



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1205120
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

- New Well Re-Entry Workover
- Oil WSW SWD SIOW
- Gas D&A ENHR SIGW
- OG GSW Temp. Abd.
- CM (Coal Bed Methane)
- Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

- Deepening Re-perf. Conv. to ENHR Conv. to SWD
- Plug Back Conv. to GSW Conv. to Producer
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite: _____

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

- Confidentiality Requested
Date: _____
- Confidential Release Date: _____
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____

1205120

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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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				

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

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

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

TUBING RECORD: Size: _____ Set At: _____ Packer At: _____ Liner Run: 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: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	OSAGE Resources, LLC
Well Name	Osage 3314 13-02HC
Doc ID	1205120

Tops

Name	Top	Datum
Kanwaka SH	3824	-1943
Heebner Sh	4006	-2155
Toronto LS	4023	-2172
Douglas GP	4045	-2194
Haskell (Brown)	4195	-2344
Lansing	4203	-2352
Stark SH	4553	-2705
Hushpuckney SH	4598	-2747
BKC	4631	-2780
Marmaton	4631	-2780
Kinderhook SH	4961	-3110
Woodford SH	4988	-3137

Cement Report

Customer: <i>OSAGE Resources LLC</i>	Lease No: <i>OSAGE 3314</i>	Date: <i>05-03-14</i>
Lease: <i>OSAGE 3314</i>	Well #: <i>13-02AC</i>	Service Receipt #: <i>1711-05641A</i>
Casing: <i>4 1/2" Linen</i>	Depth: <i>9347'</i>	County: <i>Barber</i>
Job Type: <i>4 1/2" Linen</i>	Formation:	State: <i>KS</i>
Legal Description: <i>13-33-14</i>		

Pipe Data		Perforating Data		Cement Data
Casing size	Tubing Size	Shots/Ft		Lead <i>640 sks 15.68ppg</i> <i>50/50 Perm</i> <i>2% gal - 18% Salt</i> <i>1.25% defoamer, .75% CMC-2</i> <i>.5% F1A322 - .2% WDA-1</i> Tail in
Depth	Depth	From	To	
Volume	Volume	From	To	
Max Press	Max Press	From	To	
Well Connection	Annulus Vol.	From	To	
Plug Depth	Packer Depth	From	To	

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
<i>1030</i>					<i>Called out</i> <i>On Location - Pump Truck 4 miles</i> <i>from location with broken belt.</i> <i>Safety meeting</i> <i>Setup</i>
<i>1530</i>					
<i>1800</i>					
<i>1810</i>					
<i>1820</i>	<i>300</i>		<i>10</i>	<i>4</i>	<i>Test Lines to Rig Floor 3000 psi</i> <i>Pump 5 BBLs H₂O</i> <i>Pump 10 BBLs Stop Loss</i> <i>Polymer & LCM</i>
<i>1825</i>	<i>100</i>		<i>172</i>	<i>5</i>	<i>Mix pump cement 640 sks</i> <i>15.68ppg 1.5% defoamer</i>
					<i>Washup</i>
<i>1940</i>					<i>Drop Plug</i>
	<i>800</i>		<i>125</i>	<i>6</i>	<i>Displace 41 DP</i> <i>129 Total 8 H₂L 50 BBLs</i> <i>Land Pickfoot 79 CS9</i>
<i>2015</i>					<i>Pump 250 BBLs</i>
<i>2030</i>					

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Service Units	<i>21755</i>	<i>70897</i>	<i>30469</i>	<i>37547</i>	<i>19826</i>	<i>19860</i>
Driver Names	<i>Roger</i>	<i>Grabel</i>	<i>Swartz</i>	<i>Joshua</i>		

Scott Higgins Customer Representative
 Jerry Bennett Station Manager
 Roger Brown Cementer

Customer Osage Resources	Lease No.	Date 4-10-14
Lease Osage 33/4	Well # 13-02 HC	
Field Order # 09978	Station	Casing 13 3/8
Type Job 133/8 Surface	Formation	Depth 210
		County Barber
		State KS
		Legal Description 13-33-14

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size 13 3/8	Tubing Size 100 PB TP	Shots/Ft		Acid 255ski Com	RATE	PRESS 500	ISIP	
Depth 190	Depth 29.8	From	To	Pre Pad 296 CC 1/4 C.F.	Max		5 Min.	
Volume 29.8	Volume	From	To	Pad 15.6 ppg 1.18 #13	Min		10 Min.	
Max Press 500	Max Press	From	To	Frac	Avg		15 Min.	
Well Connection	Annulus Vol.	From	To		HHP Used		Annulus Pressure	
Plug Depth	Packer Depth	From	To	Flush	Gas Volume		Total Load	

Customer Representative Scott Higgins	Station Manager K Gordley	Treater D. Scott
Service Units Vap B Whitfield J Hansen		
Driver Names Scott 33768 20920 19826 19860		

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
0915					On Loc w/Trks Safety mtg
0948	100		4	4	H2O Spacer
0950	100		54	4	Mix 255ski 'A' @ 15.6 ppg
1003	0			4	Finish mixing 5+ Disp w/H2O
1025	150		29.8	0	Disp In Close In w.H.
					Circ 20 Bbls Cmt to Pit
					Job Complete Thank you
					Scotty & Crew

