

Mooring Deployment Record

Project Name: <u>Effingham Inlet</u>	
Project Area: <u>"</u>	
Mooring Name: <u>EF04-H</u>	Station Name: <u>EF04</u>
Latitude: <u>49° 03.865'</u>	Longitude: <u>125° 09.108'</u>
Depth: <u>111 m 106 - 110 datum</u>	Tide: <u>Effingham Bay = +1 m</u>
Mag. Declination: <u>—</u>	Time Zone: <u>UTC</u>
Date: <u>May 21, 2011</u>	Time: <u>1536 UTC</u>
Remarks:	

Recovery

Date: <u>June 16, 2012</u>	Time: <u>1540 PDT</u>
Remarks:	

Instruments

Type	Serial #	Depth	Time In:	Time Out	Notes
<i>Soutek</i> mCat	9036	35m.			oxygen
Argonaut	D215				order 2x Bats
mCat	5310	75m.			Pump
mCat	9037	106.8			oxygen
Norkk	2646				
300kHz	2272	103.8			with Alum external

Releases

Release	Serial #	Range:	Release	Freq	Other
AR191	18U	B537	B538	8 kHz	

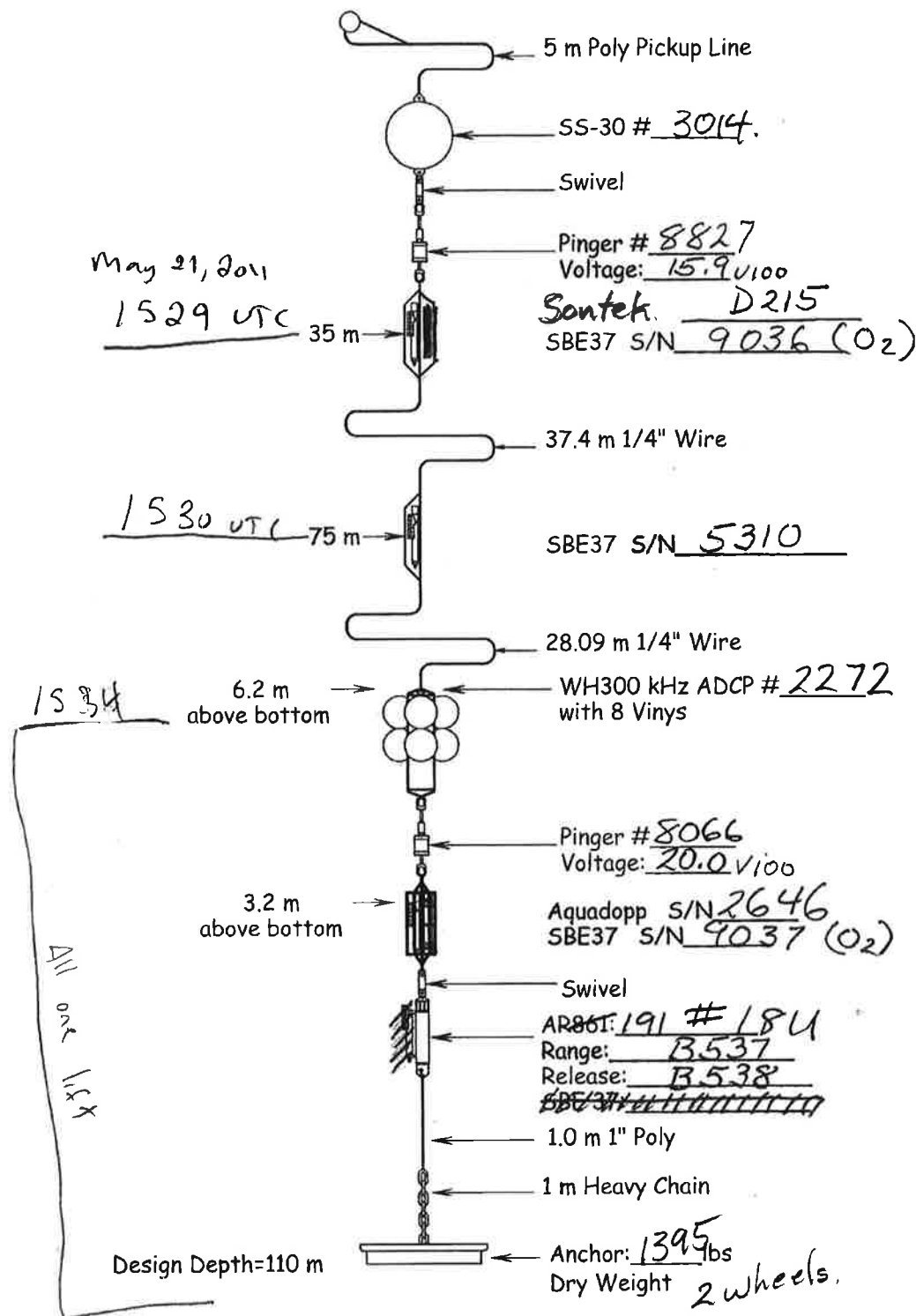
Pingers

No Argos.

