End of Well Report
TNT-GT-02-I

Hydreco Geomec / Duurzaam Voorne

Operator:	Hydreco Geomec Minervum 7181 4817 ZN Breda	Project entity:	Duurzaam Voorne Konneweg 4b 3234 KG Tinte
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DUURZAAM VOORNE

Contents

APPENDICES

GLOSSARY

AH	Along hole
BGL	Below ground level
BTC	Buttress thread connection
BOP	Blow out preventer
B/U	Bottoms up
CBL	Cement bond log
CHH	Casing head housing
C/O	Change out
Cr	Chrome
CRA	Corrosion resistant alloy
CRT	Casing running tool
DSV	Drilling supervisor
E	Easting
ESP	Electric submersible pump
ETSR	European Terrestrial Reference System
Fm	Formation
FMS	Flush mounted spider
GL	Ground level
GT	Geothermie
GRE	Glass reinforced epoxy
HKL	Hookload
HMR	High magnesium resistant
Hrs	Hours
HSE	Health, Safety & Environment
LIB	Lead impression block
LIH	Lost in hole
LH	Liner hanger
LMP	Liquid mud plant
Lpm	Litre per minute
LSA	Low specific activity
LTOBM	Low toxic oil-based mud
m	Meter
MD	Measured depth
MW	Mud weight
N	Northing
N2	Nitrogen
NAP	Normaal Amsterdams Peil
NDSV	Night drilling supervisor
OBM	Oil based mud
OH	Open hole
P	Production
PBR	Polished bore receptacle
PDC	Polycrystalline diamond compact
PDM	Positive displacement motor
POD	Point of departure
POOH	Pull out of hole
ppf	pounds per foot
PR	Performance requirement
PSL	Product specification level
PV	Plastic viscosity
RD	Rijksdriehoekstelsel
R/D	Rig down
RIH	Run in hole
ROP	Rate of penetration
RT	Rotary table
R/U	Rig up
s.g.	Specific gravity
SodM	Staatstoezicht op de Mijnen
TCI	Tungsten Carbide Insert
TCP	Tubing conveyed perforation
TD	Total depth
TNT	Tinte
TOC	Top of cement
TOL	Top of liner
TSH	Tenaris Hydril
TVD	True vertical depth
TWCV	Two-way check valve
W	Wedge
WBM	Water based mud
WEP	Well Engineering Partners
YP	Yield point

1. Project Details

1.1 Organisation

Project Management:

Project Director	[redacted]
Project Manager	[redacted]
Drilling Manager	[redacted]
Drilling Engineer	[redacted]
Production Engineer	[redacted]
Sr. Well Site Geologist	[redacted]
HSE Manager	[redacted]

Drilling Supervisors on a two-week rotational scheme:

Drilling Supervisor	[redacted]	21-04-2020 / 22-04-2020 07-05-2020 / 15-05-2020
Drilling Supervisor	[redacted]	23-04-2020 / 06-05-2020
Night Drilling Supervisor	[redacted]	21-04-2020 / 04-05-2020
Night Drilling Supervisor	[redacted]	05-05-2020 / 11-05-2020
Night Drilling Supervisor	[redacted]	12-05-2020 / 15-05-2020

1.2 Operational summary

Location	Tinte (onshore), Netherlands
Well Number	TNT-GT-02-P
Well Name	TNT-GT-02-P
Well Type	Geothermal Injection
Spud date	21-04-2020; 01:45 hr
Start rig down (end of well)	15-05-2020; 15:00 hr
Days Operational	24 days, 13 hrs and 15 min
Operator	Hydreco Geomec

	Latitude & Longitude (ETSR89)	Geographical
Surface Location	51°53'57.2"N 4° 8' 4,4"E	X: 68,787m (RD) Y: 435,266m (RD)

Grid Coordinate System	Rijksdriehoeksmeting / Netherlands New
Depth reference	Rotary Table (RT)

1.3 Drilling rig

Drilling Contractor	DrillTec
Drilling Rig	VDD 370.2 VarioRig

2. Well summary

The table below gives a summary of the drilling operations

Table 1: Well summary

Item	MDRT (m)	TVDRT (m)	Comments
24" Conductor	68	68	Prior to R/U the 24" Conductor was pre-installed to 68m MDRT as part of the drill site construction.
16" Hole	1313	1302	Hole drilled with a milled tooth bit and 9 ⅝" PDM. Bentonite was used in first part of the section to plaster off the sandy Maassluis fm. below the conductor. WBM of the first well was added before entering first clay layers and kept up-to spec. Called TD at 1313m AH. After circulating hole clean with 4000lpm / 2x B/U. Wash OOH from 1313 to 900m AH. Circulate B/U, observed large amount of cuttings over shakers. Wash OOH to 325m AH, observing large amount of cuttings (attempted POOH elevators at 880, 723 and 506m AH; 15 MT overpull). POOH and handle BHA.
13 ⅜" Casing	1309	1298	The 13 ⅜" 68# K55 BTC casing was ran using CRT + FMS with torque rings installed at every connection. Ran casing w/o circulation until resistance was met at 772m AH (Ieper fm.). Washed down to 850m AH with 1000 lpm. Continued RIH w/o circulation until resistance was met again at 1210m AH (Ekofisk fm.). Washed down casing to casing point at 1309m AH. Cemented with 116 m^3 1.36 s.g. lightweight lead slurry, switched to 13.5 m^3 1.90 s.g. tail after cement returns were observed at surface. Diverted 24 m^3 excess cement to cutting boxes. Displaced drill pipe with 10.9 m^3 WBM. POOH stinger.
12 ¼" Hole (TD)	2707	2490	RIH 9 ⅝" PDM with PDC bit. Pressure test 13 ⅜" casing to 60 bar. Drilled out shoe track and rat hole and POOH. Performed limit test below 13 ⅜" shoe to 1.50 s.g. Drilled Chalk until drilling performance dropped until displacement depth was called (planned at daylight) and displaced well to OBM. Overall performance in rotary was good with ROP's varying between 10 – 15 m/hr. Despite changing trajectory, difficulties were found in sliding mode to build to an inclination of 45° before entering the reservoir. In the reservoir max inclination obtained was 46.8°). TD was called at 2707m AH. POOH on elevators.
9 ⅝" Liner	2706	2489	RIH mixed string 9 ⅝", 47# (BTC shoetrack + 13Cr reservoir section + GRE-lined casing to LH). Primary LH system was M/U but no shoulder torque was observed, B/O of the connection resulted in damaged thread. Spare LH system was M/U and liner was ran to casing point without restriction. The liner hanger set successfully. Cemented liner with 37.2 m^3 1.35 s.g. lead (lightweight cement) and 15.8 m^3 1.86 s.g. HMR+ tail cement. Bumped plug and set packer successfully. Circulated straight, observed spacer at surface and no cement (TOC was planned in liner lap). Pressure test liner (and total well) to 100 bar.
Clean-out, Displace and suspend well			RIH dress mill with 13 ⅜" scraper + magnets, and dress-off 9 ⅝" PBR. Circulated hole clean, with some minor cutting returns over the shakers. M/U clean-out assembly (bullnose + 9 ⅝" GRE-brushes

			+ 13 ⅜" scraper + magnet assembly). Wash down and tag landing collar. Pumped clean-out pills and displaced well to 1.09 s.g. brine. POOH on elevators. M/U jetting tool assembly and flush wellhead area. Land-off 10 ¾" hanger assembly, install TWCV, N/D BOP and install X-mas tree. Pressure test wellhead and remove TWCV. Prepare for rig move.

2.1 *Depths and trajectory*

Primary Objective		Hardegsen, Detfurth and Volpriehausen (Trias Sandstones)	
Primary Objective Depth		2358m MDRT	2247.5m TVDRT
Total Depth		2707m MDRT	2490m TVDRT
Elevation	RT – GL	8.6m	
	GL – NAP	-0.3m (NAP is 0.3m below ground level)	
	NAP – RT	8.3m	

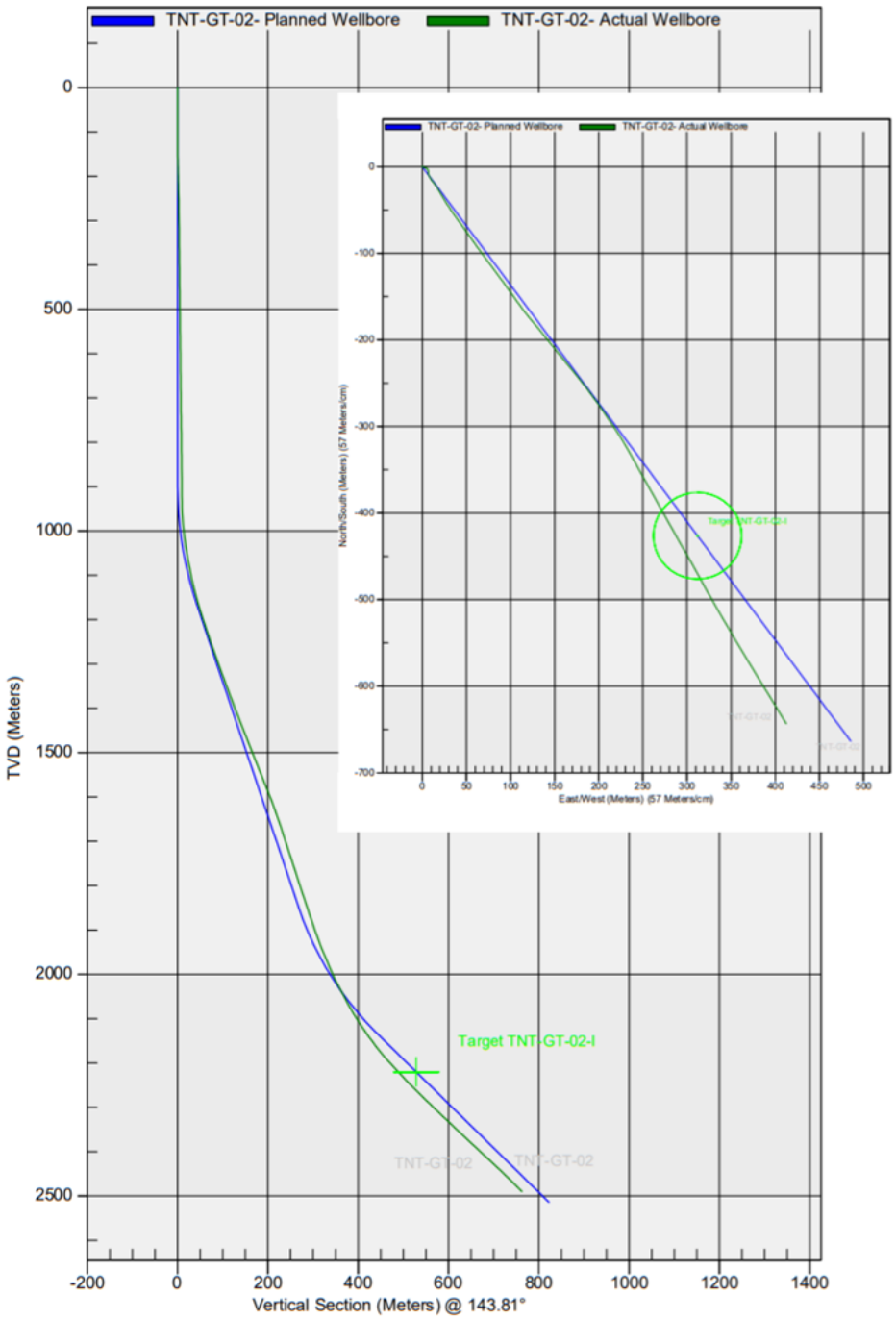


Figure 1. Vertical section and plan view

2.2 Technical summary

2.2.1 Casing

Table 2: TNT-GT-02 tubular summary

Item	Top (m MDRT)	Bottom (m MDRT)	Weight	Grade	Connection
24" Conductor	0	68	244" WT	S355	Welded
13 ⅜" Casing	0	1309	68 ppf	K55	BTC (with torque rings installed)
9 ⅝" mixed string liner	1071 (TOL)	2323	51.9 ppf	L80 GRE-lined	VAMTOP
	2323	2682	47 ppf	13Cr L80	TSH W523
	2682	2707	47 ppf	L80	BTC

2.2.2 Cement

Table 3: TNT-GT-02 cement summary

Item	TOC (m MDRT)	Lead Slurry Volume (m^3)	Lead Slurry Weight (s.g.)	Tail Slurry Volume (m^3)	Tail Slurry Weight (s.g.)	Type (Lead / Tail)
13 ⅜" Casing	At surface	116	1.36	13.5	1.90	Lightweight / Class G
9 ⅝" Liner	Liner Top	37.2	1.35	15.8	1.86	Lightweight / HMR+

2.2.3 Pressure test overview

Test	Test against	Test fluid	Surface Test pressure (bar)	Depth (m TVD)	Test Date
CHH P-seals, via test port	P-seals	Oil	108	-	28/04/2020
13 ⅜" wellhead connection and SOV	Blind rams, Cup type tester	Water	206	-	29/04/2020
13 ⅜" casing	Grey cement	1.20 s.g. WBM	60	1298	30/03/2020
LIM 13 ⅜" shoe	Ommelanden fm.	1.20 s.g. WBM	38 (1.50 s.g. EMW)	1298	30/04/2020
9 ⅝" liner	Green cement (on bump)	1.23 s.g. OBM	100	-	11/05/2020
9 ⅝" liner packer (and complete well)	Green cement	1.23 s.g. WBM	100	-	12/05/2020
Hanger neck seals and hanger cavity, via test port	Hanger neck seals, ring gasket, hanger seal	Oil	207	-	15/05/2020
X-mas Tree and Tubing Head Adaptor connections	Blind flange, Wing valve, TWCV	Water	207	-	15/05/2020

2.2.4 Well schematic

Figure 2: TNT-GT-02 well schematic without completion.

Nr.	Item Description Production Well, Depths from RT *RT = 8.7m above GL* *RT = 8.4m above NAP*	Wellhead and Xmastree **TNT-GT-02-I** (Injector)	Depth m TVDRT	Depth m AHRT	Hole ID in	Pipe OD in	Collar OD in (nom)	Pipe ID in	Pipe ID in (drift)	Lithology Top TVDRT
1	24" welded conductor / stove pipe		68	68		24	welded	22	>16	North Sea 8
										Mid NS 373
										Low NS 505
	LH 13-3/8" x 9-5/8"		1071	1072						
	Theoretical TOC		1098	1100						
2	13-3/8", 68#, K55, BTC (w/ TQ rings)		1298	1309	16.000	13.375	14.175	12.415	12.259	Chalk 1149
										Rijnland 1932 (Schieland)
										Trias 2165
3	9-5/8", 47#, L80, GRE-Lined VAM TOP									Rot Fringe 2208
	X-over 9-5/8" GRE-lined x 9-5/8" CRA		2221	2323		9.625	10.396	**8.250**	**8.125**	
										Hardegsen 2248
										Lr Detfurth 2313
4	9-5/8", 47# , L80, 13Cr, TSH W523 *HUD (landing collar)*		2473	2682.4	12.250	9.625	9.784	8.681	8.525	
										Rogenstein 2437
5	9-5/8", 47#, L80, BTC (shoetrack)		2490	2707	12.250	9.625	10.626	8.681	8.525	

*Not in scale.

3. Drilling fluid summary

Per section the following drilling fluid types have been used:

Table 4: TNT-GT-02 drilling fluid summary

Section	Type	Density (s.g.) Min – Max	PV (cP) Min – Max	YP (lbf/100ft2) Min – Max
16”	Bentonite spud mud & KCl Glycol WBM	1.11– 1.21	11 – 25	21 – 30
12 ¼”	KCl Glycol WBM	1.20 – 1.22	15 - 20	20 - 24
12 ¼”	LTOBM (Enviromul)	1.20 – 1.22	25 - 30	22 - 24

The figure below shows the mud weight versus depth during drilling operations.

