LINE E-W along 47°56.5'N
START 47°56.5'N; 129°04.5'W
END 47°56.5'N; 129°07.5'W | Sounder on.
Across main vent region.

TIME UTC	GPS LAT	GPS LONG	DEPTH (cm)	MARK
17:58:23	47°56.441'N	129°05.079'W	2119	1 ↑ 100'
18:01:47	56.434	05.845'	2136	2
18:05:27	.456	.863	2158	3
08:49	.475	06.175	2139	4
11:35	.480	06.425	2086.5	5
14:02	.476	.739	2076	6
19:10	.512	.340	2107.8	7
21:30	.477	06.610	2130	8 ↓ west end of line.
turn around				
Prohu 21:24:25	47°56.570'N	07.828	2213.4	1 west
18:28	56.806	07.640	2142.3	2
31:06	56.466	07.160	2096.1	3
34:30	56.459	06.753	2075.7	4
36:25	.452	.451	2082.0	5
37:25	.459	.378	2101.8	6
38:45	.466	.198	2146.2	7
39:45	.459	.092	2161.8	8
39:55	.466	.090	2170.8	9
40:17	.489	.046	2174.7	10

Oxygen Standardization

Blank .004 .001
.003 .002
.002

V2 .722 .722
.722
.718 .716 .718

DAILY LOG

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YEAR		MONTH		SHIP		CRUISE		PAGE		OF				
1996		June				9612								
DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC #	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
20	R96-01	ROS	0313		1	47 56.78	129 05.99	12682	32496	2211				0 & 2211. <i>done</i>
	R96-01		0356		2	47 56.94	129 05.93							
20	R96-02		2355		3	47 56.86	129 06.16	12383	32.503	2025		10		upcast
21	R96-02		0042		4	47 56.82	129 06.12							0 & 2025 <i>done</i>
21	R96-02		0241		5	47 56.82	129 05.87			2122				2001 & 1983 Yoyo
21	R96-03		0825		6	47 56.67	129 6.67					10		2122 & 1433
	R96-03		0906		7	47 56.74	129 06.15	12319	32.500	2077				0 & 2076 <i>done</i>
22	C96-01		0042		8	47 56.71	129 06.13	12248	32.497	2000		10		2000 & 0.
22	C96-01		0126		9	47 56.62	129 06.10	12166	32.495	2192				0 & 2192
22	C96-01		0330		10	47 56.64	129 06.03							Tag file Yoyo
22					11	no file		12179	32.498					2100 & 0.
22	R96-04		0537		12	47 55.95	129 09.57							
					13	no file				10 - 2301				10 & 2301.
	R96-04		0620		14	47 55.97	129 09.61							
22	R96-04		0700		15	47 55.96	129 09.56			2036 - 2301				Yoyo
22	R96-04		0915		16	47 55.92	129 09.62			1994 - 2131				pump file
	R96-04		0922		17	47 55.97	129 09.59	12336	32.501	2200 - 2304		1		
										2300 - 5		9		upcast <i>done</i>

CAST TYPE -

BOT - bottle cast
CTD - ctd
MOR - mooringROS - rosette
NET - net haul
DRF - drifter

USW - sea water loop

TIME CODE -

BE - beginning time of cast
BO - bottom time of cast
EN - end of castDE - deployment time
MR - messenger release
RE - recover mooring

POSITION CODE -

RAD - RADAR
GPS - GLOBAL
LOR - LORAN

time	lat	lon	depth	mark
18:41:50	47° 56.464	129° 05.875	2167.5	12
42:58	.462	.758	2151.9	13
44:18	.475	.595	2136.6	14
46:25	.452	.378	2140.6	15
48:15	.451	.165	2128.4	16

Real Tow (FOR PLOT)

TI = E96A

Time	depth (UTC)	Latitude	Longitude	wireout	horizontal	vertical
TI-1 *						
TI-2	2018	47° 55.396	129 06.595	1080	30	
TI-3	2116	47° 56.48	129 06.40	2324	35	

E9612A

* Tow #1 Apep E9612A
IN WATER @ 1300 PDT. [1953 UTC]
47° 55.054 129° 06.667°

Clear / Sunny, Low waves.

Tow along 110° T from 47° 55.00 ; 129° 06.57.

