

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1239660
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

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

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

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

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
-----------------------------------	-----------------	---

API No. 15 - _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

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

1239660

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

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

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

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

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

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

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

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

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

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

TUBING RECORD: Size: _____ Set At: _____ Packer At: _____ Liner Run: Yes No

Date of First, Resumed Production, SWD or ENHR. _____ Producing Method:
 Flowing Pumping Gas Lift Other *(Explain)* _____

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
--	--	---



INVOICE

DATE	INVOICE #
10/8/2014	5165

BILL TO
SANDRIDGE ENERGY, INC. ATTN: PURCHASING MANAGER 123 ROBERT S. KERR AVENUE OKLAHOMA CITY, OK 73102

REMIT TO
EDGE SERVICES, INC. PO BOX 609 WOODWARD, OK 73802

COUNTY	STARTING D...	WORK ORDER	RIG NUMBER	LEASE NAME	Terms
HARPER, KS	10/6/2014	3777	NOMAC 52	CAROTHERS 3306 1-3H	Due on rec...

Description

DRILLED 90' OF 30" CONDUCTOR HOLE
 DRILLED 6' OF 76" HOLE
 FURNISHED AND SET 6' X 6' TINHORN CELLAR
 FURNISHED 90' OF 20" CONDUCTOR PIPE
 FURNISHED MUD, WATER, AND TRUCKING
 FURNISHED WELDER AND MATERIALS
 FURNISHED 9 YARDS OF 10 SACK GROUT FOR CONDUCTOR HOLE
 FURNISHED 4 YARDS OF 10 SACK GROUT FOR MOUSE HOLE
 FURNISHED GROUT PUMP
 DRILL MOUSE HOLE
 FURNISHED 50' OF 16" CONDUCTOR PIPE

TOTAL BID \$20,500.00

AFE Number: DC 14020
 Well Name: Carothers 3306 1-3H
 Code: 850.010
 Amount: \$20,732.59
 Co. Man: John Forbush
 Co. Man Sig: [Signature]
 Notes: _____

Sales Tax (6.15%)	\$232.59
--------------------------	----------

TOTAL	\$20,732.59
--------------	-------------



SandRidge Energy
Carothers #3306 1-3H
Harper County, KS.

1.0 Executive Summary

Allied Oil & Gas Services would like to thank you, for the award of the provision of cementing products and services on the well Carothers #3306 1-3H Surface Casing.

A pre-job meeting was held to discuss job details, review the safety hazards, potential environmental impact and established emergency procedures.

Allied started the job testing lines to 2000 psi. After a successful test we began the job by pumping 10 bbls of preflush spacer. We then mixed and pumped the following cements:

63.5 Bbls (190 sacks) of 12.7 ppg Lead slurry:
Class A poz Blend Yeild 1.87
6% Gel
2% CC
¼# Floseal

32 Bbls (150 sacks) of 15.6 ppg Tail slurry
Class A Yeild 1.20
2% CC
¼ # Floseal

The top plug was then released and displaced with 53 Bbls of fresh water. The plug bumped and pressured up to 1000 psi. Pressure was released and floats held.

All real time data is shown on the graph in the attachment section.

Allied Oil & Gas Services remains committed to provide operational excellence and superior product performance. All comments and suggestions are greatly appreciated and help us to continue to provide this level of service.

Again we want to thank you for the opportunity to perform these and your future cementing & acidizing service needs.



SandRidge Energy
Carothers #3306 1-3
Harper County, KS.

1.0 Executive Summary

Allied Oil & Gas Services would like to thank you, for the award of the provision of cementing products and services on the well Carothers #3306 1-3 Intermediate Casing.

A pre-job meeting was held to discuss job details, review the safety hazards, potential environmental impact and established emergency procedures.

Allied started the job testing lines to 3000 psi. After a successful test we began the job by pumping 30 bbls of preflush spacer. We then mixed and pumped the following cements:

60 Bbls (240 sacks) of 13.6 ppg Lead slurry:
50:50 Class A:Poz Blend - 1.4 Yield
2.0% Gel
0.4% FL-160
0.1% SA-51

21Bbls (100 sacks) of 15.6 ppg Tail slurry:
Class A - 1.18 Yield
0.8% FL-160
0.2% CD-31

The top plug was then released and displaced with 185 of fresh water. The plug bumped and pressured up to 1650 psi. Pressure was released and floats held.

All real time data is shown on the graph in the attachment section.

Allied Oil & Gas Services remains committed to provide operational excellence and superior product performance. All comments and suggestions are greatly appreciated and help us to continue to provide this level of service.

