

ROBERT STOLZLE

CONSULTING PETROLEUM GEOLOGIST

APPO OIL & GAS

3271 G. 201st ST, W.

Grand, KS 67532 - 0249

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DRILLING TIME AND SAMPLE LOG

OPERATOR: Murfin Drilling Co., Inc.

LEASE: Agnes WELL NO.: 1-7

FIELD: W. Idcat

LOCATION: 1650' ENL, 330' EEL (NE, SE, NE)

SEC.: 7 TWP: 16S RANGE: 32W

COUNTY: Scott STATE: KS

API NO.: 15-171-20891-00-00

CONTRACTOR: Murfin Drilling Co., Rig #21

DATE: July 17, 2012 COMPLETED: 7/26/12

ROTARY TOTAL DEPTH: 4800' LOG TOTAL DEPTH: 4800'

GEOLOGICAL SUPERVISOR: 3213' LOG TYPE: Chemical / Polymer

LOG-UP DEPTH: 3213' LOG TYPE: Chemical / Polymer

FORMATION	START DEPTH	END DEPTH	STRUCTURAL POSITION
Stonecaynel Anhyd.	2404 (4617)	2404 (4617)	+13'
Base of Anhydrite	2425 (4596)	2422 (4599)	+13'
Topaka fm.	3731 (-710)	3726 (-705)	+11'
Heachner Sh.	3958 (-937)	3959 (-938)	+10'
Lansing Gp.	4003 (-982)	3997 (-976)	+15'
Stark Shale	4263 (-1242)	4263 (-1242)	+9'
Base K5 City Gp.	4345 (-1324)	4345 (-1324)	+10'
Marmaton Gp.	4400 (-1379)	4462 (-1381)	+19'
Pawnee ls.	4480 (-1459)	4480 (-1459)	+8'
ft. Scott ls.	4522 (-1501)	4522 (-1501)	+11'
Charokae Sh.	4550 (-1529)	4549 (-1528)	+8'
Johnson Zone	4592 (-1571)	4592 (-1571)	+9'
Atokals.	4616 (-1595)	4616 (-1595)	+7'
Miss. St. Gcn.	4650 (-1629)	4648 (-1627)	+39'
Total Depth	4800	4800	

ELEVATIONS

KB 3021'

GL 3010'

Measurements are all from KB

CASING RECORD

SIZE: 8 5/8" @

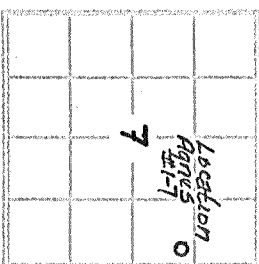
225' KB, circ

PRODUCTION: None, PAH

WIRELINE SERVICES

Log Tech: Dual
Induction, Dual
Compass and Density
Sonic and
Micro Resistivity
Logs were run.

LOCATION MAP



Reference Well for Structural Comparison: Grand Mesa #1-4 Home SW 1/4 SE 1/4 NW 1/4
Comments and Recommendations: Recommended well be plugged and abandoned

DST # 1 ZONE: Kansas City 'K' Zone

INTERVAL: 4270'-4310'

Pressure:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2095 psi	260' M.W. (50% mud)
2. Initial Flow: Start	0	153 psi	315' M.W. (20% mud)
3. Initial Flow: End	30	719 psi	1260' M.W. (59% mud)
4. Initial Shut-in: End	60	1160 psi	
5. Final Flow: Start	0	734 psi	Blow Desc:
6. Final Flow: End	15	878 psi	I.F. - BOB - 2 min.
7. Final Shut-in: End	60	1163 psi	I.S.I. - No blow
8. Final Hydrostatic		2052 psi	F.F. BOB 3 1/2 min. F.S.I. - No blow

BHT: 125°F

Re: .11 @ 98°F

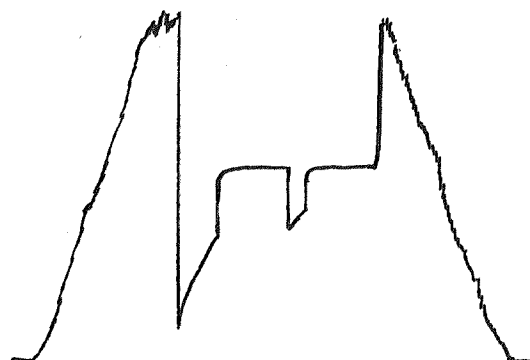
48,000 ppm Chlorides

DST # 1

Interval: 4270'-4310'

8844 Chart

Depth: 4271'



DST # 2 ZONE: Marmaton and Pawnee ls.

INTERVAL: 4408'-4515'

DST # 2

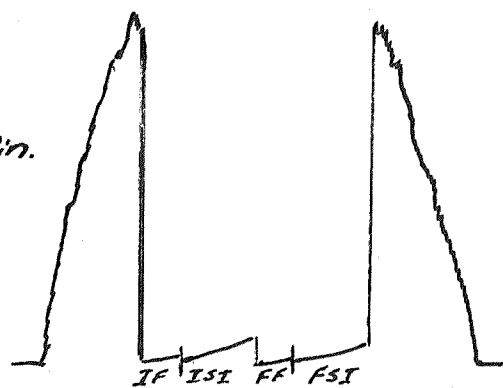
Interval: 4408'-4515'

