CRUISE NUMBER 96 - 16

DAILY LOG
INSTITUTE OF OCEAN SCIENCES
OCEAN PHYSICS

DATE JUNE 24 /96

VESSEL VECTOR

PROJECT HARO STRAIT

96-16 HARO STRAIT JUNE 96

Captain: LEN JENSEN First Officer: JORDAN ROCHE

Second Officer: SHANE LOVELACE Third Officer:

Cruise Participants / Agencies: IOS, WOODS HOLE, MIT

Scientific Personnel: Party Chief: DAVID FARMER JUNE 24 - July 7/96

Name	Watch	Cabin	Name	Watch	Cabin
RICH PAWLOWICZ	JUNE 24 - July 7				
WILLI WEICHSELBAUMER	JUNE 24 - July 7		(WW)		
AL ADRIAN	"	"	(AA)		
VADIM POLONITCHKO	"	"	(VP)		
NICK HALL-PATCH	"	-JUNE 30	(NHP)		
SIMON HOLGATE	"	"	(SJH)		
~~ROBIN LEWTHWAITE~~	~~JUNE 24~~				
MATT GRINDER	JUNE 24 - July 7		(MG)		
ENYU WANG	July 1 - July 7		(EW)		
NICOLE AUGUST	"	"	(NA)		

Second leg of cruise: Party Chief:

Name	Watch	Cabin	Name	Watch	Cabin
* CHIEF SCIENTISTS: IOS: DAVID FARMER / RICH PAWLOWICZ (ACTING)					
MIT: TIM BELLINGHAM / BOB GRIEVE (ACTING)					

Data logging system: Unit no.:

Program Name: CTD (IOS SHELL VER. 1.2)

Program version: 1.46 (May 2 1996)

CTD deck unit make: GUILDLINE model: 87107 serial no.: 43,825

Computer make: DELL model: 433DE serial no.: I2TX5

1st CTD make: GUILDLINE model: N8707 serial no.: 43,825

Temperature sensor model: 87401 serial no.: 57,149

coefficients: slope: 1 offset: 0

Conductivity sensor model: 87410 serial no.: 46,730

coefficients: slope: 1 offset: 0

Pressure sensor range: psi serial no.:

coefficients: FSP: 1000 dB offset: 0

Transmissometer n/u. model: serial no.:

coefficients: slope: offset:

Comments: OTHER VESSELS PARTICIPATING: ROSS BAY + 1 AIRCRAFT + MIT AUV (AUTONOMOUS UNDERWATER VEHICLES)

2nd CTD make: GUILDLINE model: 8715 serial no.: 53, 501

Temperature sensor model: 8741~~8~~01 serial no.: ~~52, 474~~ 53, 237

coefficients: slope: _____ offset: _____

Conductivity sensor model: 87410 serial no.: 52, 474

coefficients: slope: _____ offset: _____

Pressure sensor range: _____ psi serial no.: _____

coefficients: FSP: 2000 dB offset: _____

Transmissometer n/u. model: _____ serial no.: _____

coefficients: slope: _____ offset: _____

Winches:

Bore 1. make: SWANN model: 410 serial no.: 1433 use: CTD *

Center 2. make: WHOI RECOVERY model: _____ serial no.: _____ use: _____

STBD 3. make: VECTOR'S STD model: SWANN? (NO PLATE) serial no.: mkd: overhauled Jan 1976 Harrison use: Robbins *

HYDRO 4. make: SWANN model: 410 serial no.: 1536 use: HYDRO

5. make: _____ model: _____ serial no.: _____ use: _____

6. make: _____ model: _____ serial no.: _____ use: _____

7. make: _____ model: _____ serial no.: _____ use: _____

* 7/32" Cable, Guildline slip rings mod. 8600/2w SN. 42,991. *3/8" 6x19"

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 ID: _____ serial no.: _____

Name: _____ module ID: _____ serial no.: _____

Name: _____ module ID: _____ serial no.: _____

Comments: _____

ADCP Setup:

