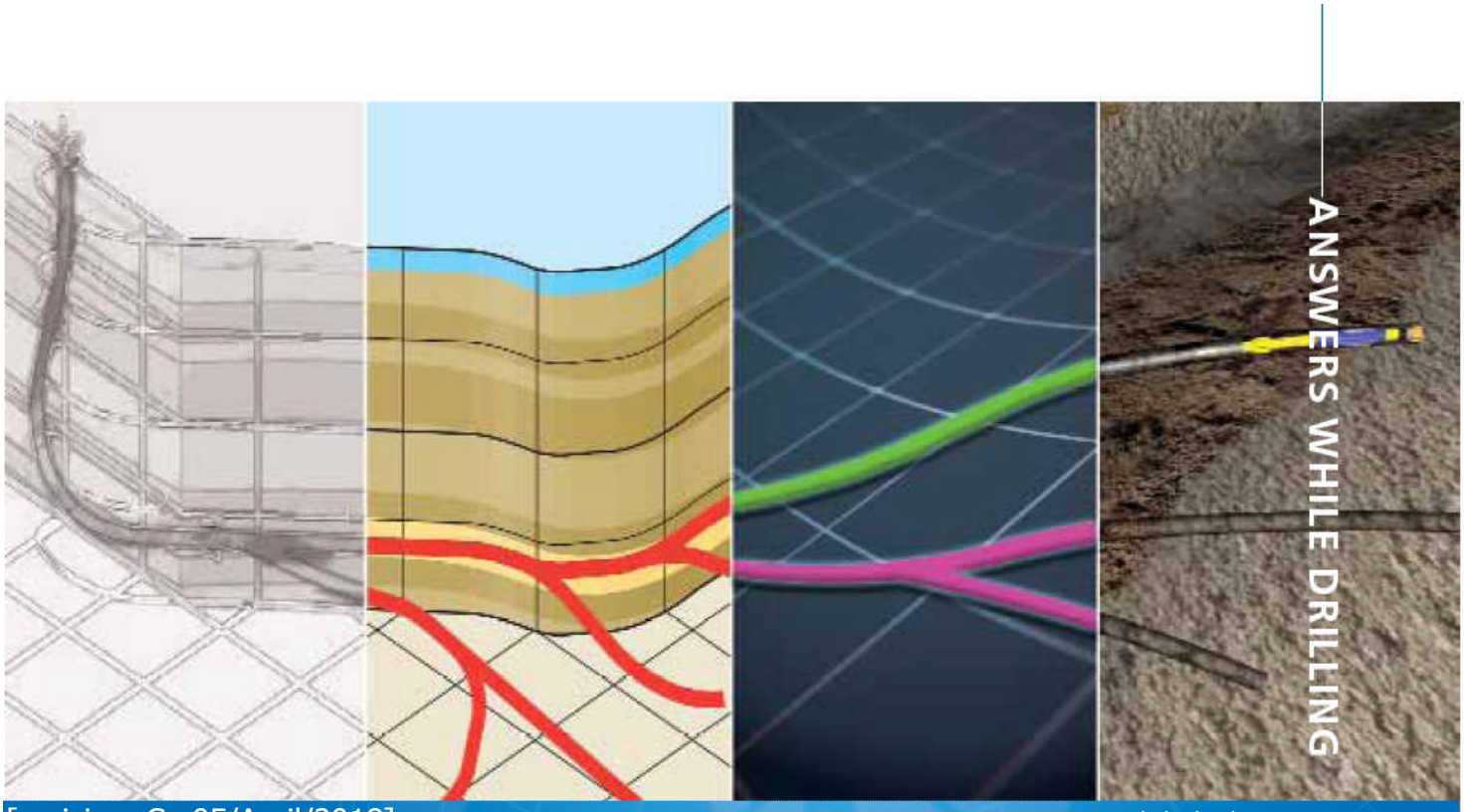
AleAnna Resources

Trava 3 dir well

DRILLING PROGRAM

BAKER HUGHES a GE company



[revision C –05/April/2018]

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Summary

Introduction

Trava 3 dir 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 7.5° INC will be performed during this phase, kicking off from 250m 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 = 12.8° and 2.00°/30m DLS.

TD of the well (at 1112.36mMD = 1103.40mTVDRT) will be reached after having intercepted the planned geological target, named "PL2G", at 994.70mTVDRT. The plan is to come back to vertical (0.0° inclination) 105mTVD before reaching the target depth.

The planned wellbore will have a constant direction = 357.7° Azi.

For the 12 ¼" section, an 8" NaviDrill Ultra XL Motor in combination with 6 ¾" NaviTrak MWD tool will be used. For anti-collision issue some single shot acquisitions will be necessary for overcoming magnetic interference with MWD tool, so an UBHO has been included in the BHA.

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

Planned Wellpath Report

Planned Wellpath Report

Trava 3dir (PWP A.2 AD 28-Mar-18)

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

REPORT SETUP INFORMATION			
Projection System	**WGS84 / UTM Zone 32 North**	Software System	**WellArchitect® 5.1**
North Reference	**Grid**	User	**Dangand**
Scale	**1.000304**	Report Generated	**30/Mar/2018** at **17:06**
Convergence at slot	**2.12° East**	Database/Source file	**WA_PES_Defn/Trava_3dir__PWP_A.2_AD_28-Mar-18_.xml**

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[m]	**East[m]**	**Easting[m]**	**Northing[m]**	**Latitude**	**Longitude**
Slot Location	**0.00**	**-5.00**	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E
Facility Reference Pt			**739244.30**	**4952461.94**	44°41'08.221"N	12°01'08.489"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	**4.70m**
Vertical Reference Pt	**HH 200 (RT)**	HH 200 (RT) to Mud Line at Slot (Slot 2)	**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	**357.72°**

Planned Wellpath Report

Trava 3dir (PWP A.2 AD 28-Mar-18)

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

WELLPATH DATA (45 stations) † = 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 [°]	Comments
0.00†	0.000	357.724	0.00	-4.70	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
7.70	0.000	357.724	7.70	3.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	Tie On
37.70†	0.000	357.724	37.70	33.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
67.70†	0.000	357.724	67.70	63.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
97.70†	0.000	357.724	97.70	93.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
127.70†	0.000	357.724	127.70	123.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
157.70†	0.000	357.724	157.70	153.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
187.70†	0.000	357.724	187.70	183.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
217.70†	0.000	357.724	217.70	213.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
247.70†	0.000	357.724	247.70	243.00	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	0.00	
250.00	0.000	357.724	250.00	245.30	0.00	0.00	0.00	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E	0.00	-2.28	End of Tangent
277.70†	1.385	357.724	277.70	273.00	0.33	0.33	-0.01	739239.29	4952462.27	44°41'08.238"N	12°01'08.262"E	1.50	0.00	
307.70†	2.885	357.724	307.68	302.98	1.45	1.45	-0.06	739239.24	4952463.39	44°41'08.275"N	12°01'08.262"E	1.50	0.00	
337.70†	4.385	357.724	337.61	332.91	3.35	3.35	-0.13	739239.17	4952465.29	44°41'08.336"N	12°01'08.262"E	1.50	0.00	
367.70†	5.885	357.724	367.49	362.79	6.04	6.03	-0.24	739239.06	4952467.98	44°41'08.423"N	12°01'08.261"E	1.50	0.00	
397.70†	7.385	357.724	397.29	392.59	9.51	9.50	-0.38	739238.92	4952471.44	44°41'08.535"N	12°01'08.261"E	1.50	0.00	
400.00	7.500	357.724	399.57	394.87	9.80	9.80	-0.39	739238.91	4952471.74	44°41'08.545"N	12°01'08.261"E	1.50	0.00	End of Build
427.70†	9.347	357.724	426.97	422.27	13.86	13.85	-0.55	739238.75	4952475.79	44°41'08.677"N	12°01'08.260"E	2.00	0.00	
457.70†	11.347	357.724	456.48	451.78	19.25	19.23	-0.76	739238.53	4952481.18	44°41'08.851"N	12°01'08.260"E	2.00	0.00	
479.94	12.829	357.724	478.23	473.53	23.91	23.89	-0.95	739238.35	4952485.83	44°41'09.002"N	12°01'08.259"E	2.00	0.00	End of Build (S)
487.70†	12.829	357.724	485.80	481.10	25.63	25.61	-1.02	739238.28	4952487.56	44°41'09.058"N	12°01'08.259"E	0.00	0.00	
517.70†	12.829	357.724	515.05	510.35	32.29	32.26	-1.28	739238.02	4952494.21	44°41'09.274"N	12°01'08.258"E	0.00	0.00	
547.70†	12.829	357.724	544.30	539.60	38.95	38.92	-1.55	739237.75	4952500.87	44°41'09.489"N	12°01'08.257"E	0.00	0.00	
577.70†	12.829	357.724	573.55	568.85	45.61	45.58	-1.81	739237.49	4952507.53	44°41'09.705"N	12°01'08.257"E	0.00	0.00	
607.70†	12.829	357.724	602.80	598.10	52.27	52.23	-2.08	739237.22	4952514.19	44°41'09.921"N	12°01'08.256"E	0.00	0.00	
637.70†	12.829	357.724	632.05	627.35	58.94	58.89	-2.34	739236.96	4952520.85	44°41'10.137"N	12°01'08.255"E	0.00	0.00	
667.70†	12.829	357.724	661.30	656.60	65.60	65.55	-2.61	739236.69	4952527.51	44°41'10.353"N	12°01'08.254"E	0.00	0.00	
697.70†	12.829	357.724	690.55	685.85	72.26	72.20	-2.87	739236.43	4952534.16	44°41'10.568"N	12°01'08.253"E	0.00	0.00	
706.23	12.829	357.724	698.87	694.17	74.15	74.09	-2.95	739236.35	4952536.06	44°41'10.630"N	12°01'08.253"E	0.00	180.00	End of Tangent (S)
727.70†	11.398	357.724	719.86	715.16	78.66	78.60	-3.12	739236.17	4952540.56	44°41'10.776"N	12°01'08.253"E	2.00	180.00	
757.70†	9.398	357.724	749.37	744.67	84.07	84.01	-3.34	739235.96	4952545.97	44°41'10.951"N	12°01'08.252"E	2.00	180.00	