Again we want to thank you for the opportunity to perform these and your future cementing & acidizing service needs.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/13/2014
Job End Date:	11/14/2014
State:	Kansas
County:	Harper
API Number:	15-077-22082-01-00
Operator Name:	SandRidge Energy
Well Name and Number:	Carothers 3306 1-3H
Longitude:	-97.95511000
Latitude:	37.19684600
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	4,713
Total Base Water Volume (gal):	2,541,882
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Archer	Carrier/Base Fluid	Water	7732-18-5	100.00000	95.44042	None
Sand (Proppant)	Archer	Proppant	Silica Substrate	NA	100.00000	3.63368	None
C102	Bosque Disposal Systems, LLC	Oxidizer	Chlorine Dioxide	10049-04-4	15.00000	0.27147	
Hydrochloric Acid (15%)	Archer	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.08764	None
			Methyl Alcohol	67-56-1	80.00000	0.00067	None
			thiourea-formaldehyde copolymer	68527-49-1	15.00000	0.00013	None
			NONYL PHENOL, 4 MOL	104-40-5	10.00000	0.00003	None
AIC	Archer	Liquid Acid Iron Control	Acetic Acid	64-19-7	50.00000	0.00151	None
			Citric Acid	77-92-9	30.00000	0.00090	None
Chemflush	Archer	Enviro-Friendly Chemical Flush	Hydrotreated Petroleum Distillate	64742-47-8	99.00000	0.00080	None

		Alcohol Ethoxylate Surfactants	NA	10.00000	0.00008	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.						
		Other Chemicals				
		Water	7732-18-5		0.03329	
		Aliphatic Hydrocarbon	64742-47-8		0.01664	
		Anionic Polymer	N/A		0.01664	
		Water	7732-18-5		0.00878	
		Oxyalkylated Alcohol	68002-97-1		0.00277	
		Polyol Ester	N/A		0.00277	
		Acrylic Polymer	28205-96-1		0.00146	
		Sodium Salt of Phosphate Ester	68131-72-6		0.00146	
		Water	7732-18-5		0.00105	
		Polyglycol Ester	N/A		0.00055	
		WATER	7732-18-5		0.00015	
		Alcohol Ethoxylate Surfactants	N/A		0.00013	
		TRADE SECRET	N/A		0.00010	
		n-olefins	N/A		0.00007	
		Tetrasodium Ethylenediaminetetraacetate	64-02-8		0.00006	
		Propargyl Alcohol	107-19-7		0.00005	
		METHANOL	67-56-1		0.00003	
		ISOPROPANOL	67-63-0		0.00003	
		Water	7732-18-5			
		Surfactant	N/A			
		Cinnamic Aldehyde	104-55-2			
		Acetic Acid	64-19-7			
		Buffer	N/A			

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

8) Frac the MISSISSIPPI (Stage 1) as follows using the chemical concentrations below:

	Surfactant (gpt)	ClO ₂ (ppm)	Scale Inhibitor (gpt)
Archer/Cim		2-3	0.1

NOTE: Pump FR as required to obtain minimum rate of 75 bpm. DO NOT EXCEED 0.75 gal/1000 concentration of FR without prior discussion with engineer.

STAGE 1								
Port @ 8,910'								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	9000	213					2.1
Slickwater	100	4800	114	40/70	0.25	Garnet	1200	1.1
Slickwater	100	2400	57					0.6
Slickwater	100	10600	252	40/70	0.50	Genoa	5300	2.5
Slickwater	100	5300	126					1.3
Slickwater	100	10133	241	40/70	0.75	Genoa	7600	2.4
Slickwater	100	5067	121					1.2
Slickwater	100	5900	140	40/70	1.00	Genoa	5900	1.4
Slickwater	100	2950	70					0.7
Slickwater	100	3500	83	40/70	1.00	Garnet	3500	0.8
Slickwater	100	12607	300					3.0
TOTAL		73,007	1,737				23,500	18.1
							4700	

Frac the MISSISSIPPI (Stage 2) as follows:

Drop 2.250" ball. Reduce rate to 5-10bpm as +/- 197 bbls (50 bbls before ball seats), 247.9 bbls to sleeve

STAGE 2								
Port @ 8,764'								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	11100	263					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13000	310	40/70	0.50	Genoa	6500	3.1
Slickwater	100	6500	155					1.5
Slickwater	100	12533	298	40/70	0.75	Genoa	9400	3.0
Slickwater	100	6267	149					1.5
Slickwater	100	7200	171	40/70	1.00	Genoa	7200	1.7
Slickwater	100	3600	86					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	12511	298					3.0
TOTAL		86,861	2,066				29,000	21.4
							5900	



Frac the MISSISSIPPI (Stage 3) as follows:

Drop 2.313" ball. Reduce rate to 5-10bpm as +/- 194 bbls (50 bbls before ball seats),
244.9 bbls to sleeve

STAGE 3								
Port @ 8,572 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	14900	355					3.5
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	1.9
Slickwater	100	4000	95					1.0
Slickwater	100	17600	419	40/70	0.50	Genoa	8800	4.2
Slickwater	100	8800	210					2.1
Slickwater	100	16933	403	40/70	0.75	Genoa	12700	4.0
Slickwater	100	8467	202					2.0
Slickwater	100	9800	233	40/70	1.00	Genoa	9800	2.3
Slickwater	100	4900	117					1.2
Slickwater	100	5900	140	40/70	1.00	Garnet	5900	1.4
Slickwater	100	12387	295					2.9
TOTAL		112,187	2,671				39,200	27.2
							7900	

Frac the MISSISSIPPI (Stage 4) as follows:

Drop 2.375" ball. Reduce rate to 5-10bpm as +/- 193 bbls (50 bbls before ball seats),
243.4 bbls to sleeve

