

2007-19,20 LSSL

Underway Sea Water Loop

TSG, Gas Cooler, Black Box

-Log-

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-Log-

Start Up:

TSG Start & Sea save
save to file:

SBE48

start hyperterminal config SBE48
capture data to file:

SBE38

start hyperterminal config SBE38
capture data to file:

Gas Cooler Blue

TSG:

SBE21 2145516-3297

T 3297

C 3297

SBE38 319 (assume)

SBE48 4B 3N 490022 4B0022

Underway Log

Date 16 July 2007

Daily Notes

TSG:

TSG T+C logging to file

C:\LSSL\TSG

Systems up and running

CCGS Louis St. Laurent

C30 and Canada Basin
2007-19 + 2007-20

Made our way into pack ice

Plumbing off. What time?

Black Box has sucked bucket dry.

~~Powered off @~~

Black Box: (1356 UTC)
✓

1056 local try to download data
Download to file BlackBox.dat and
renamed BlackBox ~~del~~

Black box 16 ~~16~~ ~~16~~ July 2007.dat

Powered off @ 1400 UTC

Data in not sure it has time stamp?
Last data record is:

201, 2007, 163, 1300, 50.13, 3244, -6999,
10.79, 22.09, -6999, 28.11, -6999, .052,
3.162, 0, .005, .368, 0, 0, 0, 0

Pump was ^{still} running @ 2300 July 15 UTC

16 July 1410

Svein's Blue Cooler

- ~~a~~ natural pump still running but software hung - no new updates water in system, just no new water.

leave software alone for now as SW pump is still off

Seabird TSG

Still recording data. TSG temp is 16°C so appears pump has been off a while.

~~Outside~~

In line T in engine room is 13°C

Hull Temp is 0.0942

16 July 2007

Date

Time	SW psi	Black Box Bucket Fill?	GTD Optode Logging?	TSG S	T T	⁴⁸ Hull T	In line T
1400	off	NO	NO	0	16.5	0.45	14.15

Pump restarted @ 16:30
lots of bubbles in system

Black Box turned on ~ 17:20

TSG turned on ~ 1940
~~File~~ File:

SBE 48 turned on ~ 1940
via Hyperterminal File:

SBE 38 turned on ~ 1940
via Hyperterminal File:

Blue cooler ~~turned~~ data collector
started ~ 1950
↳

But only optode is on
GTD didn't start (cause I don't
know how!!) did start lucky!

Flow not getting through solenoid
so just recirc. in cooler!

1900	18.6	yes	yes	28.4	2.7	3.0	2.2
------	------	-----	-----	------	-----	-----	-----

UTC

Date July 16

Time	SW psi	Black Box Bucket	GTD Optix Logging?	TSG S	T	T	38 T
2130	18.5	yes	yes	28.8	3.9	5.1	2.7
0000	19.0	✓	✓	30.0	2.4	4.1	1.8

July 17

0130	19.0	✓	✓	28.6	2.9	3.2	2.7
0320	18.6	✓	✓	28.3	2.9	3.3	2.0

~~Blue~~ Blue cooler powered off $\Rightarrow$ plumbing is still not in place - solenoid valve not open

SBC 38 - extension cable not good
w/ direct TSG $\rightarrow$ com3 get continuous ϕ . With ^{using SEATerm}
~~extension~~ extension get ϕ and SBC 38 timeout.
Baud rate of 4800 ok?

Serial extension is blocking signal

0858	18.7	✓	NO	27.6	4.2	4.2	4.3
------	------	---	----	------	-----	-----	-----

1140 SOLENOID BOX PLUGGED IN - WORKS OK.
ADJUSTED FLOW TO GET WATER GOING THROUGH
GAS BOX (BIG BLUE) - NO

UTC Time	SWPSI	BB Bucket	GTD logging?	TSG	Hull	inlie
				SIT	T	T

15:30 TSG display not updating
stopped data acquisition

15:37 restarted data acquisition

15:45 CONNECTED (FRESH AIR) GREEN GARDEN ROSE
TO GTD AIR INPUT (BLACK BOX)

* In Lancaster sound *

July ~~17~~ 18

0319	18.5	✓	✓	27.3	6.4	6.0	5.9
0719	18.5	✓	✓	27.6	6.8	7.4	5.2

July 18 Reset TSG axis for warmer + fresher

1247	18.5	✓	✓	25.7	1.6	0.0	2.1
------	------	---	---	------	-----	-----	-----

Ship lost power ~1730 UTC for ~30sec
1745 Pump PSI @ 5 ... ice? loss of ships power?