Pinger	Serial #	Voltage	Freq
Helle	8827	15.9	27 kHz
Helle	8066	20.0	"

Flotation

Type	Serial #	Size	Colour	Type	Serial #	Size	Colour
SS30	3014	30"	yellow				
8Viny + frame			orange				



2 new batteries
external
1 new battery inside
both cases aluminium.

tide +1 m.
111 - 1 = 110 m datum.

EF04-H	
Latitude:	49° 3.865' N
Longitude	125° 9.108' W
Time: 1536	Date: May 21, 2011 UTC
Depth: 111 m	110 datum.

EF04-H

May 21, 2011

5 m $\frac{3}{4}$ " poly $\frac{1}{2}$ " ϕ

SS 30 # 3014 $\frac{1}{2}$ " ϕ $\frac{1}{2}$ " ϕ swivel $\frac{1}{2}$ " ϕ

Pinger 8822 15.9 v100 $\frac{1}{2}$ " ϕ

Soutek D215 SBE37 9036 $\frac{1}{2}$ " ϕ

37.95 m $\frac{5}{16}$ " wire $\frac{1}{2}$ " ϕ

→ * 8 Viny Frame WH 300 2272 $\frac{1}{2}$ " ϕ

Pinger 8066 20.0 v100 $\frac{1}{2}$ " ϕ

Nortek 2646 SBE37 9035

$\frac{1}{2}$ " ϕ $\frac{1}{2}$ " ϕ swivel $\frac{5}{8}$ " ϕ 1" ϕ

AR191 18U

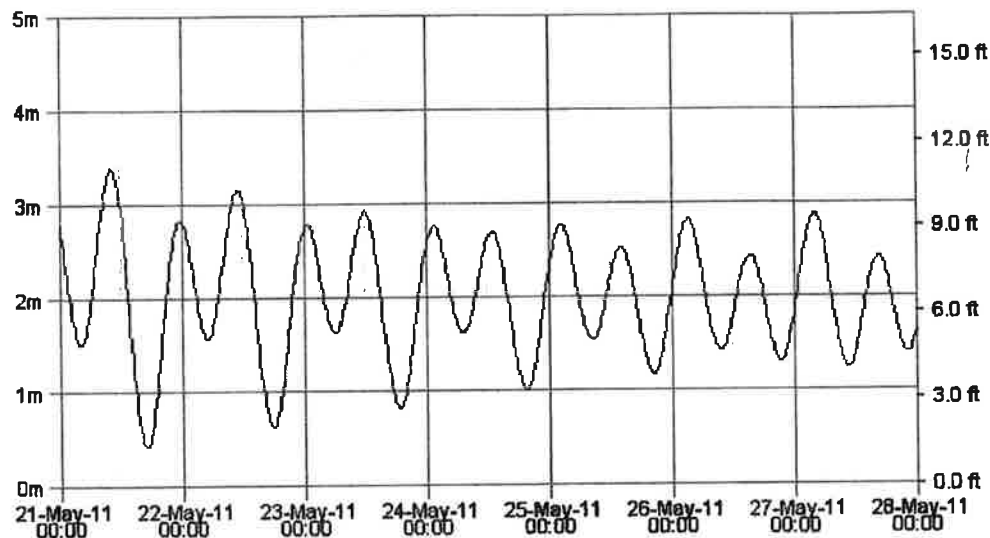
1 m 1" polysteel $\frac{7}{8}$ " ϕ

2 wheels 1395 lbs.

insert.

* { SBE37 5310 $\frac{1}{2}$ " ϕ
27.69 m $\frac{1}{4}$ " wire $\frac{1}{2}$ " ϕ

Effingham Bay (Station #8585)
7 days Tidal Prediction
 Time Zone : UTC - Reference : Chart Datum



N.B. The whole 7 days data are available in table and text formats.

