ROBERT STOLZLE

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DRILLING TIME AND SAMPLE LOG

OPERATOR: Murfin Drilling Co., Inc.
LEASE: Poore   WELL NO.: 1-14
FIELD: Unnamed
LOCATION: 970'FNL, 910'FWL
SEC.: 14   TWP: 3S   RANGE: 36W
COUNTY: Rawlins   STATE: KS
API NO.: 15-153-20909-00-00

CONTRACTOR: Murfin Drilling Co. Rig #14
COMMENCED: October 10, 2012   COMPLETED: 10/20/12
ROTARY TOTAL DEPTH: 5050'   LOG TOTAL DEPTH: 5052'
GEOLOGICAL SUPERVISION FROM: 3550' to: T.D.
MUD-UP DEPTH: 3297'   MUD TYPE: Chemical Polymer

ELEVATIONS
KB 3327
GL 3317
Measurements are all from KB

CASING RECORD
SURFACE: 8 5/8" @ 398', circ.
PRODUCTION: None, P&A.

WIRELINE SURVEYS
Pioneer - Dual. Comp. Porosity, Dual Induction Microresistivity and BHC Sonic logs were run.

FORMATION	SAMPLE TOP	SAMPLE SUBSEA	LOG TOP	LOG SUBSEA	STRUCTURAL COMPARISON
Stone Corral Anhy.	3138	(+189)	3140	(+187)	+4'
Base of Anhydrite	3174	(+153)	3174	(+153)	+7'
Nava Ls.	3651	(-324)	3651	(-324)	+9'
Foraker Ls.	3775	(-448)	3775	(-448)	+10'
Topeka Fm.*	4033	(-706)	4033	(-706)	+2'
Heebner Shale	4186	(-859)	4183	(-856)	+12'
Lansing Group	4231	(-904)	4234	(-907)	+9'
Stark Shale	4446	(-1119)	4448	(-1121)	+12'
Base KS. City Gp.	4495	(-1168)	4496	(-1169)	+15'
Pawnee Ls.	4626	(-1299)	4627	(-1300)	+7'
Cherokee Shale	4696	(-1369)	4697	(-1370)	+12'
Mississippian	4883	(-1556)	4882	(-1555)	+19'
Total Depth	5050		5052		

*Strat. change on top of Topeka

LOCATION MAP

Location
○ #1-14 Poore

14

Reference Well for Structural Comparison: MDC, Sramek 'B' #1-11 Sec. 11 T3S-R36W
Comments and Recommendations: Recommended well be plugged and abandoned

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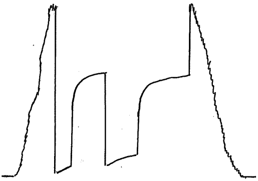
DST # 1   ZONE: Douglas Ss., Lansing 'A' + 'D' Zones
INTERVAL: 4181-4310'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2054 psi	352' Mud w/ Trace Oil, 5% gas
2. Initial Flow: Start	0	53 psi	178' Sli. wtr. cut
3. Initial Flow: End	30	130 psi	Mud w/ tr. oil
4. Initial Shut-in: End	60	1237 psi	(7% gas, 4% wtr.)
5. Final Flow: Start	0	134 psi	Blow Desc.
6. Final Flow: End	60	269 psi	I.F. - built to 9 3/4"
7. Final Shut-in: End	90	1213 psi	I.S.I. - No blow
8. Final Hydrostatic		2021 psi	F.F. - built to 9 3/4"
			F.S.I. - No blow

BHT: 126°F.
Rw:
Note: Tool slid 7' to bottom, lost 15' Mud

DST # 1   6719 Chart
Interval: 4181-4310   Depth: 4182'



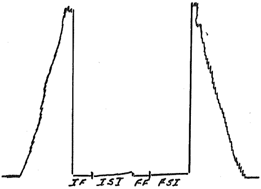
DST # 2   ZONE: Kansas City 'J' Zone
INTERVAL: 4401-4450

DST # 2   6719 Chart
Interval: 4401-50   Depth: 4402'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2177 psi	3'Drilling Mud
2. Initial Flow: Start	0	17 psi	
3. Initial Flow: End	30	19 psi	
4. Initial Shut-in: End	60	57 psi	Blow Desc:
5. Final Flow: Start	0	19 psi	I.F.-1/4"died@27min.
6. Final Flow: End	30	20 psi	I.S.I.-No blow
7. Final Shut-in: End	60	39 psi	F.F.-No blow
8. Final Hydrostatic		2157 psi	F.S.I.-No blow

BHT: 127°F.

Rw:



DST # 3 ZONE: Kansas City 'L' Zone + basal Sandstone

INTERVAL: 4480'-4510'

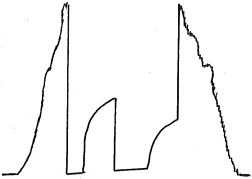
Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2306 psi	150' Watery
2. Initial Flow: Start	0	19 psi	Mud (48%
3. Initial Flow: End	30	49 psi	Water, 52% Mud)
4. Initial Shut-in: End	60	1004 psi	Blow Desc.
5. Final Flow: Start	0	53 psi	I.F.-3" blow
6. Final Flow: End	60	83 psi	I.S.I.-No blow
7. Final Shut-in: End	60	753 psi	F.F.-1" blow
8. Final Hydrostatic		2219 psi	F.S.I.-No blow

BHT: 138°F.

Rw: .275@65.5°F
Chlorides 27,000 ppm

DST # 3 6719 Chart

Interval: 4480-4510 Depth: 4481'



DST # 4 ZONE: Upper Pawnee Ls.

INTERVAL: 4596'-4650'

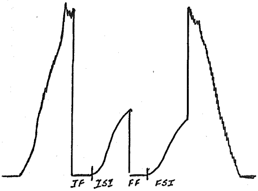
Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2420 psi	5'Mud w/th oil
2. Initial Flow: Start	0	19 psi	
3. Initial Flow: End	30	21 psi	
4. Initial Shut-in: End	60	921 psi	Blow Desc.
5. Final Flow: Start	0	22 psi	I.F.-1/2"died in 23 Min.
6. Final Flow: End	30	24 psi	I.S.I.-No blow
7. Final Shut-in: End	60	786 psi	F.F.-No blow
8. Final Hydrostatic		2403 psi	F.S.I.-No blow

BHT: 134°F.

