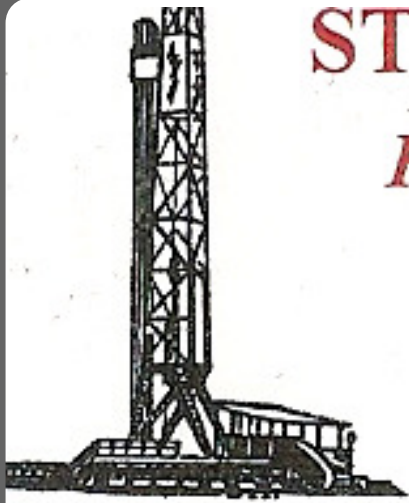


STEVEN P. MURPHY, P.G.

Petroleum Geologist (KS #228)



Cell 620.639.3030

Fax 785.387.2400

RR#1, Box 69

Otis, Kansas 67565

geomurphy@gbta.net

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

Well Name: Knopp #6

Location: Logan County

License Number: API # 15-109-211179-00-00

Spud Date: 5/18/13

Surface Coordinates: 2590' FSL & 335' FWL (NE NW SW NW)
Section 13-T14S-R32W

Bottom Hole Coordinates: Vertical well w/minimal deviation

Ground Elevation (ft): 2793'

K.B. Elevation (ft): 2803'

Logged Interval (ft): 3600'

To: TD

Total Depth (ft): RTD - 4520'

Formation: Topeka through Mississippian

Type of Drilling Fluid: Chemical (Mudco, Inc)

Region: Kansas

Drilling Completed: 5/30/13

Printed by STRIP.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Pioneer Resources

Address: 80 Windmill Drive
Phillipsburg, KS 67661-9622

GEOLOGIST

Name: Steven P. Murphy, PG (Ks License #339)

Company: Consulting Petroleum Geologist

Address: 3365 CR 390
Otis, KS 67565

LogTops (Datum)

The open-hole logging was performed by Nabors (Hays, KS shop). Logs included Compensated Neutron/Compensated Density and Dual Induction.

Formation tops and datums from the open-hole logs include the following:

Anhydrite Top - 2222 (+581)
Anhydrite Base - 2280 (+523)
Heebner - 3781 (-978)
Toronto - 3800 (-997)
Lansing - 3818 (-1015)
Muncie Creek Sh - 3978 (-1175)
Stark Sh - 4069 (-1266)
Hushpuckney Sh - 4103 (-1300)
Base KC - 4150 (-1347)
Pawnee 4278 (-1475)
Myrick Station - 4318 (-1515)
Ft. Scott - 4335 (-1532)
Cherokee Sh - 4363 (-1560)
Johnson Zone - 4403 (-1600)
Morrow Sh - 4438 (-1635)
Mississippian - 4464 (-1661)

DSTs

Drillstem testing was performed by Trilobite Testing (Scott City shop). The following are the results of DSTs:

DST #1 3972-4040 (LKC "H-I")

30:30:30:30

IF: Wk blow died, flushed, no blow
(Pipe plugged with dirt clod)

FF: No blow, no return

Recovery: 10' Mud w/few oil spots

IHP: 1924 FHP: 1903

IFP: 17-24 ISIP: 714

FFP: 24-26 FSIP: 634

BHT - 111 F

DST #2 4242-4300 (Marmaton & Pawnee)

Misrun, packer failure

DST #3 4252-4300 (Marmaton & Pawnee)

30:30:30:30

IF: Blow built to 1/4", no return

FF: Wk surface blow, no return

Recovery: 8' Mud w/few oil spots

IHP: 2162 FHP: 1925

IFP: 18-21 ISIP: 543

FFP: 21-23 FSIP: 355

BHT - 112 F

DST #4 4310-4336 (Myrick Station)

30:30:30:30

IF: Wk surface blow, no return

FF: No blow, no return

Recovery: 5' Mud w/few oil spots

IHP: 2173 FHP: 2023

IFP: 10-12 ISIP: 23

FFP: 12-14 FSIP: 20

BHT - 110 F

DST #5 4418-4448 (Johnson)

45:45:45:60

IF: Blow built to 4 1/2", no return

FF: Blow built to 3", no return

Recovery: 2' Oil, 129 OMCW (2%O,
75% W, 33% M)

IHP: 2242 FHP: 2016

IFP: 14-48 ISIP: 747

FFP: 51-73 FSIP: 746

BHT - 117 F

Chlorides - 50,000 ppm


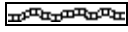
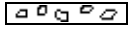
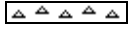
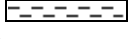
COMMENTS






Based the negative results of drillstem tests, and sample & log analysis, it was recommended that this test be plugged at a RTD of 4520'.



