

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

| | |
|--|---|
| Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run: | <input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum |
|--|---|

| CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used | | | | | | | |
|---|-------------------|---------------------------|-------------------|---------------|----------------|--------------|----------------------------|
| Report all strings set-conductor, surface, intermediate, production, etc. | | | | | | | |
| Purpose of String | Size Hole Drilled | Size Casing Set (In O.D.) | Weight Lbs. / Ft. | Setting Depth | Type of Cement | # Sacks Used | Type and Percent Additives |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| ADDITIONAL CEMENTING / SQUEEZE RECORD | | | | |
|--|------------------|----------------|--------------|----------------------------|
| Purpose: | Depth Top Bottom | Type of Cement | # Sacks Used | Type and Percent Additives |
| <input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone | | | | |
| | | | | |

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

| | | | | |
|---|--|---------|-------------|-----------------------|
| Date of first Production/Injection or Resumed Production/Injection: | Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____ | | | |
| Estimated Production Per 24 Hours | Oil Bbls. | Gas Mcf | Water Bbls. | Gas-Oil Ratio Gravity |

| | | |
|---|---|------------------------------------|
| DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i> | METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i> | PRODUCTION INTERVAL: Top Bottom |
|---|---|------------------------------------|

| Shots Per Foot | Perforation Top | Perforation Bottom | Bridge Plug Type | Bridge Plug Set At | Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i> |
|----------------|-----------------|--------------------|------------------|--------------------|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|----------------|-------|---------|------------|--|
| TUBING RECORD: | Size: | Set At: | Packer At: | |
|----------------|-------|---------|------------|--|

| | |
|-----------|------------------------|
| Form | ACO1 - Well Completion |
| Operator | Griffin, Charles N. |
| Well Name | CAMBRIE 3 |
| Doc ID | 1477209 |

All Electric Logs Run

| |
|---------------------------------|
| |
| Micro Log |
| Dual Induction Log |
| Compensated Density-Neutron Log |
| Sonic Log |

| | |
|-----------|------------------------|
| Form | ACO1 - Well Completion |
| Operator | Griffin, Charles N. |
| Well Name | CAMBRIE 3 |
| Doc ID | 1477209 |

Tops

| Name | Top | Datum |
|---------------|------|-------|
| Topeka | 3558 | -1547 |
| King Hill | 3694 | -1683 |
| Heebner | 3916 | -1905 |
| Browning Lime | 4077 | -2066 |
| Lansing | 4096 | -2085 |
| Stark | 4352 | -2341 |
| Pawnee | 4554 | -2543 |
| Chk Shale | 4588 | -2577 |
| Viola | 4662 | -2651 |
| Simpson Shale | 4778 | -2767 |
| Simpson Sand | 4812 | -2801 |
| LTD | 4881 | -2870 |



GRIFFIN MANAGEMENT, LLC

PO Box 347 Pratt, Kansas 67124
620.672.9700

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

Well Name: Cambrie #3
API: 15-151-22500
Location: W2-NW-SE-NW of Sec 28 29s 15w
License Number: 5142
Spud Date: 9/04/2019
Surface Coordinates: Long: -98.9705174
Lat: 37.4948431
Bottom Hole NA
Coordinates: Sterling Drilling (Rig #4). Drilled out from Surface w/ PDC bit.
Ground Elevation (ft): 2000' K.B. Elevation (ft): 2011'
Logged Interval (ft): 3600' To: 4880' Total Depth (ft): 4880'
Formation: Ordovician (Simpson) @ RTD
Type of Drilling Fluid: Mud Co. Chemical Drispac

Region: Pratt Co.
Drilling Completed: 9/09/2019

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

OPERATOR

Company: Griffin Management, LLC
Address: P.O. Box 347
Pratt, KS 67124-0347

GEOLOGIST

Name: Eli J. Felts
Company: Griffin Management, LLC
Address: ejfelts47@gmail.com
316.204.5059

Formation Tops

| SAMPLE TOPS | | LOG TOPS | |
|-------------|--------------|------------|--------------|
| TOPEKA | 3659 (-1648) | TOPEKA | 3658 (-1647) |
| KING HILL | 3697 (-1686) | KING HILL | 3694 (-1683) |
| HEEBNER | 3916 (-1906) | HEEBNER | 3916 (-1906) |
| BROWN LIME | 4077 (-2066) | BROWN LIME | 4077 (-2066) |
| LANSING | 4094 (-2083) | LANSING | 4096 (-2085) |
| STARK | 4351 (-2340) | STARK | 4352 (-2341) |
| PAWNEE | 4562 (-2541) | PAWNEE | 4564 (-2543) |
| CHK SHALE | 4588 (-2577) | CHK SHALE | 4588 (-2577) |
| VIOLA | 4662 (-2651) | VIOLA | 4662 (-2651) |
| SIMP SHALE | 4778 (-2767) | SIMP SHALE | 4778 (-2767) |
| SIMP SAND | 4811 (-2800) | SIMP SAND | 4812 (-2801) |
| RTD | 4880 (-2869) | LTD | 4881 (-2870) |

Drilling Report

- 9/04/19 Spud @ 7:15 PM. Drilled 12.25" to 272.
- 9/05/19 WOC. 272'
- 9/06/19 Drilling @ 1960'. Displaced mud system @ 2787' Lost Returns @ 2840' w/ 10# LCM and 60 spm. Lost ~100bbl. Cut pump strokes from 60 to 55spm & raise LCM to 14#. No losses.
- 9/07/19 Drilling @ 3350'. Geo called @ 8:15 AM. On location @ 12:00 PM. 3550' on arrival. Start 20' wet & dry samples @ 3600'.
- 9/08/19 Drilling @ 4370' (CFS Swope, 20-40-06)
- 9/09/19 RTD @ 3:00 AM. CFS 60" prior to Short trip. Short trip (73) stands to surface pipe. TIH, CTCH 1.5 hours prior to logging well. Eli Wireline run full suite.>CNL/CDL w/ PE, DI, Micro, Sonic< No tight spots while logging.
- 9/10/19 Cementing 5.5" Casing
Plug Down @ 7:30 AM. Release Rig @ 9:30 AM

Problems

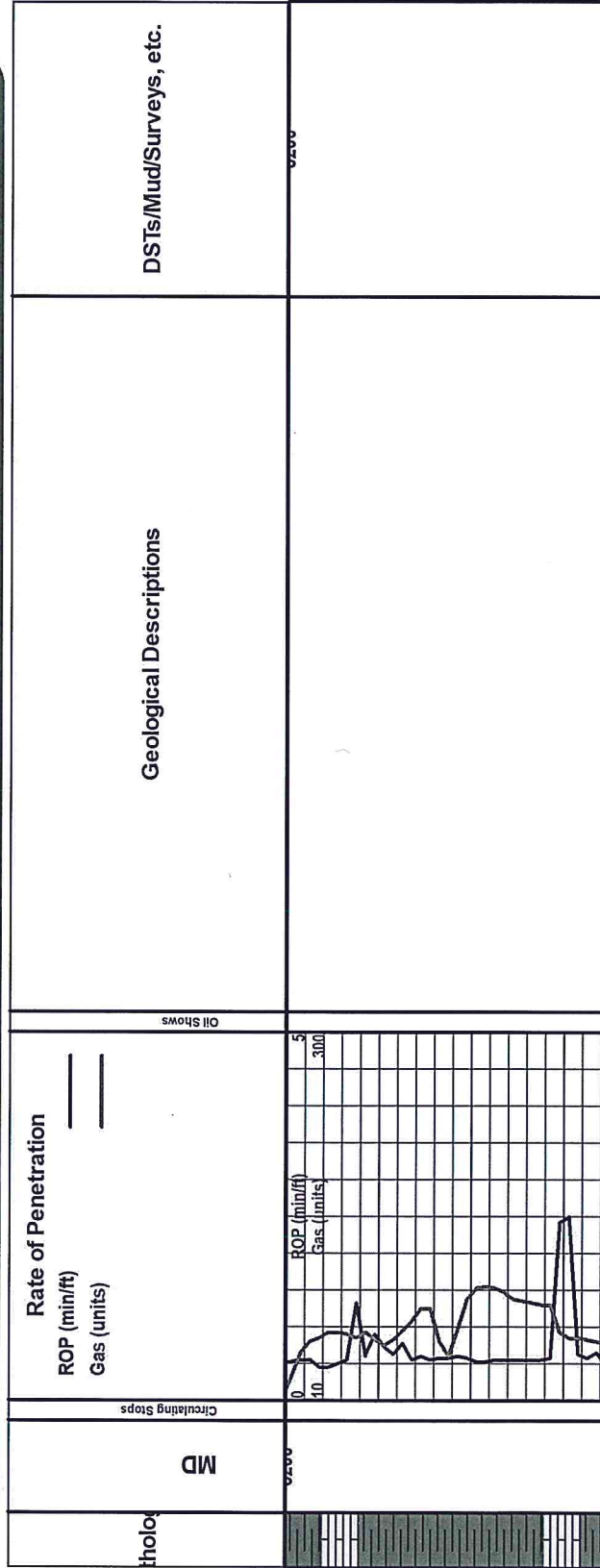
Lost returns @2840'. Lost 100 bbls. Cut pump strokes from 60 down to 55 spm. Raise LCM from 10# to 14#. Maintained circulation from this point forward. No other issues reported.

