

Remarks

The electric log measurements correlate from 2' to 5' lower to the drilling measurements.

Formation tops and lithology on this report have been corrected to the electric log.

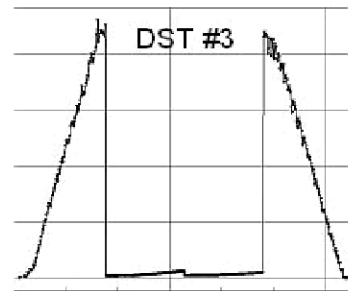
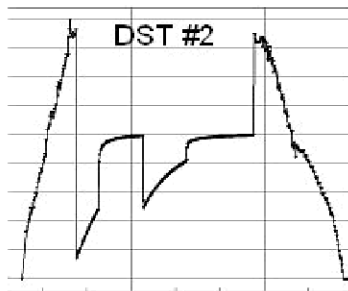
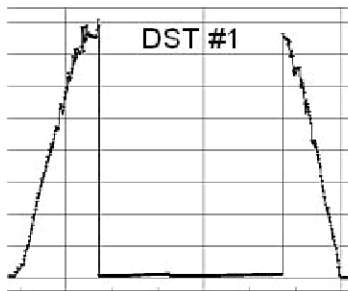
The drilling samples were deposited at the Kansas Geological Survey office in Wichita.

Respectfully submitted,

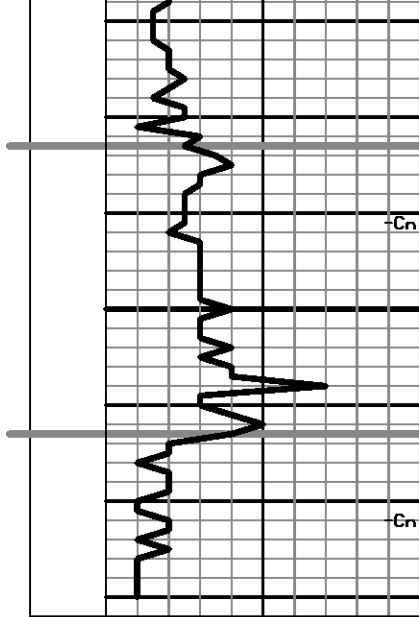
Robert L. Milford

Drill Stem Test Charts

Drill Stem Test by Trilobite Testing, Inc.



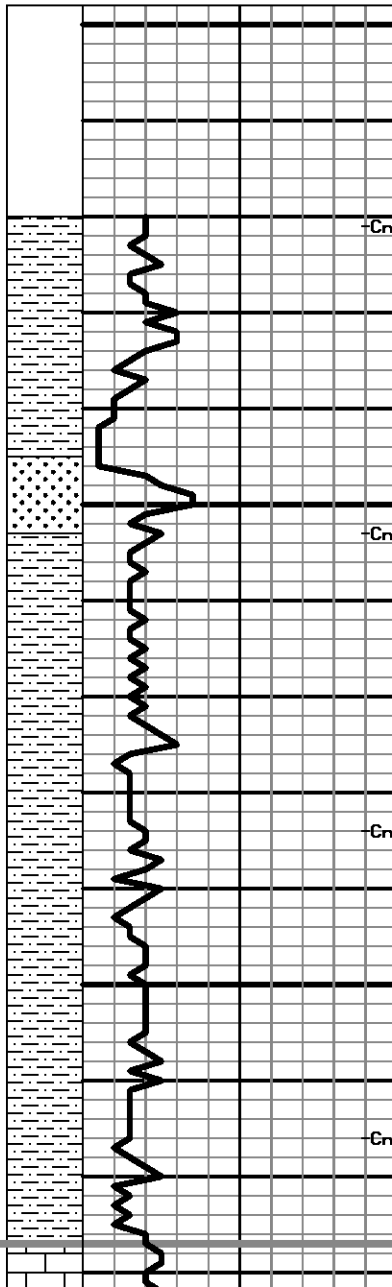
LITH.	0	DRILL TIME (MIN/FT)	10	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
				3200		



3250

Stone Corral 3238' (+94) EL

B/Stone Corral 3268' (+64) EL



3600

3650

3700

Mud displaced from 3304' to 3318'
 Call depth 3320' @ 9:23 am on 8-22-13
 Morgan Mud check @ 3335': 67 Vis,
 8.6 Wt, 5.2 WL, 600 ppm Chl, trace LCM
 Samples start 3620' @ 7:15 pm on 8-22-13

Sdy Sh: red-brn, some soft & gummy, intermixed w/ small amnt of Sd: lt gry, fn-vry fn grain, sli calc, semi fri-brittle, pr vis por, NS

Sd: lt gry, fn-vry fn grain, some sli calc, semi fri-brittle, pr vis por, NS, w/ some Sdy Sh: red-brn
 Sdy Sh: red-brn, w/ some Sd: A.A.

