

Confidentiality Requested:

Yes No

#### Kansas Corporation Commission Oil & Gas Conservation Division

1100437

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:			Sec.	TwpS. R	East West
Address 2:			F6	eet from North /	South Line of Section
City:	State: Z	ip:+	Fe	eet from East /	West Line of Section
Contact Person:			Footages Calculated from I	Nearest Outside Section C	Corner:
Phone: ()			□ NE □ NW	V □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:	W	/ell #:
	e-Entry	Workover	Field Name:		
	_		Producing Formation:		
☐ Oil ☐ WSW ☐ D&A	☐ SWD	∐ SIOW □ SIGW	Elevation: Ground:	Kelly Bushing:	:
	GSW	Temp. Abd.	Total Vertical Depth:	Plug Back Total C	Depth:
CM (Coal Bed Methane)	dow	Temp. Abd.	Amount of Surface Pipe Se	et and Cemented at:	Feet
☐ Cathodic ☐ Other (Co	ore, Expl., etc.):		Multiple Stage Cementing	Collar Used? Yes	No
If Workover/Re-entry: Old Well I			If yes, show depth set:		Feet
Operator:			If Alternate II completion, c	cement circulated from:	
Well Name:			feet depth to:	w/	sx cmt.
Original Comp. Date:					
Deepening Re-perf	•	NHR Conv. to SWD	Drilling Fluid Managemer	nt Plan	
☐ Plug Back	Conv. to G		(Data must be collected from the		
Commingled	Pormit #:		Chloride content:	ppm Fluid volume	e: bbls
Dual Completion			Dewatering method used: _		
SWD			Location of fluid disposal if	hauled offsite	
☐ ENHR			· ·		
GSW	Permit #:		Operator Name:		
_ <del>_</del>			Lease Name:	License #:_	
Spud Date or Date R	eached TD	Completion Date or	QuarterSec	TwpS. R	East _ West
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								

Page Two



Operator Name:				_ Lease l	Name: _			Well #:		
Sec Twp	S. R	East V	West	County	:					
INSTRUCTIONS: Shopen and closed, flow and flow rates if gas to	ring and shut-in pres o surface test, along	sures, whether s with final chart(	shut-in pre s). Attach	ssure reac extra shee	hed stati t if more	c level, hydrosta space is neede	itic pressures, bot d.	tom hole temp	erature, flui	d recovery,
Final Radioactivity Lo- files must be submitte						gs must be ema	ailed to kcc-well-lo	gs@kcc.ks.go	v. Digital el	ectronic log
Drill Stem Tests Taker (Attach Additional S		Yes	No				on (Top), Depth ar			mple
Samples Sent to Geological Survey					Nam	e		Тор	Da	tum
Cores Taken         ☐ Yes         ☐ N           Electric Log Run         ☐ Yes         ☐ N										
List All E. Logs Run:										
			CASING		☐ Ne					
	0: 11-1-	· ·				ermediate, product		# O	T	d Damasat
Purpose of String	Size Hole Drilled	Size Cas Set (In O		Weig Lbs. /		Setting Depth	Type of Cement	# Sacks Used		d Percent itives
		AD	DITIONAL	CEMENTIN	NG / SQL	JEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Ce	of Cement # Sacks Used			Type and Percent Additives				
Perforate Protect Casing										
Plug Back TD Plug Off Zone										
Did you perform a hydrau	•					Yes	No (If No, ski	p questions 2 ar	nd 3)	
Does the volume of the to							= :	p question 3)	of the ACO	()
Was the hydraulic fractur	ing treatment information	on submitted to the	e chemicai d	isciosure re	gistry?	Yes	No (If No, fill	out Page Three	or the ACO-1	<i>)</i> 
Shots Per Foot		ION RECORD - I Footage of Each I					cture, Shot, Cement mount and Kind of Ma		d	Depth
TUBING RECORD:	Size:	Set At:		Packer A	i:	Liner Run:	Yes No			
Date of First, Resumed	Production, SWD or Ef	NHR. Prod	ducing Meth	ıod:		1				
			Flowing	Pumpin	g	Gas Lift C	Other (Explain)			
Estimated Production Per 24 Hours	Oil	Bbls.	Gas	Mcf	Wate	er B	bls. (	Gas-Oil Ratio		Gravity
DISPOSITIO	ON OF GAS:		M	METHOD OF	COMPLE	ETION:		PRODUCTION	ON INTERVA	
Vented Sold		Open		Perf.	Dually	Comp. Cor	mmingled			
	bmit ACO-18.)		(Specify)		(Submit )	ACO-5) (Sub	mit ACO-4)			

