

Cor	nfiden	tiality	/ Requested	:t
	Yes	N	10	

#### 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 #	API No. 15
Name:	Spot Description:
Address 1:	SecTwpS. R 🗌 East 🗌 West
Address 2:	Feet from North / South Line of Section
City:	Feet from _ East / _ West Line of Section
Contact Person:	Footages Calculated from Nearest Outside Section Corner:
Phone: ()	□NE □NW □SE □SW
CONTRACTOR: License #	GPS Location: Lat:, Long:
Name:	(e.g. xx.xxxxx) (e.gxxx.xxxxx)
Wellsite Geologist:	Datum: NAD27 NAD83 WGS84
Purchaser:	County:
Designate Type of Completion:	Lease Name: Well #:
New Well Re-Entry Workover	Field Name:
	Producing Formation:
☐ Oil ☐ WSW ☐ SWD ☐ SIOW ☐ Gas ☐ D&A ☐ ENHR ☐ SIGW	Elevation: Ground: Kelly Bushing:
OG GSW Temp. Abd.	Total Vertical Depth: Plug Back Total Depth:
CM (Coal Bed Methane)	Amount of Surface Pipe Set and Cemented at: Feet
Cathodic Other (Core, Expl., etc.):	Multiple Stage Cementing Collar Used? Yes No
If Workover/Re-entry: Old Well Info as follows:	If yes, show depth set: Feet
Operator:	If Alternate II completion, cement circulated from:
Well Name:	feet depth to:w/sx cmt.
Original Comp. Date: Original Total Depth:	
☐ Deepening ☐ Re-perf. ☐ Conv. to ENHR ☐ Conv. to SWD	Drilling Fluid Management Plan
☐ Plug Back ☐ Conv. to GSW ☐ Conv. to Producer	(Data must be collected from the Reserve Pit)
	Chloride content: ppm Fluid volume: bbls
Commingled Permit #:	Dewatering method used:
Dual Completion Permit #:	
SWD Permit #:	Location of fluid disposal if hauled offsite:
ENHR	Operator Name:
GSW Permit #:	Lease Name: License #:
	Quarter Sec TwpS. R
Spud Date or Date Reached TD Completion Date or Recompletion Date Recompletion Date	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:										

Page Two



Operator Name:				Lease N	Name: _			Well #:			
Sec Twp	S. R	East	West	County	:						
<b>INSTRUCTIONS:</b> Shopen and closed, flow and flow rates if gas to	ing and shut-in pressu	ires, whe	ther shut-in pre	ssure reac	hed stati	c level, hydrosta	tic pressures, bott				
Final Radioactivity Log files must be submitte						gs must be ema	iled to kcc-well-lo	gs@kcc.ks.go	v. Digital elec	tronic log	
Drill Stem Tests Taken (Attach Additional S		Ye	es No		L		on (Top), Depth an			Sample	
Samples Sent to Geol	ogical Survey	_ Ye	es No		Nam	е		Тор	Datur	n	
Cores Taken Electric Log Run		Y€									
List All E. Logs Run:											
				RECORD	☐ Ne						
				conductor, su	rface, inte	ermediate, producti			I		
Purpose of String	Size Hole Drilled		e Casing (In O.D.)	Weig Lbs./		Setting Depth	Type of Cement	# Sacks Used	Type and P Additiv		
			ADDITIONAL	CEMENTIN	NG / SQL	JEEZE RECORD					
Purpose:	Depth Top Bottom	Туре	of Cement	# Sacks	Used		Type and P	ercent Additives			
Perforate Protect Casing	Jop Zollow										
Plug Back TD Plug Off Zone											
1 ag on zono											
Did you perform a hydrau	ılic fracturing treatment o	n this well?	•			Yes	No (If No, ski	p questions 2 ar	nd 3)		
	otal base fluid of the hydra		J	,	0		_ , ,	p question 3)	(# 100 f)		
Was the hydraulic fractur	ing treatment information	submitted	to the chemical o	disclosure re	gistry?	Yes	No (If No, fill	out Page Three	of the ACO-1)		
Shots Per Foot			D - Bridge Plug Each Interval Perf			Acid, Fracture, Shot, Cement Squeeze Record (Amount and Kind of Material Used)					
	. ,					(Amount and Nind of Waterial Osed)					
TUBING RECORD:	Size:	Set At:		Packer At	t:	Liner Run:					
							Yes No				
Date of First, Resumed	Production, SWD or ENH	IR.	Producing Meth Flowing	nod:	g 🗌	Gas Lift C	Other (Explain)				
Estimated Production Per 24 Hours	Oil B	bls.	Gas	Mcf Wate		er Bl	ols. G	as-Oil Ratio	Gr	ravity	
DISDOSITIO	ON OF GAS:			METHOD OF	COMPLE	TION:		PRODUCTIO	ON INTERVAL:		
Vented Sold			Open Hole	Perf.	Dually	Comp. Con	nmingled	THODOUTIC	ZIV IIVI LTIVAL.		
(If vented, Sub			Other (Specify)		(Submit )	ACO-5) (Subi	mit ACO-4)				

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

#### Tops

Name	Тор	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
Intermedia te	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



	30									Date								
Customer	ASE Ro	Sairer	5 110		Lease No.						9	7	17					
Lease OSA	ne 33/3			V	Vell #	18.	-06HC		l D	8 7	- 1	-	) -13					
Field Order #	Station	Prati					Casing	3/8 Depti	h	County	BAI	Ber		State				
Type Job	cnw	5. P.						Formation	1			Legal De	escription	8-33-1	3			
PIPE	DATA	PE	RFOR	ATING	DATA		FLUID (											
Casing Size	Tubing Siz	e Sho	ts/Ft			Ac	id 25	3 545 /	MMON	MANON RATE PRESS			ISIP					
Depth 707.98	Depth	Fro	m	То		_	e Pad		Max 5 Min.									
Volume 2 . 69		Froi	m	То		Pa	ıd		Min	Min			10 Min.					
Max Press	Max Press	Froi	m	То		Fra	ac	- N	Avg	Avg			15 Min.		2.			
Well Connection	1	ol. From	m	То				20	HHP Use	d		1	Annulus	Pressure				
Plug Depth 9		From	m	То		Flu	ush 31.	28	Gas Volu	me			Total Loa	.d				
Customer Rep	resentative	JEFF	DAIT		Station	n Mar	nager Kcv	in Gui	Oley	Trea	iter p	like	MA	TAI				
Service Units	37586			7463	) i		70959	19918		e								
Driver Names	MATTHI			4114			Grav	e5						g				
Time	Casing Pressure	Tubing Pressu		ols. Pum	nped		Rate	Service Log										
11:15-AM		(	7.5	11			2 I	ONL	0 CATIO	w/5	AKTO	y M	eeTir	19	iz.			
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3:25								csng	00 6	UTTO	М	6						
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4:00		(		5			5	Pump.	5 3	BI H	50		# 6					
4:05	250	)		55		11	5	mix Z50 SKS cmr										
4:15	150	)	S: (x)			_	5	STATT DISPIDEMENT										
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4:25	300	)	19	31		1 **		Plus	Down	1 . 9	s resident		Oglass A.		£			
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#### RECEIVED

OCT 0 9 2015

Customer		-	L e s, L.P.	Lease No					Date		it .					
Lease	se Res	outto	11(	Well # 18-06 Hc 10-2-13												
Lease Field Order #	Station			<u> </u>	18	Casing _	// Depth	h 3	County p			itate				
Type Job	CNW	Pra			-		Formation	5388.86	County BA	Legal De		state US				
	E DATA	T	RFORATIN	C DATA							18-	33-13				
Casing Size				G DATA	- U 0			ļ.,	J. 1 1000 1000 1000		RESUME					
/		26 31101.	5/11	2	Pro	Pad -	2 .250	Max 1		SS TO GAIT	CONTROL V	FR				
Depth 388.8	Volume	From	То		Pad	Pad ,3%	F1A-3	Min /4	对()	170 WC	5 Min. 10 Min.					
Max Press	Max Press	From			Frac		a	Avg	N	Ţ,	15 Min.					
Well Connection		/ol.			Truc			HHP Used			Annulus Pres	CUITO				
Plug Depth	Packer De	From			Flus	h Z ()	~	Gas Volume	e e		Total Load	Sure				
Customer Rep	resentative	From			n Mana		/									
Service Units	_	Je F		8 209		o Mc	VIA GO		Trouisi ye	TIVE I	MATTAI					
Driver	37900 MATTA			114	20			19862			4 0.7%	100				
Names Time	Casing Pressure	Tubing				Rate	110	, , , , ,	The state of the s							
7:15 Byo	Pressure	Pressure	DDIS. FO	imped		nate	120 1	a ATION		ce Log	ertin) a	7 %				
8.05			- /	1				// "			7 hit A					
												4				
9:05							Drill Pipe in hole									
10:30						2 2	Chasing wall cake, Decition to chase it									
						1	TO BUTTOH									
7:45 AM							RUN 125 JTS 7" 26# (505									
1:30											500 200	7				
					2	/		y 4P CMT CIEW								
2:30	250		TZ			5	Pump	12 BB	1 muo	Flus	54	- I				
2:.32	250	/_	Ę			5		5 BB				11				
2:34	750	- (	3	8	l	5		150 5				21 31 . W.I				
2:44	3		-		F-94		release	12/49	, STA.	+ Dis	PHIEMEN	F .				
7:45	50			3 71		0	6 BPM	@ 5	UPSI							
3:03	100		120		6			7 @ 11		- A		20 100				
3:16	200		16		6	2		7 @ 20			37					
3:12	350		18					n @ 3								
3:16	400		190			3			3 BP	m a	400 PSI					
3:25	700		20	/			Plug Donn									
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Customer	00	ρ.		Lease No.					Date						
Lease	05A9-	Kesou	(15es 11C			s / II :			0-11-13						
Lease Field Order	# Statio	n 0		/	8-0	Casing (	11/2 Depth	,	County			1 -		ato.	
Type Joh	5	119				Casing		1) Alli-1					ite KS		
	Cnw	L1.	rev	1 1	_		Formation		Legal Description   8-33-13					33-13	
PIP	E DATA		RFORATING	G DATA		FLUID	USED		TR	EAT	MENT F	RESUM	1E		
Casing Size	Tubing Si	ize Shots	/Ft		Acid	4 465	50/30P	PRESS SUSIPLIE					1 dans		
Depth 976	5 Depth	From	То	8 2	Pre Pad								weu	7	
Volume	Volume	From	То		Pac			Min			4	10 Min.			
Max Press	Max Pres	From	То		Fra	С	2	Avg	22	i i		15 Min.	15%	×	
Well Connecti	on Annulus \	Vol. From	То			1.h		HHP Used				Annulus	s Pressi	ure	
Plug Depth	Packer D	From	n To		Flus	sh		Gas Volum	е			Total Lo	ad		
Customer Re	presentative	Jeft	DAIR	Station	Mana	ager Keu	in Gul	Diey	Treater	p	Tike	MAT	MI	11	
Service Units	37586	-	2746		8.		73768	/		$\overline{}$	1986				
Driver Names	HATTI	E 3	MAIRYEZ			1449	441				run			11 2	
Time	Casing Pressure	Tubing Pressure	Bbls. Pur	mped		Rate	1		S	ervic	e Log	4		51	
7:30PM		,			3		ON LUCATION / SAKTEY MEETI							#. #	
12:45,	41	(					ON BUTTON, CITE WHITE (1991) 4P.						2		
3:00				ļ e.		11	Pressur	· rest	4000	P	う」,	held			
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<u>.</u>	3,200	/	- stay	96%	-	3	BAIIN	YENT TH	rough					16 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
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3:10	- 1	-(			m,y			1 465 SKS CMT							
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3:50			-			1	WASH	Pump +	400		7	2	11 5	2	
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4:00	200		10			3	· 3 13 Pm	@ 20	upst				5		
4:02	400		16	- 1	2	L 10	2 BPM	€ 400	UPSE		2.		,		
4:09	700	-	35		2	£	2 BPM	@ 700	PSE	14	y.				
4:14	1200	- /	42			3	LWD	Went	Throw	94	6	1200	2151	F	
4:34	<u></u>	)	110				5100.1	211	3PM			13		34	
4:42	1000	-	120	) .	1		Pluy D	own	releas	)-eV)	FIUM	ieo Bi	TIM		
4:45	1500	-			9	e 1	BUNST				out 15	OUTTOM	oF	Shoe	
4:46	2.71		10			2	Pump	10 BB	N Hz	Ü	e				
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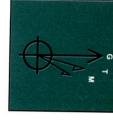
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## BASIC energy services, L.P.