NET #2 opened at 2126 / 47° 56' 696 / 129° 06.367
Bottom (~2145 m) to 1950 m.

Computer restarted @ 2129. Crashed after net triggered.

All nets opened. Net #4 tied up on frame.

END CAST AT 1645 PDT. WASH DOWN DURING BBSQ

NETS: #2 Bottom (~2126 m) to 1950 m.
#3 1950 to 1800 m
#4 1800 to 1200 m
#5 1200 to 800 m
#6 800 to 400 m
#7 400 to 0 m

WE HAD Problems with Pitch ANGLE, Too NEGATIVE (NOSE DOWN) most of the downcast and first part of up cast. Some -20° pitch values.

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1996		June		Tully		96-12								
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22	R96-05		2250		18	47 55.99	129 09.64	12.377	32.495	1967				0 to 1967 ^{del 1967} hy 1932
	R96-05		2330		19	47 55.95	129 09.66	12.367	32.487			10		upcast.
23	R96-06		0424		20	47 55.953	129 09.61	12.528	32.448	2150	0 to 2150			Reset with in situ pump
	R96-06		0521		21	47 55.910	129 09.615			2030		-		Pump file
23	R96-06		0731		22	47 55.94	129 09.64	12.510	32.478	2326		10		2326 to 0.
23	R96-07		2220		23	47 56.70	129 06.13	12.298	32.482	2137	0 to 2100.			0 to 2100.
			2307		24					2137		1		
			2312		25	47 56.70	129 06.16				2100-1719	1		computer crashed
23	R96-07		2325		26	47 56.71	129 06.13	12.384	32.479		1700-0	9		full profile
24	R96-08		0450		27	47 56.64	129 06.05	12.308 32.461	2138	2102.	0 to 2100	-		
			0530		28	47 56.72	129 06.11				2100-2038	-		
			0546		29	47 56.71	129 06.15				2046-1990	1.		Yoyo ...
	R96-08		0727		30	47 56.66	129 06.20	12.319 32.477			1900-0	-		
	R96-09		1314		31	47 56.70	129 06.19				30-1800	-		
24	R96-09		1506		32	47 56.66	129 06.17	12.215 32.476			1800-0	-		
25	R96-10		0002		33	47 52.94	129 11.09	-	2504		0-2267	-		noisy data
	R96-10		0058		34	47 52.96	129 11.08				2200-0	10.		

CAST TYPE -

BOT -
CTD -
MOR -bottle cast
ctd
mooringROS -
NET -
DRF -rosette
net haul
drifter

USW -

sea water loop

TIME CODE -

BE -
BO -
EN -beginning time of cast
bottom time of cast
end of castDE -
MR -
RE -deployment time
messenger release
recover mooring

POSITION CODE -

RAD -
GPS -
LOR -RADAR
GLOBAL
LORAN

Tow #1 CONT'D E9612A

The tow line was slightly off to the west of the main vent axis. Almost North South; @ 11° True.
[Ridge Axis is at 22° True] Had to avoid mooring ERA2. Samples not large. Towing angle? But sign of major acoustic signal above plume.

Comments

- Need to verify mooring location before we recover it.
- Conduct 2nd Tow along axis, using improved coordinates.

47°56.5 N : Approximately in centre of
129°06.0 W Axial Valley

47 58.5 W Should be @ 22°
129 03.0 W

1800 PDT — UH Rosette/CTD cast near main vent site. Moderate plume near 2100 — 2200 m. First did a quick dip to see which 30 l bottles leaked.

STN R9601 Ecs 1 & 2.

47 56.98	START
129 05.99	
47 56.94	END
129 05.93	

JUNE 20, 1996

WANT TO REPEAT ALONG AXIS TOW LINE WITH SCUID
YESTERDAY'S TOW WAS TOO FAR TO WEST.
NEW WAY POINTS

- ① 47°56.5 ; 129°06.0 W
- ② 47°58.5 129 03.0 W

Should be along 22° T

— TOW POINT MOVED FORWARD ONE NOTCH

Tow #2 E9612B

JUNE 20. START DOWN 0910 PDT
Seas up; winds 25 knots Sunny.

TEMP SENSOR Crapped out 1.

