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Analysis of Rig Parameter Data Using Drilling Process Modeling Constraints

Volume 5: Utah FORGE Well 16B(78)-32

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ABSTRACT

Drill rig parameter measurements are routinely used during deep well construction to monitor and guide drilling conditions for improved performance and reduced costs. While insightful into the drilling process, these measurements are of reduced value without a standard to aid in data evaluation and decision making. In the main body of this work (Volume 1), a method is demonstrated whereby rock reduction model constraints are used to interpret drilling response parameters; the method could be applied in real-time to improve decision-making in the field and to further discern technology performance during post-drilling evaluations. Drilling parameters are evaluated using laboratory-validated rock reduction models for predicting the phenomenological response of drag bits (Detournay and Defourny, 1992) in computational algorithms. The method presented has applicability to development of advanced analytics on future geothermal wells using real-time electronic data recording for improved performance and reduced drilling costs. A drilling cost model is also used to show the tradeoff between rate of penetration and bit life and the influence on interval drilling costs.

Details of the bit specifications and performance are cataloged in an independent volume, documented under separate cover, for each of the four wells, and include Volume 2: Utah FORGE 16A(78)-32; Volume 3: Utah FORGE 56-32; Volume 4: Utah FORGE 78B-32 and Volume 5: Utah FORGE 16B(78)-32.

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The authors are indebted to Utah FORGE, Frontier Drilling, Nabors, Pason, NOV, Baker Hughes, Ulterra Drilling Technologies, Smith International, Scout, GeoGuidance and others for permission to use information in preparing this work. The sponsorship of the US Department of Energy Geothermal Technologies Office (DOE/EERE/GTO) is gratefully acknowledged. In particular, funding for drilling activities at the FORGE site was provided by the U.S. DOE under grant DE-EE0007080 "Enhanced Geothermal System Concept Testing and Development at the Milford City, Utah FORGE Site."

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EXECUTIVE SUMMARY

The United States Department of Energy has sponsored development of geothermal well construction at the Utah Frontier Observatory for Research in Geothermal Energy (FORGE). Drill rig parameter data were acquired by drilling contractor Frontier Drilling and evaluated for four wells: 1) Utah FORGE 16A(78)-32, a directional injection well with vertical depth to a kick-off point at 5892 ft and a 65 degree tangent to a measured depth of 10987 ft and, 2) Utah FORGE 56-32, a vertical monitoring well to a depth of 9145 ft, 3) Utah FORGE 78B-32, a vertical well drilled to a depth of 9500 ft, and 4) Utah FORGE 16B(78)-32, a directional production well drilled vertically to a kick-off point at 5269 ft, and a 65 degree tangent to a measured depth of 10947 ft. Sandia National Labs has accessed, cataloged, evaluated, and recorded drill bit performance information used on the four Utah FORGE wells herein.

The subject drilling program has resulted in a large database of bit performance and durability records for drilling hot, hard rock characteristic of geothermal reservoirs. The majority of the Utah FORGE wells were drilled almost exclusively with Polycrystalline Diamond Compact (PDC) drill bits. The characteristic features of PDC bits and cutters are accordingly reviewed. While synthetic diamond cutter materials and bit design methodologies have improved over time, the recent success of these types of bits in hard rock formations may also be attributed to monitoring of drilling system response parameters using electronic data recorders on the surface rig for preferential performance and bit health monitoring.

Drill rig parameter measurements are routinely used during deep well construction to monitor and guide drilling conditions for improved performance and reduced costs. While insightful into the drilling process, these measurements are of reduced value without a standard to aid in data evaluation and decision making. In the main body of this work (Volume 1), a method is demonstrated whereby rock reduction model constraints are used to interpret drilling response parameters; the method could be applied in real-time to improve decision-making in the field and to further discern technology performance during post-drilling evaluations. Drilling parameters are evaluated using laboratory-validated rock reduction models for predicting the phenomenological response of drag bits (Detournay and Defourny, 1992) in computational algorithms. The method presented has applicability to development of advanced analytics on future geothermal wells using real-time electronic data recording for improved performance and reduced drilling costs.

Bit program and performance summaries are tabulated and presented for each well. These summaries include bit manufacturer model references, drilling system penetration rates, and overall bit lives. Representative drilling parameter data are evaluated to illustrate parameter use to monitor bit response, wear, and cutting structure damage. These bits failed by both normal wear and tear and drilling dynamic dysfunctions resulting in chipped and worn cutters, cutter shear and ring outs. Nevertheless, exemplar bit penetration rates easily exceeded 100 ft/hr and produced several 100 feet of hole construction. The tradeoff between rate of penetration and bit life is addressed with a drilling cost model using representative drilling cost parameters.

Details of the bit specifications and performance are cataloged in an independent volume, documented under separate cover, for each of the four wells, and include Volume 2: Utah FORGE 16A(78)-32; Volume 3: Utah FORGE 56-32; Volume 4: Utah FORGE 78B-32 and Volume 5: Utah FORGE 16B(78)-32. Bottom hole assembly information and daily drilling reports are also included.

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ACRONYMS AND DEFINITIONS

Abbreviation	Definition
BHA	Bottom Hole Assembly
DOE	Department of Energy
EDR	Electronic Data Recording
FORGE	Frontier Observatory for Research in Geothermal Energy
GTO	Geothermal Technology Office
ROP	Rate of Penetration
WOB	Weight on Bit

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1. BACKGROUND AND INTRODUCTION

Geothermal drilling is difficult as the rock is hot, hard, and often fractured. Wellbore construction costs have historically dominated the cost of geothermal energy development and have been an impediment to widespread development of geothermal energy. Technology improvements are needed to enable improved access and reduced drilling costs.

One technology improvement that can be applied to geothermal wellbore construction is the use of polycrystalline diamond compact (PDC) drill bits. Research and development on PDC drill bits has been sponsored by the United States Department of Energy for years resulting in improved diamond formulations, bonding techniques, bit designs, and hardening features that comprise the state of the art in the drilling industry. The oil and gas industry has benefited widely from these developments as the bits are routinely used to drill the majority of oil and gas wells worldwide. While the geothermal industry has benefited from incidental use of PDC bits for geothermal drilling, recent use of PDC bits at the DOE-sponsored Utah FORGE site has resulted in significant data for evaluation to address the efficacy of PDC bits for geothermal drilling.

1.1. Utah FORGE

The DOE-sponsored program, Utah Frontier Observatory for Research in Geothermal Energy (FORGE) was implemented to foster the development and demonstration of technologies supporting commercial applications of geothermal energy. The site is located near Milford, Utah (Moore, 2019). US DOE sponsorship of the FORGE activities de-risks developing technology for accessing deep geothermal reserves on a broad scale. One of the primary obstacles to commercial geothermal development is high drilling costs. The FORGE campaign applies state-of-the-art drilling technology to demonstrate well construction and completion activities on a utility scale. Multiple wells are planned over the life of the FORGE program. Well 16A(78)-32 is a directional well. Well 56-32 is a vertical monitoring well. Well 78B-32 is a vertical monitoring well. Well 16B(78)-32 is a directional well. These four wells were drilled with the top-drive, triple shown in Figure 1-1.

Figure 1-1. Frontier Rig 16 used to drill wells 16A(78)-32, 56-32, 78B-32 and 16B(78)-32.

1.2. Sandia Role

With a long legacy of programmatic research pertaining to the development of synthetic diamond drill bit technology, Sandia is participating with DOE/EERE/GTO and the Utah FORGE drilling program to provide evaluations of the rock reduction technologies used at Utah FORGE. Although not expressly involved in the day-to-day decisions associated with the drilling program, the Sandia team has accessed electronic data recording (EDR) services to review drilling system performance. This effort has primarily been focused on monitoring and evaluation of multiple parameters to identify areas where improved productivity and cost savings can be realized via improved drilling performance. Drilling response parameters have been compared to rock reduction model constraints that have been proven in the laboratory to identify possible performance enhancement areas.

The methods used have been exercised in a post-processing manner. To provide the greatest benefit to the drilling process, a method is needed to enable the intuitive interpretation of response parameters and is amenable to implementation in computational algorithms for real-time evaluation. A method is demonstrated whereby drilling response parameters may be interpreted for improved drilling performance. This analysis is not an exhaustive assessment but rather an overview of representative bit performance that demonstrates the application of the approach using rock reduction constraints. Drilling data from the Utah FORGE site have been used for the analyses.

2. FORGE WELL 16B(78)-32

2.1. Well Program

Utah FORGE Well 16B(78)-32 was drilled vertically to a kick-off point at 5269 ft, the curve was built at 5°/100 ft MD and a 65° tangent was drilled at an azimuth of 105° to a measured depth of 10947 ft. The well profile is shown in Figure 2-1.

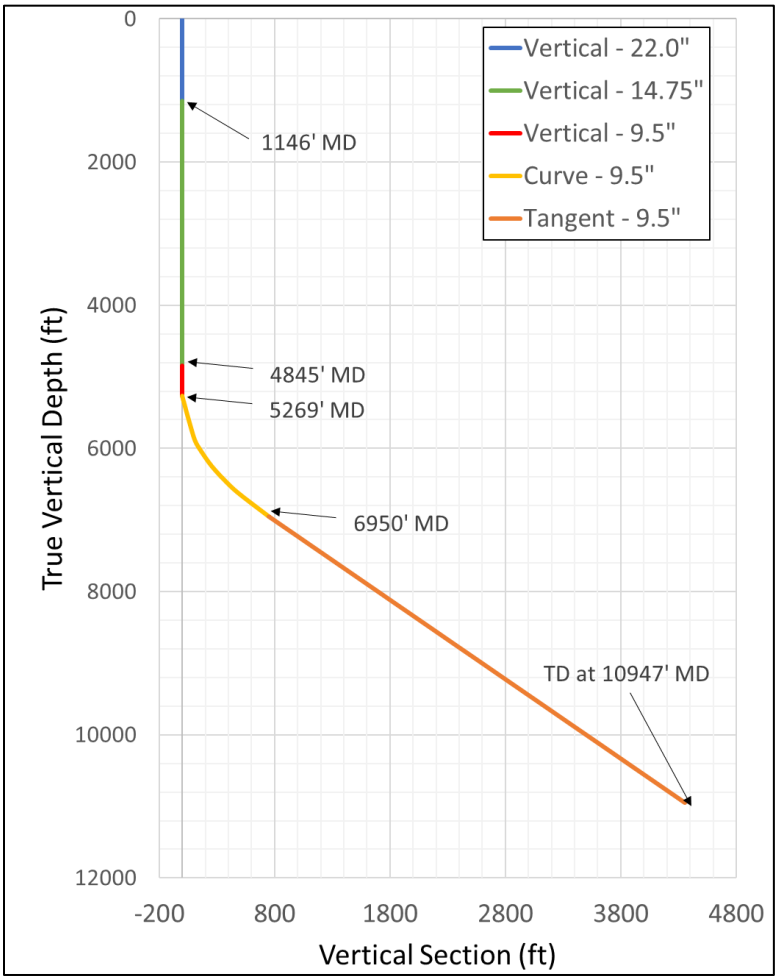

Figure 2-1. Utah FORGE Well 16B(78)-32 Profile.

2.2. Drilling Parameter Data Acquisition

Pason US DataHub service was used to access EDR.

2.3. Drilling Narrative

FORGE well 16B(78)-32 bit runs comprised the following:

- 22" Diameter Surface Hole
  - Bit Run #1 (Frontier Bit #1) drilled 22" vertical hole from 120' to 1146'.
- 14-3/4" Vertical Hole

- Bit Run #2 (Frontier Bit #2) cleaned out rathole from 1136' to 1146' and drilled 14-3/4" vertical hole from 1146' to 1181.'
- Bit Run #3 (Frontier Bit #3) drilled 14-3/4" vertical hole from 1181 to 4353.'
- Bit Run #4 (Frontier Bit #4) drilled 14-3/4" vertical hole from 4353' to 4845.'

- 9-1/2" Diameter Vertical Hole
  - Bit Run #5 (Frontier Bit #5) drilled 9-1/2" vertical hole from 4845' to 4855.'
  - Bit Run #6 (Frontier Bit #6) drilled 8-3/4" core hole from 4855' to 4871.'
  - Bit Run #7 (Frontier Bit #7) drilled 8-3/4" core hole from 4871' to 4878.'
  - Bit Run #8 (Frontier Bit #8) particle drilled 9-1/2" vertical hole from 4878' to 4910.'
  - Bit Run #9 (Frontier Bit #9) particle drilled 9-1/2" vertical hole from 4910' to 4978.'
  - Bit Run #5 (Frontier Bit #5) reamed 9-1/2" hole from 4978' to 4980.'
  - Bit Run #10 (Frontier Bit #11) drilled 9-1/2" vertical hole from 4980' to 5269.'
- 9-1/2" Diameter Curve
  - Bit Run #11 (Frontier Bit #11) drilled 9-1/2" curved hole section from 5269' to 5957.'
  - Bit Run #12 (Frontier Bit #12) drilled 9-1/2" curved hole section from 5957' to 6545.'
  - Bit Run #13 (Frontier Bit #13) drilled 9-1/2" curved hole section from 6545' to 6610.'
  - Bit Run #14 (Frontier Bit #14) drilled 9-1/2" curved hole section from 6610' to 6950.'
- 9-1/2" Diameter Tangent
  - Bit Run #15 (Frontier Bit #15) drilled 9-1/2" tangent hole section from 6950' to 7584.'
  - Bit Run #16 (Frontier Bit #16) drilled 9-1/2" tangent hole section from 7584' to 8085.'
  - Bit Run #17 (Frontier Bit #17) drilled 9-1/2" tangent hole section from 8085' to 8585.'
  - Bit Run #18 (Frontier Bit #18) drilled 9-1/2" tangent hole section from 8585' to 9255.'
  - Bit Run #19 (Frontier Bit #19) drilled 9-1/2" tangent hole section from 9255' to 9800.'
  - Bit Run #20 (Frontier Bit #20) drilled 8-3/4" core hole from 9800' to 9817.'
  - Bit Run #21 (Frontier Bit #21) reamed 8-3/4" hole from 9780' to 9823.'
  - Bit Run #22 (Frontier Bit #22) drilled 9-1/2" core hole section from 9823' to 9853.'

- Bit Run #23 (Frontier Bit #23) reamed 8-3/4" hole to 9-1/2" hole from 9,800' to 9853' and drilled 9-1/2" tangent hole section from 9853' to 9863.'
- Bit Run #24 (Frontier Bit #24) drilled 9-1/2" tangent hole section from 9863' to 10250.'
- Bit Run #25 (Frontier Bit #25) reamed 8-3/4" hole from 10230' to 10250' and drilled core hole section from 10250' to 10256.'
- Bit Run #26 (Frontier Bit #26) reamed 8-3/4" hole from 10250' to 10256' and drilled tangent section from 10256' to 10264.'
- Bit Run #27 (Frontier Bit #27) drilled 8-3/4" core hole section from 10264' to 10271.'
- Bit Run #26 (Frontier Bit #26) drilled 8-3/4" tangent hole section from 10271' to 10274.'
- Bit Run #28 (Frontier Bit #28) drilled 8-3/4" core hole section from 10274' to 10304.'
- Bit Run #29 (Frontier Bit #29) drilled 8-3/4" tangent hole section from 10304' to 10430.'
- Bit Run #30 (Frontier Bit #30) drilled 8-3/4" core hole section from 10430' to 10460.'
- Bit Run #26 (Frontier Bit #26) drilled 8-3/4" tangent hole section from 10460' to 10462.'
- Bit Run #31 (Frontier Bit #31) drilled 8-3/4" core hole section from 10462' to 10493.'
- Bit Run #23 (Frontier Bit #23) reamed 9-1/2" section from 10250' to 10493' and drilled 9-1/2" tangent hole section from 10493' to 10503.'
- Bit Run #32 (Frontier Bit #32) drilled 9-1/2" tangent hole section from 10503' to 10947.'

2.4. Bit Program & Performance Summary

The bit program and resulting performance experienced on FORGE 16B(78)-32 are shown in Table 2-1 and Figure 2-2. Individual bit run summaries and processed data for FORGE well 16B(78)-32 is summarized in Section 3. A bit run summary is included for each bit along with BHA component information where pre-drill and post-drill images are included when available. The EDR data acquired for each bit was taken at a rate of one sample per second. This data is processed for each drill-ahead bit and includes 1) Reduction parameters (WOB, Torque on Bit, Bit Speed, and ROP vs. Depth, 2) Depth of cut per revolution vs. Depth, 3) Specific Energy and Drilling Strength vs. Depth, 4) Specific Energy vs. Drilling Strength (the linear regression does not account for the scatter due to sliding), 5) Rotary Speed Components (Top Drive, Motor and Bit) vs. depth, and 6) Rotary Torque components (Top Drive, Motor and Bit) vs. depth.

Table 2-1. FORGE Well 16B (78)-32 Bit Summary

	Daily Drilling Report		Pason	SDI		Daily Drilling Report									
Bit Run #	BHA No.	Bit No.	Bit No.	Bit No.	BHA No.	Well Profile Interval	Manufacturer	Type	Serial # (Daily Drilling Report)	Bit Dia.	Depth Start (ft)	Depth End (ft)	Total Footage (ft)	Time on Bottom (hrs)	Net ROP (ft/hr)
1	1	1	1	1	1	Vertical	NOV ReedHycalog	TK99	A297420	22	120	1146	1026	9.00	114
2	2	2	-	-	Intermediate BHA	Clean out	Other	XR+C	-	14.75	1146	1181	35	1.25	28
3	3	3	2	2	2	Vertical	NOV ReedHycalog	0	A297421	14.75	1181	4353	3172	21.17	150
4	4	4	4	3	3	Vertical	SANJOAQ	TKC83	A298775	14.75	4353	4845	492	9.50	52
5	5	5	5	-	Insert Bit	Vertical	SANJOAQ	MX-S50R	W45JG	9.50	4845	4855	10	0.50	20
6	6	6	6	-	Core BHA 1	Core	CCI	CCI-913	3409-05	8.75	4855	4871	16	2.50	6
7	7	7	7	-	Core BHA 2	Core	CCI	CCI-713	4219-01	8.75	4871	4878	7	2.50	3
8	8	8	6	-	Particle Drilling BHA	Vertical	NOV ReedHycalog	E1451	A298243	9.50	4878	4910	32	2.00	16
9	9	9	7	-	Particle Drilling BHA	Vertical	NOV ReedHycalog	E1451	A298244	9.50	4910	4978	68	3.50	19
10	10	5	-	-	Clean out BHA	Ream	SANJOAQ	MX-S50R	W45JG	9.50	4978	4980	2	1.00	2
11	11	10	9	4	4	Vertical	NOV ReedHycalog	TKC73 A1	A298329	9.50	4980	5269	289	4.00	72
12	12	11	9	5	5	Curve	NOV ReedHycalog	TKC73 A1	A298328	9.50	5269	5957	688	14.50	47
13	13	12	10	6	6	Curve	NOV ReedHycalog	TKC73 A1	A208330	9.50	5957	6545	588	14.00	42
14	14	13	11	7	7	Curve	NOV ReedHycalog	8 BLADE PDC	A298355	9.50	6545	6610	65	1.00	65
15	15	14	12	8	8	Curve	NOV ReedHycalog	8 BLADE PDC	A298353	9.50	6610	6950	340	9.50	36
16	16	15	12	9	9	Tangent	NOV ReedHycalog	8 BLADE PDC	A298354	9.50	6950	7584	634	14.00	45
17	17	16	13	10	10	Tangent	NOV ReedHycalog	8 BLADE PDC	A298358	9.50	7584	8085	501	11.50	44
18	18	17	14	11	11	Tangent	NOV ReedHycalog	8 Blade PDC	A298356	9.50	8085	8585	500	10.50	48
19	19	18	15	12	12	Tangent	Baker Hughes	6 Blade PDC	5341818	9.50	8585	9255	670	8.50	79
20	20	19	16	13	13	Tangent	NOV ReedHycalog	TKC83	A298355	9.50	9255	9800	545	8.00	68
21	21	5	-	-	-	Circulate & Survey	SANJOAQ	MX-S50R	W45JG	9.50	9800	9800	0	3.00	0
22	22	20	18	-	Core BHA 3	Core	CCI	CCI-911	3409-05	8.75	9800	9817	17	13.75	1
23	23	5	-	-	-	Circulate & Survey	SANJOAQ	MX-S50R	W45JG	9.50	-	-	-	-	-
24	24	21	18	-	-	Ream	Baker Hughes	VGD-38CH	5344137	8.75	9780	9823	43	7.00	6
25	25	22	19	-	Core BHA 4	Core	CCI	CCI-713	3409	8.75	9823	9853	30	11.25	3
26	26	23	20	14	14	Tangent	NOV ReedHycalog	Insert RC	5243758	9.50	9853	9863	10	2.00	5
27	27	24	21	15	15	Tangent	Baker Hughes	D406VX	5342357	9.50	9863	10250	387	5.00	77
28	28	5 & 25	22	-	Core BHA 5	Ream	CCI	CCI-713	4219-01	8.75	10230	10256	26	9.50	3
29	29	26	23	-	Clean out BHA	Ream	NOV ReedHycalog	TRI CONE	T46ZX	8.75	10250	10264	14	1.00	14
30	30	27	24	-	Core BHA 6	Core	NOV ReedHycalog	CCI-913	CCI 3409-05	8.75	10264	10271	7	8.50	1
31	31	26	4	-	Clean out BHA	Tangent	NOV ReedHycalog	CCI-713	CCI-3409-01	8.75	10271	10274	3	0.50	6
32	32	28	26	-	Core BHA 7	Core	NOV ReedHycalog	CCI-713	CCI-3409-01	8.75	10274	10304	30	23.50	1
33	33	29	27	16	16	Tangent	NOV ReedHycalog	PDC 6 BLADE	A299586	8.75	10304	10430	126	0.75	168
34	34	30	28	-	Core BHA 8	Core	NOV ReedHycalog	CCI-913	CCI-3409-05	8.75	10430	10460	30	22.75	1
35	35	26	25	-	Clean out BHA	Tangent	NOV ReedHycalog	TRI CONE	T462X	8.75	10460	10462	2	0.25	8
36	36	31	29	-	Core BHA 9	Core	CCI	CCI-713	CCI-3409-03	8.75	10462	10493	31	22.50	1
37	37	23	29	17	17	Tangent	NOV ReedHycalog	TRI CONE	5243758	9.50	10493	10503	10	0.75	13
38	38	32	30	18	18	Tangent	Baker Hughes	6 BLADE PDC	5341859	9.50	10503	10947	444	5.00	89

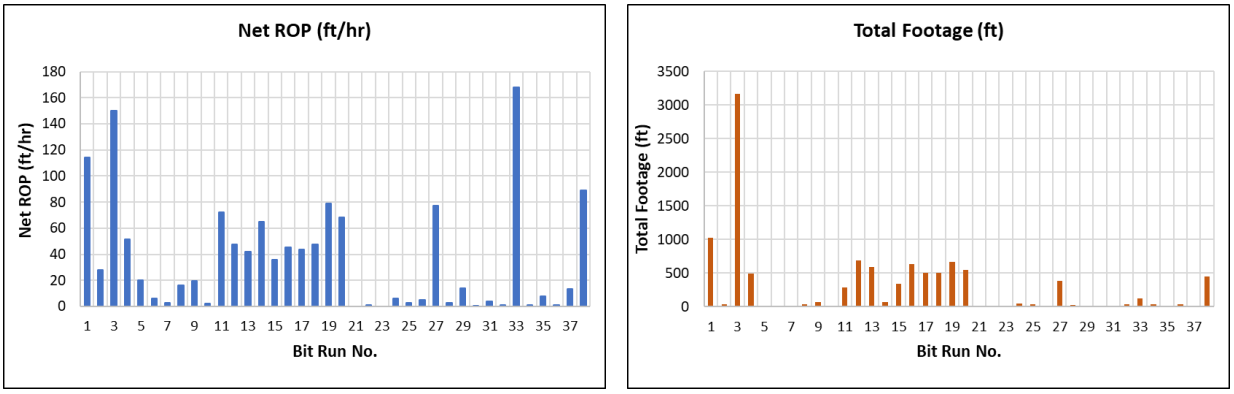

Figure 2-2. Utah FORGE Well 16B(78)-32 Bit Program and Performance Summary.

2.5. Depth vs Days Summary

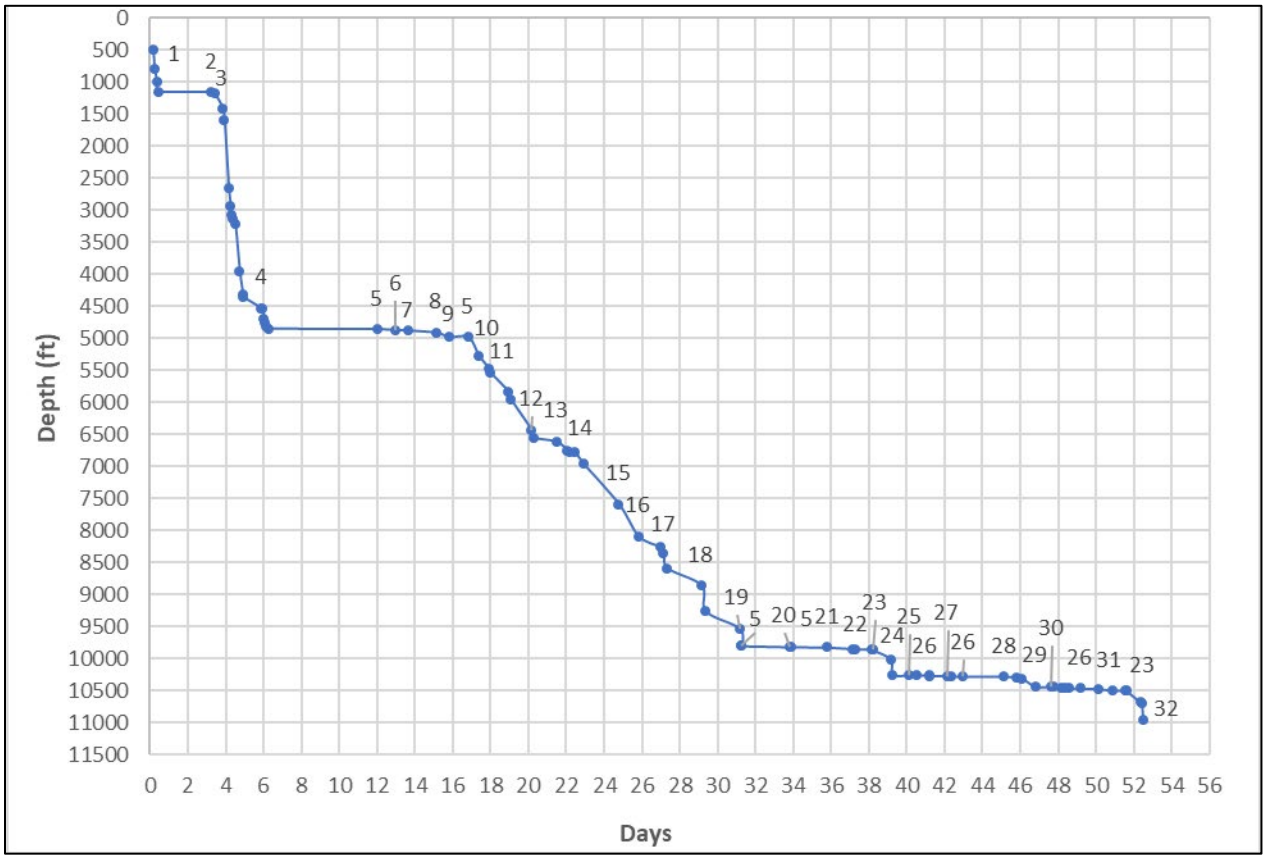

Figure 2-3. Depth vs Days Summary with corresponding Bit Run Identification numbers for Utah FORGE Well 16B(78)-32.

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3. BIT RUN SUMMARIES AND PROCESSED DATA

3.1. Bit-1 (Drill Ahead)

Table 2: Bit 1 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	04/26/23	22.00	NOV	TK99, 9 Blade PDC	A297420
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
1	120	1146	1026	9.00	114

Table 3: BHA 1 component makeup. (SDI End of Well Report)

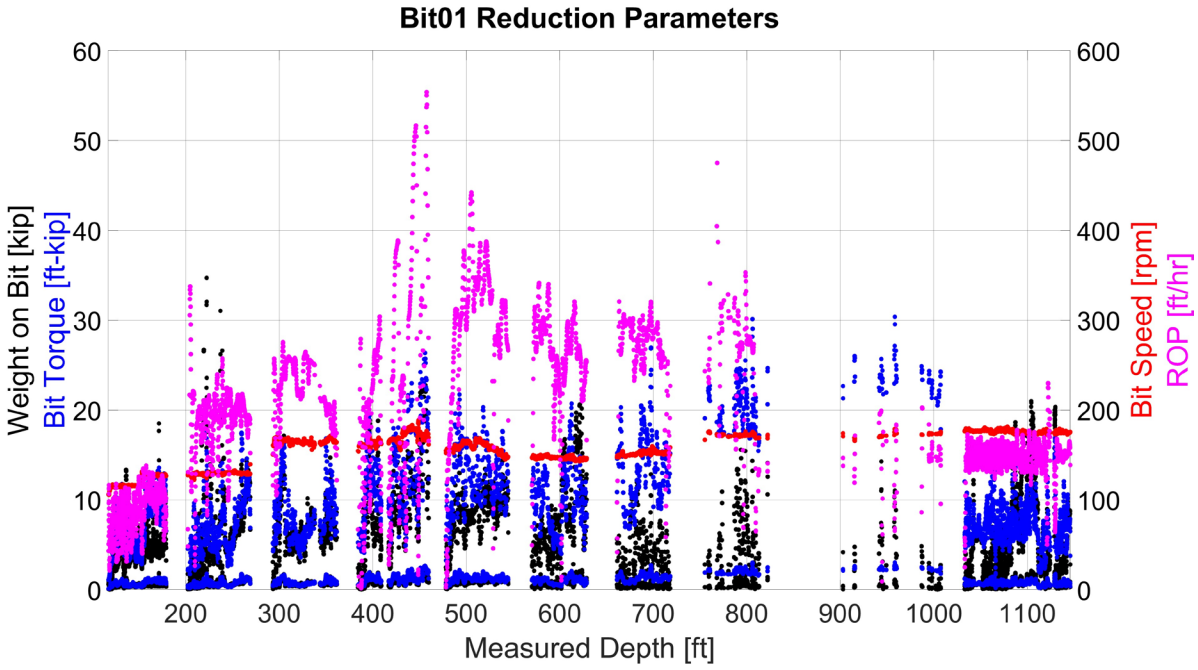
BHA No.	Component	OD (in)	ID (in)	Length (ft)
1	22" PDC Bit (FN 0.5)	9.688	3.375	1.75
2	9.15 Mud Motor	9.5	4.625	38.1
3	21 7/8" String Stab (wrapped)	9	2.813	7.83
4	9 1/2 NMDC	9.563	4.25	30.56
5	9 1/2 NM Pony DC	9.875	4.25	9
6	9 1/2 Hangoff Sub	9.5	4.25	3.01
7	9 1/2 Hybrid Sub	9.375	3.5	5.4
8	9 1/2 NM Pony DC	9.25	4.25	12.32
9	Crossover	8	3	4.31
10	9 - 8" DC's	8.125	3	271.72
11	Crossover	8	2.875	2.91
12	15 JTS HWDP	7.188	3.75	456.67

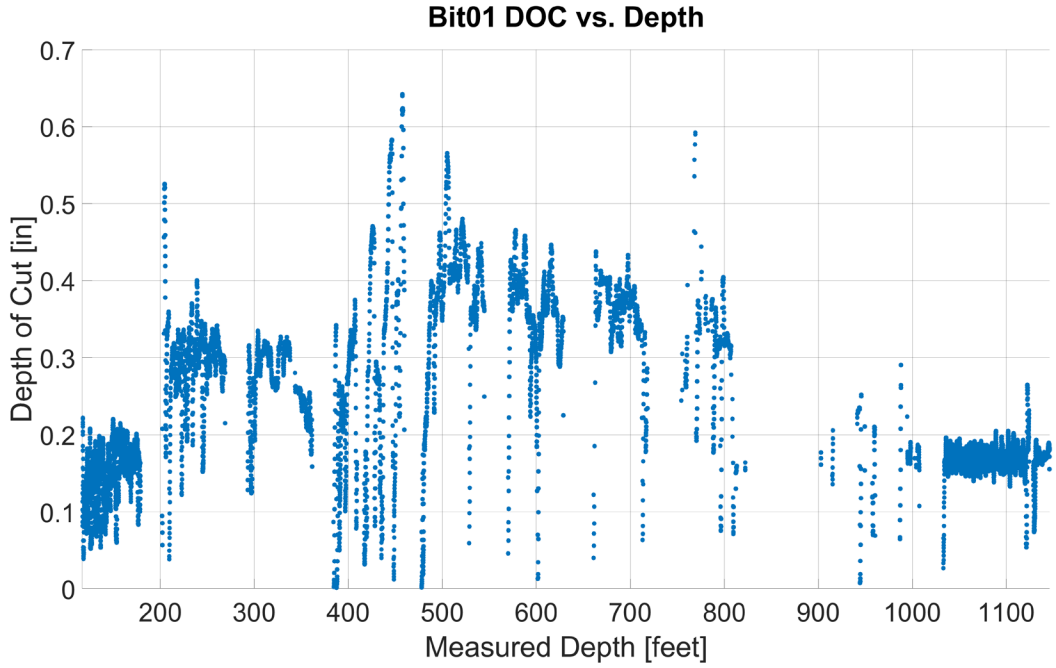
Images:

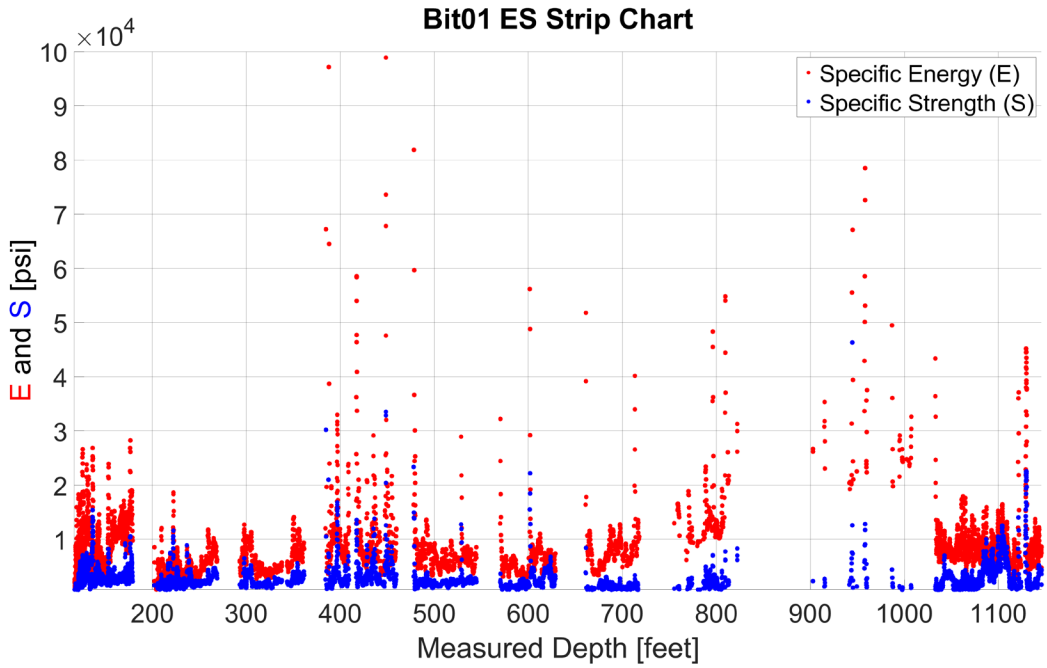
Figure 3-1. Pre-drill photo of bit #1.

Figure 3-2. Post-drill photo of bit #1.

Bit Run Figures:






Bit01 ES Strip Chart
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10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
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400
500
600
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1000
1100
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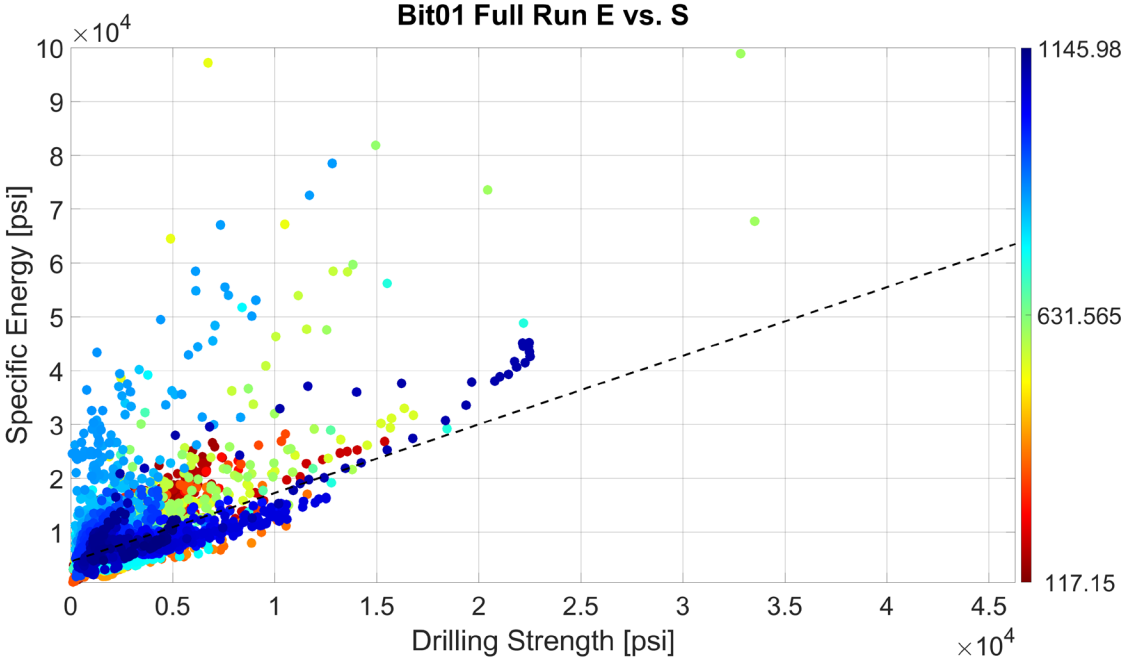
Bit01 Full Run E vs. S
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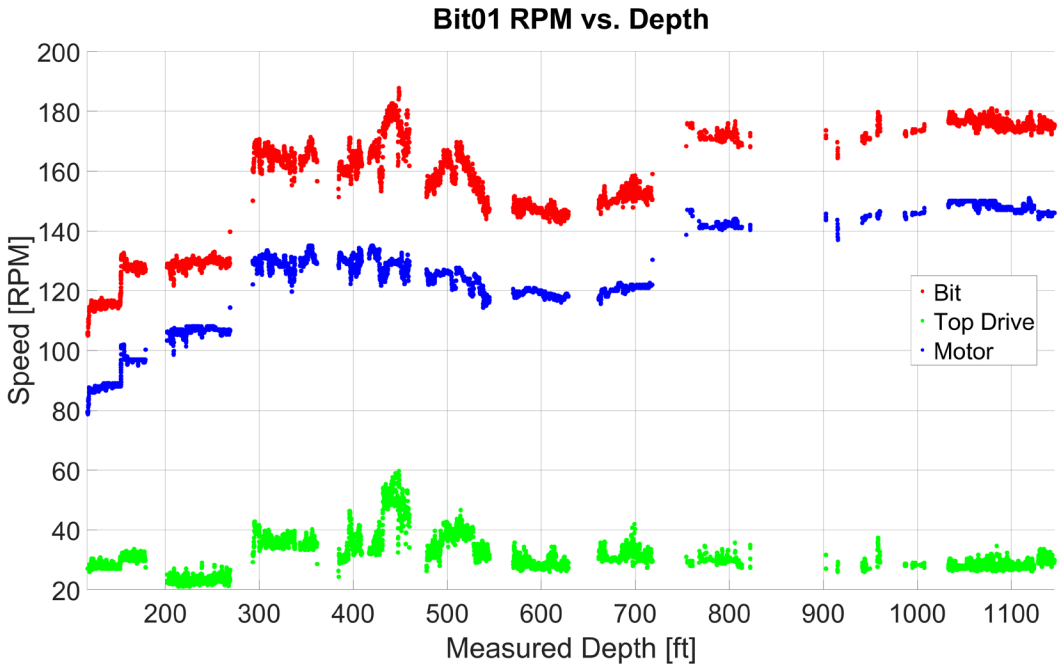
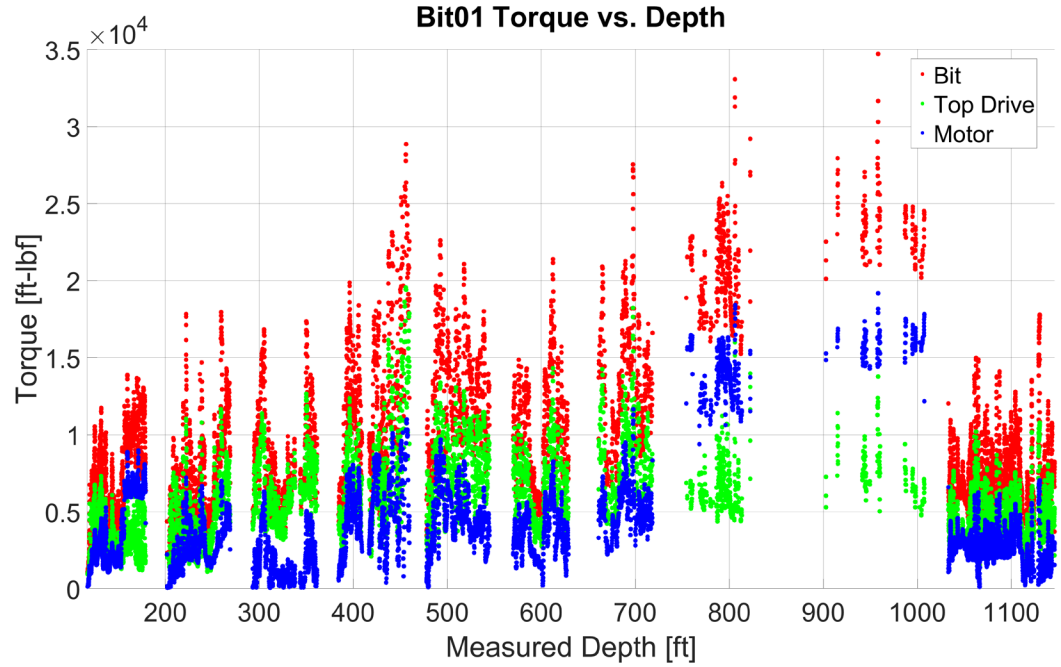




3.2. Bit-2 (Drill Out Cement)

Table 4: Bit 2 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	04/29/23	14.75	Other	XR+C	-
BHA No.	Depth Start (ft)	Depth End (ft)	Total Footage (ft)	Time on Bottom (hrs)	Net ROP (ft/hr)
2	1146	1181	35	1.25	28.0

Table 5: BHA 2 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	Bit			
2	BS			
3	9 DC			
4	XO			
5	15 HWDP			

Images:

3.3. Bit-3 (Drill Ahead)

Table 6: Bit 3 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	04/29/23 – 5/1/23	14.75	NOV	TKC66-A4, 6 Blade PDC	A297421
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
3	1181	4353	3172	21.17	150

Table 7: BHA 3 component makeup. (SDI End of Well Report)

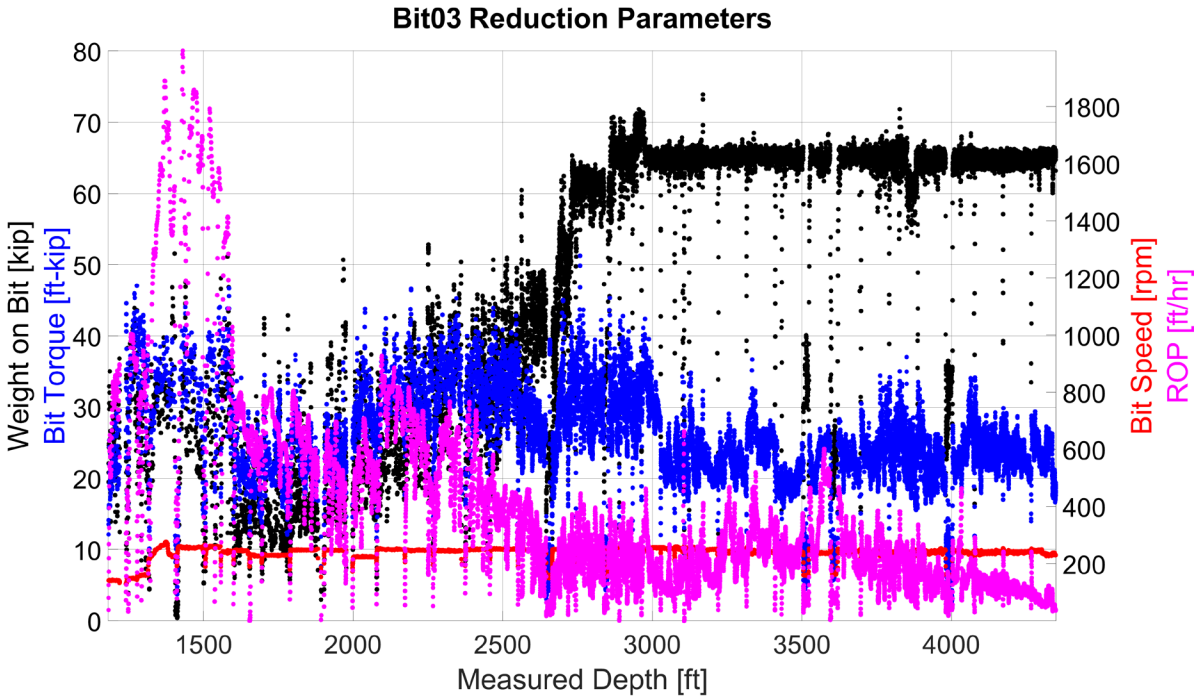
BHA No.	Component	OD (in)	ID (in)	Length (ft)
1	14 3/4" PDC Bit (FN)	14.75	3.375	1.55
2	9.15 Mud Motor	9.5	4.625	38.47
3	14 5/8" String stab (strait blade)	10	2.875	5.5
4	9 1/2 NMDC	9.563	4.25	30.56
5	9 1/2 NM Pony DC	9.875	4.25	9
6	9 1/2 Hangoff Sub	9.5	4.25	3.01
7	9 1/2 Hybrid Sub	9.375	3.5	5.4
8	9 1/2 NM Pony DC	9.25	4.25	12.32
9	Crossover	8	3	4.31
10	9 - 8" DC's	8.125	3	271.72
11	Crossover	8	2.875	2.91
12	15 JTS HWDP	7.188	3.875	456.67

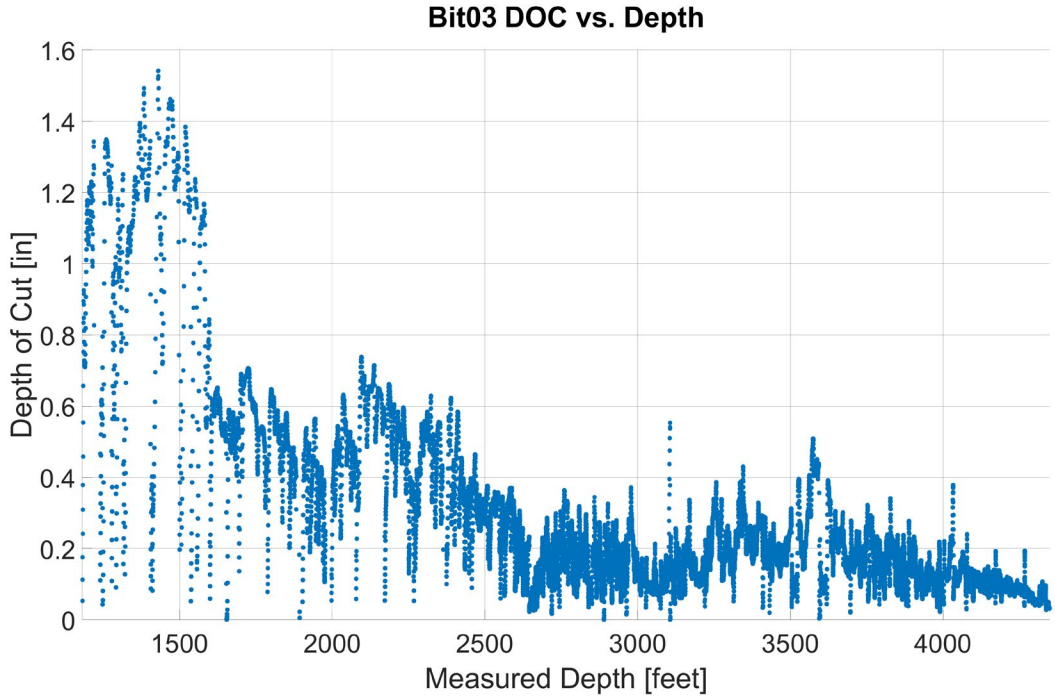
Images:

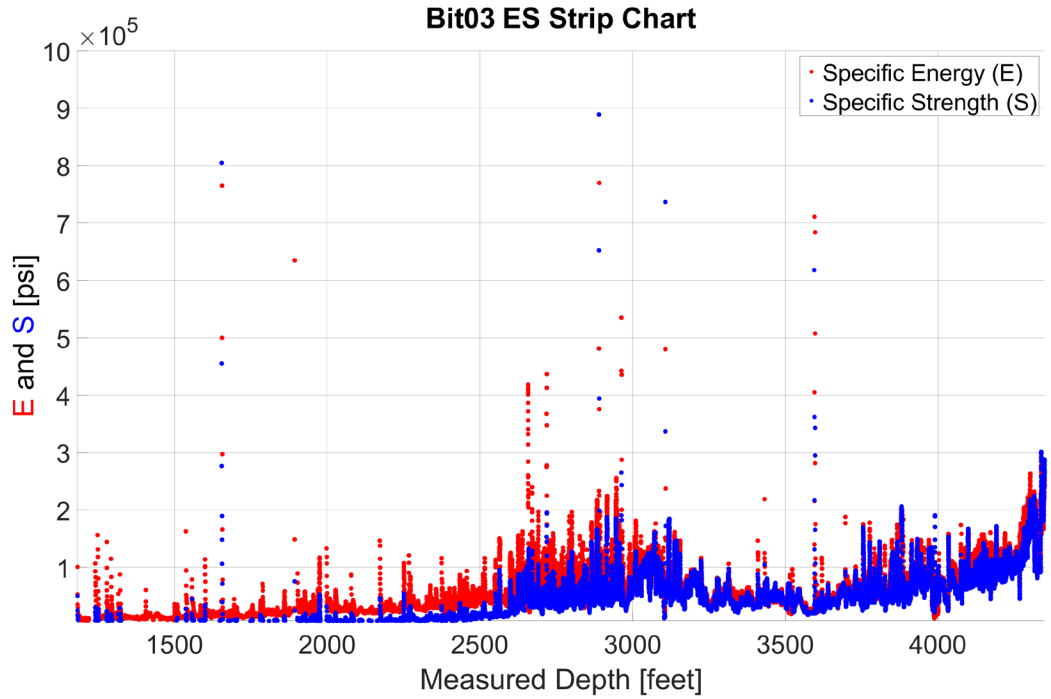
Figure 3-3. Pre-drill photo of bit #3.

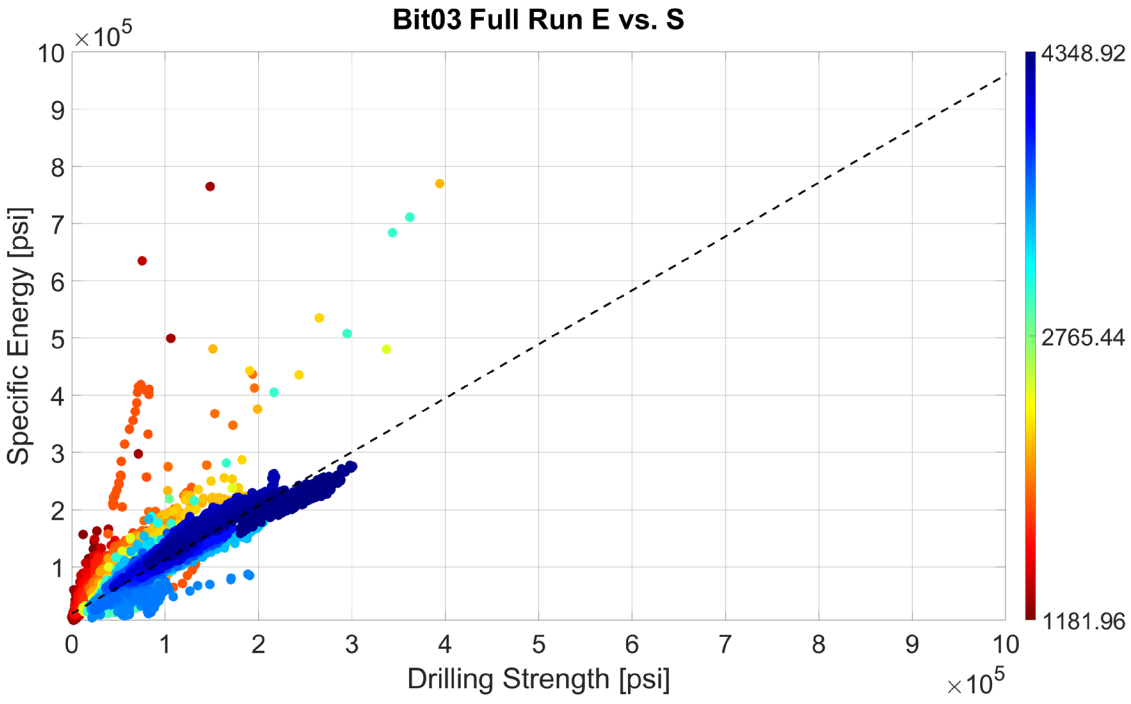
Figure 3-4: Post-drill photo of bit #3.

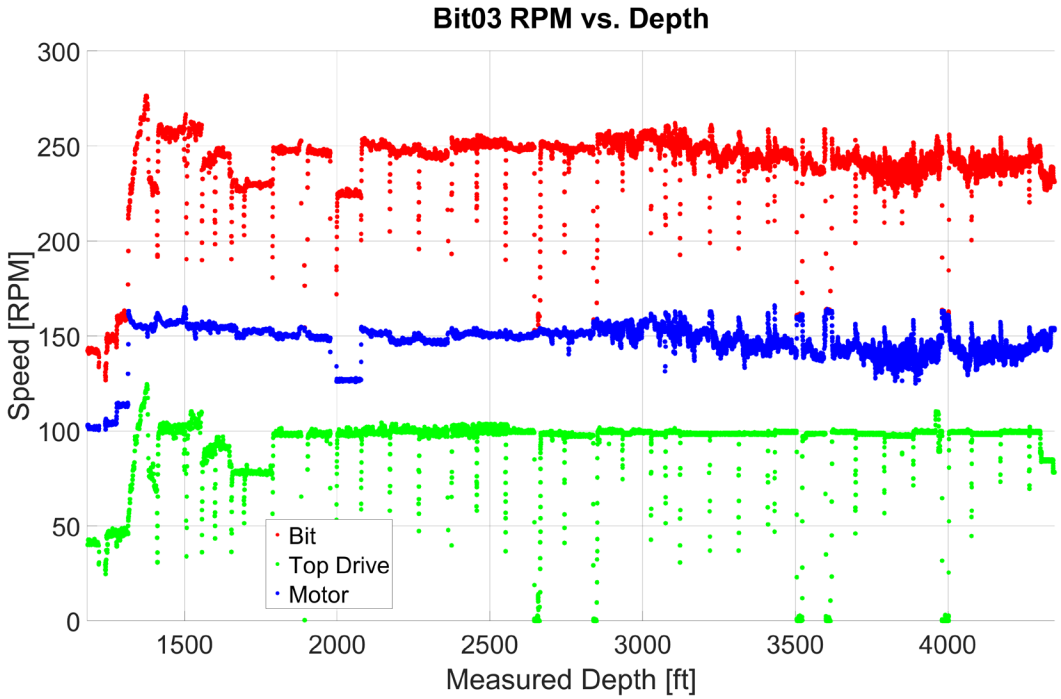
Bit Run Figures:

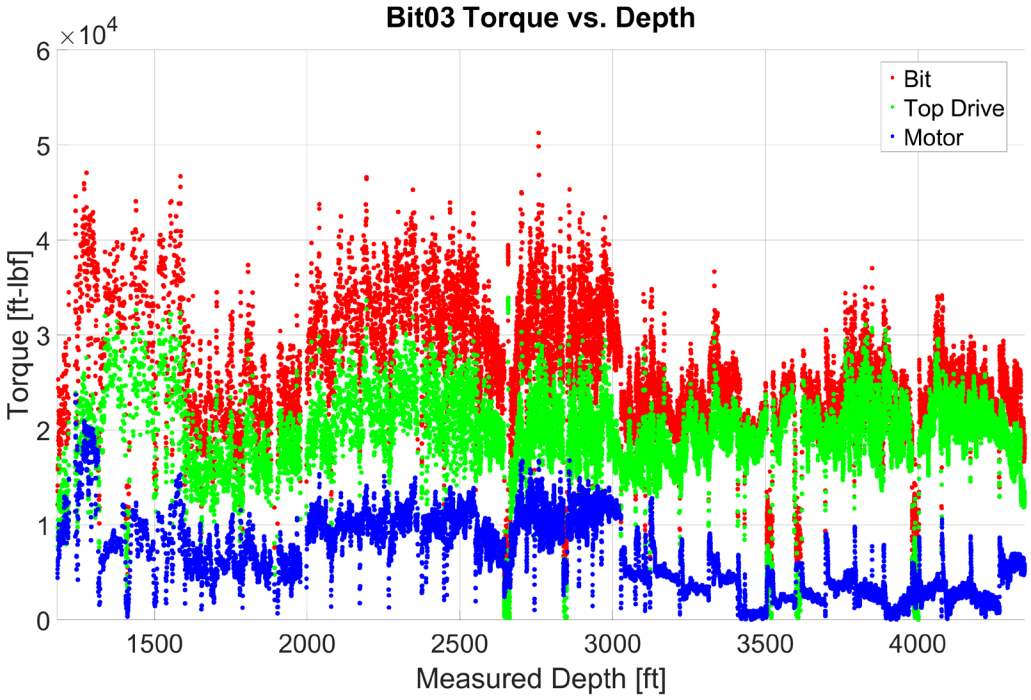

Bit03 Reduction Parameters
Weight on Bit [kip]
Bit Torque [ft-kip]
Bit Speed [rpm]
ROP [ft/hr]
Measured Depth [ft]
0
10
20
30
40
50
60
70
80
200
400
600
800
1000
1200
1400
1600
1800
1500
2000
2500
3000
3500
4000


Bit03 DOC vs. Depth
Depth of Cut [in]
Measured Depth [feet]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1500
2000
2500
3000
3500
4000


Bit03 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
1500
2000
2500
3000
3500
4000
Measured Depth [feet]


Bit03 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
0
1
2
3
4
5
6
7
8
9
10
×10^5
Drilling Strength [psi]
4348.92
2765.44
1181.96





3.4. Bit-4 (Drill Ahead)

Table 8: Bit 4 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No

1	5/1/23 – 5/2/23	14.75	NOV	TKC83, 8 Blade PDC	A298775
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
4	4353	4845	492	9.50	52

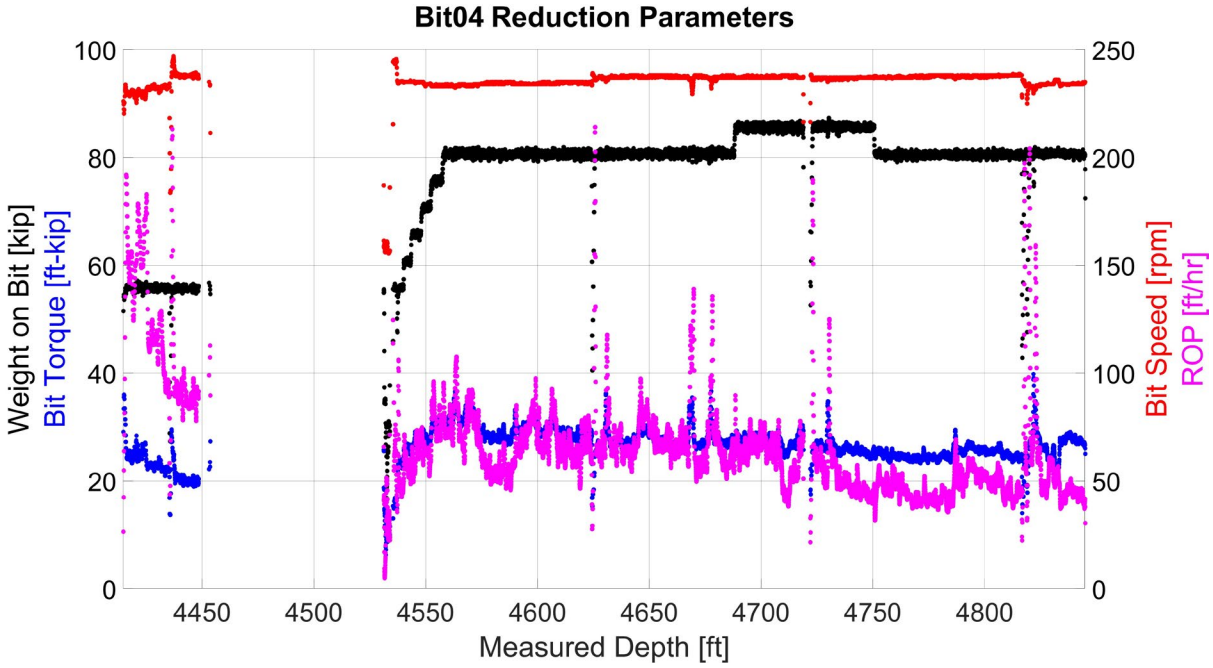
Table 9: BHA 4 component makeup. (SDI End of Well Report)

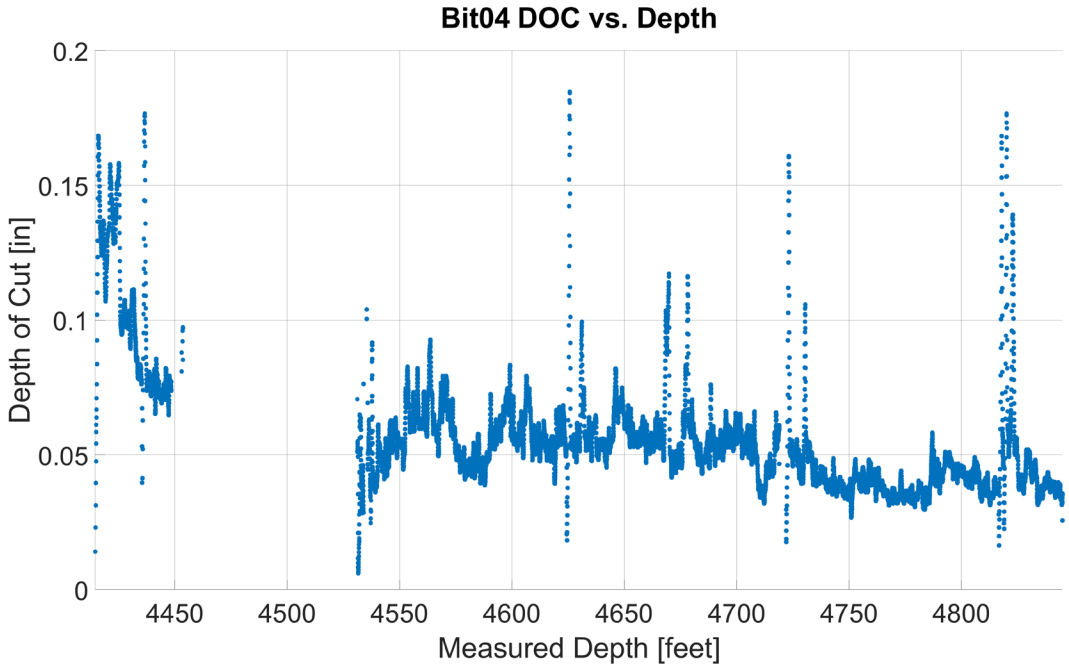
BHA No.	Component	OD (in)	ID (in)	Length (ft)
1	14 ¾" PDC Bit (FN) – 1.48 (4x15, 4x16)	14.75	3.375	1.56
2	9.15 Mud Motor	9.5	4.625	37.96
3	FG 14 ¾" Roller reamer	9.5	3	7.8
4	9 ½ NMDC	9.563	4.25	30.56
5	9 ½ NM Pony DC	9.875	4.25	9
6	9 ½ Hangoff Sub	9.5	4.25	3.01
7	9 ½ Hybrid Sub	9.375	3.5	5.4
8	9 ½ NM Pony DC	9.25	4.25	12.32
9	Crossover	8	3	4.31
10	12 – 8" DC's	8.125	3	363.21
11	Crossover	8	2.875	2.91
12	30 Jts HWDP	7.188	3.875	913.42

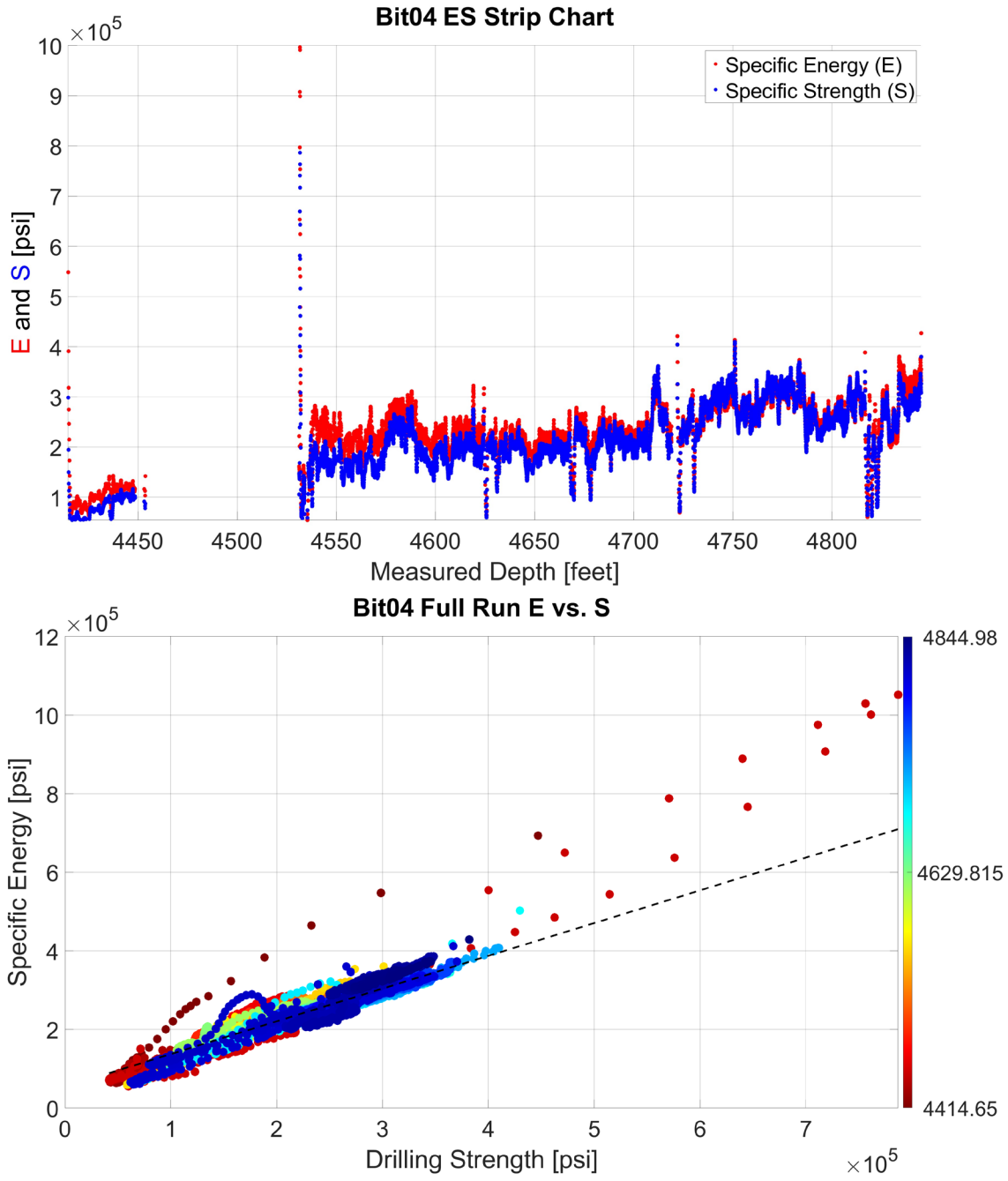
Images:

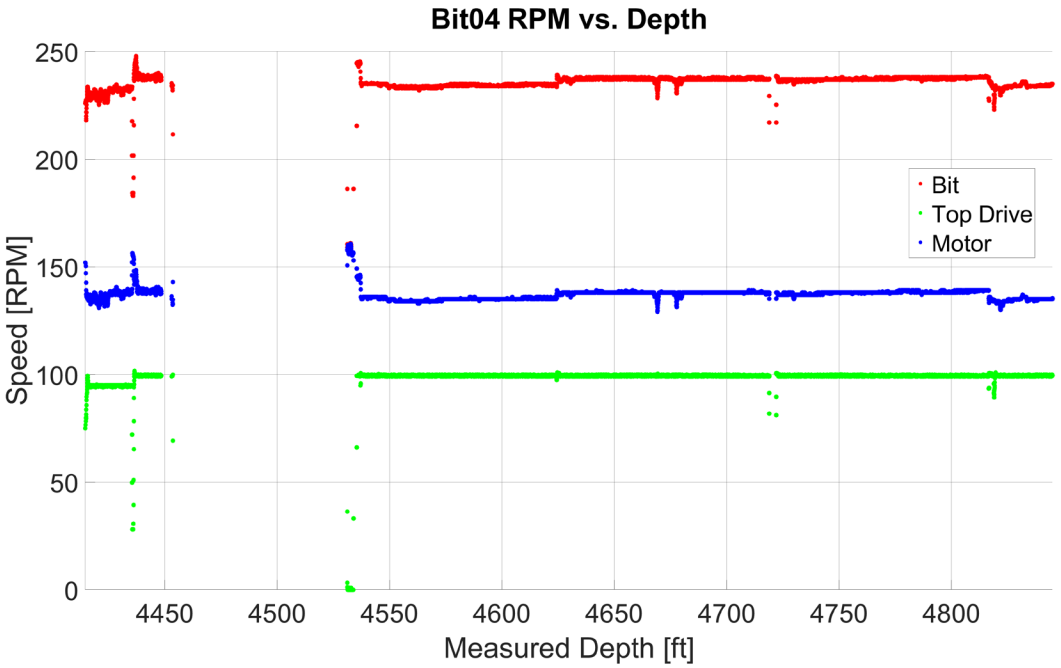
Figure 3-5. Post-drill photo of bit #4.

