EDISON OPERATING COMPANY LLC

Scale 1:240 Imperial

Well Name:	Knop #1-27		
Surface Location:	Sec. 27 - T19S - R12W		
Bottom Location:			
API:	15-009-26176-0000		
License Number:	34434		
Spud Date:	7/13/2017	Time:	11:00 AM
Region:	Barton County		
Drilling Completed:	7/20/2017	Time:	10:30 PM
Surface Coordinates:	470' FNL & 828' FWL		
Bottom Hole Coordinates:			
Ground Elevation:	1823.00ft		
K.B. Elevation:	1832.00ft		
Logged Interval:	2650.00ft	To:	3520.00ft
Total Depth:	3520.00ft		
Formation:	Lansing-Kansas City and Arbuckle		
Drilling Fluid Type:	Chemical/Fresh Water Gel		

OPERATOR

Company: Edison Operating Company LLC
Address: 8100 E. 22nd St. North
Building 1900
Wichita, KS 67226
Contact Geologist: David Withrow
Contact Phone Nbr: 316.613.1544
Well Name: Knop #1-27
Location: Sec. 27 - T19S - R12W
API: 15-009-26176-0000
Pool:
Field: Unnamed
State: Kansas
Country: USA

LOGGED BY

EDISON OPERATING COMPANY LLC

Company: Edison Operating Company LLC
Address: 8100 E. 22nd St. North
Building 1900
Wichita, KS 67226
Phone Nbr: 316.655.3550
Logged By: Geologist
Name: Derek W. Patterson

REMARKS

After review of the geologic log, DST results, and the open hole logs for the Knop #1-27, it was decided upon by operator to run 5 1/2" production casing for further evaluation of the Lansing-Kansas City and Arbuckle sections.

Respectfully Submitted,

Derek W. Patterson

GENERAL INFORMATION

Service Companies

Drilling Contractor: Southwind Drilling - Rig #9
Tool Pusher: Wes Pfaff
Daylight Driller: Louis Nolde
Evening Driller: Derek Petz
Morning Driller: Travis Epp

Gas Detector: Bluestem Environmental
Engineer: Keith Reavis
Unit: 5259
Operational By: 1800'

Drilling Fluid: Mud-Co/Service Mud Inc.
Engineers: Rick Hughes
Jason Whiting

Logging Company: Eli Wireline
Engineer: Jeff Luebbers
Logs Ran: DI, CDNL, Micro, Sonic

Testing Company: Eagle Testers
Tester: Gene Budig

Deviation Survey

Depth	Survey
402'	1/4°
3182'	1/4°
RTD - 3520'	1°

Pipe Strap

Depth	Pipe Strap
3182'	0.63' Long to Board

Bit Record

Bit #	Size	Make	Type	Serial Number	Depth In	Depth Out	Feet	Hours
1	12 1/4"	Smith	RT	RR	0'	402'	402'	6.5
2	7 7/8"	JZ	HA-20	1706855	402'	3520'	3118'	78

Surface Casing

7.13.2017	Ran 9 joints of new 23#, 8 5/8" surface casing, tallying 390.15', set @ 401' KB. Cemented with 270 sacks 60/40 Poz, 3% cc, 2% gel, 1/4 #/sx flocel. Cement did circulate. Plug down @ 0015 hrs 7.14.17. By Basic Energy Services.

Production Casing

7.21.2017	Ran 81 joints of used and tested 15.5#, 5 1/2" production casing, tallying 3496.16', set @ 3505' KB. Cemented with 100 sacks AA2. Plug rathole with 30 sacks. Cement did circulate. Plug down @ 1845 hrs 7.21.17. By Basic Energy Services.

