Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1164387

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 # 32811
Name: OSAGE Resources, LLC
Address 1: 6209 N K61 HWY
Address 2:
City: HUTCHINSON State: KS Zip: 67502 + 8608
Contact Person: Jeff Dale
Phone: (620) 664-9622
CONTRACTOR: License # 5929
Name: Duke Drilling Co., Inc.
Wellsite Geologist: Peter Debenham
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 #:

09/13/2013 Spud Date or Recompletion Date
10/08/2013 Date Reached TD
10/12/2013 Completion Date or Recompletion Date

API No. 15 - 15-007-24072-01-00
Spot Description:
NW SE SW NW Sec. 18 Twp. 33 S. R. 13 ☐ East ☑ West
2225 Feet from ☑ North / ☐ South Line of Section
895 Feet from ☐ East / ☑ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☐ NE ☑ NW ☐ SE ☐ SW

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

Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84

County: Barber
Lease Name: Osage Well #: 3313 18-06HC
Field Name: Medicine Lodge Boggs
Producing Formation: Mississippian
Elevation: Ground: 1861 Kelly Bushing: 1878
Total Vertical Depth: 10146 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 209 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: 5000 ppm Fluid volume: 800 bbls
Dewatering method used: Evaporated

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: 01/06/2014
☑ **Confidential Release Date:** 01/06/2016
☐ **Wireline Log Received**
☐ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** NAOMI JAMES **Date:** 01/06/2014

[redacted] 1164387

Operator Name: OSAGE Resources, LLC Lease Name: Osage Well #: 3313 18-06HC

Sec. 18 Twp. 33 S. R. 13 ☐ East ☑ West County: Barber

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 ☐ Yes ☑ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☑ Yes ☐ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☐ Yes ☑ No

List All E. Logs Run:

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name: Attached Top: Attached Datum: Attached

CASING RECORD ☑ New ☐ 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
Attached	Attached	Attached	Attached	Attached	Attached	Attached	Attached

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
___ Perforate ___ Protect Casing ___ Plug Back TD ___ 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 *(Amount and Kind of Material Used)*	Depth

TUBING RECORD:	Size:	Set At:	Packer At:	Liner Run:
	3.5	4424	4647	☑ Yes ☐ No

Date of First, Resumed Production, SWD or ENHR.

Producing Method: ☐ Flowing ☐ Pumping ☐ Gas Lift ☐ Other *(Explain)* _____

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☐ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☐ Other *(Specify)* _____

PRODUCTION INTERVAL:
_____
_____

Mail to: KCC - Conservation Division, 130 S. Market - Room 2078, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	OSAGE Resources, LLC
Well Name	Osage 3313 18-06HC
Doc ID	1164387

Tops

Name	Top	Datum
Heebner	4024	-2148
Lansing	4217	-2341
Stark SH	4581	-2678
Hushpuckney	4623	-2747
Mississippi	4736	-2878
Kinderhook	4950	-2989
Compton	5072	-3054
Woodford	5735	-3136

Form	ACO1 - Well Completion
Operator	OSAGE Resources, LLC
Well Name	Osage 3313 18-06HC
Doc ID	1164387

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	17.5	13.375	56	208	CP100C	250	2% CC & 1/4#sk Cellflake
Intermediate	8.75	7	26	5304	CP105	150	0.25% defoamer, 10% salt, 0.5% CFR, 0.3% FLA-322, 1/4#/sx celloflake & 0.1% WCA-1
Production	6.125	4.5	11.6	9767	CP104	465	2% gel, 0.25% defoamer, 10% salt, 0.75% CFR, 0.75% FLA-322 & 0.2% WCA-1

BASIC energy services, L.P.

TREATMENT REPORT

Customer Osage Resources LLC	Lease No.	Date 9-20-13	
Lease Osage 3313	Well # 18-06HC		
Field Order # 8775	Station Pratt	Casing 13 3/8	Depth
County Barber	State KS		
Type Job CNW S.P.	Formation	Legal Description 18-33-13	

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size 13 3/8	Tubing Size	Shots/Ft		Acid CMT 250 SKS COMMON 2% CC 1/4 CF	RATE	PRESS	ISIP
Depth 207.98	Depth	From	To	Pre Pad	Max		5 Min.
Volume 32.65	Volume	From	To	Pad	Min		10 Min.
Max Press 300	Max Press	From	To	Frac	Avg		15 Min.
Well Connection SW	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth 199.98	Packer Depth	From	To	Flush 31.08	Gas Volume		Total Load

Customer Representative Jeff Dair	Station Manager Kevin Goldley	Treater Mike Mattai	

Service Units	37586		27463		70959	19918					
Driver Names	Mattai		Young		Graves						

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
11:15 AM					On Location / Safety Meeting
2:45					Run CSG
3:25					CSG on Bottom
3:35					Hook up to CSG / Break circ w. Rig
4:00			5	5	Pump 5 BBl H2O
4:05	250		55	5	Mix 250 SKS CMT
4:15	150			5	Start Displacement
4:22	300		25	4	Slow Rate
4:25	300		31	—	Plug Down
					Circ. Thru Job
					15 BBls Slurry to Pit
					Job Complete
					Thank You
					Mike Mattai