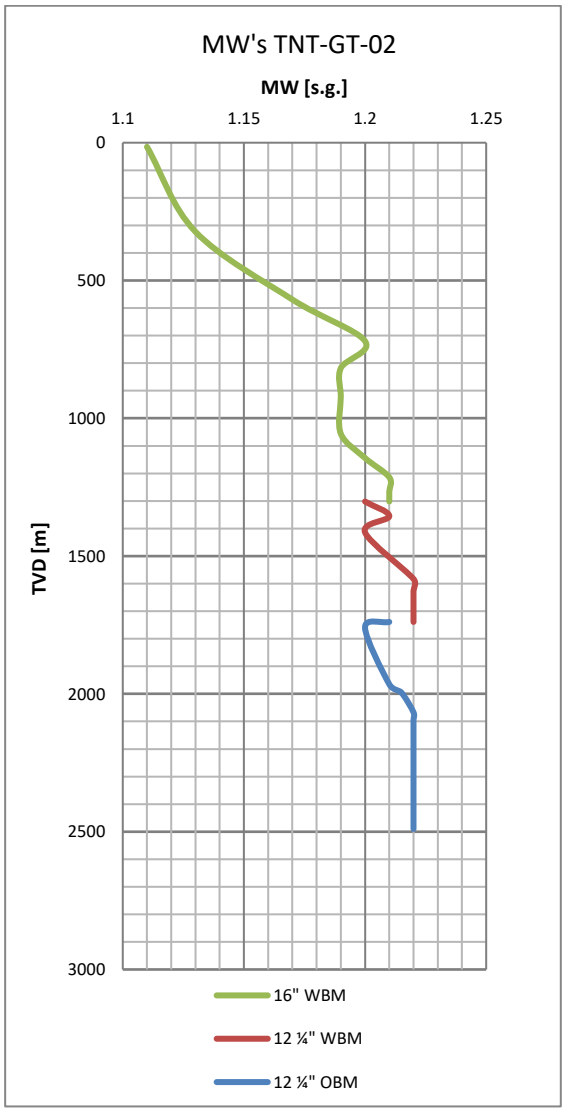


Figure 3: Mud weight vs. depth

4. Geology

4.1 Lithostratigraphic column

Below the geological column with vertical and along hole depths below RT.

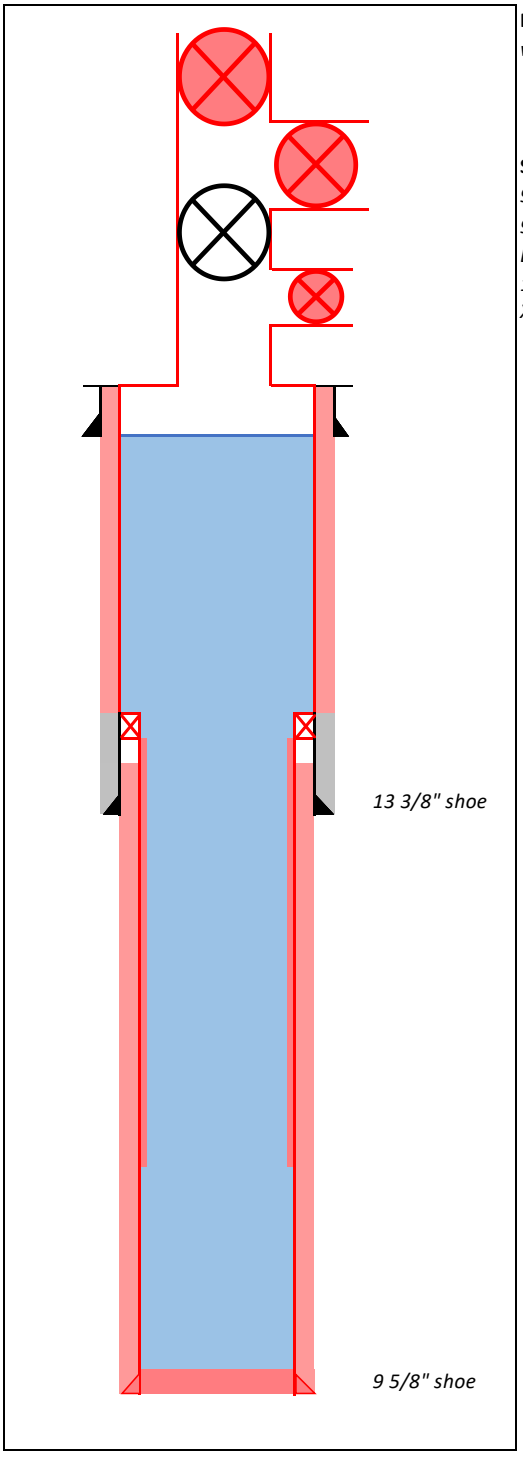
Lithostratigraphic Column Tinte TNT-GT-02 Julien Smeulders					Actual	
Group	Period	Formation	Member	Lithology	TV-RT Depth (m)	AH-RT Depth (m)
Upper North Sea NU	Quaternary	"Diverse"		Diverse continental deposits, mostly fluvial sands and silts intercalated by layers of grey or greenish-grey, silty clays.	8.6	8.6
		Maassluis NUMS		Fine to medium coarse sand, calcareous, micaceous and with marine shells. Small intercalations of silty clays, grey to dark grey. Locally some wood, reed and roots are present.	84	84
	Tertiary	Oosterhout NUOO		Succession of sands, sandy clays, and grey and greenish clays. The glauconite content is low. Locally rich in shells and bryozoans.	215	215
		Breda NUBR		Sequence of marine, glauconitic sands, sandy clays and clays. A glauconite-rich layer occurs at the base.	307.5	307.5
Middle North Sea NM		Rupel NMRU	Rupel Clay NMRFC	Clays that become more silty towards basis and top. It is rich in pyrite, contains hardly any glauconite and calcium carbonate tends to be concentrated in the septaria layers.	373	373
			Vessem NMRFV	Silty to clayey sands with a low glauconite content; flint pebbles or phosphorite nodules commonly occur at the base.	457	457
Lower North Sea NL		Dongen NLDO	Asse NLFFB	Dark greenish-grey and blue-grey, plastic clays. The unit locally shows indications of bioturbation, and may be glauconitic and micaceous.	505	505
			Brussel Sand NLFFS	Green-grey, glauconitic, very fine-grained sand with a number of hard, calcareous sandstone layers of some dm thickness.	625	625
			Ieper NLFFI	A soft, tough and sticky to hardened and friable clay.	761	761
			Basal Dongen Sand NLLFD	Light green-grey, locally glauconitic, usually thin (argillaceous) sand with a fining-upward character.	1063	1063.5
		Landen NLLA	Landen Clay NLLFC	Dark-green, hard, flaky clay, somewhat silty, containing glauconite, pyrite and mica. The basal part of the member can be marly.	1091.5	1093
Chalk CK		Ekofisk CKEK		White, chalky limestones containing rare white and grey nodular and bedded chert layers, and thin, grey to green (glauconitic) clay laminae.	1149.5	1155
	Cretaceous	Ommelanden CKGR		Succession of white, yellowish-white or light-grey, fine grained limestones, in places argillaceous. Layers of chert are common. Along the basin edge coarse, bioclastic limestones and tongues of sandstone can occur.	1206.5	1212 13 3/8" casing shoe @ 1309m
		Texel CKTX	Plenus Marl CKTXP	Dark-grey, partly black, calcareous, laminated claystone.	1906	1954
			Texel Marlstone CKTXM	White to light-grey, locally pinkish, limestones and marly chalks.	1908.5	1957
			Texel Greensand CKTXG	Greenish, glauconitic, calcareous sandstones with intercalated marls.	1919.5	1968
Rijnland KN		Holland KNGL	Spijkenisse Greensand KNGLS	Mainly coarse-grained, greenish grey, glauconitic sandstones, locally with argillaceous matrix or calcareous cementation.	1932	1982
			Lower Holland Marl KNGLL	A fossiliferous, glauconitic and intensely bioturbated, greenish grey, silty to very silty or sandy, glauconitic marl and claystone unit.	1988.5	2043
		Vlieland Sandstone KNNS	De Lier KNNSL	Alternation of thin-bedded, very fine- to fine-grained argillaceous sandstones, generally glauconitic and lignitic.	2024	2082
			Eemhaven Claystone KNNCU	A thin claystone section intercalated between the De Lier Member and the IJsselmonde Sandstone Member, with marine fossils.	2064.5	2125
			IJsselmonde Sandstone KNNSY	Massive sandstone, very fine- to medium-grained, lignitic, locally glauconitic and/or with sideritic concretions. Calcareous cemented beds are common; locally shells and shell fragments are present.	2073	2137.5
Schieland SL		Nieuwerkerk SLDN	Alblasserdam SLDNA	A succession of red and dark to light (brownish) grey clay(stones) and siltstones, fine to medium grained sandstones and massive, thick-bedded, coarse grained sandstones. Coal & lignite beds.	2139.5	2216
Upper Germanic Trias RN	Triassic	Keuper RNKP	Upper Keuper Claystone RNKP	Predominantly grey, silty claystones and marls with streaks of fine- grained sandstone.	2164.5	2247.5
			Dolomitic Keuper RNKPD	A sequence of anhydritic, dolomitic or marly claystones, containing fine- grained sandstone intercalations. Grey to green colours are common, but red claystones also occur.	2166.5	2250
			Red Keuper Claystone RNKPR	Red, silty clay- or marlstones (high gamma-ray readings). These rocks are strongly variegated displaying red, green, yellow and grey colours.	2174	2259
		Muschelkalk RNMU	Middle Muschelkalk RNMUA	Light greenish/grey marlstone unit which contains some anhydrite beds in the basal part.	2175.5	2261.5
			Muschelkalk Evaporite RNMUE	This unit is composed a thin succession of anhydrites intercalated with limestone, dolomite and thin beds with sandstone.	-	-
			Lower Muschelkalk RNMUL	Alternation of mainly light-greenish/grey limestone or dolomite and marl beds.	2182.5	2270
		Röt RNRO	Upper Röt Fringe Claystone RNROF	A red-brown, silty, sandy or anhydritic claystone. It may also contain some dolomitic stringers.	2204	2299
			Röt Fringe Sandstone RNROF	Grey, cross-bedded, arkosic sandstones with intercalated claystone beds.	2208	2304
			Lower Röt Fringe Claystone RNROL	Red-brown silty claystone, often with an anhydrite or anhydrite-cemented sandstone bed at its base.	2,234	2339
		Solling RNSO	Solling Claystone RNSOC	Red, green and locally grey claystones. Within the member, occasional sand stringers are present.	2242	2351
			Basal Solling Sandstone RNSOB	Light-coloured, massive or cross-bedded, and dolomite-cemented sandstone.	2245	2356
Lower Germanic Trias RB		Hardegsen RBMH		Several stacked alternations of off-white to pink sandstones and some red claystones.	2247.5	2358
		Detfurth RBMD	Upper Detfurth Sandstone RBMDU	The member displays a typical log character of two clay beds with high gamma-ray readings, separated by sandstones.	2291.5	2421
			Lower Detfurth Sandstone RBMDL	A massive, light-coloured, arkosic sandstone.The high quartz content and quartz cementation of the sandstones is typical here.	2313	2452
		Volpriehausen RBMV	Upper Volpriehausen Sandstone RBMVU	Light-brown sandstone, usually carbonate-cemented. The thin claystone beds have a greenish colour & show an alternation of thin sandstone and claystone laminae.	2320	2462
			Lower Volpriehausen Sandstone RBMVL	Pink to grey, (sub-)arkosic sandstone unit, frequently displaying a distinct, blocky character on the gamma-ray logs. The member contains reworked material of the underlying formation in its lower part, which in general is strongly cemented.	2382.5	2552
	Permian-	Lower Buntsandstein RBSH	Rogenstein RBSHR	A cyclical alternation of red-brown and green, in places grey, occasionally anhydritic claystones, siltstones and sandstones or calcareous oolite beds.	2436.5	2631
				TD	2490	2707

Table 5: TNT-GT-02 geological lithostratigraphic column (updated re-interpretation from 11-06-2020).

5. Well suspension status

5.1 Well status

Well is suspended with formation brine (1.06 to 1.08 s.g. brine). The well is designed for a lifespan of 30 years (with 10 ¾" tie-back installed). See below the well barrier schematic. Primary barrier is the brine and secondary barrier. Top perforation is planned 3m AH below the Top Hardegsen at a depth 2361m AH.

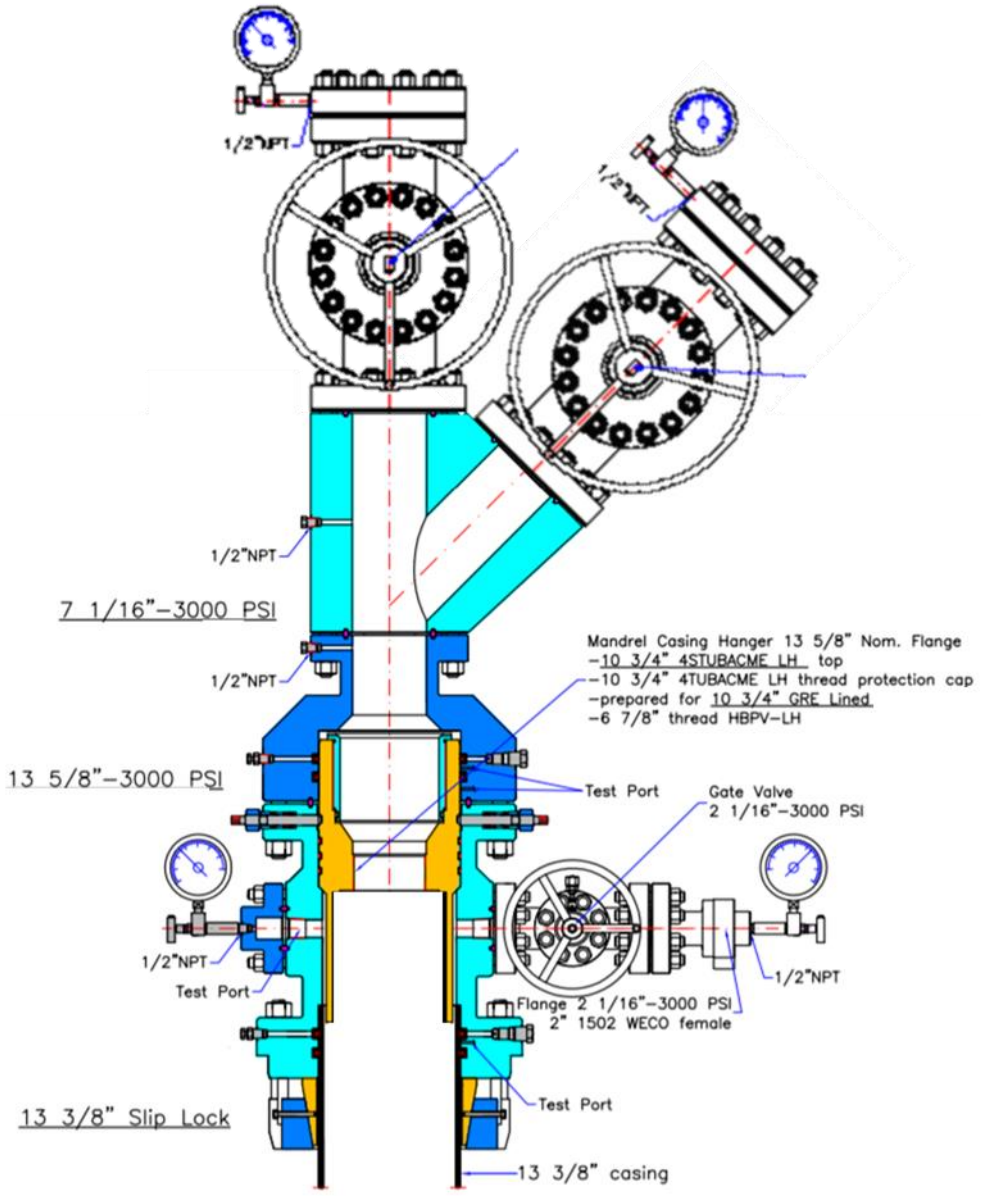


Primary barrier(s):
well filled with brine

Secondary Barrier(s):
9 5/8" cemented shoetrack
9 5/8" cemented liner
Liner hanger packer
13 3/8" cemented casing
X-mas tree
Master valves
SOV

5.2 *Wellhead and Christmas tree drawing*

Below the schematic of the wellhead as it was suspended. See section for pressure testing history.



Description	Material grade	Testing criteria	Status
CHH	DD	PSL 2, PR1	-
SOV (gate valve)	DD	PSL 2, PR1	Closed
10 ¾" tie-back hanger	EE, alloy 718	PSL 2, PR1	-
Tubing head adapter	EE, wet areas cladded with alloy 625	PSL 2, PR1	-
Master valves (ball valve, soft seats, gear box hand operated)	EE, wet areas cladded with alloy 625	PSL 2, PR1	Closed

TNT-GT-02

Netherlands

Technical Log, 1:1000

Mudlogging:

GEO SERVICE GmbH

Client:

Client: Duurzaam Voorne Holding B.V.
Operator: Duurzaam Voorne Holding B.V.

