

# ROBERT STOLZLE

## CONSULTING PETROLEUM GEOLOGIST

APPG Cert. 53244

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### DRILLING TIME AND SAMPLE LOG

OPERATOR: **Murfin Drilling Co., Inc.**

LEASE: **Phillips Unit** WELL NO.: **1-19**

FIELD:

LOCATION: **2520' ENL, 1740' FEL (SWSE SWNE)**

SEC.: **19** TWP: **14S** RANGE: **16W**

COUNTY: **Ellis** STATE: **KS**

API NO.: **15-051-26296**

CONTRACTOR: **Murfin Drilling Co., Rig # 21**

CONCEDED: **10:15 AM 4/11/12** COMPLETED: **4/18/12**

ROTARY TOTAL DEPTH: **3550'** LOG TOTAL DEPTH: **3551'**

LOG-UP DEPTH: **2610'** LOG TYPE: **Chemical Polymer**

GEOLOGICAL SUPERVISOR NAME: **2790'** LOG: **T.D.**

FORMATION: **Stone Corral Anhy. 1075 (+857) 1068 (+864) -6'**  
**Base of Anhydrite 1115 (+817) 1106 (+826) -2'**

**Topoka Fm. 2896 (-964) 2898 (-966) -7'**  
**Heabner-Shale 3146 (-1214) 3148 (-1216) -4'**  
**Toronto L.S. 3167 (-1235) 3166 (-1234) -3'**

**Lansing Group 3194 (-1262) 3196 (-1264) -4'**  
**Star-K Shale 3391 (-1459) 3391 (-1459) -5'**  
**Base K.S. City Gp. 3427 (-1495) 3429 (-1497) -6'**

**Abucicle Fm. 3447 (-1515) 3448 (-1516) -12'**

**Total Depth 3550 3551**

### ELEVATIONS

KB **1932**

GL **1921**

Measurements are all from KB

### CASING RECORD

SURFACE: **8 5/8", 23#**

@ **270' WILLIAMS AIR**

PREDICTED: **None - P.A.**

### WIRELINE SURVEYS

**Log-Tech**  
**Dual Compensated**  
**Forosity, Dual**  
**Induction, BHC**  
**Sonic and**  
**Microradiosity**  
**Logs were run.**

LOCATION NO.	LOG DATE
	LOG DATE: <b>PH 11/1905</b>
	<b>190 1-19</b>

Reference Well for Structural Comparison: **Murfin Phillips ut. 1-18 SE 1/4 18**  
 Comments and Recommendations: **Recommended well be plugged and abandoned**

DST # **1** ZONE: **Lansing 'A' - 'D' Zones**  
 INTERVAL: **3175' - 3255'**

DST # **1** **8372** Chert  
 Interval: **3175-3255** Depth: **3178'**

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1565 psi	200' Total Recovery
2. Initial Flow: Start	0	21 psi	20' Heavy Oil + Gas Cut Mud
3. Initial Flow: End	30	70 psi	(10% Gas, 30% Oil)
4. Initial Shut-in: End	60	650 psi	60' Oil Cut Mud
5. Final Flow: Start	0	76 psi	(10% Oil)
6. Final Flow: End	60	123 psi	120' Oil cut watery Mud
7. Final Shut-in: End	90	647 psi	(10% Oil, 20% Water)
8. Final Hydrostatic		1507 psi	Deviation 3/4°
BHT: <b>99°F.</b>		Blow Desc.	STRAP .01 short
Rv: <b>N.A.</b>		I.E. - 1 1/2"	
		I.S.T. - No blow	
		F.F. - 1"	
		F.S.I. - No blow	



DST # **2** ZONE: **Lansing 'E', 'F' & 'G' Zones**  
 INTERVAL: **3256' - 3300'**

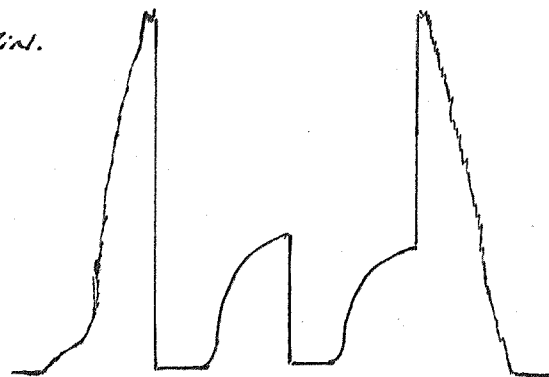
DST # **2** **8372** Chert  
 Interval: **3256' - 3300'** Depth: **3260'**