WELLPATH DATA (45 stations) † = 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 [°]	Comments
787.70†	7.398	357.724	779.04	774.34	88.45	88.38	-3.51	739235.78	4952550.35	44°41'11.093"N	12°01'08.251"E	2.00	180.00	
817.70†	5.398	357.724	808.86	804.16	91.80	91.72	-3.65	739235.65	4952553.69	44°41'11.201"N	12°01'08.251"E	2.00	180.00	
847.70†	3.398	357.724	838.77	834.07	94.10	94.02	-3.74	739235.56	4952555.99	44°41'11.276"N	12°01'08.251"E	2.00	180.00	
877.70†	1.398	357.724	868.74	864.04	95.35	95.28	-3.79	739235.51	4952557.24	44°41'11.316"N	12°01'08.251"E	2.00	180.00	
898.66	0.000	357.724	889.70[2]	885.00	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	2.00	0.00	End of Drop (S)
907.70†	0.000	357.724	898.74	894.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
937.70†	0.000	357.724	928.74	924.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
967.70†	0.000	357.724	958.74	954.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
997.70†	0.000	357.724	988.74	984.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
1003.66	0.000	357.724	994.70[2]	990.00	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	End of Tangent
1027.70†	0.000	357.724	1018.74	1014.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
1057.70†	0.000	357.724	1048.74	1044.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
1087.70†	0.000	357.724	1078.74	1074.04	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00	0.00	
1112.36	0.000	357.724	1103.40	1098.70	95.61	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"E	0.00		End of Tangent

Planned Wellpath Report

Trava 3dir (PWP A.2 AD 28-Mar-18)

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

HOLE & CASING SECTIONS - Ref Wellbore: Trava 3dir Ref Wellpath: Trava 3dir (PWP A.2 AD 28-Mar-18)

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]
12.25in Open Hole	50.00	400.43	350.43	50.00	400.00	0.00	0.00	9.85	-0.39
9.625in Casing	7.70	400.43	392.73	7.70	400.00	0.00	0.00	9.85	-0.39
8.5in Open Hole	400.43	1112.36	711.93	400.00	1103.40	9.85	-0.39	95.53	-3.80
7in Casing	7.70	1112.36	1104.66	7.70	1103.40	0.00	0.00	95.53	-3.80

TARGETS

Name	MD [m]	TVD [m]	North [m]	East [m]	Grid East [m]	Grid North [m]	Latitude	Longitude	Shape
2) PL2G revB	1003.66	994.70	95.53	-3.80	**739235.50**	**4952557.50**	44°41'11.325"N	12°01'08.251"E	point

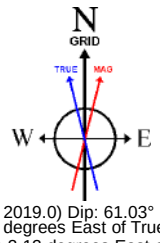
SURVEY PROGRAM - Ref Wellbore: Trava 3dir Ref Wellpath: Trava 3dir (PWP A.2 AD 28-Mar-18)

Start MD [m]	End MD [m]	Positional Uncertainty Model	Log Name/Comment	Wellbore
7.70	400.00	Gyrodata standard - Single-shot		Trava 3dir
400.00	1112.36	BHI NaviTrak (SAG, Axial)		Trava 3dir

