



Andrew Stenzel Geologist

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WELLSITE GEOLOGIST'S REPORT

WellSight Systems

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Harold Michaelis Family Trust #1

Well Id:

Location: Sec. 30-15S-35W (Logan County)

License Number: 15-109-21383

Spud Date: 1/15/15

Surface Coordinates: 605' FNL & 1710' FWL

Region: KANSAS

Drilling Completed: 1/28/15

Bottom Hole

Coordinates:

Ground Elevation (ft): 3234

K.B. Elevation (ft): 3239

Logged Interval (ft): 3500

To: TD

Total Depth (ft): 4925

Formation:

Type of Drilling Fluid: Mud-Co Chemical

Printed by WellSight Log Viewer from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Palomino Petroleum, Inc.

Address: 4924 SE 84th St.

Newton, KS 67114

GEOLOGIST

Name: Andrew Stenzel

Company: Petroleum Geologist

Address: 515 S. Franklin

Ness City, KS 67560

Misc. Info.

RIG: WW Drilling Rig #2

MUD: MUDCO

LOGS: Pioneer (CND, DIL, ML)

TESTER: Trilobite Testing

Formation Tops

Sample Tops

Anhy. 2516 (+723)
Base Anhy. 2533 (+706)
Topeka 3722 (-483)
Heebner 3953 (-714)
Toronto 3972 (-733)
Lansing 4004 (-765)
Muncie Cr 4187 (-948)
BKC 4348 (-1109)
Marmaton 4415 (-1176)
Pawnee 4475 (-1236)
Ft. Scott 4521 (-1282)

LogTops

Anhy. 2514 (+725)
Base Anhy. 2532 (+707)
Topeka 3722 (-483)
Heebner 3954 (-715)
Toronto 3978 (-739)
Lansing 4008 (-769)
Muncie Cr 4174 (-935)
BKC 4350 (-1111)
Marmaton 4404 (-1165)
Pawnee 4480 (-1241)
Ft. Scott 4521 (-1282)

Lansing 4004 (-765)
 Muncie Cr 4187 (-948)
 BKC 4348 (-1109)
 Marmaton 4415 (-1176)
 Pawnee 4475 (-1236)
 Ft. Scott 4521 (-1282)
 Cher. Sh. 4536 (-1297)
 Johnson 4622 (-1383)
 Morrow Sh 4675 (-1436)
 Morrow Sd 4745 (-1506)
 Miss 4776 (-1537)
 RTD 4925 (-1686)

Lansing 4008 (-769)
 Muncie Cr 4174 (-935)
 BKC 4350 (-1111)
 Marmaton 4404 (-1165)
 Pawnee 4480 (-1241)
 Ft. Scott 4521 (-1282)
 Cher. Sh 4536 (-1297)
 Johnson 4628 (-1389)
 Morrow Sh 4675 (-1436)
 Morrow Sd 4750 (-1511)
 Miss 4773 (-1534)
 LTD 4923 (-1684)

Drilling Report

1/15/15 MIRU, ran surface casing.
 1/16/15 Drilling @ 350'
 1/17/15 Drilling @ 2255'
 1/18/15 Drilling @ 3295'
 1/19/15 Drilling @ 3845', DST 1
 1/20/15 DST 2
 1/21/15 DST 3, DST 4
 1/22/15 DST 5, DST 6
 1/23/15 DST 7, DST 8
 1/24/15 Drilling @ 4340', DST 9
 1/25/15 Tripping out for DST 10, DST 10
 1/26/15 Circulating @ 4686', DST 11
 1/27/15 Drilling @ 4843'
 1/28/15 Ran production casing

Comments

SURFACE Casing: Ran 5 jts new 8 5/8", 23# casing @ 217'.
PRODUCTION Casing: Ran 129 jts new 5 1/2", 17# casing set 4' off bottom @ 4291'.

ROCK TYPES

Anhy	Clyst	Mrst	Shgy
Bent	Carb sh	Salt	Sltst
Brec	Congl	Shale	Ss
Cht	Dol	Shcol	Till

