

**O'Brien Energy Resources, Inc.**

**Keystone No. 5-4**

**Section 4, T33S, R29W**

Meade County, Kansas

June, 2019

**Well Summary**

The Keystone No. 5-4 was drilled to a total depth of 6250' in the St. Louis Formation. It offset the Keystone No. 3-4 by approximately 1200' to the Northeast. The Heebner, Toronto and Lansing ran 2', 3' and 4' low relative to this offset. Thinning occurred as the Cherokee, Atoka and Morrow came in 4', 6' and 11' high respectively. The Basal Chester and St. Louis came in 11' high.

A good show occurred in a Morrow sandstone section ("B" or "C" SS) and consists of a sandstone in 10% of the samples: Medium to light brown, light gray, occasionally white to buff, hard to friable, very fine upper well sorted subround grains, siliceous cement, clean to argillaceous, tight to fair intergranular porosity, very fine vuggy porosity, pale blue to bright yellow hydrocarbon fluorescence when dried, slow streaming to bleeding cut, no stain, fair show that appears fairly tight in samples. A good spike of porosity is noted on logs (5727'-5732'). A 400 Unit gas kick was documented. If this is the "B" Sandstone it is 2' high relative to the sand in the Keystone No. 3-4.

An excellent show occurred in the St Louis (6103'-6136') and consists of a Dolomite in 12% of the samples: Medium to dark brown with oil stain, salt and pepper, occasionally very dark even brown oil stain, microcrystalline, microsucrosic to sucrosic, granular in part, clean, siliceous with chert inclusions, fossiliferous with excellent moldic and vuggy porosity, excellent intercrystalline porosity, dark mottled even brown oil stain with abundant live oil, very dull orange brown hydrocarbon fluorescence, excellent fast streaming cut, oil odor, excellent show in 12% of the samples. Several Gas increases of 75 to 180 Units indicate three benches of porosity and pay with the most notable from 6111' to 6115' with the 180 Unit gas increase.

4 ½" production casing was run on the Keystone No. 5-4 for the above mentioned shows.

Respectfully Submitted,

Peter Debenham

## WELL DATA

Operator: O'Brien Energy Resources, Inc., John Forma – Portsmouth, NH  
Geologist: Paul Wiemann – Denver, CO

Prospect Geologist: David Ward, Ed Schuett, Denver

Well: Keystone No. 5-4, Keystone Field

API: 15-119-21413

Location: 1350'FSL & 1320'FWL, Section 4, 33S, R29W, Meade Co. Kansas – Southeast of Plains.

Elevation: Ground Level 2634', Kelly Bushing 2646'

Contractor: Duke Drilling Rig No. 1, T.P. Mike Godfrey, Drillers Juan, Saul and Carlos

Company Man: Dana Geathouse

Spud Date: 6/13/19, 8 pm.

Total Depth: 6/20/19, 2 AM, Driller 6250', Logger 6245', St. Louis Formation

Casing Program: 39 joints of 8 5/8", J-55, 24Lbs/ft, set at 1570' with 385 sacks A-Con blend(3%cc & ¼ lb flake) tail with 150 sacks Pem Plus(2%cc, ¼ bl Poly Flake), cement did circulate, services by Basic. 148 joints of 4 1/2" production casing set to TD.'

Mud Program: Winter Mud, engineer Paul White, displaced 2596', Chemical gel/LCM.

Wellsite Consultant: Peter Debenham, Call depth 4000', Box 350, Drake, CO 80515, 720/220-4860.

Mudlogging trailer: MBC Logging, Meade.

Samples: 30' to 5600', 20' to TD.

Electric Logs: Weatherford, engineer Matt McGlothlin, Array Induction, Compensated Neutron/Density, Microlog, Hi Res.

Status: 4 ½" production casing run to TD on 6/21/19.

