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DRILLING TIME AND SAMPLE LOG

OPERATOR: **Miko Oil LLC**
 LEASE: **Gosser** WELL NO.: **3-14**
 FIELD: **Gosser**
 LOCATION: **824' FSL, 503' FEL (approx. SWNESESE)**
 SEC.: **14** TWP.: **10S** RANGE: **17W**
 COUNTY: **Rooks** STATE: **KS**
 API NO.: **15-163-24237-00-00**

CONTRACTOR: **Discovery Drilling, Rig #2**
 COMPLETED: **August 9, 2014** COLLECTED: **Aug. 16, 2014**
 ROTARY TOTAL DEPTH: **3650'** LOG TOTAL DEPTH: **3650'**
 GEOLOGICAL SUPERVISION FROM: **2950'** vs. **T.D.**
 MUD-UP DEPTH: **2799'** MUD TYPE: **Chemical Polymer**

FORMATION	LOG	DEPTH	STRENGTH
Stone Corral Fm., 1287 (4763)	1286 (+764)	+5'	
Base of Anhydrite 1324 (4726)	1324 (4726)	+4'	
Top of K formation 2988 (-938)	2988 (-938)	-8'	
Haehnle shale 3215 (-1165)	3215 (-1165)	-10'	
Lansing Group 3252 (-1202)	3252 (-1204)	-6'	
LKC G. Zone Grossly 3355 (-1305)	3354 (-1304)	-8'	
Stark shale 3454 (-1404)	3453 (-1403)	-9'	
Base of C. G. 3497 (-1447)	3496 (-1446)	-8'	
A. buckle fm. 3625 (-1575)	3624 (-1574)	-58'	
Total Depth	3650	3650	

ELEVATIONS:
 KB **2050**
 CL **2042**
 Measurements are all from KB

CASING RECORD
 SURFACE: **8 5/8" 23#**
 @ 221' circ.
 PROTECTION: **None - P.A.**

WIRELINE SURVEYS
 Gamma Ray
 Comp. Density
 Neutron and Dual
 Induction Logs
 Micro. Full.

LOCATIONS

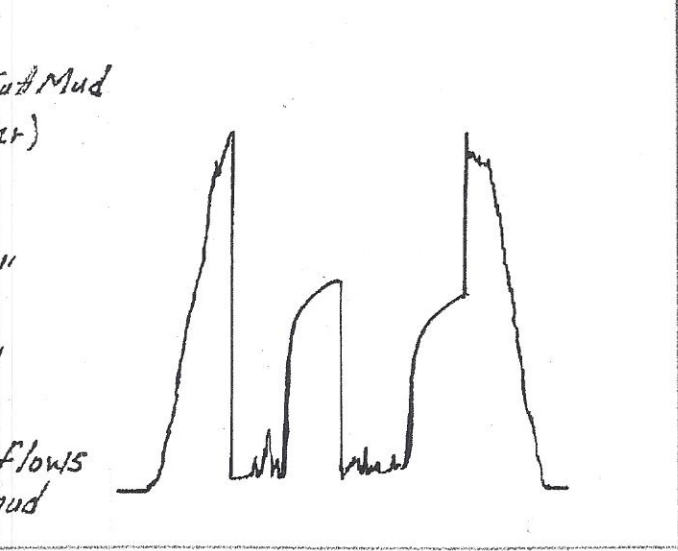
KEY Well #14 Gosser	
Location Gosser 3-14	

Reference Well for Structural Comparison: #1 Gosser 52369' FSL, 2626' FLL, Sec. 14, Combs and Recommendations: **Recommended well be plugged and abandoned.**