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Customer <i>OSGSE Resources LLC</i>	Lease No.	Date <i>4-18-2014</i>
Lease <i>OSGSE 3314</i>	Well # <i>13-02HC</i>	
Field Order # <i>10401</i>	Station <i>Pratt, KS</i>	Casing <i>7"</i>
Type Job <i>CNW 7' Intermediate</i>	Depth <i>5163</i>	County <i>Baker</i>
	Formation <i>TD-5161</i>	State <i>KS</i>
		Legal Description <i>13-33-14</i>

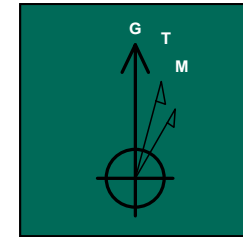
PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size <i>7"</i>	Tubing Size	Shots/Ft		Acid		RATE	PRESS	ISIP
Depth <i>5163</i>	Depth	From	To	Pre Pad	Max			5 Min.
Volume <i>196</i>	Volume	From	To	Pad	Min			10 Min.
Max Press <i>3500</i>	Max Press	From	To	Frac	Avg			15 Min.
Well Connection	Annulus Vol.	From	To		HHP Used			Annulus Pressure
Plug Depth <i>5120</i>	Packer Depth	From	To	Flush <i>Freshwater</i>	Gas Volume			Total Load

Customer Representative	Station Manager	Treater
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Service Units	<i>27283</i>	<i>19889</i>	<i>19847</i>	<i>19959</i>	<i>73768</i>				
Driver Names	<i>Darin</i>	<i>Ed</i>	<i>Ed</i>	<i>Josh</i>	<i>Josh</i>				

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
<i>4:30</i>					<i>On location</i>
					<i>on location / SSP meeting</i>
<i>6:25</i>	<i>3200</i>		<i>1</i>	<i>1/4</i>	<i>Pressure test lines</i>
<i>6:30</i>	<i>400</i>		<i>12</i>	<i>5</i>	<i>pump 12 bbls Flush</i>
	<i>400</i>		<i>38</i>	<i>5</i>	<i>Pump 150 Sx AP2 Cement</i>
					<i>Shut down / Wash lines</i>
	<i>200</i>		<i>0</i>	<i>6</i>	<i>Dispense Freshwater</i>
	<i>800</i>		<i>145</i>	<i>6</i>	<i>Li't pressure</i>
	<i>1200</i>		<i>186</i>	<i>3</i>	<i>Slow Rate</i>
<i>7:30</i>	<i>2000</i>		<i>196</i>	<i>3</i>	<i>Bump Plug</i>
					<i>Float Held</i>
					<i>Wash up</i>
					<i>Ris Down</i>
					<i>Job Complete / Darin & Crew</i>
					<i>Thank you!!!</i>
					<i>TOP of Cement + 3,818 Lt</i>

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WELLBORE: Lateral #1

PLAN: Design #3

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' 32.106 N
 LONGITUDE: 98° 47' 18.146 W
 NORTHING (Y): 1497774.05
 EASTING (X): 1228311.36

GROUND LEVEL: 1851.0
 RIG FLOOR(KB):
 WELL @ 1868.0usft (Original Well Elev)

MAGNETIC FIELD:

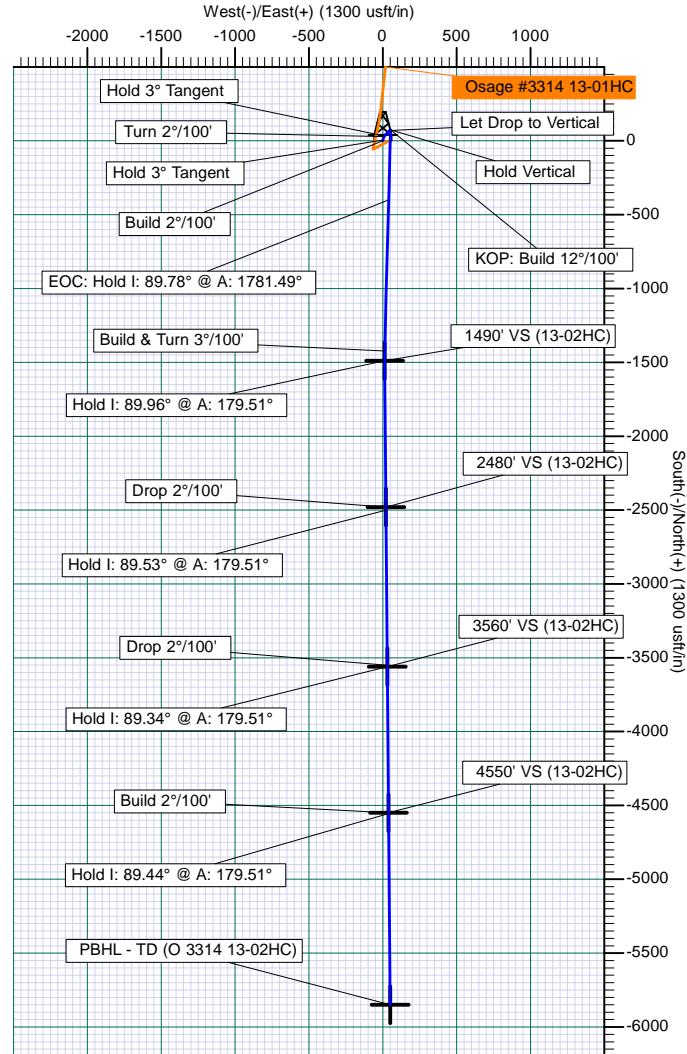
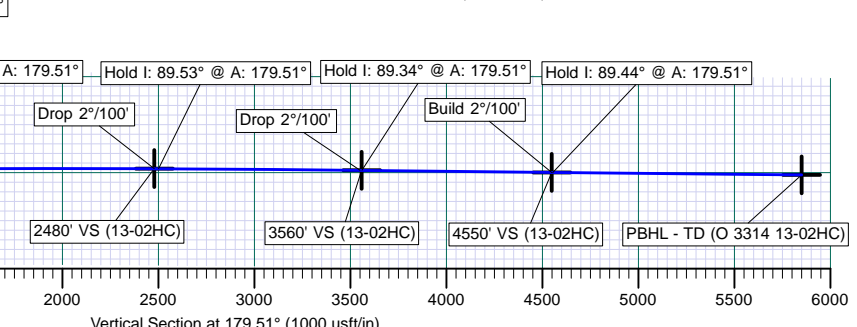
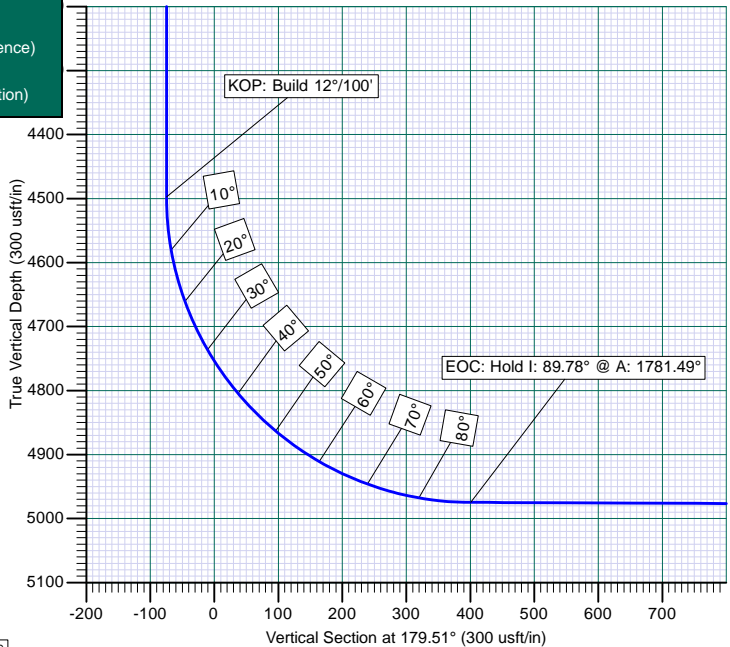
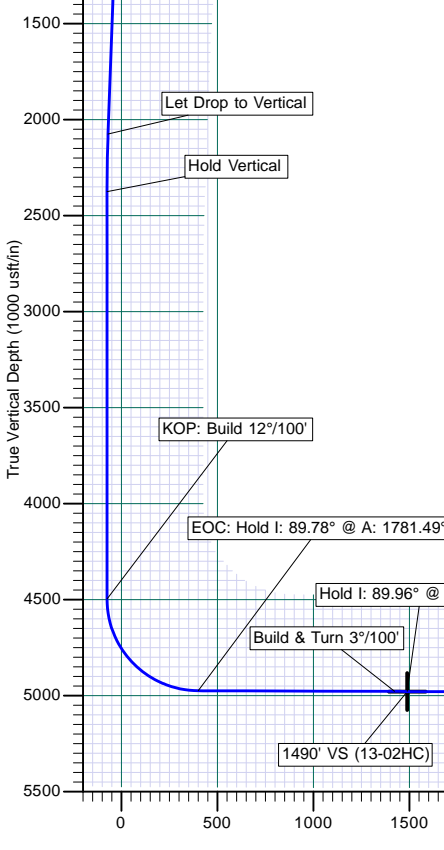
STRENGTH: 51649
 DIP ANGLE: 65.15°
 MODEL: IGRF2010
 DATE: 06-Mar-14
 AZIMUTHS CORRECTED TO: Grid

MWD - USE IF ABOVE IS GRID
 Magnetic North is 5.03° East of Grid North (Magnetic Convergence)

MWD - USE IF ABOVE IS TRUE
 Magnetic North is 4.85° East of True North (Magnetic Declination)