Sdy Sh: red-brn, some soft & gummy, w/ small amnt of Sd: A.A.

Sdy Sh: red-brn, some soft & gummy, small amnt Sdy Sh: grn

Sdy Sh: red-brn, some soft & gummy, small amnt Sh: gry & Sdy Sh: grn

Sdy Sh: A.A. w/ some Sdy Sh-Shly Sd: lt grn, fn-vry fn grain, pr vis por, NS

LS: wh-crm, fxln, fos, sub chky-prtly dns w/ some chky-imp chky-pr vis por, NS

Neva 3729' (-397) EL

chky-vry chky, pr vis por, NS

Sdy Sh: red-brn, some Sh: gry & grn

Cn 3750

Sdy Sh & Sh: A.A. w/ small amnt Sd: lt gry, fn-vry fn grain, semi fri, pr vis por, NS

Sdy Sh: red-brn, some soft & gummy w/ small amnt Sh & Sd: A.A.

Sd: lt gry, fn-vry fn grain, sli calc, semi fri-brittle, pr vis por, NS

Cn

Sdy Sh: red-brn, some soft & gummy, w/ small amnt Sh: grn & gry

Red Eagle 3789' (-457) EL

Dol: crm, fxl, sli fos, sli sub chky, pr por, NS & LS: lt-med gry, fxl, sli chty (crm-org), sli shly in prt, sub chky-prtly dns, pr por, NS

3800

LS: lt gry, fxl, sli dolomitic in prt, sub chky-prtly dns, pr por, NS

Sdy Sh: red-brn, some soft & gummy, w/ some Sh: red-brn, grn, gry

Cn

Sdy Sh & Sh: A.A. w/ some Sdy Sh: lt-med gry

Foraker 3841' (-509) EL

Cn

• Dol-Dol LS: crm-lt gry, fxl, fos in prt, sub chky-prtly dns, pr por, scat blk (some tarry) sptd-sub sat stn, NSFO, no odor

3850

• LS: crm-tan, fxl, fos in prt, some sli shly, sub chky-prtly dns, pr por, vry scat blk sptd-sub sat stn, NSFO, no odor

• LS: crm-lt gry, fxl, sub chky-prtly dns w/ some chky, pr por, tr blk sptd-sub sat stn, NSFO, no odor

Shly LS: med gry, fxl, gritty, pr por, NS

Cn

Dol-Dol LS: wh-lt tan, fxl, sub chky-prtly dns w/ some chky-vry chky, pr vis por, NS

Dol LS: brn, fxl, prtly dns-gritty, pr por, NS

Sh: med gry

Sh: red-brn, w/ gry & some grn

30" 3900

3900

Sh: A.A. w/ some drk gry

Cn

• Dol-Dol LS: crm-tan, fxl, fos in prt, sli chty (crm), sub chky-prtly dns, tr blk patchy stn, NSFO, no odor

Sh: red-brn & purple, tr grn & gry

Cn

Dol & LS: wh-lt gry, fxl, fos in prt, sub chky-prtly dns, pr por, NS

Sh: red-brn, med-drk gry, some grn

3950

Sh: red-brn, some gry & grn

Morgan Mud check @ 3948': 52 Vis, 9.0 Wt. 6.4 WL. 600 ppm Chl. 0# LCM

Sh: red-brn, some gry & grn

Dol & LS: crm-med gry, fxln, sli fos, some sli dol, sub chky-prtly dns, pr por, NS
Sh: red-brn & gry, some grn

LS: crm-lt gry, fxln, fos-ool, some sli dol, sub chky-prtly dns, pr por, NS
LS: A.A., pr por, NS
Sh: red-brn & gry, some grn

• LS: wh-lt gry, fxln, fos, sub chky-prtly dns w/ some chky-vry chky, pr por, vry scat blk dead sptd-sub sat w/ tr sat stn, NSFO, no odor
Sh: red-brn, some gry & grn