Rw:

DST # 4 6719 Chart

Interval: 4596'-4650' Depth: 4597'



DST # 5 ZONE: lwr. Pawnee, Ft. Scott, Cherokee
INTERVAL: 4645'-4740'

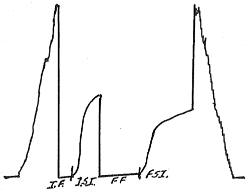
Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2400 psi	20' Mudcut Oil
2. Initial Flow: Start	0	22 psi	(79% oil, 1% gas)
3. Initial Flow: End	30	32 psi	70' Oil cut Mud
4. Initial Shut-in: End	60	1127 psi	(22% oil, 3% gas)
5. Final Flow: Start	0	37 psi	90' gas in pipe
6. Final Flow: End	90	59 psi	Oil gravity-26.8°
7. Final Shut-in: End	120	951 psi	
8. Final Hydrostatic		2324 psi	Blow Desc.

BHT: 128°F

Rw:

Blow Desc.
I.F. - 2 1/4"
I.S.I. - No Blow
F.F. - 4 1/2"
F.S.I. - No Blow

DST # 5 6719 Chart
Interval: 4645'-4740' Depth: 4646'



ABBREVIATIONS USED

ROCK TYPES:

Ls - Limestone
Sh - Shale
Ss - Sandstone
Slts - 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
Dtt - Detrital
Foss - Fossiliferous
Xln - Crystalline
Mxln - Microcrystalline
Ool - Oolitic
Oom - Oomoldic
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 - 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
intgran - intergranular
pp - pinpoint
dd - dead
osy - oozy

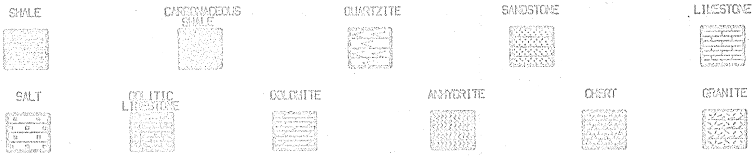
TEXTURE:

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

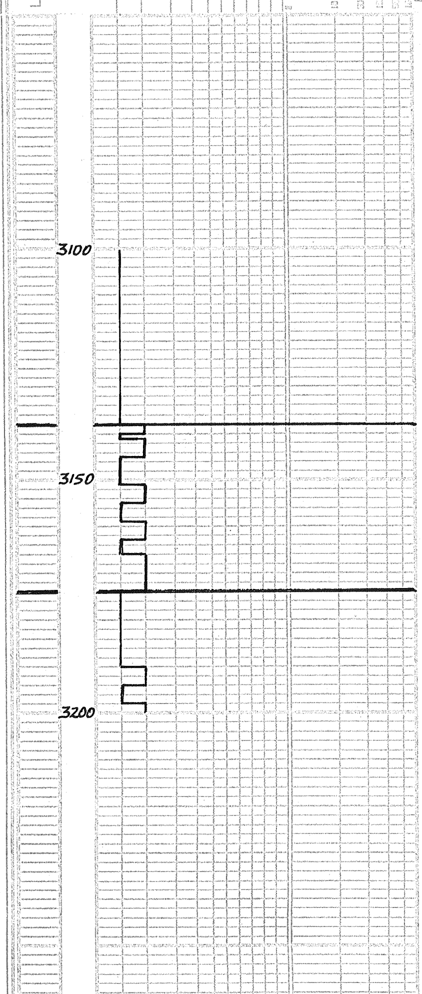
OIL SHOWS

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

ROCK TYPE SYMBOLS



THOLOGY
DRILLING TIME
GAS SHOWS
TOTAL GAS UNITS
CHROMATOGRAPH UNITS
il Shows
SAMPLE DESCRIPTIONS
REMARKS



Stone Corral Anhydrite (+189')

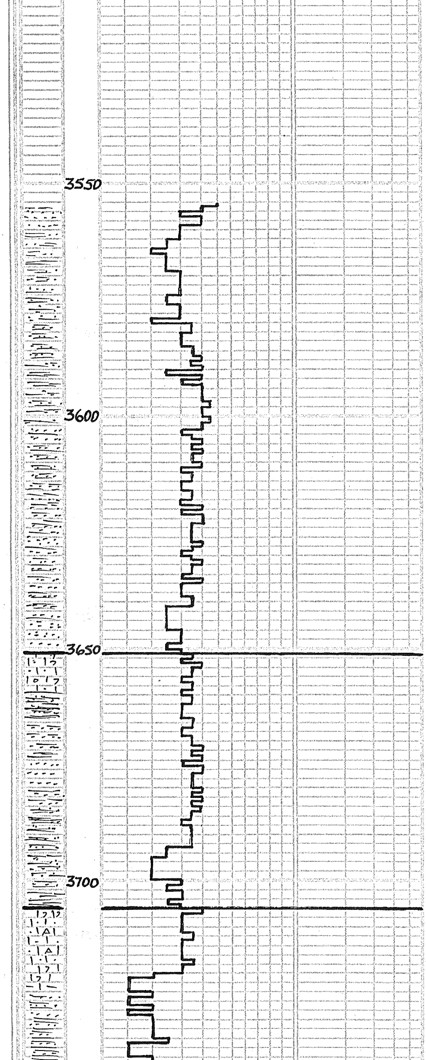
Base of Anhydrite (+153')

Displace Native Mud System at 3297'

Note: Made bit trip at 3519' for button bit

Deviation 1°

Strap .56 short to board



Ss: crm, hrd, dns, VFG., V.W. cmtd.
CALC, mod. srtd. NO NSFOC
Sh: rd.-rd. brn, V. sft, earthy.-
clayey, occ. slty
Ss: A.A., occ. sft + fria. No Vis
Ø, VFG. NSFOC
Sh. A.A.
Ls: wh, sft, mxln, chlky. NO NSFOC

Sh: rd.-rd. brn, sft, clayey,
occ. slty.-sndy. tr. slts.
NO NSFOC
Sh: -slts, rd, V. sft. + clayey-
m. sft. + earthy, occ. V.
sndy.