Pipe Setting

12.25" (23#) Surface Casing @ 268' KB
 5.5" (15.5#) Production Casing @ 4874' KB

ROCK TYPES

| | | | | |
|-----------|-----------|-----------|-------------|----------|
| Anhy | Coal | Igne | Mrlst | Shcol |
| Bent | Congl | Granite 2 | Quartz | Shgy |
| Brec | Shale red | Granite | Salt | Slst |
| Dol-white | Dol-cream | Lmst tan | Shale green | Ss-white |
| Cht | Dol | Lmst | Shale gry | Ss |
| Clyst | Gyp | Meta | Shale 1 | Till |



Formation Tops

SAMPLE TOPS

TOPEKA 3559 (-1548)
 KING HILL 3697 (-1686)
 HEEBNER 3916 (-1906)
 BROWN LIME 4077 (-2066)
 LANSING 4094 (-2083)
 STARK 4361 (-2340)
 PAWNEE 4552 (-2541)
 CHK SHALE 4588 (-2577)
 VIOLA 4662 (-2651)
 SIMP SHALE 4778 (-2767)
 SIMP SAND 4811 (-2800)
 RTD 4880 (-2869)

LOG TOPS

TOPEKA 3558 (-1547)
 KING HILL 3694 (-1683)
 HEEBNER 3916 (-1906)
 BROWN LIME 4077 (-2066)
 LANSING 4096 (-2086)
 STARK 4362 (-2341)
 PAWNEE 4554 (-2543)
 CHK SHALE 4588 (-2577)
 VIOLA 4662 (-2651)
 SIMP SHALE 4778 (-2767)
 SIMP SAND 4812 (-2801)
 LTD 4881 (-2870)

Drilling Report

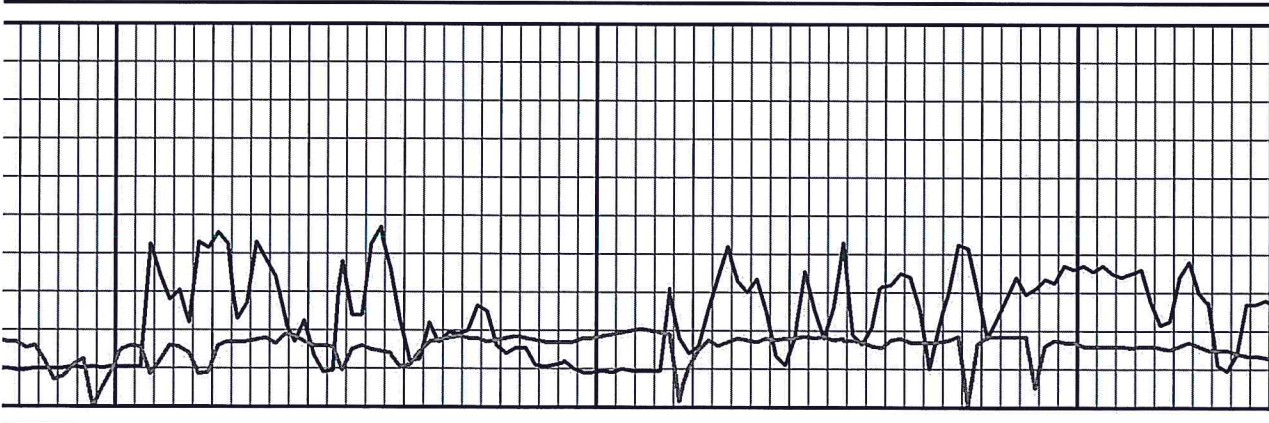
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 9/10/19 Cementing 5.5" Casing
 Plug Down @ 7:30 AM. Release Rig @ 9:30 AM

3250

3300

3350

Mud-Co
Report #4
9/7/2019
Time: 7 AM
Depth: 3348
Wt: 8.9#
Vis: 60
WL: 9.6
Chi: 6,000
LCM: 12#
9/7/2019
3350' @ 7 AM.
Rig call ~8:15 AM



3250

3300

3350





GRIFFIN MANAGEMENT, LLC

PO Box 347 Pratt, Kansas 67124
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Scale 1:240 (5"=100') Imperial
Measured Depth Log

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GEOLOGIST

Name: Eli J. Felts
Company: Griffin Management, LLC
Address: ejfelts47@gmail.com
316.204.5059

3400

3450

3500

ROP (min/ft)
Gas (units)

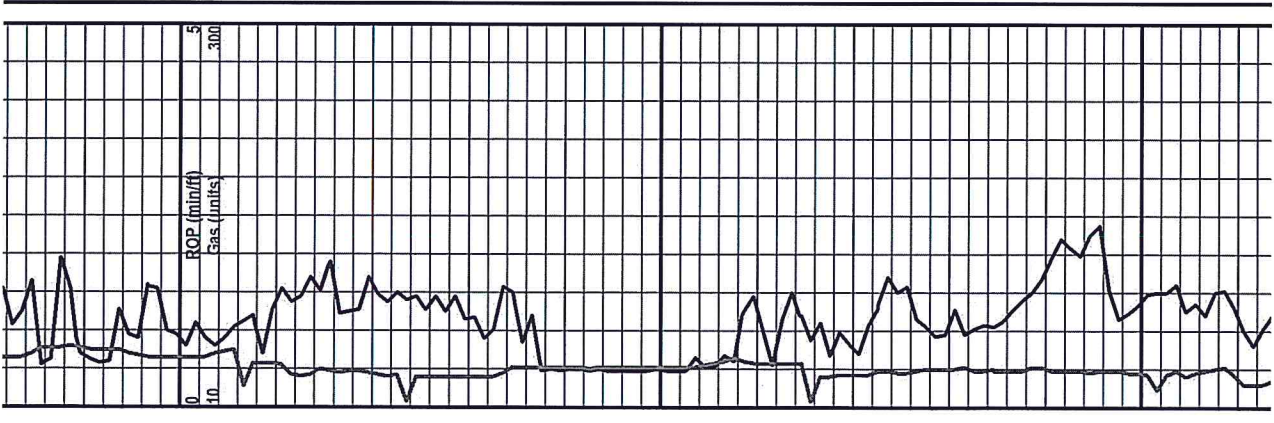
0
10

3400

3450

3500

5
1000



Samples have been lagged. Sample tops have not been corrected to Logs. See header for Log tops.

9/7/19

3550

12 PM:

Geo on Location

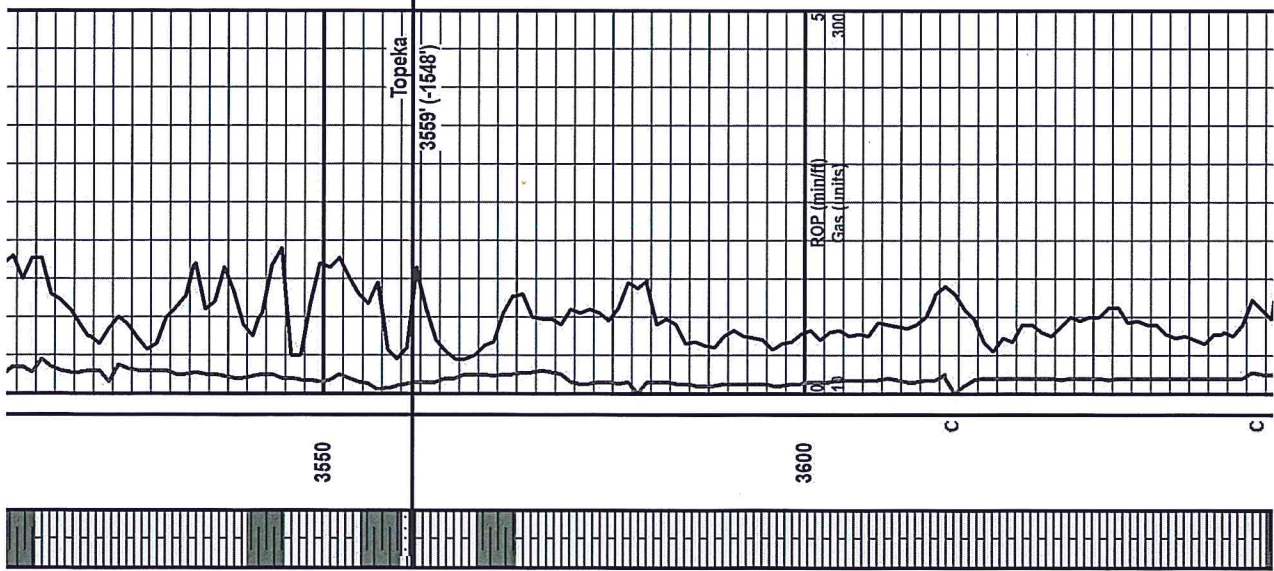
3600

VIS: 52
WT: 9.0
LCM: 12#
WOB: 14K
RPM: 95+
SPM: 65
PP: 760#

LS - cream, grey, med xin; foss in most w/ poor intra foss porosity, some secondary re-xin porosity, chalky in most, increase on break, fr trail; barren, no odor, ns; few trace pcs CH - grey & wht, vitreous, foss

