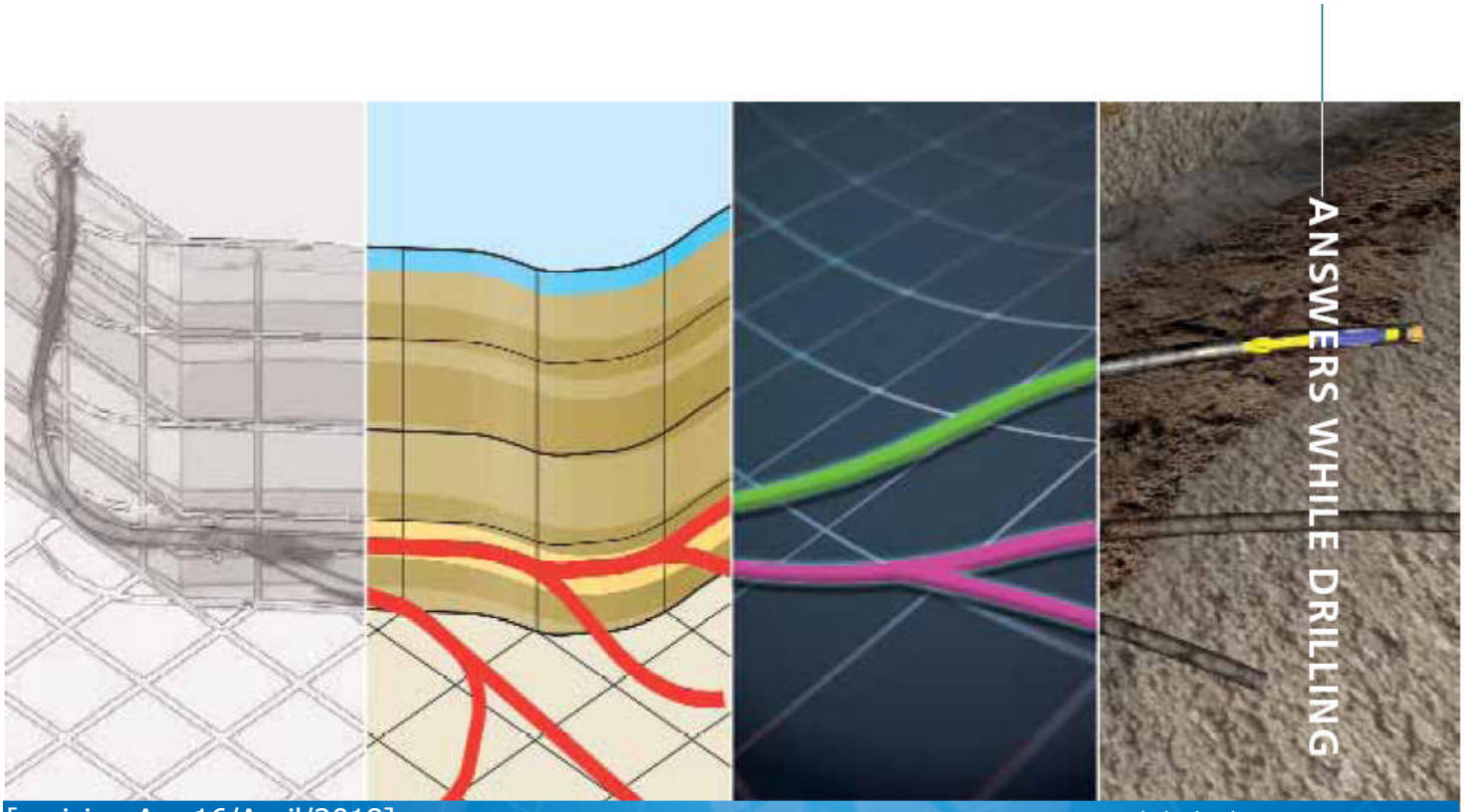
AleAnna Resources

Trava NE 1 dir

DRILLING PROGRAM

BAKER HUGHES a GE company



[revision A – 16/April/2018]

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Summary

Introduction

Well Overview

Trava NE#1D will be a new deviated well which will be drilled from surface in the "Corte dei Signori" field (Po Valley area, North Italy).

A 12 ¼" section J-shape will be drilled up to about 400mMD. A 2D build up to 8.0° INC will be performed during this phase, kicking off from 240m with a BUR of 1.50°/30m.

Afterwards a 9-5/8" casing will be run to isolate the formations with different pore gradients.

The last 8 ½" section will be drilled with an S-shape profile with maximum INC = 25.4° and 2.50°/30m DLS.

TD of the well (at 1514.67mMD = 1456.70mTVDRT) will be reached after having intercepted the planned geological target, named "CAR-1", at 1348.70mTVDRT. The plan is to come back to vertical (0.0° inclination) 100mTVD before reaching the target depth.

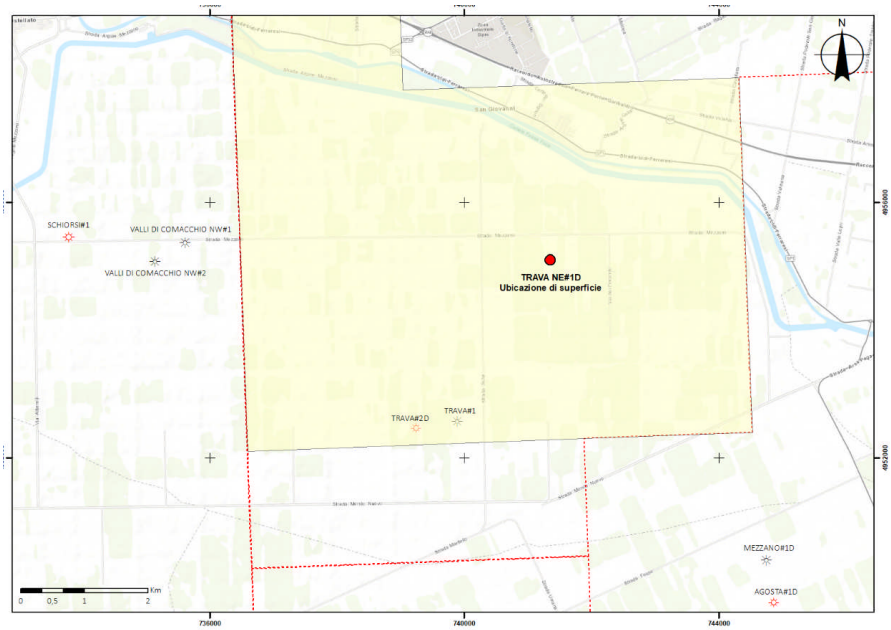
The planned wellbore will have a constant direction = 253.08° Azi.

For the 12 ¼" section, an 8" NaviDrill Ultra XL Motor in combination with 6 ¾" NaviTrak MWD tool will be used.

For the 8 ½" section, a 6 ¾" NaviDrill Ultra XL motor in combination with 6 ¾" NaviTrak MWD tool will be used.

Offset Wells

Several other wells were drilled by other operators in the past within Corte dei Signori permit. The nearest ones are Trava#1 (drilled by eni) and Trava#2D (Aleanna), which are within a distance of 3.5 km of the TravaNE#1D.



Planned Wellpath Report

Planned Wellpath Report

Positional Uncertainty

Trava NE 1 dir (PWP A.2 AD 09-Ap-2018)

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 1**
Area	**Italy**	Well	**Trava NE 1 dir**
Field	**Corte dei Signori**	Wellbore	**Trava NE 1 dir (PWB)**
Facility	**Trava NE 1 dir**		

REPORT SETUP INFORMATION			
Projection System	**WGS84 / UTM Zone 32 North**	Software System	**WellArchitect® 5.1**
North Reference	**Grid**	User	**Dangand**
Scale	**1.000322**	Report Generated	**16/Apr/2018** at **17:47**
Convergence at slot	**2.15° East**	Database/Source file	**WA_PES_Defn/Trava_NE_1_dir__PWP_A.2_AD_09-Ap-2018_.xml**

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[m]	East[m]	Easting[m]	Northing[m]	Latitude	Longitude
Slot Location	**0.00**	**0.00**	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E
Facility Reference Pt			**742222.84**	**4954757.06**	44°42'18.900"N	12°03'27.520"E
Field Reference Pt			**739244.30**	**4952461.94**	44°41'08.221"N	12°01'08.489"E

WELLPATH DATUM			
Calculation method	**Minimum curvature**	HH 200 (RT) to Facility Vertical Datum	**7.70m**
Horizontal Reference Pt	**Slot**	HH 200 (RT) to Mean Sea Level	**6.70m**
Vertical Reference Pt	**HH 200 (RT)**	HH 200 (RT) to Mud Line at Slot (Slot 1)	**7.70m**
MD Reference Pt	**HH 200 (RT)**	Section Origin	**N 0.00, E 0.00 m**
Field Vertical Reference	**Mean Sea Level**	Section Azimuth	**253.08°**

POSITIONAL UNCERTAINTY CALCULATION SETTINGS					
Ellipse Confidence Limit	**2.00 Std Dev**	Ellipse Start MD	**7.70m**	Surface Position Uncertainty	**included**
Declination	**3.22° East of TN**	Dip Angle	**61.06°**	Magnetic Field Strength	**47394nT**
Slot Surface Uncertainty @1SD		Horizontal	**0.000m**	Vertical	**0.000m**
Facility Surface Uncertainty @1SD		Horizontal	**0.500m**	Vertical	**0.200m**

Positional Uncertainty values in the WELLPATH DATA table are the projection of the ellipsoid of uncertainty onto the vertical and horizontal planes