					Jr.			4.3				
Customer	SAge 1	esourers	Lease No.	ayn ta ""	9		Date	) 1	1 12	- (₹) (₹) = :		
Lease USA	140 331	3	Well #	18-06 11	(			9-1				
Field Order #	Station	Plarr	1	Casing 4	1/2 Depth	4765	County 3	41BEV		State 45		
Type Job	ハル	LIAN			Formation			Legal De	escription / 8	- 33-13		
	DATA	2"	ATING DATA	FLUID U	SED		TRE		ENT RESUME			
Casing Size	Tubing Size	Shots/Ft	x	Acid		RATE PRESS			ISIP			
Depth 9765	Depth	From	То	Pre Pad		Max	2	5 Min.				
Volume	Volume	From	То	Pad		Min *				10 Min.		
Max Press		From	То	Frac		Avg		4	15 Min.			
Well Connection		From	То			HHP Used	1		Annulus Pre	essure		
Plug Depth	Packer Dept	From	То	Flush		Gas Volum	ne		Total Load	E)		
Customer Repre	esentative	Teft DA	Station	Manager Ke VI	1 901	Oley	Treater	Mike	MATT	31		
Service Units	2	7	0				*					
Driver Names		<i>XX</i>	a 1.							e V		
Time	Casing Pressure	Tubing Pressure Bt	ols. Pumped	Rate			Sen	rice Log	7	5 12: 37 2: 365		
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GEODETIC SYSTEM: US State Plane 1983
DATUM: North American Datum 1983
ELLIPSOID: GRS 1980
ZONE: Karcsas Southern Zone
SYSTEM DATUM: Mean Sea Level LATITUDE: 37° 10' 28.927 N LONGITUDE: 98° 46' 56.149 W NORTHING (Y): 1497447.09 EASTING (X): 1230090.68 SURFACE HOLE COORDINATES

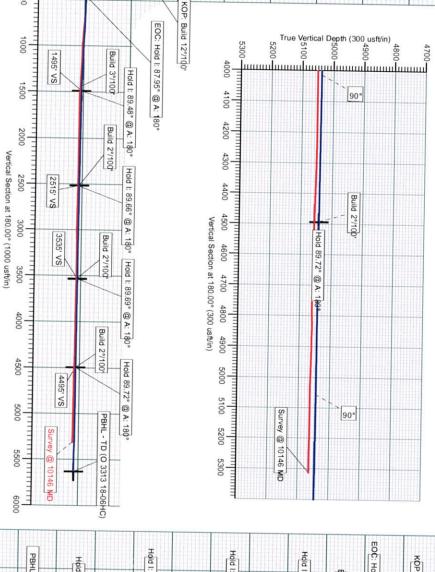
STRENGTH: 51704
DIP ANGLE: 65,17°
MODEL: IGRF2010
DATE: 05-5ep-13
AZIMUTHS CORRECTED TO: Grid

MWD - USE IF ABOVE IS GRID

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

West(-)/E3S(+) (1200 USIVIF.
Northing Easting Latitude 1495952.09 1230090.68 37° 10' 14.146 N
TARGET DETAILS
0.00 0.00 5633.0
0.00
0.00
0.00
0.00
0.00
0.00
0.00
180.00
0.00
0.00 0.00 0.0
TFace
PLAN SECTION DETAILS
,
Location: Barber Co, Kansas (NAD-83)

uild 12°/100' old I: 87.95° @ A: 180° 9.48° @ A: 180°



True Vertical Septh (1000 usft/in)

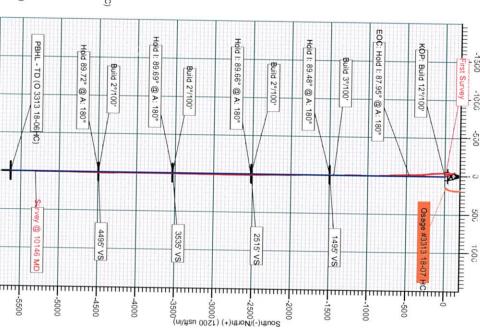
2000

10000

5000

5500-

500





O (NAD B2)	Cocal Co-ordinate Reference:  Kansas (NAD-83)  TVD Reference:  MD Reference:  North Reference:  Survey Calculation Method:  Database:	Project	Company: Osage Resources, LL Project: Barber Co, Kansas (N Site: Osage 3313 18-06HC Well: Osage 3313 18-06HC Wellbore: Lateral #1 Design: Lateral #1
D S Z K T C	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:	Barber Co Kansas (NAD-83)	Osage Resources, LLC Barber Co, Kansas (NAD-83) Osage 3313 18-06HC Osage 3313 18-06HC Lateral #1 Lateral #1
	ocal Co-ordinate Reference:  // // // // // // // // // // // // //		

Site Position:  From:  Map  Position Uncertainty:	Site
0.0 usft	Osage 3313 18-06HC
Northing: Easting: Slot Radius:	
1,497,447.09 usft 1,230,090.68 usft 13-3/16 "	
Latitude: Longitude: Grid Convergence:	
37° 10' 28.927 N 98° 46' 56.149 W -0.17°	

Map System: Geo Datum: Map Zone:

US State Plane 1983 North American Datum 1983 Kansas Southern Zone

System Datum:

Mean Sea Level

Osage 3313 18-06HC  0.0 usft 0.0 usft Easting: 1,497,447.09 usft 1,230,090.68 usft 0.0 usft Wellhead Elevation: 1,876.0 usft	Northing: Easting:  Wellhead Elevation:
Elevation:	1,497,447.09 usft 1,230,090.68 usft Elevation: 1,876.0 usft
1,497,447.09 usft 1,230,090.68 usft 1,876.0 usft	
	Latitude: Longitude: Ground Level:

Dip Angle (°)	
4.91	

278.0 10,146.	From To (usft)	Survey Program Date
10,146.0 Survey #1 (Lateral #1)	Survey (Wellbore)	a 10/9/2013
MWD	Tool Name	
MWD - Calmena	Description	

Version:
Vertical Section:

Depth From (TVD)
(usft)
0.0

+N/-S (usft)

+E/-W (usft)

**Direction** (°) 180.00

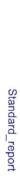
1.0

Phase:

ACTUAL

Tie On Depth:

0.0



Osage Resources

Project: Site: Well: Wellbore: Design:	Osage Resources, LLC Barber Co, Kansas (NAD-83) Osage 3313 18-06HC Osage 3313 18-06HC Lateral #1 Lateral #1	(NAD-83)				Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:	te Reference: :: ion Method:	Well Osage 3313 18-06HC WELL @ 1876.0usft (Origina WELL @ 1876.0usft (Origina Grid Minimum Curvature EDM 5000.1 Single User Db	Well Osage 3313 18-06HC WELL @ 1876.0usft (Original Well Elev) WELL @ 1876.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db
Survey									
(usft)	(°)	Azi (azimuth) (°)	TVD (usft)	(usft)	(usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usff)
-	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	8.0 1.00	0 341.50	278.0	2.3	-0.8	0.36	-2.3	1,497,449.39	1,230,089.91
First Survey	vey								
557.0	7.0 1.10	0 336.60	556.9	7.1	-2.6	0.05	-7.1	1,497,454.15	1,230,088.07
836.0	5.0 1.20	0 327.00	835.9	12.0	-5.3	0.08	-12.0	1,497,459.06	1,230,085.42
1,294.0	4.0 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	3.0 2.00	0 336.20	1,572.6	29.4	-13.4	0.18	-29.4	1,497,476.50	1.230.077.28
1,850.0	2.30	0 339.20	1,849.4	39.0	-17.3	0.12	-39.0	1,497,486.12	1,230,073,35
1,957.0	7.0 2.70	0 341.80	1,956.3	43.4	-18.9	0.39	43.4	1,497,490.52	1,230,071.80
2,267.0	7.0 3.50	0 340.10	2,265.9	59.3	-24.4	0.26	-59.3	1,497,506.35	1,230,066,30
2,549.0	9.0 4.40	0 339.10	2,547.2	77.5	-31.2	0.32	-77.5	1,497,524.55	1,230,059.51
2,829.0	9.0 4.70	0 342.50	2,826.3	98.4	-38.4	0.14	-98.4	1,497,545.53	1,230,052.23
2,967.0	7.0 5.00	0 345.10	2,963.8	109.6	41.7	0.27	-109.6	1,497,556.73	1,230,048.98
2,998.0	3.0 5.10	0 344.80	2,994.7	112.3	42.4	0.33	-112.3	1,497,559.37	1,230,048.28
3,029.0	4.60	0 342.20	3,025.6	114.8	43.1	1.76	-114.8	1,497,561.88	1,230,047.53
3,060.0	).0 4.10	0 341.70	3,056.5	117.0	43.9	1.62	-117.0	1,497,564.12	1,230,046.81
3,091.0	1.0 3.70	0 334.10	3,087.4	119.0	44.7	2.11	-119.0	1,497,566.07	1,230,046.02
3,122.0	2.0 3.40	0 329.20	3,118.4	120.7	45.6	1.38	-120.7	1,497,567.76	1,230,045.11
3,153.0	3.0 2.80	0 330.20	3,149.3	122.1	46.4	1.94	-122.1	1,497,569.20	1,230,044.27
3,184.0	1.0 2.20	0 326.20	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	0 338.70	3,242.3	124.8	48.0	3.29	-124.8	1,497,571.89	1,230,042.65
3,277.0	.0 0.30	0 119.70	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	.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	.0 1.40	160.30	3,396.2	122.8	47.0	0.43	-122.8	1,497,569.91	1,230,043.65
3 463 0	.0 140	152 50	3.458.2	121.4	46.4	0.31	-121 4	1 407 568 52	1 230 044 26