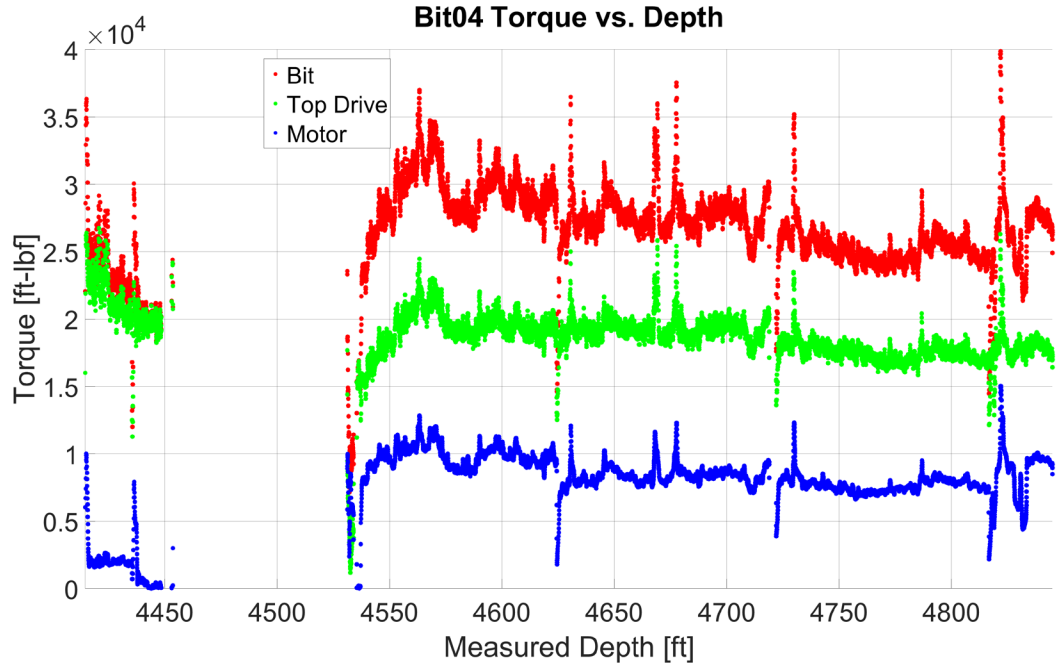
Bit Run Figures:






Bit04 ES Strip Chart
×10^5
Specific Energy (E)
Specific Strength (S)
E and S [psi]
Measured Depth [feet]
Bit04 Full Run E vs. S
Specific Energy [psi]
Drilling Strength [psi]
4844.98
4629.815
4414.65


Bit04 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor
250
200
150
100
50
0
4450
4500
4550
4600
4650
4700
4750
4800


Bit04 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor
4
3.5
3
2.5
2
1.5
1
0.5
0
4450
4500
4550
4600
4650
4700
4750
4800

3.5. Bit-5 (Insert Bit)

Table 10: Bit 5 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/8/23	9.5	SANJOAQ	MX-S50R	W45JG
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
5	4845	4855	10	0.5	20

Table 11: BHA 5 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	Bit			
2	BS			
3	5 DC			
4	XO			
5	30 HWDP			

Images:

Figure 3-6. Post-drill photo of bit #5.

3.6. Bit-6 (Core)

Table 12: Bit 6 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/8/23 – 5/9/23	8.75	CCI	CCI-913	3409-05
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
6	4855	4871	16	2.5	6.4

Table 13: BHA 6 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	Bit			
2	NBS			
3	PC			
4	STAB			
5	CORE			
6	STAB			
7	CORE			
8	STAB			
9	OTHER			
10	JAR			
11	DC			
12	XO			
13	30 JTS HWDP			

Images:

Figure 3-7. Post-drill photo of bit #6.

3.7. Bit-7 (Core)

Table 14: Bit 7 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/9/23	8.75	CCI	CCI-913	4219-01
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
7	4871	4878	7	2.5	2.8

Table 15: BHA 7 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	BS			
3	RR			
4	OTHER			
5	RR			
6	DC			
7	RR			
8	12 DC			
9	XO			
10	30 HWDP			

Images:

Figure 3-8. Post-drill photo of bit #7.

3.8. Bit-8 (Particle Drill)

Table 16: Bit 8 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/11/23	9.5	NOV	E1451	A298243
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
8	4878	4910	32	2	16

Table 17: BHA 8 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	BS			
3	RR			

4	OTHER			
5	RR			
6	DC			
7	RR			
8	12 DC			
9	XO			
10	30 HWDP			

Images:

Figure 3-9. Pre-drill photo of bit #8.

Figure 3-10. Post-drill photo of bit #8

3.9. Bit-9 (Particle Drill)

Table 18: Bit 9 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/11/23	9.5	NOV	E1451	A298244
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
9	4910	4978	68	3.5	19.43

Table 19: BHA 9 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	BS			
3	RR			
4	OTHER			
5	RR			
6	DC			
7	RR			

8	12 DC			
9	XO			
10	30 HWDP			

Images:

Figure 3-11. Pre-drill photo of bit #9.

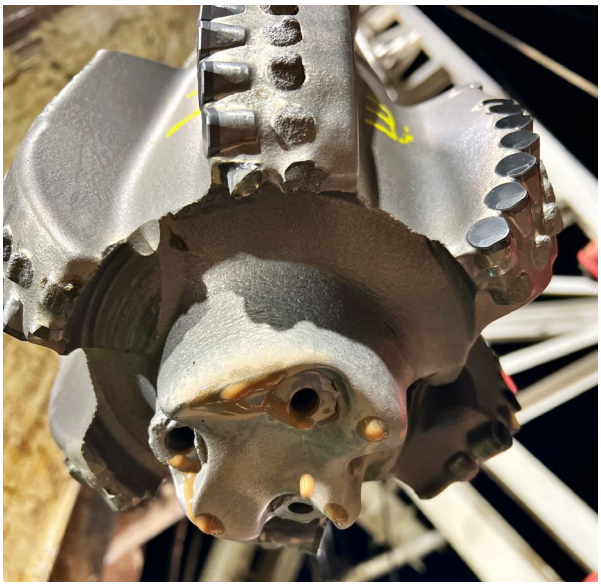


Figure 3-12. Post-drill photo of bit #9

3.10. Bit-10 (Ream, Run No. 2 of Bit-5)

Table 20: Bit 10 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
2	05/12/23	9.5	SANJOAQ	MX-S50R	W45JG
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
10	4978	4980	2	1	2

Table 21: BHA 10 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	Bit			
2	BS			
3	5 DC			
4	XO			
5	30 HWDP			

Images:

Figure 3-13. Post-drill photo of bit #10.

3.11. Bit-11 (Drill Ahead)

Table 22: Bit 11 run summary. (Daily Drilling Report & Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/13/23	9.5	NOV	TKC73A1, 7 Blade PDC	A298329
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
11	4980	5269	289	4.00	72.3

Table 23: BHA 11 component makeup. (SDI End of Well Report)

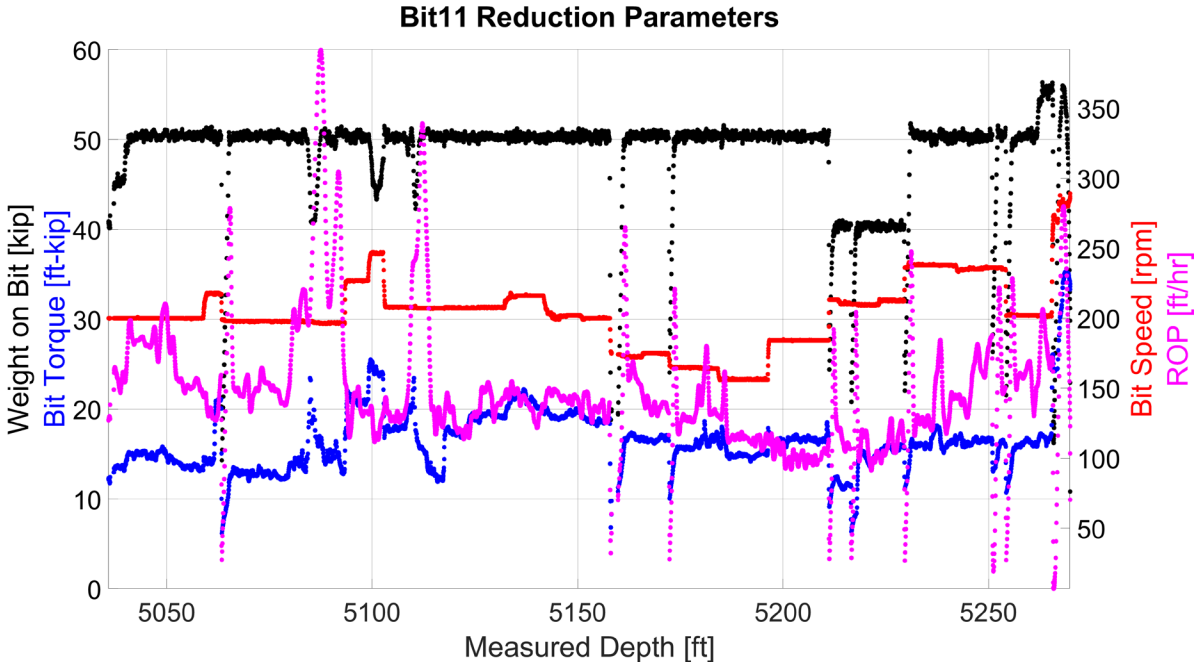
BHA No.	Component	OD	ID	Length
1	9 1/2" 7 Blade PDC bit	9.5	2.75	1.13
2	HALO RSS w/HFTO	6.75	2	35.38
3	Spiral wrapped IB Stabilizer	6.5	2.813	5.62
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	FG 9 1/2" Roller reamer	6.375	3	5.64
7	6 3/4 RIPstick	6.75	2	19.93
8	6 3/4 Black Box	6.75	2.25	6
9	7.15 Mud Motor	7.188	2	41.28
10	6 3/4 Filter sub	6.688	3.25	3.93
11	9 JTS, 6 3/4" DC's	6.813	2.875	278.27
12	Crossover (DC's to HWDP)	6.937	3	3.15
13	30 JTS HWDP	5.5	3.625	913.42

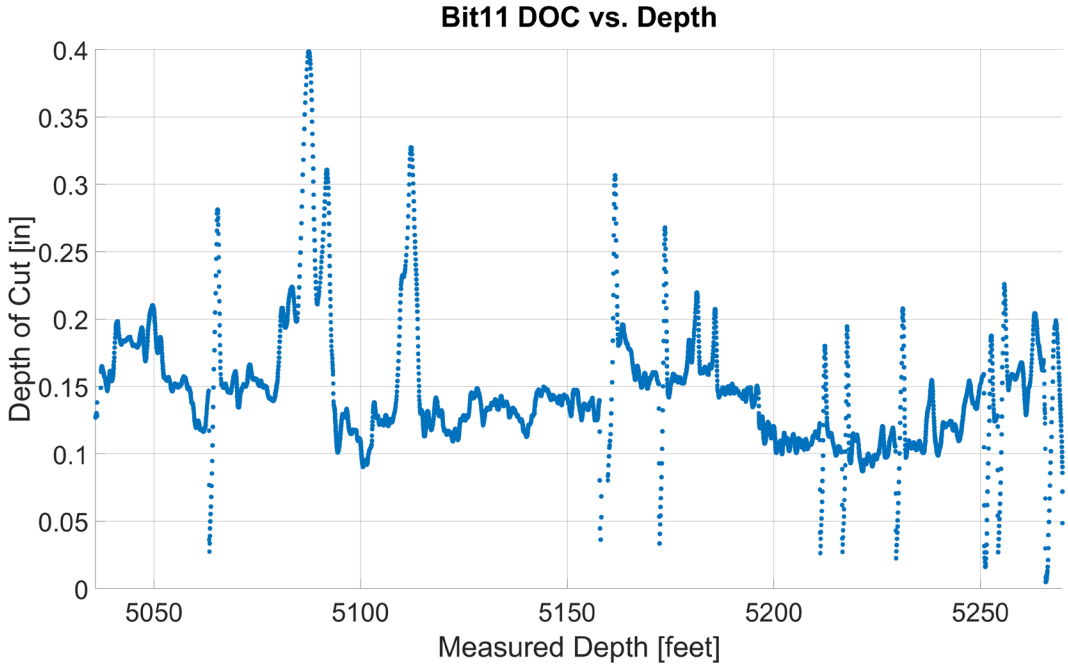
Images:

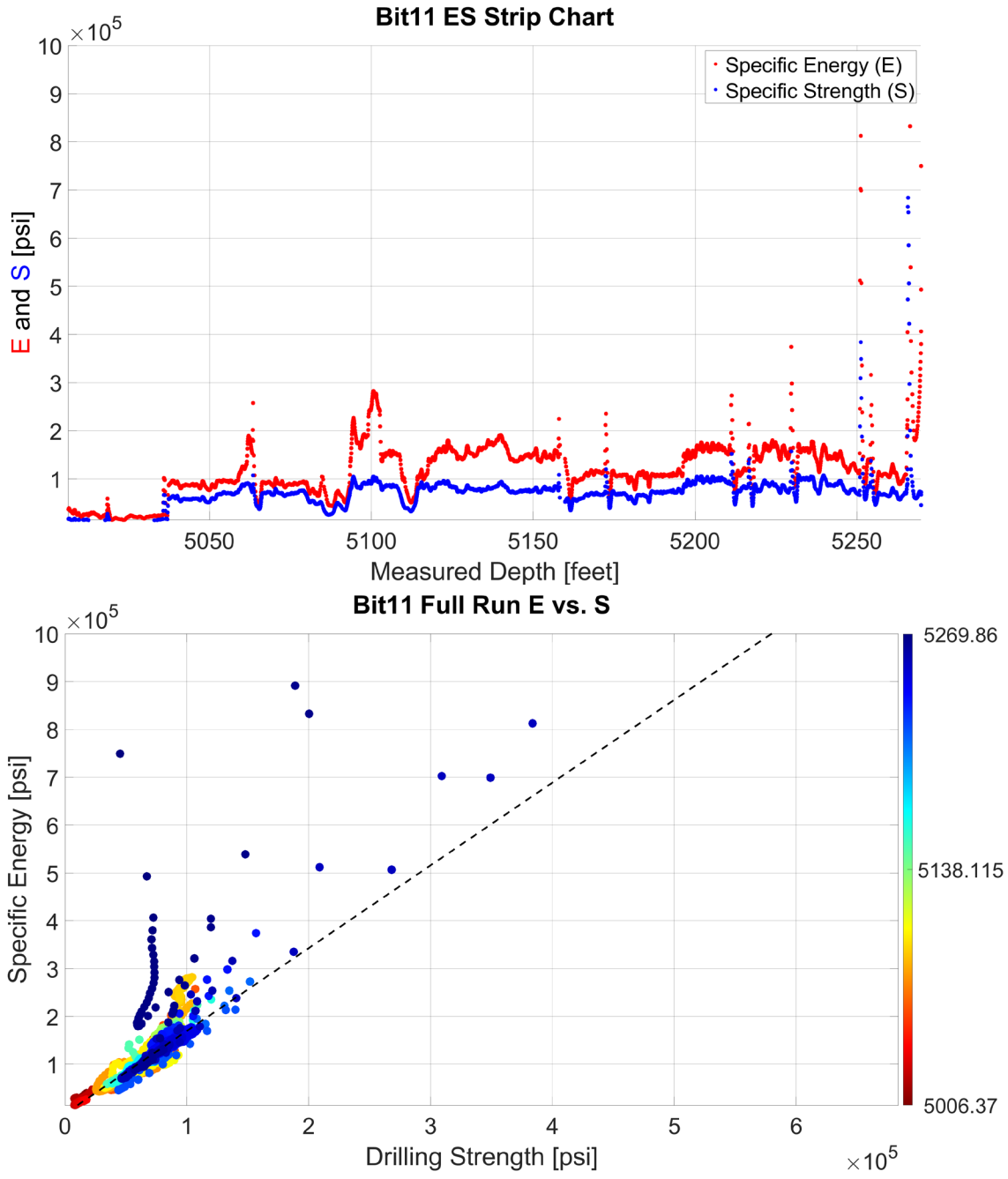
Figure 3-14. Pre-drill photo of bit #11.

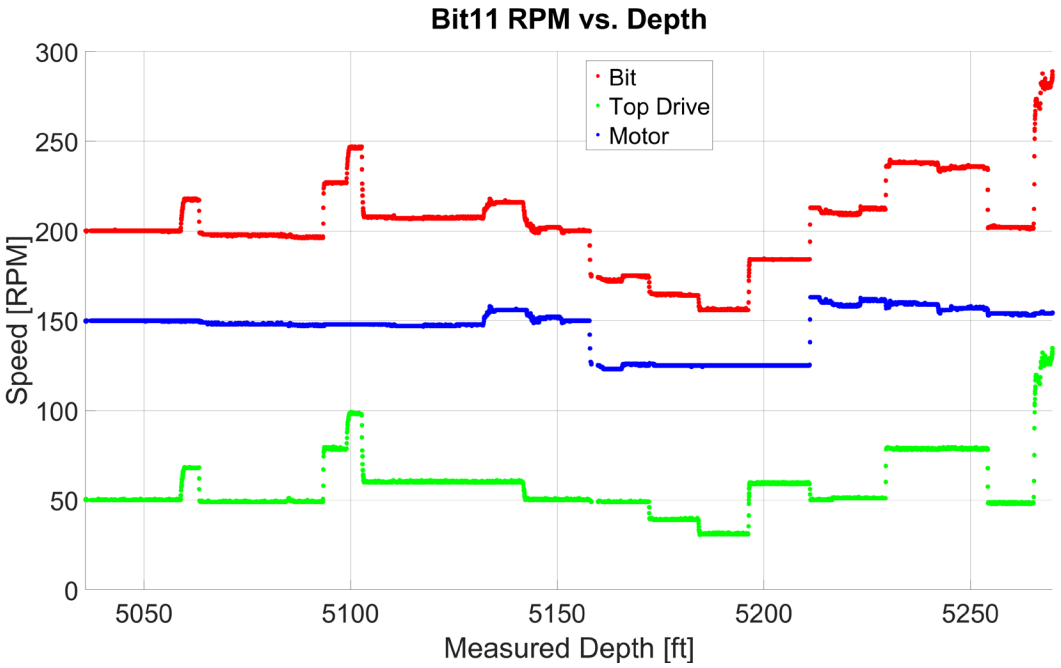
Figure 3-15. Post-drill photo of bit #11.

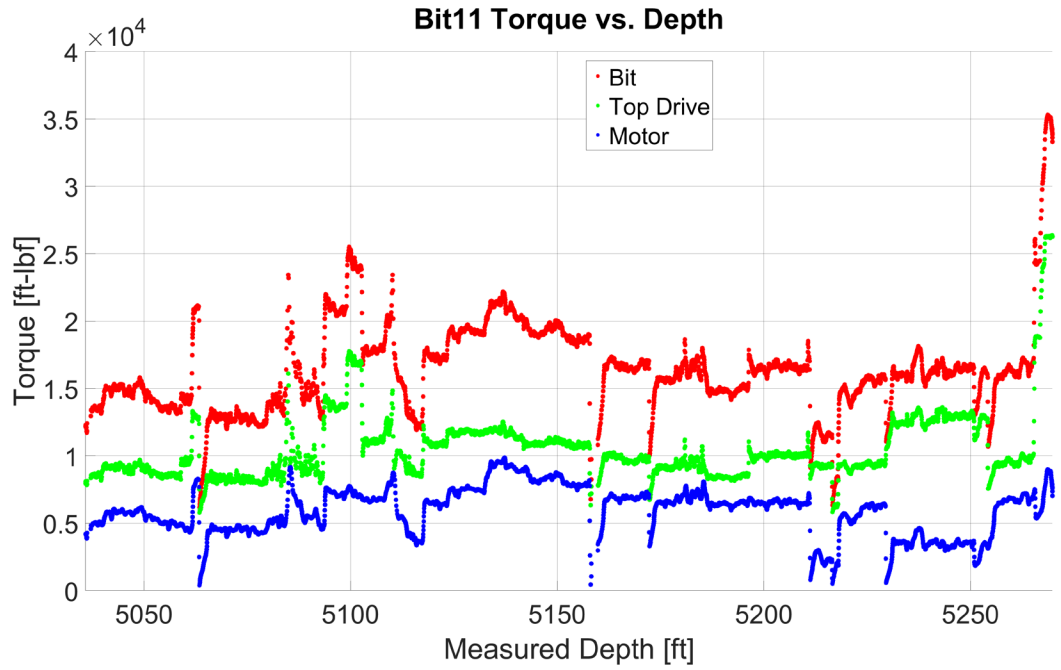
Bit Run Figures:






Bit11 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
5050
5100
5150
5200
5250
Measured Depth [feet]
Bit11 Full Run E vs. S
×10^5
Specific Energy [psi]
0
1
2
3
4
5
6
Drilling Strength [psi]
×10^5
5269.86
5138.115
5006.37





3.12. Bit-12 (Drill Ahead)

Table 24: Bit 12 run summary. (Daily Drilling Report and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/13/23-5/15/23	9.5	NOV	TKC73A1, 7 Blade PDC	A298328
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
12	5269	5957	688	14.50	47.4

Table 25: BHA 12 component makeup. (SDI End of Well Report)

BHA No.	Component	OD	ID	Length
1	9 1/2" 7 Blade PDC bit	9.5	2.75	1.13
2	HALO RSS w/HFTO (Stiff)	6.75	2	35.31
3	Spiral wrapped IB Stabilizer	6.5	2.813	5.66
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	FG 9 1/2" Roller reamer	6.625	2.938	6.71
7	6 3/4 Black Box	6.75	2.25	6
8	6 3/4" Float sub	6.375	2.875	2.45
9	6 3/4 Filter sub	6.688	3.25	3.93
10	9 JTS, 6 3/4" DC's	6.813	2.875	278.27
11	Crossover (DC's to HWDP)	6.937	3	3.15
12	30 JTS HWDP	5.5	3.625	913.42

Images:

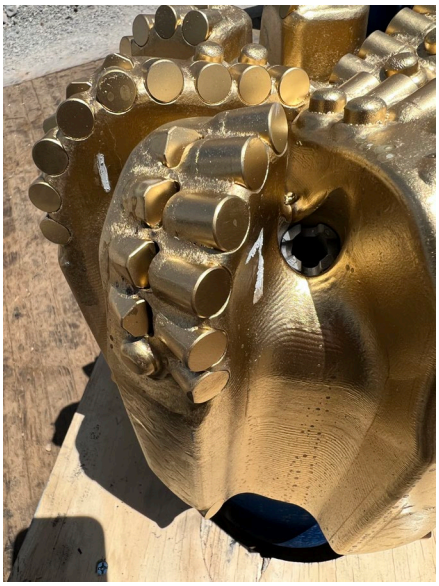
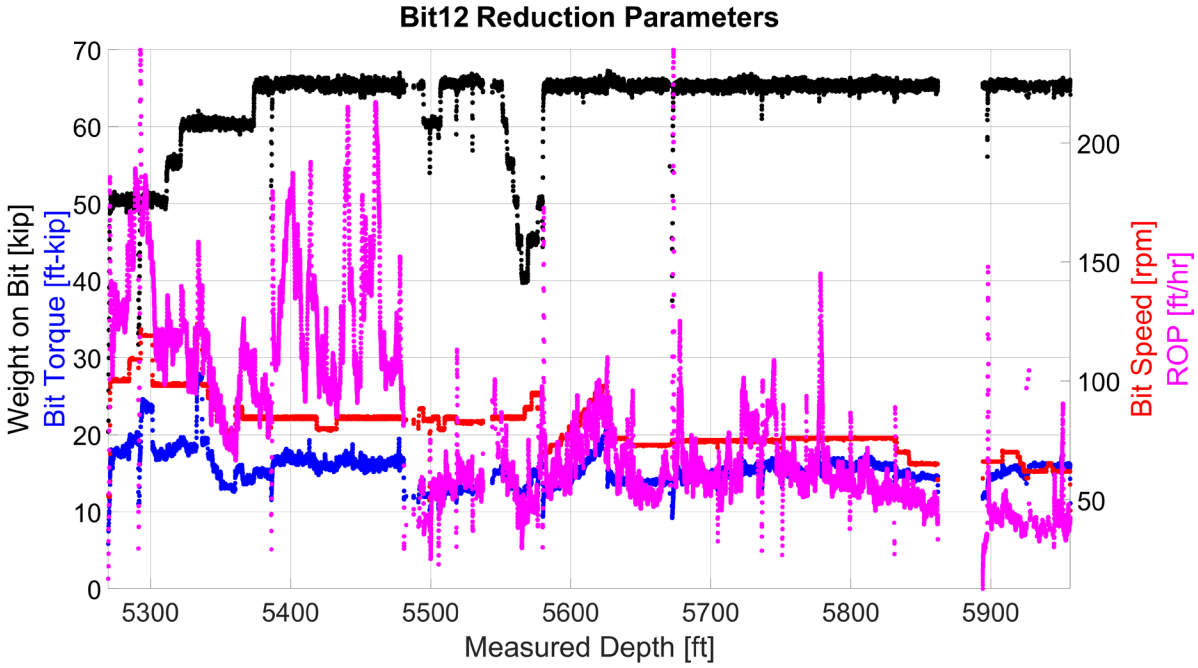
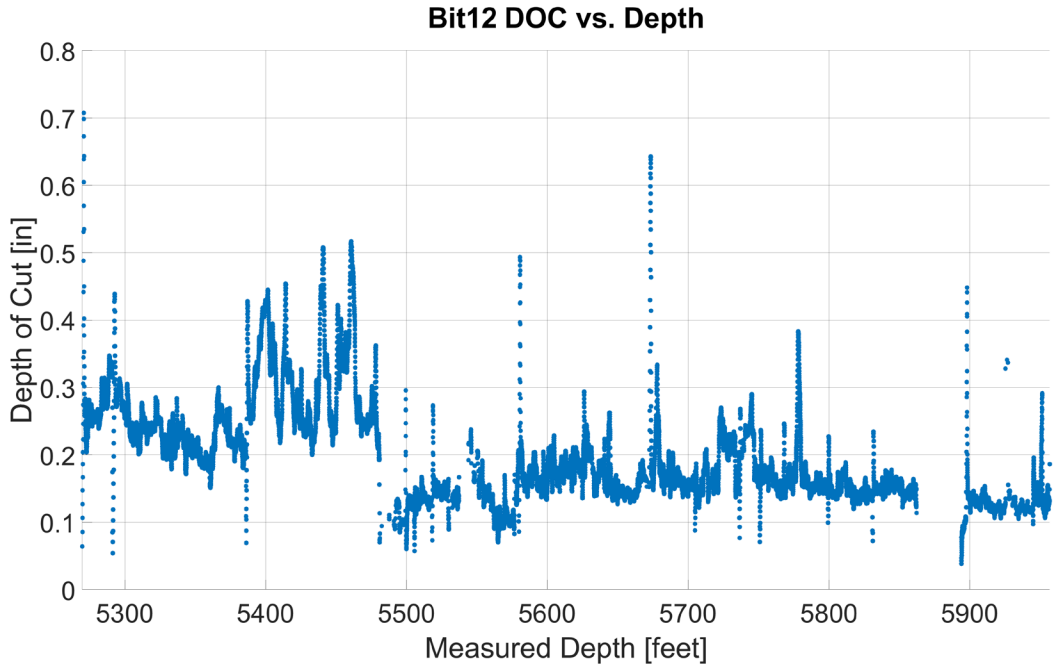


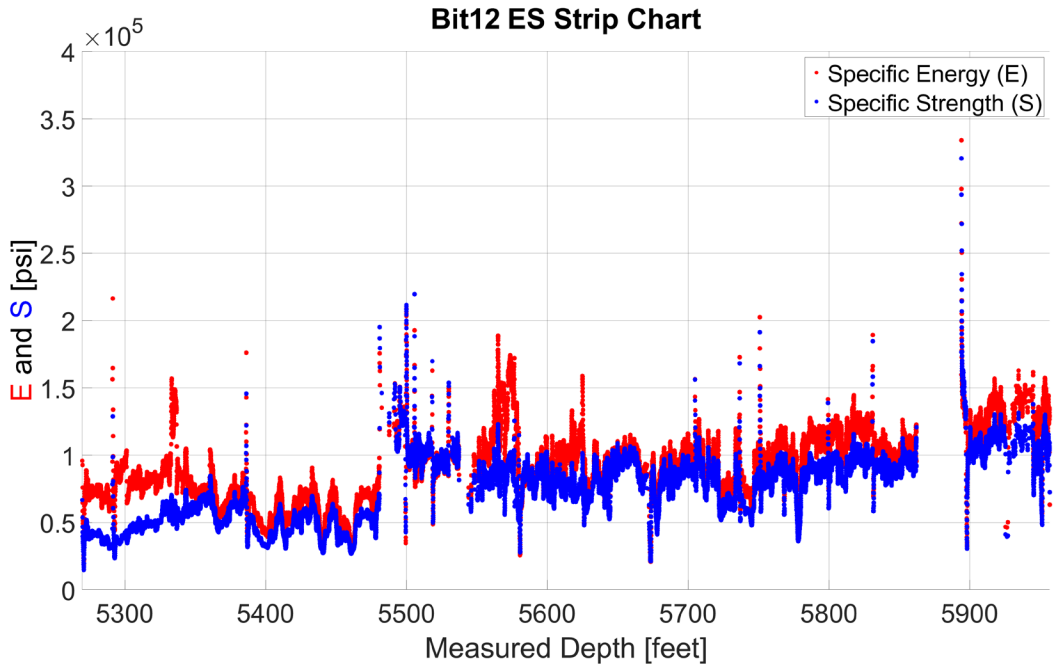
Figure 3-16. Pre-drill photo of bit #12.

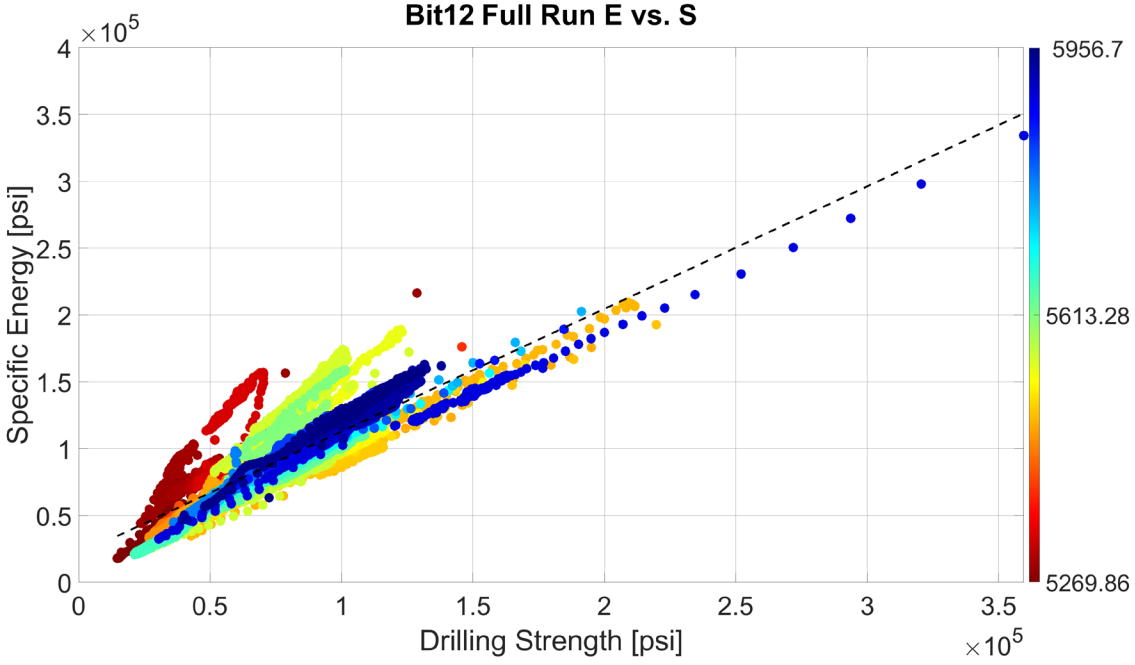
Figure 3-17. Post-drill photo of bit #12.

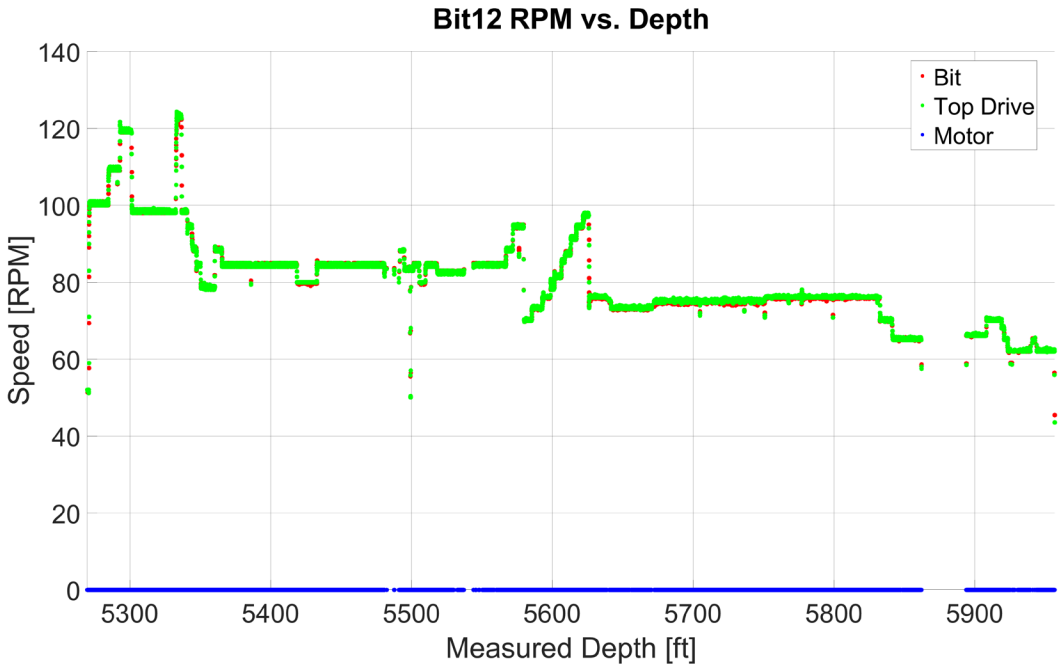
Bit Run Figures:

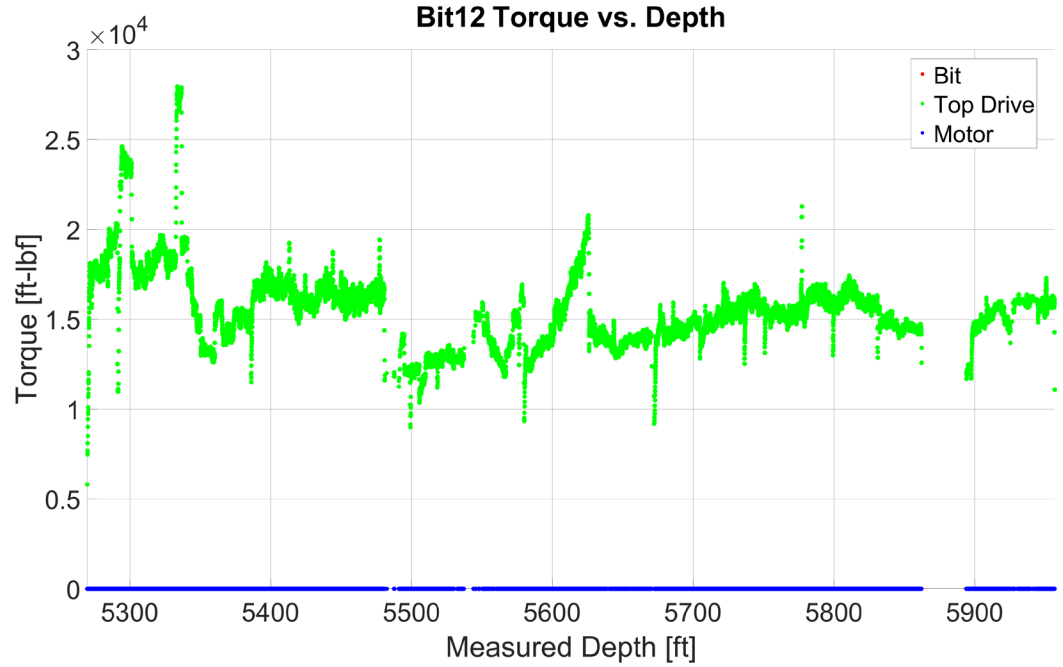





Bit12 ES Strip Chart
×10^5
4
3.5
3
2.5
2
1.5
1
0.5
0
E and S [psi]
Specific Energy (E)
Specific Strength (S)
5300
5400
5500
5600
5700
5800
5900
Measured Depth [feet]


Bit12 Full Run E vs. S
×10^5
4
3.5
3
2.5
2
1.5
1
0.5
0
Specific Energy [psi]
0
0.5
1
1.5
2
2.5
3
3.5
×10^5
Drilling Strength [psi]
5956.7
5613.28
5269.86


Bit12 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor
0
20
40
60
80
100
120
140
5300
5400
5500
5600
5700
5800
5900


Bit12 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor
0
0.5
1
1.5
2
2.5
3
5300
5400
5500
5600
5700
5800
5900

3.13. Bit-13 (Drill Ahead)

Table 26: Bit 13 run summary. (Daily Drilling Report and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/15/23-5/16/23	9.5	NOV	TKC73A1, 7 Blade PDC	A208330
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
13	5957	6545	588	14.00	42.0

Table 27: BHA 13 component makeup. (SDI End of Well Report)

BHA No.	Component	OD	ID	Length
1	9 1/2" 7 Blade PDC bit	9.5	2.75	1.13
2	HALO RSS w/HFTO (Stiff)	6.75	2	35.31
3	Spiral wrapped IB Stabilizer	6.5	2.813	5.42
4	6 3/4 NMDC	6.813	3.25	31.11
5	FG 9 1/2" Roller reamer	6.625	2.938	6.71
6	6 3/4 Black Box	6.75	2.25	5.9
7	6 3/4" Float sub	6.375	2.875	2.45
8	6 3/4 Filter sub	6.688	3.25	3.93
9	9 JTS, 6 3/4" DC's	6.813	2.875	278.27
10	Crossover (DC's to HWDP)	6.937	3	3.15
11	30 JTS HWDP	5.5	3.625	913.42

Images:

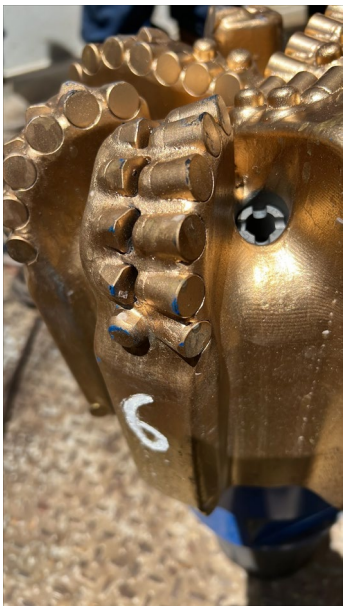
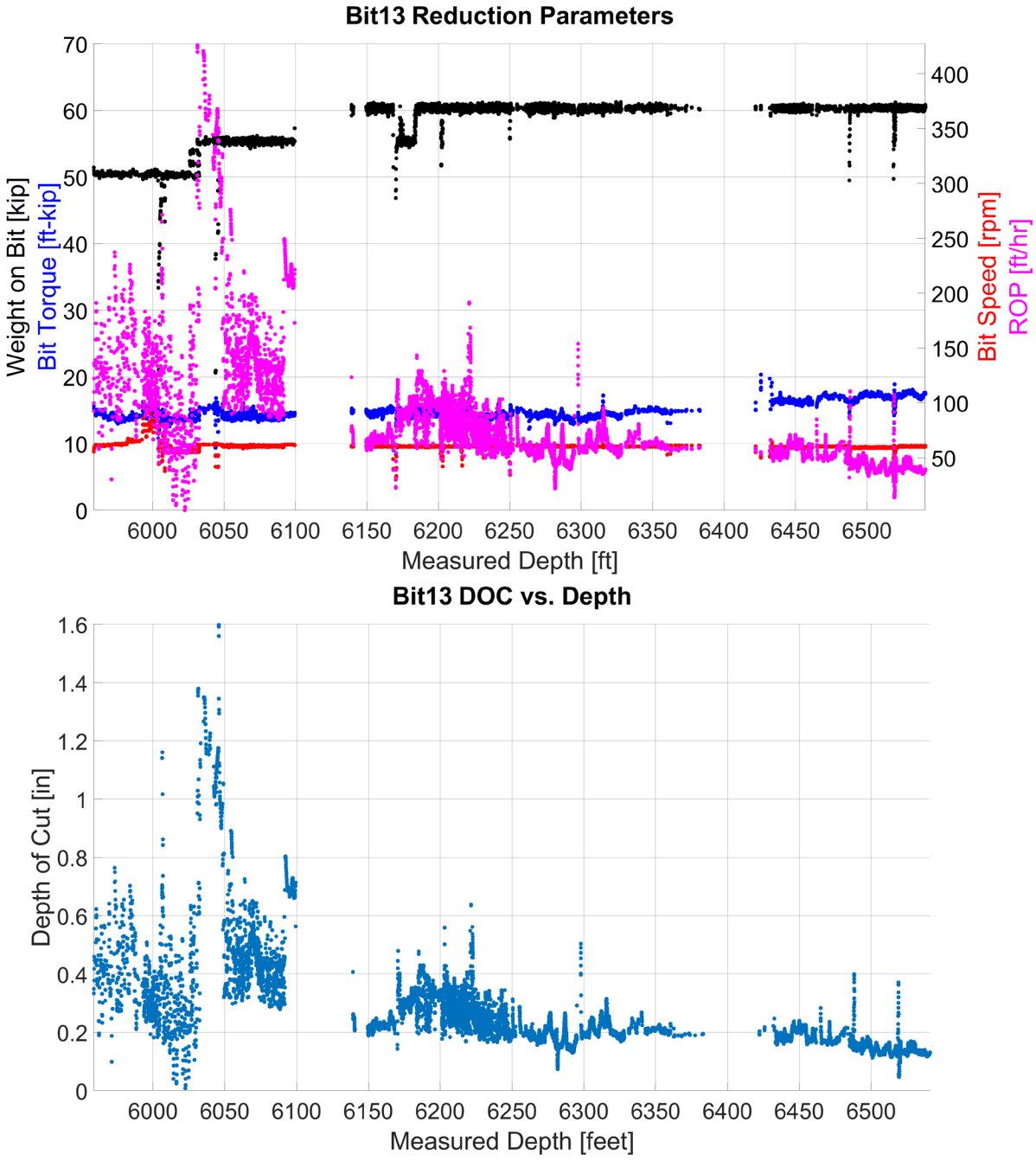
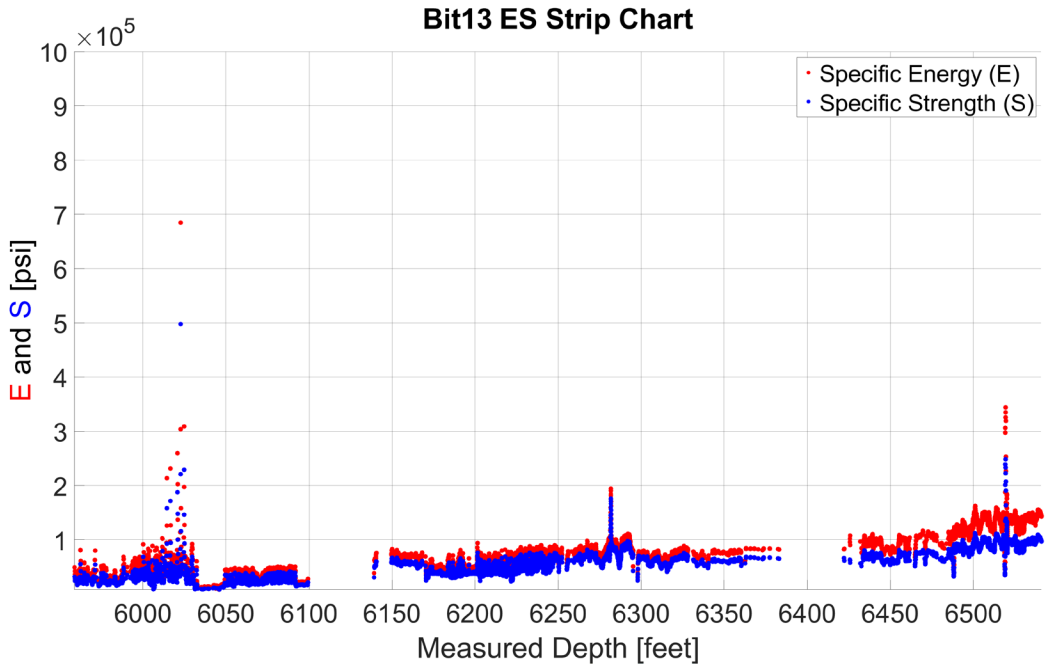


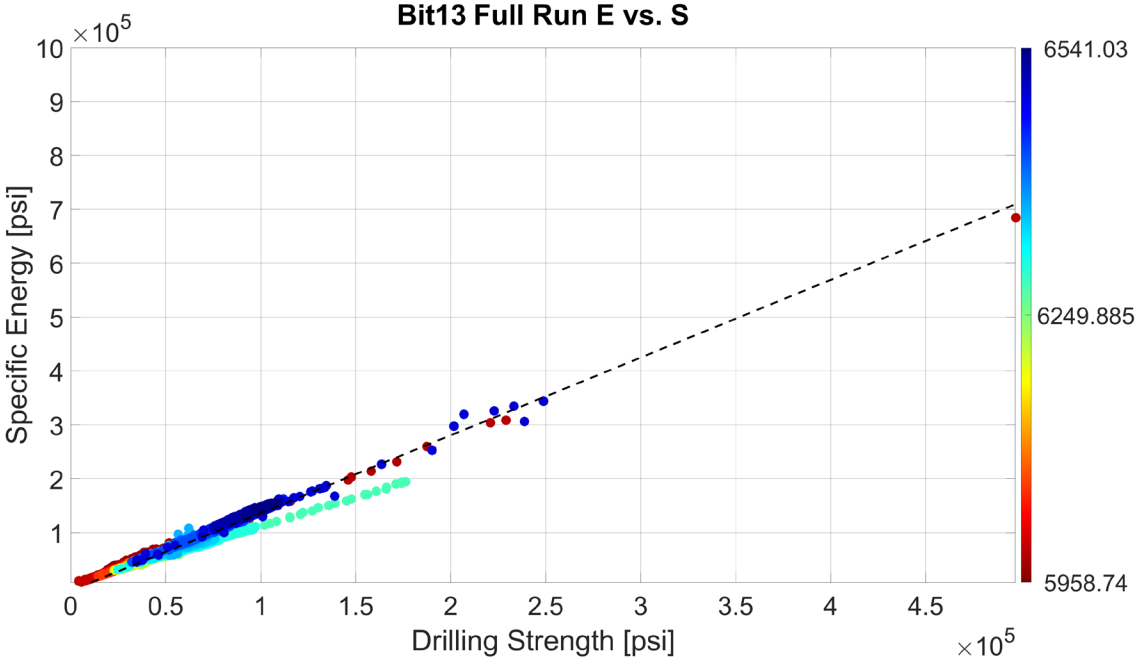
Figure 3-18. Pre-drill photo of bit #13.

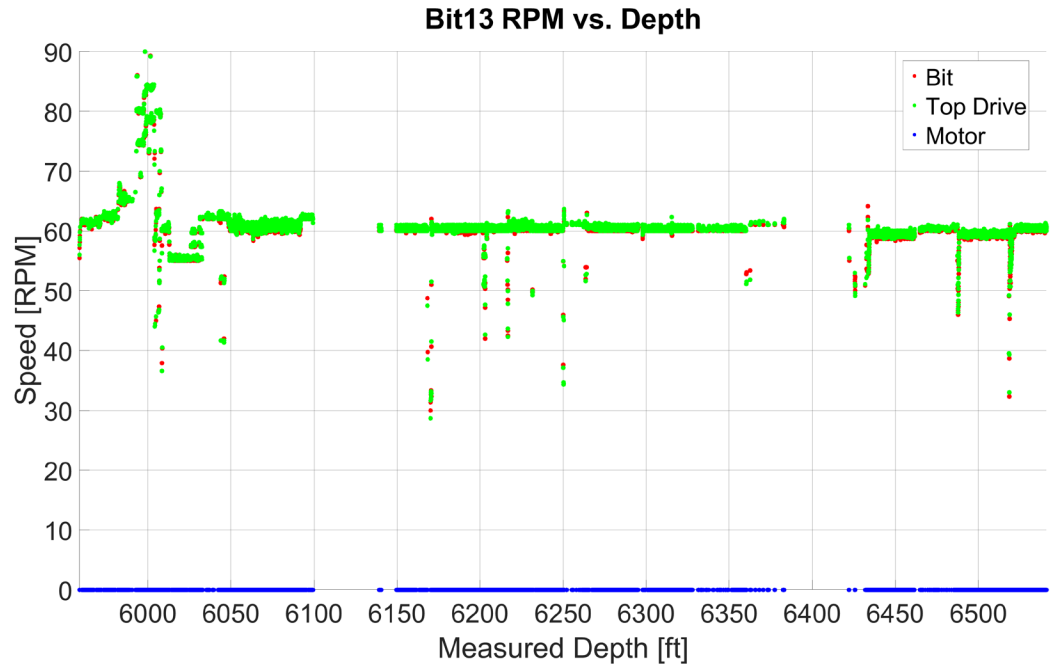
Figure 3-19. Post-drill photo of bit #13.

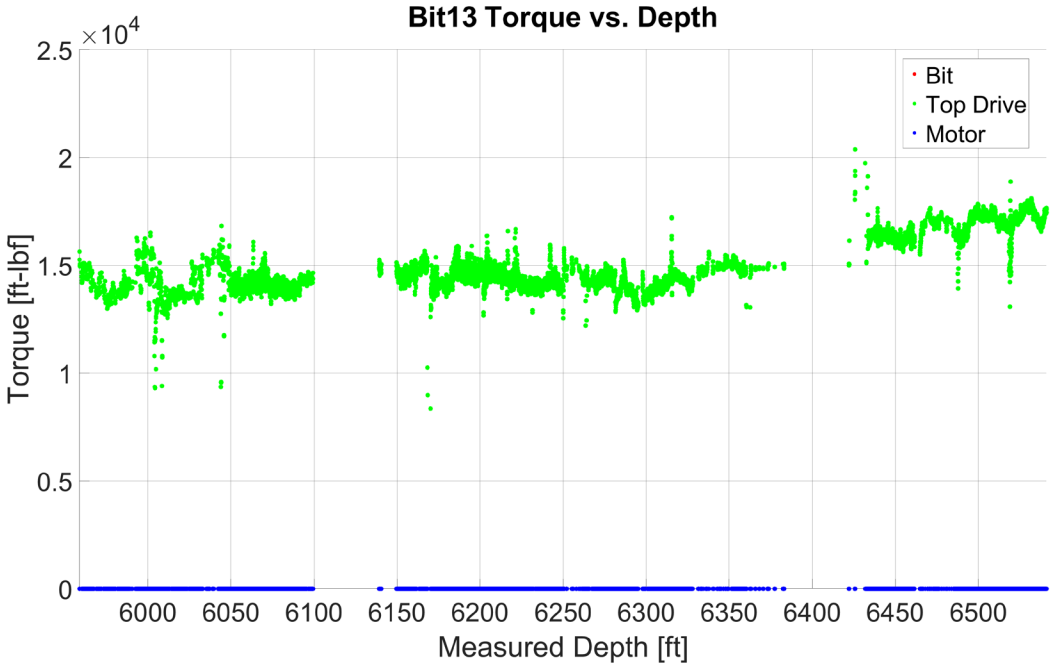
Bit Run Figures:




Bit13 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
6000
6050
6100
6150
6200
6250
6300
6350
6400
6450
6500
Measured Depth [feet]


Bit13 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Drilling Strength [psi]
×10^5
6541.03
6249.885
5958.74


Bit13 RPM vs. Depth
Bit
Top Drive
Motor
Speed [RPM]
Measured Depth [ft]
0
10
20
30
40
50
60
70
80
90
6000
6050
6100
6150
6200
6250
6300
6350
6400
6450
6500


Bit13 Torque vs. Depth
×10^4
Bit
Top Drive
Motor
Torque [ft-lbf]
Measured Depth [ft]
0
0.5
1
1.5
2
2.5
6000
6050
6100
6150
6200
6250
6300
6350
6400
6450
6500

3.14. Bit-14 (Drill Ahead)

Table 28: Bit 14 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/17/23	9.5	NOV	TKC83, 8 Blade PDC	A298355
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
14	6545	6610	65	1.00	65.0

Table 29: BHA 14 component makeup. (SDI End of Well Report)

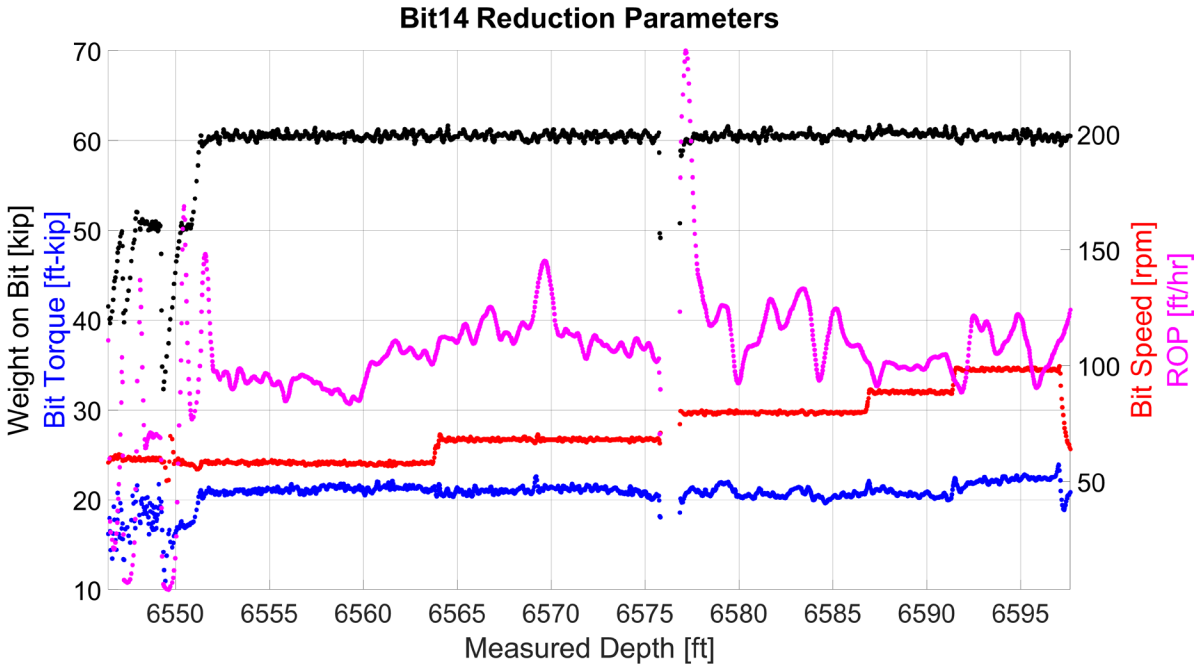
BHA No.	Component	OD	ID	Length
1	9 1/2 8 Blade PDC bit	9.5	2.75	1.18
2	HALO RSS w/HFTO (Stiff)	6.75	2	35.31
3	9 3/8 Spiral Stabilizer	6.5	2.875	4.14
4	6 3/4 NM Pony DC	6.438	3.5	12.24
5	6 3/4 NM Pony DC	6.813	3.25	9.83
6	FG 9 1/2 Roller reamer	6.625	3	5.39
7	6 3/4 NMDC	6.813	3.25	31.11
8	6 3/4 Black Box	6.75	2.25	6
9	6 3/4 Filter sub	6.688	3.25	3.93
10	6 3/4 Float sub	6.375	2.875	2.45
11	9 JTS, 6 3/4 DCs	6.813	2.875	278.27
12	Crossover (DCs to HWDP)	6.937	3	3.15
13	30 JTS HWDP	5.5	3.625	913.42

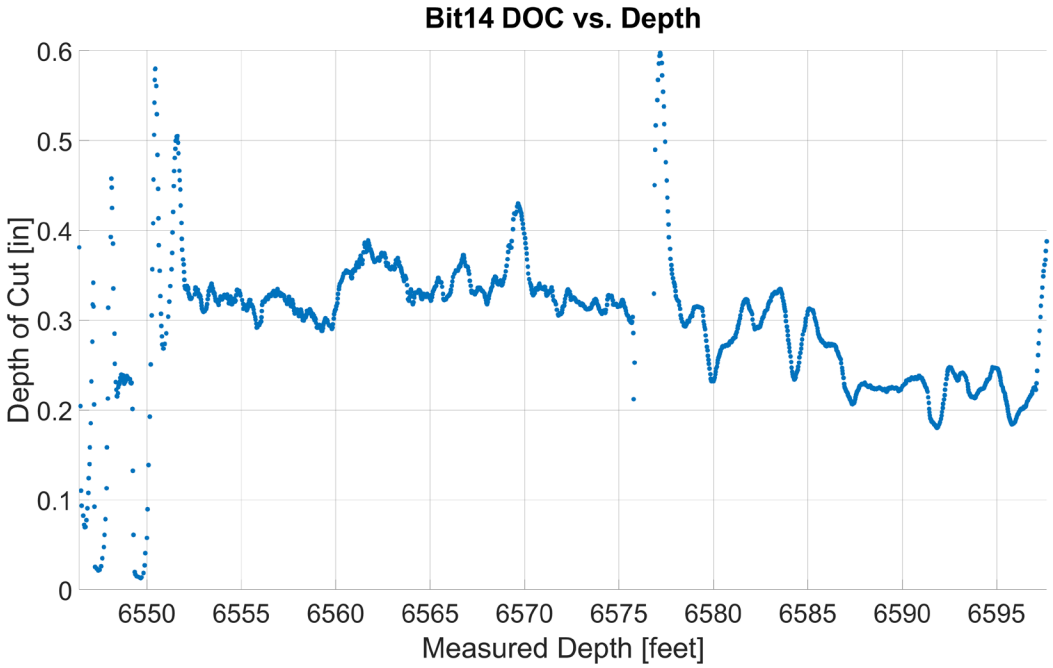
Images

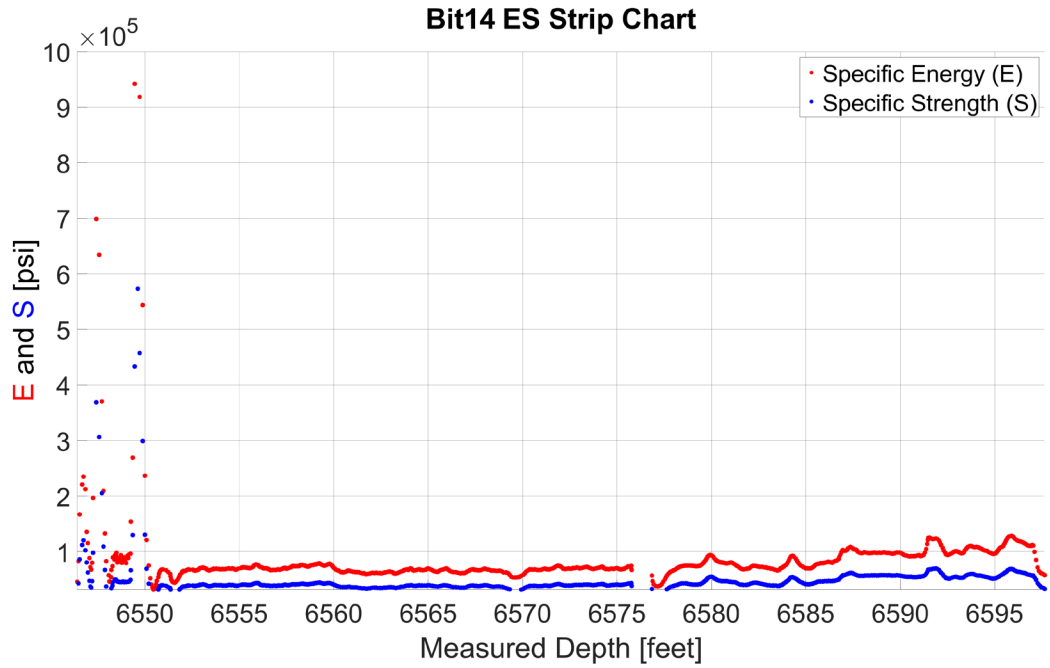
Figure 3-20. Pre-drill photo of bit #14.

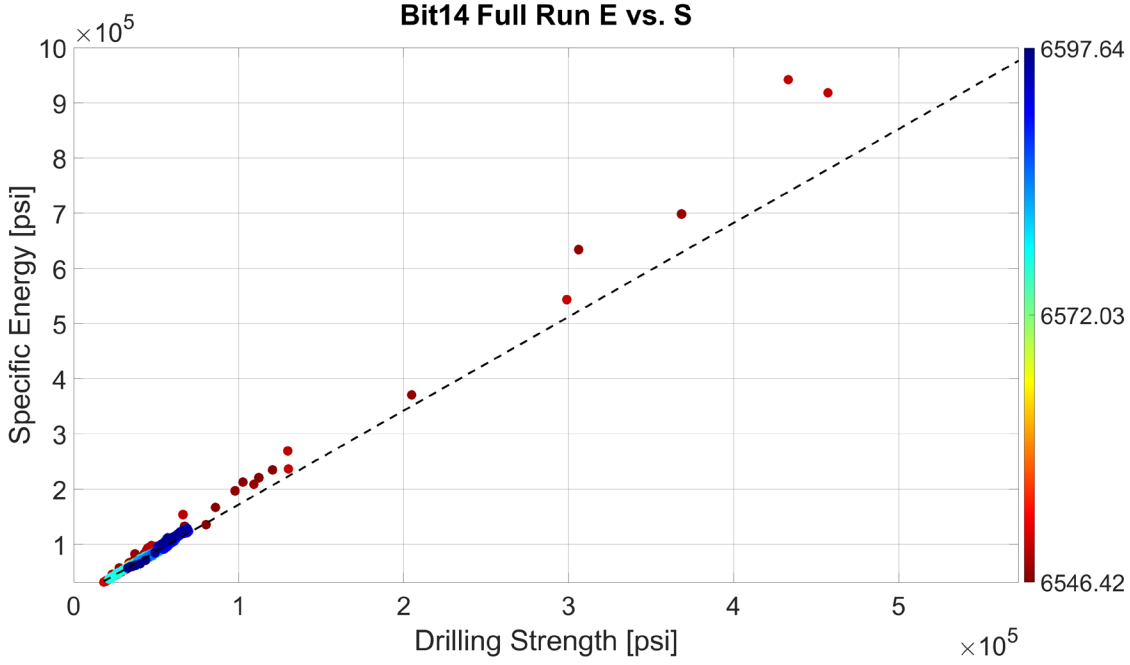
Figure 3-21. Post-drill photo of bit #14.

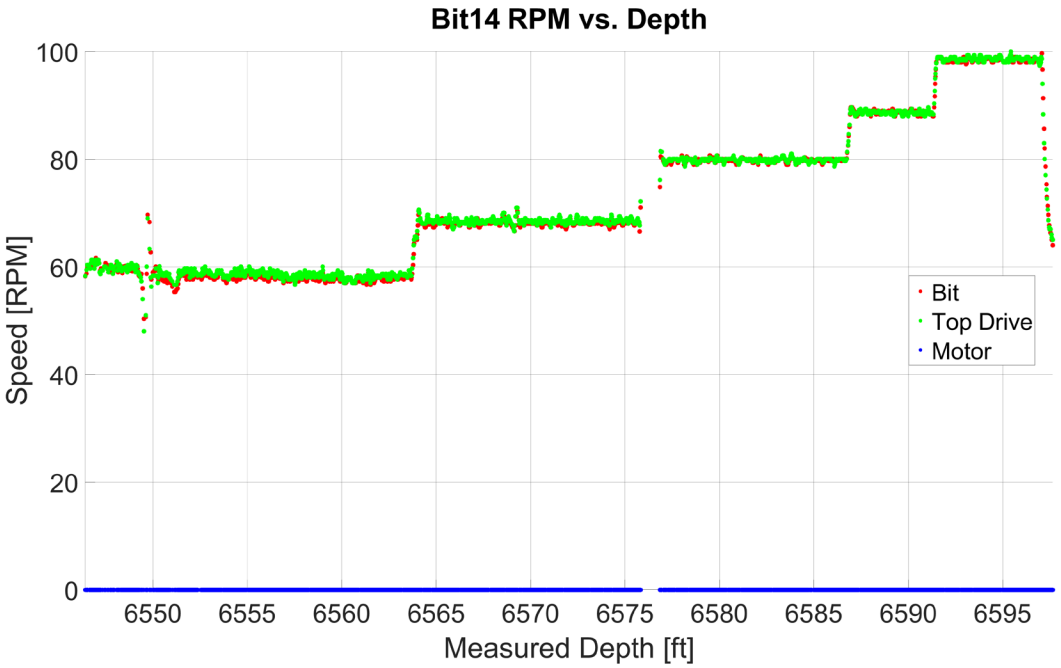
Bit Run Figures:

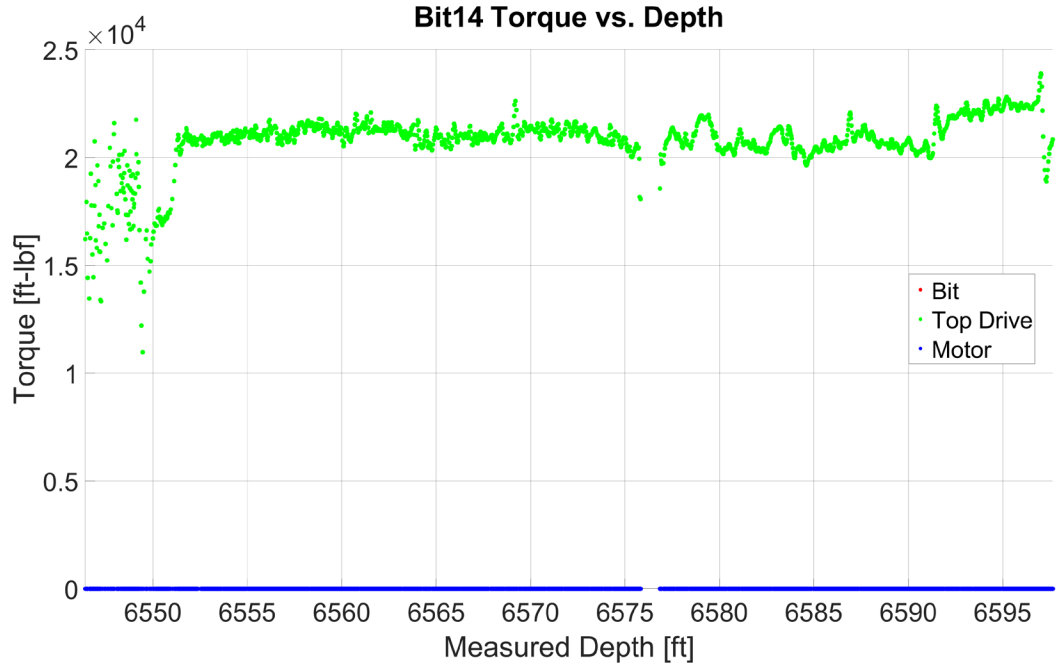





Bit14 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
6550
6555
6560
6565
6570
6575
6580
6585
6590
6595
Measured Depth [feet]


Bit14 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
6597.64
6572.03
6546.42
0
1
2
3
4
5
Drilling Strength [psi]
×10^5


Bit14 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor


Bit14 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor

3.15. Bit-15 (Drill Ahead)

Table 30: Bit 15 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/18/23-5/19/23	9.5	NOV	TKC83, 8 Blade PDC	A298353
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
15	6610	6950	340	9.50	35.8

Table 31: BHA 15 component makeup. (SDI End of Well Report)

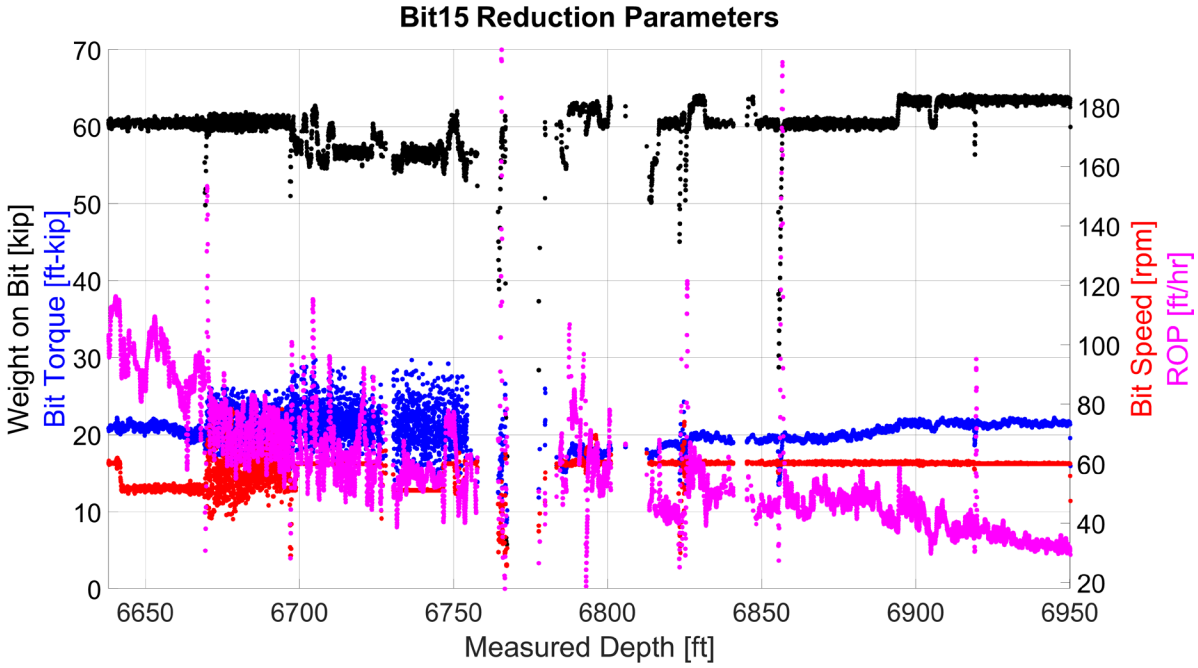
BHA No.	Component	OD	ID	Length
1	9 1/2 8 Blade PDC bit	9.5	2.75	1.22
2	HALO RSS w/HFTO (Flex)	6.75	2	35.48
3	9 3/8 Spiral wrapped stabilizer	6.5	2.875	4.14
4	6 3/4 NM Pony DC	6.438	3.5	12.24
5	6 3/4 NM Pony DC	6.813	3.25	9.83
6	FG 9 1/2 Roller reamer	6.625	3	5.39
7	6 3/4 NMDC	6.813	3.25	31.11
8	6 3/4 Black Box	6.75	2.25	6
9	6 3/4 Filter sub	6.688	3.25	3.93
10	6 3/4 Float sub	6.375	2.875	2.45
11	9 JTS, 6 3/4 DCs	6.813	2.875	278.27
12	Crossover (DCs to HWDP)	6.937	3	3.15
13	30 JTS HWDP	5.5	3.625	913.42

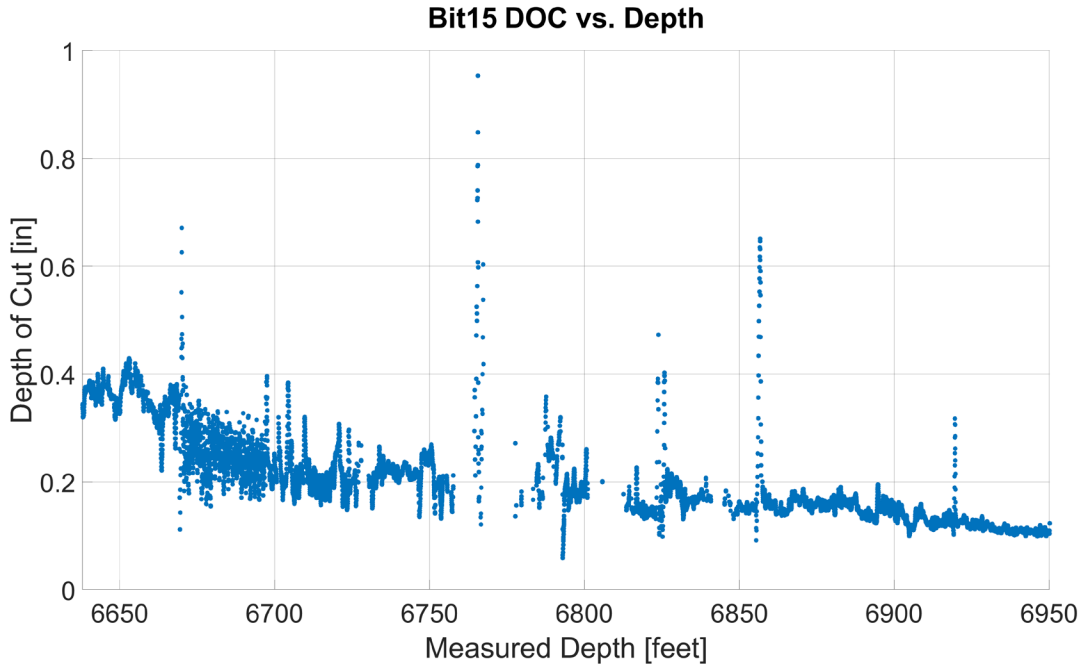
Images:

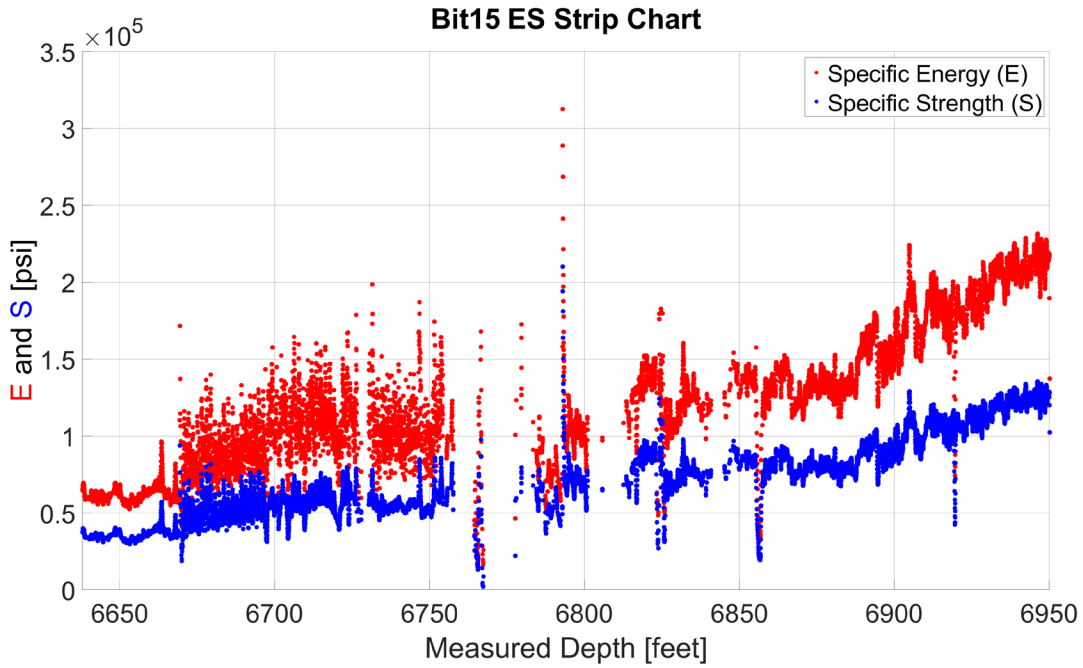
Figure 3-22. Pre-drill photo of bit #15.

