

DAILY LOG BOOK

MISSION
NUMBER

2002-28

DATE:

From: 26 Aug

to: 2 Sept 2002

VESSEL:

Vector

PROJECT:

BC Inlets

INSTITUTE OF OCEAN SCIENCES
OCEAN SCIENCES AND PRODUCTIVITY DIVISION
SIDNEY, BC, CANADA

Captain: Scott Doan
 Second Officer: Mark Meester
 First Officer: Steve Kennedy
 Third Officer: 1

Mission Participants / Agencies: IOS

[illegible][illegible]

Data logging computer:

Data acquisition program:

CTD deck unit make: _____ model: _____ serial number: 0619

Primary CTD

Make: Seabird model: 911plus serial number: 0585
 Primary temperature serial number: 2023
 Primary conductivity serial number: 1743
 Secondary temperature serial number: 2106
 Secondary conductivity serial number: 1764

*Temp sensors not tracking well.
 Large difference.*

Temp sensors not tracking well.
Large difference.

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:	_____
Oxygen sensor:	_____	Model:	_____	s/n:	_____
PAR sensor:	_____	Model:	_____	s/n:	_____
Other sensors:	_____		_____	s/n:	_____
Other sensors:	_____		_____	s/n:	_____
Other sensors:	_____		_____	s/n:	_____
Other sensors:	_____		_____	s/n:	_____

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

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month <i>August</i>					Year <i>2002</i>			Ship <i>Vector</i>		Cruise ID <i>2002-28</i>				
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
27	FS-05	2225	RE											1525 PDT released
														All on board at 1559 PDT
28	TC-02	0037	RE											1737 PDT released
														All on board at 1759 PDT
28	TrC1	0259	ROS	BE	00/	50 43.64	126 10.77	284						
		0306		BO		50 43.70	126 10.72		264	1-14	14	DA	✓	
		0326		EN		50 43.80	126 10.23							
28	TrC25	0446	ROS	BE	2	50 50.34	126 19.85	300		15-28	12	DA	✓	
		0454		BO		50 50.32	126 20.06		290					
		0515		EN		50 50.31	126 20.45							
28	FIS	0634	ROS	BE	3	50 47.03	126 36.68	333						
		0641		BO		50 47.03	126 36.69		321	29-42	14	DA		
		0703		EN		50 47.01	126 36.80							
28	PP1	0746	ROS	BE	4	50 48.91	126 31.53	166	137	43-52	10	DL		
		0750		BO		50 48.93	126 31.61							
		0802		EN		50 48.92	126 31.81							
28	KIWO	0835	ROS	BE	5	50 51.72	126 37.29	395	400	53-67	15	DL		
		0844		BO		50 51.73	126 37.26							
		0904		EN		50 51.68	126 37.17							

Cast type:

BOT = bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD

USW = sea water loop
 MOR = mooring
 NET = net haul
 DRF = drifter

bottle firing method:
 • US = up / stop
 • UN = up / no stop
 • DN = down / no stop

Time Code

• BE = beginning time of cast
 • BO = bottom time of cast
 • EN = end of cast time

DE = deployment time
 MR = messenger release time
 RE = recover mooring time

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

22 March 2002
 Daily_log_book.doc

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month <i>August</i>					Year <i>2002</i>			Ship <i>Vector</i>				Cruise ID		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
28	KIN1.5	0952	ROS	BE	6	50 56.17	126 28.90	480	470	68-84	17	JL		2 trips depth 10. bottle 14 leaking
		10:02		BO		50 56.18	126 28.94							Seasave crashed
		10:21		EW		50	126							
28	SC	11:40	ROS	BE	7	50 53.42	126 45.69	235	218	85-97	13	JL		Stopped acquisition
		11:45		BO		50 53.43	126 45.64							
28	SC	11:52	ROS	BO	8	50 53.43	126 45.56					JL		Up cast
		12:02				50 53.44	126 45.48							
28	WP	13:00	ROS	BE	9	50 50.84	126 56.45	183	176	98-108	11	JL		
		13:04		BO		50 50.85	126 56.43							
		13:15		EW		50 50.88	126 56.51							
28	FS_06	1716	DE			50° 47.082	126° 36.768	335m						Surface float submerged at 1016PDT Anchor released at 1014PDT
28	TC 03	1934	DE			50° 49.296	126° 23.663	234						Surface float submerged at 1234PDT Anchor released at 1234PDT
28	KNI	22:43	ROS	BE	10	50 38.09	126 25.28	260	250	109-122	14	JL		
		22:48		BO		50 38.08	126 25.25							
				EW		50	126							