Project:

Borehole Section: TNT-GT-02
Well Name: TNT-GT-02

Location:

Country: Netherlands
Region or oilfield: West Netherlands Basin
Location: Tinte
Concession: Oostvoorne

Coordinates:

Longitude / Latitude: E 4° 8' 4.35" N 51° 53' 57.19"
Ordnance Survey Map: ETRS89
Elev. well head / KB: -0.20 m / 8.60 m

Well Type:

Observation/Injection/disposal well

Duration:

Spud: 21.04.2020
Last day drilled: 08.05.2020
Start depth (Tie-in) 0.00 m
Total depth: 2707.00 m

Rig:

DrillTec VarioRig VDD370.2
DrillTec GUT GmbH

Team:

Company Man:
Toolpusher:
Project- and operations geologist:
Wellsite geologist:

Mudlogging:

GeoService GmbH
Kreuzstraße 19
D-26603 Aurich
Germany
dirks@geoservice.de
Mudloggers:

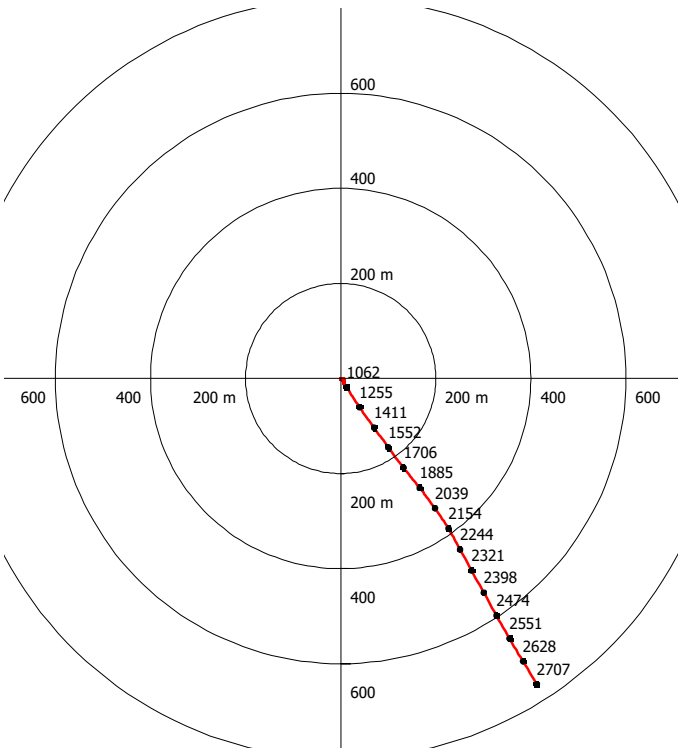
Service:

Fluid Services: Halliburton Baroid
Mud Engineers:

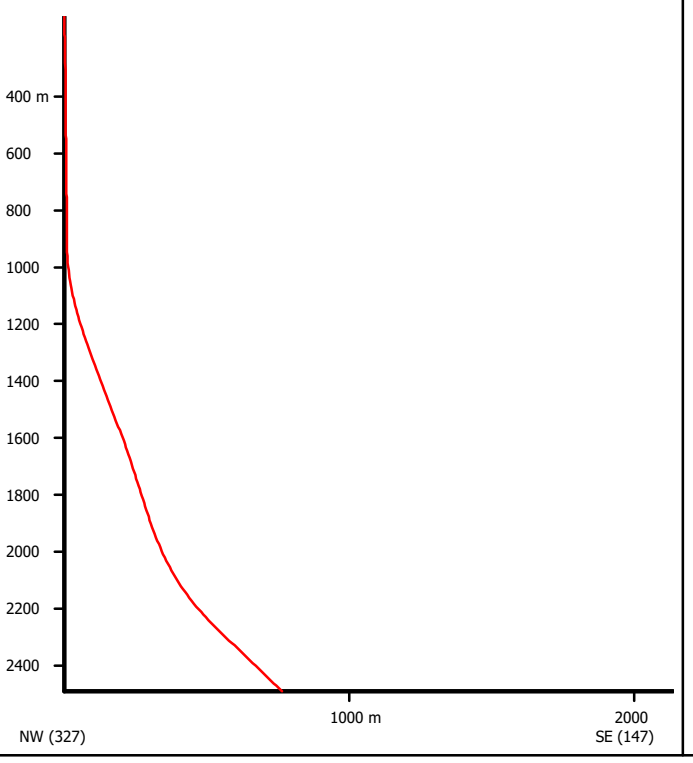
Remarks:

Print Date: 18.06.2020 09:28

H-Projection



V-Projection



Evaporites

Anhydrite

Clastic sediments

Gravel, calc. Sandstone, Greensand, Sand, Sandstone, Silt, Siltstone, Claystone, Mud/Clay, Flint

Carbonates and Biogenic sediments

Chalk, Limestone, Marl (-stone), Marl, argillaceous

Marlstone, dolomitic, Dolomite, Coal

Artificial

Cement, Mud Additives, No sample

Accessories

Anhydritic, Argillaceous, Calcareous, Carbonaceous, Conglomeratic, Dolomitic, Flint, Glauconite, Gypsiferous, Lignite, Marly, Mica (unspec.), Ooids, Pyrite, Quartz, Sandy, Silty

Fossils

Bryozoans, Crinoids, Echinoids, Fish, Foraminifera, Inoceramus, Molluscs, Plants, Shell fragments, Sponges

Framework

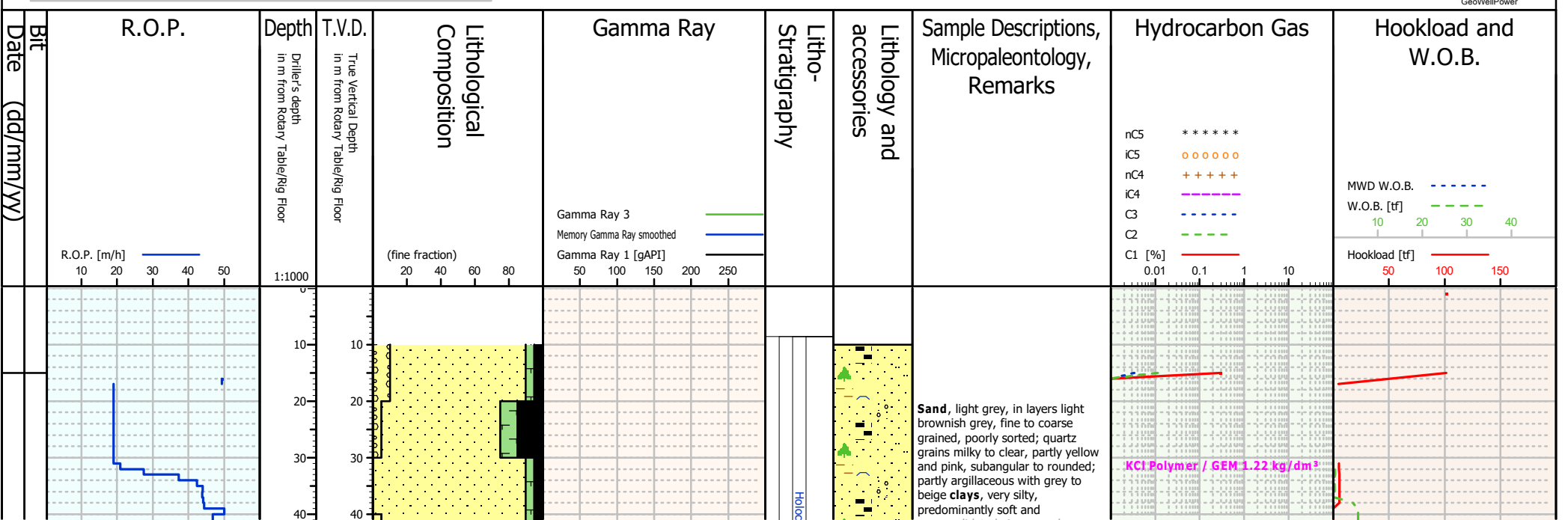
Lime-Mudstone, Lime-Wackestone, Chalky, Microcrystalline

Technical symbols

Casing shoe, Liner head, Sidewall core, (unrecovered), Hydrocarbon show, Gains, Losses, FIT or leakoff test, Directional drilling

Vertical axis is measured depth.

GEO data GeoWellPower



16" Varel Mill Tooth ES3G; S/N: 1595416
21/04/2020

16" Varel Mill Tooth ES3G; S/N: 1595416
22/04/2020

16" Varel Mill Tooth ES3G; S/N: 1595
22/04/20

24" Conductor Shoe
@ 68 m

Incl at 120.50 m
0.40 °
AZ : 275.00 °
TOT DEV: 0.42 m
TVD : 120.50 m

Incl at 182.60 m
2.10 °
AZ : 110.20 °
TOT DEV: 0.60 m
TVD : 182.59 m

Incl at 229.70 m
1.50 °
AZ : 108.50 °
TOT DEV: 2.11 m
TVD : 229.66 m

Incl at 280.60 m
1.00 °
AZ : 109.70 °
TOT DEV: 3.31 m
TVD : 280.55 m

Incl at 331.90 m
0.60 °
AZ : 116.60 °
TOT DEV: 4.02 m
TVD : 331.84 m

Incl at 382.90 m
0.80 °
AZ : 103.90 °
TOT DEV: 4.70 m
TVD : 382.84 m

Incl at 434.30 m
0.70 °
AZ : 103.50 °

"Diverse"
Pleistocene - Pleistocene
Maassluis
Early Pleistocene - Late Pliocene (Pretiglian - Tiglian)
Upper North Sea
Quaternary

Glauconitic Sand, light grey, fine to coarse grained, poorly sorted; quartz grains milky to clear, partly yellow, subangular to rounded; silty and partly argillaceous with grey to beige **clays**, silty, soft and unconsolidated. Fossil shells more dominant coarse section. Acc.: Glauconite, mica, shell fragments.

Glauconitic Sand a.d.p. becomes light greenish grey.

Argillaceaous Silt to silty clay. **Clay** and silt light to medium grey, to the bottom also brownish grey, soft to fairly consolidated, calcareous, sandy with fine grained, well sorted sand; quartz grains milky translucent to clear, occasionally yellow, subangular to subrounded. Acc.: mica, glauconite, shell fragments.

Oosterhout
Pliocene - Late Miocene
Tertiary
Upper North Sea

Clay, light brownish grey, grey, strongly silty, sandy with decreasing content of fine grained sand, occasionally also medium and coarse grains; quartz milky to clear, subrounded; silty clay is unconsolidated to fairly consolidated. Acc.: mica, glauconite, shell fragments.

Breda
Miocene

Clay, grey to green and brown, with increased content of **sand** and glauconite. Sand is fine grained, subangular and milky to clear. Acc.: shell fragments, foraminifers.

Clay, brownish grey, subordinated light grey, silty, micaceous, slightly calcareous, firm. Acc.: pyrite, fine grained sand, foraminifers.

Rupel Clay
Rupel
'Middle Oligocene (Chattian - Rupelian)
Tertiary
Middle Nor

KCl Polymer / GEM 1.10 kg/dm³
KCl Polymer / GEM 1.11 kg/dm³
KCl Polymer / GEM 1.13 kg/dm³

16" Varel Mill Tooth ES3G; S/N: 1595416
22/04/2020

Incl at 485.40 m
0.60 °
AZ : 121.90 °
TOT DEV: 5.83 m
TVD : 485.50 m

Incl at 536.80 m
0.70 °
AZ : 147.30 °
TOT DEV: 6.25 m
TVD : 536.73 m

Incl at 587.80 m
0.60 °
AZ : 130.70 °
TOT DEV: 6.75 m
TVD : 587.73 m

Incl at 639.40 m
0.60 °
AZ : 142.70 °
TOT DEV: 7.20 m
TVD : 639.32 m

Incl at 678.00 m
0.70 °
AZ : 143.80 °
TOT DEV: 7.57 m
TVD : 677.92 m

Incl at 729.60 m
0.80 °
AZ : 171.80 °
TOT DEV: 8.03 m
TVD : 729.52 m

Incl at 780.40 m
0.60 °
AZ : 160.40 °
TOT DEV: 8.45 m
TVD : 780.31 m

Incl at 819.90 m
0.70 °
AZ : 167.90 °
TOT DEV: 8.75 m
TVD : 819.81 m

Tertiary
North Sea
Oligocene - Eocene (Rupelian - Priabonian)
Rupel
Vessem
Lower North Sea
Eocene (Ypresian - Bartonian)
Dongen
Asse
Tertiary
Lower North Sea
Early to Middle Eocene (Ypresian to Lutetian)
Dongen
Brussel Sand
Tertiary
Lower North Sea
Dongen

Clay, light grey, silty, micaceous, slightly calcareous, firm. Acc.: fine grained sand, pyrite, foraminifers.

Claystone, light to medium grey, silty, slightly calcareous, firm to moderately hard. Acc.: pyrite, fine grained sand, foraminifers.

Sandstone, light grey, light brownish grey, fine to medium grained, glauconitic; quartz graines moderately sorted, milky to clear, yellow, pale orange, subrounded in a silty, light brown matrix, firm to moderately hard. Acc.: glauconite, pyrite, , foraminifers, fish fragments (-bones, dorsa), wood fragments.

Claystone, light to medium grey, silty, sandy, micaceous, firm; content of fine grained, glauconitic sand and siltstone decreasing to the bottom. Acc.: glauconite, pyrite, mica, foraminifers

Claystone, greenish grey, occasionally light brownish grey, silty, firm to moderately hard. Decreasing content of siltstone, light grey, increasing to the bottom with some fine grained glauconitic sand at the base. Acc.: pyrite, glauconite, foraminifers.

Calcareous sandstone, grey white, off white, fine to very fine grained, well sorted, glauconitic; quartz grains milky to clear, occasionally pale red, in white, calcareous matrix. Acc.: mica, glauconite, foraminifers, bryozoa, sponge needles.

Claystone, light grey to greenish grey, sandy, silty, blocky, friable to hard. Acc.: glauconite, rarely pyrite.

Claystone, light- to medium grey, greenish grey, sandy, silty, blocky, friable to hard. Acc.: glauconite, rarely pyrite.

KCl Polymer / GEM 1.16 kg/dm³
KCl Polymer / GEM 1.17 kg/dm³
KCl Polymer / GEM 1.20 kg/dm³
KCl Polymer / GEM 1.19 kg/dm³

23/04/2020 16" Varel Mill Tooth ES3G; S/N: 1595416

Incl at 883.20 m
0.50 °
AZ 181.30 °
TOT DEV: 9.25 m
TVD : 883.11 m

Incl at 934.40 m
1.30 °
AZ 184.10 °
TOT DEV: 9.60 m
TVD : 934.30 m

Incl at 985.50 m
5.00 °
AZ 159.70 °
TOT DEV: 12.00 m
TVD : 985.50 m

10 20 30 40
MD

23/04/2020 16" Varel Mill Tooth ES3G; S/N: 1595416

Incl at 1036.60 m
8.90 °
AZ 145.30 °
TOT DEV: 18.17 m
TVD : 1036.02 m

9 5/8" TOL @ 1071.5 m

Incl at 1088.30 m
10.50 °
AZ : 145.70 °
TOT DEV: 27.22 m
TVD : 1086.91 m

Incl at 1139.40 m
14.20 °
AZ : 150.50 °
TOT DEV: 38.08 m
TVD : 1136.83 m

Incl at 1190.70 m
17.60 °
AZ : 146.00 °
TOT DEV: 52.16 m
TVD : 1186.15 m

850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240

50 100 150 200 250

Tertiary
Early Eocene (Ypresian)
Lower North Sea
Ieper
Dongen

Claystone, light brownish grey, subordinated greenish grey, silty, slightly micaceous, blocky, platy, splintery, generally homogeneous: Acc.: mica, pyrite, rarely foraminifers.

KCl Polymer / GEM 1.19 kg/dm³

0.01 0.1 1 10

10 20 30 40

50 100 150

Tertiary
Early Eocene (Ypresian)
Lower North Sea
Ieper
Dongen

Claystone, light brownish grey, subordinated greenish grey, silty, slightly micaceous, blocky, platy, splintery, generally homogeneous: Acc.: mica, pyrite, rarely foraminifers.

