KIM B. SHOEMAKER
CONSULTING GEOLOGIST
316-684-9709 * WICHITA,KS

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY L.D. DRILLING, INC.
LEASE # 2-31 DARREL
FIELD LUNDGREN
LOCATION 1700' FSL & 2310' FWL
SEC. 31 TWSP. 14s RGE. 29w
COUNTY GOVE STATE KANSAS

ELEVATIONS
KB 2660
DF
GL 2655
Measurements Are All From 2660 KB

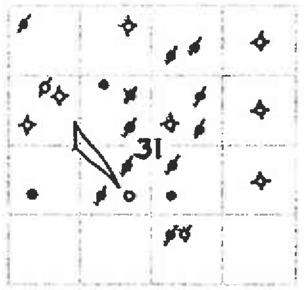
CONTRACTOR L.D. DRILLING, INC.
SPUD 11-27-12 COMP. 12-9-12
RTD 4415 LTD 4420
MUD UP 3228 TYPE MUD CHEMICAL

CASING
SURFACE 8 5/8"@ 302'
PRODUCTION 4½"@

ELECTRICAL SURVEYS
Dual Ind. Dens: N., Micro

SAMPLES SAVED FROM 3300 TO 4415
DRILLING TIME KEPT FROM 3200 TO 4415
SAMPLES EXAMINED FROM 3300 TO 4415
GEOLOGICAL SUPERVISION FROM 3400 TO 4415
GEOLOGIST ON WELL KIM B. SHOEMAKER

FORMATION TOPS	LOG	SAMPLES
ANHYDRITE	2057 + 603	2058 + 602
B/ANH.	2085 + 575	2087 + 573
STOTLER	3292 - 632	3290 - 630
HEEBNER	3664 - 1004	3664 - 1004
LANSING	3700 - 1040	3700 - 1040
STARK	3950 - 1290	3948 - 1288
MARMATON	4050 - 1390	4045 - 1385
FORT SCOTT	4205 - 1545	4202 - 1542
CHEROKEE	4231 - 1571	4228 - 1568
MISS. SPERGEN	4324 - 1664	4320 - 1660