Program version: _____ number of depth bins: _____

Time zone: _____ bin length (2x): _____

Sampling interval: _____ sec pulse length: _____

Blank beyond transmit: _____ pings per ensemble: _____

Pulse cycle time: _____

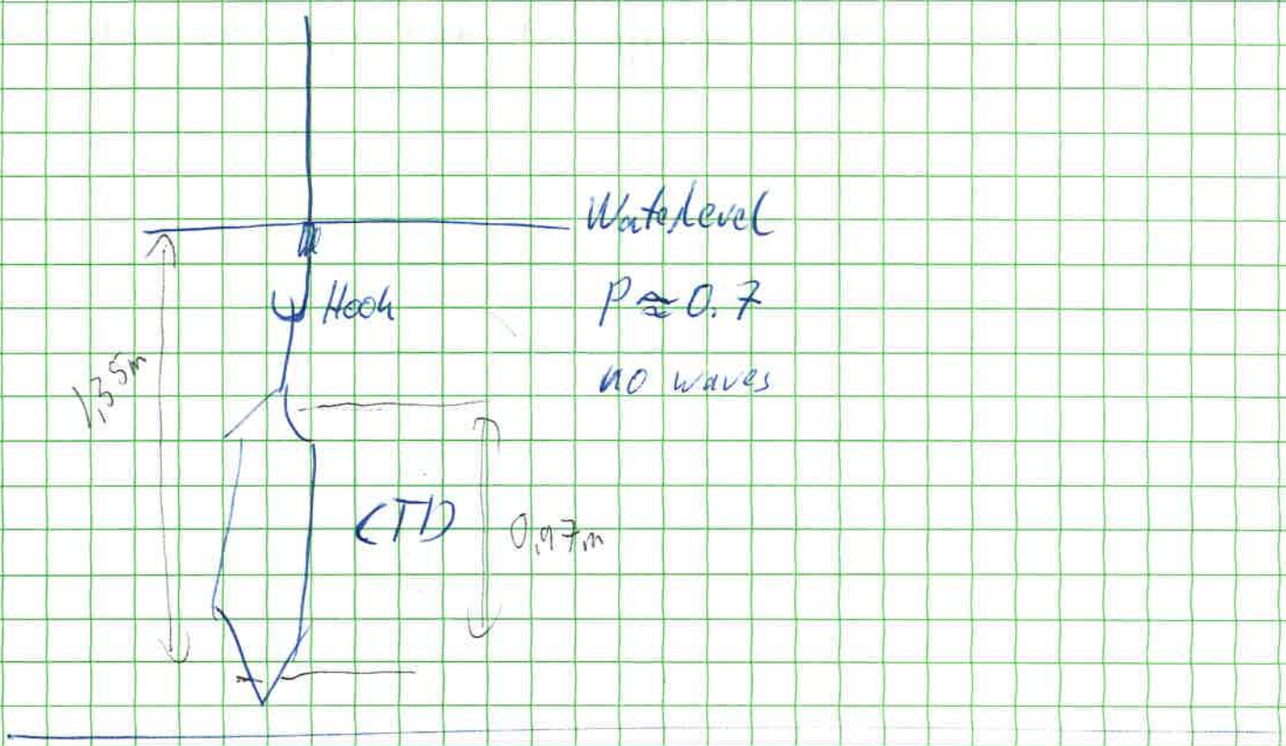
% pings good threshold: _____

Comments: _____

96/6/24 PDT

1325 — lv. IOS Pat Bay
proceed for equipment testing, Saanich Inlet

Pressure calibration



Temperature	reading	Rosette cast 1
15555	4997	
17.0	16.7	
8.79	8.77	

DAILY LOG — OCEAN PHYSICS — INSTITUTE OF OCEAN SCIENCES

YEAR	MONTH	SHIP	CRUISE	PAGE	OF
1996	06	CSS. VECTOR	96-16	1	

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
24	SAANICH INLET	CTD	2256	BE	008	48 38.45	123 30.27	(TRIMBLE) GPS	190	160			LS	
24			2304	BE	009	48 38.39	123 30.28	GPS		160				
24			2320	BE	010	48.38.31	123.30.26			160				
24			23:35	BE	011	48,38,25	123,30,20	motorolla ↓	.	159			MB	↓ Motorolla gps to be used for now on
24			23:46	BE	012	48 38.25	123 30.05	Motorola GPS ↓	190	160			SJH	
25	B4	CTD	05:11	BE	013	48 50.01	123 5.18		196	1,0 m const			↓	pressure calibration
25	B4	BOT	05:14	BE	014	48 49.99	123 5.04		196	186				bottle calibration 165m lost first 5m
25	B4	CTD	05:38	BE	015	48 49.87	123 5.05		196	187				Tag didn't work upcast recorded.
25	B5	CTD	06:20	BE	016	48 49.93	123 0.23		207	197				
25	B6	CTD	06:59	BE	017	48 50.01	123 55.10		183	173				
~~25~~	~~B3~~	~~CTD~~		~~BE~~	~~018~~	~~48 46.24~~	~~123 1.56~~		~~220~~					VOID NO CAST
25	B3	CTD	08:26	BE	018	48 45.93	123 1.93		226	216				
~~25~~	~~B2~~	~~CTD~~		~~BE~~	~~019~~	~~48 44.42~~	~~123 7.03~~		~~125~~ 112					VOID CAST
25	B2	CTD	09:10	BE	020	48 44.54	123 7.14		112	102				
25	B1	CTD	09:52	BE	021	48 43.40	123 10.15		290 ?	280				Depth below range of echo sounder. Approx depth from paper.
25	B7	CTD	10:59	BE	022	48 40.46	123 0.12		195	185			↑	
25	B8	CTD	11:35	BE	023	48 40.10	123 6.69		99	89			SJH	
25	S1	CTD	12:28	BE	024	48 40.72	123 15.58		>390	240			VP	STATION S1

CAST TYPE - BOT - bottle cast, CTD - ctd, MOR - mooring, ROS - 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 cast, DE - deployment time, MR - messenger release, RE - recover mooring

POSITION CODE - RAD - RADAR, GPS - GLOBAL, LOR - LORAN

DAILY LOG — OCEAN PHYSICS — INSTITUTE OF OCEAN SCIENCES

YEAR 1996 | MONTH June | SHIP CSS VECTOR | CRUISE 96-16 | PAGE 2 OF

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
25	S2	CTD	12:52	BTE	025	48° 40.198	123° 14.196	Motorola GPS	300	260			VP	Station S2
25	S3	CTD	13:20	BE	026	48° 39.297	123° 11.85	↓	160	140			VP	Station S3
25	S4	CTD	13:42	BE	027	48° 39.178	123° 09.440		120	95			VP	Station S4
25	S1	CTD	14:18	BE	028	48° 40.666	123° 15.474		310	290			VP	Station S1
25	S2	CTD	14.39	BE	029	48° 40.169	123° 14.136		280	260			VP	STATION S2
25	S3	CTD	15.01	BE	(030)	48:39.30	123 11.96		170	150			WW	Station S3 not valid flushed CTD
25	S3	CTD	15.03	BE	031	48 39.30	123 11.96		170	150			WW	station S3
25	S4	CTD	15:27	BE	032	48.39.165	123.09.456		180	90			VP	STATION S4
25	S1	CTD	16:28	BE	033	48.40.72	123.15.56		310	300			MB	station S1
25	S1	CTD	17:03	BE	034	48.40.76	123.15 63		310	301			MB	Station S1
25	S1	CTD	18:02	BE	035	48.40.77	123.15.63		310	301			MB	Station S1
25	S1	CTD	19:02		036	48:40,73	123:15,52		310	294			MB	↓station S1
25	S1	CTD	20:08		037	48:40,75	123:15,46		310	298			MB	↓ station S1
25	S1	CTD	21:07		038	48: 40.7	123:15,56		310	1			MB	↓ station S1 bad cast failed
25	S1	CTD	21:11		039	48:40,7	123:15.54		310	300			MB	↓ station S1
25	S1	CTD	22:03		040	48 : 40,76	123 : 15,6		320	277			MB	↓ station S1 drifted station
25	S1	CTD	23:39	BE	041	48 40.72	123 15.65	Motorola GPS	280 ~~305~~	275			SJH	Drifted shallow
26	S1	CTD	01:12	BE	042	48 40.73	123 15.65	↓	310	275			↓	Drifted shallow

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	Temperature	Bottle #2
S/N	15555	4997
	22.2	21.8
	8.02	8.04

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YEAR 1996 | MONTH JUNE | SHIP CSS VECTOR | CRUISE 9616 | PAGE 3 OF

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
26	B1	~~CTD~~ BOT	08:39	BE	43	48 43.46	123 10.12	Motorola G-PS	290	283			SJH	
26	B2	CTD	0456	BE	44	48 ~~44~~.52	123 7.03	|	110	100.4			NHP	(45 was an error)
26	B3	CTD	0550	BE	45 missing 46	48 46.12	123 1.80	|	230	221			NHP	forgot time tag.
26	BPW	CTD	07:20	BE	47	48 45.56	123 0.33	Motorola GPS	220	210			SJH	
26	BPC	CTD	07:51	BE	48	48 45.05	122 58.51		218	210			↓	ship moved before logging quite complete
26	B6	CTD	08:~~51~~	BE	49	48 ~~41.88~~ 39.01	122 55.~~08~~		183	173			SJH	strongly stratified surface layer - V. fresh
26	S2	CTD	12:40		50	48 40.259	123 14.315		290	280			VPL	great 94 S2
					51									none
26	SW1	CTD	13:22		52	48°39.393	123°15.315		200	135				Station SW1
26	SE1	CTD	14:59		53	48°38.746	123°11.966		180	170				Station SE1
26	C1	CTD	17:47		54	48:28.21	123:10.06		155	130			MB	↓ near CM south
26	C2		19:00		~~55~~ 55-56 missing ~~57~~	48:25.22	123:9.94		80m	0			B	Premature stat.
26	C2	CTD	19:06	BE	~~56~~ 58	48:25.30	123:9.75		80m	68			B	Station
26	Mixing Experiment	CTD	19:53	BE	~~57~~ 59	48:25.22	123:9.88		72m	68			B	Fast Drop
26	C3	CTD	20:06	BE	~~58~~ 60	48:24.77	123:6.30		24m	25			B	Quicky
26	C1	CTD	21:17	BE	~~59~~ 61	48:29.97	123:10.30		260m	241			B	
26	C1	CTD	21:50	BE	~~60~~ 62	48:30.21	123:10.65		242	236			B	Calibration Bottle #2
26	C1	CTD	22:17	BE	~~61~~ 63	48:30.13	123:10.31		261	251			B	

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check gps ↓ check chart gps

Day	STN	Stn/Hydro cast #	time	time code	cast type	lat	long	Position code	Bot depth	Sample dep	int	comments
27	Wavefront	85a	1400		seabird CTD	48;39,5	123;9,5	?	?			~~too shp~~
27	Wavefront	85b	14;55;31		seabird CTD	48;39,5	123;9,5				m6	tow-yo 100m
27	Wavefront	85c	16;51;10		seabird CTD	48;39.5	123;9,5				m6	tow yo 150m
											m6	tow yo 150m

