DAILY SCIENCE LOG BOOK

MISSION NUMBER: 2008-50

DATE: From: Sep. 11 to: Sep. 21, 2008

VESSEL: CCGS J. P. Tully

PROJECT(S): La Perouse, Aquaculture, PATC's, Bowie Seamount
Effingham Inlet, Juan de Fuca

Water Properties Group
Fisheries and Oceans Canada
Institute of Ocean Sciences
Ocean Sciences Division
Sidney, BC, Canada

Captain: Bill Noon First Officer: Don
Second Officer: Shane Third Officer: Erika
Fishing Master: n/a

Mission Participants / Agencies: OSD

Scientific Personnel: Chief Scientist: Tom Juhász

Name	Watch	Cabin	Name	Watch	Cabin
Dave Spear			Josh Zotzman		
Lucius Perreault					
Hugh Maclean					
Tara Lamothe					
Steve Romaine					
Emilie Hall					
Rachel Robb					
Grace Kamitakahara					
Scott Rose					
Peter Crocker					

Second leg of Mission: Chief Scientist: _____

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: _____
Data acquisition program: _____
CTD deck unit make: _____ model: _____ serial number: _____

Primary CTD
Make: _____ model: _____ serial number: _____
Primary temperature serial number: _____
Primary conductivity serial number: _____
Secondary temperature serial number: _____
Secondary conductivity serial number: _____
Transmissometer: _____ Model: _____ s/n: _____
Fluorometer: Model _____ Cable gain: _____ s/n: _____ **P, S** or **NO** pump?
Oxygen sensor: _____ Model: _____ s/n: _____ **P, S** or **NO** pump?
PAR sensor: _____ Model: _____ s/n: _____
Other sensors: _____ s/n: _____ **P, S** or **NO** pump?
Other sensors: _____ s/n: _____ **P, S** or **NO** pump?
Other sensors: _____ s/n: _____ **P, S** or **NO** pump?
Other sensors: _____ s/n: _____ **P, S** or **NO** pump?

Secondary CTD
Make: _____ model: _____ serial number: _____
Primary temperature serial number: _____
Primary conductivity serial number: _____
Secondary temperature serial number: _____
Secondary conductivity serial number: _____
Transmissometer: _____ Model: _____ s/n: _____
Fluorometer: Model _____ Cable gain: _____ s/n: _____ **P, S** or **NO** pump?
Oxygen sensor: _____ Model: _____ s/n: _____ **P, S** or **NO** pump?
PAR sensor: _____ Model: _____ s/n: _____
Other sensors: _____ s/n: _____ **P, S** or **NO** pump?
Other sensors: _____ s/n: _____ **P, S** or **NO** pump?
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Other sensors: _____ s/n: _____ **P, S** or **NO** pump?

CTD calibration bottle location (height above CTD in metres): _____

Date	Time (PDT)	This page is for any notes or observations
Sep. 11	0800	- depart I.O.S. - on board Dave Spear, Lucius Perreault, Tara Lamothe, Steve Romaine, Hugh Maclean, Emilie Hall and Tom Juhász. - steaming for DPN mooring for deployment. - setting up en route.
	1911	- deployed mooring DPN-A in 150 m datum at 49° 57.800' 125° 08.680'
	1917	- head for Knight Inlet recoveries
Sep. 12	0730	- steaming to TCS06.
	0820	- arrive TCS06 above mooring ranges = 226, 228, 228 move off for release - ranges 231, 241, 246, 291, 343, 412, 441, 459, 481
	0828	- stopped for release range 488, 482
	0830	- sent range 16B4 484, sent release 1655 got rec'd - sighted on surface. - recovered without incident - top components fouled. - top 2 RCMs would be effected.

