<table>
<thead>
<tr>
<th>Eventlabel</th>
<th>FIL2014_Wed_a_m_03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campaign</td>
<td>Filchner 2014</td>
</tr>
<tr>
<td>Species</td>
<td>Weddell seal (<em>Leptonychotes weddellii</em>).</td>
</tr>
<tr>
<td>Age</td>
<td>Adult</td>
</tr>
<tr>
<td>Sex</td>
<td>Female</td>
</tr>
<tr>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>231 cm</td>
</tr>
<tr>
<td>Girth</td>
<td>178 cm</td>
</tr>
<tr>
<td>Weight [estimated]</td>
<td>400</td>
</tr>
<tr>
<td>Weight [calculated]</td>
<td></td>
</tr>
<tr>
<td>Weight [measured]</td>
<td></td>
</tr>
<tr>
<td>ARGOS PTT ID</td>
<td>13061</td>
</tr>
<tr>
<td>Transmitter type</td>
<td>SMRU series 9000 SRDL CTD satellite tag with 0.5 Watt WildCat RF unit, D</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>SMRU</td>
</tr>
<tr>
<td>PTT Serial Number</td>
<td>12826</td>
</tr>
<tr>
<td>PTT Software</td>
<td></td>
</tr>
<tr>
<td>Setting protocol</td>
<td>Software specification for CTD_GEN_13A deployment (Standard CTD)</td>
</tr>
<tr>
<td></td>
<td>Valid for dates in years 2013 to 2016</td>
</tr>
<tr>
<td></td>
<td>Transmitting via ARGOS</td>
</tr>
<tr>
<td></td>
<td>Argos page transmission sequences:</td>
</tr>
<tr>
<td></td>
<td>Until day 1464: 0 0 1 0 0 2 3 0 0 4 5</td>
</tr>
<tr>
<td></td>
<td>An additional diagnostics page (6) is sent every 60 transmissions</td>
</tr>
<tr>
<td>Satellite availability (UTC):</td>
<td></td>
</tr>
<tr>
<td>00:</td>
<td>-- on --</td>
</tr>
<tr>
<td>01:</td>
<td>-- on --</td>
</tr>
<tr>
<td>02:</td>
<td>-- on --</td>
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<td>03:</td>
<td>-- on --</td>
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<td>04:</td>
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<td>05:</td>
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<td>-- on --</td>
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<td>08:</td>
<td>-- on --</td>
</tr>
<tr>
<td>09:</td>
<td>-- on --</td>
</tr>
<tr>
<td>10:</td>
<td>-- on --</td>
</tr>
<tr>
<td>11:</td>
<td>-- on --</td>
</tr>
<tr>
<td>12:</td>
<td>-- on --</td>
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<td>13:</td>
<td>-- on --</td>
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<tr>
<td>14:</td>
<td>-- on --</td>
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<tr>
<td>15:</td>
<td>-- on --</td>
</tr>
<tr>
<td>16:</td>
<td>-- on --</td>
</tr>
<tr>
<td>17:</td>
<td>-- on --</td>
</tr>
<tr>
<td>18:</td>
<td>-- on --</td>
</tr>
<tr>
<td>19:</td>
<td>-- on --</td>
</tr>
<tr>
<td>20:</td>
<td>-- on --</td>
</tr>
<tr>
<td>21:</td>
<td>-- on --</td>
</tr>
</tbody>
</table>
Transmission targets:

56000 transmissions after 365 days

Normal interval between Argos transmissions: 40 secs
In Haulouts: ON (one tx every 1 min 20 secs) for first 5 hours
then cycling OFF for 3 hours, ON for 2 hours

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 dry, or above 6m
Do not separate '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 profiles: max 2000 dbar up to 4 dbar in 2 dbar bins.
Note: these values should now be given in cbar. They have been auto-converted from dbar because
CTD_HI_RES_PRESSURE is not specified

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
Fluorescence: Not collected.
Oxygen: Not collected.
Light level: Not collected.

Send the deepest upcast in each 6-hour period.
An upcast is collected if the depth exceeds:
1000m in hour 1
400m in hour 2
200m in hour 3
100m in hour 4
50m in hour 5
30m in hour 6

In addition, a replacement upcast is collected if the depth exceeds the depth of the current upcast
by 20%.

