

CRUISE
NUMBER

98-36

DAILY LOG
INSTITUTE OF OCEAN SCIENCES
OCEAN PHYSICS

DATE

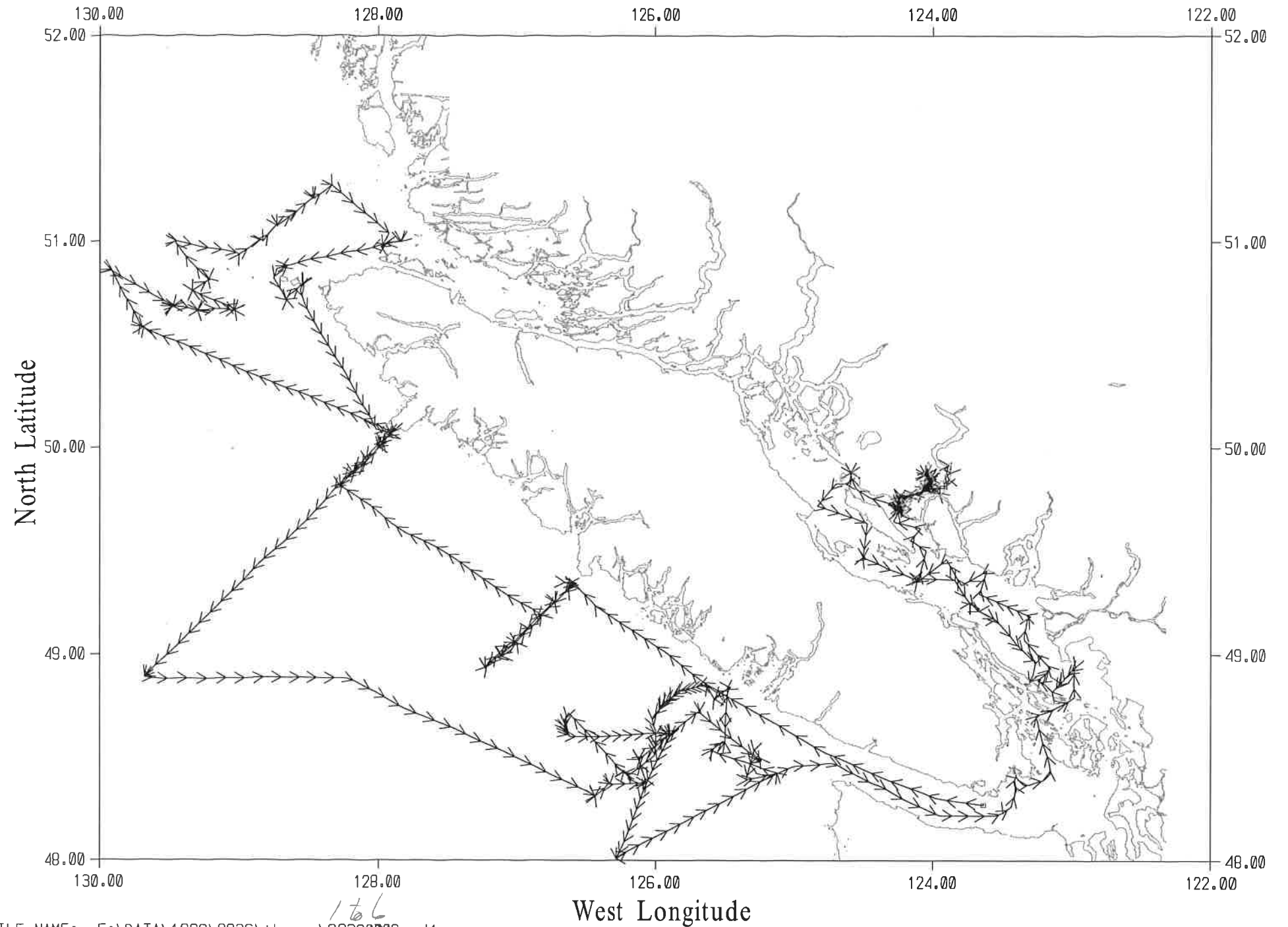
6 - 17 Oct. 1998

VESSEL

J.P. Tully

PROJECT

1998-36 thermo



FILE NAME: E:\DATA\1998\9836\thermo\98360006.ed1

START TIME: UTC 1998/10/15 01:01:26 END TIME: o

Captain: _____

First Officer: _____

Second Officer: _____

Third Officer: _____

Cruise Participants / Agencies:

Scientific Personnel: Party Chief: Doug Yelland

[illegible]

Second leg of cruise: Party Chief:

[illegible]

Data logging system: Unit no.:

Program Name: _____

Program version: _____

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

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

1st CTD make: Sea-Bird model: 911 + serial no.: 6443

Temperature sensor	model:	Primary	serial no:	209K

coefficients: slope: $\frac{1}{2}$ Serial no: 2030
 coefficients: slope: $\frac{1}{2}$ Serial no: 2030

Conductivity sensor	model:	serial no.
	DT-1000	1746

coefficients:	slope:	serial no.:	1762
		offset:	
		Secondary	

Pressure sensor range: 10 000 psi serial no: 7 2607

coefficients:	FSP:	dB	offset:

Transmissometer

model:	Sea-Tech
serial no.:	182 D

coefficients:	slope:	offset:

Comments: Flammometer - See Tech Spec is here

DE 14-SEEN : NWS

Deck Unit - SPE 11415

2. $k \neq 0$

2nd CTD make: Sea-Bird model: 911 + serial no.: 0437
Temperature sensor model: Primary serial no.: 2106
coefficients: slope: Secondary offset: 2062
Conductivity sensor model: Primary serial no.: 1748
coefficients: slope: Secondary offset: 1764
Pressure sensor range: 10000 psi serial no.: 63502
coefficients: FSP: dB offset:
Transmissometer model: serial no.:
coefficients: slope: offset:

Deck Unit: SNO471
Winches:

1. make: model: serial no.: use:
2. make: model: serial no.: use:
3. make: model: serial no.: use:
4. make: model: serial no.: use:
5. make: model: serial no.: use:
6. make: model: serial no.: use:
7. make: model: serial no.: use:

Salinometer: make: Gouldline model: Pontosal serial no.: 59724

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: Sea-Bird Thermosalinograph

Model: 21

S/N: 2487

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:

1 13 15
4 15 60

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR			MONTH			SHIP			CRUISE			PAGE			OF		
1998			OCTOBER			JP TULLY			9836			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			
6	LG01	ROS	1230	UTC	0001	49°20.49	126°35.00	✓	52	49	1-5	5		O ₂ , NUTS, CHL, NH ₄ , PHYTO			
6	LG02	ROS	1333	UTC	0002	49°18.71	126°38.13	✓	100	95	6-12	7		O ₂ only <u>Bad header</u>			
6	LG03	NET		UTC	0003				120					Bongo			
6	LG03	ROS	1530		4	49 15.03	126 43.76	✓			13-25	13		-incubation PAR			
6	LG07	ROS	1839		5	48 59 44	127 07.06	✓	1780		26-46	21		PAR			
6	LG07	NET			0006									BONGO.			
6	LG08	CTD	2124	UTC	7	48 56.12	127 13.55	✓	2077	2070				CTD only to bottom			
6	LG06	ROS	2358	UTC	8	49 03.35	127 01.1	✓	963	942	47-63	17		CTD, O ₂ , sal calibr PAR			
7	LG06	NET	0018	UTC	9	49 03.35	127 01.1	✓	~950					BONGO VNH 0-250			
7	LG4	ROS	0059	UTC	10	49 07.4	126 55.2	✓	275	250	64-73	10		O ₂ , NUTS, 3 Sal, 3 chl, NH ₄ , phy			
7	LG4	ROS NET	0304		11	49 11.32	126 49.43	✓	145	140	74-82	9		" "			
7	LG4	BGO	03	UTC	12									Bongo			
7	LBP8	CTD	11:33 BO 11:01 RE UTC		13	Bot 49 48.61 549 48.63	128 16.77 128 16.68	✓	2089	2080				Program hung on down cast, missed 897-994m, returned to 890 & resumed down cast. Also logged up cast			
7	LBP6	ROS	13:20 BE 13:34 BO		14	49 56.25 49 56.26	128 05.42 128 05.58	✓	825	~750	83-101	19		O ₂ , NUTS, CHL, NH ₄ , Phyto, sal x 5 (kept @ 600 & bottom)			
7	LBP7	BGO	1455		15									Bongo			
7	LBP7	ROS	1533		16	49 52.35	128 11.19	✓	2200	1000	102-125	24		Incubation station PAR			
7	LBP5	NET			17				1292	1000				Bongo to 250m			
7	LBP5	ROS	1810		18	49 59.96	128 00.05	✓			126-143	19		CTD/P to 1000 PAR			

