



Shell OCS-Y-2321 Burger J 001 Posey Block 6912

1 INTRODUCTION

1.1 Well Synopsis

The OCS-Y-2321 Burger J 001, also known as Burger J well is a vertical exploration well for the 2015 Shell Exploration season drilled by Transocean on the Polar Pioneer semi-submersible drilling platform.

Burger J spudded on July 30, 2015 and drilled to the TD of 6,800' MD on 9/21/2015.

The 8.5" Main Objective Interval was evaluated with an extensive LWD string to further evaluate the Kuparuk age equivalent C, A and D sands as seen in the SWEPI OCS-Y-1413 Burger no. 1 well drilled in 1989-1991. Wireline operations were also used for further evaluation (refer to [Section 4.2](#) Wireline Log Suite Run for more information).

Plug and abandoned operations began September 25th, 2015.

1.2 Well Objective

The main objective of the Burger J well is to drill to 6,800' MD and verify the presence of liquid hydrocarbons in the Kuparuk age equivalent C, A and D sands; evaluate the reservoir properties with both LWD and wireline logs, fluid sampling (MDT), and rotary sidewall cores.

1.3 Well Summary

The 8.5" pilot hole (Run 100) spudded the Burger J well on July 30, 2015, with the BHA consisting of a mud motor, Gamma Ray, Resistivity, Neutron/Density, MRIL, XBAT, Directional tools. Run 100 drilled to a depth of 1,512' MD and the 36" hole opener (Run 200) was then ran from 222' MD to 384' MD. Following was the Mud line cellar bit (Run 230), which drilled from 222' MD to 257' MD, opening a large enough hole in the sea floor mud line to place the blow out preventer equipment for protection from ice. Next the 42" hole opener (Run 300) was ran and drilled to 393' MD, following that was surface casing (Run 340). The first attempt to run surface casing was unsuccessful and the 42" bit was re-ran (Run 341) for a cleanout. The 36" surface casing conductor was then ran successfully to 375' MD (Run 342). Next a 26" hole opener bit (Run 400) was picked up and drilled 30' of new hole and then tripped back to surface to pick up the Pressure While Drilling tool (Run 401) and then proceeded to drill out to 1,512' MD. The 22" casing (Run 440) was then ran and cemented at 1,475' MD.

The 17-1/2" Intermediate Section (Run 500) consisted of a Pressure While Drilling and Directional tools with a mud motor. Drilling out with Run 500 began September 4th, 2015 at 1830 hours, drilling from 1,512' to a TD of 2,963' MD on September 6th, 2015. The 14" casing (Run 540) was then ran to bottom without issues and cemented in at 2,933' MD.

The 12-1/4" Intermediate Section (Run 600) consisted of Gamma Ray, Resistivity, Neutron/Density, XBAT, and Directional tools with a mud motor on the BHA and was picked up September 10th and drilled out September 11th, 2015. Total depth was reached at 5,423' MD on September 13th at 1634 hrs. Upon tripping out, tight spots were encountered and circulation at the shoe resulted with a mass unloading of cavings consisting of large clay lumps (2-3") and various shale fragments (1.5-2"). Run 600 was tripped back to bottom for a cleanout run. Shale inhibitors and mud sweeps were pumped, at bottoms up the cuttings were much smaller comparatively to the previous circulation at the shoe. Tripping out went smoothly and the BHA was racked back to expedite running the liner. The 9 5/8" liner was then run in hole September 16th. The liner weight began to slack off at ~5,318' MD. The liner was continued to be run to ~5,412' MD. Circulation was established at 265 gpm for 19 minutes until the annulus packed off and returns were lost (rate of 120 bph). The rig was able to establish partial returns. Total 60 bbls lost to



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this point. Pumped cement with minimal returns and material over shakers.

The 8-1/2" Main Objective Section (Run 700) consisted of Gamma ray, Resistivity, Neutron/Density, XBAT, MRIL, and Directional tools on the BHA with a mud motor and was picked up September 19th and drilled out September 20th, 2015. Total depth was reached at 6,800' MD on September 21st at 2309 hrs. The drill string was tripped out of the hole with minor tight spots. Minor drag was observed across the C/A Sands.

Wireline operations began September 23rd with MDT-GR and followed with FMI-Sonic-GR. Finally, RSWC was executed targeting 50 sample points (see [Section 3.4](#) for further details). Wireline rigged down September 25th and the cement stinger was picked up to move operation towards the plug and abandon stage.

1.4 Location Map





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1.5 Difficulties and Delays (NPTs and Issues) for Individual Hole Intervals

Surface Interval

- 13-14 Aug Initial difficulty in running casing/conductor to bottom
- 24-30 Aug Weather conditions and ROV/SAM/HFL troubleshooting at surface

Intermediate Interval

- 14-15 Sept Differential sticking / Pulling tight / Hole instability (see [Section 5.7](#))
- 17 Sept Annulus packed off, 60 bbl loss while running liner

Main Objective Interval

No issues.

PROPRIETARY



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2 WELL DETAILS

2.1 Well Resume

Burger J					
General Well Data Table					
WELL NAME, API & LOCATION					
Well Name			OCS-Y-2321 Burger J 001		
API/UWI			55-352-00004-00		
Block/Lease Name			Posey 6912		
Area/Field			Chukchi Sea		
State			Alaska		
Country			USA		
COORDINATES					
Surface Location					
Projection Datum	NAD 83	Coordinate System	UTM	Zone	3
Latitude		Longitude	X (ft)	Y (ft)	
71° 10' 24.0029" N		163° 28' 18.522" W	555,036	7,897,424	
Bottom hole Location					
Projection Datum	NAD 83	Coordinate System	UTM	Zone	3
Latitude		Longitude	X (ft)	Y (ft)	
71° 10' 24.0029" N		163° 28' 18.522" W	555,036	7,897,424	
DATES					
Spud Date			7/30/2015 17:05		
TD Date			9/21/2015 23:09		
P&A Date			WSG released before P&A		
Rig Release Date			WSG released before rig release		
RIG & DATUM					
Water Depth			146 ft		
RT elevation (above MSL)			76 ft		
Rig Name			Polar Pioneer		
Rig Company			Transocean		
Rig Type			Semi-submersible / Triple		
TD and KOP					
			ft MDRT	ft TVDSS	
Planned TD			6,800'	-6,724'	
Pilot Hole Actual TD Driller			6,800'	-6,719'	



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WELL OBJECTIVES									
Primary Objective									
Formation Name	Expected at		Drilled at		Results				
	MDRT	TVDSS	MDRT	TVDSS					
C SAND	5,926'	-5,850'	5,873'	-5,795'	-55'				
A SAND	6,006'	-5,930'	5,968'	-5,889'	-41'				
D SAND	6,511'	-6,435'	6,451'	-6,719'	-64'				
OFFSET WELLS									
Well Name		Operator		Year	Distance (surface Location)				
Burger 1		SWEPI		1989/1990	~8 mi				
BOREHOLE & WELL PROFILE									
Borehole (pilot hole, by-pass or sidetrack)			Pilot hole						
Well Profile (vertical, deviated, horizontal)			Vertical						
Maximum deviation @ depth (MDRT)			3.99° @ 6,445' and 6,745'						
Deviation at TD			3.99°						
SERVICE COMPANIES AND CONTRACTORS									
WSGs			Waters Petroleum Advisors						
Mudlogging			Sperry Drilling						
Wireline Logging			Schlumberger						
LWD/MWD			Sperry Drilling						
Coring			n/a						
Mud			MI-Swaco						
Cementing			Halliburton						
WELL CONFIGURATION									
Hole Section (")	Maximum Depth		Mud Weight	Casing/ Liner	Csg Diameter (")	Shoe Depth		FIT/ LOT	
	ft MD	ft TVDSS	ppg			ft MD	ft TVDSS	Depth (ft MD)	EMW (ppg)
42	375	-299	8.6 (Sea Water)	Conductor	36	369	-293	n/a	n/a
26	1,512	-1,436	8.6	Casing	22	1,475	-1,399	1,522	12.6
17.5	2,963	-2,887	10.4	Casing	14	2,933	-2,857	2,933	14.0
12.25	5,423	-5,347	11.4	Liner	9 5/8	5,408	-5,347	5433	15.28
8.5	6,800	-6,719	12	-	-	-	-	-	-
Gains/Losses									
MDRT (ft)		Loss/Gains	Barrels lost/gained		Control Time	Comments			
5,423		Loss	2		20 min	Likely small sand stringer up hole broke down and quickly sealed			
5,423		Loss	60		2 hr	Hole packed off while running liner			

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3 GEOLOGICAL DATA

3.1 Predrill Stratigraphic Column

Polar Pioneer – Burger J Stratigraphic Column
Shell OCS-Y 2321 PoseyBLK 6912
Chukchi Sea, Alaska

AGE	SEISMIC HORIZON (FEET SUBSEA)	TVD (ft)	DEPTH (FEET SUBSEA)	LITHOLOGY
	MUDLINE -144'	220		
	NANUSHUK			
			-2000 ft ss 605 ms	DELTAIC and SHALLOW MARINE SANDS and SHALES
	TOP TOROK -2679'	2755		
	Prob. wet sand -2755'	2831		
	Prob. gas sand -3175'	3251		
CRETACEOUS			-4000 ft ss 1055 ms	SLOPE SHALE & SAND
	TOP HRZ -5270'	5346		
	Top Pebble Shale -5576'	5652		SHALE
	-5850'	5926		
LCU	Kup C -5930'	6006		
	Kup A -5969'	6045	-6000 ft ss 1452 ms	DELTAIC and SHALLOW MARINE SANDS
	-6435'	6511		
	Kup D -6549'	6625		
	-6894'	6970	TD 6800' (TVD) 1610 ms	
	Top Kingak			
JURASSIC			-8000 ft ss 1843 ms	SLOPE SHALE & SAND
	Drawing not to scale.			

06-09-2014

There are no major faults or anticipated lost circulation zones in the vicinity of the Burger J Location.

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3.2 Tops (Prognosed vs Actual)

Provisional Formation Tops								Picked On
Formation	Prognosed Tops (ft)			Actual Tops (Provisional) (ft)			Diff (+/- ft)	
	MDRT	TVDRT	TVDSS	MDRT	TVDRT	TVDSS		
Top Torok	2,755	2,755	-2,679	2,760	2,760	-2,684	5	Cuttings
Torok Gas Sand	3,251	3,251	-3,175	3,275	3,275	-3,199	24	LWD
Top HRZ	5,346	5,346	-5,270	5,024	5,023	-4,947	-323	TBD
Top Pebble Shale	5,652	5,652	-5,576	5,539'	5,536'	-5,460'	-116'	LWD
Top C Sand	5,926	5,926	-5,850	5,873'	5,871'	-5,795'	-55'	LWD
Top A Sand	6,006	6,006	-5,930	5,968'	5,965'	-5,889'	-41'	LWD
Top D Sand	6,511	6,511	-6,724	6,451'	6,447'	-6,371'	-64'	LWD

Tops based off LWD field picks.

3.3 Formation Summary (Descriptions)

NANUSHUK (220' – 2,760' MD)

Sampling of the Nanushuk Formation began at 1,512' MD, when the rig first took returns.

CLAYSTONE: Medium to light gray, soft to firm, rarely hard, blocky, earthy to waxy, generally hydrophilic, commonly silty.

SILTSTONE/ SILTY SANDSTONE: Light gray, friable to firm. Silty sandstone is silty to very fine grained, well sorted, common clear quartz grains and dark gray to black lithics, possible carbonaceous material, calcareous or argillaceous cement in most samples.

TOROK (2,760' – 5,024' MD)

CLAYSTONE: Gray to medium gray to dark gray, soft to friable, firm in part, blocky, earthy, slightly silty, occasionally hydrated, PDC curl cuttings habit common.

SILTSTONE: Gray to light gray, silt to lower very fine, calcareous.

SANDSTONE: Light gray, very fine, sub-round, well sorted, moderate calcareous cement, fair visible porosity, slightly tuffaceous.

SHALE: Medium dark gray, firm, poorly fissile

HRZ (5,024' – 5,539' MD)

SHALE: Medium dark gray, hard to brittle, earthy, slightly silty

CLAYSTONE: Medium light gray to medium gray, soft, fragile

SILTSTONE: Light gray, occasionally grades to very fine sandstone, rare pyrite



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PEBBLE SHALE (5,539' – 5,873' MD)

SHALE: medium dark gray, firm to moderately hard, flaky to splintery, laminated, fissile

CLAYSTONE: Medium gray to medium dark gray with common brownish hues, firm to hard, moderate to well indurated, blocky to elongated, occasionally silty, trace pyrite

SILTSTONE: Medium gray with brownish hue, common pyrite, common carbonate, trace tuff, grading to very fine gray sand

SANDSTONE: Light gray with translucent to transparent, very fine with trace floating medium grains, sub round to sub angular, poor sorting, calcareous cement

C SAND (5,873' – 5,968' MD)

For further descriptions and pictures, see [Section 5.5](#) below.