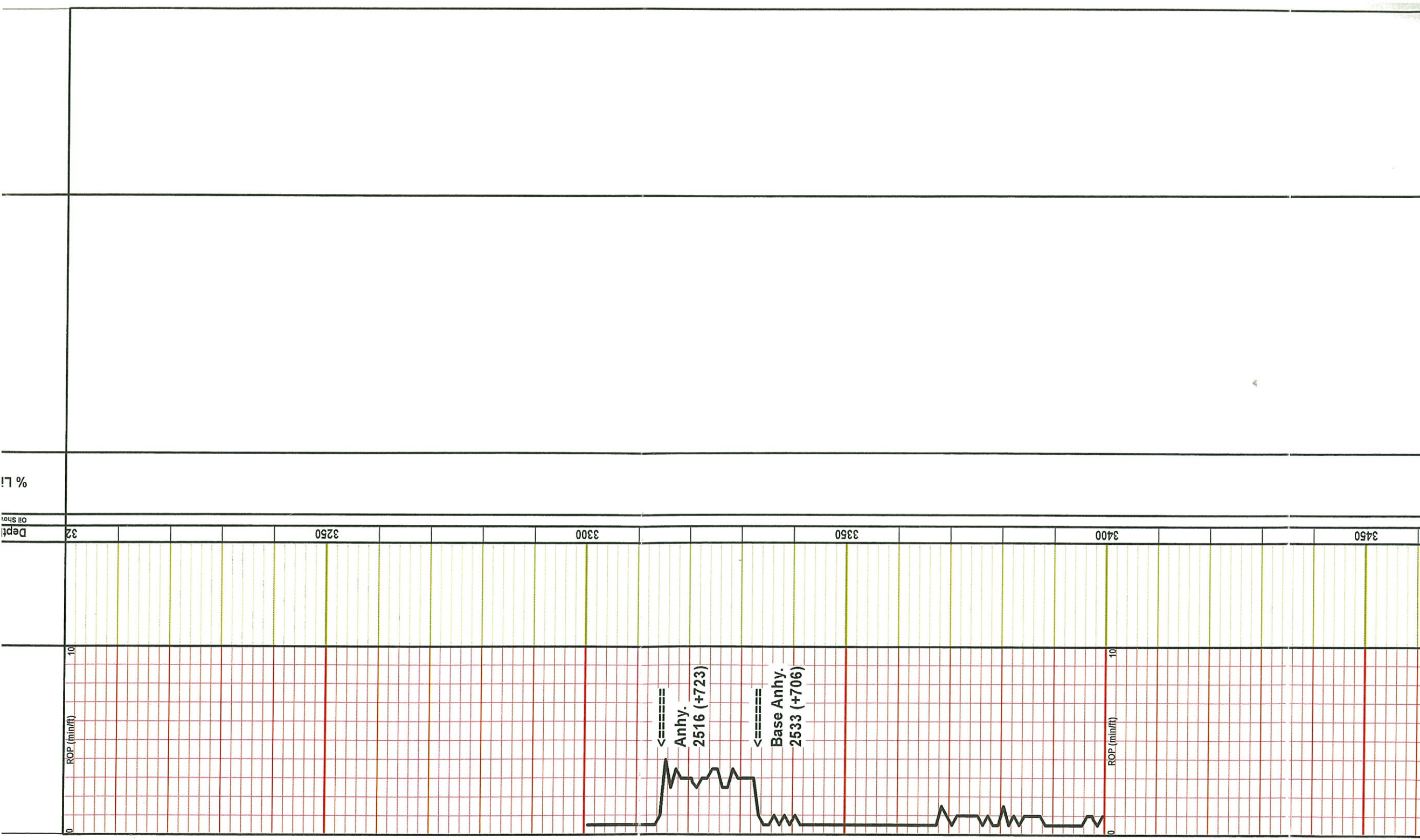
ACCESSORIES

Pellet	Coal	OIL SHOW Good
Pisolite	Dol	OIL SHOW Fair
Plant	Gyp	OIL SHOW Slight
Strom	Ls	OIL SHOW Very slight
STRINGER	Mrst	
Anhy	Sltstrg	
Arg	Ssstrg	
Bent		

FOSSIL

Algae	Crin	Echin
Amph	Fish	Foram
Belm	Fossil	Gastro
Bioclist	Gastro	Oolite
Brach	Oolite	Ostra
Bryozoa	Ostra	Pelec
Cephal		
Coral		

ROP (min/ft)	Misc Infc	% Lithology	Geological Descriptions	DSTs
ROP (min/ft)	Oil Shows	Depth		
0		32		
10				



% LI

Depth

ROP (min/ft)

ROP (min/ft)

<=====
Anhy.
2516 (+723)

<=====
Base Anhy.
2533 (+706)

