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Remarks

The Ziegler # 1-30 was declared dry and abandoned.

Electric log measurements correlate about even to 2' low compared to rotary measurements.

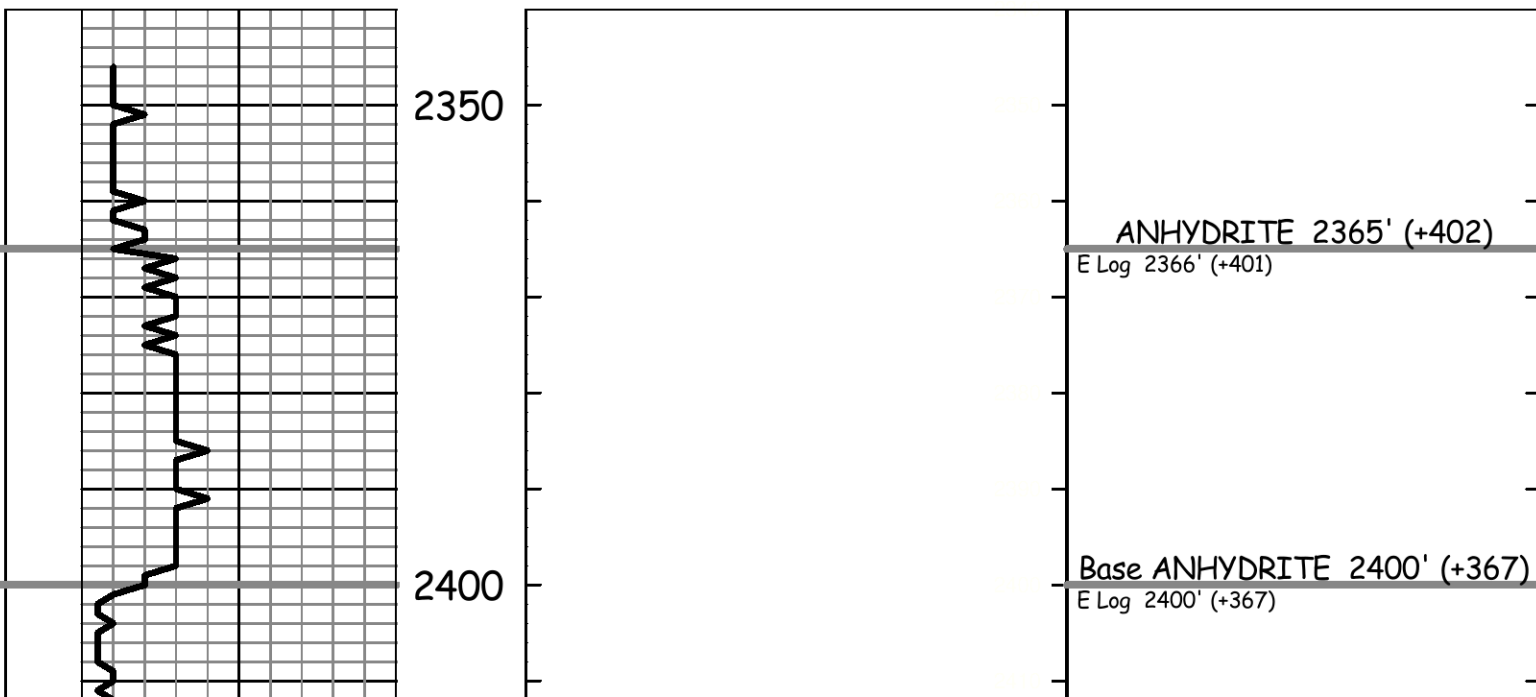
Samples deposited at the Kansas Geological Survey.

