

ROBERT STOLZLE

CONSULTING PETROLEUM GEOLOGIST

AAPO CORP. # 3244

6211 G. 201st ST. W. Coonard, MN 55002 - 0269

(910) 704 - 3000

DRILLING TIME AND SAMPLE LOG

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

LEASE: **Sharp A'** WELL NO.: **1-3**

FIELD: **Wildcat**

LOCATION: **2200' FSL, 1650' FWW (5 1/2 NW 1/4 S4)**

SEC.: **3** TWP.: **18S** RANGE: **30W**

COUNTY: **Lane** STATE: **KS**

API NO.: **15-101-22487-00-00**

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

COMMENCED: **January 14, 2014** COMPLETED: **1/25/14**

ROTARY TOTAL DEPTH: **4680'** LOG TOTAL DEPTH: **4680'**

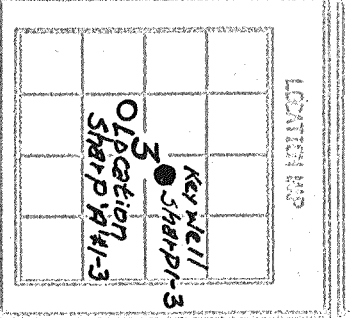
GEOLOGICAL SUPERVISION FROM: **3560'** to: **T.D.**

FORMATION	DEPTH		LOG		STRENGTH
	TOP	BASE	TOP	BASE	
Stonora G. / Anhydrite	2192	(+686)	2190	(+688)	-2'
Base of Anhydrite	2249	(+629)	2247	(+631)	-2'
Topeka Fm.	3662	(-784)	3662	(-784)	-3'
Hebner Shale	3902	(-1024)	3904	(-1026)	-5'
Lansing Group	3940	(-1062)	3939	(-1061)	-3'
G' Zone Porosity	4057	(-1179)	4054	(-1176)	-0-
Starb Shale	4217	(-1339)	4214	(-1336)	-3'
Base of City Gp.	4296	(-1418)	4296	(-1418)	-5'
Marmaton Gp.	4346	(-1468)	4349	(-1471)	-6'
Pawnee Ls.	4410	(-1532)	4411	(-1533)	+1'
Et. Scott Ls.	4463	(-1585)	4460	(-1582)	+1'
Cherokee Sh.	4482	(-1604)	4482	(-1604)	+1'
Mississippian	4554	(-1676)	4551	(-1673)	+16'
Miss. Spargan Fm.	4629	(-1751)	4626	(-1748)	-6'
Total Depth	4680		4680		

ELEVATIONS
KB **2878'**
CL **2867'**
Measurements are all from KB

CASING RECORD
SIZE: **8 5/8" 23#**
@ **223' KB, W/1755X**
PRODUCTION: **5 1/2" @**
4670' KB, W/1755X
EA-2

WIRELINE SERVICES
Pioneer Energy Services, BHL Sonic, Microseismicity, Dual Compensated Porosity and Dual Induction Logs were run.



Reference Well for Structural Comparison: **Murfin Sharp A-3 (approx SW 1/4 S4)**
Comments and Recommendations: **Recommended Completion for Oil**

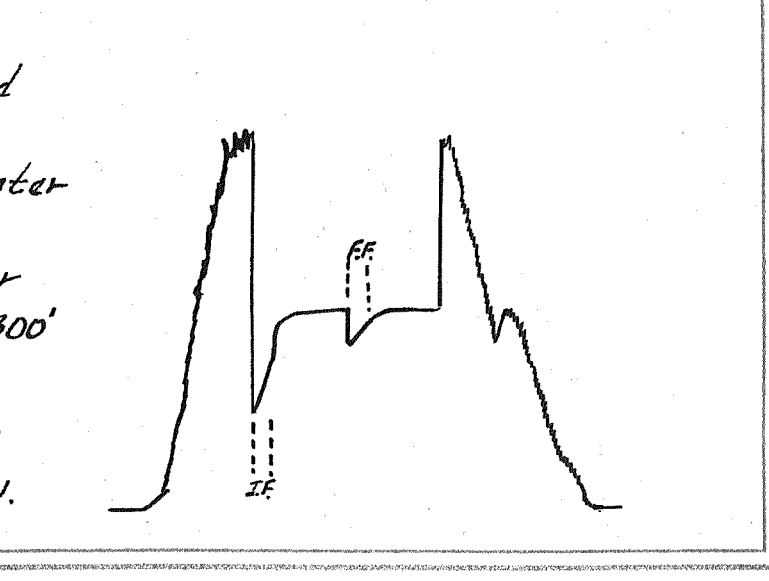
DST # 1 ZONE: L-KC'H, I+J' Zones
INTERVAL: 4085'-4210'

DST # 1 8675 Chart
Interval: 4085'-4210' Depth: 4086'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2035 psi	356' water + mud
2. Initial Flow: Start	0	523 psi	(50% mud)
3. Initial Flow: End	15	797 psi	252' Mud cut water
4. Initial Shut-in: End	60	1064 psi	(30% mud)
5. Final Flow: Start	0	878 psi	1692' salt water
6. Final Flow: End	15	998 psi	Total Recovery 2300'
7. Final Shut-in: End	60	1068 psi	Blow Desc:
8. Final Hydrostatic		1971 psi	I.F. - BOB 45 sec.

