JERRY A. SMITH

CERTIFIED PETROLEUM GEOLOGIST

GEOLOGIST'S REPORT
DRILLING TIME and SAMPLE LOG

COMPANY: BEREXCO, LLC			ELEVATIONS
LEASE: CHAFF #8			K.B. 2343
FIELD: CHAFF			D.F.
LOCATION: 1700' FSL & 2270' FWL			G.L. 2337
SEC. 21	TWSP. 16	RNG. 21W	Measurements Are All From:
COUNTY: NESS	STATE: KANSAS		KB

CONTRACTOR: ROYAL DRLG., RIG #1		CASING
SPUD: 7/31/2018	COMP. 8/09/2018	SURFACE: 8 5/8" @ 305'
RTD. 4375	LTD. 4370	PRODUCTION: P&A
MUD UP: 3400	TYPE MUD: CHEMICAL	ELECTRICAL SURVEYS
API No. 15-135-26009		PIONEER: DIL, CNL/CDL MEL
SAMPLES SAVED FROM: 3900		TO: RTD
DRILLING TIME KEPT FROM: 3500		TO: RTD
SAMPLES EXAMINED FROM: 3900		TO: RTD
GEOLOGICAL SUPERVISON FROM: 3440		TO: RTD
GEOLOGIST ON WELL: JERRY A. SMITH		

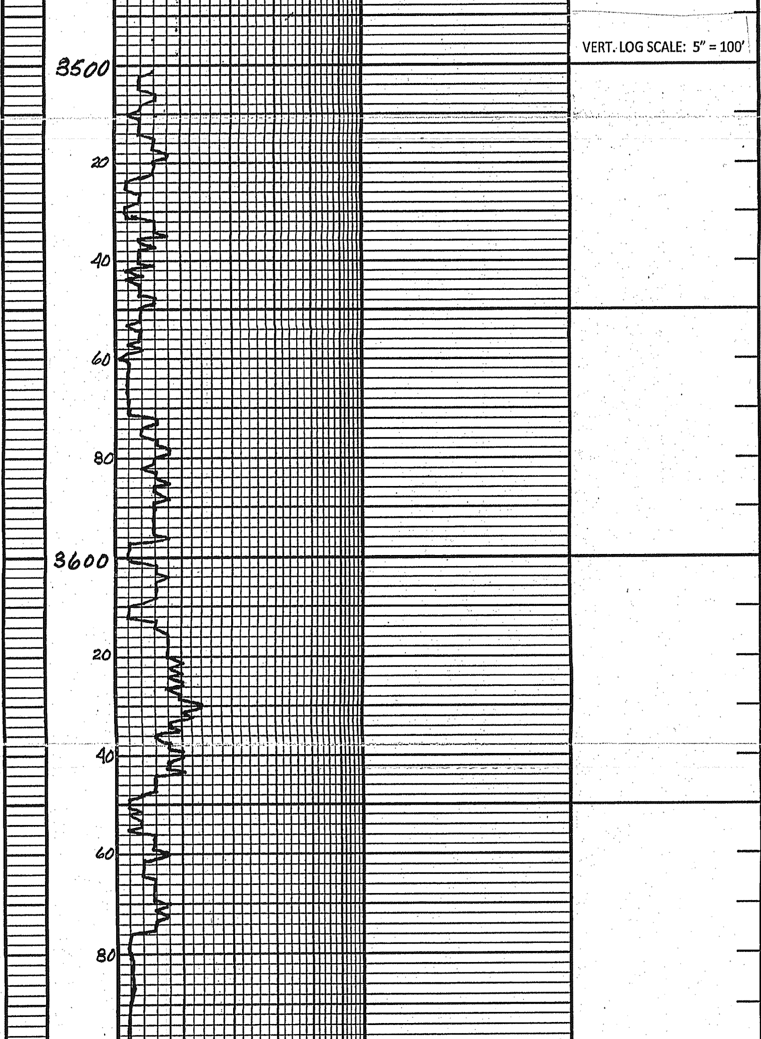
FORMATION TOPS	LOG	SAMPLES
HEEBENER	3718 (-1375)	3718 (-1375)
LANSING	3760 (-1417)	3760 (-1417)
B/KANSAS CITY	4040 (-1697)	4042 (-1699)
PAWNEE	4104 (-1761)	4109 (-1766)
FT. SCOTT	4195 (-1852)	4200 (-1857)
CHEROKEE 'A' Ss	4206 (-1863)	4213 (-1870)
CHEROKEE 'B' Ss	4235 (-1892)	4241 (-1898)
CHEROKEE 'C' Ss	4258 (-1915)	4265 (-1922)
MISSISSIPPIAN	4316 (-1973)	4320 (-1977)