**WELL CHRONOLOGY**

<b>AM Report</b>			
<b><u>DATE</u></b>	<b><u>DEPTH</u></b>	<b><u>FOOTAGE</u></b>	<b><u>RIG ACTIVITY</u></b>
6/13			Move to location and rig up rotary tools. Prep water and mix spud mud. Drill rat hole and mouse hole. Spud in 12 1/4" surface hole(8 PM).
6/14	720'	720'	Surface hole to 720'.
6/15	1580'	860'	To 1580' and circulate. Unload 39 joints of 8 5/8" casing. Drop survey(3/4 deg.) and trip and and run 39 joints of casing set at 1570' – did circulate, intense rain and mud, pull cement truck with cat.
6/16	2690'	1110'	Wait on cement, did drop at well head, bring in gravel. Nipple up BOP and pressure test. Drill plug and cement and 7 7/8" hole to 2690'. Displace mud system at 2596'.
6/17	3620'	930'	To 3228' and trip for bit. Found hole in pipe an stand 13. Bit balled up and 3 jets plugged. Clean bit, trip in and circulate. Drilling with 650 PSI pump pressure.
6/18	4643'	1023'	
6/19	5286'	653'	Survey(3/4 deg.). To 4986' and circulate and wiper trip. Bit packed off from wiper trip. Clean bit, trip in and circulate and drill to 5286'.
6/20	6250' TD	954'	To TD(2 AM) and circulate. Wiper trip to 5000' and circulate. Trip for logs.
6/21	TD		Run in hole with Elog tools – hit bridge at 4742'. Pull tools and run wiper trip and ream tight spots. Trip out and run Elogs. Trip in and circulate. Trip out laying down and run and cement 148 joints of 4 1/2" production to TD. Plug rat hole and mouse hole. Rig down. Rig released 8:45 PM.

**BIT RECORD**

<b><u>NO.</u></b>	<b><u>MAKE</u></b> <b><u>HOURS</u></b>	<b><u>TYPE</u></b>	<b><u>SIZE</u></b>	<b><u>OUT</u></b>	<b><u>FOOTAGE</u></b>	
1	PL 619		12 1/4"	1530'	1530'	21
2	TX 616		7 7/8"	4986'	3406'	52
3	TX 516		7 7/8"	6250'	1264'	24
Total Rotating Hours:			97			
Average:			64.4 Ft/hr			

**DEVIATION RECORD - degree**

767' ¼, 1580' ¾, 2093' 1, 2596' 1, 3099' ¾, 3228' ¾, 3668' ¾, 4986' ¾, 6250'TD 1

**MUD PROPERTIES**

<b><u>DATE</u></b> <b><u>LBS/BBL</u></b>	<b><u>DEPTH</u></b>	<b><u>WT</u></b>	<b><u>VIS</u></b>	<b><u>PV</u></b>	<b><u>YP</u></b>	<b><u>pH</u></b>	<b><u>WL</u></b>	<b><u>CL</u></b>	<b><u>LCM-</u></b>
6/14	1030'	9	32	5	7	8.5	nc	2K	0
6/15	1580'	8.4	26	1	2	8.0	nc	2K	0
6/16	1580'	8.6	40	13	16	10.5	21	5K	2
6/17	3668'	8.75	40	12	20	10.5	18	5K	2
6/18	4705'	8.9	42	12	10	10.0	12	6K	4
6/19	5404'	8.9	50	17	12	10.0	8	4K	5
6/20	6250'TD	9.1	49	15	19	10.0	8	4K	6

**ELECTRIC LOG FORMATION TOPS- KB Elev. 2646'**

<b><u>FORMATION</u></b>	<b><u>DEPTH</u></b>	<b><u>DATUM</u></b>	<b><u>*Keystone No. 3-4</u></b> <b><u>DATUM</u></b>	<b><u>POSITION</u></b>
Casing	1567'			
Heebner	4417'	-1771'	-1769'	-2'
Toronto	4445'	-1799'	-1796'	-3'
Lansing	4564'	-1918'	-1914'	-4'
Marmaton	5115'	-2469'	-2550'	-19'
Cherokee	5362'	-2716'	-2720'	+4'
Atoka	5610'	-2964'	-2970'	+6'
Morrow	5664'	-3018'	-3029'	+11'
"B"/"C"	5722'	-3076'	-3078'	+2'
Mississippi Chester	5767'	-3121'	-3150'	+29'
Basal Chester	5972'	-3326'	-3337'	+11'
Ste. Genevieve	6017'	-3371'	-3368'	-3'
St. Louis	6103'	-3457'	-3468'	+11'
TD	6250'			

\*O'Brien Energy Resources, Keystone No. 3-4, 380' FSL & 729' FWL, Section 4, 33 S, 29W – 1200' to the SW., K.B. Elev. 2597'.