# ROBERT STOLZLE

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DRILLING TIME AND SAMPLE LOG

OPERATOR: Pickrell Drilling Co., Inc.

LEASE: Coykendall WELL NO.: 10

FIELD: Spivey-Grabs-Basil

LOCATION: 1980'FSL, 760'FEL (Loc. of NESE)

SEC.: 36 TWP.: 29S RANGE: 7W

COUNTY: Kingman STATE: KS

API NO.: 15-095-22267-00-00

CONTRACTOR: Pickrell Drilling Co., Rig #1

COMMENCED: January 24, 2013 COMPLETED: 2/1/13

ROTARY TOTAL DEPTH: 4220' LOG TOTAL DEPTH: 4218'

GEOLOGICAL SUPERVISION FROM: 2900' to: T.D.

MUD UP DEPTH: 3170' MUD TYPE: Chemical/Polymer

ELEVATIONS

KB 1469'

GL 1459'

Measurements are all from KB

CASING RECORD

SURFACE: New 24# 8 5/8" @ 223' w/ 225sx

PRODUCTION: New 4 1/2", 10.5# @ 4189' w/ 125sx. Allied

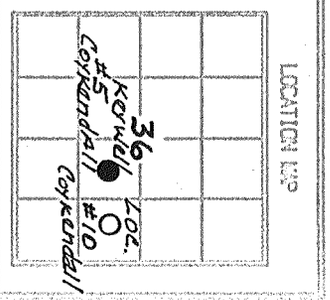
WIRELINE SURVEYS

Tucker Energy Services: Microlog Phased Induction and Compensated Density/Neutron Radiation Logs were run.

| FORMATION | SAMPLE TOP | SAMPLE SUBSEA | LOG TOP | LOG SUBSEA | STRUCTURAL COMPARISON |
|---|---|---|---|---|---|
| Heebner Shale | 3047 | (-1578) | 3044 | (-1575) | +1' |
| Douglas Shale | 3080 | (-1611) | 3076 | (-1607) | +5' |
| Lansing Group | 3270 | (-1801) | 3272 | (-1803) | -3' |
| Ks. City Group | 3548 | (-2079) | 3548 | (-2079) | +3' |
| Stark Shale | 3696 | (-2227) | 3691 | (-2222) | +9' |
| Base Ks. City Gp. | 3794 | (-2325) | 3790 | (-2321) | +7' |
| Altamont Ls. | 3846 | (-2377) | 3842 | (-2373) | +10 |
| Pawnee Ls. | 3908 | (-2439) | 3904 | (-2435) | +5' |
| Miss. Osage Fm.* | 4100 | (-2631) | 4080 | (-2611) | +31' |
| Total Depth | 4220' | | 4218' | | |

*Note: No chert was observed in the samples above 4100' due to excessive shale cavings.

LOCATION MAP




Reference Well For Structural Comparison: Pickrell #5 Coykendall (NW SE Sec. 36)

Comments and Recommendations: Excessive Douglas Shale cavings throughout hole.

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DST # 1 ZONE: Mississippian Osage Fm.

INTERVAL: 4106'-4155'

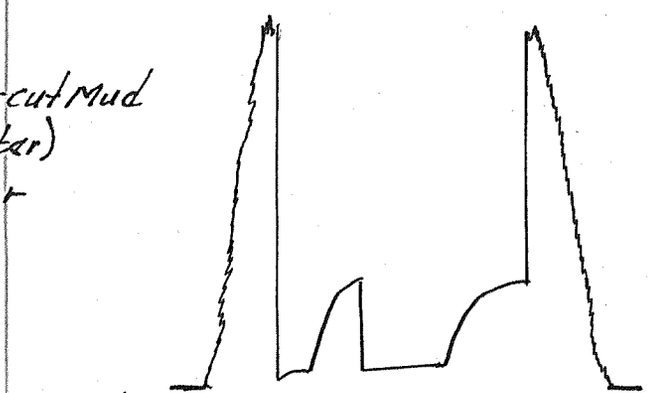
| Pressures: | Time | Press. | RECOVERY |
|---|---|---|---|
| 1. Initial Hydrostatic | | 2118 psi | 160' Gas in Pipe |
| 2. Initial Flow: Start | 0 | 37 psi | 25' Oil cut Mud |
| 3. Initial Flow: End | 30 | 79 psi | (10% O; 1) |
| 4. Initial Shut-in: End | 60 | 600 psi | 120' O; lt water cut Mud |
| 5. Final Flow: Start | 0 | 81 psi | (2% oil, 48% water) |
| 6. Final Flow: End | 90 | 130 psi | 119' Salt Water |
| 7. Final Shut-in: End | 90 | 579 psi | Blow Desc: |
| 8. Final Hydrostatic | | 2002 psi | I.F. - BOB 6 Min. |
| | | | I.S.I. - No Blow |
| | | | F.F. - BOB 3 Min. |
| | | | F.S.I. - No Blow |

BHT: 127°F.

Rw: .13@38°F. Chl. 126,000 p.p.m.

DST # 1 6798 Chart

Interval: 4106'-55' Depth: 4107'



Deviation 1° Strap .27' short to board

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DST # 2 ZONE: Miss. Osage Fm.

INTERVAL: 4081'-4101'

| Pressures: | Time | Press. | RECOVERY |
|---|---|---|---|

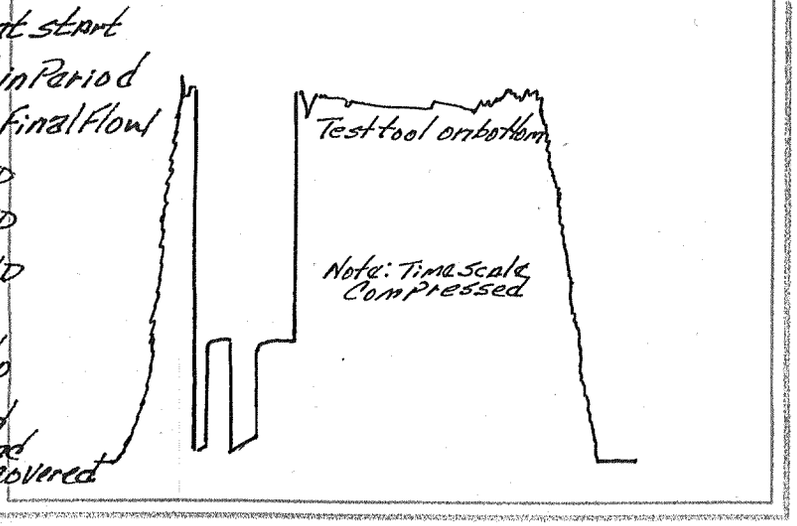
DST # 2 6798 Chart

Interval: 4081'-4101' Depth: 4082'