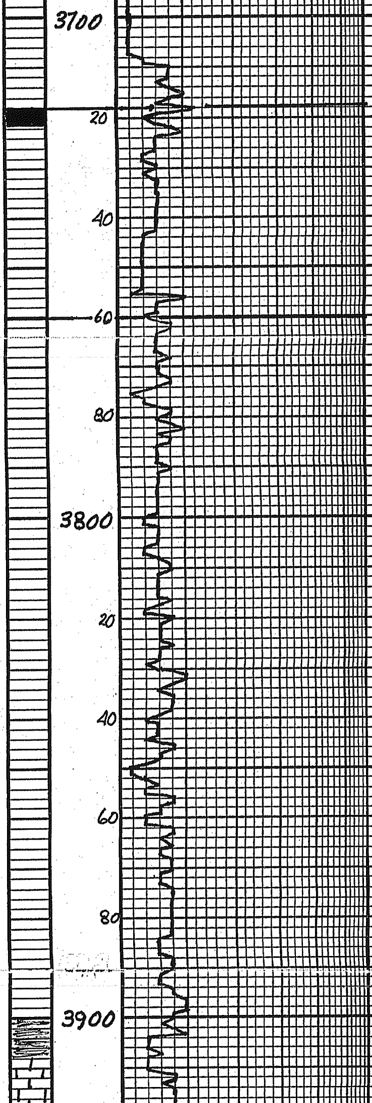
LEGEND

▥	▦	░	▤	■	▦	▦	▨	▨
Anhydrite	Salt	Sandstone	Shale	Carb sh	Limestone	Ool.Lime	Chert	Dolomite

LITHOLOGY	DEPTH	DRILLING TIME IN MINUTES PER FOOT Rate of Penetration Increases 5" 10" 15" 20" 25"	SAMPLE DESCRIPTIONS	REMARKS
				NO GAS DETECTOR RUN DST'S (3) BY TRILOBITE MUD BY ANDY'S MUD & CHEM. S.H.T.'S 305' ¾° 4228' 1½°

LOG 7704





HEEBNER
3718 (-1375) SMPL & LOG

LANSING
3780 (-1417) SMPL & LOG

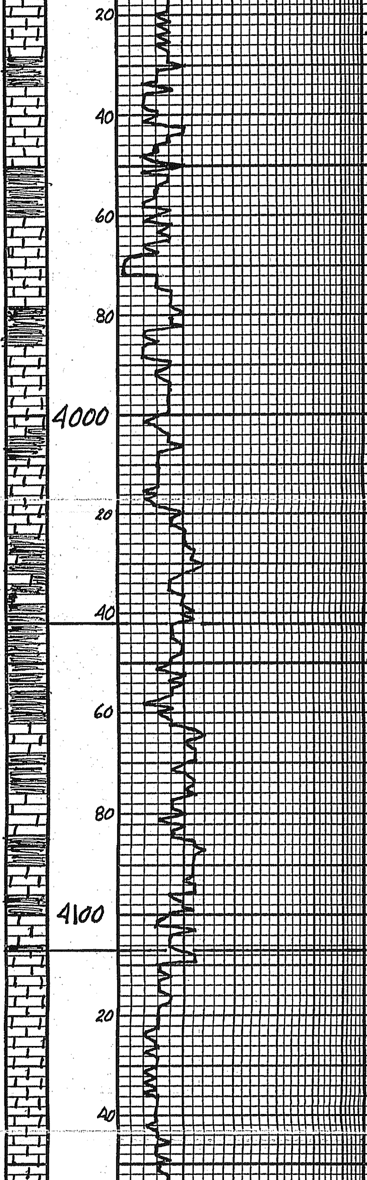
MUD @ 3808:
8.5 WT, 56 VIS, 8.8 FILT,
5000 CHLOR, LCM 2#