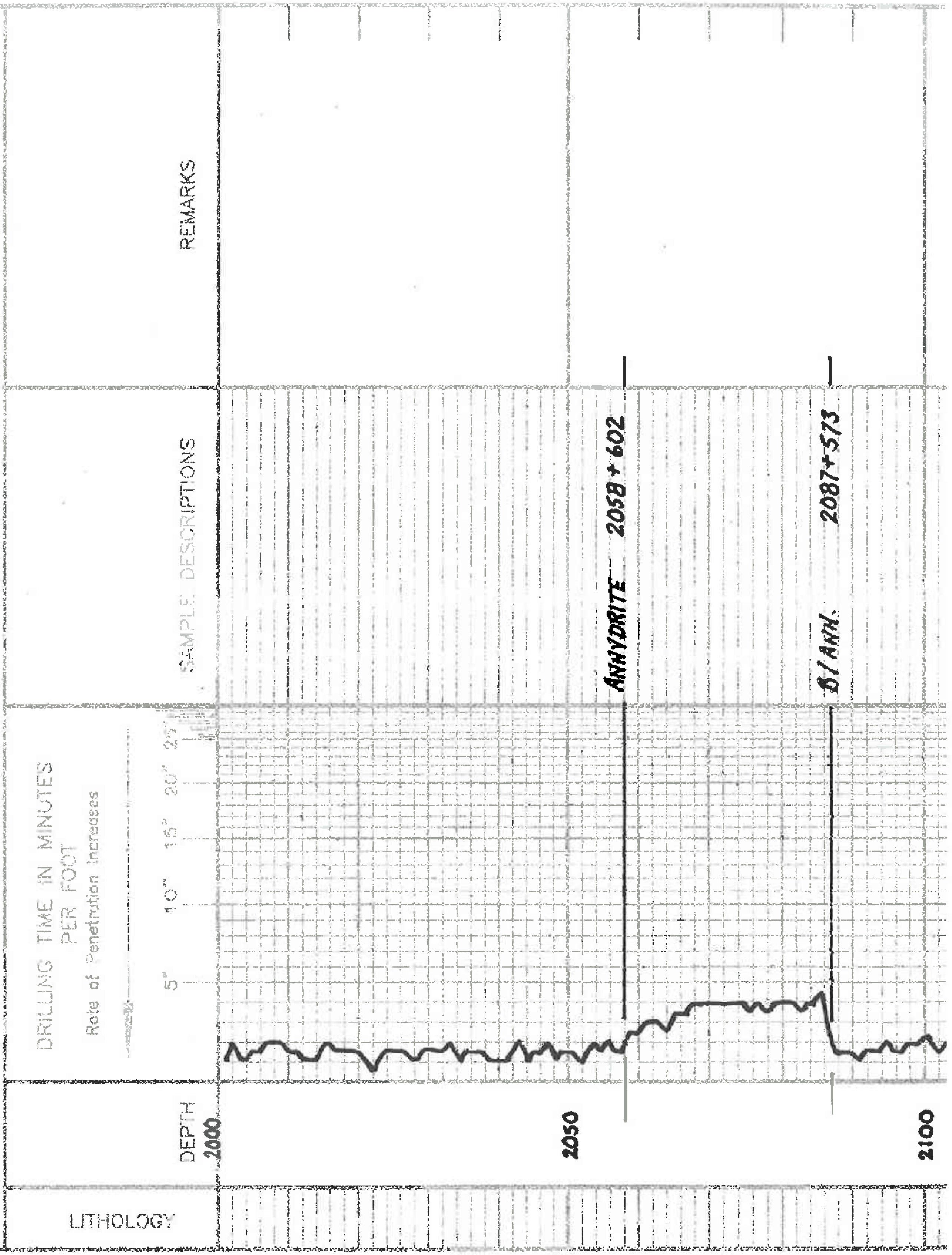


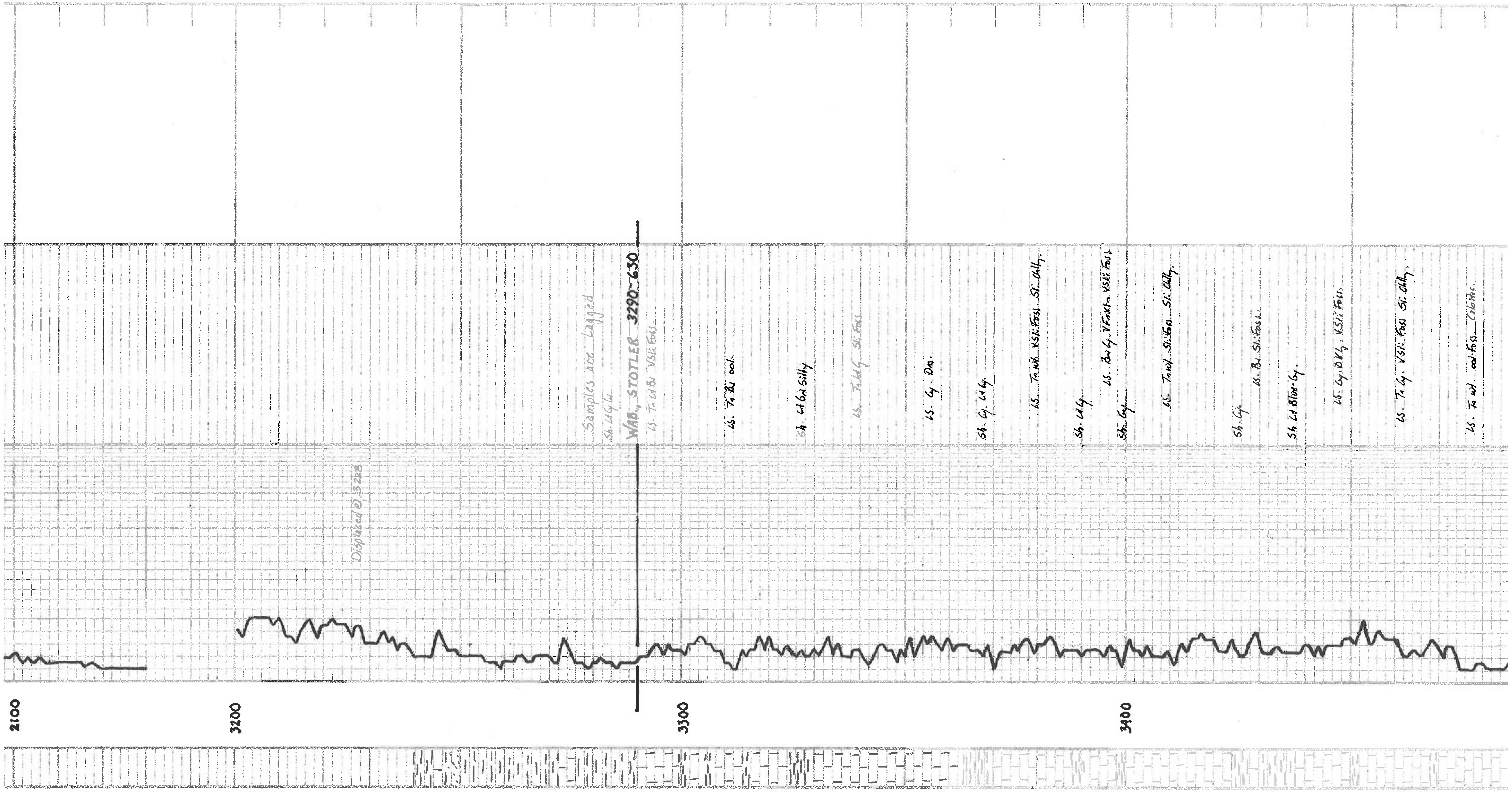
API: 15-063-21981

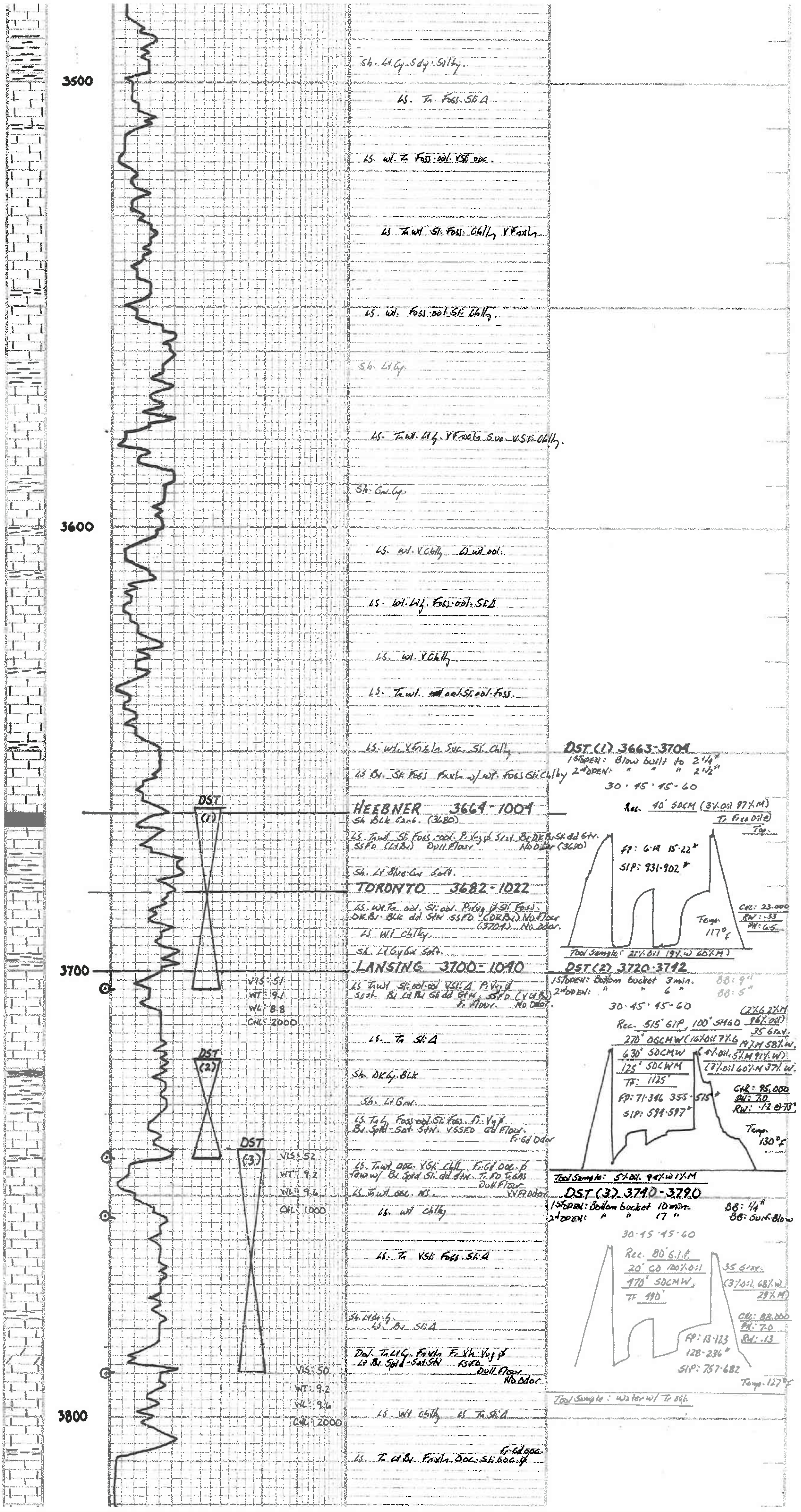
REMARKS
11-27-12 SPUD
11-28 @ 305'
11-29 @ 1800'
11-30 @ 2640'
12-1 @ 3150'
12-2 @ 3704'
12-3 @ 3742'
12-4 @ 3790'
12-5 @ 3940'
12-6 @ 4208'
12-7 @ 4295'
12-8 @ 4343'
12-9 @ 4415'

