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DRILLING TIME AND SAMPLE LOG

OPERATOR: Murfin Drilling Co., Inc.
LEASE: Kuhlman 'D' WELL NO.: 2-35
FIELD: Wildcat
LOCATION: 335' FNL, 765' FWL (SW-NE-NW-NW)
SEC.: 35 TWP: 12S RANGE: 32W
COUNTY: Logan STATE: KS
API NO.: 15-109-20,988-00-00

CONTRACTOR: Murfin Drilling Co., Rig #21
COMMENCED: March 11, 2011 COMPLETED: 3/19/11
ROTARY TOTAL DEPTH: 4710' LOG TOTAL DEPTH: 4712'
GEOLOGICAL SUPERVISION FROM: 3650' to: T.D.
MUD-UP DEPTH: 3190' MUD TYPE: Chemical Polymer

ELEVATIONS

KB 2998'
GL 2987'
Measurements are all from KB

CASING RECORD

SURFACE: 8 5/8" @ 222', circ.
PRODUCTION: 5 1/2, 15.5# @ 4707' w/175 sx EA-2
P.C. @ 2557'

WIRELINE SURVEYS

Log-Tech: Dual Induction Comp. Neutron & Density Porosity and Sonic + Microresistivity Logs were run.

FORMATION	Kay Well TOP	Kay Well DATUM	Subject Well TOP	Subject Well DATUM	STRUCTURAL VARIANCE
Stone Corral Anh.	2510	(+488)	2508	(+490')	+5'
Base of Anhydrite	2534	(+464')	2532	(+466')	+4'
Topeka Fm.	3752	(-754)	3754	(-756')	-4'
Heebner Shale	3981	(-983)	3984	(-986')	-7'
Lansing Group	4025	(-1027)	4028	(-1030')	-8'
Stark Shale	4257	(-1259)	4254	(-1256')	-5'
Base KS. City Gp.	4322	(-1324)	4324	(-1326')	-10'
Marmaton Gp	4350	(-1352)	4350	(-1352')	-2'
Pawnee Ls.	4452	(-1454)	4456	(-1458')	+2'
Ft. Scott Ls.	4508	(-1510)	4508	(-1510')	+3'
Cherokee Sh.	4535	(-1537)	4534	(-1536')	+1'
Johnson Zone	4577	(-1579)	4576	(-1578')	+3'
Mississippian	4653	(-1655)	4654	(-1656')	-17'
Total Depth	4710		4712		

LOCATION MAP

Reference Well for Structural Comparison: Murfin Kuhlman 'D' #1-35 (SWNENENW35)
Comments and Recommendations: Recommended Johnson Zone Completion

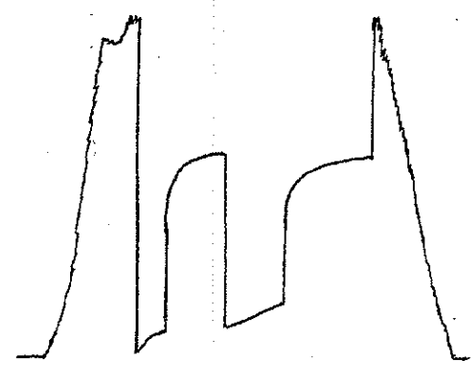
DST # 1 ZONE: Lansing 'D' + 'E' Zones
INTERVAL: 4059'-4100'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2044 psi	630' Mudcut Water
2. Initial Flow: Start	0	25 psi	(5% Mud)
3. Initial Flow: End	30	173 psi	20' Heavy Mud
4. Initial Shut-in: End	60	1220 psi	I.F.-BOB 16 Min.
5. Final Flow: Start	0	177 psi	I.S.I.-3½" 10 Min.
6. Final Flow: End	60	321 psi	1" in 60 Min
7. Final Shut-in: End	90	1189 psi	F.F.-BOB 16 Min.
8. Final Hydrostatic		2024 psi	F.S.I.-No Blow

BHT: 121°F
Rw: .09@72.5°F
Chl. 82,000 ppm

Strap .63 long to board
Deviation 3/4°

DST # 1 8360 Chart
Interval: 4059'-4100' Depth: 4060'



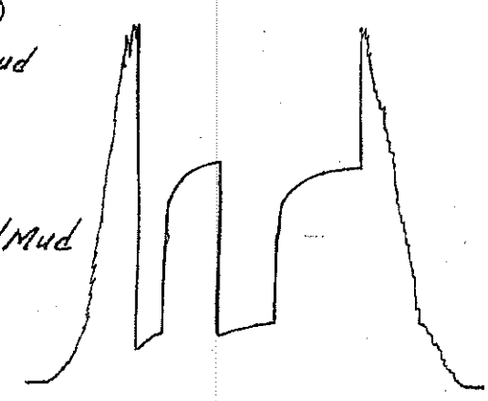
DST # 2 ZONE: LKC 'F', 'G' + 'H' Zones
INTERVAL: 4096'-4195'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2085 psi	80' Gas
2. Initial Flow: Start	0	61 psi	60' Gassy Oil (20% gas)
3. Initial Flow: End	30	176 psi	176' Oil + Water cut Mud
4. Initial Shut-in: End	60	1250 psi	(5% Oil, 30% Water)
5. Final Flow: Start	0	190 psi	228' Mud cut Water
6. Final Flow: End	60	262 psi	(15% Mud)
7. Final Shut-in: End	90	1212 psi	20' Heavy Oil Spotted Mud
8. Final Hydrostatic		2018 psi	Oil is 38° API

BHT: 119°F
Rw: .142@62°F
Chl. 62,000 ppm

I.F.-BOB 20 Min.
I.S.I.-No Blow
F.F.-BOB 27 Min.
F.S.I.-No Blow

DST # 2 8360 Chart
Interval: 4096'-4195' Depth: 4097'