Company: Project: Site: Well: Wellbore: Design:	Osage Resources, LLC Barber Co, Kansas (NAD-83) Osage 3313 18-06HC Osage 3313 18-06HC Lateral #1 Lateral #1	LC NAD-83) C				Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:	e Reference:	Well Osage 3313 18-06HC WELL @ 1876.0usft (Origina WELL @ 1876.0usft (Origina Grid Minimum Curvature EDM 5000.1 Single User Db	Well Osage 3313 18-06HC WELL @ 1876.0usft (Original Well Elev) WELL @ 1876.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db
Survey									
MD (usft)	Inc (°)	Azi (azimuth)	TVD (us#)	N/S	E/W	DLeg	V. Sec	Northing	Easting
3,524.0			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	8.0 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	0.0 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	2.0 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	5.0 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	7.0 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	9.0 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	1.0 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	3.0 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	4.0 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	6.0 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	8.0 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	0.0 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	2.0 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	3.0 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	4.0 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	5.0 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	6.0 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	7.0 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	8.0 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	9.0 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	0.0 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	1.0 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	2.0 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	3.0 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	4.0 33.00	181.50	4,711.6	4.5	-39.2	10.24	4.5	1.497.451.59	1 230 051 50



No.	Company: Project: Site: Well: Wellbore: Design:	Barber Co, Kansas (NAD-83) Osage 3313 18-06HC Osage 3313 18-06HC Lateral #1 Lateral #1	C(NAD-83)				Local Co-ordinate Reference TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:	inate Reference: ce: e: nce: nce: lation Method:	Well Osage 3313 18-06HC WELL @ 1876.0usft (Origina WELL @ 1876.0usft (Origina Grid Minimum Curvature EDM 5000.1 Single User Db	Well Osage 3313 18-06HC WELL @ 1876.0usft (Original Well Elev) WELL @ 1876.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db
Pro   Pro	Survey									
4,7850         4,7850         182,10         4,7370         1,732         1,732         1,732         1,732         1,733         1,733         1,734         1,487,328.50         1,487,328	MD (usft)	Inc (*)	Azi (azimuth)	TVD	N/S	E/W	DLeg	V. Sec	Northing	Easting
4000         181.60         4,761.4         -32.3         40.4         11.33         32.3         1,407,414.76           4300         180.20         4,784.6         -52.9         40.7         10.13         52.9         1,407,594.22           4610         178.00         4,806.7         -74.6         40.3         11.17         74.6         1,497,394.22           49.10         175.90         4,827.6         -97.5         -39.1         10.89         97.5         1,497,394.53           52.00         1775.10         4,864.7         -122.1         -37.2         9.27         122.1         1,497,394.50           54.30         174.40         4,884.0         -172.3         -32.6         8.13         172.3         1,497,244.50           59.30         174.40         4,889.9         -197.6         -30.2         8.34         197.6         1,497,244.50           65.00         175.30         4,928.8         -224.5         -27.6         9.42         224.5         1,497,244.50           74.40         178.00         4,928.8         -224.5         -27.6         9.42         224.5         1,497,146.57           7.40         177.80         4,962.1         -39.2         -20.7 <t< td=""><td>4</td><td></td><td></td><td>4,737.0</td><td></td><td>. 1</td><td>11.34</td><td></td><td>1.497.433.93</td><td>1 230 050 94</td></t<>	4			4,737.0		. 1	11.34		1.497.433.93	1 230 050 94
4300         180 20         4,784 6         -529         -407         1013         529         1,497,394.22           4610         178 00         4,8067         -74 6         403         11,17         74 6         1,497,394.22           4910         175 90         4,827 6         -97 5         391         10.89         97 5         1,497,392.48           52,00         177,510         4,847 9         -1221         37 2         927         1223         149,395.50           54,30         174,40         4,884 9         -1723         32 6         8.13         172 3         1,497,292.60           56,200         177,40         4,899 9         -197 6         -224 5         27 6         9.42         294 5         1,497,294.83           59,30         177,40         4,982 8         -222 2         2.75         9.42         294 5         1,497,294.85           65,00         177,50         4,982 8         -227 6         9.15         292 7         1,497,294.85           74,40         178,40         4,982 8         -231 3         2.18         11,697,292.88         202 7         9.14         1,497,292.88         1,497,292.88         2.27         9.12         9.24         294 5 <t< td=""><td>4</td><td></td><td></td><td>4,761.4</td><td>-32.3</td><td>40.4</td><td>11.33</td><td>32.3</td><td>1,497,414.76</td><td>1,230,050.32</td></t<>	4			4,761.4	-32.3	40.4	11.33	32.3	1,497,414.76	1,230,050.32
4610         178.00         4,8067         -74.6         40.3         11.7         74.6         1,497,372.48           4910         175.90         4,887.6         -97.5         -39.1         10.89         97.5         1,497,392.48           5200         175.10         4,887.6         -122.1         -37.2         92.7         122.1         1,497,395.50           5430         174.90         4,886.6         -146.8         -35.0         7,44         146.8         1467,305.50           5580         174.40         4,884.0         -172.3         -32.6         8.13         172.3         1,497,204.50           6520         174.80         4,915.1         -224.5         -27.6         9.42         224.5         1497,194.92           6520         177.70         4,928.8         -252.2         -25.2         9.15         9.42         124.5         1,497,194.92           7640         177.10         4,952.8         -310.3         -21.8         11.69         30.3         1,497,194.92           7740         178.00         4,992.1         -339.8         -20.7         10.40         39.8         1,497,072.4           7820         178.90         179.90         -398.2         -19.9 </td <td>4</td> <td></td> <td></td> <td>4,784.6</td> <td>-52.9</td> <td>40.7</td> <td>10.13</td> <td>52.9</td> <td>1,497,394.22</td> <td>1,230,050.01</td>	4			4,784.6	-52.9	40.7	10.13	52.9	1,497,394.22	1,230,050.01
4910         17590         4,8276         -97.5         -39.1         10.89         97.5         1,497,349.63           5200         17510         4,847.9         -1221         -37.2         927         1221         1,497,349.63           5430         174.90         4,886.5         -146.8         -35.0         7.44         146.8         1,497,325.00           5430         174.40         4,886.5         -146.8         -35.0         7.44         146.8         1,497,204.95           5530         174.40         4,884.0         -172.3         -32.6         8.34         197.3         1,497,224.95           6520         174.80         4,915.1         -224.5         -27.6         9.42         224.5         1,497,124.95           67.40         176.70         4,952.8         -310.3         -21.8         11.69         310.3         1,497,194.78           70.90         177.10         4,952.8         -310.3         -21.8         11.69         39.8         1,497,105.78           78.00         179.40         4,962.1         -339.8         -20.7         10.40         39.8         1,497,105.78           78.00         179.40         4,963.6         -39.8         -19.0	4			4,806.7	-74.6	40.3	11.17	74.6	1,497,372.48	1,230,050.36
5200         175.10         4,847.9         -122.1         -37.2         9.27         122.1         1,497,325.00           5430         174.90         4,866.5         -146.8         -350         7.44         146.8         146.9           5580         174.50         4,864.0         -172.3         -326         8.13         172.3         1,497,302.59           5930         174.40         4,899.9         -197.6         -20.2         8.34         197.6         1,497,248.50           5930         177.40         4,981.1         -224.5         -27.6         9.42         224.5         1,497,249.50           6220         177.70         4,981.8         -228.1         -27.2         9.15         252.2         1,497,194.92           70.90         177.70         4,982.8         -310.3         -21.8         11.69         310.3         1,497,107.74           76.80         178.10         4,982.1         -39.9         -19.9         9.28         39.9         1,497,007.24           79.90         179.10         4,985.8         -39.2         -19.9         10.04         39.9         1,497,017.20           87.20         178.0         4,986.8         -503.7         -11.3         7.76<	4			4,827.6	-97.5	-39.1	10.89	97.5	1,497,349.63	1,230,051.59
54.30         174.90         4,866.5         -146.8         -350         7.44         146.8         1,497,300.29           56.80         174.50         4,884.0         -172.3         -32.6         8.13         172.3         1,497,274.83           59.30         174.40         4,899.9         -197.6         -30.2         8.34         197.6         1,497,249.50           62.20         177.80         4,915.1         -224.5         -27.6         9.42         224.5         1,497,249.50           65.00         175.30         4,928.8         -252.2         -27.2         9.52         9.42         224.5         1,497,222.89           67.40         177.70         4,941.8         -281.4         -23.2         9.50         281.2         1,497,194.92           76.40         177.80         4,962.1         -391.3         -21.8         11.69         30.3         1,497,087.21           76.40         177.80         4,962.1         -389.2         -19.9         9.28         36.8         1,497,087.21           79.90         179.10         4,965.4         -29.9         -19.0         10.04         399.2         1,497,072.26           86.70         178.90         4,986.1         -47.2	4			4,847.9	-122.1	-37.2	9.27	122.1	1,497,325.00	1,230,053.53
56.80         174.50         4,884 0         -172.3         -32.6         8.13         172.3         1,497,274.83           59.30         174.40         4,899.9         -197.6         -30.2         8.34         197.6         1,497,249.50           62.20         174.80         4,915.1         -224.5         -27.6         9.42         224.5         1,497,225.80           65.00         175.30         4,928.8         -282.2         -25.2         9.15         252.2         1,497,194.92           65.00         177.70         4,928.8         -282.2         -25.2         9.15         252.2         1,497,194.92           70.90         177.70         4,982.8         -310.3         -21.8         11.69         30.3         1,497,195.71           79.90         179.10         4,982.8         -330.3         -21.8         10.40         398.9         1,497,197.24           86.70         178.90         4,986.4         -429.9         -19.0         10.40         399.2         1,497,072.4           87.20         178.0         4,987.5         -534.6         -16.9         0.72         534.6         1,496,974.32           87.20         177.6         4,984.6         -564.6         -16.9	4			4,866.5	-146.8	-35.0	7.44	146.8	1,497,300.29	1,230,055.69
59.30         174.40         4.899.9         -197.6         -30.2         8.34         197.6         1,497,249.50           62.20         174.80         4.915.1         -224.5         -27.6         94.2         224.5         1,497,225.60           65.00         175.30         4.928.8         -252.2         -25.2         9.15         282.2         1,497,194.92           67.40         176.70         4.941.8         -281.4         -23.2         8.50         281.4         1,497,194.92           79.90         177.70         4.952.8         -310.3         -21.8         11.69         339.8         1,497,195.71           79.90         179.10         4.962.6         -398.9         -19.9         9.28         39.2         1,497,707.24           88.70         178.90         4.964.1         -429.9         -19.0         11.33         429.9         1,497,707.26           87.20         177.80         4.984.1         -472.7         -18.3         7.76         472.7         1,495,707.24           87.20         177.80         4.984.5         -533.7         -17.7         1.74         503.7         1,496,874.37           87.40         177.80         4.986.5         -584.6         -16.0 <td>4</td> <td></td> <td></td> <td>4,884.0</td> <td>-172.3</td> <td>-32.6</td> <td>8.13</td> <td>172.3</td> <td>1,497,274.83</td> <td>1,230,058.05</td>	4			4,884.0	-172.3	-32.6	8.13	172.3	1,497,274.83	1,230,058.05
62.20         174.80         4,915.1         -224.5         -27.6         9,42         224.5         1,497,222.58           65.00         175.50         4,928.8         -252.2         -25.2         9,15         252.2         1,497,194.92           67.40         176.70         4,941.8         -281.4         -23.2         8.50         281.4         1,497,194.92           70.90         177.70         4,952.8         -310.3         -21.8         11.69         310.3         1,497,195.78           74.10         178.10         4,962.1         -339.8         -20.7         10.40         339.8         1,497,107.24           76.80         178.10         4,969.6         -368.9         -19.9         9.28         368.9         1,497,072.4           79.90         179.10         4,969.6         -399.2         -19.4         10.04         399.2         1,497,078.21           79.90         178.00         4,984.1         -472.7         -18.3         7.76         472.7         1,496,074.86           87.20         178.00         4,984.1         -472.7         -18.3         7.76         472.7         1,496,974.37           87.20         177.00         4,985.8         -503.7         -17.7 <td>5</td> <td></td> <td></td> <td>4,899.9</td> <td>-197.6</td> <td>-30.2</td> <td>8.34</td> <td>197.6</td> <td>1,497,249.50</td> <td>1,230,060.52</td>	5			4,899.9	-197.6	-30.2	8.34	197.6	1,497,249.50	1,230,060.52