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	350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.0		Build 2°/100'	
3	500.0	3.00	15.00	499.9	3.8	1.0	2.00	15.00	-3.8		Hold 3° Tangent	
4	1000.0	3.00	15.00	999.2	29.1	7.8	0.00	0.00	-29.0		Turn 2°/100'	
5	1077.6	3.00	45.00	1076.8	32.5	9.8	2.00	104.98	-32.4		Hold 3° Tangent	
6	2077.6	3.00	45.00	2075.4	69.5	46.8	0.00	0.00	-69.1		Let Drop to Vertical	
7	2377.6	0.00	0.00	2375.2	75.0	52.3	1.00	180.00	-74.6		Hold Vertical	
8	4499.8	0.00	0.00	4497.4	75.0	52.3	0.00	0.00	-74.6		KOP: Build 12°/100'	
9	5248.0	89.78	181.49	4974.9	-400.4	39.9	12.00	181.49	400.8	1490' VS (13-02HC)	EOC: Hold I: 89.78° @ A: 1781.49°	
10	6271.6	89.78	181.49	4978.8	-1423.7	13.3	0.00	0.00	1423.7		Build & Turn 3°/100'	
11	6337.8	89.96	179.51	4979.0	-1489.9	12.7	3.00	-84.89	1490.0	1490' VS (13-02HC)	Hold I: 89.96° @ A: 179.51°	
12	7327.8	89.96	179.51	4979.8	-2479.9	21.2	0.00	0.00	2480.0	2480' VS (13-02HC)	Drop 2°/100'	
13	7349.1	89.53	179.51	4979.9	-2501.1	21.4	2.00	180.00	2501.2		Hold I: 89.53° @ A: 179.51°	
14	8398.2	89.53	179.51	4988.4	-3550.3	30.3	0.00	0.00	3550.4		Drop 2°/100'	
15	8407.9	89.34	179.51	4988.5	-3559.9	30.4	2.00	-180.00	3560.0	3560' VS (13-02HC)	Hold I: 89.34° @ A: 179.51°	
16	9397.9	89.34	179.51	4999.9	-4549.8	38.9	0.00	0.00	4550.0	4550' VS (13-02HC)	Build 2°/100'	
17	9402.9	89.44	179.51	5000.0	-4554.8	38.9	2.00	0.01	4555.2		Hold I: 89.44° @ A: 179.51°	
18	10698.2	89.44	179.51	5012.7	-5850.0	50.0	0.00	0.00	5850.2	PBHL - TD (O 3314 13-02HC)		

TARGET DETAILS										
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape		
1490' VS (13-02HC)	4979.0	-1489.9	12.7	1496284.10	1228324.10	37° 10' 17.375 N	98° 47' 17.932 W	Point		
2480' VS (13-02HC)	4979.8	-2479.9	21.2	1495294.14	1228332.56	37° 10' 7.588 N	98° 47' 17.789 W	Point		
3560' VS (13-02HC)	4988.5	-3559.9	30.4	1494214.18	1228341.79	37° 9' 56.911 N	98° 47' 17.634 W	Point		
4550' VS (13-02HC)	4999.9	-4549.8	38.9	1493224.21	1228350.25	37° 9' 47.123 N	98° 47' 17.492 W	Point		
PBHL - TD (O 3314 13-02HC)	5012.7	-5850.0	50.0	1491924.05	1228361.36	37° 9' 34.269 N	98° 47' 17.305 W	Point		



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Osage #3314 13-02HC
Company:	Osage Resources, LLC	TVD Reference:	WELL @ 1868.0usft (Original Well Elev)
Project:	Barber Co, Kansas (NAD-83)	MD Reference:	WELL @ 1868.0usft (Original Well Elev)
Site:	Osage #3314 13-02HC	North Reference:	Grid
Well:	Osage #3314 13-02HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Design #3		

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 #3314 13-02HC				
Site Position:		Northing:	1,497,774.05 usft	Latitude:	37° 10' 32.106 N
From:	Lat/Long	Easting:	1,228,311.36 usft	Longitude:	98° 47' 18.146 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.18 °

Well	Osage #3314 13-02HC					
Well Position	+N/-S	0.0 usft	Northing:	1,497,774.05 usft	Latitude:	37° 10' 32.106 N
	+E/-W	0.0 usft	Easting:	1,228,311.36 usft	Longitude:	98° 47' 18.146 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	1,868.0 usft	Ground Level:	1,851.0 usft

Wellbore	Lateral #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/6/2014	4.85	65.15	51,649

Design	Design #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.51

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Osage #3314 13-02HC
Company:	Osage Resources, LLC	TVD Reference:	WELL @ 1868.0usft (Original Well Elev)
Project:	Barber Co, Kansas (NAD-83)	MD Reference:	WELL @ 1868.0usft (Original Well Elev)
Site:	Osage #3314 13-02HC	North Reference:	Grid
Well:	Osage #3314 13-02HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Design #3		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	3.00	15.00	499.9	3.8	1.0	2.00	2.00	0.00	15.00	
1,000.0	3.00	15.00	999.2	29.1	7.8	0.00	0.00	0.00	0.00	
1,077.6	3.00	45.00	1,076.8	32.5	9.8	2.00	0.00	38.65	104.98	
2,077.6	3.00	45.00	2,075.4	69.5	46.8	0.00	0.00	0.00	0.00	
2,377.6	0.00	0.00	2,375.2	75.0	52.3	1.00	-1.00	0.00	180.00	
4,499.8	0.00	0.00	4,497.4	75.0	52.3	0.00	0.00	0.00	0.00	
5,248.0	89.78	181.49	4,974.9	-400.4	39.9	12.00	12.00	0.00	181.49	
6,271.6	89.78	181.49	4,978.8	-1,423.7	13.3	0.00	0.00	0.00	0.00	
6,337.8	89.96	179.51	4,979.0	-1,489.9	12.7	3.00	0.27	-2.99	-84.89	1490' VS (13-02HC)
7,327.8	89.96	179.51	4,979.8	-2,479.9	21.2	0.00	0.00	0.00	0.00	2480' VS (13-02HC)
7,349.1	89.53	179.51	4,979.9	-2,501.1	21.4	2.00	-2.00	0.00	180.00	
8,398.2	89.53	179.51	4,988.4	-3,550.3	30.3	0.00	0.00	0.00	0.00	
8,407.9	89.34	179.51	4,988.5	-3,559.9	30.4	2.00	-2.00	0.00	-180.00	3560' VS (13-02HC)
9,397.9	89.34	179.51	4,999.9	-4,549.8	38.9	0.00	0.00	0.00	0.00	4550' VS (13-02HC)
9,402.9	89.44	179.51	5,000.0	-4,554.8	38.9	2.00	2.00	0.00	0.01	
10,698.2	89.44	179.51	5,012.7	-5,850.0	50.0	0.00	0.00	0.00	0.00	PBHL - TD (O 3314 1

