

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
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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)</i> <i>(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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QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 2827

Date	5-16-22	Sec.	23	Twp.	17	Range	9	County	Ellsworth	State	KS	On Location		Finish	3:30 PM
Lease	Zwilllich		Well No.	#2		Owner	1 1/2 E, 54th								
Contractor	Murfin #16		Location			Lorraine South Side of town, Rd V									
Type Job	Surface		To Quality Oilwell Cementing, 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	12 1/4"		T.D.	265'		Charge To	Patterson Energy								
Csg.	8 5/8"		Depth	268'		Street									
Tbg. Size			Depth			City	State								
Tool			Depth			The above was done to satisfaction and supervision of owner agent or contractor.									
Cement Left in Csg.	15'		Shoe Joint	15'		Cement Amount Ordered	180 80/20 3%CC 2%Gel								
Meas Line	Displace		15 3/4 BU												
EQUIPMENT						Common	145								
Pumptrk	16	No.	Cement	Jordan		Poz. Mix	35								
Bulktrk	14	No.	Driver	Tim Clayton		Gel.	3								
Bulktrk	p.u.	No.	Driver	Rick		Calcium	2								
JOB SERVICES & REMARKS						Hulls									
Remarks:	Cement did Circulate														
Rat Hole															
Mouse Hole															
Centralizers															
Baskets															
D/V or Port Collar															
						Handling	190								
						Mileage									
						FLOAT EQUIPMENT									
						Guide Shoe									
						Centralizer									
						Baskets									
						AFU Inserts									
						Float Shoe									
						Latch Down									
						Pumptrk Charge	Surface								
						Mileage	37								
						Thanks									
						Tax									
						Discount									
						Total Charge									
Signature															

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 2834

Date	5-23-22	Sec.	23	Twp.	17	Range	9	County	Ellsworth	State	Ks	On Location		Finish	4:00 PM
Lease	Zwillich		Well No.	2		Owner	5/4 rto								
Contractor	Murfin #16				To Quality Oilwell Cementing, 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	Longstring				Charge To Patterson Energy										
Hole Size	7 7/8"		T.D.	3600'		Csg. 5 1/2" 15.50#									
Csg.	5 1/2" 15.50#		Depth	3568.13		Tbg. Size									
Tbg. Size			Depth			Tool									
Tool			Depth			The above was done to satisfaction and supervision of owner agent or contractor.									
Cement Left in Csg.	20.84'		Shoe Joint	20.84'		Cement Amount Ordered 175 Com 10% Salt 5% Gilsomite									
Meas Line			Displace	84 1/2 BLS		500 gal mud Clear 48									
EQUIPMENT						Common 175									
Pumptrk	16	No.	Cementer	David		Poz. Mix									
Bulktrk	15	No.	Helper	Doug		Gel.									
Bulktrk	p.u.	No.	Driver	Rick		Calcium									
JOB SERVICES & REMARKS						Hulls									
Remarks:						Salt 14									
Rat Hole	30sx					Flowseal									
Mouse Hole	20sx					Kol-Seal 750 lb									
Centralizers	3, 5, 7, 9, 11					Mud CLR 48 500 gal									
Baskets	#1					CFL-117 or CD110 CAF 38									
D/V or Port Collar	pipe on bottom break Circulation					Sand									
pump 500 gal mud Clear 48 plug Rat						Handling 196									
+ mousehole Hook to 5 1/2" mud mix						Mileage									
125sx Cement. Shut down Wash						FLOAT EQUIPMENT									
pump + lines Displaced plug w/ 8 1/2"						Guide Shoe 1-Limit clamp									
BLS H2O. Released + held.						Centralizer 5									
Lift pressure 700 #						Baskets 1									
Land plug to 1500 #						AFU Inserts									
						Float Shoe 1									
						Latch Down 1									
						Pumptrk Charge									
						Mileage 37									
Thanks						Tax									
Signature <i>any</i>						Discount									
						Total Charge									

