

# LITHOLOGY STRIP LOG

## WellSight Systems

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

Well Name: Kroutwurst #20  
Location: 380' FSL & 675' FWL, Sec. 34-T16S-R11W, Barton County, KS.  
Licence Number: 15-009-26137-00-00 Region: Kraft-Prusa Field  
Spud Date: 2/29/2016 Drilling Completed: 3/5/2016  
Surface Coordinates: 380' FSL & 675' FWL, Sec. 34-T16S-R11W

Bottom Hole Same as above  
Coordinates:  
Ground Elevation (ft): 1925' K.B. Elevation (ft): 1936'  
Logged Interval (ft): 2600' To: 3380' Total Depth (ft): 3380'  
Formation: Arbuckle at Total Depth  
Type of Drilling Fluid: Freshwater/Gel to 2544'; Chemical Gel 2544' to 3380'

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

### OPERATOR

Company: Herman L. Loeb, LLC.  
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### GEOLOGIST

Name: Jon D. Christensen  
Company: Consulting Petroleum Geologist  
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### Cores

None Taken

### DSTs

DST #1(Toronto) 2984' - 3014'(Corrected Depths to Log) Test Times 15"-45"-30"-60" IFP Weak blow built to 1.25", FFP Weak Blow built to 1.75", no Blowback on SI's; REC: 10' Oil Specked Mud, no water; IFP 11-20#, ISIP 339#, FFP 20-39#, FSIP 156#, IHP 1426#, FHP 1393#, BHT 97 Deg. F.

DST #2(Arbuckle) 3358' - 3380'(Corrected Depths to Log) Test Times 15"-45"-15"-45" IFP Strong Blow BOB/30 Sec., 3.5" Blowback on ISI, FFP Strong Blow BOB/30 Sec., BOB Blowback in 5 Min. of FSI; Total of 25 BBL. of oil Reversed into Water truck, 44 Deg. API oil; REC: 252' Gas in Pipe, 2268' CGO(35%G, 65%O), 315' MSW(5%M, 95%W)CI 24,000; IFP 469-763#, ISIP 1058#, FFP 807-967#, FSIP 1058#, IHP 1664#, FHP 1587#, BHT 109 Deg. F.

## Comments

2/29/16 MIRU Sterling Drilling Co. Rig #4, Spud at 11:00 PM; 3/1/16 Drilling at 385'; 3/2/16 Bit Trip at 856'; 3/3/16 TD. 2640' - Rig Repairs; 3/4/16 TD. 3010' - DST #1; 3/5/16 TD. 3380' - TOH for DST #2; 3/6/16 RTD. 3380', LTD. 3377', LDDP in preparation for setting 5 1/2" Production Casing.

Set new 8 5/8"(23#) Surface Casing at 771' with 345 sacks of cement(Basic Energy Services). PD. at 7:00 PM. on 3/1/16. Cement did circulate to cellar.

Set new 5 1/2"(15.5#) Production Casing at 3371' with 120 sacks of "Loeb Blend" Cement(Basic Energy Services). PD at 3:15 PM. on 3/6/16.

Surveys: 1.0 Deg. at 775'(Surface Casing); 0.75 Deg. at 2895'(Bit Trip); 1.0 Deg. at 3380'(DST #2).

Pipe Strap at 2895'(Bit Trip): Strap 0.26' Short to the Board, no correction made to the Board.


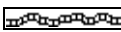
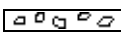
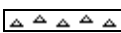
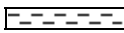







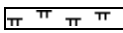
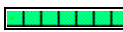
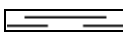
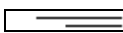
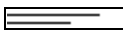



After review of DST #2 in the Arbuckle, Cased Hole Solutions logs and positive indications of commercially recoverable amounts of hydrocarbons, the operator elected to set new 5 1/2"(15.5#) Production Casing for completion in the Arbuckle.