BHT: 122°F
Rv: .18 @ 82°F
Chlorides 30,000 ppm (Mud Filtrate 1600 ppm)

I.S.I. - No blow
E.F. - BOB 1 1/4 min.
F.S.I. - No blow



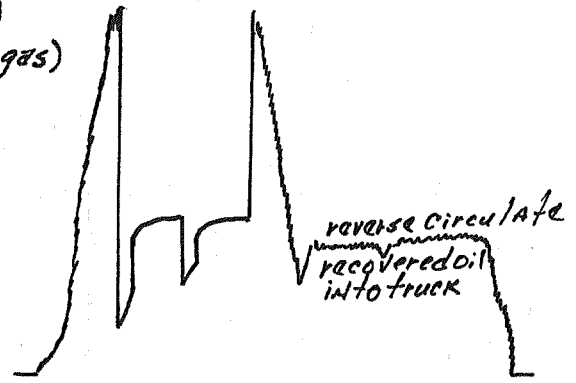
DST # 2 ZONE: Ks City L' Zone + Exline Ls.
INTERVAL: 4252'-4320'

DST # 2 8650 Chart
Interval: 4252'-4320' Depth: 4254'

Pressures:	Time	Press.	RECOVERY
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1. Initial Hydrostatic		2143	psi
2. Initial Flow: Start	0	231	psi
3. Initial Flow: End	15	464	psi
4. Initial Shut-in: End	60	912	psi
5. Final Flow: Start	0	499	psi
6. Final Flow: End	15	627	psi
7. Final Shut-in: End	60	897	psi
8. Final Hydrostatic		2124	psi

723' Gas in Pipe
 126' Gassy Oil (60% gas)
 1380.5' Gassy Oil (10-20% gas)
 123.5' Gas + Oil cut Mud
 (20% gas, 40% Mud)
 Total Recovery 1630'
 (34° gravity Oil)
 Blow Desc:
 I.F. - BOB 1 1/4 min.
 I.S.I. - BOB 14 min.
 F.F. - BOB - 1 sec.
 F.S.I. - 4 1/2" blow



BHT: 127°F

Rv: _____

DST # 3 ZONE: Marmaton A, B + C Zones

INTERVAL: 4342'-4410'

Pressures:	Time	Press.
1. Initial Hydrostatic		2234 psi
2. Initial Flow: Start	0	156 psi
3. Initial Flow: End	15	345 psi
4. Initial Shut-in: End	60	560 psi
5. Final Flow: Start	0	365 psi
6. Final Flow: End	15	445 psi
7. Final Shut-in: End	60	530 psi
8. Final Hydrostatic		2173 psi

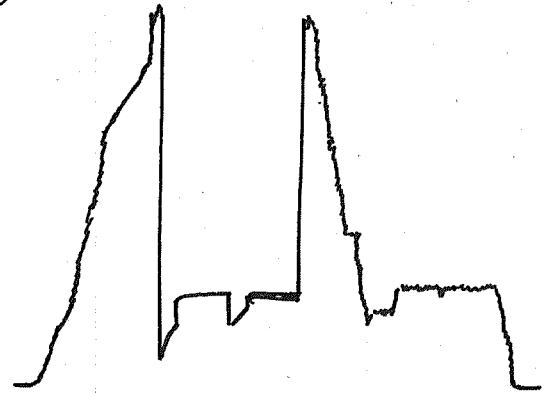
RECOVERY
 108' Gassy Oil (50% gas)
 907' Gas cut Oil (10% gas)
 123' Gas + Oil cut Mud
 (10% gas, 50% Mud)
 (35° gravity Oil)
 Total Recovery 1138'
 Blow Desc:
 I.F. - BOB 1 1/2 min.
 I.S.I. - BOB 8 1/2 min.
 F.F. - BOB 1 sec.
 F.S.I. - 2 1/2" blow

DST # 3

Interval: 4342'-4410'

8650 Chart

Depth: 4344'



DST # 4 ZONE: Upper + Lower Pawnee + Ft. Scott

INTERVAL: 4402'-4485'

Pressures:	Time	Press.
1. Initial Hydrostatic		2284 psi
2. Initial Flow: Start	0	29 psi
3. Initial Flow: End	30	62 psi
4. Initial Shut-in: End	60	1162 psi
5. Final Flow: Start	0	82 psi
6. Final Flow: End	60	115 psi
7. Final Shut-in: End	90	1116 psi
8. Final Hydrostatic		2238 psi