Sh.-slts. A.A. occ. Ls: crm.-tan.
hrd, dns, mxln, mic, occ.
sndy.-V. sndy. NO NSFOC

Slts.-shly. Ss: rd. brn, sft. +
clayey.-m. hrd, dns, V. pr.
srtd, W. cmtd, VFG NO NSFOC

Slts: -shly. Ss: A.A., sli. more
clayey + V. sft., NO NSFOC

Slts: -shly. / clayey Ss: sft.-
m. sft., clayey-earthy.
V. pr. srtd, fn. grnd, w. cmtd.
NO NSFOC
Slts.-shly. Ss: A.A., more
earthy. + m. sft. NO NSFOC
Sh: gry. grn-gry, m. hrd.-m. sft.
dns, hackly.-trace only
Slts: / Sh: A.A.
Ls: crm.-tr. gry, m. hrd, dns, VFG
-mxln, occ. sndy., tr. foss. +
ool, tr. pyr, tr. rexlzd. NO NSFOC
Ls: crm.-gry, sft. + chlky.-hrd,
dns, VFG-mxln, sndy, occ. foss.
+ ool. NO NSFOC

Nava Member
of
(Grenola Ls.)
(-324')

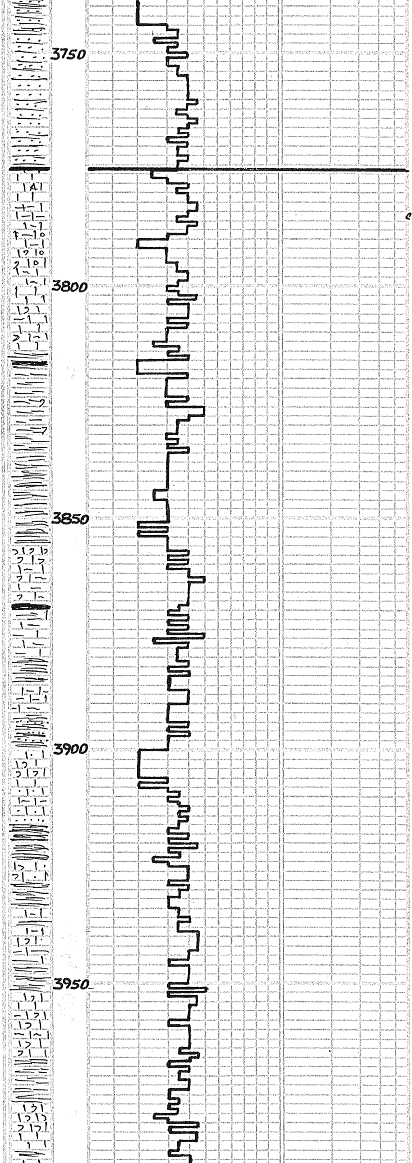
occ. Ls: A.A. NO NSFOC
sndy. Sh.-shly. Ss: rd. brn,
sft. + clayey.-m. hrd, dns,
earthy, V. pr. srtd, NO NSFOC
Sndy Sh.-shly. Ss: A.A. NO NSFOC
tr. Ss: tan, m. hrd, dns., NO NSFOC
tr. Sh: grn. gry.-gry, m. hrd,
dns., earthy

Slts. rd.-rd. brn, sft.-m. sft.,
clayey-earthy., occ. sndy
-V. sndy. NO NSFOC
Slts. A.A. w/ Sh. / Slts: wh.-
gry, m. sft, dns, occ. sndy,
clay-earthy

Slts. rd.-gry. A.A.
tr. Ss. gry, m. sft, dns., VFG, mod.
srtd, W. cmtd, ?Ø NSFOC
Ls: tan, hrd, dns, VFG, sndy. NO NSFOC
Ls: crm, sft. + chlk.-hrd, dns.,
VFG-mxln, mic, occ. sndy,
tr. foss, occ. rd. brn. cht.
hrd, dns, V.t. NO NSFOC
Ls: A.A., more foss., more sft. +
chlky, occ. rd. brn. cht.
NO NSFOC

Red Eagle Ls.
(-379')

Sh. + Slts. rd.-rd. brn, V. sft. +
clayey-m. sft, earthy, occ.
V. sndy, tr. cht. NO NSFOC



Sh: rd.-rd.brn., v.sft., clayey, occ. m.sft. + slty. A.A. NΦ NSFOC

Slts: rd.-rd.brn., v.sft. + clayey-m.hrd. + earthy., sndy., tr. calc. NΦ NSFOC

Slts: A.A., tr. **Sh**: gry., m.hrd., dns., earthy-hackly, tr. **Ss**: v.sft., wh., v.?Φ. NSFOC

Mud Check @ 3763'
M.W. 9.0 lb./gal.
Vis. 56 sec./qt.
W.L. 6.8 ml./30 min
chl. 1,100 P.P.M
solids 5%
L.C.M. 4 lbs/bbl.

Ls: wh.-crm., v.sft. + chlky.-m.hrd., dns., VFG-mxln., occ. foss. NΦ NSFOC

Foraker Ls.
(-448')

Ls: A.A., chlky, NΦ NSFOC, tr. **Cht**: rd., hrd., dns., vit.

Ls: crm.-tan-gry., m.sft.-m.hrd., dns., fn.-VFG xln, occ. sndy., occ. foss. + ool., tr. chlk. NΦ NSFOC

Ls: crm.-gry., hrd., dns. med.-fn. xln. occ. foss., 2-3 pc. pr. vug. Φ w/ dd. blk. oil stn., No odor, No F.O. fr.-pr. cut + fl. V. Very Weak Show

Ls: crm.-gry., sft. + chlky-hrd., dns., fnxln-mxln, tr. rexlzd. tr. foss., tr. sh. stnd. NΦ NSFOC

Ls: A.A.-less. chlky. NΦ NSFOC

Sh: dk.gry.-blk., m.hrd., dns., occ. foss., hackly

Sh: rd.-lt.gry., sft., clayey, occ m.hrd., dns., hackly

Sh: A.A., tr. **Sh**: dk. gry., m.hrd. dns., hackly

Sh: rd., v. sft., clayey

Ls: crm.-gry., hrd., dns., VFG xln., occ. foss.-v. foss. NΦ NSFOC

Ls: crm.-dk.gry., hrd., dns., occ. foss., tr. sndy NΦ NSFOC

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

Ls: crm.-tan-gry., hrd., dns. fn. xln.-mxln., tr. rexlzd., foss. + sh. stnd. NΦ NSFOC

occ. **Sh**: gry., m.sft., earthy

Ls: A.A., tr. chlky NΦ NSFOC

Sh: rd. brn., v. sft., clayey, tr. dk. gry., m.hrd., hackly

Sh: rd. brn., v. sft., clayey, occ. m.sft., earthy, occ. sndy., tr. dk. gry. sh.

