

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

RITCHIE EXPLORATION, INC.

**#1 SCHNIEDER TRUST 13B
13-10-14W
664' FNL & 1402' FWL
OSBORNE COUNTY, KANSAS
API: 15-141-20483-00-00
X: 1762401.93 Y:312861.16 (NAD KS-N)**

**DRILLING CONTR.: WW RIG #12
SPUD:04-02-2019 COMP: 04-11-2019
MUD UP: 2500' TYPE MUD: CHEM.
DRILL TIME: 2500' to RTD
RTD: 4048' LTD:4038'
SAMPLES SAVED: 2700' to RTD
GEOLOGIST: ROBERT J. PETERSEN**

ELEVATION

KB: 2005'
GL: 1997'
LOG MEASURED
FROM: KB

SURFACE CASING

23# 8 5/8" SET @ 220'
Cem. W/ 150 SX

PRODUCTION CASING

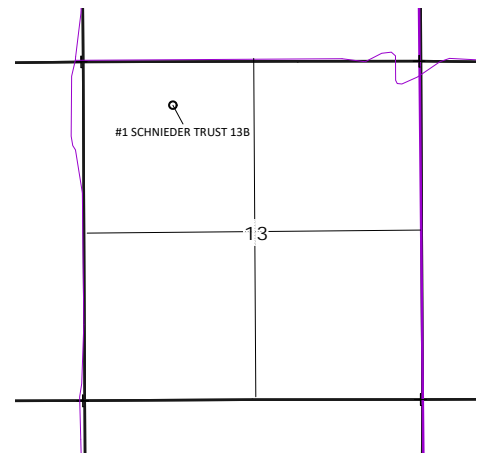
D & A

WELL LOG SURVEYS

DUAL INDUCTION
COMPENSATED NEUTRON
MICRORESISTIVITY
SONIC

FORMATION NAME	E-LOG		SAMPLE		STRUCT. POSITION	
	TOP	DATUM	TOP	DATUM	A	B
ANHYDRITE	1177	+828	1185	+820	+24	+5
BASE ANHY.	1214	+791	1219	+786	+19	+2
TOPEKA	2950	-945	2957	-952	-10	-21
HEEBNER	3206	-1201	3215	-1210	-12	-28
TORONTO	3229	-1224	3240	-1235	-14	-29
LANSING	3262	-1257	3269	-1264	-18	-31
STARK	3481	-1476	3489	-1484	-19	-39
HUSH	3511	-1506	3519	-1514	-19	-39
BKC	3542	-1537	3550	-1545	-18	-39
CHEROKEE	3673	-1668	3679	-1674	-29	-55
MISS	3713	-1708	3721	-1716	N/A	0
MAQ	3749	-1744	3763	-1758	N/A	N/A
VIOLA	3847	-1842	3848	-1843	N/A	-111
SIMPSON SH	3968	-1963	3960	-1955	N/A	-164
ARB	4018	-2013	4024	-2019	N/A	-149

LOCATION MAP



REFERENCE WELL

REF. WELL A
DOUBLE ACE OIL CO.
MEYER #1 B
990' FSL & 2310' FEL
10-10-14W

REF. WELL B
MURFIN
#1 PAMELA
1100' FNL & 1200' FEL
16-10-14W

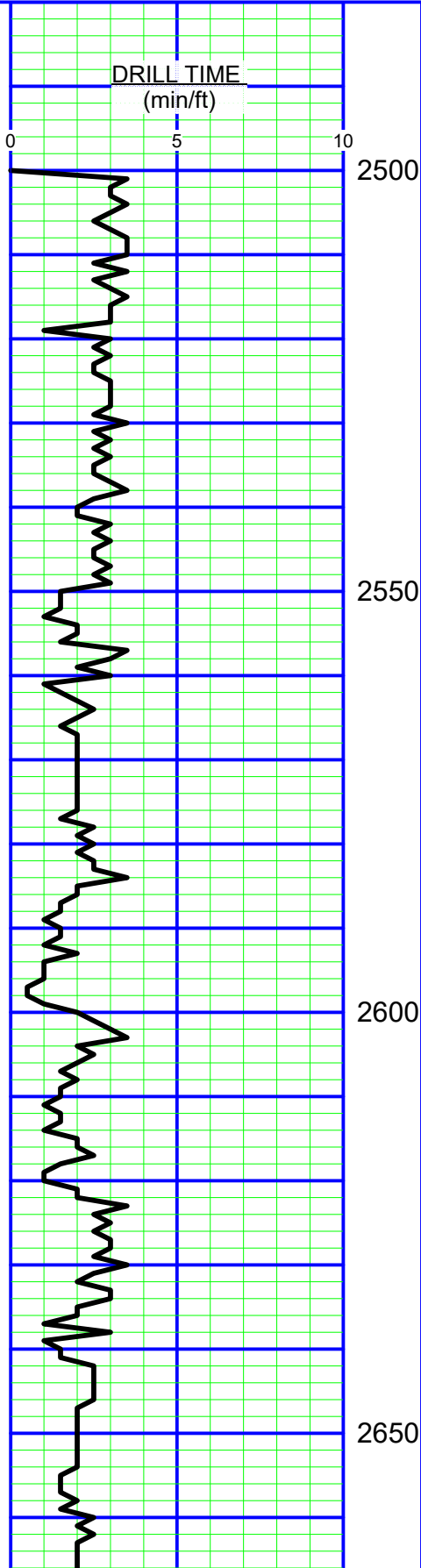
DAILY REPORT @7:00 A.M.