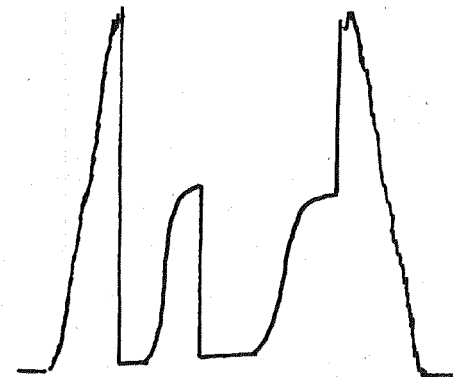
RECOVERY
 269' Gas in Pipe
 30' Gassy Oil (10% gas)
 244' Gas + Oil cut Mud
 (10% gas, 20% Oil)
 Total Recovery 274'
 Blow Desc:
 I.F. - BOB 22 min.
 I.S.I. - No blow
 F.F. - BOB - 33 min.
 F.S.I. - 5" blow

DST # 4

Interval: 4402'-85'

8650 Chart

Depth: 4404'



BHT: 123°F

Rv: _____

Oil is 43° API Gravity

DST # 5 ZONE: Charoake Ls. + Johnson Zone

INTERVAL: 4469'-4540'

Pressures:	Time	Press.
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RECOVERY

DST # 5

Interval: 4469'-4540'

8650 Chart

Depth: 4474'

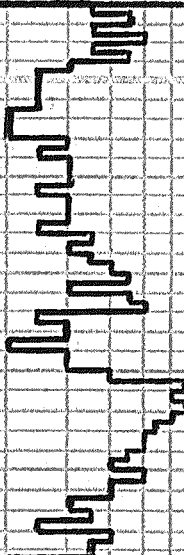
2150

Shallow hole drilled with
PDC bit



2200

stone Corral
Anhydrite
(+686')



2250

Base of
Anhydrite
(+629')



2300

Displace Mud system
at 3189'

3550

Strap Pipe @
3569', .41' long
to board
Deviation .40

Made bit trip for button bit
at 3569'

Start drilling time and 10'
wet and dry samples at 3570

Ls. gry. m. sft. hrd. dns. VFG-MXN.
foss. - v. foss. NΦNSFOC

Sh. gry. - dk. gry., sft. - m. sft., earthy
Sh. A. A., occ. hackly.

Mud Chack @ 3569'

M.W. 8.8 lb. / gal.

W.L. 54 sec. / qt.

Vis. 6 cc. / 30 min.

chl. 1200 ppm

Solids 3.5%

LCM. 4 lbs. / bbl.

Ls. crm. - gry. sft. - m. hrd. dns. VFG -
MXN. tr. chik. tr. sndy. - sft. -
foss. - v. foss. sh. std. NΦNSFOC

Ls. crm. - gry. v. sft. chiky. - m. hrd.
VFG - MXN. sh. std. foss. - v.
foss. tr. sndy. NΦNSFOC

tr. sh. dk. gry. m. sft. hack - earthy
Ls. crm. - gry. sft. chiky. tr. hrd. dns.
mic. foss. - v. foss. sh. std. sh.
pellets. NΦNSFOC

tr. Sh. A. A.
Ls. P. A.

Sh. gry. - dk. gry. m. sft. - sft. -
earthy - hackly, occ. sndy. - sft.

3600

Sh. A. A. more sft.

Ls. crm. - TAN - dk. gry. hrd. dns. -
VFG - MXN. foss. sh. std.
NΦNSFOC

Ls. gry. - TAN - crm. hrd. dns. VFG -
MXN. occ. foss. - v. foss. sh. std.
tr. sndy. NΦNSFOC

tr. sh. dk. gry. m. sft. hackly
Sh. A. A. tr. earthy

Ls. gry. - dk. gry. - crm. - TAN. hrd. -
dns. VFG - MXN. foss. sh. std. -
tr. sndy. - v. sndy. NΦNSFOC

Ls. A. A. more sndy. NΦNSFOC

3650

Sh. dk. gry. m. hrd. dns. hack -
earthy

Sh. A. A.

Ls. gry. - crm. hrd. - sft. dns. foss. -
sh. std. sndy. NΦNSFOC

Top of Fm.
(-784')

Ls. dk. gry. - crm. hrd. dns. VFG -
MXN. tr. mic. tr. v. foss. tr.
sndy. sh. std. NΦNSFOC

Ls. A. A. sh. more crm. NΦNSFOC

Sh. dk. gry. m. sft. - m. hrd. dns. -
hackly

Ls. gry. - crm. hrd. dns. VFG - MXN.
occ. foss. sh. std. NΦNSFOC

Sh. lt. - dk. gry. sft. chiky. sft.
- m. sft. earthy sndy

Ls. crm. sft. chiky. - hrd. dns. -
VFG - MXN. occ. foss. +ool. wll
qd - ex. oom. + moldic. Φ NSFOC