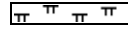

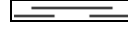
Respectfully submitted,

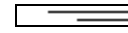
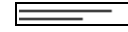



Steven P. Murphy, PG (KS License #228)
Consulting Petroleum Geologist

ROCK TYPES




-  Anhy
-  Bent
-  Brec
-  Cht
-  Clyst

-  Coal
-  Congl
-  Dol
-  Gyp
-  Igne

-  Lmst
-  Meta
-  Mrlst
-  Salt
-  Shale

-  Shcol
-  Shgy
-  Sltst
-  Ss
-  Till

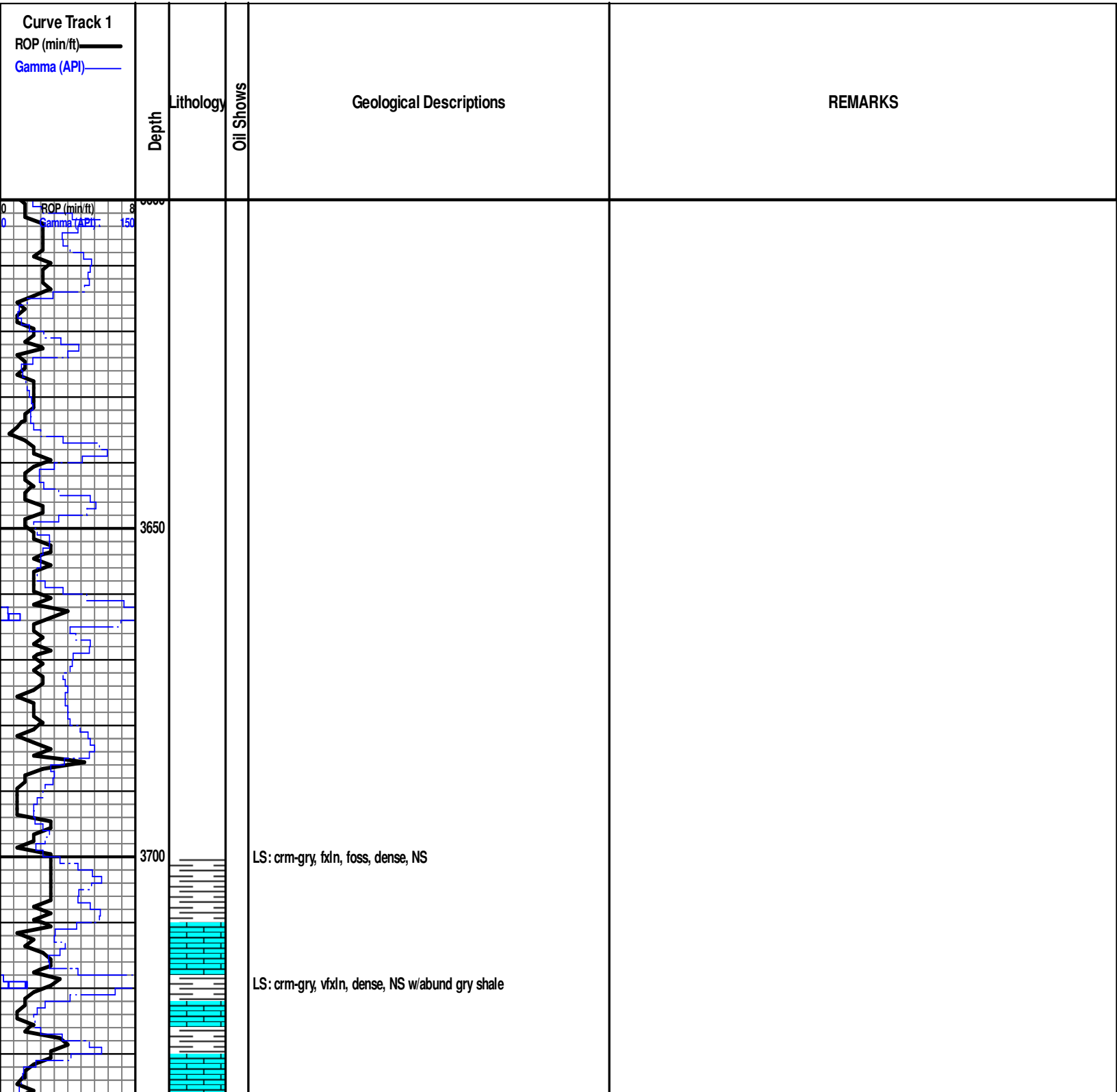
OTHER SYMBOLS

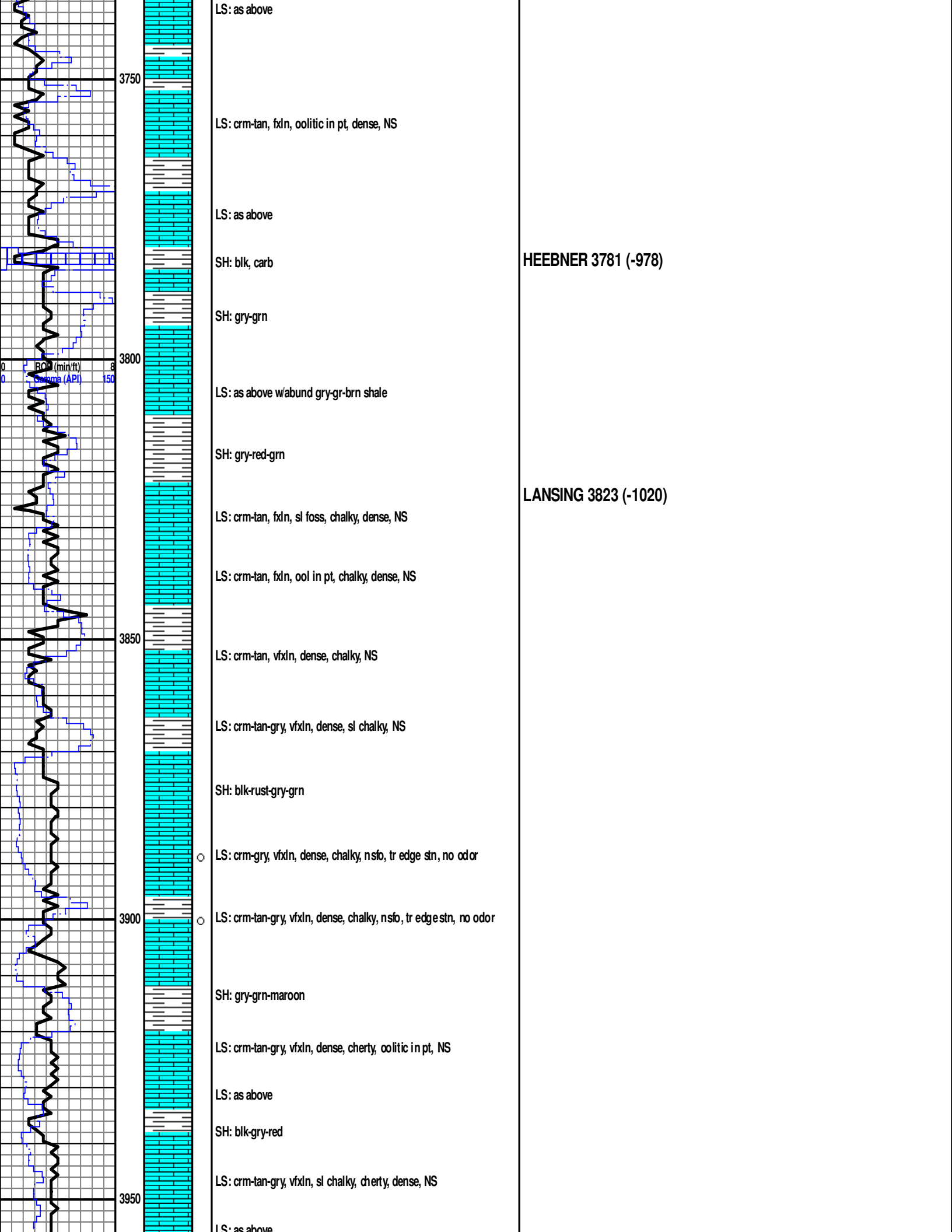
- OIL SHOW**
-  Even
 -  Spotted
 -  Ques

