ROBERT STOLZLE

CONSULTING PETROLEUM GEOLOGIST
AAPG Cert. # 3244
6211 S. 231st ST,W. Goddard, KS 67052-8240 (316) 734-2490

DRILLING TIME AND SAMPLE LOG

OPERATOR: *Murfin Drilling Co., Inc.*
LEASE: *Fikan* WELL NO.: *1-5*
FIELD: *Wildcat*
LOCATION: *440' FSL, 540' FWL (NESWSWSW)*
SEC.: *5* TWP: *4S* RANGE: *35W*
COUNTY: *Rawlins* STATE: *KS*
API NO.: *15-153-21085-00-00*

CONTRACTOR: *Murfin Drilling Co., Rig #8*
COMMENCED: *December 2, 2014* COMPLETED: *12/12/14*
ROTARY TOTAL DEPTH: *4930'* LOG TOTAL DEPTH: *4929'*
GEOLOGICAL SUPERVISION FROM: *3860'* to: *T.D.*
MUD-UP DEPTH: *3392'* MUD TYPE: *Chemical Polymer*

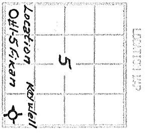
ELEVATIONS
KB *3272'*
GL *3267'*
Measurements are all from KB

CASING RECORD
SURFACE: *8 5/8" @ 343' W/300sx. Circ.*
PRODUCTION: *None*
P&A 12/12/14

WIRELINE SURVEYS
Pioneer Energy Services: Dual Comp. Porosity, Dual Induction, BHC Sonic and Micro-electric logs run

FORMATION	SAMPLE TOP	SAMPLE SUBSEA	LOG TOP	LOG SUBSEA	STRUCTURAL COMPARISON
Stone Corral Anhy.	*3000*	*(+272')*	*2998*	*(+274')*	*-1'*
Base of Anhydrite	*3040*	*(+232')*	*3050*	*(+222')*	*-3'*
Topeka Fm.	*3965*	*(-693)*	*3964*	*(-692)*	*+5'*
Heebner Sh.	*4142*	*(-870)*	*4138*	*(-866)*	*+2'*
Lansing Group	*4184*	*(-912)*	*4183*	*(-911)*	*+3'*
Stark Shale	*4383*	*(-1111)*	*4383*	*(-1111)*	*+6'*
Base KS. City Gp	*4434*	*(-1162)*	*4431*	*(-1159)*	*+6'*
Pawnee Ls.	*4562*	*(-1290)*	*4560*	*(-1288)*	*+8'*
Cherokee Sh.	*4634*	*(-1362)*	*4631*	*(-1359)*	*+6'*
Mississippian	*4828*	*(-1556)*	*4831*	*(-1559)*	*+2'*
Total Depth	*4930'*		*4929'*		

LOCATION MAP



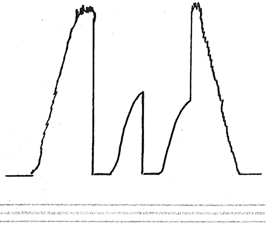
Reference Well for Structural Comparison: *Larson O&G, #1 Fikan-SESES*
Comments and Recommendations:

DST # *1* ZONE: *Lansing 'A' Zone*
INTERVAL: *4137'-4205*

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		*2023* psi	*15' Mud*
2. Initial Flow: Start	*0*	*14* psi	*(oil spots in tool)*
3. Initial Flow: End	*30*	*16* psi	*Blow Desc:*
4. Initial Shut-in: End	*60*	*1002* psi	*I.F.-built to 1/2"*
5. Final Flow: Start	*0*	*18* psi	*I.S.F.-No blow*
6. Final Flow: End	*30*	*19* psi	*F.F.-surface blow*
7. Final Shut-in: End	*60*	*920* psi	*F.S.I.-No blow*
8. Final Hydrostatic		*2002* psi	

BHT: *123°F.*
Rw:

DST # *1* *8791* Chart
Interval: *4137'-4205'* Depth: *4138'*



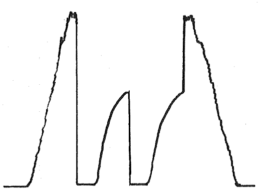
DST # *2* ZONE: *Lansing 'D' & 'F' Zones*
INTERVAL: *4202'-4285'*

DST # *2* *8791* Chart
Interval: *4202-85'* Depth: *4203'*

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2061 psi	10' Mud
2. Initial Flow: Start	0	15 psi	(oil spots in tool)
3. Initial Flow: End	30	20 psi	Blow Desc:
4. Initial Shut-in: End	60	1153 psi	I.F.-1/8" blow
5. Final Flow: Start	0	22 psi	I.S.I.-No blow
6. Final Flow: End	30	26 psi	F.F.-No blow
7. Final Shut-in: End	60	1126 psi	F.S.I.-No blow
8. Final Hydrostatic		2053 psi	

BHT: 120°F.