DAILY DRILLING REPORT

Date	0700 Hrs Depth	Previous 24 Hours of Operations
7.17.2017	3045'	Drilling and connections upper Pennsylvanian beds. Displace mud system @ 2704'. Geologist Derek W. Patterson on location 1810 hrs 7.16.17. Reset Bloodhound and test system. Drilling and connections Topeka, Heebner, and into Toronto. Made 524' over past 24 hrs of operations. WOB: 30k RPM: 80 PP: 980 SPM: 60 DMC: $89.12 CMC: $5,319.62
7.18.2017	3196'	Drilling and connections Toronto, Douglas, and Brown Lime. Short trip @ 3134' 1050 hrs 7.17.17. Conduct 20 stand short trip, CTCH. Resume drilling following short trip 1305 hrs 7.17.17. Drilling and connections Brown Lime and into Lansing-Kansas City. CFS @ 3158' (LKC 'A'). Resume drilling and connections Lansing-Kansas City. CFS @ 3182' (LKC 'B'). Shows warrant test. CTCH, drop survey, strap out for DST #1 1820 hrs 7.17.17. TIH with tool, conduct DST #1, TOH with tool, test unsuccessful. TIH with bit, CTCH, resume drilling following DST #1 0610 hrs 7.18.17. Drilling and connections Lansing-Kansas City. Made 151' over past 24 hrs of operations. WOB: 30k RPM: 80 PP: 980 SPM: 58 DMC: $1,122.58 CMC: $6,442.20
7.19.2017	3330'	Drilling and connections Lansing-Kansas City. CFS @ 3217' (LKC 'D'/'F'). CFS @ 3240' (LKC 'G'), CFS @ 3330' (LKC 'J'). Shows in LKC 'I'/ 'J' warrant test. CTCH, TOH for DST #2 1710 hrs 7.18.17. Pulling tight coming out of hole, decision made to run short trip. Conduct short trip, CTCH, TOH for DST #2. TIH with tool, conduct DST #2, TOH with tool, test successful. TIH with bit, CTCH. Made 134' over past 24 hrs of operations. WOB: 32k RPM: 80 PP: 925 SPM: 58 DMC: $1,176.52 CMC: $6,618.72
7.20.2017	3429'	CTCH, resume drilling following DST #2 0915 hrs 7.19.17. Drilling and connections Lansing-Kansas City and Base Kansas City. CFS @ 3407' (BKC-Conglomerate). Drilling Base Kansas City. CFS @ 3415' (BKC-Conglomerate). Drilling Conglomerate and into Arbuckle. CFS @ 3419' (Arb), CFS @ 3422' (Arb). Shows warrant test. CTCH, TOH for DST #3 1935 hrs 7.19.17. TIH with tool, conduct DST #3, TOH with tool, test successful. TIH with bit, CTCH. Resume drilling following DST #3 0530 hrs 7.20.17. Drilling Arbuckle. CFS @ 3429' (Arb). Made 99' over past 24 hrs of operations. WOB: 32k RPM: 80 PP: 890 SPM: 58 DMC: $284.26 CMC: $6,902.98
7.21.2017	RTD - 3520' LTD - 3520'	CFS @ 3429' (Arb). Shows warrant test. CTCH, TOH for DST #4 0745 hrs 7.20.17. TIH with tool, conduct DST #2, TOH with tool, test successful. TIH with bit, CTCH. Resume drilling following DST #4 1700 hrs 7.20.17. Drilling Arbuckle. CFS @ 3440' (Arb). Resume drilling and connections Arbuckle ahead to RTD of 3520'. RTD reached 2230 hrs 7.20.17. CTCH, drop survey, TOH for open hole logging operations. Rig up loggers. Commence logging operations 0145 hrs 7.21.17. Logging operations complete 0630 hrs 7.21.17. Orders received to run 5 1/2" production casing for further evaluation of the Lansing-Kansas City and Arbuckle. Geologist Derek W. Patterson off location 0740 hrs 7.21.17. Made 91' over past 24 hrs of operations. WOB: 32k RPM: 80 PP: 1070 SPM: 58 DMC: $290.18 CMC: $7,193.16

WELL COMPARISON SHEET

	Drilling Well				Comparison Well				Comparison Well			
	Edison Operating - Knop #1-27 Sec. 27 - T19S - R12W 470' FNL & 828' FWL 1823 GL 1832 KB				Trans Era - Knop 'B' #1 Sec. 27 - T19S - R12W SW NW NW DHCA - LKC/Arb 1828 KB		Structural Relationship		B & R Drilling - Johnson 'A' #2 Sec. 27 - T19S - R12W SW SE SW Oil - Arbuckle 1816 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Topeka	2755	-923	2755	-923	2755	-927	4	4	2719	-903	-20	-20
King Hill	2844	-1012	2845	-1013	n/a	n/a	n/a	n/a	2810	-994	-18	-19
Queen Hill	2919	-1087	2919	-1087	n/a	n/a	n/a	n/a	2886	-1070	-17	-17
Heebner	3015	-1183	3016	-1184	3016	-1188	5	4	2982	-1166	-17	-18
Toronto	3033	-1201	3034	-1202	3034	-1206	5	4	3000	-1184	-17	-18
Douglas	3051	-1219	3051	-1219	3051	-1223	4	4	3018	-1202	-17	-17
Brown Lime	3131	-1299	3131	-1299	3131	-1303	4	4	3099	-1283	-16	-16
Lansing-Kansas City	3147	-1315	3147	-1315	3146	-1318	3	3	3114	-1298	-17	-17
LKC 'B'	3171	-1339	3171	-1339	3172	-1344	5	5	3138	-1322	-17	-17
LKC 'D'	3194	-1362	3193	-1361	3194	-1366	4	5	3164	-1348	-14	-13
LKC 'F'	3215	-1383	3214	-1382	3216	-1388	5	6	3186	-1370	-13	-12
LKC 'G'	3233	-1401	3233	-1401	3232	-1404	3	3	3203	-1387	-14	-14
Muncie Creek	3277	-1445	3277	-1445	3275	-1447	2	2	3244	-1428	-17	-17
LKC 'H'	3285	-1453	3285	-1453	3282	-1454	1	1	3251	-1435	-18	-18
LKC 'I'	3300	-1468	3300	-1468	3298	-1470	2	2	3266	-1450	-18	-18
LKC 'J'	3316	-1484	3316	-1484	3316	-1488	4	4	3282	-1466	-18	-18
Stark	3343	-1511	3340	-1508	3338	-1510	-1	2	3303	-1487	-24	-21
LKC 'K'	3345	-1513	3343	-1511	3342	-1514	1	3	3310	-1494	-19	-17
Hushpuckney	3373	-1541	3374	-1542	3370	-1542	1	0	3334	-1518	-23	-24
LKC 'L'	3376	-1544	3376	-1544	3375	-1547	3	3	3338	-1522	-22	-22
Base Kansas City	3387	-1555	3386	-1554	3384	-1556	1	2	3348	-1532	-23	-22
Arbuckle	3414	-1582	3416	-1584	3409	-1581	-1	-3	3362	-1546	-36	-38
Total Depth	3520	-1688	3520	-1688	3422	-1594	-94	-94	3379	-1563	-125	-125