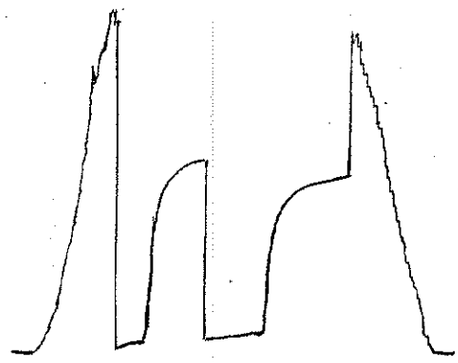
DST # 3 ZONE: LKC 'J' Zone
INTERVAL: 4215-4245'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2077 psi	165' Gas + Mud Cut Oil
2. Initial Flow: Start	0	23 psi	(30% gas, 5% mud)
3. Initial Flow: End	30	68 psi	90' Gas + Oil Cut Mud
4. Initial Shut-in: End	60	1203 psi	(10% gas, 30% oil)
5. Final Flow: Start	0	77 psi	Gravity 36° API
6. Final Flow: End	60	114 psi	
7. Final Shut-in: End	90	1103 psi	
8. Final Hydrostatic		2049 psi	

BHT: 121°F
Rw:

I.F.-BOB 14 Min.
I.S.I.-No blow
F.F.-BOB 15 Min.
F.S.I.-No blow

DST # 3 8360 Chart
Interval: 4215'-4245' Depth: 4216'



DST # 4 ZONE: Johnson Zone
INTERVAL: 4555-4595'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2289 psi	1426' Gas in Pipe

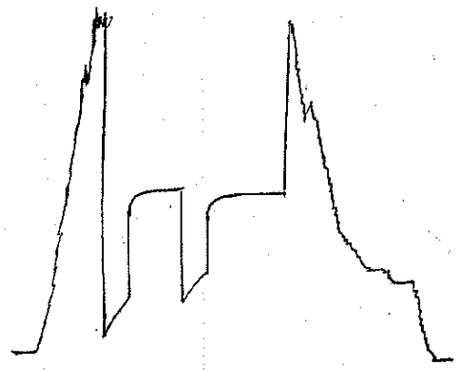
DST # 4 8360 Chart
Interval: 4555-4595 Depth: 4556'

2. Initial Flow: Start	0	90 psi	1550' Gassy Oil*
3. Initial Flow: End	30	379 psi	(40% gas)
4. Initial Shut-in: End	60	1128 psi	*Dumped 8 stands+
5. Final Flow: Start	0	386 psi	Circulated out
6. Final Flow: End	30	585 psi	±10 bbls - No Water
7. Final Shut-in: End	90	1104 psi	Noted - Oil in Collars
8. Final Hydrostatic		2282 psi	Gravity 28° API

BHT: 133°F

Rw: _____

I.F. - BOB 2¼ Min.
ISI - BOB 11 Min.
F.F. BOB 3 Min.
FSI BOB 16 Min.



ABBREVIATIONS USED

ROCK TYPES:

Ls - Limestone
Sh - Shale
Sds - Sandstone
Silts - Siltstone
Cgl - Conglomerate
Cht - Chert
Qtz - Quartzite
Gran - Granite
Dol - Dolomite
Chlk - chalky

COLOR:

Wh - White
Cre - Cream
Clr - Clear
Red - Red
Grn - Green
Gry - Gray
Blk - Black
Mot - Mottled

HARDNESS:

Sft - Soft
M.Sft - Moderately soft
Hrd - Hard
V.Hrd - Very hard

FABRIC:

Fn.grn - fineagrained
VFG - Very fine grained
Med - Medium
Crse - Coarse
Dst - Detrital
Fossil - fossiliferous
Xln - Crystalline
Mxln - Microcrystalline
Ool - Oolitic
Sup - Supaldic
Mat - Matrix

OTHER TERMS:

Fl - Fluorescence (of oil)
min fl - mineral fluorescence
pyr - pyritic
glau - glauconitic
carb - carbonaceous
stn - stain (of oil)
cut - oil cut
AA - as above
Φ - porosity
NSFOC - no stain, fluorescence, odor, or cut (of oil)
sampl - sample
perm - permeability
F.O. - free oil
vug - vugular
tr - trace
w/ - with

MODIFIERS:

gd - Good
fr - Fair
pr - Poor
ex - excellent
v - very
w - well
tr - trace
occ - occasional
vis - visible
N - no
gran - granular
intergran - intergranular
pp - pinpoint
dull - dull
gsy - gassy

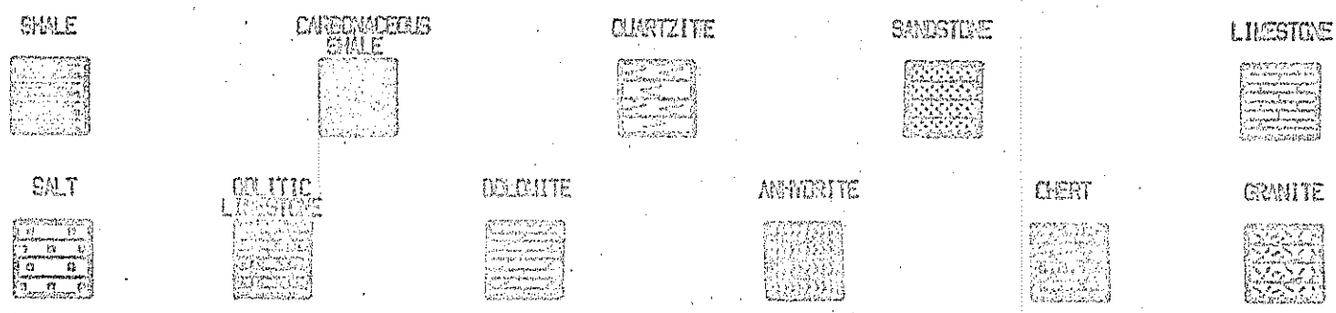
TEXTURE:

Dns - Dense
Sly - Slowly
Fri - Friable
Earth - Earthy
Flak - Flakly
Vitre - Vitreous
Vit - Vitreous
Vug - Vugular
Mic - Micritic

