<table>
<thead>
<tr>
<th><strong>Eventlabel</strong></th>
<th>JUB2010_sel_a_m_06</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Campaign</strong></td>
<td>King George Island 2010</td>
</tr>
<tr>
<td><strong>Species</strong></td>
<td>Southern elephant seal (<em>Mirounga leonina</em>)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>Adult; &gt;6 years ~9</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>Male</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>4030 cm</td>
</tr>
<tr>
<td><strong>Weight [estimated]</strong></td>
<td>2200</td>
</tr>
<tr>
<td><strong>Weight [calculated]</strong></td>
<td>1934 kg <a href="http://doi.pangaea.de/10.1594/PANGAEA.737046">http://doi.pangaea.de/10.1594/PANGAEA.737046</a></td>
</tr>
<tr>
<td><strong>Weight [measured]</strong></td>
<td>2200</td>
</tr>
<tr>
<td><strong>ARGOS PTT ID</strong></td>
<td>96499</td>
</tr>
<tr>
<td><strong>Transmitter type</strong></td>
<td>SMRU/Series 9000 SRDL/CTD</td>
</tr>
<tr>
<td><strong>Manufacturer</strong></td>
<td>SMRU</td>
</tr>
<tr>
<td><strong>PTT Serial Number</strong></td>
<td>11285</td>
</tr>
<tr>
<td><strong>PTT Software</strong></td>
<td>Software specification for CTD_GEN_07B deployment (MEOP: Temp+Salinity share 2 tx)</td>
</tr>
</tbody>
</table>
| **Setting protocol** | Transmitting via ARGOS Page transmission sequences: Until day 1464: 0 0 1 0 0 2 3 0 0 4 5 using 1 PTT numbers Satellite availability (UTC): 00: -- on -- 01: -- on -- 02: -- on -- 03: -- on -- 04: -- on -- 05: -- on -- 06: -- on -- 07: -- on -- 08: -- on -- 09: -- on -- 10: -- on -- 11: -- on -- 12: -- on -- 13: -- on -- 14: -- on -- 15: -- on -- 16: -- on -- 17: -- on -- 18: -- on -- 19: -- on -- 20: -- on -- 21: -- on -- 22: -- on -- 23: -- on -- Transmission targets: 56000 transmissions after 365 days In Haulouts: ON (one tx every 1 min 20 secs) for first 5 hours then cycling OFF for 6 hours, ON for 1 hour
Check sensors every 4 secs
When near surface (shallower than 10m), check wet/dry every 1 sec
Consider wet/dry sensor failed if wet for 7 days or dry for 99 days
Dives start when wet and below 6m for 8 secs
and end when above 6m for 0, or dry at any time
No separation of 'Deep' dives
A cruise begins if there has been no dive for 9 mins
A haulout begins when dry for 10 mins
and ends when wet for 40 secs

Dive shape (normal dives):
4 points per dive using broken-stick algorithm

Dive shape (deep dives):
none

CTD upcasts: max 2000 dbar up to 6 dbar in 2 dbar bins.
17 cut points per profile
Send the deepest 1 upcasts in each 6-hour period.
Minimum depth to trigger collection of cast:
  1000m in hour 1
  600m in hour 2
  300m in hour 3
  100m in hour 4
  50m in hour 5
  25m in hour 6
or 20% greater than current maximum.

Sample CTD sensor every 1 seconds.
Temperature: Collected, Stored. Valid range: -2.5 to 30.2 degC
Conductivity: Collected, Not stored.
Salinity: Calculated, Stored. Valid range: 28.9 to 37.1

No GPS data

TRANSMISSION BUFFERS (in RAM):
Dive in groups of 3 (6.25 days @ 10mins/dive): 300 = 1200 bytes
No 'deep' dives
Haulout: 30 = 120 bytes
6-hour summaries in groups of 3 (7.5 days): 10 = 40 bytes
No berniegrams
No timelines
Cruise: 30 = 120 bytes
No diving periods
No spot depths
No emergence records
No Duration histograms
No Max depth histograms
CTD casts (7.5 days): 30 = 120 bytes
No GPS fixes

