



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1138086
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

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 SIOW
- Gas D&A ENHR SIGW
- OG GSW Temp. Abd.
- 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 ENHR Conv. to SWD
- Plug Back Conv. to GSW Conv. to Producer
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

| | | |
|-----------------------------------|-----------------|-----------------------------------------|
| Spud Date or Recompletion Date | Date Reached TD | Completion Date or Recompletion Date |
|-----------------------------------|-----------------|-----------------------------------------|

API No. 15 - _____

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
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____



1138086

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 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 | | | | |
| | | | | |

Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 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)*

| Shots Per Foot | PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated | Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i> | Depth |
|----------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| | | | | |
|----------------|-------|---------|------------|---------------------------------------------------------------------|
| TUBING RECORD: | Size: | Set At: | Packer At: | Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No |
|----------------|-------|---------|------------|---------------------------------------------------------------------|

| | |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of First, Resumed Production, SWD or ENHR. | 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> <input type="checkbox"/> Other <i>(Specify)</i> _____ <input type="checkbox"/> Other <i>(Specify)</i> _____ | PRODUCTION INTERVAL: _____ _____ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|



#1 Wray 18A
2140' FNL & 1100' FEL
170' N & 110' W of SW SE NE Section 18-13S-31W
Gove Co., Kansas
API# 15-063-22078-00-00
Elevation: 2930' GL, 2935' KB

| Sample Tops | | | Ref. Well |
|----------------|-------|-------|--------------|
| Anhydrite | 2434' | +501 | -8 |
| B/Anhydrite | 2459' | +476 | -8 |
| Stotler | 3589' | -654 | -6 |
| Heebner | 3940' | -1005 | -6 |
| Lansing | 3986' | -1051 | -8 |
| Muncie Shale | 4124' | -1189 | -3 |
| Stark Shale | 4214' | -1279 | -8 |
| Hush | 4248' | -1313 | -8 |
| BKC | 4278' | -1343 | -4 |
| Marmaton | 4308' | -1373 | -5 |
| Altamont | 4327' | -1392 | -5 |
| Pawnee | 4417' | -1482 | -9 |
| Myrick | 4449' | -1514 | -7 |
| Fort Scott | 4466' | -1531 | -6 |
| Cherokee Shale | 4497' | -1562 | -8 |
| Johnson | 4539' | -1604 | -9 |
| Base Johnson | 4557' | -1622 | -7 |
| Morrow Sand | 4590' | -1655 | -30 |
| Mississippian | 4598' | -1663 | -26 |
| RTD | 4720' | -1785 | |

ALLIED OIL & GAS SERVICES, LLC 050870

Federal Tax I.D.# 20-5976804

REMIT TO P.O. BOX 93999
SOUTHLAKE, TEXAS 76092

SERVICE POINT:
Oakley, KS

| | | | | | | | |
|-------------------------|-----------------|----------------------------------------|-----------------|--------------|----------------------------|-------------------------|--------------------------|
| DATE <u>1-24-13</u> | SEC. <u>18</u> | TWP. <u>13</u> | RANGE <u>31</u> | CALLED OUT | ON LOCATION <u>10:30am</u> | JOB START <u>12:30p</u> | JOB FINISH <u>1:30pm</u> |
| LEASE <u>W104184</u> | WELL # <u>1</u> | LOCATION <u>Oakley, 11S, 3E, 242S,</u> | | | COUNTY <u>Gove</u> | STATE <u>KS</u> | |
| OLD OR NEW (Circle one) | | | | <u>Write</u> | <u>1.01</u> | <u>8.05</u> | |

CONTRACTOR Alliance Well Service
 TYPE OF JOB Production Port Collar
 HOLE SIZE _____ TD. _____
 CASING SIZE _____ DEPTH _____
 TUBING SIZE 2 7/8 DEPTH _____
 DRILL PIPE _____ DEPTH _____
 TOOL port collar DEPTH 2405'
 PRES. MAX _____ MINIMUM _____
 MEAS. LINE _____ SHOE JOINT _____
 CEMENT LEFT IN CSO. _____
 PERFS. _____
 DISPLACEMENT 9.38 bbl