8844 Chart

Depth: 4409'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2238 psi	2' Muddy Oil
2. Initial Flow: Start	0	17 psi	(95% Oil)
3. Initial Flow: End	30	17 psi	
4. Initial Shut-in: End	60	161 psi	Blow Desc:
5. Final Flow: Start	0	18 psi	I.F. - 1/4" blow, died in 28 min.
6. Final Flow: End	30	19 psi	I.S.I. - No blow
7. Final Shut-in: End	60	107 psi	F.F. - No blow
8. Final Hydrostatic		2116 psi	F.S.I. - No blow

BHT: 124°F
Rv: _____

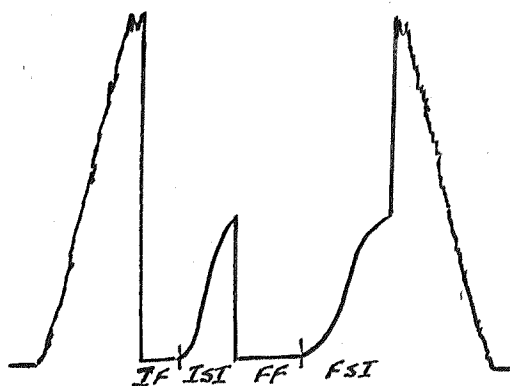


DST # 3 ZONE: Ft. Scott, Cherokee & Johnson
 INTERVAL: 4518'-4620' ZONE

DST # 3 8844 Chart
 Interval: 4518-4620 Depth: 4519'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2275 psi	70' Oil Cut Mud
2. Initial Flow: Start	0	20 psi	(5% Oil)
3. Initial Flow: End	30	32 psi	
4. Initial Shut-in: End	60	926 psi	Blow Desc:
5. Final Flow: Start	0	36 psi	I.F. - built to 1/4"
6. Final Flow: End	60	54 psi	I.S.I. - No blow
7. Final Shut-in: End	90	974 psi	F.F. - built to 1/2"
8. Final Hydrostatic		2228 psi	F.S.I. - No blow

BHT: 124°F
Rv: _____

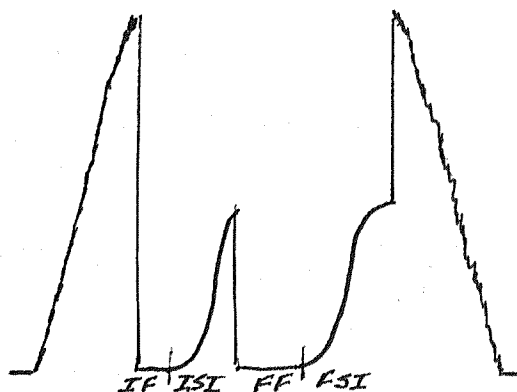


DST # 4 ZONE: Alcoals & Basal Penn. Ss.
 INTERVAL: 4607'-4647'

DST # 4 8844 Chart
 Interval: 4607-4647 Depth: 4608'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2316 psi	5' Oil Cut Mud
2. Initial Flow: Start	0	17 psi	(5% Oil)
3. Initial Flow: End	30	26 psi	60' Oil Cut Mud
4. Initial Shut-in: End	60	1062 psi	(20% Oil)
5. Final Flow: Start	0	30 psi	Blow Desc:
6. Final Flow: End	60	44 psi	I.F. - built to 1/4"
7. Final Shut-in: End	90	1109 psi	I.S.I. - No blow
8. Final Hydrostatic		2306 psi	F.F. - built to 3"

BHT: 124°F
Rv: _____



ABBREVIATIONS USED

ROCK TYPES:

FABRIC:

MODIFIERS:

2400

2450

3600

3650

3700

Stone Corral
Anhydrite
(+617')

Base of
Anhydrite
(+596')

Displace Native Mud System
at 3213'

Replace PDC bit with
button bit at 3620'

Mud Check @ 3620'
M.W. 8.9 lb./gal.
Vis. 59 sec./qt.
W.L. 6.4 ml./30min.
chl. 1,200 ppm
Solids 4.3%
LCM 4.0 lb./bbl.

Start 1 hr. drilling time
and 10 ft. wet and dry
samples at 3630'

Sh: gry.-dk. gry., m. sft.-m. hrd., dns.,
earthy-hackly
Ls: crm.-gry., m. hrd., dns., vfg xln.,
foss. & sh. std. NØ NSFDC
Ls: gry.-crm.-tan, sft. & chik.-hrd., dns.
vfg. xln., foss., occ. sh. std. NØ NSFDC

occ. sh: A.A.
Sh: lt.-dk. gry., sft. & clay.-m. hrd., dns.
hack.
Ls: tan-gry., hrd.-sft. & chik., foss.,
occ. sh. std. NØ NSFDC
Sh: lt. gry., sft.-v. sft. & clay.-earthy
Ls: crm.-tan, sft. & chik.-hrd., dns.
vfg.-med. xln., foss., tr. sh. std. NØ NSFDC

Ls: xln.-crm., sft. & chik.-m. hrd., dns.
f-xln.-mxln., foss., tr. sh. std., tr.
gry. NØ NSFDC

Ls: crm.-tan-gry., m. hrd.-hrd., dns.,
vfg.-mxln., occ. sft. & chik., occ.
foss.-l. foss., tr. pr. pp. vug. Ø NSFDC

Ls: A.A. NØ NSFDC

Sh: sft.-m. sft., dns., occ. clayey,
earthy
Sh: A.A.

