



DEPLOYMENT LOG for IceCube STRING # 38

Deployment Start: at 9:13 pm on 01/09/06 (Jan)

Deployment End: at _____ on _____

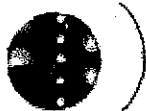
Target depth (DOM60): 2450 m Final depth: _____

Deployment Crew

Position	First Shift	Second Shift	Third Shift
Shift lead	Gary Hill		
DOM install 1 (high)	Jon Eisch		
DOM install 2 (low)	Nobuyoshi Patrick		
DOM supply 1 / DOM install 3	Bernhard Vogt Mike Solenz		
DOM supply 2 / floater	Mark Kussberg		
Winch operator (cable & tower)	Dan		
Notary (logbook & photos)	Alex Olivas / Kara	Dag C	
PTS (monitoring / sensors)	Igacio / Justin / Dan	Igacio / Justin	
Support (optional)	Patrick Berghaus		
Time shift on:			
Time shift off:			

Summary/Comments:

Tape was cut @ 20 cm

**Hole Handover**☐ Drill data reviewed☐ maximum drift in x: 59 ^{h-a.} ☒ plot☐ maximum drift in y: 59 ☒ plot☐ maximum depth: ~~2500m~~ 2500m☐ minimum radius: 59 ☒ plot☐ plot of predicted radius vs depth and time☒ Hole dimensions verified

Time: _____

Drill Lead: _____
name / signature / dateDeployment Lead: _____
name / signature / date☐ Handover complete**Hole Logging**

(skip if not applicable)

R Min = 59 cm

* Logging startup 15:40

☒ Logger drop startedTime: 1620

Speed: _____

☒ Logging started

Time: _____

Speed: _____

☐ Logging ended

Time: _____

☐ Estimated hole lifetime: _____

► Must reach target depth by _____ on _____

**Deployment Startup**

Time: _____

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

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

- ☐ Loopback terminators connected (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

- 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): _____
 - ☐ ☐ CPR trained: _____
 - ☐ ☐ Food runners: _____

- ☐ End of Main Cable brought into TOS and secured

call galley at 65521

Cable end attachments

- ☐ Measure well depth: _____
- ☐ Weights (5) attached
- ☐ Weight cable attached (weight stack complete)

Time: _____

Photos: DOM ids (☒ long ☒ short); connectors (☒ long ☒ short)**DOM position 60**DOM id: ☒ TP4P0089

(T, Long)

Cable mark: 2.7

Reason for substitution:

☒ Bottom shackle connected to weight stack☒ Top clutch connected at link # 19☒ Bow OK → ☒ clutch zip tied☒ Cable end taped to weight stack cable

Payout: _____

Photos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 59**DOM id: ☒ UP4P0094

(U, Short)

Cable mark: 20.6

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 19☒ Bow OK → ☒ clutch zip tied $\Delta(59-60)$: 17.03
(use laser ranger)Photos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 30**Time: 9:46 pm☒ Cable/LC continuity test complete (Q16)

Depth: _____

☒ all pass☐ fail: _____

Payout _____

- LongDOM☒ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☒ connected☐ Loose pigtails taped to cable**Thermistor:**☒ Present ☒ Distance to DOM59: 0.55m**Paro:** (= Paro2)☒ Connected ☒ Operational ☒ Air pressure [PSI]: 40.7Ser.#: 95410☐ Cable mark: too much tape ☒ Distance to DOM59: 0.2m 1.28mAdapter: 10052☐ All clear to lower cable ☺ Nipple ☐ on ☒ off

dom 59 disconnected & down hole @ 10:08m 4

ok 9:30
Albrecht
decreases
that it is
9:30

Photos: DOM ids (☒ long ☒ short); connectors (☒ long ☒ short)**DOM position 58**DOM id: ☒ TP4P0095

(T, Long)

Cable mark: 36.62 m

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 16 $\Delta(58-59)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 57**DOM id: ☒ UP4P0132

(U, Short)

Cable mark: 53.55 m

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 16 $\Delta(57-58)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 29**

Time:

☒ Cable/LC continuity test complete (Q16)☒ all pass☐ fail: _____Now 10:34Last b/o 9:46 Δt [min] 48**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☐ connected

In air Depth:

Paro2 46.4 m

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP4P0113

(T, Long)

Cable mark: 70.51 m

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 17 $\Delta(56-57)$: 17.1 m☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 55**DOM id: ☒ UP4P0154

(U, Short)

Cable mark: 67.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 17 $\Delta(55-56)$: 17.0 m☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 28**

Time:

☒ Cable/LC continuity test complete (Q15)Now 22:50☒ all passLast b/o 10:34 22:34☐ fail: _____ Δt [min] 16 min**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro 267.7 m☒ connector O-ring in place and ☒ lubed

