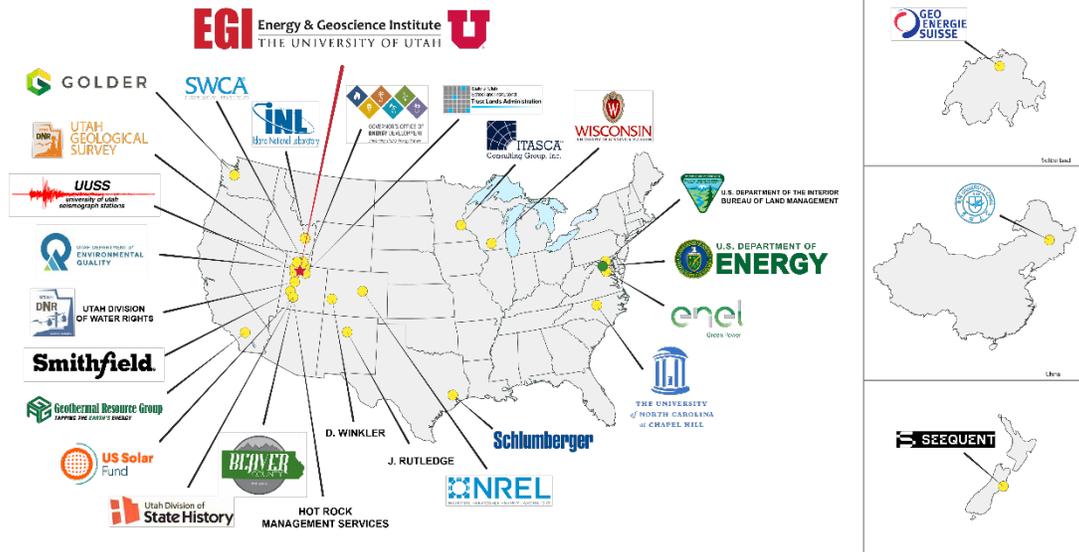


APPENDICES to End of Well Report

Utah Forge Seismic Monitoring Well 78B-32 Milford, Utah



Prepared by:
Geothermal Resource Group, Inc.
for
University of Utah (UofU)

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9. APPENDICES

- 9.1. Daily Reports-RIMBase
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9.1. Daily Reports-RIMBase





Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 1

Report For 27-Jun-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 128	Last Casing:	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	Next Casing: 24.000 at 129	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	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 (\$): ---		
Drilling Days (act./plan): 1/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 1/30	Days On Location: 1		
Pers/Hrs: Operator: 3 / 36	Contractor: 12 / 144	Service: 8 / 96	Other: 1 / 12	Total: 24 / 288	

Safety Summary: No incidents or events reported. 0 days since LTI. Conducted Safety Meeting.

Current Operations: Finished drilling 22 in hole to 421 ft
Circulating hole clean at 421 ft

Planned Operations: POH and run 16 in casing and cement in place.
Nipple up and test 21-1/4 in BOP

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	128	WOD	Wait on daylight.	
6:00	9:00	3.00	128	RIGU	Pre-Spud Inspection.	
9:00	16:00	7.00	128	1-01	Cut and removed conductor pipe at 4" above ground level. Rigged up cellar pump. Set pipe racks in place. Strapped 105 joints of 5" drill pipe 9 joints of 5" HWDP and readied for pick up. Mixed spud mud.	
16:00	17:00	1.00	128	10-341	Pick up and make up 5 stands of 5" HWDP.	
17:00	22:30	5.50	128	10-341	Pick up 114 joints of 5" drill pipe and rack back in derrick.	
22:30	0:00	1.50	128	3-34-3	Make up 22" surface hole assembly.	

Management Summary

Waited on Day Light and conducted Pre-Spud Rig Inspection.
Strapped, OD, ID and Fishing Neck of HWDP.
Picked up 5 stands of HWDP and stood back in Derrick.
Picked up 114 joints (38 Stands) of 5" DP and stood back in derrick.
Cleaned and strapped 16 in Casing.
Made up Directional tools.

Comments

Rig on "Day Rate" at 0900 hours of June 27,2021.

Note: Spoke to Jim Goddard with Department of Water Resources. Jim had received our start casing, cementing, and BOP testing schedule and waived witnessing of the 20 in BOP test provided testing to be done by a 3rd party. Results to be documented and sent to DWR.
Fuel on hand 7,637.

Activities prior to Rig Move/ Spud

June 8, 2021

- Drill 36" hole from surface to 100'. All material was alluvium (decomposed granite). Experienced no hole cave or sluff.
- weld lifting eyes on 24", move all dirt out of the way and prep to run conductor and cement same in the morning

June 9, 2021

- Check hole for fill / clean out to 100' / welding 3 joints of 24", 1/2" wall. 125.5#/ft conductor casing / set on bottom / pull rig forward / center and level conductor (102' total)
- From surface pour 14 cu. Yds (2 trucks) in annulus. Cement came to within 33' of surface. Cement is 4000 psi mix with 3/4" rock
- Prep 14" casing for mouse hole. Will top off conductor cement @ 8:00 tomorrow morning prior to drilling service hole. Crew released for the day. No accidents, incidents or injuries

June 10, 2021

- Dump 6 cu. Yds of 4000 psi w/ 3/4" rock ready mix around conductor bringing the level from 33'bgl to 5'bgl. Used another 2 cu yds to cement tower foundation on 78-32
- Let cement around conductor thicken
- Drill 26" mouse hole to 75' bgl
- Weld 3 each 25' long 14" line pipe pieces for the mouse hole and lower in the ground
- Cement the mouse shuck with 7 cu. Yds of 4000 psi mix w/ 3/4" rock. Level 5' bgl
- Using excavator dig hole for cellar and install 10'OD x 5' deep cellar ring
- Pour 1 foot of 4000 psi, w/ 3/4" rock in bottom of cellar



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 1

Report For 27-Jun-21

- Clean up site and release Wyoming Casing

June 21,2021

- With H&B move company man quarters, tool pusher quarters, septic system, fresh water system, power distribution panel and generator from 56-32 to 78B-32 and rig up same. Move Command center from 16A to 78B-32 and rig up same

June 22, 2021

- MSE training with all 4 Frontier crews, and 3 pushers, 3 GRG supervisors, 2 GRG office staff, 1 mud man, 2 mud loggers, 2 solids control

June 23, 2021

- MSE training with all contractors

June 24, 2021

- Tear down and move everything off 56-32 location except for subbase. On 78B-32 set and rig up pump package and mud pits, solids equipment, SCR and motor package, derrick, tool house. Removed monkey board from derrick and welder cut all racking fingers out of board and re-install to accept 5.5" drill pipe

June 25,2021

- Hold JSA with all crews involved with rig move, On 56-32 rig down subbase and load out same, clean location and call for dumpster pick up, 56-32 completed. On 78B-32 set matting boards and build subbase, install drawworks, hang derrick and string blocks, welder completed modifying racking board to accommodate 5.5" drill pie, install modified racking board and raise A-Legs, set mud loggers trailer, set solids equipment, unload 16", set 2 mud coolers, received 1st load of diesel, finish setting top dog houses and hanging wind walls, rig up Pason NOTE: Spoke to Jim Goddard with Department of Water Resources Jim had received messages of our start casing, cementing and BOP testing schedule and waived witnessing of the 20" BOP test provided testing be done by a 3rd party and results be documented and sent to DWR

June 26, 2021

- Raise derrick and unbridal

- Rig up Top drive, mud coolers, fill tanks w/ water prepare to PUDP

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	R.O.P. Hrs	Avg	Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Press	J. Vel	P. Drp	HHP	JIF				
1	1	Smith	XR-C	22.000	128																		
Jets: 28 28 28			Out: 421			Grade: Cutter: 1 / 1			Dull: NO / NO			Wear: A			Brgs: 0			Gge: 0			Pull: TD		
BHA - No. 1 - BIT, BS, XO, MWD, XO, MONEL, FLOAT, OTHER, XO, HWDP = 314.30																							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):				
Shaker No 1:	60	60	60	60					
Shaker No 2:	60	60	60	60	Centrifuge 1: 4			Centrifuge 2: 4	
Shaker No 3:	60	60	60	60					

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Mixing chemicals, pinch points, running casing / BHA
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI: 0
<input type="checkbox"/> BOP Test		<input type="checkbox"/> Crownamatic Check

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 56 degF	Bar. Pressure: 29.87
Wind Speed/Dir: 10 / SE	Wind Gusts: 12



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 2

Report For 28-Jun-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	421	Last Casing:	16.000 at 416	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):		Next Casing:	11.750 at 3,300	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	28-Jun-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	293 / 4.0	Next BOP Test:	19-Jul-21	Working Interest:		Totals:	---	---	
Average ROP (ft/hr):	73.25			LOT (lbs/gal):	0.61	Well Cost (\$):	---		
Drilling Days (act./plan):	2/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	2/30	Days On Location:	2		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	4 / 48	Other:	3 / 36	Total:	24 / 288

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

Current Operations: Testing out choke manifold at report time.

Planned Operations: Test casing along with BOPE.
Pick up 8" drill collars.
Trip in the hole with tri-cone bit.
Drill out shoe track and 10 ft of new formation to perform LOT
Pull out of the hole and lay down tricone bit
Make up 14 3/4" BHA with PDC and continue drilling 14 3/4" section.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:00	1.00	128	3-34-3	Make up 22" surface hole assembly.	
1:00	1:30	0.50	128	03-051	Filled pipe and hole.	
1:30	5:00	3.50	421	03-021	Drilled 22" hole from 128' to 421'.	
5:00	5:30	0.50	421	03-051	Circulated well bore clean.	
5:30	6:00	0.50	421	3-27	Wiped hole f/ 421' t/ 100' with no issues. No fill on bottom.	
6:00	6:30	0.50	421	3-6-2	Pull out of the hole f/ 421'	
6:30	7:00	0.50	421	3-34-4	Lay down NMDC and bit	
7:00	8:00	1.00	421	4-56	Rig up casing crew.	
8:00	10:00	2.00	421	4-12-1	Rigged up and Ran 9 joints of 16" k-55 64# BTC casing (382.89') of total casing. Landed out with 33' landing joint. Shoe set at 416' KB. Float collar at 372' KB.	
10:00	11:00	1.00	421	4-56	Rig down casing crew	
11:00	12:30	1.50	421	4-12-1	Land casing with well head 3' below ground level.	
12:30	13:00	0.50	421	5-56	RIH with stab-in and stab into float collar at 378	
13:00	14:30	1.50	421	5-56	Rig up cement crew	
14:30	16:00	1.50	421	5-99	Pressure test to 1500 psi, Pump 20 bbl fresh water, pump 50 bbls of sepiolite, pump 5 bbl of fresh water, pump 13 bbl od sodium silkicate, pump 5 bbls fresh water, Mix and pump 146 bbl of 13.88 RC Theremelite w/ 2% CC, displace w/ 6 bbls fresh water, check floats CIP @ 16:00	
16:00	16:30	0.50	421	5-56	Rig down cement crew	
16:30	17:00	0.50	421	5-6-2	POH with stab-in	
17:00	0:00	7.00	421	1-14	Installed BOP as followed. 16" x 21-1/4" 2M DSA, 21-1/4" 2M spacer spool, 21-1/4" 2M x 21-1/4" 3M DSA, 21-1/4" 3M mud cross, 21-1/4" 3M X 21-1/4" 2M DSA, 21-1/4" 2M double gates, 21-1/4" 2M annular, 21-1/4" 2M flow spool.	

Management Summary

Drilled 22" hole from 128' to 421'. Circulated hole clean. Wiped hole from 421' to 100'. Pulled out laying down tools.
Rigged up and ran 9 joints of 65 ppf, K-55 16" Buttress casing setting shoe at 416' KB.
Ran in the hole with stab-in tool.
Rigged up Resource cementing and cemented casing in place CIP @ 16:00.
Rigged down Resource cementing.
Pulled out of the hole with stab-in tool.
Installed 20" BOPE. Nipped up BOPE.

Comments

Good cement to surface.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 2

Report For 28-Jun-21

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	0		416		SURF	22.000	65	K-55	0.61

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
28-Jun-21 05:15 at Depth 421 ft Mud Pits																				
8.90	51	19	22	12.2	1	9	11	0	89	2.5		800	120	0	9	16	25	85	85	10.0

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	R.O.P. Hrs	Avg	Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Press	J. Vel	P. Drp	HHP	JIF	
1	1	Smith	XR-C	22.000	128	293	3.5	83.7	250.0	15	90	7	9	800	576	142	161	75	524	
Jets: 28 28 28					Out: 421		Grade: Cutter: 1 / 1		Dull: NO / NO		Wear: A		Brgs: 0		Gge: 0		Pull: TD			
BHA - No. 1 - BIT, BS, XO, MWD, XO, MONEL, FLOAT, OTHER, XO, HWDP = 314.30																				

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)
128	421	80.0	120.0	15	30	75	80	3	8	650	800	1,100
Annular Velocity: Drill Collars: 37.9				Drill Pipe: 34.7								

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	85	Pick Up:	100	Slack Off:	78	Drag Avg/Max:	3 / 5
Hours on BHA:	Since Inspection:	3.5	Total:		Jars:			

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
							N-S	E-W	
MWD	241.0	0.69	358.3	241.0	1.5	1.5	N 1.5	W 0.0	0.286
MWD	337.0	1.04	359.5	337.0	2.9	2.9	N 2.9	W 0.1	0.365

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:	60	60	60	60	Desander: 4	Desilter: 4	Degasser: 0
Shaker No 2:	60	60	60	60	Centrifuge 1: 4 (Solids Removal)		
Shaker No 3:	60	60	60	60			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Running casing, cementing casing, Nipple up, Pinch points
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
<input checked="" type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownamatic Check

Weather Information

Sky Condition:	Clear	Visibility:	10
Air Temperature:	66 degF	Bar. Pressure:	29.96
Wind Speed/Dir:	8 / NNE	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 3

Report For 29-Jun-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	433	Last Casing:	16.000 at 416	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	433	Next Casing:	11.750 at 3,300	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	29-Jun-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	12 / 1.5	Next BOP Test:	19-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):	8.0			LOT (lbs/gal):	0.61	Well Cost (\$): ---		
Drilling Days (act./plan):	3/21	Flat Days (act./plan):	0/9	Total Days (act./plan):		3/30	Days On Location: 3	
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	4 / 48	Other:	3 / 36	Total: 24 / 288

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

Current Operations: Picked up RSS and ran in the hole. Drilled 14 3/4" hole section from 433' to 1,524' (report time)

Planned Operations: Drill 14 3/4" section.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	3:00	3:00	421	3-15	Installed inner and outer choke and kill valves. Installed choke and kill lines. Torqued all flanges.	
3:00	6:00	3:00	421	3-15	Attempted to Test BOPE system to 300 psi low to 1,000 psi high. First Low test of 300 psi testing against the pipe rams held. Stepped pressure up to 1,000 psi and pressure bleed back down to 500 psi. Attempted to pressure back up to 1,000 psi, pressure bleed back down to 500 psi. Inspected all surface equipment for leaks. No leaks were found. Decision was made to test choke manifold while allowing more time for cement to set. Tested out all valves on choke manifold to 300 psi low for 5 mins and 1,000 psi high for 10 mins.	
6:00	9:00	3:00	421	2-14	Nipple up Flow nipple w/ rotating head to flow line	
9:00	10:00	1:00	421	2-14	Walk catwalk into place and raise V-Door	
10:00	11:30	1:50	421	3-34-3	Set racks and move and strap 15 each 8" DCS	
11:30	14:30	3:00	421	3-34-3	Pick up 15 each 8" DCS and stand back in Derrick	
14:30	16:30	2:00	421	3-15	Test Blind rams to 250 psi for 5 min low & 1000 psi for 10 min high / test good / PU stand of drill pipe and test pipe rams to 250 psi for 5 min & 1000 psi for 10 min test good, test bag to 250 psi for 5 min low & 1000 psi high for 10 min	
16:30	18:00	1:50	421	3-34-3	PU 14-3/4" bit, bit sub, 3 stands of DCS and 1 stand of HWDP and RIH to drill float, cement and shoe	
18:00	18:30	0:50	421	2-14	Installed rotating rubber bushing to bearing assembly. Installed rotating rubber.	
18:30	19:30	1:00	421	3-28	Drilled out shoe track from 370' to 416'. Good cement Throughout shoe track.	
19:30	20:00	0:50	421	SERV	Serviced rig.	
20:00	20:45	0:75	421	3-28	Cleaned out rat hole to 421'. Drilled new formation to 433'	
20:45	21:00	0:25	421	3-5-1	Circulated hole clean for FIT.	
21:00	22:00	1:00	421	3-46	Performed FIT.	
22:00	23:30	1:50	421	3-6-2	Pulled out of the hole from 433' to surface. Broke out bit along with bit sub.	
23:30	0:00	0:50	421	3-98	Held detailed safety meeting with all involved personal on picking up BHA.	

Management Summary

Installed inner and outer choke and kill valves.
 Torqued up all breaks on BOPE.
 Attempted to test BOPE. High pressure test leaked off. Decision was made to allow more time for cement to set.
 Tested out choke manifold.
 Nipped up riser and installed flowline.
 Walked catwalk into place and raised V-Door.
 Set racks in place. Strapped 15-8" drill collars. Picked up 5 stands of 8" drill collars and racked back in the derrick.
 Tested out BOPE. Good test.
 Made up 14 3/4" slick assembly.
 Tripped in the hole.
 Drilled out shoe track from 370' to 416'.
 Drilled new formation to 433'.
 Circulated hole clean.
 Performed FIT to a 1 psi/ft. Good test.
 Pulled out of the hole.
 Held detailed safety meeting with all involved personal on picking up BHA.

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 3

Report For 29-Jun-21

Comments

Test out all BOPE to 300 psi low and 1,000 psi high. All test good.

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	0		416		SURF	22.000	65	K-55	0.61

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
29-Jun-21 21:00 at Depth 436 ft Mud Pits, Type: Spud Mud																				
8.60	36	8	7	18.8	1	11.5	5	0	95	0.5	0.6	900	240		4	6	11	85	97	

Mud Consumables

Item Description		Qty.	Cost	Item Description		Qty.	Cost
Bicarb - 50#SK		10	---	Desco CF - 25#SK		3	---
Engineering - EACH		1	---	perdiem - OTHER		1	---
wraps - OTHER		2	---				

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run		R.O.P.		WOB	RPM	Torque	Wt	Mud		Pump		J. Vel	P. Drp	HHP	JIF
						Dist	Hrs	Avg	Max					Flow	Press						
2	1	BAKER	GT-C1	14.750	360	93	1.5	62.0	80.0	10	50	3	9	450	184	194	289	76	388		
Jets: 18 18 18					Out: 433	Grade: Cutter: 1 / 1		Dull: NO / NO		Wear: A		Brgs: 0	Gge:		Pull: BHA						
BHA - No. 3 - BIT, OTHER, STAB, MWD, 4 OTHER, MMTR, RR, FLOAT, 2 OTHER, DC, XO, HWDP = 956.61																					

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)			Gas		Drilling Exp.	Pore Press	Mud Dens.	Shale Dens.	ROP	
From	To	From	To	Avg	Max	at Depth	Connect.	Trip					Shale	Sand
422	436													
Formation Name: Alluvium (sand-cobbles)														
Lithology: 100% Alluvium (granitic)														

Rig Information

Equipment Problems: Changed of two swabs in mud pump#2. Changed out liner gasket in mud pump#3.

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
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"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Covered pinch points, testing, handling BHA
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
<input checked="" type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownamatic Check

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 61 degF	Bar. Pressure: 29.94
Wind Speed/Dir: 4 / NW	Wind Gusts: 1



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 4

Report For 30-Jun-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):			---	
Measured Depth (ft):	2699	Last Casing:	16.000 at 416	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)		
Vertical Depth (ft):	2699	Next Casing:	11.750 at 3,300	RKB Elevation (ft):	30.40	---	---	---		
Proposed TD (ft):	9500	Last BOP Test:	29-Jun-21	Job Reference RKB (ft):			---	---	---	
Hole Made (ft) / Hrs:	2,266 / 15.0	Next BOP Test:	19-Jul-21	Working Interest:			Totals:	---	---	
Average ROP (ft/hr):	151.07			LOT (lbs/gal):	0.61	Well Cost (\$):			---	
Drilling Days (act./plan):	4/21	Flat Days (act./plan):	0/9	Total Days (act./plan):		4/30	Days On Location:			4
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	4 / 48	Other:	3 / 36	Total:		24 / 288

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

Current Operations: Pulled out of the hole from 951' to Surface.
Changed bit. Tipped in the hole to 2,699'.
Drilled 14 3/4" hole section from 2,699' to 2,812' (report time)

Planned Operations: Drill 14 3/4" section to casing point.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	3:30	3.50	433	3-34-3	Picked up 14 3/4" RSS BHA to 433'.	
3:30	4:15	0.75	665	3-2-3	Drilled 14 3/4" hole from 433' to 665' with full returns.	
4:15	4:30	0.25	665	03-051	Circulated hole clean to rack back HWDP and place 3 stands of 8" drill collars into BHA.	
4:30	5:30	1.00	665	3-34-3	Pulled out of the hole from 665' to 389'. Racked back 3 stands of HWDP. Installed 3 stands of 8" drill collars into the BHA. Tripped in the hole to 665'.	
5:30	6:00	0.50	858	3-2-3	Drilled 14 3/4" hole from 665' to 858 with full returns.	
6:00	10:00	4.00	2,077	3-2-3	Drilled 14-3/4" hole from 858' to 2,077' with full returns.	
10:00	10:30	0.50	2,077	SERV	Serviced rig / torqued saver sub	
10:30	11:00	0.50	2,232	3-2-3	Drilled 14-3/4" hole from 2,077' to 2,232' with full returns.	
11:00	11:30	0.50	2,232	REPR	Rig blacked out/ cleaned #2 generator radiator due to overheating.	X
11:30	12:30	1.00	2,359	3-2-3	Drilled 14-3/4" hole from 2,232' to 2,359' with full returns.	
12:30	13:30	1.00	2,359	REPR	Rig Repair cleaned #1 generator radiator due to overheating.	X
13:30	14:00	0.50	2,399	3-2-3	Drilled 14-3/4" hole from 2,359' to 2,399' with full returns.	
14:00	15:30	1.50	2,399	REPR	Rig Repairs cleaned #3 generator radiator due to overheating.	X
15:30	21:15	5.75	2,699	3-2-3	Drilled 14-3/4" hole from 2,399' to 2,699' with full returns.	
21:15	22:00	0.75	2,699	3-5-1	Circulate hole clean. Pump 15 bbl slug.	
22:00	0:00	2.00	2,699	3-6-4	Pull out of the hole from 2,699' to 951'. Tight hole encountered from 2,351' to 1,799' 50-100k over string weight. Extended trip time due to tight connections and using rig tongs. Removed rotating rubber at 850'.	

Management Summary

Picked up 14 3/4" RSS BHA to 433'.
 Drilled 14 3/4" hole from 433' to 665' with full returns.
 Circulated hole clean.
 Pulled out of the hole from 665' to 389'.
 Racked back 3 stands of HWDP.
 Installed 3 stands of 8" drill collars into the BHA.
 Tripped in the hole to 665'.
 Drilled 14 3/4" hole from 665' to 2,077' with full returns. Serviced rig.
 Drilled 14-3/4" hole from 2,077' to 2,232' with full returns. Circulated while cleaning radiator on gen #2 due to overheating.
 Drilled 14-3/4" hole from 2,232' to 2,359' with full returns. Circulated while cleaning radiator on gen #1 due to overheating.
 Drilled 14-3/4" hole from 2,359' to 2,399' with full returns. Circulated while cleaning radiator on gen #3 due to overheating.
 Drilled 14-3/4" hole from 2,399' to 2,699' with full returns. Circulated hole clean. Tripped out of the hole to 951'.

Comments

BOPE test results emailed DWR (Jim Goddard).

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	0		416		SURF	22.000	65	K-55	0.61



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 4

Report For 30-Jun-21

Mud Information

															% Gels			Temp		Mud
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
30-Jun-21 21:00 at Depth 2,697 ft Mud Pits, Type: Low Solids Non-Dispersed																				
9.10	42	14	13	9.4	1	10	9	0	91	12.5	4.2	800	120		3	7	11	110	118	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	20	---	Desco CF - 25#SK	1	---
DMA - 50#SK	5	---	Drispac LV - 50#SK	5	---
Engineering - EACH	1	---	FlowZan - 25#SK	10	---
Gel - 100#SK	70	---	Micro C - 50#SK	50	---
pallets - OTHER	13	---	perdiem - OTHER	1	---
Trucking - EACH	1	---			

Bit/BHA/Workstring Information

															Mud		Pump			
No Run	Make	Model	Diam	Depth In	This Run Dist	R.O.P. Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF		
2	1	BAKER	GT-C1	14.750	360	166	3	55.3	1,	40	80	15	9	950	3050	409	1361	754	1829	
Jets: 18 18 18				Out: 433	Grade: Cutter: 1 / 1	Dull: NO / NO	Wear: A	Brgs: 0	Gge:	Pull: BHA										
3	1	NOV	TKC66	14.750	433	2,266	15	151.1				9	950	3050	281	645	357	1259		
Jets: 15 15 15 15 16 16				Out: 2699	Grade: Cutter: 3 / 1	Dull: LT / CT	Wear: N	Brgs: X	Gge:	Pull: PR										

BHA - No. 3 - BIT, OTHER, STAB, MWD, 4 OTHER, MMTR, RR, FLOAT, 2 OTHER, DC, XO, HWDP = 956.61

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
433	2,699	174.3	1,300.0	40	65	70	120	13	22	950	1,050	3,150

Annular Velocity: Drill Collars: 197.7 Drill Pipe: 128.2

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	125	Pick Up:	150	Slack Off:	100	Drag Avg/Max:	10 / 15
Slow Circulation Data:								
Pump 1:	35 spm	95 psi	45 spm	210 psi	60 spm	375 psi		
Pump 2:	35 spm	95 psi	45 spm	210 psi	60 spm	375 psi		
Pump 3:	35 spm	95 psi	45 spm	210 psi	60 spm	375 psi		
Hours on BHA:	Since Inspection:	9	Total:	9	Jars:	0		
Hours on Casing/Liner:	Rotating:	9 / 0	Tripping:	3 / 0	<input type="checkbox"/> Wear Bushing Installed			



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 4

Report For 30-Jun-21

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
							N-S	E-W	
MWD	545.0	0.17	93.9	545.0	4.8	4.8	N 4.8	E 0.2	0.513
MWD	731.0	0.07	271.8	731.0	4.8	4.8	N 4.8	E 0.4	0.129
MWD	822.0	0.12	37.4	822.0	4.8	4.8	N 4.8	E 0.4	0.187
MWD	914.0	0.15	342.6	914.0	5.0	5.0	N 5.0	E 0.4	0.138
MWD	1,005.0	0.47	187.3	1,005.0	4.8	4.8	N 4.8	E 0.3	0.670
MWD	1,101.0	0.19	350.9	1,101.0	4.5	4.5	N 4.5	E 0.3	0.682
MWD	1,195.0	0.07	294.8	1,195.0	4.7	4.7	N 4.7	E 0.2	0.172
MWD	1,291.0	0.19	82.6	1,291.0	4.8	4.8	N 4.8	E 0.3	0.263
MWD	1,386.0	0.12	297.7	1,386.0	4.8	4.8	N 4.8	E 0.3	0.312
MWD	1,480.0	0.24	141.5	1,480.0	4.7	4.7	N 4.7	E 0.4	0.376
MWD	1,576.0	0.17	48.7	1,576.0	4.7	4.6	N 4.6	E 0.6	0.314
MWD	1,670.0	0.10	216.9	1,670.0	4.7	4.7	N 4.7	E 0.7	0.286
MWD	1,765.0	0.14	231.1	1,765.0	4.6	4.5	N 4.5	E 0.5	0.052
MWD	1,861.0	0.18	123.1	1,861.0	4.4	4.4	N 4.4	E 0.6	0.271
MWD	1,955.0	0.10	292.1	1,955.0	4.4	4.3	N 4.3	E 0.6	0.297
MWD	2,050.0	0.26	216.1	2,050.0	4.2	4.2	N 4.2	E 0.4	0.268
MWD	2,145.0	0.15	323.8	2,145.0	4.1	4.1	N 4.1	E 0.2	0.355
MWD	2,240.0	0.12	115.8	2,240.0	4.2	4.2	N 4.2	E 0.2	0.276
MWD	2,335.0	0.18	98.9	2,335.0	4.1	4.1	N 4.1	E 0.5	0.078
MWD	2,431.0	0.11	21.4	2,431.0	4.2	4.2	N 4.2	E 0.6	0.197
MWD	2,526.0	0.08	179.7	2,526.0	4.2	4.2	N 4.2	E 0.7	0.197
MWD	2,620.0	0.10	52.9	2,620.0	4.2	4.2	N 4.2	E 0.7	0.171
MWD	2,715.0	0.12	192.1	2,715.0	4.2	4.1	N 4.1	E 0.8	0.217

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect.	Press	Dens.	Dens.	Shale	Sand
0	430	0	430	0	0				9.10			
Formation Name:												
Lithology: 100% Alluvium												
430	2,430	430	2,430	0	0							
Formation Name:												
Lithology: 100% Alluvium												
2,440	2,630	2,430	2,440	0	0							
Formation Name: 60% Clay, 40% Alluvium												
Lithology: 90% Clay 10% Alluvium												
2,630	2,650	2,440	2,570	0	0							
Formation Name: 90% Clay 10% Alluvium												
Lithology: 100% Alluvium												
2,650	2,670	2,570	2,580	0	0							
Formation Name: 70% Clay, 30% Rhyolite												
Lithology: 10-50% Rhyolite 50-90% Alluvium												
2,670	2,700	2,580	2,640	0	0							
Formation Name: 90% Rhyolite, 10% Clay												
Lithology: 100% Alluvium												

Rig Information

Equipment Problems: Generators overheating. cleaned radiators on all 3 gens.

Location Condition: Good.

Transport:



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 4

Report For 30-Jun-21

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	60	60	60	60
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"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Trip hazards, pinch points, Working at heights.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
<input type="checkbox"/> BOP Test		<input type="checkbox"/> Crownamatic Check

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 75 degF	Bar. Pressure: 29.94
Wind Speed/Dir: 10 / W	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 5

Report For 01-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	3009	Last Casing:	16.000 at 416	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	3009	Next Casing:	11.750 at 3,300	RKB Elevation (ft):	30.40	---	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	29-Jun-21	Job Reference RKB (ft):		---	---	---	---
Hole Made (ft) / Hrs:	310 / 22.75	Next BOP Test:	19-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):	13.63			LOT (lbs/gal):	0.61	Well Cost (\$):	---		
Drilling Days (act./plan):	5/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	5/30	Days On Location:	5		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 148	Service:	4 / 48	Other:	3 / 36	Total:	24 / 268

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Cleaned and cleared rig floor. Rigged up and ran 11 3/4" casing to 2,800' (report time)

Planned Operations: Run 11 3/4" casing to set depth.
Rig down Casing crew.
Run in the hole with stab-in tool.
Circulate and cement 11 3/4" casing.
Nipple down 20" BOPE.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:00	2.00	2,699	3-6-2	Pulled out of the hole from 951' to Surface. Broke out bit and inspected MWD. No visible wear on roller reamer or stabs. Motor had minimal movement in bearing assembly. cleaned and cleared rig floor.	
2:00	4:00	2.00	2,699	3-6-1	Make up 14 3/4" Bit and trip in the hole with BHA to 951'.	
4:00	5:15	1.25	2,699	10-6-3	Trip in the hole from 951' to 2,699'.	
5:15	15:30	10.25	3,009	3-2-3	Drilled 14-3/4" hole from 2,699' to 3,009' with full returns.	
15:30	16:00	0.50	3,009	3-2-3	After making a hook ROP dropped from 15'/hour to 0'/hour. Perform step test from 5K to 30K no ROP / No change in diff pressure and no pressure loss and no hook load change but found excessive amounts of metal on ditch magnet mix dry job.	
16:00	19:30	3.50	3,009	3-6-2	Pulled out of the hole from 3,009' to 951' with no issues. hoe taking proper fill. Stopped and removed rotating rubber at 1,100'.	
19:30	0:00	4.50	3,009	3-6-2	Racked back HWDP. Racked back 8" drill collars. Laid out Cubic sensor, Diffuser sub, along with float sub. Pulled up and broke out bit. laid out the remaining RSS tools. (Note: Bit was 3.75" under gage, 3.5" of the center of the bit was washed out with 4 jets missing. RSS had signs of wear below the pads approximately .25" wide by .25" deep. No signs of wear on the stabilizers or roller reamer. Motor had approximately .25" of play in bearing assembly.	

Management Summary

Pulled out of the hole from 951' to Surface.
Picked up 14 3/4" PDC bit.
Tripped in the hole to 2,699'.
Drilled 14-3/4" hole from 2,699' to 3,009' with full returns. Decision was made to pull out of the hole at 3,009' due to low ROP.
Pulled out of the hole from 3,009' to surface.
Laid out RSS assembly. cleaned and cleared rig floor for casing run.

Comments

Bit was 3.75" under gage with 3.5" of the center of the bit was washed out with 4 jets missing. RSS had signs of wear below the pads approximately 0.25" wide by 0.25" deep. No signs of wear on the stabilizers or roller reamer.

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	0		416		SURF	22.000	65	K-55	0.61

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
01-Jul-21 20:00 at Depth 3,009 ft Mud Pits, Type: Low Solids Non-Dispersed																				
9.00	42	14	15	7.8	1	11	9	0	92	1	3.2	800	120		5	9	16	116	109	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 5

Report For 01-Jul-21

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	20	---	Engineering - EACH	1	---
Gel - 100#SK	96	---	perdiem - OTHER	1	---
Zanflow - 25#SK	5	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth		This Run		R.O.P.		Mud Pump										
					In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF		
3	1	NOV	TKC66	14.750	433	2,266	9	251.8										267	572	301	1118
Jets: 15 15 15 15 16 16					Out: 2699	Grade:	Cutter: 3 / 1	Dull: LT / CT	Wear: N	Brgs: X	Gge:	Pull: PR									
4	1	NOV	TKC63	14.750	2699	310	10.25	30.2	75.0	40	188	15	9	900	2560	267	572	301	1118		
Jets: 15 15 15 15 16 16					Out: 3009	Grade:	Cutter: 4 / 8	Dull: RG / CR	Wear: A	Brgs: X	Gge: 3.75	Pull: PR									

BHA - No. 4 - BIT, OTHER, STAB, MWD, 4 OTHER, MMTR, RR, FLOAT, 2 OTHER, DC, XO, HWDP = 956.61

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
2,699	3,009	30.2	80.0	40	70	188	220	15	21	900	950	2,587

Annular Velocity: Drill Collars: 199.3 Drill Pipe: 129.3

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	145	Pick Up:	165	Slack Off:	135	Drag Avg/Max:	10 / 15
Slow Circulation Data:								
Pump 1:	30 spm	95 psi	45 spm	210 psi	60 spm	350 psi		
Pump 2:	30 spm	95 psi	45 spm	210 psi	60 spm	350 psi		
Pump 3:	30 spm	95 psi	45 spm	210 psi	60 spm	350 psi		
Hours on BHA:	Since Inspection:	19.25	Total:	19.25	Jars:	0		
Hours on Casing/Liner:	Rotating:	19.25 / 10.25	Tripping:	11 / 8	<input type="checkbox"/> Wear Bushing Installed			

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		
							N-S	E-W	D.L.S.
MWD	2,810.0	0.13	85.8	2,810.0	4.1	4.0	N 4.0	E 0.9	0.211
MWD	2,905.0	0.14	127.6	2,905.0	4.1	4.0	N 4.0	E 1.1	0.102
MWD	2,981.0	0.09	327.3	2,981.0	4.1	4.0	N 4.0	E 1.1	0.298
MWD	3,101.0	0.15	39.4	3,101.0	4.3	4.2	N 4.2	E 1.2	0.124

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)			Gas	Drilling	Pore	Mud	Shale	ROP		
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Dens.	Shale	Sand
2,650	2,670	2,650	2,670	0	0	0	0	0	0		9.00			
Formation Name: 1050% Rhyolite 50-90% Granite														
Lithology:														
2,670	2,700	2,670	2,700	0	0	0	0	0	0		9.00			
Formation Name:														
Lithology: 100% Granite														
2,700	3,000	2,700	3,000	0	0	0	0	0	0		9.00			
Formation Name:														
Lithology: 100% Granite														

Rig Information

Equipment Problems:	Generators having issues with over heating with higher pump rates.
Location Condition:	Good
Transport:	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 5

Report For 01-Jul-21

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	60	60	60	60	Centrifuge 1: 14 (Solids Removal)	Centrifuge 2: 14
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"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description					
Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, Tripping pipe, Rigging up and running casing.					
First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	
<input type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownamatic Check					

Weather Information

Sky Condition:	Clear	Visibility:	10
Air Temperature:	70 degF	Bar. Pressure:	29.83
Wind Speed/Dir:	6 / NNW	Wind Gusts:	1



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 6

Report For 02-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	3009	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	3009	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	29-Jun-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	19-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):				LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	6/21	Flat Days (act./plan):	0/9	Total Days (act./plan):			6/30	Days On Location:
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	4 / 48	Other:	7 / 84	Total: 28 / 336

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Installing 13 5/8" 5M BOPE. (report time)

Planned Operations: Nipple up 13 5/8" 5M BOPE. Test BOPE.
Run in the hole and lay down 5" drill pipe.
Pick up and rack back 5.5" drill pipe.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:30	0.50	3,009	3-97	Cleaned and cleared rig floor of 14 3/4" handling tools.	
0:30	1:00	0.50	3,009	10-98	Hold detailed safety meeting with Wyoming Casing Service/Rig crew along with GRG representative.	
1:00	2:00	1.00	3,009	CASE	Rig up 11 3/4" casing running equipment.	
2:00	8:30	6.50	3,009	CASE	Run 11 3/4", 54 lbs/ft, J-55 BTC casing as follows: Float Shoe, 2-joints, Float collar followed by 71-joints. Landed out with 31' landing joint to set depth of 2,989.99' Total casing ran 2,958.99' Shoe set 2,984.70 KB. Float Collar 2,903.97' KB.	
8:30	9:00	0.50	3,009	CASE	Rig down casing crew	
9:00	9:30	0.50	3,009	SERV	Service rig	
9:30	11:30	2.00	3,009	CMTP	Install valve in wellhead, rig up pumps in cellar, 4 bolt BOP	
11:30	12:30	1.00	3,009	TRPI	Trip in hole with stab-in	
12:30	13:30	1.00	3,009	CIRC	Circulate bottoms up	
13:30	14:30	1.00	3,009	CMTP	Rig up cement crew and held JSA	
14:30	16:30	2.00	3,009	CMTP	Pump 2 bbl water, pressure test lines to 3000 psi, pump 52 bbls fresh water, @ 6bpm, 20 bbl mud clean, @ 6 bpm, 10 bbl fresh water @ 6bpm-HT--HSLD atr 6 bpm, , mix and pump 315 bbl RC-Thermalite (cement to surface at 300 bbl, Displace with 3 bbl water and 47 bbl drilling mud, check floats, CIP @ 16:00	
16:30	18:00	1.50	3,009	CMTP	Un-sting and trip out of the hole with stab-in to surface.	
18:00	21:00	3.00	3,009	BOPO	Nipple down 21-1/4" BOPE and set out.	
21:00	23:45	2.75	3,009	WELLHD	Installed temporary 11 3/4" x 13 5/8 " SOW flange. Test to 1,000 psi. Good test.	
23:45	0:00	0.25	3,009	2-14	Installed 13 5/8" 5M BOPE stack.	

Management Summary

Cleaned and cleared rig floor.
Held safety meeting.
Rigged up and ran 11 3/4" casing with shoe depth of 2,899.99' KB.
Rigged down casing crew.
Ran in the hole with stab-in tool.
Rigged up Resource cementing and cemented casing with 315 bbl RC-Thermalite cement. Had good cement to surface. CIP @ 16:00.
Rigged down Resource cementing.
Pulled out of the hole with stab-in tool.
Nipped down 21-1/4" BOPE.
Installed temporary 11 3/4" x 13 5/8 " SOW flange. Test to 1,000 psi. Good test.
Installed 13 5/8" 5m BOPE stack.

Comments

CIP @ 1600 HRS.
Good cement to surface.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 6

Report For 02-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
02-Jul-21 16:00 at Depth 3,009 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.90	43	43	29	7.8	1	10.5	7	93	0	0.5	2.8	900	120		5	9	16	109	118	

Mud Consumables

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

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		
							N-S	E-W	D.L.S.
MWD	3,196.0	0.18	42.8	3,196.0	4.6	4.4	N 4.4	E 1.3	0.033
MWD	3,289.0	0.08	311.2	3,289.0	4.7	4.5	N 4.5	E 1.4	0.214

Rig Information

Equipment Problems: Replaced HYD hose on top drive.
Location Condition: Good.
Transport: Received 2- 10 5/8" nov bit's. Sent 2-14 3/4" used bits back to NOV. sent in 20" double gate along with spacer spools.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	60	60	60	60	Centrifuge 1: 6 (Solids Removal)	Centrifuge 2: 6 (Solids Removal)
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"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Running casing, Cementing, Handling BOPE.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
<input type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownamatic Check

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 70 degF	Bar. Pressure: 29.82
Wind Speed/Dir: 8 / SSE	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 7

Report For 03-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	3009	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	3009	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):				LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	7/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	7/30	Days On Location: 7		
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	4 / 48	Other:	7 / 84	Total: 28 / 336

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

Current Operations: Picked up 5.5" drill pipe from 740' to 2,900'.
Filled Pipe.
Drilled out shoe track from 2,902' to 2,989'.

Planned Operations: Perform FIT.
Pull out of the hole.
Pick up 10 5/8" RSS assembly.
Trip in the hole.
Drill 10 5/8" hole.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	7:00	7.00	3,009	2-14	Installed BOP as followed. 11.75" x 13 5/8" 2M Spacer spool. 13 5/8" 5M mud cross, 5M Double gates, 13 5/8" 5M Annular, 13 5/8" Riser with rotating head. Installed inner and outer choke and kill valves. Installed choke and kill lines. Torqued all flanges. (Note: removed variable 3.5"x 5" ram blocks and installed 5.5" ram blocks)	
7:00	11:30	4.50	3,009	2-15	#1 Test Blind rams, check valve, casing and 3 choke valves to 250 low pressure for 5 min and 1000 psi high pressure for 30 min, #2 Test pipe rams, outside kill side mud cross and 3 choke valves to 250 psi low pressure for 5 min and 1000 psi high pressure for 10 min, #3 Test Bag, inside kill mud cross and 3 choke valves to 250 psi low pressure for 5 min and 1000 psi high pressure for 10 min #4 Test HCR valve to 250 psi low pressure for 5 min and 1000 psi high pressure for 10 min #5 Test inside choke side mud cross valve to 250 psi for 5 min and 1000 psi for 10 min. All test are good	
11:30	15:00	3.50	3,009	3-34-2	RIH with 5 stands of 5" HWDP and 20 stands of 5" DP / POH laying down DP and transporting to 16A for inspection / excessive over torque.	
15:00	17:30	2.50	3,009	4-34-2	RIH with same 5 stands of HWDP and remaining 18 stands of 5" drill pipe / Laid down 54 joints of 5" drill pipe and 15 joints of 5" HWDP and transport to 16A for inspection / excessive over torque Note: When laying down 5" DP every 3rd joint that had not been serviced (due to making only 2 trips) was extremely over torqued (55-70K) more than double max torque due to extreme drilling parameters. SD-80 unable to break so manual tongs were utilized teamed by 2 air tuggers to break the connection and ultimately had to go to a 4 part break line after the torque cylinder was destroyed.	
17:30	18:00	0.50	3,009	SERV	Serviced rig.	
18:00	21:00	3.00	3,009	OTHER	Rebuild I-BOP with new 6 5/8" X 6 5/8" sub. Installed 6 5/8" X 5.5" X/O lower Valve. Installed saver sub. Installed torque clamps.	
21:00	23:00	2.00	3,009	3-34-1	Transport 5.5" HWDP along with 71-joints of 5.5" drill pipe from 16A location to rig site. Load racks and strap same.	
23:00	0:00	1.00	3,009	3-34-3	Make up 10 5/8" drill out assembly as followed. 10 5/8" Mill Tooth. 8 1/8" Junk Basket. 3-Stands of 8" DC. 5-Stands of 5.5" HWDP.	

Management Summary

Nipple up and test 13 5/8" 5M BOPE.
Ran in the hole with 5" HWDP and 5" drill pipe to 2,327'.
Laid out 5" drill pipe to HWDP.
Ran in the hole with remaining 18 stands of drill pipe and laid out same.
Serviced rig.
Changed out saver sub.

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 7

Report For 03-Jul-21

Transported 5.5" drill pipe from 16A to rig site.
 Loaded racks with 5.5" drill pipe, strapped same.
 Made up 10 5/8" drill out assembly.

Comments

Test out all BOPE to 300 psi low and 1,000 psi high, all test good.
 Pressure test results were sent to Jim Goddard (State Engineer)

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
03-Jul-21 14:00 at Depth 3,009 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.80	41	15	9	8.8	1	10	6	0	94	0.25	2.1	800	120		3	6	8	85	85	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	perdiem - OTHER	1	---
Trucking - EACH	1	---			

Bit/BHA/Workstring Information

BHA - No. 5 - BIT, JUNK, 9 DC, XO, 15 HWDP = 739.12

Rig Information

Equipment Problems: None.

Location Condition: Good.

Transport:

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom
Shaker No 1:	60	60	60	60
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"	114	19.5	S-135	4.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Cementing, laying down drill pipe, forklift operations.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
<input checked="" type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownomatic Check

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 75 degF	Bar. Pressure: 29.78
Wind Speed/Dir: 10 / S	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 8

Report For 04-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	3456	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	3455	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	447 / 10.5	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	
Average ROP (ft/hr):	42.57			LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	8/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	8/30	Days On Location:	8		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	2 / 24	Total:	25 / 300

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 10 5/8" hole section at 3,628'.

Planned Operations: Drill 10 5/8" hole section to 3,622'. Possibly trip to pick up conventional assembly with 1.5 deg motor due to build in angle.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	4:00	4.00	3,009	3-34-1	Picked up 5.5" drill pipe from 740' to 2,900'.	
4:00	4:15	0.25	3,009	3-5-1	Lined up mud pumps and shakers. Filled pipe.	
4:15	6:00	1.75	3,009	3-28	Drilled out shoe track from 2,902' to 2,989'. Good cement in shoe track from 2,922' to shoe. Observed 4' off good cement outside of the shoe. Cleaned out rat hole from 2,989' to 3,009'.	
6:00	7:00	1.00	3,009	3-46	Perform FIT. Gradient of 0.61 psi/ft with EQM of 11.7 ppg	
7:00	9:30	2.50	3,009	3-6-4	POH and lay down junk sub and bit. Junk basket had nine pieces of metal, small in size 0.5" by .5".	
9:30	10:00	0.50	3,009	4-34-3	Picked up Directional Tools and PDC	
10:00	11:00	1.00	3,009	OTHER	Repaired depth tracker in crown with Pason	
11:00	12:00	1.00	3,009	4-34-3	Picked up directional Tools and PDC	
12:00	12:30	0.50	3,009	SERV	Serviced Rig.	
12:30	13:30	1.00	3,009	OTHER	Broke off TIW and saver sub / welded saver sub to TIW and reinstalled same.	
13:30	16:00	2.50	3,009	TRPI	Tripped in hole to 3,009'. torqued every connection to 42K on 5.5" drill pipe.	
16:00	0:00	8.00	3,456	3-2-3	Drilled 10 5/8" section from 3,009' to 3,456'. Performed rotary step from 3,230' to 3,260'. Performed weight on bit step test from 3,265' to 3,291'.	

Management Summary

Picked up 5.5" drill pipe from 740' to 2,900'.
 Lined up mud pumps and shakers. Filled pipe.
 Drilled out shoe track from 2,902' to 2,989'.
 Performed FIT.
 Pulled out of the hole and laid out bit and junk basket. Found a few small pieces of bit debris in junk basket from last 14 3/4" bit run.
 Picked up 10 5/8" RSS assembly.
 Repaired depth tracker in crown with Pason.
 Continued picking up 10 5/8" RSS assembly.
 Broke off TIW and saver sub and tack welded saver sub to TIW and reinstalled same.
 Tripped in hole to 3,009'.
 Drilled 10 5/8" section from 3,009' to 3,456'.

Comments

Observed 70' of good cement throughout shoe track.
 4' of good cement outside of shoe track.
 Torque all 5.5" drill pipe to 42K.
 Performed rotary step from 3,230' to 3,260'.
 Performed weight on bit step test from 3,265' to 3,291'.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 8

Report For 04-Jul-21

Pumped 100 bbl's of fresh water down at 3,430' with ROP increased 85-95% once water hit the bit. ROP dropped back down once water cleared the bit.

Lost communication with MWD at 3,346'. Trouble shoot communication issues.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
04-Jul-21 20:30 at Depth 3,341 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.70	39	9	10	9.4	1	10.5	6	0	94	0.25	1.6	900	250		4	5	11	105	114	

Mud Consumables

Item Description		Qty.	Cost	Item Description		Qty.	Cost
Bicarb - 50#SK		12	---	caustic Soda - 50#SK		2	---
DeFoam 14 - GAL		2	---	Desco CF - 25#SK		2	---
Engineering - EACH		1	---	FlowZan - 25#SK		6	---
pallets - OTHER		1	---	perdiem - OTHER		1	---

Bit/BHA/Workstring Information

				Depth		This Run		R.O.P.		Mud				Pump					
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF	
5	1	VAREL	VM-1	10.625	3009	0	1.5	0.0		10	50	6	9	600	1300	107	88	31	285
Jets: 28 28 28				Out: 3009		Grade: Cutter: 1 / 1		Dull: WT / NO		Wear: A		Brgs: 0		Gge:		Pull: BHA			
6	1	NOV	TKC83	10.625	3009	282	8	35.2				9	800	2330	278	596	278	991	
Jets: 12 12 12 12 12 12 13 13				Out: 3651		Grade: Cutter: 1 / 1		Dull: WT / NO		Wear: A		Brgs: X		Gge: 0		Pull: DTF			
BHA - No. 6 - BIT, OTHER, STAB, MWD, 4 OTHER, MMTR, RR, FLOAT, 2 OTHER, DC, XO, HWDP = 966.88																			

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)	
3,009	3,456	35.0	150.0	55	65	45	65	7	9	800	815	2,181	
Annular Velocity: Drill Collars: 478.5				Drill Pipe: 231.5									

Miscellaneous Drilling Parameters

Hook Loads (lbs):		Off Bottom Rotate: 185		Pick Up: 195		Slack Off: 175		Drag Avg/Max: 5 / 10	
Slow Circulation Data:									
Pump 1:		30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:		30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:		30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:		Since Inspection: 27.25		Total: 27.25		Jars: 0			
Hours on Casing/Liner:		Rotating: 10 /		Tripping: 8 /		<input type="checkbox"/> Wear Bushing Installed			



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 8

Report For 04-Jul-21

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)			Gas	Drilling	Pore	Mud	Shale	ROP		
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Dens.	Shale	Sand
2,700	3,040													
Formation Name:														
Lithology: 100% Granite														
3,040	3,190													
Formation Name:														
Lithology: 60-100% Hornblende Quartz Monzodiorite, 0-40% Granite														
3,190	3,330													
Formation Name:														
Lithology: 100% Granite														
3,330	3,380													
Formation Name:														
Lithology: 100% Quartz Monzodiorite														
3,380	3,420													
Formation Name:														
Lithology: 100% Granodiorite														
3,420	3,470													
Formation Name:														
Lithology: 100% Quartz Monzodiorite														

Rig Information

Equipment Problems: None.
Location Condition: Good.
Transport: Received 7" float equipment.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):	
Shaker No 1:	60	60	60	60		
Shaker No 2:	120	120	80	80	Centrifuge 1: 12 (Solids Removal)	Centrifuge 2: 12 (Solids Removal)
Shaker No 3:	120	120	80	80		

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	194	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Tripping pipe, Handling BHA, House keeping, Trip hazards.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/>	Crownamatic Check

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 75 degF	Bar. Pressure: 29.78
Wind Speed/Dir: 9 / SW	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 9 Report For 05-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	3730	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	3729	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	274 / 14.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	
Average ROP (ft/hr):	19.57			LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	9/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	9/30	Days On Location:	9		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	6 / 72	Total:	29 / 348

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 10 5/8" hole section at 4,260'.

Planned Operations: Drill 10 5/8" hole section.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	5:00	5:00	3,582	3-2-3	Drilled 10 5/8" section from 3,456' to 3,582'. Pumped 100 bbl's of fresh water down at 3,557', ROP increased 85-95% once water hit the bit. ROP dropped back down once water cleared the bit. Reduced pump rate from 800 to 775 per Texas A&M advisor.	
5:00	5:30	0:50	3,582	3-5-1	Circulated while discussing survey of 3.75 deg with team. Decision was made to drill 40' of new hole and take a check shoot.	
5:30	6:00	0:50	3,602	3-2-3	Drilled 10 5/8" section from 3,582' to 3,602'.	
6:00	7:30	1:50	3,651	3-2-3	Drilled 10-5/8" hole from 3,602' to 3,651'.	
7:30	8:00	0:50	3,651	CIRC	Take check shot and confirm steerable not working / circ and pump slug	
8:00	12:00	4:00	3,651	3-6-4	POH to change out directional assembly.	
12:00	13:30	1:50	3,651	4-34-4	Lay down rotary steerable assembly and bit	
13:30	14:30	1:00	3,651	4-34-3	Picked up 1.5 deg bent assembly	
14:30	16:00	1:50	3,651	3-6-3	RIH to shoe	
16:00	21:30	5:50	3,651	OTHER	Transferred mud from 78B-32 to sump @ 58-32 / cleaned pits / filled pits with water to prepare for change over.	
21:30	22:00	0:50	3,651	3-6-3	RIH from 2900' to 3,645'.	
22:00	23:00	1:00	3,651	3-5-1	Filled pipe and change hole over to fresh water with a total of 3,800 strokes at 486 gpm.	
23:00	23:30	0:50	3,681	3-2-3	Slide drill 10 5/8" hole from 3,651' to 3,681'.	
23:30	0:00	0:50	3,730	3-2-3	Drilled 10-5/8" hole from 3,681' to 3,730'	

Management Summary

Drilled 10 5/8" section from 3,456' to 3,582'.
 Circulated while discussing survey of 3.75 deg with team.
 Drilled 10 5/8" section from 3,582' to 3,651'.
 Took check shot and confirm steerable not working.
 Circulated and pumped slug.
 Pulled out of the hole to change out directional assembly.
 Laid down rotary steer-able assembly and bit.
 Picked up 1.5 deg bent assembly.
 Tripped in the hole to 2,900'.
 Transferred mud from 78B-32 to sump @ 58-32 / cleaned pits / filled pits with water to prepare for change over.
 Tripped in the hole from 2900' to 3,645'.
 Filled pipe and change hole over to fresh water.
 Slide drilled 10 5/8" hole with water from 3,651' to 3,681'.
 Drilled 10-5/8" hole from 3,681' to 3,730'.

Comments

Performed weight on bit step test at 3,711'.
 Performed RPM step test at 3,820'.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 9

Report For 05-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
05-Jul-21 23:00 at Depth 3,651 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	0	9	1	0	99	0	0	600	120		1	1	1	90	114	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	40	---	Engineering - EACH	1	---
FlowZan - 25#SK	22	---	pallets - OTHER	2	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

										Depth		This Run		R.O.P.		Mud Pump						
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF				
6	1	NOV	TKC83	10.625	3009	387	15	25.8	65.0	65	40	8	9	800	2495	278	596	278	991			
Jets: 12 12 12 12 12 12 13 13				Out: 3651	Grade:	Cutter: 1 / 1	Dull: WT / NO	Wear: A	Brgs: X	Gge: 0	Pull: DTF											
7	1	NOV	TKC83	10.625	3651	79	1	79.0	79.0	55	60	11	8	800	2510	278	569	265	945			
Jets: 13 13 12 12 12 12 12 12				Out: 5761	Grade:	Cutter: 4 / 8	Dull: RO / LT	Wear: S	Brgs: X	Gge: 3	Pull: PR											
BHA - No. 7 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 960.36																						

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)
3,651	3,730	130.0	157.0	45	65	60	60	12	14	800	830	2,460
Annular Velocity: Drill Collars: 478.0				Drill Pipe: 231.0								
Comments: Slide drilled 10 5/8" hole from 3,651' to 3,681'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	196	Pick Up:	199	Slack Off:	190	Drag Avg/Max:	5000 / 8000
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	35.25	Total:	35.25	Jars:	0		
Hours on Casing/Liner:	Rotating:	18 /	Tripping:	14 /	<input type="checkbox"/> Wear Bushing Installed			

Survey Information

Survey Type	Meas. Depth		Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
								N-S	E-W	
MWD	3,384.0	0.76		228.4	3,384.0	4.2	4.1	N 4.1	E 0.9	0.794
MWD	3,480.0	2.55		232.0	3,479.9	2.7	2.4	N 2.4	W 1.3	1.867
MWD	3,575.0	3.93		223.2	3,574.8	5.3	-1.3	S 1.3	W 5.2	1.539
MWD	3,642.0	3.93		218.3	3,641.6	9.4	-4.7	S 4.7	W 8.2	0.498
MWD	3,737.0	1.10		218.9	3,736.5	13.4	-8.0	S 8.0	W 10.8	2.979



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 9

Report For 05-Jul-21

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)			Gas		Drilling Exp.	Pore Press	Mud Dens.	Shale Dens.	ROP	
From	To	From	To	Avg	Max	at Depth	Connect.	Trip					Shale	Sand
3,640	3,730													
Formation Name:														
Lithology: 100% Quartz Monzodiorite														
3,330	3,380													
Formation Name:														
Lithology: 100% Quartz Monzodiorite														
3,380	3,420													
Formation Name:														
Lithology: 100% Granodiorite														
3,420	3,510													
Formation Name:														
Lithology: 100% Quartz Monzodiorite														
3,520	3,560													
Formation Name:														
Lithology: 20-60% Quartz Monzodiorite 40-80% Granodiorite														
3,570	3,580													
Formation Name:														
Lithology: 100% Quartz Monzodiorite														
3,590	3,630													
Formation Name:														
Lithology: 20% Quartz Monzodiorite 80% Grandodiorite														

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:	100	100	100	100	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	120	120	80	80	Centrifuge 1: 10 (Solids Removal)		Centrifuge 2: 10 (Solids Removal)
Shaker No 3:	120	120	80	80			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5	194	24.7	S-135	5.5REG					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Tripping pipe, Handling BHA, Cleaning mud pits, LOTO.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/>	Crownamatic Check

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 72 degF	Bar. Pressure: 29.84
Wind Speed/Dir: 10 / ENE	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 10

Report For 06-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	5334	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	5333	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	---
Hole Made (ft) / Hrs:	1,604 / 23.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):	69.74			LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	10/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	10/30	Days On Location:	10		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	4 / 48	Total:	27 / 324

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 10 5/8" hole section at 5,717'. (report time)

Planned Operations: Drill 10 5/8" hole section until ROP drops below 30 ft/hr.
Trip out of the hole for new bit.
Continue to drill 10 5/8" hole section to coring point (6,700')

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:30	0.50	3,765	3-2-3	Drilled 10-5/8" hole from 3,730' to 3,765'	
0:30	0:45	0.25	3,780	3-2-3	Slide drill 10 5/8" hole from 3,765' to 3,780'.	
0:45	1:30	0.75	3,927	3-2-3	Drilled 10-5/8" hole from 3,780' to 3,927'.	
1:30	2:00	0.50	3,947	3-2-3	Slide drill 10 5/8" hole from 3,927' to 3,947'.	
2:00	3:00	1.00	4,060	3-2-3	Drilled 10-5/8" hole from 3,947' to 4,060'.	
3:00	3:30	0.50	4,085	3-2-3	Slide drill 10 5/8" hole from 4,060' to 4,085'.	
3:30	4:15	0.75	4,153	3-2-3	Drilled 10-5/8" hole from 4,085' to 4,153'. Performed weight on bit step test at 4,099' per Texas A&M advisor 50-70k.	
4:15	4:45	0.50	4,168	3-2-3	Slide drill 10 5/8" hole from 4,153' to 4,168'.	
4:45	11:45	7.00	4,753	3-2-3	Drilled 10-5/8" hole from 4,168' to 4,753	
11:45	12:15	0.50	4,773	3-2-3	Slide drill 10-5/8" hole from 4,753' to 4,773'.	
12:15	16:30	4.25	5,036	3-2-3	Drilled 10-5/8" hole from 4,773' to 5,036'.	
16:30	17:00	0.50	5,036	SERV	Serviced Rig.	
17:00	17:30	0.50	5,036	OTHER	Replaced stroke counter on # 2 mud pump.	
17:30	18:15	0.75	5,051	3-2-3	Slide drill 10-5/8" hole from 5,036' to 5,051'.	
18:15	0:00	5.75	5,334	3-2-3	Drilled 10-5/8" hole from 5,051' to 5,334'. Dump and diluted system with 200 bbl's of fresh water while drilling ahead at 5,166'.	

Management Summary

Drilled 10 5/8" section from 3,730' to 5,036'.
Serviced rig.
Replaced stroke counter on # 2 mud pump.
Drilled 10 5/8" section from 5,036' to 5,334'.

Comments

Performed weight on bit step test at 4,099'.
Dump and diluted system with 200 bbl's of fresh water while drilling ahead at 5,166'.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%													Gels			Temp		Mud		
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
06-Jul-21 18:00 at Depth 5,051 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.40	26	0	1	0	1	11	3	0	97	0.01	0.6	600	120		1	1	1	97	109	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 10

Report For 06-Jul-21

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	80	---	caustic Soda - 50#SK	2	---
Engineering - EACH	1	---	pallets - OTHER	4	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth		This Run		R.O.P.		Mud		Pump		J. Vel	P. Drp	HHP	JIF	
					In	Out	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt					Flow
7	1	NOV	TKC83	10.625	3651	1,683	24	70.1	175.0	65	40	8	8	820	2160	285	605	289	1005
Jets: 13 13 12 12 12 12 12 12					Out: 5761		Grade: Cutter: 4/8		Dull: RO/LT		Wear: S		Brgs: X		Gge: 3		Pull: PR		
BHA - No. 7 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 960.36																			

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
3,730	5,334	65.0	175.0	65	70	40	80	8	9	820	830	2,680

Annular Velocity: Drill Collars: 478.5 Drill Pipe: 247.2

Comments: Slide drill 10 5/8" hole from 3,765' to 3,780'.
Slide drill 10 5/8" hole from 3,927' to 3,947'.
Slide drill 10 5/8" hole from 4,060' to 4,085'.
Slide drill 10 5/8" hole from 4,153' to 4,168'.
Slide drill 10-5/8" hole from 4,753' to 4,773'.
Slide drill 10-5/8" hole from 5,036' to 5,051'.