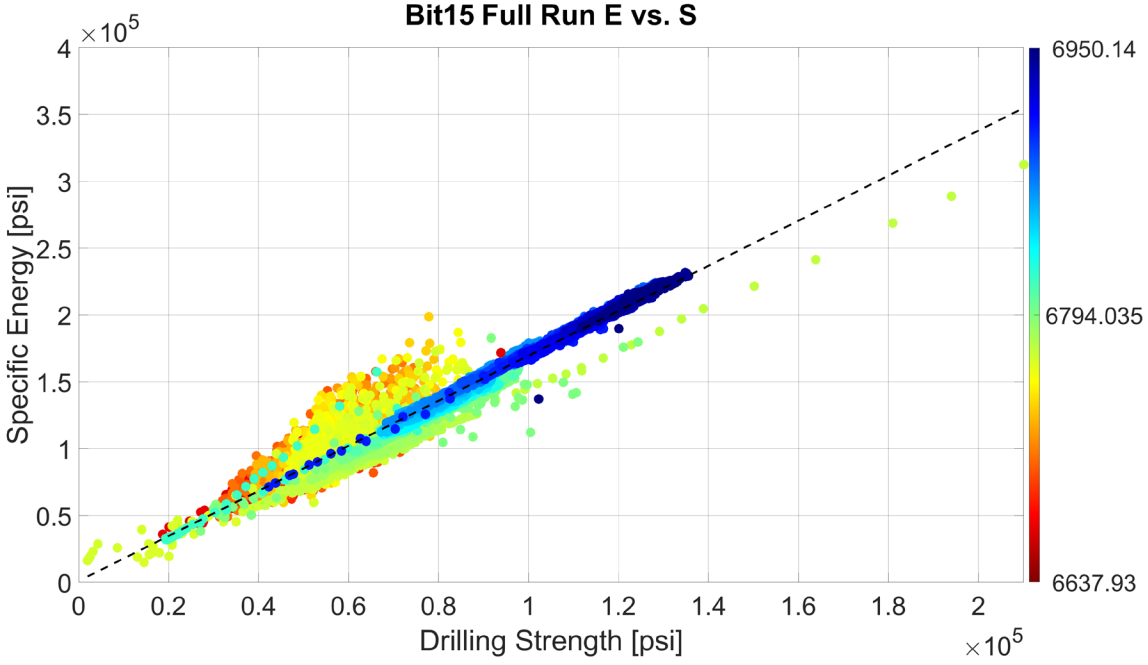
Figure 3-23. Post-drill photo of bit #15.

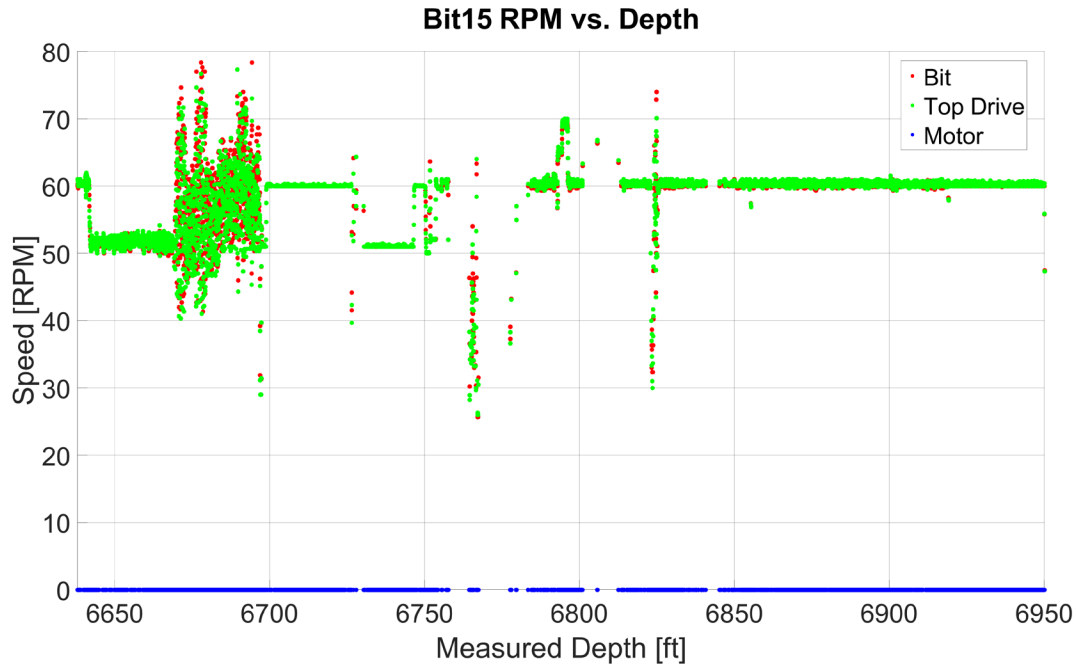
Bit Run Figures:

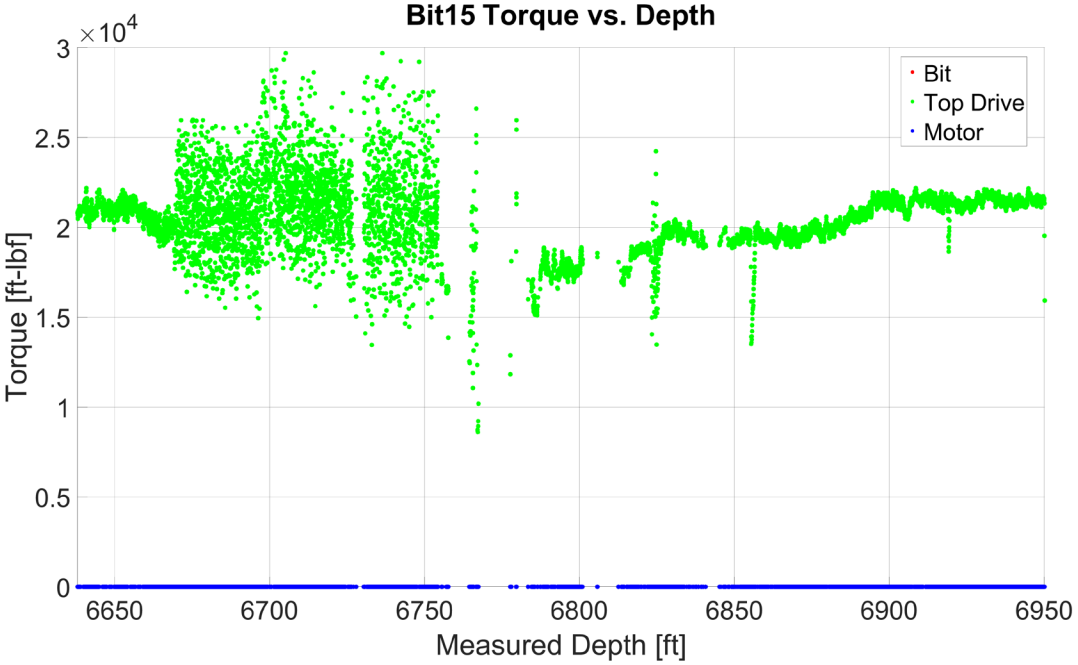





Bit15 ES Strip Chart
×10^5
3.5
3
2.5
2
1.5
1
0.5
0
E and S [psi]
Specific Energy (E)
Specific Strength (S)
6650
6700
6750
6800
6850
6900
6950
Measured Depth [feet]


Bit15 Full Run E vs. S
×10^5
4
3.5
3
2.5
2
1.5
1
0.5
0
Specific Energy [psi]
6950.14
6794.035
6637.93
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Drilling Strength [psi]
×10^5


Bit15 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor
0
10
20
30
40
50
60
70
80
6650
6700
6750
6800
6850
6900
6950


Bit15 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor
0
0.5
1
1.5
2
2.5
3
6650
6700
6750
6800
6850
6900
6950

3.16. Bit-16 (Drill Ahead)

Table 32: Bit 16 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/20/23	9.5	NOV	TKC83, 8 Blade PDC	A298354
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
16	6950	7584	634	14.00	45.3

Table 33: BHA 16 component makeup. (SDI End of Well Report)

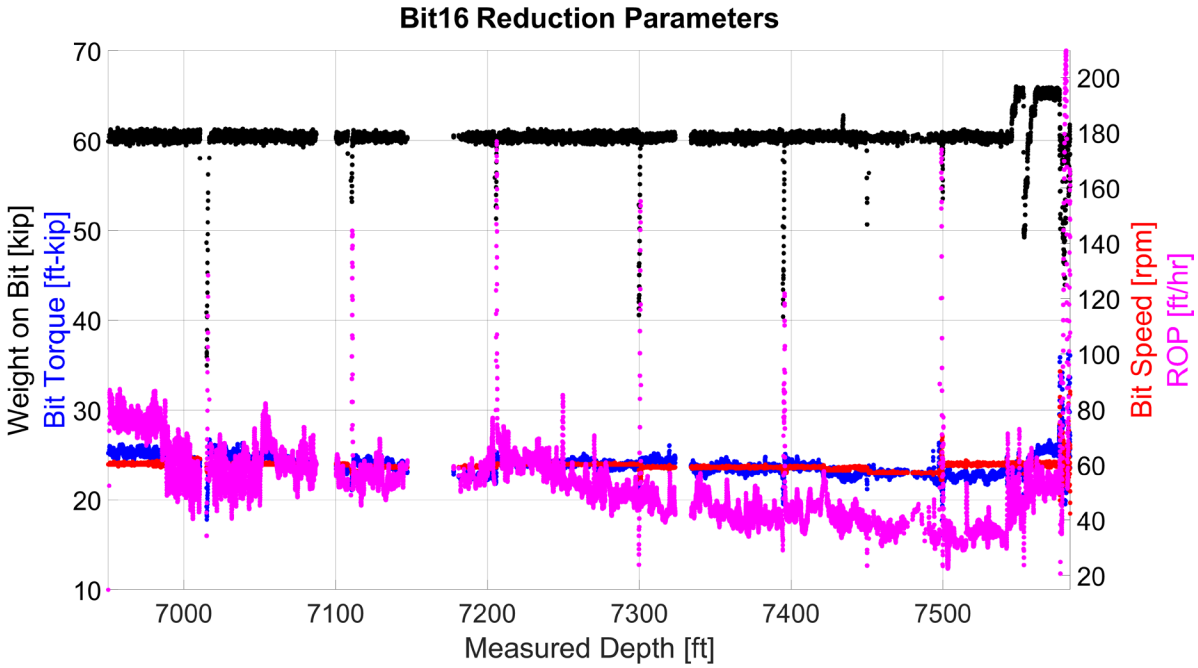
BHA No.	Component	OD	ID	Length
1	9 1/2 8 Blade PDC bit	9.5	2.75	1.18
2	HALO RSS w/HFTO (Stiff)	6.75	2	35.33
3	9 3/8 Spiral wrapped stabilizer	6.5	2.875	4.14
4	6 3/4 NM Pony DC	6.438	3.5	12.24
5	6 3/4 NM Pony DC	6.813	3.25	9.83
6	FG 9 1/2 Roller reamer	6.625	3	5.39
7	6 3/4 NMDC	6.813	3.25	31.11
8	6 3/4 Black Box	6.75	2.25	5.97
9	6 3/4 Filter sub	6.688	3.25	3.93
10	6 3/4 Float sub	6.375	2.875	2.45
11	9 JTS, 6 3/4 DCs	6.813	2.875	278.27
12	Crossover (DCs to HWDP)	6.937	3	3.15
13	30 JTS HWDP	5.5	3.625	913.42

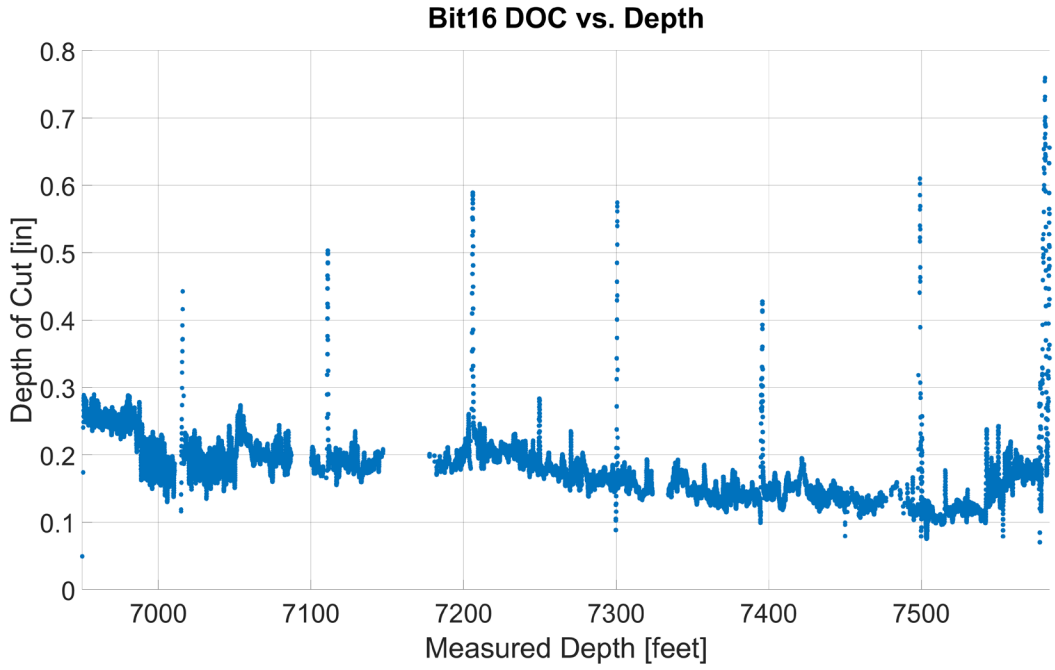
Images:

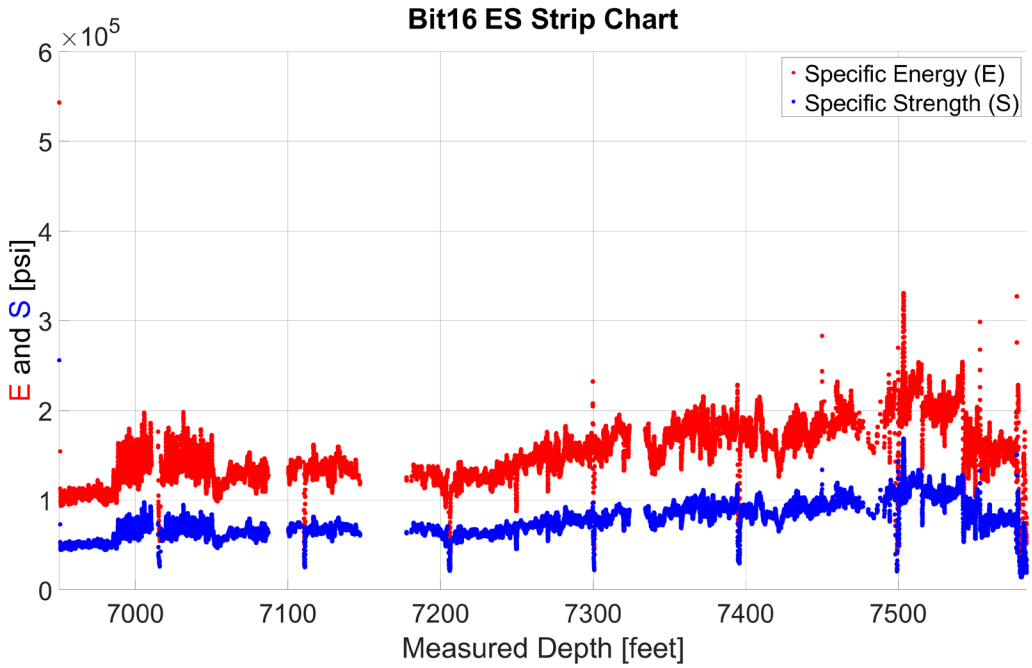
Figure 3-24. Pre-drill photo of bit #16.

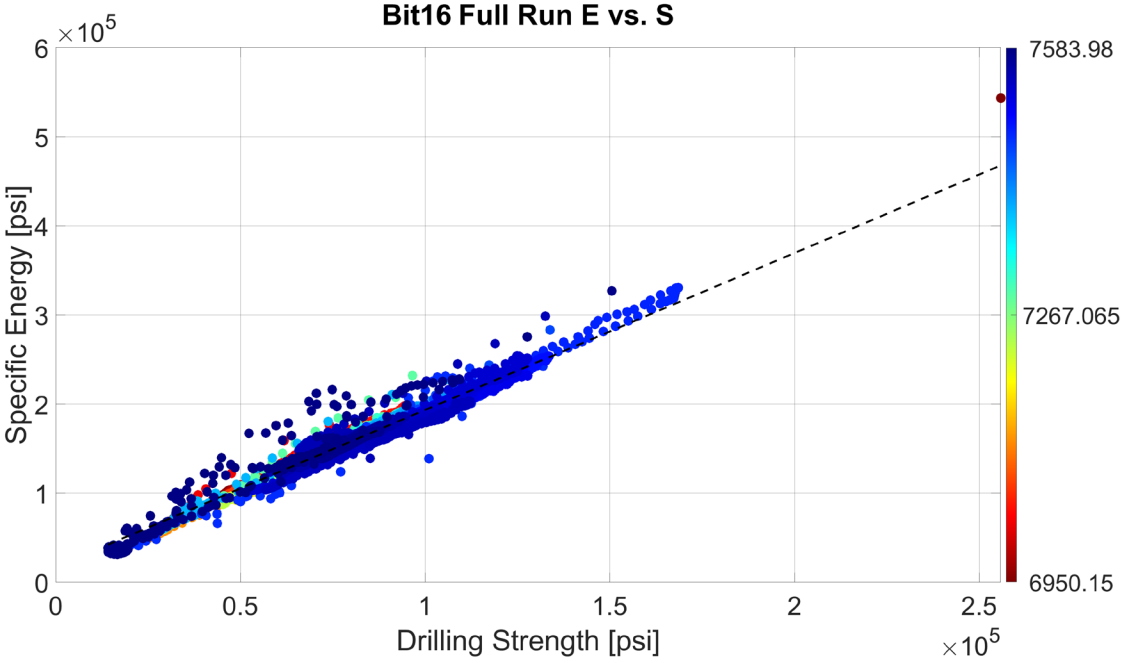
Figure 3-25. Post-drill photo of bit #16.

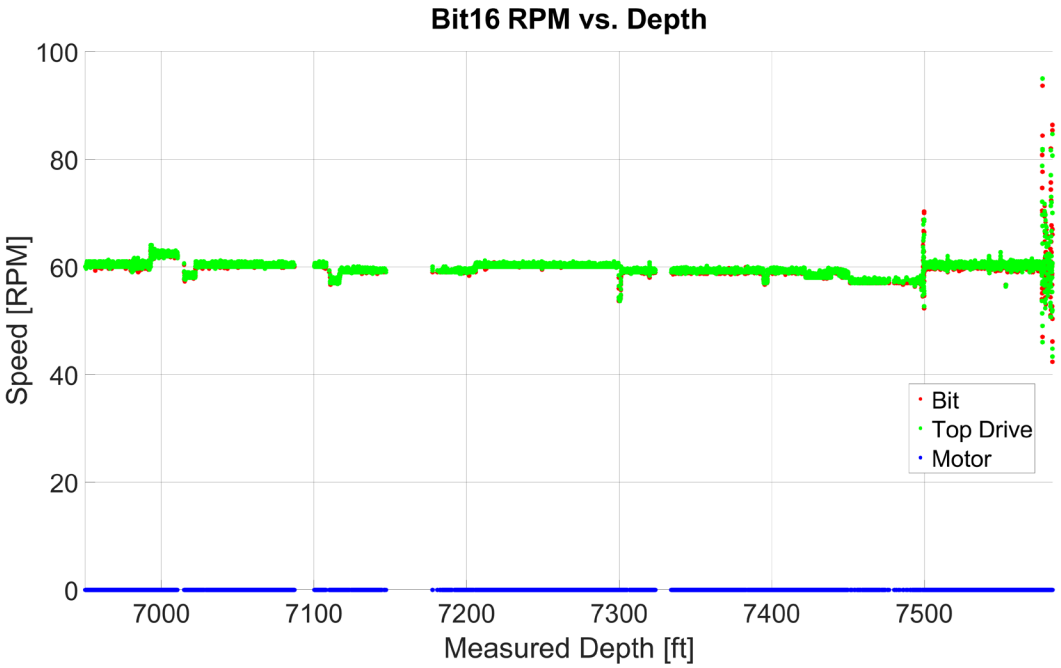
Bit Run Figures:

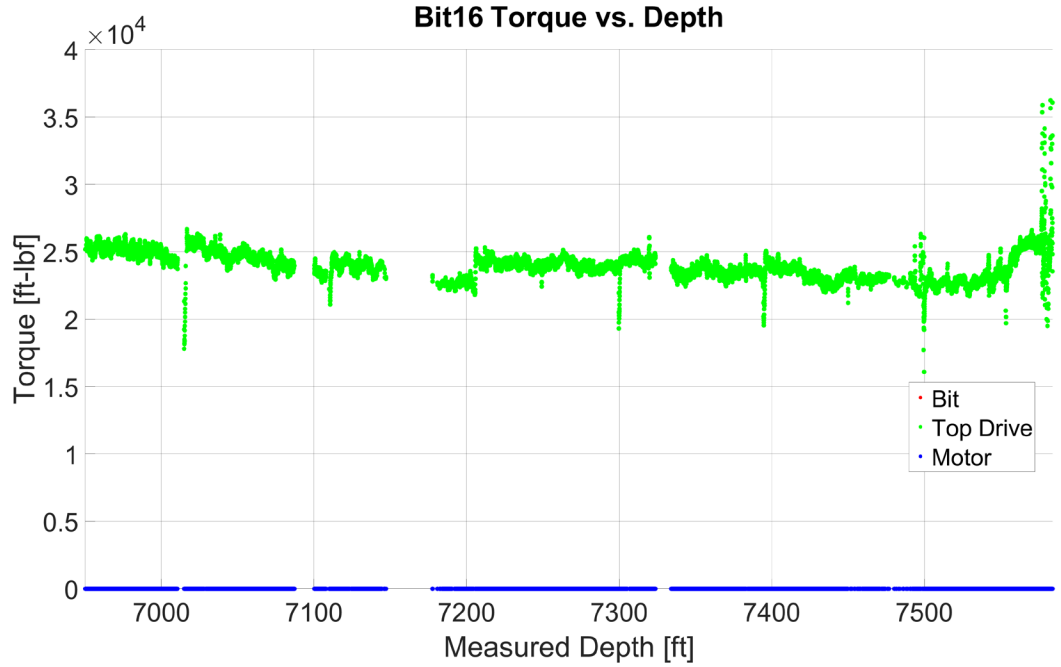





Bit16 ES Strip Chart
×10^5
6
5
4
3
2
1
0
E and S [psi]
Specific Energy (E)
Specific Strength (S)
7000
7100
7200
7300
7400
7500
Measured Depth [feet]


Bit16 Full Run E vs. S
×10^5
6
5
4
3
2
1
0
Specific Energy [psi]
0
0.5
1
1.5
2
2.5
×10^5
Drilling Strength [psi]
7583.98
7267.065
6950.15


Bit16 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor


Bit16 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor

3.17. Bit-17 (Drill Ahead)

Table 34: Bit 17 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/21/23	9.5	NOV	TKC83, 8 Blade PDC	A298358
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
17	7584	8085	501	11.50	43.6

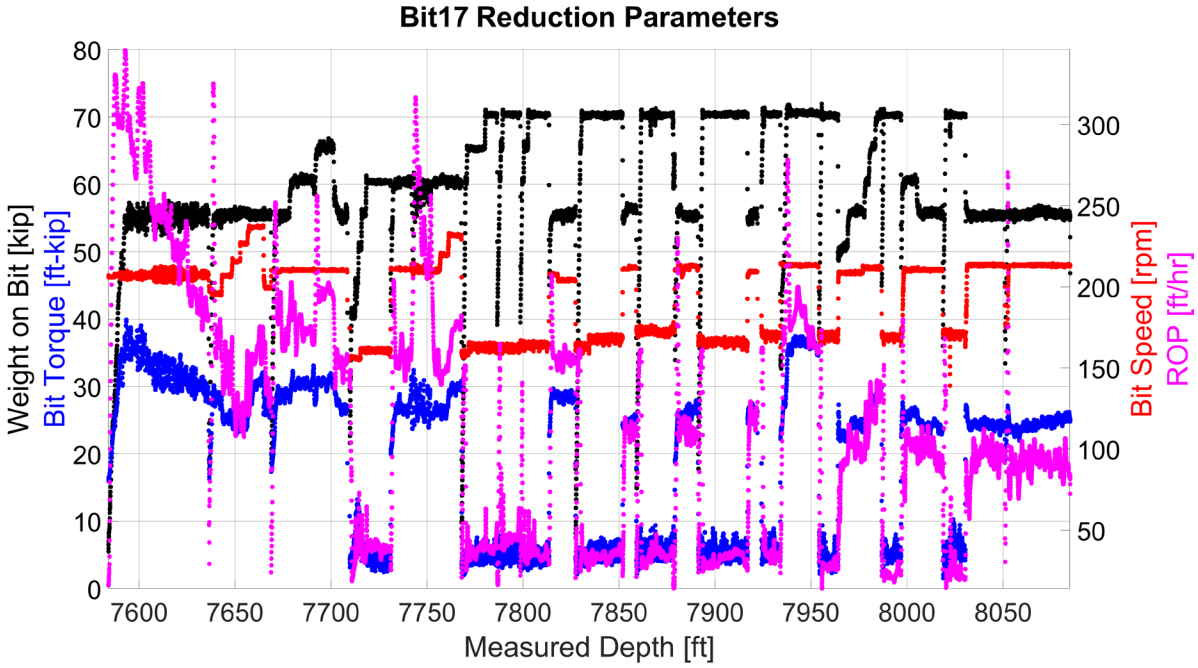
Table 35: BHA 17 component makeup. (SDI End of Well Report)

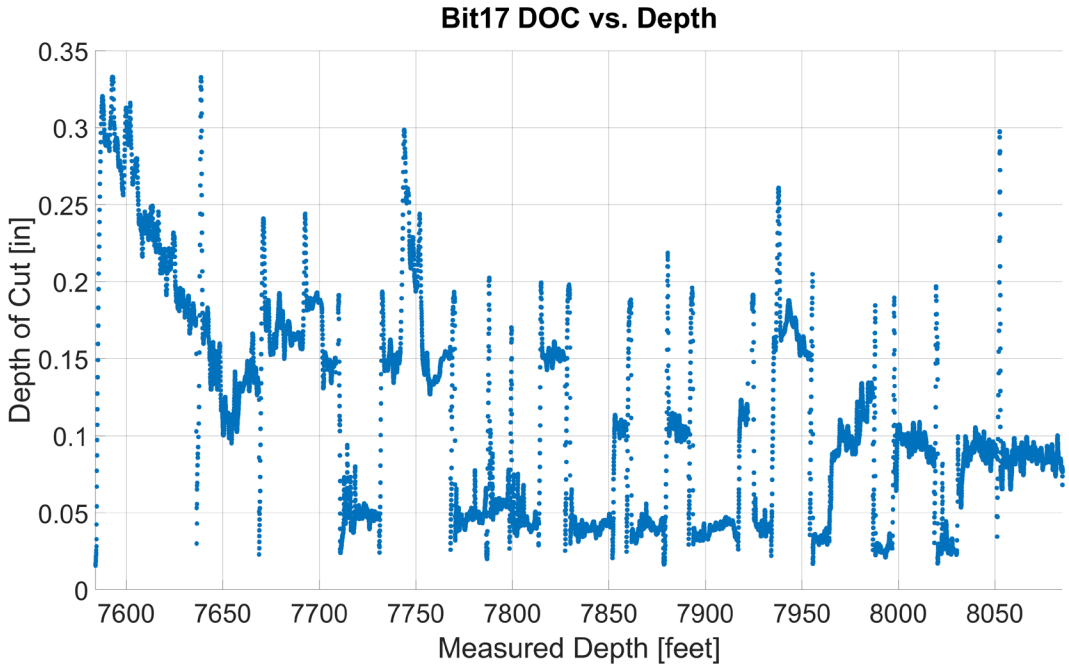
BHA No.	Component	OD	ID	Length
1	9 ½ 8 Blade PDC bit	9.5	2.75	1.25
2	7.15 Mud Motor	6.75	2	41.87
3	FG 9 ½ Roller reamer	6.625	3	5.39
4	6 ¾ NM Pony DC	6.438	3.25	9.22
5	6 ¾ NMDC	6.813	3.25	31.11
6	6 ¾ Pulser Sub	6.5	3.5	5.6
7	6 ¾ NM Pony DC	6.438	3.5	12.24
8	6 ¾ NM Pony DC	6.813	3.25	9.83
9	6 ¾ Black Box	6.75	2.25	6
10	6 ¾ Filter sub	6.688	3.25	3.93
11	6 ¾ Float sub	6.375	2.875	2.45
12	9 JTS, 6 ¾ DCs	6.813	2.875	278.27
13	Crossover (DCs to HWDP)	6.937	3	3.15
14	28 JTS HWDP	5.5	3.625	852.73

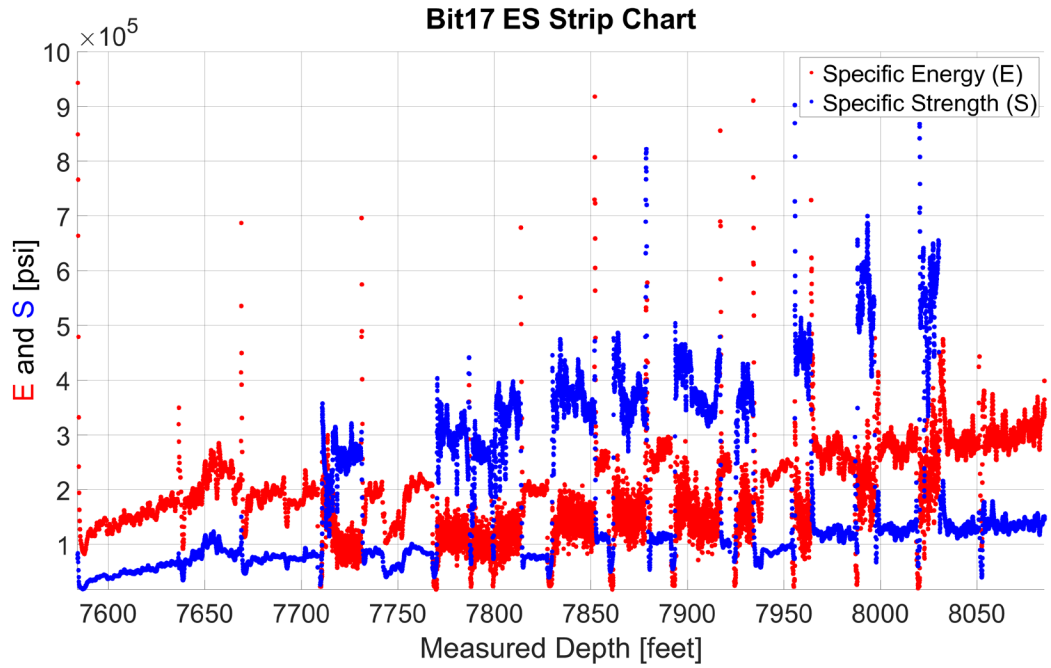
Images:

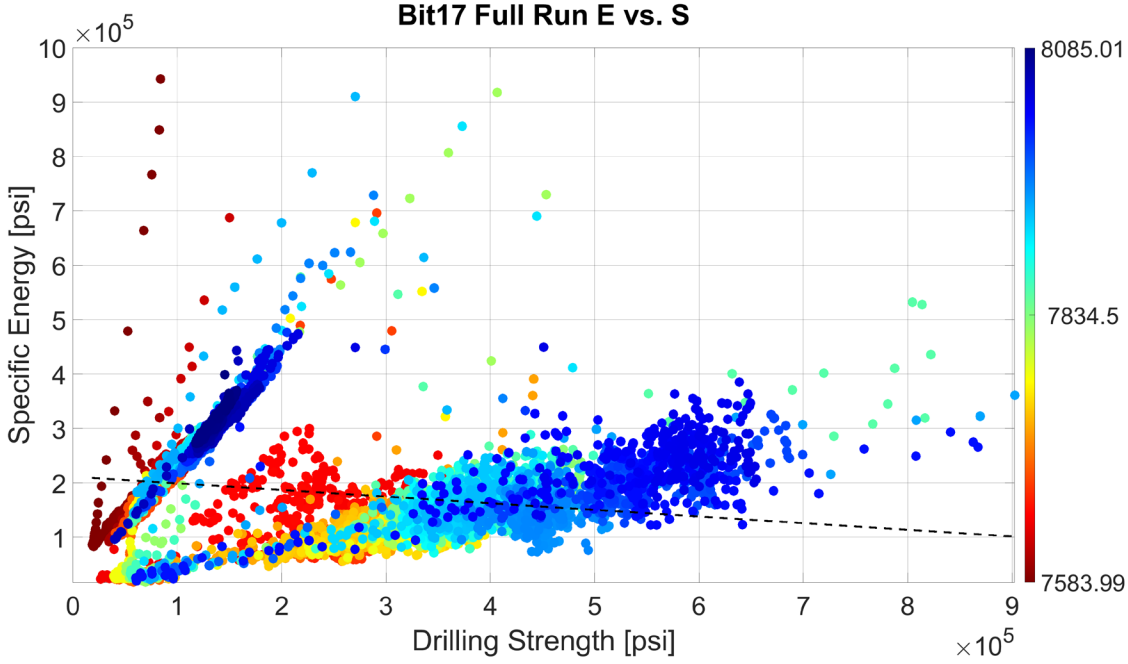
Figure 3-26. Post-drill photo of bit #17.

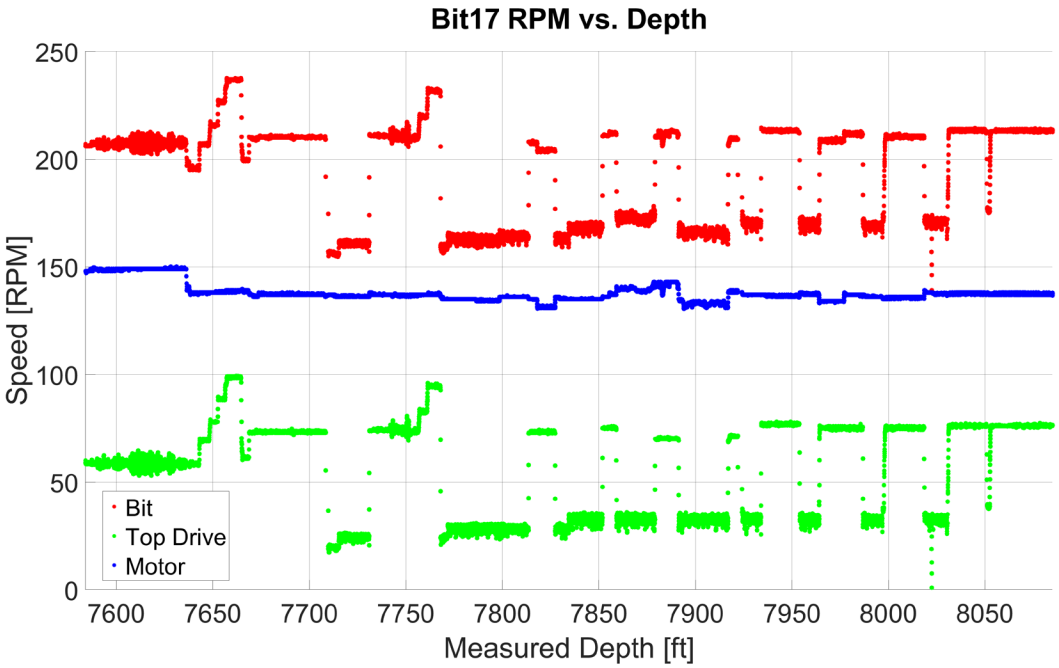
Bit Run Figures:

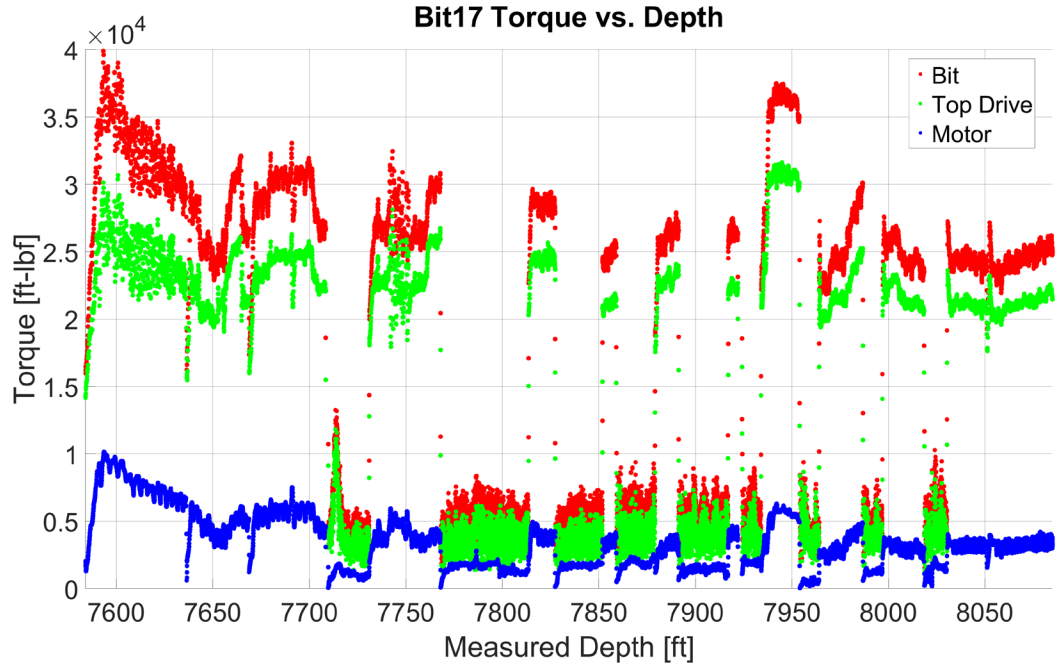





Bit17 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
7600
7650
7700
7750
7800
7850
7900
7950
8000
8050
Measured Depth [feet]


Bit17 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
0
1
2
3
4
5
6
7
8
9
×10^5
Drilling Strength [psi]
8085.01
7834.5
7583.99


Bit17 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor
250
200
150
100
50
0
7600
7650
7700
7750
7800
7850
7900
7950
8000
8050


Bit17 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor
4
3.5
3
2.5
2
1.5
1
0.5
0
7600
7650
7700
7750
7800
7850
7900
7950
8000
8050

3.18. Bit-18 (Drill Ahead)

Table 36: Bit 18 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/22/23 – 5/23/23	9.5	NOV	TKC83, 8 Blade PDC	A298356
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
18	8085	8585	500	10.50	47.6

Table 37: BHA 18 component makeup. (SDI End of Well Report)

BHA No.	Component	OD	ID	Length
1	9 1/2 8 Blade PDC bit	9.5	2.75	1.25
2	7.15 Mud Motor	7.188	2	41.92
3	FG 9 1/2 Roller reamer	6.625	3	5.39
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	6 3/4 Pulser Sub	6.5	3.5	5.6
7	6 3/4 NM Pony DC	6.438	3.5	12.24
8	6 3/4 NM Pony DC	6.813	3.25	9.83
9	6 3/4 Black Box	6.75	2.25	6
10	6 3/4 Filter sub	6.688	3.25	3.93
11	6 3/4 Float sub	6.375	2.875	2.45
12	9 JTS, 6 3/4 DCs	6.813	2.875	278.27
13	Crossover (DCs to HWDP)	6.937	3	3.15
14	28 JTS HWDP	5.5	3.625	852.73
15	Crossover (HWDP to IDP)	6.937	3	4.25

Images:

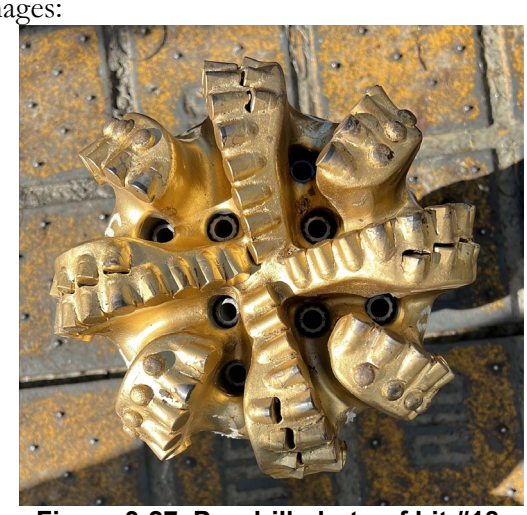
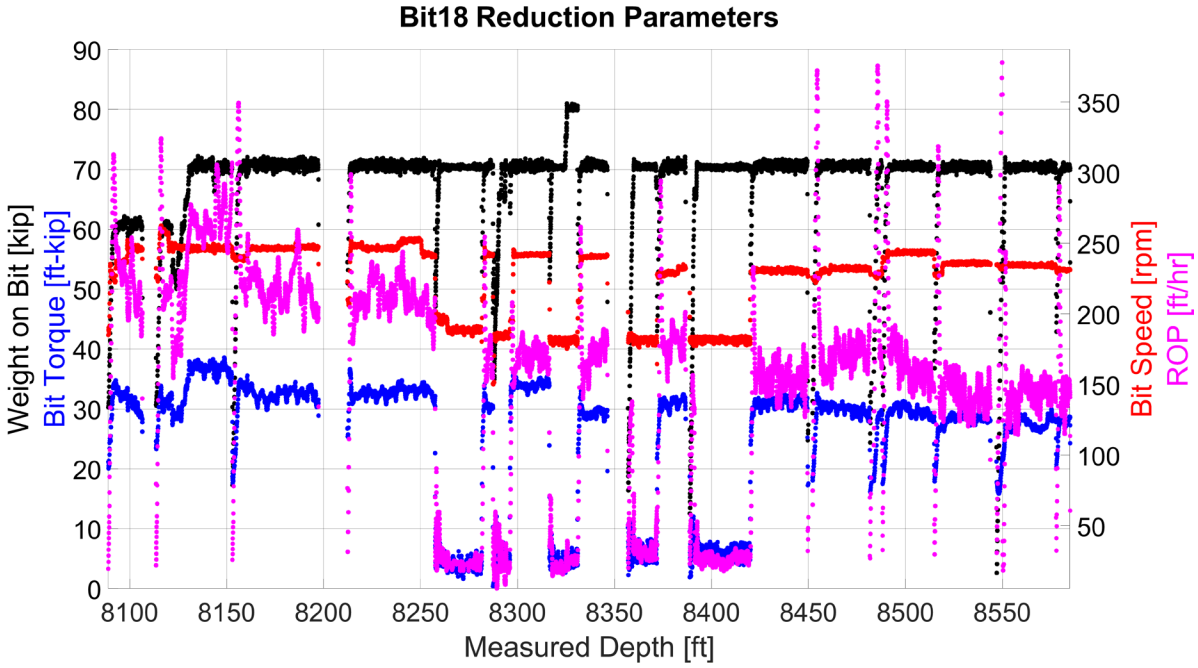
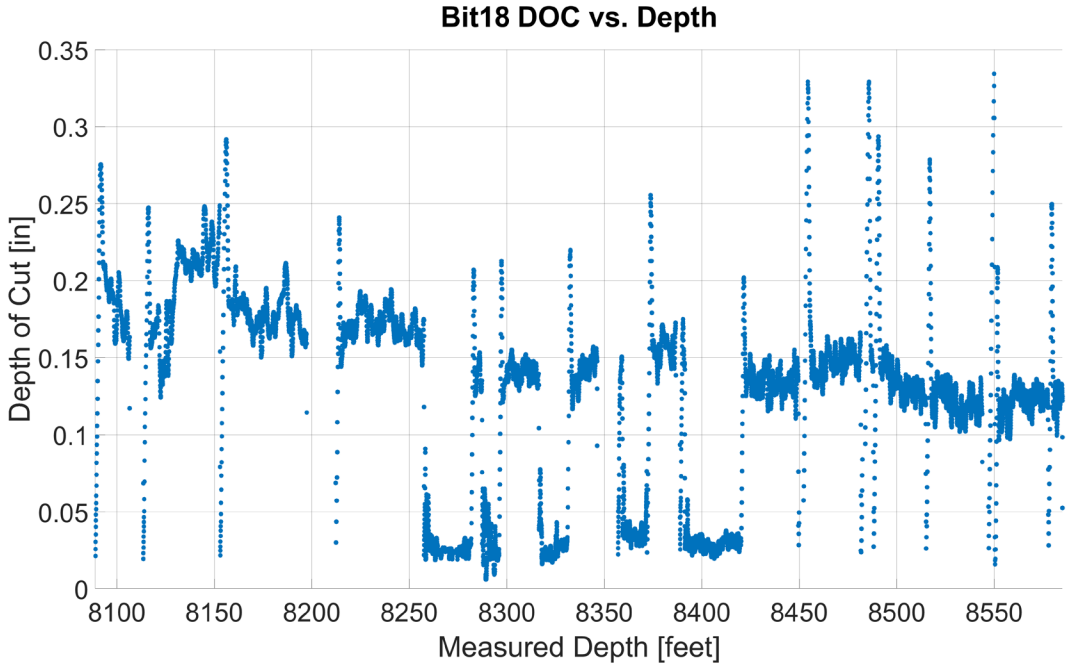


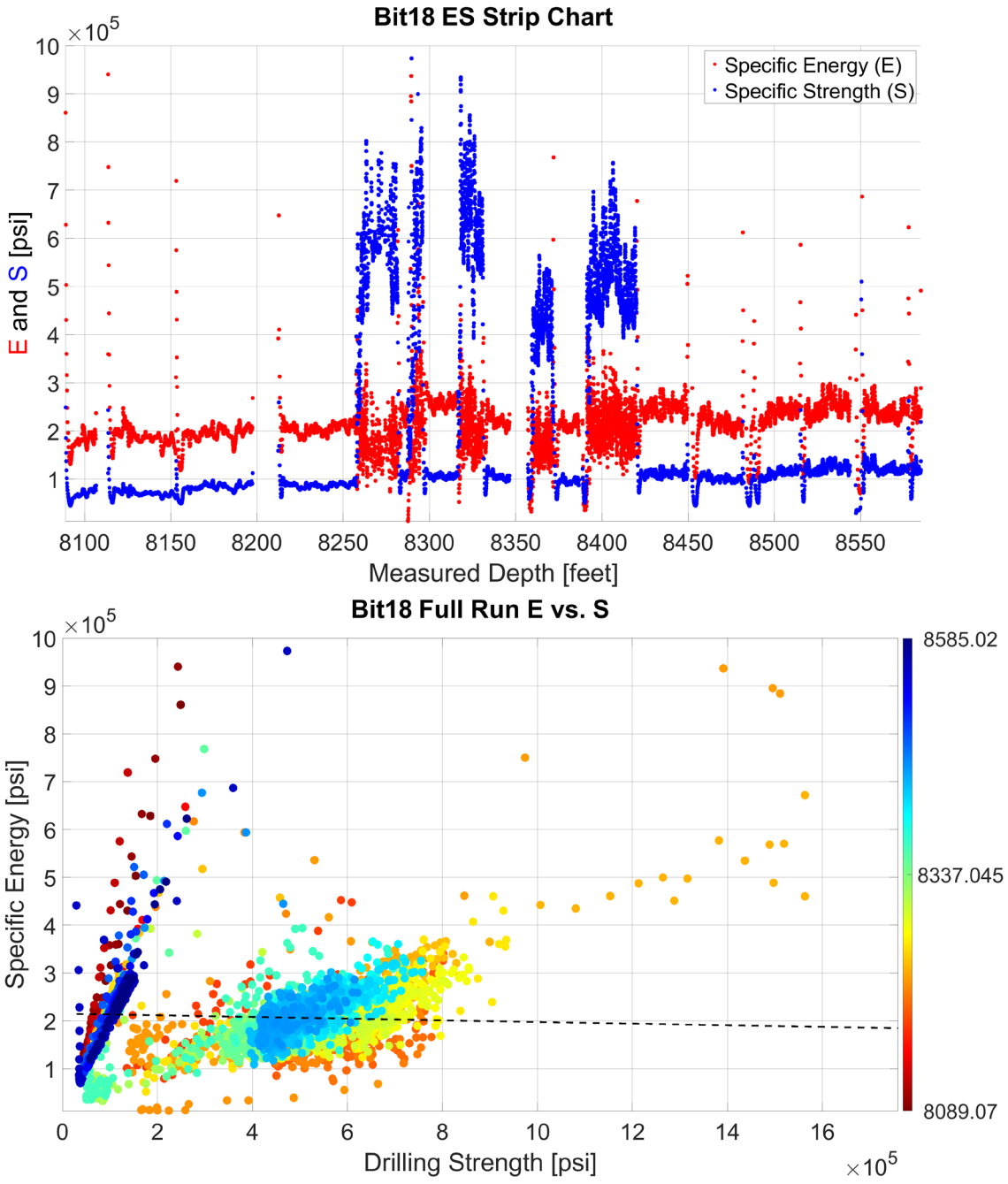
Figure 3-27. Pre-drill photo of bit #18.

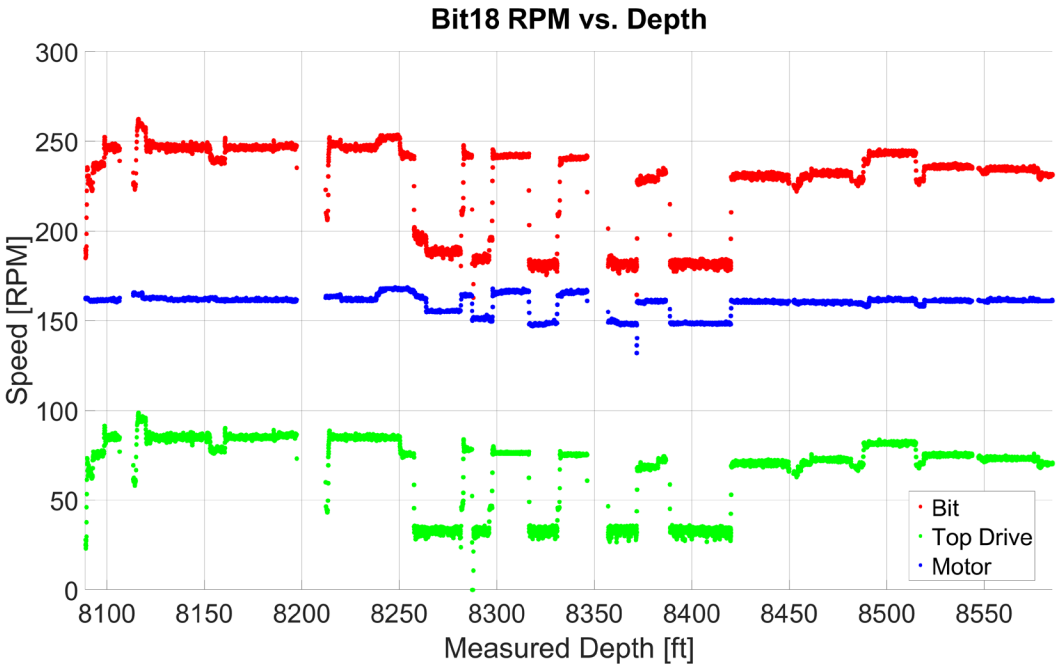
Figure 3-28. Post-drill photo of bit #18.

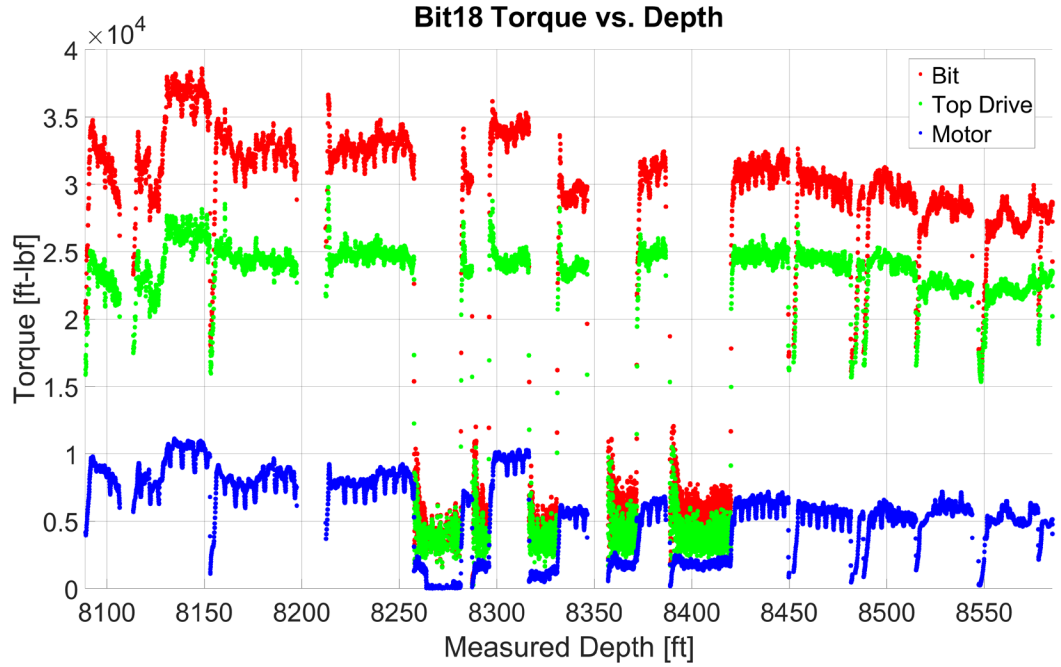
Bit Run Figures:






Bit18 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
8100
8150
8200
8250
8300
8350
8400
8450
8500
8550
Measured Depth [feet]
Bit18 Full Run E vs. S
×10^5
Specific Energy [psi]
0
2
4
6
8
10
12
14
16
×10^5
Drilling Strength [psi]
8585.02
8337.045
8089.07


Bit18 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor


Bit18 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor

3.19. Bit-19 (Drill Ahead)

Table 38: Bit 19 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/25/23	9.5	Baker Hughes	D406V, 6 Blade PDC	5341818
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
19	8585	9255	670	8.50	78.8

Table 39: BHA 19 component makeup. (SDI End of Well Report)

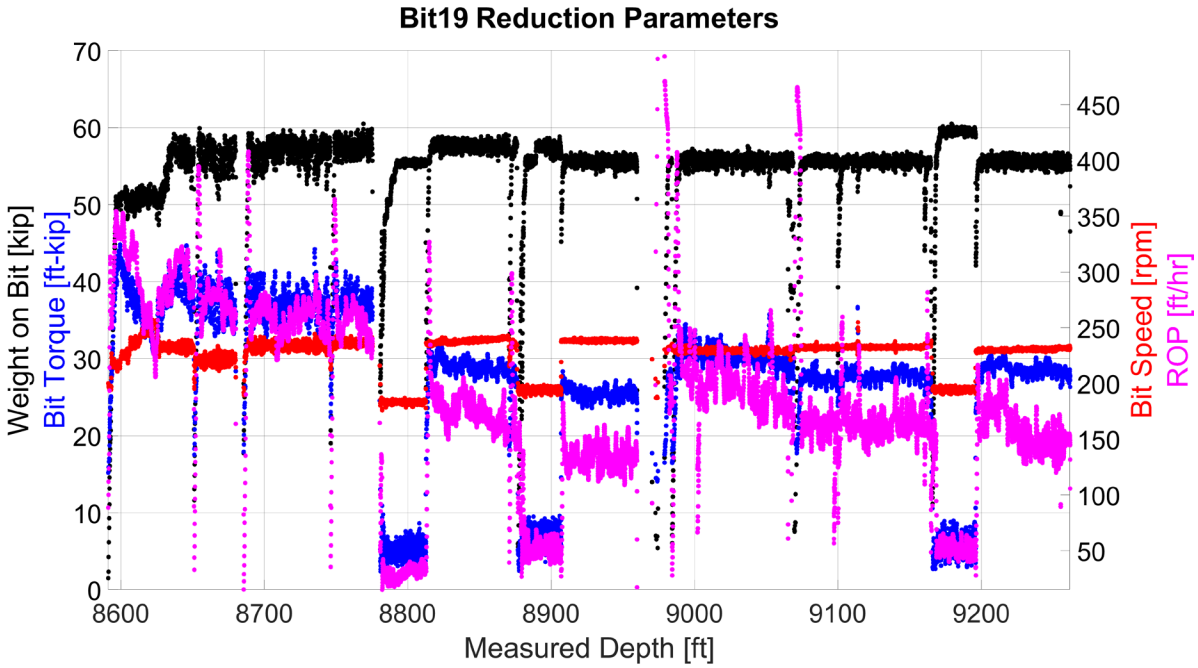
BHA No.	Component	OD	ID	Length
1	9 1/2 6 Blade PDC bit	9.5	2.75	1.25
2	7.15 Mud Motor	7.188	2	41.87
3	FG 9 1/2 Roller reamer	6.563	3	6.98
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	6 3/4 Pulser Sub	6.5	3.5	5.6
7	6 3/4 NM Pony DC	6.438	3.5	12.24
8	6 3/4 NM Pony DC	6.813	3.25	9.83
9	6 3/4 Black Box	6.75	2.25	5.9
10	6 3/4 Filter sub	6.688	3.25	3.93
11	6 3/4 Float sub	6.375	2.875	2.45
12	Crossover (BHA to HWDP)	6.937	3	3.15
13	28 JTS HWDP	5.5	3.625	852.73
14	25 STD Drill pipe	5.5	*	2378.5
15	Crossover (HWDP to IDP)	6.937	3	4.25

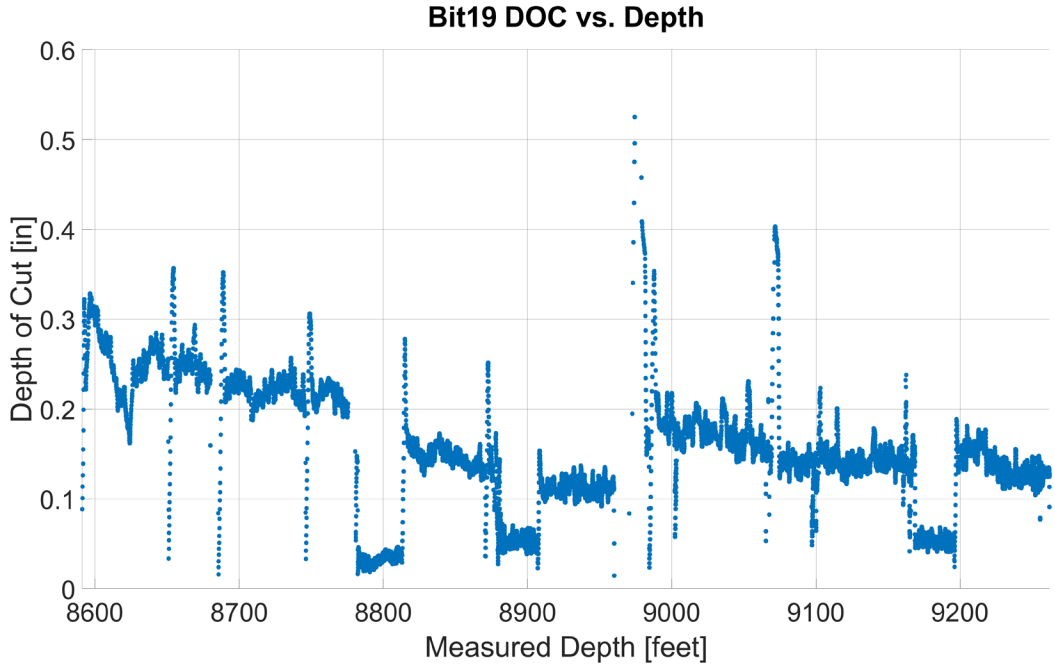
Images:

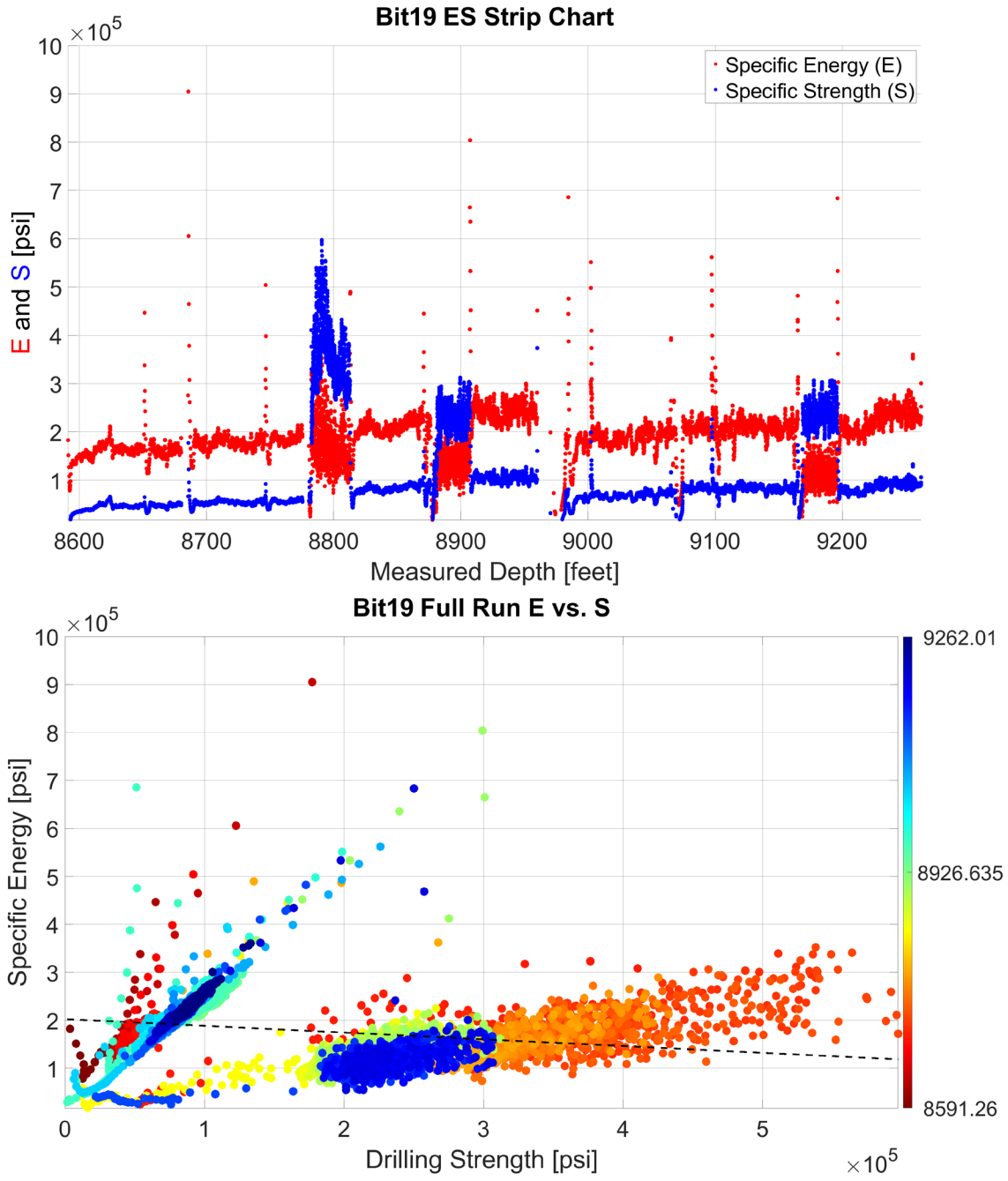
Figure 3-29. Pre-drill photo of bit #19.

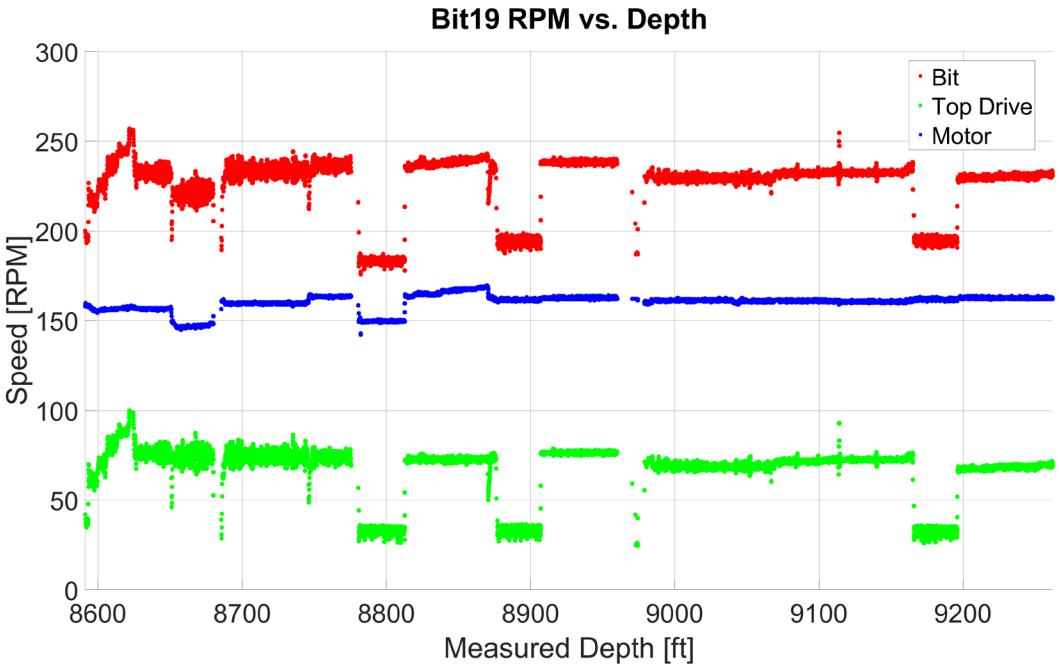
Figure 3-30. Post-drill photo of bit #19.