KCl Polymer / GEM 1.19 kg/dm³

Basal Dongen sand

Sandstone, light grey, fine grained, well sorted, slightly glauconitic, friable, predominantly milled to loose, subrounded quartz grains, milky to clear. Additionally Claystone, light brownish grey and medium grey, silty, blocky, splintery, moderately hard. Acc.: pyrite, glauconite, mica.

Landen Clay
Late Paleocene (Thanetian)
Landen

Claystone, brownish grey, medium grey, also green grey, silty, blocky, platy, splintery, hard. Acc.: fine grained sand, pyrite.

Claystone, brownish grey, medium grey, also green grey, silty, blocky, platy, splintery, hard. Marlstone to argillaceous marlstone, light grey to off white, blovky and splintery. Acc.:Pyrite.

KCl Polymer / GEM 1.20 kg/dm³

Ekofisk
Danian
Chalk

Limestone, white to off white, micro-crystalline, chalky matrix, subangular cuttings. Some claystone as previously described. Flintstone, off white to light grey, very hard, platy, splintery, slowly increasing towards the bottom.

30/04/2020

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854

Incl at 1242.00 m
18.50 °
AZ : 144.50 °
TOT DEV: 67.96 m
TVD : 1234.96 m

Incl at 1293.60 m
19.30 °
AZ : 145.50 °
TOT DEV: 84.88 m
TVD : 1283.70 m

13-3/8" CS @ 1308 m

Gamma device recalibrated after casing run

MWD/Gamma data: updated mud coefficient!

Chalk, white, off white, micritic, porous, crumbly, brittle. **Flintstone**, grey white to light grey, splintery, sharp edged, very hard. Acc.:claystone, marlstone, pyrite,fossil debris: foraminifera, bryozoa, inoceramus fragments.

KCl Polymer / GEM 1.21 kg/dm³

16" Section TD at 1313 m (MD).

Incl at 1346.50 m
20.00 °
AZ : 144.30 °
TOT DEV: 102.60 m
TVD : 1333.54 m

Chalk, white, off white, micritic, porous, crumbly, brittle. Subordinated flintstone, grey white to light grey, splintery, sharp edged, very hard. Acc.: claystone, marlstone, pyrite,fossil debris: foraminifera, bryozoa, inoceramus fragments, sea urchin spines.

Incl at 1397.90 m
20.40 °
AZ : 144.90 °
TOT DEV: 120.32 m
TVD : 1381.79 m

Chalk, white, off white, micritic,porous, crumbly, brittle; argillaceous marlstone, light grey, brittle to hard, silty, slightly glauconitic. Acc.: pyrite, rarely fossil debris.

KCl Polymer / GEM 1.20 kg/dm³

Incl at 1449.20 m
20.90 °
AZ : 143.30 °
TOT DEV: 138.31 m
TVD : 1429.83 m

Incl at 1500.40 m
21.20 °
AZ : 144.30 °
TOT DEV: 156.81 m
TVD : 1477.56 m

Chalk, off white, micritic, porous, crumbly, occasionally slightly arenitic. Subordinated argillaceous marlstone, light grey, light brownish grey, silty, slightly glauconitic, brittle to hard. Acc.: pyrite, rarely fossil debris and foraminifera.

01/05/2020

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854

Incl at 1564.90 m
21.40 °
AZ : 144.40 °
TOT DEV: 180.23 m
TVD : 1537.66 m

Chalk, cream white to off white, micritic, porous, friable. Fairly marlstone, light to medium grey, brownish grey, silty, friable to firm. Acc.: pyrite, rarely fossil debris.

Incl at 1615.80 m
21.20 °
AZ : 143.80 °
TOT DEV: 198.82 m
TVD : 1585.04 m

Chalk, a.p.d.; mud additive (nut-shells).

Cretaceous
Chalk
Upper Cretaceous (Turonian)
Ommelanden

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854
02/05/2020

Incl at 1667.10 m
18.90 °
AZ : 140.20 °
TOT DEV: 216.58 m
TVD : 1633.15 m

Incl at 1718.50 m
17.80 °
AZ : 141.70 °
TOT DEV: 233.04 m
TVD : 1681.83 m

Incl at 1795.30 m
17.80 °
AZ : 142.10 °
TOT DEV: 256.44 m
TVD : 1754.97 m

Incl at 1847.10 m
17.80 °
AZ : 140.90 °
TOT DEV: 272.27 m
TVD : 1804.28 m

Incl at 1898.00 m
18.10 °
AZ : 141.50 °
TOT DEV: 288.01 m
TVD : 1852.68 m

Incl at 1949.10 m
19.80 °
AZ : 141.90 °
TOT DEV: 304.11 m
TVD : 1901.17 m

Incl at 2000.80 m
21.90 °
AZ : 144.30 °
TOT DEV: 322.15 m
TVD : 1949.62 m

10 20 30 40 50

1610 1650 1620 1660 1630 1670 1640 1680 1650 1690 1660 1700 1670 1710 1680 1720 1690 1730 1700 1740 1710 1750 1720 1760 1730 1770 1740 1780 1750 1790 1760 1800 1770 1810 1780 1820 1790 1830 1800 1840 1810 1850 1820 1860 1830 1870 1840 1880 1850 1890 1860 1900 1870 1910 1880 1920 1890 1930 1900 1940 1910 1950 1920 1960 1930 1970 1940 1980 1950 2000 1960 2010 1970 2020 1980 2030 2040

50 100 150 200 250

Cretaceous
Upper Cretaceous (Turonian)
Chalk
Ommelanden
Cretaceous
Chalk
Upper Cretaceous (Turonian)
Ommelanden
Chalk
Cretaceous
Pnl Texel Marls
Texel Greensa
Early- Middle Cenomanian
Texel
Spijkenisse Greensand
Holland
Lower Cretaceous (Albian - Early Aptian)

Chalk, grey white, off white, micritic, porous, friable. Fairly marlstone, light to medium grey, silty, friable to firm. Acc.: pyrite, rarely fossil debris.

Chalk, grey white, off white, creme white, micritic, friable to firm. Some marlstone, light to medium grey, also brown grey, silty, friable to firm. Acc.: pyrite, rarely fossil debris.

Chalk, off white, micritic, friable to firm with low content of flintstone, light to medium grey, brownish grey, splintery, sharp edged, very hard. Acc.: marlstone, rarely pyrite.

Marlstone, medium grey, silty, slightly micaceous, blocky, moderately hard. Intercalated layers of sandstone, grey white, fine grained, glauconitic, calcareous, silty, well sorted.

Siltstone, medium grey to green-grey, glauconitic, partly strong sandy with fine to medium grained sand(-stone), light grey, greenish grey, moderately sorted, partly with coarse rounded quartz grains in silty matrix.

KCl Polymer / GEM 1.22 kg/dm³

KCl Polymer / GEM 1.22 kg/dm³

OBM 1.20 kg/dm³

temporary no gas readings due to lower mud level in the flowline

0.01 0.1 1 10

10 20 30 40

50 100 150

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854
03/05/2020

03/05/2020

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854
04/05/2020

Incl at 2051.60 m
23.90 °
AZ : 145.30 °
TOT DEV: 342.02 m
TVD : 1996.37 m

Incl at 2103.60 m
27.40 °
AZ : 146.60 °
TOT DEV: 364.84 m
TVD : 2043.08 m

Incl at 2153.90 m
30.40 °
AZ : 148.90 °
TOT DEV: 388.88 m
TVD : 2087.24 m

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854
05/05/2020

Incl at 2205.60 m
34.50 °
AZ : 151.70 °
TOT DEV: 416.59 m
TVD : 2130.76 m

Incl at 2256.70 m
38.40 °
AZ : 150.40 °
TOT DEV: 446.68 m
TVD : 2171.92 m

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854
06/05/2020

Incl at 2308.00 m
42.80 °
AZ : 151.30 °
TOT DEV: 480.12 m
TVD : 2210.65 m

Incl at 2359.40 m
44.20 °
AZ : 151.00 °
TOT DEV: 515.07 m
TVD : 2248.19 m

12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854

Incl at 2410.30 m
45.80 °
AZ : 151.30 °
TOT DEV: 550.95 m
TVD : 2284.18 m

1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440

Cretaceous
Rijnland
Early Aptian
Holland
Lower Holland Marl

Siltstone, greenish-grey, glauconitic, partly strong sandy with fine to medium grained sand(-stone), light grey, greenish-grey, moderately sorted, partly with coarse rounded quartz grains in silty matrix, also marla. Minor some **Marlstone**, light greenish-grey, silty, glauconitic.

Barremian - Aptian
Vlieland
De Lier

Sandstone, grey white, towards the bottom increasingly light brownish white, very fine to fine grained, well sorted, strong silty and partly grading into siltstone, partly glauconitic. Quartz grains milky translucent to colourless clear, occasionally pale yellow or pale brownish translucent, subangular to sub rounded in silty matrix. Sandstone partly milled to rock flour. Acc: pyrite, glauconite, claystone.

Barremian to
Vlieland
Eemhaven Cl

Siltstone, light grey to grey, very sandy, occasionally grading to silty claystone.
Sandstone, a.p.d.
Acc, Claystone, Pyrite

Rijnland
Mid Barremian
Vlieland
IJsselmonde Sandstone

Sandstone, often milled to rockflour, very light grey to grey white, occasionally pale brownish shaded, also milled to loose quartz grains, milky translucent to colourless clear, occasionally pale yellow or pale brownish translucent, predominantly very fine to fine grained, occasionally medium grained, subrounded, moderately sorted, matrix argillaceous and silty and partly very weak calcareous. Moreover some **Siltstone**, light grey, a.p.d.
Acc: claystone, pyrite, towards the base occasionally some coaly debris.

Siltstone, light grey to grey white, occasionally brownish white, decreasingly sandy, increasingly argillaceous, slightly calcareous, partly milled to rockflour. Acc.: coal debris, pyrite.

Schieland
Ryazanian to Valanginian
Nieuwerkerk
Alblasserdam

Claystone, light to medium grey, occasionally dark grey, strong silty, slightly calcareous, carboniferous with coal detritus, friable to moderately hard. **Siltstone** as previously described and partly grading into very fine grained sand. Acc.: coal detritus, mica.

Upper Germanic Trias
Middle to Upper Triassic (Late Anisian to Early Lad
Keuper
Dolomitic R
Middle Triassic
Muschelkalk
Middle M
Lower Muschelkalk

Calcareous and **Dolomitic Marlstone** as well as **Argillaceous Marlstone** sectionwise with transitions to **Marly Claystone**, mainly milled, predominantly light to medium grey, rarely also whitish grey or dark grey, partly very pale greenish grey shaded, occasionally silty to very finely sandy, firm. Furthermore some **Limestone** and **Dolomite**, off white to light grey. Acc.: **Sandstone** and **Siltstone** as previously described.

Triassic
Early Anisian
Röt
Upper Röt
Röt Fringe Sandstone
Lower Röt Fr
Solling
Solling Bd

Dolomitic Marlstone, light grey, partly calcareous, argillaceous and sandy, blocky, friable to firm; mainly milled. Additionally marly **claystone**, light to medium grey, from 2330 m to the bottom occasionally pale reddish brown, firm. Subordinated **Sandstone**, fine grained, well sorted with milky to clear, subrounded quartz grains in in grey white, marly matrix, friable to firm.
Furthermore **Anhydrite**, predominantly milled to gypsum, off white to very light grey, friable, milled. Acc.: traces of pyrite.

Hardegsen

Sandstone, milled to rockflour and partly to loose quartz grains, very light to light grey, fine to medium grained, loose quartz grains are mainly colourless clear to translucent, rarely pale yellowish, alternating calcareous and dolomitic cemented, firm. Furthermore **Marlstone**, **Siltstone** and **Claystone** a.p.d.

Some interbedded **Siltstone**, light grey, slightly calcareous, friable. **Sandstone,** a.d.p.

Lower Germanic T
Triass
Lower Triassic (Scyth
Det
Upper Detfurth Sa

Sandstone to **Siltstone**, samples predominantly milled to rock flour, very light to light grey, quartz grains fine to medium grained, colourless clear to translucent, subrounded to subangular, friable, in a silty, dolomitic and slightly

OBM 1.22 kg/dm³
OBM 1.22 kg/dm³
OBM 1.22 kg/dm³

Bit: 12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854

Date (dd/mm/yy): 07/05/2020

Incl at 2461.80 m
46.30 °
AZ : 150.80 °
TOT DEV: 587.74 m
TVD : 2320.07 m

Incl at 2500.10 m
46.50 °
AZ : 150.80 °
TOT DEV: 615.33 m
TVD : 2346.57 m

Incl at 2551.20 m
46.70 °
AZ : 149.60 °
TOT DEV: 652.37 m
TVD : 2381.71 m

Incl at 2602.70 m
46.50 °
AZ : 149.20 °
TOT DEV: 689.76 m
TVD : 2417.09 m

Incl at 2653.80 m
45.30 °
AZ : 149.00 °
TOT DEV: 726.54 m
TVD : 2452.54 m

9-5/8" LS @ 2707 m

Total Depth @ 2707m reached on 08MAY2020

Bit: 12.25" Varel PDC FY616PPDGRU-T; S/N: 6024854

Date (dd/mm/yy): 08/05/2020

Total Depth @ 2707m reached on 08MAY2020

Sandstone, off white, grey white to light grey, strong silty with abundant rockflour in samples. Quartz grains fine grained, subrounded, milky white, occasionally pale yellow in a white, silty, dolomitic and slight calcareous matrix. Predominantly milled to silt, rockflour and loose quartz grains. Acc.: claystone, in traces pyrite.

Claystone, milled, mainly reddish brown and partly alternating also light grey to grey and pale greenish shaded, blocky, platy, occasionally silty, rarely calcareous oolithes.
Decreasingly still some **Sandstone** and **Siltstone**, a.p.d.

Section wise additionally some content of **Marlstone**, milled, light grey to grey, also pale reddish grey and pale greenish grey shaded, also likely material comes partly from milled calcareous oolithes.

OBM 1.22 kg/dm³

R.O.P. [m/h]

Gamma Ray 3

Memory Gamma Ray smoothed

Gamma Ray 1 [gAPI]

(fine fraction)

nC5 * * * * * *
iC5 o o o o o o
nC4 + + + + +
iC4 ------
C3 - - - - -
C2 - - - -
C1 [%]

MWD W.O.B.
W.O.B. [tf]
Hookload [tf]

Depth: Driller's depth in m from Rotary Table/Rig Floor

1:1000

T.V.D.: True Vertical Depth in m from Rotary Table/Rig Floor

Triassic
Lower Germanic Trias
Lower Triassic (Scythian)
Volpriehausen
Upper Volpriehausen Sandstone
Lower Volpriehausen Sandstone
Permian-Triassic
Lower Germanic Trias
Latest Permian - early Scythian
Lower Buntsandstein
Rogenstein

Lithological Composition

Gamma Ray

Litho-Stratigraphy

Lithology and accessories

Sample Descriptions, Micropaleontology, Remarks

Hydrocarbon Gas

Hookload and W.O.B.

