BEREXCO LLC

MEARS E 1-15

SW NE NW NW SEC 15 T1S R37W

CHEYENNE COUNTY, KANSAS

SUMMARY

The Berexco LLC Mears E 1-15 in Cheyenne County, Kansas spud September 6, 2014 and reached a total depth of 4650' on September 13, 2014. Wellsite geological supervision commenced at 3000'. The primary objectives were the Pawnee in the Marmaton Group and the Pennsylvanian Missourian Lansing-Kansas City limestones which produce in the Jones Canyon Southeast field. Secondary zones of interests were the Permian Foraker and Virgilian Oread limestones. The Mears E 1-15 was drilled using seismic and nearby well control.

On-site evaluation was by drill stem testing after sample analysis and consideration of structural position. Three DSTs were run.

Foraker, Wabaunsee, and Oread

The Foraker samples were fossiliferous packstone and mudstone with no visible porosity, a few oil specks, and no fluorescence or cuts. The Foraker appears nonproductive at this location.

The Wabaunsee had good oil shows but lacked porosity.

The Oread samples were fossiliferous mudstone and wackestone with traces of interparticle and vuggy porosity, scattered oil staining, and good cuts. The limited porosity in samples did not merit testing as the Oread is nonproductive in the area.

Lansing-Kansas City and Pawnee

The Lansing-Kansas City A exhibited no visible porosity or oil shows.

DST 1 in the Lansing-Kansas City B recovered 20 ft of oil cut mud. Samples were grainstone with poor interparticle and vuggy porosity, abundant spotty black oil, and good fluorescence and cuts.

The Lansing-Kansas City C was chalky mudstone with occasional very poor fluorescence and cut and rare spotty black and dark brown oil stain. The Lansing-Kansas City D was mudstone with only a trace of black asphaltic staining and no visible porosity.

DST 2 in the Lansing-Kansas City E recovered 100 ft of mud with very low pressures after opening 10 ft off bottom which resulted in higher mud recovery. The E was nonporous mudstone to wackestone with only minor sample shows.

The Lansing-Kansas City F was nonporous chalky limestone with no sample show.

DST 3 in the Pawnee recovered 730 ft of clean oil and 1372 ft of gas in the drill pipe. Samples were porous grainstone occasionally occluded with lime mud. Scattered oil shows with good fluorescence and cuts were observed in the upper 10 ft in poor interparticle and vuggy porosity.

Oil Well Completion

5 ½" production casing was run to complete the Mears E 1-15 as an oil producer.

Peter J. Vollmer
Consulting Wellsite Geologist, WPG #3369
September 2014

WELL DATA

OPERATOR:	Berexco LLC 2020 North Bramblewood Drive Wichita, Kansas 67206
WELL NAME:	Mears E 1-15
SURFACE LOCATION:	455’ FNL & 700’ FWL SW NE NW NW Sec 15, T1S, R37W Cheyenne County, Kansas
LATITUDE & LONGITUDE:	39.9721698, -101.4641543 (From State, calculated from footages)
BOTTOM HOLE LOCATION:	Vertical hole
ELEVATIONS:	3143’ GL 3156’ KB
API NUMBER:	15-023-21405
BASIN:	Mid-Continental Arch
FIELD:	Wildcat - Jones Canyon Southeast area
HOLE SIZE:	12 ¼” to 310’; 7 7/8” to 4650’
CASING:	8 5/8” J-55 24# STC set to 310’ KB
SPUD DATE:	September 6, 2014
TD DATE:	September 13, 2014
TOTAL DEPTH:	4650’ Rig TD 4651’ Log TD
LAST FORMATION:	Pennsylvanian Cherokee
WELL STATUS:	Ran 5 1/2” production casing
OPERATOR REPRESENTATIVE:	Dana Wreath - Vice President
WELLSITE GEOLOGIST:	Peter J. Vollmer