Pressures: Time Press. RECOVERY

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1611 psi	65' Drilling Mud
2. Initial Flow: Start	0	20 psi	
3. Initial Flow: End	30	33 psi	I.F. - 1" blow died in 18 min.
4. Initial Shut-in: End	60	614 psi	I.S.I. - No blow
5. Final Flow: Start	0	39 psi	F.F. - No blow
6. Final Flow: End	30	45 psi	F.S.I. - No blow
7. Final Shut-in: End	60	568 psi	
8. Final Hydrostatic		1591 psi	

BHT: 97°  
Rv: \_\_\_\_\_

Note: I.F. 37 min.  
Rotary Chain  
Broke

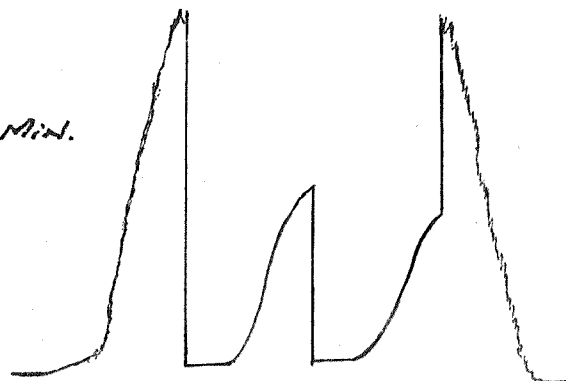


DST # 3 ZONE: LKC 'H', 'I', 'J' & 'K' Zones  
INTERVAL: 3315'-3420'

DST # 3 8372 Chart  
Interval: 3315'-3420' Depth: 3319'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1695 psi	80' slightly Oil + Gas Cut Mud
2. Initial Flow: Start	0	31 psi	(5% gas, 5% oil)
3. Initial Flow: End	30	53 psi	
4. Initial Shut-in: End	60	877 psi	
5. Final Flow: Start	0	55 psi	I.F. - Blow died in 20 min.
6. Final Flow: End	30	67 psi	I.S.I. - No blow
7. Final Shut-in: End	60	753 psi	F.F. - Surface blow
8. Final Hydrostatic		1614 psi	F.S.I. - No blow

BHT: 97°F  
Rv: \_\_\_\_\_

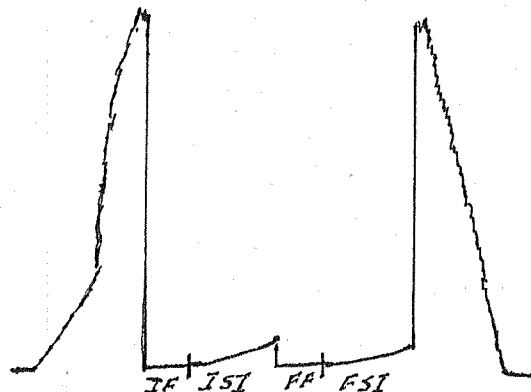


DST # 4 ZONE: Arbuckle Fm.  
INTERVAL: 3406'-3450'

DST # 4 8372 Chart  
Interval: 3406'-3450' Depth: 3410'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1741 psi	20' Drilling Mud
2. Initial Flow: Start	0	24 psi	
3. Initial Flow: End	30	28 psi	
4. Initial Shut-in: End	60	147 psi	
5. Final Flow: Start	0	33 psi	I.F. - Died in 6 min.
6. Final Flow: End	30	36 psi	I.S.I. - No blow
7. Final Shut-in: End	60	92 psi	F.F. - No blow
8. Final Hydrostatic		1677 psi	F.S.I. - No blow

BHT: 97°F  
Rv: \_\_\_\_\_



DST # 5 ZONE: Arbuckle Fm.  
INTERVAL: 3447'-3460'

DST # 5 8372 Chart  
Interval: 3447'-3460' Depth: 3448'