04/02/2019 MIRU/SPUD
04/03/2019 291' WOC
04/04/2019 1891' DRILLING
04/05/2019 2581' DRILLING
04/06/2019 2987' DRILLING

REMARKS

THE OPERATOR PLUGGED AND ABONDED THIS WELL

04/07/2019 3278' DST #1
04/08/2019 3325' DST #3
04/09/2019 3521' CFS
04/10/2019 3855' DRILLING
04/11/2019 3940' LOGGING



MUDCO MUD CHECK 2610'
VIS 61/WT 8.6/WL 6.0?LCM 3#
CHLORIDES 1,900 PPM

THE DRILL TIME DEPTHS ARE 7 TO 9' DEEPER THAN THE LOG TOPS.
STRAP 3.12' SHORT TO BOARD.
LOGGED SURFACE PIPE WAS 4' SHORT OF DRILLER DEPTH.

SAMPLES START AT 2700'

2700 LS; Cream/pink, fine crystalline, chalky + SH; Gray, sandy SD; Gray, mic (2700)
SH; Red/gray, silty-sandy + LS; Gray, dense, arg, chalky, cherty (2710)
SD; Gray/blue-gray, fine to medium, sub angular, sub rounded, poorly sorted, calc, mic (2720)

LS; Tan/dense, foss, chalky + SH; Dark gray (2730)

SD; Gray, fine grained, well-cem, ang (2740)

LS; Cream/lt gray, very fine crystalline, foss, chalky (2740)

LS; Cream/lt gray, very fine crystalline to dense, foss, cherty + SH; Gray + SD; Gray, mic (2750)

2750 LS; Cream, very fine crystalline, foss, sub chalky + SH; Black, earthy (2760)

LS; Gray, dense, arg, sl foss, cherty (orange/white-sharp) + SH; Gray, dense (2770)

LS; Cream/tan/brown, very fine crystalline to dense, foss, chalky, poor moldic por (barren)(2780)+ SD; Lt gray, very fine grained, ang, friable (2790)

SD; Lt gray, very fine grained, calc, + LS; Cream/gray, very fine crystalline to dense, foss, chalky (2800)

2800 LS; Cream/tan/brown, dense, hard, foss w/chalky + SH; Dark gray/green (2810)

LS; Cream/tan, very fine crystalline, sl foss, chalky + SH; Gray, sandy, tr pyrite (2820)

LS; Tan, fine to med crystalline, foss + SH; Red/gray (2830)

LS; Gray, very fine crystalline, to dense, sl foss, arg + SH; Gray (2840) w/tr dead stain (2850)

SH; Gray/dark gray (2850)

