# CHARLES SCHMALTZ
CONSULTING GEOLOGIST
WICHITA, KANSAS

## GEOLOGIC REPORT LOG

COMPANY DIXON OPERATING CO.

WELL ARDREY #1-35

FIELD ZENITH PEACE CREEK

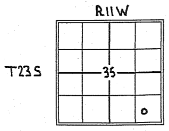
LOCATION 500' FSL 1080' FEL

SEC 35 TWSP 23S RGE 11W

COUNTY STAFFORD

STATE KANSAS

15-185-23988-00-00



PRODUCTION:

ELEVATION: KB 1813
DF
GL 1804
DRILLING MEASURED FROM KB

MUD COMPANY MUDCO/SERVICE MUD INC.
CONTRACTOR SOUTHWIND DRLG CO. RIG #9
COMMENCED 12 JUNE 17 COMPLETED 22 JUNE 17

CASING RECORD:
SURFACE 8 5/8 @ 306' PRODUCTION 5 1/2 @ 3997'
TOTAL DEPTH DRLS. 4000'
TOTAL DEPTH LOG 4001'

SAMPLES SAVED FROM 10' - 2800' TO RTD
DRILLING TIME KEPT FROM 1' - 2800' TO RTD
SAMPLES EXAMINED FROM 2800' TO RTD
GEOLOGICAL SUPERVISION FROM 3040' TO TOTAL DEPTH
DRILL STEM TESTS TRILOBITE TESTING INC.
ELECTRICAL SURVEYS ELI WIRELINE SERVICES
DIL-MEL
CNL-CDL w/ PE
SONIC

### FORMATION TOPS & STRUCTURAL POSITION

| FORMATION | SAMPLE TOP | ELECTRIC LOG TOP | SUB-SEA DATUM | STRUCTURAL POSITION |
|---|---|---|---|---|
| ANHYDRITE - TOP | 523 | 520 | +1293 | -9 |
| ANHYDRITE - BASE | 537 | 536 | +1277 | -9 |
| HEEBNER | 3153 | 3151 | -1338 | -5 |
| BROWN LIME | 3305 | 3304 | -1491 | -4 |
| LANSING | 3333 | 3334 | -1521 | -1 |
| STARK | 3551 | 3548 | -1735 | -1 |
| BKC | 3610 | 3607 | -1794 | -3 |
| MISNER SD | 3699 | 3700 | -1887 | 0 |
| VIOLA | 3722 | 3724 | -1911 | -11 |
| SIMPSON SH | 3846 | 3845 | -2032 | NR |
| SIMPSON SD | 3857 | 3856 | -2043 | NR |
| ARBUCKLE | 3913 | 3913 | -2100 | NR |
| TOTAL DEPTH | 4000 | 4001 | -2188 | +128 |

REFERENCE WELL FOR STRUCTURE SINCLAIR PRARIE - # R C ARDREY
E/2 NE SE, SEC 35-T23S-R11W, STAFFORD CTY, KANSAS

### DRILL STEM TESTS

| No. | Interval | IFP/Time | ISIP/Time | FFP/Time | FSIP/Time | IHH-FHH | RECOVERY |
|---|---|---|---|---|---|---|---|
| 1 | 3672-3715<br>MISNER SD. | 29#-32#<br>30" | 351#<br>60" | 42#-51#<br>60" | 350#<br>90" | 1812#-1774#<br>111°F | 1650' GIP<br>20' O&GCM<br>60' VGOCM |
| 2 | 3724-3740<br>VIOLA 'A' | 33#-40#<br>30" | 415#<br>60" | 22#-27#<br>60" | 174#<br>90" | 1900#-1799#<br>106°F | GTS / ISIP-TSTM<br>60' GMO |
| 3 | 3740-3770<br>VIOLA 'B' | 182#-226#<br>30" | 636#<br>60" | 227#-406#<br>60" | 632#<br>90" | 1906#-1801#<br>115°F | GTS 18 MIN: 232 MCF<br>90' OGCM, 248' GM&WCO<br>124' SOCW 496' W |
| 4 | 3775-3795<br>VIOLA 'C' | 20#-17#<br>30" | 410#<br>60" | 14#-23#<br>60" | 618#<br>90" | 1921#-1858#<br>110°F | 25' SGCM |