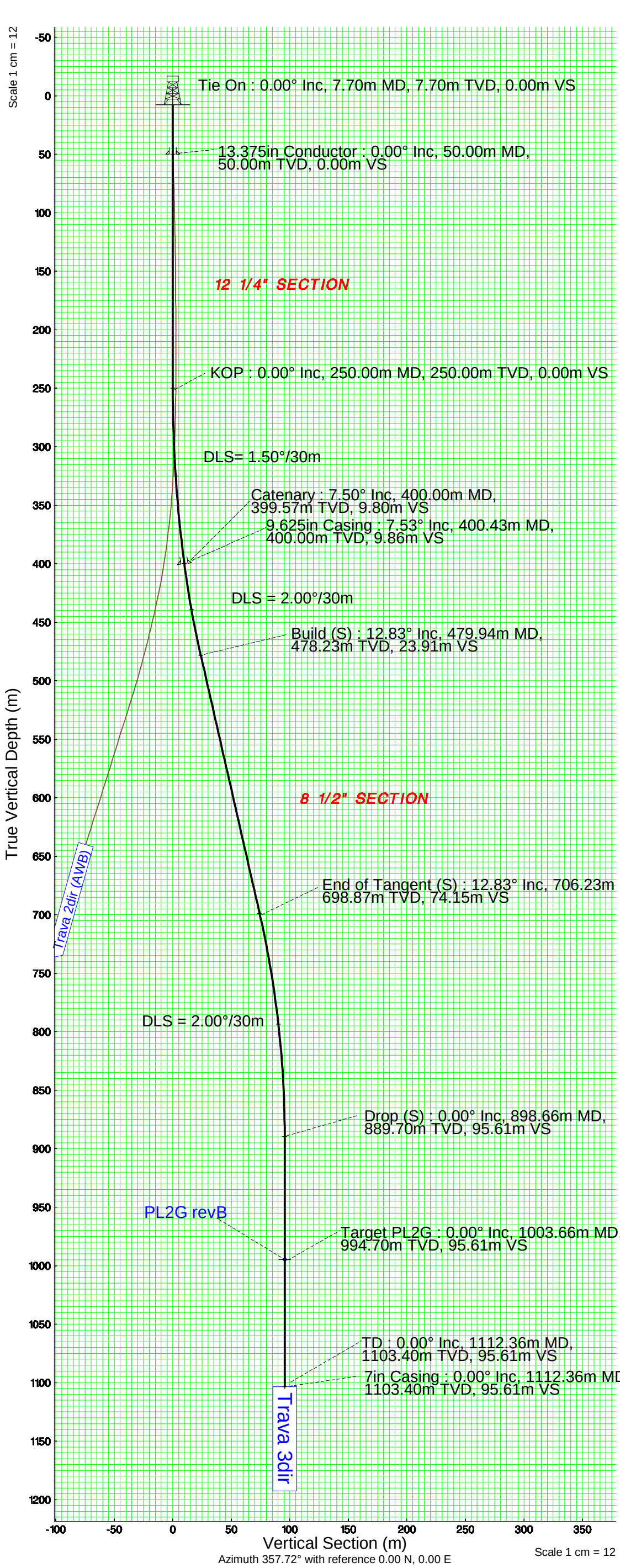
WellPlot

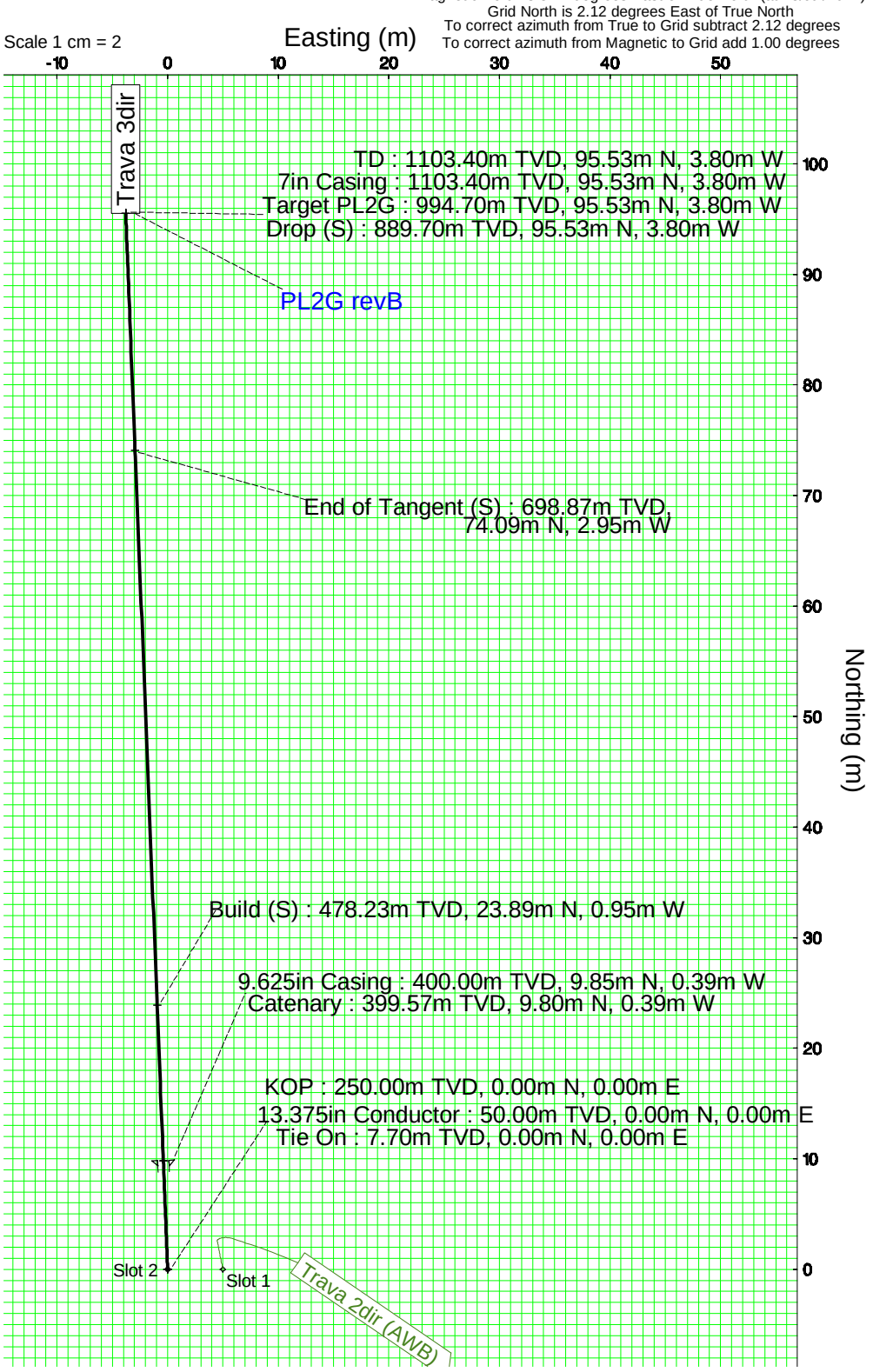
Aleanna Resources LLC

Location:	Italy	Slot:	Slot 2
Field:	Corte dei Signori	Well:	Trava 3dir
Facility:	Trava Cluster (2dir-3dir)	Wellbore:	Trava 3dir



BGGM (1900.0 to 2019.0) Dip: 61.03° Field: 47354.5 nT
Magnetic North is 3.12 degrees East of True North (at 13/Jul/2017)
Grid North is 2.12 degrees East of True North
To correct azimuth from True to Grid subtract 2.12 degrees
To correct azimuth from Magnetic to Grid add 1.00 degrees





Plot reference wellpath is Trava 3dir (PWP A.2 AD 28-Mar-18)	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: 4.7 meters	Depths are in meters
Mean Sea Level to Mud line (At Slot: Slot 2): 3 meters	Created by: dangand on 2018-03-28
Coordinates are in meters referenced to Slot	Database: WA_PES_Defn

Location Information

Facility Name			Grid East (m)	Grid North (m)	Latitude	Longitude
Trava Cluster (2dir-3dir)			739244.300	4952461.940	44°41'08.221"N	12°01'08.489"E
Slot	Local N (m)	Local E (m)	Grid East (m)	Grid North (m)	Latitude	Longitude
Slot 2	0.00	-5.00	739239.298	4952461.940	44°41'08.227"N	12°01'08.262"E

HH 200 (RT) to Mud line (At Slot: Slot 2)	7.7m
Mean Sea Level to Mud line (At Slot: Slot 2)	3m
HH 200 (RT) to Mean Sea Level	4.7m

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	357.724	7.70	0.00	0.00	0.00	0.00
KOP	250.00	0.000	357.724	250.00	0.00	0.00	0.00	0.00
Catenary	400.00	7.500	357.724	399.57	9.80	-0.39	1.50	9.80
Build (S)	479.94	12.829	357.724	478.23	23.89	-0.95	2.00	23.91
End of Tangent (S)	706.23	12.829	357.724	698.87	74.09	-2.95	0.00	74.15
Drop (S)	898.66	0.000	357.724	889.70	95.53	-3.80	2.00	95.61
Target PL2G	1003.66	0.000	357.724	994.70	95.53	-3.80	0.00	95.61
TD	1112.36	0.000	357.724	1103.40	95.53	-3.80	0.00	95.61

Targets

Name	MD (m)	TVD (m)	Local N (m)	Local E (m)	Grid East (m)	Grid North (m)	Latitude	Longitude
PL2G revB	1003.66	994.70	95.53	-3.80	739235.50	4952557.50	44°41'11.325"N	12°01'08.251"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 Conduc.	7.70	50.00	42.30	7.70	50.00	0.00	0.00	0.00	0.00	Trava 3dir
12.25in Open Hole	50.00	400.43	350.43	50.00	400.00	0.00	0.00	9.85	-0.39	Trava 3dir
9.625in Casing	7.70	400.43	392.73	7.70	400.00	0.00	0.00	9.85	-0.39	Trava 3dir
8.5in Open Hole	400.43	1112.36	711.93	400.00	1103.40	9.85	-0.39	95.53	-3.80	Trava 3dir
7in Casing	7.70	1112.36	1104.66	7.70	1103.40	0.00	0.00	95.53	-3.80	Trava 3dir

Survey Program

Start MD (m)	End MD (m)	Tool	Model	Log Name/Comment	Wellbore
7.70	400.00	Gyrodata standard - Single-shot	Gyrodata standard - Single-shot		Trava 3dir
400.00	1112.36	BHI NaviTrak	BHI NaviTrak (SAG, Axial)		Trava 3dir

Approval

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

Anti-Collision Report

An Anti-Collision analysis has been performed according to the "Baker Hughes GE Stop Drilling (offset is HSE risk)" rule.

As already stated, the 12 ¼" hole section survey program includes gyro survey acquisitions to overcome magnetic interference issues. In fact the Trava 2 dir surface casing will be maximum 5 meters distant from the planned well trajectory.

The AC analysis results, presented in the next pages, show as the Separation Ratio is always above the limit value (=1.00) along the whole well trajectory.

Clearance Report

Trava 3dir (PWP A.2 AD 28-Mar-18)
Closest Approach

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

REPORT SETUP INFORMATION			
Projection System	**WGS84 / UTM Zone 32 North**	Software System	**WellArchitect® 5.1**
North Reference	**Grid**	User	**Dangand**
Scale	**1.000304**	Report Generated	**30/Mar/2018** at **17:02**
Convergence at slot	**2.12° East**	Database/Source file	**WA_PES_Defn/Trava_3dir__PWP_A.2_AD_28-Mar-18__CR.xml**

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[m]	East[m]	Easting[m]	Northing[m]	Latitude	Longitude
Slot Location	**0.00**	**-5.00**	739239.30	4952461.94	44°41'08.227"N	12°01'08.262"E
Facility Reference Pt			**739244.30**	**4952461.94**	44°41'08.221"N	12°01'08.489"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	**4.70m**
Vertical Reference Pt	**HH 200 (RT)**	HH 200 (RT) to Mud Line at Slot (Slot 2)	**7.70m**
MD Reference Pt	**HH 200 (RT)**		
Field Vertical Reference	**Mean Sea Level**		

POSITIONAL UNCERTAINTY CALCULATION SETTINGS					
Ellipse Confidence Limit	**3.00 Std Dev**	Ellipse Start MD	**7.70m**	Surface Position Uncertainty	**included**
Declination	**3.21° East of TN**	Dip Angle	**61.04°**	Mag Field Strength	**47383 nT**
Slot Surface Uncertainty @1SD		Horizontal	**0.100m**	Vertical	**0.050m**
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					