LEGEND
- ▨ Anhydrite
- ▨ Salt
- ▨ Sandstone
- ▨ Shale
- ▨ Carb sh
- ▨ Limestone
- ▨ Ool.Lime
- ▨ Chert
- ▨ Dolomite

SHOE01-08




Displaced @ 3228
Samples are Lagged
Sh. LtGy Gn
WAB., STOTLER 3290-630
LS. Tn LtBr VSli Foss.
LS. Tn Br ool.
Sh. Lt Gn Silty
LS. Tn Lt G Sli Foss.
LS. Gy. Dns.
Sh. Gy. Lt Gy.
LS. Tn wh. VSli Foss. Sli Chlty.
Sh. Lt Gy
LS. Bn Gy. VFxtn VSli Foss
Sh. Gy
LS. Tn wh. Sli Foss. Sli Chlty.
Sh. Gy
LS. Br. Sli Foss.
Sh. Lt Blue-Gy.
LS. Gy. D Gy. VSli Foss.
LS. Tn Gy. VSli Foss. Sli Chlty.
LS. Tn wh. ool Foss. Oolitic.
2100
3200
3300
3400



DST (1) 3663 - 3704

1st OPEN: Blow built to 2 1/4"
2nd OPEN: " " " 2 1/2"

30 · 45 · 45 - 60

Rec. 40' SOCM (3% Oil 97% M)
Tr. Free Oil (e) Top.

FP: 6-14 15-22#
SIP: 931-902#

Temp. 117° F

CHL: 23,000
RW: .33
PH: 6.5

Tool Sample: 21% Oil 19% W 60% M

DST (2) 3720 - 3742

1st OPEN: Bottom bucket 3 min. BB: 9"
2nd OPEN: " " 6 " BB: 5"

30 · 45 · 45 - 60

Rec. 515' GIP, 100' SMGO (2% G 2% M 96% Oil)
35 Grav.
270' OGCMW (16% Oil 7% G 19% M 58% W.)
630' SOCMW (4% Oil, 5% M 91% W)
125' SOCWM (3% Oil 60% M 37% W.)
TF: 1125'