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OCT 09 2013

TREATMENT REPORT

Customer: Osage Resources LLC	Lease No.		Date: 10-2-13		
Lease: Osage 3313	Well #: 18-06Hc				
Field Order #: 9207	Station: Pratt	Casing: 7"	Depth: 5388.86	County: Barber	State: KS
Type Job: CNW INT	Formation		Legal Description: 18-33-13		

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size: 7	Tubing Size	Shots/Ft		Acid: CMT 150 AA2 .25%	RATE: Bl Formate	PRESS: 1070 Bait	ISIP: .5% CFR
Depth: 5388.86	Depth	From	To	Pre Pad: .3% FLA-322	Max: 1/4# CF	.1% WCP	5 Min.
Volume: 205.4	Volume	From	To	Pad	Min		10 Min.
Max Press: 1000	Max Press	From	To	Frac	Avg		15 Min.
Well Connection: PP	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth: 5344.32	Packer Depth	From	To	Flush: 207	Gas Volume		Total Load

Customer Representative: Jeff			Station Manager: Kevin Gurley			Treater: Mike Mattai					
Service Units	37900		33708	20920		19831	19862				
Driver Names	Mattai		Young			Pierson					

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
7:15 AM					On Location / Safety Meeting
8:05					Running 7" csng, Joint 7 hit and would
					not go in. Pull csng
9:05					Drill pipe in hole
10:30					Chasing wall cake, Decided to chase it
					to Bottom
7:45 AM					Run 125 jts 7" 26# csng
1:30					csng on Bottom Rig down csng crew
					rig up cmt crew
2:30	250		12	5	Pump 12 Bbl mud flush
2:32	250		5	5	Pump 5 Bbl water
2:34	250		38	5	Mix 150 sks AA2 cmt
2:44					Release Plug, start displacement
2:45	50			6	6 BPM @ 50 PSI
3:03	100		120	6	6 BPM @ 100 PSI
3:10	200		160	6	6 BPM @ 200 PSI
3:12	350		180	5	5 BPM @ 350 PSI
3:16	400		190	3	Slow rate to 3 BPM @ 400 PSI
3:25	700		207		Plug down
3:25	900				Pressured to 900 PSI, released, Plug held
					TOC 4388' Job complete
					Thank You Mike Mattai

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TREATMENT REPORT

Customer: OSAGE Resources LLC	Lease No.			Date: 10-11-13	
Lease: OSAGE 3313	Well #: 18-06 HC				
Field Order #: 9213	Station: PRATT	Casing: 4 1/2	Depth	County: BARBER	State: KS
Type Job: CMW Liner	Formation			Legal Description: 18-33-13	

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size: 4 1/2	Tubing Size	Shots/Ft		Acid: CMT 465 50/50 POZ H	RATE: 3BPM gel .35% FOAMER	PRESS	ISIP
Depth: 9765	Depth	From	To	Pre Pad: 109. SALT .75%	Max: CFR .75%	FIK-122	5 Min.: 3% WCHM
Volume	Volume	From	To	Pad	Min		10 Min.
Max Press	Max Press	From	To	Frac	Avg		15 Min.
Well Connection: P.C.	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth: 9757.67	Packer Depth	From	To	Flush	Gas Volume		Total Load

Customer Representative: JEFF DALE			Station Manager: Kevin GOODLEY			Treater: MIKE MATTHAI					
Service Units	37586		27463		19903	73768		78918	19862		
Driver Names	MATTHAI		MARQUEZ		MAYKAT			BARTON			

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
7:30PM					ON LOCATION / SAFETY MEETING
12:45AM					ON BOTTOM, CIRC WHILE RIGGING UP
3:00					PRESSURE TEST 4000 PSI, HELD
3:03	700		12	3	PUMP 12 BBL MUD FLUSH
	3,200		~~5~~	~~3~~	BALL WENT THROUGH
3:07	500		5	3	PUMP 5 BBL H2O
3:10					MIX 465 SKS CMT
3:25	400		30	3	3 BPM @ 400 PSI
3:30	200		44	3	3 BPM @ 200 PSI
3:40	200		89	3.5	3.5 BPM @ 200 PSI
3:50			—		WASH PUMP + LINE
3:55	100			3	START DISPLACEMENT
4:00	200		10	3	3 BPM @ 200 PSI
4:02	400		16	2	2 BPM @ 400 PSI
4:09	700		35	2	2 BPM @ 700 PSI
4:14	1200		42		LWD WENT THROUGH @ 1200 PSI
4:34			110	1	SLOW TO 1 BPM
4:42	1000		120	1	PLUG DOWN, RELEASED, FLOWED BACK
4:45	1500				BURST DISK, PUMPED OUT BOTTOM OF SHOE
4:46			10		PUMP 10 BBL H2O
4:55					RELEASED D.P. FROM LINER
	1000			5	PUMPED ~~10~~ 175 H2O, NO CMT RETURN

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TREATMENT REPORT

Customer OSAGE RESOURCES	Lease No.			Date 10-11-13	
Lease OSAGE 3313	Well # 18-06 HC				
Field Order # 4213	Station PRATT	Casing 4 1/2	Depth 4765	County BARBER	State KS
Type Job CNW LINER	Formation			Legal Description 18-33-13	