### BIT RECORD

| NO | SIZE | MAKE | TYPE | DEPTH OUT | FEET | HOURS |
|---|---|---|---|---|---|---|
| 1 | 12 1/4 | SMITH | | 306' | 306' | 2 1/4 |
| 2 | 7 7/8 | JZ | HA20-Q | 3770' | 3464' | 92 1/4 |
| 3 | 7 7/8 | JZ | HA20-Q | 4000' | 230' | 10 1/4 |

### PIPE STRAPS & DEV. SURVEYS

PIPE STRAPS:
@ 3715': 2.75 LONG
DEVIATION SURVEYS:
@ 306' - 1/2°
@ 3715 - 1°
@ 4000 - 0°

### DAILY PENETRATION

| DATE | DEPTH |
|---|---|
| 6-12 | MIRT |
| 6-13 | SPUD |
| 6-14 | 306' |
| 6-15 | 1565' |
| 6-16 | 2405' |
| 6-17 | 3027' |
| 6-18 | 3524' |
| 6-19 | 3715' - DST #1 |
| 6-20 | 3770' - TD/DST #3 |
| 6-21 | 3795' - DST #4 |
| 6-22 | 4000' - LOGGING |

### MUD RECORD

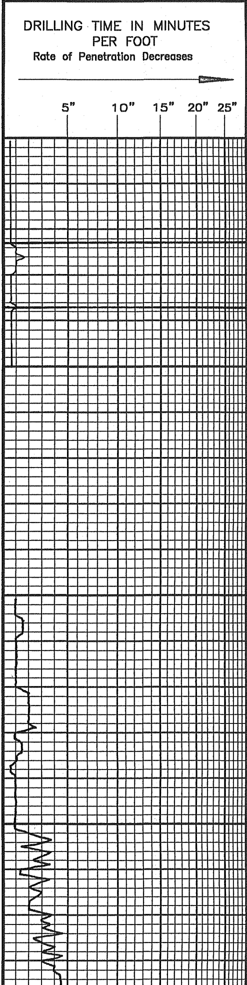
MUD TYPE: PUMP SIZE: BPS:

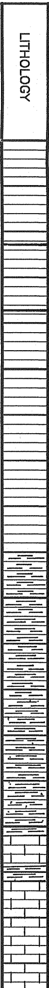
| NO | DATE | DEPTH | ACTIVITY | WT | VIS | WL | YP | PH | GS | LCM | CHL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 6-17 | 3029' | DRLG | 8.9 | 50 | 9.2 | 13 | 11.5 | 13/38 | TRC | 6500 |
| 6 | 6-18 | 3569' | DRLG | 9.5 | 50 | 10.4 | 14 | 10.0 | 17/15 | 0# | 6300 |
| 7 | 6-19 | 3715' | TOOH-DST #1 | 9.5 | 54 | 9.4 | 15 | 10.5 | 12/47 | 1# | 6600 |
| 8 | 6-20 | 3770' | DST #3 | 9.4 | 50 | 10.6 | 17 | 9.5 | 13/45 | 1# | 9500 |
| 9 | 6-21 | 3795' | DST #4 | 9.2 | 68 | 12.8 | 11 | 10.0 | 38/51 | 1# | 11600 |
| 10 | 6-22 | 4000' | LOGGING | 9.3 | 61 | 12.6 | 31 | 10.0 | 26/62 | 1# | 11900 |

