

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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Form	ACO1 - Well Completion
Operator	Gra Ex, LLC
Well Name	LUCAS 2
Doc ID	1422074

All Electric Logs Run

DIL
CDL/N
MICRO
SONIC

COPELAND

Acid & Cement

POST OFFICE BOX 438
 HAYSVILLE, KS 67060
 (316) 524-1225
 (316) 524-1027 FAX

Invoice

BURRTON, KS ♦ GREAT BEND, KS
 (620) 463-5161 (620) 793-3366
 FAX (620) 463-2104 FAX (620) 793-3536

INVOICE NUMBER:
C45890-IN

BILL TO:
GRA-EX, LLC
PO BOX 32
KINGMAN, KS 67068

LEASE: LUCAS #2

DATE	ORDER	SALESMAN	ORDER DATE	PURCHASE ORDER	SPECIAL INSTRUCTIONS	
07/17/2018	C45890		07/09/2018		NET 30	
QUANTITY	U/M	ITEM NO./DESCRIPTION		D/C	PRICE	EXTENSION
		NEW WELL				
25.00	MI	MILEAGE CEMENT PUMP TRUCK		15.00	4.00	85.00
25.00	MI	MILEAGE PICKUP		15.00	2.00	42.50
1.00	EA	PUMP CHARGE-SURFACE PIPE		15.00	1,100.00	935.00
225.00	SK	60/40 POZ MIX 2% GEL		15.00	10.75	2,055.44
11.00	SK	CALCIUM CHLORIDE		15.00	30.00	280.00
236.00	EA	BULK CHARGE		15.00	1.25	250.75
259.50	MI	BULK TRUCK - TON MILES		15.00	1.10	242.65
		73				
REMIT TO: P.O. BOX 438 HAYSVILLE, KS 67060		COP		Net Invoice:		3,892.22
		FUEL SURCHARGE IS NOT TAXABLE AND IS ADDED TO MILEAGE, PUMP AND OR DELIVERY CHARGES ONLY.		STFCO Sales Tax:		175.33
RECEIVED BY _____		NET 30 DAYS		Invoice Total:		4,067.55

There will be a charge of 1.5% "per month" (18% annual rate) on all accounts over 30 days past due.



NEW WELL

FIELD ORDER N^o C 45890

BOX 438 • HAYSVILLE, KANSAS 67060
316-524-1225

DATE 7-9 2018

IS AUTHORIZED BY: Gra Ex, LLC
(NAME OF CUSTOMER)

Address _____ City _____ State _____
To Treat Well _____
As Follows: Lease Lucas Well No. #2 Customer Order No. _____
Sec. Twp. Range 4-24s-15w County Stafford State KS

CONDITIONS: As a part of the consideration hereof it is agreed that Copeland Acid Service is to service or treat at owners risk, the hereinbefore mentioned well and is not to be held liable for any damage that may accrue in connection with said service or treatment. Copeland Acid Service has made no representation, expressed or implied, and no representations have been relied on, as to what may be the results or effect of the servicing or treating said well. The consideration of said service or treatment is payable. There will be no discount allowed subsequent to such date. 6% interest will be charged after 60 days. Total charges are subject to correction by our invoicing department in accordance with latest published price schedules.

The undersigned represents himself to be duly authorized to sign this order for well owner or operator.

THIS ORDER MUST BE SIGNED BEFORE WORK IS COMMENCED _____ By _____
Well Owner or Operator Agent

CODE	QUANTITY	DESCRIPTION	UNIT COST	AMOUNT	
2	25	Mileage Pick up	2 ⁰⁰	50 ⁰⁰	NT
2	25	Mileage Pump Truck	4 ⁰⁰	100 ⁰⁰	NT
2		Pump Charge - Surface Pipe		1100 ⁰⁰	NT
2	225	60/40 2% Gel	10 ²⁵	2418 ²⁵	T
2	11	Calcium Chloride	30 ⁰⁰	330 ⁰⁰	T
2	236	Bulk Charge	1 ²⁵	295 ⁰⁰	NT
2		Bulk Truck Miles <u>10.387 x 25 miles = 259.507m</u>	1 ¹⁰	285 ⁵⁶	NT
		Process License Fee on _____ Gallons		4579.31	
TOTAL BILLING			D. 15% <u>3892.41</u>	-686.90	

I certify that the above material has been accepted and used; that the above service was performed in a good and workmanlike manner under the direction, supervision and control of the owner, operator or his agent, whose signature appears below.

Copeland Representative Greg C
Station GB
Well Owner, Operator or Agent Doug

Remarks _____ **NET 30 DAYS**



QUALITY OILWELL CEMENTING, INC.
 PO Box 32 - 740 WEST WICHITA AVE, RUSSELL KS 67665
 PHONE:785-324-1041 FAX:785-483-1087
 EMAIL: cementing@ruraltel.net

Date: 7/19/2018
 Invoice # 908

P.O.#:
 Due Date: 8/18/2018
 Division: Russell

Invoice

Contact:

Address/Job Location:

Ara Ex
P.O. Box 32
Kingman KS *67668*

Reference:

LUCAS 2 SEC 4-24-15

Description of Work:

PROD STRING TOP STAGE

Services / Items Included:

	Quantity	Price	Taxable	Item	Quantity	Price	Taxable
Labor		\$ 641.27	No				
Multi Density- 80/20	375	\$ 4,716.80	Yes				
Bulk Truck Matl-Material Service Charge	375	\$ 269.53	No				
Flo Seal	100	\$ 143.75	Yes				
Bulk Truck Mileage-Job to Nearest Bulk Plant	40	\$ 100.63	No				

Invoice Terms:

Net 30

SubTotal: \$ 5,871.97
 Discount Available ONLY if Invoice is Paid & Received
 within listed terms of invoice: \$ (146.80)

SubTotal for Taxable Items:	\$ 4,739.03
SubTotal for Non-Taxable Items:	\$ 986.14
Total:	\$ 5,725.17
Tax:	\$ 355.43

7.50% Stafford County Sales Tax

Thank You For Your Business!

Amount Due: \$ 6,080.60
Applied Payments:
Balance Due: \$ 6,080.60

Past Due Invoices are subject to a service charge (annual rate of 24%)

This does not include any applicable taxes unless it is listed.