During profile, sample CTD sensor every 2 seconds when deeper than 500 m, every 1 seconds
when shallower than 500 m.
Each profile contains 16 cut points consisting of 8 fixed points, maximum depth, minimum
depth, 6 broken-stick points
A set of fixed point is selected according to depth:
10,12,14,16,18,20,24,30
10,14,20,26,30,36,40,50
10,20,30,40,50,60,70,75
10,20,30,40,50,60,75,100
10,20,30,50,75,100,125,150
10,20,30,50,75,100,150,200
10,20,30,50,100,150,200,300
10,20,50,100,150,200,300,400
10,20,50,100,200,300,400,500
10,20,50,100,200,300,500,700
20,50,100,200,300,500,700,1000
50,100,200,300,500,700,1000,1500
No GPS data

TRANSMISSION BUFFERS (in RAM):
Dives in groups of 3 (10.4167 days @ 10mins/dive): 500 = 2000 bytes
No 'deep' dives
Haulouts: 50 = 200 bytes
6-hour Summaries in groups of 3 (7.5 days): 10 = 40 bytes
No Timelines
Cruises: 50 = 200 bytes
No Diving periods
No Spot depths
No Emergence records
No Dive duration histograms
No Max depth histograms
No Depth & Temperature histograms
CTD casts (7.5 days): 30 = 120 bytes
No GPS fixes
No Spot CTD's
No Vemco VMT's

TOTAL 2560 bytes (of about 21000 available)

MAIN BUFFERS (in 8 or 24 Mb Flash):
Dive in groups of 3 (10.4167 days @ 10mins/dive): 500 x 104 bytes = 52000 bytes
No 'deep' dives
Haulout: 50 x 32 bytes = 1600 bytes
6-hour summaries in groups of 3 (7.5 days): 10 x 88 bytes = 880 bytes
No Depth & Temperature histograms
No timelines
Cruise: 50 x 32 bytes = 1600 bytes
No diving periods
No spot depths
No emergence records
No Duration histograms
No Max depth histograms
CTD casts (7.5 days): 30 x 160 bytes = 4800 bytes
No GPS fixes
No spot CTD's
No Vemco VMT's

TOTAL 59 kb (from 8192 kb available)

PAGE CONTENTS:

PAGE 0 (Argos, 247 bits):
PTT NUMBER OVERHEAD (28-bit code)
----------[8 bits: 0 - 7]

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

DIAGNOSTICS in format 0:

2050, 2050-2100, 2100-2150, >2150 in units of 0.1 m (range: 0 to 2150 m)

---------[7 bits: 11 - 17]

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) OK
   (recommended sell-by 5 days 11 hours, actual: 5 days)
is OK)
Number of records: raw 2 bits in units of 1 (range: 0 to 3)
Reason for end: -- not transmitted --
Group number: -- not transmitted --
Max depth: -- not transmitted --
Dive duration: odlog 2/5 in units of 16 s (range: 0 to 7608 s)
Mean speed: -- not transmitted --
Profile data (4 depths/times, 0 speeds):
   Profile times: raw 6 bits in units of 15.873 permille (range: 0 to 1000 permille)
   Speed profile: -- not transmitted --
   Residual: -- not transmitted --
   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: raw 6 bits in units of 15.873 permille (range: 0 to 1000 permille)
---------[229 bits: 18 - 246]

Available bits used exactly
=== End of page 0 ===

PAGE 1 (Argos, 247 bits):
PTT NUMBER OVERHEAD (28-bit code)
---------[8 bits: 0 - 7]

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

DIAGNOSTICS in format 1:

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

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
   tx as raw 12 bits in units of 1 (range: 0 to 4095) OK
   (recommended sell-by 5 days 11 hours, actual: 5 days)
4 hours is OK)
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: 22 - 47]
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
4 hours is OK
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: 48 - 72]

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 12 hours @ 6 hours = 30
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:
SD max dive depth: odlog 2/4 in units of 5 m (range: 0 to 1177.5 m)
Avg dive duration: odlog 2/5 in units of 16 s (range: 0 to 7608 s)
SD dive duration: odlog 1/4 in units of 60 s (range: 0 to 2790 s)
Max dive duration: odlog 2/5 in units of 16 s (range: 0 to 7608 s)
Avg speed in dive: -- not transmitted --
Number of dives: odlog 1/4 in units of 2 (range: 0 to 93)
### Deep dives:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg max dive depth</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>SD max dive depth</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Max max dive depth</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Avg dive duration</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>SD dive duration</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Max dive duration</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Avg surface duration</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>SD surface duration</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Max surface duration</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Avg speed in dive</td>
<td>-- not transmitted --</td>
</tr>
<tr>
<td>Number of dives</td>
<td>-- not transmitted --</td>
</tr>
</tbody>
</table>