ROCK TYPES

▨	Chtcongl	▨	LMST2	▨	LMST5	▨	SHALE CAR	▨	SHALE RED
▨	DOL2	▨	LMST3	▨	Ss	▨	SHALE GRN		
▨	LMST1	▨	LMST4	▨	SILTSTONE	▨	SHALE GRA		

ACCESSORIES

MINERAL
- •• Silty
- △ Chert White

FOSSIL
- ⌒ Bioclastic or Fragmental
- F Fossils < 20%
- ⌽ Oolite
- Oomoldic

STRINGER
- — Shale Green
- — Shale Gray
- — Shale Red

TEXTURE
- C Chalky
- CX Cryptocrystalline
- L Lithogr

OTHER SYMBOLS

MISC
- Daily Report
- Digital Photo
- Document
- Folder
- Link
- Vertical Log File
- Horizontal Log File
- Core Log File
- Drill Cuttings Rpt

DST
- ■ DST1
- ■ DST2
- ■ DST3
- ■ Core
- ▮ tail pipe

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Curve Track #1
ROP (min/ft)
Gamma (API)
Cal (in)
1:240 Imperial
Depth | Intervals
Cored Interval
DST Interval
DST
Lithology
Oil Show
Geological Descriptions
TG, C1 - C5
Total Gas (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Mud-Co Mud Ck @ 2710' 1340 hrs 7.16.17 Vis: 97 Wt: 8.7 PV: 24 YP: 34 WL: 7.2 Cake: 1/32nd pH: 11.5 CHL: 1,800 ppm Cal: 20 Solids: 2.7 LCM: 0 #/bbl
Light Plant Down No Gas Readings Available
Vis: 55 Wt: 8.8
System Test
Mud-Co Mud Ck @ 3051' 0715 hrs 7.17.17 Vis: 48 Wt: 9.0 PV: 14 YP: 13 WL: 8.8 Cake: 2/32nd pH: 11.0 CHL: 2,800 ppm Cal: 30 Solids: 4.8 LCM: 0 #/bbl
DST #1.bmp
Vis: 63 Wt: 9.1
Rezero Gas Detector 0 = 10 units
Mud-Co Mud Ck @ 3192' 0645 hrs 7.18.17 Vis: 67 Wt: 9.0 PV: 16 YP: 14 WL: 9.2 Cake: 1/32nd pH: 10.5 CHL: 9,600 ppm Cal: 20 Solids: 4.5 LCM: 0 #/bbl
Vis: 60 Wt: 9.1
DST #2.bmp
Mud-Co Mud Ck @ 3330' 0650 hrs 7.19.17 Vis: 50 Wt: 9.0 PV: 14 YP: 11 WL: 9.6 Cake: 1/32nd pH: 10.5 CHL: 10,700 ppm Cal: 40 Solids: 4.4 LCM: Tr
DST #3.bmp
DST #4.bmp
Vis: 66 Wt: 9.0
Vis: 54 Wt: 9.1
Mud-Co Mud Ck @ 3429' 0655 hrs 7.20.17 Vis: 54 Wt: 9.05 PV: 13 YP: 12 WL: 11.2 Cake: 1/32nd pH: 9.5 CHL: 11,000 ppm Cal: 40 Solids: 5.0 LCM: 0 #/bbl
Vis: 54 Wt: 9.0 LCM: 2 #/bbl

Displace Mud System @ 2704'

Start 10' Wet & Dry Samples

TOPEKA 2755' (-923')

Limestone: cream gray, dense matrix, vf-fxln, some 2ndary xln fill, fair interxln porosity, no shows, no fluorescence, with some interbedded Shale.

Shale: gray dk gray, blocky, most firm.

Limestone: cream gray, dense matrix, some chalky, vf-fxln, some 2ndary xln fill, fair interxln porosity, no shows, no fluorescence.

Limestone: gray dk gray, dense, microxln, scattered fossils, poor porosity, no shows, no fluorescence.

Limestone: lt cream, dense matrix, vf-fxln, scattered fossils, fair interxln porosity, no shows, no fluorescence.