ANTI-COLLISION RULE			
Rule Name	**Baker Hughes Stop Drilling (offset is HSE risk)**	Rule Based On	**Ratio**
Plane of Rule	**Closest Approach**	Threshold Value	**1.00**
Include Casing & Hole Size	**yes**	Apply Cone of Safety	**no**

HOLE & CASING SECTIONS - Ref Wellbore: Trava 3dir Ref Wellpath: Trava 3dir (PWP A.2 AD 28-Mar-18)

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]
12.25in Open Hole	50.00	400.43	350.43	50.00	400.00	0.00	0.00	9.85	-0.39
9.625in Casing	7.70	400.43	392.73	7.70	400.00	0.00	0.00	9.85	-0.39
8.5in Open Hole	400.43	1112.36	711.93	400.00	1103.40	9.85	-0.39	95.53	-3.80
7in Casing	7.70	1112.36	1104.66	7.70	1103.40	0.00	0.00	95.53	-3.80

Clearance Report

Trava 3dir (PWP A.2 AD 28-Mar-18)
Closest Approach

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

SURVEY PROGRAM - Ref Wellbore: Trava 3dir Ref Wellpath: Trava 3dir (PWP A.2 AD 28-Mar-18)

Start MD [m]	End MD [m]	Positional Uncertainty Model	Log Name/Comment	Wellbore
7.70	400.00	Gyrodata standard - Single-shot		Trava 3dir
400.00	1112.36	BHI NaviTrak (SAG, Axial)		Trava 3dir

CALCULATION RANGE & CUTOFF

From: **7.70m MD**	To: **1112.36m MD**	C-C Cutoff: **(none)**

OFFSET WELL CLEARANCE SUMMARY (1 Offset Wellpath selected) Ratios are calculated in Closest Approach plane

					C-C Clearance Distance			ACR Separation Ratio			
Offset Facility	Offset Slot	Offset Well	Offset Wellbore	Offset Wellpath	Ref MD [m]	Min C-C Clear Dist [m]	Diverging from MD [m]	Ref MD of Min Ratio [m]	Min Ratio	Min Ratio Dvrg from [m]	ACR Status
Trava Cluster (2dir-3dir)	Slot 1	Trava 2dir	Trava 2dir (AWP)	Trava 2dir (AWP)	67.70	4.89	71.80	217.70	3.21	1112.36	PASS

Clearance Report

Trava 3dir (PWP A.2 AD 28-Mar-18)

Closest Approach

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

CLEARANCE DATA - Offset Wellbore: **Trava 2dir (AWP)** Offset Wellpath: **Trava 2dir (AWP)**

Facility: Trava Cluster (2dir-3dir) **Slot: Slot 1** **Well: Trava 2dir** **Threshold Value=1.00** † = interpolated/extrapolated station

Ref MD [m]	Ref TVD [m]	Ref North [m]	Ref East [m]	Offset MD [m]	Offset TVD [m]	Offset North [m]	Offset East [m]	Horiz Bearing [°]	C-C Clear Dist [m]	ACR MASD [m]	Sep Ratio	ACR Status
7.70	7.70	0.00	0.00	5.00	7.70	0.00	5.00	90.00	5.00	1.19	5.23	PASS
37.70†	37.70	0.00	0.00	35.01	37.71	0.22	4.95	87.46	4.96	1.24	4.95	PASS
67.70†	67.70	0.00	0.00	65.01	67.70	0.87	4.82	79.80	4.89	1.28	4.59	PASS
71.80†	71.80	0.00	0.00	69.11	71.80	0.97	4.79	78.53	4.89	1.30	4.53	PASS
97.70†	97.70	0.00	0.00	95.00	97.68	1.62	4.66	70.81	4.94	1.39	4.19	PASS
127.70†	127.70	0.00	0.00	125.00	127.68	2.22	4.57	64.12	5.08	1.52	3.86	PASS
157.70†	157.70	0.00	0.00	155.01	157.68	2.53	4.49	60.57	5.16	1.66	3.52	PASS
187.70†	187.70	0.00	0.00	184.98	187.66	2.71	4.56	59.25	5.31	1.79	3.33	PASS
217.70†	217.70	0.00	0.00	214.94	217.61	2.84	4.89	59.89	5.66	1.95	3.21	PASS
247.70†	247.70	0.00	0.00	244.86	247.52	2.84	5.59	63.09	6.27	2.10	3.29	PASS
250.00	250.00	0.00	0.00	247.15	249.81	2.82	5.67	63.59	6.34	2.11	3.30	PASS
277.70†	277.70	0.33	-0.01	274.67	277.29	2.37	7.09	73.99	7.40	2.25	3.60	PASS
307.70†	307.68	1.45	-0.06	304.26	306.77	1.56	9.39	89.32	9.49	2.44	4.27	PASS
337.70†	337.61	3.35	-0.13	333.43	335.72	0.16	12.70	103.99	13.36	2.59	5.62	PASS
367.70†	367.49	6.03	-0.24	362.07	363.96	-2.19	16.82	115.74	19.27	2.78	7.54	PASS
397.70†	397.29	9.50	-0.38	390.12	391.44	-5.48	21.43	124.48	27.09	2.83	10.44	PASS
400.00	399.57	9.80	-0.39	392.25	393.51	-5.76	21.79	125.04	27.76	2.94	10.28	PASS
427.70†	426.97	13.85	-0.55	416.85	417.42	-9.46	26.25	131.02	36.78	3.15	12.45	PASS
457.70†	456.48	19.23	-0.76	442.21	441.73	-14.41	31.52	136.18	48.91	3.46	14.99	PASS
479.94	478.23	23.89	-0.95	461.02	459.61	-18.51	35.64	139.21	59.02	3.73	16.73	PASS
487.70†	485.80	25.61	-1.02	467.43	465.69	-19.96	37.08	140.11	62.71	3.79	17.50	PASS
517.70†	515.05	32.26	-1.28	491.78	488.65	-25.70	42.79	142.76	77.45	3.98	20.54	PASS
547.70†	544.30	38.92	-1.55	514.29	509.66	-31.54	48.38	144.68	93.04	4.18	23.44	PASS
577.70†	573.55	45.58	-1.81	538.68	532.22	-38.39	54.66	146.08	109.31	4.41	25.99	PASS
607.70†	602.80	52.23	-2.08	564.23	555.84	-45.53	61.27	147.06	125.61	4.64	28.33	PASS
637.70†	632.05	58.89	-2.34	589.12	578.89	-52.47	67.60	147.87	141.84	4.86	30.50	PASS
667.70†	661.30	65.55	-2.61	613.55	601.45	-59.41	73.91	148.52	158.27	5.08	32.47	PASS
697.70†	690.55	72.20	-2.87	640.07	625.97	-66.83	80.73	148.98	174.62	5.34	34.07	PASS
706.23	698.87	74.09	-2.95	647.63	632.98	-68.91	82.67	149.09	179.22	5.41	34.46	PASS

CLEARANCE DATA - Offset Wellbore: **Trava 2dir (AWP)** Offset Wellpath: **Trava 2dir (AWP)**

Facility: Trava Cluster (2dir-3dir) Slot: Slot 1 Well: Trava 2dir Threshold Value=1.00 † = interpolated/extrapolated station

Ref MD [m]	Ref TVD [m]	Ref North [m]	Ref East [m]	Offset MD [m]	Offset TVD [m]	Offset North [m]	Offset East [m]	Horiz Bearing [°]	C-C Clear Dist [m]	ACR MASD [m]	Sep Ratio	ACR Status
727.70†	719.86	78.60	-3.12	667.09	651.03	-74.17	87.66	149.28	190.57	5.60	35.37	PASS
757.70†	749.37	84.01	-3.34	696.35	678.31	-81.71	95.10	149.29	205.43	5.90	36.11	PASS
787.70†	779.04	88.38	-3.51	722.29	702.53	-88.23	101.69	149.22	219.35	6.18	36.73	PASS
817.70†	808.86	91.72	-3.65	752.40	730.71	-95.64	109.33	148.91	232.32	6.50	36.96	PASS
847.70†	838.77	94.02	-3.74	784.54	760.95	-103.06	117.30	148.44	244.02	6.83	36.88	PASS
877.70†	868.74	95.28	-3.79	819.70	794.25	-110.54	125.70	147.83	254.31	7.18	36.47	PASS
898.66	889.70	95.53	-3.80	847.66	821.04	-115.91	131.63	147.36	260.31	7.46	35.92	PASS
907.70†	898.74	95.53	-3.80	858.30	831.30	-117.89	133.68	147.21	262.67	7.56	35.75	PASS
937.70†	928.74	95.53	-3.80	903.22	874.93	-125.57	141.02	146.78	269.73	7.96	34.81	PASS
967.70†	958.74	95.53	-3.80	971.52	942.60	-131.45	147.50	146.31	273.26	8.59	32.62	PASS
997.70†	988.74	95.53	-3.80	1006.40	977.44	-132.82	148.28	146.34	274.59	8.91	31.56	PASS
1003.66	994.70	95.53	-3.80	1012.45	983.49	-133.05	148.39	146.34	274.84	8.96	31.40	PASS
1027.70†	1018.74	95.53	-3.80	1038.42	1009.44	-133.93	148.82	146.37	275.74	9.17	30.77	PASS
1057.70†	1048.74	95.53	-3.80	1069.38	1040.38	-134.81	149.26	146.40	276.68	9.43	30.02	PASS
1087.70†	1078.74	95.53	-3.80	1099.62	1070.61	-135.61	149.67	146.42	277.57	9.69	29.28	PASS
1112.36	1103.40	95.53	-3.80	1103.20	1074.19	-135.70	149.72	146.42	279.09	9.82	28.99	PASS