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QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

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

No. 908

Date	7-19-18	Sec.	4	Twp.	24	Range	15	County	Stafford	State	Ks	On Location		Finish	3:30 PM
Lease								Location							
Lucas								Macksville - 2N to 30th Street, 1/4 W, 5th St							
Well No.				2				Owner				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.			
Contractor				Royal 1				Type Job				Top Stage			
Hole Size				7 7/8"				T.D.				4150'			
Csg.				used 5 1/2" 15.50#				Depth				4144.99'			
Tbg. Size								Depth							
Tool				DU Tool				Depth				2686.63'			
Cement Left in Csg.								Shoe Joint							
Meas Line				Displace				64 BLS				Cement Amount Ordered			
												750 80/20 QMDC 1/4# Flowseal			
												375			
EQUIPMENT								Common							
Pumptrk 18				No.				Cementer				Helper			
								Brett							
Bulktrk 9				No.				Driver				Doug			
								Driver				Rick			
Bulktrk p.u.				No.				Driver				Rick			
JOB SERVICES & REMARKS								Hulls							
Remarks:								Salt							
Rat Hole								Flowseal 100 lb							
Mouse Hole								Kol-Seal							
Centralizers								Mud CLR 48							
Baskets								CFL-117 or CD110 CAF 38							
DN or Port Collar #37								2686.63'							
Pipe on bottom break								Circulation							
plug Rathole w/ 30 5x plug mouse hole								w/ 20 5x Hook to Casing + Mix 30 30 5x							
Cement, shutdown, wash pump +								lines + Displaced plug w/ 64 BLS.							
H2O.								Released + held							
Lift pressure 700 #								Land plug to 1600 #							
Cement did NOT Circulate								Pumptrk Charge							
								Mileage 40							
								Tax							
								Discount							
								Total Charge							
Signature								[Signature]							



QUALITY OILWELL CEMENTING, INC.
 PO Box 32 - 740 West Wichita Ave, Russell KS 67665
 PHONE: 785-324-1041 FAX: 785-483-1087
 EMAIL: cementing@ruraltel.net

Date: 7/19/2018
 Invoice # 907

P.O.#:
 Due Date: 8/18/2018
 Division: Russell

Invoice

Contact:

Address/Job Location:

Gra Ex
 P.O. BOX 32
 Kingman KS 67068

Reference:

LUCAS 2 SEC 4-24-15

Description of Work:

PROD STRING BOTTOM STAGE

Services / Items Included:

	Quantity	Price	Taxable	Item	Quantity	Price	Taxable
Labor		\$ 724.36	No	Pump Truck Mileage-Job to Nearest Camp	40	\$129.38	No
Two Stage Cement Collar, 5 1/2"	1	\$ 2,987.13	Yes	Bulk Truck Mileage-Job to Nearest Bulk Plant	40	\$100.63	No
Common-Class A	175	\$ 2,591.09	Yes				
Gilsonite	875	\$ 943.36	Yes				
5 1/2" Turbolizer	12	\$ 621.00	Yes				
5 1/2" Basket	2	\$ 402.50	Yes				
Mud Clear	500	\$ 265.94	Yes				
Auto Fill Float Shoe, 5 1/2"	1	\$ 241.50	Yes				
Latch Down Plug & Baffle, 5 1/2"	1	\$ 191.19	Yes				
Salt (Fine)	15	\$ 141.23	Yes				
Bulk Truck Matl-Material Service Charge	198	\$ 142.31	No				

Invoice Terms:

Net 30

SubTotal: \$ 9,481.61
 Discount Available ONLY if Invoice is Paid & Received within listed terms of invoice: \$ (237.04)

SubTotal for Taxable Items: \$ 8,175.31
 SubTotal for Non-Taxable Items: \$ 1,069.25
 Total: \$ 9,244.57
 Tax: \$ 613.15

7.50% Stafford County Sales Tax

Thank You For Your Business!

Amount Due: \$ 9,857.72
Applied Payments:
Balance Due: \$ 9,857.72

Past Due Invoices are subject to a service charge (annual rate of 24%)
 This does not include any applicable taxes unless it is listed.
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QUALITY OILWELL CEMENTING, INC.


Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

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

No. 907

Date	7-19-18	Sec.	4	Twp.	24	Range	15	County	Stafford	State	Ks	On Location		Finish	1:00 PM
Lease								Location				Macksville - 2nd to 3rd street, 1/4 W, 5th			
Lucas								Well No.		2		Owner			
Contractor								Royal 1				To Quality Oilwell Cementing, Inc.			
Type Job								Bottom Stage				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								T.D.		4150'		Charge To			
Csg.								Depth		4144.99'		Gra Ex			
Tbg. Size								Depth		2686.63'		Street			
Tool								Shoe Joint		12.91'		P.O. 32			
Cement Left in Csg.								Displace		98 1/4 BCS		City			
Meas Line								Displace		98 1/4 BCS		Kingman			
												State			
												Ks 67068			
												The above was done to satisfaction and supervision of owner agent or contractor.			
												Cement Amount Ordered			
												175 Com 10% Salt 5% Gilsomite			
												500 gal mud Clear			
												Common			
												125			
												Poz. Mix			
												Gel.			
												Calcium			
												Hulls			
												Salt			
												15			
												Flowseal			
												Kol-Seal			
												875 #			
												Mud CLR 48			
												500 gal			
												CFL-117 or CD110 CAG 38			
												Sand			
												Handling			
												198			
												Mileage			
												FLOAT EQUIPMENT			
												Guide Shoe			
												D U Tool w/ plug			
												Centralizer			
												12			
												Baskets			
												2			
												AFU Inserts			
												Float Shoe			
												1			
												Latch Down			
												1			
												Pumptrk Charge			
												Mileage			
												40			
												Tax			
												Discount			
												Total Charge			
Signature															

X Signature 



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
 July
11
 2018

DST #1 **Formation: Herrington** **Test Interval: 1989 - 2054'** **Total Depth: 2054'**
 Time On: 19:32 07/11 Time Off: 02:01 07/12
 Time On Bottom: 20:55 07/11 Time Off Bottom: 00:10 07/12