Geologist Derek W. Patterson On Location 1810 hrs 7.16.17

Limestone: gray brown, dense matrix, vfxln, fossiliferous with 2ndary xln, poor visible porosity, no shows, no fluorescence.

Limestone: lt cream, dense matrix, vfxln, fossiliferous with 2ndary xln, poor visible porosity, no shows, no fluorescence.

Limestone: lt cream, dense matrix, fxln, fossiliferous with 2ndary xln, some visible interxln porosity, no shows, no fluorescence.

KING HILL 2845' (-1013')

Shale: black, carbonaceous, blocky and waxy, no gas show.

Limestone: tan, dense matrix, microxln, no visible porosity, no shows.

Shale: gray dk gray, most round and soft.

Limestone: cream lt cream lt gray, dense to sub-friable matrix, vfxln, scattered fossiliferous, poor-fair interxln porosity, no shows, no fluorescence.

Shale: gray dk gray, most round and soft.

Limestone: cream tan, dense to sub-friable matrix, vfxln, most fossiliferous, poor-fair interxln porosity, no shows, no fluorescence.

Limestone: lt cream lt gray, dense matrix, vfxln, fair-poor interxln porosity, no shows, no fluorescence, with scattered Chert: bone white, fresh and sharp.

Limestone: off white lt cream, dense matrix, microxln, poor visible porosity, no shows, no fluorescence.

QUEEN HILL 2919' (-1087')

Shale: black, carbonaceous, blocky and waxy, no gas show.

Limestone: lt cream lt gray, dense sub-friable matrix, vfxln, barren, fair interxln porosity, no shows, no fluorescence.

Limestone: cream tan, dense matrix, vfxln, heavily fossiliferous/oolitic, fair interparticle porosity, no shows, no fluorescence.

Shale: gray dk gray, blocky to rounded, most soft.

Limestone: lt cream cream, dense matrix, vfxln, fossiliferous, fair-good visible porosity, no shows, no fluorescence.

Limestone: lt cream cream, dense matrix, vfxln, fossiliferous, fair visible porosity, no shows, no fluorescence.

Limestone: cream lt gray, dense matrix, vf-microxln, scattered sub-fossiliferous to barren, poor visible porosity, no shows, no fluorescence.

Limestone: cream lt gray, dense matrix, vf-microxln, scattered sub-fossiliferous to barren, poor visible porosity, no shows, no fluorescence.

HEEBNER 3016' (-1184')

Shale: black, carbonaceous, blocky to rounded, good gas show.

Limestone: cream tan, dense matrix, microxln, barren, poor visible porosity, no shows, no fluorescence.

Shale: gray dk gray, blocky to rounded, most firm.

TORONTO 3034' (-1202')

Limestone: lt cream lt gray, dense matrix, microxln, barren, poor visible porosity, no shows, no fluorescence.

DOUGLAS 3051' (-1219')

Shale: gray dk gray brick red dk green, blocky to rounded, firm to soft.

Shale: gray dk gray brick red dk green, blocky to rounded, firm to soft.

Shale: gray dk gray brick red dk green, blocky to rounded, firm to soft.

Shale: gray lt gray speckled, becoming very silty, blocky to round, most dense, with Siltstone: gray dk gray, dense, and scattered Sandstone: gray lt gray, well sorted and cemented, vfgrained, fair intergranular porosity, no shows, no fluorescence.

Shale: gray lt gray speckled, very silty, blocky to round, most dense, with Siltstone: gray dk gray, dense, and increase in Sandstone: gray lt gray, well sorted and cemented, vfgrained, fair intergranular porosity, no shows, no fluorescence.

Shale with scattered Siltstone and Sandstone as above.

BROWN LIME 3131' (-1299')

3134 cfs 20"/40" - Limestone: brown tan, dense matrix, microxln, poor visible porosity, no shows, no fluorescence.

Shale: gray dk gray, block and limey, hard.

LANSING-KANSAS CITY 3147' (-1315')

3158' cfs 15"/30" - Limestone: off white lt cream, softer sub-chalky to chalky matrix, vfxln, some scattered bioclastic, good weathered pinpoint porosity, brown saturated stain, good show brown oil from porosity with increase under lamp, even yellow fluorescence, milky-white cut, good odor.

Limestone: as above with overall decrease in shows, still carrying fair odor.

Shale: gray dk gray, limey and dense.

3182' cfs 20"/40" - Limestone: off white lt cream, dense xln matrix, vfxln, scattered fossiliferous to sub-oolitic, good weathered pinpoint porosity, brown saturated stain, good oil with increase under lamp, even lt yellow fluorescence, white cut, fair-good odor.

Limestone: as above becoming heavily fossiliferous/bioclastic, slight decrease in overall shows.

Limestone: gray, dense matrix, microxln, no visible porosity, no shows.

Limestone: cream lt cream, dense matrix, microxln, barren, few pieces with slight edge weathering and associated stain, poor show lt brown oil from edge stain, poor-no fluorescence, poor cut, faint odor.