Operator	Duurzaam Voorne	**Local co-ord ref**	Well Centered
Field	TNT	**TVD Reference**	RKB
Facility	TNT	**North Reference**	GRID
Well	TNT-GT-02	**Survey Calc Method**	Minimum Curvature
Wellbore	TNT-GT-02		

Field: TNT

CRS	Netherlands Coordinate System / N		
Apply Scale Factor	NO	**Scale Factor**	0.99991
System Datum	User Defined	**Depth Datum->MSL**	8.30 m
Latitude	51° 54' 0.821" N	**Longitude**	4° 8' 5.047" E
Grid Convergence	-0.989		

Facility: TNT

Map Northing	435271.91 Meters	**Map Easting**	68782.93 Meters
Vertical Uncertainty	0.00 m	**Horizontal Uncertainty**	0.00 m
Grid Convergence	-0.989		

Well: TNT-GT-02

Local North	-5.63 m	**Local East**	4.16 m
Map Northing	435266.28 Meters	**Map Easting**	68787.09 Meters
Depth Datum	RKB	**Datum Elevation**	8.30 m
GL Elevation	-0.30 m		
Grid Convergence	-0.989		

Well bore: TNT-GT-02

Magnetic Model	IGRF13.COF	**Date**	20/4/2020
Total Field (nT)	49159.796	**Dip Angle (°)**	66.985
Declination (°)	1.488		
VS Origin	Well	**VS Azimuth**	147.33
VS Orgin NS	0.00 m	**VS Origin EW**	0.00 m

Survey Program: TNT-GT-02

Depth From (m)	Depth To (m)	Survey	Survey Tool
0	1293.6	16" Section Surveys TNT-GT-02	MWD+SAG
1313	2707	12 1/4" Section Surveys TNT-GT-02	MWD+IGRF+SAG

MD m	Inc °	Azi °	TVD m	NS m	EW m	VS m	DLS (°/30m)	BR (°/30m)	TR (°/30m)	TF °	CL m	TVD SS m	Map Northing Meters	Map Easting Meters	Closure Azi °	Up/Dn m	Left/Right m
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-8.30	435266.28	68787.09	0.00	0.00	0.00
120.50	0.40	275.00	120.50	0.04	-0.42	-0.26	0.10	0.10	21.16	275.00	120.50	112.20	435266.32	68786.67	275.00	0.42	0.00
127.50	0.40	90.00	127.50	0.04	-0.42	-0.26	3.43	0.00	750.00	177.50	7.00	119.20	435266.32	68786.67	275.29	-0.42	-0.04
145.50	0.30	133.00	145.50	0.01	-0.32	-0.18	0.45	-0.17	71.67	131.43	18.00	137.20	435266.29	68786.77	271.18	-0.24	0.21

MD	Inc	Azi	TVD	NS	EW	VS	DLS	BR	TR	TF	CL	TVD SS	Map Northing	Map Easting	Closure Azi	Up/Dn	Left/Right
m	°	°	m	m	m	m	(°/30m)	(°/30m)	(°/30m)	°	m	m	Meters	Meters	°	m	m
155.00	1.10	108.00	155.00	-0.04	-0.22	-0.08	2.65	2.53	-78.95	-33.70	9.50	146.70	435266.24	68786.87	259.93	-0.19	0.10
164.20	1.40	116.80	164.20	-0.12	-0.03	0.08	1.16	0.98	28.70	37.07	9.20	155.90	435266.16	68787.06	195.55	0.02	0.12
173.30	1.80	117.40	173.29	-0.23	0.19	0.30	1.32	1.32	1.98	2.70	9.10	164.99	435266.05	68787.28	140.18	0.28	0.12
182.60	2.10	110.20	182.59	-0.36	0.48	0.56	1.25	0.97	-23.23	-42.87	9.30	174.29	435265.92	68787.57	126.56	0.58	0.17
191.90	1.80	106.70	191.88	-0.46	0.78	0.81	1.04	-0.97	-11.29	-160.09	9.30	183.58	435265.82	68787.87	120.39	0.88	0.21
201.20	1.90	107.50	201.18	-0.55	1.07	1.04	0.33	0.32	2.58	14.88	9.30	192.88	435265.73	68788.16	117.10	1.19	0.20
210.70	2.10	108.50	210.67	-0.65	1.39	1.30	0.64	0.63	3.16	10.40	9.50	202.37	435265.63	68788.48	115.14	1.52	0.18
219.80	1.70	111.30	219.77	-0.75	1.67	1.53	1.35	-1.32	9.23	168.33	9.10	211.47	435265.53	68788.76	114.25	1.83	0.09
229.70	1.50	108.30	229.66	-0.85	1.93	1.75	0.66	-0.61	-9.09	-158.77	9.90	221.36	435265.43	68789.02	113.68	2.10	0.20
242.30	1.50	115.30	242.26	-0.97	2.23	2.02	0.44	0.00	16.67	93.50	12.60	233.96	435265.31	68789.32	113.43	2.43	-0.08
255.10	1.40	104.20	255.05	-1.08	2.54	2.28	0.70	-0.23	-26.02	-115.09	12.80	246.75	435265.20	68789.63	113.02	2.72	0.42
267.80	1.30	104.80	267.75	-1.15	2.83	2.50	0.24	-0.24	1.42	172.25	12.70	259.45	435265.13	68789.92	112.19	3.03	0.39
280.60	1.00	109.70	280.55	-1.23	3.07	2.69	0.74	-0.70	11.48	164.29	12.80	272.25	435265.05	68790.16	111.78	3.31	0.12
306.10	0.80	120.70	306.04	-1.39	3.44	3.03	0.31	-0.24	12.94	144.59	25.50	297.74	435264.89	68790.53	112.08	3.67	-0.56
319.10	0.70	120.70	319.04	-1.48	3.58	3.18	0.23	-0.23	0.00	180.00	13.00	310.74	435264.80	68790.67	112.46	3.84	-0.56
331.90	0.60	116.60	331.84	-1.55	3.71	3.31	0.26	-0.23	-9.61	-157.10	12.80	323.54	435264.73	68790.80	112.69	4.01	-0.27
344.60	0.90	104.00	344.54	-1.60	3.87	3.44	0.80	0.71	-29.76	-35.20	12.70	336.24	435264.68	68790.96	112.54	4.14	0.62
357.30	0.70	120.70	357.24	-1.67	4.03	3.58	0.72	-0.47	39.45	138.77	12.70	348.94	435264.61	68791.12	112.49	4.32	-0.62
369.90	0.80	102.10	369.84	-1.73	4.18	3.71	0.62	0.24	-44.29	-77.15	12.60	361.54	435264.55	68791.27	112.43	4.45	0.81
382.90	0.80	103.90	382.84	-1.77	4.36	3.84	0.06	0.00	4.15	90.90	13.00	374.54	435264.51	68791.45	112.07	4.65	0.67
395.90	0.70	105.00	395.84	-1.81	4.52	3.96	0.23	-0.23	2.54	172.36	13.00	387.54	435264.47	68791.61	111.80	4.84	0.58
408.50	0.80	110.80	408.44	-1.86	4.68	4.09	0.30	0.24	13.81	40.13	12.60	400.14	435264.42	68791.77	111.68	5.03	0.08
421.60	0.70	102.90	421.53	-1.91	4.84	4.22	0.33	-0.23	-18.09	-137.94	13.10	413.23	435264.37	68791.93	111.53	5.15	0.78
434.30	0.70	103.50	434.23	-1.95	4.99	4.33	0.02	0.00	1.42	90.30	12.70	425.93	435264.33	68792.08	111.29	5.31	0.73
447.10	0.50	118.50	447.03	-1.99	5.12	4.44	0.59	-0.47	35.16	149.19	12.80	438.73	435264.29	68792.21	111.25	5.45	-0.69
459.90	0.60	128.50	459.83	-2.06	5.22	4.55	0.32	0.23	23.44	48.90	12.80	451.53	435264.22	68792.31	111.53	5.37	-1.64
472.80	0.40	120.90	472.73	-2.12	5.31	4.66	0.49	-0.47	-17.67	-165.43	12.90	464.43	435264.16	68792.40	111.80	5.65	-0.90
485.40	0.60	121.90	485.33	-2.18	5.41	4.75	0.48	0.48	2.38	3.00	12.60	477.03	435264.10	68792.50	111.98	5.74	-1.00
498.20	0.50	147.60	498.13	-2.26	5.49	4.87	0.62	-0.23	60.23	124.58	12.80	489.83	435264.02	68792.58	112.41	4.85	-3.42
511.20	0.60	152.00	511.13	-2.37	5.55	5.00	0.25	0.23	10.15	25.11	13.00	502.83	435263.91	68792.64	113.13	4.70	-3.79
524.30	0.50	150.40	524.23	-2.48	5.62	5.12	0.23	-0.23	-3.66	-172.07	13.10	515.93	435263.80	68792.71	113.85	4.93	-3.66
536.80	0.70	147.30	536.73	-2.59	5.68	5.25	0.49	0.48	-7.44	-10.77	12.50	528.43	435263.69	68792.77	114.54	5.25	-3.38
549.50	0.70	140.00	549.43	-2.72	5.78	5.41	0.21	0.00	-17.24	-93.65	12.70	541.13	435263.56	68792.87	115.21	5.80	-2.68
562.40	0.50	144.00	562.33	-2.83	5.86	5.54	0.47	-0.47	9.30	170.17	12.90	554.03	435263.45	68792.95	115.74	5.73	-3.08
575.30	0.60	132.40	575.23	-2.92	5.94	5.66	0.35	0.23	-26.98	-53.97	12.90	566.93	435263.36	68793.03	116.14	6.35	-1.85
587.80	0.60	130.70	587.73	-3.00	6.04	5.79	0.04	0.00	-4.08	-90.85	12.50	579.43	435263.28	68793.13	116.44	6.54	-1.66
600.70	0.50	147.60	600.63	-3.09	6.12	5.91	0.44	-0.23	39.30	129.91	12.90	592.33	435263.19	68793.21	116.82	5.89	-3.51
613.60	0.50	119.90	613.52	-3.17	6.20	6.02	0.56	0.00	-64.42	-103.85	12.90	605.22	435263.11	68793.29	117.08	6.96	-0.34
626.60	0.60	148.90	626.52	-3.26	6.28	6.13	0.67	0.23	66.92	85.13	13.00	618.22	435263.02	68793.37	117.39	6.03	-3.70
639.40	0.60	142.70	639.32	-3.37	6.36	6.27	0.15	0.00	-14.53	-93.10	12.80	631.02	435262.91	68793.45	117.90	6.53	-3.02
652.30	0.50	151.50	652.22	-3.47	6.43	6.39	0.30	-0.23	20.47	144.16	12.90	643.92	435262.81	68793.52	118.37	6.12	-3.99
665.20	0.70	143.80	665.12	-3.58	6.50	6.53	0.50	0.47	-17.91	-25.84	12.90	656.82	435262.70	68793.59	118.87	6.73	-3.13

MD	Inc	Azi	TVD	NS	EW	VS	DLS	BR	TR	TF	CL	TVD SS	Map Northing	Map Easting	Closure Azi	Up/Dn	Left/Right
m	°	°	m	m	m	m	(°/30m)	(°/30m)	(°/30m)	°	m	m	Meters	Meters	°	m	m
678.00	0.70	162.50	677.92	-3.72	6.57	6.68	0.53	0.00	43.83	99.35	12.80	669.62	435262.56	68793.66	119.53	5.52	-5.15
690.80	0.80	155.40	690.72	-3.88	6.63	6.84	0.32	0.23	-16.64	-46.49	12.80	682.42	435262.40	68793.72	120.31	6.29	-4.42
703.50	0.50	159.30	703.42	-4.01	6.69	6.99	0.72	-0.71	9.21	173.56	12.70	695.12	435262.27	68793.78	120.94	6.11	-4.84
716.50	0.60	165.40	716.42	-4.13	6.72	7.11	0.27	0.23	14.08	33.42	13.00	708.12	435262.15	68793.81	121.55	5.69	-5.47
729.60	0.80	171.80	729.52	-4.29	6.76	7.25	0.49	0.46	14.66	24.57	13.10	721.22	435261.99	68793.85	122.39	5.20	-6.08
742.00	0.70	172.30	741.92	-4.45	6.78	7.40	0.24	-0.24	1.21	176.51	12.40	733.62	435261.83	68793.87	123.26	5.31	-6.12
754.80	0.70	174.90	754.72	-4.60	6.80	7.54	0.07	0.00	6.09	91.30	12.80	746.42	435261.68	68793.89	124.10	5.19	-6.36
767.70	0.80	175.80	767.61	-4.77	6.81	7.69	0.23	0.23	2.09	7.17	12.90	759.31	435261.51	68793.90	125.01	5.26	-6.44
780.40	0.60	160.40	780.31	-4.92	6.84	7.83	0.64	-0.47	-36.38	-144.28	12.70	772.01	435261.36	68793.93	125.74	6.93	-4.79
793.20	0.50	168.50	793.11	-5.04	6.87	7.95	0.30	-0.23	18.98	146.14	12.80	784.81	435261.24	68793.96	126.25	6.31	-5.73
806.10	0.70	178.90	806.01	-5.17	6.88	8.07	0.53	0.47	24.19	33.84	12.90	797.71	435261.11	68793.97	126.92	5.30	-6.78
819.90	0.70	167.90	819.81	-5.34	6.90	8.22	0.29	0.00	-23.91	-95.50	13.80	811.51	435260.94	68793.99	127.72	6.67	-5.63
831.70	0.80	167.70	831.61	-5.49	6.94	8.37	0.25	0.25	-0.51	-1.60	11.80	823.31	435260.79	68794.03	128.36	6.84	-5.61
844.60	0.80	179.40	844.51	-5.67	6.96	8.53	0.38	0.00	27.21	95.85	12.90	836.21	435260.61	68794.05	129.18	5.74	-6.90
857.50	0.60	181.60	857.41	-5.83	6.96	8.66	0.47	-0.47	5.12	173.45	12.90	849.11	435260.45	68794.05	129.95	5.63	-7.12
883.20	0.50	181.30	883.11	-6.07	6.95	8.86	0.12	-0.12	-0.35	-178.50	25.70	874.81	435260.21	68794.04	131.15	5.91	-7.08
895.70	0.60	189.00	895.61	-6.19	6.94	8.96	0.30	0.24	18.48	40.36	12.50	887.31	435260.09	68794.03	131.75	5.03	-7.82
908.50	0.50	192.80	908.41	-6.31	6.91	9.05	0.25	-0.23	8.91	161.85	12.80	900.11	435259.97	68794.00	132.39	4.60	-8.11
921.90	0.80	187.50	921.80	-6.46	6.89	9.16	0.68	0.67	-11.87	-13.99	13.40	913.50	435259.82	68793.98	133.17	5.31	-7.48
934.40	1.30	184.10	934.30	-6.69	6.87	9.34	1.21	1.20	-8.16	-8.80	12.50	926.00	435259.59	68793.96	134.25	5.66	-6.88
947.10	2.50	184.00	947.00	-7.11	6.84	9.68	2.83	2.83	-0.24	-0.21	12.70	938.70	435259.17	68793.93	136.12	5.63	-6.47
959.90	3.40	177.90	959.78	-7.77	6.83	10.23	2.23	2.11	-14.30	-22.29	12.80	951.48	435258.51	68793.92	138.67	6.28	-5.36
972.60	4.00	165.10	972.45	-8.57	6.96	10.97	2.40	1.42	-30.24	-60.51	12.70	964.15	435257.71	68794.05	140.93	7.20	-3.39
985.50	5.00	159.70	985.31	-9.53	7.27	11.95	2.52	2.33	-12.56	-25.67	12.90	977.01	435256.75	68794.36	142.67	7.35	-2.33
998.00	6.00	157.00	997.75	-10.65	7.72	13.13	2.48	2.40	-6.48	-15.86	12.50	989.45	435255.63	68794.81	144.07	7.34	-1.65
1011.50	7.20	155.50	1011.16	-12.07	8.34	14.66	2.69	2.67	-3.33	-8.92	13.50	1002.86	435254.21	68795.43	145.34	7.31	-1.10
1036.60	8.90	145.30	1036.02	-15.09	10.10	18.16	2.65	2.03	-12.19	-45.16	25.10	1027.72	435251.19	68797.19	146.21	7.24	0.58
1049.40	9.60	141.00	1048.65	-16.74	11.34	20.21	2.30	1.64	-10.08	-46.77	12.80	1040.35	435249.54	68798.43	145.89	7.09	1.08
1062.30	10.30	140.80	1061.36	-18.47	12.74	22.42	1.63	1.63	-0.47	-2.92	12.90	1053.06	435247.81	68799.83	145.40	6.97	0.98
1075.10	10.80	142.60	1073.94	-20.31	14.19	24.76	1.40	1.17	4.22	34.28	12.80	1065.64	435245.97	68801.28	145.05	6.82	0.68
1088.30	10.40	145.70	1086.92	-22.27	15.62	27.18	1.58	-0.91	7.05	126.56	13.20	1078.62	435244.01	68802.71	144.97	6.48	0.34
1101.10	11.30	149.70	1099.49	-24.31	16.90	29.59	2.75	2.11	9.37	41.89	12.80	1091.19	435241.97	68803.99	145.20	6.00	0.12
1114.00	12.30	151.40	1112.11	-26.61	18.19	32.22	2.46	2.33	3.95	20.00	12.90	1103.81	435239.67	68805.28	145.64	5.54	0.32
1126.70	13.30	150.10	1124.50	-29.06	19.57	35.03	2.46	2.36	-3.07	-16.70	12.70	1116.20	435237.22	68806.66	146.04	5.11	0.83
1139.40	14.20	150.50	1136.83	-31.68	21.07	38.04	2.14	2.13	0.94	6.22	12.70	1128.53	435234.60	68808.16	146.38	4.71	1.19
1152.20	15.40	149.20	1149.21	-34.51	22.71	41.31	2.92	2.81	-3.05	-16.10	12.80	1140.91	435231.77	68809.80	146.65	4.32	1.67
1165.10	15.90	149.90	1161.63	-37.51	24.47	44.79	1.24	1.16	1.63	21.03	12.90	1153.33	435228.77	68811.56	146.88	3.97	2.01
1177.90	16.60	147.70	1173.92	-40.57	26.33	48.37	2.18	1.64	-5.16	-42.39	12.80	1165.62	435225.71	68813.42	147.02	3.47	2.49
1190.70	17.60	146.00	1186.15	-43.72	28.39	52.13	2.62	2.34	-3.98	-27.37	12.80	1177.85	435222.56	68815.48	147.01	3.13	2.80
1203.50	18.00	146.60	1198.34	-46.98	30.56	56.04	1.03	0.94	1.41	24.92	12.80	1190.04	435219.30	68817.65	146.96	3.05	2.94
1216.30	17.70	147.30	1210.53	-50.27	32.70	59.97	0.86	-0.70	1.64	144.76	12.80	1202.23	435216.01	68819.79	146.96	2.99	3.13
1229.10	18.00	146.10	1222.71	-53.55	34.85	63.89	1.11	0.70	-2.81	-51.37	12.80	1214.41	435212.73	68821.94	146.94	2.83	3.39