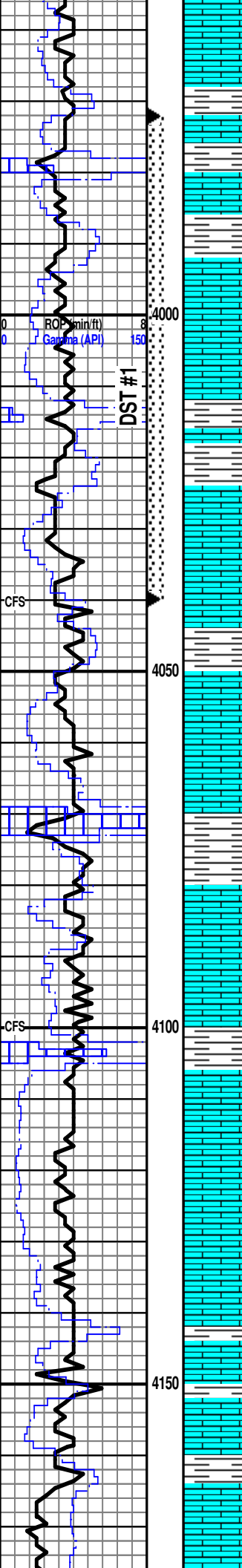
-  Dead
-  Gas

- INTERVAL**
-  Core
 -  Dst

- EVENT**
-  Conn
 -  Rft
 -  Sidewall







LS: as above

LS: as above

SH: blk, carb

SH: gry-grn-red-blk

LS: crm-tan-gry, vfxln, dense, NS

① LS: crm-tan-gry, fxl n, oolic in pt, pr inxln & ppt por, ssfo, spotty stn, fr odor

● LS: as above, sl foss

SH: gry-grn-blk-rust

① LS: wht-tan-gry, fxl n, ool in pt, pr-fr ppt por, ssfo, spotty st, str odor

SH: blk-gry-grn-red

LS: crm-gry, vfxln, dense, NS

LS: as above

SH: blk, carb-gry-grn

○ LS: crm-gry, fxl n, dense, vssfo, pr ppt por, rare stn, fr odor

LS: crm-gry, vfxln, dense, nsfo/stn, sl odor

SH: blk-gry-grn

LS: tan-brn-gry, vfxln, dense, NS

LS: as above

LS: as above w/abund gry-red shale

SH: blk-gry-maroon

LS: crm-gry, vfxln, dense, NS w/shale as above

SH: gry-blk-red

SH: as above

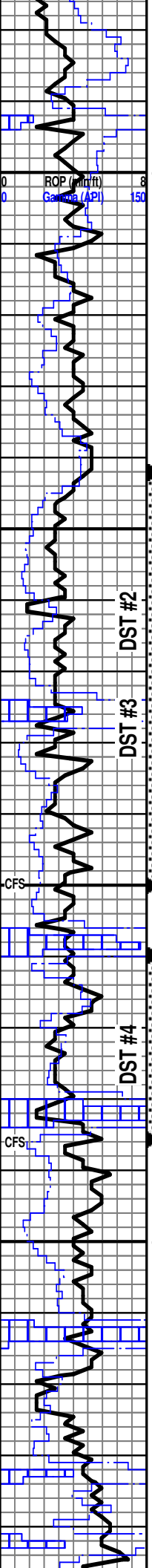
MUNCIE CRK 3978 (-1175)

DST #1 3972-4040 (LKC "H-I")
 30:30:30:30
 IF: Wk blow died, flushed, no blow
 (Pipe plugged with dirt clod)
 FF: No blow, no return
 Recovery: 10' Mud w/few oil spots
 IHP: 1924 FHP: 1903
 IFP: 17-24 ISIP: 714
 FFP: 24-26 FSIP: 634
 BHT - 111 F

Strap @ 4040' - 1.58' short
 Survey @ 4040' - 1/2 degree

STARK 4071 (-1268)

BKC 4148 (-1345)



SN: as above

LS: crm-tan-gry, vfxln, dense, cherty, NS w/shale as above

LS: wht-brn-gry, vfxln, sl foss, sl chalky, dense, NW

SH: gry-red-brn-grn

LS: crm-brn-gry, vfxln, sl oolitic, dense, NS

LS: crm-gry, vfxln, foss, dense, NS

SH: gry-blk-red

LS: crm-tan-gry, fxl, oolitic in pt, pr-fr inxln por, ssfo, spotty str, sl odor

LS: as above, tight w/red-grn shale

SH: maroon-gry-blk

LS: crm-gry, fxl, oolitic in pt, pr-fr vug & inter-ool por, ssfo, spotty-even str, sl odor