AUSTIN B. KLAUS

Cell 785.650.3629
Work 785.483.3145
Ext 225

PO BOX 352
Russell, KS 67665
austin.klaus@johnofarmer.com

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

Well Name: Zwillich #2
API: 15-053-21380-00-00
Location: Ellsworth County
License Number: Region: Kansas
Spud Date: 5/16/2022 Drilling Completed: 5/22/2022
Surface Coordinates: 1,320' FNL & 2,310' FEL
Section 23, Township 17 South, Range 9 West
Bottom Hole Vertical well w/ minimal deviation, same as above
Coordinates:
Ground Elevation (ft): 1,778 K.B. Elevation (ft): 1,783
Logged Interval (ft): 2,400 To: RTD Total Depth (ft): 3,569
Formation: LKC-Arbuckle
Type of Drilling Fluid: Chemical (Andy's Mud & Chemical Co.)
Printed by StripLog from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Patterson Energy, LLC
Address: PO Box 400
Hays, KS 67601

GEOLOGIST


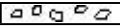

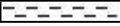






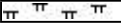






Name: Austin Klaus
Company: John O. Farmer, Inc.
Address: PO Box 352
Russell, KS 67665

Comments

The Zwillich #2 well was drilled by Murfin Drilling Company Inc. Rig #16 (Tool Pusher: Andy Dinkel).

The Zwillich #2 well was drilled for utilization as a salt-water disposal well. Drill time was recorded, and rock samples were collected and evaluated from 2,400' - 3,569'. Several Lansing zones contained good porosity development with slight oil staining (see 'Geological Descriptions' below). Good porosity development and slight - fair oil shows were also encountered in the upper Arbuckle section (top 20'). Additionally, several sections in the lower Arbuckle contained good porosity development. Structurally, the Zwillich #2 ran 9' low at the Lansing when compared to the Zwillich #1 (6/2021; located 660' north). Structure thickened slightly and the Arbuckle was picked 11' low to the comparison well. At the conclusion of the drilling operation, open-hole logs were run, which discovered the total depth of the well to be 3,569', rather than 3,600. On May 23, 2022, 5-1/2" casing was set on Zwillich #2.

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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OTHER SYMBOLS