| | | | |
|---|---|---|---|
| 1. Initial Hydrostatic | | 2108 psi | Gas to Surface at start |
| 2. Initial Flow: Start | 0 | 39 psi | of Initial Shut-in Period |
| 3. Initial Flow: End | 30 | 75 psi | Gauged during final flow |
| 4. Initial Shut-in: End | 60 | 673 psi | 20 min - 64 MCF/D |
| 5. Final Flow: Start | 0 | 51 psi | 40 min - 83 MCF/D |
| 6. Final Flow: End | 60 | 124 psi | 60 min - 115 MCF/D |
| 7. Final Shut-in: End | 90 | 669 psi | |
| 8. Final Hydrostatic | | 2027 psi | Jarred 4 times to get tool loose and tool parted at top of tool and lost any liquid recovered during test. |

BHT: 124°F

Rw: _____




## ABBREVIATIONS USED

ROCK TYPES:

Ls - limestone
Sh - Shale
Ss - Sandstone
Silts - Siltstone
Cg - Conglomerate
Cht - Chert
Qtz - Quartzite
Gran - Granite
Dol - Dolomite
Chlk - chalky

COLOR:

Wh - White
Crm - Cream
Clr - Clear
Rd - Red
Grn - Green
Gry - Grey
Blk - Black
Mot - Mottled

HARDNESS:

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

FABRIC:

Fn.grn - finegrained
VFG - Very fine grained
Med - Medium
Crs - Coarse
Det - Detrital
Foss - Fossiliferous
Xln - Crystalline
Mxln - Microcrystalline
Ool - Oolitic
Dom - Domoldic
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
ø - porosity
NSFOC - no stain, fluorescence, odor, or cut (of oil)
smpl - sample
perm - permiability
F.O. - free oil
vug - vuguler
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
intgran - intergranular
PP - pinpoint
dd - dead
goy - gooey

TEXTURE:

Dns - Dense
Cly - Clayey
Fri - Friable
Earth - Earthy
Hack - Hackly
Fiss - Fissile
Vit - Vitreous
Vug - Vuguler
Mic - Micritic

OIL SHOWS

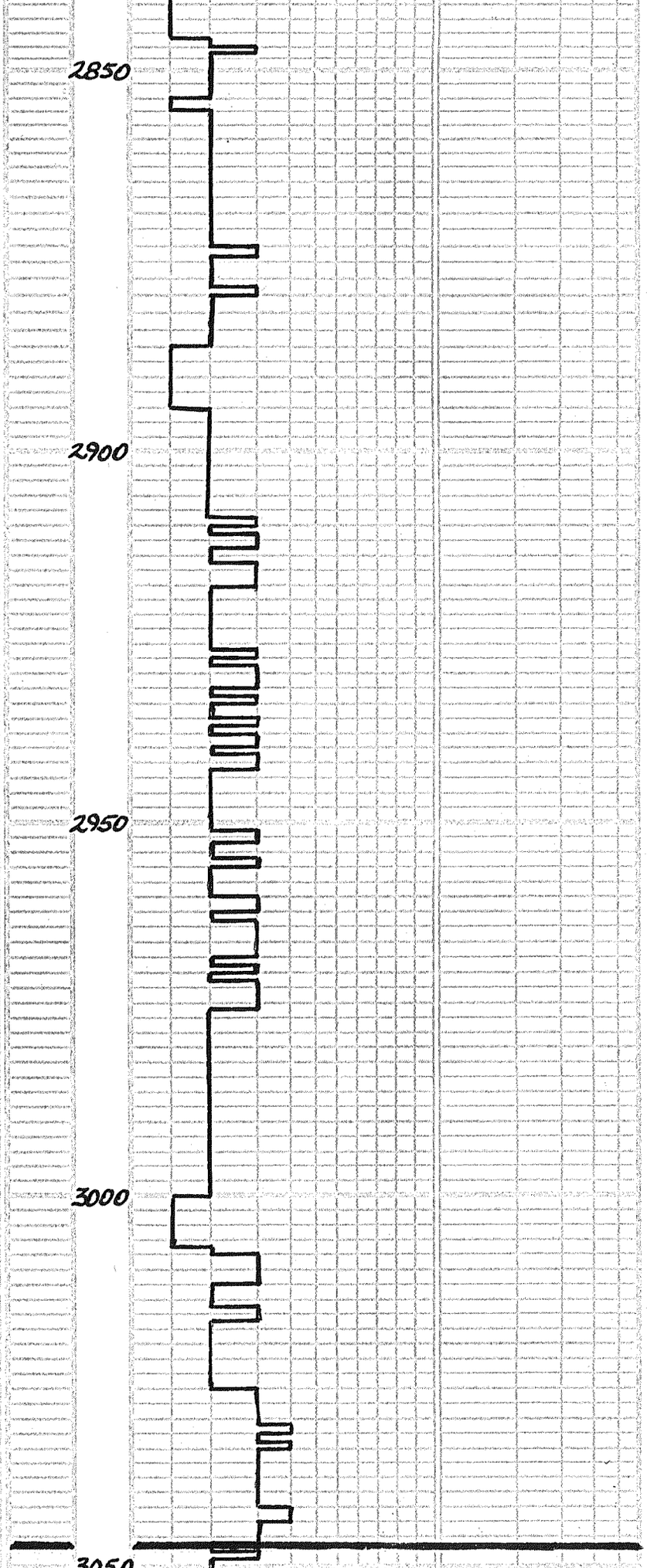
- ○ Weak Oil Show
- ◔ Fair Oil Show
- ◑ Good Oil Show
- ● Excellent Oil Show