Payout _____

☒ breakout O-ring in place and ☐ lubed☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☒ connected☒ Loose pigtails taped to cableParo 2
054
060☐ All clear to lower cable ☺

Photos: DOM ids (☒ long ☒ short); connectors (☒ long ☒ short)**DOM position 54**

(T, Long)

Cable mark: 1.44 mDOM id: ☒ TP4P0119

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 17 $\Delta(54-55)$: 17.1 m☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 53**

(U, Short)

Cable mark: 12.4 mDOM id: ☒ UP4P0208

Reason for substitution:

☒ Bottom shackle connected☐ Top clutch connected at link # 17 $\Delta(53-54)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 27**

Time:

☒ Cable/LC continuity test complete (Q15)☒ all pass☐ fail: _____Now 11:05 pmLast b/o 10:34 pm Δt [min] 30 minutes

- LongDOM

☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☐ connected

Depth:

Paro2 103.34

Payout _____

- ShortDOM

☐ connector discharged (ESD)☒ 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: ☒ TP5Y0187

(T, Long)

Cable mark: 138.3

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 17 $\Delta(52-53)$: 17.0m☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 51**DOM id: ☒ UP4P0130

(U, Short)

Cable mark: 155.2

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 19 $\Delta(51-52)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 26**

Time:

☒ Cable/LC continuity test complete (Q14)☒ all passLow Z☐ fail:Now 23:18Last b/o 23:05 Δt [min] _____**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 137.35

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☐ breakout O-ring in place and ☐ lubed☒ connected☒ Loose pigtails taped to cable**Thermistor:**☒ Present☒ Distance to DOM51: 54cm☐ All clear to lower cable ☺

Photos: DOM ids (☒ long ☒ short); connectors (☒ long ☒ short)**DOM position 50**DOM id: ☒ TP4P0197

(T, Long)

Cable mark: 172.2

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(50-51)$: 17.2☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view☒ Curved distance around DOM: 2.40m ☒ Vertical distance: 2.36**DOM position 49**DOM id: ☐ UP5Y0086

(U, Short)

Cable mark: 189.1☒ UP5P0719

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(49-50)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view☒ Curved distance around DOM: 2.40m ☐ Vertical distance: 2.30m**Breakout 25**

Time:

☒ Cable/LC continuity test complete (Q14)☒ all pass☐ fail: _____Now 11.36pmLast b/o 11:18 Δt [min] 18min

Depth:

Paro2 171.81

Payout _____

- LongDOM☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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 48DOM id: ☒ TP4Y0019

(T, Long)

Cable mark: 206.05

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(48-49)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 47**DOM id: ☒ ~~TP4Y0018~~ ^{TP4Y0018}

(U, Short)

Cable mark: 223

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(47-48)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☐ phi orientation ☐ whole view *connector broke during deployment, reason for fail connector was not connected when winch move***Breakout 24**

Time:

☒ Cable/LC continuity test complete (Q13)☒ all pass☐ fail: _____Now 11:36 ^{11:57 pm}Last b/o 11:36 Δt [min] 21 min**- LongDOM**

Depth:

☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☒ breakout O-ring in place and ☐ lubed☒ connectedParo2 598m

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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**

(T, Long)

Cable mark: 240mDOM id: ☒ TP4H0055

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(46-47)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 45**

(U, Short)

Cable mark: 257mDOM id: ☒ UP4Y0020

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(45-46)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 23**☒ Cable/LC continuity test complete (Q13)☒ all pass☐ fail: _____**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☒ breakout O-ring in place and ☐ lubed☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☒ breakout O-ring in place and ☐ lubed☒ connected☒ Loose pigtailed taped to cable

Time:

Now 12:10 amLast b/o 11:57 pm Δt [min] 13 min

Depth:

Paro2 240.14

Payout _____

☐ All clear to lower cable ☺

Photos: DOM ids (☒ long ☒ short); connectors (☒ long ☒ short) *gel looks good***DOM position 44**DOM id: ☒ TP5P0815

(T, Long)

Cable mark: 274

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(44-45)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 43**DOM id: ☒ UP5P0540 *gel gc*

(U, Short)

Cable mark: 290.8

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(43-44)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 22**

Time:

☒ Cable/LC continuity test complete (Q12) *Low Z*☒ all pass☐ fail: _____Now 12:25amLast b/o 12:10am Δt [min] 15 min**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☒ connected

Depth:

Paro2 274.26

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☐ connected☒ Loose pigtails taped to cable

Thermistor:

☒ Present☒ Distance to DOM 430.58m☐ All clear to lower cable ☺



IceCube String Deployment Log

String 38

stopped for "midnight meal" at 12:30am

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

restarted deployment at 12:57

DOM position 42

DOM id: ☒ TP5P0841

(T, Long)

Cable mark: 307.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 8 $\Delta(42-43)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view

DOM position 41

DOM id: ☒ UP5P1002

(U, Short)

Cable mark: 329.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(41-42)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view

Breakout 21

Time:

☒ Cable/LC continuity test complete (Q12)

Low 2 continuity

☒ all pass☐ fail: _____Now 1:10Last b/o 12:25amAt [min] 13 minutes sinceDepth: restart

- LongDOM

☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☒ breakout O-ring in place and ☐ lubed☒ connected

Paro2 _____

Payout _____

- ShortDOM

☐ connector discharged (ESD)☒ 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: ☒ TP5Y0191

(T, Long)

Cable mark: 341.6

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(40-41)$: 17.0☒ Bow OK → ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 39**DOM id: ☒ UP5Y0070 *good gel*

(U, Short)

Cable mark: 358.6

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(39-40)$: 17.1☒ Bow OK → ☒ clutch zip tiedPhotos: ☐ chain with clutch ☐ phi orientation ☐ whole view**Breakout 20**Low Z

Time:

☐ Cable/LC continuity test complete (Q11)☐ all pass☒ fail: bad as expectedNow 1:20amLast b/o 1:10am Δ [min] 10 minutes**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 3435☒ connector O-ring in place and ☐ lubed

Payout

☒ breakout O-ring in place and ☐ lubed☐ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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: ☒ TP5P0757

(T, Long)

Cable mark: 375.8☐ Reason for substitution:☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(38-39)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 37**DOM id: ☒ UP5P0838

(U, Short)

Cable mark: 393.7☐ Reason for substitution:☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(37-38)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 19**

Time:

☒ Cable/LC continuity test complete (Q11)☒ all pass Low Z☐ fail: _____Now 1:33Last b/o 1:20 Δt [min] 13**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 377.3

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP4H0052

(T, Long)

Cable mark: 410.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(36-37)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 35**DOM id: ☒ UP5P0768

(U, Short)

Cable mark: 427.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(35-36)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 18**

Time:

☒ Cable/LC continuity test complete (Q10)☒ all pass Low Z☐ fail: _____Now 1:46Last b/o 1:33 Δt [min] _____**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 411.1

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP5P0609

(T, Long)

Cable mark: 444.6

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(34-35)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 33**DOM id: ☒ UP5P0572

(U, Short)

Cable mark: 461.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(33-34)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 17**

Time:

☒ Cable/LC continuity test complete (Q10)☒ all pass LOW Z☐ fail: _____Now 1:56Last b/o 1:46 Δt [min] 10 min**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☒ breakout O-ring in place and ☒ lubed☒ connected

Depth:

Paro2 445.1

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP5P0599

(T, Long)

Cable mark: 478.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(32-33)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 31**DOM id: ☒ UP5P0552

(U, Short)

Cable mark: 495.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(31-32)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 16**

Time:

☒ Cable/LC continuity test complete (Q9)Now 2:08☒ all pass Low ZLast b/o 1:56☐ fail: _____ Δt [min] _____**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 479.6☒ connector O-ring in place and ☒ lubed

Payout _____

☐ breakout O-ring in place and ☐ lubed☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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: ☒ TP5Y0217

(T, Long)

Cable mark: 512.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(30-31)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 29**DOM id: ☒ UP5P0636

(U, Short)

Cable mark: 529.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(29-30)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 15**

Time:

☒ Cable/LC continuity test complete (Q9)☒ all pass Low Z☐ fail: _____Now 2:27Last b/o 2:08 Δt [min] 19 min**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 514☒ connector O-ring in place and ☒ lubed

Payout _____

☐ breakout O-ring in place and ☐ lubed☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected☒ Loose pigtails taped to cableThermistor: ☒ Present ☒ Distance to DOM29: 3cmKeller: ☒ Connected ☒ Operational ☒ Air pressure [PSI]: 76Ser.#: 407560 ☒ Cable mark: 528.25 ☒ Distance to DOM29: 109cm☐ All clear to lower cable ☺

Photos: DOM ids (☒ long ☒ short); connectors (☒ long ☒ short)**DOM position 28**DOM id: ☒ TP5P0589

(T, Long)

Cable mark: 546.5

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(28-29)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 27**DOM id: ☒ UP5P0712

(U, Short)

Cable mark: 563.4

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(27-28)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 14**

Time:

☒ Cable/LC continuity test complete (Q8)☒ all pass LOW Z☐ fail: _____Now 2:41Last b/o 2:27 Δt [min] 14**- LongDOM**

Depth:

☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connectedParo2 547

Keller _____

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP5Y0155

(T, Long)

Cable mark: 580.3☐

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(26-27)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 25**DOM id: ☒ UP5P0718

(U, Short)

Cable mark: 597.3☐

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(25-26)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 13**

Time:

☒ Cable/LC continuity test complete (Q8)Now 2:56☒ all pass Low ZLast b/o 2:41☐ fail: _____ Δt [min] _____**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 582.9☒ connector O-ring in place and ☒ lubedKeller 68.1☐ breakout O-ring in place and ☐ lubed

Payout _____

☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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: ☒ TP5P0715

(T, Long)

Cable mark: 614.2☐

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(24-25)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 23**DOM id: ☒ UP5Y0140

(U, Short)

Cable mark: 631.2☐

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(23-24)$: [7.0]☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 12**

Time:

☒ Cable/LC continuity test complete (Q7)☒ all pass Low Z☐ fail: _____Now 3:07Last b/o 2:56 Δt [min] 11**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 615.7Keller 89.5

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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 22**DOM id: ☒ TP5P0519

(T, Long)

Cable mark: 646.2

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(22-23)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 21**DOM id: ☒ UP5P0744

(U, Short)

Cable mark: 665.2

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 14 $\Delta(21-22)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 11**

Time:

☒ Cable/LC continuity test complete (Q7)☒ all pass Low Z☐ fail: _____Now 3:18Last b/o 3:07 Δt [min] 11**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 650.2Keller 112.6

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP5P0673

(T, Long)

Cable mark: 682.2

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(20-21)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view☒ Curved distance around DOM: 237cm ☒ Vertical distance: 233cm**DOM position 19**DOM id: ☒ UP5P0732

(U, Short)

Cable mark: 699.1

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(19-20)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☐ whole view☒ Curved distance around DOM: 240cm ☐ Vertical distance: 237cm**Breakout 10**

Time:

☒ Cable/LC continuity test complete (Q6)Now 3:36☒ all pass Low ZLast b/o 3:18☐ fail: _____ Δt [min] 18 min**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 689.6☒ connector O-ring in place and ☒ lubedKeller 137.9☐ breakout O-ring in place and ☐ lubed

Payout _____

☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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: ☒ TP5Y0141

(T, Long)

Cable mark: 716.1

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(18-19)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 17**DOM id: ☒ UP5P0688

(U, Short)

Cable mark: 733.1

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(17-18)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 9**

Time:

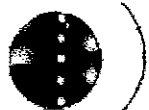
☒ Cable/LC continuity test complete (Q6)☒ all pass Low Z☐ fail: _____Now 3:48Last b/o 3:36 Δt [min] 12**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 718.6Keller 160.0

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP4P0173

(T, Long)

Cable mark: 750.0

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(16-17)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view Sanity Break
3:53
3:57**DOM position 15**DOM id: ☒ UP5P0796

(U, Short)

Cable mark: 767

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(15-16)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 8**

Time:

☒ Cable/LC continuity test complete (Q5)☒ all pass Low Z cont.Now 4:09☐ fail: LC GoodLast b/o 3:48 Δt [min] _____**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 7529☒ connector O-ring in place and ☒ lubed

Keller _____

☐ breakout O-ring in place and ☐ lubed

Payout _____

☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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: ☒ TP5Y0139

(T, Long)

Cable mark: 784

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(14-15)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 13**DOM id: ☒ UP4P0316

(U, Short)

Cable mark: 800.95

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(13-14)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 7**

Time:

☒ Cable/LC continuity test complete (Q5)☒ all pass LC Low Z☐ fail: _____Now 4:28Last b/o 4:09 Δt [min] 19 min**- LongDOM**

Depth:

☐ connector discharged (ESD)Paro2 787.15m☒ connector O-ring in place and ☒ lubed

Keller _____

☐ breakout O-ring in place and ☐ lubed

Payout _____

☒ connected**- ShortDOM**☐ connector discharged (ESD)☒ 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 12DOM id: ☒ TP4P0247

(T, Long)

Cable mark: 817.9

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(12-13)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 11**DOM id: ☒ UP4P0312

(U, Short)

Cable mark: 834.9

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(11-12)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☐ whole view**Breakout 6**

Time:

☒ Cable/LC continuity test complete (Q4)☒ all passAll Low Z7P+no measurementNow 4:42Last b/o 4:28☐ fail: Δt [min] 14**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 821.2

Keller

Payout

- ShortDOM☐ connector discharged (ESD)☒ 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 ☺



IceCube String Deployment Log

String 38

Call Ignacio in the other TOS when you read DOM 10

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

DOM position 10 ~~10~~ ~~11~~ ~~12~~ read ^{note} above

DOM id: ~~TP5Y0095~~

(T, Long)

