

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

## **Keystone No. 2-4**

### **Section 4, T33S, R29W**

Meade County, Kansas

November, 2016

## **Well Summary**

The O'Brien Energy Resources, Keystone No. 2-4 was drilled to a total depth of 6350' in the Spergen without any problems. It offset the Keystone No. 1-5 by approximately 1000' to the East. Formation tops ran low relative to this offset. The Heebner, Toronto and Lansing came in 23' low. The Marmaton, Cherokee and Atoka ran 17', 12' and 11' low respectively. The Morrow came in 12' low and the Morrow "C" Sandstone, 26' low. The Chester, St. Louis and Spergen ran 17', 13' and 19' low.

Numerous quality hydrocarbon shows were documented during the drilling of this test. A 500 Unit gas kick occurred in the Morrow "A" Sandstone(5652'-5668'): White, very light brown, very friable, fine lower well sorted grains, siliceous cement, calcareous, slightly glauconitic, excellent intergranular porosity, no fluorescence, no stain or cut. Gas crossover is noted on logs.

The Morrow "B" Sandstone(5677'-5687') consists of a Sandstone in 35% of the samples and looks very similar to the "A" Sandstone and exhibits excellent intergranular and vuggy porosity, glauconitic, light pale blue hydrocarbon fluorescence in 4% of the samples, slow bleeding cut, no stain, show dissipates when dried. A 480 Unit gas increase was noted on the hotwire.

An excellent oil show was documented in the Morrow "C" Sandstone(5707'-5714'): Medium to light brown with oil staining, friable, fine lower to fine upper well sorted subround grains, siliceous cement, slightly calcareous, slightly glauconitic, clean, good intergranular porosity, bright light yellow hydrocarbon fluorescence in 6% of the samples, excellent fast streaming cut, good brown matrix oil stain, live oil and gas bubbles when crushed, oil odor. A 320 Unit gas increase was noted.

The St. Louis(6072'-6080') consists of a Dolomite: Dark to medium brown, coarsely crystalline, brittle, sucrosic to granular, clean, some brown matty marly material when dissolved in acid, occasional Chert nodules, good intercrystalline and excellent coarse vuggy porosity, excellent dark brown oil stain with traces of live oil, very dark goldbrown hydrocarbon fluorescence(all dolomite) explosive cut, oil odor, excellent show. A 320 Unit gas increase occurred.

Typical shows from the Basal Chester Limestone(5940'-5960') were documented.

4 1/2" production casing was run to TD on the Keystone No. 2-4 on 11/11/16.

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. 2-4, Angell SE Field

API: 15-119-21397

Location: 500' FSL & 716' FWL, Section 4, T33S, R29W, Meade County, Kansas – Southeast of Plains.

Elevation: Ground Level 2585', Kelly Bushing 2597'

Contractor: Duke Drilling Rig No. 1, Type: Double jackknife, double stand, Toolpusher Mike Godfrey, Drillers: Brothers Carlos and Saul Garcia and Henry Daiz

Company Man: Roger Pearson – Liberal, Kansas

Spud Date: 11/3/16

Total Depth: 11/10/16, Driller 6350', Logger 6352', Spergen Formation

Casing Program: 35 joints of 8 5/8", J-55, 24Lbs/ft, set at 1495' with 340 sacks H-Com(3% cc, ¼ lb Floseal) and 150 sacks Class C tail. Plug down 7 pm 11/4/16.

Mud Program: Winter Mud, engineer Drew Smith, displaced 2590', Chem. gel/LCM.

Wellsite Consultant: Peter Debenham with mudlogging trailer, Call depth 3000', Box 350, Drake, CO 80515, 720/220-4860.

Samples: 30' to 5700', 20' to TD. One set dry cut sent to KGS sample log library.

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

Status: 4 ½" production casing run to TD on 11/10/2016.