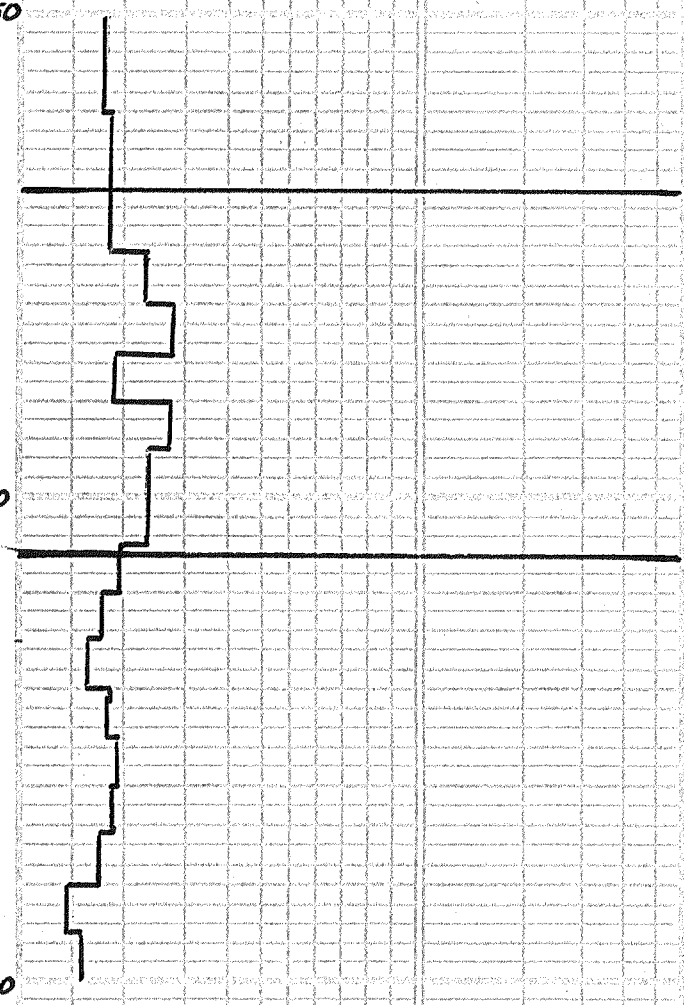


1050

1100

1150

2750



5' Drilling Time

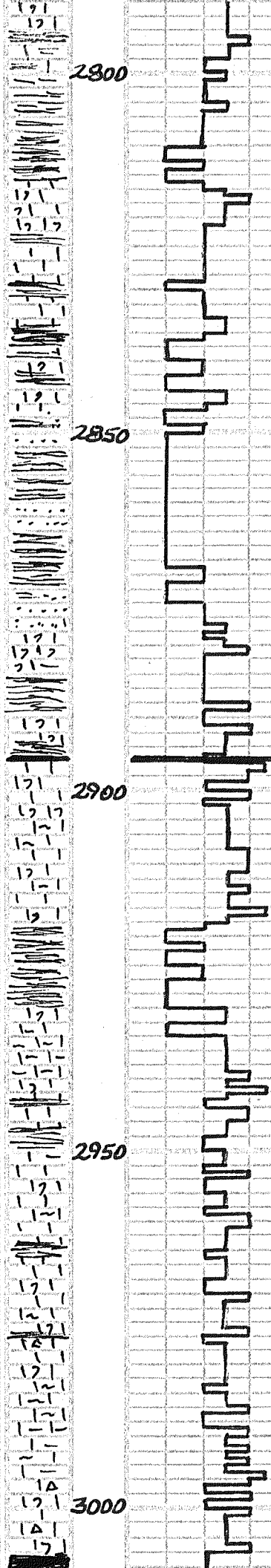
Stone Coral  
Anhydrite  
(+864')  
(log top)

Base of  
Anhydrite  
(+826')  
(log top)

Displace Mud  
System at  
2610'

WE. ON BIT 35,000#  
R.P.M. 80  
PUMP. PRESS. 750 PSI.

start 10' samples and  
1' drilling time at 2790'