Sh: A.A., occ. rd., more sndy.

Ls: wh., sft., chlk., occ. gry., hrd. dns., foss., VFG xln. NΦ NSFOC

Ss: - sndy. **Sh**: lt.-dk. gry., VFG, mod-pr. srtd., w/ cmtd., tr. fri A., No Vis. Φ, occ. v. sndy sh.-slts. NSFOC

Sh: rd. brn., sft., clayey-cavings?

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

Ls: tan-gry., hrd., dns., VFG-mxln. occ. sndy., occ foss. NΦ NSFOC

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

Ls: crm-gry., hrd., dns., VFG-mxln. foss., tr. chlky NΦ NSFOC

Ls: crm.-dk. gry., hrd.-m.hrd., dns., foss., occ. sh. stnd. NΦ NSFOC

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

occ. **Sh**: A.A.

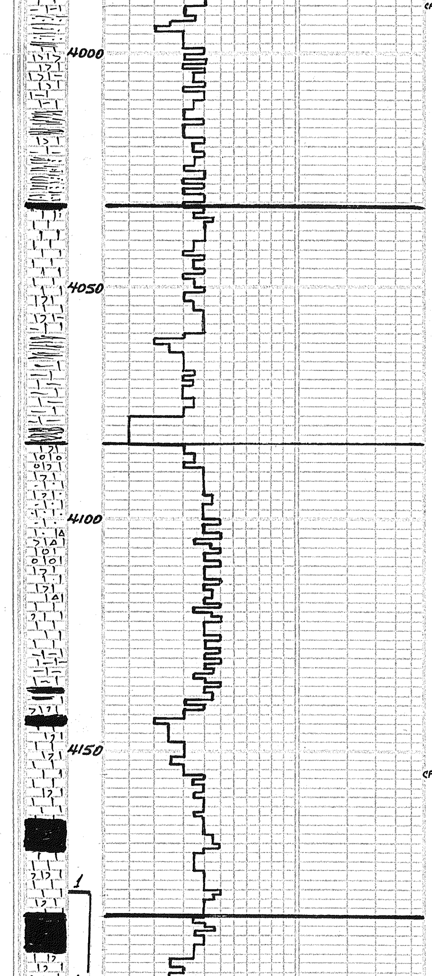
Ls: crm-gry., m.hrd-hrd., dns., VFG xln., tr. rexlzd., occ. foss., w/ 1-2 pc. pr. vug. Φ NSFOC

Ls: crm-tan-gry, hrd., dns., VFG-mxln., occ rexlzd., occ. sh. stnd. foss. NΦ NSFOC

Sh: rd.-gry.-poss. rd. cavings.

Ls: crm.-tan, hrd., dns., fn. xln.-mxln., occ. mic., tr. rexlzd., tr. sft. + chlky., occ. v. foss-grnstn. NΦ NSFOC

Ls: crm.-lt.gry., hrd., dns., tr. wh. sft. + chlk., foss.-v. foss., fnxln. occ. rexlzd. NΦ NSFOC



Sh: rd. brn-gry.-dk. gry., sft. + clayey-m. hrd., hack, tr. rd. sndy-slty.

Ls: crm., hrd., dns., NØ NSFOC

Ls: crm.-lt. gry., hrd., dns., VFG-mxln., mic., rd. sh. stnd., tr. foss. NØ NSFOC

Sh: rd. brn, sft., sndy, clayey

Ls: A.A., rd. stnd., occ. VFG. pp. vug Ø around. foss. grns., dd. blk. stn., wk. cut + fl. No odor, No F.O. V.? perm.

V. Very Weak Show

Ls: A.A. w/ tr. oil show A.A.

Sh: rd. brn-dk. gry., sft.-m. hrd. dns., clayey-hackly, occ. sndy-poss. cavings?

*Note stratigrahic change

Sh: A.A.

Topeka Fm.* (-706')

Ls: wh-crm., m. sft.-m. hrd., VFG xln., occ. VFG. pp. vug Ø w/ blk. dd. oil stn., NFO, No odor

V. Very Weak Show

Ls: A.A., occ. rd. sh. stnd., tr. pyr. occ. VFG pp. vug. Ø., tr. intxln. med. xln. Ø w/ dd oil stn. A.A. wk. cut + fl., No odor, No F.O.

V. Very Weak Show

Ls: crm.-lt. gry., m. sft.-hrd., dns. VFG-mxln., mic., tr. chky., tr. foss., sh. stnd. NØ NSFOC

Ls: A.A., shly.-sh. stn. NØ NSFOC

Sh: rd. brn, sft.-m. sft., clayey occ. sndy. + earthy. w/ sh. gry-dk. gry., m. hrd., hackly

Ls: crm-tan, hrd.-m. hrd., dns., VFG xln., occ. ool. + fiss w/ pr. gd. oom. Ø NSFOC

Sh: rd. brn, sft, clayey-earthy

Lecompton Ls. (-757')

Ls: crm.-tan., hrd., dns., VFG-mxln. mic., occ. foss. + ool. w/ pr.-gd. oom. Ø, 2-3 pc w/ dd. oil stn., wk. cut + fl., No odor, No F.O.

V. Very Weak Show

Ls: crm.-tan-gry., m. hrd.-hrd., dns., VFG-mxln., tr. mic., tr. chlk., occ. sndy.-v. sndy. NØ NSFOC

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

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

Ls: gry.-crm., hrd., dns., VFG-mxln., mic., tr. chky., rare foss. NØ NSFOC

tr. Sh: rd., sft., clayey-cavings?