MD	Inc	Azi	TVD	NS	EW	VS	DLS	BR	TR	TF	CL	TVD SS	Map Northing	Map Easting	Closure Azi	Up/Dn	Left/Right
m	°	°	m	m	m	m	(°/30m)	(°/30m)	(°/30m)	°	m	m	Meters	Meters	°	m	m
1242.00	18.50	144.50	1234.96	-56.87	37.15	67.93	1.65	1.16	-3.72	-45.82	12.90	1226.66	435209.41	68824.24	146.84	2.72	3.57
1254.90	19.00	145.00	1247.18	-60.25	39.55	72.07	1.22	1.16	1.16	18.06	12.90	1238.88	435206.03	68826.64	146.72	2.85	3.61
1267.60	19.40	144.80	1259.17	-63.67	41.95	76.24	0.96	0.94	-0.47	-9.43	12.70	1250.87	435202.61	68829.04	146.62	3.04	3.70
1279.90	19.30	145.80	1270.77	-67.02	44.27	80.31	0.84	-0.24	2.44	107.27	12.30	1262.47	435199.26	68831.36	146.56	3.32	3.75
1293.60	19.30	145.50	1283.70	-70.76	46.82	84.84	0.22	0.00	-0.66	-90.14	13.70	1275.40	435195.52	68833.91	146.51	3.54	3.90
1333.80	19.70	144.90	1321.60	-81.78	54.48	98.25	0.33	0.30	-0.45	-26.88	40.20	1313.30	435184.50	68841.57	146.33	4.34	4.25
1346.50	20.00	144.30	1333.54	-85.29	56.98	102.56	0.86	0.71	-1.42	-34.46	12.70	1325.24	435180.99	68844.07	146.26	4.64	4.35
1359.50	20.10	145.00	1345.76	-88.93	59.56	107.01	0.60	0.23	1.62	67.71	13.00	1337.46	435177.35	68846.65	146.19	5.09	4.35
1372.20	20.10	143.90	1357.68	-92.48	62.10	111.37	0.89	0.00	-2.60	-90.52	12.70	1349.38	435173.80	68849.19	146.12	5.40	4.49
1385.40	20.30	144.50	1370.07	-96.18	64.76	115.92	0.65	0.45	1.36	46.29	13.20	1361.77	435170.10	68851.85	146.04	5.88	4.47
1397.90	20.40	144.90	1381.79	-99.72	67.27	120.26	0.41	0.24	0.96	54.48	12.50	1373.49	435166.56	68854.36	146.00	6.36	4.49
1410.60	20.40	143.60	1393.69	-103.32	69.86	124.68	1.07	0.00	-3.07	-90.61	12.70	1385.39	435162.96	68856.95	145.93	6.72	4.66
1436.30	21.00	144.60	1417.73	-110.67	75.19	133.75	0.81	0.70	1.17	30.97	25.70	1409.43	435155.61	68862.28	145.81	7.87	4.58
1449.20	20.90	143.30	1429.78	-114.40	77.90	138.35	1.11	-0.23	-3.02	-102.75	12.90	1421.48	435151.88	68864.99	145.75	8.37	4.77
1461.80	21.00	143.90	1441.55	-118.03	80.57	142.85	0.56	0.24	1.43	65.29	12.60	1433.25	435148.25	68867.66	145.68	8.99	4.67
1475.20	21.30	143.90	1454.05	-121.94	83.42	147.68	0.67	0.67	0.00	0.00	13.40	1445.75	435144.34	68870.51	145.62	9.66	4.68
1488.20	21.40	143.90	1466.15	-125.76	86.21	152.40	0.23	0.23	0.00	0.00	13.00	1457.85	435140.52	68873.30	145.57	10.35	4.68
1500.40	21.20	144.30	1477.52	-129.35	88.81	156.83	0.61	-0.49	0.98	144.19	12.20	1469.22	435136.93	68875.90	145.53	11.01	4.63
1513.20	21.30	144.10	1489.45	-133.11	91.52	161.46	0.29	0.23	-0.47	-36.03	12.80	1481.15	435133.17	68878.61	145.49	11.66	4.70
1526.40	21.20	145.10	1501.75	-137.01	94.29	166.24	0.85	-0.23	2.27	105.89	13.20	1493.45	435129.27	68881.38	145.46	12.41	4.55
1539.30	21.20	144.60	1513.78	-140.83	96.98	170.90	0.42	0.00	-1.16	-90.23	12.90	1505.48	435125.45	68884.07	145.45	13.02	4.73
1551.80	21.50	145.20	1525.42	-144.55	99.60	175.44	0.89	0.72	1.44	36.34	12.50	1517.12	435121.73	68886.69	145.43	13.73	4.68
1564.90	21.40	144.40	1537.62	-148.46	102.36	180.23	0.71	-0.23	-1.83	-109.24	13.10	1529.32	435117.82	68889.45	145.42	14.39	4.93
1577.40	21.80	144.90	1549.24	-152.22	105.02	184.83	1.06	0.96	1.20	24.94	12.50	1540.94	435114.06	68892.11	145.40	15.15	4.87
1590.10	21.40	144.90	1561.05	-156.04	107.71	189.50	0.94	-0.94	0.00	180.00	12.70	1552.75	435110.24	68894.80	145.38	15.88	4.95
1603.10	21.20	144.60	1573.16	-159.90	110.43	194.21	0.53	-0.46	-0.69	-151.55	13.00	1564.86	435106.38	68897.52	145.37	16.53	5.09
1615.80	21.20	143.80	1585.00	-163.62	113.12	198.80	0.68	0.00	-1.89	-90.37	12.70	1576.70	435102.66	68900.21	145.34	17.10	5.34
1628.70	21.20	143.50	1597.03	-167.38	115.88	203.45	0.25	0.00	-0.70	-90.14	12.90	1588.73	435098.90	68902.97	145.30	17.73	5.42
1641.40	20.40	142.60	1608.90	-170.99	118.59	207.95	2.03	-1.89	-2.13	-158.64	12.70	1600.60	435095.29	68905.68	145.25	18.20	5.63
1654.10	19.50	141.40	1620.84	-174.40	121.26	212.27	2.34	-2.13	-2.83	-156.10	12.70	1612.54	435091.88	68908.35	145.19	18.45	5.87
1667.10	18.90	140.20	1633.11	-177.71	123.96	216.51	1.66	-1.38	-2.77	-147.23	13.00	1624.81	435088.57	68911.05	145.10	18.54	6.02
1679.80	19.00	140.20	1645.12	-180.88	126.60	220.61	0.24	0.24	0.00	0.00	12.70	1636.82	435085.40	68913.69	145.01	18.69	5.77
1692.70	19.00	140.00	1657.32	-184.10	129.30	224.77	0.15	0.00	-0.47	-90.09	12.90	1649.02	435082.18	68916.39	144.92	18.83	5.57
1705.50	18.60	140.50	1669.44	-187.28	131.93	228.87	1.01	-0.94	1.17	158.30	12.80	1661.14	435079.00	68919.02	144.84	18.99	5.17
1718.50	17.80	141.70	1681.79	-190.43	134.49	232.90	2.04	-1.85	2.77	155.47	13.00	1673.49	435075.85	68921.58	144.77	19.07	4.59
1744.30	17.70	142.20	1706.36	-196.63	139.33	240.73	0.21	-0.12	0.58	123.50	25.80	1698.06	435069.65	68926.42	144.68	18.86	4.18
1769.40	17.70	141.80	1730.27	-202.64	144.03	248.33	0.15	0.00	-0.48	-90.19	25.10	1721.97	435063.64	68931.12	144.60	18.57	4.05
1782.30	17.90	142.20	1742.55	-205.75	146.46	252.26	0.55	0.47	0.93	31.63	12.90	1734.25	435060.53	68933.55	144.56	18.48	3.80
1795.30	17.80	142.10	1754.93	-208.90	148.90	256.23	0.24	-0.23	-0.23	-163.01	13.00	1746.63	435057.38	68935.99	144.52	18.37	3.71
1808.20	17.90	140.70	1767.21	-211.99	151.37	260.16	1.02	0.23	-3.26	-77.55	12.90	1758.91	435054.29	68938.46	144.47	18.18	3.97
1821.10	17.80	141.30	1779.49	-215.06	153.86	264.09	0.49	-0.23	1.40	118.82	12.90	1771.19	435051.22	68940.95	144.42	18.12	3.59
1833.50	17.80	141.20	1791.29	-218.02	156.23	267.86	0.07	0.00	-0.24	-90.05	12.40	1782.99	435048.26	68943.32	144.37	18.01	3.44

MD	Inc	Azi	TVD	NS	EW	VS	DLS	BR	TR	TF	CL	TVD SS	Map Northing	Map Easting	Closure Azi	Up/Dn	Left/Right
m	°	°	m	m	m	m	(°/30m)	(°/30m)	(°/30m)	°	m	m	Meters	Meters	°	m	m
1847.10	17.80	140.90	1804.24	-221.25	158.85	271.99	0.20	0.00	-0.66	-90.14	13.60	1795.94	435045.03	68945.94	144.32	17.88	3.33
1859.50	18.00	142.00	1816.04	-224.23	161.22	275.78	0.95	0.48	2.66	59.92	12.40	1807.74	435042.05	68948.31	144.28	17.85	2.84
1872.20	18.10	141.20	1828.12	-227.31	163.66	279.70	0.63	0.24	-1.89	-68.41	12.70	1819.82	435038.97	68950.75	144.25	17.76	2.93
1885.00	18.10	141.00	1840.28	-230.41	166.16	283.65	0.15	0.00	-0.47	-90.10	12.80	1831.98	435035.87	68953.25	144.20	17.70	2.79
1898.00	18.10	141.50	1852.64	-233.56	168.69	287.67	0.36	0.00	1.15	90.24	13.00	1844.34	435032.72	68955.78	144.16	17.67	2.46
1910.90	18.10	141.40	1864.90	-236.69	171.19	291.65	0.07	0.00	-0.23	-90.05	12.90	1856.60	435029.59	68958.28	144.12	17.41	2.31
1923.40	17.90	142.00	1876.79	-239.72	173.58	295.50	0.65	-0.48	1.44	137.45	12.50	1868.49	435026.56	68960.67	144.09	16.94	1.98
1936.60	18.60	141.00	1889.33	-242.96	176.16	299.61	1.74	1.59	-2.27	-24.58	13.20	1881.03	435023.32	68963.25	144.06	16.20	2.06
1949.10	19.80	141.90	1901.13	-246.17	178.72	303.70	2.97	2.88	2.16	14.28	12.50	1892.83	435020.11	68965.81	144.02	15.53	1.63
1961.90	19.90	142.50	1913.17	-249.61	181.38	308.03	0.53	0.23	1.41	64.14	12.80	1904.87	435016.67	68968.47	144.00	14.75	1.34
1974.60	20.10	142.80	1925.10	-253.06	184.02	312.36	0.53	0.47	0.71	27.30	12.70	1916.80	435013.22	68971.11	143.98	13.77	1.16
1987.40	20.80	144.20	1937.10	-256.66	186.67	316.82	2.00	1.64	3.28	35.60	12.80	1928.80	435009.62	68973.76	143.97	12.67	0.84
2000.80	21.90	144.30	1949.58	-260.61	189.52	321.69	2.46	2.46	0.22	1.94	13.40	1941.28	435005.67	68976.61	143.97	11.46	0.87
2012.90	22.70	144.20	1960.77	-264.34	192.21	326.27	1.99	1.98	-0.25	-2.76	12.10	1952.47	435001.94	68979.30	143.98	10.34	0.93
2026.00	22.80	143.70	1972.85	-268.44	195.19	331.33	0.50	0.23	-1.15	-62.88	13.10	1964.55	434997.84	68982.28	143.98	9.00	1.02
2038.90	23.10	143.80	1984.73	-272.49	198.16	336.35	0.70	0.70	0.23	7.45	12.90	1976.43	434993.79	68985.25	143.97	7.49	1.00
2051.60	23.90	145.30	1996.38	-276.62	201.10	341.41	2.36	1.89	3.54	37.47	12.70	1988.08	434989.66	68988.19	143.98	5.93	0.94
2064.30	25.00	145.90	2007.94	-280.96	204.07	346.66	2.66	2.60	1.42	13.00	12.70	1999.64	434985.32	68991.16	144.01	4.34	1.10
2077.10	26.30	146.70	2019.48	-285.57	207.14	352.20	3.15	3.05	1.88	15.28	12.80	2011.18	434980.71	68994.23	144.04	2.78	1.36
2089.90	27.20	146.90	2030.91	-290.39	210.30	357.96	2.12	2.11	0.47	5.80	12.80	2022.61	434975.89	68997.39	144.09	1.24	1.72
2103.60	27.40	146.60	2043.08	-295.64	213.74	364.25	0.53	0.44	-0.66	-34.66	13.70	2034.78	434970.64	69000.83	144.13	-0.53	2.12
2116.20	27.90	146.80	2054.24	-300.53	216.95	370.09	1.21	1.19	0.48	10.60	12.60	2045.94	434965.75	69004.04	144.17	-2.31	2.50
2129.00	28.30	147.30	2065.53	-305.59	220.23	376.12	1.09	0.94	1.17	30.71	12.80	2057.23	434960.69	69007.32	144.22	-4.22	2.97
2141.20	29.30	147.70	2076.22	-310.55	223.39	382.00	2.50	2.46	0.98	11.08	12.20	2067.92	434955.73	69010.48	144.27	-6.10	3.48
2153.90	30.40	148.90	2087.24	-315.92	226.71	388.32	2.96	2.60	2.83	29.02	12.70	2078.94	434950.36	69013.80	144.34	-7.99	4.21
2166.90	31.40	150.20	2098.39	-321.68	230.09	394.99	2.77	2.31	3.00	34.29	13.00	2090.09	434944.60	69017.18	144.42	-9.89	5.19
2179.80	32.80	151.10	2109.32	-327.65	233.45	401.83	3.44	3.26	2.09	19.24	12.90	2101.02	434938.63	69020.54	144.53	-11.73	6.31
2193.30	34.00	151.60	2120.59	-334.18	237.01	409.25	2.74	2.67	1.11	13.13	13.50	2112.29	434932.10	69024.10	144.65	-13.61	7.55
2205.60	34.50	151.70	2130.76	-340.27	240.30	416.15	1.23	1.22	0.24	6.46	12.30	2122.46	434926.01	69027.39	144.77	-15.37	8.69
2218.50	35.70	151.40	2141.31	-346.79	243.83	423.55	2.82	2.79	-0.70	-8.30	12.90	2133.01	434919.49	69030.92	144.89	-17.30	9.80
2230.10	36.00	151.30	2150.72	-352.75	247.09	430.32	0.79	0.78	-0.26	-11.09	11.60	2142.42	434913.53	69034.18	144.99	-19.05	10.84
2243.80	37.10	151.40	2161.72	-359.91	251.00	438.46	2.41	2.41	0.22	3.14	13.70	2153.42	434906.37	69038.09	145.11	-21.00	12.10
2256.70	38.40	150.40	2171.92	-366.81	254.84	446.34	3.34	3.02	-2.33	-25.61	12.90	2163.62	434899.47	69041.93	145.21	-22.75	12.92
2269.50	39.80	150.70	2181.85	-373.84	258.81	454.40	3.31	3.28	0.70	7.81	12.80	2173.55	434892.44	69045.90	145.30	-23.99	14.03
2282.50	41.30	151.60	2191.73	-381.24	262.89	462.84	3.72	3.46	2.08	21.65	13.00	2183.43	434885.04	69049.98	145.41	-24.80	15.44
2295.20	42.10	151.70	2201.21	-388.68	266.90	471.26	1.90	1.89	0.24	4.79	12.70	2192.91	434877.60	69053.99	145.52	-25.47	16.68
2308.00	42.80	151.30	2210.66	-396.27	271.02	479.88	1.76	1.64	-0.94	-21.24	12.80	2202.36	434870.01	69058.11	145.63	-26.07	17.75
2320.80	42.90	151.60	2220.04	-403.92	275.18	488.56	0.53	0.23	0.70	64.00	12.80	2211.74	434862.36	69062.27	145.73	-26.43	19.04
2333.40	42.50	151.30	2229.30	-411.42	279.27	497.08	1.07	-0.95	-0.71	-153.15	12.60	2221.00	434854.86	69066.36	145.83	-26.94	20.14
2347.00	43.50	150.90	2239.25	-419.54	283.75	506.34	2.29	2.21	-0.88	-15.41	13.60	2230.95	434846.74	69070.84	145.93	-27.48	21.21
2359.40	44.20	151.00	2248.19	-427.05	287.92	514.91	1.70	1.69	0.24	5.69	12.40	2239.89	434839.23	69075.01	146.01	-27.67	22.32
2372.10	45.00	150.40	2257.23	-434.83	292.29	523.81	2.14	1.89	-1.42	-27.99	12.70	2248.93	434831.45	69079.38	146.09	-27.89	23.18