2800

2850

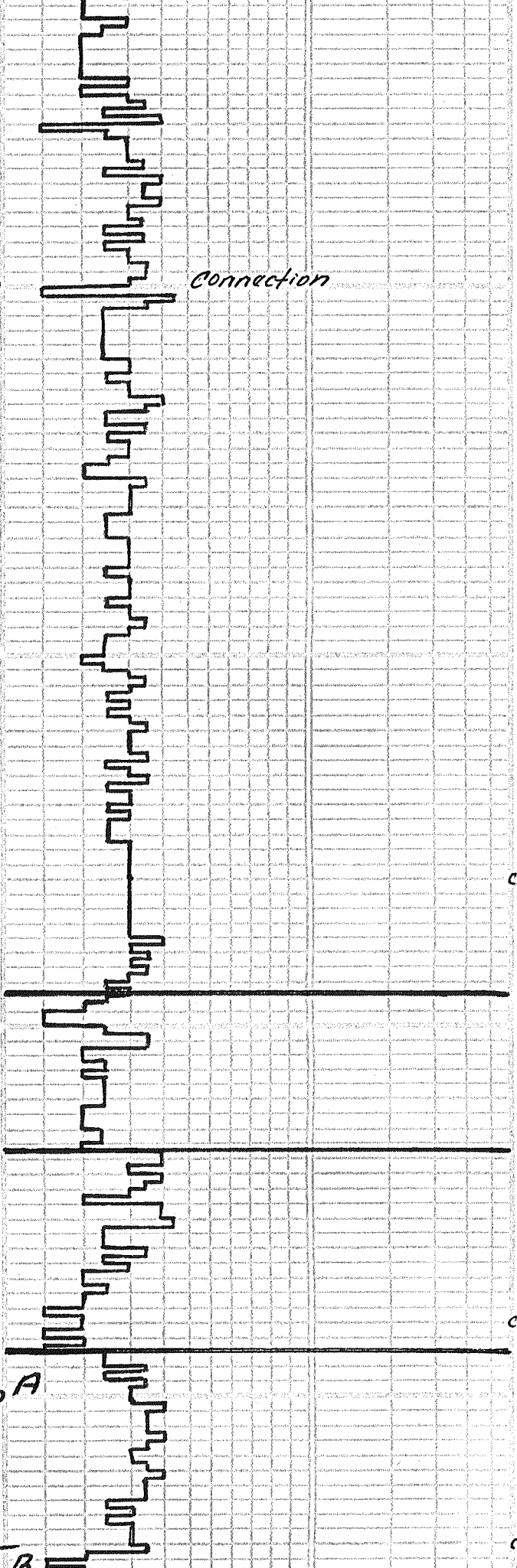
2900

2950

3000

Sh. gry. 1st. , stly, mica, earthy  
 Occ. Ls. crm-brn., m. hrd., dns.,  
 fn. xln., foss., tr. glauc. NØ NSFOC  
 Sh. lt.-dk. gry. 1st. - v. stly. clay.  
 Occ. stly-sndy, earthy  
 Ls. crm-brn., m. hrd-hrd., dns.,  
 xln., occ. foss. NØ NSFOC  
 Sh. gry.-dk. gry., v. stly. m. stly.,  
 stly-clayey, earthy  
 Ls. crm-brn., hrd.-m. stly., dns.,  
 fn. xln.-mxln., foss. NØ NSFOC  
 Sh. A.A.  
 Ls. crm.-tan-lt. gry., m. stly.-hrd.,  
 dns., fn. xln.-mxln., tr. mic., foss.,  
 tr. chky. NØ NSFOC  
 Ls. crm.-gry., m. hrd.-m. stly., dns.,  
 fn. vfg xln., foss. NØ NSFOC  
 Sh. lt.-dk. gry., v. stly. clayey,  
 m. stly., dns., earthy, stly.  
 tr. ss., gry., m. stly., vfg., tr. A., pr-  
 No vis. Ø, stly. NSFOC  
 Sh. A.A.  
 Ls. A.A.  
 tr. ss. A.A., ? Ø NSFOC  
 tr. Ls. crm.-gry., m. hrd., dns.,  
 vfg., foss. NØ NSFOC  
 Sh. gry.-dk. gry., stly., earthy  
 tr. Ls. A.A. ? cavings. NØ NSFOC  
 Sh. gry.-dk. gry., stly., stly-sndy.-  
 m. hrd., earthy, pyr.  
 Sh. A.A. tr. stly-sndy,  
 Ls. crm.-gry., m. stly.-hrd., dns., vfg.  
 -mxln., foss.-v. foss. NØ NSFOC  
 Occ. Sh. A.A., Pyr.  
 Ls. crm.-tan-prn.-gry., m. hrd.-  
 hrd., dns., fn. xln.-mic., occ. foss.  
 tr. sh. stnd. NØ NSFOC  
 Occ. Sh. gry.-dk. gry., m. stly., dns.,  
 earthy  
 Ls. crm.-gry., m. hrd., dns., occ.  
 foss. NØ NSFOC  
 Occ. Sh. A.A.  
 Ls. crm.-tan, tr. gry., m. hrd.,  
 dns.-m. stly., chky., occ. foss.  
 tr. sh. stnd. NØ NSFOC  
 Ls. crm., m. hrd.-m. stly., dns.,  
 vfg.-mxln., occ. foss. NØ NSFOC  
 Sh. lt.-dk. gry., m. stly.-stly., stly.-  
 sndy., earthy  
 Sh. A.A., less stly.-sndy  
 Ls. crm.-gry., m. stly., tr. chky  
 tr. foss., sh. stnd. NØ NSFOC  
 tr. Sh. A.A.  
 Ls. crm.-tan.-gry., m. stly., chky.-  
 hrd., dns., vfg.-mxln., foss.  
 + sh. stnd. NØ NSFOC  
 Ls. crm.-tan, hrd., dns.-stly., chky  
 Abun. sh. stnd., vfg.-mxln., occ.  
 foss. NØ NSFOC  
 tr. Sh. dk. gry., m. stly., earthy  
 Sh. lt.-dk. gry., stly.-m. hrd., clayey-  
 earthy  
 Ls. crm.-tan.-gry., stly., chky.-hrd., dns.  
 vfg.-mxln., occ. foss. + sh. stnd. NØ NSFOC  
 Ls. crm.-tan, hrd., dns., occ. stly.  
 + chky., occ. foss. + sh. stnd., vfg.  
 -mxln., tr. mic. NØ NSFOC  
 Sh. dk. gry., m. stly.-m. hrd., earthy  
 Ls. crm.-tan-lt. gry., hrd., dns.  
 fn. xln.-mxln., mic., occ. foss. +  
 sh. stnd. NØ NSFOC  
 Sh. A.A.  
 Ls. crm.-brn.-gry., hrd., dns.,  
 fn. xln.-mxln., mic., tr. chky,  
 foss., Abun. sh. stnd., tr. chky.  
 NØ NSFOC  
 Ls. A.A., 1-2 pc. vfg. p. Ø, dk. oil  
 stly., tr. cut + fl., v. perm.  
 No odor., No F.O.  
 Very weak show  
 Ls. crm.-brn.-gry., hrd., dns.,  
 occ. stly., chky., fn. xln.-mxln.,  
 Abun. sh. stnd., foss. NØ NSFOC