STOPPED pump

Stopped GTD logging and powered units off

Stopped black box

Left TSG logging

1800 Turned back on

2040 turn entire system off to remove
com-port cable

2104 restart system

black box connected to com 5

Page

9

2/20

turned power off for black box
pump makes loud squeaky noise

UTC

Date

Time	SW PSI	Black Box	Blue Cooler	TSG	Hill	iklin
		Bucket fill?	Logging?	S	T	T

→ July 19

0330
SZStopped GTD logging and
powered off.

Were ^{are} beached anchored off Resolute
and want to keep gas ~~box~~
blue cooler scum free.

And changed ^{manual} valve so no
new water goes into cooler.

1553

Turned pump off - anchored in Res,
and ship pumping...

July 20

1244

Pump on

1313

Replace 9 pin extension cable from COM3 →
SBE21 for SBE38 signal - works

Set up SBE38 instance of GPSTop to send
signal to Both COM3 & virtual COM12

Page

11

UTC Time

Date

1350

Set up SBE48 instace of GPS Gate to
take COM8 (from V-LINX box) and send
to virtual COM4 → Hyperterm capture &
to TCP Server 20176 (for NOAA SCS)

UTC	SW	BlackBox	Blueair	TSG	11/11	38
Time	PSI			\$	T	T

July 22 - outside of Bellot St

data collection

Set [✓] computer to UTC → had been
~ +4 hours so changed this to +3

Pump system:

set to manual ~~set point~~
speed to get
18 psi (Phill's recommendation)

Kate Flow control opened to 11 psi
to increase flow to TSG etc.

MAINTAINING DVPSI AT 18.87 / SETPOINT PSI AT 30.5
GAUGE READING 21 PSI AND STEADY (FLUSHING SEQUENCE AT THIS TIME)

1145 - SUMP PUMP SCREAMING -

- CHANGED OUT TO NEW ONE -
- BACK ON 1218 UTC

4-28

UTC

Date



July 23

SE

0037

Filters clogged w/ slush. ~~at~~
We started going through 10/10
ice ~~at~~ half an hour ago -
TSG shows drop in salinity
from ~28 to ~23 so very
fresh.

Pump turned off.

~~at~~ Ian notified

Blue Cooler turned off + pump

TSG turned off

Black Box data downloaded
- attempted -

26629 / 92336

{ time data logs 22/07/07/1913

PC 23/07/07/0113

↓
Time ~~reset~~ reset ~~at~~ at
0113 (mid-way
through cycle)

UTC



the clogged ^{Date} 23 July

- critters in ¹ filter's ice are larger than the critters pulled out earlier

Black Box:

Downloading - each file only receives a set amount of data. There were 92336 records requiring 4 downloads to get to the C30 data.

~~All but the last record~~
last record was likely from 23 July ~0030

New data logger time may be incorporated into ⁰⁰current next data record ~0130.

Box powered off after cycle ~0130.

24 July

set up SBE48 through comm

cons → COM11 virtual

↳ TCP/IP port 20176 (for NOAA server)

Date 24 July

UTC

Test seawater loop pump - strainers clean,
run output up & down to check engine
room alarms.

SEAWATER R/P ALARM RS-CHECKED - ALARMS AT 14 PSI
IN LAB READOUT, SYSTEM SET AND PUMPING TO SYSTEM.
P.S.

1920 Turned on

Black Box

Blue Cooler + software

TSG already on

SZ

Flow to Tanks not turned on yet. Ian
needs to ~~change~~ unplug tanks outflow
drains.

2000

Flow to tanks turned on - tried to get
control to stabilize in automatic - no
luck, just starts over & undershooting
Left in manual @ 23.8% output SE.

SEAWATER ADJUSTED TO 26.2 SET POINT / 18.3 PV
AT 16:45 P.S.

July 25

0006

Problem with SBE48 - would transmit 4-6
readings at 5s intervals and then stop,
timeout for 2 minutes and resume →

Page

16

Date July 25

0006 cont Problem was due to virtual serial port software on NOAA server sending periodic messages back through, reaching the SBE48 & causing it to pause readings. Solution - When creating port, on Settings tab, unclick NVT enable. JE

0223 Adjust pump to 26.4, PV 18.35
" " " 26.6 18.33

1345 set to 26.6, reading 18.79 in lab
TSG: 24.472, 3.322 in lab, 2.604 at intake, 3.16 @ hull