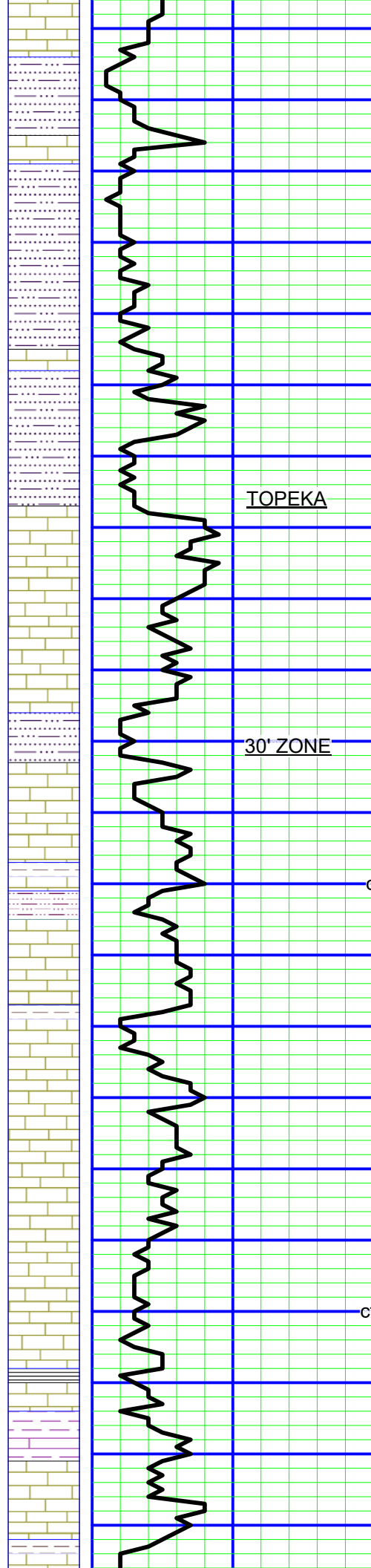
2850 LS; Tan/gray, fine crystalline, foss (2860)

LS; Cream/gray, fine crystalline, foss, mottled, chalky + SH; Gray (2870)

SH; Gray, soft (2880)

LS; Tan, fine crystalline to dense, tr sp calc, sl mottled, chalky (2880)

LS; Pink/tan/gray, very fine crystalline, foss, chalky + SH; Gray, silty (2890-2900)



SH; Gray/dark gray, silty+ SD; Gray, fine grained, angular, friable (2910)

2900

SH; Gray +SD; Gray/dark gray, fine grained, tr LS; Gray, dense, chalky (2920)

SD; Gray, fine to med, subangular, friable, sl glauc (2930)

SH; Gray, soft + SD; Gray, fine grained, micaceous, silty w/tr LS;; Gray, dense, arg, chalky (2940)

LS; Cream, very fine crystalline, sl foss/w tr chert inclusions, (2950-2960)

2950

SH; Gray, silty-sandy (2960-2970)

TOPEKA

LS; Cream/tan, fine crystalline, tr dead stain, no vis por (2980)

LS; Tan/gray, dens, tr dead stain, no vis por (2990-3000)

30' ZONE

SH; Gray, silty, sl sdy (3000) + SD; Gray, silty, angular, friable (3010)

3000

LS; Cream, fine crystalline, sl dolo/sl foss, sub chalky, tr dead stain/dull fl (3010)

LS; Cream/gray, mottled in part, fine crystalline, foss, sl dol, chalky, tr ppt dead flake from crushed sample (3010/20")

LS; Cream/tan/gray, very fine crystalline, sl foss, sub chalky, cherty (tan/angular) (3010/40")

cfs

LS; Gray w/cream mottle, fine crystalline w/tr coarse, dense, arg in part + SH; Gray, silty (3020)

MUDCO MUD CHECK 3010'
VIS 54/WT 8.8/WL 6.0/LCM 2#
CHLORIDES 1600 PPM

LS; Gray, dense, chalky, sl fuss + Chert; Gray, ang-blocky, sl pyritic, tr dull fl (3030)

SH; Dark gray/brown (3030)

LS; Cream/gray, dense, tr sp calc w/dull fl, mottled, sl foss, chalky, mealy, arg in part (3030)

SH; Dark gray (3050)

LS; Cream/gray/tan, mottle, fine crystalline to dense, chalky-mealy, cherty (blocky-black/tan) tr dead stain on mealy chalk (3050)

3050

LS; Cream/gray mottle, fine crystalline to dense, foss, chalky, tr dead stain, nsfo w/ppt dead oil flakes from crushed sample, faint pungent odor agitated cup, dull fl (3060)

LS; Gray, dense, arg, sl foss, chalky-mealy + SH; Black/gray, blocky (3070)

LS; Cream/gray/tan, very fine crystalline to dense, foss, chalky, tr poor ppt por (barren) cherty (black-blocky) + LS; Gray, dense, hard, arg (3071/30")

cfs

LS; Tan/gray, fine crystalline to dense, sl dolo, foss, chalky-mealy, tr ppt dead oil stain (3080)

LS; Gray, fine crystalline to dense, ool/foss, chalky (3090)

SH; Black, carb (3090)

LS; Tan/gray, dense, foss, mottled, hard, cherty (blocky-gray/tan) +SH; Gray/pale green gray, soft (3100)