3217' cfs 15" - Limestone: cream tan gray, dense tight matrix, micro-vfxln, barren, poor visible porosity, no shows, no fluorescence.

Shale: gray dk gray, blocky to rounded, firm to soft.

3217' cfs 30"/45" - Limestone: cream tan gray, dense tight matrix, micro-vfxln, barren, poor visible porosity, no shows, no fluorescence.

Limestone: cream lt cream lt gray, dense sub-chalky matrix, microxln, barren, poor-no visible porosity, no shows, no fluorescence.

3241' cfs - Limestone: cream tan, dense matrix, vfxln, heavily oomoldic with 2ndary xln fill in molds, very good oomoldic porosity with poor visible perm, no shows, no fluorescence, grading to Limestone: cream tan, dense matrix, heavily oolitic, poor visible porosity, no shows, no fluorescence.

Limestone: cream lt cream, dense matrix, vfxln, oolitic with good-excellent oomoldic development and associated porosity, 2ndary xln fill in porosity, no shows, no fluorescence.

Limestone: lt cream tan, dense matrix, micro-vfxln, most oolitic, some scattered oomoldic development, overall fair-good visible porosity, no shows, no fluorescence.

Limestone: cream tan, dense matrix, microxln, barren, poor-no visible porosity, no shows, no fluorescence, with some scattered chalky material.

MUNCIE CREEK 3277' (-1445')

Shale: black, carbonaceous, blocky and hard, fair-good gas show upon break, with Shale: gray dk gray, blocky to rounded, most dense and hard, limey.

Limestone: lt cream off white, dense matrix, microxln, barren, poor-no visible porosity, no shows, no fluorescence, with scattered loose Chalk in sample.

Shale: gray dk gray, most blocky and dense.

Limestone: cream, softer sub-chalky matrix, vfxln, some scattered oolitic, fair-good interxln porosity, fair brown saturated stain in porosity, poor-fair show live oil, most shows are stringy to dead, poor lt yellow fluorescence, bluish-white cut upon break, slight odor, grading to Limestone: cream tan, dense matrix, microxln, barren, poor visible porosity, no shows.

3330' cfs - Limestone: off white lt cream, sub-friable matrix, vfxln, heavily oolitic with excellent oomoldic development and associated porosity, 2ndary xln fill in molds, golden brown stain in porosity, fair-good show brown oil with increase upon break, lt yellow fluorescence, milky-white cut, moderate odor.

Limestone: cream lt cream, dense matrix, micro-cryptoxln, few pieces with scattered oolites, poor edge weathering in a few pieces with associated poor porosity, slight brown stain and poor show oil in 5%, poor-no fluorescence, poor cut, no odor.

STARK 3340' (-1508')

Shale: black, carbonaceous, blocky to rounded, dense, poor gas show.

Limestone: lt cream cream lt gray, dense tight matrix, micro-cryptoxln, no visible porosity, no shows, no fluorescence.

Limestone: off white lt cream, dense tight matrix, micro-cryptoxln, no visible porosity, no shows, no fluorescence.

HUSHPUCKNEY 3374' (-1542')

Shale: black dk gray, carbonaceous, blocky, dense, poor gas show.

Limestone: lt cream lt gray, dense matrix, micro-cryptoxln, some lithographic non-descript, no visible porosity, no shows, no fluorescence.

BASE KANSAS CITY 3386' (-1554')

Shale: gray dk gray, blocky to sub-rounded, most soft.

Limestone: lt cream, dense matrix, micro-cryptoxln, no porosity, no shows.

Abundant Shale: gray dk gray dk green brick red, blocky to rounded, soft.

3407' cfs - Conglomerate - Chert: various colors, most sharp and fresh, no shows, Shale: gray dk gray brick red, most soft, some scattered Limestone, and abundant loose dk red mushy material, sample washes dk red.

3415' cfs 15"/30" - Conglomerate as above.

ARBUCKLE 3416' (-1584')

(3416'-3419') 3415' cfs 45" - Dolomite: lt brown cream, fxln, friable sucrosic, cherty in part, fair-good interxln porosity, saturated stain, poor-fair show oil with increase upon break, light yellow fluorescence, bluish-white cut, fair odor.

(3420'-3424') 3419'/3422' cfs - Dolomite: as above with increase in shows, grading to Dolomite: tan brown, sub-friable matrix, fxln, fair-good rhombic development with associated good porosity, even brown stain, fair-good show lt brown oil from porosity with increase upon break/under lamp, even lt yellow fluorescence, milky-white cut upon break, strong odor.

(3425'-3435') 3429' cfs - Dolomite: as above grading to Dolomite: lt brown, sub-friable to friable matrix, f-coarsexln, good rhombic development with associated porosity, even brown stain, good show lt brown oil from porosity with increase upon break/under lamp, abundant free oil in tray, even bright yellow fluorescence, milky-white cut, strong odor.