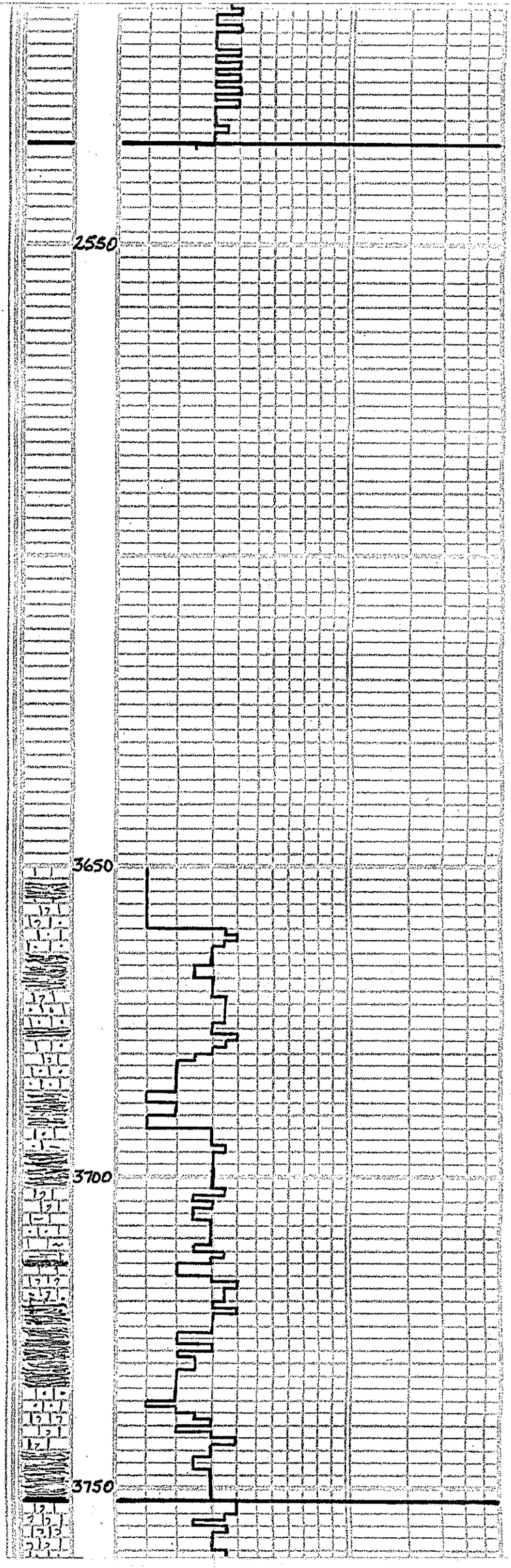
OIL SHOWS

- Weak Oil Show
- Fair Oil Show
- Good Oil Show
- Excellent Oil Show

ROCK TYPE SYMBOLS



LITHOLOGY	DRILLING TIME	GAS SHOWS (TOTAL GAS UNITS / CHROMATOGRAPH UNITS)	Oil Shows	SAMPLE DESCRIPTIONS	REMARKS
	0 1 2 3 4 5	0 1 2 3 4 5			
2500					



Stone Corral Anhydrite (+488')

Base of Anhydrite (+464')

Displace Mud System @ 3190'

Ls. cr.m.-gry., m.hrd.-v.sft., clayey.-chky., mxln.-vfg xln., tr. foss. NØNSFOC

Sh. dk.gry., m.hrd.-m.sft., hack.

Sh. A.A.

Ls. gry., sft. & chk.-hrd., dns., vfg.-mxln., occ. foss., occ. sndy., sft. stnd. NØNSFOC

Ls. gry.-cr.m., hrd., dns.-sft. & chk., occ. foss. & oo., occ. sndy., tr. v. pr. int. par., Ø NSFOC

Sh. dk.gry., m.hrd., dns., hack.

Sh. A.A. w/ Sh. rd.brn., sft., clayey sndy.

Ls. cr.m.-gry., m.sft.-v.sft. chk., tr. sndy. tr. foss. NØNSFOC

Sh. gry.-dk.gry., m.sft., dns., earthy.

Ls. cr.m.-gry., m.sft.-hrd., dns., occ. sndy., occ. chk. NØNSFOC

Ls. cr.m.-wh., sft. & chk.-hrd., dns., vfg.-mxln., mic., occ. foss., occ. sndy., tr. tr. mo bic Ø NSFOC

Ls. cr.m.-tan.-lt.gry., hrd., dns., vfg.-mxln., tr. mic., tr. chk., foss. Sh. stnd. NØNSFOC

Ls. A.A., tr. pr. mo bic Ø NSFOC

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

tr. Ss. brn., f.n.-vfg., hrd.-f.cm., v.l. pr. sft., mica., shk., No vis. Ø NSFOC

Sh. dk.gry., m.sft.-m.hrd., dns., hack.