Rate of Penetration in Minutes per foot

2800 ½ 1 2 3 4 5 6 7 8 9 10

Start 1 foot drilling time at 2800'

Deviation @ 2535' 3¼°




start 10' wet and dry samples at 2900'

Sh: lt.-dk.gry., sft.-m.sft., sl.hy earthy
Ls: crm-wh. hrd.-sft., fn-VFG xln. V. FN. grnld. smpl. NSFOC

Very Fine grained samples
Ls: wh.-crm., m.sft., dns., occ. foss. fn-VFG xln. ⌀ NSFOC
Sh: lt.-dk.gry., m.sft.-sft., dns., occ. slty. earthy
Ls: wh.-crm., sft.-m.sft., dns., fn-VFG xln., tr. gd. gom. ⌀ NSFOC
Very. Fine grained samples
Ls. A.A. N⌀NSFOC
Sh: A.A. Abun. rd. sh. cavings?
Sh: lt.-dk.gry., m.sft., dns., earthy
tr. Ss: clr-wh., m.sft., fn-VFG., mod.-w.rnd. unkn. ⌀ NSFOC

Sh: lt-drk.gry., m.sft., dns., tr carb., tr. slty., earthy
Ls: crm.-wh., m.sft.-m.hrd., fn.-VFG xln., foss. N⌀NSFOC
Sh: lt.-dk.gry., m.sft-sft., dns., earthy
Ls: crm-wh., m.sft.-m.hrd., VFG xln., tr. foss. N⌀ NSFOC
Sh: A.A., Abun. rd sh. cavings
tr. Ls: A.A. N⌀NSFOC

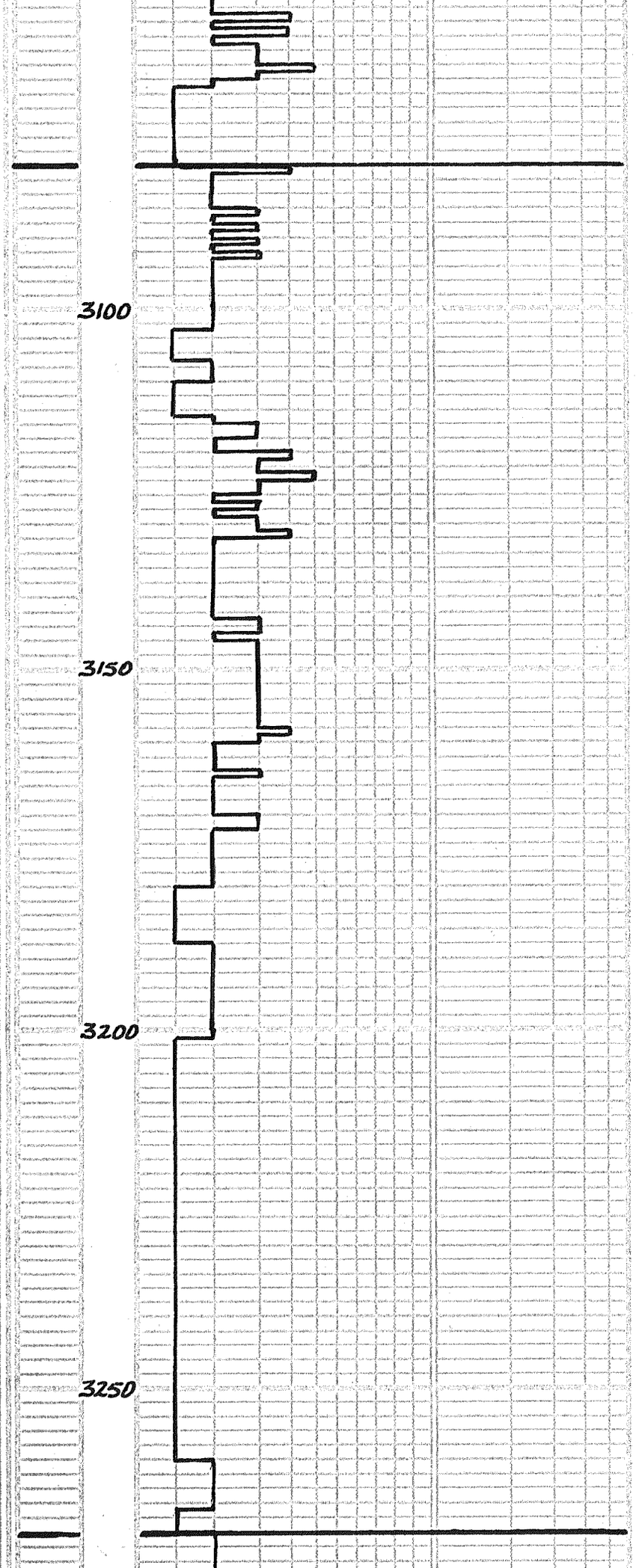
Sh: lt-dk.gry., m.sft.-sft., dns., occ. slty., earthy. Abun. cavings
Ls: crm-wh., hrd.-m.sft., dns., VFG-mxln., mic. N⌀NSFOC
tr. Ls: A.A. N⌀NSFOC
Sh: lt-dk.gry., sft., slty., earthy Abun. rd. sh. cavings. Very fine grained sample

Abun. rd. sh. cavings
Sh: lt.-dk.gry., sft.-m.sft., dns. occ. slty., mica., earthy
Sh: A.A.
Ls: crm., m.sft., dns., VFG. N⌀NSFOC
tr. Ss: crm., m.sft., fn-VFG., pr. srtd., cmtd. ⌀ NSFOC
Ss: A.A., mod.-w.gmtd., tr. pr. ⌀ ang.-sub.rnd. NSFOC
Sh: A.A.

Sh. gry.-dk.gry., m.sft., dns., tr. slty., earthy Abun. rd. sh. cavings.

tr. Ls. wh.-crm., m.sft.-m.hrd. dns VFG-mxln. mic. N⌀NSFOC
Sh: lt.gry.-tr. blk., m.sft., dns., earthy., tr. carb.
Sh: lt.-dk.gry., tr. blk. & carb. sft.-m.sft., earthy.
tr. Ls: A.A. N⌀NSFOC

Heebner Shale (4578')




Sh: A.A.

