# DEPLOYMENT LOG for IceCube STRING # 74

Deployment Start: *at* 5R39 *on* 29 DEC 2006

Deployment End: *at* 16 09 *on* 29 Dec 2006

Target depth (DOM60): **2450** m Final depth: 2451.2

## Deployment Crew

7:30 AM

| Position | First Shift | Second Shift |
|---|---|---|
| Shift lead | Gary Hill | Tom Hutton |
| DOM install 1 (high) | Susie Hagrob | Jim Whitehorn |
| DOM install 2 (low) | Tom Pi | Rod Matthews |
| ~~DOM supply~~ 1 / DOM install 3 | Tad Schatz | |
| DOM supply ~~2~~ / ~~floater~~ | Claire Peterson | Sven Lidstrom |
| Winch operator (cable & tower) | Thomas Gustafsson | Dan Pernic |
| Notary (logbook & photos) | Freya Descamps | Andres Morey |
| PTS (monitoring / sensors) | Freya Descamps | Andres Morey |
| Support (optional) | | |

Time of shift change:

Summary/Comments:

7
3 drillers
24hrs

6
3 drillers
7.5 hrs

## Hole Handover

☐ Drill data reviewed

- ☐ maximum drift in x:_____ ☐ plot
- ☐ maximum drift in y:_____ ☐ plot
- ☐ maximum depth:_____
- ☐ minimum radius:_____ ☐ plot
- ☐ plot of predicted radius vs depth and time

☐ Hole dimensions verified ~60cm Time:_____

Drill Lead: _____
name / signature / date

Deployment Lead: NO INFO RECEIVED G.C. Hill 29/12/06
name / signature / date

Water stagnated at 4pm Jonathan 12/29/06

☐ Handover complete

## Hole Logging
(skip if not applicable)

☐ Logger drop started Time:_____ Speed:_____
☐ Logging started Time:_____ Speed:_____
☐ Logging ended Time:_____

☐ Estimated hole lifetime:_____

► Must reach target depth by _____ on _____

## Deployment Startup

Time: 5.39 am.

- ☑ Cable winch anchored and ☑ operational
- ☑ Tower winch operational
- ☑ Tie off verified
- ☑ Yellow rope verified

- ☑ Deployment monitoring system (PTS) operational ☑ DDB# 4
- ☐ Pressure sensors on hand: Paro and Keller, with backups
- ☑ Laser ranger, tape measure (metric) on hand

Paro measured 7.20 cm below test

- ☑ Bleeder string installed (on quad connectors inside cable reel drum)

- ☑ Uphole pressure system on hand: Setra sensor and cable

- ☑ DOMs placed in racks
- ☑ Weight stack on hand: weights (5) and 2 m cable
- ☑ 17 m string extension steel cable on hand

Safety checks complete (☐ 1st shift ☐ 2nd shift)

- ☑ ☐ Crew safety briefing
- ☑ ☐ E-stop locations identified
- ☑ ☐ TOS evacuation procedures reviewed
- ☑ ☐ Mustering point identified
- ☑ ☐ Snow mobile driver(s): all
- ☑ ☐ CPR trained: many
- ☑ ☐ Food runners: Took Break for Lunch

call galley at 65521

- ☑ End of Main Cable brought into TOS and secured

## Cable end attachments

- ☑ Measure well depth: 98.28
- ☑ Weights (5) attached
- ☑ Weight cable attached (weight stack complete) Time: 5.39 am

Photos: DOM ids (☐ long ☑ short); connectors (☐ long ☐ short)

**DOM position 60** DOM id: TP SP0677
(T, Long)

☑ Bottom shackle connected to weight stack Payout: 1.31 m
☑ Top shackle connected to 17 m steel cable
Photos: ☑ whole view

**DOM position 59** DOM id: UP 4P011
(U, Short) Cable mark: unreadable

☑ Bottom shackle connected to 17 m cable
☑ Top shackle connected to Yale grip Δ(59-60): 17.038
☑ Main cable end taped to 17 m steel cable (use laser ranger)
Photos: ☐ phi orientation ☐ whole view

**Breakout 30** Time: 6:50 am

Depth:

- LongDOM Payout 17.69
  - ☑ connector O-ring in place and ☑ lubed
  - ☑ breakout O-ring in place and ☑ lubed
  - ☐ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☑ breakout O-ring in place and ☑ lubed
  - ☐ connected

☐ Loose pigtails taped to cable

**Paro** Serial #: 104252 Nipple ☑ on ☐ off
☑ Connected ☑ Operational ☑ Air pressure [PSI]: 9.73
☐ Cable mark: X ☐ Distance to DOM59: 0.388

☐ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 58** DOM id: TP 4P0293
(T, Long) Cable mark: 18

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(58-59): 16.683
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 57** DOM id: UP6Y43G4
(U, Short) Cable mark: 35

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(57-58): 16.87
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**Breakout 29** Time:

Now 7:06
Last b/o
Δt [min]

Depth:
Paro 65.89
Payout -31.83

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 56** DOM id: TP 5P0585

(T, Long) Cable mark: 53

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(56-57): 16.76
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**DOM position 55** DOM id: UP 6Y4440

(U, Short) Cable mark: 69

☑ Bottom shackle connected
☑ Top clutch connected at link # 21 Δ(55-56): 16.34
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**Breakout 28** Time:

Now 7:19
Last b/o
Δt [min]
Depth:
Paro 84.5
Payout -55.76

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 54** DOM id: TP 4P 0105

(T, Long) Cable mark: 86

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(54-55): 16.99
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 53** DOM id: UP 5P0770

(U, Short) Cable mark: 103

☐ Bottom shackle connected
☐ Top clutch connected at link # 21 Δ(53-54): 16.32
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 27** Time:

Now 7:32
Last b/o
Δt [min]

Depth:
Paro 119.18
Payout -30.22

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☐ long ☑ short); connectors (☐ long ☐ short)

**DOM position 52** DOM id: TP 6Y4289

(T, Long) Cable mark: 121

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(52-53): 16.5
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 51** DOM id: UP 4P0122

(U, Short) Cable mark: 137

☑ Bottom shackle connected
☑ Top clutch connected at link # 21 Δ(51-52): 16.87
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**Breakout 26** Time:

Now 7:43
Last b/o
Δt [min]

Depth:
Paro 152
Payout -146 *

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

* changed payout on DOM 52 to agree with paro

☐ All clear to lower cable ☺

Photos: DOM ids (☐ long ☑ short); connectors (☐ long ☐ short)

**DOM position 50** DOM id: TP 6P1827

(T, Long) Cable mark: 154

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(50-51): 16.91
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view
~~☐ Curved distance around DOM: ☐ Vertical distance:~~