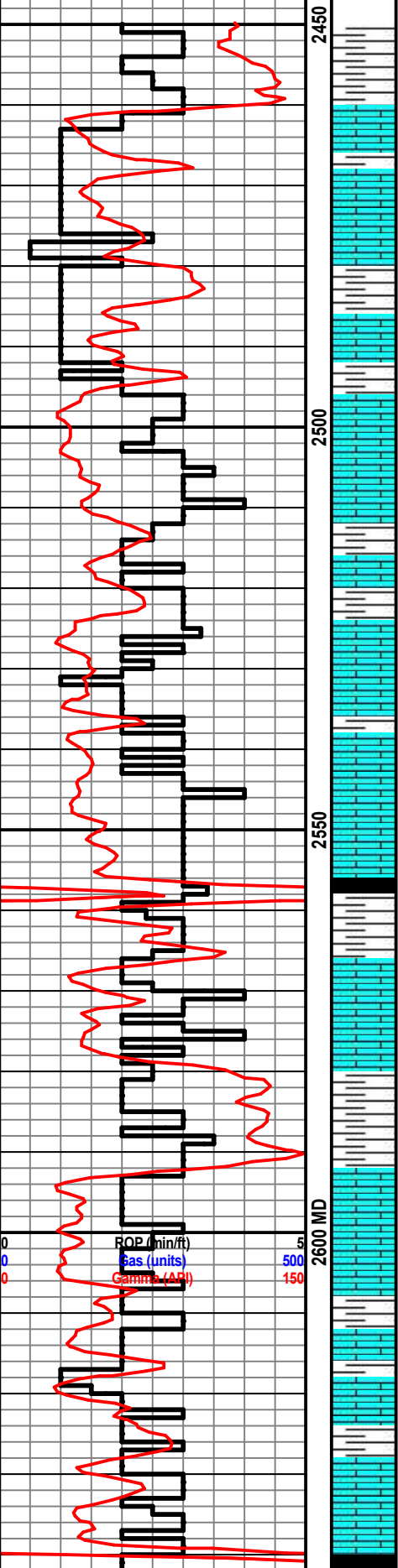
POROSITY <input type="checkbox"/> Earthy <input type="checkbox"/> Fenest <input type="checkbox"/> Fracture <input type="checkbox"/> Inter <input type="checkbox"/> Moldic <input type="checkbox"/> Organic <input type="checkbox"/> Pinpoint	<input checked="" type="checkbox"/> Vuggy SORTING <input type="checkbox"/> Well <input type="checkbox"/> Moderate <input type="checkbox"/> Poor	ROUNDING <input type="checkbox"/> Rounded <input type="checkbox"/> Subrnd <input type="checkbox"/> Subang <input type="checkbox"/> Angular OIL SHOW <input checked="" type="checkbox"/> Even	<input type="checkbox"/> Spotted <input type="checkbox"/> Ques <input type="checkbox"/> Dead INTERVAL <input type="checkbox"/> Core <input type="checkbox"/> Dst	EVENT <input type="checkbox"/> Rft <input type="checkbox"/> Sidewall
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Curve Track 1	MD	Lithology	Geological Descriptions	DST/Mud/Survey																								
ROP (min/ft) ——— Gas (units) - - - - - Gamma (API) ———																												
0 ROP (min/ft) 5 0 Gas (units) 500 0 Gamma (API) 150	23		<p><i>The open-hole logging was performed by Mr. Gus Pfanenstiel with Gemini Wireline, LLC (Hays, KS). Logs included: Compensated Density Neutron, Dual Induction, and Microresistivity.</i></p> <p><i>Formation tops and datums from the open-hole logs include the following:</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Formation</th> <th>E-Log</th> <th>Datum</th> </tr> </thead> <tbody> <tr><td>Anhydrite</td><td>444</td><td>1339</td></tr> <tr><td>Topeka</td><td>2461</td><td>-678</td></tr> <tr><td>Heebner</td><td>2723</td><td>-940</td></tr> <tr><td>Toronto</td><td>2742</td><td>-959</td></tr> <tr><td>Lansing</td><td>2858</td><td>-1075</td></tr> <tr><td>B/KC</td><td>3147</td><td>-1364</td></tr> <tr><td>Arbuckle</td><td>3198</td><td>1102</td></tr> </tbody> </table>	Formation	E-Log	Datum	Anhydrite	444	1339	Topeka	2461	-678	Heebner	2723	-940	Toronto	2742	-959	Lansing	2858	-1075	B/KC	3147	-1364	Arbuckle	3198	1102	<p>Mud Engineer: Brandon Mendez</p>
Formation	E-Log	Datum																										
Anhydrite	444	1339																										
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5/12/2022 - MIRT																												
5/13/2022 - OFF/STAFFING																												
5/14/2022 - OFF																												
5/15/2022 - OFF																												
5/16/2022 - SPUD IN																												
5/17/2022 - DOWN/STAFFING																												
5/18/2022 - DOWN/STAFFING																												
0 ROP (min/ft) 5 0 Gas (units) 500 0 Gamma (API) 150	2400																											
5/19/2022 - 860', DRLG																												
5/20/2022 - 2,020', DRLG																												
5/21/2022 - 2,705' DRLG																												

5/22/2022 - 3,295', DRLG

5/23/2022 - 3,569', LOGGING

Arduckie	3180	-1403
LTD	3569	-1786



Topeka 2461' (-678)

Ls: tan-gry-buff, fn-sub xln, DNS, scat chalk

Sh: lt-drk gry

Ls: tan-gry-buff, fn-sub xln, DNS, scat fossil

Ls: off wh-tan-gry, fn xln, poor scat int xln & fossil porosity, scat dead oil str

Ls: tan-lt gry, fn-sub xln, mostly DNS, scat fossil

Ls: tan-gry, fn-sub xln, mostly DNS, scat chalk

Sh: gry-blk

Ls: off wh-tan-gry, fn xln, scat poor int xln & fossil porosity, scat dead oil str

