

**Welltest analyse en log interpretatie  
HON-GT-01 en HON-GT-01-S1**

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## **Executive summary**

For the Greenwell Westland project; a deep geothermal well doublet, well Honselersdijk-GT-01 and its sidetrack 1 were drilled from end-December 2011 to 29<sup>th</sup> February 2012. The final TD reached in the sidetrack is 3190 m (Along Hole). Purpose of this well is to produce hot water from the Delft Sandstone Member and sandstones within the deeper Alblasserdam Member for heating of glasshouses. HON-2, the second well constituting this doublet, just reached TD ( April 12<sup>th</sup> 2012).

The sidetrack well HON-1ST was screened over most of the Delft sandstone and parts of sand intervals in the Alblasserdam. Following screen installment, the well was production tested and injection tested over the same combined reservoir intervals.

### **Conclusions**

The transmissivity of 112 meter (True Vertical Depth) screened net-reservoir amounts to  $4,3 - 7,6 * 10^{-4} \text{ m}^2/\text{s}$  (or 14,2 to 25,1 Darcymeter), corresponding with an average permeability of 152 milliDarcy over this entire section.

The highest recorded temperature is 86,1 °C at the well head coinciding with the highest flow-rate of 43,1 liter per second, under a drawdown of 12,3 bar. Long term production is likely to result in 1 or 2 additional degrees.

The majority of the produced water (say an estimated 85%) seems to flow from the Delft Sandstone Member. This is based on the produced water temperature, pressure plots, log evaluation and permeability estimations.

The maximum possible flow rate amounts to 60 l/s (extrapolated value) under a drawdown of 20 bar that will result in a water level drop of 250 meter.

The water has a total salinity of 123.000 ppm and contains 1,5 – 5,0 mg/l solid particles of which >90% are clay particles. The production of 1 m<sup>3</sup> water goes along with 1 m<sup>3</sup> gas.

The injection test was executed for three flow rates (20, then 30 then 44 l/sec). The initial high pressure at the start of the first test (73 bar) reflects initialization pressure followed by breakdown pressure. After this the pressure starts to decrease down to 16 - 8 bar. The validity of the following two tests is hampered by their short duration. The longer term injectivity at rates of 45 l/sec will presumably see a decreasing pressure over time since the near-well bore environment will be flushed clean. Summarised; injectivity over the longer term is likely sufficient to store the produced water.

### **Recommendations**

The overall test configuration and test lay-out of such extensive water producing intervals in a deep well, is not yet a well-established practice. A disadvantage of testing over an interval of ca. 400 m (112m net) is that all parameters obtained from such a test are averaged over a long vertical section. In this way it is not possible to establish drainage radius and permeability for specific zones.

In view of geological reasons, i.e. unknown connectivity of thinner sands and absence of long-term testing, T&A Survey does not recommend to effectuate this highest possible flow-rate immediately, but rather after the first year of production well flow-conditions are stabilized.

Installation of a gas separator is necessary because with the production of 1 m<sup>3</sup> water an amount of 1 m<sup>3</sup> gas (Standard Temperature Pressure) is being produced.

Installation of a surface filters with mesh size of 10 -20 micron for the production well and 1 micron for the injection well.

# 1 Inleiding

## 1.1 Algemeen

Voor het geothermieproject Greenwell Westland is de boring Honselersdijk-GT-01 gestart eind december 2011. Begin maart 2012 heeft sidetrack 1 van de boring HON-GT-01 de einddiepte bereikt van 3190 meter gemeten diepte. Over de beoogde reservoirsectie zijn wireline logs opgenomen en is een puttest uitgevoerd. Resultaten van de wireline logging en de puttest zijn geanalyseerd en zijn in dit rapport beschreven.

## 1.2 Beschikbare informatie

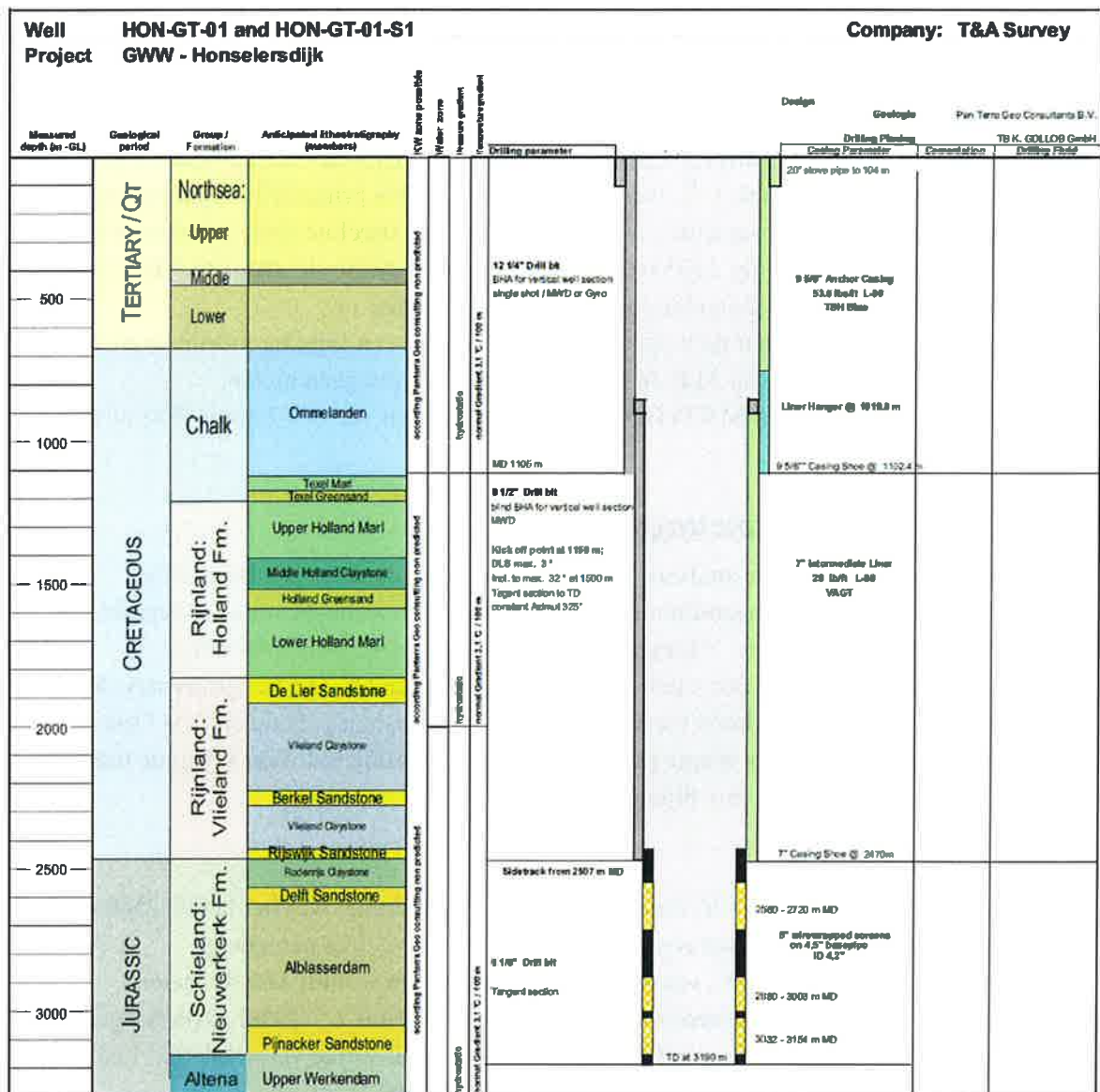
- Schlumberger (wireline logs)
- Baker Hughes (drukmetingen tijdens productietest)
- Geoservices (Masterlogs)
- Pathfinder (MWD Gamma Ray log)
- Seibt (water-, gas- en vaste bestanddelenanalyse)
- Schmid (welltest analyse)

# 2 Putinformatie

## 2.1 Putconfiguratie en filters

De boring HON-GT-01 is uitgevoerd met, in chronologische volgorde een beiteldiameter van 16, 12 ¼, 8 ½ en 6 ⅛ inch (zie figuur 1). De HON-GT-01 boring heeft een diepte van 3240 m MD bereikt (2945 m TVD). In de opeenvolgende boorgatdiameters is het volgende casingschema op toegepast: 9 5/8 en 7 inch. In de laatste sectie (6 ⅛ inch boorgatdiameter) zijn filters en blind pipes geplaatst van 5,0 inch buitendiameter.

Vanwege het vastlopen van deze filters in HON-GT-01 tijdens het zetten ervan is ervoor gekozen een sidetrack te boren in de wand van de 6 ⅛ boorgatdiameter sectie ter hoogte van 2507 m MD. De sidetrack HON-GT-01-S1 heeft een einddiepte van 3190 m MD bereikt (2940 m TVD). In de 6 ⅛ inch boorgatsectie van de sidetrack zijn wikkeldraadfilters en blind pipes geplaatst van 5,0 inch buitendiameter (ca 4,2 inch binnendiameter) over de trajecten 2550 – 2720 m MD, 2880 – 3003 m MD, 3032 – 3154 m MD (zie bijlage 1 en figuur 1). In totaal is een lengte van ca 415 m filter geplaatst. Tussenliggende delen zijn afgeschermd met blind pipes. Top van de filters en blind pipes sectie is afgehangen in de 7 inch liner.



Figuur 1 Casingschema van de boring HON-GT-01 en sidetrack 1 en stratigrafie van de ondergrond.

Horizontale afstand tussen oppervlaktelocatie en ondergrondse doorprikpunt beoogde reservoir bedraagt tussen 658 m (top Delft Zandsteen) en 960 m (basis Alblasserdam). Deviatietraject van het primaire boorgat en de sidetrack is opgenomen in bijlage 2.

## **3 Petrofysische evaluatie logs HON-GT-01 en HON-GT-01-S1**

### **3.1 Beschikbare boorgatmetingen**

Ten behoeve van het geothermieproject Greenwell Westland zijn met verschillende wireline logging tools het gesteente in de 6 1/8 inch boorgatsectie van het primaire boorgat bemeten. In dit boorgat is tweemaal met een verschillende samenstelling van wireline tools gemeten. Vanaf een diepte van maximaal 3146 m tot 2135 m MD zijn de Resistivity, Sonic, Density, PEF, Gamma Ray, Caliper en Spontaneous Potential logs gemeten (zie bijlage 1).

De logging tools zijn niet vanaf de bodem van de put gerund. Het logging meetinstrument is blijven steken op een diepte van 3146 m MD en vanaf die diepte gaan meten.

In het sidetrack boorgat is een MWD Gamma Ray log gemeten van 3177 m tot 2588 m MD.

### **3.2 Analyse boorgatmetingen**

Op de beschikbare logs zijn de analyses uitgevoerd waarmee de netto zandsteendikte, kleigehalte, porositeit en permeabiliteit zijn vastgesteld. Netto zandsteendikte is bepaald aan de hand van twee cut-off waarden; 1) kleigehalte dient kleiner te zijn dan 50% van de gesteentematrix; 2) effectieve porositeit dient groter te zijn dan 6% van het gesteentevolume. Kleigehalte is bepaald aan de hand van Gamma Ray log, porositeit is berekend via Density log. Zandsteenintervallen met significante permeabiliteit zijn gedefinieerd waar separatie tussen de diepe en ondiepe resistivity is (zie bijlage 1).

#### **Delft Zandsteen Member**

In boorgat HON-GT-01 is de Delft Zandsteen member vastgesteld over het bereik 2560 tot 2621 m MD (2366 - 2418 m TVD), met een verticale dikte van 52 m. Het percentage zandsteenreservoir bedraagt 78%, wat leidt tot een netto reservoirdikte van 41 meter.

Gemiddelde porositeit van netto reservoir bedraagt 16,3% (bereik 6 – 30%). Over het gehele netto reservoir bereik hebben de zandstenen een permeabiliteit welke vermoedelijk rond de 100 – 300 mD ligt op basis van gegevens van nabijgelegen boringen.

Berekende reservoir eigenschappen variëren weinig binnen het verticale bereik van de Delft Zandsteen Member.

#### **Alblasserdam Member**

In boorgat HON-GT-01-S1 is de Alblasserdam Member vastgesteld over het bereik 2610 – 3154 m MD (2418 – 2907m TVD), met een verticale dikte van 489 m.

In het boorgat HON-GT-01 is de Alblasserdam Member bemeten over het traject 3120 – 2621 m MD, een verticale bereik van 426 m. De laatste circa 60 meter van de Alblasserdam zijn niet bemeten. Op basis van de in de sidetrack gemeten MWD Gamma Ray log is het kleigehalte bepaald van de onderste 60 meter Alblasserdam Member en is daarmee een inschatting gemaakt van het percentage netto reservoir, porositeit en permeabiliteit.

Netto percentage zandsteenreservoir bedraagt circa 20%, nettodikte reservoir bedraagt 98 m met een gemiddelde porositeit van 14% (bereik 6 – 22%), waarvan de gemiddelde permeabiliteit vermoedelijk rond de 50 tot 100 mD ligt op basis van gegevens van nabijgelegen boringen. De berekende reservoir eigenschappen variëren sterk binnen verticale bereik van de Alblasserdam Member. Zandsteenbanken in het hogere bereik (tussen 2620 en 2700 m MD HON-GT-01) hebben de hoogste porositeit- en permeabiliteitswaarden. Zandsteenbanken in het lagere bereik (tussen 2700 – 3120 m MD HON-GT-01) hebben lagere waarden.

### **Reservoir**

Het zandstenen van de Delft Zandsteen en Alblasserdam members bevinden tussen 2366 m tot 2907 m TVD, een interval van 541 m TVD. Hiervan wordt circa 26 % als reservoir gekwalificeerd, dat is een netto dikte van 139 m TVD.

### **Filter plaatsing**

Op basis van log evaluatie zijn filters geplaatst over de meest poreuze en permeabele zandstenen: 2550 – 2720 m MD, 2880 – 3003 m MD, 3032 – 3154 m MD (zie bijlage 1 en figuur 1). De gehele Delft en ca 85% van de Alblasserdam Member is met totale lengte van ca 415 meter wikkeldraadfilter afgewerkt. Binnen dit bereik bedraagt het netto zandsteenreservoir 30%, oftewel 126 m MD (112 m TVD).

### **Conclusie**

Op basis van de boorgatmetingen bevinden de zandstenen met de beste reservoir eigenschappen zich in de Delft Zandsteen Member en in de bovenste 100 meter van de Alblasserdam Member. Hier worden porositeiten bereikt van 6 – 30% waarvan de permeabiliteit vermoedelijk rond de 100 tot 300 mD ligt.

In de zandstenen in het overige deel van de Alblasserdam Member zijn de reservoir kwaliteiten minder goed. Hier worden porositeiten bereikt van 6 – 22% met een gemiddelde permeabiliteit rond de 50 tot 100 mD .

De grootste toestroom (>85%) bij een productie van reservoirwater zal plaatsvinden uit de Delft zandstenen en de zandlagen in de bovenste 100 meter van de Alblasserdam Member. De Delft zandstenen hebben zeer goede reservoir kwaliteiten en zijn grotendeels in verticaal verband aaneengesloten. Hiervan wordt een goede continuïteit en laterale connectiviteit verwacht. Dit laatste is belangrijk voor de langere termijn van waterproductie.

De bovenste Alblasserdam zandstenen hebben zeer goede reservoir kwaliteiten maar mindere verticale connectie. Hiervan wordt een goede continuïteit en een redelijke connectiviteit verwacht.

De zandsteenbanken in het diepere deel van de Alblasserdam hebben minder goede reservoir eigenschappen en vertonen matige verticale connectie. De sedimentologische

eigenschappen van de dunnere zandstenen geven de indicatie dat een matige continuïteit en beperkte laterale connectiviteit kan worden verwacht.

## **4 Testplan**

De capaciteit voor het produceren van warm formatiewater is getest middels een productietest. De productietest is uitgevoerd in overeenstemming met de specificaties die zijn beschreven in de “*Aanvraag vaststelling subsidieregeling energie en innovatie Risico's dekken voor Aardwarmte, bijlage D*”.

### **4.1 Testopstelling**

Het uitvoeren van de productietest is verricht door Baker Hughes (zie bijlage 3). Middels een ESP waarvan het innamepunt zich op 775 meter diepte bevindt is water omhoog gepompt via een opvoerbuis van 5 inch buitendiameter (3,25 inch binnendiameter). Onder de pomp zijn waterdruk en temperatuur gemeten op 789,6 meter diepte. Aan de putmond is debiet en temperatuur gemeten.

Water- en gasmonsters zijn genomen in een aftappunt in de bovengrondse leidingen. Analyse en werkwijze hiervan wordt behandeld in hoofdstuk 6.

Nadat de productietests waren afgerond is met een deel van het geproduceerde water een injectietest uitgevoerd.

### **4.2 Schoonpompen van de put**

Voorbereiding van de productietesten bestaat onder andere uit het wegpompen van de boorvloeistof. Op dinsdag 6 maart 2012 omstreeks 13:40 is met een debiet van 35 l/s het schoonpompen van de put begonnen. Na twee uur pompen is het debiet teruggevoerd naar 22 l/s. Dinsdag omstreeks 19:00 is de het schoonpompen van de voltooid. In totaal is hiervoor 526 m<sup>3</sup> verpompt.

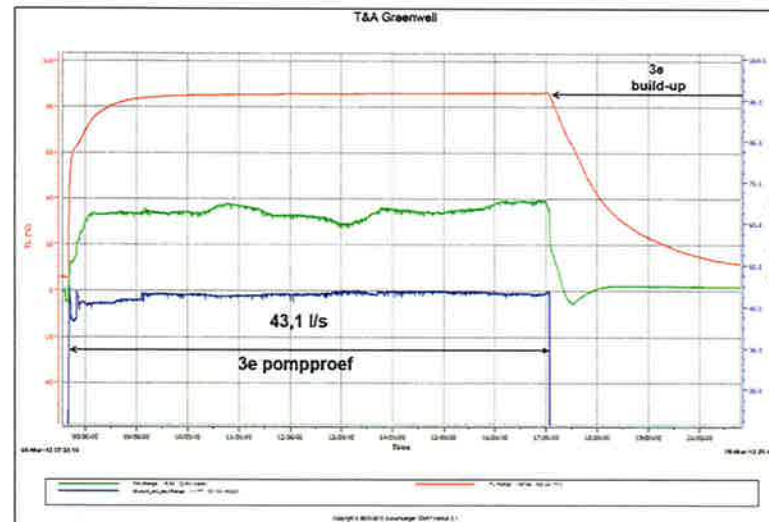
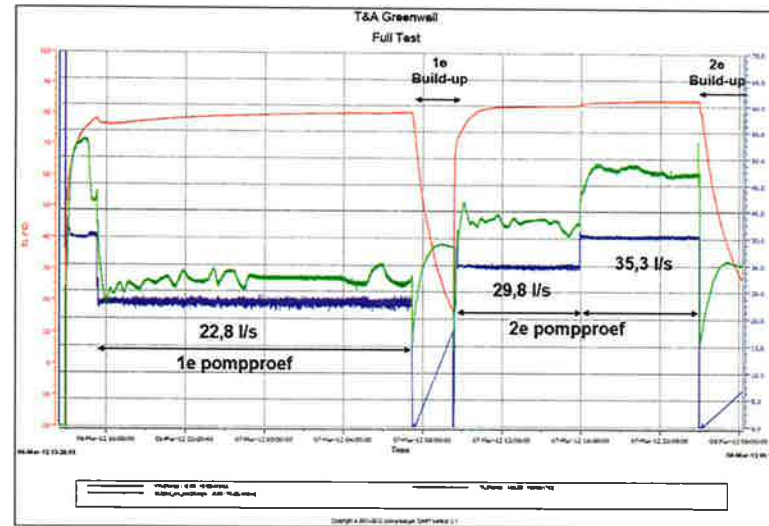
## 5 Resultaten

### 5.1 Productiecapaciteit

Resultaten van drie opeenvolgende pompproeven met debieten van 22,8 29,8 35,8 en 43,1 l/s en build-up periodes tussendoor zijn weergegeven in onderstaande figuur (zie tabel 1 hieronder en figuur 2 en figuur 3 hiernaast).

Honselersdijk GT1	van	tot	Basisdata	
<b>1e Pompproef</b>	06.03.2012 13:41	07.03.2012 09:32	Duur vd pompproef $t_{pmp}$	17,8 h
			Totaal opgepompte volume $V_{op}$	1.515,3 m <sup>3</sup>
			Diepte drukmeting ESP $h_{TSP}$	789,6 m -mv
			Max. Temperatuur a. d. ESP $T_{TSP}$	85,4 °C
			Max. Temperatuur putmoed $T_{PM}$	80,5 °C
			Rust druk a. d. ESP $p_{TSP}$	81,36 bara bij 41,4 °C
			Drukverlaging (drawdown) Reservoir $dp_{R2}$	4,73 bar bij 22,8 l/s
<b>1e Build up</b>	07.03.2012 09:32	07.03.2012 09:36	Duur $t_{bu}$	2,1 h
			Diepte drukmeting ESP $h_{TSP}$	789,6 m -mv
			Druk a. d. ESP na afspiegeling $p_{TSP}$	76,14 bara bij 76,3 °C
<b>2e Pompproef</b>	07.03.2012 09:36	07.03.2012 22:02	Duur vd pompproef $t_{pmp}$	12,4 h
			Totaal opgepompte volume $V_{op}$	1.448,3 m <sup>3</sup>
			Diepte drukmeting ESP $h_{TSP}$	789,6 m -mv
			Max. Temperatuur a. d. ESP $T_{TSP}$	87,5 °C
			Max. Temperatuur putmoed $T_{PM}$	84,6 °C
			Rust druk a. d. ESP $p_{TSP}$	76,14 bara bij 76,3 °C
			Drukverlaging (drawdown) Reservoir $dp_{R2}$ (in twee stappen)	6,91 bar bij 29,8 l/s 8,98 bar bij 35,3 l/s
<b>2e Build up</b>	07.03.2012 22:02	08.03.2012 07:42	Duur $t_{bu}$	9,7 h
			Diepte drukmeting ESP $h_{TSP}$	789,6 m -mv
			Druk a. d. ESP na afspiegeling $p_{TSP}$	75,89 bara bij 63,8 °C
<b>3e Pompproef</b>	08.03.2012 07:42	08.03.2012 17:06	Duur vd pompproef $t_{pmp}$	17,8 h
			Totaal opgepompte volume $V_{op}$	1.446,8 m <sup>3</sup>
			Diepte drukmeting ESP $h_{TSP}$	789,6 m -mv
			Max. Temperatuur a. d. ESP $T_{TSP}$	87,8 °C
			Max. Temperatuur putmoed $T_{PM}$	86,1 °C
			Rust druk a. d. ESP $p_{TSP}$	75,89 bara bij 63,8 °C
			Drukverlaging (drawdown) Reservoir $dp_{R2}$	12,26 bar bij 43,1 l/s
<b>3e Build up</b>	08.03.2012 17:06	08.03.2012 20:48	Duur $t_{bu}$	3,7 h
			Diepte drukmeting ESP $h_{TSP}$	789,6 m -mv
			Druk a. d. ESP na afspiegeling $p_{TSP}$	75,93 bara bij 75,2 °C

Tabel 1 Overzichtstabel van pompproeven 1 t/m 3 van Honselersdijk-GT-01-S1 van 06.03.2012 t/m 08.03.2012



Figuur 2 (boven) Druk- (groen) temperatuurverloop (rood) en debiet (blauw) tijdens pompproeven 1 en 2.  
Figuur 3 (onder) Druk- (groen) temperatuurverloop (rood) en debiet (blauw) tijdens pompproef 3

## 5.2 *Temperatuur*

De temperatuur van het reservoirwater is gemeten op hoogte van de productiepomp (789,5 m TVD) en aan de wellhead. Verloop van de temperatuur tijdens de puttests is weergegeven in figuur 2 en figuur 3. Maximale geregistreeerde temperatuur aan de productiepomp bedraagt 87,8 °C (86,1 °C aan de wellhead). Hoogste temperatuur is gemeten bij het hoogste opgelegde debiet van 43,1 l/s.

De temperatuur van het water op aquifer niveau is niet gemeten vanwege het ontbreken van een meetsonde. Uitgaande van een geothermische gradient 0,033 °C/meter (zie figuur 6) bedraagt de temperatuur over de reservoirsectie tussen de 89 °C en 107 °C.

## 5.3 *Drukverlaging*

Drukverlaging in de waterkolom treedt op bij wegpompen van water door de productiepomp, de zogenaamde *drawdown*. Deze drukverlaging zorgt voor een toestroom vanuit het reservoir. Bij het hoogst opgelegde debiet (43,1 l/s) bedraagt de drawdown 12,3 bar (zie tabel 2). De productie index (PI) kwalificeert de productiecapaciteit van het instroomvermogen van de boorput over een specifieke lengte per drawdown, kortom liter per seconde per bar (l/s/bar). De productie index varieert tussen 3,5 – 4,8 l/s/bar.

van	tot	$P_{TKP}$ [bara]	$dp_{res}^*$ [bar]	Q [l/s]	Kh [m <sup>2</sup> /s]	Productie index [l/s/bar]	opmerking
07.03.2012 07:02	07.03.2012 07:32	72,02	<b>4,73</b>	22,8	5,91 tot $7,64 \cdot 10^{-4}$	<b>4,8</b>	1. Pompproef
07.03.2012 15:20	07.03.2012 16:00	69,90	<b>6,91</b>	29,8	5,29 tot $6,84 \cdot 10^{-4}$	<b>4,3</b>	2. Pompproef
07.03.2012 21:32	07.03.2012 22:02	67,89	<b>8,98</b>	35,3	4,82 tot $6,23 \cdot 10^{-4}$	<b>3,9</b>	2. Pompproef
08.03.2012 16:37	08.03.2012 17:05	64,67	<b>12,26</b>	43,1	4,31 tot $5,57 \cdot 10^{-4}$	<b>3,5</b>	3. Pompproef

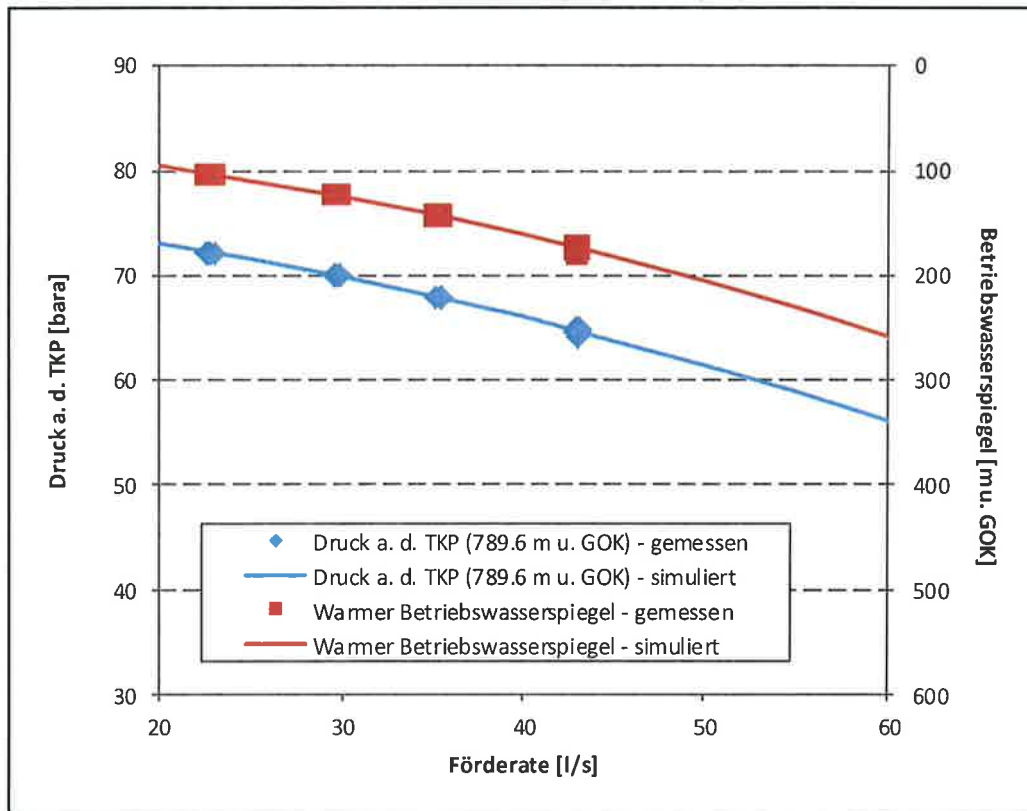
\*) Geïnterpoleerde waarde; aangenomen drainage cirkel: 200-2000 m, boorgatradius: 7,78 cm

Tabel 2 Overzicht van de stationaire analyse (Thiem, 1906) van pompproef 1 t/m 3.

## 5.4 *Analyse productiecapaciteit, temperatuur en drukverlaging*

Op basis van de tijdens de productietest geregistreeerde gegevens is een hydraulische transmissiviteit van het reservoir bepaald variërend van  $4,31 - 7,64 \cdot 10^{-4} \text{ m}^2/\text{s}$  (tabel 2 uit: Schmid, 2012; zie bijlage 4).

Extrapolatie van gemeten drukken aan de ESP en gemeten waterspiegelstand tijdens de drie fases van productietest geven aan dat een debiet van 60 l/s haalbaar is (Schmid, 2012). Hierbij wordt een drawdown van 20 bar verwacht en een waterspiegelverlaging van circa 250 meter.



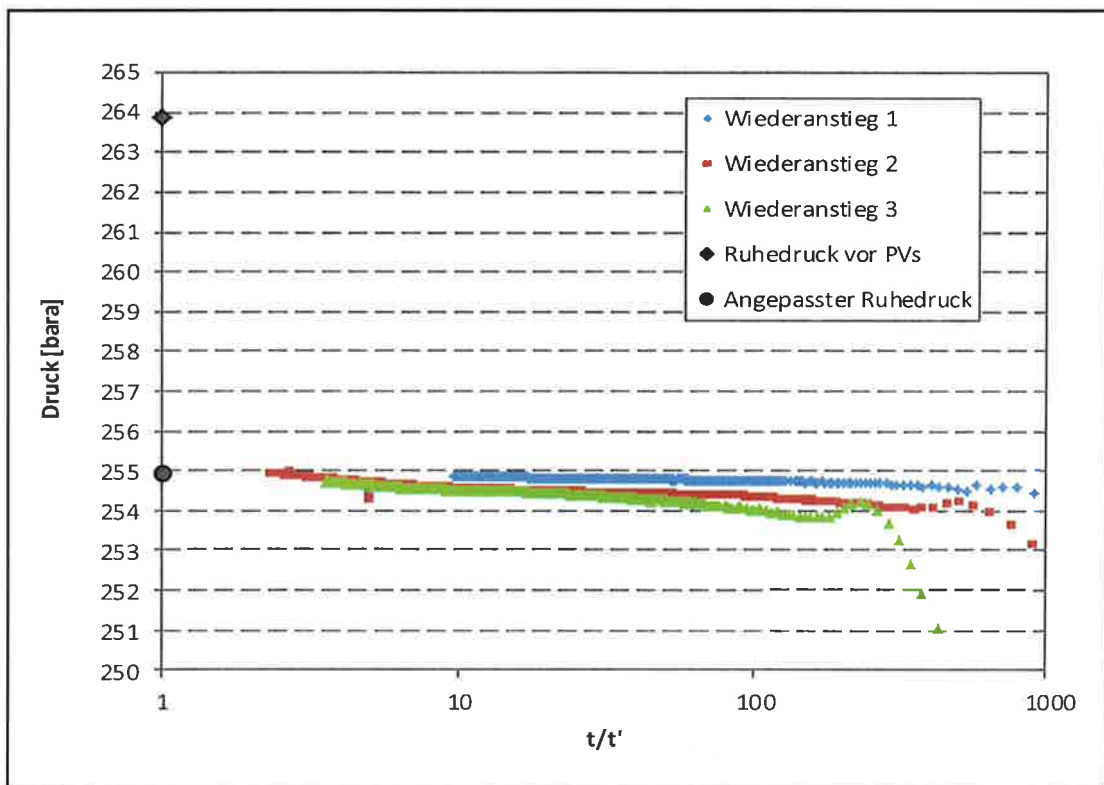
Figuur 4 Weergave van het gemeten drukverloop aan de ESP (789,6 m TVD) en de gemeten waterspiegel. Extrapolatie van deze meetpunten geven het maximale debiet aan en daarbij behorende waterspiegelverlaging uitgaande van een temperatuur van 87,8 °C in de hele kolom.

T&A raadt aan het maximaal haalbare debiet het eerste jaar niet te effectueren omdat:

- 1) Er verwachte beperkingen zijn met betrekking tot de connectiviteit van de zanden in de Alblasserdam (alle zanden onder de Delft). Dit is gebaseerd op geologisch inzicht; waarbij een goede connectiviteit niet wordt verwacht bij een lage net-to-gross (<30%) (ref. doi: 10.1144/1354-079306-699 *Petroleum Geoscience* November 2006 v. 12 no. 4 p. 291-308);
- 2) De aard van de productietest niet toestond een drainage afstand te bepalen;
- 3) Een constant hoge drawdown de dieper gelegen lagen in de Alblasserdam zou kunnen beschadigen.

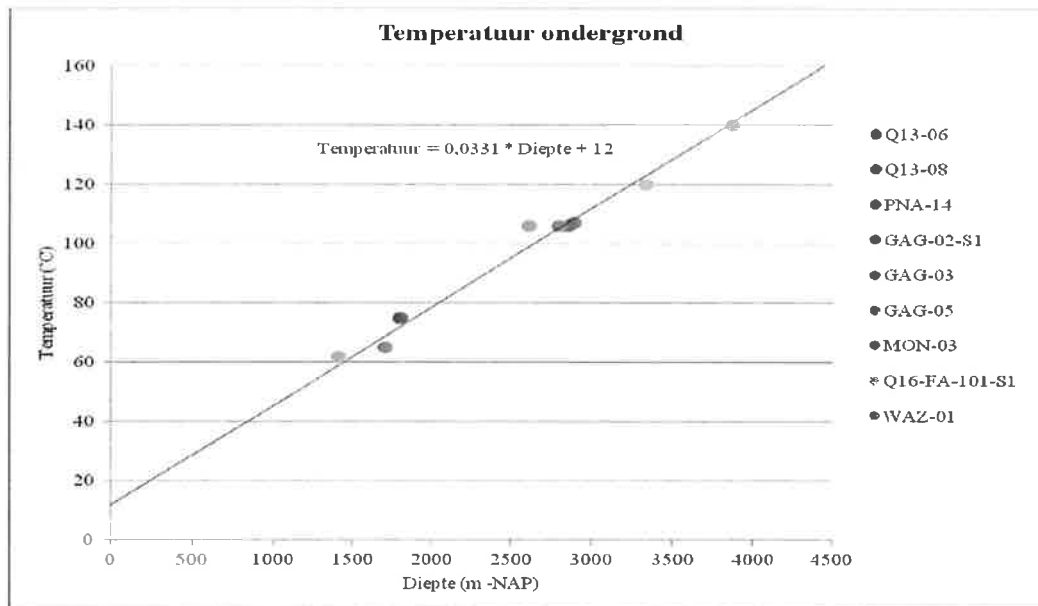
Uit de analyse van de drukopbouw na elke periode van productie blijkt dat de initiële reservoirdruk 255 bar bedraagt (Schmid, 2012). De initiële reservoirdruk is niet gemeten en door

Schmid vastgesteld op 264 bar, uitgaande van een reservoirdiepte van 2500 m TVD (zie figuur 5). Het verschil is geïnterpreteerd als skin. Het midden van de Delft Zandsteen bevindt zich op 2400 m TVD. De hier heersende hydrostatische druk bedraagt circa 255 bar, wat precies overeenkomt met de drukopbouw analyses van Schmid. Dit toont aan dat water hoofdzakelijk uit de Delft Zandsteen Member afkomstig is en dat er vermoedelijk geen sprake is van skin.



Figuur 5. Halflogaritmische weergave van de pressure build-up curves (Horner plot) met de aangenomen initiële druk in rusttoestand (264 bar) en de op basis van de analyse bepaalde reservoirdruk (255 bar).

De maximale geregistreeerde temperatuur bedraagt 87,8 °C bij de ESP (86,1 °C aan wellhead) bij het hoogste debiet. Het temperatuurverlies over het traject van de pomp naar de oppervlakte bedraagt slecht 1,7 °C. Over dit traject zal het grootste temperatuurverlies optreden vanwege het grote temperatuurverschil met het omgevingsgesteente. Uitgaande van enkele graden temperatuurverlies (2 à 3 °C) tijdens het vervoer vanuit het reservoir naar de pomp bedraagt het reservoirwater gemiddeld circa 91 °C. Op basis van gegevens van omliggende putten bedraagt de geothermische gradiënt 0,033 °C/meter met een oppervlaktetemperatuur van circa 11 °C (zie figuur 6). Een temperatuur van 90 °C wordt bereikt op circa 2400 meter. Dit toont aan dat het geproduceerde water voor het grootste deel uit de Delft Zandsteen formatie komt en bijdrage van diepere reservoirs gering is.



Figuur 6. Temperatuur distributie van de ondergrond van het West Nederland Bekken. Een geothermische gradiënt van 0,033 °C per meter is hieruit afgeleid.

Analyse van de verschillende debieten, drukopbouw, temperatuur en saliniteit geeft aan dat de transmissiviteit van de totale filtersectie tussen de  $4,3 - 7,6 \cdot 10^{-4} \text{ m}^2/\text{s}$  bedraagt (Schmid, 2012). Schmid heeft geen hydraulische conductiviteit (in m/s) van het reservoir kunnen bepalen omdat er geen drukmetingen op reservoirniveau zijn genomen.

T&A Survey heeft de transmissiviteit omgerekend naar permeabiliteit (zie tabel 3) voor de volgende drie mogelijkheden;

- 1) water toestroom alleen uit Delft Zandsteen Member,
- 2) water toestroom uit Delft Zandsteen Member en zandlagen in bovenste 100 meter Alblasserdam Member,
- 3) water toestroom uit alle met filters afgewerkte secties (Delft + gehele Alblasserdam).

#### **Delft Zandsteen Member**

Gemiddelde permeabiliteit bedraagt 502 mD van netto reservoir (41 m TVD).

#### **Delft Zandsteen Member en bovenste 100 meter Alblasserdam Member**

Gemiddeld permeabiliteit bedraagt 300 mD van netto reservoir (67,5 m TVD).

#### **Delft Zandsteen Member en gehele Alblasserdam Member**

Gemiddeld permeabiliteit bedraagt 152 mD van netto reservoir (112 m TVD).

Totale transmissiviteit bedraagt tussen de 14,2 en 25,1 Darcymeter. Gemiddelde permeabiliteit bedraagt 152 mD (bereik 112 – 200 mD).

## Permeabiliteit uit Conductiviteit

Invoerparameters:	Gtherm	geothermische gradient	C/m	0.033
	Tb	bodemtemperatuur	C	11
	s	Saliniteit gewichtsfractie		0.0885
	k0	Permeabiliteit (m2) 1 mD : m2		9.9E-13
	g	valversnelling	m/s2	9.81
	pf	dichtheid water	kg/m3	in te vullen in gele kolom
	K	Permeabiliteit	Darcy	in te vullen in bruine kolom

Formules:

$$k_f = (K * \rho_f * g) / \mu \quad K = (k_f * \mu) / (\rho_f * g)$$

$$\mu = 0.1 + (0.333 * s) + [1.65 + (91.9 * s^3)] \exp[-\{0.42 * (s^{0.8} - 17)^2 + 0.045\} * T^{0.8}]$$

$$T(z) = (\text{Diepte} * G_{\text{therm}}) + T_b$$

										min	max	min	max	min	max
		Debiet (l/s)	netto zand (m)	Diepte (m)	Temp (C)	$\mu$ (cP)	$\mu$ (kg/m*s)	$\rho_f$ (DC)	kH (m2/s)	kf (m/s)	K (mD)	K (mD)			
Delft	22.8	41	2400	90.2	36.66	-1.66	0.36	0.0003623	1060	5.9E-04	7.6E-04	1.4E-05	1.9E-05	508.9	657.9
	29.8	41	2400	90.2	36.66	-1.66	0.36	0.0003623	1060	5.3E-04	6.8E-04	1.3E-05	1.7E-05	455.5	589.0
	35.3	41	2400	90.2	36.66	-1.66	0.36	0.0003623	1060	4.8E-04	6.2E-04	1.2E-05	1.5E-05	415.0	536.4
	43.1	41	2400	90.2	36.66	-1.66	0.36	0.0003623	1060	4.3E-04	5.6E-04	1.1E-05	1.4E-05	371.1	479.6
													gem		437.6
												gem		501.7	
Delft + top Alblasterdam	22.8	67.5	2450	91.85	37.19	-1.68	0.36	0.000357	1060	5.9E-04	7.6E-04	8.8E-06	1.1E-05	304.6	393.7
	29.8	67.5	2450	91.85	37.19	-1.68	0.36	0.000357	1060	5.3E-04	6.8E-04	7.8E-06	1.0E-05	272.6	352.5
	35.3	67.5	2450	91.85	37.19	-1.68	0.36	0.000357	1060	4.8E-04	6.2E-04	7.1E-06	9.2E-06	248.4	321.0
	43.1	67.5	2450	91.85	37.19	-1.68	0.36	0.000357	1060	4.3E-04	5.6E-04	6.4E-06	8.3E-06	222.1	287.0
													gem		261.9
												gem		300.2	
Alle gescreende secties	22.8	126	2640	98.12	39.21	-1.78	0.34	0.0003376	1060	5.9E-04	7.6E-04	4.7E-06	6.1E-06	154.3	199.5
	29.8	126	2640	98.12	39.21	-1.78	0.34	0.0003376	1060	5.3E-04	6.8E-04	4.2E-06	5.4E-06	138.1	178.6
	35.3	126	2640	98.12	39.21	-1.78	0.34	0.0003376	1060	4.8E-04	6.2E-04	3.8E-06	4.9E-06	125.8	162.6
	43.1	126	2640	98.12	39.21	-1.78	0.34	0.0003376	1060	4.3E-04	5.6E-04	3.4E-06	4.4E-06	112.5	145.4
													gem		132.7
												gem		152.1	

Tabel 3 Overzicht van de berekende permeabiliteiten uitgaande van drie scenario's (Delft, Delft plus top Alblasterdam en Delft plus gehele Alblasterdam). De laatste kolom (in rood) geeft per scenario de minimale en maximale permeabiliteit weer en de gemiddelde waarde per scenario.

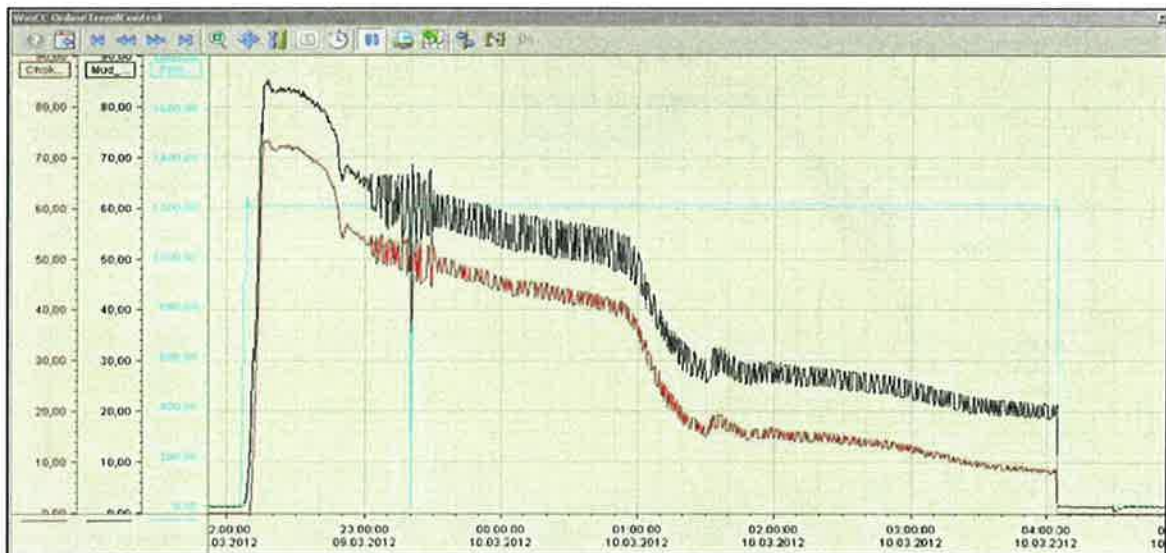
## 5.5 Injectietest

De injectie test werd uitgevoerd voor drie debieten (20, dan 30 dan 44 l/sec). De eerste hoge druk bij het begin van de proef (73 bar) geeft initialisatie druk, gevolgd door 'break-down' druk. Hierna begint de druk af te nemen tot 16 - 8 bar. De geldigheid van de volgende twee tests wordt belemmerd door hun korte duur. De langere termijn injectiviteit met een debiet van 45 l / sec, zal overtijd een druk-afname laten zien omdat de omgeving van de boorbut geleidelijk wordt schoongespoeld. Samengevat; injectiviteit op de langere termijn is waarschijnlijk voldoende om het geproduceerde water op te slaan.

De drie stappen injectietest is uitgevoerd met debieten van 20, 30, 45 en 28 l/s met pompdrukken van 20 tot 85 bar (zie bijlage 4).

### 1<sup>e</sup> Test (20 l/s)

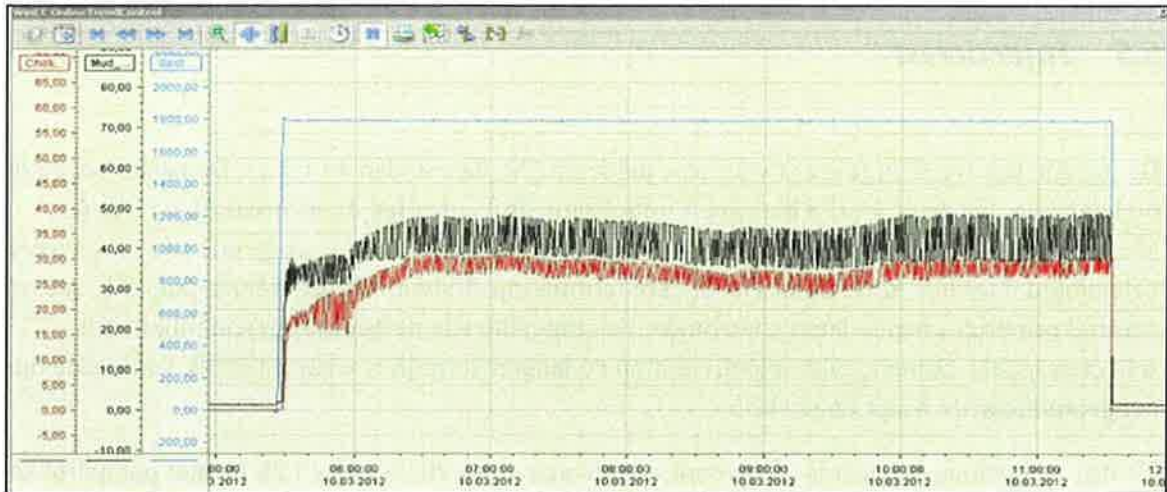
De pompdruk is bij de start van deze test opgelopen tot 85 bar en na zes uur teruggelopen tot 20 bar (zie figuur 7).



Figuur 7 Weergave van de pompdruk (zwarte lijn) tijdens de 1e injectietest van 20 l/s

### 2<sup>e</sup> Test (30 l/s)

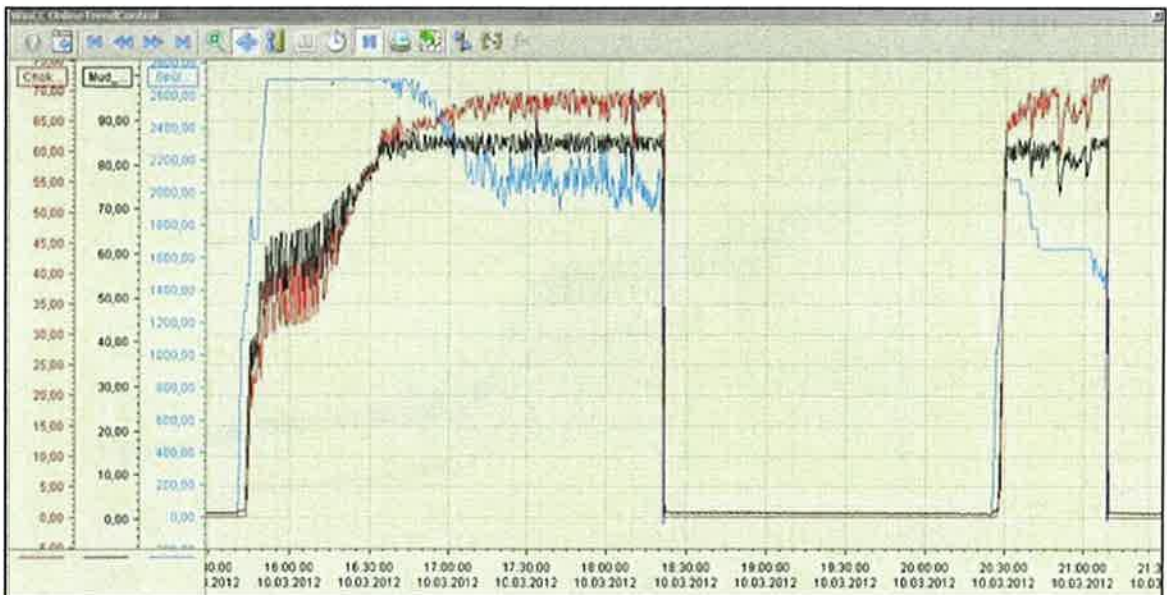
De pompdruk tijdens de twee test opgelopen tot 44 bar en redelijk constant gebleven rond de 40 bar (zie figuur 8).



Figuur 8 Weergave van de pompdruk (zwarte lijn) tijdens de 2e injectietest van 30 l/s.

### 3<sup>e</sup> Test (45 en 28 l/s)

De derde test is met een debiet van 45 l/s en 28 l/s uitgevoerd. De druk tijdens de derde test is opgelopen tot 85 bar en constant gebleven (zie figuur 9).



Figuur 9 Weergave van de pompdruk (zwarte lijn) tijdens de 3e injectietests van 45 l/s en 28 l/s.

De injectietesten zijn van te korte tijdsduur geweest voor het bereiken van een stabiele stroming. De in iedere test gemeten einddruk is niet op een constant peil gekomen. Indien over langere periode geïnjecteerd gaat worden kan deze injectiedruk afwijken.

## 5.6 Geothermisch vermogen

Op basis van de resultaten van de well test en de log evaluatie kan het geothermisch vermogen van de put worden berekend. Hiervoor is het programma DoubletCalc 1.3 (TNO) gebruikt.

In de onderzoeksfase van het geothermieproject Greenwell Westland zijn analyses en inschattingen gemaakt met betrekking tot het te verwachte geothermisch vermogen (*Report well proposal Honselersdijk, Panterra, 2011*). Hierin werden de volgende geothermische vermogen gegeven (zie tabel 4).

<b>Pompdrukverschil van 40 bar en injectietemperatuur van 35 C</b>				
	P90	P50	P10	
<b>Pomp volume debiet</b>	129	190	271	m <sup>3</sup> /u
<b>Geothermisch vermogen</b>	7,2	11,1	16,0	MW
<b>Benodigd pompvermogen</b>	236	345	493	kW
<b>COP</b>	29	32	34	kW/kW

Tabel 4 Overzicht van de op basis van voorgaande geologische studie gesimuleerde geothermische vermogens, debiet, stroomverbruik en coefficient of performance.

De invoerwaardes uit de voorgaande studie zijn overgenomen voor een zo werkelijkheidsgetrouwe vergelijking tussen de vooraf gestelde verwachte vermogens met de vermogens die in werkelijkheid haalbaar zijn.

In deze berekening zijn de gegevens van de injectietest niet meegenomen en zijn gebaseerd op de analyses van de productie pompproeven en de log evaluatie. Een pompdruk van 40 bar is aangehouden.

Aangepast zijn de volgende parameters (zie bijlage 5): Permeabiliteit, net-to-gross, diepte, dikte, saliniteit, temperatuur, horizontale offset en pompdiepte.

Hieruit is het volgende geothermisch vermogen berekend (zie tabel 5) van 7,8 MWt (P50) en dat is significant lager dan de 11,1 MWt (P50) die werd geprognosticeerd. De oorzaak hiervan is hoofdzakelijk de lagere netto dikte reservoir (112 m TVD) die is aangetroffen. In voorgaande studie werd deze geschat op circa 162 meter.

<b>Pompdrukverschil van 40 bar en injectietemperatuur van 35 C</b>				
	P90	P50	P10	
<b>Pomp volume debiet</b>	111	127	145	m <sup>3</sup> /u
<b>Geothermisch vermogen</b>	6,6	7,8	9,1	MW
<b>Benodigd pompvermogen</b>	202	232	264	kW
<b>COP</b>	31,2	33,6	35,8	kW/kW

Tabel 5 Overzicht van de op basis van voorgaande geologische studie gesimuleerde geothermische vermogens, debiet, stroomverbruik en coefficient of performance.

### Productie en injectietest

Op basis van de voorlopige injectietest resultaten wordt het P50 vermogen (7,8 MWt ) niet gehaald met een COP van 33,6 en een pompdruk van 40 bar. Een significant hogere productie- en injectiedruk (9 bar en ca 44 bar) zijn nodig voor het oppompen en terugpersen van het reservoirwater (zie bijlage 4). Hieronder is een overzicht gemaakt van de geteste debieten en de drukken die daarbij zijn gebruikt.

Debiet		Drawdown productietest	Pompdruk injectietest	Totale pompdruk
l/s	m <sup>3</sup> /uur	bar	bar	bar
20 – 23	72 – 83	4,7	20 – 28	24,7 – 32,7
30 – 35	108 – 126	6,9 – 9,0	44	50,9 – 53,0
43 – 45	155 – 162	12,3	85	97,3

Tabel 6 Overzicht van de voor de drie stappen van productie- en injectietests benodigde drawdown en pompdruk. De pompdruk voor injectie zal afnemen na enige tijd als warmer water wordt gebruikt en de injectie voor minstens een week heeft kunnen plaats vinden. De injectie drukken voor HON-2 kunnen lager zijn.

## 6 Analyse water- en gasmonsters

### 6.1 Water analyse (Seibt, 2012)

Uit de wateranalyse blijkt dat de saliniteit 123.224 mg/l bedraagt (Seibt, 2012) met een dichtheid van 1091 g/cm<sup>3</sup>, waarvan het grootste deel uit NaCl bestaat (zie bijlage 6), de pH-waarde circa 6,1.

In één watermonster zijn 2,68 mg/l koolwaterstoffen aangetroffen. Aanwezigheid van deze minimale hoeveelheden worden geen consequenties voor de winning van thermaal water verbonden.

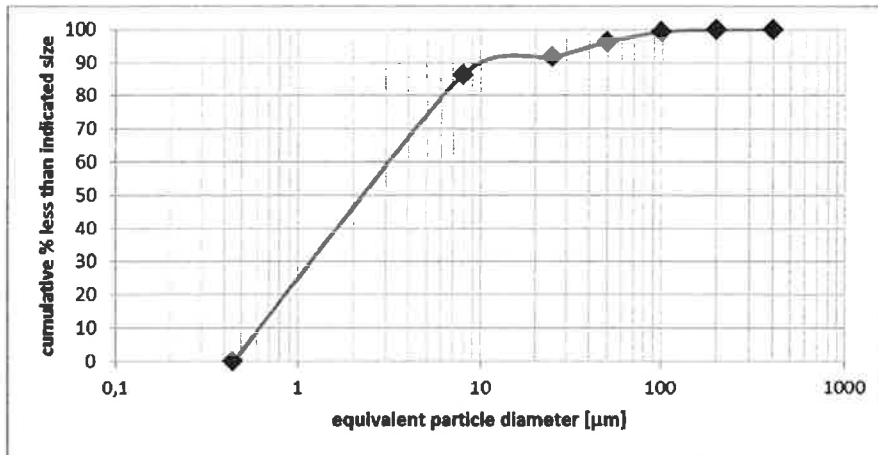
### 6.2 Gas analyse (Seibt, 2012)

Uit de gasanalyse blijkt dat per kubieke meter geproduceerd water tussen de 0,93 en 1,01 kubieke meter gas (STP) aanwezig is (bijlage 6). Van het gasvormige bestanddeel bestaat ca 79 % uit koolwaterstoffen (methaan, ethaan etc), ca 20 % uit CO<sub>2</sub> en 1,5% uit N<sub>2</sub>.

### 6.3 Vaste bestanddelen analyse (Seibt, 2012)

Analyse van twee watermonsters die tijdens en aan het eind van de laatste pomptest zijn genomen, zijn vaste deeltjes opgevangen van 0,45 micron tot 320 micron. De hoeveelheid vaste deeltjes groter dan 8 micron af te nemen (Bijlage 6). De deeltjes met diameter tussen de 0,45 en 8 micron neemt enigszins toe. Deeltjes van 0,45 tot 8 micron vormen 86,4% van het totale

opgevangen volume (zie figuur 10). Overgang van klei naar silt ligt op 64 micron, wat betekent dat meer dan 96% van de deeltjes zich binnen de kleifractie bevindt. Het grootste deel van de vaste deeltjes bestaat uit kwarts (35-40%) en veldspaat (20-25%).



Figuur 10 Logaritmischnormaal diameter distributie van watermonster 2. Klei-silt grens ligt bij 64 micron.

Op basis van deze resultaten wordt aangeraden gaasfilters te plaatsen met een gaas grootte van 10 – 20 micron voor de productieput en 1 micron gaasfilters voor de injectieput.

## **7 Conclusies en aanbevelingen**

### **7.1 Conclusies**

Analyse van de pompproven en de wireline logs hebben de volgende conclusies opgeleverd:

- Middels een productiepomp (ESP) is een debiet behaald van 43,5 l/s (155 m<sup>3</sup>/uur) bij een drawdown van 12,3 bar, met een temperatuur van 86,1 °C.
- Middels een injectietest is 45 l/s (162 m<sup>3</sup>/uur) teruggepompt in het reservoir bij een druk van 85 bar.
- Toestroom vanuit het reservoir komt hoofdzakelijk (geschat >85%) uit de Delft Zandsteen Member en zandlagen in bovenste 100 meter Alblasserdam Member.
- Per geproduceerde kubieke meter reservoirwater wordt ca één kubieke meter gas meegeproduceerd.
- Saliniteit van het water bedraagt 123.000 ppm en bestaat voornamelijk uit NaCl.

Uit de informatie die bij de welltest ter beschikking zijn gekomen is de *bijlage B* van “Aanvraag vaststelling *Subsidieregeling energie en innovatie*” ingevuld (zie bijlage 7)

### **7.2 Aanbevelingen**

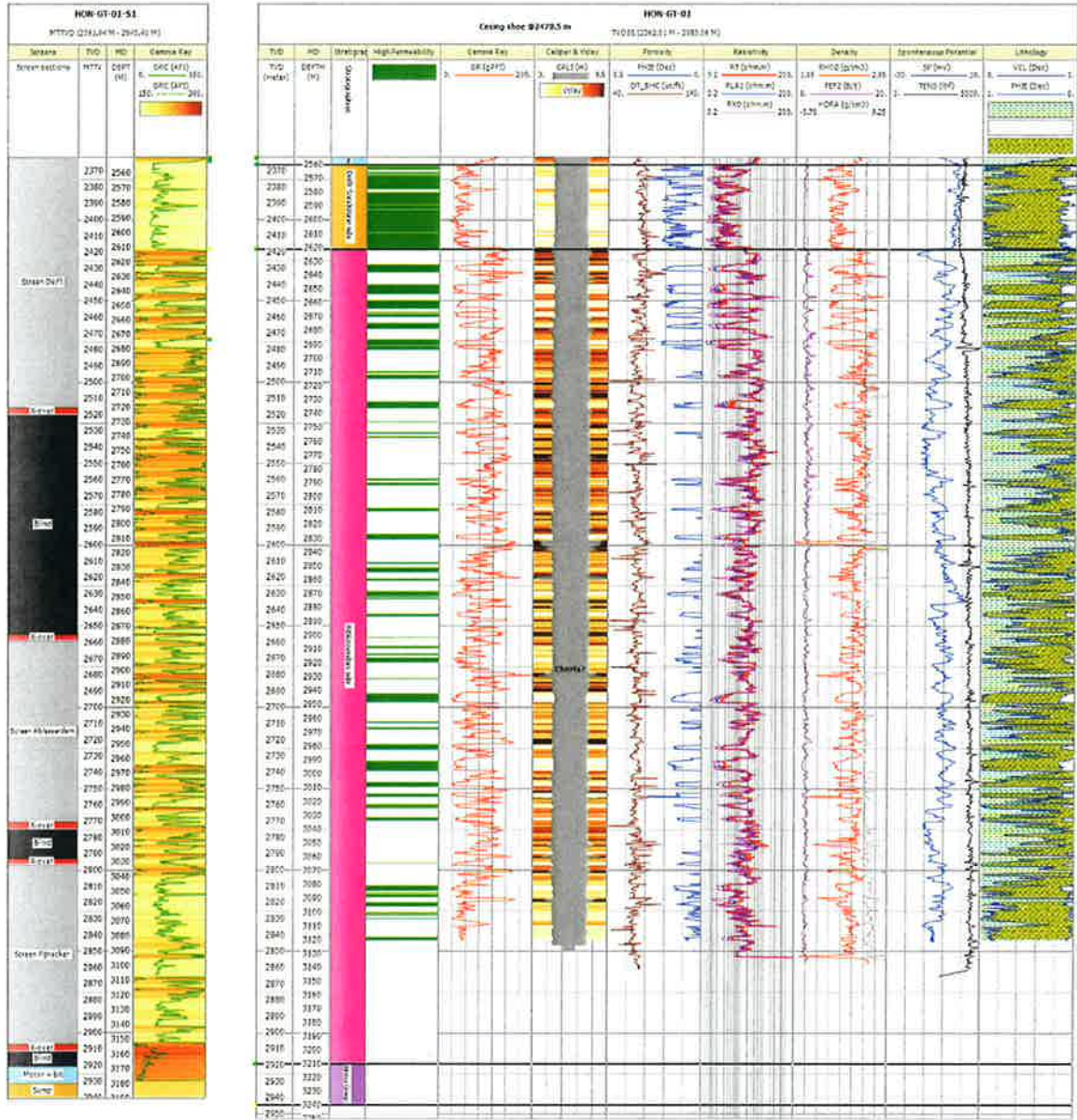
Aanbevolen wordt, op basis van wireline logs analyse en puttest analyse:

- Delft Zandsteen Member als primair reservoir te beschouwen en als secundair reservoir de bovenste 100 meter van de Alblasserdam Member.
- Het installeren van een gas-afvanginstallatie (separator) in het bovengrondse systeem wordt aangeraden in verband met de aanwezigheid van de opgeloste gas (1m<sup>3</sup> gas per 1 m<sup>3</sup> water) in het reservoirwater.
- De mogelijkheid open te houden om HON-GT-01-S1 te beschouwen als productieput en de HON-GT-02 als injectieput, indien de injectie en/of productietesten aantonen dat injecteren in HON-GT-02 gemakkelijker verloopt dan in HON-GT-01-S1.

**Bijlagen**

Bijlage 1

Log evaluatie HON-GT-01 en HON-GT-01-S1



Weergave van de log evaluatie van HON-GT-01 en HON-GT-01-S1. Sidetrack (links) betreft de kolommen met zandsteenlagen en de met filters afgewerkte secties. Rechts zijn de kolommen te zien met wireline logging, log interpretatie, stratigrafie en lithologie van het primaire boorgat.