OWNER Same.
 CEMENT AMOUNT ORDERED 450 sacks 60/40 & 20 gal
1/4" top seal, 500' Hullson side
250 sacks 60/40 & 20 gal 1/4" top seal
circulate thru 250' cement
 COMMON 2705/ks @ 17.90 4833.00
 POZ MIX 1805/ks @ 9.55 1683.00
 OBL 235/ks @ 23.90 538.20
 CHLORIDE _____
 ASC _____
Flow seal 113' @ 22.7 2565.61
collarwood (Hull) 85k @ 35.00 280.00
Handling 275 @ 2.48 672.00
Handling 11.42 @ 17.25 196.00
 HANDLING 526.25 @ 2.48 1285.38
 MILBAGE 30.82 @ 17.25 530.00
 TOTAL 9845.49

EQUIPMENT
 PUMP TRUCK CEMENTUR Perry Heinrich
Lakona & Wentz
431 HELPER Paul Beaver
 BULK TRUCK # 396/306 DRIVER David Scario
 BULK TRUCK # _____ DRIVER _____

REMARKS sw/hulls 400k
Mix 450 sacks cement. Did not circulate
circulate - cemented collar.
Close port collar, pressure fold down
Remain 3' joints. Wash out

SERVICE
 DEPTH OF JOB 2405'
 PUMP TRUCK CHARGE 2488.59
 EXTRA FOOTAGE _____
 MILBAGE MILB 17 @ 7.20 120.90
 MANIFOLD _____
MFLR 17 @ 4.40 74.80

CHARGE TO: Ritchie Exploration
 STREET _____
 CITY _____ STATE _____ ZIP _____

TOTAL 2689.29

To: Allied Oil & Gas Services, LLC.
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PLUG & FLOAT EQUIPMENT

 TOTAL _____

PRINTED NAME _____
 SIGNATURE Thomas A. Adell

SALES TAX (if Any) 617.58
 TOTAL CHARGES 12,534.72
 DISCOUNT 2381.59 IF PAID IN 30 DAYS
10153.13

[Handwritten mark]

ALLIED OIL & GAS SERVICES, LLC 060032

Federal Tax I.D. # 20-8661476

REMIT TO P.O. BOX 93999
SOUTHLAKE, TEXAS 76092

SERVICE POINT:

Oakley

| | | | | | | | |
|------------------------------------|-----------------|----------------------------------------|-----------------|---------------------|------------------|---------------------------|---------------------------|
| DATE <u>1-21-13</u> | SEC. <u>18</u> | TWP. <u>X3</u> | RANGE <u>31</u> | CALLED OUT | ON LOCATION | JOB START <u>7:30 Am.</u> | JOB FINISH <u>2:30 Am</u> |
| LEASE <u>Wray 18A</u> | WELL # <u>1</u> | LOCATION <u>Oakley 115-3E-25-Winto</u> | | COUNTY <u>Gove.</u> | STATE <u>Ks.</u> | 8.05 | |
| OLD OR NEW (Circle one) <u>NEW</u> | | | | | | | |

CONTRACTOR WWS-6
 TYPE OF JOB Production
 HOLE SIZE 7 7/8 TD. 4725
 CASING SIZE 4 1/2 DEPTH 4706
 TUBING SIZE DEPTH
 DRILL PIPE DEPTH
 TOOL Port Collar DEPTH 2405
 PRES. MAX MINIMUM
 MBAS. LINE SHOE JOINT 21.00
 CEMENT LBFT IN CSG. 21.00
 PERFS.
 DISPLACEMENT 74.49

OWNER Same
 CEMENT
 AMOUNT ORDERED 255 SKS ASC 10% Salt
2% Gal 5" Gilsonite .25% CDAL
 COMMON
 POZMIX
 GBL 5 SKS @ \$23.42 = \$117.00
 CHLORIDE
 ASC 255 SKS @ \$20.22 = \$5156.50

EQUIPMENT
 PUMP TRUCK CEMENTER Darren Racette 1
423-281 HBLPER Tyler Flipse 2
 BULK TRUCK
396-306 DRIVER Kevin Ryan 3
 BULK TRUCK
 # DRIVER

Gilsonite 1275 # @ \$12 = \$15300.00
CD-31 60 # @ \$10.22 = \$613.20
Super Flush 1266L @ \$58.22 = \$73644.00
 HANDLING 327.72 @ \$2.12 = \$6947.76
 MILBAG 1362 x 17 x @ \$2.42 = \$3297.24
 TOTAL 9933.15

REMARKS:

Pump Super Flush Plug Rathole 305ks Cement
mix 225 SKS Cement in casing washup pump
& Lines Displace with Water Load Plug
600 # Lift 1100"

