

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 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
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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) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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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:	
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Form	ACO1 - Well Completion
Operator	Patterson Energy LLC
Well Name	MUCHMORE-THORNBURG 1
Doc ID	1733817

All Electric Logs Run

Cement Bond
Dual Induction
Neutron
Micro

Form	ACO1 - Well Completion
Operator	Patterson Energy LLC
Well Name	MUCHMORE-THORNBURG 1
Doc ID	1733817

Tops

Name	Top	Datum
Anhydrite	1982	+577
Base	2020	+539
Heebner	3816	-1257
Lansing	3856	-1297
Muncie Creek	4010	-1451
BKC	4159	-1600
Marmaton	4206	-1647
Pawnee	4306	-1747
Fort Scott	4371	-1812
Cherokee	4398	-1839
Miss Warsaw	4460	-1901
Miss Osage	4539	-1980
LTD	4594	-2035
RTD	4590	-2031

Geological Report

Muchmore-Thornburg #1

2310' FNL & 1650' FEL

Sec. 34 T15s R26w

Gove County, Kansas



Patterson Energy, LLC.

General Data

Well Data: Patterson Energy, LLC.
Muchmore-Thornburg #1
2310' FNL & 1650' FEL
Sec. 34 T15s R26w
Gove County, Kansas
API # 15-063-22430-0000

Drilling Contractor: Discovery Drilling, Co., Inc. Rig #4

Geologist: Jason T Alm

Spud Date: June 9, 2023

Completion Date: June 18, 2023

Elevation: 2551' Ground Level
2559' Kelly Bushing

Directions: Utica, KS. North 4 mi. West 1 mi. North 7/8 mi.
West and south into location.

Casing: 223' 8 5/8" surface casing
160 sks Common, 2% Gel, 3% CC

4586' 5 1/2" production casing
100 sks Standard

Samples: 10' wet and dry, 3650' to RTD

Drilling Time: 3600' to RTD

Electric Logs: Gemini Wireline "Gus Pfannenstiel"
CNL/CDL, DIL, MEL

Drillstem Tests: None

Problems: None

Remarks: Port Collar @ 1995'

Formation Tops

Formation	Patterson Energy, LLC. Muchmore-Thornburg #1 Sec. 34 T15s R26w 2310' FNL & 1650' FEL
Anhydrite	1982' +577
Base	2020' +539
Heebner	3816' -1257
Lansing	3856' -1297
Muncie Creek	4010' -1451
BKC	4159' -1600
Marmaton	4206' -1647
Pawnee	4306' -1747
Fort Scott	4371' -1812
Cherokee	4398' -1839
Miss Warsaw	4460' -1901
Miss Osage	4539' -1980
LTD	4594' -2035
RTD	4590' -2031

Sample Zone Descriptions

Fort Scott (4371' -1812): Not Tested
 Ls – Fine crystalline with poor-fair scattered vuggy porosity, few rocks with light spotted oil stain in porosity, no show of free oil, light odor, much chert, 62 Gas Units.

Miss Warsaw (4460' -1901): Not Tested
 Dolo – Fine crystalline, sucrosic in part with fair to good vuggy and scattered good inter-crystalline porosity, light to good oil stain in porosity, many rocks with partial to total saturation, fair show of free oil on break and cup, good odor, fair yellow fluorescents, fair to good cut, slight chert, 210 Gas Units.

Structural Comparison

	Patterson Energy, LLC. Muchmore-Thornburg #1 Sec. 34 T15s R26w 2310' FNL & 1650' FEL	Mull Drilling Co Muchmore-Thornburg Unit #1-34 Sec. 34 T15s R26w 2445' FNL & 2130' FEL		Slawson Deighton A #1 Sec. 26 T15s R26w SW SW NE	
Formation					
Anhydrite	1982' +577	573	(+4)	579	(-2)
Base	2020' +539	536	(+3)	NA	NA
Heebner	3816' -1257	-1257	(FL)	-1253	(-4)
Lansing	3856' -1297	-1297	(FL)	-1293	(-4)
Muncie Creek	4010' -1451	-1449	(-2)	NA	NA
BKC	4159' -1600	-1598	(-2)	NA	NA
Marmaton	4206' -1647	-1643	(-4)	NA	NA
Pawnee	4306' -1747	-1741	(-6)	NA	NA
Fort Scott	4371' -1812	-1807	(-5)	NA	NA
Cherokee	4398' -1839	-1831	(-8)	NA	NA
Miss Warsaw	4460' -1901	-1896	(-5)	-1905	(+4)
Miss Osage	4539' -1980	-1977	(-3)	NA	NA

Summary

The Muchmore-Thornburg #1 ran structurally as expected. No Drill Stem Tests were conducted. Commercial oil shows were encountered in the Mississippian Warsaw Formation. After all gathered data had been examined the decision was made to run 5 ½ inch production casing to further evaluate the Muchmore-Thornburg #1 well.

Recommended Perforations

Primary:

Mississippian Warsaw 4486' – 4492'

Before Abandonment:

Fort Scott 4388' – 4395'

LKC K 4113' – 4117'

LKC J 4083' – 4088'

Respectfully Submitted,

Jason T Alm
Hard Rock Consulting, Inc.