3250

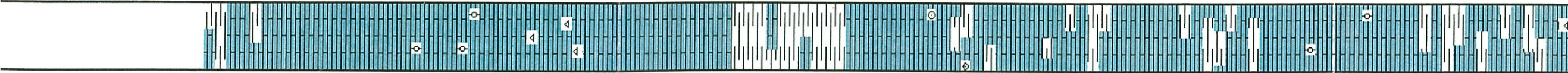
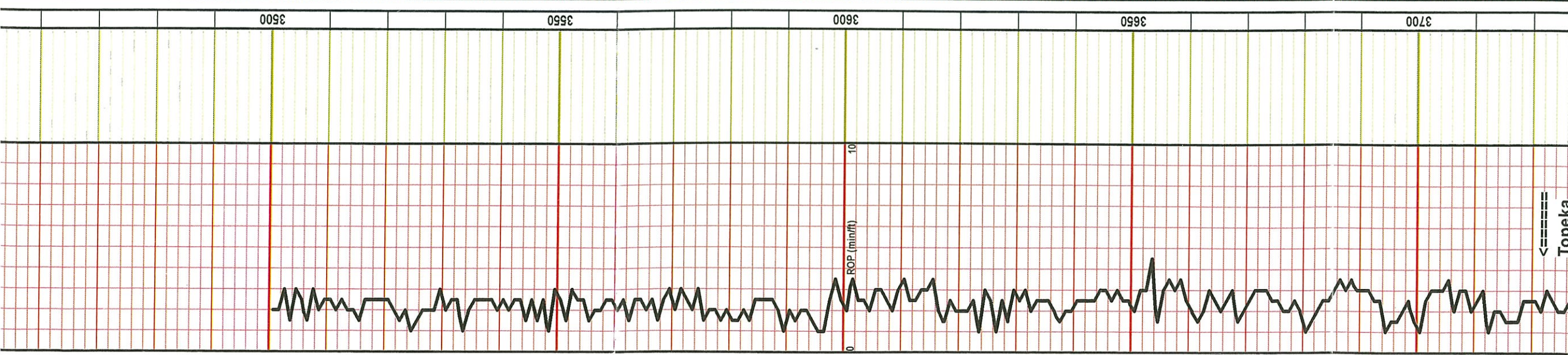
3300

3350

3400

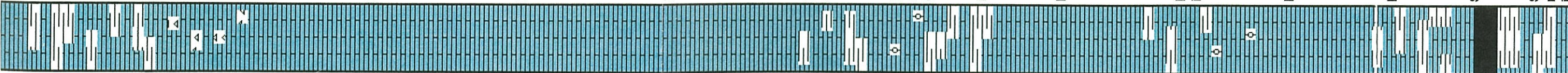
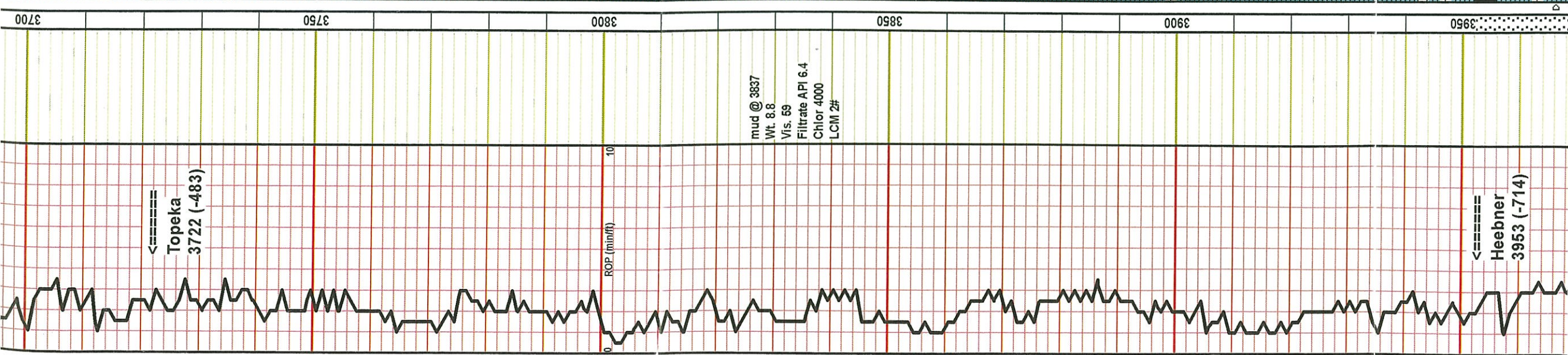
3450

32



Ls., crm, fnxin, mod hd, chiky ip, dns, ns., scatt Sh., gy, soft
 Ls., crm-tn-gy, fnxin, sli fri, chiky ip, pr ppt por, ns
 Ls., crm-gy, fnxin, mod hd, ool ip, dk gy ooids, chiky, dns, ns
 Ls., crm-tn, fnxin, mod hd, chiky-vy chiky, dns, scatt chrt, tn-gy, weath, ns
 Ls., tn-lt gy, fnxin, mod hd, dns, ns
 Sh., gy-brn, soft
 Ls., gy-tn, fn-vfnxin, hd, dns, ns
 Ls., crm-tn, fnxin, mod hd-hd, foss ip, dns, ns, scatt sh., gy, fss, silty ip
 Ls., aa, abund sh., gy, soft
 Ls., crm-tn-lt gy, fn-vfnxin, mod hd, dns, ns
 Ls., crm-tn, fnxin, mod hd, chiky ip, dns, ns, Sh., gy-brn
 Ls., tn-gy, fnxin, hd, ool ip, dk gy ooids, dns, ns
 Ls., tn-lt gy, vfnxin, hd, dns, ns, scatt Sh., gy-brn