Avg SST: -- not transmitted --

Available bits used exactly

--- End of page 1 ---

### PAGE 2 (Argos, 247 bits):

**PTT NUMBER OVERHEAD (28-bit code)**

--- [8 bits: 0 - 7]

**PAGE NUMBER**

--- [3 bits: 8 - 10]

**CTD PROFILE in format 0:**

End time: max 7 days @ 10 mins = 1008

*tx as raw 10 bits in units of 1  (range: 0 to 1023 ) OK

(recommended sell-by 6 days 23 hours, actual: 6 days 18 hours is OK)

CTD cast number: -- not transmitted --

Note: these old-style dbar pressures are internally converted to cbar

- Max pressure: raw 10 bits in units of 2 dbar (range: 4 to 2050 dbar)
- Min pressure: raw 10 bits in units of 0.001 (range: 2.5 to 35.267°C in steps of 0.001°C)
- Max temperature: raw 15 bits in units of 0.001 (range: 2.5 to 35.267°C in steps of 0.001°C)
- Min temperature: raw 15 bits in units of 0.001 (range: 2.5 to 35.267°C in steps of 0.001°C)

Min pressure: -- not transmitted --

Max pressure: raw 10 bits in units of 2 dbar (range: 4 to 2050 dbar)

Min temperature: raw 15 bits in units of 0.001 (range: 2.5 to 35.267°C in steps of 0.001°C)

Max temperature: raw 15 bits in units of 0.001 (range: 2.5 to 35.267°C in steps of 0.001°C)

Min salinity: raw 13 bits in units of 1 mPSU (range: 28900 to 37091 mPSU)

Max salinity: raw 13 bits in units of 1 mPSU (range: 28900 to 37091 mPSU)

Number of samples: -- not transmitted --

8 profile points 0 to 7 (from total of 16 cut points): Temperature:

0.977517 permille (range: 0 to 1000 permille)

Temperature residual: -- not transmitted --

Temperature bounds: -- not transmitted --

Salinity:

8 profile points 0 to 7 (from total of 16 cut points): Salinity:

0.977517 permille (range: 0 to 1000 permille)

Salinity residual: -- not transmitted --

Conductivity bounds: -- not transmitted --

Salinity bounds: -- not transmitted --

Min fluoro: -- not transmitted --

Max fluoro: -- not transmitted --

Min DOxy: -- not transmitted --

Max DOxy: -- not transmitted --

Min Light: -- not transmitted --

Max Light: -- not transmitted --

--- [236 bits: 11 - 246]

Available bits used exactly

--- End of page 2 ---
PAGE 3 (Argos, 247 bits):

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 PROFILE in format 1:

End time: max 7 days @ 10 mins= 1008

18 hours is OK)

CTD cast number: -- not transmitted --

Note: these old-style dbar pressures are internally converted to cbar

Min pressure: -- not transmitted --

Max pressure: -- not transmitted --

Min temperature: -- not transmitted --

Max temperature: -- not transmitted --

Number of samples: -- not transmitted --

8 profile points 8 to 15 (from total of 16 cut points):

Temperature:

units of 1 bin (range: 0 to 1023 bin)

8 x Temperature: raw 10 bits in units of

0.977517 permille (range: 0 to 1000 permille)

Temperature residual: -- not transmitted --

Salinity:

Pressure already transmitted

8 x Salinity: raw 10 bits in units of 0.977517 permille (range: 0 to 1000 permille)

Salinity residual: -- not transmitted --

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)

Min fluoro: -- not transmitted --

Max fluoro: -- not transmitted --

Min DOxy: -- not transmitted --

Max DOxy: -- not transmitted --

Min Light: -- not transmitted --

Max Light: -- not transmitted --

---------[234 bits: 13 - 246]

Available bits used exactly

=== End of page 3 ===

PAGE 4 (Argos, 247 bits):

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

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

CTD PROFILE in format 2:

End time: max 3 days 6 hours @ 10 mins= 468

18 hours is OK)