CAST TYPE -

BOT -
CTD -
MOR -

bottle cast
ctd
mooring

ROS -
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 cast

DE -
MR -
RE -

deployment time
messenger release
recover mooring

POSITION CODE -

RAD -
GPS -
LOR -

RADAR
GLOBAL
LORAN

YEAR				MONTH		SHIP				CRUISE				PAGE	OF
1998				Oct		J.P. Tully				9836				2	
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	
7	LBP4	ROS	19:53	UTC	019	50 01.26	127 58.27	✓	1133		144-162	19		Bottle 13 - Valve Open " 16 - Didn't fire PAR	
7	LBP3	ROS	21:45	UTC	020	50 03.02	127 55.60	✓	223	220	163-172	10		PAR	
7	LBP3	Bongo			021										
7	LBP1	ROS	22:31	UTC	022	50 04.74	127 52.81	✓	50	42	173-176	4		* Switched Rylans. PAR	
8	CSI	ROS	06:39	UTC	023	50 34.92	129 41.55	✓	2100	1000m	177-194	18			
8	CSI	BGO			024									Bongo 250-0m	
8	CSI	BGO			025									Bongo 50-0m	
8	ODAS	CTD	10:32	UTC	026	50 51.57	129 54.95		2141	1000					
8	ODAS	BGO	11:16	UTC	027	50 51.412	129 54.841			50				Bongo 50-0	
8	ODAS	BGO	11:44	UTC	028	50 51.3	129 54.7			250				Bongo 250-0	
8	CS2	BGO	13:36	UTC	029	50°41.3	129°28.1		1914	50				Bongo 50-0	
	CS2	BGO	13:58	"	030	"	"			250				Bongo 250-0	
	CS2	ROS	14:26 1447	BE BO	31	50 41.26 50 41.09	129 28.12 129 28.32	✓		1000m	196-218	23		PAR	
	CS2	Net	15:45	BE	32	"	"		80	50m				phytoplankton net	
	JI22	BGO	16:42	BE	033	50 39.80	129 17.61			50m				Bongo 50-0	
	JI22	BGO			034					250m				Bongo 250-0	
	JI22	CTD	17:18	BE	035	50 39.81	129 17.58		1530m	1000m				CTD only	
08	LO03	CTD	19:10	UTC	036	50 39.93	129 01.93		1176m	1000m				CTD only	

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

* Due to #16 bottle problems, I swapped the electronic carousel pylon from the spare rocket, DA. 98/10/07
with the help of H. McClean.

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR			MONTH			SHIP			CRUISE			PAGE		OF	
1998			October			J. P. Tully			9836			3			
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	
08	LQ03	Bongo		UTC	37										
08	LQ03	Bongo		UTC	38										
08	CS3	ROS	22:11	UTC	39	50 45.59	129 19.95	✓	223		219-229	11.		PAR	
08	CS3	NET			40	↓	↓							0-50 bongo	
08	CS3	NET			41	↓	↓		235					0-230 bongo	
08	CS4	CTD	23:43	UTC	42	50 49.13	129 13.05		107	88					
09	CS4	NET	00:07		43	↓	↓		50					0-50 bongo	
09	CS4	NET	00:12		44	↓	↓		94					"0-100" bongo	
09	CS3B	CTD	01:50		45	51 00.0	129 27.15	65	222	202					
↓	CS3B	NET	02:10		46				223					0-50 bongo	
↓	CS3B	NET	02:20		47									0-200 bongo	
9	CS5	CTD	04:26		48				62	55					
	CS5	NET	04:41		49	↑ 50 56.31	↑ 128 59.78		62	55				0-55 (wire out) bongo	
	CS6	ROS	05:37		50	51 00.04	128 49.93	✓	65	60	230-235	6.			
	CS6	NET			51				65	60				0-60 bongo	
9	CS7	CTD	06:49		52	51 4.54	128 43.84		65	60					
9	CS7	NET			53										
9	CS8	CTD	07:49	UTC	54	51 08.61	128 35.81		177	170					