Date	Time (PDT)	This page is for any notes or observations
Sep. 12	1018	- on station KIW06-N for recovery - launching small boat - mooring close to shore and boat will tow in to ship - near station (no over) ranges , 227, 225 m - moving away for release - standing off app. 1 cable range 305 m.
	1030	- sent range 1686 = 317 sent 1655 release - sighted on surface - top instrument rotor knocked out
	1210	- on site KIW06-Mid for recovery - app. ½ cable off ranges = 212, 213 m - moving off to release
	1220	- 2 cables away rngs 456, 461. - send release 1683 and 1655 rec'd + executed - sighted on surface. RCM4 # 4240 rotor bearings too tight. + bio-fouled
	1340	- near site KIW06-S for recovery. - ranges 226, 225 - moving off to release position + launched small boat - 2 cables off ranges 422, 424
	1348	- sent 1687 + 1655 for release got rec'd + exec'd - sighted on surface - recovered without incident - proceed with CTDs in Broughton area

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month 9 **Year** 2008 **Ship** Tully **Cruise ID** 2008-50

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
12	Kn2	2329	BE	ROS		0001	50 39.298	126 11.603	183	175	1-11	11	SM/~~ST~~	✓	
		2332	BO				50 39.256	126 11.011							
		2343	EN				50 39.298	126 11.012							
13	Trc1	0056	BE	ROS		0002	50 43.576	126 10.996	308	300	12-25	14		✓	
		0103	BO				50 43.583	126 10.930							
		0118	EN				50 43.585	126 11.010							
13	Trc1	0138	BO	NET		0003	50 43.585	126 11.010	308	250	*				Bongo UNIT
13	Trc2	0256	BE	ROS		0004	50 49.16	126 12.76	200		26-37			✓	
		0300	BO				50 49.20	126 12.77		190					
		03	EN												
13	Kn1	0545	BE	ROS		0005	50 38.13	126 25.22	255		38-50	13	T&H	✓	* →
		0549	BO				50 38.12	126 25.24		245					UPCAST ONLY
		0609	EN				50 38.08	126 25.32							
13	Kn 1	0621	BO	NET		0006	50 38 09	126 25 33	256	240					Bongo UNIT

Cast Type:
BOT = Bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD
SET = Fish Set
USW = Sea Water Loop
MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter
____ = _____

Bottle Firing Method:
US = Up / Stop
UN = Up / No stop
DN = Down / No stop

Time Code:
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Transmissometer to be cleaned before each cast, do not use Ammonia products

Notes: _____

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 06 March 2008

CTD's

- lower to 10m
- start pump
- return to surface
- wait 30
- start acq
- to cast, max 10 mi off bottom

OXY

- collect sample + add chemical
- shake
- go to other samples reset bottles
- shake again
- add MQ
- store outside door at temp
- can be run after 15 min

BOTTLES

#7 does not trip, but we did labels 7, 8.

* KM1 DIDN'T ARCHIVE DOWN CAST

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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							Latitude	Longitude							
13	KM 0	0716	BE	ROS		007	50 38.282	126 35.015	69	55	51-55	5	SL	✓	
		0718	BO				50 38.275	126 35.020							
		0723	EN				50 38.267	126 35.033							
13	QCS1	0828	BE	ROS		0008	50 40.004	126 46.349	160	150	56-65	10			
		0832	BO				50 40.016	126 46.334							
		0842	EN				50 40.020	126 46.298							
13	FS1	1002	BE	ROS		0009	50 47.024	126 36.653	332	322	66-80			✓	
		1008	BO				50 47.060	126 36.670							
		1026	EN				50 47.016	126 36.685							
13	FS1	1050	BO	NET		0010	50 46.94	126 36.69	312	250					Bongo UNH
13	PP1	1137	BE	ROS		0011	50 48.94	126 31.46			81-90	10	T/H		
		1140	BO				50 48 93	126 31 44							
		1149	EN				50 48 81	126 31 37							