Form	CO1 - Well Completion				
Operator	SandRidge Exploration and Production LLC				
Well Name	Lillian 3206 2-31H				
Doc ID	1100437				

# All Electric Logs Run

CML Messenger Shuttle Array Induction Electric Log
CML Messenger Shuttle Compact Photo Density Dual Spaced Neutron Log
Boresight
Mudlog

Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Lillian 3206 2-31H
Doc ID	1100437

### Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
5	8350-8774	1868 bbls of water, 385 bbls acid, 22M lbs sand, 2250 TLTR	
5	7764-8228	1852 bbls of water, 385 bbls acid, 22M lbs sand, 4486 TLTR	
5	7233-7660	1899 bbls of water, 385 bbls acid, 23M lbs sand, 6769 TLTR	
5	6740-7101	462 bbls of water, 96 bbls acid, 0M lbs sand, 7328 TLTR	
5	6286-6651	423 bbls of water, 96 bbls acid, 0M lbs sand, 7846 TLTR	
5	5815-6201	418 bbls of water, 96 bbls acid, 0M lbs sand, 8359 TLTR	
5	5305-5714	389 bbls of water, 96 bbls acid, 0M lbs sand, 8843 TLTR	
5	4796-5204	352 bbls of water, 96 bbls acid, 0M lbs sand, 9334 TLTR	

Form	CO1 - Well Completion				
Operator	SandRidge Exploration and Production LLC				
Well Name	Lillian 3206 2-31H				
Doc ID	1100437				

## Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Conductor	20	20	75	100	Mid- Continent Conductor Grout	10	none
Surface	12.25	9.63	36	703	O-Tex Lite Premium Plus/ Premium Plus (Class C)	380	(6% Gel) 2% Calcium Chloride, 1/4 pps Cello- Flake, .5% C-41P
Intermedia te	8.75	7	26	4985	50/50 Poz Premium/ Premium	300	4% Gel, .4% C-12, .1% C-37, .5% C- 41P, 2 lb/sk Phenoseal
Production Liner	6.12	4.5	11.6	8926	50/50 Premium Poz	475	(4% gel) .4% C12, .1% C37, .5% C- 41P, 2 lb/sk Phenoseal

Conservation Division Finney State Office Building 130 S. Market, Rm. 2078 Wichita, KS 67202-3802



Phone: 316-337-6200 Fax: 316-337-6211 http://kcc.ks.gov/

Sam Brownback, Governor

Mark Sievers, Chairman Thomas E. Wright, Commissioner Shari Feist Albrecht, Commissioner

November 09, 2012

Tiffany Golay SandRidge Exploration and Production LLC 123 ROBERT S. KERR AVE OKLAHOMA CITY, OK 73102-6406

Re: ACO1 API 15-077-21883-01-00 Lillian 3206 2-31H SW/4 Sec.31-32S-06W Harper County, Kansas

#### **Dear Production Department:**

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully, Tiffany Golay



Invoice

Date	Invoice #
10/10/2012	1519

**Drilling Rig** 

P.O. Box 1570

Woodward, OK 73802

Phone: (580)254-5400 Fax: (580)254-3242

Ordered By

Bill To	
SandRidge Energy, Inc.	
Attn: Purchasing Mgr.	
123 Robert S. Kerr Avenue	
Oklahoma City, OK. 73102	