Miscellaneous Drilling Parameters

Hook Loads (lbs): Off Bottom Rotate: 236 Pick Up: 255 Slack Off: 220 Drag Avg/Max: 10 / 15

Slow Circulation Data:

Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi

Hours on BHA: Since Inspection: 58.25 Total: 58.25 Jars: 0

Hours on Casing/Liner: Rotating: 41 / Tripping: 14 / Wear Bushing Installed

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
							N-S	E-W	
MWD	3,832.0	1.11	93.7	3,831.5	13.6	-8.8	S 8.8	W 10.4	2.065
MWD	3,927.0	1.83	89.4	3,926.5	11.9	-8.8	S 8.8	W 8.0	0.766
MWD	4,022.0	3.01	85.3	4,021.4	9.5	-8.6	S 8.6	W 4.0	1.255
MWD	4,117.0	1.92	159.4	4,116.3	9.9	-9.9	S 9.9	W 0.9	3.259
MWD	4,181.0	1.19	199.7	4,180.3	11.5	-11.5	S 11.5	W 0.8	1.987
MWD	4,213.0	0.99	220.1	4,212.3	12.1	-12.0	S 12.0	W 1.1	1.354
MWD	4,308.0	0.86	209.3	4,307.3	13.4	-13.3	S 13.3	W 1.9	0.229
MWD	4,403.0	0.40	258.7	4,402.3	14.2	-14.0	S 14.0	W 2.6	0.708
MWD	4,498.0	0.66	264.5	4,497.3	14.5	-14.1	S 14.1	W 3.5	0.279
MWD	4,593.0	1.33	319.3	4,592.2	14.1	-13.3	S 13.3	W 4.8	1.148
MWD	4,688.0	1.75	318.6	4,687.2	13.1	-11.4	S 11.4	W 6.4	0.443
MWD	4,783.0	1.48	0.5	4,782.2	11.7	-9.1	S 9.1	W 7.4	1.246
MWD	4,879.0	1.68	339.3	4,878.1	10.2	-6.5	S 6.5	W 7.9	0.641
MWD	4,974.0	1.65	322.9	4,973.1	10.1	-4.1	S 4.1	W 9.2	0.498
MWD	5,069.0	0.45	52.1	5,068.1	10.1	-2.8	S 2.8	W 9.7	1.794
MWD	5,164.0	0.21	25.9	5,163.1	9.7	-2.4	S 2.4	W 9.3	0.292
MWD	5,259.0	0.57	255.7	5,258.1	10.0	-2.4	S 2.4	W 9.7	0.762



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 10

Report For 06-Jul-21

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)			Gas	Drilling	Pore	Mud	Shale	ROP		
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Dens.	Shale	Sand
3,990	4,770	3,989	4,769											

Formation Name:

Lithology: 100% Quartz Monzodiorite

4,770	4,790	4,769	4,789											
-------	-------	-------	-------	--	--	--	--	--	--	--	--	--	--	--

Formation Name:

Lithology: 60-80% Granite, 20-40% Quartz Monzodiorite

4,790	5,333	4,789	5,332											
-------	-------	-------	-------	--	--	--	--	--	--	--	--	--	--	--

Formation Name:

Lithology: 100% Quartz Monzodiorite

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:	120	120	120	120	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	120	120	120	120	Centrifuge 1: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description					
Safety	60	Two 30 min Pre tour safety meetings with both crews. Forklift operations, House keeping, Proper lifting techniques.					
First Aid Treatments:	0	Medical Treatments:	0	Lost Time Incidents:	0	Days Since LTI:	
<input type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownamatic Check					

Weather Information

Sky Condition:	Clear	Visibility:	10
Air Temperature:	75 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	8 / SE	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 11

Report For 07-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---			
Measured Depth (ft):	5761	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	5760	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---	
Hole Made (ft) / Hrs:	427 / 12.0	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---	
Average ROP (ft/hr):	35.58			LOT (lbs/gal):	11.70	Well Cost (\$):		---	
Drilling Days (act./plan):	11/21	Flat Days (act./plan):	0/9	Total Days (act./plan):		11/30	Days On Location:		11
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	5 / 60	Total:	28 / 336

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Changing out motor from 1.5 deg, 0.111 rev/gal to 1.25 deg, 0.166 rev/gal.

Planned Operations: Swap out motor from 0.111 rev/gal to 0.116 rev/gal.
Trip in the hole to 2,946'.
Wait on SCR electrician to arrive from Vernal, estimated arrival time 0900 HRS.
Troubleshoot issues with traction A motor on drawworks and repair.
Trip in the hole to 5,761'.
Continue to drill 10-5/8" hole section from 5,761' to 6,700' (coring depth)

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	4:30	4.50	5,628	3-2-3	Drilled 10-5/8" hole from 5,334' to 5,628'.	
4:30	5:00	0.50	5,628	3-2-3	Slide drill 10 5/8" hole from 5,628' to 5,643'.	
5:00	7:30	2.50	5,761	3-2-3	Drilled 10-5/8" hole from 5,628' to 5,761'	
7:30	11:00	3.50	5,761	3-6-4	ROP dropped to 30%, POH for Bit	
11:00	12:30	1.50	5,761	10-6-2	POH w/BHA / found 2 jets plugged with motor rubber and bit DBR'd. NOTE: no over torqued connections.	
12:30	13:00	0.50	5,761	10-344	Lay down NMDC, Motor and bit.	
13:00	15:30	2.50	5,761	CUTDL	Slipped and Cut drilling line while waiting on Schlumberger tools to arrive. Note: Dumped and diluted system with 250 bbl's of fresh water.	
15:30	16:00	0.50	5,761	SERV	Serviced rig while waiting on Schlumberger tools to arrive.	
16:00	19:00	3.00	5,761	3-34-1	Picked up 5.5" drill pipe and standing back in derrick while waiting on Schlumberger tools to arrive. Motor arrived on location at 19:10 HRS.	
19:00	19:30	0.50	5,761	3-34-3	Strap Motor prior to picking up.	X
19:30	22:30	3.00	5,761	3-34-3	Picked up 1.50 deg bent assembly. Scribe Motor. Run in the hole with BHA to 1,042'.	X
22:30	23:30	1.00	5,761	3-6-3	Ran in the hole from 1,042' to 2,946'. Installed TIW valve in sting. Picked up and racked back 6 stands of 5.5" drill pipe.	X
23:30	0:00	0.50	5,761	3-34-1	Picked up and racked back 6 stands of 5.5" drill pipe out of the mouse hole.	

Management Summary

Drilled 10-5/8" hole from 5,334' to 5,761'.
Tripped out of the hole from 5,761' to surface due to low ROP.
Laid down NMDC, Motor and bit.
Slipped and Cut drilling line.
Serviced rig.
Picked up and racked back 5 stands of drill pipe while waiting on Schlumberger tools to arrive.
Motor arrived on location at 19:10 HRS.
Picked up 1.25 deg bent assembly and tripped in the hole to 2,926'.
Picked up and racked back 6 stands of 5.5" drill pipe.

Comments

Found 2 jets plugged with rubber the stator section of the motor.
Bit was DBR'd.
No over torqued connections.
Dumped and diluted system with 250 bbl's of fresh water while out of the hole.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 11

Report For 07-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
07-Jul-21 16:00 at Depth 5,761 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	9.5	2	0	98	0.01	0	800	120		1	1	1	95	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	1	---	Engineering - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

				Depth		This Run		R.O.P.			Mud Pump										
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF			
7	1	NOV	TKC83	10.625	3651	2,110	31.5	67.0	165.0	65	40	9	8	820	2550	285	605	289	1005		
Jets: 13 13 12 12 12 12 12 12				Out: 5761		Grade: Cutter:		4 / 8			Dull: RO / LT		Wear: S		Brgs: X		Gge: 3		Pull: PR		
8	1	NOV	TCK83	10.625	5761																
Jets: 13 13 12 12 12 12 12 12				Out: 5761		Grade: Cutter:		0 / 0			Dull: NO / NO		Wear: A		Brgs: X		Gge: 0		Pull: BHA		
BHA - No. 8 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 962.49																					

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)
5,334	5,761	57.0	70.0	60	65	40	45	9	10	810	830	2,550
Annular Velocity: Drill Collars:				478.5		Drill Pipe:		247.2				
Comments: Slide drill 10 5/8" hole from 5,628' to 5,643'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	248	Pick Up:	257	Slack Off:	235	Drag Avg/Max:	10 / 15
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	65.75	Total:	65.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	48.5 /	Tripping:	22 /	<input type="checkbox"/> Wear Bushing Installed			

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect.	Exp.	Press	Dens.	Dens.	Shale Sand
5,334	5,761	5,333	5,760									
Formation Name:												
Lithology: 100% Granodiorite												

Rig Information

Equipment Problems:	Traction motor A on drawworks kicking SCR breaker. Electrician in route to troubleshoot.
Location Condition:	Good.
Transport:	Received 8" 1.25 deg motor along with RSS tool. Back hauled 2 dirty motors along with dirty RSS tool.

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: 24 (Solids Removal)		Centrifuge 2: 24 (Solids Removal)
Shaker No 3:	120	120	120	120			



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 11

Report For 07-Jul-21

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
5.5"	258	24.7	S-135	5.51F					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Forklift operations, Handling BHA, Tripping pipe.

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

Accident Description: None to report.

BOP Test Crownamatic Check

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 75 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 8 / SW	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 12 Report For 08-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	5761	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	5760	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	
Average ROP (ft/hr):				LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	12/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	12/30	Days On Location:	12		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	2 / 24	Total:	25 / 300

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Waiting on SCR technician to arrive.

Planned Operations: Wait on SCR technician to arrive.
troubleshoot SCR.
Trip in the hole.
Drill 10-5/8" hole section from 5,761' to 6,700' (coring depth).

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:00	1.00	5,761	3-34-1	Continue picking up and racking back 6 stands of 5.5" drill pipe out of the mouse hole.	
1:00	2:00	1.00	5,761	3-5-1	Tripped in one stand to 3,030'. Circulate bottoms up to cool wellbore while waiting on electrician to arrive to troubleshoot issue with drawworks A traction motor. Max temperature observed at the flow line was 105 deg.	
2:00	6:00	4.00	5,761	3-34-3	Tripped out of the hole from 2,946' to Surface. break out bit and swap motor from 1.5 deg. .111 rev to 1.25 deg .166 rev. Note: first motor arrived on location at 1915 HRS on 7-7. No paper work was provided with the motor when it arrived. Motor was made up and ran in the hole to 2,946'. Second motor arrived at 0100 HRS on 7-8. Once paper work was provided to the on-site GRG supervisor it was discovered that the first motor ran in the hole was a low speed high torque motor with a .111 rev. conversation was had with GRG team and decision was made to pull out of the hole and swap motors to the high speed low torque .166 rev that was delivered at 0100 HRS while waiting on electrician to arrive to troubleshoot drawworks A traction motor.	X
6:00	6:30	0.50	5,761	3-34-4	Lay down MWD, NMDC and motor	X
6:30	11:30	5.00	5,761	9-32	Waiting on Schlumberger to rebuild MWD	X
11:30	13:00	1.50	5,761	3-34-3	Picked up Directional tools and RIH with same.	X
13:00	14:00	1.00	5,761	OTHER	Changed Pason sensor in crown.	
14:00	15:00	1.00	5,761	3-34-3	RIH to 1135'.	X
15:00	0:00	9.00	5,761	REPR	Repair Rig / Work on rig SCR system. Electrician was unable to locate issue with drawwork traction motor A. Wait on SCR tech to arrive.	X

Management Summary

Continued picking up and racking back 6 stands of 5.5" drill pipe out of the mouse hole.
 Tripped in one stand to 3,030'. Circulate bottoms up to cool wellbore while waiting on electrician to arrive to troubleshoot issue with drawworks A traction motor.
 Tripped out of the hole from 2,946' to Surface. break out bit and swap motor from 1.5 deg. .111 rev to 1.25 deg 0.166 rev/gal.
 Laid down MWD, NMDC and motor.
 Rebuild MWD.
 Picked up Directional tools and RIH with same.
 Changed Pason sensor in crown.
 RIH to 1135'.
 Repair Rig / Work on rig SCR system.

Comments

Total hours of NPT on daily report 13 due to Schlumberger 12.0 HRS.
 Total hours for well to Schlumberger 16.5 HRS.
 Total hours of NPT on daily report 13 due to Frontier 9 HRS.
 Total hours for well to Frontier 9.0 HRS.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 12

Report For 08-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
08-Jul-21 15:30 at Depth 5,761 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	10	2	0	98	0.01	0	700	120		1	1	1	95	95	

Mud Consumables

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

Bit/BHA/Workstring Information

				Depth	This Run		R.O.P.		Mud Pump												
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF			
8	1	NOV	TCK83	10.625	5761																
Jets: 13 13 12 12 12 12 12 12				Out: 5761		Grade: Cutter: 0/0		Dull: NO/NO		Wear: A		Brgs: X		Gge: 0		Pull: BHA					
BHA - No. 9 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 962.49																					

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	65.75	Total:	65.75	Jars: 0
Hours on Casing/Liner:	Rotating:	48.5 /	Tripping:	28 /	<input type="checkbox"/> Wear Bushing Installed

Rig Information

Equipment Problems:	Traction motor A on drawwoks tripping SCR breaker.
Location Condition:	Good.
Transport:	Received 7" wellhead, 2- X/O from Dynasty.

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Forklift operations, LOTO, Working with electrician.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Clear	Visibility:	10
Air Temperature:	78 degF	Bar. Pressure:	29.98
Wind Speed/Dir:	10 / SW	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 13

Report For 09-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	5761	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	5760	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	13/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	13/30	Days On Location:	13		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	24 / 0	Total:	47 / 276

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Waiting on SCR technician to arrive.

Planned Operations: Wait on SCR technician to arrive.
troubleshoot SCR.
Trip in the hole.
Drill 10-5/8" hole section from 5,761' to 6,700' (coring depth).

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:00	24.00	5,761	REPR	Wait on SCR technician to arrive.	X

Management Summary

Waited on SCR technician to arrive.

Comments

Total hours of NPT on daily report 13 due to Frontier 24 HRS.
Total hours of NPT on Frontier to date 33 HRS.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
09-Jul-21 14:00 at Depth 5,761 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	10	2	0	98	0.01	0	800	120		1	1	1	90	90	

Mud Consumables

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

Bit/BHA/Workstring Information

BHA - No. 9 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 962.49

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/	
Slow Circulation Data:						
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Hours on BHA:	Since Inspection:	65.75	Total:	65.75	Jars:	0
Hours on Casing/Liner:	Rotating:	48.5 /	Tripping:	28 /	<input type="checkbox"/> Wear Bushing Installed	

Rig Information

Equipment Problems: Traction motor A on drawwoks tripping SCR breaker.

Location Condition: Good.

Transport: Received 2 loads of 7" casing.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 13

Report For 09-Jul-21

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Forklift operations, LOTO, Working with electrician.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Clear	Visibility:	10
Air Temperature:	66 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	5 / SW	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 14

Report For 10-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	5821	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	5820	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	60 / 8.5	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):	7.06			LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	14/21	Flat Days (act./plan):	0/9	Total Days (act./plan):		14/30	Days On Location: 14	
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 38	Total: 26 / 314

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Drilling 10-5/8" hole section at 6,036'.

Planned Operations: Stage in the hole from 1,000' to 5,821'.
Drill 10-5/8" hole section from 5,821' to 6,700' (coring depth).

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	10:00	10.00	5,761	REPR	Wait on SCR technician to arrive.	X
10:00	13:00	3.00	5,761	REPR	Diagnose issues with SCR house and repair same. Rig back on Dayrate @ 13:00 hours on 7/10/2021 Note: SCR tech found two bare wires between SCR bays causing system to short out.	X
13:00	15:30	2.50	5,761	10-6-3	RIH to bottom / fill pipe	
15:30	16:30	1.00	5,821	3-2-3	Drill 10-5/8" hole from 5,761' to 5,821'. Dumped and diluted 100 bbl's of fresh water while drilling ahead. Note: Observed pressure spike while drilling ahead at 5,806' along with motor stall. Pressure reached 4,158 psi at surface blowing pop-off on mud pump. Picked up off bottom and rest pop off. Once back on bottom differential pressure fell to 198 psi and continued dropping. large pieces of rubber observed at the shakers from stator indicating motor failed. Upon discussion with Schlumberger, it was discovered that the motor in the hole had a temperature rating of 208 deg. Max temperature on bottom was 300 deg.	
16:30	19:30	3.00	5,821	3-6-4	Trip out of the hole from 5,821' to surface with no issues. Dumped and diluted 100 bbl's of fresh water while tripping out of the hole.	X
19:30	22:00	2.50	5,821	3-6-2	Rack back HWDP along with 8' drill collars. Broke out bit and laid out motor. Note: Motor rotated with no resistance, no fluid in motor. Bit had 2 plugged jets with stator rubber. Stabilizer above the motor at 41' was 3/4" under-gauged.	X
22:00	0:00	2.00	5,821	3-6-1	Picked up new (NOV) motor 1.5 deg, .111 rev. Picked up new 10-5/8" NOV bit. Picked up new top 10-3/8" stab. made up and scribed tools. Tripped in the hole with BHA to 1,000'.	X

Management Summary

Waited on SCR technician to arrive.
Diagnose issues with SCR house and repaired same. Rig back on Dayrate @ 13:00 hours on 7/10/2021.
RIH to bottom / fill pipe.
Drill 10-5/8" hole from 5,761' to 5,821'.
Tripped out of the hole from 5,821' due to motor failure.
Laid out motor and bit.
Picked up new (NOV) motor 1.5 deg, .111 rev.
Picked up new 10-5/8" NOV bit.
Picked up new top 10-3/8" stab.

Comments

Note: Observed pressure spike while drilling ahead at 5,806' along with motor stall. Pressure reached 4,158 psi at surface blowing pop-off on mud pump. Picked up off bottom and rest pop off. Once back on bottom differential pressure fell to 198 psi and continued dropping. large pieces of rubber observed at the shakers from stator indicating motor failed. Upon discussion with Schlumberger, it was discovered that the motor in the hole had a temperature rating of 208 deg. Max temperature on bottom was 300 deg while tripping in the hole.

Total hours of NPT on daily report 14 due to Frontier 13 HRS.
Total hours of NPT on Frontier to date 46 HRS.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 14

Report For 10-Jul-21

Total hours of NPT on daily report 14 due to Schlumberger 7.5 HRS.
Total hours for well to Schlumberger 24 HRS.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
10-Jul-21 19:30 at Depth 5,821 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	9.5	2	0	98	0.01	0	800	120		1	1	1	98	105	

Mud Consumables

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

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth			This Run		R.O.P.		WOB	RPM	Torque	Mud			Pump			
				In	Dist	Hrs	Avg	Max	Avg	Max				Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF
8	2	NOV	TCK83	10.625	5761	60	1	60.0	65.0	65	40	16	8	800	3000	278	576	269	957	
Jets: 13 13 12 12 12 12 12 12				Out: 5821		Grade: Cutter: 1/3		Dull: WT/NO		Wear: S		Brgs: X		Gge: 0		Pull: DMF				
BHA - No. 9 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 962.49																				

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)
5,761	5,821	40.0	65.0	65	65	40	40	16	16	800	800	3,000
Annular Velocity:		Drill Collars:		478.5		Drill Pipe:		247.2				

Comments: Tripped out of the hole due to motor failure.

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	231	Pick Up:	245	Slack Off:	225	Drag Avg/Max:	3 / 5
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	66.75	Total:	66.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	49.5 /	Tripping:	37 /	<input type="checkbox"/> Wear Bushing Installed			

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas		Drilling Exp.	Pore Press	Mud Dens.	Shale Dens.	Shale	ROP
From	To	From	To	Avg	Max	at Depth	Connect. Trip						
4,790	5,821	4,789	5,820	0	0	0	0	0	0.00	8.30			
Formation Name:													
Lithology: 100% Granodiorite													

Rig Information

Equipment Problems:	SCR tech found two wires shorted out on SCR system.
Location Condition:	Good.
Transport:	Received 2 loads of 7" casing.

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 14

Report For 10-Jul-21

Safety Information

Meetings/Drills	Time	Description
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Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, forklift operations, LOTO, working in the heat.
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First Aid Treatments: 0 Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:

Accident Description: None to report.

BOP Test Crownamatic Check

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 76 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 10 / NE	Wind Gusts: 3



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 15

Report For 11-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	6700	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	6699	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	879 / 14.5	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):	60.62			LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	15/21	Flat Days (act./plan):	0/9	Total Days (act./plan):		15/30	Days On Location: 15	
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 36	Total: 26 / 312

Safety Summary: No incidents or events reported. Conducted BOP Drill, Crown Check, Safety Meeting.

Current Operations: Held safety meeting with all involved personal on picking up coring assembly.
Made up 8-3/4" coring assembly.
Picked up 15 joints of 5.5" drill pipe.
Tripping in the hole with 8-3/4" coring assembly at 4,000'.

Planned Operations: Trip in the hole with 8-3/4" coring assembly.
Core 8-3/4" hole from 6,700'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:15	1.25	5,821	3-6-3	Tripped in the hole from 1,000' to 3,245'.	X
1:15	1:30	0.25	5,821	3-5-1	Broke circulation at 3,245' to cool tools. Max temp observed at MWD was 189 deg. Max temp at surface was 103 deg.	X
1:30	2:00	0.50	5,821	3-6-3	Tripped in the hole from 3,245' to 4,192'.	X
2:00	2:15	0.25	5,821	3-5-1	Broke circulation at 4,192' to cool tools. Max temp observed at MWD was 214 deg. Max temp at surface was 107 deg.	X
2:15	2:45	0.50	5,821	3-6-3	Tripped in the hole from 4,192' to 5,200'.	X
2:45	3:00	0.25	5,821	3-5-1	Broke circulation at 5,200' to cool tools. Max temp observed at MWD was 222 deg. Max temp at surface was 109 deg.	X
3:00	3:15	0.25	5,821	3-6-3	Tripped in the hole from 5,200' to 5,710'.	X
3:15	3:30	0.25	5,821	3-5-1	Broke circulation at 5,710' to cool tools. Washed down from 5,710' to 5,821' Max temp observed at MWD was 254 deg. Max temp at surface was 135 deg.	X
3:30	6:00	2.50	6,087	3-2-3	Drill 10-5/8" hole from 5,821' to 6,087' Performed WOB step test @ 5,900'. Performed RPM step test @ 5,920'.	
6:00	6:30	0.50	6,108	3-2-3	Slide Drill from 6,087' to 6,108'	
6:30	14:00	7.50	6,561	3-2-3	Drill 10-5/8" hole from 6,108' to 6,561' with 65K WOB, 800 GPM and 40-50 surface RPM, Dump 180 bbl from active system and add 150 bbl fresh water to system	
14:00	14:30	0.50	6,561	SERV	Service rig and top drive while circulating on bottom with 1 pump to keep MWD cool	
14:30	16:00	1.50	6,700	3-2-3	Drill 10-5/8" hole from 6,561' to 6,700' with 65K WOB, 820 GPM and 51 surface RPM with no losses or hole issues: MWD temp has risen from 170F to 176F in the last 500' of drilling	
16:00	16:30	0.50	6,700	3-5-1	Circulate bottoms up while allowing weight to drill off	
16:30	20:00	3.50	6,700	10-6-4	Trip out of the hole from 6,700' to BHA. 30-40k over-pull.	
20:00	23:30	3.50	6,700	3-34-4	Racked back HWDP along with 8' drill collars. Laid out all dir tools. Motor drained good with minimal movement in bearing assembly. Sleeve stab on motor had one blade completely worn off .	
23:30	0:00	0.50	6,700	OTHER	Cleaned and cleared rig floor. Laid out 15 joints of 5.5" drill pipe on racks and strapped same.	

Management Summary

Staged in the hole from 1,000' to 5,821'.
Drilled 10-5/8" hole from 5,821' to 6,700' (core point).
Circulated bottoms up.
Tripped out of the hole from 6,700' to BHA.
Racked back HWDP along with 8' drill collars. Laid out all directional tools.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 15

Report For 11-Jul-21

Cleaned and cleared rig floor.
Laid out 15 joints of 5.5" drill pipe on racks.

Comments

Total hours of NPT on daily report 15 due to Schlumberger 3.5 HRS.
Total hours for well to Schlumberger 27.5 HRS.
Total hours of NPT on Frontier to date 46 HRS.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%																	Gels			Temp		Mud
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss		
11-Jul-21 16:30 at Depth 6,700 ft Mud Pits, Type: Low Solids Non-Dispersed																						
8.30	26	0	1	0	1	10	2	0	98	0.01	0	900	120		1	1	1	114	123			

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	2	---	Engineering - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	R.O.P. Hrs	Avg	Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Press	J. Vel	P. Drp	HHP	JIF				
9	1	NOV	TKC83	10.625	5821	879	12	73.2	165.0	65	50	15	8	800	2670	278	576	269	957				
Jets:		13	13	12	12	12	12	12	12	Out:	6700	Grade:	Cutter: 3/6	Dull:	LT / WT	Wear:	S	Brgs:	X	Gge:	0	Pull:	BHA
BHA - No. 10 - BIT, MMTR, STAB, MWD, 2 OTHER, STAB, MONEL, 3 OTHER, DC, XO, HWDP = 963.16																							

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)
5,821	6,700	75.0	165.0	65	75	50	70	15	17	800	820	2,670
Annular Velocity:		Drill Collars:		478.5		Drill Pipe:		247.2				
Comments: Slide Drill from 6,087' to 6,108'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	247	Pick Up:	265	Slack Off:	237	Drag Avg/Max:	10 / 15
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	78.75	Total:	78.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	61.5 /	Tripping:	49 /	<input type="checkbox"/> Wear Bushing Installed			

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 15

Report For 11-Jul-21

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
							N-S	E-W	
MWD	5,354.0	1.12	247.8	5,353.1	11.4	-2.8	S 2.8	W 11.0	0.590
MWD	5,499.0	1.46	260.8	5,498.0	14.7	-3.7	S 3.7	W 14.2	0.308
MWD	5,545.0	2.01	268.4	5,544.0	16.0	-3.8	S 3.8	W 15.6	1.293
MWD	5,640.0	1.97	247.9	5,639.0	19.3	-4.5	S 4.5	W 18.7	0.745
MWD	5,736.0	1.56	198.0	5,734.9	21.6	-6.3	S 6.3	W 20.7	1.598
MWD	5,832.0	1.57	189.1	5,830.9	23.1	-8.9	S 8.9	W 21.3	0.256
MWD	5,927.0	1.77	197.9	5,925.8	24.8	-11.5	S 11.5	W 21.9	0.344
MWD	6,022.0	1.47	189.1	6,020.8	26.7	-14.1	S 14.1	W 22.6	0.410
MWD	6,117.0	1.10	155.5	6,115.8	27.6	-16.2	S 16.2	W 22.4	0.867
MWD	6,307.0	1.06	132.5	6,305.7	27.9	-19.0	S 19.0	W 20.4	0.227
MWD	6,402.0	1.07	123.7	6,400.7	27.6	-20.1	S 20.1	W 19.0	0.173
MWD	6,497.0	0.71	100.2	6,495.7	27.2	-20.7	S 20.7	W 17.6	0.532
MWD	6,592.0	0.88	33.2	6,590.7	26.2	-20.2	S 20.2	W 16.7	0.935
MWD	6,635.0	0.77	56.7	6,633.7	25.6	-19.8	S 19.8	W 16.2	0.820

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP			
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Dens.	Shale	Sand
5,820	6,700	5,819	6,699											
Formation Name:														
Lithology: 100% Granodionite														

Rig Information

Equipment Problems: None
Location Condition: Good.
Transport: Received 7 loads of water to frack tanks.

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, working in the heat, good communication.
BOP	15	All crews to stations in 80 sec.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 72 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 8 / SE	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 16 Report For 12-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	6728	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	6727	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	28 / 3.5	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	
Average ROP (ft/hr):	8.0			LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	16/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	16/30	Days On Location:	16		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 36	Total:	26 / 312

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Tripped in the hole with 8-3/4" core assembly to 6,728' .
 Fill pipe and established circulation.
 Cut core from 6,728' to 6,740'.
 Tripped out of the hole from 6,740' to 1,300' at report time.

Planned Operations: Trip out of the hole with core assembly.
 Make up 10-5/8" TCI bit.
 Trip in the hole to 6,740'.
 Open hole from 6,700' to 6,740'.
 Trip out of the hole.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:30	0.50	6,700	SAFE	Held safety meeting with all involved personal on picking up coring assembly.	
0:30	3:00	2.50	6,700	3-34-3	Made up 8-3/4" coring assembly as followed. 8-3/4" x 4" core bit. Stabilizer 8-15/32" Core barrel 7-1/4" Stabilizer 8-15/32" Lower sub Upper sub Float sub X/O 10-5/8" roller reamer 1-stand 8" drill collars 5-stands HWDP	
3:00	4:30	1.50	6,700	3-34-1	Picked up 15 joints of 5.5" drill pipe from pipe rack and trip in the hole.	
4:30	8:00	3.50	6,700	3-6-3	Tripped in the hole with 8-3/4" core assembly. Filling pipe every 1,000'.	
8:00	8:30	0.50	6,700	3-4	Tag bottom while circulating @ 400 GPM, drop ball and slow pump to 300 GPM, ball seated	
8:30	10:00	1.50	6,728	3-4	Cut core from 6700' to 6728'	
10:00	15:30	5.50	6,728	3-4	POH with core @ controlled speed	
15:30	18:00	2.50	6,728	3-4	Laid down Reamer, X/O, Float sub. Break down core barrel and collect core. Recovered 12' of core.	
18:00	20:00	2.00	6,728	3-34-4	Run in the hole with 5-stands of 8" drill collars. Remove lifting sub that belonged to Schlumberger and replace with lifting subs that belong to Frontier. Rack 8" drill collars back in derrick.	
20:00	21:00	1.00	6,728	3-4	Made up 8-3/4" coring assembly as followed. 8-3/4" x 4" core bit. Stabilizer 8-15/32". Core barrel 7-1/4" (dressed with aluminum barrel). Stabilizer 8-15/32". Lower sub. Upper sub. Float sub. X/O. 5-stands HWDP.	
21:00	0:00	3.00	6,728	3-4	Tripped in the hole with 8-3/4" core assembly to 5,623' at report time . Filling pipe every 1,000'.	

Management Summary



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 16

Report For 12-Jul-21

Held safety meeting with all involved personal on picking up coring assembly.
 Made up 8-3/4" coring assembly.
 Picked and racked back 5 stands of drill pipe.
 Tripped in the hole with 8-3/4" core assembly.
 Tag bottom while circulating @ 400 GPM, dropped ball and slowed pump to 300 GPM, ball seated.
 Cut core from 6700' to 6728'.
 Tripped out of the hole with core from 6,728'.
 Tripped in the hole with 8" collars, removed Schlumberger lifter and replaced with rig lifter.
 Made up 8-3/4" coring assembly.
 Tripped in the hole with 8-3/4" core assembly.

Comments

First core run recovered 12' of core.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
12-Jul-21 16:00 at Depth 2,728 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	10	2	0	98	0.01	0	800	120		1	1	1	89	99	

Mud Consumables

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

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run			R.O.P.			Mud Pump								
					Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF	
10	1	HALLBT	FC3843	8.750	6700	28	1.5	18.7	59.0	22	50	9	8	300	75	54	22	4	70
Jets: 17 17 17 17 17 17 17 17 17				Out: 6728	Grade: Cutter: 8 / 4			Dull: RO / WT			Wear: S		Brgs: X		Gge: 0		Pull: BHA		
11	1	H&P	FC3843	8.750	6723	12	1	12.0	25.0	14	55	7	8	281	0	51	19	3	61
Jets: 17 17 17 17 17 17 17 17 17				Out:	Grade: Cutter: 1 / 1			Dull: WT / NO			Wear: S		Brgs: X		Gge: 0		Pull: BHA		

BHA - No. 12 - CORBIT, STAB, CORE, STAB, 2 OTHER, FLOAT, XO, 15 HWDP = 509.79

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
6,700	6,728	25.0	59.0	22	30	50	50	10	12	309	400	75
Annular Velocity:		Drill Collars: 250.0		Drill Pipe: 175.0								

Comments: Cored from 6700' to 6,728'.

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	217	Pick Up:	225	Slack Off:	210	Drag Avg/Max:	5 / 8
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	80.25	Total:	80.25	Jars:	0		
Hours on Casing/Liner:	Rotating:	63 /	Tripping:	61 /	<input type="checkbox"/> Wear Bushing Installed			



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 16

Report For 12-Jul-21

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)			Gas	Drilling	Pore	Mud	Shale	ROP		
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Dens.	Shale	Sand
6,700	6,728	6,699	6,727											

Formation Name:

Lithology: 100% Granodiorite

Rig Information

Equipment Problems: None.

Location Condition: Good.

Transport: Received SDI dir tools.

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, working in the heat, good communication.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition: Clear	Visibility: 10
Air Temperature: 74 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 6 / SE	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 17

Report For 13-Jul-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 6742	Last Casing: 11.750 at 2,990	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft): 6741	Next Casing: 7.000 at 8,500	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	Last BOP Test: 03-Jul-21	Job Reference RKB (ft):	---	---	---
Hole Made (ft) / Hrs: 14 / 10.5	Next BOP Test: 24-Jul-21	Working Interest:	Totals: ---		
Average ROP (ft/hr): 1.33		LOT (lbs/gal): 11.70	Well Cost (\$): ---		
Drilling Days (act./plan): 17/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 17/30	Days On Location: 17		
Pers/Hrs: Operator: 3 / 36	Contractor: 14 / 168	Service: 6 / 72	Other: 3 / 36	Total: 26 / 312	

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Made up 10-5/8" directional assembly and tripped in the hole to 1,036'. Slip and cut drilling line. Trip in the hole from 1,036' to 3,100'. Shallow tested MWD tool @ 3,100'. Tripped in the hole from 3,100' to 4,100'. (Stage in hole and circulate every 1,000')

Planned Operations: Continue to trip in the hole to 6,742'. Drill 10-5/8" hole section from 6,742'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:00	1.00	6,728	3-4	Tripped in the hole with 8-3/4" core assembly to 6,728' . Filling pipe every 1,000'.	
1:00	1:30	0.50	6,728	3-5-1	Filled pipe and established circulation. Record up and down weights. Tagged bottom while circulating @ 400 GPM, dropped ball and slowed pump to 300 GPM, ball seated.	
1:30	2:30	1.00	6,740	3-4	Cut core from 6,728' to 6,740'. Core barrel jammed up at 6,738', drilled down to 6,740' with no change. Decision was made to pull out of the hole.	
2:30	6:00	3.50	6,740	3-4	Tripped out with core assembly from 6,740' to 1,300'.	
6:00	7:00	1.00	6,740	3-4	Tripped out with core assembly from 1,300' to BHA	
7:00	8:00	1.00	6,740	3-34-4	Laid down core and coring assembly / Recovered 9.5' of core	
8:00	9:00	1.00	6,740	3-34-3	Made up bit and bit sub / pick up reamer at 30' off the bit	
9:00	14:30	5.50	6,740	3-6-3	RIH with clean out run to open hole to 10-5/8"	
14:30	15:00	0.50	6,740	SERV	Serviuce rig and change tong dies in SD80	
15:00	16:00	1.00	6,740	3-21	Open 8-3/4" core hole to 10-5/8" from 6,700' to 6,740'	
16:00	16:30	0.50	6,742	3-2-1	Drilled 10-5/8" hole from 6,740' to 6,742'.	
16:30	17:00	0.50	6,742	3-5-1	Circulated hole clean @ 6,742'.	
17:00	20:00	3.00	6,742	3-6-4	Tripped out of the hole from 6,742' to BHA.	
20:00	21:30	1.50	6,742	3-6-2	Racked back HWDP along with 8' drill collars. Broke out bit and laid out.	
21:30	0:00	2.50	6,742	3-34-3	Picked up 1.15 deg bent motor 0.166 rev/gal. Scribe Motor. Make up dir assembly.	

Management Summary

Tripped in the hole with 8-3/4" core assembly to 6,728' . Filled pipe and established circulation. Dropped ball. Cut core from 6,728' to 6,740'. Tripped out with core assembly from 6,740' to BHA. Laid down core and coring assembly. Made up 10-5/8" TCI bit and tripped in the hole to 6,700'. Serviced rig. Open 8-3/4" core hole to 10-5/8" from 6,700' to 6,740'. Drilled 10-5/8" hole from 6,740' to 6,742'. Circulated hole clean @ 6,742'. Tripped out of the hole from 6,742' to BHA. Racked back HWDP along with 8' drill collars. Laid out bit. Picked up 1.15 deg bent motor 0.166 rev/gal. Scribe Motor. Make up drilling assembly.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 17

Report For 13-Jul-21

Comments

Core barrel jammed at 6,738', drilled down to 6,740' with no change. Decision was made to pull out of the hole. Recovered 9.5' of core.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
13-Jul-21 16:30 at Depth 6,742 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	9.5	1	0	99	0.01	0	800	120		1	1	1	104	124	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	1	---	Engineering - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

										Depth		This Run		R.O.P.		Mud		Pump		
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF		
11	1	H&P	FC3843	8.750	6723	24	2	12.0	25.0	14	55	7	8	320	75	58	25	5	80	
Jets: 17 17 17 17 17 17 17 17 17				Out:	Grade:	Cutter:	1/1	Dull:	WT/NO	Wear:	S	Brgs:	X	Gge:	0	Pull:	BHA			
12	1	BAKER	MX-1	10.625	6740	2	1	2.0	5.0	21	61	11	8	800	1275	279	578	270	959	
Jets: 20 20 20				Out: 6742	Grade:	Cutter:	1/3	Dull:	WT/NO	Wear:	G	Brgs:	0	Gge:	0	Pull:	BHA			
BHA - No. 13 - BIT, DC, RR, DC, XO, HWDP = 845.73																				

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)
6,728	6,740	20.0	25.0	14	16	55	55	7	8	400	320	75
Annular Velocity:		Drill Collars:		250.0		Drill Pipe:		175.0				
6,740	6,742	3.0	5.0	21	25	61	61	11	11	800	829	
Annular Velocity:		Drill Collars:		478.0		Drill Pipe:		247.0				

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	217	Pick Up:	225	Slack Off:	210	Drag Avg/Max:	5 / 8
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	81.25	Total:	81.25	Jars:	0		
Hours on Casing/Liner:	Rotating:	64 /	Tripping:	75 /	<input type="checkbox"/> Wear Bushing Installed			

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas		Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Shale	Sand
6,728	6,742	6,727	6,741										

Formation Name:

Lithology: 100% Granodiorite

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport: Received 6 loads of water.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 17

Report For 13-Jul-21

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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, working in the heat, good communication. Forklift operations.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition: Cloudy	Visibility: 10
Air Temperature: 70 degF	Bar. Pressure: 29.87
Wind Speed/Dir: 4 / SE	Wind Gusts: 2
Comments: Light rain.	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 18

Report For 14-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	7613	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	7611	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	871 / 17.75	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):	49.07			LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	18/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	18/30	Days On Location: 18		
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 360	Total: 26 / 636

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Waiting on hydraulic hose for top drive to arrive.

Planned Operations: Install topdrive hydraulic service link hose.
Pull out of the hole from 6,599' to BHA.
Swap out motor and bit.
Trip in the hole to 7,613'.
Continue to drill 10-5/8" hole section from 7,613'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:00	2.00	6,742	3-34-3	Made up 10-5/8" directional assembly and trip in the hole to 1,036'.	
2:00	3:30	1.50	6,742	CUTDL	Slipped and cut drilling line.	
3:30	8:30	5.00	6,742	3-6-3	Tripped in the hole from 1,036' to 4,100'. Shallow test MWD tool @ 3,100' Filling pipe and breaking circulation every 1,000' from 3,100' to 6,742'. Once on bottom when filling pipe got pipe stuck. Work loose shortly afterwards	
8:30	10:30	2.00	6,946	3-2-3	Rotate drilling 10-5/8" hole from 6,742' to 6,946'	
10:30	11:00	0.50	6,970	3-2-3	Slide drilling 10-5/8" hole from 6,946' to 6,970'.	
11:00	13:00	2.00	7,158	3-2-3	Rotate drilling 10-5/8" hoe from 6,970' to 7,158'	
13:00	13:30	0.50	7,183	3-2-3	Slide drilling 10-5/8" hole from 7,158' to 7,183'	
13:30	15:45	2.25	7,316	3-2-3	Rotary drilling 10-5/8" hole from 7,183' to 7,316' performing step down test on WOB and RPM in an attempt to lower vibration on MWD	
15:45	16:00	0.25	7,316	SERV	Service Rig	
16:00	16:15	0.25	7,326	3-2-3	Rotate drilling 10-5/8" hoe from 7,316' to 7,326"	
16:15	17:00	0.75	7,350	3-2-3	Slide drilling 10-5/8" hole from 7,326' to 7,350'.	
17:00	18:00	1.00	7,424	3-2-3	Rotate drilling 10-5/8" hoe from 7,350' to 7,424'.	
18:00	20:30	2.50	7,613	3-2-3	Rotate drilling 10-5/8" hoe from 7,424' to 7,613'.	
20:30	21:00	0.50	7,613	OTHER	While drilling ahead at 7,613' differential pressure jumped from 350 psi to 1,199 psi. Killed mud pumps and picked up off bottom. Brought pumps back online at 830 GPM slacked back off to bottom. Differential pressure jumped up to 1,000 psi with 25k weight on bit and would not drill off. Killed mud pumps and picked up off bottom. Brought pumps back online at 830 GPM slacked back off to bottom. Differential pressure jumped up to 1,356 psi with 30k weight on bit and would not drill off. Decision was made to trip out of the hole.	
21:00	22:00	1.00	7,613	3-6-3	Tripped out of the hole from 7,613' to 6,559'.	
22:00	0:00	2.00	7,613	REPR	While tripping out of the hole service loop came into contact with top drive damaging the main hydraulic return line. Wait on hydraulic hose to arrive. Pump down the string to cool tools every hour at 300 gpm.	X

Management Summary

Made up 10-5/8" directional assembly and trip in the hole to 1,036'.
Slipped and cut drilling line.
Tripped in the hole from 1,036' to 6,742'.
Filled pipe and broke circulation every 1,000' from 3,100' to 6,742'.
Drilled 10-5/8" hole from 6,742' to 7,316'.
Serviced rig.
Drilled 10-5/8" hole from 7,316' to 7,613'.
Tripped out of the hole due to high mud motor differential pressure. POH from 7,613' to 6,559'.
Found damaged top drive hydraulic service link hose.
Wait on hydraulic hose for top drive to arrive.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 18

Report For 14-Jul-21

Comments

While tripping out of the hole service loop came into contact with top drive damaging the main hydraulic return line. Waited on hydraulic hose to arrive.
 Pump down the string to cool tools every 45 mins at 300 gpm max temperature observed at tools 245 deg.
 Total hours of NPT on report 2.0 HRS
 Total hours of NPT on Frontier to date 48 HRS.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
14-Jul-21 18:00 at Depth 7,423 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	10	2	0	98	0.01	0	700	120		1	1	1	113	112	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	1	---	Engineering - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

				Depth		This Run		R.O.P.			Mud		Pump						
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF	
13	1	NOV	TKC83	10.625	6742	871	12.5	69.7	105.0	65	45	13	8	830	2630	289	620	300	1030
Jets: 12 12 12 12 12 12 13 13				Out: 7613		Grade: Cutter:		8 / 3		Dull: RO / BT		Wear: S		Brgs: X		Gge: 2		Pull: DMF	
BHA - No. 14 - BIT, MMTR, STAB, MONEL, 2 OTHER, STAB, MONEL, OTHER, DC, XO, HWDP = 1035.59																			

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
6,742	7,613	75.0	110.0	65	70	45	45	13	18	830	850	
Annular Velocity:		Drill Collars:		478.0		Drill Pipe:		247.0				
Comments: Slide drilling 10-5/8" hole from 6,946' to 6,970'. Slide drilling 10-5/8" hole from 7,158' to 7,183'. Slide drilling 10-5/8" hole from 7,326' to 7,350'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	285	Pick Up:	310	Slack Off:	265	Drag Avg/Max:	5 / 10
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	93.75	Total:	93.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	66.5 /	Tripping:	83 /	<input type="checkbox"/> Wear Bushing Installed			

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		
							N-S	E-W	D.L.S.
MWD	6,675.0	1.18	44.2	6,673.7	24.9	-19.3	S 19.3	W 15.7	1.149
MWD	6,770.0	1.25	26.0	6,768.7	22.9	-17.7	S 17.7	W 14.6	0.412

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect. Trip	Exp.	Press	Dens.	Dens.	Shale Sand
6,742	7,613	6,741	7,612	0	0							
Formation Name:												
Lithology: 100% Granodiorite												

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 18

Report For 14-Jul-21

Rig Information**Equipment Problems:** Leaking house on top drive.**Location Condition:** Good.**Transport:** Received 7 loads of water.**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:** 24 (Solids Removal) **Centrifuge 2:** 24 (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	258	24.7	S-135	5.5IF					

Safety Information**Meetings/Drills** **Time** **Description**

Safety 60 Two 30 min Pre tour safety meetings with both crews. Handling BHA, working in the heat, good communication.

First Aid Treatments: 0 **Medical Treatments:** 0 **Lost Time Incidents:** 0 **Days Since LTI:****Accident Description:** None to report. **BOP Test** **Crownamatic Check****Weather Information****Sky Condition:** Cloudy **Visibility:** 10**Air Temperature:** 72 degF **Bar. Pressure:** 29.89**Wind Speed/Dir:** 6 / SE **Wind Gusts:** 2**Comments:** Light rain.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 19

Report For 15-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	7613	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	7611	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	0 / 9.5	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):	0.0			LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	19/21	Flat Days (act./plan):	0/9	Total Days (act./plan):		19/30	Days On Location: 19	
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 36	Total: 26 / 312

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Tripped in the hole from 2,613' to 7,072'.
Filled pipe and broke circulation every 1,000'.
Took weight at 7,072'. Work string free with 90k in over-pull. Ream from 7,072' to 7,231'.

Planned Operations: Ream from 7,231' to 7,613' as needed.
Drilled 10-5/8" hole to 8,500'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	8:00	8.00	7,613	REPR	Waited on hydraulic hose to arrive. Pumping down the string to cool tools every hour at 300 gpm.	X
8:00	13:00	5.00	7,613	3-6-4	POH from 6,559' to 629'	
13:00	16:30	3.50	7,613	3-6-2	Racked back HWDP along with 8' drill collars. Laid out motor, bit, stabs. Motor took a high amount of torque to drain 45 kft/lbs. Bit had 3-plugged jets with pieces of rubber from the stator bit was also DBR'ed. Motor Stabilizer was 0.5" under-gauged Stabilizer above the motor was 0.75" under-gauged. Top Stabilizer was 1.25" under-gauged.	
16:30	22:30	6.00	7,613	3-34-3	Picked up new (Bico) motor 1.5 deg, 0.160 rev/gal. Picked up new 10-5/8" NOV bit. Picked up 1- Re-Run Roller Reamers 10-3/8" stab placed at 39.53'. Picked up new 10-1/2" spiral stab placed at 100.82'. Placed cubic sensors at 50.96', 132.86'. Made up and scribed tools. Tripped in the hole with BHA to 1,000'.	
22:30	23:30	1.00	7,613	3-6-3	Tripped in the hole from 1,000' to 2,613'.	
23:30	0:00	0.50	7,613	SERV	Serviced rig. Adjusted service loop.	

Management Summary

Waited on hydraulic hose to arrive.
Installed new top-drive service link hydraulic hose.
Tripped out of the hole from 6,559' to BHA.
Racked back HWDP along with 8' drill collars.
Laid out motor, bit, stabs.
Made up 10-5/8" directional assembly.
Tripped in the hole from 1,000' to 2,613'.
Serviced rig. Adjusted service loop.

Comments

Motor took a high amount of torque to drain 45 kft/lbs. Bit had 3-plugged jets with pieces of rubber from the stator bit was also DBR'ed.
Motor Stabilizer was 0.5" under-gauged
Stabilizer above the motor was 0.75" under-gauged.
Top Stabilizer was 1.25" under-gauged.

Total hours of NPT on report 8.0 HRS
Total hours of NPT on Frontier to date 56 HRS.

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 19

Report For 15-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
15-Jul-21 16:00 at Depth 7,613 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	10	2	0	98	0.01	0	700	120		1	1	1	86	87	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Other - EACH	1	---
perdiem - OTHER	1	---	Trucking - EACH	1	---

Bit/BHA/Workstring Information

				Depth		This Run		R.O.P.			Mud Pump										
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF			
13	1	NOV	TKC83	10.625	6742	871	12.5	0.0	0.0	0	0	13	8	830	2730	289	620	300	1030		
Jets: 12 12 12 12 12 12 13 13				Out: 7613		Grade: Cutter:		8/3		Dull: RO/BT		Wear: S		Brgs: X		Gge: 2		Pull: DMF			
BHA - No. 15 - BIT, MMTR, STAB, 2 OTHER, MONEL, 2 OTHER, STAB, MONEL, 2 OTHER, DC, XO, HWDP = 1049.30																					

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	93.75	Total:	93.75	Jars: 0
Hours on Casing/Liner:	Rotating:	66.5 /	Tripping:	91 /	<input type="checkbox"/> Wear Bushing Installed

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		
							N-S	E-W	D.L.S.
MWD	6,865.0	1.46	26.2	6,863.7	20.8	-15.7	S 15.7	W 13.6	0.221
MWD	6,960.0	1.09	38.8	6,958.6	18.7	-13.9	S 13.9	W 12.5	0.486
MWD	7,056.0	1.57	206.0	7,054.6	19.0	-14.3	S 14.3	W 12.5	2.754
MWD	7,151.0	1.92	193.9	7,149.6	21.7	-17.1	S 17.1	W 13.5	0.533
MWD	7,246.0	1.38	197.6	7,244.5	24.3	-19.7	S 19.7	W 14.2	0.579
MWD	7,341.0	0.83	203.9	7,339.5	26.0	-21.4	S 21.4	W 14.8	0.592
MWD	7,436.0	0.89	200.9	7,434.5	27.4	-22.7	S 22.7	W 15.4	0.079
MWD	7,531.0	0.95	208.9	7,529.5	28.9	-24.1	S 24.1	W 16.0	0.149

Rig Information

Equipment Problems:	Parted HYD hose on Service loop.
Location Condition:	Good.
Transport:	Received 2 loads of 7" casing, 1-10-5/8" PDC bit.

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 19

Report For 15-Jul-21

Safety Information

Meetings/Drills	Time	Description
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Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, Working at heights. Looking up while tripping pipe.
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First Aid Treatments: 0 Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:

Accident Description: None to report.

BOP Test Crownamatic Check

Weather Information

Sky Condition:	Cloudy	Visibility:	10
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Air Temperature:	70 degF	Bar. Pressure:	29.89
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Wind Speed/Dir:	8 / SE	Wind Gusts:	2
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Comments: Light rain with some wind.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 20

Report For 16-Jul-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 8500	Last Casing: 11.750 at 2,990	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft): 8498	Next Casing: 7.000 at 8,500	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	Last BOP Test: 03-Jul-21	Job Reference RKB (ft):	---	---	---
Hole Made (ft) / Hrs: 887 / 18.0	Next BOP Test: 24-Jul-21	Working Interest:	Totals: ---		
Average ROP (ft/hr): 49.28		LOT (lbs/gal): 11.70	Well Cost (\$): ---		
Drilling Days (act./plan): 20/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 20/30	Days On Location: 20		
Pers/Hrs: Operator: 3 / 36	Contractor: 14 / 168	Service: 6 / 72	Other: 3 / 36	Total: 26 / 312	

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Tripped out of the hole from 4,000' to BHA with no issues. Racked back HWDP. Laid out 15X8" drill collars and all directional tools.

Planned Operations: Finish laying out directional tools. Make up 8-3/4" coring assembly. Trip in the hole to 8,500'. Cut core from 8,500'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:30	0.50	7,613	3-6-3	Tripped in the hole from 2,613' to 3,145'.	
0:30	0:45	0.25	7,613	3-5-1	Broke circulation at 3,145' to cool tools. Shallow tested tools.	
0:45	1:15	0.50	7,613	3-6-3	Tripped in the hole from 3,145' to 4,129'.	
1:15	1:30	0.25	7,613	3-5-1	Broke circulation at 4,129' to cool tools. Max temp observed at MWD was 201 deg. Max temp at surface was 98 deg.	
1:30	2:00	0.50	7,613	3-6-3	Tripped in the hole from 4,129' to 5,078'.	
2:00	2:15	0.25	7,613	3-5-1	Broke circulation at 5,078' to cool tools. Max temp observed at MWD was 228 deg. Max temp at surface was 98 deg.	
2:15	2:30	0.25	7,613	3-6-3	Tripped in the hole from 5,078' to 6,025'.	
2:30	3:00	0.50	7,613	3-5-1	Broke circulation at 6,025' to cool tools. Max temp observed at MWD was 260 deg. Max temp at surface was 103 deg.	
3:00	3:30	0.50	7,613	3-6-3	Tripped in the hole from 6,025 to 6,974'.	
3:30	4:00	0.50	7,613	3-5-1	Broke circulation at 6,974' to cool tools. Max temp observed at MWD was 292 deg. Max temp at surface was 108 deg.	
4:00	4:15	0.25	7,613	3-6-3	Tripped in the hole from 6,974' to 7,072'.	
4:15	6:00	1.75	7,613	3-3	Took weight at 7,072'. Work string free with 90k in over-pull. Ream from 7,072' to 7,231'.	
6:00	8:00	2.00	7,613	3-3	Ream from 7,231' to 7,260'. Ran one stand from 7,260' to 7,340'. Ream from 7,260' to 7,613'.	
8:00	13:00	5.00	8,091	3-2-3	Rotate drilling 10-5/8" hole from 7,613' to 8,091' Conduct RPM step test @ 35,40,45,50 Conduct GPM step test at 700,800,900 GPM Best results were what we were running 50 RPM 800 GPM Conducted a water sweep test showing less ROP	
13:00	13:45	0.75	8,111	3-2-3	Slid Drill from 8,091' to 8,111'.	
13:45	16:15	2.50	8,282	3-2-3	Rotate drilling 10-5/8" hole from 8,111' to 8,282'	
16:15	16:45	0.50	8,303	3-2-3	Slide drill from 8,282' to 8,303'.	
16:45	18:00	1.25	8,377	3-2-3	Rotate drill from 8,303' to 8,377'.	
18:00	18:30	0.50	8,395	3-2-3	Slide drill from 8,377' to 8,395'.	
18:30	20:00	1.50	8,500	3-2-3	Rotate drill from 8,395' to 8,500' (Core point).	
20:00	20:30	0.50	8,500	3-5-1	Circulate bottoms up at 8,500'.	
20:30	0:00	3.50	8,500	3-6-4	Tripped out of the hole from 8,500' to 4,000' with no issues.	

Management Summary

Tripped in the hole from 2,613' to 7,072'.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 20

Report For 16-Jul-21

Breaking circulation every 1,000' to cool tools.
Reamed from 7,707' to 7,613'.
Drilled 10-5/8" hole from 7,613' to 8,500' (Core point).
Circulated bottoms up at 8,500'.
Tripped out of the hole from 8,500' to 4,000'.

Comments

Slid Drill from 8,091' to 8,111'.
Slide Drill from 8,282' to 8,303'.
Slide Drill from 8,377' to 8,395'.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

Mud Information

%													Gels			Temp		Mud		
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
16-Jul-21 20:15 at Depth 8,500 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	11	2	0	98	0.01	0	700	120		1	1	1	118	130	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	4	---	Engineering - EACH	1	---
Other - EACH	1	---	perdiem - OTHER	1	---

Bit/BHA/Workstring Information

Depth													This Run			R.O.P.			Mud			Pump		
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HPH	JIF						
14	1	NOV	TCK83	10.625	7613	887	12	73.9	230.0	65	50	16	8	830	2750	289	620	300	1030					
Jets:				12	12	12	12	12	13	13	Out: 8500		Grade: Cutter: 3/2		Dull: WT/LT		Wear: S		Brgs: X		Gge: 0		Pull: CP	
BHA - No. 15 - BIT, MMTR, STAB, 2 OTHER, MONEL, 2 OTHER, STAB, MONEL, 2 OTHER, DC, XO, HWDP = 1049.30																								

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
7,613	8,500	73.9	230.0	65	70	50	53	16	18	800	830	2,750
Annular Velocity:				Drill Collars: 478.0		Drill Pipe: 247.0						
Comments: Slid Drill from 8,091' to 8,111'. Slide Drill from 8,282' to 8,303'. Slide Drill from 8,377' to 8,395'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	302	Pick Up:	330	Slack Off:	250	Drag Avg/Max:	15 / 20
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	105.75	Total:	105.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	82.5 /	Tripping:	99 /	<input type="checkbox"/> Wear Bushing Installed			



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 20

Report For 16-Jul-21

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
							N-S	E-W	
MWD	7,639.0	0.74	209.6	7,637.5	30.5	-25.5	S 25.5	W 16.8	0.195
MWD	7,830.0	1.62	212.6	7,828.4	34.5	-28.9	S 28.9	W 18.8	0.462
MWD	7,925.0	1.87	235.7	7,923.4	37.2	-30.9	S 30.9	W 20.9	0.778
MWD	8,020.0	1.85	235.7	8,018.4	40.1	-32.6	S 32.6	W 23.4	0.021
MWD	8,116.0	1.52	279.6	8,114.3	42.2	-33.3	S 33.3	W 25.9	1.351
MWD	8,211.0	1.76	291.6	8,209.3	43.3	-32.5	S 32.5	W 28.5	0.440
MWD	8,306.0	1.49	275.6	8,304.2	44.5	-31.9	S 31.9	W 31.1	0.553
MWD	8,402.0	0.87	250.9	8,400.2	46.0	-32.0	S 32.0	W 33.0	0.821
MWD	8,428.0	1.39	249.8	8,426.2	46.4	-32.1	S 32.1	W 33.5	2.002

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect. Trip	Exp.	Press	Dens.	Dens.	Shale Sand
7,613	8,500	7,612	8,498									

Formation Name:

Lithology: 100% Granodiorite

Rig Information

Equipment Problems: None to report.

Location Condition: Good.

Transport: Received 8.75" core bit along with 10-5/8" NOV PDC bit. Received 2-loads of 7" casing.,

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.51F					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, good communication, Forklift operations.

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

Accident Description: None to report.

BOP Test Crownamatic Check

Weather Information

Sky Condition: Cloudy	Visibility: 7
Air Temperature: 70 degF	Bar. Pressure: 29.84
Wind Speed/Dir: 8 / SSE	Wind Gusts: 2
Comments: Light rain.	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 21

Report For 17-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	8530	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	8528	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	30 / 7.5	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):	4.0			LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	21/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	21/30	Days On Location:	21		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 36	Total:	26 / 312

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Made up 8-3/4" core assembly.
Tripped in the hole with 8-3/4" core assembly to 6,495'.

Planned Operations: Trip in the hole with 8-3/4" core assembly to 8,530'.
Core from 8,530' to 8,560'.
Trip out of the hole with core assembly.
Make up 10-5/8" reaming assembly.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:00	2.00	8,500	3-6-4	Tripped out of the hole from 4,000' to BHA with no issues.	
2:00	7:00	5.00	8,500	3-34-4	Racked back HWDP. Laid out 15-8" drill collars and all directional tools. Motor had approximately .5" of squat in bearing assembly. Kick pad was wore smooth. Roller reamer above the motor had heavy wear on all buttons, 2 of the rollers had bad bearings. Top Stabilizer was .75" under-gauged.	
7:00	8:30	1.50	8,500	3-4	Picked up 8-3/4" Coring assembly / RIH 5 HWDP	
8:30	9:00	0.50	8,500	3-4	Pick up 18 jts of 5.5" drill pipe to replace DCS and Directional Tools	
9:00	13:30	4.50	8,500	3-4	RIH to 8,500' filling pipe every 20 stands with 8-3/4" core head	
13:30	17:30	4.00	8,530	3-4	Drop ball and core from 8,500' to 8,530'. No over-pull observed when pulling off bottom.	
17:30	23:00	5.50	8,530	3-6-4	Tripped out of the hole from 8,530' with core assembly.	
23:00	0:00	1.00	8,530	3-4	Handled BHA. Laid out core barrel. Recovered 23.7' of core. 50% 2-3" in length with the other 50% 9-12" in length. Note: Inner barrel assembly was pushed up inside of core barrel approximately 3".	

Management Summary

Tripped out of the hole from 4,000' with BHA and no issues.
Racked back HWDP. Laid out 15X8" drill collars and all directional tools.
Picked up 8-3/4" Coring assembly.
Tripped in the hole to 8,500' filling pipe every 1,000'.
Cored from 8,500' to 8,530'.
Tripped out of the hole from 8,530' with core assembly.
Handled BHA. Laid out core barrel. Recovered 23.7' of core. 50% 2-3" in length with the other 50% 9-12" in length.

Comments

Drilling assembly motor had approximately .5" of squat in bearing assembly.
Kick pad was wore smooth.
Roller reamer above the motor had heavy wear on all buttons and 2 of the rollers had bad bearings.
Top Stabilizer was .75" under-gauged.
After core run laid out the core barrel.
Recovered 23.7' of core.
50% 2-3" in length with the other 50% 9-12" in length.
Note: The inner barrel assembly was pushed up inside of core barrel approximately 3".

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 21

Report For 17-Jul-21

Mud Information

														%			Gels			Temp		Mud
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss		
17-Jul-21 15:45 at Depth 8,517 ft Mud Pits, Type: Low Solids Non-Dispersed																						
8.30	29	2	1	32	1	10	2	0	98	0.01		800	120		2	2	2	81	109			

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	2	---	Engineering - EACH	1	---
Other - EACH	1	---	perdiem - OTHER	1	---
polyvis - 5GAL	12	---	TORKease concentrate - 5GAL	6	---

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	R.O.P. Hrs	Avg	Max	WOB	RPM	Torque	Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF	
14	1	NOV	TCK83	10.625	7613	887	12	73.9	230.0	65	50		8	800	2750	278	576	269	957	
Jets: 12		12	12	12	13	13	Out: 8500	Grade: Cutter: 3/2	Dull: WT/LT	Wear: S	Brgs: X	Gge: 0	Pull: CP							
15	1	HALLB1	FC3843	8.750	8500															
Jets: 17		17	17	17	17	17	Out: 8530	Grade: Cutter: 1/1	Dull: WT/NO	Wear: S	Brgs: 0	Gge: 0	Pull: BHA							

BHA - No. 16 - CORBIT, STAB, CORE, STAB, 2 OTHER, FLOAT, XO, 15 HWDP = 509.79

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
8,500	8,530	8.0	14.0	8	10	65	65	11	12	290	290	10
Annular Velocity: Drill Collars: 230.0				Drill Pipe: 197.0								
Comments: Cored from 8,500' to 8,530'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	273	Pick Up:	285	Slack Off:	265	Drag Avg/Max:	10 / 15
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	109.75	Total:	109.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	86.5 /	Tripping:	113 /	<input type="checkbox"/> Wear Bushing Installed			

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP		
From	To	From	To	Avg	Max	at Depth	Connect.	Exp.	Press	Dens.	Dens.	Shale	Sand
8,500	8,530	8,498	8,528										
Formation Name:													
Lithology: 100% Granodiorite													

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	Received 1-load of 7" casing. Back hauled 1 load of 8" dir tools.

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: 24 (Solids Removal)		Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 21

Report For 17-Jul-21

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Handling BHA, good communication, Forklift operations.
First Aid Treatments:	0	Medical Treatments: 0
		Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test		<input checked="" type="checkbox"/> Crownamatic Check

Weather Information

Sky Condition: Partly cloudy	Visibility: 10
Air Temperature: 75 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 7 / SE	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 22

Report For 18-Jul-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 8540	Last Casing: 11.750 at 2,990	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft): 8438	Next Casing: 7.000 at 8,500	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	Last BOP Test: 03-Jul-21	Job Reference RKB (ft):	---	---	---
Hole Made (ft) / Hrs: 10 / 3.0	Next BOP Test: 24-Jul-21	Working Interest:	Totals:		
Average ROP (ft/hr): 3.33		LOT (lbs/gal): 11.70	Well Cost (\$): ---		
Drilling Days (act./plan): 22/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 22/30	Days On Location: 22		
Pers/Hrs: Operator: 3 / 36	Contractor: 14 / 168	Service: 6 / 72	Other: 3 / 36	Total: 26 / 312	

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Tripped in the hole with 10-5/8" clean out assembly to 8,500'.
 Open 8-3/4" core hole to 10-5/8" from 8,500' to 8,514'. Rerun PDC bit failed.
 Circulate surface to surface strokes to cool well bore prior to logs.
 Tripped out of the hole with clean out assembly from 8,514' to 1,947'.