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YEAR	MONTH	SHIP	CRUISE	PAGE	OF
1996	JUNE	VECTOR	9616	4	

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
27	JdFVI	CTD	00:34	BE	64	4811352	12331584	Motorola GPS ↓	220	200			SJH	Juan de Fuca V. cold & salty below 60m
27	V2	CTD		BE	65								↓	VOID — no cast
27	V2	CTD	01:04	BE	66	48 14.06	123 31.30		165	156				
27	V3	CTD	01:32	BE	67	48 11.73	123 31.40		140	131				
27	V4	CTD	01:50	BE	68	48 10.45	123 31.37		24	21				
27	V10	CTD	03:34	BE	69	48 12.34	123 4.06		44	39			↑	
27	V9	CTD	0400	BE	71	48 15.90	123 4.10		170	161			SJH	
27	V8	CTD	0430	BE	72	48 19.43	123 4.10		28	25			NHP	#70 void
27	V7	CTD	0454	BE	73	48 21.48	123 5.93		143	135			NHP	
27	V6	CTD	0521	BE	74	48 23.55	123 7.65		36	30			NHP	
27	V5	CTD	0554	BE	75	48 24.90	123 10.12		78	72			NHP	
27	V5	CTD	06:25	BE	76	48 24.80	123 10.11		72	67			NHP	
27	C3	CTD	06:51	BE	77	48 24.69	123 6.30		32	25			SJH ↓	
27	C4	CTD	07:20	BE	79	48 28.10	123 6.36		145					CTD data problem #78 VOID — #8[illegible] VOID
27	C4	CTD	07:39	BE	84	48 28.13	123 6.27		165	160				
27	S2	CTD	11:42		85	48 40.26	123 14.25		290	237?			[illegible]	Stat on Surface for extra 5 mins. stol. 11:52
27	C1	CTD	19:54		86	48 29.82	123 9.87		278	265			[illegible]	Repaired Termination Replaced Sliprings.
27	C1/5	CTD	20:18		87	48 29150	123 09999	↓	210	200			VP	

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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
27	C1.7	CTD	20:50	BE	88	48 28.02	123 10.23	Motorola GPS	135	128			SJH	~~To-Yo~~
27	To-Yo	CTD	20:52	BE	89	48 28.23	123 10.29		172	165			SJH	To-Yo
↓	↓	↓			↓	↓	↓		↓	165			↓	
27			21:07	EN		48 28.44	123 10.63		110	105			SJH	
27	C3 exten	CTD	22 14	BE	90	48° 26.929	123° 3.853W		190	185			RP	CTD
27	C4	CTD	22:42	BE	91	48 27 73	123 5 89		215	200			RP	CTD
27	C4.5	CTD	23:15	BE	92	48 29.25	123 8.57		280	268			SJH	slow fall rate near bottom raised in case of potential pipe
28	C0 45	CTD	00:29	BE	93	48 33.57	123 12.12		265	261			↓	
28		CTD	01:53	BE	94	48 40.91	123 14.80		315 ~~295~~	302				Interesting feature 40-60m depth ~~out of upcast recorded~~
28	B6	CTD	0409	BE	95	48 50.01	122 55.04		183	178			NHP	
28	B5	CTD	0440	BE	96	48 49.93	123 00.05		208	206			↓	
28	B4	CTD	0514	BE	97	48 49.94	123 5.12		195	193				
28	BFW	CTD	0546	BE	98	48 48.56	123 0.17		218	210				may have hit bottom (wire slackened) ~~drifted~~ Drifted to 210m bottom Unsettled features at <150m
~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
28	BPC	CTD	0606	BE	99	48 48.07	122 58.18		183	173			↑	cold band 50-70m hit bottom again.
28	B3	CTD	0634	BE	100	48 46.11	123 1.96		220	210			NHP	
28	B2	CTD	07:07	BE	101	48 44.48	123 7.07		120	125			SJH	V. thin highly stratified layer at surface steps?
28	B1	CTD	07:33	BE	102	48 43.53	123 10.04		283	270			↓	

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Day	Sta	Cast Type	Time	Cast #	Lat	Long	bot	Max Samp	Init	Comments
28	wave front	seaglid CTD	15:49	105d	48:39.5	123:14.00	? ?	150m	MB	tow-yo 150m

13:00 start 105a ✓
13:43 start 105b ✓
14:32 start 105c ✓
15:49 start 105d ✓

N, files found with start time of 14:05 → Void?
no, 105b is 2 casts in 1 file.
split into 105b1 and 105b2

Kevin Bartlett, Nov 18, 1996

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YEAR 1996 | MONTH JUNE | SHIP VECTOR | CRUISE 9616 | PAGE 6 OF

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
28	B8	CTD	06:14	BE	103	48 39.95	123 6.57	Motorola GPS	104	100			STH	Again, v. thin fresh, warm stratified layer.
28	B7	CTD	05:48	BE	104	48 40.53	123 0.00	↓	190	185			↓	Lots of mixing upper 15m
			12:21											Start of CTD - it slips off pulley once again!
28	B8	Test			105 →		Test just to see		electrical connection OK.					
28	B8	CBird	13:00		105a	48 39 995	123 6.58W		120	100			VP	CBird CDP
28	S4	CTD CBird	13:40		105b	48 39219	12309.600		120	100			VP	CBird CDP
28	S3	CBird	14:05		105c	48 39 312	12312.005		160					CBird CTD.
28	S2	CBird	14:32		105d	48° 40.294	123° 14.221		210	180			Up	CBird two yo's & 1 cast
28	ST1	CTD	20:04	BE	106	48 27.90	123 05.62		228	210				File # confirmed.
28	ST2	CTD	20:20	BE	107	48 28.53	123 5.58		218	205				
28	CT1	CTD	20:41	BE	108	48 28.03	125 05.51		222	210				Some spot
28	CT2	CTD	20:55	BE	109	48 28.02	123 05.54		228	221				
28	CT3	CTD	21:21	BE	110	48 28.03	123 05.56		227	221				
28	CT4	CTD	21:42	BE	111	48 28.03	123 05.66		227	220				
28	CT5	CTD	21:59	BE	112	48 28.00	123 05.53		227	220				
28	CT6	CTD	22:14	BE	113	48 28.02	123 05.51		227	221				
28	CT7	CTD	22:29	BE	114	48 27.98	123 05.56		227	221				
28	CT8	CTD	22:43	BE	115	48 28.00	123 05.56		227	220				