Terms

	Ricky Beene	Net 45		10/10/2012	Lillian 2-31H, Harper Cnty., KS	Lariat 39			
Item Quantity				Description					
20" P Mous 16" P Cellar 6' X 6 Mud a Mud, Grout Welde	e Hole ipe r Hole r Hole d' Tinhorn and Water Water, & Trucking & Trucking Pump er & Materials demoval r Plate		90 80 80 1 1 1 10 1 1	Drilled 80 ft. mo Furnished 80 ft. o Drilled 6x6 cella Furnished and se Furnished mud a Transport mud at Furnished 10 yar Furnished grout p Furnished weldet Labor & Equip. f Furnished cover Permits  AFE Well Code Amor Co. N Co. N	of 20 inch conductor pipe. use hole, of 16 inch mouse hole pipe, r hole, t 6x6 tinhorn, nd water, nd water to location, ds of grout and trucking to location, oump, r and materials. or dirt removal.	2-31 H			
	l		- 1		Subtotal	\$17.800	00		

Date of Service

Subtotal

\$17,800.00

**Sales Tax (0.0%)** 

Lease Name/Legal Desc.

\$0.00

**Total** 

\$17,800.00

IOR SUM	PROJECT NOMBER   TICKET DATE   10/31/12								
JOB SUM	CUSTOMER REP								
HARPER KANSAS SANDRIDO	DAVID MONTOYA  EMPLOYEE NAME								
LILLIAN I206 2-31 Surface	Robert Burris								
Robert Burris   Frank Reeves									
Robert Burris Frank Reeves Jessie McClain									
Rocky Anthis									
Wesley Truex									
Form. NameType:				1					
Packer Type Set At 0	Date Called Out 10/31/2012	On Location	Job Started 10/31/2012	Job Cor 10/3	1/2012				
Bottom Hole Temp. 80 Pressure									
Retainer Depth Total Depth 700 Tools and Accessories	Time 08:30	11:15 Well Data	19:04	1 19	:58				
Type and Size Qty Make	New/Used	Weight Size Gra	ade From	To	Max. Allow				
Auto Fill Tube 0 IR	Casing	36# 9 5/8"	Surface	706	1,500				
Insert Float Val 0 IR Centralizers 0 IR	Liner								
Centralizers         0         IR           Top Plug         0         IR	Liner Tubing	0	<del></del>						
HEAD 0 IR	Drill Pipe								
Limit clamp 0 IR	Open Hole	12 1/4	Surface	703	Shots/Ft,				
Weld-A 0 IR Texas Pattern Guide Shoe 0 IR	Perforations								
Texas Pattern Guide Shoe 0 IR Cement Basket 0 IR	Perforations Perforations								
Materials	Hours On Location	Operating Hours Date Hours	Descriptio	n of Job					
Mud Type WBM Density 9 Lb/Gal Disp. Fluid Fresh Water Density 8.33 Lb/Gal	Date Hours	Date Hours	Surface	11					
Disp. Fluid Fresh Water Density 8.33 Lb/Gal Spacer type resh Wate BBL 10 8.33	10/31 9.0 10/31 1.0 Surface								
Spacer type BBL.									
Acid Type Gal %									
Acid Type									
NE Agent Gal. In									
Fluid Loss Gal/Lb In									
Gelling Agent									
MISC. Gal/Lb In	Total 9.0	Total 1.0							
Perfpac BallsQty.									
Other Qty.	MAX 1,500 PSI	Pressures AVG. 37	5						
Other		Average Rates in I							
Other	MAX 6 BPM	AVG 4							
OtherOther	Feet 47	Cement Left in P Reason SHOE J	OINT						
Other	i cct	TCGSOIT OTTOL O	City		-				
	Cement Data								
Stage Sacks Cement  1 260 FEX Lite Premium Plus 65 (6% Gel) 2% Calc	Additives	Flate FO/ C 44D	W/Rq.	Yield	Lbs/Gal				
1 260 FEX Lite Premium Plus 65 (6% Gel) 2% Calc 2 120 Premium Plus (Class C) 1% Calcium Chlo		-riake5% C-41P	10.88 6.32	1.84	12.70 14.80				
3 0 0	Happ bello-i lake		0 0.00	0.00	0.00				
	0								
Preflush Type:	Summary Preflush:	BBI 10.0	Type:	Fresh \	Nater				
Breakdown MAXIMUM	1,600 PSI Load & Bkdn:	Gal - BBI N//	Pad:Bbl -C	Gal	N/A				
Lost Returns-N Actual TOC	NO/FULL Excess /Retu SURFACE Calc. TOC:	rn BBI SURF	Calc.Disp ACE Actual Dis		51 51.00				
Average Bump Plug PSI:	1,100 Final Circ.	PSI: 450	Disp:Bbl	. L	01.00				
ISIP 5 Min 10 Min 15 M									
	Total Volume	BBI 174.	1						
CUSTOMER REPRESENTATIVE									
SIGNATURE									