Rw:



DST # 3 ZONE: L-KC 'F'-'L' Zones

INTERVAL: 4256'-4445'

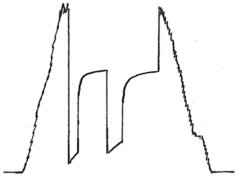
Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2157 psi	62' water cut Mud
2. Initial Flow: Start	0	60 psi	440' watery Mud
3. Initial Flow: End	15	237 psi	444' Mud cut water
4. Initial Shut-in: End	60	1310 psi	Total Rec. 946'
5. Final Flow: Start	30	248 psi	Blow Desc:
6. Final Flow: End	30	450 psi	I.F.-BOB 4 min.
7. Final Shut-in: End	60	1294 psi	I.S.I.-No blow
8. Final Hydrostatic		2065 psi	F.F.-BOB 5 min. F.S.I.-No blow

BHT: 132°F.

Rw: .24@37°F.
Chlorides 60,000 ppm

DST # 3 8791 Chart

Interval: 4256'-4445' Depth: 4257'



DST # 4 ZONE: Pawnee Ls.

INTERVAL: 4538'-4620'

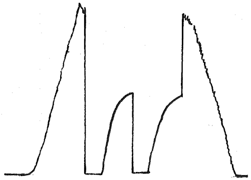
Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2320 psi	70' Mud
2. Initial Flow: Start	0	33 psi	
3. Initial Flow: End	30	44 psi	Blow Desc:
4. Initial Shut-in: End	60	1146 psi	I.F.-built to 1½"
5. Final Flow: Start	0	47 psi	I.S.I.-No blow
6. Final Flow: End	30	55 psi	F.F.-1/8" died
7. Final Shut-in: End	60	1102 psi	F.S.I.-No blow
8. Final Hydrostatic		2309 psi	

BHT: 126°F.

Rw:

DST # 4 8791 Chart

Interval: 4538'-4620' Depth: 4539'

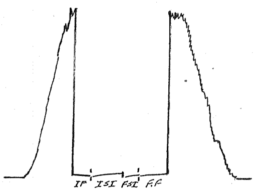


DST # 5 ZONE: Verdigris
INTERVAL: 4610'-4670'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2373 psi	5'Mud
2. Initial Flow: Start	0	15 psi	
3. Initial Flow: End	30	18 psi	Blow Desc:
4. Initial Shut-in: End	60	56 psi	I.F.-Built to 1"
5. Final Flow: Start	0	18 psi	I.S.I.-No blow
6. Final Flow: End	30	19 psi	F.F.-surf. blow died
7. Final Shut-in: End	60	37 psi	F.S.I.-No blow
8. Final Hydrostatic		2319 psi	

BHT: 128°F
Rw:

DST # 5 8791 Chart
Interval: 4610'-4670' Depth: 4611'



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
Det - 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)
ampl - ample
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
intgran - intergranular
pp - pinpoint
dd - dead
gsy - gassy

TEXTURE:

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

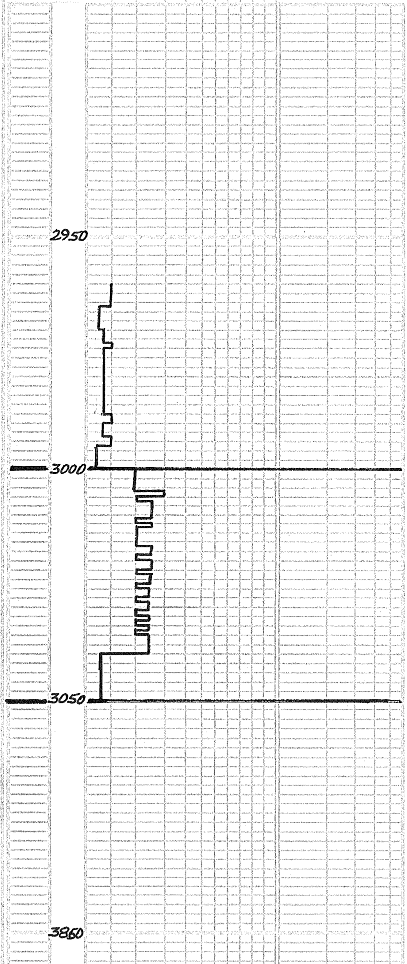
OIL SHOWS

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

ROCK TYPE SYMBOLS

SHALE	CARBONACEOUS SHALE	QUARTZITE	SANDSTONE	LIMESTONE	
▨	▨	▨	▨	▨	
SALT	OOLITIC LIMESTONE	DOLOMITE	ANHYDRITE	CHERT	GRANITE
▨	▨	▨	▨	▨	▨