Bijlage 2      Deviatie gegevens HON-GT-01 en HON-GT-01-S1

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey	<b>Date:</b> 30/01/2012	<b>Time:</b> 14:24:31	<b>Page:</b> 1
<b>Field:</b> GWW- Honselersdijk	<b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North	<b>Vertical (TVD) Reference:</b> Ground Level 0.6	
<b>Site:</b> HON-GT-01	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az)	<b>Survey Calculation Method:</b> Minimum Curvature	
<b>Well:</b> HON-GT-01	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Adapti	

<b>Field:</b> GWW- Honselersdijk		
<b>Map System:</b> New Netherland Nat Grid	<b>Map Zone:</b> Netherland	
<b>Geo Datum:</b> Bessel 1841	<b>Coordinate System:</b> Site Centre	
<b>Sys Datum:</b> NAP	<b>Geomagnetic Model:</b> bggm2011	

<b>Site:</b> HON-GT-01		
<b>Site Position:</b>	<b>Northing:</b> 448081.04 m	<b>Latitude:</b> 52 0 58.741 N
<b>From:</b> Map	<b>Easting:</b> 75242.83 m	<b>Longitude:</b> 4 13 32.212 E
<b>Position Uncertainty:</b> 0.00 m		<b>North Reference:</b> Grid
<b>Ground Level:</b> 0.57 m		<b>Grid Convergence:</b> -0.92 deg

<b>Well:</b> HON-GT-01			<b>Slot Name:</b>		
<b>Well Position:</b> +N/-S 0.00 m	<b>Northing:</b> 448081.04 m	<b>Latitude:</b> 52 0 58.741 N			
+E/-W 0.00 m	<b>Easting:</b> 75242.83 m	<b>Longitude:</b> 4 13 32.212 E			
<b>Position Uncertainty:</b> 0.00 m					

<b>Wellpath:</b> HON-GT-01			<b>Drilled From:</b> Surface		
<b>Current Datum:</b> Ground Level	<b>Height:</b> 0.57 m	<b>Tie-on Depth:</b> 0.00 m			
<b>Magnetic Data:</b> 31/12/2011		<b>Above System Datum:</b> NAP			
<b>Field Strength:</b> 48891 nT		<b>Declination:</b> 0.09 deg			
<b>Vertical Section:</b> Depth From (TVD)	+N/-S	<b>Mag Dip Angle:</b> 67.07 deg			
m	m	+E/-W	<b>Direction</b>		
		m	deg		
0.00	0.00	0.00	325.00		

**Survey**

MD	Incl	Azim	TVD	N/S	E/W	DLS	VS
m	deg	deg	m	m	m	deg/30m	m
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21.90	0.33	210.00	21.90	-0.05	-0.03	0.45	-0.03
49.00	0.36	210.03	49.00	-0.20	-0.11	0.03	-0.10
76.20	0.58	210.67	76.20	-0.39	-0.23	0.24	-0.19
103.30	0.68	210.13	103.30	-0.65	-0.38	0.11	-0.31
130.40	0.95	205.67	130.39	-0.99	-0.55	0.31	-0.49
157.60	1.06	200.66	157.59	-1.43	-0.74	0.16	-0.74
184.70	1.08	200.63	184.69	-1.90	-0.92	0.02	-1.03
211.80	0.99	199.06	211.78	-2.36	-1.09	0.10	-1.31
238.90	1.03	198.33	238.88	-2.81	-1.24	0.05	-1.59
266.00	1.09	197.40	265.97	-3.29	-1.39	0.07	-1.90
293.10	1.14	197.33	293.07	-3.79	-1.55	0.06	-2.22
320.10	1.25	197.51	320.06	-4.33	-1.72	0.12	-2.56
347.20	1.29	197.67	347.15	-4.90	-1.90	0.04	-2.93
374.20	1.31	197.72	374.15	-5.49	-2.09	0.02	-3.30
401.30	1.32	197.62	401.24	-6.08	-2.28	0.01	-3.67
428.40	1.31	201.96	428.33	-6.66	-2.49	0.11	-4.03
455.50	1.28	202.00	455.43	-7.23	-2.71	0.03	-4.37
482.60	1.26	201.92	482.52	-7.79	-2.94	0.02	-4.69
509.80	1.27	202.23	509.71	-8.34	-3.17	0.01	-5.02
537.00	1.25	203.05	536.91	-8.90	-3.40	0.03	-5.34
564.20	1.33	201.60	564.10	-9.46	-3.63	0.10	-5.67
591.30	1.32	201.64	591.19	-10.05	-3.86	0.01	-6.02
618.30	1.32	201.97	618.18	-10.62	-4.09	0.01	-6.36
645.50	1.31	202.40	645.38	-11.20	-4.33	0.02	-6.69
672.70	1.24	200.53	672.57	-11.76	-4.55	0.09	-7.03
699.70	1.13	197.21	699.57	-12.29	-4.73	0.14	-7.36
726.80	1.00	190.81	726.66	-12.78	-4.85	0.19	-7.69
753.90	0.95	190.76	753.76	-13.23	-4.94	0.06	-8.01
781.00	0.89	191.17	780.85	-13.66	-5.02	0.07	-8.31
808.10	0.82	190.90	807.95	-14.06	-5.10	0.08	-8.59
820.70	0.77	180.69	820.55	-14.23	-5.12	0.36	-8.72
834.20	0.85	197.57	834.05	-14.42	-5.15	0.56	-8.86

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
847.80	0.84	200.78	847.65	-14.61	-5.21	0.11	-8.97
861.40	0.92	205.96	861.24	-14.80	-5.30	0.25	-9.08
874.90	0.99	200.85	874.74	-15.00	-5.39	0.24	-9.20
888.50	0.84	205.89	888.34	-15.20	-5.47	0.38	-9.32
902.10	0.89	191.98	901.94	-15.40	-5.54	0.47	-9.44
915.70	0.84	190.03	915.54	-15.60	-5.58	0.13	-9.58
929.10	0.79	186.40	928.94	-15.79	-5.60	0.16	-9.72
942.60	0.80	186.42	942.44	-15.97	-5.62	0.02	-9.86
956.10	0.88	189.92	955.93	-16.17	-5.65	0.21	-10.00
969.60	0.76	186.57	969.43	-16.36	-5.68	0.29	-10.14
983.20	0.74	185.23	983.03	-16.54	-5.70	0.06	-10.28
996.80	0.53	198.42	996.63	-16.68	-5.73	0.56	-10.38
1010.40	0.54	183.97	1010.23	-16.81	-5.75	0.30	-10.47
1023.90	0.36	166.44	1023.73	-16.91	-5.75	0.50	-10.56
1037.40	0.37	164.42	1037.23	-16.99	-5.72	0.04	-10.64
1050.90	0.21	164.44	1050.73	-17.06	-5.71	0.36	-10.70
1064.50	0.32	167.42	1064.33	-17.12	-5.69	0.24	-10.76
1078.00	0.29	131.20	1077.83	-17.18	-5.66	0.43	-10.83
1090.60	0.31	138.40	1090.43	-17.23	-5.61	0.10	-10.89
1121.00	0.44	135.65	1120.83	-17.37	-5.47	0.13	-11.09
1148.50	1.14	330.59	1148.33	-17.21	-5.53	1.71	-10.92
1175.50	3.69	329.36	1175.30	-16.23	-6.11	2.83	-9.79
1202.50	6.42	329.18	1202.19	-14.18	-7.33	3.03	-7.42
1230.00	9.85	333.84	1229.41	-10.75	-9.15	3.81	-3.56
1257.00	12.57	331.64	1255.89	-6.09	-11.57	3.06	1.64
1284.00	14.51	327.78	1282.14	-0.64	-14.76	2.38	7.94
1311.50	16.53	324.35	1308.64	5.45	-18.88	2.42	15.29
1339.00	18.99	323.65	1334.83	12.23	-23.81	2.69	23.68
1366.00	21.72	324.88	1360.14	19.86	-29.29	3.07	33.07
1393.00	24.18	325.05	1385.00	28.48	-35.34	2.73	43.60
1420.50	26.38	325.49	1409.86	38.13	-42.02	2.41	55.34
1447.50	28.49	324.52	1433.83	48.32	-49.16	2.40	67.78
1474.50	30.78	324.09	1457.29	59.16	-56.95	2.56	81.13
1502.00	32.27	325.05	1480.73	70.88	-65.29	1.72	95.51
1528.50	32.45	325.49	1503.12	82.53	-73.37	0.34	109.69
1556.00	32.18	324.61	1526.36	94.58	-81.79	0.59	124.39
1583.00	32.36	324.44	1549.19	106.32	-90.15	0.22	138.80
1610.00	32.01	324.09	1572.04	118.00	-98.55	0.44	153.19
1637.50	31.83	324.52	1595.38	129.81	-107.04	0.32	167.72
1667.50	31.57	324.35	1620.91	142.63	-116.20	0.27	183.49
1694.50	31.22	323.65	1643.95	154.01	-124.47	0.56	197.55
1722.00	31.48	324.35	1667.44	165.58	-132.88	0.49	211.86
1749.00	32.71	324.61	1690.31	177.26	-141.21	1.38	226.20
1776.00	33.33	325.40	1712.95	189.31	-149.65	0.84	240.91
1803.00	33.50	325.58	1735.49	201.57	-158.08	0.22	255.78
1830.00	33.15	325.76	1758.05	213.81	-166.44	0.40	270.61
1857.50	34.38	325.93	1780.91	226.46	-175.02	1.35	285.90
1884.50	34.29	326.28	1803.20	239.10	-183.51	0.24	301.12
1911.00	34.65	325.14	1825.05	251.49	-191.96	0.84	316.12
1924.50	35.09	324.88	1836.13	257.82	-196.39	1.03	323.84
1952.00	35.09	325.58	1858.63	270.80	-205.41	0.44	339.65
1979.00	34.82	325.14	1880.76	283.53	-214.20	0.41	355.11
2020.00	34.47	325.58	1914.49	302.71	-227.45	0.31	378.42
2047.00	34.12	326.28	1936.80	315.31	-235.97	0.59	393.63
2074.00	33.77	325.67	1959.19	327.80	-244.41	0.54	408.71
2101.00	33.50	326.37	1981.67	340.20	-252.77	0.52	423.66
2128.00	33.15	326.55	2004.23	352.57	-260.96	0.40	438.49

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 3 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2155.50	32.89	326.11	2027.29	365.04	-269.27	0.39	453.47
2182.50	33.24	326.11	2049.92	377.27	-277.48	0.39	468.20
2209.50	34.38	325.67	2072.35	389.71	-285.91	1.30	483.22
2237.00	34.47	326.02	2095.04	402.57	-294.64	0.24	498.76
2263.50	34.21	325.40	2116.92	414.92	-303.06	0.49	513.71
2291.00	33.77	324.88	2139.72	427.54	-311.85	0.58	529.09
2318.00	33.59	324.96	2162.19	439.79	-320.45	0.21	544.06
2345.00	33.15	324.96	2184.74	451.95	-328.98	0.49	558.91
2372.00	32.89	325.05	2207.38	464.00	-337.42	0.29	573.62
2399.50	32.45	325.40	2230.52	476.20	-345.88	0.52	588.47
2426.50	32.01	325.05	2253.36	488.02	-354.09	0.53	602.87
2453.00	33.15	325.05	2275.69	499.72	-362.27	1.29	617.14
2453.03	32.94	298.27	2275.72	499.73	-362.28	FmtErr	617.15
2453.18	32.99	299.62	2275.85	499.77	-362.35	145.90	617.23
2453.34	33.04	300.78	2275.98	499.81	-362.43	124.36	617.30
2453.49	33.07	301.74	2276.10	499.86	-362.50	103.61	617.38
2453.64	33.11	302.54	2276.23	499.90	-362.57	85.32	617.45
2453.79	33.13	303.09	2276.36	499.94	-362.64	60.26	617.53
2453.94	33.15	303.47	2276.49	499.99	-362.71	40.05	617.61
2454.10	33.15	303.58	2276.61	500.04	-362.78	12.07	617.69
2454.25	33.15	303.62	2276.74	500.08	-362.85	4.61	617.76
2454.40	33.14	303.42	2276.87	500.13	-362.91	21.08	617.84
2454.55	33.12	303.18	2277.00	500.17	-362.98	26.47	617.92
2454.71	33.08	302.81	2277.12	500.22	-363.05	40.75	618.00
2454.86	32.95	302.53	2277.25	500.26	-363.12	39.70	618.07
2455.01	32.39	301.81	2277.38	500.31	-363.19	134.05	618.15
2455.16	31.64	300.70	2277.51	500.35	-363.26	187.21	618.22
2455.32	30.39	298.85	2277.64	500.39	-363.33	310.29	618.29
2455.47	28.44	295.60	2277.77	500.42	-363.40	495.55	618.36
2455.62	25.90	290.55	2277.91	500.45	-363.46	674.80	618.42
2455.77	22.96	283.00	2278.05	500.47	-363.52	842.41	618.47
2455.93	20.20	273.02	2278.19	500.48	-363.58	902.09	618.51
2456.08	18.20	261.81	2278.33	500.48	-363.63	824.41	618.53
2456.23	17.23	252.49	2278.48	500.47	-363.67	589.28	618.55
2456.38	17.25	247.67	2278.62	500.45	-363.71	280.94	618.56
2456.54	18.71	251.42	2278.77	500.43	-363.76	366.36	618.57
2456.69	20.52	259.50	2278.91	500.42	-363.81	641.09	618.59
2456.84	22.85	269.54	2279.05	500.42	-363.86	860.82	618.62
2456.99	25.40	279.18	2279.19	500.42	-363.93	923.20	618.66
2457.15	27.73	287.46	2279.33	500.44	-363.99	859.52	618.71
2457.30	29.49	293.59	2279.46	500.46	-364.06	674.09	618.77
2457.45	30.88	298.13	2279.59	500.50	-364.13	525.93	618.84
2457.60	31.88	301.71	2279.72	500.54	-364.20	415.78	618.91
2457.75	32.38	304.31	2279.85	500.58	-364.27	289.16	618.98
2457.91	32.63	306.20	2279.98	500.63	-364.33	206.52	619.06
2458.06	32.74	307.72	2280.11	500.68	-364.40	163.00	619.14
2458.21	32.78	308.74	2280.24	500.73	-364.46	108.20	619.22
2458.36	32.79	309.19	2280.37	500.78	-364.53	48.32	619.30
2458.52	32.82	309.52	2280.50	500.83	-364.59	35.30	619.38
2458.67	32.84	309.19	2280.62	500.88	-364.65	35.58	619.46
2458.82	32.85	308.73	2280.75	500.94	-364.72	48.36	619.54
2458.97	32.86	307.96	2280.88	500.99	-364.78	82.99	619.62
2459.13	32.86	306.93	2281.01	501.04	-364.85	110.05	619.69
2459.28	32.85	305.88	2281.14	501.09	-364.92	111.50	619.77
2459.43	32.83	304.81	2281.26	501.13	-364.98	114.88	619.85
2459.58	32.79	303.40	2281.39	501.18	-365.05	150.66	619.93
2459.74	32.73	301.86	2281.52	501.23	-365.12	164.55	620.00
2459.89	32.68	300.37	2281.65	501.27	-365.19	157.95	620.08

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2460.04	32.62	298.78	2281.78	501.31	-365.26	169.31	620.15
2460.19	32.56	297.27	2281.90	501.35	-365.34	160.76	620.23
2460.35	32.50	296.02	2282.03	501.38	-365.41	133.20	620.30
2460.50	32.44	295.15	2282.16	501.42	-365.48	93.07	620.37
2460.65	32.37	294.57	2282.29	501.45	-365.56	62.50	620.44
2460.80	32.26	294.22	2282.42	501.49	-365.63	42.52	620.51
2460.96	32.12	294.20	2282.55	501.52	-365.71	27.51	620.58
2461.11	32.00	294.06	2282.68	501.55	-365.78	27.88	620.65
2461.26	31.90	293.84	2282.81	501.59	-365.85	29.73	620.72
2461.41	31.82	293.21	2282.94	501.62	-365.93	67.59	620.79
2461.56	31.77	292.90	2283.07	501.65	-366.00	33.77	620.86
2461.72	31.79	292.44	2283.20	501.68	-366.07	47.44	620.92
2461.87	31.80	292.36	2283.32	501.71	-366.15	8.31	620.99
2462.02	31.76	292.55	2283.45	501.74	-366.22	20.30	621.06
2462.17	31.66	293.32	2283.58	501.77	-366.30	82.88	621.13
2462.33	31.49	294.40	2283.71	501.81	-366.37	115.42	621.20
2462.48	31.30	295.57	2283.84	501.84	-366.44	126.11	621.26
2462.63	31.12	297.08	2283.97	501.87	-366.51	158.10	621.33
2462.78	31.01	298.58	2284.10	501.91	-366.58	153.34	621.40
2462.94	31.07	300.20	2284.24	501.95	-366.65	164.98	621.47
2463.09	31.20	301.40	2284.37	501.99	-366.72	124.45	621.55
2463.24	31.55	302.87	2284.50	502.03	-366.79	166.17	621.62
2463.39	31.72	303.50	2284.63	502.08	-366.85	73.24	621.69
2463.55	31.82	303.86	2284.76	502.12	-366.92	41.81	621.77
2463.70	31.78	303.92	2284.88	502.16	-366.99	8.86	621.84
2463.85	31.67	303.46	2285.01	502.21	-367.05	53.09	621.92
2464.00	31.45	302.31	2285.14	502.25	-367.12	125.43	621.99
2464.16	31.25	300.69	2285.27	502.29	-367.19	171.26	622.06
2464.31	31.06	298.52	2285.40	502.33	-367.26	223.63	622.14
2464.46	30.97	295.93	2285.54	502.37	-367.33	263.51	622.21
2464.61	31.03	293.16	2285.67	502.40	-367.40	281.35	622.27
2464.77	31.16	290.75	2285.80	502.43	-367.47	246.16	622.34
2464.92	31.31	289.04	2285.93	502.46	-367.54	177.13	622.40
2465.07	31.41	288.12	2286.06	502.48	-367.62	96.46	622.47
2465.22	31.39	288.41	2286.19	502.51	-367.69	30.71	622.53
2465.37	31.37	289.58	2286.32	502.53	-367.77	119.95	622.60
2465.53	31.40	292.93	2286.45	502.56	-367.84	342.98	622.66
2465.68	31.53	295.78	2286.58	502.60	-367.92	293.95	622.73
2465.83	31.76	298.32	2286.71	502.63	-367.99	265.92	622.80
2465.98	32.04	300.73	2286.84	502.67	-368.06	256.86	622.87
2466.14	32.24	302.78	2286.97	502.71	-368.13	218.76	622.95
2466.29	32.41	304.49	2287.09	502.76	-368.19	182.69	623.02
2466.44	32.51	306.04	2287.22	502.81	-368.26	165.05	623.10
2466.59	32.58	307.44	2287.35	502.86	-368.33	148.63	623.18
2466.75	32.62	308.83	2287.48	502.91	-368.39	148.19	623.26
2466.90	32.64	310.01	2287.61	502.96	-368.45	125.11	623.34
2467.05	32.69	311.19	2287.74	503.01	-368.52	126.12	623.42
2467.20	32.54	312.40	2287.86	503.07	-368.58	130.53	623.50
2467.36	32.08	313.33	2287.99	503.12	-368.64	134.00	623.58
2467.51	31.21	314.16	2288.12	503.18	-368.70	190.86	623.65
2467.66	29.66	315.43	2288.25	503.23	-368.75	331.86	623.73
2467.81	25.32	318.77	2288.39	503.28	-368.80	905.72	623.80
2467.97	20.84	322.92	2288.53	503.33	-368.84	938.05	623.86
2468.12	15.22	331.65	2288.67	503.37	-368.86	FmtErr	623.91
2468.27	9.25	353.29	2288.82	503.40	-368.87	FmtErr	623.94
2468.42	6.64	49.29	2288.97	503.42	-368.87	FmtErr	623.95
2468.58	10.49	95.45	2289.13	503.42	-368.85	FmtErr	623.94

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 5 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,.325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2468.73	15.66	113.27	2289.27	503.41	-368.81	FmtErr	623.91
2468.88	19.71	123.21	2289.42	503.39	-368.77	991.60	623.87
2469.03	22.25	131.14	2289.56	503.36	-368.73	749.34	623.82
2469.18	23.39	139.44	2289.70	503.31	-368.69	671.69	623.76
2469.34	23.63	149.99	2289.84	503.26	-368.65	828.51	623.70
2469.49	23.63	164.05	2289.98	503.21	-368.63	FmtErr	623.64
2469.64	24.09	183.43	2290.12	503.15	-368.62	FmtErr	623.59
2469.79	25.24	212.60	2290.26	503.09	-368.64	FmtErr	623.55
2469.95	26.80	252.65	2290.40	503.05	-368.69	FmtErr	623.55
2470.10	28.38	287.90	2290.53	503.05	-368.76	FmtErr	623.59
2470.25	30.20	312.46	2290.67	503.09	-368.83	FmtErr	623.66
2470.40	30.98	318.90	2290.80	503.14	-368.88	663.18	623.73
2470.56	31.49	321.94	2290.93	503.21	-368.93	325.71	623.81
2470.71	31.87	323.84	2291.06	503.27	-368.98	210.45	623.89
2470.86	32.12	324.13	2291.19	503.33	-369.03	57.52	623.97
2471.01	32.30	324.03	2291.32	503.40	-369.07	37.89	624.05
2471.17	32.50	324.14	2291.45	503.47	-369.12	39.98	624.13
2471.32	32.66	324.30	2291.57	503.53	-369.17	36.95	624.22
2471.47	32.80	324.40	2291.70	503.60	-369.22	28.22	624.30
2471.62	32.92	324.48	2291.83	503.67	-369.26	25.28	624.38
2471.78	33.00	324.52	2291.96	503.74	-369.31	16.38	624.46
2471.93	33.05	324.51	2292.09	503.80	-369.36	9.43	624.55
2472.08	33.08	324.52	2292.21	503.87	-369.41	7.84	624.63
2472.23	33.12	324.54	2292.34	503.94	-369.46	7.94	624.71
2472.39	33.15	324.56	2292.47	504.01	-369.51	5.42	624.80
2472.54	33.16	324.61	2292.60	504.07	-369.55	5.84	624.88
2472.69	33.17	324.66	2292.72	504.14	-369.60	5.73	624.96
2472.84	33.17	324.72	2292.85	504.21	-369.65	6.39	625.05
2472.99	33.14	324.76	2292.98	504.28	-369.70	7.40	625.13
2473.15	33.10	324.80	2293.11	504.35	-369.75	9.48	625.21
2473.30	33.04	324.83	2293.23	504.41	-369.79	13.28	625.30
2473.45	32.98	324.89	2293.36	504.48	-369.84	12.86	625.38
2473.60	32.92	324.95	2293.49	504.55	-369.89	13.52	625.46
2473.76	32.88	325.06	2293.62	504.62	-369.94	14.19	625.55
2473.91	32.87	325.20	2293.75	504.69	-369.99	14.51	625.63
2474.06	32.87	325.34	2293.87	504.75	-370.03	15.07	625.71
2474.21	32.88	325.47	2294.00	504.82	-370.08	14.01	625.79
2474.37	32.89	325.58	2294.13	504.89	-370.13	11.85	625.88
2474.52	32.89	325.64	2294.26	504.96	-370.17	7.17	625.96
2474.67	32.84	325.66	2294.39	505.03	-370.22	9.99	626.04
2474.82	32.78	325.61	2294.51	505.09	-370.27	12.34	626.13
2474.98	32.72	325.56	2294.64	505.16	-370.31	13.59	626.21
2475.13	32.66	325.53	2294.77	505.23	-370.36	11.04	626.29
2475.28	32.64	325.56	2294.90	505.30	-370.41	6.28	626.37
2475.43	32.66	325.68	2295.03	505.37	-370.45	13.25	626.45
2475.59	32.74	325.88	2295.16	505.43	-370.50	27.29	626.54
2475.74	32.88	326.14	2295.28	505.50	-370.54	37.69	626.62
2475.89	33.05	326.40	2295.41	505.57	-370.59	43.74	626.70
2476.04	33.25	326.65	2295.54	505.64	-370.64	48.41	626.79
2476.20	33.43	326.78	2295.67	505.71	-370.68	36.96	626.87
2476.35	33.58	326.80	2295.79	505.78	-370.73	29.79	626.95
2476.50	33.61	326.60	2295.92	505.85	-370.77	22.65	627.04
2476.65	33.52	326.21	2296.05	505.92	-370.82	45.17	627.12
2476.80	33.33	325.69	2296.17	505.99	-370.87	68.72	627.21
2476.96	33.07	325.10	2296.30	506.06	-370.92	81.13	627.29
2477.11	32.67	324.29	2296.43	506.13	-370.96	116.85	627.37
2477.26	32.44	323.86	2296.56	506.19	-371.01	64.79	627.45
2477.41	32.28	323.60	2296.69	506.26	-371.06	42.10	627.54

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 6 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2477.57	32.22	323.51	2296.82	506.33	-371.11	14.90	627.62
2477.72	32.26	323.61	2296.95	506.39	-371.16	13.28	627.70
2477.87	32.39	323.84	2297.07	506.46	-371.20	35.35	627.78
2478.02	32.55	324.11	2297.20	506.52	-371.25	41.96	627.86
2478.18	32.72	324.39	2297.33	506.59	-371.30	45.68	627.94
2478.33	32.88	324.64	2297.46	506.66	-371.35	39.49	628.03
2478.48	33.00	324.85	2297.59	506.72	-371.40	34.33	628.11
2478.63	33.10	325.02	2297.71	506.79	-371.44	26.71	628.19
2478.79	33.17	325.15	2297.84	506.86	-371.49	19.77	628.28
2478.94	33.21	325.27	2297.97	506.93	-371.54	14.36	628.36
2479.09	33.19	325.31	2298.10	507.00	-371.59	5.54	628.44
2479.24	33.16	325.32	2298.22	507.07	-371.63	7.46	628.53
2479.40	33.10	325.31	2298.35	507.13	-371.68	10.96	628.61
2479.55	33.03	325.29	2298.48	507.20	-371.73	13.53	628.69
2479.70	32.97	325.25	2298.61	507.27	-371.78	13.56	628.77
2479.85	32.92	325.24	2298.74	507.34	-371.82	10.16	628.86
2480.01	32.88	325.22	2298.86	507.41	-371.87	7.62	628.94
2480.16	32.86	325.24	2298.99	507.48	-371.92	3.34	629.02
2480.31	32.85	325.25	2299.12	507.54	-371.97	2.83	629.11
2480.46	32.86	325.28	2299.25	507.61	-372.01	3.88	629.19
2480.61	32.86	325.31	2299.38	507.68	-372.06	3.03	629.27
2480.77	32.87	325.28	2299.50	507.75	-372.11	4.00	629.35
2480.92	32.87	325.24	2299.63	507.82	-372.15	4.58	629.44
2481.07	32.87	325.10	2299.76	507.88	-372.20	14.51	629.52
2481.22	32.87	324.95	2299.89	507.95	-372.25	16.17	629.60
2481.38	32.87	324.77	2300.02	508.02	-372.30	18.89	629.68
2481.53	32.88	324.60	2300.14	508.09	-372.34	18.96	629.77
2481.68	32.90	324.45	2300.27	508.15	-372.39	16.25	629.85
2481.83	32.92	324.35	2300.40	508.22	-372.44	11.73	629.93
2481.99	32.95	324.31	2300.53	508.29	-372.49	6.55	630.02
2482.14	32.98	324.35	2300.66	508.36	-372.54	7.36	630.10
2482.29	33.01	324.43	2300.78	508.42	-372.59	10.12	630.18
2482.44	33.02	324.55	2300.91	508.49	-372.63	13.16	630.26
2482.60	33.03	324.70	2301.04	508.56	-372.68	16.04	630.35
2482.75	33.03	324.85	2301.17	508.63	-372.73	15.61	630.43
2482.90	33.03	324.96	2301.29	508.69	-372.78	12.03	630.51
2483.05	33.01	325.04	2301.42	508.76	-372.82	9.26	630.60
2483.21	33.00	325.07	2301.55	508.83	-372.87	4.25	630.68
2483.36	32.98	325.13	2301.68	508.90	-372.92	7.91	630.76
2483.51	32.95	325.17	2301.81	508.97	-372.97	6.44	630.85
2483.66	32.93	325.17	2301.93	509.03	-373.01	4.77	630.93
2483.82	32.89	325.16	2302.06	509.10	-373.06	7.54	631.01
2483.97	32.86	325.14	2302.19	509.17	-373.11	6.62	631.09
2484.12	32.83	325.10	2302.32	509.24	-373.16	6.96	631.18
2484.27	32.80	325.07	2302.45	509.31	-373.20	6.12	631.26
2484.42	32.80	325.06	2302.57	509.37	-373.25	1.17	631.34
2484.58	32.81	325.04	2302.70	509.44	-373.30	2.57	631.42
2484.73	32.83	325.04	2302.83	509.51	-373.35	4.38	631.51
2484.88	32.87	325.05	2302.96	509.58	-373.39	7.13	631.59
2485.03	32.89	325.06	2303.09	509.64	-373.44	5.40	631.67
2485.19	32.90	325.05	2303.21	509.71	-373.49	2.20	631.76
2485.34	32.90	325.04	2303.34	509.78	-373.54	2.01	631.84
2485.49	32.87	324.99	2303.47	509.85	-373.58	7.26	631.92
2485.64	32.82	324.94	2303.60	509.92	-373.63	11.84	632.00
2485.80	32.80	324.93	2303.73	509.98	-373.68	3.54	632.09
2485.95	32.80	324.96	2303.85	510.05	-373.73	2.70	632.17
2486.10	32.84	325.03	2303.98	510.12	-373.77	11.48	632.25

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 7 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2486.25	32.90	325.13	2304.11	510.19	-373.82	15.47	632.33
2486.41	32.96	325.23	2304.24	510.25	-373.87	15.90	632.42
2486.56	33.01	325.31	2304.37	510.32	-373.91	13.07	632.50
2486.71	33.02	325.32	2304.49	510.39	-373.96	2.75	632.58
2486.86	32.99	325.27	2304.62	510.46	-374.01	8.35	632.67
2487.02	32.93	325.17	2304.75	510.53	-374.06	16.47	632.75
2487.17	32.85	325.04	2304.88	510.59	-374.10	20.93	632.83
2487.32	32.78	324.90	2305.01	510.66	-374.15	20.28	632.91
2487.47	32.74	324.81	2305.13	510.73	-374.20	12.25	633.00
2487.63	32.75	324.74	2305.26	510.80	-374.25	7.26	633.08
2487.78	32.82	324.81	2305.39	510.86	-374.29	15.51	633.16
2487.93	32.91	324.92	2305.52	510.93	-374.34	22.90	633.24
2488.08	33.02	325.06	2305.65	511.00	-374.39	24.91	633.33
2488.23	33.09	325.17	2305.77	511.07	-374.44	18.98	633.41
2488.39	33.12	325.23	2305.90	511.14	-374.48	8.79	633.49
2488.54	33.12	325.26	2306.03	511.21	-374.53	3.16	633.58
2488.69	33.07	325.24	2306.16	511.27	-374.58	9.56	633.66
2488.84	33.01	325.19	2306.28	511.34	-374.63	12.51	633.74
2489.00	32.96	325.15	2306.41	511.41	-374.67	11.85	633.83
2489.15	32.93	325.12	2306.54	511.48	-374.72	5.82	633.91
2489.30	32.93	325.12	2306.67	511.55	-374.77	0.07	633.99
2489.45	32.96	325.15	2306.80	511.61	-374.82	7.38	634.07
2489.61	33.01	325.18	2306.92	511.68	-374.86	8.99	634.16
2489.76	33.10	325.25	2307.05	511.75	-374.91	19.40	634.24
2489.91	33.12	325.25	2307.18	511.82	-374.96	4.14	634.32
2490.06	33.11	325.22	2307.31	511.89	-375.01	4.22	634.41
2490.22	33.08	325.17	2307.43	511.96	-375.05	8.05	634.49
2490.37	33.02	325.10	2307.56	512.02	-375.10	13.47	634.57
2490.52	32.97	325.05	2307.69	512.09	-375.15	11.41	634.66
2490.67	32.94	325.03	2307.82	512.16	-375.20	6.37	634.74
2490.83	32.94	325.06	2307.95	512.23	-375.24	3.20	634.82
2490.98	32.97	325.13	2308.07	512.30	-375.29	9.96	634.91
2491.13	33.02	325.23	2308.20	512.36	-375.34	14.26	634.99
2491.28	33.09	325.35	2308.33	512.43	-375.38	18.66	635.07
2491.44	33.16	325.46	2308.46	512.50	-375.43	17.40	635.15
2491.59	33.20	325.53	2308.58	512.57	-375.48	11.07	635.24
2491.74	33.20	325.57	2308.71	512.64	-375.53	3.70	635.32
2491.89	33.14	325.52	2308.84	512.71	-375.57	12.70	635.41
2492.04	33.08	325.47	2308.97	512.78	-375.62	12.90	635.49
2492.20	33.02	325.41	2309.10	512.84	-375.67	12.73	635.57
2492.35	32.97	325.37	2309.22	512.91	-375.72	11.75	635.65
2492.50	32.93	325.34	2309.35	512.98	-375.76	7.52	635.74
2492.65	32.91	325.34	2309.48	513.05	-375.81	4.25	635.82
2492.81	32.90	325.35	2309.61	513.12	-375.86	2.72	635.90
2492.96	32.90	325.38	2309.73	513.18	-375.90	3.15	635.99
2493.11	32.89	325.40	2309.86	513.25	-375.95	2.87	636.07
2493.26	32.87	325.40	2309.99	513.32	-376.00	5.09	636.15
2493.42	32.84	325.39	2310.12	513.39	-376.04	5.44	636.23
2493.57	32.81	325.37	2310.25	513.46	-376.09	6.59	636.32
2493.72	32.79	325.36	2310.37	513.52	-376.14	4.65	636.40
2493.87	32.76	325.33	2310.50	513.59	-376.19	5.46	636.48
2494.03	32.77	325.34	2310.63	513.66	-376.23	1.94	636.56
2494.18	32.79	325.34	2310.76	513.73	-376.28	2.85	636.65
2494.33	32.81	325.36	2310.89	513.80	-376.33	5.78	636.73
2494.48	32.85	325.38	2311.02	513.86	-376.37	7.75	636.81
2494.64	32.88	325.38	2311.14	513.93	-376.42	4.97	636.89
2494.79	32.89	325.37	2311.27	514.00	-376.47	3.00	636.98
2494.94	32.89	325.35	2311.40	514.07	-376.51	2.87	637.06

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 8 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2495.09	32.89	325.31	2311.53	514.14	-376.56	3.74	637.14
2495.25	32.87	325.27	2311.66	514.20	-376.61	5.46	637.23
2495.40	32.84	325.23	2311.78	514.27	-376.66	7.20	637.31
2495.55	32.81	325.18	2311.91	514.34	-376.70	7.53	637.39
2495.70	32.79	325.15	2312.04	514.41	-376.75	5.61	637.47
2495.85	32.77	325.13	2312.17	514.48	-376.80	3.95	637.56
2496.01	32.77	325.13	2312.30	514.54	-376.84	0.83	637.64
2496.16	32.78	325.15	2312.42	514.61	-376.89	2.87	637.72
2496.31	32.80	325.18	2312.55	514.68	-376.94	5.87	637.80
2496.46	32.83	325.22	2312.68	514.75	-376.99	6.32	637.89
2496.62	32.86	325.26	2312.81	514.81	-377.03	7.64	637.97
2496.77	32.89	325.30	2312.94	514.88	-377.08	7.78	638.05
2496.92	32.92	325.33	2313.06	514.95	-377.13	5.39	638.13
2497.07	32.93	325.34	2313.19	515.02	-377.17	2.97	638.22
2497.23	32.93	325.34	2313.32	515.09	-377.22	0.54	638.30
2497.38	32.92	325.32	2313.45	515.16	-377.27	2.36	638.38
2497.53	32.91	325.29	2313.58	515.22	-377.32	4.36	638.47
2497.68	32.88	325.25	2313.70	515.29	-377.36	6.89	638.55
2497.84	32.86	325.23	2313.83	515.36	-377.41	5.25	638.63
2497.99	32.80	325.15	2313.96	515.43	-377.46	13.50	638.71
2498.14	32.79	325.13	2314.09	515.49	-377.50	3.85	638.80
2498.29	32.78	325.12	2314.22	515.56	-377.55	1.00	638.88
2498.45	32.79	325.13	2314.34	515.63	-377.60	1.52	638.96
2498.60	32.80	325.15	2314.47	515.70	-377.65	3.22	639.04
2498.75	32.80	325.15	2314.60	515.77	-377.69	0.09	639.13
2498.90	32.81	325.16	2314.73	515.83	-377.74	2.20	639.21
2499.06	32.82	325.17	2314.86	515.90	-377.79	1.91	639.29
2499.21	32.81	325.17	2314.98	515.97	-377.83	1.46	639.37
2499.36	32.82	325.19	2315.11	516.04	-377.88	2.63	639.46
2499.51	32.81	325.19	2315.24	516.10	-377.93	1.43	639.54
2499.66	32.81	325.21	2315.37	516.17	-377.98	1.90	639.62
2499.82	32.81	325.23	2315.50	516.24	-378.02	2.00	639.70
2499.97	32.80	325.24	2315.62	516.31	-378.07	2.02	639.79
2500.12	32.78	325.24	2315.75	516.38	-378.12	4.43	639.87
2500.27	32.76	325.23	2315.88	516.44	-378.16	4.10	639.95
2500.43	32.74	325.21	2316.01	516.51	-378.21	4.82	640.03
2500.58	32.72	325.18	2316.14	516.58	-378.26	5.34	640.12
2500.73	32.70	325.15	2316.27	516.65	-378.31	4.90	640.20
2500.88	32.70	325.14	2316.39	516.71	-378.35	0.90	640.28
2501.04	32.72	325.16	2316.52	516.78	-378.40	4.55	640.36
2501.19	32.76	325.21	2316.65	516.85	-378.45	9.81	640.45
2501.34	32.81	325.27	2316.78	516.92	-378.49	12.65	640.53
2501.49	32.87	325.33	2316.91	516.99	-378.54	12.87	640.61
2501.65	32.91	325.37	2317.03	517.05	-378.59	9.75	640.69
2501.80	32.94	325.40	2317.16	517.12	-378.63	5.37	640.78
2501.95	32.93	325.37	2317.29	517.19	-378.68	3.85	640.86
2502.10	32.88	325.28	2317.42	517.26	-378.73	12.43	640.94
2502.26	32.83	325.20	2317.55	517.33	-378.78	13.06	641.03
2502.41	32.80	325.15	2317.67	517.39	-378.82	8.89	641.11
2502.56	32.79	325.13	2317.80	517.46	-378.87	2.81	641.19
2502.71	32.82	325.16	2317.93	517.53	-378.92	5.85	641.27
2502.87	32.88	325.24	2318.06	517.60	-378.96	15.52	641.36
2503.02	32.95	325.35	2318.19	517.66	-379.01	17.50	641.44
2503.17	33.03	325.46	2318.31	517.73	-379.06	19.49	641.52
2503.32	33.07	325.54	2318.44	517.80	-379.11	12.80	641.60
2503.47	33.08	325.57	2318.57	517.87	-379.15	3.02	641.69
2503.63	33.04	325.53	2318.70	517.94	-379.20	8.24	641.77

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2503.78	32.98	325.45	2318.83	518.01	-379.25	15.69	641.85
2503.93	32.89	325.35	2318.95	518.08	-379.29	20.05	641.94
2504.08	32.81	325.24	2319.08	518.14	-379.34	18.69	642.02
2504.24	32.75	325.16	2319.21	518.21	-379.39	16.16	642.10
2504.39	32.76	325.17	2319.34	518.28	-379.44	2.17	642.18
2504.54	32.81	325.24	2319.47	518.35	-379.48	13.65	642.27
2504.69	32.89	325.33	2319.59	518.41	-379.53	17.85	642.35
2504.85	32.97	325.43	2319.72	518.48	-379.58	18.51	642.43
2505.00	33.02	325.50	2319.85	518.55	-379.62	12.73	642.52
2505.15	33.04	325.52	2319.98	518.62	-379.67	4.11	642.60
2505.30	33.01	325.48	2320.11	518.69	-379.72	5.89	642.68
2505.46	32.96	325.41	2320.23	518.76	-379.76	13.51	642.76
2505.61	32.89	325.32	2320.36	518.82	-379.81	16.00	642.85
2505.76	32.82	325.23	2320.49	518.89	-379.86	17.84	642.93
2505.91	32.76	325.16	2320.62	518.96	-379.91	13.52	643.01
2506.07	32.73	325.14	2320.75	519.03	-379.95	5.67	643.09
2506.22	32.74	325.17	2320.87	519.10	-380.00	2.87	643.18
2506.37	32.77	325.23	2321.00	519.16	-380.05	8.73	643.26
2506.52	32.80	325.29	2321.13	519.23	-380.09	8.91	643.34
2506.68	32.82	325.35	2321.26	519.30	-380.14	7.51	643.42
2506.83	32.84	325.39	2321.39	519.37	-380.19	5.82	643.51
2506.98	32.84	325.39	2321.51	519.43	-380.24	0.95	643.59
2507.13	32.83	325.38	2321.64	519.50	-380.28	2.04	643.67
2507.28	32.81	325.36	2321.77	519.57	-380.33	4.83	643.76
2507.44	32.79	325.33	2321.90	519.64	-380.38	5.55	643.84
2507.59	32.77	325.30	2322.03	519.71	-380.42	3.67	643.92
2507.74	32.76	325.28	2322.15	519.77	-380.47	3.29	644.00
2507.89	32.76	325.28	2322.28	519.84	-380.52	0.57	644.09
2508.05	32.78	325.30	2322.41	519.91	-380.56	3.86	644.17
2508.20	32.79	325.32	2322.54	519.98	-380.61	3.40	644.25
2508.35	32.83	325.37	2322.67	520.05	-380.66	9.80	644.33
2508.50	32.84	325.38	2322.80	520.11	-380.70	0.72	644.42
2508.66	32.84	325.38	2322.92	520.18	-380.75	0.43	644.50
2508.81	32.82	325.36	2323.05	520.25	-380.80	4.16	644.58
2508.96	32.80	325.33	2323.18	520.32	-380.85	4.71	644.66
2509.11	32.78	325.31	2323.31	520.39	-380.89	4.60	644.75
2509.27	32.76	325.29	2323.44	520.45	-380.94	4.29	644.83
2509.42	32.76	325.29	2323.56	520.52	-380.99	0.12	644.91
2509.57	32.78	325.31	2323.69	520.59	-381.03	3.62	644.99
2509.72	32.80	325.34	2323.82	520.66	-381.08	5.05	645.08
2509.88	32.82	325.37	2323.95	520.72	-381.13	5.93	645.16
2510.03	32.83	325.38	2324.08	520.79	-381.17	1.68	645.24
2510.18	32.82	325.38	2324.20	520.86	-381.22	2.22	645.32
2510.33	32.76	325.32	2324.33	520.93	-381.27	12.43	645.41
2510.49	32.71	325.25	2324.46	521.00	-381.31	12.75	645.49
2510.64	32.66	325.20	2324.59	521.06	-381.36	11.43	645.57
2510.79	32.62	325.16	2324.72	521.13	-381.41	8.38	645.65
2510.94	32.62	325.16	2324.85	521.20	-381.46	0.70	645.74
2511.09	32.65	325.20	2324.97	521.27	-381.50	7.27	645.82
2511.25	32.70	325.28	2325.10	521.33	-381.55	14.11	645.90
2511.40	32.78	325.39	2325.23	521.40	-381.60	18.65	645.98
2511.55	32.84	325.48	2325.36	521.47	-381.64	16.33	646.06
2511.70	32.89	325.55	2325.49	521.54	-381.69	11.46	646.15
2511.86	32.89	325.57	2325.61	521.61	-381.74	1.83	646.23
2512.01	32.85	325.52	2325.74	521.67	-381.78	9.88	646.31
2512.16	32.77	325.43	2325.87	521.74	-381.83	18.59	646.40
2512.31	32.62	325.25	2326.00	521.81	-381.88	33.89	646.48
2512.47	32.55	325.16	2326.13	521.88	-381.92	18.45	646.56

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature
	<b>Time:</b> 14:24:31 <b>Page:</b> 10 <b>Db:</b> Adapti

Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2512.62	32.50	325.11	2326.26	521.94	-381.97	9.65	646.64
2512.77	32.51	325.11	2326.38	522.01	-382.02	1.17	646.72
2512.92	32.56	325.18	2326.51	522.08	-382.06	11.34	646.81
2513.08	32.63	325.28	2326.64	522.15	-382.11	18.23	646.89
2513.23	32.71	325.38	2326.77	522.21	-382.16	18.25	646.97
2513.38	32.76	325.45	2326.90	522.28	-382.21	13.12	647.05
2513.53	32.78	325.47	2327.03	522.35	-382.25	4.67	647.13
2513.69	32.76	325.45	2327.15	522.42	-382.30	5.08	647.22
2513.84	32.70	325.37	2327.28	522.49	-382.35	13.87	647.30
2513.99	32.64	325.29	2327.41	522.55	-382.39	14.75	647.38
2514.14	32.57	325.20	2327.54	522.62	-382.44	17.32	647.46
2514.30	32.56	325.20	2327.67	522.69	-382.49	1.17	647.55
2514.45	32.60	325.25	2327.80	522.76	-382.53	8.79	647.63
2514.60	32.65	325.32	2327.92	522.82	-382.58	13.22	647.71
2514.75	32.71	325.41	2328.05	522.89	-382.63	15.06	647.79
2514.90	32.76	325.47	2328.18	522.96	-382.67	10.95	647.88
2515.06	32.77	325.48	2328.31	523.03	-382.72	3.85	647.96
2515.21	32.75	325.45	2328.44	523.09	-382.77	5.18	648.04
2515.36	32.70	325.37	2328.56	523.16	-382.81	13.23	648.12
2515.51	32.65	325.29	2328.69	523.23	-382.86	14.19	648.20
2515.67	32.59	325.20	2328.82	523.30	-382.91	13.72	648.29
2515.82	32.56	325.15	2328.95	523.37	-382.95	8.47	648.37
2515.97	32.56	325.14	2329.08	523.43	-383.00	1.21	648.45
2516.12	32.58	325.17	2329.21	523.50	-383.05	5.42	648.53
2516.28	32.65	325.24	2329.34	523.57	-383.09	15.33	648.62
2516.43	32.68	325.28	2329.46	523.63	-383.14	7.49	648.70
2516.58	32.70	325.30	2329.59	523.70	-383.19	4.48	648.78
2516.73	32.70	325.30	2329.72	523.77	-383.24	0.97	648.86
2516.89	32.68	325.28	2329.85	523.84	-383.28	3.86	648.94
2517.04	32.65	325.24	2329.98	523.91	-383.33	6.31	649.03
2517.19	32.64	325.22	2330.10	523.97	-383.38	4.59	649.11
2517.34	32.62	325.20	2330.23	524.04	-383.42	3.38	649.19
2517.50	32.62	325.20	2330.36	524.11	-383.47	0.19	649.27
2517.65	32.63	325.21	2330.49	524.18	-383.52	2.13	649.36
2517.80	32.65	325.23	2330.62	524.24	-383.56	5.07	649.44
2517.95	32.68	325.27	2330.75	524.31	-383.61	6.46	649.52
2518.11	32.70	325.29	2330.87	524.38	-383.66	4.74	649.60
2518.26	32.71	325.30	2331.00	524.45	-383.70	2.34	649.68
2518.41	32.71	325.30	2331.13	524.51	-383.75	0.75	649.77
2518.56	32.70	325.29	2331.26	524.58	-383.80	2.66	649.85
2518.71	32.67	325.25	2331.39	524.65	-383.84	6.21	649.93
2518.87	32.64	325.21	2331.52	524.72	-383.89	7.04	650.01
2519.02	32.61	325.17	2331.64	524.78	-383.94	7.34	650.10
2519.17	32.59	325.12	2331.77	524.85	-383.99	6.42	650.18
2519.32	32.60	325.10	2331.90	524.92	-384.03	1.82	650.26
2519.48	32.62	325.11	2332.03	524.99	-384.08	5.22	650.34
2519.63	32.67	325.15	2332.16	525.05	-384.13	10.27	650.42
2519.78	32.73	325.21	2332.29	525.12	-384.17	12.47	650.51
2519.93	32.78	325.27	2332.41	525.19	-384.22	12.60	650.59
2520.09	32.82	325.33	2332.54	525.26	-384.27	10.05	650.67
2520.24	32.80	325.32	2332.67	525.32	-384.31	3.43	650.75
2520.39	32.75	325.28	2332.80	525.39	-384.36	11.74	650.84
2520.54	32.68	325.21	2332.93	525.46	-384.41	16.20	650.92
2520.70	32.59	325.13	2333.06	525.53	-384.46	18.75	651.00
2520.85	32.53	325.07	2333.18	525.59	-384.50	13.66	651.08
2521.00	32.50	325.06	2333.31	525.66	-384.55	6.01	651.17
2521.15	32.51	325.10	2333.44	525.73	-384.60	4.90	651.25

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 11 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azj) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2521.31	32.56	325.19	2333.57	525.80	-384.64	14.11	651.33
2521.46	32.63	325.30	2333.70	525.86	-384.69	17.52	651.41
2521.61	32.70	325.39	2333.83	525.93	-384.74	16.44	651.49
2521.76	32.74	325.46	2333.95	526.00	-384.78	10.80	651.58
2521.92	32.73	325.45	2334.08	526.07	-384.83	2.39	651.66
2522.07	32.65	325.36	2334.21	526.13	-384.88	18.03	651.74
2522.22	32.56	325.25	2334.34	526.20	-384.92	21.02	651.82
2522.37	32.48	325.16	2334.47	526.27	-384.97	18.69	651.90
2522.52	32.43	325.10	2334.60	526.34	-385.02	12.57	651.99
2522.68	32.41	325.10	2334.72	526.40	-385.06	2.71	652.07
2522.83	32.45	325.16	2334.85	526.47	-385.11	9.18	652.15
2522.98	32.50	325.24	2334.98	526.54	-385.16	14.56	652.23
2523.13	32.57	325.34	2335.11	526.61	-385.20	16.28	652.31
2523.29	32.62	325.42	2335.24	526.67	-385.25	12.87	652.40
2523.44	32.62	325.43	2335.37	526.74	-385.30	1.23	652.48
2523.59	32.59	325.39	2335.50	526.81	-385.34	7.61	652.56
2523.74	32.53	325.30	2335.62	526.88	-385.39	14.85	652.64
2523.90	32.45	325.20	2335.75	526.94	-385.44	19.42	652.72
2524.05	32.36	325.07	2335.88	527.01	-385.48	22.06	652.81
2524.20	32.33	325.03	2336.01	527.08	-385.53	6.76	652.89
2524.35	32.36	325.05	2336.14	527.14	-385.58	5.16	652.97
2524.51	32.41	325.12	2336.27	527.21	-385.62	12.24	653.05
2524.66	32.48	325.20	2336.40	527.28	-385.67	16.23	653.13
2524.81	32.56	325.30	2336.52	527.35	-385.72	18.44	653.21
2524.96	32.61	325.35	2336.65	527.41	-385.76	12.10	653.30
2525.12	32.64	325.37	2336.78	527.48	-385.81	6.19	653.38
2525.27	32.63	325.35	2336.91	527.55	-385.86	3.34	653.46
2525.42	32.58	325.26	2337.04	527.62	-385.90	12.66	653.54
2525.57	32.52	325.15	2337.17	527.68	-385.95	17.33	653.62
2525.73	32.44	325.02	2337.30	527.75	-386.00	21.42	653.71
2525.88	32.36	324.90	2337.42	527.82	-386.04	20.36	653.79
2526.03	32.31	324.81	2337.55	527.88	-386.09	12.68	653.87
2526.18	32.32	324.81	2337.68	527.95	-386.14	1.11	653.95
2526.33	32.37	324.87	2337.81	528.02	-386.19	12.75	654.03
2526.49	32.47	325.00	2337.94	528.08	-386.23	23.12	654.11
2526.64	32.59	325.17	2338.07	528.15	-386.28	30.98	654.20
2526.79	32.72	325.35	2338.20	528.22	-386.33	31.79	654.28
2526.94	32.82	325.49	2338.32	528.29	-386.37	23.98	654.36
2527.10	32.88	325.57	2338.45	528.35	-386.42	14.62	654.44
2527.25	32.87	325.57	2338.58	528.42	-386.47	2.52	654.53
2527.40	32.79	325.49	2338.71	528.49	-386.51	18.13	654.61
2527.55	32.67	325.34	2338.84	528.56	-386.56	28.00	654.69
2527.71	32.52	325.16	2338.96	528.63	-386.61	35.52	654.77
2527.86	32.38	324.98	2339.09	528.69	-386.65	33.18	654.86
2528.01	32.25	324.81	2339.22	528.76	-386.70	31.01	654.94
2528.16	32.23	324.79	2339.35	528.83	-386.75	3.27	655.02
2528.32	32.30	324.88	2339.48	528.89	-386.79	16.10	655.10
2528.47	32.41	325.02	2339.61	528.96	-386.84	25.31	655.18
2528.62	32.55	325.20	2339.74	529.03	-386.89	34.62	655.26
2528.77	32.69	325.37	2339.87	529.09	-386.93	32.53	655.34
2528.93	32.79	325.49	2339.99	529.16	-386.98	23.23	655.43
2529.08	32.84	325.55	2340.12	529.23	-387.03	11.23	655.51
2529.23	32.81	325.50	2340.25	529.30	-387.07	7.43	655.59
2529.38	32.73	325.39	2340.38	529.37	-387.12	19.30	655.67
2529.54	32.63	325.23	2340.51	529.43	-387.17	26.49	655.76
2529.69	32.50	325.05	2340.63	529.50	-387.22	31.31	655.84
2529.84	32.36	324.82	2340.76	529.57	-387.26	36.86	655.92
2529.99	32.30	324.73	2340.89	529.63	-387.31	14.73	656.00

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 12 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2530.14	32.30	324.72	2341.02	529.70	-387.36	1.15	656.08
2530.30	32.35	324.77	2341.15	529.77	-387.40	9.92	656.17
2530.45	32.43	324.88	2341.28	529.83	-387.45	20.81	656.25
2530.60	32.55	325.04	2341.41	529.90	-387.50	28.69	656.33
2530.75	32.68	325.21	2341.53	529.97	-387.54	30.38	656.41
2530.91	32.80	325.38	2341.66	530.04	-387.59	30.62	656.49
2531.06	32.90	325.51	2341.79	530.10	-387.64	24.31	656.58
2531.21	32.96	325.58	2341.92	530.17	-387.68	12.41	656.66
2531.36	32.95	325.58	2342.05	530.24	-387.73	0.20	656.74
2531.52	32.88	325.48	2342.17	530.31	-387.78	18.79	656.82
2531.67	32.74	325.30	2342.30	530.38	-387.83	33.32	656.91
2531.82	32.49	324.99	2342.43	530.44	-387.87	58.26	656.99
2531.97	32.33	324.77	2342.56	530.51	-387.92	38.78	657.07
2532.13	32.22	324.63	2342.69	530.58	-387.97	27.69	657.15
2532.28	32.16	324.55	2342.82	530.64	-388.01	14.50	657.23
2532.43	32.17	324.58	2342.95	530.71	-388.06	4.21	657.31
2532.58	32.25	324.70	2343.08	530.78	-388.11	19.73	657.40
2532.74	32.38	324.88	2343.20	530.84	-388.15	31.62	657.48
2532.89	32.52	325.08	2343.33	530.91	-388.20	35.28	657.56
2533.04	32.64	325.25	2343.46	530.98	-388.25	30.17	657.64
2533.19	32.72	325.36	2343.59	531.04	-388.30	19.98	657.72
2533.35	32.74	325.40	2343.72	531.11	-388.34	5.12	657.81
2533.50	32.70	325.34	2343.85	531.18	-388.39	9.49	657.89
2533.65	32.62	325.23	2343.97	531.25	-388.44	21.23	657.97
2533.80	32.43	324.97	2344.10	531.32	-388.48	45.68	658.05
2533.95	32.32	324.82	2344.23	531.38	-388.53	26.76	658.13
2534.11	32.25	324.71	2344.36	531.45	-388.58	18.00	658.22
2534.26	32.23	324.68	2344.49	531.51	-388.62	4.81	658.30
2534.41	32.28	324.74	2344.62	531.58	-388.67	10.56	658.38
2534.56	32.36	324.84	2344.75	531.65	-388.72	20.01	658.46
2534.72	32.47	324.98	2344.88	531.71	-388.76	25.74	658.54
2534.87	32.58	325.13	2345.00	531.78	-388.81	26.48	658.62
2535.02	32.66	325.23	2345.13	531.85	-388.86	20.05	658.71
2535.17	32.71	325.29	2345.26	531.92	-388.90	10.84	658.79
2535.33	32.71	325.29	2345.39	531.98	-388.95	0.11	658.87
2535.48	32.66	325.23	2345.52	532.05	-389.00	11.47	658.95
2535.63	32.59	325.14	2345.65	532.12	-389.05	17.10	659.03
2535.78	32.48	325.00	2345.77	532.19	-389.09	25.97	659.12
2535.94	32.42	324.94	2345.90	532.25	-389.14	12.68	659.20
2536.09	32.40	324.92	2346.03	532.32	-389.19	4.56	659.28
2536.24	32.41	324.95	2346.16	532.39	-389.23	3.62	659.36
2536.39	32.45	325.01	2346.29	532.45	-389.28	9.49	659.44
2536.55	32.49	325.09	2346.42	532.52	-389.33	11.73	659.53
2536.70	32.52	325.16	2346.55	532.59	-389.37	10.12	659.61
2536.85	32.53	325.19	2346.67	532.66	-389.42	3.36	659.69
2537.00	32.50	325.17	2346.80	532.72	-389.47	6.55	659.77
2537.16	32.44	325.12	2346.93	532.79	-389.51	13.21	659.85
2537.31	32.37	325.04	2347.06	532.86	-389.56	16.34	659.93
2537.46	32.29	324.96	2347.19	532.92	-389.61	16.37	660.02
2537.61	32.24	324.90	2347.32	532.99	-389.65	12.57	660.10
2537.76	32.26	324.92	2347.45	533.06	-389.70	5.02	660.18
2537.92	32.33	325.01	2347.58	533.12	-389.75	16.43	660.26
2538.07	32.43	325.13	2347.70	533.19	-389.79	23.91	660.34
2538.22	32.55	325.26	2347.83	533.26	-389.84	25.80	660.42
2538.37	32.64	325.36	2347.96	533.33	-389.89	21.89	660.51
2538.53	32.69	325.40	2348.09	533.39	-389.93	11.02	660.59
2538.68	32.69	325.37	2348.22	533.46	-389.98	2.80	660.67

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 13 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2538.83	32.65	325.29	2348.35	533.53	-390.03	11.99	660.75
2538.98	32.57	325.16	2348.47	533.60	-390.08	20.51	660.83
2539.14	32.48	325.03	2348.60	533.66	-390.12	23.57	660.92
2539.29	32.40	324.91	2348.73	533.73	-390.17	20.30	661.00
2539.44	32.35	324.84	2348.86	533.80	-390.22	12.58	661.08
2539.59	32.33	324.82	2348.99	533.86	-390.26	3.07	661.16
2539.75	32.38	324.87	2349.12	533.93	-390.31	9.68	661.24
2539.90	32.43	324.94	2349.25	534.00	-390.36	13.19	661.32
2540.05	32.49	325.01	2349.38	534.06	-390.40	13.19	661.41
2540.20	32.52	325.05	2349.50	534.13	-390.45	8.81	661.49
2540.36	32.54	325.07	2349.63	534.20	-390.50	4.18	661.57
2540.51	32.54	325.06	2349.76	534.27	-390.54	1.46	661.65
2540.66	32.52	325.04	2349.89	534.33	-390.59	4.10	661.73
2540.81	32.50	325.03	2350.02	534.40	-390.64	3.86	661.82
2540.97	32.49	325.03	2350.15	534.47	-390.69	1.19	661.90
2541.12	32.51	325.07	2350.27	534.53	-390.73	4.57	661.98
2541.27	32.54	325.12	2350.40	534.60	-390.78	8.44	662.06
2541.42	32.58	325.19	2350.53	534.67	-390.83	11.26	662.14
2541.57	32.66	325.30	2350.66	534.74	-390.87	18.84	662.23
2541.73	32.67	325.33	2350.79	534.80	-390.92	3.58	662.31
2541.88	32.65	325.30	2350.92	534.87	-390.97	4.79	662.39
2542.03	32.60	325.23	2351.04	534.94	-391.01	13.22	662.47
2542.18	32.52	325.12	2351.17	535.01	-391.06	19.38	662.55
2542.34	32.43	325.00	2351.30	535.07	-391.11	21.67	662.64
2542.49	32.34	324.89	2351.43	535.14	-391.15	20.42	662.72
2542.64	32.28	324.82	2351.56	535.21	-391.20	14.17	662.80
2542.79	32.26	324.81	2351.69	535.27	-391.25	4.36	662.88
2542.95	32.27	324.87	2351.82	535.34	-391.29	6.46	662.96
2543.10	32.33	324.99	2351.95	535.41	-391.34	17.11	663.04
2543.25	32.41	325.14	2352.07	535.47	-391.39	21.23	663.13
2543.40	32.49	325.29	2352.20	535.54	-391.43	23.42	663.21
2543.56	32.55	325.42	2352.33	535.61	-391.48	17.89	663.29
2543.71	32.60	325.52	2352.46	535.68	-391.53	14.24	663.37
2543.86	32.57	325.50	2352.59	535.74	-391.57	5.62	663.45
2544.01	32.51	325.41	2352.72	535.81	-391.62	15.82	663.54
2544.17	32.42	325.28	2352.85	535.88	-391.67	22.62	663.62
2544.32	32.32	325.14	2352.97	535.95	-391.71	23.37	663.70
2544.47	32.25	325.02	2353.10	536.01	-391.76	19.82	663.78
2544.62	32.20	324.95	2353.23	536.08	-391.81	11.39	663.86
2544.78	32.21	324.94	2353.36	536.14	-391.85	1.37	663.94
2544.93	32.26	325.01	2353.49	536.21	-391.90	12.46	664.02
2545.08	32.36	325.13	2353.62	536.28	-391.95	22.24	664.11
2545.23	32.47	325.27	2353.75	536.35	-391.99	27.13	664.19
2545.38	32.63	325.47	2353.88	536.41	-392.04	37.46	664.27
2545.54	32.69	325.54	2354.00	536.48	-392.09	14.98	664.35
2545.69	32.71	325.55	2354.13	536.55	-392.13	3.39	664.43
2545.84	32.68	325.49	2354.26	536.62	-392.18	8.71	664.52
2545.99	32.62	325.38	2354.39	536.68	-392.23	16.56	664.60
2546.15	32.54	325.26	2354.52	536.75	-392.27	21.14	664.68
2546.30	32.46	325.13	2354.65	536.82	-392.32	20.01	664.76
2546.45	32.40	325.05	2354.77	536.89	-392.37	14.11	664.84
2546.60	32.37	325.01	2354.90	536.95	-392.41	6.98	664.93
2546.76	32.38	325.02	2355.03	537.02	-392.46	1.86	665.01
2546.91	32.41	325.07	2355.16	537.09	-392.51	8.37	665.09
2547.06	32.46	325.15	2355.29	537.15	-392.55	11.77	665.17
2547.21	32.49	325.21	2355.42	537.22	-392.60	10.02	665.25
2547.37	32.51	325.26	2355.55	537.29	-392.65	5.60	665.33
2547.52	32.49	325.26	2355.68	537.36	-392.69	4.93	665.42