Cast type:
 BOT = bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD

USW = sea water loop
 MOR = mooring
 NET = net haul
 DRF = drifter

bottle firing method:
 • US = up / stop
 • UN = up / no stop
 • DN = down / no stop

Time Code
 • BE = beginning time of cast
 • BO = bottom time of cast
 • EN = end of cast time

DE = deployment time
 MR = messenger release time
 RE = recover mooring time

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

22 March 2002
 Daily_log_book.doc

FS-06

Additional comments

TC-03

TIME IN WATER

Time
SUBMERSION

Left Column		Additional comments	Right Column	
30m	30" #2591 30" #3016 Pinger #8822 RCM #7893	PST Time in water 09.59	30m SS30 #3005 Pinger 6591 S4 # 0652	12:17 12:30
50m	ADCP # 1826 30" #3012 RCM # 3012	10.02 10.04	90m SS28 #2569 RCM # 8211	12:19
150m	30" #3011 RCM # 6924	10.06	150m SS2568 RCM # 1015	12:21
210	RCM # 6917	10.08	210 RCM # 1939	12:23
	Pinger #6945 AR # 182 DEGH	(10 12)	Pinger 9314003C AR # 465 ABFF	12:24


 anchor released
 at 1014 PDT
 1016 Surface float submerged
 335m water depth: $50^\circ 47.082$ $126^\circ 36.768$


 12:34 PDT
 50° 49.296
 234m
 126° 23.663

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month					Year			Ship				Cruise ID		
Aug.					2002			Vector				2002-28		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
28	PE-DO	2345	ROS	BO	11	50 40.26	126 28.95	48				D8	✓	
		2347		BO		50 40.26	126 28.95		40	123-130	8			
		2354		EN		50 40.27	126 28.95							
28	PE-DO	2343	RE			50 40.232	126 28.894							PE-DO#2 recovered YSI - disturbed at 1643 PDT
	PE-DO	2356	DE			50 40.222	126 28.894							PE-DO#3 deployed YSI #929A at 1656
29	KNO	0056	ROS	BE	12	50 38.30	126 35.07	62						
		0101		BO		50 38.32	126 35.13			131-136	6	DA		
		0108		EN		50 38.33	126 35.23							
29	BIS	0206	ROS	BE	13	50 35.99	126 43.64	146						
		0210		BO		50 35.99	126 43.63		135	137-145	9	DA	✓	
				EN		50 36.00	126 43.74							
29	GCS1	0546	ROS	BE	14	50 40.08	126 46.27	155						
		0550		BO		50 40.13	126 46.30		145	146-155	10	DA		
		0601		EN		50 40.27	126 46.39							

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month <u>August</u>					Year <u>2002</u>			Ship				Cruise ID <u>2002-28</u>			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
29	QCS1.5	06:47	ROS	BE	15	50 42.87	126 55.56	140	134	156-165	10	JL			
		06:50		BO		50 42.86	126 55.57								
		07:00		EN		50 42.76	126 55.66								
29	Sm5	15:39	ROS	BE	16	51 21.30	127 06.19	107		166-173	8	JL			
		15:42		BO		51 21.29	127 06.17								
		15:49		EN		51 21.29	127 06.12								
29	Sm4	16:12	ROS	BE	17	51 21.61	127 09.00	182		174-184	11	JL		51 21.61' lat?	
		16:16		BO		51 21.60	127 09.01								
		16:26		EN		51 21.55	127 09.04								
29	Sm3	17:02	ROS	BE	18	51 18.50	127 14.68	325		185-199	15	JL			
		17:09		BO		51 18.50	127 14.67								
		17:28		EN		51 18.46	127 14.68								
29	Sm2	18:13	ROS	BE	19	51 18.05	127 22.16	355	320	200-214	15	JL			
				BO		51 18.07	127 22.15								
		18:32		EN		51 17.98	127 22.15								
29	Sm1	19:08	ROS	BE	20	51 18.71	127 29.94	213	200	215-226	12	JL			
		19:13		BO		51 18.71	127 29.92								
		19:24		EN		51 18.72	127 29.81								