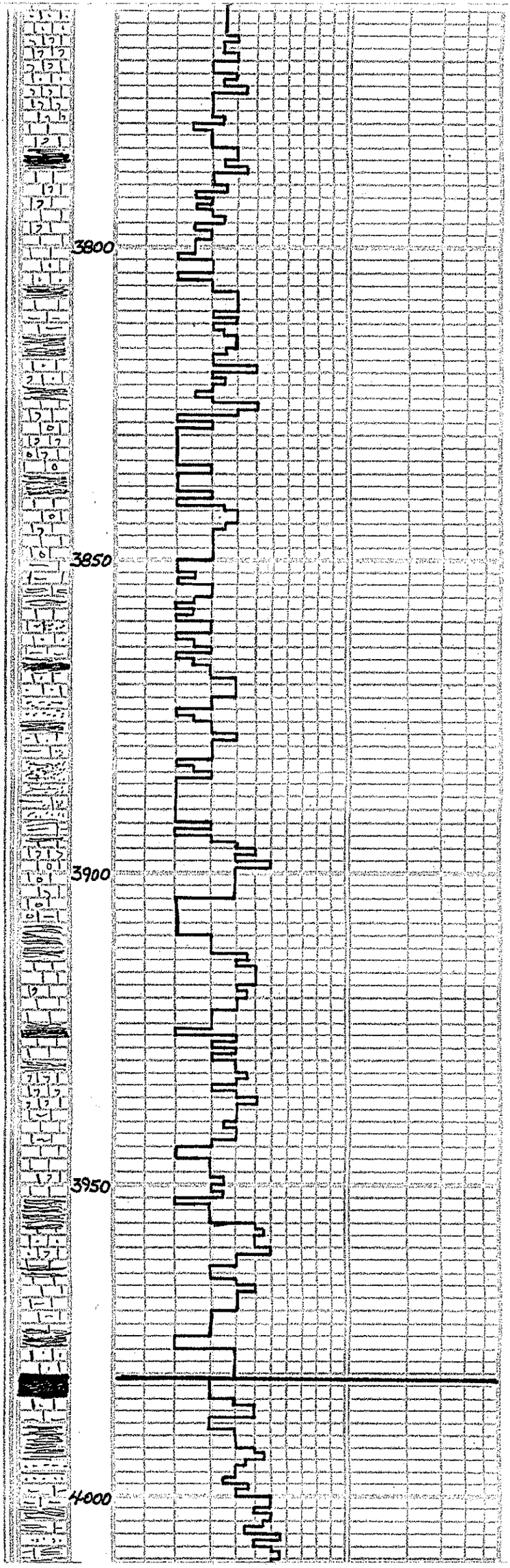
Ls. cr.m., hrd.-sft. & dns., vfg.-mxln. occ. chk., occ. sndy., tr. foss. NØNSFOC

Ls. cr.m., hrd., dns., vfg.-mxln. mic. tr. chk. NØNSFOC

tr. Sh. rd., sft., earthy-cavings?

Ls. cr.m., hrd., dns., vfg.-mxln. occ. chk., occ. v. foss. NØNSFOC

Topeka Fm. (-754')



Ls. wh.-crm., hrd., dns., VFG-mxln., mic., tr. chik., occ. V. foss.-xln. stnd., tr. sndy. NØNSFOC

Ls. crm., hrd., dns., VFG-mxln., mic., tr. sft. + chik., tr. sndy. NØNSFOC

Ls. crm., hrd., dns., VFG-mxln., tr. mic., tr. chik., occ. foss. NØNSFOC

Ls. A.A., tr. VFG. foss. moldic Ø NSFOC

Sh. gry., m. sft., dns., hackly

Sh. gry.-dk. gry., m. sft.-m. hrd., dns., hackly, tr. sndy.

Ls. crm.-gry., hrd., dns., VFG xln., occ. foss., tr. sndy. NØNSFOC

Ls. crm., hrd., dns., occ. foss. + sndy. VFG xln., occ. sndy., occ. foss. tr. rexld. NØNSFOC

Ls. crm., hrd.-sft., dns., VFG xln. foss. tr. sndy. tr. rexld., occ. VFG moldic Ø NSFOC

Ls. crm.-wh., sft. + chik.-hrd., dns., VFG-mxln., occ. foss., tr. pr. oom.-moldic Ø NSFOC

Ls. crm.-wh., hrd., dns.-occ. wh., sft. chik., VFG-mxln., occ. foss. + ool. w/tr. ft.-pr. moldic Ø NSFOC

Ls. tan-crm.-gry., hrd., dns., VFG xln occ. sft. + chik. + mxln., sh. stnd. occ. foss-V. foss. NØNSFOC

Sh. gry., m. hrd., dns., hackly

Ls. A.A., occ. V. sndy. NØNSFOC

Sh. A.A., Ss. gry., hrd., dns., VFG. mod. srtd., w.-v. w. cmtd., mica. no vis. Ø NSFOC

Ss. gry., A.A., occ. fn. grnd. tr. frik., v. w. cmtd. NØ NSFOC

Ls. crm., hrd., dns., VFG-mxln., mic., rare foss. NØNSFOC

Sh. gry.-lt. brn., m. sft.-sft. clay-earthy.

Ls. A.A. NØNSFOC

Ss. A.A. NØNSFOC

Sh. A.A.

Ls. crm.-lt. gry., hrd., dns., VFG xln. occ. V. sndy., tr. V. pr. moldic Ø NSFOC

Ls. crm.-lt. gry., hrd.-sft., dns., occ. foss. + ool. w/chik matrix occ. chiky., VFG-mxln., tr. mic. tr. V. pr. int. part. Ø, NSFOC

Ls. crm.-lt. gry., hrd., dns., VFG xln., foss. + ool. NØNSFOC

tr. Sh. gry.-dk. gry., m. hrd., dns., hack

Ls. crm.-tan, hrd., dns., VFG-mxln. + mic., rare foss., tr. sft. + chik. NØNSFOC

Ls. crm.-tan, hrd., dns., VFG-mxln. mic., occ. cht., tr. chik., occ. foss. + sh. stnd. NØNSFOC

Ls. crm.-tan, hrd., dns.-sft. + chik. occ. V. foss., VFG-mxln., sh. stnd. NØNSFOC

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

Ls. crm.-gry., sft. + chik.-hrd., dns. VFG-mxln., occ. foss. NØNSFOC

Ls. crm.-tan.-wh., m. hrd.-sft. + chiky., occ. sh. stnd., occ. sndy. tr. foss. NØNSFOC

Ls. A.A., less chiky. NØNSFOC

Sh. blk., m. hrd., dns., earthy.-hackly, carb.

Ls. crm., hrd., dns., mic., VFG-mxln. tr. sndy NØNSFOC

Sh. lt.-dk. gry., sft.-m. hrd., occ. clayey. tr. lam., earthy, occ. carb.