Black Box: alive

Blue cooler: collecting data & water flowing
Incubation tanks receiving water

1805 set to 26.1 reading dropped fr. 18.73 → 18.50.
2026 26.4

19:30 CHANGED SETTING TO 26.2 PSI PV DROPPED 18.3 PSI

2146 Turn off optode, GTD gas box, supply to TSG as Kugluktuk water looks a bit mucky

July 26 Adjust pump output to 13.3 PV 18.3
0040 13.5 PV 18.4

$$\text{Gain} = \frac{\% \text{ output change}}{\Delta \text{PV}}$$

	out	PV	
	26.6	18.73	
→	26.1	18.30	
Δ	.5	.43	→ Gain = 1.1

with TSG &
incubator

	13.5	18.26	
	15	20.04	
Δ	1.5	1.78	→ Gain = 0.84

incubation
only

	12.5	17.14	
Δ	1.0	1.12	→ Gain = 0.89

so try gain of 1.0

UTC

Date

July 26

1350

Adjusted clock on TSG computer to UTC, was 1 hour later.

1558

Play with feedback parameters for automatic operation - Accutune calculated were: x

Gain 6.4 change to 1.0

Ratemin 0.02 change to 0.70

Rsetmin 0.25 no change

put in Auto - wild oscillations, return to MAN.

Pressure in engine room 57, in lab 31 - looks like flow to incubators was shut off? Opened waste line. JE

July 27

1912

Start up flow to TSG pump, gas box, GTD/optode.

Start acquisition Seasave, start GTD/optode logging, restart text capture for SBE48

2328

pump settings pump output 25.6 @ 18.32 psi
PVC 18.78, reduce ∇ to 244

2356

ER strainers changed, pressure drop to 13.1, up output to 30.8 to give 18.3 psi

Page

19

Date July 27

TSG COMM setup

physical	COM 1	SBE21
	COM 2	GTD
	COM 3	SBE38 data → Interface box (via GPS Gate)
	COM 4	GPS from NOAA server → SBE21 Interface Box
	COM 5	Gas Box
	COM 6	Optode
	COM 7	VLINX part ↔ SBE38 in engine room
	COM 8	VLINX part ↔ SBE48 on hull
	COM 9	HW Port ↔ Knudsen GPS 142.2.148.78:20177 to Gas Cooler (filtered for GPRMC, GPVTG)
	COM 10	GPS Gate part sending TSG data to network 142.2.148.73:20175

July 28 Turn off waste valve on manifold, readjust
output to 25.5%

JUL-28 0626 PV 17.48 SP 25.5
All sensors good
adjust SP up to 26.5
PV 18.28 MA.

JULY 28 0640 PV = 18.30 SP = 26.4

1043 PV = 18.39 SP = 26.4

adjust to PV 18.39 SP = 26.3

All sensors OK MA

Date July 28

1851 PV was at 31 psi with output @ 26.3, no obvious change in flows to lab uses. Odd.

Turned off flow to incubators, adjusted output to 14.1 to get 18.40 JE

1926 14.2 @ 18.10 READJUST 14.2 @ 18.33

2014 adjust Kates valve slightly, had to adjust output as well. 19.1% for 18.3 JE

2104 ↓ 19.1% JE

JULY 29 0210 ENGINEERS UP TO ADJUST PUMPS
THINGS ARE NOT WELL IN SEA PUMP LAND

Dial Pressure gauge may not be working properly? Showing ~25 psi when debubbler doesn't have enough water for overflow?

43 psi @ pump
18.3 psi process variable
18.5 psi set point

~20 psi loss is consistent

may be due to? Too much pressure?
Maybe turning off flow could have pinned gauge.

Jul 29

0613 SBE48 not displayed since 0600
 hum - disconnected Hyperterm
 and re start since
 File named 07101.t but PC clock
 1 hour ahead. re-set PC clock to
 UTC no

0959 AV 17.97
 SP 18.9

bumped up SP to 19.0

AV now 18.22 no

1355 bumped up output to 19.2 to get 183 JE

1515 Turned on supply to incubation tanks,
 adjusted output to 29.5 for 18.19_{psi}
 JE

1800 adjusted $\uparrow$ 30.2% to get 18.36 JE

Jul 29

Local + 6 = UTC

UTC	Pump	PSI	Black	Blue	TSG	Date
	Set	Process	Box	Cooler	T(n) S	38 ^(T2) Hall
				(data/water)		

29 July

0300	30.2	18.3	✓	✓/✓	0.9	26.8	0.3	0.8
------	------	------	---	-----	-----	------	-----	-----

0349	31.3	18.32	✓	✓✓	-0.1	27.8	-0.6	1.1
------	------	-------	---	----	------	------	------	-----