Planned Operations: Trip out of the hole from 1,947' to surface.
 Rig up loggers.
 Log well.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:30	2.50	8,530	3-4	Made up 8-3/4" core assembly.	
2:30	7:30	5.00	8,530	3-4	Tripped in the hole with 8-3/4" core assembly to 8,530'.	
7:30	10:30	3.00	8,540	3-4	Cored with 8-3/4" assembly from 8,530' to 8,540'. Core barrel jammed up at 8,540'.	
10:30	15:00	4.50	8,540	3-4	POH with coring assembly as per trip out schedule.	
15:00	16:00	1.00	8,540	WOW	Shut down for high winds and thunder storm.	
16:00	17:00	1.00	8,540	3-4	Continue to POH with coring assembly	
17:00	19:30	2.50	8,540	3-4	Laid down all coring tools. Recovered 8.7' of core.	
19:30	20:00	0.50	8,540	OTHER	Cleaned and cleared floor. Laid out and lifting subs for 8" drill collars for inspection along with crossover subs.	
20:00	21:00	1.00	8,540	3-34-3	Make up 10-5/8" clean out assembly.	
21:00	0:00	3.00	8,540	3-6-3	Tripped in the hole with 10-5/8" clean out assembly to 6,454'. Filled pipe every 3,000'.	

Management Summary

Made up 8-3/4" core assembly.
 Tripped in the hole with 8-3/4" core assembly to 8,530'.
 Cored with 8-3/4" assembly from 8,530' to 8,540'. Core barrel jammed up at 8,540'.
 Pulled out of the hole with coring assembly as per trip out schedule.
 Shut down for high winds and thunder storm.
 Continue Pulling out of the hole with coring assembly as per trip out schedule.
 Laid down all coring tools.
 Cleaned and cleared floor.
 Make up 10-5/8" clean out assembly.
 Tripped in the hole with 10-5/8" clean out assembly to 6,454'.

Comments

Core barrel jammed at 8,540'.
 Recovered 8.7' of core on run #4.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 22

Report For 18-Jul-21

Weather Information

Sky Condition: Cloudy	Visibility: 8
Air Temperature: -70 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 10 / SE	Wind Gusts: 4

Comments: Heavy rain during the day. shut down for 1 hour due to high winds.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 23

Report For 19-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	8540	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	8438	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):			---	---
Hole Made (ft) / Hrs:	0 / 7.25	Next BOP Test:	24-Jul-21	Working Interest:			Totals:	---
Average ROP (ft/hr):	0.0			LOT (lbs/gal):	11.70	Well Cost (\$): ---		
Drilling Days (act./plan):	23/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	23/30	Days On Location: 23		
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	3 / 36	Other:	3 / 36	Total: 23 / 276

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

Current Operations: Slipped and cut drilling line.
 Tripped in the hole with 10-5/8" clean out assembly from 2,900' to 8,514'.
 Opened 8-3/4" core hole to 10-5/8" from 8,514' to 8,540'.
 Circulated surface to surface strokes to cool well bore prior to logs.

Planned Operations: Trip out of the hole to surface.
 Rig up loggers.
 Log well.
 Rig down loggers.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:15	1.25	8,540	3-6-3	Tripped in the hole with 10-5/8" clean out assembly to 8,500'. Filled pipe and broke circulation.	
1:15	2:00	0.75	8,540	3-21	Open 8-3/4" core hole to 10-5/8" from 8,500' to 8,514'. ROP dropped off from 50 ft/hr to 5 f/thr.	
2:00	3:00	1.00	8,540	3-5-1	Circulated surface to surface strokes to cool well bore prior to logs.	
3:00	6:00	3.00	8,540	3-6-4	Tripped out of the hole with 10-5/8" clean out assembly from 8,514' to 1,947'.	
6:00	7:00	1.00	8,540	3-6-4	Tripped out of the hole with clean out assembly from 1,947' to surface	
7:00	15:00	8.00	8,540	LOG	Rigged up and ran Sonic Scanner and borehole formation Imager / max temperature was 321 F @ 8,520' / good log / lay down tools.	
15:00	20:30	5.50	8,540	LOG	Rig up and run Triple-Combo / Max BHT was 354 F / Logging upwards	
20:30	21:00	0.50	8,540	LOG	Laid down logging tools.	
21:00	21:30	0.50	8,540	3-6-1	Make up 10-5/8" clean out assembly with TCI bit.	
21:30	23:00	1.50	8,540	3-6-3	Tripped in the hole with 10-5/8" clean out assembly to 2,900'.	
23:00	0:00	1.00	8,540	CUTDL	Slipped and cut drilling line.	

Management Summary

Tripped in the hole with 10-5/8" rerun PDC bit on clean out assembly to 8,500'.
 Open 8-3/4" core hole to 10-5/8" from 8,500' to 8,514'. Bit DBR.ed.
 Circulate surface to surface strokes to cool well bore prior to logs.
 Tripped out of the hole with 10-5/8" clean out assembly from 8,514' to surface.
 Rigged up and ran Sonic Scanner and Borehole Formation Imager. Max bottom hole BHT was 321 deg F.
 Rigged down logging tools.
 Rigged up and ran Triple-Combo / Max BHT was 354 deg F / Logged upwards.
 Rigged down loggers.
 Ran in the hole with 10-5/8" rerun TCI bit on clean out assembly to 2,900'.

Comments

Open 8-3/4" core hole to 10-5/8" from 8,500' to 8,514'. ROP dropped off from 50 ft/hr to 5 f/thr. Decision was made to complete opening the hole on cool down run with a TCI 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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 23

Report For 19-Jul-21

Mud Information

%

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	Temp In	Temp Out	Mud Loss
8.30	36	2	2	34	1	10	2	0	98	0.01	0	800	120		2	2	2	98	105	

19-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Other - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	R.O.P. Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF	
12	2	BAKER	MX-1	10.625	8415														
Jets: 20 20 20				Out: 8540	Grade: Cutter: 2/2	Dull: WT/CT	Wear: S	Brgs: 0	Gge: 0	Pull: TD									
14	2	NOV	TCK83	10.625	8500	14	1	14.0	75.0	25	55	16	8	820	1200	285	605	289	1005
Jets: 12 12 12 12 12 12 13 13				Out: 8514	Grade: Cutter: 3/8	Dull: RO/WT	Wear: S	Brgs: 0	Gge: 20	Pull: LOG									
BHA - No. 19 - BIT, BS, 15 HWDP = 469.42																			

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	271	Pick Up:	285	Slack Off:	265	Drag Avg/Max:	10 / 15
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	113.75	Total:	113.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	90.5 /	Tripping:	141 /	<input type="checkbox"/> Wear Bushing Installed			

Rig Information

Equipment Problems:	None to report,
Location Condition:	Good.
Transport:	None.

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: 24 (Solids Removal) Centrifuge 2: 24 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Rigging up loggers. Handling BHA. Working in weather.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test <input type="checkbox"/> Crownamatic Check		

Weather Information

Sky Condition:	Cloudy	Visibility:	7
Air Temperature:	68 degF	Bar. Pressure:	29.96
Wind Speed/Dir:	11 / S	Wind Gusts:	5
Comments:	Light rain		



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 24

Report For 20-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	8540	Last Casing:	11.750 at 2,990	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	8438	Next Casing:	7.000 at 8,500	RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	0 / 9.5	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):	0.0			LOT (lbs/gal):	11.70	Well Cost (\$):	---		
Drilling Days (act./plan):	24/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	24/30	Days On Location:	24		
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 36	Total:	26 / 312

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Tripped in the hole with 10-5/8" clean out assembly to 8,540'.
Drilled 10-5/8" hole from 8,540' to 8,545'.
Circulated surface to surface strokes to clean the well bore prior to running casing.
Pull out of the hole laying down 5.5" drill pipe from 8,545' to 6,300'.

Planned Operations: Lay out 5.5" drill string.
Rig up and run 7" casing.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:00	1.00	8,540	CUTDL	Slipped and cut drilling line.	
1:00	4:00	3.00	8,540	3-6-3	Tripped in the hole with 10-5/8" clean out assembly from 2,900' to 8,514'. Filled pipe and broke circulation. Filled pipe every 3,000'. Strapped all drill pipe while running in the hole.	
4:00	5:00	1.00	8,540	OPEN	Opened 8-3/4" core hole to 10-5/8" from 8,514' to 8,540'.	
5:00	6:00	1.00	8,540	3-5-1	Circulated surface to surface strokes to cool well bore prior to logs.	
6:00	10:00	4.00	8,540	3-6-4	Tripped out of the hole for Schlumberger logs.	
10:00	21:30	11.50	8,540	LOG	Rigged up Schlumberger . Ran UBI log. Rigged down loggers.	
21:30	22:00	0.50	8,540	3-6-1	Made up 10-5/8" clean out assembly with TCI bit.	
22:00	0:00	2.00	8,540	3-6-3	Tripped in the hole with 10-5/8" clean out assembly to 4,657'. Filled pipe very 3,000'.	

Management Summary

Slipped and cut drilling line.
Tripped in the hole with 10-5/8" clean out assembly from 2,900' to 8,514'.
Opened 8-3/4" core hole to 10-5/8" from 8,514' to 8,540'.
Circulated surface to surface strokes to cool well bore prior to logs.
Tripped out of the hole for Schlumberger logs.
Rigged up Schlumberger .
Ran UBI log.
Rigged down loggers.
Made up 10-5/8" clean out assembly with TCI bit.
Tripped in the hole with 10-5/8" clean out assembly to 4,657'

Comments

Strapped all drill pipe on trip in and compared to tally. Tally was good.
Five foot was drilled to fit casing and provide 13' of rat hole.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 24

Report For 20-Jul-21

Mud Information

														%			Gels			Temp		Mud
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss		
20-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																						
8.30	38	2	2	34	1	10	2	0	98	0.01		800	120		2	2	2	98	105			

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Other - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run		R.O.P.		Mud Pump										
						Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF	
12	2	BAKER	MX-1	10.625	8415	26	1	26.0	75.0	23	50	13	8	800	1300	279	578	270	959	
Jets: 20 20 20					Out: 8540	Grade: Cutter:	2 / 2	Dull: WT / CT	Wear: S	Brgs: 0	Gge: 0	Pull: TD								
12	3	BAKER	MX-1	10.625	8540															
Jets: 20 20 20					Out: 8545	Grade: Cutter:	2 / 3	Dull: WT / CT	Wear: S	Brgs: 0	Gge: 0	Pull: TD								

BHA - No. 20 - BIT, BS, 15 HWDP = 469.42

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	271	Pick Up:	285	Slack Off:	265	Drag Avg/Max:	5 / 10
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	114.75	Total:	114.75	Jars:	0		
Hours on Casing/Liner:	Rotating:	92.5 /	Tripping:	149 /	<input type="checkbox"/> Wear Bushing Installed			

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	Back hauled 8" dir tools.

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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Rigging up loggers. Forklift operations. Working in weather.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Cloudy	Visibility:	8
Air Temperature:	72 degF	Bar. Pressure:	29.98
Wind Speed/Dir:	7 / SE	Wind Gusts:	3
Comments:	Light rain during the day.		



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 25

Report For 21-Jul-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 8545	Last Casing: 11.750 at 2,990	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft): 8543	Next Casing: 7.000 at 8,500	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	Last BOP Test: 03-Jul-21	Job Reference RKB (ft):	---	---	---
Hole Made (ft) / Hrs: 5 / 2.5	Next BOP Test: 24-Jul-21	Working Interest:	Totals: ---		
Average ROP (ft/hr): 2.0		LOT (lbs/gal): 11.70	Well Cost (\$): ---		
Drilling Days (act./plan): 25/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 25/30	Days On Location: 25		
Pers/Hrs: Operator: 4 / 36	Contractor: 14 / 168	Service: 8 / 96	Other: 4 / 36	Total: 30 / 336	

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Running 7" casing to 2,514'.

Planned Operations: Run 7" casing to set depth of 8,531'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:00	2.00	8,540	3-6-3	Tripped in the hole with 10-5/8" clean out assembly to 8,540'. Filled pipe very 3,000'.	
2:00	2:30	0.50	8,545	3-2-1	Drilled 10-5/8" hole from 8,540' to 8,545'. Note: Five foot was drilled to fit casing and provide 13' of rat hole.	
2:30	3:30	1.00	8,545	3-5-1	Circulated surface to surface strokes to clean the wellbore prior to running casing.	
3:30	6:00	2.50	8,545	3-34-2	Pull out of the hole laying down 5.5" drill pipe from 8,545' to 6,300'.	
6:00	14:00	8.00	8,545	3-34-2	Pull out of the hole laying down 5.5" drill pipe from 6,300' to HWDP, Lay down HWDP	
14:00	17:00	3.00	8,545	4-12-1	Changed out IBOP valve for CRT. Install saver sub. Laid down all handling tools.	
17:00	18:00	1.00	8,545	OTHER	Removed 5.5" ram blocks. Installed Frontiers 5" ram blocks back into double gate.	
18:00	21:00	3.00	8,545	OTHER	Load racks with 7" casing. Cleaned threads on casing and prep to run.	
21:00	23:30	2.50	8,545	4-12-1	Held detailed safety meeting with all involved personal. Rigged up Wyoming Casing Service. Rigged up Silixa. Loaded out floor with Silixa centralizes.	
23:30	0:00	0.50	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing as followed. 7"- float shoe. 2-joints of 7", 41#, T-110SS. 7"- float collar at report time. Note: Casing was ran with torque turn system. All joints were torqued to manufactures recommendation of 17,070 FT/LBS.	

Management Summary

Tripped in the hole with 10-5/8" clean out assembly to 8,540'.
 Drilled 10-5/8" hole from 8,540' to 8,545'.
 Circulated surface to surface strokes to clean the wellbore prior to running casing.
 Pulled out of the hole laying down 5.5" drill pipe.
 Laid out all BHA.
 Changed out IBOP valve for CRT. Install saver sub. Laid down all handling tools.
 Removed 5.5" ram blocks. Installed Frontiers 5" ram blocks into double gate.
 Load racks with 7" casing. Cleaned threads on casing and prepared to run.
 Held detailed safety meeting with all involved personal. Rigged up Wyoming Casing Service. Rigged up Silixa.
 Loaded out floor with Silixa centralizes.
 Ran 7", 41#, T-110SS, Tenaris casing.

Comments

Five foot was drilled to fit casing and provide 13' of rat hole.
 BHA on fiber optics was placed to be landed at 8,389' top of third full joint.
 All 7" casing joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 25

Report For 21-Jul-21

Mud Information

														%			Gels			Temp		Mud
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss		
21-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																						
8.30	38	2	2	34	1	10	2	0	98	0.01		800	12		2	2	2	98	105			

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Gel - 100#SK	10	---
Micro C - 50#SK	17	---	Other - EACH	1	---
perdiem - OTHER	1	---			

Bit/BHA/Workstring Information

														Depth		This Run		R.O.P.		Mud		Pump	
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF					
12	3	BAKER	MX-1	10.625	8540	5	0.5	10.0	25.0	25	45	7	8	820	1800	286	607	290	1007				
Jets: 20 20 20				Out: 8545		Grade: Cutter: 2/3		Dull: WT/CT		Wear: S		Brgs: 0		Gge: 0		Pull: TD							
BHA - No. 20 - BIT, BS, 15 HWDP = 469.42																							

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	114.75	Total:	114.75	Jars: 0
Hours on Casing/Liner:	Rotating:	92.5 /	Tripping:	167 /	<input type="checkbox"/> Wear Bushing Installed

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	Back hauled 4 loads of 5.5" drill pipe.

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: 12 (Solids Removal)		Centrifuge 2: 12 (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"	258	24.7	S-135	5.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Laying down drill pipe. Forklift operations. Rigging up and running casing.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Partly cloudy	Visibility:	8
Air Temperature:	70 degF	Bar. Pressure:	29.98
Wind Speed/Dir:	7 / SE	Wind Gusts:	2
Comments:	Light rain during the day.		



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 26

Report For 22-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	8545	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	8543	Next Casing:		RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	15.00	Well Cost (\$):		---
Drilling Days (act./plan):	26/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	26/30	Days On Location:		26
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	8 / 96	Other:	3 / 36	Total: 28 / 336

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Pulled out of the hole with 7" casing from 5,477' to 1,212'.

Planned Operations: Continue pulling 7" casing.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	8,545	4-12-1	Run 7", 41#, T-110SS, Tenaris casing from 94' to 2,514'. Note: BHA on fiber optics was placed at 8,389' top of third full joint. Stopped and tested continuity every 15 joints while running casing. All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS.	
6:00	15:00	9.00	8,545	4-12-1	Run 7", 41#, T-110SS, Tenaris casing from 2,514'. to 6,178'.	
15:00	15:30	0.50	8,545	4-12-1	Stopped to test fibers AT 6,178'. Breakage in fiber optic cable detected; decision was made to continue running in hole with remaining intact fiber/casing and monitor for cable quality.	
15:30	16:00	0.50	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 6,178' to 6,517'.	
16:00	18:30	2.50	8,545	4-12-1	Stopped at joint 6,517' to run Fiber optic tests- the measured fiber length shortened by approximately 500ft on the fibers. Meeting was held to decide plan moving forth; the decision was made to run 5 more joints in the hole and assess the fiber quality afterwards.	
18:30	19:15	0.75	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 6,517' to 6,753'.	
19:15	20:30	1.25	8,545	4-12-1	Tested fibers; fibers shortened by 500ft. The decision was made to pull casing out of hole.	
20:30	0:00	3.50	8,545	4-99	Pull out of the hole with 7" casing from 6,753' to 5,447'. Note: While pulling the first joint of 7" casing fiber optic got cut pulling through the bushings.	

Management Summary

Ran 7", 41#, T-110SS, Tenaris casing from 94' to 6,178'.
 Stopped to test fibers AT 6,178'.
 Breakage in fiber optic cable detected.
 Ran 7", 41#, T-110SS, Tenaris casing from 6,178' to 6,517'.
 Stopped at joint 6,517' to run Fiber optic tests- the measured fiber length shortened by approximately 500ft on the fibers.
 Ran 7", 41#, T-110SS, Tenaris casing from 6,517' to 6,753'.
 Tested fibers; fibers shortened by 500ft.
 Decision was made to pull the casing out of hole.
 Pull out of the hole with 7" casing from 6,753' to 5,447' at report time.

Comments

Tested out fiber optic cable every 15 joints while running 7" casing.
 Tested fibers at 6,178'. Breakage in fiber optic cable detected.
 Decision was made to continue running in hole with remaining intact fiber/casing and monitor for cable quality.
 Tested fibers at 6,517'.
 The measured fiber length shortened by approximately 500ft on the fibers.
 Meeting was held to decide plan moving forth; the decision was made to run 5 more joints in the hole and assess the fiber quality afterwards.
 Tested fibers AT 6,753'.
 Fibers shortened by 500ft. The decision was made to pull casing out of hole.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 26

Report For 22-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
22-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	38	2	2	34	1	10	2	0	98	0.01	0	800	120		2	2	2	98	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	80	---	Engineering - EACH	1	---
Gel - 100#SK	4	---	Other - EACH	1	---
pallets - OTHER	2	---	perdiem - OTHER	1	---
polyvis - 5GAL	1	---			

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	114.75	Total:	114.75	Jars: 0
Hours on Casing/Liner:	Rotating:	92.5 /	Tripping:	185 /	<input type="checkbox"/> Wear Bushing Installed

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	Back hauled 4 loads of 5.5" pipe.

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: 8 (Solids Removal)		Centrifuge 2: 8 (Solids Removal)
Shaker No 3:	120	120	120	120			

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Running 7" casing. Laying out 7" casing.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Cloudy	Visibility:	10
Air Temperature:	68 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	5 / SE	Wind Gusts:	2
Comments:	Light rain		



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 27

Report For 23-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	8545	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	8543	Next Casing:		RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	15.00	Well Cost (\$):		---
Drilling Days (act./plan):	27/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	27/30	Days On Location:		27
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	8 / 96	Other:	3 / 36	Total: 28 / 336

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Ran 7", 41#, T-110SS, Tenaris casing from 2,380' to 3,722'. Install splice on fiber-optic cable at 3,722'.

Planned Operations: Run 7" casing to set depth of 8,531'. Circulate to cool well bore prior to cement job.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	8,545	4-99	Pulled out of the hole with 7" casing from 5,477' to 1,212'. Note: Fiber-optic cable was broke from 3,017' down to 1,212' in multiple place ranging from 40' to 160' foot sections.	
6:00	7:30	1.50	8,545	4-99	Pulled out of hole with 7" casing from 1212' to 120' NOTE: Fiber optic had no breaks from 1212' to 120'	
7:30	10:00	2.50	8,545	WOO	Waited on Orders while Silixa measured and determines usable length of fiber optic. Determined 3,686' of usable fiber-optic.	
10:00	18:00	8.00	8,545	WOE	Silixa shipping a 5,000' cable from Montana to splice / Continue wiring 3,686' piece to BHA	
18:00	20:00	2.00	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 94' to 685'. Note: BHA on fiber optics was placed at 8,389' top of third full joint. All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Pumped through shoe track to verify no blockage. Remaining joints were not filled.	
20:00	20:30	0.50	8,545	4-99	Performed continuity test on fiber optics at 6,85'. Test was good.	
20:30	21:45	1.25	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 685' to 1,376'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
21:45	22:00	0.25	8,545	4-99	Performed continuity test on fiber optics at 1,376'. Test was good.	
22:00	23:15	1.25	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 1,376' to 2,060'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
23:15	23:30	0.25	8,545	4-98	Performed continuity test on fiber optics at 2,060'. Test was good.	
23:30	0:00	0.50	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 2,060' to 2,380'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	

Management Summary

Pulled out of the hole with 7" casing from 5,477' to 120'.
 Multiple breaks in fiber-optic cable from 3,017' to 1,212'.
 Removed Silixa Fiber-optic BHA from casing.
 Waited on Orders while Silixa measured usable length of fiber-optic cable. Determined 3,686' of usable fiber-optic cable.
 Installed fiber-optic BHA on casing.
 Ran 7", 41#, T-110SS, Tenaris casing from 94' to 2,380'.
 Performed continuity test on fiber optics every 15-joints while running 7" casing.

Comments

Fiber-optic cable was broke from 3,017' up to 1,212' in multiple places ranging from 40' to 160' sections.
 Silixa shipped 5,000' of fiber-optic cable from Montana.
 Cable arrived on location at 0030 hrs on 7-24-2021.

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 27

Report For 23-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
23-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	38	2	2	34	1	10	2	0	98	0.01	0	800	120		2	2	2	98	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Other - EACH	1	---
perdiem - OTHER	1	---	Trucking - EACH	1	---

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	114.75	Total:	114.75	Jars: 0
Hours on Casing/Liner:	Rotating:	92.5 /	Tripping:	197 /	<input type="checkbox"/> Wear Bushing Installed

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	Back hauled remaining 5.5" drill pipe. Back hauled roller reamers along with cubic sensors.

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			

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Laying out 7" casing. Running 7" casing. hand and body placement.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Cloudy	Visibility:	10
Air Temperature:	70 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	8 / SE	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 28

Report For 24-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	8545	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	8543	Next Casing:		RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	15.00	Well Cost (\$):	---	---
Drilling Days (act./plan):	28/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	28/30	Days On Location:		28
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	14 / 168	Other:	2 / 24	Total: 33 / 396

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Circulated at 16 bbl's per min to cool well bore.
Cemented 7" casing in place with 126 bbl's of cement to surface.

Planned Operations: Wait on cement.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:45	0.75	8,540	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 2,380' to 2,742'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
0:45	1:00	0.25	8,540	4-99	Performed continuity test on fiber optics at 2,742'. Test was good.	
1:00	2:00	1.00	8,540	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 2,742' to 3,428'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
2:00	2:15	0.25	8,545	4-99	Performed continuity test on fiber optics at 3,428'. Test was good.	
2:15	2:30	0.25	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 3,428' to 3,722'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
2:30	9:00	6.50	8,545	4-99	Installed new spool of fiber-optic cable on to unit. Ran fiber-optic cable to rig floor. Spliced on new fiber-optic cable at 3,722'.	
9:00	10:00	1.00	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 3,711' to 4,117'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
10:00	10:30	0.50	8,545	4-99	Performed continuity test on fiber optics at 4,117'. Test was good.	
10:30	11:30	1.00	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 4,117' to 4,803'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
11:30	12:00	0.50	8,545	4-99	Performed continuity test on fiber optics at 4,803'. Test was good.	
12:00	13:00	1.00	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 4,803' to 5,480'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
13:00	13:30	0.50	8,545	4-99	Performed continuity test on fiber optics at 5,480'. Test was good.	
13:30	15:00	1.50	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 5,480' to 6,161'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
15:00	15:15	0.25	8,545	4-99	Performed continuity test on fiber optics at 6,161'. Test was good.	
15:15	16:00	0.75	8,545	4-12-1	Run 7", 41#, T-110SS, Tenaris casing from 6,161' to 6,614'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
16:00	16:15	0.25	8,545	4-99	Performed continuity test on fiber optics at 6,614'. Test was good.	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 28

Report For 24-Jul-21

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
16:15	17:00	0.75	8,545	4-12-1	Run 7", 41#, T-110SS, Tenaris casing from 6,614' to 7,070'. Note: Floats failed at 6,795' while running casing gained 81k in hook load. All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
17:00	17:30	0.50	8,545	4-99	Performed continuity test on fiber optics at 7,070'. Test indicated one of the five fiber-optic had failed at 4,000' from surface. Decision was made to run in one joint to 7,106' and circulate bottoms up.	
17:30	19:00	1.50	8,545	3-5-1	Circulated bottoms up at 7,106'. Max surface flow temperature was 99 degrees Fahrenheit. Static temperature reading at 6,966' with fiber-optic cable was 359 degrees Fahrenheit.	
19:00	19:45	0.75	8,545	4-12-1	Run 7", 41#, T-110SS, Tenaris casing from 7,070' to 7,812'. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling.	
19:45	20:00	0.25	8,545	4-99	Performed continuity test on fiber optics at 7,812'. Test indicated all five fiber-optic cables failed from 4,500' to 7,812'. Static temperature was 240 degrees Fahrenheit at 4,500'.	
20:00	21:15	1.25	8,545	4-12-1	Ran 7", 41#, T-110SS, Tenaris casing from 7,812' to set depth of 8,508'. Shoe set at 8,508' KB. Float collar at 8,414' KB. Note: All joints were torqued to manufactures optimum recommendation of 17,070 FT/LBS. Ran all 15-joints without filling. Thread locked last 3 joints in the hole below landing joint.	
21:15	21:30	0.25	8,545	4-99	Performed continuity test on fiber optics at 8,508'. Test indicated all five fiber-optic cables failed from 3,933' to 8508'. Static temperature was 208 degrees Fahrenheit at 3,933'.	
21:30	22:30	1.00	8,545	4-99	Rigged down CRT tool. Rigged up cement head. Broke circulation.	
22:30	0:00	1.50	8,545	3-5-1	Circulated at 16 bbl's per min to cool well bore. Mixed and pumped 4ppb Micro C while circulating. Cleaned and cleared floor while circulating.	

Management Summary

Ran 7", 41#, T-110SS, Tenaris casing from 2,380' to 3,722'.
Installed new spool of fiber-optic cable on unit. Ran fiber-optic cable to rig floor.
Spliced on new fiber-optic cable at 3,722'.
Ran 7", 41#, T-110SS, Tenaris casing from 3,711' to set depth of 8,508'.
Rigged down CRT tool.
Rigged up cement head.
Broke circulation.
Circulated at 16 bbl's per min to cool well bore.
Mixed and pumped 4ppb Micro C while circulating.
Cleaned and cleared floor while circulating.

Comments

Splice on new fiber-optic cable at 3,722'.
Performed continuity test on fiber optics every 15 joints while running casing.
Floats failed at 6,795' while running casing.
Performed continuity test on fiber optics at 7,070'.
Test indicated one of the five fiber-optic had failed at 4,000' from surface.
Performed continuity test on fiber optics at 7,812'.
Test indicated all five fiber-optic cables failed from 4,500' to 7,812'.
Static temperature was 240 degrees Fahrenheit at 4,500'.
Performed continuity test on fiber optics at 8,508'.
Test indicated all five fiber-optic cables failed from 3,933' to 8508'.
Static temperature was 208 degrees Fahrenheit at 3,933'.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 28

Report For 24-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
24-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	38	2	2	34	1	10	2	0	98	0.01		800	120		2	2	2	98	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Other - EACH	1	---
perdiem - OTHER	1	---			

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	114.75	Total:	114.75	Jars: 0
Hours on Casing/Liner:	Rotating:	92.5 /	Tripping:	197 /	<input type="checkbox"/> Wear Bushing Installed

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	Received all 3.5" drill pipe along with handling tools and BHA.

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			

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Running 7" casing. hand and body placement. Cementing.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Cloudy	Visibility:	10
Air Temperature:	68 degF	Bar. Pressure:	28.97
Wind Speed/Dir:	10 / SE	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 29

Report For 25-Jul-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 8545	Last Casing: 7.000 at 8,509	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft): 8543	Next Casing:	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	Last BOP Test: 03-Jul-21	Job Reference RKB (ft):	---	---	---
Hole Made (ft) / Hrs: 0 / 0.0	Next BOP Test: 24-Jul-21	Working Interest:	Totals:	---	---
Average ROP (ft/hr):		LOT (lbs/gal): 15.00	Well Cost (\$): ---		
Drilling Days (act./plan): 29/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 29/30	Days On Location: 29		
Pers/Hrs: Operator: 3 / 36	Contractor: 14 / 168	Service: 6 / 72	Other: 3 / 36	Total: 26 / 312	

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Waited on cement.
 Bled back 4 bbl's from casing to cement truck.
 Slacked off casing and monitored for 5 mins.
 Removed cement head and lines.
 Cut Silixa fiber-optic cable.
 Raised rotating head extension and made rough cut on 7" casing.

Planned Operations: Finish nipling down 13-5/8 BOPE. Install the 7" 10K wellhead, nipple up and test the 7-1/16" 10K BOP's.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:30	2.50	8,545	3-5-1	Circulated at 16 bbl's per min to cool well bore. Mixed and pumped 4ppb Micro C while circulating. Cleaned and cleared floor while circulating.	
2:30	6:00	3.50	8,545	5-12-2	Held safety meeting with all involved personal. Swapped lines to cement truck. Pumped cement as followed. Fill lines, pressure tested lines to 5,500 psi. Pumped 100 bbls of fresh water spacer @ 5 bpm. Pumped 20 bbls of RC Mud cleaner spacer @ 5 bpm. Pumped 10 bbls of fresh water spacer @ 5 bpm. Mixed and pumped 809 bbls of 12.7 ppg RC Thermalite-HT cement @ 8 bpm. Note: Last 80 bbls of cement has 1.3% of retarder. Dropped top plug and displaced with 273 bbls of fresh water. Bumped plug with 500 psi over circulating pressure at 3385 psi. CIP at 06:16 HRS on 7-25-2021.	
6:00	12:00	6.00	8,545	3-13	Waited on cement while holding between 2800 psi and 3000 psi pressure on inside of casing. Cement fell to 95' below KB.	
12:00	13:00	1.00	8,545	5-12-2	Mixed and pump 6 bbls of neat cement filling annulus from 95' to surface / CIP 13:00	
13:00	0:00	11.00	8,545	3-13	Waited on cement. Monitored cement samples while waiting on cement. Monitored temperature at 3,998' with Silixa fiber-optic cable. Monitored casing pressure with Resources Cementing. Bleeding pressure Note: Temperature at 4,200' monitored with Silixa cable at 197 degrees fahrenheit. at 1100 hrs final temp at 0000 hrs reached 208 degrees fahrenheit.	

Management Summary

Circulated at 16 bbl's per min to cool well bore.
 Held safety meeting with all involved personal. Swapped lines to cement truck.
 Pumped cement as per pump schedule.
 Waited on cement .
 Cement fell to 95' below KB.
 Mixed and pump 6 bbl's of neat cement while waiting on cement.

Comments

Bumped plug with 3385 psi, (500 psi over displacement pressure). CIP at 06:16 HRS on 7-25-2021.
 Had 126 bbl's of good cement to surface.
 Held pressure on casing and bled back as necessary for thermal expansion.
 Cement fell to 95' below KB.
 Topped out with 6 bbls of neat cement. CIP at 13:00 7-25-2021. WOC.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 29

Report For 25-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
25-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	38	2	2	34	1	10	2	0	98	0.01		800	120		2	2	2	98	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Micro C - 50#SK	100	---
Other - EACH	1	---	perdiem - OTHER	1	---

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	114.75	Total:	114.75	Jars: 0
Hours on Casing/Liner:	Rotating:	92.5 /	Tripping:	197 /	<input type="checkbox"/> Wear Bushing Installed

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	None to report.

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			

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews.Pumping Cement. Nippling down BOP. forklift operations.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Partly cloudy	Visibility:	10
Air Temperature:	75 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	10 / SE	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 30

Report For 26-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	8545	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	8543	Next Casing:		RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	03-Jul-21	Job Reference RKB (ft):		---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	15.00	Well Cost (\$):		---
Drilling Days (act./plan):	30/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	30/30	Days On Location:		30
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	6 / 72	Other:	3 / 36	Total: 26 / 312

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Tested out casing along with BOPE.
 Made up 5-3/4" TCI clean out assembly.
 Picked up 4-3/4" drill collars to 900'.
 Picked up 3.5" drill pipe from 900' to 1,500' at report time.

Planned Operations: Trip in the hole with 5-3/4" clean out assembly to top of float collar.
 Slip and cut drilling line.
 Test annular along with pipe rams.
 Drill out shoe track.
 Clean out cement to 8,545'.
 Perform XLOT.
 Pull out of the hole for 5 3/4" dir assembly.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	3:00	3.00	8,545	3-13	Waited on cement. Monitored cement samples while waiting on cement. Monitored temperature at 3,998' with Silixa fiber-optic cable. Monitored casing pressure with Resources Cementing. Bleeding pressure as needed to maintain 2,700 psi on float collar.	
3:00	6:00	3.00	8,545	6-14	Bled back 4 bbl's from casing to cement truck. Slacked off casing and monitored for 5 mins. Removed cement head and lines. Cut Silixa fiber-optic cable. Raised rotating head extension and made rough cut on 7" casing. Laid out rotating head. Raised annular and made rough cut on 7" casing. Laid out annular.	
6:00	12:00	6.00	8,545	6-14	Remove double gate BOP and strip out fiber optic / Remove Drilling spool and strip out fiber optic / Extension spool 11"3000 X 13-5/8" 5000 and 7" cemented together / cut extension spool in half and chip out cement in lower half of spool while protecting the fiber optic.	
12:00	13:00	1.00	8,545	6-14	Rig up power tongs underneath substructure and back out landing joint removing the casing collar with it.	
13:00	14:00	1.00	8,545	6-14	Installed 7" riser nipple on the well head and torqued the well head to 17,070 ft/lbs to the 7" casing.	
14:00	15:00	1.00	8,545	6-14	Removed the riser nipple and install well head side valves with companion flanges	
15:00	21:30	6.50	8,545	6-14	Installed drilling spool w/ 2ea 2" 10K valves and 1- 2" 10K check valve on the kill side with a 2" 1502, and 1ea 4"10K manual valve and a 4" 10K hydraulic valve on the choke side / Installed 7-1/16" 10 K double gate BOP, Installed 7-16" 10K X 7-1/16" 15K crossover spool / installed 7-1/16" 10K annular BOP w/ 7-1/16" 15K lower flange and 7-1/16" 10K upper flange / installing 7-1/16" 10K riser nipple. Installed turn buckles. Function test BOP.	
21:30	23:00	1.50	8,545	3-15	Rigged up pump truck to well head. Attempted to test truck prior to starting test. unable to get a good test on the pump truck. Pressure leaking at the truck losing approximately 600 psi every 30 mins.	
23:00	0:00	1.00	8,545	3-15	Removed Pason transducer from stand-pipe and installed on 2" 10K valve on well head to monitor casing pressure. Tested casing along with inside choke valve and out side kill check valve to 300 psi. held for 5 mins. good test. All test charted out on Pason.	

Management Summary



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 30

Report For 26-Jul-21

Waited on cement.
 Bled back 4 bbl's from casing to cement truck.
 Slacked off casing and monitored for 5 mins.
 Removed cement head and lines.
 Cut Silixa fiber-optic cable 30' above rig floor.
 Removed BOPE.
 Rig up power tongs underneath substructure and back out landing joint.
 Installed 7" 10k wellhead and torqued to 17,070 ft/lbs.
 Set in and nipped up 7-1/16" 10K BOP's.
 Tested casing to 300 psi low.

Comments

Cement at surface after 6 bbl top job.
 Spacer spool on BOP had to be cut off due to being cemented up.
 Unable to test BOP'S with pump truck due to Pressure leaking at the truck losing approximately 600 psi or 12% every 30 mins.
 Decision was made to test BOP'S with rig pump. Removed Pason transducer from stand-pipe and installed on 2" 10K valve on well head to monitor casing pressure during BOP test. All test were charted out on the Pason nd witnessed by GRG supervisor.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
26-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	1	1	0	1	11	1	0	99	0.01	0	700	120		1	1	1	98	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
caustic Soda - 50#SK	2	---	Engineering - EACH	1	---
Other - EACH	1	---	perdiem - OTHER	1	---

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi

Rig Information

Equipment Problems: None to report.
Location Condition: Good.
Transport: None to report.

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
3.5"	317	13.3	S-135	3.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews Nipling down BOP. forklift operations. Pressure testing.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 30

Report For 26-Jul-21

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 73 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 6 / SE	Wind Gusts: 3



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 31 Report For 27-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---
Measured Depth (ft):	8545	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	---
Vertical Depth (ft):	8543	Next Casing:		RKB Elevation (ft):	30.40	AFE (\$)	---
Proposed TD (ft):	9500	Last BOP Test:	27-Jul-21	Job Reference RKB (ft):		Actual (\$)	---
Hole Made (ft) / Hrs:	0 / 12.0	Next BOP Test:	28-Aug-21	Working Interest:		Totals:	---
Average ROP (ft/hr):	0.0			LOT (lbs/gal):	15.00	Well Cost (\$):	---
Drilling Days (act./plan):	31/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	31/30	Days On Location:	31
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	3 / 36	Other:	3 / 36
						Total:	23 / 276

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

Current Operations: Circulated bottoms up Prior to testing.
 Tested pipe rams along with annular 300 psi low to 5,200 psi high.
 Drilled out cement and shoe track from 8,364" to 8,508'.
 Drilled 5-3/4" hole from 8,545' to 8,555'.
 Rigged up Resource cementing pump truck.
 Troubleshoot pressure gage on truck.
 Slipped and cut drilling line.

Planned Operations: Perform xLOT.
 Trip out of the hole from 8,482'.
 Make up 5-3/4" directional assembly.
 Trip in the hole to 8,555'.
 Drill 5-3/4" hole section from 8,555'.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	3:00	3.00	8,545	3-15	Tested casing along with inside choke valve and out side kill check valve to 5,200 psi. held for 30 mins. good test. Tested outside valve on mud-cross along with inside kill valve to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Tested 3 outside valves on the choke to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Tested 3 middle valves on the choke to 300 psi low 5200 high. Held low test for 5 mins held high test for 10 mins. Tested 3 inside valves on choke to 300 psi low 5200 high. Held low test for 5 mins held high test for 10 mins. All test charted out on Pason.	
3:00	5:30	2.50	8,545	3-34-3	Picked up 4 3/4" drill collar. Make up 5-3/4" TCI bit. Picked up 29 joints of 4-3/4" drill collars. Tripped in the hole to 900'.	
5:30	7:15	1.75	8,545	3-34-1	Picked up 3.5" drill pipe from 900' to 2,003' @07:15 noticed a slip die missing from rented slips.	
7:15	9:00	1.75	8,545	3-97	Open doors on BOP and search for slip die	
9:00	12:00	3.00	8,545	3-6-4	Tripped out of the hole with drill pipe from 2,003' with BOP doors open looking for lost slip die.	
12:00	14:00	2.00	8,545	6-14	Once at top of drill collars close blind ram doors, Rigged up slings to lift BOP while pulling drill collars. Pick stack up 1 foot and chained off to sub substructure and block between wellhead and BOP Release pick up slings	
14:00	15:00	1.00	8,545	3-6-2	Pulled out of the hole with 10 stands of drill collars to bit looking for slip die.	
15:00	16:00	1.00	8,545	6-14	Remove BOP hanging system and Nipple BOP back up / Pull last stand of collars / no markings on bit to indicate slip die had passed / close blind rams and function pipe rams and Annular BOP / nothing fell on top of blind rams.	
16:00	16:30	0.50	8,545	3-6-1	RIH w/ bit and drill collars to 900'.	
16:30	0:00	7.50	8,545	3-6-3	Picked up 3.5" drill pipe and run in the hole to 8,400'.	

Management Summary

Tested casing along with inside choke valve and out side kill check valve to 300 psi low and 5200 psi high.
 Held low test for 5 mins - good test.
 Held high test for 30 mins - good test.
 Picked up 4 3/4" drill collars.
 Made up 5-3/4" TCI bit.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 31

Report For 27-Jul-21

Picked up 29 joints of 4-3/4" drill collars.
 Tripped in the hole to 900'.
 Picked up 3 1/2" drill pipe from 900' to 2,003'. Found one 3 1/2" slip insert die missing.
 Tripped out of the hole with drill pipe from 2,003' with BOP doors open looking for lost slip die.
 Rigged up slings to lift BOP while pulling drill collars.
 Picked up stack 1 foot and chained off to sub substructure.
 Pulled out of the hole with 10 stands of drill collars to bit looking for slip die with no results.
 Remove BOP hanging system and Nipped BOP back up.
 Pulled last stand of collars / no markings on bit to indicate slip die had passed.
 Closed blind rams and function pipe rams and Annular BOP / no indication of die on top of blind rams.
 Ran in hole with bit and drill collars to 900'.
 Picked up 3.5" drill pipe and ran in the hole to 8,400'.

Comments

At 07:15 noticed a slip die missing from rented slips. Unable to find it on floor or in cellar.
 Pulled out of the hole looking for slip die.
 No markings on bit to indicate slip die had dropped down the hole.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels		Temp		Mud		
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
27-Jul-21 11:00 at Depth 8,540 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	11	1	0	99	0.01	0	700	120		1	1	1	98	105	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Engineering - EACH	1	---	Other - EACH	1	---
perdiem - OTHER	1	---			

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas		Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect.	Trip	Exp.	Press	Dens.	Dens.	Shale Sand
8,555	8,950		8,947										

Formation Name:

Lithology: 100% Granodiorite

Rig Information

Equipment Problems: Rental slips from Weatherford missing die segment.
Location Condition: Good.
Transport: Received 5-3/4" mill, junk basket, 5-3/4" magnet.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	175	175	175	175	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	175	175	175	175			
Shaker No 3:	175	175	175	175			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
3.5"	317	13.3	S-135	3.5IF					



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 31

Report For 27-Jul-21

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews Nippling down BOP. Picking up BHA. Picking up 3.5" drill pipe.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
Accident Description: None to report.		
<input checked="" type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Partly Cloudy	Visibility:	10
Air Temperature:	75 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	6 / SE	Wind Gusts:	2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 32

Report For 28-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft):	8950	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft):	8947	Next Casing:		RKB Elevation (ft):	30.40	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	27-Jul-21	Job Reference RKB (ft):		---	---	---
Hole Made (ft) / Hrs:	405 / 13.5	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---
Average ROP (ft/hr):	30.0			LOT (lbs/gal):	15.00	Well Cost (\$):		---
Drilling Days (act./plan):	32/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	32/30	Days On Location:		32
Pers/Hrs:	Operator: 3 / 36	Contractor:	14 / 168	Service:	3 / 36	Other:	3 / 36	Total: 23 / 276

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Drilled from 8,950 to 9,500' at report time.

Planned Operations: Circulate hole clean.
Trip out of the hole.
Lay out drill collars.
Trip in the hole with 3.5" drill pipe.
Rig up logger and log.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:30	0.50	8,545	03-051	Circulated bottoms up Prior to testing.	
0:30	1:45	1.25	8,545	3-15	Tested pipe rams to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Good test. Tested annular to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Good test.	
1:45	2:30	0.75	8,545	3-28	Drilled out cement and shoe track from 8,364" to 8,508'. Good cement in shoe. Observed 1' of good cement outside of the shoe. Cleaned out rat hole from 8,508' to 8,545'. Note: Float collar did not take any weight while drilling out. Note: Pumped 2-5 gallon buckets of Poly Vis along with 25 pounds of torkease mixed in 40 bbl's of water.	
2:30	3:30	1.00	8,555	3-99	Drilled 5-3/4" hole from 8,545' to 8,555'.	
3:30	4:00	0.50	8,555	3-5-1	Circulated bottoms up prior to performing XLOT.	
4:00	5:00	1.00	8,555	OTHER	Rigged up Resource cementing pump truck. Troubleshoot pressure gage on truck.	
5:00	6:00	1.00	8,555	CUTDL	Slipped and cut drilling line.	
6:00	8:00	2.00	8,555	3-46	Conducted xLOT with Resource bleed back was 2.5 bbl with both low and high rates	
8:00	11:30	3.50	8,555	3-6-4	Pulled out of the hole and lay down bit.	
11:30	12:00	0.50	8,555	SERV	Serviced Rig.	
12:00	14:00	2.00	8,555	3-34-3	Picked up 5-3/4" directional drilling assembly. NOTE: hole took 25 bbls of fluid to fill while picking up tools avg loss is 12.5 bbl/hour	X
14:00	20:00	6.00	8,555	3-6-3	Tripped in the hole with drill pipe filling pipe at 4,000' 6,000'. Staged in the hole every 50' from 7,000' to 8,150'. Washed down from 8,150' to 8,555' to keep tools under 345 degrees. Max temperature observed was 345 degrees at MWD. Note: Lost connection with MWD once on bottom. Recycled pump 3 times and was able to regained communication with MWD.	
20:00	20:30	0.50	8,615	3-2-3	Drilled 5-3/4" hole from 8,555' to 8,615'.	
20:30	21:30	1.00	8,654	3-2-3	Slide Drilled 5-3/4" from 8,615' to 8,654'.	
21:30	22:00	0.50	8,709	3-2-3	Drilled 5-3/4" hole from 8,654' to 8,709'.	
22:00	22:30	0.50	8,742	3-2-3	Slide Drilled 5-3/4" from 8,709' to 8,742'.	
22:30	0:00	1.50	8,950	3-2-3	Drilled 5-3/4" hole from 8,742' to 8,950'.	

Management Summary

Circulated bottoms up prior to testing.
Tested pipe rams to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Both test good.
Tested annular to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Both test good.
Drilled out cement and shoe track from 8,364" to 8,508'.
Drilled 5-3/4" hole from 8,545' to 8,555'.
Circulated bottoms up prior to performing xLOT.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 32

Report For 28-Jul-21

Rigged up Resource cementing pump truck.
 Troubleshoot pressure gage on truck.
 Slipped and cut drilling line.
 Conducted xLOT with Resource cementing pump truck.
 Pulled out of the hole and lay down bit.
 Serviced Rig.
 Picked up 5-3/4" directional drilling assembly.
 Tripped in the hole with drill pipe filling pipe at 4,000' 6,000'.
 Staged in the hole every 500' from 7,000' to 8,150'.
 Washed down from 8,150' to 8,555' to keep tools under 345 degrees.
 Drilled 5-3/4" hole from 8,555' to 8,950'.

Comments

Float collar did not take any weight while drilling out.
 Pumped 2-5 gallon buckets of Poly Vis along with 25 pounds of Torkease mixed in 40 bbl's of water while drilling 10' rat hole.
 Lost connection with MWD once on bottom. Recycled pump 3 times and was able to regained communication with MWD.
 Performed WOB step test at 8,555'
 Slide drilled 5-3/4" from 8,615' to 8,654'.
 Slide drilled 5-3/4" from 8,709' to 8,742'.
 Performed RPM step test at 8,835'.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels		Temp		Mud		
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
28-Jul-21 21:00 at Depth 8,626 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	11	1	0	99	0.01	0	700	120		1	1	1	82	100	

Mud Consumables

Item Description			Qty.	Cost	Item Description			Qty.	Cost
ALUMINUM sTEARATE - 50#SK			2	---	caustic Soda - 50#SK			1	---
Engineering - EACH			1	---	MicA - 50#SK			5	---
Other - EACH			1	---	perdiem - OTHER			1	---
polyvis - 5GAL			2	---	TORKease concentrate - 5GAL			1	---
Trucking - EACH			1	---					

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth			This Run			R.O.P.			Mud Pump							
				In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF		
16	1	BAKER	STX	5.750	8545	10	1	10.0	18.0	16	45	4	8	300	1360	129	124	22	166	
Jets: 18 18 18				Out: 8555			Grade: Cutter: 1/1			Dull: WT/NO		Wear: S		Brgs: 0		Gge: 0		Pull: BHA		
17	1	REED	TKC63	5.750	8555	395	3.5	112.9	278.0	30	30	5	8	300	2760					
Jets: 12 12 12				Out: 9500			Grade: Cutter: 3/3			Dull: WT/CT		Wear: S		Brgs: X		Gge: 0		Pull: TD		
BHA - No. 22 - BIT, MMTR, 2 MONEL, OTHER, MONEL, 30 DC = 1020.17																				

Drilling Parameters

Depth (ft)		ROP (ft/hr)		WOB (lbs)		RPM		Torque (ft lbs)		Flow (gals/min)		Pressure (psi)
From	To	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	
8,555	8,950	200.0	268.0	30	30	30	50	5	6	280	300	2,760

Annular Velocity: Drill Collars: 681.0 Drill Pipe: 321.0

Comments: Slide Drilled 5-3/4" from 8,615' to 8,654'.
Slide Drilled 5-3/4" from 8,709' to 8,742'.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 32

Report For 28-Jul-21

Miscellaneous Drilling Parameters

Hook Loads (lbs): Off Bottom Rotate: 178 Pick Up: 185 Slack Off: 170 Drag Avg/Max: 3 / 8

Slow Circulation Data:

Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi

Hours on BHA: Since Inspection: 4.5 Total: 4.5 Jars: 0

Hours on Casing/Liner: Rotating: 4.5 / 0 Tripping: 12 / Wear Bushing Installed

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		D.L.S.
							N-S	E-W	
MWD	8,558.0	2.78	264.5	8,556.1	50.4	-33.0	S 33.0	W 38.1	1.136
MWD	8,653.0	2.31	307.2	8,651.0	52.8	-32.1	S 32.1	W 42.0	2.006
MWD	8,743.0	0.99	21.4	8,741.0	52.7	-30.2	S 30.2	W 43.1	2.501
MWD	8,843.0	0.92	283.7	8,841.0	52.5	-29.2	S 29.2	W 43.6	1.438

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect. Trip	Exp.	Press	Dens.	Dens.	Shale Sand
8,555	8,950	8,552	8,947									

Formation Name:

Lithology: 100% Granodiorite

Rig Information

Equipment Problems: None to report

Location Condition: Good.

Transport: Received new 3.5" slips from Weatherford.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	175	175	175	175	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	175	175	175	175	Centrifuge 1: 12 (Solids Removal)		Centrifuge 2: 12 (Solids Removal)
Shaker No 3:	175	175	175	175			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
3.5"	317	13.3	S-135	3.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Making up BHA. Tripping in the hole.

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

Accident Description: None to report.

BOP Test Crownamatic Check

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 71 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 12 / SE	Wind Gusts: 4



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 33

Report For 29-Jul-21

Operator: University of Utah	Rig: Frontier Rig 16	Spud Date: 28-Jun-21	Daily Cost / Mud (\$): ---		
Measured Depth (ft): 9500	Last Casing: 7.000 at 8,509	Wellbore: Original Wellbore	AFE No.	AFE (\$)	Actual (\$)
Vertical Depth (ft): 9497	Next Casing:	RKB Elevation (ft): 30.40	---	---	---
Proposed TD (ft): 9500	Last BOP Test: 27-Jul-21	Job Reference RKB (ft):	---	---	---
Hole Made (ft) / Hrs: 550 / 19.0	Next BOP Test: 24-Jul-21	Working Interest:	Totals: ---		
Average ROP (ft/hr): 28.95		LOT (lbs/gal): 15.00	Well Cost (\$): ---		
Drilling Days (act./plan): 33/21	Flat Days (act./plan): 0/9	Total Days (act./plan): 33/30	Days On Location: 33		
Pers/Hrs: Operator: 3 / 36	Contractor: 14 / 168	Service: 3 / 36	Other: 3 / 36	Total: 23 / 276	

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Rigged up and ran Triple-Combo. Logged up from 9532' to 8530' wire line depth. Max BHT was 416 F. POH with logging tools and rigged down logging equipment.
Tripped in the hole with 5-3/4" slick assembly to 5,000' at report time.

Planned Operations: Trip in the hole to 6,000'.
Lay out 3.5" drill pipe to BHA.
Trip in the hole with remaining drill pipe and lay out same.
Lay out BHA.
Nipple down 7-1/16" 10K BOP's.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:30	0.50	8,995	3-2-3	Drilled 5-3/4" hole from 8,950' to 8,995'.	
0:30	1:00	0.50	9,031	3-2-3	Slide Drilled 5-3/4" from 8,995' to 9,031'.	
1:00	2:00	1.00	9,184	3-2-3	Drilled 5-3/4" hole from 9,031' to 9,184'.	
2:00	3:00	1.00	9,225	3-2-3	Slide Drilled 5-3/4" from 9,184' to 9,225'.	
3:00	4:00	1.00	9,225	3-2-3	Drilled 5-3/4" hole from 9,225' to 9,373'.	
4:00	5:00	1.00	9,225	3-2-3	Slide Drilled 5-3/4" from 9,373' to 9,406'.	
5:00	6:00	1.00	9,225	3-2-3	Drilled 5-3/4" hole from 9,406' to 9,500'.	
6:00	7:00	1.00	9,225	3-5-1	Circulated hole clean at TD.	
7:00	12:00	5.00	9,225	3-6-4	Tripped out of the hole from 9,500' to BHA. Laid down directional tools.	
12:00	13:00	1.00	9,225	3-34-4	Lay down all directional tools	
13:00	13:30	0.50	9,225	SERV	Serviced Rig.	
13:30	14:00	0.50	9,225	3-6-1	Tripped in the hole w/ same bit, BS w/ a float and all DCS	
14:00	17:30	3.50	9,225	3-6-3	RIH filling pipe @ 4,000' 8,000' and bottom	
17:30	20:00	2.50	9,225	3-5-1	Circulated to cool well bore while waiting on loggers.	
20:00	0:00	4.00	9,225	3-6-4	Tripped out of the hole from 9,500' to surface with no issues.	

Management Summary

Drilled 5-3/4" hole from 8,950' to 9,500'.
Circulated hole clean at TD.
Tripped out of the hole from 9,500' to BHA.
Laid down directional tools.
Serviced Rig.
Tripped in the hole with 5-3/4" PDC bit to 9,500'.
Circulated to cool well bore while waiting on loggers.
Tripped out of the hole from 9,500' to surface.

Comments

Slide Drilled 5-3/4" from 8,995' to 9,031'.
Slide Drilled 5-3/4" from 9,184' to 9,225'.
Slide Drilled 5-3/4" from 9,373' to 9,406'.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 33

Report For 29-Jul-21

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Information

%														Gels			Temp		Mud	
Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	Oil	Water	Sand	LGS	Cl	Ca	CaCl	10s	10m	30m	In	Out	Loss
29-Jul-21 06:15 at Depth 9,500 ft Mud Pits, Type: Low Solids Non-Dispersed																				
8.30	26	0	1	0	1	10	2	0	98	0.01	0	700	120		1	1	1	84	97	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	80	---	Bicarb - 50#SK	9	---
caustic Soda - 50#SK	2	---	Engineering - EACH	1	---
Other - EACH	1	---	pallets - OTHER	2	---
perdiem - OTHER	1	---	polyvis - 5GAL	3	---
TORKease concentrate - 5GAL	2	---			

Bit/BHA/Workstring Information

Depth										This Run			R.O.P.			Mud Pump			
No Run	Make	Model	Diam	In	Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press	J. Vel	P. Drp	HHP	JIF	
17	1	REED	TKC63	5.750	8555	945	9.5	99.5	230.0	30	30	5	8	300	2760				
Jets: 12 12 12				Out: 9500		Grade: Cutter:		3 / 3		Dull: WT / CT		Wear: S		Brgs: X		Gge: 0		Pull: TD	
BHA - No. 22 - BIT, MMTR, 2 MONEL, OTHER, MONEL, 30 DC = 1020.17																			

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)
8,950	9,500	120.0	230.0	30	32	30	50	5	6	290	300	2,760
Annular Velocity: Drill Collars:				612.0		Drill Pipe:		327.0				
Comments: Slide Drilled 5-3/4" from 8,995' to 9,031'. Slide Drilled 5-3/4" from 9,184' to 9,225'. Slide Drilled 5-3/4" from 9,373' to 9,406'.												

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	186	Pick Up:	222	Slack Off:	175	Drag Avg/Max:	5 / 10
Slow Circulation Data:								
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm	311 psi		
Hours on BHA:	Since Inspection:	10.5	Total:	10.5	Jars:	0		
Hours on Casing/Liner:	Rotating:	10.5 / 6	Tripping:	24 /	<input type="checkbox"/> Wear Bushing Installed			

Mud Log Information

Depth (ft)		TVD (ft)		Gas (Units)		Gas	Drilling	Pore	Mud	Shale	ROP	
From	To	From	To	Avg	Max	at Depth	Connect. Trip	Exp.	Press	Dens.	Dens.	Shale Sand
8,950	9,500	8,947	9,497									
Formation Name:												
Lithology: 100% Granodiorite												

Rig Information

Equipment Problems:	None to report.
Location Condition:	Good.
Transport:	None to report.



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 33

Report For 29-Jul-21

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	175	175	175	175	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	175	175	175	175	Centrifuge 1: 12 (Solids Removal)		Centrifuge 2: 12 (Solids Removal)
Shaker No 3:	175	175	175	175			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
3.5"	317	13.3	S-135	3.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Making up BHA. Tripping in the hole.
First Aid Treatments:	0	Medical Treatments: 0 Lost Time Incidents: 0 Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition: Partly Cloudy	Visibility: 10
Air Temperature: 70 degF	Bar. Pressure: 29.89
Wind Speed/Dir: 5 / SE	Wind Gusts: 2



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 34

Report For 30-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	9500	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	9497	Next Casing:		RKB Elevation (ft):	30.40	---	---	---	
Proposed TD (ft):	9500	Last BOP Test:	27-Jul-21	Job Reference RKB (ft):		---	---	---	
Hole Made (ft) / Hrs:	0 / 3.75	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):	0.0			LOT (lbs/gal):	15.00	Well Cost (\$):	---		
Drilling Days (act./plan):	34/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	34/30	Days On Location:	34		
Pers/Hrs: Operator:	3 / 36	Contractor:	14 / 168	Service:	3 / 36	Other:	2 / 24	Total:	22 / 264

Safety Summary: No incidents or events reported. Conducted Crown Check, Safety Meeting.

Current Operations: Nipple down 7-1/16" 10K BOP's. Install master valve with 3" 10k spool on top.

Planned Operations: Clean pits and release rig.

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	4:00	4.00	9,225	LOG	Rigged up and run Triple-Combo / Max BHT was 416 F / Logging upwards Note: worked past ledge at 8,555'.	
4:00	6:00	2.00	9,225	3-6-3	Tripped in the hole with 5-3/4" slick assembly to 5,000'.	
6:00	10:30	4.50	9,225	3-34-2	Laid down 3.5" drill pipe to top of drill collars.	
10:30	12:15	1.75	9,225	3-6-3	Tripped in the hole with 3-1/2" drill pipe and slick assembly to 5,500'.	
12:15	15:30	3.25	9,225	3-34-2	Laid down 3-1/2" drill pipe to the top of the drill collars.	
15:30	18:00	2.50	9,225	3-34-4	Laid down 4-3/4" drill collars.	
18:00	19:00	1.00	9,225	SAFE	Shut down and test night tour for Covid-19 due to 3 guys on daylights testing positive. Night driller tested positive for Covid-19. Resume operations.	
19:00	0:00	5.00	9,225	6-99	Nippled down 7-1/16" 10K BOP's.	

Management Summary

Rigged up and run Triple-Combo / Max BHT was 416 F.
 Tripped in the hole with 5-3/4" slick assembly to 5,000'.
 Laid down 3.5" drill pipe to top of drill collars.
 Tripped in the hole with 3-1/2" drill pipe and slick assembly to 5,500'.
 Laid down 3-1/2" drill pipe to the top of the drill collars.
 Laid down 4-3/4" drill collars.
 Shut down and tested night tour for Covid-19 due to 3 guys on daylights testing positive. Night driller tested positive for Covid-19. Resume operations shorthanded.
 Nipple down 7-1/16" 10K BOP's.

Comments

Shorthanded due to 4 of Frontier's employees testing positive for Covid-19. 3 on daylights and one on nights along with mud engineer for a total of 5 people.
 GRG site supervisor notified service contractors that had been on location over the past week of the Covid-19 positive test on the rig site.
 Weatherized top section of casing by poring 8 gals of vegetable oil down 7" casing.
 7" well head was noticed to be down 8" and setting on top of the 11.75" well head.

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Barite - 100#SK	50	---	Engineering - EACH	1	---
Other - EACH	1	---	pallets - OTHER	2	---
perdiem - OTHER	1	---	Trucking - EACH	1	---

**Daily Drilling Report**

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 34

Report For 30-Jul-21

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run			R.O.P.			Mud		Pump		J. Vel	P. Drp	HHP	JIF	
						Dist	Hrs	Avg	Max	WOB	RPM	Torque	Wt	Flow	Press					
17	1	REED	TKC63	5.750	8555	945	9.5	130.0		30	30		8	300						

Jets: 12 12 12 Out: 9500 Grade: Cutter: 3/3 Dull: WT/CT Wear: S Brgs: X Gge: 0 Pull: TD

Miscellaneous Drilling Parameters

Hook Loads (lbs):	Off Bottom Rotate:	Pick Up:	Slack Off:	Drag Avg/Max:	/
Slow Circulation Data:					
Pump 1:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 2:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Pump 3:	30 spm	110 psi	40 spm	215 psi	50 spm 311 psi
Hours on BHA:	Since Inspection:	10.5	Total:	10.5	Jars: 0
Hours on Casing/Liner:	Rotating:	10.5 / 6	Tripping:	40 /	<input type="checkbox"/> Wear Bushing Installed

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates		
							N-S	E-W	D.L.S.
MWD	8,938.0	2.76	282.7	8,935.9	54.6	-28.6	S 28.6	W 46.6	1.937
MWD	9,033.0	1.05	250.4	9,030.9	57.1	-28.3	S 28.3	W 49.6	2.056
MWD	9,127.0	2.40	258.9	9,124.8	59.9	-29.0	S 29.0	W 52.4	1.457
MWD	9,222.0	1.31	284.5	9,219.8	62.6	-29.1	S 29.1	W 55.4	1.416
MWD	9,317.0	3.73	270.0	9,314.7	66.1	-28.9	S 28.9	W 59.5	2.614
MWD	9,412.0	3.96	251.0	9,409.5	72.2	-29.9	S 29.9	W 65.7	1.360
MWD	9,444.0	3.91	235.5	9,441.4	74.4	-30.9	S 30.9	W 67.6	3.322
MWD	9,497.5	3.91	235.5	9,494.7	78.0	-33.0	S 33.0	W 70.6	0.000
MWD	9,500.0	3.91	235.5	9,497.3	78.1	-33.1	S 33.1	W 70.8	0.000

Rig Information

Equipment Problems: None to report.
 Location Condition: Good.
 Transport: None to report.