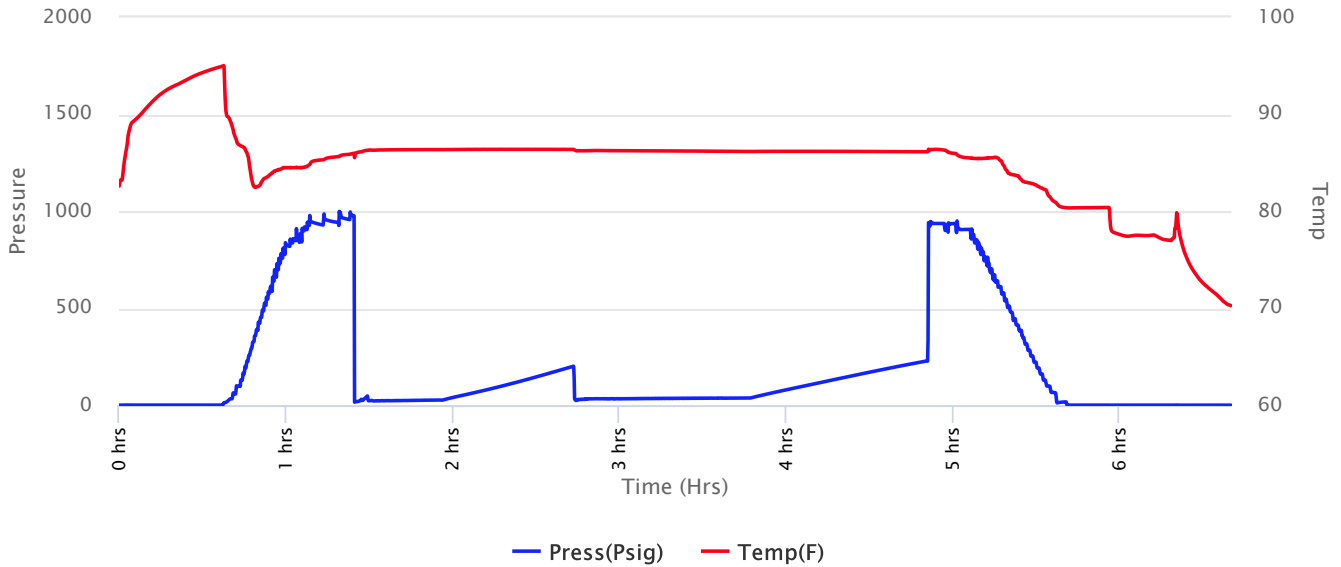
Electronic Volume Estimate:
 138'

1st Open
 Minutes: 30
 9" at 30 min

1st Close
 Minutes: 45
 0" at 45 min

2nd Open
 Minutes: 60
 11.1" at 60 min

2nd Close
 Minutes: 60
 0" at 60 min





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DST #1 **Formation: Herrington** **Test Interval: 1989 - 2054'** **Total Depth: 2054'**
 Time On: 19:32 07/11 Time Off: 02:01 07/12
 Time On Bottom: 20:55 07/11 Time Off Bottom: 00:10 07/12

Recovered

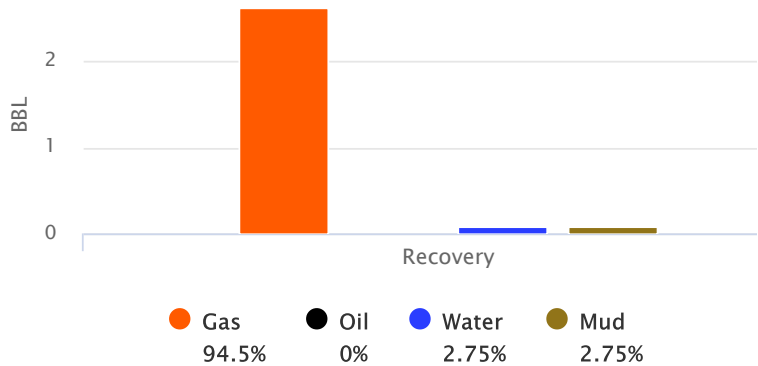
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
221	2.61948	G	100	0	0	0
31	0.15252	HMCW	0	0	50	50

Total Recovered: 252 ft
 Total Barrels Recovered: 2.772

Reversed Out
 NO

Initial Hydrostatic Pressure	930	PSI
Initial Flow	16 to 27	PSI
Initial Closed in Pressure	201	PSI
Final Flow Pressure	29 to 38	PSI
Final Closed in Pressure	229	PSI
Final Hydrostatic Pressure	938	PSI
Temperature	87	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

DATE July 11 2018
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DST #1	Formation: Herrington	Test Interval: 1989 - 2054'	Total Depth: 2054'
	Time On: 19:32 07/11	Time Off: 02:01 07/12	
	Time On Bottom: 20:55 07/11	Time Off Bottom: 00:10 07/12	

REMARKS:

- 1O. 1/4" Blow. Built to 9 inches in 30 mins
- 1C. NOBB
- 2O. 3" Blow Built to 11 1/4 inches in 60 mins
- 2C. NOBB

Tool Sample: 50% W 50% M

Ph: 7

RW: .4 @ 80 degrees F

Chlorides: 75,000 ppm



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
July
14
2018

DST #2 **Formation: Lans B & D** **Test Interval: 3659 - 3693'** **Total Depth: 3693'**

Time On: 20:07 07/14 Time Off: 02:44 07/15
 Time On Bottom: 21:30 07/14 Time Off Bottom: 00:45 07/15

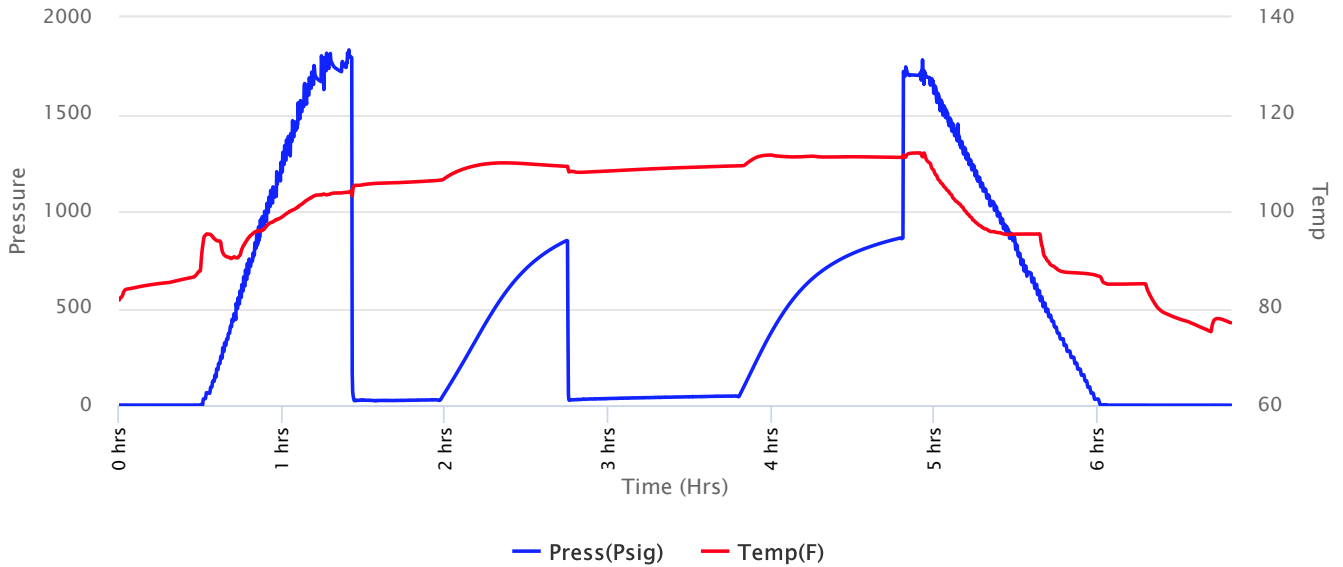
Electronic Volume Estimate:
2081'