Planned Wellpath Report

Positional Uncertainty

Trava NE 1 dir (PWP A.2 AD 09-Ap-2018)

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 1**
Area	**Italy**	Well	**Trava NE 1 dir**
Field	**Corte dei Signori**	Wellbore	**Trava NE 1 dir (PWB)**
Facility	**Trava NE 1 dir**		

WELLPATH DATA (9 stations) - with Positional Uncertainty values † = interpolated/extrapolated station

MD [m]	Inclination [°]	Azimuth [°]	TVD [m]	TVDSS [m]	Vert Sect [m]	North [m]	East [m]	Grid East [m]	Grid North [m]	Latitude	Longitude	DLS [°/30m]	Toolface [°]	Vertical Semi-Axis [m]	Horiz Major Semi-Axis [m]	Horiz Minor Semi-Axis [m]	Horiz Minor Axis Azim [°]	Comments
0.00†	0.000	253.084	0.00	-6.70	0.00	0.00	0.00	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E	0.00	0.00	0.00	0.00	0.00	0.000	
7.70	0.000	253.084	7.70	1.00	0.00	0.00	0.00	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E	0.00	0.00	0.40	1.00	1.00	0.000	Tie On
240.00	0.000	253.084	240.00	233.30	0.00	0.00	0.00	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E	0.00	-106.92	0.85	1.30	1.30	0.000	KOP
400.00	8.000	253.084	399.48	392.78	11.15	-3.24	-10.67	742212.17	4954753.81	44°42'18.808"N	12°03'27.030"E	1.50	0.00	0.92	1.81	1.74	164.229	Catenary1
608.79	25.400	253.084	598.70	592.00	70.92	-20.64	-67.85	742154.97	4954736.42	44°42'18.314"N	12°03'24.405"E	2.50	0.00	1.09	2.41	2.25	251.636	Catenary2
1001.88	25.400	253.084	953.79	947.09	239.53	-69.69	-229.16	741993.60	4954687.34	44°42'16.922"N	12°03'16.999"E	0.00	180.00	1.65	5.87	2.97	252.693	End of Tangent
1306.67	0.000	253.084	1248.70	1242.00	305.98	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E	2.50	0.00	2.15	7.54	3.98	252.627	Back to 0°Inc
1406.67	0.000	253.084	1348.70[1]	1342.00	305.98	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E	0.00	0.00	2.27	7.69	4.24	252.593	Target
1514.67	0.000	253.084	1456.70	1450.00	305.98	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E	0.00		2.42	7.87	4.53	252.557	Total Depth

HOLE & CASING SECTIONS - Ref Wellbore: Trava NE 1 dir (PWB) Ref Wellpath: Trava NE 1 dir (PWP A.2 AD 09-Ap-2018)

String/Diameter	Start MD [m]	End MD [m]	Interval [m]	Start TVD [m]	End TVD [m]	Start N/S [m]	Start E/W [m]	End N/S [m]	End E/W [m]
13.375in Conductor	7.70	50.00	42.30	7.70	50.00	0.00	0.00	0.00	0.00
12.25in Open Hole	50.00	400.00	350.00	50.00	399.48	0.00	0.00	-3.24	-10.67
9.625in Casing	7.70	400.00	392.30	7.70	399.48	0.00	0.00	-3.24	-10.67
8.5in Open Hole	400.00	1514.67	1114.67	399.48	1456.70	-3.24	-10.67	-89.03	-292.75
7in Casing	7.70	1514.67	1506.97	7.70	1456.70	0.00	0.00	-89.03	-292.75

TARGETS

Name	MD [m]	TVD [m]	North [m]	East [m]	Grid East [m]	Grid North [m]	Latitude	Longitude	Shape
1) CAR-1	1406.67	1348.70	-89.03	-292.75	**741930.00**	**4954668.00**	44°42'16.374"N	12°03'14.079"E	circle

Planned Wellpath Report

Positional Uncertainty

Trava NE 1 dir (PWP A.2 AD 09-Ap-2018)

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 1**
Area	**Italy**	Well	**Trava NE 1 dir**
Field	**Corte dei Signori**	Wellbore	**Trava NE 1 dir (PWB)**
Facility	**Trava NE 1 dir**		

SURVEY PROGRAM - Ref Wellbore: Trava NE 1 dir (PWB) Ref Wellpath: Trava NE 1 dir (PWP A.2 AD 09-Ap-2018)

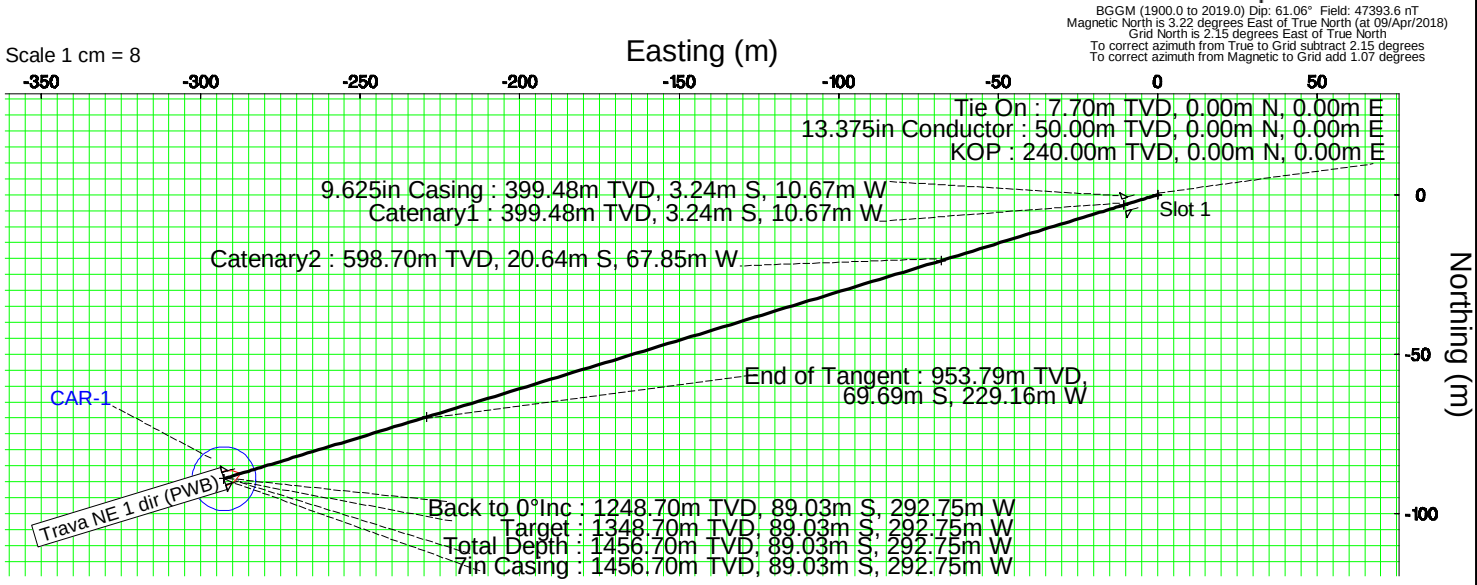
Start MD [m]	End MD [m]	Positional Uncertainty Model	Log Name/Comment	Wellbore
7.70	400.00	BHI NaviTrak (SAG, Axial)		Trava NE 1 dir (PWB)
400.00	1515.00	BHI NaviTrak (SAG, Axial)		Trava NE 1 dir (PWB)

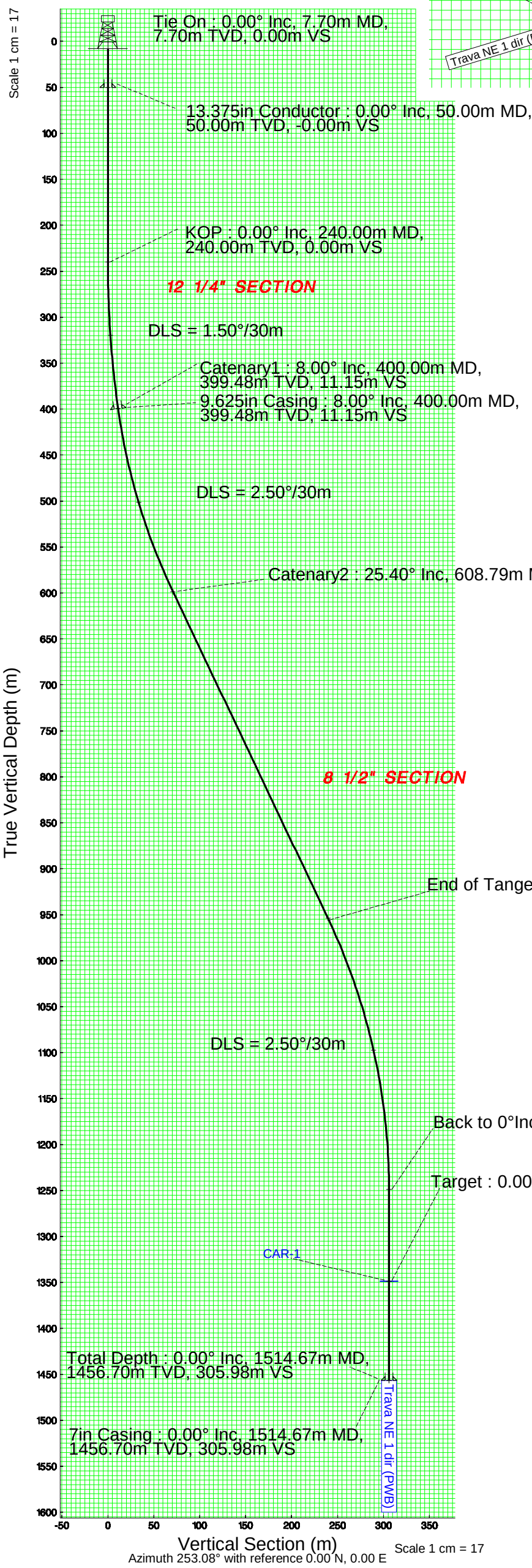
WellPlot

Aleanna Resources LLC

Location:	Italy	Slot:	Slot 1
Field:	Corte dei Signori	Well:	Trava NE 1 dir
Facility:	Trava NE 1 dir	Wellbore:	Trava NE 1 dir (PWB)