TOTAL 1600 bytes (of about 21000 available)

MAIN BUFFERS (in 6.2 Mb Flash):
Dive in groups of 3 (416.667 days @ 10mins/dive): 20000 x 100 bytes = 2000000 bytes
No 'deep' dives
Haulout: 3000 x 16 bytes = 48000 bytes
6-hour summaries in groups of 3 (450 days): 600 x 68 bytes = 40800 bytes
No berniegrams
No timelines
Cruise: 3000 x 16 bytes = 48000 bytes
No diving periods
No spot depths
No emergence records
No Duration histograms
No Max depth histograms
CTD casts (500 days): 2000 x 164 bytes = 328000 bytes
No GPS fixes

TOTAL 2407 kb (from 6333 kb available)

PAGE CONTENTS (256 bits - 9 overhead):

PAGE 0:

PTT NUMBER OVERHEAD (28-bit code)
-----------[8 bits: 0 - 7]

PAGE NUMBER
-----------[3 bits: 8 - 10]

DIAGNOSTICS in format 0:

TX number: wraparound 11 bits in units of 32 (range: 0 to 65536)
-----------[11 bits: 11 - 21]

DIVE group in format 0:
Normal dives transmitted in groups of 3
Time of start of last dive: max 5 days 12 hours @ 30 secs = 15840

(14 bits in units of 1, range: 0 to 16383)

(recommended sell-by 5 days 11 hours)

Sell-by range: 5 days
Number of records: raw 2 bits in units of 1 (range: 0 to 3)
Reason for end: -- not transmitted --
Group number: wraparound 8 bits in units of 1 (range: 0 to 255)

Max depth: -- not transmitted --
Dive duration: odlog 1/6 in units of 30 s (range: 0 to 5715 s)

Mean speed: -- not transmitted --
Profile data (4 depths/times, 0 speeds):
Depth profile: odlog 2/6 in units of 25 dm
(0 to 23887.5 dm)
Profile times: raw 5 bits in units of 32.2581 permille (range: 0 to 1000 permille)

Speed profile: -- not transmitted --
Residual: raw 2 bits in units of 60 (range: 0 to 180)
Calculation time: -- not transmitted --
Surface duration: odlog 2/4 in units of 2.5 s (range: 0 to 588.75 s)

cf. cruise starts after 9 mins (540 secs)
Dive area: -- not transmitted --
-----------[225 bits: 22 - 246]

Available bits used exactly

=== End of page 0 ===

PAGE 1:

PTT NUMBER OVERHEAD (28-bit code)
-----------[8 bits: 0 - 7]

PAGE NUMBER
-----------[3 bits: 8 - 10]

DIAGNOSTICS in format 1:

Max depth ever: odlog 1/4 in units of 500 dm (range: 0 to 23250 dm)
-----------[5 bits: 11 - 15]
### CRUISE group in format 0:
- **Number of records:** raw 1 bits in units of 1 (range: 0 to 1)
- **Cruise number:** wraparound 4 bits in units of 1 (range: 0 to 15)
- **Start time:** not transmitted
- **End time:** max 5 days 12 hours @ 2 mins = 3960 (recommended sell-by 5 days 11 hours)
- **Sell-by range:** 5 days 4 hours
- **Duration:** raw 9 bits in units of 120 s (range: 0 to 61320 s) max duration is 16 hours
- **Speed:** not transmitted
- **Reason for end:** not transmitted

### HAULOUT in format 0:
- **Number of records:** raw 1 bits in units of 1 (range: 0 to 1)
- **Haulout number:** wraparound 3 bits in units of 1 (range: 0 to 7)
- **Start time:** not transmitted
- **End time:** max 5 days 12 hours @ 2 mins = 3960 (recommended sell-by 5 days 11 hours)
- **Sell-by range:** 5 days 4 hours
- **Duration:** raw 9 bits in units of 120 s (range: 0 to 61320 s) max duration is 16 hours
- **Reason for end:** not transmitted
- **Contiguous:** not transmitted