SANDSTONE: Gray to medium gray with abundant translucent to transparent and common white grains, very fine to fine with scattered medium, well to moderate sorted, sub round, abundant carbonaceous, trace glauconite, trace siderite cement

CLAYSTONE: Medium gray to dark gray, soft to firm

A SAND (5,968' – 5,996' MD)

SANDSTONE: Light gray to medium gray with abundant transparent to translucent grains, well sorted, subrounded to subangular, abundant carbonaceous material, common lithics

SILTSTONE: medium gray with brownish hues, soft to friable, argillaceous matrix, clayey, mushy, amorphous

D SAND (6,451' – 6,568' MD)

For further descriptions and pictures, see [Section 5.6](#) below

SANDSTONE: Light gray to medium gray with abundant transparent to translucent grains, fine lower grains to silty, moderately sorted, subrounded to subangular, calcareous cement in part, scattered tuffaceous clay matrix, abundant carbonaceous material, common lithics, rare pyrite, glauconite, N/S visible oil, Fluorescence: moderately abundant, spotty, orange, Cut: slow, dull, yellow to dull yellow fluorescence, immediate bright yellow crush cut fluorescence, dull yellow residual fluorescence

SILTSTONE: Light gray to medium gray, easily friable to friable, dull yellow fluorescence even over 40% of sample, faint slow dull yellow crush fluorescence, dull yellow fluorescence

CLAYSTONE: Light gray to medium gray, soft to moderately hard, moderate induration, silty, slightly calcareous



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3.4 Sidewall Core Summary Table

For the Main Objective Interval, 50 sidewall cores were cut and 46 sidewall cores were collected. The sidewall cores were briefly analyzed on the wellsite. The wellsite analysis consisted of photographing the core in plain and UV light (see [Section 5.4](#) for photos), cleaning off drilling mud from a small portion of the core, then briefly identifying and describing lithological properties of each core as seen in the table below.

SIDEWALL CORE REPORT: OCS-Y-2321 #001																	
Region/Field:		Posey 6912		Date:		09/25/15		API No:		50-352-00004-00		Formation:		HRZ, Kupanuk C, A, D, and Milluveach			
Geologists:		Ryan Massey				Cores attempted:		50		Cores successful:		46		Core Recovered (%):		92%	
Jeff McBeth						Total Recovered:		46									
Description Summary																	
No.	Depth	Rec (cm)	Lithology	Color	Cement	Matrix	Structures	Grain Size	Sorting	Porosity	Odor	Staining	Fluorescence	Cut Fluor	Comments/FM		
1	5882.3	4.2	sat	brown				vfg							Kup C		
2	5897.3	4.2		brown									trace br yell		Kup C		
3	5908.9	4.2	sat	brown								slight	abund br yell		Kup C		
4	5924.2	4.0	sat	brown											Kup C		
5	5934.7	4.0		brown		5 mm white bedding plane							tr br yell		Kup C		
6	5941	4.7	sat	brown											Kup C		
7	5953	4.2		brown									tr br yell		Kup C		
8	5971	4.8	silt	brown											Kup C		
9	5937.7	30 / 1	sat	lt gray				v fg							fracture/Kup C		
10	5877	4.5	sat	brown				v fg							Kup C		
11	5889.3	4.0		lt gray											Kup C		
12	5912.6	4.5	sat	brown											Kup C		
13	5930.2	4.0	sat	lt gray								visible		inc br yell	Kup C		
14	5947	3.8		dk brown											Kup C		
15	5962	4.5		brown											Kup C		
16	5977	4.7		brown											Kup C		
17	5992.7	5.0		brown											Kup A		
18	5968.1	4.5		brown											Kup A		
19	5955.9	4.5		brown											Kup A		
20	5927.1	4.6		lt gray									scat lt yell		Kup A		
21	5906.3	3.9		brown				vis gr							Kup A		
22	5864.1	miss													Pebble Shale		
23	5886.3	3.6		lt gray				vis gr							Kup A		
24	5915.6	3.6		lt gray											Kup A		
25	5944	4.3		brown to black											Kup A		
26	5965	3.6		brown											Kup A		
27	5980	4.6		dk brown											Kup A		
28	5959	4.7		brown											Kup A		
29	5918.7	4.6		lt gray											Kup A		
30	5892.3	4.4	sat	lt gray											Kup A		
31	5983	4.5	silt	brown											Kup A		
32	5974	4.0		brown											Kup A		
33	5950	4.7		dk brown to black											Kup A		
34	5901.3	4.0	sat	lt gray											Kup A		
35	5895.3	4	sat	lt gray				vis							Kup A		
36	6460.8	4.2		brown											Kup D		
37	6472.5	4.0	sat	brown											Kup D		
38	6481.5	4.0	sat	brown											Kup D		
39	6492.5	4.1	sat	brown											Kup D		
40	6509.2	4.3		brown											Kup D		
41	6521.3	4	sat/silt	brown									even dull orange fluor		Kup D		
42	6542.5	miss													Kup D		
43	6529	5.0	silt	brown									even dull orange fluor		Kup D		
44	6514.1	4.7		brown									common dull orange fluor		Kup D		
45	6500.5	4.3		brown											Kup D		
46	6487.5	4.0		brown											Kup D		
47	6477	1.4 / 2.3		brown											Kup D		
48	6466.5		miss												Kup D		
49	6427	4.6		brown											Milluveach		
50	6285.2		miss												Milluveach		
Comments																	
Per instruction, cores were photographed in plain and UV light. Cores were also evaluated visually for basic observations without disturbing sample integrity. Observed Fluorescence is noted above.																	



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3.5 Sampling Program / Sample Dispatch

Halliburton-Sperry services provided mud logging, sample catching and steam sill analysis. Sampling was as followed:

Cuttings Samples	<ul style="list-style-type: none">• Every 30'• 10' in Zones of Interest (ZOI)	<ul style="list-style-type: none">• 4 Bags of Wet Ditch Cuttings.• Minimum 1000 grams per sample.• Consolidated in rice sacks with 10 per sack.
		<ul style="list-style-type: none">• 4 sets of fully washed and air-dried cuttings• 4 Sets to be packed and stored for shipping
Steam Still	<ul style="list-style-type: none">• Every 30'• 10' in ZOI	
Isotubes	<ul style="list-style-type: none">• Every 90' through 17.25"• 12.25": Every 90' / 10' through ZOI• 8.25": Every 10'	
Mud Samples	<ul style="list-style-type: none">• Every 1000'• 2 Samples across the Torok Sands and Kuparuk C, A, and D Sands	
Mud Additives	<ul style="list-style-type: none">• Collect an additive sample for each set of wet cuttings• Collect a 15cc sample of ALL solid additives	
Geochron Samples	<ul style="list-style-type: none">• As per Geologist	

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4 WELL EVALUATION

4.1 LWD Log Suite Run

Surface 8.5" (Opened to 26" later)

BHA#01 / Run#100:

Sensor	Distance to Bit
Vibration	3.86
Gamma Ray	6.67
Pressure	9.49
Directional	17.02
QBAT/Sonic	32.85
Resistivity	59.89
Density	79.17
Porosity	92.13
MRIL NMR	109.6

Intermediate 1 17.5"

BHA#05 / Run 500:

Sensor	Distance to Bit
D & I (at bit)	79.96
Pressure	89.88

Intermediate 2 12.25"

BHA#06 / Run 600:

Sensor	Distance to Bit
Gamma Ray	37.22
Resistivity	45.42
Directional	56.82
Pressure	70.67
Density	87.77
Porosity	106.44
Sonic	130.62

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Main Objective Interval 8.5"

BHA#07 / Run 700:

Sensor	Distance to Bit
Gamma Ray	38.4
Pressure	41.27
Directional	48.8
Sonic	64.79
Azimuthal Deep Resistivity	95.88
Azimuthal Litho-Density	113.16
Neutron	126.09
Magnetic Resonance Image Logging	143.06

4.2 Wireline Log Suite Run

E-line Services provided by Schlumberger

Shell Petrophysicists were on location monitoring wireline operations.

Run	Date	Tool Suite	Failure/Incidents
1	9/23/2015	MDT-GR	None
2	9/24/2015	FMI-SS-GR-HRLA	None
3	9/25/2015	RSWC	Recovered 46 out 50 RSWC



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5 DRILLING DATA

5.1 Daily Activity Summary

25-July	Rig beginning to deploy anchors.
26-July	Continue anchor deployment, begin picking up pipe and racking back, begin picking up BHA.
27-July	Finish picking up BHA, bring on brine and chemicals to make mud.
28-July	Continue rig maintenance and repairing barite system, pick up dumb iron BHA to tag bottom and check water depth.
29-July	Water depth checked to 146' MD, complete rig repairs on Barite tanks, build kill mud and sweeps. Begin Picking up 8.5' pilot hole BHA.
30-July	Troubleshoot MWD tools, begin picking up BHA, complete BHA pick up and TIH to sea floor, shallow pulse test and begin drilling the 8.5' section as 17:02 pm 07/30/2015. No sweeps pumped.
31-July	Continue to drill from 438' MD to 1005' MD. Pump 20 bbl sweeps every stand. Lithology has consisted of mainly silt w/ beds of coal, sand, and clay based off MWD data.
1-Aug	Continue to drill from 1005' MD to 1512' MD, TD Pilot Hole section at 1512' MD, pump 20 bbl sweeps every stand. Pull out oh hole and lay down BHA #1.
2-Aug	Pick up BHA #2 & drill ahead from 222' MD to 384' MD w/ 36" hole opener. Pull out of hole & begin to lay down BHA #2.
3-Aug	Pick up MLC bit. Wait on weather.
4-Aug	Continue to wait on weather. Prep to run in hole w/ MLC. Perform maintenance on standpipe.
5-Aug	Continue repair kelly hose. Run in hole w/ MLC & drill ahead from 222' MD to 230' MD.
6-Aug	Drill ahead from 230' MD to 241' MD w/ MLCB. Pull off bottom to inspect MLCB.
7-Aug	Pull out of hole w/ MLCB. Inspect MLCB & clean off.
8-Aug	Continue to clean off MLCB. Run in hole w/ MLC & tag bottom. Rig maintenance on pump.
9-Aug	Finish rig maintenance on pump. Drill ahead w/ MLCB from 241' MD to 257' MD. Circulate & clean out hole.
10-Aug	TOOH w/ MLCB. Clean off MLCB & prepare rig floor for 42" hole opener. Perform rig maintenance on pumps.
11-Aug	Rig down MLC equip. Pick up BHA #3. Run in hole w/ BHA #3 & drill ahead from 257' MD to 287' MD w/ 42" hole

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	opener.TO 2500 PSI. DRILL
12- Aug	Drill ahead from 287' MD to 393' MD w/ 42" hole opener. Displace well with WBSF. Pull out of hole & lay down BHA #3. Begin to rig up 36" conductor casing equip.
13- Aug	Rig up equip to run in hole w/ 36" conductor. Run in hole w/ conductor.
14- Aug	Pull out of hole w/ conductor & pick up BHA. Run in hole w/ BHA & wash hole clean.
15- Aug	Pull out of hole w/ BHA & lay down. Pick up 36" casing & run in hole. Rig up to cement casing. Pressure test cement lines.
16- Aug	Pump cement. Wait on cement.
17- Aug	Continue to wait on cement. Decision made to re-cement 36" casing. Pump cement & wait on cement. Rig down cement equip and pick up clean out BHA.
18- Aug	Run in hole w/ 26" clean out BHA. Clean out hole and drill new hole to 425' MD. Pull out of hole & lay down BHA. Pick up drilling BHA & run in hole.
19- Aug	Drill ahead from 425' MD to 1245' MD w/ 26" hole opener. Pump sweeps every 45'.
20- Aug	Drill ahead from 1245' MD to TD of 1512' MD w/ 26" hole opener. Pump sweeps every 45'. Short trip 3 stands & run in hole to 1512' MD. CBU & displace to 10.5 ppg WBSF. Trip out of hole & lay down BHA. Clean rig floor & rig up 22" casing equip.
21- Aug	Continue to rig up 22" casing equip. run in hole w/ 22" casing.
22- Aug	Continue to run in hole w/ 22" casing & set at 1475' MD. Rig up cement equip & cement 22" casing. Prepare to set BOP.
23- Aug	Pull out of hole with 5" inner string and rig down all temporary piping from cement job. Perform rig maintenance and skid rig 200' off well center for BOP deployment. Assist subsea with changing the choke stab on the KT ring. Rig up marine riser equipment and function test. Pick up and run marine riser to 105' and assist with changing the choke stab on the KT ring.
24- Aug	Assist subsea with changing choke stab seals on KT ring, remove boost stab and install blank flange. Install choke and kill drape hoses on KT ring. Scope out pod line tensioners, tie back the COP tensioner guideline and transport BOP to well center. Attached the cobra head to tugger and install beacons on BOP stack. Lower riser and land on BOP. Install guide line cables in BOP guide line guides. Wait on Nordica to deploy HFL due to weather.
25- Aug	Continue to wait on weather to deploy HFL. Nordica deploy HFL skid and attempt to install on subsea mud mat with assistance from ROV. Wait on weather to deploy BOP.
26- Aug	Continue to wait on weather.
27- Aug	Continue to wait on weather.
28- Aug	Continue to wait on weather. Begin to skid rig.