Ls: crm.-m. hrd., dns., fH-vfg xln.
occ. foss., tr. sh. std. NØ NSFDC

Ls: lt. gry.-gry., m. sft.-hrd., dns.,
vfg.-mxln., foss.-l. foss., sh.
std. NØ NSFDC

Ls: A.A. NØ NSFDC

Ls: A.A., itr. sandy. NΦ NSFOC

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

Sh: A.A., earthy - hackly

Ls: crm., sft. - hrd., dns., VEG - mxln.

occ. foss., itr. chiky. NΦ NSFOC

Ls: crm. - tan - gry., hrd., dns., VEG

xln. itr. sft. & chik., occ. foss. NΦ NSFOC

TOPEKA FM. (-710') /og-705

Ls: wh., sft., chik. - hrd., dns., crm.

VEG - mxln., foss., sh. stn. NΦ NSFOC

Sh: lt. - dk. gry., sft. - m. hrd., occ.

sandy, clayey - earthy

Sh: A.A., less clayey

Ls: A.A., occ. sh. stn. - looks like oil stn. NΦ NSFOC

Ls: crm. - tan - gry., sft. - hrd., dns.,

tr. chiky., VEG - mxln., mic. NΦ NSFOC

tr. Sh: dk. gry. - blk., m. hrd., dns., carb.

tr. Sh: A.A.

Ls: crm. - lt. gry., sft. - hrd., dns., VEG -

mxln., foss., sh. stn. NΦ NSFOC

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

occ. sandy, tr. carb., hackly

Ls: crm. - gry., m. sft. - hrd., dns., VEG -

mxln., foss., sh. stn., itr. sandy. NΦ

Ls: crm. - tan, m. hrd. - hrd., itr. chik.,

VEG - mxln., mic., foss., itr. sh. stn. NΦ NSFOC

tr. Sh: dk. gry., m. sft., hack.

Sh: A.A.

Ls: crm. - gry., m. sft. - hrd., dns., VEG -

mxln., itr. sandy, foss. NΦ NSFOC

Ls: crm., sft. & chiky. - hrd., dns.,

VEG - mxln., occ. foss., NΦ NSFOC

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

tr. Sh: A.A.

Ls: crm., sft. & chik. - hrd., dns., VEG -

mxln., occ. v. foss. w/ tr. int. part. NΦ NSFOC

Ls: crm. - tan, sft. & chik. - hrd., dns.,

VEG - mxln., foss., abund. sh. stn. NΦ NSFOC

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

tr. Sh: A.A.

Ls: crm. - tan - gry., m. sft. - hrd., dns., VEG -

mxln., chiky., abund. sh. stn., tr.

foss., itr. sandy. NΦ NSFOC

Ls: crm. - tan - gry., hrd., dns., occ.

sft. & chiky., occ. foss., sh. stn.,

abund. sandy - VEG, gry. Sg. NΦ NSFOC

Ls: crm. - tan, hrd. - sft. & chiky., VEG -

mxln., occ. foss. w/ pr. pp. Vug. NΦ NSFOC

tr. int. part. Φ

Ls: A.A., less chiky. NΦ NSFOC

Sh: lt. gry. & dk. gry., m. hrd. -

m. sft., dns., earthy - hackly

tr. Sh: A.A.

Ls: crm. - tan, tr. gry., hrd. - m. sft., dns.,

VEG - mxln., tr. pelec., foss., sh. stn., tr.

tr. pr. VEG pp. Φ NSFOC

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

Ls: crm., hrd. - m. sft., dns., VEG -

mxln., mic. itr. foss. NΦ NSFOC

Queen Hill Sh.

Ls: crm. - gry., hrd., dns., VEG - mxln.,

mic., tr. chik., itr. sft. & chik., foss. NΦ NSFOC

Ls: A.A., less chik., tr. sh. stn. NΦ NSFOC

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

Ls: crm. - lt. gry., hrd., dns., VEG - mxln.