LS - cream to lt tan, grey, highly foss, some 2ndary re-xin; remains chalky, increase CH - vitreous to weathered ip; foss texture, dns; few LS transitional SH - grey, dark, silty & soft; pyrite xin dev in shale

LS - cream, sm grey, highly chalky & foss, soft crush, lt brown to grey mineral staining; sm re-xin ip w/ granular to dolomitic app; no odor, ns



3550

Topoka

3559' (-1548')

3600

ROP (min/ft)

Gas (units)

5

300

0

10

C

C

brown staining in some; oa soft & chalky lime; no odor, ns

WOB: 14K
RPM: 95+
SPM: 65
PP: 750#

VIS: 55
WT: 9.0
LCM: 12#

LS - cream to grey, mst med xin; abdt foss w/ chalky matrix, some trans argillaceous to interbedded shales ip; mst pcs soft, crush easily under light pressure; poor visible porosity; some chalk w/ small pyrite xin dev; no odor, ns; cup washes white

WOB: 14K
RPM: 95+
SPM: 65
PP: 750#

VIS: 55
WT: 9.1
LCM: 10#

LS - cream to it tan, sm grey, mst med xin, foss & chalky aa, few fn to microxin (sub cherty) w/ wht foss; dense w/ sharp edges, contact w/ dark shale & few trace pcs dark, earthy shale; no vis gas, no odor, ns

LS - cream, it tan & grey, mst med xin, aa, some pcs fine to microxin, dense, foss, abdt gills & mineral stning throughout; abundant chalk dominates sample

LS - mostly aa; few pcs SS - app white, blocky clusters, med friab; well sorted, sb rd clear to sl frosted grains; poor vis intergranlir pors; no odor, ns

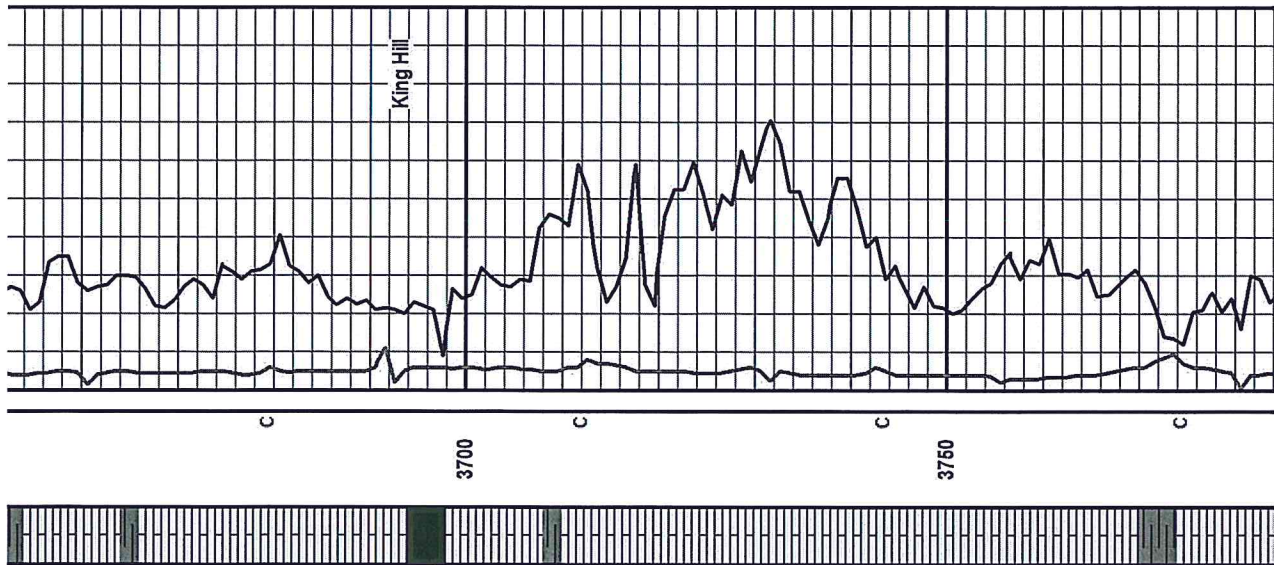
WOB: 15K
RPM: 95+
SPM: 65
PP: 750#

VIS: 53
WT: 9.2
LCM: 9#

LS - crm - it tan, grey, mst med xin, sl foss & highly chalky, few pcs fn xin, foss w/ chert in matrix (white, vit streaks) pos dense & sharp; few shaley stringers

LS - cream, fine to med xin, few pcs w/ ooc porosity, barren, fair to gd vis por, soft crush w/ no show, flood dark grey fine xin LS & grey silty shales

LS - cream, mst fine xin, sl re-xin ip w/ vis dissolution vuggs, barren pors, some cherty ip;



| | |
|------|--|
| 3800 | <p>WOB: 15K RPM: 96+ SPM: 65 PP: 750#</p> |
| 3850 | <p>Rig Check @ 3870' (~15") WOB: 15K RPM: 96+ SPM: 65 PP: 750#</p> |
| 3900 | <p>WOB: 15K RPM: 96 SPM: 65 PP: 750# VIS: 52</p> |

LS - cm to gry, fine to med xln, sm granular txt, foss ip, sm lt brown mineral stn, abundant white chalk, few dk grey shales

LS - cm to gry, fn to med xln, few micrite (lt grey w/ wht foss), sl granular txt ip, few foss, mst soft w/ few pcs firm, fissile break, ~20% grey shales remain

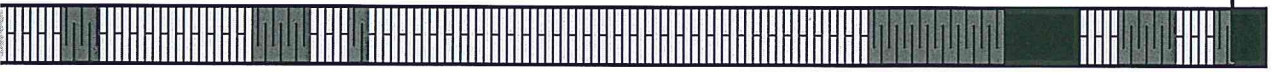
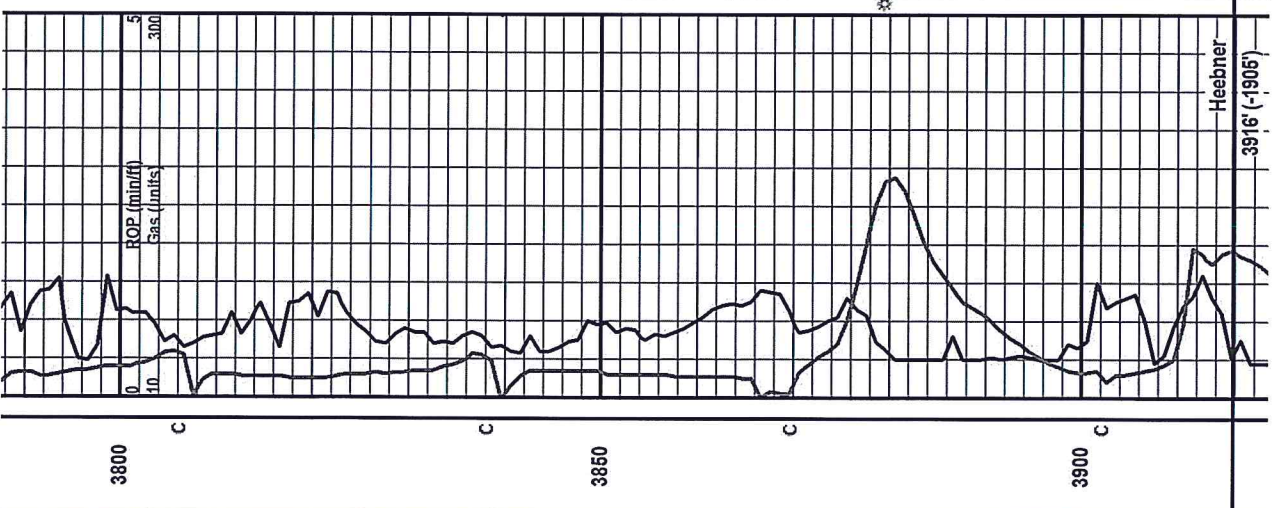
LS - mst cream, sm white & lt grey, mst fine xln, fair porosity w/ intrafoss & sm re-xln sparite, lots of chalk in matrix, fair friab; no odor, ns; w/ trc mineral fluor

LS - cream to grey, fn to med xln; fair re-xln porosity w/ sm lt brown staining in some, w/ chalky transitional pcs, oa soft; no vis fluor; no odor, ns

SH - flood grey to dark brown, soft to firm, some fissile, vis laminations in some w/ poss mic particles (glitter-like); edges bleed gas

SH - some aa, trans lighter grey; abundant LS - cm to tan, fine xln to micritic ip; few dark sm; blocky & dense