NOTE: First pass on the logs bridged off at 2260'. Trip in hole to wash out bridge, no further problems logging.








































































LOG TOPS: Anhydrite 758(+1178), Base Anhydrite 782(+1154), Topeka 2695(-759), Queen Hill Shale 2901(-965), Heebner Shale 2987(-1051), Toronto 3004(-1068), Douglas Shale 3020(-1084), Brown Lmst. 3088(-1152), Lansing 3101(-1165), Lansing G Porosity 3203(-1267), Kansas City 'J' 3280(-1344), Base Kansas City 3367(-1431), Arbuckle 3370(-1434).

NOTE: This log was shifted downward by 4' for correlation purposes with the Cased Hole Solutions logs.

## ROCK TYPES

 Anhy  Bent  Brec  Cht	 Clyst  Coal  Congl  Dol	 Gyp  Igne  Lmst  Meta	 Mrlst  Salt  Shale  Shcol	 Shgy  Sltst  Ss  Till
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## ACCESSORIES

<b>MINERAL</b>  Anhy  Arggrn  Arg  Bent  Bit  Brecfrag  Calc  Carb  Chtdk  Chtlt  Dol  Feldspar  Ferrpel  Ferr  Glau	 Gyp  Hvymin  Kaol  Marl  Minxl  Nodule  Phos  Pyr  Salt  Sandy  Silt  Sil  Sulphur  Tuff	<b>FOSSIL</b>  Algae  Amph  Belm  Bioclst  Brach  Bryozoa  Cephal  Coral  Crin  Echin  Fish  Foram  Fossil  Gastro  Oolite	 Ostra  Pelec  Pellet  Pisolite  Plant  Strom  <b>STRINGER</b>  Anhy  Arg  Bent  Coal  Dol  Gyp  Ls  Mrst	 Sltstrg  Ssstrg  <b>TEXTURE</b>  Boundst  Chalky  Cryxln  Earthy  Finexln  Grainst  Lithogr  Microxln  Mudst  Packst  Wackest
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OTHER SYMBOLS

- POROSITY**
- [E] Earthy
  - [B] Fenest
  - [F] Fracture
  - [X] Inter
  - [M] Moldic
  - [O] Organic
  - [P] Pinpoint