LOG 7710

# LEGEND

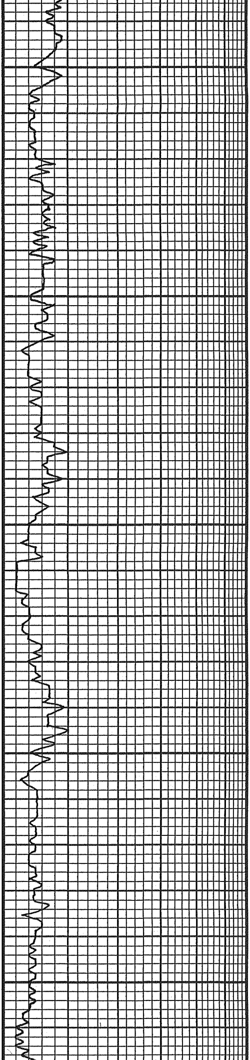
- ▥ Anhydrite
- ▦ Salt
- ▤ Sandstone
- ▤ Shale
- ■ Carb sh
- ▦ Limestone
- ▦ Ool.Lime
- △ Chert
- ▨ Dolomite

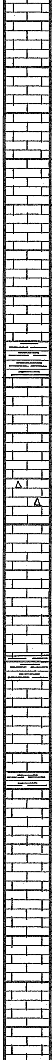




OIL SHOWS

| DEPTH | SAMPLE DESCRIPTIONS | REMARKS |
|---|---|---|
| 500 | | |
| | | ANHYDRITE -TOP<br>523 (+1290) |
| | | ANHYDRITE - BASE<br>537 (+1276) |
| 550 | | |
| | sh: mostly grey, green-grey, some brown, rust sh | |
| 2800 | sh: as above; few pcs tan, fnxtln, granular ls; no vis ø | |
| 10 | sh: lt. grey, sli calc; sh: grey, rust, brown | |
| 20 | sh: lt. grey, silty/sandy, micaceous, in part; sh: grey, brown, inc in rust sh; few pcs ls: tan, medxtln, sli foss, dense | |
| 30 | sh: grey, brown, rust; w/ scat ss: ltgry vry fngrained, shaley, micaceous, fri, no vis ø, no show | |
| 40 | sh: as above; w/ few clusters lt. grey sltst/vfngrained shalev ss; no vis ø | |
| 2850 | ls: dk grey, fragmental, foss, dolo & sh matrix, no vis ø, no show; inc in lt. grey, sltst/vfngrained ss, mica, friable | |
| 60 | no vis ø, no show; sh grey, brown ls: tan, tan-grey, fn-medxtln, ool, pelletal, well cemented, few isolated ool, no show | |
| 70 | ls: as above; w/ tan, fnxtln, sli chalky ls: w/ ls: tan, lt. brown, vfn-fnxtln, dense | |
| 80 | ls: as above; no vis ø, no show | |





90

ls: tan, some lt. grey, fn-medxtln, sli foss, ool in part, well-cemented, no vis ø; no show

2900

ls: tan, lt. brown, fn-medxtln, granular in part, sli calcitic & foss, app pr interxtln/intergranular ø; no show

10

ls: as above; w/ few pcs ls: lt. brown, fnxtln, vfnly ool & ooc, pr ooc ø, no show

20

ls: tan, lt. brown, fn-medxtln, sli foss, & calcitic; trc pr interxtln ø, most dense, no show

30

ls: as above; considerable sh: grey, dk grey, brown, rust.

40

ls: tan, lt. brown, fn-medxtln, sli foss, calcitic in part, trc pr interxtln ø, N.S.

2950

ls: as above; no show; w/ scat ls: grey, dk brown, fn-medxtln, dense

60

sh: grey, dk grey, rust, brown; few pcs green

70

sh: as above; w/ ls: grey, tan, brown, med-coarse xtln, pelletal, calcite cement in part, trc pr interxtln ø, N.S.

