

ROBERT STOLZLE

CONSULTING PETROLEUM GEOLOGIST

API# 001 2324

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DRILLING TIME AND SAMPLE LOG

OPERATOR: **Mikrol Oil, LLC**
 LEASE: **Patricia** WELL NO.: **1-34**
 FIELD: **Unnamed**
 LOCATION: **630'ENL, 1965'FWL (SENNENEM)**
 SEC.: **34** TWP: **105** RANGE: **16W1**
 COUNTY: **Rooks** STATE: **K5**
 API NO.: **15-163-24083-00-00**

CONTRACTOR: **Discovery Drilling-Rig #4**
 COMPLETED: **November 13, 2012** COMPLETED: **11/20/12**
 ROTARY TOTAL DEPTH: **3780'** LOG TOTAL DEPTH: **3782'**
 GEOLOGICAL SUPERVISION FROM: **3100'** to: **T.D.**
 MUD-UP DEPTH: **2810'** MUD TYPE: **Chemical/Biopolymer**

FORMATION	SAMPLE		LOG		STRUCTURAL ORGANISM
	TOP	THICKNESS	TOP	THICKNESS	
Stenocephal Anth.	1270	(+809)	1270	(+809)	-5'
Basal Anhydrite	1304	(+775)	1304	(+775)	-6'
Topoka Fm.	3011	(-932)	3015	(-936)	-10'
Haebner Sh.	3249	(-1170)	3252	(-1173)	-15'
Toronto ls.	3272	(-1193)	3272	(-1193)	-12'
Lansing Group	3292	(-1213)	3294	(-1215)	-13'
G. Lond. Positivity	3392	(-1313)	3392	(-1313)	-15'
Stark shale	3493	(-1414)	3495	(-1416)	-13'
Basal K. City gp.	3535	(-1456)	3534	(-1455)	-3'
Conglomerate zone	3568	(-1489)	3569	(-1490)	-8'
Simpson ss.	3630	(-1551)	3631	(-1552)	-6'
Alpuck ls. Fm.	3662	(-1583)	3665	(-1586)	-16'
Total Depth	3780		3782		

ELEVATIONS
 KB **2079**
 GL **2071**
 Measurements are all from KB

CASING RECORD
 SURFACE: **New 8 5/8"**
 @220KB, Pirc.
 PRODUCTION: **None, P+A.**

WIRELINE SURVEYS
 Weatherford:
 Photo Density & Comp.
 Neutron Array
 Induction Spectral
 GammaRay and
 Sonic Microresistivity Logs Etc.

LOCATION MAP

O Location	
Patricia 1-34	
34	

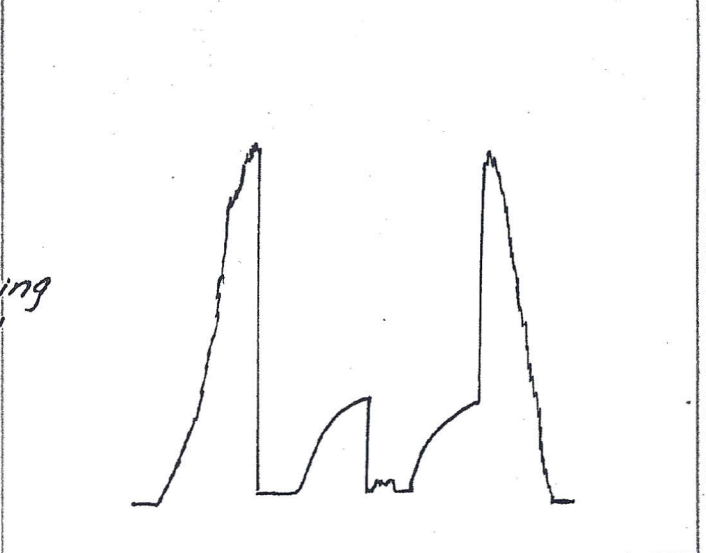
Reference Well for Structural Comparison: **Mikrol Oil Heberer #1-27 (N55E54S27)**
 Comments and Recommendations: **Recommended well to be plugged and abandoned.**