←
 Tonaka



Ls., tn-lt gy, vfnxln, hd, dns, ns, scatt Sh., gy-brn

Ls., crm-tn, fnxln, mod hd ip, chlky ip, dns, ns, scatt chrt., gy, foss, shp, ns

Ls., crm, fnxln, mod hd, chlky, dns, ns

Ls., aa, abund Sh., gy-brn, soft

Ls., crm, fnxln, fri/soft, vy chlky, dns, ns

Ls., crm-tn, fnxln, mod hd, chlky, foss, dns, ns, scatt sh., gy

Ls., crm-tn-lt gy, mottld brn ip, fnxln, mod fri/soft, sli chlky, ool ip, gy ooids, dns, ns, abund Sh., gy-brn

Ls., aa, Sh., gy-blk

Ls., crm-lt gy, vfnxln, hd, dns, ns

Ls., crm-tn, fnxln, sli fri, ool ip, chlky ip, rare pr introol & ppt por, ns, scatt Sh., brn

Ls., crm-lt gy, fnxln, mod hd, dns, ns

Ls., aa, scatt sh., brn-gy

Sh., blk, carb

Sh., gy-brn-blk, Ls., crm-tn, fnxln, sli fri, chlky ip, rare pr intrxln & small vug por, one pc w ? it brn stn in nor NSFO no ctr

DST #1 3951-3998
30-30-30-30
IF: BOB in 2 min
IS: No blow
FF: BOB in 3 min
FS: No blow

Recovery:
350' WCM (30%W, 70%M)
248' MCW (80%W, 20%M)
806' MCW (95%W, 5%M)

Flow Pressures:
144-676; 428-661
Shut in Pressures:
1057-1036
Hydrostatic:
1974-1916

BHT: 112 Deg F
Gravity API: -
Chlor: 63000

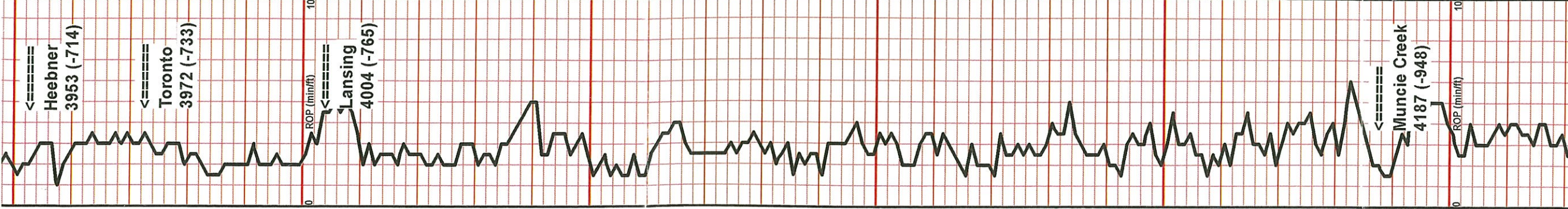
DST #2 3995-4035
15-30-15-30
IF: BOB in 2 min
IS: No blow
FF: BOB in 3 min
FS: No blow

Recovery:
201' MCW (40%W, 60%M)
186' MCW (90%W, 10%M)
496' SW (100%W)

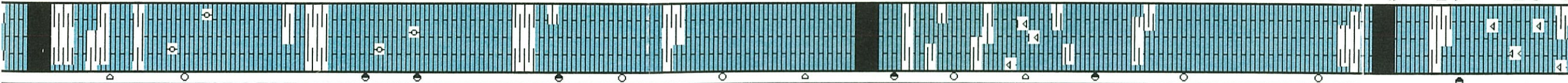
Flow Pressures:
88-274; 289-420
Shut in Pressures:
1056-1051
Hydrostatic:
1985-1915

BHT: 111 Deg F
Gravity API: -
Chlor: 40000

DST #3 4032-4062
30-30-30-30
IF: WSB, died after 15 min
IS: No blow
FF: No blow
FS: No blow