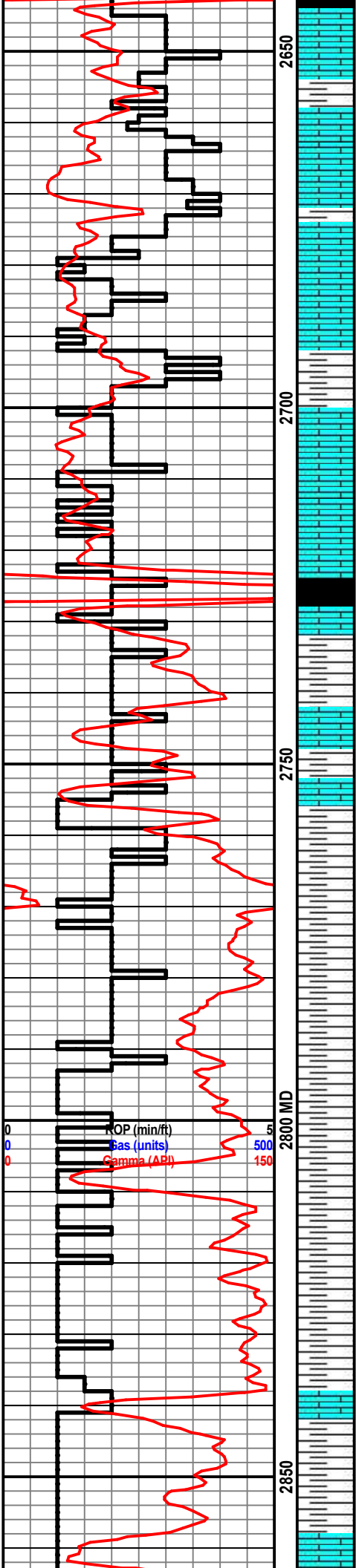
Sh: gry

Ls: off wh-tan-gry, fn xln, scat-poor int xln porosity, scat fossil

Ls: tan-gry, fn-sub xln, mostly DNS, NSFO, scat chalk

Ls: ala

Sh: drk arv-blk



Ls: off wh-tan, fn xln, scat-poor int xln porosity, barren, scat chalk

Ls: tan-lt gry, fn-sub xln, mostly DNS, scat chalk

Ls: ala

Sh: lt gry-bm

Ls: off wh-tan-lt gry, poor-fair int xln porosity, mostly barren, scat foss

Heebner 2722' (-939)

Sh: blk, carb, fissile

Ls: tan-lt gry, fn-sub xln, mostly DNS

Sh: lt-drk gry

Toronto 2743' (-960)

Ls: tan-gry, fn-sub xln, DNS

Sh: lt gry-bm

Sh: ala

Sh: lt gry

Sh: lt gry-bm

Sh: ala

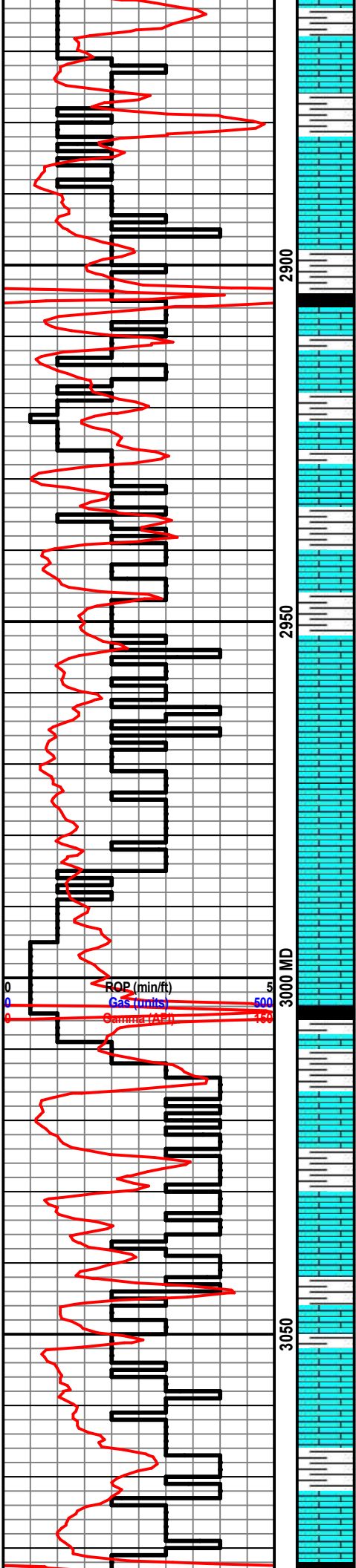
Sh: lt gry, soft

Sh: lt gry-bm

Lansing 2860' (-1077)

Ls: off wh-tan, fn xln, poor int xln porosity, NSFO

Wt: 92
 Vis: 59



Ls: off wh-tan, fn xln, fossil, poor int xln porosity, barren

Sh: lt gry-bm

Ls: off wh-tan, fn xln, ool, fair-good oom porosity, scat sl oil stn, VSSFO, vry fnt odor