Clearance Report

Trava 3dir (PWP A.2 AD 28-Mar-18)
Closest Approach

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Aleanna Resources LLC**	Slot	**Slot 2**
Area	**Italy**	Well	**Trava 3dir**
Field	**Corte dei Signori**	Wellbore	**Trava 3dir**
Facility	**Trava Cluster (2dir-3dir)**		

POSITIONAL UNCERTAINTY - Offset Wellbore: Trava 2dir (AWP) Offset Wellpath: Trava 2dir (AWP)				
Slot Surface Uncertainty @1SD	Horizontal	**0.200m**	Vertical	**0.050m**
Facility Surface Uncertainty @1SD	Horizontal	**0.500m**	Vertical	**0.200m**

HOLE & CASING SECTIONS - Offset Wellbore: **Trava 2dir (AWP)** Offset Wellpath: **Trava 2dir (AWP)**

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	5.00	55.00	50.00	5.00	54.99	0.00	10.00	0.61	9.87
12.25in Open Hole	55.00	312.00	257.00	55.00	311.77	0.61	9.87	1.27	15.17
9.625in Casing	5.00	309.35	304.35	5.00	309.14	0.00	10.00	1.37	14.90
8.5in Open Hole	312.00	1103.00	791.00	311.77	1071.29	1.27	15.17	-135.70	154.72

WELLPATH COMPOSITION - Offset Wellbore: **Trava 2dir (AWP)** Offset Wellpath: **Trava 2dir (AWP)**

Start MD [m]	End MD [m]	Positional Uncertainty Model	Log Name/Comment	Wellbore
5.00	288.90	BHI NaviTrak (SAG, Axial)	8" Ultra Motor + 6-3/4" NaviTrak in 12-1/4" HS (58.60m - 312.00m)	Trava 2dir (AWP)
288.90	1085.50	BHI NaviTrak (SAG, Axial)	6-3/4" Ultra Maotor + NaviTrak in 8-1/2" HS (314.70m - 1085.50m)	Trava 2dir (AWP)
1085.50	1103.20	Blind Drilling (std)	Projection to bit	Trava 2dir (AWP)

OFFSET WELLPATH REFERENCE - Offset Wellbore: Trava 2dir (AWP) Offset Wellpath: Trava 2dir (AWP)	
MD Reference: **Perazzoli CORSAIR (RKB)**	*Offset TVD & local coordinates use Reference Wellpath settings (See WELLPATH DATUM on page 1 of this report)*
Ellipse Start MD	**5.00m**

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 250m, then the plan is to build inclination up 7.5° 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. An UBHO sub will allow to acquire single shot gyro surveys until the magnetic interference issue will disappear.

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 90bar 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 1.0 tons.

Sinusoidal buckling limit is equal to 19.2 tons.

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

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

BHA Proposal – Trava 3 dir– 12 ¼" Steerable Motor BHA + MWD NaviTrak			
Operator	Aleanna Resources	Field	Corte dei Signori
Well	**Trava 3 dir**	Depth IN: 50m MD	Depth OUT: 350m 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	222.70	400.00
	14	HWDP x 8		5	3	(BP) 4 ½ IF – 4 ½ IF	73.60	177.30
	13	Drill Collar x 4		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	36.80	103.70
	12	Jar		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	9.60	66.90
	11	Drill Collar x 3		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	27.90	57.30
	10	String Stab	8 3/8	6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	1.80	29.40
	9	UBHO		6 ¾	2 ½	(BP) 4 ½ IF – 4 ½ IF	1.00	27.60
	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	RC Bit	12 ¼	12 ¼		6 5/8 Reg	0.40	0.40

15 BHA components.

ADVANTAGE DesignFrame

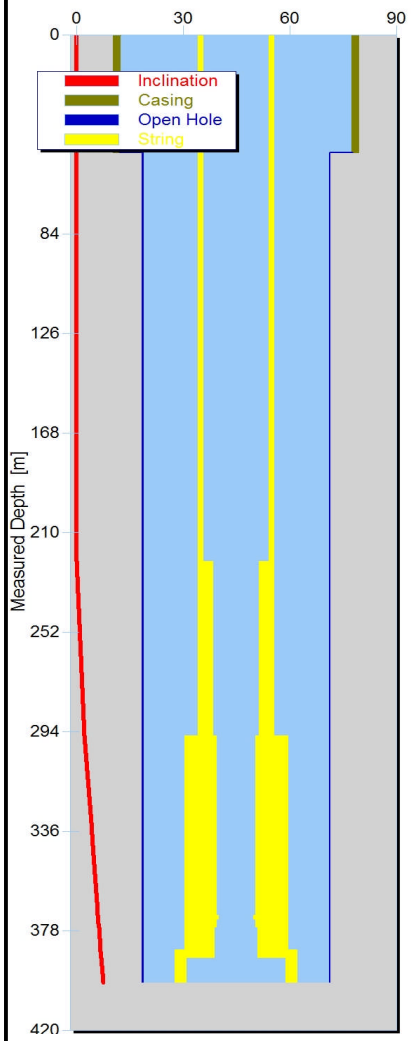
BAKER HUGHES a GE company

Case - Trava 3 Dir - 12 ¼" Ultra XL+NTK

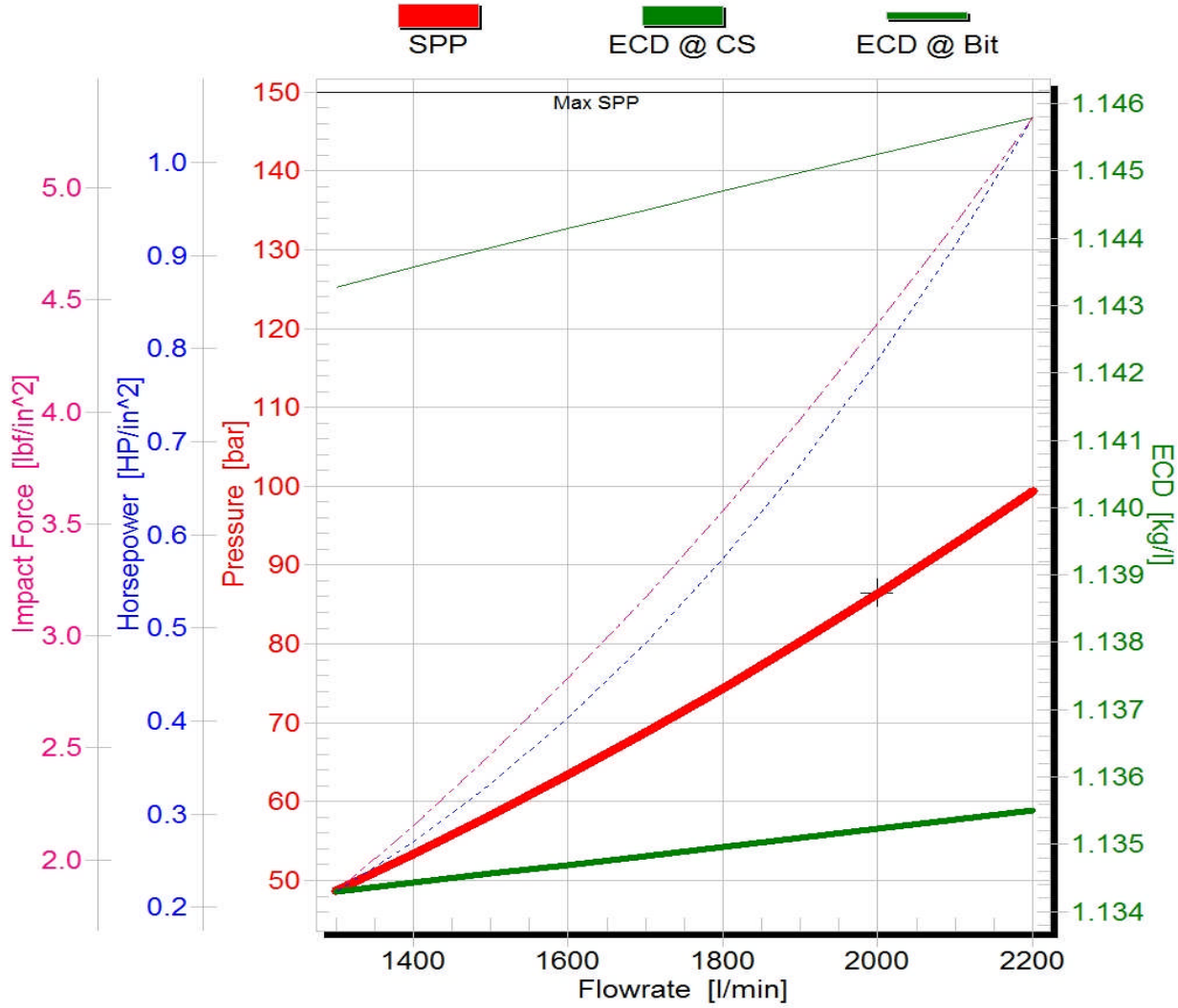
Operator	Aleanna Resources LLC	**Facility**	Trava 2dir-3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