		SOK 2077 11/04/12											
Harper Kansas Sandridge Exploration & Production							CUSTOMER REP Harold Roller						
Lillian 3206 2-31 Intermediate							EMPLOYEE NAME NATHAN COTTA						
EMP NAME													
NATHAN COTTA	0												
ARTHUR S.								$\vdash$					
MIKE C.				Н				$\vdash$					
JAMES K.				Ш				$\Box$					
Form. Name	Type: _			Cal	led Out	On Location	n	Joh	Started	Llob C	ompleted		
Packer Type	Set At	3,642	Date	- Cui	11.5.12	11.5.	12	002	11.5.12	1	11.5.12		
Bottom Hole Temp. 155	Pressure	9							40.47	١,	000		
Retainer Depth	I otal De	pth 5010	Time		500	830   Well [	Tata		1217		323		
Type and Size	Accessories Qty	Make			New/Used		Size G	rade	From	То	Max. Allow		
Auto Fill Tube	0	IR	Casing		The time see	26#	7"	-	Surface		5,000		
Insert Float Val	0	IR	Liner										
Centralizers	0	IR	Liner					丁					
Top Plug	0	IR	Tubing			-	0	-					
HEAD Limit clamp	0	IR IR	Drill Pi				8 3/4	<del>"  </del>	Surface	5,010	Shots/Ft		
Limit clamp Weld-A	0	İR	Perfora				1 00.1	$\dashv$	ouridoo	0,010	GIOGH		
Texas Pattern Guide Shoe	0	İR	Perfora	tions	S								
Cement Basket	0	İR	Perfora	tion	S	A							
Mud Type Wem	als Depoits	9 Lb/Gal	Hours Date	On L	ocation Hours	Operating Date	Hours Hour	-	-	tion of Job	)		
Disn Fluid Fresh Water	Density 8	.33   h/Gal	11.5.		Hours	11.5.12	1 1001	3	Interme	diate			
Spacer type resh Wate BBL	20	8.33	V 1/4-1						_				
Spacer type Caustic BBL	10	8.40											
Acid Type Gal.		%					-						
Acid Type Gal. Surfactant Gal.		n —	_					$\dashv$	•				
NF Agent Gal.		n —											
Fluid Loss Gal/	LD1	n											
Gelling Agent Gal/	Th I	n I		_				$\dashv$					
Fric. RedGal/	Lb   Lb	n ———	Total		0.0	Total	0.0	-	-				
V			lotai	ı	0.0	Iulai	0.0						
Perfpac Balls	Qty.				100		essures						
Other			MAX		3500		30						
Other			MAX		8 BPM	Average	Rates in		Л				
Other			101637		0 131 111	Cemen	t Left in I	Pipe					
Other			Feet		91	Reason			IT				
					nt Data								
Stage Sacks Ceme	ent	0/ 6 1 5 40/ 5	Additive	S	0.50/ 0.4/5	0.11-1-1-12			W/Ro				
	KEMIUM 4	1% Gel - 0.4% C- 0.4% C-12 - 0.1%	C-37	J-37	- 0.5% C-41P	- 2 ID/SK Phe	noseal		6.77 5.20				
2 100 Premit 3 0 0	um (	1.4% U-12 - U.1%	0-31						0 0.00		0.00		
<u> </u>										3.30	1		
				nma	ITV								
	Type:		austic		Preflush:		20. N	00	Type:	WEIGH	TED SP.		
Breakdown	MAXIMU Lost Ret		NO/FULL		Load & Bkdn Excess /Retu		- N		Pad:Bb Calc.Di		N/A 187		
	Actual T		3,264	_	Calc. TOC:		3,2	264	Actual I	Disp.	187.00		
Average	Bump Pl	ug PSI:	1,500	_	Final Circ.	PSI:		000	Disp:Bb	ol	187.00		
ısır5 Min	10 Min _	15 M	ın		Cement Slurr Total Volume		279						
		0	/		Total volume	וטטו	2/3	T					
		1-11	/	_	1. 14								
CUSTOMER REPRES	CONTATAL	E VM	arol	1	took	er-							
COSTOWER REPRES	PENIAIIV	- XV	V VO	<b>(</b> 1)	.,,,,,	SIGNATURE							
	/												