**DOM position 49** DOM id: UP 6P1772

(U, Short) Cable mark: 171

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(49-50): 16.88
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view
~~☐ Curved distance around DOM: ☐ Vertical distance:~~

**Breakout 25**

Time:
Now 7:54
Last b/o
Δt [min]

Depth:
Paro 186.66
Payout 38670 167.92

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 48** DOM id: TP 6Y4417

(T, Long) Cable mark: 188

☑ Bottom shackle connected
☑ Top clutch connected at link # 26 Δ(48-49): 16.91
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**DOM position 47** DOM id: UP 6P1770

(U, Short) Cable mark: 205

☑ Bottom shackle connected
☑ Top clutch connected at link # 21 Δ(47-48): 16.94
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 24**

Time:
Now 8:05
Last b/o
Δt [min]

Depth:
Paro 220
Payout -192

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 46** DOM id: TP CY4369

(T, Long) Cable mark: 222

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(46-47): 16.9
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 45** DOM id: UP CY4434

(U, Short) Cable mark: 239

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(45-46): 17.3
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 23** Time:

Now 8:17
Last b/o
Δt [min]

Depth:
Paro 255
Payout 209

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 44** DOM id: TP 6P1803

(T, Long) Cable mark: 256

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(44-45): 16.93
☑ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**DOM position 43** DOM id: UP 6P1760

(U, Short) Cable mark: 273

☑ Bottom shackle connected
☑ Top clutch connected at link # 21 Δ(43-44): 16.91
☑ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 22**

Time:
Now 8:29
Last b/o
Δt [min]
Depth:
Paro 288.76
Payout -225

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☑ short); connectors (☐ long ☐ short)

**DOM position 42** DOM id: TP 6P1825

(T, Long) Cable mark: 290

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(42-43): 16.94
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 41** DOM id: UP 6P1766

(U, Short) Cable mark: 307

☑ Bottom shackle connected
☑ Top clutch connected at link # ~~19~~ 20 Δ(41-42): 16.93
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 21**

Time:
Now 5:40
Last b/o
Δt [min]

Depth:
Paro 322.8
Payout -240

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 40** DOM id: TP 6Y4425

(T, Long) Cable mark: 324

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(40-41): 16.96
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**DOM position 39** DOM id: UP 6Y4378

(U, Short) Cable mark: 341

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(39-40): 15.99 ??
☐ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 20**

Time:
Now 8:51
Last b/o
Δt [min]
Depth:
Paro 357.34
Payout -261.94

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☑ short); connectors (☐ long ☐ short)

**DOM position 38** DOM id: TP 6P1809

(T, Long) Cable mark: 358

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(38-39): 16.93
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**DOM position 37** DOM id: UP 6P1782

(U, Short) Cable mark: 375

☑ Bottom shackle connected
☑ Top clutch connected at link # 21 Δ(37-38): 16.904
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**Breakout 19**

Time:
Now 9:01
Last b/o
Δt [min]

Depth:
Paro 390.97
Payout -282.6

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 36** DOM id: TP 4P0311

(T, Long) Cable mark: 392

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(36-37): 16.900
☐ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 35** DOM id: UP 4P0304

(U, Short) Cable mark: 408

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(35-36): 16.82
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 18**

Time:
Now 9:13
Last b/o
Δt [min]
Depth:
Paro 425.08
Payout -300

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☐ Put two Kellers (one is for backup) in bucket of water/ice mix

☐ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 34** DOM id: TP 6P1821

(T, Long) Cable mark: 426

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(34-35): 16.9
☑ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 33** DOM id: UP SY0156

(U, Short) Cable mark: 442

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(33-34): 16.84
☐ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 17** Time:

Now 9:23
Last b/o
Δt [min]

Depth:
Paro 459.7
Payout -322.4

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 32** DOM id: TP 5P0507

(T, Long) Cable mark: 459

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(32-33): 16.93
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 31** DOM id: UP 4P0300

(U, Short) Cable mark: 476

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(31-32): 16.59
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**Breakout 16**

Time:
Now 9:34
Last b/o
Δt [min]

Depth:
Paro 493
Payout -347

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 30** DOM id: TP 6P1813

(T, Long) Cable mark: 494

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(30-31): 16.98
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 29** DOM id: UP AP0200

(U, Short) Cable mark: 510

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(29-30): 16.9
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 15** Time:

Now 9:50
Last b/o
Δt [min]

Depth:
Paro 527.7
Payout 363

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

☐ Loose pigtails taped to cable

31
17
217
310
527

**Thermistor** ~~☐ Present ☐ Distance to DOM29:~~

**Keller** ☐ Connected ☐ Operational ☐ Air pressure [PSI]: ~~8001~~ 10.00
Ser.#: 04 7558 ☐ Cable mark: 510 ☐ Distance to DOM29: 4303

m=331.17
b=-935.61

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 28** DOM id: TP 5P0805

(T, Long) Cable mark: 527

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(28-29): 16.91
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**DOM position 27** DOM id: UP ~~6P4230~~ 6P1776

(U, Short) Cable mark: 544

☐ Bottom shackle connected
☑ Top clutch connected at link # ~~20~~ 20 Δ(27-28): 16.855
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 14** Time:

Now 10:26
Last b/o
Δt [min]

Depth:
Paro 562
Keller 576
Payout 376

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 26** DOM id: TP 5P0425

(T, Long) Cable mark: 561

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(26-27): 16.91
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 25** DOM id: UP 5P0724

(U, Short) Cable mark: 578

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(25-26): 16.91
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 13** Time:

Now 10:39
Last b/o
Δt [min]

Depth:
Paro 595
Keller 595
Payout -386

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☒ long ☐ short); connectors (☐ long ☐ short)

**DOM position 24** DOM id: TP 5P0953

(T, Long) Cable mark: 595

☒ Bottom shackle connected
☒ Top clutch connected at link # 20 Δ(24-25): 16.90
☐ Bow OK → ☒ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 23** DOM id: UP 5P0556

(U, Short) Cable mark: 612

☒ Bottom shackle connected
☐ Top clutch connected at link # 18 Δ(23-24): 16.95
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 12** Time:

Now 10:50
Last b/o
Δt [min]

- LongDOM
  - ☒ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

Depth:
Paro 629.9
Keller 629
Payout -397

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 22** DOM id: TP 5P0845

(T, Long) Cable mark: 629

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(22-23): 16.9
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**DOM position 21** DOM id: UP 5P0560

(U, Short) Cable mark: 646

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(21-22): 16.88
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**Breakout 11** Time:

Now 11:01
Last b/o
Δt [min]

Depth:
Paro 664
Keller 663
Payout -410

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 20** DOM id: TP 6Y4385

(T, Long) Cable mark: 663

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(20-21): ERR
☑ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view
☐ Curved distance around DOM: ☐ Vertical distance:

**DOM position 19** DOM id: UP 6P1758

(U, Short) Cable mark: 680

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(19-20): 16.89
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view
☐ Curved distance around DOM: ☐ Vertical distance:

**Breakout 10**

Time:
Now 11:13
Last b/o
Δt [min]

Depth:
Paro 697
Keller 697
Payout -420

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 18** DOM id: TP 5P0737

(T, Long) Cable mark: 697

☑ Bottom shackle connected
☑ Top clutch connected at link # 20 Δ(18-19): 16.9
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**DOM position 17** DOM id: UP 5P0396

(U, Short) Cable mark: 714

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(17-18): 16.92
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 9**

Time:
Now 11:23
Last b/o
Δt [min]

Depth:
Paro 732
Keller 731
Payout

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 16** DOM id: TP SY0127

(T, Long) Cable mark: 731

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(16-17): 16.91
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 15** DOM id: UP 4P0328

(U, Short) Cable mark: 748

☑ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(15-16): 16.95
☑ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**Breakout 8** Time:

Now 11:32
Last b/o
Δt [min]

Depth:
Paro 765
Keller 764
Payout -453

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 14** DOM id: TP 6P1823

(T, Long) Cable mark: 765

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(14-15): 16.91
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 13** DOM id: UP SP0498

(U, Short) Cable mark: 782

☑ Bottom shackle connected
☐ Top clutch connected at link # 20 Δ(13-14): 16.95
☐ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 7**

Time:
Now 11:41
Last b/o
Δt [min]

Depth:
Paro 800
Keller 800
Payout -468

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

Call for lunch at 11:45am TH

☐ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 12** DOM id: TP 4P0323

(T, Long) Cable mark: 799

☐ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(12-13): 16.774
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 11** DOM id: UP 5P0574

(U, Short) Cable mark: 816

☐ Bottom shackle connected
☐ Top clutch connected at link # 19 Δ(11-12): 16.92
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**Breakout 6**

Time:
Now 13:13
Last b/o
Δt [min]
Depth:
Paro 835
Keller 335
Payout

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☐ connected

☐ Loose pigtails taped to cable

☐ All clear to lower cable ☺

Return from lunch — 13:00

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 10** DOM id: TP 5P0611

(T, Long) Cable mark: 833

☐ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(10-11): 16.9
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 9** DOM id: UP 5P0652

(U, Short) Cable mark: 849

* broken connector still deployed

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(9-10): 16.92
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

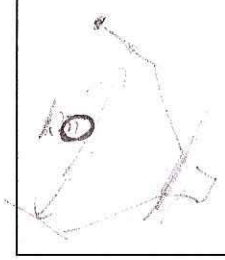
**Breakout 5**

Time:
Now 13:24
Last b/o
Δt [min]

Depth:
Paro 869
Keller 869
Payout -504

- LongDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable



☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 8** DOM id: TP 4P0317

(T, Long) Cable mark: 867

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(8-9): 16.91
☐ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**DOM position 7** DOM id: UP 5P0316

(U, Short) Cable mark: 853

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(7-8): 16.92
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**Breakout 4** Time:

Now 13:35
Last b/o
Δt [min]

Depth:
Paro 904
Keller 903
Payout -5.21

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☐ long ☐ short); connectors (☐ long ☐ short)

**DOM position 6** DOM id: TP 3P0503

(T, Long) Cable mark: _____

☐ Bottom shackle connected
☐ Top clutch connected at link # _____ Δ(6-7): 16.421
☐ Bow OK → ☐ clutch zip tied
Photos: ☐ phi orientation ☐ whole view

**DOM position 5** DOM id: UP 3P0902

(U, Short) Cable mark: 917

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(5-6): 16.88
☑ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 3** Time:

Now 13:41
Last b/o _____
Δt [min] _____

Depth:
Paro 937
Keller 937
Payout -538

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☐ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 4** DOM id: TP 6P1815

(T, Long) Cable mark: 934

☐ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(4-5): 16.95
☑ Bow OK → ☑ clutch zip tied
Photos: ☐ phi orientation ☑ whole view

**DOM position 3** DOM id: UP 4P0292

(U, Short) Cable mark: 951

☐ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(3-4): 16.93
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☐ whole view

**Breakout 2**

Time:
Now 13:58
Last b/o
Δt [min]

Depth:
Paro 972
Keller 972
Payout -552

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected
- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☐ Loose pigtails taped to cable

☑ All clear to lower cable ☺

Photos: DOM ids (☑ long ☐ short); connectors (☐ long ☐ short)

**DOM position 2** DOM id: TP SPC591

(T, Long) Cable mark: 968

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(2-3): 16.94
☑ Bow OK → ☑ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**DOM position 1** DOM id: UP 6P1774

(U, Short) Cable mark: 985

☑ Bottom shackle connected
☑ Top clutch connected at link # 19 Δ(1-2): 16.91
☑ Bow OK → ☐ clutch zip tied
Photos: ☑ phi orientation ☑ whole view

**Breakout 1**

Time:
Now 14:09
Last b/o
Δt [min]

- LongDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

Depth:
Paro 1066
Keller 1066
Payout 564

- ShortDOM
  - ☑ connector O-ring in place and ☐ lubed
  - ☐ breakout O-ring in place and ☐ lubed
  - ☑ connected

☑ Loose pigtails taped to cable

**No second Paro no more...**

☑ Group photo

☐ All clear to lower cable ☺

## Uphole Pressure Sensor (Setra)

*After DOM1 is safely under the surface (> 50 m)*

Time: 14:22

☐ Stop the cable winch

☐ Lower Setra pressure sensor into hole

☐ Distance to Setra from floor: _____

☐ Setra readout verified with monitoring system

☐ Well depth from Setra: _____

☐ Well depth from laser: 44.8

If the two well depth measurements agree:

☐ Switch to Setra well depth in monitoring system

Time: _____

**Now the String Drop begins**

## String Drop

*The target depth is **2450** m*

☐ Switch cable winch to computer control

☐ Speed:_____ Time:_____ Depth:_____
☐ Speed:_____ Time:_____ Depth:_____
☐ Speed:_____ Time:_____ Depth:_____
☐ Speed:_____ Time:_____ Depth:_____
☐ Speed:_____ Time:_____ Depth:_____
☐ Speed:_____ Time:_____ Depth:_____

**Depth Monitoring** (log on the fly – do not stop for this)

| Depth by Paro[1] | Time | Well depth[1] | Depth by cable marks[2] | Depth by Payout[1] | Δdepth P-K[1] |
|---|---|---|---|---|---|
| 1000 m | | | | | |
| 1500 m | | | | | |
| 2000 m | | | | | |
| 2100 m | | | 2043 | | |
| 2200 m | | | 2154 | | |
| 2300 m | | | 2222 | | |
| 2400 m | | | | | |