Ls: crm, prd.-m.sft, dns, fn.-vfg. foss.? NØNSFOC
Sh: lt-dk.gry, sft, sndy-slty.
tr. Ss: wh, m-sft, dns, vfg. mod. srt'd. ?Ø NSFOC

tr. Ss: wh, sft., vfg. frig. mod. srt'd. pr.-mod. cmtd. ?ØNSFOC
Sh: lt-dk.gry, m-sft., dns., earthy, tr. slty.

Douglas Sh. (-1611')

Sh: gry.-dk.gry, m-sft., dns., occ. slty, earthy

Sh: A.A., tr. tan?, more slty
Abun. rd. sh. cavings.

Sh: lt-dk.gry, m-sft., dns.) tr. slty.-sndy., earthy.

Sh: lt-dk.gry, m-sft., dns, tr. slty, earthy
tr. Ss: wh, hrd., dns., w. cmtd. cherty., vfg. NØNSFOC
Sh: A.A., Abun. loose sd. grns. fn-med. grnd., subrnd.

Sd: Abun. loose sd. gtn., med.-fn. grnd., occ. crs., sub. rnd.
Sh: gry, dk.gry, m-sft., dns., slty., earthy
Sd: loose grns. A.A.

Sh: gry.-dk.gry., m-sft., dns., occ. slty., earthy
Sh: A.A., occ. sl. hrdr. & hackly
Sd: loose grns. A.A.

Sh: lt-dk.gry., m-sft.-m. hrd. dns., tr. sndy., earthy-hack.
Sd: loose grns., sl. more fn. grnd.

Complete Displacing Mud System at 3170'

Sh: lt-dk.gry., m-sft.-m. hrd. dns., slty.-sndy., earthy, hackly
Sh: A.A.
tr. Ls.? tan., hrd., dns., vfg-mxln. mic., tr. foss. NØNSFOC

Sh: gry.-dk.gry., sft.-m-sft., dns., occ. slty., earthy
Sd: loose grns., med.-fn., sub rnd-sub. ang.
Sh: lt-dk.gry., sft.-m-sft., occ. slty.-sndy., earthy-hackly occ. slty stn.

Sh: lt-dk.gry., sft.-m-sft., dns. occ. slty-slts., earthy-hackly, tr. pyr., tr. mica.

Sh: lt-dk.gry., m-sft., dns., earthy-hackly, tr. slty., tr. mica.

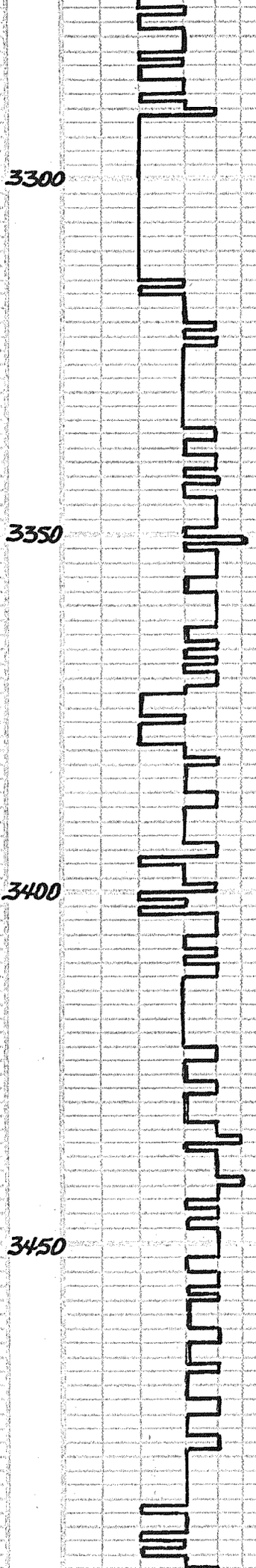
Sh: gry., m-sft., dns., occ. slty. earthy-hackly

Sh: gry., m-sft.-sft., occ. slty.-sndy., tr. mic., earthy.-hackly.

Sh: gry., m-sft., dns., tr. slty.) tr. Ss: vfg., hrd., dns., w. cmtd. NØNSFOC

Sh: A.A.

Lansing




ft. Ls: brn., hrd., dns., VFG-mx/n. mic., occ. foss. NØ NSFOC

Group (-1801')

Ls: crm-brn., hrd., dns., VFG-mx/n mic., tr. foss. pyr. NØ NSFOC
predom. Sh, gry., sft., dns., slty (CAVITY)

Ls: crm-tan, hrd.-sft. +chiky., VFG-mx/n., foss., pyr. NØ NSFOC
Abun. Doug/AS-shale A.A.

Deviation@3292' 1¼°

Ls: crm., hrd.-sft+chiky., VFG-mx/n., occ. foss., tr. pr. vug. moldic Ø NSFOC
Abun. Dg. Sh. CAVINGS

Ls: crm.-tan, hrd-m.sft., dns. VFG-mx/n, tr. mic., tr. chiky occ. foss., tr. Sh. Stnd. NØ NSFOC

Ls: crm., m. hrd., dns., VFGx/n., foss. w/ gd. vug. molic. Ø tr. sh. stnd. NSFOC

Ls: crm., hrd.-m. hrd., dns., fn.-VFGx/n., occ. foss. w/ occ., gd. Vug. Ø, some moldic Sh. Stnd. NSFOC

Ls: crm., hrd., dns., fnx/n., foss. tr. sh. stnd. NØ NSFOC

Ls: crm., hrd., dns., occ. sft.+ chiky, fnx/n-mx/n., foss. NØ NSFOC

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

Sh: A.A.

Ls: crm-tan, hrd., dns., fnx/n--mx/n., tr. chiky., tr. foss. +ool. w/ pr. moldic Ø NSFOC

Ls; crm-tan, hrd.-sft.+chky. fnx/n-mx/n., foss., tr. ool. tr. pr. vug. moldic Ø NSFOC

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

Sh: A.A.

Ls: crm., hrd. dns., fn-VFGx/n. foss. +ool. w/ tr. v. pr. oom. Ø NSFOC

Ls: crm.-brn., hrd., dns., fn-VFG x/n., foss, ool-grnstn., tr. v. pr. oom. Ø NSFOC
Abun. gry. Sh. CAVINGS?