Topeka Fm.  
 (-964)



Ls: A. A. NΦ NSFOC  
sh. dk. gry. - blk., m. sft. - m. hrd.,  
dns., earthy. - hackly, tr. carb.  
sh. A. A., less carb.

Ls: crm. - tan - lt. gry. m. hrd., dns  
VFG - mxln., foss. + sh. stnd. NΦ NSFOC  
Ls: A. A., less foss. + sh. stnd.  
tr. mic., tr. chf. NΦ NSFOC  
tr. s. gry., m. sft. - sft., tr. A. VFG  
sft., No Vis. Φ NSFOC  
sh. gry. - dk. gry., sft. - m. hrd., dns.  
earthy - hackly

Ls: crm. - tan, hrd., dns., VFG - mxln.  
occ. foss., tr. sh. stnd. NΦ NSFOC  
Sh: gry. - dk. gry., m. sft., dns.,  
earthy - hackly

Ls: A. A., occ. sh. stnd., foss.  
NΦ NSFOC  
Sh: gry. - blk. - blk., m. hrd., dns.,  
earthy - fissile, tr. carb.

Ls: crm., hrd. - m. sft., dns., VFG -  
mxln., occ. foss. NΦ NSFOC  
Ls: A. A. NΦ NSFOC

Sh: dk. gry. - blk., m. hrd., dns.,  
hack. tr. carb.  
Ls: crm. - gry., m. sft. - hrd., dns.,  
VFG - mxln., foss., occ. sh. stnd.  
tr. chiky. NΦ NSFOC

Mud Check @ 3151'  
M.W. 9.1 lb/gal  
Vis. 51 sec/qt  
W.L. 8.0 ml/30 min.  
CHT. 6,800 ppm  
Solids 5.7%  
L.C.M. 3 lbs. / bbl.

Ls: crm. - tan, occ. gry., m. sft. - hrd.  
dns., VFG - mxln., mic., tr. chf.  
occ. foss., tr. sh. stnd. NΦ NSFOC

Sh: gry. - blk., m. sft., dns., earthy -  
hack., tr. carb.  
Ls: crm. - tan, sft. + chiky. - hrd., dns.  
VFG - mxln., occ. foss. NΦ NSFOC  
Sh: A. A.

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

DST # 1 3175-3255'  
30-60-60-90  
REL. 200' OCWM  
Dev. 3/4"  
STRAP .01' short

Ls: crm. - gry., hrd. - m. sft., dns.,  
VFG - mxln., tr. mic., tr. pyr.  
sh. stnd., tr. pyr. NΦ NSFOC  
Ls: A. A. NΦ NSFOC

Sh: gry. - blk., m. hrd. - m. sft., dns.  
earthy - hackly, occ. carb.  
Sh: A. A., mod. blk., carb.