2070
2180
2250

[1]Read off monitoring screen
[2]Cable mark offset = _____ (at DOM59) – 17 m = _____ (at DOM60)
(from p.4)

☐ Switch to manual control @ 2400 m

☐ Well depth
@ 2420:_____ 2425 : 43.62 cable: 2398
@ 2440:_____

☑ Position string at target depth of ~~2450~~ 2451.06 m Time: 16:02

☑ String secured with Yale grip and anchor chain Time: 16:02

cable mark 2423

## Absolute depth with bottom Paro
(depth in *meters* and pressure in *PSI*)

☐ Distance from Paro to DOM60:

$d_{Paro\text{-}DOM59}$ = _____ (from p. 4)

$d_{Paro\text{-}DOM60}$ = ($d_{Paro\text{-}DOM59}$ + 17) m = _____ ← insert below

☐ Convert Paro pressure to string depth:

$K = 3.78151 \cdot 10^{-6}$ /PSI (compressibility of aerated water)

(use 6 decimals for exp's)

Ambient pressure (from p. 4): $P_0$ = _____ PSI → $\exp(-KP_0)$ = _____

Pressure reading (from screen): P = _____ PSI → $\exp(-KP)$ = _____

Subtract exponentials → = _____

× $1.85947 \cdot 10^5$

Paro depth in water → = _____ m

Add distance to DOM60 (above) → + _____ m

Add well depth → + _____ m

Depth of bottom DOM → = _____ m

## Final depth estimates

◀--------- read off deployment screen ---------▶

| Time: | Paro | Keller | Payout | Cable marks |
|---|---|---|---|---|
| Reading | 3430 PSI | 2702 PSI | -1824 m | 2423 m |
| Offset | 9.73 PSI | 10.00 PSI | 43 m | 15 m |
| Well depth | 4362 m | | This space is intentionally left blank | |
| Dist. to DOM60 | 17.47 m | 527.3 m | | |
| **DEPTH** (DOM60) | 2451.13 | 2453.8 | -1866 | 2438 |

Time: 14:08

13 m starting

**Final depth** (DOM60): 2451.13

## Deployment Closeout

- ☑ Log entries complete
- ☑ String safely secured
- ☑ Hole covered and secured
- ☐ Equipment safely shutdown and secured
- ☑ Deployment data OK (in database)
- ☑ Site cleanup
- ☑ Deployment crew dismissed
- ☐ String deployment complete

Time: 5:105 pm Date: 12/25/06

Shift Lead: _____
name / signature

Logger: Andreas Mora _____
name / signature

PTS Lead: Andreas Mora _____
name / signature

Deployment Manager: _____ 12/29/06
name / signature

Safety Officer: _____
name / signature

IceCube On-ice Lead: _____
name / signature

# IceCube Deployment Monitoring Check Sheet (IDMCS)

**Version 4.0**
December 12, 2006

Kurt Woschnagg, UCB

## General instructions

- Read through this entire document before deployment starts.
- Deployment monitoring is done with a computer (housed in the TOS) running drill/deployment monitoring software (by Chuck Rentmeesters) with a GUI for readout and manual inputs. All deployment sensor data and manual inputs are logged and saved on disk by this system.
- For each manual entry into the monitoring interface (marked **ENTER** below), also make a note in the logbook (marked *Logbook* below).
- For each entry in the logbook, include time and name (initials).
- Write down as much useful information you can think of (it *will* all be needed sooner or later).

## Measurement instructions

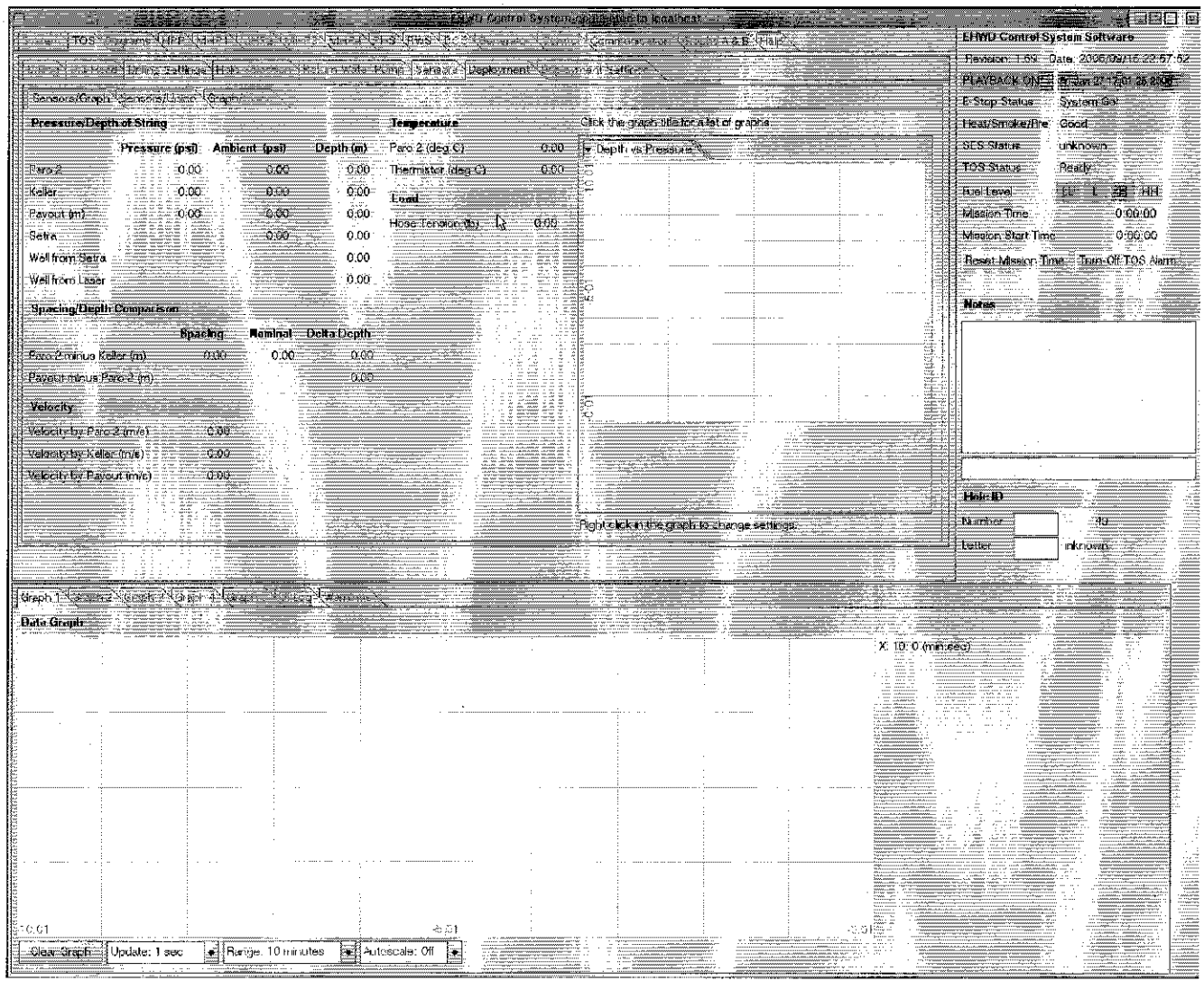
- All vertical measurements are relative to the floor of the tower (not the lip of the kick board).
  - Measure well depth from this level.
  - Take cable mark readings at this level.
- The location of a DOM on a string (for distance measurements) is defined as the position of the center of the sphere (at the equator defined by the harness).
- When taking a cable mark reading, estimate the location to nearest cm (0.01 m) with closest cable marks and tape measure.
- The location of a Paro is defined at the bottom of its body (at the little hole with the nipple).
- The location of a Keller is defined at the row of holes in the black plastic nose cap.
- The distance between a pressure sensor and the nearest DOM is positive/negative if the unit is above/below the DOM.
- Well depth is measured with a laser ranger (if possible), or with a tape measure (if not).
- The unit used for all distances and depths during deployment is **meters**.