DST # 1 ZONE: Lansing 'C', 'D', 'E' and 'F' zones
 INTERVAL: 3313'-3390'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1678 psi	10' oil spotted
2. Initial Flow: Start	0	51 psi	Mud
3. Initial Flow: End	30	55 psi	
4. Initial Shut-in: End	60	491 psi	Blow Desc:
5. Final Flow: Start	0	59 psi	I.F. - 1/2" blow/drying
6. Final Flow: End	30	58 psi	I.S.I. - No blow
7. Final Shut-in: End	60	455 psi	F.F. - No blow
8. Final Hydrostatic			F.S.I. - No blow

BHT: 96°F
 Rv: _____

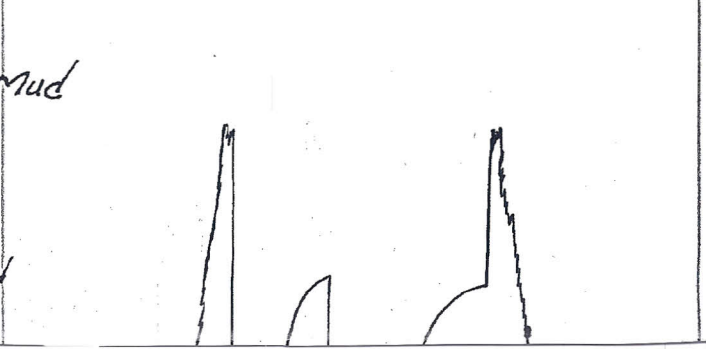
DST # 1 6752 Chert
 Interval: 3313'-90' Depth: 3382'



DST # 2 ZONE: Conglomerate & Simpson Sand
 INTERVAL: 3538'-3650'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1796 psi	45' Water Cut Mud
2. Initial Flow: Start	0	22 psi	(2% water)
3. Initial Flow: End	30	31 psi	
4. Initial Shut-in: End	60	1059 psi	Blow Desc:
5. Final Flow: Start	0	38 psi	I.F. - Surface blow
6. Final Flow: End	60	40 psi	I.S.I. - No blow

DST # 2 6752 Chert
 Interval: 3538'-3650' Depth: 3545'

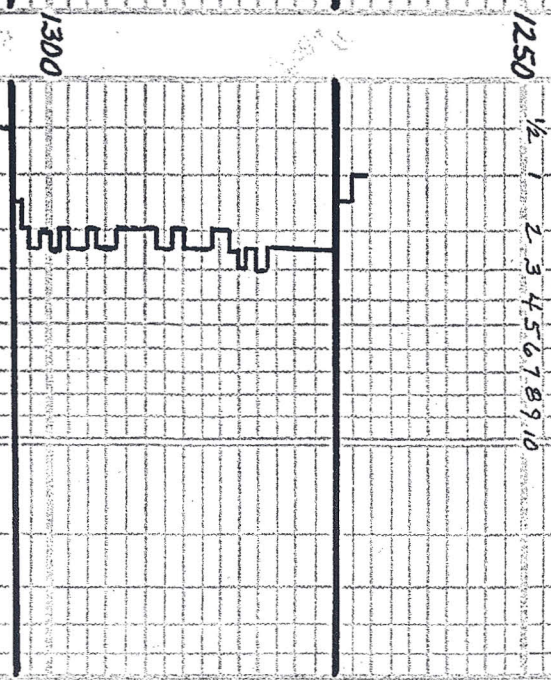


7. Final Shut-in: End 90 1027 psi E/E-Mk surf blow
 8. Final Hydrostatic 1797 psi RSI-No blow
 BHT: 97°F
 Rev: _____

1111
 2

Rate of Penetration
 (inches per foot)

1/2	1	2	3	4	5	6	7	8	9	10
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Stone Corral
 Anhydrite
 (+809')

Base of
 Anhydrite
 (+775')

Displace Native Mud System
 @ 1810'

2900

1350

1300

Start 1' Drilling Time
at 2950'

2950

3000

3050

3100

3150

Topok2 Fm.
(-932')

Start 10' Wet & Dry Samples
at 3106'

Ls: crm. - tan, hrd - m. sft. dns.,
VEG - mx ln., foss., Abun. sh.
stnc., tr. pr. pp. v. g. \emptyset
NSFOC

Ls: crm. - tan - gry., hrd - m. sft.,
VEG - mx ln., tr. mic., tr. chky.
tr. chky., foss. + sh. stnd.
NSFOC