FORMATION TOPS

Formation	Sample Top	Log Top	Log TVD	Log Datum
KB				3156
Pierre Sh	Cased	Cased	N/A	N/A
Niobrara Fm	N/A	1114	1114	+2042
Fort Hays Ls Mbr	N/A	1616	1616	+1540
Carlile Sh	N/A	1648	1648	+1508
Dakota	N/A	2008	2008	+1148
Cheyenne	N/A	2582	2582	+574
Blaine	N/A	2872	2872	+284
Stone Corral Anhydrite	3098	3102	3102	+54
Base Anhydrite	3132	3132	3132	+24
Chase Limestone	3296	3296	3296	-140
Neva	3551	3554	3554	-398
Red Eagle	3614	3618	3618	-462
Foraker	3660	3664	3664	-508
Wabaunsee	3816	3812	3812	-656
Topeka	3882	3890	3890	-734
Deer Creek Lime	3958	3959	3959	-803
Oread	4018	4018	4018	-862
Heebner Sh	4044	4047	4047	-891
Leavenworth Lime	4050	4055	4055	-899
Lansing-Kansas City				
"A"	4098	4101	4101	-945
"B"	4156	4160	4160	-1004
"C"	4212	4213	4213	-1057
"D"	4252	4254	4254	-1098
"E"	4296	4300	4300	-1144
"F"	4341	4344	4344	-1188
Pawnee	4488	4490	4490	-1334
Cherokee	4581	4581	4581	-1425
TD Driller	4650			
TD Logger		4651	4651	-1495

LITHOLOGY AND SHOWS

The following descriptions are interpretive. Rig crew members collected unlagged samples from 3500' to 4650' TD. Depths are rig depths except where noted as wireline.

3500' – 3539'	SHALE: light reddish brown to reddish orange, firm to soft, lumpy to subblocky, very silty, sandy in part, non to slightly calcareous, clayey.
3539' – 3551'	SANDSTONE: very light gray to gray, friable to firm, very fine grained, sub rounded to rounded, well sorted, calcareous cement, occasional clay filled, no visible porosity, no shows.

NEVA SAMPLE TOP: 3551' LOG TOP: 3554' SUBSEA: -398'

3551' – 3566'	LIMESTONE: light tan to gray tan, firm to hard, mudstone, slightly chalky, occasional fossil, trace pellet, black Algal material, occasional grayish green Shale, tight, no show.
3566' – 3582'	SILTSTONE: light gray to reddish brown, friable to firm, blocky, sandy, non to slightly calcareous.
3582' – 3614'	SHALE: light reddish brown to reddish orange, firm to soft, fissile to blocky, very silty, sandy in part, non to slightly calcareous.

RED EAGLE SAMPLE TOP: 3614' LOG TOP: 3618' SUBSEA: -462'

3614' – 3632'	LIMESTONE: light gray to white, with light reddish partings and mottled, firm to hard, microcrystalline, gritty texture, occasional reddish brown SHALE, trace sand grains, tight, no shows.
3632' – 3644'	LIMESTONE: white to light gray, firm to hard, cryptocrystalline, chalky, fossil fragment (Brachiopod), moderately to very sandy, secondary white calcareous in vugs, styolite, dark reddish brown to gray Shale stringers, pin point black specks, no visible porosity, no shows.
3644' – 3660'	SHALE: reddish brown, firm to hard, fissile to blocky, very silty, sandy in part, non to slightly calcareous, trace light gray Limestone.

LITHOLOGY AND SHOWS

FORAKER	SAMPLE TOP: 3660’	LOG TOP: 3664’	SUBSEA: -508’

3660’ – 3676’	LIMESTONE: light gray to light brown, firm to hard, cryptocrystalline, gritty texture, moderately to very sandy, rare fossil fragment, few specks black dead oil, very tight, no shows.
3676’ – 3686’	SHALE: gray to greenish gray, firm, blocky, non to slightly calcareous, fossil fragments, slightly sandy.
3686’ – 3704’	LIMESTONE: white to light gray, firm to hard, cryptocrystalline to packstone, fossil fragment (Fusulinid), moderately to very sandy, gritty texture, algal stain, no visible porosity, no shows.
3704’ – 3719’	SANDSTONE: very light gray to white, friable, very fine grained, subangular to subrounded, well sorted, calcareous cement, clay fill, black specks, abundant loose grains, tight to trace porosity, no shows.
3719’ – 3734’	SHALE: reddish brown, soft to firm, sub blocky, non calcareous, occasionally moderately to very silty.
3734’ – 3738’	LIMESTONE: pale gray to dull bluish gray, firm to hard, mudstone to wackestone, occasional fossil fragment, sandy in part, slightly argillaceous, tight, no shows.
3738’ – 3762’	SHALE: reddish brown, soft to firm, sub blocky, non calcareous, occasionally moderately to very silty.
3762’ – 3784’	SANDY SILTSTONE: reddish brown to light gray to white, mottled, firm to friable, very fine grained grading to silt, argillaceous in part, reddish brown Shale partings, tight, no show.
3784’ – 3800’	LIMESTONE: white to light gray to cream, occasional reddish brown mottled, firm to hard, mudstone, slightly argillaceous in part, gray to dark gray slightly carbonaceous Shale partings, tight, no show.
3800’ – 3816’	SHALE: reddish brown, soft to firm, sub blocky, non calcareous, occasionally silty.