MD	Inc	Azi	TVD	NS	EW	VS	DLS	BR	TR	TF	CL	TVD SS	Map Northing	Map Easting	Closure Azi	Up/Dn	Left/Right
m	°	°	m	m	m	m	(°/30m)	(°/30m)	(°/30m)	°	m	m	Meters	Meters	°	m	m
2384.40	44.70	150.80	2265.95	-442.39	296.54	532.47	1.00	-0.73	0.98	136.90	12.30	2257.65	434823.89	69083.63	146.16	-27.76	24.35
2397.60	45.30	150.50	2275.29	-450.52	301.12	541.79	1.45	1.36	-0.68	-19.58	13.20	2266.99	434815.76	69088.21	146.24	-27.81	25.35
2410.30	45.80	151.30	2284.18	-458.44	305.53	550.84	1.79	1.18	1.89	49.08	12.70	2275.88	434807.84	69092.62	146.32	-27.41	26.71
2423.10	45.80	151.20	2293.11	-466.49	309.94	559.99	0.17	0.00	-0.23	-90.03	12.80	2284.81	434799.79	69097.03	146.40	-27.21	27.85
2436.20	45.70	151.90	2302.25	-474.74	314.41	569.35	1.17	-0.23	1.60	101.52	13.10	2293.95	434791.54	69101.50	146.48	-26.75	29.32
2449.00	45.70	151.70	2311.19	-482.81	318.74	578.48	0.34	0.00	-0.47	-90.07	12.80	2302.89	434783.47	69105.83	146.57	-26.61	30.51
2461.80	46.30	150.80	2320.08	-490.88	323.17	587.67	2.07	1.41	-2.11	-47.49	12.80	2311.78	434775.40	69110.26	146.64	-26.67	31.39
2474.40	46.20	151.00	2328.79	-498.84	327.60	596.75	0.42	-0.24	0.48	124.76	12.60	2320.49	434767.44	69114.69	146.71	-26.28	32.56
2487.30	46.10	150.80	2337.73	-506.97	332.12	606.04	0.41	-0.23	-0.47	-124.80	12.90	2329.43	434759.31	69119.21	146.77	-26.05	33.62
2500.10	46.50	150.80	2346.57	-515.04	336.63	615.28	0.94	0.94	0.00	0.00	12.80	2338.27	434751.24	69123.72	146.83	-25.72	34.72
2513.00	46.60	149.80	2355.44	-523.18	341.27	624.63	1.70	0.23	-2.33	-82.50	12.90	2347.14	434743.10	69128.36	146.88	-25.75	35.45
2525.80	46.50	149.90	2364.25	-531.21	345.94	633.91	0.29	-0.23	0.23	144.06	12.80	2355.95	434735.07	69133.03	146.93	-25.33	36.43
2538.50	46.50	149.80	2372.99	-539.18	350.57	643.12	0.17	0.00	-0.24	-90.03	12.70	2364.69	434727.10	69137.66	146.97	-25.00	37.34
2551.20	46.70	149.60	2381.71	-547.15	355.22	652.33	0.58	0.47	-0.47	-36.07	12.70	2373.41	434719.13	69142.31	147.01	-24.71	38.21
2564.00	46.80	149.50	2390.48	-555.18	359.95	661.65	0.29	0.23	-0.23	-36.10	12.80	2382.18	434711.10	69147.04	147.04	-24.34	39.08
2576.90	46.40	149.80	2399.35	-563.27	364.69	671.02	1.06	-0.93	0.70	151.52	12.90	2391.05	434703.01	69151.78	147.08	-23.80	40.10
2589.60	46.60	149.60	2408.09	-571.23	369.33	680.22	0.58	0.47	-0.47	-36.03	12.70	2399.79	434695.05	69156.42	147.11	-23.54	40.96
2602.70	46.50	149.20	2417.10	-579.41	374.17	689.72	0.70	-0.23	-0.92	-109.14	13.10	2408.80	434686.87	69161.26	147.15	-23.34	41.76
2615.40	46.30	149.10	2425.86	-587.31	378.89	698.92	0.50	-0.47	-0.24	-160.13	12.70	2417.56	434678.97	69165.98	147.17	-23.05	42.57
2628.00	46.10	149.10	2434.58	-595.11	383.56	708.01	0.48	-0.48	0.00	180.00	12.60	2426.28	434671.17	69170.65	147.20	-22.76	43.39
2640.90	46.00	149.00	2443.53	-603.08	388.34	717.29	0.29	-0.23	-0.23	-144.28	12.90	2435.23	434663.20	69175.43	147.22	-22.54	44.20
2653.80	45.30	149.00	2452.55	-610.98	393.09	726.51	1.63	-1.63	0.00	180.00	12.90	2444.25	434655.30	69180.18	147.24	-22.35	45.04
2666.70	45.20	148.90	2461.63	-618.83	397.81	735.67	0.29	-0.23	-0.23	-144.65	12.90	2453.33	434647.45	69184.90	147.27	-22.32	45.83
2679.20	45.10	149.10	2470.45	-626.43	402.38	744.53	0.42	-0.24	0.48	125.26	12.50	2462.15	434639.85	69189.47	147.29	-22.14	46.69
2684.10	45.00	149.00	2473.91	-629.40	404.16	747.99	0.75	-0.61	-0.61	-144.75	4.90	2465.61	434636.88	69191.25	147.29	-22.18	46.98
2707.00	45.00	149.00	2490.10	-643.28	412.50	764.18	0.00	0.00	0.00	0.00	22.90	2481.80	434623.00	69199.59	147.33	-22.13	48.44

Date: 25-04-2020	13 3/8" Casing Tally			Rig: VDD 370.2 VarioRig		Well: TNT-GT-02		
DSV:	13 3/8" 68# K55 BTC							
Weight Lbs/ft	68.00	lbs/ft						
Casing ID inch	12.415	inch						
Cap	78.100	L/m						
Connection	BTC	M/u Loss	**0.1250**	m		Mud weight	1.17 sg	
M/u Torque Min	22300.00	ft.lbs		Nm		Bouyancy fact.	0.85	
M/u Torque Opt	47750.00	ft.lbs		Nm		Block weight	0 Klbs	
M/u Torque Max	73200.00	ft.lbs		Nm		Rathole:	5.42 m	
90% Burst	214	bar	**RT to Gr LvL**		8,6 m	**Section TD:**	**1313.00 m**	
90% Collapse	120	bar				**Shoe Depth :**	**1309.00 m**	
Tensile Strength	485	ton				**Capacity**	**78.10 l/m**	

Joint no	Length m	Less m/u loss	Cum Length	Jt Btm m	Jt Top m	No.of joints	Remarks	Centraliser	Hookload T
13-3/8" Shoe	1.08	1.08	1.08	1309.00	1307.92	shoe			0
1	11.87	11.87	12.95	1307.92	1296.05	1		Centralizer	1
2	12.03	11.91	24.86	1296.05	1284.15	2		Centralizer	2
3	11.87	11.75	36.60	1284.15	1272.40	3			3
4	11.67	11.55	48.15	1272.40	1260.86	4		Centralizer	4
5	11.80	11.68	59.82	1260.86	1249.18	5			5
6	11.86	11.74	71.56	1249.18	1237.45	6		Centralizer	6
7	11.90	11.78	83.33	1237.45	1225.67	7			7
8	11.92	11.80	95.13	1225.67	1213.88	8		Centralizer	8
9	11.78	11.66	106.78	1213.88	1202.22	9			9
10	12.02	11.90	118.68	1202.22	1190.33	10		Centralizer	10
11	11.99	11.87	130.54	1190.33	1178.46	11			11
12	11.53	11.41	141.95	1178.46	1167.06	12		Centralizer	12
13	11.84	11.72	153.66	1167.06	1155.34	13			13
14	12.02	11.90	165.56	1155.34	1143.45	14		Centralizer	14
15	11.98	11.86	177.41	1143.45	1131.59	15			15
16	11.73	11.61	**189.02**	1131.59	1119.99	16		Centralizer	16
17	11.82	11.70	200.71	1119.99	1108.29	17			17
18	11.96	11.84	212.55	1108.29	1096.46	18		Centralizer	18
19	12.04	11.92	224.46	1096.46	1084.54	19			19
20	11.79	11.67	236.13	1084.54	1072.88	20		Centralizer	20
21	11.78	11.66	247.78	1072.88	1061.22	21			21
22	12.01	11.89	259.67	1061.22	1049.34	22		Centralizer	22
23	11.34	11.22	270.88	1049.34	1038.12	23			23
24	12.01	11.89	282.77	1038.12	1026.24	24		Centralizer	24
25	11.98	11.86	294.62	1026.24	1014.38	25			25
26	11.82	11.70	306.32	1014.38	1002.69	26		Centralizer	26
27	11.95	11.83	318.14	1002.69	990.86	27			27
28	11.61	11.49	329.63	990.86	979.38	28		Centralizer	28
29	11.97	11.85	341.47	979.38	967.53	29			29
30	12.01	11.89	353.36	967.53	955.65	30		Centralizer	30
31	11.93	11.81	365.16	955.65	943.84	31			31
32	11.49	11.37	376.53	943.84	932.48	32			32
33	11.60	11.48	388.00	932.48	921.00	33		Centralizer	33
34	11.89	11.77	399.77	921.00	909.24	34			34
35	11.54	11.42	411.18	909.24	897.82	35			35
36	11.92	11.80	422.98	897.82	886.03	36		Centralizer	36
37	11.76	11.64	434.61	886.03	874.39	37			37
38	11.12	11.00	445.61	874.39	863.40	38			38
39	11.91	11.79	457.39	863.40	851.61	39		Centralizer	39
40	11.92	11.80	469.19	851.61	839.82	40			40
41	10.42	10.30	479.48	839.82	829.52	41			41
42	11.82	11.70	491.18	829.52	817.83	42		Centralizer	42
43	11.96	11.84	503.01	817.83	805.99	43			43
44	11.70	11.58	514.59	805.99	794.42	44			44
45	11.90	11.78	526.36	794.42	782.64	45		Centralizer	45
46	11.86	11.74	538.10	782.64	770.91	46			46
47	11.88	11.76	549.85	770.91	759.15	47			47
48	11.74	11.62	561.47	759.15	747.54	48		Centralizer	48
49	11.87	11.75	573.21	747.54	735.79	49			49
50	11.75	11.63	584.84	735.79	724.17	50			50
51	11.90	11.78	596.61	724.17	712.39	51		Centralizer	51
52	11.87	11.75	608.36	712.39	700.65	52			52
53	11.92	11.80	620.15	700.65	688.85	53			53
54	12.02	11.90	632.05	688.85	676.96	54		Centralizer	54
55	11.78	11.66	643.70	676.96	665.30	55			55
56	11.78	11.66	655.36	665.30	653.65	56			56
57	11.88	11.76	667.11	653.65	641.89	57		Centralizer	57
58	11.94	11.82	678.93	641.89	630.08	58			58
59	11.62	11.50	690.42	630.08	618.58	59			59
60	11.77	11.65	702.07	618.58	606.94	60		Centralizer	60
61	11.82	11.70	713.76	606.94	595.24	61			61

62	11.80	11.68	725.44	595.24	583.57	62			62
63	11.89	11.77	737.20	583.57	571.80	63		Centralizer	63
64	11.99	11.87	749.07	571.80	559.94	64			65
65	11.64	11.52	760.58	559.94	548.42	65		Centralizer	65
66	11.50	11.38	771.96	548.42	537.05	66			66
67	11.98	11.86	783.81	537.05	525.19	67			67
68	11.93	11.81	795.62	525.19	513.39	68			69
69	11.98	11.86	807.47	513.39	501.53	69			70
70	11.85	11.73	819.20	501.53	489.81	70			71
71	11.58	11.46	830.65	489.81	478.35	71			72
72	11.94	11.82	842.47	478.35	466.54	72			73
73	11.89	11.77	854.23	466.54	454.77	73			74
74	11.37	11.25	865.48	454.77	443.53	74			75
75	11.42	11.30	876.77	443.53	432.23	75			75
76	11.98	11.86	888.63	432.23	420.38	76			77
77	12.05	11.93	900.55	420.38	408.45	77			78
78	11.95	11.83	912.38	408.45	396.63	78			79
79	11.95	11.83	924.20	396.63	384.80	79			80
80	11.95	11.83	936.03	384.80	372.98	80			81
81	11.45	11.33	947.35	372.98	361.65	81			82
82	11.70	11.58	958.93	361.65	350.08	82			83
83	11.90	11.78	970.70	350.08	338.30	83			84
84	11.96	11.84	982.54	338.30	326.47	84			85
85	11.99	11.87	994.40	326.47	314.60	85			86
86	12.00	11.88	1006.28	314.60	302.73	86			87
87	12.02	11.90	1018.17	302.73	290.83	87			88
88	12.05	11.93	1030.10	290.83	278.91	88			89
89	11.97	11.85	1041.94	278.91	267.06	89			90
90	11.94	11.82	1053.76	267.06	255.25	90			91
91	11.85	11.73	1065.48	255.25	243.52	91			92
92	11.68	11.56	1077.04	243.52	231.97	92			93
93	11.36	11.24	1088.27	231.97	220.73	93			94
94	11.72	11.60	1099.87	220.73	209.14	94			95
95	11.45	11.33	1111.19	209.14	197.81	95			96
96	11.64	11.52	1122.71	197.81	186.30	96			97
97	11.95	11.83	1134.53	186.30	174.47	97			98
98	12.02	11.90	1146.43	174.47	162.58	98			99
99	11.66	11.54	1157.96	162.58	151.04	99			100
100	11.27	11.15	1169.11	151.04	139.90	100			101
101	11.75	11.63	1180.73	139.90	128.27	101			102
102	11.97	11.85	1192.58	128.27	116.43	102			103
103	11.40	11.28	1203.85	116.43	105.15	103			104
104	12.02	11.90	1215.75	105.15	93.26	104			105
105	12.03	11.91	1227.65	93.26	81.35	105			106
106	12.01	11.89	1239.54	81.35	69.47	106			107
107	11.96	11.84	1251.37	69.47	57.63	107			108
108	11.92	11.80	1263.17	57.63	45.84	108			109
109	11.86	11.74	1274.90	45.84	34.10	109			110
110	11.85	11.73	1286.63	34.10	22.38	110			111
111	11.87	11.75	1298.37	22.38	10.63	111			112
112	11.91	11.79	1310.16	10.63	-1.15	112			113
113	11.95	11.83	1321.98	-1.15	-12.98	113			114
114	11.74	11.62	1333.60	-12.98	-24.59	114			115
115	11.73	11.61	1345.20	-24.59	-36.20	115			116
Joint no	**Length m**	**Less m/u loss**	**Cum Length**	**Jt Btm m**	**Jt Top m**	**No.of joints**	**Remarks**		**Hookload T**