SH - dark brown, earthy, laminated & med soft; bleeds gas; SH - green w/ tan to brown



| | | | |
|--|------|--|------|
| | 3960 | | |
| | | VIS: 67 WT: 9.0+ LCM: 10# WOB: 15-16K RPM: 95 SPM: 65 PP: 750# | 4000 |
| | | | 4060 |

SH - dark brown to black, earthy, bleeds gas, trans micrite; appears cherty, shiny black, heavy HCL reaction; dense & blocky, few cream to tan LS, med xin w/ granular texture; chalky

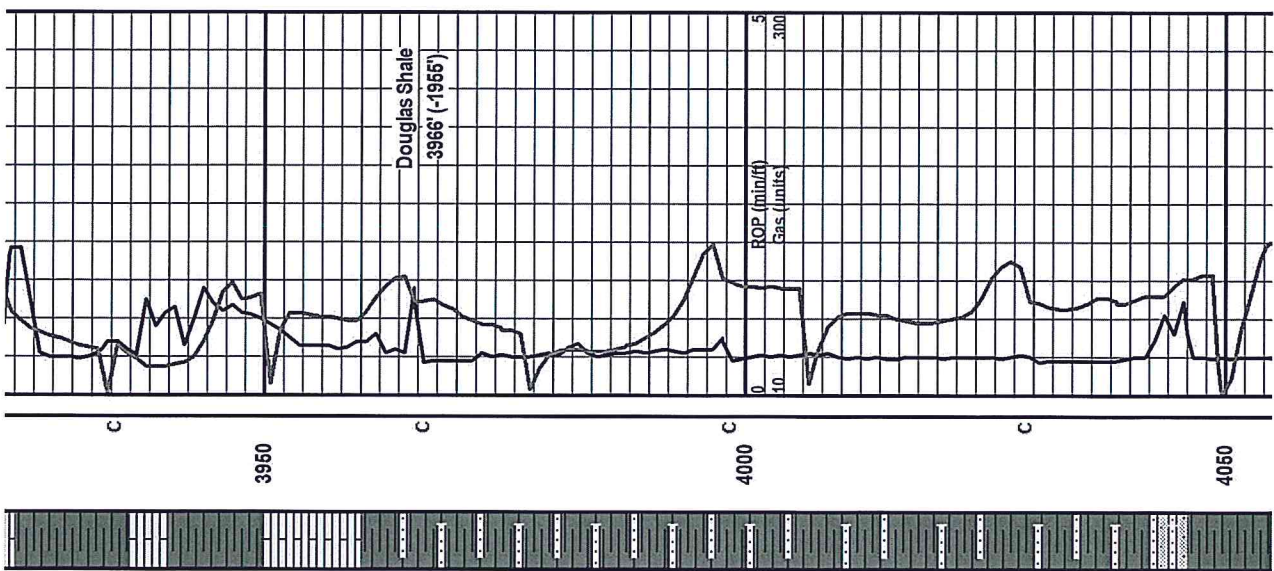
LS - tan, fine to microxin, dense blocky, few foss, abdt wht chalky soft ls, few sandy shales; poorly sorted, sub rd, med-large grains, v shaley

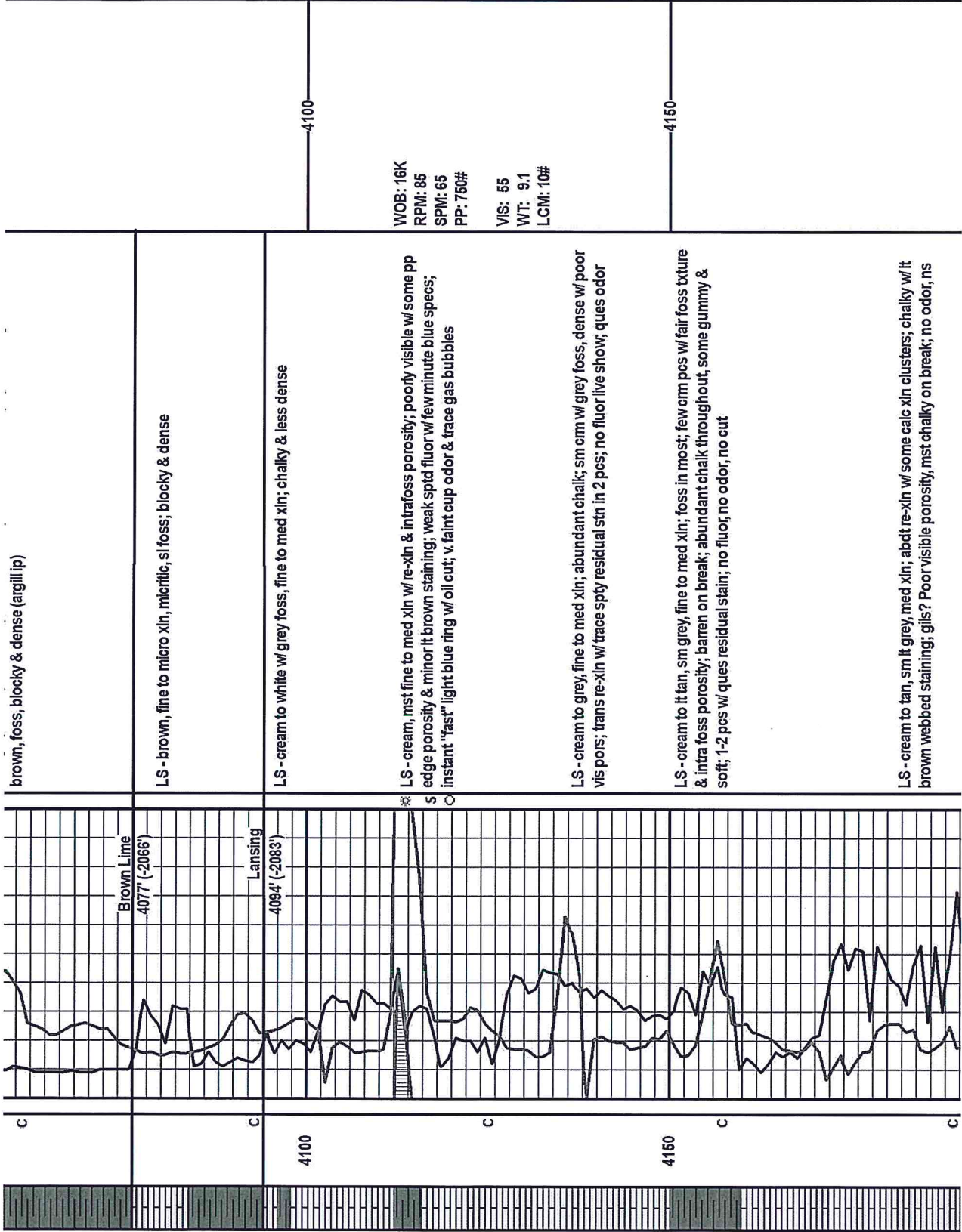
Sandy SH / Shaley SS; lt grey w/ cir grains, fine grains, well rd & std, dark specks/streaks throughout, soft crush w/ v, poor intragranular por; v. shaley matrix

Sandy SH, lt to med grey, aa, sl dec sand content; highly shaley w/ dark streaks/ specks, soft

SH - grey, lt to med w/ some vis layering; abdt sand content, fine grained, appear cir, well rd/std; dark streaks throughout; some dark interbedded silty shale

SH - lt to med grey, decrease sand, some green shale, silty, blocky; all soft, few w/ cream limey foss inclusions, oa more silty w/ scattered sand stringers





brown, foss, blocky & dense (argill ip)

LS - brown, fine to micro xln, micritic, sl foss; blocky & dense

LS - cream to white w/ grey foss, fine to med xln; chalky & less dense

⊗ LS - cream, mst fine to med xln w/ re-xln & intrafoss porosity; poorly visible w/ some pp
 s edge porosity & minor it brown staining; weak sptd fluor w/ few minute blue specs;
 ○ instant "fast" light blue ring w/ oil cut; v. faint cup odor & trace gas bubbles

LS - cream to grey, fine to med xln; abundant chalk; sm crm w/ grey foss, dense w/ poor vis pois; trans re-xln w/ trace spty residual stn in 2 pcs; no fluor live show; ques odor

LS - cream to it tan, sm grey, fine to med xln; foss in most; few crm pes w/ fair foss txture & intra foss porosity; barren on break; abundant chalk throughout, some gummy & soft; 1-2 pcs w/ ques residual stain; no fluor, no odor, no cut

LS - cream to tan, sm it grey, med xln; abdt re-xln w/ some calc xln clusters; chalky w/ it brown webbed staining; glis? Poor visible porosity, mst chalky on break; no odor, ns

4100

4150

WOB: 16K
 RPM: 85
 SPM: 65
 PP: 750#
 VIS: 55
 WT: 9.1
 LCM: 10#

Brown Lime
 4077' (-2066')

Lansing
 4094' (-2083')