Sh. lt. gry., sft., clayey, sndy., tr. VFG ss. gry., hrd.-m. sft., shly., v. pr. srtd. NØNSFOC

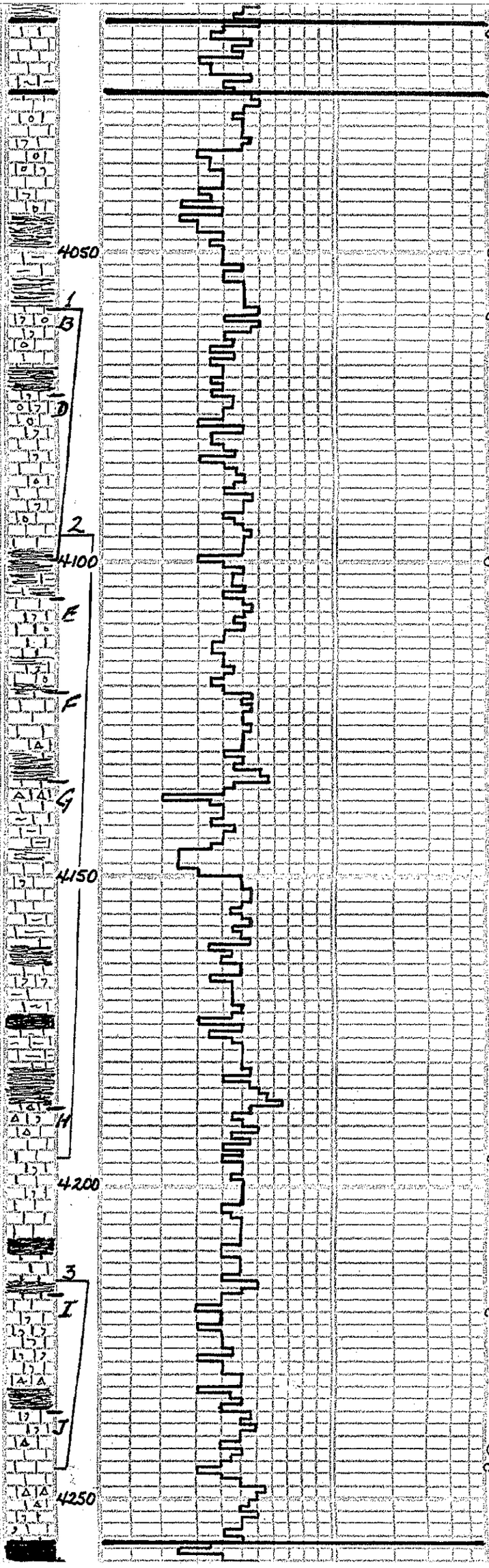
Ls. crm., hrd., dns., VFG-mxln., mic. tr. foss. NØNSFOC

Sh. A.A.

WOB 42,000#
R.P.M. 85
Press. 1200psi

Mud Check @ 3975'
M.W. 9.3
Vis. 69
W.L. 6.4
Ch.l. 1,200
Solids 7.1%
L.C.M. 2.0

Heebner Shale
(-983')



Ls. A.A., occ. lt. gry. NØNSFOC
CFS Sh. gry., m. stf., dns., earthy
Ls. crm.-wh.-lt. gry., hrd.-stf., dns. VFG xln.-mxln., occ. chiky. NØNSFOC
Ls. crm.-wh.-gry., hrd., dns., VFG-mxln. + mic. tr. chik., occ. sh. stnd., occ. foss. NØNSFOC
Sh. gry., m. stf.-mhrd., dns., hack.

Toronto Ls. (-1015')

Lansing Gp. (-1027')

Ls. A.A., tr. pp. mold. c Ø NSFOC
Sh. gry.-rd. brn., m. stf.-m. hrd., dns., earthy-hack/y. cav. ngs?
tr. Sh. A.A.
Ls. crm.-lt. gry., hrd., dns., VFG-mxln., mic., tr. chik., rare foss. tr. V. pp. mold. c Ø NSFOC
CFS Ls. crm., hrd., dns., VFG-mxln., occ. mic., occ. stf. + chik., occ. foss., tr. pp. int. part. Ø NSFOC
CFS Sh. gry., m. hrd., dns., hack.

WOB-42,000#
RPM 85
Press. 1200 psi
585 SPM

Ls. crm.-wh., hrd., dns., VFG xln., occ. foss. + ool., occ. tr.-pp. int. part. Ø + tr. gd. vug. Ø w/ dk. oil stn., tr. F.O. tr.-gd. cut No odor, ? perm.

Fair Show

Ls. crm., hrd.-m. stf., dns., VFG xln., occ. foss. + ool., tr. chik., tr. pyr. NØNSFOC
Ls. crm., hrd.-m. stf. + chik., dns., VFG xln., tr. foss. + ool., tr. pyr. NØNSFOC
Ls. crm., hrd.-m. stf., dns., VFG-mxln., occ. texled., tr. foss., tr. chiky., pyr. NØNSFOC

DST #1
4059'-4100'
30-60-60-90
Rec. 630' MCW
20' Mud
Stab. 63' long
Dev. 3¼°

CFS Ls. crm., hrd., dns., VFG xln., occ. foss. + ool. w/ tr. gd. no Ø c Ø, tr. gd. leached vug. Ø, tr. brn. stn. gd. odor, tr. gd. cut + fl., V. thin zone
Ls. crm.-wh., stf.-hrd., med. xln.-mxln. chiky., tr. mic., tr. VFG pp.-VF. vug. Ø, dk. brn. oil stn., wk. odor tr.-pp. cut + fl., tr. vug. Ø A.A. wk. stn.
Ls. wh.-crm., hrd., dns., VFG-mxln. mic., tr. chik., tr. texled. NØNSFOC

Fair-Good Show

Weak Show

Mud Check @ 4,102'
M.W. 9.3
Vis. 69 Solids 7.1%
LCM. 1.5
W.L. 6.4

Ls. crm.-wh., hrd., dns., VFG-mxln. mic., occ. cht., occ. V. stf. + chik.-clayey, tr. pyr. NØNSFOC
Ls. A.A., sl. more stf. + chik., tr. sh. stnØ. NØNSFOC
Sh. gry.-dk. gry., m. stf., dns., earthy