TOW line START 47 56.5 129 06.0
TO END 47 58.5 129 05.0

JUNE 19, 1996

E96A Brief net notes:

- did not yield very many animals
- also evident in surface waters, pelagic birds, but there were 5+ Dall porpoise and some long neck fur seal pups
- squid flew with some unpleasant pitch angles
- nets were not left open very long
- upon recovery some nets (specified in Sara's log) were wrapped around the bridle. This appeared to have occurred at the surface and I think the nets fished properly because the animals were in the codends not in the nets themselves.

JUNE 20 1996

E96B Brief tow notes:

- Bridle moved forward → much better pitch
- longer net openings
- greater abundance
- speculation: seems the cool weather this year has pushed seasonal changes back i.e. it is earlier in the season than the calendar indicates, resulting in less animals

IN SITU Pump Above Plume at main vent site

DAILY LOG

UTC

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24	R9608		13:10		0031	47 56.680	129 06.185							IN BITU Pump down plane
														lower to 1800 m; pump set for 1 hour; 0.9 hr start delay plane New C-cells used for power.
			1321			47 56.685	129 06.235							
			1327			47 56.656	129 06.194							
			1335			47 56.644	129 06.169							
			1342			47 56.645	129 06.172							
														HIT plane @ 1910 m. Max plane about 89%, background 89.4% -88.9
														Step down @ 1800 m 47 56.660 129 06.166 89.501%
			1354											
														Start pumping 1800 m 47 56.649 129 06.183 89.550%
24	1505				0032	47 56.658	129 06.162							89.55% upcast. File 96120032.
	1511					47 56.676	129 06.167							sfc.

2 57.68

05.424

Tow # 2, TowT'D

Temperature sensor partly recovered during decent.
No spare available.
Some large swell. Heavy compensation under control of Reg.

Nets washed and suboared @ 1400 PDT
Proceed to Rosette Station

Nets seemed to fish OK after we moved the
Bridle hinge forward one bolt hole.
Only near surface did pitch give us trouble.
Pegged out at 19.70. Tried altering by
changing ship speed and winch speed.

June 21 (UTC) June 20 (PDT)
U H Rosette
Finally hit plume @ 2070
4756.80 @ 0234 UTC
129 @ 5.996

Weak plume of 1%

June 20 PDT / June 21 UTC
U H Rosette @ 1600 PDT. Tow yo around
trying to find plume. Did full circle to
plume.

During cast yesterday near main vent site,
it appears that the rosette was right
on top of main vent field. High T and
high S.

Plume starts @ 1950 m. Up to -2%
reduction. Core values at 1970 m, 2070 m.
Diffuse plume also near 1950 m

U H did two rosette casts at this
site. Complete a breakfast time Friday
June 21!

1	1	F8.4
2	9	F9.4
3	18	F9.4
4	27	F8.3
5	35	F7.3
6	42	F5.0
7	47	F5.0
8	52	F5.0
9	57	F5.0
10	62	F5.0
11	67	F5.0
12	72	F7.2
13	79	F6.0
14	85	F7.2

SDF

D:\data\9612\SAIL\96120001.CLN

Sail data

Time
Temperature: cell
Salinity

(5)

~~9612SUFF.TXT~~

Julian-day
Temperature
Salinity: CTD

(P)

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YEAR 1996		MONTH June		SHIP		CRUISE								PAGE	OF
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25	C96-02	CAM	0335		35	4755.86	129 09.68							10-2030-1600	
			0425		36	4755.91	129 09.68				1600-2322	✓		Tag file	
	C96-02		0545		37	4755.93	129 09.70	12.416 32.472			2300-0	✓			
	C96-03		0728		38	4755.91	129 09.63	12.451 32.471			0-1610	✓			
25	C96-03		0909		39	4755.93	129 09.64				1500-35.	✓			
26	R96-11		0347		40	4756.96	128 54.04	12.664 32.478			0-2300	✓			
26			0446		41	4756.99	128 54.04	12.425 32.470			2301-0	10			
26	R96-12		1200		42	4756.03	128 54.06				8-23			pump cont	
27	R96-13		0244		43	4746.86	129 19.81		2743.			1.		20 m only for pump	
27	R96-14		0426		44	4746.88	129 19.79	12.577 32.461	2745		0-2600				
	R96-14		0514		45	4746.88	129 19.79	12.518 32.462			2585-0	10			
27	R96-15		0800		46	4752.01	129 20.13	12.948 32.408	2566.	2462	0-2460	✓			
	R96-15		0902		47	4751.95	129 20.16	12.888 32.404				10		2457-0	
	R96-16		1125		48	4756.96	129 20.14				10-2403-0	✓		down 12:21:19	
			1221		48	4756.99	129 20.07					10.		end 13:24:53	