STAGE 4								
Port @ 8,472 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	7600	181					1.8
Slickwater	100	4000	95	40/70	0.25	Garnet	1000	1.0
Slickwater	100	2000	48					0.5
Slickwater	100	9000	214	40/70	0.50	Genoa	4500	2.1
Slickwater	100	4500	107					1.1
Slickwater	100	8667	206	40/70	0.75	Genoa	6500	2.1
Slickwater	100	4333	103					1.0
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1.2
Slickwater	100	2500	60					0.6
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	0.7
Slickwater	100	12321	293					2.9
TOTAL		63,421	1,510				20,000	15.6
							4000	

Frac the MISSISSIPPI (Stage 5) as follows:

Drop 2.438" ball. Reduce rate to 5-10bpm as +/- 191 bbls (50 bbls before ball seats),
241.1 bbls to sleeve

STAGE 5								
Port @ 8,325 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	268					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13400	319	40/70	0.50	Genoa	6700	3.2
Slickwater	100	6700	160					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4500	107	40/70	1.00	Garnet	4500	1.1
Slickwater	100	12226	291					2.9
TOTAL		87,926	2,093				29,700	21.4
							6000	

Frac the MISSISSIPPI (Stage 6) as follows:

Drop 2.500" ball. Reduce rate to 5-10bpm as +/- 188 bbls (50 bbls before ball seats),
238.8 bbls to sleeve

STAGE 6								
Port @ 8,179 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	267					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13200	314	40/70	0.50	Genoa	6600	3.1
Slickwater	100	6600	157					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	12130	289					2.9
TOTAL		87,430	2,079				29,500	21.3
							5900	

Frac the MISSISSIPPI (Stage 7) as follows:

Drop 2.563" ball. Reduce rate to 5-10bpm as +/- 186 bbls (50 bbls before ball seats),
236.6

STAGE 7								
Port @ 8,034 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11100	263					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13000	310	40/70	0.50	Genoa	6500	3.1
Slickwater	100	6500	155					1.5
Slickwater	100	12533	298	40/70	0.75	Genoa	9400	3.0
Slickwater	100	6267	149					1.5
Slickwater	100	7200	171	40/70	1.00	Genoa	7200	1.7
Slickwater	100	3600	86					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	12036	287					2.9
TOTAL		86,136	2,049				29,000	21.0
							5900	

Frac the MISSISSIPPI (Stage 8) as follows:

Drop 2.625" ball. Reduce rate to 5-10bpm as +/- 184 bbls (50 bbls before ball seats),
234.3

STAGE 8								
Port @ 7,889 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11100	263					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13000	310	40/70	0.50	Genoa	6500	3.1
Slickwater	100	6500	155					1.5
Slickwater	100	12533	298	40/70	0.75	Genoa	9400	3.0
Slickwater	100	6267	149					1.5
Slickwater	100	7200	171	40/70	1.00	Genoa	7200	1.7
Slickwater	100	3600	86					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	11942	284					2.8
TOTAL		86,042	2,047				29,000	20.9
							5900	

Frac the MISSISSIPPI (Stage 9) as follows:

Drop 2.688" ball. Reduce rate to 5-10bpm as +/- 182 bbls (50 bbls before ball seats).

232.1

STAGE 9								
Port @ 7,743 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	268					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13400	319	40/70	0.50	Genoa	6700	3.2
Slickwater	100	6700	160					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4500	107	40/70	1.00	Garnet	4500	1.1
Slickwater	100	11847	282					2.8
TOTAL		87,547	2,084				29,700	21.3
							6000	

Frac the MISSISSIPPI (Stage 10) as follows:

Drop 2.750" ball. Reduce rate to 5-10bpm as +/- 179 bbls (50 bbls before ball seats).

229.8

STAGE 10								
Port @ 7,596 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	267					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13200	314	40/70	0.50	Genoa	6600	3.1
Slickwater	100	6600	157					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	11751	280					2.8
TOTAL		87,051	2,070				29,500	21.2
							5900	

Frac the MISSISSIPPI (Stage 11) as follows:

Drop 2.813" ball. Reduce rate to 5-10bpm as +/- 177 bbls (50 bbls before ball seats).

227.5

STAGE 11								
Port @ 7,449 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	14700	350					3.5
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	1.9
Slickwater	100	4000	95					1.0
Slickwater	100	17400	414	40/70	0.50	Genoa	8700	4.1
Slickwater	100	8700	207					2.1
Slickwater	100	16667	397	40/70	0.75	Genoa	12500	4.0
Slickwater	100	8333	198					2.0
Slickwater	100	9600	229	40/70	1.00	Genoa	9600	2.3
Slickwater	100	4800	114					1.1
Slickwater	100	5800	138	40/70	1.00	Garnet	5800	1.4
Slickwater	100	11655	278					2.8
TOTAL		110,155	2,623				38,600	26.7
							7800	

Frac the MISSISSIPPI (Stage 12) as follows:

Drop 2.875" ball. Reduce rate to 5-10bpm as +/- 174 bbls (50 bbls before ball seats).
224.6