80

ls: as above; w/ ls: lt. grey, lt. brown fnxtln, dense

90

ls: tan, brown, lt. grey, fn-medxtln, sli foss, no vis ø; no show; few pcs Δ: fresh lt. grey, sli foss, opaque

3000

ls: tan, lt. brown, fn-med foss, calcitic pelletal, scat pr-trc fr interxtln ø; no st, fluor, cut, odor; no show Fo

10

ls: as above becoming chalky, w/ few pcs wh chalk

20

ls: tan, lt. grey, fn-some medxtln, chalky in part; no show

30

sh: grey, dk grey, some brown; w/ ls: grey, brown, vfn-scat medxtln, dense; no vis ø; no show

40

ls: tan, grey, brown, fn-medxtln, sli foss, no vis ø; no show

3050

ls: as above; w/ grey, dk grey sh

ls: tan, brown, fn-medxtln, granular in part, sli foss, pr-trc fr interxtln & intergranular ø; no show

60

70

ls: as above; becoming sli chalky in part

80

ls: tan, brown, fn-medxtln, trc pr interxtln ø; ls: grey, fn-medxtln, pelletal, mottled, scat pr-fr interxtln ø; no show

90

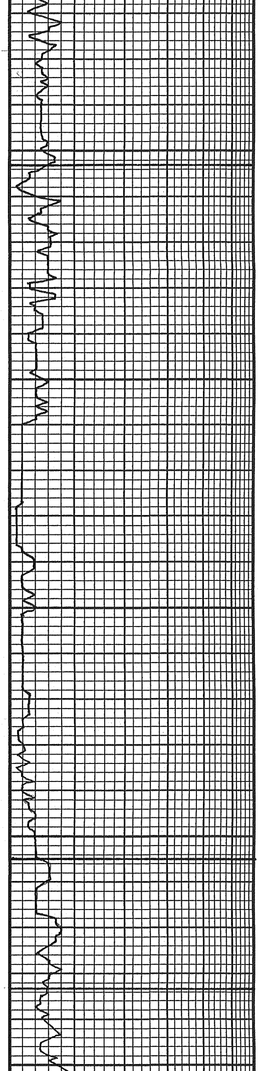
ls: tan, brown, fn-medxtln, pelletal, granular, pr-fr interxtln ø, no fluor, cut, st, or odor; no show oil

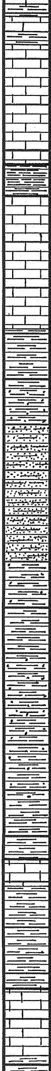
3100

ls: as above; some scat dk brown dolo cement, pr-fr interxtln ø; no show

10

ls: as above; becoming sli chalky, w/ few pcs wh chalk





20

sh: dk grey, grey; w/ ls: brown, grey, vfn-fnxtln, dense

30

ls: tan, lt. brown, lt. grey, fn-medxtln, pelletal, trc pr interxtln, ø; no show

40

ls: tan, lt. grey, vfn-scat medxtln, sli chalky; no vis ø, no show

**3150**

**HEEBNER**
**3153 (-1340)**

ls: as above; w/
sh: dk grey, black

60

ls: tan, brown, fn-medxtln, sli foss, dnse
sh: dk grey, grey, brown

70

ls: lt. grey, tan → dk brown, fn-medxtln, no vis ø, no show

80

ls: tan, lt. brown, lt. grey, fn-medxtln, sli foss, pelletal in part, chalky in pt, no vis ø, no show

90

sh: grey, dk grey, some brown, rust

**3200**

sh: grey, dk grey, brown, rust; cpl clusters grey, micaceous, siltstone no vis ø; no show

10

siltstone: lt. grey, shaley, sli calc, soft, no vis ø; no show; w/ sh: as above, silty

20

sh & siltstone: as above

30

sh: lt. → dk grey, sli silty; w/ few clusters siltstone; as above

40

sh: grey, dk grey, some brown, rust, few cluster ss/siltstone as above

**3250**

sh: as above; w/ considerable lt. grey soft, gummy sh:

60

sh: grey, dk grey, lt. grey, gummy w/ few clusters lt. grey, mica, siltstone, no vis ø, no show

70

sh: grey, dk grey, vsli silty, scat brown, rust, some lt. grey

80

sh: as above; w/ scat siltstone, lt grey, micaceous, shaley, friable, no vis ø, no show