**WELL CHRONOLOGY**

11 PM	<b><u>DATE</u></b>	<b><u>DEPTH</u></b>	<b><u>FOOTAGE</u></b>	<b><u>RIG ACTIVITY</u></b>
	11/3	192'	192'	Move to and rig up rotary tools. Drill rat hole and mouse hole. Spud in 12 1/4" surface hole to 192'.
	11/4	1495'	1303'	Survey(1 deg.). To 1495' and trip for casing and run and cement 35 joints of 8 5/8", J-55, 24Lbs/ft, set at 1495' with 340 sacks H-Com(3% cc, 1/4 lb Floseal) and 150 sacks Class C tail. Plug down 7 pm – did circulate. Wait on cement.
	11/5	2370'	875'	Wait on cement. Nipple up and pressure test BOP. Work on flowline. Survey(1 deg.). Displace mud system at 2590'.
	11/6	3539'	1169'	Survey(1/2 deg.). Clean pits.
	11/7	4609'	1070'	
	11/8	5365'	756'	To 5019' and circulate and wiper trip to 2500' and circulate.
	11/9	6122'	757'	Circulate for samples at 5711'.
	11/10	6350'TD	228'	To 6190' and trip for Bit No. 3. To 6350'TD and circulate. Wiper trip 10 stands and circulate. Drop survey(1 deg.) and trip for logs.
	11/11	TD		Trip out for logs and run ELogs. Unload casing to racks. Trip in and circulate. Trip out laying down and run and cement 4 1/2" production casing to TD. Rig down.

**BIT RECORD**

<b><u>NO.</u></b>	<b><u>MAKE</u></b>	<b><u>TYPE</u></b>	<b><u>SIZE</u></b>	<b><u>OUT</u></b>	<b><u>FOOTAGE</u></b>	<b><u>HOURS</u></b>
1	PLT	519	12 1/4"	1495'	1495'	13 3/4
2	PLT	616	7 7/8"	6190'	4695'	95 3/4
3	PLT	516 53	7 7/8"	6350'	160'	5 3/4
Total Rotating Hours:						114.75
Average:						55.34 Ft/hr

**DEVIATION RECORD - degree**

513' 1, 1495' 1, 2022' 1, 2527' 3/4, TD 1

## MUD PROPERTIES

<u>DATE</u>	<u>DEPTH</u>	<u>WT</u>	<u>VIS</u>	<u>PV</u>	<u>YP</u>	<u>pH</u>	<u>WL</u>	<u>CL</u>	<u>LCM-LBS/BBL</u>
11/4	1235'	9.5	30	5	4	8.0	nc	5K	140
11/5	1738'	9.3	30	3	6	11.0	nc	65K	tr
11/6	2844'	8.9	59	16	21	9.0	10.4	7K	5
11/7	3992'	9.1	48	14	12	9.5	10.0	5.5K	6
11/8	4844'	9.1	60	25	14	10.0	7.6	4.5K	6
11/9	5620'	9.2	45	21	9	10.0	5.6	4K	6
11/10	6190'	9.4	48	20	9	9.5	4.8	5K	6

## ELECTRIC LOG FORMATION TOPS- KB Elev. 2597'

<u>FORMATION</u>	<u>DEPTH</u>	<u>DATUM</u>	<u>*Keystone No. 1-5</u>	
			<u>DATUM</u>	<u>POSITION</u>
Casing	1494'			
Heebner	4374'	-1777'	-1754'	-23'
Toronto	4398'	-1801'	-1778'	-23'
Lansing	4516'	-1801'	-1778'	-23'
Marmaton	5154'	-2557'	-2540'	-15'
Cherokee	5322'	-1725'	-1713'	-12'
Atoka	5574'	-2977'	-2966'	-11'
Morrow	5633'	-3036'	-3024'	-12'
"A" SS	5652'	-3055'		
"B" SS	5377'	-2780'		
"C" SS	5707'	-3110'	-3084'	-26'
Mississippi Chester	5752'	-3155'	-3131'	-24'
Basal Chester	5940'	-3343'	-3326'	-17'
Ste. Genevieve	5971'	-3374'	-3363'	-11'
St. Louis	6072'	-3475'	-3462'	-13'
Spergen	6274'	-3677'	-3658'	-19'
TD	6350'	-3753'		

\*O'Brien Energy Resources, Keystone No. 1-5, 760' FSL & 341' FEL, Section 5, 33 S, 29W – app. 1000' to the W., K.B. Elev. 2632'.