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Shell OCS-Y-2321 Burger J 001 Posey Block 6912

29- Aug	Waited on Weather to deploy BOP. Splash and run BOPs. Test choke and kill lines, good tests. Moved rig to well center. Installed guidelines and applied required tension.
30- Aug	ROV washed and cleaned wellhead with thrusters. Attempted to pressure tested Choke and Kill line with Halliburton cement unit, pressure test good on 250 low and bleeding down at 10k. Bleed down to zero after no success. Troubleshoot and test choke and kill lines separately; good tests. Landed out BOP on well head. Function and latch wellhead connector; good latch and good tests. With Halliburton cement unit conduct pressure tests on BSRs and casing. Close LBSRs and test T/250 Psi 5 min low while coming up to 1500 psi high @ 1600 psi pressure dropped 134 psi and was bled off. Pressured back up to 1250 psi and started bleeding off, unable to perform test. Begin scoping out slip joint.
31- Aug	Conduct BOP Tests.
1-Sept	Conduct pressure tests on BOPs and Choke/Kill manifold.
2-Sept	Complete surface tests. Pick up MWD, test and download. Trip in with wash sub.
3-Sept	Wash through BOPs and wellhead. Pull out of hole with wash sub. Pick up and rack back drill pipe. Begin picking up BHA.
4-Sept	Pick up BHA. Shallow pulse test MWD. Wash and ream; tag shoe at 1469'. Displaced well from seawater to 10.0ppg WBM. Drill out 22" shoe and 10' of new formation; circulate two well volumes. Perform FIT; 208 psi, 12.72 ppg. Trip to bottom and drill ahead
5-Sept	Drilling 17.5 hole section. Circulate and condition mud while MWD calibrated depth tracking. Drilling/sliding as per Directional Driller. Weight up to 10.3 ppg at 2360'. Continue drilling ahead.
6-Sept	Drilling 17.5 hole section to 2963' with 10.5ppg WBM. Pump 51 bbls hi vis sweep, circulate hole clean and weight up to 10.6 ppg. Short trip to shoe. Function rams. Trip back to bottom. Circulate two bottoms ups. Pump pill. Circulate above pill while trouble shooting Gyro. Pull out of hole.
7-Sept	Pull out of hole. Lay down BHA. Plug in and read MWD tools. Retrieve bore protector. Rig up to run casing. Begin run casing.
8-Sept	Run casing. Troubleshoot casing running equipment. Resume running casing.
9-Sept	Finish running casing. Cement casing. Unlatch from casing pull out running string.
10-Sept	Continue to run in hole with 14" Casing. Rig down casing equipment. Rig up cement head, Circulate 1.5 casing volume. Cement casing with 100 bbls 12 ppg spacer/168 bbls 13.5 ppg lead/78 bbls 15.6 ppg tail/10 bbls 12 ppg spacer, then displaced cement with 383 bbls of 10.6 ppg mud. Picking up drill pipe and rack back. Pick up BHA and surface test tools.
11-Sept	Pick up BHA and shallow hole test tools. Trip in seal assembly, couldn't shear seal assembly, and trip out. Troubleshoot seal assembly, trip back in, and set seal assembly. Trip in hole tag cement at 2846' MD, drill cement, and 11' of formation. Conduct F.I.T.
12-Sept	Drill ahead. Current depth 4412'. Pump 50 bbl sweeps as directed.
13-Sept	Drill ahead to TD at 5423' MD. Circulate hole clean and begin pull out of hole. Pump sweeps to clean hole, circulate to monitor ECD's.
14-Sept	Pump out of hole, circulated and pump sweeps to clean, and monitor ECD's. Short trip to shoe, circulate, condition mud.

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Shell OCS-Y-2321 Burger J 001 Posey Block 6912

	Trip in to 4969' MD. Wash and ream to bottom. Continue circulating, pumping sweeps, and monitoring returns at report time.
15-Sept	Complete rig repairs. Short trip five stands then back to bottom. Circulate bottoms up, max gas 63 units. Pull out of hole. Rack back BHA.
16-Sept	Rack back BHA. Rig up casing equipment and run in hole with casing to 2,716' MD. Pick up liner hanger and run in hole on drill pipe from 2,716' MD to 3,070' MD.
17-Sept	Trip in with liner from 3,070' MD to 5,379' MD, liner string taking weight. Circulate and work liner to ~5,408' MD. Annulus packed off and lost 60 bbls, regain partial returns. Pressure test cement lines, pump cement, release dart, displace and land dart. Reverse circulate out and rig down cementers.
18-Sept	Rig down cementers. Trip out of hole 10 stands, hang off and pick up test joint. Test BOPE.
19-Sept	Finish testing BOPE and lay down test joint. Pull out of hole, test casing and shear rams. Pick up BHA and shallow pulse test tools (good). Single in hole to 2,110' MD
20-Sept	Single in hole to 2,418' MD, trip in hole with stands to 5,099' MD. Wash and ream to 5,286' MD. Circulate and condition, obtain slow pump rates. Drill cement and casing shoe, drill new hole to 5,433' MD, circulate hole clean. Perform FIT (Good), drill ahead from 5,433' MD to 5,852' MD.
21-Sept	Drill ahead from 5,852' MD to TD of 6,800' MD. Circulate bottoms up.
22-Sept	Circulate and reciprocate drill string. Pull out of the hole and rack back BHA.
23-Sept	Rig up and begin wireline operations. Finish run #1 (MDT-GR), rig tools down and rig up run #2 (FMI-SS-GR-HRLA).
24-Sept	Perform run #2 (FMI-SS-GR-HRLA) of wireline operations. Rig tools down and rig up for run #3 (RSWC). Begin run #3 (RSWC).
25-Sept	Complete run #3 (RSWC). Lay down and process cores. Package and prep RSWC for transport. Lay down BHA and download tools. Pick up cement stinger.
26-Sept	Wellsite Geologists released from rig.

5.2 Survey Data

Measured Depth	Inclination	Azimuth	True Vertical Depth	Vertical Section	Latitude North/South	Departure East/West	Dog-Leg Severity
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220.00	0.00	0.00	220.00	0.00	0.00	0.00	0.00
320.88	0.51	129.60	320.88	-0.29	-0.29	0.35	0.50
406.77	0.31	89.93	406.76	-0.53	-0.53	0.88	0.39
495.25	0.99	122.22	495.24	-0.93	-0.93	1.76	0.84
590.43	0.31	82.72	590.41	-1.34	-1.34	2.71	0.81
684.05	0.64	327.24	684.03	-0.87	-0.87	2.68	0.88
866.10	0.28	101.20	866.08	-0.09	-0.09	2.55	0.47
957.99	0.00	269.46	957.97	-0.13	-0.13	2.77	0.30
1051.65	0.14	176.72	1051.63	-0.24	-0.24	2.78	0.15
1144.54	0.26	120.65	1144.52	-0.46	-0.46	2.97	0.23
1235.66	0.41	134.11	1235.63	-0.80	-0.80	3.38	0.19
1328.60	0.51	59.75	1328.58	-0.83	-0.83	3.98	0.61
1378.50	0.25	111.62	1378.48	-0.76	-0.76	4.27	0.81
1540.18	0.12	50.83	1540.15	-0.78	-0.78	4.74	0.14
1723.74	0.39	34.99	1723.71	-0.14	-0.14	5.26	0.15
1818.58	0.58	50.01	1818.55	0.43	0.43	5.81	0.24
2003.18	1.06	39.81	2003.12	2.35	2.35	7.62	0.27
2095.93	0.87	35.51	2095.87	3.57	3.57	8.57	0.22
2186.15	0.69	72.12	2186.07	4.30	4.30	9.49	0.57
2373.34	0.75	76.36	2373.25	4.93	4.93	11.76	0.04
2463.93	0.78	75.65	2463.83	5.23	5.23	12.93	0.03
2555.30	0.79	70.25	2555.19	5.59	5.59	14.13	0.08
2646.22	0.79	76.51	2646.11	5.95	5.95	15.33	0.10
2743.03	0.70	74.08	2742.91	6.27	6.27	16.55	0.10
2837.42	0.74	67.59	2837.29	6.66	6.66	17.68	0.10
2875.38	0.64	69.95	2875.25	6.83	6.83	18.10	0.27
2978.31	0.74	64.69	2978.17	7.31	7.31	19.25	0.11
3074.55	0.58	52.33	3074.40	7.88	7.88	20.20	0.22
3169.04	0.67	47.05	3168.89	8.55	8.55	20.99	0.11
3258.93	0.77	27.36	3258.77	9.44	9.44	21.65	0.30
3351.80	0.94	33.05	3351.63	10.64	10.64	22.35	0.21
3445.40	0.89	33.34	3445.22	11.90	11.90	23.18	0.06
3537.90	0.88	39.68	3537.71	13.05	13.05	24.03	0.11
3630.29	0.86	29.57	3630.09	14.20	14.20	24.82	0.17
3724.13	1.05	46.97	3723.91	15.40	15.40	25.80	0.37
3815.47	1.16	37.46	3815.23	16.71	16.71	26.98	0.24
3909.95	1.11	27.77	3909.70	18.28	18.28	27.99	0.21
4001.96	1.54	18.87	4001.69	20.24	20.24	28.80	0.52
4095.18	1.55	21.22	4094.87	22.60	22.60	29.67	0.07
4189.17	1.52	19.27	4188.83	24.97	24.97	30.54	0.06

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4280.67	1.73	13.84	4280.29	27.46	27.46	31.27	0.28
4373.26	2.11	22.24	4372.83	30.39	30.39	32.25	0.51
4465.71	1.69	19.56	4465.23	33.26	33.26	33.35	0.46
4559.04	2.02	19.56	4558.51	36.11	36.11	34.37	0.35
4651.17	2.19	23.91	4650.58	39.24	39.24	35.62	0.25
4743.27	2.64	25.07	4742.59	42.77	42.77	37.23	0.49
4836.87	3.09	32.03	4836.08	46.87	46.87	39.49	0.61
4929.20	3.15	34.87	4928.26	51.06	51.06	42.26	0.18
5021.52	3.28	37.85	5020.45	55.22	55.22	45.33	0.23
5113.59	3.34	39.69	5112.36	59.37	59.37	48.66	0.13
5206.14	3.59	47.76	5204.74	63.39	63.39	52.52	0.59
5299.05	3.70	48.27	5297.46	67.34	67.34	56.92	0.12
5364.19	3.45	52.11	5362.48	69.95	69.95	60.04	0.54
5429.81	3.65	46.91	5427.97	72.59	72.59	63.12	0.58
5518.31	3.73	45.18	5516.29	76.55	76.55	67.22	0.15
5612.70	3.58	42.26	5610.48	80.90	80.90	71.39	0.25
5704.09	3.56	42.97	5701.70	85.09	85.09	75.24	0.06
5795.19	3.47	41.51	5792.62	89.22	89.22	79.00	0.13
5889.32	3.48	42.48	5886.58	93.46	93.46	82.82	0.06
5980.70	3.42	42.67	5977.80	97.52	97.52	86.54	0.07
6075.07	3.43	41.69	6072.00	101.69	101.69	90.33	0.06
6167.81	3.55	39.12	6164.57	105.99	105.99	93.98	0.21
6259.59	3.53	39.52	6256.17	110.37	110.37	97.57	0.03
6346.61	3.75	37.26	6343.02	114.70	114.70	100.99	0.30
6445.34	3.99	34.54	6441.52	120.10	120.10	104.89	0.31
6536.48	3.96	35.37	6532.44	125.27	125.27	108.51	0.07
6628.63	3.92	37.01	6624.37	130.38	130.38	112.25	0.13
6721.62	3.89	35.41	6717.15	135.49	135.49	115.99	0.12
6745.05	3.99	35.86	6740.52	136.80	136.80	116.93	0.46