DST # 1 ZONE: Lansing A-D Zones
 INTERVAL: 3207'-3320'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1511 psi	125' sh. water cur. Mud
2. Initial Flow: Start	0	34 psi	(10% salt water)
3. Initial Flow: End	45	90 psi	
4. Initial Shut-in: End	60	897 psi	Blow Desc.
5. Final Flow: Start	0	71 psi	I.F. - built to 2"
6. Final Flow: End	60	93 psi	I.S.I. - No blow
7. Final Shut-in: End	60	829 psi	F.F. - built to 1"
8. Final Hydrostatic		1445 psi	F.S.I. - No blow
BHT: <u>97°F</u>		deviation 1/4°	Note: Plugging flows
Rv: <u>.5 @ 70°F.</u>			8# LCM in mud
			chlorides 14,000 ppm (Mud chl. 3,000 ppm)

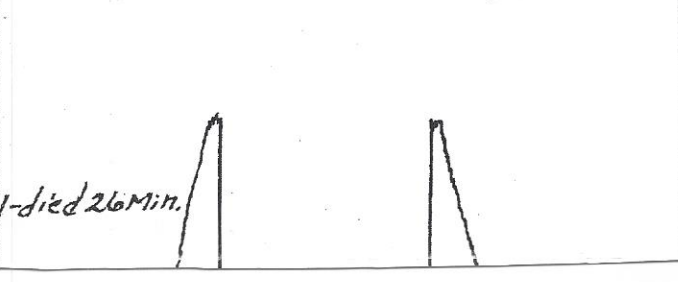
DST # 1 8957 Chart
 Interval: 3207'-3320' Depth: 3211'



DST # 2 ZONE: L-KC H, I, J, & K Zones
 INTERVAL: 3380'-3480'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1574 psi	5' Drilling Mud
2. Initial Flow: Start	0	33 psi	
3. Initial Flow: End	30	32 psi	Blow Desc.
4. Initial Shut-in: End	60	844 psi	I.F. - surface blow - died 26 min.
5. Final Flow: Start	0	34 psi	I.S.I. - No blow

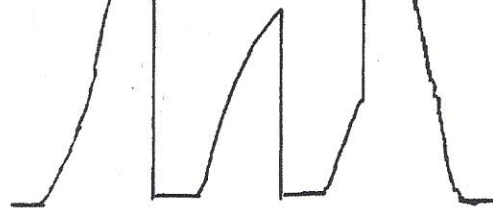
DST # 2 8957 Chart
 Interval: 3380'-3480' Depth: 3384'



6. Final Flow: End 30 32 psi F.F.-No blow
 7. Final Shut-in: End 30 486 psi F.S.I.-No blow
 8. Final Hydrostatic _____ 1529 psi _____

BHT: 96°F

Rv: _____



2

Note: Spotted 40 bbls Mud w/ LCM

ABBREVIATIONS USED

ROCK TYPES:

Ls - Limestone
 Sh - Shale
 St - Sandstone
 Sls - Siltsstone
 Ca - Calcarenite
 Cst - Chert
 Qz - Quartzite
 Grn - Granite
 Dol - Dolomite
 Chk - Chalky

COLOR:

Wh - White
 Crn - Cream
 Clr - Clear
 Rd - Red
 Grn - Green
 Yel - Yellow
 Blk - Black
 Mst - Mottled

HARDNESS:

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

FABRIC:

Fn.grn - Finegrained
 VFG - Very Fine grained
 Med - Medium
 Lrg - Large
 Det - Detrital
 P.crn - Porcelliferous
 Crn - Crystalline
 M.crn - Microcrystalline
 Pol - Politic
 Opa - Oolitic
 Mat - Matrix

OTHER TERMS:

fl - Fluorescence (of oil)
 min fl - mineral fluorescence
 pur - puritic
 glau - glauconitic
 carb - carbonaceous
 str - stain (of oil)
 cut - oil cut
 AA - as above
 G - gravity
 NEGOS - no stain, fluorescence, odor, or cut (of oil)
 eapl - eaplic
 para - permeability
 F.D. - Free oil
 vug - vugular
 tr - trace
 w/ - with

MODIFIERS:

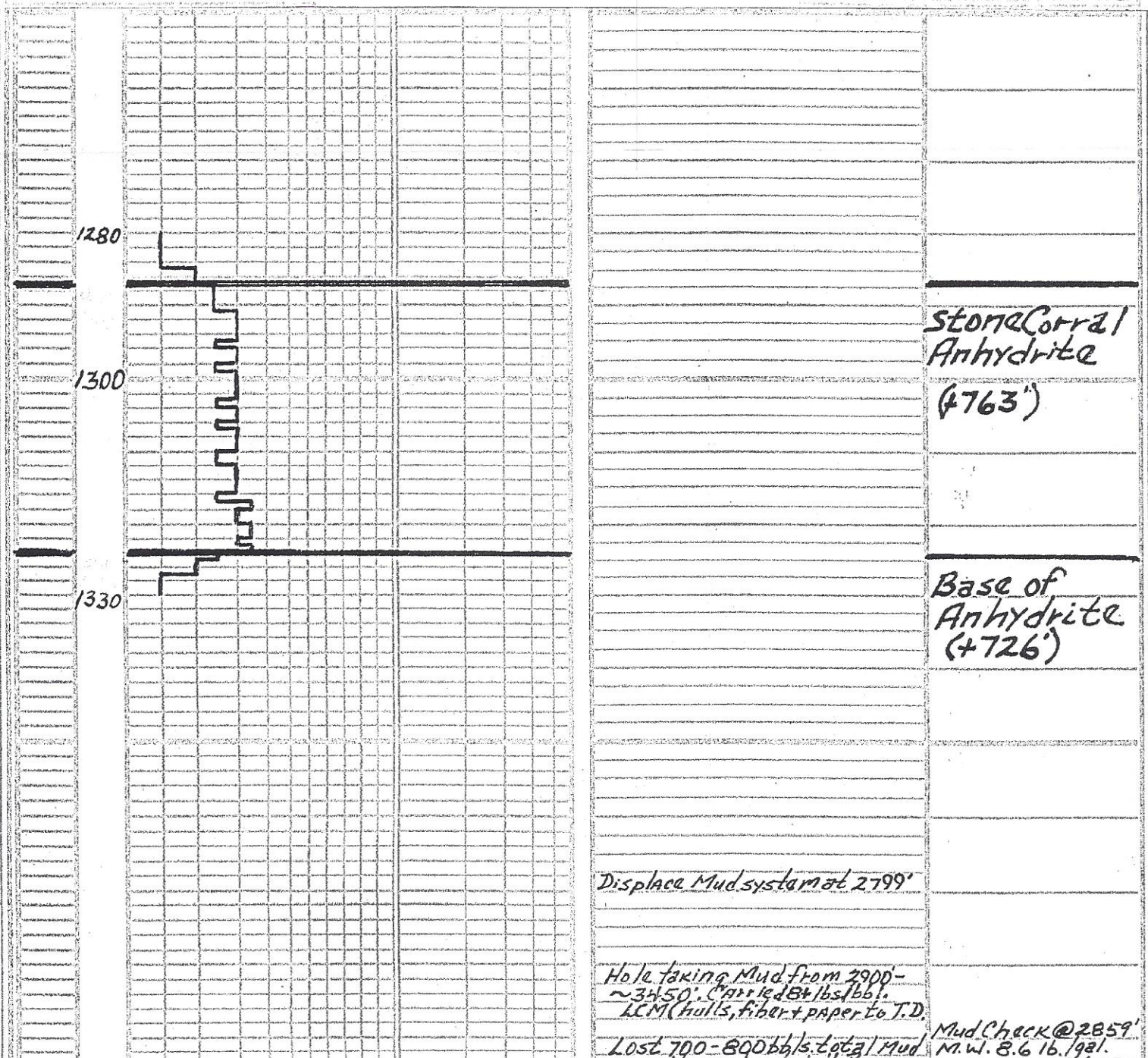
gd - Good
 fr - Fair
 pr - Poor
 ex - excellent
 v - very
 wll - well
 tr - trace
 occ - occasional
 vis - visible
 N - no
 gran - granular
 intgran - intergranular
 ng - pinpoint
 oil - oiled
 omy - omy

TEXTURE:

Dns - Dense
 Fly - Flaky
 Fri - Friable
 Sbrth - Sordid
 Bckl - Blocky
 Fns - Fissile
 Vit - Vitreous
 Vug - Vugular
 Mic - Micritic

OIL SHOWS

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



Stone Corral
 Anhydrite
 (+763')

Base of
 Anhydrite
 (+726')

Displace Mud system at 2799'

Hole taking Mud from 2900 -
 ~3450'. Carried 84 lbs/bbl
 LCM (hulls, fiber & paper to T.D.)