Solids Control Information

Screen Sizes:	Top	Middle 1	Middle 2	Bottom	Equipment Usage (Hrs):		
Shaker No 1:	175	175	175	175	Desander: 0	Desilter: 0	Degasser: 0
Shaker No 2:	175	175	175	175			
Shaker No 3:	175	175	175	175			

Drill Pipe Inventory

DP Size	Joints	Weight	Grade	Thread	DP Size	Joints	Weight	Grade	Thread
3.5"	317	13.3	S-135	3.5IF					

Safety Information

Meetings/Drills	Time	Description
Safety	60	Two 30 min Pre tour safety meetings with both crews. Laying out drill pipe along with drill collars. Nipling down BOP's.
First Aid Treatments:	0	Medical Treatments: 0
Lost Time Incidents:	0	Days Since LTI:
Accident Description: None to report.		
<input type="checkbox"/> BOP Test	<input checked="" type="checkbox"/> Crownamatic Check	

Weather Information

Sky Condition:	Partly Cloudy	Visibility:	10
Air Temperature:	76 degF	Bar. Pressure:	29.89
Wind Speed/Dir:	5 / SE	Wind Gusts:	1



Daily Drilling Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 35

Report For 31-Jul-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	9500	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	9497	Next Casing:		RKB Elevation (ft):	30.40	---	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	27-Jul-21	Job Reference RKB (ft):		---	---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	15.00	Well Cost (\$):	---		
Drilling Days (act./plan):	35/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	35/30	Days On Location:	35		
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: Rigging down. FINAL REPORT.

Planned Operations: Move rig to yard

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	9,225	6-99	Continued nipping down 7-1/16" 10K BOP's. Installed master valve with 3" 10k spool on top. Note: Weatherized top section of casing by poring 8 gals of vegetable oil down 7" casing.	
6:00	0:00	18.00	9,225	OTHER	Load out 6 loads of rental equipment 3.5" pipe, loaded out 2 loads of cooling towers to drill cool, loaded out mud logging shack, loaded out centrifuge tank, clean cellar and pits with price pumping, Rig released from Day rate @ midnight on 7/31/2012	

Management Summary

Rig released on 7/31/2021 at midnight

Comments

In the last 2 days we have had 6 negative COVID test. Early afternoon on 8/1/2021 Frontier decided to stop the rig move and send everyone home for 2 weeks and quarantine

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

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 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Report No: 36

Report For 01-Aug-21

Operator:	University of Utah	Rig:	Frontier Rig 16	Spud Date:	28-Jun-21	Daily Cost / Mud (\$):	---		
Measured Depth (ft):	9500	Last Casing:	7.000 at 8,509	Wellbore:	Original Wellbore	AFE No.	AFE (\$)	Actual (\$)	
Vertical Depth (ft):	9497	Next Casing:		RKB Elevation (ft):	30.40	---	---	---	---
Proposed TD (ft):	9500	Last BOP Test:	27-Jul-21	Job Reference RKB (ft):		---	---	---	---
Hole Made (ft) / Hrs:	0 / 0.0	Next BOP Test:	24-Jul-21	Working Interest:		Totals:	---	---	---
Average ROP (ft/hr):				LOT (lbs/gal):	15.00	Well Cost (\$):	---		
Drilling Days (act./plan):	36/21	Flat Days (act./plan):	0/9	Total Days (act./plan):	36/30	Days On Location:	36		
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: COST update report

Toolpusher: Steve Caldwell , Justin Bristol

Wellsite Supervisors: Virgil Welch , Brian Gresham

Tel No.: 7132807438

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	0		416		SURF	22.000	65	K-55	0.61
FULL	11.750	0		2,990		INT1	14.750	54	J-55	11.70
FULL	7.000	0	0	8,509	8,507	PROD	10.625	41	T-110S	15.00

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI:
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<input type="checkbox"/> BOP Test	<input type="checkbox"/> Crownamatic Check
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Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
	Ver. Final	Page 95 of 288
	To accompany report issued 1 December 2021	

9.2. Daily Management Summary-RIMBase





Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
1	27-Jun-21	128		<p>Waited on Day Light and conducted Pre-Spud Rig Inspection. Strapped, OD, ID and Fishing Neck of HWDWP. Picked up 5 stands of HWDWP and stood back in Derrick. Picked up 114 joints (38 Stands) of 5" DP and stood back in derrick. Cleaned and strapped 16 in Casing. Made up Directional tools.</p>
2	28-Jun-21	421		<p>Drilled 22" hole from 128' to 421'. Circulated hole clean. Wiped hole from 421' to 100'. Pulled out laying down tools. Rigged up and ran 9 joints of 65 ppf, K-55 16" Buttress casing setting shoe at 416' KB. Ran in the hole with stab-in tool. Rigged up Resource cementing and cemented casing in place CIP @ 16:00. Rigged down Resource cementing. Pulled out of the hole with stab-in tool. Installed 20" BOPE. Nipped up BOPE.</p>
3	29-Jun-21	433	433	<p>Installed inner and outer choke and kill valves. Torqued up all breaks on BOPE. Attempted to test BOPE. High pressure test leaked off. Decision was made to allow more time for cement to set. Tested out choke manifold. Nipped up riser and installed flowline. Walked catwalk into place and raised V-Door. Set racks in place. Strapped 15-8" drill collars. Picked up 5 stands of 8" drill collars and racked back in the derrick. Tested out BOPE. Good test. Made up 14 3/4" slick assembly. Tripped in the hole. Drilled out shoe track from 370' to 416'. Drilled new formation to 433'. Circulated hole clean. Performed FIT to a 1 psi/ft. Good test. Pulled out of the hole. Held detailed safety meeting with all involved personal on picking up BHA.</p>
4	30-Jun-21	2,699	2,699	<p>Picked up 14 3/4" RSS BHA to 433'. Drilled 14 3/4" hole from 433' to 665' with full returns. Circulated hole clean. Pulled out of the hole from 665' to 389'. Racked back 3 stands of HWDWP. Installed 3 stands of 8" drill collars into the BHA. Tripped in the hole to 665'. Drilled 14 3/4" hole from 665' to 2,077' with full returns. Serviced rig. Drilled 14-3/4" hole from 2,077' to 2,232' with full returns. Circulated while cleaning radiator on gen #2 due to overheating. Drilled 14-3/4" hole from 2,232' to 2,359' with full returns. Circulated while cleaning radiator on gen #1 due to overheating. Drilled 14-3/4" hole from 2,359' to 2,399' with full returns. Circulated while cleaning radiator on gen #3 due to overheating. Drilled 14-3/4" hole from 2,399' to 2,699' with full returns. Circulated hole clean. Tripped out of the hole to 951'.</p>
5	01-Jul-21	3,009	3,009	<p>Pulled out of the hole from 951' to Surface. Picked up 14 3/4" PDC bit. Tripped in the hole to 2,699'. Drilled 14-3/4" hole from 2,699' to 3,009' with full returns. Decision was made to pull out of the hole at 3,009' due to low ROP. Pulled out of the hole from 3,009' to surface. Laid out RSS assembly. cleaned and cleared rig floor for casing run.</p>



Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
6	02-Jul-21	3,009	3,009	Cleaned and cleared rig floor. Held safety meeting. Rigged up and ran 11 3/4" casing with shoe depth of 2,899.99' KB. Rigged down casing crew. Ran in the hole with stab-in tool. Rigged up Resource cementing and cemented casing with 315 bbl RC-Thermalite cement. Had good cement to surface. CIP @ 16:00. Rigged down Resource cementing. Pulled out of the hole with stab-in tool. Nippled down 21-1/4" BOPE. Installed temporary 11 3/4" x 13 5/8" SOW flange. Test to 1,000 psi. Good test. Installed 13 5/8" 5m BOPE stack.
7	03-Jul-21	3,009	3,009	Nipple up and test 13 5/8" 5M BOPE. Ran in the hole with 5" HWDP and 5" drill pipe to 2,327'. Laid out 5" drill pipe to HWDP. Ran in the hole with remaining 18 stands of drill pipe and laid out same. Serviced rig. Changed out saver sub. Transported 5.5" drill pipe from 16A to rig site. Loaded racks with 5.5" drill pipe, strapped same. Made up 10 5/8" drill out assembly.
8	04-Jul-21	3,456	3,455	Picked up 5.5" drill pipe from 740' to 2,900'. Lined up mud pumps and shakers. Filled pipe. Drilled out shoe track from 2,902' to 2,989'. Performed FIT. Pulled out of the hole and laid out bit and junk basket. Found a few small pieces of bit debris in junk basket from last 14 3/4" bit run. Picked up 10 5/8" RSS assembly. Repaired depth tracker in crown with Pason. Continued picking up 10 5/8" RSS assembly. Broke off TIW and saver sub and tack welded saver sub to TIW and reinstalled same. Tripped in hole to 3,009'. Drilled 10 5/8" section from 3,009' to 3,456'.
9	05-Jul-21	3,730	3,729	Drilled 10 5/8" section from 3,456' to 3,582'. Circulated while discussing survey of 3.75 deg with team. Drilled 10 5/8" section from 3,582' to 3,651'. Took check shot and confirm steerable not working. Circulated and pumped slug. Pulled out of the hole to change out directional assembly. Laid down rotary steer-able assembly and bit. Picked up 1.5 deg bent assembly. Tripped in the hole to 2,900'. Transferred mud from 78B-32 to sump @ 58-32 / cleaned pits / filled pits with water to prepare for change over. Tripped in the hole from 2900' to 3,645'. Filled pipe and change hole over to fresh water. Slide drilled 10 5/8" hole with water from 3,651' to 3,681'. Drilled 10-5/8" hole from 3,681' to 3,730'.



Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
10	06-Jul-21	5,334	5,333	Drilled 10 5/8" section from 3,730' to 5,036'. Serviced rig. Replaced stroke counter on # 2 mud pump. Drilled 10 5/8" section from 5,036' to 5,334'.
11	07-Jul-21	5,761	5,760	Drilled 10-5/8" hole from 5,334' to 5,761'. Tripped out of the hole from 5,761' to surface due to low ROP. Laid down NMDC, Motor and bit. Slipped and Cut drilling line. Serviced rig. Picked up and racked back 5 stands of drill pipe while waiting on Schlumberger tools to arrive. Motor arrived on location at 19:10 HRS. Picked up 1.25 deg bent assembly and tripped in the hole to 2,926'. Picked up and racked back 6 stands of 5.5" drill pipe.
12	08-Jul-21	5,761	5,760	Continued picking up and racking back 6 stands of 5.5" drill pipe out of the mouse hole. Tripped in one stand to 3,030'. Circulate bottoms up to cool wellbore while waiting on electrician to arrive to troubleshoot issue with drawworks A traction motor. Tripped out of the hole from 2,946' to Surface. break out bit and swap motor from 1.5 deg, .111 rev to 1.25 deg 0.166 rev/gal. Laid down MWD, NMDC and motor. Rebuild MWD. Picked up Directional tools and RIH with same. Changed Pason sensor in crown. RIH to 1135'. Repair Rig / Work on rig SCR system.
13	09-Jul-21	5,761	5,760	Waited on SCR technician to arrive.
14	10-Jul-21	5,821	5,820	Waited on SCR technician to arrive. Diagnose issues with SCR house and repaired same. Rig back on Dayrate @ 13:00 hours on 7/10/2021. RIH to bottom / fill pipe. Drill 10-5/8" hole from 5,761' to 5,821'. Tripped out of the hole from 5,821' due to motor failure. Laid out motor and bit. Picked up new (NOV) motor 1.5 deg, .111 rev. Picked up new 10-5/8" NOV bit. Picked up new top 10-3/8" stab.
15	11-Jul-21	6,700	6,699	Staged in the hole from 1,000' to 5,821'. Drilled 10-5/8" hole from 5,821' to 6,700' (core point). Circulated bottoms up. Tripped out of the hole from 6,700' to BHA. Racked back HWDP along with 8' drill collars. Laid out all directional tools. Cleaned and cleared rig floor. Laid out 15 joints of 5.5" drill pipe on racks.
16	12-Jul-21	6,728	6,727	Held safety meeting with all involved personal on picking up coring assembly. Made up 8-3/4" coring assembly. Picked and racked back 5 stands of drill pipe. Tripped in the hole with 8-3/4" core assembly. Tag bottom while circulating @ 400 GPM, dropped ball and slowed pump to 300 GPM, ball seated. Cut core from 6700' to 6728'. Tripped out of the hole with core from 6,728'. Tripped in the hole with 8" collars, removed Schlumberger lifter and replaced with rig lifter. Made up 8-3/4" coring assembly. Tripped in the hole with 8-3/4" core assembly.



Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
17	13-Jul-21	6,742	6,741	<p>Tripped in the hole with 8-3/4" core assembly to 6,728' . Filled pipe and established circulation. Dropped ball. Cut core from 6,728' to 6,740'. Tripped out with core assembly from 6,740' to BHA. Laid down core and coring assembly. Made up 10-5/8" TCI bit and tripped in the hole to 6,700'. Serviced rig. Open 8-3/4" core hole to 10-5/8" from 6,700' to 6,740'. Drilled 10-5/8" hole from 6,740' to 6,742'. Circulated hole clean @ 6,742'. Tripped out of the hole from 6,742' to BHA. Racked back HWDP along with 8' drill collars. Laid out bit. Picked up 1.15 deg bent motor 0.166 rev/gal. Scribe Motor. Make up drilling assembly.</p>
18	14-Jul-21	7,613	7,611	<p>Made up 10-5/8" directional assembly and trip in the hole to 1,036'. Slipped and cut drilling line. Tripped in the hole from 1,036' to 6,742'. Filled pipe and broke circulation every 1,000' from 3,100' to 6,742'. Drilled 10-5/8" hole from 6,742' to 7,316'. Serviced rig. Drilled 10-5/8" hole from 7,316' to 7,613'. Tripped out of the hole due to high mud motor differential pressure. POH from 7,613' to 6,559'. Found damaged top drive hydraulic service link hose. Wait on hydraulic hose for top drive to arrive.</p>
19	15-Jul-21	7,613	7,611	<p>Waited on hydraulic hose to arrive. Installed new top-drive service link hydraulic hose. Tripped out of the hole from 6,559' to BHA. Racked back HWDP along with 8' drill collars. Laid out motor, bit, stabs. Made up 10-5/8" directional assembly. Tripped in the hole from 1,000' to 2,613'. Serviced rig. Adjusted service loop.</p>
20	16-Jul-21	8,500	8,498	<p>Tripped in the hole from 2,613' to 7,072'. Breaking circulation every 1,000' to cool tools. Reamed from 7,707' to 7,613'. Drilled 10-5/8" hole from 7,613' to 8,500' (Core point). Circulated bottoms up at 8,500'. Tripped out of the hole from 8,500' to 4,000'.</p>



Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
21	17-Jul-21	8,530	8,528	<p>Tripped out of the hole from 4,000' with BHA and no issues. Racked back HWDP. Laid out 15X8" drill collars and all directional tools. Picked up 8-3/4" Coring assembly. Tripped in the hole to 8,500' filling pipe every 1,000'. Cored from 8,500' to 8,530'. Tripped out of the hole from 8,530' with core assembly. Handled BHA. Laid out core barrel. Recovered 23.7' of core. 50% 2-3" in length with the other 50% 9-12" in length.</p>
22	18-Jul-21	8,540	8,438	<p>Made up 8-3/4" core assembly. Tripped in the hole with 8-3/4" core assembly to 8,530'. Cored with 8-3/4" assembly from 8,530' to 8,540'. Core barrel jammed up at 8,540'. Pulled out of the hole with coring assembly as per trip out schedule. Shut down for high winds and thunder storm. Continue Pulling out of the hole with coring assembly as per trip out schedule. Laid down all coring tools. Cleaned and cleared floor. Make up 10-5/8" clean out assembly. Tripped in the hole with 10-5/8" clean out assembly to 6,454'.</p>
23	19-Jul-21	8,540	8,438	<p>Tripped in the hole with 10-5/8" rerun PDC bit on clean out assembly to 8,500'. Open 8-3/4" core hole to 10-5/8" from 8,500' to 8,514'. Bit DBR,ed. Circulate surface to surface strokes to cool well bore prior to logs. Tripped out of the hole with 10-5/8" clean out assembly from 8,514' to surface. Rigged up and ran Sonic Scanner and Borehole Formation Imager. Max bottom hole BHT was 321 deg F. Rigged down logging tools. Rigged up and ran Triple-Combo / Max BHT was 354 deg F / Logged upwards. Rigged down loggers. Ran in the hole with 10-5/8" rerun TCI bit on clean out assembly to 2,900'.</p>
24	20-Jul-21	8,540	8,438	<p>Slipped and cut drilling line. Tripped in the hole with 10-5/8" clean out assembly from 2,900' to 8,514'. Opened 8-3/4" core hole to 10-5/8" from 8,514' to 8,540'. Circulated surface to surface strokes to cool well bore prior to logs. Tripped out of the hole for Schlumberger logs. Rigged up Schlumberger . Ran UBI log. Rigged down loggers. Made up 10-5/8" clean out assembly with TCI bit. Tripped in the hole with 10-5/8" clean out assembly to 4,657'</p>
25	21-Jul-21	8,545	8,543	<p>Tripped in the hole with 10-5/8" clean out assembly to 8,540'. Drilled 10-5/8" hole from 8,540' to 8,545'. Circulated surface to surface strokes to clean the wellbore prior to running casing. Pulled out of the hole laying down 5.5" drill pipe. Laid out all BHA. Changed out IBOP valve for CRT. Install saver sub. Laid down all handling tools. Removed 5.5" ram blocks. Installed Frontiers 5" ram blocks into double gate. Load racks with 7" casing. Cleaned threads on casing and prepared to run. Held detailed safety meeting with all involved personal. Rigged up Wyoming Casing Service. Rigged up Silixa. Loaded out floor with Silixa centralizes. Ran 7", 41#, T-110SS, Tenaris casing.</p>



Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
26	22-Jul-21	8,545	8,543	Ran 7", 41#, T-110SS, Tenaris casing from 94' to 6,178'. Stopped to test fibers AT 6,178'. Breakage in fiber optic cable detected. Ran 7", 41#, T-110SS, Tenaris casing from 6,178' to 6,517'. Stopped at joint 6,517' to run Fiber optic tests- the measured fiber length shortened by approximately 500ft on the fibers. Ran 7", 41#, T-110SS, Tenaris casing from 6,517' to 6,753'. Tested fibers; fibers shortened by 500ft. Decision was made to pull the casing out of hole. Pull out of the hole with 7" casing from 6,753' to 5,447' at report time.
27	23-Jul-21	8,545	8,543	Pulled out of the hole with 7" casing from 5,477' to 120'. Multiple breaks in fiber-optic cable from 3,017' to 1,212'. Removed Silixa Fiber-optic BHA from casing. Waited on Orders while Silixa measured usable length of fiber-optic cable. Determined 3,686' of usable fiber-optic cable. Installed fiber-optic BHA on casing. Ran 7", 41#, T-110SS, Tenaris casing from 94' to 2,380'. Performed continuity test on fiber optics every 15-joints while running 7" casing.
28	24-Jul-21	8,545	8,543	Ran 7", 41#, T-110SS, Tenaris casing from 2,380' to 3,722'. Installed new spool of fiber-optic cable on unit. Ran fiber-optic cable to rig floor. Spliced on new fiber-optic cable at 3,722'. Ran 7", 41#, T-110SS, Tenaris casing from 3,711' to set depth of 8,508'. Rigged down CRT tool. Rigged up cement head. Broke circulation. Circulated at 16 bbl's per min to cool well bore. Mixed and pumped 4ppb Micro C while circulating. Cleaned and cleared floor while circulating.
29	25-Jul-21	8,545	8,543	Circulated at 16 bbl's per min to cool well bore. Held safety meeting with all involved personal. Swapped lines to cement truck. Pumped cement as per pump schedule. Waited on cement . Cement fell to 95' below KB. Mixed and pump 6 bbl's of neat cement while waiting on cement.
30	26-Jul-21	8,545	8,543	Waited on cement. Bled back 4 bbl's from casing to cement truck. Slacked off casing and monitored for 5 mins. Removed cement head and lines. Cut Silixa fiber-optic cable 30' above rig floor. Removed BOPE. Rig up power tongs underneath substructure and back out landing joint. Installed 7" 10k wellhead and torqued to 17,070 ft/lbs. Set in and nipped up 7-1/16" 10K BOP's. Tested casing to 300 psi low.
31	27-Jul-21	8,545	8,543	Tested casing along with inside choke valve and out side kill check valve to 300 psi low and 5200 psi high. Held low test for 5 mins - good test. Held high test for 30 mins - good test. Picked up 4 3/4" drill collars. Made up 5-3/4" TCI bit. Picked up 29 joints of 4-3/4" drill collars. Tripped in the hole to 900'. Picked up 3 1/2" drill pipe from 900' to 2,003'. Found one 3 1/2" slip insert die missing. Tripped out of the hole with drill pipe from 2,003' with BOP doors open looking for lost slip die. Rigged up slings to lift BOP while pulling drill collars. Picked up stack 1 foot and chained off to sub substructure. Pulled out of the hole with 10 stands of drill collars to bit looking for slip die with no results. Remove BOP hanging system and Nipped BOP back up



Management Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Rpt. No.	Date	MD (ft)	TVD (ft)	Management Summary
				<p>Remove BOP hanging system and nipple BOP back up. Pulled last stand of collars / no markings on bit to indicate slip die had passed. Closed blind rams and function pipe rams and Annular BOP / no indication of die on top of blind rams. Ran in hole with bit and drill collars to 900'. Picked up 3.5" drill pipe and ran in the hole to 8,400'.</p>
32	28-Jul-21	8,950	8,947	<p>Circulated bottoms up prior to testing. Tested pipe rams to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Both test good. Tested annular to 300 psi low, 5200 high. Held low test for 5 mins held high test for 10 mins. Both test good. Drilled out cement and shoe track from 8,364" to 8,508'. Drilled 5-3/4" hole from 8,545' to 8,555'. Circulated bottoms up prior to performing xLOT. Rigged up Resource cementing pump truck. Troubleshoot pressure gage on truck. Slipped and cut drilling line. Conducted xLOT with Resource cementing pump truck. Pulled out of the hole and lay down bit. Serviced Rig. Picked up 5-3/4" directional drilling assembly. Tripped in the hole with drill pipe filling pipe at 4,000' 6,000'. Staged in the hole every 500' from 7,000' to 8,150'. Washed down from 8,150' to 8,555' to keep tools under 345 degrees. Drilled 5-3/4" hole from 8,555' to 8,950'.</p>
33	29-Jul-21	9,500	9,497	<p>Drilled 5-3/4" hole from 8,950' to 9,500'. Circulated hole clean at TD. Tripped out of the hole from 9,500' to BHA. Laid down directional tools. Serviced Rig. Tripped in the hole with 5-3/4" PDC bit to 9,500'. Circulated to cool well bore while waiting on loggers. Tripped out of the hole from 9,500' to surface.</p>
34	30-Jul-21	9,500	9,497	<p>Rigged up and run Triple-Combo / Max BHT was 416 F. Tripped in the hole with 5-3/4" slick assembly to 5,000'. Laid down 3.5" drill pipe to top of drill collars. Tripped in the hole with 3-1/2" drill pipe and slick assembly to 5,500'. Laid down 3-1/2" drill pipe to the top of the drill collars. Laid down 4-3/4" drill collars. Shut down and tested night tour for Covid-19 due to 3 guys on daylights testing positive. Night driller tested positive for Covid-19. Resume operations shorthanded. Nipple down 7-1/16" 10K BOP's.</p>
35	31-Jul-21	9,500	9,497	<p>Rig released on 7/31/2021 at midnight</p>



Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
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9.3. Daily Mud Reports-RIMBase





Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	28-Jun-21 05:15	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	11
Sample Depth (ft):	421	Water %:	89
Mud Type:		Oil %:	0
Density (lbs/gal):	8.90	Sand %:	2.5
Funnel Vis (secs/qt):	51	Low G.S. %:	
PV (centipoises):	19	High G.S. %:	
YP (lbs/100sq ft):	22	LCM %:	
Gels - 10secs:	9	Mud Alkalinity Pm:	
10mins:	16	Filtrate Alkalinity Pf:	
30mins:	25	Filtrate Alkalinity Mf:	
Mud Temp In (degF):	85	Calcium:	120
Mud Temp Out (degF):	85	Chlorides:	800
Filtrate:	12.2	Calcium Chloride:	0
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	9	CEC:	
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:		Active Vol (bbls):	550.0
200/100 rpm:		Reserve Vol (bbls):	0.0
6/3 rpm:		Daily Mud Loss (bbls):	10.0
		Cumulative Mud Loss (bbls):	10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	29-Jun-21 21:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	5
Sample Depth (ft):	436	Water %:	95
Mud Type:	SPUD	Oil %:	0
Density (lbs/gal):	8.60	Sand %:	0.5
Funnel Vis (secs/qt):	36	Low G.S. %:	0.6
PV (centipoises):	8	High G.S. %:	
YP (lbs/100sq ft):	7	LCM %:	
Gels - 10secs:	4	Mud Alkalinity Pm:	0.6
10mins:	6	Filtrate Alkalinity Pf:	0.4
30mins:	11	Filtrate Alkalinity Mf:	0.3
Mud Temp In (degF):	85	Calcium:	240
Mud Temp Out (degF):	97	Chlorides:	900
Filtrate:	18.8	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11.5	CEC:	
Filtrate pH:	18.8	Lime Content:	
Rheology - 600/300 rpm:	23	15	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	30-Jun-21 21:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	9
Sample Depth (ft):	2697	Water %:	91
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	9.10	Sand %:	12.5
Funnel Vis (secs/qt):	42	Low G.S. %:	4.2
PV (centipoises):	14	High G.S. %:	
YP (lbs/100sq ft):	13	LCM %:	
Gels - 10secs:	3	Mud Alkalinity Pm:	0.01
10mins:	7	Filtrate Alkalinity Pf:	0.01
30mins:	11	Filtrate Alkalinity Mf:	0.3
Mud Temp In (degF):	110	Calcium:	120
Mud Temp Out (degF):	118	Chlorides:	800
Filtrate:	9.4	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	12.5
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	41	27	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	01-Jul-21 20:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	9
Sample Depth (ft):	3009	Water %:	92
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	9.00	Sand %:	1
Funnel Vis (secs/qt):	42	Low G.S. %:	3.2
PV (centipoises):	14	High G.S. %:	
YP (lbs/100sq ft):	15	LCM %:	
Gels - 10secs:	5	Mud Alkalinity Pm:	0.1
10mins:	9	Filtrate Alkalinity Pf:	0.05
30mins:	16	Filtrate Alkalinity Mf:	0.3
Mud Temp In (degF):	116	Calcium:	120
Mud Temp Out (degF):	109	Chlorides:	800
Filtrate:	7.8	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11	CEC:	15
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	43	29	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	02-Jul-21 16:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	7
Sample Depth (ft):	3009	Water %:	0
Mud Type:	LSND	Oil %:	93
Density (lbs/gal):	8.90	Sand %:	0.5
Funnel Vis (secs/qt):	43	Low G.S. %:	2.8
PV (centipoises):	43	High G.S. %:	
YP (lbs/100sq ft):	29	LCM %:	
Gels - 10secs:	5	Mud Alkalinity Pm:	0.1
10mins:	9	Filtrate Alkalinity Pf:	0.05
30mins:	16	Filtrate Alkalinity Mf:	0.2
Mud Temp In (degF):	109	Calcium:	120
Mud Temp Out (degF):	118	Chlorides:	900
Filtrate:	7.8	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10.5	CEC:	
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	43	29	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	03-Jul-21 14:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	6
Sample Depth (ft):	3009	Water %:	94
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.80	Sand %:	0.25
Funnel Vis (secs/qt):	41	Low G.S. %:	2.1
PV (centipoises):	15	High G.S. %:	
YP (lbs/100sq ft):	9	LCM %:	
Gels - 10secs:	3	Mud Alkalinity Pm:	0.01
10mins:	6	Filtrate Alkalinity Pf:	0.01
30mins:	8	Filtrate Alkalinity Mf:	0.2
Mud Temp In (degF):	85	Calcium:	120
Mud Temp Out (degF):	85	Chlorides:	800
Filtrate:	8.8	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	39	24	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	04-Jul-21 20:30	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	6
Sample Depth (ft):	3341	Water %:	94
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.70	Sand %:	0.25
Funnel Vis (secs/qt):	39	Low G.S. %:	1.6
PV (centipoises):	9	High G.S. %:	
YP (lbs/100sq ft):	10	LCM %:	
Gels - 10secs:	4	Mud Alkalinity Pm:	0.1
10mins:	5	Filtrate Alkalinity Pf:	0.05
30mins:	11	Filtrate Alkalinity Mf:	0.4
Mud Temp In (degF):	105	Calcium:	250
Mud Temp Out (degF):	114	Chlorides:	900
Filtrate:	9.4	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10.5	CEC:	10
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	28	19	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	05-Jul-21 23:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	1
Sample Depth (ft):	3651	Water %:	99
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.01
Mud Temp In (degF):	90	Calcium:	120
Mud Temp Out (degF):	114	Chlorides:	600
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	0	Elec. Stability:	
Mud pH:	9	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	06-Jul-21 18:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	3
Sample Depth (ft):	5051	Water %:	97
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.40	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0.6
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	97	Calcium:	120
Mud Temp Out (degF):	109	Chlorides:	600
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11	CEC:	0.01
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	07-Jul-21 16:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	5761	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	95	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	9.5	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	08-Jul-21 15:30	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	5761	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	95	Calcium:	120
Mud Temp Out (degF):	95	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	09-Jul-21 14:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	5761	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	90	Calcium:	120
Mud Temp Out (degF):	90	Chlorides:	800
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	10-Jul-21 19:30	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	5821	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	9.5	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0
Comments:			



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	11-Jul-21 16:30	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	6700	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	114	Calcium:	120
Mud Temp Out (degF):	123	Chlorides:	900
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	12-Jul-21 16:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	2728	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	89	Calcium:	120
Mud Temp Out (degF):	99	Chlorides:	800
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	13-Jul-21 16:30	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	1
Sample Depth (ft):	6742	Water %:	99
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	104	Calcium:	120
Mud Temp Out (degF):	124	Chlorides:	800
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	9.5	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0
Comments:			



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	14-Jul-21 18:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	7423	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	113	Calcium:	120
Mud Temp Out (degF):	112	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	15-Jul-21 16:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	7613	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.01
10mins:	1	Filtrate Alkalinity Pf:	0.01
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	86	Calcium:	120
Mud Temp Out (degF):	87	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	16-Jul-21 20:15	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8500	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.1
10mins:	1	Filtrate Alkalinity Pf:	0.05
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	118	Calcium:	120
Mud Temp Out (degF):	130	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	17-Jul-21 15:45	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8517	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	29	Low G.S. %:	
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	81	Calcium:	120
Mud Temp Out (degF):	109	Chlorides:	800
Filtrate:	32	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	5	3	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	18-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	39	Low G.S. %:	0
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	109	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	3	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	19-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	36	Low G.S. %:	0
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	20-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	38	Low G.S. %:	
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	21-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	38	Low G.S. %:	
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	12
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	22-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	38	Low G.S. %:	0
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	23-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	38	Low G.S. %:	0
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	24-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	38	Low G.S. %:	
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	25-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	8540	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	38	Low G.S. %:	
PV (centipoises):	2	High G.S. %:	
YP (lbs/100sq ft):	2	LCM %:	
Gels - 10secs:	2	Mud Alkalinity Pm:	0.01
10mins:	2	Filtrate Alkalinity Pf:	0.01
30mins:	2	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	800
Filtrate:	34	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	6	4	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	26-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	1
Sample Depth (ft):	8540	Water %:	99
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	1	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.1
10mins:	1	Filtrate Alkalinity Pf:	0.1
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	27-Jul-21 11:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	1
Sample Depth (ft):	8540	Water %:	99
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.1
10mins:	1	Filtrate Alkalinity Pf:	0.1
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	98	Calcium:	120
Mud Temp Out (degF):	105	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	28-Jul-21 21:00	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	1
Sample Depth (ft):	8626	Water %:	99
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.2
10mins:	1	Filtrate Alkalinity Pf:	0.2
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	82	Calcium:	120
Mud Temp Out (degF):	100	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	11	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0

Comments:



Mud Report
Well ID: Forge 78B-32
Field: UTAHFORGE

Geothermal Resource Group
Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Date/Time:	29-Jul-21 06:15	Oil/Water Ratio:	/
Engineer:	Alex Harrison	Company:	SHS
Location:	PIT	Solids %:	2
Sample Depth (ft):	9500	Water %:	98
Mud Type:	LSND	Oil %:	0
Density (lbs/gal):	8.30	Sand %:	0.01
Funnel Vis (secs/qt):	26	Low G.S. %:	0
PV (centipoises):	0	High G.S. %:	
YP (lbs/100sq ft):	1	LCM %:	
Gels - 10secs:	1	Mud Alkalinity Pm:	0.1
10mins:	1	Filtrate Alkalinity Pf:	0.1
30mins:	1	Filtrate Alkalinity Mf:	0.1
Mud Temp In (degF):	84	Calcium:	120
Mud Temp Out (degF):	97	Chlorides:	700
Filtrate:	0	Calcium Chloride:	
HTHP Filtrate:		C03:	
Cake (1/32 in):	1	Elec. Stability:	
Mud pH:	10	CEC:	0
Filtrate pH:		Lime Content:	
Rheology - 600/300 rpm:	1	1	Active Vol (bbls): 550.0
200/100 rpm:			Reserve Vol (bbls): 0.0
6/3 rpm:			Daily Mud Loss (bbls):
			Cumulative Mud Loss (bbls): 10.0
Comments:			



Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
	Ver. Final	Page 137 of 288
	To accompany report issued 1 December 2021	

9.4. Fluids Subcontractor Daily Reports





Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate



Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32

9,500' Exploration Well

Daily Depth & Properties																							
Date	Depth	Wt	Flowline Temp	Vis	PV	YP	Gel 10 Sec	Gel 10 Min	Gel 30 Min	CEC	pH	FL	PF	MF	CL MPL	Ca PPM	% Solids	LGS% Oil	% Water	% Sand	Vol Lost DH	Vol Lost Surf	Vol Built
06/27/2021	128	8.680		436	215		9	15	15	9.5	16.4	0.1	2	600	120	5	0	95	.01	0	0	589	
06/28/2021	1421	8.985		5119	229		16	25	15	9	12.2	0.1	2	800	120	11	3	89	2.5	0	10	10	
06/29/2021	1436	8.697		368	7	4	6	11	12.5	11.5	18.8	4	3	900	240	5	1	95	.5	0	8	25	
06/30/2021	1269	9.1118		4214	133		7	11	12.5	10	9.4	0.1	3	800	120	9	4	91	1.5	0	70	500	
07/01/2021	1300	9.0116		4214	155		9	16	15	11	7.8	0.5	3	800	120	8	3	92	1	0	10	70	
07/02/2021	1300	9.9118		4314	155		9	16	12.5	10.5	7.8	0.5	2	900	120	7	3	93	.5	0	0	0	
07/03/2021	1300	9.885		4115	9	3	6	8	12.5	10	8.8	0.1	2	800	120	6	2	94	.25	0	0	0	
07/04/2021	1334	8.7114		399	104		5	11	10	10.5	9.4	0.5	4	900	240	6	2	94	.25	0	15	30	
07/05/2021	1365	8.3115		26	1	1	1	1	9	NA	0.1	0	1	600	120	1	0	99		0	0	784	
07/06/2021	1505	8.4109		26	1	1	1	1	.01	11	N/A	.1	.1	600	120	3	1	97	.01	0	10	397	
07/07/2021	1576	8.395		26	1	1	1	1	9.5	N/A	0.1	.1	600	120	2	0	98	.01	0	40	320		
07/08/2021	1576	8.395		26	1	1	1	1	10	N/A	0.1	.1	700	120	2	0	98	.01	0	0	40		
07/09/2021	1576	8.390		26	1	1	1	1	10	N/A	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/10/2021	1582	8.3105		26	1	1	1	1	9.5	N/A	0.1	.1	800	120	2	0	98	.01	0	0	200		
07/11/2021	1670	8.3123		26	1	1	1	1	10	N/A	0.1	.1	900	120	2	0	98	.01	0	20	565		
07/12/2021	1272	8.399		26	1	1	1	1	10	N/A	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/13/2021	1674	8.3124		26	1	1	1	1	9.5	N/A	0.1	.1	800	120	1	0	1	98	.01	0	0	140	
07/14/2021	1742	8.3113/122		26	1	1	1	1	10	N/A	0.1	.1	700	120	2	0	98	.01	0	3	630		
07/15/2021	1761	8.386/87		26	1	1	1	1	10	N/A	0.1	.1	700	120	2	0	98	.01	0	0	0		
07/16/2021	1850	8.3118/130		26	1	1	1	1	11	N/A	0.5	.1	700	120	2	0	98	.01	0	16	350		
07/17/2021	1851	8.381/109		292	1	2	2	2	10	32	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/18/2021	1854	8.398/105		262	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/19/2021	1854	8.398/105		362	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/20/2021	1854	8.398/105		382	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/21/2021	1854	8.398/105		382	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/22/2021	1854	8.398/105		382	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/23/2021	1854	8.398/105		382	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/24/2021	1854	8.398/105		382	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/25/2021	1854	8.398/105		382	2	2	2	2	10	34	0.1	.1	800	120	2	0	98	.01	0	0	0		
07/26/2021	1854	8.398/105		26	1	1	1	1	11	N/A	.1	.1	700	120	1	0	99	.01	0	0	323		
07/27/2021	1854	8.398/105		26	1	1	1	1	11	N/A	.1	.1	700	120	1	0	99	.01	0	0	0		
07/28/2021	1862	8.382/100		26	1	1	1	1	11	N/A	.2	.1	700	120	1	0	99	.01	0	0	40		
07/29/2021	1950	8.384/97		26	1	1	1	1	10	N/A	.1	.1	700	120	2	0	98	.01	0	0	40		

Project Information						Page 1 / 7
Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021	
Supervisor Names		Rig #	16	End Date	7/30/2021	
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902	
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR		
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1			
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32			
Project Manager Phones		AFE Amt.				
		Cumulative Cost				



Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate



Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32
9,500' Exploration Well

IADC Codes		Materials				
<p>■ 01. RIG UP/TEAR DOWN/RIG MOVE (RUTDRM, 24 hrs) ■ 02. DRILLING (DRILL, 36 hrs) ■ 03. REAMING (REAM, 12 hrs) ■ 06. TRIPS (TRIPS, 12 hrs) ■ 12. RUN CASING & CEMENT (RCC, 12 hrs) ■ Unknown (UNKN, 744 hrs)</p>		Product	Unit Cost	Total Used	Total Cost	% Total Cost
		API Gel		340		10
		Aluminum Stearate		2		2
		Barite		370		17
		Bicarb		31		2
		Caustic Soda		21		3
		DMA/SPA		5		2
		Defoam 14		2		1
		Desco CF		6		1
		Drispac LV		5		3
		Flowzan		43		22
		Mica		5		0
		Micro C		212		16
		Pallets/Wraps		33		2
		PolyVis		23		7
Soda Ash		4		0		
TORKease Concentrate		11		10		

Cumulative Costs			
Credit (\$)	0.00	Materials (\$)	
Materials Sales Tax (\$)	0		

Project Progress							
Task #	Activity	Plan Days	Act. Days	Days Diff.	%	Unplanned Days	Downtime Days
1		7	2	-5	29		
2		5	2	-3	40		
3		6					
Totals:		18	4	-14	230		0

Casing						
Type	OD (in)	ID (in)	From (ft)	Set To (ft)	Length (ft)	
Conducto	24	23.5	0	128	128	
Surface	16	15.25	0	416	416	
Interm.	11.75	10.88	0	2989	2989	
Prod.	7	5.82	0	8508	8508	
Open Hole		5.75	8508	9500	992	

Daily Cost & Remarks			
Date	Cost / Day	Cumulative Cost / Day	Remarks
06/26/2021			<ul style="list-style-type: none"> 6 days Engineering charged for Travel day 6/21/21, Two Days of Class 6/22 to 6/23, three days charged for Rig up 6/24 to 6/26, Lodging cost for two night at the hotel for Class. labor: Misc charge is for Per Diem for the listed above days. Trucking Charges for H&S Invoice 100713-FD16, 100714-FD16 and American Roughneck hotshot Invoice 100310
06/27/2021			<ul style="list-style-type: none"> wait on daylight, Pre Spud, P/u DP and HWDP, Strap CSG, M/U BHA, Delivery this after noon from H&S, Trucking charge will be added once invoice is received
06/28/2021			<ul style="list-style-type: none"> P/U Dir. BHA, Fill hole, Drill f/128 T/421, Cir. hole clean, wipe, cir. hole clean, L/D BHA, R/u and Run 16" CSG and stab in to 383', Pump Cement, CIP 1600, R/D CMTERS, N/D BOP

Project Information					
Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021
Supervisor Names		Rig #	16	End Date	7/30/2021
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR	
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1		
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32		
Project Manager Phones		AFE Amt.			
		Cumulative Cost			



Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate



Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32

9,500' Exploration Well

Date	Cost / Day	Cumulative Cost / Day	Remarks
06/29/2021			<ul style="list-style-type: none"> N/U BOP and Surface equipment, Test BOP, Service Rig, Strap and pick up DC, RIH, Drill out shoe, Drill T/436, Leak off test, POOH, P/U DIR BHA. Mud will be conditioned as soon as Drilling the 14 3/4 Section. Spurt loss on mud 1 mL
06/30/2021			<ul style="list-style-type: none"> P/U Dir. BHA, RIH, Dir. Drill F/433 T/667, Swap Collars and HWDP, Dir. Drill F/667 T/2359, Repair Gens, Dir. Drill F/2359 T/2699, Trucking Charged for load of gel PO 100716-FD16
07/01/2021			<ul style="list-style-type: none"> POOH, P/U New Bit, Inspect Tools, RIH, Dir. Drill F/2699' T/3009, ROP Dropped and metal across shakers, Called TD, POOH, L/D Dir. Tools, R/u and Run CSG
07/02/2021			<ul style="list-style-type: none"> HSM, R/u and Run 11.75 CSG T/2989, R/D Tongs, Service Rig, R/U well head and pumps in cellar, RIH with DP, Stab in, Cir. Bottoms up, Bottoms up Temp 133, HSM, R/U and pump Cement job, CIP 1600, POOH, N/D BOP
07/03/2021			<ul style="list-style-type: none"> N/D BOP, N/U BOP, Test BOP, L/D all 5" DP and HWDP, P/U Junk basket and pit, RIH T/Drill out shoe. Trucking Charge for Invoice 100717-FD16
07/04/2021			<ul style="list-style-type: none"> M/U D/O BHA, RIH, Drill out shoe, Drill T/3011', FIT test, POOH L/D BHA, M/U Dir BHA, RIH, Re TRQ every connection, Fill pipe, Dir. Drill f/3011' T/3370. Spurt loss on mud 1.4 ML
07/05/2021			<ul style="list-style-type: none"> Dir. Drill F/3370 T/3651, POOH For Motor, L/D Dir. BHA, Transfer Pits to lower sump, P/U Dir. BHA, RIH T/shoe, Clean pits, Fill with fresh water, RIH T/3651 change well over, Dir. Drill F/ 3651 T/3680
07/06/2021			<ul style="list-style-type: none"> Dir. Drill F/3651 T/5200. Spurt loss on make up water is 20MI 15 Sec, Spurt loss on drilling water 8 MI in 15 Sec. Barite was not used in the drilling water. Dumped 130 bbls water, Filled with 200 bbls fresh water
07/07/2021			<ul style="list-style-type: none"> Dir. Drill F/5200 T/5761, L/D Bit and motor, Dump 200 bbls, add 200 bbls fresh water, Slip and cut service Rig, P/U 5.5 DP, M/U Dir. BHA RIH, Spurt loss on water 10.8 mL 15 Sec
07/08/2021			<ul style="list-style-type: none"> P/U DP, cir. bottoms up, POOH, L/D Motor, M/U MWD, P/U Motor, RIH to shoe, Trouble shoot SCR house and floor motor, Spurt loss 11 mL in 15 Sec
07/09/2021			<ul style="list-style-type: none"> Repair Rig, Spurt loss on water 11 MI in 15 Sec
07/10/2021			<ul style="list-style-type: none"> Wait on Tech, Repair rig, RIH, Dir. Drill F/5761 T/5821, POOH for motor and bit, P/U new motor and bit, RIH, Spurt loss At 5815 5 MI in 1 Sec, 5821 after 100 bbls dilution 4.5MI in 1 sec
07/11/2021			<ul style="list-style-type: none"> Stage in hole, dir. Drill f/5821 T/6700, Cir. hole clean, POOH, L/D Dir. Tools, P/U Coring tools
07/12/2021			<ul style="list-style-type: none"> P/U Coring Tools, Sage in hole every 1000', Core F/6700 T/6728, Time trip out of hole, Check core, P/U new Coring BHA, RIH

Project Information				Page 3 / 7	
Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021
Supervisor Names		Rig #	16	End Date	7/30/2021
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR	
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1		
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32		
Project Manager Phones		AFE Amt.			
		Cumulative Cost			



Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate



Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32

9,500' Exploration Well

Date	Cost / Day	Cumulative Cost / Day	Remarks
07/13/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> RIH, Dump 200 bbls water, Fill with 140 bbls, while coring pumped 30 bbls down drill string, Coring T/6740, POOH, M/U C/O BHA, RIH, C/O T/6742, Cir. Bottoms up, POOH, P/U Dir. BHA
07/14/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> RIH with DC and HWDP, Slip and cut, RIH t/6742, Dir. Drill F/6742 T/7850, Dumped 390 bbls water, Added 630 bbls water
07/15/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> Wait on part, Repair rig, POOH, L/D Dir Tools, P/u Dir. Tools, RIH, Stage in every 1000' after the shoe. 87.69 for shipping of testing equipment, other charge is for spurt loss/Turbidity monitoring on drilling water
07/16/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> RIH T/7069, wash and Ream F/7069 T/7613, Dir. DRILL F/7613 T/8500, Cir. hole clean, POOH
07/17/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> POOH, L/D DC and Dir. BHA, M/U Coring BHA, RIH stage in hole every 1000' Drop ball and cir. core F/8500 T/8530, POOH
07/18/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> RIH with new core BHA, Core F/8530 T/8540, time trip out of the hole, L/D core and coring BHA, M/U C/O BHA RIH
07/19/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> RIH, C/O F/8500 T/8540, Cir. hole clean, POOH, R/U and log well, make two runs, RIH with Slick BHA to cool well prior to final log
07/20/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> RIH to shoe, Slip and cut, RIH to 8540, Cir. to cool well, POOH, R/U and Run 3rd log, RIH to L/D DPO
07/21/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> POOH, L/D Drill pipe, Spot 80 bbl Gel/Micro C pill at shoe, finish laying down Drill pipe, R/U and run 7" CSG with fiber optic cable
07/22/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> Run 7" CSG with fiber optic cable, Test Cable, Pump Dry job, POOH, one load of mud materials hauled off this after noon, will reflect on inventory once i have trucking ticket
07/23/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> POOH L/D 7" CSG, Wait on fiber optic rebuild, R/U and run 7" CSG and fiber optic cable. trucking charge for materials sent back to ceritos
07/24/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> Run 7" CSG with Fiber optic cable, Splice in new cable, finish running 7" CSG, Cir. CSG for 4 hours to cool well, R/U CMTERS
07/25/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> Pump 4 lbs/bbl Mirco C while cooling the well, Pump cement job, Hold pressure on CSG, Wait on Cement job, Pump 6 bbls top job, Wait on Cement, Dump pits
07/26/2021	[REDACTED]	[REDACTED]	<ul style="list-style-type: none"> Wait on Cement, Fill pits with water, N/D BOP, Work with Welder to get bottom spool off, Install well head, N/U BOP, Test Surface equipment, RIH with DC, Test CSG and BOP

Project Information

Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021
Supervisor Names		Rig #	16	End Date	7/30/2021
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR	
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1		
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32		
Project Manager Phones		AFE Amt.	[REDACTED]		
		Cumulative Cost	[REDACTED]		



Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate

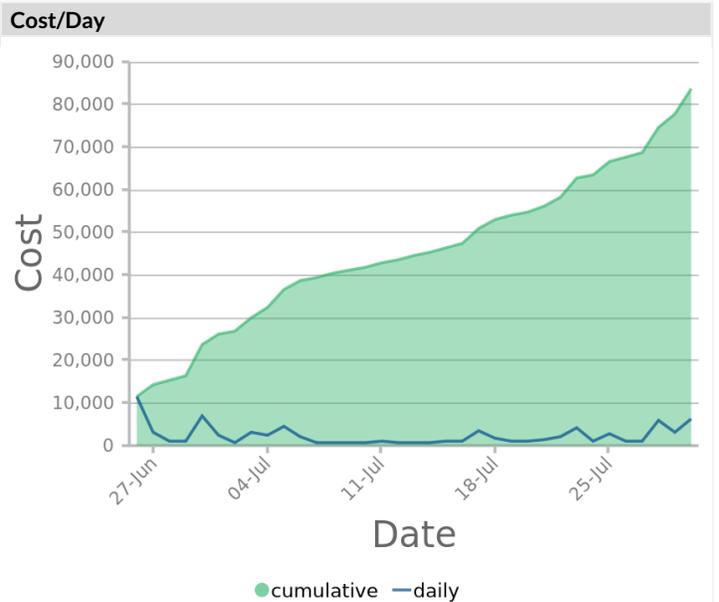
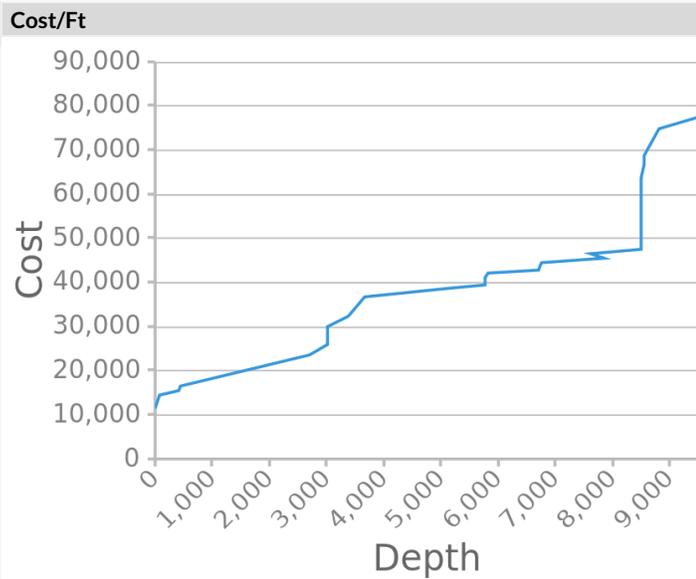


Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32

9,500' Exploration Well

Date	Cost / Day	Cumulative Cost / Day	Remarks
07/27/2021	\$1,087.00		<ul style="list-style-type: none"> Finish testing, P/U DC, Service Rig, RIH with DP, Dropped Slip Die, Attempt to find die, No Die, RIH, Test CSG and blind Rams, Drill out. Second other Charge is for tools I had to buy for Virgil
07/28/2021	\$5,972.65		<ul style="list-style-type: none"> Cir. Well, Test BOP, Drill out, Drill F/8545 T/8555, Cir. Well, Leak off test, Slip and cut, POOH, Service Rig, P/U Dir BHA, RIH T/7200, RIH cooling well every 500', Dir. Drill F/8555 T/8800, aluminum stearate and mica charged off due to damage
07/29/2021	\$2,966.00		<ul style="list-style-type: none"> Dir. Drill F/8800 T/9500, Pump Hi Vis Torqease sweep, Cir. hole clean, POOH, L/D Dir. BHA, RIH open ended to cool well while waiting on loggers, POOH for logs. Bi Carb chared off due to damaged material



Operations Summary Recap

Date	From Time	To Time Hrs.	Start Depth	End Depth	Details	Task #	Activity	W	O	B	R	P	M	R	O	P	U	U	U
06/26/2021	10:00	12:00	12	0	MIRU	1	01. RIG UP/TEAR DOWN/RIG MOVE	0	0	0									
06/26/2021	12:00	00:00	12	0	MIRU	1	01. RIG UP/TEAR DOWN/RIG MOVE	0	0	0									
06/27/2021	10:00	12:00	12	128	Wait on Daylight, Pre Spud inspection, P/U DP and HWDP			0	0	0									
06/27/2021	12:00	00:00	12	128	Strap pipe and finish picking up DP, M/U BHA			0	0	0									
06/28/2021	10:00	12:00	12	128	421	P/U Dir BHA, fill and cir. hole, Drill F/128 T/421, Cir. hole clean, Wipe, cir. hole clean, L/D BHA, R/U and Run 16" CSG T/383	1	02. DRILLING	0	0	0								

Project Information

Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021
Supervisor Names		Rig #	16	End Date	7/30/2021
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR	
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1		
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32		
Project Manager Phones		AFE Amt.			
		Cumulative Cost			



Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate



Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32

9,500' Exploration Well

Date	From Time	To Time	Hrs.	Start Depth	End Depth	Details	Task #	Activity	WO	BR	PM	R	OP	Unplanned
06/28/2021	12:00	00:00	12	422	421	Run Stab in, R/U and pump cement job, CIP 1600, R/D CMTERS, POOH, N/D BOP	1	12. RUN CASING & CEMENT	0	0	0			
06/29/2021	10:00	12:00	12	421	421	N/U BOP, Test BOP and Surface equipment, N/U Flow line, Strap DC, Service Rig			0	0	0			
06/29/2021	12:00	00:00	12	421	436	P/U DC, Test BOP, Intall Saver Sub, RIH, Drill out shoe, Drill T/436' Leak off test, POOH, P/U Dir. BHA			0	0	0			
06/30/2021	10:00	12:00	12	433	2359	P/u Dir. BHA, RIH, Dir. Drill F/433 T/667, Swap collars and HWDP, Dir. Drill f/667 T/2359	2	02. DRILLING	0	0	0			
06/30/2021	12:00	00:00	12	2359	2699	Repair Gens, Dir. Drill F/2359 T/2699	2	02. DRILLING	0	0	0			
07/01/2021	10:00	12:00	12	2699	2938	POOH, P/U new Bit, Inspect Tools, RIH, Dir. Drill F/2699 T/2938	2	03. REAMING	0	0	0			
07/01/2021	12:00	00:00	12	2938	3009	Dir. Drill F/2938 T/3009, ROP Dropped and metal across shakers, called TD, POOH, L/D Dir. Tools, R/U to Run CSG	2	06. TRIPS	0	0	0			
07/02/2021	10:00	12:00	12	3009	3009	HSM, R/U and Run 11.75 In CSG T/2989', R/D Tongs, Service Rig, R/u well head and pumps in cellar			0	0	0			
07/02/2021	12:00	00:00	12	3009	3009	RIH with DP, Stab in, Cir. Bottoms up, Check Temp. 133 on bottoms up, HSM, Pump Cement job, CIP 16:00, POOH, N/D BOP			0	0	0			
07/03/2021	10:00	12:00	12	3009	3009	N/U BOP, Test BOP, RIH 20 Stands			0	0	0			
07/03/2021	12:00	00:00	12	3009	3009	L/D 5" DP and HWDP, Change Equipment for 5.5 DP, P/U 5.5 DP, P/U Bit and Junk baskets, RIH T/drill out shoe			0	0	0			
07/04/2021	10:00	12:00	12	3009	3011	Make up Bit and Junk baskets, RIH, Drill out shoe T/3011', FIT Test, POOH, L/D BHA, M/u Dir. BHA			0	0	0			
07/04/2021	12:00	00:00	12	3011	3370	RIH, TRQ every connection, Fill pipe, Dir. Drill F/3011' T/3370			0	0	0			
07/05/2021	10:00	12:00	12	3370	3651	dir. Drill F/3370 T/3651, POOH for Motor, L/D Dir. BHA, Transfer pits to lower sump.			0	0	0			
07/05/2021	12:00	00:00	12	3651	3680	P/U Dir. BHA, RIH to shoe, Dump and clean pits, Fill with fresh water, RIH T/3651, Change well over, Dir. DRill F/3651 t/3680			0	0	0			
07/06/2021	10:00	12:00	12	3651	4762	Dir. Drill F/3651' T/4762'			0	0	0			
07/06/2021	12:00	00:00	12	4762	5200	Dir. Drill F/4762' T/5200'			0	0	0			
07/07/2021	10:00	12:00	12	5200	5761	Dir. Drill f/5200 T/5761, POOH			0	0	0			
07/07/2021	12:00	00:00	12	5761	5761	L/D Bit and Motor, Service Rig, Slip and cut, P/U 5.5 DP, M/u Dir. BHA, RIH			0	0	0			
07/08/2021	10:00	12:00	12	5761	5761	P/U DP, Cir. Bottoms up, POOH, L/D Motor, M/U MWD			0	0	0			
07/08/2021	12:00	00:00	12	5761	5761	RIH to shoe, Trouble shoot SCR house and floor motor,			0	0	0			
07/09/2021	10:00	12:00	12	5761	5761	Repair rig			0	0	0			
07/09/2021	12:00	00:00	12	5761	5761	Repair Rig			0	0	0			
07/10/2021	10:00	12:00	12	5761	5761	Wait on Tech, Repair Rig			0	0	0			
07/10/2021	12:00	00:00	12	5761	5821	Repair Rig, RIH, Dir. Drill f/5761 T/5821, POOH for motor and bit, P/u new motor and pit, RIH			0	0	0			
07/11/2021	10:00	12:00	12	5821	6428	Stage in hole, Dir. Drill F/5821 T/6428			0	0	0			
07/11/2021	12:00	00:00	12	6428	6700	Dir. Drill F/6428 T/6700, Cir. hole clean, POOH, L/D Dir. Tools, P/u Coring tools			0	0	0			
07/12/2021	10:00	12:00	12	6700	6728	P/u Coring Tools, Stage in hole every 1000', Core F/6700 T/6728, Time Trip out of hole			0	0	0			
07/12/2021	12:00	00:00	12	6728	6728	Time Trip out of hole, handle coring tools, Check core, P/U new Coring BHA, RIH			0	0	0			
07/13/2021	10:00	12:00	12	6728	6740	RIH, Coring F/6728 T/6740, Time trip out, L/D core, M/U C/O BHA, RIH			0	0	0			
07/13/2021	12:00	00:00	12	6740	6742	RIH, service rig, Ream F/6700 T/6740, Drill T/6742, Cir. bottoms up, POOH, P/U Dir. BHA			0	0	0			
07/14/2021	10:00	12:00	12	6742	7070	RIH, Slip and Cut, RIH T/6742, Dir. Drill t/7070			0	0	0			

Project Information

Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021
Supervisor Names		Rig #	16	End Date	7/30/2021
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR	
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1		
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32		
Project Manager Phones		AFE Amt.			
		Cumulative Cost			



Operator University of Utah
Lease Pilot 1
Field FORGE

Report Cost
Cumulative Cost
AFE Cost Estimate



Report # 35
Start Date 6/26/2021
End Date 7/30/2021

Sinclair WBM (Un-Weighted) 3.0
Well: 78B-32

9,500' Exploration Well

Date	Time	Start Depth	End Depth	Detail	Task #	Activity	W	O	B	P	M	B	O	P	Unplanned
07/14/2021	00:00	12	7613	Drill F/7070 t/7850											
07/15/2021	12:00	12	7613	Wait on Hydraulic hose, Repair Rig, POOH			0	0	0						
07/15/2021	00:00	12	7613	L/D Dir. Tools, M/U New Dir. Tools, RIH, Sage in hole every 1000' after the shoe.			0	0	0						
07/16/2021	12:00	12	7613	RIH t/7069, Wash and Ream F/7069 T/7613, Dir. Drill F/7613 T/7997			0	0	0						
07/16/2021	00:00	12	7997	Dir. Drill f/7997 t/8500, Cir. hole clean, POOH			0	0	0						
07/17/2021	12:00	12	8500	POOH, L/D DC amd Dir. BHA, M/U Coring BHA, RIH			0	0	0						
07/17/2021	00:00	12	8500	RIH, Drop ball and cir., core F/8500 T/8530, Time Trip with core			0	0	0						
07/18/2021	12:00	12	8530	RIH with new core BHA, Core F/8530 T/8540, time trip out of hole			0	0	0						
07/18/2021	00:00	12	8540	L/D core and coring BHA, M/U C/O BHA, RIH clean out core hole.			0	0	0						
07/19/2021	12:00	12	8540	RIH, C/O F/8500 T/8540, Cir. hole clean, POOH, R/U and log well			0	0	0						
07/19/2021	00:00	12	8540	Log Well, RIH to cool down well, Run last log			0	0	0						
07/20/2021	12:00	12	8540	RIH to Shoe, Slip and cut, RIH T/8540, Cir. hole to cool well, POOH, R/U and Run 3rd log			0	0	0						
07/20/2021	00:00	12	8540	Run 3rd log, RIH to L/D DP			0	0	0						
07/21/2021	12:00	12	8540	POOH L/D Drill pipe, Spot 80 bbls Gel/Micro C pill at shoe, POOH, L/D DP			0	0	0						
07/21/2021	00:00	12	8540	R/U and run 7" CSG with fiber optic cable			0	0	0						
07/22/2021	12:00	12	8540	Run 7" CSG with Fiber optic cable			0	0	0						
07/22/2021	00:00	12	8540	Run 7" CSG with fiber optic cable, Test cable, Pump Dry job, POOH			0	0	0						
07/23/2021	12:00	12	8540	POOH L/D 7" CSG, Wait on Fiber optic rebuild			0	0	0						
07/23/2021	00:00	12	8540	wait on fiber optic rebuild, R/U and Run 7" CSG and Fiber optic cable			0	0	0						
07/24/2021	12:00	12	8540	Run Fiber optic cable and 7" CSG, splice in new cable			0	0	0						
07/24/2021	00:00	12	8540	Run 7" CSG and fiber optic cable, Cir. CSG for 4 hours to cool well, R/U CMTERS			0	0	0						
07/25/2021	12:00	12	8540	pump 4lb/bbl Micro Cir. to cool well, Pump Cement job, hold pressure on CSG, Wait on Cement job			0	0	0						
07/25/2021	00:00	12	8540	WOC, Pump 6 bbls top job, Wait on cement, Dump pits			0	0	0						
07/26/2021	12:00	12	8540	W.O.C, N/D BOP, Work with welder			0	0	0						
07/26/2021	00:00	12	8540	Install well head, N/U BOP, Test BOP, RIH with DC, Test BOP			0	0	0						
07/27/2021	12:00	12	8540	Finish Testing, P/U DC, Service Rig, P/U DP, Dropped slip die, Attempt to find die			0	0	0						
07/27/2021	00:00	12	8540	Attempt to find die, No Die, RIH, Test CSG and Blind rams			0	0	0						
07/28/2021	12:00	12	8540	Cir. well, Test BOP, Drill out F/8411 T/8510, Drill F/8545 T/8555, Cir. Well, Leak off Test, Slip and Cut, POOH Break bit, Rig Service			0	0	0						
07/28/2021	00:00	12	8555	P/U Dir. BHA, RIH T/7200, RIH Cooling well every 500', Dir. DRill F/8555 T/8800			0	0	0						
07/29/2021	12:00	12	8800	Dir. Drill T/9500, Pump Hi-Vis Torqasee sweep, Cir. hole clean, POOH, L/D Dir. Tools			0	0	0						
07/29/2021	00:00	12	9500	L/D Dir. Tools, Service Rig, RIH and Cir. well cool while waiting on loggers, POOH for Logs			0	0	0						
07/30/2021	12:00	12	9500	Log Well, R/D Loggers, POOH L/D DP			0	0	0						
07/30/2021	00:00	12	9500	L/D DP and Drill Collars, Tear out Rig			0	0	0						
Totals:			840												

Project Information				Page 7 / 7	
Project Start Depth	128	Contractor	Frontier Drilling	Start Date	6/26/2021
Supervisor Names		Rig #	16	End Date	7/30/2021
Supervisor Phones		Operator	University of Utah	Notes	PO-U000308902
Mud Engineer Names	A. Harrison	Field	FORGE	URL QR	
Mud Engineer Phones	(661) 477-2421	Lease	Pilot 1		
Project Manager Name	Virgil Welch / Brian Gresham	Well	78B-32		
Project Manager Phones		AFE Amt.			
		Cumulative Cost			



Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
	Ver. Final	Page 145 of 288
	To accompany report issued 1 December 2021	

9.5. Cementing Subcontractor Reports





University of Utah

201 S Presidents Circle RM 170
Salt Lake City, Utah 84112-9351

16" Surface Casing Cementing

Prepared for: Geothermal Resource Group
Job Date: Monday, June 28, 2021

RFP UU 143620677
Monitoring Well 78B-32
Beaver county, Utah

Version 1
Job # 21-0055

Sincerely,

Farzad Najafi
Resource Cementing
2500 Airport Rd,
Rio Vista, CA 94571
Phone: (707) 374-3350

Objective:

Surface casing cementing, bring cement to surface

Job Summary

Casing Size	16.00" 86 lb/ft, ID=15.250"
Casing Depth	0' – 415'
Previous Casing	24" 128.5 lb/ft, ID=23.00"
Casing Depth	0' - 98'
Open Hole	22", 98 ft. – 421 ft.
Drill Pipe	5" 19.5 lb/ft, ID=4.276"
DP Depth	0' – 372'
Cement Volume	410 sacks (820 Ft3 – 146 bbl.) of 13.88 ppg Surface density
Mud Weight	9.0 lbs./gal
Well Status before Job	Full Circulation before Casing at TD and FULL Circulation before Cement Job
Customer Representative	Virgil Welch

16" Surface Casing Cementing

Job called out on Tuesday, July 20, 2021, at 2:00 PM. Crew arrived on location on location on Thursday, July 22, 2021, at 7:00 AM, all equipment was in staging area. At the time rig was running casing down hole and were expecting to do the cement job some time that night. At 8:00 PM rig was pulling casing out of hole as they had lost communication with the fiber optic lines, cement crew on standby. Saturday, July 24, crew was called out, crew on location

And crew was able to proceed with spotting the field storage bin on location and transfer cement. Crew was at hotel at 11:00 PM, waiting on rig. Crew was called out for the job at 5:00 AM, crew on location at 7:00 AM. All equipment were spotted on location, rigged up and job ready at 12:00 PM. Pre job Safety meeting was conducted with everyone on location at 2:00 PM. Following the safety meeting crew proceeded in finishing rigging up on rig floor. Pumps and lines were pressure tested at 1,500 psi. the following fluids were pumped for the job;

- Pump **20 BBLS** of Fresh Water Spacer @ **5.5 BPM**
- Pump **50 BBLS** of 10.5 ppg. Sepiolite Spacer @ **5.2 BPM**
- Pump **5 BBLS** of Fresh Water Spacer @ **3 BPM**
- Pump **13 BBLS** of 11.6 ppg. Sodium Silicate @ **3 BPM**
- Pump **5 BBLS** of Fresh Water Spacer @ **3 BPM**
- Pump **140 BBLS** of 13.88 ppg RC Thermalite Cement @ **5 BPM**

- Pump **6 BBLS** of Fresh Water Displacement @ **2 BPM**

Full circulation was observed throughout the job, cement was returned to surface after pumping 132 BBL of bbl. of cement, thus crew was instructed to switch to displacement after pumping 140 BBL of cement, Cement was in place (CIP), at 4:00 PM. crew proceeded to wash up pump unit and lines while Waiting on cement (WOC). At 5:00 PM crew mixed and pumped 15 BBL of cement to top out the cement. following the top out cementing crew washed up equipment and rigged down, all equipment and crew was off location at 9:00 PM.

