

<b>Eventlabel</b>	JUB2010_sel_a_m_02
<b>Campaign</b>	King George Island 2010
<b>Species</b>	Southern elephant seal ( <i>Mirounga leonina</i> )
<b>Age</b>	Adult; >6 years
<b>Sex</b>	Male
<b>Number</b>	
<b>Length</b>	390 cm
<b>Girth</b>	
<b>Weight [estimated]</b>	2000
<b>Weight [calculated]</b>	1240 kg <a href="http://doi.pangaea.de/10.1594/PANGAEA.737046">http://doi.pangaea.de/10.1594/PANGAEA.737046</a>
<b>Weight [measured]</b>	
<b>ARGOS PTT ID</b>	96496
<b>Transmitter type</b>	SMRU/Series 9000 SRDL/CTD
<b>Manufacturer</b>	SMRU
<b>PTT Serial Number</b>	11287
<b>PTT Software</b>	Software specification for CTD_GEN_07B deployment (MEOP: Temp+Salinity share 2 tx)
<b>Setting protocol</b>	<p>Transmitting via ARGOS Page transmission sequences:</p> <p style="padding-left: 40px;">Until day 1464: 0 0 1 0 0 2 3 0 0 4 5 using 1 PTT numbers</p> <p>Satellite availability (UTC):</p> <p style="padding-left: 40px;">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 --</p> <p>Transmission targets:</p> <p style="padding-left: 40px;">56000 transmissions after 365 days</p> <p style="padding-left: 40px;">In Haulouts: ON (one tx every 1 min 20 secs) for first 5 hours then cycling OFF for 6 hours, ON for 1 hour</p>

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  
65504 )  
-----[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  
)  
tx as raw 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  
(range: 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]

	<p>15 )</p> <p>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 )</p> <p>Start time: -- not transmitted --  End time: max 5 days 12 hours @ 2 mins= 3960  tx as raw 12 bits in units of 1 (range: 0 to 4095 )  (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)  cf. Max duration is 16 hours  Speed: -- not transmitted --  Reason for end: -- not transmitted --  -----[26 bits: 16 - 41]</p> <p>to 7 )</p> <p>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 )</p> <p>Start time: -- not transmitted --  End time: max 5 days 12 hours @ 2 mins= 3960  tx as raw 12 bits in units of 1 (range: 0 to 4095 )  (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)  cf. Max duration is 16 hours  Reason for end: -- not transmitted --  Contiguous: -- not transmitted --  -----[25 bits: 42 - 66]</p> <p>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  tx as raw 5 bits in units of 1 (range: 0 to 31 )  (recommended sell-by 6 days 17 hours)  Sell-by range: 7 days  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 )</p> <p>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 --  -----[180 bits: 67 - 246]</p>
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Available bits used exactly  
=== End of page 1 ===

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 = -2.5 to 30.267 °C in steps of 0.001 °C)

Max temperature: raw 15 bits in units of 1 (range: 2500 to  
35267 = -2.5 to 30.267 °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)

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 --

-----[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 --  
 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  
 (range: 0 to 511 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  
 (range: 0 to 1000 permille)  
                   Salinity residual: raw 7 bits in units of 1 mPSU per sample  
 (range: 0 to 127 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)  
 -----[235 bits: 11 - 245]  
  
 UNUSED  
 -----[1 bits: 246 - 246]  
  
 === End of page 3 ===

PAGE 4:

PTT NUMBER OVERHEAD (28-bit code)  
 -----[8 bits: 0 - 7]  
  
 PAGE NUMBER  
 -----[3 bits: 8 - 10]  
  
 CTD in format 2:  
  
     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: 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 = -2.5 to 30.267 °C in steps of 0.001 °C)  
     Max temperature: raw 15 bits in units of 1 (range: 2500 to  
 35267 = -2.5 to 30.267 °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)  
                   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 --  
 -----[235 bits: 11 - 245]

	<p>UNUSED  -----[1 bits: 246 - 246]</p> <p>=== End of page 4 ===</p> <p>PAGE 5:</p> <p>PTT NUMBER OVERHEAD (28-bit code)  -----[8 bits: 0 - 7]</p> <p>PAGE NUMBER  -----[3 bits: 8 - 10]</p> <p>DIAGNOSTICS in format 2:</p> <p>Number of resets: wraparound 2 bits in units of 1 (range: 0  to 3 )  -----[2 bits: 11 - 12]</p> <p>CTD in format 3:</p> <p>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)</p> <p>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 --  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 --  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  (range: 0 to 511 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  (range: 0 to 1000 permille)  Salinity residual: raw 7 bits in units of 1 mPSU per sample  (range: 0 to 127 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]</p> <p>Available bits used exactly  === End of page 5 ===</p>
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<b>Deployment</b>																			
<b>Immobilisation</b>	<table border="0"> <tr> <td>Application</td> <td>Blowpipe dart 15ml, 80/2mm needle</td> </tr> <tr> <td>Induction dose</td> <td>14:34 12.5ml Zoletil IM@100mg/ml</td> </tr> <tr> <td>Top-up dose</td> <td>---</td> </tr> <tr> <td>Induction complete</td> <td>14:54</td> </tr> <tr> <td>Follow-up dose</td> <td>---</td> </tr> <tr> <td>Deployment</td> <td>15:00</td> </tr> <tr> <td>Onset of recovery</td> <td>15:08</td> </tr> <tr> <td>End of recovery</td> <td>15:12</td> </tr> <tr> <td>Anesthesia level</td> <td>4</td> </tr> </table> <p><a href="http://doi.pangaea.de/10.1594/PANGAEA.737045">http://doi.pangaea.de/10.1594/PANGAEA.737045</a></p>	Application	Blowpipe dart 15ml, 80/2mm needle	Induction dose	14:34 12.5ml Zoletil IM@100mg/ml	Top-up dose	---	Induction complete	14:54	Follow-up dose	---	Deployment	15:00	Onset of recovery	15:08	End of recovery	15:12	Anesthesia level	4
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<b>Tag deployed</b>	2010-03-22T14:34:00 -62.2559 -59.2286																		
<b>Tag retrieved</b>																			
<b>First transmission</b>	2010-03-21T15:28:02 -62.266 -58.615																		
<b>Last transmission</b>	2010-09-07T04:21:15 -60.837 -47.054																		