BGGM (1900.0 to 2019.0) Dip: 61.06° Field: 47393.6 nT
Magnetic North is 3.22 degrees East of True North (at 09/Apr/2018)
Grid North is 2.15 degrees East of True North
To correct azimuth from True to Grid subtract 2.15 degrees
To correct azimuth from Magnetic to Grid add 1.07 degrees





Plot reference wellpath is Trava NE 1 dir (PWP A.2 AD 09-Ap-2018)	Grid System: WGS84 / UTM Zone 32 North
True vertical depths are referenced to HH 200 (RT)	North Reference: Grid north
Measured depths are referenced to HH 200 (RT)	Scale: True distance
HH 200 (RT) to Mean Sea Level: 6.7 meters	Depths are in meters
Mean Sea Level to Mud line (At Slot: Slot 1): 1 meters	Created by: dangand on 2018-04-16
Coordinates are in meters referenced to Slot	Database: WA_PES_Defn

Location Information

Facility Name			Grid East (m)	Grid North (m)	Latitude	Longitude
Trava NE 1 dir			742222.840	4954757.060	44°42'18.900"N	12°03'27.520"E
Slot	Local N (m)	Local E (m)	Grid East (m)	Grid North (m)	Latitude	Longitude
Slot 1	0.00	0.00	742222.840	4954757.060	44°42'18.900"N	12°03'27.520"E
HH 200 (RT) to Mud line (At Slot: Slot 1)					7.7m	
Mean Sea Level to Mud line (At Slot: Slot 1)					1m	
HH 200 (RT) to Mean Sea Level					6.7m	

Survey Program

Start MD (m)	End MD (m)	Tool	Model	Log Name/Comment	Wellbore
7.70	400.00	BHI NaviTrak	BHI NaviTrak (SAG, Axial)		Trava NE 1 dir (PWB)
400.00	1515.00	BHI NaviTrak	BHI NaviTrak (SAG, Axial)		Trava NE 1 dir (PWB)

Targets

Name	MD (m)	TVD (m)	Local N (m)	Local E (m)	Grid East (m)	Grid North (m)	Latitude	Longitude
CAR-1	1406.67	1348.70	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E

Hole and Casing Sections

Name	Start MD (m)	End MD (m)	Interval (m)	Start TVD (m)	End TVD (m)	Start Local N (m)	Start Local E (m)	End Local N (m)	End Local E (m)	Wellbore
13.375in Conductor	7.70	50.00	42.30	7.70	50.00	0.00	0.00	0.00	0.00	Trava NE 1 dir (PWB)
12.25in Open Hole	50.00	400.00	350.00	50.00	399.48	0.00	0.00	-3.24	-10.67	Trava NE 1 dir (PWB)
9.625in Casing	7.70	400.00	392.30	7.70	399.48	0.00	0.00	-3.24	-10.67	Trava NE 1 dir (PWB)
8.5in Open Hole	400.00	1514.67	1114.67	399.48	1456.70	-3.24	-10.67	-89.03	-292.75	Trava NE 1 dir (PWB)
7in Casing	7.70	1514.67	1506.97	7.70	1456.70	0.00	0.00	-89.03	-292.75	Trava NE 1 dir (PWB)

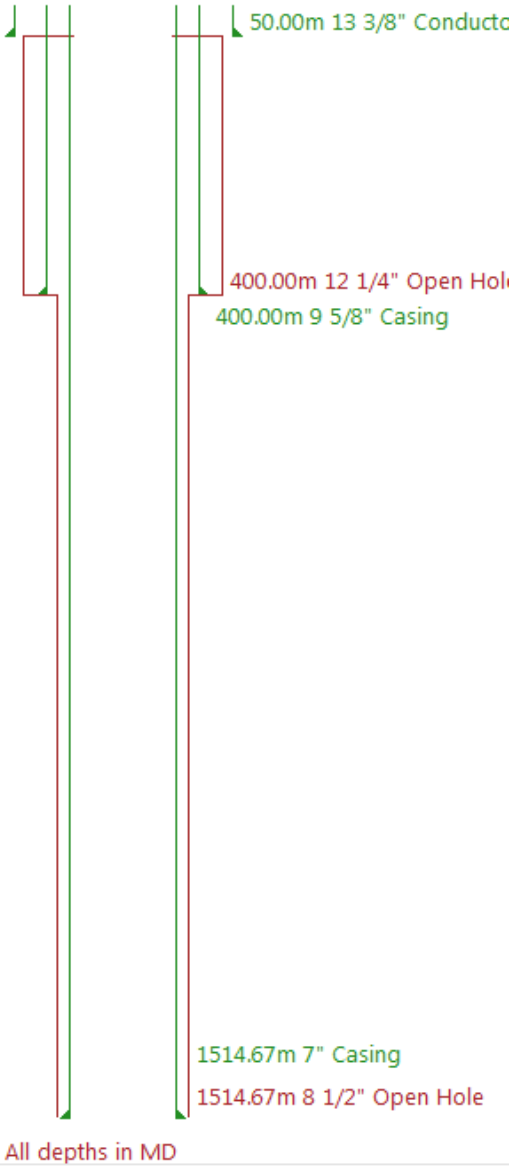
Well Profile Data

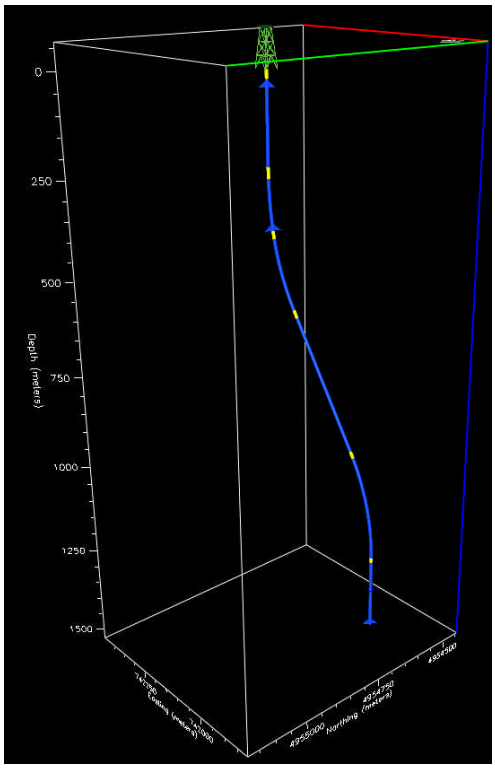
Design Comment	MD (m)	Inc (°)	Az (°)	TVD (m)	Local N (m)	Local E (m)	DLS (°/30m)	VS (m)
Tie On	7.70	0.000	253.084	7.70	0.00	0.00	0.00	0.00
KOP	240.00	0.000	253.084	240.00	0.00	0.00	0.00	0.00
Catenary1	400.00	8.000	253.084	399.48	-3.24	-10.67	1.50	11.15
Catenary2	608.79	25.400	253.084	598.70	-20.64	-67.85	2.50	70.92
End of Tangent	1001.88	25.400	253.084	953.79	-69.69	-229.16	0.00	239.53
Back to 0°Inc	1306.67	0.000	253.084	1248.70	-89.03	-292.75	2.50	305.98
Target	1406.67	0.000	253.084	1348.70	-89.03	-292.75	0.00	305.98
Total Depth	1514.67	0.000	253.084	1456.70	-89.03	-292.75	0.00	305.98

Approval

Baker Hughes Representatives			
Prepared by		Reviewed by	
Signature		Signature	
Position		Position	
Date		Date	
Aleanna Resources LLC Representative			
Approved by		Position	
Signature		Date	
Comment			

Hole sizes/ Casing Design





FASE	TOOLS	MWD / LWD
12 ¼”	Ultra XL Motor	NaviTrak
8 ½”	Ultra XL Motor	NaviTrak

WELLPATH DATA (9 stations) - with Positional Uncertainty values † = interpolated/extrapolated station