2,31.53

SERVICE

DEPTH OF JOB 4706
 PUMP TRUCK CHARGE \$2765.75
 EXTRA FOOTAGE @
 MILBAG 17 @ \$7.20 = \$122.40
 MANIFOLD Head @ \$275.22 = \$4680.84
L.V mileage @ \$4.20 = \$71.40
 TOTAL 3246.15

CHARGE TO: Ritchie Exploration
 STREET
 CITY STATE ZIP

PLUG & FLOAT EQUIPMENT

4 1/2 Weatherford @ \$224.42 = \$1011.89
1 Guide Shoe @ \$291.00 = \$291.00
1" AFU Insert @ \$70.00 = \$70.00
8" Turbodrillers @ \$315.22 = \$2521.76
5" Back Kats @ \$390.75 = \$1953.75
1" Port Collar @ \$85.87 = \$85.87
1" Rubber Plug
 TOTAL 5806.71

To: Allied Oil & Gas Services, LLC.
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

SALES TAX (if Any) 1112.92 (1.2%)
 TOTAL CHARGES 18486.31
 DISCOUNT 3697.26 IF PAID IN 30 DAYS
14789.05

PRINTED NAME
 SIGNATURE Thomas A. Ash

2010

R

ALLIED OIL & GAS SERVICES, LLC 060029

Federal Tax I.D. # 20-8051476

REMIT TO P.O. BOX 93999
SOUTHLAKE, TEXAS 76092

SERVICE POINT:

Oakley

| | | | | | | | |
|--------------------------------|-----------------|----------------------------------------|-----------------|------------|----------------------|--------------------------|---------------------------|
| DATE <u>1-12-13</u> | SEC. <u>18</u> | TWP. <u>13</u> | RANGE <u>31</u> | CALLED OUT | ON LOCATION | JOB START <u>8:30 Pm</u> | JOB FINISH <u>4:00 Pm</u> |
| LEASE <u>Wray 18A</u> | WELL # <u>1</u> | LOCATION <u>Oakley 115-3E-25-winto</u> | | | COUNTY <u>Greene</u> | STATE <u>Ks.</u> | |
| OLD OR <u>NBW</u> (Circle one) | | | | | | | |

CONTRACTOR WW-6

TYPE OF JOB Surface

HOLE SIZE 12 1/4 TD. 219

CASING SIZE 8 7/8 DEPTH 223.40

TUBING SIZE DEPTH

DRILL PIPE DEPTH

TOOL DEPTH

PRES. MAX MINIMUM

MBAS. LINE SHOBJOINT

CEMENT LBFT IN CSO. 15'

PERES.

DISPLACEMENT 13.27

EQUIPMENT

OWNER Same

CEMENT AMOUNT ORDERED 175 SKS Com 3% CC

2% Gel

COMMON 175 SKS @ \$12.20 \$2132.50

POZMIX 3 SKS @ \$23.42 \$70.26

GBL 6 SKS @ \$68.00 \$408.00

CHLORIDE ASC

PUMP TRUCK CEMENTER Daven Proctor 1

423-281 HELPER Tylar Flipse 2

BULK TRUCK

396-306 DRIVER Kevia Ryan 3

BULK TRUCK

DRIVER

HANDLING 188.24 OFX \$2.42 \$469.32

MILEAGE 8.64 x 17.2 \$260 \$381.82

TOTAL \$4437.91

REMARKS:

mix cement

Disp. cement with water

Cement did circulate

146.88

SERVICE

DEPTH OF JOB 223.40

PUMP TRUCK CHARGE \$1512.35

BXTRA FOOTAGE

MILEAGE 17 \$7.22 \$130.20

MANIFOLD Swedge \$4.42 \$74.80

14 mileage

TOTAL \$1992.25

CHARGE TO: Ritchie Exploration

STREET

CITY STATE ZIP

PLUG & FLOAT EQUIPMENT

To: Allied Oil & Gas Services, LLC.