Hole Size	12 1/4 in	**Bit Depth (MD)**	400.00 m	**Bit Depth (TVD)**	399.57 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
$ESD_{w/o\ Cuttings}$ initial	1.12	1.12

Circulation Data

Flowrate	2000	**l/min**
ROP	10.0	**m/hr**
RPM	50	**RPM**
Bit TFA	0.8376	**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	20.5	**bar**
Annulus	1.0	**bar**
Surface Equip	2.2	**bar**
SPP	86.4	**bar**

Comment

Date 28/Mar/2018 18:58:12
Prepared by Andrea D'Angelo

ADVANTAGE Hydraulics Spreadsheet Report

Case - Trava 3 Dir - 12 ¼" Ultra XL+NTK

Operator	Aleanna Resources LLC	**Facility**	Trava 2dir-3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

General

Max Allw.SPP	150.0 **bar**		
Surface Equip.	Type 4		
Bit Depth	400.00	**Bit TVD**	399.57 **m**
Bit Nozzles in/32	18\ 3x16	**TFA**	0.8376 **in^2**

Drilling Fluid

Mud System	Water Based
Mud Weight	1.12 **kg/l**
PV \ YP	10.00 **cP** \ 12.00 **g/100cm^2**
Gel Strength, 10s\10min	8.00 \ 10.00 **g/100cm^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	16	15.010	50.00
Openhole		12 1/4	400.00

Volumes bbl

Annulus Volume	163.040	**Hole Volume**	203.290
String Displacement	22.310	**String Volume**	17.940

Drill String

Type	Length m	OD in	ID in	TJ in \ in	Weight lb/ft
DP - NC50 (IF) /S-1...	222.30	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	1.40	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**	99.4	92.7	86.4	80.3	74.4	68.8	63.4	58.3	53.4	48.8
Surface HP	**HP**	488.2	435.0	385.8	340.5	299.0	261.1	226.5	195.2	166.9	141.6
Bit DeltaP	**bar**	24.8	22.6	20.5	18.5	16.6	14.8	13.1	11.5	10.0	8.7
%SPP	**%**	25	24	24	23	22	22	21	20	19	18
Jet Velocity	**ft/sec**	222.6	212.5	202.4	192.3	182.1	172.0	161.9	151.8	141.7	131.6
Impact Force	**lbf/in^2**	5.3	4.8	4.4	4.0	3.6	3.2	2.8	2.5	2.2	1.9
HSI	**HP/in^2**	1.05	0.91	0.79	0.68	0.57	0.48	0.40	0.33	0.27	0.22
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	2.6	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**	2.3	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1
Annulus	**bar**	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
ECD - CSG Shoe	**kg/l**	1.14	1.14	1.14	1.14	1.13	1.13	1.13	1.13	1.13	1.13
ECD - BH	**kg/l**	1.15	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14	1.14

Annular Velocities m/s Flow Regime

Hole ID in	String OD in									
15.010	5	0.36 L	0.34 L	0.33 L	0.31 L	0.30 L	0.28 L	0.26 L	0.25 L	0.23 L	0.21 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	0.3	0.3	0.3	0.3	0.3

Comment

Date 28/Mar/2018 18:58:43
Prepared by Andrea D'Angelo

ADVANTAGE T&D Calculation - Summary Report

Case - Trava 3 Dir - 12 ¼" Ultra XL+NTK

Operator	Aleanna Resources LLC	**Facility**	Trava 2dir-3dir
Well	Trava 3 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	222.30
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	1.40
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	16	15.010	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	0.4

	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	25 deg
Max Allowable HookLoad (@min. Yield)	323 tonne	
DrillString Weight in Air	34 tonne	
Bit To Neutral Point (Drilling)	26.63 m	
Sin. Buckling WOB	19 tonne	

	Stretch mm
Drilling	63.6
Slack-Off	76.6
Pick-Up	81.0
Rot off Btm	78.8

	Drawwork HP	at Fastline Load tonne	Rotary HP	Mud Pumps HP	Max Flowrate l/min	Max SPP bar
Power	29.4 P	27 P	11.2 D	0.0	0	150.0

ADVANTAGE T&D Calculation - Summary Report

BAKER HUGHES a GE company

Case - Trava 3 Dir - 12 ¼" Ultra XL+NTK

Operator	Aleanna Resources LLC	**Facility**	Trava 2dir-3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

	O.Mode	Stress psi	at MD m		O.Mode	Safety Factor	at MD m
Max Axial	P	11115.5	0.00	**Min Yield Safety Factor**	P	12.05	7.70
Max Torsional	D	1238.6	0.00	**Min Fatigue Safety Factor**	D	6.67	352.30
Max Bending	D	3715.1	399.60				
Max Combined	D	11200.3	7.70				

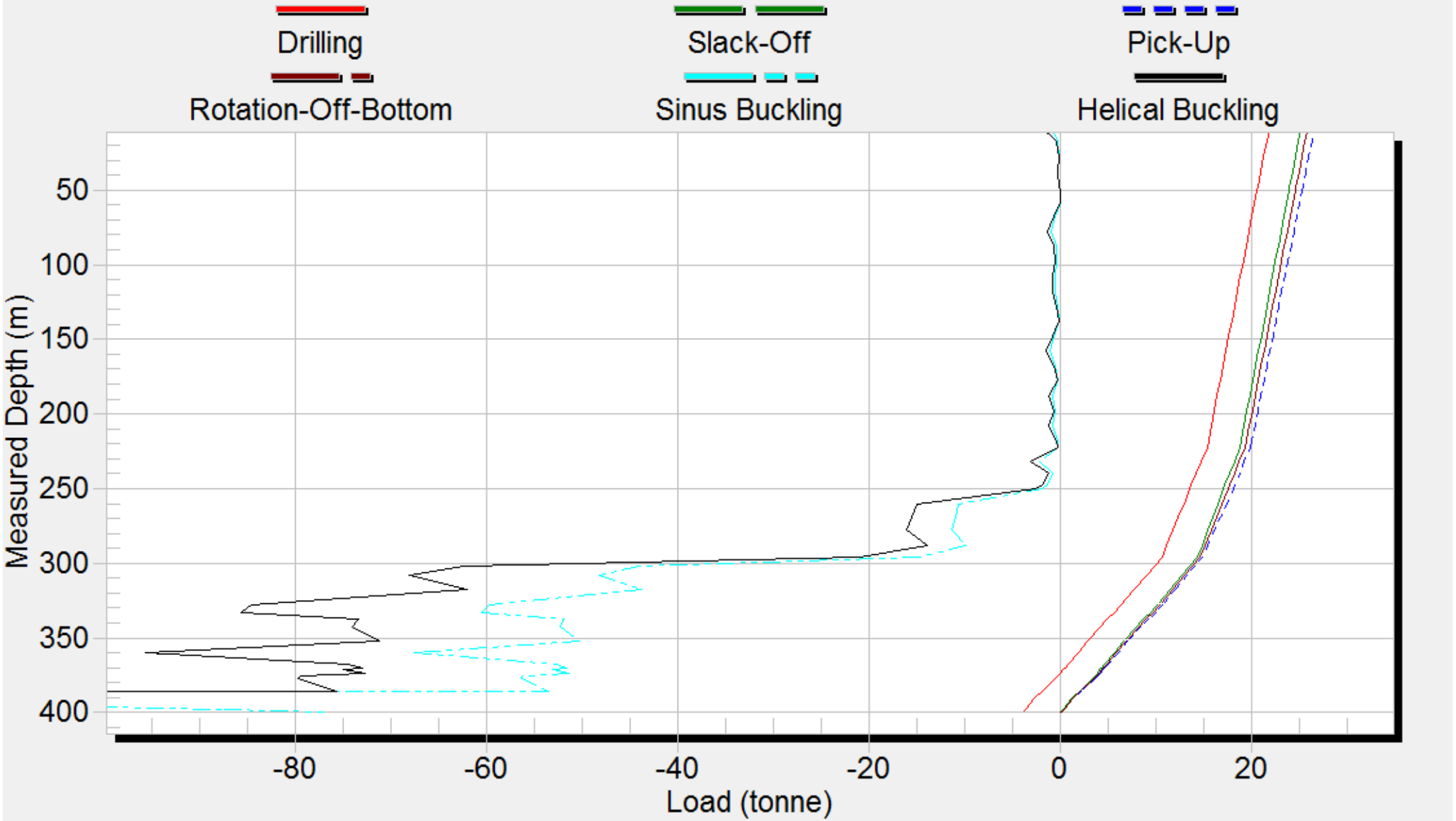
D Drilling	S Slack-Off	P Pick-Up	R Rot off Btm		i input	c calculated