MD [m]	Inclination [°]	Azimuth [°]	TVD [m]	TVDSS [m]	Vert Sect [m]	North [m]	East [m]	Grid East [m]	Grid North [m]	Latitude	Longitude	DLS [°/30m]	Toolface [°]	Vertical Semi-Axis [m]	Horiz Major Semi-Axis [m]	Horiz Minor Semi-Axis [m]	Horiz Minor Axis Azim [°]	Comments
0.00†	0.000	253.084	0.00	-6.70	0.00	0.00	0.00	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E	0.00	0.00	0.00	0.00	0.00	0.000	
7.70	0.000	253.084	7.70	1.00	0.00	0.00	0.00	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E	0.00	0.00	0.40	1.00	1.00	0.000	Tie On
240.00	0.000	253.084	240.00	233.30	0.00	0.00	0.00	742222.84	4954757.06	44°42'18.900"N	12°03'27.520"E	0.00	-106.92	0.85	1.30	1.30	0.000	KOP
400.00	8.000	253.084	399.48	392.78	11.15	-3.24	-10.67	742212.17	4954753.81	44°42'18.808"N	12°03'27.030"E	1.50	0.00	0.92	1.81	1.74	164.229	Catenary1
608.79	25.400	253.084	598.70	592.00	70.92	-20.64	-67.85	742154.97	4954736.42	44°42'18.314"N	12°03'24.405"E	2.50	0.00	1.09	2.41	2.25	251.636	Catenary2
1001.88	25.400	253.084	953.79	947.09	239.53	-69.69	-229.16	741993.60	4954687.34	44°42'16.922"N	12°03'16.999"E	0.00	180.00	1.65	5.87	2.97	252.693	End of Tangent
1306.67	0.000	253.084	1248.70	1242.00	305.98	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E	2.50	0.00	2.15	7.54	3.98	252.627	Back to 0°Inc
1406.67	0.000	253.084	1348.70†	1342.00	305.98	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E	0.00	0.00	2.27	7.69	4.24	252.593	Target
1514.67	0.000	253.084	1456.70	1450.00	305.98	-89.03	-292.75	741930.00	4954668.00	44°42'16.374"N	12°03'14.079"E	0.00		2.42	7.87	4.53	252.557	Total Depth

12 ¼" Section

Section and equipment overview

Starting from the 16" conductor shoe at 50m MD, the 12 ¼" section will be drilled with a J-Shape profile. The KOP is planned at 240m, then the plan is to build inclination up 8.0° with 1.50°/30m DLS. TD of the phase is at 400mMD.

An 8" Ultra XL motor and an 6 ¾" NaviTrak MWD tool will be use to drill this section.

The motor will be stabilized with a 12 $^{1}/_{8}$" UBHS and 11 ¾" string top stabilizer: this stabilizer configuration, in conjunction with an adequate AKO (Adjustable Kick-Off) angle, will provide the required BUR, in order to build the follow the planned vertical wellprofile. At the same time, the proposed BHA configuration will assure a quite neutral/building tendency of the assembly, while drilling in rotary mode, considering the soft formations expected at these shallow depths.

The NaviTrak tool, together with the Pulser, will provide directional information using a real-time transmission from the tool up to surface, allowing steering the motor with the required toolface and recording directional surveys.

The number of drill collars and HWDPs above and below the jar has been chosen in order to provide a sufficient WOB and ensuring correct jar activation in case of stuck BHA; along the whole wellpath.

Hydraulics calculations show a 86bar SPP with a 2000lpm flow-rate.

Using standard values for friction factors, the T&D analysis shows a drilling torque value equal to ~1.2 kft.lb: this value is far below the maximum limit for the planned drillpipes (5" OD – 19.5 lb/ft – Premium). The maximum value of the drag, when the BHA will be picked-up, will be equal to 1 tons.

Sinusoidal buckling limit is equal to 19.6 tons.

Calculated load below the jar is equal to 8tons, above is equal to 10tons.

12 ¼" Section - Proposed Ultra XL Motor + NaviTrak BHA

12 ¼" Steerable Motor BHA + MWD NaviTrak			
Operator	Aleanna Resources	Field	Corte dei Signori
Well	**Trava NE 1 dir**	Depth IN: 50m MD	Depth OUT: 400m MD

String Components

Item	#	Component	Gauge OD In	OD In	ID In	Thread	Length m	Total Length m
	15	Drill pipe		5	4.276	(BP) 4 ½ IF – 4 ½ IF	221.70	400.00
	14	HWDP x 8		5	3	(BP) 4 ½ IF – 4 ½ IF	73.60	178.30
	13	Drill Collar x 4		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	36.80	104.70
	12	Jar		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	9.60	67.90
	11	Drill Collar x 3		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	27.90	58.30
	10	Circulating Sub		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	2.00	38.40
	9	String Stab	8 3/8	6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	1.80	28.40
	8	Filter Sub		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	1.80	26.60
	7	Pulser		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	1.60	24.80
	6	MWD NaviTrak		6 ¾	2 ¾	(BP) 4 ½ IF – 4 ½ IF	9.30	23.20
	5	X-Over Sub		8	2 ¾	(BP) 4 ½ IF – 6 5/8 Reg	0.80	13.90
	4	String Stab	11 ¾	8 ¼	2 13/16	(BP) 6 5/8 Reg – 6 5/8 Reg	2.10	13.10
	3	Float Valve (included in the motor)		8	2 ¾	(BP) 6 5/8 Reg – 6 5/8 Reg	0.80	11.00
	2	Ultra XL Motor (12 1/8" UBHS, AKO= 1.5°)	12 1/8	8	6.400	(BB) 6 5/8 Reg – 6 5/8 Reg	9.80	10.20
	1	Bit	12 ¼	12 ¼		6 5/8 Reg	0.40	0.40

15 BHA components.

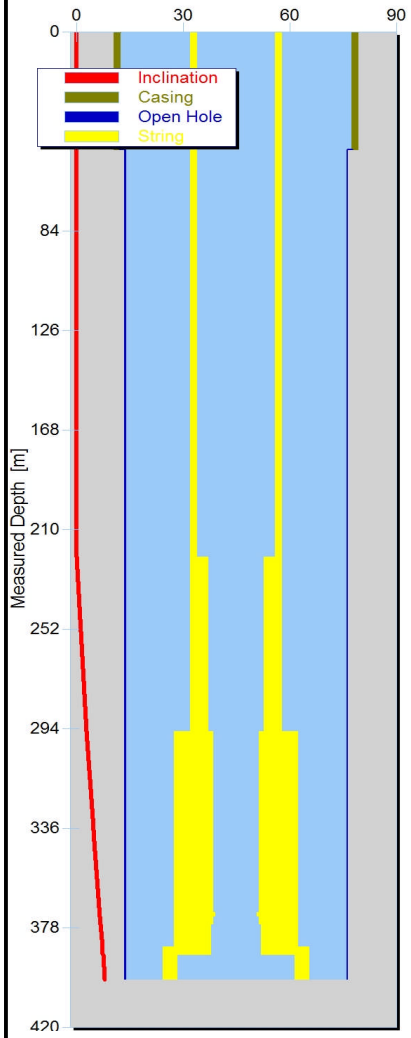
ADVANTAGE DesignFrame

Case - Trava NE 1 Dir - 12 ¼" Ultra XL+NTK

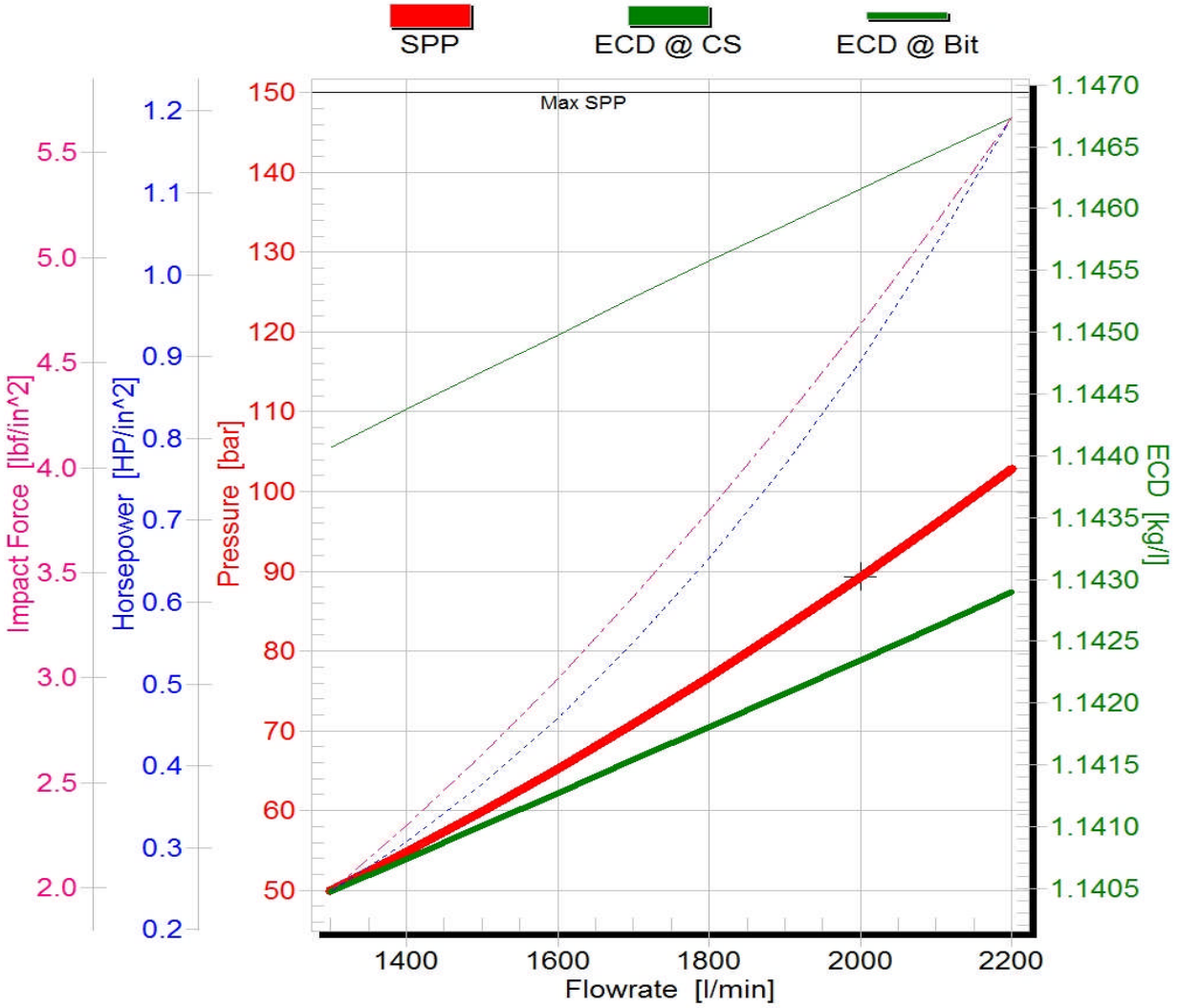
Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