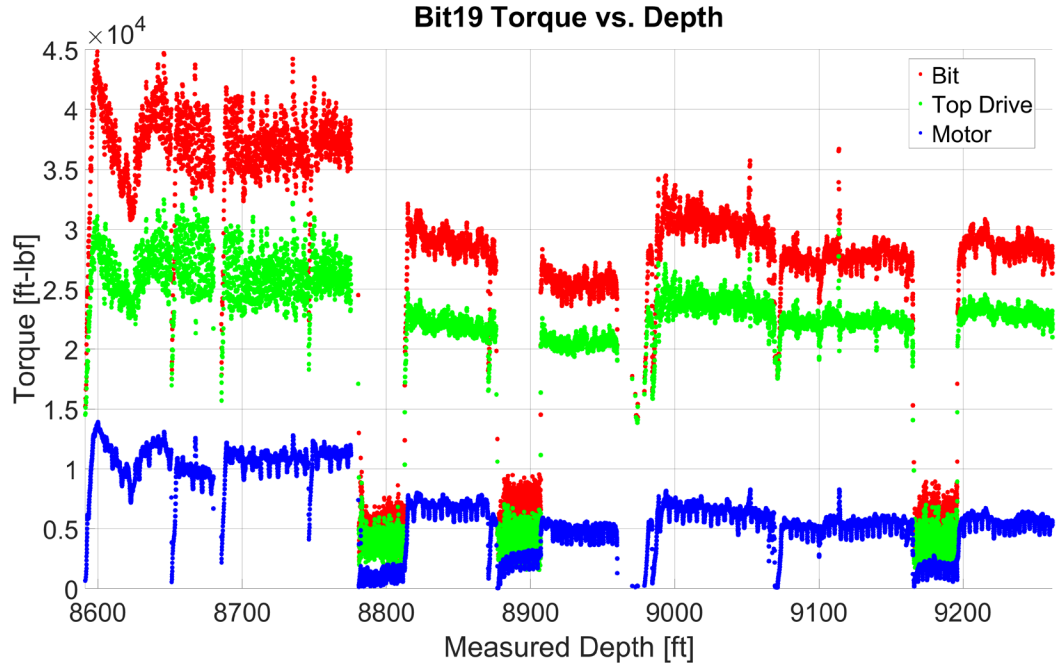
Bit Run Figures:






Bit19 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
8600
8700
8800
8900
9000
9100
9200
Measured Depth [feet]
Bit19 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
9262.01
8926.635
8591.26
0
1
2
3
4
5
Drilling Strength [psi]
×10^5


Bit19 RPM vs. Depth
Bit
Top Drive
Motor
Speed [RPM]
Measured Depth [ft]
300
250
200
150
100
50
0
8600
8700
8800
8900
9000
9100
9200


Bit19 Torque vs. Depth
×10^4
Bit
Top Drive
Motor
Torque [ft-lbf]
Measured Depth [ft]
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
8600
8700
8800
8900
9000
9100
9200

3.20. Bit-20 (Drill Ahead)

Table 40: Bit 20 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/27/23	9.5	NOV	TKC83, 8 Blade PDC	A298355
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
20	9255	9800	545	8.00	68.1

Table 41: BHA 20 component makeup. (SDI End of Well Report)

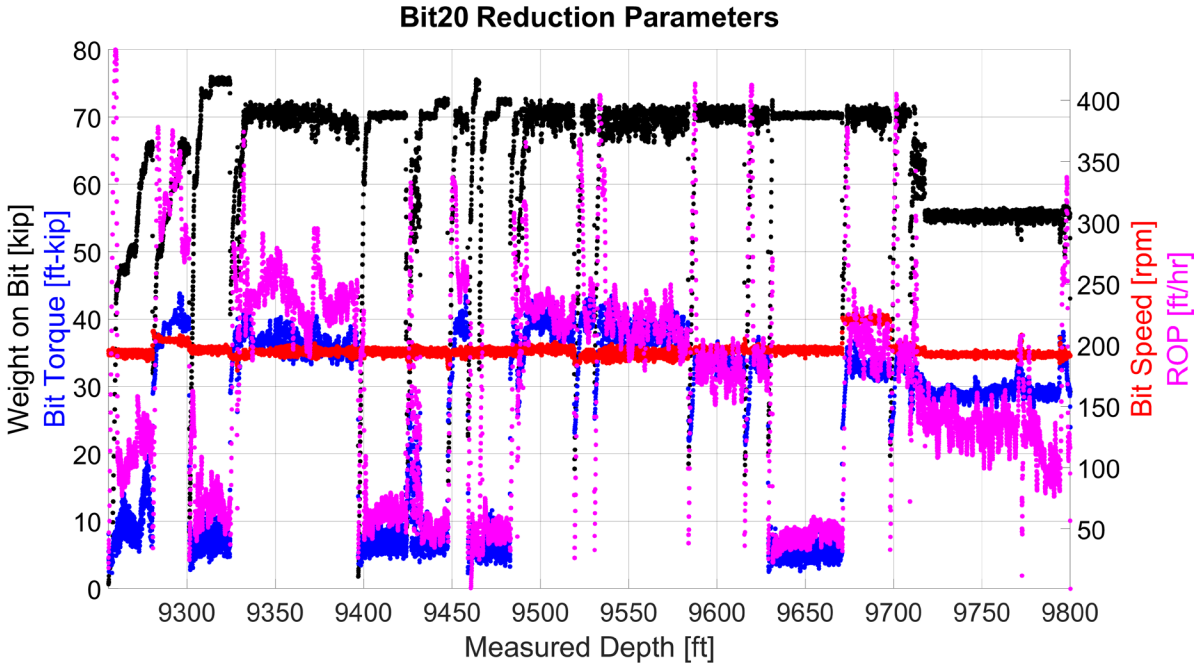
BHA No.	Component	OD	ID	Length
1	9 1/2 8 Blade PDC bit	9.5	2.75	1.25
2	7.15 Mud Motor	7.188	2	41.92
3	FG 9 1/2 Roller reamer	6.563	3	6.98
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	6 3/4 Pulser Sub	6.5	3.5	5.6
7	6 3/4 NM Pony DC	6.438	3.5	12.24
8	6 3/4 NM Pony DC	6.813	3.25	9.83
9	6 3/4 Black Box	6.75	2.25	5.9
10	6 3/4 Filter sub	6.688	3.25	3.93
11	6 3/4 Float sub	6.375	2.875	2.45
12	Crossover (BHA to HWDP)	6.937	3	3.15
13	30 JTS HWDP	5.5	3.625	917.79

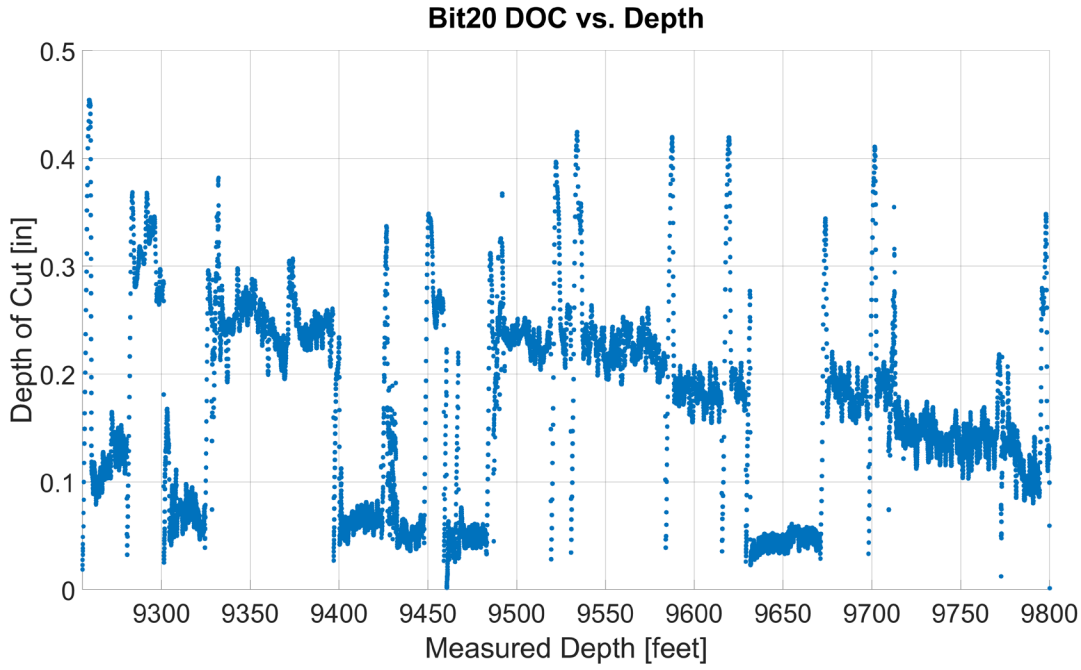
Images:

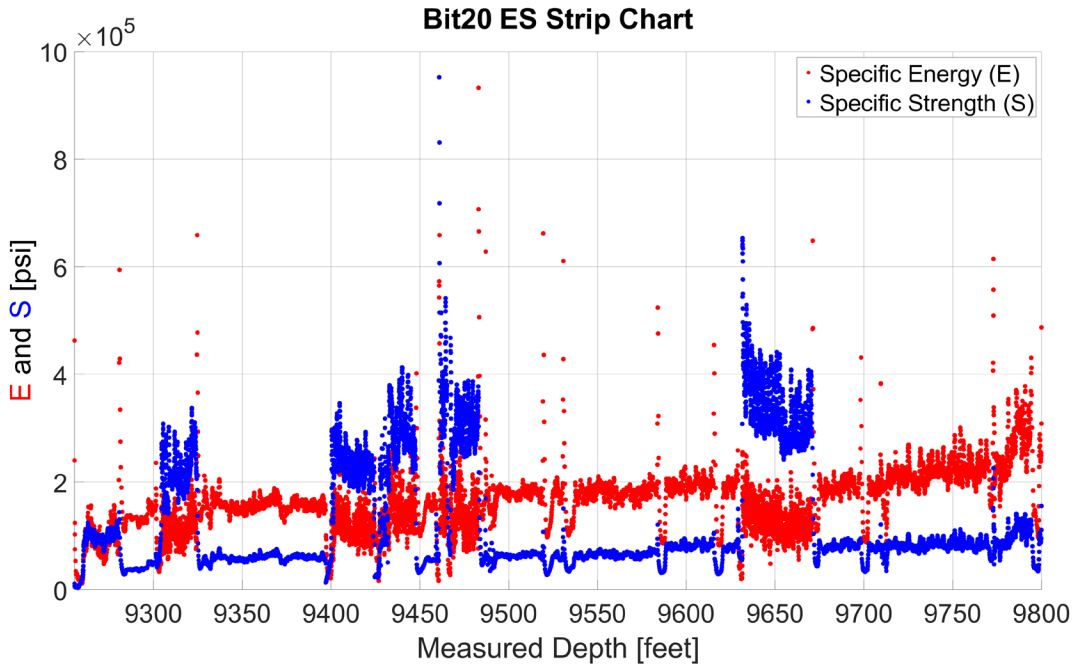
Figure 3-31. Pre-drill photo of bit #20.

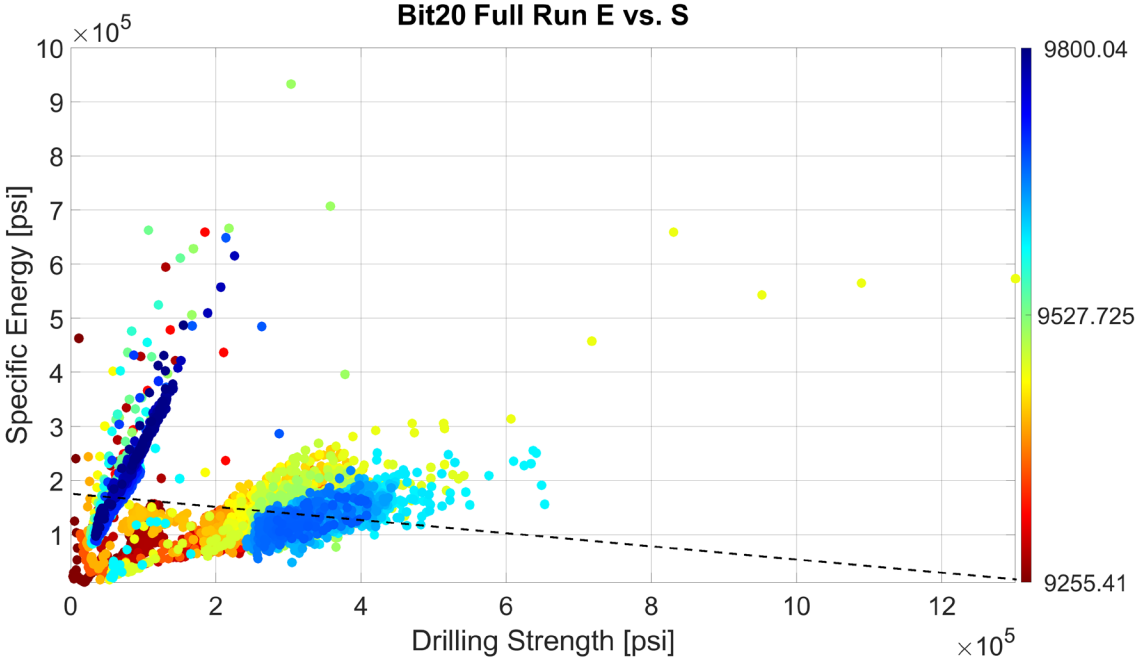
Figure 3-32. Post-drill photo of bit #20.

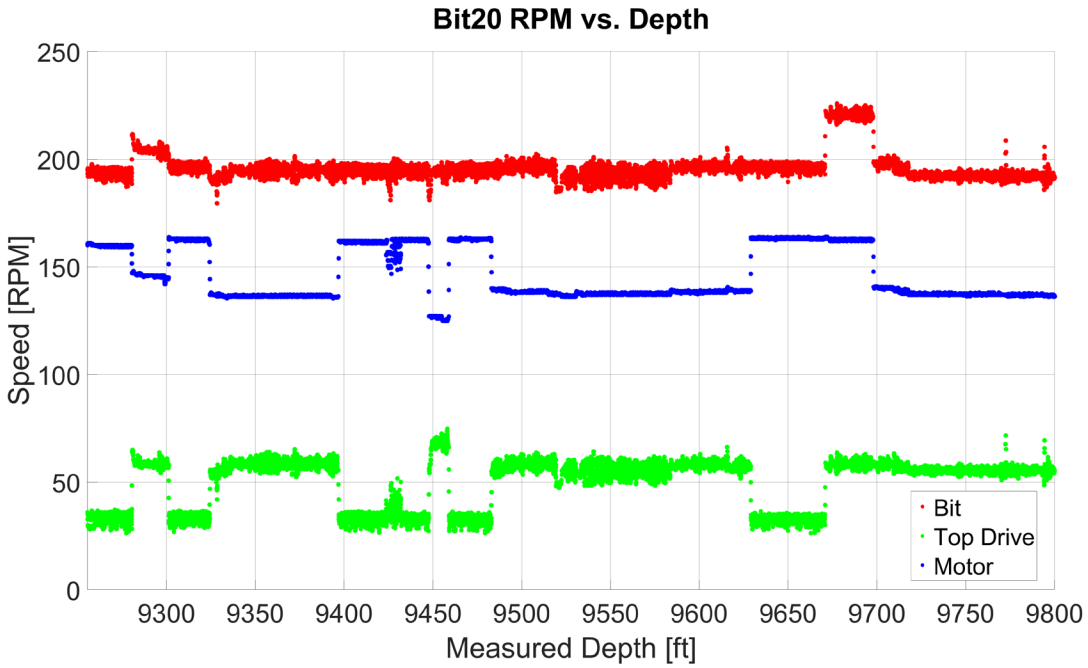
Bit Run Figures:

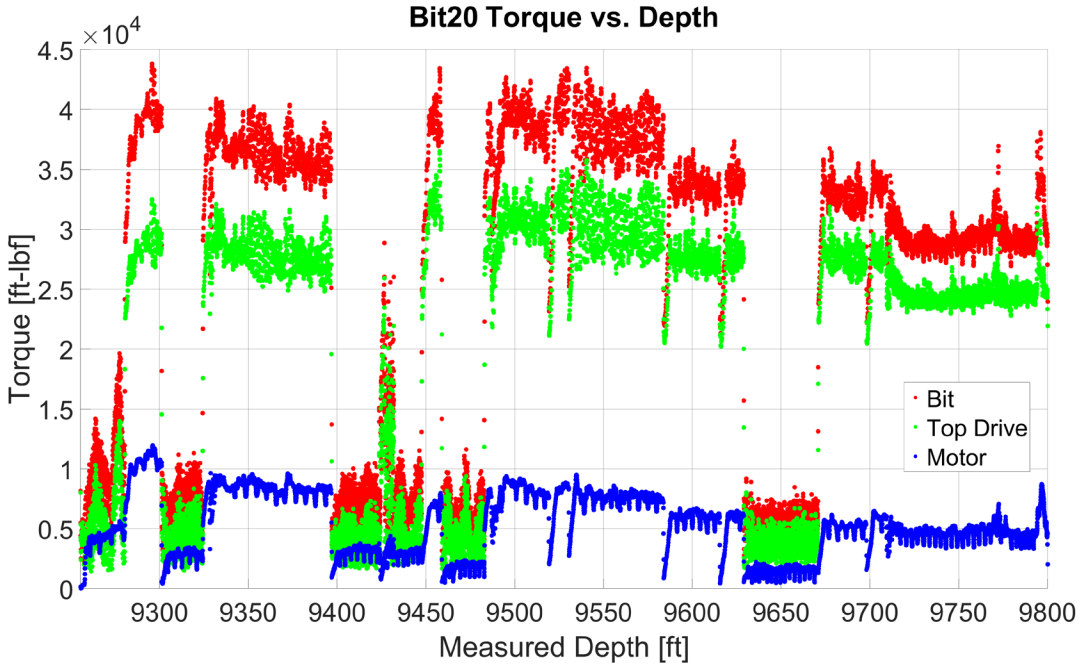





Bit20 ES Strip Chart
×10^5
10
8
6
4
2
0
E and S [psi]
Specific Energy (E)
Specific Strength (S)
9300
9350
9400
9450
9500
9550
9600
9650
9700
9750
9800
Measured Depth [feet]


Bit20 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
0
2
4
6
8
10
12
×10^5
Drilling Strength [psi]
9800.04
9527.725
9255.41


Bit20 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor


Bit20 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor

3.21. Bit-21 (Circulate & Survey)

Table 42: Bit 21 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	05/27/23	9.5	SANJOAQ	MX-S50R	W45JG
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
21	9800	9800	0	3	0

Table 43: BHA 21 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	BS			
3	XO			
4	30 HWDP			

3.22. Bit-22 (Core)

Table 44: Table 45: Bit 22 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/29/23	8.75	CCI	CCI-911	3409-05
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
22	9800	9817	17	13.75	1.24

Table 46: BHA 22 component makeup.

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	CORE			
8	STAB			
9	OTHER			
10	JAR			
11	XO			
12	30 HWDP			

Images:

Figure 3-33. Pre-drill photo of bit #22.

Figure 3-34. Post-drill photo of bit #22.

3.23. Bit-23 (Circulate & Survey, Run No. 3 of Bit-5)

Table 47: Table 48: Bit 23 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
3	5/30/23	9.5	SANJOAQ	MX-S50R	W45JG
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
23	9800	9800	0	3	0

Table 49: BHA 23 component makeup.

BHA No.	Component	OD	ID	Length
1	Bit			
2	BS			
3	5 DC			
4	XO			
5	30 HWDP			

Images:

Figure 3-35. Post-drill photo of bit #23.

3.24. Bit-24 (Ream)

Table 50: Bit 24 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	5/31/23	8.75	Baker Hughes	VGD-38CH	5344137
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
24	9780	9823	43	7	6.14

Table 51: BHA 24 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	Bit			
2	BS			
3	XO			
4	30 HWDP			

Images:

Figure 3-36. Pre-drill photo of bit #24.

Figure 3-37. Post-drill photo of bit #24.

3.25. Bit-25 (Core)

Table 52: Bit 25 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	6/1/23 – 6/2/23	8.75	CCI	CCI-713	3409
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
25	9823	9853	30	11.25	3

Table 53: BHA 25 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	CORE			
8	STAB			
9	OTHER			
10	JAR			
11	XO			
12	30 HWDP			

Images:

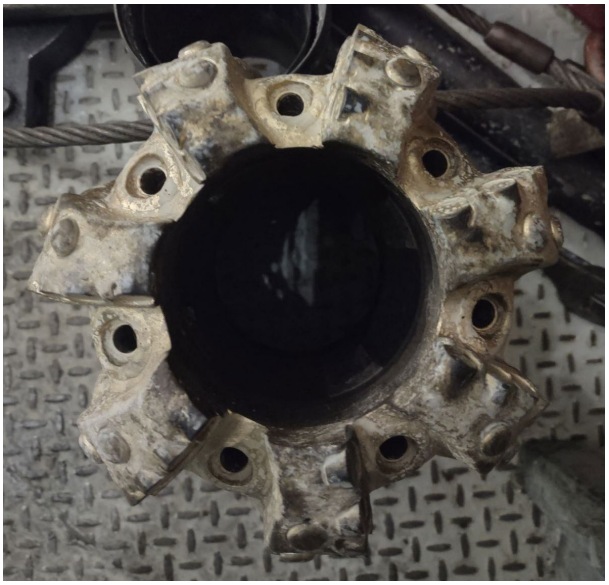


Figure 3-38. Pre-drill photo of bit #25.

Figure 3-39. Post-drill photo of bit #25.

3.26. Bit-26 (Ream)

Table 54: Bit 26 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/3/23	9.5	NOV Reed Hycalog	XLS30DX, Insert RC	5243758
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
26	9853	9863	10	2.00	5.0

Table 55: BHA 26 component makeup.

BHA No.	Component	OD	ID	Length
1	9 1/2 Insert bit	9.5	3	0.85
2	Bit Sub	6.75	2.5	3.14
3	FG 9 1/2 Roller reamer	6.563	3	6.98
4	7.15 Mud Motor	7.188	2	40.15
5	FG 9 1/2 Roller reamer	6.625	3	5.39
6	6 3/4 Float sub	6.375	2.875	2.45
7	Crossover (BHA to HWDP)	6.937	3	3.15
8	30 JTS HWDP	5.5	3.625	918.47

Images:

Figure 3-40. Pre-drill photo of bit #26.

Figure 3-41. Post-drill photo of bit #26.

3.27. Bit-27 (Drill Ahead)

Table 56: Bit 27 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/4/23	9.5	Baker Hughes	D406VX, 6 Blade PDC	5342357
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
27	9863	10250	387	5.00	77.4

Table 57: BHA 27 component makeup.

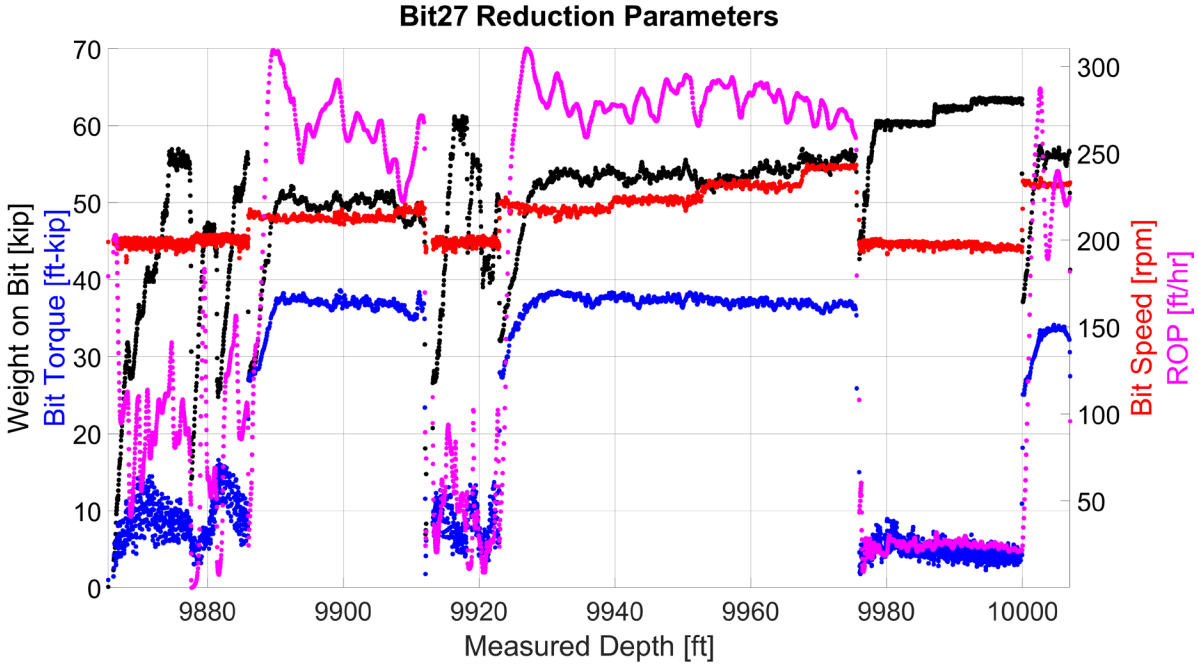
BHA No.	Component	OD	ID	Length
1	9 1/2 6 Blade PDC bit	9.5	2.75	1.25
2	7.15 Mud Motor	7.188	2	41.92
3	FG 9 1/2 Roller reamer	6.563	3	6.71
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	6 3/4 Pulser Sub	6.5	3.5	5.6
7	6 3/4 NMDC	6.813	3.5	31.1
8	6 3/4 Black Box	6.75	2.25	6
9	6 3/4 Filter sub	6.688	3.25	3.93
10	6 3/4 Float sub	6.375	2.875	2.45
11	Crossover (BHA to HWDP)	6.937	3	3.15
12	30 JTS HWDP	5.5	3.625	920.94

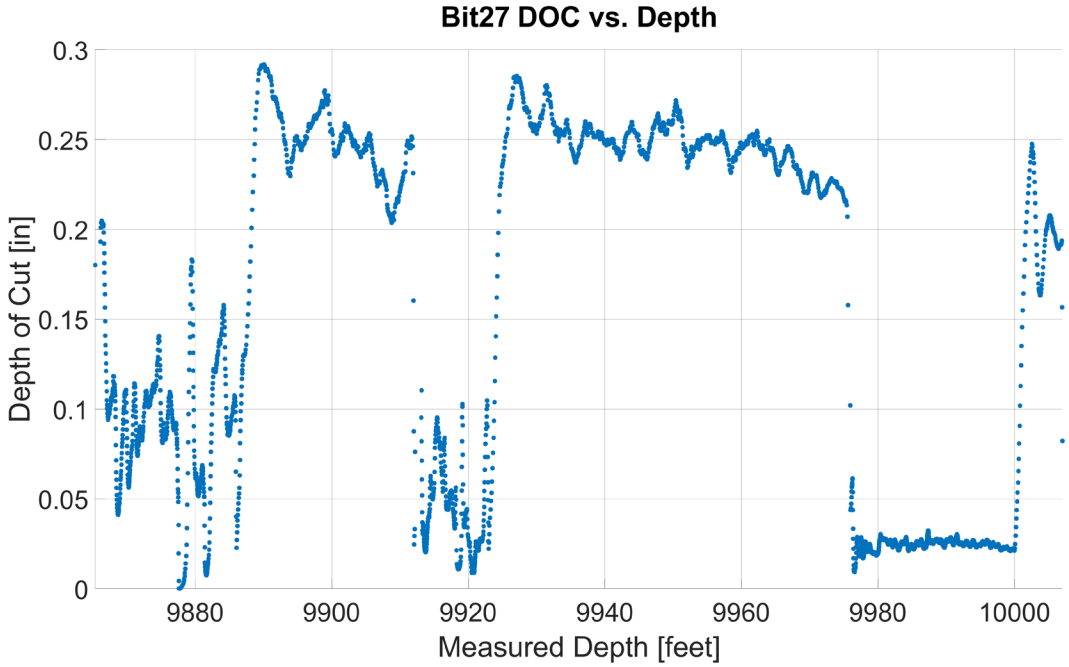
Images:

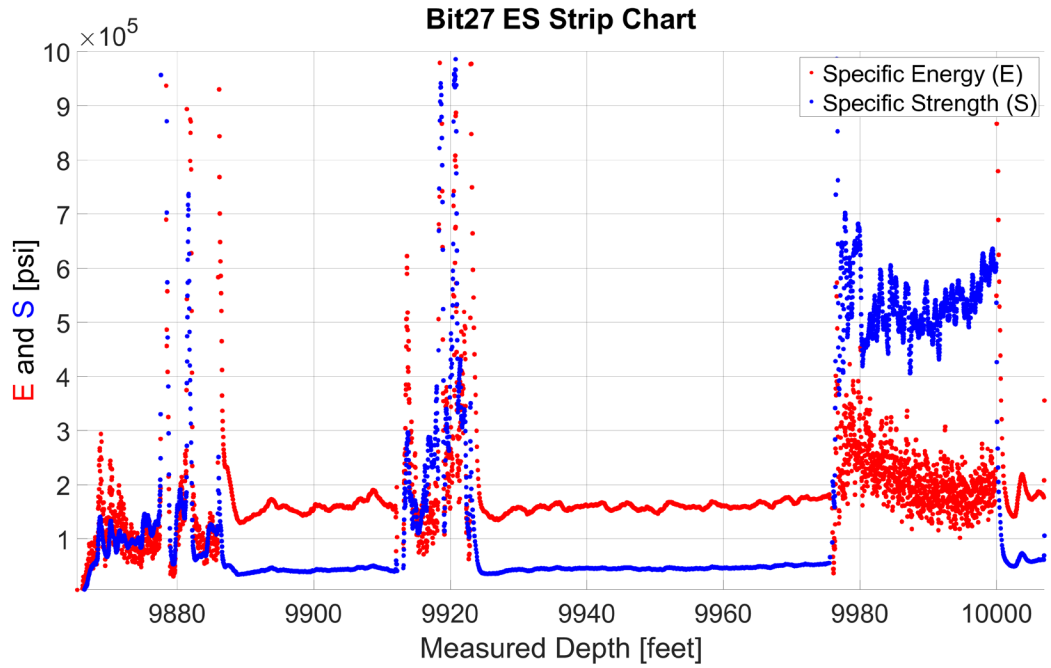
Figure 3-42. Pre-drill photo of bit #27.

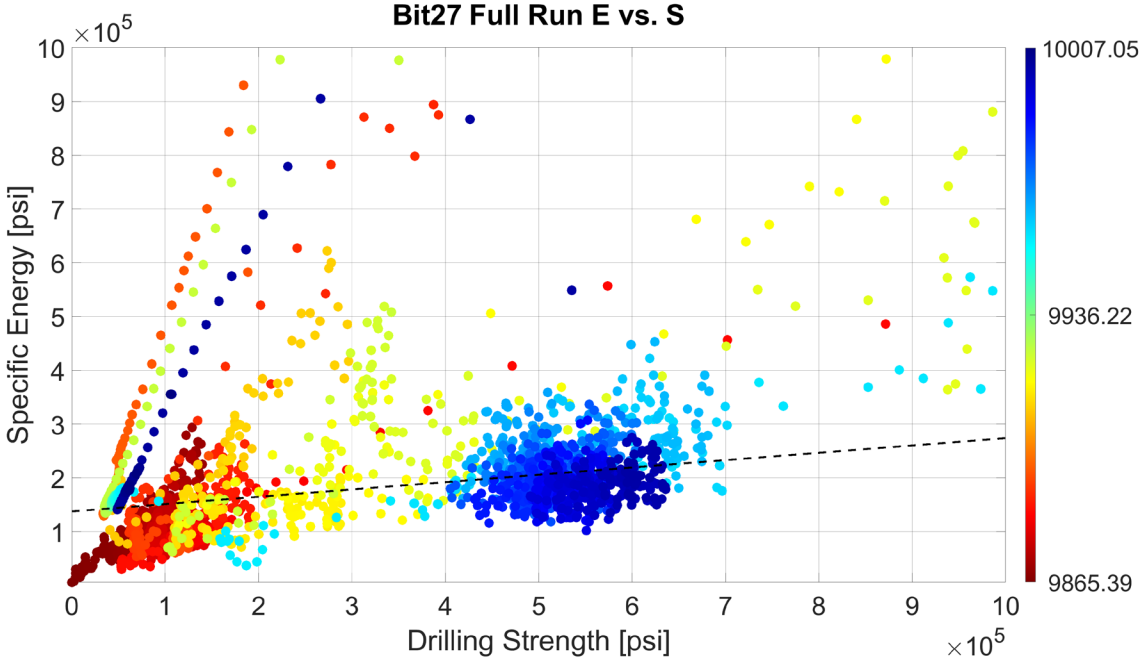
Figure 3-43. Post-drill photo of bit #27.

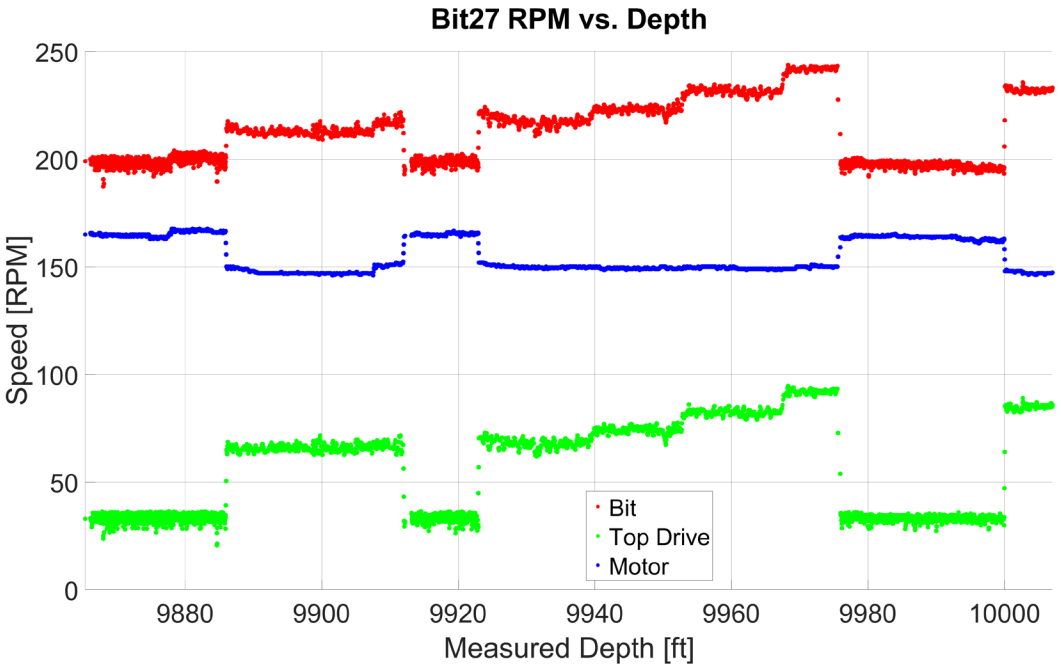
Bit Run Figures:

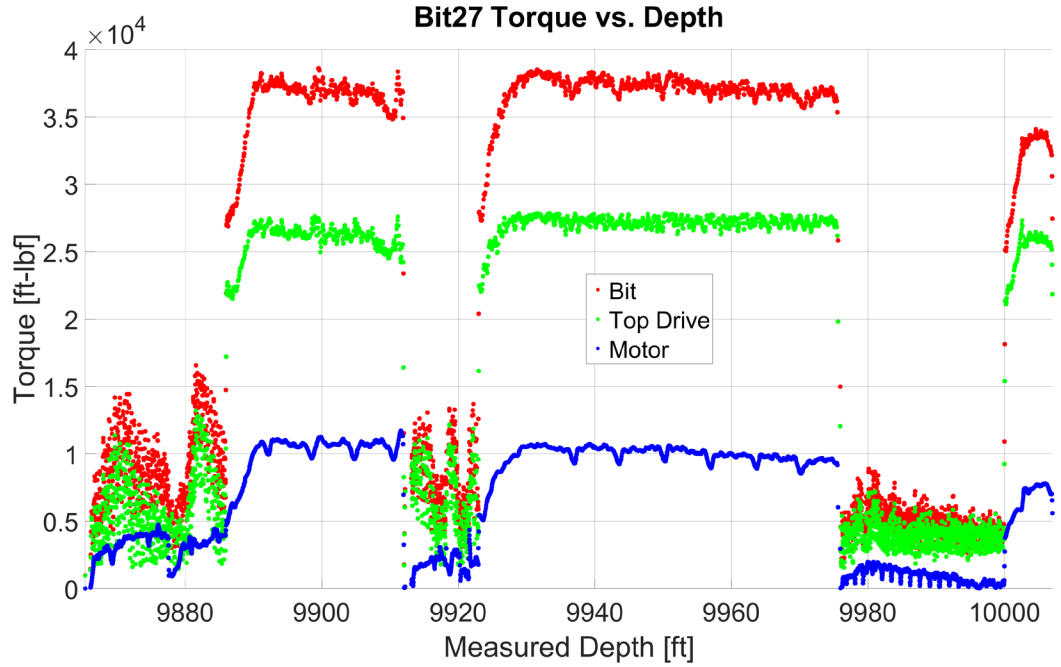





Bit27 ES Strip Chart
×10^5
10
9
8
7
6
5
4
3
2
1
E and S [psi]
Specific Energy (E)
Specific Strength (S)
9880
9900
9920
9940
9960
9980
10000
Measured Depth [feet]


Bit27 Full Run E vs. S
×10^5
10
9
8
7
6
5
4
3
2
1
Specific Energy [psi]
0
1
2
3
4
5
6
7
8
9
10
×10^5
Drilling Strength [psi]
10007.05
9936.22
9865.39


Bit27 RPM vs. Depth
Speed [RPM]
Measured Depth [ft]
Bit
Top Drive
Motor
250
200
150
100
50
0
9880
9900
9920
9940
9960
9980
10000


Bit27 Torque vs. Depth
×10^4
Torque [ft-lbf]
Measured Depth [ft]
Bit
Top Drive
Motor
4
3.5
3
2.5
2
1.5
1
0.5
0
9880
9900
9920
9940
9960
9980
10000

3.28. Bit-28 (Core)

Table 58: Bit 28 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	6/5/23	8.75	CCI	CCI-713	4219-01
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
28	10230	10256	26	9.5	2.74

Table 59: BHA 28 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	CORE			
8	STAB			
9	OTHER			
10	JAR			
11	XO			
12	30 HWDP			

3.29. Bit-29 (Ream)

Table 60: Bit 29 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	6/6/23	8.75	NOV	Tri Cone	T46ZX
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
29	10250	10264	14	1	14

Table 61: BHA 29 component makeup.

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	CORE			
8	STAB			
9	OTHER			
10	JAR			
11	XO			
12	30 HWDP			

3.30. Bit-30 (Core)

Table 62: Bit 30 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/07/23	8.75	NOV	CCI-913	CCI 3409-05
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
30	10264	10271	7	8.5	0.82

Table 63: BHA 30 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	Core BHA 6			
4	STAB			
5	CORE			
6	STAB			
7	CORE			
8	STAB			
9	OTHER			
10	JAR			
11	XO			
12	30 HWDP			

3.31. Bit-31 (Drill Out Cement)

Table 64: Bit 31 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/08/23	8.75	NOV	CCI-713	CCI 3409-01
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
31	10271	10274	3	0.5	6

Table 65: BHA 31 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	BS			
3	XO			
4	30 HWDP			

3.32. Bit-32 (Core)

Table 66: Bit 32 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/10/23 -06/11/23	8.75	NOV	CCI-713	CCI-3409-01
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
32	10274	10304	30	23.5	1.28

Table 67: BHA 32 component makeup.

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	OTHER			
8	JAR			
9	XO			
10	30 HWDP			

3.33. Bit-33 (Drill Ahead)

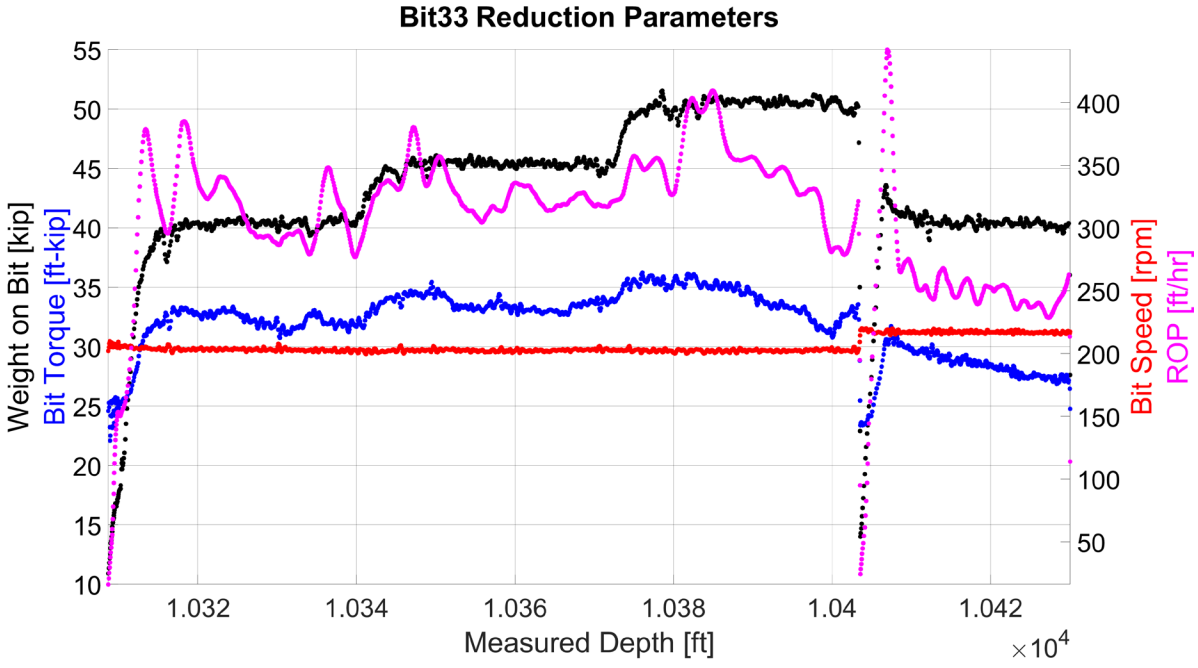
Table 68: Bit 33 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

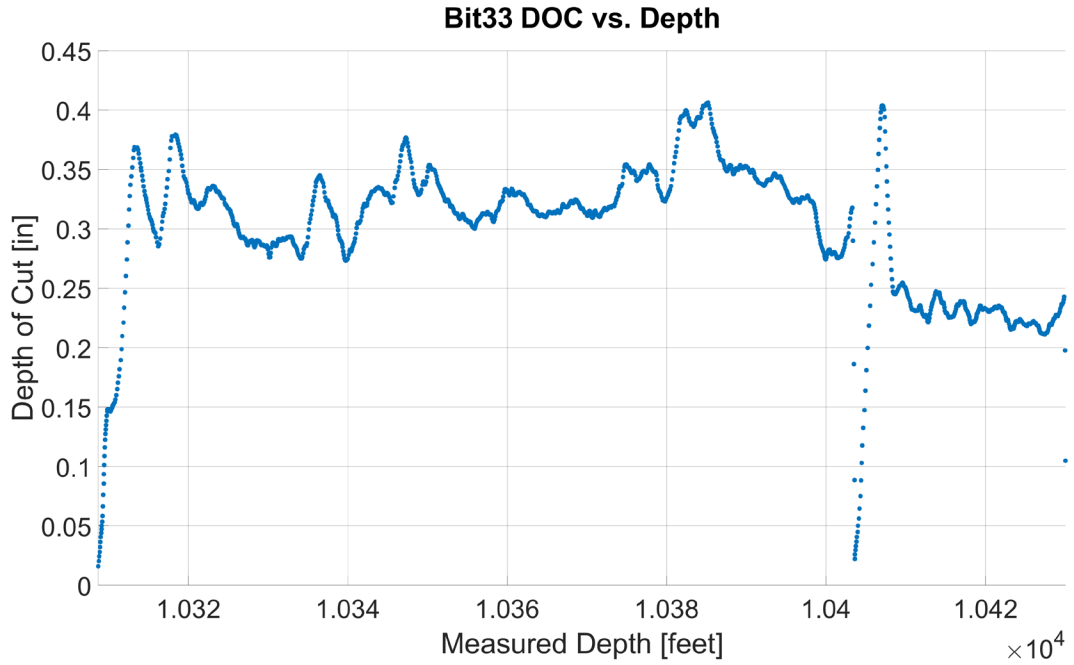
Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/11/23	8.75	NOV	TKC63, PDC 6 Blade	A299586
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
33	10304	10430	126	0.75	168

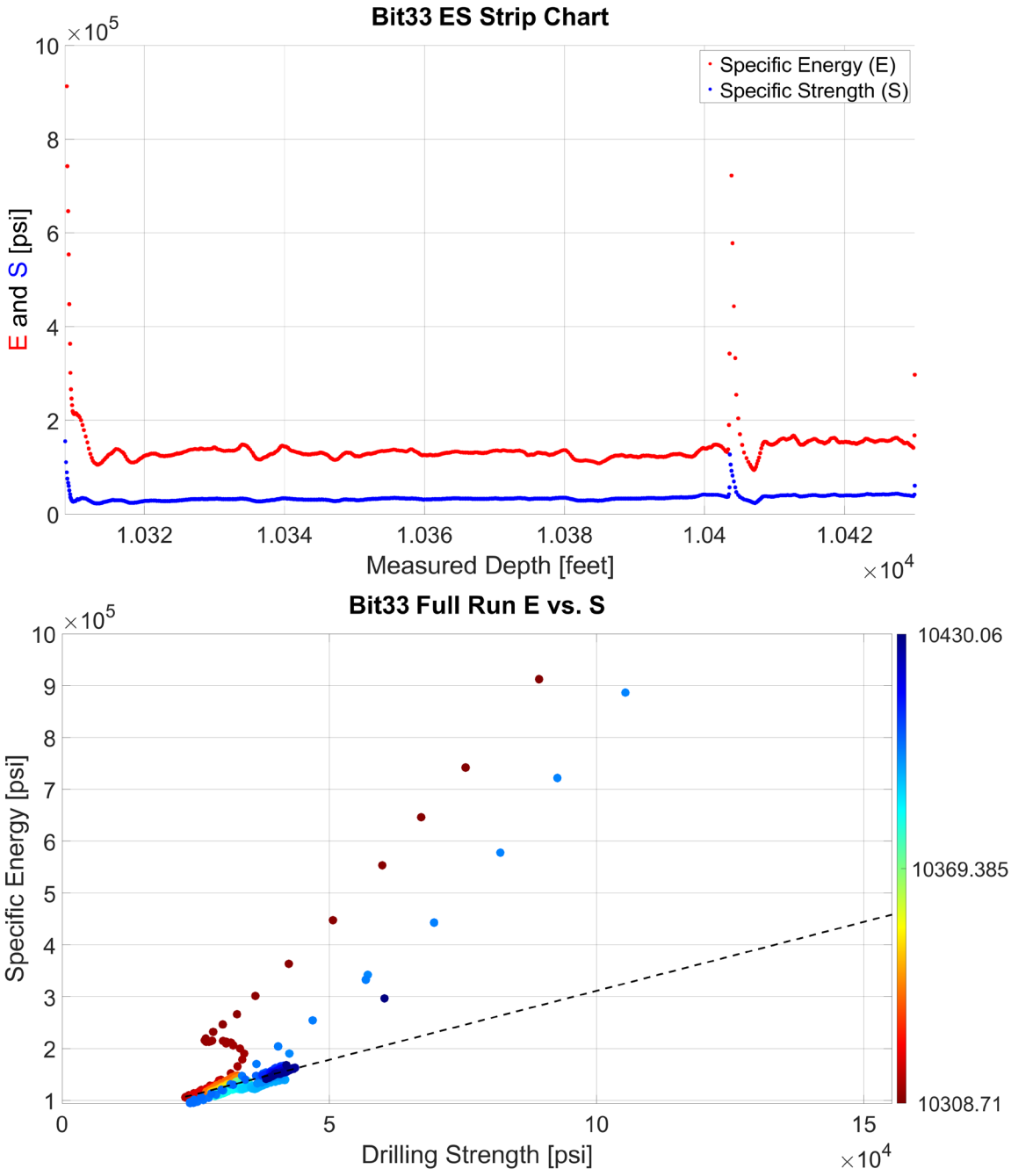
Table 69: BHA 33 component makeup.

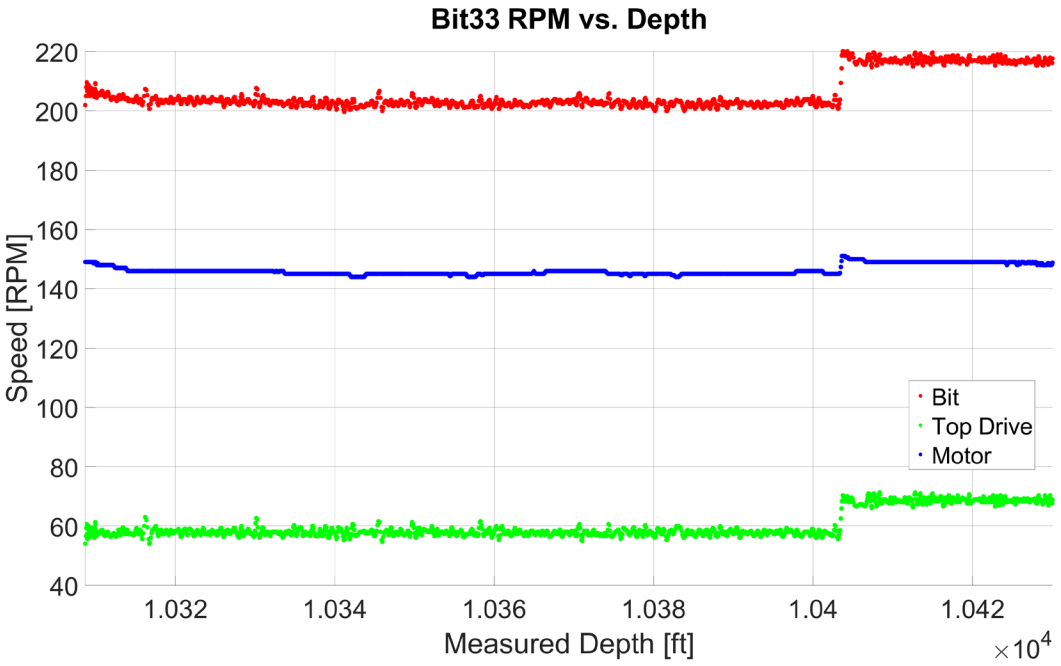
BHA No.	Component	OD	ID	Length
1	8 3/4, 6 Blade PDC bit	6.5	2.25	0.9
2	Bit Sub	6.75	2.5	3.95
3	8 1/2 Spiral Stabilizer	6.75	3.188	6.27
4	7.15 Mud Motor	7.188	2	40.15
5	FG 8 3/4" Roller reamer	6.625	3	6.64
6	6 3/4 Float sub	6.375	2.875	2.45
7	Crossover (BHA to HWDP)	6.937	3	3.15
8	30 JTS HWDP	5.5	3.625	920.94

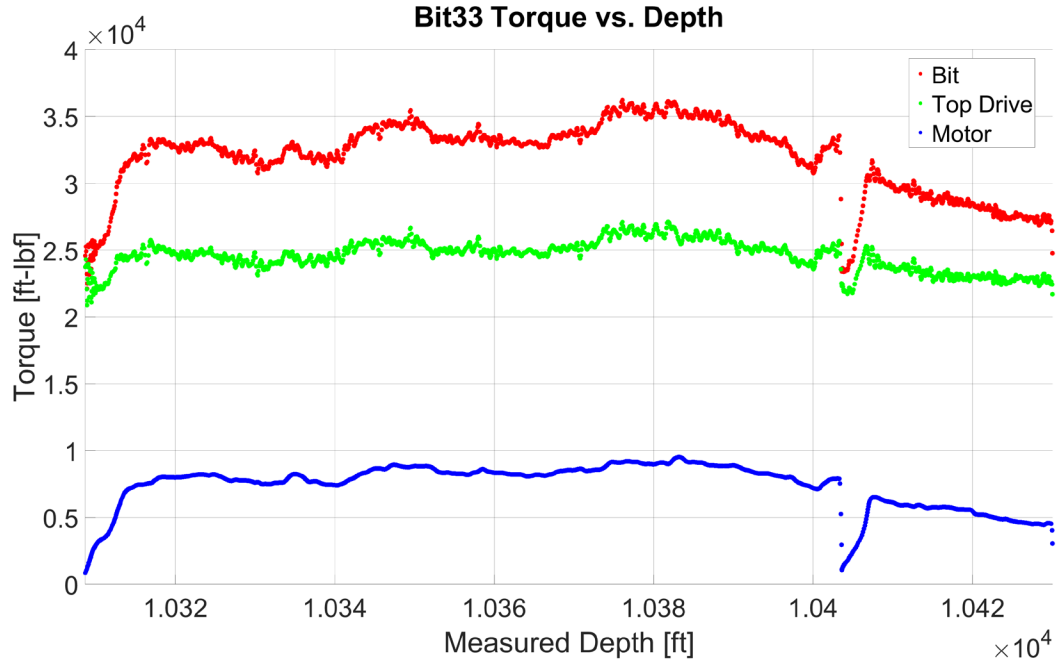
Bit Run Figures:






Bit33 ES Strip Chart
Specific Energy (E)
Specific Strength (S)
E and S [psi]
Measured Depth [feet]
Bit33 Full Run E vs. S
Specific Energy [psi]
Drilling Strength [psi]
10430.06
10369.385
10308.71


Bit33 RPM vs. Depth
Speed [RPM]
220
200
180
160
140
120
100
80
60
40
1.032
1.034
1.036
1.038
1.04
1.042
Measured Depth [ft]
×10^4
Bit
Top Drive
Motor


Bit33 Torque vs. Depth
×10^4
4
3.5
3
2.5
2
1.5
1
0.5
0
Torque [ft-lbf]
1.032
1.034
1.036
1.038
1.04
1.042
Measured Depth [ft]
×10^4
Bit
Top Drive
Motor

3.34. Bit-34 (Core)

Table 70: Bit 34 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/12/23	8.75	NOV	CCI-913	CCI-3409-05
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
34	10430	10460	30	22.75	1.32

Table 71: BHA 34 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	OTHER			
8	JAR			
9	XO			
10	30 HWDP			

3.35. Bit-35 (Drill Out Cement)

Table 72: Bit 35 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/14/23	8.75	NOV	TRI CONE	T462X
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
35	10460	10462	2	0.25	8

Table 73: BHA 35 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	OTHER			
8	JAR			
9	XO			
10	30 HWDP			

3.36. Bit-36 (Core)

Table 74: Bit 36 run summary. (Daily Drilling Report)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/15/23	8.75	CCI	CCI-713	3409-03
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
36	10462	10493	31	22.5	1.38

Table 75: BHA 36 component makeup. (Daily Drilling Report)

BHA No.	Component	OD	ID	Length
1	BIT			
2	NBS			
3	CORE			
4	STAB			
5	CORE			
6	STAB			
7	OTHER			
8	JAR			
9	XO			
10	30 HWDP			

3.37. Bit-37 (Drill Ahead)

Table 76: Bit 37 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/16/23	9.5	NOV	XLS30DX, TRI CONE	5243758
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
37	10493	10503	10	0.75	13.3

Table 77: BHA 37 component makeup.

BHA No.	Component	OD	ID	Length
1	9 1/2 Insert bit	9.5	3	0.85
2	Bit Sub	6.75	2.5	3.14
3	FG 9 1/2 Roller reamer	6.563	3	6.98
4	7.15 Mud Motor	7.188	2	40.15
5	FG 9 1/2 Roller reamer	6.625	3	5.39
6	6 3/4 Float sub	6.375	2.875	2.45
7	Crossover (BHA to HWDP)	6.937	3	3.15
8	30 JTS HWDP	5.5	3.625	918.47

3.38. Bit-38 (Drill Ahead)

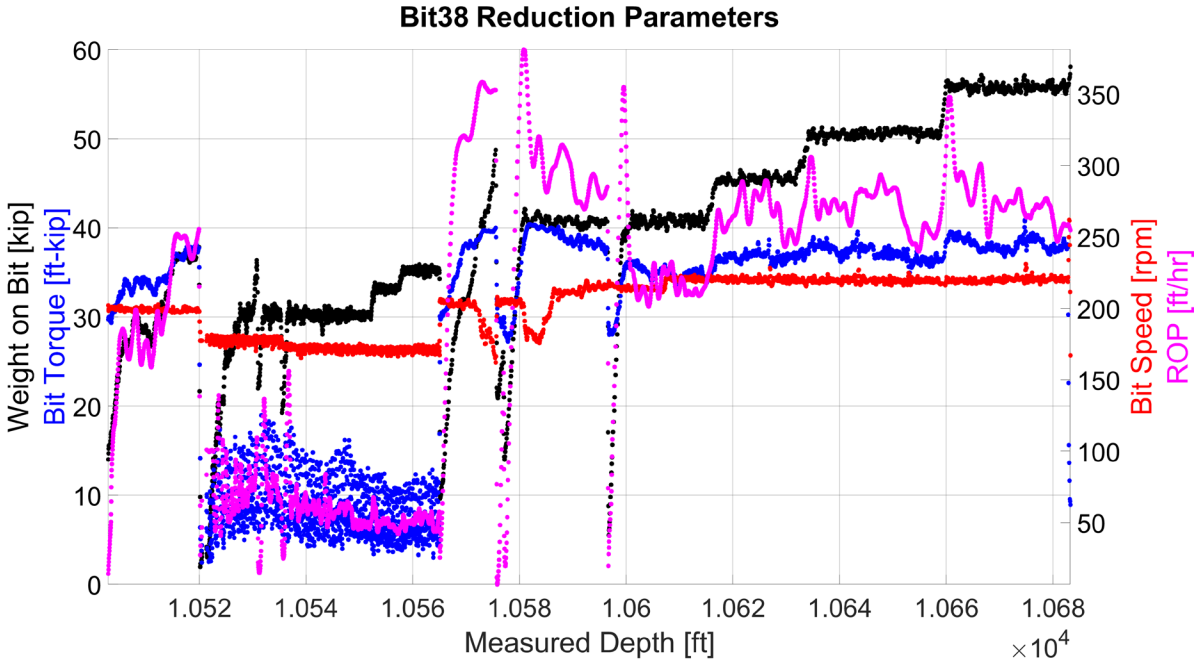
Table 78: Bit 38 run summary. (Daily Drilling Report, SDI EOWR and Sandia Master Bit Record)

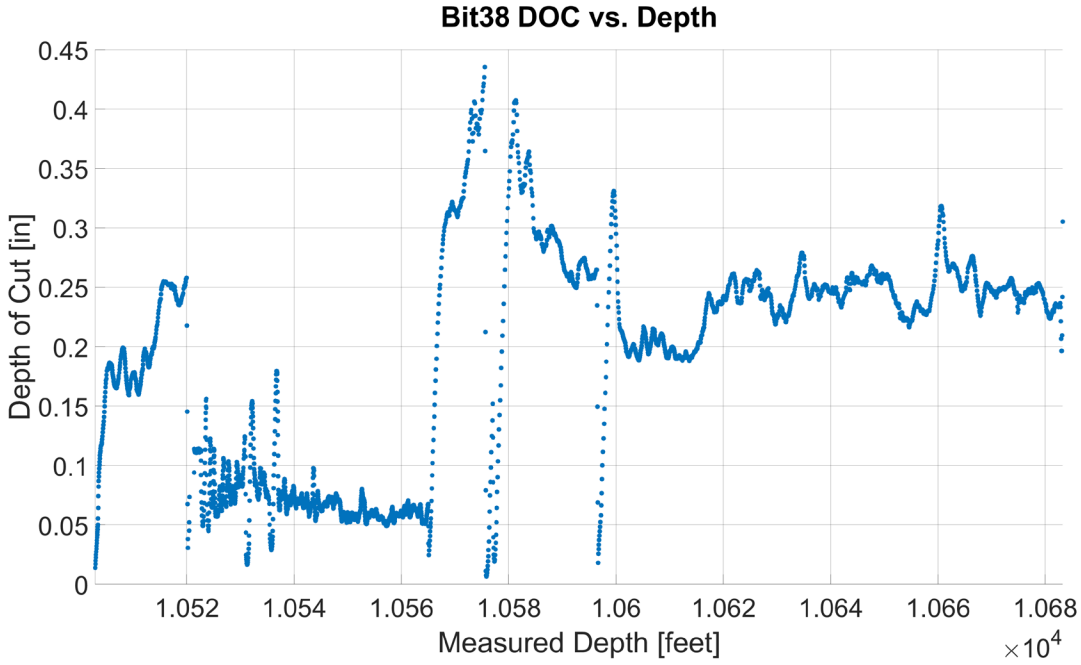
Run No.	Run Date	Bit Diameter (in)	Manufacturer	Type	Serial No
1	06/17/23	9.5	Baker Hughes	DD506V, 6 Blade PDC	5341859
BHA No.	**Depth Start (ft)**	**Depth End (ft)**	**Total Footage (ft)**	**Time on Bottom (hrs)**	**Net ROP (ft/hr)**
38	10503	10947	444	5.00	88.8

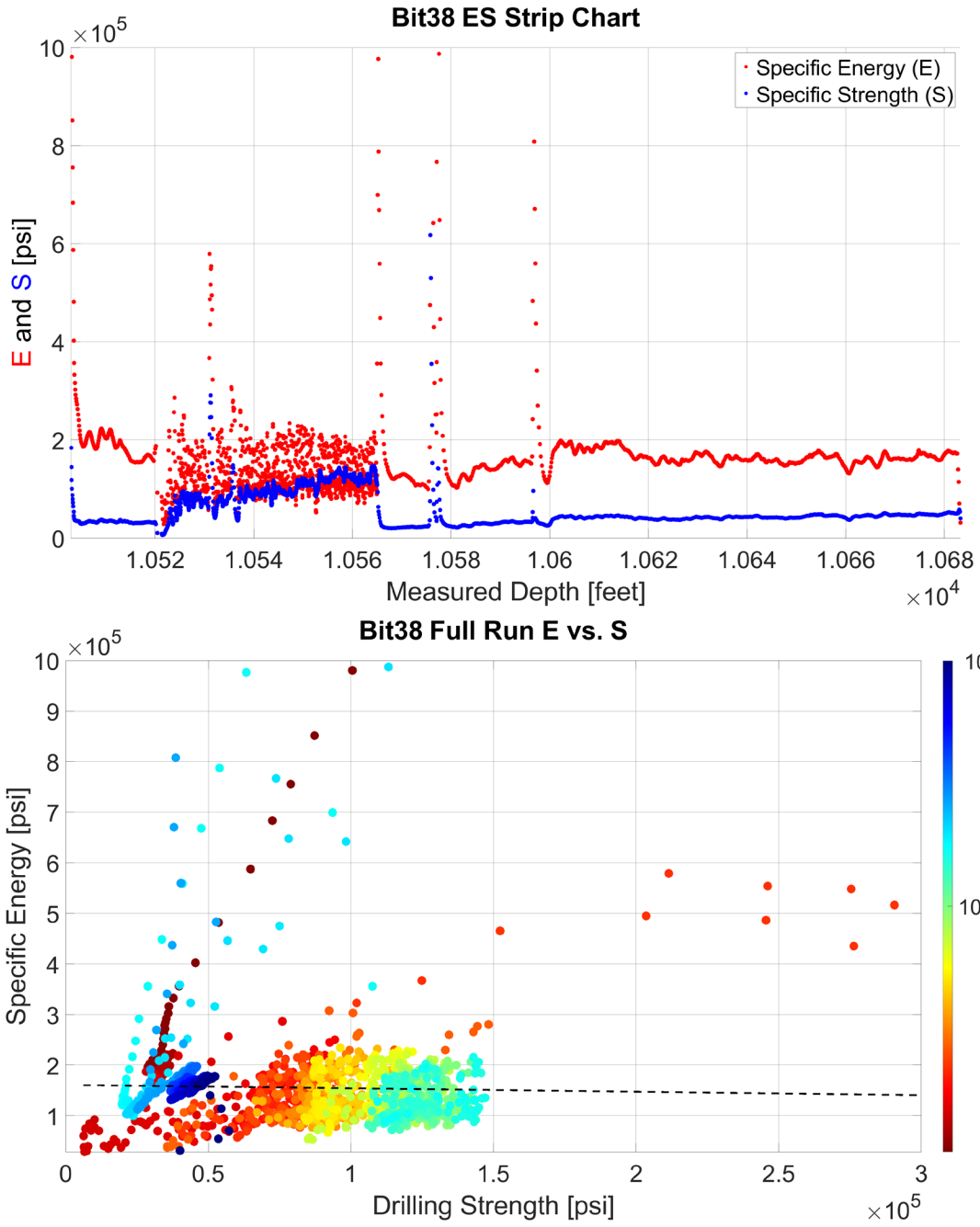
Table 79: BHA 38 component makeup.

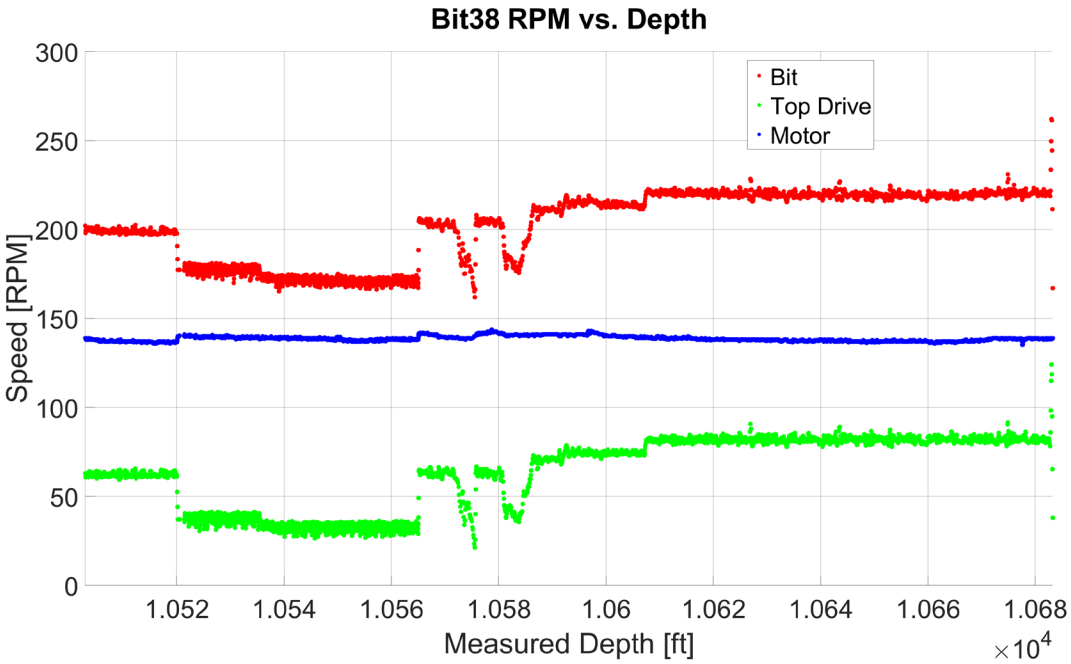
BHA No.	Component	OD	ID	Length
1	9 1/2 6 Blade PDC bit	9.5	2.75	1.05
2	7.15 Mud Motor	7.188	2	41.92
3	FG 9 1/2 Roller reamer	6.563	3	6.71
4	6 3/4 NM Pony DC	6.438	3.25	9.22
5	6 3/4 NMDC	6.813	3.25	31.11
6	6 3/4 Pulser Sub	6.5	3.5	5.6
7	6 3/4 NMDC	6.813	3.5	31.1
8	6 3/4 NM Pony DC	6.438	3.5	12.24
9	6 3/4 NM Pony DC	6.813	3.25	9.83
10	6 3/4 Black Box	6.75	2.25	5.9
11	6 3/4 Filter sub	6.688	3.25	3.93
12	6 3/4 Float sub	6.375	2.875	2.45
13	Crossover (BHA to HWDP)	6.937	3	3.15
14	30 JTS HWDP	5.5	3.625	918.47

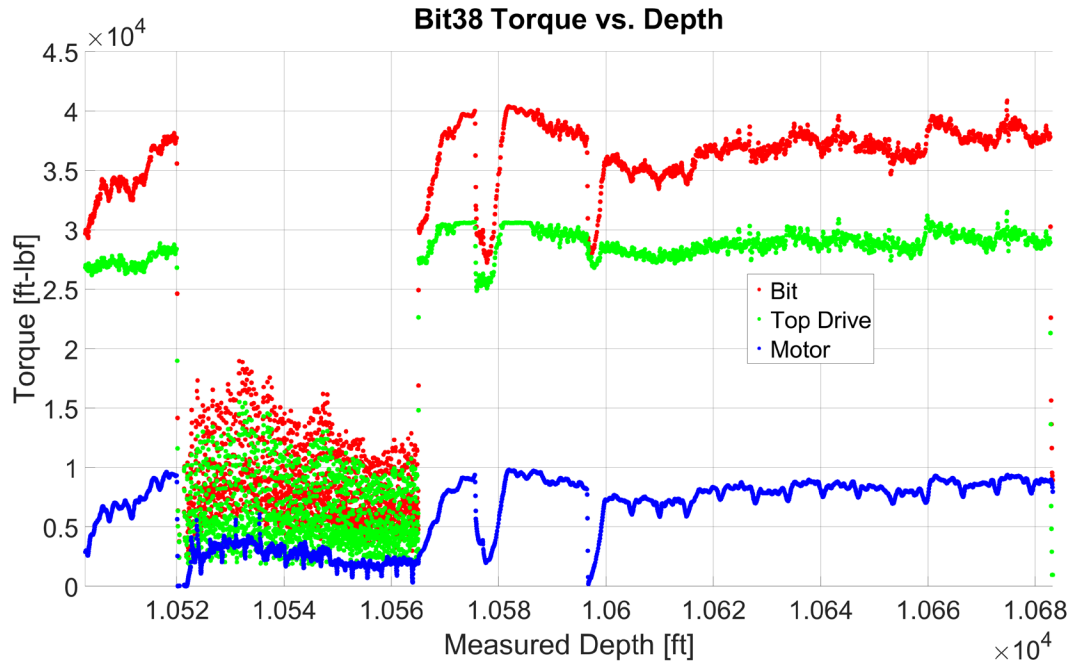
Bit Run Figures:






Bit38 ES Strip Chart
Specific Energy (E)
Specific Strength (S)
E and S [psi]
Measured Depth [feet]
Bit38 Full Run E vs. S
Specific Energy [psi]
Drilling Strength [psi]
10683.23
10593.115
10503


Bit38 RPM vs. Depth
Bit
Top Drive
Motor
Speed [RPM]
300
250
200
150
100
50
0
1.052
1.054
1.056
1.058
1.06
1.062
1.064
1.066
1.068
Measured Depth [ft]
×10^4


Bit38 Torque vs. Depth
×10^4
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Torque [ft-lbf]
Bit
Top Drive
Motor
1.052
1.054
1.056
1.058
1.06
1.062
1.064
1.066
1.068
Measured Depth [ft]
×10^4

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[3] Detournay, E., Defourny, P., "A Phenomenological Model for the Drilling Action of Drag Bits," Int. J. Rock Mech. Min. Sci. & Geomech. Abstr., Vol. 29, No.1, (1992) 13-23.