0649	lowered set point		Process PSI was at 18.4					
	31.2	18.32	✓	✓✓	-0.2	27.7	-0.6	0.98

0958	31.25	18.35	✓	✓✓	0.54	27.6	0.32	0.63
------	-------	-------	---	----	------	------	------	------

1530	31.2	18.27	All comms OK.					
------	------	-------	---------------	--	--	--	--	--

1730	31.2	18.33	-0.12 26.0 -0.22 0.19					
------	------	-------	-----------------------	--	--	--	--	--

2144	31.2	16 → 22 ^{→11}	✓	✓✓	-0.6	24.5	-0.84	0.06
------	------	------------------------	---	----	------	------	-------	------

we've been working our way through the a big flow for ~2 hours

w/out changing demand - ~~the~~ process variable PSI has been falling

2150	called 117 (engine room) - they switched over to alternate filter while to clean first 19 psi → 12 psi in ~3 minutes!							
------	---	--	--	--	--	--	--	--

Free of ice 2157 and Process variable PSI up to 22. Reset to 26 to get 18.5-

open water:

2200	26.0	18.3	✓	✓	-0.4	25.2	-0.5	.1
------	------	------	---	---	------	------	------	----

23:10 CHANGED PSI UP TO 27.3/PV UP TO 18.30 P.S.

Page 23

31/07/07

01:20

ADJUSTED SP TO 25.0 = PV OF 18.6 STOPPED ON STATION

Date

PS.

0243

24.7 → 18.35 JE

0351

25.0 → 18.20

0532

25.7 → 18.32

no

1202

cl 7.49 so, 26.9 → 18.27

JE

1543

Fiddle with Singer valve ~~per~~ on waste line near pump to dry & stabilize control

Did Accutune w/ waste line closed off

Gain 2.534

Rate Min 0.05

Rset Min 0.22

Turn valve to waste line open, put Honeywell in Auto with params

Gain 1

Rate Min 0.05

Rset Min 0.30.

leave in Auto pump output cycling
~22 → 30% set point 18.4,
PV cycling 18.01 → 18.81.

JE & PS.

Page

24

1628 New set of feedback params
 Gain .91
 Rate .01
 Rset .50

Better - response to change in flow is slow, but stable 😊 JE.

AUG 1/07

16:30 WATER OFF TO IAN, BYPASS OPENED ^{SLIGHTLY} SYSTEM A BIT UNSTABLE 😞
 BUT SETTLING DOWN 24 → 29 SP, 16 → 21 PV
 BE SURE TO COORDINATE OPENING + CLOSING OF IAN/BYPASS AT SAME TIME PS.

1754 Still unstable in Auto - set back to Man, closed waste valve somewhat. Output 16.1% → 18.3% JE.

1821 Trick opening waste so that output of ~25% gives 18.4 & returning to Auto, but still unstable. What changed? Left in Manual. JE.

1844 Pump Man Lab BB Bluebottle TSL 38 11.1 5.1
 25.6 17.96 ✓ ✓ 9.4°C 9.2°C 8.5°C 20.3
 ↑
 entered Mac River outflow = green water

2352 25.6 17.98 ✓ ✓ 8.5 8.3 8.6 19.6

AUG 02/07

01:00 TRISO AUTO, NOT TRUSTING ENOUGH TO LEAVE ALONE 11/11/11
 BACK TO MANUAL 26.7 SP 18:39 PV 8.5.

Aug 3 1209^{UTC}outputpsi

14.5

25.31

14.0

23.97

13.5

22.45

13.0

20.80

 $\Rightarrow \text{Gain } \frac{1.5}{4.51} = .33$

Gain .33

Rate .01

Rset .2

Fuzzy - Enable

set, OK with waste
mostly off,
12.1% $\rightarrow$ 18.4

open waste, watch adjustment
17.9% $\rightarrow$ 18.4

a bit of wobble 17.8% $\rightarrow$ 18.0%
but not increasing

JE

Date 02 Aug 07

1107 Adjusted output to 26.3

SBE48 Comm was hung - disconnected, connected, hit return to get S> prompt, ds showed SBE48 is logging, 9s → all as normal. Restarted text capture file

03 Aug '07

0439	Man	Process Variable	BlackBox	BlueBox	TSG	Lab	inline	Hull
13.5	18.1	✓	✓✓	26.7	4.3°	4.1°	6.6°	

Aug 3

1209 ← s/e note on opp page.