FP: 71-346 355-515#
SIP: 594-597#

CHL: 95,000
PH: 7.0
RW: .12 @ 73°

Temp. 130° F

Tool Sample: 5% Oil. 94% W 1% M

DST (3) 3740 - 3790

1st OPEN: Bottom bucket 10 min. BB: 1/4"
2nd OPEN: " " 17 " BB: Surf. Blow

30 · 45 · 45 - 60

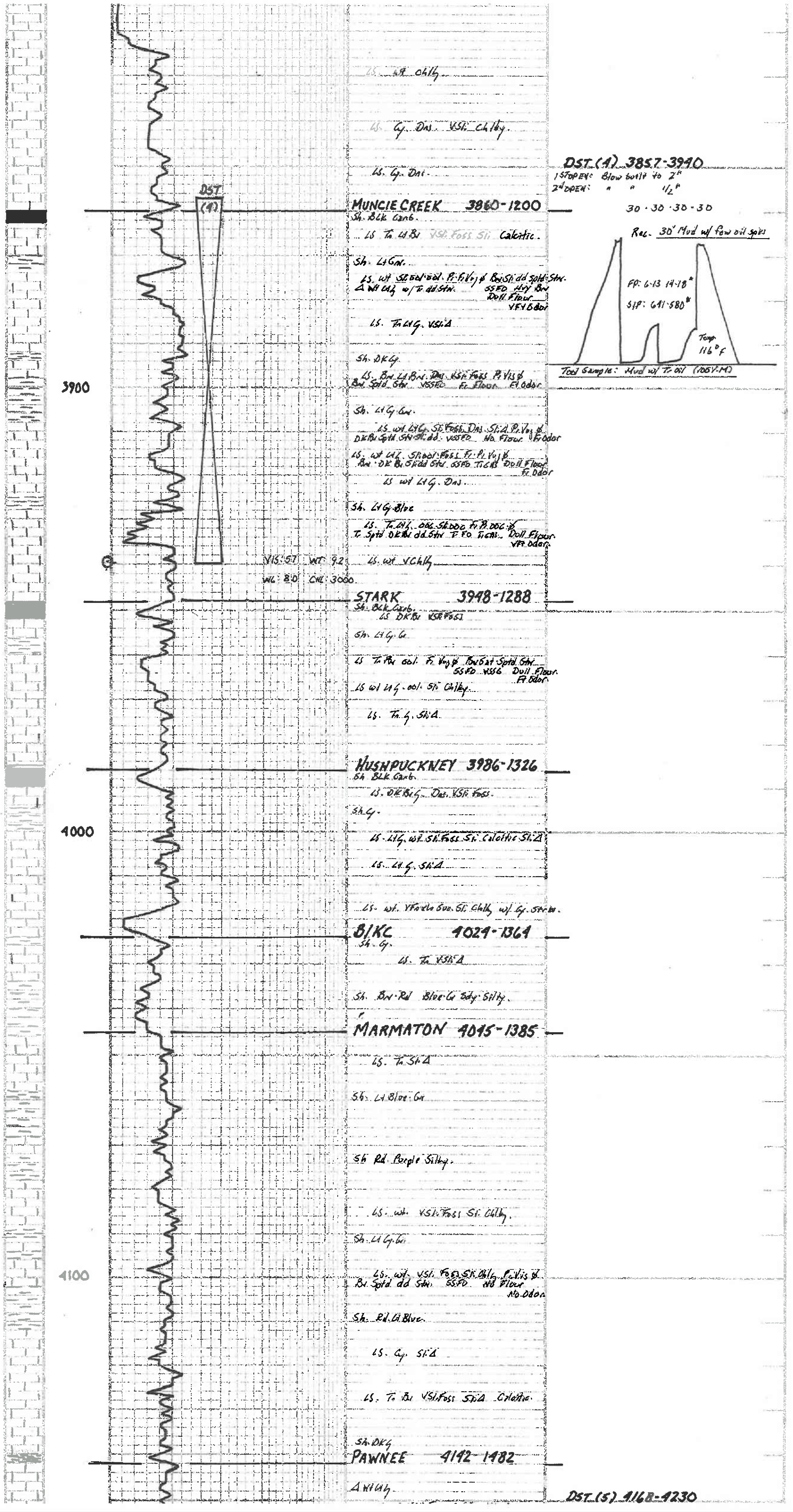
Rec. 80' G.I.P.
20' CO 100% Oil 35 Grav.
470' SOCMW (3% Oil, 68% W 29% M)
TF 490'