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Osage #3314 13-02HC
Company:	Osage Resources, LLC	TVD Reference:	WELL @ 1868.0usft (Original Well Elev)
Project:	Barber Co, Kansas (NAD-83)	MD Reference:	WELL @ 1868.0usft (Original Well Elev)
Site:	Osage #3314 13-02HC	North Reference:	Grid
Well:	Osage #3314 13-02HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Design #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 2°/100'									
400.0	1.00	15.00	400.0	0.4	0.1	-0.4	2.00	2.00	0.00
500.0	3.00	15.00	499.9	3.8	1.0	-3.8	2.00	2.00	0.00
Hold 3° Tangent									
600.0	3.00	15.00	599.8	8.8	2.4	-8.8	0.00	0.00	0.00
700.0	3.00	15.00	699.7	13.9	3.7	-13.9	0.00	0.00	0.00
800.0	3.00	15.00	799.5	19.0	5.1	-18.9	0.00	0.00	0.00
900.0	3.00	15.00	899.4	24.0	6.4	-24.0	0.00	0.00	0.00
1,000.0	3.00	15.00	999.2	29.1	7.8	-29.0	0.00	0.00	0.00
Turn 2°/100'									
1,077.6	3.00	45.00	1,076.7	32.5	9.8	-32.4	2.00	0.00	38.65
Hold 3° Tangent									
1,100.0	3.00	45.00	1,099.1	33.3	10.6	-33.2	0.00	0.00	0.02
1,200.0	3.00	45.00	1,199.0	37.0	14.3	-36.9	0.00	0.00	0.00
1,300.0	3.00	45.00	1,298.8	40.7	18.0	-40.5	0.00	0.00	0.00
1,400.0	3.00	45.00	1,398.7	44.4	21.7	-44.2	0.00	0.00	0.00
1,500.0	3.00	45.00	1,498.6	48.1	25.4	-47.9	0.00	0.00	0.00
1,600.0	3.00	45.00	1,598.4	51.8	29.1	-51.5	0.00	0.00	0.00
1,700.0	3.00	45.00	1,698.3	55.5	32.8	-55.2	0.00	0.00	0.00
1,800.0	3.00	45.00	1,798.2	59.2	36.5	-58.9	0.00	0.00	0.00
1,900.0	3.00	45.00	1,898.0	62.9	40.2	-62.6	0.00	0.00	0.00
2,000.0	3.00	45.00	1,997.9	66.6	43.9	-66.2	0.00	0.00	0.00
2,077.6	3.00	45.00	2,075.4	69.5	46.8	-69.1	0.00	0.00	0.00
Let Drop to Vertical									
2,100.0	2.78	45.00	2,097.7	70.3	47.6	-69.9	1.00	-1.00	0.00
2,200.0	1.78	45.00	2,197.7	73.1	50.4	-72.6	1.00	-1.00	0.00
2,300.0	0.78	45.00	2,297.6	74.7	51.9	-74.2	1.00	-1.00	0.00
2,377.6	0.00	45.00	2,375.2	75.0	52.3	-74.6	1.00	-1.00	0.00
Hold Vertical									
2,400.0	0.00	0.00	2,397.6	75.0	52.3	-74.6	0.00	0.00	0.00
2,500.0	0.00	0.00	2,497.6	75.0	52.3	-74.6	0.00	0.00	0.00
2,600.0	0.00	0.00	2,597.6	75.0	52.3	-74.6	0.00	0.00	0.00
2,700.0	0.00	0.00	2,697.6	75.0	52.3	-74.6	0.00	0.00	0.00
2,800.0	0.00	0.00	2,797.6	75.0	52.3	-74.6	0.00	0.00	0.00
2,900.0	0.00	0.00	2,897.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,000.0	0.00	0.00	2,997.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,100.0	0.00	0.00	3,097.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,200.0	0.00	0.00	3,197.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,300.0	0.00	0.00	3,297.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,400.0	0.00	0.00	3,397.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,500.0	0.00	0.00	3,497.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,600.0	0.00	0.00	3,597.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,700.0	0.00	0.00	3,697.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,800.0	0.00	0.00	3,797.6	75.0	52.3	-74.6	0.00	0.00	0.00
3,900.0	0.00	0.00	3,897.6	75.0	52.3	-74.6	0.00	0.00	0.00
4,000.0	0.00	0.00	3,997.6	75.0	52.3	-74.6	0.00	0.00	0.00
4,100.0	0.00	0.00	4,097.6	75.0	52.3	-74.6	0.00	0.00	0.00
4,200.0	0.00	0.00	4,197.6	75.0	52.3	-74.6	0.00	0.00	0.00
4,300.0	0.00	0.00	4,297.6	75.0	52.3	-74.6	0.00	0.00	0.00
4,400.0	0.00	0.00	4,397.6	75.0	52.3	-74.6	0.00	0.00	0.00
4,499.8	0.00	0.00	4,497.4	75.0	52.3	-74.6	0.00	0.00	0.00
KOP: Build 12°/100'									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Osage #3314 13-02HC
Company:	Osage Resources, LLC	TVD Reference:	WELL @ 1868.0usft (Original Well Elev)
Project:	Barber Co, Kansas (NAD-83)	MD Reference:	WELL @ 1868.0usft (Original Well Elev)
Site:	Osage #3314 13-02HC	North Reference:	Grid
Well:	Osage #3314 13-02HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Design #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,525.0	3.02	181.49	4,522.6	74.4	52.3	-73.9	12.00	12.00	0.00
4,550.0	6.02	181.49	4,547.5	72.4	52.2	-71.9	12.00	12.00	0.00