LITHOLOGY	DRILLING TIME	GAS SHOWS TOTAL GAS UNITS CHROMATOGRAPH UNITS	Oil Shows	SAMPLE DESCRIPTIONS	REMARKS



Hole drilled with PDC bit to 3836'

Stone Corral Anhydrite +272'

Displace native mud at 3392'

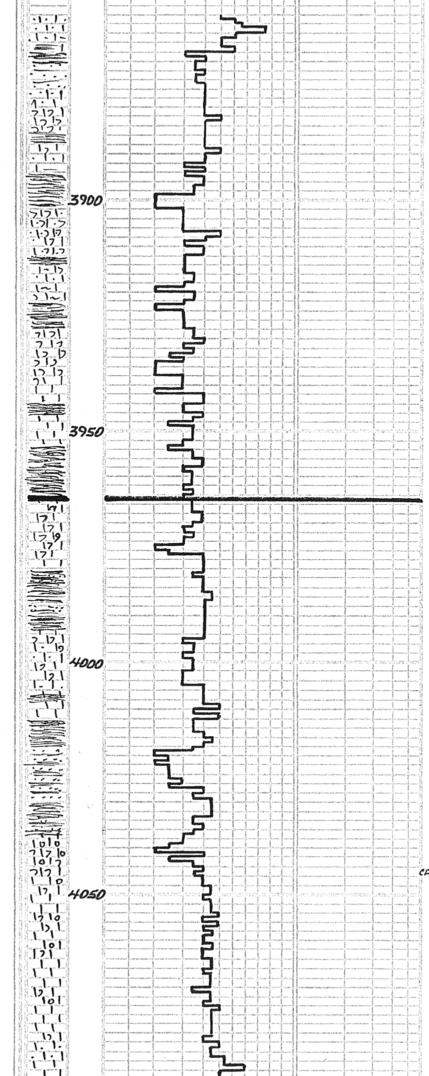
Base of Anhydrite (logtop) +222'

Trip for button bit at 3836'

Strap .7' short to board
Deviation 1 1/4°

MudCheck@3836'
M.W. 8.9 lb./gal.
Vis. 187 sec./qt.
W.L. 6.0 sec./cc.
solids 4.3%
Chl. 2,000 P.P.M.
LCM 3 lbs./bbl.

Start 1' drilling time and 10' wet+dry samples at 3860'



Ls: crm.-gry., m.sft.-hrd., VFGXlN.,
sndy.-V.sndy., tr.sh.stnd., rare
foss. NØNSFOC
Sh: gry.-rd.brn., m.sft., earthy
Ls: gry., m.sft.-hrd., VFGXlN. sndy
-V.sndy.-calc. ss. lt.gry., VFG-
slty., sft. No Vis. ϕ NSFOC
Sh. A.A.
Ls: crm.-gry., hrd.-m.hrd., dns.,
VFGXlN., occ.sndy. A.A., occ.
foss.-V.foss., rd.sh.stnd. NØNSFOC
Sh: rd.brn., sft., earthy.-clayey
Sh: A.A.
Ls: crm.-gry., m.hrd.-hrd., VFGXlN.
foss., occ.sndy. NØNSFOC

Ls: crm.-lt.gry., hrd., dns., VFG-mxln.
occ.sft.+chlky., foss.w/dk.ool
+pellets. NØNSFOC

Ls: crm.-wh., hrd.-sft.+chlky., VFG-
mxln., foss.-V.foss.+detrital,
occ.sndy. NØNSFOC
tr. Sh: rd.brn., sft., earthy-slty.
Sh: A.A. occ.clayey
Ls. crm., hrd.-sft.+chlky., VFGxln.
foss., tr.sndy., tr.sh.stnd.
NØNSFOC
Ls: crm.-lt.gry., m.hrd.-hrd., dns.
VFG-mxln., tr.rexlzd., foss.-V.
foss.w/tr.pr.pp.int.part. ϕ
occ.chlky. NSFOC
Ls: crm.-gry., hrd.-sft.+chlky. fn.xln.
-mxln., tr.mic., foss. NØNSFOC
Sh: rd.brn., m.sft., earthy.-clayey

Ls: crm.-lt.gry., m.hrd.-hrd., dns.,
VFG-mxln., occ.foss., tr.sndy.
NØNSFOC
Sh: A.A.
Ls: crm., m.hrd.-hrd., dns., VFG-mxln.
foss., w/occ. VFG intpart. ϕ., hvy
dk.-dd.oil stn., gd.cut+fl., No
F.O., No odor, V? perm, abun.stng.
Ls: A.A., occ.chlky., pr.-fr.VFG,
pp. ϕ around foss.grns., w/dd.
oil stn. A.A. Very weak show
Sh: rd.brn., sft., earthy
Sh: rd.brn., V.sft.+clayey-m.sft.
earthy., occ.slty.-sndy.