START 10' WET & DRY
SAMPLES @ 3900'

Lm- Crm, Lt→M Gy, Fx.
Dse→ Rare PP Ø. NS.
Scatt Wh, Sft Chk.

Lm- AA w/ Sli incln Sh-M→
Dk Gy, Gy-Grn.

Lm & Sh-AA.



LM & SH-AA. SLI INC IN SH.

LM-CRM, LT→M GY. FX. DSE.

LM-CRM, LT→M GY. FX. DSE.
w/ SCATT GY, GY-GRN SH.

LM-AA B'CMG CHKY. INC
IN M→DK GY SH.

LM & SH-AA.

LM-GY-TN. FX. GD OOMLD
Ø. NS.

LM-CRM, LT GY. FX. DSE.
w/ SCATT WH CHK.

LM-LT→M GY, GY-TN. FX.
DSE. w/ ABD M GY SH.

LM-CRM. FX. DSE. w/ SCATT
WH CHK.

LM-AA w/ INC IN M GY, GY-
TN LM. FX. DSE. HD.

LM-CRM. FX. DSE→CHKY.

LM-AA w/ SCATT CHT-GY-
TN, OPQ, SHP, DSE.

LM-CRM, LT→M GY. FX. DSE.
w/ CHT-AA. SCATT DK
GY SH.

B/KANSAS CITY
4042 (-1699) SMPL
4040 (-1697) LOG

LM-AA. INC IN GY, GY-GRN
SH. VARICOL SHP, DSE
CHT.

SH-M→DK GY, GY-GRN, RED-
BRN.

PREDOM SH-AA w/ SCATT
CRM, FX, DSE LM.

SH & LM-AA.

SH-M GY, GY-GRN, REDISH-
BRN, w/ SCATT CRM LM.

SH & LM-AA.

PAWNEE
4109 (-1766) SMPL
4104 (-1761) LOG

SH & LM-AA. INC IN LM-
CRM, LT GY. FX. DSE.

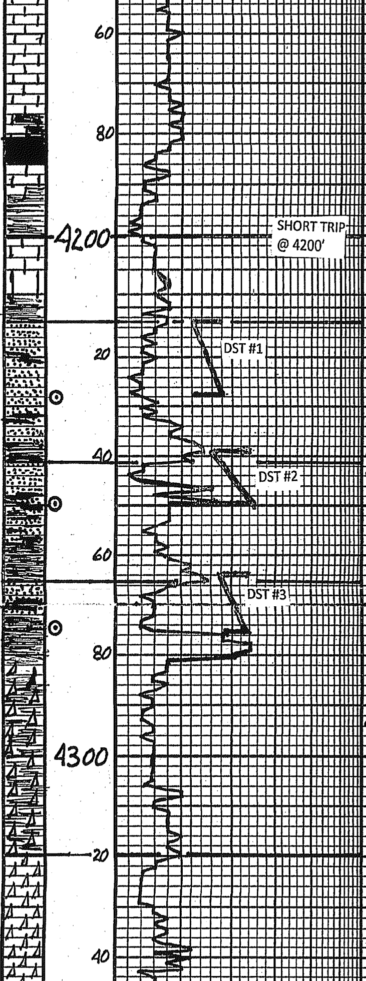
LM-LT→M GY. FX. DSE
w/ SCATT WH CHK.