Ls: crm., hrd., dns., VFGx/n., foss. +ool.-grnstn.-pack. stn. NØ NSFOC
Abun. Sh. CAVINGS

Ls: A.A., occ. tan-brn., pyr. tr. vesicd. NØ NSFOC

gry. Sh. CAVINGS?

Ls: crm.-tan., hrd., dns., VFG-mx/n. occ. chiky., occ. foss. +ool. tr. pr.-v. pr. oom. Ø NSFOC

Ls: A.A., tr. med. x/n. NØ NSFOC
Sh: gry.-dk. gry., m. hrd., dns. hackly

Ls: crm.-brn., hrd., dns., fn. x/n-mx/fn., tr. mic., tr. chik., foss.-v. foss., sh. stnd. NØ NSFOC

Ls: A.A., tr. pr. moldic Ø tr. gry. Ls. NSFOC

Ls: crm.-tan, hrd., dns., VFG-mx/n., mic. occ. foss., tr. sh. stnd., pyr. NØ NSFOC

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

Sh. A.A., occ. sndy.

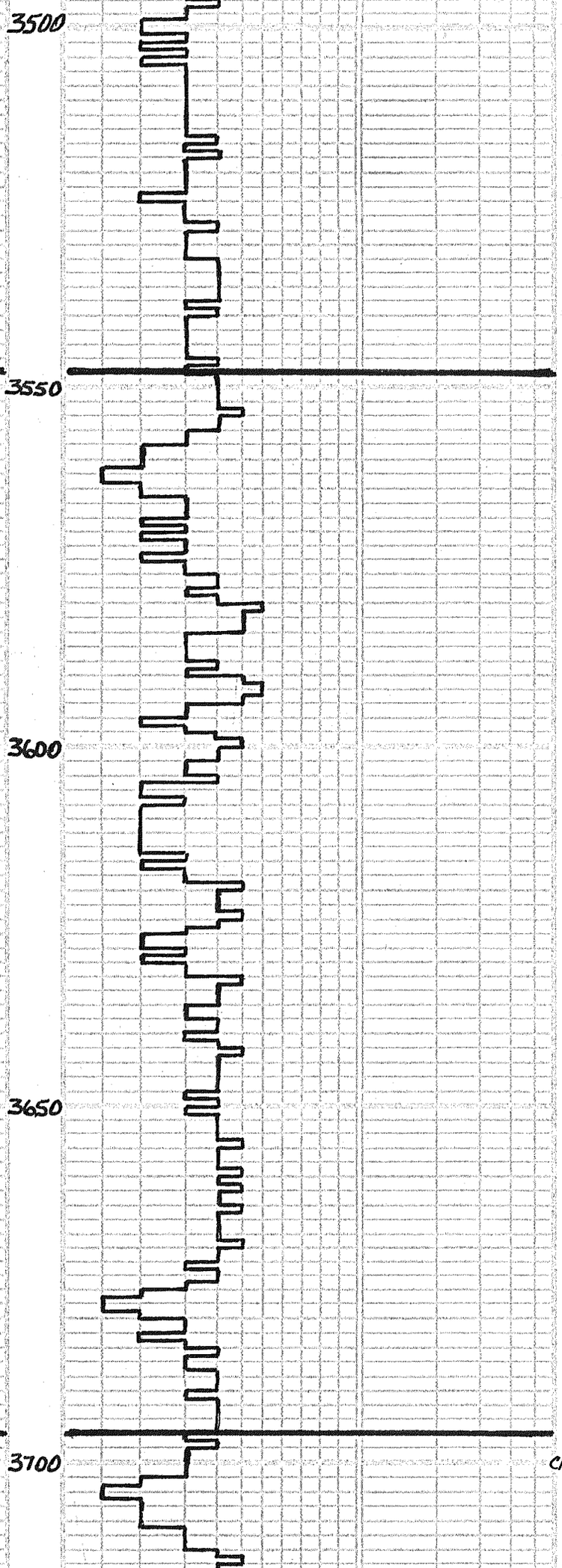
Ls: A.A., tr. sft.+chiky., tr. v. pr. moldic vug. Ø NSFOC

Sh: A.A.

Ls: crm-brn., hrd., dns., VFG-mx/n., mic., foss. +oo/., tr. chiky. NØ NSFOC

Ls: A.A. NØ NSFOC

Sh: gry. grn., dk. gry., m. sft.-




m.hrd., fr. pyr., hacky

Sh: gry.-blk., m.sft.-m.hrd., dns., hack.
Ls: crm-brn, hrd, dns, VFG-mxln, mic., foss. NΦ NSFOC
Ls: A.A. NΦ NSFOC

Sh: gry.-blk, m.hrd., dns., hack. occ. sh. dy.
Sh: gry.-blk. A.A., fr. shly. ss.

Ls: crm-brn.-dk.gry., hrd., dns., VFG-mxln, foss. NΦ NSFOC
Ls: A.A. VFG sml. NΦ NSFOC

Sh: lt.-dk.gry., m.hrd., dns., hacky
Sh: gry.-blk., m.hrd. dns., hack, fr. carb., fr. pyr.
Ls: tan-brn, hrd, dns, VFG-mxln, occ. foss. NΦ NSFOC

Sh: A.A.
Ls: crm-brn., hrd.-sft. & chik, VFG-mxln, fr. mic., fr. foss. NΦ NSFOC

Kansas City Group (-2079')

Ls: crm., sft., VFG-mxln, chiky. occ. dns., mic., fr. foss. fr. ool. w/ pr. oom. Φ
Abun. Sh. Cavings

Ls: crm-tan, hrd., dns.-fr. sft. & chiky., fr. foss. & ool., fr. sh. stnd. NΦ NSFOC
Ls: crm-brn, hrd. dns., VFG-mxln. mic., fr. ool. NΦ NSFOC
Sh: dk. gry.-blk., m.hrd., dns., hack,
Abun. Sh: A.A.
Ls: crm., hrd.-m. sft. & chik., occ ool. & foss. w/ fr. v. pr. oom. Φ NSFOC
Ls: crm., m. hrd., dns., VFG-mxln. occ. v. foss. & ool. w/ fr. fr.-pr. oom. Φ NSFOC
Sh: dk. gry., m. hrd., dns., hack.