Topeka Fm.

Very weak show
(-693')

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

Ls: crm.-lt.gry., hrd.-abun.sft.+
chlky., VFG-mxln., occ.foss., tr.
sndy. NØNSFOC

Ls: A.A. w/tr.hvy.blk.dd.oil stn. in
pr.moldic vug. ϕ, gd.cut+fl., No
odor, No.F.O. V.Very Weak Show
Sh: rd.brn., sft., earthy.-clayey

Sh: rd.brn., V.sft.-m.sft., clay-earthy
sndy.-V.sndy.

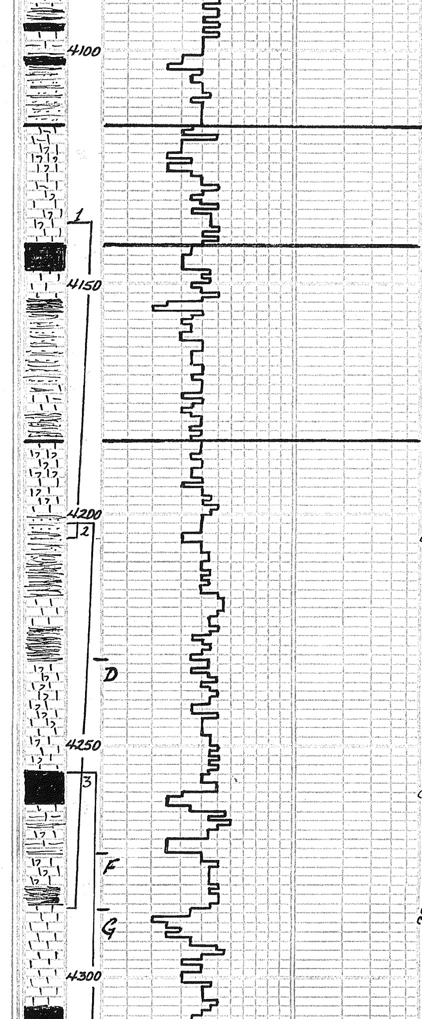
Sh.-slts: rd.brn., sft.-m.sft., occ
V.sndy., earthy-clayey

Ls: crm.-tan, hrd., dns., VFG-mxln.,
occ.chlky., foss., tr.VFG ool., 1-2 pc.
pr.pp. ϕ w/dd.blk.stn., fr.cut+fl.
No F.O., No odor V.Very weak show
Ls: crm.-tan-lt.gry., hrd., dns., VFG
-mxln., mic., tr.chlky., rare foss.
tr.rexlzd. NØNSFOC

Ls: crm.-tan-gry., hrd., dns., VFG-
mxln., mic., rare foss., tr.VFG ool.
tr.chlky. NØNSFOC

Ls: crm.-tan, hrd., dns., mxln., mic.
tr.chlky., V.rare foss.
NØNSFOC

Ls: gry., hrd., dns., VFG-mxln., mic.,
tr.chlky., rare foss., occ.sndy.
NØ NSFOC



Ls: gry.-tan-crm, hrd., dns., VFG-mxln., occ. sndy., tr. chiky, rare foss. NØNSFOC
Sh: dk. gry., m. hrd., dns., earthy

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

Sh: A.A. w/ Sh: gry., m. sft., earthy., sndy.-v. sndy.
Ls: crm.-gry., hrd., dns., foss., VFG xln., sh. stnd. NØNSFOC

Oread Ls. (-843')

Ls: crm.-lt. gry., hrd., dns., VFG-mxln. mic., occ. foss. w/ tr. fr.-gd. vug. moldic Φ, most barren, lpc. w/ dd. gilsonite stn. No odor, No F.O.
Ls: crm.-tan, hrd., dns., mxln., mic., tr. foss., tr. chiky. NØNSFOC

Ls: A.A. NØNSFOC

Heebner Shale (-870')

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

Sh: A.A., tr. Ls: A.A. NØNSFOC tr. Ss: gry., sft., VFG., ang.-sub. ang., mod.-pr. srtd., w. cmtd., friA., tr. dd. flaky oil stn., wk. cut + fl., No F.O. No odor.
tr. Ss. A.A., rare dd. flaky stn. A.A.
Sh: lt. gry., sft.-v. sft., clayey, occ. slty.

DST #1 4137'-4205' Rec. 15' Mud

Sh: A.A.
Ls: crm., hrd., dns., VFGxln., occ. foss.-v. foss. w/ pr.-fr. intpart., VFG Φ, mott. brn. stn., gd. cut + fl., No F.O., No odor

Very weak show

Lansing Gp. (-912')

○ Ls: crm.-wh., hrd., VFGxln., foss., v. foss. pr.-fr. intpart. vug. Φ, lt. brn. stn., No F.O., wk. odor, gd. cut + fl., ? perm.