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVW-Honseleersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 14 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2547.67	32.45	325.23	2355.80	537.42	-392.74	7.18	665.50
2547.82	32.40	325.18	2355.93	537.49	-392.79	11.32	665.58
2547.98	32.35	325.12	2356.06	537.56	-392.83	11.89	665.66
2548.13	32.31	325.08	2356.19	537.62	-392.88	9.85	665.74
2548.28	32.28	325.05	2356.32	537.69	-392.93	5.91	665.82
2548.43	32.28	325.07	2356.45	537.76	-392.97	1.78	665.91
2548.59	32.30	325.12	2356.58	537.82	-393.02	6.23	665.99
2548.74	32.33	325.20	2356.71	537.89	-393.07	11.53	666.07
2548.89	32.38	325.31	2356.83	537.96	-393.11	13.91	666.15
2549.04	32.41	325.40	2356.96	538.02	-393.16	12.19	666.23
2549.19	32.43	325.52	2357.09	538.09	-393.21	12.71	666.31
2549.35	32.40	325.54	2357.22	538.16	-393.25	5.83	666.39
2549.50	32.34	325.51	2357.35	538.23	-393.30	12.39	666.48
2549.65	32.26	325.46	2357.48	538.29	-393.34	16.92	666.56
2549.80	32.17	325.37	2357.61	538.36	-393.39	20.34	666.64
2549.96	32.09	325.30	2357.74	538.43	-393.44	17.80	666.72
2550.11	32.03	325.24	2357.86	538.49	-393.48	13.55	666.80
2550.26	32.00	325.22	2357.99	538.56	-393.53	6.40	666.88
2550.41	32.00	325.24	2358.12	538.63	-393.58	2.96	666.96
2550.57	32.03	325.29	2358.25	538.69	-393.62	7.76	667.04
2550.72	32.08	325.35	2358.38	538.76	-393.67	10.16	667.12
2550.87	32.12	325.41	2358.51	538.83	-393.71	11.46	667.21
2551.02	32.16	325.44	2358.64	538.89	-393.76	7.11	667.29
2551.18	32.15	325.43	2358.77	538.96	-393.81	1.36	667.37
2551.33	32.13	325.38	2358.90	539.03	-393.85	7.45	667.45
2551.48	32.09	325.33	2359.03	539.09	-393.90	8.13	667.53
2551.63	32.06	325.28	2359.16	539.16	-393.94	8.42	667.61
2551.79	32.03	325.24	2359.28	539.23	-393.99	7.54	667.69
2551.94	32.02	325.23	2359.41	539.29	-394.04	1.64	667.77
2552.09	32.03	325.25	2359.54	539.36	-394.08	2.71	667.85
2552.24	32.05	325.29	2359.67	539.43	-394.13	5.89	667.93
2552.40	32.08	325.33	2359.80	539.49	-394.17	7.37	668.01
2552.55	32.11	325.37	2359.93	539.56	-394.22	6.34	668.10
2552.70	32.12	325.39	2360.06	539.62	-394.27	2.72	668.18
2552.85	32.11	325.38	2360.19	539.69	-394.31	2.20	668.26
2553.00	32.06	325.32	2360.32	539.76	-394.36	11.15	668.34
2553.16	32.03	325.28	2360.45	539.82	-394.40	8.04	668.42
2553.31	32.00	325.23	2360.58	539.89	-394.45	7.45	668.50
2553.46	31.99	325.22	2360.71	539.96	-394.50	2.01	668.58
2553.61	32.01	325.23	2360.83	540.02	-394.54	3.66	668.66
2553.77	32.05	325.28	2360.96	540.09	-394.59	9.65	668.74
2553.92	32.11	325.35	2361.09	540.16	-394.63	13.89	668.82
2554.07	32.18	325.43	2361.22	540.22	-394.68	15.51	668.90
2554.22	32.24	325.50	2361.35	540.29	-394.73	14.65	668.99
2554.38	32.28	325.54	2361.48	540.36	-394.77	9.06	669.07
2554.53	32.30	325.55	2361.61	540.42	-394.82	3.46	669.15
2554.68	32.27	325.47	2361.74	540.49	-394.86	10.20	669.23
2554.83	32.21	325.38	2361.87	540.56	-394.91	13.71	669.31
2554.99	32.15	325.27	2362.00	540.63	-394.96	17.34	669.39
2555.14	32.08	325.16	2362.12	540.69	-395.00	17.14	669.47
2555.29	32.04	325.08	2362.25	540.76	-395.05	12.27	669.55
2555.44	32.02	325.04	2362.38	540.82	-395.10	6.29	669.64
2555.60	32.03	325.04	2362.51	540.89	-395.14	2.68	669.72
2555.75	32.09	325.10	2362.64	540.96	-395.19	13.01	669.80
2555.90	32.17	325.20	2362.77	541.02	-395.23	18.69	669.88
2556.05	32.27	325.33	2362.90	541.09	-395.28	23.97	669.96
2556.21	32.36	325.45	2363.03	541.16	-395.33	21.48	670.04

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,.325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2556.36	32.42	325.54	2363.16	541.22	-395.37	15.44	670.12
2556.51	32.44	325.57	2363.29	541.29	-395.42	4.75	670.20
2556.66	32.38	325.51	2363.41	541.36	-395.47	13.69	670.29
2556.81	32.29	325.41	2363.54	541.43	-395.51	19.20	670.37
2556.97	32.19	325.29	2363.67	541.49	-395.56	23.29	670.45
2557.12	32.10	325.19	2363.80	541.56	-395.60	20.43	670.53
2557.27	32.04	325.12	2363.93	541.63	-395.65	14.01	670.61
2557.42	32.03	325.11	2364.06	541.69	-395.70	2.78	670.69
2557.58	32.06	325.17	2364.19	541.76	-395.74	8.00	670.77
2557.73	32.13	325.26	2364.32	541.83	-395.79	16.59	670.85
2557.88	32.20	325.37	2364.45	541.89	-395.84	18.02	670.93
2558.03	32.26	325.47	2364.58	541.96	-395.88	16.58	671.02
2558.19	32.30	325.52	2364.70	542.03	-395.93	9.08	671.10
2558.34	32.29	325.53	2364.83	542.09	-395.97	1.27	671.18
2558.49	32.22	325.45	2364.96	542.16	-396.02	16.40	671.26
2558.64	32.14	325.35	2365.09	542.23	-396.07	18.00	671.34
2558.80	32.06	325.25	2365.22	542.29	-396.11	18.85	671.42
2558.95	32.01	325.17	2365.35	542.36	-396.16	14.40	671.50
2559.10	31.97	325.13	2365.48	542.43	-396.20	7.56	671.58
2559.25	31.98	325.13	2365.61	542.49	-396.25	1.70	671.66
2559.41	32.03	325.19	2365.74	542.56	-396.30	11.23	671.74
2559.56	32.10	325.28	2365.87	542.63	-396.34	16.56	671.83
2559.71	32.18	325.38	2366.00	542.69	-396.39	18.39	671.91
2559.86	32.24	325.46	2366.12	542.76	-396.44	15.93	671.99
2560.02	32.28	325.52	2366.25	542.83	-396.48	9.18	672.07
2560.17	32.30	325.54	2366.38	542.89	-396.53	3.38	672.15
2560.32	32.25	325.47	2366.51	542.96	-396.57	12.08	672.23
2560.47	32.19	325.39	2366.64	543.03	-396.62	13.90	672.31
2560.62	32.13	325.30	2366.77	543.09	-396.67	15.20	672.39
2560.78	32.08	325.23	2366.90	543.16	-396.71	12.68	672.48
2560.93	32.04	325.18	2367.03	543.23	-396.76	8.00	672.56
2561.08	32.04	325.16	2367.16	543.29	-396.80	2.53	672.64
2561.23	32.05	325.18	2367.29	543.36	-396.85	3.68	672.72
2561.39	32.07	325.21	2367.41	543.43	-396.90	5.54	672.80
2561.54	32.10	325.24	2367.54	543.49	-396.94	5.81	672.88
2561.69	32.12	325.28	2367.67	543.56	-396.99	6.16	672.96
2561.84	32.13	325.30	2367.80	543.63	-397.04	3.34	673.04
2562.00	32.14	325.31	2367.93	543.69	-397.08	0.86	673.12
2562.15	32.12	325.30	2368.06	543.76	-397.13	4.16	673.20
2562.30	32.10	325.28	2368.19	543.83	-397.17	3.21	673.29
2562.45	32.10	325.27	2368.32	543.89	-397.22	1.98	673.37
2562.61	32.08	325.25	2368.45	543.96	-397.27	2.71	673.45
2562.76	32.08	325.24	2368.58	544.03	-397.31	1.84	673.53
2562.91	32.07	325.23	2368.71	544.09	-397.36	2.10	673.61
2563.06	32.06	325.22	2368.83	544.16	-397.40	1.39	673.69
2563.22	32.06	325.22	2368.96	544.22	-397.45	1.07	673.77
2563.37	32.05	325.21	2369.09	544.29	-397.50	1.21	673.85
2563.52	32.05	325.22	2369.22	544.36	-397.54	0.90	673.93
2563.67	32.05	325.23	2369.35	544.42	-397.59	1.23	674.01
2563.83	32.05	325.26	2369.48	544.49	-397.63	2.43	674.09
2563.98	32.05	325.27	2369.61	544.56	-397.68	1.52	674.18
2564.13	32.05	325.28	2369.74	544.62	-397.73	1.33	674.26
2564.28	32.04	325.29	2369.87	544.69	-397.77	1.27	674.34
2564.43	32.03	325.29	2370.00	544.76	-397.82	1.70	674.42
2564.59	32.03	325.29	2370.13	544.82	-397.87	1.58	674.50
2564.74	32.02	325.29	2370.26	544.89	-397.91	1.29	674.58
2564.89	32.02	325.30	2370.38	544.96	-397.96	1.09	674.66
2565.04	32.03	325.32	2370.51	545.02	-398.00	3.15	674.74

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 16 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2565.20	32.05	325.35	2370.64	545.09	-398.05	4.16	674.82
2565.35	32.07	325.38	2370.77	545.15	-398.09	5.44	674.90
2565.50	32.09	325.40	2370.90	545.22	-398.14	4.52	674.98
2565.65	32.10	325.41	2371.03	545.29	-398.19	1.94	675.06
2565.81	32.09	325.38	2371.16	545.35	-398.23	3.61	675.15
2565.96	32.06	325.33	2371.29	545.42	-398.28	8.35	675.23
2566.11	32.01	325.26	2371.42	545.49	-398.32	11.12	675.31
2566.26	31.97	325.20	2371.55	545.55	-398.37	10.55	675.39
2566.42	31.94	325.14	2371.68	545.62	-398.42	8.87	675.47
2566.57	31.93	325.13	2371.81	545.69	-398.46	2.12	675.55
2566.72	31.95	325.14	2371.94	545.75	-398.51	3.39	675.63
2566.87	31.98	325.19	2372.06	545.82	-398.56	7.85	675.71
2567.03	32.03	325.26	2372.19	545.89	-398.60	11.65	675.79
2567.18	32.07	325.32	2372.32	545.95	-398.65	11.03	675.87
2567.33	32.09	325.36	2372.45	546.02	-398.69	6.45	675.95
2567.48	32.09	325.37	2372.58	546.08	-398.74	0.95	676.03
2567.64	32.04	325.31	2372.71	546.15	-398.79	11.48	676.12
2567.79	31.99	325.24	2372.84	546.22	-398.83	11.96	676.20
2567.94	31.94	325.17	2372.97	546.28	-398.88	12.08	676.28
2568.09	31.91	325.13	2373.10	546.35	-398.92	7.08	676.36
2568.24	31.92	325.12	2373.23	546.42	-398.97	0.94	676.44
2568.40	31.95	325.15	2373.36	546.48	-399.02	6.79	676.52
2568.55	32.00	325.21	2373.49	546.55	-399.06	12.20	676.60
2568.70	32.06	325.29	2373.62	546.62	-399.11	13.94	676.68
2568.85	32.11	325.34	2373.74	546.68	-399.15	11.00	676.76
2569.01	32.12	325.37	2373.87	546.75	-399.20	4.09	676.84
2569.16	32.11	325.35	2374.00	546.82	-399.25	3.25	676.92
2569.31	32.06	325.29	2374.13	546.88	-399.29	11.72	677.00
2569.46	31.97	325.18	2374.26	546.95	-399.34	20.40	677.08
2569.62	31.92	325.11	2374.39	547.01	-399.38	12.71	677.17
2569.77	31.90	325.09	2374.52	547.08	-399.43	5.34	677.25
2569.92	31.91	325.10	2374.65	547.15	-399.48	2.44	677.33
2570.07	31.94	325.15	2374.78	547.21	-399.52	8.87	677.41
2570.23	32.00	325.23	2374.91	547.28	-399.57	14.17	677.49
2570.38	32.05	325.30	2375.04	547.35	-399.61	12.12	677.57
2570.53	32.08	325.35	2375.17	547.41	-399.66	8.21	677.65
2570.68	32.07	325.35	2375.30	547.48	-399.71	1.50	677.73
2570.84	32.02	325.30	2375.42	547.54	-399.75	11.38	677.81
2570.99	31.95	325.22	2375.55	547.61	-399.80	16.29	677.89
2571.14	31.87	325.12	2375.68	547.68	-399.84	18.62	677.97
2571.29	31.81	325.04	2375.81	547.74	-399.89	14.88	678.05
2571.45	31.78	325.01	2375.94	547.81	-399.94	7.38	678.13
2571.60	31.81	325.06	2376.07	547.87	-399.98	8.69	678.21
2571.75	31.88	325.17	2376.20	547.94	-400.03	18.23	678.29
2571.90	31.98	325.31	2376.33	548.01	-400.07	22.93	678.37
2572.05	32.05	325.42	2376.46	548.07	-400.12	19.44	678.46
2572.21	32.10	325.50	2376.59	548.14	-400.17	13.05	678.54
2572.36	32.10	325.51	2376.72	548.21	-400.21	1.34	678.62
2572.51	32.05	325.46	2376.85	548.27	-400.26	11.10	678.70
2572.66	31.97	325.36	2376.98	548.34	-400.30	19.67	678.78
2572.82	31.88	325.26	2377.11	548.41	-400.35	21.02	678.86
2572.97	31.80	325.16	2377.23	548.47	-400.40	19.34	678.94
2573.12	31.75	325.11	2377.36	548.54	-400.44	9.55	679.02
2573.27	31.79	325.17	2377.49	548.60	-400.49	8.84	679.10
2573.43	31.86	325.29	2377.62	548.67	-400.53	19.21	679.18
2573.58	31.96	325.43	2377.75	548.74	-400.58	25.08	679.26
2573.73	32.06	325.56	2377.88	548.80	-400.62	22.40	679.34

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapli
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2573.88	32.12	325.64	2378.01	548.87	-400.67	15.59	679.42
2574.04	32.13	325.65	2378.14	548.94	-400.72	1.38	679.50
2574.19	32.08	325.58	2378.27	549.00	-400.76	11.67	679.59
2574.34	31.99	325.46	2378.40	549.07	-400.81	22.23	679.67
2574.49	31.88	325.31	2378.53	549.14	-400.85	27.13	679.75
2574.65	31.77	325.17	2378.66	549.20	-400.90	24.60	679.83
2574.80	31.70	325.08	2378.79	549.27	-400.95	17.80	679.91
2574.95	31.67	325.05	2378.92	549.33	-400.99	5.90	679.99
2575.10	31.69	325.09	2379.05	549.40	-401.04	6.38	680.07
2575.26	31.78	325.24	2379.18	549.47	-401.08	22.94	680.15
2575.41	31.86	325.36	2379.31	549.53	-401.13	19.50	680.23
2575.56	31.92	325.46	2379.43	549.60	-401.17	16.22	680.31
2575.71	31.96	325.52	2379.56	549.66	-401.22	9.67	680.39
2575.86	31.96	325.53	2379.69	549.73	-401.27	1.31	680.47
2576.02	31.94	325.50	2379.82	549.80	-401.31	5.41	680.55
2576.17	31.91	325.45	2379.95	549.86	-401.36	8.30	680.63
2576.32	31.86	325.39	2380.08	549.93	-401.40	10.30	680.71
2576.47	31.82	325.34	2380.21	550.00	-401.45	9.57	680.79
2576.63	31.81	325.31	2380.34	550.06	-401.49	4.37	680.87
2576.78	31.80	325.31	2380.47	550.13	-401.54	1.07	680.95
2576.93	31.81	325.33	2380.60	550.19	-401.59	2.54	681.03
2577.08	31.83	325.36	2380.73	550.26	-401.63	5.33	681.11
2577.24	31.86	325.42	2380.86	550.33	-401.68	9.06	681.19
2577.39	31.87	325.46	2380.99	550.39	-401.72	4.29	681.27
2577.54	31.88	325.49	2381.12	550.46	-401.77	3.24	681.35
2577.69	31.87	325.51	2381.25	550.53	-401.81	2.63	681.43
2577.85	31.84	325.51	2381.38	550.59	-401.86	4.29	681.52
2578.00	31.82	325.51	2381.51	550.66	-401.90	4.79	681.60
2578.15	31.79	325.51	2381.64	550.72	-401.95	6.12	681.68
2578.30	31.76	325.50	2381.76	550.79	-402.00	5.51	681.76
2578.46	31.74	325.50	2381.89	550.86	-402.04	3.73	681.84
2578.61	31.73	325.50	2382.02	550.92	-402.09	3.00	681.92
2578.76	31.72	325.51	2382.15	550.99	-402.13	1.11	682.00
2578.91	31.72	325.51	2382.28	551.05	-402.18	0.33	682.08
2579.07	31.73	325.51	2382.41	551.12	-402.22	1.26	682.16
2579.22	31.74	325.51	2382.54	551.19	-402.27	3.03	682.24
2579.37	31.76	325.52	2382.67	551.25	-402.31	2.89	682.32
2579.52	31.77	325.54	2382.80	551.32	-402.36	2.96	682.40
2579.67	31.78	325.57	2382.93	551.38	-402.40	3.39	682.48
2579.83	31.79	325.60	2383.06	551.45	-402.45	4.51	682.56
2579.98	31.80	325.64	2383.19	551.52	-402.49	3.99	682.64
2580.13	31.81	325.68	2383.32	551.58	-402.54	5.31	682.72
2580.28	31.82	325.72	2383.45	551.65	-402.59	4.61	682.80
2580.44	31.84	325.77	2383.58	551.72	-402.63	5.42	682.88
2580.59	31.85	325.81	2383.71	551.78	-402.68	5.09	682.96
2580.74	31.87	325.83	2383.84	551.85	-402.72	3.74	683.04
2580.89	31.88	325.86	2383.97	551.92	-402.77	3.14	683.12
2581.05	31.88	325.86	2384.10	551.98	-402.81	0.20	683.20
2581.20	31.86	325.84	2384.23	552.05	-402.86	3.23	683.28
2581.35	31.81	325.77	2384.36	552.12	-402.90	12.70	683.36
2581.50	31.78	325.72	2384.49	552.18	-402.95	7.81	683.44
2581.66	31.76	325.70	2384.61	552.25	-402.99	4.31	683.52
2581.81	31.77	325.71	2384.74	552.31	-403.04	1.07	683.60
2581.96	31.81	325.77	2384.87	552.38	-403.08	10.45	683.68
2582.11	31.88	325.87	2385.00	552.45	-403.13	17.97	683.76
2582.27	31.97	326.01	2385.13	552.51	-403.17	23.71	683.84
2582.42	32.06	326.15	2385.26	552.58	-403.22	22.67	683.92
2582.57	32.14	326.26	2385.39	552.65	-403.26	18.56	684.01

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 18 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2582.72	32.15	326.30	2385.52	552.72	-403.31	4.50	684.09
2582.88	32.09	326.25	2385.65	552.78	-403.35	13.60	684.17
2583.03	31.96	326.10	2385.78	552.85	-403.40	29.36	684.25
2583.18	31.79	325.91	2385.91	552.92	-403.44	38.46	684.33
2583.33	31.62	325.69	2386.04	552.98	-403.49	40.81	684.41
2583.48	31.40	325.43	2386.17	553.05	-403.53	50.76	684.49
2583.64	31.32	325.33	2386.30	553.11	-403.58	18.38	684.57
2583.79	31.31	325.33	2386.43	553.18	-403.62	1.40	684.65
2583.94	31.37	325.42	2386.56	553.25	-403.67	14.47	684.73
2584.09	31.48	325.58	2386.69	553.31	-403.71	26.46	684.81
2584.25	31.61	325.77	2386.82	553.38	-403.76	33.13	684.89
2584.40	31.75	325.96	2386.95	553.44	-403.80	33.06	684.97
2584.55	31.86	326.12	2387.08	553.51	-403.85	28.16	685.05
2584.70	31.95	326.24	2387.21	553.58	-403.89	21.83	685.13
2584.86	32.00	326.31	2387.34	553.64	-403.94	11.29	685.21
2585.01	32.01	326.34	2387.46	553.71	-403.98	4.51	685.29
2585.16	31.98	326.31	2387.59	553.78	-404.03	8.34	685.37
2585.31	31.91	326.24	2387.72	553.84	-404.07	14.94	685.45
2585.47	31.82	326.14	2387.85	553.91	-404.12	19.46	685.53
2585.62	31.68	325.98	2387.98	553.98	-404.16	32.59	685.61
2585.77	31.60	325.88	2388.11	554.04	-404.21	18.61	685.69
2585.92	31.55	325.81	2388.24	554.11	-404.25	13.39	685.77
2586.08	31.52	325.79	2388.37	554.18	-404.30	4.55	685.85
2586.23	31.53	325.81	2388.50	554.24	-404.34	2.68	685.93
2586.38	31.57	325.86	2388.63	554.31	-404.39	9.19	686.01
2586.53	31.62	325.93	2388.76	554.37	-404.43	12.21	686.09
2586.69	31.68	325.99	2388.89	554.44	-404.48	12.07	686.17
2586.84	31.72	326.04	2389.02	554.51	-404.52	10.62	686.25
2586.99	31.75	326.08	2389.15	554.57	-404.56	7.12	686.33
2587.14	31.77	326.09	2389.28	554.64	-404.61	2.57	686.41
2587.29	31.77	326.08	2389.41	554.71	-404.65	0.72	686.49
2587.45	31.76	326.07	2389.54	554.77	-404.70	1.54	686.57
2587.60	31.76	326.04	2389.67	554.84	-404.74	2.73	686.65
2587.75	31.76	326.04	2389.80	554.91	-404.79	1.12	686.73
2587.90	31.77	326.04	2389.93	554.97	-404.83	2.00	686.81
2588.06	31.78	326.05	2390.06	555.04	-404.88	2.13	686.89
2588.21	31.79	326.05	2390.19	555.11	-404.92	1.31	686.97
2588.36	31.79	326.04	2390.32	555.17	-404.97	0.77	687.05
2588.51	31.78	326.03	2390.45	555.24	-405.01	2.19	687.13
2588.67	31.77	326.00	2390.58	555.31	-405.06	3.67	687.21
2588.82	31.75	325.98	2390.71	555.37	-405.10	4.04	687.29
2588.97	31.73	325.95	2390.83	555.44	-405.15	4.64	687.37
2589.12	31.72	325.93	2390.96	555.51	-405.19	3.09	687.45
2589.28	31.72	325.91	2391.09	555.57	-405.24	1.55	687.53
2589.43	31.72	325.90	2391.22	555.64	-405.28	1.28	687.61
2589.58	31.73	325.89	2391.35	555.70	-405.33	1.58	687.69
2589.73	31.74	325.88	2391.48	555.77	-405.37	2.29	687.77
2589.89	31.74	325.88	2391.61	555.84	-405.42	1.50	687.85
2590.04	31.75	325.87	2391.74	555.90	-405.46	1.42	687.93
2590.19	31.76	325.88	2391.87	555.97	-405.51	2.29	688.01
2590.34	31.77	325.89	2392.00	556.04	-405.55	1.57	688.09
2590.50	31.78	325.90	2392.13	556.10	-405.60	2.82	688.17
2590.65	31.80	325.92	2392.26	556.17	-405.64	3.40	688.25
2590.80	31.81	325.94	2392.39	556.24	-405.69	3.09	688.33
2590.95	31.82	325.96	2392.52	556.30	-405.73	3.52	688.41
2591.10	31.83	325.97	2392.65	556.37	-405.78	1.60	688.49
2591.26	31.83	325.97	2392.78	556.44	-405.82	0.23	688.57

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 19 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2591.41	31.82	325.96	2392.91	556.50	-405.87	1.73	688.66
2591.56	31.81	325.93	2393.04	556.57	-405.91	3.70	688.74
2591.71	31.80	325.91	2393.17	556.64	-405.96	3.61	688.82
2591.87	31.78	325.88	2393.30	556.70	-406.00	3.78	688.90
2592.02	31.78	325.86	2393.43	556.77	-406.05	1.88	688.98
2592.17	31.79	325.87	2393.56	556.83	-406.09	1.62	689.06
2592.32	31.81	325.89	2393.68	556.90	-406.14	3.90	689.14
2592.48	31.83	325.92	2393.81	556.97	-406.18	6.49	689.22
2592.63	31.86	325.96	2393.94	557.03	-406.23	6.19	689.30
2592.78	31.88	326.00	2394.07	557.10	-406.27	5.37	689.38
2592.93	31.89	326.02	2394.20	557.17	-406.32	3.08	689.46
2593.09	31.88	326.03	2394.33	557.23	-406.36	1.38	689.54
2593.24	31.87	326.02	2394.46	557.30	-406.41	3.78	689.62
2593.39	31.84	326.00	2394.59	557.37	-406.45	6.35	689.70
2593.54	31.80	325.97	2394.72	557.43	-406.50	6.97	689.78
2593.70	31.78	325.95	2394.85	557.50	-406.54	5.70	689.86
2593.85	31.76	325.94	2394.98	557.57	-406.59	4.40	689.94
2594.00	31.74	325.94	2395.11	557.63	-406.63	2.70	690.02
2594.15	31.75	325.95	2395.24	557.70	-406.68	2.17	690.10
2594.31	31.76	325.98	2395.37	557.77	-406.72	3.86	690.18
2594.46	31.77	326.01	2395.50	557.83	-406.77	3.74	690.26
2594.61	31.78	326.03	2395.63	557.90	-406.81	2.79	690.34
2594.76	31.78	326.05	2395.76	557.97	-406.86	2.27	690.42
2594.91	31.78	326.06	2395.89	558.03	-406.90	1.10	690.50
2595.07	31.78	326.07	2396.02	558.10	-406.95	1.10	690.58
2595.22	31.78	326.09	2396.15	558.17	-406.99	1.20	690.66
2595.37	31.79	326.10	2396.28	558.23	-407.04	1.13	690.74
2595.52	31.79	326.10	2396.40	558.30	-407.08	1.23	690.82
2595.68	31.79	326.10	2396.53	558.37	-407.12	0.60	690.90
2595.83	31.78	326.10	2396.66	558.43	-407.17	0.73	690.98
2595.98	31.77	326.09	2396.79	558.50	-407.21	1.87	691.06
2596.13	31.75	326.08	2396.92	558.57	-407.26	4.91	691.14
2596.29	31.73	326.07	2397.05	558.63	-407.30	3.36	691.22
2596.44	31.72	326.06	2397.18	558.70	-407.35	4.01	691.30
2596.59	31.70	326.06	2397.31	558.77	-407.39	2.89	691.38
2596.74	31.69	326.07	2397.44	558.83	-407.44	1.91	691.46
2596.90	31.69	326.08	2397.57	558.90	-407.48	2.05	691.54
2597.05	31.68	326.10	2397.70	558.96	-407.53	1.99	691.62
2597.20	31.68	326.12	2397.83	559.03	-407.57	2.62	691.70
2597.35	31.68	326.14	2397.96	559.10	-407.62	2.05	691.79
2597.51	31.68	326.17	2398.09	559.16	-407.66	2.38	691.87
2597.66	31.68	326.19	2398.22	559.23	-407.71	2.11	691.95
2597.81	31.67	326.20	2398.35	559.30	-407.75	1.90	692.03
2597.96	31.67	326.22	2398.48	559.36	-407.79	1.81	692.11
2598.12	31.66	326.23	2398.61	559.43	-407.84	2.54	692.19
2598.27	31.64	326.23	2398.74	559.50	-407.88	2.40	692.26
2598.42	31.63	326.23	2398.87	559.56	-407.93	2.15	692.34
2598.57	31.63	326.24	2399.00	559.63	-407.97	1.46	692.42
2598.72	31.62	326.25	2399.13	559.70	-408.02	1.08	692.50
2598.88	31.62	326.26	2399.26	559.76	-408.06	1.15	692.58
2599.03	31.63	326.27	2399.39	559.83	-408.11	1.65	692.66
2599.18	31.63	326.29	2399.52	559.89	-408.15	1.49	692.74
2599.33	31.63	326.29	2399.65	559.96	-408.19	0.82	692.82
2599.49	31.64	326.30	2399.78	560.03	-408.24	1.13	692.90
2599.64	31.63	326.29	2399.91	560.09	-408.28	1.16	692.98
2599.79	31.63	326.28	2400.04	560.16	-408.33	1.05	693.06
2599.94	31.63	326.26	2400.17	560.23	-408.37	2.33	693.14
2600.10	31.63	326.24	2400.30	560.29	-408.42	1.72	693.22

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature
	<b>Time:</b> 14:24:31 <b>Page:</b> 20 <b>Db:</b> Adapti

Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2600.25	31.63	326.23	2400.43	560.36	-408.46	1.51	693.30
2600.40	31.64	326.22	2400.56	560.43	-408.51	2.58	693.38
2600.55	31.65	326.20	2400.69	560.49	-408.55	1.44	693.46
2600.71	31.64	326.18	2400.81	560.56	-408.59	2.35	693.54
2600.86	31.64	326.17	2400.94	560.63	-408.64	1.95	693.62
2601.01	31.63	326.14	2401.07	560.69	-408.68	3.21	693.70
2601.16	31.62	326.12	2401.20	560.76	-408.73	3.12	693.78
2601.32	31.61	326.10	2401.33	560.83	-408.77	2.08	693.86
2601.47	31.61	326.09	2401.46	560.89	-408.82	1.54	693.94
2601.62	31.61	326.09	2401.59	560.96	-408.86	0.54	694.02
2601.77	31.62	326.11	2401.72	561.02	-408.91	2.34	694.10
2601.93	31.63	326.12	2401.85	561.09	-408.95	2.09	694.18
2602.08	31.63	326.14	2401.98	561.16	-408.99	2.54	694.26
2602.23	31.63	326.15	2402.11	561.22	-409.04	0.91	694.34
2602.38	31.62	326.15	2402.24	561.29	-409.08	2.33	694.42
2602.53	31.61	326.15	2402.37	561.36	-409.13	3.36	694.50
2602.69	31.59	326.14	2402.50	561.42	-409.17	3.62	694.58
2602.84	31.57	326.15	2402.63	561.49	-409.22	3.34	694.66
2602.99	31.56	326.16	2402.76	561.55	-409.26	2.77	694.74
2603.14	31.55	326.18	2402.89	561.62	-409.31	2.49	694.82
2603.30	31.56	326.21	2403.02	561.69	-409.35	3.22	694.90
2603.45	31.56	326.25	2403.15	561.75	-409.39	3.77	694.98
2603.60	31.57	326.28	2403.28	561.82	-409.44	3.60	695.06
2603.75	31.58	326.30	2403.41	561.89	-409.48	2.52	695.14
2603.91	31.58	326.32	2403.54	561.95	-409.53	1.73	695.22
2604.06	31.57	326.32	2403.67	562.02	-409.57	0.91	695.30
2604.21	31.57	326.32	2403.80	562.09	-409.62	1.30	695.38
2604.36	31.56	326.31	2403.93	562.15	-409.66	2.11	695.46
2604.52	31.56	326.32	2404.06	562.22	-409.70	0.62	695.54
2604.67	31.56	326.33	2404.19	562.28	-409.75	1.31	695.62
2604.82	31.57	326.34	2404.32	562.35	-409.79	1.26	695.70
2604.97	31.57	326.34	2404.45	562.42	-409.84	1.02	695.78
2605.13	31.58	326.35	2404.58	562.48	-409.88	0.63	695.86
2605.28	31.57	326.34	2404.71	562.55	-409.93	0.94	695.94
2605.43	31.56	326.32	2404.84	562.62	-409.97	2.86	696.02
2605.58	31.54	326.30	2404.97	562.68	-410.01	4.12	696.10
2605.74	31.52	326.28	2405.10	562.75	-410.06	4.37	696.18
2605.89	31.51	326.26	2405.23	562.82	-410.10	3.41	696.26
2606.04	31.50	326.25	2405.36	562.88	-410.15	2.20	696.34
2606.19	31.50	326.25	2405.49	562.95	-410.19	0.75	696.42
2606.34	31.50	326.26	2405.62	563.01	-410.24	0.76	696.50
2606.50	31.51	326.28	2405.75	563.08	-410.28	3.10	696.58
2606.65	31.51	326.29	2405.88	563.15	-410.32	1.47	696.65
2606.80	31.52	326.30	2406.01	563.21	-410.37	1.75	696.73
2606.95	31.52	326.31	2406.14	563.28	-410.41	0.83	696.81
2607.11	31.52	326.31	2406.27	563.35	-410.46	0.45	696.89
2607.26	31.51	326.30	2406.40	563.41	-410.50	0.95	696.97
2607.41	31.51	326.30	2406.53	563.48	-410.54	0.57	697.05
2607.56	31.51	326.30	2406.66	563.54	-410.59	0.54	697.13
2607.72	31.50	326.28	2406.79	563.61	-410.63	2.46	697.21
2607.87	31.49	326.27	2406.92	563.68	-410.68	2.49	697.29
2608.02	31.47	326.24	2407.05	563.74	-410.72	4.61	697.37
2608.17	31.46	326.22	2407.18	563.81	-410.77	3.86	697.45
2608.33	31.44	326.19	2407.31	563.88	-410.81	4.14	697.53
2608.48	31.43	326.17	2407.44	563.94	-410.85	3.64	697.61
2608.63	31.42	326.14	2407.57	564.01	-410.90	3.23	697.69
2608.78	31.42	326.14	2407.70	564.07	-410.94	0.98	697.77

# Pathfinder Energy Services

## Definitive Survey Listing

**Company:** T&A Survey  
**Field:** GWW- Honselersdijk  
**Site:** HON-GT-01  
**Well:** HON-GT-01  
**Wellpath:** HON-GT-01

**Date:** 30/01/2012      **Time:** 14:24:31      **Page:** 21  
**Co-ordinate(NE) Reference:** Site: HON-GT-01, Grid North  
**Vertical (TVD) Reference:** Ground Level 0.6  
**Section (VS) Reference:** Well (0.00N,0.00E,325.00Azi)  
**Survey Calculation Method:** Minimum Curvature      **Db:** Adapti

**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2608.94	31.43	326.16	2407.83	564.14	-410.99	2.92	697.85
2609.09	31.45	326.17	2407.96	564.21	-411.03	4.08	697.93
2609.24	31.47	326.20	2408.09	564.27	-411.08	4.83	698.01
2609.39	31.50	326.22	2408.22	564.34	-411.12	5.13	698.09
2609.55	31.52	326.24	2408.35	564.40	-411.16	4.52	698.17
2609.70	31.53	326.25	2408.48	564.47	-411.21	2.72	698.25
2609.85	31.54	326.26	2408.61	564.54	-411.25	2.25	698.33
2610.00	31.54	326.26	2408.74	564.60	-411.30	0.23	698.41
2610.15	31.54	326.26	2408.87	564.67	-411.34	0.85	698.49
2610.31	31.53	326.25	2409.00	564.73	-411.39	2.09	698.56
2610.46	31.52	326.23	2409.13	564.80	-411.43	2.34	698.64
2610.61	31.52	326.23	2409.26	564.87	-411.47	0.64	698.72
2610.76	31.51	326.23	2409.39	564.93	-411.52	0.60	698.80
2610.92	31.51	326.23	2409.52	565.00	-411.56	0.50	698.88
2611.07	31.52	326.24	2409.65	565.07	-411.61	1.19	698.96
2611.22	31.52	326.26	2409.78	565.13	-411.65	1.61	699.04
2611.37	31.53	326.27	2409.91	565.20	-411.70	1.91	699.12
2611.53	31.53	326.29	2410.04	565.26	-411.74	1.96	699.20
2611.68	31.53	326.30	2410.17	565.33	-411.78	1.17	699.28
2611.83	31.52	326.31	2410.30	565.40	-411.83	1.14	699.36
2611.98	31.51	326.31	2410.43	565.46	-411.87	1.34	699.44
2612.14	31.51	326.31	2410.56	565.53	-411.92	1.00	699.52
2612.29	31.51	326.32	2410.69	565.60	-411.96	0.77	699.60
2612.44	31.51	326.33	2410.82	565.66	-412.00	1.05	699.68
2612.59	31.51	326.33	2410.95	565.73	-412.05	1.31	699.76
2612.75	31.52	326.34	2411.08	565.80	-412.09	1.42	699.84
2612.90	31.53	326.34	2411.21	565.86	-412.14	1.70	699.92
2613.05	31.53	326.34	2411.34	565.93	-412.18	0.90	700.00
2613.20	31.54	326.34	2411.47	565.99	-412.23	1.03	700.08
2613.36	31.54	326.34	2411.60	566.06	-412.27	1.16	700.16
2613.51	31.55	326.32	2411.73	566.13	-412.31	1.81	700.24
2613.66	31.55	326.32	2411.86	566.19	-412.36	0.66	700.32
2613.81	31.55	326.31	2411.99	566.26	-412.40	0.57	700.40
2613.96	31.55	326.30	2412.12	566.33	-412.45	1.52	700.48
2614.12	31.54	326.30	2412.25	566.39	-412.49	1.11	700.56
2614.27	31.53	326.29	2412.37	566.46	-412.54	1.65	700.64
2614.42	31.53	326.29	2412.50	566.52	-412.58	1.16	700.72
2614.57	31.53	326.29	2412.63	566.59	-412.62	0.27	700.80
2614.73	31.53	326.30	2412.76	566.66	-412.67	1.41	700.88
2614.88	31.56	326.34	2412.89	566.72	-412.71	6.36	700.96
2615.03	31.58	326.37	2413.02	566.79	-412.76	6.15	701.03
2615.18	31.61	326.41	2413.15	566.86	-412.80	6.86	701.11
2615.34	31.63	326.45	2413.28	566.92	-412.84	6.32	701.19
2615.49	31.65	326.48	2413.41	566.99	-412.89	3.94	701.27
2615.64	31.65	326.49	2413.54	567.06	-412.93	1.22	701.35
2615.79	31.63	326.48	2413.67	567.12	-412.98	3.47	701.43
2615.95	31.61	326.45	2413.80	567.19	-413.02	6.50	701.51
2616.10	31.56	326.40	2413.93	567.26	-413.07	11.16	701.59
2616.25	31.52	326.36	2414.06	567.32	-413.11	7.95	701.67
2616.40	31.49	326.33	2414.19	567.39	-413.15	6.51	701.75
2616.56	31.47	326.32	2414.32	567.46	-413.20	3.62	701.83
2616.71	31.47	326.32	2414.45	567.52	-413.24	1.21	701.91
2616.86	31.47	326.34	2414.58	567.59	-413.29	1.53	701.99
2617.01	31.47	326.35	2414.71	567.65	-413.33	2.03	702.07
2617.17	31.47	326.37	2414.84	567.72	-413.37	1.36	702.15
2617.32	31.47	326.38	2414.97	567.79	-413.42	1.03	702.23
2617.47	31.47	326.39	2415.10	567.85	-413.46	1.02	702.31
2617.62	31.47	326.39	2415.23	567.92	-413.51	0.68	702.39

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 22 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2617.77	31.47	326.40	2415.36	567.99	-413.55	1.29	702.47
2617.93	31.49	326.42	2415.49	568.05	-413.59	3.72	702.55
2618.08	31.51	326.45	2415.62	568.12	-413.64	5.41	702.63
2618.23	31.54	326.49	2415.75	568.18	-413.68	6.94	702.71
2618.38	31.57	326.52	2415.88	568.25	-413.73	7.11	702.79
2618.54	31.60	326.54	2416.01	568.32	-413.77	4.86	702.87
2618.69	31.61	326.54	2416.14	568.38	-413.81	2.19	702.95
2618.84	31.60	326.52	2416.27	568.45	-413.86	2.98	703.03
2618.99	31.57	326.48	2416.40	568.52	-413.90	6.00	703.11
2619.15	31.55	326.44	2416.53	568.58	-413.95	7.16	703.19
2619.30	31.52	326.39	2416.66	568.65	-413.99	7.04	703.27
2619.45	31.50	326.36	2416.79	568.72	-414.04	5.39	703.35
2619.60	31.49	326.34	2416.92	568.78	-414.08	2.34	703.43
2619.76	31.49	326.34	2417.05	568.85	-414.12	0.28	703.51
2619.91	31.50	326.35	2417.18	568.92	-414.17	2.14	703.58
2620.06	31.52	326.38	2417.31	568.98	-414.21	5.26	703.66
2620.21	31.54	326.41	2417.44	569.05	-414.26	4.46	703.74
2620.37	31.56	326.44	2417.57	569.11	-414.30	4.19	703.82
2620.52	31.56	326.46	2417.70	569.18	-414.34	2.56	703.90
2620.67	31.56	326.47	2417.83	569.25	-414.39	1.06	703.98
2620.82	31.56	326.47	2417.96	569.31	-414.43	1.30	704.06
2620.98	31.55	326.48	2418.09	569.38	-414.48	1.75	704.14
2621.13	31.53	326.47	2418.22	569.45	-414.52	3.99	704.22
2621.28	31.50	326.46	2418.35	569.51	-414.56	5.01	704.30
2621.43	31.46	326.42	2418.48	569.58	-414.61	10.32	704.38
2621.58	31.42	326.39	2418.61	569.65	-414.65	6.79	704.46
2621.74	31.39	326.37	2418.74	569.71	-414.70	6.55	704.54
2621.89	31.37	326.35	2418.87	569.78	-414.74	4.90	704.62
2622.04	31.35	326.33	2419.00	569.84	-414.78	4.10	704.70
2622.19	31.34	326.32	2419.13	569.91	-414.83	3.24	704.78
2622.35	31.33	326.33	2419.26	569.98	-414.87	1.45	704.86
2622.50	31.32	326.34	2419.39	570.04	-414.92	1.42	704.94
2622.65	31.32	326.35	2419.52	570.11	-414.96	1.28	705.02
2622.80	31.32	326.37	2419.65	570.17	-415.00	2.24	705.10
2622.96	31.32	326.37	2419.78	570.24	-415.05	0.63	705.17
2623.11	31.32	326.36	2419.91	570.31	-415.09	0.62	705.25
2623.26	31.32	326.36	2420.04	570.37	-415.14	0.97	705.33
2623.41	31.32	326.34	2420.17	570.44	-415.18	1.69	705.41
2623.57	31.33	326.33	2420.30	570.50	-415.22	2.60	705.49
2623.72	31.35	326.31	2420.43	570.57	-415.27	2.77	705.57
2623.87	31.36	326.30	2420.56	570.64	-415.31	3.28	705.65
2624.02	31.39	326.28	2420.69	570.70	-415.36	5.62	705.73
2624.18	31.41	326.27	2420.82	570.77	-415.40	4.25	705.81
2624.33	31.42	326.24	2420.95	570.83	-415.44	3.76	705.89
2624.48	31.44	326.21	2421.08	570.90	-415.49	4.18	705.97
2624.63	31.46	326.18	2421.21	570.97	-415.53	4.84	706.05
2624.79	31.48	326.15	2421.34	571.03	-415.58	5.10	706.13
2624.94	31.50	326.13	2421.47	571.10	-415.62	5.93	706.21
2625.09	31.54	326.12	2421.60	571.16	-415.66	6.43	706.29
2625.24	31.60	326.15	2421.73	571.23	-415.71	13.62	706.37
2625.39	31.65	326.19	2421.86	571.30	-415.75	10.88	706.45
2625.55	31.71	326.25	2421.99	571.36	-415.80	11.99	706.53
2625.70	31.76	326.33	2422.12	571.43	-415.84	13.38	706.61
2625.85	31.81	326.41	2422.25	571.50	-415.89	12.67	706.69
2626.00	31.84	326.49	2422.38	571.56	-415.93	9.92	706.77
2626.16	31.86	326.55	2422.51	571.63	-415.98	7.23	706.85
2626.31	31.86	326.59	2422.64	571.70	-416.02	4.47	706.93

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 23 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2626.46	31.84	326.62	2422.77	571.76	-416.06	4.73	707.01
2626.61	31.81	326.62	2422.90	571.83	-416.11	5.85	707.09
2626.77	31.74	326.58	2423.03	571.90	-416.15	14.34	707.17
2626.92	31.70	326.55	2423.16	571.97	-416.20	8.40	707.25
2627.07	31.67	326.52	2423.29	572.03	-416.24	6.34	707.33
2627.22	31.66	326.51	2423.42	572.10	-416.29	2.76	707.41
2627.38	31.66	326.49	2423.55	572.17	-416.33	1.39	707.49
2627.53	31.66	326.48	2423.68	572.23	-416.37	2.16	707.57
2627.68	31.67	326.46	2423.81	572.30	-416.42	2.63	707.65
2627.83	31.67	326.42	2423.94	572.37	-416.46	4.24	707.73
2627.99	31.63	326.31	2424.07	572.43	-416.51	13.30	707.81
2628.14	31.60	326.21	2424.20	572.50	-416.55	12.74	707.89
2628.29	31.56	326.10	2424.33	572.57	-416.60	13.20	707.97
2628.44	31.52	326.00	2424.46	572.63	-416.64	12.27	708.05
2628.60	31.49	325.92	2424.58	572.70	-416.68	10.93	708.13
2628.75	31.48	325.85	2424.71	572.76	-416.73	6.88	708.21
2628.90	31.48	325.81	2424.84	572.83	-416.77	4.19	708.29
2629.05	31.49	325.79	2424.97	572.90	-416.82	3.40	708.37
2629.20	31.51	325.76	2425.10	572.96	-416.86	4.11	708.45
2629.36	31.51	325.74	2425.23	573.03	-416.91	2.32	708.52
2629.51	31.52	325.72	2425.36	573.09	-416.95	2.32	708.60
2629.66	31.53	325.71	2425.49	573.16	-417.00	2.06	708.68
2629.81	31.54	325.70	2425.62	573.22	-417.04	2.30	708.76
2629.97	31.56	325.70	2425.75	573.29	-417.09	4.01	708.84
2630.12	31.58	325.72	2425.88	573.36	-417.13	5.76	708.92
2630.27	31.63	325.76	2426.01	573.42	-417.18	9.04	709.00
2630.42	31.70	325.82	2426.14	573.49	-417.22	15.83	709.08
2630.58	31.75	325.86	2426.27	573.55	-417.27	10.28	709.16
2630.73	31.78	325.88	2426.40	573.62	-417.31	6.30	709.24
2630.88	31.79	325.87	2426.53	573.69	-417.36	2.15	709.32
2631.03	31.78	325.85	2426.66	573.75	-417.40	3.17	709.40
2631.19	31.76	325.80	2426.79	573.82	-417.45	6.13	709.48
2631.34	31.73	325.74	2426.92	573.89	-417.49	8.41	709.56
2631.49	31.70	325.68	2427.05	573.95	-417.54	8.59	709.64
2631.64	31.68	325.63	2427.18	574.02	-417.58	6.54	709.72
2631.80	31.69	325.61	2427.31	574.08	-417.63	2.40	709.80
2631.95	31.70	325.61	2427.44	574.15	-417.67	3.14	709.88
2632.10	31.72	325.62	2427.57	574.22	-417.72	3.14	709.96
2632.25	31.74	325.64	2427.70	574.28	-417.76	5.70	710.04
2632.41	31.77	325.67	2427.83	574.35	-417.81	5.99	710.13
2632.56	31.80	325.71	2427.96	574.42	-417.85	6.57	710.21
2632.71	31.82	325.74	2428.09	574.48	-417.90	5.60	710.29
2632.86	31.83	325.77	2428.22	574.55	-417.94	3.74	710.37
2633.01	31.85	325.80	2428.35	574.62	-417.99	4.35	710.45
2633.17	31.84	325.79	2428.48	574.68	-418.04	1.79	710.53
2633.32	31.83	325.76	2428.61	574.75	-418.08	3.93	710.61
2633.47	31.81	325.73	2428.74	574.81	-418.13	4.66	710.69
2633.62	31.79	325.68	2428.86	574.88	-418.17	5.30	710.77
2633.78	31.79	325.65	2428.99	574.95	-418.22	3.86	710.85
2633.93	31.80	325.64	2429.12	575.01	-418.26	2.13	710.93
2634.08	31.81	325.64	2429.25	575.08	-418.31	3.27	711.01
2634.23	31.85	325.66	2429.38	575.15	-418.35	7.18	711.09
2634.39	31.86	325.66	2429.51	575.21	-418.40	2.17	711.17
2634.54	31.86	325.67	2429.64	575.28	-418.44	1.39	711.25
2634.69	31.85	325.65	2429.77	575.35	-418.49	3.09	711.33
2634.84	31.82	325.63	2429.90	575.41	-418.53	5.79	711.41
2635.00	31.79	325.59	2430.03	575.48	-418.58	7.66	711.49
2635.15	31.76	325.57	2430.16	575.54	-418.62	6.71	711.57

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2635.30	31.74	325.56	2430.29	575.61	-418.67	4.57	711.65
2635.45	31.73	325.60	2430.42	575.68	-418.72	3.59	711.73
2635.61	31.74	325.64	2430.55	575.74	-418.76	4.78	711.81
2635.76	31.76	325.69	2430.68	575.81	-418.81	6.55	711.89
2635.91	31.77	325.74	2430.81	575.88	-418.85	5.18	711.97
2636.06	31.77	325.76	2430.94	575.94	-418.90	2.75	712.05
2636.22	31.76	325.77	2431.07	576.01	-418.94	2.85	712.13
2636.37	31.73	325.75	2431.20	576.07	-418.99	6.13	712.21
2636.52	31.69	325.72	2431.33	576.14	-419.03	7.05	712.29
2636.67	31.65	325.68	2431.46	576.21	-419.08	9.49	712.37
2636.82	31.64	325.68	2431.59	576.27	-419.12	1.96	712.45
2636.98	31.65	325.69	2431.72	576.34	-419.17	2.49	712.53
2637.13	31.68	325.74	2431.84	576.40	-419.21	8.09	712.61
2637.28	31.73	325.82	2431.97	576.47	-419.26	11.76	712.69
2637.43	31.77	325.89	2432.10	576.54	-419.30	11.91	712.77
2637.59	31.81	325.97	2432.23	576.60	-419.35	10.53	712.85
2637.74	31.82	326.01	2432.36	576.67	-419.39	5.61	712.93
2637.89	31.80	326.02	2432.49	576.74	-419.44	4.17	713.01
2638.04	31.71	325.95	2432.62	576.80	-419.48	19.67	713.09
2638.20	31.61	325.84	2432.75	576.87	-419.53	21.65	713.17
2638.35	31.51	325.73	2432.88	576.94	-419.57	23.40	713.25
2638.50	31.42	325.61	2433.01	577.00	-419.62	21.76	713.33
2638.65	31.35	325.51	2433.14	577.07	-419.66	16.33	713.41
2638.81	31.32	325.44	2433.27	577.13	-419.71	9.55	713.49
2638.96	31.33	325.42	2433.40	577.20	-419.75	3.00	713.57
2639.11	31.40	325.45	2433.53	577.26	-419.80	14.29	713.65
2639.26	31.48	325.52	2433.66	577.33	-419.84	18.29	713.73
2639.42	31.59	325.64	2433.79	577.39	-419.89	23.44	713.81
2639.57	31.68	325.74	2433.92	577.46	-419.93	21.05	713.89
2639.72	31.75	325.83	2434.05	577.53	-419.98	16.19	713.97
2639.87	31.79	325.90	2434.18	577.59	-420.02	11.20	714.05
2640.03	31.80	325.91	2434.31	577.66	-420.07	1.83	714.13
2640.18	31.77	325.88	2434.44	577.73	-420.11	6.39	714.21
2640.33	31.72	325.84	2434.57	577.79	-420.16	9.72	714.29
2640.48	31.64	325.72	2434.70	577.86	-420.20	20.68	714.37
2640.63	31.60	325.67	2434.83	577.92	-420.25	9.55	714.45
2640.79	31.58	325.64	2434.96	577.99	-420.29	5.16	714.53
2640.94	31.57	325.63	2435.09	578.06	-420.34	1.71	714.61
2641.09	31.58	325.64	2435.22	578.12	-420.38	2.52	714.69
2641.24	31.61	325.70	2435.35	578.19	-420.43	8.19	714.77
2641.40	31.65	325.79	2435.48	578.25	-420.47	11.41	714.85
2641.55	31.68	325.87	2435.61	578.32	-420.52	10.71	714.93
2641.70	31.73	326.03	2435.74	578.39	-420.56	19.01	715.01
2641.85	31.73	326.10	2435.87	578.45	-420.61	7.37	715.09
2642.01	31.73	326.15	2436.00	578.52	-420.65	5.15	715.17
2642.16	31.70	326.15	2436.13	578.59	-420.69	5.56	715.25
2642.31	31.65	326.11	2436.26	578.65	-420.74	9.74	715.33
2642.46	31.60	326.05	2436.39	578.72	-420.78	11.22	715.41
2642.62	31.57	325.99	2436.52	578.78	-420.83	9.21	715.49
2642.77	31.55	325.93	2436.65	578.85	-420.87	7.34	715.57
2642.92	31.57	325.87	2436.78	578.92	-420.92	6.62	715.65
2643.07	31.62	325.87	2436.91	578.98	-420.96	9.52	715.73
2643.23	31.69	325.89	2437.04	579.05	-421.01	13.31	715.81
2643.38	31.77	325.93	2437.16	579.12	-421.05	15.73	715.89
2643.53	31.84	325.97	2437.29	579.18	-421.10	14.66	715.97
2643.68	31.89	325.98	2437.42	579.25	-421.14	10.29	716.05
2643.84	31.92	325.97	2437.55	579.32	-421.19	5.87	716.13

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2643.99	31.93	325.95	2437.68	579.38	-421.23	3.20	716.21
2644.14	31.91	325.89	2437.81	579.45	-421.28	7.43	716.29
2644.29	31.89	325.86	2437.94	579.52	-421.32	4.76	716.37
2644.44	31.88	325.83	2438.07	579.58	-421.37	4.69	716.45
2644.60	31.87	325.84	2438.20	579.65	-421.41	0.96	716.53
2644.75	31.90	325.89	2438.33	579.72	-421.46	7.15	716.61
2644.90	31.93	325.99	2438.46	579.78	-421.50	11.60	716.69
2645.05	31.98	326.09	2438.59	579.85	-421.55	14.69	716.78
2645.21	32.03	326.21	2438.72	579.92	-421.59	15.36	716.86
2645.36	32.08	326.39	2438.85	579.98	-421.64	22.12	716.94
2645.51	32.07	326.45	2438.98	580.05	-421.68	5.84	717.02
2645.66	32.03	326.44	2439.11	580.12	-421.73	8.18	717.10
2645.82	31.95	326.38	2439.23	580.19	-421.77	17.00	717.18
2645.97	31.85	326.26	2439.36	580.25	-421.82	23.57	717.26
2646.12	31.75	326.13	2439.49	580.32	-421.86	24.02	717.34
2646.27	31.67	326.00	2439.62	580.39	-421.91	20.64	717.42
2646.43	31.62	325.90	2439.75	580.45	-421.95	14.65	717.50
2646.58	31.64	325.85	2439.88	580.52	-422.00	5.69	717.58
2646.73	31.68	325.85	2440.01	580.58	-422.04	8.85	717.66
2646.88	31.77	325.92	2440.14	580.65	-422.09	18.15	717.74
2647.04	31.87	326.02	2440.27	580.72	-422.13	22.60	717.82
2647.19	31.96	326.12	2440.40	580.78	-422.18	20.70	717.90
2647.34	32.05	326.22	2440.53	580.85	-422.22	19.74	717.98
2647.49	32.10	326.29	2440.66	580.92	-422.27	12.85	718.06
2647.65	32.13	326.33	2440.79	580.99	-422.31	7.32	718.14
2647.80	32.12	326.34	2440.92	581.05	-422.36	1.89	718.22
2647.95	32.05	326.27	2441.05	581.12	-422.40	15.34	718.31
2648.10	31.98	326.21	2441.18	581.19	-422.45	14.52	718.39
2648.25	31.92	326.14	2441.30	581.25	-422.49	15.15	718.47
2648.41	31.85	326.07	2441.43	581.32	-422.54	14.68	718.55
2648.56	31.81	326.02	2441.56	581.39	-422.58	10.29	718.63
2648.71	31.77	325.98	2441.69	581.46	-422.63	7.22	718.71
2648.86	31.77	325.97	2441.82	581.52	-422.67	1.77	718.79
2649.02	31.79	325.99	2441.95	581.59	-422.72	4.40	718.87
2649.17	31.83	326.06	2442.08	581.65	-422.76	11.17	718.95
2649.32	31.88	326.12	2442.21	581.72	-422.81	11.20	719.03
2649.47	31.92	326.18	2442.34	581.79	-422.85	9.67	719.11
2649.63	31.95	326.22	2442.47	581.86	-422.89	7.79	719.19
2649.78	31.96	326.25	2442.60	581.92	-422.94	3.48	719.27
2649.93	31.95	326.25	2442.73	581.99	-422.98	1.80	719.35
2650.08	31.92	326.22	2442.86	582.06	-423.03	6.30	719.43
2650.24	31.88	326.17	2442.99	582.12	-423.07	9.99	719.51
2650.39	31.82	326.10	2443.12	582.19	-423.12	13.88	719.59
2650.54	31.78	326.07	2443.25	582.26	-423.16	7.24	719.67
2650.69	31.76	326.04	2443.38	582.32	-423.21	5.61	719.75
2650.85	31.76	326.05	2443.51	582.39	-423.25	1.29	719.83
2651.00	31.78	326.07	2443.63	582.46	-423.30	2.74	719.91
2651.15	31.80	326.10	2443.76	582.52	-423.34	6.14	719.99
2651.30	31.83	326.13	2443.89	582.59	-423.39	6.46	720.07
2651.46	31.84	326.14	2444.02	582.66	-423.43	2.19	720.16
2651.61	31.85	326.14	2444.15	582.72	-423.48	1.33	720.24
2651.76	31.84	326.12	2444.28	582.79	-423.52	3.49	720.32
2651.91	31.82	326.08	2444.41	582.86	-423.57	4.93	720.40
2652.06	31.81	326.06	2444.54	582.92	-423.61	3.31	720.48
2652.22	31.80	326.04	2444.67	582.99	-423.66	2.43	720.56
2652.37	31.81	326.04	2444.80	583.06	-423.70	2.32	720.64
2652.52	31.83	326.04	2444.93	583.12	-423.75	4.08	720.72
2652.67	31.86	326.05	2445.06	583.19	-423.79	4.65	720.80

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2652.83	31.89	326.06	2445.19	583.26	-423.84	5.61	720.88
2652.98	31.91	326.05	2445.32	583.32	-423.88	4.76	720.96
2653.13	31.91	326.02	2445.45	583.39	-423.93	2.90	721.04
2653.28	31.90	325.97	2445.58	583.46	-423.97	5.10	721.12
2653.44	31.88	325.91	2445.71	583.52	-424.02	7.16	721.20
2653.59	31.86	325.85	2445.84	583.59	-424.06	8.62	721.28
2653.74	31.83	325.78	2445.97	583.66	-424.11	8.97	721.36
2653.89	31.80	325.71	2446.09	583.72	-424.15	9.01	721.44
2654.05	31.79	325.67	2446.22	583.79	-424.20	4.72	721.52
2654.20	31.80	325.68	2446.35	583.86	-424.24	2.44	721.60
2654.35	31.83	325.71	2446.48	583.92	-424.29	7.06	721.68
2654.50	31.88	325.76	2446.61	583.99	-424.33	10.22	721.76
2654.66	31.93	325.83	2446.74	584.06	-424.38	11.61	721.84
2654.81	31.97	325.89	2446.87	584.12	-424.42	11.53	721.92
2654.96	32.00	325.93	2447.00	584.19	-424.47	6.38	722.00
2655.11	32.01	325.94	2447.13	584.26	-424.51	2.02	722.09
2655.27	31.99	325.92	2447.26	584.32	-424.56	4.60	722.17
2655.42	31.92	325.85	2447.39	584.39	-424.60	14.65	722.25
2655.57	31.87	325.80	2447.52	584.46	-424.65	10.89	722.33
2655.72	31.83	325.75	2447.65	584.52	-424.69	9.69	722.41
2655.87	31.82	325.73	2447.78	584.59	-424.74	3.31	722.49
2656.03	31.82	325.74	2447.91	584.66	-424.79	1.29	722.57
2656.18	31.85	325.77	2448.04	584.72	-424.83	6.26	722.65
2656.33	31.90	325.83	2448.17	584.79	-424.88	11.89	722.73
2656.48	31.94	325.86	2448.29	584.86	-424.92	8.38	722.81
2656.64	31.97	325.87	2448.42	584.92	-424.97	5.51	722.89
2656.79	31.97	325.85	2448.55	584.99	-425.01	1.58	722.97
2656.94	31.96	325.81	2448.68	585.06	-425.06	5.25	723.05
2657.09	31.94	325.78	2448.81	585.12	-425.10	4.08	723.13
2657.25	31.92	325.75	2448.94	585.19	-425.15	4.84	723.21
2657.40	31.92	325.75	2449.07	585.26	-425.19	0.51	723.29
2657.55	31.94	325.79	2449.20	585.32	-425.24	5.03	723.37
2657.70	31.97	325.85	2449.33	585.39	-425.28	8.18	723.46
2657.86	32.01	325.96	2449.46	585.46	-425.33	14.71	723.54
2658.01	32.06	326.05	2449.59	585.52	-425.37	13.18	723.62
2658.16	32.09	326.13	2449.72	585.59	-425.42	10.60	723.70
2658.31	32.10	326.18	2449.85	585.66	-425.46	5.71	723.78
2658.47	32.10	326.21	2449.97	585.72	-425.51	3.07	723.86
2658.62	32.07	326.21	2450.10	585.79	-425.55	4.75	723.94
2658.77	32.02	326.18	2450.23	585.86	-425.60	10.61	724.02
2658.92	31.96	326.14	2450.36	585.93	-425.64	12.46	724.10
2659.08	31.85	326.04	2450.49	585.99	-425.69	24.34	724.18
2659.23	31.79	326.01	2450.62	586.06	-425.73	12.32	724.26
2659.38	31.75	326.00	2450.75	586.13	-425.78	7.09	724.34
2659.53	31.74	326.03	2450.88	586.19	-425.82	3.49	724.42
2659.68	31.75	326.08	2451.01	586.26	-425.87	5.76	724.50
2659.84	31.79	326.16	2451.14	586.33	-425.91	11.36	724.58
2659.99	31.83	326.22	2451.27	586.39	-425.96	10.23	724.66
2660.14	31.88	326.28	2451.40	586.46	-426.00	10.09	724.74
2660.29	31.89	326.27	2451.53	586.53	-426.05	3.37	724.83
2660.45	31.87	326.21	2451.66	586.59	-426.09	7.68	724.91
2660.60	31.83	326.13	2451.79	586.66	-426.14	12.08	724.99
2660.75	31.78	326.04	2451.92	586.73	-426.18	12.94	725.07
2660.90	31.74	325.96	2452.05	586.79	-426.23	11.13	725.15
2661.06	31.72	325.92	2452.18	586.86	-426.27	5.72	725.23
2661.21	31.74	325.94	2452.31	586.93	-426.32	3.95	725.31
2661.36	31.78	326.00	2452.43	586.99	-426.36	9.53	725.39