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Notes: _____

Date	Time PDT	This page is for any notes or observations
Sep. 13	0730	- still completing Broughton CTDs + added 4 bongos
	0830	- contact Grace + Rachel en route driving up - they were in Nanaimo - have PATC batteries, - no CTD - no SBE pressure read out.
≐	1430	- last Broughton CTD done - contacted Grace again - just arrived Port Hardy
≐	1530	- small boat launched to pick up shore party at CCG base - vehicle stored at DFO facility
	1630	- shore party arrives on Tully - we set off for Cape St. James app. 16 hr steam ETA 0800 hrs Sep. 14

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month SEPT **Year** 2008 **Ship** TULLY **Cruise ID** 2008-50

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
13	TrC3	1226	BE	ROS		012	50 48 88	126 25 55	232		91-103	13	T/H		
		1232	BO				50 48 90	126 25 57		220					
		1246	EN				50 48 83	126 25 87							
13	KIN 0	1400	BE	ROS		013	50 51.68	126 37.19			104-118				
		1407	BO				50 51.66	126 37.29	393	385					
		1428	EN				50 51.607	126 37.369							
13	KIN 0	1442	BO	NET		014	50 51.61	126 37.37	393	250			DLT		
13	SC	1556	BE	ROS		015	50 53.434	126° 45.737	232	225	119-131		DLT	✓	Very close to bottom
		1602	BO				50 53.418	126° 45622							
		1615	EN				5053.395	126° 45461							
13	WP	1718	BE	ROS		016	50° 50.846	126° 56.450	180		132-142		DLT	✓	Fluorometer noisy 4 mab
		1723	BO								NOTE - NO 143				
		1734	EN				50° 50.880	126° 56510		176	[illegible]		missed	surface	sample
13	QCS2	1818		ROS		017	50° 46.6[illegible]5	127 2.280	223		144-156				Stripper Sample # 143 2 mab
							50°46.609	127 2.284		222					
		1835					50° 46.594	127 2.288							
13	QCS6	2011	BE	ROS		0018	50 52.411	127 21.611	151	141	157-166			/	
		2015	BO				50 52.421	127 21.600							
		2026	EN				50 52.424	127 21.602							

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Notes: _____

NO SAMPLE 143 - MISSCOUNT BY WATCH

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month | **Year** | **Ship** | **Cruise ID**

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
15	Bowie North	2026	BO	NET		0019	53° 16.313	135° 40.116	430	250			SR/TL		Bongo UNH
15	Bowie South	21 32	BO	NET		0020	53 16.33	135 39.11		250			"		Bongo UNH
18	LG01	0405	BE	ROS		021	49 20 50	126 35.05	55		167	1	HSR	✓	BOT @ 5m
		0407	BO				49 20 50	126 35 05		45					MISFIRE #1 (NO SAMPLE)
		0409	EN				49 20 49	126 35 04							→
18	LG02a	0444	BE	ROS		022	49 18 71	126 38 13	100		168 - 177	10	HSR	✓	CALLED LG01 LG02
		0446	BO				49 18 71	126 38 12		90					LG02 = LG02a
		0454	EN				49 18 70	126 38 11							
18	LG07	0518	BO	NET		023	49 18 69	126 38 13	100	90					BONGO
			EN				49 18 69	126 38 13							
18	LG03	0607	BE	ROS		024	49 14 97	126 43 73	122		178	1	HSR		BOT @ 5m
		0609	BO				49 14 98	126 43 71		112					
		0612	EN				49 14 98	126 43 70							

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This page is for any notes or observations

Date	Time	PDT
Sep 14	0800	- on station CSJ1-A mooring for recovery. - stopped over mooring ranges = 111, 114 - saw mooring on sounder. - waiting for heavy fog to clear.
	1208	- fog has thinned but still limits visibility, but we will attempt recovery - we have set up Gonio DF (for Argos) - we launch small boat - increase range of visibility.
	1225	- directly above mooring ranges 95, 92, 95, m → 98m. - moving off for release app. 1-2 cables - 133m, 133, 136, m → 249 252 m → 271 m, 277 m.
	1232	- sent B540 got "rec'd + execut'd"
	1233	- sighted on surface. - recovered without incident Argos working, Novatech working Transpounder working