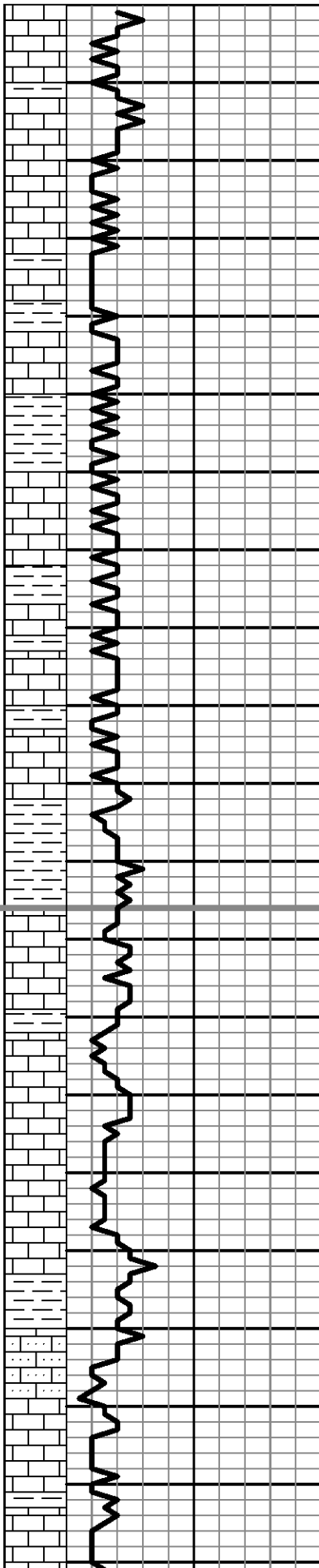
Respectfully Submitted,



Jeff Christian

| LITH. | 0 | DRILL TIME (MIN/FT) | 10 | DEPTH | MHS | SAMPLE DESCRIPTIONS | REMARKS |
|-------|---|---------------------|----|-------|-----|---------------------|---------|
|-------|---|---------------------|----|-------|-----|---------------------|---------|





3550

Ls: lt gry-gry, fn xln, part dns, foss-sli mott, ool in part, pr vis por, ns

Sh: gry

Ls: lt brn-lt gry, fn xln, dns, foss-ool, pr vis por, ns

Ls: as above, trc intrxln-pp por, ns

Ls: lt brn-lt gry, fn xln, sli grnlr, part dns, sli foss, trc pr intrxln-pp por, ns

3600

Sh: gry-some grn

Ls: lt brn-lt gry, fn xln, sli grnlr, dolo in part, foss in part, sct pr intrxln-foss por, ns

Sh: gry w/ Ls: lt brn-lt gry, fn xln, dns

Ls: crm-lt brn-lt gry, fn xln, sli grnlr, part dns, foss in part, trc intrxln-vug por, ns

Ls: lt brn-lt gry, fn xln, sli grnlr, part dns, sli foss-ool, pr vis por, ns

3650

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

Ls: lt brn-lt gry, fn xln, sli grnlr, part dns, foss in part, sct pr intrxln por, ns

Same

Ls: crm-lt gry, some w/ yell tent, fn xln, dns, sli foss-ool in part, trc chrt, pr vis por, ns

Ls: crm-lt gry, fn xln, grnlr, sli chlky, sli foss, trc chrt, fr intrxln por, ns

3700

Ls: as above, incrs dns ls

Sh: gry w/ Ls: brn-gry, fn xln, dns

sct Sst: gry, vy fn-fn grn, calc, hard-sndy lm

Ls: crm-lt brn, fn xln, sli grnlr, sli foss, sli chrty, sct fr intrxln-foss por, ns