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:24:31 <b>Page:</b> 27 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2661.51	31.88	326.17	2452.56	587.06	-426.41	27.08	725.47
2661.67	31.94	326.27	2452.69	587.13	-426.45	15.53	725.55
2661.82	31.97	326.34	2452.82	587.19	-426.50	9.62	725.63
2661.97	31.97	326.36	2452.95	587.26	-426.54	2.71	725.71
2662.12	31.93	326.34	2453.08	587.33	-426.59	8.89	725.79
2662.28	31.85	326.27	2453.21	587.39	-426.63	16.84	725.87
2662.43	31.77	326.19	2453.34	587.46	-426.67	18.11	725.95
2662.58	31.65	326.08	2453.47	587.53	-426.72	25.19	726.03
2662.73	31.60	326.04	2453.60	587.59	-426.76	10.27	726.11
2662.89	31.59	326.06	2453.73	587.66	-426.81	2.30	726.19
2663.04	31.62	326.11	2453.86	587.73	-426.85	7.48	726.27
2663.19	31.66	326.18	2453.99	587.79	-426.90	11.09	726.35
2663.34	31.71	326.27	2454.12	587.86	-426.94	13.84	726.43
2663.49	31.76	326.34	2454.25	587.93	-426.99	11.88	726.51
2663.65	31.79	326.38	2454.38	587.99	-427.03	7.46	726.59
2663.80	31.81	326.40	2454.51	588.06	-427.08	3.72	726.67
2663.95	31.79	326.37	2454.64	588.13	-427.12	4.68	726.75
2664.10	31.76	326.34	2454.77	588.19	-427.16	6.67	726.83
2664.26	31.73	326.30	2454.90	588.26	-427.21	7.64	726.91
2664.41	31.69	326.25	2455.03	588.33	-427.25	8.48	726.99
2664.56	31.67	326.22	2455.16	588.39	-427.30	6.24	727.07
2664.71	31.65	326.19	2455.29	588.46	-427.34	4.83	727.15
2664.87	31.63	326.17	2455.41	588.53	-427.39	4.07	727.23
2665.02	31.61	326.15	2455.54	588.59	-427.43	3.16	727.31
2665.17	31.62	326.17	2455.67	588.66	-427.48	2.02	727.39
2665.32	31.64	326.19	2455.80	588.73	-427.52	3.23	727.47
2665.48	31.65	326.21	2455.93	588.79	-427.56	3.56	727.55
2665.63	31.66	326.24	2456.06	588.86	-427.61	3.99	727.63
2665.78	31.67	326.26	2456.19	588.93	-427.65	3.22	727.71
2665.93	31.68	326.28	2456.32	588.99	-427.70	2.58	727.79
2666.09	31.69	326.30	2456.45	589.06	-427.74	2.34	727.87
2666.24	31.68	326.31	2456.58	589.12	-427.79	0.71	727.95
2666.39	31.68	326.31	2456.71	589.19	-427.83	0.40	728.03
2666.54	31.70	326.32	2456.84	589.26	-427.88	2.73	728.11
2666.70	31.72	326.35	2456.97	589.32	-427.92	4.49	728.19
2666.85	31.75	326.37	2457.10	589.39	-427.96	6.49	728.27
2667.00	31.78	326.40	2457.23	589.46	-428.01	6.80	728.35
2667.15	31.81	326.41	2457.36	589.53	-428.05	5.89	728.43
2667.30	31.82	326.41	2457.49	589.59	-428.10	3.45	728.51
2667.46	31.83	326.37	2457.62	589.66	-428.14	3.88	728.59
2667.61	31.82	326.33	2457.75	589.73	-428.19	5.23	728.67
2667.76	31.80	326.27	2457.88	589.79	-428.23	7.02	728.75
2667.91	31.78	326.22	2458.01	589.86	-428.28	7.19	728.83
2668.07	31.77	326.18	2458.14	589.93	-428.32	4.35	728.91
2668.22	31.77	326.16	2458.27	589.99	-428.37	2.32	728.99
2668.37	31.80	326.16	2458.40	590.06	-428.41	4.14	729.07
2668.52	31.84	326.19	2458.53	590.13	-428.45	8.81	729.15
2668.68	31.92	326.28	2458.66	590.19	-428.50	18.97	729.24
2668.83	31.99	326.35	2458.78	590.26	-428.54	14.63	729.32
2668.98	32.04	326.40	2458.91	590.33	-428.59	11.68	729.40
2669.13	32.08	326.44	2459.04	590.39	-428.63	9.25	729.48
2669.29	32.10	326.45	2459.17	590.46	-428.68	3.21	729.56
2669.44	32.09	326.43	2459.30	590.53	-428.72	2.64	729.64
2669.59	32.05	326.38	2459.43	590.60	-428.77	8.11	729.72
2669.74	32.01	326.32	2459.56	590.66	-428.81	11.61	729.80
2669.90	31.93	326.23	2459.69	590.73	-428.86	17.14	729.88
2670.05	31.90	326.20	2459.82	590.80	-428.90	6.88	729.96
2670.20	31.89	326.20	2459.95	590.87	-428.95	2.06	730.04

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(N/E) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2670.35	31.90	326.24	2460.08	590.93	-428.99	4.99	730.12
2670.51	31.94	326.31	2460.21	591.00	-429.04	9.93	730.20
2670.66	31.99	326.41	2460.34	591.07	-429.08	13.63	730.28
2670.81	32.02	326.50	2460.46	591.13	-429.13	12.41	730.37
2670.96	32.04	326.58	2460.59	591.20	-429.17	8.67	730.45
2671.11	32.03	326.62	2460.72	591.27	-429.22	4.81	730.53
2671.27	31.95	326.59	2460.85	591.34	-429.26	17.14	730.61
2671.42	31.86	326.54	2460.98	591.40	-429.30	16.92	730.69
2671.57	31.77	326.47	2461.11	591.47	-429.35	20.09	730.77
2671.72	31.69	326.39	2461.24	591.54	-429.39	17.36	730.85
2671.88	31.64	326.33	2461.37	591.60	-429.44	12.21	730.93
2672.03	31.61	326.30	2461.50	591.67	-429.48	5.62	731.01
2672.18	31.61	326.28	2461.63	591.74	-429.53	1.92	731.09
2672.33	31.65	326.30	2461.76	591.80	-429.57	6.31	731.17
2672.49	31.69	326.30	2461.89	591.87	-429.61	9.16	731.25
2672.64	31.72	326.31	2462.02	591.94	-429.66	6.07	731.33
2672.79	31.74	326.30	2462.15	592.00	-429.70	4.17	731.41
2672.94	31.75	326.28	2462.28	592.07	-429.75	2.69	731.49
2673.10	31.74	326.24	2462.41	592.14	-429.79	4.08	731.57
2673.25	31.74	326.22	2462.54	592.20	-429.84	2.73	731.65
2673.40	31.74	326.20	2462.67	592.27	-429.88	1.67	731.73
2673.55	31.75	326.20	2462.80	592.34	-429.93	1.43	731.81
2673.71	31.78	326.22	2462.93	592.40	-429.97	6.42	731.89
2673.86	31.80	326.25	2463.06	592.47	-430.02	5.16	731.97
2674.01	31.82	326.28	2463.19	592.54	-430.06	5.33	732.05
2674.16	31.84	326.30	2463.32	592.60	-430.10	4.05	732.13
2674.32	31.84	326.30	2463.44	592.67	-430.15	1.24	732.21
2674.47	31.84	326.28	2463.57	592.74	-430.19	2.41	732.29
2674.62	31.84	326.26	2463.70	592.80	-430.24	2.25	732.37
2674.77	31.83	326.22	2463.83	592.87	-430.28	4.41	732.45
2674.92	31.84	326.19	2463.96	592.94	-430.33	3.06	732.53
2675.08	31.84	326.15	2464.09	593.00	-430.37	4.40	732.61
2675.23	31.83	326.11	2464.22	593.07	-430.42	4.91	732.69
2675.38	31.81	326.06	2464.35	593.14	-430.46	6.50	732.77
2675.53	31.79	326.01	2464.48	593.20	-430.51	6.08	732.85
2675.69	31.76	325.96	2464.61	593.27	-430.55	8.28	732.93
2675.84	31.72	325.91	2464.74	593.34	-430.60	8.37	733.01
2675.99	31.69	325.89	2464.87	593.40	-430.64	6.29	733.09
2676.14	31.68	325.91	2465.00	593.47	-430.69	3.81	733.17
2676.30	31.68	325.94	2465.13	593.54	-430.73	3.14	733.25
2676.45	31.69	325.99	2465.26	593.60	-430.78	6.59	733.33
2676.60	31.72	326.06	2465.39	593.67	-430.82	8.25	733.41
2676.75	31.75	326.13	2465.52	593.74	-430.87	9.50	733.49
2676.91	31.77	326.20	2465.65	593.80	-430.91	8.68	733.57
2677.06	31.79	326.25	2465.78	593.87	-430.95	5.56	733.65
2677.21	31.79	326.27	2465.91	593.94	-431.00	2.42	733.73
2677.36	31.75	326.25	2466.04	594.00	-431.04	6.62	733.82
2677.52	31.72	326.22	2466.17	594.07	-431.09	8.36	733.90
2677.67	31.67	326.16	2466.30	594.14	-431.13	11.29	733.98
2677.82	31.62	326.12	2466.42	594.20	-431.18	10.20	734.06
2677.97	31.58	326.09	2466.55	594.27	-431.22	8.86	734.14
2678.13	31.55	326.08	2466.68	594.33	-431.27	5.78	734.21
2678.28	31.53	326.09	2466.81	594.40	-431.31	3.53	734.29
2678.43	31.52	326.12	2466.94	594.47	-431.36	3.44	734.37
2678.58	31.53	326.17	2467.07	594.53	-431.40	4.85	734.45
2678.73	31.54	326.25	2467.20	594.60	-431.44	8.90	734.53
2678.89	31.54	326.30	2467.33	594.67	-431.49	5.04	734.61

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2679.04	31.54	326.35	2467.46	594.73	-431.53	4.60	734.69
2679.19	31.53	326.37	2467.59	594.80	-431.58	3.74	734.77
2679.34	31.51	326.40	2467.72	594.86	-431.62	3.49	734.85
2679.50	31.49	326.40	2467.85	594.93	-431.67	4.40	734.93
2679.65	31.45	326.38	2467.98	595.00	-431.71	7.44	735.01
2679.80	31.41	326.34	2468.11	595.06	-431.75	10.01	735.09
2679.95	31.32	326.25	2468.24	595.13	-431.80	20.08	735.17
2680.11	31.24	326.16	2468.37	595.20	-431.84	17.99	735.25
2680.26	31.16	326.06	2468.50	595.26	-431.89	18.80	735.33
2680.41	31.08	325.96	2468.64	595.33	-431.93	17.86	735.41
2680.56	31.03	325.87	2468.77	595.39	-431.97	14.27	735.49
2680.72	31.00	325.83	2468.90	595.46	-432.02	6.71	735.56
2680.87	31.01	325.82	2469.03	595.52	-432.06	2.25	735.64
2681.02	31.05	325.83	2469.16	595.59	-432.11	8.74	735.72
2681.17	31.22	325.95	2469.29	595.65	-432.15	35.03	735.80
2681.33	31.33	325.99	2469.42	595.72	-432.19	22.21	735.88
2681.48	31.43	326.01	2469.55	595.78	-432.24	19.45	735.96
2681.63	31.51	325.98	2469.68	595.85	-432.28	16.38	736.04
2681.78	31.57	325.91	2469.81	595.91	-432.33	12.71	736.12
2681.94	31.59	325.81	2469.94	595.98	-432.37	11.45	736.20
2682.09	31.61	325.71	2470.07	596.05	-432.42	10.48	736.28
2682.24	31.61	325.63	2470.20	596.11	-432.46	8.64	736.36
2682.39	31.63	325.59	2470.33	596.18	-432.51	5.00	736.44
2682.54	31.73	325.70	2470.46	596.24	-432.55	22.76	736.52
2682.70	31.78	325.79	2470.59	596.31	-432.60	13.79	736.60
2682.85	31.85	325.92	2470.72	596.38	-432.64	18.67	736.68
2683.00	31.91	326.06	2470.85	596.44	-432.69	19.45	736.76
2683.15	31.95	326.18	2470.97	596.51	-432.73	14.79	736.84
2683.31	31.97	326.27	2471.10	596.58	-432.78	10.58	736.92
2683.46	31.97	326.32	2471.23	596.65	-432.82	5.52	737.00
2683.61	31.94	326.34	2471.36	596.71	-432.87	5.86	737.08
2683.76	31.88	326.34	2471.49	596.78	-432.91	11.89	737.16
2683.92	31.82	326.29	2471.62	596.85	-432.96	13.96	737.24
2684.07	31.75	326.25	2471.75	596.91	-433.00	12.75	737.32
2684.22	31.69	326.21	2471.88	596.98	-433.05	12.36	737.40
2684.37	31.65	326.20	2472.01	597.05	-433.09	8.07	737.48
2684.53	31.62	326.20	2472.14	597.11	-433.13	6.04	737.56
2684.68	31.61	326.22	2472.27	597.18	-433.18	3.53	737.64
2684.83	31.60	326.24	2472.40	597.25	-433.22	2.35	737.72
2684.98	31.65	326.33	2472.53	597.31	-433.27	12.74	737.80
2685.14	31.67	326.37	2472.66	597.38	-433.31	6.29	737.88
2685.29	31.69	326.40	2472.79	597.45	-433.36	4.37	737.96
2685.44	31.70	326.42	2472.92	597.51	-433.40	3.54	738.04
2685.59	31.71	326.45	2473.05	597.58	-433.45	4.10	738.12
2685.75	31.71	326.48	2473.18	597.65	-433.49	2.86	738.20
2685.90	31.71	326.52	2473.31	597.71	-433.53	3.54	738.28
2686.05	31.69	326.54	2473.44	597.78	-433.58	4.90	738.36
2686.20	31.65	326.56	2473.57	597.85	-433.62	7.48	738.44
2686.35	31.59	326.57	2473.70	597.91	-433.67	12.21	738.52
2686.51	31.51	326.51	2473.83	597.98	-433.71	17.37	738.60
2686.66	31.43	326.45	2473.96	598.05	-433.75	17.52	738.68
2686.81	31.36	326.37	2474.09	598.11	-433.80	16.17	738.76
2686.96	31.30	326.30	2474.22	598.18	-433.84	13.84	738.84
2687.12	31.27	326.25	2474.35	598.24	-433.89	7.73	738.92
2687.27	31.28	326.24	2474.48	598.31	-433.93	3.06	739.00
2687.42	31.32	326.25	2474.61	598.37	-433.97	7.92	739.08
2687.57	31.44	326.34	2474.74	598.44	-434.02	24.59	739.16

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 3 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2687.73	31.52	326.41	2474.87	598.51	-434.06	17.02	739.24
2687.88	31.60	326.48	2475.00	598.57	-434.11	17.36	739.32
2688.03	31.66	326.54	2475.13	598.64	-434.15	13.98	739.40
2688.18	31.70	326.59	2475.26	598.71	-434.19	9.74	739.48
2688.34	31.72	326.61	2475.39	598.77	-434.24	3.73	739.56
2688.49	31.72	326.60	2475.52	598.84	-434.28	0.57	739.64
2688.64	31.68	326.57	2475.65	598.91	-434.33	7.35	739.72
2688.79	31.63	326.50	2475.78	598.97	-434.37	11.90	739.80
2688.95	31.54	326.38	2475.91	599.04	-434.41	21.77	739.88
2689.10	31.46	326.27	2476.04	599.11	-434.46	19.32	739.96
2689.25	31.38	326.15	2476.17	599.17	-434.50	21.76	740.03
2689.40	31.30	326.03	2476.30	599.24	-434.55	19.49	740.11
2689.56	31.24	325.95	2476.43	599.30	-434.59	14.12	740.19
2689.71	31.19	325.88	2476.56	599.37	-434.64	11.47	740.27
2689.86	31.18	325.86	2476.69	599.44	-434.68	2.51	740.35
2690.01	31.20	325.89	2476.82	599.50	-434.72	4.89	740.43
2690.16	31.29	326.02	2476.95	599.57	-434.77	20.82	740.51
2690.32	31.34	326.10	2477.08	599.63	-434.81	13.22	740.59
2690.47	31.38	326.17	2477.21	599.70	-434.86	10.09	740.67
2690.62	31.40	326.21	2477.34	599.76	-434.90	5.74	740.75
2690.77	31.39	326.21	2477.47	599.83	-434.94	1.35	740.83
2690.93	31.36	326.19	2477.60	599.90	-434.99	6.36	740.91
2691.08	31.35	326.19	2477.73	599.96	-435.03	2.72	740.98
2691.23	31.34	326.19	2477.86	600.03	-435.08	0.87	741.06
2691.38	31.44	326.34	2477.99	600.09	-435.12	24.39	741.14
2691.54	31.56	326.49	2478.12	600.16	-435.17	27.15	741.22
2691.69	31.73	326.71	2478.25	600.23	-435.21	40.78	741.30
2691.84	31.92	326.94	2478.38	600.29	-435.25	45.26	741.38
2691.99	32.07	327.10	2478.51	600.36	-435.30	33.47	741.46
2692.15	32.19	327.21	2478.64	600.43	-435.34	26.12	741.54
2692.30	32.19	327.14	2478.76	600.50	-435.39	7.40	741.63
2692.45	32.07	326.90	2478.89	600.57	-435.43	34.30	741.71
2692.60	31.86	326.52	2479.02	600.63	-435.47	57.24	741.79
2692.76	31.45	325.80	2479.15	600.70	-435.52	109.37	741.87
2692.91	31.19	325.33	2479.28	600.76	-435.56	69.89	741.95
2693.06	30.99	324.95	2479.41	600.83	-435.61	55.73	742.03
2693.21	30.88	324.70	2479.54	600.89	-435.65	33.69	742.10
2693.37	30.87	324.62	2479.67	600.96	-435.70	8.18	742.18
2693.52	30.93	324.67	2479.81	601.02	-435.74	14.32	742.26
2693.67	31.07	324.84	2479.94	601.09	-435.79	32.40	742.34
2693.82	31.29	325.13	2480.07	601.15	-435.83	51.28	742.42
2693.97	31.42	325.31	2480.20	601.22	-435.88	32.53	742.50
2694.13	31.53	325.45	2480.33	601.28	-435.92	25.47	742.58
2694.28	31.59	325.54	2480.46	601.35	-435.97	14.60	742.66
2694.43	31.66	325.64	2480.59	601.41	-436.02	17.16	742.74
2694.58	31.69	325.68	2480.72	601.48	-436.06	7.71	742.82
2694.74	31.73	325.73	2480.85	601.54	-436.11	8.79	742.90
2694.89	31.77	325.79	2480.98	601.61	-436.15	9.78	742.98
2695.04	31.80	325.83	2481.11	601.68	-436.20	7.59	743.06
2695.19	31.82	325.86	2481.23	601.74	-436.24	4.96	743.14
2695.35	31.83	325.86	2481.36	601.81	-436.29	1.51	743.22
2695.50	31.82	325.86	2481.49	601.88	-436.33	1.33	743.30
2695.65	31.80	325.83	2481.62	601.94	-436.38	4.67	743.38
2695.80	31.77	325.79	2481.75	602.01	-436.42	6.65	743.46
2695.96	31.75	325.75	2481.88	602.08	-436.47	6.36	743.54
2696.11	31.71	325.70	2482.01	602.14	-436.51	8.72	743.62
2696.26	31.72	325.70	2482.14	602.21	-436.56	0.99	743.70
2696.41	31.74	325.72	2482.27	602.27	-436.60	4.12	743.78

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 4 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2696.57	31.74	325.72	2482.40	602.34	-436.65	1.07	743.86
2696.72	31.75	325.74	2482.53	602.41	-436.69	3.12	743.94
2696.87	31.75	325.75	2482.66	602.47	-436.74	0.64	744.02
2697.02	31.73	325.73	2482.79	602.54	-436.78	4.52	744.10
2697.18	31.70	325.71	2482.92	602.61	-436.83	6.51	744.18
2697.33	31.63	325.65	2483.05	602.67	-436.87	14.34	744.26
2697.48	31.58	325.60	2483.18	602.74	-436.92	11.24	744.34
2697.63	31.55	325.56	2483.31	602.80	-436.96	8.40	744.42
2697.78	31.52	325.53	2483.44	602.87	-437.01	6.28	744.50
2697.94	31.50	325.51	2483.57	602.93	-437.05	4.02	744.58
2698.09	31.51	325.50	2483.70	603.00	-437.10	0.82	744.66
2698.24	31.51	325.50	2483.83	603.07	-437.14	1.44	744.74
2698.39	31.53	325.50	2483.96	603.13	-437.19	3.03	744.82
2698.55	31.55	325.50	2484.09	603.20	-437.23	4.65	744.90
2698.70	31.59	325.51	2484.22	603.26	-437.28	7.71	744.98
2698.85	31.61	325.51	2484.35	603.33	-437.32	3.44	745.06
2699.00	31.62	325.49	2484.48	603.39	-437.37	2.51	745.14
2699.16	31.62	325.48	2484.61	603.46	-437.41	1.85	745.22
2699.31	31.63	325.47	2484.74	603.53	-437.46	1.17	745.30
2699.46	31.64	325.49	2484.87	603.59	-437.50	3.68	745.38
2699.61	31.66	325.51	2485.00	603.66	-437.55	3.66	745.46
2699.77	31.71	325.59	2485.13	603.72	-437.60	12.75	745.54
2699.92	31.74	325.66	2485.26	603.79	-437.64	9.09	745.62
2700.07	31.76	325.72	2485.39	603.86	-437.69	8.26	745.70
2700.22	31.78	325.77	2485.51	603.92	-437.73	6.83	745.78
2700.38	31.79	325.80	2485.64	603.99	-437.78	3.37	745.86
2700.53	31.77	325.80	2485.77	604.06	-437.82	4.03	745.94
2700.68	31.74	325.76	2485.90	604.12	-437.87	7.24	746.02
2700.83	31.69	325.70	2486.03	604.19	-437.91	11.56	746.10
2700.99	31.60	325.59	2486.16	604.25	-437.96	20.11	746.18
2701.14	31.57	325.54	2486.29	604.32	-438.00	7.71	746.26
2701.29	31.55	325.51	2486.42	604.39	-438.05	5.21	746.34
2701.44	31.56	325.51	2486.55	604.45	-438.09	0.99	746.42
2701.59	31.58	325.52	2486.68	604.52	-438.14	3.96	746.50
2701.75	31.60	325.54	2486.81	604.58	-438.18	5.03	746.58
2701.90	31.62	325.55	2486.94	604.65	-438.23	3.43	746.66
2702.05	31.62	325.54	2487.07	604.72	-438.27	1.15	746.74
2702.20	31.60	325.48	2487.20	604.78	-438.32	7.87	746.82
2702.36	31.57	325.43	2487.33	604.85	-438.36	7.29	746.90
2702.51	31.55	325.38	2487.46	604.91	-438.41	6.00	746.98
2702.66	31.55	325.36	2487.59	604.98	-438.45	2.01	747.06
2702.81	31.58	325.38	2487.72	605.04	-438.50	6.22	747.14
2702.97	31.64	325.43	2487.85	605.11	-438.54	12.03	747.22
2703.12	31.71	325.52	2487.98	605.18	-438.59	16.92	747.30
2703.27	31.79	325.61	2488.11	605.24	-438.64	18.44	747.38
2703.42	31.87	325.69	2488.24	605.31	-438.68	17.57	747.46
2703.58	31.92	325.75	2488.37	605.37	-438.73	12.22	747.54
2703.73	31.92	325.74	2488.50	605.44	-438.77	2.55	747.62
2703.88	31.86	325.67	2488.63	605.51	-438.82	12.33	747.70
2704.03	31.79	325.56	2488.76	605.57	-438.86	18.85	747.78
2704.19	31.69	325.44	2488.89	605.64	-438.91	22.44	747.86
2704.34	31.60	325.32	2489.02	605.71	-438.95	21.23	747.94
2704.49	31.53	325.22	2489.15	605.77	-439.00	17.77	748.02
2704.64	31.49	325.17	2489.28	605.84	-439.04	10.14	748.10
2704.80	31.49	325.17	2489.41	605.90	-439.09	0.46	748.18
2704.95	31.53	325.23	2489.54	605.97	-439.13	9.82	748.26
2705.10	31.58	325.31	2489.67	606.03	-439.18	13.69	748.34

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature
<b>Page:</b> 5	<b>Db:</b> Adapti

Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2705.25	31.65	325.39	2489.80	606.10	-439.23	15.74	748.42
2705.40	31.71	325.48	2489.93	606.16	-439.27	15.55	748.50
2705.56	31.76	325.54	2490.05	606.23	-439.32	10.90	748.58
2705.71	31.79	325.58	2490.18	606.30	-439.36	7.30	748.66
2705.86	31.78	325.58	2490.31	606.36	-439.41	1.45	748.74
2706.01	31.75	325.56	2490.44	606.43	-439.45	7.26	748.82
2706.17	31.69	325.51	2490.57	606.50	-439.50	11.79	748.90
2706.32	31.63	325.45	2490.70	606.56	-439.54	14.46	748.98
2706.47	31.56	325.38	2490.83	606.63	-439.59	15.42	749.06
2706.62	31.49	325.32	2490.96	606.69	-439.63	13.99	749.14
2706.78	31.44	325.28	2491.09	606.76	-439.68	11.56	749.22
2706.93	31.42	325.27	2491.22	606.82	-439.72	4.68	749.30
2707.08	31.43	325.31	2491.35	606.89	-439.77	4.60	749.38
2707.23	31.46	325.37	2491.48	606.95	-439.82	10.07	749.46
2707.39	31.52	325.46	2491.61	607.02	-439.86	13.68	749.53
2707.54	31.58	325.55	2491.74	607.09	-439.91	16.04	749.61
2707.69	31.65	325.63	2491.87	607.15	-439.95	14.89	749.69
2707.84	31.69	325.69	2492.00	607.22	-440.00	10.94	749.77
2708.00	31.72	325.71	2492.13	607.28	-440.04	5.72	749.85
2708.15	31.72	325.68	2492.26	607.35	-440.09	2.66	749.93
2708.30	31.69	325.62	2492.39	607.42	-440.13	8.45	750.01
2708.45	31.61	325.48	2492.52	607.48	-440.18	21.73	750.09
2708.61	31.55	325.39	2492.65	607.55	-440.22	15.34	750.17
2708.76	31.50	325.31	2492.78	607.61	-440.27	12.81	750.25
2708.91	31.46	325.26	2492.91	607.68	-440.31	7.89	750.33
2709.06	31.46	325.25	2493.04	607.74	-440.36	1.04	750.41
2709.21	31.48	325.27	2493.17	607.81	-440.40	4.76	750.49
2709.37	31.53	325.32	2493.30	607.87	-440.45	9.72	750.57
2709.52	31.58	325.38	2493.43	607.94	-440.49	12.71	750.65
2709.67	31.67	325.47	2493.56	608.01	-440.54	20.06	750.73
2709.82	31.71	325.49	2493.69	608.07	-440.58	7.98	750.81
2709.98	31.73	325.47	2493.82	608.14	-440.63	3.85	750.89
2710.13	31.73	325.44	2493.95	608.20	-440.68	3.47	750.97
2710.28	31.73	325.39	2494.08	608.27	-440.72	5.43	751.05
2710.43	31.71	325.34	2494.21	608.34	-440.77	5.55	751.13
2710.59	31.71	325.30	2494.34	608.40	-440.81	4.47	751.21
2710.74	31.70	325.27	2494.47	608.47	-440.86	3.01	751.29
2710.89	31.72	325.27	2494.60	608.53	-440.90	3.72	751.37
2711.04	31.75	325.29	2494.73	608.60	-440.95	5.29	751.45
2711.20	31.77	325.31	2494.86	608.67	-440.99	4.83	751.53
2711.35	31.78	325.31	2494.99	608.73	-441.04	2.15	751.61
2711.50	31.76	325.29	2495.12	608.80	-441.09	4.22	751.69
2711.65	31.73	325.24	2495.25	608.86	-441.13	7.29	751.77
2711.81	31.69	325.18	2495.37	608.93	-441.18	11.07	751.85
2711.96	31.64	325.12	2495.50	608.99	-441.22	11.44	751.93
2712.11	31.57	325.04	2495.63	609.06	-441.27	15.55	752.01
2712.26	31.55	325.02	2495.76	609.13	-441.31	4.25	752.09
2712.42	31.55	325.04	2495.89	609.19	-441.36	1.81	752.17
2712.57	31.58	325.10	2496.02	609.26	-441.41	8.29	752.25
2712.72	31.63	325.19	2496.15	609.32	-441.45	12.56	752.33
2712.87	31.68	325.29	2496.28	609.39	-441.50	14.54	752.41
2713.02	31.73	325.38	2496.41	609.45	-441.54	13.15	752.49
2713.18	31.76	325.45	2496.54	609.52	-441.59	9.57	752.57
2713.33	31.78	325.51	2496.67	609.59	-441.63	7.71	752.65
2713.48	31.77	325.51	2496.80	609.65	-441.68	2.31	752.73
2713.63	31.74	325.49	2496.93	609.72	-441.72	5.19	752.81
2713.79	31.71	325.45	2497.06	609.78	-441.77	7.76	752.89
2713.94	31.68	325.41	2497.19	609.85	-441.82	7.69	752.97

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 6 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2714.09	31.64	325.36	2497.32	609.92	-441.86	7.96	753.05
2714.24	31.62	325.33	2497.45	609.98	-441.91	5.74	753.13
2714.40	31.60	325.31	2497.58	610.05	-441.95	4.94	753.21
2714.55	31.57	325.29	2497.71	610.11	-442.00	5.55	753.29
2714.70	31.55	325.27	2497.84	610.18	-442.04	4.69	753.37
2714.85	31.53	325.27	2497.97	610.24	-442.09	4.29	753.45
2715.01	31.50	325.26	2498.10	610.31	-442.13	5.16	753.53
2715.16	31.48	325.27	2498.23	610.37	-442.18	3.85	753.61
2715.31	31.46	325.27	2498.36	610.44	-442.22	3.45	753.69
2715.46	31.46	325.29	2498.49	610.51	-442.27	2.05	753.77
2715.62	31.46	325.31	2498.62	610.57	-442.31	2.98	753.85
2715.77	31.49	325.36	2498.75	610.64	-442.36	7.80	753.93
2715.92	31.52	325.39	2498.88	610.70	-442.41	5.24	754.01
2716.07	31.54	325.42	2499.01	610.77	-442.45	5.15	754.09
2716.23	31.56	325.44	2499.14	610.83	-442.50	4.35	754.17
2716.38	31.57	325.46	2499.27	610.90	-442.54	3.33	754.25
2716.53	31.58	325.48	2499.40	610.96	-442.59	3.13	754.33
2716.68	31.59	325.49	2499.53	611.03	-442.63	1.33	754.41
2716.83	31.59	325.50	2499.66	611.10	-442.68	2.23	754.49
2716.99	31.58	325.50	2499.79	611.16	-442.72	2.10	754.57
2717.14	31.57	325.50	2499.92	611.23	-442.77	2.40	754.65
2717.29	31.55	325.49	2500.05	611.29	-442.81	4.17	754.73
2717.44	31.53	325.48	2500.18	611.36	-442.86	4.12	754.81
2717.60	31.51	325.47	2500.31	611.42	-442.90	3.96	754.89
2717.75	31.49	325.46	2500.44	611.49	-442.95	3.25	754.97
2717.90	31.48	325.47	2500.57	611.56	-442.99	2.47	755.05
2718.05	31.47	325.49	2500.70	611.62	-443.04	2.32	755.13
2718.21	31.45	325.50	2500.83	611.69	-443.08	5.41	755.21
2718.36	31.42	325.51	2500.96	611.75	-443.13	4.68	755.29
2718.51	31.39	325.51	2501.09	611.82	-443.17	6.57	755.37
2718.66	31.35	325.49	2501.22	611.88	-443.22	9.22	755.44
2718.82	31.30	325.47	2501.35	611.95	-443.26	8.33	755.52
2718.97	31.27	325.46	2501.48	612.01	-443.31	6.83	755.60
2719.12	31.25	325.44	2501.61	612.08	-443.35	4.76	755.68
2719.27	31.25	325.43	2501.74	612.14	-443.40	1.16	755.76
2719.43	31.32	325.47	2501.87	612.21	-443.44	13.94	755.84
2719.58	31.38	325.49	2502.00	612.27	-443.49	12.07	755.92
2719.73	31.45	325.50	2502.13	612.34	-443.53	13.05	756.00
2719.88	31.50	325.49	2502.26	612.41	-443.58	10.68	756.08
2720.04	31.54	325.44	2502.39	612.47	-443.62	7.96	756.16
2720.19	31.55	325.38	2502.52	612.54	-443.67	7.24	756.24
2720.34	31.56	325.31	2502.65	612.60	-443.71	7.43	756.32
2720.49	31.55	325.24	2502.78	612.67	-443.76	7.48	756.40
2720.64	31.58	325.21	2502.91	612.73	-443.80	6.35	756.48
2720.80	31.61	325.23	2503.04	612.80	-443.85	5.46	756.56
2720.95	31.65	325.26	2503.17	612.86	-443.89	8.55	756.64
2721.10	31.68	325.32	2503.30	612.93	-443.94	8.77	756.72
2721.25	31.73	325.40	2503.43	613.00	-443.99	12.94	756.80
2721.41	31.75	325.46	2503.56	613.06	-444.03	7.84	756.88
2721.56	31.75	325.50	2503.69	613.13	-444.08	4.26	756.96
2721.71	31.73	325.53	2503.82	613.19	-444.12	4.84	757.04
2721.86	31.67	325.55	2503.95	613.26	-444.17	12.43	757.12
2722.02	31.62	325.54	2504.08	613.33	-444.21	9.21	757.20
2722.17	31.57	325.54	2504.21	613.39	-444.26	9.60	757.28
2722.32	31.53	325.53	2504.34	613.46	-444.30	8.34	757.36
2722.47	31.50	325.54	2504.47	613.52	-444.35	5.49	757.44
2722.63	31.49	325.56	2504.60	613.59	-444.39	3.17	757.52

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 7 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2722.78	31.50	325.58	2504.73	613.65	-444.44	2.93	757.60
2722.93	31.51	325.62	2504.86	613.72	-444.48	4.98	757.68
2723.08	31.57	325.71	2504.99	613.79	-444.53	14.60	757.76
2723.24	31.61	325.76	2505.11	613.85	-444.57	10.06	757.84
2723.39	31.66	325.81	2505.24	613.92	-444.62	9.72	757.92
2723.54	31.71	325.87	2505.37	613.98	-444.66	12.43	758.00
2723.69	31.73	325.89	2505.50	614.05	-444.71	3.61	758.08
2723.85	31.72	325.86	2505.63	614.12	-444.75	3.09	758.16
2724.00	31.69	325.81	2505.76	614.18	-444.80	7.95	758.24
2724.15	31.62	325.72	2505.89	614.25	-444.84	16.06	758.32
2724.30	31.53	325.58	2506.02	614.32	-444.89	23.03	758.40
2724.45	31.48	325.51	2506.15	614.38	-444.93	12.20	758.47
2724.61	31.47	325.49	2506.28	614.45	-444.98	3.31	758.55
2724.76	31.50	325.52	2506.41	614.51	-445.02	7.92	758.63
2724.91	31.58	325.62	2506.54	614.58	-445.07	18.91	758.71
2725.06	31.69	325.76	2506.67	614.64	-445.11	25.01	758.79
2725.22	31.80	325.90	2506.80	614.71	-445.16	26.07	758.87
2725.37	31.90	326.03	2506.93	614.78	-445.20	24.34	758.95
2725.52	31.90	326.03	2507.06	614.84	-445.25	0.48	759.03
2725.67	31.84	325.96	2507.19	614.91	-445.29	13.23	759.12
2725.83	31.74	325.83	2507.32	614.98	-445.34	25.26	759.20
2725.98	31.61	325.67	2507.45	615.04	-445.38	29.89	759.28
2726.13	31.48	325.51	2507.58	615.11	-445.43	29.69	759.36
2726.28	31.39	325.39	2507.71	615.17	-445.47	22.48	759.43
2726.44	31.33	325.33	2507.84	615.24	-445.52	12.14	759.51
2726.59	31.33	325.34	2507.97	615.31	-445.56	0.99	759.59
2726.74	31.36	325.39	2508.10	615.37	-445.61	7.63	759.67
2726.89	31.41	325.47	2508.23	615.44	-445.65	13.26	759.75
2727.05	31.45	325.54	2508.36	615.50	-445.70	11.09	759.83
2727.20	31.49	325.59	2508.49	615.57	-445.74	8.03	759.91
2727.35	31.51	325.62	2508.62	615.63	-445.79	5.34	759.99
2727.50	31.53	325.65	2508.75	615.70	-445.83	5.63	760.07
2727.66	31.56	325.68	2508.88	615.76	-445.88	6.87	760.15
2727.81	31.61	325.70	2509.01	615.83	-445.92	8.63	760.23
2727.96	31.66	325.75	2509.14	615.90	-445.97	12.04	760.31
2728.11	31.71	325.79	2509.27	615.96	-446.01	10.98	760.39
2728.26	31.76	325.81	2509.40	616.03	-446.06	8.86	760.47
2728.42	31.77	325.79	2509.53	616.10	-446.10	3.33	760.55
2728.57	31.76	325.74	2509.66	616.16	-446.15	5.89	760.63
2728.72	31.72	325.66	2509.79	616.23	-446.19	10.68	760.71
2728.87	31.68	325.57	2509.92	616.29	-446.24	12.91	760.79
2729.03	31.61	325.44	2510.05	616.36	-446.28	18.83	760.87
2729.18	31.61	325.41	2510.18	616.43	-446.33	2.27	760.95
2729.33	31.64	325.43	2510.31	616.49	-446.38	5.15	761.03
2729.48	31.69	325.48	2510.44	616.56	-446.42	12.28	761.11
2729.64	31.76	325.57	2510.57	616.62	-446.47	15.71	761.19
2729.79	31.83	325.66	2510.70	616.69	-446.51	17.10	761.27
2729.94	31.89	325.74	2510.82	616.76	-446.56	14.44	761.35
2730.09	31.93	325.79	2510.95	616.82	-446.60	9.00	761.43
2730.25	31.95	325.83	2511.08	616.89	-446.65	6.42	761.51
2730.40	31.94	325.82	2511.21	616.96	-446.69	2.75	761.59
2730.55	31.91	325.78	2511.34	617.02	-446.74	6.85	761.67
2730.70	31.87	325.71	2511.47	617.09	-446.78	11.54	761.75
2730.86	31.82	325.65	2511.60	617.16	-446.83	11.91	761.83
2731.01	31.77	325.57	2511.73	617.22	-446.87	11.72	761.91
2731.16	31.74	325.52	2511.86	617.29	-446.92	8.74	762.00
2731.31	31.72	325.48	2511.99	617.35	-446.96	5.70	762.08
2731.47	31.71	325.45	2512.12	617.42	-447.01	2.63	762.16

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 8 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2731.62	31.73	325.46	2512.25	617.49	-447.06	2.86	762.24
2731.77	31.74	325.47	2512.38	617.55	-447.10	3.45	762.32
2731.92	31.76	325.49	2512.51	617.62	-447.15	2.97	762.40
2732.07	31.76	325.49	2512.64	617.68	-447.19	1.17	762.48
2732.23	31.75	325.49	2512.77	617.75	-447.24	2.02	762.56
2732.38	31.72	325.46	2512.90	617.82	-447.28	7.06	762.64
2732.53	31.69	325.43	2513.03	617.88	-447.33	6.44	762.72
2732.68	31.63	325.39	2513.16	617.95	-447.37	12.11	762.80
2732.84	31.61	325.37	2513.29	618.01	-447.42	5.90	762.88
2732.99	31.59	325.36	2513.42	618.08	-447.46	3.73	762.96
2733.14	31.58	325.37	2513.55	618.15	-447.51	1.28	763.04
2733.29	31.58	325.37	2513.68	618.21	-447.56	0.78	763.12
2733.45	31.58	325.38	2513.81	618.28	-447.60	0.58	763.20
2733.60	31.58	325.37	2513.93	618.34	-447.65	1.27	763.28
2733.75	31.57	325.35	2514.06	618.41	-447.69	2.71	763.36
2733.90	31.56	325.32	2514.19	618.47	-447.74	3.80	763.44
2734.06	31.56	325.32	2514.32	618.54	-447.78	1.36	763.51
2734.21	31.60	325.37	2514.45	618.60	-447.83	8.47	763.59
2734.36	31.66	325.43	2514.58	618.67	-447.87	12.67	763.67
2734.51	31.73	325.53	2514.71	618.74	-447.92	17.81	763.75
2734.67	31.81	325.63	2514.84	618.80	-447.96	18.17	763.83
2734.82	31.87	325.71	2514.97	618.87	-448.01	14.51	763.92
2734.97	31.89	325.74	2515.10	618.94	-448.05	6.20	764.00
2735.12	31.86	325.71	2515.23	619.00	-448.10	6.88	764.08
2735.28	31.75	325.56	2515.36	619.07	-448.14	27.35	764.16
2735.43	31.63	325.40	2515.49	619.13	-448.19	28.47	764.24
2735.58	31.52	325.26	2515.62	619.20	-448.24	27.01	764.32
2735.73	31.42	325.14	2515.75	619.27	-448.28	21.42	764.40
2735.88	31.38	325.09	2515.88	619.33	-448.33	10.84	764.48
2736.04	31.37	325.09	2516.01	619.40	-448.37	0.83	764.55
2736.19	31.42	325.16	2516.14	619.46	-448.42	11.41	764.63
2736.34	31.52	325.32	2516.27	619.53	-448.46	26.22	764.71
2736.49	31.60	325.43	2516.40	619.59	-448.51	18.50	764.79
2736.65	31.63	325.50	2516.53	619.66	-448.55	9.96	764.87
2736.80	31.65	325.54	2516.66	619.72	-448.60	4.64	764.95
2736.95	31.63	325.54	2516.79	619.79	-448.64	2.47	765.03
2737.10	31.59	325.51	2516.92	619.86	-448.69	9.18	765.11
2737.26	31.54	325.47	2517.05	619.92	-448.73	10.27	765.19
2737.41	31.49	325.42	2517.18	619.99	-448.78	11.86	765.27
2737.56	31.43	325.36	2517.31	620.05	-448.82	13.72	765.35
2737.71	31.40	325.34	2517.44	620.12	-448.87	5.70	765.43
2737.87	31.39	325.34	2517.57	620.18	-448.91	2.04	765.51
2738.02	31.39	325.34	2517.70	620.25	-448.96	0.48	765.59
2738.17	31.40	325.36	2517.83	620.31	-449.01	2.18	765.67
2738.32	31.41	325.38	2517.96	620.38	-449.05	3.07	765.75
2738.48	31.42	325.39	2518.09	620.44	-449.10	3.42	765.83
2738.63	31.44	325.41	2518.22	620.51	-449.14	3.10	765.91
2738.78	31.47	325.43	2518.35	620.57	-449.19	7.01	765.99
2738.93	31.48	325.44	2518.48	620.64	-449.23	3.02	766.07
2739.09	31.51	325.44	2518.61	620.71	-449.28	5.00	766.15
2739.24	31.54	325.45	2518.74	620.77	-449.32	5.56	766.23
2739.39	31.56	325.43	2518.87	620.84	-449.37	4.60	766.31
2739.54	31.59	325.42	2519.00	620.90	-449.41	5.26	766.39
2739.69	31.61	325.41	2519.13	620.97	-449.46	5.01	766.47
2739.85	31.63	325.39	2519.26	621.03	-449.50	4.22	766.55
2740.00	31.64	325.35	2519.39	621.10	-449.55	5.33	766.63
2740.15	31.63	325.30	2519.52	621.17	-449.59	5.86	766.71

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 9 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2740.30	31.62	325.25	2519.65	621.23	-449.64	5.49	766.79
2740.46	31.61	325.21	2519.78	621.30	-449.68	4.57	766.87
2740.61	31.61	325.17	2519.91	621.36	-449.73	3.34	766.95
2740.76	31.62	325.15	2520.04	621.43	-449.78	2.50	767.03
2740.91	31.64	325.16	2520.17	621.49	-449.82	4.66	767.11
2741.07	31.67	325.17	2520.30	621.56	-449.87	6.14	767.18
2741.22	31.71	325.20	2520.43	621.63	-449.91	8.73	767.27
2741.37	31.74	325.21	2520.56	621.69	-449.96	6.65	767.35
2741.52	31.76	325.21	2520.69	621.76	-450.00	2.25	767.43
2741.68	31.74	325.18	2520.82	621.82	-450.05	3.96	767.51
2741.83	31.71	325.13	2520.95	621.89	-450.10	8.15	767.59
2741.98	31.67	325.08	2521.08	621.95	-450.14	10.06	767.67
2742.13	31.63	325.03	2521.20	622.02	-450.19	9.44	767.75
2742.29	31.60	325.01	2521.33	622.09	-450.23	5.63	767.83
2742.44	31.60	325.03	2521.46	622.15	-450.28	2.22	767.91
2742.59	31.65	325.13	2521.59	622.22	-450.32	14.33	767.99
2742.74	31.71	325.24	2521.72	622.28	-450.37	15.89	768.07
2742.90	31.77	325.37	2521.85	622.35	-450.42	18.05	768.15
2743.05	31.81	325.46	2521.98	622.41	-450.46	12.64	768.23
2743.20	31.82	325.52	2522.11	622.48	-450.51	6.56	768.31
2743.35	31.79	325.53	2522.24	622.55	-450.55	5.73	768.39
2743.50	31.73	325.48	2522.37	622.61	-450.60	14.54	768.47
2743.66	31.63	325.40	2522.50	622.68	-450.64	19.71	768.55
2743.81	31.49	325.28	2522.63	622.74	-450.69	30.59	768.63
2743.96	31.43	325.24	2522.76	622.81	-450.73	12.18	768.71
2744.11	31.41	325.25	2522.89	622.87	-450.78	4.09	768.79
2744.27	31.43	325.30	2523.02	622.94	-450.82	6.53	768.87
2744.42	31.48	325.38	2523.15	623.01	-450.87	13.32	768.94
2744.57	31.55	325.47	2523.28	623.07	-450.92	15.44	769.02
2744.72	31.60	325.55	2523.41	623.14	-450.96	13.42	769.10
2744.88	31.63	325.58	2523.54	623.20	-451.01	6.56	769.18
2745.03	31.60	325.50	2523.67	623.27	-451.05	9.51	769.26
2745.18	31.56	325.41	2523.80	623.33	-451.10	13.02	769.34
2745.33	31.50	325.30	2523.93	623.40	-451.14	16.38	769.42
2745.49	31.45	325.21	2524.06	623.47	-451.19	12.37	769.50
2745.64	31.43	325.15	2524.19	623.53	-451.23	7.24	769.58
2745.79	31.45	325.14	2524.32	623.60	-451.28	2.59	769.66
2745.94	31.50	325.19	2524.45	623.66	-451.32	11.56	769.74
2746.10	31.60	325.32	2524.58	623.73	-451.37	24.67	769.82
2746.25	31.70	325.45	2524.71	623.79	-451.41	22.56	769.90
2746.40	31.77	325.56	2524.84	623.86	-451.46	17.79	769.98
2746.55	31.80	325.62	2524.97	623.92	-451.50	8.57	770.06
2746.71	31.78	325.63	2525.10	623.99	-451.55	3.25	770.14
2746.86	31.72	325.59	2525.23	624.06	-451.60	12.49	770.22
2747.01	31.62	325.49	2525.36	624.12	-451.64	21.96	770.30
2747.16	31.50	325.37	2525.49	624.19	-451.69	27.10	770.38
2747.31	31.31	325.17	2525.62	624.25	-451.73	43.74	770.46
2747.47	31.22	325.08	2525.75	624.32	-451.78	19.21	770.54
2747.62	31.18	325.04	2525.88	624.38	-451.82	8.90	770.62
2747.77	31.19	325.07	2526.01	624.45	-451.87	3.10	770.70
2747.92	31.23	325.13	2526.14	624.51	-451.91	10.70	770.78
2748.08	31.30	325.24	2526.27	624.58	-451.96	18.61	770.86
2748.23	31.39	325.36	2526.40	624.64	-452.00	20.29	770.94
2748.38	31.46	325.45	2526.53	624.71	-452.05	16.78	771.01
2748.53	31.50	325.49	2526.66	624.77	-452.09	8.70	771.09
2748.69	31.48	325.44	2526.79	624.84	-452.14	5.21	771.17
2748.84	31.43	325.35	2526.92	624.91	-452.18	14.08	771.25
2748.99	31.37	325.23	2527.05	624.97	-452.23	17.12	771.33

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapli
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2749.14	31.31	325.10	2527.18	625.04	-452.27	17.49	771.41
2749.30	31.27	325.00	2527.31	625.10	-452.32	13.32	771.49
2749.45	31.27	324.95	2527.44	625.17	-452.36	5.31	771.57
2749.60	31.30	324.95	2527.57	625.23	-452.41	7.48	771.65
2749.75	31.42	325.04	2527.70	625.30	-452.45	24.07	771.73
2749.91	31.52	325.14	2527.83	625.36	-452.50	23.16	771.81
2750.06	31.63	325.24	2527.96	625.43	-452.55	22.80	771.89
2750.21	31.70	325.30	2528.09	625.49	-452.59	16.26	771.97
2750.36	31.75	325.33	2528.22	625.56	-452.64	10.22	772.05
2750.52	31.76	325.31	2528.35	625.62	-452.68	3.53	772.13
2750.67	31.74	325.24	2528.48	625.69	-452.73	8.08	772.21
2750.82	31.71	325.15	2528.61	625.76	-452.77	12.11	772.29
2750.97	31.66	325.03	2528.74	625.82	-452.82	15.85	772.37
2751.12	31.64	324.98	2528.87	625.89	-452.87	5.25	772.45
2751.28	31.65	324.98	2529.00	625.95	-452.91	2.36	772.53
2751.43	31.68	325.01	2529.13	626.02	-452.96	5.50	772.61
2751.58	31.73	325.07	2529.26	626.08	-453.00	10.95	772.69
2751.73	31.77	325.13	2529.39	626.15	-453.05	11.19	772.77
2751.89	31.80	325.17	2529.52	626.21	-453.10	7.28	772.85
2752.04	31.80	325.19	2529.65	626.28	-453.14	1.16	772.93
2752.19	31.75	325.14	2529.78	626.35	-453.19	10.36	773.01
2752.34	31.70	325.07	2529.91	626.41	-453.23	12.50	773.09
2752.50	31.64	324.98	2530.03	626.48	-453.28	15.36	773.17
2752.65	31.60	324.91	2530.16	626.54	-453.32	11.21	773.25
2752.80	31.58	324.87	2530.29	626.61	-453.37	5.29	773.33
2752.95	31.58	324.87	2530.42	626.67	-453.42	1.26	773.41
2753.11	31.62	324.90	2530.55	626.74	-453.46	7.53	773.49
2753.26	31.67	324.98	2530.68	626.80	-453.51	12.47	773.57
2753.41	31.74	325.11	2530.81	626.87	-453.55	19.39	773.65
2753.56	31.77	325.20	2530.94	626.94	-453.60	11.94	773.73
2753.72	31.78	325.27	2531.07	627.00	-453.65	7.12	773.81
2753.87	31.77	325.31	2531.20	627.07	-453.69	5.16	773.89
2754.02	31.74	325.32	2531.33	627.13	-453.74	7.37	773.97
2754.17	31.68	325.29	2531.46	627.20	-453.78	11.87	774.05
2754.33	31.61	325.24	2531.59	627.27	-453.83	14.93	774.13
2754.48	31.54	325.17	2531.72	627.33	-453.87	14.00	774.21
2754.63	31.46	325.08	2531.85	627.40	-453.92	18.75	774.29
2754.78	31.43	325.03	2531.98	627.46	-453.96	8.01	774.37
2754.93	31.42	325.02	2532.11	627.53	-454.01	1.45	774.45
2755.09	31.43	325.03	2532.24	627.59	-454.06	1.34	774.53
2755.24	31.47	325.08	2532.37	627.66	-454.10	8.31	774.61
2755.39	31.50	325.13	2532.50	627.72	-454.15	9.42	774.69
2755.54	31.55	325.21	2532.63	627.79	-454.19	12.53	774.77
2755.70	31.60	325.28	2532.76	627.85	-454.24	12.37	774.85
2755.85	31.67	325.36	2532.89	627.92	-454.28	15.42	774.93
2756.00	31.69	325.38	2533.02	627.98	-454.33	5.19	775.01
2756.15	31.70	325.37	2533.15	628.05	-454.37	1.91	775.09
2756.31	31.68	325.32	2533.28	628.12	-454.42	5.22	775.17
2756.46	31.67	325.26	2533.41	628.18	-454.47	7.03	775.25
2756.61	31.64	325.19	2533.54	628.25	-454.51	9.45	775.33
2756.76	31.61	325.12	2533.67	628.31	-454.56	8.02	775.41
2756.92	31.59	325.06	2533.80	628.38	-454.60	7.66	775.49
2757.07	31.59	325.01	2533.93	628.44	-454.65	5.02	775.57
2757.22	31.59	325.00	2534.06	628.51	-454.69	1.73	775.65
2757.37	31.60	325.00	2534.19	628.58	-454.74	2.29	775.73
2757.53	31.64	325.04	2534.32	628.64	-454.79	7.09	775.81
2757.68	31.66	325.06	2534.45	628.71	-454.83	5.29	775.89

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey	<b>Date:</b> 30/01/2012	<b>Time:</b> 14:25:56	<b>Page:</b> 11
<b>Field:</b> GWW- Honselersdijk	<b>Co-ordinate(NE) Reference:</b>	Site: HON-GT-01, Grid North	
<b>Site:</b> HON-GT-01	<b>Vertical (TVD) Reference:</b>	Ground Level 0.6	
<b>Well:</b> HON-GT-01	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,325.00Azi)	
<b>Wellpath:</b> HON-GT-01	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Adapti

Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2757.83	31.70	325.11	2534.58	628.77	-454.88	8.83	775.97
2757.98	31.72	325.15	2534.71	628.84	-454.92	6.51	776.05
2758.14	31.74	325.18	2534.84	628.90	-454.97	5.18	776.13
2758.29	31.75	325.20	2534.97	628.97	-455.01	2.06	776.21
2758.44	31.73	325.20	2535.10	629.03	-455.06	2.81	776.29
2758.59	31.72	325.20	2535.23	629.10	-455.11	1.77	776.37
2758.74	31.70	325.18	2535.35	629.17	-455.15	4.41	776.45
2758.90	31.67	325.15	2535.48	629.23	-455.20	7.01	776.53
2759.05	31.64	325.10	2535.61	629.30	-455.24	7.89	776.61
2759.20	31.61	325.05	2535.74	629.36	-455.29	8.70	776.69
2759.35	31.57	324.98	2535.87	629.43	-455.33	10.63	776.77
2759.51	31.50	324.85	2536.00	629.49	-455.38	18.01	776.85
2759.66	31.48	324.79	2536.13	629.56	-455.43	7.52	776.93
2759.81	31.48	324.74	2536.26	629.62	-455.47	5.12	777.01
2759.96	31.49	324.71	2536.39	629.69	-455.52	3.49	777.09
2760.12	31.52	324.72	2536.52	629.75	-455.56	5.98	777.17
2760.27	31.57	324.74	2536.65	629.82	-455.61	10.45	777.25
2760.42	31.63	324.79	2536.78	629.88	-455.66	12.69	777.32
2760.57	31.69	324.84	2536.91	629.95	-455.70	13.41	777.40
2760.73	31.79	324.92	2537.04	630.02	-455.75	20.58	777.49
2760.88	31.84	324.96	2537.17	630.08	-455.79	10.84	777.57
2761.03	31.86	324.97	2537.30	630.15	-455.84	4.28	777.65
2761.18	31.86	324.95	2537.43	630.21	-455.89	1.42	777.73
2761.34	31.84	324.92	2537.56	630.28	-455.93	5.68	777.81
2761.49	31.82	324.87	2537.69	630.34	-455.98	6.69	777.89
2761.64	31.78	324.83	2537.82	630.41	-456.03	8.08	777.97
2761.79	31.76	324.80	2537.95	630.48	-456.07	5.94	778.05
2761.95	31.74	324.79	2538.08	630.54	-456.12	3.42	778.13
2762.10	31.74	324.80	2538.21	630.61	-456.16	1.73	778.21
2762.25	31.75	324.83	2538.34	630.67	-456.21	3.04	778.29
2762.40	31.77	324.86	2538.47	630.74	-456.26	4.33	778.37
2762.55	31.78	324.88	2538.60	630.80	-456.30	3.14	778.45
2762.71	31.77	324.88	2538.73	630.87	-456.35	1.31	778.53
2762.86	31.75	324.84	2538.86	630.93	-456.40	6.00	778.61
2763.01	31.71	324.78	2538.99	631.00	-456.44	8.72	778.69
2763.16	31.65	324.67	2539.12	631.07	-456.49	17.54	778.77
2763.32	31.62	324.62	2539.25	631.13	-456.53	8.27	778.85
2763.47	31.60	324.58	2539.37	631.20	-456.58	4.73	778.93
2763.62	31.62	324.59	2539.50	631.26	-456.63	3.56	779.01
2763.77	31.65	324.64	2539.63	631.33	-456.67	8.46	779.09
2763.93	31.71	324.71	2539.76	631.39	-456.72	13.62	779.17
2764.08	31.77	324.81	2539.89	631.46	-456.77	15.80	779.25
2764.23	31.83	324.90	2540.02	631.52	-456.81	14.99	779.33
2764.38	31.88	325.01	2540.15	631.59	-456.86	14.72	779.41
2764.54	31.87	325.04	2540.28	631.65	-456.90	3.25	779.49
2764.69	31.83	325.03	2540.41	631.72	-456.95	7.63	779.57
2764.84	31.78	325.00	2540.54	631.79	-457.00	12.07	779.65
2764.99	31.72	324.97	2540.67	631.85	-457.04	12.13	779.73
2765.15	31.64	324.92	2540.80	631.92	-457.09	15.68	779.81
2765.30	31.58	324.88	2540.93	631.98	-457.13	11.94	779.89
2765.45	31.53	324.85	2541.06	632.05	-457.18	10.43	779.97
2765.60	31.48	324.81	2541.19	632.11	-457.23	11.47	780.05
2765.76	31.45	324.78	2541.32	632.18	-457.27	6.74	780.13
2765.91	31.44	324.77	2541.45	632.24	-457.32	2.48	780.21
2766.06	31.44	324.75	2541.58	632.31	-457.36	1.86	780.29
2766.21	31.46	324.75	2541.71	632.37	-457.41	4.15	780.37
2766.36	31.49	324.77	2541.84	632.44	-457.46	7.04	780.45
2766.52	31.55	324.80	2541.97	632.50	-457.50	11.28	780.53

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 12 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2766.67	31.61	324.86	2542.10	632.57	-457.55	14.58	780.61
2766.82	31.71	324.92	2542.23	632.63	-457.59	20.81	780.69
2766.97	31.77	324.95	2542.36	632.70	-457.64	10.80	780.77
2767.13	31.81	324.96	2542.49	632.76	-457.69	7.99	780.85
2767.28	31.84	324.96	2542.62	632.83	-457.73	5.50	780.93
2767.43	31.83	324.92	2542.75	632.90	-457.78	4.50	781.01
2767.58	31.82	324.88	2542.88	632.96	-457.82	3.85	781.09
2767.74	31.81	324.84	2543.01	633.03	-457.87	5.01	781.17
2767.89	31.79	324.77	2543.14	633.09	-457.92	9.36	781.25
2768.04	31.79	324.75	2543.27	633.16	-457.96	1.98	781.33
2768.19	31.80	324.75	2543.40	633.22	-458.01	2.91	781.41
2768.35	31.83	324.75	2543.52	633.29	-458.06	4.12	781.49
2768.50	31.85	324.76	2543.65	633.36	-458.10	5.43	781.57
2768.65	31.87	324.77	2543.78	633.42	-458.15	3.97	781.65
2768.80	31.88	324.77	2543.91	633.49	-458.19	1.88	781.73
2768.96	31.88	324.76	2544.04	633.55	-458.24	0.80	781.81
2769.11	31.87	324.74	2544.17	633.62	-458.29	2.92	781.89
2769.26	31.83	324.70	2544.30	633.68	-458.33	9.33	781.97
2769.41	31.80	324.68	2544.43	633.75	-458.38	6.08	782.05
2769.57	31.77	324.67	2544.56	633.82	-458.43	6.40	782.13
2769.72	31.73	324.66	2544.69	633.88	-458.47	6.88	782.21
2769.87	31.71	324.65	2544.82	633.95	-458.52	5.08	782.29
2770.02	31.68	324.66	2544.95	634.01	-458.57	4.55	782.37
2770.17	31.66	324.66	2545.08	634.08	-458.61	4.03	782.45
2770.33	31.65	324.69	2545.21	634.14	-458.66	4.17	782.53
2770.48	31.64	324.71	2545.34	634.21	-458.70	2.87	782.61
2770.63	31.64	324.75	2545.47	634.27	-458.75	3.74	782.69
2770.78	31.65	324.79	2545.60	634.34	-458.80	4.45	782.77
2770.94	31.64	324.82	2545.73	634.40	-458.84	3.64	782.85
2771.09	31.62	324.85	2545.86	634.47	-458.89	3.72	782.93
2771.24	31.60	324.85	2545.99	634.53	-458.93	4.73	783.01
2771.39	31.56	324.83	2546.12	634.60	-458.98	8.11	783.09
2771.55	31.50	324.76	2546.25	634.66	-459.03	13.67	783.17
2771.70	31.48	324.70	2546.38	634.73	-459.07	7.20	783.25
2771.85	31.46	324.64	2546.51	634.79	-459.12	7.07	783.33
2772.00	31.47	324.61	2546.64	634.86	-459.16	4.28	783.41
2772.16	31.51	324.60	2546.77	634.92	-459.21	7.36	783.49
2772.31	31.57	324.62	2546.90	634.99	-459.26	11.67	783.57
2772.46	31.65	324.66	2547.03	635.05	-459.30	15.91	783.65
2772.61	31.77	324.76	2547.16	635.12	-459.35	25.89	783.73
2772.77	31.82	324.81	2547.29	635.19	-459.40	11.22	783.81
2772.92	31.84	324.84	2547.42	635.25	-459.44	5.61	783.89
2773.07	31.83	324.82	2547.54	635.32	-459.49	2.94	783.97
2773.22	31.78	324.77	2547.67	635.38	-459.53	10.50	784.05
2773.38	31.71	324.70	2547.80	635.45	-459.58	16.62	784.13
2773.53	31.62	324.59	2547.93	635.51	-459.63	20.86	784.21
2773.68	31.53	324.48	2548.06	635.58	-459.67	21.63	784.29
2773.83	31.42	324.33	2548.19	635.64	-459.72	25.19	784.37
2773.98	31.38	324.25	2548.32	635.71	-459.77	11.87	784.45
2774.14	31.37	324.20	2548.45	635.77	-459.81	4.71	784.53
2774.29	31.41	324.21	2548.58	635.84	-459.86	6.65	784.61
2774.44	31.47	324.26	2548.71	635.90	-459.91	13.67	784.69
2774.59	31.56	324.35	2548.84	635.97	-459.95	20.47	784.77
2774.75	31.67	324.47	2548.97	636.03	-460.00	24.99	784.85
2774.90	31.82	324.66	2549.10	636.10	-460.05	34.50	784.93
2775.05	31.89	324.76	2549.23	636.16	-460.09	17.20	785.01
2775.20	31.91	324.81	2549.36	636.23	-460.14	6.34	785.09