DST #2
4096'-4195'
30-60-60-90
Rec: 80' GIP
60' GCO
176' OHWCM
228' MCW
20' HOSM

Ls. gry.-crm., hrd., dns., VFG-mxln. mic., tr. chik., rare foss., tr. pyr. NØNSFOC
tr. Sh. gry.-blk., m. stf., earthy
Sh. gry.-blk., m. stf., dns., tr. carb.
Ls. crm.-gry., hrd., dns., fn xln.-mxln. sh. stnd., occ. foss., tr. pyr., tr. chik. NØNSFOC
tr. Sh. A.A.
Ls. crm.-tan-gry., hrd.-stf. + chik., abun. sh. stnd., occ. foss., V. wk. odor, 2-3 pc. VFG pp. Ø w/ tr. cut + fl., No V.is. stn., No F.O., V. wk. show
Ls. crm.-tan-gry., hrd., dns., VFG-mxln., mic., abun. cht., sh. stnd. pyr. NØNSFOC
Ls. crm., hrd.-stf. + chik., VFG-mxln. occ. mic., rare foss. NØNSFOC
CFS Sh. gry. grn.-blk., m. stf.-m. hrd., dns., earthy, tr. carb.
Ls. tan-lt. gry., hrd., dns., fn xln.-mxln., mic., tr. foss. NØNSFOC
Sh. gry. grn.-dk. gry., m. stf.-m. hrd., dns., earthy-flakly
Ls. A.A., occ. V. stf. + chiky.-clayey
Sh. gry., stf., clayey, occ. m. stf. earthy, tr. blk., carb.

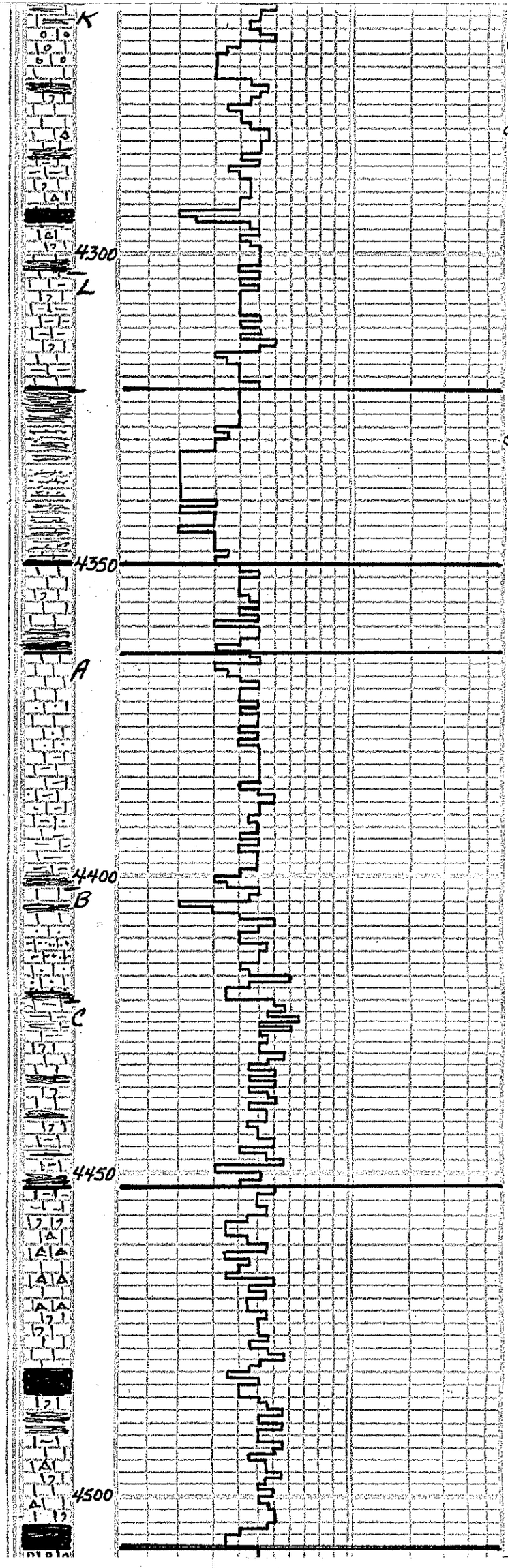
Fair Show

Mud Check @ 4203'
M.W. 9.2
W.L. 6.4
Vis. 54
Chl. 1,500
Solids 6.4%
LCM. 1.5#

CFS Sh. lt.-dk. gry.-rd. brn., m. stf.-m. hrd., dns., hack/y-earthy
Ls. crm.-tan, hrd., dns., fn xln.-mxln. occ. V. foss., tr. cht., tr. chik. NØNSFOC
Sh. A.A.
Ls. crm., hrd., dns., VFG-mxln., mic. tr. cht., less. foss. NØNSFOC
Ls. wh., A.A., occ. gd. vug. int. part. Ø tr. brn. stn., 1-2 pc. bldg. O + G, tr.-wk. cut. stf., gd. odor, ? saturation
CFS Ls. wh.-crm., m. stf.-hrd., dns., VFG-mxln., tr. foss., tr. cht. NØNSFOC
Ls. crm.-brn., hrd., dns., fn xln.-mxln. mic., tr. chik., tr. foss. NØNSFOC
Sh. gry.-blk., m. stf., dns., earthy, carb.

DST #3
4215'-4245'
30-60-60-90
Rec. 165' GHMCO
90' GHOCM

Stark Shale



Ls: crm.-wh., hrd., dns., occ. sft. + chik., occ. ool. wl. pr.-fr. int. ool., φ, tr. pr. vug, φ, lt. brn. stn., fl. cut fl., wk. odor, ? perm. (-1259')

Weak Show

Ls: crm.-lt. gry., hrd.-sft. + chik., fnxln-mxln., occ. foss. NØNSFOC

CFS Ls: crm.-tan, hrd.-sft. + chik., vfg-mxln., mic., occ. cht., occ. foss. sh. stnd. NØNSFOC

Ls: tan-dk. gry., hrd., dns., vfg-mxln., occ. sft. + chik., abun. sh. stnd., tr. foss., tr. cht. NØNSFOC

Sh: blk., m. sft., dns., earthy, carb.