4100

4150

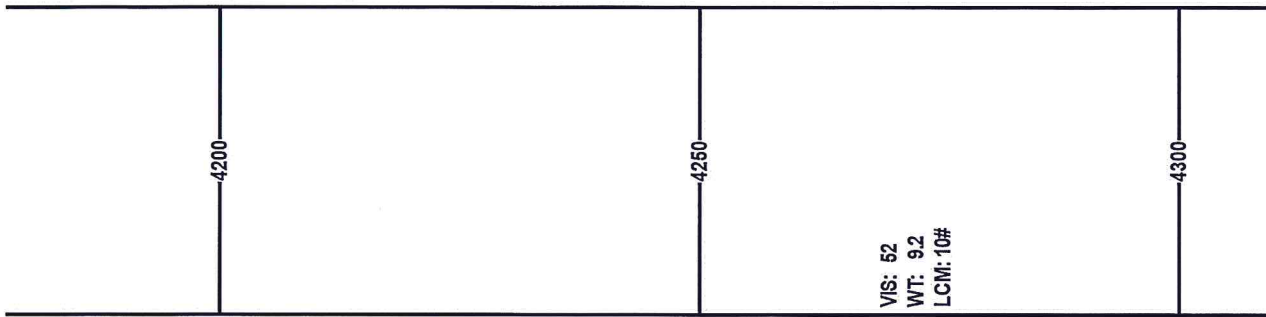
C

C

C

C

C



LS - cream to tan, sm lt grey, med xin; abdt re-xin w/ some calc xin clusters; chalky w/ it brown webbed staining; gils? Poor visible porosity, mst chalky on break; no odor, ns

LS - cream to tan, grey ip, fine xin, foss ip w/ poor intrafoss pores, well cemented, soft to med firm; chalky on break, abdt gils stn; ~20% shales

LS - cream to grey, med xin w/ granular txt, abdt lt grey foss w/ highly chalky matrix, some re-xin spar w/ residual stn, no odor, lt flakey dead oil on break

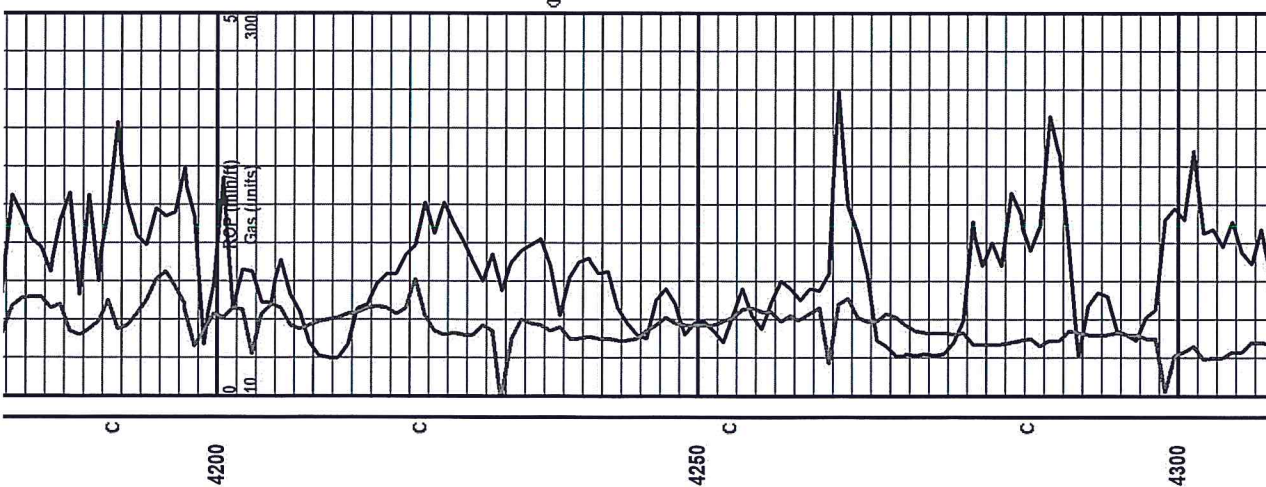
LS - cream lt grey, med xin in most w/ granular to sl foss txture, poor intrafoss porosity, few re-xin w/ sm vis cal xin; few pos w/ ss lt brwn free oil, increase to fair show on break, fair cup odor w/ rare sptd fluor, oa wk show

LS - cream, med xin, granular & foss txture, poor vis porosity; chalky ip, few pcs micritic to cherty, vitreous, foss (grey w/ wht)

LS - cream, fine to med xin, granular & foss txture w/ sm dissolution porosity; sm vggly ip w/ poor interconnected pores; fairly friable; chalky; trace chert; no odor, ns

LS - cream, mst fine xin, blocky & dense; few foss & re-xin; oa poor vis pores, trace pos chert, vitreous, sharp & fresh; no odor, ns

VIS: 52
WT: 9.2
LCM: 10#



ROP (units)
Gas (units)

C

C

C

C

4200

4250

4300

VIS: 52
 WT: 9.2
 LCM: 10#

 WOB: 16K
 RPM: 88
 SPM: 66

 9/8/2019
 4370' @ 7 AM.
 Mud-Co
 Report#5
 9/8/2019
 Time: 8:15AM
 Depth: 4375
 Wt: 9.6+
 Vis: 50
 WL: 11.2
 Cht: 5,000
 LCM: 10#

 WOB: 16K
 RPM: 95+

LS - cream to tan, fine to med xin, foss, sl granular to foss txt w/ poor vis prs, some re-xin sparr veins w/ med xin growth; chalky to shaley ip

 LS - cream to lt grey, fine to sm med xin, v. sl foss w/ tr re-xin; chalky ip, platy & lithographic w/ poor vis porosity; no odor, ns; few dark silty shales

 LS - cream, fine xin, highly foss w/ poor intrafoss por, some secondary intrafoss xin porosity; trace sfo in 2 pcs, increase on break; good odor on break; good ylw fluor w/ pinhead drops floating in tray, oa weak show

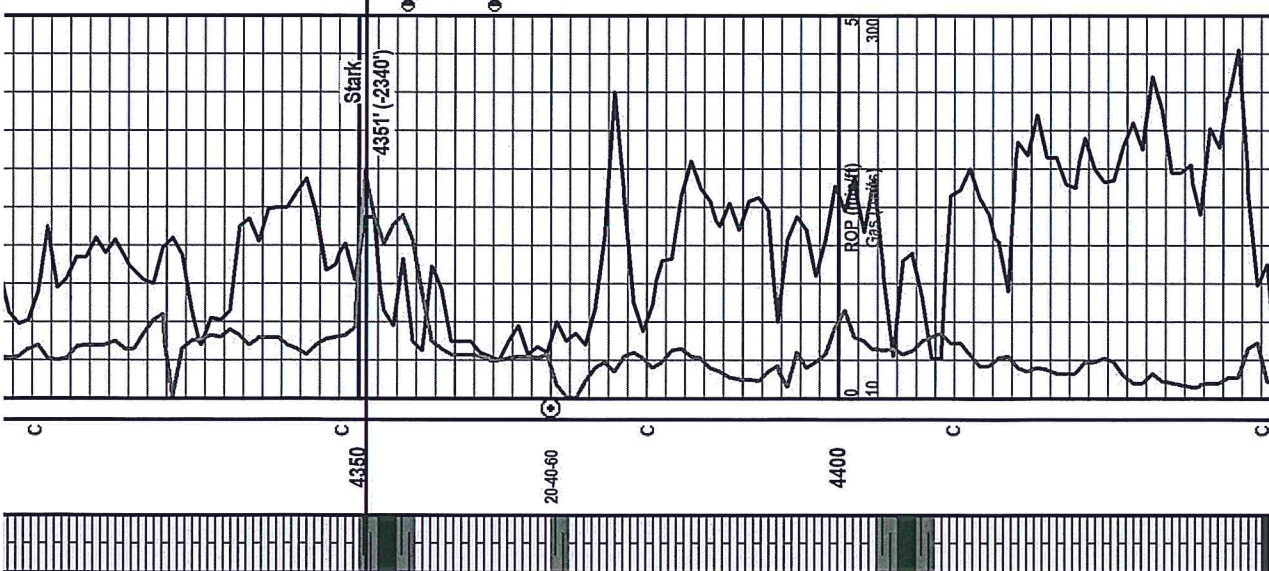
 LS - cream, fn xin, foss aa, mst tight, few w/ vis intrafoss poros & sl re-xin ip; oily odor w/ rare sfo in tray; hvy increase show & odor on break

 LS - cream fossiliferous clusters w/ fair intrafoss porosity; sfo w/ increase show & odor on break & faint cup odor; trans cream lt tan, fine to microxin; foss w/ smooth txture; blocky & dense; stringers dark earthy shale

 LS - cream to lt grey, mst fine xin, blocky & dense, few transitional med xin w/ interbedded brwn shale streaks, chalky break; ns

 LS - crm, med xin w/ sl granular txture, chalky break, mst lithographic; trans fine to micro-xin, gry-brwn, blocky & dense, tr foss

 LS - lt tan - brown, micro xin to sub-cherty; trans black chert; trans SH - jet black, earthy, no vis gas



| | | |
|------|--|--|
| 4450 | V/S: 59 WT: 93 LCM: 10# | |
| 4500 | | |
| 4550 | V/S: 57 WT: 9.3+ LCM: 10# WOB: 16K RPM: 95+ SPM: 65 PP: 820# | |