CALLED LG01-LG02 in FILE

Unfortunately the PATC had failed on deployment acc. data
- there was water in the case
- electronics still respounding, battery voltages were nearly new.
- the battery case and electronics were damp throughout.
- can not redeploy this instrument.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month SEPT **Year** 2008 **Ship** TULLY **Cruise ID** 2008-50 Page 5 of _____

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
18	LG04	0700	BE	ROS		025	49 11.323	126 49.373	146	136	179-188	10	H S T	/	
		0704	BO	0			49 11.305	126 49.342							
		0714	EN				49 11.310	126 49.339							
18	LG04	0725	BO	NET		0026	49 11.310	126 49.339	146	136					Bongo UNH
18	LG05	0815	BE	ROS		0027	49 7.382	126 55.234	275	265	189	1		/	bottle C 5m
		0823	BO				49 7.360	126 55.164							chl, sal, nut
		0828	EN				49 7.344	126 55.134							
18	LG06	0915	BE	ROS		0028	49 3.494	127 1.150	958	948	190	1		/	bottle C 5m
		0934	BO				49 3.514	127 1.222							chl, sal, nut
		0951	EN				49 3.552	127 1.261							
19	LD10	0058	BE	ROS		0029	48 32.014	126 36.506	1503	1494	191-200	20		/	
		0122	BO				48 31.944	126 36.481							
		0157	EN				48 31.937	126 36.413							
19	LD10	0212	BO	NET		0030	48 31.937	126 36.413	1494	280					Bongo UNH

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Notes:

Transmissometer to be cleaned before each cast, do not use Ammonia products

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 06 March 2008

This page is for any notes or observations

Date	Time PDT	
Sep. 14	1319	- launched CSJ1-B in 91.5 m water at position 52° 02.020' 131° 12.010'
	1330	- head for Bowie Seamount

* The PATC instrument appears to have flooded or moisture has condensed inside. (Maybe both) The battery pack was moist throughout and there was app. 2-3 teaspoons of water in the case and on the electronics. Strangely there was no corrosion. The battery pack voltages were near new. The data showed it stopped on deployment May 16. — Decide not to redeploy.

Date	Time PDT	
Sep. 15	0755	- on station BS1-B for recovery. - directly over mooring and getting 90 m range consistantly. the mooring position is off from recorded position. - move off drift over 108, 89, 79, 40, 36, 44, 51, 9 over position. - switched dunking transducer for broader beam angles — shallow water
	0821	- small boat in water with sounder hardwired on. - getting random ranges but also several at app. 330 m ranges consistant with our relation to mooring. - sent release code multiple times - got "rec'd + executed." but bad ranges. - drifting away and mooring not sighted on surface. - switch back to hull transducer and move closer.
	0837	- moving over 110 m, 72m, 64m. - drifting away - lost contact! — nb: visibility app 1 mile — not a problem. - moving closer 109, 91, 47, 44, 46, 40, 42

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2008 **Ship** Tully **Cruise ID** 2008-50

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
19	LD09	0258	BE	ROS		0031	48 35.55	126 29.80	1087		211	1	Hm	✓	BOT @ 5m
		0308	BO				48 35.51	126 29.75							NO SAMPLE - BOT.
		0318	EN				48 35.57	126 29.73							ALWAYS TRIGGER
19	LD08	0400	BE	ROS		032	48 39 (16)	126 23 (50)	780		212 - 228	17	HSTP	✓	
		0414	BO				48 39 16	126 23 50		770					
		0434	EN				48 39 13	126 23 57							
19	LD07	0526	BE	ROS		033	48 42.65	126 16 45	391		229	1	HSTP	✓	BOT @ 5m
		0532	BO				48 42 62	126 16 45		390					ALTIMETER NOT
		0536	EN				48 42 60	126 16 43							WORKING
19	LD06	0619	BE	ROS		034	48 46.30	126 10 14	136		230	1	HSTP	✓	BOT @ 5m
		0621	BO				48 46 27	126 10 13		125					ALTIMETER GOOD
		0623	EN				48 46 29	126 10 13							
19	LD05	0700	BE	ROS		035	48 49.571	126 3.433	91	80	231 - 239	9		✓	
		0711	BO				48 49 571	126 3.439							
		0717	EN				48 49.565	126 3.426							
19	LD04	0757	BE	ROS		0036	48 52.999	125 56.953	65	55	240	1		✓	
		0800	BO				48 52.990	125 56.962							
		0802	EN				48 52.986	125 56.962							