Lost 700-800 bbls. total Mud

Mud Check @ 2859'
 M.W. 8.6 lb. 1921.

Pressure 300-400 psi - Average

V.S. 41 sec. 19c.

2950

Sh. lt. dk. gry., m. sft., m. hrd., dns.,
occ. slty. - sandy, earthy

W.L. 8.8 ml./30 min.
Chl. 2500 P.P.M.
Solids 1.8%
LCM 2 1/2 lbs./bbl.

Sh. A.A., occ. v. sft. clayey
Ls. crm., m. sft. - hrd., dns., VEG - mxln.
tr. sh. chiky., occ. foss.

3

Ls. A.A.
Sh. lt. dk. gry., sft. - m. sft., clayey -
earthy

Sh. lt. gry. - gry., sft. - v. sft., occ.
slty. mica., earthy - clayey

3000

Sh. A.A. - Abun. carings
Ls. crm., hrd., dns., VEG - mxln., tr. mic.
tr. chiky., occ. v. foss., 1-2 pc. sdy.

Topeka Fm.
(-938')

Ls. crm. - gry., hrd., dns., VEG - mxln.
mic., tr. chiky., occ. foss., tr.
sdy.

Ls. crm., occ. gry., m. hrd. - hrd., dns.
VEG - mxln., mic., occ. foss., tr.
chiky., tr. sdy.

Ls. crm. - gry., hrd., dns., tr. VEG - mxln., occ.
foss., tr. sh. stnd., wk. ool., tr. VEG
R.P. ool. and foss. gms., lt. tan. sh.,
wk. - tr. cut., fl., No. F.O., V? perm. 3-4

Very weak show

Ls. crm. - gry., dns. tan. - mxln., mic.
6 pc. tr. ax. w/ VEG R.P. ool. sh.,
No. ool., wk. - tr. cut. fl., V? perm.
occ. sh. stnd., tr. chiky., tr. sdy.

Very weak show

3050

Ls. crm. - tan. - gry., hrd., dns., VEG -
mxln., mic., occ. foss., tr. sh. stnd.
tr. sdy.

Mud Check @ 3047'

Ls. gry. - crm. - tan., m. sft. - hrd., dns.,
mxln. - mxln., mic., tr. ool., foss.
+ sh. stnd.

M.W. 8.7
Vis. 70
W.L. 7.2
Chl. 3000
Solids 1.3%
LCM 8#

Ls. crm. - tan. - gry., hrd., dns., VEG -
mxln., mic., occ. foss., ool.,
Abun. sh. stnd.

Ls. crm. - tan. - gry., hrd., dns., tr. mxln.
- mxln., tr. mic., Abun. sh. stnd.,
foss., tr. ool. - dk. gry. foss.

Ls. crm. - tan. - gry., hrd. - sft. chiky.
VEG - mxln., tr. ch. sh. stnd., foss.
v. foss.

Ls. crm. - tan., tr. gry., hrd., dns. - sft.
chiky., VEG - mxln., tr. ool., sh. stnd.
foss., tr. ool.

3100

tr. sh. blk., m. sft., carb., earthy
Ls. crm., hrd. - sft. chiky., VEG - mxln.
foss. + sh. stnd.

tr. sh., gry., m. sft., earthy
Ls. crm., m. sft., chiky. - hrd., dns.,
mic., VEG - mxln., tr. sh. stnd.,
occ. foss.

Ls. crm. - tr. lt. gry., hrd. - m. sft.,
VEG - mxln., mic., occ. chiky.,
occ. foss., tr. sh. stnd.