Source: <http://www.tides.gc.ca/>

MicroCat SBE 37 Deployment Sheet

INSTRUMENT

Serial Number: 9036 Oxy

Sensors (C,T,P): + O₂

Firmware Version: _____

Depth Rating: 350 meters

PARAMETERS

SampleNum: 0

Storetime: Y

Interval: 3600 sec

Syncmode: N

Navg/Ncycles: /

Txrealtime: N

Reference pressure*: _____

OutputSV: N Y

Time Zone: UTC

OutputSal: Y

Start: May 21, 2011 @ 1800 UTC

*only needed if there is no pressure sensor for the salinity calculation

DEPLOYMENT

Station: EF04-H

Cruise Number: 2011-44

Latitude: _____

Water Depth: 30m 105m

Longitude: _____

Instrument Depth: 30m

Time and Date in Water: 1529 UTC May 21, 2011

Comments:

This is ~~to~~ an oxygen smp-IDO.
Order a spare ~~Red~~ yellow Battery housing.

Completed by: _____

Date: _____

uCat dep.xls SFM

MicroCat SBE 37 Deployment Sheet

INSTRUMENT

Serial Number: 5310

Sensors (C,T,P):

Firmware Version: 2.6b

Depth Rating: 1000 m

PARAMETERS

SampleNum: 0

Storetime: Y

Interval: 30 mins (1800 sec)

Syncmode: N

Navg/Ncycles: 4

Txrealtime: N

Reference pressure*: —

OutputSV: ~~N~~ Y

Time Zone: UTC

OutputSal: Y

Start: May 21, 2011 @ 1300 UTC

*only needed if there is no pressure sensor for the salinity calculation

DEPLOYMENT

Station: EF04-H

Cruise Number: 2011-44

Latitude:

Water Depth:

Longitude:

Instrument Depth:

Time and Date in Water: 1530 UTC May 21, 2011

Comments:

Completed by:

Date:

uCat-dep.xls SFM

Mooring: EF04-H
UCats X 3
Serial

5310-Pumped

Battery Calculations:

Note: 10 min sampling with a pump lasts about 220 days.

Sampling Time:

$$3.33s + (2.27 * (NAV G - 1))$$

$$3.33s + (2.27 * (4 - 1)) = 10.14s$$

Example 1: A standard MicroCAT (no external power option) with pressure sensor is set up to sample autonomously every 10 minutes (6 samples/hour), taking 4 measurement per sample (**NAV G=4**). How long can it be deployed?

Sampling time = 3.33 seconds + 2.27 seconds * (**NAV G** - 1) = 10.14 seconds

Sampling current consumption = 0.020 amps * 10.14 seconds = 0.2 amp-seconds/sample

In 1 hour, sampling current consumption = 6 * 0.2 amp-seconds/sample = 1.2 amp-seconds/hour

Pump current consumption = 0.13 amp-seconds/pulse

In 1 hour, pump current consumption = 6 * 0.13 amp-seconds/pulse = 0.78 amp-seconds/hour

Quiescent current 10 microamps = 0.01 mA

In 1 hour, quiescent current consumption = 0.01 mA * 3600 seconds/hour = 0.036 amp-seconds/hour

Total current consumption / hour = 1.2 + 0.78 + 0.036 = 2.02 amp-seconds/hour

Capacity = (5 amp-hours * 3600 seconds/hr) / (2.02 amp-seconds/hour) = 8910 hours = 371 days = 1.02 years

Number of samples = 8910 hours * 6 samples/hour = 53460 samples

Command Summary:

DDMMYY=210511

HHMMSS=200000 //(UTC)

OUTPUTSAL=Y

OUTPUTSV=Y

FORMAT=1

NAV G=4

PUMPINSTALLED=N

SAMPLENUM=0

INTERVAL=1800 (NOTE: 10 min sampling with a pump lasts about 220

days so use 30 mins)

REFPRESS= 60 (x = pressure at which the instrument is at...only used if there is no pressure sensor installed)

STORETIME=Y

TXREALTIME=N

STARTDDMMYY=210511

STARHHMMSS=180000

STARTLATER

ADCP Deployment Sheet

INSTRUMENT

Serial Number: 2272

Pressure Sensor: _____

Model: 300kHz

Depth Rating: _____

Batteries: 2x 6023 in newish cage

PARAMETERS

Number of Pings (WP): 115

Bin Size (WS): 4m

Ensemble Interval (TE): 30 mins

Number of Bins (WN): 25

Time between Pings (TP): _____

Mode 1 Bandwidth (WB): Ø

Profiling Mode (WM): _____

Pre-deployment tests: ✓

Time Zone: UTC

Compass Calibration: X

Start (TF): May 21, 2011 @ 1800 UTC

DEPLOYMENT

Station: EF04-H

Cruise Number: 2011-47

Latitude: Ø

Water Depth: 105

Longitude: _____

Instrument Depth: _____

Time and Date in Water: 1534 UTC. 21 May, 2011

Comments: _____

Completed by: _____

Date: _____

ADCP-dep.xls SFM

2272-EF04-H

PlanADCP (Advanced): Workhorse Sentinel 300 kHz [Dpl1]