(3436'-3442') 3440' cfs - Dolomite: brown, sub-friable to friable matrix, med-coarsexln, good rhombic and interxln porosity, even brown stain, good show lt brown oil from porosity with increase upon break/under lamp, abundant free oil in tray, even bright yellow fluorescence, milky-white cut, strong odor, with abundant Chert: bone white, most fresh and sharp, some weathered (sluff?).

(3443'-3346') - Dolomite: cream lt cream, tighter matrix, fxln, fair-good rhombic development with fair-good interxln porosity, overall decrease in oil shows with minor staining and poor-fair show oil with little increase upon break, even bright yellow fluorescence, poor cut, strong oil/sulfur odor, with Chert.

(3447'-3460') - Dolomite: lt cream, sub-friable matrix, coarsexln, good rhombic development with associated good-excellent porosity, scattered saturated stain, very good show heavy dk black oil upon break in most, even bright yellow fluorescence, milky-white cut upon break, strong odor, with Chert.

(3461'-3481') - Dolomite: lt cream off white, sub-friable matrix, fxln, good rhombic development with fair interxln porosity, scattered minor oil shows, lt yellow mineral fluorescence, little-no cut, fair odor, with scattered Chert.

(3482'-3491') - Dolomite: lt cream off white, dense matrix, vf-fxln, decrease in xln development, fair interxln porosity, oil shows drop out, even bright lt yellow mineral fluorescence, no cut, faint sulfur odor, with scattered Chert.

(3492'-3507') - Dolomite: cream lt cream, mostly dense matrix, f-medxln, fair interxln porosity, no shows, even bright lt yellow mineral fluorescence, no cut, faint sulfur odor, with scattered Chert.

(3508'-3520') - Dolomite: cream lt cream, mostly dense matrix, f-medxln, fair interxln porosity, no shows, even bright lt yellow mineral fluorescence, no cut, faint sulfur odor, with scattered Chert.

RTD/LTD 3520' (-1688')

Orders Received to Run 5 1/2" Production Casing

Geologist Derek W. Patterson Off Location 0740 hrs 7.21.17

Respectfully Submitted,

Derek W. Patterson

DST #1.bmp

DRILL STEM TEST REPORT

Edison Operating Company
8100 e.22nd St.bldg 1900
Wichita, Kansas 67226
ATTN: Derek Patterson

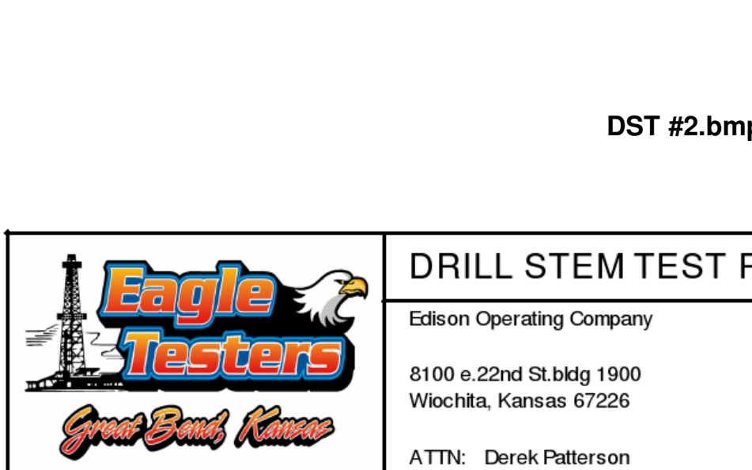
27-19s-12w Barton
Knop #1-27
Job Ticket: 01178 DST#: 1
Test Start: 2017.07.17 @ 08:10:00

GENERAL INFORMATION:
Formation: Kansas City "B"
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 09:48:00
Time Test Ended: 00:00:00
Interval: 3160.00 ft (KB) To 3182.00 ft (KB) (TVD)
Total Depth: 3182.00 ft (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Initial)
Tester: Gene Budig
Unit No: 1
Reference Elevations: 1832.00 ft (KB)
1823.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 93335 Outside
Press@RunDepth: 925.61 psig @ 3177.00 ft (KB)
Start Date: 2017.07.18 End Date: 2017.07.19
Start Time: 20:10:00 End Time: 20:26:30
Capacity: 5000.00 psig
Last Calib.: 2017.07.18
Time On Btm: 2017.07.18 @ 21:47:30
Time Off Btm: 2017.07.18 @ 23:53:30

TEST COMMENT: 1st Opening 12 Minutes w eak blow for 8 minutes and died
1st shut-in 30 minutes no blow back
2nd opening 20 minutes no blow
2nd shut-in 60 minutes no blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1563.57	107.31	Initial Hydro-static
1	50.32	107.38	Open To Flow (1)
12	52.69	107.44	Shut-In(1)
44	741.46	107.86	End Shut-In(1)
44	745.54	107.87	Open To Flow (2)
64	802.92	108.04	Shut-In(2)
124	925.61	108.47	End Shut-In(2)
126	1519.31	108.51	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Drilling mud	0.07