1st Open
Minutes: 30
109.9" at 30 min

1st Close
Minutes: 45
0" at 45 min

2nd Open
Minutes: 60
149.5" at 60 min

2nd Close
Minutes: 60
0" at 60 min





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
 July
14
 2018

DST #2 **Formation: Lans B & D** **Test Interval: 3659 - 3693'** **Total Depth: 3693'**

Time On: 20:07 07/14 Time Off: 02:44 07/15
 Time On Bottom: 21:30 07/14 Time Off Bottom: 00:45 07/15

Recovered

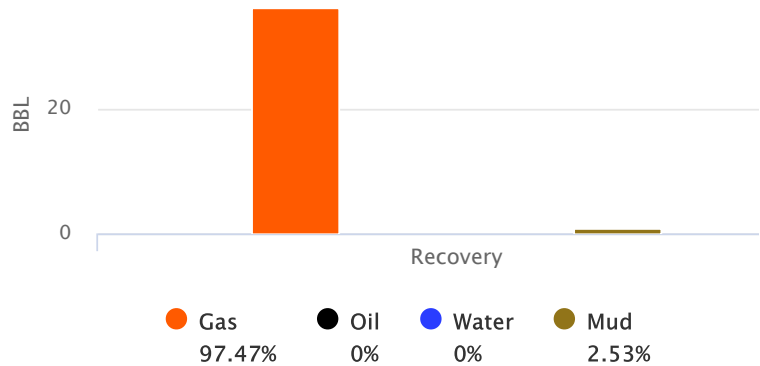
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
2813	36.2877	G	100	0	0	0
73	0.9417	M	0	0	0	100

Total Recovered: 2886 ft
 Total Barrels Recovered: 37.2294

Reversed Out
 NO

Initial Hydrostatic Pressure	1720	PSI
Initial Flow	24 to 26	PSI
Initial Closed in Pressure	849	PSI
Final Flow Pressure	26 to 49	PSI
Final Closed in Pressure	864	PSI
Final Hydrostatic Pressure	1716	PSI
Temperature	112	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

<p>DATE July 14 2018</p>
--

DST #2 **Formation: Lans B & D** **Test Interval: 3659 - 3693'** **Total Depth: 3693'**

Time On: 20:07 07/14

Time Off: 02:44 07/15

Time On Bottom: 21:30 07/14

Time Off Bottom: 00:45 07/15

REMARKS:

1O. 2" Blow. BOB in 35 secs.

1C. NOBB

2O. 12" Blow BOB Instantly

2C. NOBB

Tool Sample: 100% M



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE July 14 2018
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DST #2 **Formation: Lans B & D** **Test Interval: 3659 - 3693'** **Total Depth: 3693'**

Time On: 20:07 07/14 Time Off: 02:44 07/15
 Time On Bottom: 21:30 07/14 Time Off Bottom: 00:45 07/15

Down Hole Makeup

Heads Up: 8.72 FT	Packer 1: 3654 FT
Drill Pipe: 3642.56 FT <i>ID-3 1/2</i>	Packer 2: 3659 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 3646 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 3664 FT
Test Tool: 26.16 FT <i>ID-3 1/2-FH</i>	Well Bore Size: 7 7/8
Total Anchor: 34	Surface Choke: 1"
Anchor Makeup	
Packer Sub: 1 FT	Bottom Choke: 5/8"
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/2</i>	
Change Over: 0 FT	
Perforations: (below): 30 FT <i>4 1/2-FH</i>	



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

<p>DATE July 14 2018</p>
--

DST #2 **Formation: Lans B & D** **Test Interval: 3659 - 3693'** **Total Depth: 3693'**

Time On: 20:07 07/14 Time Off: 02:44 07/15
Time On Bottom: 21:30 07/14 Time Off Bottom: 00:45 07/15

Mud Properties

Mud Type: Chem **Weight:** 8.9 **Viscosity:** 53 **Filtrate:** 7.6 **Chlorides:** 6500 ppm



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
July
14
2018

DST #2 **Formation: Lans B & D** **Test Interval: 3659 - 3693'** **Total Depth: 3693'**

Time On: 20:07 07/14 Time Off: 02:44 07/15
 Time On Bottom: 21:30 07/14 Time Off Bottom: 00:45 07/15

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
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Time	Orifice	PSI	MCF/D
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Company: Gra Ex, LLC
Lease: Lucas #2

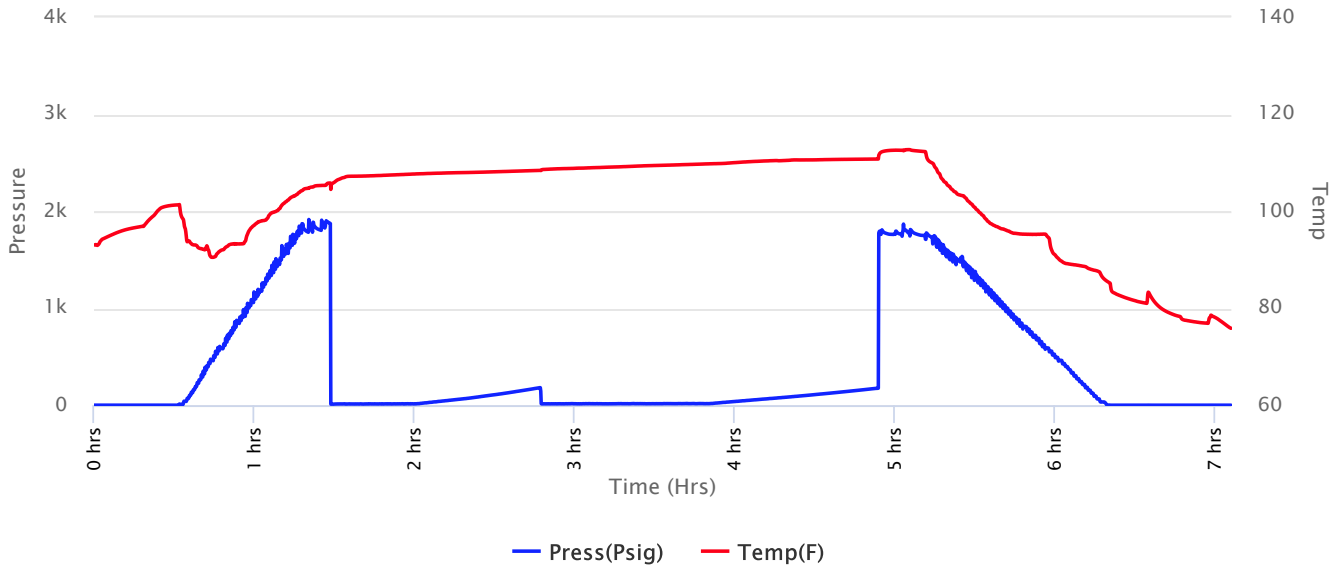
SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
 July
15
 2018