tr. sft. & chiky., tr. chik., occ. foss.,

tr. sh. stn., NΦ NSFOC

Sh: v. m. sft., dns., earthy - hackly

3750

3800

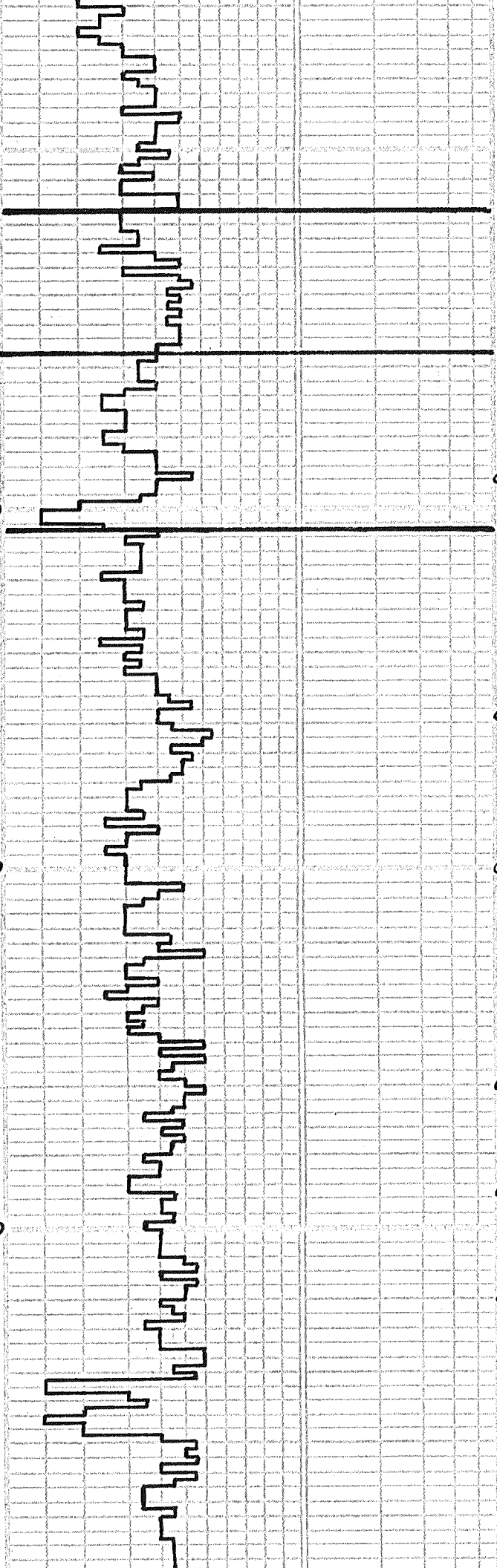
3850

3900



3950
4000
4050
4100

A
B
C
D
E
F



occ. sh. A.A.
Ls. crm.-lt. gry., hrd., dns., occ.
sft. chiky, VEG-MXIN, 10CC
foss., tr. sh. std. NQ NSFOC
sh. gry. grn.-dk. gry., m. hrd.-m. sft.,
dns., occ. sandy, hackly
Ls. crm.-gry. A.A. NQ NSFOC
rd. sh. cavinas

Ls. gry.-crm., hrd., dns., VEG-MXIN,
mic., foss., sh. std., NQ NSFOC
sh. gry. grn.-dk. gry., m. hrd.-m. sft.,
dns., earthy-hackly, 1-2 pr. carb.

sh. gry.-grn.-dk. gry.-blk., m. sft.-m. hrd.
dns., carb., earthy-hackly
Ls. crm.-tan, hrd.-m. hrd., dns., VEG-
MXIN, sft. std. tr. pr. pp. NSFOC
tr. sh. A.A.

Ls. crm.-tan, m. sft.-hrd., dns., VEG-
MXIN, mic., tr. ch., foss. + sh. std.
tr. pr. pp. moldic NSFOC

Ls. wh.-crm.-tan, sft. chiky-hrd., dns.,
VEG-MXIN, mic., tr. ch., occ. foss.,
tr. V. pr. int. part. NSFOC

Ls. crm.-wh., m. sft.-hrd., dns., VEG-
MXIN, mic., chky, foss. NQ NSFOC
CFS sh. gry.-dk. gry., m. sft., dns., earthy

Ls. crm.-wh., hrd.-m. sft., dns.,
VEG-MXIN, tr. mic., tr. ch., occ.
foss. + ool. w/ tr. oom. NSFOC

Ls. crm., hrd., dns., VEG-MXIN, mic.
tr. ch., tr. foss. + ool. w/ tr. tr.
pr. oom. NSFOC, tr. sh. std., occ. sft.
chiky NSFOC

Ls. crm., sft. + chiky-hrd., dns., VEG-
MXIN, mic., tr. ch., tr. foss. +
ool. w/ pr. oom. NSFOC
CFS

sh. gry. grn.-dk. gry., m. sft., dns., hackly
Ls. crm., m. sft.-hrd., dns., VEG-
MXIN, mic., occ. foss., tr. pr.
NQ NSFOC

Ls. crm., m. sft.-hrd., dns., VEG-MXIN,
mic., occ. chky-wr-tan., occ. foss.
ool., occ. chky. NQ NSFOC

CFS sh. gry.-blk., m. sft., dns., occ. carb., earthy
-hackly
Ls. crm., m. sft.-hrd., dns., VEG-MXIN,
mic., tr. ch.-wh., rxd. NQ NSFOC
Ls. crm.-wh., sft. chiky-hrd., dns.,
mic., VEG-MXIN, tr. rxd., rare
foss., tr. ch. NQ NSFOC

Ls. crm.-lt. gry., hrd., dns., VEG-MXIN,
occ. ch., abun. wh. chiky Ls.,
occ. rxd., tr. foss. NQ NSFOC
CFS tr. sh. gry.-blk., m. sft., dns., carb., earthy
sh. A.A.

Ls. crm.-wh., sft. chiky-hrd., dns.,
VEG-MXIN, mic., tr. foss. + ool.
w/ pr. moldic NSFOC

Ls. A.A. 1-2 pr. chiky w/ lt. std. w/ k
cut + fl. - No perm., var. wk show
CFS Ls. wh.-crm., sft. chiky-hrd., dns., MXIN,
foss. + ool.-grn. std.-pr. sh. NQ NSFOC

Ls. crm., hrd., dns.-sft. chiky, VEG-
MXIN, mic., tr. sh. std., occ. foss.
NQ NSFOC
CFS

Ls. crm., hrd., dns.-sft. chiky, MXIN-
MXIN, mic., tr. ch., tr. foss., tr.
sh. std. NQ NSFOC

Ls. crm.-tan, hrd., dns., tan-VEG-MXIN,
occ. sft. chiky, ool.-ool. gen. std.
qd.-ex. oom. NSFOC

Ls. crm.-lt. gry., hrd., dns., tan-VEG-MXIN,
tr. ch., tr. chiky, occ. ool. w/
pr. tr. oom. NSFOC

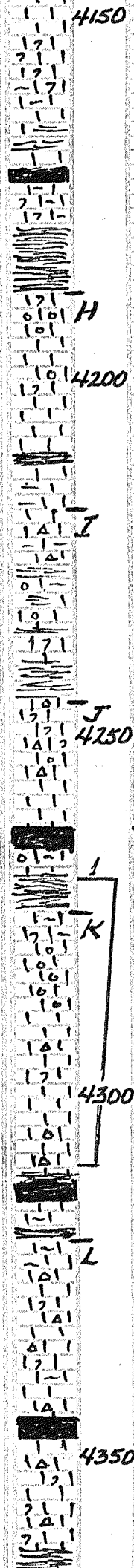
Ls. crm.-tan, hrd., dns., tan-MXIN-
mic., tr. ch., tr. ool.-oom.
NQ NSFOC

Heebner Sh.
(-937')

Toronto Ls.