SH; Gray, silty-sandy (3110)

3100

LS; Cream/tan/white, fine crystalline to dense, foss in part, chalky (3110)

LS; Cream/tan/white, fine crystalline to dense, ool/foss, chalky (soft) (3113/20")

cfs

LS; Cream/gray, mottled in part, fine crystalline to dense, foss, chalky-mealy (3120)

LS; Cream/tan, very fine crystalline w/coarse crystalline frac regrowth, foss, chalky, mealy (3140)

SH; Gray (3140)

LS; Cream/gray, fine crystalline, foss-granular, chalky, tr spot red brown min stain (3140-3150)

SH; Black (3150-3160)

3150

LS; Cream/tan/brown, fine crystalline, foss, chalky-mealy + SH; Gray, silty-sandy (3160)

LS; Cream/gray/tan, mottle, fine crystalline to dense, very foss, chalky (3170)

LS; Tan/gray, very fine crystalline, sl foss, sub chalky, cherty (white-angular) + SH; Black (3180)

SH; Gray (3190)

LS; Cream/gray, dense, foss, chalky, blocky w/tr dead oil flakes, no vis por (3190)

LS; Gray, sl mottled, very fine crystalline, foss, subgranular in part, chalky (3200)

3200

LS; Tan, fine crystalline, foss subgranular, chalky, tr dead oil stain (3210)

LS; Tan, fine crystalline, dolo, sl cherty, chalky, cherty, tr dead stain (3210) + LS; Cream, fine crystalline w/poor moldic por w/dead stain (3220)

HEEBNER

SH; Black, carb (3230)

LS; Tan/gray, dense (3230)

SH; Gray, silty, gummy (3240) SH; Red/gray, sandy (3250)

TORONTO

LS; Cream/white, very fine crystalline, chalky (3250)

LS; Cream/lt gray, fine to med crystalline, foss, chalky (3260)

3250

SH; Red, chalky, gummy (3270)

DST #1
3236-3678'
30-45-30-45"
IF: TOOL SLID
(NO BLOW AFTER
BLED OFF 2" BLOW)
FF: NONE-FLUSHED TOOL
NO HELP
RECOVERED: 30' MUD
SIP: 272-173#
FP: 35-36/37-43#
HP: 1624-1567#
BHT: 96F

MUDCO MUD CHECK 3278"
VIS 57/WT 9.0/WL 6.8/LCM 2#
CHLORIDES 1900 PPM

LANSING

LS; Tan/brown, fine crystalline w/some coarse, foss w/fair to good moldic por, sfo (streaming), odor w/lt brown even sat on dry (3278)

LS; Cream/lt gray, fine crystalline, sl foss, chalky, w/tr edge ppt moldic por, ssfo (3278/20")

SH; Gray, silty (3278/40") STRAP @ 3278' 3.12' SHORT

LS; Gray/tan, mottled, fine crystalline to dense, chalky, foss, tr edge stain on dry + tr SH; Black (3295)

LS; Cream/gray, fine crystalline, ool/foss, chalky (3295/20")

SH; Gray, sandy (3295/20")

DST #2
3276-3310'
30-45-30-45"
(TOOL SLID 5')
IF: INTERMITTANT SURF. BLOW
FF: NO BLOW
NO BLOW ON SHUT-INS
RECOVERED: 60' MUD
SIP: 995-967#
FP: 30-42/45-51#
HP: 1632-1591#
BHT: 96F

cfs

C ZONE

DST #2

3300

LS; Cream/white, fine crystalline w/coarse regrowth, oolitic/sl foss, chalky, w/sharp chert, good moldic/fair intercrystalline por, sfo (amber to brown), faint odor, light to medium sat on dry (3310)

LS; Cream/lt gray, fine crystalline, foss, chalky, cherty (tan/brown-sharp), tr poor moldic por, decrease sfo (3310/20-40")

(sample box empty @60")

SH; Red/gray (3320)

LS; Tan/brown/gray, mottled, fine crystalline to dens, chalky (3320-3325)

LS; Cream/white, fine crystalline, oolitic-granular, foss in part, chalky, chert (gray/angular) w/fair to good moldic por, odor, sfo, light even amber stain on dry (3325/20-40")

LS; Tan, fine crystalline, ool/foss, cherty (tan/gray and to blocky), chalky (3325/40-60")