Weak Show

● Ls: crm.-wh., hrd., VFGxln., occ. gd.-fr. vug. moldic Φ-lg. vugs., brn. stn. fr. S.F.O., fr.-gd. odor., gd. cut + fl.

Fair Show

Ls: A.A., occ. sndy.-calc. Ss: gry., VFG, mod. srtd., w. cmtd., No Vis. ØNSFOC
CFS - Sh: rd. brn.-gry. grn.-gry., m. sft. earthy-v. sft. + clayey, slty.

Mud Check @ 4205'
M.W. 8.9
Vis. 55
W.L. 6.0
Solids 4.3%
Chl. 2400
LCM. 3#

Sh: gry. grn.-dk. gry.-rd. brn., sft.-m. sft., dns., occ. slty.-sndy., earthy
Sh: A.A. Ls: crm., hrd., dns., VFG mxln., mic., tr. chiky., foss. w/ VFG. pp. vug., intpart. Φ w. blk. oil stn., No odor, No F.O., gd. cut + fl.

Very weak show

Ls: crm., hrd., dns., VFG-mxln., mic., occ. sft. + chiky. w/ tr. v. pr. pp vug. Φ-moldic? dk. tarry oil stn., No F.O. No odor. wk. cut + fl. V. very wk. show
Ls: crm., hrd. dns., fnxln-mxln. mic., chiky., occ. foss. NØNSFOC

Mud Check @ 4285'
M.W. 9.1 Solids 5.7%
Vis. 56 Chl. 2600
W.L. 6.4 LCM 2#

Ls: crm.-lt. gry., hrd., dns., VFG-mxln., mic., occ. chiky., tr. foss. w/ rare VFG pp. vug. Φ, blk. dd. stn. No F.O., No odor, wk. cut + fl. V.V. wk. show
CFS Sh: blk., m. hrd., dns., hack., carb.

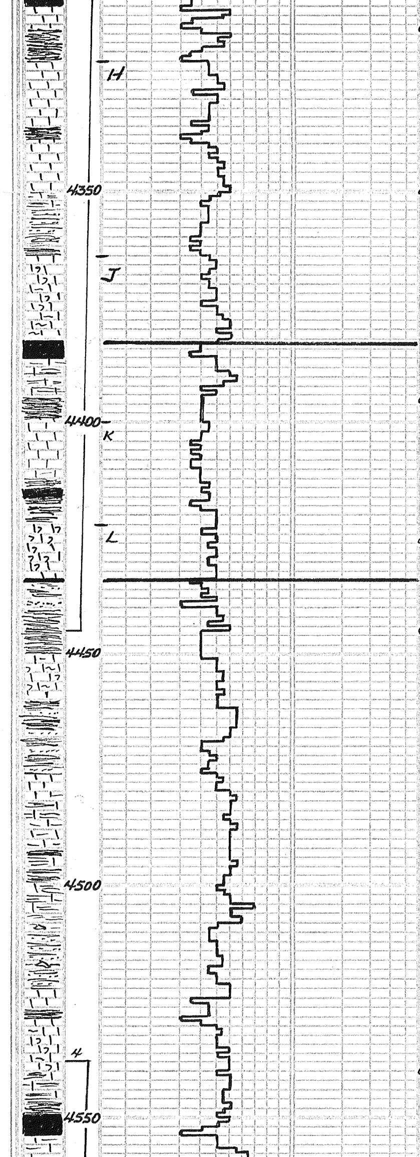
Ls: tan-brn., hrd., dns., VFG-mxln. rare foss., mic. NØNSFOC
Sh: dk. gry.-blk. A.A.-gry. grn., m. sft. earthy-hackly
Ls: crm.-brn., hrd., dns., VFG-mxln. hrd. dns., foss. NØNSFOC

DST #2 4202'-4285' Rec: 10' Mud

Ls: crm., hrd., dns., VFGxln., foss. + ool. w/ fn. grnd. intpart. vug. Φ, dk. brn. stn. gd. cut + fl., tr. F.O., No odor, ? perm.
○ CFS

Weak show

Sh: rd. brn.-gry., m. sft., dns., earthy
Ls: crm., sft. + chiky-hrd., dns., VFG-mxln., occ. foss., tr. pr. vug. moldic Φ NSFOC
Ls: crm.-lt. gry.-wh., sft. + chiky-hrd. dns, mic., VFG-mxln., tr. rexlzd., occ. foss. NØNSFOC