Ls: crm., m. sft., VFG xln., occ. foss. & ool., fria. No vis. Φ
Abun. Sh. Cavings NSFOC

Mud Check @ 3620'
M.W. 9.2 lb. /gal.
Vis. 53 sec. /qt.
W.L. 8.8 ml. /30 min.
Chl. 4,000 ppm
Solids 6.2%
LCM 0 lbs. /bbl.

Ls: crm.-tan., m. sft., VFG-mxln. fr. chik., occ. foss. & ool., fria. No vis. Φ NSFOC
Ls: crm., hrd.-m. sft., dns. fnxln. -mxln., occ. ool., fr. chik. NΦ NSFOC
Abun. Sh. Cavings
Ls: crm.-tan, hrd-m. sft., dns., VFG-mxln., fr. mic., fr. foss. NΦ NSFOC
Abun. Sh. Cavings
Ls: crm., hrd-m. sft., dns., fnxln -mxln., fr. mic., occ. foss. fr. sh. stnd. NΦ NSFOC

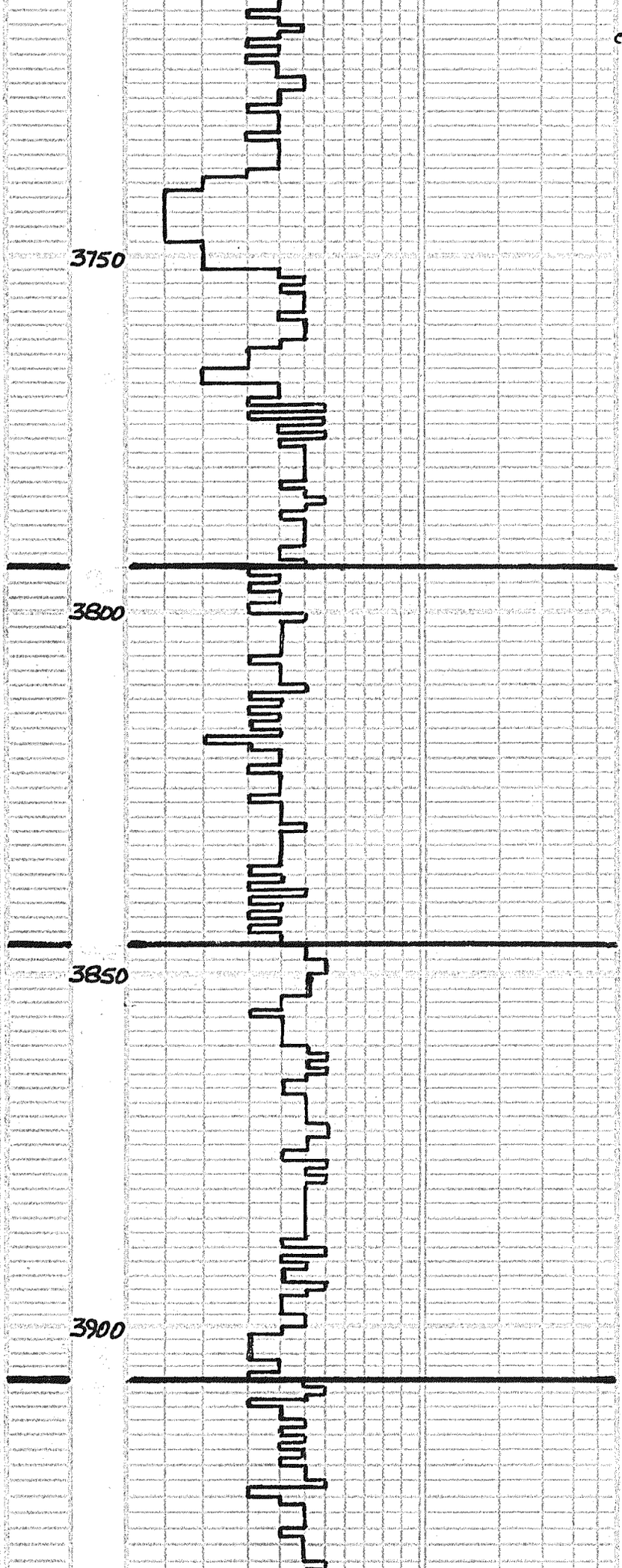
Ls: crm., hrd.-sft., dns., VFG-mxln., occ. chiky., fr. mic. occ. foss. & ool. NΦ NSFOC
Abun. Sh. Cavings
Ls: crm., sft. & chiky.-hrd., dns. fnxln-mxln., fr. foss. NΦ NSFOC

Sample ± 80% shale
Ls: crm., sft.-hrd., dns., VFG-mxln., mic., occ. foss. & ool. w/ fr. pr. oom. Φ NSFOC
Abun. Sh. Cavings
Ls: A.A. NΦ NSFOC

Sh: dk. gry.-blk., m. sft., carb. earthy-hacky
Ls: crm., hrd., VFG xln., ool. w/ gd-ex. oom. Φ, fr. sft. & chik. NSFOC

Stark Shale (-2227')

Ls: crm.-tan, hrd., dns., fn xln-mxln., occ. ool. w/ pr. oom. Φ




Fr. chiky NSFOC
Abun. sh. cavings

Ls: crm.-tan, hrd., dns., vfg-mxln., fr. mic., ool. w/fr. oom. ϕ NSFOC
Sh: blk, m.sft, carb., earthy
Ls: crm., hrd., dns., vfg x/n. fr. ool. & foss. NϕNSFOC

Ls: crm. m. hrd., dns., vfg x/n. ool. w/gd.-ex. oom. ϕ NSFOC

Ls: crm.-tan, hrd.-m. sft., vfg-mxln., mic., fr. chiky., fr. sh. stnd., ool. w/gd. oom. ϕ NSFOC
Ls: crm.-tan, hrd., dns., vfg-mxln., mic., ool. w/fr.-pr. oom. ϕ, tr. sh. stnd. NSFOC

Sh: dk. gry., m. hrd., dns., hack.
Ls: crm-brn-gry., hrd-sft. vfg-mxln., mic. tr. chiky. fr. sh. stnd. & foss. NϕNSFOC
Sh: dk. gry., m. hrd., dns., hack.