Date: 12-05-2020	9 5/8" Liner Tally Final	Rig: VDD 370.2 VarioRig	Well: TNT-GT-02
DSV: [redacted]	9 5/8" Mixed string		

	Weight Lbs/ft	47.00	lbs/ft						
	Casing ID inch	8.681	inch						
	Weight Lbs/ft	51.90	lbs/ft						
	Casing ID inch	8.250	inch						
	Connection	**Vam Top**	M/u Loss	**0.142**	m		Mud weight	1.22 sg	
	M/u Torque Min	14400	ft.lbs		Nm		Bouyancy fact.	0.84	
	M/u Torque Opt	15900	ft.lbs		Nm		Block weight	0 Klbs	
	M/u Torque Max	17400	ft.lbs		Nm		Rathole:	-0.22 m	
	Connection	**TSH W523**	M/u Loss	**0.121**	m				
	M/u Torque Min	18000	ft.lbs		Nm				
	M/u Torque Opt	22000	ft.lbs		Nm				
	M/u Torque Max	32000	ft.lbs		Nm			**Tagged bttm at 2707,91m**	
	90% Burst		bar	**RT to Gr LvL**		8,6 m	**Section TD:**	**2707.00 m**	
	90% Collapse		bar				**Shoe Depth :**	**2707.22 m**	

Joint no		Length m	Less m/u loss	Cum Length	Jt Btm m	Jt Top m	No.of joints	Remarks	Centraliser	Hookload T
9 5/8" Shoe joint 1	-	12.08	0.00	12.08	2707.22	2695.14	shoe	Buttres connections	x	0
Float collar joint 3	-	11.92	11.80	23.88	2695.14	2683.34	1	Buttres connections	x	1
X/o Landing collar A	-	12.06	11.94	35.82	2683.34	2671.40	2	Buttres pin x TSH-W523 box	x	1
1	-	11.79	11.67	47.49	2671.40	2659.73	3	TSH-W523 connections	x	2
2	-	11.78	11.66	59.15	2659.73	2648.07	4	TSH-W523 connections	x	3
3	-	11.78	11.66	70.81	2648.07	2636.41	5	TSH-W523 connections	x	3
4	-	11.80	11.68	82.49	2636.41	2624.73	6	TSH-W523 connections	x	4
5	-	11.80	11.68	94.17	2624.73	2613.05	7	TSH-W523 connections	x	5
6	-	11.80	11.68	105.85	2613.05	2601.37	8	TSH-W523 connections	x	6
7	-	11.38	11.26	117.11	2601.37	2590.11	9	TSH-W523 connections	x	6
8	-	11.79	11.67	128.77	2590.11	2578.45	10	TSH-W523 connections	x	7
9	-	11.80	11.68	140.45	2578.45	2566.77	11	TSH-W523 connections	x	8
10	-	11.64	11.52	151.97	2566.77	2555.25	12	TSH-W523 connections	x	8
11	-	11.80	11.68	163.65	2555.25	2543.57	13	TSH-W523 connections	x	9
12	-	11.79	11.67	175.32	2543.57	2531.90	14	TSH-W523 connections	x	10
13	-	11.79	11.67	186.99	2531.90	2520.23	15	TSH-W523 connections	x	10
14	-	11.79	11.67	198.66	2520.23	2508.56	16	TSH-W523 connections	x	11
15	-	11.39	11.27	209.93	2508.56	2497.29	17	TSH-W523 connections	x	12
16	-	11.80	11.68	221.61	2497.29	2485.61	18	TSH-W523 connections	x	12
17	-	11.65	11.53	233.14	2485.61	2474.08	19	TSH-W523 connections	x	13
18	-	11.68	11.56	244.70	2474.08	2462.52	20	TSH-W523 connections	x	14
19	-	11.77	11.65	256.35	2462.52	2450.87	21	TSH-W523 connections	x	14
20	-	11.78	11.66	268.01	2450.87	2439.21	22	TSH-W523 connections	x	15
21	-	11.79	11.67	279.68	2439.21	2427.54	23	TSH-W523 connections	x	16
22	-	11.78	11.66	291.34	2427.54	2415.88	24	TSH-W523 connections	x	16
23	-	11.78	11.66	303.00	2415.88	2404.22	25	TSH-W523 connections	x	17
24	-	11.78	11.66	314.65	2404.22	2392.57	26	TSH-W523 connections	x	18
25	-	11.78	11.66	326.31	2392.57	2380.91	27	TSH-W523 connections	x	19
26	-	11.79	11.67	337.98	2380.91	2369.24	28	TSH-W523 connections	x	19
27	-	11.76	11.64	349.62	2369.24	2357.60	29	TSH-W523 connections	x	20
28	-	11.79	11.67	361.29	2357.60	2345.93	30	TSH-W523 connections	x	21
29	-	11.79	11.67	372.96	2345.93	2334.26	31	TSH-W523 connections	x	21
30	-	11.78	11.66	384.62	2334.26	2322.60	32	TSH-W523 connections	x	22
X/over	-	0.62	0.50	385.12	2322.60	2322.10	33	Cross Over		22
X/over joint		11.37	11.37	396.49	2322.10	2310.73	34	GRE VAM TOP	x	23
41		11.69	11.57	408.06	2310.73	2299.16	35	GRE VAM TOP	x	23
42		11.69	11.57	419.63	2299.16	2287.59	36	GRE VAM TOP	x	24
43		11.41	11.29	430.92	2287.59	2276.30	37	GRE VAM TOP	x	25
44		11.42	11.28	442.20	2276.30	2265.02	38	GRE VAM TOP	x	26
45		11.68	11.54	453.73	2265.02	2253.49	39	GRE VAM TOP	x	26
46		11.58	11.44	465.17	2253.49	2242.05	40	GRE VAM TOP	x	27
47		11.61	11.47	476.64	2242.05	2230.58	41	GRE VAM TOP	x	28
48		11.51	11.37	488.01	2230.58	2219.21	42	GRE VAM TOP	x	29
49		10.92	10.78	498.79	2219.21	2208.43	43	GRE VAM TOP	x	29
50		11.69	11.55	510.33	2208.43	2196.89	44	GRE VAM TOP	x	30
51		11.52	11.38	521.71	2196.89	2185.51	45	GRE VAM TOP	x	31
52		11.64	11.50	533.21	2185.51	2174.01	46	GRE VAM TOP	x	31
53		11.70	11.56	544.77	2174.01	2162.45	47	GRE VAM TOP	x	32
54		11.69	11.55	556.32	2162.45	2150.90	48	GRE VAM TOP	x	33
55		10.91	10.77	567.08	2150.90	2140.14	49	GRE VAM TOP	x	34
56		11.52	11.38	578.46	2140.14	2128.76	50	GRE VAM TOP	x	34
57		11.35	11.21	589.67	2128.76	2117.55	51	GRE VAM TOP	x	35
58		11.09	10.95	600.62	2117.55	2106.60	52	GRE VAM TOP	x	36
59		11.69	11.55	612.17	2106.60	2095.05	53	GRE VAM TOP	x	37
60		11.37	11.23	623.39	2095.05	2083.83	54	GRE VAM TOP	x	37
61		11.70	11.56	634.95	2083.83	2072.27	55	GRE VAM TOP	x	38
62		11.48	11.34	646.29	2072.27	2060.93	56	GRE VAM TOP	x	39
63		11.69	11.55	657.84	2060.93	2049.38	57	GRE VAM TOP	x	40
64		11.46	11.32	669.16	2049.38	2038.06	58	GRE VAM TOP	x	40
65		11.69	11.55	680.70	2038.06	2026.52	59	GRE VAM TOP	x	41
66		11.69	11.55	692.25	2026.52	2014.97	60	GRE VAM TOP	x	42
67		11.58	11.44	703.69	2014.97	2003.53	61	GRE VAM TOP	x	43

68		11.51	11.37	715.06	2003.53	1992.16	62	GRE VAM TOP	x	43
69		11.68	11.54	726.60	1992.16	1980.62	63	GRE VAM TOP	x	44
70		11.69	11.55	738.14	1980.62	1969.08	64	GRE VAM TOP	x	45
71		11.35	11.21	749.35	1969.08	1957.87	65	GRE VAM TOP	x	46
72		11.59	11.45	760.80	1957.87	1946.42	66	GRE VAM TOP	x	46
73		11.72	11.58	772.38	1946.42	1934.84	67	GRE VAM TOP	x	47
74		11.70	11.56	783.94	1934.84	1923.28	68	GRE VAM TOP	x	48
75		11.70	11.56	795.50	1923.28	1911.72	69	GRE VAM TOP	x	49
76		11.69	11.55	807.04	1911.72	1900.18	70	GRE VAM TOP	x	49
77		11.70	11.56	818.60	1900.18	1888.62	71	GRE VAM TOP	x	50
78		11.40	11.26	829.86	1888.62	1877.36	72	GRE VAM TOP	x	51
79		11.42	11.28	841.14	1877.36	1866.08	73	GRE VAM TOP	x	52
80		11.68	11.54	852.68	1866.08	1854.54	74	GRE VAM TOP	x	52
81		11.69	11.55	864.22	1854.54	1843.00	75	GRE VAM TOP	x	53
82		11.43	11.29	875.51	1843.00	1831.71	76	GRE VAM TOP	x	54
83		11.69	11.55	887.06	1831.71	1820.16	77	GRE VAM TOP	x	55
84		11.69	11.55	898.61	1820.16	1808.61	78	GRE VAM TOP	x	55
85		11.69	11.55	910.16	1808.61	1797.06	79	GRE VAM TOP	x	56
86		11.33	11.19	921.34	1797.06	1785.88	80	GRE VAM TOP	x	57
87		11.69	11.55	932.89	1785.88	1774.33	81	GRE VAM TOP	x	58
88		11.69	11.55	944.44	1774.33	1762.78	82	GRE VAM TOP	x	58
89		11.57	11.43	955.87	1762.78	1751.35	83	GRE VAM TOP	x	59
90		11.69	11.55	967.42	1751.35	1739.80	84	GRE VAM TOP	x	60
91		11.26	11.12	978.53	1739.80	1728.69	85	GRE VAM TOP	x	61
92		11.51	11.37	989.90	1728.69	1717.32	86	GRE VAM TOP	x	61
93		11.69	11.55	1001.45	1717.32	1705.77	87	GRE VAM TOP	x	62
94		11.69	11.55	1013.00	1705.77	1694.22	88	GRE VAM TOP	x	63
95		11.37	11.23	1024.23	1694.22	1682.99	89	GRE VAM TOP	x	64
96		11.38	11.24	1035.46	1682.99	1671.76	90	GRE VAM TOP	x	64
97		11.68	11.54	1047.00	1671.76	1660.22	91	GRE VAM TOP	x	65
98		11.38	11.24	1058.24	1660.22	1648.98	92	GRE VAM TOP	x	66
99		11.69	11.55	1069.79	1648.98	1637.43	93	GRE VAM TOP	x	66
100		11.50	11.36	1081.15	1637.43	1626.07	94	GRE VAM TOP	x	67
101		11.42	11.28	1092.42	1626.07	1614.80	95	GRE VAM TOP	x	68
102		11.68	11.54	1103.96	1614.80	1603.26	96	GRE VAM TOP	x	69
103		11.59	11.45	1115.41	1603.26	1591.81	97	GRE VAM TOP	x	69
104		11.52	11.38	1126.79	1591.81	1580.43	98	GRE VAM TOP	x	70
105		11.21	11.07	1137.86	1580.43	1569.36	99	GRE VAM TOP	x	71
106		11.64	11.50	1149.35	1569.36	1557.87	100	GRE VAM TOP	x	72
107		11.45	11.31	1160.66	1557.87	1546.56	101	GRE VAM TOP	x	72
108		11.69	11.55	1172.21	1546.56	1535.01	102	GRE VAM TOP	x	73
109		11.40	11.26	1183.47	1535.01	1523.75	103	GRE VAM TOP	x	74
110		11.69	11.55	1195.02	1523.75	1512.20	104	GRE VAM TOP	x	75
111		11.39	11.25	1206.26	1512.20	1500.96	105	GRE VAM TOP	x	75
112		11.69	11.55	1217.81	1500.96	1489.41	106	GRE VAM TOP	x	76
113		11.28	11.14	1228.95	1489.41	1478.27	107	GRE VAM TOP	x	77
114		11.69	11.55	1240.50	1478.27	1466.72	108	GRE VAM TOP	x	78
115		11.69	11.55	1252.05	1466.72	1455.17	109	GRE VAM TOP	x	78
116		11.69	11.55	1263.59	1455.17	1443.63	110	GRE VAM TOP	x	79
117		11.69	11.55	1275.14	1443.63	1432.08	111	GRE VAM TOP	x	80
118		11.68	11.54	1286.68	1432.08	1420.54	112	GRE VAM TOP	x	81
119		11.28	11.14	1297.82	1420.54	1409.40	113	GRE VAM TOP	x	81
120		11.69	11.55	1309.37	1409.40	1397.85	114	GRE VAM TOP	x	82
121		11.70	11.56	1320.92	1397.85	1386.30	115	GRE VAM TOP	x	83
122		11.69	11.55	1332.47	1386.30	1374.75	116	GRE VAM TOP	x	84
123		11.65	11.51	1343.98	1374.75	1363.24	117	GRE VAM TOP	x	84
124		11.28	11.14	1355.12	1363.24	1352.10	118	GRE VAM TOP		85
125		11.50	11.36	1366.48	1352.10	1340.74	119	GRE VAM TOP		86
126		11.69	11.55	1378.03	1340.74	1329.19	120	GRE VAM TOP		87
127		11.67	11.53	1389.55	1329.19	1317.67	121	GRE VAM TOP		87
128		11.35	11.21	1400.76	1317.67	1306.46	122	GRE VAM TOP		88
129		11.70	11.56	1412.32	1306.46	1294.90	123	GRE VAM TOP		89
130		10.73	10.59	1422.91	1294.90	1284.31	124	GRE VAM TOP		90
131		11.69	11.55	1434.46	1284.31	1272.76	125	GRE VAM TOP		90
132		11.67	11.53	1445.98	1272.76	1261.24	126	GRE VAM TOP		91
133		11.69	11.55	1457.53	1261.24	1249.69	127	GRE VAM TOP		92
134		11.69	11.55	1469.08	1249.69	1238.14	128	GRE VAM TOP		93
135		11.28	11.14	1480.22	1238.14	1227.00	129	GRE VAM TOP		93
136		11.68	11.54	1491.76	1227.00	1215.46	130	GRE VAM TOP		94
137		11.70	11.56	1503.31	1215.46	1203.91	131	GRE VAM TOP		95
138		11.67	11.53	1514.84	1203.91	1192.38	132	GRE VAM TOP		96
139		11.69	11.55	1526.39	1192.38	1180.83	133	GRE VAM TOP		96
140		11.25	11.11	1537.50	1180.83	1169.72	134	GRE VAM TOP		97
141		11.68	11.54	1549.04	1169.72	1158.18	135	GRE VAM TOP		98
142		11.08	10.94	1559.97	1158.18	1147.25	136	GRE VAM TOP		98
143		11.34	11.20	1571.17	1147.25	1136.05	137	GRE VAM TOP		99
144		11.69	11.55	1582.72	1136.05	1124.50	138	GRE VAM TOP		100
145		11.64	11.50	1594.22	1124.50	1113.00	139	GRE VAM TOP		101
146		11.68	11.54	1605.76	1113.00	1101.46	140	GRE VAM TOP		101
147		11.69	11.55	1617.30	1101.46	1089.92	141	GRE VAM TOP	x	102
PIN X PIN JOINT		11.52	11.38	1628.68	1089.92	1078.54	142	GRE VAM TOP	x	103

Bttm to mid Slips Incl X/o		1.68	1.54	1630.22	1078.54	1077.00	143			103
Mid Slips - Mid packer		1.39	1.39	1631.61	1077.00	1075.61	144			103
Mid Packer - TOL		3.93	3.93	1635.54	1075.61	1071.68	145			103
Runningtool (incl X/o)		3.27	3.27	1638.81	1071.68	1068.41	146			104