[V] Vuggy

- SORTING**
- [W] Well
  - [M] Moderate
  - [P] Poor

- ROUNDING**
- [R] Rounded
  - [r] Subrnd
  - [a] Subang
  - [A] Angular

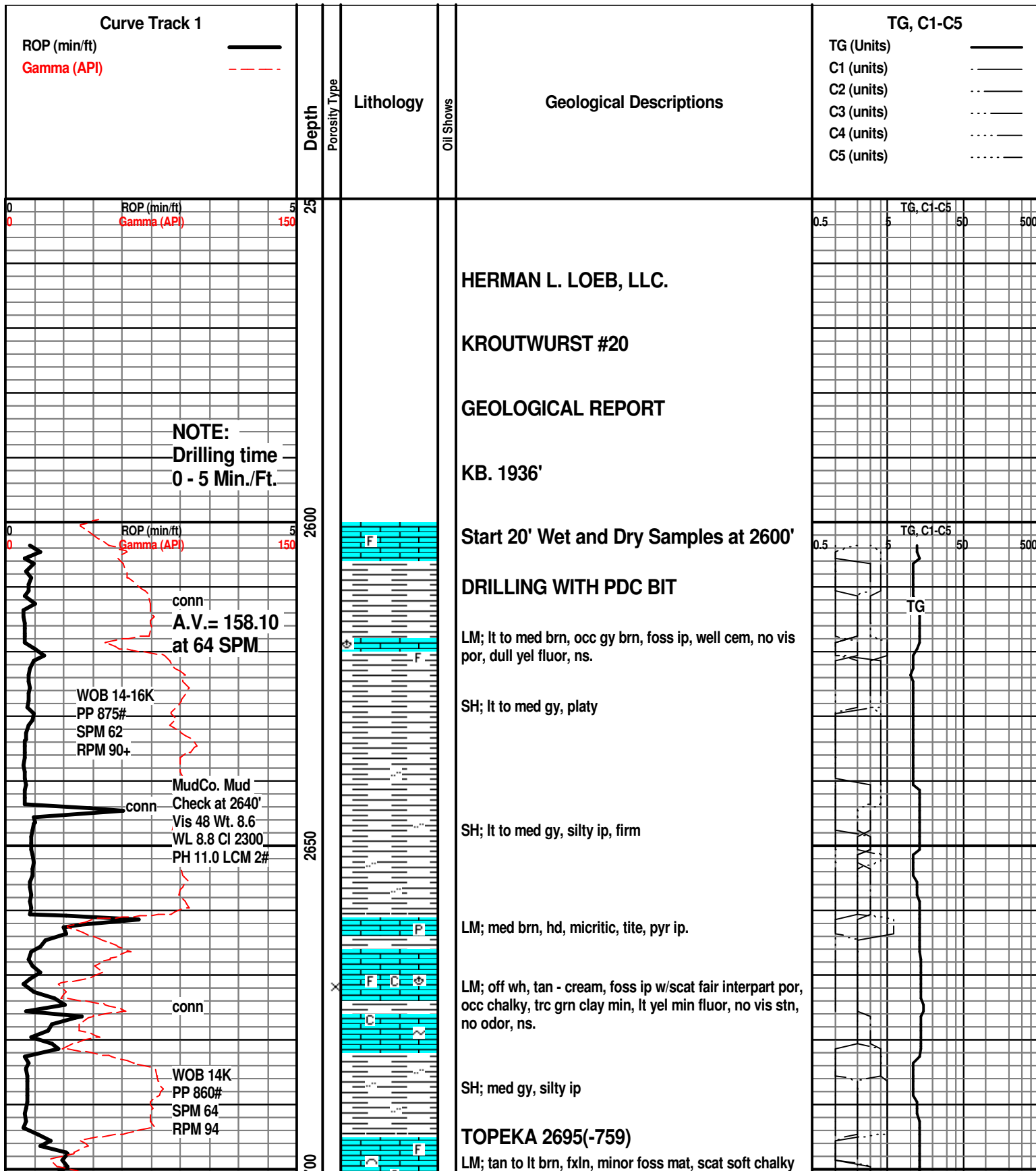
**OIL SHOW**

- [●] Even

- [●] Spotted
- [○] Ques
- [D] Dead

- INTERVAL**
- [■] Core
  - [□] Dst

- EVENT**
- [▽] Rft
  - [▲] Sidewall



NOTE:  
Drilling time  
0 - 5 Min./Ft.

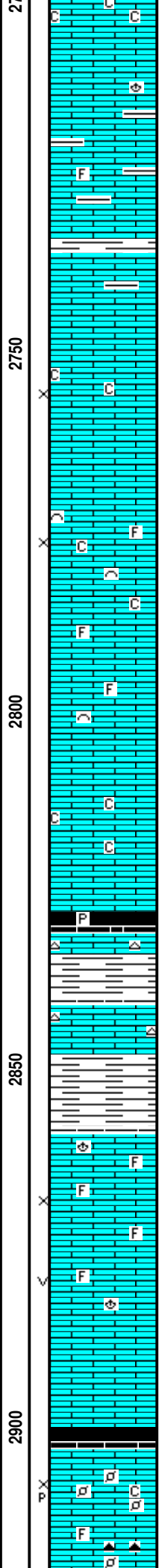
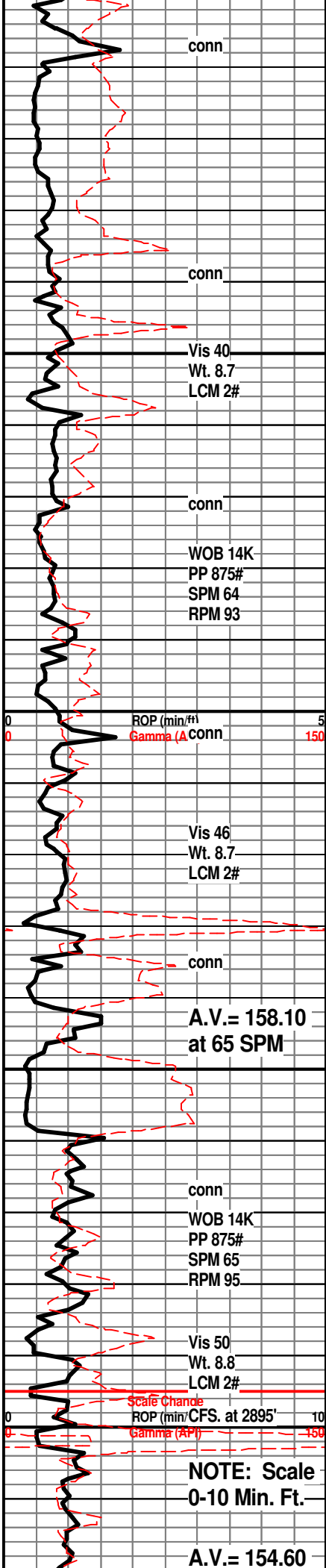
conn  
A.V.= 158.10  
at 64 SPM