4,575.0	9.02	181.49	4,572.3	69.1	52.2	-68.7	12.00	12.00	0.00
4,600.0	12.02	181.49	4,596.9	64.6	52.0	-64.1	12.00	12.00	0.00
4,625.0	15.02	181.49	4,621.2	58.7	51.9	-58.3	12.00	12.00	0.00
4,650.0	18.02	181.49	4,645.2	51.6	51.7	-51.2	12.00	12.00	0.00
4,675.0	21.02	181.49	4,668.7	43.3	51.5	-42.8	12.00	12.00	0.00
4,700.0	24.02	181.49	4,691.8	33.7	51.2	-33.2	12.00	12.00	0.00
4,725.0	27.02	181.49	4,714.4	22.9	51.0	-22.5	12.00	12.00	0.00
4,750.0	30.02	181.49	4,736.3	11.0	50.6	-10.5	12.00	12.00	0.00
4,775.0	33.02	181.49	4,757.7	-2.1	50.3	2.5	12.00	12.00	0.00
4,800.0	36.02	181.49	4,778.2	-16.2	49.9	16.7	12.00	12.00	0.00
4,825.0	39.02	181.49	4,798.1	-31.5	49.5	31.9	12.00	12.00	0.00
4,850.0	42.02	181.49	4,817.1	-47.7	49.1	48.1	12.00	12.00	0.00
4,875.0	45.02	181.49	4,835.2	-64.9	48.7	65.3	12.00	12.00	0.00
4,900.0	48.02	181.49	4,852.4	-83.0	48.2	83.5	12.00	12.00	0.00
4,925.0	51.02	181.49	4,868.6	-102.1	47.7	102.5	12.00	12.00	0.00
4,950.0	54.02	181.49	4,883.8	-121.9	47.2	122.3	12.00	12.00	0.00
4,975.0	57.02	181.49	4,898.0	-142.5	46.7	142.9	12.00	12.00	0.00
5,000.0	60.02	181.49	4,911.0	-163.8	46.1	164.2	12.00	12.00	0.00
5,025.0	63.02	181.49	4,923.0	-185.8	45.5	186.1	12.00	12.00	0.00
5,050.0	66.02	181.49	4,933.7	-208.3	44.9	208.7	12.00	12.00	0.00
5,075.0	69.02	181.49	4,943.3	-231.4	44.3	231.8	12.00	12.00	0.00
5,100.0	72.02	181.49	4,951.6	-255.0	43.7	255.3	12.00	12.00	0.00
5,125.0	75.02	181.49	4,958.7	-278.9	43.1	279.3	12.00	12.00	0.00
5,150.0	78.02	181.49	4,964.5	-303.2	42.5	303.6	12.00	12.00	0.00
5,175.0	81.02	181.49	4,969.1	-327.8	41.8	328.2	12.00	12.00	0.00
5,200.0	84.02	181.49	4,972.3	-352.6	41.2	352.9	12.00	12.00	0.00
5,225.0	87.02	181.49	4,974.3	-377.5	40.5	377.8	12.00	12.00	0.00
5,248.0	89.78	181.49	4,974.9	-400.5	39.9	400.8	11.98	11.98	0.00
EOC: Hold I: 89.78° @ A: 1781.49°									
5,300.0	89.78	181.49	4,975.1	-452.5	38.6	452.8	0.00	0.00	0.00
5,400.0	89.78	181.49	4,975.5	-552.4	36.0	552.7	0.00	0.00	0.00
5,500.0	89.78	181.49	4,975.9	-652.4	33.4	652.7	0.00	0.00	0.00
5,600.0	89.78	181.49	4,976.3	-752.4	30.8	752.6	0.00	0.00	0.00
5,700.0	89.78	181.49	4,976.6	-852.3	28.2	852.5	0.00	0.00	0.00
5,800.0	89.78	181.49	4,977.0	-952.3	25.6	952.5	0.00	0.00	0.00
5,900.0	89.78	181.49	4,977.4	-1,052.3	23.0	1,052.4	0.00	0.00	0.00
6,000.0	89.78	181.49	4,977.8	-1,152.2	20.4	1,152.3	0.00	0.00	0.00
6,100.0	89.78	181.49	4,978.2	-1,252.2	17.8	1,252.3	0.00	0.00	0.00
6,200.0	89.78	181.49	4,978.6	-1,352.1	15.2	1,352.2	0.00	0.00	0.00
6,271.6	89.78	181.49	4,978.8	-1,423.7	13.3	1,423.8	0.00	0.00	0.00
Build & Turn 3°/100'									
6,300.0	89.85	180.64	4,978.9	-1,452.1	12.8	1,452.2	3.00	0.27	-2.99
6,337.8	89.96	179.51	4,979.0	-1,489.9	12.7	1,490.0	3.00	0.27	-2.99
Hold I: 89.96° @ A: 179.51°									
6,400.0	89.96	179.51	4,979.0	-1,552.1	13.3	1,552.2	0.00	0.00	0.00
6,500.0	89.96	179.51	4,979.1	-1,652.1	14.1	1,652.2	0.00	0.00	0.00
6,600.0	89.96	179.51	4,979.2	-1,752.1	15.0	1,752.2	0.00	0.00	0.00
6,700.0	89.96	179.51	4,979.3	-1,852.1	15.8	1,852.2	0.00	0.00	0.00
6,800.0	89.96	179.51	4,979.4	-1,952.1	16.7	1,952.2	0.00	0.00	0.00
6,900.0	89.96	179.51	4,979.4	-2,052.1	17.5	2,052.2	0.00	0.00	0.00
7,000.0	89.96	179.51	4,979.5	-2,152.1	18.4	2,152.2	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Osage #3314 13-02HC
Company:	Osage Resources, LLC	TVD Reference:	WELL @ 1868.0usft (Original Well Elev)
Project:	Barber Co, Kansas (NAD-83)	MD Reference:	WELL @ 1868.0usft (Original Well Elev)
Site:	Osage #3314 13-02HC	North Reference:	Grid
Well:	Osage #3314 13-02HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Design #3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,100.0	89.96	179.51	4,979.6	-2,252.1	19.2	2,252.2	0.00	0.00	0.00	
7,200.0	89.96	179.51	4,979.7	-2,352.1	20.1	2,352.2	0.00	0.00	0.00	
7,300.0	89.96	179.51	4,979.7	-2,452.1	21.0	2,452.2	0.00	0.00	0.00	
7,327.8	89.96	179.51	4,979.8	-2,479.9	21.2	2,480.0	0.00	0.00	0.00	
Drop 2°/100'										