This job was completed as planned and without any incidents, should you have any questions regarding this job please free to contact me at any time.

Sincerely,

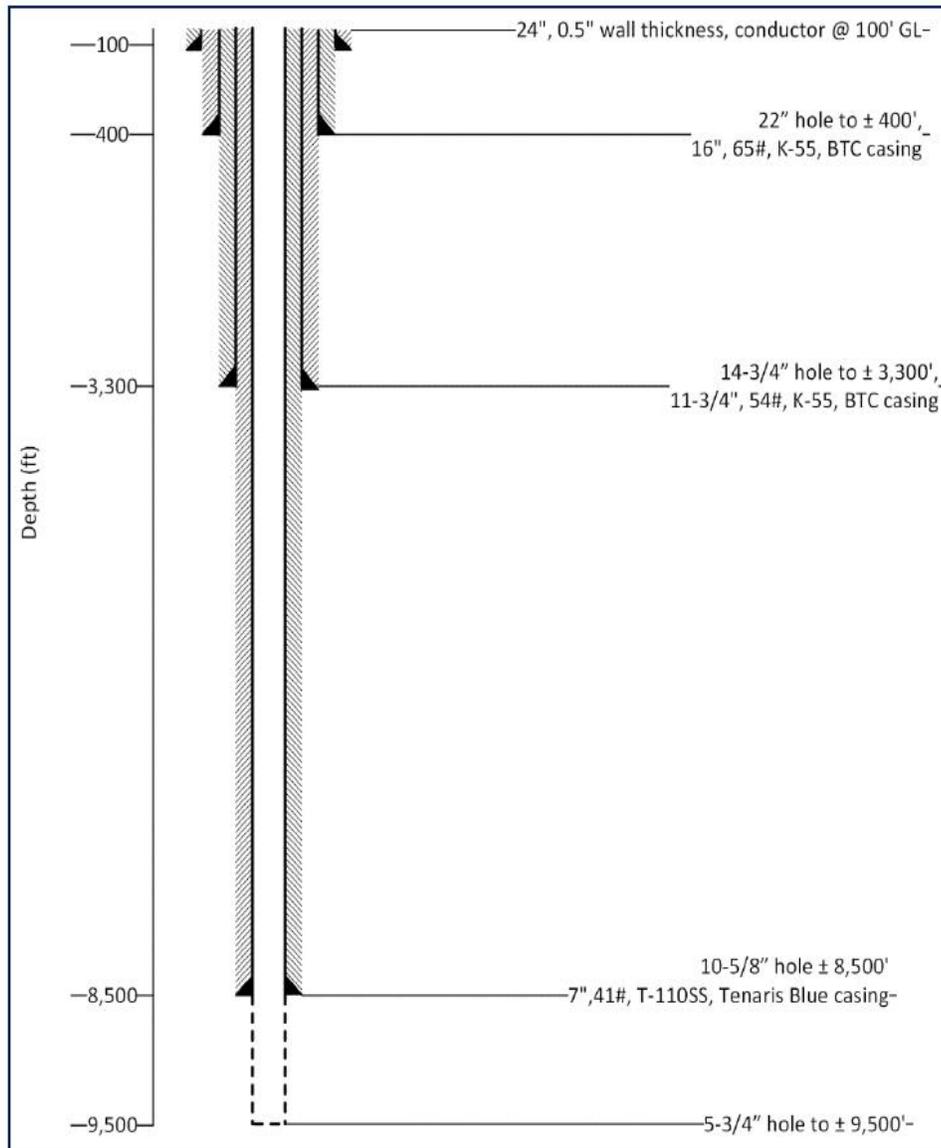
Farzad Najafi
Resource Cementing
2500 Airport Rd.
Rio Vista, CA 94571
Phone: (707) 374-3350

Note: Resource Cementing maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Resource Cementing again thanks you for the opportunity to perform services work on this well. We hope to be your preferred solutions provider for future projects.



Well Schematic

Well 78B-32



University of Utah
FORGE Monitoring Well 78B-32: 16" Surface Casing

Friday, September 17, 2021

Previous Casing: 24" .; 0 – 98' MD; ID=23"

Open Hole: 22", 98' – 421' TMD

Surface Casing: 16" 86 lb/ft.; 0' – 415' MD; ID=15.250"

Shoe Volume: 42' ft.; MW 8.6 lb/gal

Estimated Job Time: 90 Minuets

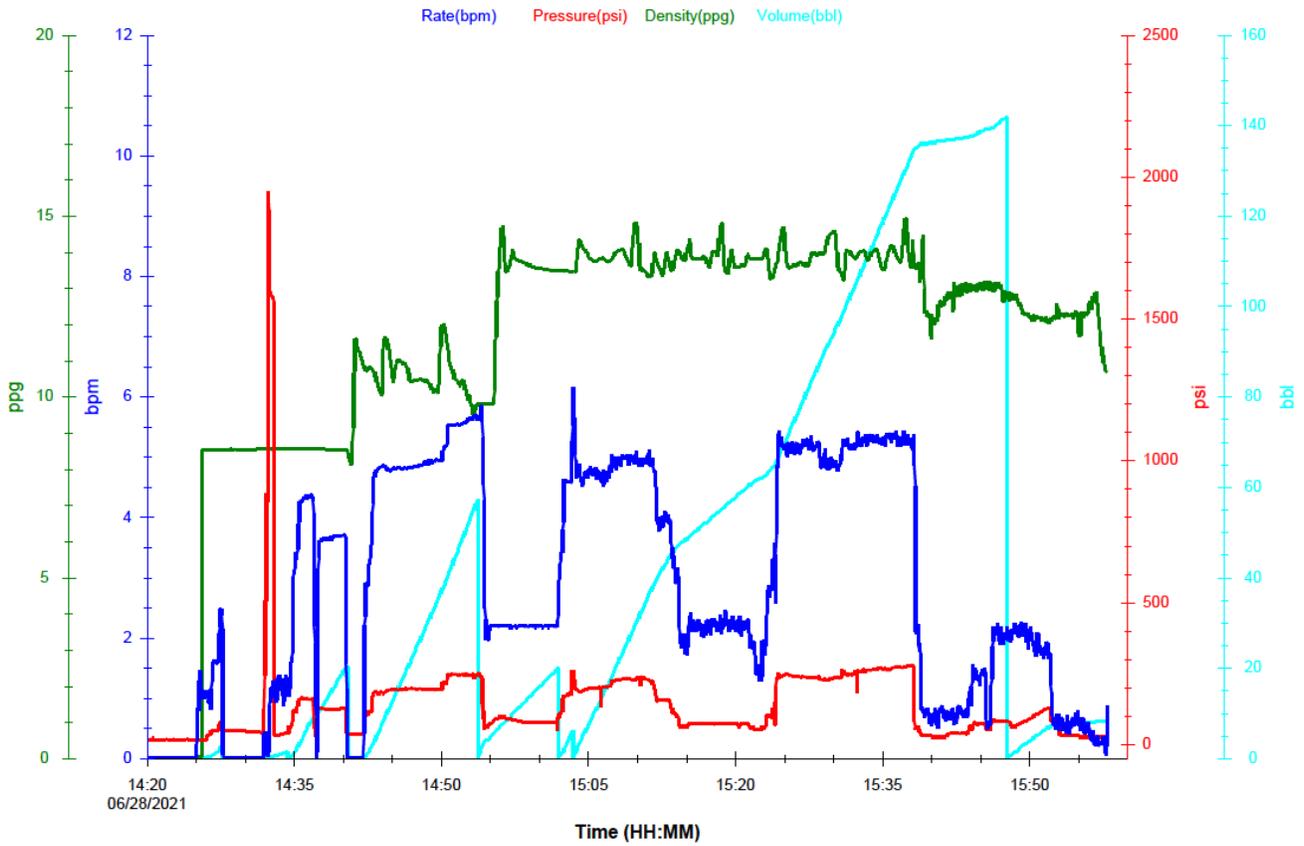
- 1) Hold pre-job safety meeting with everyone on location.
- 2) Fill lines **2 BBL** of Fresh Water
- 3) Pressure test surface lines to **1500 psi**
- 4) Pump **20BBLs** of **Fresh Water** Spacer @ **5 BPM**
- 5) Pump **50 BBLs** of **10.5 ppg Sepiolite** Spacer @ **5 BPM**
- 6) Pump **5 BBLs** of **Fresh Water** Spacer at **5 BPM**
- 7) Pump **13 BBLs** of **Sodium Silicate** at **3 BPM**
- 8) Pump **5 BBLs** of **Fresh Water** Spacer at **5 BPM**
- 9) Mix and Pump **146 BBLs** of **13.88 ppg RC ThermaLite-A with 2% CaCl Cement** @ **5 BPM**
- 10) Displace with **6.0 BBLs** total of **Fresh Water** at **3 BPM**
- 11) Bleed off pressure to Check Floats. Cement in Place.
- 12) Wash up Equipment.
- 13) Break out equipment and depart location safely.

<p><u>410 Sacks of RC ThermaLite-HT Cement</u> <u>146.04 BBLs (820 ft³) – Surface</u> <i>Surface Density: 13.88 lb/gal</i> <i>Surface Yield: 2.02 ft³/sk</i> <u>146.04 BBLs (820 ft³) - Downhole</u> <i>Downhole Density: 14.0 lb/gal</i> <i>Downhole Yield: 2.00 ft³/sk</i> <u>Water Requirement: 7.85 gal/sk</u></p>
--

Job Graph: 16" Surface casing cement job



2500 AIRPORT RD. RIO VISTA CA 94571



Customer: University of Utah	Well: Monitoring Well 78B 32	Job Type: Surface Casing Cementing
Customer Rep: Welch, Virgil	Supervisor: Valentine, James	Sales Order Number: 21-0055



University of Utah

201 S Presidents Circle RM 170
Salt Lake City, Utah 84112-9351

11.75" Intermediate Casing Cementing

Prepared for: Geothermal Resource Group
Job Date: Friday, July 02, 2021

RFP UU 143620677
Monitoring Well 78B-32
Beaver county, Utah

Version 1

Job # 21-0057

Sincerely,

Farzad Najafi
Resource Cementing
2500 Airport Rd,
Rio Vista, CA 94571
Phone: (707) 374-3350

Objective:

Surface casing cementing, bring cement to surface

Job Summary

Casing Size	11.75” 54 lb/ft, ID=10.880”
Casing Depth	0’ – 2989’
Previous Casing	16.00” 65 lb/ft, ID=15.250”
Casing Depth	0’ - 415’
Open Hole	14.75”, 415 ft. – 3009 ft.
Drill Pipe	5” 19.5 lb/ft, ID=4.276”
DP Depth	0’ – 2906’
Cement Volume	1105 sacks (2375.75 Ft3 – 423 bbl.) of 13.03 ppg Surface density
Mud Weight	9.0 lbs./gal
Well Status before Job	Full Circulation before Casing at TD and FULL Circulation before Cement Job
Customer Representative	Virgil Welch

11.75” Intermediate Casing Cementing

Job called out on Wednesday, June 30, 2021, at 9:00 AM. Crew arrived on location on location on Thursday, July 01, 2021, at 8:00 PM, all equipment was in staging area. Rig had issues with drilling bit and called TD at 3009’ and started to run casing down hole on Friday, July 02, 20021 at 3:00 AM. Cement equipment were spotted on location at 8:00 AM, all cement equipment was rigged up and job ready at 10:00 AM. Pre job Safety meeting was conducted with everyone on location at 1:15 PM on Friday, July 02, 2021. Following the safety meeting crew proceeded in finishing rigging up on rig floor. Pumps and lines were pressure tested to 3100 psi. The following fluids were pumped after conducting the pressure test:

- Pump **50 BBLS** of Fresh Water Spacer @ **5.0 BPM**
- Pump **20 BBLS** of 8.5 ppg. RC-Mud Clean Spacer @ **4 BPM**
- Pump **10 BBLS** of Fresh Water Spacer @ **4 BPM**
- Pump **315 BBLS** of 13.03 ppg RC Thermalite – HT-HSLD Cement @ **5.5 BPM**
- Pump **50 BBLS** of Fresh Water Displacement @ **5 BPM**

Full circulation was observed throughout the job, Cement was in place (CIP), at 4:00 PM. crew proceeded to wash up pump unit and lines while, waiting on cement (WOC). At 5:00 PM crew was informed that no top job is needed, thus crew proceeded in rigging down equipment, all equipment and crew was off location at 6:30 PM on Friday, July 02, 2021.

This job was completed as planned and without any incidents, should you have any questions regarding this job please free to contact me at any time.

Sincerely,

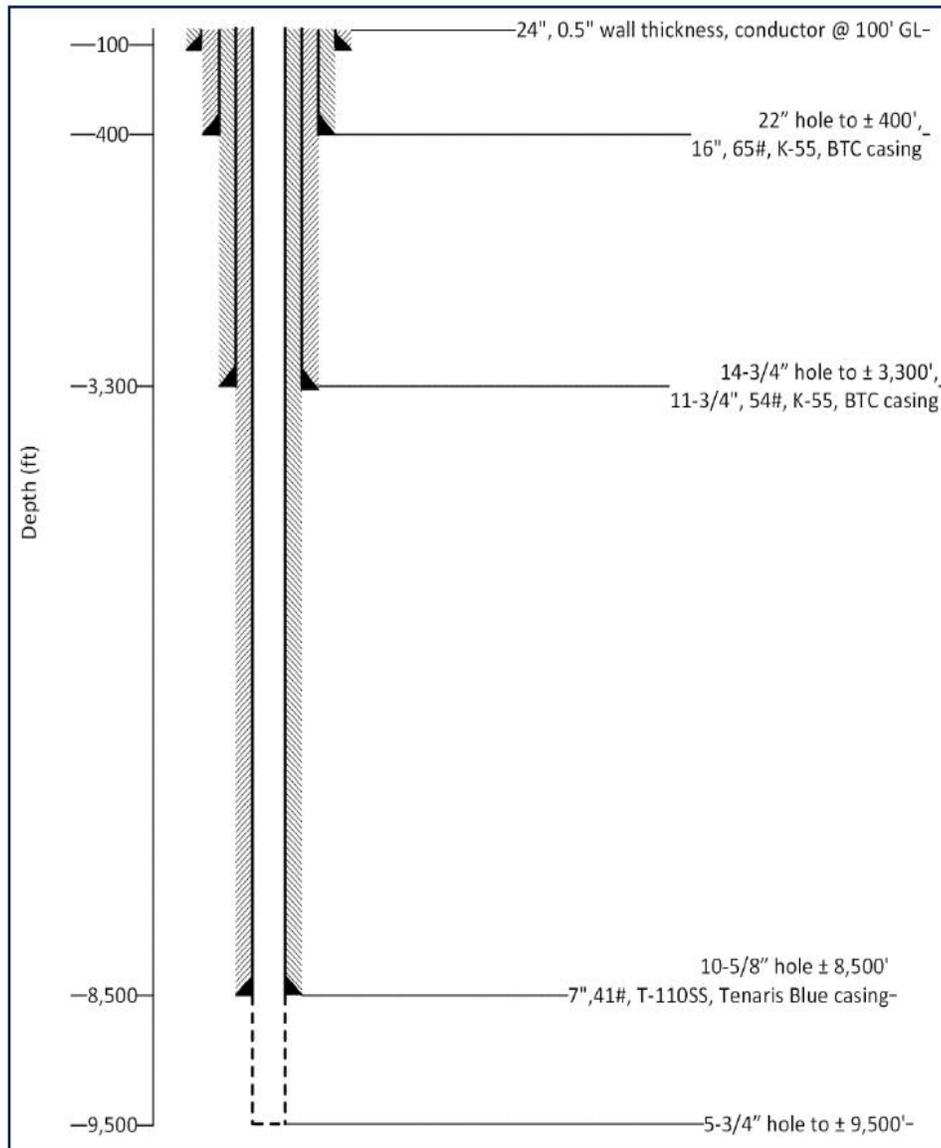
Farzad Najafi
Resource Cementing
2500 Airport Rd.
Rio Vista, CA 94571
Phone: (707) 374-3350

Note: Resource Cementing maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Resource Cementing again thanks you for the opportunity to perform services work on this well. We hope to be your preferred solutions provider for future projects.



Well Schematic

Well 78B-32



University of Utah
Monitoring Well 78B-32
11 3/4" Intermediate Casing
Friday, September 17, 2021
Surface Casing: 16" 65 lb./ft. @ 0' - 415'
Open Hole: 14 3/4" @ 415' - 3009'
Surface Casing: 11 3/4" 54 lb./ft @ 0' - 2989'
Drill Pipe 5" 19.5 lb./ft @ 0' - 2906'
Shoe Volume 9.5 bbl. - 83 ft.

- 1) Hold pre-job safety meeting with everyone on location.
- 2) Fill lines with **2 BBL** Fresh Water, Pressure Test Lines **3000 PSI**
- 3) Pump **52 BBL** of Fresh Water Ahead @ **6-8 BPM**
- 4) Pump **20 BBL** of RC Mud Clean @ **4-6 BPM**
- 5) Pump **10 BBL** of Fresh Water Spacer @ **4-6 BPM**
- 6) Mix and pump **438 BBL** of **13** ppg RC ThermaLite-HT-HSLD @ **5-8 BPM**
(2464.2 ft³, - 1105 Sacks)
- 7) Pump **3 BBL** Water Spacer @ **6-8 BPM**
- 8) Pump **47 BBL** of Drilling Mud Displacement @ **6-8 BPM**
- 9) Shut Down, Bleed Off, Check Floats

1105 Sacks of 13 ppg RC ThermaLite HT-HSLD

Density: 13 lb./gal

Yield: 2.23 ft³/sk

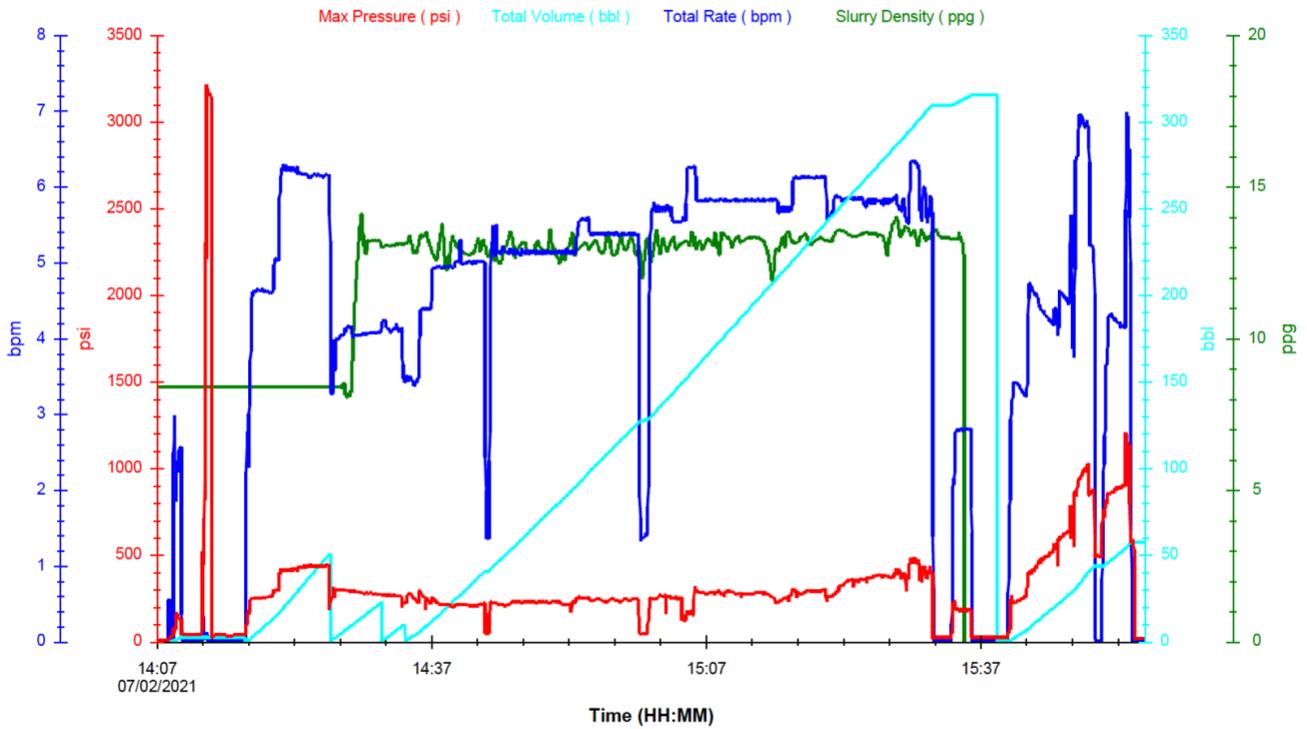
Water Requirement: 7.75 gal/sk

Job Graph: 11.75" Intermediate casing cement job



2500 AIRPORT RD. RIO VISTA CA 94571

University of Utah
Monitoring Well 78B-32
11 3/4" Intermediate Casing



Customer: University of Utah	Well: Monitoring Well 78B-32	Job Type: Intermediate
Customer Rep: Welch, Virgil	Supervisor: Stafford, Jeff	Sales Order Number: 21-0057



University of Utah

201 S Presidents Circle RM 170
Salt Lake City, Utah 84112-9351

7" Production Casing Cementing

Prepared for: Geothermal Resource Group
Job Date: Friday, July 02, 2021

RFP UU 143620677
Monitoring Well 78B-32
Beaver county, Utah

Version 1

Job # 21-0060

Sincerely,

Farzad Najafi
Resource Cementing
2500 Airport Rd,
Rio Vista, CA 94571
Phone: (707) 374-3350

Objective:

Surface casing cementing, bring cement to surface

Job Summary

Casing Size	7" 41 lb/ft, ID=5.820"
Casing Depth	0' – 8508'
Previous Casing	11.75" 54 lb/ft, ID=10.880"
Casing Depth	0' - 2989'
Open Hole	14.75", 415 ft. – 3009 ft.
Cement Volume	2000 sacks (4540 Ft3 – 809 bbl.) at 12.97 ppg,
Mud Weight	9.0 lbs./gal
Well Status before Job	Full Circulation before Casing at TD and FULL Circulation before Cement Job for 4 hour
Customer Representative	Virgil Welch

11.75" Intermediate Casing Cementing

Job called out on Tuesday, July 20, 2021, at 2:00 PM. Crew arrived on location on Thursday, July 22, 2021, at 7:00 AM, all equipment was in staging area. At the time rig was running casing down hole and were expecting to do the cement job some time that night. At 8:00 PM rig was pulling casing out of hole as they had lost communication with the fiber optic lines, cement crew on standby.

Saturday, July 24, crew was called out, crew on location at 8:00 PM, crew proceeded to spot equipment and rig up. All equipment were rigged up and job ready at 11:00 PM. Rig started to circulate well at 10:30 PM for 4 hours.

Pre job Safety meeting was conducted with everyone on location on Sunday, July 25, 2021, at 2:00 AM. Following the safety meeting crew proceeded in finishing rigging up on rig floor. All surface lines were pressure tested to 5500 psi. The following fluid were pumped for the job using 2 pump units

- Pump **100 BBLS** of Fresh Water Spacer @ **5.1 BPM; (Pump Truck #2)**
- Pump **20 BBLS** of 8.5 ppg. RC-Mud Clean Spacer @ **5.1 BPM; (Pump Truck #2)**
- Pump **10 BBLS** of Fresh Water Spacer @ **5.1 BPM; (Pump Truck #2)**
- Pump **809 BBLS** of 12.97 ppg RC Thermalite – HT Cement @ **6 – 8 BPM; (Pump Truck #1)**

The initial fluid was pumped with truck #2, all cement for the this job was mixed and pumped using truck #1 as stated above, the cement was pumped at 6 – 8 BPM, cement crew did encounter some issues in shipping dry cement from field storage bins to the truck thus the pump rate had to be reduced to allow crew to correct the issue and proceed with the job, the average pump rate for this job was 6 BPM. After

pumping all 809 BBL of cement, crew shut down, top plug was released at 5:34 AM. The following fluid was pumped to displace cement at respected pump rate.

- Pump **100 BBLS** of Fresh Water Displacement @ **5.1 BPM; (Pump Truck #2)**
- Pump **176 BBLS** of Fresh Water Displacement @ **5.7 BPM; (Pump Truck #1)**

Well, had full circulation throughout the job and cement was returned to surface after pumping 150 BBL of freshwater displacement, thus total of 126 BBL of cement was returned to surface. after pumping all 276 BBL of displacement plug landed with 3400 psi at 6:16 AM on July 25, 2021. After holding pressure for few minutes CIP was called at 6:22 AM.

Crew washed up truck #1 and conducted a 4BBL of cement top job at 1:00 PM on Sunday July 25, 2021. Crew monitored casing pressure with pump truck #2, until Monday, July 26, 2021 at 3:00 AM.

This job was completed as planned and without any incidents, should you have any questions regarding this job please free to contact me at any time.

Sincerely,

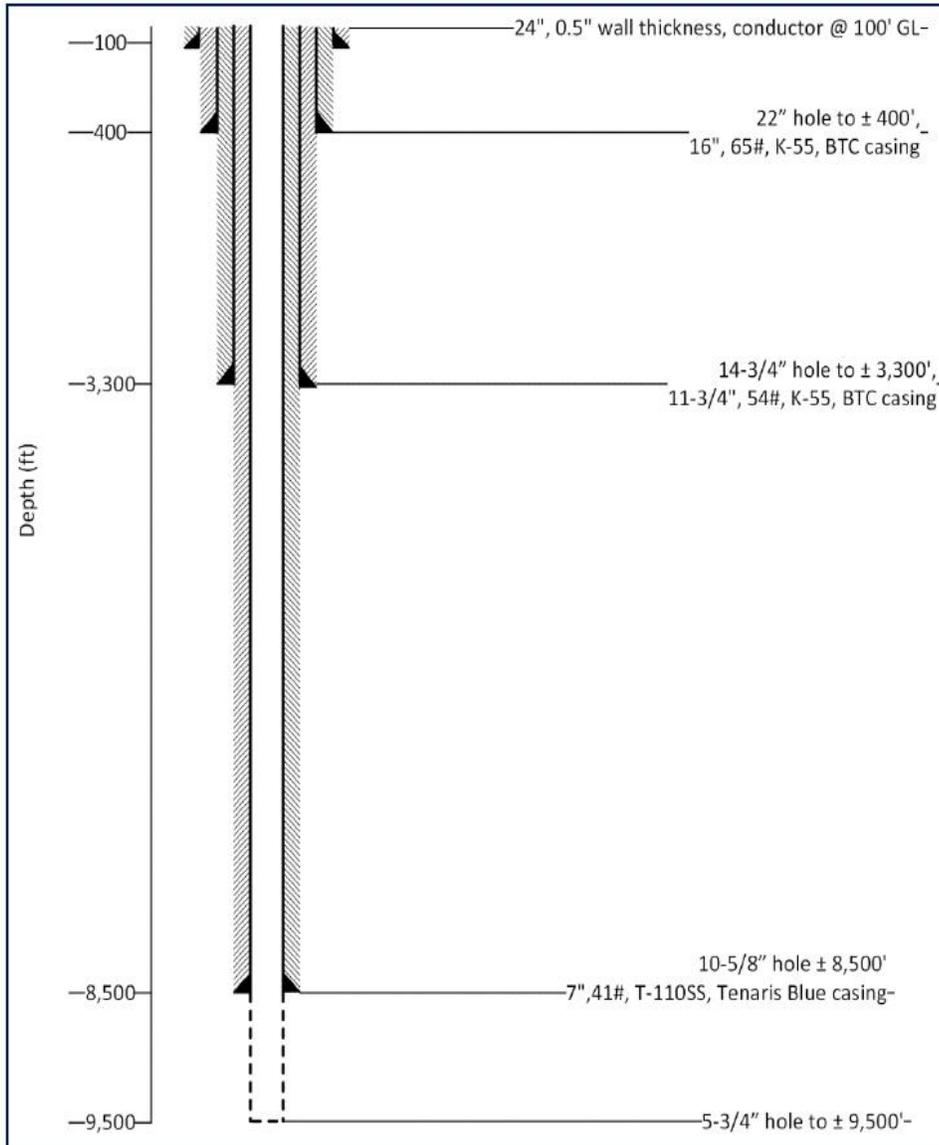
Farzad Najafi
Resource Cementing
2500 Airport Rd.
Rio Vista, CA 94571
Phone: (707) 374-3350

Note: Resource Cementing maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Resource Cementing again thanks you for the opportunity to perform services work on this well. We hope to be your preferred solutions provider for future projects.



Well Schematic

Well 78B-32



Final Job Procedure

University of Utah

FORGE Well 78B-32: 7" Production Casing

Friday, September 17, 2021

Previous Casing: 11-3/4" 54 lb/ft.; 0 - 2989' MD; ID=10.880"

Open Hole: 2989' - 8540'; ID=10-5/8"

Production Casing: 7" 41 lb/ft.; 0' - 8508' MD; ID=5.820"

Shoe Volume 3.11 bbls - 94.61 ft.; MW 9.0 lb/gal

Estimated Job Time: 3 hrs:00 Mins

- 1) Hold pre-job safety meeting with everyone on location.
- 2) Fill lines with 3 BBL of Fresh Water
- 3) Pressure test surface lines to **5,500 psi**
- 4) **Truck #2:** Pump **100 BBLs** of **Fresh Water** Spacer @ **5 BPM**
- 5) **Truck #2:** Pump **20 BBLs** of **RC Mud Clean** Spacer @ **5 BPM**
- 6) **Truck #2:** Pump **10 BBLs** of **Fresh Water** Spacer @ **5 BPM**
- 7) Truck #1: Mix and Pump **809 BBLs** of **12.97 ppg RC ThermoLite-HT Cement** @ **8 BPM**
(Note: last 80 BBL of cement has 1.3% retarder)
- 8) **Drop Top Plug** on a fly while pumping last few BBL of cement
- 9) Displace
 - **Truck #1:** Displace with **176.8 BBLs** of **Fresh Water** @ **5 BPM**
 - **Truck #1:** **slow your rate to 3 BPM last 30 BBL**
 - **Truck #1:** **Slow your rate to 2 BOM last 10 BBL**
 - **Truck #2:** Displace with **100 BBLs** of **Fresh Water** @ **5 BPM**
- 10) **Bump Plug** with 500 psi over pumping pressure.
- 11) **Hold Pressure for 5 minutes**
- 12) Bleed off pressure to Check Floats. Cement in Place.
- 13) Wash up Equipment.
- 14) Break out equipment and depart location safely.

2000 Sacks of RC ThermoLite-HT Cement

808.57 BBLs (4540 ft³) - Surface

Surface Density: 12.97 lb/gal

Surface Yield: 2.27 ft³/sk

762.3 BBLs (4280 ft³) - Downhole

Downhole Density: 13.77 lb/gal

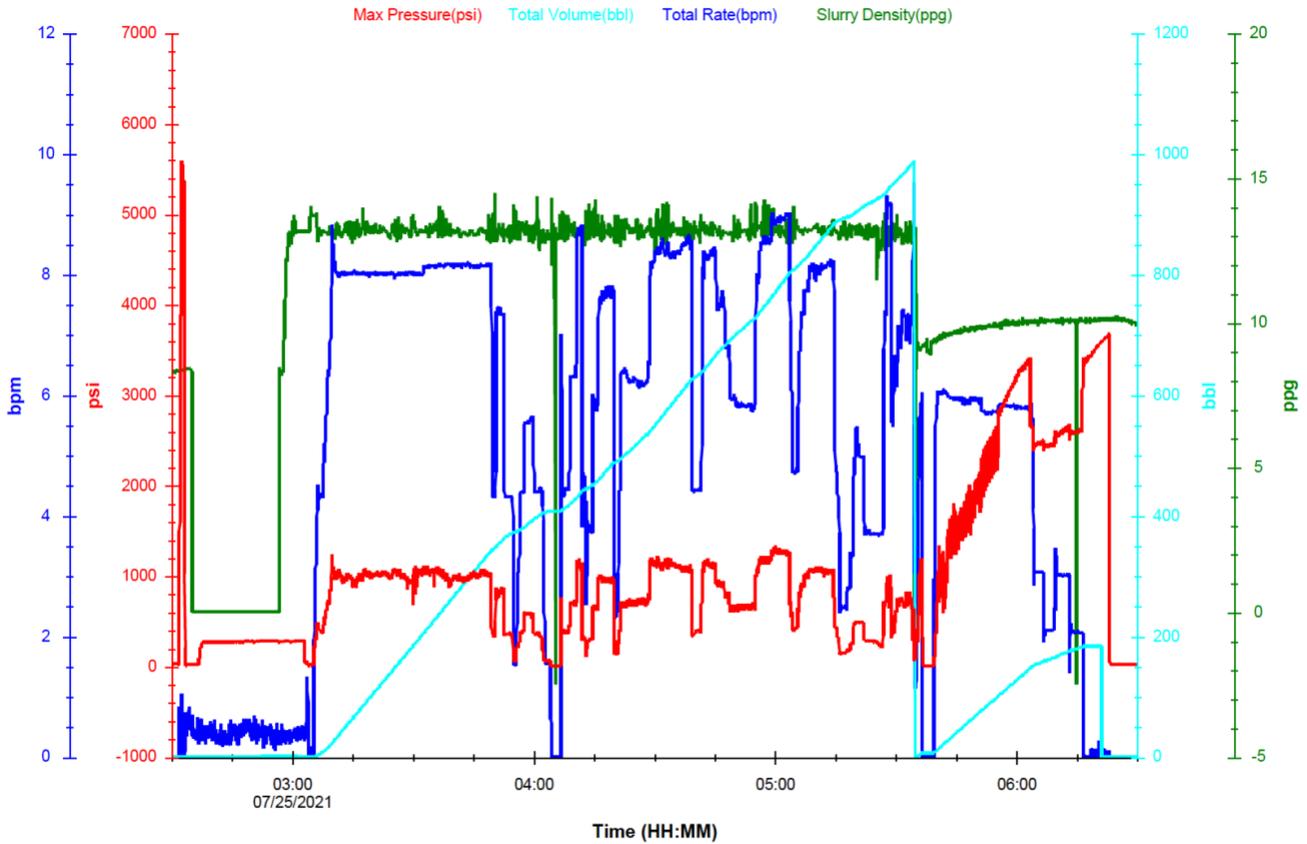
Downhole Yield: 2.14 ft³/sk

Water Requirement: 8.01 gal/sk

Job Graph: 7" production casing cement job



2500 AIRPORT RD. RIO VISTA CA 94571

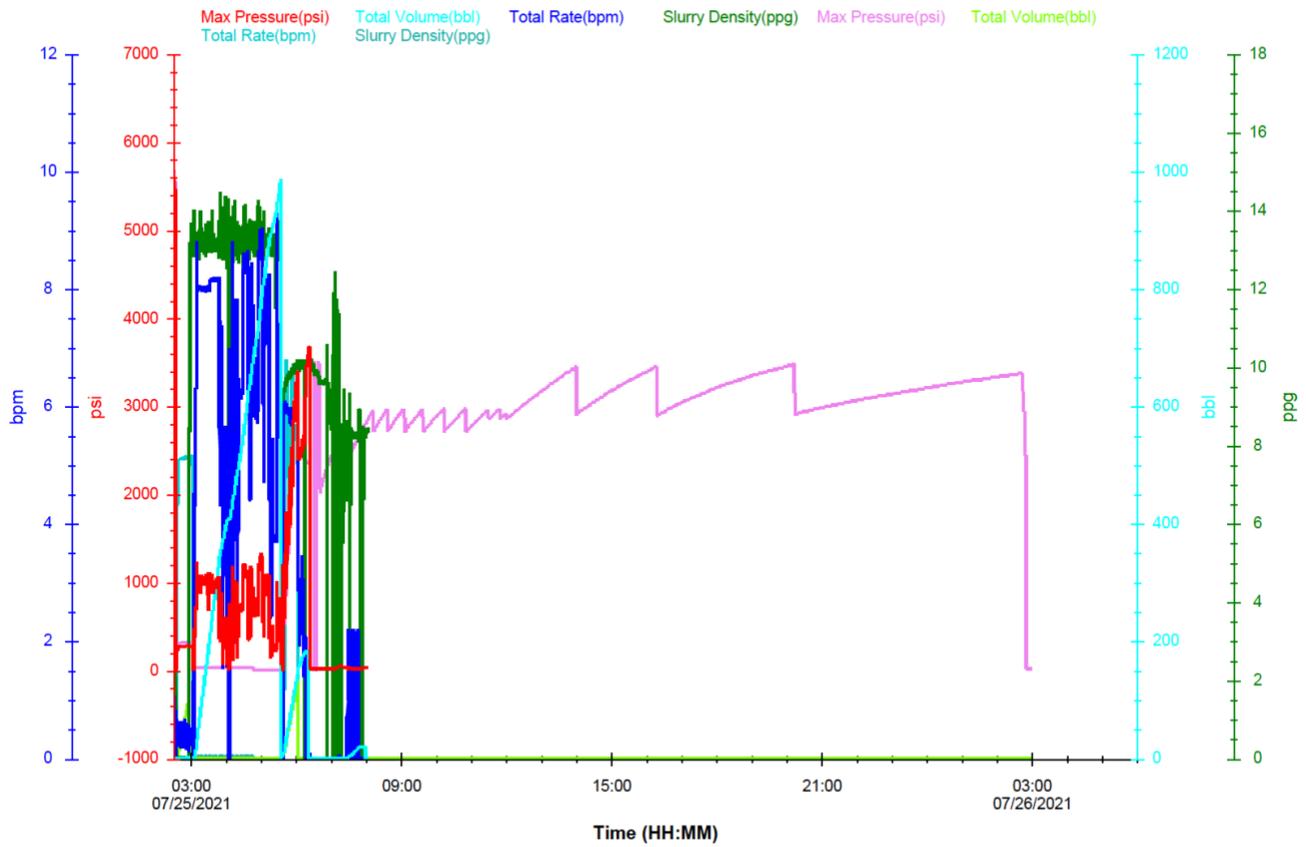


Customer: University of Utah	Well: Monitoring Well 78B-32	Job Type: 7" Production Casing Cementing
Customer Rep: Welch, Virgil	Supervisor: Stafford, Jeff	Sales Order Number: 21-0060

Job Graph: 7" production casing cement job



2500 AIRPORT RD. RIO VISTA CA 94571



Customer: University of Utah	Well: Monitoring Well 78B-32	Job Type: 7" Production Casing Cementing
Customer Rep: Welch, Virgil	Supervisor: Stafford, Jeff	Sales Order Number: 21-0060



Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
	Ver. Final	Page 171 of 288
	To accompany report issued 1 December 2021	

9.6. BHA Graphical reports-RIMBase





BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	1	BHA Length (ft):	314.30	Date In:	27-Jun-21 11:30	Depth In (ft):	128
				Date Out:	28-Jun-21 06:30	Depth Out (ft):	421



HWDP, Length: 235 ft
5.000 ins, 3.000 ins
Top Thread 4.5IF
S/No: RIGS
314 ft from top to Bit



XO, Length: 4 ft
8.000 ins, 2.750 ins
Top Thread 4.5IF
S/No: DR44284



OTHER, Length: 3 ft
8.063 ins, 2.750 ins
Top Thread 6.625REG
S/No: DR44846



FLOAT, Length: 2 ft
8.000 ins, 2.750 ins
Top Thread 6.625REG
S/No: DR28684



MONEL, Length: 28 ft
8.375 ins, 3.500 ins
Top Thread 6.625REG
S/No: DR34100
70 ft from top to Bit



XO, Length: 3 ft
8.063 ins, 3.500 ins
Top Thread 6.625REG
S/No: DR26834



MWD, Length: 30 ft
8.125 ins, 4.250 ins
Top Thread 5.5IF
XBOLT MP MWD (D&I ONLY)
S/No: D80H158D
39 ft from top to Bit



XO, Length: 2 ft
8.125 ins, 3.125 ins
Top Thread 5.5IF
S/No: DR31132



BS, Length: 4 ft
9.625 ins, 3.000 ins
Top Thread 6.625REG
S/No: DR42979



BIT, Length: 2 ft
22.000 ins
Top Thread 7.625REG
S/No: RH7510
2 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	2	BHA Length (ft):	433.74	Date In:	29-Jun-21 17:00	Depth In (ft):	370
				Date Out:	29-Jun-21 23:45	Depth Out (ft):	433



HWDP, 5 joints, Length: 154 ft
5.000 ins, 3.000 ins
Top Thread 4.5IF
S/No: RIGS
434 ft from top to Bit



XO, Length: 4 ft
8.000 ins, 2.750 ins
Top Thread 4.5IF
S/No: DR44284
280 ft from top to Bit



DC, 9 joints, Length: 270 ft
8.000 ins, 2.750 ins
Top Thread 6.625REG
S/No: RIGS
276 ft from top to Bit



BS, Length: 4 ft
9.625 ins, 3.000 ins
Top Thread 7.625REG
S/No: DR42979
6 ft from top to Bit



BIT, Length: 1 ft
Top Thread 7.625REG
S/No: FO1JY
1 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	3	BHA Length (ft):	956.61	Date In:	30-Jun-21 00:00	Depth In (ft):	433
				Date Out:	01-Jul-21 02:00	Depth Out (ft):	2,699



HWDP, Length: 381 ft
 5.000 ins, 3.000 ins
 Top Thread 4.5IF
 S/No: RIGS
 957 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 4.5IF
 S/No: DR44284
 576 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIG
 572 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 CUBIC SENSOR
 S/No: 800CSS007



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



FLOAT, Length: 8 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: DR28684
 115 ft from top to Bit



RR, Length: 8 ft
 8.125 ins, 3.000 ins
 Top Thread 6.625REG
 RED BACK ROLLER REAMER
 S/No: GU4505



MMTR, Length: 34 ft
 9.625 ins, 7.852 ins
 Top Thread 6.625REG
 S/No: RVDF96005
 99 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 CUBIC SENSOR
 S/No: 800CSS008



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR44846



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 50 ft from top to Bit



STAB, Length: 7 ft
 8.000 ins, 3.000 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: DR11424



OTHER, Length: 14 ft
 9.000 ins, 5.125 ins
 Top Thread 6.625REG
 RSS PD 900 POWER V
 S/No: 68994



BIT, Length: 2 ft
 14.750 ins
 Top Thread 7.625REG
 S/No: A279635
 2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	4	BHA Length (ft):	956.61	Date In:	01-Jul-21 02:00	Depth In (ft):	2,699
				Date Out:	01-Jul-21 23:45	Depth Out (ft):	3,009



HWDP, Length: 381 ft
 5.000 ins, 3.000 ins
 Top Thread 4.5IF
 S/No: RIGS
 957 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 4.5IF
 S/No: DR44284
 576 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIG
 572 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 CUBIC SENSOR
 S/No: 800CSS007



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



FLOAT, Length: 8 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: DR28684
 115 ft from top to Bit



RR, Length: 8 ft
 8.125 ins, 3.000 ins
 Top Thread 6.625REG
 RED BACK ROLLER REAMER
 S/No: GU4505



MMTR, Length: 34 ft
 9.625 ins, 7.852 ins
 Top Thread 6.625REG
 S/No: RVDF96005
 99 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 CUBIC SENSOR
 S/No: 800CSS008



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR44846



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 50 ft from top to Bit



STAB, Length: 7 ft
 8.000 ins, 3.000 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: DR11424



OTHER, Length: 14 ft
 9.000 ins, 5.125 ins
 Top Thread 6.625REG
 RSS PD 900 POWER V
 S/No: 68994



BIT, Length: 2 ft
 14.750 ins
 Top Thread 7.625REG
 S/No: A279636
 2 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	5	BHA Length (ft):	739.12	Date In:	03-Jul-21 23:00	Depth In (ft):	3,009
				Date Out:	04-Jul-21 09:30	Depth Out (ft):	3,009



HWDP, 15 joints, Length: 456 ft
5.000 ins, 3.000 ins
Top Thread 5.5IF
S/No: RIGS
739 ft from top to Bit



XO, Length: 4 ft
8.000 ins, 2.750 ins
Top Thread 5.5IF
S/No: DR44284
283 ft from top to Bit



DC, 9 joints, Length: 275 ft
8.000 ins, 2.750 ins
Top Thread 6.625REG
S/No: RIG
279 ft from top to Bit



JUNK, Length: 3 ft
8.375 ins, 3.000 ins
Top Thread 6.625REG
S/No: 3595
4 ft from top to Bit



BIT, Length: 1 ft
10.625 ins
Top Thread 6.625REG
S/No: A279636
1 ft from top to Bit





BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	6	BHA Length (ft):	966.88	Date In:	04-Jul-21 09:30	Depth In (ft):	3,009
				Date Out:	05-Jul-21 13:30	Depth Out (ft):	3,651



HWDP, Length: 381 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 967 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 586 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIG
 582 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 CUBIC SENSOR
 S/No: 800CSS007



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



FLOAT, Length: 8 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: DR28684
 125 ft from top to Bit



RR, Length: 8 ft
 8.125 ins, 3.000 ins
 Top Thread 6.625REG
 RED BACK ROLLER REAMER
 S/No: GU4505



MMTR, Length: 43 ft
 9.625 ins, 7.852 ins
 Top Thread 6.625REG
 S/No: RVEN86118
 109 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 CUBIC SENSOR
 S/No: 800CSS008



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR44846



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 51 ft from top to Bit



STAB, Length: 7 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: SD604680



OTHER, Length: 14 ft
 9.000 ins, 5.125 ins
 Top Thread 6.625REG
 RSS PD 900 POWER V
 S/No: 68994



BIT, Length: 2 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279637
 2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	7	BHA Length (ft):	960.36	Date In:	05-Jul-21 21:00	Depth In (ft):	3,651
				Date Out:	07-Jul-21 17:00	Depth Out (ft):	5,761



HWDP, Length: 381 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 960 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 580 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIGS
 576 ft from top to Bit



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 FLOAT SUB
 S/No: DR28684



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR28684



MONEL, Length: 29 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 S/No: DR24762
 115 ft from top to Bit



STAB, Length: 9 ft
 8.250 ins, 2.750 ins
 Top Thread 6.625REG
 10 3/8" NM STAB
 S/No: DR43576



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 68 ft from top to Bit



STAB, Length: 7 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: SD604680



MMTR, Length: 31 ft
 8.250 ins, 6.250 ins
 Top Thread 6.625REG
 S/No: RVENN86052
 32 ft from top to Bit



BIT, Length: 2 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279639
 2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	8	BHA Length (ft):	962.49	Date In:	07-Jul-21 21:00	Depth In (ft):	5,761
				Date Out:	08-Jul-21 00:00	Depth Out (ft):	5,761



HWDP, Length: 381 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 962 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 582 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIGS
 578 ft from top to Bit



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 FLOAT SUB
 S/No: DR28684



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR28684



MONEL, Length: 29 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 S/No: DR24762
 117 ft from top to Bit



STAB, Length: 9 ft
 8.250 ins, 2.750 ins
 Top Thread 6.625REG
 10 3/8" NM STAB
 S/No: DR43576



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 70 ft from top to Bit



STAB, Length: 7 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: SD604680



MMTR, Length: 33 ft
 8.250 ins, 6.250 ins
 Top Thread 6.625REG
 S/No: 800-36-7618
 35 ft from top to Bit



BIT, Length: 2 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279690
 2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	9	BHA Length (ft):	962.49	Date In:	08-Jul-21 06:00	Depth In (ft):	5,761
				Date Out:	10-Jul-21 23:00	Depth Out (ft):	5,821



HWDP, Length: 381 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 962 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 582 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIGS
 578 ft from top to Bit



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 FLOAT SUB
 S/No: DR28684



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR28684



MONEL, Length: 29 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 S/No: DR24762
 117 ft from top to Bit



STAB, Length: 9 ft
 8.250 ins, 2.750 ins
 Top Thread 6.625REG
 10 3/8" NM STAB
 S/No: DR43576



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 70 ft from top to Bit



STAB, Length: 7 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: SD604680



MMTR, Length: 33 ft
 8.250 ins, 6.250 ins
 Top Thread 6.625REG
 S/No: 800-36-7618
 35 ft from top to Bit



BIT, Length: 2 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279690
 2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	10	BHA Length (ft):	963.16	Date In:	11-Jul-21 01:00	Depth In (ft):	5,821
				Date Out:	11-Jul-21 11:30	Depth Out (ft):	6,700



HWDP, Length: 381 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 963 ft from top to Bit



XO, Length: 4 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 582 ft from top to Bit



DC, Length: 450 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIGS
 578 ft from top to Bit



OTHER, Length: 5 ft
 8.250 ins, 3.250 ins
 Top Thread 6.625REG
 DIFFUSER SUB
 S/No: DHRTDS399



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 FLOAT SUB
 S/No: DR28684



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 S/No: DR28684



MONEL, Length: 29 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 S/No: DR24762
 118 ft from top to Bit



STAB, Length: 9 ft
 8.250 ins, 2.750 ins
 Top Thread 6.625REG
 10 3/8" NM STAB
 S/No: DR43576



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 80001-3



OTHER, Length: 4 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 GAP SUB
 S/No: GSDRSN20



MWD, Length: 28 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: DR34100
 71 ft from top to Bit



STAB, Length: 8 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 NON MAG STAB
 S/No: DR43516



MMTR, Length: 33 ft
 8.250 ins, 6.250 ins
 Top Thread 6.625REG
 S/No: 800-36-7618
 35 ft from top to Bit



BIT, Length: 2 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279692
 2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	11	BHA Length (ft):	612.69	Date In:	12-Jul-21 00:30	Depth In (ft):	6,700
				Date Out:	12-Jul-21 20:00	Depth Out (ft):	6,728



HWDP, 15 joints, Length: 465 ft
 5.500 ins, 2.750 ins
 Top Thread 5.5IF
 613 ft from top to Bit

XO, Length: 3 ft
 8.000 ins, 3.000 ins
 Top Thread 5.5IF
 148 ft from top to Bit

DC, 3 joints, Length: 93 ft
 8.000 ins, 3.000 ins
 Top Thread 6.625REG
 144 ft from top to Bit

RR, Length: 7 ft
 10.625 ins, 3.000 ins
 Top Thread 6.625REG
 10-5/8" Roller Reamer
 51 ft from top to Bit

XO, Length: 3 ft
 6.750 ins, 3.000 ins
 Top Thread OTHER
 45 ft from top to Bit

FLOAT, Length: 3 ft
 6.750 ins, 3.000 ins
 Top Thread OTHER
 42 ft from top to Bit



OTHER, Length: 2 ft
 6.750 ins, 5.375 ins
 Top Thread OTHER
 Upper sub
 38 ft from top to Bit

OTHER, Length: 2 ft
 7.250 ins, 5.875 ins
 Top Thread OTHER
 Lower sub
 37 ft from top to Bit

STAB, Length: 4 ft
 8.468 ins, 5.875 ins
 Top Thread OTHER
 35 ft from top to Bit

CORE, Length: 26 ft
 7.250 ins, 5.875 ins
 Top Thread OTHER
 31 ft from top to Bit

STAB, Length: 4 ft
 8.468 ins, 4.000 ins
 Top Thread OTHER
 5 ft from top to Bit

CORBIT, Length: 1 ft
 8.750 ins
 Top Thread OTHER
 8-3/4"X4"
 1 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	12	BHA Length (ft):	509.79	Date In:	12-Jul-21 23:00	Depth In (ft):	6,723
				Date Out:	13-Jul-21 08:00	Depth Out (ft):	6,740



HWDP, 15 joints, Length: 465 ft
5.500 ins, 2.750 ins
Top Thread 5.5IF
510 ft from top to Bit



XO, Length: 3 ft
8.000 ins, 3.000 ins
Top Thread 5.5IF
45 ft from top to Bit



FLOAT, Length: 3 ft
6.750 ins, 3.000 ins
Top Thread OTHER
42 ft from top to Bit



OTHER, Length: 2 ft
6.750 ins, 5.375 ins
Top Thread OTHER
Upper sub
38 ft from top to Bit



OTHER, Length: 2 ft
7.250 ins, 5.875 ins
Top Thread OTHER
Lower sub
37 ft from top to Bit



STAB, Length: 4 ft
8.468 ins, 5.875 ins
Top Thread OTHER
35 ft from top to Bit



CORE, Length: 26 ft
7.250 ins, 5.875 ins
Top Thread OTHER
31 ft from top to Bit



STAB, Length: 4 ft
8.468 ins, 4.000 ins
Top Thread OTHER
5 ft from top to Bit



CORBIT, Length: 1 ft
8.750 ins
Top Thread OTHER
8-3/4"X4"
S/No: 12958459



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	13	BHA Length (ft):	845.73	Date In:	13-Jul-21 09:00	Depth In (ft):	6,740
				Date Out:	13-Jul-21 21:00	Depth Out (ft):	6,742



HWDP, Length: 381 ft
5.500 ins, 4.776 ins
Top Thread 5.0XH
S/No: RIGS
846 ft from top to Bit



XO, Length: 4 ft
8.000 ins, 2.750 ins
Top Thread 5.0XH
S/No: DR44284
465 ft from top to Bit



DC, Length: 421 ft
8.000 ins, 2.750 ins
Top Thread 6.625REG
S/No: RIGS
461 ft from top to Bit



RR, Length: 7 ft
10.625 ins, 3.250 ins
Top Thread 6.625REG
40 ft from top to Bit



DC, Length: 31 ft
8.250 ins, 3.250 ins
Top Thread 6.625REG
S/No: RIGS
33 ft from top to Bit



BIT, Length: 2 ft
10.625 ins
Top Thread 7.625REG
S/No: 1116990
2 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	14	BHA Length (ft):	1,035.59	Date In:	14-Jul-21 01:00	Depth In (ft):	6,742
				Date Out:	15-Jul-21 17:00	Depth Out (ft):	7,613



HWDP, Length: 456 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 1,036 ft from top to Bit

XO, Length: 3 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 579 ft from top to Bit

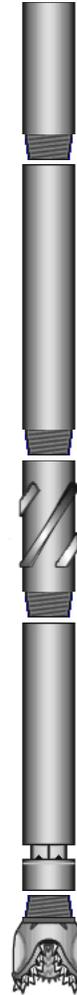
DC, Length: 456 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIGS
 577 ft from top to Bit

OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 121 ft from top to Bit

MONEL, Length: 29 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 S/No: 84-350
 118 ft from top to Bit

STAB, Length: 4 ft
 8.250 ins, 2.750 ins
 Top Thread 6.625REG
 10 1/2" NM STAB
 S/No: 770132
 89 ft from top to Bit

OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 74-124
 84 ft from top to Bit



OTHER, Length: 9 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 PONY COLLAR
 S/No: 126-120
 78 ft from top to Bit

MONEL, Length: 30 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: 84-121
 69 ft from top to Bit

STAB, Length: 5 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 10-1/4"NON MAG STAB
 S/No: 770162
 39 ft from top to Bit

MMTR, Length: 33 ft
 8.250 ins, 6.250 ins
 Top Thread 6.625REG
 S/No: BPG2800-047
 34 ft from top to Bit

BIT, Length: 1 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279638
 1 ft from top to Bit



BHA Graphical Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	15	BHA Length (ft):	1,049.30	Date In:	15-Jul-21 23:00	Depth In (ft):	7,613
				Date Out:	16-Jul-21 23:00	Depth Out (ft):	8,500



HWDP, Length: 456 ft
 5.500 ins, 4.776 ins
 Top Thread 5.0XH
 S/No: RIGS
 1,049 ft from top to Bit



XO, Length: 3 ft
 8.000 ins, 2.750 ins
 Top Thread 5.0XH
 S/No: DR44284
 593 ft from top to Bit



DC, Length: 456 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 S/No: RIGS
 590 ft from top to Bit



OTHER, Length: 3 ft
 8.063 ins, 2.750 ins
 Top Thread 6.625REG
 FILTER SUB
 134 ft from top to Bit



OTHER, Length: 3 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 Cubic sensor
 S/No: CS-04



MONEL, Length: 29 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 S/No: 84-350
 129 ft from top to Bit



STAB, Length: 4 ft
 8.250 ins, 2.750 ins
 Top Thread 6.625REG
 10 1/2" NM STAB
 S/No: 770127



OTHER, Length: 9 ft
 8.000 ins, 3.500 ins
 Top Thread 6.625REG
 Pony Collar
 S/No: 126-058



OTHER, Length: 6 ft
 8.125 ins, 3.500 ins
 Top Thread 6.625REG
 PULSER SUB
 S/No: 74-124



MONEL, Length: 30 ft
 8.375 ins, 3.500 ins
 Top Thread 6.625REG
 S/No: 84-121
 80 ft from top to Bit



OTHER, Length: 2 ft
 8.000 ins, 2.750 ins
 Top Thread 6.625REG
 Cubic sensor
 S/No: CSS-006



OTHER, Length: 9 ft
 8.000 ins, 3.430 ins
 Top Thread 6.625REG
 Pony Collar
 S/No: 126-120



STAB, Length: 5 ft
 8.313 ins, 2.750 ins
 Top Thread 6.625REG
 10-5/8" roller reamer
 39 ft from top to Bit



MMTR, Length: 33 ft
 8.250 ins, 6.250 ins
 Top Thread 6.625REG
 S/No: BPG2800-0035
 34 ft from top to Bit



BIT, Length: 1 ft
 10.625 ins
 Top Thread 7.625REG
 S/No: A279691
 1 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	16	BHA Length (ft):	509.79	Date In:	17-Jul-21 08:00	Depth In (ft):	8,500
				Date Out:	18-Jul-21 01:00	Depth Out (ft):	8,530



HWDP, 15 joints, Length: 465 ft
5.500 ins, 2.750 ins
Top Thread 5.5IF
510 ft from top to Bit



XO, Length: 3 ft
8.000 ins, 3.000 ins
Top Thread 5.5IF
45 ft from top to Bit



FLOAT, Length: 3 ft
6.750 ins, 3.000 ins
Top Thread OTHER
42 ft from top to Bit



OTHER, Length: 2 ft
6.750 ins, 5.375 ins
Top Thread OTHER
Upper sub
38 ft from top to Bit



OTHER, Length: 2 ft
7.250 ins, 5.875 ins
Top Thread OTHER
Lower sub
37 ft from top to Bit



CORE, Length: 26 ft
7.250 ins, 5.875 ins
Top Thread OTHER
31 ft from top to Bit



STAB, Length: 4 ft
8.468 ins, 4.000 ins
Top Thread OTHER
5 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No: 17	BHA Length (ft): 509.79	Date In: 18-Jul-21 02:00	Depth In (ft): 8,530
		Date Out: 18-Jul-21 18:00	Depth Out (ft): 8,540



HWDP, 15 joints, Length: 465 ft
5.500 ins, 2.750 ins
Top Thread 5.5IF
510 ft from top to Bit



XO, Length: 3 ft
8.000 ins, 3.000 ins
Top Thread 5.5IF
45 ft from top to Bit



FLOAT, Length: 3 ft
6.750 ins, 3.000 ins
Top Thread OTHER
42 ft from top to Bit



OTHER, Length: 2 ft
6.750 ins, 5.375 ins
Top Thread OTHER
Upper sub
38 ft from top to Bit



OTHER, Length: 2 ft
7.250 ins, 5.875 ins
Top Thread OTHER
Lower sub
37 ft from top to Bit



STAB, Length: 4 ft
8.468 ins, 5.875 ins
Top Thread OTHER
35 ft from top to Bit



CORE, Length: 26 ft
7.250 ins, 5.875 ins
Top Thread OTHER
31 ft from top to Bit



STAB, Length: 4 ft
8.468 ins, 4.000 ins
Top Thread OTHER
5 ft from top to Bit



CORBIT, Length: 1 ft
8.750 ins
Top Thread OTHER
8-3/4"X4"
S/No: 13206404



BHA Graphical Report

Geothermal Resource Group

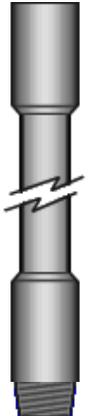
Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	18	BHA Length (ft):	469.42	Date In:	18-Jul-21 19:00	Depth In (ft):	8,500
				Date Out:	19-Jul-21 08:00	Depth Out (ft):	8,514



HWDP, 15 joints, Length: 465 ft
5.500 ins, 2.750 ins
Top Thread 5.5IF
469 ft from top to Bit



BS, Length: 3 ft
8.000 ins
Top Thread 5.5IF
Dressed with float
4 ft from top to Bit



BIT, Length: 1 ft
10.625 ins
Top Thread OTHER
S/No: A279691
1 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