You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME Jason Buchanan

SIGNATURE [Signature]

TOTAL

SALES TAX (If Any) 288.72

TOTAL CHARGES 6430.86

DISCOUNT 1449.09 IF PAID IN 30 DAYS

4951.77

2310

Conservation Division
Finney State Office Building
130 S. Market, Rm. 2078
Wichita, KS 67202-3802



Phone: 316-337-6200
Fax: 316-337-6211
<http://kcc.ks.gov/>

Mark Sievers, Chairman
Thomas E. Wright, Commissioner
Shari Feist Albrecht, Commissioner

Sam Brownback, Governor

May 06, 2013

John Niernberger
Ritchie Exploration, Inc.
8100 E 22ND ST N # 700
BOX 783188
WICHITA, KS 67278-3188

Re: ACO1
API 15-063-22078-00-00
Wray 18A 1
NE/4 Sec.18-13S-31W
Gove County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,
John Niernberger

Max R. Loveley

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY Richie Exploration, Inc.
 LEASE # #1 Wray 18A
 FIELD Antelope Ridge Northwest
 LOCATION SW SE NE
 SEC 18 TWP 13 RGE 31W
 COUNTY Gove STATE KS
 CONTRACTOR WW Drilling #6
 SPUD 1-12-2013 COMP 1-20-2013
 RTD 4720 LTD 4725
 MUD UP 3447 TYPE MUD Chem

ELEVATIONS
 KB 2935
 DF 2930
 GL 2930
 Measurements Are All From KB

CASING
 SURFACE 8 7/8" @ 219'
 PRODUCTION 4 1/2"

ELECTRICAL SURVEYS
 Dual IND
 Comp N/D

FORMATION TOPS AND STRUCTURAL POSITION



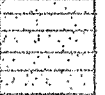



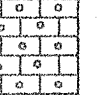
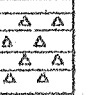
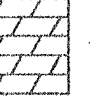
| FORMATION | SAMPLE TOP | ELECTRIC LOG TOP | SUB-SEA DATUM | STRUCTURAL POSITION | | |
|----------------|------------|------------------|---------------|---------------------|---|---|
| | | | | A | B | C |
| Anhydrite | 2434 | 2436 | 499 | 509 | | |
| Base Anhydrite | 2460 | 2461 | 474 | 484 | | |
| Stoller | 3589 | 3582 | -647 | -648 | | |
| Heebner | 3940 | 3943 | -1008 | -999 | | |
| Lansing | 3986 | 3987 | -1052 | -1043 | | |
| Muncie SH | 4124 | 4133 | -1198 | -1186 | | |
| Stark | 4214 | 4218 | -1283 | -1271 | | |
| Altamont | 4327 | 4330 | -1395 | -1387 | | |
| Pawnee | 4417 | 4420 | -1485 | -1473 | | |
| Myric | 4449 | 4454 | -1519 | -1507 | | |
| Cherokee SH | 4497 | 4502 | -1567 | -1554 | | |
| Johnson | 4539 | 4546 | -1611 | -1595 | | |
| Morrow SH | 4585 | 4570 | -1635 | -1625 | | |
| Mississippi | 4598 | 4622 | -1687 | -1637 | | |

REFERENCE WELLS FOR STRUCTURE

- A Richie #1 Phillips-Quier 1645 FSL 165 FEL 18-13-31W
- B _____
- C _____

REMARKS

LEGEND

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

DRILLING TIME IN MINUTES PER FOOT
 Rate of Penetration Decreases

5" 10" 15" 20" 25"

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

ANHYDRITE
2434 +501

2450

ANHYDRITE
2460 +475

3500

SH, GRY, LT GRY, RED

A.A.

LS, TAN, V FXTLN, DNS, FEW
MICRO FOSS, T, TE, NS

SLT STN, V F SMD GRNS, GRY,
GRY/GRN, V FRIABLE, NS

SLT STN / SS, GRY, GRY/GRN,
V FRIABLE, SS GRN SL

STOTLER
3589-654

3600

LGR THAN ABOVE
LS, GRY/WHT, F→M XTLN,
MHRD, ? XTLN Ø, NS

LS, TAN, F XTLN, SL HRD, BRITL,
NO Ø, NS

LS, CRM / TAN / BLK XTLN, F→M
XTLN, HRD, V SL XTLN Ø, NS

LS, GRY, F XTLN, DNS, M HRD,
TITE, NS

SH, DK GRY

LS, WHT, CRM, V CHLKY, SOFT, A
SL HRD, NS

DOLO, TAN, SUCR, M HRD, NS

SS, CLR+CRM GRMS, W SDRT, SCT
MICA, FRIABLE, F→P CMT'D, VG Ø
NS

SH, GRY

LS, GRY, V F XTLN, DNS, HRD, NO Ø
NS

3700

SH, GRY

LS, CRM, F XTLN, SOFT, BRITL,
FEW FOSS, VP Ø, NS

LS, GRY / WHT, V F XTLN, HRD, SCT
CHT (WHT), NS

LS, CRM, BUFF, V F XTLN, SDFT,
CHLKY, NS

LS, GRY, F XTLN, DK GRY XTLN
M HRD, V SL FOSS, NO Ø, NS

LS, WHT / BUFF, V F XTLN, BRITL,
SL FOSS, NO APP Ø, NS

3800

SH, GRY

LS, BUFF, TAN, V FXTLN, ALGAL, SCT M FOSS FRAGS, VW CMT'D, NO VIS Ø, NS

SLTSTN, GRY

A.A.