65.00         175.30         4,928.8         -252.2         -252.         9.15         252.2         1,497,194.92           67.40         176.70         4,941.8         -281.4         -23.2         8.50         281.4         1,497,165.71           70.90         177.70         4,945.8         -310.3         -21.8         11.69         310.3         1,497,165.71           70.90         178.10         4,962.1         -339.8         -20.7         10.40         339.8         1,497,107.24           70.80         179.10         4,965.6         -368.9         -19.9         9.28         368.9         1,497,072.21           79.90         179.10         4,965.9         -399.2         -19.4         10.04         399.2         1,497,072.21           88.70         178.90         4,984.1         -472.7         -18.3         7.76         472.7         1,496,974.37           87.20         178.70         4,985.8         -503.7         -17.7         1,74         593.7         1,496,974.37           87.20         177.90         4,987.2         -534.6         -16.9         2,72         534.6         1,496,982.51           87.40         177.0         4,991.8         -562.4         -13.3 <td>S</td> <td></td> <td></td> <td>4,915.1</td> <td>-224.5</td> <td>-27.6</td> <td>9.42</td> <td>224.5</td> <td>1,497,222.58</td> <td>1,230,063.06</td>	S			4,915.1	-224.5	-27.6	9.42	224.5	1,497,222.58	1,230,063.06
67.40         176.70         4,941.8         -281.4         -23.2         8.50         281.4         1,497,165.71           70.90         177.70         4,952.8         -310.3         -21.8         11.69         310.3         1,497,165.78           74.10         178.10         4,962.1         -339.8         -20.7         10.40         339.8         1,497,107.24           76.80         178.80         4,969.6         -368.9         -19.9         9.28         368.9         1,497,107.24           79.90         179.10         4,975.9         -399.2         -19.4         10.04         398.2         1,497,078.21           86.70         178.90         4,980.4         -472.9         -19.0         11.33         429.9         1,496,974.37           87.20         178.70         4,985.8         -503.7         -17.7         1.74         503.7         1,496,974.37           87.20         177.90         4,986.5         -503.7         -17.9         1.74         503.7         1,496,974.37           87.20         177.90         4,986.5         -564.6         -16.9         2.42         564.6         1,496,974.37           87.40         177.10         4,991.8         -526.4         -18.3<	. U			4,928.8	-252.2	-25.2	9.15	252.2	1,497,194.92	1,230,065.45
70.90         177.70         4.952.8         -310.3         -21.8         11.69         310.3         1,497,136.78           74.10         178.10         4.962.1         -339.8         -20.7         10.40         339.8         1,497,107.24           76.80         178.80         4.965.6         -368.9         -19.9         9.28         368.9         1,497,072.82           79.90         179.10         4.975.9         -399.2         -19.4         10.04         399.2         1,497,078.21           86.70         178.90         4.984.1         -472.7         -18.3         7.76         472.7         1,496,974.37           87.20         178.60         4.985.8         -503.7         -17.7         1,74         503.7         1,496,974.37           87.20         177.90         4.988.6         -584.6         -16.9         0.72         534.6         1,496,943.42           87.20         177.40         4.990.2         -584.6         -16.9         2.42         594.6         1,496,943.42           87.20         177.10         4.991.8         -585.5         -14.8         1.8         595.5         1,496,891.56           87.70         177.10         4.990.5         -587.4         -11.7 <td>IJ</td> <td></td> <td></td> <td>4,941.8</td> <td>-281.4</td> <td>-23.2</td> <td>8.50</td> <td>281.4</td> <td>1,497,165.71</td> <td>1,230,067.49</td>	IJ			4,941.8	-281.4	-23.2	8.50	281.4	1,497,165.71	1,230,067.49
74.10     178.10     4,962.1     -339.8     -20.7     10.40     339.8     1,497,107.24       76.80     178.80     4,969.6     -368.9     -19.9     9.28     368.9     1,497,078.21       79.90     179.10     4,975.9     -399.2     -19.4     10.04     399.2     1,497,047.86       83.40     179.40     4,980.4     -429.9     -19.0     11.33     429.9     1,497,047.86       86.70     178.90     4,984.1     -472.7     -18.3     7.76     472.7     1,496,943.7       87.20     178.70     4,985.8     -503.7     -17.7     1,74     503.7     1,496,943.42       87.20     177.90     4,986.6     -564.6     -16.9     0.72     534.6     1,496,912.46       87.20     177.70     4,988.6     -564.6     -16.9     0.72     534.6     1,496,912.46       87.20     177.70     4,988.6     -564.6     -16.0     2,42     564.6     1,496,912.46       86.90     177.10     4,991.8     -626.4     -13.3     1,88     595.5     1,496,881.58       87.70     177.10     4,993.1     -657.4     -11.7     0.97     657.4     1,496,881.58       88.10     176.90     4,996.5     -786.2	5			4,952.8	-310.3	-21.8	11.69	310.3	1,497,136.78	1,230,068.91
76.80         178.80         4,965.6         -368.9         -19.9         9.28         38.9         1,497,078.21           79.90         179.10         4,975.9         -399.2         -19.4         10.04         399.2         1,497,047.86           83.40         179.40         4,980.4         -429.9         -19.0         11.33         429.9         1,497,047.86           86.70         178.90         4,984.1         -472.7         -18.3         7.76         472.7         1,496,974.37           87.20         178.70         4,985.8         -503.7         -17.7         1.74         503.7         1,496,943.42           87.20         177.90         4,988.6         -564.6         -16.9         0.72         534.6         1,496,912.46           87.20         177.40         4,990.2         -595.5         -14.8         1.88         595.5         1,496,982.51           87.40         177.10         4,991.8         -626.4         -13.3         1.88         595.5         1,496,882.51           87.40         177.10         4,993.1         -627.4         -13.3         1.88         595.5         1,496,882.51           87.40         176.0         176.90         4,994.5         -687.3 <td>5</td> <td></td> <td></td> <td>4,962.1</td> <td>-339.8</td> <td>-20.7</td> <td>10.40</td> <td>339.8</td> <td>1,497,107.24</td> <td>1,230,069.99</td>	5			4,962.1	-339.8	-20.7	10.40	339.8	1,497,107.24	1,230,069.99
79.90         179.10         4,975.9         -399.2         -19.4         10.04         399.2         1,497,047.86           83.40         179.40         4,980.4         -429.9         -19.0         11.33         429.9         1,497,047.20           86.70         178.90         4,984.1         -472.7         -18.3         7.76         472.7         1,496,974.37           87.20         178.60         4,987.2         -534.6         -16.9         0.72         534.6         1,496,943.42           87.20         177.90         4,988.6         -564.6         -16.0         2.42         564.6         1,496,912.46           86.90         177.40         4,990.2         -595.5         -14.8         1.88         595.5         1,496,882.51           87.70         177.10         4,991.8         -626.4         -13.3         1.88         626.4         1,496,881.58           87.70         177.10         4,993.1         -687.3         -10.1         3.07         687.3         1,496,789.72           86.10         176.60         4,994.5         -687.3         -718.2         -84         2.46         718.2         1,496,759.80           85.20         177.00         4,998.7         -748.0 <td>5</td> <td></td> <td></td> <td>4,969.6</td> <td>-368.9</td> <td>-19.9</td> <td>9.28</td> <td>368.9</td> <td>1,497,078.21</td> <td>1,230,070.77</td>	5			4,969.6	-368.9	-19.9	9.28	368.9	1,497,078.21	1,230,070.77
83.40       179.40       4,980.4       -42.99       -19.0       11.33       429.9       1,497,017.20         86.70       178.90       4,984.1       -472.7       -18.3       7.76       472.7       1,496,974.37         87.20       178.70       4,985.8       -503.7       -17.7       1,74       503.7       1,496,943.42         87.20       177.90       4,988.6       -534.6       -16.9       0.72       534.6       1,496,912.46         87.20       177.40       4,990.2       -595.5       -14.8       1.88       595.5       1,496,882.51         87.40       177.10       4,991.8       -626.4       -13.3       1.88       595.5       1,496,881.58         87.70       177.10       4,991.8       -626.4       -13.3       1.88       626.4       1,496,820.65         87.70       177.10       4,994.5       -657.4       -11.7       0.97       657.4       1,496,789.72         86.10       176.90       4,994.5       -687.3       -718.2       -84       2.46       748.0       1,496,789.90         85.20       177.00       4,996.5       -718.2       -84       2.46       748.0       1,496,728.90	5			4,975.9	-399.2	-19.4	10.04	399.2	1,497,047.86	1,230,071.33
86.70     178.90     4,984.1     472.7     -18.3     7.76     472.7     1,496,974.37       87.20     178.70     4,985.8     -503.7     -17.7     1.74     503.7     1,496,943.42       87.40     178.60     4,987.2     -534.6     -16.9     0.72     534.6     1,496,943.42       87.20     177.90     4,988.6     -564.6     -16.0     2.42     564.6     1,496,882.51       86.90     177.40     4,990.2     -595.5     -14.8     1.88     595.5     1,496,882.51       87.70     177.10     4,991.8     -626.4     -13.3     1.88     595.5     1,496,820.65       87.70     177.10     4,993.1     -657.4     -11.7     0.97     657.4     1,496,789.72       86.80     176.90     4,994.5     -687.3     -10.1     3.07     687.3     1,496,789.72       86.10     176.60     4,994.5     -718.2     -8.4     2.46     718.2     1,496,728.90       85.20     177.00     4,998.7     -748.0     -6.7     3.28     748.0     1,496,728.90	51			4,980.4	-429.9	-19.0	11.33	429.9	1,497,017.20	1,230,071.73
87.20       178.70       4,985.8       -503.7       -17.7       1.74       503.7       1,496,943.42         87.40       178.60       4,987.2       -534.6       -16.9       0.72       534.6       1,496,912.46         87.20       177.90       4,988.6       -564.6       -16.0       2.42       564.6       1,496,812.51         86.90       177.40       4,990.2       -595.5       -14.8       1.88       595.5       1,496,825.158         87.70       177.10       4,991.8       -626.4       -13.3       1.88       626.4       1,496,820.65         87.70       177.10       4,993.1       -657.4       -11.7       0.97       657.4       1,496,789.72         86.80       176.90       4,994.5       -687.3       -10.1       3.07       687.3       1,496,759.80         86.10       176.60       4,996.5       -718.2       -8.4       2.46       718.2       1,496,728.90         85.20       177.00       4,998.7       -748.0       -6.7       3.28       748.0       1,496,699.04	5			4,984.1	472.7	-18.3	7.76	472.7	1,496,974.37	1,230,072.36
87.40         178.60         4,987.2         -534.6         -16.9         0.72         534.6         1,496,912.46           87.20         177.90         4,988.6         -564.6         -16.0         2.42         564.6         1,496,882.51           86.90         177.40         4,990.2         -595.5         -14.8         1.88         595.5         1,496,851.58           87.40         177.10         4,991.8         -626.4         -13.3         1.88         626.4         1,496,820.65           87.70         177.10         4,993.1         -657.4         -11.7         0.97         657.4         1,496,789.72           86.80         176.90         4,994.5         -687.3         -10.1         3.07         687.3         1,496,789.72           86.10         176.60         4,996.5         -718.2         -8.4         2.46         718.2         1,496,728.90           85.20         177.00         4,998.7         -748.0         -6.7         3.28         748.0         1,496,699.04	5			4,985.8	-503.7	-17.7	1.74	503.7	1,496,943.42	1,230,073.01
87.20         177.90         4,988.6         -564.6         -16.0         2.42         564.6         1,496,882.51           86.90         177.40         4,990.2         -595.5         -14.8         1.88         595.5         1,496,851.58           87.40         177.10         4,991.8         -626.4         -13.3         1.88         626.4         1,496,820.65           87.70         177.10         4,993.1         -657.4         -11.7         0.97         657.4         1,496,789.72           86.80         176.90         4,994.5         -687.3         -10.1         3.07         687.3         1,496,728.90           86.10         176.60         4,996.5         -718.2         -8.4         2.46         718.2         1,496,728.90           85.20         177.00         4,998.7         -748.0         -6.7         3.28         748.0         1,496,699.04	5			4,987.2	-534.6	-16.9	0.72	534.6	1,496,912.46	1,230,073.74
86.90         177.40         4,990.2         -595.5         -14.8         1.88         595.5         1,496,851.58           87.40         177.10         4,991.8         -626.4         -13.3         1.88         626.4         1,496,820.65           87.70         177.10         4,993.1         -657.4         -11.7         0.97         657.4         1,496,789.72           86.80         176.90         4,994.5         -687.3         -10.1         3.07         687.3         1,496,759.80           86.10         176.60         4,996.5         -718.2         -8.4         2.46         718.2         1,496,728.90           85.20         177.00         4,998.7         -748.0         -6.7         3.28         748.0         1,496,699.04	5			4,988.6	-564.6	-16.0	2.42	564.6	1,496,882.51	1,230,074.66
87.40     177.10     4,991.8     -626.4     -13.3     1.88     626.4     1,496,820.65       87.70     177.10     4,993.1     -657.4     -11.7     0.97     657.4     1,496,789.72       86.80     176.90     4,994.5     -687.3     -10.1     3.07     687.3     1,496,759.80       86.10     176.60     4,996.5     -718.2     -8.4     2.46     718.2     1,496,728.90       85.20     177.00     4,998.7     -748.0     -6.7     3.28     748.0     1,496,699.04	, Si			4,990.2	-595.5	-14.8	1.88	595.5	1,496,851.58	1,230,075.93
87.70         177.10         4,993.1         -657.4         -11.7         0.97         657.4         1,496,789.72           86.80         176.90         4,994.5         -687.3         -10.1         3.07         687.3         1,496,759.80           86.10         176.60         4,996.5         -718.2         -8.4         2.46         718.2         1,496,728.90           85.20         177.00         4,998.7         -748.0         -6.7         3.28         748.0         1,496,699.04	5			4,991.8	-626.4	-13.3	1.88	626.4	1,496,820.65	1,230,077.41
86.80     176.90     4,994.5     -687.3     -10.1     3.07     687.3     1,496,759.80       86.10     176.60     4,996.5     -718.2     -8.4     2.46     718.2     1,496,728.90       85.20     177.00     4,998.7     -748.0     -6.7     3.28     748.0     1,496,699.04	5			4,993.1	-657.4	-11.7	0.97	657.4	1,496,789.72	1,230,078.98
86.10 176.60 4,996.5 -718.2 -8.4 2.46 718.2 1,496,728.90 85.20 177.00 4,998.7 -748.0 -6.7 3.28 748.0 1,496,699.04	5			4,994.5	-687.3	-10.1	3.07	687.3	1,496,759.80	1,230,080.55
85.20 177.00 4,998.7 -748.0 -6.7 3.28 748.0 1,496,699.04	5			4,996.5	-718.2	-8.4	2.46	718.2	1,496,728.90	1,230,082.30
	,5i			4,998.7	-748.0	-6.7	3.28	748.0	1,496,699.04	1,230,083.97