Cast type: USW = sea water loop • bottle firing method: • Time Code
 BOT = bottle cast, no CTD MOR = mooring • US = up / stop • BE = beginning time of cast DE = deployment time
 CTD = CTD without Rosette NET = net haul • UN = up / no stop • BO = bottom time of cast MR = messenger release time
 ROS = Rosette plus CTD DRF = drifter • DN = down / no stop • EN = end of cast time RE = recover mooring time

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

22 March 2002
 Daily_log_book.doc

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month August					Year 2002			Ship				Cruise ID 2002-28			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
29	RI 1	22:20	ROS	BE	21	51 26.38	127 38.13	333	320	227-241	15				
		22:27		BO		51 26.35	127 38.14								
		22:44		EN		51 26.29	127 38.19								
29	RI 2	23:28	ROS	BE	22	51 31.22	127 33.64	335				DA			
		23:36		BO		51 31.16	127 33.63		325	242-256	15				
		23:53		EN		51 30.98	127 33.76								
30	RI 3	00:34	ROS	BE	23	51 35.89	127 32.09	331							
		0041		BO		35.82	32.09			257-271	14	DA			
		0100		EN		51 35.70	127 32.27								
30	RI 4	0136	ROS	BE	24	51 38.91	127 26.67	304							
		0143		BO		51 38.93	127 26.64		290	272-285	14	DA			
		0200		EN		51 38.91	127 26.55								
30	RI 5	0239		BE	25	51 40.70	127 19.89	200							
		0246		BO		51 40.71	127 19.90			286-297	12	DA			
		0259		EN		51 40.75	127 19.84								
30	RI 6	0402		BE	26	51 43.71	127 27.20	210		298					
		0408		BO		51 43.67	127 27.19		200	298-309	12	DA			
		0422		EN		51 43.58	127 27.17								

Cast type: USW = sea water loop • bottle firing method: • Time Code
 BOT = bottle cast, no CTD MOR = mooring • US = up / stop • BE = beginning time of cast DE = deployment time
 CTD = CTD without Rosette NET = net haul • UN = up / no stop • BO = bottom time of cast MR = messenger release time
 ROS = Rosette plus CTD DRF = drifter • DN = down / no stop • EN = end of cast time RE = recover mooring time

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

22 March 2002
 Daily_log_book.doc

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

MonthAug.					Year2002			ShipVector				Cruise ID2002-28			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
30	mc1	14:28	ROS	BE	27	52 22.16	128 21.28	260		310-322	13	JL			
		14:33		BO		52 22.13	128 21.32								
		14:46		EN		52 22.07	128 21.39								
30	OP	15:53	ROS	BE	28	52 28.76	128 18.44	269		323-336	14	JL			
		15:58		BO		52 28.74	128 18.44								
		16:14		EN		52 28.71	128 18.44								
30	mc3	17:10	ROS	BE	29	52 35.33	128 14.81	382		337-351	15	JL			
		17:17		BO		52 35.34	128 14.83		375						
		17:35		EN		52 35.48	128 14.76								
30	mc4	18:48	ROS	BE	30	52 42.44	128 10.01	619		352-368	17	JL			
		18:59		BO		52 42.48	128 10.06		610						
		19:21		EN		52 42.64	128 10.16								
30	Mu1	20:29	ROS	BE	31	52 52.53	128 08.69	335		369-392	14	JL			
		20:35		BO		52 52.57	128 08.67		323						
		20:52		EN		52 52.66	128 08.70								
30	FC3	22:22	ROS	BE	32	52 47.91	128 25.73	562		393-409	17				May have sucked in something at the bottom of the cast.
		22:35		BO		52 47.91	128 25.58		550			DA			
		23:01		EN		52 47.87	128 25.38								

Cast type:
BOT = bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD

USW = sea water loop
MOR = mooring
NET = net haul
DRF = drifter

bottle firing method:
• US = up / stop
• UN = up / no stop
• DN = down / no stop

Time Code
• BE = beginning time of cast
• BO = bottom time of cast
• EN = end of cast time