DST #3 Formation: Lans I-J Test Interval: 3788 - 3830' Total Depth: 3830'

Time On: 18:26 07/15 Time Off: 01:20 07/16
 Time On Bottom: 19:55 07/15 Time Off Bottom: 23:20 07/15

Electronic Volume Estimate:	<u>1st Open</u> Minutes: 30	<u>1st Close</u> Minutes: 45	<u>2nd Open</u> Minutes: 60	<u>2nd Close</u> Minutes: 60
129'	3.4" at 30 min	0" at 45 min	9.6" at 60 min	0" at 60 min





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
 July
15
 2018

DST #3 **Formation: Lans I-J** **Test Interval: 3788 - 3830'** **Total Depth: 3830'**

Time On: 18:26 07/15 Time Off: 01:20 07/16
 Time On Bottom: 19:55 07/15 Time Off Bottom: 23:20 07/15

Recovered

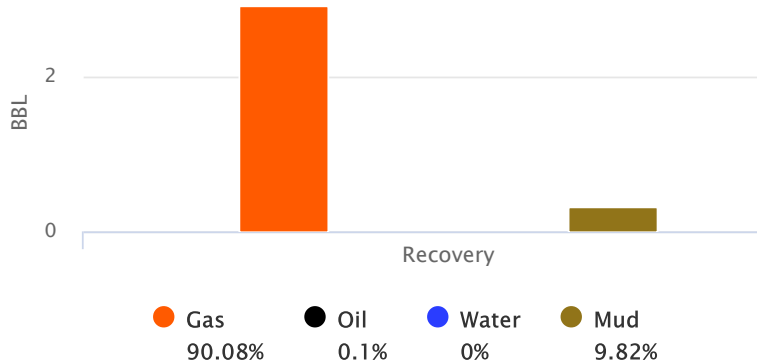
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
227	2.9283	G	100	0	0	0
25	0.3225	SLOCM	0	1	0	99

Total Recovered: 252 ft
 Total Barrels Recovered: 3.2508

Reversed Out
 NO

Initial Hydrostatic Pressure	1804	PSI
Initial Flow	11 to 15	PSI
Initial Closed in Pressure	182	PSI
Final Flow Pressure	16 to 17	PSI
Final Closed in Pressure	176	PSI
Final Hydrostatic Pressure	1809	PSI
Temperature	111	°F
Pressure Change Initial Close / Final Close	3.3	%

Recovery at a glance





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

DATE July 15 2018
--

DST #3 Formation: Lans I-J Test Interval: 3788 - Total Depth: 3830'
3830'

Time On: 18:26 07/15 Time Off: 01:20 07/16
Time On Bottom: 19:55 07/15 Time Off Bottom: 23:20 07/15

REMARKS:

- 1O. 1/4" Blow Built to 3 1/2 inches in 30 mins
- 1C. NOBB
- 2O. 4' Blow Built to 9 1/4 inches in 60 mins
- 2C. NOBB

Tool Sample: 3 % O 97% M



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE July 15 2018
--

DST #3 Formation: Lans I-J Test Interval: 3788 - 3830' Total Depth: 3830'

Time On: 18:26 07/15 Time Off: 01:20 07/16
 Time On Bottom: 19:55 07/15 Time Off Bottom: 23:20 07/15

Down Hole Makeup

Heads Up: 6.2 FT	Packer 1: 3783 FT
Drill Pipe: 3769.04 FT <i>ID-3 1/2</i>	Packer 2: 3788 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 3775 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 3793 FT
Test Tool: 26.16 FT <i>ID-3 1/2-FH</i>	Well Bore Size: 7 7/8
Total Anchor: 42	Surface Choke: 1"
Anchor Makeup	
Packer Sub: 1 FT	Bottom Choke: 5/8"
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/2</i>	
Change Over: 0 FT	
Perforations: (below): 38 FT <i>4 1/2-FH</i>	



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

<p>DATE July 15 2018</p>
--

DST #3 **Formation: Lans I-J** **Test Interval: 3788 - 3830'** **Total Depth: 3830'**

Time On: 18:26 07/15 Time Off: 01:20 07/16
Time On Bottom: 19:55 07/15 Time Off Bottom: 23:20 07/15

Mud Properties

Mud Type: Chem **Weight:** 8.9 **Viscosity:** 50 **Filtrate:** 10.6 **Chlorides:** 12000 ppm



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
July
16
2018

DST #4 **Formation: Lan K-L** **Test Interval: 3830 - 3880'** **Total Depth: 3880'**

Time On: 11:37 07/16 Time Off: 18:24 07/16
 Time On Bottom: 13:30 07/16 Time Off Bottom: 16:45 07/16