# Standard\_report

Osage Resources

Math   Math	Company: Project: Site: Well: Wellbore: Design:	Osage Resources, LLC Barber Co, Kansas (NAD-83) Osage 3313 18-06HC Osage 3313 18-06HC Lateral #1	D-83)				Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:	Reference:	Well Osage 3313 18-06HC WELL @ 1876.0usft (Origina WELL @ 1876.0usft (Origina Grid Minimum Curvature EDM 5000.1 Single User Db	Well Osage 3313 18-06HC WELL @ 1876.0usft (Original Well Elev) WELL @ 1876.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db
	Survey									
5611.0         64.30         177.00         5001.6         -778.9         1000.0 </th <th>MD (usft)</th> <th>Inc (°)</th> <th>Azi (azimuth)</th> <th>TVD</th> <th>N/S</th> <th>E/W</th> <th>DLeg</th> <th>V. Sec</th> <th>Northing</th> <th>Easting</th>	MD (usft)	Inc (°)	Azi (azimuth)	TVD	N/S	E/W	DLeg	V. Sec	Northing	Easting
84.40 177.00 5.004.60907 3.5 0.32 809.7 1,456.57.40 85.00 177.90 5.007.521 3.48 80.0 177.90 5.007.521 3.48 80.0 177.90 5.007.521 3.48 80.0 178.50 5.017.411 1.93 87.1 1.496.806.57 88.00 178.30 5.012.6902.30.5 4.38 90.23 1.496.848.8 88.10 181.50 5.015.6992.210 4.87 993.2 1.496.848.8 88.60 181.50 5.016.6994.218 1.61 994.2 1.496.42.9 88.60 180.70 5.016.6994.225 1.44 1.005.2 1.496.42.9 88.60 180.70 5.018.41086.130 1.82 1.62 1.496.42.9 88.60 180.70 5.018.41086.130 1.82 1.62 1.496.42.9 88.60 180.20 5.022.4118134 2.16 1.118.1 1.496.32.9 99.8 8.40 180.20 5.022.4118134 2.16 1.118.1 1.496.32.9 99.8 8.40 180.20 5.022.41180.135 2.27 1.494 1.108.7 1.496.32.9 99.8 8.40 180.20 5.022.41180.135 2.27 1.494 1.108.7 1.496.32.9 99.8 8.40 180.20 5.022.41180.134 2.16 1.118.1 1.496.32.9 99.8 8.40 180.20 5.022.41180.134 2.16 1.02 1.149.1 1.496.32.9 99.8 8.40 180.20 5.022.41180.135 2.27 1.494 1.496.32.9 99.8 8.40 180.20 5.022.41180.135 2.27 1.494 1.496.32.9 99.8 8.40 180.20 5.022.4122.132 0.44 1.212.1 1.496.32.9 99.8 8.70 178.90 5.022.81243027 3.2 0.44 1.212.1 1.496.32.9 99.8 8.70 178.80 5.022.4138.927 3.2 0.44 1.212.1 1.496.32.9 99.7 99.7 99.7 99.7 99.7 99.7 99.7 9	5,611.0			5,001.6					1 496 668 21	1 230 085 59
85.00 177.90 5.007.5 -840.5 -21 3.48 840.5 1,496.606.57 8500 178.50 5.010.2 -871.4 1.1 1.93 871.4 1,496.576.6 86.10 179.30 5.010.2 -871.4 1.1 1.93 871.4 1,496.576.6 86.10 179.30 5.010.5 -892.3 -0.5 4.38 992.3 1,496.48.89 88.60 181.50 5.016.6 -984.2 -1.8 1.6 1.98.42 1,496.42.89 88.60 181.50 5.016.6 -984.2 -1.8 1.6 1.99.42 1,496.42.99 88.60 180.20 5.018.4 -1.025.2 -2.5 1.4 1.025.2 1,496.42.99 88.60 180.20 5.018.4 -1.065.1 -3.0 1.8 2.1 1.056.1 1,496.39.95 87.90 180.20 5.018.4 -1.087.1 -3.2 1.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	5,642.		177.00	5,004.6	-809.7	-3.5	0.32	809.7	1,496,637.40	1,230,087,20
8500         17850         5,010.2         -871.4         -1,1         1,93         871.4         1,496,575.70           8610         17930         5,012.6         -902.3         -0.5         4,38         902.3         1,496,544.80           8810         18150         5,015.7         -963.2         -1,0         4,87         963.2         1,496,483.89           8860         181.50         5,015.4         -1,025.2         -2,5         1,44         1,025.2         1,496,482.91           88.40         181.70         5,018.4         -1,066.1         -30         1,82         1,181         1,496,482.91           88.50         180.20         5,023.4         -1,181         -3,4         2,16         1,181         1,496,221.93           88.50         180.20         5,022.3         -1,181         -3,4         2,16         1,181         1,496,289.99           88.50         180.20         5,022.3         -1,180.1         -3,5         2,77         1,496,289.99           88.70         178.90         5,022.3         -1,180.1         -3,2         1,6         1,149.1         1,496,289.99           88.70         178.90         5,022.3         -1,212.1         -3,2         2,7	5,673.0		177.90	5,007.5	-840.5	-2.1	3.48	840.5	1,496,606.57	1,230,088.58
86.10         179.30         5,012.6         -902.3         -0.5         4.38         902.3         1,496,544.80           88.10         181.50         5,015.7         -963.2         -1.0         4.87         963.2         1,496,483.89           88.60         181.50         5,016.6         -994.2         -1.8         1.61         994.2         1,496,483.89           88.60         181.70         5,017.4         -1,056.1         -2.5         1.44         1,052.2         1,496,483.89           88.40         180.70         5,018.4         -1,066.1         -3.0         1.82         1,056.1         1,496,482.91           88.50         180.50         5,020.4         -1,118.1         -3.4         2.16         1,118.1         1,496,288.99           88.40         180.20         5,021.3         -1,149.1         -3.6         1,02         1,149.1         1,496,288.99           88.40         180.20         5,022.3         -1,180.1         -3.5         2,77         1,180.1         1,496,289.90           87.90         179.40         5,022.3         -1,243.0         -2,7         3,2         1,24.0         1,149.1         1,496,287.01           87.30         178.60         5,023.4	5,704.0		178.50	5,010.2	-871.4	-1.1	1.93	871.4	1,496,575.70	1,230,089.55
88.10         18150         5.0157        9632         -1.0         4.87         963.2         1.496,483.89           88.60         181.50         5.016.6        994.2         -1.8         1.61         994.2         1.496,483.89           88.40         181.10         5.016.4         -1.055.2         -2.5         1.44         1.025.2         1.496,421.93           88.00         180.20         5.019.5         -1.087.1         -3.0         1.82         1.026.1         1.496,380.95           88.50         180.20         5.020.4         -1.118.1         -3.4         2.16         1.118.1         1.496,380.95           88.50         180.20         5.022.3         -1.180.1         -3.5         2.71         1.184.1         1.496,280.99           87.90         179.90         5.022.3         -1.180.1         -3.5         2.77         1.180.1         1.496,286.00           87.90         178.90         5.022.3         -1.243.0         -2.7         3.32         1.274.0         1.496,286.00           87.30         178.40         5.028.3         -1.274.0         -2.1         0.91         1.274.0         1.496,286.00           87.90         178.50         5.028.3         -1.274.0	5,735.0		179.30	5,012.6	-902.3	-0.5	4.38	902.3	1,496,544.80	1,230,090.14
88.60         181.50         5,016.6         -994.2         -1.8         1.61         994.2         1,496,452.91           88.40         181.10         5,017.4         -1,025.2         -2.5         1.44         1,025.2         1,496,421.93           88.40         180.70         5,018.4         -1,056.1         -3.0         1.82         1,056.1         1,496,221.93           88.50         180.20         5,019.5         -1,087.1         -3.2         1.64         1,087.1         1,496,330.95           88.50         180.20         5,020.4         -1,118.1         -3.4         2.16         1,118.1         1,496,328.99           88.40         180.20         5,022.3         -1,149.1         -3.6         2.7         1,149.1         1,496,328.99           88.70         179.90         5,022.4         -1,212.1         -3.2         0.44         1,212.1         1,496,285.00           87.30         178.90         5,022.4         -1,212.1         -3.2         0.44         1,212.1         1,496,285.00           87.30         178.90         5,022.3         -1,274.0         -2.1         0.91         1,274.0         1,496,204.07           87.30         178.90         5,022.1         -1,335.9 <td>5,796.0</td> <td></td> <td>181.50</td> <td>5,015.7</td> <td>-963.2</td> <td>-1.0</td> <td>4.87</td> <td>963.2</td> <td>1,496,483.89</td> <td>1,230,089.71</td>	5,796.0		181.50	5,015.7	-963.2	-1.0	4.87	963.2	1,496,483.89	1,230,089.71
88.40         181.10         5,017.4         -1,025.2         -2.5         1,44         1,025.2         1,496,421.93           88.00         180.70         5,018.4         -1,056.1         -30         182         1,056.1         1,496,390.95           87.90         180.20         5,018.5         -1,087.1         -32         1,64         1,067.1         1,496,390.95           88.50         180.20         5,020.4         -1,118.1         -3.4         2,16         1,118.1         1,496,328.99           88.40         180.20         5,022.3         -1,149.1         -3.6         1,02         1,149.1         1,496,328.99           87.90         179.40         5,022.3         -1,180.1         -3.5         2,77         1,180.1         1,496,238.00           87.30         178.90         5,022.3         -1,243.0         -2.7         3,32         1,240.         1,496,204.07           87.30         178.90         5,027.7         -1,304.9         -1,44         0,64         1,235.9         1,496,104.7           87.50         178.60         5,020.4         -1,386.9         0.7         1,88         1,355.9         1,496,104.7           87.50         178.30         5,031.6         -1,386.9	5,827.0		181.50	5,016.6	-994.2	-1.8	1.61	994.2	1,496,452.91	1,230,088.90