Cable mark: 851.8

☐ Reason for substitution:

☒ Bottom shackle connected

☒ Top clutch connected at link # 18

$\Delta(10-11)$: 17.1

☒ Bow OK $\rightarrow$ ☒ clutch zip tied

Photos: ☒ chain with clutch ☒ phi orientation ☒ whole view

DOM position 9

DOM id: ~~UP4P0280~~

(U, Short)

Cable mark: 868.8

☐ Reason for substitution:

☒ Bottom shackle connected

☒ Top clutch connected at link # 18

$\Delta(9-10)$: 17.1

☒ Bow OK $\rightarrow$ ☒ clutch zip tied

Photos: ☒ chain with clutch ☒ phi orientation ☒ whole view

Breakout 5

Time:

☒ Cable/LC continuity test complete (Q4)

☒ all pass All Low Z

☐ fail: _____

Now 4:57

Last b/o 4:42

Δt [min] _____

- LongDOM

☐ connector discharged (ESD)

☒ connector O-ring in place and ☒ lubed

☐ breakout O-ring in place and ☐ lubed

☒ connected

Depth:

Paro2 855.94

Keller _____

Payout _____

- ShortDOM

☐ connector discharged (ESD)

☒ 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: ☒ TP5Y0087

(T, Long)

Cable mark: 885.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(8-9)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 7**DOM id: ☒ UP5Y0138

(U, Short)

Cable mark: _____



Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(7-8)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 4**

Time:

☒ Cable/LC continuity test complete (Q3)☒ all pass All Low Z☐ fail: _____Now 5:15Last b/o 4:57 Δt [min] 18**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 889.5

Keller _____

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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**

(T, Long)

Cable mark:

919.7

990.7

DOM id: ☒ TP4P0307

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(6-7)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 5**

(U, Short)

Cable mark:

936.6

DOM id: ☒ UP5Y0146

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(5-6)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 3**

Time:

☒ Cable/LC continuity test complete (Q3)☒ all pass

All Low Z

☐ fail:Now 5:31Last b/o 5:15 Δt [min] 16**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☐ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 923.42

Keller

Payout

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP5P0631

(T, Long)

Cable mark: 953.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(4-5)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 3**DOM id: ☒ UP5Y0098

(U, Short)

Cable mark: 970.6

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(3-4)$: 17.0☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 2**

Time:

☒ Cable/LC continuity test complete (Q2)☒ all pass All Low Z☐ fail: _____Now 5:48Last b/o 5:31 Δt [min] _____**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

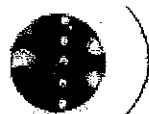
Depth:

Paro2 953.89

Keller _____

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ 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: ☒ TP4P0265

(T, Long)

Cable mark: 987.8

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(2-3)$: 17.1☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**DOM position 1**DOM id: ☒ UP5Y0172

(U, Short)

Cable mark: 1004.7

Reason for substitution:

☒ Bottom shackle connected☒ Top clutch connected at link # 18 $\Delta(1-2)$: 16.93☒ Bow OK $\rightarrow$ ☒ clutch zip tiedPhotos: ☒ chain with clutch ☒ phi orientation ☒ whole view**Breakout 1**

Time:

☒ Cable/LC continuity test complete (Q2)☒ all pass All low $\approx$ Now 6:10☐ fail: _____Last b/o 5:48 Δt [min] _____**- LongDOM**☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected

Depth:

Paro2 980.22

Keller _____

Payout _____

- ShortDOM☐ connector discharged (ESD)☒ connector O-ring in place and ☒ lubed☐ breakout O-ring in place and ☐ lubed☒ connected21069☒ Loose pigtails taped to cableParo (Q1): ☒ Connected ☒ Operational ☒ Air pressure [PSI]: 11Ser.#: 93438 ☒ Cable mark: 210cm ☒ Distance to DOM1: 166cmAdapter: 100SL Nipple ☐ on ☒ off☒ Group photo☒ All clear to lower cable ☺

**Uphole Pressure Sensor (Setra)**

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

Time: 6:218☒ Stop the cable winch 39.7☒ Lower Setra pressure sensor into hole☒ Distance to Setra from floor: 60m☒ Setra readout verified with monitoring system *yes. Some small problems.*☐ Well depth from Setra: _____☒ Well depth from laser: 39.6m

If the two well depth measurements agree:

☐ Switch to Setra well depth in monitoring system

Time: _____

Now the String Drop begins



The target depth is **2450 m**

- Depth: ^{2293.5}~~2293~~ / 2300 8.24 spms down

Time:

Sutra = problem - ~60m discrepancy between Para & cable work
(i.e. lower since as dist. - 100 ft. & near zero. (Lower dist. for. Encl 25.1.1)



60-22 = 38m well depth from Setra
 using ambient
 IceCube String Deployment Log 10.14 psi
 entered by hand

String 38

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

☐ Distance from Paro2 to DOM60:

$d_{\text{Paro2-DOM59}} = \underline{\hspace{2cm}}$ (from p. 4)

$d_{\text{Paro2-DOM60}} = (d_{\text{Paro2-DOM59}} + 17) \text{ m} = \underline{\hspace{2cm}}$ ← insert below

☐ Convert Paro2 pressure to string depth:

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

(use 6 decimals for exp's)

Ambient pressure (from p. 4): $P_0 = \underline{\hspace{2cm}}$ PSI → $\exp(-KP_0) = \underline{\hspace{2cm}}$

Pressure reading (from screen): $P = \underline{\hspace{2cm}}$ PSI → $\exp(-KP) = \underline{\hspace{2cm}}$

Subtract exponentials → $= \underline{\hspace{2cm}}$

$\times 1.85947 \cdot 10^5$

Paro2 depth in water → $= \underline{\hspace{2cm}}$ m

Add distance to DOM60 (above) → $+$ $\underline{\hspace{2cm}}$ m

Add well depth → $+$ $\underline{\hspace{2cm}}$ m

Depth of bottom DOM → $= \underline{\hspace{2cm}}$ m

Final depth estimates

←----- read off deployment screen ----->

Time:	Paro2	Keller	Paro1	Payout	Cable marks
Reading	3450.34 PSI	2738.3 PSI	2034.70 PSI	-2462.78m	2454.8 m
Offset	10.41 PSI	10.14 PSI	PSI	m	m
Well depth	38.2 m (laser)			This space is intentionally left blank	
Dist. to DOM60	2462.64 m	2472.74m	2460.86m		
DEPTH (DOM60)	↓	↓	↓		

Time: 10:07 am 11/9/05 (14 hrs)

" Final depth (DOM60): 2462.64 prelim. from Paro 2

**Deployment Closeout**

- ☐ Log entries complete 0
- ☒ 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
E-stop hit.

Time: _____ Date: 1/9/06

Shift Lead: GARY HILL *G. b. Hill*
name / signature

Logger: *Alex Oliver*
name / signature

PTS Lead: _____
name / signature

Deployment Manager: *Jonathan* 1/9/06
name / signature

Safety Officer: *Jonathan*
name / signature

IceCube On-ice Lead: _____
name / signature

10

5

1

100-2017-10

2025

Walt J. & Jim Peters

2019/10/10 10:10 AM

Mit freundlichen Grüßen

IceCube Deployment Monitoring Check Sheet (IDMCS)

Version 2.2

January 3, 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 Remmeesters) 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 name (initials) and time.
- ▶ 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**.

Distances between devices

calculate manually and enter on deployment screen

Distance between Paro2 and DOM60: $1.28 + 17 = 18.28$

Distance between Keller and DOM60: $1.09 + 31 \times 17 = 528.09$

Distance between Paro1 and DOM60: $1.66 + 59 \times 17 = 1004.66$
 ~~$1.66 + 40 \times 17 = 681.66$~~

Distance between Paro2 and Paro1: $1.66 + 58 \times 17 - 1.28 = 986.38$

Distance between Paro2 and Keller: ~~1097.77~~ $=$

Distance between Keller and Paro1: $=$

Notes:

There are 60 DOMs on every string.

The nominal spacing between DOMs is 17 m.

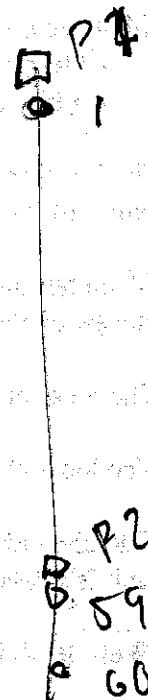
The nominal spacing between breakouts is 34 m.

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

Paro1 is at breakout 1, just above DOM1.

The Keller is at breakout 15, just above DOM29.

Paro2 is at breakout 30, just above DOM59.



Check Sheet

STRING # 38

DATE: 1/8/2006

Before Deployment

- 1:30 PM
- ☒ Action: Locate laser ranger for well depth measurements. J.V.
 - ☒ Action: Locate metric tape measure. J.V.
 - ☒ Action: Locate two Paros (and two adapter cables) and one Keller, *plus spares* of each. J.V.
 - ☒ Action: Locate bucket (for cooling of Keller sensor with water/ice mix). J.V.
 - ☒ Action: Fill bucket with snow and place in heated area to make slush. J.V.
 - ☒ Action: Locate Setra uphole pressure assembly (sensor + cable). J.V.