SH: blk, carb

LS: crm-tan, fxl, pr-fr ppt por, fsfo, even sat str, gd odor

LS: crm-tan-gry, vfxln, dense, minor chert, NS

SH: blk, carb

SH: gry-blk-grn-rust

LS: crm-tan-brn, fxl, ool, fr-gd ppt & vug por, fsfo, even sat str, fr odor

SH: blk, carb

LS: crm-brn-gry, vfxln, oolitic in pt, dense, minor chert, NS

LS: as above

SH: blk, carb

LS: crm-tan, fxl, oolitic in pt, pr-fr inxln & vug por, ssfo, spotty str, fr odor

LS: crm-tan-gry, vfxln, dense, rare sfo/str, sl odor

SH: blk, carb

DST #2 4242-4300 (Marmaton & Pawnee)
Misrun, packer failure

DST #3 4252-4300 (Marmaton & Pawnee)
30:30:30
IF: Blow built to 1/4", no return
FF: Wk surface blow, no return
Recovery: 8' Mud w/few oil spots
IHP: 2162 FHP: 1925
FFP: 18-21 ISIP: 543
FFP: 21-23 FSIP: 355
BHT - 112 F

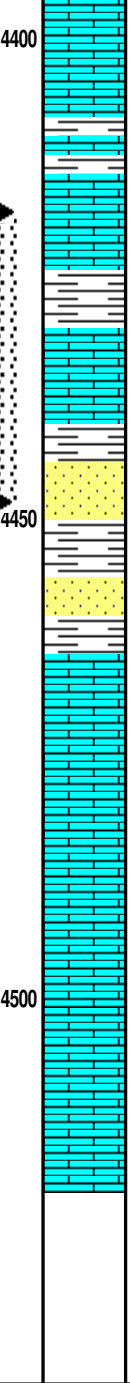
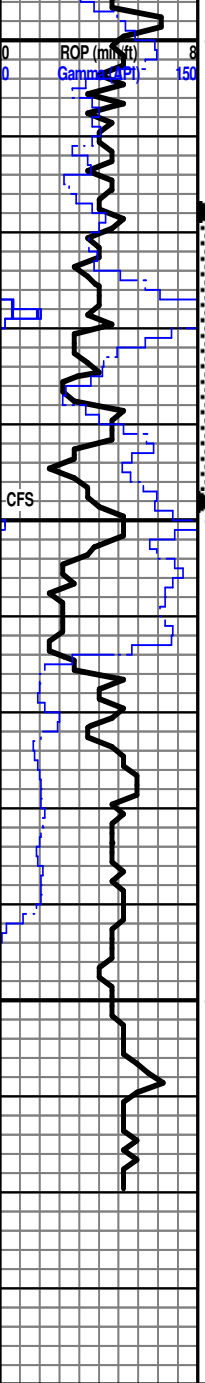
PAWNEE 4291 (-1488)

DST #4 4310-4336 (Myrick Station)
30:30:30
IF: Wk surface blow, no return
FF: No blow, no return
Recovery: 5' Mud w/few oil spots
IHP: 2173 FHP: 2023
FFP: 10-12 ISIP: 23
FFP: 12-14 FSIP: 20
BHT - 110 F

**MYRICK STATION
4330 (-1527)**

**FT SCOTT
4344 (-1541)**

**CHEROKEE
4369 (-1566)**



SH: blk

LS & SH: as above

SH: gry-blk-rust

LS: crm-brn-gry, fxl'n, pr-fr ppt & vug por, fsfo, spotty stn, str odor

SH: gry-grn-blk

LS: as above w/incr in por & show

SH: gry-grn-blk

Sst: clr, med-gr, sub-ang, prly std, friable, gsfo, str odor

Sst: grn-clr, f-gr w/abund grn shale & chert, NS (60 min)

SH: grn-yel-blk-gry

SH: as above

Sst: clr, f-mgr, prly std, sub-rd, firm to friable, white calcite cement, shaley, NS

LS: wht-tan, fxl'n, sandy-pelletal, tight, NS

LS: as above w/abund blk shale

LS: crm-tan, vfx'n, dense, cherty, sl chalky, NS

LS: as above

LS: crm-tan, vfx'n, dense, minor chert, sl chalky, NS

RTD - 4520'

LTD - 4520'

JOHNSON ZONE
4413 (-1610)

DST #5 4418-4448 (Johnson)
45:45:560
IF: Blow built to 4 1/2", no return
FF: Blow built to 3", no return
Recovery: 2' Oil, 129 OMCW (2%O, 75% W, 33% M)
IHP: 2242 FHP: 2016
IFP: 14-48 ISIP: 747
FFP: 51-73 FSIP: 746
BHT - 117 F
Chlorides - 50,000 ppm

MISSISSIPPIAN
4466 (-1663)