LM-CRM, LT GY. FX. DSE. w/
CHT-LT GY. OPQ. SHP. DSE.
SH-RED-BRN.

MUD @ 4125:
8.9 WT, 56 VIS, 9.2 FILT,
5000 CHLOR, 2# LCM

LM & CHT-AA. CHKY IN PT.

LM-CRM, LT GY. FX. DSE→
CHKY w/ CHT-LT GY→
GY-TN, OPQ. SHP. DSE.



LM & CHT - AA. w/ SH - GY - GRN, REDISH & BRN.

LM, CHT & SH - AA.

LM, CHT & SH - AA. SH - M → DK GY, GY - GRN, RED, REDISH - BRN. ABD BLK, CARB SH.

SH - DK GY → BLK, CARB.

SH - AA.

LM - CRM, LT GY, FX, DSE.

LM - AA. SCATT LT GY, OPQ, SHP, DSE CHT.

RARE SD CLUST'S, ANG → SUBRD, VFG, HD → FRI, V DULL FLUOR, NO SO. COUPLE W RD, CLR QTZ GRNS, ABD LG LOOSE GRNS & WK ODOR IN 60" SMPL.

SH - GY, GRN, RED, w/ SCATT GY, TN DSE LM. SCATT GY, GY - TN OPQ, DSE CHT.

SH - GY, GY - GRN, BRN w/ SCATT LM - CRM, FX, DSE.

SD - WH → GY, FG, SUB - RD → RD, M → W SRT, FRI, FR INT GRN Ø, FR SHO FGO, ABD LG, LOOSE RD GRNS.

PREDOM SH - GY, GRN, MAROON.

SH - AA w/ SCATT VARICOL CHT. SCATT LM - LT → M GY, FX, DSE. ABD SD - WH, FG, SUB - RD, TITE, HD, NS.

SD - WH → GY, FG, ANG → SUB - RD, FRLY SRT, FRI w/ PR SHO DK FO. NUMEROUS LG ANG → RD CLR QTZ GRNS

SH - DK GY, DK GRN, DK RED, w/ TR LM - LT → M GY, FX, DSE, HD.

CHT - CRM, LT → M GY, GY - TN OPQ, SHP, DSE, FEW PCS DEVIT.

CHT - AA. w/ GY, GRN, RED SH, TR M → DK GY, FX, DSE LM.

CHT - CRM → VARICOL, OPQ, SHP DSE, w/ ABD RED, GY, GRN SH.

CHT - CRM, OPQ, SHP, DSE, TR DULL YELL CHT.

CHT - WH, OPQ → LT GY, SEMITRSL, SHP, DSE.

CHT - AA.

CHT - AA.

FT. SCOTT
4200 (-1857) SMPL
4195 (-1852) LOG

CHEROKEE 'A' SS
4213 (-1870) SMPL
4206 (-1863) LOG

PIPE STRAP @ 4228':