Flood SH - jet black to shades of grey; few pcs bleeding gas; mst sub-carb; some LS - cream w/ brown mineral str; chalky break, poor vis pots; ns

SH - shades of grey to lt green, silty & soft; LS - crm to brown, many transitional microxin w/ chalky edges; few trc fossiliferous, blocky & dense, sub shaley ip

Flood SH - lt grey to pale green, mst soft & silty; few interbedded LS stringers, caramel, microxin; few foss ip

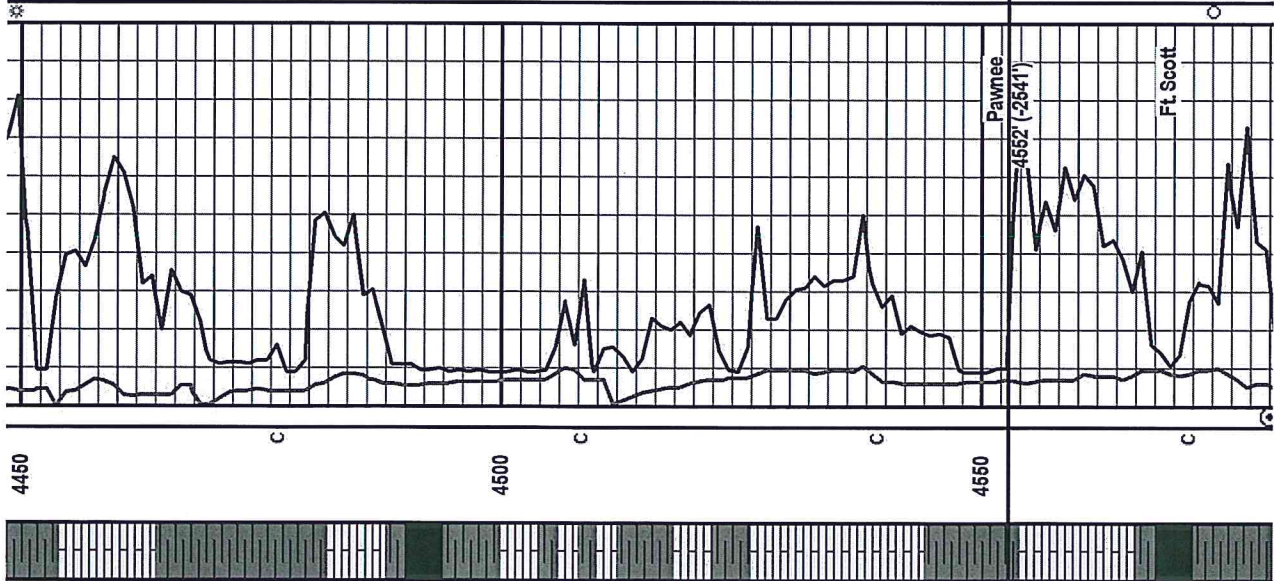
SH - grey to green sm mottled w/ blk specks, soft & silty; interbedded LS in some, brown, fine to microxin w/ few foss

LS & SH - varicolored, cream to tan, brown & pink LS - interbedded shales; grey to green, pink, mottled

LS - cream to brown, mst fine xin; some crm med xin edges w/ chalky appearance; oa blocky & dense

SH - grey green w/ dark specks, soft & silty; trace pcs jet black, carb shale

LS - cream to brown, mst fine xin; few foss w/ poor intrafoss porosity; trc re-xin w/ residual oil staining & vss "clingly" residual oil; no odor, no fluor



Out Pump Strokes back to 55 SPM @ 4650' after CFS. Catching samples with cloth to catch any loose sand grains.

CFS 4600' 4605' 4610' 4615'

4600

WOB: 16K
RPM: 95
SPM: 55
PP: 600#

Increase Pump Strokes back to 65 SMP @ 4615' & resume drilling ahead.

*First sand (KD) in 4680' cup. Increase in 4700' cup

4650

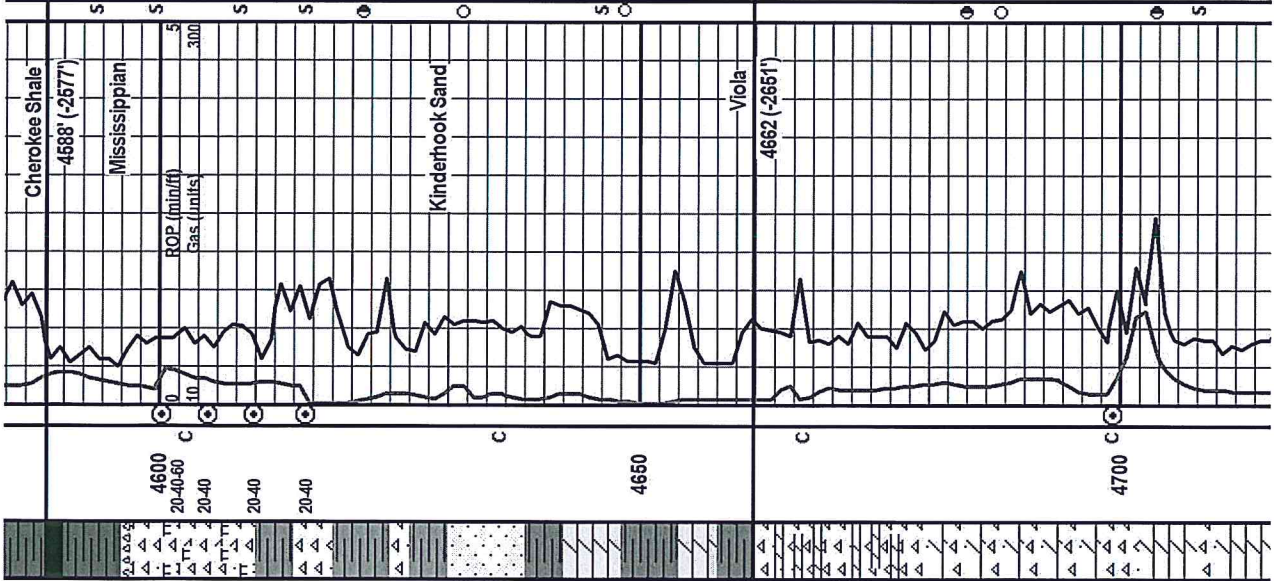
V/S: 58
WT: 9.2
LCM: 8#

V/S: 60
WT: 9.2+
LCM: 8#

WOB: 16K
RPM: 95+
SPM: 65
PP: 800#

4700

shale
Chert - dolomitic, cream to white w/ abt dark staining; vitreous ip mst highly tripolitic weathering; trace pp bright yw-grn flur; quest odor; soft crush
>4605 DS - CH - trans vitreous, varicolored, semi translucent, sharp & blocky; trace weathered CH, aa->20" LS - cream to tan, fine xln; blocky & dense; ~20 shales, varicolored w/ sm interbedded chert; vitreous & varicolored to white, dolomitized & weathered >40" LS aa w/ grn sh contact; iner CH-dolomitic & weath w/ blk str; (f) pc w/ vssio (lt brwn drop)
LS - tan to brown, fine to microxln; bicky & litrographic; 20% CH - dolomitic, sm w/ green hue, weathered w/ blk str, dolomitic texture & abundant sh, varicolored, grey/green 4615 stop->Mst dol im & ch; lt grn hue, trans varic vit ch, ~15% weath CH pcs; trace SS - rare clust; app whitrans, fn-med grn, pr std, sub rd to sb ang; dk str; md friab; no odor; ns 4615 20" food sh, varic, brk red, sm mott w/ grn, whit to pink, mst med firm to chalky; 40" flood sh, aa; scat CH - mst vit w/ few dolo & weath w/ blk str (cavings?) 1-2 pc SS - clr wht, fn grn, friab w/ blk str, no show
4660 > LS & CH - varicolored; LS - crm to tan, fine to med xln; foss ip; poor vis pors; CH - varicolored; translucent white to opaque, cream, sl foss CH - fract'd ip, some weathered & dolomitized; slight show med brown free oil, increase on break; no odor, rare sptd yellow flur; cup washes red
CH white to cream, opaque to semi translucent; mostly vitreous, sharp & fresh. Fract'd in some w/ dark staining in fracs; few clusters SS - appear grey, clear to sl frosted grains, well rd & std, dark material between grains; no odor, ns; fr-gd friab; trace pinhead flur w/ v. slight milky weeping cut
*few wht clusters SS, friab, fn med grains, well rd & std; no show
LS - cream to lt grey, fine to med xln w/ sl granular texture; poss sl dolomitic; abundant CH - wht to cream, foss ip, most vitreous w/ some edge staining & vis fracs; overall dense & blocky
CH & SH - varicolored shales, CH - cream to white, mostly vitreous. v. few pcs w/ edge weathering & visible fracs; sm pcs w/ slight show oil, it brown free drops to some darker, clingy oil; no odor, rare sptd yellow flur in show pcs that were crushed; few wht clusters SS, friab, fn med grains, well rd & std; no show
~50% SH & CH - mst red-green shales; CH - cream to white, mst vitreous, blocky, sharp & fresh; some dolomitic & weathered; dark stain w/ sso in few; dark tarry, heavy oil w/ few lt drops
CH & Dol - mst cream to white; Dol - wht, cottony, soft & chalky break; CH - white to crm, opaque to semi translucent; vitreous in mst w/ some dolomitized & weathered edges; edges are lighter brown w/ sl oil scum in fracs; dense, 1-2 pcs w/ lt brown pinhead drops on break & trc gas bubbles; no odor, wk show