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Eagle Testers Ref. No: 01178 Printed: 2017.07.18 @ 01:48:24

DST #2.bmp

DRILL STEM TEST REPORT

Edison Operating Company
8100 e.22nd St.bldg 1900
Wichita, Kansas 67226
ATTN: Derek Patterson

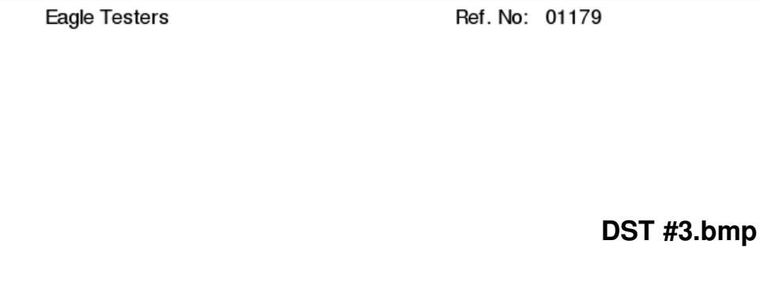
27-19s-12w Barton
Knop #1-27
Job Ticket: 01179 DST#: 2
Test Start: 2017.07.18 @ 08:30:00

GENERAL INFORMATION:
Formation: Kansas City "I&J"
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 10:13:00
Time Test Ended: 03:03:00
Interval: 3294.00 ft (KB) To 3330.00 ft (KB) (TVD)
Total Depth: 3330.00 ft (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Initial)
Tester: Gene Budig
Unit No: 1
Reference Elevations: 1832.00 ft (KB)
1823.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 93335 Outside
Press@RunDepth: 749.26 psig @ 3325.00 ft (KB)
Start Date: 2017.07.18 End Date: 2017.07.19
Start Time: 20:30:00 End Time: 02:52:59
Capacity: 5000.00 psig
Last Calib.: 2017.07.19
Time On Btm: 2017.07.18 @ 22:12:29
Time Off Btm: 2017.07.19 @ 01:09:30

TEST COMMENT: 1st Opening 10 Minutes good blow built to the bottom of a 5 gallon bucket in 2 1/2 minutes
1st Shut-In 45 Minutes no blow back
2nd opening 30 Minutes good blow built to the bottom of a 5 gallon bucket in 1 minute
2nd Shut-In 90 Minutes good blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1600.19	106.70	Initial Hydro-static
1	67.56	106.71	Open To Flow (1)
12	64.69	106.34	Shut-In(1)
57	742.78	106.98	End Shut-In(1)
58	73.66	106.99	Open To Flow (2)
86	97.10	107.23	Shut-In(2)
176	749.26	108.69	End Shut-In(2)
178	1583.81	108.73	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	1200 feet of gas in the pipe	0.00
80.00	mud and w ater cut gassy oil	1.12
0.00	10%Gas 60%Oil 15%Mud 15%Water	0.00
30.00	Oil ans gas cut muddy w ater	0.42
0.00	5%Gas 15%oil 5% Mud 75% Water	0.00
0.00	Chlorides 58000	0.00

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Eagle Testers Ref. No: 01179 Printed: 2017.07.19 @ 03:19:00

DST #3.bmp

DRILL STEM TEST REPORT

Edison Operating Company
8100 e.22nd St.bldg 1900
Wichita, Kansas 67226
ATTN: Derek Patterson

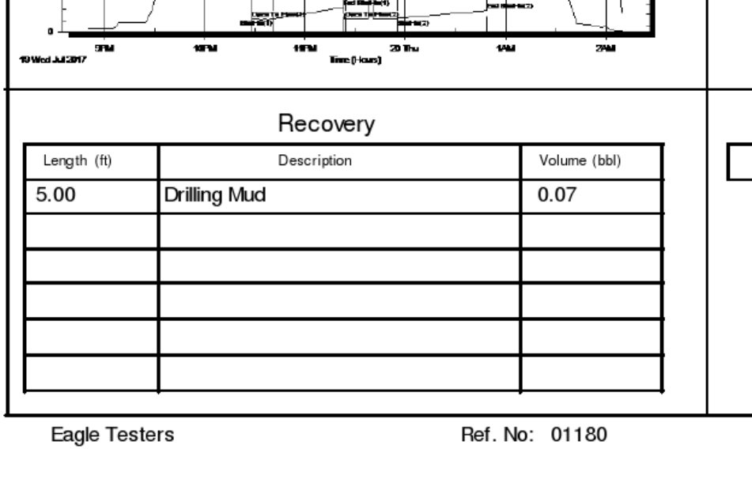
27-19s-12w Barton
Knop #1-27
Job Ticket: 01180 DST#: 3
Test Start: 2017.07.19 @ 20:20:00