PIPE DATA		PERFORATING DATA		FLUID USED
Casing Size 4 1/2	Tubing Size	Shots/Ft		Acid
Depth 4765	Depth	From	To	Pre Pad
Volume	Volume	From	To	Pad
Max Press 3500	Max Press	From	To	Frac
Well Connection	Annulus Vol.	From	To	
Plug Depth 4757.67	Packer Depth	From	To	Flush

TREATMENT RESUME		
RATE	PRESS	ISIP
Max		5 Min.
Min		10 Min.
Avg		15 Min.
HHP Used		Annulus Pressure
Gas Volume		Total Load

Customer Representative Jeff Dale | Station Manager Kevin Goolsby | Treater Mike Mattal

Service Units											
Driver Names											

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
					Circulation Thru Job
~~5:40~~					TOC @ 4251
5:40					Job Complete
					Thank You
					Mike Mattal

10244 NE Hiway 61 • P.O. Box 8613 • Pratt, KS 67124-8613 • (620) 672-1201 • Fax (620) 672-5383

Taylor Printing, Inc. 620-672-3656

Osage Resources

WELLBORE:	Lateral #1
PLAN:	Design #1
GEODETIC SYSTEM:	US State Plane 1983
DATUM:	North American Datum 1983
ELLIPSOID:	GRS 1980
ZONE:	Kansas Southern Zone
SYSTEM DATUM:	Mean Sea Level

SURFACE HOLE COORDINATES

LATITUDE: 37° 10' 28.927 N
LONGITUDE: 98° 46' 56.149 W
NORTHING (Y): 1497447.09
EASTING (X): 1230090.68

GROUND LEVEL: 1859.0
RIG FLOOR(KB):
WELL @ 1876.0usft (Original Well Elev)

MAGNETIC FIELD:

STRENGTH: 51704
DIP ANGLE: 65.17°
MODEL: IGRF2010
DATE: 05-Sep-13
AZIMUTHS CORRECTED TO: Grid

MWD - USE IF ABOVE IS GRID

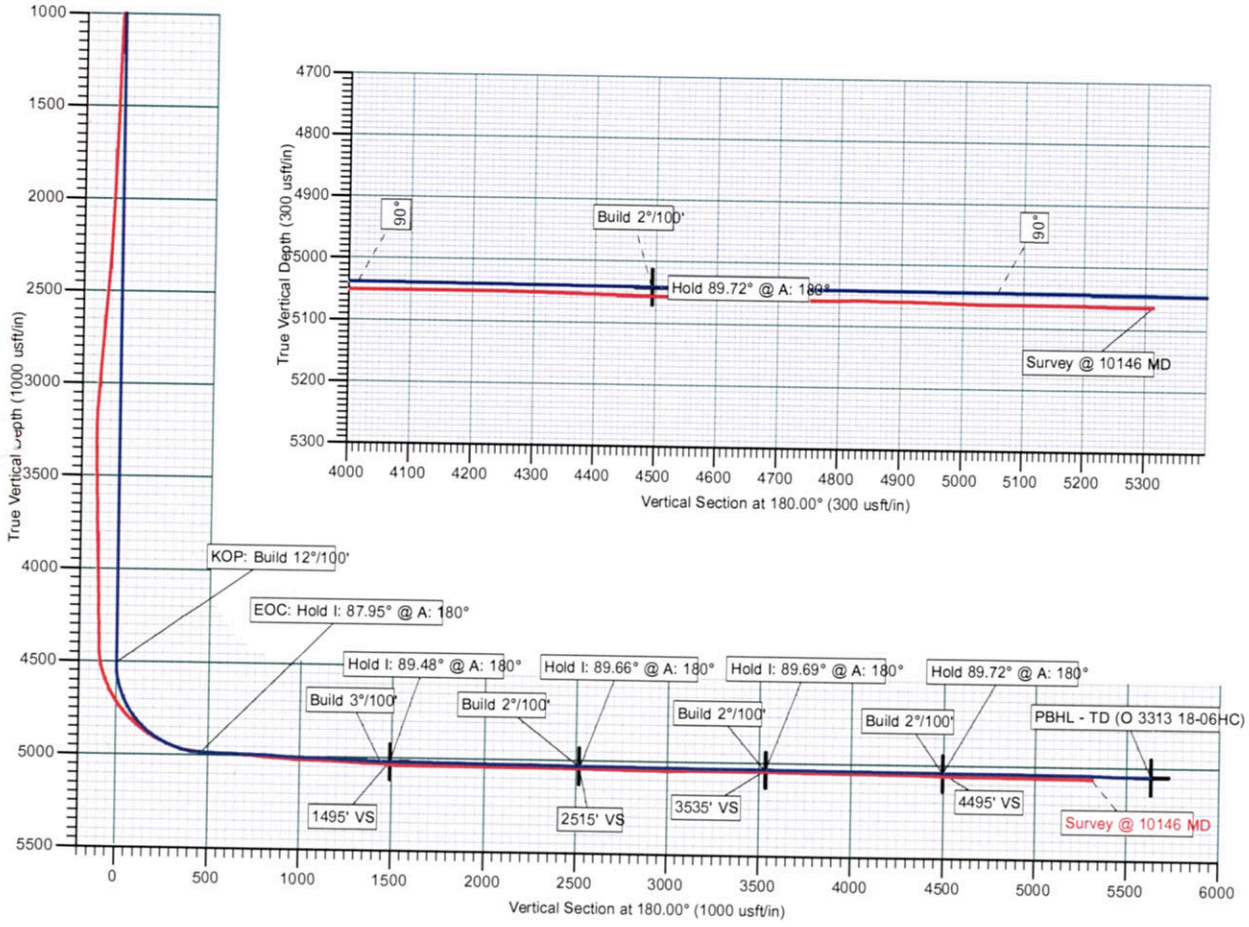
Operator:	Osage Resources, LLC
Location:	Barber Co, Kansas (NAD-83)
Well Name:	Osage 3313 18-06HC