• LS: crm-tan, fxln, fos-ool, sub chky-prtly dns, pr por, tr blk dead sptd-sub sat stn, NSFO, no odor

• LS: crm-lt gry, fxln, ool-fos, tr calcite, sub chky-prtly dns, pr intrprtical w/ tr small vug por, fr amnt lt-drk brn sptd-sub sat w/ tr sat stn, S-FSFO (pin point-small beads), no odor
• Sdy LS: crm-red-brn, fxln, vry fn grain sd, shly in prt, pr por, tr blk asph sptd stn, NSFO, no odor
Sh: red-brn, some grn

• LS: crm, fxln, fos-ool in prt, some shly (red-brn, mottled), sub chky-prtly dns, pr por, few pcs w/ blk sptd-patchy stn, NSFO, no odor
Sh: red-brn, some gry-grn

LS: wh-crm, fxln, fos-ool in prt, some shly (red-brn, mottled), sub chky-prtly dns w/ some chky, pr por, NS
LS: A.A., incrs chky-vry chky, pr por, NS

Sh: red-brn, gry, grn
Sdy Sh-Shly Sd: red-brn, calc, w/ tr Sd: lt gry, fn-vry fn grain, calc, fri, pr vis por, NS

Sh: red-brn, some gry & grn

• LS: wh-tan, fxln, ool in prt, sub chky-prtly dns w/ some chky-vry chky, tr moldic por, cpl pcs w/ blk dead-tarry stn, NSFO, no odor
LS: crm-tan, fxln, sub chky-dns, pr por, NS

Calc Sh: lt red-brn to lt purple, some lt gry

Calc Sh: A.A. w/ small amnt Sh: grn & red-brn

Calc Sh: lt gry, w/ some Sh: red-brn

Stotler 3992' (-660) EL

DST #1 4025'-4049' Stotler
IF: surface blow FF: blow built to 0.75"
Rec: 45' Mud w/ oil spots
IFP: 13-14#/30" ISIP: 30#/60"
FFP: 15-17#/60" FSIP: 25#/90"
Ran 25 stand short trip prior to DST #1
Pipe Strap @ 4049': Strap short 0.34'
Straight Hole Survey @ 4049': 1.25° Dev.
Morgan Mud check @ 4049': 69 Vis, 8.9 Wt, 5.6 WL, 600 ppm Chl, 0# LCM

Topeka 4061' (-729) EL

Caught smpl @ 4145'. No circ smpl caught

4000

4050

4100

4150

DST #1

60"

20"

10"

Cn

Cn

Cn

60"