CTD cast number: -- not transmitted --

Note: these old-style dbar pressures are internally converted to cbar
Min pressure:   -- not transmitted --
Max pressure:   raw 10 bits in units of 2 dbar (range: 4 to 2050 dbar)
Min temperature:   raw 15 bits in units of 0.001 (range: 2.5 to 35.267 = -2.5 to 30.267 °C in steps of 0.001 °C)
Max temperature:   raw 15 bits in units of 0.001 (range: 2.5 to 35.267 = -2.5 to 30.267 °C in steps of 0.001 °C)
Min salinity:   raw 13 bits in units of 1 mPSU (range: 28900 to 37091 mPSU)
Max salinity:   raw 13 bits in units of 1 mPSU (range: 28900 to 37091 mPSU)
Number of samples:   -- not transmitted --
8 profile points 0 to 7 (from total of 16 cut points):
Temperature:
Points 0 to 7 are at fixed pressure
8 x Temperature:   raw 10 bits in units of
0.977517 permille (range: 0 to 1000 permille)
Temperature residual:   -- not transmitted --
Salinity:
Points 0 to 7 are at fixed pressure
8 x Salinity:   raw 10 bits in units of 0.977517 permille (range: 0 to 1000 permille)
Salinity residual:   -- not transmitted --
--- end solving code ---
---[235 bits: 11 - 245]

UNUSED
---[1 bits: 246 - 246]
==== End of page 4 ====

PAGE 5 (Argos, 247 bits):
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 PROFILE 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 ) OK
(recommended sell-by 3 days 5 hours, actual:  3 days is
OK)
CTD cast number:   -- not transmitted --
Note: these old-style dbar pressures are internally converted to cbar
Min pressure:   -- not transmitted --
Max pressure:   -- not transmitted --
Min temperature:   -- not transmitted --
Max temperature:   -- not transmitted --
Min salinity:   -- not transmitted --
Max salinity:   -- not transmitted --
Number of samples:   -- not transmitted --
8 profile points 8 to 15 (from total of 16 cut points):
Temperature:
Min pressure is sent separately
Max pressure is sent separately
6 broken stick pressure bins: raw 10 bits in
units of 1 bin (range: 0 to 1023 bin)

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

Temperature residual: -- not transmitted --

Salinity: Pressure already transmitted

8 x Salinity: raw 10 bits in units of 0.977517 permille (range: 0 to 1000 permille)

Salinity residual: -- not transmitted --

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)

Min fluoro: -- not transmitted --
Max fluoro: -- not transmitted --

Min DOxy: -- not transmitted --
Max DOxy: -- not transmitted --

Min Light: -- not transmitted --
Max Light: -- not transmitted --

----------[233 bits: 13 - 245]

UNUSED
----------[1 bits: 246 - 246]

=== End of page 5 ===

PAGE 6 (special diagnostics page sent every 60 transmissions)

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

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

TX number: wraparound 18 bits in units of 1 (range: 0 to 262143 )
Current state: raw 3 bits in units of 1 (range: 0 to 7 )

Tag time (mm:ss): raw 12 bits in units of 1 secs (range: 0 to 4095 secs)

ADC offset: raw 12 bits in units of 1 A/D units (range: 0 to 4095 A/D units)

Tag hours: wraparound 16 bits in units of 1 hours (range: 0 to 65535 hours)

Aborted tx: wraparound 18 bits in units of 1 (range: 0 to 262143 )

Wet/dry status: raw 2 bits in units of 1 (range: 0 to 3 )

Wet/dry fail count: wraparound 8 bits in units of 1 (range: 0 to 255 )

Body number: raw 16 bits in units of 1 (range: 0 to 65535 )

Max depth ever: raw 15 bits in units of 0.1 m (range: 0 to 3276.7 m)

Latest reset hour: raw 16 bits in units of 1 hours (range: 0 to 65535 hours)

Number of resets: wraparound 8 bits in units of 1 (range: 0 to 255 )

Wettest (min wet/dry): raw 8 bits in units of 1 (range: 0 to 255 )

Driest (max wet/dry): raw 8 bits in units of 1 (range: 0 to 255 )

Number of depth spikes: wraparound 16 bits in units of 1 (range: 0 to 65535 )

Number of CTD samples: wraparound 22 bits in units of 1 (range: 0 to 4.1943e+06 )

----------[198 bits: 11 - 208]

UNUSED
----------[38 bits: 209 - 246]

=== End of page 6 ===
**Deployment**

![Image of a seal with a tag]

**Immobilisation**

http://doi.pangaea.de/10.1594/PANGAEA.839451

**Comment**

Seal tag
Deployment site: Filchner
Previous deployment:

<table>
<thead>
<tr>
<th>Tag deployed</th>
<th>2014-02-02T11:55</th>
<th>-74.5624</th>
<th>-37.6396</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tag retrieved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First transmission</td>
<td>2014-02-02T12:32:08</td>
<td>-74.566</td>
<td>-37.763</td>
</tr>
<tr>
<td>Last transmission</td>
<td>2014-08-29T16:28:02</td>
<td>-74.509</td>
<td>-37.673</td>
</tr>
</tbody>
</table>