Comment

Date 29/Mar/2018 08:53:16
Prepared by Andrea D'Angelo

Calculated Loads along String vs. Measured Depth

Case - Trava 3 dir - 12 ¼" Ultra XL+NTK



Min. Yield Saf. Fact.: 12.05 (P)
Drilling HKLD: 22.1 tonne
Pick-Up HKLD: 26.8 tonne
Sin. Buckling WOB: 19.2 tonne
Min. Fatigue Saf. Fact.: 6.67 (D)
Slack-Off HKLD: 25.4 tonne
ROB HKLD: 26.1 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 = 1112mMD (=1103m 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 148bar SPP with a 1600lpm flow-rate.

Using standard values for friction factors, the T&D analysis shows a drilling torque value equal to ~3.3 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 5 tons.

Sinusoidal buckling limit is equal to 17.7 tons.

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

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

BHA proposal – Trava 3 dir– 8 ½" Steerable Motor + MWD NaviTrak			
Operator	Aleanna Resources	Field	Corte dei Signori
Well	**Trava 3 dir**	Depth IN: 400m MD	Depth OUT: 1112m 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	948.56	1112.36
	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	PDC Bit	8 ½	8 ½		4 ½ Reg	0.30	0.30

13 BHA components

ADVANTAGE DesignFrame

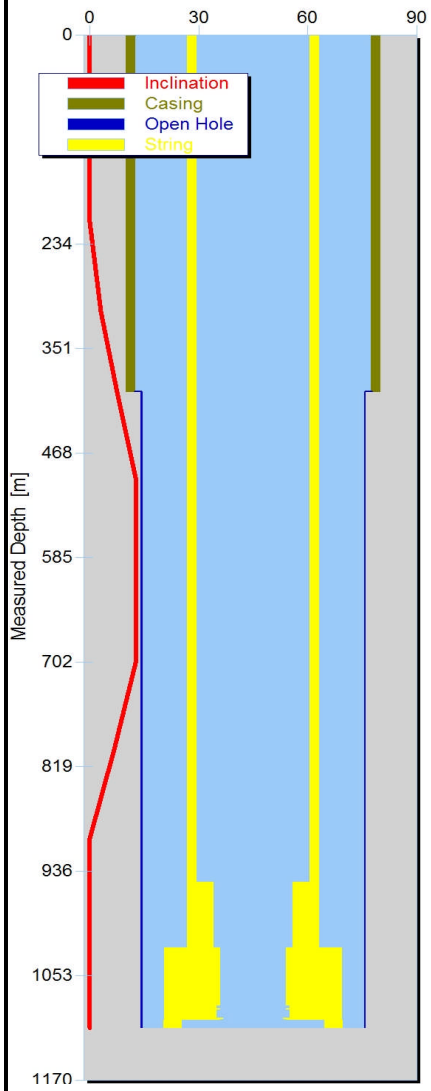
BAKER HUGHES a GE company

Case - Trava 3 Dir - 8½" UTR + NTK

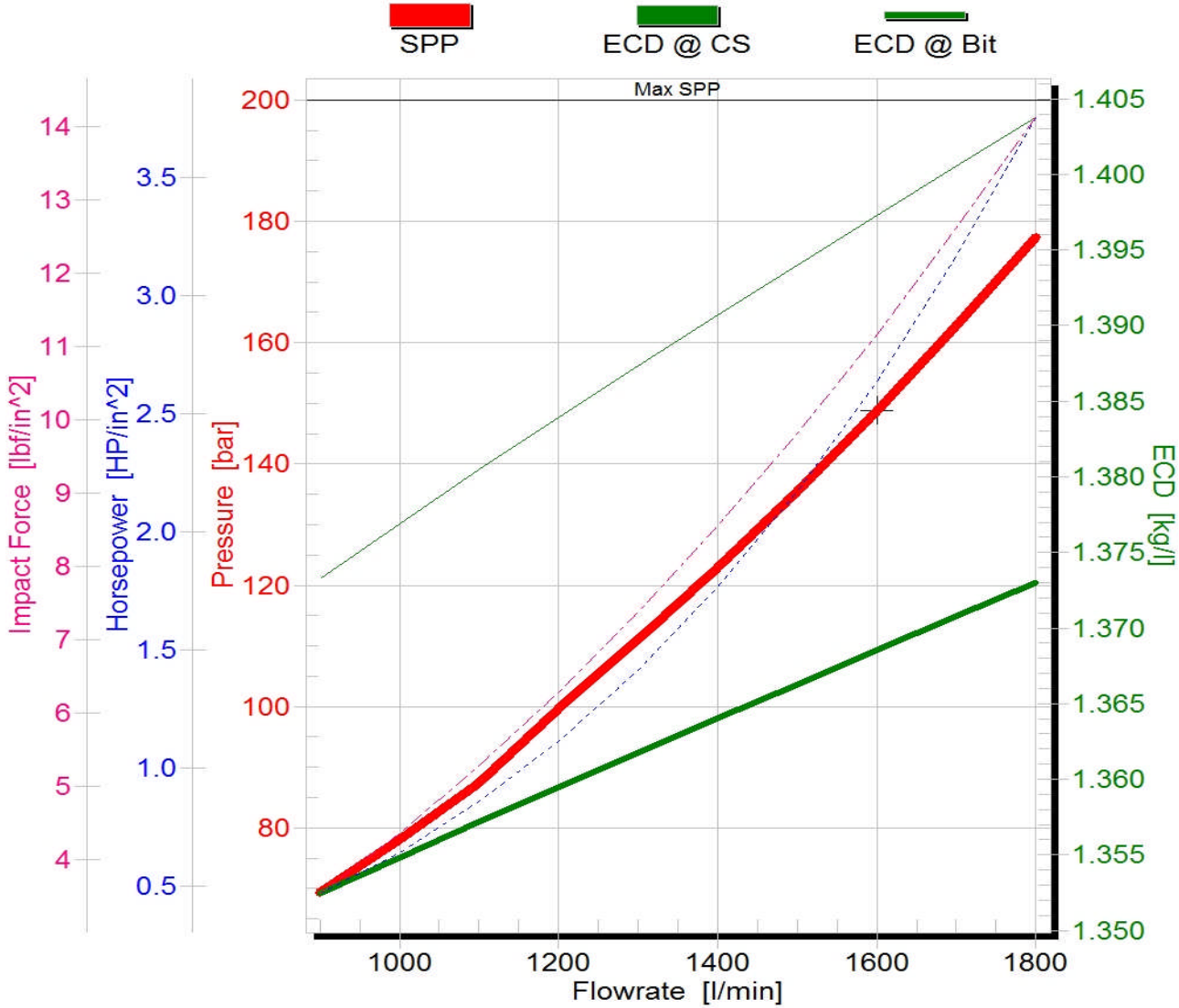
Operator	Aleanna Resources LLC	**Facility**	Trava 2dir - 3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