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 13 <b>Co-ordinate(N/E) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2775.36	31.89	324.78	2549.49	636.29	-460.18	5.40	785.17
2775.51	31.82	324.69	2549.62	636.36	-460.23	15.68	785.25
2775.66	31.72	324.55	2549.75	636.42	-460.28	24.03	785.33
2775.81	31.56	324.29	2549.88	636.49	-460.32	42.25	785.41
2775.97	31.48	324.13	2550.01	636.55	-460.37	22.65	785.49
2776.12	31.44	324.02	2550.14	636.62	-460.42	13.61	785.57
2776.27	31.44	323.98	2550.27	636.68	-460.46	4.54	785.65
2776.42	31.50	324.00	2550.40	636.75	-460.51	10.40	785.73
2776.58	31.57	324.08	2550.53	636.81	-460.56	17.33	785.81
2776.73	31.70	324.27	2550.66	636.88	-460.60	31.76	785.89
2776.88	31.77	324.39	2550.79	636.94	-460.65	18.93	785.97
2777.03	31.80	324.48	2550.92	637.01	-460.70	10.80	786.05
2777.19	31.79	324.53	2551.05	637.07	-460.74	5.70	786.13
2777.34	31.74	324.54	2551.18	637.14	-460.79	9.56	786.21
2777.49	31.66	324.52	2551.31	637.20	-460.84	16.29	786.29
2777.64	31.53	324.48	2551.44	637.27	-460.88	25.48	786.37
2777.79	31.45	324.44	2551.57	637.33	-460.93	16.76	786.45
2777.95	31.38	324.41	2551.70	637.40	-460.98	13.71	786.53
2778.10	31.36	324.42	2551.83	637.46	-461.02	5.24	786.61
2778.25	31.36	324.46	2551.96	637.53	-461.07	3.48	786.69
2778.40	31.44	324.61	2552.09	637.59	-461.11	22.50	786.77
2778.56	31.49	324.69	2552.22	637.66	-461.16	13.76	786.85
2778.71	31.55	324.77	2552.35	637.72	-461.21	13.93	786.93
2778.86	31.61	324.85	2552.48	637.79	-461.25	14.21	787.01
2779.01	31.64	324.88	2552.61	637.85	-461.30	6.63	787.09
2779.17	31.66	324.88	2552.74	637.92	-461.34	3.86	787.17
2779.32	31.65	324.85	2552.87	637.98	-461.39	4.05	787.25
2779.47	31.63	324.78	2553.00	638.05	-461.44	8.34	787.33
2779.62	31.58	324.70	2553.13	638.11	-461.48	12.22	787.41
2779.78	31.54	324.62	2553.26	638.18	-461.53	11.73	787.49
2779.93	31.52	324.56	2553.39	638.24	-461.58	7.65	787.57
2780.08	31.51	324.53	2553.52	638.31	-461.62	3.12	787.65
2780.23	31.57	324.57	2553.65	638.37	-461.67	11.78	787.73
2780.39	31.61	324.62	2553.78	638.44	-461.71	9.53	787.81
2780.54	31.66	324.69	2553.91	638.50	-461.76	11.62	787.89
2780.69	31.71	324.77	2554.03	638.57	-461.81	13.33	787.97
2780.84	31.75	324.84	2554.16	638.63	-461.85	11.74	788.05
2781.00	31.79	324.91	2554.29	638.70	-461.90	10.57	788.13
2781.15	31.81	324.97	2554.42	638.76	-461.94	6.62	788.21
2781.30	31.80	324.96	2554.55	638.83	-461.99	3.38	788.29
2781.45	31.75	324.93	2554.68	638.90	-462.04	9.52	788.37
2781.60	31.69	324.87	2554.81	638.96	-462.08	12.68	788.45
2781.76	31.63	324.80	2554.94	639.03	-462.13	14.58	788.53
2781.91	31.57	324.72	2555.07	639.09	-462.18	14.23	788.61
2782.06	31.52	324.67	2555.20	639.16	-462.22	11.69	788.69
2782.21	31.52	324.67	2555.33	639.22	-462.27	0.22	788.77
2782.37	31.54	324.70	2555.46	639.29	-462.31	6.48	788.85
2782.52	31.58	324.75	2555.59	639.35	-462.36	9.69	788.93
2782.67	31.63	324.81	2555.72	639.42	-462.41	10.43	789.01
2782.82	31.66	324.84	2555.85	639.48	-462.45	6.11	789.09
2782.98	31.64	324.81	2555.98	639.55	-462.50	4.86	789.17
2783.13	31.60	324.75	2556.11	639.61	-462.54	10.42	789.25
2783.28	31.53	324.65	2556.24	639.68	-462.59	16.43	789.32
2783.43	31.46	324.55	2556.37	639.74	-462.64	16.48	789.40
2783.59	31.41	324.47	2556.50	639.81	-462.68	12.74	789.48
2783.74	31.39	324.42	2556.63	639.87	-462.73	7.27	789.56
2783.89	31.41	324.43	2556.76	639.94	-462.77	5.39	789.64
2784.04	31.46	324.48	2556.89	640.00	-462.82	10.52	789.72



# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey	<b>Date:</b> 30/01/2012	<b>Time:</b> 14:25:56	<b>Page:</b> 15
<b>Field:</b> GWW- Honselersdijk	<b>Co-ordinate(NE) Reference:</b>	<b>Site:</b> HON-GT-01, Grid North	
<b>Site:</b> HON-GT-01	<b>Vertical (TVD) Reference:</b>	Ground Level 0.6	
<b>Well:</b> HON-GT-01	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,325.00Azl)	
<b>Wellpath:</b> HON-GT-01	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Adapti

Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2792.88	31.14	324.03	2564.42	643.77	-465.52	30.31	794.36
2793.03	31.27	324.24	2564.55	643.84	-465.56	33.59	794.43
2793.19	31.42	324.46	2564.68	643.90	-465.61	36.83	794.51
2793.34	31.54	324.64	2564.81	643.96	-465.65	30.57	794.59
2793.49	31.64	324.78	2564.94	644.03	-465.70	23.71	794.67
2793.64	31.68	324.83	2565.07	644.09	-465.75	9.44	794.75
2793.80	31.65	324.81	2565.20	644.16	-465.79	4.78	794.83
2793.95	31.60	324.74	2565.33	644.23	-465.84	13.10	794.91
2794.10	31.53	324.65	2565.46	644.29	-465.89	17.35	794.99
2794.25	31.46	324.57	2565.59	644.36	-465.93	16.13	795.07
2794.41	31.41	324.51	2565.72	644.42	-465.98	11.64	795.15
2794.56	31.38	324.48	2565.85	644.48	-466.02	6.40	795.23
2794.71	31.39	324.54	2565.98	644.55	-466.07	6.82	795.31
2794.86	31.42	324.60	2566.11	644.61	-466.12	8.64	795.39
2795.02	31.47	324.69	2566.24	644.68	-466.16	13.65	795.47
2795.17	31.51	324.76	2566.37	644.74	-466.21	10.87	795.55
2795.32	31.53	324.80	2566.50	644.81	-466.25	5.26	795.63
2795.47	31.53	324.80	2566.63	644.87	-466.30	1.19	795.71
2795.63	31.46	324.68	2566.76	644.94	-466.35	17.21	795.79
2795.78	31.42	324.59	2566.89	645.00	-466.39	12.87	795.87
2795.93	31.38	324.49	2567.02	645.07	-466.44	12.48	795.95
2796.08	31.37	324.42	2567.15	645.13	-466.48	7.70	796.03
2796.24	31.38	324.38	2567.28	645.20	-466.53	5.11	796.11
2796.39	31.41	324.36	2567.41	645.26	-466.58	6.26	796.19
2796.54	31.47	324.37	2567.54	645.33	-466.62	12.42	796.26
2796.69	31.54	324.43	2567.67	645.39	-466.67	13.67	796.34
2796.84	31.60	324.49	2567.80	645.46	-466.72	13.02	796.42
2797.00	31.64	324.54	2567.93	645.52	-466.76	9.68	796.50
2797.15	31.64	324.55	2568.06	645.59	-466.81	1.51	796.58
2797.30	31.64	324.55	2568.19	645.65	-466.85	0.97	796.66
2797.45	31.58	324.48	2568.32	645.72	-466.90	12.68	796.74
2797.61	31.55	324.45	2568.45	645.78	-466.95	7.62	796.82
2797.76	31.53	324.43	2568.58	645.85	-466.99	4.85	796.90
2797.91	31.51	324.42	2568.71	645.91	-467.04	3.18	796.98
2798.06	31.51	324.44	2568.84	645.98	-467.09	2.01	797.06
2798.22	31.53	324.48	2568.97	646.04	-467.13	5.15	797.14
2798.37	31.55	324.55	2569.10	646.11	-467.18	8.40	797.22
2798.52	31.55	324.58	2569.23	646.17	-467.22	3.29	797.30
2798.67	31.53	324.60	2569.36	646.24	-467.27	3.71	797.38
2798.83	31.50	324.59	2569.49	646.30	-467.32	6.11	797.46
2798.98	31.45	324.57	2569.62	646.37	-467.36	9.21	797.54
2799.13	31.40	324.53	2569.75	646.43	-467.41	10.45	797.62
2799.28	31.37	324.51	2569.88	646.50	-467.46	7.08	797.70
2799.44	31.36	324.51	2570.01	646.56	-467.50	2.09	797.78
2799.59	31.37	324.53	2570.14	646.62	-467.55	3.16	797.86
2799.74	31.40	324.56	2570.27	646.69	-467.59	5.75	797.94
2799.89	31.43	324.59	2570.40	646.75	-467.64	7.74	798.02
2800.05	31.48	324.62	2570.53	646.82	-467.69	9.57	798.10
2800.20	31.50	324.63	2570.66	646.88	-467.73	4.37	798.18
2800.35	31.50	324.61	2570.79	646.95	-467.78	2.30	798.26
2800.50	31.50	324.58	2570.92	647.01	-467.82	3.41	798.34
2800.65	31.50	324.54	2571.05	647.08	-467.87	4.27	798.41
2800.81	31.50	324.51	2571.18	647.14	-467.92	3.11	798.49
2800.96	31.51	324.49	2571.31	647.21	-467.96	3.02	798.57
2801.11	31.56	324.52	2571.44	647.27	-468.01	10.86	798.65
2801.26	31.61	324.55	2571.57	647.34	-468.06	9.27	798.73
2801.42	31.65	324.58	2571.70	647.40	-468.10	8.58	798.81
2801.57	31.68	324.60	2571.82	647.47	-468.15	6.11	798.89



# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature
	<b>Time:</b> 14:25:56 <b>Page:</b> 17 <b>Db:</b> Adapti

**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2810.41	31.70	324.36	2579.35	651.24	-470.84	7.00	803.53
2810.56	31.66	324.30	2579.48	651.30	-470.88	8.65	803.61
2810.71	31.63	324.25	2579.61	651.37	-470.93	8.07	803.69
2810.87	31.61	324.22	2579.74	651.43	-470.98	5.21	803.77
2811.02	31.60	324.19	2579.87	651.50	-471.02	3.45	803.85
2811.17	31.62	324.21	2580.00	651.56	-471.07	4.29	803.92
2811.32	31.64	324.25	2580.13	651.63	-471.12	6.47	804.00
2811.48	31.67	324.30	2580.26	651.69	-471.16	7.00	804.08
2811.63	31.70	324.35	2580.39	651.76	-471.21	7.21	804.16
2811.78	31.71	324.39	2580.52	651.82	-471.26	5.25	804.24
2811.93	31.71	324.43	2580.65	651.89	-471.30	3.98	804.33
2812.08	31.69	324.43	2580.78	651.95	-471.35	3.82	804.41
2812.24	31.67	324.41	2580.91	652.02	-471.40	5.14	804.49
2812.39	31.63	324.37	2581.04	652.08	-471.44	8.75	804.57
2812.54	31.59	324.32	2581.17	652.15	-471.49	9.59	804.64
2812.69	31.55	324.24	2581.30	652.21	-471.54	11.28	804.72
2812.85	31.50	324.10	2581.43	652.28	-471.58	17.07	804.80
2813.00	31.48	324.02	2581.56	652.34	-471.63	9.34	804.88
2813.15	31.49	323.98	2581.69	652.41	-471.68	5.26	804.96
2813.30	31.54	323.97	2581.82	652.47	-471.72	8.41	805.04
2813.46	31.61	324.03	2581.95	652.54	-471.77	15.55	805.12
2813.61	31.71	324.13	2582.08	652.60	-471.82	23.16	805.20
2813.76	31.90	324.34	2582.21	652.67	-471.86	41.76	805.28
2813.91	31.98	324.46	2582.34	652.73	-471.91	21.39	805.36
2814.07	32.04	324.55	2582.47	652.80	-471.96	14.32	805.44
2814.22	32.04	324.57	2582.60	652.86	-472.00	2.26	805.53
2814.37	31.97	324.50	2582.73	652.93	-472.05	16.37	805.61
2814.52	31.84	324.39	2582.85	653.00	-472.10	27.71	805.69
2814.68	31.59	324.20	2582.98	653.06	-472.15	52.20	805.77
2814.83	31.43	324.10	2583.11	653.12	-472.19	33.79	805.85
2814.98	31.29	324.05	2583.24	653.19	-472.24	27.93	805.93
2815.13	31.20	324.07	2583.37	653.25	-472.28	18.50	806.00
2815.29	31.16	324.17	2583.50	653.32	-472.33	11.90	806.08
2815.44	31.19	324.32	2583.64	653.38	-472.38	16.50	806.16
2815.59	31.29	324.55	2583.77	653.45	-472.42	30.89	806.24
2815.74	31.38	324.69	2583.90	653.51	-472.47	23.73	806.32
2815.89	31.47	324.77	2584.03	653.57	-472.51	18.33	806.40
2816.05	31.55	324.80	2584.16	653.64	-472.56	16.06	806.48
2816.20	31.60	324.79	2584.29	653.70	-472.61	9.65	806.56
2816.35	31.63	324.75	2584.42	653.77	-472.65	7.72	806.64
2816.50	31.62	324.61	2584.55	653.84	-472.70	14.44	806.72
2816.66	31.61	324.52	2584.67	653.90	-472.75	9.93	806.80
2816.81	31.60	324.43	2584.80	653.97	-472.79	9.02	806.88
2816.96	31.60	324.36	2584.93	654.03	-472.84	7.06	806.96
2817.11	31.60	324.31	2585.06	654.10	-472.88	5.69	807.04
2817.27	31.60	324.22	2585.19	654.16	-472.93	9.00	807.12
2817.42	31.63	324.22	2585.32	654.22	-472.98	6.87	807.20
2817.57	31.67	324.24	2585.45	654.29	-473.03	8.01	807.28
2817.72	31.71	324.25	2585.58	654.35	-473.07	6.81	807.36
2817.88	31.74	324.28	2585.71	654.42	-473.12	7.18	807.44
2818.03	31.76	324.29	2585.84	654.48	-473.17	4.46	807.52
2818.18	31.76	324.28	2585.97	654.55	-473.21	1.22	807.60
2818.33	31.75	324.24	2586.10	654.62	-473.26	5.19	807.68
2818.49	31.73	324.21	2586.23	654.68	-473.31	5.09	807.76
2818.64	31.72	324.18	2586.36	654.75	-473.35	3.56	807.84
2818.79	31.71	324.16	2586.49	654.81	-473.40	2.43	807.92
2818.94	31.71	324.15	2586.62	654.88	-473.45	0.75	808.00
2819.10	31.72	324.16	2586.75	654.94	-473.49	1.94	808.08

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 18 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2819.25	31.73	324.18	2586.88	655.00	-473.54	2.16	808.16
2819.40	31.72	324.18	2587.01	655.07	-473.59	1.12	808.24
2819.55	31.72	324.20	2587.14	655.13	-473.63	1.84	808.32
2819.70	31.72	324.23	2587.27	655.20	-473.68	3.31	808.40
2819.86	31.72	324.26	2587.40	655.26	-473.73	3.19	808.48
2820.01	31.74	324.34	2587.53	655.33	-473.77	9.19	808.56
2820.16	31.75	324.38	2587.66	655.40	-473.82	4.96	808.64
2820.31	31.75	324.42	2587.79	655.46	-473.87	3.49	808.72
2820.47	31.75	324.44	2587.92	655.53	-473.91	2.41	808.80
2820.62	31.74	324.44	2588.05	655.59	-473.96	3.06	808.88
2820.77	31.72	324.42	2588.18	655.66	-474.01	3.72	808.96
2820.92	31.69	324.40	2588.31	655.72	-474.05	6.23	809.04
2821.08	31.67	324.36	2588.43	655.79	-474.10	5.08	809.12
2821.23	31.66	324.34	2588.56	655.85	-474.15	4.06	809.20
2821.38	31.66	324.33	2588.69	655.92	-474.19	0.58	809.28
2821.53	31.67	324.35	2588.82	655.98	-474.24	3.35	809.36
2821.69	31.69	324.38	2588.95	656.05	-474.29	3.95	809.44
2821.84	31.72	324.45	2589.08	656.11	-474.33	10.73	809.52
2821.99	31.73	324.48	2589.21	656.18	-474.38	2.76	809.60
2822.14	31.73	324.50	2589.34	656.24	-474.43	2.64	809.68
2822.30	31.71	324.51	2589.47	656.31	-474.47	2.80	809.76
2822.45	31.69	324.52	2589.60	656.37	-474.52	4.55	809.84
2822.60	31.66	324.50	2589.73	656.44	-474.57	6.13	809.92
2822.75	31.63	324.50	2589.86	656.50	-474.61	6.48	810.00
2822.91	31.59	324.47	2589.99	656.57	-474.66	7.18	810.08
2823.06	31.57	324.44	2590.12	656.63	-474.71	5.31	810.16
2823.21	31.55	324.41	2590.25	656.70	-474.75	5.09	810.24
2823.36	31.53	324.37	2590.38	656.76	-474.80	4.98	810.32
2823.51	31.52	324.33	2590.51	656.83	-474.85	6.01	810.40
2823.67	31.51	324.30	2590.64	656.89	-474.89	3.32	810.48
2823.82	31.51	324.28	2590.77	656.96	-474.94	2.19	810.56
2823.97	31.51	324.26	2590.90	657.02	-474.99	1.58	810.64
2824.12	31.51	324.26	2591.03	657.09	-475.03	1.78	810.72
2824.28	31.53	324.28	2591.16	657.15	-475.08	3.79	810.80
2824.43	31.55	324.30	2591.29	657.22	-475.12	3.99	810.88
2824.58	31.59	324.34	2591.42	657.28	-475.17	8.61	810.96
2824.73	31.59	324.33	2591.55	657.34	-475.22	1.41	811.04
2824.89	31.59	324.31	2591.68	657.41	-475.26	2.50	811.12
2825.04	31.58	324.26	2591.81	657.47	-475.31	5.51	811.20
2825.19	31.56	324.19	2591.94	657.54	-475.36	7.93	811.28
2825.34	31.55	324.13	2592.07	657.60	-475.40	7.20	811.36
2825.50	31.54	324.07	2592.20	657.67	-475.45	6.21	811.44
2825.65	31.55	324.05	2592.33	657.73	-475.50	2.45	811.52
2825.80	31.57	324.06	2592.46	657.80	-475.54	3.70	811.60
2825.95	31.61	324.10	2592.59	657.86	-475.59	8.49	811.68
2826.11	31.64	324.16	2592.72	657.93	-475.64	9.13	811.76
2826.26	31.71	324.26	2592.85	657.99	-475.69	16.04	811.84
2826.41	31.74	324.32	2592.98	658.06	-475.73	8.65	811.92
2826.56	31.75	324.36	2593.11	658.12	-475.78	5.53	812.00
2826.72	31.75	324.38	2593.24	658.19	-475.83	1.92	812.08
2826.87	31.74	324.38	2593.37	658.25	-475.87	1.89	812.16
2827.02	31.72	324.35	2593.50	658.32	-475.92	5.71	812.24
2827.17	31.68	324.28	2593.63	658.38	-475.97	10.19	812.32
2827.32	31.66	324.24	2593.76	658.45	-476.01	5.74	812.40
2827.48	31.64	324.17	2593.89	658.51	-476.06	8.51	812.48
2827.63	31.63	324.13	2594.01	658.58	-476.11	4.79	812.56
2827.78	31.64	324.10	2594.14	658.64	-476.15	3.35	812.64

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2827.93	31.65	324.07	2594.27	658.71	-476.20	3.45	812.72
2828.09	31.70	324.09	2594.40	658.77	-476.25	10.35	812.80
2828.24	31.75	324.12	2594.53	658.84	-476.29	9.33	812.88
2828.39	31.80	324.17	2594.66	658.90	-476.34	12.04	812.96
2828.54	31.85	324.21	2594.79	658.97	-476.39	10.67	813.04
2828.70	31.88	324.25	2594.92	659.03	-476.43	7.43	813.12
2828.85	31.89	324.26	2595.05	659.10	-476.48	2.06	813.20
2829.00	31.86	324.23	2595.18	659.16	-476.53	7.49	813.28
2829.15	31.81	324.17	2595.31	659.23	-476.58	11.69	813.36
2829.31	31.74	324.08	2595.44	659.29	-476.62	16.59	813.44
2829.46	31.65	323.98	2595.57	659.36	-476.67	19.83	813.52
2829.61	31.57	323.87	2595.70	659.42	-476.72	19.58	813.60
2829.76	31.50	323.78	2595.83	659.49	-476.76	15.95	813.68
2829.92	31.46	323.73	2595.96	659.55	-476.81	10.73	813.76
2830.07	31.47	323.75	2596.09	659.61	-476.86	2.52	813.84
2830.22	31.50	323.80	2596.22	659.68	-476.90	8.09	813.92
2830.37	31.56	323.89	2596.35	659.74	-476.95	14.81	814.00
2830.53	31.61	323.98	2596.48	659.81	-477.00	14.87	814.08
2830.68	31.67	324.09	2596.61	659.87	-477.05	15.93	814.16
2830.83	31.73	324.20	2596.74	659.94	-477.09	15.85	814.24
2830.98	31.73	324.25	2596.87	660.00	-477.14	4.75	814.32
2831.13	31.71	324.26	2597.00	660.07	-477.19	4.00	814.40
2831.29	31.67	324.25	2597.13	660.13	-477.23	8.40	814.48
2831.44	31.62	324.23	2597.26	660.20	-477.28	9.87	814.56
2831.59	31.56	324.20	2597.39	660.26	-477.33	11.80	814.64
2831.74	31.49	324.17	2597.52	660.33	-477.37	16.02	814.72
2831.90	31.44	324.15	2597.65	660.39	-477.42	8.58	814.80
2832.05	31.41	324.16	2597.78	660.46	-477.47	6.57	814.88
2832.20	31.39	324.17	2597.91	660.52	-477.51	4.28	814.96
2832.35	31.37	324.19	2598.04	660.58	-477.56	3.86	815.04
2832.51	31.37	324.23	2598.17	660.65	-477.61	3.88	815.12
2832.66	31.37	324.30	2598.30	660.71	-477.65	7.13	815.19
2832.81	31.38	324.34	2598.43	660.78	-477.70	4.76	815.27
2832.96	31.38	324.40	2598.56	660.84	-477.74	5.49	815.35
2833.12	31.38	324.44	2598.69	660.91	-477.79	4.16	815.43
2833.27	31.37	324.47	2598.82	660.97	-477.84	3.83	815.51
2833.42	31.36	324.50	2598.95	661.04	-477.88	3.84	815.59
2833.57	31.32	324.53	2599.08	661.10	-477.93	8.62	815.67
2833.73	31.28	324.55	2599.21	661.16	-477.97	8.24	815.75
2833.88	31.23	324.58	2599.34	661.23	-478.02	9.32	815.83
2834.03	31.18	324.62	2599.47	661.29	-478.07	11.34	815.91
2834.18	31.14	324.70	2599.60	661.36	-478.11	10.93	815.99
2834.34	31.13	324.88	2599.73	661.42	-478.16	18.54	816.07
2834.49	31.15	325.02	2599.86	661.49	-478.20	14.97	816.14
2834.64	31.24	325.19	2599.99	661.55	-478.25	24.41	816.22
2834.79	31.33	325.31	2600.12	661.62	-478.29	22.74	816.30
2834.94	31.46	325.40	2600.25	661.68	-478.34	27.03	816.38
2835.10	31.60	325.43	2600.38	661.75	-478.38	26.72	816.46
2835.25	31.70	325.23	2600.51	661.81	-478.43	28.73	816.54
2835.40	31.73	324.99	2600.64	661.88	-478.47	25.50	816.62
2835.55	31.74	324.71	2600.77	661.94	-478.52	29.23	816.70
2835.71	31.70	324.39	2600.90	662.01	-478.57	34.13	816.78
2835.86	31.66	324.10	2601.03	662.07	-478.61	31.70	816.86
2836.01	31.62	323.85	2601.16	662.14	-478.66	26.53	816.94
2836.16	31.60	323.64	2601.29	662.20	-478.71	21.93	817.02
2836.32	31.64	323.63	2601.42	662.27	-478.76	8.35	817.10
2836.47	31.74	323.73	2601.55	662.33	-478.80	21.42	817.18
2836.62	31.85	323.89	2601.68	662.40	-478.85	27.96	817.26

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 20 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,.325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2836.77	32.00	324.12	2601.81	662.46	-478.90	37.66	817.34
2836.93	32.14	324.34	2601.94	662.53	-478.95	36.48	817.42
2837.08	32.30	324.62	2602.07	662.59	-478.99	43.29	817.50
2837.23	32.36	324.71	2602.19	662.66	-479.04	15.23	817.59
2837.38	32.39	324.76	2602.32	662.73	-479.09	7.74	817.67
2837.54	32.39	324.74	2602.45	662.79	-479.13	2.51	817.75
2837.69	32.35	324.65	2602.58	662.86	-479.18	12.29	817.83
2837.84	32.26	324.49	2602.71	662.93	-479.23	23.72	817.91
2837.99	32.16	324.33	2602.84	662.99	-479.28	25.95	817.99
2838.15	32.05	324.16	2602.97	663.06	-479.32	27.98	818.07
2838.30	31.93	324.00	2603.10	663.12	-479.37	29.34	818.16
2838.45	31.80	323.84	2603.23	663.19	-479.42	30.90	818.24
2838.60	31.66	323.70	2603.36	663.25	-479.46	30.73	818.32
2838.75	31.52	323.56	2603.49	663.32	-479.51	30.35	818.40
2838.91	31.37	323.41	2603.62	663.38	-479.56	33.98	818.48
2839.06	31.26	323.27	2603.75	663.45	-479.61	25.36	818.55
2839.21	31.20	323.17	2603.88	663.51	-479.65	16.37	818.63
2839.36	31.18	323.08	2604.01	663.57	-479.70	10.34	818.71
2839.52	31.20	323.04	2604.14	663.64	-479.75	6.07	818.79
2839.67	31.29	323.06	2604.27	663.70	-479.80	17.80	818.87
2839.82	31.36	323.12	2604.40	663.76	-479.84	15.10	818.95
2839.97	31.42	323.17	2604.53	663.83	-479.89	12.58	819.03
2840.13	31.46	323.24	2604.66	663.89	-479.94	10.74	819.11
2840.28	31.48	323.30	2604.79	663.95	-479.99	7.15	819.19
2840.43	31.48	323.33	2604.92	664.02	-480.03	3.89	819.27
2840.58	31.47	323.39	2605.05	664.08	-480.08	5.73	819.35
2840.74	31.48	323.43	2605.18	664.14	-480.13	4.54	819.43
2840.89	31.49	323.48	2605.31	664.21	-480.18	5.64	819.51
2841.04	31.52	323.55	2605.44	664.27	-480.22	9.50	819.59
2841.19	31.56	323.63	2605.57	664.34	-480.27	11.92	819.67
2841.35	31.60	323.70	2605.70	664.40	-480.32	9.06	819.74
2841.50	31.65	323.80	2605.83	664.47	-480.37	15.60	819.82
2841.65	31.66	323.84	2605.96	664.53	-480.41	3.64	819.90
2841.80	31.63	323.83	2606.09	664.59	-480.46	5.47	819.98
2841.96	31.60	323.83	2606.22	664.66	-480.51	6.19	820.06
2842.11	31.57	323.84	2606.35	664.72	-480.55	6.62	820.14
2842.26	31.53	323.85	2606.48	664.79	-480.60	7.05	820.22
2842.41	31.50	323.92	2606.61	664.85	-480.65	9.30	820.30
2842.56	31.48	323.98	2606.74	664.92	-480.70	7.24	820.38
2842.72	31.46	324.04	2606.87	664.98	-480.74	7.72	820.46
2842.87	31.43	324.09	2607.00	665.05	-480.79	7.72	820.54
2843.02	31.39	324.12	2607.13	665.11	-480.84	8.40	820.62
2843.17	31.34	324.14	2607.26	665.17	-480.88	9.15	820.70
2843.33	31.28	324.14	2607.39	665.24	-480.93	12.72	820.78
2843.48	31.23	324.12	2607.52	665.30	-480.97	9.62	820.86
2843.63	31.19	324.09	2607.65	665.37	-481.02	8.93	820.94
2843.78	31.15	324.04	2607.78	665.43	-481.07	9.20	821.02
2843.94	31.12	324.00	2607.91	665.49	-481.11	6.41	821.10
2844.09	31.10	323.94	2608.04	665.56	-481.16	7.36	821.17
2844.24	31.10	323.88	2608.17	665.62	-481.21	6.30	821.25
2844.39	31.13	323.87	2608.30	665.68	-481.25	5.48	821.33
2844.55	31.15	323.85	2608.43	665.75	-481.30	5.61	821.41
2844.70	31.20	323.85	2608.56	665.81	-481.35	8.11	821.49
2844.85	31.25	323.87	2608.69	665.88	-481.39	10.10	821.57
2845.00	31.28	323.87	2608.82	665.94	-481.44	7.50	821.65
2845.16	31.31	323.82	2608.95	666.00	-481.49	6.56	821.73
2845.31	31.31	323.78	2609.08	666.07	-481.53	4.77	821.81

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 21 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2845.46	31.29	323.69	2609.21	666.13	-481.58	9.83	821.89
2845.61	31.25	323.58	2609.34	666.20	-481.63	14.48	821.96
2845.77	31.21	323.46	2609.47	666.26	-481.67	14.40	822.04
2845.92	31.18	323.36	2609.60	666.32	-481.72	11.62	822.12
2846.07	31.17	323.28	2609.73	666.39	-481.77	8.51	822.20
2846.22	31.22	323.31	2609.86	666.45	-481.81	10.20	822.28
2846.37	31.30	323.40	2609.99	666.51	-481.86	18.79	822.36
2846.53	31.41	323.53	2610.12	666.58	-481.91	26.26	822.44
2846.68	31.55	323.71	2610.25	666.64	-481.96	31.79	822.52
2846.83	31.66	323.86	2610.38	666.70	-482.00	26.77	822.60
2846.98	31.75	323.99	2610.51	666.77	-482.05	23.24	822.68
2847.14	31.75	323.99	2610.64	666.83	-482.10	0.33	822.76
2847.29	31.69	323.90	2610.77	666.90	-482.14	16.00	822.84
2847.44	31.57	323.75	2610.90	666.96	-482.19	27.05	822.92
2847.59	31.44	323.56	2611.03	667.03	-482.24	33.11	823.00
2847.75	31.30	323.37	2611.16	667.09	-482.29	32.87	823.08
2847.90	31.14	323.16	2611.29	667.15	-482.33	38.28	823.16
2848.05	31.09	323.09	2611.42	667.22	-482.38	12.08	823.23
2848.20	31.08	323.09	2611.55	667.28	-482.43	1.53	823.31
2848.36	31.11	323.14	2611.68	667.34	-482.48	7.81	823.39
2848.51	31.20	323.27	2611.81	667.41	-482.52	21.31	823.47
2848.66	31.37	323.53	2611.94	667.47	-482.57	43.53	823.55
2848.81	31.52	323.74	2612.07	667.53	-482.62	34.97	823.63
2848.97	31.67	323.95	2612.20	667.60	-482.66	37.00	823.71
2849.12	31.85	324.21	2612.33	667.66	-482.71	44.13	823.79
2849.27	32.03	324.46	2612.46	667.73	-482.76	43.90	823.87
2849.42	32.14	324.63	2612.59	667.79	-482.80	29.04	823.95
2849.58	32.22	324.74	2612.72	667.86	-482.85	18.84	824.03
2849.73	32.10	324.63	2612.85	667.93	-482.90	25.71	824.11
2849.88	31.88	324.37	2612.98	667.99	-482.95	50.39	824.19
2850.03	31.59	324.00	2613.11	668.06	-482.99	68.48	824.27
2850.18	31.27	323.59	2613.24	668.12	-483.04	75.91	824.35
2850.34	30.97	323.20	2613.37	668.19	-483.09	71.87	824.43
2850.49	30.73	322.89	2613.50	668.25	-483.13	57.43	824.51
2850.64	30.54	322.68	2613.63	668.31	-483.18	42.17	824.59
2850.79	30.56	322.73	2613.76	668.37	-483.23	6.60	824.67
2850.95	30.64	322.90	2613.89	668.43	-483.27	23.74	824.74
2851.10	30.79	323.13	2614.02	668.50	-483.32	36.81	824.82
2851.25	30.93	323.36	2614.16	668.56	-483.37	36.91	824.90
2851.40	31.14	323.67	2614.29	668.62	-483.41	50.64	824.98
2851.56	31.23	323.80	2614.42	668.68	-483.46	22.16	825.06
2851.71	31.31	323.92	2614.55	668.75	-483.51	20.32	825.14
2851.86	31.38	324.01	2614.68	668.81	-483.55	15.88	825.21
2852.01	31.41	324.05	2614.81	668.88	-483.60	8.29	825.29
2852.17	31.48	324.12	2614.94	668.94	-483.65	15.49	825.37
2852.32	31.50	324.11	2615.07	669.01	-483.69	3.84	825.45
2852.47	31.50	324.07	2615.20	669.07	-483.74	4.27	825.53
2852.62	31.50	324.01	2615.33	669.13	-483.79	6.65	825.61
2852.78	31.48	323.91	2615.46	669.20	-483.83	11.30	825.69
2852.93	31.45	323.79	2615.59	669.26	-483.88	12.83	825.77
2853.08	31.43	323.68	2615.72	669.33	-483.93	12.41	825.85
2853.23	31.43	323.56	2615.85	669.39	-483.98	11.64	825.93
2853.39	31.42	323.48	2615.98	669.46	-484.02	8.44	826.01
2853.54	31.43	323.45	2616.11	669.52	-484.07	4.24	826.09
2853.69	31.44	323.42	2616.24	669.58	-484.12	3.11	826.17
2853.84	31.44	323.41	2616.37	669.65	-484.16	1.61	826.25
2853.99	31.45	323.42	2616.50	669.71	-484.21	2.39	826.33
2854.15	31.44	323.40	2616.63	669.77	-484.26	4.20	826.41

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2854.30	31.43	323.40	2616.76	669.84	-484.31	1.38	826.49
2854.45	31.42	323.40	2616.89	669.90	-484.35	2.12	826.57
2854.60	31.40	323.38	2617.02	669.97	-484.40	3.18	826.65
2854.76	31.40	323.39	2617.15	670.03	-484.45	0.81	826.72
2854.91	31.41	323.41	2617.28	670.09	-484.50	3.31	826.80
2855.06	31.43	323.44	2617.41	670.16	-484.54	3.65	826.88
2855.21	31.44	323.46	2617.54	670.22	-484.59	2.90	826.96
2855.37	31.45	323.48	2617.67	670.28	-484.64	3.82	827.04
2855.52	31.46	323.48	2617.80	670.35	-484.69	0.77	827.12
2855.67	31.44	323.46	2617.93	670.41	-484.73	3.76	827.20
2855.82	31.40	323.39	2618.06	670.48	-484.78	10.56	827.28
2855.98	31.35	323.31	2618.19	670.54	-484.83	13.86	827.36
2856.13	31.28	323.21	2618.32	670.60	-484.88	15.99	827.44
2856.28	31.20	323.11	2618.45	670.67	-484.92	18.97	827.52
2856.43	31.11	322.99	2618.58	670.73	-484.97	21.20	827.60
2856.59	31.05	322.91	2618.71	670.79	-485.02	15.68	827.68
2856.74	30.99	322.88	2618.84	670.86	-485.06	11.61	827.75
2856.89	30.97	322.90	2618.97	670.92	-485.11	3.51	827.83
2857.04	30.98	322.95	2619.10	670.98	-485.16	5.63	827.91
2857.20	31.01	323.04	2619.23	671.04	-485.21	9.98	827.99
2857.35	31.05	323.14	2619.36	671.11	-485.25	13.10	828.07
2857.50	31.10	323.24	2619.49	671.17	-485.30	14.07	828.15
2857.65	31.16	323.38	2619.62	671.23	-485.35	18.91	828.23
2857.80	31.18	323.43	2619.75	671.30	-485.40	6.58	828.30
2857.96	31.19	323.46	2619.88	671.36	-485.44	3.00	828.38
2858.11	31.16	323.44	2620.01	671.42	-485.49	4.98	828.46
2858.26	31.13	323.39	2620.14	671.49	-485.54	8.13	828.54
2858.41	31.08	323.31	2620.27	671.55	-485.58	13.51	828.62
2858.57	31.00	323.15	2620.41	671.61	-485.63	22.80	828.70
2858.72	30.96	323.04	2620.54	671.67	-485.68	13.58	828.78
2858.87	30.94	322.94	2620.67	671.74	-485.72	9.99	828.85
2859.02	30.96	322.87	2620.80	671.80	-485.77	7.83	828.93
2859.18	31.01	322.85	2620.93	671.86	-485.82	10.94	829.01
2859.33	31.09	322.86	2621.06	671.92	-485.87	16.24	829.09
2859.48	31.28	322.98	2621.19	671.99	-485.91	37.81	829.17
2859.63	31.41	323.09	2621.32	672.05	-485.96	29.39	829.25
2859.79	31.54	323.20	2621.45	672.11	-486.01	26.82	829.33
2859.94	31.64	323.31	2621.58	672.18	-486.06	23.84	829.41
2860.09	31.72	323.38	2621.71	672.24	-486.11	16.43	829.49
2860.24	31.75	323.42	2621.84	672.31	-486.15	7.94	829.57
2860.40	31.72	323.41	2621.97	672.37	-486.20	5.91	829.65
2860.55	31.65	323.34	2622.10	672.44	-486.25	15.98	829.73
2860.70	31.57	323.28	2622.23	672.50	-486.30	18.03	829.81
2860.85	31.49	323.24	2622.36	672.56	-486.34	15.30	829.89
2861.01	31.43	323.21	2622.49	672.63	-486.39	11.51	829.97
2861.16	31.42	323.23	2622.62	672.69	-486.44	3.23	830.05
2861.31	31.50	323.37	2622.75	672.75	-486.49	20.94	830.13
2861.46	31.57	323.44	2622.88	672.82	-486.53	15.76	830.21
2861.61	31.65	323.51	2623.01	672.88	-486.58	17.22	830.29
2861.77	31.71	323.54	2623.14	672.95	-486.63	11.83	830.37
2861.92	31.74	323.53	2623.27	673.01	-486.68	5.36	830.45
2862.07	31.71	323.45	2623.40	673.08	-486.72	9.85	830.53
2862.22	31.59	323.26	2623.53	673.14	-486.77	30.98	830.61
2862.38	31.48	323.14	2623.66	673.20	-486.82	23.20	830.68
2862.53	31.38	323.03	2623.79	673.27	-486.87	24.53	830.76
2862.68	31.29	322.95	2623.92	673.33	-486.92	19.30	830.84
2862.83	31.23	322.90	2624.05	673.39	-486.96	12.43	830.92

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 23 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2862.99	31.21	322.90	2624.18	673.46	-487.01	4.22	831.00
2863.14	31.23	322.94	2624.31	673.52	-487.06	5.71	831.08
2863.29	31.29	323.00	2624.44	673.58	-487.11	13.06	831.16
2863.44	31.35	323.07	2624.57	673.65	-487.15	14.50	831.24
2863.60	31.41	323.12	2624.70	673.71	-487.20	11.91	831.32
2863.75	31.46	323.14	2624.83	673.77	-487.25	10.30	831.40
2863.90	31.49	323.14	2624.96	673.84	-487.30	6.39	831.48
2864.05	31.52	323.13	2625.09	673.90	-487.34	6.44	831.56
2864.21	31.53	323.10	2625.22	673.96	-487.39	3.56	831.64
2864.36	31.54	323.08	2625.35	674.03	-487.44	3.34	831.72
2864.51	31.57	323.08	2625.48	674.09	-487.49	4.20	831.80
2864.66	31.59	323.09	2625.61	674.16	-487.54	5.02	831.88
2864.82	31.62	323.10	2625.74	674.22	-487.58	5.47	831.96
2864.97	31.63	323.11	2625.87	674.28	-487.63	1.65	832.03
2865.12	31.62	323.10	2626.00	674.35	-487.68	0.70	832.11
2865.27	31.63	323.10	2626.13	674.41	-487.73	0.31	832.19
2865.42	31.63	323.11	2626.26	674.48	-487.78	1.32	832.27
2865.58	31.64	323.13	2626.39	674.54	-487.82	2.01	832.35
2865.73	31.67	323.18	2626.52	674.60	-487.87	8.34	832.43
2865.88	31.69	323.22	2626.64	674.67	-487.92	5.63	832.51
2866.03	31.71	323.25	2626.77	674.73	-487.97	5.08	832.59
2866.19	31.72	323.26	2626.90	674.80	-488.02	2.49	832.67
2866.34	31.71	323.25	2627.03	674.86	-488.06	2.29	832.75
2866.49	31.69	323.21	2627.16	674.92	-488.11	5.86	832.83
2866.64	31.64	323.13	2627.29	674.99	-488.16	12.12	832.91
2866.80	31.61	323.07	2627.42	675.05	-488.21	8.55	832.99
2866.95	31.58	323.02	2627.55	675.12	-488.26	8.53	833.07
2867.10	31.57	322.99	2627.68	675.18	-488.30	4.11	833.15
2867.25	31.57	322.98	2627.81	675.24	-488.35	0.69	833.23
2867.41	31.58	322.99	2627.94	675.31	-488.40	3.00	833.31
2867.56	31.62	323.05	2628.07	675.37	-488.45	10.07	833.39
2867.71	31.65	323.09	2628.20	675.43	-488.50	6.94	833.47
2867.86	31.67	323.13	2628.33	675.50	-488.54	5.51	833.55
2868.02	31.69	323.18	2628.46	675.56	-488.59	6.51	833.63
2868.17	31.69	323.20	2628.59	675.63	-488.64	2.40	833.71
2868.32	31.67	323.20	2628.72	675.69	-488.69	3.89	833.79
2868.47	31.62	323.18	2628.85	675.75	-488.74	9.84	833.87
2868.63	31.58	323.15	2628.98	675.82	-488.78	8.37	833.95
2868.78	31.54	323.12	2629.11	675.88	-488.83	8.43	834.03
2868.93	31.51	323.10	2629.24	675.95	-488.88	7.01	834.11
2869.08	31.49	323.08	2629.37	676.01	-488.93	4.59	834.19
2869.23	31.48	323.08	2629.50	676.07	-488.97	0.61	834.27
2869.39	31.51	323.11	2629.63	676.14	-489.02	5.90	834.35
2869.54	31.55	323.15	2629.76	676.20	-489.07	8.32	834.43
2869.69	31.59	323.20	2629.89	676.26	-489.12	10.15	834.51
2869.84	31.64	323.24	2630.02	676.33	-489.17	9.51	834.59
2870.00	31.67	323.27	2630.15	676.39	-489.21	8.52	834.67
2870.15	31.71	323.30	2630.28	676.46	-489.26	6.65	834.75
2870.30	31.73	323.31	2630.41	676.52	-489.31	5.64	834.83
2870.45	31.75	323.30	2630.54	676.59	-489.36	2.38	834.91
2870.61	31.75	323.28	2630.67	676.65	-489.41	2.17	834.99
2870.76	31.74	323.25	2630.80	676.71	-489.45	2.60	835.07
2870.91	31.74	323.23	2630.93	676.78	-489.50	3.12	835.15
2871.06	31.73	323.19	2631.06	676.84	-489.55	4.29	835.23
2871.22	31.71	323.15	2631.19	676.91	-489.60	4.73	835.31
2871.37	31.71	323.13	2631.32	676.97	-489.65	1.77	835.39
2871.52	31.72	323.13	2631.45	677.03	-489.69	1.17	835.47
2871.67	31.72	323.13	2631.57	677.10	-489.74	1.07	835.55

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 24 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2871.83	31.74	323.16	2631.70	677.16	-489.79	4.65	835.63
2871.98	31.77	323.20	2631.83	677.23	-489.84	7.22	835.71
2872.13	31.82	323.26	2631.96	677.29	-489.89	10.53	835.79
2872.28	31.85	323.31	2632.09	677.36	-489.93	9.21	835.87
2872.44	31.87	323.34	2632.22	677.42	-489.98	3.62	835.95
2872.59	31.86	323.32	2632.35	677.49	-490.03	2.20	836.03
2872.74	31.83	323.28	2632.48	677.55	-490.08	7.21	836.11
2872.89	31.77	323.20	2632.61	677.61	-490.13	14.68	836.19
2873.04	31.66	323.06	2632.74	677.68	-490.17	25.33	836.27
2873.20	31.59	322.95	2632.87	677.74	-490.22	18.75	836.35
2873.35	31.53	322.87	2633.00	677.81	-490.27	14.19	836.43
2873.50	31.49	322.84	2633.13	677.87	-490.32	7.21	836.51
2873.65	31.49	322.84	2633.26	677.93	-490.37	1.73	836.59
2873.81	31.50	322.87	2633.39	678.00	-490.41	4.36	836.67
2873.96	31.53	322.93	2633.52	678.06	-490.46	8.97	836.75
2874.11	31.56	322.99	2633.65	678.12	-490.51	7.77	836.83
2874.26	31.57	323.02	2633.78	678.19	-490.56	4.52	836.91
2874.42	31.58	323.04	2633.91	678.25	-490.61	3.00	836.99
2874.57	31.60	323.06	2634.04	678.31	-490.65	3.18	837.07
2874.72	31.62	323.10	2634.17	678.38	-490.70	5.06	837.15
2874.87	31.65	323.15	2634.30	678.44	-490.75	9.66	837.23
2875.03	31.70	323.22	2634.43	678.51	-490.80	11.55	837.31
2875.18	31.75	323.29	2634.56	678.57	-490.85	12.27	837.39
2875.33	31.79	323.35	2634.69	678.63	-490.89	9.71	837.47
2875.48	31.79	323.34	2634.82	678.70	-490.94	0.51	837.55
2875.64	31.75	323.29	2634.95	678.76	-490.99	9.93	837.63
2875.79	31.63	323.13	2635.08	678.83	-491.04	29.22	837.71
2875.94	31.52	322.98	2635.21	678.89	-491.09	26.33	837.79
2876.09	31.42	322.85	2635.34	678.95	-491.13	22.86	837.87
2876.25	31.36	322.76	2635.47	679.02	-491.18	15.55	837.95
2876.40	31.34	322.74	2635.60	679.08	-491.23	4.78	838.03
2876.55	31.42	322.86	2635.73	679.14	-491.28	20.52	838.11
2876.70	31.50	322.98	2635.86	679.21	-491.33	20.66	838.19
2876.85	31.60	323.11	2635.99	679.27	-491.37	22.53	838.27
2877.01	31.69	323.23	2636.12	679.34	-491.42	22.41	838.35
2877.16	31.75	323.32	2636.25	679.40	-491.47	15.63	838.43
2877.31	31.78	323.34	2636.38	679.46	-491.52	4.79	838.51
2877.46	31.74	323.28	2636.51	679.53	-491.57	9.55	838.59
2877.62	31.69	323.21	2636.63	679.59	-491.61	11.69	838.67
2877.77	31.62	323.11	2636.76	679.66	-491.66	17.19	838.75
2877.92	31.58	323.04	2636.89	679.72	-491.71	12.12	838.83
2878.07	31.55	322.99	2637.02	679.78	-491.76	7.29	838.91
2878.23	31.54	322.98	2637.15	679.85	-491.81	1.78	838.99
2878.38	31.58	323.05	2637.28	679.91	-491.85	11.00	839.07
2878.53	31.65	323.14	2637.41	679.98	-491.90	16.41	839.15
2878.68	31.73	323.26	2637.54	680.04	-491.95	19.18	839.23
2878.84	31.80	323.37	2637.67	680.10	-492.00	17.94	839.31
2878.99	31.84	323.44	2637.80	680.17	-492.05	10.54	839.39
2879.14	31.84	323.46	2637.93	680.23	-492.09	2.94	839.47
2879.29	31.78	323.42	2638.06	680.30	-492.14	12.26	839.55
2879.45	31.72	323.36	2638.19	680.36	-492.19	14.03	839.63
2879.60	31.64	323.28	2638.32	680.43	-492.24	17.40	839.71
2879.75	31.57	323.19	2638.45	680.49	-492.28	16.95	839.79
2879.90	31.51	323.13	2638.58	680.55	-492.33	13.52	839.87
2880.06	31.46	323.07	2638.71	680.62	-492.38	11.10	839.95
2880.21	31.42	323.04	2638.84	680.68	-492.43	8.11	840.03
2880.36	31.42	323.05	2638.97	680.74	-492.48	1.10	840.11

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2880.51	31.45	323.10	2639.10	680.81	-492.52	6.73	840.19
2880.66	31.48	323.15	2639.23	680.87	-492.57	8.29	840.26
2880.82	31.52	323.22	2639.36	680.94	-492.62	10.95	840.34
2880.97	31.60	323.33	2639.49	681.00	-492.67	19.12	840.42
2881.12	31.65	323.41	2639.62	681.06	-492.71	13.62	840.50
2881.27	31.70	323.49	2639.75	681.13	-492.76	12.95	840.58
2881.43	31.74	323.56	2639.88	681.19	-492.81	9.76	840.66
2881.58	31.76	323.60	2640.01	681.26	-492.86	5.58	840.74
2881.73	31.76	323.62	2640.14	681.32	-492.90	2.05	840.82
2881.88	31.74	323.61	2640.27	681.39	-492.95	4.20	840.90
2882.04	31.68	323.56	2640.40	681.45	-493.00	11.62	840.98
2882.19	31.65	323.53	2640.53	681.51	-493.05	7.10	841.06
2882.34	31.62	323.49	2640.66	681.58	-493.09	7.01	841.14
2882.49	31.62	323.47	2640.79	681.64	-493.14	2.15	841.22
2882.65	31.63	323.46	2640.92	681.71	-493.19	2.09	841.30
2882.80	31.64	323.44	2641.05	681.77	-493.24	3.00	841.38
2882.95	31.66	323.40	2641.18	681.84	-493.29	5.55	841.46
2883.10	31.65	323.35	2641.31	681.90	-493.33	5.72	841.54
2883.26	31.65	323.30	2641.44	681.96	-493.38	5.08	841.62
2883.41	31.63	323.23	2641.57	682.03	-493.43	8.12	841.70
2883.56	31.62	323.17	2641.70	682.09	-493.48	6.72	841.78
2883.71	31.60	323.07	2641.83	682.16	-493.52	10.56	841.86
2883.87	31.58	323.01	2641.95	682.22	-493.57	7.87	841.94
2884.02	31.57	322.96	2642.08	682.28	-493.62	4.75	842.02
2884.17	31.58	322.94	2642.21	682.35	-493.67	2.34	842.10
2884.32	31.59	322.93	2642.34	682.41	-493.72	1.97	842.18
2884.47	31.61	322.96	2642.47	682.47	-493.76	5.30	842.26
2884.63	31.66	323.04	2642.60	682.54	-493.81	12.83	842.34
2884.78	31.69	323.09	2642.73	682.60	-493.86	8.31	842.42
2884.93	31.72	323.15	2642.86	682.67	-493.91	7.65	842.50
2885.08	31.74	323.19	2642.99	682.73	-493.96	5.63	842.58
2885.24	31.76	323.22	2643.12	682.80	-494.00	5.09	842.66
2885.39	31.74	323.20	2643.25	682.86	-494.05	4.06	842.74
2885.54	31.72	323.16	2643.38	682.92	-494.10	6.03	842.82
2885.69	31.65	323.06	2643.51	682.99	-494.15	15.98	842.90
2885.85	31.60	322.97	2643.64	683.05	-494.20	15.10	842.98
2886.00	31.54	322.88	2643.77	683.12	-494.25	14.84	843.06
2886.15	31.49	322.82	2643.90	683.18	-494.29	11.05	843.14
2886.30	31.46	322.79	2644.03	683.24	-494.34	6.05	843.22
2886.46	31.48	322.82	2644.16	683.31	-494.39	4.00	843.30
2886.61	31.51	322.89	2644.29	683.37	-494.44	9.52	843.38
2886.76	31.56	322.98	2644.42	683.43	-494.49	13.27	843.46
2886.91	31.60	323.06	2644.55	683.50	-494.53	12.05	843.54
2887.07	31.64	323.14	2644.68	683.56	-494.58	11.64	843.62
2887.22	31.66	323.19	2644.81	683.62	-494.63	6.77	843.70
2887.37	31.67	323.23	2644.94	683.69	-494.68	4.62	843.78
2887.52	31.65	323.20	2645.07	683.75	-494.73	6.05	843.86
2887.68	31.60	323.14	2645.20	683.82	-494.77	10.83	843.94
2887.83	31.56	323.07	2645.33	683.88	-494.82	11.53	844.02
2887.98	31.51	323.01	2645.46	683.94	-494.87	11.16	844.10
2888.13	31.48	322.96	2645.59	684.01	-494.92	7.74	844.18
2888.28	31.49	322.96	2645.72	684.07	-494.96	1.63	844.26
2888.44	31.51	322.98	2645.85	684.13	-495.01	4.16	844.34
2888.59	31.54	323.04	2645.98	684.20	-495.06	8.80	844.42
2888.74	31.58	323.10	2646.11	684.26	-495.11	10.20	844.50
2888.89	31.63	323.18	2646.24	684.33	-495.16	12.01	844.58
2889.05	31.66	323.25	2646.37	684.39	-495.20	9.66	844.66
2889.20	31.70	323.32	2646.50	684.45	-495.25	10.98	844.74

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 26 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2889.35	31.70	323.32	2646.63	684.52	-495.30	0.83	844.82
2889.50	31.69	323.29	2646.76	684.58	-495.35	3.49	844.90
2889.66	31.65	323.21	2646.89	684.65	-495.40	10.53	844.98
2889.81	31.62	323.11	2647.02	684.71	-495.44	12.74	845.06
2889.96	31.58	323.00	2647.15	684.77	-495.49	13.32	845.14
2890.11	31.55	322.86	2647.28	684.84	-495.54	16.12	845.22
2890.27	31.54	322.79	2647.41	684.90	-495.59	7.15	845.30
2890.42	31.56	322.76	2647.54	684.96	-495.64	4.23	845.38
2890.57	31.58	322.75	2647.67	685.03	-495.68	4.47	845.46
2890.72	31.62	322.78	2647.80	685.09	-495.73	8.59	845.54
2890.88	31.67	322.84	2647.93	685.16	-495.78	11.06	845.62
2891.03	31.72	322.93	2648.06	685.22	-495.83	14.40	845.70
2891.18	31.74	322.97	2648.18	685.28	-495.88	5.50	845.78
2891.33	31.75	322.99	2648.31	685.35	-495.93	3.10	845.86
2891.49	31.74	322.98	2648.44	685.41	-495.97	2.30	845.94
2891.64	31.72	322.97	2648.57	685.48	-496.02	4.73	846.02
2891.79	31.69	322.94	2648.70	685.54	-496.07	6.36	846.10
2891.94	31.65	322.89	2648.83	685.60	-496.12	10.04	846.18
2892.09	31.62	322.86	2648.96	685.67	-496.17	6.30	846.26
2892.25	31.59	322.84	2649.09	685.73	-496.22	6.38	846.34
2892.40	31.57	322.83	2649.22	685.79	-496.26	3.34	846.41
2892.55	31.57	322.85	2649.35	685.86	-496.31	1.87	846.49
2892.70	31.59	322.88	2649.48	685.92	-496.36	4.54	846.57
2892.86	31.65	323.00	2649.61	685.99	-496.41	17.40	846.65
2893.01	31.69	323.06	2649.74	686.05	-496.46	9.48	846.73
2893.16	31.71	323.10	2649.87	686.11	-496.50	5.74	846.81
2893.31	31.73	323.12	2650.00	686.18	-496.55	4.34	846.89
2893.47	31.72	323.10	2650.13	686.24	-496.60	2.65	846.97
2893.62	31.71	323.04	2650.26	686.31	-496.65	6.83	847.05
2893.77	31.68	322.97	2650.39	686.37	-496.70	8.95	847.13
2893.92	31.65	322.89	2650.52	686.43	-496.75	9.87	847.21
2894.08	31.61	322.82	2650.65	686.50	-496.79	10.47	847.29
2894.23	31.58	322.74	2650.78	686.56	-496.84	10.11	847.37
2894.38	31.56	322.70	2650.91	686.62	-496.89	5.81	847.45
2894.53	31.53	322.66	2651.04	686.69	-496.94	6.92	847.53
2894.69	31.55	322.68	2651.17	686.75	-496.99	3.42	847.61
2894.84	31.56	322.71	2651.30	686.81	-497.04	4.96	847.69
2894.99	31.58	322.74	2651.43	686.88	-497.08	4.71	847.77
2895.14	31.59	322.77	2651.56	686.94	-497.13	3.69	847.85
2895.30	31.59	322.77	2651.69	687.00	-497.18	1.14	847.93
2895.45	31.57	322.75	2651.82	687.07	-497.23	4.77	848.01
2895.60	31.52	322.69	2651.95	687.13	-497.28	10.03	848.09
2895.75	31.49	322.64	2652.08	687.19	-497.33	9.02	848.17
2895.90	31.46	322.61	2652.21	687.26	-497.37	6.06	848.25
2896.06	31.44	322.59	2652.34	687.32	-497.42	4.01	848.33
2896.21	31.49	322.66	2652.47	687.38	-497.47	11.42	848.41
2896.36	31.51	322.70	2652.60	687.45	-497.52	5.63	848.49
2896.51	31.55	322.77	2652.73	687.51	-497.57	10.67	848.57
2896.67	31.57	322.83	2652.86	687.57	-497.61	7.98	848.65
2896.82	31.59	322.88	2652.99	687.64	-497.66	5.70	848.73
2896.97	31.61	322.94	2653.12	687.70	-497.71	7.64	848.81
2897.12	31.61	323.01	2653.25	687.77	-497.76	7.02	848.89
2897.28	31.62	323.05	2653.38	687.83	-497.81	4.26	848.97
2897.43	31.61	323.07	2653.51	687.89	-497.86	2.71	849.05
2897.58	31.60	323.09	2653.64	687.96	-497.90	2.51	849.13
2897.73	31.58	323.08	2653.77	688.02	-497.95	3.82	849.21
2897.89	31.55	323.06	2653.90	688.09	-498.00	7.49	849.29

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2898.04	31.49	322.99	2654.03	688.15	-498.05	12.94	849.37
2898.19	31.45	322.95	2654.16	688.21	-498.09	9.16	849.45
2898.34	31.42	322.93	2654.29	688.28	-498.14	5.81	849.53
2898.50	31.41	322.94	2654.42	688.34	-498.19	2.50	849.60
2898.65	31.40	322.97	2654.55	688.40	-498.24	2.60	849.68
2898.80	31.44	323.05	2654.68	688.47	-498.29	11.07	849.76
2898.95	31.49	323.17	2654.81	688.53	-498.33	16.14	849.84
2899.11	31.54	323.26	2654.94	688.59	-498.38	12.94	849.92
2899.26	31.58	323.31	2655.07	688.66	-498.43	8.99	850.00
2899.41	31.59	323.33	2655.20	688.72	-498.48	2.60	850.08
2899.56	31.58	323.30	2655.33	688.79	-498.52	3.15	850.16
2899.71	31.54	323.23	2655.46	688.85	-498.57	11.55	850.24
2899.87	31.49	323.15	2655.59	688.91	-498.62	11.84	850.32
2900.02	31.46	323.09	2655.72	688.98	-498.67	8.88	850.40
2900.17	31.45	323.05	2655.85	689.04	-498.72	4.56	850.48
2900.32	31.47	323.05	2655.98	689.10	-498.76	4.14	850.56
2900.48	31.51	323.08	2656.11	689.17	-498.81	9.53	850.64
2900.63	31.62	323.16	2656.23	689.23	-498.86	21.26	850.72
2900.78	31.66	323.16	2656.36	689.30	-498.91	9.64	850.80
2900.93	31.69	323.13	2656.49	689.36	-498.96	6.27	850.88
2901.09	31.70	323.06	2656.62	689.42	-499.00	7.01	850.96
2901.24	31.69	322.97	2656.75	689.49	-499.05	9.62	851.04
2901.39	31.66	322.86	2656.88	689.55	-499.10	13.01	851.12
2901.54	31.63	322.74	2657.01	689.61	-499.15	13.46	851.20
2901.70	31.64	322.72	2657.14	689.68	-499.20	3.18	851.28
2901.85	31.67	322.74	2657.27	689.74	-499.24	7.02	851.36
2902.00	31.72	322.79	2657.40	689.81	-499.29	10.78	851.44
2902.15	31.77	322.83	2657.53	689.87	-499.34	10.59	851.52
2902.31	31.81	322.86	2657.66	689.93	-499.39	8.74	851.60
2902.46	31.81	322.83	2657.79	690.00	-499.44	2.86	851.68
2902.61	31.79	322.75	2657.92	690.06	-499.49	9.70	851.76
2902.76	31.75	322.67	2658.05	690.13	-499.54	11.18	851.84
2902.92	31.71	322.56	2658.18	690.19	-499.58	13.52	851.92
2903.07	31.67	322.47	2658.31	690.25	-499.63	12.71	852.00
2903.22	31.67	322.41	2658.44	690.32	-499.68	5.91	852.08
2903.37	31.71	322.43	2658.57	690.38	-499.73	7.48	852.16
2903.52	31.77	322.50	2658.70	690.44	-499.78	14.04	852.24
2903.68	31.84	322.59	2658.83	690.51	-499.83	17.05	852.32
2903.83	31.90	322.68	2658.96	690.57	-499.88	15.33	852.40
2903.98	31.96	322.77	2659.09	690.63	-499.93	14.29	852.48
2904.13	31.97	322.82	2659.22	690.70	-499.98	5.69	852.56
2904.29	31.94	322.83	2659.35	690.76	-500.02	5.15	852.64
2904.44	31.89	322.82	2659.47	690.83	-500.07	10.33	852.72
2904.59	31.82	322.77	2659.60	690.89	-500.12	14.73	852.80
2904.74	31.76	322.75	2659.73	690.96	-500.17	11.11	852.88
2904.90	31.72	322.78	2659.86	691.02	-500.22	8.50	852.96
2905.05	31.73	322.83	2659.99	691.08	-500.27	5.22	853.04
2905.20	31.77	322.89	2660.12	691.15	-500.32	9.44	853.12
2905.35	31.84	322.98	2660.25	691.21	-500.36	16.69	853.20
2905.51	31.90	323.03	2660.38	691.28	-500.41	12.70	853.28
2905.66	31.93	323.04	2660.51	691.34	-500.46	7.54	853.36
2905.81	31.94	323.00	2660.64	691.40	-500.51	4.28	853.45
2905.96	31.87	322.84	2660.77	691.47	-500.56	22.79	853.53
2906.12	31.75	322.63	2660.90	691.53	-500.61	32.13	853.61
2906.27	31.60	322.40	2661.03	691.60	-500.65	37.38	853.69
2906.42	31.45	322.17	2661.16	691.66	-500.70	37.13	853.77
2906.57	31.34	321.99	2661.29	691.72	-500.75	29.20	853.85
2906.73	31.26	321.88	2661.42	691.78	-500.80	18.27	853.92