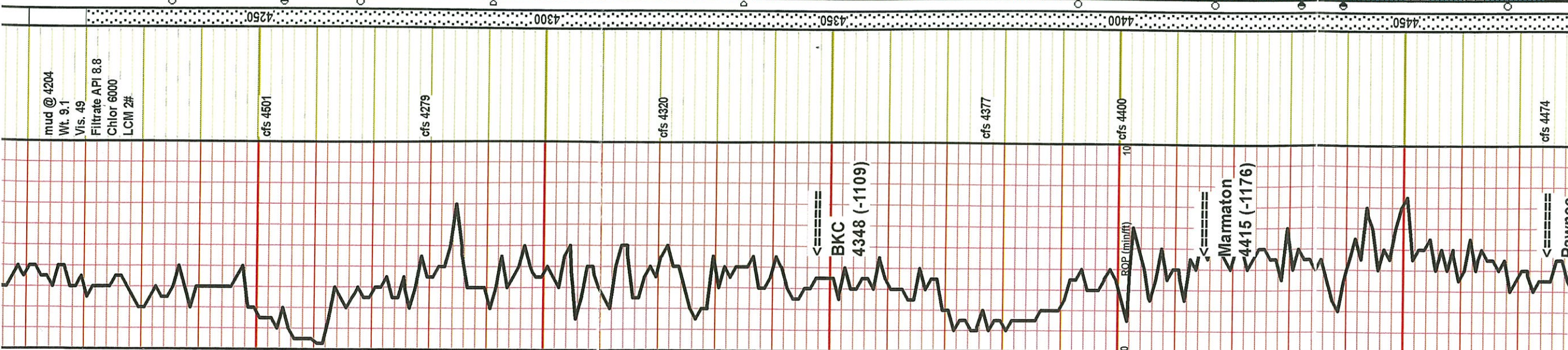


Pipe Strip: 4.15' long, no correction	efs 3998	Mud @ 4000 Wt. 8.8 Vis. 54 Filtrate API 8.0 Chlor 6000 LCM 2#	efs 4035	efs 4062	Mud @ 4062 Wt. 8.7 Vis. 57 Filtrate API 8.0 Chlor 6100 LCM 2#	efs 4098	efs 4116	mud @ 4116 Wt. 9.0 Vis. 66 Filtrate API 9.6 Chlor 7400 LCM 2#	efs 4143 efs 4146	efs 4204	mud @ 4204 Wt. 9.1 Vis. 49
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Sh., blk, carb	Sh., gy-brn, blk, Ls., erm-tn, fnxln, sli fri, chiky ip, rare pr intrxln & small vug por, one pc w ? lt brn stn in por, NSFO, no odr	DST #3 4032-4062 30-30-30-30 IF: WSB, died after 15 min IS: No blow FF: No blow FS: No blow
Ls., erm-tn, fnxln, sli fri, ool ip, chiky ip, fr introol & small vug por ip, brn edge stn & in por, SSFO, no odr, dull fluoro	Ls., erm, fnxln, sli fri, vy chiky, few pcs w pr-fr intrxln por, ns, scatt chrt, erm, ns	Recovery: 10' Mud
Sh., gy-brn	Ls., erm-tn, fnxln, mod hd/some fri, ool ip, fr-gd introol & occ fr vug por, FSFO, fr bleed, blk stn, wk odr in cup	Flow Pressures: 15-21; 22-29 Shut in Pressures: 1082-1074 Hydrostatic: 1977-1966
Ls., erm-tn, fnxln-vfxln ip, mod hd, few pcs w pr-fr vug por, SSFO, dk brn stn, no odr, Scatt sh., gy	Sh., gy-brn, soft, fiss ip	BHT: 101 Deg F Gravity API:-- Chlor:--
Ls., tm, fnxln, mod hd, fr intrxln & scatt pr vug por, FSFO, lt brn-brn stn, vy wk odr	Ls., aa, incr amt pr-fr vug por, some intrxln & ppt por, S-FSFO, dk brn-blk stn, mayb sli odr?	DST 4 4064-4088 30-30-30-30 IF: SB, built to 1 1/4" IS: No blow FF: SB, built to 1" FS: No blow
Sh., gy-brn, soft, fiss, soft	Ls., erm-tn, fnxln, mod hd, chiky ip, tr frac, pyr, most dns, scatt pes w pr vug & intrxln por, some sec xln in vugs, SSFO, dk brn stn in por & on edge, no odr	Recovery: 70' mud
Ls., aa, more dns, deer shows, aa, few pcs w sub sat brn stn, NSFO, fr strm yel cut, no odr	Sh., blk, carb	Flow Pressures: 19-33; 35-49 Shut in Pressures: 1103-1065 Hydrostatic: 2018-1928
Ls., erm, fnxln, mod hd, vy chiky ip, sli dol ip, some dns, rest w fr-gd intrxln & pr-fr sm vug por, FSFO, brn stn, some sub sat stn, fr odr, scatt sh., brn-grn-gy	Ls., erm-tn, fn-vfxln, mod hd-hd, more dns, sli deer shows, aa	BHT: 100 Deg F Gravity API:-- Chlor:--
Ls., erm-tn, fn-vfxln, mod hd-hd, chiky ip, most dns, three pcs chiky w pr vug por, VSSFO, blk stn, wk odr in cup, scatt chrt, erm, shp, scatt sh, gy-brn	Ls., erm, fnxln, mod hd-sli fri, fr-gd vug & fr intrxln por, FSFO, brn-blk stn, fr odr	DST #5 4094-4116 30-30-30-30 IF: SB, died in 5 min IS: No blow FF: No blow FS: No blow
Ls., erm-tn, vfn-vfxln, dol ip w suer tex, dns, ns, scatt sh., gy, fiss	Ls., erm, sli fri-mod hd ip, fnxln, chiky ip, most dns, few pcs w fr intrxln & vug por, SSFO, blk stn, wk odr	Recovery: 5' mud
Ls., erm, fnxln, mod hd, chiky ip, dns, scatt chrt, erm, shp, ns	Ls., erm-tn-it gy, fnxln, mod hd, chiky ip, ool ip, some pcs w fr introol por, SSFO, brn stn, wk odr, abund chrt., erm-oppq, shp, scatt sh., gy-brn	Flow Pressures: 15-18; 18-22 Shut in Pressures: 1105-1089 Hydrostatic: 2036-2031
Sh., blk, carb	Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	BHT: 100 Deg F Gravity API:-- Chlor:--
Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	Ls., erm-tn, fnxln, mod hd-hd, chiky ip, dns, scatt chrt, erm-oppq, shp, ns	DST #6 4094-4146 15-30-15-30 IF: BOB in 2 min IS: No blow FF: BOB in 3 min FS: No blow
Ls., erm, fnxln, mod hd, chiky ip, dns, scatt chrt, erm, shp, ns	Ls., erm, sli fri-mod hd ip, fnxln, chiky ip, most dns, few pcs w fr intrxln & vug por, SSFO, blk stn, wk odr	Recovery: 345' WCM w oil spots (30%W, 70%M) 310' MCW (60%W, 40%M) 372' MCW (90%W, 10%M)
Ls., erm, fnxln, mod hd, chiky ip, dns, scatt chrt, erm, shp, ns	Ls., erm, fnxln, mod hd, chiky ip, dns, scatt chrt, erm, shp, ns	Flow Pressures: 119-304; 322-486 Shut in Pressures: 1133-1120 Hydrostatic: 2069-1966
Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	BHT: 113 Deg F Gravity API:-- Chlor: 30000
Ls., erm-tn, fnxln, mod hd-hd, chiky ip, dns, scatt chrt, erm-oppq, shp, ns	Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	DST #7 4152-4204 30-30-30-30 IF: BOB in 15 min IS: No blow FF: BOB in 25 min FS: No blow
Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	Ls., erm, fnxln, mod hd, most dns, few pcs w fr-gd vug por, FSFO, brn-blk stn, wk odr, scatt sh., gy-brn	Recovery:

Sh. mud fiss in l e aa ns



Ls., crm-tn, fmxln, mod hd-hd, chiky ip, dns, scatt chrt, crm-opq, shp, ns
 Sh., gy-rd, fiss ip, Ls., aa, ns
 Sh., blk, carb
 Ls., tn-erm, fn-vfxln ip, mod hd-hd, dns, few pcs w pr intrxin & vug por, SSFO, blk oil, blk stn, vy wk odr, scatt sh., gy
 Ls., tn-erm, fmxln, mod hd-hd, dns, abund chrt., crm, shp, ns, abund sh., gy-brn
 Ls., crm-tn, fmxln, sli fri-mod hd, ool ip, few pcs w fr introol & vug por, FSFO, it brn lively? oil, it brn stn, fr odr
 Ls., tn, fmxln, sli fri-fri, ool, gd ooc por, ns
 Ls., crm-tn, fmxln, mod hd-hd, most dns, few pcs w pr intrxin por, SSFO, blk stn, poss wk odr
 Sh., blk, carb
 Ls., crm-tn, fn-vfxln ip, mod hd, chiky ip, dns, ns, scatt sh, gy
 Ls., aa, two pcs w pr vug por, fr dev sec xln in vugs, tarry blk stn, VSSFO, no odr
 Ls., crm-tn-brn, vfxln, mod hd, chik ip, ool ip, dns, ns
 Sh., blk, carb
 Ls., crm-t gy, fn-vfxln, hd, dns, ns, scatt sh., gy, soft
 Ls., aa, onr pc w fr intrxin & vug por, SSFO, brn stn, two pcs w pr intrxin por, brn stn, NSFO, no odr in cup, scatt sh., gy-soft
 Sh., gy-blk sli carb
 Ls., tn-erm, fmxln, hd, ool ip, dns, ns
 Ls., crm-tn, fmxln, sli fri-mod hd, vy chiky, some frac, dns, ns
 Ls., crm-t gy, fmxln, mod hd, ool ip, gy ooids, dns, ns, scatt sh., gy-brn, silty ip
 Ls., crm-tn, fmxln, sli fri, few pcs w pr-fr intrxin por, SSFO, it brn stn, wk odr, scatt sh., gy-brn
 Sh., gy-brn-blk, soft
 Ls., crm-tn, fmxln, hd, chiky ip, most dns, couple pcs w pr intrxin por, VSSFO, it brn stn, no odr, abund sh., aa
 Sh., brn-gy, vy soft
 Ls., crm-tn, fmxln, mod hd-sli fri ip, chiky ip, ool ip, fr intrxin & vug & fr-gd introol por, SSFO, it brn stn, some edge stn, no odr, brt yel fluoro, gd strm cut
 Ls., crm, fmxln, mod hd, chiky ip, most dns, few pcs w pr intrxin por, SSFO, it brn stn, no odr
 Sh., blk, carb