90

sh: lt → dk grey, vsli silty, micaceous, w/ scat brown shale

**3300**

**BROWN LIME**
**3306 (-1492)**

sh: as above
ls: brown, micro-fnxtln, dense

10

sh: lt. grey, grey, brown, scat rust sh

20

sh: as above; w/ ls: off wh, tan, fn-med xtln, no vis ø, no show

30

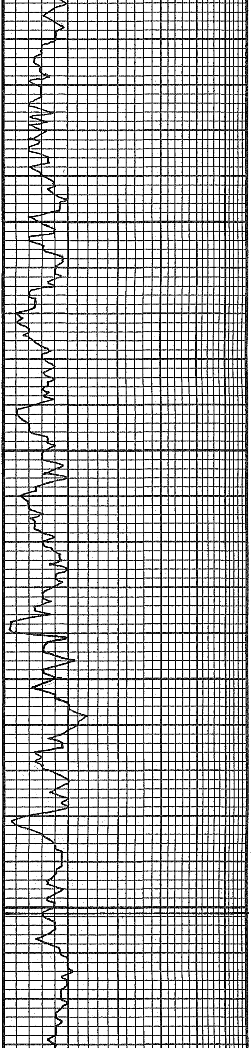
**LANSING**
**3333 (-1520)**

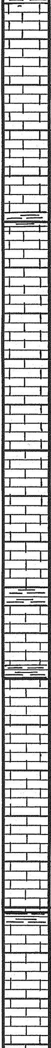
ls: tan, brown, fn-medxtln, sli foss, calcitic in part, pr-trc fr interxtln ø no st, cut, fluor, or odor

40

ls: off wh, tan, fn-med xtln, sli pelletal, sli foss, app pr interxtln ø, no show w/ sh: grey, dk grey

**3350**





ls: tan, brown, grey, vfn - some med xtln, dense.

60

ls: off wh, tan, lt. grey, fn - medxtln, sli chalky, trc pr interxtln ø, no show

70

ls: grey, brown, fn - medxtln, pelletal, mottled, foss, no vis ø; no show; w/ sh: grey, dk grey

80

ls: tan, lt. grey, fn - medxtln, sli foss, sli chalky, no vis ø, no show

90

ls: tan, brown, grey, fn - medxtln, sli foss, mottled, no vis ø; no show
sh: grey, dk grey

3400

ls: tan, brown, fn - medxtln, sli granular & calcitic, pr - trc fr interxtln ø; pr spotty st, wk cut, VSS oil film, no odor

10

ls: tan, brown, lt. grey, vfn - fnxtln, sli chalky, no vis ø, no show

20

ls: lt. grey, brown-grey, fn - medxtln, sli oolitic, granular in part, scat pr intergranular ø, trc pr st, wk cut, NSFO

30

ls: tan, brown, grey, mostly fn - some medxtln, dense; w/ Δ greyish-brown, fresh, oolitic, foss, opaque

40

ls: offwh, tan, fnxtln, finely granular, chalky in part, soft, pr intergranular ø, no show
w/ ls: brown, fn - medxtln, pr - trc fr interxtln ø, pr spotty st, wk cut, ft oil film, no odor, no show FO

3450

ls: brown, grey, fn - medxtln, dense

60

ls: tan, brown, grey, fn - medxtln, foss, sli ool, app pr interxtln ø, no st, cut, fluor, odor w/ scat Δ; grey, brown, fresh, foss, opaque

70

ls: tan, brown, brown-grey, fn - med xtln, granular in part, no vis ø; N.S.