5.3 BHA Diagrams

BHA 1

<div style="display: flex; justify-content: space-between; align-items: center;"> <div> HALLIBURTON Sperry Drilling </div> </div>									
WELL INFORMATION								Created On : Aug 02 2015	
<h2 style="margin: 0;">BHA Report</h2> <p style="margin: 10px 0;">IADC Rig BHA# 0100</p> <p style="margin: 10px 0;">Run# 0100</p>				<div style="display: flex; justify-content: space-between;"> <div>Customer : Shell Oil</div> <div>Well Name : Burger J</div> <div>Job Number : AK-XX-0901604700</div> <div>Rig Name : Polar Pioneer</div> <div>Field Name : Posey</div> <div>State / Province : Alaska</div> </div>					
Date In : 7/30/2015 MD In (ft) : 220 TVD In (ft) : 220 Date Out : 8/1/2015 MD Out (ft) : 1512 TVD Out (ft) : 1512									
BIT DATA									
Bit Number : 1		Nozzles : 3x15,1x14							
Bit Size (in) : 8.500		TFA (in2) : 0.6680							
Manufacturer : Schlumberger / Smith		Dull Grade In : NEW							
Model : XR+C		Dull Grade Out : 1-1-NO-A-E-IN-NO-TD							
Serial Number : PX2493									
COMPONENT DATA									
Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	Mill	PX2493	6.750	3.000	8.500	97.86	P 4-1/2" REG	0.80	
2	6-5/8" Bit Sub	DR17721	6.625	2.750		97.24	B NC 50	3.06	
3	6 3/4" DGR Collar	90432750	6.750	1.920		97.80	B NC 50	4.55	
4	6 3/4" PWD	90432750	6.750	1.905		96.30	B NC 50	4.39	
5	6 3/4" DM Collar	12510194	6.750	3.125		103.40	B NC 50	9.21	
6	6 3/4" BAT Collar	90434116	6.750	1.905		97.70	B NC 50	22.01	
7	6 3/4" ADR Collar	90432745	6.750	1.920		109.40	B NC 50	26.06	
8	6.75" Inline Stabilizer (ILS)	10605408	6.790	1.720	8.375	115.49	B NC 50	3.85	71.13
9	6 3/4" ALD Collar	90433305	6.750	1.920	8.200	104.30	P NC 50	16.27	79.07
	Stabilizer				8.200				79.07
10	6 3/4" CTN Collar	90433305	6.750	1.905		102.30	B NC 50	11.84	
11	6 3/4" Smart Stabilizer	90433307	6.720	1.920	8.250	111.01	P NC 50	2.21	102.90
12	6 3/4" MRIL-WD	90433307	6.750	1.920		105.40	B NC 50	36.86	
	Stabilizer				7.890				106.52
	Bottom Stabilizer				8.250				106.92
	Stabilizer				7.860				111.29
	Top Stabilizer				8.250				111.73
13	6 3/4" HOC (TM)	11535844	6.900	3.250		103.60	B NC 50	9.95	
14	6-3/4" Downhole Filter Sub	634300	6.790	3.313		94.03	B NC 50	4.66	
15	2 jts x 6 3/4" 96# Drill Collar		6.750	2.813		100.50		61.26	
16	3 jts x 5" X 3" HWDP 49#		5.000	3.000		49.30		90.50	
17	Jar		6.500	2.750		88.24		32.38	
18	3 jts x 5" X 3" HWDP 49#		5.000	3.000		49.30		90.99	
Total:								430.85	

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BHA 2

HALLIBURTON Sperry Drilling																					
WELL INFORMATION								<i>Created On : Aug 03 2015</i>													
<h3 style="margin: 0;">BHA Report</h3> <p style="margin: 10px 0;">IADC Rig BHA#</p> <p style="margin: 10px 0;">Run# 0200</p>				<table style="width: 100%; border: none;"> <tr> <td style="width: 150px;">Customer</td> <td>: Shell Oil</td> </tr> <tr> <td>Well Name</td> <td>: Burger J</td> </tr> <tr> <td>Job Number</td> <td>: AK-XX-0901604700</td> </tr> <tr> <td>Rig Name</td> <td>: Polar Pioneer</td> </tr> <tr> <td>Field Name</td> <td>: Posey</td> </tr> <tr> <td>State / Province</td> <td>: Alaska</td> </tr> </table>						Customer	: Shell Oil	Well Name	: Burger J	Job Number	: AK-XX-0901604700	Rig Name	: Polar Pioneer	Field Name	: Posey	State / Province	: Alaska
Customer	: Shell Oil																				
Well Name	: Burger J																				
Job Number	: AK-XX-0901604700																				
Rig Name	: Polar Pioneer																				
Field Name	: Posey																				
State / Province	: Alaska																				
Date In : 8/2/2015		MD In (ft) :		TVD In (ft) :		Date Out : 8/3/2015		MD Out (ft) :		TVD Out (ft) :											
BIT DATA																					
Bit Number : 2 Bit Size (in) : 36.000 Manufacturer : Schlumberger / Smith Model : XR + 7C Serial Number : PW4840				Nozzles : 1x16,3x20 TFA (in2) : 1.1167 Dull Grade In : NEW Dull Grade Out : 1-1-NO-A-E-IN-NO-BHA																	
COMPONENT DATA																					
Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbf)	Top Connection	Length (ft)	Bit - Center Blade (ft)												
1	36" Mill Tooth	PW4840	15.000	3.250	36.000	573.97	P 7-5/8" REG	3.50													
2	9.5" Bit Sub with float installed	17856	9.520	3.000		218.49	B 7-5/8" REG	4.76													
3	9.5" Spiral Drill Collar 208#		9.500	3.000		208.00	B 7-5/8" REG	30.96													
4	36" Welded Blade Stabilizer	30181	9.530	3.063	35.750	217.99	B 7-5/8" REG	10.10	42.22												
5	X-Over Sub (7-5/8 Reg Pin x 6-5/8" Reg Box)	29919	9.570	2.825		223.78	B 6-5/8" REG	4.16													
6	3jts x 8.25" Spiral Drill Collars 155#		8.250	2.813		155.00	B 6-5/8" REG	93.28													
7	X-Over Sub (6-5/8" Reg P x NC50 B)	16036	8.010	2.875		149.61	B NC 50	3.21													
8	1jt x 6 3/4" X 2.8125" - 96# Drill Collar		6.750	2.813		96.00	B NC 50	31.06													
9	5 jts 5" X 3" HWDP 49# - NC50		5.000	3.000		49.00		149.88													
Total:								330.91													

BHA 3

Not Available

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BHA 4A

HALLIBURTON

Sperry Drilling

WELL INFORMATION

Created On : Aug 22 2015

BHA Report

IADC Rig BHA# 400a

Run# 0400

Customer : Shell Oil
Well Name : Burger J
Job Number : AK-XX-0901604700
Rig Name : Polar Pioneer
Field Name : Posey
State / Province : Alaska

Date In : 08/18/2015 MD In (ft) : 393 TVD In (ft) : 393 Date Out : 08/18/2015 MD Out (ft) : 425 TVD Out (ft) : 425

BIT DATA

Bit Number : 3
Bit Size (in) : 26.000
Manufacturer : Schlumberger / Smith
Model : XR+C
Serial Number : PW4813
Nozzles : 3x20.1x16
TFA (in2) : 1.1167
Dull Grade In : NEW
Dull Grade Out : 0-0-NO-A-E-I-NO-BHA

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	26" Smith XR+C Mill Tooth	PW4813	9.300	3.000	26.000	207.41	P 7-5/8" REG	2.18	
2	Bit Sub with float	47389	9.520	3.000		218.49	B 7-5/8" REG	4.00	
3	9.5" Spiral Drill Collar 208#	SST43980	9.550	3.000		220.03	B 7-5/8" REG	30.96	
4	9.5" Spiral Drill Collar 208#	SST42294	9.540	3.000		219.52	B 7-5/8" REG	31.03	
5	26" Steel Stabilizer (7-5/8" Reg Conn)	29772	9.600	3.000	25.750	222.59	B 7-5/8" REG	7.48	71.07
6	X-Over Sub (7-5/8" Reg Pin x 6-5/8" Box)	44517	9.570	2.825		223.78	B 6-5/8" REG	4.35	
7	8.25" Spiral Drill Collar 155#	R484828	8.250	2.875		160.05	B 6-5/8" REG	30.98	
8	8" BN X-Over NC50 b x 6-5/8" reg p	DR18145	8.090	2.875		153.06	B NC 50	3.67	
9	6jts x 5" X 3" HWDP 49# - NC50		5.000	3.000		49.00		180.85	
Total:								295.5	

PERFORMANCE Section A

Parameter	Min	Max	Avg	Activity	Hours	BHA Weight (klb)	
WOB (klb) :	5	5	5	Drilling	: 3.67	in Air (Total)	: 31.97
RPM (rpm) :	60	60	60	Reaming	: 6.25	in Mud (Total)	: N/A
Flow (gpm) :	750	750	750	Circ-Other	: 0.92	in Air (Bel Jars)	: N/A
SPP (psig) :	590	590	590	Total	: 10.84	in Mud (Bel Jars)	: N/A

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RUN 4B

HALLIBURTON | Sperry Drilling

WELL INFORMATION

Created On : Aug 22 2015

BHA Report

IADC Rig BHA# 400B

Run# 0401

Customer : Shell Oil
Well Name : Burger J
Job Number : AK-XX-0901604700
Rig Name : Polar Pioneer
Field Name : Posey
State / Province : Alaska

Date In : 08/18/2015 MD In (ft) : 425 TVD In (ft) : 425 Date Out : 08/20/2015 MD Out (ft) : 1512 TVD Out (ft) : 1512

BIT DATA


Bit Number : 3rr1 Nozzles : 3x20,1x16
Bit Size (in) : 26.000 TFA (in2) : 1.1167
Manufacturer : Schlumberger / Smith Dull Grade In : 0-0-NO-A-E-I-NO-BHA
Model : XC+R Dull Grade Out : 1-1-WT-A-E-I-NO-TD
Serial Number : PW4813

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	26" Smith XR+C Mill Tooth	PW4813	9.300	3.000	26.000	207.41	P 7-5/8" REG	2.18	
2	Bit Sub with float	47389	9.520	3.000		218.49	B 7-5/8" REG	4.00	
3	9.5" Spiral Drill Collar 208#	SST43980	9.500	3.000		208.00	B 7-5/8" REG	30.96	
4	9.5" Spiral Drill Collar 208#	SST42294	9.500	3.000		208.00	B 7-5/8" REG	31.03	
5	26" Steel Stabilizer	DR29772	9.600	3.000	25.750	222.59	B 7-5/8" REG	7.48	72.02
6	9.5" Spiral Drill Collar 208#	SST44729	9.500	3.000		208.00	B 7-5/8" REG	31.16	
7	26" Steel Stabilizer	DR29764	9.580	3.000	25.750	221.56	B 7-5/8" REG	8.40	110.81
8	X-Over Sub (7-5/8" Reg Pin x 6-5/8" Box)	44517	9.570	2.825		223.78	B 6-5/8" REG	4.35	
9	8" DM Collar	12185782	8.000	3.500		147.40	B 6-5/8" REG	9.20	
10	8" PWD	90441519	8.000	1.920		143.40	B 6-5/8" REG	8.30	
11	8" HCIM Collar	90441519	8.000	1.920		149.90	B 6-5/8" REG	7.84	
12	8" HOC (TM)	11672161	8.150	4.000		145.20	B 6-5/8" REG	10.20	
13	8" Downhole Filter Sub	814131	8.340	3.500		153.39	B 6-5/8" REG	4.60	
14	2jts x 8.25" Spiral Drill Collar 155#	38347/41702	8.250	2.813		155.00	B 6-5/8" REG	62.30	
15	Jar	10369H	8.050	2.500		156.72	B 6-5/8" REG	33.48	
16	3jts x 8.25" Spiral Drill Collar 155#	484828/47293-10/43970	8.250	2.813		155.00	B 6-5/8" REG	93.04	
17	X-Over Sub (6-5/8" RegP x NC50B)	16036	8.010	2.875		149.61	B NC 50	3.20	
18	2jts x 6 3/4" - 96# Drill Collar	35335/38963	6.750	2.813		96.00	B NC 50	61.26	
19	7jts x 5" HWDP 49# - NC50		5.000	3.000		49.00		211.62	
Total:								624.6	