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:25:56 <b>Page:</b> 28 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2906.88	31.28	321.92	2661.55	691.85	-500.85	4.87	854.00
2907.03	31.37	322.05	2661.68	691.91	-500.90	21.50	854.08
2907.18	31.47	322.21	2661.81	691.97	-500.95	26.78	854.16
2907.33	31.60	322.39	2661.94	692.03	-501.00	30.27	854.24
2907.49	31.77	322.62	2662.07	692.10	-501.05	41.27	854.32
2907.64	31.84	322.71	2662.20	692.16	-501.09	17.34	854.40
2907.79	31.88	322.75	2662.33	692.23	-501.14	8.69	854.48
2907.94	31.88	322.74	2662.46	692.29	-501.19	1.91	854.56
2908.10	31.85	322.65	2662.59	692.35	-501.24	11.39	854.64
2908.25	31.79	322.53	2662.72	692.42	-501.29	17.64	854.72
2908.40	31.68	322.32	2662.85	692.48	-501.34	29.40	854.80
2908.55	31.63	322.20	2662.98	692.54	-501.39	16.80	854.88
2908.71	31.59	322.11	2663.11	692.61	-501.44	11.55	854.96
2908.86	31.59	322.07	2663.24	692.67	-501.48	4.10	855.04
2909.01	31.62	322.09	2663.37	692.73	-501.53	6.86	855.12
2909.16	31.68	322.16	2663.49	692.80	-501.58	13.89	855.20
2909.32	31.80	322.29	2663.62	692.86	-501.63	26.41	855.28
2909.47	31.86	322.38	2663.75	692.92	-501.68	15.96	855.36
2909.62	31.92	322.45	2663.88	692.99	-501.73	13.03	855.44
2909.77	31.95	322.48	2664.01	693.05	-501.78	6.72	855.52
2909.93	31.95	322.47	2664.14	693.12	-501.83	1.28	855.60
2910.08	31.93	322.44	2664.27	693.18	-501.88	5.15	855.68
2910.23	31.87	322.33	2664.40	693.24	-501.93	16.58	855.76
2910.38	31.83	322.27	2664.53	693.31	-501.98	10.21	855.85
2910.54	31.78	322.21	2664.66	693.37	-502.03	10.22	855.93
2910.69	31.74	322.16	2664.79	693.43	-502.07	9.52	856.01
2910.84	31.71	322.13	2664.92	693.50	-502.12	6.95	856.09
2910.99	31.67	322.11	2665.05	693.56	-502.17	7.84	856.17
2911.14	31.66	322.12	2665.18	693.62	-502.22	2.48	856.25
2911.30	31.66	322.13	2665.31	693.69	-502.27	2.25	856.33
2911.45	31.66	322.18	2665.44	693.75	-502.32	4.59	856.41
2911.60	31.69	322.24	2665.57	693.81	-502.37	8.76	856.49
2911.75	31.73	322.31	2665.70	693.88	-502.42	9.81	856.57
2911.91	31.81	322.44	2665.83	693.94	-502.47	20.89	856.65
2912.06	31.84	322.50	2665.96	694.00	-502.52	8.89	856.73
2912.21	31.87	322.54	2666.09	694.07	-502.56	6.47	856.81
2912.36	31.88	322.55	2666.21	694.13	-502.61	2.71	856.89
2912.52	31.88	322.54	2666.34	694.20	-502.66	0.99	856.97
2912.67	31.88	322.53	2666.47	694.26	-502.71	1.79	857.05
2912.82	31.87	322.48	2666.60	694.32	-502.76	5.31	857.13
2912.97	31.86	322.45	2666.73	694.39	-502.81	3.25	857.21
2913.13	31.85	322.42	2666.86	694.45	-502.86	3.59	857.29
2913.28	31.85	322.40	2666.99	694.51	-502.91	3.17	857.37
2913.43	31.83	322.36	2667.12	694.58	-502.96	4.27	857.45
2913.58	31.81	322.32	2667.25	694.64	-503.01	6.27	857.53
2913.74	31.79	322.26	2667.38	694.70	-503.06	7.58	857.61
2913.89	31.75	322.20	2667.51	694.77	-503.10	9.12	857.69
2914.04	31.72	322.11	2667.64	694.83	-503.15	11.31	857.77
2914.19	31.71	322.07	2667.77	694.89	-503.20	4.89	857.85
2914.35	31.71	322.05	2667.90	694.96	-503.25	2.12	857.93
2914.50	31.73	322.06	2668.03	695.02	-503.30	4.02	858.01
2914.65	31.76	322.08	2668.16	695.08	-503.35	6.18	858.09
2914.80	31.80	322.13	2668.29	695.15	-503.40	9.17	858.17
2914.95	31.84	322.17	2668.42	695.21	-503.45	8.87	858.25
2915.11	31.87	322.22	2668.55	695.27	-503.50	7.37	858.33
2915.26	31.88	322.24	2668.68	695.34	-503.55	2.66	858.41
2915.41	31.87	322.25	2668.80	695.40	-503.60	1.30	858.49

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2915.56	31.85	322.23	2668.93	695.47	-503.65	4.50	858.57
2915.72	31.82	322.21	2669.06	695.53	-503.70	6.76	858.65
2915.87	31.79	322.20	2669.19	695.59	-503.74	6.54	858.73
2916.02	31.76	322.19	2669.32	695.66	-503.79	5.85	858.81
2916.17	31.74	322.22	2669.45	695.72	-503.84	4.71	858.89
2916.33	31.76	322.28	2669.58	695.78	-503.89	6.37	858.97
2916.48	31.79	322.35	2669.71	695.85	-503.94	10.32	859.05
2916.63	31.84	322.45	2669.84	695.91	-503.99	14.06	859.13
2916.78	31.90	322.56	2669.97	695.97	-504.04	15.85	859.21
2916.94	31.94	322.63	2670.10	696.04	-504.09	11.96	859.29
2917.09	31.97	322.69	2670.23	696.10	-504.14	8.87	859.37
2917.24	31.99	322.70	2670.36	696.17	-504.19	2.51	859.46
2917.39	31.96	322.66	2670.49	696.23	-504.23	6.34	859.54
2917.55	31.91	322.58	2670.62	696.29	-504.28	13.09	859.62
2917.70	31.85	322.47	2670.75	696.36	-504.33	16.50	859.70
2917.85	31.78	322.36	2670.88	696.42	-504.38	18.96	859.78
2918.00	31.71	322.24	2671.01	696.49	-504.43	17.40	859.86
2918.16	31.68	322.19	2671.14	696.55	-504.48	8.53	859.94
2918.31	31.66	322.15	2671.27	696.61	-504.53	4.70	860.02
2918.46	31.68	322.17	2671.39	696.68	-504.58	3.74	860.10
2918.61	31.73	322.24	2671.52	696.74	-504.63	12.24	860.18
2918.76	31.78	322.31	2671.65	696.80	-504.68	13.23	860.26
2918.92	31.84	322.39	2671.78	696.87	-504.73	13.12	860.34
2919.07	31.87	322.45	2671.91	696.93	-504.77	9.66	860.42
2919.22	31.89	322.48	2672.04	696.99	-504.82	4.54	860.50
2919.37	31.87	322.47	2672.17	697.06	-504.87	3.56	860.58
2919.53	31.85	322.44	2672.30	697.12	-504.92	6.28	860.66
2919.68	31.82	322.41	2672.43	697.18	-504.97	6.35	860.74
2919.83	31.78	322.38	2672.56	697.25	-505.02	7.51	860.82
2919.98	31.77	322.38	2672.69	697.31	-505.07	2.42	860.90
2920.14	31.79	322.41	2672.82	697.38	-505.12	4.51	860.98
2920.29	31.81	322.46	2672.95	697.44	-505.17	7.76	861.06
2920.44	31.86	322.53	2673.08	697.50	-505.22	10.82	861.14
2920.59	31.92	322.61	2673.21	697.57	-505.26	14.09	861.22
2920.75	31.95	322.65	2673.34	697.63	-505.31	8.58	861.30
2920.90	31.98	322.67	2673.47	697.69	-505.36	5.17	861.38
2921.05	31.98	322.67	2673.60	697.76	-505.41	1.17	861.46
2921.20	31.96	322.63	2673.72	697.82	-505.46	5.78	861.54
2921.36	31.92	322.57	2673.85	697.89	-505.51	9.67	861.62
2921.51	31.88	322.50	2673.98	697.95	-505.56	11.79	861.70
2921.66	31.83	322.44	2674.11	698.01	-505.61	11.06	861.78
2921.81	31.78	322.38	2674.24	698.08	-505.66	12.29	861.86
2921.97	31.75	322.36	2674.37	698.14	-505.70	5.75	861.94
2922.12	31.73	322.36	2674.50	698.21	-505.75	3.29	862.02
2922.27	31.73	322.38	2674.63	698.27	-505.80	2.27	862.10
2922.42	31.75	322.43	2674.76	698.33	-505.85	7.11	862.18
2922.57	31.77	322.49	2674.89	698.40	-505.90	7.95	862.27
2922.73	31.80	322.55	2675.02	698.46	-505.95	7.38	862.35
2922.88	31.81	322.59	2675.15	698.52	-506.00	5.49	862.43
2923.03	31.82	322.62	2675.28	698.59	-506.05	2.36	862.51
2923.18	31.80	322.61	2675.41	698.65	-506.10	3.32	862.59
2923.34	31.77	322.58	2675.54	698.71	-506.14	6.62	862.67
2923.49	31.73	322.54	2675.67	698.78	-506.19	8.02	862.75
2923.64	31.70	322.51	2675.80	698.84	-506.24	6.88	862.83
2923.79	31.68	322.49	2675.93	698.91	-506.29	4.65	862.91
2923.95	31.68	322.50	2676.06	698.97	-506.34	1.05	862.99
2924.10	31.71	322.54	2676.19	699.03	-506.39	6.33	863.07

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 3 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2924.25	31.74	322.58	2676.32	699.10	-506.44	6.84	863.15
2924.40	31.77	322.64	2676.45	699.16	-506.49	9.69	863.23
2924.56	31.80	322.67	2676.58	699.22	-506.53	6.44	863.31
2924.71	31.82	322.69	2676.70	699.29	-506.58	4.27	863.39
2924.86	31.82	322.68	2676.83	699.35	-506.63	1.25	863.47
2925.01	31.79	322.63	2676.96	699.42	-506.68	7.20	863.55
2925.17	31.75	322.56	2677.09	699.48	-506.73	10.40	863.63
2925.32	31.71	322.49	2677.22	699.54	-506.78	10.97	863.71
2925.47	31.67	322.42	2677.35	699.61	-506.83	11.31	863.79
2925.62	31.65	322.37	2677.48	699.67	-506.88	6.76	863.87
2925.78	31.63	322.33	2677.61	699.73	-506.92	5.36	863.95
2925.93	31.63	322.32	2677.74	699.80	-506.97	0.95	864.03
2926.08	31.64	322.32	2677.87	699.86	-507.02	1.81	864.11
2926.23	31.66	322.34	2678.00	699.92	-507.07	4.10	864.19
2926.38	31.68	322.36	2678.13	699.99	-507.12	5.13	864.27
2926.54	31.69	322.37	2678.26	700.05	-507.17	2.45	864.35
2926.69	31.70	322.36	2678.39	700.11	-507.22	0.65	864.43
2926.84	31.69	322.35	2678.52	700.18	-507.27	1.59	864.51
2926.99	31.67	322.33	2678.65	700.24	-507.32	3.74	864.59
2927.15	31.66	322.31	2678.78	700.30	-507.36	4.03	864.67
2927.30	31.64	322.30	2678.91	700.37	-507.41	2.95	864.75
2927.45	31.63	322.30	2679.04	700.43	-507.46	2.54	864.83
2927.60	31.62	322.31	2679.17	700.49	-507.51	1.93	864.91
2927.76	31.63	322.34	2679.30	700.56	-507.56	2.95	864.99
2927.91	31.63	322.36	2679.43	700.62	-507.61	1.57	865.07
2928.06	31.62	322.37	2679.56	700.68	-507.66	1.58	865.15
2928.21	31.61	322.36	2679.69	700.75	-507.71	3.39	865.23
2928.37	31.58	322.34	2679.82	700.81	-507.76	5.32	865.31
2928.52	31.54	322.28	2679.95	700.87	-507.80	10.35	865.39
2928.67	31.49	322.23	2680.08	700.94	-507.85	10.78	865.46
2928.82	31.45	322.16	2680.21	701.00	-507.90	11.28	865.54
2928.98	31.40	322.10	2680.34	701.06	-507.95	10.68	865.62
2929.13	31.38	322.07	2680.47	701.12	-508.00	5.66	865.70
2929.28	31.38	322.06	2680.60	701.19	-508.05	1.50	865.78
2929.43	31.39	322.07	2680.73	701.25	-508.10	3.73	865.86
2929.59	31.44	322.08	2680.86	701.31	-508.15	8.25	865.94
2929.74	31.50	322.11	2680.99	701.37	-508.19	12.63	866.02
2929.89	31.56	322.12	2681.12	701.44	-508.24	12.29	866.10
2930.04	31.64	322.13	2681.25	701.50	-508.29	15.20	866.18
2930.19	31.70	322.11	2681.38	701.56	-508.34	13.50	866.26
2930.35	31.75	322.07	2681.51	701.63	-508.39	10.92	866.34
2930.50	31.80	322.02	2681.64	701.69	-508.44	10.13	866.42
2930.65	31.83	321.96	2681.77	701.75	-508.49	8.05	866.50
2930.80	31.84	321.90	2681.90	701.82	-508.54	6.84	866.58
2930.96	31.84	321.84	2682.02	701.88	-508.59	6.69	866.66
2931.11	31.83	321.79	2682.15	701.94	-508.64	5.63	866.74
2931.26	31.81	321.74	2682.28	702.01	-508.69	6.00	866.82
2931.41	31.79	321.70	2682.41	702.07	-508.74	6.16	866.90
2931.57	31.77	321.69	2682.54	702.13	-508.79	2.59	866.98
2931.72	31.77	321.69	2682.67	702.19	-508.84	1.55	867.06
2931.87	31.77	321.70	2682.80	702.26	-508.89	1.40	867.14
2932.02	31.78	321.74	2682.93	702.32	-508.94	5.42	867.22
2932.18	31.79	321.78	2683.06	702.38	-508.99	4.88	867.30
2932.33	31.80	321.83	2683.19	702.45	-509.04	4.81	867.38
2932.48	31.82	321.89	2683.32	702.51	-509.09	6.93	867.46
2932.63	31.80	321.91	2683.45	702.57	-509.14	3.60	867.54
2932.79	31.78	321.92	2683.58	702.64	-509.18	5.53	867.62
2932.94	31.74	321.94	2683.71	702.70	-509.23	6.62	867.70

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature
	<b>Time:</b> 14:27:23 <b>Page:</b> 4 <b>Db:</b> Adapti

Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2933.09	31.70	321.93	2683.84	702.76	-509.28	9.12	867.78
2933.24	31.64	321.91	2683.97	702.83	-509.33	10.30	867.86
2933.40	31.60	321.90	2684.10	702.89	-509.38	8.49	867.94
2933.55	31.57	321.90	2684.23	702.95	-509.43	6.57	868.02
2933.70	31.54	321.88	2684.36	703.01	-509.48	6.29	868.10
2933.85	31.52	321.88	2684.49	703.08	-509.53	3.46	868.18
2934.00	31.51	321.87	2684.62	703.14	-509.58	2.50	868.26
2934.16	31.49	321.86	2684.75	703.20	-509.63	3.43	868.34
2934.31	31.49	321.85	2684.88	703.26	-509.68	1.73	868.42
2934.46	31.48	321.84	2685.01	703.33	-509.73	2.07	868.50
2934.61	31.47	321.84	2685.14	703.39	-509.78	1.57	868.58
2934.77	31.46	321.85	2685.27	703.45	-509.82	1.67	868.66
2934.92	31.46	321.88	2685.40	703.51	-509.87	2.63	868.74
2935.07	31.45	321.90	2685.53	703.58	-509.92	2.80	868.82
2935.22	31.45	321.94	2685.66	703.64	-509.97	4.28	868.90
2935.38	31.45	321.99	2685.79	703.70	-510.02	4.20	868.98
2935.53	31.45	322.03	2685.92	703.77	-510.07	4.23	869.06
2935.68	31.44	322.06	2686.05	703.83	-510.12	4.09	869.13
2935.83	31.45	322.11	2686.18	703.89	-510.17	4.45	869.21
2935.99	31.46	322.15	2686.31	703.95	-510.22	5.57	869.29
2936.14	31.50	322.23	2686.44	704.02	-510.27	11.33	869.37
2936.29	31.53	322.26	2686.57	704.08	-510.31	6.75	869.45
2936.44	31.57	322.29	2686.70	704.14	-510.36	7.87	869.53
2936.60	31.60	322.31	2686.83	704.21	-510.41	7.48	869.61
2936.75	31.64	322.33	2686.96	704.27	-510.46	6.88	869.69
2936.90	31.66	322.33	2687.09	704.33	-510.51	3.36	869.77
2937.05	31.66	322.32	2687.22	704.40	-510.56	0.90	869.85
2937.21	31.65	322.32	2687.35	704.46	-510.61	1.70	869.93
2937.36	31.63	322.30	2687.48	704.52	-510.66	4.93	870.01
2937.51	31.60	322.28	2687.61	704.59	-510.71	5.97	870.09
2937.66	31.57	322.26	2687.74	704.65	-510.75	6.95	870.17
2937.81	31.54	322.24	2687.87	704.71	-510.80	5.30	870.25
2937.97	31.51	322.22	2688.00	704.77	-510.85	6.82	870.33
2938.12	31.48	322.18	2688.13	704.84	-510.90	7.14	870.41
2938.27	31.45	322.16	2688.25	704.90	-510.95	5.72	870.49
2938.42	31.44	322.16	2688.39	704.96	-511.00	1.86	870.57
2938.58	31.43	322.15	2688.52	705.03	-511.05	2.83	870.65
2938.73	31.42	322.15	2688.65	705.09	-511.10	2.26	870.73
2938.88	31.42	322.17	2688.78	705.15	-511.14	1.99	870.81
2939.03	31.43	322.19	2688.91	705.21	-511.19	3.05	870.89
2939.19	31.44	322.20	2689.04	705.28	-511.24	2.20	870.97
2939.34	31.44	322.19	2689.17	705.34	-511.29	0.94	871.04
2939.49	31.44	322.16	2689.30	705.40	-511.34	3.63	871.12
2939.64	31.41	322.08	2689.43	705.47	-511.39	10.13	871.20
2939.80	31.35	321.94	2689.56	705.53	-511.44	17.96	871.28
2939.95	31.32	321.85	2689.69	705.59	-511.49	11.09	871.36
2940.10	31.31	321.79	2689.82	705.65	-511.53	6.37	871.44
2940.25	31.31	321.75	2689.95	705.71	-511.58	3.65	871.52
2940.41	31.35	321.79	2690.08	705.78	-511.63	8.92	871.60
2940.56	31.42	321.86	2690.21	705.84	-511.68	14.65	871.68
2940.71	31.51	321.98	2690.34	705.90	-511.73	22.93	871.76
2940.86	31.63	322.12	2690.47	705.96	-511.78	26.19	871.84
2941.02	31.70	322.22	2690.60	706.03	-511.83	18.24	871.92
2941.17	31.76	322.27	2690.73	706.09	-511.88	11.99	872.00
2941.32	31.76	322.25	2690.86	706.15	-511.93	2.71	872.08
2941.47	31.72	322.14	2690.98	706.22	-511.98	13.98	872.16
2941.62	31.64	321.98	2691.11	706.28	-512.03	23.61	872.24

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 5 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,.325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2941.78	31.54	321.79	2691.24	706.34	-512.07	27.07	872.32
2941.93	31.44	321.60	2691.37	706.41	-512.12	28.43	872.40
2942.08	31.36	321.45	2691.50	706.47	-512.17	21.46	872.48
2942.23	31.32	321.36	2691.63	706.53	-512.22	11.86	872.55
2942.39	31.32	321.33	2691.76	706.59	-512.27	2.54	872.63
2942.54	31.36	321.37	2691.89	706.65	-512.32	7.91	872.71
2942.69	31.40	321.43	2692.02	706.72	-512.37	10.83	872.79
2942.84	31.45	321.51	2692.15	706.78	-512.42	12.91	872.87
2943.00	31.51	321.62	2692.28	706.84	-512.47	15.26	872.95
2943.15	31.52	321.66	2692.41	706.90	-512.52	5.54	873.03
2943.30	31.52	321.68	2692.54	706.97	-512.57	2.04	873.11
2943.45	31.52	321.70	2692.67	707.03	-512.62	2.77	873.19
2943.61	31.52	321.73	2692.80	707.09	-512.67	3.06	873.27
2943.76	31.54	321.79	2692.93	707.15	-512.72	6.80	873.35
2943.91	31.57	321.86	2693.06	707.22	-512.77	9.49	873.43
2944.06	31.61	321.95	2693.19	707.28	-512.82	12.57	873.51
2944.22	31.64	322.02	2693.32	707.34	-512.87	9.32	873.59
2944.37	31.66	322.09	2693.45	707.40	-512.91	7.68	873.67
2944.52	31.66	322.14	2693.58	707.47	-512.96	4.81	873.75
2944.67	31.62	322.13	2693.71	707.53	-513.01	7.35	873.83
2944.83	31.56	322.09	2693.84	707.59	-513.06	12.06	873.91
2944.98	31.49	322.02	2693.97	707.66	-513.11	16.22	873.99
2945.13	31.41	321.93	2694.10	707.72	-513.16	18.42	874.07
2945.28	31.34	321.84	2694.23	707.78	-513.21	16.60	874.15
2945.43	31.30	321.79	2694.36	707.84	-513.26	9.62	874.22
2945.59	31.29	321.77	2694.49	707.91	-513.31	2.04	874.30
2945.74	31.33	321.80	2694.62	707.97	-513.36	7.12	874.38
2945.89	31.41	321.91	2694.75	708.03	-513.40	20.82	874.46
2946.04	31.59	322.12	2694.88	708.09	-513.45	40.20	874.54
2946.20	31.70	322.26	2695.01	708.16	-513.50	26.62	874.62
2946.35	31.78	322.35	2695.14	708.22	-513.55	18.14	874.70
2946.50	31.80	322.37	2695.27	708.28	-513.60	5.15	874.78
2946.65	31.76	322.29	2695.40	708.35	-513.65	11.02	874.86
2946.81	31.67	322.13	2695.53	708.41	-513.70	25.27	874.94
2946.96	31.52	321.90	2695.66	708.47	-513.75	36.90	875.02
2947.11	31.37	321.66	2695.79	708.54	-513.80	38.61	875.10
2947.26	31.24	321.45	2695.92	708.60	-513.85	33.46	875.18
2947.42	31.15	321.30	2696.05	708.66	-513.90	24.06	875.26
2947.57	31.11	321.24	2696.18	708.72	-513.94	9.28	875.34
2947.72	31.14	321.28	2696.31	708.78	-513.99	6.85	875.42
2947.87	31.22	321.39	2696.44	708.84	-514.04	18.88	875.49
2948.03	31.31	321.54	2696.57	708.91	-514.09	23.59	875.57
2948.18	31.41	321.69	2696.70	708.97	-514.14	25.27	875.65
2948.33	31.49	321.82	2696.83	709.03	-514.19	21.11	875.73
2948.48	31.55	321.90	2696.96	709.09	-514.24	13.89	875.81
2948.64	31.57	321.94	2697.09	709.16	-514.29	5.81	875.89
2948.79	31.58	321.95	2697.22	709.22	-514.34	1.50	875.97
2948.94	31.57	321.94	2697.35	709.28	-514.39	2.60	876.05
2949.09	31.55	321.92	2697.48	709.35	-514.44	4.22	876.13
2949.24	31.53	321.92	2697.61	709.41	-514.49	2.55	876.21
2949.40	31.55	321.98	2697.74	709.47	-514.54	7.03	876.29
2949.55	31.55	322.01	2697.87	709.53	-514.58	3.37	876.37
2949.70	31.55	322.04	2698.00	709.60	-514.63	2.52	876.45
2949.85	31.54	322.03	2698.13	709.66	-514.68	3.41	876.53
2950.01	31.51	322.01	2698.26	709.72	-514.73	5.86	876.61
2950.16	31.47	321.96	2698.39	709.78	-514.78	8.98	876.69
2950.31	31.42	321.90	2698.52	709.85	-514.83	11.76	876.77
2950.46	31.38	321.83	2698.65	709.91	-514.88	11.66	876.85

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 6 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Az) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2950.62	31.35	321.79	2698.78	709.97	-514.93	6.16	876.93
2950.77	31.35	321.77	2698.91	710.03	-514.98	1.62	877.00
2950.92	31.37	321.79	2699.04	710.10	-515.03	5.16	877.08
2951.07	31.43	321.87	2699.17	710.16	-515.07	13.29	877.16
2951.23	31.50	321.96	2699.30	710.22	-515.12	17.05	877.24
2951.38	31.58	322.05	2699.43	710.28	-515.17	17.57	877.32
2951.53	31.64	322.13	2699.56	710.35	-515.22	15.32	877.40
2951.68	31.68	322.17	2699.69	710.41	-515.27	9.43	877.48
2951.84	31.68	322.15	2699.82	710.47	-515.32	2.60	877.56
2951.99	31.65	322.08	2699.95	710.54	-515.37	9.72	877.64
2952.14	31.58	321.97	2700.08	710.60	-515.42	16.79	877.72
2952.29	31.50	321.83	2700.21	710.66	-515.47	21.14	877.80
2952.45	31.43	321.71	2700.34	710.73	-515.52	19.52	877.88
2952.60	31.37	321.60	2700.47	710.79	-515.57	15.23	877.96
2952.75	31.34	321.54	2700.60	710.85	-515.62	9.55	878.04
2952.90	31.34	321.52	2700.73	710.91	-515.66	1.46	878.12
2953.05	31.37	321.55	2700.86	710.97	-515.71	6.06	878.20
2953.21	31.42	321.62	2700.99	711.04	-515.76	13.55	878.28
2953.36	31.46	321.67	2701.12	711.10	-515.81	9.32	878.36
2953.51	31.49	321.70	2701.25	711.16	-515.86	6.22	878.44
2953.66	31.50	321.70	2701.38	711.22	-515.91	1.46	878.51
2953.82	31.50	321.68	2701.51	711.29	-515.96	2.13	878.59
2953.97	31.48	321.64	2701.64	711.35	-516.01	4.56	878.67
2954.12	31.46	321.59	2701.77	711.41	-516.06	7.05	878.75
2954.27	31.44	321.56	2701.90	711.47	-516.11	5.60	878.83
2954.43	31.42	321.53	2702.03	711.54	-516.16	3.80	878.91
2954.58	31.42	321.52	2702.16	711.60	-516.21	0.97	878.99
2954.73	31.42	321.53	2702.29	711.66	-516.26	0.34	879.07
2954.88	31.44	321.57	2702.42	711.72	-516.31	6.18	879.15
2955.04	31.47	321.62	2702.55	711.78	-516.36	7.99	879.23
2955.19	31.50	321.67	2702.68	711.85	-516.41	7.83	879.31
2955.34	31.54	321.74	2702.81	711.91	-516.45	11.27	879.39
2955.49	31.57	321.79	2702.94	711.97	-516.50	7.61	879.47
2955.65	31.58	321.80	2703.07	712.03	-516.55	2.25	879.55
2955.80	31.58	321.80	2703.20	712.10	-516.60	0.88	879.63
2955.95	31.56	321.76	2703.33	712.16	-516.65	5.96	879.71
2956.10	31.52	321.69	2703.46	712.22	-516.70	9.73	879.79
2956.26	31.48	321.61	2703.59	712.28	-516.75	12.37	879.87
2956.41	31.43	321.54	2703.72	712.35	-516.80	11.12	879.95
2956.56	31.40	321.47	2703.85	712.41	-516.85	8.94	880.02
2956.71	31.39	321.41	2703.98	712.47	-516.90	7.01	880.10
2956.86	31.41	321.42	2704.11	712.53	-516.95	3.92	880.18
2957.02	31.42	321.43	2704.24	712.60	-517.00	3.99	880.26
2957.17	31.45	321.46	2704.37	712.66	-517.05	6.64	880.34
2957.32	31.48	321.49	2704.50	712.72	-517.10	5.90	880.42
2957.47	31.49	321.50	2704.63	712.78	-517.15	2.54	880.50
2957.63	31.48	321.49	2704.76	712.84	-517.20	1.80	880.58
2957.78	31.47	321.48	2704.89	712.91	-517.25	2.40	880.66
2957.93	31.43	321.44	2705.02	712.97	-517.30	9.11	880.74
2958.08	31.40	321.39	2705.15	713.03	-517.35	9.21	880.82
2958.24	31.36	321.33	2705.28	713.09	-517.39	9.46	880.90
2958.39	31.33	321.28	2705.41	713.15	-517.44	8.05	880.98
2958.54	31.31	321.24	2705.54	713.22	-517.49	5.45	881.06
2958.69	31.31	321.23	2705.67	713.28	-517.54	1.55	881.13
2958.85	31.33	321.24	2705.80	713.34	-517.59	3.93	881.21
2959.00	31.37	321.27	2705.93	713.40	-517.64	7.32	881.29
2959.15	31.41	321.32	2706.06	713.46	-517.69	10.46	881.37

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 7 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2959.30	31.45	321.38	2706.19	713.53	-517.74	10.44	881.45
2959.46	31.48	321.44	2706.32	713.59	-517.79	8.36	881.53
2959.61	31.50	321.48	2706.45	713.65	-517.84	6.07	881.61
2959.76	31.50	321.51	2706.58	713.71	-517.89	2.47	881.69
2959.91	31.48	321.50	2706.71	713.78	-517.94	4.66	881.77
2960.07	31.44	321.48	2706.84	713.84	-517.99	7.80	881.85
2960.22	31.38	321.42	2706.97	713.90	-518.04	14.03	881.93
2960.37	31.35	321.38	2707.10	713.96	-518.09	7.32	882.01
2960.52	31.33	321.35	2707.23	714.02	-518.14	4.19	882.09
2960.67	31.33	321.33	2707.36	714.09	-518.19	1.97	882.16
2960.83	31.35	321.33	2707.49	714.15	-518.24	3.78	882.24
2960.98	31.38	321.35	2707.62	714.21	-518.29	6.90	882.32
2961.13	31.43	321.39	2707.75	714.27	-518.34	9.33	882.40
2961.28	31.47	321.43	2707.88	714.33	-518.39	9.00	882.48
2961.44	31.51	321.49	2708.01	714.40	-518.44	9.97	882.56
2961.59	31.54	321.54	2708.14	714.46	-518.49	8.29	882.64
2961.74	31.55	321.59	2708.27	714.52	-518.53	5.47	882.72
2961.89	31.55	321.63	2708.40	714.58	-518.58	3.69	882.80
2962.05	31.53	321.63	2708.53	714.65	-518.63	4.36	882.88
2962.20	31.50	321.62	2708.66	714.71	-518.68	7.25	882.96
2962.35	31.45	321.58	2708.79	714.77	-518.73	10.27	883.04
2962.50	31.40	321.52	2708.92	714.83	-518.78	11.54	883.12
2962.66	31.35	321.44	2709.05	714.89	-518.83	12.59	883.20
2962.81	31.31	321.37	2709.18	714.96	-518.88	10.83	883.28
2962.96	31.29	321.32	2709.31	715.02	-518.93	6.84	883.35
2963.11	31.28	321.28	2709.44	715.08	-518.98	3.96	883.43
2963.27	31.30	321.29	2709.57	715.14	-519.03	4.35	883.51
2963.42	31.34	321.31	2709.70	715.20	-519.08	7.51	883.59
2963.57	31.39	321.36	2709.83	715.27	-519.13	11.45	883.67
2963.72	31.43	321.41	2709.96	715.33	-519.18	9.93	883.75
2963.88	31.47	321.46	2710.09	715.39	-519.23	9.15	883.83
2964.03	31.50	321.51	2710.22	715.45	-519.28	8.28	883.91
2964.18	31.50	321.51	2710.35	715.51	-519.33	0.86	883.99
2964.33	31.48	321.50	2710.48	715.58	-519.38	3.45	884.07
2964.48	31.45	321.47	2710.61	715.64	-519.43	6.86	884.15
2964.64	31.41	321.44	2710.74	715.70	-519.48	8.43	884.23
2964.79	31.37	321.41	2710.87	715.76	-519.53	8.61	884.31
2964.94	31.34	321.40	2711.00	715.83	-519.57	6.11	884.39
2965.09	31.32	321.40	2711.13	715.89	-519.62	3.90	884.46
2965.25	31.32	321.43	2711.26	715.95	-519.67	3.05	884.54
2965.40	31.34	321.49	2711.39	716.01	-519.72	6.59	884.62
2965.55	31.37	321.56	2711.52	716.07	-519.77	9.27	884.70
2965.70	31.41	321.64	2711.66	716.14	-519.82	12.21	884.78
2965.86	31.47	321.73	2711.79	716.20	-519.87	14.08	884.86
2966.01	31.51	321.79	2711.92	716.26	-519.92	10.90	884.94
2966.16	31.56	321.85	2712.04	716.32	-519.97	10.63	885.02
2966.31	31.58	321.86	2712.17	716.39	-520.02	3.87	885.10
2966.47	31.57	321.84	2712.30	716.45	-520.07	2.03	885.18
2966.62	31.56	321.79	2712.43	716.51	-520.12	6.07	885.26
2966.77	31.51	321.71	2712.56	716.57	-520.17	12.63	885.34
2966.92	31.46	321.61	2712.69	716.64	-520.22	14.39	885.42
2967.08	31.41	321.52	2712.82	716.70	-520.27	13.41	885.50
2967.23	31.37	321.44	2712.95	716.76	-520.31	10.81	885.58
2967.38	31.36	321.40	2713.08	716.82	-520.36	5.10	885.66
2967.53	31.36	321.41	2713.21	716.88	-520.41	0.96	885.73
2967.69	31.38	321.45	2713.34	716.95	-520.46	6.20	885.81
2967.84	31.42	321.50	2713.47	717.01	-520.51	8.30	885.89
2967.99	31.46	321.57	2713.60	717.07	-520.56	10.99	885.97

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 8 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2968.14	31.49	321.64	2713.73	717.13	-520.61	9.34	886.05
2968.29	31.50	321.70	2713.86	717.20	-520.66	6.63	886.13
2968.45	31.50	321.73	2713.99	717.26	-520.71	3.56	886.21
2968.60	31.49	321.74	2714.12	717.32	-520.76	3.25	886.29
2968.75	31.46	321.73	2714.25	717.38	-520.81	6.31	886.37
2968.90	31.41	321.68	2714.38	717.45	-520.86	11.32	886.45
2969.06	31.34	321.61	2714.51	717.51	-520.91	14.27	886.53
2969.21	31.29	321.54	2714.65	717.57	-520.96	13.12	886.61
2969.36	31.24	321.47	2714.78	717.63	-521.01	11.67	886.69
2969.51	31.21	321.43	2714.91	717.69	-521.05	7.52	886.76
2969.67	31.21	321.43	2715.04	717.76	-521.10	0.18	886.84
2969.82	31.23	321.46	2715.17	717.82	-521.15	5.50	886.92
2969.97	31.27	321.53	2715.30	717.88	-521.20	10.51	887.00
2970.12	31.34	321.62	2715.43	717.94	-521.25	15.96	887.08
2970.28	31.39	321.70	2715.56	718.00	-521.30	13.65	887.16
2970.43	31.44	321.78	2715.69	718.07	-521.35	12.58	887.24
2970.58	31.46	321.81	2715.82	718.13	-521.40	5.49	887.32
2970.73	31.46	321.81	2715.95	718.19	-521.45	0.76	887.40
2970.89	31.44	321.78	2716.08	718.25	-521.50	4.22	887.48
2971.04	31.40	321.72	2716.21	718.32	-521.55	10.48	887.56
2971.19	31.36	321.65	2716.34	718.38	-521.60	11.07	887.64
2971.34	31.32	321.59	2716.47	718.44	-521.65	9.49	887.71
2971.50	31.30	321.54	2716.60	718.50	-521.69	7.08	887.79
2971.65	31.28	321.49	2716.73	718.56	-521.74	5.58	887.87
2971.80	31.28	321.46	2716.86	718.63	-521.79	3.03	887.95
2971.95	31.28	321.45	2716.99	718.69	-521.84	1.90	888.03
2972.10	31.28	321.43	2717.12	718.75	-521.89	1.80	888.11
2972.26	31.29	321.43	2717.25	718.81	-521.94	2.28	888.19
2972.41	31.31	321.43	2717.38	718.87	-521.99	2.72	888.27
2972.56	31.32	321.44	2717.51	718.94	-522.04	3.38	888.35
2972.71	31.35	321.46	2717.64	719.00	-522.09	5.27	888.43
2972.87	31.37	321.49	2717.77	719.06	-522.14	4.93	888.51
2973.02	31.39	321.51	2717.90	719.12	-522.19	4.99	888.58
2973.17	31.41	321.54	2718.03	719.18	-522.24	4.73	888.66
2973.32	31.42	321.56	2718.16	719.25	-522.29	2.00	888.74
2973.48	31.42	321.57	2718.29	719.31	-522.34	2.09	888.82
2973.63	31.41	321.58	2718.42	719.37	-522.39	1.40	888.90
2973.78	31.40	321.57	2718.55	719.43	-522.43	3.31	888.98
2973.93	31.39	321.57	2718.68	719.49	-522.48	2.01	889.06
2974.09	31.37	321.58	2718.81	719.56	-522.53	2.67	889.14
2974.24	31.36	321.58	2718.94	719.62	-522.58	2.38	889.22
2974.39	31.35	321.60	2719.07	719.68	-522.63	3.35	889.30
2974.54	31.35	321.63	2719.20	719.74	-522.68	2.79	889.38
2974.70	31.35	321.66	2719.33	719.81	-522.73	3.08	889.46
2974.85	31.34	321.68	2719.46	719.87	-522.78	2.46	889.53
2975.00	31.34	321.71	2719.59	719.93	-522.83	2.67	889.61
2975.15	31.33	321.72	2719.72	719.99	-522.88	2.20	889.69
2975.31	31.32	321.72	2719.85	720.05	-522.93	1.22	889.77
2975.46	31.32	321.72	2719.98	720.12	-522.98	1.52	889.85
2975.61	31.32	321.70	2720.11	720.18	-523.03	1.36	889.93
2975.76	31.32	321.69	2720.24	720.24	-523.07	1.81	890.01
2975.91	31.33	321.67	2720.37	720.30	-523.12	2.24	890.09
2976.07	31.33	321.64	2720.50	720.36	-523.17	3.10	890.17
2976.22	31.34	321.63	2720.63	720.43	-523.22	2.29	890.25
2976.37	31.34	321.61	2720.76	720.49	-523.27	2.09	890.33
2976.52	31.34	321.61	2720.89	720.55	-523.32	0.48	890.41
2976.68	31.33	321.60	2721.02	720.61	-523.37	1.58	890.48

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2976.83	31.33	321.61	2721.15	720.68	-523.42	1.28	890.56
2976.98	31.33	321.63	2721.28	720.74	-523.47	1.30	890.64
2977.13	31.33	321.63	2721.41	720.80	-523.52	0.59	890.72
2977.29	31.33	321.64	2721.54	720.86	-523.57	1.51	890.80
2977.44	31.34	321.64	2721.67	720.92	-523.62	0.80	890.88
2977.59	31.34	321.62	2721.80	720.99	-523.66	1.86	890.96
2977.74	31.34	321.57	2721.93	721.05	-523.71	5.04	891.04
2977.90	31.31	321.46	2722.06	721.11	-523.76	12.74	891.12
2978.05	31.29	321.35	2722.19	721.17	-523.81	11.26	891.20
2978.20	31.27	321.24	2722.32	721.23	-523.86	12.55	891.28
2978.35	31.26	321.13	2722.46	721.30	-523.91	10.95	891.35
2978.51	31.25	321.02	2722.59	721.36	-523.96	12.42	891.43
2978.66	31.24	320.91	2722.72	721.42	-524.01	11.03	891.51
2978.81	31.27	320.86	2722.85	721.48	-524.06	7.48	891.59
2978.96	31.30	320.83	2722.98	721.54	-524.11	7.08	891.67
2979.12	31.34	320.83	2723.11	721.60	-524.16	8.16	891.75
2979.27	31.39	320.85	2723.24	721.66	-524.21	10.07	891.83
2979.42	31.43	320.88	2723.37	721.73	-524.26	8.93	891.91
2979.57	31.45	320.90	2723.50	721.79	-524.31	4.45	891.99
2979.72	31.45	320.91	2723.63	721.85	-524.36	1.77	892.07
2979.88	31.42	320.92	2723.76	721.91	-524.41	5.89	892.14
2980.03	31.36	320.91	2723.89	721.97	-524.46	11.01	892.22
2980.18	31.32	320.96	2724.02	722.03	-524.51	9.79	892.30
2980.33	31.28	321.03	2724.15	722.10	-524.56	10.81	892.38
2980.49	31.26	321.15	2724.28	722.16	-524.61	12.87	892.46
2980.64	31.29	321.35	2724.41	722.22	-524.66	21.58	892.54
2980.79	31.36	321.59	2724.54	722.28	-524.71	27.39	892.62
2980.94	31.43	321.81	2724.67	722.34	-524.76	26.79	892.70
2981.10	31.51	322.00	2724.80	722.41	-524.81	24.96	892.78
2981.25	31.57	322.15	2724.93	722.47	-524.86	19.54	892.86
2981.40	31.55	322.13	2725.06	722.53	-524.91	5.42	892.94
2981.55	31.49	322.02	2725.19	722.59	-524.96	16.49	893.02
2981.71	31.39	321.83	2725.32	722.66	-525.00	27.38	893.10
2981.86	31.28	321.61	2725.45	722.72	-525.05	31.89	893.18
2982.01	31.18	321.39	2725.58	722.78	-525.10	29.45	893.25
2982.16	31.12	321.21	2725.71	722.84	-525.15	21.28	893.33
2982.32	31.09	321.09	2725.84	722.90	-525.20	13.74	893.41
2982.47	31.11	321.06	2725.97	722.97	-525.25	5.67	893.49
2982.62	31.15	321.07	2726.10	723.03	-525.30	8.86	893.57
2982.77	31.22	321.14	2726.23	723.09	-525.35	14.90	893.65
2982.93	31.30	321.24	2726.36	723.15	-525.40	18.31	893.73
2983.08	31.36	321.35	2726.49	723.21	-525.45	16.58	893.80
2983.23	31.39	321.42	2726.62	723.27	-525.50	9.22	893.88
2983.38	31.39	321.46	2726.75	723.34	-525.55	4.14	893.96
2983.53	31.37	321.47	2726.88	723.40	-525.60	4.13	894.04
2983.69	31.33	321.45	2727.01	723.46	-525.65	7.97	894.12
2983.84	31.28	321.41	2727.14	723.52	-525.70	10.37	894.20
2983.99	31.23	321.37	2727.27	723.58	-525.75	11.06	894.28
2984.14	31.19	321.33	2727.40	723.64	-525.79	10.18	894.36
2984.30	31.16	321.33	2727.53	723.71	-525.84	4.80	894.44
2984.45	31.17	321.37	2727.66	723.77	-525.89	4.53	894.52
2984.60	31.22	321.48	2727.79	723.83	-525.94	15.19	894.59
2984.75	31.35	321.71	2727.92	723.89	-525.99	35.05	894.67
2984.91	31.46	321.88	2728.05	723.95	-526.04	27.29	894.75
2985.06	31.55	322.01	2728.18	724.02	-526.09	22.55	894.83
2985.21	31.62	322.09	2728.31	724.08	-526.14	15.69	894.91
2985.36	31.65	322.10	2728.44	724.14	-526.19	5.77	894.99
2985.52	31.62	322.00	2728.57	724.21	-526.24	11.59	895.07

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> <b>Vertical (TVD) Reference:</b> <b>Section (VS) Reference:</b> <b>Survey Calculation Method:</b>	<b>Time:</b> 14:27:23 <b>Site:</b> HON-GT-01, Grid North <b>Ground Level:</b> 0.6 <b>Well (0.00N,0.00E,325.00Azi)</b> <b>Minimum Curvature</b>	<b>Page:</b> 10 <b>Db:</b> Adapti
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**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2985.67	31.53	321.80	2728.70	724.27	-526.29	26.63	895.15
2985.82	31.41	321.55	2728.83	724.33	-526.34	35.39	895.23
2985.97	31.29	321.30	2728.96	724.39	-526.39	35.13	895.31
2986.13	31.18	321.06	2729.09	724.45	-526.43	32.78	895.39
2986.28	31.11	320.89	2729.22	724.52	-526.48	21.55	895.47
2986.43	31.10	320.83	2729.35	724.58	-526.53	6.77	895.55
2986.58	31.14	320.85	2729.48	724.64	-526.58	7.81	895.62
2986.74	31.24	320.97	2729.62	724.70	-526.63	22.95	895.70
2986.89	31.36	321.13	2729.75	724.76	-526.68	29.30	895.78
2987.04	31.49	321.31	2729.88	724.82	-526.73	32.15	895.86
2987.19	31.60	321.46	2730.01	724.89	-526.78	26.05	895.94
2987.34	31.69	321.57	2730.13	724.95	-526.83	20.56	896.02
2987.50	31.71	321.59	2730.26	725.01	-526.88	6.04	896.10
2987.65	31.70	321.56	2730.39	725.07	-526.93	4.18	896.18
2987.80	31.67	321.49	2730.52	725.14	-526.98	10.28	896.26
2987.95	31.54	321.28	2730.65	725.20	-527.03	32.51	896.34
2988.11	31.48	321.18	2730.78	725.26	-527.08	16.33	896.42
2988.26	31.43	321.09	2730.91	725.32	-527.13	12.99	896.50
2988.41	31.41	321.04	2731.04	725.38	-527.18	6.56	896.58
2988.56	31.40	321.03	2731.17	725.45	-527.23	2.10	896.66
2988.72	31.43	321.06	2731.30	725.51	-527.28	6.30	896.74
2988.87	31.47	321.11	2731.43	725.57	-527.33	10.03	896.82
2989.02	31.52	321.18	2731.56	725.63	-527.38	12.13	896.90
2989.17	31.57	321.24	2731.69	725.69	-527.43	11.31	896.98
2989.33	31.61	321.30	2731.82	725.76	-527.48	9.46	897.06
2989.48	31.64	321.34	2731.95	725.82	-527.53	6.95	897.13
2989.63	31.63	321.35	2732.08	725.88	-527.58	0.67	897.21
2989.78	31.61	321.33	2732.21	725.94	-527.63	4.41	897.29
2989.94	31.58	321.30	2732.34	726.01	-527.68	7.14	897.37
2990.09	31.54	321.25	2732.47	726.07	-527.73	9.65	897.45
2990.24	31.50	321.21	2732.60	726.13	-527.78	9.02	897.53
2990.39	31.46	321.18	2732.73	726.19	-527.83	8.35	897.61
2990.55	31.44	321.17	2732.86	726.25	-527.88	3.99	897.69
2990.70	31.43	321.17	2732.99	726.32	-527.93	2.06	897.77
2990.85	31.44	321.20	2733.12	726.38	-527.98	3.44	897.85
2991.00	31.45	321.24	2733.25	726.44	-528.03	5.43	897.93
2991.15	31.48	321.29	2733.38	726.50	-528.08	6.57	898.01
2991.31	31.49	321.33	2733.51	726.56	-528.13	5.00	898.09
2991.46	31.50	321.38	2733.64	726.63	-528.18	4.93	898.17
2991.61	31.50	321.39	2733.77	726.69	-528.23	1.79	898.25
2991.76	31.50	321.43	2733.90	726.75	-528.28	3.62	898.33
2991.92	31.50	321.45	2734.03	726.81	-528.33	2.31	898.41
2992.07	31.51	321.48	2734.16	726.87	-528.38	3.37	898.49
2992.22	31.51	321.51	2734.29	726.94	-528.43	3.49	898.57
2992.37	31.52	321.55	2734.42	727.00	-528.48	4.23	898.64
2992.53	31.52	321.57	2734.55	727.06	-528.53	2.46	898.72
2992.68	31.51	321.58	2734.68	727.12	-528.58	2.03	898.80
2992.83	31.48	321.57	2734.81	727.19	-528.63	4.68	898.88
2992.98	31.45	321.53	2734.94	727.25	-528.67	8.42	898.96
2993.14	31.39	321.46	2735.07	727.31	-528.72	12.83	899.04
2993.29	31.35	321.40	2735.20	727.37	-528.77	10.93	899.12
2993.44	31.31	321.34	2735.33	727.44	-528.82	9.83	899.20
2993.59	31.29	321.30	2735.46	727.50	-528.87	5.61	899.28
2993.75	31.29	321.30	2735.59	727.56	-528.92	0.55	899.36
2993.90	31.32	321.33	2735.72	727.62	-528.97	6.40	899.44
2994.05	31.36	321.39	2735.85	727.68	-529.02	11.10	899.52
2994.20	31.42	321.46	2735.98	727.74	-529.07	13.81	899.60

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GVVV- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
2994.36	31.48	321.52	2736.11	727.81	-529.12	12.43	899.68
2994.51	31.52	321.55	2736.24	727.87	-529.17	9.30	899.75
2994.66	31.53	321.55	2736.37	727.93	-529.22	2.60	899.83
2994.81	31.53	321.51	2736.50	727.99	-529.27	4.10	899.91
2994.96	31.45	321.37	2736.63	728.06	-529.32	20.66	899.99
2995.12	31.39	321.26	2736.76	728.12	-529.37	16.03	900.07
2995.27	31.34	321.16	2736.89	728.18	-529.42	14.80	900.15
2995.42	31.29	321.09	2737.02	728.24	-529.47	11.29	900.23
2995.57	31.27	321.05	2737.15	728.30	-529.52	5.61	900.31
2995.73	31.28	321.07	2737.28	728.36	-529.57	2.00	900.39
2995.88	31.32	321.12	2737.41	728.43	-529.62	9.45	900.47
2996.03	31.37	321.21	2737.54	728.49	-529.67	14.27	900.55
2996.18	31.45	321.33	2737.67	728.55	-529.72	19.64	900.63
2996.34	31.53	321.46	2737.80	728.61	-529.77	20.27	900.71
2996.49	31.60	321.56	2737.93	728.67	-529.82	17.82	900.79
2996.64	31.65	321.63	2738.06	728.74	-529.87	11.62	900.86
2996.79	31.66	321.63	2738.19	728.80	-529.91	1.45	900.94
2996.95	31.63	321.58	2738.32	728.86	-529.96	8.20	901.02
2997.10	31.56	321.46	2738.45	728.93	-530.01	18.97	901.10
2997.25	31.46	321.30	2738.58	728.99	-530.06	25.54	901.18
2997.40	31.35	321.12	2738.71	729.05	-530.11	27.15	901.26
2997.56	31.26	320.97	2738.84	729.11	-530.16	24.05	901.34
2997.71	31.20	320.86	2738.97	729.17	-530.21	15.86	901.42
2997.86	31.19	320.82	2739.10	729.23	-530.26	4.54	901.50
2998.01	31.22	320.86	2739.23	729.29	-530.31	7.34	901.58
2998.17	31.34	321.02	2739.36	729.36	-530.36	28.07	901.66
2998.32	31.44	321.17	2739.49	729.42	-530.41	24.72	901.74
2998.47	31.52	321.29	2739.62	729.48	-530.46	20.88	901.82
2998.62	31.58	321.38	2739.75	729.54	-530.51	15.08	901.90
2998.77	31.60	321.41	2739.88	729.60	-530.56	4.06	901.97
2998.93	31.58	321.38	2740.01	729.67	-530.61	4.31	902.05
2999.08	31.54	321.31	2740.14	729.73	-530.66	11.42	902.13
2999.23	31.49	321.22	2740.27	729.79	-530.71	12.87	902.21
2999.38	31.45	321.12	2740.40	729.85	-530.76	12.88	902.29
2999.54	31.43	321.06	2740.53	729.92	-530.81	7.13	902.37
2999.69	31.44	321.03	2740.66	729.98	-530.86	3.42	902.45
2999.84	31.49	321.05	2740.79	730.04	-530.91	8.87	902.53
2999.99	31.54	321.10	2740.92	730.10	-530.96	12.24	902.61
3000.15	31.61	321.16	2741.05	730.16	-531.01	13.93	902.69
3000.30	31.66	321.21	2741.18	730.23	-531.06	11.02	902.77
3000.45	31.69	321.25	2741.31	730.29	-531.11	7.42	902.85
3000.60	31.69	321.26	2741.44	730.35	-531.16	0.90	902.93
3000.76	31.66	321.24	2741.57	730.41	-531.21	5.80	903.01
3000.91	31.61	321.20	2741.70	730.47	-531.26	10.49	903.09
3001.06	31.55	321.16	2741.83	730.54	-531.31	11.94	903.17
3001.21	31.50	321.13	2741.96	730.60	-531.36	11.45	903.25
3001.37	31.44	321.10	2742.09	730.66	-531.41	10.96	903.33
3001.52	31.43	321.14	2742.22	730.72	-531.46	4.83	903.41
3001.67	31.43	321.20	2742.35	730.78	-531.51	5.71	903.49
3001.82	31.50	321.37	2742.48	730.85	-531.56	22.25	903.57
3001.98	31.53	321.46	2742.61	730.91	-531.61	11.20	903.65
3002.13	31.56	321.54	2742.74	730.97	-531.66	10.07	903.72
3002.28	31.57	321.57	2742.87	731.03	-531.71	4.23	903.80
3002.43	31.54	321.56	2743.00	731.10	-531.76	5.50	903.88
3002.58	31.48	321.49	2743.13	731.16	-531.81	13.71	903.96
3002.74	31.39	321.36	2743.26	731.22	-531.86	22.52	904.04
3002.89	31.28	321.20	2743.39	731.28	-531.91	27.00	904.12
3003.04	31.17	321.02	2743.52	731.34	-531.96	28.18	904.20

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3003.19	31.08	320.86	2743.65	731.41	-532.01	24.42	904.28
3003.35	31.02	320.73	2743.78	731.47	-532.06	17.41	904.36
3003.50	31.01	320.68	2743.91	731.53	-532.11	6.08	904.44
3003.65	31.05	320.70	2744.04	731.59	-532.16	7.87	904.51
3003.80	31.13	320.78	2744.17	731.65	-532.21	17.45	904.59
3003.96	31.27	320.98	2744.30	731.71	-532.26	34.80	904.67
3004.11	31.44	321.19	2744.44	731.77	-532.31	39.18	904.75
3004.26	31.62	321.45	2744.56	731.83	-532.36	44.92	904.83
3004.41	31.80	321.69	2744.69	731.90	-532.41	43.09	904.91
3004.57	31.93	321.84	2744.82	731.96	-532.46	29.39	904.99
3004.72	32.00	321.93	2744.95	732.02	-532.51	17.32	905.07
3004.87	31.97	321.87	2745.08	732.09	-532.56	7.81	905.15
3005.02	31.86	321.69	2745.21	732.15	-532.61	29.27	905.23
3005.18	31.67	321.41	2745.34	732.21	-532.66	47.16	905.31
3005.33	31.46	321.09	2745.47	732.28	-532.71	54.10	905.39
3005.48	31.13	320.61	2745.60	732.34	-532.76	81.01	905.47
3005.63	30.96	320.37	2745.73	732.40	-532.81	40.10	905.55
3005.79	30.87	320.26	2745.86	732.46	-532.86	21.41	905.63
3005.94	30.86	320.26	2745.99	732.52	-532.91	1.84	905.71
3006.09	30.93	320.37	2746.12	732.58	-532.96	16.88	905.78
3006.24	31.04	320.54	2746.26	732.64	-533.00	27.20	905.86
3006.39	31.17	320.73	2746.39	732.70	-533.05	33.26	905.94
3006.55	31.32	320.92	2746.52	732.76	-533.10	34.47	906.02
3006.70	31.45	321.08	2746.65	732.82	-533.15	30.22	906.10
3006.85	31.54	321.19	2746.78	732.88	-533.20	22.22	906.18
3007.00	31.63	321.28	2746.91	732.95	-533.25	18.58	906.26
3007.16	31.68	321.34	2747.04	733.01	-533.30	12.64	906.34
3007.31	31.71	321.36	2747.17	733.07	-533.35	5.48	906.42
3007.46	31.70	321.35	2747.29	733.13	-533.40	1.22	906.50
3007.61	31.68	321.33	2747.42	733.20	-533.45	5.29	906.58
3007.77	31.63	321.28	2747.55	733.26	-533.50	10.41	906.66
3007.92	31.58	321.22	2747.68	733.32	-533.55	11.43	906.74
3008.07	31.53	321.17	2747.81	733.38	-533.60	12.53	906.82
3008.22	31.48	321.13	2747.94	733.45	-533.65	9.89	906.90
3008.38	31.45	321.11	2748.07	733.51	-533.70	6.55	906.97
3008.53	31.44	321.13	2748.20	733.57	-533.75	3.39	907.05
3008.68	31.44	321.16	2748.33	733.63	-533.80	3.36	907.13
3008.83	31.44	321.18	2748.46	733.69	-533.85	2.53	907.21
3008.99	31.43	321.20	2748.59	733.76	-533.90	2.59	907.29
3009.14	31.41	321.20	2748.72	733.82	-533.95	3.73	907.37
3009.29	31.36	321.16	2748.85	733.88	-534.00	9.86	907.45
3009.44	31.32	321.11	2748.98	733.94	-534.05	9.86	907.53
3009.60	31.28	321.07	2749.11	734.00	-534.10	8.45	907.61
3009.75	31.25	321.05	2749.24	734.06	-534.15	5.33	907.69
3009.90	31.25	321.04	2749.38	734.13	-534.20	1.79	907.77
3010.05	31.26	321.06	2749.51	734.19	-534.25	3.32	907.84
3010.20	31.28	321.09	2749.64	734.25	-534.30	5.56	907.92
3010.36	31.32	321.13	2749.77	734.31	-534.35	7.98	908.00
3010.51	31.34	321.15	2749.90	734.37	-534.40	5.28	908.08
3010.66	31.36	321.16	2750.03	734.43	-534.45	3.31	908.16
3010.81	31.35	321.14	2750.16	734.50	-534.50	2.85	908.24
3010.97	31.33	321.10	2750.29	734.56	-534.55	5.86	908.32
3011.12	31.29	321.05	2750.42	734.62	-534.60	9.37	908.40
3011.27	31.26	321.01	2750.55	734.68	-534.65	7.48	908.48
3011.42	31.24	321.00	2750.68	734.74	-534.70	4.20	908.56
3011.58	31.24	321.02	2750.81	734.80	-534.75	1.71	908.63
3011.73	31.25	321.04	2750.94	734.86	-534.80	4.10	908.71

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 13 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3011.88	31.31	321.13	2751.07	734.93	-534.85	14.98	908.79
3012.03	31.37	321.21	2751.20	734.99	-534.90	14.12	908.87
3012.19	31.42	321.27	2751.33	735.05	-534.95	11.41	908.95
3012.34	31.45	321.30	2751.46	735.11	-535.00	7.44	909.03
3012.49	31.47	321.30	2751.59	735.17	-535.05	2.45	909.11
3012.64	31.46	321.27	2751.72	735.24	-535.10	3.44	909.19
3012.80	31.44	321.22	2751.85	735.30	-535.15	6.22	909.27
3012.95	31.42	321.17	2751.98	735.36	-535.20	7.28	909.35
3013.10	31.40	321.12	2752.11	735.42	-535.25	6.23	909.43
3013.25	31.40	321.10	2752.24	735.48	-535.30	2.14	909.51
3013.41	31.43	321.11	2752.37	735.55	-535.35	6.39	909.59
3013.56	31.49	321.16	2752.50	735.61	-535.40	12.81	909.66
3013.71	31.57	321.23	2752.63	735.67	-535.45	16.93	909.74
3013.86	31.65	321.28	2752.76	735.73	-535.50	15.76	909.82
3014.01	31.72	321.32	2752.89	735.79	-535.55	14.45	909.90
3014.17	31.75	321.30	2753.02	735.86	-535.60	7.28	909.98
3014.32	31.75	321.22	2753.15	735.92	-535.65	7.69	910.06
3014.47	31.71	321.10	2753.28	735.98	-535.70	14.73	910.14
3014.62	31.64	320.93	2753.41	736.04	-535.75	23.13	910.22
3014.78	31.55	320.75	2753.54	736.11	-535.80	25.79	910.30
3014.93	31.48	320.61	2753.67	736.17	-535.85	20.19	910.38
3015.08	31.43	320.51	2753.80	736.23	-535.90	13.83	910.46
3015.23	31.41	320.48	2753.93	736.29	-535.95	4.84	910.54
3015.39	31.43	320.53	2754.06	736.35	-536.00	5.83	910.62
3015.54	31.48	320.62	2754.19	736.41	-536.05	13.81	910.70
3015.69	31.53	320.74	2754.32	736.47	-536.10	16.38	910.78
3015.84	31.63	320.93	2754.45	736.54	-536.15	28.11	910.86
3016.00	31.67	321.02	2754.58	736.60	-536.20	11.31	910.94
3016.15	31.67	321.08	2754.71	736.66	-536.25	6.31	911.02
3016.30	31.65	321.09	2754.84	736.72	-536.30	4.65	911.10
3016.45	31.60	321.06	2754.97	736.78	-536.35	10.24	911.18
3016.61	31.56	321.03	2755.09	736.85	-536.40	9.26	911.26
3016.76	31.50	320.98	2755.22	736.91	-536.45	11.75	911.34
3016.91	31.47	320.95	2755.35	736.97	-536.50	7.26	911.42
3017.06	31.45	320.93	2755.48	737.03	-536.55	4.57	911.50
3017.22	31.44	320.92	2755.61	737.09	-536.60	1.41	911.58
3017.37	31.46	320.95	2755.74	737.16	-536.65	4.31	911.65
3017.52	31.49	320.97	2755.87	737.22	-536.70	5.71	911.73
3017.67	31.53	321.00	2756.00	737.28	-536.75	8.29	911.81
3017.82	31.58	321.05	2756.13	737.34	-536.80	10.91	911.89
3017.98	31.63	321.09	2756.26	737.40	-536.85	11.57	911.97
3018.13	31.70	321.13	2756.39	737.47	-536.90	13.30	912.05
3018.28	31.75	321.16	2756.52	737.53	-536.95	11.63	912.13
3018.43	31.80	321.17	2756.65	737.59	-537.00	9.56	912.21
3018.59	31.84	321.19	2756.78	737.65	-537.06	8.43	912.29
3018.74	31.85	321.16	2756.91	737.72	-537.11	2.90	912.37
3018.89	31.83	321.13	2757.04	737.78	-537.16	3.85	912.45
3019.04	31.80	321.10	2757.17	737.84	-537.21	7.65	912.53
3019.20	31.73	321.04	2757.30	737.90	-537.26	14.45	912.61
3019.35	31.64	320.99	2757.43	737.97	-537.31	18.35	912.69
3019.50	31.59	320.98	2757.56	738.03	-537.36	10.45	912.77
3019.65	31.56	321.00	2757.69	738.09	-537.41	7.22	912.85
3019.81	31.55	321.07	2757.82	738.15	-537.46	6.45	912.93
3019.96	31.57	321.15	2757.95	738.21	-537.51	9.54	913.01
3020.11	31.62	321.26	2758.08	738.28	-537.56	13.96	913.09
3020.26	31.66	321.35	2758.21	738.34	-537.61	13.22	913.17
3020.42	31.71	321.43	2758.34	738.40	-537.66	11.78	913.25
3020.57	31.73	321.46	2758.47	738.46	-537.71	5.85	913.33