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Temperature bottle

S/N	15555	4947
	19.70	19.8
	9.37	9.30

DAILY LOG — OCEAN PHYSICS — INSTITUTE OF OCEAN SCIENCES

YEAR 1996 | MONTH JUNE | SHIP VECTOR | CRUISE 9616 | PAGE 7 OF

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
28	CT9	CTD	23:00	BE	116	48 28.06	123 5.63	Motorola GPS	227	220			SJH	
29	S5	CTD	02:52	BE	117	48 37.85	123 8.61		155	150			SJH	Drifted shallow & dragged CTD while waiting for bottle
29	B9	BOT	03:36	BE	118	48 37.65	123 4.78		220	220		1	MG	B9 bottle cast at 75m
29	B7	CTD	04:3	BE	119	48 40.46	123 0.08		192	185			SJH	
29	BPS	CTD	06:15	BE	120	48 47.38	123 59.96		215	205			SJH	Lots of microstructure
29	BPC	CTD	06:35	BE	121	48 48.05	122 58.26		190	175			↓	& mixing
29	BPW	CTD	07:24	BE	122	48 48.60	123 0.15		210	205				
29	BA	CTD	08:15	BE	123	48 49.99	123 05.02		197	193				
29	BS	CTD	09:01	BE	124	48 50.04	122 59.95		207	202				
29	BIO	CTD	10:00	BE	125	48 53.16	123 0.18		200	195				Thicker fresh warm layer. Mixing in upper 10m
29	B6	CTD	11:08	BE	126	48 49.87	122 55.00		180	175			↑ SJH	
29	B5	CTD	11:45	BE	127	48 ° 49.978	123 00050		240	200			VPL	
29	B4	CTD	12.16	BE	128	48 50 028	123° 05.108		200	190				Lots of overturning
29	BPW		1241	BE	129	48 48 538	122 59 964		207	~~200~~ 195				pretty wild stuff in the top 75m
29	BPC	CTD	13:57	BE	130	48 48 102	122 58.162		200	180				
29	B3	CTD	13:25	BE	131	48 46 108	123 01.664		216	200				Depth mark in 1344
29	B2	CTD	14:02	BE	132	48 44 489	123 05.703		190	130				
29	B1	CTD	14:32	BE	133	48 43 531	123 00179		300	299				

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

DAILY LOG

OCEAN PHYSICS

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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
29	SWAN1	CTD	15:24		134	48:44.37	123:17.45	Motorola GPS	160	145			MB	SWAN1 Down
29	Rapids	CTD	16:59		135	48 38 717	123° 13.412		250	200			Vadim	RIght in the turbulence zone.
	Rapids	Yoyo			136	48 38 850	123 13 392		250	210				passing Rapids.
29		CAST	1737		137	48 38 393	123 13 416		150	210				FREIGHTER
29		YOY YOY			138					150				
29	Rapids	Yo-Yo CTD	1750	BE	139	48 38 634	12312.115		200	180				
	Hare Str.	YOYO CTD	1824	EN	4	48 38.15	123 12.88		to 250	to 230			NHP	Conductivity cell came undone
29	C1	CTD	22.39	BE	~~22:39~~ 140	48 29.79	123 10.13		240 250	239			JB	Swivel added to weight.
29	C1	CTD	22.46	BE	141	48 29.84	123 10.20		250	236				Start of Yo Yo
		CTD	22.58	EN		48.29.77	123 10.09		250	240			SJH	Pause In YoYo
29	C1	CTD		BE	142	48.29.77	123 10.09		250	241			↓	Start of YoYo
		CTD	23:15	EN										Broke surface on upcast.
29	C1	CTD	23:18	BE	143	48.29.86	123 9.92		270	260				Yo-Yo
			23:37	GN		48.29.96	123 10.02		280	275				(3 casts)
30	C2	CTD	01:04	BE	144	48.24.63	123 10.2		73	65				
30	C3	CTD	01:41	BE	145	48. 24.79	123 6.28		25	20				
30	C6	CTD	02:12	BE	146	48 26.59	123 4.47		210	205				Early part 2m/s. slowed to 1 m/s
30	C7	CTD	02:38	BE	147	48 27.63	123 3.69		170	165				

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

17:11 Freight is passing to the east.
29/06
David took a few pictures

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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
30	C2	CTD	0418	BE	148	48 24.79	123 10.09	Motorola GPS	75m	70m			NHP	
↓	C3	CTD	0508	BE	149	48 24.73	123 6.24	↓	26m	22m			↓	
	C6	CTD	0541	BE	150	48 26.64	123 4.48		210m	205m				
	C7	CTD	0607	BE	151	48 27.72	123 3.63		170m	167m			↑	
30	C2	CTD	07:29	BE	152	48 24.77	123 10.07		73m	65m			STH	
30	C3	CTD	08:04	BE	153	48 24.76	123 6.35		27m	22m			↓	
30	C6	CTD	08:35	BE	154	48 26.60	123 4.48		210m	205				
30	C7	CTD	08:58	BE	155	48 27.70	123 3.63		170	165				
30	C2	CTD	10:19	BE	156	48 24.53	123 10.03		74	72				ooh! Microstructure!
30	C3	CTD	10:52	BE	157	48 24.78	123 6.23		26	24			STH	
30	C6	CTD	11:23	↓	158	48 2616	123 4,54		210	200			MG	down cast
30	C7	CTD	11:47		159	48 27.7	123 3,61		170	161			MG	
30	C2	CTD	12:49		160	48 24,73	123. 10.11		74	65			ML	
30	front	~~YOYO~~ CTD	16.12	BE	161	48 38 209	123 13 38		240	220			VP	Middle most of front
30	front	YOYO	16.20	BE	162	48 38 078	123 13 285		240	195			VP	middle - East
30	front	END	16:50	EN	162	48 38 171	123 14 022							
30	front	YO	17:06	BE	163	48 37 997	123 14 505		220	200			VP	CTD after sunset
30	front	end	1729	EN	163	48 37 07	123 14. 58							

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

16:22 upcast (East of front)

16:28 CTD Right in the front. (depth 150)

17:10 CTD went through an eddy (gyre)

17:22 Vector is turning

17:26 - wire angle ~30°

No. Alecast # 4		
SN	15555	4997
	15.5	8.91
	14.9	8.00

155 m

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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
30		~~BOT~~ CTD	17:33	BE	164	48 : 37	123 14 78	Botanda	220	200				
30		END	18:04	EN	164	4835 971	123 15 262		220	200				
30	out of front	yoyo	1804	BE	165	48:35 971	123 15 262		180	150-170			UP	out of the front
30			18:18	EN	165									
30		↓	18:18		166	48 : 35 589	123 14 234		220	190				approaching the front
			1838		167	48 34 513	123 13 666		240					going thru the front
30	C2	CTD	21:12	BE	?168 missing 169	48 24 72	123 9.95		72	65			AB	High speed stop 140
30	C3	CTD	21:51	BE	170	48 24.84	123 6.30		22	20			AB	
30	C6	CTD	22:20		171	48 26.64	1234.50		200	0			AB	Messed up.
30	66	CTD	22:20	BE	172	48 26.64	123 4.50		208	200			AB	
30	C7	CTD	22:43	BE	173	48 27.74	123 3.72		175	172			AB	
01/07	C2	CTD	00:34	BE	174	48 24.72	123 10.03		72	72			SJH	
01	C3	~~BOT~~ CTD	01:02	BE	175	48 24.85	123 6.18		289	29			↓	
01	C6	BOT	01:25	BE	176	48 26.63	123 4.45		210	204		1		Bottle #4
01	C7	CTD	01:54	BE	177	48 27.67	123 3.62		175	170			SJH	
01	B10	CTD	0538	BE	178	48 53.12	123 0.08		200	195			NHP	
01	B6	CTD	0620	BE	179	48 50.00	122 55.08		180	178			↓	
01	B5	CTD	0650	BE	180	48 49.98	123 0.04		205	202				

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Time	CTD Depth	cable	
17:39	203	244	
17:45	205	405	
17:50	196	244	
17:55	195	370	
17:59:30	180	210	
18:02:30	130	164	New file
18:05:35	150	197	
18:08:30	170	210	
18:12:25	184.5	256	
18:18:25	193	254	
18:20:50	201	285	New file
18:25:30	181.5	251	
18:29:30	180	232	
18:33:16	172	212	
18:36:40	158	210	
18:41:05	198	243	New file
18:45:00	209.8	240	
18:48:52	207	241	
18:53:01	187	259	
21:12	65	140	