Heebner Shake  
(-1214')

sh. gry. - lt. gry., m. sft., dns.,  
clayey - earthy  
Sh: A. A.  
Ls: crm. - tr. gry., hrd. - m. hrd., dns.  
VFG - mxln., mic., tr. sh. stnd.,  
tr. foss., tr. pyr. NΦ NSFOC

Toronto Ls.  
(-1235')

Ls: crm., hrd. - sft. + chiky., VFG  
- mxln., occ. foss. + sh. stnd.  
some looks like oil, NΦ NSFOC

Ls: A. A. tr. blk. chf. NΦ NSFOC  
Sh: gry. - dk. gry. - m. sft. -  
m. hrd., dns., earthy - hack.

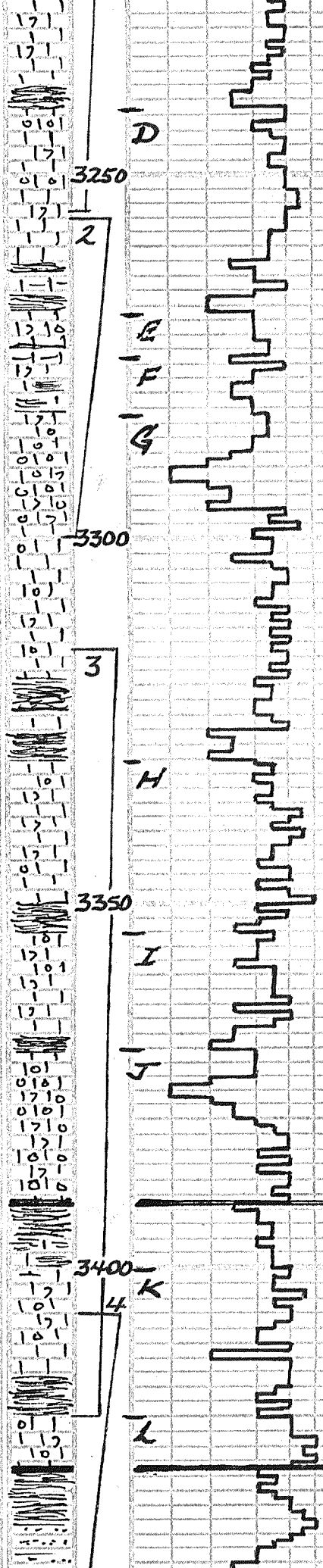
Sh: dk. gry. - blk., m. sft. - m. hrd., dns.  
hackly, tr. carb.  
Ls: crm., hrd., dns., VFG - mxln.,  
tr. foss., tr. sh. stnd. NΦ NSFOC

Lansing  
Group  
(-1262')

Ls: crm., hrd., dns., VFG - mxln., mic.  
tr. foss. 1/3-4 pc. VFG pp. Φ w/  
dk. tan. stn. V. wk. ood. wk. cut  
+ fl., No F. O. ? and very weak show  
Ls: crm., hrd., dns., tr. mxln. - mxln.  
tr. sft. + chiky., occ. foss., occ.  
sh. stnd., tr. dk. gry. ool.  
NΦ NSFOC

Ls: crm. - wh. sft. + chiky. - hrd., dns.  
mic., tr. VFG. mod. chf. w/  
wk. stn. tr. cut. fl. wk. ood.

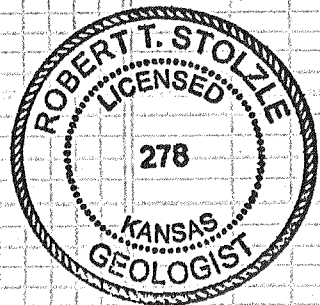
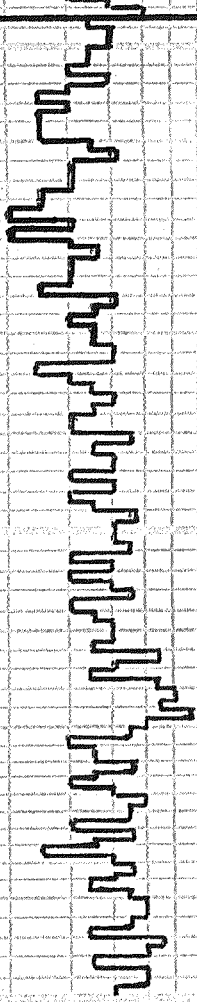
Weak Show