GENERAL INFORMATION:
Formation: Arbuckle
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:54:00
Time Test Ended: 02:26:00
Interval: 3384.00 ft (KB) To 3422.00 ft (KB) (TVD)
Total Depth: 3422.00 ft (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Initial)
Tester: Gene Budig
Unit No: 1
Reference Elevations: 1832.00 ft (KB)
1823.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 91716 Inside
Press@RunDepth: 94.33 psig @ 3417.00 ft (KB)
Start Date: 2017.07.19 End Date: 2017.07.20
Start Time: 20:50:00 End Time: 02:10:30
Capacity: 5000.00 psig
Last Calib.: 2017.07.20
Time On Btm: 2017.07.19 @ 22:27:30
Time Off Btm: 2017.07.20 @ 00:50:00

TEST COMMENT: 1st Opening 10 Minutes w eak blow for 4 minutes and died
1st Shut-In 45 Minutes no blow back
2nd Opening 30 Minutes no blow Flushed tool-Good surge-No help
2nd Shut-In 60 Minutes no blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1644.42	109.20	Initial Hydro-static
1	56.61	109.16	Open To Flow (1)
13	56.76	108.92	Shut-In(1)
56	108.84	109.55	End Shut-In(1)
57	56.84	109.57	Open To Flow (2)
88	58.65	110.05	Shut-In(2)
147	94.33	110.71	End Shut-In(2)
143	1639.83	110.61	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Drilling Mud	0.07

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Eagle Testers Ref. No: 01180 Printed: 2017.07.20 @ 02:39:07

DST #4.bmp

DRILL STEM TEST REPORT

Edison Operating Company
8100 e.22nd St.bldg 1900
Wichita, Kansas 67226
ATTN: Derek Patterson

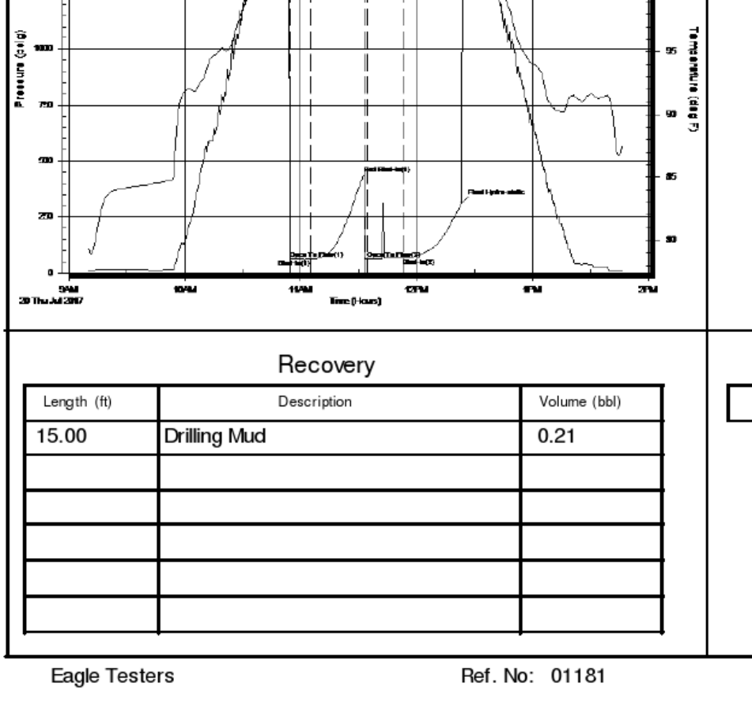
27-19s-12w Barton
Knop #1-27
Job Ticket: 01181 DST#: 4
Test Start: 2017.07.20 @ 09:10:00

GENERAL INFORMATION:
Formation: Arbuckle
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 10:54:00
Time Test Ended: 01:48:00
Interval: 3382.00 ft (KB) To 3429.00 ft (KB) (TVD)
Total Depth: 3429.00 ft (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Initial)
Tester: Gene Budig
Unit No: 1
Reference Elevations: 1832.00 ft (KB)
1823.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 91716 Inside
Press@RunDepth: 443.50 psig @ 3423.92 ft (KB)
Start Date: 2017.07.20 End Date: 2017.07.20
Start Time: 09:10:00 End Time: 13:47:00
Capacity: 5000.00 psig
Last Calib.: 2017.07.20
Time On Btm: 2017.07.20 @ 10:53:00
Time Off Btm: 2017.07.20 @ 12:23:30

TEST COMMENT: 1st Opening 10 Minutes w eak blow for 7 minutes and died
1st Shut-In 30 Minutes no blow back
2nd Opening 20 Minutes w eak blow 1 minute died flushed tool w eak blow 2 minutes and died
2nd Shut-In 30 Minutes no blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1680.22	104.27	Initial Hydro-static
2	61.98	104.38	Open To Flow (1)
12	60.82	104.61	Shut-In(1)
40	443.50	105.18	End Shut-In(1)
42	62.90	105.48	Open To Flow (2)
60	65.12	106.03	Shut-In(2)
91	312.00	107.02	Final Hydro-static
92	1590.67	107.24	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	Drilling Mud	0.21

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Eagle Testers Ref. No: 01181 Printed: 2017.07.20 @ 13:59:31