Lansing Group
(-982') log-976

Mud Chock @ 4028'
M. w. 9.3
Vis. 55
W. 6.4
Chl. 2,300
Solids 7.1 %
LCM 6#



Ls. crm. - lt. gry., hrd., dns., f. xln. -
mxln., mic., tr. chik., rare foss.
NØ NSFDC

Ls. crm. - tan-gry., hrd., dns., f. xln. -
mxln., mic., occ. foss. + sh. std.
NØ NSFDC

sh. bik., hrd., dns., carb., earthy
sh. dk. gry. - bik., m. sft. - hrd., dns.,
carb., earthy

Ls. crm. - tan, hrd., dns., f. xln. -
mxln., foss. + sh. std. NØ NSFDC
Sh: A. A.

Ls. crm. - tan-gry., hrd., dns., occ.
sft. f. xln. - mxln., occ. foss. +
sh. std. NØ NSFDC

Ls. crm., hrd. - m. sft., dns., f. xln. -
mxln., tr. chik., occ. sft. + chik.,
rare foss. NØ NSFDC

Ls. crm. - lt. gry., hrd., dns., vfg. - mxln.
tr. chik., tr. mic., occ. foss. w/ tr.
pr. pp. moldic vug. Ø NSFDC

CFS Ls. crm. - tan-gry., hrd., dns., f. xln. -
mxln., mic., tr. rexed., rare foss.
NØ NSFDC

tr. sh. dk. gry., m. sft., dns., hackly
Sh: A. A. tr. bik., carb.

Ls. crm. - brn. - lt. gry., hrd., dns.,
vfg. - mxln., tr. foss., tr. chik.,
tr. sft. + chik. NØ NSFDC

Ls. crm. - brn. - gry., hrd., dns., f. xln. -
mxln., mic., tr. rexed., occ. foss. +
ool. sh. std., tr. chik. NØ NSFDC

CFS sh. dk. gry., m. sft., dns., earthy - hackly
Sh: A. A.

Ls. crm. - tan - lt. gry., hrd., dns., f. xln. -
mxln., mic., occ. sft. + chik., tr. foss.
NØ NSFDC

Ls. crm. - tan-gry., hrd., dns., occ. sft. +
chik., vfg. - mxln., tr. rexed., tr. wh.
pol. chik., occ. foss. NØ NSFDC

CFS sh. dk. gry. - bik., m. hrd., dns., carb., hack.
Sh: A. A.

Ls. crm. - brn. - gry., hrd., dns., f. xln. -
mxln., occ. sft. + chik., foss. + sh.
std. NØ NSFDC

Ls. wh. - tan, sft. + chik. - hrd., dns.,
f. xln. - mxln., tr. ool. w/ qd. int.
ool. Ø, v. pin zone, No f. Ø.

Ls. wh. - crm., sft. + chiky. - hrd., dns.,
vfg. - mxln., mic., tr. gry. chik., rare
foss., occ. sh. std. NØ NSFDC

Ls. crm. - tan - lt. gry., hrd., dns., vfg.
- mxln., mic., chik., tr. sft. + chik.
rare foss. NØ NSFDC

Ls. crm. - lt. gry., hrd., dns., f. xln. -
mxln., tr. rexed., occ. sft. + chik.
tr. gry. chik. NØ NSFDC

CFS tr. sh. dk. gry. - bik., m. sft. + carb.
Sh: A. A.

Ls. crm. - brn. - gry., m. sft. - hrd., dns.,
vfg. - mxln., abun. sh. std., occ.
foss. NØ NSFDC

CFS Ls. A. A., sli. more foss., 1-2 pc. w/ pr.
vfg. pp. vug. Ø NSFDC

Ls. crm. - lt. gry., hrd., dns., vfg. - mxln.,
mic., tr. chik., rare foss. NØ NSFDC

CFS Ls. crm. - lt. gry., hrd., dns., vfg. -
mxln., mic., chik., rare foss.
std. + tr. chik., rare foss. NØ NSFDC

tr. sh. bik., hrd., dns., carb., hackly
Ls. crm. - lt. gry., hrd. - m. hrd., dns.,
vfg. - mxln., mic., tr. chik., tr. rexed.
rare foss., sh. std. NØ NSFDC

Ls. crm. - lt. gry., hrd., dns., vfg. -
mxln., mic., chik., rare foss.
tr. ppt. NØ NSFDC

Ls. A. A., occ. vfg. sdy., tr. sh.
std., rare foss. NØ NSFDC
sh. gry. - brn. - bik., m. hrd., dns.