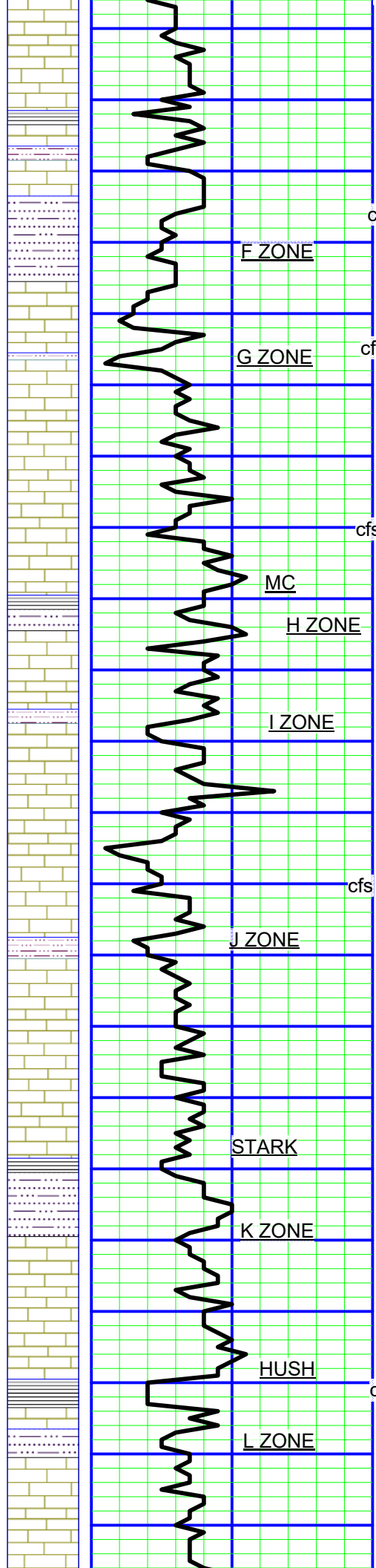
DST #3
3307-3325'
30-45-30-45"
IF: SURF. DIED IN 6 MIN
FF: NONE
NO BLOW ON SHUT-INS
RECOVERED: 5' MUD
SIP: 10-6-1082@
FP: 17-20/22-24#
HP: 1619-1590#
BHT: 94F

cfs

D ZONE

DST #3

cfs



3350

cfs

F ZONE

G ZONE

cfs

cfs 3400

MC

H ZONE

I ZONE

cfs 3450

J ZONE

STARK

K ZONE

3500

HUSH

cfs

L ZONE

LS; Cream/white, fine crystalline, sl foss, chalky (3340)

SH; Black (3350)

LS; Lt gray, fine crystalline, sl foss, cherty (3350)

LS; Cream, fine crystalline, foss/ool, chalky, soft, tr light patchy dull fl, quest stain, nsfo (3355/20")

LS; Cream/gray, fine crystalline, foss, chalky, cherty + SH; Gray, silty (3355/40"-3360)

SH; Gray, silty (3370)

LS; Cream/tan, fine crystalline, ool, gran, chalky (3375)

LS; Cream fine crystalline, ool, chalky(soft-white) (3375/20")+ chert (3375/40")

LS; Cream/white, fine crystalline, oolitic, granular w/fair oomoldic por (barren), chalky (3390)

LS; Cream/lit gray. Very fine crystalline, foss, chalky (3400)

LS; Lt gray/gray, very fine crystalline, foss, chalky, cherty (black/angular) (3400/20")

LS; Cream/tan, fine crystalline to dense, foss, chalky, cherty (3410)

SH; Black (3420)

LS; Cream/white, very fine crystalline, foss/ool, chalky (3430)

LS; Cream/gray/tan, very fine crystalline, foss, chalky, cherty (3440)

LS; Cream/lit gray, very fine crystalline to dense, sl foss, chalk (3450)

LS; Cream/lit gray fine crystalline, foss, chalky, tr coarse crystalline regrowth (3450/20")

LS; Tan/lit brown, very fine crystalline, foss, sub chalky (3460)

SH; Dark gray/red (3470)

LS; Cream/tan, very fine crystalline to dense (hard), foss, chalky (3470)

LS; Tan/brown, very fine crystalline to dense (hard), foss, chalky, trace dark residual dead stain, nsfo, tr red shale impurity + SH; Dark gray/red (3480)

LS; Lt gray, very fine crystalline to dense, foss, sub chalky (3490)

SH; Black (3500)

SH; Gray, sandy (3510)

LS; Tan/gray, fine crystalline, foss, chalky, tr ppt residual dead stain, nsfo (3510)