IF: BOB in 15 min
 IS: No blow
 FF: BOB in 25 min
 FS: No blow
 Recovery:
 144' Mud
 124' WCM w oil spots (30%W, 70%M)
 124' WCM w oil spots (40%W, 60%M)
 Flow Pressures:
 28-132; 135-196
 Shut in Pressures:
 1183-1178
 Hydrostatic:
 2061-2002
 BHT:--
 Gravity API:--
 Chlor: 32000
 DST #8 4221-4279
 15-30-15-30
 IF: BOB in 1 1/2 min
 IS: No blow
 FF: BOB in 2 min
 FS: No blow
 Recovery:
 217' WCM (20%W, 80%M)
 248' MCW (80%W, 20%M)
 465' Water w show of oil
 Flow Pressures:
 175-409; 379-521
 Shut in Pressures:
 1188-1188
 Hydrostatic:
 2180-2020
 BHT: 117 Deg F
 Gravity API:--
 Chlor: 28000
 DST #9 4272-4400
 15-30-30-30
 IF: BOB in 6 min
 IS: No blow
 FF: BOB in 8 min
 FS: No blow
 Recovery:
 164' Mud
 186' WCM (10%W, 90%M)
 186' WCM (30%W, 70%M)
 124' WCM (40%W, 60%M)
 Flow Pressures:
 43-186; 177-349
 Shut in Pressures:
 1238-1222
 Hydrostatic:
 2232-2110
 BHT: 115 Deg F
 Gravity API:--
 Chlor: 36000
 DST #10 4394-4474
 30-30-30-30
 IF: BOB in 1 1/2 min
 IS: BOB in 6 min
 FF: BOB in 2 min
 FS: BOB in 8 min
 Recovery:
 1116' GIP
 1860' GO (15%G, 85%O)
 124' GOCM (20%G, 30%O, 50%M)
 62' MCGO (50%G, 10%O, 40%M)
 Flow Pressures:
 225-555; 555-776
 Shut in Pressures:
 1248-1262
 Hydrostatic:
 2254-2135
 BHT: 119 Deg F
 Gravity API: 33
 Chlor:--

226-566; 565-776

Shut in Pressures:
1248-1262

Hydrostatic:
2264-2135

BHT: 119 Deg F

Gravity API: 33

Chlor:-

DST #11 4467-4686

30-30-30-30

IF: 1/4" blow, died in 8 min

IS: No blow

FF: No blow

FS: No blow

Recovery: 10' Mud

Flow Pressures:
25-31; 32-35

Shut in Pressures:
336-338

Hydrostatic:
2265-2230

BHT:-

Gravity API:-

Chlor:-

Ls., crm-tn-ht gy, vfnxln, hd, chky ip, dns, scatt chrt., gy-smokey, ns, scatt sh., gy-brn-rd

Ls., crm, fnxln, mod hd, chky ip, most dns, few pcs w pr intrxn por, SSFO, lt brn stn, no odr

Sh., blk, carb

Sh., gy-rd, Ls., crm-tn, fn-vfnxln, hd, ool ip, some w pr intrxn & fr introol por, SSFO, lt brn stn, no odr

Ls., aa, pr intrxn por, VSSFO, lt brn stn, no odr, scatt sh., gy-blk

Ls., crm-lt gy, fnxln, hd, dns, ns

Sh., gy-blk, carb ip

Ls., crm-lt gy, fnxln, hd, chky ip, ool, dns, ns, scatt sh., gy

Sh., blk, carb

Ls., crm-tn, fnxln, mod hd, ool ip, chky ip, dns, ns

Ls., tn-brn, fnxln, hd, ool ip, one pc w pr introol por, VSSFO, lt brn stn, no odr, abund chrt, crm-tn, mottld, foss, shp