3700

Ls. crm. - gry. hrd. dns. VFG - MXN.
tr. chiky. occ. foss. +ool. wll. qd.
oom. Φ. occ. sh. std. NSFOC

Sh. dk. gry. m. hrd. dns. hackly

Ls. crm. - lt. gry. hrd. dns. VFG -
MXN. occ. chiky. foss. +ool. wll
pt. moldic. Φ. sh. std. NSFOC

Sh. gry. sft. - sft. - clayey - earthy
Sh. A. A. earthy, less clayey

Ls. crm. hrd. dns. - sft. chiky. -
VFG - MXN. occ. foss. +ool. wll. occ.
tr. pt. moldic. Φ NSFOC

Ls. crm. hrd. - sft. chiky. VFG - MXN.
foss. sh. std. tr. pt. pp. Φ
NSFOC

3750

Ls. crm. - TAN. hrd. dns. VFG - MXN.
occ. sft. chiky. foss. sh. std.
tr. pt. foss. moldic. Φ NSFOC

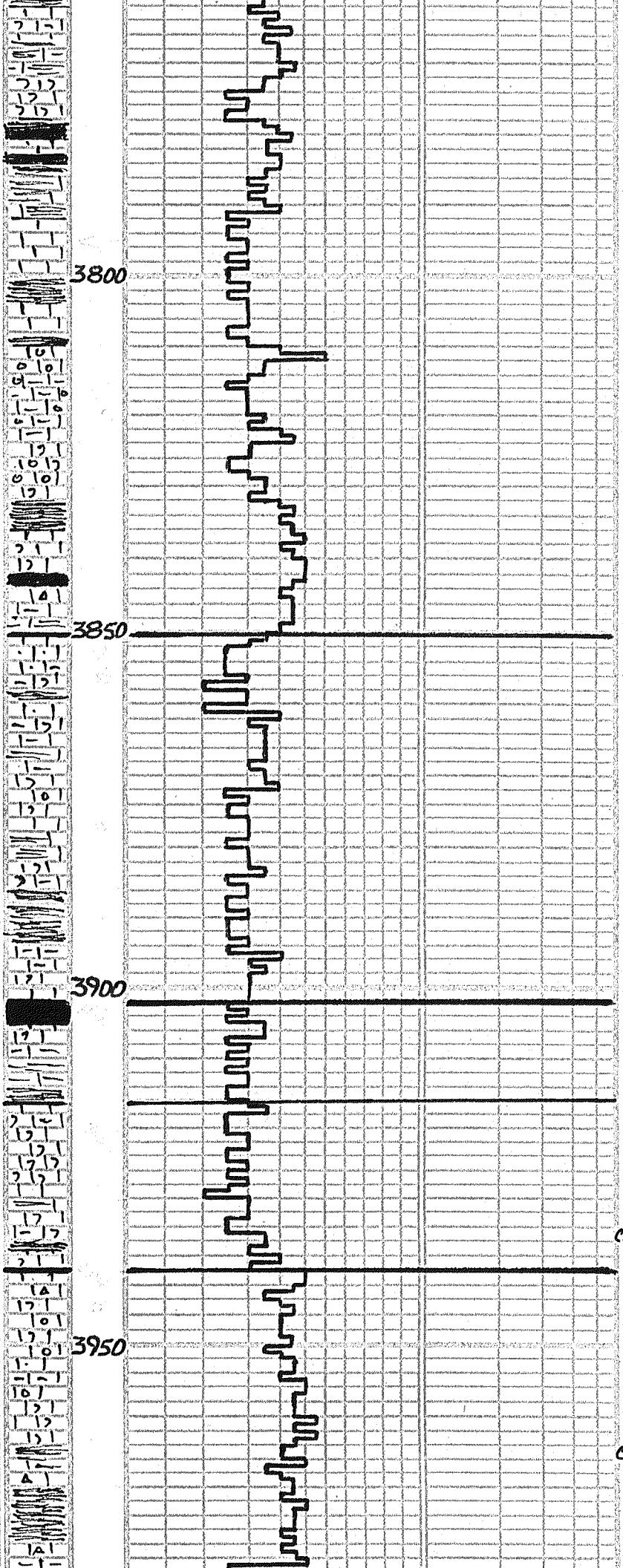
Ls. crm. - TAN. hrd. dns. VFG - MXN.
occ. sft. chiky. foss. sh. std.
tr. pt. foss. moldic. Φ NSFOC

Ls. crm. - TAN. hrd. dns. VFG - MXN.
occ. sft. chiky. foss. sh. std.
tr. pt. foss. moldic. Φ NSFOC

Ls. crm. - TAN. hrd. dns. VFG - MXN.
occ. sft. chiky. foss. sh. std.
tr. pt. foss. moldic. Φ NSFOC

Ls. crm. - TAN. hrd. dns. VFG - MXN.
occ. sft. chiky. foss. sh. std.
tr. pt. foss. moldic. Φ NSFOC