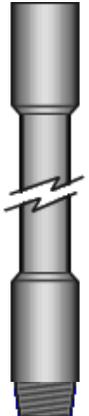
Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	19	BHA Length (ft):	469.42	Date In:	19-Jul-21 21:00	Depth In (ft):	8,514
				Date Out:	20-Jul-21 10:00	Depth Out (ft):	8,540



HWDP, 15 joints, Length: 465 ft
5.500 ins, 2.750 ins
Top Thread 5.5IF
469 ft from top to Bit



BS, Length: 3 ft
8.000 ins
Top Thread 5.5IF
Dressed with float
4 ft from top to Bit



BIT, Length: 1 ft
10.625 ins
Top Thread OTHER
TCI BIT RE-RUN
S/No: 1116990
1 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

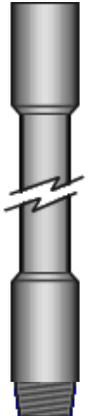
Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	20	BHA Length (ft):	469.42	Date In:	20-Jul-21 21:30	Depth In (ft):	8,540
				Date Out:	21-Jul-21 11:00	Depth Out (ft):	8,545



HWDP, 15 joints, Length: 465 ft
5.500 ins, 2.750 ins
Top Thread 5.5IF
469 ft from top to Bit



BS, Length: 3 ft
8.000 ins
Top Thread 5.5IF
Dressed with float
4 ft from top to Bit



BIT, Length: 1 ft
10.625 ins
Top Thread OTHER
TCI BIT RE-RUN
S/No: 1116990
1 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

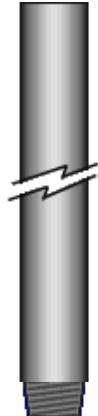
Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	21	BHA Length (ft):	921.57	Date In:	28-Jul-21 01:00	Depth In (ft):	8,545
				Date Out:	28-Jul-21 09:00	Depth Out (ft):	8,555



DC, 30 joints, Length: 918 ft
4.750 ins, 2.000 ins
Top Thread 3.5IF
922 ft from top to Bit



BS, Length: 3 ft
4.620 ins, 2.620 ins
Top Thread 3.5IF
4 ft from top to Bit



BIT, Length: 1 ft
5.750 ins
Top Thread 3.5REG
S/No: 5002331
1 ft from top to Bit



BHA Graphical Report

Geothermal Resource Group

Well ID: Forge 78B-32

Well Name: 78B-32

Field: UTAHFORGE

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

BHA No:	22	BHA Length (ft):	1,020.17	Date In:	28-Jul-21 18:00	Depth In (ft):	8,555
				Date Out:	29-Jul-21 07:00	Depth Out (ft):	10



DC, 30 joints, Length: 918 ft
4.740 ins, 2.250 ins
Top Thread 3.5IF
1,020 ft from top to Bit



MONEL, Length: 31 ft
4.750 ins, 2.650 ins
Top Thread 3.5IF
S/No: 121-698
102 ft from top to Bit



OTHER, Length: 6 ft
4.750 ins, 2.650 ins
Top Thread 3.5IF
PULSER SUB
S/No: 65-258



MONEL, Length: 31 ft
4.750 ins, 2.650 ins
Top Thread 3.5IF
S/No: 121-151
65 ft from top to Bit



MONEL, Length: 10 ft
4.750 ins, 2.360 ins
Top Thread 3.5IF
PONY COLLAR
S/No: 17-261



MMTR, Length: 24 ft
5.000 ins, 2.620 ins
Top Thread 3.5IF
S/No: BPG2475-0192
25 ft from top to Bit



BIT, Length: 1 ft
5.750 ins
Top Thread 3.5REG
S/No: A279641
1 ft from top to Bit



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9.7. Bit Grading Reports-RIMBase





Bit Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Run No	No	Diam	Manuf.	Model	Serial No	Nozzles - 1/32 in	TFA	Date/Time In	Depth - ft In	Out	Hole Made	Hrs	ROP	WOB	RPM	Flow	MWt	In	Out	Major	Loc	Grading Brg	Gge	Oth	Pull																										
Well ID: Forge 78B-32																										Well Name: 78B-32																									
1	1	22.000	Smith	XR-C	RH7510	28 28 28	1.804	27-Jun-21 01:30	128	421	293	3.5	83.7	15	90	800	8.90	1	1	NO	A	0	0	NO	TD																										
Bit Comments: 22" Mill tooth used to drill surface section																																																			
2	1	14.750	BAKER	GT-C1	FO1YJ	18 18 18	0.746	29-Jun-21 17:00	360	433	73	1.5	62.0	10	50	450	8.60	1	1	NO	A	0		NO	BHA																										
Bit Comments: Bit was used to drill out shoe track.																																																			
Bit Run Comments: Minimal to no wear on the bit																																																			
3	1	14.750	NOV	TKC66	A279635	15 15 15 15 16 16	1.083	30-Jun-21 00:00	433	2699	2266	17.0	133.3				9.00	3	1	LT	N	X		CT	PR																										
Bit Comments: 14 3/4" NOV first bit in 14 3/4" section																																																			
Bit Run Comments: Bit was pulled due to low ROP. heavy wear in nose of bit.																																																			
4	1	14.750	NOV	TKC63	A279636	15 15 15 15 16 16	1.083	01-Jul-21 02:00	2699	3009	310	10.3	30.2	40	188	900	9.00	4	8	RG	A	X	3.75	CR	PR																										
Bit Comments: 14 3/4" RSS																																																			
Bit Run Comments: Note: Bit was 3.75" under gage, 3.5" of the center of the bit was washed out with 4 jets missing.																																																			
5	1	10.625	VAREL	VM-1	5253868	28 28 28	1.804	04-Jul-21 00:00	3009	3009	0	1.5	0.0	10			8.60	1	1	WT	A	0		NO	BHA																										
Bit Comments: Bit was used to drill out 11 3/4" shoe track.																																																			
6	1	10.625	NOV	TKC83	A279637	12 12 12 12 12 12 13 13	0.922	04-Jul-21 09:30	3009	3651	642	15.0	42.8	65	40	800	8.60	1	1	WT	A	X		0	NO	DTF																									
Bit Comments: Bit graded 1-1 was pulled due to RSS failure.																																																			
7	1	10.625	NOV	TKC83	A279639	13 13 12 12 12 12 12 12	0.922	05-Jul-21 21:00	3651	5761	2110	31.5	67.0	65	40	820	8.30	4	8	RO	S	X	3	LT	PR																										
Bit Comments: 10.625" PDC Conventional BHA																																																			
Bit Run Comments: Found 2 jets plugged with rubber the stator section of the motor. Bit is DBR'd																																																			
8	1	10.625	NOV	TCK83	A279690	13 13 12 12 12 12 12 12	0.922	07-Jul-21 21:00	5761	5761	0	0.0	0.0	0	0		8.30	0	0	NO	A	X		0	NO	BHA																									
Bit Comments: Motor was not the right speed. BHA was pulled out of the hole and motor was swapped.																																																			
8	2	10.625	NOV	TCK83	A279690	13 13 12 12 12 12 12 12	0.922	08-Jul-21 06:00	5761	5821	60	1.0	60.0	65	40	800	8.30	1	3	WT	S	X		0	NO	DMF																									
Bit Run Comments: Motor failed																																																			
9	1	10.625	NOV	TKC83	A279692	13 13 12 12 12 12 12 12	0.922	11-Jul-21 01:00	5821	6700	879	12.0	73.3	65	50	800	8.30	3	6	LT	S	X		0	WT	BHA																									
Bit Comments: Bit was missing 12 cutters																																																			
Bit Run Comments: Bit was missing 12 cutters																																																			
10	1	8.750	HALLBTN	FC3843	13340636	17 17 17 17 17 17 17 17	1.773	12-Jul-21 00:30	6700	6728	28	1.5	18.7	22	50	300	8.30	8	4	RO	S	X		0	WT	BHA																									
Bit Comments: 8-3/4" X 4" CORE BIT																																																			
Bit Run Comments: Bit was DBR'D																																																			
11	1	8.750	H&P	FC3843	12958459	17 17 17 17 17 17 17 17	1.773	12-Jul-21 23:00	6723			2.0	12.0	14	55	320	8.30	1	1	WT	S	X		0	NO	BHA																									
Bit Comments: Core run #2																																																			
Bit Run Comments: Core run #2																																																			
12	1	10.625	BAKER	MX-1	1116990	20 20 20	0.920	13-Jul-21 09:00	6740	6742	2	1.0	2.0	21	61	800	8.30	1	3	WT	G	0		0	NO	BHA																									
Bit Comments: Bit was used to open hole after core run. drilled 2' of new formation																																																			
Bit Run Comments: Bit was used top open hole after core run. drilled 2' of new formation																																																			
13	1	10.625	NOV	TKC83	A279638	12 12 12 12 12 12 13 13	0.922	14-Jul-21 01:00	6742	7613	871	12.5				830	8.30	8	3	RO	S	X		2	BT	DMF																									
Bit Comments: Bit had 3-plugged jets with pieces of rubber from the stator bit was also DBR'ed.																																																			
Bit Run Comments: Bit had 3-plugged jets with pieces of rubber from the stator bit was also DBR'ed.																																																			
14	1	10.625	NOV	TCK83	A279691	12 12 12 12 12 12 13 13	0.922	15-Jul-21 23:00	7613	8500	887	12.0	73.9	65	50	800	8.30	3	2	WT	S	X		0	LT	CP																									
Bit Comments: 1.5 deg .160 rev/gal. Re-ran on ream out assembly																																																			



Bit Summary Report

Well ID: Forge 78B-32

Field: UTAHFORGE

Geothermal Resource Group

Well Name: 78B-32

Sect: 32 Town: 26 Rng: 9W County: Beaver State: UT

Run No	No	Diam	Manuf.	Model	Serial No	Nozzles - 1/32 in							TFA	Date/Time In	Depth - ft		Hole Made		Hrs	ROP	WOB	RPM	Flow	MWt	Grading				Oth	Pull			
Well ID: Forge 78B-32															Well Name: 78B-32																		
15	1	8.750	HALLBTN	FC3843	13206404	17	17	17	17	17	17	17	17	17	1.773	17-Jul-21 08:00	8500	8530	30	4.0	7.5	8	65	291	8.30	1	1	WT	S	0	0	NO	BHA
Bit Comments: 8-3/4"- 4" Core Bit. run #3 Recovered 23.7' of core. 50% 2-3" in size with the other 50% 9-12" in size. Note: Inner barrel assembly was pushed up inside of core barrel approximately 3".																																	
15	2	8.750	HALLBTN	FC3843	13206404	17	17	17	17	17	17	17	17	17	1.773	18-Jul-21 02:00	8530	8540	10	3.0	3.3	10	65	300	8.30	2	3	WT	S	0	0	NO	BHA
Bit Run Comments: Recovered 7' of core.																																	
14	2	10.625	NOV	TCK83	A279691	12	12	12	12	12	13	13			0.922	18-Jul-21 19:00	8500	8514	14	1.0	14.0	25	55	820	8.30	3	8	RO	S	0	20	WT	LOG
Bit Run Comments: Bit was used to open hole from 8,500' to 8,514'.																																	
12	2	10.625	BAKER	MX-1	1116990	20	20	20							0.920	19-Jul-21 21:00	8415	8540	125	1.0	125.0	23	45	800	8.30	2	2	WT	S	0	0	CT	TD
12	3	10.625	BAKER	MX-1	1116990	20	20	20							0.920	20-Jul-21 21:30	8540	8545	5	0.5	10.0	25	45	820	8.30	2	3	WT	S	0	0	CT	TD
Bit Run Comments: 10-5/8" Clean out run																																	
16	1	5.750	BAKER	STX	5002331	18	18	18							0.746	28-Jul-21 01:00	8545	8555	10	1.0	10.0	16	40	300	8.30	1	1	WT	S	0	0	NO	BHA
Bit Comments: Drilled out shoe track along with 10' of new formation Bit Run Comments: Drilled out show track along with 10" of new formation																																	
17	1	5.750	REED	TKC63	A279641	12	12	12							0.331	28-Jul-21 18:00	8555	9500	945	9.5	99.5	30	30	300	8.30	3	3	WT	S	X	0	CT	TD
Bit Comments: 5-3/4" bit drilled to TD																																	



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9.8. Daily Mudlogging Subcontractor Reports



West Coast Report: 7/29/2021 0:00hrs to 7/30/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	9500	ft
Previous Depth	8960	ft
Footage Cut	540	ft
Drill hours	5.25	hrs
Depth @ 5am	9500	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number	18	
Range	70-250 ft/hr	Bit Type	Reed C55	
Average	103.0 ft/hr	Rotate Hrs	9	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
						-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct. Az	Depth	Deviation	Direct. Az
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
9000	82	95	9317	3.73	270.04			
9100	83	96	9412	3.96	250.99			
9200	83	95	9444	3.91	235.47			
9300	83	96	9500	3.91	235.47			
9400	83	96						
9500	84	98						

Lithology		
From	To	
4790	9500	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Drill f/8960-9500' in Granodiorite: alternating biotite dominant and clear quartz dominant samples where average cutting size is 1mm. Rig down West Coast Geologic.

5:00 AM			
0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley

West Coast Report: 7/28/2021 0:00hrs to 7/29/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	8960	ft
Previous Depth	8545	ft
Footage Cut	415	ft
Drill hours	3.75	hrs
Depth @ 5am	9412	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	201	ft/hr	Bit Number	18
Range	16-292	ft/hr	Bit Type	Reed C55
Average	111.0	ft/hr	Rotate Hrs	3.75

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
1	94	3096	44	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct. Az	Depth	Deviation	Direct. Az
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8600	79	99	8558	2.78	264.46	8938	2.76	282.65
8700	83	101	8653	2.31	307.21	9033	1.05	250.44
8800	83	95	8748	0.99	21.37	9127	2.40	258.85
8900	83	94	8843	0.92	283.71	9222	1.31	284.52

Lithology		
From	To	
4790	8960	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Condition mud and circulate, Pressure test pipe rams/annular preventer, Drill out float/shoe/cement, Drill f/8545-8555', Condition mud and circulate, Slip and cut drill line, Perform XLOT (extended leak off test), POOH, Make up directional BHA, RIH, Drill ahead f/8555-8960' in Granodiorite.

5:00 AM | Drill f/8960-9412' in Granodiorite.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley
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West Coast Report: 7/27/2021 0:00hrs to 7/28/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	8545	ft
Previous Depth	8545	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8555	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						

Lithology		
From	To	
4790	8550	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Pick up 30 drill collars, Make up 5.75" bit and bit sub, Single in the hole, POOH t/921', Pick up BOPE and install seals, POOH f/921' to verify no slip die hanging between bit and casing, Pick up BOPE and remove seals, Set BOPE, Nipple up at wellhead flange, Close blind rams and function test annular preventer/pipe rams verify no slip die hanging up, Trip in the hole, Single in t/8356'.

5:00 AM Condition mud, Circulate, Pressure test pipe rams/annular preventer, drill out shoe/cement, drill f/8545-8555'.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley
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West Coast Report: 7/26/2021 0:00hrs to 7/27/2021 0:00hrs

Present Depth	8545	ft
Previous Depth	8545	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8545	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						

Lithology		
From	To	
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Wait on cement, Rig down cement head, Nipple down flow nipple, Cut casing, Nipple down BOPE and mud cross, Install well head, Nipple up BOPE, Pressure test BOPE.

5:00 AM Pick up 30 drill collars, Make up 5.75" bit and bit sub, Trip in the hole.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley
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West Coast Report: 7/25/2021 0:00hrs to 7/26/2021 0:00hrs

Present Depth	8545	ft
Previous Depth	8545	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8545	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						

Lithology		
From	To	
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Casing shoe at 8508', Condition mud and circulate, Cement casing, Wait on cement, Perform Top Job, Wait on cement.

5:00 AM Wait on cement, Rig down cement head, Nipple down flow nipple, Cut casing, Nipple down BOPE.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley
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West Coast Report: 7/24/2021 0:00hrs to 7/25/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	8545	ft
Previous Depth	8545	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8545	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						

Lithology		
From	To	
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Run casing with fiber optic cable t/3722', C/O fiber cable spool, Install fiber optic cable, Run casing, Rig down casing crew, Rig up Resource Cementers, Condition mud and circulate.

5:00 AM Condition mud and circulate, Cement casing.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley
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West Coast Report: 7/23/2021 0:00hrs to 7/24/2021 0:00hrs

Present Depth	8545	ft
Previous Depth	8545	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8545	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						

Lithology		
From	To	
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks

Lay down 7" casing, Wait on equipment to rebuild fiber optic cable, Run casing with fiber optic cable t/2060'.

5:00 AM Run casing with fiber optic cable t/3722', C/O fiber cable spool, Install fiber optic cable.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Tim Dooley
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West Coast Report: 7/22/2021 0:00hrs to 7/23/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	8545	ft
Previous Depth	8545	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8545	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Run 7" casing and fiber optic cable, Check continuity, Fill pipe every 15 joints, Run casing t/6500', Fill pipe, Check downhole temperature with fiber optics, Circulate to cool well, Condition mud and circulate, Fiber optic cable broke, Lay down 7" casing.

5:00 AM Lay down 7" casing.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Patrick Bradshaw
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West Coast Report: 7/21/2021 0:00hrs to 7/22/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	8545	ft
Previous Depth	8540	ft
Footage Cut	5	ft
Drill hours		hrs
Depth @ 5am	8545	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 RIH to cool down well, Condition mud and Circulate, Drill f/8540-8545', POOH, Lay down 5.5" drill pipe and HWDP, Lay down all 5.5" equipment, Move casing to racks, Rig up Wyoming Casing and Silixa to run casing.

5:00 AM Run 7" casing and fiber optic.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Patrick Bradshaw
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West Coast Report: 7/20/2021 0:00hrs to 7/21/2021 0:00hrs

Present Depth	8540	ft
Previous Depth	8540	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am	8545	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 RIH t/8514', Ream 8.75" hole to 10.625" f/8514-8540', Condition Mud, Circulate to cool well, POOH, Rig up Schlumberger logging, Run wireline logs, Rig down Schlumberger logging, RIH to cool down well.

5:00 AM	RIH to cool down well, Condition mud and Circulate, Drill f/8540-8545', POOH sideways laying down drill pipe.
0:00-12:00 Geologist	Andrew Schepflin
12:00-0:00 Geologist	Patrick Bradshaw

West Coast Report: 7/19/2021 0:00hrs to 7/20/2021 0:00hrs

Present Depth	8540	ft
Previous Depth	8540	ft
Footage Cut	0	ft
Drill hours		hrs
Depth @ 5am		ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Ream open hole f/8500-8514' w/10 5/8" bit, POOH, Rig up Schlumberger logging, Run wireline logs, Temperature at 8520': 321 degF, Run triple combo logs, RIH with tri-cone bit to shoe, Cut and slip 111' of drilling line.

5:00 AM	RIH for cooling run (cool down well), Ream f/8514
0:00-12:00 Geologist	Andrew Schepflin
12:00-0:00 Geologist	Patrick Bradshaw

West Coast Report: 7/18/2021 0:00hrs to 7/19/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	8540	ft
Previous Depth	8530	ft
Footage Cut	10	ft
Drill hours	2.2	hrs
Depth @ 5am		ft

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	17
Range	3.9-7.9	ft/hr	Bit Type	HC3843
Average	4.8	ft/hr	Rotate Hrs	5

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	8540	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 POOH with core, Recovered 23.7', RIH to 8530', Core f/8530-8540', POOH, Recovered 8.7', RIH w/10 5/8" bit (RRB#16) and bit sub.

5:00 AM Ream open hole f/8500-8514' w/10 5/8" bit, POOH t/3000'.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Patrick Bradshaw
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West Coast Report: 7/17/2021 0:00hrs to 7/18/2021 0:00hrs

Present Depth	8530	ft
Previous Depth	8500	ft
Footage Cut	30	ft
Drill hours	2.8	hrs
Depth @ 5am	8530	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	17
Range		ft/hr	Bit Type	HC3843
Average		ft/hr	Rotate Hrs	2.8

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
					2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	8500	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 POOH, Lay down 8" drill collars and directional tools, RIH w/ Core barrel staging in hole every 2000', Core f/ 8500-8530, POOH w/core.

5:00 AM POOH with core (approximately 25' recovered), RIH to core deeper.

0:00-12:00 Geologist	Andrew Schepflin	12:00-0:00 Geologist	Patrick Bradshaw
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West Coast Report: 7/16/2021 0:00hrs to 7/17/2021 0:00hrs

Present Depth	8500	ft
Previous Depth	7613	ft
Footage Cut	887	ft
Drill hours	12.2	hrs
Depth @ 5am	8500	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	16
Range	9-287	ft/hr	Bit Type	Reed TKC83
Average	89.0	ft/hr	Rotate Hrs	12.2

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	40	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
8500	119	130	7830	1.62	S32.6W	8211	1.76	N68.4W
8400	119	132	7925	1.87	S39.4W	8306	1.49	N84.4W
8300	119	130	8020	1.85	S55.7W	8402	0.87	S70.9W
8200	114	130	8116	1.52	N80.4W	8428	1.39	S69.8W

Lithology		
From	To	
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite
5821	6700	100% Granodiorite
6700	7610	100% Granodiorite
7610	8500	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Trip in Hole, Drill F/7613' T/8500', Pull out of Hole

5:00 AM	L/D Drill Collars
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger:	Patrick Bradshaw

West Coast Report: 7/15/2021 0:00hrs to 7/16/2021 0:00hrs

Present Depth	7613	ft
Previous Depth	7613	ft
Footage Cut	0	ft
Drill hours	0	hrs
Depth @ 5am	7613	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	16
Range	0	ft/hr	Bit Type	Reed TKC83
Average	0.0	ft/hr	Rotate Hrs	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	40	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
7600	112	121	6865	1.46	N26.2E	7246	1.38	S17.6W
7500	116	127	6960	1.09	N38.8E	7341	0.83	S23.9W
7400	117	127	7056	1.57	S25.9W	7436	0.89	S20.9W
7300	118	129	7151	1.92	S13.9W	7531	0.95	S28.9W

Lithology		
From	To	
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite
5821	6700	100% Granodiorite
6700	7610	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Repair rig blowed hydraulic hose in service loop of top drive, TOH f/6559 t/dirc tools, l/d 2 monnels pony collar 2 stabilizer mwd tool drain motor break bit l/d motor, p/u motor reamer pony collar sensor

5:00 AM	Trip in Hole
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/14/2021 0:00hrs to 7/15/2021 0:00hrs

Present Depth	7613	ft
Previous Depth	6742	ft
Footage Cut	871	ft
Drill hours	11	hrs
Depth @ 5am	7613	ft

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Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	15
Range	9-286	ft/hr	Bit Type	Reed TNZ
Average	88.4	ft/hr	Rotate Hrs	11

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	40	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
7600	112	121	4403	0.40	S78.7W	5640	1.97	S67.9W
7500	116	127	4974	1.65	N37.1W	5927	1.77	S17.3W
7400	117	127	5259	0.57	S75.7W	6307	1.06	S47.5E
7300	118	129	5545	2.01	S88.4W	6592	0.88	N33.2E

Lithology		
From	To	
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite
5821	6700	100% Granodiorite
6700	7610	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Drill F/6742' T/7613'

5:00 AM	
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/13/2021 0:00hrs to 7/14/2021 0:00hrs

Present Depth	6742	ft
Previous Depth	6728	ft
Footage Cut	14	ft
Drill hours	1.5	hrs
Depth @ 5am	6742	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	14
Range	9-24	ft/hr	Bit Type	Haliburton
Average	9.3	ft/hr	Rotate Hrs	0.5

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	30	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
6700	110	123	4403	0.40	S78.7W	5640	1.97	S67.9W
6600	108	122	4974	1.65	N37.1W	5927	1.77	S17.3W
6500	107	123	5259	0.57	S75.7W	6307	1.06	S47.5E
6400	110	124	5545	2.01	S88.4W	6592	0.88	N33.2E

Lithology		
From	To	
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite
5821	6700	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Trip in hole 8 3/4" core assembly, filling pipe every 1000 feet, coring f/6728 t/6740', trip out of hole with core t/1300', T.O.H., L/D core assembly, reaming F/6700'-6740', circulate btm up, T.O.H w/insert bit & reamer, directional work, trips run in hole 5 stands 8" D.C., 5 stands HWDP

5:00 AM	Trip in Hole
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/12/2021 0:00hrs to 7/13/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	6728	ft
Previous Depth	6700	ft
Footage Cut	28	ft
Drill hours		hrs
Depth @ 5am	6740	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	0	Bit Number	12	
Range	0-53	Bit Type	Haliburton	
Average	22.0	Rotate Hrs	1.5	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	93	70	30	0	2300	-	-

Summary Data			Survey Results								
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.			
Depth (ft)	Temp In (deg F)	Temp Out (deg F)	6700	110	123	4403	0.40	S78.7W	5640	1.97	S67.9W
6600	108	122	4974	1.65	N37.1W	5927	1.77	S17.3W			
6500	107	123	5259	0.57	S75.7W	6307	1.06	S47.5E			
6400	110	124	5545	2.01	S88.4W	6592	0.88	N33.2E			

Lithology		
From	To	
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite
5821	6700	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 Waiting for Coring crew to rig up, core f/6700 t/6728, TOH w/ core, l/d reamer xo float sub, break out core, collect core, l/d core bbl, rig up for coring, TIH

5:00 AM	Trip out of hole with Core #2		
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/11/2021 0:00hrs to 7/12/2021 0:00hrs

Present Depth	6700	ft
Previous Depth	5821	ft
Footage Cut	879	ft
Drill hours	12	hrs
Depth @ 5am	6700	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	9
Range	28-309	ft/hr	Bit Type	Reed TKC83
Average	73.0	ft/hr	Rotate Hrs	12

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	30	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
6700	110	123	4403	0.40	S78.7W	5640	1.97	S67.9W
6600	108	122	4974	1.65	N37.1W	5927	1.77	S17.3W
6500	107	123	5259	0.57	S75.7W	6307	1.06	S47.5E
6400	110	124	5545	2.01	S88.4W	6592	0.88	N33.2E

Lithology		
From	To	
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite
5821	6700	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		
7/11/21	3:56	5859	159	308	10	0		
7/11/21	4:40	5950	123	264	7	0		

Remarks
 T.I.H. t/5821, Drill Actual f/5821 t/6087, slide f/6087 t/6108 JSA #R0-22, rotate f/6108 t/6562, rig service grease blocks td swivel packing crown JSA #MN-41, Rotate f/6562 t/6700 JSA #R0-01, Circulate BTM up JSA #R0-49, T.O.H 50000 over pull coming out of hole JSA #R0-12

5:00 AM	P/U 15 Jnts of 5.5" DP
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/10/2021 0:00hrs to 7/11/2021 0:00hrs

Present Depth	5821	ft
Previous Depth	5761	ft
Footage Cut	60	ft
Drill hours	1	hrs
Depth @ 5am	5985	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	9
Range	9-226	ft/hr	Bit Type	Reed TKC83
Average	156.0	ft/hr	Rotate Hrs	1

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	25	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
5800	104	129	3480'	2.55	S51.9W	4974'	1.65	N37.1W
5700	103	113	3737	1.10	S38.9W	5259'	0.57	S75.7W
5600	103	112	4117	1.92	S20.6W	5545	2.01	S88.39W
5500	103	112	4403	0.40	S78.7W	5640	1.97	S67.92W

Lithology		
From	To	
3640	3700	100% Quartz Monzodiorite
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5821	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		

Remarks
 Wait on SCR hand troubleshoot scr found a wire grounding out, rig service, T.I.H f/ 1135-5761, fill pipe, drill f/ 5761-5821, T.O.H f/ 5821-3904

5:00 AM	Drill ahead F/5985'
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/9/2021 0:00hrs to 7/10/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	5761	ft
Previous Depth	5761	ft
Footage Cut	0	ft
Drill hours	0	hrs
Depth @ 5am	5761	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	8
Range	0	ft/hr	Bit Type	Reed Hyacalog TNZ
Average	0.0	ft/hr	Rotate Hrs	0

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	25	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
5700	103	113	3480'	2.55	S51.9W	4974'	1.65	N37.1W
5600	103	112	3737	1.10	S38.9W	5259'	0.57	S75.7W
5500	103	112	4117	1.92	S20.6W	5545	2.01	S88.39W
5400	102	111	4403	0.40	S78.7W	5640	1.97	S67.92W

Lithology		
From	To	
3640	3700	100% Quartz Monzodiorite
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5761	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		

Remarks
 Wait on SCR tech

5:00 AM	Wait on SCR tech
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Patrick Bradshaw

West Coast Report: 7/8/2021 0:00hrs to 7/9/2021 0:00hrs

Present Depth	5761	ft
Previous Depth	5761	ft
Footage Cut	0	ft
Drill hours	0	hrs
Depth @ 5am	5761	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0 ft/hr	Bit Number	8	
Range	0 ft/hr	Bit Type	Reed Hyacalog TNZ	
Average	0.0 ft/hr	Rotate Hrs	0	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	0	0	25	0	2300	-	-

Summary Data			Survey Results								
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.			
Depth (ft)	Temp In (deg F)	Temp Out (deg F)	5700	103	113	3480'	2.55	S51.9W	4974'	1.65	N37.1W
5600	103	112	3737	1.10	S38.9W	5259'	0.57	S75.7W			
5500	103	112	4117	1.92	S20.6W	5545	2.01	S88.39W			
5400	102	111	4403	0.40	S78.7W	5640	1.97	S67.92W			

Lithology		
From	To	
3640	3700	100% Quartz Monzodiorite
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5761	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		

Remarks
 waiting on electrical problems on rig, electrician troubleshooting.

5:00 AM			
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/7/2021 0:00hrs to 7/8/2021 0:00hrs

Present Depth	5761	ft
Previous Depth	5334	ft
Footage Cut	427	ft
Drill hours	7.5	hrs
Depth @ 5am	5761	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	7
Range	23-84	ft/hr	Bit Type	Reed Hyacalog TNZ
Average	53.0	ft/hr	Rotate Hrs	29.5

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
0	0/0	0	25	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
5700	103	113	3480'	2.55	S51.9W	4974'	1.65	N37.1W
5600	103	112	3737	1.10	S38.9W	5259'	0.57	S75.7W
5500	103	112	4117	1.92	S20.6W	5545	2.01	S88.39W
5400	102	111	4403	0.40	S78.7W	5640	1.97	S67.92W

Lithology		
From	To	
3640	3700	100% Quartz Monzodiorite
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5761	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		

Remarks
 Drill to 5761.7' TOOH dir work PJSM l/d BHA cut off drilling line, rig service, p/u 5.5" DP, wait on tools and rig service

5:00 AM			
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/6/2021 0:00hrs to 7/7/2021 0:00hrs

Present Depth	5334	ft
Previous Depth	3725	ft
Footage Cut	1609	ft
Drill hours	24	hrs
Depth @ 5am	5641	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	52.4	ft/hr	Bit Number	7
Range	9-239	ft/hr	Bit Type	Reed Hyacalog TNZ
Average	78.6	ft/hr	Rotate Hrs	24

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	197	2596	25	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
5300	103	Drill	2981	0.09	N32.7W	4117'	1.92	S20.6W
5200	105	114	3289	0.08	N48.8W	4403'	0.40	S78.7W
5100	107	113	3480'	2.55	S51.9W	4974'	1.65	N37.1W
5000	108	111	3737	1.10	S38.9W	5259'	0.57	S75.7W

Lithology		
From	To	
3640	3700	100% Quartz Monzodiorite
3700	3760	50-90% Quartz Monzodiorite, 10-50% Granodiorite
3760	3910	100% Quartz Monzodiorite
3910	3990	20-80% Quartz Monzodiorite, 20-80% Granodiorite
3990	4770	100% Quartz Monzodiorite
4770	4790	60-100% Granodiorite, 0-40% Quartz Monzodiorite
4790	5330	100% Granodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		
7/6/21	11:15	4715	65	237	12	0		

Remarks
 Drill ahead F/3725' T/5036', Rig Service, Fix Pason stroke counter on #2MP for the MSE, Drill ahead F/5036' T/5334'.

5:00 AM	Drill Ahead F/5641'
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/5/2021 0:00hrs to 7/6/2021 0:00hrs

Present Depth	3725	ft
Previous Depth	3456	ft
Footage Cut	269	ft
Drill hours	7	hrs
Depth @ 5am	4180	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	124	ft/hr	Bit Number	6
Range	34-136	ft/hr	Bit Type	Reed Hyacalog TNZ
Average	125.0	ft/hr	Rotate Hrs	7

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	99/99	2380	15	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
3700	104	106	37'	1.04	N1.51W	2050	0.26	S36.1W
3600	102	110	914	0.15	N17.4W	2335	0.18	S81.15W
3500	102	108	1480	0.24	S38.5E	2981	0.09	N32.67W
3400	106	115	1670	0.10	S36.9W	3289	0.08	N48.8W

Lithology		
From	To	
3330	3380	100% Quartz Monzodiorite
3380	3420	100% Granodiorite
3420	3510	100% Quartz Monzodiorite
3520	3560	20-60% Quartz Monzodiorite 40-80% Granodiorite
3570	3580	100% Quatrz Monzodiorite
3590	3630	20% Quartz Monzodiorite 80% Grandodiorite
3640	3710	100% Quatrz Monzodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)
7/4/21	18:19	3226'	63.7	224.1	5'	0		

Remarks
 Switch mud pits to fresh water, wipe hole, fill hole with fresh water, begin drilling on fresh water, begin drilling from 3651 into a mix of quartz monzodiorite and granodiorite,

5:00 AM	Drill ahead F/4180'
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/4/2021 0:00hrs to 7/5/2021 0:00hrs

Present Depth	3456	ft
Previous Depth	3009.9	ft
Footage Cut	446.1	ft
Drill hours	8	hrs
Depth @ 5am	3590	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	26	Bit Number	6	
Range		Bit Type	Reed Hyacalog TNZ	
Average		Rotate Hrs	8	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	191	2030	15	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
3400	106	115	37'	1.04	N1.51W	2050	0.26	S36.1W
3300	106	117	914	0.15	N17.4W	2335	0.18	S81.15W
3200	108	120	1480	0.24	S38.5E	2981	0.09	N32.67W
3100	109	120	1670	0.10	S36.9W	3289	0.08	N48.8W

Lithology		
From	To	
2700	3040	100% Granite
3040	3190	60-100% Hornblende quartz monzodiorite, 0-40% Granite
3190	3330	100% Granite
3330	3380	100% Quartz Monzodiorite
3380	3420	100% Granodiorite
3420	3470	100% Quartz Monzodiorite

Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 drill through cement, fill BOP with mud and begin drilling from 3009.9' t/3456, drill through granite, hornblende quartz diorite and diorite.

5:00 AM	Drill T/3590'		
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/3/2021 0:00hrs to 7/4/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	3009.9	ft
Previous Depth	3009.9	ft
Footage Cut	0	ft
Drill hours	0	hrs
Depth @ 5am		ft

Penetration Rate		Bit Info.	As Of	0:00
Current	ft/hr	Bit Number		
Range	ft/hr	Bit Type		
Average	ft/hr	Rotate Hrs		

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
0	0	0	15	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
3000	106	116	37'	1.04	N1.51W	2050	0.26	S36.1W
2900	110	120	914	0.15	N17.4W	2335	0.18	S81.15W
2800	108	118	1480	0.24	S38.5E	2981	0.09	N32.67W
2700	75	118	1670	0.10	S36.9W			

Lithology			
From	To		
0	430		100% Alluvium
430	2430		100% Alluvium
2440	2630		90% Clay 10% Alluvium
2630	2650		100% Alluvium
2650	2670		10-50% Rhyolite 50-90% Granite
2670	2700		100% Granite
2700	3000		100% Granite

Fractures & Mud losses			Drill Breaks			Losses		
Date	Time	Depth	Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 nipple down 20" BOP break choke and kill valves of 20" mud x, weld on well pressure test at 1000 psi hold for 10 min, install spool on mud cross set on well head install choke, kill side valves, set double gates, and annular preventer, hook flow long at BOP toruq BOP with flow pack

5:00 AM			
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/2/2021 0:00hrs to 7/3/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	3009.9	ft
Previous Depth	3009.9	ft
Footage Cut	0	ft
Drill hours	0	hrs
Depth @ 5am		ft

Penetration Rate		Bit Info.	As Of	0:00
Current		ft/hr	Bit Number	
Range		ft/hr	Bit Type	
Average		ft/hr	Rotate Hrs	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
0	0	0	15	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
3000	106	116	37'	1.04	N1.51W	2050	0.26	S36.1W
2900	110	120	914	0.15	N17.4W	2335	0.18	S81.15W
2800	108	118	1480	0.24	S38.5E	2981	0.09	N32.67W
2700	75	118	1670	0.10	S36.9W			

Lithology		
From	To	
0	430	100% Alluvium
430	2430	100% Alluvium
2440	2630	90% Clay 10% Alluvium
2630	2650	100% Alluvium
2650	2670	10-50% Rhyolite 50-90% Granite
2670	2700	100% Granite
2700	3000	100% Granite

Fractures & Mud losses								
Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 Run 11.75" casing, r/d casing crew. Install valve in well head, rig up pump in cellar, 4 bolt BOP TIH w. stab in tool, cond mud and circ, rig up cement crew, cement, test lines, r/d cement crew, TOO, r/d cement crew, wait on cement

5:00 AM			
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 7/1/2021 0:00hrs to 7/2/2021 0:00hrs

FORGE Utah 78B-32

Present Depth	3009.9	ft
Previous Depth	2700	ft
Footage Cut	309.9	ft
Drill hours	8.5	hrs
Depth @ 5am	3009.9	ft

Penetration Rate		Bit Info.	As Of	0:00
Current	0	Bit Number	A279635	
Range	7-20	Bit Type	TKC66	
Average	12.0	Rotate Hrs	11.5	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	117/117	2700	15	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
3000	106	116	37'	1.04	N1.51W	2050	0.26	S36.1W
2900	110	120	914	0.15	N17.4W	2335	0.18	S81.15W
2800	108	118	1480	0.24	S38.5E	2981	0.09	N32.67W
2700	75	118	1670	0.10	S36.9W			

Lithology		
From	To	
0	430	100% Alluvium
430	2430	100% Alluvium
2440	2630	90% Clay 10% Alluvium
2630	2650	100% Alluvium
2650	2670	10-50% Rhyolite 50-90% Granite
2670	2700	100% Granite
2700	3000	100% Granite

Fractures & Mud losses								
Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 Drill through granite t/3009', rop slowed down, rig service remove over torque saver sub, repiar rig, rig black out, gen 2 over heated, gen 1 overheated perform step test, condition mud and circ dry, POH for bit,metal shavings in shakers, change bit for inspection POH to prep for casing.

5:00 AM			
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 6/30/2021 0:00hrs to 7/1/2021 0:00hrs

Present Depth	2700	ft
Previous Depth	436	ft
Footage Cut	2264	ft
Drill hours	11.5	hrs
Depth @ 5am	2700	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	RH7510
Range	11-1607	ft/hr	Bit Type	Smith XR-C
Average	90.0	ft/hr	Rotate Hrs	11.5

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
1	118/113	1600	11	0	2300	-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
2700	106	119	37'	1.04	N1.51W	2050	0.26	S36.1W
2600	104	115	914	0.15	N17.4W	2335	0.18	S81.15W
2500	100	111	1480	0.24	S38.5E			
2400	81	122	1670	0.10	S36.9W			

Lithology		
From	To	
430	2430	100% Alluvium
2430	2440	60% Rhyolite, 40% Alluvium (significant clay alteration of Rhyolite)
2440	2570	90% Rhyolite 10% Alluvium
2570	2640	100% Rhyolite
2640	2660	80% Rhyolite, 20% Granite
2660	2690	70% Rhyolite, 30% Granite

Fractures & Mud losses								
Date	Time	Depth	Drill Breaks			Losses		
			Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 Drill through alluvium, hit very viscous clay section @2440-2630', and then a short altered rhyolite section @2650'-2670', generators overheating during the day causing delays, ROP very high in AM dwindling down in PM especially before the clay section.

5:00 AM	RIH w/ 14.75" bit to drill ahead
0:00-12:00 Mud Logger:	Brennan Williams-Mieding
12:00-24:00 Mud Logger:	Austin Mellema

West Coast Report: 6/29/2021 0:00hrs to 6/30/2021 0:00hrs

Present Depth	436	ft
Previous Depth	421	ft
Footage Cut	15	ft
Drill hours	3.5	hrs
Depth @ 5am	436	ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	RH7510
Range	30-180	ft/hr	Bit Type	Smith XR-C
Average	90.0	ft/hr	Rotate Hrs	3.5

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
1	117/0	190	5	0		-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
200	85		37'	1.04	N1.51W			
300	87							
400	90	93						

Lithology		From	To	
		0	430	100% Alluvium

Fractures & Mud losses			Drill Breaks			Losses		
Date	Time	Depth	Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 Nipple up BOP flow nipple, flow line. Set up pipe racks, rig service. p/u 15 jnts 8" DC and rack in derrick. Test BOP blind rams 5 min, low 250 psi / 10 min high 1000 psi, pipe rams 5 min low, 250 psi, 10 min high 1000 psi, ann 5 min 250 low 1000 high, instal saver sub, drill out cement t/436' collect sample (100% Granitic Alluvium) POH, pick up BHA, install rotating rubber bushing, tag float collar at 372'/cement and float equipment to 414', rig service, drill actual F/414' to 433', condition & circulate clean hole, space out/close annular/fit test, trip out of hole, break out bit and bit sub/ rack back last stand of collars, dir work/hold safety meeting. p/u dir BHA

5:00 AM	Drill ahead F/ 665'		
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 6/28/2021 0:00hrs to 6/29/2021 0:00hrs

Present Depth	421	ft
Previous Depth	0	ft
Footage Cut	421	ft
Drill hours	3.5	hrs
Depth @ 5am		ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0	ft/hr	Bit Number	RH7510
Range	30-95	ft/hr	Bit Type	Smith XR-C
Average	55.0	ft/hr	Rotate Hrs	3.5

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
2	106/97	560	5	0		-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						
200	85		37'	1.04	N1.51W			
300	87							
400	90							

Lithology		
From	To	
0	420	100% Alluvium

Fractures & Mud losses			Drill Breaks			Losses		
Date	Time	Depth	Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 Begin drilling, 100% Alluvium until TD @421', POH, set cement, nipple up for pressure test, perform pressure test and rig up to drill out cement

5:00 AM	Test B.O.P., Test Blinds, Pipes, Annular, Inside/Outside valves 1K high 30 min, 250 low 5 min		
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema

West Coast Report: 6/27/2021 0:00hrs to 6/28/2021 0:00hrs

Present Depth	0 ft
Previous Depth	0 ft
Footage Cut	0 ft
Drill hours	0 hrs
Depth @ 5am	0 ft

FORGE Utah 78B-32

Penetration Rate		Bit Info.	As Of	0:00
Current	0 ft/hr	Bit Number	RH7510	
Range	0 ft/hr	Bit Type	Smith XR-C	
Average	0.0 ft/hr	Rotate Hrs	0	

Circulation (at time of report)							
# of pumps	SPM	Press in (psig)	Approx lag time (min)	Total Mud losses for day (Bbls)	Cooling Tower start depth	# of air compressors	cfm
						-	-

Summary Data			Survey Results					
Cooling Tower on @			Depth	Deviation	Direct.	Depth	Deviation	Direct.
Depth (ft)	Temp In (deg F)	Temp Out (deg F)						

Lithology		
From	To	

Fractures & Mud losses			Drill Breaks			Losses		
Date	Time	Depth	Baseline ROP (ft/hr)	Peak ROP (ft/hr)	Length sustained (ft)	Initial Loss (Bph)	Sustained loss (Bph)	Total Losses (bbls)

Remarks
 West Coast Geologic Rig Up and test H2S sensors, go over safety procedures with sample catchers

5:00 AM	Drill to Casing depth of 421'		
0:00-12:00 Mud Logger:	Brennan Williams-Mieding	12:00-24:00 Mud Logger	Austin Mellema



Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
	Ver. Final	Page 199 of 288
	To accompany report issued 1 December 2021	

9.9. Final Mud Log





COMPANY University of Utah
WELL NAME 78B-32
FIELD FORGE UTAH
COUNTY Beaver
STATE Utah
WELL HEAD COORDINATES 38.500, -112.882
 Northing: 4263043 m
 Easting: 335450 m
ELEVATION 5536'
RIG START DATE 6/26/2021
TD DATE 7/29/2021
TOTAL DEPTH 9500'
TRUE VERTICAL DEPTH 9497.27'
TD LOCATION 33.1'S, 70.8'W of wellhead
DRILLING CONTRACTOR Frontier Drilling Rig #16
COMPANY REPRESENTATIVES V. Welch
 Brian Gresham

LOG INTERVAL
DATE LOGGED 6/27/21 TO 7/29/21
DEPTH LOGGED 140' TO 9500'
MUD DRILLING 140' TO 9500'
LOG SCALE 1:600
UNIT NO. C23
LOGGING GEOLOGISTS
 Brennan Williams-Mieding(bwm), Austin
 Mellema(am), Patrick Bradshaw(pb), Andrew
 Schepflin(as), Tim Dooley(td)

HOLE	
24.5"	TO 128'
22"	TO 422'
14 3/4"	TO 3009'
10 5/8"	TO 8545'
5 3/4"	TO 9500'

CASING			
23.5"	FROM 0'	TO 128'	
16"	FROM 0'	TO 421'	
11.75"	FROM 0'	TO 2989'	
7"	FROM 0'	TO 8508'	

ABBREVIATIONS			
NB	New Bit	BHT	Bottom Hole Temp
RRB	Re-run Bit	c	Carbide Test
CB	Core Bit	NR	No Returns
WOB	Weight on Bit	LAT	Logged After Trip
SPM	Strokes per Minute	CFM	Cubic Feet per Min
PP	Pump Pressure	BUT	Bottoms Up Temp
RPM	Revolutions per Min		

SYMBOLS	
	Wireline Log
	Steam/Water Entry
	Deviation Survey
	Casing Shoe
	Flow Test
	Cored Interval No Recovery

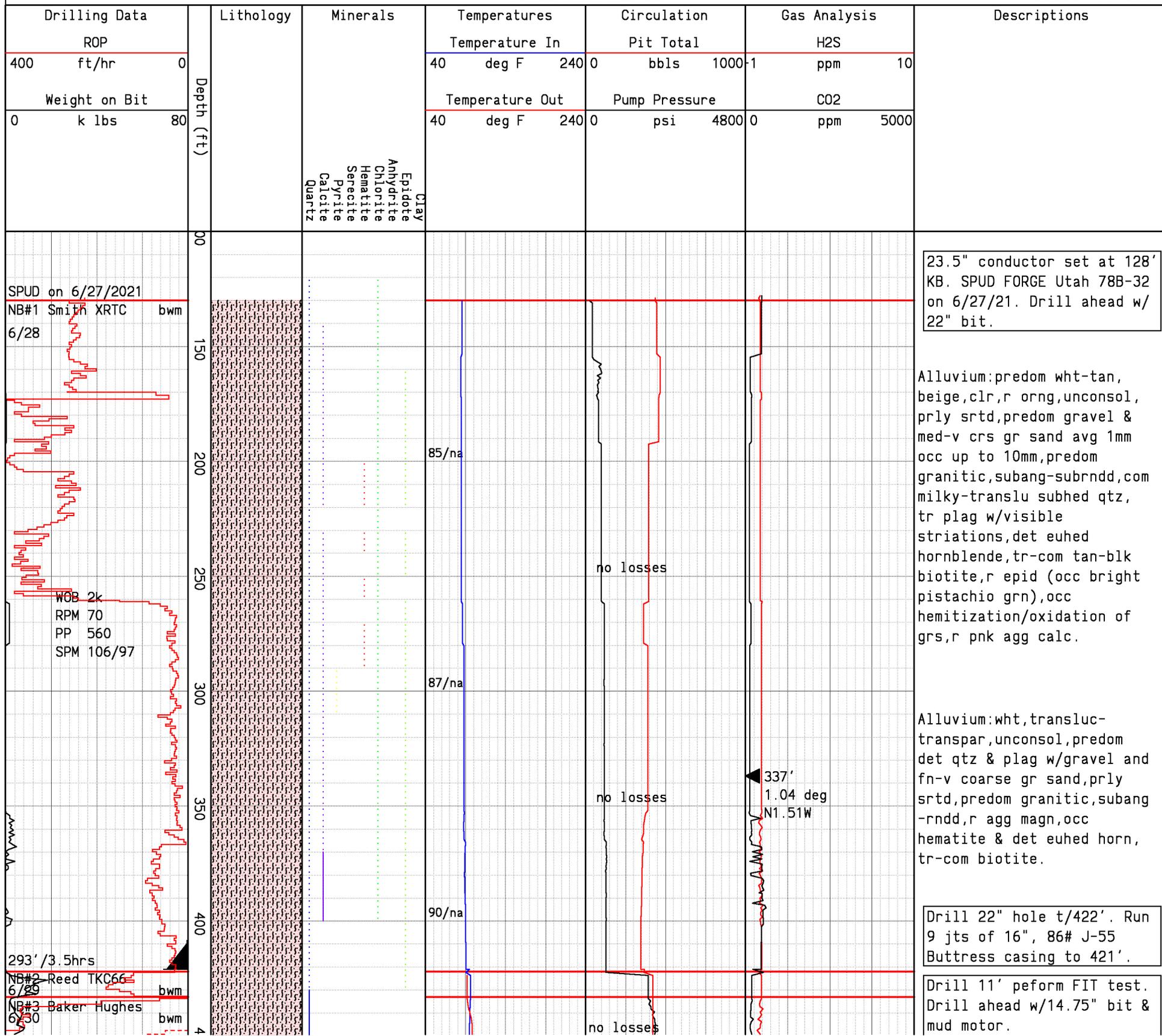
REMARKS
 All depths from rotary table = 30.5'

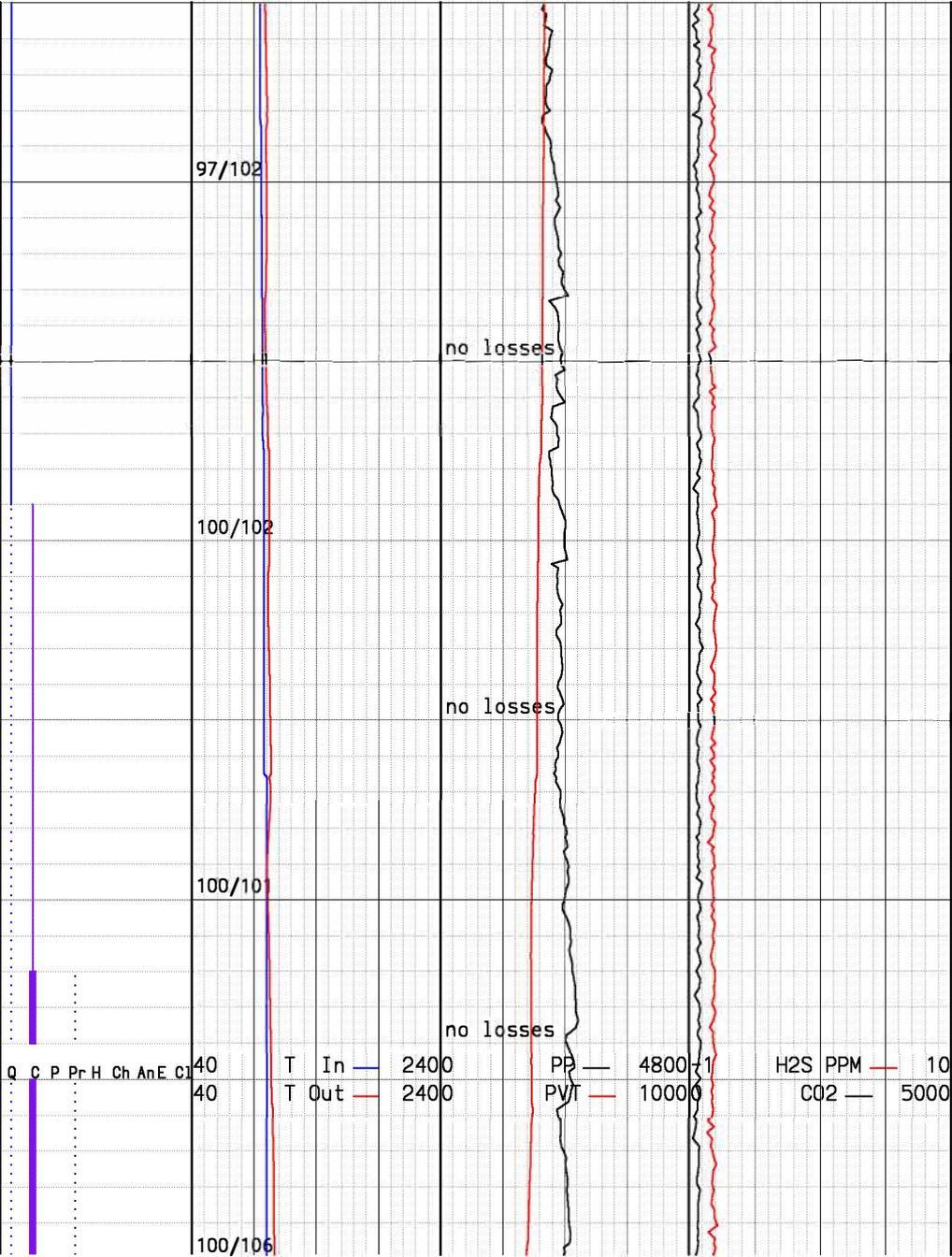
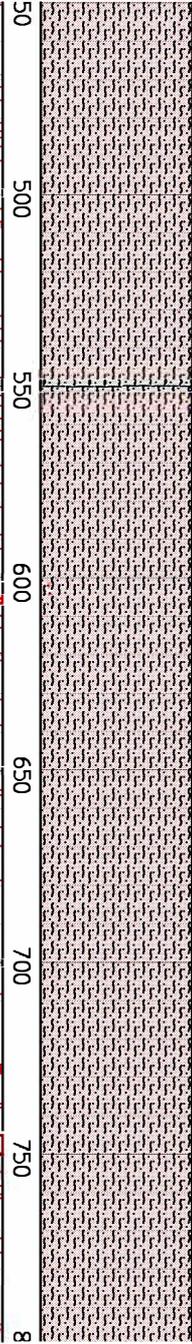
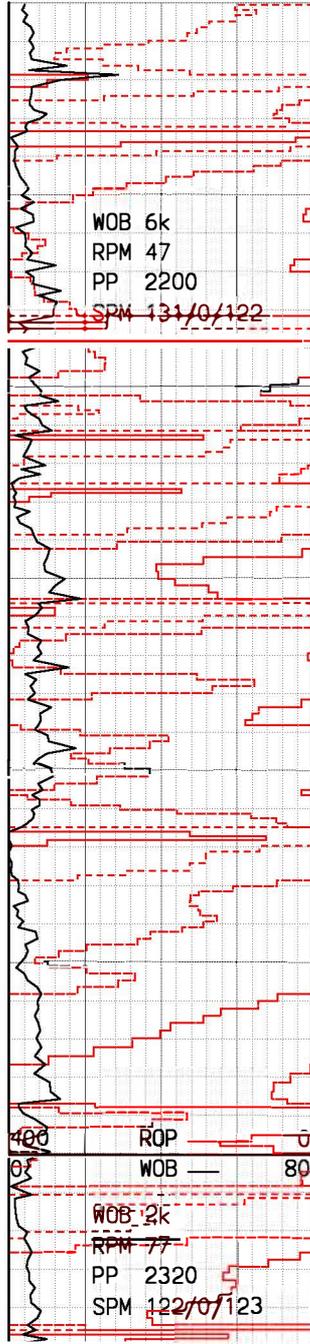
LITHOLOGY			
	Clay		Diorite
	Silt		Syenite
	Sand		Quartz Monzonite
	Gravel		Quartz Latite
	Alluvium		Quartzite
	Basalt		Gneiss
	Rhyolite		Felsic Dike
	Tuff		Altered Zone
	Granite		
	Granodiorite		

DRILL BREAKS
3226'
4294'
4711'
5609'
5859'
5950'

WATER ENTRIES

SECONDARY MINERALS		
Q = Quartz		Rare << 1%
C = Calcite		Trace < 1%
P = Pyrite		Minor 1% to 4%
Z = Zeolite		Common 4% to 7%
H = Hematite		Abundant 7% to 10%
Ch = Chlorite		> 10%
An = Anhydrite		
E = Epidote		
Cl = Clay		

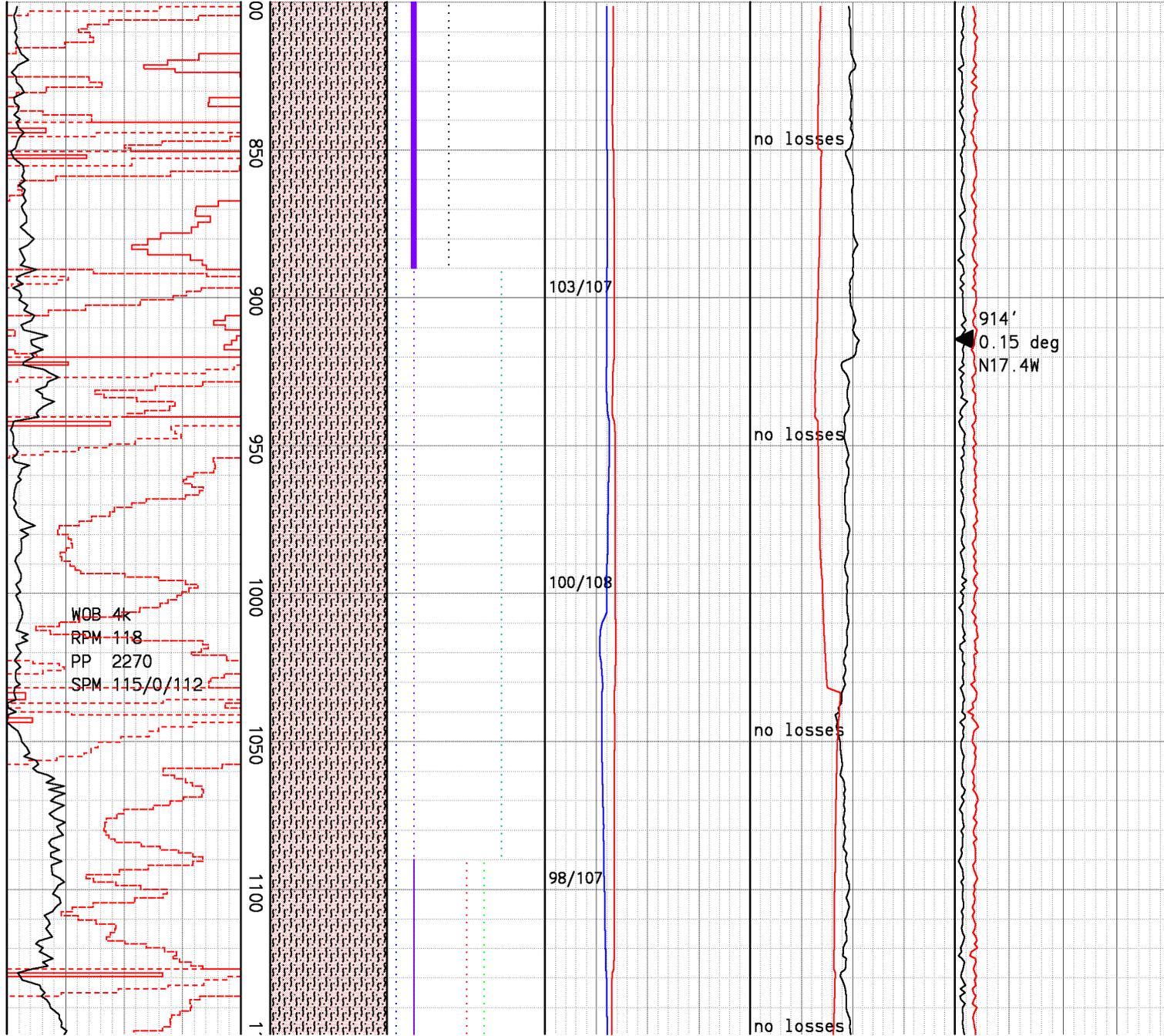




Alluvium:wht-tan/org,translu-
transpar qtz,unconsol,grs
~2mm & up to 15mm,predom det
qtz & plag w/gravel and crs-
v coarse gr sand,prly srtd,
predom granitic,subang
-subrddd,r agg magn,occ
hematite,tr brn-blk biotite.

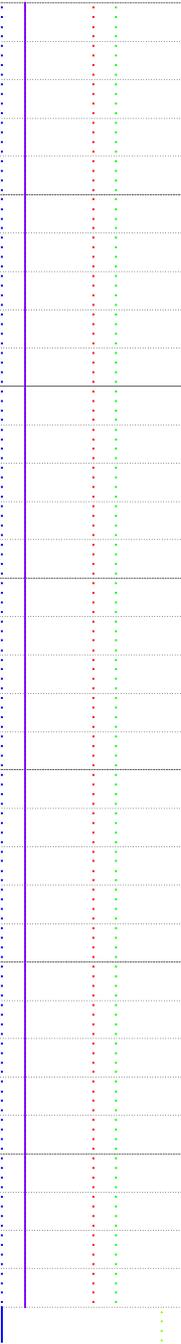
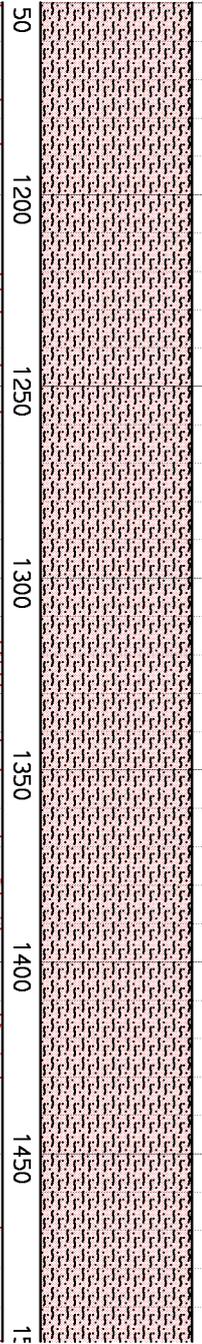
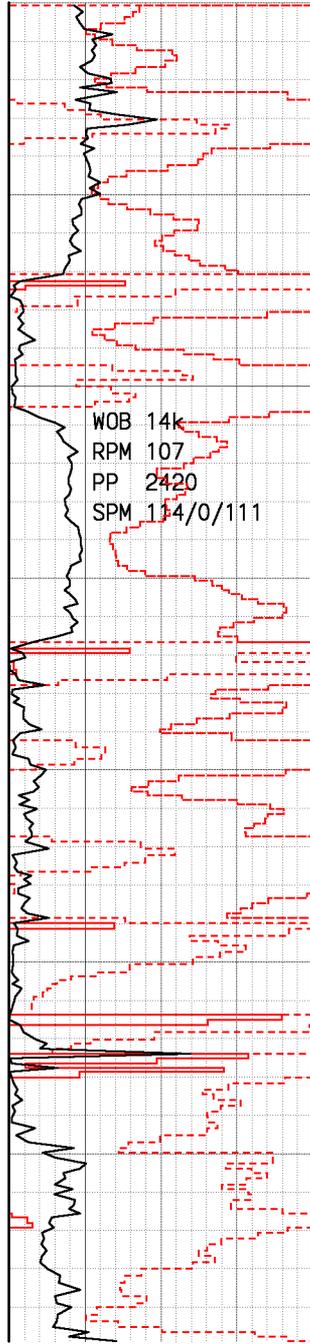
Alluvium:wht-tan/org,translu-
transpar qtz,unconsol,grs
~2mm & up to 10mm,predom det
qtz & plag w/gravel and crs-
v coarse gr sand,mod-prly
srtd,predom granitic,ang
-subrddd,occ hematite,r brn-
blk biotite.