Automatic

2010	17.8	18.4	✓	✓✓	30.8	9.1°	8.7°	8.5°

↑ Flow looks slow

(were been @ Barrow ~ 8am → 2pm local
(1400-2000 UTC)

it doesn't

look like we've seen any ship heaving.
Engines have been off for last 3 hrs

add new plot w/ Julian Day to show longer time trend

Aug 4

	black	blue	TSL	lab	38	hull
0414	17.8	18.4	✓	✓✓	20.8	5.7 5.1 4.8

Sharp transitions show lag btw
in line SBE38 and Lab T+S
~ 3 minutes

0843 also see heating on station?
transition from 7°C to 4°C

1514 In manual, output 18.1°C but PV
Varying btwn 17.6 & 18.6 °C. DE
- Due to motion of ship, probably.

	Manual OUT	PV	BB	BlueCool	PSU	lab	38	hull
2319	18.3	18.4	BB ✓	BlueCool ✓✓	27psu	8.0	7.7	7.7

Aug 5

0124 Just entering in to ice edge @ CS-28a
Parked in the ice for station. Upper
10m are FRESH (confirmed w/
CTD cast)

	Manual	P.V.	BB	BlueCool	PSU	lab	38	hull
	18.3	18.2	BB ✓	BlueCool ✓✓	18PSU	6.4	5.1	5.0

Date Aug 5

6319 Switched pump control back to auto -
 seems stable 3E
 output 18.4% PV 18.4

1026 after 3 hours on jtn CB2,
 output 25.6% PV 18.4

2223 out PV BB Cooler Salt Lab 38 Hll
 26.8 18.4 ~~M~~ vV 23.7 -0.1 -0.6 +0.02

2 more bubbles in system as we
 steam through ice ~9 lent 9+110 of
 rotten 2nd year

Even 'de-bubbled' water has bubbles.

Maybe on station will have the
 best gas info?

August 6

0158 26.8 18.4 v vV 23.9 0.2 -0.3 0.08

↓ stopped for buoy exploration, bubbles gone
 STOP AND restart TSG!

Download file

↓ 27 Jul 2007-1913
 ↓

August 6

0242 Stop TSG File
 "LSSL 2007-19_start_27Jul2007-1913"
 AND START: "LSSL 2007-19_start_6Aug2007-0242"
 ↗
 name should be 2007-20 ohwell

Black box download

C:\LSSL\BlackBox\2007-195.dat
 Julian day 204 → 218



recollect and file is back to
 2006/271 → 2007/163
 1A file 2007-196.dat

Try collect all : Area 1 2007-197.dat Area 1
 2007-19-2 .dat Area 2

pointer has gone back to 0?

August 7
 0605

SV 18.42 GP 26.9
 All sensors TOR ☺

8 Aug
 UTC Auto PV B13 GC TSG Lab 38 hull
 1800 22.1 18.4 ✓ vv 25.8 0.8 0.2 1.1

stopped for Buoy recovery

Flow seems low through GTD box ☺☺☺☺

10 Aug
 0516 26.1 18.4 ✓ vv 25.3 0.02 -0.4 0.1

213 = 31 Aug + 2 Aug Snt = 20 psu
 222 = 10th

1716 PV 18.39 SP 17.4
 GTD OK all pumps OK.

12 Aug

0028 26.4 18.4 ✓ ^{Black Box} GTD TSG
 26.2 -0.06 -0.6 ~~26.2~~

0344 No water flowing through loop
 PV 0.62 SP 100.0
 All sensors operating SBE48 - 0.245

0902 Stop acquire in Seaview - TSG dry.

Date 12 Aug

0903

Engine room reported alarm occurred at around midnight local - strainers were full of ice. Cleaned out, but at 3am local, pump was controller showed 100% output, PV of 0.6. Engine room reported pump was not running. Shot ☹️ down.

SCS showed change in TSG variables starting at 0003 local; & no sign that they returned to normal since JE

- REFERENCE TO ABOVE SITUATION: FLOW SWITCH AT THE PUMP IS A SOCKET MOUNT SENSOR BOARD; IT HAD FALLEN OUT OF THE MOUNT, RESULTING IN A STOP PUMP MOTOR CONDITION.

RE
CIRCUIT BOARD SECURED WITH EXISTING DESIGN (POOR DESIGN) ☺️
MAY NEED MODS TO HANDLE THE VIBRATION IN THAT AREA

= PUMP IN SERVICE APPROX 9:40 AM SP OF 18.4 PV OF 18.4 PS.

- PRESSURE GAUGE REPLACED DURING SHUTDOWN: PRESSURE AT MANIFOLD READS 20 PSI, AND STEADY.