88.00         180.70         5,018.4         -1,056.1         -3.0         1.82         1,056.1         1,496,390.95           87.90         180.20         5,019.5         -1,087.1         -3.2         1.64         1,087.1         1,496,390.95           88.50         180.50         5,020.4         -1,118.1         -3.4         2.16         1,118.1         1,496,389.97           88.40         180.20         5,022.4         -1,149.1         -3.6         1.02         1,149.1         1,496,288.90           87.90         179.40         5,022.4         -1,121.1         -3.2         0.44         1,221.1         1,496,238.04           87.10         178.90         5,022.4         -1,243.0         -2.7         3.32         1,243.0         1,221.1         1,496,236.04           87.30         178.70         5,026.3         -1,274.0         -2.1         0.91         1,274.0         1,496,123.1           87.30         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,121.5           87.50         178.60         5,039.4         -1,366.9         0.1         0.72         1,88         1,496,121.5           87.90         178.00         5,034.6	5,858.0		181.10	5,017.4	-1,025.2	-2.5	1.44	1,025.2	1,496,421.93	1,230,088.20
87.90         180.20         5,019.5         -1,087.1         -3.2         1,64         1,087.1         1,496,359.97           88.50         180.50         5,020.4         -1,118.1         -3.4         2.16         1,118.1         1,496,328.99           88.40         180.20         5,022.3         -1,149.1         -3.6         1,02         1,149.1         1,496,238.00           87.90         179.50         5,022.3         -1,180.1         -3.5         2,77         1,180.1         1,496,235.04           87.10         178.90         5,023.4         -1,212.1         -3.2         0.44         1,212.1         1,496,235.04           87.30         178.90         5,024.8         -1,243.0         -2.7         3.32         1,243.0         1,496,204.07           87.30         178.90         5,027.7         -1,304.9         -1,4         0.64         1,204.9         1,496,173.11           87.50         178.60         5,029.1         -1,335.9         -0,7         1.88         1,335.9         1,496,111.19           87.70         179.00         5,034.0         -1,458.8         2,4         1.17         1,458.8         1,496,060.23           87.90         179.00         5,034.0         -1,520.7	5,889.0		180.70	5,018.4	-1,056.1	-3.0	1.82	1,056.1	1,496,390.95	1,230,087.71
88.50         180.50         5,020.4         -1,118.1         -3.4         2.16         1,118.1         1,496,328.99           88.40         180.20         5,021.3         -1,149.1         -3.6         1.02         1,149.1         1,496,238.09           87.90         179.50         5,022.3         -1,180.1         -3.5         2,77         1,180.1         1,496,235.04           87.90         179.40         5,022.3         -1,180.1         -3.2         0.44         1,212.1         1,496,235.04           87.10         178.90         5,024.8         -1,243.0         -2.7         3.32         0.44         1,212.1         1,496,235.04           87.30         178.90         5,026.3         -1,274.0         -2.1         0.91         1,274.0         1,496,173.11           87.30         178.90         5,027.7         -1,304.9         -1,4         0.64         1,304.9         1,496,173.11           87.90         178.40         5,029.1         -1,335.9         -0.7         1.88         1,335.9         1,496,173.11           87.70         178.30         5,034.0         -1,368.9         0.1         1.67         1,36.9         1,496,180.23           87.90         179.00         5,034.0	5,920.0		180.20	5,019.5	-1,087.1	-3.2	1.64	1,087.1	1,496,359.97	1,230,087.47
88.40         180.20         5,021.3         -1,149.1         -3.6         1.02         1,149.1         1,496,298.00           87.90         179.50         5,022.3         -1,180.1         -3.5         2,77         1,180.1         1,496,298.00           88.00         179.40         5,023.4         -1,212.1         -3.2         0.44         1,212.1         1,496,285.04           87.10         178.90         5,024.8         -1,243.0         -2.7         3.32         1,243.0         1,496,204.07           87.30         178.90         5,026.3         -1,274.0         -2.1         0.91         1,274.0         1,496,173.11           87.30         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,173.11           87.50         178.60         5,029.1         -1,335.9         -0.7         1.88         1,335.9         1,496,142.15           87.70         179.00         5,034.0         -1,366.9         0.1         0.7         1,366.9         1,496,080.23           87.90         179.00         5,034.0         -1,458.8         2.4         1.17         1,458.8         1,495,988.33           87.90         180.00         5,034.0         -1,520.7 </td <td>5,951.0</td> <td></td> <td>180.50</td> <td>5,020.4</td> <td>-1,118.1</td> <td>-3.4</td> <td>2.16</td> <td>1,118.1</td> <td>1,496,328.99</td> <td>1,230,087.28</td>	5,951.0		180.50	5,020.4	-1,118.1	-3.4	2.16	1,118.1	1,496,328.99	1,230,087.28
87.90         179.50         5,022.3         -1,180.1         -3.5         2,77         1,180.1         1,496,287.01           88.00         179.40         5,023.4         -1,212.1         -3.2         0.44         1,212.1         1,496,235.04           87.10         178.90         5,024.8         -1,243.0         -2.7         3.32         0.44         1,212.1         1,496,235.04           87.30         178.70         5,026.3         -1,243.0         -2.7         3.32         1,243.0         1,243.0         1,246,020.7           87.50         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,142.15           87.50         178.60         5,030.4         -1,335.9         0.7         1.88         1,335.9         1,496,142.15           87.70         179.50         5,031.6         -1,336.9         0.1         0.7         1.88         1,335.9         1,496,080.23           87.70         179.00         5,034.0         -1,458.8         2.4         1.17         1,458.8         1,495,080.23           87.70         180.00         5,034.4         -1,520.7         3.4         0.32         1,520.7         1,495,080.23           88.70	5,982.0		180.20	5,021.3	-1,149.1	-3.6	1.02	1,149.1	1,496,298.00	1,230,087.09
88.00         179.40         5,023.4         -1,212.1         -3.2         0.44         1,212.1         1,496,235.04           87.10         178.90         5,024.8         -1,243.0         -2.7         3.32         1,243.0         1,496,204.07           87.30         178.70         5,026.3         -1,274.0         -2.1         0.91         1,274.0         1,496,173.11           87.30         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,173.11           87.50         178.60         5,029.1         -1,335.9         -0.7         1.88         1,335.9         1,496,111.19           87.50         178.30         5,031.6         -1,366.9         0.1         0.72         1,366.9         1,496,080.23           87.70         179.00         5,034.0         -1,458.8         2.4         1.17         1,458.8         1,496,080.23           87.90         179.00         5,036.4         -1,520.7         3.4         0.32         1,520.7         1,496,988.33           87.90         180.00         5,038.1         -1,520.7         3.4         0.32         1,520.7         1,458,864.41           89.70         180.00         5,039.2         -1,644.7 <td>6,013.0</td> <td></td> <td>179.50</td> <td>5,022.3</td> <td>-1,180.1</td> <td>-3.5</td> <td>2.77</td> <td>1,180.1</td> <td>1,496,267.01</td> <td>1,230,087.17</td>	6,013.0		179.50	5,022.3	-1,180.1	-3.5	2.77	1,180.1	1,496,267.01	1,230,087.17
87.10         178.90         5,024.8         -1,243.0         -2.7         3.32         1,243.0         1,496,204.07           87.30         178.70         5,026.3         -1,274.0         -2.1         0.91         1,274.0         1,496,173.11           87.30         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,173.11           87.50         178.40         5,039.4         -1,335.9         -0.7         1.88         1,335.9         1,496,142.15           87.90         178.30         5,031.6         -1,366.9         0.1         0.72         1,366.9         1,496,080.23           87.90         179.00         5,034.0         -1,458.8         2.4         1.17         1,458.8         1,496,080.27           88.90         179.00         5,036.4         -1,520.7         3.4         0.32         1,520.7         1,495,926.39           88.90         180.00         5,038.1         -1,582.7         4.0         2.28         1,520.7         1,495,806.44           89.70         180.00         5,039.2         -1,644.7         3.9         0.58         1,644.7         1,495,802.42           89.70         179.90         5,039.8         -1,765.7 <td>6,045.0</td> <td></td> <td>179.40</td> <td>5,023.4</td> <td>-1,212.1</td> <td>-3.2</td> <td>0.44</td> <td>1,212.1</td> <td>1,496,235.04</td> <td>1,230,087.48</td>	6,045.0		179.40	5,023.4	-1,212.1	-3.2	0.44	1,212.1	1,496,235.04	1,230,087.48