LS; Tan/brown/gray, mottled, very fine crystalline, foss, chalky, cherty (angular/tl/brown/foss)(3520)increase chert, trace black shale (3520/20")

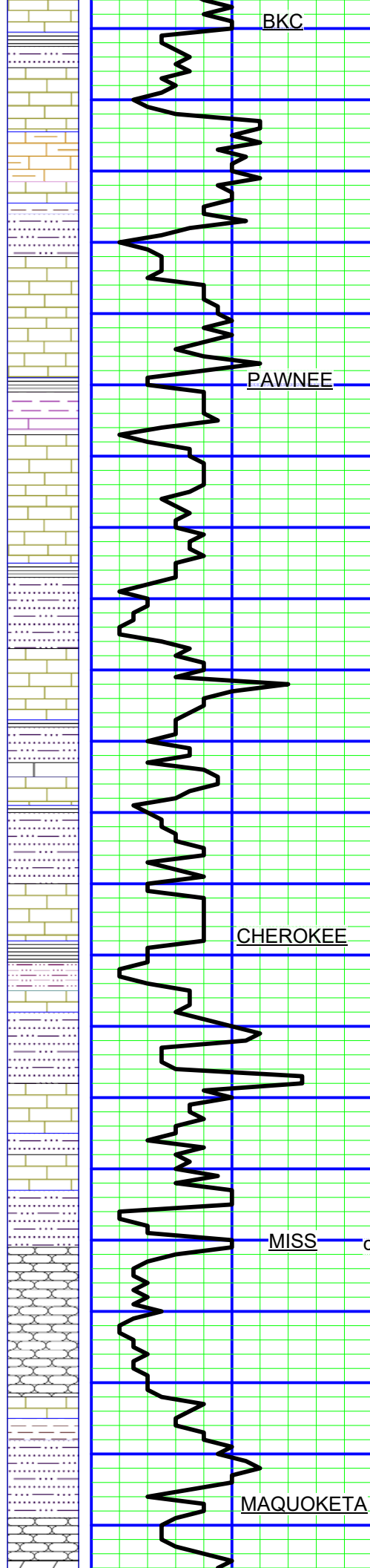
SH; Black (3530)

LS; Cream/gray, very fine crystalline, foss, sub chalky (3530)

SH; Gray, silty-sandy (3540)

LS; Cream/gray, fine crystalline to dense, foss, chalky, cherty (3550)

MUDCO MUD CHECK 3544'
VIS 48/WL 9.4/WL 7.8/LCM 1#
CHLORIDES 1,900 PPM



3550 SH; Gray, silty (3560)

LS; Tan/cream, fine crystalline, ool + SS; Cream, fine grained, ang, hard (3570)

SH; Red/gray, sandy + LS; Cream/tan, fine crystalline, cherty (sandy texture), chalky (3580)

SH; Red/gray, sandy w/hard calc concretions + LS; Brown/gray, dense. Blocky + SH; Gray, blocky (3590)

LS; Cream/gray, dense, foss w/some red shale discoloration + SH; Red/green-gray, sandy (3600)

PAWNEE

3600 LS; Cream/white, fine crystalline, foss, chalky + SH; Red/gray, soft, blocky (3610)

LS; Cream/gray, fine crystalline, blocky, chalky + SH; Red/gray (3620)

SH; Red/gray, calc, sandy + LS; Cream/white, fine crystalline, chalky (3630)

LS; Cream, fine crystalline, chalky, sandy + SH; Red/gray (3640)

SH; Dark gray/red + LS; Cream/gray, very fine crystalline, foss, chalky (3650)

LS; Cream/gray, very fine crystalline to dense, ool, yellow min stain + SH; Red (3660)

3650 LS; Cream/gray, fine crystalline, chalky, sandy, dull fl (calcite) + SH; Gray (3670)

LS; Cream fine to coarse crystalline, sl foss, chalky + SH; Red/gray, sandy (3680)

CHEROKEE

LS; Cream/white, fine crystalline, oolitic, tr shale inclusion/discoloration, cherty + SH; Green-gray/red (3690)

LS; Cream/white, fine crystalline, ool/cherty + SH; Red/gray, sandy (3700)

3700 LS; Cream, white, fine crystalline, chalky, cherty +SH Red/gray, sandy W/tr SD; Cleae, coarse, well-rounded, hard w/shaley in part (3710)

SH; Red, sandy + SH; Olive, LS; Cream, fine crystalline, chalky (3720)

SH; Red/gray/tan, blocky + SD; Gray, fine to med, poorly sorted, shaley, tr clean friable, cluster + varicolored chert (3720/20")