## Screen Tab: TOS ► Deployment

### ► Sensors/Graph

This is the main tab used during deployment monitoring. No input required on this tab.

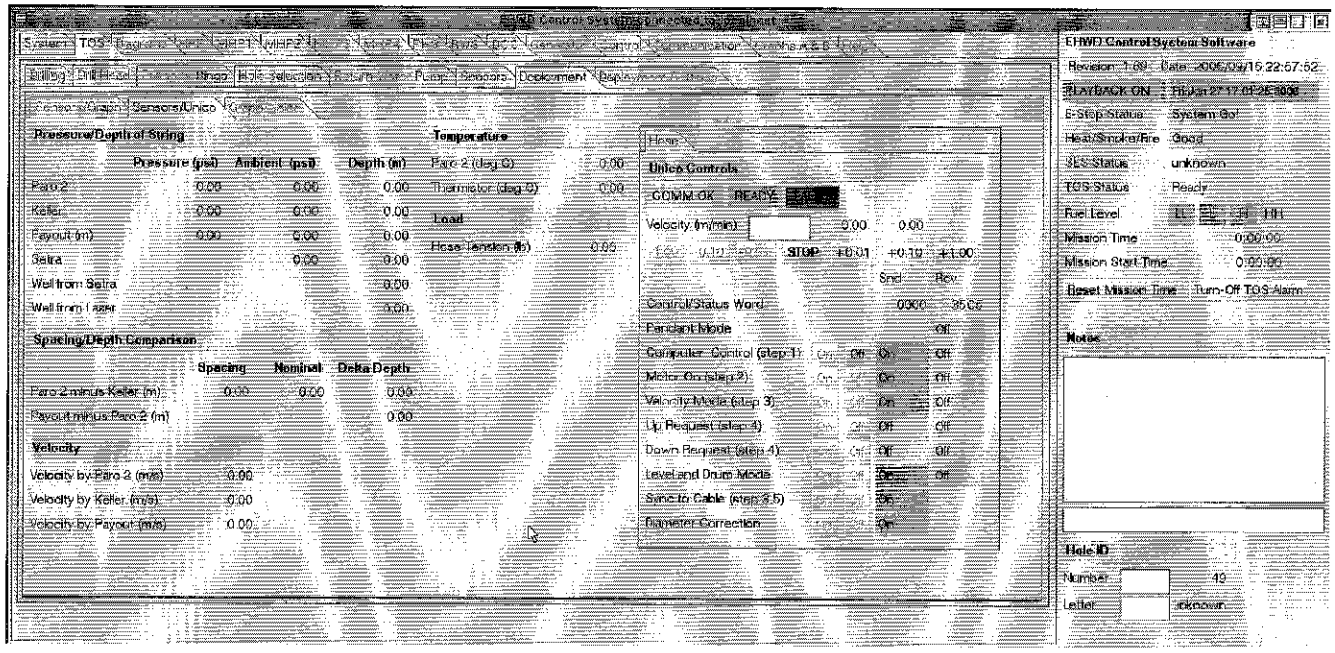
**Pressure/Depth of String** Current and ambient (air) pressures, and the corrected depths at DOM60.
**Spacing/Depth Comparison** Difference in depth from pressure data. *Should be stable during deployment!*
**Velocity** The deployment velocity calculated from recent pressure/payout readings.
**Temperature** Temperature readings.
**Load** Cable tension from load cell data.



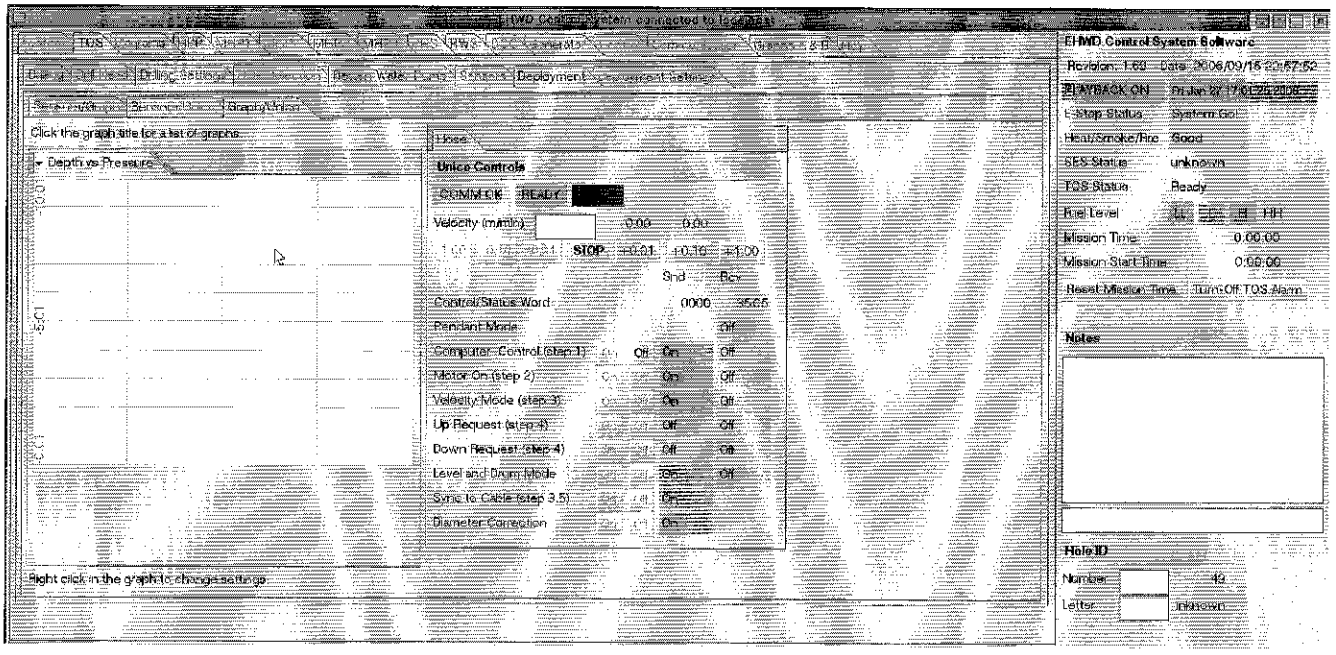
## Screen Tab: TOS ▶ Deployment

### ▶ Sensors/Unico

This tab has the same data display as the main Sensors/Graph tab above, but instead of the graph window this tab has the controls for the Unico drive which controls the winch.