[4] Raymond, D., "PDC Bits Demonstrate Benefit Over Conventional Hard-Rock Drill Bits," Geothermal Resources Council Transactions, Vol. 25, (2001) 125-132.

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[6] Bourgoyne, A.J.T., Chenevert , M.E. & Millheim, K.K., 1986. SPE Textbook Series, Volume 2: Applied Drilling Engineering, Society of Petroleum Engineers.

[7] Winkler, D., and Swearingen, L., "Summary of Drilling Activities: Well 16A(78)-32," Mar 2021.

[8] Stevenson, M., et al, "FORGE 16A(78)-32 Drill Bit Analysis," January 2021.

[9] Stevenson, M., et al, "FORGE 56-32 Drill Bit Performance," 02/27/2021.

[10] ReedHycalog, Drill Bit Performance, FORGE 56-32 - Complete Well , Feb 27, 2021 (received).

[11] Scientific Drilling, End of Well Report, Utah FORGE 16B(78)-32, June 2023.

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APPENDIX A. DAILY DRILLING REPORTS

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 1 **Report For 06:00 AM 17-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**		**Daily Cost / Mud ($):**		---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore		**AFE No.**	**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31		---	---	---
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**		---	---	---
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**		**Totals:**	---	---
Average ROP (ft/hr):				**Well Cost ($):**		---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 1

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Safety Summary: No incidents or events reported. Conducted Safety Meeting.

Current Operations: WOD

Planned Operations: MIRU with Frontier Drilling and RW Jones Trucking.

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00		WOD	No activity	
7:00	13:00	6.00		RIGU	Laying plastic for rig with Rollins Construction	
13:00	19:00	6.00		RIGU	Offloading trucks with RW Jones Trucking. Approximately 10 loads received.	
19:00	6:00	11.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition: Excellent surface.

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	15	Hand safety, Tag lines on all loads, being aware of your surroundings.

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:**

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 2 **Report For 06:00 AM 18-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**		**Daily Cost / Mud ($):**		---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore		**AFE No.**	**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31		---	---	---
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**		---	---	---
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**		**Totals:**	---	---
Average ROP (ft/hr):				**Well Cost ($):**		---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 2

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Safety Summary: No incidents or events reported. Conducted Safety Meeting.

Current Operations: WOD

Planned Operations: MIRU with Frontier Drilling and RW Jones Trucking.

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00		WOD	No activity	
7:00	7:30	0.50		SAFETY	Hold safety meeting with FORGE DSM Leroy Swearingen, Frontier Drilling rig manager, and RW Jones Trucking personnel.	
7:30	19:00	11.50		RIGU	Offloading trucks with RW Jones Trucking.Continue rigging up with 1 crane, 2 bed trucks, 1 telehandler, and Rolling forklift. Set lower subs on plastic, set mud tanks. 60% to 70%of rig components on location. 5% to 10% rigged up.	
19:00	6:00	11.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition: Excellent surface.

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	15	Hand safety, Tag lines on all loads,wind precautions..

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI:

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 3 **Report For 06:00 AM 19-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**		**Daily Cost / Mud ($):**		---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore		**AFE No.**	**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31		---	---	---
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**		---	---	---
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**		**Totals:**	---	---
Average ROP (ft/hr):				**Well Cost ($):**		---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 3

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Safety Summary: No incidents or events reported. Conducted Safety Meeting.

Current Operations: WOD

Planned Operations: Continue rigging up Frontier Drilling Rig 16

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00		WOD	No activity	
7:00	7:30	0.50		SAFETY	Hold safety meeting with FORGE DSM Leroy Swearingen, Frontier Drilling personnel, and Jones Trucking.	
7:30	19:00	11.50		RIGU	Offloading trucks with RW Jones Trucking.Continue rigging up with 2 cranes, 2 bed trucks, 2 telehandlers. Set in back yard, including pumps generators, SCR house. Set fuel tanks on plastic and build containment dike with Rollins loader operator. Approximately 80% of rig components on location and 30% rigged up.	
19:00	6:00	11.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition: Excellent surface.

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	Use of tag lines, overhead loads, hand placement,awareness of surroundings

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI:

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 4 **Report For 06:00 AM 20-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**	**Daily Cost / Mud ($):**			---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31	---	---	---	
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**	---	---	---	
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**	**Totals:**	---	---	
Average ROP (ft/hr):			**Well Cost ($):**			---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 4

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Safety Summary: No incidents or events reported. Conducted Safety Meeting.

Current Operations: WOD

Planned Operations: Continue rigging up with Frontier Drilling Rig 16 personnel and RW Jones Trucking. String up blocks, raise derrick, install top drive, release trucks and crane.

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00		WOD	No activity	
7:00	7:30	0.50		SAFETY	Hold safety meeting with 1 Superintendent, 1 rig manager and Frontier Drilling personnel, and RW Jones Trucking personnel.	
7:30	20:30	13.00		RIGU	Rigging up with Frontier personnel; 1 Superintendent, 1 Rig Manager, 12 crew members, 2 cranes, 1 bed truck and 1 telehandler. Additional equipment included 2 haul trucks with pipe and collars, 1 fuel truck, 1 haul truck with solids control equipment, 1 solids control personnel, and 2 RW Jones haul trucks. Operations were rig up floor for derrick, assemble derrick, hang blocks and place derrick on floor and crown stand, raise A legs, rig up fuel lines and mud lines, string electrical lines, and spot solids control equipment stands. Approximately 65% rigged up at this time.	
20:30	6:00	9.50		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	HSM with Frontier Drilling Superintendent, Rig Manager, rig crews and RW Jones personnel.

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:**

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 5 **Report For 06:00 AM 21-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**	**Daily Cost / Mud ($):**			---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31	---	---	---	
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**	---	---	---	
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**	**Totals:**	---	---	
Average ROP (ft/hr):			**Well Cost ($):**			---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 5

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Safety Summary: No incidents or events reported.

Current Operations: WOD

Planned Operations: Continue rigging up with Frontier Drilling. String electric and hydraulic lines, set catwalk, rig up mud lines.

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00		WOD	No activity	
7:00	7:30	0.50		SAFETY	Hold safety meeting with 1 Superintendent, 1 rig manager and Frontier Drilling personnel, and RW Jones Trucking personnel.	
7:30	19:00	11.50		RIGU	String up drilling line and slip to drawworks. Pull electrical wires. Release RW Jones trucks and crane at 12:00. PJSM with all Frontier personnel before raising derrick. Raise and pin derrick. Rig up air tuggers, Bridle down and pick up top drive. Rig up hydraulic lines. Set trip tank. Rig up Zeco solids control equipment. Set stairs to rig floor. Unload haul truck of drill collars, drill bits, weight pipe and drill pipe. Frontier Rig 16 is approximately 75% rigged up. SDFN	
19:00	6:00	11.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI:

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 6 **Report For 06:00 AM 22-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**		**Daily Cost / Mud ($):**		---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore		**AFE No.**	**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31		---	---	---
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**		---	---	---
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**		**Totals:**	---	---
Average ROP (ft/hr):				**Well Cost ($):**		---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 6

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Current Operations: WOD

Planned Operations: Continue rigging up Frontier Rig 16. Install conductor under rig floor and weld up. Fill mud tanks. Complete running mud and electrical lines. Offload, spot and rig up mud coolers. Offload rental drill pipe and equipment. 90% rigged up.

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:30	0.50		SAFETY	Hold safety meeting with rig manager and Frontier Drilling personnel	
6:30	19:00	12.50		RIGU	Continue rigging up Frontier Rig 16. Hook up rotary chain. Work with top drive tech and electrician to wire top drive. Complete Pason installation on rig floor, mud pits and command center. Wire up crown lights. Rebuild IBOP and install. Install lower kelly valve and connect standpipe. Adjust guides and function test top drive. Hook up kelly hose and hang tongs. Rollins welder building conductor and flowline. Fill rig water tank. Unload mud products and rental tools. Rig is approximately 90% rigged up.	
19:00	20:00	1.00		WOD	No activity	
20:00	6:00	10.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 7 **Report For 06:00 AM 23-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**	**Daily Cost / Mud ($):** ---			
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31	---	---	---	
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**	---	---	---	
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**	**Totals:**	---	---	
Average ROP (ft/hr):			**Well Cost ($):** ---			

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 7

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Current Operations: WOD

Planned Operations: MSE Training

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:30	0.50		SAFETY	Hold safety meeting with 2 Frontier Drilling rig managers and personnel. Discuss operations for the day and working safe.	
6:30	13:00	6.50		RIGU	Install new wash pipe. Work with Canrig on top drive and install Rockit/Revit. Review operating of Rockit/Revit with drillers. Offload drill pipe, stabilizers and rig tools. Offload 3 mud coolers and spot. DrillCool rigging up coolers.	
13:00	14:00	1.00		SAFETY	Hold pre-spud safety meeting with FORGE representatives John McLennan, Ben Barker, FORGE Site Manager Garth Larsen, Frontier Drilling safety man, 2 rig managers, and rig personnel	
14:00	19:00	5.00		RIGU	Work on pump liner washers. Spot mud coolers in place, install reducers on mud tank valves and rig up mud coolers. Rebuild pop offs on mud lines. Set and test TAC 2 and rev in.	
19:00	6:00	11.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 8 **Report For 06:00 AM 24-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**		**Daily Cost / Mud ($):**		---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore		**AFE No.**	**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31		---	---	---
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**		---	---	---
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**		**Totals:**	---	---
Average ROP (ft/hr):				**Well Cost ($):**		---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 8

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Current Operations: WOD

Planned Operations: Physics-based Limiter Redesign Training by Fred Dupriest and Sam Noynaert, Texas A&M University

Wellsite Supervisors: Leroy Swearingen **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00		WOD	No activity	
8:00	17:00	9.00		OTHER	Physics-based Limiter Redesign Training by Fred Dupriest and Sam Noynaert, Texas A&M University with John McLennan, Ben Barker, Paul Stroud, Garth Larsen, FORGE DSM's Frontier Drilling Rig 16 rig managers and personnel and numerous industry participants and vendors.	
17:00	19:00	2.00		RIGU	Complete rigging up DrillCool cooler system. Install shaker slides.	
19:00	6:00	11.00		WOD	No activity	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 9 **Report For 06:00 AM 25-Apr-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:**	**Daily Cost / Mud ($):**			---
Measured Depth (ft):	**Last Casing:**	**Wellbore:** Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	**Next Casing:**	**RKB Elevation (ft):** 31	---	---	---	
Proposed TD (ft):	**Last BOP Test:**	**Job Reference RKB (ft):**	---	---	---	
Hole Made (ft) / Hrs: 0 / 0.0	**Next BOP Test:**	**Working Interest:**	**Totals:**	---	---	
Average ROP (ft/hr):			**Well Cost ($):**			---

Days (actual / plan): Drilling 0 / 0, Flat 0 / 0, Complete 0 / 0, Total 0 / 0 **DOL:** 9

Pers/Hrs:	**Operator:** 0 / 0	**Contractor:** 0 / 0	**Service:** 0 / 0	**Other:** 0 / 0	**Total:** 0 / 0

Safety Summary: No incidents or events reported.

Current Operations: WOD

Planned Operations: Complete rig up, Pre-Spud check. Pickup 22-inch BHA.

Toolpusher: Shawn Seddell

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00		WOD	No activity	
8:00	17:00	9.00		OTHER	Physics-based Limiter Redesign Training by Fred Dupriest and Sam Noynaert, Texas A&M University with FORGE Site Manager Garth Larsen, Operations Manager Paul Stroud, FORGE DSM's Frontier Drilling Rig 16 rig managers and personnel and numerous industry participants and vendors.	
17:00	21:00	4.00		RIGU	Set in 24-inch riser and weld on to conductor. Weld pad-eyes for turnbuckles on riser.	
21:00	6:00	9.00		WOD	No activity	

Management Summary

WOD. Attended Physics-based Limiter Redesign Training by Fred Dupriest and Sam Noynaert, Texas A&M University. Installed 24-inch riser on conductor. WOD.

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:**

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 10 **Report For 06:00 AM 26-Apr-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	500	**Last Casing:**		**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	500	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**		**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	380 / 3.5	**Next BOP Test:**		**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	108.57					**Well Cost ($):**	---

Days (actual / plan): Drilling 0.15 / 0, Flat 0 / 0, Complete 0 / 0, Total 0.15 / 0 **DOL:** 10

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	14 / 168	3 / 36	7 / 84	2 / 24	26 / 312

Safety Summary: No incidents or events reported. 10 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling Surface Hole Section at 500'.

Planned Operations: Drill Surface Hole Section to casing point.

Toolpusher: Shawn Seddell

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	18:00	12.00		RIGU	Walk catwalk into place, change liner washers on mud pumps, rig up yellow dog and run hoses back to mud tanks, change elevators to 5 1/2", make up 5 1/2" saver sub and install clamps, install drill pipe and collar ropes in board, bring bit to rig floor, stage BHA.Test mud lines from mud pumps to top drive to 1500 psi for 15 minutes. Fill conductor and check flow line and shakers, install PVC pipe for shale shaker slides. Begin mudding up system for spud. Accept rig at 18:00, 4-25-2023.	
18:00	20:30	2.50		RIGU	Install liners in open top tanks for cement returns, lay plastic around shaker area.	
20:30	22:30	2.00		BHAOP	Make up 22” surface hole section BHA #1 as followed. 22” PDC (TK99), 9.5” Motor set at 0 deg, 21.875” string stab, 9.5” NMDC, 9.5” Pony Collar, 9.5” Hangoff Sub, 9.5” Hybrid Sub, 9.5” Pony Sub, X/O.	
22:30	2:30	4.00		BHAOP	Layout Drill collars along with HWDP on racks, strap and ready for pickup. Build stand of 8” drill collars in mouse hole.	
2:30	6:00	3.50		DRIL	Drill 22” Surface hole f/120’ t/500' Spud well at 02:30 4-26-2023.	

Management Summary

Walked catwalk into place. Rigged up yellow dog pump to shaker slides. Changed out Elevators along with Saver Sub. Dressed out Derrick Board. Set tools on rig floor. Tested mud lines from mud pumps to top drive to 1500 psi for 15 minutes. Filled conductor and checked surface equipment. Installed PVC pipe for shale shaker slides. Mudded up system for spud. Conducted pre-spud inspection of rig and components. Made up 22” surface hole section BHA #1. Laid out Drill collars along with HWDP on racks. Built stand of 8” drill collars in mouse hole. Drilled 22" surface hole f/120' t/500'.

Comments

Accept rig at 18:00, 4-25-2023. Spud well at 02:30 4-26-2023.
Fuel on hand 18,841 gals.
Fuel used 700 gals.
Fuel delivered 7,500 gals.
Total NPT to date 0 HR

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
1	1	NOV	TK99	22.000	120	380	3.5	108.6	350.0	10	30	5	9	1000	1650	241	457	266	1097

Jets: 12 12 12 12 12 12 12 12 12 21 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **e:** **Pull:**

Comments: Bit has a TFA of 1.32 with 12x12s

BHA - No. 1 - BIT, MMTR, STAB, DCM, PC, HSUB, OTHER, PC, XO, 9 DC, XO, HWDP = 843.58

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
120	500	100.0	350.0	10	20	20	40	4	6	650	1,000	1,500

Annular Velocity: **Drill Collars:** 45.0 **Drill Pipe:** 60.0

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	110	**Pick Up:**	112	**Slack Off:**	109	**Drag Avg/Max:**	2 / 3
Hours on BHA:	**Since Inspection:**	3.5	**Total:**	3.5	**Jars:**	0		

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 10 **Report For 06:00 AM 26-Apr-23**

Rig Information

Equipment Problems:

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	60	60	60	60	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	60	60	60	60			
Shaker No 3:	60	60	60	60			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations, Picking up Dir Assembly.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	10

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	38 degF	**Bar. Pressure:**	30.09
Wind Speed/Dir:	10 / SW	**Wind Gusts:**	15

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 11 **Report For 06:00 AM 27-Apr-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	1146	**Last Casing:**		**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	1135	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**		**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	646 / 6.0	**Next BOP Test:**		**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	107.67					**Well Cost ($):**	---

Days (actual / plan): Drilling 0.4 / 0, Flat 0 / 0, Complete 0 / 0, Total 0.4 / 0 **DOL:** 11

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	14 / 168	3 / 36	10 / 120	2 / 24	29 / 348

Safety Summary: No incidents or events reported. 11 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Cementing as per prog at report time, details to follow.

Planned Operations: Cement 16” surface casing as per prog.

Toolpusher: Shawn Seddell

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	800	DRILR	Drill Surface f/ 500’ t/ 800'. WOB 10, RPM 30, TQ 7500, SPP 1660, DIFF 280, GPM 940, ROP 115	
8:00	8:30	0.50	800	DRILR	Trouble breaking out of stump.	
8:30	11:00	2.50	1,000	DRILR	Drill Surface f/ 800' t/ 1000'. WOB 20, RPM 30, TQ 12000, SPP 2165, DIFF 700, GPM 1100, ROP 105	
11:00	12:00	1.00	1,000	CIRC	Circulate to build volume. Shakers blinding off.	
12:00	13:00	1.00	1,146	DRILR	Drill Surface f/1,000' t/ 1,146'. WOB 20, RPM 30, TQ 12000, SPP 2200, DIFF 810, GPM 1120, ROP 120	
13:00	14:30	1.50	1,146	CIRC	Circulate hole clean. Pump 2 high viscosity sweeps.	
14:30	18:45	4.25	1,146	WIPE	Wipe hole f/1,146’ t/Surface with no issues. Max over pull of 15k, full displacement while running back to bottom, 4’ of fill.	
18:45	20:00	1.25	1,146	CIRC	Pump 50 bbl high vis sweep with nutplug caliper. Circulate surface to surface strokes,calculated 3%-hole washout. Circulate additional surface to surface strokes. Spot 50 bbl high vis sweep on bottom.	
20:00	21:30	1.50	1,146	TRPO	Trip out of the hole f/1,146 t/ BHA, hole taking proper fill.	
21:30	23:00	1.50	1,146	BHAOP	Rack back HWDP along with 8” DC’s. lay down stabilizer, rack back NMDC’s. drain motor and break bit. Note: Motor drained good with minimal movement in bearing assembly. Bit grade 0-1-WT-S-X-0-NO-TD. Minimal balling on stabilizer or bit.	
23:00	23:30	0.50	1,146	OTHER	Clean and clear rig floor.	
23:30	0:45	1.25	1,146	RIGU	Hold detailed safety meeting with B&L casing service along with rig crew and DSM. Rig up to run 16” surface casing.	
0:45	3:45	3.00	1,146	CASE	Make up shoe track and check floats, run 16-inch x 84 ppf, JFE110T, BTC casing t/ with full displacement. Top filling on the fly. Shoe set depth 1,136’	
3:45	5:00	1.25	1,146	CIRC	Circulate 2 bottoms up at 8 bbl’s min with full returns. Note: Circulated with CRT, rigged down casing crew while circulating,	
5:00	5:30	0.50	1,146	RIGU	Hold detailed safety meeting with SLB cementing along with rig crew and DSM. Rig up cement head along with iron.	
5:30	6:00	0.50	1,146	CMTP	Surface test lines t/3000 high. Pump cement as per prog at report time, details to follow.	

Management Summary

Drilled Surface section f/ 500’ t/ 800'. Rigged down grabber box on TDS to break out of stump with tongs. Drilled Surface section f/ 800’ t/ 1,000'. Circulated to build volume in mud pits. Drilled Surface section f/ 1,000’ t/ 1,146’ (casing point). Pumped 2 high viscosity sweeps and circulated hole clean Wiped hole f/1,146’ to surface. Pumped 50 bbl high vis sweep with nutplug caliper. Circulated hole clean. Tripped out of the hole t/surface. Handled BHA. Held safety meeting, rigged up and ran 16-inch x 84 ppf, JFE110T, BTC surface casing to set depth of 1,136’. Circulated 2 bottoms up. Held safety meeting and rigged up SLB cementing. Cementing as per prog at report time, details to follow.

Comments

Fuel on hand 17,363 gals.
Fuel used 1,478 gals.
Total NPT to date 0 HR

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32 | **Well Name: FORGE 16B(78)-32**

Field: FORGE | Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 11 | **Report For 06:00 AM 27-Apr-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
1	1	NOV	TK99	22.000	120	380	3.5												

Jets: 12 12 12 12 12 12 12 12 12 21 | **Out:** 1146 | **Grade:** | **Cutter:** 0 / 1 | **Dull** WT / NO | **Wear:** S | **Brgs:** X | **Gge:** 0 | **Pull:** TD

Comments: Bit has a TFA of 1.32 with 12x12s

BHA - No. 1 - BIT, MMTR, STAB, DCM, PC, HSUB, OTHER, PC, XO, 9 DC, XO, HWDP = 843.58

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
500	1,146	130.0	350.0	15	35	20	40	12	16	950	1,150	2,200

Annular Velocity: Drill Collars: 56.0 **Drill Pipe:** 62.0

Miscellaneous Drilling Parameters

Hook Loads (lbs): Off Bottom Rotate: 125 **Pick Up:** 130 **Slack Off:** 120 **Drag Avg/Max:** 5 / 10

Hours on BHA: Since Inspection: 9 **Total:** 9 **Jars:** 0

Hours on Casing/Liner: Rotating: 0 / 0 **Tripping:** 0 / 0 ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems: Replaced water pump on #4 generator, #3 generator not running properly, tech is currently troubleshooting.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	60	60	60	60	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	60	60	60	60			
Shaker No 3:	60	60	60	60			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations, Handling BHA, Making up and running casing.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 11

Accident Description: None.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	56 degF	**Bar. Pressure:**	29.95
Wind Speed/Dir:	5 / SW	**Wind Gusts:**	8

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 12 **Report For 06:00 AM 28-Apr-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	1146	**Last Casing:**	16.000 at 1,136	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	1135	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**		**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**		**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 0.4 / 0, Flat 0 / 0, Complete 0 / 0, Total 0.4 / 0 **DOL:** 12

Pers/Hrs:	**Operator:** 14 / 168	**Contractor:** 3 / 36	**Service:** 12 / 144	**Other:** 2 / 24	**Total:** 31 / 372

Safety Summary: No incidents or events reported. 12 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Setting in 21 1/4-inch BOPE.

Planned Operations: Nipple up 21 1/4-inch BOPE, Test BOPE. Make up 14 3/4-inch Dir Assembly.

Toolpusher: Shawn Seddell

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	1,146	CMTP	Fill lines and pressure test t/3,000 psi. Load bottom plug. Pump 10 bbls of CaCl solution ahead, pump 40 bbls of fresh water, pump 10 bbls of Zonelock, pump 10 bbls of fresh water, pump 50 bbls of MudPush Express. Mix and pump 478.2 bbls (1467 sks) of 14.0 ppg Surface Slurry, pumped at an average of 5.5 bbls/min. Drop top plug and displace with 241 bbls of 8.9 ppg mud, bump plug with 1,000 psi, 500 psi over. Increase pressure t/1,500 psi and hold for 30 mins. Bleed back 3.5 bbls and check floats, floats holding. Note: 144 bbls of good cement to surface. Monitored fall back for 30 mins, no fallback cement at surface. Held 30 min casing test at 1,500 psi, casing test good.	
8:00	8:30	0.50	1,146	CMTP	Rig down SLB cement equipment	
8:30	16:30	8.00	1,146	WOC	Wait on cement. Clean out sand trap on pits, Mechanic working on generators, Rig down celler pump and hoses	
16:30	18:00	1.50	1,146	WELLHD	Cut conductor, make rough cut on surface casing, remove conductor and casing, Make final cut on casing.	
18:00	23:00	5.00	1,146	WELLHD	Preheat and install 16-3/4" 3,000 psi wellhead as per Stream Flo procedure. Allow wellhead to cool, test t/1,600 psi, hold for 15 mins, good test. Note: Stream Flo representative present during insulation of wellhead, all guidelines and recommendations followed for install. All test witnessed by DSM.	
23:00	6:00	7.00	1,146	BOPO	Set in 16 3/4-inch 3,000 psi x 21 1/4-inch 3,000 psi DSA, 21 1/4-inch 2,000 psi Spacer Spool, 21 1/4-inch 2,000 psi Mud Cross, 21 1/4-inch 2,000 psi Double Gate, 21 1/4-inch 2,000 psi Annular, 21 1/4-inch 2,000 psi riser w/Rotating Head Assembly.	

Management Summary

Cemented Surface Casing. Rigged down SLB cementers. Waited on cement. Cut conductor and dresses 16" casing. Installed 16-3/4" 3,000 psi wellhead. Installed 21 1/4-inch BOPE.

Comments

Fuel on hand 16,843 gals.
Fuel used 520 gals.
Total NPT to date 0 HR
Notified SE Office on casing run and cement job on 4-27-2023 @ 08:30 hrs waiting on response.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	J-55	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
27-Apr-23 15:00 at Depth 1,146 ft Mud Pits																				
9.00	38	9	8	8	2	8	5	0	100	0.25		4600	200		4	7	8			0

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 12 **Report For 06:00 AM 28-Apr-23**

Rig Information

Equipment Problems: Mechanic on location working on #3 generator.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	120	120	120	120	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	120	120	120	120			
Shaker No 3:	120	120	120	120			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations, Cementing operations, Setting in 21 1/4-inch BOPE.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	12

Accident Description: None

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	60 degF	**Bar. Pressure:**	29.95
Wind Speed/Dir:	5 / SW	**Wind Gusts:**	8

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 13 **Report For 06:00 AM 29-Apr-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	1146	**Last Casing:**	16.000 at 1,136	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	1135	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 0.4 / 0, Flat 0 / 0, Complete 0 / 0, Total 0.4 / 0 **DOL:** 13

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	4 / 48	2 / 24	23 / 276

Safety Summary: No incidents or events reported. 13 days since LTI. Conducted BOP Test, Crown Check, Safety Meeting.

Current Operations: Drilling out shoe track at 1,136'.

Planned Operations: Drill t/1,156', circulate hole clean, FIT test, trip out of the hole, pick up dir assembly, trip in the hole t/1,156', drill intermediate section.

Toolpusher: Shawn Seddell

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	14:00	8.00	1,146	BOPO	Nipple up 21 1/4" BOPE, Rotating head, Choke Manifold. Reset catwalk, pick up joint of pipe to test.	
14:00	22:00	8.00	1,146	BOPT	Test rams 250 psi low, 3000 psi high, Test annular 250 psi low, 1,500 psi high. Test all valves and lines on choke manifold 250 psi low, 3000 psi high. Test inner and outer valves on mud cross 250 psi low, 3000 psi high. Test lower Kelly valve 250 psi low, 3000 psi high. Test floor valve 250 psi low, 3000 psi high. Test witnessed by DSM. Note: extended time testing due to multiple leaks and having to retighten flanges.	
22:00	22:30	0.50	1,146	WELLHD	Remove test plug and close casing valve. Install wear bushing, verified by DSM.	
22:30	23:00	0.50	1,146	SERV	Service rig, change out grabber dies on TDS.	
23:00	2:00	3.00	1,146	BHAOP	Make up 14 3/4-inch clean out assembly as follows, 14 3/4-inch Mill tooth bit, BS, 9-8-inch drill collars, 15-HWDP.	
2:00	6:00	4.00	1,146	CMTD	Drilled out shoe track f/1,096' t/1,136', clean out rathole t/1,146'.	

Management Summary

Nipped up 21 1/4-inch BOPE. Tested BOPE. Removed test plug and installed wear bushing. Serviced rig. Made up 14 3/4-inch clean out assembly. Tripped in the hole to 1,094'. Drilled out shoe track t/1,136'. Cleaned out rathole t/1,146'.

Comments

Fuel on hand 16,394 gals.
Fuel used 447 gals.
Total NPT to date 0 HR
Notified SE Office on upcoming BOP test on 4-28-2023.
Ditch magnets installed.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	J-55	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
28-Apr-23 15:00 at Depth 1,146 ft Mud Pits																				
9.00	38	9	8	8	2	8	5	0	100	0.25		4600	200		4	7	8			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 13 **Report For 06:00 AM 29-Apr-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	40	---	Bicarb - 50#SK	0	---
Cotton Seed - 50#SK	0	---	Defoam 14 - GALS	0	---
De-MOB - OTHER	1	---	Desco - 25#SK	0	---
DMA/SPA - 50#SK	15	---	Engineering - OTHER	2	---
Lime - 50#SK	0	---	Micro C - 50#SK	0	---
PAC LV - 50#SK	6	---	PAllets/Wraps - OTHER	6	---
PrimeSeal/MaxiSea1117 - 50#SK	0	---	SAPP - 50#SK	0	---
Sawdust - 50#SK	0	---	Soda Ash - 50#SK	3	---
TORKease - GALS	0	---	TORKease Concentrate - GALS	0	---
Walnut - 50#SK	0	---			

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
2 1	OTHER	XR+C	14.750	1146														

Jets: 24 24 24 14 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 2 - BIT, BS, 9 DC, XO, 15 HWDP = 737.36

Rig Information

Equipment Problems:

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	120	120	120	120	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	120	120	120	120			
Shaker No 3:	120	120	120	120			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations, Slips, trips and falls. Overhead objects.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 13

Accident Description: None.

☑ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Sunny	**Visibility:**	31
Air Temperature:	66 degF	**Bar. Pressure:**	30.06
Wind Speed/Dir:	10 / S	**Wind Gusts:**	10

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 14 **Report For 06:00 AM 30-Apr-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	2650	**Last Casing:**	16.000 at 1,136	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	2579	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	1,504 / 8.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	188.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 0.73 / 0, Flat 0 / 0, Complete 0 / 0, Total 0.73 / 0 **DOL:** 14

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	4 / 48	3 / 36	24 / 288

Safety Summary: No incidents or events reported. 14 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling Intermediate section @ 2,650' MD

Planned Operations: Drill Intermediate section f/ 2.650'

Toolpusher: Shawn Seddell

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:15	1.25	1,136	CMTD	Drill out shoe track f/1,096' t/1,136'.	
7:15	8:00	0.75	1,156	DRIL	Clean out rathole t/1,146'. Drill 10' new formation t/1,156'.	
8:00	9:00	1.00	1,156	CIRC	Circulate hole clean for trip for directional tools.	
9:00	11:30	2.50	1,156	REPR	Replace dies in clamp on IBOP/Saver sub.	X
11:30	12:00	0.50	1,181	DRIL	Drill ahead f/ 1,156' t/ 1,181', 20K WOB, 60 rpm ROT, 2.5K ft-lb TORQ, 1,012 gpm, 1,550 psi SPP	
12:00	15:30	3.50	1,181	REPR	Work on clamps on top drive. Replace hydraulic hose on ST-80.	X
15:30	17:30	2.00	1,181	TRPO	Trip out of hole f/ 981' t/surface. Break off bit and bit sub.	
17:30	18:00	0.50	1,181	BHAOP	Pick up SDI 7/8 5.7, 1/5° bent motor. Make up 14 3/4-inch Intermediate BHA.	
18:00	21:00	3.00	1,181	TRPI	Trip in the hole t/1,036' hole giving proper displacement.	
21:00	21:30	0.50	1,181	OTHER	Install rotating rubber.	X
21:30	22:30	1.00	1,410	DRIL	Drill 14 ¾-inch intermediate section f/1,181' t/1,410', 10-60K WOB, 60-120 rpm ROT, 15-35 K ft-lb TORQ, 1,200 gpm, 2,450 psi SPP, Diff 650-800. ROP Limiter, making up stands in the mouse hole.	
22:30	23:30	1.00	1,410	OTHER	Remove clamp on TDS, raise grabber assembly and break out of connection w/tongs. Note: circulate at reduced pump rate while rigging down grabber box.	
23:30	0:30	1.00	1,597	DRIL	Drill 14 ¾-inch intermediate section f/1,410' t/1,597', 10-60K WOB, 100 rpm ROT, 15-25 K ft-lb TORQ, 1,200 gpm, 2,450 psi SPP, Diff 650-800. ROP Limiter, making up stands in the mouse hole.	
0:30	1:15	0.75	1,597	OTHER	Retighten clamps on TDS.	X
1:15	6:00	4.75	2,500	DRIL	Drill 14 ¾-inch intermediate section f/1,597' t/2,650', 20-60K WOB, 100 rpm ROT, 18-27 K ft-lb TORQ, 1,200 gpm, 2,450 psi SPP, Diff 650-800. ROP Limiter, making up stands in the mouse hole.	

Management Summary

Drilled out shoe track t/1,136'. Cleaned out rathole t/1,146'. Drilled 10' of new formation t/1,156'. Circulated hole clean. Replaced dies on Saver Sub clamp. Drilled f/1,156' t/1,181'. Retighten clamps on TDS. Tripped out of the hole with clean out assembly. Picked up 14 3/4-inch Dir assembly. Tripped in the hole t/1,036'. Installed rotating rubber. Drilled intermediate section f/1,181' t/1,410'. Removed Saver Sub clamp and break out of connection with tongs. Drilled intermediate section f/1,410' t/1,597'. Retighten clamp on TDS. Drilled intermediate section f/1,597' t/2,650'.

Comments

Fuel on hand 16,394 gals.
Fuel used 447 gals.
Total NPT to date 7.75 HR

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	J-55	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 14 **Report For 06:00 AM 30-Apr-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
29-Apr-23 16:00 at Depth 1,181 ft Mud Pits																				
8.80	40	12	9	5	1	9	3.5	0	100	0.1		3100	20		2	14	22			0

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	SAPP - 50#SK	6	---

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
3	1 NOV	TKC66-A4	9.688	1181														

Jets: 18 18 18 18 18 18 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **gs:** **Gge:** **Pull:**

BHA - No. 3 - BIT, MMTR, STAB, DCM, PC, HSUB, OTHER, PC, XO, DC, XO, HWDP = 841.42

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
1,146	2,650	300.0	1,800.0	20	60	100	120	18	3	1,150	1,200	

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 140	**Pick Up:** 150	**Slack Off:** 135	**Drag Avg/Max:** 5 / 10			
Hours on BHA:	**Since Inspection:** 7.25	**Total:** 7.25	**Jars:** 0				
Hours on Casing/Liner:	**Rotating:** 7.25 / 0	**Tripping:** 2 /	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems:

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	120	120	120	120	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	120	120	120	120	**Centrifuge 1:** 6 (Solids Removal)		**Centrifuge 2:** 6 (Solids Removal)
Shaker No 3:	120	120	120	120			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations. Making up BHA.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	14

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Sunny	**Visibility:**	10
Air Temperature:	44 degF	**Bar. Pressure:**	1021
Wind Speed/Dir:	8 / SSW	**Wind Gusts:**	3

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 15 **Report For 06:00 AM 01-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4353	**Last Casing:**	16.000 at 1,136	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4352	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	1,703 / 14.42	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):	118.12					**Well Cost ($):**	---

Days (actual / plan): Drilling 1.33 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.33 / 0 **DOL:** 15

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	4 / 48	3 / 36	24 / 288

Safety Summary: No incidents or events reported. 15 days since LTI. Conducted Safety Meeting.

Current Operations: Working tight hole at 2,132'.

Planned Operations: Finish pulling out of the hole. Change out 14-3/4" bit and MWD batteries. Run in hole and drill 14-3/4" to +/- 4,960'. TD for this section.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:15	2.25	2,932	DRIL	Drill 14 ¾-inch intermediate section f/2,650' t/2,932', 20-70K WOB, 100 rpm ROT, 18-27 K ft-lb TORQ, 1,200 gpm, 2,450 psi SPP, Diff 650-800.	
8:15	8:35	0.33	2,932	REPR	Lost air pressure to drawworks, clutch would not function.	X
8:35	10:00	1.42	3,075	DRIL	Drill 14 ¾-inch intermediate section f/2,932' t/3,075', 40-70K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,200 gpm, 3,300 psi SPP, Diff 650-800. ROP Limiter is available weight on bit.	
10:00	11:30	1.50	3,075	OTHER	No. 1 generator down on high temp, 2 of 4 generators operational.	X
11:30	12:00	0.50	3,122	DRIL	Drill 14 ¾-inch intermediate section f/3,075' t/3,122', 65K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,200 gpm, 3,300 psi SPP, Diff 650-800. ROP Limiter is available weight on bit.	
12:00	13:30	1.50	3,122	OTHER	No. 2 and 4 generator down on high temp, 1 of 4 generators operational.	X
13:30	14:15	0.75	3,207	DRIL	Drill 14 ¾-inch intermediate section f/3,122' t/3,207', 65K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,200 gpm, 3,300 psi SPP, Diff 650-800. ROP Limiter is available weight on bit, generators.	
14:15	15:00	0.75	3,207	OTHER	Cool down generators. 3 of 4 generators operational. Change swab on #2 mud pump.	X
15:00	20:00	5.00	3,960	DRIL	Drill 14 ¾-inch intermediate section f/3,207' t/3,960', 65K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,200 gpm, 3,300 psi SPP, Diff 200-400. ROP Limiter is available weight on bit, generators.	
20:00	0:00	4.00	4,316	DRIL	Drill 14 ¾-inch intermediate section f/3,960' t/4316', 65K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,100-1200 gpm, 3,300 psi SPP, Diff 200-400. ROP Limiter is available weight on bit, generators. NOTE: Vibrations went to orange around 3,960'. At 20:00. Adjusted rotary to 110 rpm and 90 rpm. Vibrations stayed at orange. Continued at 100 rpm.	
0:00	0:30	0.50	4,316	DRIL	Drill 14 ¾-inch intermediate section f/4,316' t/4,353', 65K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,150-1,200 gpm, 3,300 psi SPP, Diff 200-400. ROP Limiter is available weight on bit, generators. NOTE: MSE steadily climbed and ROP slowed after connection at 4,264'. Vibrations went from yellow orange to orange red. Adjusted rotary to 90 rpm and then 85 rpm. Vibrations stayed at orange with MSE still climbing.	
0:30	1:40	1.17	4,353	CIRC	Circulated hole clean with 1-1/2 hole volumes.	
1:40	4:15	2.58	4,353	TRPO	Tripped out of the hole from 4,353' to 2,241'. Hole giving proper displacement.	
4:15	6:00	1.75	4,353	STUCK	Worked tight hole from 2,241' to 2,132' with 70 - 100 K overpullwith pumps.	X

Management Summary

Drill 14 ¾-inch intermediate section f/2,650' t/4,353', 65K WOB, 100 rpm ROT, 18-33 K ft-lb TORQ, 1,150-1,200 gpm, 3,300 psi SPP, Diff 200-400. ROP Limiter is available weight on bit and generators overheating. NOTE: MSE steadily climbed and ROP slowed after connection at 4,264'. Vibrations increased from yellow orange to orange red. Formation changed to granite wash around 4,330'. Circulated hole cleaned and tripped out of the hole with proper hole fill. Pulled tight at 2,241'. Worked tight hole from 2,241' to 2,132' with pumps.

Comments

Fuel on hand 11,846 gals.
Fuel used 3,466 gals.
Total NPT to date 11.75 HR

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 15 **Report For 06:00 AM 01-May-23**

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	J-55	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	% Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
30-Apr-23 17:00 at Depth 3,599 ft Mud Pits, Type: Low Solids Non-Dispersed																				
9.00	38	11	8	5	1	8.2	3.5	0	96.5	0.3		2900	72		2	2	6	129	140	0

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	136	---	Desco - 25#SK	3	---
DMA/SPA - 50#SK	24	---	Micro C - 50#SK	14	---
PAC LV - 50#SK	19	---	PAllets/Wraps - OTHER	5	---
SAPP - 50#SK	4	---	Sawdust - 50#SK	17	---
Soda Ash - 50#SK	2	---			

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
3	1 NOV	TKC66-A4	9.688	1181	3170	16	198.1	300.0	65	350	18000	9	1200	3300	258	537	376	1443

Jets: 18 18 18 18 18 18 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **e:** **Pull:**

BHA - No. 3 - BIT, MMTR, STAB, DCM, PC, HSUB, OTHER, PC, XO, DC, XO, HWDP = 841.42

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
2,650	4,351	200.0	300.0	65	65	350	350	18,000	22,000	1,16	1,220	3,300

Annular Velocity: **Drill Collars:** 1,021.2 **Drill Pipe:** 151.8

Comments: No Losses.

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 200 **Pick Up:** 204 **Slack Off:** 192 **Drag Avg/Max:** 4000 / 8000

Slow Circulation Data:

Pump 1:	40 spm	150 psi	50 spm	200 psi	60 spm	250 psi
Pump 2:	40 spm	150 psi	50 spm	200 psi	60 spm	250 psi

Hours on BHA: **Since Inspection:** 23.25 **Total:** 23.25 **Jars:**

Hours on Casing/Liner: **Rotating:** 23.25 / 16 **Tripping:** 6 / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems: Generators overheating. Gen #3 down for repairs.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	120	120	120	120		
Shaker No 2:	120	120	120	120	**Centrifuge 1:** 20 (Solids Removal)	**Centrifuge 2:** 20 (Solids Removal)
Shaker No 3:	120	120	120	120		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations. Drilling ahead.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 15

☐ **BOP Test** ☐ **Crownamatic Check**

Report No: 15 **Report For 06:00 AM 01-May-23**

Weather Information

Sky Condition:	Clear	**Visibility:**	10	
Air Temperature:	73 degF	**Bar. Pressure:**		
Wind Speed/Dir:	11 / SSW	**Wind Gusts:**	14	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 16 **Report For 06:00 AM 02-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	4816	**Last Casing:**	16.000 at 1,136	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	4815	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	463 / 8.83	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):	52.42					**Well Cost ($):** ---

Days (actual / plan): Drilling 1.7 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.7 / 0 **DOL:** 16

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	5 / 0	3 / 6	25 / 210

Safety Summary: No incidents or events reported. 16 days since LTI. Conducted Safety Meeting.

Current Operations: Drilling 14-3/4" hole at 4,816'.

Planned Operations: Drill to casing point. Make wiper trip. Strap out of the hole. Rig up and run 11-3/4" 65# casing.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	4,353	TRPO	TOOH f/ 2,153' t/ 1,957'. Pulling tight, 50K - 100K over string weight. Kelly up on each stand and washing out of hole.	
7:00	10:30	3.50	4,353	TRPO	TOOH on elevators f/ 1,957' t/ 166'.	
10:30	13:00	2.50	4,353	DIR	Lay down directional tools, mud motor and bit.	
13:00	16:00	3.00	4,353	DIR	Pick up new 7/8 5.7 stage, 0.13 rev/gal mud motor, full gauge roller reamer and MWD tools.	
16:00	20:50	4.83	4,353	TRPI	TIH t/4,339' picking up an additional std of 8" drill collars and 5 additional stds weight pipe.	
20:50	21:00	0.17	4,353	CIRC	Filled drill pipe.	
21:00	21:10	0.17	4,353	TRPI	TIH f/4,339' t/4,350'. Ran survey. TIH t/4,353'.	
21:10	21:30	0.33	4,353	DRIL	Perform RPM step test with 55K WOB. Excessive surface chatter until 100 rpm was reached.	
21:30	23:30	2.00	4,527	DRIL	Drill 14 ¾-inch intermediate section f/4,353' t/4,527', 55K WOB, 100 rpm ROT, 20-33 K ft-lb TORQ, 1,050-1,150 gpm, 3,450 psi SPP, Diff 100-500. 50-150 ROP.	
23:30	0:30	1.00	4,535	DRIL	Attempt to get MWD signal to slide. Drilled f/4,527' t/4,535' while attempting to slide.	X
0:30	3:00	2.50	4,690	DRIL	Perform WOB step test. Drill 14 ¾-inch intermediate section f/4,535' t/4,690', 80K WOB, 100 rpm ROT, 19-23 K ft-lb TORQ, 1,050 gpm, 3,200 psi SPP, Diff 400-650. 50-100 ROP.	
3:00	4:20	1.33	4,750	DRIL	Drill 14 ¾-inch intermediate section f/4,690' t/4,750', 85K WOB, 100 rpm ROT, 19-23 K ft-lb TORQ, 1,060 gpm, 3,280 psi SPP, Diff 400-500. 60-100 ROP.	
4:20	6:00	1.67	4,816	DRIL	Drill 14 ¾-inch intermediate section f/4,750' t/4,816', 80K WOB, 100 rpm ROT, 17-20 K ft-lb TORQ, 1,060 gpm, 3,270 psi SPP, Diff 400-500. 60-100 ROP.	

Management Summary

TOOH f/ 2,153' t/ 1,957'. Pulling tight, 50K - 100K over string weight. Kelly up on each stand and washing out of hole. TOOH on elevators f/ 1,957' t/ 166'. Lay down directional tools, mud motor and bit. TIH t/4.353' with new bit and directional tools picking up an additional stand of 8" drill collars and 5 additional stands weight pipe. Perform RPM step test. Excessive surface chatter until 100 rpm was reached. Continue drilling 14 ¾-inch intermediate section f/4,353' t/4,527', Perform WOB step test f/ 55K-80K. Continue drilling 14 ¾-inch intermediate section f/4,527' t/4,816', 80K-85K WOB, 100 rpm ROT, 19-23 K ft-lb TORQ, 1,060 gpm, 3,280 psi SPP, Diff 400-500. 60-100 ROP.

Comments

Fuel on hand 10,157 gals.
Fuel used 1,689 gals.
Total NPT to date 11.75 HR

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	J-55	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 16 **Report For 06:00 AM 02-May-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
01-May-23 16:00 at Depth 4,353 ft Mud Pits, Type: Low Solids Non-Dispersed																				
9.10	38	13	7	4.8	1	8	5.7		94.3	0.1		3100	80		3	3	10	127		0

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	54	---	DMA/SPA - 50#SK	11	---
Micro C - 50#SK	6	---	PAC LV - 50#SK	10	---
PAllets/Wraps - OTHER	2	---	Poly Vis - 50#SK	4	---
Soda Ash - 50#SK	2	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
3	1	NOV	TKC66-A4	14.750	1181	3170	16	0.0	0.0	0	0	0	0	0	0	258	537	376	1443
Jets: 18 18 18 18 18 18					**Out:** 4353		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
4	1	SANJOAQ	TKC83	14.750	4353	433	9	48.1	90.0	80	335	19	9	1050	3200	228	424	260	1129
Jets: 15 15 15 15 16 16 16 16					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	

BHA - No. 4 - BIT, MMTR, RR, DCM, PC, HSUB, OTHER, PC, XO, 12 DC, XO, 30 HWDP = 1391.45

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,353	4,816	60.0	100.0	80	85	100	100	19	22	1,050	1,050	3,200

Annular Velocity: **Drill Collars:** 169.8 **Drill Pipe:** 137.4

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 235,000 **Pick Up:** 250,000 **Slack Off:** 220,000 **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 32.25 **Total:** 32.25 **Jars:**

Hours on Casing/Liner: **Rotating:** 32.25 / 25 **Tripping:** 16 / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	120	120	120	120	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	120	120	120	120	**Centrifuge 1:** 18 (Solids Removal)		**Centrifuge 2:** 18 (Solids Removal)
Shaker No 3:	120	120	120	120			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Review planned operations. Drilling ahead.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 16

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	76 degF	**Bar. Pressure:**	998
Wind Speed/Dir:	23 / S	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 17 **Report For 06:00 AM 03-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4845	**Last Casing:**	16.000 at 1,136	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4844	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	29 / 1.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):	29.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 1.74 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.74 / 0 **DOL:** 17

Pers/Hrs: **Operator:** 3 / 36 **Contractor:** 14 / 168 **Service:** 5 / 60 **Other:** 3 / 0 **Total:** 25 / 264

Safety Summary: No incidents or events reported. 17 days since LTI. Conducted Safety Meeting.

Current Operations: Running 11-3/4" 65# BTC casing.

Planned Operations: Finish running 11-3/4" 65# casing to 4,837'. Cement same.

Toolpusher: Shawn Seddell, Jason

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	4,816	CIRC	Circulate hole clean for running 11 3/4" intermediate casing. Fill pill tank with fresh water.	
8:00	8:30	0.50	4,816	REPR	Change swab in No. 3 mud pump.	X
8:30	9:30	1.00	4,845	DRIL	Drill 14 3/4" hole to casing point f/4,818' t/4,845' to obtain proper stick up. 80K WOB, 100 rpm ROT, 17-20 K ft-lb TORQ, 1,060 gpm, 3,270 psi SPP, Diff 400-500. 50-100 ROP.	
9:30	10:00	0.50	4,845	CIRC	Circulate bottoms up.	
10:00	16:00	6.00	4,845	WIPE	Wiper trip to 16" casing shoe and back in. No tight spots.	
16:00	16:45	0.75	4,845	CIRC	Circulate bottoms up.	
16:45	2:30	9.75	4,845	TRPO	Trip out of hole f/4,845' t/485'. Strap out was 3 tenths of a foot difference. Lay down 8" DC's, directional tools, mud motor and bit. Some of the drill pipe and HWDP and all of the 8" drill collars were torqued up. Use rig tongs instead of ST 80 to break out.	
2:30	3:00	0.50	4,845	OTHER	Pulled wear bushing.	
3:00	3:30	0.50	4,845	OTHER	Cleared and cleaned rig floor.	
3:30	4:30	1.00	4,845	CASE	Hold detailed safety meeting with B&L Casing Service along with rig crew and DSM. Rig up to run 11-3/4" 65# casing.	
4:30	6:00	1.50	4,845	CASE	Make up shoe track. Run 11-3/4" 65 ppf, JFE110T BTC casing t/150 ft. Rig up CRT.	

Management Summary

Circulated and cleaned hole @ 4,816' to running casing. Drill 14 3/4" hole f/4,816' t/4,845' to obtain proper stick up. 80K WOB, 100 rpm ROT, 17-20 K ft-lb TORQ, 1,060 gpm, 3,270 psi SPP, Diff 400-500. 50-100 ROP. Circulate bottoms up. Wiper trip to 16" casing shoe and back in. No tight spots. Trip out of hole f/4,845' t/485'. Strap out was 3 tenths of a foot difference. Lay down 8" DC's, directional tools, mud motor and bit. Pulled wear bushing. Held Safety meeting for running casing. Made up shoe track, Run 11-3/4" 65 ppf, JFE110T BTC casing t/150 ft. Rig up CRT.

Comments

Fuel on hand 16,413 gals.
Fuel used 1,244 gals.
Total NPT to date 12.25 HR

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	J-55	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
02-May-23 15:00 at Depth 4,845 ft Mud Pits, Type: Low Solids Non-Dispersed																				
9.10	40	14	6	5.2	1	8	5.7		94.3	0.25		30000	80		3	4	11	127	148	0

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 17 **Report For 06:00 AM 03-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	80	---	DMA/SPA - 50#SK	10	---
Engineering - OTHER	1	---	Micro C - 50#SK	3	---
PAC LV - 50#SK	8	---	PAllets/Wraps - OTHER	2	---
Soda Ash - 50#SK	2	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
4	1	SANJOAQ	TKC83	14.750	4353	462	10	46.2	100.0	80	335	2(	9	1050	3200	228	424	260	1129

Jets: 15 15 15 15 16 16 16 16 **Out:** 4845 **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 4 - BIT, MMTR, RR, DCM, PC, HSUB, OTHER, PC, XO, 12 DC, XO, 30 HWDP = 1391.45

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,818	4,845	60.0	100.0	80	80	100	100	19	22	1,050	1,050	3,200

Annular Velocity: **Drill Collars:** 169.8 **Drill Pipe:** 137.4

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** **Pick Up:** **Slack Off:** **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 33.25 **Total:** 33.25 **Jars:**

Hours on Casing/Liner: **Rotating:** 33.25 / 26 **Tripping:** / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	120	120	120	120		
Shaker No 2:	120	120	120	120	Centrifuge 1: 14	Centrifuge 2: 14
Shaker No 3:	120	120	120	120		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. PJSM for running casing.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 17

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	8
Air Temperature:	68 degF	**Bar. Pressure:**	
Wind Speed/Dir:	13 / SSW	**Wind Gusts:**	20

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 18 **Report For 06:00 AM 04-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4845	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4844	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 1.74 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.74 / 0 **DOL:** 18

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 128	22 / 220	3 / 36	42 / 420

Safety Summary: No incidents or events reported. 18 days since LTI. Conducted Safety Meeting.

Current Operations: Measuring cement fallback for possible cement top job.

Planned Operations: Nipple down 21-1/4" BOPs and nipple up 13-5/8" 3M BOPs.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	14:45	8.75	4,845	CASE	Run in hole with 11 3/4", 65 #/ft, JFE 110 and JFE 125 casing from 150' to 4,837' shoe depth.	
14:45	15:45	1.00	4,845	CIRC	Rig down B&L casing crew while circulating casing prior to cement job.	
15:45	17:30	1.75	4,845	CASE	Rig down CRT tool.	
17:30	17:45	0.25	4,845	CMTP	Rig up SLB to cement 11 3/4" Intermediate string.	
17:45	18:15	0.50	4,845	SAFETY	Held safety meeting with SLB cementers, FORGE DSM's, Rig Managers and crew.	
18:15	22:30	4.25	4,845	CMTP	Run in hole with 11 3/4", 65 #/ft, JFE 110 and JFE 125 casing from 150' to 4,837' shoe depth. Circulated with CRT. Rigged down casing running equipment and CRT. Rigged up cement pumping equipment. Pumped primary cement job as follows. Dropped bottom plug with 5 bbls of water, Test lines to 3500 psi. Pumped 50 bbls of 11.5 ppg spacer, 549 bbls of 14 ppg cement. Dropped top plug and displaced with 520 bbls of mud and water. Bumped plug. Checked floats (OK). CIP at 21:50. Good returns through out job. Waited 20 minutes and attempted to drain BOP stack. No cement. Waited on cement.	
22:30	6:00	7.50	4,845	WOC	Waited on cement. Removed and cleaned out flow line. 4 bolted stack. Changed out pump liners from 6" to 5.5".	

Management Summary

Run in hole with 11 3/4", 65 #/ft, JFE 110 and JFE 125 casing from 150' to 4,837' shoe depth. Circulated with CRT. Rigged down casing running equipment and CRT. Rigged up cement pumping equipment. PJSM. Pumped primary cement job as follows. Dropped bottom plug with 5 bbls of water, Test lines to 3500 psi. Pumped 50 bbls of 11.5 ppg spacer, 549 bbls of 14 ppg cement. Dropped top plug and displaced with 10 bbls of water, 496 bbls of mud and 14 bbls of water. Bumped plug. Checked floats (OK). CIP at 21:50. 67 bbls of good cement back. Waited 20 minutes and attempted to drain BOP stack. No cement. Waited on cement.

Comments

Fuel on hand 15050 gals.
Fuel used 1,363 gals.
Total NPT to date 12.25 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
03-May-23 15:00 at Depth 4,845 ft Mud Pits, Type: Low Solids Non-Dispersed																				
9.00	38	13	7	4.8	1	8	5		95			3000	80		3	3	9		125	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 18 **Report For 06:00 AM 04-May-23**

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**		**Slack Off:**	**Drag Avg/Max:**	/
Hours on BHA:	**Since Inspection:**	33.25	**Total:**	33.25	**Jars:**		
Hours on Casing/Liner:	**Rotating:**	33.25 / 26	**Tripping:**	/	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	120	120	120	120

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two Pre-tour safety meetings held daily with crews. Casing running procedures. Cementing procedures.

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 18

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly Sunny	**Visibility:**	10
Air Temperature:	67 degF	**Bar. Pressure:**	1002
Wind Speed/Dir:	16 / SSW	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32 | **Well Name: FORGE 16B(78)-32**

Field: FORGE | Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 19 | **Report For 06:00 AM 05-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	4845	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	4844	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):						**Well Cost ($):** ---

Days (actual / plan): Drilling 1.74 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.74 / 0 | **DOL:** 19

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 128	5 / 60	3 / 36	25 / 260

Safety Summary: No incidents or events reported. 19 days since LTI. Conducted Safety Meeting.

Current Operations: Test pack-off.

Planned Operations: Nipple up 13-5/8" 3M BOPE.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin | **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	4,845	WOC	Wait on cement. Finish changing mud pump liners to 5-1/2".	
8:30	9:00	0.50	4,845	CMTS	PJSM. Mix and pump Top Job #1. Flush lines with cement. Rig up to annulus. Pump 36 bbls of 14.0 ppg surface tail cement with 2% Calcium Chloride. Approx 413 linear feet. No returns.	
9:00	20:30	11.50	4,845	WOC	Wait on additional cement from Bakersfield. Work with welder on next BOP stack. Work on generators.	
20:30	23:15	2.75	4,845	BOPO	Slack off 11-3/4" casing. No movement. Rig down choke and kill lines. Rig down turnbuckles. Rig up bridle lines and lift BOP stacked approx 24". Install casing slips. Remove mousehole and catwalk.	
23:15	0:15	1.00	4,845	CMTS	PJSM. Mix and pump Top Job #2. Flush lines with cement. Rig up to annulus. Pump 13 bbls of 15.8 ppg tail cement with 2% Calcium Chloride. Approx 153 linear feet. Cement to surface. Cement not falling. Top job #1 and #2 combined for approx 566 ft.	
0:15	6:00	5.75	4,845	BOPO	Make rough cut on 11-3/4" casing and remove same. Set out 21-1/4" riser, annular, doublegate and mudcross. Make final cut on casing. Install pack-off and flange.	

Management Summary

Waited on cement before pumping top job. Pumped Top Job #1: Flushed lines with cement. Rigged up to annulus. Pumped 36 bbls of 14.0 ppg surface tail cement with 2% Calcium Chloride. Approx 413 linear feet. No returns. Waited on additional cement from Bakersfield. Slacked off 11-3/4" casing. No movement. Rigged down turnbuckles, choke and kill lines. Rigged up bridle lines and lifted BOP stacked approx 24". Installed casing slips. Removed mousehole and catwalk. Pumped Top Job #2: Flushed lines with cement. Riggged up to annulus. Pumped 13 bbls of 15.8 ppg tail cement with 2% Calcium Chloride. Approx 153 linear feet. Cement to surface. Made rough cut on 11-3/4" casing and removed same. Set out 21-1/4" riser, annular, doublegate and mudcross. Made final cut on casing. Installed pack-off and flange.

Comments

Fuel on hand 19866 gals.
Fuel used 400 gals.
Total NPT to date 12.25 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	% Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
04-May-23 15:00 at Depth 4,845 ft Mud Pits, Type: Low Solids Non-Dispersed																				
	27								100									70		

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 19 **Report For 06:00 AM 05-May-23**

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**		**Slack Off:**	**Drag Avg/Max:**	/
Hours on BHA:	**Since Inspection:**	0	**Total:**	0	**Jars:**		
Hours on Casing/Liner:	**Rotating:**	0 / 0	**Tripping:**	/	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**	**Equipment Usage (Hrs):**	
Shaker No 1:	120	120	120	120		
Shaker No 2:	120	120	120	120	**Centrifuge 1:** 3 (Solids Removal)	
Shaker No 3:	120	120	120	120		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	OTHER					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two Pre-tour safety meetings held daily with crews. Two PJSM for Cementing procedures.

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 19

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Light rain	**Visibility:**	3
Air Temperature:	49 degF	**Bar. Pressure:**	
Wind Speed/Dir:	27 / SSW	**Wind Gusts:**	35

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 20 **Report For 06:00 AM 06-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4845	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4844	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 1.74 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.74 / 0 **DOL:** 20

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 128	6 / 72	3 / 36	26 / 272

Safety Summary: No incidents or events reported. 20 days since LTI. Conducted Safety Meeting.

Current Operations: Loading 6-3/4" drill collars.

Planned Operations: Test 13-5/8" 5M BOPE. Pick up drill collars and trip in hole. Drill out shoe track plus 10' of new hole. Perform FIT test. Drop gyro.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	4,845	WELLHD	Install and test packoff on 11 3/4" casing. 5,000 psi for 15 minutes. Test good.	
8:00	9:00	1.00	4,845	WELLHD	Test upper and lower wellhead flanges. 5,000 psi for 15 minutes. Test good.	
9:00	10:00	1.00	4,845	BOPO	Move BOP into cellar on forks to begin nippling up. While installing bridle lines to lift, BOP slipped off forks onto ground hitting one of the lock down pins for the 7" casing packoff, damaging the lock down pin.	
10:00	22:00	12.00	4,845	BOPO	Continue nippling up while waiting on new lock down pin. Stack up 13 5/8" X 5,000 psi mud cross, double gate, annular, and Pruitt rotating head. Function test BOP's. Install turnbuckles, sub walkway, and sub cross beams. Move catwalk into position.	
22:00	23:00	1.00	4,845	BOPT	Pressure test valves on choke manifold to 250 psi low, 5000 psi high for 5 minutes each.	
23:00	5:00	6.00	4,845	REPR	Attempt to move mousehole to rig floor. Catwalk broke. Work on catwalk. Clear and clean rig floor.	X
5:00	6:00	1.00	4,845	REPR	Work on catwalk. Load and strap 6-3/4" drill collars.	X

Management Summary

Installed and tested packoff on the 11 3/4" casing. Tested upper and lower wellhead flanges. Moved BOP into cellar on forks to begin nippling up. While installing bridle lines to lift, BOP slipped off forks onto ground hitting one of the lock down pins for the 7" casing packoff, damaging the lock down pin. Continued nippling up while waiting on new lock down pin. Stacked up 13 5/8" X 5,000 psi mud cross, double gate, annular, and Pruitt rotating head. Function tested BOPs. Installed turnbuckles, sub walkway and sub cross beams. Installed catwalk and mousehole. Pressure tested valves on choke manifold to 250 psi low and 5000 psi high for minutes each. Attemptted to move mousehole to rig floor. Catwalk broke. Worked on catwalk. Cleared and cleaned rig floor. Loaded and strapped 6-3/4" drill collars.

Comments

Fuel on hand 19306 gals.
Fuel used 306gals.
Total NPT to date 21.58 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
05-May-23 15:00 at Depth 4,845 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35	27	2	1	100		7			100			300								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 20 **Report For 06:00 AM 06-May-23**

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**		**Slack Off:**	**Drag Avg/Max:**	/
Hours on BHA:	**Since Inspection:**	0	**Total:**	0	**Jars:**		
Hours on Casing/Liner:	**Rotating:**	0 / 0	**Tripping:**	/	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	170	170	170	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. BOPE handling procedures.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	20

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly Cloudy	**Visibility:**	10
Air Temperature:	55 degF	**Bar. Pressure:**	1010
Wind Speed/Dir:	18 / SW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 21 **Report For 06:00 AM 07-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	4845	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	4844	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):						**Well Cost ($):** ---

Days (actual / plan): Drilling 1.74 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.74 / 0 **DOL:** 21

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 128	**Service:**	6 / 72	**Other:**	3 / 36	**Total:**	26 / 272

Safety Summary: No incidents or events reported. 21 days since LTI. Conducted Safety Meeting.

Current Operations: Finish BOPE testing, blinds, kill valves, TIW valve.

Planned Operations: Run in hole with 9.5 RC bit and BHA. Drill out shoe track and 10' of new hole. Perform FIT test. Drop Gyro.Trip out of hole. Run wireline Isolation Scanner.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	18:00	12.00	4,845	REPR	Work on catwalk, assist with Particle Drilling Technologies rig up, unload 90 jts of insulated drill pipe.	X
18:00	0:15	6.25	4,845	REPR	Pick up and make up 21 joints of 6-3/4" drill collars. Stand back in derrick. Make up and ran in hole with test plug.	X
0:15	1:00	0.75	4,845	REPR	New lock down pin arrive. Install same.	X
1:00	6:00	5.00	4,845	BOPT	PJSM. Rig up testers. Make up TIW valve. Fill stack with water. Close pipe rams. Attempt to test pipe rams. Rams leaking. Pipe rams closing partially on x-over tool joint. Change out to shorter x-over. Test pipe rams 250 psi low, 5000 psi high, Test annular 250 psi low, 2,500 psi high.Test inner valves on mud cross 250 psi low, 5000 psi high. Test witnessed by DSM. Note: all choke valves on manifold were tested to 250 psi low and 5000 psi high on Report #20.	

Management Summary

Worked on catwalk. Assisted with Particle Drilling Technologies rigging up. Unloaded 90 jts of insulated drill pipe. Picked up and made up 21 joints of 6-3/4" drill collars and tood back in derrick. Made up and ran in hole with test plug. New lock down pin arrived. Installed same. Rigged up testers. Made up TIW valve. Filled stack with water. Closed pipe rams. Tested pipe rams 250 psi low, 5000 psi high, Tested annular 250 psi low, 2,500 psi high.Tested inner valves on mud cross 250 psi low, 5000 psi high. Test witnessed by DSM. Note: All choke valves on manifold were tested to 250 psi low and 5000 psi high on Report #20.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
06-May-23 15:00 at Depth 4,845 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35	27	2	1	100					100			300								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
DC-310/CI-100 - SACK	30	---	Engineering - OTHER	1	---

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	**Pick Up:**	**Slack Off:**	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:** 0	**Total:** 0	**Jars:**	
Hours on Casing/Liner:	**Rotating:** 0 / 0	**Tripping:** /	☐ **Wear Bushing Installed**	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 21 **Report For 06:00 AM 07-May-23**

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	170	170	170	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. BOPE testing procedures.

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 21

☐ BOP Test ☐ Crownamatic Check

Weather Information

Sky Condition:	Mostly cloudy	**Visibility:**	5
Air Temperature:	40 degF	**Bar. Pressure:**	
Wind Speed/Dir:	5 / SSW	**Wind Gusts:**	10

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 22 **Report For 06:00 AM 08-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	4855	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	4854	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	10 / 1.5	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):	6.67					**Well Cost ($):** ---

Days (actual / plan): Drilling 1.8 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.8 / 0 **DOL:** 22

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	10 / 120	3 / 36	30 / 360

Safety Summary: No incidents or events reported. 22 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping out of the hole at 1,607'.

Planned Operations: Finish tripping out of the hole. Remove bit, bit sub and Gyro. Run Isolation Scanner. Pick up core tools.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	9:30	3.50	4,845	BOPT	Test lower manual valve and pipe rams, 250 psi low, 5,000 psi high for 5 minutes. Test good. Attempt to test blind rams. Test failed.	
9:30	17:30	8.00	4,845	REPR	Open ram doors and remove blind rams. Remove seals. Wait on new seals. While waiting on repairs, crew changing grabber box dies and change oil in top drive.Unload 90 jts of insulated drill pipe. Install new seals on blind rams.	X
17:30	19:30	2.00	4,845	BOPT	Test blind rams to 250 psi low and 5,000 psi high for 5 minutes. Good test. Remove test plug. Install wear bushing.	
19:30	1:00	5.50	4,845	TRPI	Make up 9-1/2" insert bit. Trip in the hole. Tag top of cement at 4,744'.	
1:00	2:00	1.00	4,845	DRILR	Drill out cement f/4,744' t/4,748', top of float collar. Drill out float collar and good cement to float shoe at 4,839'. Drill out good cement t/4,843' and contaminated cement t/4,845'.	
2:00	2:30	0.50	4,855	DRILR	Drill 10' new hole f/4,845' t/4,855'. 20 WOB, RPM 50, 60, 65, &70. Brought WOB to 25. Max temp out 120 deg F.	
2:30	3:30	1.00	4,855	CIRC	Circulate hole clean. 8.5 ppg in and out.	
3:30	4:00	0.50	4,855	FIT	Perform FIT test to 330 psi. Mud Weight Equivalent 9.8 ppg.	
4:00	4:30	0.50	4,855	SURV	PJSM. Drop Gyro. Totco Ring at 4,850'.	
4:30	6:00	1.50	4,855	TRPO	Trip out of the hole f/4,852' t/1,607'.	

Management Summary

Tested lower manual valve and pipe rams, 250 psi low, 5,000 psi high for 5 minutes. Test good. Attempted to test blind rams. Test failed. Changed out blind ram seals.Tested blind rams to 250 psi low and 5,000 psi high for 5 minutes. Test good. Removed test plug. Installed wear bushing. Made up 9-1/2" insert bit and tripped in the hole. Tagged top of cement at 4,744'. Drilled out cement f/4,744' t/4,748', top of float collar. Drilled out float collar and good cement to shoe at 4,839'. Drilled out good cement t/4,843' and contaminated cement t/4,845'. Drilled 10' new hole f/4,845' t/4,855'. Circulated hole clean. 8.5 ppg in and out. Performed FIT test to 330 psi. Mud Weight Equivalent 9.8 ppg. Dropped Gyro with Totco Ring at 4,850'. Trip out of the hole f/4,852' t/1,607'.

Comments

Fuel on hand 17,978 gals.
Fuel used 824 gals.
Total NPT to date 48.5 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
07-May-23 15:00 at Depth 4,845 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35		2	1			7.8			100			300								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 22 **Report For 06:00 AM 08-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	1	SANJOAQ	MX-S50R	9.500	4845	111	1.5	74.0	120.0	25	70	4700	8	680	1080	165	204	81	487

Jets: 24 24 24 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: Drill out shoe track and 10 ft of new hole.

BHA - No. 5 - BIT, BS, 5 DC, XO, 30 HWDP = 1385.26

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,744	4,855	11.0	15.0	25	25	70	70	4,500	5,300	680	690	1,080

Annular Velocity: **Drill Collars:** 373.0 **Drill Pipe:** 277.8

Comments: 10 ft of new hole.