80

ls: as above; w/ sh: grey, dk grey, green-grey

ls: lt. brown, medxtln, ooc, w/ gd ooc ø, no fluor, cut, st, odor, no show free oil

90

ls: tan, fn - medxtln, ool in part, sli foss, no vis ø, no show

3500

ls: as above w/ sh: grey green

ls: tan, lt. brown, fn - medxtln, ool, dense

10

ls: offwh, fnxtln, finely ool in part, most well cemented, scat pr interxtln & interool ø, N.S; Δ grey fresh opaque

20

ls: tan, brown, fn - medxtln, sli foss, oolitic, well-cemented; dense

30

ls: offwh, tan, lt. brown, oolitic, sli foss, scat pr - fr ooc ø; no fluor, cut, st, odor

40

ls: tan, fn - medxtln, oolitic in part, well-cemented, no vis ø, no show

3550

STARK
3551 (-1738)

ls: as above; w/ brown, fn - medxtln ls dense: sh: grey, green, some brown

ls: wh, fnxtln, trc pr interxtln ø, cpl pcs w/ pr spotty dk st, few ppts hvy dk oil & dd oil residue, no show free oil

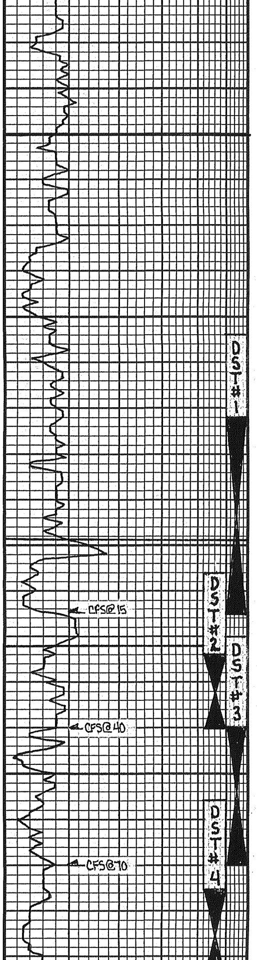
60

ls: off wh, tan, fn - medxtln, granular/oolitic, sli foss, trc vpr ooc ø, no show

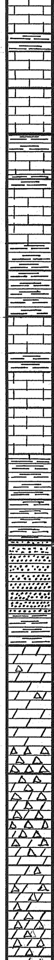
70

ls: tan, lt grey, fn - medxtln, no vis ø, no show

80



90
3600
10
20
30
40
3650
60
70
80
90
3700
10
20
30
40
3750
60
70
80
90



ls: offwh, tan, lt. brown, fn-medxtln, sli foss, no vis ø; no show
sh: grey, dk grey, some green

ls: tan, lt. grey, mostly vfn-fnxtln, some medxtln, no vis ø, no show

ls: as above; dense; 2 pcs w/ vpr interxtln ø, vpr spotty, stain, no show free oil

sh: grey, dk grey, some brown, w/ ls: tan, brown, lt → vry dk grey, vfnxtln, dense

ls: tan, lt → dk brown, fn-medxtln, sli foss, no vis ø, no show, ls: offwh, tan, fnxtln, chalky in part, w/ sh: grey, green, some brown

sh: lt. grey, grey some brown, rust

sh: lt. grey, soft, gummy; sh: grey, dk grey, some rust-brown, scat pcs w/ ls: inclusions & laminations

ls: lt. brown, lt. grey, microxtln, dense: ls: dk brown, dk grey, fn-medxtln, sli foss, dense; w/ grey, dk grey sh

ls: tan, lt brown, some grey, vfn-some medxtln, dense; scat wh chalk

ls: as above; no vis ø, no show; inc in grey, lt. grey, sh, calc: sh: rust brown, purple-brown, firm

sh: lt. grey, grey, greenish-grey, calc in part: sh: brown, rust, pale green; scat ls: as above

sh: lt. grey, pale orange; brown, gummy, soft; sh: grey, brown, green, dk. grey

ss: clear, wh, vfn-fngrained, sub rnd-sub ∠'lar, well-sorted, calc in part, firm, app vpr intergrained ø, spotty pr fluor, vry pr cut; ss: as above, friable, pr-scat fr intergrained ø, pr-fr streaming cut, pr-fr st w/ sat; VSS ppts FO w/ gas bubbles, fr oil film on wtr, fr odor, blk inert residue