Sh., blk, carb

Ls., crm-tn-brn, vfn-fnxln, hd, dns, ns, abund sh., gy-dk gy

Ls., & Sh., aa

Ls., crm-tn-ht gy, vfn-fnxln, ool ip, chky, dns, ns, abund sh., gy

Ls., crm-lt gy, fn-vfnxln, hd, chky ip, dns, ns, abund sh., gy-brn

Ls., aa, some vy soft chlk, Sh., gy, fss

Ls., crm-tn, vfnxln, hd, dns, two pcs w poss edge stn, scatt chrt, tn, ool, shp

Ls., aa, ns, scatt sh., gy-brn

Ls., crm-tn, fnxln, mod hd-hd, dns, scatt chrt, tn, ool, shp, ns

Ls., aa, scatt sh., gy-grn-brn

Sh., gy-blk, carb ip

Ls., crm-tn-gy, vfnxln, hd, dns, ns, scatt chrt, gy, foss, abund Sh., gy-dk gy

Sh., gy-grn-vel, soft, Ls., crm-lt gy, fnxln, hd, dns, abund chrt., blk-smokey, foss, ns



4450 4500 4550 4600 4650 4700



efs 4474

mud @ 4474
Wt. 9.2
Vis. 52
Filtrate API 8.2
Chlor 6800
LCM 2#

Mud @ 4611
Wt. 8.9
Vis. 54
Filtrate API 8.8
Chlor 7100
LCM 2#

efs 4686

<=====

Pawnee
4475 (-1236)

<=====

Fort Scott
4521 (-1282)

<=====

Cher. Sh.
4536 (-1297)

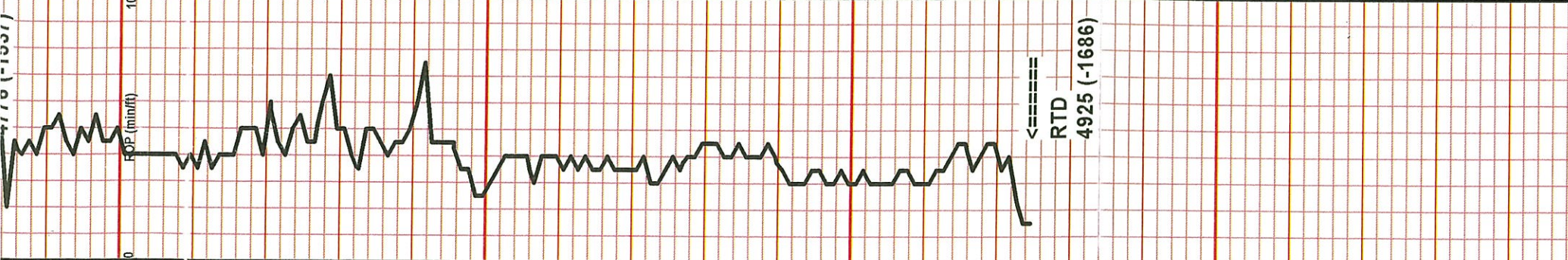
<=====

Johnson
4622 (-1383)

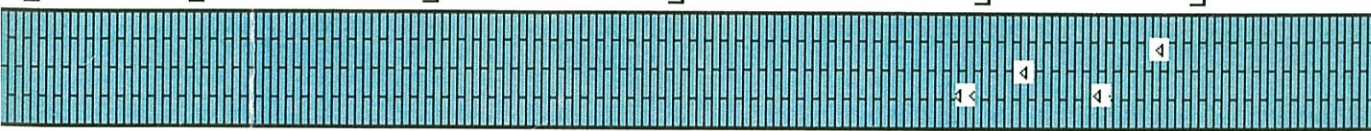
<=====

Morrow Sh
4675 (-1436)

REP (min/ft) 0 10



Marginal sample quality 4780-TD due to Mtw sh/sd stuff	4800
mud @ 4816'	
Wt. 9.1	
Vis. 57	
Filtrate API 9.6	
Chlor 8100	
LCM 2#	
Marginal Sample Quality, aa	4900
	4950
	00



Ls., tn-brn, fmxln, hd, chiky ip, pry, dns, ns
 Ls., aa, ns
 Ls., crm-tn, fmxln, mod hd, chiky, dns, ns
 Ls., aa, ns
 Ls., aa, scatt chrt., tn, shp, ns
 Ls., crm, fmxln, sli fri, chiky dns, ns