WOB 14-16K  
PP 875#  
SPM 62  
RPM 90+

MudCo. Mud  
Check at 2640'  
Vis 48 Wt. 8.6  
WL 8.8 Cl 2300  
PH 11.0 LCM 2#

conn

WOB 14K  
PP 860#  
SPM 64  
RPM 94



mtx, lt yel min fluor, no stn or odor, no gas kick

LM; lt to med gy brn, some argil lmst, foss ip, most well cem, no vis por, ns.

LM; tan to lt brn, most dense, some argil, tite

LM; tan to lt brn, gran text, fair to occ gd interxln por, minor chalky mtx, dull yel fluor, no stn or odor, ns.

LM; off wh, tan, buff, fxln w/occ foss mat(fusulinids), chalky - soft mtx ip, scat poor interpart/interxln por, lt yel min fluor, no stn or odor, ns.

LM; tan to buff, fxln to occ gran text, scat foss mat, most w/no vis por, dull to occ lt yel fluor, ns.

LM; tan to cream, buff, f to med xln, fair to poor vis interxln por, scat soft chalky mtx, lt yel min fluor, no stn or odor, ns.

SH; blk, platy, rarely pyr  
LM; lt gy brn, lt brn, hd, cherty ip, tite

LM; lt to med brn, hd, micritic, scat med gy cht, tite

SH; med to occ dk gy, platy

LM; tan to lt brn, f to occ med xln, scat foss, occ fair interxln/interpart por, no stn or odor, spotty lt yel min fluor, ns.

LM; tan to lt brn, buff, fxln, scat foss mat, rare small vug por, dull yel min fluor, ns.

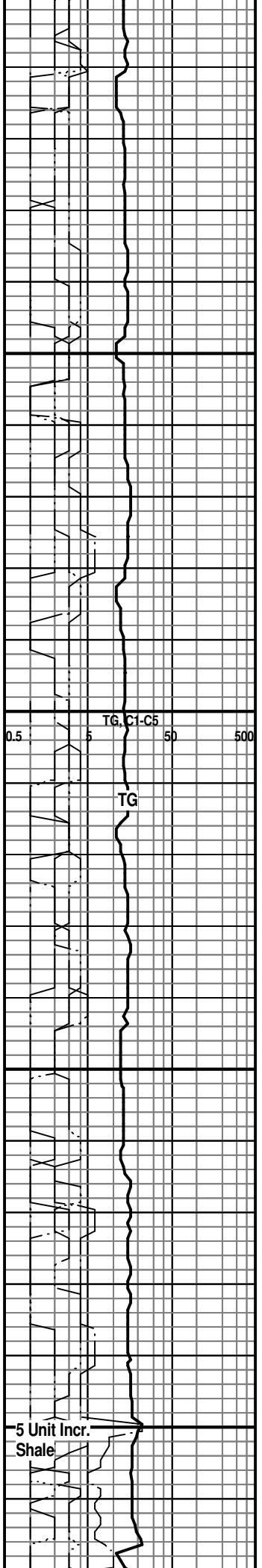
LM; off wh, tan, fxln to micritic, blocky, no vis por, no fluor, ns.

**BIT TRIP AT 2895' - Pull PDC Bit**

SH; blk, carb ip, platy

LM; tan to buff, lt gy brn, gran to finely pelletal, fair interxln w/occ p-p por, v. dull yel fluor, no vis stn, no odor, minor chalky mtx, ns.

LM; tan to lt brn. foss ip. scat fair interpart por. interbdd



NOTE: Scale 0-10 Min. Ft.