### SUMMARY group in format 0:
- **Transmitted in groups of 3**
- **Record could be in buffer for 7 days 12 hours**
- **End time:** max 7 days @ 6 hours = 28 (recommended sell-by 6 days 17 hours)
- **Number of records:** raw 1 bits in units of 1 (range: 0 to 1)
- **Cruising time:** not transmitted
- **Haulout time:** raw 6 bits in units of 15.873 permille (range: 0 to 1000 permille)
- **Dive time:** raw 6 bits in units of 15.873 permille (range: 0 to 1000 permille)
- **Deep Dive time:** not transmitted
- **Normal dives:**
  - Avg max dive depth: odlog 2/6 in units of 25 dm (range: 0 to 23887.5 dm)
  - SD max dive depth: odlog 2/4 in units of 50 dm (range: 0 to 11775 dm)
  - Max max dive depth: odlog 2/6 in units of 25 dm (range: 0 to 23887.5 dm)
  - Avg dive duration: odlog 1/6 in units of 30 s (range: 0 to 5715 s)
  - SD dive duration: odlog 1/4 in units of 60 s (range: 0 to 2790 s)
  - Max dive duration: odlog 1/6 in units of 30 s (range: 0 to 5715 s)
  - Avg speed in dive: not transmitted
  - Number of dives: odlog 1/4 in units of 2 (range: 0 to 93)
- **Deep dives:**
  - Avg max dive depth: not transmitted
  - SD max dive depth: not transmitted
  - Max max dive depth: not transmitted
  - Avg dive duration: not transmitted
  - SD dive duration: not transmitted
  - Max dive duration: not transmitted
  - Avg speed in dive: not transmitted
  - Number of dives: not transmitted
- **Avg SST:** not transmitted

--------[26 bits: 16 - 41]

--------[25 bits: 42 - 66]

--------[180 bits: 67 - 246]
PAGE 2:

PTT NUMBER OVERHEAD (28-bit code)
---------[8 bits: 0 - 7]

PAGE NUMBER
---------[3 bits: 8 - 10]

CTD in format 0:

End time: max 7 days @ 10 mins = 1008
    tx as raw 10 bits in units of 1 (range: 0 to 1023 )
    (recommended sell-by 6 days 23 hours)
Sell-by range: 6 days 18 hours
CTD cast number: -- not transmitted --
Min pressure: -- not transmitted --
Max pressure: raw 10 bits in units of 2 dbar (range: 6 to 2052 dbar)

Min temperature: raw 15 bits in units of 1 (range: 2500 to 35267 °C in steps of 0.001 °C)
Max temperature: raw 15 bits in units of 1 (range: 2500 to 35267 °C in steps of 0.001 °C)
    cf. Valid temperatures: -2.5 to 30.2 degC

Min salinity: raw 12 bits in units of 2 mPSU (range: 28900 to 37090 mPSU)
Max salinity: raw 12 bits in units of 2 mPSU (range: 28900 to 37090 mPSU)
    cf. Valid salinity: 28.9 to 37.1

Number of samples: -- not transmitted --
9 profile points 0 to 8 (from total of 17 cut points):
    First 8 pressures are fixed
    Min pressure is fixed
Temperature: raw 10 bits in units of 0.977517 permille (range: 0 to 1000 permille)
Salinity: raw 8 bits in units of 3.92157 permille (range: 0 to 1000 permille)

Temperature residual: -- not transmitted --
Salinity residual: -- not transmitted --
Temperature bounds: -- not transmitted --
Conductivity bounds: -- not transmitted --
Salinity bounds: -- not transmitted --
---------[236 bits: 11 - 246]

Available bits used exactly

=== End of page 2 ===

PAGE 3:

PTT NUMBER OVERHEAD (28-bit code)
---------[8 bits: 0 - 7]

PAGE NUMBER
---------[3 bits: 8 - 10]

CTD in format 1:

End time: max 7 days @ 10 mins = 1008
    tx as raw 10 bits in units of 1 (range: 0 to 1023 )
    (recommended sell-by 6 days 23 hours)
Sell-by range: 6 days 18 hours
CTD cast number: -- not transmitted --
Min pressure: -- not transmitted --
Max pressure: -- not transmitted --
Min temperature: -- not transmitted --
Max temperature: -- not transmitted --
    cf. Valid temperatures: -2.5 to 30.2 degC
Min salinity: -- not transmitted --
Max salinity: -- not transmitted --
  cf. Valid salinity: 28.9 to 37.1
Number of samples: -- not transmitted --
9 profile points 0 to 8 (from total of 17 cut points):
  First 8 pressures are fixed
  Min pressure is fixed
  Temperature: raw 10 bits in units of 0.977517 permille (range: 0 to 1000 permille)
  Temperature residual: -- not transmitted --
  Salinity: raw 8 bits in units of 3.92157 permille (range: 0 to 1000 permille)
  Salinity residual: -- not transmitted --
  Temperature bounds: -- not transmitted --
  Conductivity bounds: -- not transmitted --
  Salinity bounds: -- not transmitted --

--- End of page 3 ---
PAGE 5:

PTT NUMBER OVERHEAD (28-bit code)
----------[8 bits: 0 - 7]

PAGE NUMBER
----------[3 bits: 8 - 10]

DIAGNOSTICS in format 2:

Number of resets: wraparound 2 bits in units of 1 (range: 0 to 3)
----------[2 bits: 11 - 12]

CTD in format 3:

End time: max 3 days 6 hours @ 10 mins = 468
  tx as raw 9 bits in units of 1 (range: 0 to 511 )
  (recommended sell-by 3 days 5 hours)

Sell-by range: 3 days

CTD cast number: -- not transmitted --

Min pressure: -- not transmitted --
Max pressure: -- not transmitted --
Min temperature: -- not transmitted --
Max temperature: -- not transmitted --

ct. Valid temperatures: -2.5 to 30.2 degC

Min salinity: -- not transmitted --
Max salinity: -- not transmitted --

ct. Valid salinity: 28.9 to 37.1

Number of samples: -- not transmitted --

8 profile points 9 to 16 (from total of 17 cut points):
  Max pressure is sent separately

  7 pressure bins: raw 9 bits in units of 1 bin

Temperature: raw 10 bits in units of 0.977517
permille (range: 0 to 1000 permille)

Temperature residual: raw 7 bits in units of 1 mdegC per sample
  (range: 0 to 127 mdegC per sample)

Pressure already sent

Salinity: raw 8 bits in units of 3.92157 permille

Salinity residual: raw 7 bits in units of 1 mPSU per sample

Temperature bounds: raw 2 bits in units of 1 lo/hi (range: 0 to 3 lo/hi)

Conductivity bounds: -- not transmitted --

Salinity bounds: raw 2 bits in units of 1 lo/hi (range: 0 to 3 lo/hi)
----------[234 bits: 13 - 246]

Available bits used exactly

==== End of page 5 ====
<table>
<thead>
<tr>
<th>Deployment site: Fermenters</th>
<th><a href="http://doi.pangaea.de/10.1594/PANGAEA.737045">http://doi.pangaea.de/10.1594/PANGAEA.737045</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tag deployed: 2010-03-27T15:52:00 -62.2556 -58.6583</td>
<td></td>
</tr>
<tr>
<td>Tag retrieved: none</td>
<td></td>
</tr>
</tbody>
</table>

### Deployment

- **Application**: Blowpipe dart 15ml, 80/2mm needle
- **Induction dose**: 15:52 12.5ml Zoletil IM@100mg/ml
- **Top-up dose**: ---
- **Induction complete**: 16:07
- **Follow-up dose**: ---
- **Deployment**: 16:12 - 16:20
- **Onset of recovery**: 16:35 by lifting the towel
- **End of recovery**: 16:45
- **Anesthesia level**: 4

### Imobilisation

- **Comment**
  - Seal tag: none
  - Deployment site: Fermenters
  - Prev. deployment: none