STAGE 12								
Port @ 7,263 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	10900	259					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	12800	305	40/70	0.50	Genoa	6400	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	12267	292	40/70	0.75	Genoa	9200	2.9
Slickwater	100	6133	146					1.5
Slickwater	100	7100	169	40/70	1.00	Genoa	7100	1.7
Slickwater	100	3550	85					0.8
Slickwater	100	4300	102	40/70	1.00	Garnet	4300	1.0
Slickwater	100	11534	275					2.7
TOTAL		84,484	2,011				28,500	20.6
							5800	

Frac the MISSISSIPPI (Stage 13) as follows:

Drop 2.938" ball. Reduce rate to 5-10bpm as +/- 172 bbls (50 bbls before ball seats).
222.4

STAGE 13								
Port @ 7,121 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	10900	259					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	12800	305	40/70	0.50	Genoa	6400	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	12400	295	40/70	0.75	Genoa	9300	3.0
Slickwater	100	6200	148					1.5
Slickwater	100	7100	169	40/70	1.00	Genoa	7100	1.7
Slickwater	100	3550	85					0.8
Slickwater	100	4300	102	40/70	1.00	Garnet	4300	1.0
Slickwater	100	11442	272					2.7
TOTAL		84,592	2,014				28,600	20.6
							5800	

Frac the MISSISSIPPI (Stage 14) as follows:

Drop 3.000" ball. Reduce rate to 5-10bpm as +/- 170 bbls (50 bbls before ball seats).
220.9

STAGE 14								
Port @ 7,021 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	7900	186					1.9
Slickwater	100	4400	105	40/70	0.25	Garnet	1100	1.0
Slickwater	100	2200	52					0.5
Slickwater	100	9200	219	40/70	0.50	Genoa	4600	2.2
Slickwater	100	4600	110					1.1
Slickwater	100	8800	210	40/70	0.75	Genoa	6600	2.1
Slickwater	100	4400	105					1.0
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1.2
Slickwater	100	2550	61					0.6
Slickwater	100	3100	74	40/70	1.00	Garnet	3100	0.7
Slickwater	100	11377	271					2.7
TOTAL		64,127	1,525				20,500	15.7
							4200	

Frac the MISSISSIPPI (Stage 15) as follows:

Drop 3.063" ball. Reduce rate to 5-10bpm as +/- 169 bbls (50 bbls before ball seats).

219.3

STAGE 15								
Port @ 6,921 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	14300	339					3.4
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	1.8
Slickwater	100	3800	90					0.9
Slickwater	100	16800	400	40/70	0.50	Genoa	8400	4.0
Slickwater	100	8400	200					2.0
Slickwater	100	16267	387	40/70	0.75	Genoa	12200	3.9
Slickwater	100	8133	194					1.9
Slickwater	100	9400	224	40/70	1.00	Genoa	9400	2.2
Slickwater	100	4700	112					1.1
Slickwater	100	5600	133	40/70	1.00	Garnet	5600	1.3
Slickwater	100	11311	269					2.7
TOTAL		106,811	2,542				37,500	25.9
							7500	

Frac the MISSISSIPPI (Stage 16) as follows:

Drop 3.125" ball. Reduce rate to 5-10bpm as +/- 165 bbls (50 bbls before ball seats).

215.7

STAGE 16								
Port @ 6,687 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	268					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13400	319	40/70	0.50	Genoa	6700	3.2
Slickwater	100	6700	160					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4500	107	40/70	1.00	Garnet	4500	1.1
Slickwater	100	11159	266					2.7
TOTAL		86,859	2,068				29,700	21.2
							6000	

Frac the MISSISSIPPI (Stage 17) as follows:

Drop 3.188" ball. Reduce rate to 5-10bpm as +/- 163 bbls (50 bbls before ball seats).

213.6

STAGE 17								
Port @ 6,551 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	14100	334					3.3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	1.8
Slickwater	100	3800	90					0.9
Slickwater	100	16600	395	40/70	0.50	Genoa	8300	4.0
Slickwater	100	8300	198					2.0
Slickwater	100	15867	378	40/70	0.75	Genoa	11900	3.8
Slickwater	100	7933	189					1.9
Slickwater	100	9200	219	40/70	1.00	Genoa	9200	2.2
Slickwater	100	4600	110					1.1
Slickwater	100	5500	131	40/70	1.00	Garnet	5500	1.3
Slickwater	100	11071	264					2.6
TOTAL		105,071	2,500				36,800	25.5
							7400	

Frac the MISSISSIPPI (Stage 18) as follows:

Drop 3.250" ball. Reduce rate to 5-10bpm as +/- 161 bbls (50 bbls before ball seats).
211.3

STAGE 18								
Port @ 6,404 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	7600	181					1.8
Slickwater	100	4000	95	40/70	0.25	Garnet	1000	1.0
Slickwater	100	2000	48					0.5
Slickwater	100	9000	214	40/70	0.50	Genoa	4500	2.1
Slickwater	100	4500	107					1.1
Slickwater	100	8667	206	40/70	0.75	Genoa	6500	2.1
Slickwater	100	4333	103					1.0
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1.2
Slickwater	100	2500	60					0.6
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	0.7
Slickwater	100	10975	261					2.6
TOTAL		62,075	1,478				20,000	15.3
							4000	

Frac the MISSISSIPPI (Stage 19) as follows:

Drop 3.313" ball. Reduce rate to 5-10bpm as +/- 159 bbls (50 bbls before ball seats).
209.0