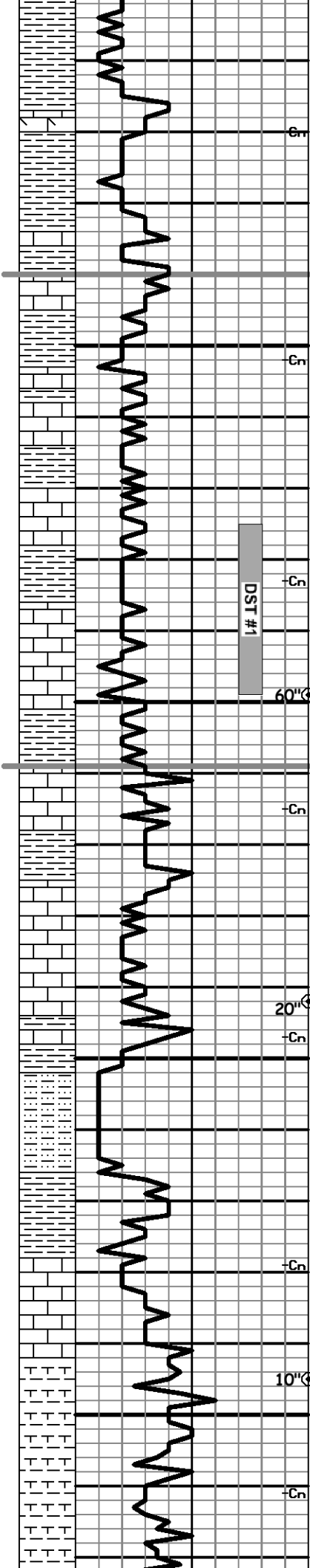
Cn

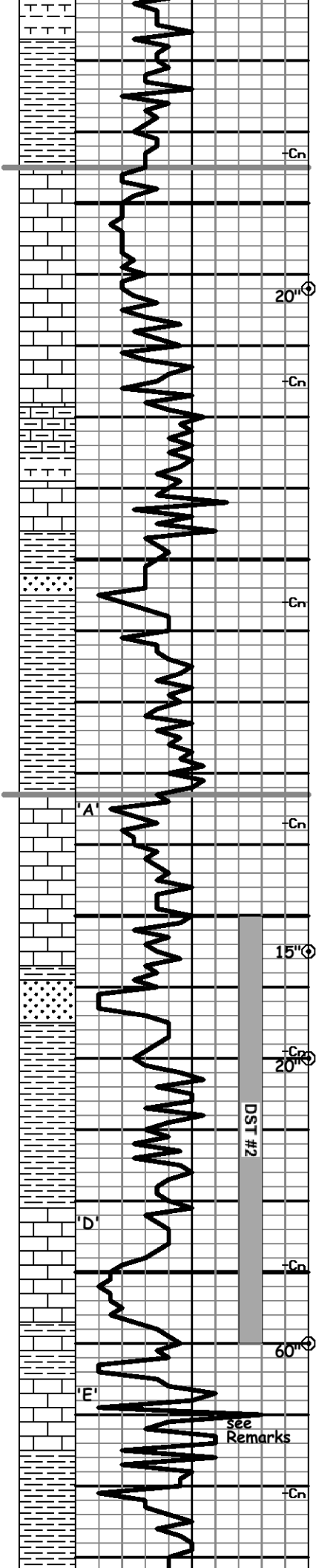
20"

Cn

Cn

Cn





Calc Sh: med gry, w/ some red-brn & tr drk gry

Sh: gry, red-brn, grn

Oread 4198' (-866) EL

4200

• LS: crm, fxlIn, ool in prt, sub chk-prt dns, pr por, few pcs w/ brn-blk sptd stn, NSFO, no odor

LS: wh-crm, fxlIn, sli ool, sub chky-prtly dns w/ some chky, pr introol por, NS

LS: crm-tan, fxlIn, sub chky-dns w/ some chky, pr por, NS

Shly LS: gry, fxlIn, gritty, pr por, NS

Calc Sh: med-drk gry, w/ some Sh: grn

LS: tan-brn, fxlIn, prtly dns-dns, pr por, NS

4250

Sh: red-brn, gry, grn

Sd: crm-lt gry, fn-vry fn grain, some glauc, fri-brittle, pr vis por, scat blk dead-asph spkld-sub sat stn, NSFO, no odor

Sh: red-brn, gry, grn

Sh: A.A.

Lansing 4286' (-954) EL

4300

• LS: crm-tan, fxlIn, ool (small) in prt, sub chky-dns, some fr ooc por, tr brn-blk dead sptd stn, NSFO, no odor

LS: tan, fxlIn, prtly dns-dns, pr por, NS

Sh: red-brn, gry, grn. intermixed w/ some amnt of

• Sd: lt gry, fn-vry fn grain, sli calc, fri-brittle, pr vis por, tr blk dead-asph spkld-sub sat stn, NSFO, no odor

Sh: red-brn, gry, grn

Sh: A.A.

DST #2 4300'-4360' LKC 'D' zn
 IF: BOB in 3" ISI: no blow back
 FF: BOB in 5" FSI: no blow back
 Rec: 2050' TOTAL FLUID:
 690' MCW (70% W, 30% M)
 1,360' MCW (95% W, 5% M)
 Chl ppm: 30,000 DST; 700 Mud
 IFP: 173-588#/30" ISIP: 1239#/60"
 FFP: 612-1019#/60" FSIP: 1243#/90"

4350

• LS: wh-crm, fxlIn, fos-ool (crs, granular) in prt, tr pyr, sub chky-prtly dns & becoming chky-vry chky w/ depth, pr-fr w/ some gd intrprt & vug por, fr amnt drk brn-blk patchy-sub sat w/ some sat stn, FSFO (some thick-hvy beads), sli odor