J	PROJECT NOMBER TICKET DATE 11/09/12										
COUNTY	CUSTOMER REP	CUSTOMER REP DAVID MONTOYA									
HARPER KANSAS	duc	EMPLOYEE NAME									
LILLIAN 1206 2-31					Matt W	ilso	n				
IMatt Wilson I 10.	10		_				_				
Mart Timoth	JU		_			-	-				
Emmit Brock David Thomas			-				+				
Dustin Odum Dustin Odum											
Form. NameType:											
			Cal	led Out	On Locatio			tarted		mpleted	
Packer Type Set Al		Date		11/9/2012	11/9/20	012	7	1/9/2012	117	9/2012	
	Depth 8926	Time		9:00 am	1:00	om	7	':04 pm	9:	00 pm	
Tools and Accessorie		Time I			Well D	ata					
Type and Size Qty	Make			New/Used			de	From	To	Max. Allow	
71010 1 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Weatherford	Casing			11.6	4 1/2	+	5474	8,926		
Micert Float Car		Liner To		_			_	3,288	5,474		
Centralizers 0   Top Plug 0		Drill Pip				4	$\vdash$	0	3,288		
HEAD 0		Drill Co									
Limit clamp 0		Open H				6 1/8"	13	Surface	8,926	Shots/Ft.	
Weld-A 0 Teyas Pattern Guide Shoe 0		Perforat					+				
Texas Pattern Guide Shoe 0 Cement Basket 0		Perforat Perforat					+				
Materials		Hours C	On L	ocation	Operating			Description of Job			
Mud Type WBM Density_	9.1 Lb/Gal	Date 11/9		Hours	Date	Hours		Liner			
Disp. Fluid Fresh Water Density Spacer type resh Wate BBL. 20	8.33 Lb/Gal 8.33	11/9	_	8.0	11/9	6.0	-				
Spacer type Caustic BBL. 10	8.40		_				_				
Acid Type Gal	%										
Acid Type Gal	%		_				_	-			
Surfactant Gal NE Agent Gal.	_In		$\dashv$				$\dashv$				
Fluid Loss Gal/Lb	In										
Gelling Agent Gal/Lb	In										
Fric. Red. Gal/Lb	_ln	Total	-	8.0	Total	6,0	$\dashv$	-			
MISC. Gal/Lb	_ln	Iotai	1	0.0	Iolai	0,0	_				
Perfpac BallsQty.						essures					
Other Other		MAX		3,500 PSI	AVG. Average	400	)				
Other		MAX		6 BPM		4					
Other		1100 111			Cement	Left in P	ipe				
Other		Feet		88	Reason	SHOE J	OINT				
Stage Sacks Cement	T	Additives		nt Data				W/Rq	.   Yield	Lbs/Gal	
Stage         Sacks         Cement           1         475         50/50 Premium Poz	(4%Gel)4% C12 -			.5% C-41P - 2	Lb/Sk Pheno	seal		6.77	1.44	13,60	
2 0 0	(11000)						(	0.00	0.00	0.00	
3 0 0							(	0.00	0.00	0.00	
		Cum	-m-	n.							
Preflush 10- Type:	Cau	Sun Istic	111114	Preflush:	BBI	20.0	0	Type:	8.59#\$	PACER	
Breakdown MAXII		00 PSI		Load & Bkdn:	: Gal - BBl	N/A		Pad:Bbl		N/A	
Lost R		D/FULL 1,697'		Excess /Retu Calc. TOC:	ım BBI	4,69	71	Calc.Dis		107 107.00	
	Plug PSI:	,001		Final Circ.	PSI:	800	)	_Disp:Bb		107.00	
ISIP5 Min10 Mir			_	Cement Slurr	v: BBI	122.		1			
		1		Total Volume	BBI	249.0	T				
	7	//-									
CUCTOMED DEDDEOCNITAT	WE land	A. J.	570	02							
CUSTOMER REPRESENTAT	VE STILLE	Mill.	100	5	SIGNATURE						
SIGNATURE											