No F.O. v. ? perm.  
 Ls: A.A., 1 pc. w/  $\phi$  + show A.A.  
 1-2 pc. barren oom.  $\phi$   
 CFS Ls: crm, hrd., dns., VFG - mxln., mic.  
 fr. chiky, itr. foss. N $\phi$  NSFOC  
 Ls: crm., hrd.: m. stf., dns., VFG -  
 mxln., 3-4 pc. Vug. moldic  $\phi$   
 w/ lt. brn. stn., tr. odor, No F.O.  
 wk. cut + fl., some barren  $\phi$   
 Ls: A.A., N $\phi$  NSFOC  
 CFS Sh: dk. gry. - blk., earthy, carb.  
 Ls: crm, hrd., dns., VFG - mxln., mic.  
 occ. foss. N $\phi$  NSFOC  
 Ls: crm. - gry., hrd. - m. stf., mxln.  
 mxln., occ. mic., 2-3 pc. w/ fr.  
 pr. stn. Vug. moldic  $\phi$ , lt. brn.  
 stn., wk. cut + fl., v. ? perm.  
 Ls: A.A., occ. foss. N $\phi$  NSFOC  
 CFS Sh: dk. gry. - blk., m. hrd., occ. carb.  
 Sh: A.A., Ls: A.A. N $\phi$ , occ. chiky  
 Sh: gry. grn. - gry. m. stf., earthy  
 Ls: crm. - tan, hrd. - m. stf., dns.,  
 VFG - mxln., itr. foss., 1-2 pc.  
 ool., fr. chiky N $\phi$  NSFOC  
 Ls: crm., hrd. - stf., chiky, VFG - mxln.,  
 occ. foss. + ool., itr. barren oom.  $\phi$   
 occ. pr. Vug. moldic  $\phi$  w/ lt. dk. brn.  
 stn., itr. cut + fl., No odor, No F.O.  
 CFS Ls: crm., hrd., dns., VFG - mxln.  
 mic., rare foss. N $\phi$  NSFOC  
 Abundant red dk. sh. cavings  
 Ls: A.A., 1-2 pc. w/ pr. Vug.  $\phi$ ,  
 dk. stn., itr. cut + fl., No odor,  
 No F.O. v. ? perm.  
 Very weak show DST#3  
 Ls: crm., hrd., dns., VFG - mxln., mic.  
 fr. foss. N $\phi$  NSFOC 3315-3420'  
 30-60-30-60  
 Sh: gry. grn. - dk. gry., m. stf., dns.  
 earthy - hackly  
 Ls: crm. - wh. hrd., dns., VFG - mxln.  
 fr. foss. w/ 3-4 pc. Vug.  $\phi$   
 Around foss. grns., brn. stn., wk.  
 cut + fl., No odor, No F.O.  
 Ls: crm. - tan, hrd., dns., VFG -  
 mxln., mic., itr. foss. + ool. 1-2  
 pc. w/ barren Vug.  $\phi$   
 CFS Sh: gry. - dk. gry., m. stf. - m. hrd., dns.  
 hackly, occ. stn. - sandy mic.  
 Ls: crm., hrd., dns., VFG - mxln., itr.  
 hex. ool., itr. foss. + ool., 5-6 pc. w/  
 pr. Vug.  $\phi$ , lt. brn. stn., wk. odor  
 CFS wk. cut + fl., No F.O.  
 Sh: gry. grn. - dk. gry., m. stf. - m. hrd.  
 dns., earthy - hackly  
 Ls: crm. - wh., hrd. - m. stf., VFG - mxln.  
 occ. foss. + ool., occ. pr. - fr.  
 Vug. moldic  $\phi$ , 1 pc. gd. int. ool.  $\phi$   
 brn. - blk. stn., wk. odor, gd. cut + fl.  
 Ls: wh. - crm., hrd., dns., VFG -  
 mxln., mic., 3-4 pc. w/ pr. - fr.  
 fr. grnd. Vug. moldic  $\phi$ , A.A.  
 CFS wk. odor, wk. cut + fl., No F.O.  
 Sh: gry. - blk., m. hrd., dns., earthy  
 Ls: crackly, occ. carb. **Stark sh. (-1459)**  
 DST#4 3406'-50'  
 30-60-30-60  
 Rec. 20' Mud  
 Ls: crm. - wh., hrd., dns., VFG - mxln.,  
 occ. foss. + ool. w/ fr. pr. - fr.  
 Vug.  $\phi$  Around foss. grns., brn. - blk.  
 stn., fr. - wk. cut + fl., No odor, No F.O.  
 Ls: crm., hrd., dns., VFG - mxln., mic.  
 fr. foss. + ool. w/ 1-2 pc. int.  
 part.  $\phi$  + shows A.A. Very weak show  
 CFS Ls: crm., hrd. - stf. + chiky, occ. Base Ks. (EYGP.  
 foss. + ool., VFG - mxln., fr. pr. (-1495)  
 Vug.  $\phi$  1-2 pc. w/ dk. stn., wk.  
 cut + fl. - from above v. wk. show  
 Ls: A.A., ool. N $\phi$  NSFOC DST#5  
 3447'-3460'  
 30-60-30-60  
 Sh: brn. - rd. brn., dk. gry., stf. +  
 clayey - m. hrd., dns., earthy  
 fr. brn. ss. - fr., fr. sh. N $\phi$   
 Dol: tan - brn., hrd., dns., fr. mxln.  
 fr. Vug. moldic  $\phi$ , poss. VFG,  
 Oil SPERKS IN  
 Tool