Ls. crm. - TAN. hrd. dns. VFG - MXN.
occ. sft. chiky. foss. sh. std.
tr. pt. foss. moldic. Φ NSFOC



Ls. crm. - tan-gry, m. hrd. - m. sft., dns.,
 VEG-mxln, occ. foss. + sh. stnd.
 occ. sandy NΦNSFOC
 sh. lt.-dk. gry. m. sft., hackly
 sh. A.A., occ. blk., carb., earthy
 Ls. crm.-gry., hrd.-m. sft., dns.,
 VEG-mxln, it. mic. occ. foss.
 v. foss. sh. stnd. NΦNSFOC
 Ls. crm.-gry., m. hrd.-sft., dns., VEG-
 mxln, foss. + ool. tr. pr. dom. φ, abun.
 sh. stn. it. sandy NSFOC
 sh. dk. gry. m. sft., sft., earthy-hack.
 Ls. A.A. NSFOC

sh. dk. gry. - blk., m. hrd.-sft., hackly,
 carb. porraceous
 tr. sh. A.A.
 Ls. crm., m. hrd.-m. sft., VEG-mxln,
 foss. + VEG ool. w/ occ. pr. - gr.
 dom. φ NSFOC
 Ls. crm., hrd.-sft., VEG-mxln, mic.,
 tr. chrt., occ. sft., chiky., occ. ool.
 qn. stn. w/ dom. + int. part. vug. φ
 tr. sh. A.A. NSFOC
 Ls. prm.-lt. gry., sft., chiky. - hrd.
 dns., mic., VEG-mxln, occ. v. foss.
 abun. sh. stnd. NΦNSFOC

Ls. A.A., tr. fr-pr. moldic. vug. φ
 NSFOC
 sh. dk. gry. - blk., m. sft.-m. hrd.,
 dns., hackly, carb.
 sh. A.A.

Ls. crm. - tan-gry., hrd., dns., VEG-
 mxln, mic. it. chrt., it. chiky., abun.
 sh. stn., tr. foss. moldic. φ NSFOC

Orcad Ls.
 (-972')

Ls. crm. - tan, hrd., dns. - sft., chiky.,
 VEG-mxln, it. chrt., occ. foss.,
 abun. sh. stnd., it. sandy.
 NΦNSFOC

Ls. crm. - tan-lt. gry., sft., chiky. -
 hrd., dns., mic., chrt., VEG-mxln,
 occ. foss., abun. sh. stn.
 NΦNSFOC

Ls. crm. - brn., m. sft., sft. chiky.,
 foss., sh. stn., w/ hrd., dns.,
 mic., mxln, occ. pr. moldic.
 vug. φ NSFOC
 Ls. A.A. NΦNSFOC

sh. dk. gry., m. hrd.-m. sft., dns.,
 hackly
 Ls. crm.-gry., sft.-hrd., VEG-mxln,
 abun. chiky., abun. sh. stnd., occ.
 foss. w/ tr. pr. pr. vug. φ NSFOC

Ls. A.A. NΦNSFOC

Heebner Shale
 (-1024')

sh. dk. gry. - blk., m. sft.-m. hrd., dns.,
 hackly, carb.
 sh. lt. gry. - blk., sft.-m. hrd., dns.,
 earthy-hack., occ. carb.

Ls. crm. - hrd. sft., chiky., mic. occ.
 foss. sh. stnd. NΦNSFOC
 Ls. crm. - tan, hrd.-sft., chiky., VEG-
 mxln, sh. stnd., foss. + v. foss. it.
 pr. int. part. vug. φ + tr. moldic. φ
 NSFOC

Toronto Ls.
 (-1038')

Ls. A.A., occ. lt. gry., sh. stnd., tr. v.
 pr. φ A.A. NSFOC
 Ls. crm., hrd., dns., mic., NΦNSFOC

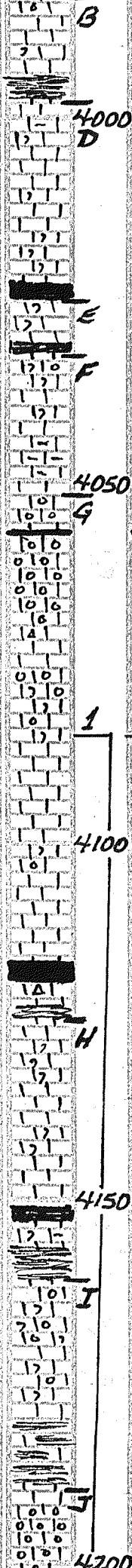
Lansing Group
 (-1062')

sh. lt.-dk. gry., sft., sft., earthy
 Ls. crm., hrd., dns., VEG-mxln,
 mic., tr. chrt., occ. foss. it. ool.
 w/ pr. vug. moldic. φ NSFOC