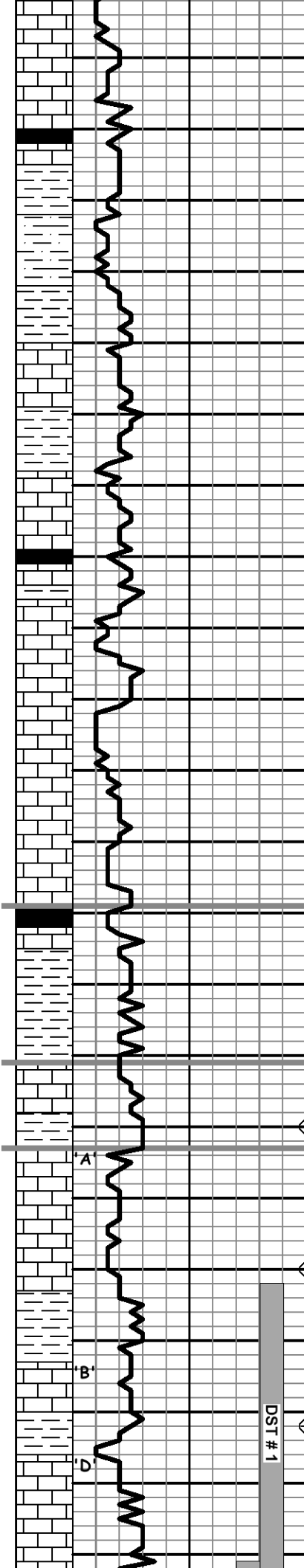
3750

Ls: crm-lt brn, fn xln, sli grnlr, chlky in part, sli foss, sct chrt, fr intrxln-trc foss por, ns

Morgan Mud: 3392'; 1/13/14
Wt. 8.6, Vis. 79, WL. 5.6, Chl. 1,300, LCM. 1.5

TOPEKA 3666' (-899)

E Log 3666' (-899)



Ls: as above, sli dolo, ns

Sh: blk, carb

Sh: gry

Sst-Sltst: lt gry-gry; vy fn-fn grn, calc, subfri-hard, pr vis por, ns

Sh: gry-red/brn

3800

Ls: crm-lt brn, fn xln, dns, sli foss, trc chrt, pr vis por, ns

Sh: gry-red/brn

Ls: crm-lt gry, fn xln, sli grnlr, chlky in part, vy sct intrxln-pp por, ns

Ls: crm-lt brn-lt gry, fn xln, grnlr, part dns, sli foss, vy sct chrt, sct fr intrxln-foss-vug por, ns

Same, incrs dns ls

3850

Ls: crm-lt brn-lt gry, fn xln, grnlr, sli dolo, foss, fr intrxln-foss-vug por, ns

Ls: as above

HEEBNER 3879' (-1112)

Sh: blk, carb

E Log 3880' (-1113)

Sh: gry-grn-red/brn

3900

TORONTO 3901' (-1134)

Ls: off wt-lt gry, fn xln, subchlky, part dns, sli foss, trc chrt, pr vis por, ns

E Log 3902' (-1135)

Sh: gry-red/brn

LANSING 3913' (-1146)

E Log 3914' (-1147)

Ls: crm-lt gry, fn xln, sli grnlr, few pcs sli ool, trc chrt, pr-fr intrxln por, ns

Ls: crm-lt gry, fn xln, part dns, part chlky, trc chrt, rare pp-vug por, ns

Sh: gry-red/brn, some grn

DST # 1

3950

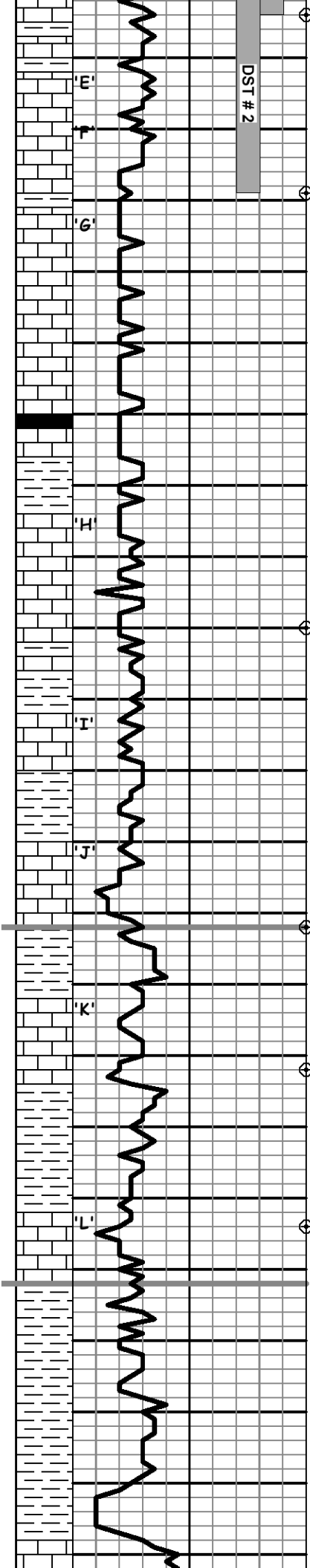
Ls: lt gry, fn xln, ool, pr-some fr introol-vug por, sli-fr sfo, sli odor, drk brn sptd-subsat stn