A.V.= 154.60

at 55 SPM

conn  
Vis 47  
Wt. 8.8  
LCM 3#

WOB 40K  
PP 785#  
SPM 55  
RPM 67

conn  
Vis 48  
Wt. 8.9  
LCM 3#

A.V.= 154.60  
at 55 SPM

conn **DST #1  
Toronto**

2984' - 3014'  
ROP (min) 10  
Gamma (A) 150  
Corrected

CFS. at 3014'  
MudCo. Mud  
Check at 3014'  
conn Vis 65 Wt. 8.9  
WL 8.0 CI 5200  
PH 11.0 LCM 3#

WOB 40K  
PP 865#  
SPM 55  
RPM 63

conn

Vis 49  
Wt. 9.0+  
LCM 2#

conn  
WOB 40K  
PP 850#  
SPM 55  
RPM 58

conn

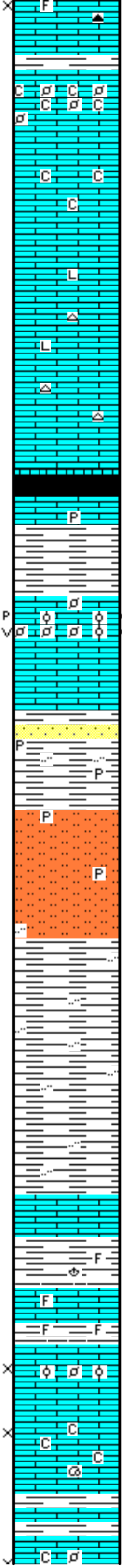
CFS. at 3130'

2950

3000

3050

3100



dk gy/dk brn cht, dull yel fluor, no stn or odor, ns.

LM; tan to buff, off wh, finely pelletal, much soft chalky mtx, lt yel fluor, poor interpart por - most well cem, no stn or odor, ns.

LM; tan/cream, off wh, fxl n, chalky mtx ip, poor to no vis por, spots of blk tar/residual oil, no odor, lt yel fluor, no live show

LM; tan to lt brn, fxl n, most dense - micritic, occ litho, scat spar calc xtals, no fluor, rare tan cht, ns.

**HEEBNER SHALE 2987(-1051)**

SH; blk, carb ip, platy  
LM; med brn, hd, micritic, trc pyr

**TORONTO 3004(-1068)**

LM; tan, cream, foss - finely pelletal to oolitic, fair p-p and vug por, spotted to even med brn live stn, SFO, gd odor, golden to brite yel fluor, gd cut, few pcs bleeding oil droplets

**DST #1: Toronto 2984' - 3014' Corrected Depths to Log**

**DOUGLAS SHALE 3020(-1084)**

SH; lt gy, pale sea grn, silty ip, rare pyr, trc f gr qtz ss clusters

SLTST; lt gy, mica ip, platy, occ dissem pyr

SH; lt to med gy, silty, platy

SH; lt to med gy, platy, smooth, silty ip.

**BROWN LMST 3088(-1152)**

LM; med brn, dense, blocky, tite  
SH; med gy, gy grn, platy, foss ip.

**LANSING 'A' 3101(-1165)**

LM; tan to lt brn, foss, well cem, blocky, tite

LM; tan to lt brn, foss - partly oolitic, some cse xln, occ spar calc xtals w/edge stn, faint odor, VSSFO, few gas bubbles, med yel fluor, fair interpart por

LM; tan to buff, fxl n, poor to fair interxln por, minor soft chalky mtx, no stn or odor, no gas kick, ns.