Ls. wh. - crm., hrd., dns., occ. sft. +
 chiky., VEG-mxln, mic., occ.
 foss. it. sh. stnd. NΦNSFOC

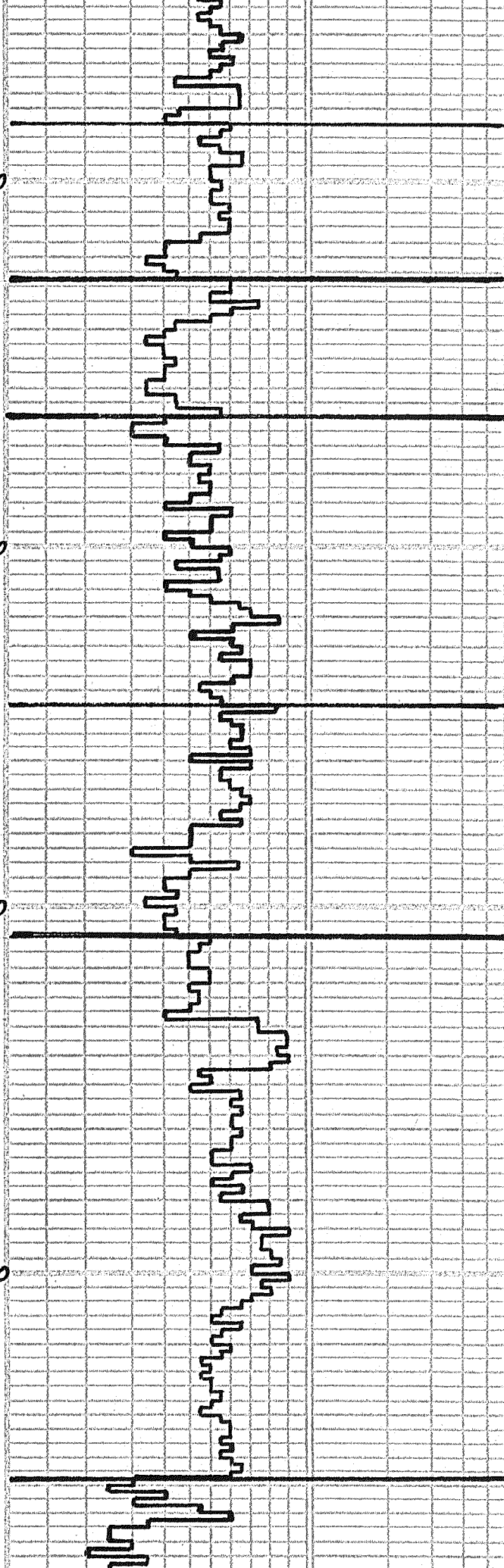
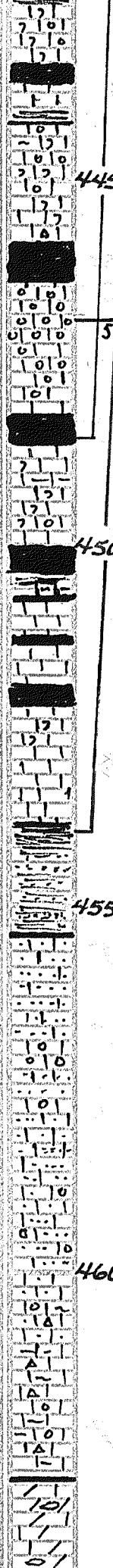
Ls. crm., hrd.-sft., chiky., tr. mic.,
 occ. foss. NΦNSFOC
 Ls. A.A., tr. ool., tr. sh. stnd. it.
 chrt., occ. chiky. NΦNSFOC
 sh. rd. brn., sft., clayey-dk. gry., m.
 sft. dns., hackly.