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Notes: _____

Date Time PDT BSI-B cont'd

This page is for any notes or observations

0854 - coming out of gen mode as we drift off. - better
- sent release code - got "recd + execu'd" each time but with bad codes
- move back over position confirm it has not come up

- approaching station 171, 114, 111, 106, 100, 88, 69, 54, 50, 45, 41, 45
↑ drifted over.

52, 60, 62, 97, 105, range 142 - sighted on surface.
↑ release ↑ release again.

*recovery was difficult in the shallow water situation.
- we had to be very close
- the Feb recovery of BSI-A had no chance with deteriorating conditions + lack of time
- the ad hoc mooring tech approach is not a good strategy. It required thorough knowledge of the command units and release to effect recovery

0926 - on board heavily fouled.

0938 - stopping over BSI-A for recovery
- out of generator mode, all sounders off, small shut down.
- stopped over position - no responses from release. multiple ranges no response.
- turned on IO transponder - ranging no consistant responses - random results.
- at app. 200 m from position - moved back over position.

1005 - on position drifting away - no contact with release or transponder.
- a 100 m distance sent multiple release commands nothing sighted on surface
- move off to repeat manouver.

1019 - 200 m up drift of position moving closer. - ranging and release multiple times without result - no response from either release or transponder.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2008 **Ship** Tully **Cruise ID** 2008-050

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
19	LD04	0812	BO	NET		0037	48 52.986	125 56.962	66	55			SK		Bongo UNIT
19	LD03	0854	BE	ROS		0038	48 56.609	125 50.674	48	38	241	1	SK	—	
		0856	BO				48 56.612	125 50.717							
		0908	EN				48 56.616	125 50.734							
19	LD02	0924	BE	ROS		0039	48 58.315	125 47.324	44	34	242-246	5		—	
		0927	BO				48 58.301	125 47.291							
			EN				48 58.301	125 47.336							
19	LD02	0938	BO	NET		0040	48 58.301	125 47.336	44	36					Bongo UNIT
19	LD01	1010	BE	ROS		0041	49 0.118	125 43.702	37	27	247	1			
		1013	BO				49 0.119	125 43.780							
		1017	EN				49 0.114	125 43.771							

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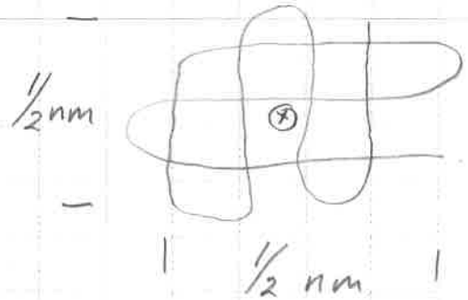
Notes: _____

Date Time PDT BSI-A cont'd. This page is for any notes or observations

Sep. 15 1045 -steaming an app. ½ nm x ½ nm grid pattern over position to search for mooring -sending range continuously.



something like this over mooring position
-steaming app. 3-4 knots.

1138 - still no contact
1212 - ditto } there have been several very long range 4+ Km hits. randomly with no repeatability

1353 - no contacts search ended - presume mooring is lost.
- proceed to complete 2 bongo stations north + south of Bowie.