LS; Cream/white, fine crystalline + SD; Olive/gray (3720/40") +SH; Red, sand (3730)

MISS cfs

SH; Red/maroon, sandy w/hard nodule + weathered chert (3735)

Chert; Tan/white, angular to blocky + LS; Tan/cream, dense, ool (3735/20") Chert'; White/orange, blocky, trip/oid w/tr coarse sand, dull fl (3735/40")

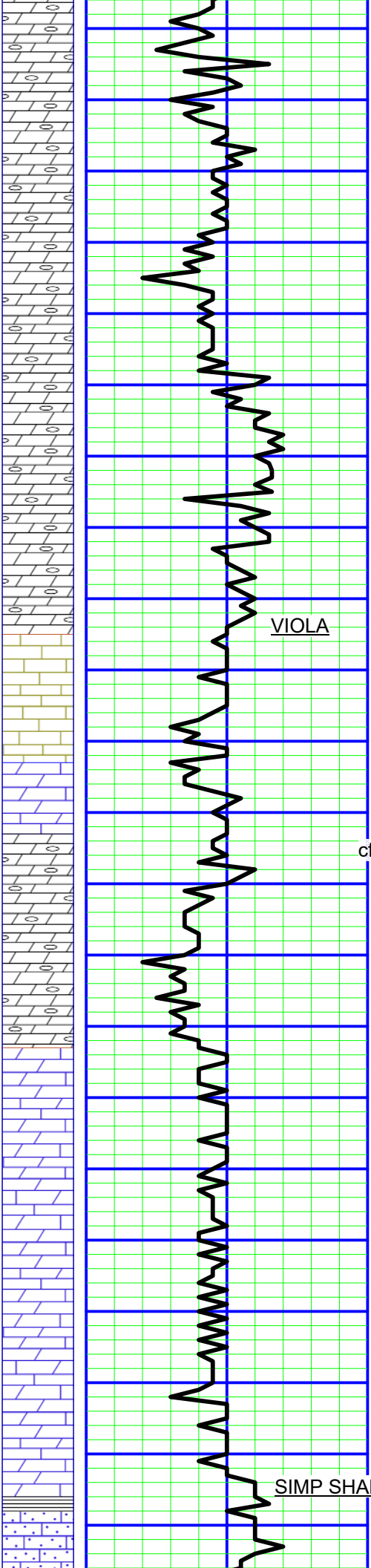
Chert; Tan/yellow, blocky + SH; Red/gray +LS; Lt gray, very fine crystalline (3750)

3750 Chert; Brown/orange, blocky + SH; Red/gray, sandy (3760)

MAQUOKETA

Chert; Tan/white, blocky + SH; Maroon/gray (3770)

Chert; Tan/white, blocky + SH; Maroon/gray (3770)



Chert; Tan/brown, blocky, foss, foss Dolo ; White, dense + SH; Black/maroon (3780)

Dolo; Cream/red, fine crystalline + Chert; Red/yellow, angular (3790)

Dolo; Gray, dense, chalky + Chert; Gray/yellow, blocky + SH; Purple/gray (3800)

3800 Dolo; Cream/red/yellow, dense + SH; Red/gray + Chert; Purple/gray (3810)

Dolo; Purp/gray/red, crypto to dense, shaley red/purple/gray, sandy Chert; Gray, sl speck, blocky (3820)

Dolo; Gray /w purple shale disc, fine crystalline, tr grap + Chert; Yellow/cream + SH; Purple/red, sandy (3830)

Dolo; Gray, fine crystalline, foss in part, + LS; Cream, dense, Chert; Yellow, SH; Gray/lit brown (3840)

LS; Cream/gray, dense + Chert; White/yellow, ang to blocky (3850)

3850 LS; Cream, dense w/red shale discoloration (3860)

MUDCO MUD CHECK 3865'
VIS 60+/WT 9.4 /WL 7.8/ LCM 2#
CHLORIDES 2,000 PPM

LS; Lt gray/cream, dense +Chert; Yellow, tr LS; Cream, sandy (3870)

SH; Dark gray (3870)

Dolo; Cream, coarse crystalline, chalky tr Dolo; Gray, dense + SH; Black (3880)

Dolo; Cream/lit gray, coarse crystalline, chalky, Cherty-Orange. Oolitic (3885)

Dolo; Cream, fine to med crystalline, chalky, sl foss, Chert; white +SH; Gray/green, waxy (3885/20")