STAGE 19								
Port @ 6,257 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	267					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13200	314	40/70	0.50	Genoa	6600	3.1
Slickwater	100	6600	157					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	10879	259					2.6
TOTAL		86,179	2,050				29,500	21.0
							5900	

Frac the MISSISSIPPI (Stage 20) as follows:

Drop 3.375" ball. Reduce rate to 5-10bpm as +/- 156 bbls (50 bbls before ball seats).
206.8

STAGE 20								
Port @ 6,115 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	10900	259					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	12800	305	40/70	0.50	Genoa	6400	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	12400	295	40/70	0.75	Genoa	9300	3.0
Slickwater	100	6200	148					1.5
Slickwater	100	7100	169	40/70	1.00	Genoa	7100	1.7
Slickwater	100	3550	85					0.8
Slickwater	100	4300	102	40/70	1.00	Garnet	4300	1.0
Slickwater	100	10787	257					2.6
TOTAL		83,937	1,998				28,600	20.5
							5800	

Frac the MISSISSIPPI (Stage 21) as follows:

Drop 3.438" ball. Reduce rate to 5-10bpm as +/- 154 bbls (50 bbls before ball seats).
204.6

STAGE 21								
Port @ 5,969 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	268					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13400	319	40/70	0.50	Genoa	6700	3.2
Slickwater	100	6700	160					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4500	107	40/70	1.00	Garnet	4500	1.1
Slickwater	100	10692	255					2.5
TOTAL		86,392	2,056				29,700	21.0
							6000	

Frac the MISSISSIPPI (Stage 22) as follows:

Drop 3.500" ball. Reduce rate to 5-10bpm as +/- 152 bbls (50 bbls before ball seats).
202.3

STAGE 22								
Port @ 5,822 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11300	267					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13200	314	40/70	0.50	Genoa	6600	3.1
Slickwater	100	6600	157					1.6
Slickwater	100	12800	305	40/70	0.75	Genoa	9600	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	1.8
Slickwater	100	3700	88					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	10596	252					2.5
TOTAL		85,896	2,043				29,500	20.9
							5900	

Frac the MISSISSIPPI (Stage 23) as follows:

Drop 3.563" ball. Reduce rate to 5-10bpm as +/- 150 bbls (50 bbls before ball seats).
200.0

STAGE 23								
Port @ 5,675 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11200	265					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13200	314	40/70	0.50	Genoa	6600	3.1
Slickwater	100	6600	157					1.6
Slickwater	100	12667	302	40/70	0.75	Genoa	9500	3.0
Slickwater	100	6333	151					1.5
Slickwater	100	7300	174	40/70	1.00	Genoa	7300	1.7
Slickwater	100	3650	87					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	10501	250					2.5
TOTAL		85,351	2,031				29,300	20.8
							5900	



Frac the MISSISSIPPI (Stage 24) as follows:

Drop 3.625" ball. Reduce rate to 5-10bpm as +/- 147 bbls (50 bbls before ball seats).
197.8

STAGE 24								
Port @ 5,535 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	10900	259					2.6
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	12800	305	40/70	0.50	Genoa	6400	3.0
Slickwater	100	6400	152					1.5
Slickwater	100	12267	292	40/70	0.75	Genoa	9200	2.9
Slickwater	100	6133	146					1.5
Slickwater	100	7100	169	40/70	1.00	Genoa	7100	1.7
Slickwater	100	3550	85					0.8
Slickwater	100	4300	102	40/70	1.00	Garnet	4300	1.0
Slickwater	100	10410	248					2.5
TOTAL		83,360	1,984				28,500	20.3
							5800	

Frac the MISSISSIPPI (Stage 25) as follows:

Drop 3.688" ball. Reduce rate to 5-10bpm as +/- 145 bbls (50 bbls before ball seats).
195.6

STAGE 25								
Port @ 5,390 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	11200	265					2.7
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1.4
Slickwater	100	3000	71					0.7
Slickwater	100	13200	314	40/70	0.50	Genoa	6600	3.1
Slickwater	100	6600	157					1.6
Slickwater	100	12667	302	40/70	0.75	Genoa	9500	3.0
Slickwater	100	6333	151					1.5
Slickwater	100	7300	174	40/70	1.00	Genoa	7300	1.7
Slickwater	100	3650	87					0.9
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1.0
Slickwater	100	10315	246					2.5
TOTAL		85,165	2,026				29,300	20.7
							5900	

Frac the MISSISSIPPI (Stage 26) as follows:

Drop 3.750" ball. Reduce rate to 5-10bpm as +/- 142 bbls (50 bbls before ball seats).
192.6

STAGE 26								
Port @ 5,196 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	500	12					0.6
Slickwater	100	28600	680					6.8
Slickwater	100	15200	362	40/70	0.25	Garnet	3800	3.6
Slickwater	100	7600	181					1.8
Slickwater	100	33800	805	40/70	0.50	Genoa	16900	8.0
Slickwater	100	16900	402					4.0
Slickwater	100	32533	775	40/70	0.75	Genoa	24400	7.7
Slickwater	100	16267	387					3.9
Slickwater	100	18800	448	40/70	1.00	Genoa	18800	4.5
Slickwater	100	9400	224					2.2
Slickwater	100	11300	269	40/70	1.00	Garnet	11300	2.7
Slickwater	100	10188	243					2.4
TOTAL		201,088	4,787				75,200	48.3
							15100	