CAST TYPE -

BOT -
CTD -
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ctd
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drifter

USW -

sea water loop

TIME CODE -

BE -
BO -
EN -beginning time of cast
bottom time of cast
end of castDE -
MR -
RE -deployment time
messenger release
recover mooring

POSITION CODE -

RAD -
GPS -
LOR -RADAR
GLOBAL
LORAN

JUNE 21/96

Problem with A&P heating. Out by 90°?

Tow #3 E96C

START @ 0900 PDT

Had temperature problems during descent around 387 m. Corrected itself.

SET NETS but took of COD TMS.

Tied up all nets except 1000 μ m net.

NO NET SAMPLES

To South west of VOTC SITE

Comments	Depth/Time	Lat	Long
Plume @ 1970 m very weak but definite plume.	1723:00 UTC	47 53.965	129 07.830
Temp problems near 2085 m. Still			
Coming out of plume Still having problems with temp signal.	2100 m	47 54.044	129 07.915
Stop down cast 50 m off bottom.	2220 m	47 54.235	129 08.065
Temperature OK on upcast Weak plume on way up			
Out of plume by 1950 m	1940 m	47 54.425	129 08.281
UP TO 1800 m.	1800 17:57 UTC	47 54.517	129 08.347
TEMP MALFUNCTIONING — George to phone John Love Going down			
Plume @ 1940 m	1809 UTC	47 54.754	129 08.524
Very weak plume. Temp. still not working.			
Temp back to #309	1821	47 55.019	129 08.771
Synker Transmiss. 1827		47 55.094	129
Almost hit bottom! very close. watching wrong side of screen. Missed wrap-around!			
STARTED NEW File 96120005.			
Out of plume ~ 1900 m		47 55.381	129 09.113
Stop winch	179.8 (2060)	47 55.443	129 09.153

June 21/96

START down. Had problems with Program
It crashed each time I used the UHF
radio. First good new file 96120009

96120007, 0008, short No Good! E96D

Time of plume around 1890m. #380

47 55.526 129 09.207

Still at 1977m 47 55 704 129 09 372 # 389

end at 2035m 47 55 752 129 09 444 # 396

Need to replace temp sensor. Pitch is good

There is a definite deep scattering layer near
1900m.

Stop @ 2001 m 47 56.968 129 09.620

2# SN. Up, last of cycles

Need to fix CTD.

Scattering layer around 1900m during up cast

47 57.500 129 09.615 # 557. This appears
to be an OFFSET in ADCP beams. Voltage
change in AGC?

HIT Bottom on this Tow!!

Probe onboard.

Checked T-sensor. Voltage OK. Must be
cords in Fish. Disconnect CTD from
Squid. Brought into lab. Exchange
T-CARD and T-Suppression Cords in Fish
Disc CANS from 41226. Reconnect to
Squid.

Note: Mur (Volcanic scabbings) on Squid

runners from hitting bottom. Was watching
the right end of the BS display and forgot
about wrap around! Sounder no help; fish
too far away.

Sunday driving

UHF VIDEO Camera profile at main vent site
Complete Camera profile. Proceed to
Station CA for Rosette + Pump.
Engineers made up a bracket for pump
Launch @ 1030 PDT @ CA

UHF: Camera @ ER
Rosette / Pump at CA

June 22

Conduct SCUBA TOW S to N @ 15 km
from main vent sites. E96D

Arrive station @ 0845 PDT. Chemists completed
filtering @ 0730 PDT.

Weather: calm seas; light rain and overcast.
Pacific White-sided Delphinus, Seals alongside.

HAD "ERROR LIGHT" problems with CTD deck unit.
We had replaced 2 boards in CTD last night.

George tried isolating the problem as a
connector problem.