Cherokee Shale
-4588' (-2577')
Mississippian
ROP (min/ft)
Gas (units)
Kinderhook Sand
Viola
-4662' (-2651')
4700

| | | |
|---|---|---------------------------------------|
| 4760 | 4800 | 4850 |
| <p>Rig Check * Clean Suction</p> <p>VIS: 60 WT: 9.3 LCM: 8#</p> <p>WOB: 16K RPM: 95+ SPM: 65 PP: 830#</p> | <p>Mud-Co Report #6 9/9/2019 Time: 9:30AM Depth: 4880 Wt: 9.0 Vis: 66 WL: 8.8 Chl: 5,000 LCM: 9#</p> <p>WOB: 16K RPM: 95+ SPM: 65</p> | <p>RTD @ 3:00 AM CFS 20-40-60</p> |

milky white, semi-translucent in some; abd: vitreous, partial dolomitization & weathering w/lt brown to black stain, sit scum lt brown oil residue in frags; no odor, nsfo

Dol & CH, aa, increase dolomite, lt tan to brown, med xln, sucrosic in some w/ good friability & fair show free oil; crushes softly to sandy like grains; some weathered dolomitized CH w/lt tan edges & pp & edge porosity; oa wk to fair show

Flood white chalky dolomite; powder soft, washes tray white; some scattered cream to white vitreous chert; vis frags w/lt brown staining; some tan to grey LS - fine to med xln; blocky & firm; rare silver green shale

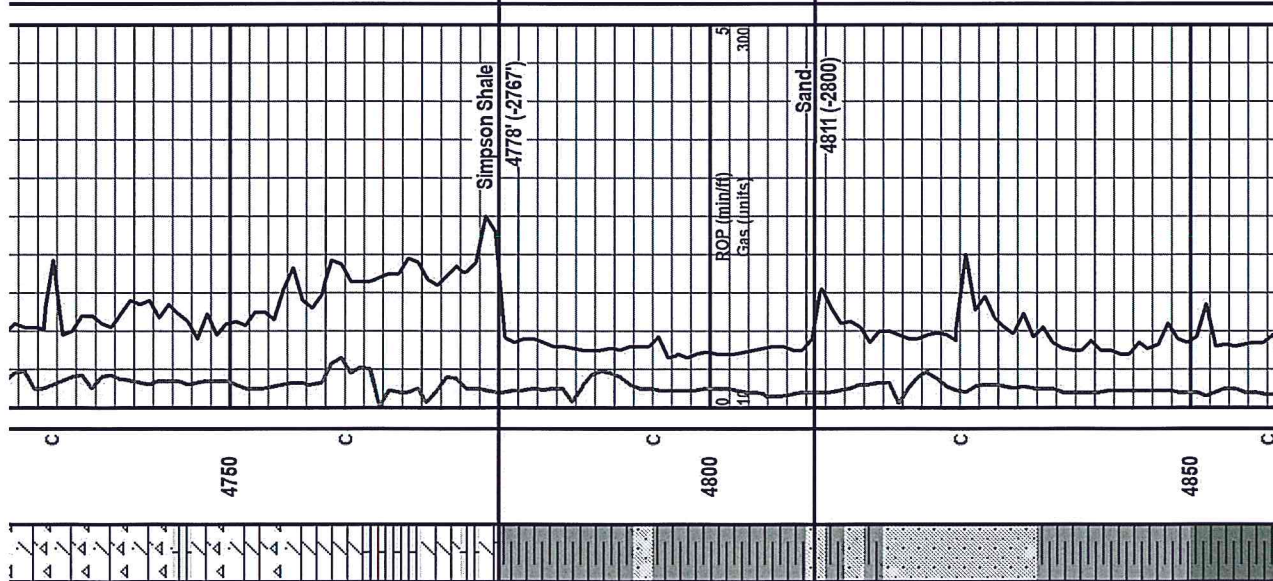
SH - turq green, brittle to sl waxy ip; some lt green chalky LS; few sandy stringers in green shale

SH - turq green, brittle to sl waxy, trans lighter green in some; few larger stringers SS - appear green to grey clusters; fn-med grain, sb angl, clear to frosted grains; mod friab w/ poor visible pois; no odor, ns

SS - variety of clusters; white to lt grey, green, most fn-med xln, mod sorted, well rounded, clear qtz grains, dark material in matrix & abundant green shales; few pcs pyritic; oa mod-gd friability w/ nsfo

SS - as above; increase intergranular black material & some w/ glauconitic inc; trans SH-turq green, aa, brittle to waxy; flood grey silty to waxy w/ green specks

SH - grey & green, brittle to waxy, silty in some; most w/ interbedded SS - clusters aa, increase vis white clust, fn-med grains, well rnd, mod strd; partly friab w/ poor intragran porosity; increase intergranular shale & clay particles (black to green, some pyrite)



VIS: 60
 WT: 9.3
 LCM: 8#
 WOB: 16K
 RPM: 95+
 SPM: 65
 PP: 330#

Mud-Co
 Report #6
 9/9/2019
 Time: 9:30AM
 Depth: 4880
 Wt: 9.0
 Vis: 66
 WL: 8.8
 Chi: 5,000
 LCM: 9#
 WOB: 16K
 RPM: 95+
 SPM: 65

RTD @ 3:00 AM
 CFS 20-40-60
 Short Trip 73 stands up to surface
 pipe. CTCH 1.5 hours.
 TOOH for Logs.

ELI Wireline Ran the
 following:
 >CNL/CDL w/PE
 >Dual Induction
 >Mico
 >Sonic

Geologist left location
 after logs. Leaving
 location @ 5:30 PM

white vitreous chert; vis frags w/ lt brown staining; some tan to grey LS - fine to med xln; blocky & firm; rare siliver green shale

SH - turq green, brittle to sil waxy ip; some lt green chalky LS; few sandy stringers in green shale

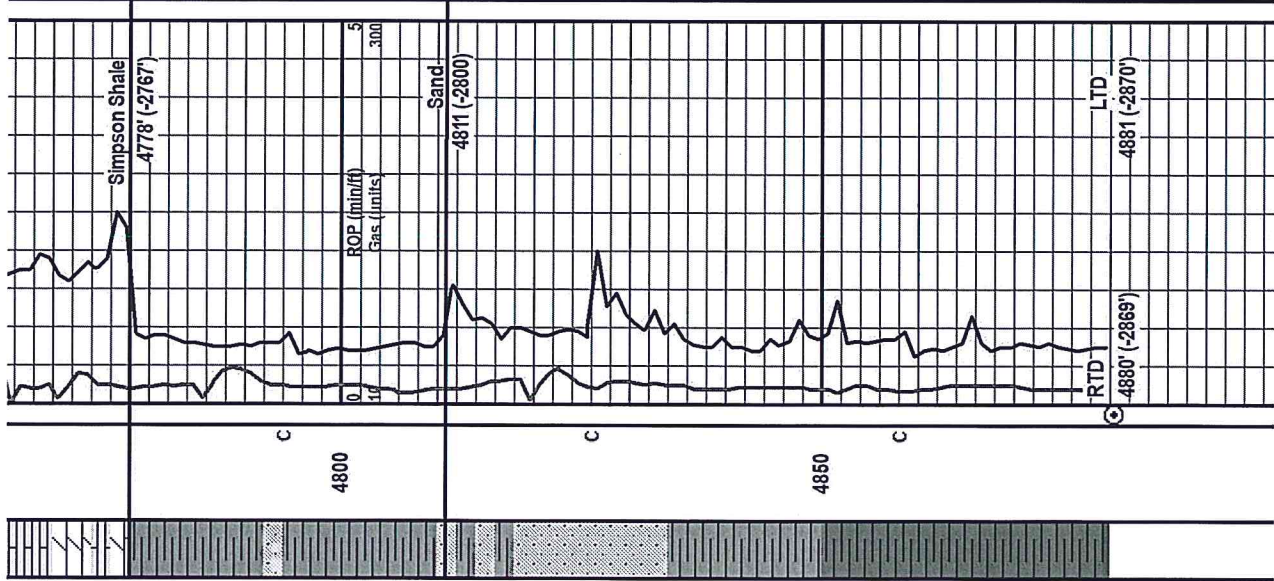
SH - turq green, brittle to sil waxy, trans lighter green in some; few larger stringers SS - appear green to grey clusters; fn-med grain, sb angl, clear to frosted grains; mod friab w/ poor visible pois; no odor, ns

SS - variety of clusters; white to lt grey, green, most fn-med xln, mod sorted, well rounded, clear qtz grains, dark material in matrix & abundant green shales; few pcs pyritic; oa mod-gd friability w/ nsfo

SS - as above; increase intergranular black material & some w/ glauconitic inci; trans SH-turq green, aa, brittle to waxy; flood grey silty to waxy w/ green specks

SH - grey & green, brittle to waxy, silty in some; most w/ interbedded SS - clusters aa, increase vis white clust, fn-med grains, well md, mod srtid; partly friab w/ poor intragran porosity; increase intergranular shale & clay particles (black to green, some pyrite)

SH - grey to green, aa, combination of interbedded w/ SS, as described above; increase SH & oa pyritic content of SS



QUALITY WELL SERVICE, INC.