DAILY LOG

OCEAN PHYSICS

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YEAR 1996 | MONTH JULY | SHIP VECTOR | CRUISE 9616 | PAGE 11 OF

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
01	B4	CTD	07:28	BE	181	48 50.00	123 5.10		198	194			SJH	
01	BPW	CTD	08.04	BE	182	48 48.60	123 0.16		219	211				Internal waves on echo sounder? Interesting upper & bottom layer
01	BPC	CTD	08:24	BE	183	48 48.09	122 58.26		192	192				Extremely isothermal 30m-150m. Sharp interface 150m
01	BPS	CTD	08:45	BE	184	48 47.41	123 0.04		220	220				Very well mixed 75m to Bottom
01	B3	CTD	09:07	BE	185	48 46.09	123 1.91		231	231				Very well mixed 25-100m & 130-231
01	B2	CTD	09:33	BE	186	48 44.46	123 5.56		134	134				well mixed surface layer to 50m
01	B1	CTD	10:00	BE	187	48 43.48	123 10.15		293	293				
01	B5	CTD	10:34	BE	188	48 39.97	123 6.59		105	105				Very isothermal & isohaline below 175 m
01	B7	CTD	11:08	BE	189	48 40.49	123 0.07		194	194			SJH	touched bottom
01	S6	CTD	12:28	BE	190	48 37,69	123 6,38		135 26	124			MG	got shallower
01	S6	CTD	13:02	BE	191	48 37,75	123 6.14		148	137			MG	got shallower
01	S6	CTD	13:33	BE	192	48 37,71	123 6,10		135	126			MG	"
01	S6	CTD	14:02	BE	193	48 37,71	123 6,28		139	122			MG	got shallower I screwed up
01	S6	CTD	14:30	BE	194	48 37,69	123 6,25		115	120			MG	got deeper
01	FRONT	tow-yo	16.23	BE	195	48 38 637	123 13 470		240	200			VP	START CTD TOW-YO
01	FRONT		16 44	BE	196	48 38 042	123 13 217		240	220				
01	Front		17:15	BE	197	48 37 466	123 13 069		240	220			VP	
01	Front	YTOW	17,50	BE	198 195	48 37 296	123 13 907		240	220				

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Time	CTDepth	Wire	
16:26:20	197	320	
16:31:02	201	230	
16:44:40	182	202	
16:47:01	218	329	New file
16:52:09	215	308	
16:56:58	219	295	
17:02:00	220	372 'c	
17:07:20	203	238	
17:12:05	220	339	
17:17:41	217	305	
17:23:34	170	412	
17:28:52	222	242	- right in the boil
17:32:20	221	258	
17:37:24	222	242	
17:52:40	221	256	
17:57:42	221	384	
18:03:11	221	258	
18:07	231	257	
18:11	215	223	
18:15:25	204	270	Vector passed Seascan
18:20:20	215	279	
18:24:4	229	252	
18:29:11	236	281	
18:33:11	18[illegible]	195	
18:36:30	161	172	
18:39:41	184	196	
18:43:20	208	242	
18:47:34	213	219	New file #200
18:51:20	224	245	
18:55:30	~~229~~	238	B takes over.
19:00:00	235	240	
19:04:32	235	240	
19:08:51	234	240	
19:13:57	232	249	
19:19:00	227	258	End

DAILY LOG — OCEAN PHYSICS — INSTITUTE OF OCEAN SCIENCES

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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
1	FRONT	Toy yoy	18:15	BE	199	48 36478	12313055		240	220			VP	approaching front
1	Front	yoy	1846	BE	200	48 36 620	12312 543		220	200				
1	Tomo 1	Toy	21:14	BE	201	48 39. 77	123 13.38		205				[illegible]	Toyo see next
1	Tomo 2	Toy	21:35	BE	~~201~~ 202	48 39.35	123 12.58		185				[illegible]	Toyo past
1	Tomo 3	Toy	21:50	BE	203	48 38 87	123 12.34		190				[illegible]	Toyo for Chart. (Tabled)
2	V1	BOT	04:36	BE	204	48:16:35	123:31:49		210					not valid
2	V1	BOT	04:57	BE	205	48:16:25	123:31:45		210	190			WW	Bottle 5 at 85m
2	V2	BTD	05:25	BE	206	48 14 08	123 31 31		170	155			EW	
2	V3	CTD	5:49	BE	207	48:11.67	123 31 38		140	125			EW	
2	V4	CTD	6:04	BE	208	48:10.50	123 31.45		25	15.			EW	beginning of the cast was in the air
~~2~~	~~V10~~	~~CTD~~			~~209~~	~~48:11.68~~	~~123 6.88~~							Not Valid
2	V10	CTD		~~BE~~	209	48:12:35	123.4:05		42	30				Not valid IO Error
	V10		8:06	BE	210	48:1250	1234.16		41	30				Not valid IO Error
2	V10	CTD	8:06	BE	211	48:12:30	1234.16		42	30			NA	
2	V9	CTD	8:34	BE	212	48:15:91	123.4.06		178	156			NA	
2	V8	CTD	9:02	BE	213	48 19:58	123 4.11		24	15			NA	
2	V7	CTD	9:22	BE	214	48 21:50	123 5.90		144	125			NA	
2	V6	CTD	9:42	BE	215	48 23.49	123 7.65		30	16			NA	

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

204 - 215 are processed

Time	Pressure	Wire Depth	Bottom Depth	
21:18:40	181	359		
21:23:00	172	209		
21:27:10	173	209	190	(201)
21:31:05	181	212	190	Salinity seemed to Jump +.5 at Bottom of cast
21:37	170	238	190	
21:41:54	177	244	190	(202)
21:46:05	155	220	190	Salinity seemed to Jump +.3 at Bottom.
21:53:00	176	237	190	
21:57:26	183	226	195	(203)
22:01:42	186	237	195	
22:05:59	185	239		
	180		180	

2100

Time	Pressure	Wirelength	Bottomdepth	Comment
17:10	202	220	240	228
17:13	220	248	240	S,T
17:17	220	276	240	
17:23	220	346	240	
17:29	225	278	246	
17:33	230	242	250	229
17:37	230	293	250	
17:42	221	225	240	Turn at front
17:47	210	227	250	230
				Changed Station
18:02	239	294	260	231
18:06	235	237	252	
18:10	233	237	255	
18:34	250	253	270	232 change station
18:38	241	253	266	
18:43	253	320	274	
18:47	233	266	265	
18:55	235	236	264	
				233 ship running along front
18:59	220	243	245	
19:03	201	275	225	
19:07	203	277	231	Takagana
19:14	205	287	237	

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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
2	VS	CTD	10:02	BE	216	48 : 24 · 90	123 10.27		80	65			NA	✓
2	C3	CTD	10:27	BE	217	48 : 24 : 83	123 6.29		24	15			NA	Leaving off final casts ⇒ Turn Point ✓
2	~~S4~~	~~CTD~~	~~12:09~~	~~BE~~	~~218~~									
2	S1	CTD	12:04	BE	219	48 : 40 686	123 15 649		310	250				✓
2	S7	CTD	12.42	BE	220	48 : 40 735	123 14 379		380	250				must in in. ✓
2	S8	CTD	13:14	BE	221	48 42 280	123 14 877		370	362				✓
					222									discard.
2	S1	CTD	1338	BE	223	48 40 733	123 15 558		320	288				✓
2	S7	CTD	14.02	BE	224	48 40 757	123 14 333		290	240				293-cable ✓
2	S8	CTD	1441	BE	225	48 42 376	123 14 903		350	333				341 ✓
2	S1	CTD	15:13	BE	226	48 40 66	123 15 56		308	289			EW	✓
2	S7	CTD	15:39	BE	227	48 40 74	123 14 40		284	254			EW	✓
2	Front	Tow Yo	17:07	BE	228	48 38 39	123 12 95		240	222			EW	Top of cast lost sbe pump voltage ✓
2	Front	Yo	17:26	BE	229	48 37 07	123 13 46		246	225			EW	✓
2	Front	Yo	17:45	BE	230	48 36 14	123 13 47			244			EW	✓
2	Front	Yo	17:59	BE	231	48 36 37	123 13 08		260	230			EW	✓
2	Front	Yo	18:30	BE	232	48 36 07	123 13 01		260	240			EW	✓
2	Front	Yo	18:42	BE	233	48 35 00	123 12 53		264	240			EW	✓