Lillian 3206 2-31H SandRidge Lariat 39 Harper Co, Kansas

Minimum Curvature Calculation

MWD Matt Stanaland / Kyle Harri:

DIRECTIONAL DRILLERS: Doug Bennett / Brandon Cr

Magnetic Declination: 4.54

Job #: DR1210165

Vertical Section Azimuth 357.31

	Survey						Vertical	DLS/		
No.	Depth	INC	AZM	TVD	N-S	E-W	Section	100	BUR	WR
Tie	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
1	933	2.50	278.70	932.70	3.08	-20.12	4.02	0.27	0.27	8.71
2	1395	1.60	256.30	1394.41	3.07	-36.34	4.78	0.26	-0.19	-4.85
3	1870	0.90	290.10	1869.30	2.79	-46.29	4.96	0.21	-0.15	7.12
4	2345	0.40	270.20	2344.27	4.07	-51.45	6.48	0.11	-0.11	-4.19
5	2820	0.50	315.90	2819.26	5.57	-54.55	8.12	0.08	0.02	9.62
6	3295	0.30	335.00	3294.24	8.18	-56.52	10.83	0.05	-0.04	4.02
7	3580	0.30	154.40	3579.24	8.19	-56.51	10.83	0.21	0.00	-62.95
8	3611	0.30	112.00	3610.24	8.08	-56.40	10.72	0.70	0.00	-136.77
9	3642	1.20	26.80	3641.24	8.34	-56.18	10.97	3.91	2.90	-274.84
10	3674	3.80	20.10	3673.21	9.64	-55.67	12.24	8.16	8.13	-20.94
11	3706	6.50	15.70	3705.07	12.38	-54.81	14.94	8.52	8.44	-13.75
12	3737	9.10	12.70	3735.79	16.46	-53.80	18.97	8.49	8.39	-9.68
13	3769	11.20	12.60	3767.28	21.96	-52.56	24.40	6.56	6.56	-0.31
14	3801	13.00	12.10	3798.57	28.51	-51.13	30.88	5.63	5.63	-1.56
15	3832	14.70	22.10	3828.67	35.57	-48.92	37.83	9.45	5.48	32.26
16	3864	16.40	9.00	3859.51	43.80	-46.68	45.94	12.16	5.31	-40.94
17	3896	18.00	7.60	3890.08	53.16	-45.32	55.23	5.16	5.00	-4.38
18	3927	19.80	6.80	3919.41	63.12	-44.07	65.12	5.87	5.81	-2.58
19	3959	22.30	6.70	3949.27	74.53	-42.72	76.46	7.81	7.81	-0.31
20	3991	24.50	6.80	3978.63	87.15	-41.22	88.99	6.88	6.88	0.31
21	4022	27.40	6.80	4006.51	100.62	-39.62	102.37	9.35	9.35	0.00
22	4054	30.00	7.90	4034.57	115.86	-37.65	117.50	8.29	8.13	3.44
23	4086	31.80	9.30	4062.03	132.11	-35.18	133.61	6.06	5.63	4.38
24	4117	34.20	9.00	4088.03	148.78	-32.50	150.14	7.76	7.74	-0.97
25	4149	36.30	6.40	4114.16	167.07	-30.04	168.30	8.06	6.56	-8.13
26	4181	38.40	5.30	4139.60	186.39	-28.06	187.50	6.89	6.56	-3.44
27	4212	40.20	4.60	4163.58	205.95	-26.37	206.96	5.98	5.81	-2.26
28	4244	41.80	2.60	4187.73	226.90	-25.06	227.82	6.47	5.00	-6.25
29	4276	43.70	2.00	4211.23	248.60	-24.19	249.46	6.07	5.94	-1.88
30	4307	45.30	1.70	4233.34	270.32	-23.49	271.12	5.21	5.16	-0.97
31	4371	49.90	1.00	4276.49	317.55	-22.39	318.25	7.23	7.19	-1.09
32	4434	50.10	0.10	4316.98	365.81	-21.92	366.43	1.14	0.32	-1.43
33	4466	49.50	359.30	4337.64	390.25	-22.05	390.85	2.68	-1.88	2.50
34	4497	49.20	359.30	4357.83	413.77	-22.34	414.36	0.97	-0.97	0.00
35	4529	48.40	359.40	4378.91	437.84	-22.61	438.42	2.51	-2.50	0.31
36	4561	48.70	359.20	4400.09	461.83	-22.90	462.39	1.05	0.94	-0.62
37	4592	51.20	359.00	4420.04	485.55	-23.28	486.11	8.08	8.06	-0.65
38	4624	54.30	358.80	4439.41	511.01	-23.77	511.57	9.70	9.69	-0.62