Ls: A.A. NSFOC

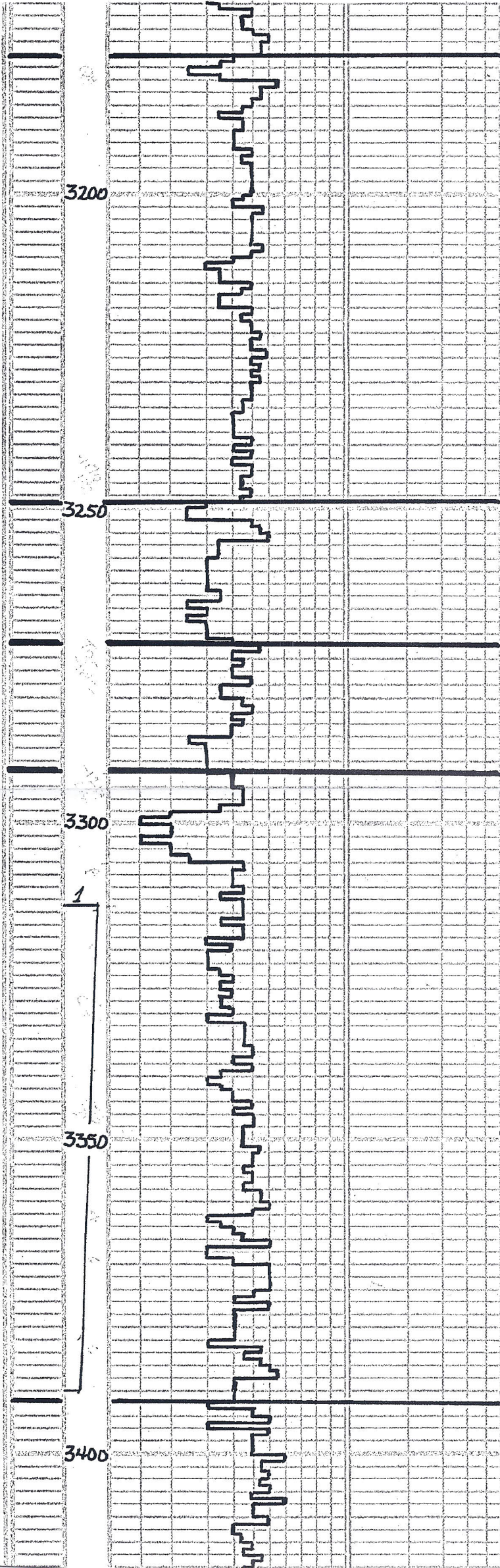
Sh. gry. - blk., m. sft. dns.,
partly, tr. carb.
occ. sh. A.A.

Ls: crm. - tan, hrd - m. sft. dns.,
VEG. v. ln., occ. foss. + sh. stnd.
occ. stnd. NSFOC

Ls: crm., hrd. dns., VEG - mx ln.,
mic., tr. carb., occ. foss. +
sh. stnd. NSFOC

Ls: crm., hrd., dns., mx ln., mic.
tr. chky., tr. dk. gry. carb.
rare foss. NSFOC

Ls: A.A. w/ Ls: tan - gry., m. hrd
- m. sft., foss., VEG. v. ln.,
sh. stnd. NSFOC