1649 Download of internally recorded data from SBE48 in progress, saved to
C:\LSSL\SBE48\uploadAug121509.asc

1843 Cancelled download - blocks of Aug 11 0032-0616 repeated several times.

Initialized logging.

- not storing data internally

→
Page

32

Date Aug 12

1851

SBE48 Setup

- Connect using SeaTerm, set for SBE39
- ds shows 'not logging no battery'
- However, with external power measurements are sent to PC for recording
- Commands
 - Samplenum = 0 (erase memory)
 - Interval = 10 (sample every 10s)
 - startnow
 - gs
- use hyperterm to Com8 to capture data .sc

- FUNCTIONAL TEST EMERGENCY POWER - SYSTEM RE-STARTED 2:45 PM
AND SST AT SP 18.40 PV 18.43 AUTO MODE P.S

UTC

Aug 13

0138

Auto Set point 18.3 but process variable was ~28! Then a blast of water came out of tube & PV came down to 18. Due to block?? Lots of bubbles in de-bubbler but ~5 min later all looks normal

Date Aug 13

- 0607 Pump stopped, sensors still running, ER
will look into it
- 0631 Pump turned on again output 27.6%, 18.41 psi
- 0916 Pump at 100%, 0.98 psi, strainers being cleaned.
- 0926 Restarted, running OK 28.3% for 18.4 psi. JE
- a lot of bubbles coming up from inlet
- 0944 Output creeping up to keep pressure - ice
conditions not good - check again in
morning! Shot down pressure & QTD
logging - JE.
- 1146 Ice easier - start up pump & instruments
- 1346 All OK. 27.2% for 18.4 psi, debubbler not perfect. 😊

Aug 14

0104	26	18.4	✓	✓✓	24.9	-0.01°C	-0.6°C	-0.20°C
0542	26.4	18.4	✓	✓✓	24.5	-0.3	-0.9	-0.2
2107	26.5	18.3	✓	✓✓	24.0	-0.3	-0.9	-0.4
22:15	FLOW SWITCH FELL OUT OF SOCKET - OK NOW AT 18.45P 18.4 PV							
*	WHEN THE SYSTEM FAILS TO MAINTAIN PRESSURE THE AUTO CONTROL WILL ATTEMPT TO DO SO BY RAMPING UP TO 100%							

WHEN THE PUMP IS RE-STARTED, MAKE SURE THE AUTO SETTING HAS BEEN LOWERED FIRST, AND CHECK THE MANUAL IS LOWERED ALSO. SYSTEM PRESSURE WILL EXCEED RESPONSE TIME OF CONTROLLER SUGGEST: ALWAYS START PUMP IN MANUAL AT APPROX 25
 SET POINT OF 25 THEN SWITCH TO AUTO ONCE WATER IS FLOWING.

Aug 15

1445 UTC

Pump working PV 18.42 SP 26.1%
 All Sensors OK. NO

1526 Downloaded data from GTD in black box

	SP	PV						
2134	27.9	18.3	BB ✓	Blue Cool ✓	✓	24.3	-0.4	-0.9 -0.3

Aug 17

0439	18.4	18.4	✓	✓	25	-0.5	-1	+0.08
------	------	------	---	---	----	------	----	-------

Aug 18

04:50 ICED UP, FILTER CLOSED AT P/P, SET POINT WAY UP TRYING TO MAINTAIN, PINNED gauge UNTIL CONTROL WAS ABLE TO LOWER IT TO 18.4. STEADY OPERATION AFTERWARDS P.S.

1915 GBE 48 comms stopped. Restarted and logged.

Date Aug 17

1635 Setup Honeywell pump control to limit pump output to a maximum of 35 ~~50~~%. Access through

Setup - press repeatedly until CONTROL, then Function, press repeatedly until OUT Hi Lim, then use $\wedge$ or $\vee$ to set.

1735 Test Hi limit setting by stopping pump. Limit  Worked, max pressure on startup was 24 psi in lab. JC

18 Aug

0752 All running well 27.1% for 18.45 psi SBE48, TSG & GTD logging. JC

22:40 ICE BLOCKAGE/POWER OFF (ON PURPOSE) - UNIT FOUND IN MAN MODE AS REASON FOR NON-START CONDITION - (IT WAS ELECTRICAL) ICE STILL A PROBLEM

Shut down until we are free of heavy ice...