Sh: gry.-dk. gry., m. hrd., dns., hackly, occ. sft + rd. sh.

Ls: crm., hrd.-sft., dns., VFG-mxln. 2-3 pc. pr. vug Ø w/ dd oil, No odor

V. Very Weak Show

Ls: crm-tan-gry, hrd-sft + chk. VFG-mxln., tr. foss. NØ NSFOC

tr. Sh: gry.-blk., hrd., dns., hack occ. carb.

Ls: A.A. chky., 1-2 pc w/ pr. pp. vug-Ø, dd. blk. stn., wk. cut + fl. No F.O.

Ls: crm-tan-gry., m. hrd.-hrd. VFG-mxln., tr. chk. NØ NSFOC

DST #1
4181'-4310'
Rec. 530' Mud + watery mud w/ tr. oil + gas
Tool slid 7' to bottom
Deviation 1°

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

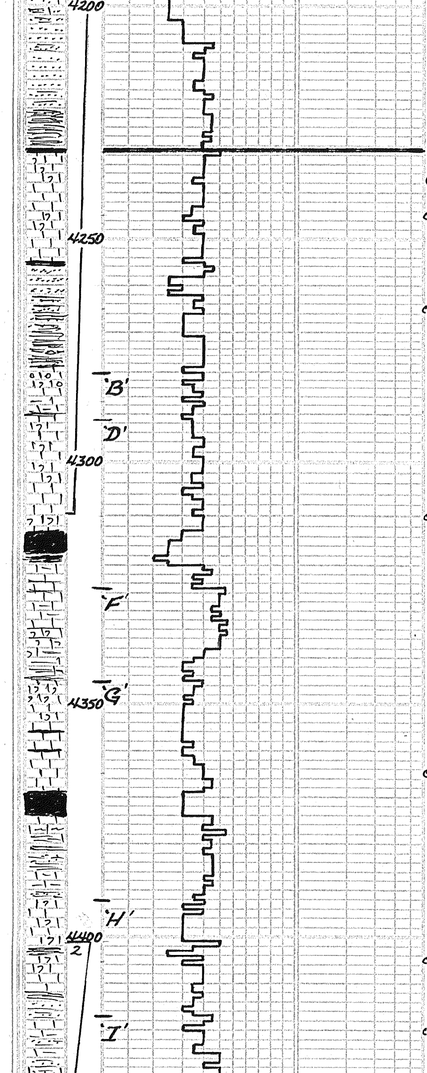
Ls: crm.-tan-gry., m. sft., chky-hrd., dns., mic., VFG-mxln. occ. foss. NØ NSFOC

Ls: crm-lt. gry., m. hrd.-sft. + chky VFG-mxln., tr. mic. rare foss. NØ NSFOC

Heebner Sh. (-859')

Sh: dk. gry.-blk., m. sft., dns., carb.

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



Ls: crm., hrd., dns., VFG, tr. VFG pp Ø
around grns. dk. dd. stn. wk. cut.
Ss.-sltst. gry., VFG., sft., friA, mod.
srtd., shly, No Vis. Ø, 1pc. wk cut. V. Very Weak Show
Ss: gry., m. sft., slty.-clayey.,
VFG., micA., mod. srtd., No Vis
Ø, 1-2 pc. w/ part. dd. oil stn.,
1-2 pc. wk. cut+fl., No odor, No F.O. V. Very Weak Show
Sh: rd-rd. brn., sft.-V. sft.+
clayey, occ. V. sndy, earthy
Note: Abun. same Sh. in 4210-
4220 sample

Lansing Group
(-904')

Ls: wh-crm., m. hrd.-hrd., dns.,
VFGxln., occ. foss. w/ occ. fr.-
O pr. fn-VFG Vug. Ø around. grns.
blk. stn., wk odor., SSFO, fr. cut+fl. Weak Show
Ls: A.A., shows A.A., 1-2 pc. fr. Vug.
tr. F.O. on break, wk. odor, fite
CFS Ls: crm.-tan, hrd., dns., VFG-mxln.
occ. pp. Vug. Ø w/ dd. oil stn., ? perm.
Ss: wh., m. sft., friA, mod. srtd.,
fn.-VFG., subAng-subrnd, V. pr.
No Vis. Ø., 1pc. w/ dd. oil stn., 2pc.
w/ V. wk. cut fl., No Vis. stn., No odor V. Very Weak Show
Ss: A.A., 2pc. w/ dd. stn., No cut.
CFS Sh: rd brn, m. sft., cavings?
Sh: rd. brn.-dk. gry., m. sft.-m. hrd.
earthy-hackly

Mud Check @ 4247'
M.W. 9.1 Chl. 1,100
Vis. 53 solids 5.7%
W.L. 6.4 LCM 4#

Sh: A.A. Ls: crm-rd. brn., hrd.,
dns., VFG-mxln., mic., rare
foss., Abun. rd. sh. stnd., occ
pebble surface NØ NSFOC
Sh: A.A
Ls: crm, hrd.-m. sft., dns., VFGxln,
occ. foss. + ool, w/ pr-fr. Vug. Ø
dk. blk. tarry. oil., No odor, No F.O. Very Weak Show
Ls: crm.-lt. gry., hrd., dns., VFG-
mxln., tr. sft. + chlk., rare
foss., pyr. NØ NSFOC

Mud Check @ 4310'
M.W. 9.1 Chl. 1,100
Vis. 50 solids 5.7%
W.L. 6.4 LCM 4#

Ls: crm- lt. gry., hrd., dns., VFG-
mxln., mic., tr. foss., tr. V. pr.
p.p. Vug. Ø NSFOC

CFS

Ls: crm, hrd., dns., VFG-mxln., occ.
foss. NØ NSFOC
Sh: rd. brn., m. sft.-sft. + clayey
Sh: gry-blk., m. hrd-m. sft., hack.