Ls. crm. - tan, lt. gry., m. sft. - hrd, dns., VEG - mxln., mic., tr. chb. foss. & sh. stnd. NΦ NSFDC
 Sh. gry. - blk., m. sft., dns., carb. earthy
 Ls. crm. - tan, m. hrd. - hrd, dns., VEG - mxln., mic. NΦ NSFDC
 Shi. A. A.
 Ls. crm. - lt. gry., hrd. - m. sft. + chky., VEG - mxln., mic., occ. foss. & sh. stnd. NΦ NSFDC
 Ls. A. A. tr. chb., 1-2 pc. w/ VEG, pp. φ, v. wk. stn., wk. cut + fl., No. F. O., No. odor. v. wk. show
 Ls. A. A. NΦ NSFDC
 Sh. gry. - dk. gry., m. sft. - m. hrd. dns., tracky
 Ls. crm. - gry., hrd. - sft. + chky., VEG - mxln., foss. abun. sh. stn. NΦ NSFDC
 Ls. crm. - lt. gry., hrd. - m. sft., dns., VEG - mxln., tr. chb., tr. chky., abun. brn. sh. stn., occ. foss. NΦ NSFDC
 Ls. crm. - gry., hrd. - m. sft., dns., VEG - mxln., occ. foss. & sh. stnd. tr. mic. tr. chb. NΦ NSFDC
 occ. sh. dk. gry. - blk., m. sft., dns., carb., earthy.
 Ls. A. A. NΦ NSFDC
 Sh. gry., sft., clayey. - earthy
 Ls. crm. hrd., dns., VEG - mxln., foss. & sh. stnd. NΦ NSFDC
 tr. sh. A. A.
 Ls. crm., hrd., dns., VEG - mxln., mic. tr. chb., occ. foss. & sh. stnd. NΦ NSFDC
 Ls. crm., hrd., dns., tr. mxln. - mxln. tr. foss., occ. sh. stn. NΦ NSFDC
 Sh. gry., m. sft., dns., earthy
 Sh. gry., m. hrd., dns., earthy - tracky
 occ. Ls. A. A. NΦ NSFDC
 Ls. crm., hrd., dns., VEG - mxln., mic. v. rare foss. NΦ NSFDC
 Sh. lt. dk. gry., m. hrd. - sft. + clayey., earthy
 Shi. A. A. less clayey.
 Ls. crm., hrd., dns., VEG - mxln., occ. foss. & sh. stnd. NΦ NSFDC
 Shi. lt. gry. - rd. brn., sft. - m. sft. dns., earthy - clayey.
 Ls. crm. - tan, hrd., dns., VEG - mxln., mic., foss. NΦ NSFDC
 Ls. crm., hrd., dns., tr. mxln. - mxln., mic., chky., tr. pr. pc. w/ VEG, pp. vug. φ, lt. brn. stn., tr. wk. cut + fl., pp. int. ool. φ, wk. odor
 Ls. crm., hrd., dns., VEG - mxln., occ. foss., w/ tr. tr. - pr. vug. φ - some moldic φ, lt. stn., tr. cut + fl., wk. odor, No. F. O.
 Ls. wh. crm., hrd., dns., med. - veg. yln., occ. foss. + ool. w/ pr. VEG oom. φ + tr. vug. φ, lt. brn. mot. stn., wk. cut + fl., No. F. O., ? perm., wk. odor
 Ls. A. A. tr. chb., tr. chik. NΦ NSFDC
 Sh. dk. gry. - blk., m. sft. - m. hrd. dns., occ. carb., earthy
 Ls. crm. - gry., hrd. - m. sft., dns., VEG - mxln., mic., occ. foss. & sh. stn. tr. pr. vug. φ, mot. brn. stn., wk. cut + fl., wk. odor, No. F. O., ? perm.
 Ls. crm. - tan, hrd., dns., med. - VEG yln., occ. foss. + ool. w/ pr. - gd. vug. φ, mot. - unif. stn., wk. odor, No. F. O., gd. cut. + fl., thin zone
 Ls. A. A. w/ tr. vug. φ, lt. stn., gd. cut + fl., No. F. O., Fr. odor, ? perm., oom. φ
 Ls. crm. - wh., m. hrd. - hrd., dns., tr. ool. w/ pr. oom. φ NSFDC
 Ls. wh. crm. - tan, hrd., dns., VEG - mxln., mic. NΦ NSFDC

Queen Hill Shale (-1099')

4

Heebner Shale (-1170')

Toronto Ls. (-1193')

Lansing Group (-1213')

Weak Show

Weak Show

Very Weak Show

Fair - Good Show

G' Zone Porosity (-1313') Weak Show

Mudcheck @ 3390' Mwt. 8.9 lb. gal. Vis. 51 sec. / gc.

3450

3500

3550

3600

3650

Ls: crm. - tan, hrd., dns., VFG - mxln., occ. chiky. NΦ NSFOC
Sh: gry. grn. - dk. gry., m. hrd., dns., hackly
chl. 4,000 PPM
solids 4.2%
L.C.M. 1 1/2 lb./bb1

5

Ls: crm. - lt. gry., hrd., dns., VFG - mxln., mic., occ. sft. + chiky. tr. sh. stnd. NΦ NSFOC
Ls: crm. - tan - gry., hrd., dns., VFG - mxln., mic., occ. sft. + chiky., rare foss.