Ls: A.A. NONSFOC
CFS Sh: dk.gry-blk, m.hrd, dns, hackly
Sh: A.A. Ls: tan-brn, hrd, dns, fnxln. foss.-v.foss. NONSFOC
Sh: sft+clayey-m.hrd, hackly, gry.
Ls: crm.-tan, hrd, dns, VFG-fn.xln. occ. foss.+sh. stnd., NONSFOC
Ls: crm, hrd, dns.-sft+chiky, VFG-mxln, occ. mic., foss.-v. foss. NONSFOC
Ls: crm-gry, hrd, dns, VFGxln., occ foss., sndy, tr. sh. stnd. NONSFOC

DST#3
4256'-4445'
Rec: 62' WCM
440' WCM
444' MCW

CFS Sh: rd. brn-gry. grn, m. sft-m.hrd, dns, occ. sndy-v. sndy, earthy
Ls: crm, hrd, dns, VFG-mxln, occ. foss VFG-mxln, mic. NONSFOC
Sh: rd. brn.-gry. grn.-dk. gry., m.sft-m.hrd, dns, occ. sndy, earthy-hackly
Sh: A.A.
Ls: lt gry.-crm, hrd, dns, VFG-mxln. occ. foss., abun. rd. sh. stnd. NONSFOC
Ls: crm.-lt. gry, hrd, dns, tr. sft. +chiky, foss, rd. sh. stnd. NONSFOC

Stark Shale
(-1111')

Ls: A.A., occ dk. gry. NONSFOC
CFS Sh: rd. brn., m.sft., earthy, sndy w/ Sh: dk. gry, m.sft., hackly
Sh: A.A., occ. dk. gry., hackly
Ls: crm., hrd, dns., VFG-mxln, mic., occ. foss, tr. sh. stnd. NONSFOC
Ls: crm.-wh.-lt. gry., hrd, dns., fnxln.-mxln, occ. sft. +chiky, foss., tr. sh. stnd. NONSFOC.

MudCheck @ 4437'
M.W. 9.2
Vis. 58
W.L. 6.8
Chl. 2900
Solids 6.4%
LCM. 2#

Ls: crm.-tan-gry., hrd, dns, VFG-mxln. occ. sli. chiky, foss.-dk. pelletal
CFS grnstn., tr. ool, tr. sh. stn NONSFOC
Sh: gry., m.sft., earthy-hackly
Ls: crm.-lt. gry., hrd, dns., VFG-mxln., occ. foss.-v. foss., occ. sft+chiky. NONSFOC

Base of
Kansas City
Group (-1162')

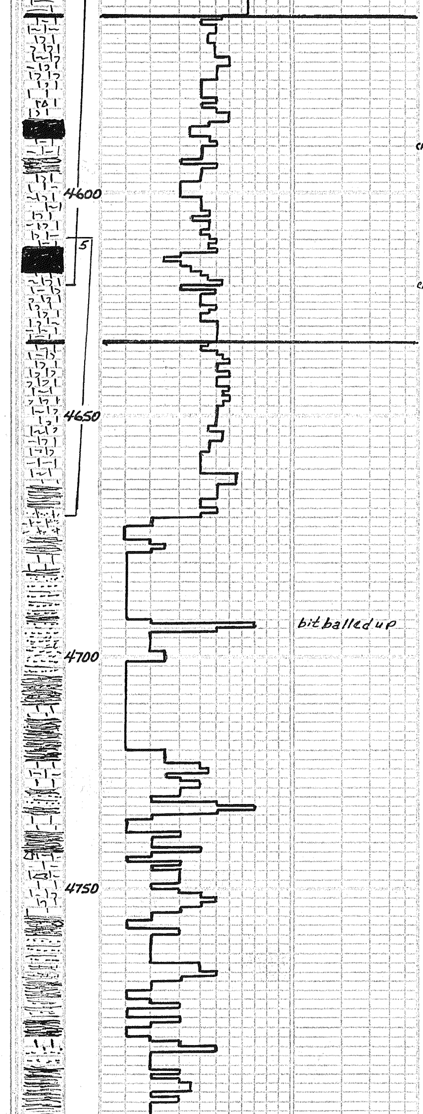
Ls: A.A., tr. sh. stnd NONSFOC
CFS Sh: rd. brn.-dk. gry., m.sft., earth-hack
Sh: rd. brn., gry. grn.-dk. gry., mott. m.sft., dns, occ. sndy, earth-hack.
Sh: A.A.
Ls: crm-lt. gry., m.sft-hrd, dns., VFG-mxln, mic., tr. chik., tr. foss. tr. sh. stnd. NONSFOC
Ls: A.A. NONSFOC
Sh: rd. brn.-dk. gry., m.sft.-m.hrd., dns, occ. sndy, earthy-hackly
Sh: rd. brn.-lt.-dk. gry., hrd.-m.hrd, dns. occ. sndy., tr. ls. pebbles, earthy
Ls: crm, hrd, dns., VFGxln, occ. foss +ool., tr. sh. stnd. NONSFOC