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - rosette; NET - net haul; DRF - drifter; USW - sea water loop

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POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

211 - 233 are processed

Bottle #6

S/N	15555	4997
Air	11.3	11.1
water	9.19	9.13

74.5 cm

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR	MONTH	SHIP	CRUISE	PAGE	OF
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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
2	C7	CTD	21:41	BE	234?	48 27.67	123 3.57		170	161			AB	
2	C6	CTD	21:07	BE	235	48 26.55	123 4.52		208	205 ~~208~~			AB	
2	C3	CTD	21:41	BE	236	48 24.80	123 6.15		32	29			AB	Till weight Tacked.
2	V6	CTD	22:16	BE	237	48 23:56	123 7.54		32	40			AB	
3	DRIFT/1	CTD	00:42	BE	238	48 22 54	123 16 28		110	100			NA	every 15 min
3	" 2	CTD	1:01	BE	239	48 22 93	123.14 73		84	70			NA	Sharp interface close to surface
3	" 3	CTD	1:16	BE	240	48 23 29	123 13.52		85	75			NA	Wind 12Kn SW
3	" 4	CTD	1:30	BE	241	48 23 66	123. 12.56		60	70			NA	
3	" 5	CTD	1:45	BE	242	48 24 07	123. 11.57		65	76			NA	
3	" 6	CTD	1:59	BE	243	48 24 49	123. 10. 71		76	82			NA	
3	" 7	CTD	2:17	BE	244	48 24 92	123. 9 .64		70	60			NA	Near C2
3	" 8	CTD	2:31	BE	245	48 25 20	123. 8 .90		60	51			NA	
3	" 9	CTD	2:46	BE	246	48 25 48	123. 8 .04		90	80			NA	Bottle Sample @ 74.5m
3	" 10	CTD	3:03	BE	247	48:25:73	123. 7. 16		96	86			NA	quite flat
3	" 11	CTD	3:19	BE	248	48:25 93	123 6 45		62	42			EW	
3	" 12	CTD	3:44	BE	249	48:26 27	123 6 00		108	89			EW	
3	" 13	CTD	4:01	BE	250	48:26 48	123 5 43		95	90			EW	Stop drifting at the end of flood
3	" 14	CTD	4:22	BE	251	48: 27 12	123 5 27		224	201			EW	last cast in deeper water

CAST TYPE - BOT - bottle cast, CTD - ctd, MOR - mooring, ROS - 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 cast, DE - deployment time, MR - messenger release, RE - recover mooring

POSITION CODE - RAD - RADAR, GPS - GLOBAL, LOR - LORAN

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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
3	S11	CTD	6.09	BE	252	48 38 86	123 15 44		160	141			EW	
3	S9	CTD	7:22	BE	253	48 39.00	123.12.14		186	170			NA	
3	S10	CTD	7:44	BE	254	48 38.89	123.13.71		240	225			NA	
3	S11	CTD	8:19	BE	255	48 38.90	123.15.44		162	151			NA	
3	S9	CTD	9.29	BE	256	48:39:05	123.12.04		184	174			NA	
3	S10	CTD	9:53	BE	257	48:38:86	123.13.59		244	230			NA	
3	S11	CTD	10:27	BE	258	48 38.91	123.15.47		160	150			NA	Echo Sounder (blanking) periodically
3	S9	CTD	11:28	BE	259	48;38.95	123;12.06		181				MG	failed
3	S9	CTD	11:32	BE	260	48; 39.04	123.11.99		181	170			MG	
3	S10	CTD	11:54	BE	261	48;38.90	123;13.6		240	230			MG	got a little of the UP cast
3	S11	CTD	12:37	BE	262	48;38.9	123,15,47		160	150			MG	
3	S9	CTD	13:40	BE	263	48;38.48	123,12,00		180				MG	failed cast E:drive failed
3	S9	CTD	13:58	BE	264	48;38.46	123;12.01		190	172			MG	got dip switched to c:drive
3	S10	CTD	14:10	BE	265	48;38.48	123;13.6		240	234			MG	
3	S11	CTD	14:50	DE	266	48 38 86	123 15 43		160	152			MG	
3	S9	CTD	15:45	BE	267	48 38 97	123 12 14		190	170			EW	
3	S10	CTD	16:06	BE	268	48 38 91	123 13 59		242	220			EW	
3	S11	CTD CB:MA	17.01	BE	269	48 38 55	123 15 50		160	141			EW	oxygen sensor attached

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

	Bottle #7	151m
S/N	15555	4997
Air	13.8	13.8
Water	9.41	9.38

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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
3	59	CTD	18:20 BE	BE	270	48 ~~9~~ 08	123 12.12		184	164			EW	
3	510	CTD	18:43	BE	271	48 38 94	123 13 65		240	220			EW	
3	Test	CTD	22:09	BE	272	48 39.31	123 13 98		250	339				auto-Sample 22:15 30 samples 2008+2009 #7
4	CIT-1	CTD	1:14	BE	273	48 29.78	123 9 53		310	236				Time Series @ 5 min @ C1, winch probe
4	CIT-2	CTD	2:00	BE	274	48 30.14	123.8.66		75	54				@ 2 m/s
4	CIT-3	CTD	2:31	BE	275	48 29 53	123.9.10		290	281				@ 2 m/s
4	CIT-4	CTD	2:46	BE	276	48 . 29.64	123. 9. 02		320	300				@ 2 m/s
4	CIT-5	CTD	3:08	BE	277	48. 29 ~~88~~ 81	123. 9 ~~28~~		324	302			EW	@ 2 m/s
4	CIT-6	CTD	3:~~29~~	BE	278	48. ~~30~~. 21	123 9. 61		300	293			EW	@ 2 m/s steep slope on the bottom
4	CIT-7	CTD	4:11	BE	279	48 29 95	123 9 55		310	295			EW	
4	CIT-8A	CTD	4:32	BE	280	48 29 84	123 9. 48		310	291			EW	Carrying instrument near 200m < 24 cast to measure noise! (R.P.)
4	CIT-8B	CTD	4:38	BE	281	48 29 93	123 9. 61		~~295~~	300			EW	
4	CIT-9	CTD	5:14	BE	282	48 29 84	123 9 39		315	295			EW	hit the bottom
4	CIT-10	CTD	5:31	BE	283	48 29 79	123 9 46		310	290			EW	
4	CIT-11	CTD	5:45	BE	284	48 29 79	123 9 38		305	286			EW	
4	CIT-12	CTD	6:00	BE	285	48 29 81	123 9 37		310	295			EW	
4	CIT-13	CTD	6:14	BE	286	48 29 81	123 9 37		315	305			EW	
4	CIT-14	CTD	6:~~28~~	BE	287	48 29 80	123 9 41		310	290			EW	