Max ROP 1654'/hr



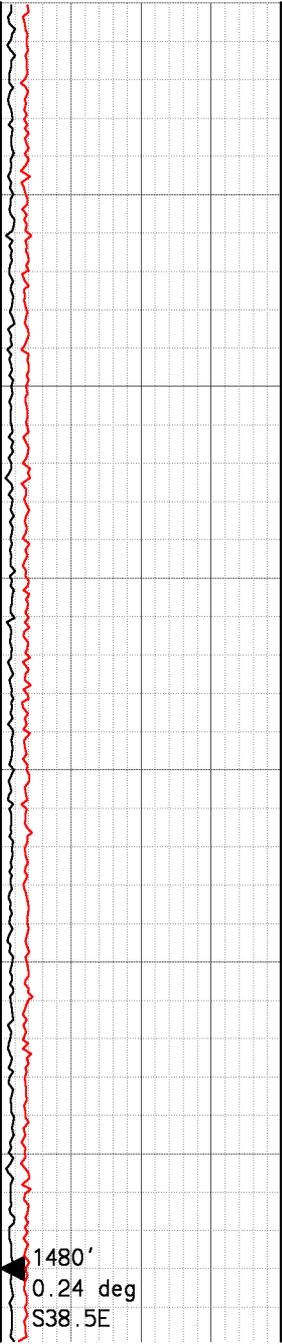
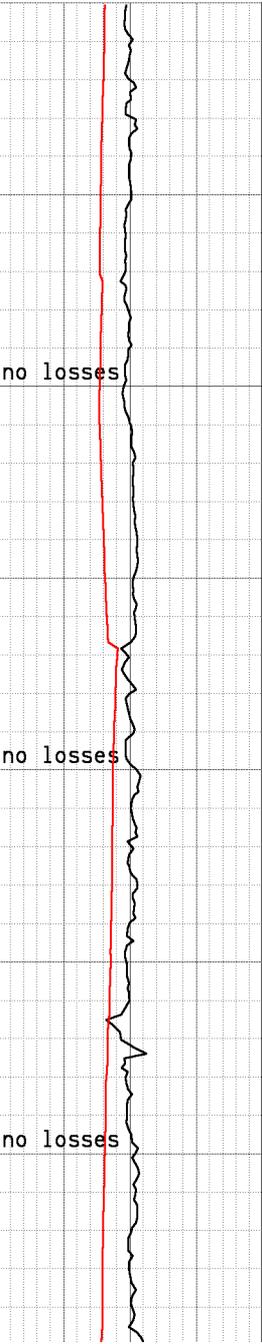
Alluvium:wht-tan/org,translu-
transpar qtz,unconsol,grs
~2mm & up to 20mm,predom det
qtz & plag w/gravel and crs-
v coarse gr sand,prly
srted,predom granitic,ang
-subrddd,occ hematite,r brn-
blk biotite.

Alluvium:wht-tan/org,translu-
transpar qtz,unconsol,grs
~2mm & up to 20mm,predom det
qtz & plag w/gravel and crs-
v coarse gr sand,prly
srted,predom granitic,ang
-subrddd,occ hematite,r brn-
blk biotite,r disem calc,occ
det apatite.



101/106
103/108
104/111
107/112

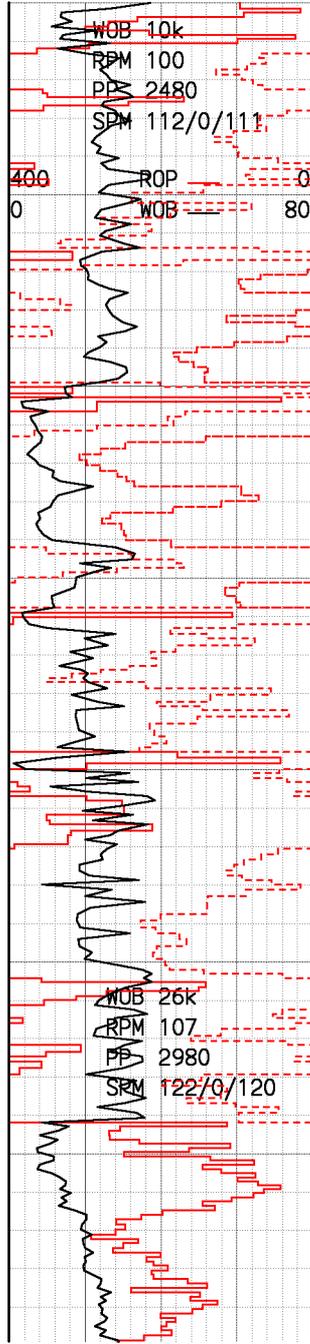
no losses
no losses
no losses



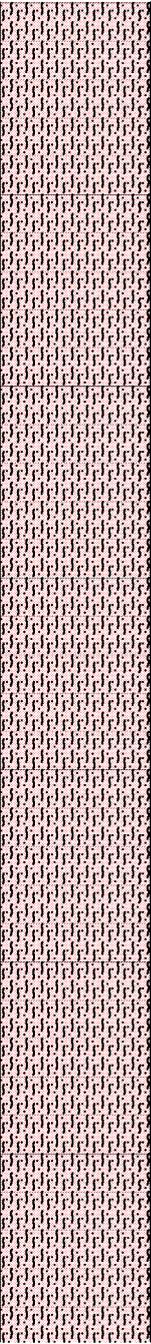
Alluvium:wht-tan/org,translu-transpar qtz,unconsol,grs ~2mm & up to 20mm,predom det qtz & plag w/gravel and crs-v crs gr sand,prly srted, predom granitic,ang-subrddd, tr disem calc,r det horn,r chlor,occ hematite,r brn-blk biotite.

Alluvium:wht-tan/org,translu-transpar qtz,unconsol,grs ~2mm & up to 20mm,predom det qtz & plag w/gravel and crs-v crs gr sand,prly srted, predom granitic,ang-subrddd, tr disem calc,r det horn,r chlor,occ hematite,r brn-blk biotite.

1480'
0.24 deg
S38.5E



1500
1550
1600
1650
1700
1750
1800
1850



Q C P Pr H Ch An E C1

40
40

T In 2400
T Out 2400

PP 4800
PVT 10000

H2S PPM 10
CO2 5000

108/115

110/117

113/121

no losses

no losses

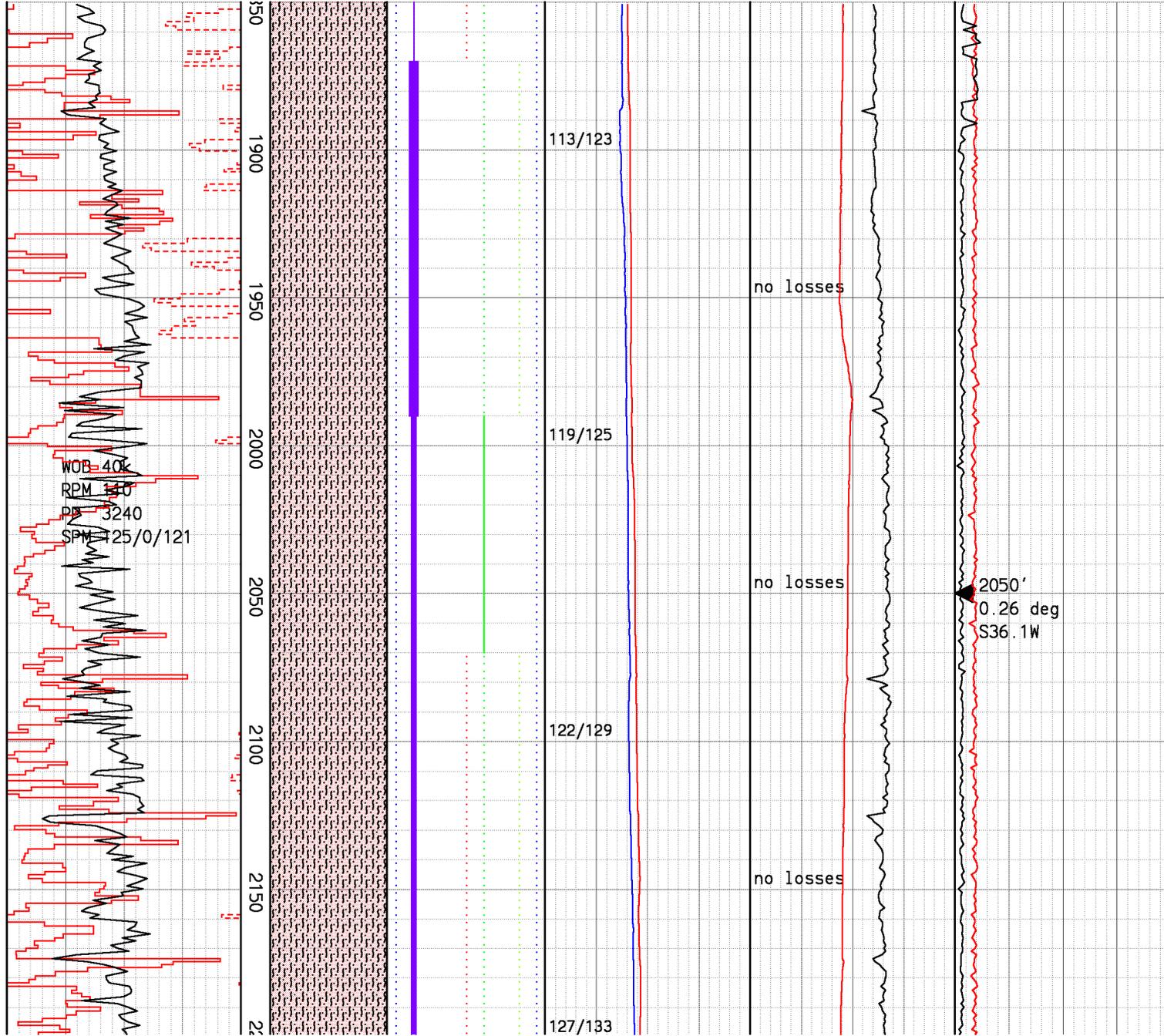
no losses

no losses

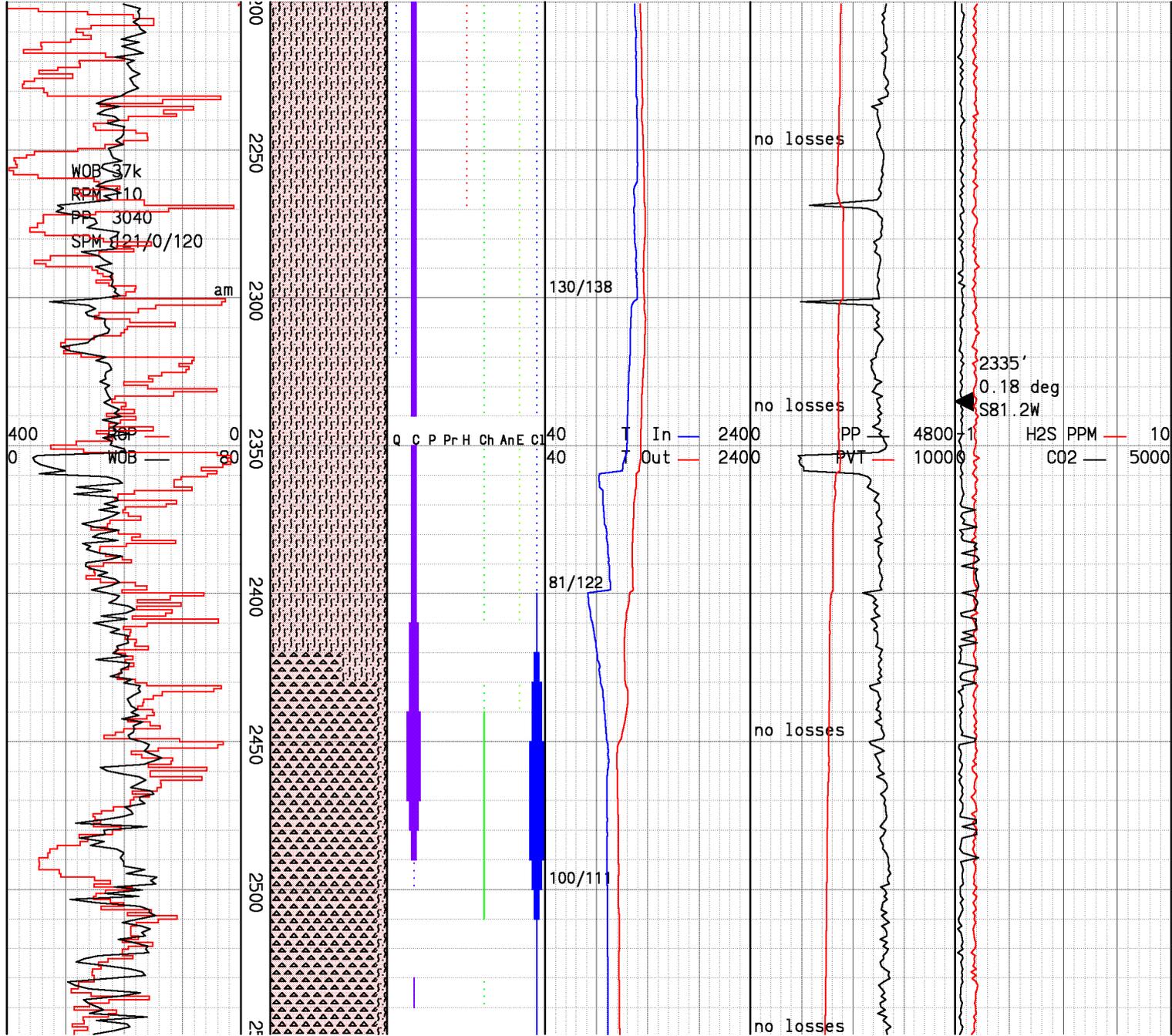
1670'
0.10 deg
S36.9W

Alluvium:wht-tan/org,translu-
transpar qtz,occ sugary txt,
unconsol,much smaller grs ~2-
5mm,predom det occ vitreous
qtz & plag w/gravel and crs-
v crs gr sand,well srted,
predom granitic,ang,tr disem
calc,r det horn,r chlor,occ
hematite,r brn-blk biotite.

Alluvium:wht-gry/tan,translu-
transpar occ rexln qtz,occ
sugary txt,unconsol,smaller
grs ~2-5mm,predom det occ
vitreous qtz & plag w/gravel
and crs-v crs gr sand,wl
srted,predom granitic,ang,tr
disem calc,r det horn,r
chlor,occ hematite,r sticky
gry clay,r gold-brn occ blk
biotite.



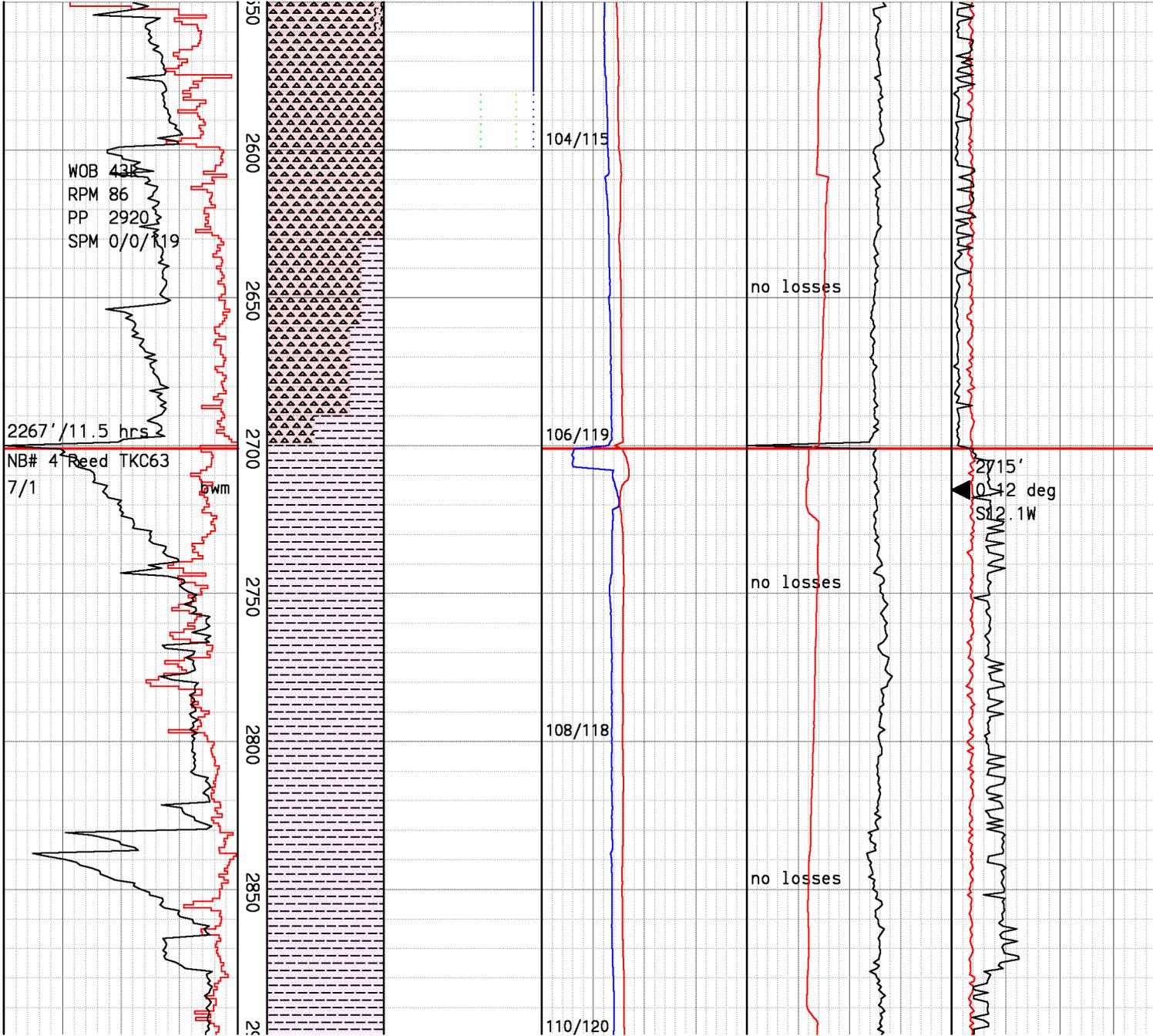
Alluvium:wht/gry-tan,translu-
 transpar occ rexln qtz,occ
 sugary txt,unconsol,smaller
 grs ~2-5mm,predom det occ
 vitreous qtz & plag w/gravel
 and crs-v coarse gr sand,wl
 srted,predom granitic,ang,tr
 disem calc,r det horn,r
 chlor,occ hematite,r sticky
 gry clay,r gold-brn occ blk
 biotite.



Mud cooler on.

Rhyolite: med-dk gry, hd, aphanitic txt, translucent qtz, significant lt pink subhed k-spar, tr-abun sticky gry clay altern of rock, cataclastic, mnr-abun disem calc, r-tr euhed horn, occ det yel-grn epid.

Alluvium: med gry, translucent transpar qtz, occ sugary txt, unconsol, much smaller grs avg 1mm occ up to 5mm, predom det occ vitreous qtz w/plag, crs -v coarse gr sand, well srtd, predom granitic, subrndd-rndd, mnr-abun disem calc, r det horn, tr chlor, occ hematite, r brn-blk biotite.



Rhyolite:wht-lt gry,hd,
aphanitic txt,transluc-
transpar qtz,significant lt
pink subhed k-spar,r-tr
sticky gry clay altern of
rock,r-tr disem calc,occ
euhed horn,occ r det yel-
grn epid,r-mnr chlor altrn.

Granite:wht/beige-dk gry,hd-
v hd,crs grained,porphyritic
txt,salt/pepper appear,chips
~2-5mm,ang-subang,occ r det
euhed horn,r-mnr dk grn chlor
altrn,r det yel epid,r disem
limonite,r perv hematite.

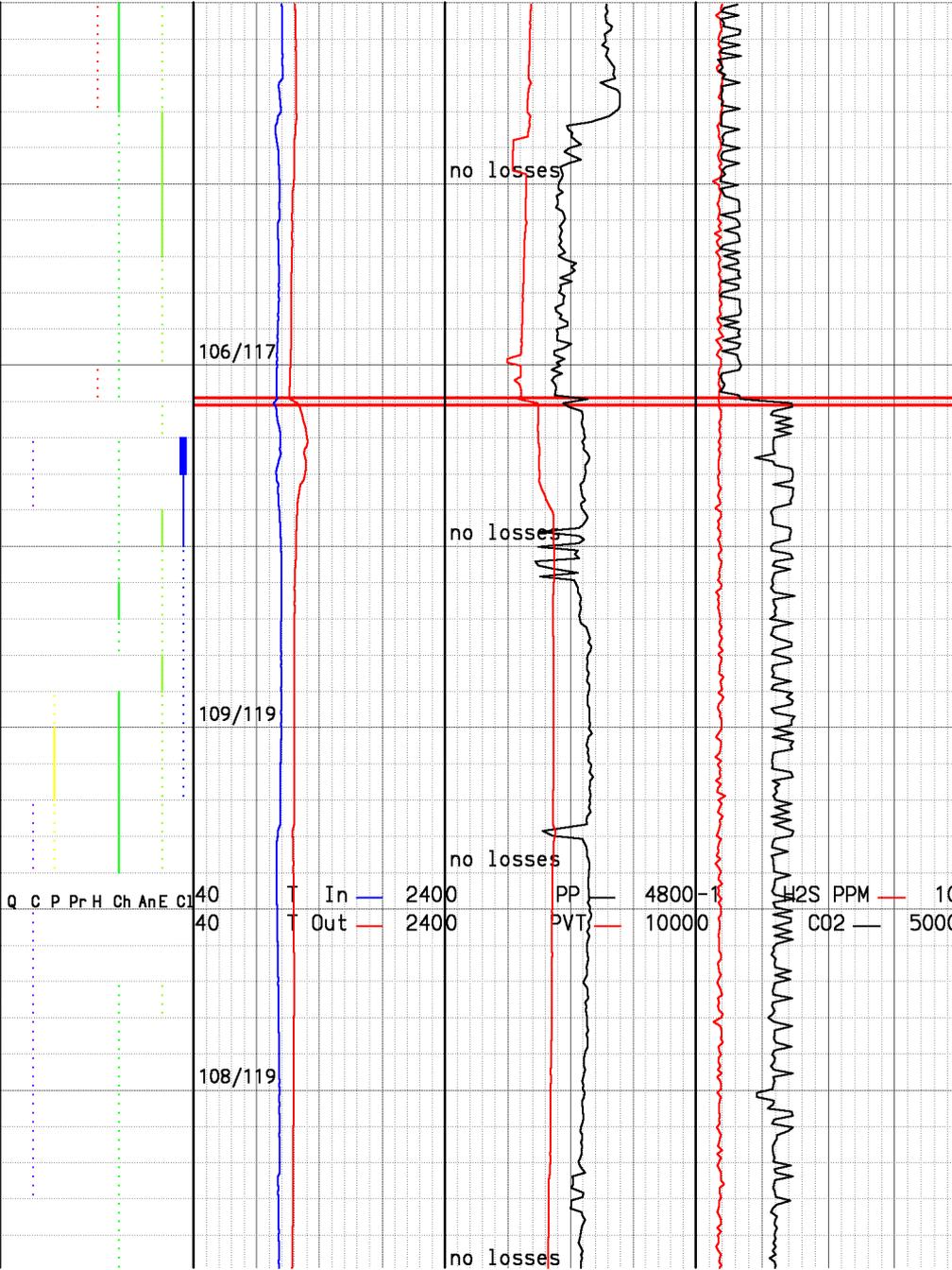
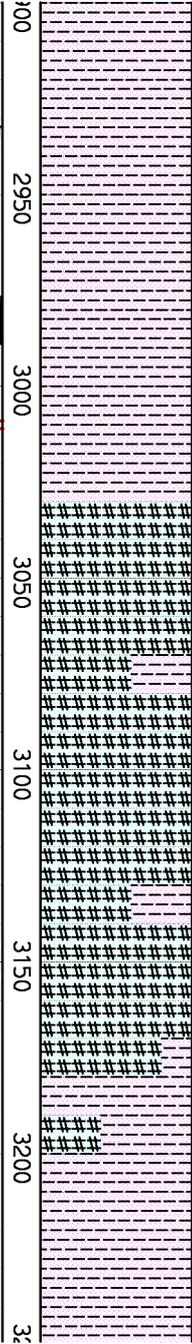
Granite:wht/beige-dk gry,hd-
v hd,fn-crs grn,porphyritic
txt,sugry app,chips >1mm
ang-sub ang,occ r detr horn,
r-tr dk gr chlor alt,r det
yel epid,abs-r perv hematite.

WOB 70k
 RPM 79
 PP 3070
 SPM 117/0/118

309' / 11 hrs

NB#5 Baker Hughes
 NB#6 Reed TKC63

400 ROP 0
 0 WOB 80



106/117

109/119

108/119

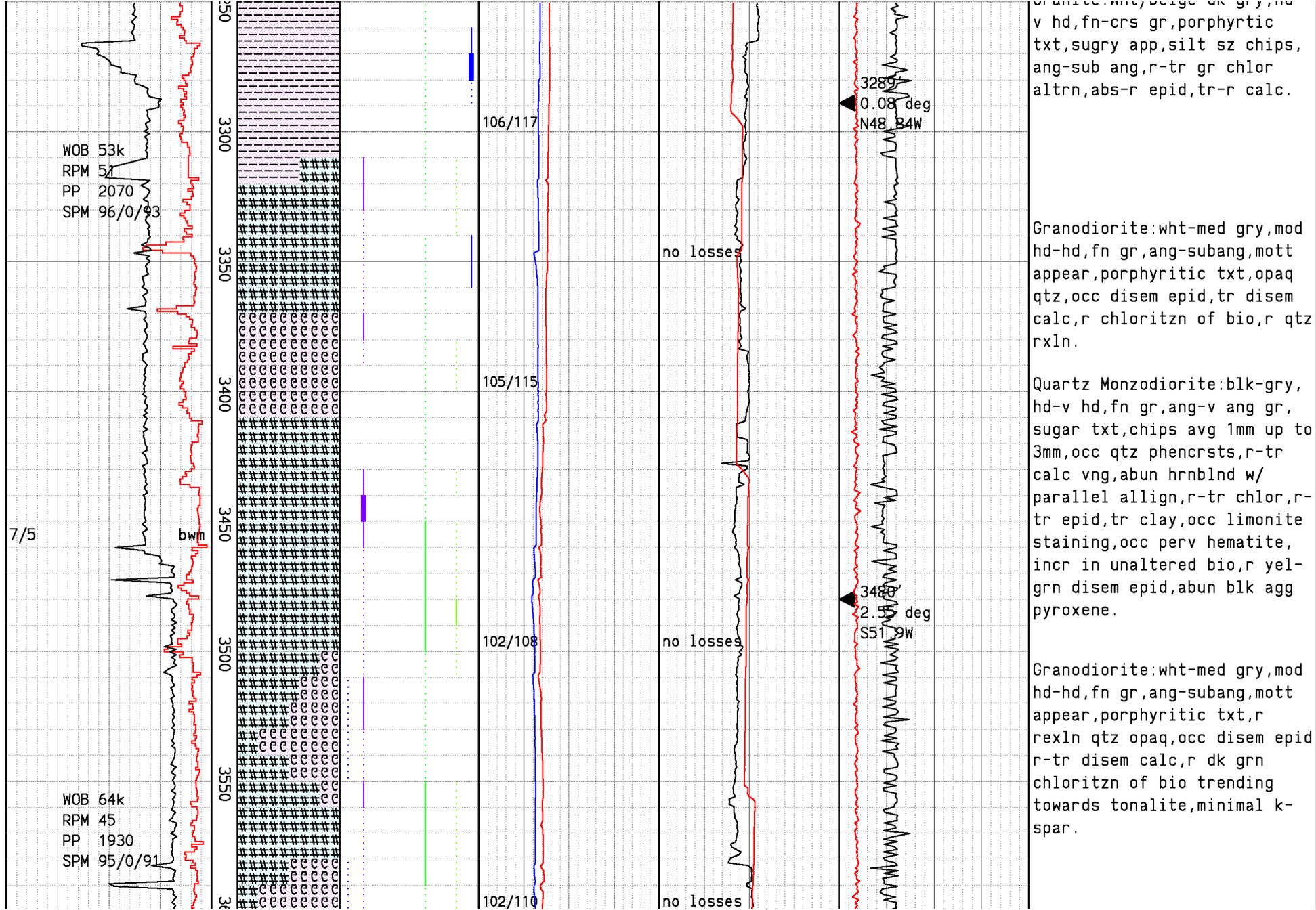
Q C P Pr H Ch An E Cl 40 T In — 2400 PP — 4800 L2S PPM — 10
 40 T Out — 2400 PVT — 10000 CO2 — 5000

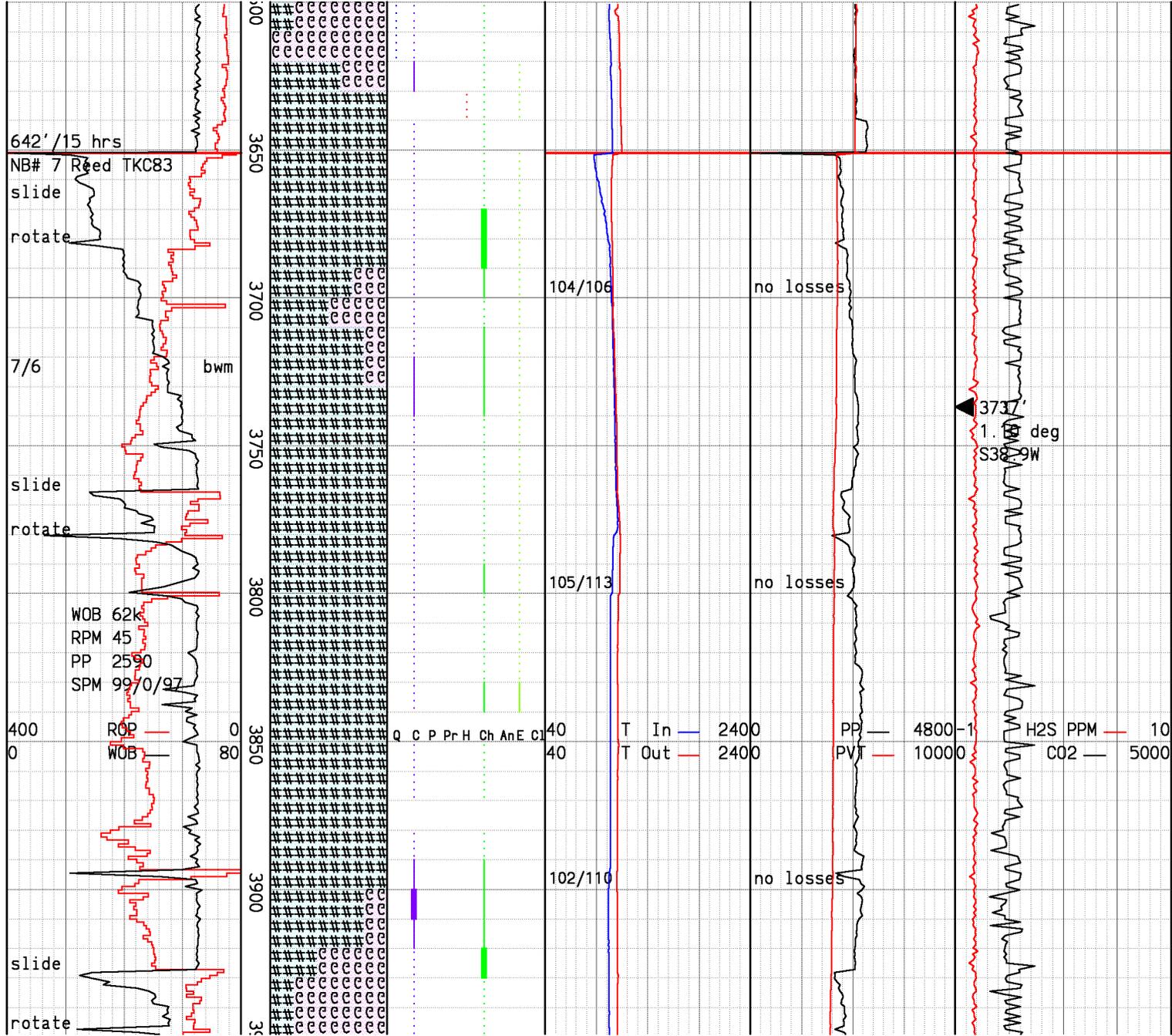
Drill 14.75" hole t/3009'.
 Run 73 jnts of 11.75", 54#
 J-55 BTC casing to 2989'.

Drill 2', perform FIT test.
 Drill ahead w/10.625" bit
 & mud motor.

Quartz Monzodiorite: blk-gry,
 hd-v hd, fn gr, ang-v ang gr,
 sugary txt, occ qtz phenocrsts,
 abun hrnblnd, r-tr chlor, r-tr
 epid, tr clay.

Drill Break F/3226' T/3231'
 ROP F/ 64'/hr to 224'/hr,
 WOB F/50-34k lbs.



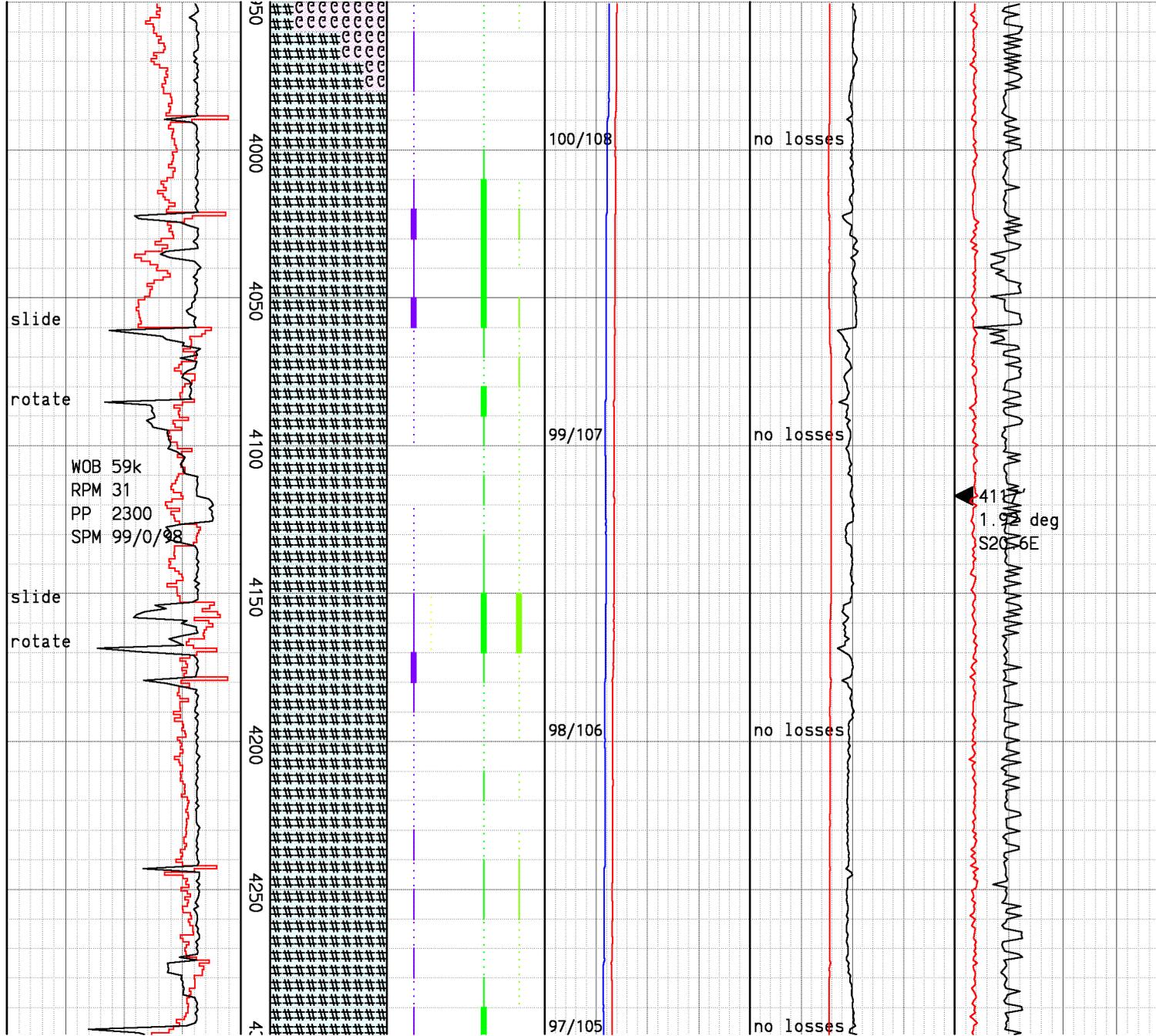


Switch from drilling on mud to drilling on clean water.

Quartz Monzodiorite: blk-gry, hd-v hd, fn gr, ang-v ang gr, sugar txt, chips avg 1mm up to 3mm, occ qtz phenocrsts, r-tr calc vng, abund hrnblnd w/ parallel align, r-tr chlor, r-tr epid, tr clay, occ limonite staining, occ perv hematite, incr in unaltered bio, r yel-grn disem epid, prom blk agg pyroxene.

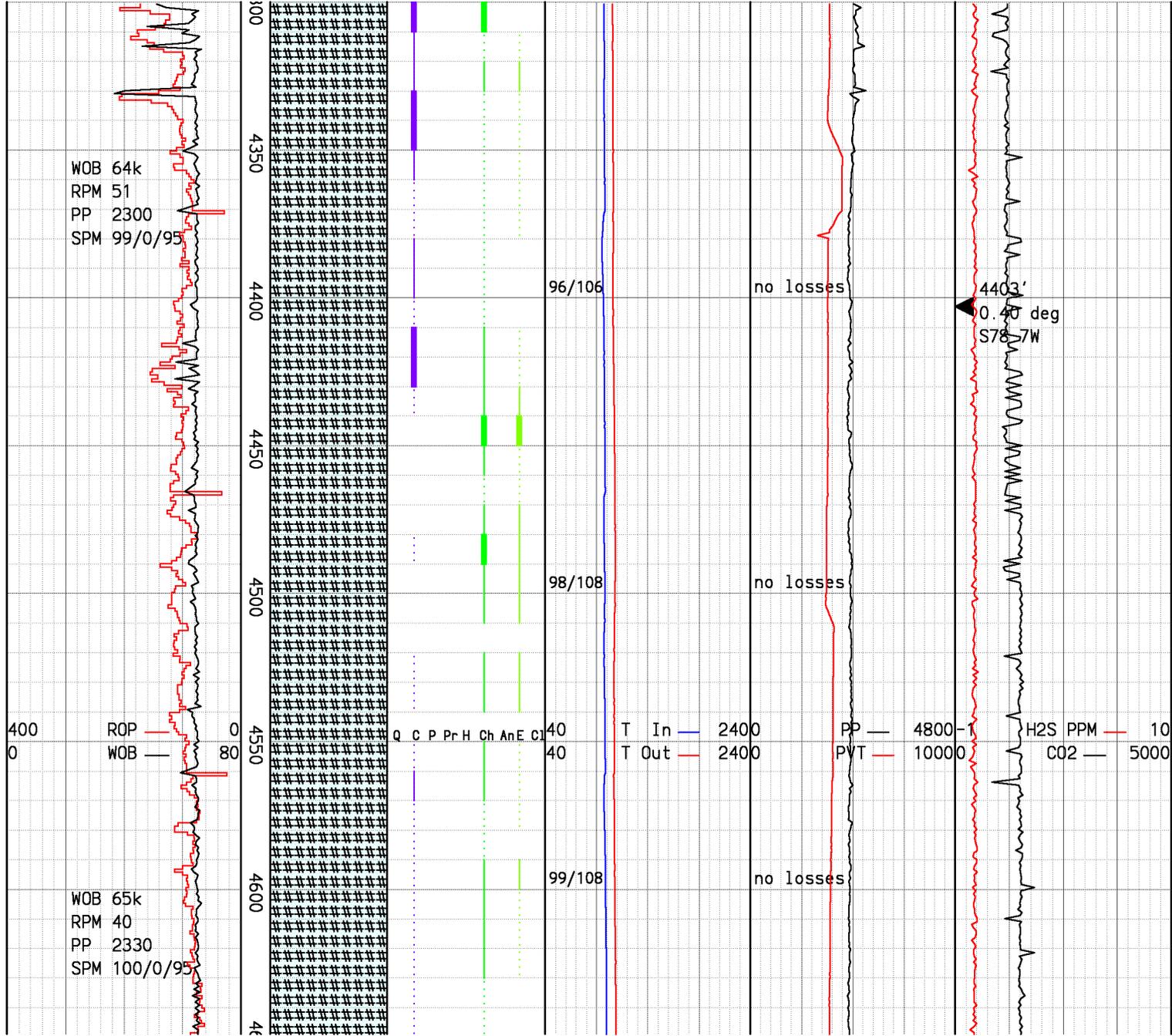
Granodiorite: wht-med gry, mod hd-hd, fn gr, ang-subang, mott appear, porphyritic txt, r yel-grn euhed & perv epid, r-tr disem calc, r-tr dk grn chloritzn of bio, minimal k-spar, high percentage of biotite lenses.

Quartz Monzodiorite: gry-blk, hd-v hd, fn-crs gr, ang-v ang gr, sugar txt, chip size avg 1-2mm, occ 5m-10mm incrng around ~3900', wk fol of micas, r-mnr disem calc microvng, tr-r perv chlor, occ r-tr yel epid, occ perv hematite, incr in unalt bio, occ yel det epid, prom blk agg pyroxene, occ agg mag, incr in biotite/pyroxene/hornblende around 3980'.



Quartz Monzodiorite: blk, hd-v
hd, fn-crs gr, v ang-ang gr,
sugar txt, chip size avg 1-2mm
occ 7-10mm, wk foliation of
micas, r-mnr interstit calc,
occ microvng, r-mnr chlor,
r-mnr perv vitreous yel epid,
occ perv hematite, incr in
unaltered bio, r-tr yel epid,
abun blk agg pyroxene, occ
agg magn, incr in biotite/
pyroxene/hornblende around
3980', occ yel-gold agg pyr.

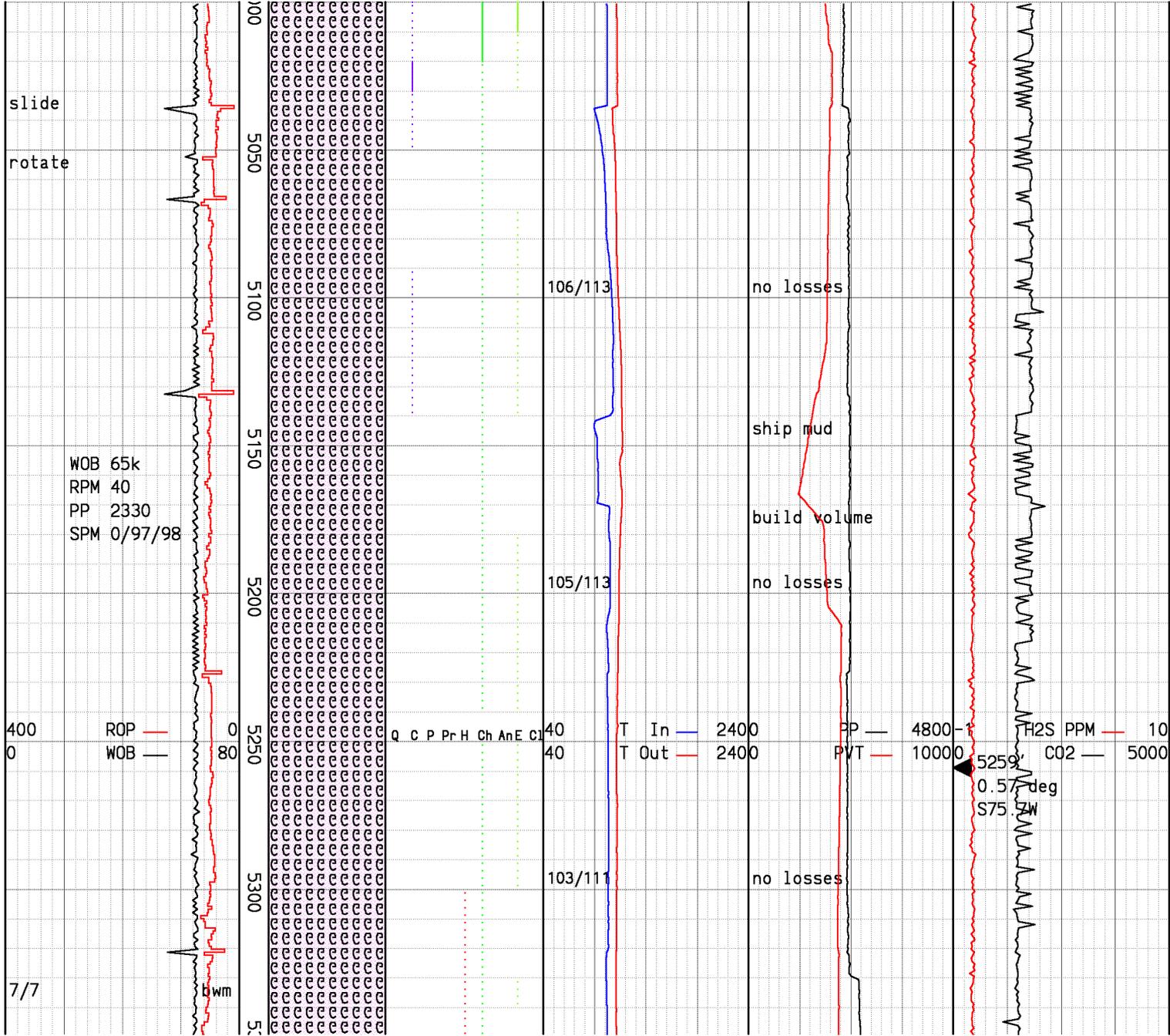
Quartz Monzodiorite: blk, v hd,
fn-crs gr, v ang-subang gr,
sugar txt, 1-2mm chip size,
occ 5mm chip size decr around
4380', wk foliation of micas, r-
mnr interstit calc, occ micro
vng, r-mnr perv chlor, r-mnr
perv vitreous yel epid, occ
perv hematite, decr in bio
around 4410', r-tr yel det
epid abun blk agg pyroxene



epid, abun blk agg pyroxene, occ agg magnetite, incr in biotite/pyroxene/hornblende around 3980', occ yel-gold pyr agg.

Quartz Monzodiorite: blk, v hd, fn-crs gr, subang-v ang gr, sugar txt, 1-2mm chip size, occ 5mm, overall decr in chip size, wk foliation of micas, r interstit calc, r-tr perv chlor, r-tr vitreous yel epid, occ perv hematite, incr in biotite around 4500', r-tr yel epid, abun blk agg pyroxene, occ agg magnetite, incr in biotite/pyroxene/hornblende around 3980', occ yel-gold pyr agg.

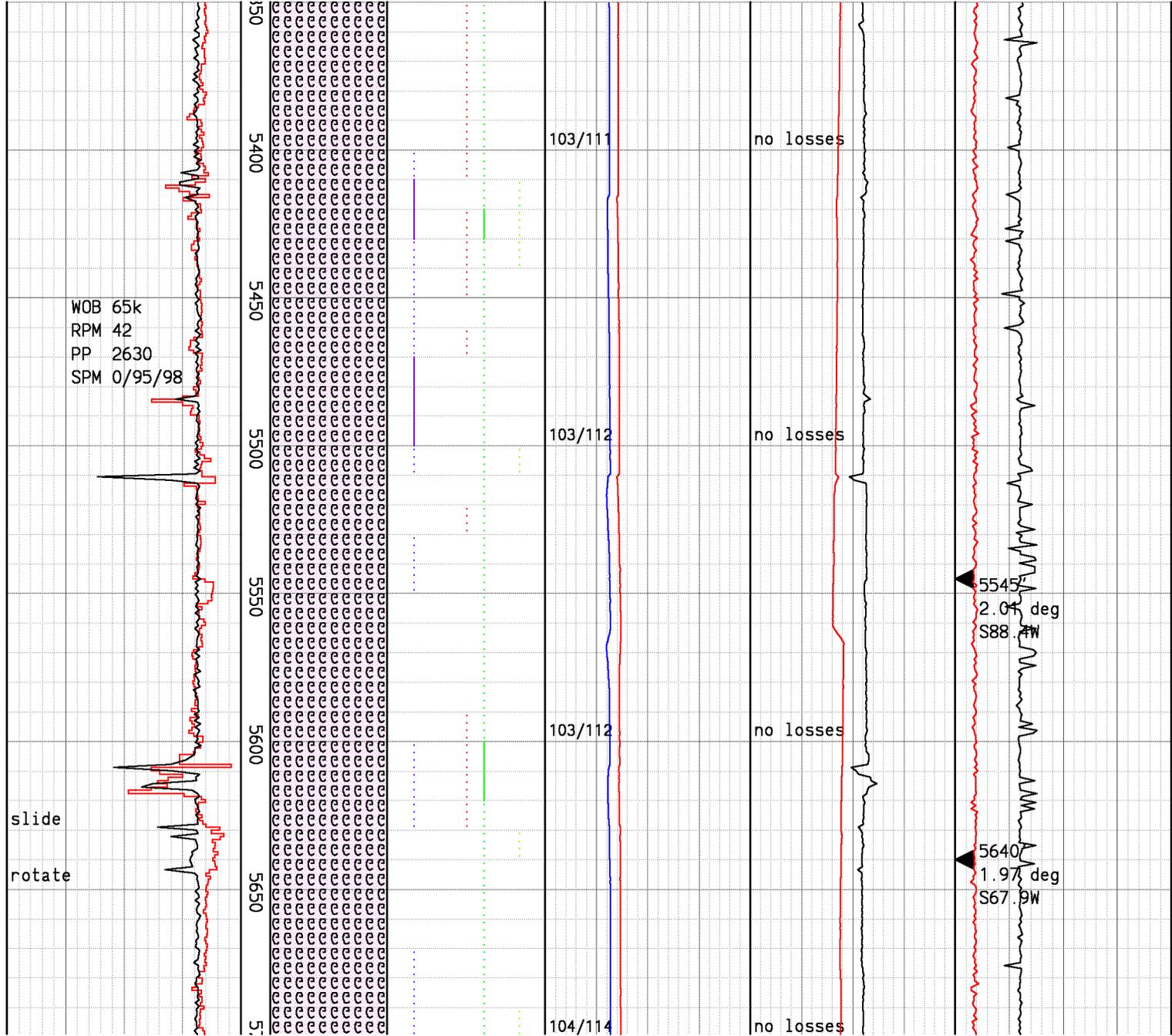
Quartz Monzodiorite: blk, v hd, fn-crs gr, v ang-subang gr, sugar txt, 1-2mm chip size, occ 5mm, overall decr in chip size, wk foliation of micas, r interstit calc, r-tr perv chlor, r-tr vitreous yel epid, occ perv hematite, incr in biotite around 4500', r-tr yel epid, abun blk agg pyroxene, occ agg magnetite, occ yel-gold pyr agg.



blchng,abs r interstit calc,
r-tr chlor,r-yr yel epid,abs
clay,tr biotite.

Granodiorite:lt-med gry,mod
hd-hd,fn gr,subang-v ang,
sugary txt,chip sz >1mm,wk
mica foliation,mnr blchng,
abs-r interstit calc,r disem
chlor,abs-r yel epid,abs
clay,tr biotite,tr nodule
of unknown orng/brn min.

Granodiorite:lt-med gry,mod
hd-hd,fn gr,subang-v ang,
sugary txt,chip sz >1mm,wk
mica foliation,mnr blchng,wl-
mod srtd,abs calc,r disem
chlor,abs-r yel-grn disem
epid,r-tr biotite,abs-r det
hornblende.



Granodiorite:lt-med gry,mod
hd-hd,fn gr,subang-v ang,
sugary txt,chip sz >1mm,wk
mica foliation,mnr blchnng,wl-
mod srtd,abs calc until
~5410',r disem chlor,abs-r
yel-grn disem epid,r-tr
biotite,abs-r det hornblende.

Transfer 50 BBL to active

Granodiorite:lt-med gry,occ
dk gry,hd-v hd,subang-v ang,
chip sz <1mm,occ 2-4mm,abun
blchnng of qtz/plag,occ
interstit calc,r-tr disem
chlor,occ yel-brn disem
epid,r-tr biotite,occ det
hornblende,occ det pyrox,
intermittant disem hematite.

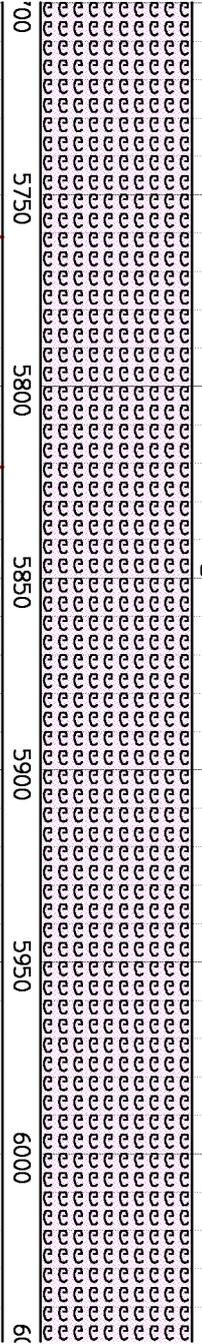
slide WOB 65k
 RPM 41
 PP 2780
 rotate SPM 0/98/100

2051' / 29.5 hrs 7/8-10
 NB#9 Reed TKC83 pb

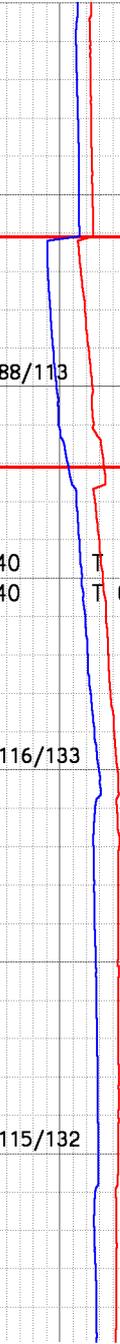
60' / 1 hr
 NB#10 Reed TKC83 bwm
 7/11

400 ROP 0
 0 WOB 80

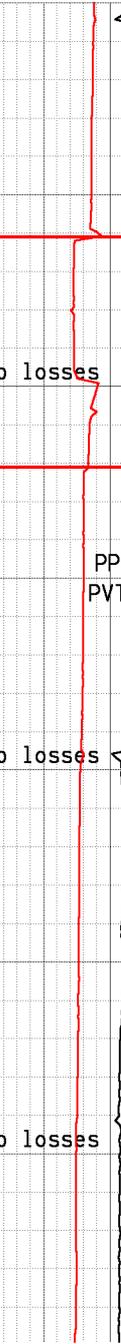
WOB 69k
 RPM 50
 PP 2610
 SPM 0/97/97



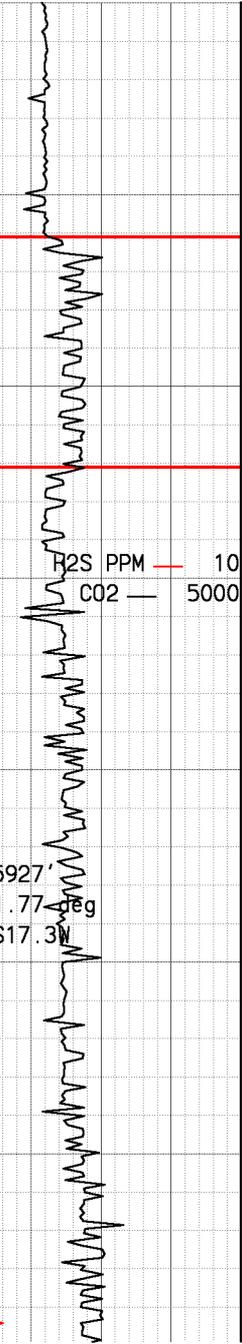
Q C P Pr H Ch An E Cl



40 T In 2400
 40 T Out 2400



PP 4800
 PVT 10000



P2S PPM 10
 CO2 5000

88/113

no losses

116/133

no losses

115/132

no losses

5927'
 1.77 Ag
 S17.3

Granodiorite:lt-med gry,occ dk gry,hd-v hd,subang-v ang, chip sz <1mm,abun blchnng of qtz/plag,occ interstit calc,r disem chlor,occ yel-brn disem epid,occ biotite.

Drill Break F/5859' T/5869'
 ROP F/ 159'/hr to 308'/hr,
 WOB F/67-51k lbs.

Granodiorite:lt-med gry,occ dk gry,hd-v hd,chip sz <1mm, minimal altrn,occ transpar interstit qtz,r disem chlor, occ yel-brn disem epid,occ euhed biotite.

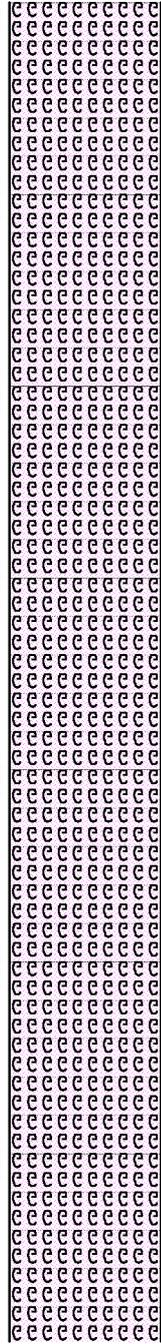
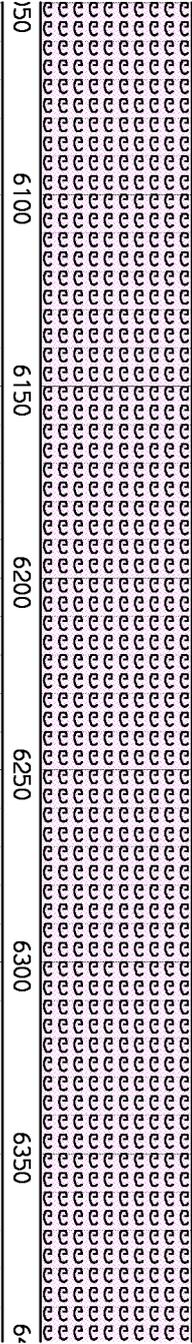
Drill Break F/5950' T/5957'
 ROP F/ 123'/hr to 264'/hr,
 WOB F/71-67k lbs.

Granodiorite:lt-med gry,occ dk gry,hd-v hd,chip sz <1mm, minimal altrn,occ interstit qtz,occ euhed biotite.

slide

rotate

WOB 65k
RPM 50
PP 2540
SPM 0/96/97



115/128

110/125

110/124

110/124

no losses
build volume

no losses

no losses

no losses

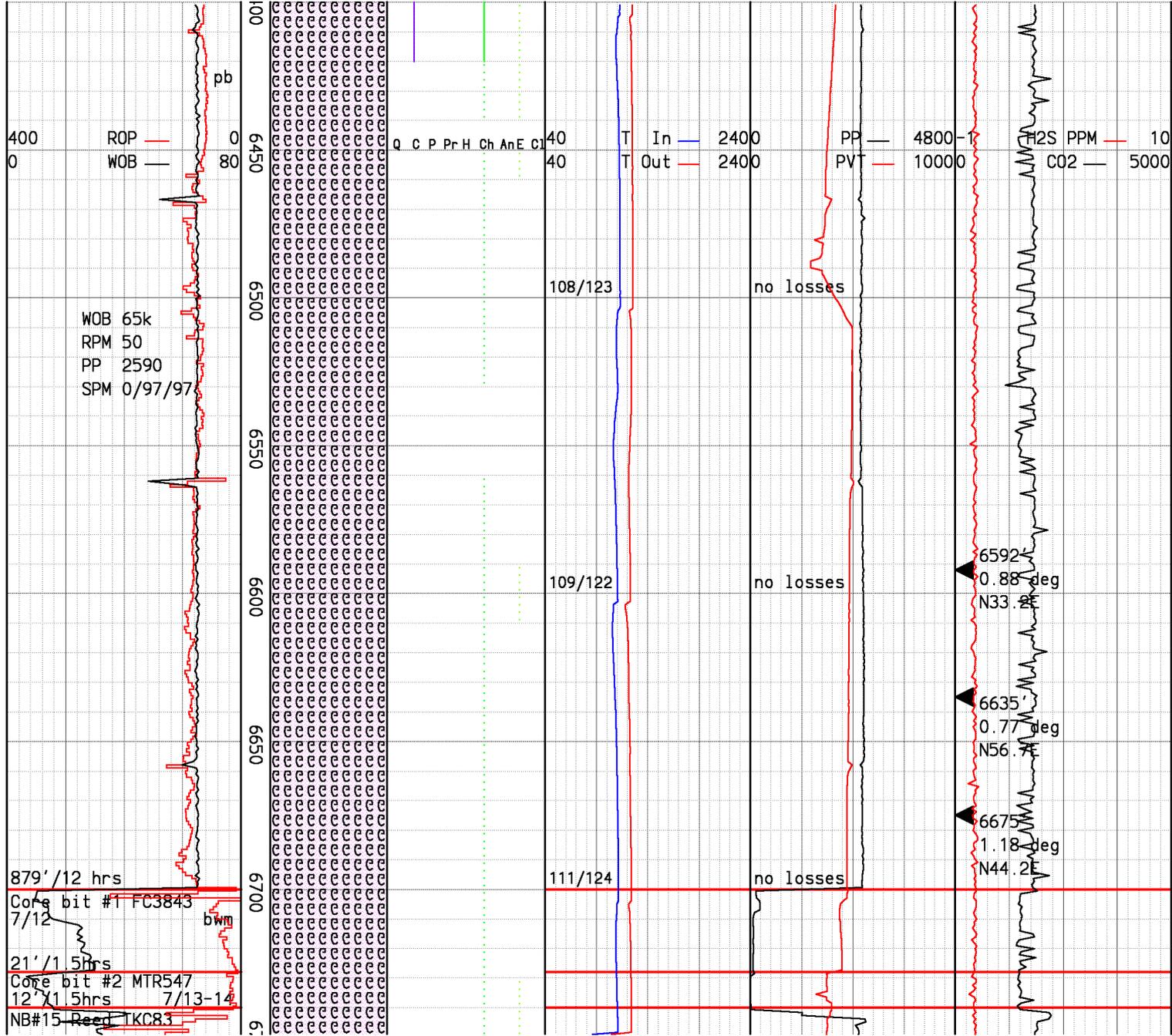
6307
1.06 deg
S47.5E

Fill pits to 500 BBLs

Granodiorite:lt-med gry,occ
dk gry,mod hd-hd,incr in chip
size,avg ~1mm,minimal altrn,
occ transpar interstit qtz,r
euhed biotite,signif incr in
biotite,calc,& chlor for ~20'
f/6180'-6200'.

Dump water out of pits
for dust control.

Granodiorite:lt-med gry,occ
dk gry,mod hd-hd,decr in chip
size,avg <1mm,minimal altrn,
occ transpar interstit qtz,r
euhed biotite.