Sh: rd.-blk. A.A.
Ls: crm-gry., m. hrd.-hrd., dns.,
VFG-mxln., foss., tr. chlk. NØ NSFOC
Sh: rd. brn., m. sft.-V. sft., sndy.,
clayey. w/ Sh: gry.-blk., m.
sft.-hrd., dns., hack, carb.
Ls: A.A. NØ NSFOC

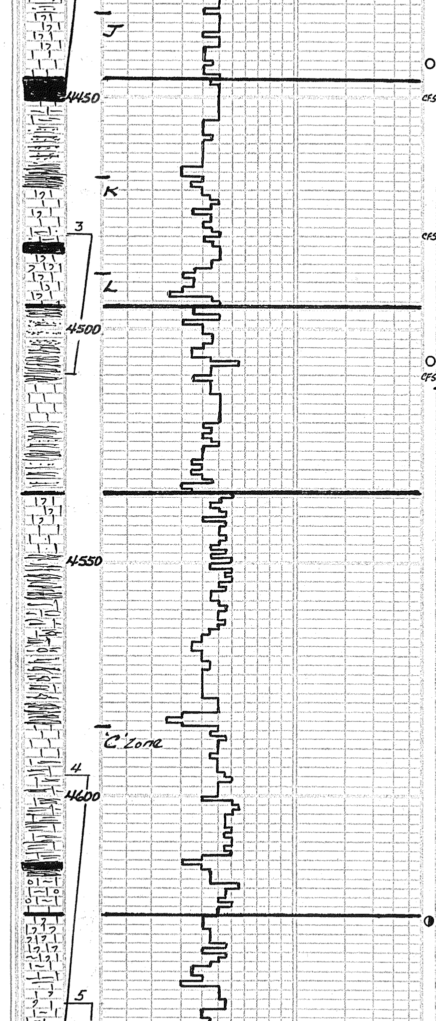
Ls: wh.-crm., sft. + chlk., -hrd.,
dns., VFGxln., foss.-V. foss.,
tr. pr. Vug. NSFOC
Ls: wh-crm., sft. + chlky.-m. hrd.
dns., VFG-mxln., occ. foss.
NØ NSFOC

Ls: A.A., tr. pr. fr. Vug Ø NSFOC
CFS Sh: dk. gry.-blk, m. sft, dns., carb.

Sh: blk., m. hrd., dns., earthy, carb.
Sh: dk. gry.-blk., m. sft.-m. hrd.,
dns., hack., occ. carb.
Ls: crm.-gry., m. sft. + chlk-hrd,
dns., VFG-mxln. sh. stn. NØ NSFOC
Sh: rd. brn, sft., clayey-earthy,
sndy.
occ. Sh: A.A., occ Ls: A.A. NØ
NSFOC
Ls: wh.-crm., sft. + chlky.-hrd.,
dns., VFG-mxln. tr. rexlzd.,
tr. foss. NØ NSFOC

Ls: A.A., tr. pr. Vug Ø NSFOC
CFS Sh: gry-dk. gry., sft-m. hrd., earthy
Ls: crm-gry., hrd., dns., VFG
-mxln, foss. NØ NSFOC
Ls: A.A. occ. m. sft., dns. sli.
chlky. NØ NSFOC
Sh: rd brn., sft., clayey.-
earthy, sndy
CFS Sh: rd. brn., v. sft., clayey.-
m. sft., earthy + sndy., tr.
Ls: wh., sft., chlky. NØ NSFOC

DST #2
4401-4450'
Rec. 3' Mud



Sh: A.A.
Ls: wh-crm., sft.+chiky-m.hrd., dNs., VFG-mxlN., tr. rexlzd., tr. fr.-pr. Vugφ around foss. grNs., brN-blk. stN., V.WK. odor, tr. F.O. on break, wk-fr. cut+fl., mott. stN. ?perm.

Sh: dk.gry.-blk., m.sft., earthy, carb.
Sh: gry.grN-rd.brN., sft.-m.sft. clayey-earthy, sNdy
Sh: A.A.
Ls: crm., hrd., dNs.-sft.+chik. VFG-mxlN., occ. foss.
NØNSFOC
Ls: crm.-lt.gry., hrd., dNs., occ. sft.+chiky., VFG-mxlN., mic., occ. foss.
NØNSFOC
tr. Sh: rd.brN.-gry., m.sft., slty-sNdy, earthy
Ls: crm., hrd., dNs., VFG-mxlN., mic., tr. chik., tr. foss. NØNSFOC
Ls: crm-gry., hrd., dNs., VFG-mxlN. mic., occ. V. foss., tr. ool., occ. sft.+chiky NØNSFOC
Sh: tr. A.A.
Ls: A.A. w/ tr. pr. Vug.φ w/ blk stN.
Ss: gry., m.sft.-hrd., fN-VFG, pr. srtd., w/ cmtd., tr. pr. Vis.φ, mott-unif. dk stN., gd. cut+fl., No F.O., No odor., ?perm.
Sh: gry.grN.-rd.brN., m.sft., earthy
Ls: crm-tan, hrd., dNs., VFGxlN., tr. VFG. pp. φ w/ blk stN., Vwk. cut+fl.

Sh: gry.-rd.brN., m.sft., dNs., earthy., occ. sNdy-slty.

Sh: A.A.
Ls: crm-gry., hrd., dNs., VFGxlN. occ. foss., occ. sh. stNd.
NØNSFOC
Ls: crm.-gry., A.A. 2-3pc. w/ pr. VFG Vug.φ around foss. grNs., dk.brN-blk. stN., No odor, No F.O., wk. cut+fl.
Sh: rd.brN.-gry., m.sft.-V.sft., clayey.-earthy., occ sNdy
Ls: crm-gry., hrd., dNs., VFGxlN. mic., occ. pebb. surf. NØNSFOC
Sh: A.A.
Ls: crm-gry.-rd.brN., hrd., dNs., VFG-mxlN, mic., tr. foss., Abun. sh. stNd. NØNSFOC
Sh: rd.brN.-gry.grN., mott., sNdy
Ls: A.A., occ. pebb. surf.
NØNSFOC

tr. Sh: A.A.
Ls: crm.-gry., hrd., dNs., VFG-mxlN., occ. foss. 'coral'? w/ gd.φ NSFOC
Ls: gry.-crm., hrd., dNs., VFG-mxlN., mic., tr. chiky., occ. sh. stNd., rare foss., tr. sNdy
NØNSFOC
Ls: A.A., occ. V. sNdy.
NØNSFOC
Sh: dk.gry.-rd.brN., m.sft.-V.sft., tr. sNdy, earthy
Sh: gry.-blk., sft.+clayey.-m.hrd., dNs., hack., carb.
Ls: crm.-gry., hrd., dNs., VFG xlN., occ. foss. NØNSFOC
Ls: crm., hrd., dNs., VFG-mxlN., occ. ool. w/ pr.-fr. int. ool. φ, gd. stN, fr. odor, gd. cut+fl., wk. S.F.O. fr. S.F.O. on break
Ls: crm., hrd.-m.hrd., dNs., VFG xlN., foss.-V. foss., occ. sh. stNd. NØNSFOC