87.30         178.70         5,026.3         -1,274.0         -2.1         0.91         1,274.0         1,496,173.11           87.30         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,142.15           87.60         178.40         5,029.1         -1,335.9         -0.7         1.88         1,335.9         1,496,142.15           87.50         178.60         5,030.4         -1,366.9         0.1         0.72         1,366.9         1,496,080.23           87.70         179.00         5,034.0         -1,458.8         2.4         1.17         1,458.8         1,496,080.27           87.90         179.00         5,036.4         -1,520.7         3.4         0.32         1,520.7         1,495,988.33           87.90         180.00         5,038.1         -1,520.7         3.4         0.32         1,520.7         1,495,986.39           88.90         180.00         5,039.2         -1,644.7         3.9         0.58         1,644.7         1,495,864.41           89.70         180.00         5,039.2         -1,705.7         3.8         0.88         1,705.7         1,495,802.42           90.10         179.90         5,039.8         -1,767.7	6,076.0		178.90	5,024.8	-1,243.0	-2.7	3.32	1,243.0	1,496,204.07	1,230,087.94
87.30         178.90         5,027.7         -1,304.9         -1.4         0.64         1,304.9         1,496,142.15           87.60         178.40         5,029.1         -1,335.9         -0.7         1.88         1,335.9         1,496,111.19           87.50         178.60         5,030.4         -1,366.9         0.1         0.72         1,366.9         1,496,080.23           87.90         179.00         5,034.0         -1,458.8         2.4         1.17         1,458.8         1,496,080.27           87.90         179.00         5,036.4         -1,520.7         3.4         0.32         1,520.7         1,495,988.33           87.90         180.00         5,038.1         -1,582.7         4.0         2.28         1,520.7         1,495,926.39           88.90         180.20         5,039.2         -1,644.7         3.9         0.58         1,644.7         1,495,864.41           89.70         180.00         5,039.2         -1,705.7         3.8         0.88         1,705.7         1,495,802.42           89.70         179.90         5,039.8         -1,705.7         3.8         0.8         1,705.7         1,495,874.143           90.10         179.90         5,039.8         -1,767.7	6,107.0		178.70	5,026.3	-1,274.0	-2.1	0.91	1,274.0	1,496,173.11	1,230,088.59
87.60       178.40       5,029.1       -1,335.9       -0.7       1.88       1,335.9       1,496,111.19         87.50       178.60       5,030.4       -1,366.9       0.1       0.72       1,366.9       1,496,080.23         87.70       179.00       5,031.6       -1,396.8       0.9       1.67       1,396.8       1,496,080.23         87.70       179.00       5,034.0       -1,458.8       2.4       1.17       1,458.8       1,496,050.27         87.70       179.00       5,036.4       -1,520.7       3.4       0.32       1,520.7       1,495,988.33         87.90       180.00       5,038.1       -1,582.7       4.0       2.28       1,520.7       1,495,926.39         88.90       180.00       5,038.1       -1,582.7       4.0       2.28       1,582.7       1,495,926.39         89.70       180.00       5,039.2       -1,644.7       3.9       0.58       1,644.7       1,495,802.42         89.70       179.90       5,039.8       -1,705.7       3.8       0.8       1,705.7       1,495,679.43         90.10       179.90       5,039.8       -1,767.7       3.8       0.67       1,767.7       1,495,679.43         89.70       179.	6,138.0		178.90	5,027.7	-1,304.9	-1.4	0.64	1,304.9	1,496,142.15	1,230,089.23
87.50       178.60       5,030.4       -1,366.9       0.1       0.72       1,366.9       1,496,080.23         87.70       178.30       5,031.6       -1,396.8       0.9       1.67       1,396.8       1,496,080.23         87.70       179.00       5,034.0       -1,458.8       2.4       1.17       1,458.8       1,495,988.33         87.90       179.00       5,036.4       -1,520.7       3.4       0.32       1,520.7       1,495,986.33         88.90       180.00       5,038.1       -1,582.7       4.0       2.28       1,582.7       1,495,864.41         89.20       180.20       5,039.2       -1,644.7       3.9       0.58       1,644.7       1,495,802.42         89.70       180.00       5,039.2       -1,705.7       3.8       0.88       1,705.7       1,495,802.42         89.70       179.90       5,039.8       -1,767.7       3.8       0.67       1,767.7       1,495,679.43         89.70       179.50       5,040.0       -1,829.7       4.2       0.91       1,829.7       1,495,679.43         89.70       179.50       5,040.0       -1,829.7       4.2       0.91       1,829.7       1,495,679.43	6,169.0		178.40	5,029.1	-1,335.9	-0.7	1.88	1,335.9	1,496,111.19	1,230,089.96
87.90       178.30       5,031.6       -1,396.8       0.9       1.67       1,396.8       1,496,050.27         87.70       179.00       5,034.0       -1,458.8       2.4       1.17       1,458.8       1,495,988.33         87.90       179.00       5,036.4       -1,520.7       3.4       0.32       1,520.7       1,495,988.33         88.90       180.00       5,038.1       -1,582.7       4.0       2.28       1,582.7       1,495,864.41         89.20       180.20       5,039.2       -1,644.7       3.9       0.58       1,644.7       1,495,802.42         89.70       180.00       5,039.2       -1,705.7       3.8       0.88       1,705.7       1,495,679.43         90.10       179.90       5,039.8       -1,767.7       3.8       0.67       1,767.7       1,495,679.43         89.70       179.50       5,040.0       -1,829.7       4.2       0.91       1,829.7       1,495,679.43	6,200.0		178.60	5,030.4	-1,366.9	0.1	0.72	1,366.9	1,496,080.23	1,230,090.77
87.70       179.00       5,034.0       -1,458.8       2.4       1.17       1,458.8       1,495,988.33         87.90       179.00       5,036.4       -1,520.7       3.4       0.32       1,520.7       1,495,926.39         88.90       180.00       5,038.1       -1,582.7       4.0       2.28       1,582.7       1,495,864.41         89.20       180.20       5,039.2       -1,644.7       3.9       0.58       1,644.7       1,495,802.42         89.70       180.00       5,039.7       -1,705.7       3.8       0.88       1,705.7       1,495,679.43         90.10       179.90       5,039.8       -1,767.7       3.8       0.67       1,767.7       1,495,679.43         89.70       179.50       5,040.0       -1,829.7       4.2       0.91       1,829.7       1,495,679.43	6,230.0		178.30	5,031.6	-1,396.8	0.9	1.67	1,396.8	1,496,050.27	1,230,091.58
87.90     179.00     5,036.4     -1,520.7     3.4     0.32     1,520.7     1,495,926.39       88.90     180.00     5,038.1     -1,582.7     4.0     2.28     1,582.7     1,495,864.41       89.20     180.20     5,039.2     -1,644.7     3.9     0.58     1,644.7     1,495,802.42       89.70     180.00     5,039.7     -1,705.7     3.8     0.88     1,705.7     1,495,741.43       90.10     179.90     5,039.8     -1,767.7     3.8     0.67     1,767.7     1,495,679.43       89.70     179.50     5,040.0     -1,829.7     4.2     0.91     1,829.7     1,495,617.43	6,292.0		179.00	5,034.0	-1,458.8	2.4	1.17	1,458.8	1,495,988.33	1,230,093.04
88.90       180.00       5,038.1       -1,582.7       4.0       2.28       1,582.7       1,495,864.41         89.20       180.20       5,039.2       -1,644.7       3.9       0.58       1,644.7       1,495,802.42         89.70       180.00       5,039.7       -1,705.7       3.8       0.88       1,705.7       1,495,741.43         90.10       179.90       5,039.8       -1,767.7       3.8       0.67       1,767.7       1,495,679.43         89.70       179.50       5,040.0       -1,829.7       4.2       0.91       1,829.7       1,495,617.43	6,354.0		179.00	5,036.4	-1,520.7	3.4	0.32	1,520.7	1,495,926.39	1,230,094.13
89.20     180.20     5,039.2     -1,644.7     3.9     0.58     1,644.7     1,495,802.42       89.70     180.00     5,039.7     -1,705.7     3.8     0.88     1,705.7     1,495,741.43       90.10     179.90     5,039.8     -1,767.7     3.8     0.67     1,767.7     1,495,679.43       89.70     179.50     5,040.0     -1,829.7     4.2     0.91     1,829.7     1,825,617.43	6,416.0		180.00	5,038.1	-1,582.7	4.0	2.28	1,582.7	1,495,864.41	1,230,094.67
89.70     180.00     5,039.7     -1,705.7     3.8     0.88     1,705.7     1,495,741.43       90.10     179.90     5,039.8     -1,767.7     3.8     0.67     1,767.7     1,495,679.43       89.70     179.50     5,040.0     -1,829.7     4.2     0.91     1,829.7     1,495,617.43	6,478.0		180.20	5,039.2	-1,644.7	3.9	0.58	1,644.7	1,495,802.42	1,230,094.56
90.10 179.90 5,039.8 -1,767.7 3.8 0.67 1,767.7 1,495,679.43 89.70 179.50 5,040.0 -1,829.7 4.2 0.91 1,829.7 1,495,617.43	6,539.0		180.00	5,039.7	-1,705.7	3.8	0.88	1,705.7	1,495,741.43	1,230,094.45
89.70 179.50 5,040.0 -1,829.7 4.2 0.91 1,829.7 1,495,617.43	6,601.0		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		179.50	5,040.0	-1,829.7	4.2	0.91	1,829.7	1,495,617.43	1,230,094.83