BackToSC Settings View Help

Basic Expert

Environmental Setup:	Profiling Setup:	Deployment Consequences
Transducer Depth: 100 m	Pings Per Ensemble: 115	First Cell Range: 5.96 m
Salinity: 32 ppt	Number of Depth Cells: 25	Last Cell Range: 101.96 m
Magnetic Variation: 0 °	Depth Cell Size: 4 m	Max Range: 114.84 m
Temperature: 5 °C	Mode: 1	Standard Deviation: 0.29 cm/s
		Ensemble Size: 648 bytes
		Storage Required: 11.35 MB
		Power Usage: 895.92 Wh
		Battery Pack Usage: 2.0

Deployment Timing Setup:

Duration: 365 days

Ensemble Interval: 00:30:00.00

Ping Int. (✓ Auto): 00:00:15.65

☐ Ping Immediately After Deployment

First Ping Date and Time:

21-May-2011 06:00:00 PM

Notes

2272-EF04-H External Housing (alum)
2x6023 batts
Start: May21, 2011 @ 1800 UTC

CR1
CF11101
EA0
EB0
ED1000
ES32
EX11111
EZ1111111
WB0
WD111100000
WF176
WN25
WP115
WS400
WV170
TE00:30:00.00
TP00:15.65
TF11/05/21 18:00:00
CK
CS

MicroCat SBE 37 Deployment Sheet

INSTRUMENT

Serial Number: 9037

Sensors (C,T,P): + O₂

Firmware Version: _____

Depth Rating: 350m

PARAMETERS

SampleNum: 0

Storetime: _____ Y

Interval: 3600

Syncmode: _____ N

Navg/Ncycles: —

Txrealtime: _____ N

Reference pressure*: _____

OutputSV: 54

Time Zone: UTC

OutputSal: _____ Y

Start: May 21, 2011 @ 1300 UTC

*only needed if there is no pressure sensor for the salinity calculation

DEPLOYMENT

Station: EF04-H

Cruise Number: 2011-47

Latitude: _____

Water Depth: 105

Longitude: _____

Instrument Depth: 100

Time and Date in Water: 1534 UTC May 21, 2011

Comments:

Oxygen Smp-IDO

Completed by: _____

Date: _____

uCat-dep.xls SFM

Mooring: EF04-H
UCats X 3
Serial

+TWO OXYGEN
9036 attached to a sontek
5310-Pumped
9037 attached to nortek

Battery Calculations:

Note: 1Hr Sampling lasts about 630 days @ 5degrees and 100meter depth

Example:

Initialize logging to overwrite previous data in memory. Set date and time. Setup to sample every 3600 secs and do not transmit realtime. Output time, sound, and salinity in Outputformat 1.

Command Summary:

INITLOGGING
DATETIME=05212011010000
TXREALTIME=N
MINCONDFREQ=1000
ADAPTIVEPUMPCONTROL=Y
OUTPUTFORMAT=1
OUTPUTSAL=Y
SAMPLEINTERVAL=3600
SYNCMODE=N
STARTDATETIME=05212011200000
STARTLATER

SBE-37 - IDO RS232 Setup

Battery Endurance

4 batteries in series, 3 parallel strings
use a capacity value of 6Ahours

The IDO uses a battery pack with a yellow cover plate while the normal uCat uses a red cover plate. The wiring is different and cannot be used with the oxygen version.

Always use AdaptivePumpControl=Y P.12

↳ pump time increases with pressure and decreasing temperature

The Adaptive Pump Control

$$ft = A + (B * T) + (C * T^2)$$

$$f_p = e^{(p_{cor} * P)}$$

$$\tau_{au} = Q * \tau_{aw20} * ft * f_p \quad (\text{min } \tau_{au} 2.0 \text{ max } \tau_{au} 30.0)$$

$$\text{pump time} = 7.0 * \tau_{au} \quad (\text{min pump time } 15.0)$$

90362
5.00

$$A = 2.549$$

$$B = -1.106 * 10^{-1}$$

$$C = 1.571 * 10^{-3}$$

$$p_{cor} = 1.45 * 10^{-4}$$

$$Q * \tau_{aw20} =$$

90372
5.51

P = measured pressure (decibars)