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Time	Pressure	Wirelength	Bottom depth	Comments
17:16	170	178	190	
17:17	170	180	190	(305)
17:21	174	174	190	
17:25	174	174	190	
17:28	172	173	190	stop down casting
17:31	60	61	190 ←	(306) to avoid woodchuck buoy

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DAY (UTC)	STATION ID	CAST TYPE	TIME (UTC)	TIME CODE	STD/HYDRO CONSEC # (288 – Not Valid)	LATITUDE	LONGITUDE	POSITION CODE	BOTTOM DEPTH (m)	MAX SAMPLING DEPTH (m)	CONSEC SAMPLE #	# OF BOTTLES	INIT	COMMENTS
4	CIT-15	CTD	6:45	BE	288	48 9 80	123 9 36		310	297			EW	
4	CIT-16	CTD	7:05	BE	290	48 29 81	123 9 42		310	300			NA	@ 2m/s
4	CIT-17	CTD	7:21	BE	291	48.29.75	123.9.40		310	300			NA	" "
4	B10	CTD	10:36	BE	292	48.53.10	123.0.05		204	191			NA	1 m/s
4	B6	CTD	11:10	BE	293	48 49 955	122 55053		180	170			VP	
4	B5	CTD	11:41	BE	294	48 49 953	123 00127							
4	B4	CTD	12:08	BE	295	48 49 951	12507 041		190	180				
4	BPW	CTD	1238	BE	296	48 48 553	123 00 176		210	205				
4	BPC	CTD	12:56	BE	297	4848 094	128.58113		190	180				
4	B3	CTD	13:20	BE	298	48 46 124	123 01893		280	260				clipped
4	B2	CTD	13:47	BE	299	48 44 484	123 05 570		129	122				
4	B1	CTD	14:13	BE	300	48 43 489	123 10 057		290	280				
4	B8	CTD	14:56	BE	301	48 40 05	123 6.55		100	100			EW	lit trd side of the ship ~~bottom~~
4	B9	CTD	15:30	BE	302	48 37 70	123 4.86		245	223				
4	S3	CTD	16:06	BE	303	48 39 20	123 11.49		140	120				
4	S2	CTD	16:36	BE	304	48 40 ~~8181~~ 17	123 14 815		260	260				
4	front	tow yo	17:14	BE	305	48 39 21	123 12 75		190	170				2m/s
4	front	tow yo	17:27	BE	306	48 39 23	123 12 79		1					

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Time	Pressure	Wirelength	Bottom depth	Comments
17:41	192	198	210	(308)
17:44	190	202	205	
17:48	180	210	200	
17:03	185	186	200	(309) stop to recover seascan
18:26	212	263	240	(310)
18:30	222	225	244	
~~18~~				stop to avoid log
18:36	222	224	244	(311)
18:40	223	230	240	
18:44	217	270	240	stop at 70m upcast
18:49	221	225	240	(312)
18:53	220	243	244	
18:57	221	240	240	
	2	228	~~244~~	
19:01	223	224	244	R
19:06	227	228	240	
19:10	166	170	240	Up to Save Boat.
19:28	232	249	248	R 313
19:33	232	275	245	
19:39	232	332	245	R Stop to Reposition
20:06	224	225	240	(314) paused
20:10	225	242	250	→ upcast ~~stopped~~ to move ship @ 90m
20:18	221	246 ↑	250 ←	downcast, moved crane @ 140m

Forgot to turn off logging, out of water crane moved!

20:32	226	246	244	(315)

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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
4	front	tow yo	17:38	BE	307	48 38 90	123 12 93							invalid
4	front	tow yo	17:39	BE	308	48 38 92	123 12 98		210	190				
4	front	tow yo	18:01	BE	309	48 38 92	123 12 02		200	180				
4	front	tow yo	18:23	BE	310	48 38 46	123 13 06		244	220				
4	front	tow yo	18:34	BE	311	48 38 27	123 13 06		244	220				
4	front	tow yo	18:47	BE	312	48 38 19	123 12 95							Lots of air logged at end of cast.
4	Front	Tow Yo	19.25	BE	313	48 37 35	123 13 13		248				KB	
4	"	Tow Yo	20:03	BE	314	48 38 12	123 13 65		240				NA	
4	"	Tow Yo	20:29	BE	315	48 37 19	123 13 29		244				NA	
4	CIT-1	CTD	21:53	BE	316	48 29.82	123 9.34		310	299			KB	2m/s Time stamp at T1 315 wire
4	CIT-2	CTD	22:07	BE	317	48 29.85	123 9.39		320	305			KB	" 315 wire clipped
4	CIT-3	CTD	22.24	BE	318	48 29.79	123 9.38		310	303			KB	" 314 wire
4	CIT-4	CTD	22:40	BE	319	48 29 81	123 9.39		310	303			KB	" 315 "
4	CIT-5	CTD	22:58	BE	320	48 29.84	123 9.34		310	300			NA	" 326 "
4	CIT-6	CTD	23:15	BE	321	48 29.71	123 9.36		310	300			NA	" 327 "
4	CIT-7	CTD	23:33	BE	322	48 29.75	123 9.20		320	~~300~~ 296			NA	2m/s
4	CIT-8	CTD	23:46	BE	323	48 29.83	1239.30		315	301			NA	
5	CIT-9	CTD	00:07	BE	324	48 29.70	1239.29		315	298			NA	403 wire

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Bottle # 8

S/N	15555	4997
Air	14	13.8
Water	9.21	9.20

DAILY LOG

OCEAN PHYSICS

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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
5	CIT-10	CTD	00:26	BE	325	48 29 78	123. 9.45		310	295				Drifting to lower depths
5	CIT-11	CTD	00:40	BE	326	48 29 .78	123 . 9. 46		310	305			JB	325
5	CIT-12	CTD	00:55	BE	327	48 29.73	123 9.39		310	305			JB	309
5	CIIT-1	CTD	1:29	BE	328	48 28. 77	123 5.66		260	250				Time series new position →
5	TOW 1	CTD	1:37	BE	329	48.29.27	123 5.69			@ 27				Towing! / getting shallow
5	Front Profile 1	CTD	1:48	BE	330	48.29.97	123 8.83		320	300				Profile near front
5	FP2	CTD	2:06	BE	331	48 31.30	123 9.92		250	235				getting shallow
5	FP3	CTD	2:23	BE	332	48:32.51	123 11:38		140	115				" "
5	FP4	CTD	2:36	BE	333	48 : 32 60	123 11.39		250	240				
						~~48.32 69~~	~~123 1~~							
5	TOW2	CTD	2:47	BE	334	48:32.73	123. 11. 49			@16				Sitting in one spot, waiting!
6	FP5	CTD	3:12	BE	335	48:33.18	123. 11. 98		250	231				Calibration Cast 122 m Bottle bottles at : 2012
6	T1	CTD	4:33	BE	336	48 27 70	123 14 13		50	30				samples 2010
6	T2	CTD	4:57	BE	337	48 28 36	123 12 19		130	100			well mixed	CTD across Haro strait @1m/s
6	T3	CTD	5:30	BE	338	48 28 88	123 10 69		210	189			EW	
6	T4	CTD	6:01	BE	339	48 29 57	123 8 95		320	300			EW	
6	T3	CTD	6:29	BE	340	48 28 91	123 10 71		210	190			EW	
6	T2	CTD	6:53	BE	341	48 28 35	123 12 28		130	100			EW	