Ls. crm. - lt. gry., hrd. - sft. chiky., VEG
- mxln., mic., sh. stnd., occ. foss.

Ls. crm. - lt. gry., m. sft., chiky. - hrd.,
dns., sh. stnd., occ. foss., VEG -
mxln., tr. mic.

3150

Sh. dk. gry. - blk., m. sft., carb., earthy
Sh. blk., m. sft., carb., earthy
Ls. crm., sft. chiky. - hrd., dns.,
mic., VEG - mxln., tr. sh. stnd.,
rare foss.

Quick Hills Sh.
(-1097')

Ls. crm. - tan., tr. gry., hrd., dns.,
VEG - mxln., mic., tr. chiky., occ.
foss., tr. sh. stnd.

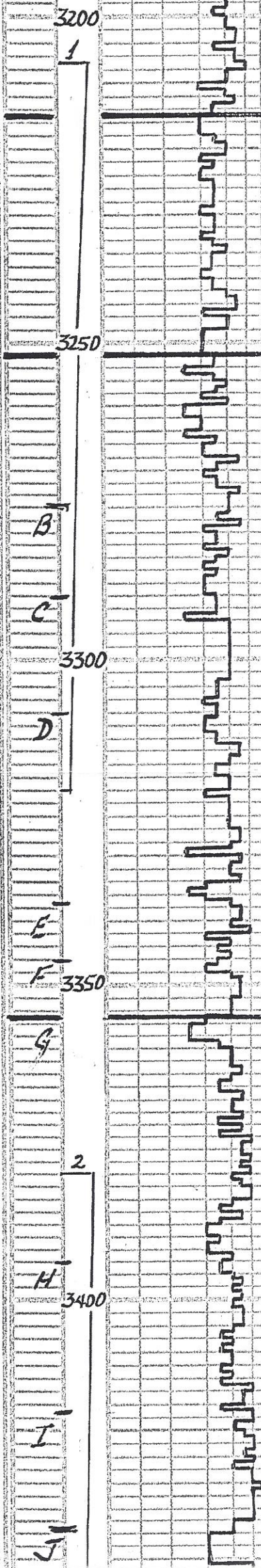
Ls. crm. - gry., m. sft. - hrd., dns.,
VEG - mxln., tr. ool., occ. foss.
ool., tr. sh. stnd., tr. mic.
tr. sdy.

Mud Check @ 3217'

Ls. crm. - tr. gry., sft. chiky. - hrd., dns.
mic., tr. ch. - mxln. - mxln., tr.
hexed., occ. foss., tr. sh. stnd.
tr. sdy.