FP: 13-123 128-236#
SIP: 757-682

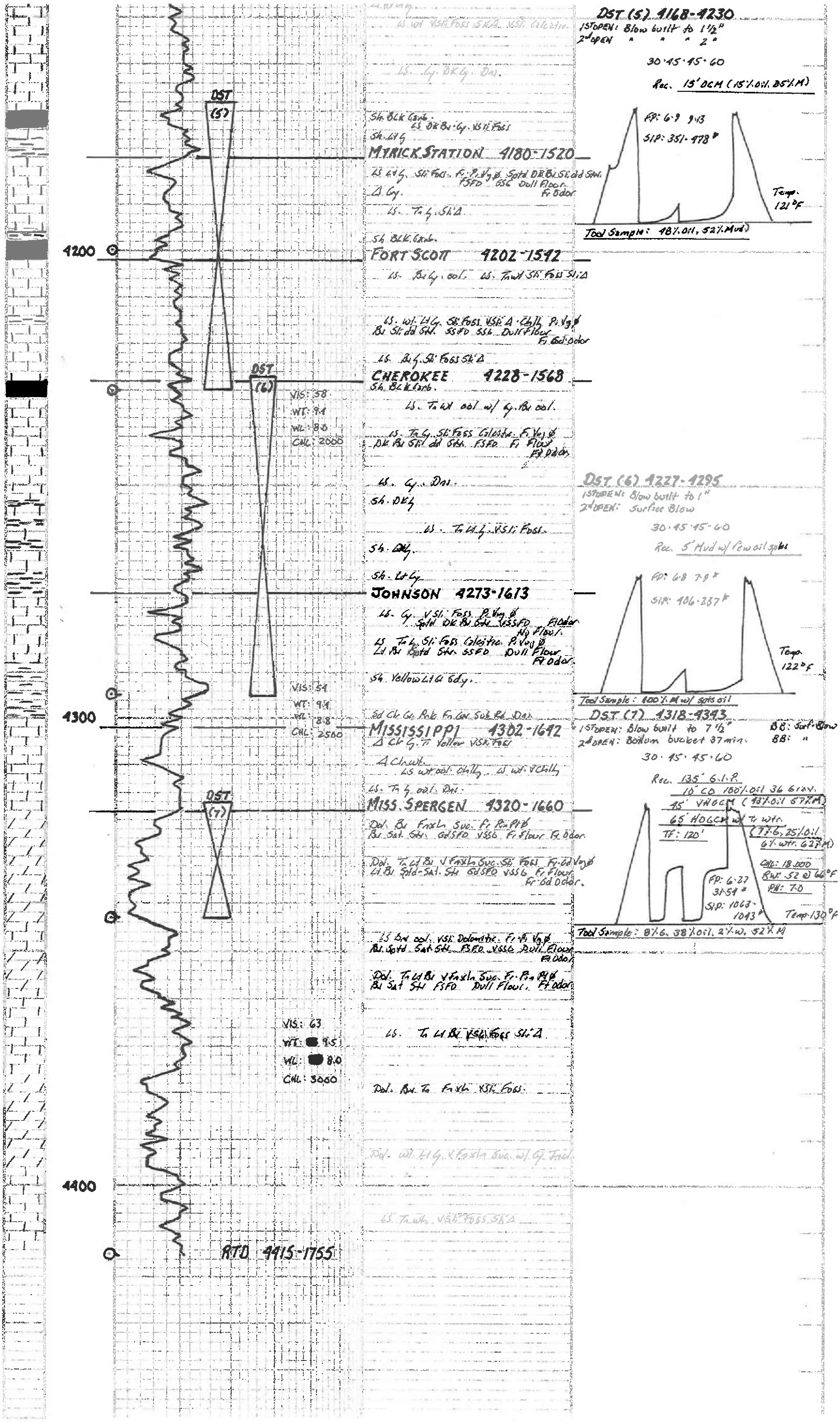
CHL: 88,000
PH: 7.0
RW: .13

Temp. 127° F

Tool Sample: water w/ Tr. Oil.