CAST TYPE -

BOT - bottle cast

ROS - rosette

USW - sea water loop

TIME CODE -

BE - beginning time of event

BT - bottom time

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

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR 1998		MONTH October		SHIP J.P. Tuhy		CRUISE 9836		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
9	CS8	BNGO			55									
9	CS8	BNGO			56									
9	CS9	CTD	9:09	UTC	57	51 12.54	128 27.95		197					
9		BNGO			58									
9		BNGO			59									
9	CS10	CTD	10:34	UTC	60	51 16.46	128 20.09		83					
9		BNGO			61									
9	CPE1	ROS	14:55	UTC	62	51 00.01	127 50.01	✓	140	145	236-244	9.		PAR
		NET			63									0-75m bongo
		NET			64									0-50 bongo
														0-135 bongo
	CS1B	CTD	1858		65	50 53.04	128 39.50		73	69				
		BNGO			66									
9	CPE2	ROS	21:10	UTC	67	50 42.99	128 39.96	✓	128		245-253	9.		PAR
9	CPE2	NET			68									
		NET			69									
10	LBP2	ROS	0529		70	50 3.99	127 54.21	✓	98		254-274	21.		PAR
		BGO	0603		71									
11	MP1φ	ROS	1605		72	48 53.50	129 40.27	✓	2700	2700	275-277	3.		PAR

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

YEAR			MONTH			SHIP			CRUISE			PAGE		OF	
1998			October			JP TULLY			7836						
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	
10	MP09	USW	18:09	UTC	74	48 52.9	129 10.0	7565	18'09:01		278			Loop only - running from storm	
10	MP08	USW	20:23		75	48 53.275	128 40.265 -67.08				279			Loop - off line to N	
10	MP07	USW	22:03	UTC	76	48 51.990	128 09.630				280		T=15.4	" " " " "	
10	MP06	USW	2350	UTC	77	48 41.4	127 40.0				281		T=14.7	Loop - Noted patch of cold water (13.5) between MP7 & MP6	
11	MP05	USW	0143	UTC	78	48 32.925	127 10.008				282			Loop South of MP05	
11	MP04	USW	0312		79	48 24.466	126 43.667				283				
11	LC11	ROS			80	48 18.86	126 26.71	✓	1481	1505	284-303	20			
11	LC10	ROS	0620		81	48 22.21	126 19.88	✓	1259	1244	304-322	19		Bottle 16 didn't fire.	
11	A2	CTD	0831	UTC	82	48 22.78	126 03.67		858						
		BNGO			83	1	1		250						
	LC08	ROS	10:05	UTC	84	48 29.53	126 07.03	✓	199		323-333	11		Monitor + long	
		BNGO			85	1	1							bongo VNH 0-190	
11	LC7	ROS	1140	UTC	86	48 32.88	126 00.55	✓	129		334-341	8		Monitor	
11	LC4	ROS	1358	UTC	87	48 43.40	125 40.77	✓	168		342-359	18		Incubation, Misfire on 16	
11	C1	NET			88				153						
11	C1	ROS	1718		89	48 29.02	125 14.14	✓	153		351-370	20		PAR	
11	C3	CTD	1922	UTC	90	48 23.48	125 20.80		123						
11	C3	NET		UTC	91										

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 1998				MONTH Oct		SHIP J.P. Tully				CRUISE 9836				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
11	C2	CTD	20146	UTC	92	48 25.41	125 07.62		113	100				
11	C2	NET	1	UTC	93	1	1							
11	LCB4(B)	CTD	2316	UTC	94	48 32.02	125 35.50		81	70				
11	" (B7)	NET	1		95	1	1							Bongo 70-0
12	LCB3(BB)	CTD	0040	UTC	96	48 34.54	125 29.99		115					CTD to near bottom
12	1	NET	1	1	97	1	1		115	105				Bongo
12	LC01	ROS	0248	UTC	98	48 50.39	125 27.84	✓	98	89	370-376	7		Monitor station
12	LC02	ROS	0331		99	48 48.91	125 31.36	✓	114	104	377-383	7		Monitor station
12	LC03	CTD	0414		100	48 47.11	125 34.37		130	119				Rough Seas
12	LC9	ROS	1532		101	48 25.90	126 13.40	✓	590		384-407	24		PAR
12	LC9	BNGO			102	48 25.60	126 13.08							250-0
12	P04	ROS	2212	UTC	103	48 36.74	126 38.26	✓	1345	1000	408-414	7		PAR
	BNGO				104									Cancelled due to weather
12	P04	USW	2253	UTC	105	48 36.33	126 37.70			Loop	415			
13	LC06	CTD	0425		106	48 36.48	125 57.94		92	88				
13	LB16	ROS	1031	UTC	107	48 00.60	126 16.97	✓	1850	1000	416-439	24		1416 MISFIRE
13	P1	USW	1647	UTC	108	48 26.17	125 04.40			Loop	440			- missed P2 + P3 just past P1
13	D11A (Race Rocks)	ROS	2234		109	48 14.0	123 30.0	✓			468-477	10		- no seg # 441-467 PAR