Hole Size	12 1/4 in	**Bit Depth (MD)**	400.00 m	**Bit Depth (TVD)**	399.48 m

Inclination **deg**



Hydraulics Operating Window



Numerical Data

Drilling Fluid

Mud System	Water Based	
Mud Density	1.12	**kg/l**

	Csg Shoe kg/l	Bottom kg/l
$ECD_{w/o\ Cuttings}$	1.14	1.15
$ESD_{w/o\ Cuttings}$	1.12	1.12

initial

Circulation Data

Flowrate	2000	**l/min**
ROP	10.0	**m/hr**
RPM	50	**RPM**
Bit TFA	0.7854	**in^2**

Flowrates

OH Critical	6011	**l/min**

System Pressure Loss

Drill String	16.1	**bar**
Motor (Op ΔP)	5.9	**bar**
Motor (No-Load)	19.2	**bar**
MWD	21.6	**bar**
Bit	23.3	**bar**
Annulus	1.0	**bar**
Surface Equip	2.2	**bar**
SPP	89.3	**bar**

Comment

Date 16/Apr/2018 19:34:58
Prepared by Andrea D'Angelo

ADVANTAGE Hydraulics Spreadsheet Report

Case - Trava NE 1 Dir - 12 ¼" Ultra XL+NTK

Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

General

Max Allw.SPP	150.0 **bar**		
Surface Equip.	Type 4		
Bit Depth	400.00	**Bit TVD**	399.48 **m**
Bit Nozzles in/32	4x16	**TFA**	0.7854 **in^2**

Drilling Fluid

Mud System	Water Based
Mud Weight	1.12 **kg/l**
PV \ YP	10.00 **cP** \ 25.00 **lbf/100ft^2**
Gel Strength, 10s\10min	16 \ 20 **lbf/100ft^2**
Rheological Model	Robertson-Stiff
	k 1,297.940[cP] **N** 0.404[-] **sri** 68.514[1/s]

Casing / Open Hole

Type	OD in	ID in	Bottom MD m
Casing	13 3/8	12.615	50.00
Openhole		12 1/4	400.00

Volumes bbl

Annulus Volume	152.460	**Hole Volume**	192.750
String Displacement	22.380	**String Volume**	17.910

Drill String

Type	Length m	OD in	ID in	TJ in \ in	Weight lb/ft
DP - NC50 (IF) /S-1...	221.70	5	4.276	6 5/16 \ 2 3/4	19.50
HWDP-HT50 /HW-100	73.60	5	3	6 5/8 \ 3	50.38
DC - API N.C. 50	36.80	6 3/4	2 1/2		105.00
Jar	9.60	6 3/4	2 1/2		220.23
DC - API N.C. 50	27.90	6 3/4	2 1/2		105.00
Sub - circulation	2.00	6 3/4	2 1/2		150.66
Stab - string	1.80	6 3/4	2 1/4		112.53
NM Sub - filter	1.80	6 3/4	2 1/2		146.82
UP / UPU	1.60	6 3/4	2 1/2		240.86
NAVITRAK /INTEQ	9.30	6 3/4	2 3/4		230.24
Sub - X/O	0.80	8	2 3/4		150.66
Stab - string	2.10	8	2 3/4		178.34
Sub - float	0.80	8	2 3/4		165.01
PDM - Ultra XL w/ I...	9.80	8	6.400		94.64
Bit - insert - roll...	0.40	12 1/4			179.08

Flowrate	**l/min**	**2200**	**2100**	**2000**	**1900**	**1800**	**1700**	**1600**	**1500**	**1400**	**1300**
Bit Hydraulics											
SPP	**bar**	102.9	95.9	89.3	82.9	76.7	70.9	65.3	59.9	54.8	50.0
Surface HP	**HP**	505.4	450.0	398.8	351.7	308.5	269.1	233.2	200.7	171.4	145.2
Bit DeltaP	**bar**	28.2	25.7	23.3	21.0	18.9	16.8	14.9	13.1	11.4	9.8
%SPP	**%**	27	27	26	25	25	24	23	22	21	20
Jet Velocity	**ft/sec**	237.4	226.6	215.8	205.0	194.2	183.5	172.7	161.9	151.1	140.3
Impact Force	**lbf/in^2**	5.7	5.2	4.7	4.2	3.8	3.4	3.0	2.6	2.3	2.0
HSI	**HP/in^2**	1.19	1.04	0.90	0.77	0.65	0.55	0.46	0.38	0.31	0.25
System Pressure Loss - W/O Cuttings Effect											
Surf Equip	**bar**	2.6	2.4	2.2	2.0	1.8	1.6	1.4	1.3	1.1	1.0
DP,CSG,LNR,TBG	**bar**	3.5	3.2	3.0	2.8	2.5	2.3	2.1	1.9	1.7	1.6
HWDP/CSDP	**bar**	4.5	4.2	3.9	3.6	3.3	3.0	2.8	2.5	2.3	2.0
DC/CT	**bar**	8.3	7.8	7.2	6.7	6.1	5.6	5.2	4.7	4.2	3.8
MWD	**bar**	25.4	23.5	21.6	19.8	18.2	16.6	15.2	13.8	12.6	11.4
Motor (Op ΔP 5.9 bar)		27.0	26.0	25.1	24.1	23.1	22.2	21.2	20.3	19.3	18.3
Additional Tools	**bar**	2.4	2.2	2.1	1.9	1.8	1.6	1.5	1.3	1.2	1.1
Annulus	**bar**	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
ECD - CSG Shoe	**kg/l**	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
ECD - BH	**kg/l**	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.14	1.14	1.14
Annular Velocities m/s Flow Regime											
Hole ID in	**String OD in**										
12.615	5	0.54 L	0.51 L	0.49 L	0.47 L	0.44 L	0.42 L	0.39 L	0.37 L	0.34 L	0.32 L
12 1/4	5	0.58 L	0.55 L	0.53 L	0.50 L	0.47 L	0.45 L	0.42 L	0.39 L	0.37 L	0.34 L
12 1/4	6 3/4	0.69 L	0.66 L	0.63 L	0.60 L	0.57 L	0.54 L	0.50 L	0.47 L	0.44 L	0.41 L
Fluid Circulation Times											
Surface to Bit	**hr**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bottom Up	**hr**	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3

Comment

Date 16/Apr/2018 19:35:47
Prepared by Andrea D'Angelo

ADVANTAGE T&D Calculation - Summary Report

Case - Trava NE 1 Dir - 12 ¼" Ultra XL+NTK

Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

Drilling Parameter

Bit Depth	400	m
Weight on Bit	4	tonne
Torque on Bit	0.8	kft.lb
Bit Drag Force	-	tonne
Overpull Force	-	tonne
ROB Torque Resistance	-	kft.lb

Analysis Setup

Calculate Indicated Hook Loads	No
Include Bending Influence	Yes
Buckling Criterion	Conservative - (Unloading)

Depth Interval m	Inner Fluid Density kg/l	Depth Interval m	Outer Fluid Density kg/l
400	1.12	400	1.12

Drill String

Type	OD in	ID in	TJOD in	TJID in	Act.Wt lb/ft	Length m
Drill pipe	5	4.276	6 5/16	2 3/4	23.89	221.70
HWDP	5	3	6 5/8	3	50.38	73.60
Drill collar	6 3/4	2 1/2			105.00	36.80
Jar	6 3/4	2 1/2			220.23	9.60
Drill collar	6 3/4	2 1/2			105.00	27.90
Sub - circulation	6 3/4	2 1/2			150.66	2.00
Stab - string	6 3/4	2 1/4			112.53	1.80
NM Sub - filter	6 3/4	2 1/2			146.82	1.80
UP / UPU	6 3/4	2 1/2			240.86	1.60
MWD - NaviTrak	6 3/4	2 3/4			230.24	9.30
Sub - X/O	8	2 3/4			150.66	0.80
Stab - string	8	2 3/4			178.34	2.10
Sub - float	8	2 3/4			165.01	0.80
Motor - steerable	8	6.400			94.64	9.80
Bit - insert - roller cone	12 1/4				179.08	0.40

Casing / Open Hole

	OD in	ID in	Bottom MD m
Casing	13 3/8	12.615	50.00
Open Hole		12 1/4	400.00

Tortuosity / Noise

Bottom MD m	Build-Plane Curvature deg/30m	Turn-Plane Curvature deg/30m	Variation
50	0.2	0.2	Random
400	0.8	1.6	Random

Friction Factor

Bottom MD m	Axial	Torsional
50	0.25 i	
400	0.35 i	

	Hook Load @ 0.0 MD tonne	Indicated Hook Load tonne	Rotary Torque kft.lb
Drilling	22	22	1.2
Slack-Off	25	25	0.0
Pick-Up	27	27	0.0
Rot off Btm	26	26	0.5

	Axial Velocity m/hr	Rotary Speed RPM
ROP	10.0	50
RIH	300.0	0
POOH	300.0	0

Rotational Discontinuity	No

	Drag tonne
Drilling	0
Slack-Off	1
Pick-Up	1

Drill String Twist	0 rev	26 deg
Max Allowable HookLoad (@min. Yield)	323 tonne	
DrillString Weight in Air	34 tonne	
Bit To Neutral Point (Drilling)	26.67 m	
Sin. Buckling WOB	20 tonne	