Ls: crm. - tan - gry., hrd. - sft. + chiky., VFG - mxln., occ. mic. rare foss. NΦ NSFOC

Ls: crm. - gry., hrd. - sft. + chiky., VFG - mxln., mic., tr. pol. + foss. wll - 2pc, pr. fr. Vug, moldic. φ, lt. stn., fr. cut + fl.
Ls: crm. - gry., hrd., dns., VFG - mxln., mic., 1-2 pc. wll VEG, Vug, φ, round. ob. l., lt. brn. stn., fr. cut + fl., wk. odor, no F.O.

Very weak show

Very weak show

Very weak show

Ls: A.A., 2-3 pc. wll, fr. - pr. oom, φ, 1 pc. in pool φ, lt. stn., tr. cut + fl., wk. odor, no F.O., v. perm.

Stark Shale (-1414)

Ls: A.A., sh. stnd., 2-3 pc. wll, fr. - pr. pp. Vug φ + show A.A.
Sh: dk. gry. - blk., m. sft. - m. hrd. dns., hack - earthy, carb.

Very weak show

Mud Check @ 3520' M.W. 8.7 V.S. 53

Ls: crm. - tan, hrd., dns., VFG - mxln., mic., tr. pyr., occ. ool. wll tr. pr. Vug φ wll, lt. brn. stn., fr. cut + fl., No odor, No F.O., v. perm.

Ls: crm. - tan, hrd. - m. sft. + chiky., VFG - mxln., mic., tr. pyr., occ. sh. stnd. NΦ NSFOC

chl. 8,000 Solids 2.4% L.C.M. 1 1/2 #

Sh: gry. - dk. gry., m. sft., earthy
Ls: crm. - tan, hrd., dns., VFG - mxln., mic., tr. pr. Vug φ, lt. brn. stn., No odor, No F.O., v. Very wk. show

Base of Ks. City Group (-1456')

Ls: crm. - tan, hrd. - m. sft. + chiky., VFG - mxln., mic., pyr., tr. foss. NΦ NSFOC
Ls: A.A., tr. sh. stnd. NΦ NSFOC
tr. ss: gry., tr. rd., dns., tr. VEG, pr. sft., v. w. emd. NΦ NSFOC

Conglomerate Zone (-1489')

Ls: crm. - hrd., dns., VFG - mxln., mic., sandy - v. sandy - calc. ss: VEG. NΦ NSFOC

Ls: A.A. wll Ls: tan - brn., hrd., dns., occ. rd. sh. stnd. NΦ NSFOC
tr. sh. rd. brn. - gry. grn., m. sft. earthy

Sh: rd. brn. - gry. grn., 2-3 ft. v. sft. + clayey, earthy
Ls: crm. - brn., hrd., dns., VFG - mxln., mic., dec. foss. NΦ NSFOC

Ls: crm. - tan, hrd., dns., VFG - mxln., mic., rd. sh. stnd., dec. pebb. surf. NΦ NSFOC

Sh: A.A.
Ls: crm. - gry., hrd., dns., VFG - mxln., tr. rd. sh. stn., tr. m. sft. + chiky., occ. v. sandy., tr. v. ool. + foss., tr. rd. sh. stnd. NΦ NSFOC

Sh: lt. gry. - rd. brn., sft., earthy - clayey, occ. sandy.
Ls: crm., hrd., dns., VFG - mxln., tr. rd. sh. stn., tr. ppl. NΦ NSFOC

Ls: A.A., dec. pebble surface, tr. brn. ch. NΦ NSFOC
Sh: maroon - rd. brn., m. sft. - v. sft. + clayey, dec. sandy, earthy

Sh: rd. brn. - mar. - gry., sft. + clayey - m. sft., earthy, occ. sandy.
Ls: A.A., tr. ss. wh. imp., dns., mod. w. sft., w. emd. NΦ NSFOC

Simpson Sandstone (-1551')

Cg: Sh: A.A., occ. Ls. + ch. rd. tr. ss: wh., hrd., dns., VFG, mod. - w. rd., w. sft., w. emd.
tr. blu. - grn. sh. No v. s. NΦ NSFOC

Cg: Sh: A.A., occ. v. lw. grn., occ. Ls. + ch. tr. ss: wh., hrd., dns., VEG, subrd., w. sft., w. emd. No v. s. NΦ NSFOC

Cg: Sh: rd. brn. - dk. gry., occ. v. lw. blu. - grn., m. sft. - m. hrd., occ. sandy, earthy - hackly.
Ls: A.A. CAVIAGS? NΦ NSFOC
Pbun. Cg: Sh: A.A.