Ls: crm-lt gry, fn xln, part dns, ool in part, sli chrt, pr-fr introol-vig por, vssfo, no odor, brn-blk sptd stn

Ls: crm-lt gry, fn xln, dns, part chlky, vy sct chrt, no vis por, ns

DST # 1 3932' to 3974'
 30"-60"-30"-60"
 IF: Blow Built to 1/2"
 FF: No Blow
 RECOVERY: 5' Mud w/ oil spts
 IFP: 18-20# ISIP: 39#
 FFP: 19-20# FSIP: 32#
 IHP: 1998# FHP: 1921#
 BHT: 110 deg. F

Morgan Mud: 3974': 1/14/14



DST # 2

4000

4050

4100

4150

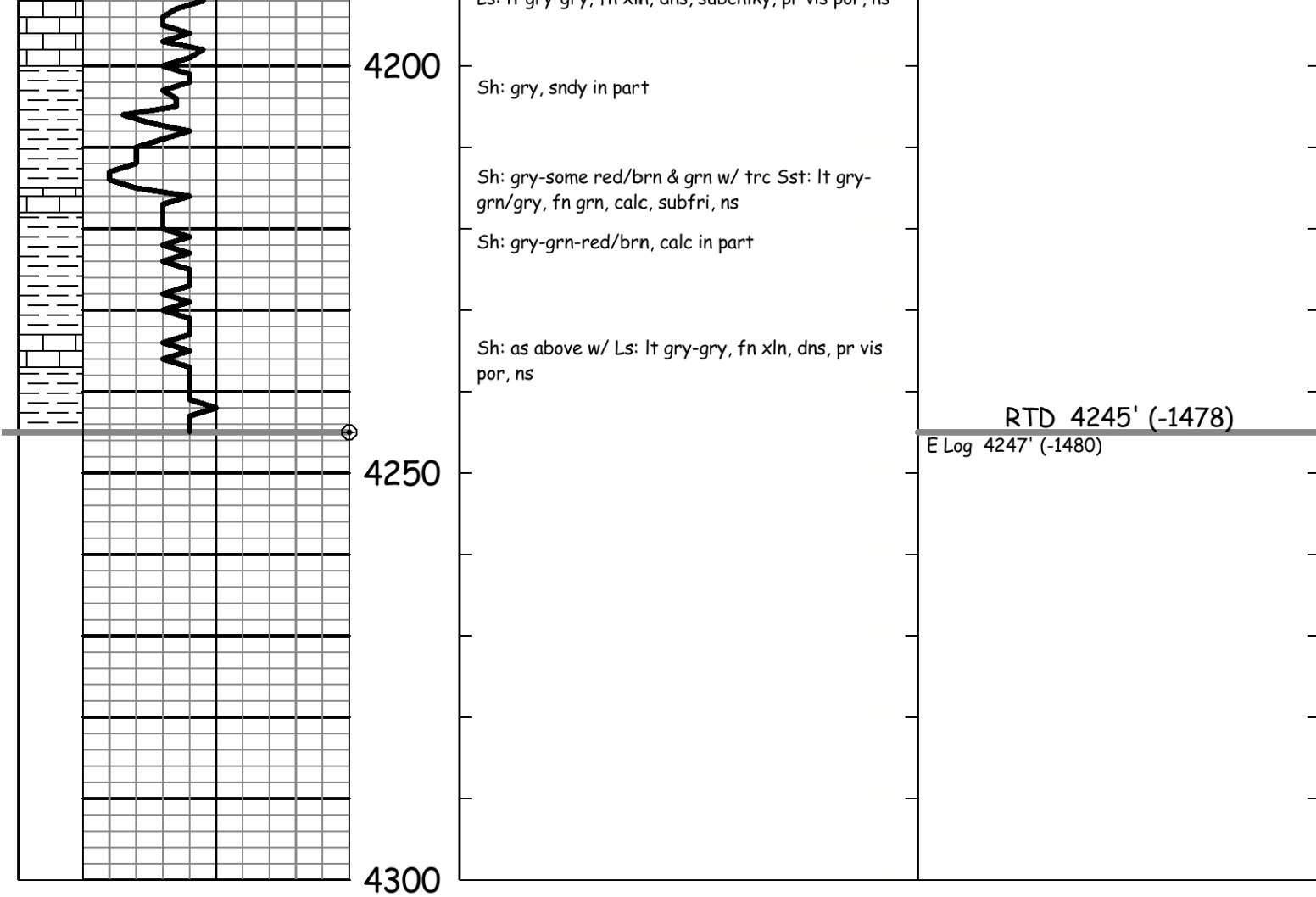
Sh: gry-grn-red/brn w/ Ls: lt brn-lt gry, fn xln, dns, ool-sli foss, pr vis por, ns
 Ls: lt brn, fn xln, part dns, pr-trc fr vug por, few pcs ssfo, no odor, drk brn sptd stn
 Ls: crm-lt gry, fn xln, foss-ool, few pcs ssfo, fnt odor, vy sct drk brn-blk stn
 Ls: wt-crm, fn xln, chlky, sli ool-suboomld, pr oomld por, nsfo, trc stn
 Ls: wt-lt gry, fn xln, part chlky, part dns, pr vis por, ns
 Ls: wt-crm-lt gry, fn xln, chlky, part dns, pr vis por, ns
 Ls: as above, vy chrty
 Sh: blk, carb
 Ls: lt brn-lt gry, fn xln, dns, ns
 Sh: gry-grn-red/brn
 Ls: crm-lt gry, fn xln, part dns, part chlky, pr vis por, ns
 Ls: crm-lt gry, fn xln, dns, cpl pcs dolo, pr vis por, ns
 Ls: lt brn-lt gry, fn xln, dns, vy foss