- cancelled deployment of BSI-C mooring.
  - the PATC at CSJ1 - failed on deployment and leaked
  - the PATC from BSI-B operated for app ½ time Feb. - May and then failed. No readily identifiable reason
    - decided to take it back to troubleshoot and test
    - it may be deployed in Feb Sta. P cruise.
- called Scott to depart Tuesday afternoon + overnight in Port Hardy to meet ship early Wednesday morning. - asked for more O_2 cases, radios, SBE pressure readout, inner tube material

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month 9 **Year** 2003 **Ship** John P. Tully **Cruise ID** 2003-50

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	EF01	0152	BE	ROS		0042	49 5.524	125 11.651	34	25	248-251	4	SR	✓	bot'z did not
		0158	BO				49 5.564	125 11.648							fire
		0201	EN				49 5.567	125 11.642							
20	EF02	0227	BE	ROS		0043	49 5.015	125 10.295	72	62	252-257	6		✓	
		0230	BO				49 5.009	125 10.286							
		0235	EN				49 4.993	125 10.264							
20	EF03	0300	BE	ROS		0044	49 04 26	125 09 38	119		258-274	17		✓	
		0302	BO				49 04 25	125 09 37		110					
		0311	EN				49 04 24	125 09 33							
20	EF04	0344	BE	ROS		0045	49 03 1427	125 08 5920	58	45	275-279			✓	
		0346	BO				49 03 1298	125 08 5818							
		0351	EN				49 03 1152	125 08 5930							
20	EF 05	0419	BE	ROS		046	49 02 46	125 09 15	202		280-292	13		✓	
		0422	BO				49 02 45	125 09 14		190					
		0435	EN				49 02 43	125 09 15							

Cast Type:
BOT = Bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD
SET = Fish Set
USW = Sea Water Loop
MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter
____ = _____

Bottle Firing Method:
US = Up / Stop
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Time Code:
BE = Beginning Time of Cast
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RE = Recover Mooring Time

Transmissometer to be cleaned before each cast, do not use Ammonia products

Notes: _____

Date	Time PDT	This page is for any notes or observations
Sep. 15	1803	- en route to Quatsino.
Sep. 16	0730	- steaming all day - preping equipment and office work
Sep. 17	middle of night	arrived in Quotsino.
Sep. 17	0730	- off Quatsino Village - preping to land Grace and Tara.
	0800	- launched small boat to take Grace + Tara - Scott checks in by cell phone - on jetty
	0845	- Scott, Josh, Peter join ship. we depart for CTDs on LG line. (Estevan Pt.) ETA 2000
Sep. 18	0730	- on station E01-TT for recovery. -seen on sounder
	0735	- had 16D9 recorded as range code which is wrong should be 16B5 - using 16B5 ranges 131, 131, 125 moving away to release spot - 121, 120, 122 → 166, 180, 196, 246 (lost contact - too far) moving back to app. 1 cable off. - started reacquiring 288, 273, stopping up.
	0748	- stopped 240m rng. - drifting off.
	0750	- rng 319 sent release code 16B5 + 1655 "rec'd + execu'd" - sighted on surface within 1 minute. - recovered without incident.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month SEPT | **Year** 2008 | **Ship** TULLY | **Cruise ID** 2008-50

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	EF 06	0500	BE	ROS		047	49 01.80	125 09.17	152		293-303	11	HSR	✓	
		0502	BO				49 01.78	125 09.18		140					
		0513	EN				49 01.75	125 09.18							
20	EF 07	0533	BE	ROS		048	49 01 27	125 09.37			304-312	9		✓	
		0534	BO				49 01 26	125 09 38							
		0543	EN				49 01 23	125 09 40							
20	EF 08	0603	BE	ROS		049	49 00 67	125 10 21			313-320	8		✓	
		0604	BO				49 00 67	125 10 21							
		0610	EN				49 00 65	125 10 29							
20	EF 09	0632	BE	ROS		050	49 00 09	125 10 82	65		321-326	6		✓	
		0633	BO				49 00 09	125 10 82		55					
		0639	EN				49 00 08	125 10 85							
20	EF 10	0703	BE	ROS		051	48 59.836	125 11.201	101	91	327-334			✓	opps - ignore first 9m, 2nd ove okay.
		0709	BO				48 59.936	125 11.206							
		0716	EN				48 59.922	125 11.212							
20	EF 11	0734	BE	ROS		0052	48 59.103	125 11.057	85	75	335-341				
		0739	BO				48 59.122	125 11.050							
		0744	EN				48 59.124	125 11.034							