Lillian 3206 2-31H SandRidge Lariat 39 Harper Co,Kansas

Minimum Curvature Calculation

MWD Matt Stanaland / Kyle Harri: DIRECTIONAL DRILLERS: Doug Bennett / Brandon Cr

Magnetic Declination: 4.54

Job #: DR1210165

Vertical Section Azimuth 357.31

	Survey						Vertical	DLS/		
No.	Depth	INC	AZM	TVD	N-S	E-W	Section	100	BUR	WR
39	4656	56.80	358.70	4457.51	537.39	-24.34	537.94	7.82	7.81	-0.31
40	4687	59.50	359.20	4473.86	563.72	-24.82	564.26	8.82	8.71	1.61
41	4719	62.70	359.20	4489.33	591.73	-25.22	592.26	10.00	10.00	0.00
42	4750	65.90	359.30	4502.77	619.66	-25.58	620.17	10.33	10.32	0.32
43	4782	70.00	358.90	4514.78	649.30	-26.05	649.81	12.86	12.81	-1.25
44	4814	73.70	357.80	4524.74	679.69	-26.93	680.21	12.01	11.56	-3.44
45	4845	77.20	356.40	4532.53	709.66	-28.45	710.21	12.11	11.29	-4.52
46	4877	81.60	355.90	4538.42	741.03	-30.56	741.65	13.84	13.75	-1.56
47	4909	85.80	355.90	4541.93	772.75	-32.83	773.44	13.13	13.13	0.00
48	4935	89.20	356.20	4543.06	798.66	-34.62	799.40	13.13	13.08	1.15
49	4960	90.50	356.10	4543.13	823.60	-36.30	824.40	5.22	5.20	-0.40
50	5028	91.40	356.80	4542.00	891.46	-40.51	892.38	1.68	1.32	1.03
51	5058	91.20	356.80	4541.32	921.41	-42.19	922.37	0.67	-0.67	0.00
52	5150	92.40	357.50	4538.43	1013.24	-46.76	1014.32	1.51	1.30	0.76
53	5242	91.90	357.10	4534.98	1105.08	-51.09	1106.26	0.70	-0.54	-0.43
54	5334	91.70	356.80	4532.09	1196.90	-55.98	1198.21	0.39	-0.22	-0.33
55	5426	91.50	356.90	4529.52	1288.73	-61.03	1290.17	0.24	-0.22	0.11
56	5518	91.20	356.20	4527.35	1380.53	-66.57	1382.14	0.83	-0.33	-0.76
57	5610	90.60	355.70	4525.91	1472.29	-73.07	1474.10	0.85	-0.65	-0.54
58	5702	91.40	357.10	4524.30	1564.09	-78.84	1566.07	1.75	0.87	1.52
59	5797	90.60	359.00	4522.64	1659.02	-82.07	1661.04	2.17	-0.84	2.00
60	5891	90.60	0.20	4521.66	1753.01	-82.73	1754.96	1.28	0.00	-1.28
61	5986	90.20	0.70	4521.00	1848.00	-81.98	1849.82	0.67	-0.42	0.53
62	6081	90.60	1.50	4520.33	1942.98	-80.16	1944.60	0.94	0.42	0.84
63	6176	92.60	359.70	4517.68	2037.93	-79.16	2039.40	2.83	2.11	1.89
64	6271	92.10	355.40	4513.78	2132.74	-83.22	2134.30	4.55	-0.53	-4.53
65	6366	91.10	353.40	4511.13	2227.25	-92.49	2229.13	2.35	-1.05	-2.11
66	6461	90.10	354.70	4510.13	2321.73		2323.97	1.73	-1.05	1.37
67	6556	89.20	354.50	4510.71	2416.30		2418.86	0.97	-0.95	-0.21
68	6651	89.20	354.10	4512.04	2510.82	-120.71	2513.72	0.42	0.00	-0.42
69	6746	90.50	354.60	4512.29	2605.36	-130.06	2608.59	1.47	1.37	0.53
70	6841	91.30	357.40	4510.80	2700.11		2703.55	3.06	0.84	2.95
71	6936	91.30	356.80	4508.64	2794.96	-141.49	2798.52	0.63	0.00	-0.63
72	7031	91.00	357.00	4506.74	2889.80	-146.63	2893.50	0.38	-0.32	0.21
73	7126	90.70	356.70	4505.33	2984.65		2988.48	0.45	-0.32	-0.32
74	7221	90.60	358.70	4504.25	3079.56	-155.66	3083.47	2.11	-0.11	2.11
75	7316	90.60	358.00	4503.25	3174.51	-158.40	3178.45	0.74	0.00	-0.74
76	7411	90.30	357.30	4502.51	3269.43	-162.29	3273.44	0.80	-0.32	-0.74
77	7506	90.00	357.90	4502.26	3364.35	-166.27	3368.44	0.71	-0.32	0.63