Opened CTD. Board was in UPSIDE DOWN!
Corrected board and reset.

WORKING FINE with New Boards

NEED TO CALIBRATE T-SENSOR

IN WATER @ 0945 PDT.
ON STATION

Transducer #2 lost output around 1600 m.
Weak return signal. Need to do diagnostic.

U/F: Rosette at site CA

Then Rosette plus pump @ CA

George had to build battery packs for in
site pump [Challenger pump]. The pump's
rechargeable batteries were not working.

Pump worked for 40 minutes and
Stopped.

Last in situ pumps → over 1 hr! but at
surface - possibly because of warmer 20°

June 23/96

ON Site 0800 for tow along axial valley
initial problems with ADCP startup. 2nd
restart fine. Transducer #2 still
malfunctioning. T/S to be recalibrated
for new configuration.
Winds from NE at 25 knots. Moderate
chop.

This is the first ADCP tow along the
axial valley. Ship speed a little high in order
to maintain the line.

✓ To Do

① Range on morning E/R. Compare position
with deployment position.

(Done: See Below)

Tow Y0 E96E CONT'D.

I had us too far north for gradual lowering.
Asked ship to go Dead Slow until probe at
depth. Hit plume at 1960m. Clear plume
signal below this depth suggesting we were near
the main vent field. Ran several Tow Y0s
from 20-50 m above bottom to 1800 m. Also, true
series of about 60 ensembles while at 1800 m.
No need to adjust winch. Held depth very well.

There some very large BS anomalies in beams 1&3
above the plume. Wire almost vertical during the
last half of tow. Wire out on winch less than
probe depth. No wire angle.

Some problems on recovery. No way on ship so
Scrub twisted when lifted out of the water
with tag lines attached. Scrub took several
hard bangs against A-frame. Nets accidentally
triggered.

ON Deck around 1300 PDT.

Nets were flushed when release mechanism
released accidentally. Steve, Sara, Pascale
washed nets on deck.

Noted that there were animals in the nets even though they
were closed.

June 23/96 CANTO

LOCATE mooring. Had ship occupy stations N, S, E W of mooring site. Reg used ship transducer with Oceanic deck unit to range on mooring. Mate (Simon) plotted positions.

- DEPLOYMENT POSITION (GPS) July 20, 1995

47° 56.996 129° 05.613

Depth 2095 m

- MATE'S BEST GUESS POSITION [BASED ON 2200m depth water]
JUNE 23/96

47° 57.63 N 129° 05.77 W

47° 59.60 N 129° 05.70 W

RETURN TO MAIN VENT SITE

47° 56.733 129° 06.146

Rosette CAST [He; O₂; Si; Phosphate, Nitrate, —]

1600 PDT Jim & I discussed operations.
Agreed to following

1. George make up two new battery packs using our C-cells for the in situ Pump.
2. Rosette chemistry complete by 2100 PDT
Send down Rosette with pump and pump for 1 hour. Onboard by MIDNIGHT.
3. June 24 (next morning) @ 0600. Deployment of rosette with pump with new battery pack.
4. Pump and on deck by 0900 PDT.

Prepare for Scrip tow in main vent region.

5. Second Scrip tow off axis by 15 km —
BACKGROUND

June 24/96

E96F

- 0600 Rosette (no bottles) with in situ pump at 1800m for 1 hour. Stop pumping at 0805 PDT. Rosette onboard @ 0850 PDT
- 0915 PROCEED LAUNCH. Chief Scientist concerned with swell. Winds up to 20knts with sets from NW had ship go downwind during launch. To reduce wave period. Made turn to north once heave compensation was on. Overcast. light rain

Scud tow along axis from South to North along axial valley.

WP#1 47 55.0 129°06.4 STN E96F
47 59.0 129°05.7

Winch speed to 0.8 m/s. Pitch is good!
@ 572m.

Note Large numbers of Pacific Whiteside Dolphins, Right-whale Dolphins, seals, Numerous shoals of Dolphins, feeding, airborne, etc. Wounded display,
(real back flips)

HC plume @ 1910m

Net #2 open @ 1738 UTC
Near bottom

47 56.080 129 06.150

ADCP stopped at Ensemble Number 180. No ADCP data on upcast. Started sampling nets on upcast. Keep winch speed at 0.3 m/s hoping to maintain level flight. No pitch information.