MudCheck @ 4469'
M.W. 9.3
Vis. 61
W.L. 6.8
Chl. 4500
Solids 7.1%
LCM 2#

Ls: A.A., occ. gry., sndy. NONSFOC
Sh: gry.-dk. gry., m.sft.-hrd, dns., occ. sndy, marl. NONSFOC
Sh: gry.-dk. gry., sft.-hrd, dns, tr. slty, abun. sndy, abun. ls. pebbles earthy-hackly
Sh: gry.-dk. gry.-occ. rd. brn., sft.+clayey-hrd, dns, hackly, tr. sndy, occ. ls. pebble.
Sh: gry. grn.-rd. brn., sft.+clayey.-hrd. dns, earthy, sndy.
Ls: crm.-gry., hrd, dns., VFG-mxln., mic., occ. foss.+sh. stnd. NONSFOC
Ls: crm.-gry., hrd-m.hrd, dns., VFG-mxln, abun. wh., sft., chiky (cavings?) tr. foss., abun. sndy.-v. sndy NONSFOC
CFS Ls: A.A., v. sndy NONSFOC
Sh: gry.-gry. grn, m.sft.-m.hrd, dns. occ. sndy, hackly

DST #4
4538-4620'
Rec: 70' Mud

Sh: gry.-blk, sft.-m.sft., occ. slty. occ. carb. 'coaly', earthy-hackly



Sh.A.A.occ.lt.gry.,v.sft.,clayey
Ls:crm-gry.,hrd.,dns.,VFG-mxln.
tr.foss.,tr.sndy.mic. NØNSFOC

Pawnee Ls.
(-1290')

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

Ls:crm-brn.,hrd.,dns.,VFG-mxln.occ
sft.+chlky.,tr.mic.,tr.cht.,occ.foss.
NØNSFOC

CFS Sh:blk.,m.sft.,carb.,earthy
Ls:crm.-brn.,mottled,hrd-sft.,
sli.chlky.,VFG-mxln.,sh.stnd.,
occ.foss. NØNSFOC

Ls:crm.,hrd.-sft.+chlky.,VFG-
mxln.,tr.mic.,tr.sh.stnd.,occ.
foss. NØNSFOC

Mud Check@4620'
M.W. 9.2
Vis. 60
W.L. 6.4
Chl. 3800
Solids 6.4%
LCM. 3#

Ls:crm-lt.gry.,hrd.,dns.,VFG-mxln.
occ.sft.+chlky.,tr.cht.,rare foss.
tr.sh.stnd. NØNSFOC
CFS Sh:blk,m.sft.,dns.,carb.,earthy

Ls:crm.-brn.-gry.,hrd-m.hrd.,dns.
VFG-mxln.,tr.sft.+chlky.,foss.-
v.foss.,occ.sh.stnd. NØNSFOC
Ls:A.A.,tr.cht. NØNSFOC

DST#5
4610'-4670'
Rec: 5' Mud

Sh:dk.gry.-blk.,m.sft.-m.hrd.,occ.
carb.,hackly
Ls:crm.-tan,tr.gry.,hrd.-sft.+chlky.,
fnxln-mxln.,occ.foss.-v.foss.,tr.
sh.stnd. NØNSFOC

Cherokee Sh.
(-1362')

Ls:crm.-tan,tr.gry.,hrd.,dns.,fnxln-
mxln.,mic.,occ.sft.+chlk.,occ.
foss.,tr.sh.stnd. NØNSFOC

Mud Check@4670'
M.W. 9.3 lb./gal.
Vis. 56 sec./qt.
W.L. 6.8 cc/30min.
Solids 7.1%
Chl. 3800 ppm
LCM 3 lbs/bbl.

Ls:A.A. NØNSFOC
Sh:gry.-gry.grn.,m.sft.,dns.,hack.
3 pc. Ss:wh.,med.grnd.,fria.gd.int.-
part.Ø w/hvy.blk.oil stn.,gd.cut NoF.O.

tr. Ss:A.A.,med.-crs.grnd.,ang.-rnd.,
w.-mod.w.cmtd.,bad.oil stn.
Ls:crm-tan,hrd.,dns.,VFGxln.,occ.
sh.stnd.,tr.foss. NØNSFOC
Sh.dk.gry.-gry.grn.-rd.brn.,m.hrd.-
m.sft.,occ.sndy,earthy-hackly