Stark Shale
(-1242)

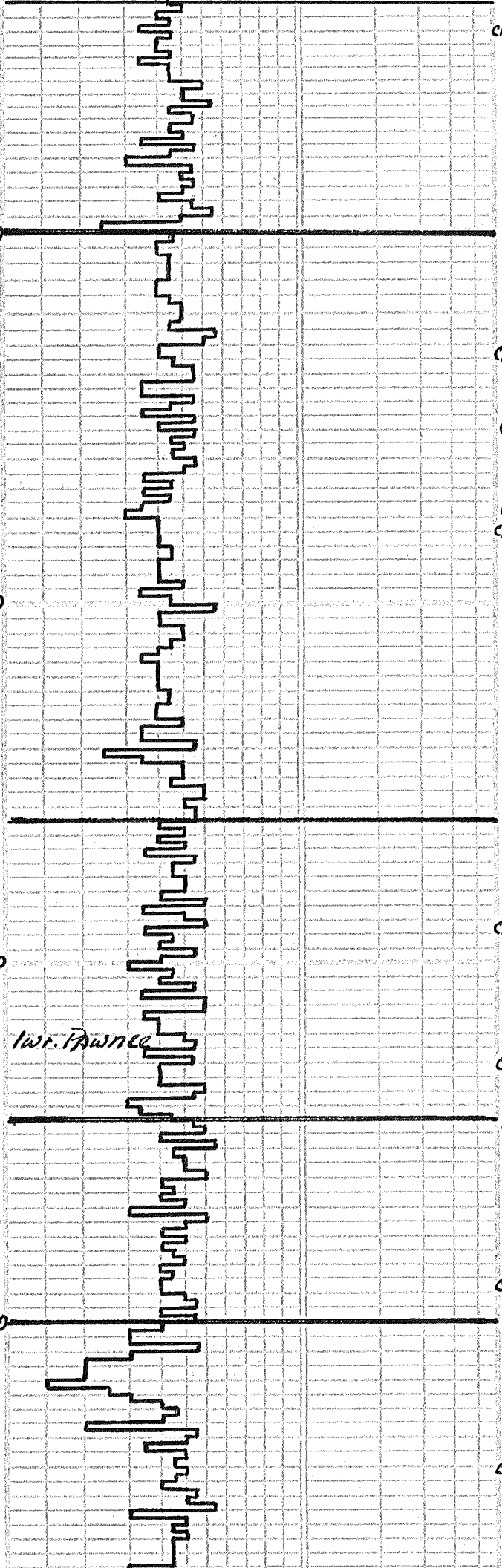
Fair Show

DST #1
4270-4310'
Rec. 1835' M.W.

Mud Check @ 4310'
M.W. 9.1
Vis. 57
W.L. 6.0
Chl. 1,800
Solids 5.7%
LCM 57

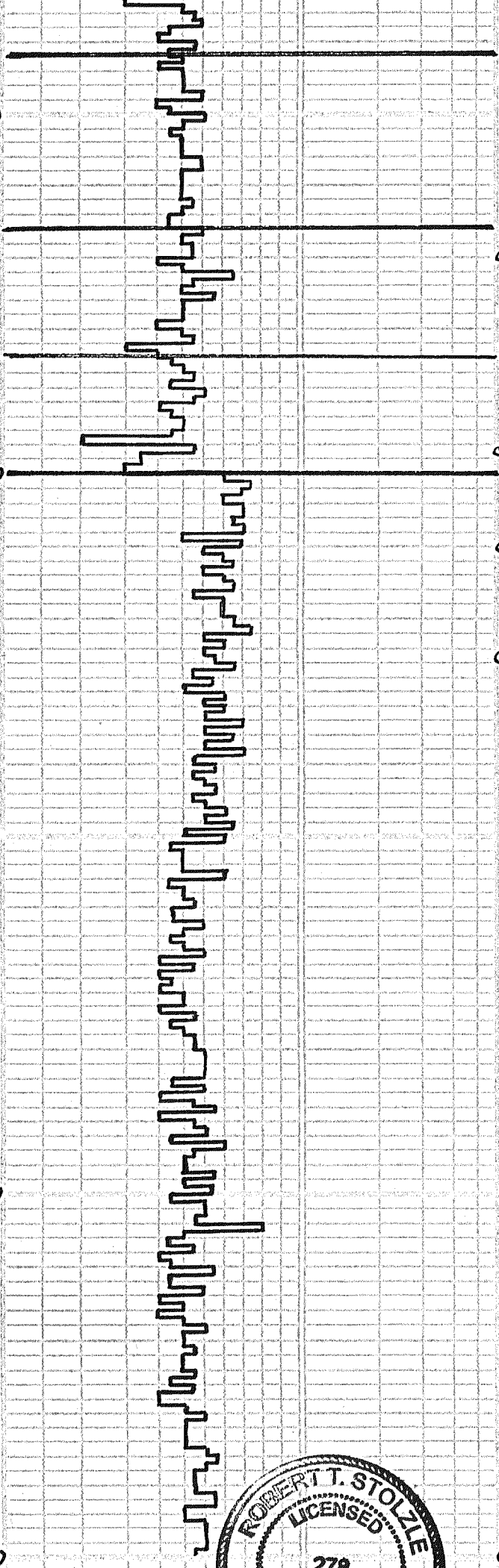
Base of Kansas
City Group
(-1324')