Try coming up at 0.3 m/s but winch man was up to 0.4 - 0.5 m/s. changed at 1300m

Massive display of Dolphins and seals off the forward bow 360°s. seals chase Dolphins; Ship's personnel claim this is common occurrence here. John Anderson has chart covering 10 years

Nets

Bottom - 1900
1900 - 1800
1800 - 1200
1200 - 800
800 - 400
400 - 0

24 June

1405 start discharging pump batteries

1527 #1 5.98 2. 5.36 3. 6.56 4. 7.01

WASP
HOOKING DEPLOYMENT
Coming up to
STATION

47	56.930	129	06.020
47	56.868	129	05.952

SOG 2.5 kt
heading 2340

dropped @ 47° 56.952

129° 06.094

depth: 2085m

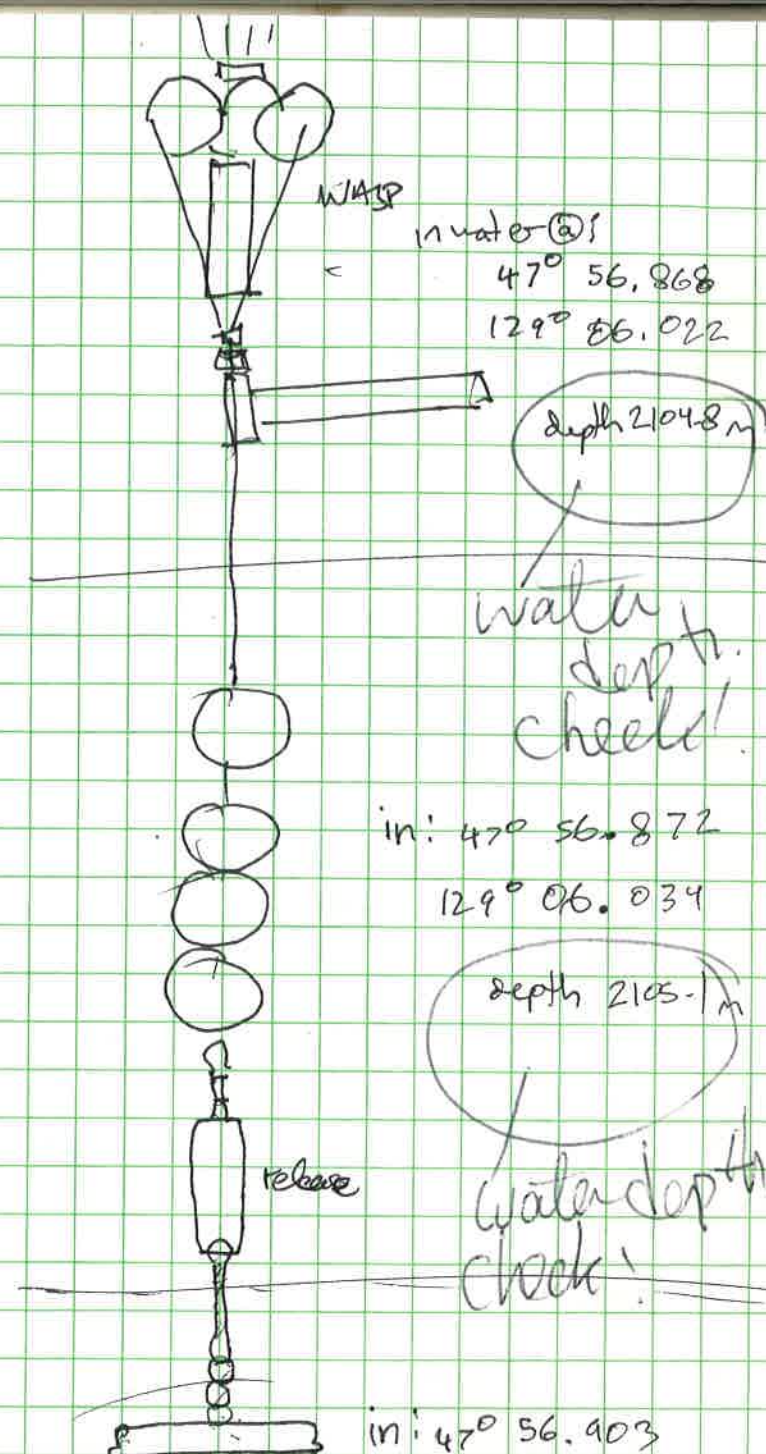
time 22:56

in: 47° 56.903

129° 06.006

depth: 2103.0m

time: 22:47





ERA 2

GPS 1705 Jly 20/95
PDT

4756.99
12905.61

EPC Sounder
1700m @ 1463m/s
= 2095



1725



2000



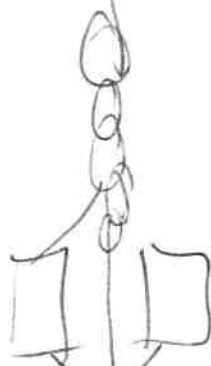
2015m



2140m



2155m



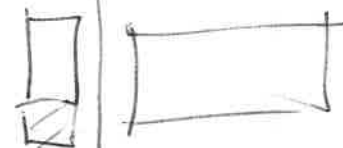
1702



NO
CM
here



2000m



June 25/96

[THIS PAGE SHOULD FOLLOW
NEXT PAGE]

Notes on Mooring

WNSP 153 kHz Sounder in
150

Stainless steel frame. ICS developed buoyancy.
Moored at 4757.0, 12906.0 w Nominal
Bouyancy 2200 m depth near main vent field.
(This is NOT Deployment Day)

Mooring CA

June 25/96

1530 UTC

Released @ 0830 PDT. Moved 0.75 to 1.00 miles
to west of site. Couldnt range on mooring when we
were nearly above mooring. Both transducers
ranged very well once we moved off to
west. Moderate long swell from north.

47 - U released! Positive response.

On surface at 0850 PDT. 1550 UTC.

on deck

UTC

1609

~~top~~

floats on deck

1614

1st sediment trap

1629

2 sediment traps

1 current meter + floats all tangled

1631

current meter

1657

floats + releases

Mooring: upper sediment trap came up fine.
However, the middle and bottom traps
came up tangled with the floats and the
current meters. We spent considerable time
disentangling the gear to make sure we got the