Ls: crm-tan, hrd., dns., vfg-mxln., mic. pebb. surf. NϕNSFOC
Ls: A.A., tr. foss. NϕNSFOC

Sh: dk. gry., tr. rd. brn., m. sft-m. hrd., earthy-hackly

Sh: lt.-dk. gry., tr. rd. brn., occ. sft. & sdy., m. sft.-m. hrd. earthy-hackly

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

Sh: A.A.
Ls: crm-dk. gry., hrd., dns., occ. foss. & sh. stnd., fr. pebb. surf. NϕNSFOC
tr. Ls: A.A. more sh. stnd. NϕNSFOC
Sh: A.A. w/ Sh. gry. grn., m. hrd., dns., sl. sdy.-sndy., w. cmtd. pr. srtd., vfg NϕNSFOC
Sh: A.A., occ. v. sndy. A.A.

Ls: crm-tan, hrd, dns., vfg-mxln., mic., rare foss. NϕNSFOC
Ls: A.A. NϕNSFOC

Sh: dk. gry.-blk., m. hrd.-m. sft. dns., occ. carb., earthy-hack.
Ls: crm-tan, hrd., dns., vfg-mxln. mic., tr. foss., NϕNSFOC
Sh: blu-grn & sndy-dk. gry., m. hrd. dns., hackly
Sh: A.A., less blu-grn.
Ls: tan, hrd., dns., vfg-mxln. occ. foss. & sh. stnd. NϕNSFOC

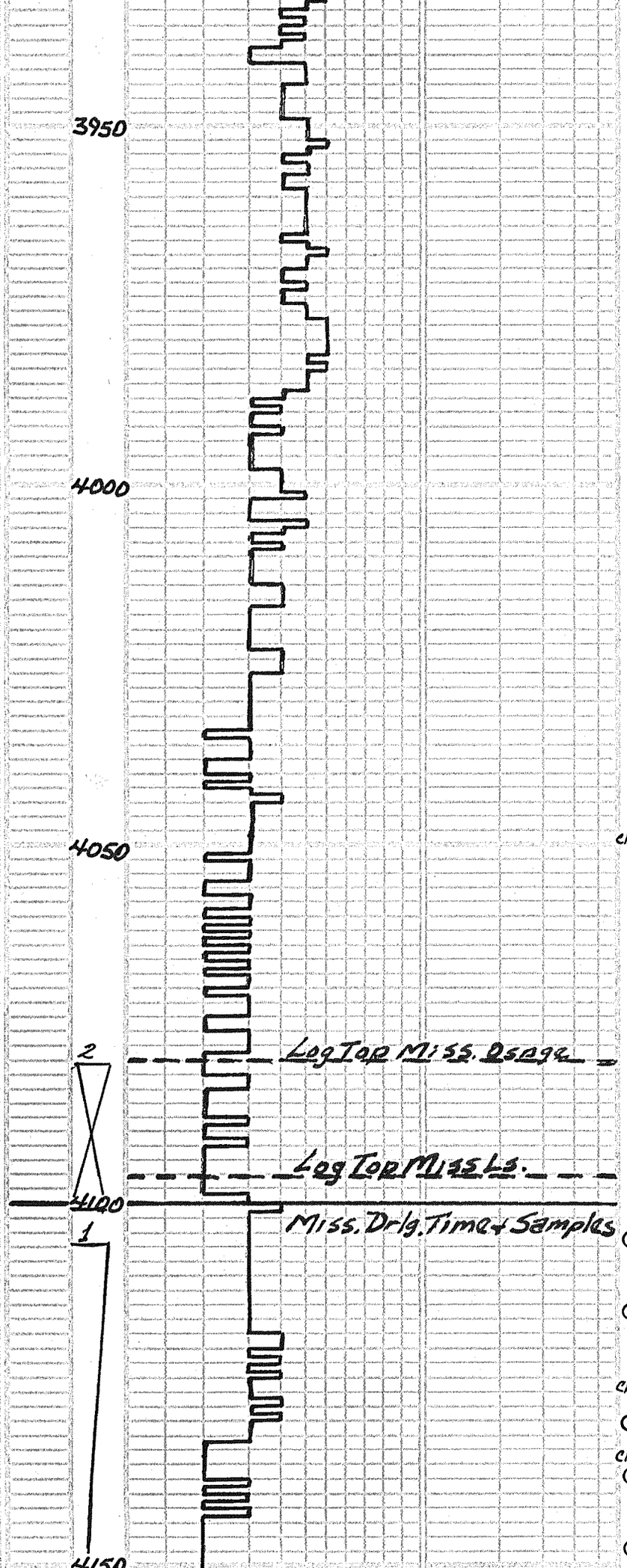
Sh: dk. gry., m. hrd., dns., hack.
Ls: crm-dk. gry., hrd., dns., vfg-mxln., mic., tr. foss., occ. sndy. fr. pebbles, sh. stnd. NϕNSFOC
Sh: A.A.
Ls: tan-blk., hrd., dns., vfg-mxln. mic., sndy., occ. v. foss., fr. pebble surf. NϕNSFOC
Sh: lt. gry.-blk., m. hrd., dns., occ. carb., earthy-hackly
Ls: crm-tan, hrd., dns., vfg-mxln. rare foss., tr. pebb. NϕNSFOC
Sh: A.A.

Ls: crm-tan, hrd., dns., vfg-mxln. mic., occ. sndy., occ. foss. NϕNSFOC
Abun. sh. - cavings?
Ls: crm.-brn, hrd., dns., vfg-mxln. mic., occ. foss. & sh. stnd., fr. pebb. surf. NϕNSFOC
Sh: A.A. - cavings?