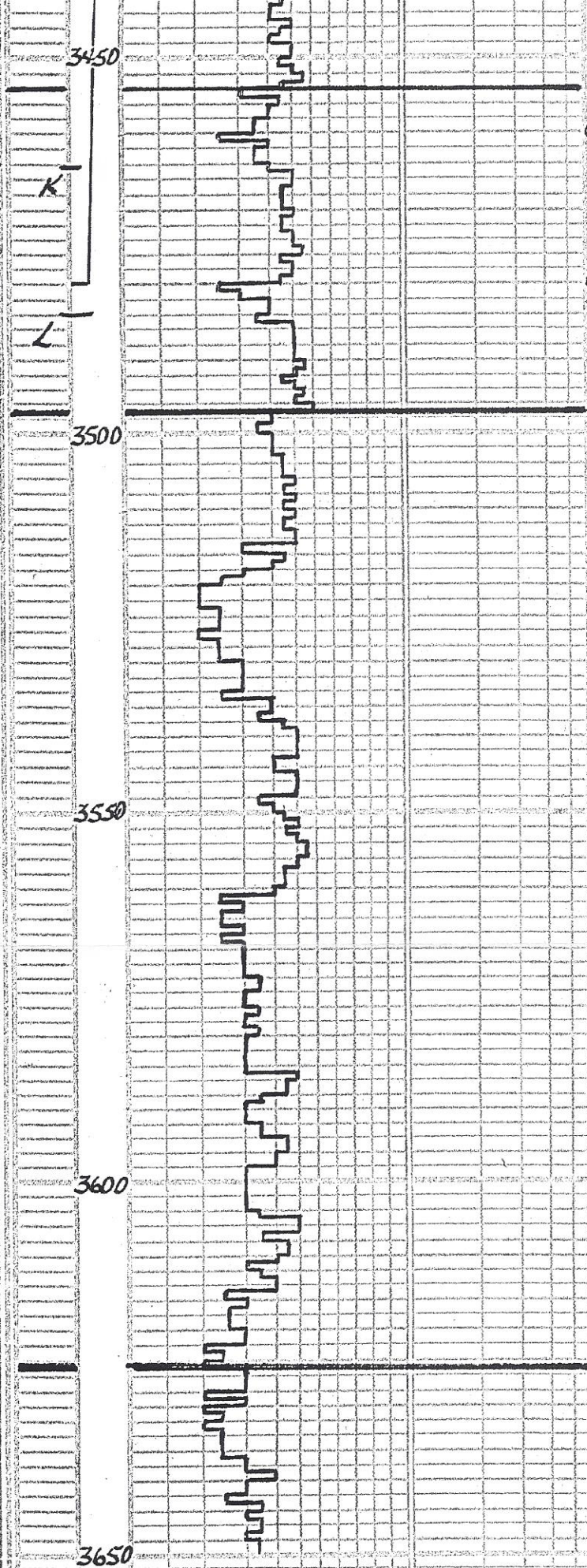
M.W. 8.6
Vis. 62
W.L. 7.2
Chl. 3000
Solids 2%