WABAUNSEE	SAMPLE TOP: 3816’	LOG TOP: 3812’	SUBSEA: -656’

3816’ – 3846’	LIMESTONE: white to light gray, with light reddish brown mottled, hard to firm, fine crystalline, microgranular texture, fossil fragments, reddish brown SHALE partings, occasional slightly sandy, even to spotty black heavy oil material, no visible porosity, very tight, pale yellow white fluorescence, diffuse pale yellow white cut, fair show with no porosity.
3846’ – 3858’	SANDSTONE: light gray to tan, friable, very fine grained, subangular to subrounded, well sorted, calcareous cement, clay fill, abundant loose grains, tight to trace porosity, no shows.

LITHOLOGY AND SHOWS

3858’ – 3882’	SHALE: reddish brown, maroon, gray, mottled in part, soft to firm, blocky, non calcareous, moderately to very silty in part, occasional thin SANDSTONE stringers.

TOPEKA	SAMPLE TOP: 3882’	LOG TOP: 3890’	SUBSEA: -734’

3882’ – 3902’	LIMESTONE: light gray to white, hard to firm, cryptocrystalline, fossil fragment (Fusulinid, Brachiopod), sparry calcareous fill, dark gray Shale partings, occasional black dead oil, tight, no shows.
3902’ – 3912’	SHALE: gray to dark gray, firm, platy to fissile, non to slightly calcareous, dull.
3912’ – 3926’	LIMESTONE: light gray to white, hard to firm, cryptocrystalline, fossil fragment, Algal stain, dark gray Shale stringers, tight, no shows.
3926’ – 3958’	SHALE: reddish brown, maroon, gray, mottled in part, soft to firm, blocky, n calcareous, moderately to very silty in part, occasional thin SANDSTONE stringers with argillaceous matrix.

DEER CREEK LIME	SAMPLE TOP: 3958’	LOG TOP: 3959’	SUBSEA: -803’

3958’ – 3974’	LIMESTONE: white light brown, soft to firm, cryptocrystalline, scattered fossil (Brachiopod, Fusilinid), very chalky, irregular brownish red partings and inclusions, tight, no shows.
3974’ – 3982’	SHALE: gray to dark gray, firm, platy to fissile, non to slightly calcareous, slightly carbonaceous in part, dull.
3982’ – 4018’	SHALE: reddish brown, brownish maroon, grayish green, firm, blocky, occasional slightly calcareous, non to slightly silty in part, occasional Siltstone stringers, waxy in part, occasional clayey to sticky to gummy.

OREAD	SAMPLE TOP: 4018’	LOG TOP: 4018’	SUBSEA: -862’

4018’ – 4032’	LIMESTONE: cream to white, firm to hard, mudstone to wackestone, fossil fragment, trace to scattered black oil stain, tight and trace vuggy porosity with free oil in vugs, patchy bright yellowish white fluorescence, immediate blooming yellowish white cuts, with slow streaming cuts, good show with limited porosity.

LITHOLOGY AND SHOWS

4032’ – 4044’	LIMESTONE: cream to white, firm to hard, mudstone to wackestone, occasional fossil fragment, trace to scattered black oil stain, no vis porosity, occasional bright yellowish white fluorescence, with immediate blooming yellowish white cuts, no shows at base, poor show.

HEEBNER SH	SAMPLE TOP: 4044’	LOG TOP: 4047’	SUBSEA: -891’

4044’ – 4050’	SHALE: black to dark gray, firm, blocky, carbonaceous.

LEAVENWORTH LIME	SAMPLE TOP: 4050’	LOG TOP: 4055’	SUBSEA: -899’

4050’ – 4060’	LIMESTONE: gray to light brown, hard, mudstone, slightly argillaceous, tight, no show.
4060’ – 4098’	SHALE: gray to reddish brown to maroon to greenish gray, firm, blocky, non to slightly calcareous, occasional silty.