### ▶ Graph/Unico

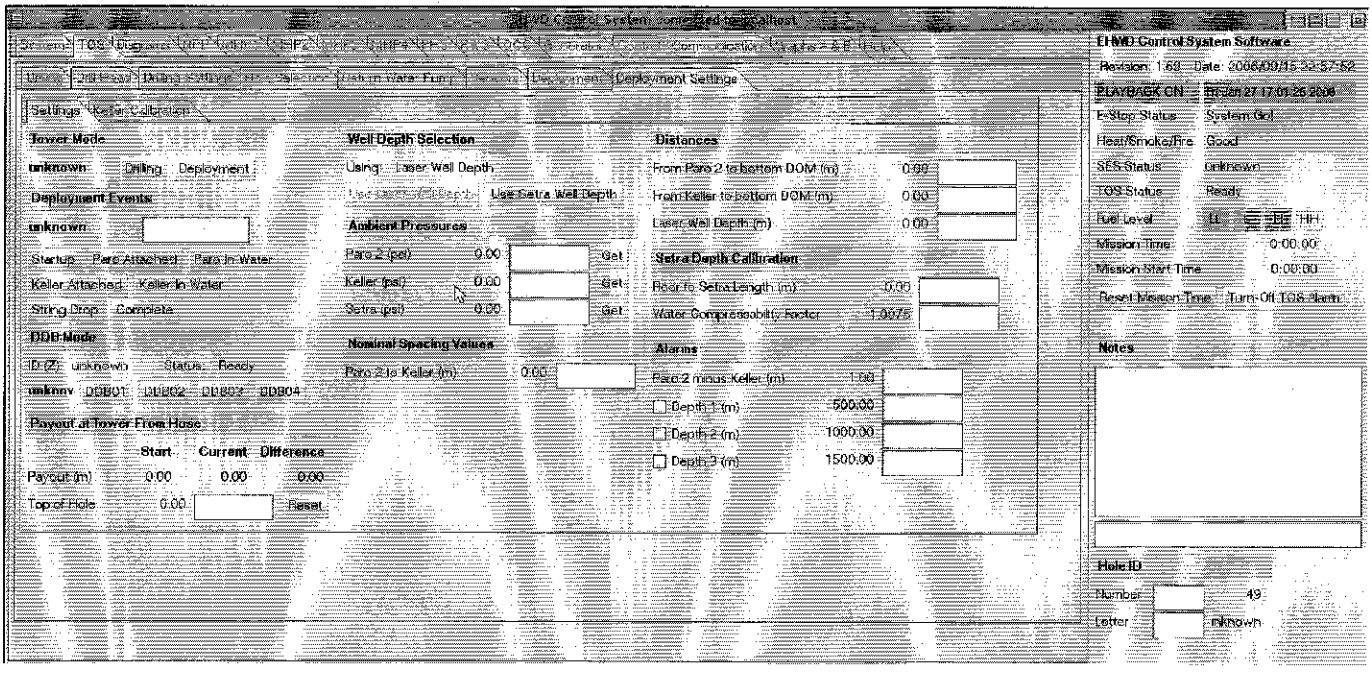


# Screen Tab: TOS ► Deployment Settings

## ► Settings

This is the main tab for entering information that is needed for a correct depth calibration of the pressure data. Make sure you understand what all the entries mean before deployment starts.

| | |
|---|---|
| **Tower Mode** | Click on "Deployment". |
| **Deployment Events** | Click the appropriate button when one of the predefined events occurs (see list below). |
| **DDB Mode** | Select the correct DDB ID before deployment startup (needed for Keller calibration). |
| **Payout at Tower** | Reset payout when bottom DOM is at tower floor level. |
| **Well Depth Selection** | Select source of well depth used in depth calculation. |
| **Ambient Pressures** | Press "Get" when pressure sensor is attached to cable, or enter reading at that time. |
| **Nominal Spacing** | Enter calculated distance between Paro and Keller. |
| **Distances** | Enter calculated distances between Paro/Keller and DOM60, and well depth. |
| **Setra Depth Calib.** | Enter measured length of Setra cable, from floor to sensor. |
| **Alarms** | Set values for which alarm is to be sounded (optional). |