CHALK

CHALK

LS, BUFF, TAN, F → M XTLN, M HRD, FOSS, P XTLN Ø, NS

A.A.

SH, LT GRY

LS, WHT, F XTLN, SCT TAN CHT W/M, HRD, TITE, NS

SH

LS, CRM, FXTLN, HRD, V FOSS, TITE, NS

SH, BLK, RED

LS, TAN, CRM, V F XTLN, DAS, FOSS, M HRD, NO APP Ø, NS

SH, GRY

3900

HEEBNER
3940-1005

SH, BLK

LS, TAN, CRM, F XTLN, SCT FOSS, W CMT'D FOSS, HRD, NS

SH, GRY, DR GRY

TORONTO
3964-1029

LS, TAN, F XTLN CMT'D OOLS, SOFT, P CMT'D OOLS, G INT OOL Ø, NS

LS, AA, INCR CMT'D OOLS, FAIR OOL Ø, NS

LANSING
3986-1051

CHALK

4000

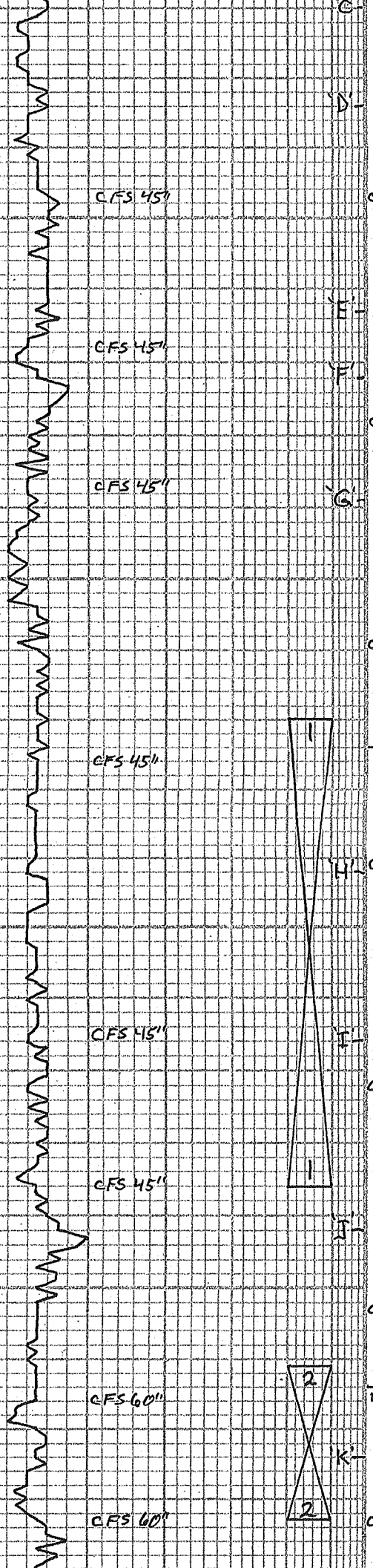
LS, BUFF, F XTLN CMT'D OOLS, P → W CMT'D OOLS, VARI SIZE, G → TITE Ø, NS

LS, WHT, V FXTLN, HRD, VW CMT'D

DST#1 4120-4186
30.45.45.60

IF: BOB 14 MIN 15I: 4' BB
FF: BOB 14 MIN FS: 2' BB

REC: 480' GIP
60' G.COM 15% G, 25% O
180' G.COM 15% G, 40% O



4100

MUNCIE
4124 - 1189

4200

STARK
4214 - 1279

FOSS + OOLS, TITE, NS
LS, WHT, VCHLKY, FOSS, CHLK Ø
NS

LS, BUFF, VFXTLN, HRD, VW CMT'D
FOSS, TITE, NS

SH, LTGRY, BLK MINS WIN

LS, BUFF, VFXTLN, DNS, TITE,
HRD, NS

LS, BUFF, CRM, FXTLN, HRD, FOSS,
NO VIS Ø, NS

CHT, CRM, PEACH, LT WHT, O PAQ,
LT SCT FOSS, FRESH

LS, BRN, VFXTLN, V DNS + HRD,
TITE CMT'D FOSS, NO Ø, NS

LS, TAN, VFXTLN, CRYPTO ¼ G SCT
VUG Ø, NS, NO ODOR

LS, LT TAN, VFXTLN CMT'D OOLS
FOSS, NO Ø, NS