19 Aug

0606 Start pump, ship in open water

1312 All logging fine - notice that inline water temp near pump is -0.25 while hull temp is 0.34 - why? Is it cooled by ice in strainer? Hull temp sensor not well attached? Pump output 27.4% for 18.4 psi

Aug 19.

UTC

2101

A
out 27.3 PV 18.4 ✓Black Box pump sounds awf1...
but it still runs

GTD / blue cooler ✓✓

lab 38 hull
TSG 25.5 psu 0.26°C 0.04°C 0.35°C

20 Aug

1254 UTC

PV 18.40 SP 28.9

All sensors OK.

TSG T 0.210 C 2.163 ~~525~~

SBE38 -0.427

SBE48 T = 0.7842

GTD 1120.29942

21 Aug

0320 UTC

A
27.3 18.4 PV BB ✓ GTD ✓

24.6 psu 0.27°C 0.03°C 0.4°C

lab inline hull

1042

All logging fine, pump 27.3% to get 18.38 psi.

22 Aug

0633

"

pump 27.4% to get 18.4 psi.

Date Aug 22
Aug 23

1510 Restarted SBE48 file capture so
I could fill in holes in SCS logging.
All other logging fine, pump at 27.0% for 18.4.
05

Black box pump sounds civilised - is it still
working?

↳ water is flowing out exit 1 lb

2113

✓ ✓

28.3 18.4 PV Automatic

Black box ✓

Blue cooler ✓

TSK 22.1 0.39 -0.11 0.67

1918

22.239

73° 41.7' N

Drew 3 salt

140° 56.9' W

samples TSK #1

↳ BUT water is leaking out
corner & grey charcoal
on counter.

Water in bottom ^{petroleum} compartment. Cables
w/ water droplets. Pump ^{tubing} has been leaking - crusty
inside. Replaced Pump. First & new sample will
be midnight UTC

Aug 24

0723

Black Box replacement pump does not have the same RPM (less) than the previous pump.

We may (Mike!) switch back to old pump but with new water end but keep old motor end...

Between 1918 and now were crossed the River water plume
 S: 18.4 T₁₃: 5.13° T₃₈: 4.76° T₁₁: 5.18°

2049

Black Box ✓	GTD ✓	TSC 18.5	Lab 2.06	38 1.88	Hill 3.05
25.9 Auto	18.40 PV				

Aug 25

1520

~~Replace~~ Replace new 175 RPM drive unit with 300 RPM original. Use new pump. Originally, 175 RPM new unit had two "beaters" and 300 RPM unit had 3 so add another

beater and space all 3 by 120°

1600 - pump comes on. SS to prime then steady stream.

1620 pump ~~on~~ dry

1622 shot down - pump appears OK.

UTC

2341

BB ✓

GTD ✓

TSG

salt lab inline huff

22.4, 9.9°, 9.4°, 9.4°

out:

25.9

18.4 PV → Pump

Aug 27

0212

TSG not happy

Lab T = 16.4

In line SB 38 = 1.771

Water is flowing...

~~stop + restart~~

0215. Stop, Power off inter face box

0216. Power on

But lab T is still reading
 $T = 16.175$

$C = 3.205 \Rightarrow \text{salt} = 24.563$

SBE38 = 1.730

Hull T = 1.9

↓ ah! no flow coming out of TSG!

0228 ↓ turned knobs off & on
 Shut bubble water outflow &
now water is running through...

* Monitor Temp to exclude
 Bad data *

Aug 27

2130 UTC

BB ✓ OTD W Lab SBE38 Hull

TSG: 25.658, 2.292, 1.649, 1.515

Reduced flow from

'sampling & spigot'

OUT 14.4 } PUMP

PV 18.4

Aug 28

1133

All logging OK

Adjust Kates valve & waste shut off

so some waste coming out of debubbler.

Pump 19.0% for 18.44 psi;

Aug 28

2043

shot down GTO/optode logging.

Tody?

Approx

$$\text{July 1} \approx 7 \times 30 = 210$$

$$\text{Aug 1} \approx 240$$

$$\text{Sep 1} \approx 270$$

Data Download

Black Box

PC 208W 3.3

Connect

PC System Date Time = 29/08/07 06:30

Data Logger Date/Time = 29/08/07 07:30

↑

Note Black Box time is +1hr
 • from PC

Black Box Time = UTC + 1hr

19971 total 142290
 2007- B

C:\LSSL\BlackBox\data\2007-20.dat

Day ~~223~~ →

Day 227 → 241

other set 163-165, 165-169, 169-214, 214-227
 need MORE!!

Collect all
143290

Area 1 7 271 →
Area 2 } then 276 → 283
then ~~20~~ 163

??