Ls. crm., hrd., dns., VEG-mxln, mic.
 tr. chrt., v. foss. NΦNSFOC



Ls. crm. - tan, hrd, dns, vfg - mxln, mic, occ. sft + chiky, rare foss, tr. sh. stnd. NΦ NSFOC
 CFS Ls. wh - crm, hrd, dns, vfg - mxln, mic, occ. sft + chiky, rare foss, + ool. NΦ NSFOC
 Sh. dk. gry. m. sft., hackly
 Ls. wh - crm, hrd, dns, vfg - mxln, mic, occ. sft + chiky, rare foss, tr. sh. stnd. NΦ NSFOC
 Ls. wh - crm, sft + chiky - hrd, dns, mic, rare foss. NΦ NSFOC
 CFS Ls. wh - crm - gry, m. sft + chiky - hrd, dns, mic, occ. foss, NΦ NSFOC
 Sh. dk. gry - blk, m. hrd - m. sft., carb.
 Ls. crm, hrd - sft + chiky, vfg - mxln, mic, occ. foss + ool, sh. stnd, tr. pt. vug, moldic φ? wk. cut, 1-2 pc. wk. odor, No F.O., tr. - wk. cut + fl.
 Ls. crm - wh, hrd, dns - sft + chiky, vfg - mxln, occ. mic, rare foss, tr. sh. stnd. NΦ NSFOC
 CFS Ls. crm, sft + chiky - hrd, vfg - mxln, foss + ool, w/ qd - ex. moldic vug φ, tr. int part φ NSFOC
 Ls. crm - tan, hrd, dns, vfg - mxln, occ. sft + chiky, ool, w/ qd - ex. oom. φ NSFOC
 Ls. crm - tan - lt. gry, hrd, dns, vfg - mxln, mic, tr. pt., occ. sft + chiky NΦ NSFOC
 Ls. crm - tan - lt. gry, hrd, dns, vfg - mxln, mic, occ. sft + chiky, tr. foss + ool, w/ pr. moldic φ NSFOC
 Ls. crm - lt. gry, hrd, dns, occ. sft + chiky, med. xln - mxln, mic, rare foss. NΦ NSFOC
 Ls. crm - lt. gry, hrd, dns, vfg - mxln, mic, tr. rev. med. xln, tr. pt. v. pr. vug, moldic φ NSFOC
 Sh. blk. m. hrd, dns, carb, hack.
 Ls. tan - ben, sft - hrd, vfg, occ. foss + sh. stnd, rare pc. w/ tr. pr. pp. φ, sft. stn, tr. odor, qd. cut, No F.O.
 Ls. crm - ben, hrd - sft + chiky, vfg - mxln, mic, tr. cut, tr. foss NΦ NSFOC
 Sh. dk. gry. m. hrd, dns, hackly
 Ls. crm - lt. gry, hrd - sft + chiky, rare foss, tr. pr. pr. vug φ, w/ ben. stn, qd. cut + fl, qd. odor, No F.O. v. perm.
 Ls. crm - gry, hrd, dns - sft + chiky, vfg - mxln, rare foss, w/ 2-3 pc. pr. vug, pp. φ, lt. stn - wk. cut + fl, wk. odor, No F.O. v. perm.
 Ls. crm - ben - gry, hrd, dns, vfg - mxln, mic, occ. sft + chiky, occ. foss + sh. stnd. NΦ NSFOC
 CFS Ls. crm - tan - gry, hrd - sft + chiky, vfg - mxln, mic, occ. foss + ool, w/ 6-8 pc. tan - pr. int part, vug φ, lt. stn, qd. odor, qd. pr. cut + fl, No F.O.
 Ls. A.A., less φ, some moldic, lt. stn, tr. odor, wk. cut + fl. No F.O. v. perm.
 Ls. crm - tan - gry, hrd - sft + chiky, vfg - mxln, occ. ool, w/ 3-4 pc. pr. int part, φ, lt. stn, wk. odor, wk. cut + fl, No F.O. v. perm.
 CFS Ls. crm, hrd, dns, vfg - mxln, ool, w/ qd - ex. oom. φ - barren - No show, 2-3 pc. w/ lt. sm. vug φ, 1 dk. stn, wk. cut + fl, qd. odor, No F.O. v. perm.
 Ls. crm - tan - gry, hrd - sft + chiky, vfg - mxln, occ. ool, w/ 3-4 pc. pr. int part, φ, lt. stn, wk. odor, wk. cut + fl, No F.O. v. perm.

Mud Check @ 3989'
 M.w. 9.3
 Vis. 64
 W.L. 5.6
 chl. 1,600
 Solids 7.1%
 L.C.M. 2#
 Very Weak Show
 G' Zone Porosity
 DST #1
 4085-4210'
 Rec. 2300' MSW
 Deviation .5°
 Very Weak Show
 Weak Show
 Very Weak Show
 Weak Show
 Very Weak Show
 Very Weak Show
 Very Weak Show



grns., brn. mot. stn., fr. cut + fl. M.w. 9.3 vis. 72
 v. wk. odor, No F.O., 7 perm

○ Ls. crm.-tan, hrd, dns., veg. mxln.
 occ. foss. + ool. w/ pr. int. part.
 vug. φ, brn. stn., fr. F.O. on brk., fr.
 cut + fl., wk. odor, br. th. ay, br. sh.

○ Ls. crm.-brn., hrd, dns., veg. mxln.,
 foss. + ool. w/ pr. int. part. p. owl
 brn. mot. stn., fr. - wk. cut + fl., wk.
 odor, 7 perm, No F.O.
 Ls. A. A., tr. chik., tr. cht., less.
 foss., NΦ NSFOC

○ Sh. bik., m. sft., earthy, carb.
 Sh. A. A.
 Ls. crm.-brn., hrd, dns., veg. mxln.
 mic., occ. ool., - v. ool. grn. stn.
 NΦ NSFOC

○ Ls. crm.-tan-brn., hrd, dns., veg-
 mxln., tr. cht., mic., occ. pol. grn. stn.
 w/ 3-4 pc. w/ pr. fr. int. ool. φ, brn.
 stn. gd. cut + fl., No F.O. wk. odor