Lillian 3206 2-31H SandRidge Lariat 39 Harper Co, Kansas

MWD Matt Stanaland / Kyle Harris DIRECTIONAL DRILLERS: Doug Bennett / Brandon Cr
Magnetic Declination: 4.54

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Vertical Section Azimuth 357.31 Minimum Curvature Calculation

	Survey						Vertical	DLS/		
No.	Depth	INC	AZM	TVD	N-S	E-W	Section	100	BUR	WR
78	7601	90.30	357.00	4502.01	3459.25	-170.50	3463.44	1.00	0.32	-0.95
79	7696	90.60	357.20	4501.26	3554.13	-175.30	3558.44	0.38	0.32	0.21
80	7791	91.20	357.40	4499.77	3649.01	-179.78	3653.42	0.67	0.63	0.21
81	7886	91.90	357.20	4497.20	3743.87	-184.25	3748.39	0.77	0.74	-0.21
82	7981	92.00	359.60	4493.97	3838.77	-186.90	3843.31	2.53	0.11	2.53
83	8076	91.40	358.40	4491.15	3933.71	-188.56	3938.22	1.41	-0.63	-1.26
84	8171	90.40	357.90	4489.66	4028.65	-191.63	4033.20	1.18	-1.05	-0.53
85	8266	89.60	357.40	4489.66	4123.57	-195.52	4128.20	0.99	-0.84	-0.53
86	8361	91.60	357.30	4488.66	4218.45	-199.91	4223.19	2.11	2.11	-0.11
87	8456	91.60	356.30	4486.01	4313.27	-205.21	4318.15	1.05	0.00	-1.05
88	8551	91.20	356.90	4483.69	4408.07	-210.85	4413.11	0.76	-0.42	0.63
89	8646	90.40	356.20	4482.36	4502.89	-216.56	4508.09	1.12	-0.84	-0.74
90	8741	89.60	356.10	4482.36	4597.67	-222.94	4603.07	0.85	-0.84	-0.11
91	8836	91.10	356.20	4481.78	4692.46	-229.32	4698.05	1.58	1.58	0.11
92	8876	92.20	356.10	4480.63	4732.35	-232.00	4738.02	2.76	2.75	-0.25