TOTAL FRAC JOB VOLUMES: 56,141 bbls 807,900 lbs, Prop
 TOTAL VOLUMES w/ ball displacement: 61,654 bbls 162,900 lbs, Garnet

Directional Survey Calculations	Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)	FNL	FSL	FWL	FEL
									5070	200	3183	2091
SHL	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5070	200	3183	2091
BHL	8976	92.52	3.77	4438.67	4713.09	567.96	4713.09	0.00	366	4905	3842	1427
Miss Entry	4764	65.99	0.31	4414.16	510.94	549.97	510.94	10.14	4567	704	3743	1530
Top Port	5196	88.62	0.12	4468.70	935.61	553.91	935.61	2.43	4143	1128	3755	1518
Bottom Port	8910	92.51	3.77	4441.57	4647.30	563.62	4647.30	0.41	431	4840	3836	1433

Survey Points	NW Corner XY Coord	X	Y	Surface XY	X	Y	m				
							North Line slope	East Line slope	South Line slope	West Line slope	
		2155440	198528		2158719.8	193511.4		0.0161382	-0.0202882	0.0130855	-0.0192088
	SW Corner XY Coord	2155541	193270								
	NE Corner XY Coord	2160707	198813								
	SE Corner XY Coord	2160814	193339								

Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (deg)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)	FNL	FSL	FWL	FEL
								5070	200	3183	2091
0	0.0	0	0	0	0	0	0	5070	200	3183	2091
254	0.3	142.77	254.00	-0.53	0.40	-0.53	0.12	5070	199	3184	2090
523	1.7	142.77	522.95	-4.27	3.24	-4.27	0.52	5074	195	3187	2088
715	2	142.77	714.85	-9.20	6.99	-9.20	0.16	5079	191	3190	2084
728	1.79	142.77	727.84	-9.54	7.25	-9.54	1.62	5079	190	3191	2084
1231	1.06	121.73	1230.69	-18.25	15.96	-18.25	0.18	5088	181	3199	2075
1661	0.49	229.99	1660.66	-21.52	17.94	-21.52	0.30	5091	178	3201	2073
1841	3.5	116	1840.55	-24.43	22.29	-24.43	2.07	5094	175	3205	2069
1961	4.06	91.64	1960.30	-26.15	29.83	-26.15	1.40	5096	173	3213	2061
2022	4.56	87.89	2021.13	-26.13	34.41	-26.13	0.94	5096	173	3217	2057
2082	6.47	90.31	2080.85	-26.06	40.17	-26.06	3.21	5096	173	3223	2051
2142	7.9	96.43	2140.38	-26.54	47.65	-26.54	2.70	5097	173	3231	2044
2204	9.21	104.25	2201.69	-28.23	56.70	-28.23	2.82	5099	171	3240	2035
2265	11.13	105.56	2261.73	-31.02	67.10	-31.02	3.17	5102	168	3250	2024
2326	12.63	106.98	2321.42	-34.54	79.15	-34.54	2.51	5105	164	3262	2012
2387	14.38	109.29	2380.73	-38.99	92.68	-38.99	3.00	5110	160	3275	1999
2447	15.58	110.2	2438.69	-44.24	107.27	-44.24	2.04	5115	154	3290	1984
2507	16.24	109.9	2498.39	-49.87	122.72	-49.87	1.11	5121	148	3305	1969
2567	16.62	109.52	2553.94	-55.60	138.70	-55.60	0.66	5127	142	3321	1953
2628	17.71	109.26	2612.22	-61.57	155.68	-61.57	1.79	5134	136	3338	1936
2689	18.88	110.77	2670.14	-68.13	173.67	-68.13	2.07	5140	129	3356	1918
2753	18.29	108.83	2730.80	-75.05	192.86	-75.05	1.34	5148	122	3375	1899
2815	18.38	108.86	2789.65	-81.35	211.32	-81.35	0.15	5154	116	3393	1881
2878	18.63	109.55	2849.40	-87.93	230.20	-87.93	0.53	5161	109	3412	1862
2942	17.93	109.45	2910.17	-94.63	249.12	-94.63	1.09	5168	102	3431	1844
3005	17.81	111.7	2970.13	-101.42	267.22	-101.42	1.11	5175	95	3449	1826
3068	17.38	109.98	3030.18	-108.20	285.01	-108.20	1.07	5182	88	3466	1808