Sh: A.A., wl. sh. lt.-dk. gry., m. sft.-m. hrd., dns., earthy-hackly

Ls: gry-tan., m. sft.-hrd., occ. chik., sh. stnd., vfg-mxln. NØNSFOC

Ls: crm.-lt. gry., hrd., dns., vfg-mxln. occ. chik., tr. foss., tr. sh. stnd. NØNSFOC

Ls: crm.-tan-gry., hrd.-sft. + chik., vfg-mxln., occ. foss., occ. sh. stnd. NØNSFOC

Base of Kansas City Group (-1324')

CFS Sh: gry., m. sft., dns., earthy, occ. rd. brn.

Ls: A.A. NØNSFOC

Sh: gry.-rd. brn., sft.-v. sft., slty.-sndy.-v. shly. ss.

Sh: gry.-rd. brn., sft.-v. sft., clayey-earthy., occ. v. sndy.-shly. ss.

Ls: crm-lt. gry., hrd., dns., fnxln.-mxln., tr. mic., tr. rexlzd., rare foss. NØNSFOC

Marmaton Gp. (-1352')

Ls: A.A. NØNSFOC

Sh: gry.-dk. gry.-rd. brn., m. sft.-sft., occ. sndy-slty., earthy

Altamont Ls.

Ls: crm.-brn., hrd., dns., vfg-mxln. occ. rexlzd., tr. mic., occ. foss. occ. sndy. NØNSFOC

Ls: A.A., less sndy, tr. chiky NØNSFOC

Mud Check @ 4356'
M.W. 9.3
Vis. 58
W.L. 6.0
Chl. 1400
Solids 7.1%
LCM 1.5#

Sh: gry.-dk. gry., m. sft.-m. hrd., dns., tr. sndy., earthy-hack.

Ls: crm. gry. hrd., dns., vfg-mxln. sh. stnd., tr. chik. NØNSFOC

Sh: gry. grn.-dk. gry.-rd. brn., m. sft., dns., tr. sndy., earthy

Sh: dk. gry., m. sft.-m. hrd, dns., earthy-hackly

Ls: crm.-tan, hrd., dns., vfg-mxln. mic. occ. foss., tr. chik. NØNSFOC

Sh: A.A., occ. rd. brn., earthy, sndy

Ls: crm.-tan, A.A., occ. sndy.-v. sndy.-carb. ss. fn. grnd., gry., hrd., dns., wl. cmtd. NØNSFOC

Ls: crm.-gry., hrd., dns., vfg-xln., tr. foss., tr. sndy., abun. sh. stnd. NØNSFOC

Ls: crm.-tan-gry., hrd., dns., vfg-mxln. tr. foss NØNSFOC

Sh: gry.-dk. gry., m. sft.-m. hrd., dns., hack-v. ss. lc, occ. sndy

Sh: A.A.

Ls: crm-gry., hrd., dns., vfg-mxln. tr. mic., tr. foss., occ. sh. stnd. NØNSFOC

Ls: crm-gry., hrd., dns., pyt., vfg-mxln. mic., rare foss. NØNSFOC

Pawnee Ls. (-1454')

Cht: gry-wh., hrd., dns., vit.

Ls: crm.-lt. gry., hrd., dns., vfg-mxln., mic., occ. foss., tr. sh. stnd., abun. cht. NØNSFOC

Sh: gry.-dk. gry., m. hrd., dns., hack.

Ls: crm.-tan-gry., hrd., dns., vfg-mxln., mic., abun. cht. occ. foss. NØNSFOC

Sh: blk., m. hrd., dns., carb., earthy

Sh: lt. gry.-blk., m. hrd., dns., occ. carb.

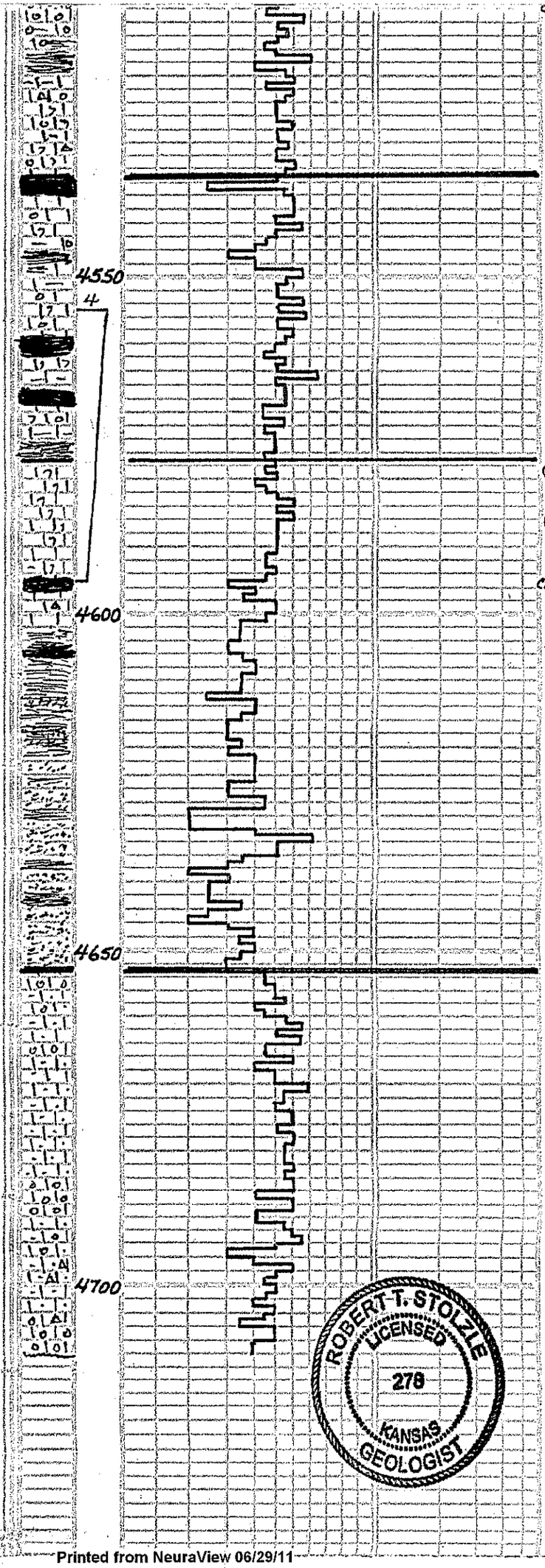
Ls: crm.-brn-gry., hrd., dns., vfg-mxln., mic., tr. cht., tr. v. ool. foss occ. sh. stnd. NØNSFOC