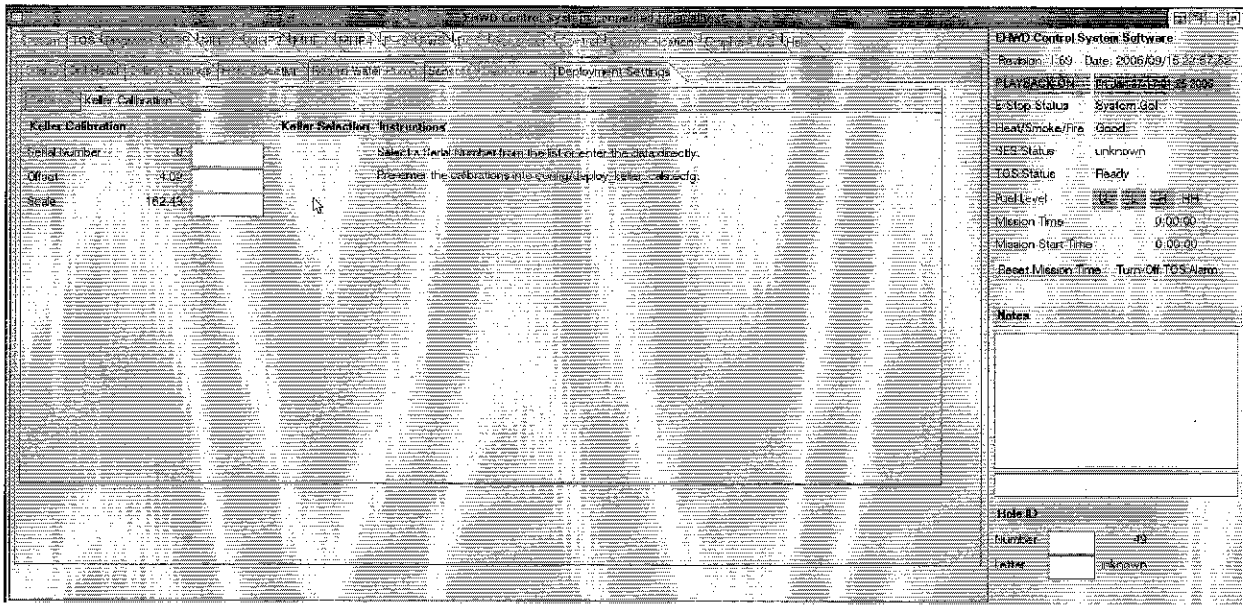

## Deployment Events

| | |
|---|---|
| ☐ **Startup** | Click when the deployment begins. |
| ☐ **Paro Attached** | Click when the Paro is attached to the breakout and starts sending data. |
| ☐ **Paro In Water** | Click when the Paro reaches the water. |
| ☐ **Keller Attached** | Click when the Keller is attached to the breakout and starts sending data. |
| ☐ **Keller In Water** | Click when the Keller reaches the water. |
| ☐ **String Drop** | Click when the String Drop phase begins, after all DOMs have been attached. |
| ☐ **Complete** | Click when the deployment ends (string is secured, etc). |

## Screen Tab: TOS ► Deployment Settings

### ► Keller Calibration

On this tab you select the Keller ID by clicking on the appropriate button. The correct (pre-programmed) calibration constants will then be used for the Keller pressure reading.




## Screen Tab: TOS ► Hole Selection

On this tab you select the hole/string number, *either* by clicking on the numbered button on the left *or* by entering it in the "Hole ID" field in the lower right hand corner.

## Distances between devices

**calculate manually and enter on Deployment Settings tab**

Distance between Paro and DOM60: _____ = _____

Distance between Keller and DOM60: _____ = _____

Distance between Paro and Keller: _____ = _____

Notes:

There are 60 DOMs on every string.

The nominal spacing between DOMs is 17 m.

The nominal spacing between breakouts is 34 m.

Breakouts (1-30) and DOMs (1-60) are counted from the top.

The Keller is at breakout 15, just above DOM29.

The Paro is at breakout 30, just above DOM59.

(Fun Fact: There used to be a second Paro at breakout 1 on the first four strings)

## Pressure conversions

| | PSI | $mH_2O$ | Atm |
|---|---|---|---|
| 1 PSI = | 1 | 0.70 | 0.07 |
| 1 $mH_2O$ = | 1.4 | 1 | 0.1 |
| 1 atm = | 14.7 | 10.3 | 1 |

## *Check Sheet*

**STRING #** 24

**DATE:** 29 DEC 2006

### *Before Deployment*

- [x] **Action**: Locate laser ranger for well depth measurements. [illegible] (blue)
- [x] **Action**: Locate metric tape measure.
- [x] **Action**: Locate one Paro (or new one (green label)) and one Keller, *plus spares* of each. [illegible] in blue box.
- [x] **Action**: Locate bucket (for cooling of Keller sensor with water/ice mix).
- [x] **Action**: Fill bucket with snow and place in heated area to make slush.
- [x] **Action**: Locate Setra uphole pressure assembly (sensor + cable).

---

### *Deployment Startup*

- [x] **Action**: Click "Deployment" button under "Tower Mode" on Deployment Settings tab.
- [x] **Action**: Select string (=hole) number on Hole Selection tab.
- [x] **Action**: Note deployment start time. 5 p.m. 30

  *Logbook*: Time
- [x] **Action**: Click "Reset Mission Time" on the right panel on the deployment screen.
- [x] **Action**: Click "Startup" under Deployment Events.

☑ **Action**: Note DDB id number (1, 2, 3, or 4).

**ENTER**: DDB# (select button)

*Logbook*: DDB#

☑ **Action**: Take a well depth measurement with the laser ranger.

**ENTER**: Well depth [m] 48.28

*Logbook*: Well depth

☑ **Action**: Reset Payout when DOM60 breaks the plane of the floor.

**CLICK**: "Reset" button (Top of Hole Reset) on Deployment Settings ▶ Settings tab.

*Logbook*: Payout Start value 1.21

☑ **Action**: Get cable mark reading at DOM59.

*Logbook*: Cable mark [m] unreadable.

☑ **Action**: Attach Paro at breakout #30. (This is called "Paro2" on the monitoring screen).

*Logbook*: Paro serial number 104251

☑ **Action**: Click "Paro Attached" under Deployment Events.

☑ **Action**: Measure distance between Paro location and nearest DOM.

Estimate distance to *bottom* DOM by adding *n* 17-meter segments
(*n* should be 1 for the Paro since nearest DOM is #59). 17.035 m to DOM 59

**ENTER**: Distance [m] from Paro to *bottom* DOM (#60) 17.035 m Δ 59-60

*Logbook*: Distance to nearest DOM, nearest DOM#, estimated distance to DOM60

☐ **Action**: Get cable mark reading at Paro.

*Logbook*: Cable mark [m]

@ Paro SN 104419 measured 7:10 pm →

☐ **Action**: Take Paro air pressure reading just before it breaks the water surface.

**ENTER**: Ambient pressure [PSI] for Paro

*Logbook*: Paro2 air pressure 9.73

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## *During Deployment*

☐ **Action**: Click "Paro In Water" under Deployment Events.

☐ **Action**: Measure curved distance of main cable going around DOM (for at least two DOMs).

*Logbook*: Straight (vertical) distance for DOM segment, curved cable distance

☐ **Action**: Measure real distance between neighboring DOMs (for every pair) with laser ranger.

*Logbook*: DOM#'s, distance

☐ **Action**: Put Keller (and one spare) in bucket of water (at near freezing temperature) at least one hour before breakout #15 is reached.

Note: The Keller is not temperature corrected and must therefore be brought to the temperature of the water in the hole (0-2°C) before the air pressure offset is determined.

☐ **Action**: Attach Keller at breakout #15.

**ENTER**: Keller serial number

*Logbook*: Keller serial number

0407558 m = 231.17416 b = -935.60782

0504000 m = 232.24796 b = -937.47573

☐ **Action**: Click "Keller Attached" under Deployment Events.

☐ **Action**: Measure distance between Keller and nearest DOM. 0.32

Estimate distance to *bottom* DOM by adding *n* 17-meter segments (*n* should be 31 for Keller since nearest DOM is #29).

**ENTER**: Distance [m] from Keller to *bottom* DOM (#60) 527.32

*Logbook*: Distance to nearest DOM, nearest DOM#, estimated distance to DOM60

☑ **Action**: Get cable mark reading at Keller.