CONFIDENTIAL

BHA 5

									
WELL INFORMATION Created On : Sep 08 2015									
BHA Report IADC Rig BHA# Run# 0500				Customer : Shell Oil Well Name : Burger J Job Number : AK-XX-0901604700 Rig Name : Polar Pioneer Field Name : Posey State / Province : Alaska					
Date In : 09/04/2015 MD In (ft) : 1512 TVD In (ft) : 1511 Date Out : 09/07/2015 MD Out (ft) : 2963 TVD Out (ft) : 2961									
BIT DATA									
Bit Number : 4 Bit Size (In) : 17.500 Manufacturer : Baker / Hughes Christensen Model : T6065 Serial Number : 7045627				Nozzles : 9x12 TFA (In2) : 0.9940 Dull Grade In : NEW Dull Grade Out : 1-2-BT-N-X-I-NO-TD					
MOTOR DATA									
Motor Number : 1 OD (In) : 9.625 Manufacturer : Sperry Drilling Model : SperryDrill Serial Number : 963469				Bend (deg) : 1.15 Nozzles (32nd) : 0.0 Avg Diff Press : 171.15 Cumul Clr Hrs : 45.05					
COMPONENT DATA									
Item #	Description	Serial Number	OD (In)	ID (In)	Gauge (In)	Weight (lbf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	17.5" Baker T6065 PDC	7045627	11.500	3.000	17.500	329.90	P 7-5/8" REG	1.54	
2	9 5/8" SperryDrill Lobe 6/7 - 5.0 stg	963469	9.625	6.135		179.08	B 7-5/8" REG	27.70	
3	Float Sub	DR5865	9.500	2.930		218.59	B 7-5/8" REG	2.92	
4	X-Over Sub (7-5/8" Reg Pin x 6-5/8" Box)	44517	9.570	2.825		223.78	B 6-5/8" REG	4.35	
5	8.25" Spiral Drill Collar 155#	38347	8.250	2.813		155.00	B 6-5/8" REG	31.19	
6	17-1/4" NonMag Stabilizer	DR30111	8.100	3.000	17.250	151.52	B 6-5/8" REG	8.04	71.30
7	8" DM Collar	12185782	8.000	3.500		147.40	B 6-5/8" REG	9.20	
8	8" PWD	90441519	8.000	1.920		143.40	B 6-5/8" REG	8.30	
9	8" HCM Collar	90441519	8.000	1.920		149.90	B 6-5/8" REG	7.84	
10	8" HOC (TM)	11672161	8.150	4.000		145.20	B 6-5/8" REG	10.20	
11	17-1/4" NonMag Stabilizer	DR30112	8.060	3.000	17.250	149.79	B 6-5/8" REG	8.04	114.98
12	8" Downhole Filter Sub	814131	8.340	3.500		153.39	B 6-5/8" REG	4.60	
13	8-1/4" Well Commander Circ Sub	B2007699	8.250	3.000		158.09	B 6-5/8" REG	14.75	
14	5jts x 8.25" Spiral Drill Collar 155#	46026/41018/41016/41019/41702	8.250	2.813		155.00	B 6-5/8" REG	154.16	
15	8" Hydra-Jar	10369H	8.050	2.500		156.72	B 6-5/8" REG	33.48	
16	3jts x 8.25" Spiral Drill Collar 155#	484828/47293-10/43970	8.250	2.813		155.00	B 6-5/8" REG	93.04	
Job No: AK-XX-0901604700 Well Name: Burger J BHA Report INSITE V8.1.10 Page 1									

CONFIDENTIAL

BHA 6

HALLIBURTON | Sperry Drilling

WELL INFORMATION

Created On : Sep 16 2015

BHA Report

IADC Rig BHA# 6

Run# 0600

Customer : Shell Oil
Well Name : Burger J
Job Number : AK-XX-0901604700
Rig Name : Polar Pioneer
Field Name : Posey
State / Province : Alaska

Date In : 9/10/2015 MD In (ft) : 2963 TVD In (ft) : 2963 Date Out : 9/15/2015 MD Out (ft) : 5423 TVD Out (ft) : 5421

BIT DATA

Bit Number : 5 Nozzles : 9x12
Bit Size (in) : 12.250 TFA (in2) : 0.9940
Manufacturer : HDBS Dull Grade In : NEW
Model : SF66H Dull Grade Out : 1-1-BT-C-X-I-WT-TD
Serial Number : 12642177

MOTOR DATA

Motor Number : 2 Bend (deg) : 1.15
OD (in) : 8.000 Nozzles (32nd) : 0.0
Manufacturer : Sperry Drilling Avg Diff Press : 209.00
Model : SperryDrill Cumul Cir Hrs : 74.23
Serial Number : 10642766

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	PDC SF66H	12642177	7.750	3.000	12.250	136.68	P 6-5/8" REG	1.48	
2	8" SperryDrill Lobe 4/5 - 5.3.sfg	10642766	8.000	5.000		121.08	B 6-5/8" REG	32.10	
3	8" DGR Collar	90433312	8.000	1.920		142.70	B 6-5/8" REG	6.85	
4	8" EWR-P4 Collar	90433312	8.000	2.000		151.00	B 6-5/8" REG	12.17	
5	8" DM Collar	12606713	8.000	3.500		147.40	B 6-5/8" REG	9.20	
6	8" Inline Stabilizer (ILS)	CP2321284	8.000	1.920	12.125	161.44	B 6-5/8" REG	4.01	62.90
7	8" PWD	90441518	8.000	1.920		143.40	B 6-5/8" REG	8.22	
8	8" HCIM Collar	90441518	8.000	1.920		149.90	B 6-5/8" REG	7.77	
9	8" ALD Collar	90433322	8.000	2.375	11.900	182.40	P 6-5/8" IF	18.04	86.90
	Stabilizer				11.900				86.90
10	8" CTN Collar	90433319	8.000	2.375		159.00	B 6-5/8" REG	19.74	
11	8" XBAT Collar	90433309	8.000	2.375		130.70	B 6-5/8" REG	22.40	
12	8" TM HOC	11672162	8.150	4.000		145.20	B 6-5/8" REG	10.18	
13	8" Downhole Filter Sub	814131	8.340	3.500		153.39	B 6-5/8" REG	4.60	
14	8-1/4" Well Commander Circ Sub	B2007699	8.250	3.000		158.09	B 6-5/8" REG	14.75	
15	8jts x 8.25" Spiral Drill Collar		8.250	3.000		155.00	B 6-5/8" REG	247.18	
16	8" Hydra-Jar	10369H	8.050	2.500		156.72	B 6-5/8" REG	33.48	
17	3jts x 8.25" Spiral Drill Collar		8.250	3.000		158.09	B 6-5/8" REG	92.47	

CONFIDENTIAL

BHA 7

HALLIBURTON

Sperry Drilling

WELL INFORMATION

Created On : Sep 23 2015

BHA Report

IADC Rig BHA#

Run# 0700

Customer : Shell Oil
 Well Name : Burger J
 Job Number : AK-XX-0901604700
 Rig Name : Polar Pioneer
 Field Name : Posey
 State / Province : Alaska

Date In : 9/19/2015 MD In (ft) : 5423 TVD In (ft) : 5421 Date Out : 9/22/2015 MD Out (ft) : 6800 TVD Out (ft) : 6795

BIT DATA

Bit Number : 6 Nozzles : 5x12
 Bit Size (in) : 8.500 TFA (in²) : 0.5522
 Manufacturer : HDBS Dull Grade In : NEW
 Model : MM55 Dull Grade Out : 1-1-BT-N-X-I-NO-TD
 Serial Number : 12642180

MOTOR DATA

Motor Number : 3 Bend (deg) : 1.15
 OD (in) : 6.750 Nozzles (32nd) : 0.0
 Manufacturer : Sperry Drilling Avg Diff Press : 224.06
 Model : Sperry Drill Cumul Cir Hrs : 45.03
 Serial Number : 12547695

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lb/ft)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	HDBS PDC MM55	12642180	6.000	2.750	8.500	76.12	P 4-1/2" REG	0.98	
2	6 3/4" Sperry Drill Lobe 6/7 - 6.0 stg	12547695	6.750	4.498		87.63	B 4-1/2" IF	31.41	
3	6-3/4" Float Sub	DR29808	6.790	2.810		102.27	P NC 46	3.20	
4	6 3/4" DGR Collar	90432749	6.750	1.920		97.80	B NC 50	4.51	
5	6 3/4" PWD	90432749	6.750	1.905		96.30	B NC 50	4.48	
6	6 3/4" DM Collar	12460872	6.750	3.125		103.40	B NC 50	9.21	
7	6 3/4" XBAT Collar	90432753	6.750	1.905		97.70	B NC 50	22.17	
	Stabilizer				7.430				57.37
	Stabilizer				7.400				67.69
8	6-3/4" Inline Stabilizer (ILS)	101315755	6.750	1.920	8.360	112.09	B NC 50	3.94	77.09
9	6 3/4" ADR Collar	90432746	6.750	1.920		109.40	B NC 50	26.09	
10	6 3/4" ALD Collar	90432754	6.750	1.920	8.500	104.30	B NC 50	18.13	113.09
	Stabilizer				8.500				113.09
11	6 3/4" CTN Collar	90432754	6.750	1.905		102.30	B NC 50	11.84	
12	Smart Stabilizer (ILS)	90433308	6.700	1.920	8.250	110.29	P NC 50	2.20	136.81
13	6 3/4" MRIL-WD	90433308	6.750	1.920		105.40	B NC 50	36.80	
	Bottom Stabilizer				8.250				140.83
	Stabilizer				7.750				142.65

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5.4 Preliminary Side Wall Core Report

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Fifty cores were attempted, forty six were recovered.

Sample fluorescence was observed in nine cores.
Strongest fluorescence was observed in cores #3 and #41.



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Abundant, bright
yellow fluorescence
was observed in core
#3 from 5908.9' MD in
the Kugaruk C.



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Core #3 in plain light.



PROPRIETARY / CONFIDENTIAL

Even, dull orange fluorescence was observed in core #41 from 6521.3' MD in the Kuparuk D.



CONFIDENTIAL

PROPRIETARY / CONFIDENTIAL

Core #41 in plain light.



CONFIDENTIAL

5.5 Various Lithologies Observed in Main Objective Interval

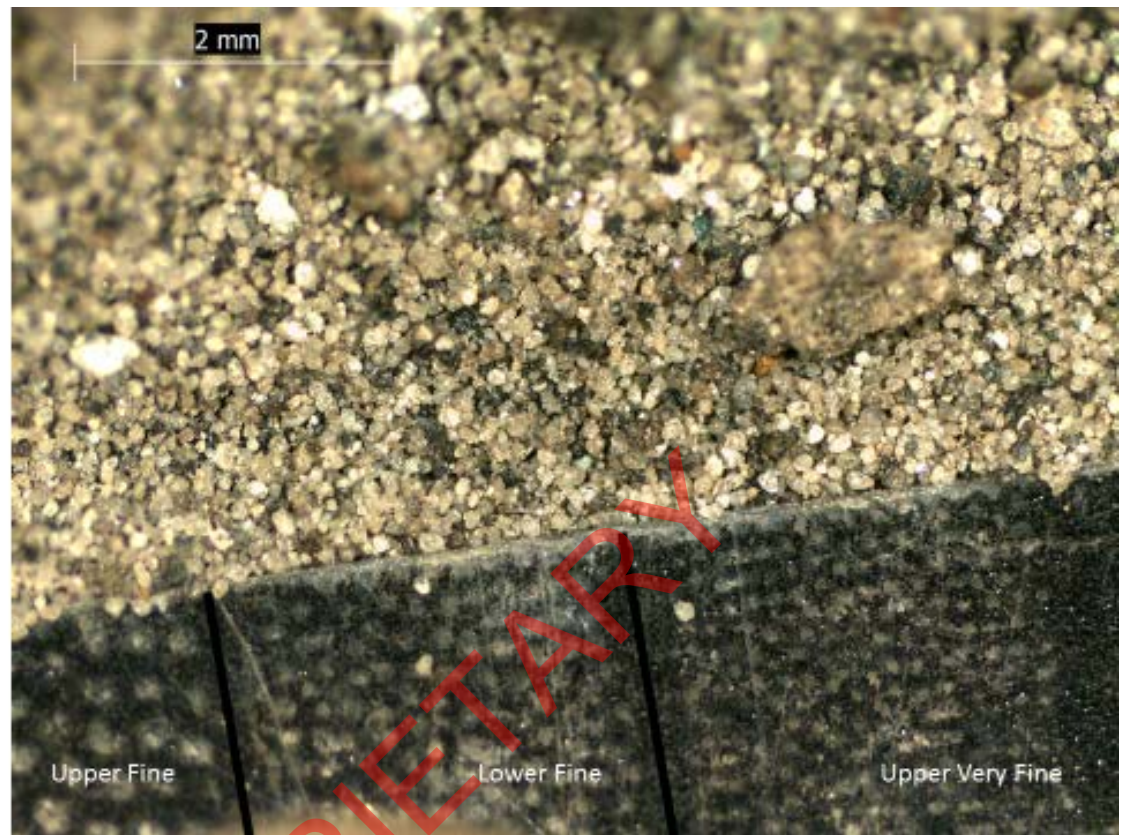
PROPRIETARY

Kuparuk C

Light gray to white (frosted) with abundant translucent to transparent, unconsolidated, upper very fine to lower fine quartz grains with very trace amounts of lower medium to upper medium grains, subrounded to angular, scattered fragments of very weak calcareous cemented quartz grains with a few grains of glauconite.