Ls. A.A., 2-3 pc. tr. ax. w/ dr. int



PART: fossils, vug, fl., wk. cut + fl., No odor, No F.O.
 Ls: crm. - tan. to H. gry., hrd. - sft. +
 chiky., VEG - mxln., mic., tr. cht.
 Abun. sh. stn., tr. foss. NΦNSEOC
 Sh: dk. gry. - blk., m. sft., carb., earthy
 Ls: crm., hrd. - sft., chiky., VEG - mxln.
 mic., tr. cht. - chiky., Abun. sh.
 stn., rare foss. NΦNSEOC
 Sh: gry., sft., sly. mica., earthy
 Ls: crm. - gry., hrd., dns., occ. sft. +
 chiky., sh. stn., tr. foss. NΦNSEOC
 Ls: crm. - tan., tr. d., dns., tr. xln. - mxln.,
 mic., occ. sft., chiky., tr. cht., sh.
 stn., rare foss. NΦNSEOC
 Ls: A. A. wh. - crm. NΦNSEOC
 Sh: lt. gry. - gry., sft., sly., earthy
 Ls: crm., lt. gry., sft. - hrd., NΦNSEOC
 tr. sh. gry., m. sft., earthy
 Sh: gry., m. sft., earthy
 Ls: crm. - wh., hrd., dns., VEG - mxln.
 mic., occ. chiky., rare foss. NΦNSEOC
 Ls: A. A. w/ pr. ool., w/ fr. int. ool.
 Yug. Φ. + tr. lgn. vugs, tr. odor,
 lt. brn. stn., in vugs, fr. - wk. cut
 + fl., No F.O., 3-4 pc. / tray
 Ls: crm., hrd., dns., tr. VEG - mxln., occ.
 ool. foss., tr. pr. - fr. vug Φ, fr.
 brn. stn., wk. odor, tr. cut + fl.
 No F.O., 2-3 pc. / tray
 Ls: crm. - gry., hrd., dns., VEG - mxln.,
 mic., tr. foss., sh. stn., NΦNSEOC
 Sh: lt. dk. gry., m. sft., dns., tr.
 sly., earthy
 Sh: A. A., occ. rd. brn. - cavings?
 Ls: crm. - tan. - gry., hrd., dns., VEG
 - mxln., sh. stn., occ. chiky., tr.
 chr., tr. foss. NΦNSEOC
 Ls: crm. - tan., hrd., dns., tr. xln. - mxln.,
 mic., tr. chik., 3-4 pc. / tray w/ pr. - fr.
 vug. modic. Φ, lt. stn., fr. cut + fl.
 No odor, No F.O., ? perm.
 Ls: crm., hrd., dns., VEG - mxln., foss. +
 ool., w/ tr. int. ool. Φ, wk. odor,
 lt. brn. stn., tr. - wk. cut + fl.
 No F.O., 3-4 pc. / tray
 Ls: crm. - wh., hrd., dns., occ. sft. +
 chiky., VEG - mxln., mic., rare foss.
 NΦNSEOC
 Sh: dk. gry., m. sft., earthy
 Sh: dk. gry. - blk., m. sft. - m. hrd., carb.
 earthy - hackly
 Ls: crm. - tan., hrd., dns., VEG - mxln.,
 mic., chiky., occ. foss. NΦNSEOC
 Ls: A. A., occ. foss. + ool. w/ tr. - fr.
 pr. int. ool. Yug. Φ, lt. brn. stn. in Φ
 wk. odor, tr. cut + fl., No F.O.,
 ? perm.
 Ls: crm. - wh., A.A., occ. foss. + ool. w/
 pr. - fr. int. ool. Φ shows A.A.
 Ls: crm. - tan., hrd. - m. sft., VEG - mxln.,
 occ. ool. w/ pr. - fr. ool. Φ NSEOC
 Ls: crm. - wh., hrd. - sft., VEG - mxln.,
 mic., occ. chiky., occ. ool. w/ pr. - fr.
 dom. Φ NSEOC
 Ls: crm. - wh., hrd. - sft., dns., VEG -
 mxln., tr. rex/ed., mic. - chiky.,
 rare foss. NΦNSEOC
 Ls: A. A., occ. gry., foss. NΦNSEOC
 tr. pyr
 Sh: gry. - blk., m. sft. - m. hrd., dns.,
 tr. carb., earthy - hackly
 Sh: A. A.
 Ls: crm. - tan. - H. gry., hrd., dns., occ.
 chiky., VEG - mxln., mic., occ. foss.
 tr. sh. stn. NΦNSEOC
 Ls: A. A., tr. ool. w/ 2-3 pc. / tray pr.
 - fr. int. ool. Φ, lt. brn. stn., mod.
 wk. odor, tr. - pr. cut + fl., No F.O.
 Sh: gry. - blk., hrd. - sft., carb., hack.
 Ls: crm. - tan. - H. gry., hrd. - sft. chik.
 VEG - mxln., mic., tr. cht., rare
 foss. NΦNSEOC
 Ls: A. A., tr. ool., tr. pr. VEG - pp. vug. Φ
 around foss. + ool. grns., tr. dom.
 VEG Φ, brn. stn., wk. - fr. cut + fl.
 No odor, No F.O., ? perm.
 Sh: dk. gry. - blk., m. hrd., carb., hack.
 Ls: crm., hrd., dns., VEG - mxln., tr. foss.
 tr. pr. - fr. vug. Φ, dk. stn., No odor,
 No F.O., wk. cut + fl.
 Ls: crm. - tan., hrd., dns., VEG - mxln., occ.

V. Very Weak Show
 4
Haebner Shale (-1165')
Lansing Group (-1202')
 Weak Show
 Vary Weak Show
DST #1
3207'-3320'
Rec. 125' SWCM
 Deviation 1/4°
 Vary Weak Show
 Weak Show
 Weak Show
G' Zone Porosity (-1305')
Mud Check @ 3370'
 M.W. 8.6
 Vis. 49
 W.L. 80
 LCM. 10#
 Chl. 3,000
 Solids 2%
DST #2
3380'-3480'
Rec. 5' Mud
 Vary Weak Show
 V. Very Weak Show
 V. Very Weak Show



VFg pp. Vug. ϕ , pass. hgr. Vugs dk. brn. stn., 1-200 ps f.d. V.W.K. odor. fr. cut. fl. ? perm.