4400
 A
 2
 B
 C
 4450
 4500
 1wr. Pawnee
 3
 4550



OCC. SANDY, EARTHY-FLACKY
 Pleasanton Ls.
 Sh: gry. gn. - dk. gry. m. sft. dns. ,
 earthy - flackly
 Ls: crm. - lt. gry. hrd. dns. , occ.
 sft. , chiky. , sh. stnd. NΦ NSFOC
 Sh: A.A.
 Ls: crm. - tan. , hrd. dns. , VEG - mxln.
 occ. sft. , chiky. , occ. foss.
 fr. sh. stnd. NΦ NSFOC
 Sh: dk. gry. - blk. , m. hrd. dns. , flack.
 Ls: crm. - tan. , hrd. dns. , VEG - mxln.
 mic. , occ. foss. NΦ NSFOC
 abun.avings from mud sweep
 Sh: lt. gry. gn. - blk. , m. hrd. - m. sft. ,
 dns. , earthy - flackly
 Ls: crm. - tan. , hrd. dns. , VEG - mxln.
 mic. , occ. foss. NΦ NSFOC
 Ls: A.A. , dk. gry. foss. gn. s. + ool.
 NΦ NSFOC
 cfs Sh: dk. gry. m. sft. , dns. , earthy - flack.
 Ls: crm. - gry. hrd. dns. , NΦ NSFOC
 Ls: crm. - tan. - gry. , m. sft. - hrd. dns. ,
 VEG - mxln. , fr. texed. , 2-3pc. w/
 pp. , vug. φ. 1-2pc. chiky. w/ stn. , No
 odor. , fr. cutt. fl. , No F.O. , ?perm.
 Ls: A.A. , fr. vug. φ. , fr. fr. pp.
 φ. , fr. stn. in chiky Ls. , fr.
 cutt. fl. , lt. dk. brn. stn. , No
 odor. , No F.O. , ?perm.
 cfs Ls: crm. - tan. - gry. , hrd. dns. , VEG -
 mxln. , mic. , chiky. , occ. foss.
 fr. chiky. , sh. stnd. NΦ NSFOC
 Sh: dk. gry. , m. sft. , dns. , earthy
 Ls: crm. - tan. - lt. gry. , hrd. dns. , VEG -
 mxln. , mic. , occ. ch. - gry. - wh. , fr.
 chiky. , fr. sh. stnd. NΦ NSFOC
 Ls: A.A.
 Sh: dk. gry. - blk. , m. hrd. dns. , carb.
 earthy - flackly
 Sh: A.A.
 Ls: crm. - brn. , hrd. dns. , VEG - mxln.
 mic. , chiky. , occ. chik. , occ. foss.
 + sh. stnd. NΦ NSFOC
 Ls: crm. , hrd. dns. , VEG - mxln. , mic.
 occ. sft. + chiky. , 1-2pc. w/ lt. brn.
 stn. on sides of chip - pass. trace
 or vug. , fr. cutt. fl. , No odor. , ?perm.
 Ls: A.A.
 cfs Sh: gry. - blk. , m. sft. , dns. , carb. , flack.
 Sh: A.A. Ls: crm. - dk. gry. , hrd. dns. ,
 VEG - mxln. , foss. , sh. stnd. NΦ NSFOC
 Ls: crm. - dk. gry. , hrd. dns. , VEG -
 mxln. , mic. , occ. dk. gry. ch. , occ.
 sft. , chiky. , foss. - v. foss. , sh.
 stnd. , pyr. NΦ NSFOC
 Ls: A.A.
 cfs Sh: blk. , m. hrd. dns. , carb. , earthy
 Sh: A.A.
 Ls: tan. - brn. , hrd. dns. , VEG - mxln. ,
 occ. ool. ch. , mic. , occ. ool. w/
 fr. pr. - fr. int. pol. φ. , fr. bldg. oil,
 No odor. , fr. cutt. fl. , thin zone
 Ls: crm. - brn. , hrd. dns. , VEG - mxln.
 less. ch. , 1-2pc. ool. w/ pr. int.
 ool. φ. , lt. stn. , wk. cutt. fl. , No
 odor. , No F.O. Vary weak show
 Ls: A.A. , fr. ool. ch. , occ. foss. , ool.
 NΦ NSFOC
 cfs Sh: blk. , m. sft. - m. hrd. dns. , carb.
 earthy - flackly
 Ls: crm. , sft. , chiky - hrd. dns. ,
 VEG - mxln. , mic. , occ. foss. + ool.
 1-2pc. w/ pr. int. ool. φ. , lt. stn. , wk.
 cutt. fl. , No odor. , No F.O. , V. wk. show
 Ls: crm. - gry. , hrd. dns. - sft. , chiky.
 VEG - mxln. , mic. , occ. foss. , sh.
 stnd. NΦ NSFOC
 cfs Sh: blk. , m. sft. , dns. , carb. , earthy
 Ls: crm. - tan. - gry. , hrd. dns. , VEG - mxln.
 occ. foss. , occ. sft. , chiky. NΦ NSFOC
 Sh: gry. - blk. , m. sft. - m. hrd. dns. ,
 occ. carb. , flackly
 occ. Sh: A. , less carb.
 Ls: crm. - tan. hrd. dns. , VEG - mxln.
 V. s. fo. Chl. 2700

Marmaton Gr.
 Almonte Ls.
 (-1379') 109-1381'
 Mud Check @ 4440'
 M.W. 9.1
 V.S. 66
 W.L. 6.8
 Chl. 2,400
 Solids 55.7%
 LCM 6#
 Weak Show
 Weak Show
 DST #2
 4408' - 4515'
 Rec. 2' M.O.
 Der. 0°
 Pawnee Ls.
 (-1459')
 Very Weak Show
 Ft. Scott Ls.
 (-1501)
 Weak Show
 Cherokee Sh.
 (-1529')
 DST #3
 4518' - 4620'
 Rec. 70' OCM
 Mud Check @ 4570'
 M.W. 9.3 Solids 57.2
 V.S. 60 Chl. 2700



fr. foss. 1 tr. stf. chiky. tr. pyr.
fr. ch. NΦ NSFOC
Ls. crm. - gry. hrd., dns., VEG - mxln.
mic. 1 abun. ch. occ. pebb. s. sh. var.
pc. w. pr. fr. vug. φ. pm. stn. tr. - wk.
cut + fl. No odor. NO F.O. ? perm
Ls. crm. - gry. - tan, hrd., dns., VEG - mxln.
mic. 1 fr. ch. 1 tr. r. ex. 1 rare foss.
occ. sh. stn. NΦ NSFOC