Ls: A.A., occ. chiky., sl. less foss. NØNSFOC
Sh: blk., m.sft., earthy, carb.

Weak Show

Stark Shale
(-1119')

MudCheck @ 4480'
M.W. 9.1 Chl. 1,000
Vis. 74 Solids 5.7%
W.L. 6.0 LCM 4#

Base of Kansas City Group
(-1168')
Weak Show

V. Very Weak Show

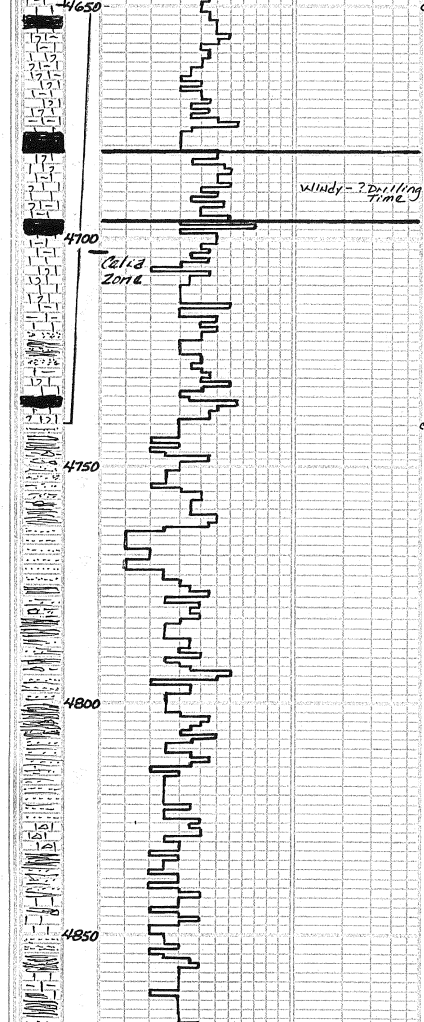
Marmaton Gp.
(-1208')

V. Very Weak Show

MudCheck @ 4625'
M.W. 9.2 Chl. 1,000
Vis. 76 Solids 6.5%
W.L. 6.0 LCM 3#

Pawnee Ls.
Good Show
(-1299')

DST #4
4596'-4650'
Rec. 5' OSM



CFS

Sh: gry.-blk, m.sft., occ. carb.

Ls: crm-dk.gry., m.hrd., dns., occ foss., sh.stnd. NØNSFOC

Mud Check @ 4712'
M.W. 9.1 Chl. 900
Vis. 74 Solids 5.7%
WL. 6.0 LCM. 4.0#

Ls: crm.-gry., m.sft., chlky.-m.hrd., dns., VFG-mxln., tr.chrt., occ. foss., occ. sh. stnd. NØNSFOC

Sh: dk.gry.-blk, m.sft., earth, carb.

Ls: crm-gry., m.hrd., dns., VFG xln., occ. foss. + sh.stnd., 2-3 pc. w/pr.ppØ, dk.stn., wk.cut.

V. Very Weak Show

Ls: crm.-tan-gry., m.sft.-m.hrd. dns., occ. foss., sh.stnd. pyr. NØNSFOC

Ft. Scott Ls. (-1354')

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

Ls: crm-tan, m.sft. + chlky.-m.hrd., dns., tr. foss., occ. sh. stnd., pyr. NØNSFOC

Cherokee Sh. (-1369')

Ls: crm-tan, m.sft.-hrd., dns., VFG-mxln., m/c., tr. fn-VFG pp. vug. Ø, blk. tarry oil stn., No odor, No F.O., fr. cut fl. V. perm

Very Weak Show

○

Ls: crm-tan, hrd-m.sft., dns. VFG-mxln., tr. mic., tr. foss., occ. fr.-pr. vug. Ø w/dk. brn stn., V. wk. odor, No F.O., gd. cut fl.

Weak Show

Ls: A.A., 1-2 pc. vug. Ø A.A. w/stn. A.A.

Ss. wh., m.hrd., dns., fn.-VFG, mod-w.srtd., dns., w.cmtd., No Vis Ø, No Vis. stn., 1-2 pc. wk. cut fl.

Very Weak Show

tr. Ss: A.A., 1 pc. w/lt. stn., cut fl.

○

Ls: crm-tan, hrd.-m.sft., dns., tr. pr. vug. Ø-lgr. vugs. w/dk. brn. stn. gd. cut fl., No odor, No F.O.

Weak Show

CFS

Sh: gry. grn.-rd. brn., mott., m. sft., dns., hack., earthy.

Ls: crm., hrd.-m.sft., dns., VFG-mxln., occ. foss. NØNSFOC

Sh: A.A., occ. Ls: A.A. NØNSFOC

Ss. wh., m.sft. + fria.-m.hrd., dns. fn. grnd., w.srtd., subrnd., w/cmtd. No Vis. Ø NSFOC

Mud Check @ 4740'
M.W. 9.3 Chl. 1,000
Vis. 76 Solids 7.1%
W.L. 6.0 LCM. 4.0#

Sh./Cg: - Sh: rd. brn.-gry. grn w/tr. Ls. + Ss: - clr-wh., lg. sd. grns. - Sh. stn., occ. med. fn. Ss: A.A. NØ NSFOC

Cg:/Sh: rd. brn.-dk.gry., mott., occ. lg. sd. grns. + pebb. surf. tr. Ls: + Ss: A.A. NØNSFOC

DST #5
4645'-4740'
Rec. 20' MCO
70' OCM
90' GIP

Cg:/Sh: A.A., occ. sndy. w/occ. Ss: wh.-ylw., m.sft. fria., crs-med. fn. grnd., mod.-pr. srtd. occ. intgran. Ø. rexlzd. NSFOC

Cg:/Sh: rd. brn.-gry. grn.-ylw. m.sft., earthy, sndy occ. Ss: wh-rd., sh. stnd., med-fn. grnd., pr. srtd. NØNSFOC

Cg: A.A. Sh: A.A., tr. Ls: crm-wh., m.sft.-sft., + chlky NØ.