LS, CRM, FXTLN, DNS, M HRD,
FEW FOSS, NS, NO Ø

CHT, WHT, ABUN FOSS + OOLS,
WCMT'D, TITE, NS

LS, CRM, FXTLN, DNS, HRD,
TITE, NS

SH, BLK, LTGRY
LS, OFF WHT, FXTLN, S → M
HRD

LS, TAN, BUFF, FXTLN, S → M HRD
NO VIS Ø, SCT Pcs W/ BLK + BRN
SURF STNG, ? FRAC'D

LS, WHT, VFXTLN, HRD, FEW SCT
STRKS OF FLUOR O SPTS + STNG,
FEW FO SPTS ON BRK, ? GRNOIL,
LT BRN OIL SPTS, VARI SIZE FO

CHALK, FLUOR, FLUOR FO ON BRK,
NO ENERGY

LS, WHT / CRM, V OOL + FRAGS,
VG Ø COATED FOSS Ø, GAS BBLS
WIN Ø, SML Ø SPTS ON BRK,
THIN ZONE
CIRC: AA, DK BRN HUY OIL IN Ø,
LESS FO ON BRK, MORE CMT'D

SLT STN, GRY, GARB-BLK

LS, CRM, WHT, VFXTLN, DNS,
MHRD, TITE, NS

LS, WHT, CRM, VFXTLN, M HRD,
SL CHLKY, NO VIS Ø, NS

SH, BLK
LS, TAN, VFXTLN, ABUN FLUOR
Ø STND FRAC'S, TITE, V SML
FRAC'S

LS, BRN, VFXTLN, DNS, V HRD, NO
VIS Ø BUT SLO GAS BLEED ON BRK

LS, TAN, WHT, VFXTLN ¼ M XTLS ¼
SOFT, VG Ø SAT FLUOR STNG, FAIR
FO ON BRK

CIRC: LS, BRN, VFXTLN (? SAT STND)

330 CGD 15% G, 85% O
38° API EMULSIFIED T
FP: 74-175, 183-279
SIP: 1282-1250
HP: 2077-2067

7:AM 1-16-2013
CFS @ 4068'

MUD CHECK
VIS 57 WT 9.1
CHLOR 2,000 LCM 2
FILT 7.2

SCT SURF
STNG

LT
ODOR
FO SPTS

MICRO
FO SPTS

G ODOR

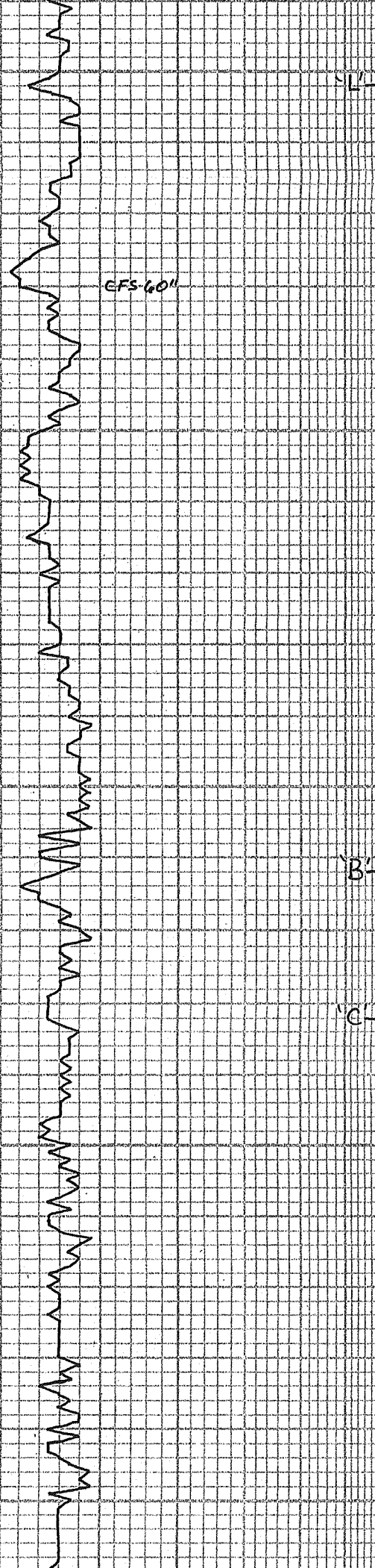
VIS 57
WT 9.4
LCM 1

7:AM 1-17-2013
GOWG IN HOLE FROM
DST #1 @ 4186'