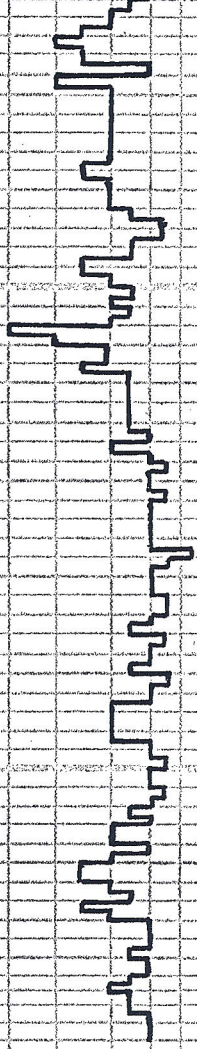
Arbuckle Fm. (-1583') Weak Show

Dol: crm. - m. hrd., dns., fuz. wll, occ. tr. int. φ, tr. Vug φ, tr. v. fr. sh., tr. cut + fl., wk. odor, poss. wet

3700

3750

3800



6

Dol: crm - tan, m. hrd., fn, xln, ool.
w/ qd. vug. oom. φ, fr: tr, int.
xln. φ, fr. ped. stn. some barren
φ, 1 qd. ool. φ, s.f.d., qd. cut & fl.

Fair Show

Dol: crm, m. hrd. - hrd. dns, fn,
xln, occ. qd. int xln, less vug.
φ, 1 occ. lt. stn. much barren
φ, fr - wk. cut & fl., looks wet

Very Weak Show

Dol: wh. - crm., hrd., dns, fn, xln
- mxln., occ. fr. - qd. int xln.
φ, 1 rare fr. oil stn., wk.
cut & fl., wet. V. Very Weak Show

Dol: crm - tan, m. stn - hrd., dns, fn -
VFG xln., occ. wh. che., occ.
sndy., occ. qd. vug. φ, fr. int.
xln. φ, tr. w/ wk. cut & fl., wet

Dol: crm - tan, hrd., fn, xln - mxln.
occ. wh. che., tr. ool. w/ oom. φ
v. pr. int xln. φ NSFOC

fr. pink. Dol.

Dol: crm - tan, hrd., dns, VFG -
mxln., occ. qd. vug. φ, fr.
int xln. φ, fr., occ. wh. che.
occ. pink. Dol. NSFOC

Mud Check @ 3733'

Dol: crm - tan, hrd., dns, fn, xln
- mxln., occ. qd. vug. φ, fr.
int xln. φ, tr. che., tr. pink
occ. sndy. NSFOC

M.W. 9.0

Vis. 54

WL. 8.8

chl. 7.000

Solids 2.4%

L.C.M. 1#

Dol: crm., hrd., dns, fn - VFG xln.
occ. pr. int xln. φ, tr. vug. φ
occ. wh. ool. che.

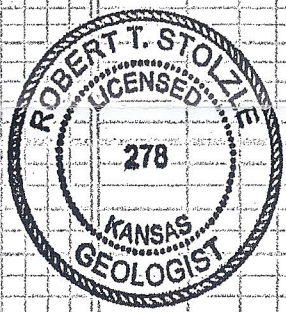
NSFOC

Dol: crm - tan, hrd., dns, VFG
xln., occ. qd. ex. vug. φ, 1
pr. int xln. φ, tr. che.
fr. red. Dol, fr. sndy NSFOC

D.T.D. 3780'

LTD 3782'

Dol: crm - tan, hrd., dns, VFG -
mxln., occ. qd. ex. vug. φ, 1
fr. pr. int xln. φ, tr. wh. che.
fr. sndy. NSFOC



Robert Stolzie
11/20/12