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	**Pick Up:**	**Slack Off:**	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:** 1.5	**Total:** 1.5	**Jars:**	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	170	170	170	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. BOPE testing procedures. Making up BHA

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 22

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	62 degF	**Bar. Pressure:**	1013
Wind Speed/Dir:	11 / ENE	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 23 **Report For 06:00 AM 09-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4871	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4870	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	16 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 1.8 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.8 / 0 **DOL:** 23

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	10 / 120	3 / 36	30 / 360

Safety Summary: No incidents or events reported. 23 days since LTI. Conducted Safety Meeting.

Current Operations: Laying down Core BHA 1

Planned Operations: Pick up Core BHA 2 and trip in hole for 2nd core run

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	4,855	TRPO	Trip out of hole with Gyro tool f/1,700' t/surface.	
8:00	8:30	0.50	4,855	TRPO	Lay down Gyro tool. Break off bit and bit sub.	
8:30	10:30	2.00	4,855	LOG	Clean floor, PJSM with SLB and Frontier personnel, rig up logging truck and tools.	
10:30	14:00	3.50	4,855	LOG	Log open hole and casing f/4,845' t/ surface with continuous Borehole Temperature, Gamma, PFlex Cement Evaluation, Isolation Scanner, Array Sonic	
14:00	14:30	0.50	4,855	LOG	Rig down SLB and SureFire wireline.	
14:30	15:30	1.00	4,855	SERV	Clean rig floor. Rig Service, grease crown, top drive, drawworks and ST-80. Test tattoo and crown save. Grease swivel packing.	
15:30	18:00	2.50	4,855	CORE	Load catwalk with coring assembly.	
18:00	19:00	1.00	4,855	BHAOP	Make up 8-3/4" core bit and core barrels. Make up jars.	
19:00	22:00	3.00	4,855	TRPI	Trip in hole f/76' to 4,855'. Wash down last 2 stands.	
22:00	23:45	1.75	4,855	CIRC	Circulate bottoms up. Drop ball and pump down.	
23:45	2:15	2.50	4,871	CORE	Core f/4,855' t/4,871'. ROP slowed and pressure increased by 220 psi.	
2:15	3:00	0.75	4,871	CIRC	Pick up and circulate hole clean.	
3:00	6:00	3.00	4,871	TRPO	Trip out of the hole f/4,871' t/BHA.	

Management Summary

Tripped out of hole with Gyro survey tool. Break off bit and bit sub. Held pre job safety meeting with SLB Wireline personnel, Frontier Drilling personnel and DSM. Rig up and log well with Borehole Temperature, Gamma, PFlex Cement Evaluation, Isolation Scanner, and Sonic Array from 4,845' to surface. Rig down logging tools. Load catwalk, make up core bit 1 and pick up core BHA 1 and jars. Trip in hole, washing last 2 stands to bottom at 4,855'. Circulate bottoms up, dropped ball, pumped down and begin coring f/ 4,855' t/4,871'. ROP slowed and pressure increased to 220 psi. Picked up, circulated hole clean and tripped out of hole f/4,871' t/BHA.

Comments

Fuel on hand 17,093 gals.
Fuel used 885 gals.
Total NPT to date 48.5 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
08-May-23 15:00 at Depth 4,855 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40		2	1	100		9.7			100			600								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 23 **Report For 06:00 AM 09-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	1	SANJOAQ	MX-S50R	9.500	4845	0	0	0.0	0.0	0	0	(	0	0	(				
Jets: 24 24 24					**Out:** 4855			**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**		**Gge:**		**Pull:**
Comments: Drill out shoe track and 10 ft of new hole.																			
6	1	CANAMER	CCI-913	8.750	4855	16	2.5	6.4	11.0	8	35	4500	8	400	335	116	102	24	202
Jets: 12 12 12 12 12 12 12 12 12					**Out:** 4871			**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**		**Gge:**		**Pull:**
BHA - No. 6 - BIT, NBS, PC, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, DC, XO, 30 HWDP = 1085.84																			

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,855	4,871	6.7	10.0	8,000	9,000							

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	**Pick Up:** 200,000	**Slack Off:**	**Drag Avg/Max:** /	
Hours on BHA:	**Since Inspection:** 4	**Total:** 4	**Jars:**		
Hours on Casing/Liner:	**Rotating:** 4 / 2.5	**Tripping:** /	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	170	170	170	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	23

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	9
Air Temperature:	56 degF	**Bar. Pressure:**	1012
Wind Speed/Dir:	7 / ENE	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 24 **Report For 06:00 AM 10-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	4878	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	4877	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	7 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):						**Well Cost ($):** ---

Days (actual / plan): Drilling 1.8 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.8 / 0 **DOL:** 24

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	10 / 120	**Other:**	3 / 36	**Total:**	30 / 360

Safety Summary: No incidents or events reported. 24 days since LTI. Conducted Safety Meeting.

Current Operations: Mixing mud for Particle Drilling.

Planned Operations: Finish mixing mud. Trip in hole to 4,855'. Open 8-3/4" to 9-1/2" hole f/4,855' t/4,878'. Drill 9-1/2" hole with particle drilling.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	4,871	CORE	Lay down coring BHA 1, break off bit.	
8:30	11:00	2.50	4,871	CORE	Cut 16.5' of core and recovered 15.1'. Cut up core. Discussed coring BHA 2.	
11:00	12:30	1.50	4,871	CORE	Pick up coring BHA 2. Make up bit.	
12:30	15:30	3.00	4,871	TRPI	TIH with coring BHA 2.	
15:30	18:00	2.50	4,878	CORE	Drop ball, pump to seat. Core f/4,871' t/4,878'. ROP dropped to less than 1 ft/hr. No increase in pump pressure or torque. Pick up 1 ft and attempt to restart coring.	
18:00	21:00	3.00	4,878	TRPO	Trip out of the hole f/4,878' t/ BHA.	
21:00	23:00	2.00	4,878	CORE	Laid down bit and coring assembly. Cut 7' of core and recovered 5' good core and 2' of rubble.	
23:00	1:00	2.00	4,878	DRILPA	Stage Particle drilling BHA. Rig up high pressure lines from Particle drilling unit to mud pumps. Mix mud. Turn on sensor at 23:50. Remove ditch magnets in possum belly, replace with magnets under the shaker screens.	
1:00	2:30	1.50	4,878	BHAOP	PJSM. Make up 9-1/2" Particle drilling BHA.	
2:30	4:30	2.00	4,878	TRPI	Trip in hole t/1,436'.	
4:30	5:00	0.50	4,878	TEST	Pressure test lines to Particle Drilling Unit to 2,400 psi.	
5:00	5:30	0.50	4,878	TRPI	Trip in the hole f/1,436' t/2,475'.	
5:30	6:00	0.50	4,878	CIRC	Circulate water out of hole. Mix mud.	

Management Summary

Laid down Run 1 coring assembly. Cut 16.5' of core and recovered 15.1'. Ran in hole with Run 2 coring assembly. Dropped ball, Cored f/4,871' t/4,878'. ROP dropped to less than 1 ft/hr. No increase in pump pressure or torque. Picked up 1 ft and attempted to restart coring. Tripped out of the hole. Laid down bit and coring assembly. Cut 7' of core and recovered 5' of good core and 2' of rubble. Made up and tripped in the hole with Particle Drilling bit and BHA t/1,436'. Pressure tested the lines to Particle Drilling Unit to 2,400 psi.Tripped in the hole f/1,436' t/2,475'. Circulated water out of the hole and mixed mud.

Comments

Fuel on hand 16,167 gals.
Fuel used 926 gals.
Total NPT to date 48.5 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
09-May-23 15:00 at Depth 4,871 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.45	30	2	1	100		10.8			100			1000								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 24 **Report For 06:00 AM 10-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
DC-310/CI-100 - SACK	10	---	Engineering - OTHER	1	---
Poly Vis - 50#SK	3	---	TORKease - GALS	4	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
6	1	CANAMER	CCI-913	8.750	4855	0	0	0.0	0.0	0	0	0	0	0	0	116	102	24	203
Jets: 12 12 12 12 12 12 12 12 12 12					**Out:** 4871		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
7	1	CANAMER	CCI-713	8.750	4871	7	2.5	2.8	10.0	10	35	4000	8	400	360	93	66	15	163
Jets: 16 16 16 16 16 16 16					**Out:** 4878		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
Comments: New core bit for run #2.																			
8	1	NOV	Partical Drilli	9.500	4878	0	0	0.0	0.0	0	0	0	8	0	0				
Jets: 11 11 12 12					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	

BHA - No. 8 - BIT, BS, RR, OTHER, RR, DC, RR, 12 DC, XO, 30 HWDP = 1348.68

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,871	4,878	4.0	10.0	10	18	35	40	4,000	4,500	400	400	360

Annular Velocity: Drill Collars: 355.7 **Drill Pipe:** 204.5

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	**Pick Up:**	**Slack Off:**	**Drag Avg/Max:**	/
Hours on BHA:	**Since Inspection:** 6.5	**Total:** 6.5	**Jars:**		
Hours on Casing/Liner:	**Rotating:** 6.5 / 0	**Tripping:** /	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	170	170	170	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. Pinch points, overhead loads, coring operations. PJSM for Partical Drilling BHA.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 24

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	69 degF	**Bar. Pressure:**	1011
Wind Speed/Dir:	7 / E	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 25 **Report For 06:00 AM 11-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4910	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4909	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	32 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 1.8 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.8 / 0 **DOL:** 25

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	12 / 144	**Other:**	5 / 60	**Total:**	34 / 408

Safety Summary: No incidents or events reported. 25 days since LTI. Conducted Safety Meeting.

Current Operations: Circulating hole clean for trip out to look at bit and possible wash out.

Planned Operations: Trip out of the hole. Change out bit. Trip in hole and particle drill ahead.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	4,878	CIRC	Displace top of hole at 2,486' with mud.	
8:00	9:00	1.00	4,878	TRPI	Trip in hole on elevators to 4,764'.	
9:00	9:30	0.50	4,878	CIRC	Displace bottom of hole at 4,774' with mud.	
9:30	10:30	1.00	4,878	REAM	Ream cored section of hole with particle drilling bit, from 4,855' to 4,878'.	
10:30	10:40	0.17	4,878	SAFETY	PJSM with Particle Drilling Technologies, NOV, FORGE DSM, and Frontier Drilling personnel.	
10:40	11:00	0.33	4,878	SERV	Service top drive and check out electrical issue.	
11:00	11:15	0.25	4,878	DRILPA	Pump shot down to begin particle drilling. Top drive rotary stopped.	
11:15	22:30	11.25	4,878	REPR	Work on top drive. Pull back into casing and continue to work on top drive. Remove blower motor on top drive.Waited on new blower motor.	X
22:30	2:30	4.00	4,878	REPR	Blower motor arrive at 22:30. Install blower motor.	X
2:30	2:45	0.25	4,878	SAFETY	PJSM with Particle Drilling Technologies, NOV, FORGE DSM, and Frontier Drilling night personnel.	
2:45	3:30	0.75	4,878	TRPI	Trip in the hole from 4,773' to 4,878'.	
3:30	5:30	2.00	4,910	DRILPA	Particle drill 9-1/2" hole from 4,878' to 4,910'. Increase WOB in steps from 15k to 30 k. Increase RPM from 80 to 100. Only slight changes in ROP. 30 to 40 ROP. ROP started to slow at around 4900' to 5 ft/hr.	
5:30	6:00	0.50	4,910	CIRC	Circulate hole clean.	

Management Summary

Displaced top of hole at 2,486' with mud. Tripped in hole to 4,764'. Displaced bottom of hole with mud. Reamed cored section of hole with particle drilling bit from 4,855' to 4,878'. Trouble shoot top drive blower motor. Pulled up to the shoe. Waited on new blower motor. Installed same. Tripped back to bottom. Particle drilled 9-1/2" hole from 4,878' to 4,910'. Increased WOB in steps from 15k to 30 k. Increased RPM from 80 to 100 with 30-40 ROP. ROP started to slow to 5 ft/hr and some pump pressure loss. Circulated hole clean for trip out.

Comments

Fuel on hand 14,783 gals.
Fuel used 1,384 gals.
Total NPT to date 63.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
10-May-23 12:00 at Depth 4,878 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.60	52	12	17	11	1	10.8			100	0.1		1300			8	24	38		127	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 25 **Report For 06:00 AM 11-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	200	---	Bicarb - 50#SK	5	---
Caustic Soda - 50#SK	1	---	DC-310/CI-100 - SACK	10	---
Defoam 14 - GALS	1	---	Desco - 25#SK	3	---
Engineering - OTHER	1	---	MDC -	1	---
PAllets/Wraps - OTHER	4	---	TORKease - GALS	5	---
Trucking -	1	---	Xanthan Gum - 50#SK	8	---

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
8	1 NOV	Partical Drilli	9.500	4878	32	2	16.0	40.0	30	80	9000	9	650	3000	513	2025	768	1484

Jets: 11 11 12 12 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 8 - BIT, BS, RR, OTHER, RR, DC, RR, 12 DC, XO, 30 HWDP = 1348.68

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,878	4,910	30.0	40.0	30	40	80	100	9,000	13,000	650	650	3,000

Annular Velocity: **Drill Collars:** 356.5 **Drill Pipe:** 265.5

Comments: Partical drilling.

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** **Pick Up:** **Slack Off:** **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 8.5 **Total:** 8.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 8.5 / 0 **Tripping:** / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	120	120	120	120
Shaker No 2:	120	120	120	120
Shaker No 3:	170	170	170	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Last day of shift, particle drilling.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 25

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast	**Visibility:**	10
Air Temperature:	75 degF	**Bar. Pressure:**	1011
Wind Speed/Dir:	8 / NW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 26 **Report For 06:00 AM 12-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	4978	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	4977	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	68 / 0.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 1.8 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.8 / 0 **DOL:** 26

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 12 / 144	**Other:** 5 / 60	**Total:** 34 / 408

Safety Summary: No incidents or events reported. 26 days since LTI. Conducted Safety Meeting.

Current Operations: Picking up wash tool to clean Particle Drilling shot from BOPE.

Planned Operations: Rig down Particle Drilling equipment. Clean mud pits. Trip in hole with 9-1/2" HALO assembly and drill ahead.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	4,910	CIRC	Circulate to remove Particle Drilling shot from hole.	
7:00	9:30	2.50	4,910	TRPO	Trip out of hole from 4,910' to BHA.	
9:30	11:00	1.50	4,910	TRPO	Lay down top reamer and pull up to bit. Break off NOV Black Box and bit.	
11:00	15:00	4.00	4,910	TRPI	Pick up new NOV Black Box and bit. Trip in hole to 4,808'. Fill pipe.	
15:00	16:30	1.50	4,910	CUTDL	Slip and cut 100' of drill line.	
16:30	17:00	0.50	4,910	SERV	Service rig.	
17:00	17:30	0.50	4,910	TRPI	Trip in hole from, 4,808' to 4,900'.	
17:30	18:15	0.75	4,910	CIRC	Pump sweep and clean hole.	
18:15	18:30	0.25	4,910	REAM	Safety ream from 4,900' to 4,910' .	
18:30	22:00	3.50	4,978	DRILPA	Particle drill 9-1/2" hole from 4,910' to 4,978'. ROP slowing down. Loss of pump pressure.	
22:00	1:30	3.50	4,978	CIRC	Pump 4 each, 80 bbl high viscosity sweeps and clean hole.	
1:30	4:30	3.00	4,978	TRPO	Trip out of the hole from 4,978' to BHA.	
4:30	6:00	1.50	4,978	BHAOP	Lay down roller reamers, NOV Black Box, bit sub and bit.	

Management Summary

Circulated and removed Particle Drilling shot from hole. Tripped out of the hole. Changed out bit and NOV Black Box. Tripped in hole to 4,900'. Safety reamed from 4,900' to 4,910'. Particle drilled 9-1/2" hole from 4,910' to 4,978'. ROP slowed and loss of pump pressure. Pumped high viscosity sweeps and cleaned shot from hole.Tripped out of the hole from 4,978' to BHA. Layed down roller reamers, Nov Black Box, bit sub and bit.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
11-May-23 09:00 at Depth 4,910 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.60	48	13	17	11	1	10.6	1.2		98.8			1600			5	23		110	120	0

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Defoam 14 - GALS	1	---	Engineering - OTHER	1	---
Trucking -	1	---	Xanthan Gum - 50#SK	2	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 26 **Report For 06:00 AM 12-May-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
8	1	NOV	Partical Drilli	9.500	4878	0	0	0.0	0.0	0	0	0	9	0	0	513	2025	768	1484
Jets: 11 11 12 12					**Out:** 4910		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
Comments: Nose of bit gone. 1 nozzle gone. Bottom cutters gone.																			
9	1	NOV	Particle	9.500	4910	68	3	22.7	44.0	20	80	6000	9	600	2500	474	1705	597	1250
Jets: 11 11 12 12					**Out:** 4978		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
Comments: Nose was gone. Cutters OK.																			

BHA - No. 9 - BIT, BS, RR, OTHER, RR, DC, RR, 12 DC, XO, 30 HWDP = 1348.68

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,910	4,978	22.0	44.0	20,000	25,000	80	100	4,500	12,000	600	650	2,500

Annular Velocity: Drill Collars: 329.1 **Drill Pipe:** 245.1

Comments: Particle Drilling

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**	**Slack Off:**	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:** 12		**Total:** 12	**Jars:**	
Hours on Casing/Liner:	**Rotating:** 12 / 0		**Tripping:** /	☐ **Wear Bushing Installed**	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):
Shaker No 1:	120	120	120	120	
Shaker No 2:	120	120	120	120	**Centrifuge 1:** 1 (Solids Removal)
Shaker No 3:	170	170	170	170	

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. Particle drilling. New rig crews.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 26

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly sunny.	**Visibility:**	10
Air Temperature:	67 degF	**Bar. Pressure:**	
Wind Speed/Dir:	8 / NW	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 27 **Report For 06:00 AM 13-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	4980	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	4979	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	2 / 1.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):	2.0					**Well Cost ($):** ---

Days (actual / plan): Drilling 1.84 / 0, Flat 0 / 0, Complete 0 / 0, Total 1.84 / 0 **DOL:** 27

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 144	10 / 120	5 / 60	32 / 360

Safety Summary: No incidents or events reported. 27 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping in the hole with 9-1/2" directional tools at 4,076'.

Planned Operations: Finish tripping to bottom. Drill ahead with 9 1/2" HALO assembly.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	4,978	BHAOP	Lay down Particle Drilling BHA.	
7:00	11:00	4.00	4,978	WASH	Rig up wash down tool for BOPE. Hold PJSM with Frontier crew and Particle Drilling. Wash out BOP stack and flow line.	
11:00	15:30	4.50	4,978	DRILPA	Rig down Particle Drilling equipment including hoses, mud lines and hoppers. Reconnect rig mud line. Drain and clean mud pits. Repair flow line sensor.	
15:30	16:30	1.00	4,978	BHAOP	Make up clean out BHA consisting of tri-cone bit, bit sub, 4 stands of drill collars.	
16:30	18:00	1.50	4,978	TRPI	Trip in hole with clean out assembly to 3,712'.	
18:00	18:30	0.50	4,978	REPR	Change out grabber dies on top drive.	X
18:30	20:00	1.50	4,978	TRPI	Trip in the hole from 3,712' to 4,968'. Fill pipe.	
20:00	20:30	0.50	4,978	OTHER	Mix high visc LCM sweep for cleaning hole.	
20:30	21:00	0.50	4,978	CIRC	Pump 80 bbl sweep.	
21:00	22:00	1.00	4,980	DRILR	Ream 9-1/2" hole from 4,968' to 4,978'. Drilled to 4,980' and displaced hole clean.	
22:00	0:30	2.50	4,980	TRPO	Trip out of the hole from 4,980' to 372'. Laid down 12 each 6-3/4" collars. Laid down bit and bit sub.	
0:30	4:30	4.00	4,980	BHAOP	Stage in hole with 9-1/2" bit with Sanvean sensor #5105 and Halo directional assembly to 1,354'. Test same at 114'. OK. Corrosion ring in top of HWDP.	
4:30	6:00	1.50	4,980	TRPI	Trip in the hole from 1,354' to 4,076'. Fill pipe. Test tools.	

Management Summary

Laid down Particle Drilling BHA. Washed out BOP stack and flow line. Rigged down Particle Drilling equipment. Reconnected rig mud line. Drained and cleaned mud pits. Tripped in hole with 9-1/2" clean out assembly to 4,968'. Safety reamed to 4,978'. Drilled new hole to 4,980'. Cleaned hole. Tripped out of the hole. Laid down 12 drill collars, bit sub and bit. Tripped in hole with 9-1/2" bit and HALO directional assembly to 4,076'. Fill pipe. Test tools.

Comments

Fuel on hand 12,235 gals.
Fuel used 1,226 gals.
Total NPT to date 63.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
12-May-23 15:00 at Depth 4,978 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27								100											

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 27 **Report For 06:00 AM 13-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	25	---	Citric Acid - OTHER	1	---
DC-310/CI-100 - SACK	5	---	Defoam 14 - GALS	2	---
Engineering - OTHER	1	---	PAllets/Wraps - OTHER	1	---
Sawdust - 50#SK	1	---	Trucking - OTHER	1	---
Xanthan Gum - 50#SK	16	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	2	SANJOAQ	MX-S50R	9.500	4978	2	0.5	4.0	10.0	20000	65	4500	8	660	78	160	193	74	461
Jets: 24 24 24					**Out:** 4980			**Grade:**	**Cutter:**	3 / 3	**Dull**	CT / WT	**Wear:** A	**Brgs:** E	**Gge:** 0		**Pull:** TD		
Comments: Some chip teeth																			
9	1	NOV	Particle	9.500	4910	68	0	0.0	0.0	20000	80	6000	9	650	250	513	2025	768	1484
Jets: 11 11 12 12					**Out:** 4978			**Grade:**	**Cutter:**	/	**Dull**	/	**Wear:**	**Brgs:**	**Gge:**		**Pull:**		
Comments: Nose was gone. 1 nozzle gone. Cutters OK.																			

BHA - No. 11 - BIT, OTHER, STAB, PC, DCM, RR, 2 OTHER, MMTR, OTHER, 9 DC, XO, 30 HWDP = 1354.08

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,978	4,980	12.0	15.0	15,000	20,000	65	65	3,900	4,400	650	650	700

Annular Velocity: Drill Collars: 363.5 **Drill Pipe:** 265.5

Comments: Cleaned hole and made 2 ft.

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	**Pick Up:**	**Slack Off:**	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:** 13	**Total:** 13	**Jars:**	
Hours on Casing/Liner:	**Rotating:** 13 / 0	**Tripping:** /	☐ **Wear Bushing Installed**	

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	170	172		
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 24 (Solids Removal)	**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	170	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 27

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast	**Visibility:**	8
Air Temperature:	54 degF	**Bar. Pressure:**	1021
Wind Speed/Dir:	8 / NNE	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 28 **Report For 06:00 AM 14-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	5537	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	5536	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	557 / 8.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):	69.63					**Well Cost ($):**	---

Days (actual / plan): Drilling 2.18 / 0, Flat 0 / 0, Complete 0 / 0, Total 2.18 / 0 **DOL:** 28

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	4 / 48	27 / 324

Safety Summary: No incidents or events reported. 28 days since LTI. Conducted BOP Drill, Safety Meeting.

Current Operations: Waiting on welder to weld crack in rotating head riser.

Planned Operations: Drill ahead building curve with 9 1/2" HALO assembly.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	4,980	TRPI	Trip in hole from 4,076' to 4,970'. Install rotating head.	
7:00	7:30	0.50	4,980	DIR	Test directional tools and pump up survey.	
7:30	11:30	4.00	5,269	DRILR	Drill 9 1/2" hole from 4,980' to 5,269', varying WOB 20K - 55K, Rotary 30 rpm - 150 rpm, Flow 550gpm - 700gpm. Directional tools flatlined. Try to restart.	
11:30	12:00	0.50	5,269	CIRC	Circulate bottoms up.	
12:00	15:00	3.00	5,269	TRPO	Trip out of hole from 5,269' to 188'.	
15:00	18:00	3.00	5,269	BHAOP	Rack back collars. Lay down motor, Black Box, Ripstick, and roller reamer. Pull up to bit and break off. Lay down HALO RSS.	
18:00	19:30	1.50	5,269	BHAOP	Stage in hole with 9-1/2" bit with Sanvean sensor #5104 and Halo directional BHA to 1,296' (No Ripstick or motor). Test same at 309'. OK. Corrosion ring in top of HWDP.	
19:30	22:00	2.50	5,269	TRPI	Trip in hole from 1,296' to 5,269'.	
22:00	22:30	0.50	5,269	OTHER	Down link RSS.	
22:30	1:00	2.50	5,480	DRILR	Drill 9-1/2" hole from 5,269' to 5,480' with Halo directional assembly with no mud motor. Step test: WOB from 50K to 65K. RPM from 80 to 125. Maintain drilling at RPM 85 and WOB 65K.	
1:00	2:30	1.50	5,537	DRIL	Start building curve. Drill from 5,480' to 5,537. Started curve approx 100 ft early to try to help with downhole vibrations. ROP slowing down.	
2:30	2:45	0.25	5,537	REPR	Pick up to 5,383'.	X
2:45	6:00	3.25	5,537	REPR	Wait on welder to weld riser. Old weld on riser broke. Riser almost broke in half.	X

Management Summary

Tripped in hole from 4,076' to 4,970'. Tested directional tools and pumped up survey. Drilled 9 1/2" hole from 4,980' to 5,269'. Directional tools flatlined. Tried to restart.Tripped out of the hole. Changed out RSS, stabilizer and roller reamer. Did not pick up mud motor and Ripstick. Tripped in the hole. Drilled 9-1/2" hole from 5,269' to 5,480' with Halo directional assembly. Started building the curve at 5,480'. Drilled to 5,537'. Riser on BOP stack broke. Waiting on welder.

Comments

Fuel on hand 18,156 gals.
Fuel used 1,472 gals.
Total NPT to date 63.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
13-May-23 11:00 at Depth 5,246 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					8.8	0.5		99.5			800								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 28 **Report For 06:00 AM 14-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
AltaVert 102 - GALS	2	---	Caustic Soda - 50#SK	1	---
DC-310/CI-100 - SACK	10	---	Engineering - OTHER	1	---
Lime - 50#SK	3	---	MDC -	3	---
Poly Vis - GALS	1	---	PrimeSeal/MaxiSea1117 - 50#SK	10	---
TORKease - GALS	2	---	Xanthan Gum - 50#SK	4	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
10	1	NOV	TKC73 A1	9.500	4980	290	4	72.5	220.0	55	120	9000	8	650	2450	173	224	85	488

Jets: 15 15 15 15 15 15 15 **Out:** 5269 **ade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: Some chip cutters.

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
11	1	NOV	TKC73 A1	9.500	5269	268	4	67.0	135.0	65	85	12000	8	600	1150	159	191	67	416

Jets: 15 15 15 15 15 15 15 **Out:** **ade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: New PDC bit.

BHA - No. 12 - BIT, OTHER, STAB, PC, DCM, RR, 3 OTHER, 9 DC, XO, 30 HWDP = 1296.36

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4,980	5,269	150.0	220.0	50	55	55	150	9,000	12,300	650	700	2,437

Annular Velocity: Drill Collars: 363.5 **Drill Pipe:** 265.5

Comments: Lost down hole tool signal. With mud motor.

5,269	5,480	100.0	185.0	65	65	85	125	15,000	17,000	600	600	1,150

Annular Velocity: Drill Collars: 335.5 **Drill Pipe:** 245.1

Comments: Without mud motor.

5,480	5,537	60.0	88.0	65	65	85	85	12,000	14,000	600	600	1,180

Annular Velocity: Drill Collars: 335.5 **Drill Pipe:** 245.1

Comments: Started the curve.

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 200,000 **Pick Up:** 240,000 **Slack Off:** 190,000 **Drag Avg/Max:** /

Slow Circulation Data:

Pump 1:	30 spm	80 psi	30 spm	75 psi	30 spm	80 psi
Pump 2:	60 spm	200 psi	60 spm	205 psi	60 spm	180 psi

Hours on BHA: **Since Inspection:** 21 **Total:** 21 **Jars:**

Hours on Casing/Liner: **Rotating:** 21 / 0 **Tripping:** 52.25 / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	170	172		
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 24 (Solids Removal)	**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	170	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

[ily Drilling Report

V ll ID: FORGE 16B(78)-32

F eld: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 28 **Report For 06:00 AM 14-May-23**

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.
BOP	3	BOP drill with Day crew.

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 28

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly cloudy	**Visibility:**	7
Air Temperature:	51 degF	**Bar. Pressure:**	1029
Wind Speed/Dir:	20 / NE	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32 | **Well Name: FORGE 16B(78)-32**

Field: FORGE | Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 29 | **Report For 06:00 AM 15-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	5957	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	5945	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	420 / 10.5	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):	40.0					**Well Cost ($):** ---

Days (actual / plan): Drilling 2.61 / 0, Flat 0 / 0, Complete 0 / 0, Total 2.61 / 0 | **DOL:** 29

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	6 / 72	29 / 348

Safety Summary: No incidents or events reported. 29 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping out of the hole at 3,920'.

Planned Operations: Continue tripping out of the hole to BHA. Change out BHA and bit. Trip in the hole and drill curve to 65°.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin | **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	16:00	10.00	5,537	WELD	Wait on welder. Cut off flow nipple and dress. Weld flow nipple back on stack.	X
16:00	16:30	0.50	5,537	OTHER	Install and tighten turnbuckles on flow nipple. Pick up and install mouse hole. Prepare to trip in hole.	X
16:30	17:00	0.50	5,537	TRPI	Trip in hole from 4,753' to 5.350'.	X
17:00	17:30	0.50	5,537	WOW	High wind and rain. Tie service loop in derrick.	
17:30	18:00	0.50	5,537	TRPI	Trip in hole from 5,350' to 5,537'. Break circulation. Sync tool.	X
18:00	1:00	7.00	5,831	DRIL	Drill 9-1/2" hole from 5,537' to 5,831' with Halo directional assembly with no mud motor or Ripstick. Step test: WOB from 65K to 40K. RPM from 70 to 97. Maintain drilling at WOB 65K and RPM 75 to 5,831'.	
1:00	4:30	3.50	5,957	DRIL	Drill 9-1/2" hole from 5,831' to 5,957' with Halo directional assembly with lower RPM from 70 to 62 due to signal loss.	
4:30	5:15	0.75	5,957	CIRC	Circulate hole clean for trip out due to signal loss, high MSE and low ROP.	
5:15	6:00	0.75	5,957	TRPO	Trip out of the hole from 5,956' to 3,920'.	

Management Summary

Repaired flow nipple on BOP stack. Tripped in hole from 4,753' to 5.537'. Sync tool. Drilled 9-1/2" hole from 5,537' to 5,831' with Halo directional assembly. Step test: WOB from 65K to 40K. RPM from 70 to 97. Maintained drilling at WOB 65K and RPM 75 to 5831'. Started receiving Halo communication errors. Slowed RPM from 75 to 62. Drilled to 5,957'. Communications errors worsened. High MSE and low ROP. Circulated hole clean.Tripped out of the hole to 3,920'.

Comments

Received word at 04:00, back up Halo will be here at 05:00.

Fuel on hand 17,015 gals.
Fuel used 1,277 gals.
Total NPT to date 63.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
14-May-23 13:00 at Depth 5,537 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35	27					9	0.1		99.9			600								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	2	---
MDC -	3	---	Soda Ash - 50#SK	1	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 29 **Report For 06:00 AM 15-May-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
11	1	NOV	TKC73 A1	9.500	5269	688	14.5	47.4	140.0	65000	75	15000	8	600	1170	159	191	67	416

Jets: 15 15 15 15 15 15 15 **Out:** 5956 **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: New PDC bit.

BHA - No. 12 - BIT, OTHER, STAB, PC, DCM, RR, 3 OTHER, 9 DC, XO, 30 HWDP = 1296.36

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
5,537	5,957	48.0	140.0	65,000	65,000	75	75	15,000	16,400	600	6,020	1,150

Annular Velocity: **Drill Collars:** 335.5 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** **Pick Up:** **Slack Off:** **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 31.5 **Total:** 31.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 31.5 / 0 **Tripping:** 54.25 / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	170	172		
Shaker No 2:	170	170	170	170	Centrifuge 1: 24	Centrifuge 2: 24
Shaker No 3:	170	170	170	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 29

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Rain	**Visibility:**	10
Air Temperature:	73 degF	**Bar. Pressure:**	1032
Wind Speed/Dir:	9 / ENE	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 30 **Report For 06:00 AM 16-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	6423	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	6361	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	466 / 11.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	42.36					**Well Cost ($):**	---

Days (actual / plan): Drilling 3.07 / 0, Flat 0 / 0, Complete 0 / 0, Total 3.07 / 0 **DOL:** 30

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	3 / 36	26 / 312

Safety Summary: No incidents or events reported. 30 days since LTI. Conducted BOP Drill, Safety Meeting.

Current Operations: Drilling 9-1/2" hole at 6,424'.

Planned Operations: Continue drilling ahead building curve to 65*.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	5,957	TRPO	Trip out of hole from 5,957' to 106'.	
8:30	11:00	2.50	5,957	BHAOP	Lay down Black box, roller reamer and RSS tool. Break off bit.	
11:00	12:00	1.00	5,957	SERV	Service rig and top drive.	
12:00	14:00	2.00	5,957	BHAOP	Lay down 9.22'x6 3/4" non-mag pony collar. Pick up RSS tool, make up bit and new Black box and trip in hole making up BHA. Pick up rebuilt roller reamer. Trip in hole with drill collars.	
14:00	15:30	1.50	5,957	TRPI	Trip in hole with drill pipe on elevators to 3,756'.	
15:30	17:30	2.00	5,957	REPR	Work on Pason Depth tracking.	X
17:30	19:00	1.50	5,957	TRPI	Trip in hole from 3,756' to 5,957'.	
19:00	6:00	11.00	6,423	DRIL	Drill 9-1/2" hole from 5,957' to 6,423' with Halo directional assembly with no mud motor or Ripstick. Step test: WOB from 50K to 60K. RPM from 60 to 80. Maintain drilling at WOB 60K and RPM 60. Last suvey @ 6,462'MD, 6,379' TVD, 40.3 Inc, 117.09 Azi, 4.03 DLS.	

Management Summary

Tripped out of hole from 5,957' to 106'. Laid down Black box, roller reamer, non mag- pony collar and RSS tool. Broke off bit. Picked up new RSS tool, bit, Black box and re-built roller reamer. Left pony collar out. Tripped in the hole to 5957'. Drilled 9-1/2" hole from 5,957' to 6,423' with Halo directional assembly.

Comments

Surveys getting magnetic interference.

Fuel on hand 16,332 gals.
Fuel used 1,383 gals.
Total NPT to date 80.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
15-May-23 13:30 at Depth 5,957 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35	27				0.1	8.9	0.1		99.9			900								
16-May-23 01:00 at Depth 5,832 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35	27	2			0.1	9.4	0.1		99.9			800								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 30 **Report For 06:00 AM 16-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Engineering - OTHER	2	---
TORKease - GALS	2	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
11	1	NOV	TKC73 A1	9.500	5269	688	14.5	47.4	47.4	0	0		8	0					
Jets: 15 15 15 15 15 15 15					**Out:** 5957			**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**	**Gge:**		**Pull:**	
Comments: New PDC bit.																			
12	1	NOV	TKC73 A1	9.500	5957	466	11	42.4	200.0	60000	60	15100	8	600	120	159	190	66	413
Jets: 15 15 15 15 15 15 15					**Out:**			**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**	**Gge:**		**Pull:**	

BHA - No. 13 - BIT, OTHER, STAB, DCM, RR, 3 OTHER, 9 DC, XO, 30 HWDP = 1286.80

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
5,957	6,423	55.0	200.0	60,000	60,000	60	85	14,800	17,300	600	600	1,200

Annular Velocity: **Drill Collars:** 335.5 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 230,000 **Pick Up:** 280,000 **Slack Off:** 210,000 **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 42.5 **Total:** 42.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 42.5 / 0 **Tripping:** 60.25 / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	170	172		
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 24 (Solids Removal)	**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	170	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.
BOP	3	Function tested blind and pipe rams.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 30

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	76 degF	**Bar. Pressure:**	1021
Wind Speed/Dir:	7 / S	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 31 **Report For 06:00 AM 17-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	6548	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	6430	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	125 / 3.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	41.67					**Well Cost ($):**	---

Days (actual / plan): Drilling 3.2 / 0, Flat 0 / 0, Complete 0 / 0, Total 3.2 / 0 **DOL:** 31

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	5 / 60	3 / 36	25 / 300

Safety Summary: No incidents or events reported. 31 days since LTI. Conducted Safety Meeting.

Current Operations: Running Gyro on wireline.

Planned Operations: Continue drilling ahead building curve to 65*.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	9:00	3.00	6,545	DRIL	Drill 9 1/2" curve from 6,423' to 6,545' with RSS. 60K WOB, 60 rpm ROT, 600 gpm. ROP dropped to 36 fph and MSE was steadly climbing. Last survey at 6462' MD, 6379' TVD, 40.3° INC, 117.09° AZI, 4.03° DLS.	
9:00	12:30	3.50	6,545	CIRC	Circulate hole to clean out steel shavings and particle drilling beads. Pump a ceder fiber sweep to clean hole. Discuss options for hole cleaning procedures.	
12:30	13:30	1.00	6,545	TRPO	Trip out of the hole from 6,545' to 4,850' for slowed ROP and rising MSE.	
13:30	16:00	2.50	6,545	CIRC	Pump 2X 20 bbl sweeps, 6 minutes apart at the bottom of the intermediate rathole. Circulate to clear bit. Pull up to 4,845' and pump 2X 20 bbl sweeps 6 minutes apart. Circulate sweeps out of hole. Shavings from sweep 1 were light, sweep 2 medium, sweep 3 heaviest, and sweep 4 lighter.	
16:00	18:30	2.50	6,545	TRPO	Trip out of hole from 4,845' to 92'.	
18:30	21:30	3.00	6,545	BHAOP	Laid down NMDC, Black Box, roller reamer and bit. Down load RSS. Made up new 9-1/2" bit with sensor #2232, 2 ea non-mag pony collars, rebuilt roller reamer, NMDC, Black new Box, filter sub and float sub. Test RSS. .	
21:30	23:00	1.50	6,545	WOE	Waited on non-mag stabilizer. Mix mud sweep in pill pit. Put 2 each Scientific ditch magnets in troughs between shakers.	X
23:00	23:30	0.50	6,545	BHAOP	Install non-mag stabilizer.	
23:30	1:30	2.00	6,545	TRPI	Trip in the hole from 111' to 2247'. Fill pipe. Corrosion ring on top of HWDP. Trip in hole to 4,850'. Tool Temp=143*	
1:30	3:00	1.50	6,545	CIRC	Pump 2X40 bbl high-visc cedar fiber sweeps to clean intermediate rathole. Work pipe from 4,850' to 4,840' while pumping and displacing. Less than a cup full of magnetic fines on first circ with 3 to 4 beads on each magnet. Tablespoon full on each magnet on 2nd sweep. No beads.	
3:00	4:00	1.00	6,545	TRPI	Trip in the hole from 4,850' to 5,697'. Tool Temp= 165*. Circulate and cool hole.Trip in to 6,536'. Tool Temp= 205*.	
4:00	4:45	0.75	6,545	CIRC	Circulate and cool hole for Gyro. PJSM.	
4:45	6:00	1.25	6,545	LOG	Rigged up and ran Gyro down drill pipe to 4,600'.	

Management Summary

Drilled 9 1/2" curve from 6,423' to 6,545' with RSS. ROP dropped to 36 fph and MSE was steadly climbing. Circulated hole clean. Some steel shavings and particle drilling beads back.Tripped out of the hole from 6,545' to 4,850'. Pumped four 20 bbl sweeps at the bottom of the intermediate rathole. Tripped out of hole. Changed out bit, roller reamer, Black Box, non-mag spiral stabilizer. Picked up two non-mag pony collars to shorten distance between stabilizer and roller reamer.Test RSS. Tripped in the hole to 4.850'. Pumped two 40 bbl sweeps to clean intermediate rathole. Staged in hole to 6,536'. Tool temp - 205*. Circulated and cooled hole for gyro survey. Rigged up and ran Gyro to 4,600'.

Comments

Fuel on hand 14,560 gals.
Fuel used 1,187 gals.
Total NPT to date 80.75 HR
No H2S today.

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 31 **Report For 06:00 AM 17-May-23**

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
17-May-23 01:00 at Depth 6,200 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	28					8.3	0.1		99.9			800								
16-May-23 13:00 at Depth 6,545 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	28					8.5	0.1		99.9			850								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	21	---	Caustic Soda - 50#SK	2	---
DC-310/CI-100 - SACK	20	---	Defoam 14 - GALS	1	---
PrimeSeal/MaxiSea1117 - 50#SK	10	---	Sawdust - 50#SK	14	---
Soda Ash - 50#SK	1	---	Walnut - 50#SK	10	---
Xanthan Gum - 50#SK	2	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
12	1	NOV	TKC73 A1	9.500	5957	591	14	42.2	65.0	60000	60	18000	8	600	1200	159	190	66	413
Jets: 15 15 15 15 15 15 15					**Out:** 6545		**Grade:**	**Cutter:** /		**Dull** /			**Wear:**		**rgs:** G	**e:**		**Pull:**	
13	1	NOV	TKC 83	9.500	6545	0	0	0.0	0.0	0	0	0	8	600	0	160	191	67	415
Jets: 14 14 14 14 14 14 14 14					**Out:**		**Grade:**	**Cutter:** /		**Dull** /			**Wear:**		**rgs:** G	**e:**		**Pull:**	

BHA - No. 14 - BIT, OTHER, STAB, 2 PC, RR, DCM, 3 OTHER, 9 DC, XO, 30 HWDP = 1306.42

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
6,423	6,545	45.0	71.0	60	60	60	60	22,000	16,000	600	600	1,200

Annular Velocity: Drill Collars: 335.5 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 240,000 **Pick Up:** 300,000 **Slack Off:** 210,000 **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 45.5 **Total:** 45.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 45.5 / 0 **Tripping:** 67.25 / ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	170	172		
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 24	**Centrifuge 2:** 24
Shaker No 3:	170	170	170	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 31

Report For 06:00 AM 17-May-23

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. PJSM for Gyro.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	31

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly sunny	**Visibility:**	10	
Air Temperature:	80 degF	**Bar. Pressure:**	1011	
Wind Speed/Dir:	6 / S	**Wind Gusts:**		

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 32 **Report For 06:00 AM 18-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	6754	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	6602	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	206 / 1.0	**Next BOP Test:**	20-May-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):	206.0					**Well Cost ($):** ---	

Days (actual / plan): Drilling 3.24 / 0, Flat 0 / 0, Complete 0 / 0, Total 3.24 / 0 **DOL:** 32

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	5 / 60	3 / 36	25 / 300

Safety Summary: No incidents or events reported. 32 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Troubleshooting encoder on TDS.

Planned Operations: Repair encoder. Drill 9 1/2" curve from 6,754'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	6,545	SURV	Wireline SDI gyro tool from surface to 6,148', hole angle 26°. Would not pass through x-over sub to drill collars.	
8:30	10:00	1.50	6,545	SURV	Pull gyro tool to surface and change configuration. Was decided to make a second run to attempt to reach TD.	
10:00	13:00	3.00	6,545	SURV	Make 2nd attempt to run wireline. Run gyro to 6,409', top of float sub. Pull tool and rig down SDI.	
13:00	14:00	1.00	6,610	DRIL	Drill 9 1/2" curve from 6,545' to 6,610' with RSS. 60K WOB, Step test rotary from 60 - 100 rpm ROT, 600 gpm. Last survey at 6,545' MD, 6,442' TVD, 45.24° INC, 119.7° AZI, 8.02° DLS.	
14:00	15:00	1.00	6,610	DIR	Pulsar quit on directional tools. Pump fresh water and work pipe attempting to restart.	
15:00	15:30	0.50	6,610	CIRC	Circulate bottoms up.	
15:30	18:00	2.50	6,610	TRPO	Trip out of hole for directional tools from 6,610' to BHA.	
18:00	20:30	2.50	6,610	BHAOP	Rack back Drill collars, laid down NMDC, Black Box, roller reamer and bit, laid out RSS. Pick up new RSS. Made up new 9-1/2" bit with sensor #2232. Pick up BHA. Shallow test RSS. Good test.	
20:30	22:30	2.00	6,610	TRPI	Trip in the hole from 913' to 6,610'. Fill pipe every 3,000'. Corrosion ring on top of HWDP.	
22:30	0:30	2.00	6,610	CIRC	Pump 80 bbl high vis sweep to remove any residual steel shot. Circulate surface to surface strokes.	
0:30	4:00	3.50	6,754	DIR	Drill 9 1/2" curve from 6,610' to 6,754' with RSS. 60K WOB, 600 gpm. Last survey at 6,729' MD, 6,552' TVD, 47.61° INC, 113.68° AZI, 1.76° DLS.	
4:00	6:00	2.00	6,754	CIRC	Pull to 6,725' troubleshoot encoder on TDS.	

Management Summary

Wireline SDI gyro tool from surface to 6,148', hole angle 26°. Tool would not pass-through x-over sub to drill collars. Pulled gyro tool to surface and change tool configuration. Ran gyro to 6,409', top of float sub. Pulled tool and rigged down SDI. Drilled 9 1/2" curve from 6,545' to 6,610' with RSS. Pulsar quit on directional tools. Pumped fresh water and work pipe attempting to restart. Circulated bottoms up. Tripped out of hole for directional tools from 6,610' to BHA. Laid out RSS, picked up new RSS and bit. Tripped in the hole to 6,610'. Pumped 80 bbl high vis sweep to remove any residual steel shot. Circulate surface to surface strokes. Drilled 9 1/2" curve from 6,610' to 6,754' with RSS. Pulled to 6,725' troubleshoot encoder on TDS.

Comments

Fuel on hand 9,464 gals.
Fuel used 5,096 gals.
Total NPT to date 80.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 32 **Report For 06:00 AM 18-May-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
18-May-23 02:00 at Depth 6,545 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	27					8.5	0.2		99.8			800								
17-May-23 14:00 at Depth 6,559 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	28					8.8	0.2		99.8			850								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	12	---	Engineering - OTHER	2	---
PAllets/Wraps - OTHER	2	---	PrimeSeal/MaxiSea1117 - 50#SK	7	---
Sawdust - 50#SK	3	---	TORKease - GALS	4	---
Xanthan Gum - 50#SK	3	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
13	1	NOV	TKC 83	9.500	6545	65	1	65.0	65.0	50	60	23	8	600	1150	160	190	67	413
Jets: 14 14 14 14 14 14 14 14					**Out:** 6610			**Grade:**	**Cutter:**	1 / 0	**Dull**	ER / NO	**Wear:** N		**gs:** X	**Gge:** 0		**Pull:** DTF	
Comments: Bit had a small area in the center that showed signs of washing out around one of the cutter pockets.																			
14	1	NOV	TKC 83	9.500	6610	144	3.5	41.1	85.0	55	50	25	8	600	1205	160	190	67	413
Jets: 14 14 14 14 14 14 14 14					**Out:**			**Grade:**	**Cutter:**	/	**Dull**	/	**Wear:**		**gs:**	**Gge:**		**Pull:**	

BHA - No. 15 - BIT, OTHER, STAB, 2 PC, RR, DCM, 3 OTHER, 9 DC, XO, 30 HWDP = 1306.42

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
6,545	6,610	85.0	128.0	60	60	60	100	20,000	24,000	600	600	1,150
Annular Velocity: Drill Collars: 335.5 **Drill Pipe:** 245.1												
6,610	6,754	65.0	125.0	55	62	50	65	25,000	32,000	600	600	1,205
Annular Velocity: Drill Collars: 335.5 **Drill Pipe:** 245.1												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 240,000	**Pick Up:** 300,000	**Slack Off:** 210,000	**Drag Avg/Max:** 5 / 10			
Hours on BHA:	**Since Inspection:** 50	**Total:** 50	**Jars:**				
Hours on Casing/Liner:	**Rotating:** 50 / 0	**Tripping:** 75.25 /	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	170	172		
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 8 (Solids Removal)	**Centrifuge 2:** 8 (Solids Removal)
Shaker No 3:	170	170	170	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	32

☐ **BOP Test** ☑ **Crownamatic Check**

Report No: 32 **Report For 06:00 AM 18-May-23**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10	
Air Temperature:	77 degF	**Bar. Pressure:**	1010	
Wind Speed/Dir:	6 / NNW	**Wind Gusts:**		

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 33 **Report For 06:00 AM 19-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	6950	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	6680	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	196 / 6.0	**Next BOP Test:**	28-May-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):	32.67					**Well Cost ($):** ---	

Days (actual / plan): Drilling 3.49 / 0, Flat 0 / 0, Complete 0 / 0, Total 3.49 / 0 **DOL:** 33

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 6 / 72	**Other:** 2 / 24	**Total:** 25 / 300

Safety Summary: No incidents or events reported. 33 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Handling BHA.

Planned Operations: lay out BHA, rig up SLB Wireline unit, log as per prog.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:15	0.25	6,754	REPR	Troubleshoot TDS electrical problems. Bad encoder. Clean and reinstall.	X
6:15	6:30	0.25	6,773	DRIL	Drill from 6,754' to 6,773' to test top drive. 60 rpm, 60K wob, 600 gpm. System was fine until picking up for a survey. Attempted several times to get encoder to work.	
6:30	13:15	6.75	6,773	REPR	Wait for new encoder to arrive from Vernal, UT. Install same.	X
13:15	13:30	0.25	6,777	DRIL	Drill from 6,773' to 6,777'. 60 rpm, 60K wob, 600 gpm testing new encoder. TDS still not communicating.	
13:30	18:00	4.50	6,777	REPR	Wait for electrician and additional parts to repair TDS.	X
18:00	18:30	0.50	6,777	REPR	Replace pigtail to encoder. Function test TDS.	X
18:30	0:00	5.50	6,950	DRIL	Drill 9 1/2" curve from 6,777' to 6,950' with RSS. 60-63K WOB, 600 gpm. EOB at 6,943' MD, 6,680' TVD, 65.9 INC, 103.47 AZI, 25' low, 1.65' right of plan.	
0:00	2:15	2.25	6,950	CIRC	Pump 70 bbl high vis sweep. Circulate sweep to surface, dump overboard, Circulate additional strokes while setting up gyro.	
2:15	2:45	0.50	6,950	OTHER	Drop gyro in drill string. Pump gyro down to top of float sub at 6,839'.	
2:45	5:30	2.75	6,950	TRPO	Trip out of the hole for logs from 6,950' to BHA.	
5:30	6:00	0.50	6,950	BHAOP	Rack back HWDP and Collars.	

Management Summary

Troubleshooted encoder issues on TDS. Drilled from 6,754' to 6,773' to test top drive. System still not functioning properly. Attempted several times to get encoder working with no success. Waited for new encoder to arrive from Vernal, UT. Install same. Drilled from 6,773' to 6,777' testing new encoder. TDS still not functioning properly. Replaced pigtail to encoder. Function tested TDS, system working properly. Drilled 9 1/2" curve from 6,777' to 6,950' with RSS. EOB at 6,943' MD, 6,680' TVD, 65.9 INC, 103.47 AZI, 25' low, 1.65' right of plan. Pumped 70 bbl high vis sweep. Circulated surface to surface strokes and condition hole for logs. Installed gyro in drill string, Pumped gyro down to top of float sub at 6,839'. Tripped out of the hole for logs from 6,950' to BHA.

Comments

Fuel on hand 18,672 gals.
Fuel used 1,409 gals.
Fuel delivered 7,352 gals.
Total NPT to date 92.75 HR
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32
Field: FORGE

University of Utah
Well Name: FORGE 16B(78)-32
Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 33 **Report For 06:00 AM 19-May-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
19-May-23 01:00 at Depth 6,685 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	28					10	1		99			800						80	93	
18-May-23 14:00 Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	28					9.5	1		99			800						80	93	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
DC-310/CI-100 - OTHER	10	---	Engineering - OTHER	2	---
Poly Vis - 50#SK	5	---	TORKease - GALS	3	---
TORKease L - GALS	3	---	Walnut - 50#SK	13	---
Xanthan Gum - 50#SK	5	---			

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
14 1	NOV	TKC 83	9.500	6610	144	9.5	15.2	75.0	60	60	2	8	600	120	160	190	6	413

Jets: 14 14 14 14 14 14 14 14 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **gs:** **Gge:** **Pull:**

BHA - No. 15 - BIT, OTHER, STAB, 2 PC, RR, DCM, 3 OTHER, 9 DC, XO, 30 HWDP = 1306.42

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
6,754	6,950	55.0	75.0	60	60	60	60	15,000	27,000	600	600	1,220

Annular Velocity: **Drill Collars:** 335.5 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 240,000 **Pick Up:** 300,000 **Slack Off:** 210,000 **Drag Avg/Max:** 5 / 10

Hours on BHA: **Since Inspection:** 56 **Total:** 56 **Jars:**

Hours on Casing/Liner: **Rotating:** 56 / 0 **Tripping:** 80.25 / ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: Encoder on TDS, not functioning properly. Encoder was changed out along with pigtail. issues resolved.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 6 (Solids Removal)		**Centrifuge 2:** 6 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 33

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	77 degF	**Bar. Pressure:**	1009
Wind Speed/Dir:	10 / NNW	**Wind Gusts:**	3

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 34 **Report For 06:00 AM 20-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	6950	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	6680	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	28-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 3.49 / 0, Flat 0 / 0, Complete 0 / 0, Total 3.49 / 0 **DOL:** 34

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	4 / 48	27 / 324

Safety Summary: No incidents or events reported. 34 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Tripping in the hole with RSS assembly at 6,950'.

Planned Operations: Drill 9 1/2" hole section from 6,950'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	6,950	DIR	Break down BHA including NOV black box, roller reamer, string stabilizer,Halo RSS and bit. Remove dart sensor #2232 from bit.	
8:30	0:00	15.50	6,950	LOG	Rig up SLB Wireline to log well with FMI and UBI. 1st run of Formation Micro Imager log @ 10:00 from 6,947' to 4,852'. Lay down tool and rig up for UBI. 2nd run of UltraSonic Borehole Imager @ 16:30 from 6,930' to 4,836'. Switch mode at 4,810' to UltraSonic casing Imager, logs casing to surface.	
0:00	0:30	0.50	6,950	RIGD	Rig down SLB Wireline.	
0:30	1:30	1.00	6,950	BHAOP	Pick up 9 1/2" Halo stiff assembly, BHA # 16, RSS # 6, bit # 15, sensor #2232.	
1:30	4:00	2.50	6,950	TRPI	Trip in the hole from 913' to 4,800'. Fill pipe every 3,000'.	
4:00	5:00	1.00	6,950	CUTDL	Slip and cut drill line.	
5:00	6:00	1.00	6,950	TRPI	Trip in the hole from 4,800' to 6,950'. Break circulation at 6,000'.	

Management Summary

Broke down BHA including NOV black box, roller reamer, string stabilizer, Halo RSS and bit. Removed dart sensor #2232 from bit. Rigged up SLB Wireline. Log well with FMI and UBI. Rigged down SLB Wireline. Picked up 9 1/2" Halo stiff assembly. Tripped in the hole from 1,036' to 4,800', Slipped and cut drill line. Tripped in the hole from 4,800' to 6,950'.

Comments

Fuel on hand 17,362 gals.
Fuel used 1,049 gals.
Total NPT to date 92.75 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
20-May-23 02:00 at Depth 6,943 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	27				0.25	10	0.2		99.8			850								
19-May-23 11:00 at Depth 6,950 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	27				0.25	10	0.2		99.8			850								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 34 **Report For 06:00 AM 20-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	6	---	Bicarb - 50#SK	3	---
Caustic Soda - 50#SK	5	---	DC-310/CI-100 - OTHER	50	---
Defoam 14 - GALS	2	---	De-MOB - OTHER	1	---
Desco - 25#SK	3	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	Poly Vis - 50#SK	2	---
Soda Ash - 50#SK	5	---	Walniut - SACK	2	---
Xanthan Gum - 50#SK	4	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
14	1	NOV	TKC 83	9.500	6610	144	9.5	45.0	60.0	60	60	19000	8	600	1250	160	193	67	418

Jets: 14 14 14 14 14 14 14 14 **Out:** 6950 **Grade:** **Cutter:** 1 / 2 **Dull** CT / WT **Wear:** S **Brgs:** X **Gge:** 1 **Pull:** PR

Comments: Second cutter from center diamond plate missing. Chipped cutters on nose and shoulder.

BHA - No. 16 - BIT, OTHER, STAB, 2 PC, RR, DCM, 3 OTHER, 9 DC, XO, 30 HWDP = 1306.42

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	**Pick Up:**	**Slack Off:**	**Drag Avg/Max:** /
Hours on Casing/Liner:	**Rotating:** /	**Tripping:** /	☑ **Wear Bushing Installed**	

Rig Information

Equipment Problems: None.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170			
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135						

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	34

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	75 degF	**Bar. Pressure:**	1017
Wind Speed/Dir:	11 / NNW	**Wind Gusts:**	3

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 35 **Report For 06:00 AM 21-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	7584	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ ---
Vertical Depth (ft):	6945	**Next Casing:**		**RKB Elevation (ft):**	31	---	---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		---	---
Hole Made (ft) / Hrs:	634 / 14.0	**Next BOP Test:**	28-May-23	**Working Interest:**		**Totals:**	---
Average ROP (ft/hr):	45.29					**Well Cost ($):**	---

Days (actual / plan): Drilling 4.07 / 0, Flat 0 / 0, Complete 0 / 0, Total 4.07 / 0 **DOL:** 35

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	5 / 60	28 / 336

Safety Summary: No incidents or events reported. 35 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Tripping in the hole with 1° motor assembly at 2,810'.

Planned Operations: Trip in the hole to 7,584'. Drill 9 1/2" tangent section from 7,584'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	6,950	TRPI	Trip in the hole from 6,000' to 6,950'. Circ. Temp@6,000' - 210°, Circ. Temp@6,950' - 290°.	
7:00	21:00	14.00	7,584	DRIL	Drill 9 1/2" hole w/ HALO RSS from 6,950' to 7,584'. 60K wob, 60 rpm, 600 gpm, 25K torq, 45-80 fph. Last survey depth 7,506' MD, 65.67° inc., 105.15° azi, Picking up insulated drill pipe with tugger and racking in derrick. Pump 80 bbl fresh water sweep at 7,083', 35% increase in ROP once sweep hit the bit. Pump 80 bbl sweep 50% fresh water, 50% reserve pit at 7,322', 13% increase in ROP once sweep hit the bit. Pump 80 bbl fresh water sweep at 7,411', 25% increase in ROP once sweep hit the bit.	
21:00	21:45	0.75	7,584	CIRC	Circulate bottoms up strokes at 600 GPM.	
21:45	22:30	0.75	7,584	OTHER	Drop gyro in drill string, let fall for 15 mins, pump gyro down at 200 GPM to top of float sub at 7,472', kill pump and let sit for 10 mins.	
22:30	2:30	4.00	7,584	TRPO	Trip out of the hole for 1° motor from 7,584' to BHA.	
2:30	3:00	0.50	7,584	BHAOP	Rack back HWDP and Collars. Note: Found one joint of HWDP washed out on the face.	
3:00	3:30	0.50	7,584	BHAOP	Break down BHA including NOV black box, roller reamer, string stabilizer, Halo RSS and bit. Remove dart sensor #2232 from bit.	
3:30	4:30	1.00	7,584	BOPO	Make up 9 1/2", 1° tangent motor assembly, BHA #17, bit sensor #2232. Shallow test tools (good test).	
4:30	6:00	1.50	7,584	TRPI	Trip in the hole from 128' to 2,810'.	

Management Summary

Tripped in the hole from 6,000' to 6,950'. Drilled 9 1/2" hole from 6,950' to 7,584'. Circulated bottoms up. Dropped gyro at 7,584'. Tripped out of the hole for 1° motor assembly from 7,584' to BHA. Laid out RSS assembly. Picked up 1° motor assembly, BHA # 17 and tripped in the hole to 2,810'.

Comments

Fuel on hand 15,616 gals.
Fuel used 2,007 gals.
Total NPT to date 92.75 HR.
No H2S today.
Pumped 80 bbl fresh water sweep at 7,083', 35% increase in ROP once sweep hit the bit.
Pumped 80 bbl sweep 50% fresh water, 50% reserve pit at 7,322', 13% increase in ROP once sweep hit the bit.
Pumped 80 bbl fresh water sweep at 7,411', 25% increase in ROP once sweep hit the bit.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 35 **Report For 06:00 AM 21-May-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
21-May-23 01:00 at Depth 6,950 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.35	28					11.5	0.2		99.8			850								
20-May-23 13:30 at Depth 7,330 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					10.5	0.5		99.5			800								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	DC-310/CI-100 - OTHER	10	---
Defoam 14 - GALS	1	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	Walnut - 50#SK	6	---

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
15 1	NOV	TKC 83	9.500	6950	634	14	45.3	87.0	60	60	2380	8	600	125	160	190	6	413

Jets: 14 14 14 14 14 14 14 14 **Out:** 7584 **Grade:** **Cutter:** 1 / 1 **Dull** WT / NO **Wear:** A **gs:** X **Gge:** 1 **Pull:** BHA

BHA - No. 17 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, 9 DC, XO, 30 HWDP = 1323.66

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
6,950	7,584	50.0	87.0	60	60	60	63	23,700	24,800	600	600	1,250

Annular Velocity: **Drill Collars:** 335.5 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 230 **Pick Up:** 325 **Slack Off:** 230 **Drag Avg/Max:** 5 / 15

Hours on BHA: **Since Inspection:** 14 **Total:** 14 **Jars:** 14

Hours on Casing/Liner: **Rotating:** 14 / 0 **Tripping:** 6 / 0 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: None.

Location Condition: Good.

Transport: Received 2 savor subs, Received 2 motors at 02:15 hrs.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135						

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 35

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	79 degF	**Bar. Pressure:**	1014
Wind Speed/Dir:	6 / WNW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 36 **Report For 06:00 AM 22-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	8085	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7087	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	501 / 11.5	**Next BOP Test:**	28-May-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	43.57					**Well Cost ($):**	---

Days (actual / plan): Drilling 4.55 / 0, Flat 0 / 0, Complete 0 / 0, Total 4.55 / 0 **DOL:** 36

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	5 / 60	28 / 336

Safety Summary: No incidents or events reported. 36 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Changing out saver sub.

Planned Operations: Pick up insulated drill pipe and rack back in the derrick, make up BHA #17, trip in the hole to 8,085', drill 9 1/2" hole section.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	10:30	4.50	7,584	TRPI	Trip in hole from 2,810 to 7,584'. Fill pipe at 3,000'. Test tools at 4,866'. test good. Stage in from 6,000' to 7,584' in 500' increments. High temperature seen was 210°.	
10:30	22:00	11.50	8,085	DRILR	Drilling 9 1/2" hole from 7,584' to 8,085'. 60-100 rpm step test, 55-65 wob step test. 121-286 fph, 13.3K-26.5K torque, 600 gpm. Turn off cooler 1 for temperature test at 7584'. Beginning temp 185° on MWD tool. Slide f/7,708 t/7,727, Slide f/7,764' t/7,798, Slide f/7,827' t/7,851', Slide f/7,859' t/7,879', Slide f/7,891' t/7,916'. Slide f/7,923' t/7,934'. Slide f/7,954' t/7,964'. Slide f/7,986' Slide f/8,014' t/8,030'. Note: Turn off cooler 2 at 7867'. Reduced weight on bit at 7,990' to 55k to see if assembly would hold or drop in rotation.	
22:00	22:45	0.75	8,085	CIRC	Circulate bottoms up strokes at 600 GPM.	
22:45	23:15	0.50	8,085	OTHER	Drop gyro in drill string, let fall for 15 mins, pump gyro down at 200 GPM to top of float sub at 7,956', kill pump and let sit for 10 mins.	
23:15	4:00	4.75	8,085	TRPO	Trip out of the hole from 8,085' to BHA.	
4:00	4:30	0.50	8,085	BHAOP	Rack back HWDP and Collars.	
4:30	5:30	1.00	8,085	BHAOP	Break bit, rack back BHA #16, retrieve gyro, remove sensor #2232 from bit	
5:30	6:00	0.50	8,085	OTHER	Change out saver sub.	

Management Summary

Tripped in the hole from 2,810 to 6,000', staged in the hole from 6,000' to 7,584' highest temperature observed was 210 deg f. Drilled 9 1/2" hole from 7,584' to 8,085' slide approximately 66%. Circulated bottoms up. Dropped gyro. Tripped out of the hole from 8,085' to BHA. Break bit out and rack BHA #16.

Comments

Fuel on hand 13,685 gals.
Fuel used 1,751 gals.
Total NPT to date 92.75 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
21-May-23 23:30 at Depth 7,589 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					11	0.5		99.5			750								
21-May-23 14:00 at Depth 7,780 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					11	0.5		99.5			800								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 36 **Report For 06:00 AM 22-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	DC-310/CI-100 - OTHER	10	---
Engineering - OTHER	2	---	Lodging - OTHER	1	---
Walnut - 50#SK	4	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
16	1	NOV	TCK 83	9.500	7584	501	11.5	43.6	175.0	60	75	2	8	600	1250	160	193	67	418

Jets: 14 14 14 14 14 14 14 14 **Out:** 7584 **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 17 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, 9 DC, XO, 30 HWDP = 1323.66

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
7,584	8,085	50.0	235.0	60	65	70	100	20	25	600	600	1,250

Annular Velocity: **Drill Collars:** 335.5 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 220 **Pick Up:** 300 **Slack Off:** 210 **Drag Avg/Max:** 5 / 15

Hours on BHA: **Since Inspection:** 25.5 **Total:** 25.5 **Jars:** 0

Hours on Casing/Liner: **Rotating:** 28 / 14 **Tripping:** 12 / 0 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: None.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 5.5 (Solids Removal)		**Centrifuge 2:** 5.5 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	365	24.7	S-135						

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 36

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Partly cloudy	**Visibility:**	10
Air Temperature:	78 degF	**Bar. Pressure:**	1012
Wind Speed/Dir:	6 / WSW	**Wind Gusts:**	5

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 37 **Report For 06:00 AM 23-May-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:** 26-Apr-23	**Daily Cost / Mud ($):** ---			
Measured Depth (ft): 8360	**Last Casing:** 11.750 at 4,837	**Wellbore:** Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft): 7189	**Next Casing:**	**RKB Elevation (ft):** 31	---	---	---	
Proposed TD (ft):	**Last BOP Test:** 29-Apr-23	**Job Reference RKB (ft):**	---	---	---	
Hole Made (ft) / Hrs: 275 / 6.0	**Next BOP Test:** 28-May-23	**Working Interest:**	**Totals:**	---	---	
Average ROP (ft/hr): 45.83			**Well Cost ($):**		---	

Days (actual / plan): Drilling 4.8 / 0, Flat 0 / 0, Complete 0 / 0, Total 4.8 / 0 **DOL:** 37

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 6 / 72	**Other:** 3 / 36	**Total:** 26 / 312

Safety Summary: No incidents or events reported. 37 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 9 1/2" hole section at 8,360'.

Planned Operations: Drill 9 1/2" hole section to 8,585'. Circulate hole clean, trip out of the hole from 8,585' to surface, handle BHA, rig up SLB, log well.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	11:30	5.50	8,085	TRPI	Rebuild roller reamer in BHA. Change pulsar speed from 300ms to 760ms. Pick up 6 stands S-135 insulated drill pipe and rack in derrick.	
11:30	13:00	1.50	8,085	TRPI	Pick up 10 stands S-135 insulated drill pipe and rack in derrick.	
13:00	15:00	2.00	8,085	BHAOP	Make up BHA #17 with new 7.15 mud motor, 1° fixed. Surface test MWD. Good test. Make up TKC 83 bit w/ dart sensor #2232.	
15:00	15:45	0.75	8,085	TRPI	Trip in hole from 129' to 1,979' with collars and HWDP.	
15:45	16:30	0.75	8,085	TRPI	Change out saver sub on top drive for insulated drill pipe.	
16:30	18:00	1.50	8,085	TRPI	Trip in stands out of the derrick from 1,979' to 3,000' with insulated drill pipe, 81 joints of S-135 on bottom of string, remaining joints to surface V-150.	
18:00	23:30	5.50	8,085	TRPI	Pick up singles of insulated drill pipe from 3,000' to 8,085', 81 joints of S-135 on bottom of string, remaining joints to surface V-150. Stage in from 6,000' to 8,085' in 500' increments. High temperature observed was 325° at 8,085'.	
23:30	2:00	2.50	8,257	DRIL	Drilling 9 1/2" hole from 8,085' to 8,257'. 60-95 rpm step test, 50-70 wob step test. 225-325 fph, 18K-25.2K torque, 600-700 gpm. Running one mud cooler. Beginning temp 163° on MWD tool. Pump 80 bbls fresh water sweep at 8,175'. Slide from 8,085' to 8,089'. Slide from 8,107' to 8,113'. Slide from 8,197' to 8,212'.	
2:00	2:30	0.50	8,257	OPEN	Reboot Pason system due to MSE not working while sliding.	
2:30	6:00	3.50	8,360	DRIL	Drilling 9 1/2" hole from 8,257' to 8,360'. 60-95 rpm step test, 50-70 wob step test. 225-325 fph, 18K-25.2K torque, 600-700 gpm. Turned on second mud cooler at 8,346'. Beginning temp 163° on MWD tool. Slide from 8,256' to 8,281'. Slide from 8,288' to 8,296'. Slide from 8,316 to 8,330'.	

Management Summary

Rebuilt roller reamer in BHA. Changed pulsar speed from 300ms to 760ms. Picked up 16 stands S-135 insulated drill pipe and rack in derrick. Make up BHA #17 with new 7.15 mud motor, fixed at 1°. Surface test MWD. Good test. Tripped in the hole from 129' to 1,979' with collars and HWDP. Changed out saver sub on top drive for insulated drill pipe. Tripped in stands out of the derrick from 1,979' to 3,000' with insulated drill pipe. Picked up singles of insulated drill pipe from 3,000' to 6,000'. Staged in from 6,000' to 8,085' in 500' increments. Highest temperature observed was 325° at 8,085'. Drilled 9 1/2" hole from 8,085' to 8,257'. Rebooted Pason system due to MSE not working while sliding. Drilled 9 1/2" hole from 8,257' to 8,360'.

Comments

Fuel on hand 20,368 gals.
Fuel used 997 gals.
Fuel delivered 7,500 gals.
Total NPT to date 92.75 HR.
No H2S today.