The trend from the C to the A was seen as sand becoming finer and the silt/clay content increased.

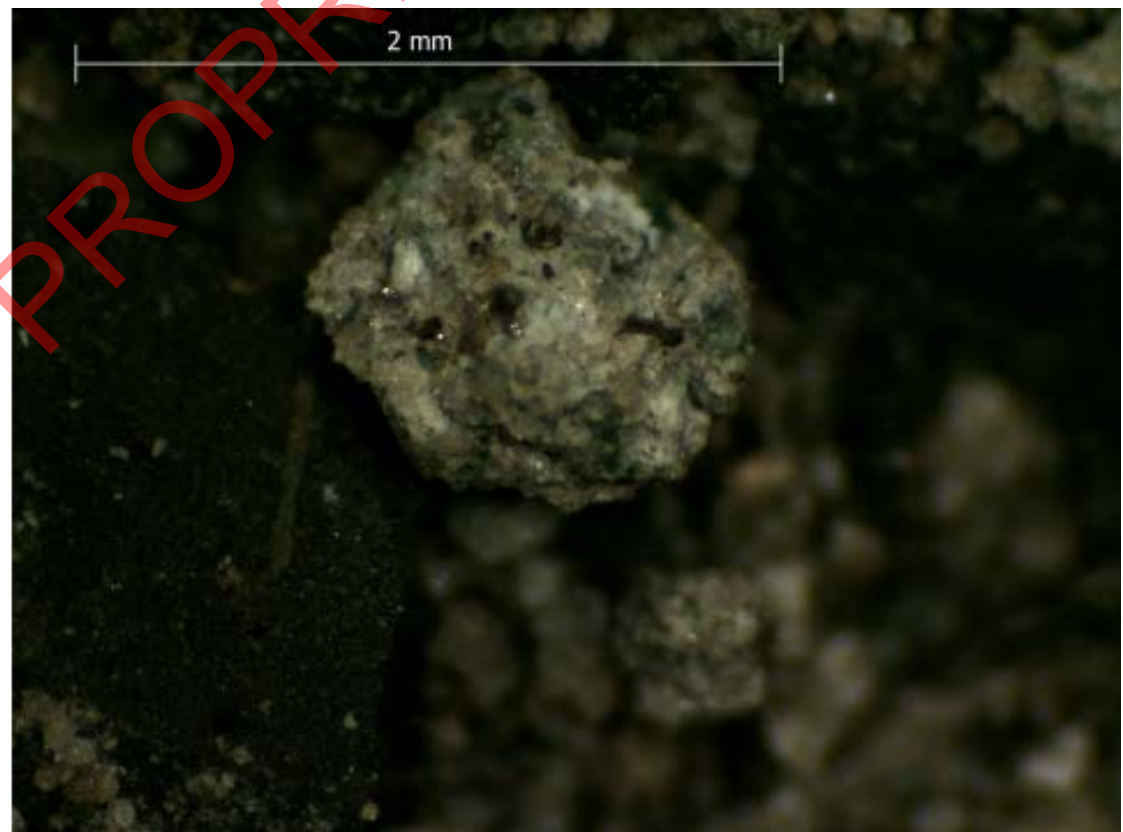
No sample fluorescence was observed.



PROPRIETARY

Kuparuk C

Quartz with glauconite grain fragment, held by an argillaceous matrix to very weak calcite cement. To the left, a pyritized microburrow in Shale.



PROPRIETARY

5910'

Pyrite
Tuffaceous Matrix
Shale
Medium Qtz Grain

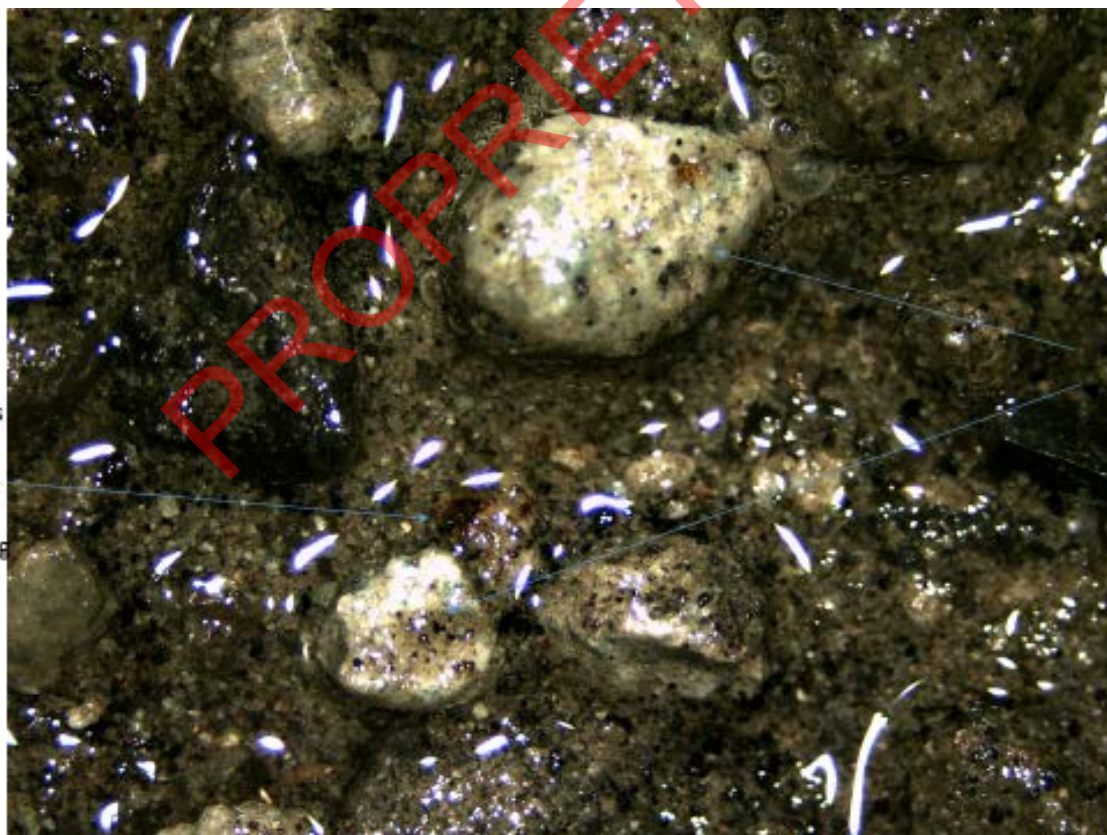


PROPRIETARY

5940'

Carbonaceous material decomposing, releasing brown staining

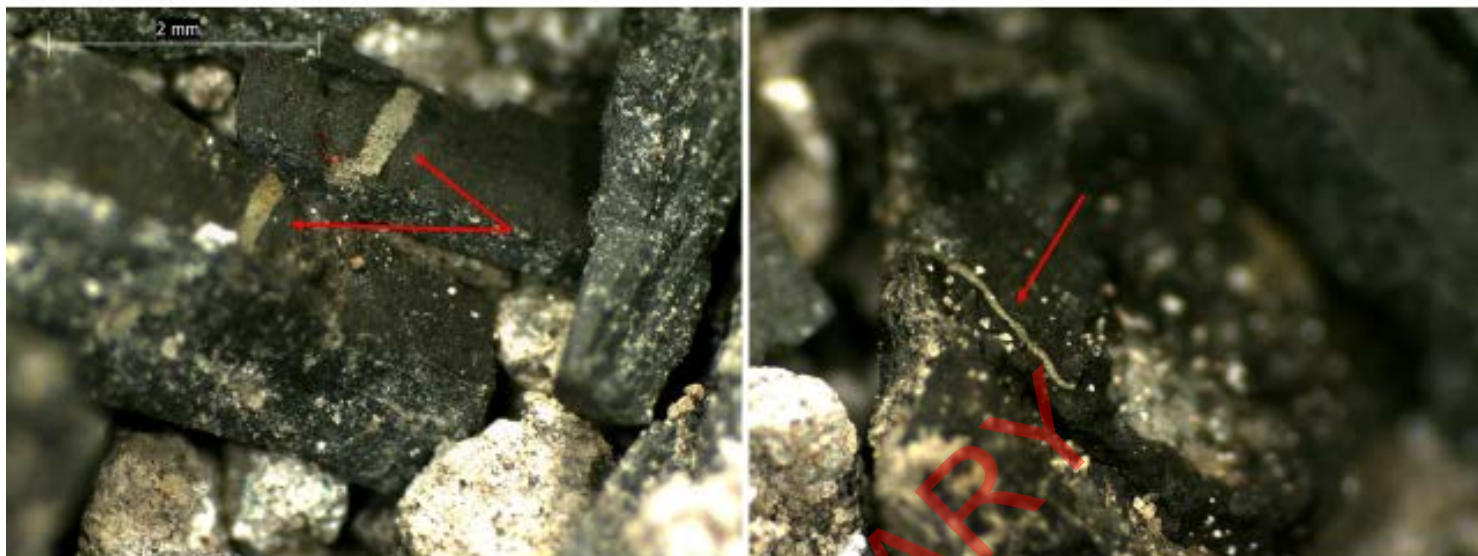
Quartz and Glauconite in a Tuffaceous matrix



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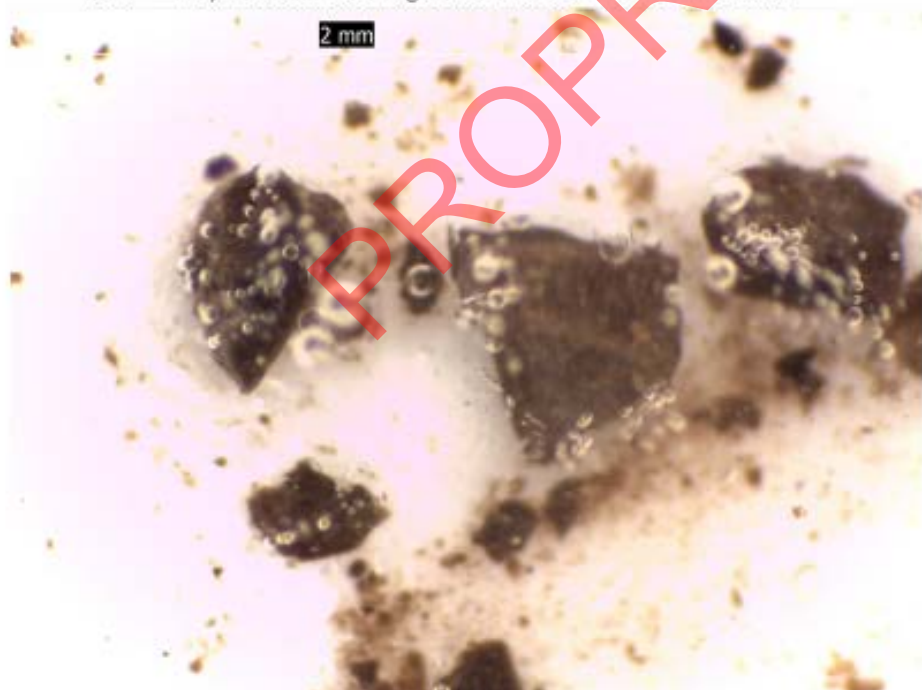
PROPRIETARY

Pyrotized Bioturbations (microburrows) in Shale



PROPRIETARY

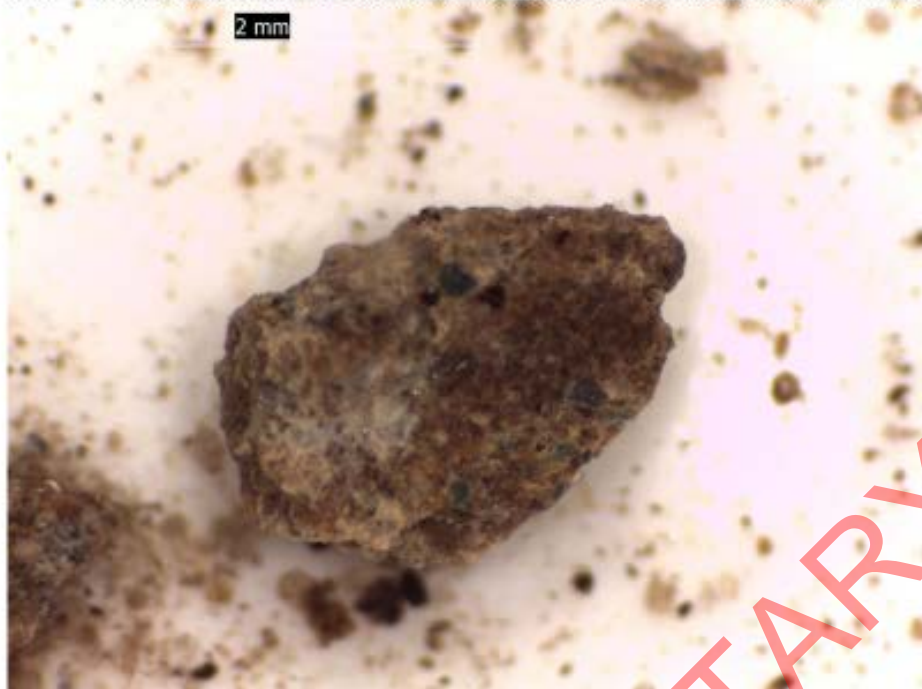
5880' – Very hard Siderite fragments with slow reaction to HCL.