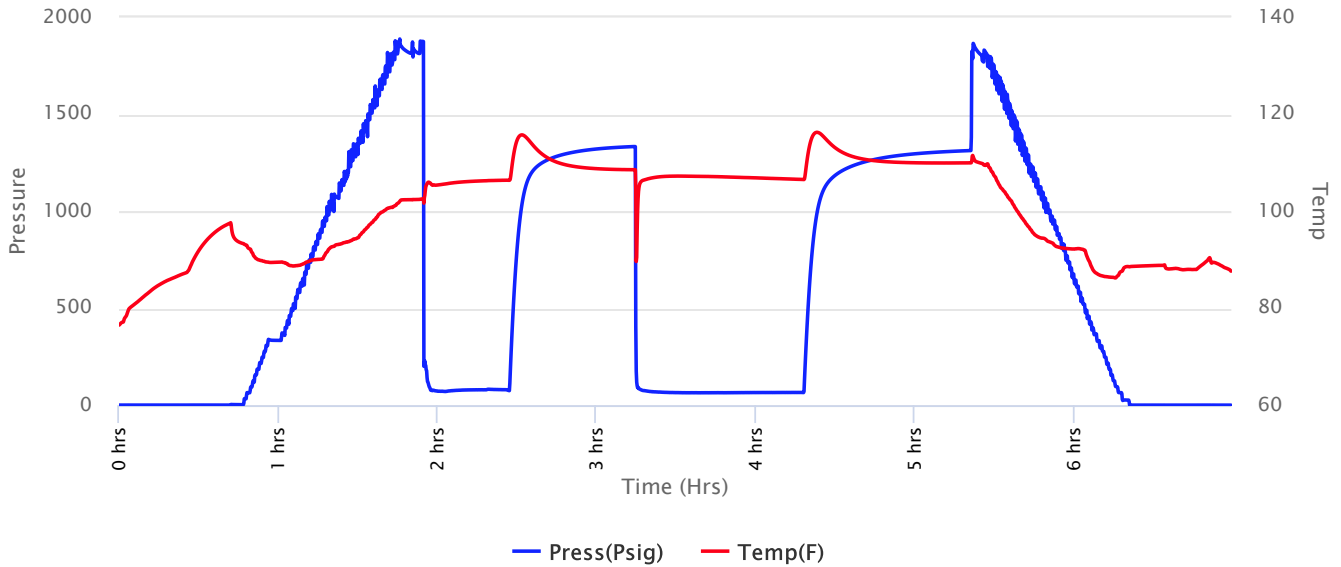
Electronic Volume Estimate:
N/A

1st Open
Minutes: 30
Gauge Gas " at 30 min

1st Close
Minutes: 45
0" at 45 min

2nd Open
Minutes: 60
Gauge Gas" at 60 min

2nd Close
Minutes: 60
0" at 60 min





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
 July
16
 2018

DST #4 **Formation: Lan K-L** **Test Interval: 3830 - 3880'** **Total Depth: 3880'**

Time On: 11:37 07/16 Time Off: 18:24 07/16
 Time On Bottom: 13:30 07/16 Time Off Bottom: 16:45 07/16

Recovered

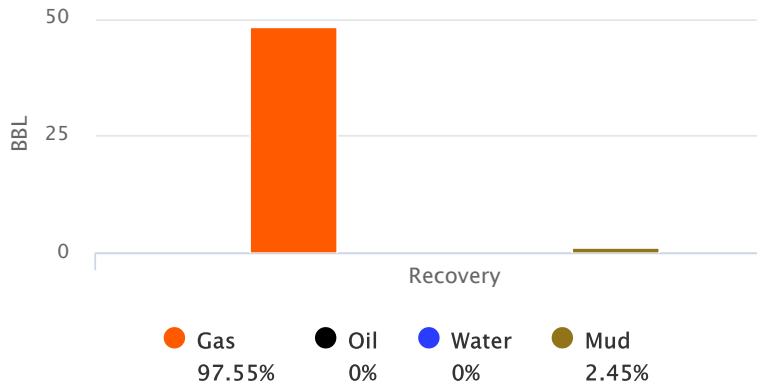
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
3738	48.2202	G	100	0	0	0
94	1.2126	M	0	0	0	100

Total Recovered: 3832 ft
 Total Barrels Recovered: 49.4328

Reversed Out
 NO

Initial Hydrostatic Pressure	1815	PSI
Initial Flow	78 to 79	PSI
Initial Closed in Pressure	1334	PSI
Final Flow Pressure	65 to 66	PSI
Final Closed in Pressure	1314	PSI
Final Hydrostatic Pressure	1816	PSI
Temperature	117	°F
Pressure Change Initial Close / Final Close	1.5	%

Recovery at a glance





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

<p>DATE July 16 2018</p>
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DST #4 Formation: Lan K-L Test Interval: 3830 - Total Depth: 3880'
3880'

Time On: 11:37 07/16 Time Off: 18:24 07/16
Time On Bottom: 13:30 07/16 Time Off Bottom: 16:45 07/16

REMARKS:

- 10. WSB. BOB in 30 secs
- 1C. NOBB
- 20. 12" Blow BOB instantly
- 2C. NOBB

Tool Sample: 100 % M



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE July 16 2018
--

DST #4 Formation: Lan K-L Test Interval: 3830 - 3880' Total Depth: 3880'

Time On: 11:37 07/16 Time Off: 18:24 07/16
 Time On Bottom: 13:30 07/16 Time Off Bottom: 16:45 07/16

Down Hole Makeup

Heads Up: 27.86 FT	Packer 1: 3825.11 FT
Drill Pipe: 3832.81 FT <i>ID-3 1/2</i>	Packer 2: 3830.11 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 3817.11 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 3868 FT
Test Tool: 26.16 FT <i>ID-3 1/2-FH</i>	Well Bore Size: 7 7/8
Total Anchor: 49.89	Surface Choke: 1"
Anchor Makeup	
Packer Sub: 1 FT	Bottom Choke: 5/8"
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 1 FT	
Drill Pipe: (in anchor): 30.89 FT <i>ID-3 1/2</i>	
Change Over: 1 FT	
Perforations: (below): 13 FT <i>4 1/2-FH</i>	



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

<p>DATE July 16 2018</p>
--

DST #4 **Formation: Lan K-L** **Test Interval: 3830 - 3880'** **Total Depth: 3880'**

Time On: 11:37 07/16 Time Off: 18:24 07/16
Time On Bottom: 13:30 07/16 Time Off Bottom: 16:45 07/16

Mud Properties

Mud Type: Chem **Weight:** 8.9 **Viscosity:** 54 **Filtrate:** 9.2 **Chlorides:** 10000 ppm



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
July
16
2018

DST #4 Formation: Lan K-L Test Interval: 3830 - 3880' Total Depth: 3880'

Time On: 11:37 07/16 Time Off: 18:24 07/16
 Time On Bottom: 13:30 07/16 Time Off Bottom: 16:45 07/16