Area 1 MPTR 25601 Area 2 MPTR 0

Test 1 of 116690 (163 → 165)
25600 of 116690

Area 1 MPTR 52225 Area 2 MPTR 0
Test 2, dat (~~163 → 165~~) (165 → 170)
25600 of 90066

Area 1 MPTR 78849 Area 2 MPTR 0
Test 3, dat (170, 195, 216)
25600 of 63442

while downloading
Black Box
starts
Running
@
701am
Aug 29

Area 1 MPTR 105473 Area 2 MPTR 0
Test 4, dat (216-234)
25600 of 36823

Area 1 MPTR 132097 Area 2 MPTR 0
Test 5, dat (234-241)
9216 of 10109

Area 1 MPTR 142296 Area 2 MPTR 0
Test 6.dat

of 142295

Reset! and began downloading
starting data

Are dates anywhere near right?

if Aug 29 = 241

Aug 01 = 213

July 31 = 212

July 14 = 195 START

system

↓

yes this matches

Time record where

Data groups from day #170 to #195

241	212
28	17
13	195
281	17
14	195

~~Rename~~ Files to match
#day name

Append all data into
one file

200719+20_LSS1_Day195 to 241 -
July 14 to Aug 29 . DAT

Black Box Continued...

Date

don't know when air
hose was pulled down but
at time of writing the
hose end near window // ship
bulkhead was face down into
rag in sink.

Will leave for one last
Run at 0800 UTC

Disconnect Hose so only
small tube is pulling air
(from lab)

Hose is ~50' long

Note: 0800 UTC reading may be funny
as I pulled intake in/out of water
for flow measurement prior to ~~the~~ reading.

FLOW

Black Box

2L / 48 sec Flow

2L / 50 sec

2L / 50 sec



NOT constant during cruise but
approximate (maybe slightly faster?)

Bucket Volume = 2400 mL 2.4 L

GTD / Blue Cooler

2L / 27 sec

2L / 23 sec

2L / 24 sec



approximate during cruise ... maybe a little
fast

Cooler Volume =

TSG

2L / 20 sec } also on Fast side

2L / 20 sec

2L / 20 sec

SBE38 $\Rightarrow$ measorment every ? sec
 when coming up through
 s/n hyper term?
 00319
 Navg = 4

SBE48 $\Rightarrow$ every 10 seconds

~~Copy files to P: drive and~~
~~computer went blue~~

=

Please wait to close files
 until after key.

Aug 29

2053 Download Black Box Test File
 OK at 140000

239 $\rightarrow$ 241 2022

Do stop restart TSG
 copy to P: Drive

END OF CRUISE

Aug 29 2007
 48

Date

Ag 29

Blank

Page

Samples

JUL 15 2007-20
LSSL

Seawater Loop Samples

#	LOOP :	UTC	Date/Time	Lat (N)	Lon (W)
#	Property				
1	Salt (3) ^{triplicate}		23 Aug 2007 / 1918	73° 41.7	140° 56.9
	TSG Salt = 22.239				

Loop

2	Salt, O18, Bay Alk x 1			73° 12.725	
	24 Aug 2007 / 00:05			142° 10.409	
	TSG Salt = 21.765				

Loop

3	Salt, O18, Bay Alk x 1			72° 53.897	
	24 Aug 2007 / 02:35			143° 24.084	
	TSG Salt 19.285				

4	Sal - ON STATION (STA-A)				
	24 Aug 2007 0739			72° 40.508' N	
	TSG Sal 18.366			144° 44.333' W	

5 TSG 21.604
 Sal 20.536 psu
 24 Aug 2007 2324 71° 41.326 715'
 2331 143° 15.414 12.852'
 } salt, O₂, B₁₂, Alk

6 Sal 23.994
 25 Aug 2007 70° 35.086
 140° 59.357

7 0007 26 Aug 2007 70° 25.615°N
 salt = 22.427 140 0.436°W
 sampled salt, alk, O₂, B₁₂

8 1128 26 Aug 71 54.98, 145 08.98
 TSG sal = 25.212
 sampled O₂, B₁₂, Alk, Sal

JOIS
 End of cruise 2007-20
 LSSL

DQI 12

GTD Com 2 9600
Configuration : START
Pressure 12000
Temp 48000
File : Exit

Gas Cooler Shortcut

computer setup

optode: 9600 Com 6

GTD 9600 Com 2

GPS 4800 Com 5

File Path to

LSS2/Gas Cooler Data/

C30-2007-16 July 1340

Back Page