	Stretch mm
Drilling	63.7
Slack-Off	76.5
Pick-Up	81.3
Rot off Btm	78.9

	Drawwork HP	at Fastline Load tonne	Rotary HP	Mud Pumps HP	Max Flowrate l/min	Max SPP bar
Power	29.5 P	27 P	11.6 D	0.0	0	150.0

ADVANTAGE T&D Calculation - Summary Report

Case - Trava NE 1 Dir - 12 ¼" Ultra XL+NTK

Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

	O.Mode	Stress psi	at MD m		O.Mode	Safety Factor	at MD m
Max Axial	P	11165.2	0.00	**Min Yield Safety Factor**	P	12.00	7.70
Max Torsional	D	1282.4	0.00	**Min Fatigue Safety Factor**	D	6.82	295.30
Max Bending	D	3670.5	399.60				
Max Combined	D	11250.3	7.70				

D Drilling	S Slack-Off	P Pick-Up	R Rot off Btm		i input	c calculated

Comment

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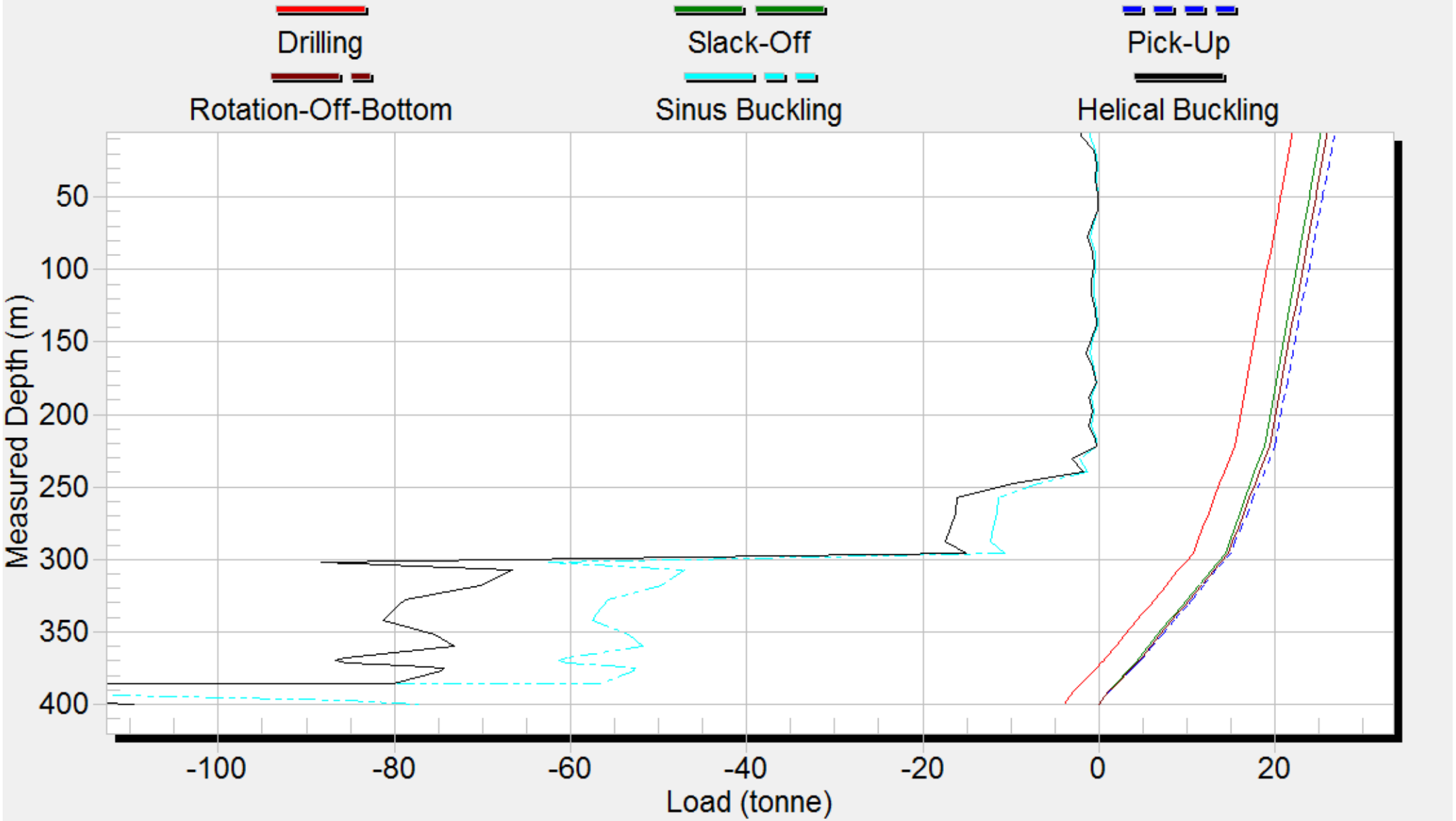
Calculated Loads along String vs. Measured Depth

Case - Trava NE 1 dir - 12 ¼" Ultra XL+NTK



Min. Yield Saf. Fact.: 12.00 (P)
Drilling HKLD: 22.2 tonne
Pick-Up HKLD: 26.9 tonne
Sin. Buckling WOB: 19.6 tonne
Min. Fatigue Saf. Fact.: 6.82 (D)
Slack-Off HKLD: 25.4 tonne
ROB HKLD: 26.2 tonne

8 ½" Section

Section and equipment overview

Starting from the 9 $^{5}/_{8}$" casing shoe at 400m MD, the 8 ½" section will be drilled with a S-shape tangent profile up to TD = 1515mMD (=1456.70m TVDRT)

A 6 ¾" Ultra XL motor and a 6 ¾" MWD NaviTrak tool will be use to drill this productive phase.

The motor will be stabilized with a 8 $^{3}/_{8}$" UBHS and 8" string top stabilizer: this stabilizer configuration, in conjunction with an adequate AKO (Adjustable Kick-Off) angle, will provide the required BUR, in order to build/drop the follow the assembly and follow the correct trajectory. At the same time, the proposed BHA configuration will assure a quite neutral tendency of the assembly, while drilling in rotary mode, considering the soft formations expected at these intermediate depths.

The number of drill collars and HWDPs above and below the jar has been chosen in order to provide a sufficient WOB and ensuring correct jar activation in case of stuck BHA; along the whole tangent wellpath.

Hydraulics calculations show a 158bar SPP with a 1600lpm flow-rate.

Using standard values for friction factors, the T&D analysis shows a drilling torque value equal to ~6.8 kft.lb: this value is below the maximum limit for the planned drillpipes (5" OD – 19.5 lb/ft – Premium). The maximum value of the drag, when the BHA will be picked-up, will be equal to 13 tons.

Sinusoidal buckling limit is equal to 18 tons.

Calculated load below the jar is equal to 7tons, above is equal to 10tons.

8 ½" Section - Proposed Ultra XL Motor + NaviTrak BHA

8 ½" Steerable Motor BHA + MWD NaviTrak			
Operator	Aleanna Resources	Field	Corte dei Signori
Well	**Trava NE 1 dir**	Depth IN: 400m MD	Depth OUT: 1515 MD

String Components

Item	#	Component	Gauge OD in	OD in	ID in	Thread	Length m	Total Length m
	13	Drill pipe		5	4.276	(BP) 4 ½ IF – 4 ½ IF	1351.20	1515.00
	12	HWDP x 8		5	3	(BP) 4 ½ IF – 4 ½ IF	73.60	163.80
	11	Drill Collar x 4		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	36.80	90.20
	10	Jar		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	9.60	53.40
	9	Drill Collar x 3		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	27.90	43.80
	8	Circulation Sub		6 ¾	2 ¾	(BP) 4 ½ IF – 4 ½ IF	1.40	25.20
	7	Sub - Filter		6 ¾	2 ¾	(BP) 4 ½ IF – 4 ½ IF	1.20	23.80
	6	Pulser		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	1.60	22.60
	5	MWD NaviTrak		6 ¾	2 ¾	(BP) 4 ½ IF – 4 ½ IF	9.30	21.00
	4	Stab string	8	6 ¾	2 ¼	(BP) 4 ½ IF – 4 ½ IF	1.80	11.70
	3	Float Valve (included in the motor)		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	0.60	9.90
	2	Ultra XL motor UBHS = 8 3/8" AKO=1.3°	8 3/8	6.791	5.400	(BB) 4 ½ IF – 4 ½ Reg	9.00	9.30
	1	Bit	8 ½	8 ½		4 ½ Reg	0.30	0.30
13 BHA components								