Gas Volume Report

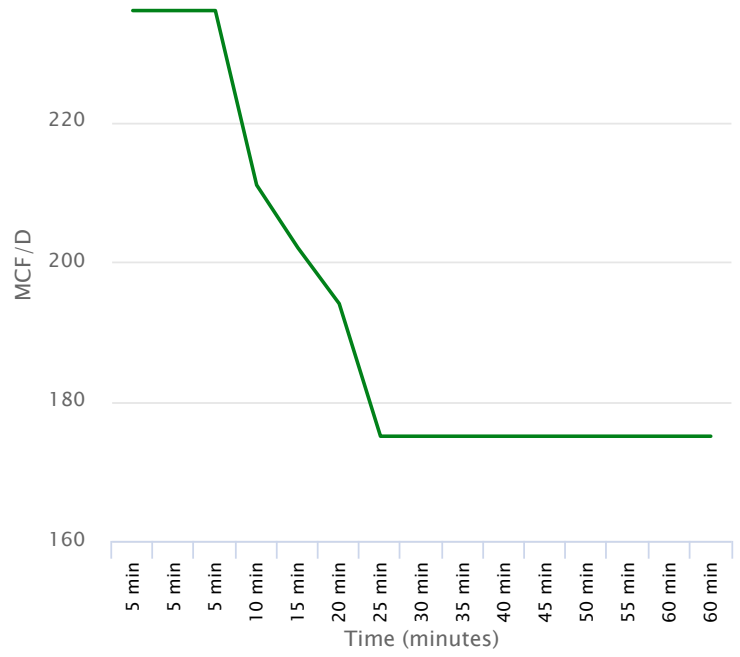
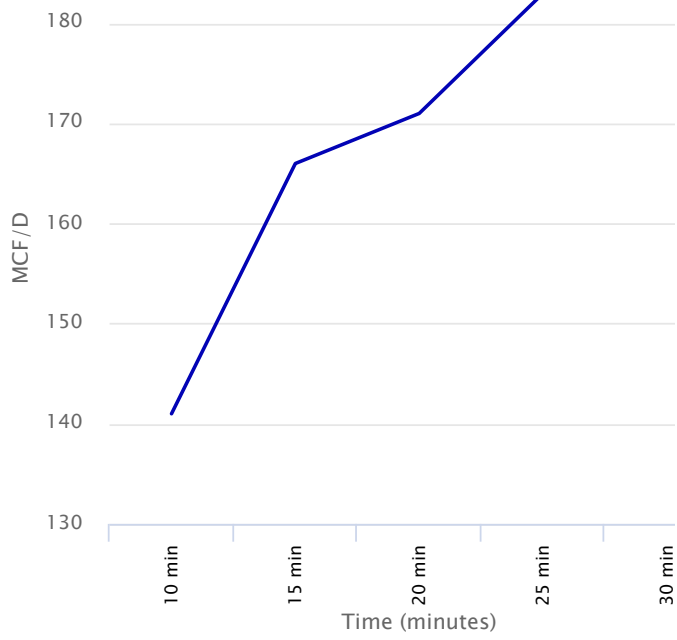
Remarks: Gas to Surface in 4 mins Caught gas sample 15 mins into first opening.

1st Open

Time	Orifice	PSI	MCF/D
10	0.50	14	141
15	0.50	18	166
20	0.50	19	171
25	0.50	21	183
30	0.50	21	183

2nd Open

Time	Orifice	PSI	MCF/D
5	0.75	8.5	236
5	0.75	8.5	236
5	0.75	8.5	236
10	0.75	7.0	211
15	0.75	6.5	202
20	0.75	6.0	194
25	0.75	5.0	175
30	0.75	5.0	175
35	0.75	5.0	175
40	0.75	5.0	175
45	0.75	5.0	175
50	0.75	5.0	175
55	0.75	5.0	175
60	0.75	5.0	175
60	0.75	5.0	175





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
July
17
2018

DST #5 **Formation: Viola** **Test Interval: 3970 - 4030'** **Total Depth: 4030'**

Time On: 15:19 07/17 Time Off: 21:52 07/17
 Time On Bottom: 16:50 07/17 Time Off Bottom: 20:05 07/17

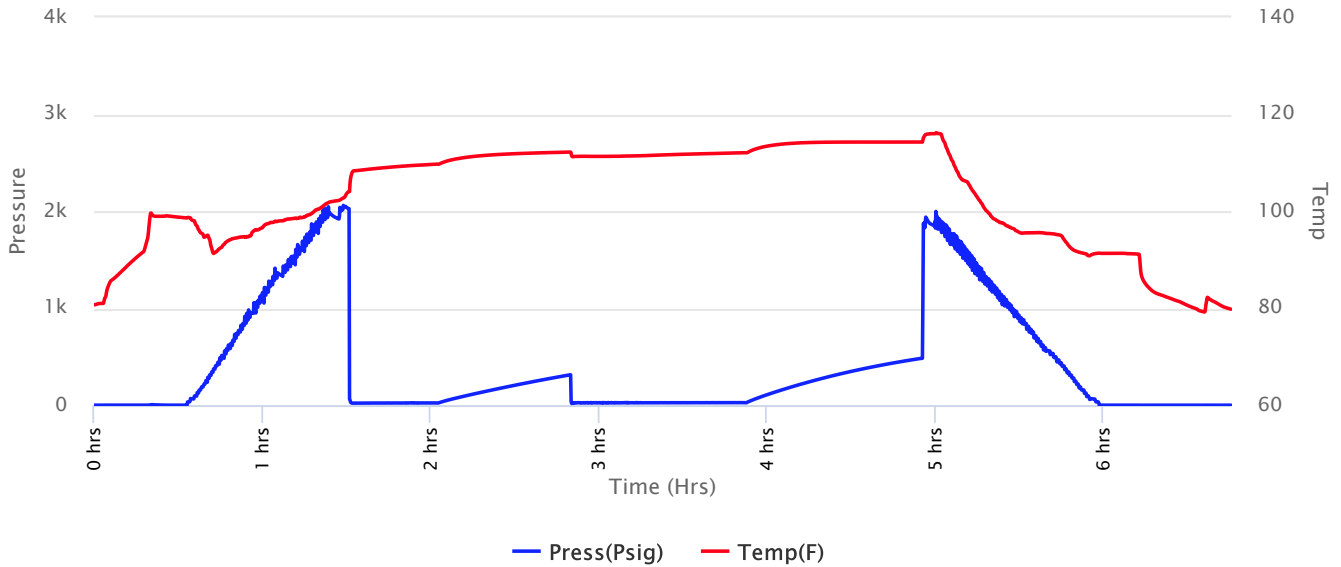
Electronic Volume Estimate:
1253'

1st Open
Minutes: 30
41.7" at 30 min

1st Close
Minutes: 45
0" at 45 min

2nd Open
Minutes: 60
87.5" at 60 min

2nd Close
Minutes: 60
0" at 60 min





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc - Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
 July
17
 2018