 Ls: lt brn-lt gry, fn xln, dns, foss, pr vis por, ns
 Sh: gry-grn, some red/brn, trc prpl
 Ls: crm-lt gry, fn xln, part dns, foss, chrty, pr vis por, ns
 Ls: wt-crm-lt gry, fn xln, subchlky, chrty, pr vis por, ns
 Sh: gry, some grn & red/brn
 Ls: crm-lt brn, fn-some med xln, sli chlky, part dns, ool-subool, vy ct pr introol-vug por, ns
 Ls: crm-lt gry, fn xln, subchlky, part dns, pr vis por, ns
 Sh: gry-grn-red/brn
 Ls: crm-lt gry-gry, fn xln, dns, pr vis por, ns
 Sh: gry-some red/brn
 Sh: gry-red/brn w/ Ls: crm-lt brn-lt gry, fn xln, dns, chlky in part, ns
 Sh: gry-grn-red/brn
 Sh: as above, sli sndy
 Ls: lt gry-gry, fn xln, dns, subchlky, pr vis por, ns

Morgan Mud: 3971'; 1/17/14
 Wt. 9.1, Vis. 57, WL. 6.4, Chl. 1,400, LCM. 1.0
 DST # 2 3971' to 3999'
 30"-60"-60"-90"
 IF: Blow Built to 4.5" ISI: vy wk surface blow
 FF: Blow Built to 6" FSI: vy wk surface blow
 RECOVERY: 130' WM (35%W, 65%M)
 IFP: 17-42# ISIP: 1052#
 FFP: 44-78# FSIP: 1051#
 IHP: 1950# FHP: 1904#
 BHT: 121 deg. F
 CHL: 45,000 ppm

Morgan Mud: 4089'; 1/15/14
 Wt. 9.1, Vis. 63, WL. 6.4, Chl. 1,600, LCM. 5.0

STARK 4102' (-1335)
 E Log 4104' (-1337)

BKC 4152' (-1385)
 E Log 4154' (-1387)



Drill Stem Test Charts