○ Ls. brn., hrd, dns., mxln. mic., NΦ NSFOC

○ Sh. bik., m. hrd, dns., carb., hackly

○ Ls. brn., hrd, dns., occ. gd. - fr. vug. int. part.
 φ, gd. odor, sfo, gd. cut + fl., thin zone

○ Ls. crm.-brn., hrd, dns., veg. mxln., occ.
 foss. w/ pr. - gd. vug. moldic? φ, gd.
 unit. stn., gd. odor, wk. show F.O., gd.
 cut + fl., thin zone

○ Ls. A. A., tr. fr. - gd. vug. moldic + int-
 part. φ, lrg. vugs. - stn. + shows A. A.

○ Sh. dk. gry. - bik., m. sft., dns., carb. earthy

○ Ls. crm.-brn., hrd, dns., mic., NΦ NSFOC

○ Ls. crm.-brn., gry., hrd, dns., veg. mxln.
 mic., fr. foss., NΦ NSFOC

○ Sh. lt. dk. gry. - bik., m. sft., m. hrd, dns.
 occ. carb., earthy - hackly

○ Sh. A. A.
 Ls. crm.-brn.-gry., hrd, dns., veg. mxln.
 mic., occ. foss. p. v. 2 pc. w/ v. pr. br.
 φ, dk. stn., wk. cut + fl., No odor, No F.O.

○ Ls. brn.-gry., hrd, dns., veg. mxln., tr. foss.
 w/ 2-3 pc. th. ay w/ th. vug φ - lrg. vugs.
 br. stn., fr. cut + fl., No F.O. v. wk.
 odor, thin zone

○ Ls. A. A., tr. sandy, NΦ NSFOC

○ Sh. gry. gr. - dk. gry., tr. rd. brn., m.
 sh., earthy, tr. sandy, - v. sandy.

○ Sh. A. A.
 Ls. crm.-tan - gry., hrd - sft. chiky., veg.
 - mxln., tr. sody, tr. sandy - fr. grnd. -
 calc. ss. cong. - rd. ang. NΦ NSFOC

○ Ls. A. A. w/ occ. stn. A. A. NΦ NSFOC

○ calc. ss. rare pc. med. fr. grnd. sub.
 ang. - hrd., calc. cm. cong. NΦ NSFOC

○ Ls. crm.-gry., - brn., hrd, dns., veg. mxln.
 mic., tr. cht., occ. sandy - v. sandy, occ.
 ool., tr. sh. stnd. NΦ NSFOC

○ Ls. crm.-brn., gry., hrd, dns., veg. mxln.
 mic., sandy - v. sandy, ool. - v. ool., tr.
 sh. stnd. NΦ NSFOC

○ Ls. crm.-brn., hrd, dns., veg. mxln.
 mic., chry., occ. sandy - v. sandy,
 tr. ool. NΦ NSFOC

○ Ls. crm.-brn., hrd, dns., tr. m. sft., chiky.
 tr. ool., occ. sandy - v. sandy, mic.,
 chry., tr. sh. stnd. NΦ NSFOC

○ Ls. crm.-brn., hrd, dns. - m. sft. + chiky.
 veg. mxln., mic., occ. cht., occ. ool.
 tr. sandy, tr. sh. stnd. NΦ NSFOC

○ Ls. crm.-brn., hrd - m. sft., veg. mxln.,
 mic., tr. cht., occ. pol., sh. stnd., 1-2
 pc. w/ pr. vug φ + fr. de ool. stn. No
 odor. No cut + fl. NSFOC

○ Ls. A. A. occ. gry. - tan Dol. hrd, tr. vug. φ
 sh. stnd., ool. + sandy NSFOC

○ Dol. crm., m. sft., tr. - veg. mxln., tr. vug. moldic
 φ, ? int. xln. φ NSFOC

○ Dol. - calc. Dol. crm.-gry., m. sft. - hrd,
 tr. chiky. NSFOC

Weak Show
 w. l. 6.0 Chl. 2,000
 Solids 7.1 LCM. 5#

Weak Show

Tower Pawnee Ls.
 Vary Weak Show
 DST #4
 4402'-4485'
 Rec: 274' 0" + GEM

Ft. Scott Ls.
 (-1585')

Very Weak Show

Charokel Shale
 (-1604')

Fair Show
 Mud Check @ 4485'
 M.w. 9.3 vis. 6.9 w. l. 6.0

Fair Show
 Fair Show

DST #5
 4469'-4540'
 Rec: 1208' 0" G
 137' 4" 0" CM

Johnson Zone
 v. Very Weak Show

Very Weak Show

Mississippian
 (-1676')

Mud Check @ 4540'
 M.w. 9.4
 vis. 65
 w. l. 6.0
 Chl. 2,000
 Solids 7.8%
 LCM. 4.0#

SPERGEM Fm.
 (-1751')