DE = deployment time
MR = messenger release time
RE = recover mooring time

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

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month Aug					Year 2002			Ship Vector				Cruise ID 2002-28		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
31	FC2	0035	ROS	BE	33	52 39.48	128 28.19	650						Bottle 11 didn't trip
		0048		BO		52 39.41	128 28.02		440	410-426	17	DA		large diff between pri & sec. temp.
		0115		EN		52 39.50	128 28.03							only seems to be present when CTD is in motion
31	FC1	0215	ROS	BE	34	52 31.08	128 27.86	767		445				problem disappeared at ~ 250 m.
		0230		BO		52 31.11	128 27.93		750	427-446	20	DA		No surface sample taken.
		0256		EN		52 31.26	128 27.80							Tripping 2 @ 125 m. in case bottle 11 doesn't trip
31	MS	0405	ROS	BE	35	52 22.94	128 33.41	246						
		0412		BO		52 22.84	128 33.42		229	446-458	13	DA		
		0426		EN		52 22.76	128 33.48							
31					36									PROGRAM CRASHED
														HAD TO START A NEW FILE TO TRIP SURFACE BOTTLES
31	QCS6	16:23	ROS	BE	37	50 52.45	127 21.71	150		459-468	10	JL		
		16:27		BO		50 52.43	127 21.70		140					
		16:37		EN		50 52.47	127 21.65							
31	QCS4	17:21	ROS	BE	38	50 46.70	127 24.32	405		469-483	15	JL		
		17:29		BO		50 46.67	127 24.41		395					
		17:48		EN		50 46.72	127 24.58							

Cast type:
BOT = bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD

USW = sea water loop
MOR = mooring
NET = net haul
DRF = drifter

bottle firing method:
US = up / stop
UN = up / no stop
DN = down / no stop

Time Code
BE = beginning time of cast
BO = bottom time of cast
EN = end of cast time

DE = deployment time
MR = messenger release time
RE = recover mooring time

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

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month August					Year 2002			Ship Vector				Cruise ID 2002-28			
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments	
						Latitude	Longitude								
31	QCS3	1837	ROS	BE	39	50° 43.78	127° 14.99	214		484-496	13	JL	✓		
		1843		BO		50° 43.77	127° 15.08		207						
		1856		EN		50° 43.89	127° 15.33								
31	QCS5	1940	ROS	BE	40	50 49.43	127 12.06	142		497-506	10	JL			
		19:44		BO		50 49.43	127 12.06		135						
				EN		50 49.41	127 11.96								
31	QCS2	20:45	ROS	BE	41	50 46.62	127 02.30	221		507-519	13	JL			
		20:50		BO		50 46.63	127 02.31		210						
		21:04		EN		50 46.59	127 02.30								
31	QCS2.5	21:39	ROS	BE	42	50 42.50	127 05.31	201		520-531	12	JL			
		21:43		BO		50 42.51	127 05.35		190						
		21:56		EN		50 42.52	127 05.29								
31	QCS1.5	22:40	ROS	BE	43	50 42.87	126 55.59	139		532-541	10	JL			
		22:43		BO		50 42.88	126 55.55		130						
		22:54		EN		50 42.86	126 55.55								
31	QCS1	23:40	ROS	BE	44	50 39.97	126 46.31	157							
		23:44		BO		50 39.93	126 46.32		151	542-551	10	DA	✓	Raining	
		23:54		EN		50 39.97	126 46.19								

Cast type:

BOT = bottle cast, no CTD
 CTD = CTD without Rosette
 ROS = Rosette plus CTD

USW = sea water loop

MOR = mooring
 NET = net haul
 DRF = drifter

• bottle firing method:

• US = up / stop
 • UN = up / no stop
 • DN = down / no stop

• Time Code

• BE = beginning time of cast
 • BO = bottom time of cast
 • EN = end of cast time

DE = deployment time
 MR = messenger release time
 RE = recover mooring time

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

22 March 2002
 Daily_log_book.doc

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month					Sept	Year		2002		Ship	Vector			Cruise ID		2002-28
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments		
						Latitude	Longitude									
01	MI DO	0152	ROS	BE	45	50 39.41	126 39.73	51								
		0155		BO		50 39.41	126 39.74		45	552-561	10	DA	✓			
		0203		EN		50 39.42	126 39.75									
01	MI DO	0047	RE			50° 39.343	126° 39.683	45m						at 17:47 POT Recovered YSI DO probe # 9298 Covered in growth which was only found at depth of 10-15m or more took sample in scintillation vial		
01	MI DO	01:01	DE			50° 39.343'	126° 39.683'	45						Deployed YSI DO probe M0296 at 18:01 POT		
01	MT-TG	wait ashore to Satron bubbler gauge and downloaded data and checked pressure, flow and the clock Tank pressure was 1,800 PSI Flow was set to 6 (high tide) Checked clock with Doug's stopwatch + the Satron gauge was 5/sec slow Downloaded data onto SRAM card - OK w/ data														
01	BIS	0312	ROS	BE	46	50 36.041	126 43.441	130								
		0317		BO		50 36.00	126 43.41		120	562-570	9	DA				
		0326		EN		50 35.93	126 43.32									