Sh: drk gry-blk

Ls: off wh-tan, fn xln, fossil, scat-poor int xln porosity, NSFO, scat chert-off wh

Ls: off wh-tan, fn xln, scat foss, poor int foss porosity, mostly barren, chert-off wh, scat chalk

Ls: off wh-tan, fn xln, scat foss, poor int xln porosity, barren

Sh: drk gry

Ls: off wh-tan, fn xln, poor-fair int xln, scat lt oil stn, vry fnt odor, scat chalk

Ls: off wh-tan, fn xln, ool, fair-good oom porosity, vry lt scat oil stn, lt odor, scat chalk

Ls: off wh-tan, fn xln, scat foss, chalky, barren

Ls: ala

Sh: drk gry-blk

Ls: off wh-tan, fn xln, poor int xln porosity, scat foss, scat chert-off wh

Sh: lt gry

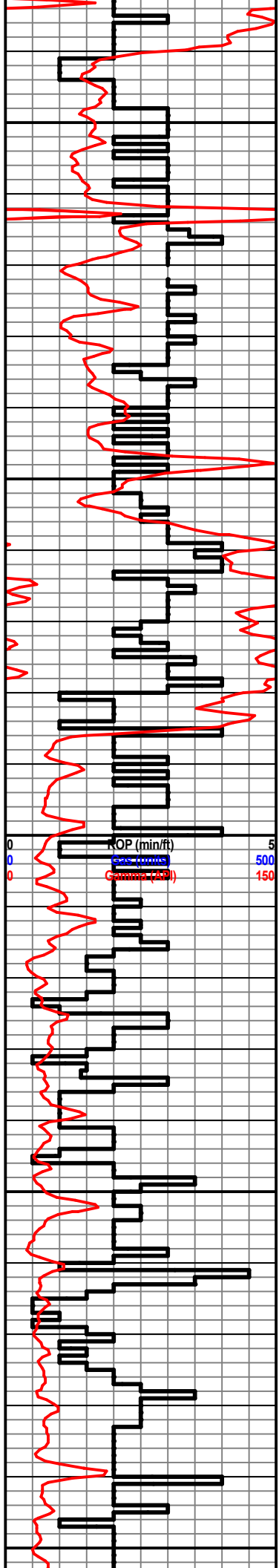
Ls: tan-lt gry, fn xln, poor int xln porosity, barren, scat chalk

Sh: lt-drk gry

Ls: off wh-tan, fn xln, poor int xln porosity, mostly barren, scat chert-off wh

Ls: off wh-tan, fn xln, scat int xln & int foss porosity, mostly barren, scat chalk

Ls: off wh-tan, fn xln, poor int xln porosity, scat chalk



3100

3150

3200 MD

3250

3300

Sh: lt drk gry-blk

Ls: off wh-tan, fn xln, poor int xln porosity, scat chert-off wh

Ls: off wh-tan, fn xln, poor int xln porosity, mostly barren, scat chert-off wh

Sh: drk gry-blk

Ls: tan-lt gry, fn xln, poor int xln & vuggy porosity, barren, scat chert-off wh, chalky

Ls: off wh-tan, fn xln, poor int xln & vuggy porosity, barren, scat chalk

Ls: off wh-tan, fn xln, scat int xln porosity, barren, NSFO, scat chalk

B/KC 3149' (-1366)

Sh: lt-drk gry

Sh: lt gry-bm, scat Ls: tan-gry, DNS, barren, scat chalk

Arbuckle 3185' (-1402)

Dolo: off wh-tan-bm, fn-md xln, poor-fair int xln porosity, sl-fair oil sat, S-FSFO, fair-good odor

Dolo: off wh-tan, fn-md xln, fair int xln porosity, fair oil sat, SSFO, fair-good odor

Dolo: off wh-tan-bm, fn-md xln, fair int xln porosity, sl-fair oil sat, VSSFO, fair odor

Dolo: off wh-tan-bm, fn-md xln, fair int xln porosity, scat foss, poor oil sat, fnt odor, scat chalk