7,349.1	89.53	179.51	4,979.9	-2,501.2	21.4	2,501.3	1.99	-1.99	0.00	
Hold I: 89.53° @ A: 179.51°										
7,400.0	89.53	179.51	4,980.3	-2,552.1	21.8	2,552.2	0.00	0.00	0.00	
7,500.0	89.53	179.51	4,981.1	-2,652.1	22.7	2,652.2	0.00	0.00	0.00	
7,600.0	89.53	179.51	4,981.9	-2,752.1	23.5	2,752.2	0.00	0.00	0.00	
7,700.0	89.53	179.51	4,982.7	-2,852.1	24.4	2,852.2	0.00	0.00	0.00	
7,800.0	89.53	179.51	4,983.5	-2,952.0	25.2	2,952.2	0.00	0.00	0.00	
7,900.0	89.53	179.51	4,984.4	-3,052.0	26.1	3,052.2	0.00	0.00	0.00	
8,000.0	89.53	179.51	4,985.2	-3,152.0	26.9	3,152.1	0.00	0.00	0.00	
8,100.0	89.53	179.51	4,986.0	-3,252.0	27.8	3,252.1	0.00	0.00	0.00	
8,200.0	89.53	179.51	4,986.8	-3,352.0	28.7	3,352.1	0.00	0.00	0.00	
8,300.0	89.53	179.51	4,987.6	-3,452.0	29.5	3,452.1	0.00	0.00	0.00	
8,398.2	89.53	179.51	4,988.4	-3,550.3	30.3	3,550.4	0.00	0.00	0.00	
8,398.8	89.52	179.51	4,988.4	-3,550.8	30.3	3,550.9	2.00	-2.00	0.00	
Drop 2°/100'										
8,407.9	89.34	179.51	4,988.5	-3,559.9	30.4	3,560.0	1.99	-1.99	0.00	
Hold I: 89.34° @ A: 179.51°										
8,500.0	89.34	179.51	4,989.6	-3,652.0	31.2	3,652.1	0.00	0.00	0.00	
8,600.0	89.34	179.51	4,990.7	-3,752.0	32.1	3,752.1	0.00	0.00	0.00	
8,700.0	89.34	179.51	4,991.9	-3,852.0	32.9	3,852.1	0.00	0.00	0.00	
8,800.0	89.34	179.51	4,993.1	-3,952.0	33.8	3,952.1	0.00	0.00	0.00	
8,900.0	89.34	179.51	4,994.2	-4,052.0	34.6	4,052.1	0.00	0.00	0.00	
9,000.0	89.34	179.51	4,995.4	-4,151.9	35.5	4,152.1	0.00	0.00	0.00	
9,100.0	89.34	179.51	4,996.5	-4,251.9	36.3	4,252.1	0.00	0.00	0.00	
9,200.0	89.34	179.51	4,997.7	-4,351.9	37.2	4,352.1	0.00	0.00	0.00	
9,300.0	89.34	179.51	4,998.8	-4,451.9	38.1	4,452.1	0.00	0.00	0.00	
9,397.9	89.34	179.51	4,999.9	-4,549.8	38.9	4,550.0	0.00	0.00	0.00	
Build 2°/100'										
9,402.9	89.44	179.51	5,000.0	-4,554.8	38.9	4,555.0	1.99	1.99	0.00	
Hold I: 89.44° @ A: 179.51°										
9,500.0	89.44	179.51	5,001.0	-4,651.9	39.8	4,652.1	0.00	0.00	0.00	
9,600.0	89.44	179.51	5,001.9	-4,751.9	40.6	4,752.1	0.00	0.00	0.00	
9,700.0	89.44	179.51	5,002.9	-4,851.9	41.5	4,852.1	0.00	0.00	0.00	
9,800.0	89.44	179.51	5,003.9	-4,951.9	42.3	4,952.1	0.00	0.00	0.00	
9,900.0	89.44	179.51	5,004.9	-5,051.9	43.2	5,052.0	0.00	0.00	0.00	
10,000.0	89.44	179.51	5,005.9	-5,151.9	44.0	5,152.0	0.00	0.00	0.00	
10,100.0	89.44	179.51	5,006.8	-5,251.8	44.9	5,252.0	0.00	0.00	0.00	
10,200.0	89.44	179.51	5,007.8	-5,351.8	45.7	5,352.0	0.00	0.00	0.00	
10,300.0	89.44	179.51	5,008.8	-5,451.8	46.6	5,452.0	0.00	0.00	0.00	
10,400.0	89.44	179.51	5,009.8	-5,551.8	47.5	5,552.0	0.00	0.00	0.00	
10,500.0	89.44	179.51	5,010.8	-5,651.8	48.3	5,652.0	0.00	0.00	0.00	
10,600.0	89.44	179.51	5,011.7	-5,751.8	49.2	5,752.0	0.00	0.00	0.00	
10,698.2	89.44	179.51	5,012.7	-5,850.0	50.0	5,850.2	0.00	0.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Osage #3314 13-02HC
Company:	Osage Resources, LLC	TVD Reference:	WELL @ 1868.0usft (Original Well Elev)
Project:	Barber Co, Kansas (NAD-83)	MD Reference:	WELL @ 1868.0usft (Original Well Elev)
Site:	Osage #3314 13-02HC	North Reference:	Grid
Well:	Osage #3314 13-02HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Design #3		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
1490' VS (13-02HC) - plan hits target center - Point	0.00	0.00	4,979.0	-1,489.9	12.7	1,496,284.11	1,228,324.09	37° 10' 17.375 N	98° 47' 17.932 W
2480' VS (13-02HC) - plan hits target center - Point	0.00	360.00	4,979.8	-2,479.9	21.2	1,495,294.14	1,228,332.56	37° 10' 7.588 N	98° 47' 17.789 W
3560' VS (13-02HC) - plan hits target center - Point	0.00	0.00	4,988.5	-3,559.9	30.4	1,494,214.18	1,228,341.79	37° 9' 56.911 N	98° 47' 17.634 W
4550' VS (13-02HC) - plan hits target center - Point	0.00	360.00	4,999.9	-4,549.8	38.9	1,493,224.22	1,228,350.25	37° 9' 47.123 N	98° 47' 17.492 W
PBHL - TD (O 3314 13-C) - plan hits target center - Point	0.00	0.00	5,012.7	-5,850.0	50.0	1,491,924.05	1,228,361.36	37° 9' 34.269 N	98° 47' 17.305 W