LANSING- KANSAS CITY “A”	SAMPLE TOP: 4098’	LOG TOP: 4101’	SUBSEA: -945’

4098’ – 4115’	LIMESTONE: cream to light gray, hard to brittle, mudstone, rare fossil, slightly chalky in part, rare black dead oil stain, very tight, no show.
4115’ – 4129’	SANDSTONE: white to light gray, firm to friable, very fine grained, well rounded, well sorted, calcareous cement, clay filled, black dead oil specks, no visible porosity, no show.
4129’ – 4156’	SHALE: gray to reddish brown, soft to firm, subblocky, non to slightly calcareous, clayey, occasional argillaceous Siltstone stringers.

LANSING- KANSAS CITY “B”	SAMPLE TOP: 4156’	LOG TOP: 4160’	SUBSEA: -1004’

4156’ – 4169’	LIMESTONE: white to very light gray, firm to hard, mudstone to grainstone, occasional peloids, ooliths, occasional fossil fragment (Fusulinid), occasional free

LITHOLOGY AND SHOWS

	live black oil in vugs, scattered black oil stain on tight cuttings, predominant tight with poor vuggy porosity and trace interparticle porosity, bright yellowish white fluorescence, instant blooming bright yellowish white cuts, good show.
4169' – 4179'	SHALE: gray to dark gray, firm, sub blocky, non to slightly calcareous, fossil fragments (Brachiopod).
4179' – 4183'	LIMESTONE: white to light gray, hard, mudstone, chalky, tight, no show.
4183' – 4212'	SHALE: dark reddish brown, very soft to firm, sub blocky to lumpy, non calcareous, moderately to very silty, sticky to gummy, clayey.

LANSING-
KANSAS CITY "C" SAMPLE TOP: 4212' LOG TOP: 4213' SUBSEA: -1057'

4212' – 4229'	LIMESTONE: light gray to white, firm, mudstone to wackestone, occasional fossil fragments, trace spotty heavy black oil stain, predominant tight with trace vuggy porosity, bright yellowish white fluorescence, instant blooming bright yellowish white cuts, trace show on a few cuttings.
4229' – 4242'	SHALE: gray to dark gray, firm, sub blocky, non to slightly calcareous, fossil fragment, pyrite.
4242' – 4252'	SHALE: gray to reddish brown, soft to firm, subblocky, non to slightly calcareous, clayey, sticky.

LANSING-
KANSAS CITY "D" SAMPLE TOP: 4252' LOG TOP: 4254' SUBSEA: -1098'

4252' – 4266'	LIMESTONE: light gray to white, firm, mudstone to wackestone, fossil fragments, very chalky texture, trace black dead oil specks, tight, no shows.
4266' – 4270'	SHALE: gray to dark gray, firm, sub blocky, non to slightly calcareous.
4270' – 4278'	LIMESTONE: light gray to gray, hard to firm, mudstone, slightly argillaceous, chalky, tight.
4278' – 4296'	SHALE: reddish brown, soft to firm, subblocky, non to slightly calcareous.

LITHOLOGY AND SHOWS

LANSING-
KANSAS CITY "E" SAMPLE TOP: 4296' LOG TOP: 4300' SUBSEA: -1144'

4296' – 4312'	LIMESTONE: light gray to white, firm to hard, mudstone to wackestone, slightly chalky in part, fossil fragment, scattered occasional patchy black oil stain, trace pin-point vuggy porosity, bright yellowish white fluorescence, immediate blooming yellowish white cuts, poor show predominantly tight at base.
4312' – 4320'	SHALE: dark gray to gray, firm, blocky, calcareous, fossil (Brachiopod), very to slightly carbonaceous in part, plant remains.
4320' – 4341'	SHALE: dark reddish brown to reddish brown, firm to soft, blocky to platy, non calcareous, moderately to very silty.