LS. wt. Chly
LS. Gy. Dns. VSl. Chlky.
LS. Gy. Dns.
DST (4)
MUNCIE CREEK 3860-1200
Sh. Blk. Carb.
LS. Tn Lt Br. VSl. Foss. Sl. Calcitic.
Sh. Lt Grn.
LS. wt. Sl. Ool. Pr. Fr. Vug φ Br. Sl. dd Sptd Stn. Δ wt Chlky w/ Tr. dd Stn. SSFO Hvy Br Dull Flour. VFt Odor
LS. Tn Lt G. VSl. Δ
Sh. DK Gy.
LS. Br. Lt Br. Dns. VSl. Foss. Pr. Vis φ Br. Sptd. Stn. VSSFO Ft. Flour. Ft. Odor
Sh. Lt Gy Grn.
LS. wt. Lt Gy. Sl. Foss. Dns. Sl. Δ Pr. Vug φ DK Br. Sptd. Stn. Sl. dd. VSSFO No Flour. Ft. Odor
LS. wt. Lt Z. Sl. Ool. Foss. Fr. Pr. Vug φ Br. DK Br. Sl. dd Stn. SSFO Tr. Gas Dull Flour. Ft. Odor
LS. wt. Lt G. Dns.
Sh. Lt Gy. Blue
LS. Tn Lt Z. Ool. Sl. Ool. Fr. Pr. Ool. φ Tr. Sptd. DK Br. dd. Stn. Tr. FO Tr. Gas. Dull Flour. VFt Odor.
VIS: 57 WT: 9.2
WL: 8.0 CHL: 3000.
LS. wt. V Chlky
STARK 3948-1288
Sh. Blk. Carb.
LS. DK Br. VSl. Foss.
Sh. Lt Gy. Gr.
LS. Tn Br. Ool. Fr. Vug φ Br. Gat Sptd. Stn. SSFO VSSG Dull Flour. Ft. Odor
LS. wt Lt G. Ool. Sl. Chlky.
LS. Tn. G. Sl. Δ
HUSHPUCKNEY 3986-1326
Sh. Blk. Carb.
LS. DK Br. G. Dns. VSl. Foss.
Sh. Gy.
LS. Lt G. wt. Sl. Foss. Sl. Calcitic Sl. Δ
LS. Lt G. Sl. Δ
LS. wt. V Fn xln Gen. Sl. Chlky w/ Gy. Strks.
B/KC 4029-1364
Sh. Gy.
LS. Tn VSl. Δ
Sh. Br. Rd Blue Gr Sdy. Silty.
MARMATON 4045-1385
LS. Tn Sl. Δ
Sh. Lt Blue. Gr.
Sh. Rd. Purple Silty.
LS. wt. VSl. Foss. Sl. Chlky.
Sh. Lt Gy. Gr.
LS. wt. VSl. Foss. Sl. Chlky. Pr. Vis φ Br. Sptd. dd Stn. SSFO No Flour. No Odor
Sh. Rd. Lt Blue
LS. Gy. Sl. Δ
LS. Tn Br. VSl. Foss. Sl. Δ Calcitic.
Sh. DK G
PAWNEE 4142-1482
Δ wt Chly.
3900
4000
4100
DST (4) 3857-3940
1ST OPEN: Blow built to 2"
2nd OPEN: " " 1/2"
30 · 30 · 30 · 30
Rec. 30' Mud w/ few oil spks
FP: 6-13 14-18#
SIP: 641-580#
Temp 116° F
Tool Sample: Mud w/ Tr. Oil (10%-M)
DST (5) 4168-4230