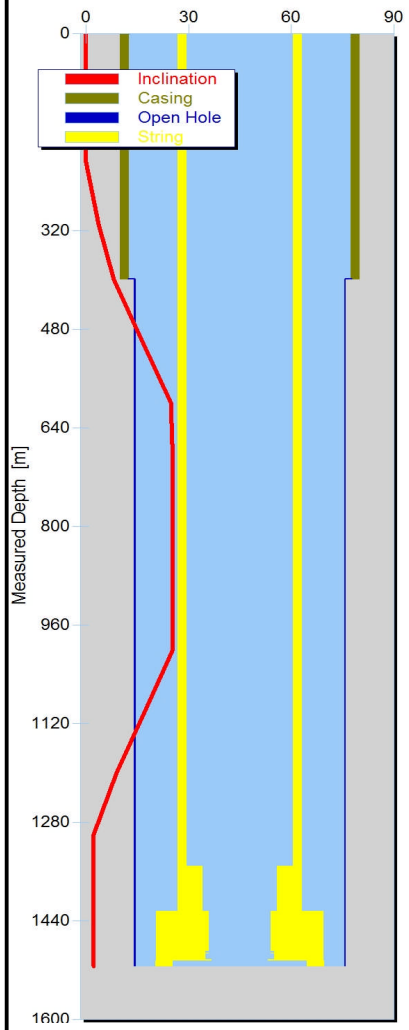
ADVANTAGE DesignFrame

Case - Trava NE 1 Dir - 8½" UTR + NTK

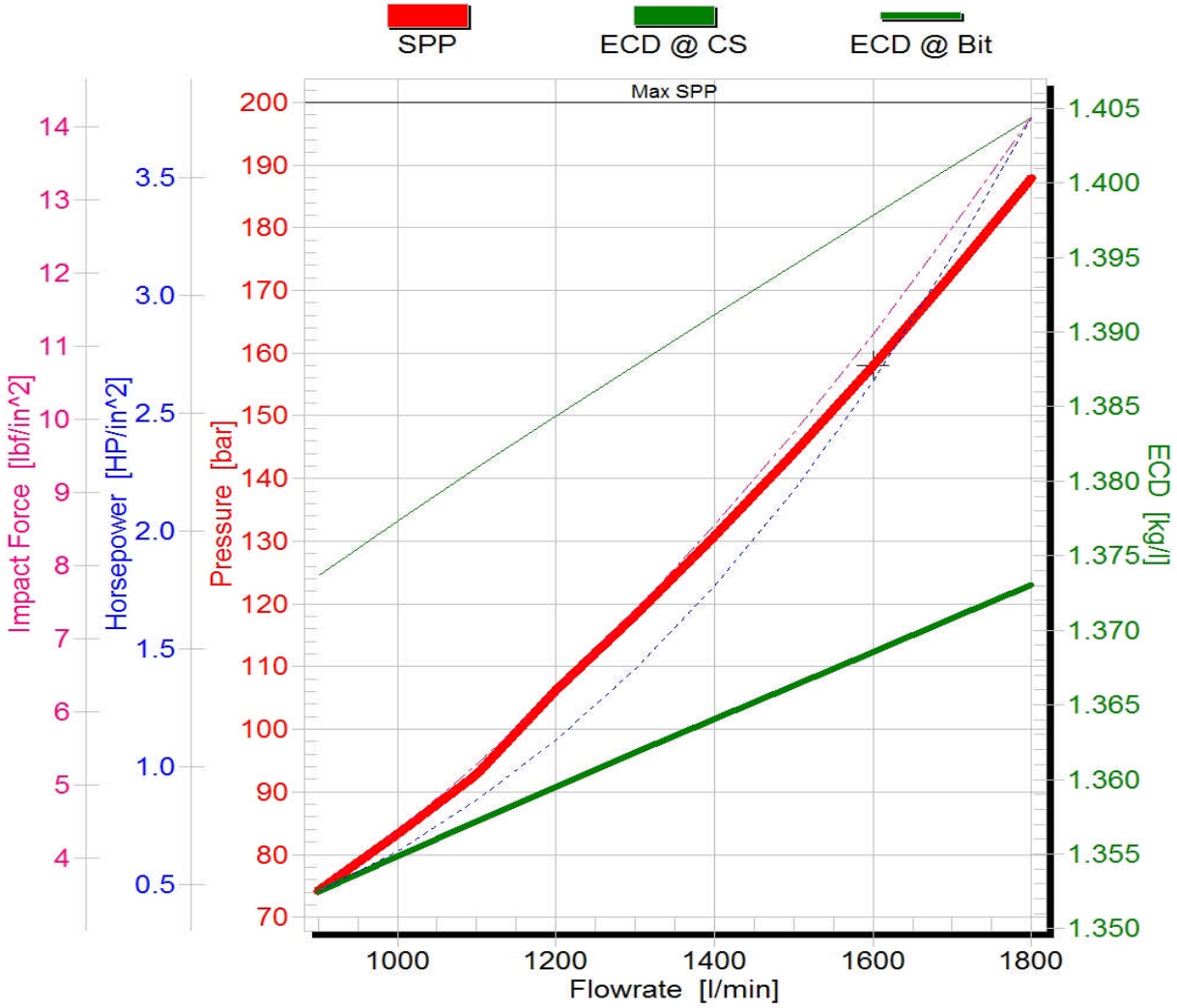
Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

Hole Size	8 1/2 in	**Bit Depth (MD)**	1515.00 m	**Bit Depth (TVD)**	1456.85 m

Inclination deg



Hydraulics Operating Window



Numerical Data

Drilling Fluid

Mud System	Water Based	
Mud Density	1.30	**kg/l**

	Csg Shoe kg/l	Bottom kg/l
$ECD_{w/o\ Cuttings}$	1.37	1.40
$ESD_{w/o\ Cuttings\ initial}$	1.30	1.30

Circulation Data

Flowrate	1600	**l/min**
ROP	10.0	**m/hr**
RPM	60	**RPM**
Bit TFA	0.5085	**in^2**

Flowrates

OH Critical	2611	**l/min**

System Pressure Loss

Drill String	33.2	**bar**
Motor (Op ΔP)	12.4	**bar**
Motor (No-Load)	28.5	**bar**
MWD	26.6	**bar**
Bit	41.3	**bar**
Annulus	14.0	**bar**
Surface Equip	2.0	**bar**
SPP	158.0	**bar**

Comment

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ADVANTAGE Hydraulics Spreadsheet Report

Case - Trava NE 1 Dir - 8½" UTR + NTK

Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

General

Max Allw.SPP	200.0 **bar**		
Surface Equip.	Type 4		
Bit Depth	1515.00	**Bit TVD**	1456.85 **m**
Bit Nozzles in/32	3x11\ 3x10	**TFA**	0.5085 **in^2**

Drilling Fluid

Mud System	Water Based
Mud Weight	1.30 **kg/l**
PV \ YP	25.00 **cP** \ 14.00 **g/100cm^2**
Gel Strength, 10s\10min	6.00 \ 8.00 **g/100cm^2**
Rheological Model	Robertson-Stiff
	k 706.040[cP] **N** 0.577[-] **sri** 30.514[1/s]

Casing / Open Hole

Type	OD in	ID in	Bottom MD m
Casing	9 5/8	8.921	400.00
Openhole		8 1/2	1515.00

Volumes bbl

Annulus Volume	228.150	**Hole Volume**	358.210
String Displacement	49.000	**String Volume**	81.060

Drill String

Type	Length m	OD in	ID in	TJ in \ in	Weight lb/ft
DP - NC50 (IF) /S-1...	1351.20	5	4.276	6 5/16 \ 2 3/4	19.50
HWDP-NC50 /HW-55	73.60	5	3	6 5/8 \ 3 1/16	50.10
DC - API N.C. 50	36.80	6 3/4	2 1/2		105.00
Jar	9.60	6 3/4	2 1/2		148.91
DC - API N.C. 50	18.60	6 3/4	2 1/2		105.00
Sub - circulation	1.40	6 3/4	2 3/4		100.51
NM Sub - filter	1.20	6 3/4	2 3/4		97.60
PULSER /INTEQ	1.60	6 3/4	2 1/2		150.77
NAVITRAK /INTEQ	9.30	6 3/4	2 3/4		152.16
Stab - string	1.80	6 3/4	2 1/4		100.95
Sub - float	0.60	6 3/4	2 1/2		104.94
PDM - Ultra XL /INT...	9.00	6.791	5.400		87.04
Bit - PDC - fixed c...	0.30	8 1/2			134.39

Flowrate	**l/min**	**1800**	**1700**	**1600**	**1500**	**1400**	**1300**	**1200**	**1100**	**1000**	**900**
Bit Hydraulics											
SPP	**bar**	187.8	172.6	158.0	144.0	130.8	118.1	106.2	92.8	83.3	74.3
Surface HP	**HP**	755.1	655.2	564.5	482.5	408.8	343.0	284.6	228.0	186.0	149.4
Bit DeltaP	**bar**	52.2	46.6	41.3	36.3	31.6	27.2	23.2	19.5	16.1	13.1
%SPP	**%**	28	27	26	25	24	23	22	21	19	18
Jet Velocity	**ft/sec**	300.0	283.3	266.7	250.0	233.3	216.7	200.0	183.3	166.7	150.0
Impact Force	**lbf/in^2**	14.1	12.6	11.2	9.8	8.5	7.4	6.3	5.3	4.4	3.5
HSI	**HP/in^2**	3.76	3.16	2.64	2.17	1.77	1.41	1.11	0.86	0.64	0.47
System Pressure Loss - W/O Cuttings Effect											
Surf Equip	**bar**	2.4	2.2	2.0	1.7	1.5	1.3	1.2	1.0	0.8	0.7
DP,CSG,LNR,TBG	**bar**	23.1	21.1	19.1	17.3	15.5	13.8	12.1	8.4	8.0	7.6
HWDP/CSDP	**bar**	5.5	5.1	4.6	4.1	3.7	3.3	2.9	2.5	2.2	1.8
DC/CT	**bar**	9.0	8.3	7.5	6.8	6.1	5.4	4.7	4.1	3.6	3.0
MWD	**bar**	33.7	30.1	26.6	23.4	20.4	17.6	15.0	12.6	10.4	8.4
Motor (Op ΔP 12.4 bar)		44.5	42.7	40.9	39.1	37.3	35.5	33.8	32.0	30.2	28.4
Additional Tools	**bar**	2.4	2.2	2.0	1.8	1.6	1.4	1.3	1.1	0.9	0.8
Annulus	**bar**	14.9	14.4	14.0	13.5	13.0	12.5	12.0	11.5	11.0	10.5
ECD - CSG Shoe	**kg/l**	1.37	1.37	1.37	1.37	1.36	1.36	1.36	1.36	1.35	1.35
ECD - BH	**kg/l**	1.40	1.40	1.40	1.39	1.39	1.39	1.38	1.38	1.38	1.37