Ls. A.A. 1 ft. VFg. pp. Vug. ϕ around foss. qms. 1 ppm. stn., V.W.K. odor. W.K. cut. fl. ? perm. No F.D. ? perm.

Sh. b. k. m. hrd., dns., carb., hckly

Ls. crm. - brn., gry., hrd., dns., VFg. x/n., tr.ool. + foss. w/ VFg pp. around foss. qms., brn. o/s. stn., tr. cut. fl. No odor. No F.D., V? perm.

Ls. crm. - brn., hrd., dns., VFg. - mx/n., mic., occ. sft. chiky, foss. - V. foss. NONSFOC

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

Ls. crm. - tan, hrd., dns., VFg. - mx/n., mic., occ. foss, pyk. N ϕ NSFOC

Ls. wh. - tan - h. gry., hrd., dns., VFg. x/n. - mic. + mx/n., sdn. y., sh. stnd. occ. foss. tr. chiky. NONSFOC

Ls. A.A. mic. sandy, glauc. NONSFOC

Sh. dk. gry. - rd. brn., m. hrd. - sft., dns. occ. sft. - sdn., earthy

Sh. A.A., Ls. crm. - gry., hrd., dns., VFg. - mx/n., foss., sh. stnd. NONSFOC

Ls. A.A., occ. rd. sh. stnd., occ. dol. w/ tr. int.ool. ϕ NSFOC

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

Sh. lt. gry. - rd. brn., sft., occ. sft., earthy

Ls. crm. - hrd. - m. sft., VFg. - mx/n., mic., occ. chiky, occ. rd. sh. stn. NONSFOC

Ls. crm. - tan, hrd., dns., VFg. - mx/n., occ. sft. chiky, tr.ool. - tr. rd. sh. stnd. NONSFOC

Ls. crm. - tan, hrd. - sft. chiky, VFg. - mx/n., mic., rare foss. NONSFOC

Ls. A.A., tr. sandy. NONSFOC

Sh. rd. brn., m. sft., occ. sft., sandy. occ. ylw. chit., earthy

Sh. rd. brn., tr. gry., sft., occ. chit. ls. pebbles. sh. stnd., occ. v. sdy. sh. earthy, tr. wh. ss. NO Cg/sh. A.A. - 30 min.

Cg/sh. - 30 min. - rd. brn. - gry. sh., sft. - m. sft. - earthy, abun. chit. ls. pebbles

Cg/sh. - rd. brn. - sft. - m. sft., abun. chit. ls. pebb., occ. ss. wh. m. sft., tr. A. mod. wh. nd., pr. sct., w. cm. t. ? ϕ NSFOC

Cg/sh. - rd. brn. - tr. blu. qms. sandy, m. sft. - sft., occ. sft., abun. chit. + ls. pebb., tr. ss. PA. NSFOC No Dolomite

Cg/sh. - rd. brn. - tr. blu. gry. qn., m. sft., dns., occ. sandy, chit. + ls. pebb. No dolomite

Cg/sh. A.A. occ. v. sandy

tr. Dol. crm. - tan, hrd., fr. x/n., tr. fr. int.ool. ϕ , most filled w/ fine chiky dol. NSFOC

Dol. crm. - tan, hrd., dns., fr. - VFg. x/n., tr. pr. vug. ϕ , tr. pr. - fr. int.ool. ϕ most dns. NSFOC

Abun. Cg. cavings

Dol. crm. - m. hrd. - hrd., fr. x/n., tr. wh. chit., occ. fr. - gd. int.ool. vug. ϕ tr.oom. ? ϕ NSFOC

Weak Show

Stark Shale
(-1404')

Very Weak Show

5

Very Weak Show

Base of Kansas City Group

Mud Check @ 3561'

M. w. 8.9 lb. gal.

V. s. 4.8 sec. / gal.

W. L. 8.8 ml. / 30 min.

Chl. 3.000 ppm

Solids 4.2%

L.C.M. 9 lbs. / bbl.

Arbuckle Fm.
(-1575')

D.T.D. 3650'

L.T.D.

Robert Stolye
8/15/14