LS: tan-med gry, fxlIn, prly dns, pr por, NS

Sh: red-brn, w/ some gry & grn

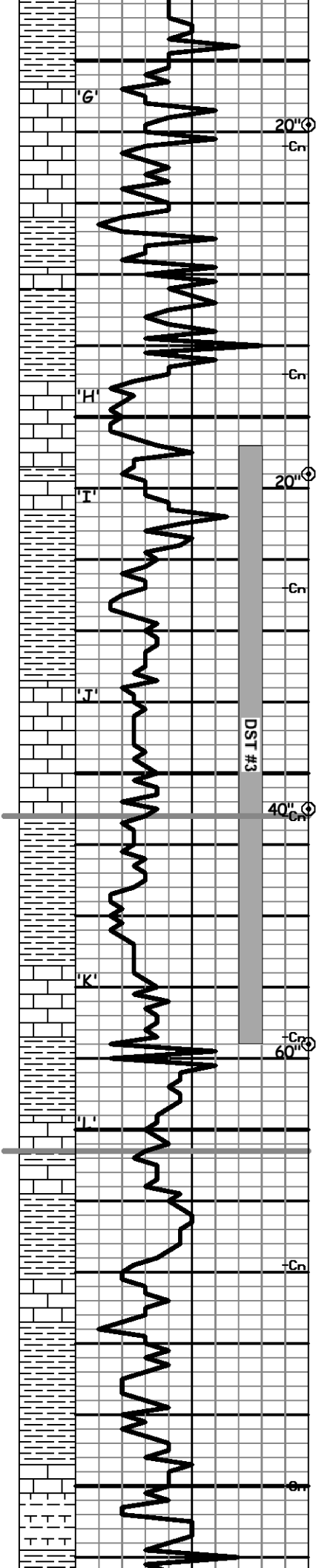
LS: crm-lt gry, fxlIn, sli chty (tan), sub chky-prtly dns, pr por, NS

Sh: red-brn, grn, gry

Sh: A.A.

Ran 6 stand short trip prior to DST #2. On trip out of hole after short trip, pulled very tight on 10th stand out, worked free, went back to bottom and conditioned another hour before trip out for DST
 Morgan Mud check @ 4360': 60 Vis, 9.2 Wt, 6.0 WL, 700 ppm Chl, 0# LCM
 On again-off again problems with Automatic Driller until repaired at about 4615'

see Remarks



4400

20" ⊕

Gn

4450

20" ⊕

Gn

4500

40" ⊕

Gn

60" ⊕

4550

Gn

4600

Sh: red-brn, gry-grn

LS: crm-lt gry, fxln, sli fos, shly in prt (red-brn, mottled), sub chky-prtly dns, pr por, NS

LS: crm-tan, fxln, sli fos, sub chky-dns w/ some chky, pr por, NS

Sh: red-brn, gry, grn

LS: drk gry-brn, fxln, sli fos, sli shly, prtly dns, pr por, NS

Sh: red-brn, gry, grn, brn

• LS: crm-tan, fxln, sli fos, sli shly in prt (red-brn, mottled), sub chky-prtly dns w/ some chky, pr w/ tr pin point por, tr brn-blk dead sptd stn, NSFO, no odor

LS: crm-lt gry, fxln, fos in prt, sub chky-prtly dns, pr por, NS

Sh: red-brn, gry, grn

Sh: A.A. w/ some red-brn, silty, & Sdy Sh: gry-grn

Sh: red-brn, gry, grn

• LS: crm-lt gry, fxln, ool-fos in prt, sub chky-prtly dns w/ some chky-vry chky, pr w/ some fr intrprtical & tr small vug por, scat med brn-blk sptd-sub sat & tr sat stn, S-FSFO, no odor ,

Sh: red-brn (some sdy), gry (some silty), & grn

Sh: A.A. w/ small amnt of Shly Sd: lt gry, fn grain, pr vis por, NS

LS: crm-lt gry, fxln, sli fos, sub chky-prtly dns

Sh: red-brn, gry, grn

LS: crm-lt gry, fxln, sli fos-ool, sub chky-prtly dns, pr por, NS

LS: A.A.