3900 Dolo; Cream, coarse crystalline, chalky, Chert; Tan, grap (3885/40")

LS; Cream, fine crystalline to dense, dolo, foss, sub chalky + SH; Red/gray (3890)

LS; Cream, fine crystalline, dolo, sandy + Chert; White, sharp (3900)

3900 Dolo; Cream/tan, fine crystalline to dense, chalky + Chert; White, blocky (3910)

Dolo; Cream, fine crystalline w/red shale impurity + LS; Cream, dense, dolo +Chert; Brown, white/gray, blocky, sl speck + SH; Red/gray (3920)

Dolo; Gray, fine crystalline, foss, (grap) + LS; Cream, dense, dolo w/red shale discoloration + SH; Red, blocky (3930)

LS; Cream/gray, fine crystalline, cherty (blue-gray-ang) dolo w/tr red shale disc (3940)

LS; Cream/tan, fine crystalline to dense, foss, chalky, cherty, tr quest stain, dull fl, nso (3950)

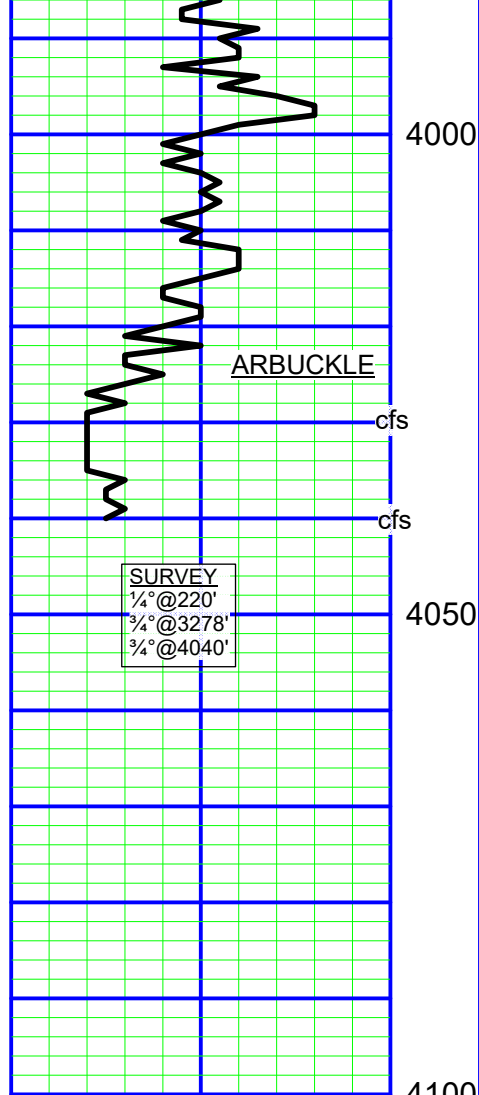
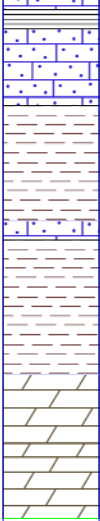
3950 LS; Gray, fine crystalline to dense, foss, sub chalky, dolo +SH; Red, cherty, blocky w/some ool imbedded in shale +Chert; red/yellow, blocky (3960)

LS; Gray, fine crystalline to dense, foss, dolo, cherty + SH; Black (3970)

LS; Gray, fine crystalline, foss, sandy + SD; Gray, fine grained, subangular to sub rounded, hard w/black shale clast, tr Sh; Red (3980)

SIMP SHALE

SH; Black + SD; Gray, fine grained, sub rounded, calc w/black shale (3990)



SD; Gray/cream. Coarse, calc, chalky, trace black shale frag + SH; Green (4000)

4000 SH; Gray + SD; Gray/orange, coarse, calc, chalky + SS; Gray, very fine grained, hard + LS; Gray w/black fossil mottle, fine crystalline (4010)

SD; Gray/orange, shaley in part, hard, fine to coarse, well rounded + SH; Red/gray (4020)

SH; Gray, foss/SH; Red, calc w/hem nods, SD; Clear/gray, coarse, well-rounded (4030)

Dolo; Tan, fine to coarse crystalline, chalky + SH; Olive black (4030/20")

Dolo; Tan, coarse crystalline, chalky, good vug por (barren) (4040)

Dolo; Tan, med to coarse crystalline, chalky, good vug por (barren) (4040/20') + SH; Pale green (4040/40")

SURVEY
1/4" @ 220'
3/4" @ 3278'
3/4" @ 4040'

4050

4100