Drilled from
4670' to T.D with
PDC bit
caught 20' samples

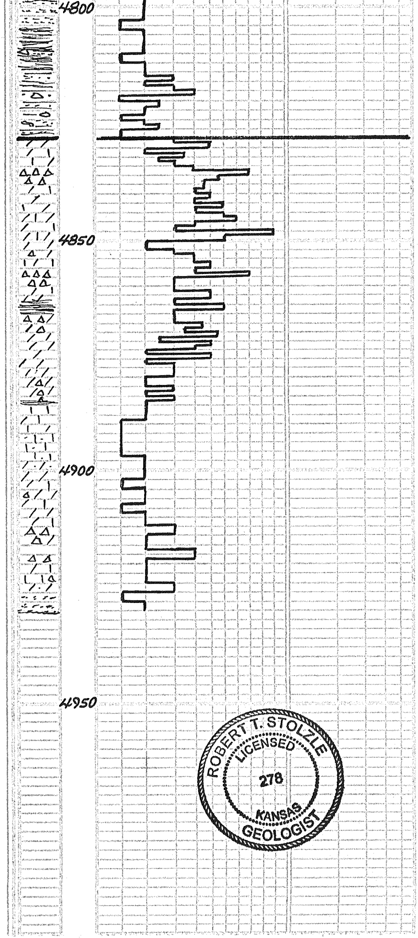
Cg:Ss:wh.,med.-fn.grnd.,hrd.-fria.,
ang.,occ.blk tarry stn.,NoF.O.No odor Very weak show
tr.Ls:A.A. NØNSFOC
Sh:dk.gry.-rd.brn.,m.sft.-m.hrd.,
dns.,occ.sndy-v.sndy.,earthy

Sh:gry.-gry.grn.-rd.brn.,hrd.sft.,dns.
occ.sndy,earthy-hackly
tr.Ls:crm-tan,hrd.,dns.,VFG-mxln.
mic.,sh.stnd. cavings? NØNSFOC

Sh:rd.brn-dk.gry.-gry.grn.,m.sft.,
sndy.-v.sndy,earthy-hackly
Ls:crm.-tan,hrd.,dns.,VFG-
mxln.,mic.,rare foss.,sh.
stnd.,occ.pebble surface
NØNSFOC

Sh:rd.brn.-gry.grn.-gry.,tr.ylw-
Cong.,sndy.,tr.ls.pebbles.
tr.Ss.clr.,m.sft.-hrd.,med.-fn.grnd.
ang.-mod.rnd.,w.-pr.cmtd.,
tr.dd.oil stn,No odor,NoF.O.
fr.cut+fl. V. Very weak show

Cg:Sh:rd.brn-ylw.-gry.-gry.grn.,
m.hrd.-m.sft.,dns.,sndy.-v.sndy
occ.Ss:rd.brn.,fn.grnd.,pr.srtd.,
w/cmtd.,shly. No vis Ø NSFOC



Cg: Sh: gry, grn-dk. gry-rd. brn, matt. m.sft.-m.hrd., dns, occ. sndy., earthy.
occ. Ss: wh., hrd., dns., fr. fria, med.-fn. grnd., subrnd-Ang., pt. srtd. w. cmtd. NØNSFOC

Cg: Sh: A.A.
tr. Ss: A.A. NØNSFOC
Dol-dolo Ls: crm, hrd., dns, VFG xln. tr. foss., tr. sucrosic. No Vis Ø NSFOC
tr. Cht: wh., hrd., dns., vit., occ. foss. + ool.
Sample is ± 75% cavings

Mississippian (-1556')

Ls: crm., hrd., dns., mxln., mic. poss. cavings. NØNSFOC
Dol: lt. gry., hrd., dns., VFG xln, No vis. Ø NSFOC
Cht: wh-crm., hrd., dns., sli. devit. NØ

Cht: wh., hrd., dns. sli. devit. NØ NSFOC

Dol: crm-gry., m. hrd-hrd., dns., VFG xln. NØ NSFOC

Cht: wh., hrd., dns., vit.-devit. NØNSFOC
Ls: crm.-gry., sli. dolo., occ. sndy.-v. sndy., rare foss. NØNSFOC

Sample ± 50 Cg. Sh. cavings

Cht: wh., hrd., dns., devit.-vit., occ. sli. dolo. NØNSFOC
Dol: gry., m. sft.-m. hrd., dns., occ. calc., VFG. xln. No Vis. Ø NSFOC

Cht: wh., hrd., dns., sli. devit. NØ
Ls: wh.-crm., m. sft., fn-VFG xln., sli. dolo., green glauc. pellts. No Vis Ø NSFOC
tr. Ss: wh., med. grnd., hrd., glauc. NØNSFOC

D.T.D. 4930'
L.T.D. 4929'

Deviation-Misrun

Robert Stolzle
12/13/14

ROBERT T. STOLZLE
LICENSED
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KANSAS GEOLOGIST