sh: grey, green, rust, brown, dk grey

dolo: wh, offwh, lt. grey, vfn-fnxtln, scat Δ inclusions; vpr-pr interxtln ø, cpl pcs trc fr ø, scat vuggy ø, scat pr-fr st w/ sat; some full sat; most w/ VSSO & G scat pcs w/ FSFO & G, ft odor

dolo: as above w/ sli dec in ø & show

Δ: mostly, wh, fresh, opaque, w/ grey fresh, opaque Δ, spotty fluor, some w/ weathered edges & faces, vpr ppt ø, fr-gd lt. brown st w/ sat, scat fr vuggy ø in wh, opaque Δ; SS bleeding gas w/ oil ring, VSS ppts FO, lt. oil sheen on chips, ft odor; scat tan dolo, pr inter-xtln ø, pr-fr stain, SSFO & G.

as above w/ sli dec in vuggy ø

dolo: tan, lt. brown, greyish-tan, fnxtln, pr-scat fr interxtln ø, spotty fluor, wk cut pr-fr lt. st w/ sat, VSS ppts FO w/ few gas bubbles; w/ chert, wh, fresh, opaque, spotty fluor on faces, trc st, ft odor.

mostly dolo: w/ scat Δ as above; sli

BKC
3610 (-1797)

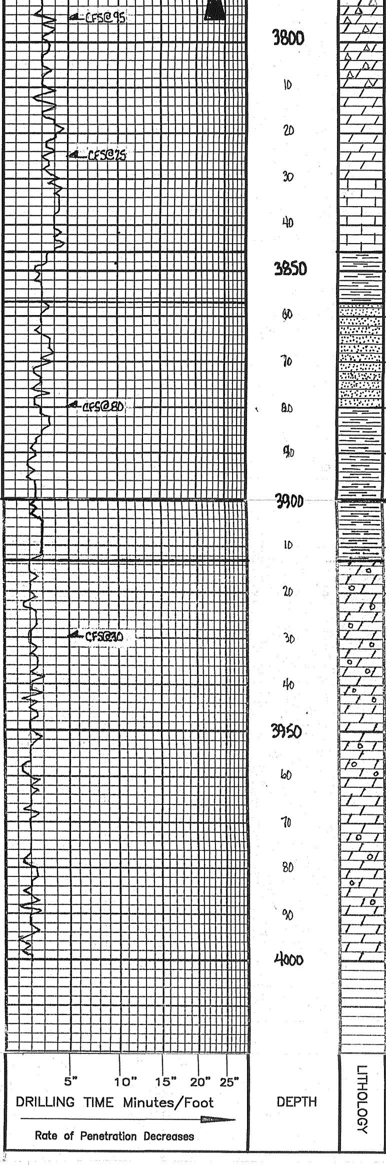
DST #1 (3672-3715)
30" - 60" - 60" - 90"
IFP: 1" BLOW BLDG TO BOB IN 16 MIN
ISIP: NO BLOW
FFP: BOB IMMEDIATELY
FSIP: NO BLOW
RECOVERED:
1650' GIP
20' SO & GCM (10% G, 10% O, 80% M)
60' VGOCM (60% G, 15% O, 25% M)
HSP: 1812# - 1774#
FP: 29#-32#/42#-51#
SIP: 351# - 350#
BHT: 111° F

MISNER SD
3699 (-1886)

VIOLA
3722 (-1909)

DST #2 (3724-3740)
30" - 60" - 60" - 90"
IFP: BOB IN 15 SEC
ISIP: GTS/8 MIN: SURF BLOW
FFP: BOB IMMEDIATELY
GTS/TSTM
FSIP: SURF BLOW
RECOVERED:
60' GMO (25% G, 30% M, 45% O)
HSP: 1900# - 1799#
FP: 33#-40#/ 22#-27#
SIP: 415# - 174#
BHT: 106° F