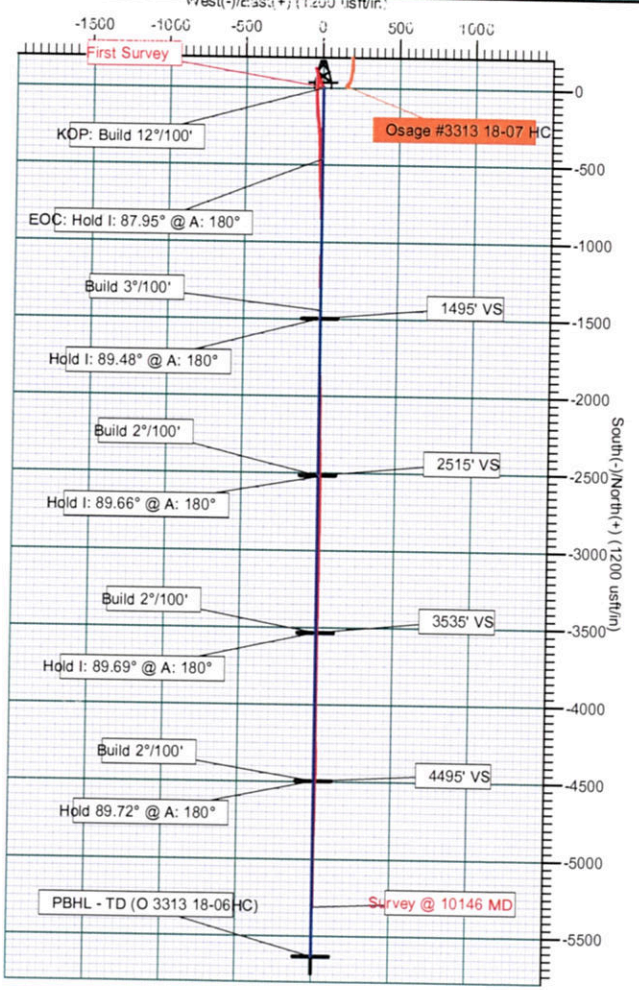
PLAN SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	4507.8	0.00	0.00	4507.8	0.0	0.0	0.00	0.00	0.0		KOP: Build 12°/100'
3	5240.7	87.95	180.00	4985.0	-460.4	0.0	12.00	180.00	460.4		EOC: Hold I: 87.95° @ A: 180°
4	6224.9	87.95	180.00	5020.2	-1443.9	0.0	0.00	0.00	1443.9		Build 3°/100'
5	6276.0	89.48	180.00	5021.3	-1495.0	0.0	3.00	0.00	1495.0	1495' VS	Hold I: 89.48° @ A: 180°
6	7296.0	89.48	180.00	5030.6	-2515.0	0.0	0.00	0.00	2515.0	2515' VS	Build 2°/100'
7	7304.9	89.66	180.00	5030.6	-2523.9	0.0	2.00	0.00	2523.9		Hold I: 89.66° @ A: 180°
8	8314.3	89.66	180.00	5036.6	-3533.3	0.0	0.00	0.00	3533.3		Build 2°/100'
9	8316.0	89.69	180.00	5036.6	-3535.0	0.0	2.00	0.00	3535.0	3535' VS	Hold I: 89.69° @ A: 180°
10	9276.0	89.69	180.00	5041.8	-4495.0	0.0	0.00	0.00	4495.0	4495' VS	Build 2°/100'
11	9277.1	89.72	180.00	5041.8	-4496.1	0.0	2.00	0.00	4496.1		Hold 89.72° @ A: 180°
12	10414.1	89.72	180.00	5047.4	-5633.0	0.0	0.00	0.00	5633.0	PBHL - TD (O 3313 18-06HC)	

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
1495' VS	5021.3	-1495.0	0.0	1495952.09	1230090.68	37° 10' 14.146 N	98° 46' 56.093 W	Point
2515' VS	5030.6	-2515.0	0.0	1494932.09	1230090.68	37° 10' 4.062 N	98° 46' 56.055 W	Point





Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Project Barber Co, Kansas (NAD-83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Kansas Southern Zone		

Site Osage 3313 18-06HC

Site Position:		**Northing:**	1,497,447.09 usft	**Latitude:**	37° 10' 28.927 N
From:	Map	**Easting:**	1,230,090.68 usft	**Longitude:**	98° 46' 56.149 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.17 °