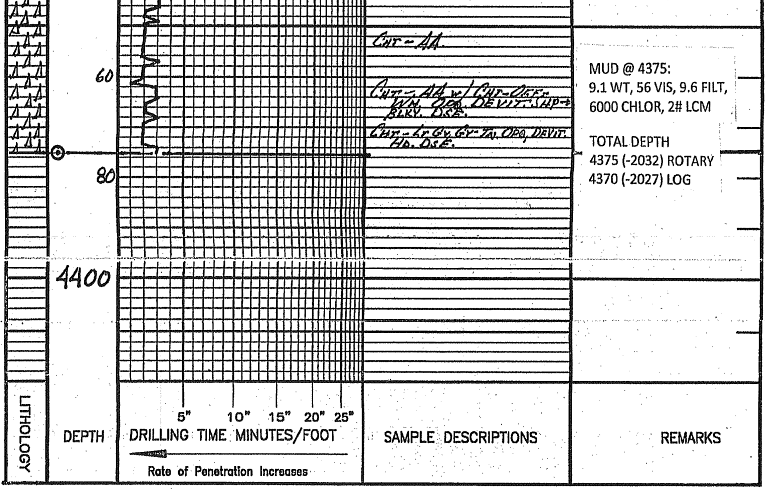
4237.51	STRAP
4235.66	BOARD
1.85	LONG

CHEROKEE 'B' SS
4241 (-1898) SMPL
4235 (-1892) LOG

MUD @ 4250:
9.0 WT, 54 VIS, 8.5 FILT, 5000 CHLOR, 2# LCM

CHEROKEE 'C' SS
4265 (-1922) SMPL
4258 (-1915) LOG

MISSISSIPPIAN
4320 (-1977) SMPL
4316 (-1973) LOG



CHT - AA.

CHT - AA w/ CHT-OFF-WH, OPQ, DEVIT. SHP-& BLKY, DSE.

CHT - LT GY, GY-TN, OPQ, DEVIT. HD, DSE.

MUD @ 4375:
9.1 WT, 56 VIS, 9.6 FILT,
6000 CHLOR, 2# LCM

TOTAL DEPTH
4375 (-2032) ROTARY
4370 (-2027) LOG

COMPANY: BEREXCO, LLC	**ELEVATION: 2343 KB**		
LEASE: CHAFF #8			
LOCATION: 1700' FSL & 2270' FWL	**SEC 21**	**TWP 16**	**RGE 21W**
COUNTY: NESS	**STATE: KS**		

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Berexco, LLC

2020 N. Bramblewood
Wichita KS 67206+1094

ATTN: Jerry Smith

21-16S-21W Ness KS

Chaff #8

Job Ticket: 64578 **DST#:1**

Test Start: 2018.08.07 @ 18:28:00

GENERAL INFORMATION:

Formation: **Cherokee 'A' Sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:22:30
Time Test Ended: 23:10:15

Interval: 4213.00 ft (KB) To 4228.00 ft (KB) (TVD)
Total Depth: 4228.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

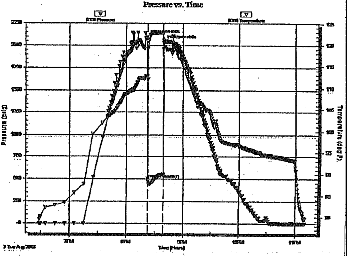
Test Type: Conventional Bottom Hole (Initial)
Tester: Spencer J. Staab
Unit No: 84

Reference Elevations: 2343.00 ft (KB)
2336.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8368 **Inside**

Press@RunDepth:	psig @ 4214.00 ft (KB)			Capacity:	8000.00 psig
Start Date:	2018.08.07	End Date:	2018.08.07	Last Calib.:	2018.08.07
Start Time:	18:28:00	End Time:	23:10:15	Time On Btm:	2018.08.07 @ 20:22:15
				Time Off Btm:	2018.08.07 @ 20:40:00

TEST COMMENT: 15-IF-Strong Blow ; BOB 45 secs; Built to 100"
Pulled tool



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2093.83	112.75	Initial Hydro-static
1	508.62	112.00	Open To Flow (1)
17	554.07	122.70	Shut-In(1)
18	2030.42	121.01	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1000.00	GW 5%G 95%W	14.18
200.00	MW 50%M 50%W	2.84

Gas Rates

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

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Berexco, LLC

2020 N. Bramblewood
Wichita KS 67206+1094

ATTN: Jerry Smith

21-16S-21W Ness KS

Chaff #8

Job Ticket: 64579 **DST#: 2**

Test Start: 2018.08.08 @ 05:41:00

GENERAL INFORMATION:

Formation: **Cherokee 'B' Sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 08:01:15
Time Test Ended: 12:37:00

Interval: 4239.00 ft (KB) To 4250.00 ft (KB) (TVD)
Total Depth: 4250.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)
Tester: Spencer J. Staab
Unit No: 84

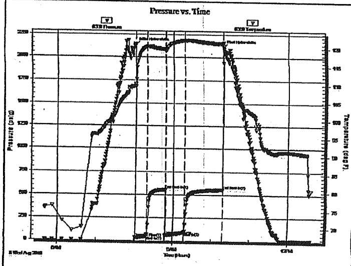
Reference Elevations: 2343.00 ft (KB)
2336.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8368 **Inside**

Press@RunDepth: 89.33 psig @ 4240.00 ft (KB)
Start Date: 2018.08.08 End Date: 2018.08.08
Start Time: 05:41:00 End Time: 12:37:00

Capacity: 8000.00 psig
Last Calib.: 2018.08.08
Time On Btm: 2018.08.08 @ 08:01:00
Time Off Btm: 2018.08.08 @ 10:18:45

TEST COMMENT: 15-IF-Weak; Built to 1&3/4"
30-ISI-No Return
30-FF-Weak; Built to 1&1/2"
60-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2132.15	110.09	Initial Hydro-static
1	29.31	109.46	Open To Flow (1)
18	47.97	120.32	Shut-In(1)
47	558.44	119.62	End Shut-In(1)
48	57.68	119.19	Open To Flow (2)
77	89.33	122.10	Shut-In(2)
137	559.02	121.27	End Shut-In(2)
138	2110.11	120.71	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
130.00	MW 50%M 50%W	1.84
15.00	SOCWM 3%O 39%W 58%M	0.21
15.00	Clean Oil 100%O	0.21
0.00	63 GIP 100%G	0.00

* Recovery from multiple tests

Gas Rates

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

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Berexco, LLC

2020 N. Bramblewood
Wichita KS 67206+1094

ATTN: Jerry Smith

21-16S-21W Ness KS

Chaff #8

Job Ticket: 64580 **DST#: 3**

Test Start: 2018.08.08 @ 19:07:00

GENERAL INFORMATION:

Formation: **Cherokee 'C' Sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:03:30
Time Test Ended: 00:41:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Spencer J. Staab
Unit No: 84

Interval: *4264.00 ft (KB) To 4275.00 ft (KB) (TVD)*
Total Depth: 4275.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

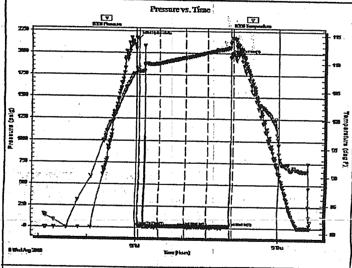
Reference Elevations: 2343.00 ft (KB)
2336.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8368 ***Inside***

Press@RunDepth: 22.68 psig @ 4265.00 ft (KB)
Start Date: 2018.08.08 End Date: 2018.08.09
Start Time: 19:07:00 End Time: 00:41:00

Capacity: 8000.00 psig
Last Calib.: 2018.08.09
Time On Btm: 2018.08.08 @ 21:03:00
Time Off Btm:

TEST COMMENT: 30-IF-Weak Surface; Died; Flushed tool; No Help
30-ISI-No Return
30-FF-NO Blow
30-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2158.37	109.23	Initial Hydro-static
1	27.67	108.69	Open To Flow (1)
26	23.26	109.94	Shut-In(1)
59	27.67	111.03	End Shut-In(1)
60	24.01	111.02	Open To Flow (2)
87	22.68	111.90	Shut-In(2)
116	23.78	112.78	End Shut-In(2)
120	1999.79	114.59	Open To Flow (3)

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud 100%M	0.14

* Recovery from multiple tests

Gas Rates

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