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 14 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3020.72	31.74	321.44	2758.60	738.53	-537.76	1.98	913.41
3020.87	31.73	321.38	2758.73	738.59	-537.81	6.37	913.49
3021.03	31.70	321.29	2758.86	738.65	-537.86	11.14	913.57
3021.18	31.66	321.17	2758.99	738.71	-537.91	13.98	913.65
3021.33	31.64	321.06	2759.12	738.78	-537.96	12.59	913.73
3021.48	31.62	320.96	2759.25	738.84	-538.01	11.73	913.81
3021.63	31.61	320.87	2759.38	738.90	-538.06	9.12	913.89
3021.79	31.61	320.81	2759.51	738.96	-538.11	6.65	913.97
3021.94	31.62	320.76	2759.64	739.02	-538.16	5.42	914.05
3022.09	31.63	320.72	2759.77	739.09	-538.21	4.32	914.13
3022.24	31.65	320.71	2759.90	739.15	-538.26	4.29	914.21
3022.40	31.67	320.70	2760.03	739.21	-538.31	3.42	914.29
3022.55	31.69	320.70	2760.15	739.27	-538.36	3.44	914.37
3022.70	31.73	320.73	2760.28	739.33	-538.41	8.89	914.45
3022.85	31.75	320.75	2760.41	739.40	-538.46	5.04	914.53
3023.01	31.78	320.76	2760.54	739.46	-538.51	5.38	914.61
3023.16	31.80	320.77	2760.67	739.52	-538.57	4.45	914.69
3023.31	31.81	320.74	2760.80	739.58	-538.62	2.71	914.77
3023.46	31.80	320.70	2760.93	739.64	-538.67	5.27	914.85
3023.62	31.77	320.63	2761.06	739.71	-538.72	8.76	914.93
3023.77	31.74	320.56	2761.19	739.77	-538.77	9.39	915.01
3023.92	31.70	320.48	2761.32	739.83	-538.82	11.40	915.09
3024.07	31.66	320.41	2761.45	739.89	-538.87	10.51	915.17
3024.23	31.64	320.37	2761.58	739.95	-538.92	5.55	915.25
3024.38	31.62	320.36	2761.71	740.02	-538.97	3.96	915.33
3024.53	31.62	320.38	2761.84	740.08	-539.02	1.91	915.41
3024.68	31.63	320.43	2761.97	740.14	-539.07	6.48	915.49
3024.84	31.64	320.48	2762.10	740.20	-539.13	5.48	915.57
3024.99	31.66	320.53	2762.23	740.26	-539.18	5.95	915.65
3025.14	31.68	320.60	2762.36	740.32	-539.23	8.53	915.73
3025.29	31.69	320.64	2762.49	740.39	-539.28	4.01	915.81
3025.44	31.70	320.68	2762.62	740.45	-539.33	4.23	915.89
3025.60	31.69	320.69	2762.75	740.51	-539.38	1.41	915.97
3025.75	31.69	320.69	2762.88	740.57	-539.43	1.32	916.05
3025.90	31.67	320.68	2763.01	740.63	-539.48	2.81	916.12
3026.05	31.66	320.67	2763.14	740.70	-539.53	2.67	916.20
3026.21	31.65	320.65	2763.27	740.76	-539.58	3.51	916.28
3026.36	31.64	320.64	2763.40	740.82	-539.63	1.89	916.36
3026.51	31.66	320.66	2763.53	740.88	-539.68	4.89	916.44
3026.66	31.69	320.70	2763.66	740.94	-539.73	7.25	916.52
3026.82	31.74	320.75	2763.79	741.00	-539.79	10.88	916.60
3026.97	31.80	320.81	2763.92	741.07	-539.84	13.11	916.68
3027.12	31.85	320.86	2764.04	741.13	-539.89	10.88	916.76
3027.27	31.89	320.87	2764.17	741.19	-539.94	7.43	916.84
3027.43	31.91	320.88	2764.30	741.25	-539.99	5.54	916.92
3027.58	31.90	320.82	2764.43	741.32	-540.04	6.41	917.00
3027.73	31.86	320.74	2764.56	741.38	-540.09	10.78	917.09
3027.88	31.81	320.64	2764.69	741.44	-540.14	15.44	917.17
3028.04	31.74	320.52	2764.82	741.50	-540.19	17.39	917.25
3028.19	31.68	320.42	2764.95	741.57	-540.24	16.64	917.33
3028.34	31.63	320.34	2765.08	741.63	-540.29	12.56	917.40
3028.49	31.61	320.30	2765.21	741.69	-540.34	6.60	917.48
3028.65	31.61	320.30	2765.34	741.75	-540.40	0.37	917.56
3028.80	31.64	320.36	2765.47	741.81	-540.45	8.75	917.64
3028.95	31.69	320.42	2765.60	741.87	-540.50	10.92	917.72
3029.10	31.77	320.55	2765.73	741.93	-540.55	21.78	917.80
3029.25	31.85	320.64	2765.86	742.00	-540.60	17.21	917.88

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 15 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3029.41	31.90	320.71	2765.99	742.06	-540.65	13.49	917.96
3029.56	31.93	320.73	2766.12	742.12	-540.70	5.85	918.04
3029.71	31.93	320.71	2766.25	742.18	-540.75	2.70	918.12
3029.86	31.88	320.62	2766.38	742.25	-540.80	13.58	918.20
3030.02	31.72	320.36	2766.51	742.31	-540.86	40.19	918.28
3030.17	31.59	320.15	2766.64	742.37	-540.91	33.59	918.36
3030.32	31.47	319.96	2766.77	742.43	-540.96	31.57	918.44
3030.47	31.39	319.84	2766.90	742.49	-541.01	19.97	918.52
3030.63	31.36	319.79	2767.03	742.55	-541.06	7.63	918.60
3030.78	31.39	319.85	2767.16	742.61	-541.11	8.60	918.68
3030.93	31.48	320.00	2767.29	742.67	-541.16	23.64	918.76
3031.08	31.62	320.21	2767.42	742.73	-541.21	34.07	918.84
3031.24	31.76	320.44	2767.55	742.80	-541.26	37.57	918.92
3031.39	31.89	320.64	2767.67	742.86	-541.32	32.42	919.00
3031.54	32.00	320.81	2767.80	742.92	-541.37	27.99	919.08
3031.69	32.04	320.88	2767.93	742.98	-541.42	9.89	919.16
3031.85	32.04	320.89	2768.06	743.05	-541.47	2.05	919.24
3032.00	32.00	320.85	2768.19	743.11	-541.52	8.84	919.32
3032.15	31.92	320.75	2768.32	743.17	-541.57	18.70	919.40
3032.30	31.84	320.63	2768.45	743.23	-541.62	19.35	919.48
3032.46	31.78	320.53	2768.58	743.30	-541.67	17.22	919.56
3032.61	31.73	320.46	2768.71	743.36	-541.72	12.60	919.64
3032.76	31.70	320.42	2768.84	743.42	-541.77	5.94	919.72
3032.91	31.71	320.43	2768.97	743.48	-541.83	1.93	919.80
3033.06	31.72	320.44	2769.10	743.54	-541.88	2.51	919.88
3033.22	31.77	320.49	2769.23	743.60	-541.93	10.72	919.96
3033.37	31.80	320.53	2769.36	743.67	-541.98	7.67	920.04
3033.52	31.83	320.56	2769.49	743.73	-542.03	6.29	920.12
3033.67	31.85	320.59	2769.62	743.79	-542.08	5.54	920.20
3033.83	31.89	320.63	2769.75	743.85	-542.13	7.65	920.28
3033.98	31.90	320.65	2769.88	743.92	-542.18	3.87	920.36
3034.13	31.93	320.68	2770.00	743.98	-542.23	5.35	920.44
3034.28	31.94	320.69	2770.13	744.04	-542.29	2.69	920.52
3034.44	31.92	320.68	2770.26	744.10	-542.34	3.18	920.60
3034.59	31.89	320.62	2770.39	744.16	-542.39	8.68	920.68
3034.74	31.84	320.56	2770.52	744.23	-542.44	11.57	920.76
3034.89	31.78	320.47	2770.65	744.29	-542.49	15.15	920.84
3035.05	31.72	320.39	2770.78	744.35	-542.54	14.26	920.92
3035.20	31.68	320.33	2770.91	744.41	-542.59	9.92	921.00
3035.35	31.66	320.31	2771.04	744.47	-542.64	3.78	921.08
3035.50	31.67	320.33	2771.17	744.54	-542.69	2.85	921.16
3035.66	31.70	320.38	2771.30	744.60	-542.74	6.92	921.24
3035.81	31.75	320.45	2771.43	744.66	-542.80	11.63	921.32
3035.96	31.79	320.51	2771.56	744.72	-542.85	10.34	921.40
3036.11	31.82	320.56	2771.69	744.78	-542.90	7.30	921.48
3036.27	31.82	320.57	2771.82	744.84	-542.95	1.95	921.56
3036.42	31.80	320.53	2771.95	744.91	-543.00	6.58	921.64
3036.57	31.77	320.48	2772.08	744.97	-543.05	7.17	921.72
3036.72	31.71	320.39	2772.21	745.03	-543.10	15.21	921.80
3036.87	31.68	320.34	2772.34	745.09	-543.15	7.21	921.88
3037.03	31.68	320.33	2772.47	745.15	-543.20	2.13	921.96
3037.18	31.67	320.32	2772.60	745.22	-543.26	1.56	922.04
3037.33	31.68	320.36	2772.73	745.28	-543.31	4.08	922.12
3037.48	31.70	320.39	2772.86	745.34	-543.36	4.62	922.20
3037.64	31.71	320.43	2772.99	745.40	-543.41	4.34	922.28
3037.79	31.71	320.45	2773.11	745.46	-543.46	2.56	922.36
3037.94	31.69	320.45	2773.24	745.52	-543.51	3.45	922.44
3038.09	31.67	320.44	2773.37	745.59	-543.56	4.95	922.52



# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 17 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3046.93	31.46	320.29	2780.90	749.16	-546.52	8.15	927.15
3047.09	31.41	320.25	2781.03	749.22	-546.57	10.04	927.23
3047.24	31.37	320.21	2781.16	749.28	-546.63	9.05	927.30
3047.39	31.35	320.18	2781.29	749.34	-546.68	4.61	927.38
3047.54	31.35	320.17	2781.42	749.40	-546.73	0.99	927.46
3047.70	31.38	320.20	2781.55	749.46	-546.78	6.08	927.54
3047.85	31.43	320.25	2781.68	749.52	-546.83	11.70	927.62
3048.00	31.50	320.33	2781.81	749.58	-546.88	16.55	927.70
3048.15	31.59	320.43	2781.94	749.64	-546.93	19.12	927.78
3048.30	31.66	320.50	2782.07	749.71	-546.98	17.21	927.86
3048.46	31.73	320.55	2782.20	749.77	-547.03	14.95	927.94
3048.61	31.77	320.55	2782.33	749.83	-547.08	7.62	928.02
3048.76	31.79	320.50	2782.46	749.89	-547.13	5.79	928.10
3048.91	31.79	320.42	2782.59	749.95	-547.19	8.69	928.18
3049.07	31.77	320.31	2782.72	750.02	-547.24	12.18	928.26
3049.22	31.75	320.18	2782.85	750.08	-547.29	12.96	928.34
3049.37	31.75	320.08	2782.98	750.14	-547.34	10.75	928.42
3049.52	31.77	319.98	2783.10	750.20	-547.39	11.31	928.50
3049.68	31.82	319.98	2783.23	750.26	-547.44	9.31	928.58
3049.83	31.88	320.01	2783.36	750.32	-547.49	13.02	928.66
3049.98	31.95	320.06	2783.49	750.39	-547.55	13.65	928.74
3050.13	32.01	320.13	2783.62	750.45	-547.60	13.75	928.82
3050.29	32.04	320.20	2783.75	750.51	-547.65	9.82	928.90
3050.44	32.05	320.24	2783.88	750.57	-547.70	4.63	928.98
3050.59	32.03	320.25	2784.01	750.63	-547.75	5.44	929.06
3050.74	31.97	320.24	2784.14	750.70	-547.80	11.02	929.14
3050.90	31.89	320.19	2784.27	750.76	-547.86	16.81	929.22
3051.05	31.79	320.14	2784.40	750.82	-547.91	19.81	929.30
3051.20	31.70	320.08	2784.53	750.88	-547.96	19.10	929.38
3051.35	31.61	320.03	2784.66	750.94	-548.01	18.04	929.46
3051.51	31.55	320.00	2784.79	751.00	-548.06	12.55	929.54
3051.66	31.51	319.99	2784.92	751.06	-548.11	8.79	929.62
3051.81	31.49	320.03	2785.05	751.13	-548.16	4.20	929.70
3051.96	31.50	320.08	2785.18	751.19	-548.22	5.38	929.78
3052.11	31.54	320.16	2785.31	751.25	-548.27	10.89	929.86
3052.27	31.60	320.25	2785.44	751.31	-548.32	14.44	929.94
3052.42	31.65	320.32	2785.57	751.37	-548.37	13.01	930.02
3052.57	31.71	320.36	2785.70	751.43	-548.42	12.08	930.10
3052.72	31.75	320.34	2785.83	751.49	-548.47	8.33	930.18
3052.88	31.78	320.29	2785.96	751.56	-548.52	8.34	930.26
3053.03	31.76	320.07	2786.08	751.62	-548.57	23.21	930.34
3053.18	31.72	319.90	2786.21	751.68	-548.62	19.36	930.42
3053.33	31.67	319.73	2786.34	751.74	-548.68	20.35	930.50
3053.49	31.62	319.59	2786.47	751.80	-548.73	17.50	930.58
3053.64	31.58	319.52	2786.60	751.86	-548.78	10.80	930.66
3053.79	31.57	319.52	2786.73	751.92	-548.83	1.78	930.74
3053.94	31.59	319.60	2786.86	751.98	-548.88	9.08	930.81
3054.10	31.65	319.75	2786.99	752.04	-548.94	19.48	930.89
3054.25	31.73	319.96	2787.12	752.10	-548.99	27.04	930.97
3054.40	31.84	320.19	2787.25	752.17	-549.04	32.29	931.05
3054.55	31.96	320.44	2787.38	752.23	-549.09	34.51	931.13
3054.71	32.05	320.63	2787.51	752.29	-549.14	26.17	931.21
3054.86	32.09	320.76	2787.64	752.35	-549.19	16.55	931.30
3055.01	32.10	320.81	2787.77	752.42	-549.24	5.95	931.38
3055.16	32.04	320.76	2787.90	752.48	-549.29	13.11	931.46
3055.32	31.95	320.64	2788.03	752.54	-549.35	21.98	931.54
3055.47	31.82	320.45	2788.16	752.60	-549.40	33.07	931.62
3055.62	31.68	320.22	2788.29	752.66	-549.45	35.66	931.70

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 18 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3055.77	31.55	320.01	2788.42	752.73	-549.50	33.07	931.78
3055.92	31.45	319.81	2788.55	752.79	-549.55	29.18	931.86
3056.08	31.38	319.67	2788.68	752.85	-549.60	18.56	931.94
3056.23	31.36	319.61	2788.81	752.91	-549.65	8.11	932.01
3056.38	31.42	319.67	2788.94	752.97	-549.70	12.23	932.09
3056.53	31.48	319.74	2789.07	753.03	-549.76	14.23	932.17
3056.69	31.54	319.82	2789.20	753.09	-549.81	14.71	932.25
3056.84	31.63	319.95	2789.33	753.15	-549.86	22.92	932.33
3056.99	31.71	320.04	2789.46	753.21	-549.91	17.38	932.41
3057.14	31.79	320.13	2789.59	753.27	-549.96	19.21	932.49
3057.30	31.86	320.21	2789.72	753.34	-550.01	15.10	932.57
3057.45	31.90	320.26	2789.84	753.40	-550.06	9.79	932.65
3057.60	31.91	320.30	2789.97	753.46	-550.12	4.02	932.73
3057.75	31.87	320.30	2790.10	753.52	-550.17	6.89	932.81
3057.91	31.79	320.27	2790.23	753.58	-550.22	16.97	932.89
3058.06	31.69	320.24	2790.36	753.64	-550.27	20.13	932.97
3058.21	31.56	320.20	2790.49	753.71	-550.32	24.57	933.05
3058.36	31.43	320.16	2790.62	753.77	-550.37	25.74	933.13
3058.52	31.35	320.19	2790.75	753.83	-550.42	16.69	933.21
3058.67	31.28	320.22	2790.88	753.89	-550.47	13.96	933.29
3058.82	31.26	320.29	2791.01	753.95	-550.52	8.99	933.37
3058.97	31.28	320.41	2791.14	754.01	-550.58	12.41	933.45
3059.13	31.33	320.51	2791.27	754.07	-550.63	13.80	933.53
3059.28	31.39	320.59	2791.40	754.13	-550.68	15.21	933.60
3059.43	31.42	320.58	2791.53	754.19	-550.73	5.69	933.68
3059.58	31.45	320.52	2791.66	754.26	-550.78	8.40	933.76
3059.73	31.44	320.35	2791.79	754.32	-550.83	16.90	933.84
3059.89	31.42	320.13	2791.92	754.38	-550.88	23.36	933.92
3060.04	31.39	319.72	2792.05	754.44	-550.93	42.69	934.00
3060.19	31.41	319.48	2792.18	754.50	-550.98	24.46	934.08
3060.34	31.46	319.31	2792.31	754.56	-551.03	20.42	934.16
3060.50	31.55	319.23	2792.44	754.62	-551.08	20.09	934.24
3060.65	31.67	319.23	2792.57	754.68	-551.14	24.10	934.32
3060.80	31.82	319.30	2792.70	754.74	-551.19	29.16	934.40
3060.95	31.95	319.42	2792.83	754.80	-551.24	28.58	934.48
3061.11	32.09	319.58	2792.96	754.86	-551.29	33.07	934.56
3061.26	32.21	319.75	2793.09	754.93	-551.35	29.19	934.64
3061.41	32.30	319.89	2793.22	754.99	-551.40	23.75	934.72
3061.56	32.36	319.99	2793.35	755.05	-551.45	15.79	934.80
3061.72	32.41	320.08	2793.48	755.11	-551.50	13.34	934.88
3061.87	32.42	320.12	2793.61	755.18	-551.56	4.17	934.96
3062.02	32.40	320.12	2793.73	755.24	-551.61	3.77	935.04
3062.17	32.35	320.10	2793.86	755.30	-551.66	9.14	935.13
3062.33	32.28	320.05	2793.99	755.36	-551.71	14.89	935.21
3062.48	32.20	319.99	2794.12	755.43	-551.77	17.87	935.29
3062.63	32.11	319.92	2794.25	755.49	-551.82	19.30	935.37
3062.78	32.04	319.90	2794.38	755.55	-551.87	13.03	935.45
3062.94	31.99	319.91	2794.51	755.61	-551.92	9.67	935.53
3063.09	31.99	319.97	2794.64	755.67	-551.97	6.45	935.61
3063.24	32.02	320.08	2794.77	755.74	-552.03	12.96	935.69
3063.39	32.14	320.32	2794.90	755.80	-552.08	35.35	935.77
3063.54	32.21	320.44	2795.02	755.86	-552.13	18.03	935.85
3063.70	32.24	320.51	2795.15	755.92	-552.18	10.42	935.93
3063.85	32.24	320.52	2795.28	755.99	-552.23	0.78	936.01
3064.00	32.17	320.42	2795.41	756.05	-552.28	17.56	936.10
3064.15	32.00	320.18	2795.54	756.11	-552.34	40.65	936.18
3064.31	31.78	319.85	2795.67	756.17	-552.39	56.14	936.26



# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 20 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3073.30	31.85	319.84	2803.33	759.77	-555.42	5.26	940.94
3073.45	31.85	319.83	2803.46	759.83	-555.47	2.01	941.02
3073.60	31.84	319.85	2803.59	759.90	-555.52	2.21	941.10
3073.76	31.81	319.85	2803.72	759.96	-555.57	6.92	941.18
3073.91	31.78	319.83	2803.85	760.02	-555.62	5.44	941.26
3074.06	31.76	319.84	2803.98	760.08	-555.67	4.84	941.34
3074.21	31.72	319.84	2804.11	760.14	-555.73	7.21	941.42
3074.37	31.68	319.84	2804.24	760.20	-555.78	8.37	941.50
3074.52	31.63	319.84	2804.37	760.26	-555.83	9.27	941.58
3074.67	31.57	319.82	2804.50	760.33	-555.88	12.12	941.66
3074.82	31.53	319.83	2804.63	760.39	-555.93	7.41	941.74
3074.97	31.50	319.84	2804.76	760.45	-555.98	7.20	941.82
3075.13	31.49	319.89	2804.89	760.51	-556.04	5.17	941.90
3075.28	31.53	319.99	2805.02	760.57	-556.09	12.59	941.98
3075.43	31.59	320.13	2805.15	760.63	-556.14	18.62	942.06
3075.58	31.67	320.29	2805.28	760.69	-556.19	22.70	942.14
3075.74	31.76	320.46	2805.41	760.75	-556.24	25.73	942.22
3075.89	31.85	320.62	2805.54	760.82	-556.29	23.42	942.30
3076.04	31.88	320.68	2805.67	760.88	-556.34	8.43	942.38
3076.19	31.90	320.72	2805.80	760.94	-556.39	5.20	942.46
3076.35	31.86	320.66	2805.93	761.00	-556.44	9.37	942.54
3076.50	31.78	320.53	2806.05	761.06	-556.49	21.43	942.62
3076.65	31.68	320.39	2806.18	761.13	-556.55	23.77	942.70
3076.80	31.59	320.24	2806.31	761.19	-556.60	23.87	942.78
3076.96	31.50	320.09	2806.44	761.25	-556.65	22.46	942.86
3077.11	31.45	320.00	2806.57	761.31	-556.70	14.57	942.94
3077.26	31.42	319.97	2806.70	761.37	-556.75	5.34	943.02
3077.41	31.42	319.97	2806.83	761.43	-556.80	0.75	943.10
3077.57	31.44	319.98	2806.96	761.49	-556.85	3.53	943.18
3077.72	31.49	320.05	2807.09	761.55	-556.90	12.43	943.25
3077.87	31.55	320.14	2807.22	761.61	-556.95	16.11	943.33
3078.02	31.61	320.21	2807.35	761.68	-557.01	12.89	943.41
3078.18	31.65	320.26	2807.48	761.74	-557.06	9.17	943.49
3078.33	31.68	320.28	2807.61	761.80	-557.11	6.20	943.57
3078.48	31.68	320.27	2807.74	761.86	-557.16	1.83	943.65
3078.63	31.68	320.24	2807.87	761.92	-557.21	2.77	943.73
3078.78	31.64	320.17	2808.00	761.98	-557.26	10.13	943.81
3078.94	31.61	320.09	2808.13	762.04	-557.31	10.53	943.89
3079.09	31.59	320.02	2808.26	762.11	-557.36	8.10	943.97
3079.24	31.56	319.94	2808.39	762.17	-557.42	9.34	944.05
3079.39	31.56	319.90	2808.52	762.23	-557.47	4.73	944.13
3079.55	31.58	319.88	2808.65	762.29	-557.52	4.11	944.21
3079.70	31.60	319.87	2808.78	762.35	-557.57	5.27	944.29
3079.85	31.65	319.88	2808.91	762.41	-557.62	8.47	944.37
3080.00	31.69	319.90	2809.04	762.47	-557.67	8.72	944.45
3080.16	31.73	319.90	2809.17	762.53	-557.72	7.84	944.53
3080.31	31.78	319.92	2809.30	762.59	-557.78	9.22	944.61
3080.46	31.79	319.89	2809.43	762.66	-557.83	4.30	944.69
3080.61	31.81	319.86	2809.56	762.72	-557.88	4.16	944.77
3080.77	31.83	319.86	2809.69	762.78	-557.93	4.58	944.85
3080.92	31.84	319.83	2809.82	762.84	-557.98	2.89	944.93
3081.07	31.85	319.82	2809.95	762.90	-558.03	2.18	945.01
3081.22	31.85	319.82	2810.08	762.96	-558.09	1.52	945.09
3081.38	31.84	319.79	2810.21	763.02	-558.14	3.53	945.17
3081.53	31.84	319.78	2810.34	763.09	-558.19	1.06	945.25
3081.68	31.83	319.77	2810.47	763.15	-558.24	2.34	945.33
3081.83	31.82	319.76	2810.60	763.21	-558.29	1.64	945.41

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 21 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3081.99	31.80	319.74	2810.72	763.27	-558.35	4.23	945.49
3082.14	31.79	319.74	2810.85	763.33	-558.40	1.58	945.57
3082.29	31.79	319.74	2810.98	763.39	-558.45	1.08	945.65
3082.44	31.79	319.75	2811.11	763.45	-558.50	1.06	945.73
3082.59	31.79	319.77	2811.24	763.52	-558.55	1.24	945.81
3082.75	31.78	319.78	2811.37	763.58	-558.61	1.62	945.89
3082.90	31.78	319.80	2811.50	763.64	-558.66	1.77	945.97
3083.05	31.77	319.81	2811.63	763.70	-558.71	1.92	946.05
3083.20	31.77	319.84	2811.76	763.76	-558.76	2.80	946.13
3083.36	31.78	319.87	2811.89	763.82	-558.81	3.06	946.21
3083.51	31.80	319.93	2812.02	763.88	-558.86	8.10	946.29
3083.66	31.83	319.98	2812.15	763.94	-558.92	8.19	946.37
3083.81	31.87	320.06	2812.28	764.01	-558.97	11.20	946.45
3083.97	31.92	320.13	2812.41	764.07	-559.02	12.60	946.53
3084.12	31.96	320.19	2812.54	764.13	-559.07	9.33	946.61
3084.27	31.98	320.21	2812.67	764.19	-559.12	4.24	946.69
3084.42	31.97	320.18	2812.80	764.25	-559.17	3.65	946.77
3084.58	31.93	320.12	2812.93	764.32	-559.23	9.39	946.85
3084.73	31.86	320.00	2813.05	764.38	-559.28	19.13	946.93
3084.88	31.77	319.85	2813.18	764.44	-559.33	23.31	947.01
3085.03	31.64	319.64	2813.31	764.50	-559.38	34.48	947.09
3085.19	31.55	319.51	2813.44	764.56	-559.43	21.16	947.17
3085.34	31.50	319.43	2813.57	764.62	-559.48	12.94	947.25
3085.49	31.48	319.40	2813.70	764.68	-559.54	4.86	947.33
3085.64	31.51	319.45	2813.83	764.74	-559.59	6.76	947.41
3085.80	31.57	319.55	2813.96	764.80	-559.64	15.66	947.49
3085.95	31.65	319.68	2814.09	764.86	-559.69	20.75	947.57
3086.10	31.75	319.85	2814.22	764.93	-559.74	27.10	947.65
3086.25	31.84	319.99	2814.35	764.99	-559.80	22.52	947.73
3086.40	31.90	320.09	2814.48	765.05	-559.85	15.75	947.81
3086.56	31.91	320.12	2814.61	765.11	-559.90	4.22	947.89
3086.71	31.87	320.05	2814.74	765.17	-559.95	11.10	947.97
3086.86	31.77	319.89	2814.87	765.23	-560.00	25.63	948.05
3087.01	31.63	319.67	2815.00	765.29	-560.05	35.65	948.13
3087.17	31.49	319.41	2815.13	765.36	-560.11	38.81	948.21
3087.32	31.37	319.20	2815.26	765.42	-560.16	32.48	948.28
3087.47	31.29	319.05	2815.39	765.48	-560.21	21.64	948.36
3087.62	31.26	318.97	2815.52	765.53	-560.26	10.29	948.44
3087.78	31.29	319.02	2815.65	765.59	-560.31	8.87	948.52
3087.93	31.39	319.15	2815.78	765.65	-560.36	22.51	948.60
3088.08	31.52	319.35	2815.91	765.71	-560.42	33.03	948.68
3088.23	31.65	319.56	2816.04	765.78	-560.47	35.03	948.76
3088.39	31.77	319.74	2816.17	765.84	-560.52	28.42	948.84
3088.54	31.86	319.89	2816.30	765.90	-560.57	25.10	948.92
3088.69	31.90	319.96	2816.43	765.96	-560.62	9.72	949.00
3088.84	31.89	319.96	2816.56	766.02	-560.68	1.73	949.08
3089.00	31.85	319.91	2816.69	766.08	-560.73	9.50	949.16
3089.15	31.79	319.83	2816.82	766.14	-560.78	14.64	949.24
3089.30	31.71	319.75	2816.95	766.21	-560.83	17.07	949.32
3089.45	31.65	319.67	2817.08	766.27	-560.88	15.17	949.40
3089.61	31.59	319.63	2817.21	766.33	-560.93	12.23	949.48
3089.76	31.54	319.59	2817.34	766.39	-560.99	10.65	949.56
3089.91	31.51	319.59	2817.47	766.45	-561.04	6.30	949.64
3090.06	31.48	319.59	2817.60	766.51	-561.09	5.23	949.72
3090.21	31.47	319.62	2817.73	766.57	-561.14	3.76	949.79
3090.37	31.47	319.66	2817.86	766.63	-561.19	4.41	949.87
3090.52	31.47	319.72	2817.99	766.69	-561.24	5.99	949.95
3090.67	31.48	319.77	2818.12	766.75	-561.30	5.84	950.03

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 22 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3090.82	31.51	319.86	2818.25	766.81	-561.35	9.74	950.11
3090.98	31.52	319.95	2818.38	766.87	-561.40	9.78	950.19
3091.13	31.53	320.02	2818.51	766.93	-561.45	7.31	950.27
3091.28	31.52	320.07	2818.64	767.00	-561.50	5.30	950.35
3091.43	31.51	320.10	2818.77	767.06	-561.55	4.40	950.43
3091.59	31.48	320.11	2818.90	767.12	-561.60	4.75	950.51
3091.74	31.46	320.10	2819.03	767.18	-561.65	4.44	950.59
3091.89	31.44	320.07	2819.16	767.24	-561.71	5.05	950.67
3092.04	31.43	320.03	2819.29	767.30	-561.76	4.86	950.75
3092.20	31.44	319.98	2819.42	767.36	-561.81	5.10	950.83
3092.35	31.46	319.93	2819.55	767.42	-561.86	7.01	950.90
3092.50	31.51	319.90	2819.68	767.48	-561.91	9.97	950.98
3092.65	31.58	319.88	2819.81	767.54	-561.96	13.05	951.06
3092.81	31.65	319.86	2819.94	767.61	-562.01	14.24	951.14
3092.96	31.78	319.88	2820.07	767.67	-562.06	25.20	951.22
3093.11	31.85	319.89	2820.19	767.73	-562.12	14.72	951.30
3093.26	31.91	319.87	2820.32	767.79	-562.17	10.99	951.38
3093.42	31.96	319.85	2820.45	767.85	-562.22	9.93	951.46
3093.57	31.98	319.81	2820.58	767.91	-562.27	7.19	951.54
3093.72	31.99	319.75	2820.71	767.97	-562.32	6.79	951.62
3093.87	31.99	319.68	2820.84	768.04	-562.38	7.15	951.70
3094.02	31.98	319.60	2820.97	768.10	-562.43	8.19	951.78
3094.18	31.96	319.54	2821.10	768.16	-562.48	7.77	951.87
3094.33	31.94	319.51	2821.23	768.22	-562.53	4.97	951.95
3094.48	31.92	319.50	2821.36	768.28	-562.59	3.15	952.03
3094.63	31.90	319.51	2821.49	768.34	-562.64	4.32	952.11
3094.79	31.87	319.56	2821.62	768.40	-562.69	7.23	952.19
3094.94	31.85	319.59	2821.75	768.47	-562.74	5.25	952.27
3095.09	31.83	319.61	2821.88	768.53	-562.79	5.29	952.35
3095.24	31.79	319.60	2822.01	768.59	-562.85	6.41	952.43
3095.40	31.75	319.55	2822.14	768.65	-562.90	9.70	952.51
3095.55	31.71	319.48	2822.26	768.71	-562.95	9.94	952.59
3095.70	31.68	319.40	2822.39	768.77	-563.00	11.19	952.67
3095.85	31.66	319.33	2822.52	768.83	-563.05	8.40	952.74
3096.01	31.66	319.28	2822.65	768.89	-563.11	5.14	952.82
3096.16	31.67	319.26	2822.78	768.95	-563.16	4.15	952.90
3096.31	31.71	319.27	2822.91	769.01	-563.21	6.24	952.98
3096.46	31.75	319.31	2823.04	769.07	-563.26	9.49	953.06
3096.62	31.83	319.42	2823.17	769.14	-563.32	19.77	953.14
3096.77	31.87	319.48	2823.30	769.20	-563.37	9.81	953.22
3096.92	31.89	319.53	2823.43	769.26	-563.42	6.33	953.30
3097.07	31.90	319.58	2823.56	769.32	-563.47	5.40	953.38
3097.23	31.90	319.60	2823.69	769.38	-563.52	2.68	953.46
3097.38	31.88	319.62	2823.82	769.44	-563.58	2.66	953.54
3097.53	31.87	319.62	2823.95	769.50	-563.63	3.62	953.62
3097.68	31.85	319.61	2824.08	769.56	-563.68	4.20	953.70
3097.83	31.82	319.59	2824.21	769.63	-563.73	5.12	953.78
3097.99	31.80	319.56	2824.34	769.69	-563.79	4.85	953.86
3098.14	31.78	319.53	2824.47	769.75	-563.84	5.83	953.94
3098.29	31.77	319.51	2824.60	769.81	-563.89	3.24	954.02
3098.44	31.75	319.48	2824.73	769.87	-563.94	4.18	954.10
3098.60	31.77	319.50	2824.86	769.93	-563.99	4.02	954.18
3098.75	31.79	319.53	2824.99	769.99	-564.05	5.72	954.26
3098.90	31.82	319.58	2825.11	770.05	-564.10	8.13	954.34
3099.05	31.87	319.66	2825.24	770.11	-564.15	12.16	954.42
3099.21	31.90	319.71	2825.37	770.18	-564.20	8.05	954.50
3099.36	31.93	319.75	2825.50	770.24	-564.25	7.34	954.58

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 23 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,.325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3099.51	31.94	319.77	2825.63	770.30	-564.31	2.84	954.66
3099.66	31.94	319.76	2825.76	770.36	-564.36	0.53	954.74
3099.82	31.93	319.73	2825.89	770.42	-564.41	4.33	954.82
3099.97	31.91	319.69	2826.02	770.48	-564.46	5.45	954.91
3100.12	31.89	319.65	2826.15	770.54	-564.51	5.98	954.99
3100.27	31.87	319.61	2826.28	770.61	-564.57	6.17	955.07
3100.43	31.84	319.54	2826.41	770.67	-564.62	9.20	955.15
3100.58	31.83	319.52	2826.54	770.73	-564.67	3.05	955.23
3100.73	31.82	319.50	2826.67	770.79	-564.72	2.11	955.31
3100.88	31.82	319.49	2826.80	770.85	-564.78	1.14	955.39
3101.04	31.82	319.47	2826.93	770.91	-564.83	1.84	955.47
3101.19	31.82	319.46	2827.06	770.97	-564.88	1.05	955.55
3101.34	31.82	319.44	2827.19	771.03	-564.93	1.73	955.63
3101.49	31.81	319.42	2827.31	771.09	-564.98	3.01	955.71
3101.64	31.81	319.40	2827.44	771.16	-565.04	1.72	955.79
3101.80	31.82	319.38	2827.57	771.22	-565.09	2.22	955.87
3101.95	31.83	319.37	2827.70	771.28	-565.14	2.75	955.95
3102.10	31.86	319.37	2827.83	771.34	-565.19	5.67	956.03
3102.25	31.89	319.39	2827.96	771.40	-565.25	6.23	956.11
3102.41	31.92	319.41	2828.09	771.46	-565.30	5.75	956.19
3102.56	31.93	319.42	2828.22	771.52	-565.35	3.77	956.27
3102.71	31.94	319.43	2828.35	771.58	-565.40	0.82	956.35
3102.86	31.93	319.43	2828.48	771.64	-565.46	1.69	956.43
3103.02	31.89	319.41	2828.61	771.71	-565.51	7.90	956.51
3103.17	31.85	319.39	2828.74	771.77	-565.56	8.11	956.59
3103.32	31.80	319.37	2828.87	771.83	-565.61	9.56	956.67
3103.47	31.76	319.36	2829.00	771.89	-565.67	7.85	956.75
3103.63	31.74	319.39	2829.13	771.95	-565.72	4.48	956.83
3103.78	31.74	319.42	2829.26	772.01	-565.77	3.64	956.91
3103.93	31.75	319.48	2829.39	772.07	-565.82	7.32	956.99
3104.08	31.79	319.56	2829.52	772.13	-565.87	11.65	957.07
3104.24	31.82	319.59	2829.65	772.19	-565.93	5.24	957.15
3104.39	31.82	319.58	2829.77	772.25	-565.98	1.43	957.23
3104.54	31.81	319.54	2829.90	772.32	-566.03	5.55	957.31
3104.69	31.78	319.47	2830.03	772.38	-566.08	9.46	957.39
3104.85	31.74	319.39	2830.16	772.44	-566.13	10.92	957.47
3105.00	31.69	319.31	2830.29	772.50	-566.19	12.98	957.55
3105.15	31.65	319.25	2830.42	772.56	-566.24	9.53	957.62
3105.30	31.62	319.22	2830.55	772.62	-566.29	6.57	957.70
3105.45	31.61	319.23	2830.68	772.68	-566.34	3.18	957.78
3105.61	31.59	319.25	2830.81	772.74	-566.40	3.31	957.86
3105.76	31.59	319.29	2830.94	772.80	-566.45	4.14	957.94
3105.91	31.59	319.34	2831.07	772.86	-566.50	5.77	958.02
3106.06	31.59	319.42	2831.20	772.92	-566.55	7.38	958.10
3106.22	31.60	319.48	2831.33	772.98	-566.60	7.41	958.18
3106.37	31.62	319.54	2831.46	773.04	-566.66	6.16	958.26
3106.52	31.64	319.61	2831.59	773.10	-566.71	9.13	958.34
3106.67	31.68	319.69	2831.72	773.17	-566.76	10.86	958.42
3106.83	31.71	319.77	2831.85	773.23	-566.81	9.74	958.50
3106.98	31.74	319.84	2831.98	773.29	-566.86	10.22	958.58
3107.13	31.77	319.91	2832.11	773.35	-566.91	9.29	958.66
3107.28	31.78	319.94	2832.24	773.41	-566.97	3.57	958.74
3107.44	31.77	319.94	2832.37	773.47	-567.02	2.29	958.82
3107.59	31.74	319.91	2832.50	773.53	-567.07	6.44	958.90
3107.74	31.65	319.78	2832.63	773.59	-567.12	22.70	958.98
3107.89	31.57	319.67	2832.76	773.66	-567.17	18.40	959.06
3108.05	31.51	319.58	2832.89	773.72	-567.22	15.98	959.14
3108.20	31.45	319.50	2833.02	773.78	-567.28	13.23	959.22

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 24 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3108.35	31.42	319.47	2833.15	773.84	-567.33	7.90	959.30
3108.50	31.43	319.50	2833.28	773.90	-567.38	4.18	959.37
3108.66	31.47	319.58	2833.41	773.96	-567.43	10.91	959.45
3108.81	31.53	319.69	2833.54	774.02	-567.48	17.21	959.53
3108.96	31.61	319.81	2833.67	774.08	-567.53	19.86	959.61
3109.11	31.68	319.89	2833.80	774.14	-567.59	15.77	959.69
3109.26	31.73	319.91	2833.93	774.20	-567.64	9.81	959.77
3109.42	31.75	319.87	2834.06	774.26	-567.69	5.79	959.85
3109.57	31.73	319.75	2834.19	774.32	-567.74	13.74	959.93
3109.72	31.68	319.57	2834.32	774.39	-567.79	20.23	960.01
3109.87	31.64	319.36	2834.45	774.45	-567.84	23.79	960.09
3110.03	31.60	319.21	2834.58	774.51	-567.90	16.96	960.17
3110.18	31.61	319.13	2834.70	774.57	-567.95	8.36	960.25
3110.33	31.64	319.11	2834.83	774.63	-568.00	7.07	960.33
3110.48	31.70	319.15	2834.96	774.69	-568.05	11.96	960.41
3110.64	31.78	319.22	2835.09	774.75	-568.11	16.73	960.49
3110.79	31.87	319.34	2835.22	774.81	-568.16	22.19	960.57
3110.94	31.95	319.45	2835.35	774.87	-568.21	20.13	960.65
3111.09	32.02	319.53	2835.48	774.93	-568.26	14.98	960.73
3111.25	32.07	319.60	2835.61	774.99	-568.31	12.65	960.81
3111.40	32.10	319.63	2835.74	775.06	-568.37	6.29	960.89
3111.55	32.10	319.63	2835.87	775.12	-568.42	1.02	960.97
3111.70	32.09	319.61	2836.00	775.18	-568.47	3.14	961.05
3111.86	32.07	319.58	2836.13	775.24	-568.52	5.85	961.13
3112.01	32.04	319.54	2836.26	775.30	-568.58	6.44	961.21
3112.16	32.01	319.50	2836.39	775.36	-568.63	7.86	961.29
3112.31	31.96	319.44	2836.52	775.43	-568.68	10.80	961.37
3112.47	31.93	319.39	2836.64	775.49	-568.73	8.63	961.45
3112.62	31.90	319.36	2836.77	775.55	-568.79	6.93	961.53
3112.77	31.88	319.34	2836.90	775.61	-568.84	3.95	961.61
3112.92	31.88	319.34	2837.03	775.67	-568.89	0.35	961.69
3113.07	31.90	319.37	2837.16	775.73	-568.94	4.30	961.77
3113.23	31.92	319.40	2837.29	775.79	-569.00	5.88	961.85
3113.38	31.97	319.47	2837.42	775.85	-569.05	11.52	961.94
3113.53	31.98	319.49	2837.55	775.91	-569.10	3.77	962.02
3113.68	31.97	319.48	2837.68	775.98	-569.15	2.29	962.10
3113.84	31.94	319.43	2837.81	776.04	-569.21	7.20	962.18
3113.99	31.91	319.37	2837.94	776.10	-569.26	9.82	962.26
3114.14	31.87	319.30	2838.07	776.16	-569.31	10.63	962.34
3114.29	31.83	319.21	2838.20	776.22	-569.36	11.81	962.42
3114.45	31.80	319.14	2838.33	776.28	-569.42	9.07	962.50
3114.60	31.79	319.08	2838.46	776.34	-569.47	6.63	962.58
3114.75	31.79	319.04	2838.59	776.40	-569.52	4.01	962.66
3114.90	31.80	319.03	2838.72	776.46	-569.57	3.38	962.74
3115.06	31.83	319.03	2838.84	776.52	-569.63	4.57	962.82
3115.21	31.87	319.05	2838.97	776.58	-569.68	8.81	962.90
3115.36	31.89	319.07	2839.10	776.65	-569.73	4.58	962.98
3115.51	31.90	319.08	2839.23	776.71	-569.79	2.01	963.06
3115.67	31.90	319.07	2839.36	776.77	-569.84	1.10	963.14
3115.82	31.88	319.06	2839.49	776.83	-569.89	3.07	963.22
3115.97	31.85	319.03	2839.62	776.89	-569.94	6.49	963.30
3116.12	31.80	318.98	2839.75	776.95	-570.00	11.42	963.38
3116.28	31.75	318.92	2839.88	777.01	-570.05	11.63	963.46
3116.43	31.70	318.88	2840.01	777.07	-570.10	10.95	963.54
3116.58	31.65	318.82	2840.14	777.13	-570.15	11.46	963.62
3116.73	31.61	318.79	2840.27	777.19	-570.21	8.03	963.69
3116.88	31.60	318.79	2840.40	777.25	-570.26	2.53	963.77

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 25 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3117.04	31.61	318.81	2840.53	777.31	-570.31	3.84	963.85
3117.19	31.66	318.87	2840.66	777.37	-570.36	10.12	963.93
3117.34	31.69	318.91	2840.79	777.43	-570.42	8.12	964.01
3117.49	31.77	318.99	2840.92	777.49	-570.47	17.16	964.09
3117.65	31.81	319.02	2841.05	777.55	-570.52	9.26	964.17
3117.80	31.85	319.04	2841.18	777.61	-570.58	7.61	964.25
3117.95	31.86	318.99	2841.31	777.67	-570.63	4.61	964.33
3118.10	31.85	318.92	2841.44	777.73	-570.68	7.52	964.41
3118.26	31.82	318.81	2841.57	777.79	-570.73	13.16	964.49
3118.41	31.77	318.68	2841.69	777.86	-570.79	15.95	964.57
3118.56	31.74	318.57	2841.82	777.92	-570.84	13.37	964.65
3118.71	31.70	318.45	2841.95	777.98	-570.89	14.70	964.73
3118.87	31.73	318.46	2842.08	778.04	-570.95	5.91	964.81
3119.02	31.80	318.55	2842.21	778.10	-571.00	15.67	964.89
3119.17	31.91	318.72	2842.34	778.16	-571.05	28.37	964.97
3119.32	32.04	318.93	2842.47	778.22	-571.11	33.38	965.05
3119.48	32.18	319.16	2842.60	778.28	-571.16	37.16	965.13
3119.63	32.28	319.36	2842.73	778.34	-571.21	29.03	965.21
3119.78	32.33	319.49	2842.86	778.40	-571.26	16.26	965.29
3119.93	32.33	319.57	2842.99	778.46	-571.32	8.25	965.37
3120.09	32.24	319.51	2843.12	778.53	-571.37	18.85	965.46
3120.24	32.09	319.35	2843.25	778.59	-571.42	34.83	965.54
3120.39	31.89	319.12	2843.37	778.65	-571.48	45.21	965.62
3120.54	31.69	318.86	2843.50	778.71	-571.53	48.55	965.70
3120.69	31.41	318.45	2843.63	778.77	-571.58	69.50	965.78
3120.85	31.32	318.31	2843.76	778.83	-571.63	21.42	965.85
3121.00	31.31	318.26	2843.89	778.89	-571.69	5.84	965.93
3121.15	31.37	318.33	2844.02	778.95	-571.74	13.76	966.01
3121.30	31.49	318.48	2844.15	779.01	-571.79	27.39	966.09
3121.46	31.64	318.69	2844.28	779.07	-571.84	36.76	966.17
3121.61	31.80	318.93	2844.41	779.13	-571.90	41.65	966.25
3121.76	31.94	319.14	2844.54	779.19	-571.95	34.43	966.33
3121.91	32.06	319.32	2844.67	779.25	-572.00	29.24	966.41
3122.07	32.12	319.43	2844.80	779.31	-572.06	17.27	966.49
3122.22	32.17	319.54	2844.93	779.37	-572.11	15.34	966.57
3122.37	32.16	319.54	2845.06	779.43	-572.16	2.60	966.65
3122.52	32.12	319.51	2845.19	779.49	-572.21	8.77	966.73
3122.68	32.06	319.44	2845.32	779.56	-572.27	12.74	966.81
3122.83	32.00	319.37	2845.45	779.62	-572.32	13.97	966.89
3122.98	31.95	319.30	2845.58	779.68	-572.37	12.87	966.97
3123.13	31.91	319.22	2845.71	779.74	-572.42	11.57	967.05
3123.29	31.90	319.19	2845.84	779.80	-572.48	4.23	967.13
3123.44	31.91	319.19	2845.96	779.86	-572.53	2.70	967.21
3123.59	31.96	319.23	2846.09	779.92	-572.58	11.74	967.29
3123.74	32.02	319.28	2846.22	779.98	-572.63	12.56	967.37
3123.90	32.14	319.41	2846.35	780.04	-572.69	27.13	967.46
3124.05	32.26	319.52	2846.48	780.11	-572.74	26.29	967.54
3124.20	32.30	319.55	2846.61	780.17	-572.79	9.14	967.62
3124.35	32.32	319.56	2846.74	780.23	-572.85	2.99	967.70
3124.50	32.25	319.46	2846.87	780.29	-572.90	17.28	967.78
3124.66	32.12	319.29	2847.00	780.35	-572.95	31.47	967.86
3124.81	31.93	319.05	2847.13	780.42	-573.00	44.55	967.94
3124.96	31.73	318.81	2847.26	780.48	-573.06	46.04	968.02
3125.11	31.56	318.62	2847.39	780.54	-573.11	39.93	968.10
3125.27	31.43	318.50	2847.52	780.60	-573.16	28.23	968.18
3125.42	31.35	318.46	2847.65	780.65	-573.22	15.39	968.26
3125.57	31.34	318.52	2847.78	780.71	-573.27	6.56	968.34
3125.72	31.49	318.85	2847.91	780.77	-573.32	43.55	968.42

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 26 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3125.88	31.59	319.05	2848.04	780.83	-573.37	28.69	968.49
3126.03	31.69	319.23	2848.17	780.89	-573.42	28.36	968.57
3126.18	31.83	319.46	2848.29	780.96	-573.48	35.79	968.65
3126.33	31.91	319.58	2848.42	781.02	-573.53	20.65	968.73
3126.49	31.97	319.66	2848.55	781.08	-573.58	13.80	968.81
3126.64	32.04	319.76	2848.68	781.14	-573.63	17.47	968.89
3126.79	32.08	319.79	2848.81	781.20	-573.69	7.58	968.98
3126.94	32.09	319.78	2848.94	781.26	-573.74	2.26	969.06
3127.10	32.07	319.72	2849.07	781.32	-573.79	7.50	969.14
3127.25	32.04	319.65	2849.20	781.39	-573.84	8.95	969.22
3127.40	31.97	319.52	2849.33	781.45	-573.90	19.60	969.30
3127.55	31.90	319.40	2849.46	781.51	-573.95	17.88	969.38
3127.71	31.84	319.30	2849.59	781.57	-574.00	16.05	969.46
3127.86	31.77	319.17	2849.72	781.63	-574.05	19.52	969.54
3128.01	31.70	319.04	2849.85	781.69	-574.11	18.68	969.62
3128.16	31.65	318.93	2849.98	781.75	-574.16	15.21	969.70
3128.31	31.61	318.84	2850.11	781.81	-574.21	12.46	969.78
3128.47	31.59	318.76	2850.24	781.87	-574.26	9.34	969.86
3128.62	31.57	318.70	2850.37	781.93	-574.32	6.67	969.94
3128.77	31.60	318.71	2850.50	781.99	-574.37	5.16	970.01
3128.92	31.65	318.77	2850.63	782.05	-574.42	11.52	970.09
3129.08	31.75	318.91	2850.75	782.11	-574.47	24.71	970.17
3129.23	31.83	319.04	2850.88	782.17	-574.53	21.48	970.25
3129.38	31.90	319.15	2851.01	782.23	-574.58	16.73	970.33
3129.53	31.87	319.16	2851.14	782.30	-574.63	4.37	970.41
3129.69	31.89	319.23	2851.27	782.36	-574.68	7.62	970.49
3129.84	31.88	319.24	2851.40	782.42	-574.74	3.15	970.57
3129.99	31.85	319.25	2851.53	782.48	-574.79	5.33	970.65
3130.14	31.81	319.25	2851.66	782.54	-574.84	7.61	970.73
3130.30	31.85	319.35	2851.79	782.60	-574.89	13.39	970.81
3130.45	31.87	319.43	2851.92	782.66	-574.95	8.14	970.89
3130.60	31.91	319.52	2852.05	782.72	-575.00	12.81	970.97
3130.75	31.90	319.55	2852.18	782.78	-575.05	3.32	971.05
3130.91	31.89	319.61	2852.31	782.84	-575.10	6.22	971.13
3131.06	31.86	319.63	2852.44	782.91	-575.16	5.69	971.21
3131.21	31.80	319.60	2852.57	782.97	-575.21	13.02	971.29
3131.36	31.75	319.59	2852.70	783.03	-575.26	9.28	971.37
3131.52	31.71	319.60	2852.83	783.09	-575.31	8.58	971.45
3131.67	31.69	319.60	2852.96	783.15	-575.36	2.89	971.53
3131.82	31.70	319.63	2853.09	783.21	-575.42	3.12	971.61
3131.97	31.72	319.65	2853.22	783.27	-575.47	4.03	971.69
3132.12	31.77	319.67	2853.34	783.33	-575.52	9.43	971.77
3132.28	31.82	319.69	2853.47	783.39	-575.57	9.81	971.85
3132.43	31.86	319.68	2853.60	783.46	-575.62	8.24	971.93
3132.58	31.90	319.67	2853.73	783.52	-575.68	8.37	972.01
3132.73	31.95	319.66	2853.86	783.58	-575.73	9.43	972.09
3132.89	31.98	319.64	2853.99	783.64	-575.78	7.10	972.17
3133.04	32.01	319.61	2854.12	783.70	-575.83	6.34	972.25
3133.19	32.04	319.60	2854.25	783.76	-575.88	5.98	972.33
3133.34	32.07	319.59	2854.38	783.82	-575.94	5.37	972.42
3133.50	32.09	319.60	2854.51	783.89	-575.99	4.45	972.50
3133.65	32.11	319.60	2854.64	783.95	-576.04	3.75	972.58
3133.80	32.13	319.63	2854.77	784.01	-576.09	5.16	972.66
3133.95	32.15	319.66	2854.90	784.07	-576.15	5.11	972.74
3134.11	32.17	319.70	2855.02	784.13	-576.20	6.43	972.82
3134.26	32.19	319.74	2855.15	784.20	-576.25	5.84	972.90
3134.41	32.21	319.79	2855.28	784.26	-576.30	6.48	972.98

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey <b>Field:</b> GWW- Honselersdijk <b>Site:</b> HON-GT-01 <b>Well:</b> HON-GT-01 <b>Wellpath:</b> HON-GT-01	<b>Date:</b> 30/01/2012 <b>Time:</b> 14:27:23 <b>Page:</b> 27 <b>Co-ordinate(NE) Reference:</b> Site: HON-GT-01, Grid North <b>Vertical (TVD) Reference:</b> Ground Level 0.6 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,325.00Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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Survey

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3134.56	32.22	319.83	2855.41	784.32	-576.36	4.68	973.06
3134.72	32.22	319.87	2855.54	784.38	-576.41	4.24	973.14
3134.87	32.20	319.88	2855.67	784.44	-576.46	4.06	973.22
3135.02	32.18	319.89	2855.80	784.51	-576.51	5.72	973.30
3135.17	32.14	319.88	2855.93	784.57	-576.57	6.91	973.38
3135.33	32.11	319.87	2856.06	784.63	-576.62	6.02	973.47
3135.48	32.07	319.85	2856.19	784.69	-576.67	8.18	973.55
3135.63	32.03	319.80	2856.31	784.75	-576.72	10.18	973.63
3135.78	31.99	319.75	2856.44	784.82	-576.77	8.38	973.71
3135.93	31.96	319.68	2856.57	784.88	-576.83	9.52	973.79
3136.09	31.94	319.61	2856.70	784.94	-576.88	7.95	973.87
3136.24	31.92	319.53	2856.83	785.00	-576.93	9.79	973.95
3136.39	31.90	319.45	2856.96	785.06	-576.98	8.31	974.03
3136.54	31.90	319.40	2857.09	785.12	-577.04	5.88	974.11
3136.70	31.90	319.36	2857.22	785.18	-577.09	3.82	974.19
3136.85	31.90	319.33	2857.35	785.24	-577.14	3.76	974.27
3137.00	31.90	319.31	2857.48	785.31	-577.19	2.16	974.35
3137.15	31.90	319.30	2857.61	785.37	-577.25	1.01	974.43
3137.31	31.89	319.27	2857.74	785.43	-577.30	3.53	974.51
3137.46	31.88	319.25	2857.87	785.49	-577.35	2.47	974.59
3137.61	31.88	319.24	2858.00	785.55	-577.40	1.55	974.67
3137.76	31.87	319.22	2858.13	785.61	-577.46	2.90	974.75
3137.92	31.86	319.21	2858.26	785.67	-577.51	1.03	974.83
3138.07	31.86	319.22	2858.38	785.73	-577.56	0.22	974.91
3138.22	31.86	319.23	2858.51	785.79	-577.61	1.20	974.99
3138.37	31.87	319.25	2858.64	785.85	-577.67	2.81	975.07
3138.53	31.88	319.28	2858.77	785.91	-577.72	3.94	975.15
3138.68	31.89	319.30	2858.90	785.98	-577.77	3.20	975.23
3138.83	31.90	319.34	2859.03	786.04	-577.82	3.92	975.31
3138.98	31.91	319.37	2859.16	786.10	-577.88	4.31	975.39
3139.14	31.93	319.42	2859.29	786.16	-577.93	5.98	975.47
3139.29	31.94	319.46	2859.42	786.22	-577.98	5.17	975.55
3139.44	31.96	319.51	2859.55	786.28	-578.03	5.58	975.63
3139.59	31.97	319.56	2859.68	786.34	-578.09	5.84	975.71
3139.74	31.99	319.62	2859.81	786.40	-578.14	7.37	975.79
3139.90	32.01	319.69	2859.94	786.47	-578.19	8.72	975.87
3140.05	32.04	319.76	2860.07	786.53	-578.24	8.55	975.95
3140.20	32.07	319.82	2860.20	786.59	-578.29	8.95	976.03
3140.35	32.10	319.89	2860.32	786.65	-578.35	8.98	976.11
3140.51	32.13	319.94	2860.45	786.71	-578.40	8.34	976.19
3140.66	32.16	320.01	2860.58	786.78	-578.45	8.52	976.27
3140.81	32.17	320.06	2860.71	786.84	-578.50	6.42	976.36
3140.96	32.19	320.11	2860.84	786.90	-578.56	5.91	976.44
3141.12	32.19	320.15	2860.97	786.96	-578.61	3.86	976.52
3141.27	32.19	320.18	2861.10	787.02	-578.66	3.93	976.60
3141.42	32.19	320.20	2861.23	787.09	-578.71	2.51	976.68
3141.57	32.19	320.22	2861.36	787.15	-578.76	2.05	976.76
3141.73	32.19	320.24	2861.49	787.21	-578.82	1.54	976.84
3141.88	32.19	320.25	2861.61	787.27	-578.87	1.70	976.92
3142.03	32.20	320.26	2861.74	787.34	-578.92	1.84	977.00
3142.18	32.21	320.27	2861.87	787.40	-578.97	2.17	977.08
3142.34	32.22	320.28	2862.00	787.46	-579.02	2.40	977.16
3142.49	32.23	320.28	2862.13	787.52	-579.07	1.87	977.25
3142.64	32.24	320.28	2862.26	787.59	-579.13	1.62	977.33
3142.79	32.24	320.28	2862.39	787.65	-579.18	1.60	977.41
3142.95	32.25	320.28	2862.52	787.71	-579.23	0.66	977.49
3143.10	32.25	320.28	2862.65	787.77	-579.28	0.72	977.57
3143.25	32.25	320.27	2862.77	787.84	-579.33	0.44	977.65

# Pathfinder Energy Services

## Definitive Survey Listing

<b>Company:</b> T&A Survey	<b>Date:</b> 30/01/2012	<b>Time:</b> 14:27:23	<b>Page:</b> 28
<b>Field:</b> GWW- Honselersdijk	<b>Co-ordinate(NE) Reference:</b>	<b>Site:</b> HON-GT-01, Grid North	
<b>Site:</b> HON-GT-01	<b>Vertical (TVD) Reference:</b>	Ground Level 0.6	
<b>Well:</b> HON-GT-01	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,325.00Azi)	
<b>Wellpath:</b> HON-GT-01	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Adapti

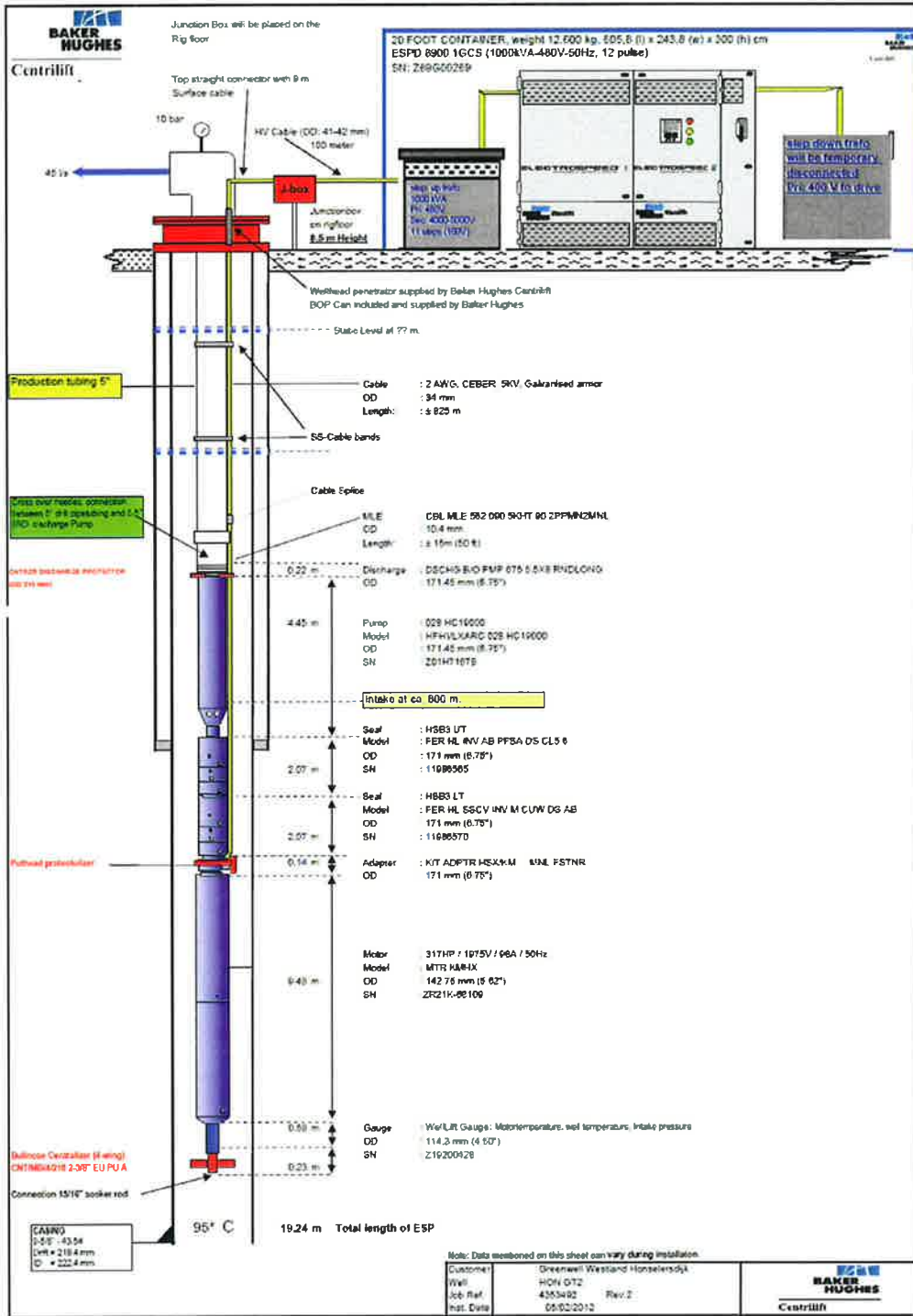
**Survey**

MD m	Incl deg	Azim deg	TVD m	N/S m	E/W m	DLS deg/30m	VS m
3143.40	32.25	320.27	2862.90	787.90	-579.39	0.39	977.73
3143.55	32.25	320.27	2863.03	787.96	-579.44	0.15	977.81
3143.71	32.25	320.27	2863.16	788.02	-579.49	0.07	977.89
3143.86	32.25	320.27	2863.29	788.09	-579.54	0.04	977.98
3144.01	32.25	320.27	2863.42	788.15	-579.59	0.28	978.06
3144.16	32.25	320.27	2863.55	788.21	-579.65	0.02	978.14
3144.32	32.25	320.27	2863.68	788.27	-579.70	0.06	978.22
3144.47	32.25	320.27	2863.81	788.34	-579.75	0.06	978.30
3144.62	32.25	320.27	2863.93	788.40	-579.80	0.09	978.38
3144.77	32.25	320.27	2864.06	788.46	-579.85	0.07	978.46
3144.93	32.25	320.27	2864.19	788.52	-579.91	0.09	978.54
3145.08	32.25	320.27	2864.32	788.59	-579.96	0.07	978.62
3145.23	32.25	320.27	2864.45	788.65	-580.01	0.05	978.70
3145.38	32.25	320.27	2864.58	788.71	-580.06	0.08	978.79
3145.54	32.25	320.28	2864.71	788.78	-580.11	0.03	978.87
3145.69	32.25	320.28	2864.84	788.84	-580.17	0.03	978.95
3145.84	32.25	320.28	2864.97	788.90	-580.22	0.04	979.03
3145.99	32.25	320.28	2865.09	788.96	-580.27	0.04	979.11
3146.15	32.25	320.27	2865.22	789.03	-580.32	0.05	979.19
3240.00	32.25	320.27	2944.60	827.54	-612.33	0.00	1029.10

**Survey Program for Definitive Wellpath**

<b>Date:</b> 30/01/2012		<b>Validated:</b> No		<b>Version:</b> 10	
<b>Actual From</b>	<b>To</b>	<b>Survey</b>	<b>Toolcode</b>	<b>Tool Name</b>	
m	m				
21.90	781.00	8 1/2" Drop Gyro (21.90-808.10)	Rate_Gyro	Rate Gyro	
820.70	1090.60	12 1/4" Drop Gyro (820.70-1090.60)	Rate_Gyro	Rate Gyro	
1121.00	2453.00	8 1/2" MWD (1121.00-2453.00)	PMWD	Pathfinder MWD	
2453.03	3240.00	6 1/8" Wireline (2453.03-3240.00)	Good_mag	Good Magnetic	

HON-GT-01-ST01 MWD SURVEY RECORD 6 1/2" Hole								
Depth (m)	Inc. (Deg)	Azi (Deg)	Course Length (m)	TVD (m)	Rectangular Coordinates		Vertical Section (m)	Dis °/30 m
					North (m)	East (m)		
2507.00	26.29	334.46	18.92	2322.09	519.02	-379.15	642.42	12.94
2534.00	20.05	345.71	27.00	2346.91	528.92	-382.88	652.51	8.47
2562.00	20.49	345.36	28.00	2373.17	538.31	-385.30	661.41	0.49
2589.00	24.45	339.38	27.00	2398.12	548.11	-388.47	671.08	5.08
2616.00	26.64	335.77	27.00	2422.48	558.87	-392.92	682.30	2.98
2643.00	27.08	334.10	27.00	2446.57	569.92	-398.09	694.19	0.97
2670.00	27.00	334.28	27.00	2470.62	580.97	-403.43	706.18	0.13
2697.00	26.82	333.67	27.00	2494.70	591.95	-408.79	718.14	0.37
2724.00	26.47	332.79	27.00	2518.83	602.76	-414.25	730.01	0.59
2752.00	26.20	332.35	28.00	2543.92	613.78	-419.97	742.22	0.36
2779.00	25.76	332.52	27.00	2568.19	624.27	-425.44	753.86	0.50
2806.00	25.94	331.29	27.00	2592.49	634.65	-430.98	765.45	0.63
2833.00	25.41	331.21	27.00	2616.83	644.91	-436.61	777.00	0.59
2860.00	25.41	329.89	27.00	2641.21	654.99	-442.31	788.45	0.63
2887.00	25.41	330.50	27.00	2665.60	665.05	-448.07	799.92	0.29
2915.00	25.41	329.18	28.00	2690.89	675.44	-454.10	811.82	0.61
2942.00	25.41	329.27	27.00	2715.28	685.39	-460.03	823.32	0.04
2969.00	25.32	329.01	27.00	2739.68	695.32	-465.96	834.79	0.16
2996.00	24.89	327.16	27.00	2764.13	705.04	-472.02	846.18	0.99
3023.00	24.71	326.99	27.00	2788.64	714.55	-478.17	857.46	0.22
3050.00	24.36	326.81	27.00	2813.20	723.94	-484.29	868.63	0.40
3077.00	24.36	326.37	27.00	2837.80	733.24	-490.43	879.74	0.20
3104.00	24.89	325.67	27.00	2862.34	742.56	-496.72	890.96	0.67
3132.00	24.89	326.20	28.00	2887.74	752.33	-503.32	902.71	0.24
3159.00	24.80	327.25	27.00	2912.24	761.81	-509.54	914.02	0.50
3190**	24.80	327.25	31.00	2940.38	772.75	-516.57	926.97	0.00
** Straight line projection to TD.								
Vertical section direction 322.00°								



Bijlage 4      Welltest Honselersdijk GT1, Schmid, 201

## Report

Geochemical investigations of water and solid samples at  
Honselersdijk Gt 1 during the hydraulic test on 07. and  
08. March 2012

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## 1. Description of the services

Two gas samples and one water sample of the geothermal well Honselersdijk Gt 1/Netherland during the hydraulic test on 07. and 08. March 2012 were to be characterised geochemically. There were to be determined:

- Gas / water ratio
- Total gas composition
- Components dissolved in the water: anions: chloride, bromide, iodide, fluoride, hydrogen carbonate, sulphate; cations: Li, K, Na, Ca, Mg, NH<sub>4</sub>, Ba, Fe (tot.), Mn, Sr, Cr, Pb, Cu, Al, Zn, As, Hg, U
- Silica, boron
- pH value (laboratory),
- Density
- Mineralisation
- Dry matter at 180°C
- Determination of in-situ parameters (pH-, Eh values, conductivity, temperature, KS and
- KB values, organoleptic evaluation, rapid determination of solute sulphide)
- 

The analysis was done in cooperation with accredited laboratories.