Ls: crm.-brn.-gry., hrd., dns., vfg-mxln., mic., sh. stnd., occ. foss., tr. cht., tr. pyt. NØNSFOC

Ls: A.A. NØNSFOC

Sh: blk., m. hrd., dns., carb., earthy

Ls: crm.-brn., hrd.-m. sft., dns., ool.-v. ool., No Vis. φ NSFOC



CFS

Ls: crm.-tan-gry., hrd., dns., VFG-mxln., mic., occ. ool. + foss. NØ NSFOC

Sh. dk. gry., m. hrd., dns., hack.

Ls. crm.-tan, hrd., dns., VFG-mxln., ool. + foss., sh. stnd. tr. cht. NØ NSFOC

tr. Sh. A.A.

Ls: crm.-tan-gry., hrd., dns., VFG-mxln., mic., cht-y, rare foss., tr. Pyr. NØ NSFOC

Sh: blk., hrd., dns., carb., earthy

Ls. crm.-wh., hrd.-m. sft., dns., VFG-mxln., mic., occ. chik., occ. ool. + foss. NØ NSFOC

Sh: gry., m. hrd., dns., earthy-hack.

Ls: crm., hrd., dns., VFG-mxln., mic., tr. chiky., occ. foss. + ool. NØ NSFOC

Ls: crm.-tan-brn., hrd., dns., VFG-mxln., mic., tr. chik., sh. stnd. occ. foss NØ NSFOC

Sh: gry.-blk., m. sft., dns., earthy.

Ls: crm., hrd., dns., VFG-mxln., occ. foss. + ool. w/ pr.-fr. mo/dk. Ø., tr. int. part. vug. Ø., dk. oil stn., tr. odor, No F.O., fr.-gd. cut + fl. thin zone

Ls. crm.-brn., hrd., dns., occ. sft. chik. tr. foss. w/ 4-5 pc. tr.-pr. vug. Ø + mo/dic. vug. Ø., 1 pc. bldg. Oil., wk. odor, gd. cut + fl. V. thin zone

Ls. crm.-tan, hrd.-m. sft., dns., VFG-mxln, chik., rare foss. NØ NSFOC

CFS

Ls. A.A. NØ NSFOC

Sh: lg. gry-grn., m. sft., sndy., earthy

Ls. crm-tan, hrd., dns. mxln-mxln. tr. mic., tr. cht. NØ NSFOC

Sh: lg. gry-grn.-rd.-y/p., m. sft., occ. sndy., earthy

Cg: Sh: grn.-gry.-y/w., m. sft., occ. v. sndy. - Shly. Ss. gry.-grn., glauc. med.-VFG., rnd-subang., pr. srtd., No Vis. Ø, mod. cmtd. NSFOC

Cg. Sh. A.A., occ. rd. brn., varic. Ss occ. wh. clr., wl cmtd., dns. fn-VFG mod.-w. rnd. No Vis Ø NSFOC occ. cht. y/w-orng. hrd., dns., vit.

Cg. Sh. gry. grn.-rd. brn.-y/w-mar. m. sft.-m. hrd., dns., earthy-wxx

Ss: wh., m. hrd., dns., fn. grnd., mod.-w. srtd., w. cmtd., tr. tr. i.a., sub. rnd., tr. pr. int. gran. Ø NSFOC

SS: A.A., occ. shly, pr. srtd. NØ NSFOC

Ls: crm., hrd.-sft., VFG-mxln., occ. chik., occ. v. sndy NØ NSFOC

SS: lg. Ls. tan, hrd., dns., VFG-mxln., mic., occ. v. sndy. - pr. srtd. - long., occ. calc. Ss: wh., hrd., dns., fn. grnd. NØ NSFOC

Ls: crm., hrd., dns., VFG-mxln. occ. m. sft. + chik., abun. sd. + ool. NØ NSFOC

Ls. crm.-tan, hrd., dns., - m. sft. + chik., VFG-mxln., tr. mic., abun. sd., med.-fn. grnd., Ls: matrix NØ NSFOC

Ls. crm-lt. gry., hrd., dns., VFG-mxln v. sndy., occ. h. ool. - pkstone, tr. Cong. Ss: wh., crs-fn., pr. srtd. w. cmtd. NØ NSFOC

Ls. crm-tan-gry., hrd., dns., VFG-mxln., mic., occ. sndy + ool. A.A. less ool. + sndy. NØ NSFOC

Ls: crm.-tan, hrd., dns., VFG-mxln. mic., abun. cht-gry., occ. v. sndy., occ. v. ool., tr. sh. stnd. NØ NSFOC

Ft. Scott Ls. (-1510')

Cherokee Sh. (-1537')

DST #4
4555'-4595'
1426' GIP
1550' CGO'

Weak Show
Johnson Zone (-1579')
Weak Show

Mud Check @ 4595'
M.W. 9.6
Vis. 59
W.L. 6.0
Chl. 1400
Solids 9.3
LCM 1.5

Mississippian (-1655')

D.T.D. 4710'
L.T.D. 4712'
Deviation 1°

Robert Stolzle
3/19/11

ROBERT T. STOLZLE
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278
KANSAS
GEOLOGIST

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