*Logbook*: Cable mark [m] for Keller 510

☑ **Action**: Determine Keller air pressure offset before (or just as) Keller hits water.

**ENTER**: Ambient pressure [PSI] for Keller 10.60

*Logbook*: Ambient Keller pressure

☐ **Action**: Click "Keller In Water" under Deployment Events.

☐ **Action**: Get cable mark reading at top DOM.

*Logbook*: Cable mark [m]

☐ **Action**: Measure well depth as soon as top DOM is under water.

**ENTER**: Well depth [m] 494 m

*Logbook*: Well depth [m], measurement method (laser/tape)

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## *Between DOM attachment and String Drop*

☐ **Action**: Lower Setra assembly into hole (after top DOM is at least 50 m under the surface).

☐ **Action**: Measure distance between Setra sensor and floor of tower (distance marked on cable).

**ENTER**: Distance Setra to floor [m]

*Logbook*: Distance Setra to floor

☐ **Action**: Measure well depth with Setra system and laser ranger and compare.

*Logbook*: Well depth from Setra [m], well depth from laser [m]

☐ **Action**: If the two well depth meaurements agree, switch from laser to Setra in monitoring system.

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## *During String Drop*

☐ **Action**: Click "String Drop" under Deployment Events.

☐ **Action**: Measure well depth manually (with laser ranger and/or tape measure).

(if shift lead allows: repeat several times during drop)

**ENTER**: Well depth [m]

*Logbook*: Well depth, measurement method (laser/tape)

☐ **Action**: Read cable marks at regular intervals.

*Logbook*: Cable mark [m]; depth readings [m] (Paro, Keller); time

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## *End of Deployment*

☐ **Action**: Get final pressure readings from Paro and Keller when final depth has been reached.

*Logbook*: Pressure readings [PSI]; corrected depths [m] (from screen)

☐ **Action**: Get final well depth reading (laser and/or Setra).

HAS TO BE SIMULTANEOUS WITH FINAL PRESSURE READINGS!

*Logbook*: Well depth [m] (laser); well depth [m] (Setra)

☐ **Action**: Note deployment end time.

*Logbook*: Time

☐ **Action**: Click "Complete" under Deployment Events.

| Name | DOMID | Special | Comment | String Location |
|---|---|---|---|---|
| Ethiopian_Airlines | UP6P1774 | | | 1 |
| Murophobiaish | TP5P0591 | Droopy | | 2 |
| Chipmunk | UP4P0292 | Droopy | | 3 |
| Varig_TAM | TP6P1815 | | | 4 |
| Montana | UP5P0902 | Droopy | | 5 |
| Typhoonish | TP5P0503 | Droopy | | 6 |
| Dermatology | UP5P0816 | Droopy | | 7 |
| Weasel | TP4P0317 | Droopy | | 8 |
| Immunology | UP5P0652 | Droopy | | 9 |
| Selaphobia | TP5P0611 | Droopy | | 10 |
| Dipsophobia | UP5P0574 | Droopy | | 11 |
| Wolverine | TP4P0323 | Droopy | | 12 |
| Islandophilia | UP5P0998 | Droopy | | 13 |
| Air_Burundi | TP6P1823 | | | 14 |
| Hedgehog | UP4P0328 | Droopy | | 15 |
| Hohenschonhausen | TP5Y0127 | Droopy | | 16 |
| | UP5P0396 | | | 17 |
| Springfield | TP5P0737 | Droopy | | 18 |
| Air_Comores | UP6P1758 | | | 19 |
| | TP6Y4385 | | Instead of AP5P0437 | 20 |
| | UP5P0860 | | | 21 |
| Cheyenne | TP5P0845 | Droopy | | 22 |
| Brubu | UP5P0556 | Droopy | | 23 |
| Jefferson_City | TP5P0953 | Droopy | | 24 |
| Enetophobia | UP5P0724 | Droopy | | 25 |
| Chicago | TP5P0925 | Droopy | | 26 |
| Czech_Airlines | UP6P1776 | | | 27 |
| Theriology | TP5P0805 | Droopy | | 28 |
| Butadieneish | UP4P0200 | Droopy | | 29 |
| TACV_Air | TP6P1813 | | | 30 |
| Dog | UP4P0300 | Droopy | | 31 |
| Noreaster | TP5P0507 | Droopy | | 32 |

| | | | | |
|---|---|---|---|---|
| Morgan_8 | UP5Y0156 | Droopy | | 33 |
| Air_China | TP6P1821 | | | 34 |
| Donkey | UP4P0304 | Droopy | | 35 |
| Wallaby | TP4P0311 | Droopy | | 36 |
| Aero_Benin | UP6P1782 | | | 37 |
| Royal_Aruban_Airline | TP6P1809 | | | 38 |
| Lakschmana | UP6Y4378 | | | 39 |
| Surya | TP6Y4425 | | | 40 |
| Druk_Air | UP6P1766 | | | 41 |
| Gulf_Air | TP6P1825 | | | 42 |
| Cayman_Airways | UP6P1760 | | | 43 |
| Royal_Brunei_Airline | TP6P1803 | | | 44 |
| Dasaratha | UP6Y4434 | | | 45 |
| Kasumamodini | TP6Y4369 | | | 46 |
| Cubana_Air | UP6P1770 | | | 47 |
| Amaravati | TP6Y4417 | | | 48 |
| Air_Canada | UP6P1772 | | | 49 |
| Aerolineas_Argentina | TP6P1827 | | | 50 |
| Rotini | UP4P0122 | FAT 1 - deploy in position 51-60 only ! Droopy | | 51 |
| | TP64289 | | | 52 |
| Balneology | UP5P0770 | Droopy | | 53 |
| Cherry | TP4P0105 | FAT 1 - deploy in position 51-60 only ! Droopy | | 54 |
| Dhritaraschtras | UP6Y4440 | | | 55 |
| Melanophobia | TP5P0585 | Droopy | | 56 |
| | UP6Y4364 | | Instead of UP6Y4428 | 57 |
| Tapir | TP4P0293 | Droopy | | 58 |
| Mostaccioli | UP4P0114 | | | 59 |
| Neophilia | TP5P0677 | Droopy | | 60 |
| Remus | AP4P0060 | FAT 1 - deploy in position 51-60 only ! ice-top Droopy | | Found after 51 deployment saved for next string |
| | TP6Y4375 | | Instead of TP6Y4373 | |
| Ligyrophobia | UP5P0596 | Droopy | | |
| Embryology | UP5P0760 | Droopy | | |
| Minnesota | UP5P1026 | Droopy | | |
| | UP6Y4230 | | | Broken Connector |
| | UP6Y4236 | | Instead of UP4v0036 | |