Base of Kansas City Group (-2325')

Altamont Ls. (-2377')

Pawnee Ls. (-2439')




Ls: A.A., less. foss. N∅NSFOC

Sh: dk. gry.-blk., m. hrd., dns., hack.
Ls: brn-blk., hrd., dns., mxln. mic., foss., sh. stnd. N∅NSFOC

Sh: A.A.
Ls: crm.-tan, hrd., dns., mxln. mic., tr. foss. N∅NSFOC

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

Ls: gry., hrd., dns., vfg-mxln. mic. rare foss., sh. stnd. N∅NSFOC
Sh: dk. gry.-blk., m. hrd., dns., carb. hack.-earthy
Ls: crm.-gry., hrd., dns., vfg-mxln. mic., pyr., tr. foss. N∅NSFOC
Ls: A.A. N∅NSFOC

Sh: dk. gry.-blk., hrd.-m. hrd., dns. earthy-hackly
Ls: crm-dk. gry., hrd., dns., vfg-mxln. occ. mic., occ. foss., sh. stnd. N∅NSFOC
Sh: dk. gry.-blk., m. hrd., dns., hack.
Sh: A.A.

Ls: crm-tan-gry., hrd., dns., vfg-mxln. tr. foss., occ. sndy N∅NSFOC
Ls: A.A. N∅NSFOC

Sh: gry. grn.-dk. gry., m hrd., dns., hack.-earthy
Ls: crm-tan-gry., hrd., dns., vfg-mxln. rare foss. N∅NSFOC
Sh: lt.-dk. gry., m. hrd., dns., hackly
Ls: crm-tan, hrd., dns., vfg-mxln. tr. foss., tr. sh. stnd. N∅NSFOC
Sh: dk-lt. gry., m. hrd., dns., tr. sndy., hackly-earthy
Sh: A.A., tr. carb.

CFS
Ls: crm-tan, hrd., dns., vfg-mxln. mic., foss., sh. stnd. N∅NSFOC
Ls: crm-tan-gry., hrd., dns., vfg-mxln., mic., tr. foss. N∅NSFOC
Sh: lt.-dk. gry., rd. brn.-mar., m, sft.-m. hrd., earthy-hack.
tr. Ls: A.A. N∅NSFOC

Sh: A.A., tr. mar.-rd. brn., tr. sndy.
Sh: gry.-dk. gry., tr. rd., brn., tr. Ls/cht. pebb., tr. ss. brnly hrd., dns., tn-vfg. w/cmtd. pr. stnd. N∅NSFOC
tr. Ss. A.A. N∅NSFOC
Sh: lt.-dk. gry., m. hrd., dns., occ. rd brn-mar., hackly

Sh: A.A.
2-3 pc. wh. cht. + wh. Ls: m. hrd dns., vfg xln., 1 pc. v. lt. brn. stn w/ wk. cut + fl., v. v. wk. shpw
cht: wh., m. hrd.-hrd., devit-trip. tr. pr. pp. ∅, lt. brn uni. stn-mott. stn., tr.-gd. cut + fl., tr.-wk. odor, No F.O., ?perm.
cht: wh-tan, hrd., dns., devit. sli. trip., tr. fr.-pr. vug ∅ sat.-mott. stn., wk.-gd. cut + fl., No F.O., weak odor
cht: A.A., tr. wh. Ls., shows A.A. Abun. sh. cavings
CFS
cht: A.A., tr. calc., tr. sli. trip. brn. uni.-mott. stn., wk. odor
cht: tr. ls. A.A. 1 pc. bldg. oil, some N∅ barren., wk. odor, wk. cut + fl.
CFS
cht: wh., hrd., dns., tr. trip. w/ vfg pp. ∅, gd-pr. stn., tr. cut + fl., No F.O.

cht: wh., hrd.-m. sft., dns., devit. tr. w/ pr.-fr. vug ∅, dk. brn.-blk stn., wk. cut + fl., wk. odor, No F.O.

Log Top Miss. Osage

Log Top Miss Ls.

Miss. Drlg. Time + Samples

Mud Check @ 4012'
M.W. 9.5+
Vis. 48
W.L. 9.8
Chl. 4,000
solids 8.3
L.C.M. 0

Short Trip @ 4049'

D.S.T. #1 4106'-55'
Rec. 160' GIP
145' O + WCM
119' S.W.
30-60-90-90
Dev. 1°
strap. 27' short

Mississippian
Osage Fm. (-2631')
Fair Show

Fair Show

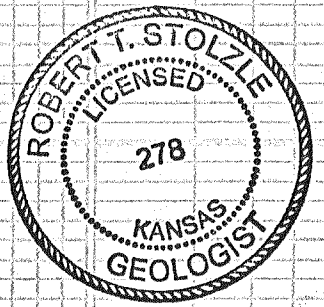
Weak Show

Weak Show

Weak Show

4200

Deviation 2°




CFS

Cht; wh., hrd-stf., fr. wh. Ls. fr. ft-pr. vug Φ, 1-2pc. bldg. oil. — Fair Show

Cht: A.A., ft. lt brn-dk. oil stn. Wk. cut+fl., v. wk. odor. v. wk show

Cht-crm-wh., hrd-m. stf., occ. calc., fr. devit., fr. v. f., vary lt. brn. stn., v. wk. cut+fl., v. wk. show, No odor, abun. cavings

Ls: crm., hrd., dns., vfg x/n., fr. Cht., fr. vfg ppΦ w/lt. brn. stn. fr. f.o., v. wk. odor. v.? perm abun. cavings ft. cut+fl. — Weak Show

Ls: crm., hrd., dns., vfg-mx/n., tr. cht., occ. vfg. pp. vug Φ. w/brn. stn., 1-2pc. bldg. oil, wk. cut+fl. ?perm., abun. cavings. ±90% — Weak Show

Ls: crm., hrd., dns., vfg-mx/n., occ. sndy., rare ppΦ, 1pc. bldg. oil., v. wk. cut+fl., No odor abun. cavings. v. weak show

Ls: wh-lt. gry., hrd., dns., vfg-mx/n., fr. wh. vit. cht. No odor No stn., tr. v. pr. ppΦ NSFOC

Ls: wh-crm., hrd., dns., vfg-mx/n. mic., fr. wh. cht., fr. sndy. ±90% shale cavings NΦ NSFOC

Mud Check @ 4220'
M.W. 9.2
Vis. 53 LCM 2#
W.L. 9.0
Chl. 4,000 ppm
Solids 6.2 %

D.T.D. 4220'
L.T.D. 4218'

Robert Stolzle
2/1/13