Sh: red-brn, gry, grn

LS: crm-tan, fxln, sli fos, sub chky-prtly dns, pr por, NS

Sh: red-brn, gry, grn

Sh: red-brn, gry, grn w/ some Calc Sh: lt gry

• LS: crm-tan, fxln, fos-ool in prt, sub chky-dns, pr por, tr brn-blk dead sptd stn, NSFO, no odor

Sh: red-brn, gry, grn w/ some Calc Sh: lt gry

Morgan Mud check @ 4488': 62 Vis, 9.2 Wt, 6.0 WL, 700 ppm Chl, 0# LCM

Stark 4509' (-1177) EL

DST #3 4454'-4538' LKC 'J'-'K' zns

IF: surface blow died in 5" FF: no blow

Rec: 5' Mud (100% M)

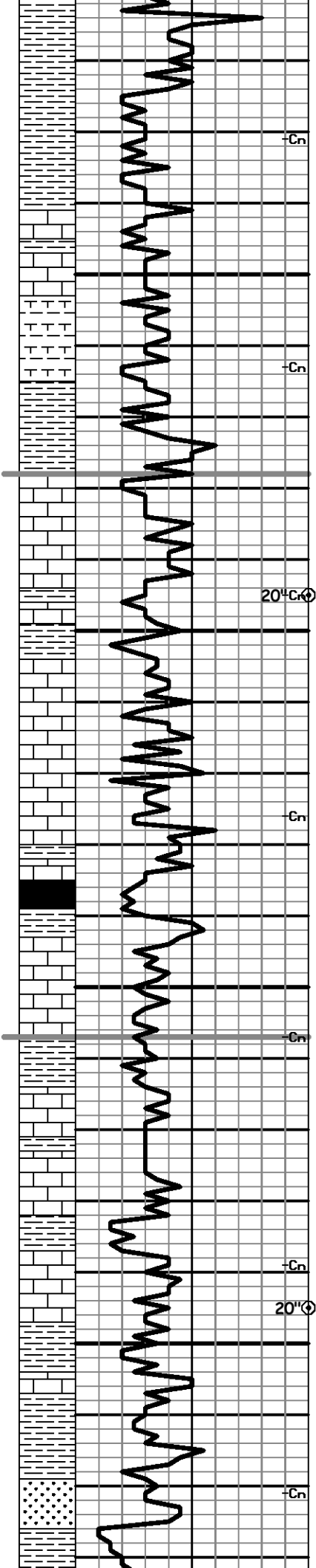
IFP: 18-20#/30" ISIP: 61#/60"

FFP: 20-22#/30" FSIP: 45#/60"

Ran 15 stand short trip prior to DST #3

B/KC 4556' (-1224) EL

Morgan Mud check @ 4586': 78 Vis, 9.1 Wt, 6.0 WL, 800 ppm Chl, 2# LCM



4650

4700

4750

4800

Sh: red-brn, gry, grn w/ some brn

Sh: red-brn, gry, grn

• LS: crm-lt gry, fxln, ool in prt, sub chky-prtly dns, pr por, tr brn-blk dead sptd stn, NSFO, no odor

LS: A.A.

Calc Sh: lt gry

Sh: red-brn w/ tr drk gry, & Calc Sh: lt-med gry

Sh: red-brn, gry, grn

LS: wh-tan, fxln, ool in prt w/ some fos, some brn mineralization, sub chky-prtly dns w/ some chky-vry chky, some pr-fr dvlpd moldic por, NS, no fluor (on brn mineralization), no cut, no odor

Sh: gry (some drk gry), red-brn, grn

LS: crm, fxln, sli fos, sli chty (wh-tan), sub chky-prtly dns w/ some chky, pr por, NS

LS: lt gry, fxln, sli shly, sub chky-prtly dns, pr por, NS

Sh: Black Carb w/ med-drk gry, & small amnt red-brn & grn

LS: crm-lt gry, fxln, fos in prt, sub chky-prtly dns w/ some chky-vry chky, pr por, NS

• LS: crm-tan, fxln, fos in prt, sub chky-prtly dns, pr por, tr brn-blk dead sptd stn, NSFO, no odor