STRAP 4202.56
BOARD 4203.33
SHORT .77'

G ODOR
OIL

MUD CHECK



HUSHPUCKNEY
4248 - 1313

BKC
4278 - 1343

4300

MARMATON
4308 - 1373

ALTAMONT
4327 - 1392

4400

PAWNEE
4417 - 1482

MYRIC
4449 - 1514

VG FLUOR BLEED

LS, WHT, F XTLN, SCT WHT CHT,
P₀, NS
SH, BLK

CHALK, SH STRKS W/N
CHT, WHT, V FOSS

LS, TAN / GRN, F XTLN, HRD, P₀S
BRTL, NO APP₀, NS

LS, LT TAN, F XTLN, SL SUCR DOLD,
HRD, NO V₀S P₀NS

SH, GRN, SET SMD GRAS

SH, GRN, GRN

SH, GRN, STICKY

LS, WHT, F XTLN, V LG XTLN W/N,
V BRTL, P XTLN₀, NS

LS, TAN, A.A.

SH, GRN, GRN, BURG, BLK

LS, LT WHT → TAN, V F XTLN,
VW CMT'D FOSS, TITE, NS

LS, WHT, CRM, TAN, V F XTLN,
DNS, HRD, TITE, NS

SH, BURG, GRN

LS, TAN, CRM, V F XTLN, DNS, NS

LS, WHT, V F XTLN, DNS, HRD,
V FEW SML FOSS, NS

SH, GRN

LS, LT GRN, V F XTLN, DNS
NS

SH, GRN, DK GRN

LS, CRM, V F XTLN, DNS, M HRD
TITE, NS

LS, BRN, V F XTLN, DNS, V FOSS,
BRTL, NS

SH, BLK

SH, GRN

LS, BRN, CRM, V F XTLN, HRD,
V FEW FOSS, NS

LS, WHT, V F XTLN, SOFT → M HRD,
NO APP₀, NS

BLEED
V L TOIL

VIS 51 WT 9.3
CHLOR 6,000 LCM 1
FILT 6.4

DST #2 4211-4233
30.45.45.60
IF: 7" ISI: NR
FF: 8" FSI: NR
REC: 210' MW 10% M 90' W
CHLOR 54,000
FP: 42-111, 114-162
SIP: 1198-1140
HP: 2106-2088

SH FLOOD

7:AM 1-18-2013
DRLG @ 4351

MUD CHECK
VIS 62 WT 9.2
CHLOR 1,000 LCM 2

Ft. Scott

SH, BLK

4466-1531

LS, BRN/TAN, V FXTLN, V HRD,
V FOSS, TITE, NS

LS, CRM, V FXTLN, CMT'D OOLS,
FOSS, TITE, NS

A.A.

CHEROKEE

4500

4497-1562

SH, BLK, ABUN CARB
LS, TAN, V FXTLN, DNS, TITE, HRD,
LS, CRM/TAN, FXTLN, G VARI SIZE
PP → LG OIL FILL VUG, FEW SCT
G.A.S. BLS, ? EMERG, V FEW FR
ON BRK

1 pc
BLK O
COAT
VUG &
F ODR

SH, BLK

LS, BUFF, TAN, V FXTLN, DNS,
V HRD, PCS W/FINE FOSS W/N,
PCS W/REXTLN FRAC'S, TITE NS

JOHNSON

c. 4539-1604

SH, GRY

LS, BRN, VARI SIZE XTLN, HRD, G OIL
FILL PP, SLD OIL BLEED, SL GAS +
OIL ON BRK
LS, TAN, V SOFT, V G OIL FILL VUG, Ø

LT BRN
OIL
VLT ODOR

BASE

JOHNSON

4557-1622

LS, DK BRN, V FXTLN, V DNS, V G, SWIL
OIL FILL VUG, STRKS ON EDGE,
G BLEED, NO VIS GAS
LS, CRM, V FXTLN, M HRD, DNS,
CHLKY, NO APP, CHLKY PCS W/Ø
OIL STRKS