7218

Federal Tax I.D. # 481187368

Home Office 30060 N. Hwy 281, Pratt, KS 67124

Mailing Address P.O. Box 468

Office 620-727-3410
Fax 620-672-3663

Rich's Cell 620-727-3409
Brady's Cell 620-727-6964

| Date | Sec. | Twp. | Range | County | State | On Location | Finish | | | |
|--|----------------------|------|----------|------------------------------|-------|-------------|--------|---|---|--|
| 9-5-19 | 28 | 29S | 15W | PRATT | KS | | | | | |
| Lease | CAMBRIE | | Well No. | #3 | | | | Location | KROFT KS S to 100 th Rd 1/4 E S into | |
| Contractor | STERLING DELG RIG #4 | | | Owner | | | | To Quality Well Service, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed. | | |
| Type Job | SURFACE | | | Hole Size | | | | 12 1/4 | | |
| Hole Size | 12 1/4 | | | T.D. | | | | 272' | | |
| Csg. | 8 5/8 2.3 # | | | Depth | | | | 268.75 | | |
| Tbg. Size | | | | Charge To | | | | Griffin | | |
| Tool | | | | Depth | | | | | | |
| Cement Left in Csg. | | | | Shoe Joint | | | | 20 | | |
| Meas Line | | | | Displace | | | | 15.8 | | |
| EQUIPMENT | | | | 2 1/2" CEL 3 1/2" CL 1/2" PS | | | | | | |
| Pumptrk | 8 No. | | | Common | | | | 225 | | |
| Bulktrk | 15 No. | | | Poz. Mix | | | | | | |
| Bulktrk | No. | | | Gel. | | | | 423 # | | |
| Pickup | No. | | | Calcium | | | | 635 # | | |
| JOB SERVICES & REMARKS | | | | Hulls | | | | | | |
| Rat Hole | | | | Salt | | | | | | |
| Mouse Hole | | | | Flowseal | | | | 113 # | | |
| Centralizers | | | | Kol-Seal | | | | | | |
| Baskets | | | | Mud CLR 48 | | | | | | |
| D/V or Port Collar | | | | CFL-117 or CD110 CAF 38 | | | | | | |
| Run 6 # 8 5/8 2.3 # CSG SET @ 268.75 | | | | Sand | | | | | | |
| START CSG CSG ON BOTTOM | | | | Handling | | | | 242/1050 | | |
| Hook up to CSG & BREAK CIRC W/ RIG | | | | Mileage | | | | 25 | | |
| START Pumping 5 Bbls H ₂ O | | | | 8 5/8 FLOAT EQUIPMENT | | | | | | |
| START Mix & Pump 225 Sx Common | | | | Guide Shoe | | | | HEAD & manifold | | |
| 2 1/2" CEL 3 1/2" CL 1/2" PS @ 14.8 H ₂ O/GAL | | | | Centralizer | | | | 8 5/8 WOODEN PLUG 1 EA | | |
| SHUT DOWN RELEASE 8 5/8 WOODEN PLUG | | | | Baskets | | | | | | |
| START DISP | | | | AFU Inserts | | | | | | |
| PLUG DOWN 15.8 out 150 # | | | | Float Shoe | | | | | | |
| Close Valve on CSG | | | | Latch Down | | | | | | |
| Good Circ. thru JOB | | | | SERVICE Suv. | | | | 1 EA | | |
| Circ CNT TO PIT | | | | LMV | | | | 25 | | |
| THANK YOU | | | | Pumptrk Charge | | | | SURFACE | | |
| PLEASE CALL AGAIN | | | | Mileage | | | | 50 | | |
| TODD T. JAKE | | | | | | | | Tax | | |
| Signature <i>Todd T. Jake</i> | | | | | | | | Discount | | |
| | | | | | | | | Total Charge | | |

QUALITY WELL SERVICE, INC.

7222

Federal Tax I.D. # 481187368
 Home Office 30060 N. Hwy 281, Pratt, KS 67124
 Mailing Address P.O. Box 468

lmw
C-2140

Office 620-727-3410
 Fax 620-672-3663

Rich's Cell 620-727-3409
 Brady's Cell 620-727-6964

| Date | Sec. | Twp. | Range | County | State | On Location | Finish |
|--|------|-------------------------|-------|---|-------|-------------|--------|
| 9-10-19 | 23 | 29S | 15W | PRATT | Ks | | |
| Lease <i>Cambrie</i> | | Well No. <i>3</i> | | Location <i>CROFT Ks S to 100th Rd 1/4 E on 100th rd</i> | | | |
| Contractor <i>Steeling Dele Rca #4</i> | | | | Owner <i>S. into</i> | | | |
| Type Job <i>S/L S</i> | | | | To Quality Well Service, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed. | | | |
| Hole Size <i>7 7/8</i> | | T.D. <i>4880'</i> | | Charge To <i>Enuffin</i> | | | |
| Csg. <i>5 1/2 17"</i> | | Depth <i>4874.11</i> | | Street | | | |
| Tbg. Size | | Depth | | City | | | |
| Tool | | Depth | | State | | | |
| Cement Left in Csg. <i>21.17</i> | | Shoe Joint <i>21.17</i> | | The above was done to satisfaction and supervision of owner agent or contractor. | | | |
| Meas Line | | Displace <i>112.59</i> | | Cement Amount Ordered <i>200 x PROC 2% FEL</i> | | | |
| EQUIPMENT | | | | <i>10% Salt 5 1/2 x Koseal .6% C16A 25% C41P 1/4" PS</i> | | | |
| Pumptrk <i>8</i> No. | | | | Common <i>200 x</i> | | | |
| Bulktrk <i>10</i> No. | | | | Poz. Mix | | | |
| Bulktrk No. | | | | Gel. <i>376"</i> | | | |
| Pickup No. | | | | Calcium | | | |
| JOB SERVICES & REMARKS | | | | Hulls | | | |
| Rat Hole <i>30 x</i> | | | | Salt <i>1101"</i> | | | |
| Mouse Hole <i>20 x</i> | | | | Flowseal <i>50"</i> | | | |
| Centralizers <i>1-3-5-7-9-11</i> | | | | Kol-Seal <i>1000"</i> | | | |
| Baskets | | | | Mud CLR 48 <i>500 GAL</i> | | | |
| D/V or Port Collar | | | | CFL-117 or CD110 CAF 38 <i>C16A 112B"</i> | | | |
| <i>Run this 5 1/2 17" csg set @</i> | | | | Sand <i>CC-1 9 GAL C41P 47"</i> | | | |
| <i>START CSG CSG ON Bottom TAG Hook up</i> | | | | Handling <i>240</i> | | | |
| <i>to CSG & BREAK CIRC W/ RIG DROP BALL</i> | | | | Mileage <i>251 6150</i> | | | |
| <i>CIRC W/ RIG</i> | | | | 5 1/2 FLOAT EQUIPMENT | | | |
| <i>START Pumping 6 Blk H₂O 12 Blk MF 6 Blk HR</i> | | | | Guide Shoe <i>HEAD & manifold</i> | | | |
| <i>START M/K Pump 50 x PLUG R/M HOLES</i> | | | | Centralizer <i>6 EA</i> | | | |
| <i>START M/K Pump 150 x ↓ CSG @ 14.8"/GAL</i> | | | | Baskets | | | |
| <i>SHOT DOWN wash up trk & RELEASE LD PLUG</i> | | | | AFU Inserts | | | |
| <i>START Disp w/ 2% KCL</i> | | | | Float Shoe <i>1 EA</i> | | | |
| <i>LIFT PS. 96. out 700 #</i> | | | | Latch Down <i>1 EA</i> | | | |
| <i>PLUG DOWN 112.59 1100 #</i> | | | | SERVICE Supr <i>1 EA</i> | | | |
| <i>PS. up on CSG 1600 #</i> | | | | LMV 25 | | | |
| <i>Release & HELD 1/2 Blk BACK</i> | | | | Pumptrk Charge <i>LS</i> | | | |
| <i>Good circ thru JOB</i> | | | | Mileage <i>50</i> | | | |
| <i>Thank you</i> | | | | Tax | | | |
| <i>PLEASE CALL AGAIN TOMO IS JAYE</i> | | | | Discount | | | |
| X Signature <i>JQ</i> | | | | Total Charge | | | |