The degassing pressure was to be calculated from the results of the analysis.

Microfiltration of the geothermal fluid had been conducted 3 hours before (1st sample) and at the end of the hydraulic test (2nd sample) at Honselersdijk Gt 1 on March 8, 2012. The Investigations (analysis and evaluation) of the solids were done by Mr. Birner, Geothermie Neubrandenburg GmbH.

## 2. Results of the water analysis

After filtration of the samples (0.45 µm), an aliquot of the filtered sample was acidified with HNO<sub>3</sub> for cation analysis. The physico-chemical properties of the samples to be analysed are summarised in Table 1 and Table 2.

The fluid produced from the deep well Honselersdijk Gt 1/Netherland was clear water with a pH value of 6.0. The fluid shows reducing conditions. The salt content is approx. 123 g/L.

The sodium content is around 40.0 mEq%. Chloride dominates the anions (49.8 mEq%). Thus, the formation fluid has to be assigned to the Na-Cl type. The contents of calcium (7.3 mEq%) and magnesium (1.9 mEq%) are lower by one order of magnitude. All the other solute components show clearly lower concentrations. The formation fluid contains a lot of iron – approx. 70 mg/L and gets brown after longer standing and contact with oxygen. The sulphate concentration is 200 mg/L; HS<sup>-</sup> or S<sup>2-</sup> are undetectable or below the detection limit (<0.2 mg/L).

Table 1: Physico-chemical properties

Denomination		HON GT1-070312	HON GT1-080312	HON GT1-080312
Date of sampling	unit	07.03.2012 6:40 p.m.	08.03.2012 1:30 p.m.	08.03.2012 4:30 p.m.
Temperature	°C		85.8	86.1
Production rate	l/s		43.3	43.4
Production amount	m <sup>3</sup>		3,940	4,250
Parameter				
Colour		yellowish (very low oil layer)		
Turbidity		none		
Smell		specific, little by hydrocarbons		
Precipitate		in air brown solids		
Degassing		yes		
Sample temperature	°C	81.3	81.4	83.7
pH value at sample temperature		6.18	6.01	6.01
pH value at 20.0°C		6.20	n.b.	5.96
Redox potential measured for Ag/AgCl	mV	-268	-265	-282
Redox potential SHE	mV	-93	-90	-109
Oxygen (O <sub>2</sub> )	mg/l	<1	<1	<1
Conductivity on site	mS/cm	145.0	n.b.	141.7
Conductivity (25°C) at laboratory	mS/cm	165.4	n.b.	166.5
Density 20°C	g/cm <sup>3</sup>	n.b.	n.b.	1.091
Acid capacity pH 4,3	mmol/L	2.68	n.b.	2.48
Base capacity pH 8,2	mmol/L	5.35	n.b.	5.15
Sulphide	mg/L	undetectable		

Table 2: Chemical composition

HON-GT1-080312			
4:30 p.m.			
		c (m)	c (eq)
<b>Cations</b>			
Lithium	Li <sup>+</sup>	5,28 [mg/L]	0,76 [mEq/L]
Sodium	Na <sup>+</sup>	38800 [mg/L]	1687,69 [mEq/L]
Potassium	K <sup>+</sup>	458 [mg/L]	11,71 [mEq/L]
Calcium	Ca <sup>2+</sup>	6190 [mg/L]	308,88 [mEq/L]
Magnesium	Mg <sup>2+</sup>	983 [mg/L]	80,91 [mEq/L]
Strontium	Sr <sup>2+</sup>	373 [mg/L]	8,51 [mEq/L]
Barium	Ba <sup>2+</sup>	8,24 [mg/L]	0,12 [mEq/L]
Iron (tot.)	Fe <sup>2+</sup>	72,1 [mg/L]	2,58 [mEq/L]
Manganese	Mn <sup>2+</sup>	1,67 [mg/L]	0,06 [mEq/L]
Ammonia	NH <sub>4</sub> <sup>+</sup>	76,7 [mg/L]	4,25 [mEq/L]
<b>Total cations</b>		<b>46968 [mg/L]</b>	<b>2105 [mEq/L]</b>
<b>Anions</b>			
Chloride	Cl <sup>-</sup>	75710 [mg/L]	2135,68 [mEq/L]
Hydrogen carbonate	HCO <sub>3</sub> <sup>-</sup>	151 [mg/L]	2,48 [mEq/L]
Sulphate	SO <sub>4</sub> <sup>2-</sup>	200 [mg/L]	4,16 [mEq/L]
Nitrate	NO <sub>3</sub> <sup>-</sup>	<0,50 [mg/L]	
Bromide	Br <sup>-</sup>	194 [mg/L]	2,43 [mEq/L]
Iodide	I <sup>-</sup>	1,0 [mg/L]	0,01 [mEq/L]
Flouride	F <sup>-</sup>	<1,0 [mg/L]	
<b>Total anions</b>		<b>76256 [mg/L]</b>	<b>2145 [mEq/L]</b>
Salinity		<b>123224 [mg/L]</b>	
Dry matter (180°C)		<b>139300 [mg/L]</b>	
Ion balance		HON-GT1-080312	-39,29 [mEq/L]
Error			-1,85
<b>Other parameters</b>			
<b>Boron, B</b>			
		28,0 [mg/L]	
	H <sub>2</sub> BO <sub>3</sub>	160,2 [mg/L]	
<b>Silicon, Si</b>			
		20,0 [mg/L]	
	SiO <sub>2</sub>	42,8 [mg/L]	
	H <sub>2</sub> SiO <sub>3</sub>	55,6 [mg/L]	
<b>Trace metals</b>			
	Aluminium, Al	6,0 [µg/L]	
	Chrome, Cr	11,9 [µg/L]	
	Copper, Cu	<7,50 [µg/L]	
	Zinc, Zn	372 [µg/L]	
	Arsenic, As	6,65 [µg/L]	
	Mercury, Hg	<1,00 [µg/L]	
	Lead, Pb	8,1 [µg/L]	
	Uranium, U	<0,233 [µg/L]	

### 3. Results of the gas analysis

#### 3.1 Method

Thermal water was taken continuously via an existing „bypass“ and fed into a degasser. The hot thermal water was sprayed in the closed vessel. The gases released in this way are carried away at the head of the degasser.



Figure 1: Degasser on the well Honselersdijk Gt 1

The gas flow was registered over a longer period of time by means of a drum-type gas flow meter and related afterwards to the degassed water (see Figure 2 and Figure 3).

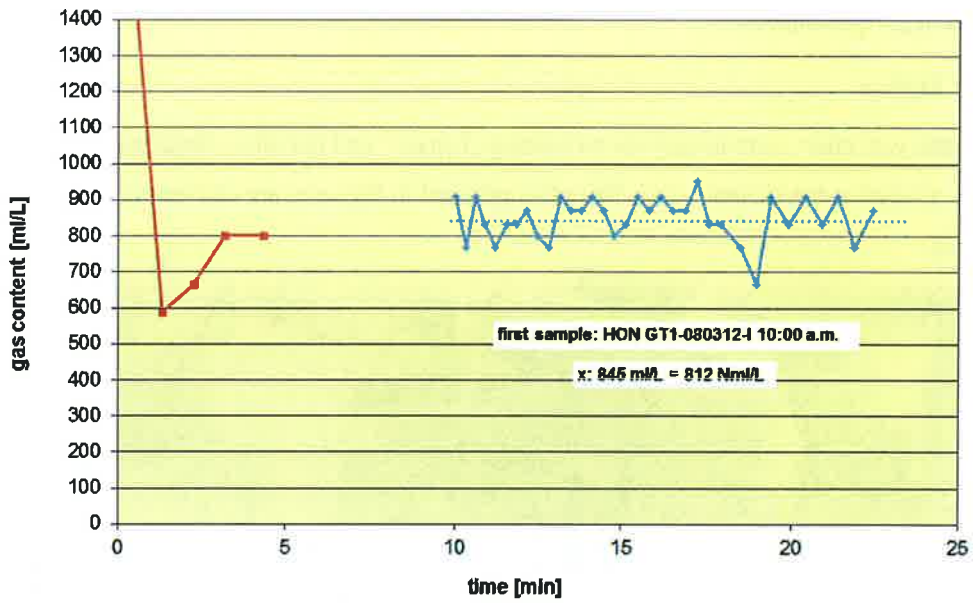


Figure 2: Gas content in one liter fluid over the time by a fluid temperature of 75°C (first measurement period on 8th march 2012 from 8:15 a.m. till 10:00 a.m.)

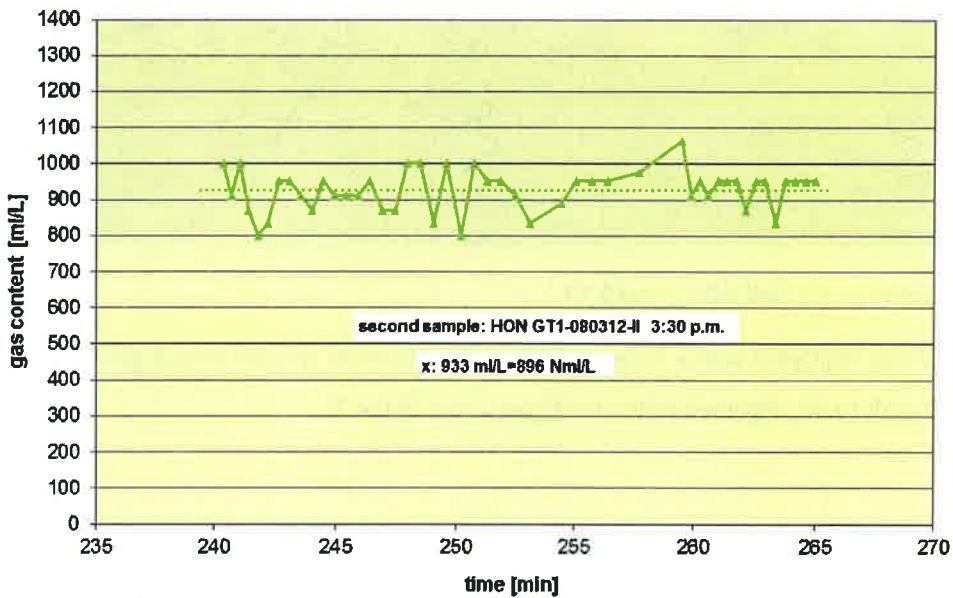


Figure 3: Gas content in one liter fluid over the time by a fluid temperature of about 80°C (second measurement period on 8th march 2012 from 1:45 p.m. till 3:30 p.m.)

### 3.2 Results

The gas composition was analyzed in the laboratory, observing a stable fluid inflow and outflow after measuring of the gas content. .

Table 3 shows the results of the gas composition. The oxygen in the both sample are very low (around 0.5 vol%).

Table 3: Results of the gas analysis

	HON GT1-080312-I		HON GT1-080312-II	
Date	08.03.2012			
Time	10:00 a.m.		3:30 p.m.	
	calculated O <sub>2</sub> -free		calculated O <sub>2</sub> -free	
Nm <sup>3</sup> (gas)/ Nm <sup>3</sup> (fluid)	0.812		0.896	
Denomination				
Nitrogen	3.44	1.58	3.17	1.71
Oxygen	0.51		0.4	
Argon	0.03	0.01	0.02	0.00
Carbon dioxide	8.68	8.90	8.76	8.93
Methane	83.716	85.80	83.997	85.64
Ethene	<0.001	<0.001	<0.001	<0.001
Ethane	2.971	3.04	2.982	3.04
Propene	<0.001	<0.001	<0.001	<0.001
Propane	0.500	0.51	0.499	0.51
i-Butane	0.035	0.04	0.035	0.04
Butene-1	<0.001	<0.001	<0.001	<0.001
n-Butane	0.085	0.09	0.086	0.09
22DMPPr	<0.001	<0.001	<0.001	<0.001
i-Pentane	0.014	0.01	0.014	0.01
Pentene-1	<0.001	<0.001	<0.001	<0.001
n-Pentane	0.018	0.02	0.018	0.02
Hexane	0.007	0.01	0.009	0.01
Helium	<0.01	<0.01	<0.01	<0.01
Hydrogen	<0.01	<0.01	<0.01	<0.01

Not all the quantity of carbon dioxide which is dissolved in the fluid under reservoir conditions is degassed on the temperature of 85°C. That is why the solute carbon dioxide in the water was determined after degassing via the base capacity (KB value up to pH = 8.2). Before, the solute iron ions were bonded by means of a sequestrant.

Table 4 gives the results of the two gas samples (air-corrected, standardised) with due consideration of the solute carbon dioxide in the fluid. Under standard conditions (T=273.15 K, p=1.01325 hPa), 1.0 Nm<sup>3</sup> of gas are dissolved in 1 m<sup>3</sup> of fluid. The gas mixture consists mainly of methane. The other hydro carbonates are only 3.3 vol%. The easily soluble gas carbon dioxide is appr. 20 vol%. A little amount of nitrogen (about 1.5 vol%) was analysed.

At the end of the hydraulic test ( $V=4.250 \text{ m}^3$ ) the gas content is a little higher than that of the first measurement. Also the methane content in one liter fluid is appr. 70 ml more than in sample number one.

Table 4: Results of the gas analysis with dissolved  $\text{CO}_2$  in the degassed fluid

Denomination	HON GT1-080312-I	HON GT1-080312-II
Date	08.03.2012	08.03.2012
Time	10:30 a.m.	3:30 p.m.
$\text{Nm}^3 \text{ (gas)}/ \text{Nm}^3 \text{ (fluid)}$	0.93	1.01
Methane, $\text{CH}_4$	74.9 vol.-%	76.0 vol.-%
Ethane and the other	3.25 vol.-%	3.30 vol.-%
Carbon dioxide, $\text{CO}_2$	20.4 vol.-%	19.1 vol.-%
Nitrogen, $\text{N}_2$	1.4 vol.-%	1.5 vol.-%

Any further considerations (bubble point) are based on the compositions of the last sample HON GT1-080312-II.

### 3.3 Determination of the flushing pressure

Solute salts reduce the solubility. The solubility of each gas component in brine can be determined when its solubility in water is known, from equation (1)

$$(1) \quad R_{\text{gas, b}} = R_{\text{gas, w}} \cdot \left( \frac{\rho_b - \text{TDS}}{1000} \right) \cdot L_{\text{rel.}}$$

$R_{\text{gas, b}}$	gas content of brine [ $\text{m}^3\text{gas}/\text{m}^3\text{solution}$ ]
$R_{\text{gas, w}}$	gas content of water [ $\text{m}^3\text{gas}/ \text{t water}$ ]
TDS	total dissolved solids [ $\text{kg salt}/\text{m}^3 \text{ solution}$ ]
$\rho_b$	density of brine [ $\text{kg}/\text{m}^3$ ]
$L_{\text{rel.}}$	relative solubility depending on the salt content of the solution

For the gases  $\text{N}_2$  and  $\text{CH}_4$ , the relative solubility  $L_{\text{rel}}$  can easily be determined from equation (2) (Harting et al., 1981):

$$(2) \quad L_{\text{rel.}} = e^{\left( -0.315 \cdot c + 0.01452 \cdot c^2 \right)} \quad c \quad \text{molality [mol/kg]}$$

The higher influence of divalent ions on the gas solubility has to be taken into account. This is done by multiplying the molality of  $\text{CaCl}_2$  by the factor of 1.8 (Harting et al., 1981), which gives an equivalent NaCl concentration causing the same gas solubility reduction. For the molality:

HON GT1-080312-II: 2.14 mol/kg

as determined for the formation water,  $L_{\text{rel}}$  is 0.55 referred to pure water ( $L_{\text{rel}}=1$ ).

Carbon dioxide behaves differently from nitrogen, and methane in that dissolved carbon dioxide forms a weak acid. For calculation of the carbon dioxide solubility reduction, there was applied equation 3 (cf. Seibt et al., 1999)

$$(3) \quad S^{CO_2}(T) = \frac{S_0^{CO_2}(T)}{10^{C \cdot 0,085}}$$

C      molarity [mol/L]  
S      solubility in saline water  
S      solubility in pure water.

Accordingly, the solubility of  $\text{CO}_2$  in the deep water is only 66.7 % of that in pure water.

HON GT1-080312-II: 66.7% ("NaCl molarity"<sub>eq</sub> = 2.07 mol/L)

The solubility figures for carbon dioxide, nitrogen, and methane in pure water taken from the literature (Harting et al., 1981) were calculated according to (1) for the thermal water.

According to the mol fraction solubility of the individual gases (carbon dioxide  $x_{\text{CO}_2}$ , methane  $x_{\text{CH}_4}$ , nitrogen  $x_{\text{N}_2}$ ) in the mixture

$$(4) \quad x_{\text{CO}_2} = \frac{n_{\text{CO}_2}}{n_{\text{CO}_2} + n_{\text{CH}_4} + n_{\text{N}_2}}$$

$n_i$       amount of the substances [mol]

solubility is related to pressure. The degassing pressure is determined according to equation (5)

$$(5) \quad P = x_{\text{CO}_2} \cdot P_{\text{CO}_2} + x_{\text{CH}_4} \cdot P_{\text{CH}_4} + x_{\text{N}_2} \cdot P_{\text{N}_2}$$

P      total pressure [MPa]  
 $P_i$       partial pressure of the gases [MPa]

Figure 4 shows the pressure-related solubility of the gas mixtures in samples HON GT1-080312-II at different temperatures. From correlation of the total gas content of the fluid with pressure – at the respective temperatures – the minimum pressure required to prevent ex-solving of gas is obtained. At  $p=27$  bar  $1 \text{ Nm}^3$  of gas mixture per litre of fluid remained in solution at a temperature of  $85^\circ\text{C}$ .

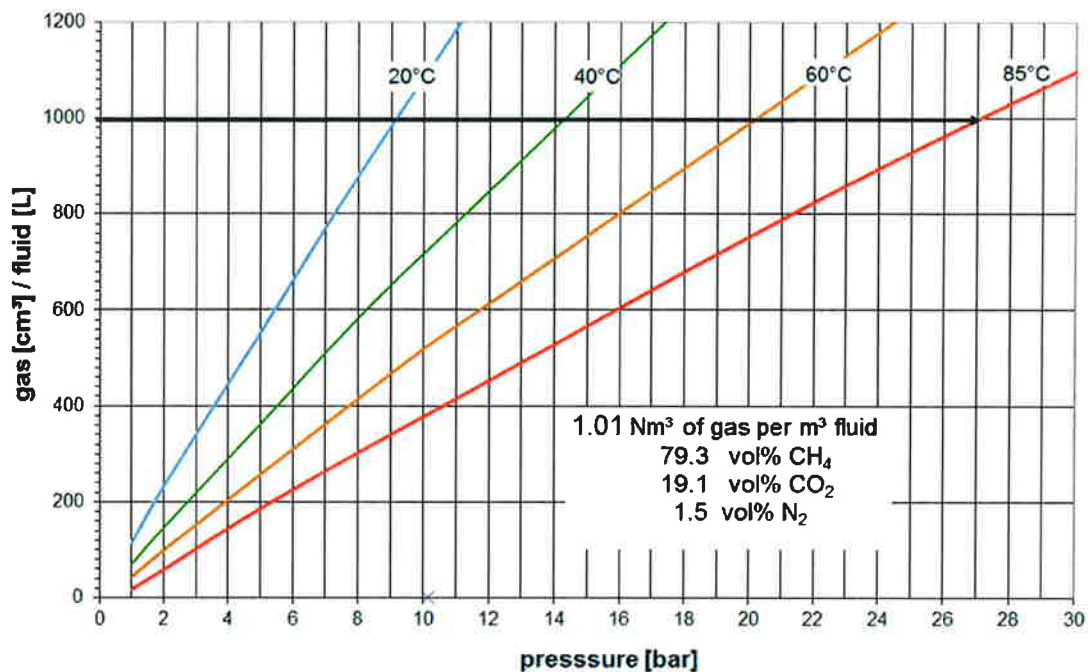


Figure 4: Pressure-related solubility of the gas mixture in sample HON GT1-080312-II at different temperatures

As the gas mixture consists of carbon dioxide (appr. 20 vol%), the results were checked via the calculation of the degassing of CO<sub>2</sub> depending on pressure and temperature. Several coefficients can be applied as a measure for the solubility of gases. The solubility of CO<sub>2</sub> was done by means of the *Henry constant*. The following empirical relation of the solubility of carbon dioxide in water was derived by Carroll et al., 1991:

$$(6) \quad \ln H_{CO_2} = -6,8346 + 1,2817 \cdot 10^4 / T - 3,7668 \cdot 10^6 / T^2 + 2,997 \cdot 10^8 / T^3 \quad (2)$$

applicable at T = 273 up to 433 K and P up to 10 bar

Now, the solubility can be calculated based on the determined H<sub>CO<sub>2</sub></sub> value according to

$$(7) \quad x_{CO_2} \cdot H_{CO_2} = y_{CO_2} \cdot \phi_{CO_2} \cdot P$$

Here, y<sub>CO<sub>2</sub></sub> is the CO<sub>2</sub> mol fraction in the co-existing gas phase, φ<sub>CO<sub>2</sub></sub> is the fugacity coefficient for CO<sub>2</sub> in the mixture and P is the total pressure in bar.

8.9·10<sup>-3</sup> mol of carbon dioxide are dissolved per kg of water in the fluid sampled in the well HON GT1. The solubility of CO<sub>2</sub> is shown in Figure 5 for the deep fluid of the well HON GT1 as a function of temperature under different pressures (after Carroll et al., 1991). According to Figure 5 Fehler! Verweisquelle konnte nicht gefunden werden., a pressure of 2 bar under an assumed brine production temperature of 358.15 K is necessary in order to keep the CO<sub>2</sub> concentration in the deep fluid in solution.

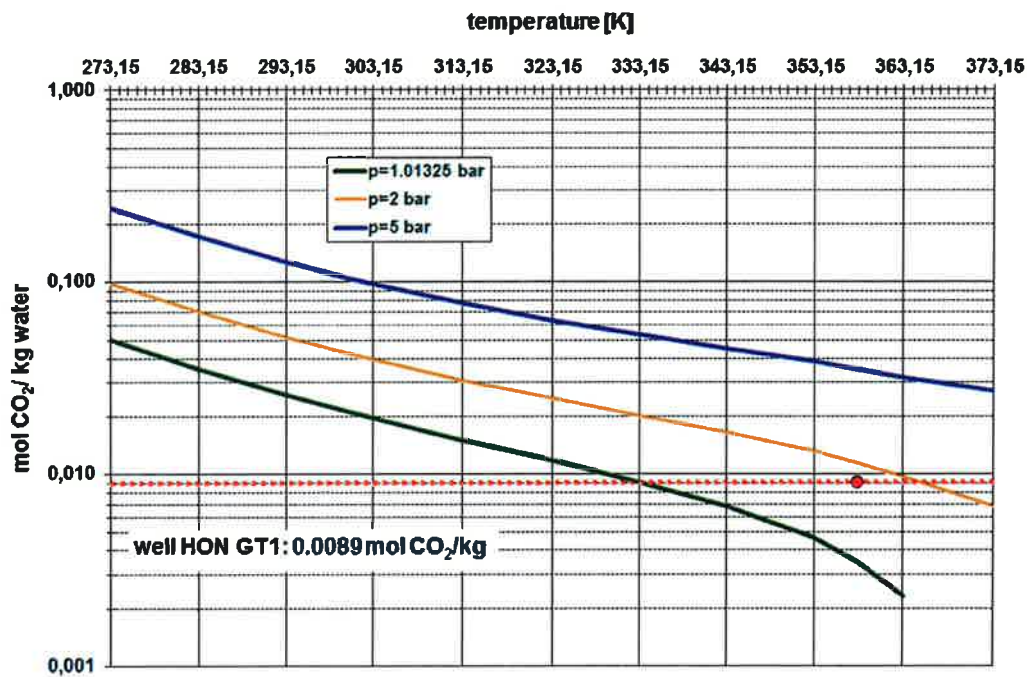


Figure 5: Solubility of CO<sub>2</sub> in brine from HON GT1 well as a function of pressure and temperature (after Carroll et al., 1991)

### 3.4 Determination of TPH (Total Petroleum Hydrocarbons)

Total Petroleum Hydrocarbons (TPH) - Mineralölkohlenwasserstoffe (MKW) content in the fluid was determined by gas chromatographic (GC). In this application was detected the speed of analysis for the hydrocarbon group eluting between n-Dekan ( $C_{10}$ ) und n-Tetracontan ( $C_{40}$ ) with a boiling point between  $175^{\circ}\text{C}$  und  $525^{\circ}\text{C}$ . According to the DIN standard the sample was cleaned by Florisil® before. This clean-up was needful to adsorb the hydrophilic components on Florisil®.

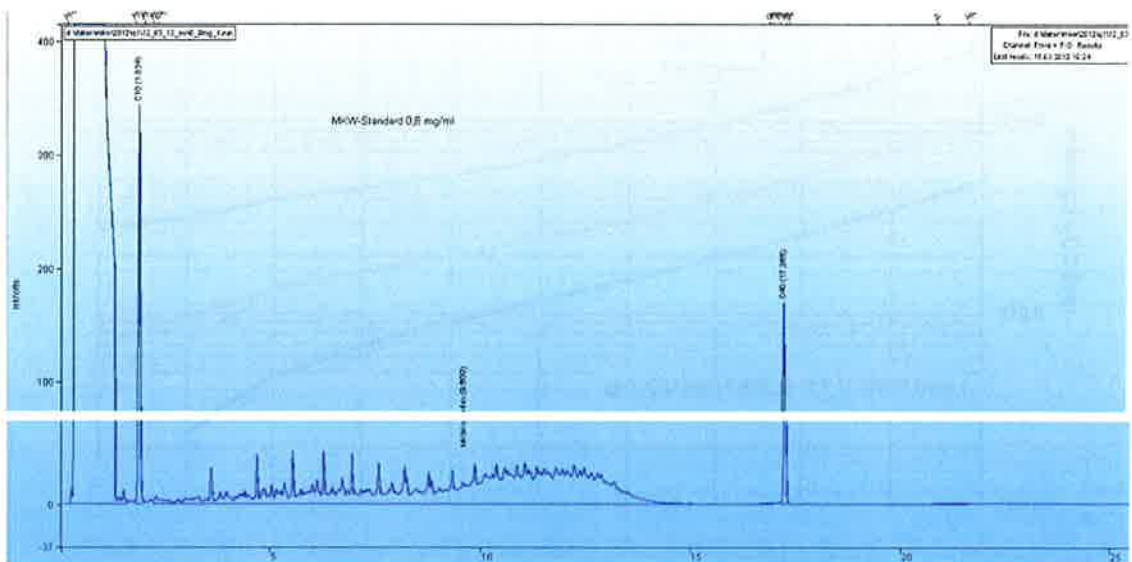


Figure 6: Chromatogram of Total Petroleum Hydrocarbons (TPH) standard in a matrix of diesel fuel and lube oil (0.8 mg/mL)

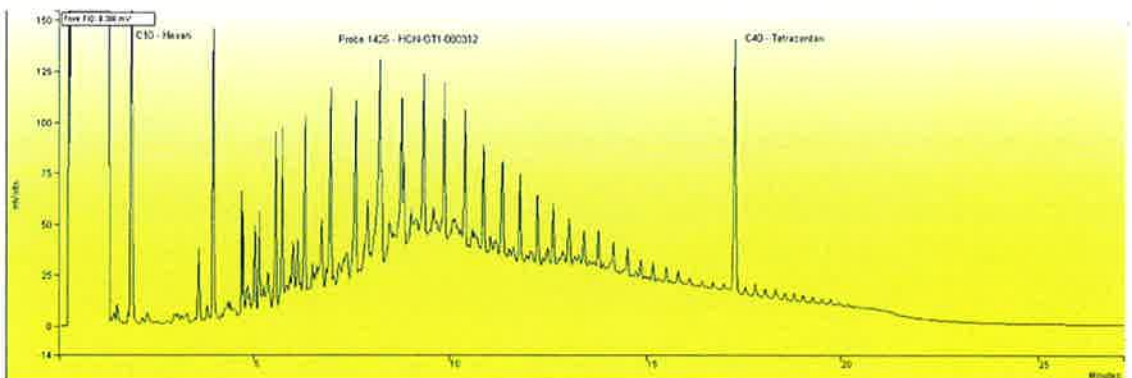


Figure 7: Chromatogram of the sample HON GT1-080312 (05:00 p.m.)

The Total Petroleum Hydrocarbons (TPH) is 2.68 mg/L. The Figure 7 shows good separated hydrocarbons with a medium to high boiling point after the diesel fuel fraction. This suggests that is probably not a "casing" contain fat.

#### 4. Solid sample analysis

##### 4.1 Sampling and field measurements

Microfiltration of the geothermal fluid had been conducted 3 hours before (1st sample) and at the end of the hydraulic test (2nd sample) at Honselersdijk Gt 1 on March 8, 2012 (Figure 8). At each sampling 2 filtration test had been performed by continuously passing water through a 8 micron filter at a constant pressure of 0,5/1 bar and a 0.45 micron filter at a constant pressure of 2,1 bar. During the tests the time required to filter a fixed volume of water is measured to calculate the rate of plugging. Filter curves for the 8 micron filter are shown in in Figure 9 and for the 0.45 micron filter in Figure 10.



Figure 8: Filtering device at drillsite Honselersdijk consisting of ball valves, feed regulator, pressure gauge and a cross flow sampler on top.

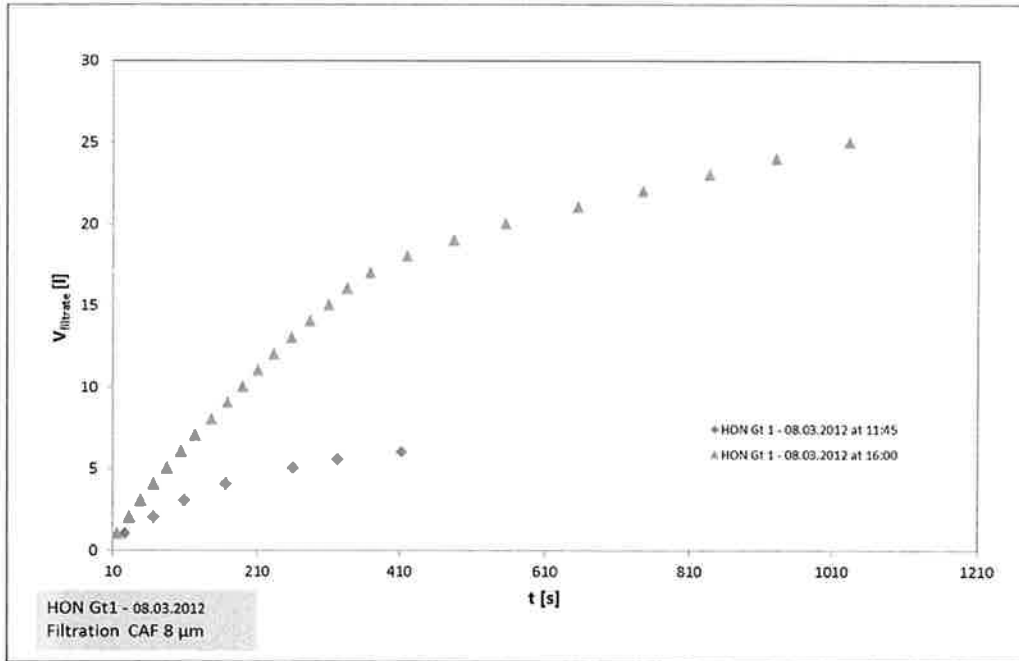


Figure 9: Declining filtrate rate during constant pressure filtration (blue diamonds: 1st sampling with 0,5 bar; green triangles: 2nd sampling with 1 bar) with 8 micron filter

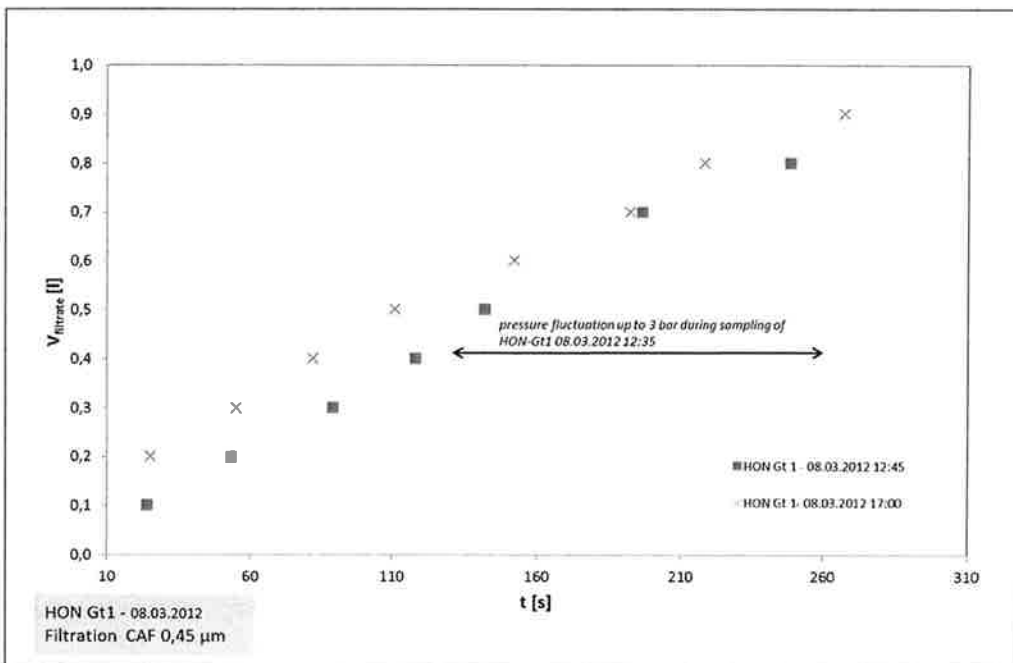


Figure 10: Declining filtrate rate during constant pressure filtration of 2.1 bar (red squares: 1st sampling; purple crosses: 2nd sampling) with 0.45 micron filter.

#### 4.2 Amount of particles in the thermal water

The silt density index (SDI) is a test that attempts to quantify the amount of solid particles in water (ASTM International, 2002). To measure SDI using the standard method, water is passed through a membrane filter at a constant applied gage pressure of 207 kPa (~2.1 bar), and the rate of plugging the filter is measured. The SDI is then calculated from the rate of plugging using the following equation:

$$SDI_T = \frac{\% P_{2,1}}{T} = \frac{[1 - \frac{t_i}{t_f}] \cdot 100}{T}$$

SDI =	Silt density index
T =	test time in minutes between start of first measurement and start of second measurement [min]
% P <sub>2,1</sub> =	% plugging at 2,1 bar
t <sub>i</sub> =	time required to collect initial sample volume [min]
t <sub>f</sub> =	time required to collect final sample volume after time T [min]

The results are used to estimate how quickly water will foul a filter membrane. In essence, the SDI test is measuring how quickly silt is built up on a filter, that is, how quickly the filter gets 'plugged' by the silt. The SDI value represents the % plugging per minute of the filter (IWTC 2010).

The modified fouling index (MFI) is determined using the same equipment and procedure used for the SDI. MFI was developed based on Darcy's law, which relates the flux to the thickness of the cake layer (Schippers & Verdouw 1980). The total resistance to flow is the sum of the filter (R<sub>m</sub>) and cake resistance (R<sub>c</sub>). A change in the flux (dV/dt) is related to the applied pressure (P) through the total resistance (R<sub>m</sub>+R<sub>c</sub>). Between t/V and V during cake filtration a linear relationship exists. The slope of the linear region is the MFI. A typical filtration curve is shown in Figure 11. The first region represents pore blocking (blocking filtration), the second region represents cake filtration, and the third region represents cake filtration with compression and/or clogging. The slope of the linear region (cake filtration) represents MFI (Adham & Fane 2008).

It has to be distinguished between the MFI of the filtration through an 8 and 0.45 micron membrane filter. Based on the filtration data shown in Figure 12 and Figure 13 the MFI is calculated. At the first sampling MFIs of 4.7 (8 micron filter) and 196.7 (0.45 micron filter) and at the second sampling at the

end of the test MFIs of 0.4 (8 micron filter) and 224.6 (0.45 micron filter) have been calculated. The values indicate a decrease of solids larger than 8 microns and an moderate increase of fine particles in the feed water during the test. It has to be taken into account that the filtration through the 8 micron filter at the first sample had been conducted with a constant pressure of 0.5 bar and at the second test with a pressure of 1 bar. The pressure differences of 0.5 bar leads to 50% overestimation of the decrease of large particles from sampling 1 to 2.

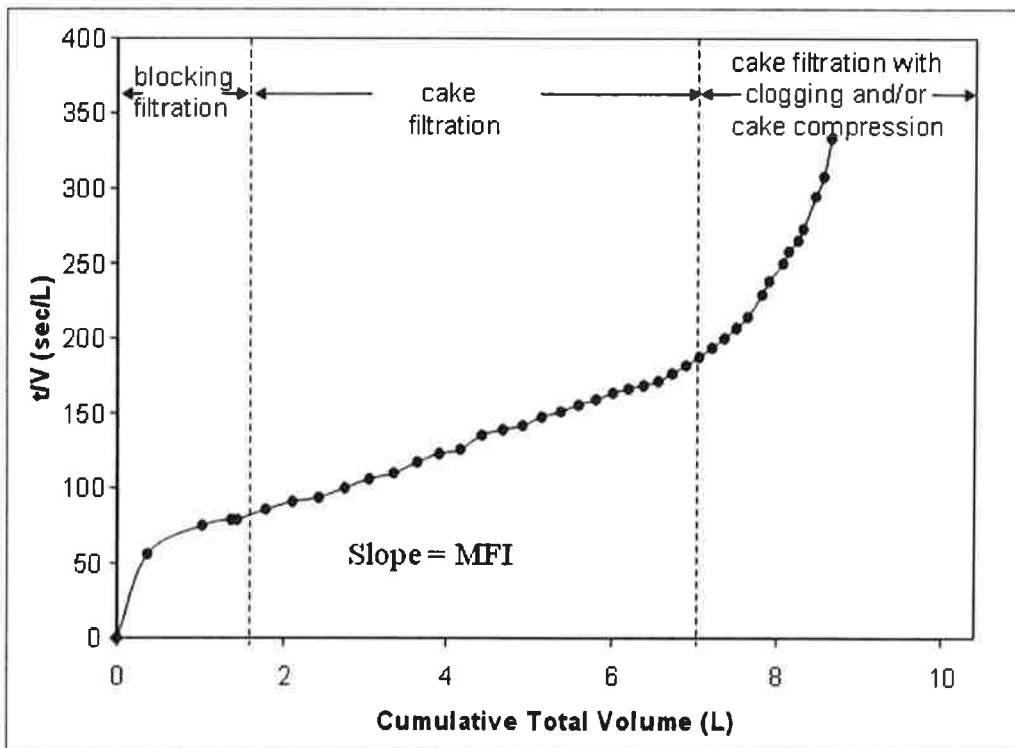


Figure 11: Ratio of filtration and volume as a function of the total volume of filtrated water indicating the three dominant filtration mechanisms (after Adham & Fane 2008).

The SDI values determined after a test time T of 5 minutes ( $SDI_5$ ) show also a decrease of particles larger than 8 microns (first sample with 8 micron: 17.2; second sample with 8 micron: 13.8). In comparison to the MFI values the decrease of the SDI is moderate. Conversely the increase of fine particles during the test seems to be much higher, if we have look to  $SDI_5$  values of 0.45 micron filtration. From the data of the first sampling a  $SDI_5$  of 5.9 and from the second sampling a  $SDI_5$  of 15.1 can be determined. But the calculation of the  $SDI_5$  of 1st sampling (5.9) is directly influenced by the pressure variations during the filtration and is therefore not representative (Figure 10).

The solid concentrations, obtained from the weight of the cake layer on the membrane filters and the total volume of filtrate, are given in Table 5. The solid concentrations confirm the results of the MFI and SDI analysis. During the test a decrease of particles larger than 8  $\mu\text{m}$  is observed, while the concentration of small particles increases moderately.

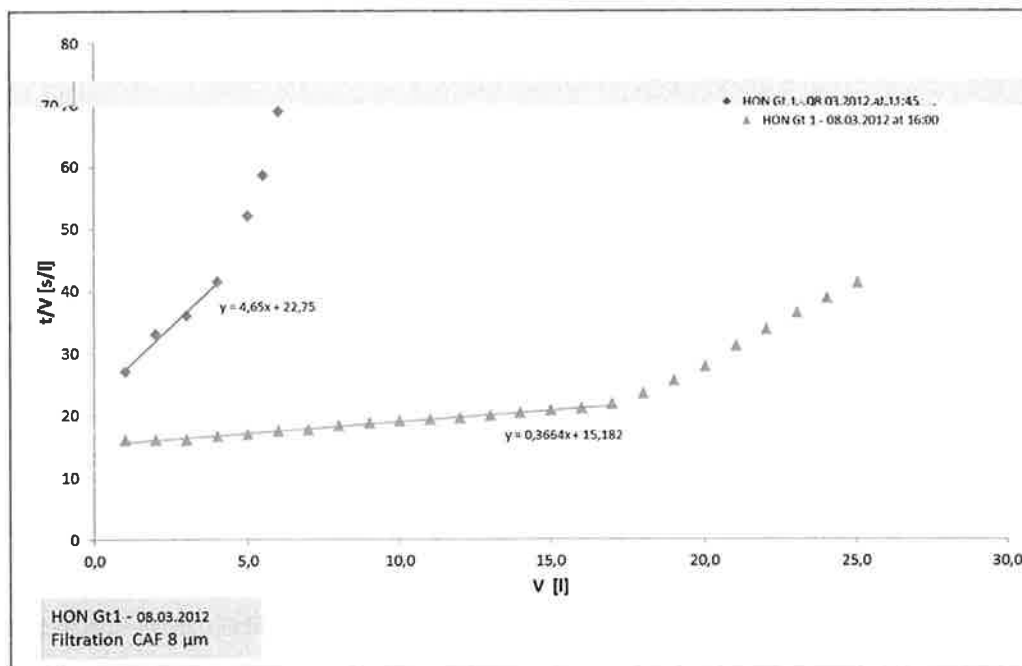


Figure 12:  $t/V$  vs  $V$  plot of the filtration through a 8 micron filter at 11:45 (1st sampling - blue diamonds) and at 16:00 (2nd sampling - green triangles) on 08.03.2012.

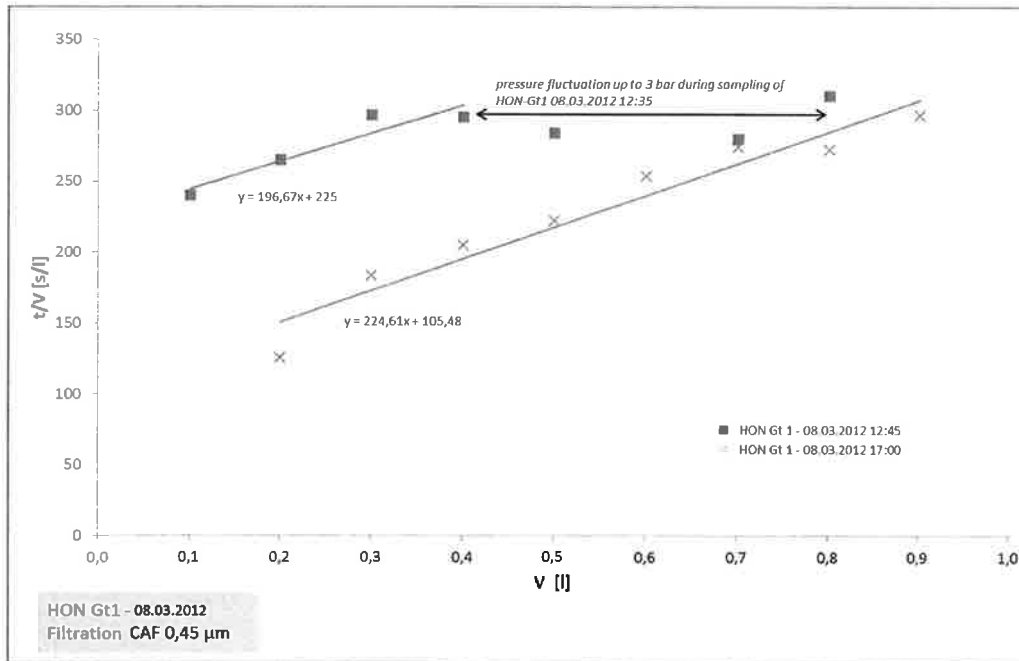


Figure 13:  $t/V$  vs  $V$  plot of the filtration through a 0.45 micron filter at 12:45 (1st sampling - red squares) and 17:00 (2nd sampling - purple crosses) on 08.03.2012.

Table 5: Amount of particles in water based on MFI, SDI5 and solid concentrations of filter samples from 08.03.2011

Sampling	Filter type	MFI	SDI5	$c$ [mg/l]
1	CAF 8 $\mu\text{m}$	4.7	17.2	5.0
	CAF 0.45 $\mu\text{m}$	196.7	5.9	10.6
2	CAF 8 $\mu\text{m}$	0.4	13.8	1.5
	CAF 0.45 $\mu\text{m}$	224.6	15.1	11.0

#### 4.3 Particle size distribution

The particle-size distribution based on sample 2 at the end of the hydraulic test on 08.03.2012 shows that 86.4 % of all solids have diameters in the range of 0.45 to 8  $\mu\text{m}$  (Figure 14). Only less than 4 % of the particles in the thermal water have diameters larger than 100  $\mu\text{m}$ . The median diameter is  $D_{50} = 2.3 \mu\text{m}$ , while the maximum particle found has a diameter of 320  $\mu\text{m}$ . The smallest particles have a diameter of 0.45  $\mu\text{m}$ . This is based on a widely used convention that considers particulate matter to be larger than 0.45  $\mu\text{m}$  in diameter. Anything smaller is considered to be dissolved. This boundary is not entirely valid because clay particles and silt can be much smaller than 0.45  $\mu\text{m}$ . For practical purposes,

however, the boundary is convenient, not least because standard membrane filters with 0.45  $\mu\text{m}$  diameter pores can be used to separate suspended particles from dissolved solids.

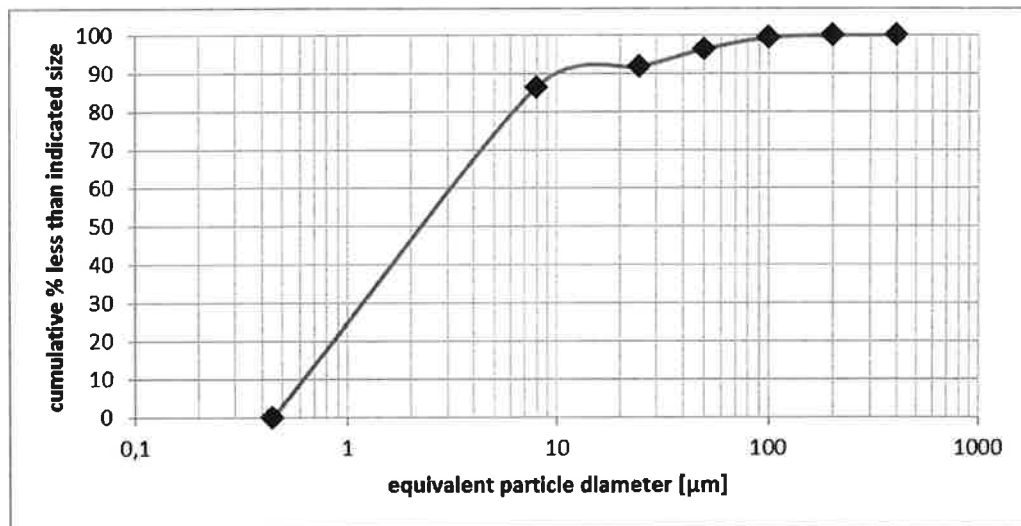


Figure 14: log-normal particle-size distribution of the 2<sup>nd</sup> sample, based on cake layer analysis of 0.45 & 8 micron filter; Mass medium diameter  $D_{50} = 2,3 \mu\text{m}$

#### 4.4 Composition of particles

The composition of particles of sample 2 (end of test) are analyzed by optical microscopy and SEM-EDX. Optical microscopy analysis provide representative information on particles of diameters larger than 8  $\mu\text{m}$ . Figure 15 illustrates particles on the 8 micron filter as seen under the optical microscope. Photo 15a shows angular to sub rounded, milky quartz grains with a size up to 100  $\mu\text{m}$  in brownish matrix. The black spots represent organic compounds (oil, organic coatings). Material (Fe(OOH)?) from the aquifer can be observed in picture 15b, while picture 15c and 15d show antropogenic materials.

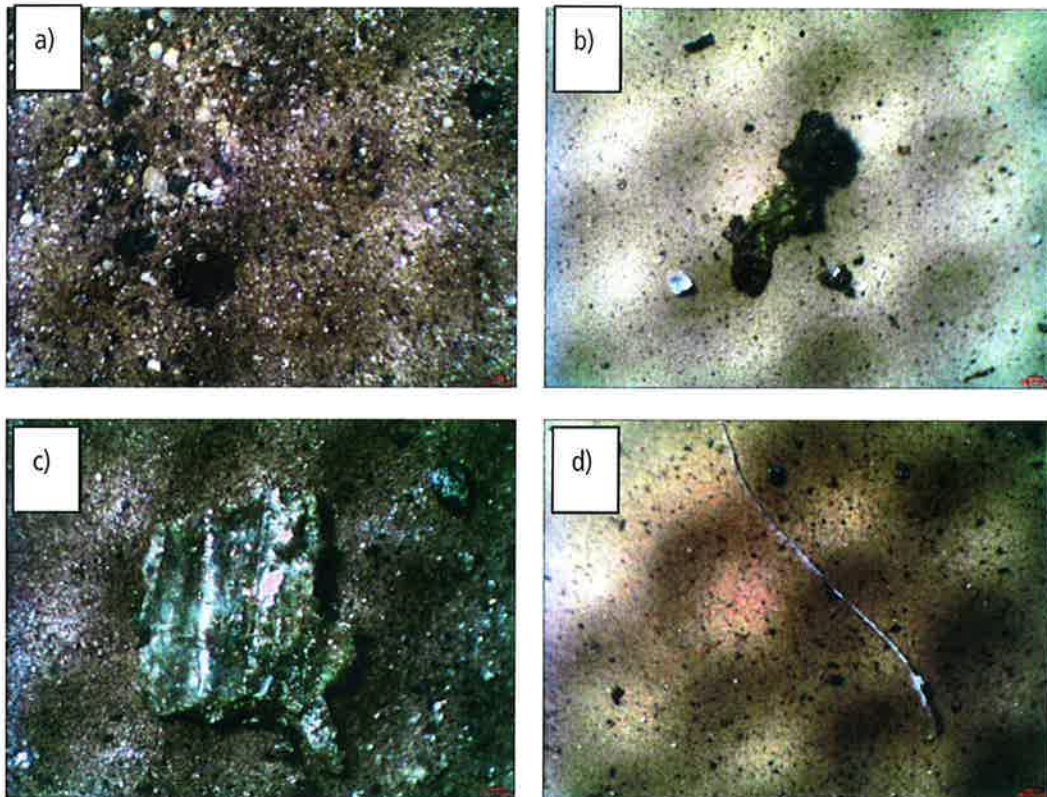


Figure 15: Microscopic images of particles on the 8 micron filter (sample 2). a) milky white quartz grains in brownish matrix, b) brownish-black aquifer material, c) Steel component (from casing/drill bit), d) white organic fiber

The 0.45 and 8 micron sample were also observed with SEM. Elemental compositions being analyzed by EDX. The EDX analysis reveals that most of the components are quartz (35-40 %) and feldspar (20-25 %). Furthermore iron hydroxides (~15 %), Cu-Zn-(Fe)-oxides (~10 %), Cr-Fe-Ni steel (5 %), CaCO<sub>3</sub> (~5 %), FeS<sub>2</sub> (~2 %) and clay minerals are observed (Figure 16).

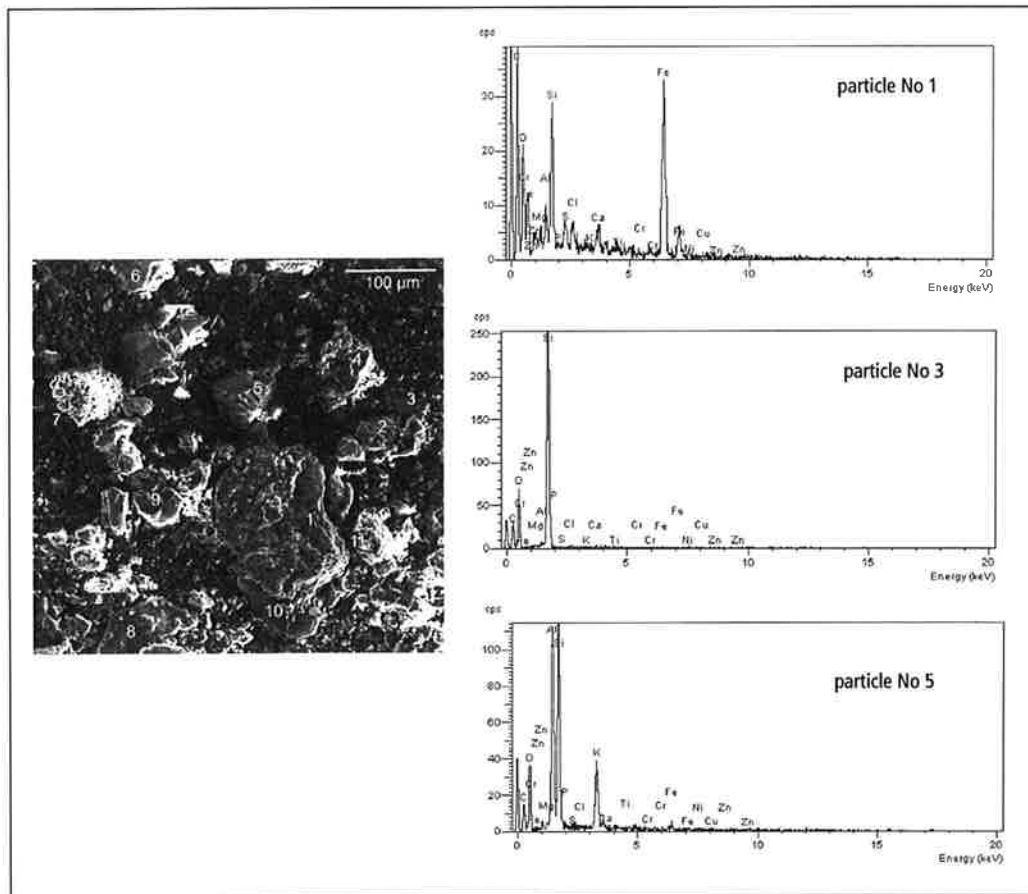


Figure 16: SEM micrograph and corresponding EDX spectra of particles on the 8 micron filter (sample 2). Particle No 1: quartz grain with iron oxide/hydroxide coating; particle 3: quartz grain; particle 5: Potassium feldspar

#### 4.5 Conclusions and recommendation on filter technologies

It can be seen, that during the test a decrease of particles larger than 8 µm is observed, while the concentration of small particles increases moderately. At the end of the hydraulic test on 08.03.2012 86.4 % of all solids had diameters in the range of 0.45 to 8 µm and just 13.6 % had a diameter larger than 8 µm. The median particle diameter is  $D_{50} = 2.3 \mu\text{m}$ , while the maximum particle detected had a diameter of 320 µm. Most of the solids found are quartz (35-40 %) or feldspar grains (20-25 %) from the aquifer (or the gravel pack - if applicable). Together with Cu-Zn-(Fe)-oxides and Cr-Fe-Ni steel they indicate that the cleaning of the well had not been completed at the end of the test. A decrease of large particles from 5 mg/l to 1.5 mg/l can be seen during the test, but it is necessary to measure the particle concentration in a further test to obtain information on constant particle load.

From the first results ( $Q \approx 35 \text{ l/s}$ ) we suggest to install bag filters with a mesh size of 10 up to 20 micron at the production well and a 1 micron bag filter system on the injection well. This or similar configurations are widely used in geothermal power plants in the North German basin. It has to be taken into

account, that the observed composition and amount of particles are not representative for the thermal fluid during long term operation. For this reason we recommend a particle monitoring during the next tests to optimize the mesh apertures of the filters.

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Bijlage 7 Bijlage B bij Aanvraag vaststelling subsidieregeling energie en innovatie  
 Risico's dekken voor Aardwarmte  
 Resultaten Puttest



Agentschap NL  
 Ministerie van Economische Zaken,  
 Landbouw en Innovatie

Parameter voor test interpretatie	Waarde	Dimensie
Top aquifer	2555	m (langs boorgat)
Basis aquifer	3154	m (langs boorgat)
Zoutgehalte formatiewater	123.000	ppm
Temperatuur formatiewater op aquiferniveau	89 - 107	°C
Schema verbuizing inclusief diameter boorgat bij productie-interval	Zie figuur 1	inch of m
Top productie-interval/filter & Basis productie-interval/filter	2550 – 2720 2880 – 3003 3032 – 3154	m (langs boorgat)
Filter diameter	4,2" ID	inch of m
Filter permeability /weerstand	-	Darcy of bar
Locatie pomp	775	m (langs boorgat)
Locatie meetsonde voor druk	789,5	m (langs boorgat)

Clean up gegevens		
Pompdruk	-	bar
Debiet vs tijd	126 en 80	m <sup>3</sup> /uur
Indicatie hoeveelheid meegeproduceerde 'fines'	5 mg/l (1) 1,5 mg/l (2)	Semi-kwantitatief

1) Watermonster 1                      2) Watermonster 2

Uitkomsten test interpretatie en analyses		
Skin	nihil	-
H	112	m
kH	14 – 25	D·m (darcy-meter)
Productiviteitsindex (PI)	3,5 – 4,8	m <sup>3</sup> /uur/bar

Meetreeks Put Deviatie			
Diepte put langs boorgat	x	y	z
Zie bijlage 2 "Deviatie HON-GT-01" en "Deviatie HON-GT-01-S1"			

Meetreeksen Puttest		
Tijd	Druk (Bar)	Debiet (m <sup>3</sup> /uur)
17,8 uur	4,73	82
12,4 uur	6,91 en 8,98	107 en 127
17,8 uur	12,26	155

Conclusie gerealiseerd vermogen		
Injectietemperatuur Ti (35°C of minder)	35	°C
Opgelegde pompdruk	40	bar
Debiet Q	127 (p50) 111 (p90)	(m <sup>3</sup> /s)
Gerealiseerd vermogen P*	7,8 (p50) 6,6 (p90)	MW

\*gebaseerd op productietesten en log interpretatie



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