reworked Arbuckle

3550  
3450  
3500  
3550



INTXIN  $\Phi$ , 14.5% stn., tr. yd. cut  
 + fl., fr. odor, No F.O., ? perm  
 CFS Dol: A.A., occ. m. st. + fr. in. tr.  
 med. tan. grnd xln w/ pr. INTXIN  
 $\Phi$ , wk. odor, tr. cut + fl., No F.O.  
 O Abul. Cong. sh. - CAVINGS?  
 CFS Dol: A.A. Abul. sh., occ. wh.  
 chb - tr. ool., occ. wh. chky  
 sp. ls. Dol: tr. tr. pr. Vug  $\Phi$   
 No odor, No F.O., wk. cut + fl.  
 CFS Dol: wh - tan, med. tan. in. tr.  
 st. wh. chky. A.A. occ. tr.  
 INTXIN  $\Phi$  + tr. qd. Vug  $\Phi$ , tr.  
 wk. stn, wk. cut + fl., No odor  
 CFS Dol: crm - tan, hrd. dns, INXIN,  
 tr. fr. Vug.  $\Phi$ , tr. pr. INTXIN  $\Phi$   
 occ. chky, tr. wh. ch. tr.  
 Sndy Dol. NSFOC  
 Dol: wh - crm - tan, hrd., dns.,  
 INXIN - MXIN, tr. pr. VEG Vug  $\Phi$   
 No INTXIN  $\Phi$ , occ. wh. ch.  
 N  $\Phi$  NSFOC  
 Dol: crm - tan, hrd., dns, INXIN -  
 MXIN, occ. wh. ch. tr.  
 pr. INTXIN  $\Phi$ , rare pr. Vug  $\Phi$   
 NSFOC  
 Dol: crm - tan, fr. pink, hrd., dns.  
 INXIN - MXIN, tr. pr. INTXIN  $\Phi$   
 1-2 pc. fr. Vug.  $\Phi$ , tr. ch.  
 NSFOC  
 Dol: crm - tan, hrd., dns., tan - VEG  
 xln, tr. wh. ch. occ. tr. pr.  
 Vug.  $\Phi$  1-2 pc. in qd. oil stn.  
 qd. cut + fl., No odor, No F.O.  
 Very WEAK Show  
 Dol: wh - tan, hrd., dns, INXIN  
 - MXIN, tr. ool. ch. tr. pr.  
 INTXIN  $\Phi$ , 1 tr. pr. Vug.  $\Phi$  1-2  
 pc. w/ brn stn. A.A. CAVINGS  
 Very WEAK Show  
 Dol: tan - crm, hrd., dns, INXIN - MXIN  
 tr. VEG INTXIN  $\Phi$  w/ brn - blk  
 stn. 2-3 pc. qd. cut + fl., No odor  
 No F.O., 11? perm. V. WEAK Show  
 CFS

Weak Show  
 An buckle Frm.  
 (-1515')  
 Weak Show

Very Weak Show

Very Weak Show

Mud Check @ 3460  
 M.W. 9.3  
 V.S. 47  
 V.L. 11.2  
 Chl. 18,300  
 Solids 7.1%  
 LCM. 1#

Very WEAK Show

Very WEAK Show

D.T.D. 3550'  
 L.T.D. 3551'

Robert Stolze  
 4/18/12