LANSING-
KANSAS CITY "F" SAMPLE TOP: 4341' LOG TOP: 4344' SUBSEA: -1188'

4341' – 4362'	LIMESTONE: cream to white to light gray, firm to hard, mudstone, very chalky texture, occasional fossil fragments, trace black asphaltic stain, very tight, no shows.
4362' – 4374'	LIMESTONE: white to light tan, hard, grainstone to mudstone, occasional abundant ooliths heavily occluded with sparry calcite, fossil fragments, styolite, black asphaltic stain, tight, no shows.
4374' – 4398'	SHALE: brownish red, firm, blocky, non calcareous, with LIMESTONE stringers.
4398' – 4410'	LIMESTONE: light gray to white, firm, mudstone to wackestone, fossil fragments, chalky texture, trace spotty black oil stain, no visible porosity, dull yellow fluorescence, dull yellowish white cut, very poor show.
4410' – 4454'	SHALE: dark to light reddish brown, brownish maroon, light gray, mottled, variegated, firm, blocky, occasional slightly calcareous, non to slightly silty in part, occasional thin white to light gray Limestone stringers.
4454' – 4464'	LIMESTONE: light gray to gray, hard, cryptocrystalline, fossil fragment, dense, interbedded gray to greenish gray Shale, tight, no shows.
4464' – 4488'	SHALE: gray to dark gray to dark gray grain, hard to firm, sub blocky to fissile, non calcareous, trace slightly carbonaceous.

LITHOLOGY AND SHOWS

PAWNEE	SAMPLE TOP: 4488’	LOG TOP: 4490’	SUBSEA: -1334’

4488’ – 4510’	LIMESTONE: white to cream to very light gray, firm to hard, grainstone to mudstone, occasional ooliths and peloids, fossil fragments (Brachiopod, Crinoid, Fusulinids), orange chert replace Crinoid, occasional live black oil stain, tight to pin point to poor vuggy porosity, occasional trace interparticle porosity, bright yellowish white fluorescence, instant blooming yellowish white cuts, fair show diminished with depth.
4510’ – 4520’	SHALE: black to dark gray to gray, firm, blocky to fissile, occasional carbonaceous, trace pyrite, fossil fragment (Brachiopod), very thin Limestone stringers.
4520’ – 4546’	LIMESTONE: white to light gray to grayish brown, firm to hard, mudstone, microgranular at top with trace porosity, occasional slightly sandy, trace chert, rare fossil, tight, no shows.
4546’ – 4556’	SHALE: gray to dark gray, firm, blocky to fissile, occasional very carbonaceous, disseminated pyrite.
4556’ – 4581’	LIMESTONE: white to light gray to gray, firm to hard, mudstone to wackestone, rare fossil fragment, tight, occasional sandy, trace chert, no shows.

CHEROKEE	SAMPLE TOP: 4581’	LOG TOP: 4581’	SUBSEA: -1425’

4581’ – 4586’	SHALE: black to dark gray to gray, firm, blocky to fissile, occasional carbonaceous, trace pyrite, plant remains, very thin black Coal stringers and inclusions.
4586’ – 4616’	LIMESTONE: white to light gray to gray, firm to hard, mudstone to wackestone, rare fossil fragment, tight, occasional Sandstone stringers, bright orange shale partings, no shows.
4616’ – 4626’	SHALE: gray to very dark gray to black, firm, fissile to platy, non to slightly calcareous, occasional slightly carbonaceous, pyrite, trace coal.
4626’ – 4638’	LIMESTONE: gray to light gray, firm to hard, mudstone to wackestone, slightly sandy in part, slightly argillaceous in part, opaque chert, tight, no shows.
4638’ – 4650’ TD	SANDSTONE: white to very light gray, friable, very fine to fine grained, well rounded, well sorted, weak silica and calcareous cement, occasional black carbonaceous specks, tight, no shows.

SERVICES

CONTRACTOR:	Beredco Drilling Inc., Rig 2	
Toolpusher:	Milo Salinas	
DRILLING FLUIDS:	Morgan Mud, Inc.	McCook, ND
Mud Type:	Freshwater Chemical	308-340-5946
Engineer:	Dave Lines	
MUD LOGGING:	None	
WELLSITE GEOLOGY:	T. M. McCoy & Co., Inc. Peter J. Vollmer	Wilson, WY 307-733-4332
DRILL STEM TESTING:	Trilobite Testing, Inc. Ryan Nichols, Jim Svaty DST 1: 4110’ - 4170’ LKC “B” DST 2: 4264’ - 4320’ LKC “E” DST 3: 4468’ - 4508’ Pawnee	Hays, KS 785- 625-4778
DIRECTIONAL DRILLING:	None	
WIRELINE LOGS:	Pioneer Wireline Services RAG: Surface casing - TD Micro: 3500’ - TD Dan Schmidt	Hays, KS 785-625-3858