Annular Velocities m/s Flow Regime

Hole ID in	String OD in									
8.921	5	1.08 L	1.02 L	0.96 L	0.90 L	0.84 L	0.78 L	0.72 L	0.66 L	0.60 L	0.54 L
8 1/2	5	1.25 L	1.18 L	1.11 L	1.04 L	0.97 L	0.90 L	0.84 L	0.77 L	0.70 L	0.63 L
8 1/2	6 3/4	2.22 L	2.10 L	1.97 L	1.85 L	1.73 L	1.60 L	1.48 L	1.36 L	1.23 L	1.11 L

Fluid Circulation Times											
Surface to Bit	**hr**	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Bottom Up	**hr**	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7

Comment

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Prepared by Andrea D'Angelo

ADVANTAGE T&D Calculation - Summary Report

Case - Trava NE 1 Dir - 8½" UTR + NTK

Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

Drilling Parameter

Bit Depth	1515	m
Weight on Bit	5	tonne
Torque on Bit	1.0	kft.lb
Bit Drag Force	-	tonne
Overpull Force	-	tonne
ROB Torque Resistance	-	kft.lb

Analysis Setup

Calculate Indicated Hook Loads	No
Include Bending Influence	Yes
Buckling Criterion	Conservative - (Unloading)

Depth Interval m	Inner Fluid Density kg/l	Depth Interval m	Outer Fluid Density kg/l
1515	1.30	1515	1.30

Drill String

Type	OD in	ID in	TJOD in	TJID in	Act.Wt lb/ft	Length m
Drill pipe	5	4.276	6 5/16	2 3/4	23.89	1351.20
HWDP	5	3	6 5/8	3 1/16	50.10	73.60
Drill collar	6 3/4	2 1/2			105.00	36.80
Jar	6 3/4	2 1/2			148.91	9.60
Drill collar	6 3/4	2 1/2			105.00	18.60
Sub - circulation	6 3/4	2 3/4			100.51	1.40
NM Sub - filter	6 3/4	2 3/4			97.60	1.20
UP / UPU	6 3/4	2 1/2			150.77	1.60
MWD - NaviTrak	6 3/4	2 3/4			152.16	9.30
Stab - string	6 3/4	2 1/4			100.95	1.80
Sub - float	6 3/4	2 1/2			104.94	0.60
Motor	6.791	5.400			87.04	9.00
Bit - PDC - fixed cutter	8 1/2				134.39	0.30

Casing / Open Hole

	OD in	ID in	Bottom MD m
Casing	9 5/8	8.921	400.00
Open Hole		8 1/2	1515.00

Tortuosity / Noise

Bottom MD m	Build-Plane Curvature deg/30m	Turn-Plane Curvature deg/30m	Variation
400	0.4	0.8	Random
1515	0.8	1.6	Random

Friction Factor

Bottom MD m	Axial	Torsional
400	0.25 i	
1515	0.35 i	

	Hook Load @ 0.0 MD tonne	Indicated Hook Load tonne	Rotary Torque kft.lb
Drilling	50	50	6.8
Slack-Off	45	45	0.0
Pick-Up	68	68	0.0
Rot off Btm	55	55	6.7

	Axial Velocity m/hr	Rotary Speed RPM
ROP	10.0	60
RIH	300.0	0
POOH	300.0	0

Rotational Discontinuity No

	Drag tonne
Drilling	0
Slack-Off	10
Pick-Up	13

Drill String Twist	1 rev	115 deg
Max Allowable HookLoad (@min. Yield)	323 tonne	
DrillString Weight in Air	69 tonne	
Bit To Neutral Point (Drilling)	38.33 m	
Sin. Buckling WOB	18 tonne	

	Stretch mm
Drilling	575.6
Slack-Off	565.1
Pick-Up	807.0
Rot off Btm	673.7

	Drawwork HP	at Fastline Load tonne	Rotary HP	Mud Pumps HP	Max Flowrate l/min	Max SPP bar
Power	74.6 P	68 P	78.0 D	0.0	0	200.0

ADVANTAGE T&D Calculation - Summary Report

Case - Trava NE 1 Dir - 8½" UTR + NTK

Operator	Aleanna Resources LLC	**Facility**	Trava NE 1 dir
Well	Trava NE 1 dir	**Field**	Corte dei Signori

	O.Mode	Stress psi	at MD m		O.Mode	Safety Factor	at MD m
Max Axial	P	28375.3	0.00	**Min Yield Safety Factor**	P	4.50	247.70
Max Torsional	D	7186.6	0.00	**Min Fatigue Safety Factor**	D	2.57	467.70
Max Bending	P	8096.5	467.70				
Max Combined	P	29998.2	247.70				

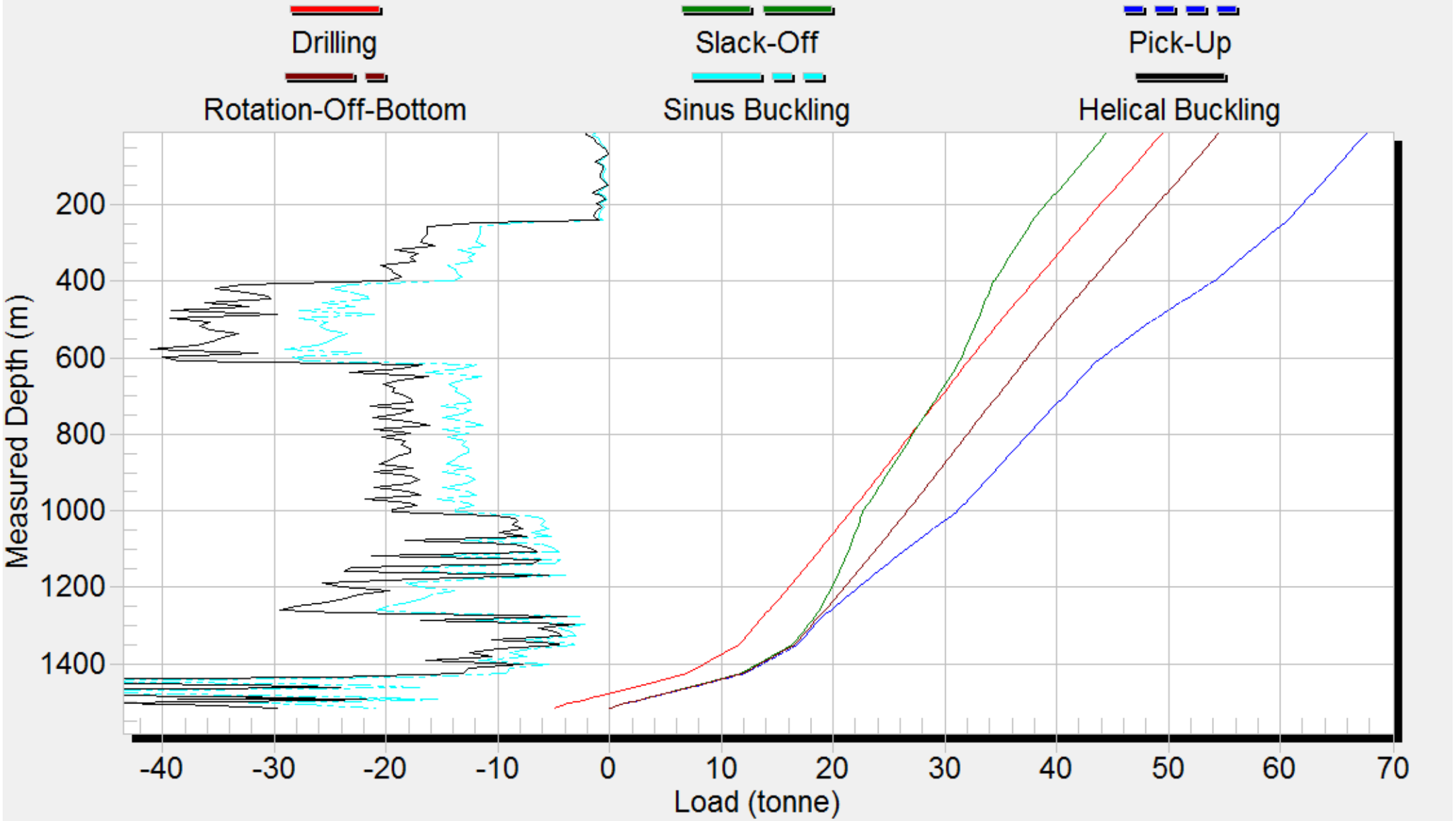
D Drilling	S Slack-Off	P Pick-Up	R Rot off Btm		i input	c calculated

Comment

Date 17/Apr/2018 16:08:20
Prepared by Andrea D'Angelo

Calculated Loads along String vs. Measured Depth

Case - Trava NE 1 dir - 8½" UTR + NTK



Min. Yield Saf. Fact.: 4.50 (P)
Drilling HKLD: 49.8 tonne
Pick-Up HKLD: 68.1 tonne

Sin. Buckling WOB: 18.4 tonne

Min. Fatigue Saf. Fact.: 2.57 (D)
Slack-Off HKLD: 44.8 tonne
ROB HKLD: 54.9 tonne