FO IN
CUP
WCR
ODOR

MORROW SH

4565-1630

SH, GRY, GRN W/BLK STRKS

SH, VARI COLOR

SS, CLR, SUB ANG → SUB RND GRAS,
P SORT, MGRNS, GRYCMT, HRD,
P NS

LS, GRY, V FXTLN, V DNS, V HRD,
FEW SCT FOSS, NO Ø, NS

MORROW SD

4590-1655

SH, GRY
LS, TAN, BRN, V FXTLN, V HRD, V PCS
SOFT, PP, STRKS W/N, G, PP, XTLN
Ø FILL Ø

FO N/TRAY

SS, WHT, G SORT, F GRNS, DD OIL STNG
SS, GRN, BRN, CLR GRN, W SORT NS

DD O STN

MISS

4600

4598-1663

LS, GRY, WHT, V FXTLN, DNS,
HRD, TITE, NS

LS, WHT, TAN, V FXTLN, HRD,
SL BRTL, NO APP, NS

LS, CRM, TAN, FXTLN, SET PCS W/
M XTLN W/N, M HRD, BRTL,
P XTLN Ø, NS

LS, CRM, F → M XTLN, SOFT, GRNLR
TXT, SL CHLKY, F → G Ø, NS

LS, TAN, CRM, F → M XTLN, V FOSS
S → M HRD, ? Ø, NS

LS, WHT, FXTLN, HRD, SL F
GRNLR TXT, NO APP, NS

LS, TAN, BUFF, V FXTLN, V HRD,
DNS, TITE, NS

LS, GRY, V FXTLN, V FOSS,
V HRD, DNS, TITE, NS

DOLD, TAN, FXTLN, HRD,

20 STAND SHORT TRIP
DST #3 4518-4564
30.45.45.60
IF: BOB 19 1/2 MIN ISI: 1 1/2"
FF: BOB 17 MIN FSI: 3"
REC: 90' GIP
330' G MO
20% G, 55% O, 25% M
OIL TOO THICK FOR GRAVITY
FP: 60-128, 135-181
SIP: 1125-1025
HP: 2279-2258

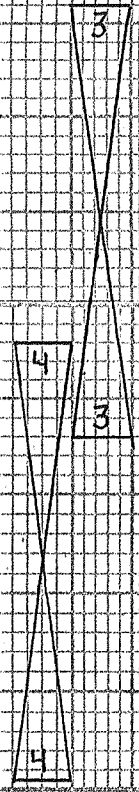
7:AM 1-19-2013 V1554
DST #3 @ 4664 WT 9.3
MUD CHECK
VIS 46 WT 9.3
CHLOR 5000 LCM 2
FILT 6.4

LS, TAN, FXTLN, "Pumice"
TEXTURE Ø G OIL FILL Ø,
SAT'D, TR GAS ON BRK, SOFT
SD GRNS, LG, CLR, SUB RND,
UN CONSOL, SL GRN STNG
IN SURF PITTING

7:AM 1-20-2013
CF@ 4620'

MUD CHECK
VIS 56 WT 9.6
CHLOR 8,000 LCM 2
FILT 6.4

DST #4 4554-4599
30.45.45.60
IF: 5" ISI: No BB
FF: 4" FSI: No BB
REC: 90' M
120' MW · 30% M, 70% W
FP: 55-113, 114-144
SIP: 1167-1122



HP: 2282-2241

SL SDR, BRUL, NO ATP
DOLD, TAN, SL WMY, FOSS FRAGS
? ϕ INS

LS, TAN/BRN, FXTLN, VFOSS,
SL DOLD, HRD, NS

DOLD, BRN, TAN, VEXTLN, FOSS,
HRD, VG VUG +XTLN ϕ INS

DOLD, A.A. INCR LS W/ABUN
FOSS + FRAGS, NS

4700

TD

CFSMS COND. IHR 10 STVA
SHORT TRIP

5" 10" 15" 20" 25"
DRILLING TIME Minutes/Foot

Rate of Penetration Decreases

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

CONTRACTOR _____

LOCATION _____

LEASE _____ IP _____

SEC. _____ TWP. _____ RNG _____

ELEVATION _____ RTD _____

COUNTY _____ STATE _____