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Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 06 March 2008

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Date	Time	PDT
Sep 18	0954	- deployed EOI-UU in 101.8 m (on sounder) at position 49°17.290 126°36.130'
		- head for recovery of A1 mooring.
	1507	- on station A1-TT for recovery.
		- range = 547 m. 547 m. (have been ranging as we approach with good communication from appp. 1.3 km away)
		- moving 2 cables back to release 547 → 595 → 711
	1519	- 711
		- 748 released got "rec'd + excc'd" - immediate ranging = 710, 697, 658, 654, 649,
	1523	- sighted on surface
		→ RCM7 9360 lost - broken out of body band.
		→ line was cut immediately above buoy, right at second nico sleave
		→ ADCP + float seem unscathed.
		- head for LD Line CTDs over night.

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2008 **Ship** Tully **Cruise ID** 2008-500

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
							Latitude	Longitude							
20	EF12	0815	BE	ROS		0053	48 57.954	125 10.513	93	83	342-350	9	SK	—	
		0918	BO				48 57.996	125 10.514							
		0925	EN				48 58.006	125 10.525							
20	EF13	0843	BE	ROS		0054	48 56.504	125 10.697	104	94	352-360	9	SK	/	
		0846	BO				48 56.501	125 10.700							
		0854	EN				48 56.496	125 10.702							
20	EF14	0919	BE	ROS		0055	48 54.018	125 12.977	168	98	361-369	9	SK	/	
		0922	BO				48 54.018	125 12.977							
		0930	EN				48 54.030	125 12.983							

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Date	Time PDT	
Sep. 19	0700	- on station AI-UU for deployment
		- prep. mooring
	1010	- launch AI-UU in 508 m depth at position 48° 31.765' 126° 12.228'
		- this is almost exactly on the same position yet the depth is app. 5-6 m deeper. ?
		- head for Uclulet to drop of Josh.
	1330	- launched small boat - Josh leaves ship for a ride back with a friend - Josh's sister is marrying Sat. and he is to catch a flight
		- continue on to recover mooring EF04
	1747	- moving to station EF04 for recovery.
	1756	- ranges = 424, 409, 261 → 238 → 192 → 142
		- range = 123 as we pass closest to it.
		- moving away 131 → 147 → 170
	1803	- 226 m sent release code "rec'd + exec'd"
	1804	- sighted on surface
		- recovered without incident - head for EF01 + CTD/Rosettes.

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Date	Time	PDT	
Sep. 20	0700		- on station EF04-D for deployment
			- setup mooring and selected new position 110 m app.
	0825		- launched EF04-D in 108 m (app. ±1.5m tide) at position 49° 03.868' 125° 09.106'
			- head in to I.O.S. - intend to recover ETA 1600-1700 hrs.
			- added second engine
			- coming up Juan de Fuca encountered heavy fog. and sports fishing boats - progress significantly slowed. - could not recover AS04 - " " land people in Victoria (as intended to meet travel arrangements)
			- stayed over night to tie up first thing Sunday morning.
Sep. 21	0730		- Dave + I stay - rest of crew departs.
	0815		- Jeff, Emmet, + Alison join ship. - load equipment.
	1030		- all loaded ready to go.

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Date	Time PDT	
Sep. 21	1030 - 1500	- successfully deployed 3 mooring legs of OTTB mooring - refer to UVic records and Jeff Kennedy
	1500 - 1700	- off loading deck equipment
Sep. 22	- 0800 - 1100	- off loading all equipment from ship completed.