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PROPRIETARY

5910' – Quartz and Glauconite bound with Sideritic cement. Slow reaction with HCL.



PROPRIETARY

5950' – Siderite fragments with very slow reaction to HCL.



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PROPRIETARY

Calcareous Siltstone/ Sandstone

(6540' MD)

In general, fluorescence was observed in the calcareous fragments, typically the Siltstones. As depth increased, the Siltstone became more argillaceous and less fluorescent.



5.6 Cuttings Fluorescence as observed in Main Objective Interval

PROPRIETARY

6410' and 6440' CLAYSTONE 90% medium gray to medium dark gray with brownish hue, soft to firm, occasionally hard, earthy, increasing silt, carbonaceous, rare calcareous tuff, rare glauconitic clay; SHALE 10% medium dark gray to dark gray, hard, brittle, elongated cuttings.

6440' - 6460' SANDSTONE 45% light gray to medium gray with abundant transparent to translucent grains, fine lower grains to silty, moderately sorted, subrounded to subangular, weak calcareous cement in part, tuffaceous clay matrix, abundant carbonaceous material, common lithics, rare pyrite, glauconite, N/S visible oil, Fluorescence: moderately abundant, spotty, orange, Cut: slow, dull, yellow; CLAYSTONE 45%; SHALE 10%



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6480' - 6500' SANDSTONE 60% light gray to medium gray with abundant transparent to translucent grains, fine lower grains to silty, moderately sorted, subrounded to subangular, weak calcareous cement in part, tuffaceous clay matrix, abundant carbonaceous material, common lithics, rare pyrite, glauconite, N/S visible oil, Fluorescence: moderately abundant, spotty, orange, Cut: slow, dull, yellow; CLAYSTONE 30%; SHALE 10%

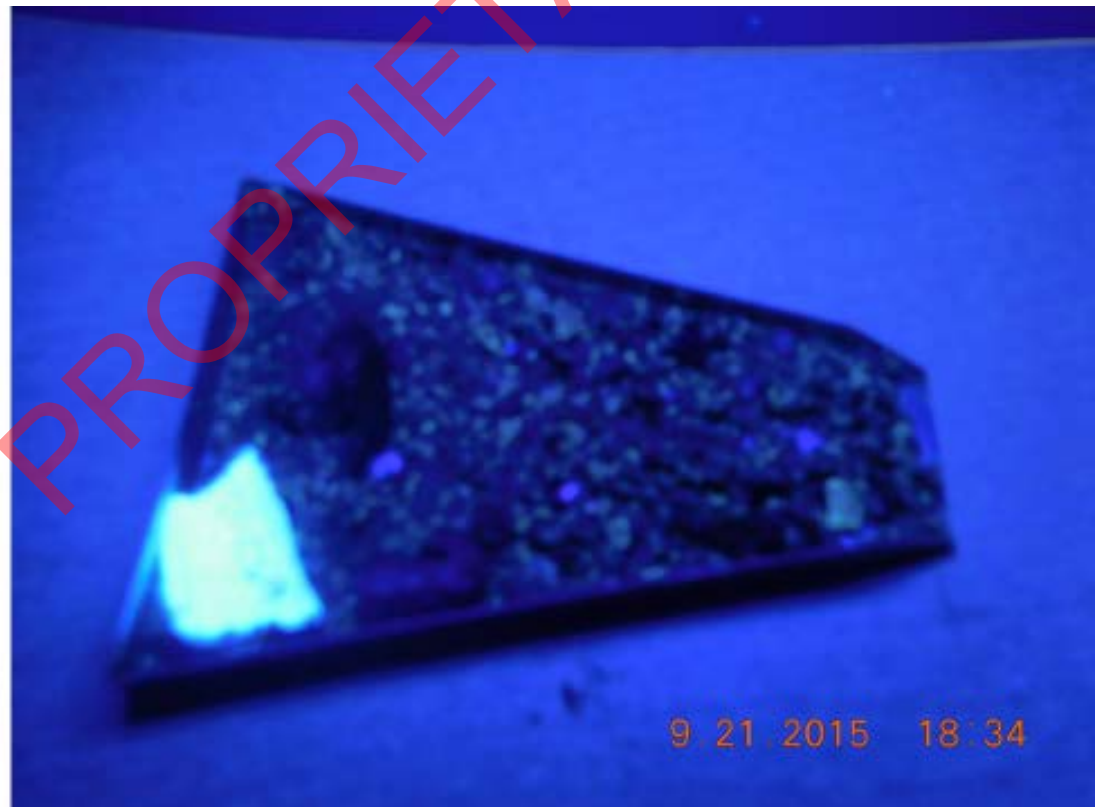
6500' - 6520' SANDSTONE 40% light gray to medium gray with abundant transparent to translucent grains, very fine to fine, subrounded to subangular, unconsolidated to consolidated with weak calcareous cement, dull yellow fluorescence over 40% sample, immediate bright yellow crush cut fluorescence, dull yellow residual fluorescence; CLAYSTONE 40% light gray to medium gray, soft to moderately hard, moderate induration, silty, slightly calcareous; SILTSTONE 20% light gray to medium gray, soft to moderately hard, friable



PROPRIETARY

6520' MD

6500' - 6520' SANDSTONE 40% light gray to medium gray with abundant transparent to translucent grains, very fine to fine, subrounded to subangular, unconsolidated to consolidated with weak calcareous cement, dull yellow fluorescence over 40% sample, immediate bright yellow crush cut fluorescence, dull yellow residual fluorescence; CLAYSTONE 40% light gray to medium gray, soft to moderately hard, moderate induration, silty, slightly calcareous; SILTSTONE 20% light gray to medium gray, soft to moderately hard, friable



PROPRIETARY

6530' MD

6520' - 6530' SILTSTONE 60% light gray to medium gray, easily friable to friable, dull yellow fluorescence even over 40% of sample, faint slow dull yellow crush fluorescence, dull yellow fluorescence; SANDSTONE 20% light gray to medium gray with abundant translucent to transparent grains, very fine to fine, subangular to subrounded, unconsolidated, common calcareous, dull yellow fluorescence, immediate bright yellow crush cut fluorescence, dull yellow residual fluorescence; CLAYSTONE 20% light gray to medium gray, soft to moderately hard, moderate induration, silty, slightly calcareous



PROPRIETARY

6540' MD

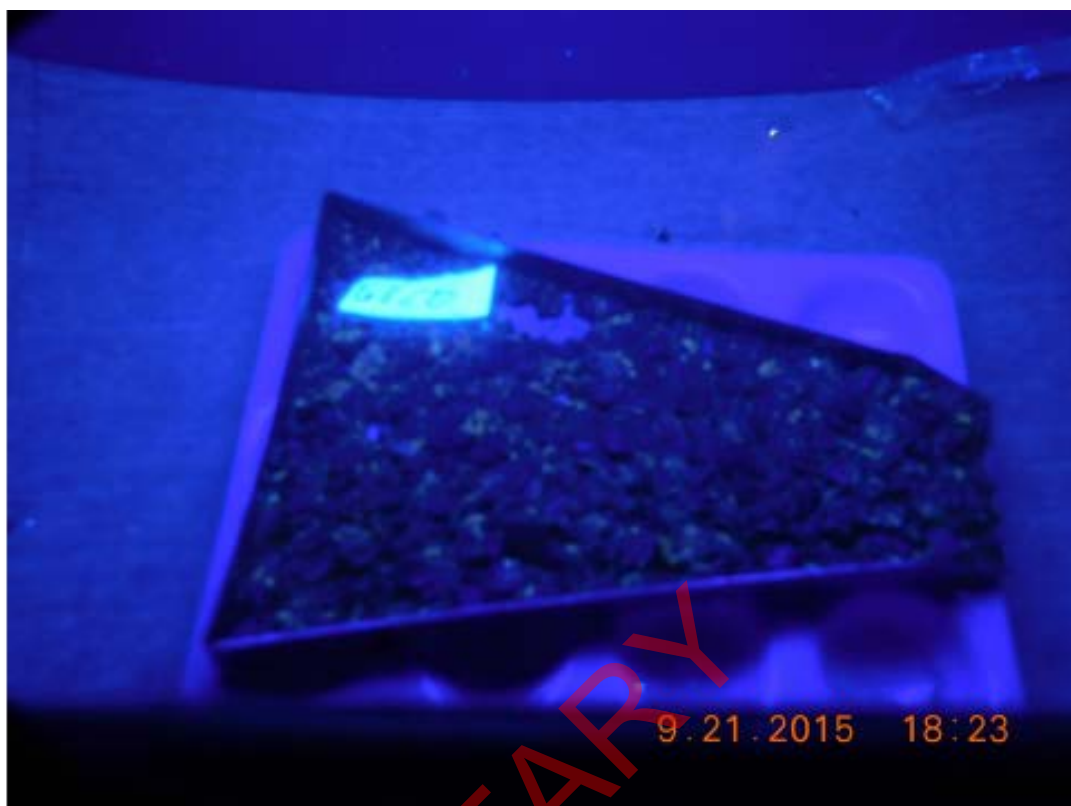
6530' - 6540' SILTSTONE 60% light gray to medium gray, firm friable to easily friable, slightly calcareous, dull yellow fluorescence even over 40% of sample, faint immediate bright yellow crush fluorescence, dull yellow residual fluorescence; SANDSTONE 20% light gray to medium gray with abundant translucent to transparent grains, very fine to fine, subangular to subrounded, predominantly unconsolidated trace calcareous cement, trace glauconite, dull yellow fluorescence, immediate bright yellow crush fluorescence, dull yellow residual fluorescence; CLAYSTONE 20% medium gray, soft to moderately hard, amorphous to platy, silty



PROPRIETARY

6550' MD

6540' - 6550' SILTSTONE 70% light gray to medium gray, friable to easily friable, slightly calcareous, dull yellow fluorescence even over 40% of sample, faint immediate bright yellow crush fluorescence, dull yellow residual fluorescence; SANDSTONE 20% light gray to medium gray with abundant translucent to transparent grains, very fine to fine, subangular to subrounded, predominantly unconsolidated trace calcareous cement, trace glauconite, dull yellow fluorescence, immediate bright yellow crush fluorescence, dull yellow residual fluorescence; CLAYSTONE 10% medium gray, soft to moderately hard, amorphous to platy, silty



PROPRIETARY

6560' MD

6550' - 6560' SILTSTONE 70% light gray to medium gray, friable to easily friable, slightly calcareous, dull yellow fluorescence even over 40% of sample, faint slow bright yellow crush fluorescence, dull yellow residual fluorescence; SANDSTONE 20% light gray to medium gray with abundant translucent to transparent grains, very fine to fine, subangular to subrounded, predominantly unconsolidated trace calcareous cement, trace glauconite, dull yellow fluorescence, immediate bright yellow crush fluorescence, dull yellow residual fluorescence; CLAYSTONE 10% medium gray, soft to moderately hard, amorphous to platy, silty



PROPRIETARY

6570' MD

6560' - 6570' SANDSTONE 50% light gray to medium gray with abundant transparent to translucent, very fine to fine, subangular to rounded, loose unconsolidated quartz grains and lithics with trace glauconite, trace fine to medium calcareous fragments; SILTSTONE 30% light gray to medium gray, easily friable to friable, argillaceous to calcareous matrix, dull yellow fluorescence over 30% of sample, faint slow bright yellow crush fluorescence, dull yellow residual fluorescence; CLAYSTONE 20% medium gray, soft to easily friable, amorphous to platy, silty



