

Eventlabel	JUB2010_sel_a_m_09
Campaign	King George Island 2010
Species	Southern elephant seal (<i>Mirounga leonina</i>)
Age	Adult; >6 years ~10
Sex	Male
Number	
Length	4000 cm
Girth	
Weight [estimated]	2000
Weight [calculated]	1462 kg http://doi.pangaea.de/10.1594/PANGAEA.737046
Weight [measured]	
ARGOS PTT ID	96504
Transmitter type	SMRU/Series 9000 SRDL/CTD
Manufacturer	SMRU
PTT Serial Number	11252
PTT Software	Software specification for CTD_GEN_07B deployment (MEOP: Temp+Salinity share 2 tx)
Setting protocol	<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:

65504) TX number: wraparound 11 bits in units of 32 (range: 0 to
-----[11 bits: 11 - 21]

15840) 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=
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 --
255) Group number: wraparound 8 bits in units of 1 (range: 0 to

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

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)

180) Speed profile: -- not transmitted --
Residual: raw 2 bits in units of 60 (range: 0 to

588.75 s) Calculation time: -- not transmitted --
Surface duration: odlog 2/4 in units of 2.5 s (range: 0 to

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:

23250 dm) Max depth ever: odlog 1/4 in units of 500 dm (range: 0 to
-----[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)</p> <p>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)</p> <p>-----[234 bits: 13 - 246]</p> <p>Available bits used exactly === End of page 5 ===</p>
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Deployment	
Immobilisation	<p>Application Blowpipe dart 15ml, 80/2mm needle Induction dose 18:22 13.0ml Zoletil IM@100mg/ml Top-up dose --- BA 18:32 - 18:53 ba <30 min (18:32 - 18:53), cynotic mucosae; mech. stim. Caused adverse reaction Induction complete 18:37 Follow-up dose --- Deployment 18:40 - 18:55 Onset of recovery 19:07 End of recovery 19:15 Anesthesia level 4 http://doi.pangaea.de/10.1594/PANGAEA.737045</p>
Comment	<p>Seal tag: none Deployment site: Refugio Elephante Prev. deployment: none</p>
Tag deployed	2010-03-30T18:22:00 -62.2559 -59.2297
Tag retrieved	
First transmission	2010-03-30T18:29:20 -62.250 -58.668
Last transmission	2010-08-13T10:26:59 -61.434 -46.634