LM; off wh, buff, foss w/scat pelletal/oolitic lmst, chalky

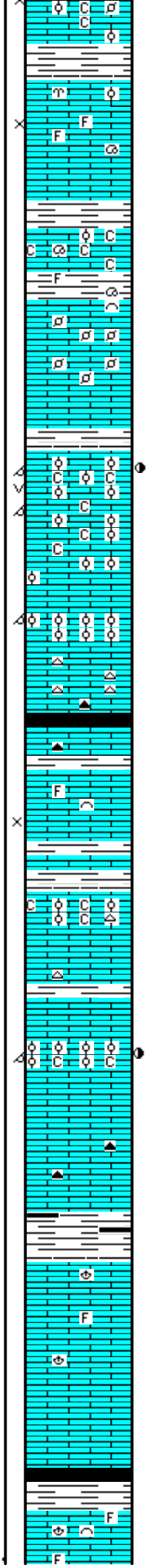
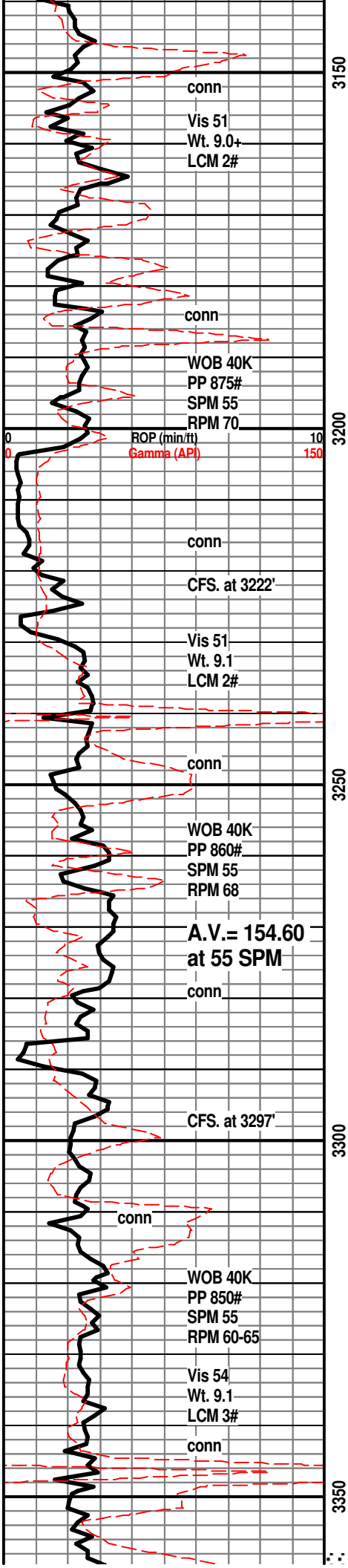
-10 Unit Incr.

9 Unit Incr.  
Shale

36 Unit Incr.  
SHOW

5 Unit Incr.

0.5 TG C1 C5 50 500



LM; off wh, tan, cream, foss w/abnt small pellets and ooids, very chalky mtx, soft, scat med yel min fluor, no stn or odor, ns.

LM; It to med brn, foss, most well cem, some w/fair interpart por, minor chalky mtx, no fluor, ns.

LM; off wh, tan, cream, foss w/abnt small pellets and ooids, very chalky mtx, soft, scat med yel min fluor, no stn or odor, ns.  
SH; grn, gy grn, foss ip.

LM; It to med brn, foss - pelletal to oolitic, well cem, blocky, no vis por, no fluor, ns.

**LANSING 'G' PORO. 3203(-1267)**  
LM; It brn, oolitic/most w/med size molds, brittle ip, well dev. oomoldic por, few pcs w/spotted lt brn stn in top, most barren por, occ chalky, lt to med yel min fluor

LM; It brn, oolitic ip, bcm dense - well cem, decr. chalk

LM; off wh, buff, oolitic, brittle ip, fair to gd oomoldic por, dull yel fluor, no stn or odor, ns.  
LM; med brn, hd, micritic, scat gy to blk cht, tite

**MUNCIE CREEK SHALE 3240(-1304)**  
SH; blk, fiss to platy

LM; tan to cream, fxln, poor interxln por, scat foss mat, no vis stn, no odor, ns.

LM; off wh, wh, foss - partly oolitic at top, poorly dev. oomoldic por, chalky, dull to lt yel fluor, no stn or odor, ns.

**KANSAS CITY 'J' 3280(-1344)**  
LM; It brn, tan, oolitic, fair to gd oomoldic por, fairly strong sulfur odor, 2 pcs w/spotted oil stn, most barren por, chalky mtx ip.