Action: One ext. cable for upper paros
~~data~~

Deployment Startup

- ☒ Action: Note deployment start time. J.V.
Logbook: Time
- ☒ Action: Click "Reset Mission Time" on the right panel on the deployment screen. J.V.
- ☒ Action: Note DDB id number (1, 2, or 3).

ENTER: DDB# (select button)

Logbook: DDB# 01

I.T.

2:01 PM

Jan/8/2006

IceCube String Deployment Monitoring

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

ENTER: Well depth [m] J✓

Logbook: Well depth

- n/a** **Action:** Measure distance (in segments) between dust logger (at laser) and bottom DOM.

Logbook: Distance [m]; segment distances [m]

- ☒ **Action:** Get cable mark reading at bottom DOM.

Logbook: Cable mark [m]

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

CLICK: "Reset" button (Top of Hole Reset) on Payout/Temperature tab

Logbook: Payout Start value

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

Logbook: Paro serial number, Paro type (147Q, 147Q2, no resistor)

- ☒ **Action:** Measure distance between bottom Paro log

Estimate distance to *bottom* DOM by adding n 17-meter segments
(n should be 1 for Paro2 since nearest DOM is #59).

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

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

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

Logbook: Cable mark [m]

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

ENTER: Ambient pressure [PSI] for Paro2

Logbook: Paro2 air pressure

During Deployment

- ☐ **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

- ☒ **Action:** Measure distance between Keller and nearest DOM.

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)

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

- ☐ **Action:** Get cable mark reading at Keller.

Logbook: Cable mark [m] for Keller

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

ENTER: Ambient pressure [PSI] for Keller

Logbook: Ambient Keller pressure

- ☒ **Action:** Get cable mark reading at top DOM.

Logbook: Cable mark [m]

☒ **Action:** Attach Paro at breakout #1. (This is called "Paro1" on the monitoring screen).

Logbook: Paro serial number, adapter type (100 Ω , 147 Ω , no resistor)

☒ **Action:** Measure distance between top Paro and nearest DOM.

Estimate distance to *bottom* DOM by adding n 17-meter segments
(n should be 59 for Paro1 since nearest DOM is #1).

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

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

☒ **Action:** Get cable mark reading at top Paro.

Logbook: Cable mark [m]

☒ **Action:** Measure well depth when top Paro hits water.

ENTER: Well depth [m]

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

Between DOM attachment and String Drop

☒ **Action:** Lower Setra assembly into hole (after top DOM is >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 measurements agree, switch from laser to Setra in monitoring system.

During String Drop

- ☒ **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] (Paro1, Paro2, Keller); time

End of Deployment

- ☒ **Action:** Get final pressure readings from Paros (2) 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

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Attached are the calibration equations and coefficients for the 2005-2006 drilling season for the Icecube Pressure Systems Deployment Pressure Sensors ("Kellers") – Part Number 300DS-340-003700.

Jack Ambuel
Electrical Engineer
11/28/2005

Note: All Raw ADC Values are written as decimal values

General Procedure for Obtaining Scaled Pressure Reading in PSIS:

This is a two step process executed as follows:

1. Convert Raw ADC reading for Pressure Sensor into milliamps using scaling equation for the DDB in use (i.e. DDB01 or DDB02):

$$I_s = m_{dn} * ADC + b_{dn}$$

where I_s = sensor current in milliamps

m_{dn} = slope in calibration equation for DDB n

b_{dn} = intercept in calibration equation for DDB n

ADC = Analog to Digital Output value of Pressure Sensor interface circuit

2. Convert milliamps into psis using sensor calibration equation for Sensor Deployed

$$P_s = m_{sn} * I_s + b_{sn} \text{ where } P_s = \text{Sensor pressure in psis}$$

m_{sn} = slope in calibration equation for Sensor n

b_{sn} = intercept in calibration equation for Sensor n

I_s = sensor current in milliamps computed in the first step

Deployment Data Box 01 (DDB01) Pressure Sensor Interface Circuit Calibration Equation and Coefficients:

The calibration equation for the DDB01 is a piecewise linear equation of two parts with each part having the form:

$$I_s = m_{dn} * ADC + b_{dn}$$

where I_s = sensor current in milliamps

m_{dn} = slope in calibration equation for DDB n

b_{dn} = intercept in calibration equation for DDB n

ADC = Analog to Digital Output value of Pressure Sensor interface circuit

There are two equations corresponding to two ranges of the ADC output:

Range 1: For ADC readings (in decimal) from 0 to 2900

Range 2: For ADC readings (in decimal) above 2900

The slope and intercept for Range 1 (0 to 2900) are:

$$m_{d11} = -0.005602847$$

$$b_{d11} = 21.750643848$$

The slope and intercept for Range 2 (above 2900) are:

$$m_{d12} = -0.003875969$$

$$b_{d12} = 16.589457364$$

Deployment Data Box 02 (DDB02) Pressure Sensor Interface Circuit Calibration Equation and Coefficients:

The calibration equation for the DDB02 is a piecewise linear equation of two parts with each part having the form:

$$I_s = m_{da} * ADC + b_{da} \quad \text{where } I_s = \text{sensor current in milliamps}$$
$$m_{da} = \text{slope in calibration equation for DDB } n$$
$$b_{da} = \text{intercept in calibration equation for DDB } n$$
$$ADC = \text{Analog to Digital Output value of Pressure Sensor interface circuit}$$

There are two equations corresponding to two ranges of the ADC output:

Range 1: For ADC readings (in decimal) from 0 to 2900

Range 2: For ADC readings (in decimal) above 2900

The slope and intercept for Range 1 (0 to 2900) are:

$$m_{d21} = -0.005578918$$

$$b_{d21} = 21.601772869$$

The slope and intercept for Range 2 (above 2900) are:

$$m_{d22} = -0.005579832$$

$$b_{d22} = 21.602789916$$

Deployment Data Box 03 (DDB03) Pressure Sensor Interface Circuit Calibration Equation and Coefficients:

The calibration equation for the DDB03 is a piecewise linear equation of two parts with each part having the form:

$$I_s = m_{dn} * ADC + b_{dn} \quad \text{where } I_s = \text{sensor current in milliamps}$$
$$m_{dn} = \text{slope in calibration equation for DDB } n$$
$$b_{dn} = \text{intercept in calibration equation for DDB } n$$
$$ADC = \text{Analog to Digital Output value of Pressure Sensor interface circuit}$$

There are two equations corresponding to two ranges of the ADC output:

Range 1: For ADC readings (in decimal) from 0 to 2900

Range 2: For ADC readings (in decimal) above 2900

The slope and intercept for Range 1 (0 to 2900) are:

$$m_{d21} = -0.005598886$$
$$b_{d21} = 21.718473538$$

The slope and intercept for Range 2 (above 2900) are:

$$m_{d22} = -0.005598373$$
$$b_{d22} = 21.717054025$$

Pressure Systems 300DS-340-003700 Pressure Sensor Calibration Equation and Coefficients:

The calibration equation for the 300DS-340-003700 Pressure Sensors is a linear equation having the form:

$$P_s = m_{sn} * I_s + b_{sn} \quad \text{where} \quad P_s = \text{Sensor pressure in psis}$$

$$M_{sn} = \text{slope for Sensor } n$$

$$B_{sn} = \text{intercept for Sensor } n$$

$$I_s = \text{sensor current in milliamps computed using appropriate DDB calibration equation}$$

The slope and intercept are different for each sensor. The following is a list of the coefficients (slopes and intercepts) for all of the sensors purchased for the 2004-2005 drilling season:

B		C	D
300DS-340-003700			
Sensor Serial Number	Slope	Intercept	
67			
68			
69			
70	405263	230.68300	-926.69975
71	405264	231.21610	-928.86444
72	407556	231.00690	-921.18622
73	407557	231.27520	-929.54128
74	407558	231.17410	-935.60782
75	407559	231.17610	-918.97123
76	407560	231.02730	-926.48878
77	407561	232.43090	-934.67438
78	407562	231.28820	-920.31888

Pressure Systems 300DS-340-003700 Pressure Sensor Calibration Equation and Coefficients:

The calibration equation for the 300DS-340-003700 Pressure Sensors is a linear equation having the form:

$$P_s = m_{sn} \cdot I_s + b_{sn} \quad \text{where} \quad P_s = \text{Sensor pressure in psis}$$

$$m_{sn} = \text{slope for Sensor } n$$

$$b_{sn} = \text{intercept for Sensor } n$$

$$I_s = \text{sensor current in milliamps computed using appropriate DDB calibration equation}$$

The slope and intercept are different for each sensor. The following is a list of the coefficients (slopes and intercepts) for all of the sensors purchased for the 2005-2006 drilling season:

	F	G	H
68	Sensor Serial Number	Slope	Intercept
69			
70	503998	231.60560	-931.33244
71	503999	231.74250	-929.40330
72	504000	232.24390	-937.47573
73	504001	231.72940	-933.38285
74	504002	231.80630	-933.18262
75	504003	232.17210	-933.51758
76	504004	231.02190	-923.48694
77	504005	231.71210	-929.79114
78	504006	231.02250	-923.67416
79	504007	232.39050	-931.83943