oany: ct:	Osage Resources, LLC Barber Co, Kansas (NAD-83) Osage 3313 18-06HC	(D-83)				Local Co-ordinate Reference: TVD Reference: MD Reference:	te Reference:	Well Osage 3313 18-06HC WELL @ 1876.0usft (Origin WELL @ 1876.0usft (Origin	Well Osage 3313 18-06HC WELL @ 1876.0usft (Original Well Elev) WELL @ 1876.0usft (Original Well Elev)
Well: Osa Wellbore: Late Design: Late	Osage 3313 18-06HC Lateral #1 Lateral #1					North Reference: Survey Calculatio Database:	ation Method:	Grid Minimum Curvature EDM 5000.1 Single User Db	) User Db
Survey									
MD	Inc	Azi (azimuth)	JVD	N/S	E/W	DLeg	V. Sec	Northing	Easting
(usft)	3	3	(usft)	(usft)	(usft)	(°/100usft)	(usft)	(usft)	(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



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9,544.0     89.80     180.70     5,060.0     4,710.3     8.1     1.82       9,636.0     90.80     180.70     5,059.5     4,802.3     7.0     1.09       9,729.0     88.60     180.10     5,060.0     4,895.3     6.4     2.45       9,822.0     88.80     180.00     5,062.1     4,988.3     6.3     0.24       9,822.0     88.80     180.40     5,062.7     -5,050.3     6.1     2.19       9,884.0     90.10     180.40     5,062.7     -5,050.3     6.1     2.19       0,008.0     89.50     179.60     5,063.9     -5,174.3     6.1     0.81       0,070.0     89.10     180.00     5,063.9     -5,236.3     6.3     0.91       0,146.0     90.00     180.00     5,064.5     -5,312.3     6.3     1.18	MD (usft)	(° la	Azi (azimuth)		TVD (usft)	N/S (usft)	E/W	DLeg (°/100usft)	V. Sec (usft)		Northing (usft)
90.80     180.70     5,059.5     4,802.3     7.0     1.09       88.60     180.10     5,060.0     4,895.3     6.4     2.45       88.80     180.00     5,062.1     4,988.3     6.3     0.24       90.10     180.40     5,062.7     -5,050.3     6.1     2.19       89.50     179.60     5,063.1     -5,174.3     6.1     0.81       89.10     180.00     5,063.9     -5,236.3     6.3     0.91       90.00     180.00     5,064.5     -5,312.3     6.3     1.18	9,544.0				5,060.0	-4,710.3			4,710.3		1,492,736.75
88.60     180.10     5,060.0     4,895.3     6.4     2,45       88.80     180.00     5,062.1     -4,988.3     6.3     0,24       90.10     180.40     5,062.7     -5,050.3     6.1     2.19       89.50     179.60     5,063.1     -5,174.3     6.1     0.81       89.10     180.00     5,063.9     -5,236.3     6.3     0.91       90.00     180.00     5,064.5     -5,312.3     6.3     1.18	9,636.0	90.8		80.70	5,059.5	-4,802.3	7.0		4,802.3		1,492,644.76
88.80     180.00     5,062.1     -4,988.3     6.3     0.24       90.10     180.40     5,062.7     -5,050.3     6.1     2.19       89.50     179.60     5,063.1     -5,174.3     6.1     0.81       89.10     180.00     5,063.9     -5,236.3     6.3     0.91       90.00     180.00     5,064.5     -5,312.3     6.3     1.18	9,729.0	88.6		80.10	5,060.0	-4,895.3	6.4		4,895.3	ω	1,492,551.77
90.10 180.40 5,062.7 -5,050.3 6.1 2.19 89.50 179.60 5,063.1 -5,174.3 6.1 0.81 89.10 180.00 5,063.9 -5,236.3 6.3 0.91 90.00 180.00 5,064.5 -5,312.3 6.3 1.18	9,822.0	88.8		80.00	5,062.1	-4,988.3	6.3		4,988.3	ω	.3 1,492,458.80
89.50     179.60     5,063.1     -5,174.3     6.1     0.81       89.10     180.00     5,063.9     -5,236.3     6.3     0.91       90.00     180.00     5,064.5     -5,312.3     6.3     1.18	9,884.0	90.		80.40	5,062.7	-5,050.3	6.1		5,050.3	w	.3 1,492,396.80
89.10     180.00     5,063.9     -5,236.3     6.3     0.91       90.00     180.00     5,064.5     -5,312.3     6.3     1.18	10,008.0	89.5		79.60	5,063.1	-5,174.3	6.		5,174.3	Ü	.3 1,492,272.80
90.00 180.00 5,064.5 -5,312.3 6.3 1.18	10,070.0	89.		80.00	5,063.9	-5,236.3	6.3		5,236.3	ü	1,492,210.81
	10,146.0	90.0		80.00	5,064.5	-5,312.3	6.3		5,312.3	2.3	2.3 1,492,134.81

Checked By:		Design Annotations  Mea D
	278.0 10,146.0	Measured Depth (usft)
	278.0 5,064.5	Vertical Depth (usft)
	2.3 -5,312.3	Local Coordinates +N/-S +usft) (usft) (usft)
	6.3	linates +E/-W (usft)
Approved By:	-0.8 First Survey 6.3 Survey @ 10146 MD	Comment
	~	
Date:		