LM; tan to lt brn, most dense, blocky, tite, occ dk gy cht

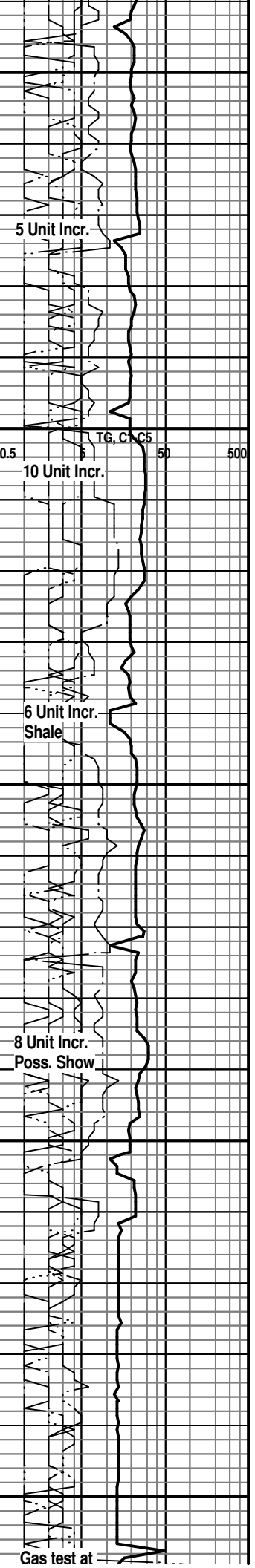
SH; dk gy, some blk, platy

LM; tan to cream, buff, hd, blocky, rare well cem foss mat, no vis por, no fluor, ns.

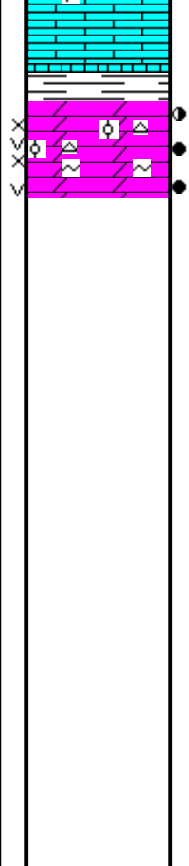
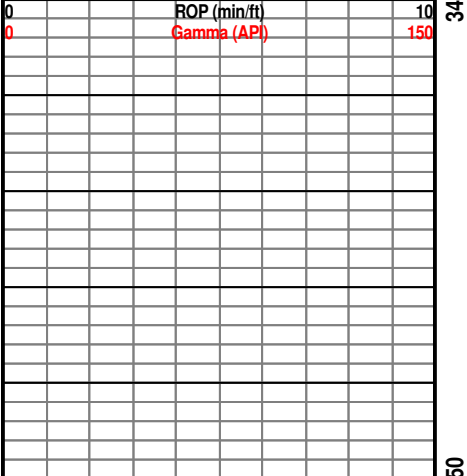
LM; med brn, occ gy brn, dense, blocky, tite

SH; blk, thinly bdd

LM; tan to med brn, foss ip, most well cem, interbdd med to cse xln lms, trc poor interxln por, no fluor, no stn, ns.



**DST #2**  
**Arbuckle**  
**3358' - 3380'**  
 CFS. at 3371'  
 CFS. at 3380'  
 MudCo. Mud  
 Check at 3380'  
 Vis 56 Wt. 9.3  
 WL 7.6 CI 5700  
 PH 10.5 LCM 3#



**BASE KANSAS CITY 3367(-1431)**  
**ARBUCKLE 3370(-1434)**  
 DOL; wh, buff, med rhombic, some very tite, gd odor, rare vug por, med/brite yel fluor, SSFO, rare oolitic cht, some grn clay incl(glau?)  
 DOL; wh, lt brn(oil stn), med rhombic, gd interxln and vug por, SFO, gd odor, brite yel fluor, most even stn, immed. streaming cut

**DST #2: Arbuckle 3358' - 3380'**  
**Corrected Depths to Log**  
**RTD. 3380' at 3:45 AM. 3/5/2016**

**LTD. 3377'**  
**Cased Hole Solutions - DIL,**  
**NEU/DEN/PE, Microlog**

**NOTE: This log was shifted downward by 4' to match Cased Hole Solutions Log depths.**