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Time	Pressure	Wirelength	Bottom depth	Comments
18:51	160	448	200	356
			stop to avoid traffic	winch stuck for a while
				large salinity fluctuation in upcast
19:30	163	374	175	12
19:37	165	381	170	13
19:44	202	350	210	Bottom
19:51	185	296	200	shallower
19:55	92	147	105	
19:57	90	118	101	
20:00	105	164	125	
20:04	100	114	100	
20:09	197	291	210	
20:13	204	235	210	
20:17	176	187	180	Last of casts

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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
5	T1	CTD	7:33	BE	342	48 27.73	123 14.14		44	31			NA	
5	T2	CTD	7:55	BE	343	48 28.33	123 12.33		130	122			NA	
5	T3	CTD	8:19	BE	344	48 28 94	123.10.66		200	190			NA	started at 3m cop
5	T4	CTD	8:50	BE	345	48 29 57	123.8.55		320	280			NA	drifting station
5	B1	CTD	10:55	BE	346	48 43 49	123.10.11		284	271			NA	
5	B8	CTD	11:32	BE	347	48 40.01	123;6.59		100	94			MG	
5	B9	CTD	12;00	BE	348	48;37.65	123;4.91		225	229			MG	drifted deeper
5	B7	CTD	12;36	BE	349	48:40 48	123:0.08		200	193			MG	
5	B2	CTD	13:27	BE	350	48;44.45	123;5.63		130	122			MG	
5	B3	CTD	13;50	BE	351	48;46.12	123;1.87		230	220			MG	touched bottom
5	B4	CTD	14;27	BE	352	48;49.95	123;4.96		200	191			MG	
5	B5	CTD	14:54	BE	353	48;49.97	123;0.12		205	190			MG	
5	B6	CTD	15;22	BE	354	48;49.98	122;55.10		180	177			MG	
5	B10	CTD	16:02	BE	355	48 53 02	123 0 08		205	185			EW	warm and fresh at surface 25m
5	Tow yo	CTD	18:46	BE	356	48 48 01	123 0 44		200	180			EW	
5	Tow yo	To yo	19:27	BE	357	48 47 08	123 1 19		175				MG	Start of Tow yo
5	Tow yo	To yo	19:48	BE	358	48 47 74	123 0.64		210					
6	C2T-1	CTD	00:43	BE	359	48 24 86	123.9.96		70	61			NA	fairly stratified

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

time	pressure	wirelength	depth	comment
4:17	192	196	210	① 2 m/s
4:21	212	214	230	(3)
4:24	222	222	240	strong activity by echo sounder
4:28	233	238	250	Large Shear
4:32	233	234	245	(3)
4:37	234	235	245	well mixed at 100-200m depth

DAILY LOG

OCEAN PHYSICS

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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
6	C2T-2	CTD	1:20	BE	360	48 23.31	123. 13.63		80	70			NA	
6	~~Drift1~~ Drift3	CTD	1:35	BE	361	48 24. 14	123. 12.53		68	60			NA	
6	Drift2	CTD	1:49	BE	362	48 25.13	123.11. 22		84	76			NA	
6	Drift3	CTD	2:07	BE	363	48 26.14	123.9. 35		78	65			NA	getting shallower
6	Drift4	CTD	2:22	BE	364	48 27.44	123 8 38		27	21			NA	
6	Drift5	CTD	2:36	BE	365	48 28 48	123 8 18		250	242			NA	
6	Drift6	CTD	2:59	BE	366	48 : 29 : 46	123 9 32		280	273				
6	~~Drift7~~	CTD	3:49	BE	367	48 : 27 02	123. 8 42		40	27			EW	upwelling
6	Drift8	CTD	4:08	BE	368	48 : 27 : 86	123 7:46		200	180			NA	unstable water body
6	~~Drift8~~ Tow yo	CTD	4:14	BE	368	48 : 28 : 12	123 : 7 : 44		240	220				Tow yo
6	Tow yo	CTD	4:31	BE	370	48 : 28 : 59	123 : 7 : 99		245	230				
6	C6.5	CTD	5:33	BE	371	48 : 26 : 92	123 : 4 : 14		200	187				disappear in up cast well mixed below 30m/100m
6	C5	CTD	6:14	BE	372	48 : 24 : 79	123 : 2 : 32		180	165				pull mast out of water
6	V1	CTD	8:16	BE	373	48 : 16 : 31	123 : 31 : 44		210	201			NA	
6	V2	CTD	8:39	BE	374	48 14. 07	123. 31. 42		170	161			NA	
6	V3	CTD	8:59	BE	375	48 : 11 : 77	123. 31. 40		140	130			NA	
6	V4	CTD	9:17	BE	376	48 : 10 52	123 31 58		21	16			NA	
6	V10	CTD	11:10	BE	377	48 12 334	123041 46		45	40			VP	

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

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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
6	V9	CTD	11:33	BE	378	48 15 958	123 04 07		180	170			VP	
6	V8	CTD	11:56	BE	379	48 19 398	123 04 129		25	20				
6	V7	CTD	12:R	BE	380	48 21516	123 05 928		150	140			VP	
6	V6	CTD	1230	BE	381	48 23506	123 07 555		25	22				
6	V5	CTD	12:47	BE	382	48 19885	123 10 124		85	80				
6	C3	CTD	13:05	BE	383	48 24 784	123 06 241		25	24				
6	C6	CTD	13:25	BE	384	48 26 621	123 04 497		210	200			VP	Core 208 m
6	C7	CTD	13:44	BE	385	48 27 704	123 03 659		175	170				
6	C2	CTD	14:14	BE	386	48 24 82	123 10 06		75	55			EW	
6	C3	CTD	15:50	BE	387	48 24 78	123 6 24		25	16			EW	salinity unstable
6	C6	CTD	16:21	BE	388	48 26 61	123 4 49		210	190			EW	small whirlpools in upwelling area, abnormal record at this stage when start downcast
6	C7	CTD	16:43	BE	389	48 27 74	123 3 64		190	170				
6	C2	CTD	18:06	BE	390	48 24 65	123 10 0[illegible]		75	56				
6	C3	CTD	18:43	BE	391	48 04 78	123 6 32		25	16			EW	
6	C6	CTD	19:15	BE	392	48 26 64	123 4 49		210	201			B	
6	C7	CTD	19:48	BE	393	48 27 70	123 3 62		172	166			AB	
6	C2	CTD	21:01	BE	394	48 24 71	123 10 12		78	71			B	
6	C3	CTD	21:53	BE	395	48 24 79	123 6 24		20	24			AB	

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN

Bottle #9 — 77cm

S/N	5555	4997
Air	12.5	12.4
water	7.21	7.20

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR	MONTH	SHIP	CRUISE	PAGE OF

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
6	C C	CTD	2227	BE	396	48 26 63	123 4.47		210	146.			AR	
6	C 7	CTD	22:49	BE	397	48 27 71	123 3.55		160	160			AR	
7	01-1	CTD	1:34	BE	398	4813 21	123 19 18		135	126			MM	
7	01-2	CTD	3:25	BE	399	48 13 31	123 19 11		140	124			EW	Extremely stratified ~~at the~~ surface layer
7	01-3	CTD	4:22	BE	400	48 13 28	123 19 22		140	119				calibration, Bottle # 7 8 9 10
7	01-4	CTD	5:49	BE	401	48 16 32	123 12 43		130	110				only T ~~[illegible]~~ drop sharply ~~[illegible]~~ at the surface upper 5m

CAST TYPE - BOT - bottle cast; CTD - ctd; MOR - mooring; ROS - 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 cast; DE - deployment time; MR - messenger release; RE - recover mooring

POSITION CODE - RAD - RADAR; GPS - GLOBAL; LOR - LORAN