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			MONTH			SHIP			CRUISE					PAGE		OF	
1998			Oct			Tully			9836								
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			
14	D8A	CTD	0356	UTC	110	48 42.15	123 15.23		354								
14	D7A	ROS	0445		111	48 44.00	123 8.37	✓	165		478-486	7					
14	D6A	CTD	0538	UTC	112	48 44.03	123 02.24		227	220							
14	SI08	CTD	0704		113	48 56.48	122 58.87		41	38							
14	SI07	CTD	0730		114	48 55.53	123 0.13		130								
14	SI06	CTD	0746		115	48 54.52	123 1.34		153	145							
14	SI05	CTD	0809	UTC	116	48 53.69	123 02.63		164								
14	SI04	CTD	0830	UTC	117	48 52.79	123 03.74		159								
14	SI03	ROS	0852	UTC	118	48 52.87	123 05.08	✓	155	145	487-495	9					
14	SI02	CTD	0927	UTC	119	48 50.49	123 06.90		219	210							
14	SI01	CTD	1000	UTC	120	48 49.20	123 08.74		116	110							
14	MI01	CTD	1042	UTC	121	48 52.41	123 14.56		153								
14	MI02	CTD	1109	UTC	122	48 53.81	123 12.58		142								
14	MI03	ROS	1131	UTC	123	48 55.23	123 10.71	✓	127		496-503	8					
14	MI04	CTD	1202	UTC	124	48 56.09	123 09.45		119	111							
14	SGA46	ACO	1400	UTC	125	49 11.00	123 18.00		97					Acoustic SNP file			
14	SGA46	ACO	1410	UTC	126	49 11.00	123 18.00		97					SNV			
14	SGA3	ACO	1808	UTC	127	-	-		-					SNV			

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

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR		MONTH			SHIP			CRUISE				PAGE		OF	
98		Oct			J.P. Tully			9836							
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	
14	CPF1	CTD	1955	UTC	128	49 21.05	124 6.61	GPS	415	395				COPRA Station	
14	CPF1	BGO		UTC	129			GPS						Bongo Net 50-0	
14	CPF1	BGO		UTC	130			GPS						Bongo Net 250-0	
14	CPF1	ACO	2148	UTC	131			GPS	415					Acoustics SRV	
15	SGA10	BIDNESS ACOUSTICS		UTC	132			GPS						Acoustic Calibration.	
15	SGA10	BIDNESS		UTC	133			GPS						BIDNESS	
15	JIAH7	ACO		UTC	134			GPS						Acoustics SRV	
15	JIAA13	ACO		UTC	135	49 43.68	124 13.82	GPS						Acoustics SRV	
		ACO			136			GPS						"	
		ACO			137			GPS						"	
		ACO			138			GPS						"	
15	JIAH7	BIDNESS ACOUSTICS			139			GPS						Acoustic calibration	
16	JIAH7	BIDNESS			140			GPS						BIDNESS	
16	JIAH7	BIDNESS			141			GPS							
16	SGA15	ACO			142			GPS						Acoustics SRV	
16	SGA15	ACO			143			GPS						Acoustics SRV	
16	CPF2	CTD	18:18	UTC	144	48 28.02	124 29.94	GPS	325	310					
16	CPF2	BGO			145				325	50				Bongo 50-0	

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

DAILY LOG

OCEAN PHYSICS

INSTITUTE OF OCEAN SCIENCES

YEAR		MONTH		SHIP		CRUISE		PAGE		OF				
98		10		TULU		9836								
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
16	CPF2	BGO		UTC	146				325	250				BONGO 250-0
16	BB01	ROS	22 21	UTC	147	49 14.98	123 43.96	✓	404		501-517	17		Beth's CTD / Ken's
16					148									Acoustics serv
16	BB01				149									Beth's Bongo
16		ACO			150									Acoustics
16	GI04	ROS	2341	UTC	151	49 12.62	123 40.11				518-532	15		
16		ACO			152									Acoustics
17	GI03	ROS	0045	UTC	153	49 10.19	123 33.45	✓	375	365	533-547	15		
		ACO			154									
17	GI02	ROS	0231	UTC	155	49 02.35	123 23.12	✓	260	250	548-559	12		Fraser river silt present
17	GI01	ROS	0311	UTC	156	49 58.38	123 16.25	✓	162	155	560-569	10		

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