Cast type:
BOT = bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD

USW = sea water loop
MOR = mooring
NET = net haul
DRF = drifter

bottle firing method:
• US = up / stop
• UN = up / no stop
• DN = down / no stop

Time Code
• BE = beginning time of cast
• BO = bottom time of cast
• EN = end of cast time

DE = deployment time
MR = messenger release time
RE = recover mooring time

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

Additional comments

Downloading MI-2 data file bat voltage 11.9
stopped logging at 03:46 UTC 1/09/2002

MI_02 has 5105 samples

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month <i>Sept</i>					Year <i>2002</i>			Ship <i>Vector</i>				Cruise ID <i>2002-28</i>		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
01	JS1	0412	ROS	BE	47	50 32.99	126 46.04	464						
		0422		BO		50 33.01	126 46.04			571-586	16	DA	✓	
		0442		EN		50 32.97	126 46.23							
01	BU4	1458	ROS	BE	48	50 35.31	124 54.16	640						
		1511		BO		50 35.38	124 54.14		630	587-604	18	DA		pump related problems primary?
		1541		EN		50 35.44	124 54.18							
01	Je1		ROS	BE	49			279		605-618	14	AL		
		22:49		BO		49 42.20	124 14.42		270					
		23:05		EN		49 42.07	124 14.40							
01	Je2	23:53	ROS	BE	50	49 46.33	124 09.27	600		619-635	17	AL		
02	Je2	00:04		BO		49 46.30	124 09.24		594					
		00:25		EN		49 46.26	124 09.13							
02	Je3	01:01	ROS	BE	51	49 48.62	124 02.50	683		636-653	18	AL		
		01:12		BO		49 48.63	124 02.47		670					
		01:37		EN		49 48.57	124 02.43							
02	Je4	02:17	ROS	BE	52	49 49.53	123 54.17	669		654-671	18	AL		
		02:30		BO		49 49.51	123 54.16		660					
		02:52		EN		49 49.47	123 54.03							

Cast type:

BOT = bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD

USW = sea water loop

MOR = mooring
NET = net haul
DRF = drifter

bottle firing method:

US = up / stop
UN = up / no stop
DN = down / no stop

Time Code

BE = beginning time of cast
BO = bottom time of cast
EN = end of cast time

DE = deployment time
MR = messenger release time
RE = recover mooring time

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

22 March 2002
Daily_log_book.doc

DAILY LOG

Ocean Sciences and Productivity Division

INSTITUTE OF OCEAN SCIENCES

Month September					Year 2002			Ship Vector				Cruise ID 2002-28		
Day	Station Name	Time (UTC)	Cast type	Firing Method	Event Number	Position		Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch keeper	Trans. cleaned	Comments
						Latitude	Longitude							
02	Jc5	03:31	ROS	BE	53	49 54.27	123 55.47	661		677-688	17			
		03:44		BO		49 54 33	123 55 63							pump experiences serious problem @ ~ 300 m and deeper. Hopefully, there is a spare one in the lab. DA.
		04:06		EN		49 54 41	123 55 84							
02	Jc6	05:32	ROS	BE	54	49 59.06	123 59.29	552						
		05:43		BO		49 59.17	123 59.27			689-705	17	DA		
		06:04		EN		49 59.15	123 59.96							
02	Jc7	06:47	ROS	BE	55	50 02.51	123 51.21	558						
		07:00		BO		50 02.55	123 51.12		545	706-722	17	DA		Hit Bottom
		07:24		EN		50 02.59	123 50.87							
02	Jc8	07:59	ROS	BE	56	50 05.28	123 46.71	477						
		08:11		BO		50 05.29	123 46.68		465	723-738	16	DA		
		08:34		EN		50 05.29	123 46.66							
02	Jc9	09:05	ROS	BE	57	50 08.61	123 50.53	363						
		09:15		BO		50 08.61	123 50.59			739-753	15	DA		
		09:38		EN		50 08.63	123 50.64							
02	Jc10	10:14	ROS	BE	58	50 11.38	123 57.10	276						
		10:21		BO		50 11.39	123 57.10			754-766	13	DA		Raining
		10:37		EN		50 11.43	123 57.11							