Ss: wh-grn., m.sft.-m.hrd. med-fn. grnd., rexlzd. NØNSFOC

Cg: - Sh: rd. brn-dk.gry., ~~sft~~ clayey-m.sft., earthy, occ sndy-v. sndy., occ. lg. sd. grns. occ. Ls. pebb. surf. NØNSFOC

Cg: - Sh: rd. brn-grn.gry-dk.gry., m.sft., earthy, occ. sndy, tr. Ls: pebb.-rd-ylw stnd. NØNSFOC

Cg: A.A. occ. Ss: wh., m.sft.-m.hrd., fn-med. grnd., mod. srtd., subrnd-ang., rexlzd. tr. pr. Ø NSFOC

Cg: predom. gry. sh., rd. brn., mott. tr. Ss: A.A. hrd., NØNSFOC. tr. Ls. gry., hrd., dns., VFG-mxln., mic., pebb. NØNSFOC

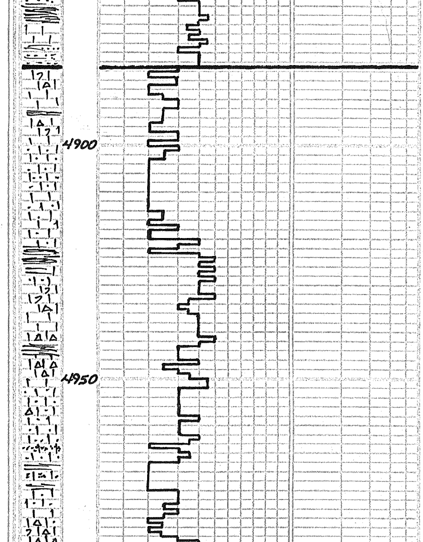
Sh: dk.gry., m.sft-v.sft., earthy-clayey

tr. Ls. crm, hrd., dns., NØ NSFOC

tr. Ss: wh., fn. grnd. A.A. NØNSFOC

tr. Ss: A.A. NØ NSFOC

Ls: gry.-dk.gry., mott., fn-VFG xln., occ. wh., sft. + chlky.



NØNSFOC

Cg: Sh: drk.gry.-rd, brn, gry. grN.-ylw., m.hrd.-sft.+ clayey. occ.sndy., tr. Ss. +tr Ls: crm-wh., NØNSFOC

Cg: A.A., pyr., sli. inc in Ls: crm hrd., dns., VFG-mxln, pebb. surf ftr. Ss: wh-ylw., fn. grnd. mod. rnd. w. cmtd. NØNSFOC

Mississippian (-1556')
St. Joe Fm.?

Ls: gry.-dk.gry., sft.+chiky., -hrd., dns., VFGxln, mott. rare foss., tr. cht., tr. sh. NØNSFOC

Ls: lt.gry., sft.-v.sft., chiky, tr. m.hrd., sndy.-v.sndy. NØNSFOC

Ls: A.A. w/ Ls: gry.-dk.gry., hrd.-m.hrd., dns., VFGxln., occ. sndy No Vis. Ø NSFOC

Ls: gry.-dk.gry., hrd., dns., fn-VFGxln., tr. cht-wh., hrd., dns., vit., occ. sndy., occ. sft.+chiky NØNSFOC

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

Ls: gry.-dk.gry., hrd., dns., tr. sft.+chiky., occ. foss. VFGxln, tr. cht. NØNSFOC

Ls: lt.gry.-gry., hrd., dns., VFG-mxln., abun. wh. cht.-hrd., dns., vit., occ. sndy., occ. foss. NØNSFOC

Ls: crm.-lt.gry., hrd., dns., sndy-v.sndy, dolo. cmt., tr. wh. cht., NØNSFOC

Ss: wh. crm., VFG-v. w. cmtd. NØNSFOC

Ls: wh. crm., hrd., dns., occ. sft. +chik., v. sndy. dolo. cmt., NØNSFOC

Ls: wh.-crm.-lt.gry., sft.+chik.-hrd., dns., VFG-mxln., occ. wh. cht., occ. v.sndy NØNSFOC tr. glauc., tr. foss.

Ls: wh.-crm., hrd., dns., sndy., glauc., abun. wh. cht., hrd., dns., vit., occ. foss. NØNSFOC

Ls: crm.-brn., hrd., dns., VFG-mxln., mic., occ. brn. cht. rare foss. NØNSFOC

Kinderhook Fm.
(-1665')

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

Ls: crm.-tan-gry., hrd., dns., VFG-mxln., mic., occ. chty., rare foss., occ. sh. stnd., pyr. NØNSFOC

Ls: crm.-tan-gry., m.sft.-hrd., dns., VFG-mxln, mic., tr. wh. cht., abun. sh. stn. NØNSFOC

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

Sh: A.A.

Ls: crm-tan-brn.-occ. gry., m.sft.-hrd., dns., VFG-mxln. mic., abun. sh. stnd. NØNSFOC

Ls: crm.-tan, tr. gry., m.hrd.-hrd., occ. sft+chik. (cavings?), VFG mxln., mic. NØNSFOC

tr. Sh: gry.-brn., m.hrd., dns., hack

Ls: crm.-tan, hrd., dns., VFG-mxln. mic., occ. sft.+chiky, tr. foss. NØNSFOC

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

D.T.D. 5050'

L.T.D. 5052'

Deviation 2½°

ROBERT T. STOLZLE
278

Robert Stolzle
10/20/12