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
350.0	350.0	0.0	0.0	Build 2°/100'
500.0	499.9	3.8	1.0	Hold 3° Tangent
1,000.0	999.2	29.1	7.8	Turn 2°/100'
1,077.6	1,076.7	32.5	9.8	Hold 3° Tangent
2,077.6	2,075.4	69.5	46.8	Let Drop to Vertical
2,377.6	2,375.2	75.0	52.3	Hold Vertical
4,499.8	4,497.4	75.0	52.3	KOP: Build 12°/100'
5,248.0	4,974.9	-400.5	39.9	EOC: Hold I: 89.78° @ A: 1781.49°
6,271.6	4,978.8	-1,423.7	13.3	Build & Turn 3°/100'
6,337.8	4,979.0	-1,489.9	12.7	Hold I: 89.96° @ A: 179.51°
7,327.8	4,979.8	-2,479.9	21.2	Drop 2°/100'
7,349.1	4,979.9	-2,501.2	21.4	Hold I: 89.53° @ A: 179.51°
8,398.8	4,988.4	-3,550.8	30.3	Drop 2°/100'
8,407.9	4,988.5	-3,559.9	30.4	Hold I: 89.34° @ A: 179.51°
9,397.9	4,999.9	-4,549.8	38.9	Build 2°/100'
9,402.9	5,000.0	-4,554.8	38.9	Hold I: 89.44° @ A: 179.51°