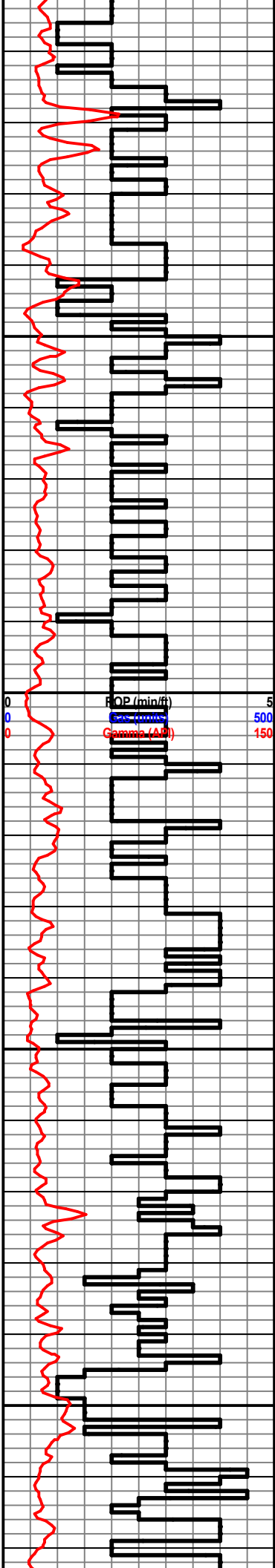
Dolo: off wh-tan, fn-md xln, fair-good int xln porosity, barren, scat chert-off wh

Dolo: off wh-tan, fn-md xln, poor int xln porosity, barren, scat chert-off wh, scat chalk

Dolo: off wh-tan, fn-md xln, scat int xln porosity, barren, scat chert-off wh, scat chalk

Dolo: off wh-tan, fn-md xln, fair-good int xln porosity, barren, scat chalk, scat sh: lt gm

Dolo: off wh-tan-bm, fn xln, fair int xln porosity, scat



Dolo: off wh-tan-lt gry, fn xln, fair int xln porosity, scat chalk, scat chert-off wh

Dolo: off wh-tan-lt gry, fn xln, fair-few rxs good int xln porosity, chalky

Dolo: tan-gry, fn-sub xln, mostly DNS, poor int xln porosity, scat chalk

Dolo: ala

Dolo: tan-lt gry, fn xln, poor int xln porosity, scat chalk, cherty

Dolo: ala

Dolo: off wh-tan-lt gry, fn xln, poor int xln porosity, hvy chert-wh, trip, scat sh: gm

Dolo: ala

Dolo: tan-lt gry, fn-sub xln, poor int xln porosity, scat chert-wh, scat chalk

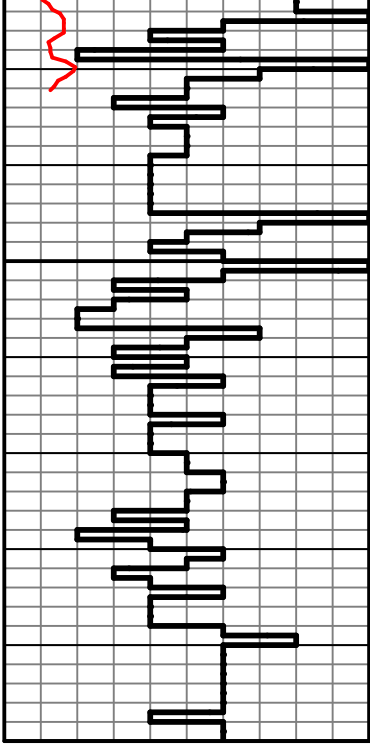
Dolo: tan-gry, fn-sub xln, DNS, scat chert

Dolo: tan-lt gry, fn-md xln, poor int xln porosity, scat chert-wh

Dolo: ala

Dolo: tan-lt gry, fn-md xln, poor, few pcs w/ fair int xln porosity, scat chert-off wh

Wt: 9.3
Vis: 65



3550

MD

Dolo: tan-lt gry, fn xln, poor int xln porosity, hvy chert-off wh, scat chalk

Dolo: tan-gry, fn xln, poor-fair int xln porosity, chert, scat sh: gm

Dolo: tan-gry, fn-md xln, poor-fair int xln porosity, scat chert-off wh, scat chalk

Dolo: tan-lt gry, fn-md xln, poor, few pcs w/ fair-good int xln porosity, scat chert, scat chalk

Dolo: tan-lt gry, fn xln, poor int xln porosity, chert-off wh, scat sh: gm

***RTD: 3600' LTD: 3569'**