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 37 **Report For 06:00 AM 23-May-23**

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
22-May-23 14:30 at Depth 8,085 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					8.5	0.5		99.5			600								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Corrosion rings - OTHER	2	---	DC-310/CI-100 - OTHER	10	---
Engineering - OTHER	2	---	Lodging - OTHER	1	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
16	1	NOV	TCK 83	9.500	7584	501	11.5						8	600	1250	160	190	67	413
Jets: 14 14 14 14 14 14 14 14					**Out:** 8085		**Grade:**	**Cutter:**	1 / 3	**Dull**	WT / CT	**Wear:**	S	**Brgs:**	X	**e:**	1	**Pull:**	BHA
Comments: This bit had test cutters on it.																			
17	1	NOV	TKC 83	9.500	8085	275	6	45.8	275.0	70	85	2	8	700	1450	187	259	106	562
Jets: 14 14 14 14 14 14 14 14					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/	**Wear:**		**Brgs:**		**e:**		**Pull:**	
Comments: Insulated drill pipe																			

BHA - No. 18 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, 9 DC, XO, 30 HWDP = 1323.71

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
8,085	8,360	40.0	280.0	70	70	85	100	24	2	6	700	1,850

Annular Velocity: Drill Collars: 391.4 **Drill Pipe:** 286.0

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 320	**Pick Up:** 345	**Slack Off:** 310	**Drag Avg/Max:** 10 / 15			
Hours on BHA:	**Since Inspection:** 31.5	**Total:** 31.5	**Jars:** 0				
Hours on Casing/Liner:	**Rotating:** 34 / 20	**Tripping:** 20 / 8	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems: None.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	81	21.9	S-135	OTHER	5.5	250	24.7	V-150	OTHER

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	37

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Report No: 37

Report For 06:00 AM 23-May-23

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10	
Air Temperature:	75 degF	**Bar. Pressure:**	1010	
Wind Speed/Dir:	12 / S	**Wind Gusts:**	3	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 38 **Report For 06:00 AM 24-May-23**

Operator: UNIVERSITY OF UTAH	**Rig:** Frontier 16	**Spud Date:** 26-Apr-23	**Daily Cost / Mud ($):** ---			
Measured Depth (ft): 8585	**Last Casing:** 11.750 at 4,837	**Wellbore:** Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft): 7350	**Next Casing:**	**RKB Elevation (ft):** 31	---	---	---	
Proposed TD (ft):	**Last BOP Test:** 29-Apr-23	**Job Reference RKB (ft):**	---	---	---	
Hole Made (ft) / Hrs: 225 / 4.5	**Next BOP Test:** 28-May-23	**Working Interest:**	**Totals:**	---	---	
Average ROP (ft/hr): 50.0			**Well Cost ($):**		---	

Days (actual / plan): Drilling 4.99 / 0, Flat 0 / 0, Complete 0 / 0, Total 4.99 / 0 **DOL:** 38

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 6 / 72	**Other:** 4 / 48	**Total:** 27 / 324

Safety Summary: No incidents or events reported. 38 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Logging well with UBI at report time.

Planned Operations: Log well, lay out drill collars, pick up BHA #19, trip in the hole to 8,585', drill 9 1/2" hole from 8,585'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	10:30	4.50	8,585	DRILS	Rotate/Slide drill 9 1/2" hole from 8,360' to 8,585'. Rotating at 70K wob, 70 rpm, 700 gpm, 120-160 fph. Rotating Sliding at 60K-80K wob, 600-700 gpm, 30-70 fph. Rotation 85%, Sliding 15%. Slide 8,360' to 8,362'. Slide 8,388' to 8,420'. Note: Lost pluses with MWD at 8,460' while drilling.	
10:30	16:00	5.50	8,585	CIRC	Circulate to clean and cool hole for open hole logs.	
16:00	18:00	2.00	8,585	TRPO	Break off top drive, drop gyro survey tool, and pump down. Trip out of hole from 8,585' to 7,027' with insulated drill pipe.	
18:00	20:30	2.50	8,585	TRPO	Trip out of the hole with insulated drill pipe from 7,027' to BHA.	
20:30	21:00	0.50	8,585	BHAOP	Rack back HWDP and Collars.	
21:00	22:00	1.00	8,585	BHAOP	Break bit, rack back BHA #18, retrieve gyro, remove sensor #2232 from bit. Lay out motor. Note: found a small amount of coating from insulated drill pipe in filter sub.	
22:00	6:00	8.00	8,585	LOG	Rig up SLB Wireline to log well with UBI and FMI. 1st run, UltraSonic Borehole Imager @ 23:00 hrs, from 8,508' to 6,700', logged at 800 ft/hr. Switch mode to borehole dip mode and log from 8,508' to 6,700', logged at 800 ft/hr. Stop at 4,810' switch mode to UltraSonic casing Imager, log casing. Max temp on first run 247 deg f. Max temp on second run 272 deg f.	

Management Summary

Drilled 9 1/2" hole from 8,360' to 8,585'. Circulated hole clean for logs, dropped gyro, tripped out of the hole from 8,585' to BHA, racked back BHA #18, Laid out motor and bit. Rigged up SLB Wireline. Log well with UBI.

Comments

Fuel on hand 18,740 gals.
Fuel used 1,628 gals.
Fuel delivered 7,500 gals.
Total NPT to date 92.75 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 38 **Report For 06:00 AM 24-May-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
24-May-23 00:30 at Depth 8,145 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.2	11	0.6		99.4			750								
23-May-23 13:00 Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.2	10.5	0.4		99.6			700								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	5	---	DC-310/CI-100 - OTHER	10	---
Engineering - OTHER	2	---	Lodging - OTHER	1	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
17	1	NOV	TKC 83	9.500	8085	550	10.5	52.4	175.0	7	85	2	8	700	215	187	262	107	568

Jets: 14 14 14 14 14 14 14 14 **Out:** 8585 **Grade:** **Cutter:** 2 / 3 **Dull** BT / WT **Wear:** S **gs:** X **Gge:** 1 **Pull:** LOG

Comments: ran on Insulated drill pipe

BHA - No. 18 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, 9 DC, XO, 30 HWDP = 1323.71

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
8,360	8,585	70.0	165.0	70	70	7	7	24	2	700	700	2,350

Annular Velocity: **Drill Collars:** 391.4 **Drill Pipe:** 286.0

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 320 **Pick Up:** 345 **Slack Off:** 320 **Drag Avg/Max:** 10 / 20

Hours on BHA: **Since Inspection:** 36 **Total:** 36 **Jars:**

Hours on Casing/Liner: **Rotating:** 38.5 / 24.5 **Tripping:** 22 / 10 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	81	21.9	S-135	OTHER	5.5	25	24.7	V-150	OTHER

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 38

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	72 degF	**Bar. Pressure:**	1011
Wind Speed/Dir:	11 / SSW	**Wind Gusts:**	10

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 39 **Report For 06:00 AM 25-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	8852	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8715	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	267 / 3.5	**Next BOP Test:**	28-May-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):	76.29					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.14 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.14 / 0 **DOL:** 39

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	8 / 96	31 / 372

Safety Summary: No incidents or events reported. 39 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 9 1/2" hole section at 8,852'.

Planned Operations: Drill 9 1/2" hole section to 9,085', circulate bottoms up, trip out of the hole from 9,085', lay out insulated drill pipe, make up BHA #20.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	15:30	9.50	8,585	LOG	Logging with Ultrasonic Borehole ImagerUBI. Rig down UBI. Rig up FMI. Logging with Formation Micro Imager. Maximum temperature on tools was 292° F. Rig down SLB Wireline tools.	
15:30	16:30	1.00	8,585	BHAOP	Stage Baker Hughes 406 bit with puck sensor and directional tools.	
16:30	18:30	2.00	8,585	BHAOP	Make up BHA #19 with 1° fixed motor, Baker 406 bit, trip in the hole to 930'.	
18:30	19:30	1.00	8,585	BHAOP	Run in with 3 stands of 6.75:" drill collars from derrick. Lay down same.	
19:30	2:30	7.00	8,585	TRPI	Trip in the hole from 930' to 8,585'. Stage in from 6,000' to 8,585' in 500' increments. Highest temperature observed was 284° at 8,371'. Note: Ran 25 stands 2,378' of non-insulated S-135 drill pipe on top of BHA, crossed over to insulated drill pipe at 3,369'. Visually inspected inner coating on insulated drill pipe on trip in the hole. laid out 3 joints due to inner coating peeling.	
2:30	6:00	3.50	8,852	DRIL	Drilling 9 1/2" hole from 8,585' to 8,852'. 60-95 rpm step test 60-100 rpm's, 50-57 wob step test. 225-345 fph, 18K-25.2K torque, 600-700 gpm. Running 3 mud coolers. Beginning temp 196° on MWD tool. Slide from 8,782' to 8,817'.	

Management Summary

Logged well with FMI and UBI, rigged down SLB wireline unit, staged out BHA, made up BHA #19 with 1° fixed motor, ran in the hole with 3 stands of 6 3/4" drill collars from the derrick. Laid out same, tripped in the hole from 930' to 6,000', staged in the hole from 6,000' to 8,585', max temperature observed was 284° at 8,371'. Drilled 9 1/2" hole from 8,585' to 8,852'.

Comments

Fuel on hand 17,561 gals.
Fuel used 1,179 gals.
Total NPT to date 92.75 HR.
No H2S today.
Visually inspected inner coating on insulated drill pipe on trip in the hole. laid out 3 joints due to inner coating peeling.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
24-May-23 14:30 at Depth 8,585 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1	100	0.2	11.1	0.5	0	100			700								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 39 **Report For 06:00 AM 25-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
DC-310/CI-100 - OTHER	20	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	Trucking - OTHER	5	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
18	1	BAKER	D406V	9.500	8585	267	3.5	76.3	375.0	57	75	2	8	700	165	216	346	141	649

Jets: 14 14 14 16 16 16 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 19 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, XO, 28 HWDP = 986.19

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
8,585	8,852	65.0	355.0	57	57	75	100	25	28	650	700	1,650

Annular Velocity: **Drill Collars:** 176.5 **Drill Pipe:** 265.5

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 225 **Pick Up:** 342 **Slack Off:** 216 **Drag Avg/Max:** 5 / 10

Hours on BHA: **Since Inspection:** 39.5 **Total:** 39.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 42 / 28 **Tripping:** 30 / 18 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: None to report.

Location Condition: Good

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	170	170	170	170	Centrifuge 1: 12 (Solids Removal)		Centrifuge 2: 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	81	21.9	S-135	OTHER	5.5	250	24.7	V-150	OTHER

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 39

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	74 degF	**Bar. Pressure:**	1009
Wind Speed/Dir:	5 / WSW	**Wind Gusts:**	15

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 40 **Report For 06:00 AM 26-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	9255	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	7623	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):		**Last BOP Test:**	29-Apr-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	403 / 5.0	**Next BOP Test:**	28-May-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):	80.6					**Well Cost ($):** ---

Days (actual / plan): Drilling 5.34 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.34 / 0 **DOL:** 40

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	3 / 36	26 / 312

Safety Summary: No incidents or events reported. 40 days since LTI. Conducted Safety Meeting.

Current Operations: Testing BOPE.

Planned Operations: Test BOPE, Make up BHA #20, trip in the hole to 9,255', drill 9 1/2" hole section from 9,255'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	11:00	5.00	9,255	DRIL	Drill 9 1/2" hole from 8,817' to 9,255', 18K-25.2K torque, 600-700 gpm. Running 3 mud coolers. Slide from 8,879' to 8,907'. Slide from 9,165' to 9,196'. Survey at 9,255' MD, 9,171' SD, 60.75° INC, 105.87° AZI, 24.36' low and 8.76' right.	
11:00	12:00	1.00	9,255	CIRC	Circulate 2X bottoms up.	
12:00	21:30	9.50	9,255	TRPO	Trip out 10 stands of insulated drill pipe from 9,255' to 8,065'. Pick up 410K, slack off 180K, string wt 245K. Trip out laying down singles from 8.065' to 3,364'. Trip in hole with 24 stands of insulated drill pipe from derrick. Trip out laying down singles to 3,364'.	
21:30	23:30	2.00	9,255	TRPO	Trip out of the hole from 3,364' to BHA.	
23:30	0:00	0.50	9,255	BHAOP	Rack back HWDP.	
0:00	1:00	1.00	9,255	BHAOP	Break bit, rack back BHA #19, lay out motor and bit. Note: Motor drained good with minimal movement in bearing assembly.	
1:00	2:30	1.50	9,255	WELLHD	Attempt to remove wear bushing, pulled 18k over with no movement in wear bushing, slack off and verify all lock screws backed out at intermediate casing head, attempt to work torque down to wear bushing with no success. Contact Stream-flo for max overpull on puller, Pull 22k over and work link tilts on TDS. Pull wear bushing. Note: Observed outer area of wear bushing coated with cuttings.	
2:30	6:00	3.50	9,255	BOPT	PJSM. Rig up testers. Make up TIW valve, install test plug. Close pipe rams. Test pipe rams 250 psi low, 5000 psi high, Test annular 250 psi low, 2,500 psi high. Test pipe rams 250 psi low, 5,000 psi high. Test inner and outer valves on mud cross 250 psi low, 5000 psi high. Test inner and outer valves on kill side 250 psi low, 5,000 psi high. Test witnessed by DSM. Note: All choke valves on manifold were tested to 250 psi low and 5000 psi high while tripping out of the hole. All test good and witnessed by DSM.	

Management Summary

Drilled 9 1/2" hole section from 8,817' to 9,255', circulated two bottoms up, tripped out of the hole from 9,255' to 8,065', laid out insulated drill pipe from 8,065' to 3,364', tripped in remaining stands of insulated drill pipe from derrick and laid out same, pulled out of the hole from 3,364 to BHA, racked back BHA # 19, laid out motor and bit, worked wear bushing from wellhead, tested BOPE.

Comments

Fuel on hand 16,120 gals.
Fuel used 1,441 gals.
Total NPT to date 92.75 HR.
No H2S today.

Survey at 9,255' MD, 9,171' SD, 60.75° INC, 105.87° AZI, 24.36' low and 8.76' right.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 40 **Report For 06:00 AM 26-May-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
26-May-23 04:00 at Depth 8,780 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1		0.2	10.8	0.5		99.5			700								
25-May-23 15:00 at Depth 9,255 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.50	27	1	1		0.25	11.1	1.25		98.75			700								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Corrosion rings - OTHER	1	---
Defoam 14 - GALS	1	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	MDC -	41	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
18	1	BAKER	D406V	9.500	8585	705	8.5	82.9	300.0	57	70	2	9	600	233	188	261	9	489

Jets: 14 14 14 16 16 16 **Out:** 9255 **Grade:** **Cutter:** 1 / 1 **Dull** BT / WT **Wear:** S **gs:** X **Gge:** 1 **Pull:** BHA

BHA - No. 19 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, XO, 28 HWDP = 986.19

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
8,817	9,255	87.6	185.0	57	57	70	73	22	2	700	700	2,330

Annular Velocity: **Drill Collars:** 190.1 **Drill Pipe:** 286.0

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 230 **Pick Up:** 360 **Slack Off:** 210 **Drag Avg/Max:** 10 / 20

Hours on BHA: **Since Inspection:** 44.5 **Total:** 44.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 47 / 33 **Tripping:** 36 / 24 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: Wear bushing sticking in in intermediate wellhead bowl.

Location Condition: Good.

Transport: Received core bit.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135						

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 40

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Cloudy	**Visibility:**	10
Air Temperature:	75 degF	**Bar. Pressure:**	1004
Wind Speed/Dir:	23 / SW	**Wind Gusts:**	15

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 41 **Report For 06:00 AM 27-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9524	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7623	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	269 / 5.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	53.8					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.55 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.55 / 0 **DOL:** 41

Pers/Hrs: **Operator:** 3 / 36 **Contractor:** 14 / 168 **Service:** 6 / 72 **Other:** 3 / 36 **Total:** 26 / 312

Safety Summary: No incidents or events reported. 41 days since LTI. Conducted BOP Test, Crown Check, Safety Meeting.

Current Operations: Drilling 9 1/2" hole at 9.524'.

Planned Operations: Drill 9 1/2" hole to 9,800', circulate hole clean, trip out of the hole to surface, make up BHA #21, trip in the hole to 9,800', change hole over to mud, rig up wireline and run gyro, trip out of the hole for core run.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	9,255	BOPT	Complete BOPE test. Test accumulator. Pull test plug and rig down tester. Install wear bushing.	
8:00	9:00	1.00	9,255	TRPI	Pick up singles of drill pipe from rack and make up 4 stands in mouse hole, rack back in derrick.	
9:00	11:00	2.00	9,255	BHAOP	Make up BHA #20. Pick up 7.15 motor and scribe, make up TKC83 bit, install MWD, and trip in hole with BHA. Check all torques. Installed dart sensor #2232 in bit.	
11:00	15:45	4.75	9,255	TRPI	Lay down 6 joints of weight pipe for bad hardbanding. Pick up 8 joints of weight pipe to replace and make even stands. Pick up 30 joints of regular drill pipe. Trip in hole from 130' to 4,978'.	
15:45	16:00	0.25	9,255	DIR	Test MWD tool.	
16:00	18:00	2.00	9,255	CUTDL	Slip and cut drilling line.	
18:00	19:30	1.50	9,255	REPR	Remove brake turnbuckles and adjust brakes.	X
19:30	20:30	1.00	9,255	TRPI	Trip in the hole from 4,978' to 6,000'.	
20:30	21:00	0.50	9,255	CIRC	Circulate and check tool temperature, beginning temp 225 deg f, ending temp 218 deg f.	
21:00	21:15	0.25	9,255	TRPI	Trip in the hole from 6,000' to 6,500'.	
21:15	21:30	0.25	9,255	CIRC	Circulate and check tool temperature, beginning temp 238 deg f, ending temp 230 deg f.	
21:30	21:45	0.25	9,255	TRPI	Trip in the hole from 6,500' to 7,000'.	
21:45	22:00	0.25	9,255	CIRC	Circulate and check tool temperature, beginning temp 243 deg f, ending temp 230 deg f.	
22:00	22:15	0.25	9,255	TRPI	Trip in the hole from 7,000' to 7,500'.	
22:15	22:30	0.25	9,255	CIRC	Circulate and check tool temperature, beginning temp 255 deg f, ending temp 233 deg f.	
22:30	22:45	0.25	9,255	TRPI	Trip in the hole from 7,500' to 8,000'.	
22:45	23:15	0.50	9,255	CIRC	Circulate and check tool temperature, beginning temp 260 deg f, ending temp 228 deg f.	
23:15	23:30	0.25	9,255	TRPI	Trip in the hole from 8,000' to 8,500'.	
23:30	23:45	0.25	9,255	CIRC	Circulate and check tool temperature, beginning temp 268 deg f, ending temp 238 deg f.	
23:45	0:00	0.25	9,255	TRPI	Trip in the hole from 8,500' to 8,900'.	
0:00	0:45	0.75	9,255	CIRC	Circulate and check tool temperature, beginning temp 300 deg f, ending temp 238 deg f.	
0:45	1:00	0.25	9,255	TRPI	Trip in the hole from 8,900' to 9,255'.	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 41 **Report For 06:00 AM 27-May-23**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
1:00	6:00	5.00	9,524	DRIL	Drill 9 1/2" hole from 9,255' to 9,524', 23K-28K torque, 600-700 gpm. Running 3 mud coolers. Slide from 9,255' to 9,280'. Slide from 9,301' to 9,324'. Slide from 9,396' to 9,424'. Slide from 9,430' to 9,447'. Slide from 9,458' to 9,482'. Note: Pumped 80 bbl surfactant pill at 9,238', observed 15% decrease in ROP along with increase in lateral and axial vibrations. Pumped 70 bbl fresh water pill at 9,487'. Survey at 9,487' MD, 9,402' SD, 64.28° INC, 106.89° AZI, 37.6' low and 14.7' right.	

Management Summary

Completed BOPE test, picked up 4 stands of drill pipe and racked back in the derrick, made up BHA #20, Tripped in the hole 4,978', tested MWD tool, slipped and cut drill line, removed brake turnbuckles and adjusted brakes, tripped in the hole to 6,000', stagged in the hole from 6,000' to 9,255' cooling MWD every 500', max temperature observed was 300° at 8,900', drilled 9 1/2" hole section from 9,255' to 9,524'.

Comments

Fuel on hand 14,997 gals.
Fuel used 1,123 gals.
Total NPT to date 94.25 HR.
No H2S today.
Survey at 9,487' MD, 9,402' SD, 64.28° INC, 106.89° AZI, 37.6' low and 14.7' right.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
27-May-23 01:30 at Depth 9,255 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.47	27			0.3		10.5	1.1		98.9			650								
26-May-23 14:00 at Depth 9,255 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27			0.25		10	0.7		99.3			600								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
DC-310/CI-100 - OTHER	20	---	Defoam 14 - GALS	1	---
Engineering - OTHER	2	---	Lodging - OTHER	1	---

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
19 1	NOV	TKC83	9.500	9255	269	5	53.8	325.0	70	56	23	8	600	1560	160	193	67	418

Jets: 14 14 14 14 14 14 14 14 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **e:** **Pull:**

BHA - No. 20 - BIT, MMTR, RR, PC, DCM, MWD, 2 PC, 3 OTHER, XO, 30 HWDP = 1051.37

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,255	9,524	250.0	325.0	70	70	56	65	23	26	60	700	1,565

Annular Velocity: **Drill Collars:** 162.9 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 265	**Pick Up:** 375	**Slack Off:** 233	**Drag Avg/Max:** 25 / 45			
Hours on BHA:	**Since Inspection:** 49.5	**Total:** 49.5	**Jars:**				
Hours on Casing/Liner:	**Rotating:** 52 / 38	**Tripping:** 44 / 32	☑ **Wear Bushing Installed**				

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 41 **Report For 06:00 AM 27-May-23**

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135						

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	41

☑ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10	
Air Temperature:	76 degF	**Bar. Pressure:**	1004	
Wind Speed/Dir:	19 / SSW	**Wind Gusts:**	12	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 42 **Report For 06:00 AM 28-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9800	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7623	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	276 / 3.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):	92.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.68 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.68 / 0 **DOL:** 42

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	6 / 72	29 / 348

Safety Summary: No incidents or events reported. 42 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Running Gyro on wireline.

Planned Operations: Run gyro, rig down wireline unit, trip out of the hole from 9,773' to surface, make up BHA #22 core assembly, trip in the hole to 9,800', change hole over, cut core from 9,800'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	9:00	3.00	9,800	DRIL	Rotate/Slide from 9,524' to 9,800'. Rotating 57K wob, 53 rpm, 600 gpm, 380-540 psi diff,120-240 fpm. Sliding 71K wob, 700 gpm, 130-240 fpm. Slide 9,629' to 9,670'. 276' drilled, 235' rotating (85.2%), 41' sliding (14.8%). Last survey depth 9,709 MD, 7,857' TVD, 64.81° INC, 107.35° AZI. We are 31.75' low and 22.39' right of the plan.	
9:00	9:30	0.50	9,800	CIRC	Circulate bottoms up. Prepare to trip out of the hole for gyro survey and core.	
9:30	16:00	6.50	9,800	TRPO	Trip out of the hole on elevators from 9,800' to 130'. 500K up, 180K down coming off bottom.	
16:00	17:30	1.50	9,800	BHAOP	Trip out with BHA #20. Lay down same.	
17:30	18:00	0.50	9,800	OTHER	Clean and clear rig floor.	
18:00	18:30	0.50	9,800	BHAOP	Make up BHA #21 with TCI bit.	
18:30	23:00	4.50	9,800	TRPI	Trip in the hole with BHA #21 to 9,773', fill pipe every 30 stands, break circulation at 8,000'.	
23:00	0:00	1.00	9,800	CIRC	Circulate bottoms up at 800 gpm. PJSM with SDI.	
0:00	6:00	6.00	9,800	DIR	Wireline SDI gyro tool from surface to 9,723', pump gyro down from 6,800' to 9,723'.	

Management Summary

Drilled 9 ½" hole section from 9,524' to 9,800', circulated bottoms up, tripped out of the hole from 9,800' to surface, laid out BHA #20, Make up BHA #21 with TCI, tripped in the hole to 9,773', circulated bottoms up at 9,773, rigged up SDI wireline unit, ran gyro from surface to 9,723'.

Comments

Fuel on hand 13,628 gals.
Fuel used 1,369 gals.
Total NPT to date 94.25 HR.
No H2S today.
Survey at 9,800' MD, 9,709' SD, 64.81° INC, 107.35° AZI, 31.75' low and 22.39' right.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
27-May-23 14:00 at Depth 9,801 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.53	27	1	1		0.5	10.5	1.5	0	98.5	0		600	60					90	101	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 42 **Report For 06:00 AM 28-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	DC-310/CI-100 - OTHER	40	---
Defoam 14 - GALS	4	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	MDC -	33	---

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	3 SANJOAQ	MX-S50R	9.500	9800														
Jets: 24 24 24				**Out:** 9800	**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**		**Gge:**		**Pull:**		
19	1 NOV	TKC83	9.500	9255	545	8	68.1	300.0	70	60	2	8	650	2300	173	226	86	490
Jets: 14 14 14 14 14 14 14 14				**Out:** 9800	**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**		**Gge:**		**Pull:**		

BHA - No. 21 - BIT, BS, XO, 30 HWDP = 924.64

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,524	9,800	180.0	240.0	70	70	56	64	23	26	600	700	2,250

Annular Velocity: **Drill Collars:** 162.9 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 280	**Pick Up:** 420	**Slack Off:** 230	**Drag Avg/Max:** 30 / 45			
Hours on BHA:	**Since Inspection:** 52.5	**Total:** 52.5	**Jars:**				
Hours on Casing/Liner:	**Rotating:** 55 / 41	**Tripping:** 52 / 40	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems: None to report

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135						

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 42

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	71 degF	**Bar. Pressure:**	1008
Wind Speed/Dir:	12 / SSW	**Wind Gusts:**	5

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 43 **Report For 06:00 AM 29-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9800	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7623	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.68 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.68 / 0 **DOL:** 43

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	2 / 24	25 / 300

Safety Summary: No incidents or events reported. 43 days since LTI. Conducted Safety Meeting.

Current Operations: Staging in the hole with Core tools at 8,039'.

Planned Operations: Finish staging in the hole with Core tools to bottom. Core from 9,800' to 9,830'.

Toolpusher: Shawn Seddell, Clay

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:30	0.50	9,800	LOG	Running gyro survey tool to surface. Retrieve data while circulating hole. Data was bad. Decision to rerun gyro.	
6:30	7:30	1.00	9,800	CIRC	Circulate hole to cool while rebuilding new gyro tool.	
7:30	15:30	8.00	9,800	LOG	Run gyro on wireline from surface to 6,800'. Tool not functioning. Pull out of hole and rebuild gyro. Run in hole to 6,800' and pump down from 6,800' to 9,720'. Surveying from 9.720' to 6,409'. Lay down gyro tools.	
15:30	16:30	1.00	9,800	CIRC	Circulate to cool hole prior to trip out for core tools. Analyze gyro data. Swap mud system to water and lube system.	
16:30	22:30	6.00	9,800	TRPO	Trip out of hole from 9,725' to surface. Break off bit, bit sub and crossover.	
22:30	23:30	1.00	9,800	BHAOP	Make up BHA #22, Core BHA #3 consisting of 8-3/4" Core bit, core barrels, stabs and jars.	
23:30	0:30	1.00	9,800	BHAOP	Change out 7 joints of slick HWDP.	
0:30	6:00	5.50	9,800	TRPI	Trip in the hole to 3,044'. Fill drill pipe.Trip in hole to 6,043'. Circulate bottoms up. Trip in hole to 6,519'. Cool tools. Wash down to 6,993'. Trip in hole to 7,469'. Cool tools. Wash down to 8,039'.	

Management Summary

Ran gyro survey tool. Data was bad. Re-ran gyro. Circulated and cooled hole prior to trip out for core tools. Changed water in hole to a lube system. Tripped out of hole. Laid down bit, bit sub and crossover. Made up BHA #22, Core BHA #3 consisting of 8-3/4" Core bit, core barrels, stabs and jars. Changed out 7 joints of slick HWDP. Staged in the hole cooling tools to 8,000'.

Comments

Fuel on hand 12582 gals.
Fuel used 1,046 gals.
Total NPT to date 94.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
29-May-23 02:00 at Depth 9,800 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.48	27					10.5	1.1		98.9			600								
28-May-23 14:30 at Depth 9,800 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.41	27					8.7	0.5		99.5			550								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 43 **Report For 06:00 AM 29-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Citric Acid - OTHER	3	---	Engineering - OTHER	2	---
HIB 19 - GALS	4	---	Lodging - OTHER	1	---
PAllets/Wraps - OTHER	1	---	ProOne - GALS	30	---
TORKease Concentrate - GALS	12	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	3	SANJOAQ	MX-S50R	9.500	9800	0	0	0.0	0.0	0	0		8	0					
Jets: 24 24 24					**Out:** 9800			**Grade:**	**Cutter:**	3 / 3	**Dull**	CT / WT	**Wear:** A	**Brgs:** E	**Gge:** 0		**Pull:** TD		
Comments: Ran with dumb iron to run Gyro																			
20	1	CANAMER	CCI	8.750	9800	0	0	0.0	0.0	0	0		8	400	408	129	126	29	226
Jets: 12 12 12 12 12 12 12 12 12					**Out:**			**Grade:**	**Cutter:**	/	**Dull**	/	**Wear:**	**Brgs:**	**Gge:**		**Pull:**		
Comments: New core bit.																			

BHA - No. 22 - BIT, NBS, CORE, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.84

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**		**Slack Off:**	**Drag Avg/Max:**	/
Hours on BHA:	**Since Inspection:**	52.5	**Total:**	52.5	**Jars:**		
Hours on Casing/Liner:	**Rotating:**	55 / 0	**Tripping:**	64 / 0	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**	**Equipment Usage (Hrs):**		
Shaker No 1:	170	170	170	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	170	170	**Centrifuge 1:** 6 (Solids Removal)		**Centrifuge 2:** 6 (Solids Removal)
Shaker No 3:	170	170	170	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. PJSM for making up core BHA. \

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	43

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly Clear	**Visibility:**	10
Air Temperature:	75 degF	**Bar. Pressure:**	1009
Wind Speed/Dir:	3 / SW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 44 **Report For 06:00 AM 30-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9817	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7640	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	17 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.68 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.68 / 0 **DOL:** 44

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	4 / 48	27 / 324

Safety Summary: No incidents or events reported. 44 days since LTI. Conducted Safety Meeting.

Current Operations: Picking up Core BHA #4.

Planned Operations: Run in hole with BHA #23. Core BHA #4. Core from 9,817' to 9,847'.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen, Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	9,800	TRPI	Stage in hole from 8,039' to 9,800' keeping tools cool. Tag bottom at 9,800'. get rotating weight 250K, up weight 380K, down 200K.	
8:00	9:30	1.50	9,800	CIRC	Circulate bottoms up at 9,710'. Drop ball and circulate down.	
9:30	22:15	12.75	9,817	CORE	Cut 8 3/4" core from 9,800' to 9,817'. Pason weight on bit reading 8-9K high. Using Totco with 12-13K wob, 40-50 rpm, 15-23K torque, 300 gpm..	
22:15	23:15	1.00	9,817	CORE	ROP slowing. Perform Pull Test to 425K. Holding. Slack off to neutral point. Zero weight and restart. Pason weight on bit reading right. ROP still slow. Pull up to 430K and broke core.	
23:15	3:00	3.75	9,817	TRPO	Trip out of the hole to 913'. 415K max up weight.	
3:00	4:15	1.25	9,817	BHAOP	Broke out and laid down jars, core barrels and core. Broke out bit.	
4:15	6:00	1.75	9,817	OTHER	Cut 17.5' of core and recovered 15.5'. Cut up core. Discussed coring BHA #4, BHA #23.	

Management Summary

Staged in hole cooling tools from 8,039' to 9,800'. Circulated bottoms up at 9,710'. Dropped ball and circulated down. Cut 8 3/4" core from 9,800' to 9,817'. ROP slowed. Performed Pull test to 425K. OK. Slack off to neutral point. Zero weight and restarted. ROP still slow. Pulled up to 430K and broke core. Tripped out of the hole. Broke out and laid down jars, core barrels and bit. Cut 17.5' of core and recovered 15.5'. Cut up core.

Comments

Fuel on hand 18713 gals.
Fuel used 1,369 gals.
Total NPT to date 94.25 HR.
No H2S today.
Pason WOB not working correctly during coring.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
30-May-23 00:30 at Depth 9,800 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.41	27					8.5			99			500								
29-May-23 14:00 at Depth 9,806 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.41	27					8.3			99			500								

Daily Drilling Report

Well ID: FORGE 16B(78)-32
Field: FORGE

University of Utah
Well Name: FORGE 16B(78)-32
Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 44 **Report For 06:00 AM 30-May-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Defoam 14 - GALS	1	---	Engineering - OTHER	2	---
HIB 19 - GALS	4	---	Lodging - OTHER	1	---
ProOne - GALS	245	---	TORKease - GALS	16	---
TORKease Concentrate - GALS	1	---			

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
20 1	CANAMER	CCI	8.750	9800	17	13.75	1.2	4.3	10	40	2	8	300	285	97	71	12	126

Jets: 12 12 12 12 12 12 12 12 12 **Out:** 9817 **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:** PR

Comments: All bottom cutters missing 9 completely gone

BHA - No. 22 - BIT, NBS, CORE, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.84

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,800	9,817	1.3	2.5	10	13	39	50	15	23	320	326	300

Annular Velocity: **Drill Collars:** 102.4 **Drill Pipe:** 315.0

Comments: Core Run from 9,800'

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 250 **Pick Up:** 380 **Slack Off:** 200 **Drag Avg/Max:** 200 / 200

Hours on BHA: **Since Inspection:** 66.25 **Total:** 66.25 **Jars:** 13.75

Hours on Casing/Liner: **Rotating:** 68.75 / 0 **Tripping:** 69.75 / 0 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: Pason WOB reading 8-9K high. Attempt to callibrate 3 times. Calling out Pason tech.

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 8.5 (Solids Removal)		**Centrifuge 2:** 8.5 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. PJSM for making up core BHA.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 44

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition: Mostly sunny **Visibility:** 10

Air Temperature: 76 degF **Bar. Pressure:** 1008

Wind Speed/Dir: 12 / SSW **Wind Gusts:**

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 45 **Report For 06:00 AM 31-May-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9817	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7640	**Next Casing:**		**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):		**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.68 / 0, Flat 0 / 0, Complete 0 / 0, Total 5.68 / 0 **DOL:** 45

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	4 / 48	27 / 324

Safety Summary: No incidents or events reported. 45 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping out of the hole with 9-1/2" bit and BHA at 584'.

Planned Operations: Finish tripping out of the hole. Break out and lay down 9-1/2" bit, bit sub and x-over. Make up and trip in hole with 8-3/4" insert bit and BHA. Clean out coring stub. Trip out of the hole.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	9,817	CORE	Break out and lay down core tools.	
8:30	10:00	1.50	9,817	SERV	Service rig and top drive. Work on ST-80.	
10:00	12:00	2.00	9,817	REPR	Make up bit sub and bit. Driller stacked out on pipe rams. Break off bit and bit sub. Lay down 2 bent joints of HWDP.	X
12:00	17:00	5.00	9,817	TRPI	Make up bit sub and 9 1/2" re-run bit. Trip in hole to 9,793' for gyro survey run.	
17:00	18:45	1.75	9,817	CIRC	Circulate to cool hole for gyro run on wireline.	
18:45	1:30	6.75	9,817	SURV	PJSM for running Gyro. Pull up to 9,772'. Rig up wireline unit. Ran Gyro to 7,763'. Pump down to 9,767'. Survey up to 50'. Ran back down to 5,500'. Survey up.	
1:30	2:00	0.50	9,817	CIRC	Circulate and clear floor.	
2:00	6:00	4.00	9,817	TRPO	Trip out of the hole from 9,772' to 584'.	

Management Summary

Broke out and laid down core tools. Made up and tripped in the hole with 9 1/2" bit and BHA to 9,793'. Circulated and cooled hole. Pulled up to 9,772'. Rigged up wireline and ran Gyro to 7,663'. Pumped down to 9,767'. Surveyed up to 50' KB. Rigged down wireline. Circulated and tripped out of the hole to 584'.

Comments

Fuel on hand 18285 gals.
Fuel used 569 gals.
Total NPT to date 96.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
30-May-23 20:30 at Depth 9,815 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					8.9	0.5		99.1			500								
30-May-23 14:00 at Depth 9,817 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					8.8	0.6		99.1			500								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Corrosion rings - OTHER	1	---	Engineering - OTHER	2	---
Lime - 50#SK	2	---	Lodging - OTHER	1	---
TORKease - GALS	10	---	Trucking - OTHER	1	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 45 **Report For 06:00 AM 31-May-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	4	SANJOAQ	MX-S50R	9.500	9817	0	0	0.0	0.0	0	0	0	8	600	995	145	159	56	381

Jets: 24 24 24 **Out:** 9817 **Grade:** **Cutter:** 3 / 3 **Dull** CT / WT **Wear:** A **Brgs:** E **Gge:** 0 **Pull:** BHA

Comments: Used for running wireline Gyro

BHA - No. 23 - BIT, BS, XO, 30 HWDP = 924.64

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	250	**Pick Up:**	390	**Slack Off:**	190	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:**	67.25	**Total:**	67.25	**Jars:**	13.75	
Hours on Casing/Liner:	**Rotating:**	69.75 / 0	**Tripping:**	78.75 / 0	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems: Stacked out top drive on stand of rental heavy weight drill pipe. Laid down 2 bent joints and changed out saver sub.

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**	**Equipment Usage (Hrs):**	
Shaker No 1:	170	170	200	170		
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 24 (Solids Removal)	**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	200	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crews. PJSM for running Gyro

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	45

Accident Description: None reported

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly cloudy	**Visibility:**	10
Air Temperature:	76 degF	**Bar. Pressure:**	1007
Wind Speed/Dir:	11 / S	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 46 **Report For 06:00 AM 01-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**		---
Measured Depth (ft):	9822	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.**	**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	7647	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	---	---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		---	---	---
Hole Made (ft) / Hrs:	5 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	---	---
Average ROP (ft/hr):						**Well Cost ($):**		---

Days (actual / plan): Drilling 5.68 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.68 / 74 **DOL:** 46

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	4 / 48	**Total:**	27 / 324

Safety Summary: No incidents or events reported. 46 days since LTI. Conducted Safety Meeting.

Current Operations: Picking up BHA #25. Core #4 assembly.

Planned Operations: Strap in hole with Core assembly #4 to verify initial SLM. Core from 9,823' to 9,853'.

Toolpusher: Shawn Seddell, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:30	0.50	9,817	BHAOP	Break off BHA #23 bit sub and bit.	
6:30	7:00	0.50	9,817	BHAOP	Make up BHA #24 consisting of BH 8 3/4" TCI bit and bit sub with float and crows foot.	
7:00	9:30	2.50	9,817	TRPI	Trip in hole from surface to 4,823'.	
9:30	11:00	1.50	9,817	CUTDL	Cut and slip drilling line.	
11:00	11:30	0.50	9,817	SERV	Check top drive connections.	
11:30	15:00	3.50	9,817	TRPI	Trip in hole from 4,823' to 9,780', performing torque and drag readings every 5 stands.	
15:00	22:00	7.00	9,823	REAM	Wash and ream from 9,780' to 9,823'. Note: Could not see any changes in ROP or torque at bottom. Decision was made to make additional hole to make sure core stub was gone. More cuttings over shakers around 9,817'.	
22:00	23:30	1.50	9,823	CIRC	Pump 50 bbl high visc sweep and clean hole.	
23:30	5:00	5.50	9,823	TRPO	Strap out of the hole from 9,823' to surface. Break out and lay down bit and bit sub.	
5:00	6:00	1.00	9,823	OTHER	Clear floor. Gather coring assembly. Add pipe tally straps. Discrepancy in SLM vs. driller's tally.	

Management Summary

Broke off BHA #23 bit sub and bit. Made up BHA #24 consisting of 8 3/4" TCI bit and bit sub with float and crows foot. Tripped in hole. Reamed from 9,780' to 9,823'. Pumped 50 bbl high visc sweep and clean hole. Strapped out of the hole from 9,823' to surface. Broke out and laid down bit and bit sub. Discrepancy in SLM vs. driller's tally.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
31-May-23 20:00 at Depth 9,817 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					8.8	0.5		99			500								
31-May-23 14:00 at Depth 9,817 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					8.7	0.5		99			500								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	HIB 19 - GALS	4	---
Lime - 50#SK	2	---	Lodging - OTHER	1	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 46 **Report For 06:00 AM 01-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	4	SANJOAQ	MX-S50R	9.500	9817	0	-2	0.0	0.0	0	0	0	0	0	0				
Jets: 24 24 24					**Out:** 9817		**Grade:**	**Cutter:**	3 / 3	**Dull**	CT / WT	**Wear:** A	**Brgs:** E	**Gge:** 0		**Pull:** BHA			
Comments: Used for running wireline Gyro																			
21	1	BAKER	VGD-38CH	8.750	9817	23	7	3.3	4.0	12	75	19000	8	400	600	172	223	52	299
Jets: 18 18 18					**Out:** 9823		**Grade:**	**Cutter:**	2 / 3	**Dull**	WT / NO	**Wear:** A	**Brgs:** E	**Gge:** 0		**Pull:** BHA			

BHA - No. 24 - BIT, BS, XO, 30 HWDP = 924.64

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,800	9,823	3.0	4.0	12	15	55	90	19,000	21,000	400	400	600

Annular Velocity: Drill Collars: 128.1 **Drill Pipe:** 211.7

Comments: Reaming 8-3/4" hole.

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** **Pick Up:** 389 **Slack Off:** **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 74.25 **Total:** 74.25 **Jars:** 13.75

Hours on Casing/Liner: **Rotating:** 76.75 / 0 **Tripping:** 90.25 / 0 ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	170	170	200	170		
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 24 (Solids Removal)	**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	200	170		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 46

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	72 degF	**Bar. Pressure:**	1005
Wind Speed/Dir:	8 / S	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 47 **Report For 06:00 AM 02-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9845	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ --- / ---
Vertical Depth (ft):	7670	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	---	--- / ---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		---	--- / ---
Hole Made (ft) / Hrs:	22 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.68 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.68 / 74 **DOL:** 47

Pers/Hrs: **Operator:** 3 / 36 **Contractor:** 14 / 168 **Service:** 6 / 72 **Other:** 4 / 48 **Total:** 27 / 324

Safety Summary: No incidents or events reported. 47 days since LTI. Conducted Safety Meeting.

Current Operations: Cutting 8-3/4" core at 9,845'.

Planned Operations: Core from 9,845' to 9,853'. Pull out of the hole.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:30	1.50	9,823	BHAOP	Pick up coring assembly #4, BHA #25.	
7:30	8:00	0.50	9,823	SERV	Change out dies on ST-80	X
8:00	18:00	10.00	9,823	TRPI	Trip in hole from 76' to 9,814'. SLM while tripping in. Strap OK. 0.58' difference from Pason talley. Lay down 4 bad joint of drill pipe. Pick up new joints. Fill pipe at 3.843'. Stage in hole from 6.000' to core point to cool tools.	
18:00	19:00	1.00	9,823	REAM	Safety ream from 9,814' to 9,823'. Tag bottom.	
19:00	21:30	2.50	9,823	CIRC	Circulate bottoms up. Drop ball and pump down.	
21:30	6:00	8.50	9,833	CORE	Cut 8-3/4" core from 9,823' to 9,845'. ROP 2-3', WOB 7K, RPM 30, TORQ 22K, GPM 300, PSI 300	

Management Summary

Picked up coring assembly #4, BHA #25.Tripped in hole from 76' to 9,814'. SLM while tripping in. Laid down 4 joints of drill pipe with worn hardband.. Picked up new joints. Filled pipe at 3.843'. Staged in hole from 6.000' to core point to cool tools. Safety reamed from 9,814' to 9,823'. Tagged bottom. Circulated bottoms up. Dropped ball and pumped down. Cut 8-3/4" core from 9,823' to 9,845'.

Comments

Fuel on hand 16242 gals.
Fuel used 1077 gals.
Total NPT to date 96.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
01-Jun-23 14:00 at Depth 9,823 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27			100	0.2	9.2	0.5	0.15	99.35			500	80					74	89	0

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Engineering - OTHER	2	---
HIB 19 - GALS	4	---	Lodging - OTHER	2	---
Poly Vis - 50#SK	1	---	TORKease L - GALS	12	---
Trucking - OTHER	1	---			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 47 **Report For 06:00 AM 02-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
22	1	CANAMER	CCI - 713	8.750	9823	22	8.5	2.6	3.2	7	35	2	8	300	290	92	63	11	119

Jets: 14 14 14 14 14 14 14 0 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 25 - BIT, NBS, CORE, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.84

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,823	9,845	2.4	3.2	7	8	30	35	21	26	300	300	300

Annular Velocity: **Drill Collars:** 158.8 **Drill Pipe:** 158.8

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** **Pick Up:** **Slack Off:** **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 82.75 **Total:** 82.75 **Jars:** 22.25

Hours on Casing/Liner: **Rotating:** 87.25 / 0 **Tripping:** 100.25 / 0 ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 24 (Solids Removal)		**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 47

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	74 degF	**Bar. Pressure:**	1004
Wind Speed/Dir:	9 / S	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 48 **Report For 06:00 AM 03-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	9853	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ --- / ---
Vertical Depth (ft):	7670	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / ---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / ---	---
Hole Made (ft) / Hrs:	8 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.68 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.68 / 74 **DOL:** 48

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	4 / 48	**Other:**	3 / 36	**Total:**	24 / 288

Safety Summary: No incidents or events reported. 48 days since LTI. Conducted Safety Meeting.

Current Operations: Reaming 8-3/4" hole to 9-1/2" hole at 9,828'.

Planned Operations: Finish reaming to 9,853' plus 10 ft of new hole. Pull out of the hole. Trip in hole with 9-1/2" PDC bit and assembly. Drill 9-1/2" hole ahead.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:45	2.75	9,853	CORE	Cut 8-3/4" core from 9,845" to 9,853'. ROP 5-7 fph, WOB 12K, RPM 30-40, TORQ 22K, GPM 300, PSI 300. Performed WOB and Rot step test from 9.848' to 9,853'.	
8:45	9:00	0.25	9,853	CIRC	Circulate partial bottoms up. Break off core. Verify core had broken off.	
9:00	10:00	1.00	9,853	CIRC	Set back on bottom and circulate full bottoms up.	
10:00	16:30	6.50	9,853	TRPO	Trip out of hole from 9,853' to 79'. Lay down a single that was picked up at start of coring.	
16:30	17:00	0.50	9,853	SERV	Repair hydraulic hose on ST-80	
17:00	19:00	2.00	9,853	CORE	Broke out and laid down coring assembly. Cut 30'. Recovered 28.4'.	
19:00	20:00	1.00	9,853	OTHER	Pull wear bushing, grease and re-install.	
20:00	21:00	1.00	9,853	BHAOP	Made up 9-1/2" insert bit , bit #23 and BHA #26.	
21:00	21:30	0.50	9,853	OTHER	Install turnbuckles on BOP stack.	
21:30	5:00	7.50	9,853	TRPI	Trip in hole from 62' to 9,733'. Performing torque and drag readings every 5 stands.	
5:00	6:00	1.00	9,853	REAM	Safety ream from 9,733' to 9.800'. Ream 8-3/4" hole to 9-1/2" hole from 9,800' to 9,828'.	

Management Summary

Cut 8-3/4" core from 9,845" to 9,853'. Circulated. Broke off core. Verified core had broken off. Circulated bottoms up. Broke out and laid down coring assembly. Cut 30'. Recovered 28.4'. Made up 9-1/2" insert bit , bit #23 and BHA #26. Tripped in hole to 9,733'. Safety reamed from 9,733' to 9.800'. Ream 8-3/4" hole to 9-1/2" hole from 9,800' to 9,828'.

Comments

Fuel on hand 14349 gals.
Fuel used 1119 gals.
Total NPT to date 96.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
03-Jun-23 00:30 at Depth 9,830 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1	100	0.2	8.8	0.6	0.6	98.8			500								
02-Jun-23 14:00 at Depth 9,853 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1	100	0.2	9.1	0.6	0.6	98.8			500								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 48 **Report For 06:00 AM 03-Jun-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	HIB 19 - GALS	2	---
Lime - 50#SK	3	---	Lodging - OTHER	1	---
TORKease - GALS	28	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
22	1	CANAMER	CCI - 713	8.750	9823	30	11.25	2.7	7.4	8	35	2	8	300	300	92	63	11	119

Jets: 14 14 14 14 14 14 14 0 **Out:** 9853 **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: Few chip cutters.

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
23	1	SANJOAQ	XLS30DX	9.500	9853	25	1	25.0	25.0	10	178	19	8	600	1523	145	159	55	379

Jets: 24 24 24 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 26 - BIT, BS, RR, MMTR, RR, OTHER, XO, 30 HWDP = 975.53

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,845	9,853	5.0	7.4	8	12	30	50	21	23	300	300	300

Annular Velocity: Drill Collars: 158.8 **Drill Pipe:** 158.8

9,800	9,828	25.0	25.0	10	10	40	178	19	21	600	600	1,510

Annular Velocity: Drill Collars: 245.1 **Drill Pipe:** 245.1

Comments: With mud motor.

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** **Pick Up:** **Slack Off:** **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 85.5 **Total:** 85.5 **Jars:** 25

Hours on Casing/Liner: **Rotating:** 90 / 0 **Tripping:** 114.25 / 0 ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	3	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 48

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast	**Visibility:**	10
Air Temperature:	71 degF	**Bar. Pressure:**	1008
Wind Speed/Dir:	6 / SSW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 49 **Report For 06:00 AM 04-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10007	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	7958	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	154 / 3.5	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	44.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.82 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.82 / 74 **DOL:** 49

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	4 / 48	4 / 48	25 / 300

Safety Summary: No incidents or events reported. 49 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 9-1/2" hole at 10,007'.

Planned Operations: Drill 9-1/2" hole to 10,250'. Trip out of the hole with directional tools. Trip in the hole with 8-3/4" core assembly.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:30	0.50	9,853	REAM	Ream 8, 3/4" core section from 9,828' to 9,853'. ROP 1-75 fph, WOB 8K-11K, RPM 30, TORQ 22K, GPM 630, PSI 1525.	
6:30	7:00	0.50	9,863	DRIL	Drill 10' of new hole from 9,853' to 9,863'. ROP 25-95 fph, WOB 20K-30K, RPM 40, TORQ 22K, GPM 630, PSI 1525.	
7:00	7:30	0.50	9,863	CIRC	Circulate partial bottoms up and prepare to trip out of hole.	
7:30	16:00	8.50	9,863	TRPO	Trip out of hole from 9,863' to 59'. Lay down 19 joints of drill pipe and 2 joints of HWDP for hardbanding. Pick up new joints.	
16:00	17:00	1.00	9,863	BHAOP	Break out and lay down 9-1/2" insert bit, roller reamer, mud motor, roller reamer and float sub.	
17:00	19:00	2.00	9,863	BHAOP	Make up new 9-1/2" 6 blade PDC bit, bit #24 and BHA #27 consisting of: Mud motor, roller reamer, NM pony collar, NM drill collar, pulse sub, NM drill collar, Black Box, filter sub and float sub. BH 5342357. Test MWD.	
19:00	19:30	0.50	9,863	TRPI	Trip in hole from 142' to 1,169'.	
19:30	20:00	0.50	9,863	SERV	Rig service.	
20:00	21:00	1.00	9,863	TRPI	Trip in hole from 1,169' to 3,059'. Fill pipe.	
21:00	22:40	1.67	9,863	TRPI	Trip in hole from 3.059' to 6,009'.	
22:40	22:50	0.17	9,863	CIRC	Circulate and check tool temperature. Start temp 238 deg F. End 230 deg F.	
22:50	23:00	0.17	9,863	TRPI	Trip in hole from 6,009' to 6,579'.	
23:00	23:15	0.25	9,863	CIRC	Circulate and check tool temperature. Start temp 250 deg F. End 245 deg F.	
23:15	23:30	0.25	9,863	TRPI	Trip in hole from 6,579' to 7,054'.	
23:30	23:45	0.25	9,863	CIRC	Circulate and check tool temperature. Start temp 260 deg F. End 255 deg F.	
23:45	0:00	0.25	9,863	TRPI	Trip in hole from 7.054' to 7,530'.	
0:00	0:15	0.25	9,863	CIRC	Circulate and check tool temperature. Start temp 270 deg F. End 260 deg F.	
0:15	0:30	0.25	9,863	TRPI	Trip in hole from 7,530' to 8,005'.	
0:30	0:40	0.17	9,863	CIRC	Circulate and check tool temperature. Start temp 278 deg F. End 275 deg F.	
0:40	0:55	0.25	9,863	TRPI	Trip in hole from 8,005' to 8,575'.	
0:55	1:15	0.33	9,863	CIRC	Circulate and check tool temperature. Start temp 287 deg F. End 268 deg F.	
1:15	1:30	0.25	9,863	TRPI	Trip in hole from 8,575' to 9,051'.	
1:30	2:00	0.50	9,863	CIRC	Circulate and check tool temperature. Start temp 292 deg F. End 265 deg F.	
2:00	2:15	0.25	9,863	TRPI	Trip in hole from 9,051' to 9,526'.	
2:15	2:30	0.25	9,863	CIRC	Circulate and check tool temperature. Start temp 292 deg F. End 275 deg F.	
2:30	3:00	0.50	9,863	TRPI	Trip in hole from 9,526' to 9,863'.	
3:00	6:00	3.00	9,863	DRIL	Drill 9-1/2" hole from 9,863' to 10,007', rotating and sliding. WOB 50K to 55K, RPM 65 to 95, GPM, 650 to 700, Torque 22K to 28K, ROP 25 to 300.	

Management Summary

Reamed 8, 3/4" core section to 9-1/2" from 9,800' to 9,853'. Drilled 10' of new hole to 9,863'. Tripped out of the hole. Laid down 9-1/2" bit and reaming assembly. Made up bit #24 and BHA #27 directional assembly. Test MWD. Tripped in the hole to 6,009'. Staged in hole from 6,009' to 9,863' cooling tools and recording torque and drag every 5 stands. Drilled 9-1/2" hole from 9,863' to 10,007', rotating and sliding. WOB 50K to 55K, RPM 65 to 95, GPM, 650 to 700, Torque 22K to 28K, ROP 25 to 300 fph.

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 49 **Report For 06:00 AM 04-Jun-23**

Comments

Fuel on hand 13123 gals.
Fuel used 1226 gals.
Total NPT to date 96.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
04-Jun-23 03:00 at Depth 9,853 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1	100	0.2	9	0.5	0.05	99			500	120							
03-Jun-23 12:00 at Depth 9,863 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1	100	0.2	8.3	0.5	0.39	99.11			500	100						102	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	HIB 19 - GALS	4	---
Lodging - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
23	1	SANJOAQ	XLS30DX	9.500	9853	35	2	17.5	95.0	20	35	22	8	630	1550	153	175	64	418
Jets: 24 24 24					**Out:** 9863			**Grade:**	**Cutter:**	1 / 3	**Dull**	FC / WT	**Wear:** G	B	**gs:** E	G	**e:** 1	**Pull:** BHA		
Comments: 1/16 under.																				
24	1	BAKER	D406VX	9.500	9863	10007	3	50.0	300.0	60	270	22	8	650	2400	170	217	82	480
Jets: 14 14 14 13 13 13 13 13 13					**Out:**			**Grade:**	**Cutter:**	/	**Dull**	/	**Wear:**	B	**gs:**	G	**e:**	**Pull:**		
BHA - No. 27 - BIT, MMTR, RR, PC, DCM, MWD, DCM, 3 OTHER, XO, 30 HWDP = 1060.91																				

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
9,853	9,863	35.0	95.0	12	30	35	40	16	22	630	630	1,525
Annular Velocity: **Drill Collars:** 257.4 **Drill Pipe:** 257.4												
Comments: Ream 8-3/4" to 9.5" plus 10' of new hole.												
9,863	10,007	50.0	300.0	55	65	270	275	24	29	650	700	2,900
Annular Velocity: **Drill Collars:** 265.5 **Drill Pipe:** 265.5												
Comments: Rotate and sliding.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 250	**Pick Up:** 380	**Slack Off:** 190	**Drag Avg/Max:** 75 / 180			
Hours on BHA:	**Since Inspection:** 90.5	**Total:** 90.5	**Jars:**				
Hours on Casing/Liner:	**Rotating:** 95 / 0	**Tripping:** 126.25 / 0	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 49

Report For 06:00 AM 04-Jun-23

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 49

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast	**Visibility:**	10
Air Temperature:	72 degF	**Bar. Pressure:**	1008
Wind Speed/Dir:	14 / SW	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 50 **Report For 06:00 AM 05-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10250	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	--- / ---
Vertical Depth (ft):	8089	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	**Actual ($)**	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	243 / 2.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):	121.5					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.91 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.91 / 74 **DOL:** 50

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 12	14 / 168	4 / 48	6 / 72	27 / 300

Safety Summary: No incidents or events reported. 50 days since LTI. Conducted Safety Meeting.

Current Operations: Circulating bottoms up.

Planned Operations: Drop ball and pump down. Core to 10,280'. Break off core and TOOH. Pick up new core barrels and bit and TIH.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:00	2.00	10,250	DRIL	Rotate/Slide from 10,007' to 10,250' performing step tests in rotation for ROT 30-90 rpm, WOB 45K-62K, GPM 550-700. Slide f/ 9,863' t/ 9,885' Slide f/ 9,912' t/ 9,922' Slide f/ 9,975' t/ 10,000' 57' of 387' or 14.7%.	
8:00	9:00	1.00	10,250	CIRC	Circulate bottoms up before trip out of hole @10,250' for core run.	
9:00	15:00	6.00	10,250	TRPO	Trip out of the hole from 10,250' to 142'. Racking drill pipe to swap top half with bottom for wear. P/U 460K S/O 175K ROT 255K.	
15:00	16:00	1.00	10,250	BHAOP	Lay down directional BHA and bit.	
16:00	16:30	0.50	10,250	SERV	Service rig and top drive. Held PJSM with Canamera.	
16:30	18:00	1.50	10,250	BHAOP	Make up 8-3/4" core bit #5, bit #25 and BHA # 28.	
18:00	20:30	2.50	10,250	TRPI	Trip in hole from 77' to 4.804'. Fill pipe at 3,000'.	
20:30	23:00	2.50	10,250	CUTDL	Slip and cut 100' of drill line. Adjusted brakes.	
23:00	4:30	5.50	10,250	TRPI	Trip in hole from 4,804 to 9,554'. Cool tools every 5 stands. Wash down from 9.554' to 10,230'.	
4:30	5:30	1.00	10,250	REAM	Safety ream from 10,230' to 10,250'. Tag bottom.	
5:30	6:00	0.50	10,250	CIRC	Start circulating bottoms up.	

Management Summary

Drilled 9 1/2" hole from10,007 to 10,250'. Circulated bottoms up and TOOH from 10,250' to 142'. Laid down directional BHA and bit. Made up 8-3/4" core bit #5, bit #25 and BHA # 28. Tripped in hole to 4,804'. Slipped and cut line. Tripped in hole to 9,554' circulating every 5 stands to cool tools. Washed down from 9,554' to 10,230'. Safety reamed from 10,230' to 10,250'. Tagged bottom at 10,250'. Circulated.

Comments

Fuel on hand 11766 gals.
Fuel used 1357 gals.
Total NPT to date 96.25 HR.
No H2S today.
Last survey: 10,165' MD, 8,054 TVD, 65.97° INC, 103.6° AZI, 37' low and 72' left of the plan.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 50 **Report For 06:00 AM 05-Jun-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
05-Jun-23 05:00 at Depth 9,880 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27	1	1	100	0.2	8.8	0.5	0.25	99.25			500	120					80	121	
04-Jun-23 11:00 at Depth 10,250 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.41	27	1	1	100	0.2	9.2	0.55	0.2	99.25			550	100							

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	2	---
HIB 19 - GALS	5	---	Lodging - OTHER	1	---

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
24	1	BAKER	D406VX	9.500	9863	387	4	96.8	320.0	60	35	2	8	600	188	157	185	6	409
Jets: 14 14 14 13 13 13 13 13 13					**Out:** 10250		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
25	1	CANAMER	CCI-713	8.750	10250	0	0	0.0	0.0	0	30	2	8	330	29	101	7	1	144
Jets: 14 14 14 14 14 14 14					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	

Comments: Core from 10,250'

BHA - No. 28 - BIT, NBS, CORE, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,007	10,250	175.0	250.0	60	62	85	9	25	2	600	700	2,880

Annular Velocity: **Drill Collars:** 245.1 **Drill Pipe:** 245.1

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 255 **Pick Up:** 460 **Slack Off:** 175 **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 93.5 **Total:** 93.5 **Jars:**

Hours on Casing/Liner: **Rotating:** 98 / 0 **Tripping:** 138.25 / 0 ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	3	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 50

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	75 degF	**Bar. Pressure:**	1013
Wind Speed/Dir:	0 / WNW	**Wind Gusts:**	5

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 51 **Report For 06:00 AM 06-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10256	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	--- / ---
Vertical Depth (ft):	8094	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / ---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / ---	---
Hole Made (ft) / Hrs:	6 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.91 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.91 / 74 **DOL:** 51

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	4 / 48	27 / 324

Safety Summary: No incidents or events reported. 51 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping in the hole with 8-3/4" Tricone bit at 8,527'.

Planned Operations: Ream 8-3/4" hole from 10,250' to 10,256'. Drill core stub. Drill 7' of new hole to 10,263'. Trip out of the hole. Pick up core bit #6. TIH. Core from 10,263' to 10,293'.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	10,250	CORE	Circulate hole. Drop ball and pump to bottom.	
7:00	15:30	8.50	10,256	CORE	Coring 8 3/4" from 10,250' to 10,256'. 8K-13K WOB, 35 RPM, 300 GPM, 23K TORQ, 0.7 FPH. P-rate dropped off.	
15:30	20:30	5.00	10,256	TRPO	Trip out of the hole from 10,256' to 76'. Pulled 410K coming off bottom.	
20:30	22:00	1.50	10,256	BHAOP	Lay down core barrels. NOTE: Top swivel connection above core barrel was unscrewed. Break off bit. Lay down coring bit # 5, BHA #28. Cut 6.6'. Re-cover 5.5'.	
22:00	0:00	2.00	10,256	REPR	Change out 2 transmissions and 1 hydraulic ram on ST-80.	X
0:00	0:30	0.50	10,256	BHAOP	Make up 8-3/4" TCI bit #26 and BHA #29.	
0:30	6:00	5.50	10,256	TRPI	Trip in the hole 8,527'. Performing torque and drag readings every 5 stands.	

Management Summary

Circulated hole. Dropped ball and pumped down. Cored 8 3/4" from 10,250' to 10,256'. ROP slowed. Tripped out of the hole. Laid down core barrels. NOTE: Top swivel connection above core barrel was unscrewed. Broke off bit. Laid down core bit # 5, BHA #28. Cut 6.6'. Recovered 5.5'. Made up 8-3/4" TCI bit #26 and BHA #29. Tripped in the hole to 8,527' recording torque and drag values every 5 stands.

Comments

Fuel on hand 18337 gals.
Fuel used 1064 gals.
Total NPT to date 98.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
05-Jun-23 14:00 at Depth 10,255 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.45	27	1	1	100	0.25	9.3	0.55		99.3			500						71	81	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Corrosion rings - OTHER	1	---
Engineering - OTHER	2	---	Lodging - OTHER	1	---
TORKease - GALS	1	---	TORKease Concentrate - GALS	12	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 51 **Report For 06:00 AM 06-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
25	1	CANAMER	CCI-713	8.750	10250	6	8.5	0.7	2.6	13	30	23	8	300	300	92	63	11	119
Jets: 14 14 14 14 14 14 14					**Out:** 10256			**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**	**Gge:**		**Pull:**	
Comments: Core from 10,250' Missing 4 out of the 7 gauge cutters.																			
26	1	SANJOAQ	EP4900	8.750	10256	0	0	0.0	0.0	0	0	0	8	600	344	145	159	55	379
Jets: 24 24 24					**Out:**			**Grade:**	**Cutter:** /		**Dull** /		**Wear:**		**Brgs:**	**Gge:**		**Pull:**	

BHA - No. 28 - BIT, NBS, CORE, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,250	10,280	0.7	2.6	10	12	33	60	19	25	300	338	300

Annular Velocity: **Drill Collars:** **Drill Pipe:** 158.8

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 258	**Pick Up:** 410	**Slack Off:**	**Drag Avg/Max:** /	
Hours on BHA:	**Since Inspection:** 102	**Total:** 102	**Jars:**		
Hours on Casing/Liner:	**Rotating:** 106.5 / 0	**Tripping:** 144.25 / 0	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 51

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly cloudy	**Visibility:**	10
Air Temperature:	77 degF	**Bar. Pressure:**	1011
Wind Speed/Dir:	8 / N	**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 52 **Report For 06:00 AM 07-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10268	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ ---
Vertical Depth (ft):	8098	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		---	---
Hole Made (ft) / Hrs:	12 / 0.5	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	---
Average ROP (ft/hr):	24.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.93 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.93 / 74 **DOL:** 52

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	6 / 72	**Total:**	29 / 348

Safety Summary: No incidents or events reported. 52 days since LTI. Conducted Safety Meeting.

Current Operations: Coring at 10,268'.

Planned Operations: Continue coring 8-3/4" hole.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	10,256	TRPI	Trip in hole from 8,527' to 10,250', recording torque and drag every 5 stands.	
7:00	7:30	0.50	10,256	REAM	Ream 8 3/4" core hole from 10,250' to 10,256'.	
7:30	8:00	0.50	10,264	DRIL	Drill 8' of new 8 3/4" hole from 10,256' to 10,264' to clean bottom and create a pilot hole for next core run.	
8:00	9:00	1.00	10,264	CIRC	Circulate, build and pump sweep to clean bottom of hole. Circulate bottoms up.	
9:00	14:30	5.50	10,264	TRPO	Trip out of hole from 10,264' to BHA. Lay down bit, bit sub and crossover.	
14:30	16:00	1.50	10,264	CORE	Make up 9 blade core bit CCI 3409-05, bit #27 and 4 stabilizer core assembly, BHA #30.	
16:00	0:00	8.00	10,264	TRPI	Trip in the hole to 10,234' with core assembly. Fill pipe at 3,091'. Cool tools every 5 stands after 5,000'. Wash down from 9.074' to 10,234'. Safety ream from 10,234' to 10,264'. Tag bottom.	
0:00	1:45	1.75	10,264	CIRC	Circulate bottoms up. Drop ball and pump down.	
1:45	3:00	1.25	10,264	OTHER	Performed RPM step test of bottom. RPM: 40,45,50,55,60 and back to 30.	
3:00	6:00	3.00	10,268	CORE	Coring 8 3/4" from 10,264' to 10,268'. 8K-13K WOB, 50 RPM, 400 GPM, 22K TORQ, 1.3 ROP. 500 SPP.	

Management Summary

Tripped in hole from 8,527' to 10,250', Reamed 8 3/4" core hole from 10,250' to 10,256'. Drilled 8' of new 8 3/4" hole from 10,256' to 10,264' for coring assembly. Pumped high viscosity sweep to clean hole. Tripped out of the hole. Made up 9 blade core bit. Bit #27 and BHA #30. Trip in the hole to 10,234' with core assembly cooling tools. Safety reamed from 10,234' to 10,264'. Tagged bottom. Circulated bottoms up. Dropped ball and pumped down. Performed RPM step test. Cored 8 3/4" hole from 10,264' to 10,268'.

Comments

Fuel on hand 17158 gals.
Fuel used 1179 gals.
Total NPT to date 98.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
06-Jun-23 14:00 at Depth 10,264 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.2	9	0.7		99.2			500						88	112	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 52 **Report For 06:00 AM 07-Jun-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	HIB 19 - GALS	4	---
Lodging - OTHER	1	---	Poly Vis - 50#SK	2	---
Xanthan Gum - 50#SK	2	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
26	1	SANJOAQ	EP4900	8.750	10256	8	1	8.0	25.0	30	85	18	8	508	1050	123	114	34	272
Jets: 24 24 24					**Out:** 10256		**Grade:**	**Cutter:**	0 / 0	**Dull**	NO / NO		**Wear:** A	**Brgs:** 0		**Gge:** 0		**Pull:** TD	
27	1	CANAMER	CCI 913	8.750	10264	4	3	1.3	4.0	10	35	20	8	400	550	129	125	29	225
Jets: 12 12 12 12 12 12 12 12 12					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	

Comments: Core bit

BHA - No. 30 - BIT, NBS, CORE, STAB, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,256	10,264	20.0	26.0	30	32	86	90	16	18	615	615	1,050

Annular Velocity: Drill Collars: 325.5 **Drill Pipe:** 325.5

Comments: 8' of new hole fore core pilot hole.

10,264	10,268	1.0	4.0	10	12	35	50	20	21	400	400	550

Annular Velocity: Drill Collars: 211.7 **Drill Pipe:** 211.7

Comments: Core

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 250	**Pick Up:** 410	**Slack Off:** 200	**Drag Avg/Max:** 75 / 160			
Hours on BHA:	**Since Inspection:** 103	**Total:** 103	**Jars:**				
Hours on Casing/Liner:	**Rotating:** 107.5 / 1	**Tripping:** 156.25 / 12	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	52

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast	**Visibility:**	10
Air Temperature:	83 degF	**Bar. Pressure:**	1001
Wind Speed/Dir:	22 / SSW	**Wind Gusts:**	25

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 53 **Report For 06:00 AM 08-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10274	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8102	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	6 / 0.5	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	12.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.95 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.95 / 74 **DOL:** 53

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	18 / 216	**Service:**	6 / 72	**Other:**	10 / 120	**Total:**	37 / 444

Safety Summary: No incidents or events reported. 53 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping out of the hole at 5,074'.

Planned Operations: Finish tripping out of the hole. Make up and trip in the hole with 8-3/4" coring assembly. Core from 10,274' to 10,304'.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	11:30	5.50	10,271	CORE	Core 8 3/4" hole from 10,268' to 10,271'. 12K-21K WOB, 35 RPM, 17K-22K TORQ, 400 GPM, 0.2-1.9 fph. Core stopped advancing.	
11:30	16:30	5.00	10,271	TRPO	Trip out of the hole from 10,271' to 76'.	
16:30	18:30	2.00	10,271	BHAOP	Lay down core assembly.7.8' of core cut, 4.5' of core recovered.	
18:30	19:00	0.50	10,271	BHAOP	Make up 8-3/4" re-run TCI bit #26 and BHA #31.	
19:00	21:00	2.00	10,271	TRPI	Trip in hole from 77' to 4,830'. Fill pipe at 3,019'	
21:00	22:30	1.50	10,271	CUTDL	Slip and cut 110' of drill line.	
22:30	1:30	3.00	10,271	TRPI	Trip in the hole to 10,246' Fill pipe at 6,059', 9,013' & 10,246'.	
1:30	2:00	0.50	10,271	DRIL	Safety ream from 10,246' to 10,269'. Drill out stump from 10,269' to 10,272' and 2' of new hole to 10,274'.	
2:00	3:00	1.00	10,271	CIRC	Pump 50 bbl high visc sweep and circulate bottoms up.	
3:00	6:00	3.00	10,271	TRPO	Trip out of the hole from 10,274' to 5,074'. Coming out on different break.	