LS. wt VSli Foss Sli.Δ. VSli Calcitic.
LS. Gy. DK Gy. Dns.
Sh. Blk Carb.
LS. DK Br-Gy. VSli Foss
Sh. Lt G
MYRICK STATION 4180-1520
LS. Lt G. Sli Foss. Fr-P. Vg ø. Sptd DK Br Sli dd Stn. FSFO SSC Dull Flour. Fr Odor
Δ Gy.
LS. Tn G. Sli Δ.
Sh Blk Carb.
FORT SCOTT 4202-1542
LS. Br Gy. ool. LS. Tn wt Sli Foss Sli Δ
LS. wt. Lt G. Sli Foss. VSli Δ. Chlk. P. Vg ø Br Sli dd Stn. SSFO SSC Dull Flour Fr Gd Odor
LS. Br G. Sli Foss Sli Δ
CHEROKEE 4228-1568
Sh. Blk Carb.
LS. Tn wt ool w/ Gy. Br ool.
LS. Tn G. Sli Foss Calcitic. Fr Vg ø. Dk Br Sli dd Stn. FSFO Fr Flour Fr Odor
LS. Gy. Dns.
Sh. DK G
LS. Tn Lt G. VSli Foss.
Sh. DkG.
Sh. Lt Gy.
JOHNSON 4273-1613
LS. Gy. V Sli. Foss P. Vg ø. Sptd Dk Br Stn. VSSFO Fr Odor No Flour.
LS Tn G. Sli Foss Calcitic. P. Vg ø Lt Br Sptd Stn. SSFO Dull Flour Fr Odor.
Sh. Yellow Lt Gr Gdy.
Sd Clr Gr Rnd. Fn Gr Sub Rd Dol.
MISSISSIPPI 4302-1642
Δ Clr G. Tr Yellow VSli Foss
Δ Clr wt.
LS wt ool. Chlky. Δ wt. V Chlky
LS. Tn G. ool. Dns.
MISS. SPERGEN 4320-1660
Dol. Br Fnxln Suc. Fr Rn Pt ø Br Sat. Stn. Gd SFO VSSC Fr Flour Fr Odor.
Dol. Tn Lt Br V Fnxln Suc. Sli Foss Fr-Gd Vg ø Lt Br Sptd-Sat. Stn Gd SFO VSSC Fr Flour Fr-Gd Odor.
LS Brn ool. VSli Dolomitic. Fr Vf Vg ø Br Sptd Sat Stn FSFO VSSC Dull Flour Fr Odor
Dol. Tn Lt Br V Fnxln Suc. Fr-Pn Pt ø Br Sat Stn FSFO Dull Flour. Fr odor
LS. Tn Lt Br VSli Foss Sli Δ.
Dol. Brn Tn Fnxln VSli Foss.
Dol. wt. Lt G. V Fnxln Suc. w/ Gy. Frd.
LS. Tn wh. VSli Foss Sli Δ
4200
4300
4400
DST (5)
DST (6)
DST (7)
VIS: 58
WT: 9.1
WL: 8.0
CHL: 2000
VIS: 54
WT: 9.1
WL: 8.8
CHL: 2500
VIS: 63
WT: 9.5
WL: 8.0
CHL: 3000
RTD 4415-1755
DST (5) 4168-4230
1ST OPEN: Blow built to 1½"
2nd OPEN " " " 2"
30·45·45·60
Rec. 15' OCM (15% oil, 85% M)
FP: 6·9 9·13
SIP: 351-978#
Temp. 121°F
Tool Sample: 48% oil, 52% Mud
DST (6) 4227-4295
1ST OPEN: Blow built to 1"
2nd OPEN: Surface Blow
30·45·45·60
Rec. 5' Mud w/ few oil spks
FP: 6·8 7·9#
SIP: 406-237#
Temp. 122°F
Tool Sample: 100% M w/ spks oil
DST (7) 4318-4393
1ST OPEN: Blow built to 7½"
2nd OPEN: Bottom bucket 37 min.
BB: Surf. Blow
BB: "
30·45·45·60
Rec. 135' G.I.P.
10' CO 100% oil 36 Grav.
45' VHOCM (43% oil 57% M)
65' HOGCM w/ Tr wtr. (7% G, 25% oil 6% wtr. 62% M)
TF: 120'
CHL: 18,000
RW: .52 @ 66°F
PH: 7.0
FP: 6·27 31·54#
SIP: 1063-1043#
Temp. 130°F
Tool Sample: 8% G, 38% oil, 2% W, 52% M