correct sediment trap sequence. Verified!!
using line lengths.

Both current meters were ~~both~~ paddle wheel
types # 8558 and 8556. RCMs.

Time: 4/5 ~~traps~~ traps worked. Dummy trap
at 1700 m.

Current meters under middle (2000 m)
and bottom (2300 m) traps.

June 24/96

Complete mooring and proceed to station 10 km SW of main site (RET guess at location).

$47^{\circ}53.0'W$; $129^{\circ}11.0'W$

Rosette cast at off axis site. Hit a small plume at required depth.

Complete Rosette cast and then return to site CA for camera work. Several camera tows over different depth ranges.

JUNE 25/96

Proceed to Mooring recovery site CA ~~at~~ west-ridge region.

Arrive site @ 0740 pdt.

See Previous Page for details of mooring CA recovery

June 25/96

Mooring ERA2. On site @ 1902 UTC.

Just after lunch. Light wind

Wind: 7.1 knots @ 2740

Some moderate swell from North from system in Gulf or Coales of Charlotte.

SST = 12.333

SSS = 32.295

1012.89 mb.

Release @ 1918 UTC

Both releases ranging to Rapid rise.

Put Zodiac over the side for recovery

1230 (EDT) Zodiac over side

1245 Ste on port side Zodiac to stretch out so it will not tangle.

1256 Tully backs up to Zodiac and line passed. VHF antenna bent 90°

1300 Floats on deck

1304 Sediment trap

1313 CM on deck - ship towing mooring 2 slower down

1326 Floats on deck

1330 Sed. memb trap 15617

1333 CM on deck cover in slime - bacterial mat'l on transmissometer - especially near light source

1338 Floats tangled badly

1341 Current meter on deck

1351 After a spectacular demonstration of how to untangle a mooring line by chief scientist. Final sediment traps 11424 aboard

JUNE 25, 1996

Tow E96G @ 2220 UTC

BACKGROUND

File: 96120018

@ 47° 54.80' N

128° 53.55' W

Started Tow in trough and then came around to North. Calm Seas, near zero wind with swell from North West. Concern that batteries might not last.