Well Osage 3313 18-06HC

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,497,447.09 usft	**Latitude:**	37° 10' 28.927 N
	+E/-W	0.0 usft	**Easting:**	1,230,090.68 usft	**Longitude:**	98° 46' 56.149 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	1,876.0 usft	**Ground Level:**	1,859.0 usft

Wellbore Lateral #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/5/2013	4.91	65.17	51,704

Design Lateral #1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	180.00

Survey Program **Date** 10/9/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
278.0	10,146.0	Survey #1 (Lateral #1)	MWD	MWD - Calmena

Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0	1,497,447.09	1,230,090.68
278.0	1.00	341.50	278.0	2.3	-0.8	0.36	-2.3	1,497,449.39	1,230,089.91
First Survey									
557.0	1.10	336.60	556.9	7.1	-2.6	0.05	-7.1	1,497,454.15	1,230,088.07
836.0	1.20	327.00	835.9	12.0	-5.3	0.08	-12.0	1,497,459.06	1,230,085.42
1,294.0	1.50	338.30	1,293.8	21.6	-10.1	0.09	-21.6	1,497,468.65	1,230,080.59
1,573.0	2.00	336.20	1,572.6	29.4	-13.4	0.18	-29.4	1,497,476.50	1,230,077.28
1,850.0	2.30	339.20	1,849.4	39.0	-17.3	0.12	-39.0	1,497,486.12	1,230,073.35
1,957.0	2.70	341.80	1,956.3	43.4	-18.9	0.39	-43.4	1,497,490.52	1,230,071.80
2,267.0	3.50	340.10	2,265.9	59.3	-24.4	0.26	-59.3	1,497,506.35	1,230,066.30
2,549.0	4.40	339.10	2,547.2	77.5	-31.2	0.32	-77.5	1,497,524.55	1,230,059.51
2,829.0	4.70	342.50	2,826.3	98.4	-38.4	0.14	-98.4	1,497,545.53	1,230,052.23
2,967.0	5.00	345.10	2,963.8	109.6	-41.7	0.27	-109.6	1,497,556.73	1,230,048.98
2,998.0	5.10	344.80	2,994.7	112.3	-42.4	0.33	-112.3	1,497,559.37	1,230,048.28
3,029.0	4.60	342.20	3,025.6	114.8	-43.1	1.76	-114.8	1,497,561.88	1,230,047.53
3,060.0	4.10	341.70	3,056.5	117.0	-43.9	1.62	-117.0	1,497,564.12	1,230,046.81
3,091.0	3.70	334.10	3,087.4	119.0	-44.7	2.11	-119.0	1,497,566.07	1,230,046.02
3,122.0	3.40	329.20	3,118.4	120.7	-45.6	1.38	-120.7	1,497,567.76	1,230,045.11
3,153.0	2.80	330.20	3,149.3	122.1	-46.4	1.94	-122.1	1,497,569.20	1,230,044.27
3,184.0	2.20	326.20	3,180.3	123.3	-47.1	2.01	-123.3	1,497,570.36	1,230,043.56
3,215.0	1.80	328.80	3,211.3	124.2	-47.7	1.32	-124.2	1,497,571.27	1,230,042.98
3,246.0	0.80	338.70	3,242.3	124.8	-48.0	3.29	-124.8	1,497,571.89	1,230,042.65
3,277.0	0.30	119.70	3,273.3	125.0	-48.0	3.39	-125.0	1,497,572.05	1,230,042.64
3,308.0	1.10	154.60	3,304.3	124.7	-47.8	2.81	-124.7	1,497,571.74	1,230,042.84
3,339.0	1.20	152.90	3,335.3	124.1	-47.6	0.34	-124.1	1,497,571.18	1,230,043.11
3,400.0	1.40	160.30	3,396.2	122.8	-47.0	0.43	-122.8	1,497,569.91	1,230,043.65
3,462.0	1.40	152.50	3,458.2	121.4	-46.4	0.31	-121.4	1,497,568.52	1,230,044.26

Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
3,524.0	1.40	149.80	3,520.2	120.1	-45.7	0.11	-120.1	1,497,567.20	1,230,044.99
3,586.0	1.40	152.90	3,582.2	118.8	-45.0	0.12	-118.8	1,497,565.87	1,230,045.71
3,648.0	1.40	158.50	3,644.2	117.4	-44.3	0.22	-117.4	1,497,564.49	1,230,046.34
3,710.0	1.90	151.50	3,706.1	115.8	-43.6	0.87	-115.8	1,497,562.88	1,230,047.11
3,772.0	1.70	149.50	3,768.1	114.1	-42.6	0.34	-114.1	1,497,561.19	1,230,048.06
3,835.0	1.80	149.00	3,831.1	112.4	-41.6	0.16	-112.4	1,497,559.53	1,230,049.05
3,897.0	2.10	143.60	3,893.0	110.7	-40.5	0.57	-110.7	1,497,557.78	1,230,050.22
3,959.0	2.00	149.70	3,955.0	108.8	-39.2	0.39	-108.8	1,497,555.94	1,230,051.44
4,021.0	1.80	147.30	4,017.0	107.1	-38.2	0.35	-107.1	1,497,554.18	1,230,052.51
4,083.0	1.60	146.20	4,078.9	105.6	-37.2	0.33	-105.6	1,497,552.64	1,230,053.52
4,114.0	1.60	142.50	4,109.9	104.9	-36.7	0.33	-104.9	1,497,551.94	1,230,054.03
4,176.0	1.30	176.50	4,171.9	103.5	-36.1	1.44	-103.5	1,497,550.55	1,230,054.60
4,238.0	1.20	186.90	4,233.9	102.1	-36.1	0.40	-102.1	1,497,549.21	1,230,054.56
4,300.0	1.10	194.60	4,295.9	100.9	-36.3	0.30	-100.9	1,497,547.99	1,230,054.33
4,362.0	1.90	188.40	4,357.9	99.3	-36.6	1.31	-99.3	1,497,546.39	1,230,054.03
4,393.0	2.10	190.10	4,388.8	98.2	-36.8	0.67	-98.2	1,497,545.33	1,230,053.86
4,424.0	2.10	182.90	4,419.8	97.1	-37.0	0.85	-97.1	1,497,544.20	1,230,053.73
4,455.0	3.80	172.10	4,450.8	95.5	-36.8	5.75	-95.5	1,497,542.61	1,230,053.84
4,486.0	8.20	171.90	4,481.6	92.3	-36.4	14.19	-92.3	1,497,539.41	1,230,054.29
4,517.0	11.90	176.70	4,512.1	86.9	-35.9	12.23	-86.9	1,497,534.02	1,230,054.79
4,548.0	15.60	181.00	4,542.2	79.6	-35.8	12.37	-79.6	1,497,526.66	1,230,054.90
4,579.0	18.20	185.90	4,571.9	70.6	-36.3	9.56	-70.6	1,497,517.68	1,230,054.33
4,610.0	20.90	186.00	4,601.1	60.3	-37.4	8.71	-60.3	1,497,507.36	1,230,053.26
4,641.0	23.90	183.80	4,629.8	48.5	-38.4	10.05	-48.5	1,497,495.59	1,230,052.26
4,672.0	26.50	180.30	4,657.8	35.3	-38.9	9.66	-35.3	1,497,482.41	1,230,051.81
4,703.0	29.90	180.20	4,685.1	20.7	-38.9	10.97	-20.7	1,497,467.76	1,230,051.75
4,734.0	33.00	181.50	4,711.6	4.5	-39.2	10.24	-4.5	1,497,451.59	1,230,051.50

Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
4,765.0	36.50	182.10	4,737.0	-13.2	-39.7	11.34	13.2	1,497,433.93	1,230,050.94
4,796.0	40.00	181.60	4,761.4	-32.3	-40.4	11.33	32.3	1,497,414.76	1,230,050.32
4,827.0	43.00	180.20	4,784.6	-52.9	-40.7	10.13	52.9	1,497,394.22	1,230,050.01
4,858.0	46.10	178.00	4,806.7	-74.6	-40.3	11.17	74.6	1,497,372.48	1,230,050.36
4,889.0	49.10	175.90	4,827.6	-97.5	-39.1	10.89	97.5	1,497,349.63	1,230,051.59
4,921.0	52.00	175.10	4,847.9	-122.1	-37.2	9.27	122.1	1,497,325.00	1,230,053.53
4,952.0	54.30	174.90	4,866.5	-146.8	-35.0	7.44	146.8	1,497,300.29	1,230,055.69
4,983.0	56.80	174.50	4,884.0	-172.3	-32.6	8.13	172.3	1,497,274.83	1,230,058.05
5,013.0	59.30	174.40	4,899.9	-197.6	-30.2	8.34	197.6	1,497,249.50	1,230,060.52
5,044.0	62.20	174.80	4,915.1	-224.5	-27.6	9.42	224.5	1,497,222.58	1,230,063.06
5,075.0	65.00	175.30	4,928.8	-252.2	-25.2	9.15	252.2	1,497,194.92	1,230,065.45
5,107.0	67.40	176.70	4,941.8	-281.4	-23.2	8.50	281.4	1,497,165.71	1,230,067.49
5,138.0	70.90	177.70	4,952.8	-310.3	-21.8	11.69	310.3	1,497,136.78	1,230,068.91
5,169.0	74.10	178.10	4,962.1	-339.8	-20.7	10.40	339.8	1,497,107.24	1,230,069.99
5,199.0	76.80	178.80	4,969.6	-368.9	-19.9	9.28	368.9	1,497,078.21	1,230,070.77
5,230.0	79.90	179.10	4,975.9	-399.2	-19.4	10.04	399.2	1,497,047.86	1,230,071.33
5,261.0	83.40	179.40	4,980.4	-429.9	-19.0	11.33	429.9	1,497,017.20	1,230,071.73
5,304.0	86.70	178.90	4,984.1	-472.7	-18.3	7.76	472.7	1,496,974.37	1,230,072.36
5,335.0	87.20	178.70	4,985.8	-503.7	-17.7	1.74	503.7	1,496,943.42	1,230,073.01
5,366.0	87.40	178.60	4,987.2	-534.6	-16.9	0.72	534.6	1,496,912.46	1,230,073.74
5,396.0	87.20	177.90	4,988.6	-564.6	-16.0	2.42	564.6	1,496,882.51	1,230,074.66
5,427.0	86.90	177.40	4,990.2	-595.5	-14.8	1.88	595.5	1,496,851.58	1,230,075.93
5,458.0	87.40	177.10	4,991.8	-626.4	-13.3	1.88	626.4	1,496,820.65	1,230,077.41
5,489.0	87.70	177.10	4,993.1	-657.4	-11.7	0.97	657.4	1,496,789.72	1,230,078.98
5,519.0	86.80	176.90	4,994.5	-687.3	-10.1	3.07	687.3	1,496,759.80	1,230,080.55
5,550.0	86.10	176.60	4,996.5	-718.2	-8.4	2.46	718.2	1,496,728.90	1,230,082.30
5,580.0	85.20	177.00	4,998.7	-748.0	-6.7	3.28	748.0	1,496,699.04	1,230,083.97

Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
5,611.0	84.30	177.00	5,001.6	-778.9	-5.1	2.90	778.9	1,496,668.21	1,230,085.59
5,642.0	84.40	177.00	5,004.6	-809.7	-3.5	0.32	809.7	1,496,637.40	1,230,087.20
5,673.0	85.00	177.90	5,007.5	-840.5	-2.1	3.48	840.5	1,496,606.57	1,230,088.58
5,704.0	85.00	178.50	5,010.2	-871.4	-1.1	1.93	871.4	1,496,575.70	1,230,089.55
5,735.0	86.10	179.30	5,012.6	-902.3	-0.5	4.38	902.3	1,496,544.80	1,230,090.14
5,796.0	88.10	181.50	5,015.7	-963.2	-1.0	4.87	963.2	1,496,483.89	1,230,089.71
5,827.0	88.60	181.50	5,016.6	-994.2	-1.8	1.61	994.2	1,496,452.91	1,230,088.90
5,858.0	88.40	181.10	5,017.4	-1,025.2	-2.5	1.44	1,025.2	1,496,421.93	1,230,088.20
5,889.0	88.00	180.70	5,018.4	-1,056.1	-3.0	1.82	1,056.1	1,496,390.95	1,230,087.71
5,920.0	87.90	180.20	5,019.5	-1,087.1	-3.2	1.64	1,087.1	1,496,359.97	1,230,087.47
5,951.0	88.50	180.50	5,020.4	-1,118.1	-3.4	2.16	1,118.1	1,496,328.99	1,230,087.28
5,982.0	88.40	180.20	5,021.3	-1,149.1	-3.6	1.02	1,149.1	1,496,298.00	1,230,087.09
6,013.0	87.90	179.50	5,022.3	-1,180.1	-3.5	2.77	1,180.1	1,496,267.01	1,230,087.17
6,045.0	88.00	179.40	5,023.4	-1,212.1	-3.2	0.44	1,212.1	1,496,235.04	1,230,087.48
6,076.0	87.10	178.90	5,024.8	-1,243.0	-2.7	3.32	1,243.0	1,496,204.07	1,230,087.94
6,107.0	87.30	178.70	5,026.3	-1,274.0	-2.1	0.91	1,274.0	1,496,173.11	1,230,088.59
6,138.0	87.30	178.90	5,027.7	-1,304.9	-1.4	0.64	1,304.9	1,496,142.15	1,230,089.23
6,169.0	87.60	178.40	5,029.1	-1,335.9	-0.7	1.88	1,335.9	1,496,111.19	1,230,089.96
6,200.0	87.50	178.60	5,030.4	-1,366.9	0.1	0.72	1,366.9	1,496,080.23	1,230,090.77
6,230.0	87.90	178.30	5,031.6	-1,396.8	0.9	1.67	1,396.8	1,496,050.27	1,230,091.58
6,292.0	87.70	179.00	5,034.0	-1,458.8	2.4	1.17	1,458.8	1,495,988.33	1,230,093.04
6,354.0	87.90	179.00	5,036.4	-1,520.7	3.4	0.32	1,520.7	1,495,926.39	1,230,094.13
6,416.0	88.90	180.00	5,038.1	-1,582.7	4.0	2.28	1,582.7	1,495,864.41	1,230,094.67
6,478.0	89.20	180.20	5,039.2	-1,644.7	3.9	0.58	1,644.7	1,495,802.42	1,230,094.56
6,539.0	89.70	180.00	5,039.7	-1,705.7	3.8	0.88	1,705.7	1,495,741.43	1,230,094.45
6,601.0	90.10	179.90	5,039.8	-1,767.7	3.8	0.67	1,767.7	1,495,679.43	1,230,094.51
6,663.0	89.70	179.50	5,040.0	-1,829.7	4.2	0.91	1,829.7	1,495,617.43	1,230,094.83

Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
6,756.0	89.70	178.60	5,040.4	-1,922.6	5.7	0.97	1,922.6	1,495,524.44	1,230,096.37
6,849.0	90.50	178.90	5,040.3	-2,015.6	7.7	0.92	2,015.6	1,495,431.46	1,230,098.40
6,911.0	89.80	179.40	5,040.1	-2,077.6	8.6	1.39	2,077.6	1,495,369.47	1,230,099.32
6,973.0	89.50	180.00	5,040.5	-2,139.6	9.0	1.08	2,139.6	1,495,307.47	1,230,099.65
7,097.0	90.30	179.80	5,040.7	-2,263.6	9.2	0.67	2,263.6	1,495,183.48	1,230,099.86
7,159.0	89.30	179.80	5,040.9	-2,325.6	9.4	1.61	2,325.6	1,495,121.48	1,230,100.08
7,283.0	88.90	179.00	5,042.9	-2,449.6	10.7	0.72	2,449.6	1,494,997.50	1,230,101.38
7,376.0	89.50	178.80	5,044.2	-2,542.6	12.5	0.68	2,542.6	1,494,904.53	1,230,103.16
7,501.0	89.40	179.30	5,045.4	-2,667.5	14.6	0.41	2,667.5	1,494,779.55	1,230,105.23
7,625.0	89.60	180.60	5,046.5	-2,791.5	14.7	1.06	2,791.5	1,494,655.56	1,230,105.34
7,749.0	90.00	180.40	5,046.9	-2,915.5	13.6	0.36	2,915.5	1,494,531.56	1,230,104.26
7,871.0	90.20	180.70	5,046.7	-3,037.5	12.4	0.30	3,037.5	1,494,409.57	1,230,103.09
7,995.0	90.50	180.40	5,045.9	-3,161.5	11.2	0.34	3,161.5	1,494,285.58	1,230,101.90
8,119.0	89.60	180.50	5,045.8	-3,285.5	10.2	0.73	3,285.5	1,494,161.58	1,230,100.93
8,244.0	90.40	180.10	5,045.8	-3,410.5	9.6	0.72	3,410.5	1,494,036.59	1,230,100.27
8,367.0	89.10	180.10	5,046.3	-3,533.5	9.4	1.06	3,533.5	1,493,913.59	1,230,100.06
8,460.0	89.40	180.10	5,047.6	-3,626.5	9.2	0.32	3,626.5	1,493,820.60	1,230,099.89
8,554.0	88.90	180.60	5,049.0	-3,720.5	8.6	0.75	3,720.5	1,493,726.61	1,230,099.32
8,616.0	89.30	180.40	5,049.9	-3,782.5	8.1	0.72	3,782.5	1,493,664.62	1,230,098.78
8,708.0	89.50	180.40	5,050.9	-3,874.5	7.5	0.22	3,874.5	1,493,572.63	1,230,098.14
8,801.0	89.80	180.30	5,051.5	-3,967.5	6.9	0.34	3,967.5	1,493,479.63	1,230,097.57
8,925.0	89.90	179.40	5,051.8	-4,091.5	7.2	0.73	4,091.5	1,493,355.64	1,230,097.89
9,049.0	89.80	178.70	5,052.1	-4,215.4	9.3	0.57	4,215.4	1,493,231.65	1,230,099.95
9,141.0	88.90	179.60	5,053.2	-4,307.4	10.6	1.38	4,307.4	1,493,139.67	1,230,101.31
9,265.0	89.00	180.90	5,055.4	-4,431.4	10.1	1.05	4,431.4	1,493,015.70	1,230,100.77
9,358.0	89.20	180.90	5,056.9	-4,524.4	8.6	0.22	4,524.4	1,492,922.72	1,230,099.31
9,451.0	88.60	179.50	5,058.7	-4,617.3	8.3	1.64	4,617.3	1,492,829.74	1,230,098.99

Company:	Osage Resources, LLC	**Local Co-ordinate Reference:**	Well Osage 3313 18-06HC
Project:	Barber Co, Kansas (NAD-83)	**TVD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Site:	Osage 3313 18-06HC	**MD Reference:**	WELL @ 1876.0usft (Original Well Elev)
Well:	Osage 3313 18-06HC	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
9,544.0	89.80	180.70	5,060.0	-4,710.3	8.1	1.82	4,710.3	1,492,736.75	1,230,098.82
9,636.0	90.80	180.70	5,059.5	-4,802.3	7.0	1.09	4,802.3	1,492,644.76	1,230,097.70
9,729.0	88.60	180.10	5,060.0	-4,895.3	6.4	2.45	4,895.3	1,492,551.77	1,230,097.05
9,822.0	88.80	180.00	5,062.1	-4,988.3	6.3	0.24	4,988.3	1,492,458.80	1,230,096.97
9,884.0	90.10	180.40	5,062.7	-5,050.3	6.1	2.19	5,050.3	1,492,396.80	1,230,096.75
10,008.0	89.50	179.60	5,063.1	-5,174.3	6.1	0.81	5,174.3	1,492,272.80	1,230,096.75
10,070.0	89.10	180.00	5,063.9	-5,236.3	6.3	0.91	5,236.3	1,492,210.81	1,230,096.97
10,146.0	90.00	180.00	5,064.5	-5,312.3	6.3	1.18	5,312.3	1,492,134.81	1,230,096.97
Survey @ 10146 MD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
278.0	278.0	2.3	-0.8	First Survey
10,146.0	5,064.5	-5,312.3	6.3	Survey @ 10146 MD

Checked By: _____ Approved By: _____ Date: _____