Ls. A.A. 13-4 pc. w. l. pr. - fr. vug. φ.
1 tr. stn. 1 tr. cut + fl. No odor.
No F.O. ? perm. 1 thin zone

Ls. crm. - gry. hrd., dns., VEG - mxln. mic.
occ. foss. w. pr. - fr. tr. vug. φ. occ.
lrg. vugs, 1 qd. odor. 1 st. O. 1 qd. - ex.
cut + fl. thin zone

Ls. A.A. NΦ NSFOC. Sh. dk. gry. hack.
Ss. gry. m. hrd., dns., mod. - w. cmtd. w.
srtd. 1 sub ang. - sub ang. pr. int. ang.
φ. 1 qd. oil stn. 1 qd. F.O. on brk. 1 tr. odor
Sh. gry. - dk. hack. 1 abun. Ls. A.A. NΦ NSFOC
Ss. A.A. 1 tr. stf. 1 tr. A. w. pr. 1 pr. cmtd.

Ss. wh. hrd. - m. stf. 1 fr. qrd. 1 sub ang.
mod. - w. cmtd. 1 calc. cen. 1
No vis. φ. w. mod. w. srtd.

Ss. wh. - H. gry. hrd. - m. stf. 1 dns.
occ. fr. 1 tr. VEG. calc. cmtd.
V. w. cmtd. 1 sub ang. - sub ang.
mod. - w. srtd. NΦ NSFOC

Ss. A.A. 1 occ. med. qrd. 1 ang. - sub.
ang. NΦ NSFOC

Ss. A.A. 1 tr. med. qrd. 1 w. well cmtd.
NΦ NSFOC

Sh. gry. - gry. qrd. 1 m. hrd., dns.,
hackly.

Ls. crm. 1 hrd., dns., faxln. s. ndy. NΦ
Ss. A.A. NSFOC

Ss. Ls. crm. - wh. m. hrd., dns.,
1 tr. VEG. 1 ln. 1 s. ndy. - v. s. ndy.
occ. mod. srtd. NΦ NSFOC

Ls. wh. crm. hrd. - m. hrd. dns., VEG
- mxln. 1 mic. 1 s. ndy. - v. s. ndy. A.A.
tr. stf. 1 ool. - v. sm. ool. + sd.

Ls. crm. m. stf. - hrd., dns., VEG. xln.
occ. foss. 1 tr. s. ndy. 1 tr. ool. ?
tr. chiky NΦ NSFOC

occ. sh. gry. qrd. m. stf. 1 m. ss. cavings.
sh. cavings A.A. ± 50%

Ls. crm. m. stf. - hrd., dns., VEG - mxln.
mic. 1 occ. s. ndy. 1 occ. foss. 1 tr.
chiky NΦ NSFOC

Ls. - calc. Ss. crm. m. stf. - hrd.,
dns. 1 fr. qrd. 1 mod. w. r. nd. 1 w.
srtd. 1 tr. foss. 1 s. ndy. 1 ool. 1 Ls.
abun. sh. cavings. NΦ NSFOC

Ls. s. ndy. - calc. Ss. wh. - crm. m. stf.
- hrd. dns. 1 sub ang. - hrd. 1 mod. -
pr. srtd. w. cmtd. 1 Ls. rare foss.
NΦ NSFOC

Ls. crm. hrd. - m. stf., dns., VEG -
mxln. 1 s. ndy. - v. s. ndy. 1 mod. srtd.
mod. - w. r. nd. 1 rare foss. + ool.
NΦ NSFOC

Ls. crm. - tan, hrd., dns., VEG - mxln.
abun. mic. 1 rare ch. 1 occ. s. ndy.
rare foss. NΦ NSFOC

abun. sh. cavings

Ls. crm. - tan, hrd., dns., VEG -
mxln. 1 mic. 1 rare s. ndy. 1 rare
foss. 1 1-2 pc. sh. stn. on frags
resembles oil NΦ NSFOC

Ls. crm. - tan, hrd., dns., VEG - mxln.
abun. mic. 1 tr. s. ndy. 1 occ. foss.
tr. sh. stn. 1 tr. chiky.
NΦ NSFOC

Ls. crm. - tan, hrd., dns., VEG - mxln.
mic. 1 occ. foss. 1 tr. sh. stn. 1
rare s. ndy. NΦ NSFOC

Johnston Zone
(-1571)
Weak Show

Atoka Ls. (-1595)
Very Weak Show

Fair - Good Show
Basal Penn. Ss.

Good Show

Fair Show

Mississippi an
(St. Genevieve)
(-1629)

Mud Check @ 4647'
M.W. 9.4
Vis. 62
WL 8.4
Chl. 3500
Solids 7.8
LCM 5

Mud Check @ 4768'
M.W. 9.2 16.19al.
Vis. 76 sec. 196.
WL 7.6 ml/30min.
Chl. 3,000 ppm
Solids 6.4%
LCM 6#

D.T.D. 4800'
1 TD 4800'



CFS



N. D. # 000
Dev. 10
Robert Logg
7/25/12