Tow from 47° 55.0' N 128° 54.0' W
To 48° 00.0' N 128° 54.0' W

Calm weather; mod-light swell from North
TO within 50m of bottom.

Rosette triggered but had not been reset.
No Nets OPENED.

Steve, Sara, Pascale to examine NET
CONTAMINATION.

We had some problems on up tow on last two nets. Pitch very high positive.

SCU File shows no scattering layer and no depletion layer near bottom.

Steve's idea was to use this tow (good acoustics but failed net triggers) as an estimate of contamination of nets.

Found some contamination in cod ends with slight increase with net #. Most of the contamination is in entrance to nets so washing down nets flushes the contamination into cod ends. Asked Sara to examine composition of contamination and biomass.

- previous closed nets showed contamination
- contamination at the four corners, but also through the openings between net boxes. Filmed cod ends before nets were washed, not very much in ends. Recommended to clean nets from mid section to cod-end.
- Sara + Pascale will write famous SCUD contamination report

UH: Rosette of Background site, 47° 55' N, 129° 54' W. Full water properties.

IN SITU Pump at 25m depth. Pump worked for 80L. 108 batteries.

LAST CHANCE DAY

Never say never!

June 26, 1996

Tow E96H. BACKGROUND REPEAT

File 96120021.

START 47 54.937 128 54.104.

Tow from south to north along $128^{\circ} 54'$.

COMPENSATOR NOON'S SCUB VALVE 11. Quick release of pressure.

Successful tow - All Nets tripped.
TRANSMISSOMETER malfunctioned after about 200m depth.
Calm seas; no swell.

Tow E96I. Main vent site. From North to South into wind. Screwed up deployment. Put SCUB in too soon; tag line became caught up.

Overcast; Sun trying to get through. Light rain. Ship has two engines but can't de-clutch. Asked them to keep going without stopping to fix problems. Choice just disappeared at 47 56.877, 129 06.178 W. Need to stop which is fix clutching problem!! No control. Fixed quickly. Back on course.

Hint of plume @ 1880m

Hit main plume @ 1960 →

Major plume - 1980 → Strong plume to 2103m. Stopped opened Net #2.

Onboard at 1800 PDT.

Very large sample in net #5. (1200-800m)

WIND UP TO 20 knots. From 310°

Tow to within 50m of bottom at 2100m. Evidence for strong BS layer above main plume on both up and down cast. Shift drifted off to SE, then came around slowly to SW.

Proceed to Rosette Station at west
off-axis site

14 mi SW of main vent (10 miles)
Rosette at $47^{\circ}47.0'N$ $129^{\circ}20.0'W$.

No long filtering. (ie no C/N or TEM)

Rosette cast at $47^{\circ}50'$, $129^{\circ}40.0'$
40 km (25 mi, west).

No sign of plume. Next rosette 5 mi
to north, then another 5 mi north.
3 rosettes.

Homeward Bound AM.

June 27.

Scrub DATA

E96H 96120021
96120022

June 26/96

DOWNCAST E# 16-200
UPCAST (1) 200-367
(2) E# 370-489

CAL. Range 120-140

E96I 96120023
96120024

DOWNCAST E# 658-835
UPCAST E# 1116-1150

E96G 96120018
19
20

DOWNCAST: 96120018 : 35-229 (END)
UPCAST 96120019 230-282
UPCAST: 96120020 287-537

E96E 96120011 Tow YC
96120012

DOWNCAST	96120011	19-204
UP (A)	96120012	205-240
DWN (A)	96120012	240-265
UP (B)	11	275-305
DWN (B)		305-340
UP/DOWN		340-410
UPCAST		390-529

E96F 96120013 ADCP CRASHED AT BOTTOM
DOWNCAST ONLY
E# 20-180.

E96D 96120010 Tow YC

DOWNCAST: 157-338
UP 340-376
DWN 3 380-424

UPCAST: 525-734

E96A: 96120001
0002

96120001:
DownCAST 34 - 200

96120002
UPCAST 224 - 485

E96B 96120003

E96C 96120004
05
07
09

→ E96B 96120003

DWN: 34 - 246
UP: 250 - 467