DST #5 **Formation: Viola** **Test Interval: 3970 - 4030'** **Total Depth: 4030'**
 Time On: 15:19 07/17 Time Off: 21:52 07/17
 Time On Bottom: 16:50 07/17 Time Off Bottom: 20:05 07/17

Recovered

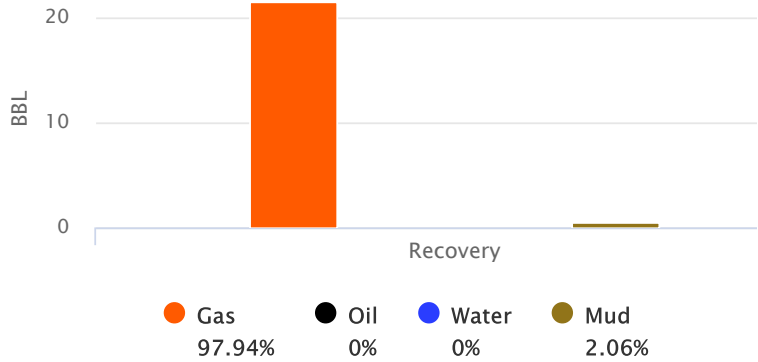
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
1666	21.4914	G	100	0	0	0
35	0.4515	M	0	0	0	100

Total Recovered: 1701 ft
 Total Barrels Recovered: 21.9429

Reversed Out
 NO

Initial Hydrostatic Pressure	1921	PSI
Initial Flow	22 to 24	PSI
Initial Closed in Pressure	313	PSI
Final Flow Pressure	19 to 27	PSI
Final Closed in Pressure	485	PSI
Final Hydrostatic Pressure	1923	PSI
Temperature	115	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance





Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

<p>DATE July 17 2018</p>
--

DST #5 **Formation: Viola** **Test Interval: 3970 - 4030'** **Total Depth: 4030'**

Time On: 15:19 07/17 Time Off: 21:52 07/17
Time On Bottom: 16:50 07/17 Time Off Bottom: 20:05 07/17

REMARKS:

- 1O. 1" Blow. BOB in 3 mins
- 1C. NOBB
- 2O. 12" Blow BOB instantly
- 2C. NOBB

Tool Sample: 100 % M



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE July 17 2018
--

DST #5 **Formation: Viola** **Test Interval: 3970 - 4030'** **Total Depth: 4030'**

Time On: 15:19 07/17 Time Off: 21:52 07/17
 Time On Bottom: 16:50 07/17 Time Off Bottom: 20:05 07/17

Down Hole Makeup

Heads Up: 14.77 FT	Packer 1: 3964.79 FT
Drill Pipe: 3959.4 FT <i>ID-3 1/2</i>	Packer 2: 3969.79 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 3956.79 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 4008 FT
Test Tool: 26.16 FT <i>ID-3 1/2-FH</i>	Well Bore Size: 7 7/8
Total Anchor: 60.21	Surface Choke: 1"
<u>Anchor Makeup</u>	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: .5 FT	
Drill Pipe: (in anchor): 31.71 FT <i>ID-3 1/2</i>	
Change Over: 1 FT	
Perforations: (below): 23 FT <i>4 1/2-FH</i>	



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
County: STAFFORD
State: Kansas
Drilling Contractor: Royal Drilling, Inc -
Rig 2
Elevation: 2018 EGL
Field Name: Macksville
Pool: Infield
Job Number: 173

DATE July 17 2018
--

DST #5 **Formation: Viola** **Test Interval: 3970 - 4030'** **Total Depth: 4030'**
Time On: 15:19 07/17 Time Off: 21:52 07/17
Time On Bottom: 16:50 07/17 Time Off Bottom: 20:05 07/17

Mud Properties

Mud Type: Chem **Weight:** 8.8 **Viscosity:** 48 **Filtrate:** 12 **Chlorides:** 14000 ppm



Company: Gra Ex, LLC
Lease: Lucas #2

SEC: 4 TWN: 24S RNG: 15W
 County: STAFFORD
 State: Kansas
 Drilling Contractor: Royal Drilling, Inc -
 Rig 2
 Elevation: 2018 EGL
 Field Name: Macksville
 Pool: Infield
 Job Number: 173

DATE
July
17
2018

DST #5 **Formation: Viola** **Test Interval: 3970 - 4030'** **Total Depth: 4030'**

Time On: 15:19 07/17 Time Off: 21:52 07/17
 Time On Bottom: 16:50 07/17 Time Off Bottom: 20:05 07/17

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
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Time	Orifice	PSI	MCF/D
------	---------	-----	-------

JEFFREY A. BURK & ELI J. FELTS

CONSULTING PETROLEUM GEOLOGISTS

GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG
15-185-24018

OPERATOR GRA EX, LLC
 LEASE Lucas #2
 FIELD MACKSVILLE
 LOCATION E2 NW NE
 SEC. 4 TWP. 24S RGE 15W
 COUNTY STAFFORD STATE KANSAS
 CONTRACTOR Royal Drilling, Rig #1
 SPUD 7/9/2018 COMP 7/18/2018
 RTD 4150' LTD 4146'
 SAMPLES SAVED FROM 2600' TO RTD
 DRILLING TIME KEPT FROM 700' TO RTD
 SAMPLES EXAMINED FROM 2200' TO RTD
 GEO SUPERVISION FROM 2054' TO RTD
 MUD UP 2975'
 TYPE MUD CHEMICAL DRISPAC (ANDY'S)

FORMATION TOPS & STRUCTURAL COMPARISON

FORMATION	DEPTH	SUBSEA	STRUCTURE
Anhydrite	944'	1080'	+5'
Base/Anhydrite	966'	1058'	+9'
Heebner	3496'	-1472'	-4'
Brown Lime	3630'	-1606'	-3'
Lansing	3638'	-1614'	-4'
Stark	3830'	-1806'	-6'
Base/Kansas City	3882'	-1858'	-4'
Viola	3992'	-1968'	-18'
Simpson	4046'	-2022'	+8'
Arbuckle	4090'	-2066'	+9'

ELEVATION

KB 2024'
 GL 2018'

CASING RECORD

CONDUCTOR NA

SURFACE 8.625" @ 257'

PRODUCTION 5.5" @ 4135'

ELECTRICAL SURVEYS

- CNL/CDL
- DUAL INDUCTION
- MICRO
- SONIC



Comparison Well Used for Structure: Sticky Oil Mgmt, Lucas #1 (15-185-23370)

REMARKS Due to the positive results of DST #4 (Lansing "K & L" zones), it was decided by all parties to run casing on this well to further evaluate gas production.

Respectfully Submitted,

Eli J. Felts