Management Summary

Core 8 3/4" hole from 10,268' to 10,271'. ROP stopped. Tripped out of the hole. Laid down core assembly.7.8' of core cut, 4.5' of core recovered. Made up 8-3/4" re-run TCI bit #26 and BHA #31.Tripped in hole from 77' to 4,830'. Slipped and cut 110' of drill line. Tripped in the hole to 10,246'. Safety reamed from 10,246' to 10,269'. Drilled out stump from 10,269' to 10,272' and 2' of new hole to 10,274'. Pumped 50 bbl high viscosity sweep and circulated bottoms up. Tripped out of the hole from 10,274' to 5,074'.

Comments

Fuel on hand 15752 gals.
Fuel used 1406 gals.
Total NPT to date 98.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
07-Jun-23 12:30 at Depth 10,271 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9.3	0.65		99.2			550								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Engineering - OTHER	2	---
HIB 19 - GALS	8	---	Lodging - OTHER	1	---
PAllets/Wraps - OTHER	1	---	Poly Vis - 50#SK	1	---
TORKease - GALS	6	---	TORKease L - GALS	12	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 53 **Report For 06:00 AM 08-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
26	2	SANJOAQ	EP4900	8.750	10271	2	0.5	10.0	14.0	30	85	17	8	600	1000	145	159	55	379
Jets: 24 24 24					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
27	1	CANAMER	CCI 913	8.750	10264	11	8.5	1.3	1.9	16	35	21	8	400	575	129	125	29	225
Jets: 12 12 12 12 12 12 12 12 12					**Out:** 10271		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:** N	**Brgs:**		**Gge:**		**Pull:** PR	

Comments: Core bit. Wear on nose cutters.

BHA - No. 31 - BIT, BS, XO, 30 HWDP = 924.24

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,268	10,271	0.5	1.9	13	21	35	35	17	21	400	400	600

Annular Velocity: **Drill Collars:** 355.7 **Drill Pipe:** 211.7

Comments: Core 8-3/4"

10,271	10,274	10.0	15.0	25	30	80	85	16	17	600	600	1,000

Annular Velocity: **Drill Collars:** 317.5 **Drill Pipe:** 317.5

Comments: Drill out core stmp and 2' of new hole.

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	255	**Pick Up:**	430	**Slack Off:**	185	**Drag Avg/Max:** 75 / 175
Hours on BHA:	**Since Inspection:**	107	**Total:**	107	**Jars:**		
Hours on Casing/Liner:	**Rotating:**	111.5 / 1	**Tripping:**	166.25 / 12	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**	**Equipment Usage (Hrs):**		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	53

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly cloudy	**Visibility:**	10
Air Temperature:	78 degF	**Bar. Pressure:**	1005
Wind Speed/Dir:	20 / SW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 54 **Report For 06:00 AM 09-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10274	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8102	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.95 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.95 / 74 **DOL:** 54

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	4 / 48	**Other:**	4 / 48	**Total:**	25 / 300

Safety Summary: No incidents or events reported. 54 days since LTI. Conducted Safety Meeting.

Current Operations: Waiting on dynamatic from Vernal.

Planned Operations: Replace dynamatic. Trip in the hole from 4,808' to bottom with 8-3/4" coring assembly. Core from 10,274' to 10,304'.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	9:30	3.50	10,274	TRPO	Trip out of the hole from 5,074' with BHA #31, cleanout run for coring. Break off bit and bit sub.	
9:30	11:00	1.50	10,274	CORE	Make up core assembly BHA #32.	
11:00	13:30	2.50	10,274	TRPI	Trip in the hole to 2,799' and fill pipe, trip in the hole to 4,985' and install rotating head.	
13:30	14:00	0.50	10,274	SERV	Service rig and top drive.	
14:00	14:30	0.50	10,274	TRPI	Trip in the hole to 5,534'.	
14:30	16:00	1.50	10,274	REPR	Bearing housing on dynamatic split apart. Wait on Frontier Drilling decision on how to proceed.	X
16:00	17:00	1.00	10,274	TRPO	Trip out of the hole to 4,808'. Inside the shoe.	
17:00	6:00	13.00	10,274	REPR	Waiting on dynamatic from Vernal. Rig down and prep dynamatic for removal. Rig down gas buster. Clean rig. Unload separator for flow testing.	X

Management Summary

Tripped out of the hole from 5,074' with BHA #31. Laid down bit and bit sub. Made up core assembly BHA #32. Tripped in the hole to 2,799' and filled pipe. Tripped in the hole to 5,534'. Bearing housing on dynamatic split apart. Tripped out of the hole to 4,808'. Waited on dynamatic from Vernal.

Comments

Fuel on hand 14690 gals.
Fuel used 1006 gals.
Total NPT to date 106.75 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
09-Jun-23 02:00 at Depth 10,270 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9.1	0.65		99.3			550								
08-Jun-23 14:00 Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9	0.65		99.3			550								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	HIB 19 - GALS	2	---
Lodging - OTHER	1	---	Poly Vis - 50#SK	2	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 54 **Report For 06:00 AM 09-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
26	2	SANJOAQ	EP4900	8.750	10271	2	0.5	0.0	0.0	30	85	1(	0	0	(				
Jets: 24 24 24					**Out:** 10274		**Grade:**	**Cutter:**	1 / 1	**Dull**	NO / NO		**Wear:**	**Brgs:** 1		**Gge:** 0		**Pull:** TD	
28	1	CANAMER	CCI-713	8.750	10274	0	0	0.0	0.0	0	0	(	8	270	10(	82	51	8	97
Jets: 14 14 14 14 14 14 14					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	

Comments: Core bit CCI-713, BHA

BHA - No. 32 - BIT, NBS, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**	**Slack Off:**	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:** 107		**Total:** 107	**Jars:**	
Hours on Casing/Liner:	**Rotating:** 111.5 / 1		**Tripping:** 172.75 / 12	☐ **Wear Bushing Installed**	

Rig Information

Equipment Problems: Bearing housing on Dynomatic is cracked. Bearing is making noise.

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**	**Equipment Usage (Hrs):**		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	54

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly Cloudy	**Visibility:**	10
Air Temperature:	77 degF	**Bar. Pressure:**	1008
Wind Speed/Dir:	15 / SSW	**Wind Gusts:**	20

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 55 **Report For 06:00 AM 10-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10275	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8103	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	1 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.95 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.95 / 74 **DOL:** 55

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	16 / 168	6 / 72	4 / 48	29 / 324

Safety Summary: No incidents or events reported. 55 days since LTI. Conducted Safety Meeting.

Current Operations: Coring 8-3/4" hole at 10,275'.

Planned Operations: Core 8-3/4" hole to 10,304'. Trip out of the hole.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	16:30	10.50	10,274	REPR	Wait on Dynamatic from Vernal, UT. Service and inspect drawworks.	X
16:30	21:30	5.00	10,274	REPR	Change out Dynamatic with Frontier Drilling and R.W. Jones Trucking crane.	X
21:30	3:15	5.75	10,274	TRPI	Trip in the hole with 8-3/4" coring assembly from 4,808' to 8,989'. Cool tools every 5 stands. Wash down from 8.989' to10,230'. Safety ream from 10,230' to 10,274'. Tag bottom. Pick up 10' and tag bottom again.	
3:15	5:00	1.75	10,274	CIRC	Circulate bottoms up. Drop ball and pump down.	
5:00	6:00	1.00	10,274	CORE	Core 8-3/4" hole from 10,274' to 10,275'.	

Management Summary

Waited on Dynamatic. Changed out Dynamatic. Tripped in the hole with 8-3/4" coring assembly from 4,808' to 8,989'. Cooled tools every 5 stands. Washed down from 8.989' to10,230'. Safety reamed from 10,230' to 10,274'. Tagged bottom. Circulated bottoms up. Dropped ball and pumped down.

Comments

Fuel on hand 13709 gals.
Fuel used 670 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
10-Jun-23 02:00 at Depth 10,274 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9.1	0.6		99.35			550								
09-Jun-23 11:30 Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9.4	0.6		99.35			550								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	2	---
HIB 19 - GALS	4	---	Lodging - OTHER	1	---

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32 | **Well Name: FORGE 16B(78)-32**

Field: FORGE | Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 55 | **Report For 06:00 AM 10-Jun-23**

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
28 1	CANAMER	CCI-713	8.750	10274	1	1	1.0	1.5	3	22	25	8	400	458	122	112	26	212

Jets: 14 14 14 14 14 14 14 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: Core bit CCI-713, BHA

BHA - No. 32 - BIT, NBS, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,274	10,275	1.0	1.0	3	5	20	25	25	26	400	400	458

Annular Velocity: Drill Collars: 355.7 **Drill Pipe:** 211.7

Comments: Coring

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 255 **Pick Up:** 450 **Slack Off:** 248 **Drag Avg/Max:** / 195

Hours on BHA: **Since Inspection:** 108 **Total:** 108 **Jars:**

Hours on Casing/Liner: **Rotating:** 112.5 / 1 **Tripping:** 178.75 / 12 ☐ **Wear Bushing Installed**

Rig Information

Equipment Problems: Waiting on replacement Dynamatic from Vernal, UT.

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 55

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly Clear	**Visibility:**	10
Air Temperature:	75 degF	**Bar. Pressure:**	1010
Wind Speed/Dir:	5 / SSW	**Wind Gusts:**	8

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 56 **Report For 06:00 AM 11-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10304	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8123	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	29 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.95 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.95 / 74 **DOL:** 56

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	4 / 48	**Other:**	1 / 12	**Total:**	22 / 264

Safety Summary: No incidents or events reported. 56 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping out of the hole at 8,330' with coring assembly # 7.

Planned Operations: Finish tripping out of the hole. Lay down core and coring assembly. Make up and trip in hole with 8-3/4" directional assembly. Drill ahead to next core point.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	22:00	16.00	10,290	CORE	Coring 8 3/4" hole from 10275' to 10290'. 5K-10K WOB, 30-50 RPM, 20k-23K TORQ, 365-380 GPM, 1.2 FPH	
22:00	4:30	6.50	10,304	CORE	Coring 8 3/4" hole from 10290' to 10304'. 16K-19K WOB, 50 RPM, 20k-23K TORQ, 380 GPM, 2.3 FPH.	
4:30	5:00	0.50	10,304	CIRC	Circulate partial bottoms up. Break off core. Verify core had broken off. Note: No overpull when breaking off core. 420K max over pull.	
5:00	6:00	1.00	10,304	TRPO	Trip out of the hole from 10,304' to 8,330'.	

Management Summary

Cored 8 3/4" hole from 10275' to 10304'. Cored 30' total. Circulated partial bottoms up. Broke off core. Verify core had broken off by slacking off to bottom and tagging no stump. Note: No over pull when breaking off core. Tripped out of the hole from 10,304' to 8,330'.

Comments

Fuel on hand 15229 gals.
Fuel used 1533 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
11-Jun-23 02:00 at Depth 10,274 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.25	9.4	0.6		99.4			550								
10-Jun-23 13:00 at Depth 10,283 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.2	9.5	0.55		99.4			500								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	2	---
HIB 19 - GALS	4	---	Lodging - OTHER	1	---
TORKease - GALS	3	---	TORKease Concentrate - GALS	16	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 56 **Report For 06:00 AM** 11-Jun-23

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
28	1	CANAMER	CCI-713	8.750	10274	30	24	1.2	5.0	15	40	22	8	380	470	116	101	22	192

Jets: 14 14 14 14 14 14 14 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

Comments: Core bit CCI-713, BHA

BHA - No. 32 - BIT, NBS, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,275	10,290	1.5	2.8	8	10	35	50	21	23	365	385	520

Annular Velocity: Drill Collars: 346.8 **Drill Pipe:** 201.1

Comments: Coring

10,290	10,304	1.5	5.0	19	23	50	50	22	23	380	380	512

Annular Velocity: Drill Collars: 361.0 **Drill Pipe:** 201.1

Comments: Coring

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 255	**Pick Up:** 420	**Slack Off:** 185	**Drag Avg/Max:** / 165			
Hours on BHA:	**Since Inspection:** 131	**Total:** 131	**Jars:**				
Hours on Casing/Liner:	**Rotating:** 135.5 / 1	**Tripping:** 179.75 / 12	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 24 (Solids Removal)		**Centrifuge 2:** 24 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew. Securing loads.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 56

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:		**Visibility:** 10	
Air Temperature: 77 degF		**Bar. Pressure:** 1007	
Wind Speed/Dir: 6 / SW		**Wind Gusts:**	

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 57 **Report For 06:00 AM 12-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10430	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ --- / ---
Vertical Depth (ft):	8162	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	126 / 0.75	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	168.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.98 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.98 / 74 **DOL:** 57

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	4 / 48	**Other:**	2 / 24	**Total:**	23 / 276

Safety Summary: No incidents or events reported. 57 days since LTI. Conducted Safety Meeting.

Current Operations: Picking up core barrels.

Planned Operations: Trip in the hole with core assembly #8, BHA #34, 9 blade and core from 10,430' to 10,460'.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	10:30	4.50	10,304	TRPO	Trip out of the hole with core assembly, BHA #32 from 8,330' to 76'.	
10:30	12:00	1.50	10,304	BHAOP	Lay down core assembly, break off bit. All three stabilizers measured 8 1/4" diameter. 30' of core cut, 27.91' of core recovered.	
12:00	13:30	1.50	10,304	BHAOP	Pick up BHA #33 consisting of new TKC 63, 8-3/4" bit, 8 1/2" NB spiral stabilizer, motor and FG roller reamer.	
13:30	15:00	1.50	10,304	TRPI	Trip in the hole from 63' to 4,800'.	
15:00	15:30	0.50	10,304	SERV	Service rig and top drive.	
15:30	16:00	0.50	10,304	TRPI	Trip in the hole from 4,800' to 6,026'.	
16:00	16:30	0.50	10,304	CIRC	Circulate to cool motor at 6,026'.	
16:30	20:45	4.25	10,304	TRPI	Trip in hole from 6,026' to 10,304', staging in to cool motor and performing torque and drag values.	
20:45	21:30	0.75	10,430	DRIL	Drill 8-3/4" hole from 10,304' to 10,430'. WOB test at 40K, 45K and 50K with 60 RPM. RPM test at 60 and 70. GPM 650. TORQ 23-27K. ROP 250-400 FT/HR	
21:30	22:30	1.00	10,430	CIRC	Pump high visc sweep and circulate bottoms up.	
22:30	4:00	5.50	10,430	TRPO	Trip out of the hole from 10,430' to 64' performing torque and drag values.	
4:00	5:00	1.00	10,430	BHAOP	Lay down8-3/4" PDC bit and BHA.	
5:00	6:00	1.00	10,430	BHAOP	PJSM with Canamera and rig personnel. Make up 8-3/4" core bit. Core bit #8 and BHA #34.	

Management Summary

Tripped out of the hole. Laid down core and coring assembly. 30' of core cut, 27.91' of core recovered. Picked up BHA #33 consisting of new TKC 63, 8-3/4" bit and BHA. Trip in the hole from 64' to 6,026'. Staged in the hole from 6,026' to 10,304' to cool mud motor. Drilled 8-3/4" hole from 10,304' to 10,430'. Circulated bottoms up.Tripped out of the hole from 10,430'. Laid down bit and BHA. Made up 8-3/4" 9 blade core bit w/ sensor and BHA #34. Last survey at 10,165 MD, 8,054' TVD, 65.97° AZI, 103.6° AZI.

Comments

Fuel on hand 10843 gals.
Fuel used 1333 gals.
Total NPT to date 120.25 HR.
No H2S today.
Last survey at 10,165 MD, 8,054' TVD, 65.97° AZI, 103.6° AZI.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 57 **Report For 06:00 AM 12-Jun-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
11-Jun-23 12:30 at Depth 10,296 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.41	27				0.2	9.5	0.55		99.45			500								
11-Jun-23 14:00 at Depth 10,304 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.4	0.6		99.4			500								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Corrosion rings - OTHER	1	---	Defoam 14 - GALS	3	---
Engineering - OTHER	2	---	HIB 19 - GALS	4	---
Lodging - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
28	1	CANAMER	CCI-713	8.750	10274	30	24	0.0	0.0	0	0		8	0					
Jets: 14 14 14 14 14 14 14				**Out:** 10304		**Grade:**	**Cutter:**	/		**Dull**	CT / WT		**Wear:** A		**Brgs:**		**Gge:**		**Pull:** TD	
Comments: Core bit CCI-713, BHA. Some chip cutters.																			
29	1	NOV	TKC 63	8.750	10304	126	0.5	252.0	400.0	45	200	2	8	650	270	248	463	176	702
Jets: 13 13 13 14 14 14				**Out:** 10430		**Grade:**	**Cutter:**	1 / 1		**Dull**	BT / CT		**Wear:** A		**Brgs:**		**Gge:** 0		**Pull:** TD	
Comments: New bit technology 3 chip cutters and 1 broken cutter.																			

BHA - No. 33 - BIT, BS, NBS, MMTR, RR, OTHER, XO, 30 HWDP = 976.88

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,304	10,430	330.0	400.0	45	50	200	210	25	2	650	650	2,700

Annular Velocity: **Drill Collars:** 617.6 **Drill Pipe:** 344.0

Comments: With mud motor.

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	255	**Pick Up:**	430	**Slack Off:**	170	**Drag Avg/Max:** / 175
Hours on BHA:	**Since Inspection:**	131.5	**Total:**	131.5	**Jars:**		
Hours on Casing/Liner:	**Rotating:**	136 / 1	**Tripping:**	/	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	3	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crew. PJSM with Canamera and rig personnel.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 57

☐ **BOP Test** ☐ **Crownamatic Check**

Report No: 57

Report For 06:00 AM 12-Jun-23

Weather Information

Sky Condition:	Mostly cloudy	**Visibility:**	10	
Air Temperature:	77 degF	**Bar. Pressure:**	1009	
Wind Speed/Dir:	5 / S	**Wind Gusts:**		

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 58 **Report For 06:00 AM 13-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10447	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ --- / ---
Vertical Depth (ft):	8170	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	17 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.98 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.98 / 74 **DOL:** 58

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	2 / 24	**Total:**	25 / 300

Safety Summary: No incidents or events reported. 58 days since LTI. Conducted Safety Meeting.

Current Operations: Coring 8-3/4" hole at 10,447'.

Planned Operations: Finish coring 8-3/4" hole to 10,460'. Trip out of the hole.

Toolpusher: Steve King, Jason Postma

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	10,430	BHAOP	Finish making up Coring BHA #34.	
7:00	9:00	2.00	10,430	TRPI	Trip in the hole from 76' to 4,800'.	
9:00	9:30	0.50	10,430	SERV	Service rig and top drive while circulating hole.	
9:30	14:30	5.00	10,430	TRPI	Trip in the hole from 4,800' to 10,407', circulating and washing down as per staging in procedure to cool core barrels. Pick up 460K, Slack off 170K.	
14:30	15:00	0.50	10,430	WASH	Wash down last stand. Tag bottom at 10,430'.	
15:00	16:30	1.50	10,430	CIRC	Circulate bottoms up at 10,427'.	
16:30	17:00	0.50	10,430	CIRC	Drop ball and circulate down to seat at 250 gpm.	
17:00	18:00	1.00	10,432	CORE	Coring 8 3/4" hole from 10,430' to 10432'. 4K-5.5K WOB, 40 RPM, 25K-26K TORQ, 400 GPM, 2 FPH.	
18:00	21:00	3.00	10,434	CORE	Coring 8 3/4" hole from 10,432' to 10434'. 6K-9K WOB, 40 RPM, 25K-26K TORQ, 400 GPM, .6 FPH.	
21:00	6:00	9.00	10,447	CORE	Coring 8 3/4" hole from 10,434' to 10,447'. 14K-16K WOB, 40 RPM, 22K-24K TORQ, 400 GPM, 1.5 FPH.	

Management Summary

Finished making up Coring BHA #34.Tripped in the hole to 4,800'. Staged in hole to 10,430', circulating and washing down to cool core barrels. Tagged bottom at 10,430'. Circulated bottoms up. Dropped ball and pumped down. Coring 8 3/4" hole from 10,430' to 10,447'.

Comments

Fuel on hand 17409 gals.
Fuel used 968 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
12-Jun-23 22:00 at Depth 10,427 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.4	0.65					500								
12-Jun-23 14:00 at Depth 10,430 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.25	0.65					550								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 58 **Report For 06:00 AM** 13-Jun-23

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	4	---	HIB 19 - GALS	4	---
Lodging - OTHER	1	---	Poly Vis - 50#SK	2	---
TORKease Concentrate - GALS	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
30	1	CANAMER	CCI-911	8.750	10430	17	13	1.3	4.0	15	40	24	8	400	800	129	125	29	225

Jets: 12 12 12 12 12 12 12 12 12 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 34 - BIT, NBS, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,430	10,432	2.0	4.0	4	6	40	40	25	26	400	400	650

Annular Velocity: Drill Collars: 355.7 **Drill Pipe:** 211.7

Comments: Formation changing from (clay ?) to granodiorite and back.

10,432	10,447	0.5	3.5	15	16	40	40	22	24	380	385	755

Annular Velocity: Drill Collars: 337.9 **Drill Pipe:** 201.1

Comments: Mostly clay

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 260	**Pick Up:** 460	**Slack Off:** 170	**Drag Avg/Max:** / 200			
Hours on BHA:	**Since Inspection:** 144.5	**Total:** 144.5	**Jars:** 0				
Hours on Casing/Liner:	**Rotating:** 149 / 0	**Tripping:** 202.75 / 0	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	45	Two Pre-tour safety meetings held daily with crew. PJSM with Canamera

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 58

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Mostly clear	**Visibility:**	10
Air Temperature:	67 degF	**Bar. Pressure:**	1010
Wind Speed/Dir:	8 / WSW	**Wind Gusts:**	10

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 59 **Report For 06:00 AM 14-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10460	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8180	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	13 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.98 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.98 / 74 **DOL:** 59

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	5 / 60	**Other:**	2 / 24	**Total:**	24 / 288

Safety Summary: No incidents or events reported. 59 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping in the hole with 8-3/4" clean out assembly at 10,343'.

Planned Operations: Trip in hole from 10,343' to bottom. Drill out core stump and 2' of new hole to10,462'. Pump sweep and clean hole. Trip out of the hole for coring assembly.

Toolpusher: Steve King, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Randy Baldwin **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	12:00	6.00	10,454	CORE	Coring 8 3/4" hole from 10,447' to 10,454'. 16K-20K WOB, 40 RPM, 22K-24K TORQ, 360 GPM, 1.3 FPH.	
12:00	15:45	3.75	10,460	CORE	Coring 8 3*4" hole from 10,454' TO 10,460'. 16-20K 20-21k WOB, 40 RPM 22-24K TORQ, 360 GPM, 1 TO 1.6 FPH	
15:45	16:30	0.75	10,460	CORE	Circulate bottom of hole and let weight drill off. Pick up to break off core.	
16:30	22:00	5.50	10,460	TRPO	Trip out of the hole from 10,460' to 77' with coring BHA #34.	
22:00	23:30	1.50	10,460	BHAOP	Lay down core assembly. Break off bit. All 9 nozzles partially plugged. Top stabilizers measured 8 -1/8" diameter, middle and near bit stabilizers measured 8-1/4". 30' of core cut, 25.7' of core recovered.	
23:30	0:00	0.50	10,460	BHAOP	Made up 8-3/4" re-run TCI bit #26 and BHA #35 for cleanout.	
0:00	1:30	1.50	10,460	TRPI	Trip in the hole to 4,933'. Fill pipe.	
1:30	2:30	1.00	10,460	CUTDL	Slip and cut 110' of drill line.	
2:30	6:00	3.50	10,460	TRPI	Trip in the hole from 4,933' to10,343'. performing torque and drag values.	

Management Summary

Cored 8-3/4" hole from 10,447 to10,460 FT. Circulated. Broke off core. Tripped out of the hole. Laid down core and core assembly. Broke off bit. All 9 nozzles partially plugged. 30' of core cut, 25.7' of core recovered. Made up 8-3/4" re-run TCI bit #26 and BHA #35. Tripped in the hole to 10,343'.

Comments

Fuel on hand 16016 gals.
Fuel used 1399 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
13-Jun-23 22:00 at Depth 10,435 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.3	0.65					500								
13-Jun-23 14:00 at Depth 10,457 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.1	0.65					450								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	3	---	Lodging - OTHER	1	---
TORKease Concentrate - GALS	6	---			

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 59 **Report For 06:00 AM 14-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
26	3	SANJOAQ	EP4900	8.750	10460	0	0	0.0	0.0	0	0	0	8	350	325	85	54	11	129
Jets: 24 24 24					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**	**Gge:**		**Pull:**		
30	1	CANAMER	CCI-911	8.750	10430	30	22.75	1.3	2.4	18	40	2	8	375	950	121	110	24	197
Jets: 12 12 12 12 12 12 12 12 12					**Out:** 10460		**Grade:**	**Cutter:**	8 / 2	**Dull**	BT / WT		**Wear:**	**Brgs:**	**Gge:** 0		**Pull:** TD		

Comments: Inside cutters damaged. All nozzles plugged.

BHA - No. 35 - BIT, BS, XO, 30 HWDP = 924.24

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,447	10,460	1.4	2.4	18	21	40	40	23	24	375	400	890

Annular Velocity: **Drill Collars:** 333.5 **Drill Pipe:** 198.5

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 260 **Pick Up:** 460 **Slack Off:** 170 **Drag Avg/Max:** /

Hours on BHA: **Since Inspection:** 154.25 **Total:** 154.25 **Jars:** 0

Hours on Casing/Liner: **Rotating:** 158.75 / 0 **Tripping:** 213.25 / 0 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew. PJSM with Canamera

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 59

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	mostly clear	**Visibility:**	10
Air Temperature:	74 degF	**Bar. Pressure:**	1006
Wind Speed/Dir:	8 / SSW	**Wind Gusts:**	10

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 60 **Report For 06:00 AM 15-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10470	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ --- / ---
Vertical Depth (ft):	8180	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	10 / 0.25	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):	40.0					**Well Cost ($):**	---

Days (actual / plan): Drilling 5.99 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.99 / 74 **DOL:** 60

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	5 / 60	**Other:**	2 / 24	**Total:**	24 / 288

Safety Summary: No incidents or events reported. 60 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Coring 8-3/4" hole at 10,470'.

Planned Operations: Core 8-3/4" hole, trip out of the hole.

Toolpusher: Steve King, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	6:45	0.75	10,460	TRPI	Trip in the hole from 10,343' to 10,460'.	
6:45	7:00	0.25	10,462	DRIL	Drill 2' of new hole from 10,460' to 10,462'.	
7:00	8:30	1.50	10,462	CIRC	Pump 70 bbl high viscosity sweep and circulate out of hole.	
8:30	13:30	5.00	10,462	TRPO	Trip out of the hole from 10,430' to 64' performing torque and drag values.	
13:30	14:30	1.00	10,462	BHAOP	Lay down 8-3/4" TCI bit and BHA, BHA #35.	
14:30	16:00	1.50	10,462	BHAOP	PJSM with Canamera and rig personnel. Make up 8-3/4" core assembly. Core bit #9 and BHA #36.	
16:00	17:30	1.50	10,462	TRPI	Trip in the hole from 76' to 4,800'.	
17:30	18:00	0.50	10,462	SERV	Service rig and top drive while circulating hole.	
18:00	22:45	4.75	10,462	TRPI	Trip in the hole from 4,800' to 10,462', circulating and washing down as per staging in procedure to cool core barrels. Pick up 460K, Slack off 170K.	
22:45	23:30	0.75	10,462	CIRC	Circulate bottoms up at 10,462'.	
23:30	0:30	1.00	10,462	CIRC	Drop ball and circulate down to seat at 250 gpm.	
0:30	6:00	5.50	10,470	CORE	Coring 8 3/4" hole from 10,462' to 10,470'. 3K-9K WOB, 45 RPM, 25K-26K TORQ, 430 GPM, 2 FPH.	

Management Summary

Tripped in the hole from 10,343' to 10,460'. Drilled 2' of new hole from 10,460' to 10,462'. Pumped 70 bbl high viscosity sweep and circulated out of the hole. Tripped out of the hole from 10,430' to 64' performing torque and drag values. Laid down 8-3/4" TCI bit and BHA, BHA #35. Held safety meeting with Canamera and rig personnel. Made up 8-3/4" core assembly, BHA #36. Tripped in the hole from 76' to 4,800'. Serviced rig and top drive while circulating hole. Tripped in the hole from 4,800' to 10,462', circulating and washing down as per staging in procedure to cool core barrels. Circulated bottoms up at 10,462'. Dropped ball and circulated down to seat at 250 gpm. Core 8 ¾" hole from 10,462' to 10,470'.

Comments

Fuel on hand 14,584 gals.
Fuel used 1,432 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
15-Jun-23 03:00 at Depth 10,460 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.25	9	0.65					450								
14-Jun-23 12:00 at Depth 10,462 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27				0.25	8.9	0.65					450								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 60 **Report For 06:00 AM 15-Jun-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	2	---	HIB 19 - GALS	2	---
Lodging - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
26	3	SANJOAQ	EP4900	8.750	10460	2	0.25	8.0	10.0	10	80	2	8	400	550	97	71	16	168
Jets: 24 24 24					**Out:** 10462		**Grade:**	**Cutter:**	1 / 1	**Dull**	NO / NO		**Wear:**	**Brgs:** 1		**Gge:** 0		**Pull:** TD	
31	1	CANAMER	CCI	8.750	10462	8	5.5	1.5	2.5	3	45	2	8	430	585	131	129	32	245
Jets: 14 14 14 14 14 14 14					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	

BHA - No. 36 - BIT, NBS, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,460	10,462	15.0		27		78		19		400		450
Annular Velocity:	**Drill Collars:**	128.1	**Drill Pipe:**									
10,462	10,470	1.0	2.4	4	6	45	45	25	26	430	430	584
Annular Velocity:	**Drill Collars:**	137.7	**Drill Pipe:**	423.3								

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	265	**Pick Up:**	460	**Slack Off:**	170	**Drag Avg/Max:** /
Hours on BHA:	**Since Inspection:**	159.75	**Total:**	159.75	**Jars:**	5.5	
Hours on Casing/Liner:	**Rotating:**	164.25 / 5.5	**Tripping:**	221.25 / 8	☑ **Wear Bushing Installed**		

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	60
☐ **BOP Test**	☑ **Crownamatic Check**						

Weather Information

Sky Condition:	Mostly cloudy	**Visibility:**	10
Air Temperature:	76 degF	**Bar. Pressure:**	1007
Wind Speed/Dir:	11 / SW	**Wind Gusts:**	15

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 61 **Report For 06:00 AM 16-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10493	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8180	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	23 / 0.0	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 5.99 / 22, Flat 0 / 0, Complete 0 / 52, Total 5.99 / 74 **DOL:** 61

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	2 / 24	**Total:**	25 / 300

Safety Summary: No incidents or events reported. 61 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Laying out reaming assembly.

Planned Operations: Make up 9 1/2" reaming assembly, trip in the hole to 10,250', Open hole from 10,250' to 10,493'. Drill 10' of new formation. Trip out of the hole from 10,503'.

Toolpusher: Steve King, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	23:00	17.00	10,493	CORE	Coring 8 3/4" hole from 10,470' to 10,493'. 9K-14K WOB, 35 RPM, 23K-25K TORQ, 380 GPM, 1.7 FPH.	
23:00	23:45	0.75	10,493	CIRC	Circulate partial bottoms up. Break off core. Verify core had broken off. Note: 450K overpull when breaking off core. 500K max overpull.	
23:45	4:00	4.25	10,493	TRPO	Trip out of the hole from 10,493' to BHA.	
4:00	5:30	1.50	10,493	BHAOP	Lay down core assembly. Break off bit. Top stabilizers measured 8 -1/8" diameter, middle and near bit stabilizers measured 8-1/4". 31' of core cut, 27' of core recovered.	
5:30	6:00	0.50	10,493	SERV	Lay out reaming assembly and prep to pick up.	

Management Summary

Cored 8 3/4" hole from 10,470' to 10,493'. Circulated. Broke off core. Tripped out of the hole. Laid down core and core assembly, 31' of core cut, 27' of core recovered. Serviced rig.

Comments

Fuel on hand 12,701 gals.
Fuel used 1,883 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
15-Jun-23 13:00 at Depth 10,479 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.42	27			100	0.25	9.3	0.65					400								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Engineering - OTHER	2	---
HIB 19 - GALS	1	---	Lodging - OTHER	1	---
TORKease Concentrate - GALS	5	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
31	1	CANAMER	CCI	8.750	10462	31	22.5	1.4	2.2	18	35	26	8	375	450	114	98	21	186

Jets: 14 14 14 14 14 14 14 **Out:** **Grade:** **Cutter:** / **Dull** / **Wear:** **Brgs:** **G** **e:** **Pull:**

BHA - No. 36 - BIT, NBS, CORE, STAB, CORE, STAB, OTHER, JAR, XO, 30 HWDP = 992.79

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 61 **Report For 06:00 AM 16-Jun-23**

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	(psi)
10,470	10,493	1.7	2.5	14	14	35	45	24	26	380	425	480

Annular Velocity: **Drill Collars:** 121.6 **Drill Pipe:** 374.1

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 265	**Pick Up:** 470	**Slack Off:** 170	**Drag Avg/Max:** 125 / 160			
Hours on BHA:	**Since Inspection:** 176.75	**Total:** 176.75	**Jars:** 22.5				
Hours on Casing/Liner:	**Rotating:** 181.25 / 0	**Tripping:** 228.25 / 0	☑ **Wear Bushing Installed**				

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	61

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Cloudy	**Visibility:**	10
Air Temperature:	65 degF	**Bar. Pressure:**	1014
Wind Speed/Dir:	14 / SW	**Wind Gusts:**	20

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 62 **Report For 06:00 AM 17-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10503	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ ---
Vertical Depth (ft):	8180	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		---	---
Hole Made (ft) / Hrs:	10 / 0.75	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:**	---
Average ROP (ft/hr):	13.33					**Well Cost ($):**	---

Days (actual / plan): Drilling 6.02 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.02 / 74 **DOL:** 62

Pers/Hrs: **Operator:** 3 / 36 **Contractor:** 14 / 168 **Service:** 6 / 72 **Other:** 4 / 48 **Total:** 27 / 324

Safety Summary: No incidents or events reported. 62 days since LTI. Conducted Safety Meeting.

Current Operations: Tripping in the hole with 9 1/2" assembly at 9,000'.

Planned Operations: Trip in the hole to 10,503', drill 9 1/2" hole from 10,503' to 10,947', pump high vis sweep, circulate hole clean, trip out of the hole from 10,947' to surface, rig up SLB logging.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	10,493	BHAOP	Make up 9 1/2" TCI bit with motor and roller reamers.	
7:00	14:30	7.50	10,493	TRPI	Trip in hole from 62' to 10,250' staging in to cool motor. Wash last 6 stands to bottom.	
14:30	16:30	2.00	10,493	REAM	Ream 8 3/4" hole to 9 1/2" hole from 10,250' to 10,493'. 10K WOB, 35 RPM, 650 GPM.	
16:30	17:15	0.75	10,503	DRIL	Drill 9 1/2" hole from 10,493' to 10,503'.	
17:15	17:30	0.25	10,503	CIRC	Circulate and prep for trip.	
17:30	22:00	4.50	10,503	TRPO	Trip out of the hole from 10,503' to BHA.	
22:00	23:00	1.00	10,503	BHAOP	Lay out 9 1/2" reaming assembly.	
23:00	0:30	1.50	10,503	BHAOP	Make up 9 1/2" drilling assembly with Baker 506 bit. Shallow test tools, good test.	
0:30	6:00	5.50	10,503	TRPI	Trip in the hole from 164' to 9,000' staging in to cool motor and tools as needed.	

Management Summary

Made up 9 1/2" clean out assembly, tripped in the hole from 62' to 10,250' staging in as needed to cool motor, opened 8 3/4" hole to 9 1/2" hole from 10,250' to 10,493', Drilled 9 1/2" hole from 10,493' to 10,503', Circulated and prepared to trip out of the hole, tripped out of the hole from 10,503' to BHA, laid out 9 1/2" reaming assembly, made up 9 1/2" drilling assembly with Baker 506 bit, Tripped in the hole from 164' to 10,503' staging in as needed to cool motor and tools.

Comments

Fuel on hand 11,418 gals.
Fuel used 1,283 gals.
Total NPT to date 120.25 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
16-Jun-23 22:00 at Depth 10,490 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9.5	0.65		99			400								
16-Jun-23 14:00 at Depth 10,503 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	27					9.4	0.65		99			350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	1	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	TORKease Concentrate - GALS	2	---

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 62 **Report For 06:00 AM 17-Jun-23**

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
23	2	SANJOAQ	XLS30DX	9.500	10493	10	0.75	13.3	20.0	20	40	25	8	650	1750	157	186	71	445
Jets: 24 24 24					**Out:** 10503		**Grade:**	**Cutter:**	1 / 1	**Dull**	WT / NO		**Wear:** A		**Brgs:** 1	**Gge:** 0		**Pull:** BHA	
31	1	CANAMER	CCI	8.750	10462	31	22.5	1.4		14	35		8	375	450	114	98	21	186
Jets: 14 14 14 14 14 14 14					**Out:** 10493		**Grade:**	**Cutter:**	5 / 2	**Dull**	WT / BT		**Wear:** N		**Brgs:** X	**Gge:** 0		**Pull:** TD	
32	1	BAKER	DD506V	9.500	10503														
Jets: 15 15 15 18 18 18					**Out:**		**Grade:**	**Cutter:**	/	**Dull**	/		**Wear:**		**Brgs:**	**Gge:**		**Pull:**	

BHA - No. 38 - BIT, MMTR, RR, PC, DCM, MWD, DCM, 4 OTHER, XO, 30 HWDP = 1068.15

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,493	10,503	25.0	35.0	15	20	35	40	22	23	655		1,706

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**		**Pick Up:**		**Slack Off:**	**Drag Avg/Max:**	/
Hours on BHA:	**Since Inspection:**	179.5	**Total:**	179.5	**Jars:** 22.5		
Hours on Casing/Liner:	**Rotating:**	184 / 2.75	**Tripping:**	236.25 / 8	☑ **Wear Bushing Installed**		

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	170	170	200	170
Shaker No 2:	170	170	200	170
Shaker No 3:	170	170	200	170

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 62

Accident Description: None to report.

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast	**Visibility:**	10
Air Temperature:	57 degF	**Bar. Pressure:**	1017
Wind Speed/Dir:	5 / NNW	**Wind Gusts:**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 63 **Report For 06:00 AM 18-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	444 / 3.75	**Next BOP Test:**	19-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):	118.4					**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 63

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	6 / 72	**Total:**	29 / 348

Safety Summary: No incidents or events reported. 63 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Logging out of the hole with UBI at 5,800'.

Planned Operations: Continue logging with UBI to 4,836', pull out of the hole to surface, rig down SLB, make up ThruBit and trip in the hole, log well.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	9:00	3.00	10,503	TRPI	Trip in the hole from 9,000' to 10,503' staging in to cool motor and tools and acquire surveys as needed.	
9:00	11:00	2.00	10,680	DRIL	Rotate/slide from 10,503' to 10,680' performing step tests, 55-80 RPM, 40-65 WOB, 600-650 GPM. Slide 40' - 23%, Rotate 137' - 77%	
11:00	12:15	1.25	10,680	REPR	Pick up to make connection and rig blacked out. All generators went down. Restart generators and get rig back on line. Drill 10' to 10,690' and drawworks and pumps went offline.	X
12:15	14:00	1.75	10,947	DRIL	Rotate from 10,690' to 10,947'. 55K WOB, 80 RPM, 28,5K TORQ, 650 GPM, 200 FPH. Pump mud sweep at 10,787'. ROP decreased from 280 FPH to 180 FPH while sweep was going across the bit, then picked back up. Last survey @ 10,947" MD, 10,862' Survey Depth, 64.9° INC, 102.17° AZI, 8,356.66' TVD.	
14:00	18:30	4.50	10,947	CIRC	Build and pump a high viscosity sweep to clean hole. Circulate out of hole. Continue circulating to cool hole prior to logs.	
18:30	19:30	1.00	10,947	REAM	Backream out of the hole from 10,947' to 10,435' max overpull 525k.	
19:30	23:30	4.00	10,947	TRPO	Trip out of the hole from 10,435' to BHA.	
23:30	0:30	1.00	10,947	BHAOP	Lay out 9 1/2" dir assembly.	
0:30	1:30	1.00	10,947	RIGU	Hold safety meeting, rig up SLB Wireline	
1:30	6:00	4.50	10,947	LOG	Make up tools, run in hole with UBI, took weight at 9,400', unable to work tool past 9,400'. log well with UBI from 9,400' to 5,800', logged at 1,000 ft/hr. Max temp on first run 280 deg f.	

Management Summary

Tripped in the hole from 9,000' to 10,503', staging in to cool tools as needed, drilled 9 1/2" hole section from 10,503' to 10,680', rig blacked out while picking up off bottom, restarted generators to get rig back online, drilled 9 1/2" hole section from 10,680' to 10,947', pumped high viscosity sweeps and circulated to cool wellbore prior to logs, Backreamed out of the hole from 10,947' to 10,435', Tripped out of the hole from 10,435' to BHA, Laid out 9 1/2" dir assembly, Held safety meeting and rigged up SLB Wireline, Made up tools and ran in the hole with UBI, took weight at 9,400', logged well with UBI from 9,400' to 5,800'.

Comments

Fuel on hand 9,796 gals.
Fuel used 1,622 gals.
Total NPT to date 121.50 HR.
No H2S today.
Last survey @ 10,947" MD, 10,862' Survey Depth, 64.9° INC, 102.17° AZI, 8,356.66' TVD.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 63 **Report For 06:00 AM 18-Jun-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
17-Jun-23 10:00 at Depth 10,657 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40						9.6						400								
18-Jun-23 05:00 at Depth 10,503 ft Other Location, Type: Low Solids Non-Dispersed																				
8.60	38	15	8	8.8	1	9	2.5		97.5			400				5	8	110	125	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
API Gel - 100#SK	7	---	Caustic Soda - 50#SK	1	---
DMA/SPA - 50#SK	2	---	Engineering - OTHER	2	---
HIB 19 - GALS	2	---	Lodging - OTHER	1	---
Poly Vis - 50#SK	2	---	TORKease Concentrate - GALS	2	---

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
32 1	BAKER	DD506V	9.500	10503	444	3.12	142.3	306.0	55	75	2	8	650	285	165	205	7	467

Jets: 15 15 15 18 18 18 **Out:** 10947 **Grade: Cutter:** 2 / 1 **Dull** BT / WT **Wear:** S **gs:** X **Gge:** 1 **Pull:** TD

BHA - No. 38 - BIT, MMTR, RR, PC, DCM, MWD, DCM, 4 OTHER, XO, 30 HWDP = 1068.15

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
10,503	10,947	142.0	306.0	55	65	75	80	27	3	650	700	2,850

Annular Velocity: Drill Collars: 176.5 **Drill Pipe:** 265.5

Miscellaneous Drilling Parameters

Hook Loads (lbs): Off Bottom Rotate: 278 **Pick Up:** 500 **Slack Off:** 190 **Drag Avg/Max:** 100 / 125

Hours on BHA: Since Inspection: 183.25 **Total:** 183.25 **Jars:** 22.5

Hours on Casing/Liner: Rotating: 187.75 / 6.5 **Tripping:** 244.25 / 16 ☑ **Wear Bushing Installed**

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	170	170	200	170	Centrifuge 1: 12 (Solids Removal)		Centrifuge 2: 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	3	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 63

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	78 degF	**Bar. Pressure:**	1009
Wind Speed/Dir:	15 / S	**Wind Gusts:**	20

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 64 **Report For 06:00 AM 19-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	**Actual ($)**
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / ---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / ---	---
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:** / ---	---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 64

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	6 / 72	**Total:**	29 / 348

Safety Summary: No incidents or events reported. 64 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Pulling out of the hole with ThruBit tools at 8,200'.

Planned Operations: Continue pulling out of the hole with ThruBit tools to surface. Rig up and run baseline temp tool, rig down same, rig up and run UBI from casing shoe to surface.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	10:00	4.00	10,947	LOG	Logging w/ SLB - running UBI log from 5,200' to intermediate casing shoe at 4,837'. Pull tool to surface. Break down UBI. Stage and make up bit, bit sub, and hangoff sub for thru bit logging.	
10:00	11:15	1.25	10,947	TRPI	Trip in hole to 3,677'.	
11:15	12:00	0.75	10,947	SUSOPS	Shut down to reroute service loop in derrick due to high winds.	
12:00	16:30	4.50	10,947	TRPI	Fill pipe, TIH to 5,981', fill pipe, TIH to 9,042', fill pipe, TIH to 10,940'.	
16:30	22:15	5.75	10,947	CIRC	Circulate and cool wellbore prior to running in logging tools. Hold safety meeting with SLB on rigging up and operations while circulating.	
22:15	22:30	0.25	10,947	TRPO	Pump out of the hole from 10,940' to 10,727'.	
22:30	3:00	4.50	10,947	LOG	Make up surface pressure equipment to drill string, pick up logging tools (Triple-Combo, Dipole sonic, Electronic imager) on wireline and run in drill string to 5,632', pump down tools from 5,632' to 10,727' (bottom of tools at 10,905') 100-650 gpm, disconnect from the logging tool at Hangoff sub, pull out of hole with wireline. Max temp observed 260 deg f.	
3:00	4:30	1.50	10,947	LOG	Pump out of the hole from 10,727' to 9,500', 450-500 gpm, 1800 ft/hr.	
4:30	5:00	0.50	10,947	LOG	Pull out on elevators from 9,500' to 9,000' at 1,800 ft/hr.	
5:00	5:30	0.50	10,947	LOG	Pump out of the hole from 9,000' to 8,700' 450-500 gpm, 1800 ft/hr.	
5:30	6:00	0.50	10,947	LOG	Pull out on elevators from 8,700' to 8,200' at 1,800 ft/hr.	

Management Summary

Ran UBI log from 5,200' to intermediate casing shoe at 4,837'. Pulled tool to surface. Broke down UBI and laid out same. Staged out and picked up bit, bit sub, and hangoff sub for ThruBit logging. Tripped in hole to 3,677'. Shut down to reroute service loop in derrick due to high winds. Tripped in the hole from 3,677' to 10,940'. Circulated and cooled wellbore prior to running in logging tools. Pumped out of the hole from 10,940' to 10,727'. Made up surface pressure equipment to drill string. Picked up logging tools. Ran in the hole with ThruBit tools to hangoff sub. Released from logging tools and pulled wireline out of the hole to surface. Pumped out of the hole with ThruBit tools from 10,727' to 9,500' at 1800 ft/hr. Pulled out on elevators from 9,500' to 9,000' at 1,800 ft/hr. Pumped out of the hole from 9,000' to 8,700' at 1,800 ft/hr. Pulled out on elevators from 8,700' to 8,200' at 1,800 ft/hr.

Comments

Fuel on hand 16,040 gals.
Fuel used 1,256 gals.
Fuel delivered 7,500 gals
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 64 **Report For 06:00 AM 19-Jun-23**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
19-Jun-23 05:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.4	0.65					350								
18-Jun-23 14:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.42	27				0.25	9.3	0.65					350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	3	---	Engineering - OTHER	2	---
Lodging - OTHER	1	---	Poly Vis - 50#SK	4	---
PrimeSeal/MaxiSea1117 - 50#SK	5	---			

Miscellaneous Drilling Parameters

Hook Loads (lbs): **Off Bottom Rotate:** 278 **Pick Up:** 500 **Slack Off:** 190 **Drag Avg/Max:** 100 / 125

Rig Information

Equipment Problems: Service loop getting tangled in derrick due to high winds.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 64

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	81 degF	**Bar. Pressure:**	1005
Wind Speed/Dir:	31 / SSW	**Wind Gusts:**	55

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32 | **Well Name: FORGE 16B(78)-32**

Field: FORGE | Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 65 | **Report For 06:00 AM 20-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):** ---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:** --- / ---
Average ROP (ft/hr):						**Well Cost ($):** ---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 | **DOL:** 65

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 6 / 72	**Other:** 8 / 96	**Total:** 31 / 372

Safety Summary: No incidents or events reported. 65 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Making up 9 1/2" reaming assembly.

Planned Operations: Trip in the hole to 4,836', ream to 10,947' as needed.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham | **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	14:00	8.00	10,947	LOG	Pulled out of the hole with FMI log and Thru Bit tools from 8,200' to 3,700' at 3 minutes/stand. Trip out of the hole from 3,700' to bit at normal trip speed. Break down tools. Download data. Data looked good.	
14:00	16:30	2.50	10,947	LOG	Rig up and run Temperature log on wireline. Tool stopped at 7,030'. Made several attempts to get past. Continued to 9,580' and tool stopped. After several attempts with no progress. Pull out of the hole. with Temperature log. Rig down and lay out same.	
16:30	20:00	3.50	10,947	LOG	Rig up and run UBI to 4,836', log from 4,836' to surface. Rig down UBI tools. Rig down SLB wireline unit.	
20:00	3:00	7.00	10,947	OTHER	Hold pre job safety meeting with rig crew and Colorado string up crew, unstring blocks and restring to twelve lines.	
3:00	6:00	3.00	10,947	BHAOP	Make up 9 1/2" reaming assembly, BHA #39. Lay out 5 joints of HWDP due to hard banding needing to be replaced.	

Management Summary

Pulled out of the hole with FMI log and Thru Bit tools from 8,200' to 3,700' at 3 minutes/stand. Tripped out of the hole from 3,700' to bit at normal trip speed. Broke down tools. Downloaded data. Rigged up and ran Temperature log on wireline, worked tool past 7,030'. Continued to 9,580' unable to work past. Pulled out of the hole with Temperature log. Rigged down and laid out same. Rigged up and run UBI, logged from 4,836' to surface, rigged down UBI tools, rigged down SLB wireline unit. Held pre job safety meeting with rig crew and Colorado string up crew, unstrung blocks and restrung to twelve lines.Made up 9 1/2" reaming assembly, BHA #39. Laid out 5 joints of HWDP due to hard banding needing to be replaced.

Comments

Fuel on hand 14,870 gals.
Fuel used 1,170 gals.
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
19-Jun-23 19:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27				0.25	9.7	0.65		99.4			350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	2	---
HIB 19 - GALS	1	---	Lodging - OTHER	1	---

Bit/BHA/Workstring Information

BHA - No. 39 - OTHER, BS, STAB, DC, STAB, OTHER, STAB, XO, HWDP, XO, STAB, XO, 9 HWDP, XO, STAB, XO, 15 HWDP, JAR, 9 HWDP =

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 65

Report For 06:00 AM 20-Jun-23

1157.13

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 10 (Solids Removal)		**Centrifuge 2:** 10 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	65

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	76 degF	**Bar. Pressure:**	1003
Wind Speed/Dir:	28 / S	**Wind Gusts:**	35

Comments: High wind throughout out the day.

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 66 **Report For 06:00 AM 21-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 66

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 6 / 72	**Other:** 2 / 24	**Total:** 25 / 300

Safety Summary: No incidents or events reported. 66 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Reaming 9 1/2" hole at 9,465'.

Planned Operations: Ream 9 1/2" hole to 10,947'. Circulate hole clean. Trip out of the hole, lay out reaming assembly.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	8:30	2.50	10,947	BHAOP	Finish making up BHA #39, Reaming Assembly. Pick up 10 newly hardbanded heviweight drill pipe.	
8:30	10:30	2.00	10,947	TRPI	Trip in hole to 5,337'.	
10:30	17:00	6.50	10,947	REAM	Reaming 9 1/2" hole from 5,337' to 6,780', 2-6K WOB, 80 RPM, 8-12K TORQ, 1000 GPM, 300 FPH.	
17:00	17:30	0.50	10,947	SERV	Service rig.	
17:30	6:00	12.50	10,947	REAM	Reaming 9 1/2" hole from 6,780' to 9,465', 2-4K WOB, 80 RPM, 18-23K TORQ, 1000 GPM, 300 FPH.	

Management Summary

Made up 9 1/2" reaming assembly. Tripped in the hole to 5,337'. Reamed 9 1/2" hole from 5,337' to 6,780'. Serviced rig. Reamed 9 1/2" hole from 6,780' to 9,465'.

Comments

Fuel on hand 12,458 gals.
Fuel used 2,412 gals.
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
20-Jun-23 13:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27					9.8	0.65		99.5			350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	1	---
HIB 19 - GALS	1	---	Lodging - OTHER	1	---
Poly Vis - 50#SK	2	---	Xanthan Gum - 50#SK	2	---

Bit/BHA/Workstring Information

BHA - No. 39 - OTHER, BS, STAB, DC, STAB, OTHER, STAB, XO, HWDP, XO, STAB, XO, 9 HWDP, XO, STAB, XO, 15 HWDP, JAR, 9 HWDP = 1157.13

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 240	**Pick Up:** 325	**Slack Off:** 230	**Drag Avg/Max:** 50 / 65
Hours on Casing/Liner:	**Rotating:** 19 / 0	**Tripping:** 5 / 0	☐ **Wear Bushing Installed**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 66 **Report For 06:00 AM 21-Jun-23**

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	66

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	80 degF	**Bar. Pressure:**	1007
Wind Speed/Dir:	22 / W	**Wind Gusts:**	30

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 67 **Report For 06:00 AM 22-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 67

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	6 / 72	**Other:**	3 / 36	**Total:**	26 / 312

Safety Summary: No incidents or events reported. 67 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Circulating at 10,442' to cool wellbore.

Planned Operations: Circulate to cool wellbore prior to running Baker pipe conveyed tools, rig up and run gyro, rig down same, pull out of the hole, rig up to run baker conveyed tools.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	16:30	10.50	10,947	REAM	Reaming 9 1/2" hole from 9,465' to 10,308', 2-5K WOB, 80 RPM, 23K-30K TORQ, 1000 GPM, 200-300 FPH.	
16:30	17:00	0.50	10,947	SERV	Service rig.	
17:00	19:15	2.25	10,947	REAM	Reaming 9 1/2" hole from 10,308' to 10,536', 2-5K WOB, 80 RPM, 30K-34K TORQ, 1000 GPM, 200-300 FPH. Note: Decision was made to stop reaming at 10,536' due to high torque.	
19:15	19:45	0.50	10,947	WASH	Wash in the hole from 10,535' to 10,715', 1,000 gpm. Pick up every 30' while washing down to check overpull.	
19:45	20:30	0.75	10,947	WASH	Pump out of the hole from 10,715' to 10,535', max overpull 550k,	
20:30	21:30	1.00	10,947	CIRC	Pump 65 bbl high vis polly sweep, circulate to surface with no noticeable increase in cuttings at the shakers.	
21:30	0:00	2.50	10,947	CIRC	Circulate to cool wellbore at 10,535' prior to running Baker pipe conveyed logging tools.	
0:00	0:15	0.25	10,947	WASH	Pump out of the hole from 10,535' to 10,442', max overpull 550k,	
0:15	6:00	5.75	10,947	CIRC	Circulate to cool wellbore at 10,442' prior to running Baker pipe conveyed logging tools.	

Management Summary

Reamed 9 1/2" hole from 9,465' to 10,308'. Serviced rig. Reamed 9 1/2" hole from 10,308' to 10,536'. Washed in the hole from 10,535' to 10,715', checking overpull every 30'. Pumped out of the hole from 10,715' to 10,535', max overpull 550k. Pumped 65 bbl high vis Polly sweep, circulated sweep to surface with no noticeable increase in cuttings at the shakers. Circulated to cool wellbore prior to running Baker pipe conveyed tools. Pumped out of the hole from 10,535' to 10,442', max overpull 550k. Circulated to cool wellbore prior to running Baker pipe conveyed tools.

Comments

Fuel on hand 15,959 gals.
Fuel used 3,999 gals.
Fuel delivered 7,500 gals.
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
21-Jun-23 10:00 at Depth 9,639 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27					10.1	0.65		99			350								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 67 **Report For 06:00 AM 22-Jun-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	2	---	Engineering - OTHER	1	---
HIB 19 - GALS	1	---	PAllets/Wraps - OTHER	2	---

Bit/BHA/Workstring Information

BHA - No. 39 - OTHER, BS, STAB, DC, STAB, OTHER, STAB, XO, HWDP, XO, STAB, XO, 9 HWDP, XO, STAB, XO, 15 HWDP, JAR, 9 HWDP = 1157.13

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:**	290	**Pick Up:**	500	**Slack Off:**	150	**Drag Avg/Max:** 100 / 150
Hours on BHA:	**Since Inspection:**		**Total:**		**Jars:**	24	
Hours on Casing/Liner:	**Rotating:**	33 / 14	**Tripping:**	5 / 0	☐ **Wear Bushing Installed**		

Rig Information

Equipment Problems: Water pump out on one mud coolers, DrillCool arrived at 23:45 hrs and replaced coupler.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	**Top**	**Middle 1**	**Middle 2**	**Bottom**	**Equipment Usage (Hrs):**		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments:	0	**Medical Treatments:**	0	**Lost Time Incidents:**	0	**Days Since LTI:**	67

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	69 degF	**Bar. Pressure:**	1016
Wind Speed/Dir:	8 / N	**Wind Gusts:**	10

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 68 **Report For 06:00 AM 23-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)** / **Actual ($)**	
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	--- / --- / ---	
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:** / --- / ---	
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 68

Pers/Hrs:	**Operator:** 3 / 36	**Contractor:** 14 / 168	**Service:** 6 / 72	**Other:** 3 / 36	**Total:** 26 / 312

Safety Summary: No incidents or events reported. 68 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Circulating at 9,143' to cool wellbore.

Planned Operations: Circulate to cool wellbore, pull out of the hole, rig up to run baker conveyed tools.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	9:30	3.50	10,947	CIRC	Circulate to cool hole for gyro survey and Baker/Battelle tools at 10,494' MD.	
9:30	11:30	2.00	10,947	LOG	Rig up SDI for gyro. HSM with SDI, Frontier Drilling and FORGE personnel.	
11:30	19:00	7.50	10,947	LOG	RIH with gyro to 10,415'. Survey out of hole from 10,415' to 5,555'. Pull gyro to surface, rig down same.	
19:00	20:30	1.50	10,947	TRPO	Pull out of the hole from 10,442' to 9,143', max overpull 230k,	
20:30	6:00	9.50	10,947	CIRC	Circulate to cool wellbore at 9,143' prior to running Baker pipe conveyed logging tools.	

Management Summary

Circulated to cool hole for gyro survey and Baker/Battelle tools at 10,494' MD. Rigged up SDI for gyro. Ran in the hole with gyro to 10,415'. Surveyed out of the hole from 10,415' to 5,555'. Pulled gyro to surface, rigged down same. Pulled out of the hole from 10,442' to 9,143'. Circulated to cool wellbore at 9,143' prior to running Baker pipe conveyed logging tools.

Comments

Fuel on hand 12,764 gals.
Fuel used 3,195 gals.
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
22-Jun-23 08:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27					9.9	0.65		99.5			350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Bit/BHA/Workstring Information

BHA - No. 39 - OTHER, BS, STAB, DC, STAB, OTHER, STAB, XO, HWDP, XO, STAB, XO, 9 HWDP, XO, STAB, XO, 15 HWDP, JAR, 9 HWDP = 1157.13

Miscellaneous Drilling Parameters

Hook Loads (lbs):	**Off Bottom Rotate:** 320	**Pick Up:** 550	**Slack Off:** 175	**Drag Avg/Max:** 175 / 225
Hours on Casing/Liner:	**Rotating:** 35 / 16	**Tripping:** 7 / 2	☐ **Wear Bushing Installed**	

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 68 **Report For 06:00 AM 23-Jun-23**

Rig Information

Equipment Problems: Replaced fan motor on mud cooler, all coolers online.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	170	170	200	170	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	170	170	200	170	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	170	170	200	170			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew. HSM w/ SDI, Frontier Drilling and FORGE prior to running gyro survey.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:** 68

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	82 degF	**Bar. Pressure:**	1008
Wind Speed/Dir:	10 / SSW	**Wind Gusts:**	20

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 69 **Report For 06:00 AM 24-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	--- / ---
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	**Actual ($)**	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		--- / --- / ---	
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:**	--- / ---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 69

Pers/Hrs:	**Operator:**	**Contractor:**	**Service:**	**Other:**	**Total:**
	3 / 36	14 / 168	6 / 72	8 / 96	31 / 372

Safety Summary: No incidents or events reported. 69 days since LTI. Conducted Crown Check, Safety Meeting.

Current Operations: Performing pull test on cable clamp.

Planned Operations: Trip in the hole with pipe conveyed logging tools to 9,200'. Log interval as per program:

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	12:30	6.50	10,947	CIRC	Circulate to cool wellbore at 9,143' prior to running Baker pipe conveyed logging tools.	
12:30	18:00	5.50	10,947	TRPO	Trip out of the hole for Baker PCL from 9,169' to 895'. Lay down jars. Trip out to BHA. Lay down reaming assembly.	
18:00	19:00	1.00	10,947	RIGD	Hold detailed safety with baker and rig crew on rigging up to run pipe conveyed logging tools. Hang sheave from derrick board. gather all tools and place on rig floor.	
19:00	22:00	3.00	10,947	LOG	Pick up tools, CBIL, XMAC, STAR, GR, surface test tools.	
22:00	3:30	5.50	10,947	TRPI	Trip in the hole with pipe conveyed logging tools from surface to 4,536'. All the stands drifted prior to running in the hole. Fill pipe at 2,347' at 200 gpm.	
3:30	4:45	1.25	10,947	RIGU	Pick up x/o, stabilizer, x/o, install wireline in string, make up SES to lower drill pipe assembly.	
4:45	6:00	1.25	10,947	LOG	Run in hole with sinker bar, latch tool and establish good communication with tool string. Raise SES above rotary and install cable clamps (8000 lbs. shear screws) and perform pull test.	

Management Summary

Circulated to cool wellbore at 9,143'. Tripped out of the hole for Baker PCL from 9,169' to 895'. Laid down jars. Tripped out to BHA. Laid down reaming assembly. Held detailed safety with Baker and rig crew on rigging up to run pipe conveyed logging tools. Hung sheave from derrick board. gather all tools and placed on rig floor. Picked up logging tools. Tripped in the hole with pipe conveyed logging tools from surface to 4,536'. Picked up crossovers, stabilizer along with SES, made up SES to lower drill pipe assembly. Ran in hole with sinker bar, latched tool and establish good communication with tool string. Raised SES above rotary and install cable clamps with 8000 lbs. shear screws. Performed pull test.

Comments

Fuel on hand 10,521 gals.
Fuel used 2,243 gals.
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
23-Jun-23 09:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27					9.6	0.65		99.5			350								

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 69 **Report For 06:00 AM 24-Jun-23**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Caustic Soda - 50#SK	3	---	Engineering - OTHER	1	---
HIB 19 - GALS	1	---			

Bit/BHA/Workstring Information

BHA - No. 39 - OTHER, BS, STAB, DC, STAB, OTHER, STAB, XO, HWDP, XO, STAB, XO, 9 HWDP, XO, STAB, XO, 15 HWDP, JAR, 9 HWDP = 1157.13

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	200	200	200	200	**Desander:** 0	**Desilter:** 0	**Degasser:** 0
Shaker No 2:	200	200	200	200	**Centrifuge 1:** 12 (Solids Removal)		**Centrifuge 2:** 12 (Solids Removal)
Shaker No 3:	200	200	200	200			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crew.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	69

Accident Description: None to report.

☐ **BOP Test** ☑ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	65 degF	**Bar. Pressure:**	1008
Wind Speed/Dir:	19 / SSW	**Wind Gusts:**	25

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 70 **Report For 06:00 AM 25-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ ---
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		---	---
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:**	---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 70

Pers/Hrs:	**Operator:**	3 / 36	**Contractor:**	14 / 168	**Service:**	7 / 84	**Other:**	8 / 96	**Total:**	32 / 384

Safety Summary: No incidents or events reported. 70 days since LTI. Conducted Safety Meeting.

Current Operations: Working on unraveling wireline from drill pipe.

Planned Operations: Unravel wireline from drill pipe. Trip out of the hole with PCL tools.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	7:00	1.00	10,947	LOG	Ran in hole with sinker bar, latched tool and establish good communication with tool string. Raised SES above rotary and install cable clamps with 8000 lbs. shear screws. Performed pull test.	
7:00	10:00	3.00	10,947	LOG	Run in hole with PCL tools from 4,645' to 9,169' drill pipe measurement (9,173' wireline measurement).	
10:00	19:00	9.00	10,947	LOG	Start tool and begin logging from 9,173' to 5,834'. Temperature at tool on bottom was 281° F.	
19:00	21:00	2.00	10,947	OTHER	Wireline counter is 700' different from drill pipe measurement. Correlate logs to Schlumberger gamma ray logs.	
21:00	2:30	5.50	10,947	LOG	Log from 5,834' to 4,554'. Top of side entry port.	
2:30	6:00	3.50	10,947	OTHER	Wireline wrapped around drill pipe below side entry port. Work on unraveling wireline from drill pipe.	

Management Summary

Ran in hole with sinker bar. Latched tool and established good communication with tool string. Raised SES above rotary and installed cable clamps with 8000 lbs. Sheared screws. Performed pull test. Ran in hole with PCL tools from 4,645' to 9,169' drill pipe measurement. (9,173' wireline measurement). Logged from 9,173' to 5,834'. Wireline counter is 700' different from drill pipe measurement. Correlate logs to Schlumberger gamma ray logs and continued logging up to side entry port at 4,554'. Wireline wrapped around drill pipe below side entry port. Worked on unraveling wireline from drill pipe.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	% Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
24-Jun-23 09:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27					9.8	0.65		99.5			350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Well ID: FORGE 16B(78)-32

Field: FORGE

University of Utah

Well Name: FORGE 16B(78)-32

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 70

Report For 06:00 AM 25-Jun-23

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	200	200	200	200
Shaker No 2:	200	200	200	200
Shaker No 3:	200	200	200	200

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	365	24.7	S-135	5.5FH	5.5	30	71.0	S-135	5.5FH
5.5	20	54.0	S-135	5.5FH					

Safety Information

Meetings/Drills	Time	Description
Safety	30	Two Pre-tour safety meetings held daily with crews. Baker and Battelle were invited to participate to review operations.

First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	70

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	81 degF	**Bar. Pressure:**	1010
Wind Speed/Dir:	11 / S	**Wind Gusts:**	15

Daily Drilling Report

University of Utah

Well ID: FORGE 16B(78)-32

Well Name: FORGE 16B(78)-32

Field: FORGE

Sect: 32 Town: 26S Rng: 9W County: BEAVER State: UT

Report No: 71 **Report For 06:00 AM 26-Jun-23**

Operator:	UNIVERSITY OF UTAH	**Rig:**	Frontier 16	**Spud Date:**	26-Apr-23	**Daily Cost / Mud ($):**	---
Measured Depth (ft):	10947	**Last Casing:**	11.750 at 4,837	**Wellbore:**	Original Wellbore	**AFE No.** / **AFE ($)**	/ ---
Vertical Depth (ft):	8357	**Next Casing:**	7.000 at 10,159	**RKB Elevation (ft):**	31	---	---
Proposed TD (ft):	10658	**Last BOP Test:**	27-May-23	**Job Reference RKB (ft):**		---	---
Hole Made (ft) / Hrs:	0 / 0.0	**Next BOP Test:**	26-Jun-23	**Working Interest:**		**Totals:**	---
Average ROP (ft/hr):						**Well Cost ($):**	---

Days (actual / plan): Drilling 6.18 / 22, Flat 0 / 0, Complete 0 / 52, Total 6.18 / 74 **DOL:** 71

Pers/Hrs: **Operator:** 3 / 36 **Contractor:** 14 / 168 **Service:** 7 / 84 **Other:** 8 / 96 **Total:** 32 / 384

Safety Summary: No incidents or events reported. 71 days since LTI. Conducted Safety Meeting.

Current Operations: Circulating and cooling hole.

Planned Operations: Pull out of the hole. Rig up replacement wireline unit. Run in hole with RCX assembly and perform microfrac testing.

Toolpusher: Shawn Seddell, Clay Nielson

Wellsite Supervisors: Leroy Swearingen , Brian Gresham **Tel No.:**

Operations Summary

From	To	Elapsed	End MD(ft	Code	Operations Description	Non-Prod
6:00	10:00	4.00	10,947	LOG	Unwind wireline from above and below SES. Meeting with Baker/Battelle to agree on plan forward. Install lift sub into SES, cut wireline and let fall into drillpipe.	
10:00	13:30	3.50	10,947	LOG	Trip out of hole from 4,554' to top of tools removing wireline from inside and outside of drillpipe.	
13:30	14:30	1.00	10,947	LOG	Lay down all logging tools from hole.	
14:30	18:00	3.50	10,947	EVAL	Make up 9 1/2" TCI bit, bit sub and X-over. Trip in the hole to 5,870' to cool as per Battelle.	
18:00	19:30	1.50	10,947	CUTDL	Slip and cut 80' of drilling line. Circulate and cool hole at 400 GPM.	
19:30	6:00	10.50	10,947	WOE	Circulate and cool hole while waiting on replacement wireline truck.	X

Management Summary

Unwind wireline from above and below SES. Installed lift sub into SES. Cut wireline and let fall into drillpipe.Tripped out of hole from 4,554' to top of tools removing wireline from inside and outside of drillpipe. Laid down logging tools. Made up 9-1/2" TCI bit, bit sub and X-over. Tripped in the hole to 5,870'. Circulated and cooled hole while waiting on wireline replacement truck.

Comments

Fuel on hand 19,1115 gals.
Fuel used 1006 gals.
Total NPT to date 121.50 HR.
No H2S today.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	16.000	4		1,136	1,135	SURF	22.000	84	OTHER	
FULL	11.750	-3	3	4,837	4,837	INT1	14.750	65	OTHER	

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	% Sand	% LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
25-Jun-23 09:00 at Depth 10,947 ft Other Location, Type: Low Solids Non-Dispersed																				
8.40	27					9.6	0.65		95			350								

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - OTHER	1	---			

Rig Information

Equipment Problems:

Location Condition:

Transport:

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