Hole Size	8 1/2 in	**Bit Depth (MD)**	1112.36 m	**Bit Depth (TVD)**	1103.40 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	27.5	**bar**
Motor (Op ΔP)	12.4	**bar**
Motor (No-Load)	28.5	**bar**
MWD	26.6	**bar**
Bit	41.3	**bar**
Annulus	10.5	**bar**
Surface Equip	2.0	**bar**
SPP	148.8	**bar**

Comment

Date 28/Mar/2018 19:08:35
Prepared by Andrea D'Angelo

ADVANTAGE Hydraulics Spreadsheet Report

BAKER HUGHES a GE company

Case - Trava 3 Dir - 8½" UTR + NTK

Operator	Aleanna Resources LLC	**Facility**	Trava 2dir - 3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

General

Max Allw.SPP	200.0 **bar**		
Surface Equip.	Type 4		
Bit Depth	1112.36	**Bit TVD**	1103.40 **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	1112.36

Volumes bbl

Annulus Volume	168.470	**Hole Volume**	265.490
String Displacement	38.740	**String Volume**	58.280

Drill String

Type	Length m	OD in	ID in	TJ in \ in	Weight lb/ft
DP - NC50 (IF) /S-1...	948.56	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**	177.3	162.7	148.8	135.5	122.9	111.0	99.6	87.4	78.2	69.5
Surface HP	**HP**	712.6	617.8	531.8	454.1	384.4	322.1	267.0	214.8	174.6	139.7
Bit DeltaP	**bar**	52.2	46.6	41.3	36.3	31.6	27.2	23.2	19.5	16.1	13.1
%SPP	**%**	29	29	28	27	26	25	23	22	21	19
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**	16.2	14.8	13.4	12.1	10.9	9.7	8.5	5.9	5.6	5.3
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**	11.2	10.9	10.5	10.2	9.8	9.4	9.1	8.7	8.3	7.9
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	0.1	0.1	0.1	0.1	0.2	0.2
Bottom Up	**hr**	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5

Comment

Date 28/Mar/2018 19:09:33
Prepared by Andrea D'Angelo

ADVANTAGE T&D Calculation - Summary Report

Case - Trava 3 Dir - 8½" UTR + NTK

Operator	Aleanna Resources LLC	**Facility**	Trava 2dir - 3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

Drilling Parameter

Bit Depth	1112.36	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
1112.36	1.30	1112.36	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	948.56
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	1112.36

Tortuosity / Noise

Bottom MD m	Build-Plane Curvature deg/30m	Turn-Plane Curvature deg/30m	Variation
400	0.4	0.8	Random
1112.36	0.8	1.6	Random

Friction Factor

Bottom MD m	Axial	Torsional
400	0.25 i	
1112.36	0.35 i	

	Hook Load @ 0.0 MD tonne	Indicated Hook Load tonne	Rotary Torque kft.lb
Drilling	39	39	3.3
Slack-Off	40	40	0.0
Pick-Up	49	49	0.0
Rot off Btm	44	44	2.7

	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	4
Pick-Up	5

Drill String Twist	0 rev	193 deg
Max Allowable HookLoad (@min. Yield)	323 tonne	
DrillString Weight in Air	54 tonne	
Bit To Neutral Point (Drilling)	38.33 m	
Sin. Buckling WOB	18 tonne	

	Stretch mm
Drilling	337.9
Slack-Off	372.2
Pick-Up	447.0
Rot off Btm	407.5

	Drawwork HP	at Fastline Load tonne	Rotary HP	Mud Pumps HP	Max Flowrate l/min	Max SPP bar
Power	54.1 P	49 P	37.9 D	0.0	0	200.0

ADVANTAGE T&D Calculation - Summary Report

BAKER HUGHES a GE company

Case - Trava 3 Dir - 8½" UTR + NTK

Operator	Aleanna Resources LLC	**Facility**	Trava 2dir - 3dir
Well	Trava 3 dir	**Field**	Corte dei Signori

	O.Mode	Stress psi	at MD m		O.Mode	Safety Factor	at MD m
Max Axial	P	20563.8	0.00	**Min Yield Safety Factor**	P	6.36	260.00
Max Torsional	D	3490.0	0.00	**Min Fatigue Safety Factor**	D	3.59	467.70
Max Bending	P	5815.7	467.70				
Max Combined	P	21212.2	260.00				

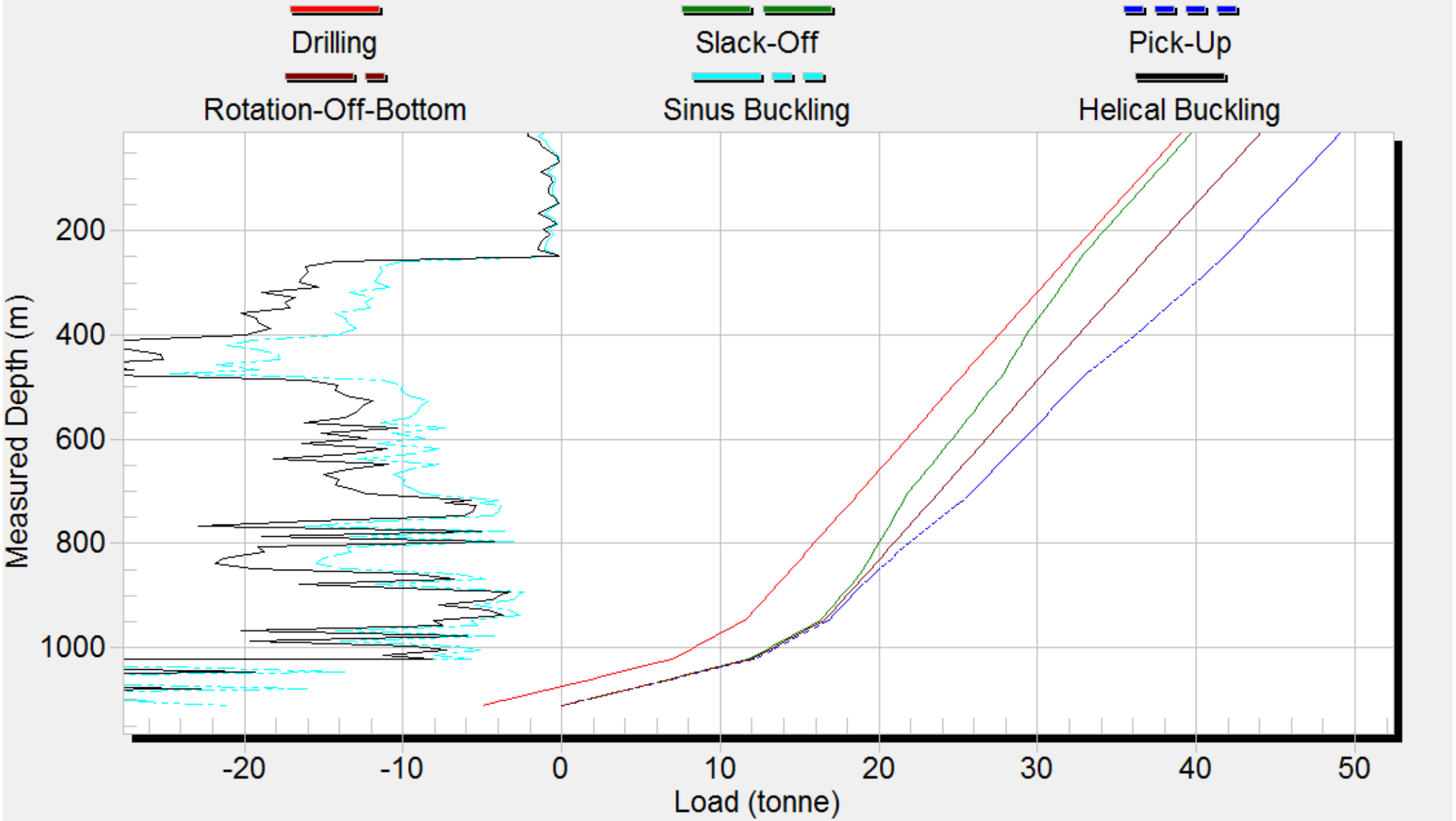
D Drilling	S Slack-Off	P Pick-Up	R Rot off Btm		i input	c calculated

Comment

Date 28/Mar/2018 19:10:55
Prepared by Andrea D'Angelo

Calculated Loads along String vs. Measured Depth

Case - Trava 3 dir - 8½" UTR + NTK



Min. Yield Saf. Fact.: 6.36 (P)
Drilling HKLD: 39.4 tonne
Pick-Up HKLD: 49.4 tonne

Sin. Buckling WOB: 17.7 tonne

Min. Fatigue Saf. Fact.: 3.59 (D)
Slack-Off HKLD: 40.0 tonne
ROB HKLD: 44.4 tonne