T = measure temperature (°C)



Example: A uCat with pressure is sampling autonomously ~~at~~ once every hour. To ~~minimize the power required from the uCat and from the controller~~

Adaptive pump control is enabled. The uCat is to be deployed at approximately 100 dBar (100 meters) and the temp is about 5°C. OxTau20 is 5.5. How long can it be deployed.

$$\text{CTD-DO samplings} = 0.17 \text{ watts} \times 3.2 \text{ secs} = 0.544 \text{ Joules/sample}$$

$$f_t = 2.04$$

$$f_p = 1.24$$

$$\tau_{av} = 13.87$$

$$\text{PumpTime} = 97 \text{ secs} + 3.2 \text{ secs} = 100 \text{ secs}$$

~~Pump runs during sample~~

$$\text{Pumping} = 0.12 \text{ Watts} \times 100 \text{ secs} = 12 \text{ Joules/sample}$$

or

$$12 \text{ Joules/hour}$$

CTD-DO waiting while pump running =

$$0.016 \text{ watts} \times 100 \text{ secs} = 1.6 \text{ Joules/hour}$$

CTD-DO waiting between samples =

$$0.0004 \text{ watts} \times (3600 - 100) \text{ seconds} = 1.4 \text{ Joules/hour}$$

$$\text{Quiescent} = 0.0004 \text{ watts} \times (3600 \text{ secs}) = 1.44 \text{ Joules/hour}$$

$$\text{Total} = 0.544 + 12 + 1.6 + 1.4 + 1.44 = 16.984 \text{ Joules/hour}$$

$$P = 30 \text{ m} + 100 \text{ m}$$

Date

$$f_t = 2.549 + (-1.106 \times 10^{-1} * 5^\circ\text{C}) + (1.571 \times 10^{-3} * (5^\circ\text{C})^2)$$

$$2.549 - .553 + 0.039275$$

$$2.035275$$

$$f_{p(30)} = e^{(1.45 \times 10^{-4}) * 30} = e^{0.0435} = 1.0447 \text{ use } 1.29$$

$$f_{p(100)} = e^{(1.45 \times 10^{-4}) * 100} = e^{0.0145} = 1.0147$$

$$\tau = 5.5 * 2.035 * 5.124 = 13.87$$

$$\text{pump time} = 7.0 * \tau = 7.0 * 13.87 = 97 \text{ sec}$$

$$\text{CTD-DO Sampling} = 0.17 \text{ watts} * 3.2 \text{ seconds Sampling}$$

$$\text{Time} = 0.544 \text{ Joules / sample}$$

$$\text{pumping} = 0.12 \text{ Watts} * (97 + 3.2) = 12 \text{ joules / sample}$$

All calcs from
p. 13-17 of manual.

$$\text{Battery Capacity} = \frac{257040 \text{ joules}}{16.984 \text{ joules / hour}} = 15134 \text{ hours}$$

$$\text{or } 630 \text{ days}$$

Setup for uCat SMP-IDO

Initialize logging to overwrite previous data in memory. Set up to sample every 3600 secs (1hr). Do not tx realtime. output time, sound velocity + salinity with each sample.

- Init logging
 - ~~SampleInterval = 3600~~ GetCD
- DateTime = 05212011 220000 GetSD
- ~~03222011~~ GetCC
- Tx RealTime = y Get EC
- Min Cond Freq = Reset EC
- Adaptive Pump Control = Y Get HD
- Output Format = 1 DS
- Output Sal = y DC
- Sample Interval = 3600 TS
- Sync Mode = N
- Start DateTime = 05212011 220000
- Start Later

Date Time PDT

This page is for any notes or observations

May 21 0730 - on station EF04 for deployment of mooring EF04-H
- preparing on deck
- final programming of ADCP

NB: - all Ettingham CTDs were completed - the last one taken at 0334PDT

0838 - deployed mooring EF04-H in 111m water. on sounder
at position $49^{\circ} 03.865'$ $125^{\circ} 09.108'$

0845 - head for SBI mooring of recovery and redeployment.

1250 - approaching SBI-C app. 1.1 nm off - attempting to transpond while steaming
at 10 knots - no luck.
- slowed down to stop on mooring got ranges 286, 267 $\rightarrow$ 204 $\rightarrow$ 162

1305 - sent release code - range 146 got rec'd + execut'd.
- recovered without problem and prepared for redeployment

1450 - deployed SBI-D at $48^{\circ} 30.979'$ $124^{\circ} 56.100'$