DST #3 (3740-3770)
30"-60"-60"-90"
GTS / 8 MIN



dec in show, dec in Δ

dolo: tan, lt. brown, brown, some lt. grey, vfn-fnxtln, vpr interxtln Ø; trc spotty fluor, no cut, VSSG in few pcs on break, no show oil, no odor: few pcs wh, fresh, opaque Δ, no show

dolo: as above; dk brown, brown dolo becoming shaley/dirty, vpr interxtln Ø, VSSG in cpl pcs, no show oil, no odor w/ few pcs wh, opaque Δ, no show; dolo: w/ scat Δ as above; no show

ls: offwh, tan, brown, vfn-fnxtln, sli sandy, sli chalky, dense, no vis Ø, no show

ls: as above; w/ few pcs Δ wh, grey-tan fresh, opaque

sh: grey, dk grey, green-grey, brown, pale green, sli silty, sandy

sh: as above; w/ green shale

ss: lt. grey, grey, some tan, vfn-fn grained, sub rnd, well-sorted, friable shaley in part (dk grey, green) vpr-pr intergrained Ø, no show

ss: as above; sli calc, vpr-pr intergrained Ø, no show

sh: grey, dk grey, green, rust, brown, pale green, sli sandy

sh: as above, silty, sandy in part

sh: as above

dolo: tan, pinkish-tan, fn-scat, medxtln sli ool & ooc, pr-fr interxtln & ooc Ø, no fluor, cut, st, odor, no show oil

dolo: as above; few pcs w/ fr-gd interxtln & ooc Ø; no show; few pcs lt grey fnxtln, dolo: trc pr interxtln Ø, no show

dolo: tan-fn-medxtln, ool & ooc in part, pr-trc fr interxtln Ø, pr ooc Ø; no show; few pcs vfn, brown, dense dolo

dolo: as above; w/ lt. grey, fn-medxtln, pr interxtln Ø, no show

dolo: tan, lt. grey, brown, fn-medxtln, sli ool & ooc Ø; pr-fr interxtln Ø, pr ooc Ø, no show

dolo: tan, lt. grey, fn-medxtln, scat pr-fr interxtln Ø; no show few pcs vfnxtln, dense

dolo: tan, some lt. grey, fn-medxtln, sli ool, sli sandy, pr-fr interxtln & scat vuggy Ø; no show

dolo: as above; no show; inc in dolo: lt. grey, brown, vfn-fnxtln, dense; few pcs Δ blue-wh fresh opaque - semi translucent

dolo: as above; w/ inc in brown, grey fn-medxtln, trc pr interxtln Ø, no show

SAMPLE DESCRIPTIONS

OIL SHOWS

GAUGED: 232 MCF @ 10 & 20 MIN
178 MCF @ 30 MIN
FFP: 37 MCF @ 10 MIN
42 MCF @ 20 & 30 MIN
35 MCF @ 40 MIN
32 MCF @ 50 & 60 MIN
RECOVERED:
190' O&GCM (20% O, 20% G, 60% M)
248' GM & WCO (35% G, 15% W, 15% M, 35% O)
124' OCW (6% O, 94% W)
496' W - CHL: 95.000 PPM
SYS: 6.600 PPM
HSP: 1906# - 1801#
FP: 182# - 226# / 227# - 406#
SIP: 636# - 632#
BHT: 115° F

SIMPSON SH.
3846 (-2033)

SIMPSON SD.
3857 (-2044)

DST #4 (3775 - 3795)
30" - 60" - 60" - 90"
IFP: SURF BLOW BLDG TO 2½"
ISIP: NO BLOW
FFP: SURF BLOW BLDG TO 6"
FSIP: NO BLOW
RECOVERED:
25' SGCM (2% G, 98% M)
HSP: 1921# - 1858#
FFP: 20# - 17# / 14# - 23#
SIP: 410# - 618#
BHT: 110° F

ARBUCKLE
3913 (-2100)

RTD 4000 (-2187)
LTD 4001 (-2188)

REMARKS