LS: crm-tan, fxln, sli fos, sub chky-prtly dns, pr por, NS

Sh: grn (some sdy), red-brn, gry, some mottled red-brn & grn

LS: wh-crm, fxln, sli fos, chky-prtly dns w/ some vry chky, pr por, NS

Sh: red-brn, gry, grn

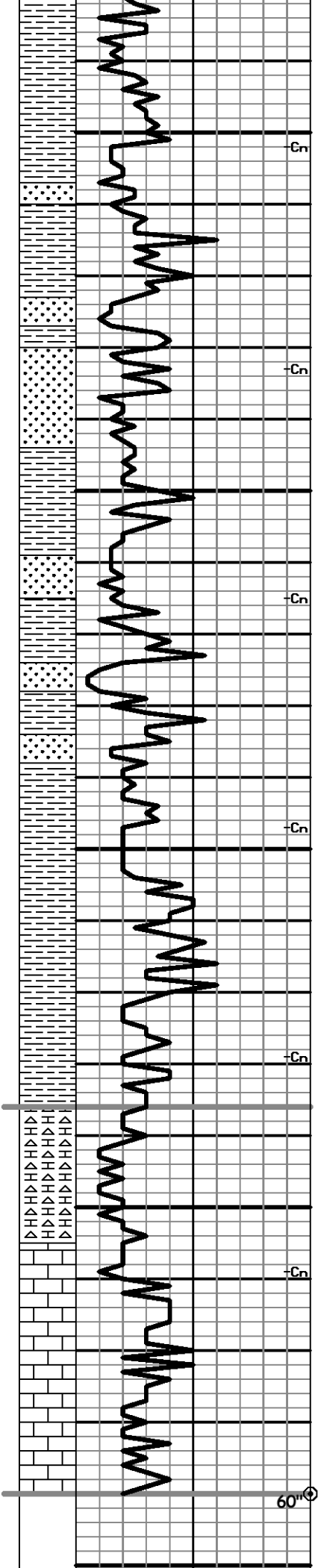
LS: A.A.

Sh: red-brn & grn, w/ small amnt Sd: wh-lt gry, fn-med grain, sli calc, semi fri-brittle, pr vis por, NS

Sh: A.A. w/ some Sd: crm-med gry, fn-med grain, sli calc, semi fri-brittle, pr vis por, NS w/ some loose Sd grains, clr, crs, sub rnd-sub ang, NS

Pawnee 4681' (-1349) EL

Cherokee 4760' (-1428) EL



4850

Sh: red-brn, gry, grn, brn, w/ some Sd: A.A. & some Shly Sd: red-brn, fn-med grain, sli calc, semi fri-brittle, pr vis por, NS

Sh: A.A. w/ some Sdy Sh: grn, & some Sd & Shly Sd: A.A.

Sh: red-brn, grn, gry, w/ some Sdy Sh: red-brn, & Sd: clr-gry, fn-crs grain, sli calc, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & some loose Sd grains, clr, crs, sub rnd-sub ang, NS

Sh: A.A. w/ some yell, & Sd: A.A., NS

Sh: red-brn, gry, grn, w/ some Sd: clr-wh, fn-med w/ some crs grain, semi fri-brittle, pr vis por, NS

4900

Sh: A.A. w/ some yell, w/ Sd: A.A., NS

Sh: A.A. w/ some Sd: clr-wh, fn-med grain, some shly (red-brn), semi fri-brittle, pr vis por, NS

Sd: clr-wh, crs loose grains, mstly frosted, sub rnd-sub ang, NS

Sh: red-brn, gry, grn w/ tr yell, & some Sd: clr-crm, fn-med grain, semi fri-semi brittle, pr vis por, NS, w/ small amnt loose crs grains, A.A.

4950

Sh: A.A. w/ small amnt Sd: A.A., NS

Sh: red-brn, gry, grn

Sh: gry, red-brn, grn, w/ tr Cht: crm-tan, fresh & weathered

A.A.

Chert: wh-crm, fresh & weathered, NS, w/ some Dol: tan-lt brn, fxl, sli suc, pr por, NS

Cht & Dol: A.A., w/ some glauc & pyr

5000

LS-Dol: tan-lt brn, fxl, some sli suc, mstly prtly dns, pr por, NS

LS: crm-tan, fxl, sli fos, sub chky-prtly dns w/ some chky, pr por, NS

LS: crm-lt brn, fxl, fos in prt, chky-prtly dns, pr por, NS

60"

5050

Mississippian 4990' (-1658) EL

Morgan Mud check @ 5004': 59 Vis, 9.4 Wt, 6.8 WL, 800 ppm Chl, 2# LCM

Recommended 10 stand short trip after CFS. Pulled tight and ran 15 stands. Had to ream hole 40' to bottom after short trip.

R.T.D. 5040' (-1708)

L.T.D. 5045' (-1713)

Straight Hole Survey @ 5040': 1.25° Dev.