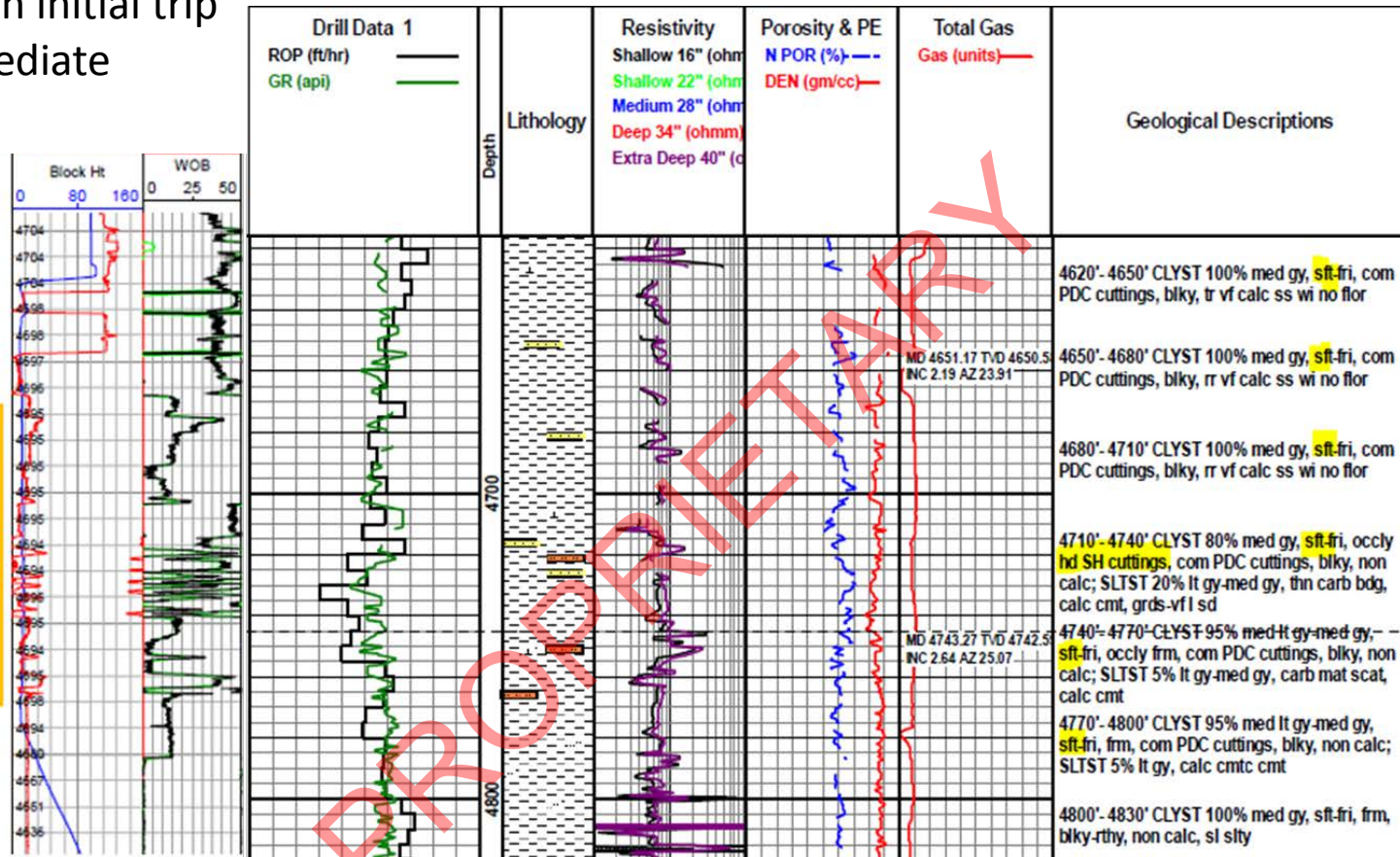
5.7 Intermediate Section Hole Stability Report

The 12.25" hole section was drilled through the Torok formation, to a depth of 5,423' MD / 5,421' TVD. Tight spots were encountered on the trip to the shoe at ~4,694' and ~3,774' MD; and upon arrival to the shoe, cavings poured over the shakers in high volume. The drill string was then sent back to bottom for a cleanout run, encountering a tight section at ~4,989'; and various sticky sections from 5,173'-5,423' with approximately 13' of cuttings on the bottom of the hole. The bottoms up revealed cavings, but in much smaller size and volume comparatively. It is thought that hydrated clays were mechanically sheared into the well bore, as well as the well bore stability fluid causing the splintered shales. While on bottom, mud sweeps were used to clean the hole as well as increasing IDCAP D (provide cuttings encapsulation and clay dispersion inhibition) to 1.5 pound per barrel and EMI-2009 to 4.1% (prevent further hydration of the clays).

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Pulling tight on initial trip
out of Intermediate
Interval

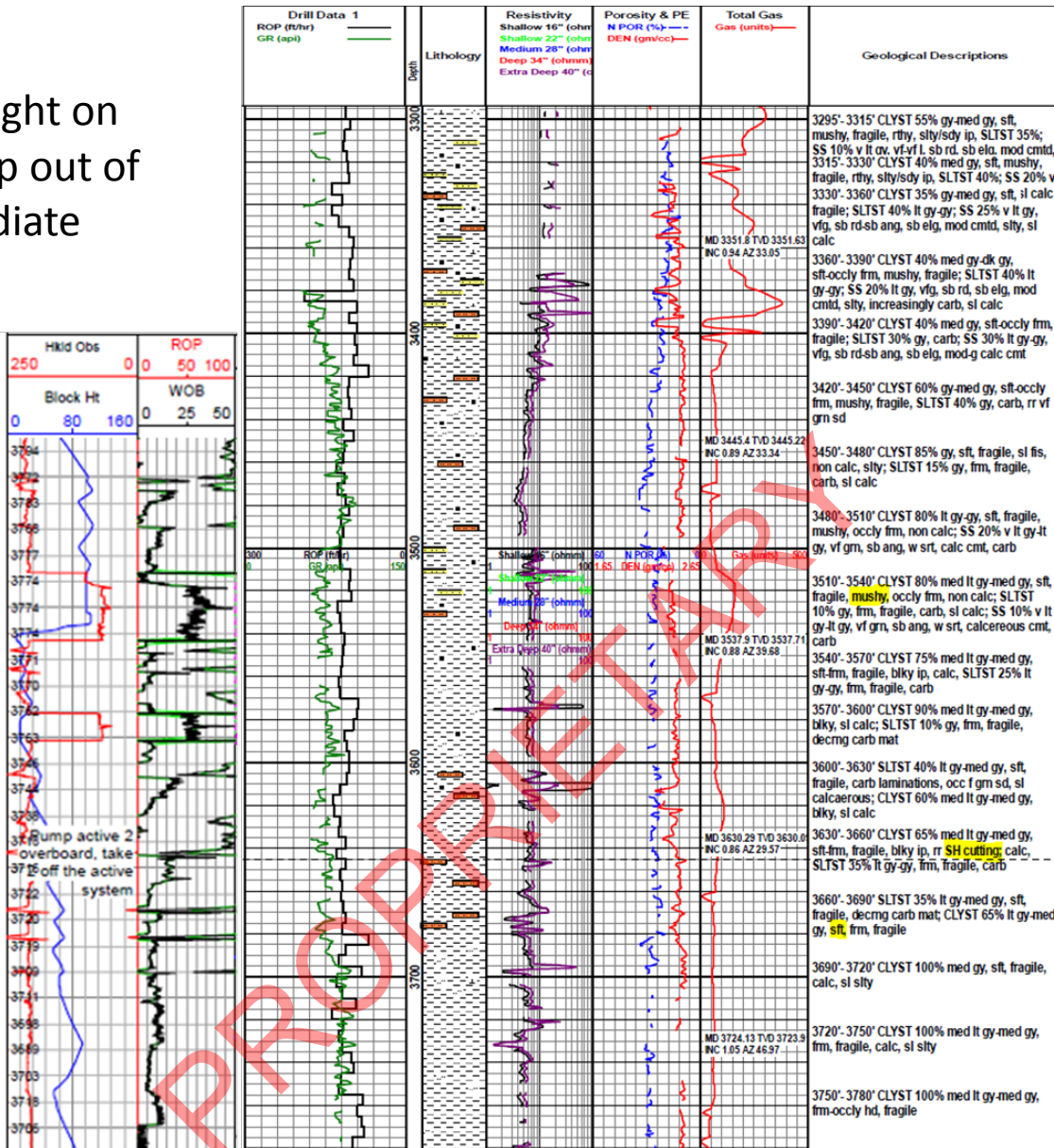
Hookload 250+
klbs and up to 20
klbs of torque



Hydrated Claystone was very abundant in this section, as well as the rare presence of the darker, harder Shales similar to the Shales in the cavings samples.

Pulling tight on
initial trip out of
Intermediate
Interval

Hookload
around ~250
klbs



Hydrated
Claystone was
very abundant in
this section, as
well as the rare
presence of the
darker, harder
Shales similar to
the Shales in the
cavings samples.

PROPRIETARY

12.25" Intermediate Interval TD (Trip to Shoe) Cavings Pictures

Ryan Massey/Jeff McBeth – Waters Wellsite Geologists



While backreaming out of the hole. Bottoms up from bit depth 3868'
Few elongated to platy Shale pieces, does not swell when exposed to water, typical brittle Shale when broken open. The Clay pieces; when broken open, appears to be hydrated Clay through out that's swelling, breaks open very naturally with earthy texture, occasionally will break on weak bedding plane. Clay is soft to occasionally firm towards the interior.



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Bottoms up from bit depth 3744' to 3709' (noted overpull).

Sub elongated to sub rounded medium gray Claystone. When broken open, appears to be hydrated Clay, breaks open very naturally with earthy texture, occasionally will break on plane of weakness.



Bottoms up from bit depth 3598'.

Amount of large Claystone pieces decreased significantly. Predominantly 1/4" gray to dark gray, platy to occasionally tabular Shale pieces.



Bottoms up from bit depth 3478'.
Predominantly ¼" gray to dark gray, platy to occasionally tabular Shale pieces.



Bottoms up from bit depth 3364'.
Predominantly smaller, soft Clay. ¼" gray to dark gray, platy to occasionally tabular Shale pieces.



Circulating inside of the casing show with flow rates of 833 gpm versus 445 gpm when pumping out of hole. Hole unloaded significantly well before bottoms up. Material over shakers were approximately 70% Soft Claystone and 30% Hard Shale Cavings.



Circulating inside of the casing show with flow rates of 833 gpm versus 445 gpm when pumping out of hole. Hole unloaded well before bottoms up. Material over shakers were approximately 70% Soft Claystone and 30% Hard Shale Cavings.



Splintery, platy, tabular Shale cavings.



Hydrated Claystone cavings with worn off edges.



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Claystone piece broken gently in half. Massively bedded with occasional planes of weakness. No evidence seen of reconstituted Claystone.



Claystone piece broken gently in half. Massively bedded with occasional planes of weakness. No evidence seen of reconstituted Claystone.



PROPRIETARY

12.25" Hole TD (Trip back to TD)

Once back on bottom, predominately 1" clumps of hydrated Claystone, sparse $\frac{1}{2}$ "-1" splintered and bladed/tabular/angular shale fragments. Overall smaller cavings and less cuttings from bottoms up than previous circulation from shoe.



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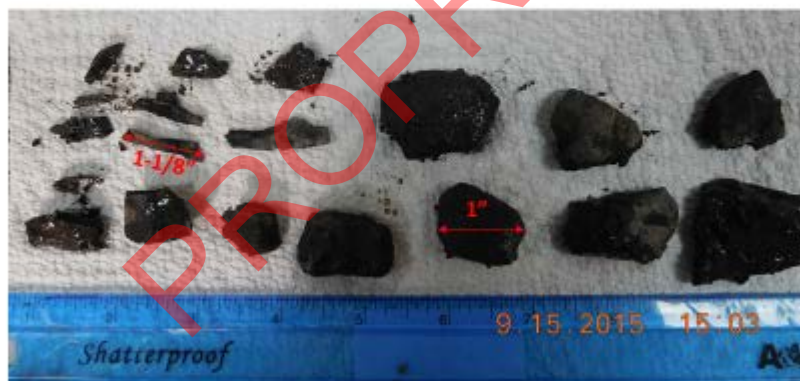
After ~8 hours of reciprocating drill string and circulating the hole, a low volume of hard, sub tabular, sub platy, angular Shale cavings.

PROPRIETARY



The rig short tripped 5 stands and went back to bottom. The hole was circulated with a slightly increased volume of material over the shakers. The cavings consisted of hard Shale cavings noted in previous slide as well as splintered, brittle Shale.

PROPRIETARY



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PROPRIETARY