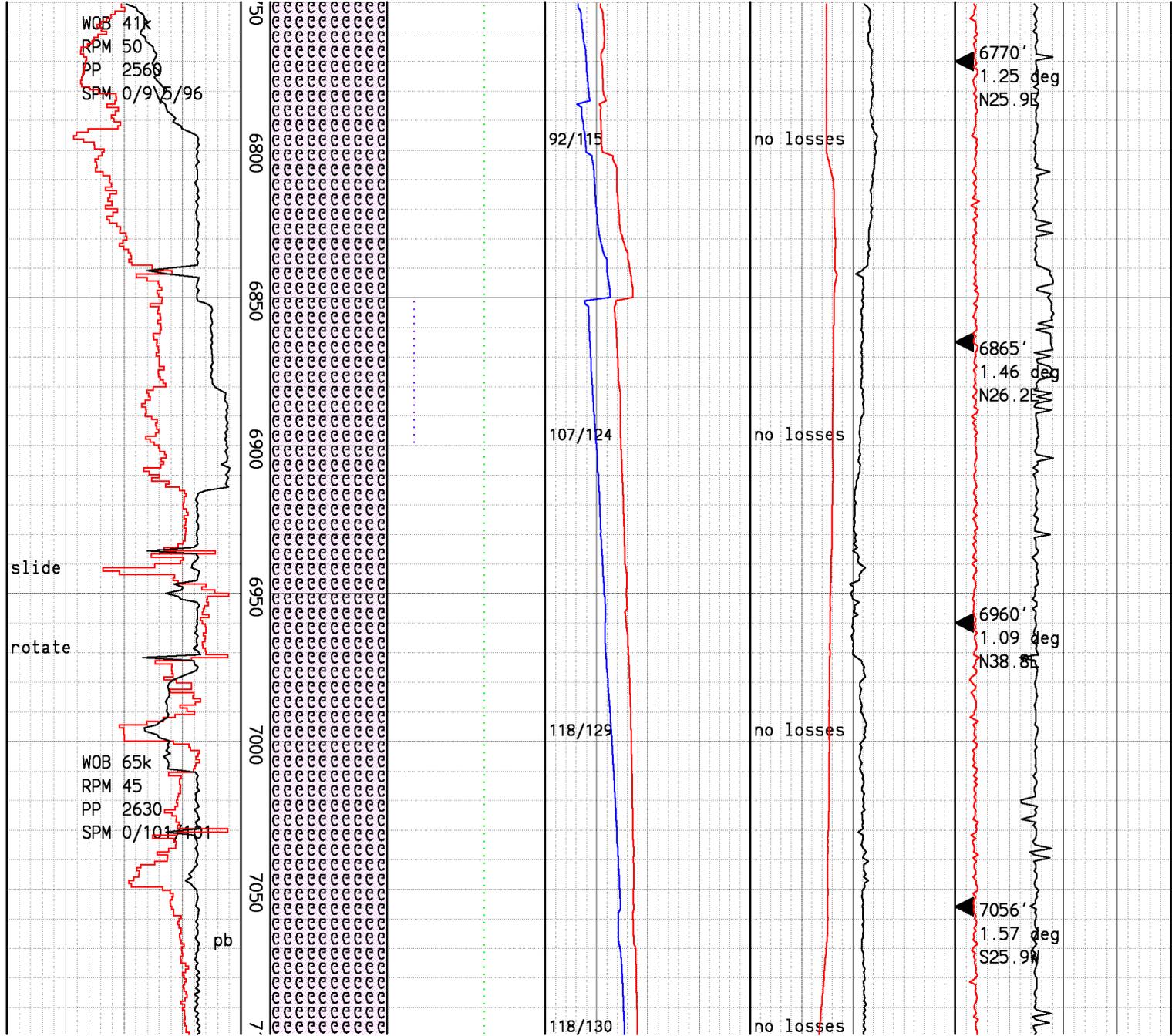
Granodiorite:lt-med gry,occ dk gry,hd,subang-v ang,chip sz <1mm,tr disem chlor,r yel disem epid,tr interstit calc, intermittant disem hematite, r euhed biotite,signif incr in biotite,calc,& chlor for ~20' f/6410'-6430'.

Granodiorite:lt-med gry,occ dk gry,mod hd-hd,ang-sub ang, sugary txt,chip sz avg <1mm, r blchnng of plag/qtz,occ yel-brn epid,r disem chlor,occ euhed biotite.

Drill to 6700'. Core #1 f/ 6700-6728'. Pull 28' of core out. RIH and Core #2 f/6728-6740'. Pull 12' of core out. RIH to ream, then POH to make up directional tools & drill ahead f/6740'.

6592' 0.88 deg N33.8
 6635' 0.77 deg N56.8
 6675' 1.18 deg N44.2

879' /12 hrs
 Core bit #1 FC3843
 7/12
 21' /1.5hrs
 Core bit #2 MTR547
 12' x 1.5hrs 7/13-14
 NB#15 Reed TKC83

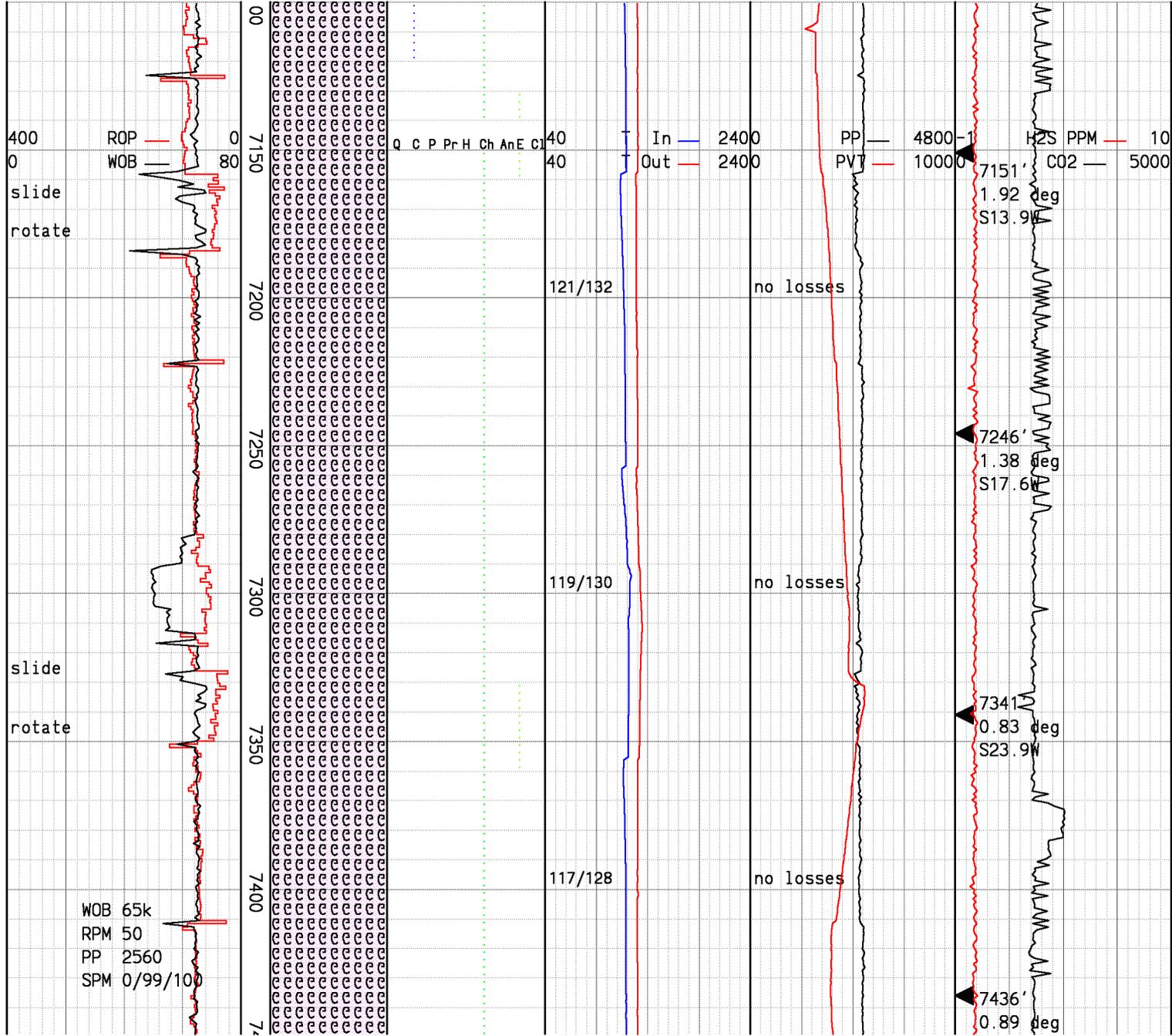


Transfer water from day tank to pits.

stop water transfer

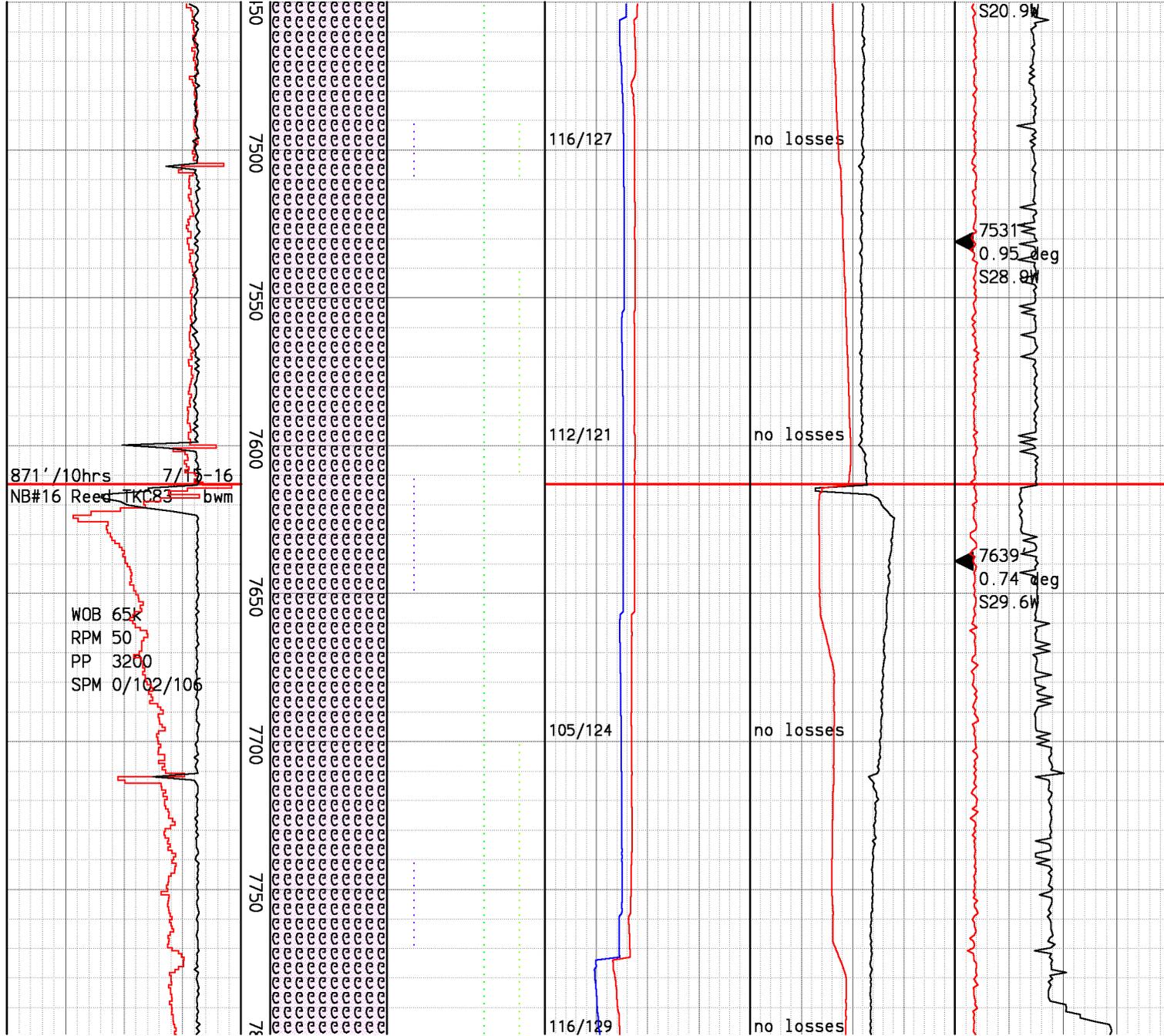
Granodiorite:lt-med gry,occ dk gry,mod hd-hd,opaq plag, transluc qtz,occ yel-grn epid,r disem chlor,tr blk euhed biotite.

Granodiorite:lt-med gry,occ dk gry,mod hd-hd,opaq plag, transluc qtz,occ yel-grn epid,r disem chlor,tr blk euhed biotite.



Granodiorite:lt-med gry,r dk gry,mod hd-hd,ang-sub ang, chip sz avg <1mm,occ ~1-2mm, opa q plag,transluc qtz,abs epid,r disem chlor,tr blk euhed biotite.

Granodiorite:lt-med gry,occ dk gry,mod hd-hd,subang-ang chip sz avg <1mm,opa q plag,tr altrn of plag,transluc qtz,r qtz vng,occ disem calc,occ yel epid,r disem chlor,tr blk euhed biotite.



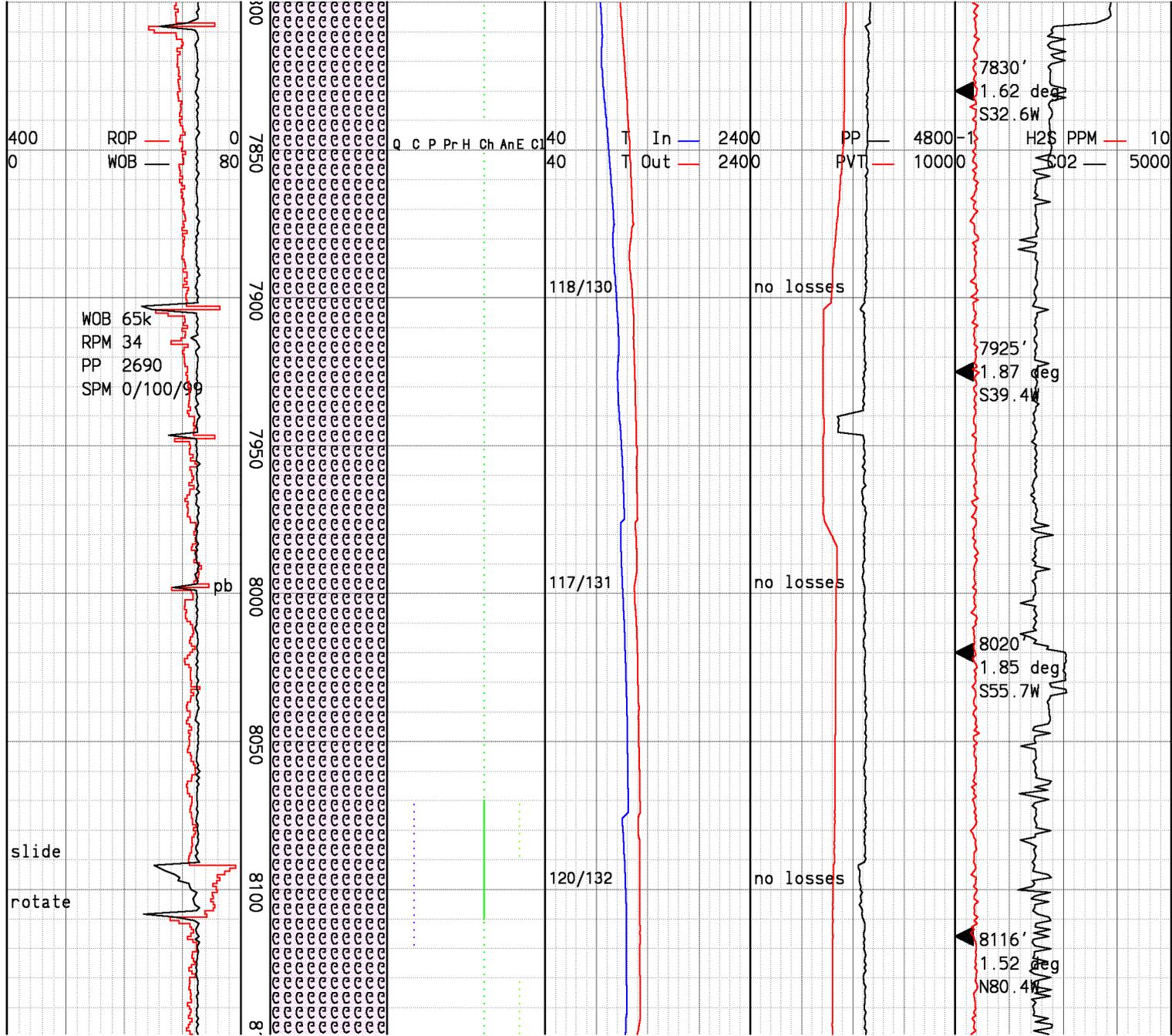
Granodiorite:lt-med gry,occ dk gry,mod hd-hd,chip sz avg <1mm,opaq plag,com altrn of plag,transluc qtz,r qtz vng,occ disem calc,r yel epid,occ disem pyr,r disem chlor,occ pyrox,r blk euhed biotite,occ biotite vng.

Transfer to pill fresh water for sweep.

Send fresh water sweep.

transfer fresh water to pill

Granodiorite:lt-med gry,occ dk gry,mod hd-hd,opaq plag,com altrn of plag,com



translucent qtz, occ disem calc,
 r yel epid, r disem chlor, r
 blk euhed biotite, occ
 biotite vng.

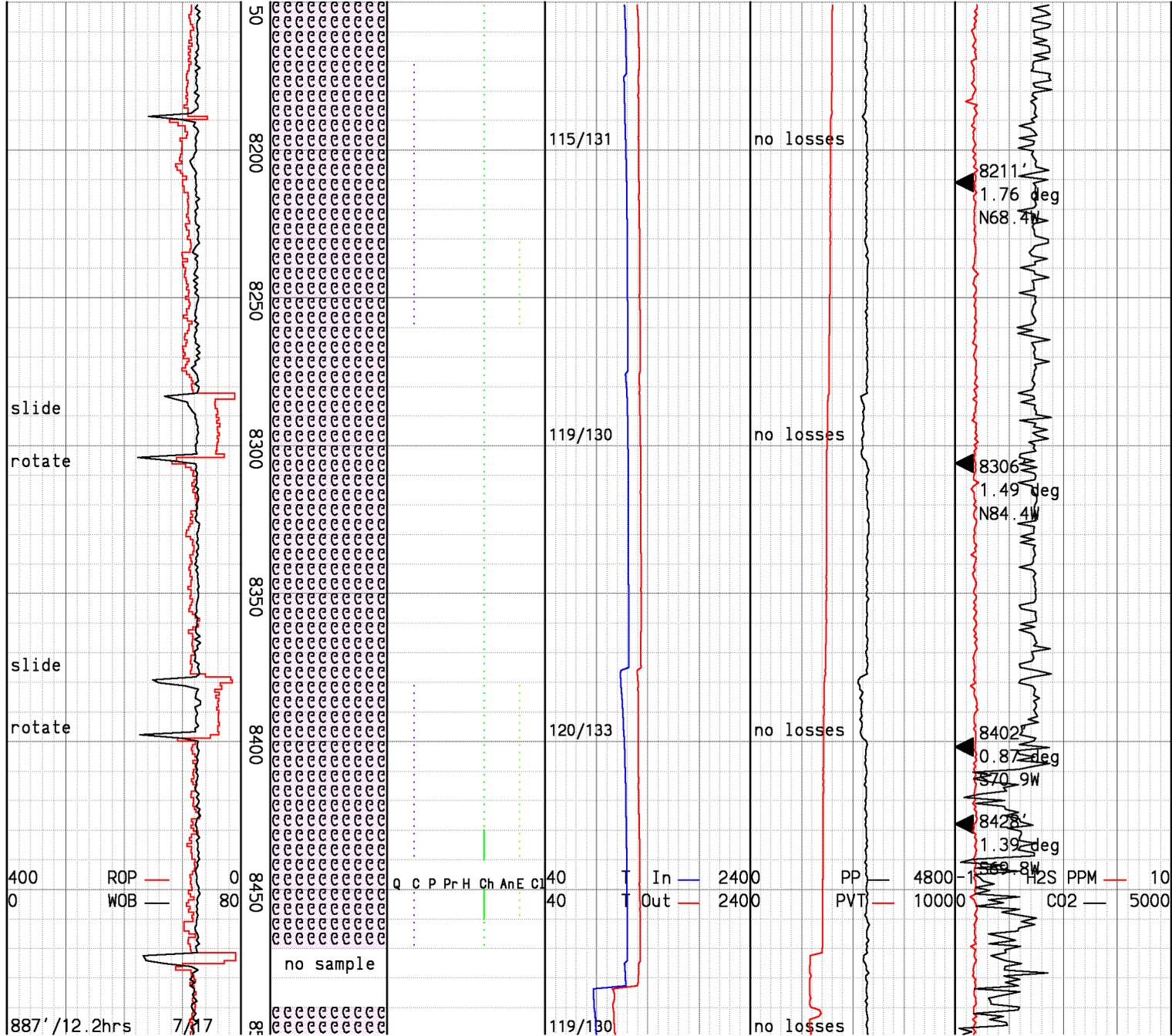
transfer out of pits to reserve pit

RPM Step Test

Pump 70 BBL fresh water sweep

Granodiorite: lt-med gry, occ
 dk gry, mod hd-hd, opa q plag, r
 altrn of plag, occ transluc
 qtz, occ disem calc, abs epid, r
 disem chlor, tr blk euhed
 biotite.

Granodiorite: lt-med gry, occ
 dk gry, mod hd-hd, transluc
 plag, occ altrn of plag, occ
 translucent qtz, occ disem calc



translucent qtz, occ disem calc, yel epid, r disem chlor, r blk euhed biotite, perv incr in biotite, calc, & chlor f/8040'-8100'.

Granodiorite: lt-med gry, occ dk gry, mod hd-hd, transluc plag, r altrn of plag, com transluc qtz, occ disem calc, occ yel epid, r disem chlor, r blk euhed biotite, decr in biot, calc, & chlor f/8300'-8370'.

Granodiorite Core: blk/white, lt gry, lt brn, hd-v hd, com augen txt w/10mm by 15mm com size, fn gr dikes typically dk gry occ felsic, com flow pattern of mafics dom biotite

8 75" core f/8500-8530'

NB#17 HC3843

7/18

40' 75hrs 7/19-27

7/28

NB#18 Reed C55 td

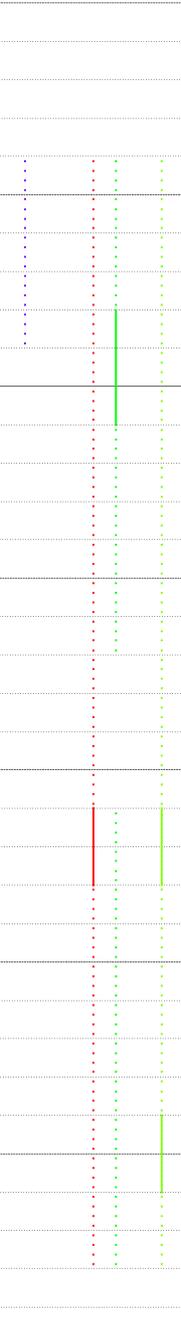
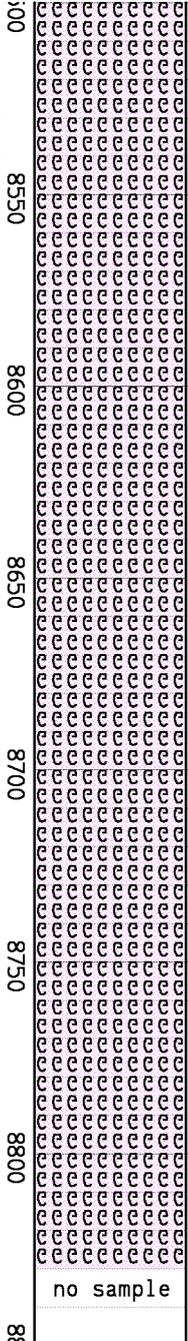
rotate

slide

rotate

slide

rotate



78/98

no losses

82/100

no losses

83/98

no losses

8558
2.7 deg
264 az

8658
2.3 deg
307 az

8748
0.9 deg
21 az

8848
0.9 deg

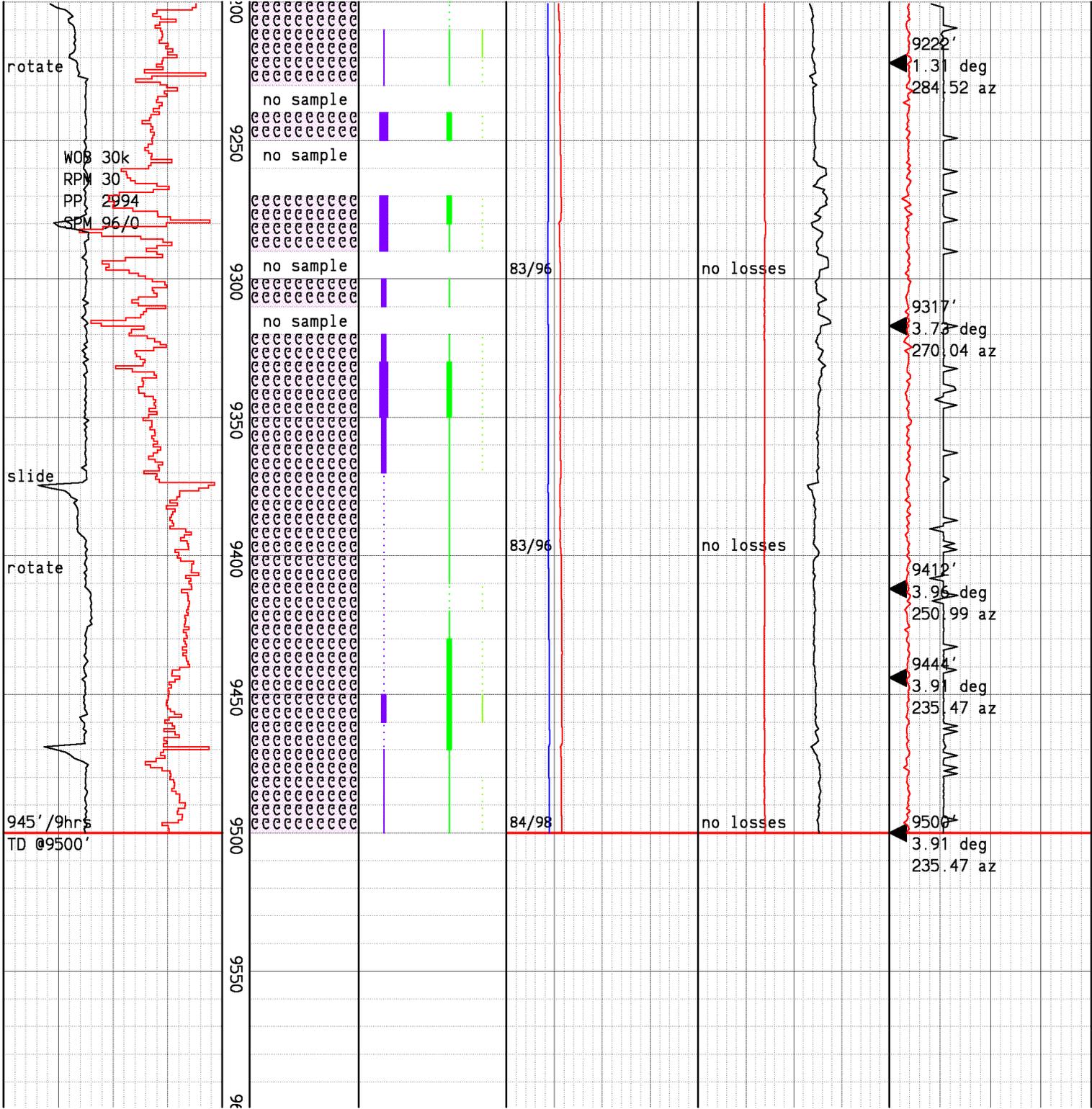
P00H,23.7' recovered,
Core f/8530-8540',P00H,
8.7' recovered.

Ream 10 5/8" t/8514',run
downhole logging:temp 321,
ream 10 5/8" t/8540',cool
well,continue logging,drill
ahead f/8540'-8544'.

Run 7" 41# TN10SS casing
w/fiber optic cable
f/surface t/8508'.

Drill ahead 10' w/5.75"
bit,perform extended
leak off test,P00H for
5.75" bit & directional
assembly.

Granodiorite:lt-md gry,blk,
wht,hd-v hd,ang-sub ang chip
sz avg ~1mm,com-abun clr qtz,
com-abun biotite,r-tr hem,r-
tr yel epid,r chlor.



Granodiorite:lt-md gry,blk, wht,hd-v hd,subang-ang chip sz avg ~1mm,occ 2-5mm,com-abun clr qtz,com-abun biotite,tr-com calc vng,r-mnr chlor,r-tr yel epid,loc mnr red/brn mica.

Granodiorite:lt-md gry,blk, wht,hd-v hd,ang-sub ang chip sz avg ~1mm,com-abun clr qtz, com-abun biotite,tr-mnr chlor,r calc vng,r-tr yel epid.

T.D. University of Utah
 FORGE 78B-32 at 9500' on
 7/29/21.Leave hole open
 below 7" shoe.



Appendices EOWR Utah FORGE Seismic Monitoring Well 78B-32	Ref. GRG-10230	
	Ver. Final	Page 260 of 288
	To accompany report issued 1 December 2021	

9.10. Coring Subcontractor Reports



Coring Log

REPORT - CORE # 1

Doc ref.: DHT_00000384_

Revision 12

WELL INFORMATION

Well #: 78B-32	Country: USA - North	Hole temp: 380 °F	Drive: Top Drive
Operator: Utah FORGE	Field: Forge Geothermal	Surf temp: 90 °F	Form. name:
Rig: Frontier 16	Section: inch	Well angle: 1 deg	Form. descr: Granite
Contractor: Frontier	Location: OnShore	B. hole pres: PSI	Water depth: ft
Resource Play (select at least one field): Geothermal			

CORE BARREL *

Size: 7 1/4" x 4"	Thread: Heavy Duty Thread	Spacing: 7.00 mm	Core catcher: HD
Type: RockStrongFCS	Inner Tube: Steel	Min Spacing: 15.00 mm	Lower Half Shoe: UF2
Length: 30 ft - 9.14 m	Swivel type: RockStrong	Max Spacing: 15.00 mm	

* Operator must fill the Equipment Information Sheet (DHT_00000455 or DHT_00000457)

COREHEAD
DULL GRADING

Type: FC3843	SN: 13340636	MN:	Before run: New
OD: 8 3/4 inch	Thread: Heavy Duty Thread	TFA: 1.7 SgIn	After run: DBR

MUD PROPERTIES

Type: Water	API Filter: N/A API	PV: cp	Sand: %
Mud Weight: 8.4 ppg	H2O/Oil:	YP: lb/100ft2	Solids: %
Viscosity: 40 cp	Gels: ppb	pH:	

BHA DESCRIPTION

Corehead, core barrel, stabilizer, Rockstrong coupling, upper coupling, float sub, x-over sub, roller reamer, drill collars, HWDP

BACKGROUND READING

String Weight			Off Bottom Torque			Drop Ball			Hydraulics		
	N/A	Klb	50 Rpm	N/A	FtLb	Flow rate	200	GPM	Flow rate	300	GPM
	N/A	Klb	60 Rpm	N/A	FtLb	Press Inc	0	PSI	On Bottom	300	PSI
	N/A	Klb	70 Rpm	N/A	FtLb	Mn to drop	10	min.	Off Bottom	300	PSI

TIMING

	START IN HOLE	START CORING	STOP CORING	CBRL at SURFACE	CBRL READY TO RUN	TOTAL Hrs
Date:	12-Jul-21	12-Jul-21	12-Jul-21	12-Jul-21	12-Jul-21	
Time*:	2:15	8:45	10:02	15:45	19:30	17.25

PERFORMANCE

Depth In	Depth Out	Cut Length	Hours	ROP	Recover	Intended core cut	Efficiency	Recover	Reason for stopping coring:
ft	ft	ft	[hr]	ft/hr	ft	ft	%	%	
6700.0	6728.0	28.00	1.2	23.33	12.00	30.00	40.00	42.86	Jam, mill, ROP

OVERPULL (last connection is at POOH)

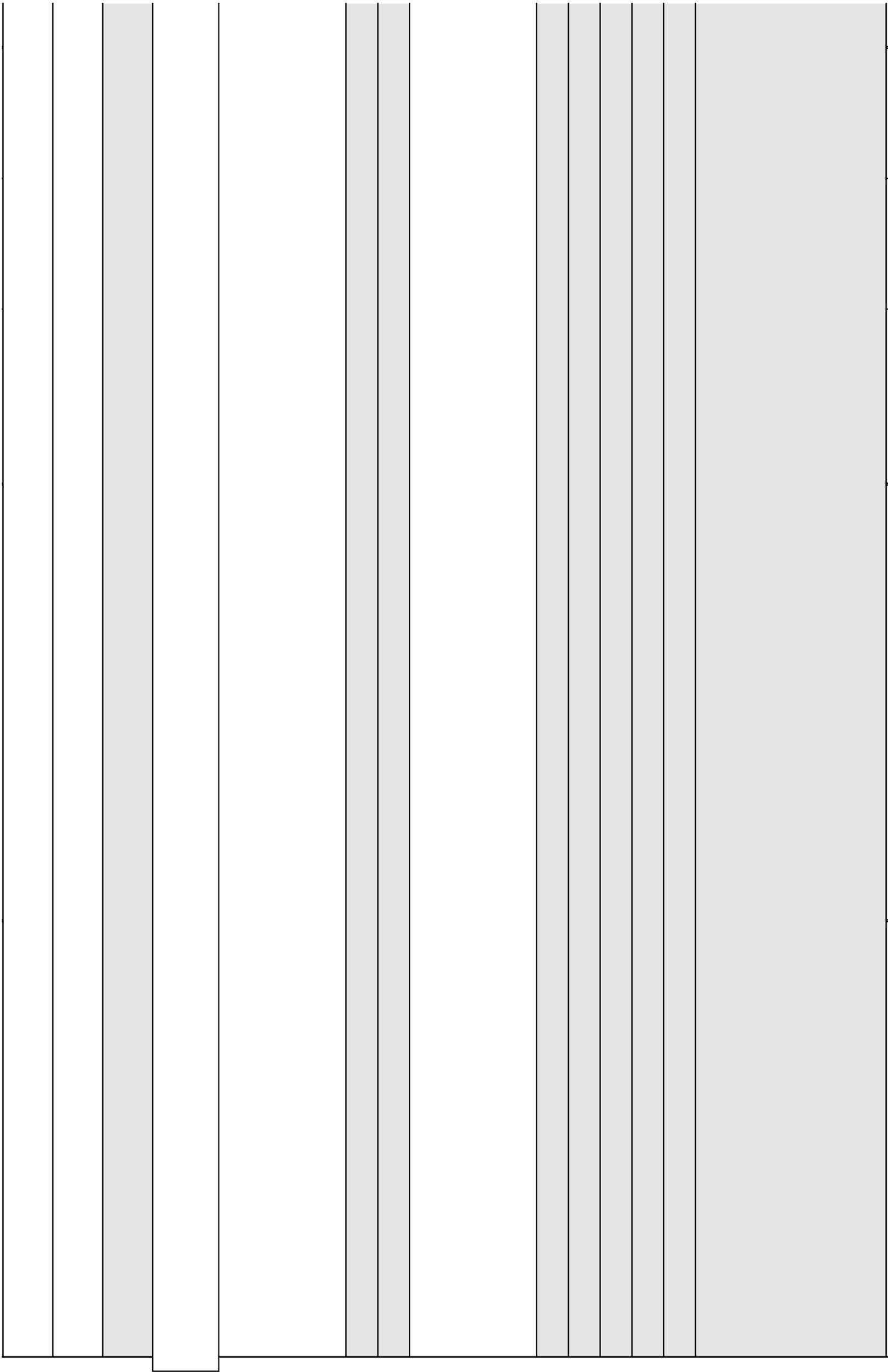
Connection	1	2	3	4	5	6	7	8	9	10
Overpull Klb										

REMARKS**U.S. CORING Representative**

Danny Rich, Scott Boid

Customer Representative

Fred Wilson, Virgil Welch, Brian Gresham



Coring Log

REPORT - CORE # 2

Doc ref.: DHT_00000384_

Revision 12

WELL INFORMATION

Well #: 78B-32	Country: USA - North	Hole temp: 390 °F	Drive: Top Drive
Operator: Utah FORGE	Field: Forge Geothermal	Surf temp: 90 °F	Form. name:
Rig: Frontier 16	Section: 0 inch	Well angle: 1 deg	Form. descr: Granite
Contractor: Frontier	Location: OnShore	B. hole pres: 0 PSI	Water depth: 0 ft
Resource Play (select at least one field): Geothermal		0	0

CORE BARREL *

Size: 7 1/4"x4"	Thread: Heavy Duty Thread	Spacing: 18.00 mm	Core catcher: HD
Type: RockStrong	Inner Tube: Aluminium Slick	Min Spacing: 22.98 mm	Lower Half Shoe: UF2
Length: 30 ft - 9.14 m	Swivel type: RockStrong	Max Spacing: 25.98 mm	

* Operator mus \

COREHEAD
DULL GRADING

Type: FC3843	SN: 12958459	MN:	Before run: New
OD: 8 1/2" inch	Thread: Heavy Duty Thread	TFA: 1.7 SgIn	After run: 6 chipped cutters

MUD PROPERTIES

Type: Water	API Filter: N/A API	PV: 0 cp	Sand: 0 %
Mud Weight: 8.4 ppg	H2O/Oil: 0	YP: 0 lb/100ft2	Solids: 0 %
Viscosity: 40 cp	Gels: 0 ppb	pH: 0	

BHA DESCRIPTION

Corehead, core barrel, stabilizer, Rockstrong coupling, upper coupling, float sub, x-over sub, HWDP

BACKGROUND READING

String Weight		Off Bottom Torque		Drop Ball		Hydraulics	
	227 Klb	50 Rpm	FtLb	Flow rate	200 GPM	Flow rate	300 GPM
	225 Klb	60 Rpm	8800 FtLb	Press Inc	0 PSI	On Bottom	0 PSI
	210 Klb	70 Rpm	FtLb	Mn to drop	12 min.	Off Bottom	0 PSI

TIMING

	START IN HOLE	START CORING	STOP CORING	CBRL at SURFACE	CBRL READY TO RUN	TOTAL Hrs
Date:	12-Jul-21	13-Mar-21	13-Mar-21	13-Mar-21	13-Mar-21	
Time*:	20:00	1:29	2:18	7:00	8:00	12.00

PERFORMANCE

Depth In	Depth Out	Cut Length	Hours	ROP	Recover	Intended core cut	Efficiency	Recover	Reason for stopping coring:
ft	ft	ft	[hr]	ft/hr	ft	ft	%	%	
6728.0	6740.0	12.00	0.8	15.58	9.40	30.00	31	78.33	Jammed

OVERPULL (last connection is at POOH)

Connection	1	2	3	4	5	6	7	8	9	10
Overpull Klb	None									

REMARKS

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U.S. CORING Representative

Danny Rich, Scott Boid

Customer Representative

Fred Wilson, Virgil Welch, Brian Gresham

Coring Log

Penetration & Parameters Log - CORE # 2 Doc ref.: DHT_00000384_ Revision 12

Depth increment		1 ft													
Depth ft	Cored #	Time min/1ft	ROP ft/hr	ROP Log	Torque FTLb		Torque Log		WOB Klb		RPM	Flow GPM	SPP PSI	Remarks	
					Min	Max	Min	Max	Min	Max					
6728 = Starting depth				Max: 20	Min	Max	8000	###	Min	Max					
6729	1	3	20.00	████████████████████	8000	10000	████████████████████		2	4	55	288	0		
6730	2	5	12.00	████████████████	8000	10000	████████████████		2	4	55	288	0		
6731	3	4	15.00	████████████████	8000	10000	████████████████		4	6	55	288	0		
6732	4	3	20.00	████████████████████	8000	10000	████████████████████		4	6	55	288	0		
6733	5	3	20.00	████████████████████	8000	10000	████████████████████		4	6	55	288	0		
6734	6	4	15.00	████████████████	8000	10000	████████████████		6	8	55	288	0		
6735	7	3	20.00	████████████████████	8000	10000	████████████████████		6	8	55	288	0		
6736	8	6	10.00	██████████████	8000	10000	██████████████		8	10	55	288	0		
6737	9	3	20.00	████████████████████	8000	10000	████████████████████		8	10	55	288	0		
6738	10	3	20.00	████████████████████	8000	10000	████████████████████		8	10	55	288	0		
6739	11	8	7.50	██████████	8000	10000	██████████		8	10	55	288	0		
6740	12	9	6.67	████████	8000	10000	████████		8	10	55	288	0		



Coring Log

REPORT - CORE # 3

Doc ref.: DHT_00000384_

Revision 12

WELL INFORMATION

Well #: 78B-32	Country: USA - North	Hole temp: 450 °F	Drive: Top Drive
Operator: Utah FORGE	Field: Forge Geothermal	Surf temp: 90 °F	Form. name:
Rig: Frontier 16	Section: 0 inch	Well angle: 1 deg	Form. descr: Granite
Contractor: Frontier	Location: OnShore	B. hole pres: 0 PSI	Water depth: 0 ft
Resource Play (select at least one field): Geothermal		0	0

CORE BARREL*

Size: 7 1/4"x4"	Thread: Heavy Duty Thread	Spacing: 7.00 mm	Core catcher: HD
Type: RockStrongFCS	Inner Tube: Steel	Min Spacing: 7.00 mm	Lower Half Shoe: UF2
Length: 30 ft - 9.14 m	Swivel type: RockStrong	Max Spacing: 15.00 mm	

* Operator must fill the Equipment Information Sheet (DHT_00000455 or DHT_00000457)

COREHEAD

Type: FC3843	SN: 13206404	MN:	DULL GRADING
OD: 8 1/2 inch	Thread: Heavy Duty Thread	TFA: 1.7 Sqn	Before run: new
			After run: slight cutter wear

MUD PROPERTIES

Type: Water	API Filter: N/A API	PV: 0 cp	Sand: 0 %
Mud Weight: 8.4 ppg	H2O/Oil: 0	YP: 0 lb/100ft2	Solids: 0 %
Viscosity: 40 cp	Gels: 0 ppb	pH: 0	

BHA DESCRIPTION

Corehead, core barrel, stabilizer, Rockstrong coupling, upper coupling, float sub, x-over sub, HWDP

BACKGROUND READING

String Weight		Off Bottom Torque			Drop Ball			Hydraulics		
	280 Klb	50 Rpm	9100 FtLb	Flow rate	200 GPM	Flow rate	280 GPM			
	270 Klb	60 Rpm	9700 FtLb	Press Inc	0 PSI	On Bottom	0 PSI			
	250 Klb	70 Rpm	FtLb	Mn to drop	15 min.	Off Bottom	0 PSI			

TIMING

	START IN HOLE	START CORING	STOP CORING	CBRL at SURFACE	CBRL READY TO RUN	TOTAL Hrs
Date:	17-Jul-21	17-Jul-21	17-Jul-21	17-Jul-21	17-Jul-21	18.00
Time*:	6:00	14:17	17:04	23:15	23:45	

PERFORMANCE

Depth In	Depth Out	Cut Length	Hours	ROP	Recover	Intended core cut	Efficiency	Recover	Reason for stopping coring:
ft	ft	ft	[hr]	ft/hr	ft	ft	%	%	
8500.0	8530.0	30.00	2.8	10.78	24.85	30.00	83	82.83	run complete

OVERPULL (last connection is at POOH)

Connection	1	2	3	4	5	6	7	8	9	10
Overpull Klb	None									

REMARKS

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U.S. CORING Representative

Danny Rich, Scott Boid

Customer Representative

Fred Wilson, Virgil Welch, Brian Gresham
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Coring Log

REPORT - CORE # 4

Doc ref.: DHT_000000384_

Revision 12

WELL INFORMATION

Well #: 78B-32	Country: USA - North	Hole temp: 85 °F	Drive: Top Drive
Operator: Utah FORGE	Field: Forge Geothermal	Surf temp: 50 °F	Form. name: Schrader
Rig: Frontier 16	Section: 0 inch	Well angle: 1 deg	Form. descr: Sand, Shale
Contractor: Frontier	Location: OnShore	B. hole pres: 0 PSI	Water depth: 0 ft
Resource Play (select at least one field): Geothermal		0	0

CORE BARREL*

Size: 7 1/4"x4"	Thread: Heavy Duty Thread	Spacing: 17.00 mm	Core catcher: HD
Type: RockStrongFCS	Inner Tube: Aluminium Vented	Min Spacing: 17.10 mm	Lower Half Shoe: UF2
Length: 30 ft - 9.14 m	Swivel type: RockStrong	Max Spacing: 17.10 mm	

* Operator must fill the Equipment Information Sheet (DHT_000000455 or DHT_000000457)

COREHEAD

Type: FC3643	SN: 12249322	MN:	DULL GRADING
OD: 8 1/2" inch	Thread: Heavy Duty Thread	TFA: 1.33 S _q ln	Before run: new
			After run: 6 Cutters damaged

MUD PROPERTIES

Type: Water	API Filter: N/A API	PV: 0 cp	Sand: 0 %
Mud Weight: 8.4 ppg	H2O/Oil: 0	YP: 0 lb/100ft ²	Solids: 0 %
Viscosity: 40 cp	Gels: 20 ppb	pH: 0	

BHA DESCRIPTION

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BACKGROUND READING

	String Weight		Off Bottom Torque			Drop Ball			Hydraulics		
	280	Klb	50 Rpm	7800	FtLb	Flow rate	200	GPM	Flow rate	280	GPM
	270	Klb	60 Rpm	8100	FtLb	Press Inc	20	PSI	On Bottom		PSI
	250	Klb	70 Rpm		FtLb	Mn to drop	18	min.	Off Bottom		PSI

TIMING

	START IN HOLE	START CORING	STOP CORING	CBRL at SURFACE	CBRL READY TO RUN	TOTAL Hrs
Date:	18-Jul-21	18-Jul-21	18-Jul-21	18-Jul-21	18-Mar-21	18.50
Time*:	0:00	8:00	8:49	17:18	18:30	

PERFORMANCE

Depth In	Depth Out	Cut Length	Hours	ROP	Recover	Intended core cut	Efficiency	Recover	Reason for stopping coring:
ft	ft	ft	[hr]	ft/hr	ft	ft	%	%	
8530.0	8540.0	10.00	0.8	12.24	8.50	30.00	28	85.00	Jammed

OVERPULL (last connection is at POOH)

Connection	1	2	3	4	5	6	7	8	9	10
Overpull Klb	None									

REMARKS

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HALLIBURTON Representative

Danny Rich, Scott Boid

Customer Representative

Fred Wilson, Virgil Welch, Brian Gresham

Coring Log

Penetration & Parameters Log - CORE # 4 Doc ref.: DHT_00000384_ Revision 12

Depth Increment		1 ft													
Depth ft	Cored #	Time min/1ft	ROP ft/hr	ROP Log	Torque FtLb		Torque Log		WOB Klb		RPM	Flow GPM	SP PSI	Remarks	
					Min	Max	Min	Max	Min	Max					
8530	= Starting depth				Max: 6.7	Min	Max	8		11	Min	Max			
8531	1	13	4.62		10	11			6	6	60	280	0		
8532	2	14	4.29		10	11			8	8	60	280	0		
8533	3	11	5.45		10	11			12	12	60	280	0		
8534	4	12	5.00		10	11			12	14	60	280	0		
8535	5	11	5.45		10	11			12	14	60	280	0		
8536	6	11	5.45		10	11			12	14	60	280	0		
8537	7	10	6.00		10	11			12	14	60	280	0		
8538	8	9	6.67		10	11			14	16	60	280	0		
8539	9	12	5.00		10	11			14	16	60	280	0		
8540	10	18	3.33		8	9			14	16	60	280	0		



Coring Log

SUMMARY

Doc ref.: DHT_00000384_

Revision 12

SO Number:

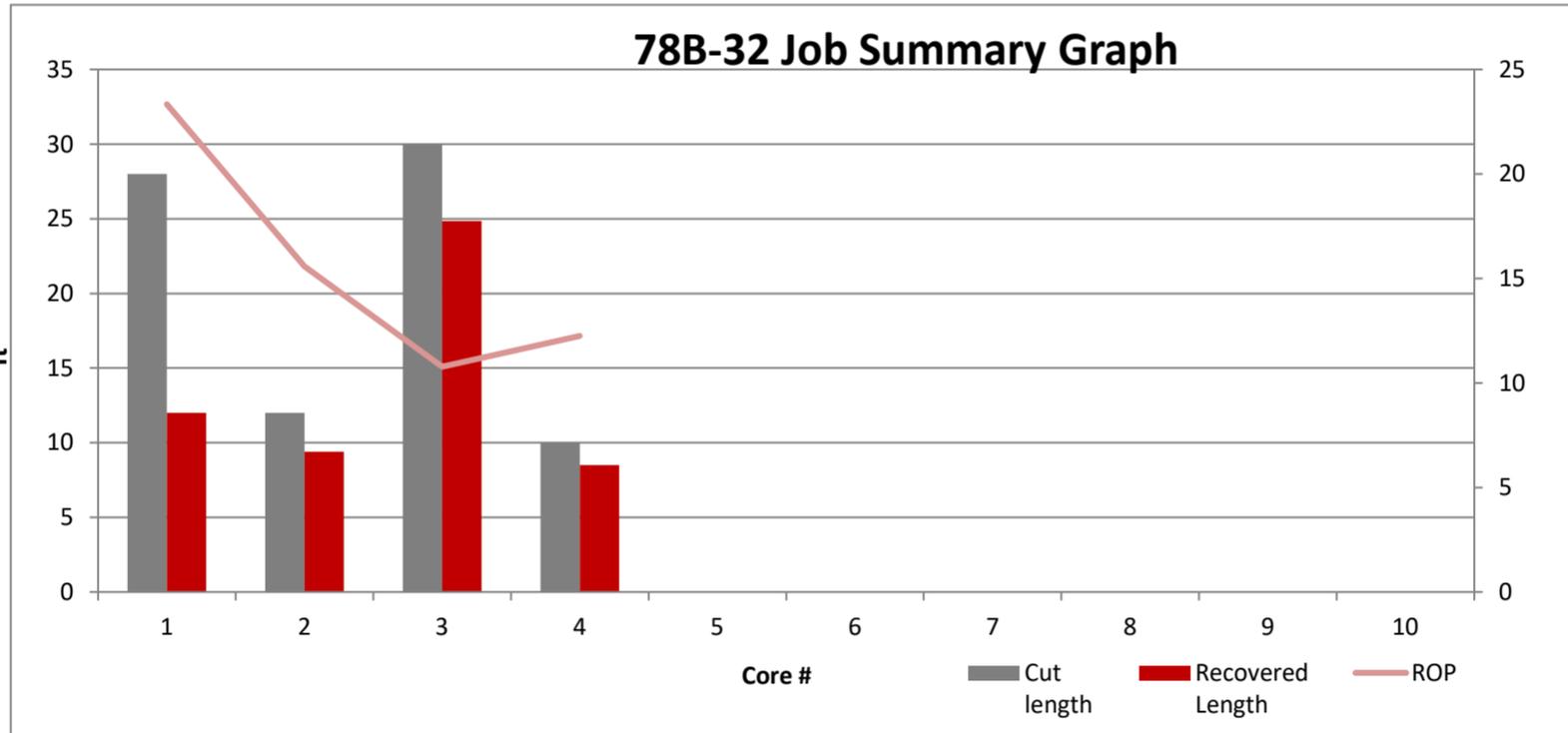
Well #: 78B-32
 Rig: Frontier 16
 Operator: Utah FORGE
 Contractor: Frontier
 Country: USA - North
 Field: Forge Geothermal

Hole size: 8 3/4 inch
 Casing Ø: 12 1/4 inch
 Shoe depth: ft
 Well angle: 1 deg
 Mud type: Water
 Mud weight: 8.4 ppg

Service eng. names: D.Rich
 Scott Boid
 Date(s) On: 7-Jul-21
 Date(s) Off: 18-Jul-21

Formation name:
 Formation description: Granite Very hard and abrasive

Core #	Corehead Type	Inner Tube Type	CBRL Length ft	Depth In ft	Cut length ft	Recovered Length ft	Recovery %	Hours Hr	ROP ft/hr	Formation
1	FC3843	Steel	30.0	6700	28	12	42.9	1.20	23.33	Granite
2	FC3843	Aluminium Slick	30.0	6728	12	9.4	78.3	0.77	15.58	Granite
3	FC3843	Steel	30.0	8500	30	24.85	82.8	2.78	10.78	Granite
4	FC3643	Steel	30.0	8530	10	8.5	85.0	0.82	12.24	Granite
Overall performance					80.0	54.75	68.4	5.57	14.36	



END OF WELL REPORT & LESSONS LEARNED CORING OPERATIONS – U of UTAH / FORGE 78B-32



- Lorne Rutherford – US CORING Aug 2021

Discussion Topics

- Run Summary
- Run 1 Review
- Run 2 Review
- Run 3 Review
- Run 4 Review
- Lessons Learned Summary

Key Message

A large, light grey arrow pointing from the Discussion Topics section towards the Key Message section.

The coring operations on the 78B-32 well can be considered as not great, not bad. It had the potential to have been a lot worse. In the end, enough useable rock material was recovered to perform the numerous studies and experiments that will result in a greater understanding on how to maximize the output of Geothermal energy in the Utah Alt Energy Corridor .

Desired Outcome

Capture the lessons learned and understanding of coring operations in order to more effectively plan and execute future coring operations

RUN SUMMARY



- With the exception of core run #1 recoveries for the next 3 cores averaged 82.2%

- Additionally, except for run # 1, we did not DBR a corehead on runs 2-4

Coring Log

SUMMARY

Doc ref.: DHT_000000384_

Revision

12

SO Number:

Well #: 78B-32
 Rig: Frontier 16
 Operator: Utah FORGE
 Contractor: Frontier
 Country: USA - North
 Field: Forge Geothermal

Hole size: 8 3/4 inch
 Casing Ø: 12 1/4 inch
 Shoe depth: ft
 Well angle: 1 deg
 Mud type: Water
 Mud weight: 8.4 ppg

Service eng. names: D.Rich
 Scott Boid
 Date(s) On: 7-Jul-21
 Date(s) Off: 18-Jul-21

Formation name:

Formation description: Granite Very hard and abrasive

Core #	Corehead Type	Inner Tube Type	CBRL Length ft	Depth In ft	Cut length ft	Recovered Length ft	Recovery %	Hours Hr	ROP ft/hr	Formation
1	FC3843	Steel	30.0	6700	28	12	42.9	1.20	23.33	Granite
2	FC3843	Aluminium Slick	30.0	6728	12	9.4	78.3	0.77	15.58	Granite
3	FC3843	Steel	30.0	8500	30	24.85	82.8	2.78	10.78	Granite
4	FC3643	Steel	30.0	8530	10	8.5	85.0	0.82	12.24	Granite

Overall performance

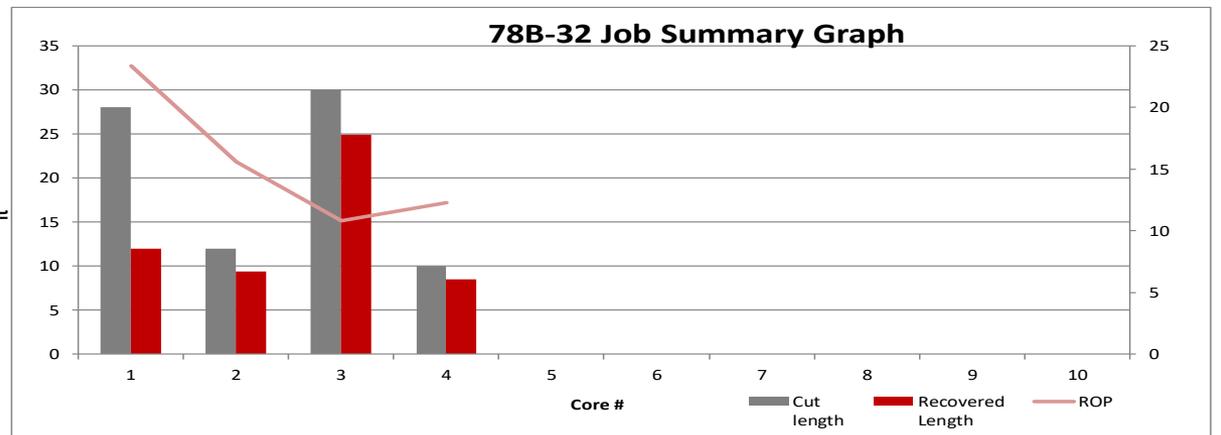
80.0

54.75

68.4

5.57

14.36



Run 1 Review



- Cored from 6700 to 6728; cut 28ft recovered 12.0
- General Parameters used: 2-33K WOB; 300 GPM; 50 RPM
- The greater portion of the run was with WOB exceeding 26,000 Lbs.
- As was discussed/planned, the core was extruded on the rig floor.
- Unfortunately, with the core being so packed in the inner barrel from being compressed with very high WOB, the only way to extrude the rock (in the moment) was to hit the innertube with a sledgehammer.
- The coring scenario: we got ~12ft in the inner barrel and it then jammed. Once jammed the remaining 16ft was drilled/milled up. Evidence of this is we went straight to bottom and tagged at the depth we finished at, 6728.
- The greater percent of rock damaged was done during coring as the impact from hitting the outside of the inner barrel does not come close to the 30K+ Lbs WOB and compacting force from it.

Run 2 Review



- Cored from 6728 to 6740; cut 12ft recovered 9.4ft
- General Parameters used: 2-10K lbs WOB; 288 GPM; 55 RPM
- We jammed at approximately 10ft into the run, and therefore the 9.4ft of recovered rock
- Upon extruding the core, it was discovered that we had cored into an existing natural vertical fracture. The fracture(s) contained a greenish-gray gouge-filled material
- The lessons learned on run 2 is that this granite can be cored with 8-10K lbs with very decent ROP i.e. 15+ft/hr
- Because the vertical fracture propagated after stress relief, it wedged in the inner barrel and once wedged, no more rock was going in the barrel
- On run 2 we ran an aluminum inner barrel in thinking it would be easier to segment than steel for the core processing. In reality from subsequent runs, chopping up the steel with a good chop saw was almost as easy as aluminum

Run 3 Review



- Cored from 8500 to 8530; cut 30ft recovered 24.9ft
- General Parameters used: 5-8/10-11K lbs WOB; 290 GPM; 65 RPM
- The run was smooth throughout. We slowed down at about foot 26, but there were no signs of jamming and milling
- Upon surfacing the core barrel and performing a bit-check and glancing at the core in the shoe assembly, it was discovered that the entire inner barrel was about 2-2.5" higher than where it should have been, thinking we may have compressed the springs in the swivel.
- After performing an investigation at the shop it was discovered there was nothing wrong with RockStrong swivel assembly.
- The space-out of the inner barrel was not correct
- We were very fortunate to get almost 25ft of core as this run could have ended up with an outcome of little to no rock

Run 3 Review



- After the tools from the job arrived at our shop in Houston, upon beginning our maintenance we discovered we had a 9.5" piece of competent core in the shoe assembly, coupled to last cut-up inner barrel.
- The reason being, the forklift driver was helping our wellsite core-processing person and was working on extracting the rock from that tube and informed our person, that was the last of the core and the tube was empty.
- It was an honest mistake, as it was 4:30am, dark, and people were tired.
- The piece has been sent to EGI to be put at the bottom of core 3.



Run 4 Review



- Cored from 8530 to 8540; cut 10ft recovered 8.5ft
- General Parameters used: 12-16K lbs WOB; 280 GPM; 60 RPM
- The run ended because all coring parameters showed the barrel was jammed. We most likely milled the 1.5ft as opposed to losing it out of the bottom of the barrel. Pictured below is all of the rock from run 4. as can be seen there are good pieces of rock and 2-3" "disced" pieces



Corehead Dull-grade



CUTTING STRUCTURE			FC3843	SN: 13340636		RUN 1	
INNER ROWS	OUTER ROWS	DULL CHAR.	LOCATION	BEARINGS /SEALS	GUAGE	OTHER DULL CHAR.	REASON PULLED
1	8	NR	S	X	4	DBR	JAM

12 Damaged Cutters

CUTTING STRUCTURE			FC3555	SN: 12958459		RUN 2	
INNER ROWS	OUTER ROWS	DULL CHAR.	LOCATION	BEARINGS /SEALS	GUAGE	OTHER DULL CHAR.	REASON PULLED
1	1	BT	N/S	X	I	CT	JAM

36 Damaged Cutters

CUTTING STRUCTURE			FC3555	SN: 13206404		RUN 3 & 4	
INNER ROWS	OUTER ROWS	DULL CHAR.	LOCATION	BEARINGS /SEALS	GUAGE	OTHER DULL CHAR.	REASON PULLED
2	2	CT	N/S	X	I	BT	JAM



END OF WELL REPORT - LESSONS LEARNED

CORING OPERATIONS – 78B-32

- Overall the job was not great but was not a total train wreck either
- There are several positives, they are:
 - We only DBRed one corehead, it could have been very easy to DBR all of them, which results in a very costly operation
 - From information told to us before the job, we did have core runs and got back more core than previous attempts on previous wells
 - 90% of core 3 is good competent rock material to conduct the numerous experiments to have a better understanding on the generation of Geothermal Energy
 - NO ONE was injured or hurt and there was no NON-PRODUCTIVE TIME
- We needed to have a better plan on extruding the rock as per run #1. In hindsight laydown and cut up and extrude AND will split the steel innertube with welding tools where the core is too packed off
- We had ZERO SPP. Pressure is also used in detecting jams, wash-outs, but overall it was not detrimental to the coring operations
- These Granite formations can be cored with decent ROP using 8-10-12K Lbs WOB

END OF WELL REPORT - LESSONS LEARNED

CORING OPERATIONS – 78B-32

- The big question and concern is; why was so much of the core material rubbleized?
- Run 1 it can be attributed to the massive force of compaction, but we also saw some rubbleized rock on subsequent cores but no where near to the extent in run 1.
- Looking at the core below, one can see a partially opened fracture. Is it natural or induced?
- Why that exact spot and not 3 inches lower where the rock is whole, yet it had the same WOB, RPM, etc.?
- It is possible there are micro fractures that become induced fractures from the drilling stresses and the detaching of the column of rock from the principle stresses of the formation



END OF WELL REPORT - LESSONS LEARNED

CORING OPERATIONS – 78B-32

- There are several theories and possible causes to the rubbleizing and discing of the core. They are:
- As can be seen at the outcrop of Granite Peak, there are intrusions, macro dissolutions seams, fractures, etc. Could well 78B-32 have more dissolution seams and micro fracturing than other wells?
- On all 4 runs there was “X” amount of hole still being drilled after the jam had occurred. This will result in a compacting force on the core in the inner barrel to some extent.



END OF WELL REPORT - LESSONS LEARNED CORING OPERATIONS – 78B-32

- The phenomenon of core discing and spalling are a direct result of heat and friction at the throat of the corehead. Using straight water and not having enough lubricity at the corehead could account for some of the discing and rock being rubbleized.
- But why would it affect some parts of the core and not others?
- Of course, core can be damage by inducing fractures from high WOB and high vibrations, but we saw broken and disc-ed core on all 4 runs and had moderate WOB on runs 2-4, so we can't say it is from excessive WOB, except for run 1
- We feel that the possibility of localized micro-fractures and micro-dissolution seams be further investigated in conjunction with the DFN

RECAP OF SOLUTIONS AND OR FINAL THOUGHTS

- This coring application can be considered as “very challenging” in the reservoir, rock acquisition space
- As we core, we are removing 54% of the volume of rock relative to the size of the wellbore. Therefore less WOB is required. Next Granite coring we recommend 8-10K lbs WOB and 65-70 RPM
- If you have 8-10ft per hour with 4K lbs WOB, keep it there. In core 2 we saw 15-20 ft/hr with 6-8. Less WOB is always better in coring
- Trip-out Schedule – this is not the same physics as an oil or gas well, but the rock is still going from ~6-8K Sv to ambient pressure, so some slowing down toward the surface is good practice. 3-4 minutes per stand for the last 2500ft is good. That’s still pretty fast in world of pull-out speeds
- For core extrusion, always laydown the inner barrel, segment and slide out. Or, physically stabilize the core and extrude back at the lab

CORING OPERATIONS – 78B-32

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