3130	17.11	110.09	3089.39	-114.49	302.28	-114.49	0.44	5189	81	3484	1791
3193	17.31	109.73	3149.57	-120.84	319.81	-120.84	0.36	5196	75	3501	1773
3256	17.39	111.23	3209.71	-127.41	337.40	-127.41	0.72	5202	68	3518	1756
3319	17.76	113.58	3269.77	-134.67	354.99	-134.67	1.27	5210	60	3536	1738
3382	16.27	111.21	3330.01	-141.70	372.02	-141.70	2.61	5217	53	3553	1722
3446	15.17	107.9	3391.61	-147.52	388.35	-147.52	2.22	5223	47	3569	1705
3477	14.75	107.42	3421.56	-149.95	395.97	-149.95	1.41	5226	45	3577	1698
3509	14.44	104.98	3452.53	-152.20	403.71	-152.20	2.15	5228	42	3584	1690
3540	14.87	95.41	3482.53	-153.57	411.41	-153.57	7.92	5230	41	3592	1682
3572	15.84	83.95	3513.39	-153.50	419.84	-153.50	9.94	5230	41	3600	1674
3604	17.2	74.38	3544.07	-151.77	428.74	-151.77	9.49	5228	42	3609	1665
3636	18.31	66.45	3574.55	-148.48	437.91	-148.48	8.31	5225	46	3618	1656
3666	18.86	60.11	3602.99	-144.18	446.43	-144.18	6.98	5221	50	3627	1647
3697	19.2	53.02	3632.30	-138.62	454.85	-138.62	7.53	5215	55	3636	1639
3729	19.39	45.84	3662.51	-131.75	462.87	-131.75	7.43	5209	62	3644	1631
3761	19.52	39.53	3692.69	-123.93	470.08	-123.93	6.58	5201	70	3651	1623
3793	19.52	34.38	3722.85	-115.39	476.50	-115.39	5.38	5193	78	3658	1617
3825	19.64	28.96	3753.00	-106.27	482.13	-106.27	5.69	5184	87	3664	1611
3857	20.02	24.43	3783.11	-96.58	487.00	-96.58	4.95	5174	97	3669	1606
3888	20.57	21.5	3812.18	-86.68	491.19	-86.68	3.73	5164	107	3673	1601
3920	21.61	19.15	3842.04	-75.88	495.18	-75.88	4.19	5153	117	3677	1597
3952	23.46	16.97	3871.59	-64.22	498.97	-64.22	6.34	5142	129	3681	1593
3983	26.18	15.49	3899.73	-51.73	502.60	-51.73	9.00	5129	141	3685	1589
4014	28.41	15.53	3927.27	-38.03	506.40	-38.03	7.19	5116	155	3689	1585
4045	30.51	15.28	3954.27	-23.33	510.45	-23.33	6.79	5101	170	3693	1581
4076	31.85	15.45	3980.79	-7.86	514.70	-7.86	4.33	5086	185	3698	1576
4108	33.04	14.81	4007.79	8.71	519.18	8.71	3.87	5069	202	3703	1571
4139	33.89	14.18	4033.65	25.26	523.46	25.26	2.96	5053	218	3707	1567
4170	35.12	12.21	4059.20	42.36	527.46	42.36	5.36	5036	235	3712	1562
4202	37.39	9.59	4085.00	60.94	531.03	60.94	8.59	5017	254	3716	1558
4234	40.06	7.04	4109.97	80.74	533.91	80.74	9.72	4997	274	3719	1555
4265	43.4	5.58	4133.10	101.25	536.17	101.25	11.22	4977	294	3722	1552
4297	46.48	4.95	4155.75	123.76	538.24	123.76	9.72	4954	317	3724	1550
4328	49.09	5.09	4176.58	146.63	540.25	146.63	8.43	4932	339	3727	1547
4359	51.05	4.88	4196.47	170.31	542.32	170.31	6.34	4908	363	3729	1545
4390	52.53	4.5	4215.65	194.58	544.31	194.58	4.87	4884	387	3731	1542
4422	54.23	3.19	4234.73	220.21	546.03	220.21	6.25	4858	413	3734	1540
4453	56.33	1.85	4252.39	245.66	547.14	245.66	7.65	4833	438	3735	1539
4485	57.57	1.09	4269.84	272.47	547.83	272.47	4.36	4806	465	3736	1537
4517	57.67	1.13	4286.98	299.49	548.35	299.49	0.33	4779	492	3738	1536
4548	57.69	0.82	4303.55	325.69	548.80	325.69	0.85	4753	518	3738	1535

Top of Tangent @ 4515'

Btm of Tangent
@ 4675'

Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (deg)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)				
								FNL	FSL	FWL	FEL
4579	57.48	0.84	4320.17	351.85	549.18	351.85	0.68	4727	544	3739	1534
4611	57.33	0.52	4337.41	378.81	549.50	378.81	0.96	4700	571	3740	1534
4642	57.24	0.33	4354.16	404.89	549.69	404.89	0.59	4674	598	3741	1533
4674	57.5	359.95	4371.42	431.84	549.76	431.84	1.29	4647	624	3741	1532
4705	60.05	0.07	4387.49	458.35	549.76	458.35	8.23	4620	651	3742	1532
4736	63.15	0.27	4402.23	485.61	549.84	485.61	10.02	4593	678	3743	1531
4768	66.4	0.32	4415.87	514.56	549.99	514.56	10.16	4564	707	3743	1530
4799	68.89	0.11	4427.66	543.23	550.10	543.23	8.06	4535	736	3744	1530
4831	71.37	0.46	4438.53	573.32	550.25	573.32	7.82	4505	766	3745	1529
4896	79.3	0.65	4454.97	636.15	550.86	636.15	12.20	4442	829	3747	1527
4926	83.98	0.72	4459.33	665.82	551.21	665.82	15.60	4413	858	3747	1526
4957	87.9	0.9	4461.53	696.73	551.85	696.73	12.66	4382	889	3748	1525
4987	88.81	0.99	4462.39	726.71	552.15	726.71	3.05	4352	919	3750	1524
5017	88.46	0.76	4463.10	756.70	552.60	756.70	1.40	4322	949	3751	1523
5047	88.11	0.65	4464.00	786.69	552.97	786.69	1.22	4292	979	3752	1522
5077	88.18	0.52	4464.97	816.67	553.28	816.67	0.49	4262	1009	3752	1521
5107	88.32	0.32	4465.89	846.65	553.50	846.65	0.81	4232	1039	3753	1520
5137	88.18	0.3	4466.81	876.64	553.66	876.64	0.47	4202	1069	3754	1519
5167	87.9	0.27	4467.83	906.62	553.81	906.62	0.94	4172	1099	3755	1518
5198	88.67	0.11	4468.76	937.61	553.91	937.61	2.54	4141	1130	3755	1518
5261	90.56	359.79	4469.18	1000.60	553.86	1000.60	3.04	4078	1193	3757	1517
5324	90.91	359.72	4468.37	1063.60	553.59	1063.60	0.57	4015	1256	3757	1516
5387	90.98	359.49	4467.34	1126.59	553.15	1126.59	0.38	3952	1319	3758	1515
5450	91.61	0.17	4465.91	1189.57	552.97	1189.57	1.47	3889	1382	3759	1514
5513	91.68	359.59	4464.10	1252.54	552.84	1252.54	0.93	3826	1445	3760	1512
5576	91.54	359.41	4462.33	1315.52	552.29	1315.52	0.36	3763	1508	3761	1512
5639	91.05	359.34	4460.91	1378.50	551.60	1378.50	0.79	3700	1571	3762	1511
5702	90.7	359.37	4459.95	1441.49	550.89	1441.49	0.56	3637	1634	3762	1511
5766	91.96	359.62	4458.46	1505.46	550.33	1505.46	2.01	3573	1698	3763	1510
5829	92.66	359.71	4455.92	1568.41	549.96	1568.41	1.12	3510	1761	3764	1509
5892	92.38	359.97	4453.15	1631.35	549.78	1631.35	0.61	3447	1824	3765	1508
5955	92.31	359.84	4450.57	1694.30	549.68	1694.30	0.23	3384	1887	3766	1507
6019	91.82	0.29	4448.27	1758.26	549.75	1758.26	1.04	3320	1951	3767	1505
6081	91.4	0.19	4446.53	1820.23	550.01	1820.23	0.70	3258	2013	3768	1504
6145	91.19	359.85	4445.08	1884.21	550.03	1884.21	0.62	3194	2077	3770	1502
6208	90.63	359.24	4444.08	1947.20	549.53	1947.20	1.31	3131	2140	3770	1502
6271	90.56	358.93	4443.43	2010.19	548.53	2010.19	0.50	3068	2203	3771	1501
6334	90.21	358.62	4443.00	2073.18	547.18	2073.18	0.74	3005	2266	3770	1501
6397	90.42	359.33	4442.66	2136.16	546.05	2136.16	1.18	2942	2329	3771	1501
6460	90.35	359.97	4442.23	2199.16	545.67	2199.16	1.02	2879	2392	3771	1500
6523	90.21	1.36	4441.92	2262.15	546.40	2262.15	2.22	2816	2455	3773	1498
6586	90.63	2.04	4441.46	2325.12	548.27	2325.12	1.27	2753	2518	3776	1495
6649	90.63	1.62	4440.77	2388.09	550.28	2388.09	0.67	2690	2581	3780	1492
6712	90.91	1.07	4439.92	2451.07	551.76	2451.07	0.98	2627	2644	3782	1489
6775	90.35	0.95	4439.23	2514.05	552.87	2514.05	0.91	2564	2707	3785	1487
6839	88.25	0.30	4440.01	2578.04	553.57	2578.04	3.43	2500	2771	3787	1485
6902	87.27	359.24	4442.48	2640.99	553.31	2640.99	2.29	2437	2834	3787	1484
6965	88.46	359.01	4444.82	2703.94	552.35	2703.94	1.92	2375	2897	3788	1483
7027	88.60	359.22	4446.41	2765.91	551.40	2765.91	0.41	2313	2958	3788	1483
7090	89.86	359.49	4447.26	2829	551	2828.90	2.05	2250	3021	3788	1483
7153	90.28	359.02	4447.18	2892	550	2891.89	1.00	2187	3085	3789	1482
7216	88.88	357.32	4447.64	2955	548	2954.85	3.50	2124	3147	3788	1483
7279	89.51	357.16	4448.53	3018	545	3017.77	1.03	2061	3210	3786	1485
7342	89.16	358.17	4449.26	3081	542	3080.72	1.70	1998	3273	3785	1486
7405	88.81	358.79	4450.38	3144	541	3143.68	1.13	1935	3336	3784	1486
7468	89.16	359.43	4451.49	3207	540	3206.67	1.16	1872	3399	3785	1486
7531	90.49	359.40	4451.68	3270	539	3269.66	2.11	1809	3462	3785	1485
7595	91.89	359.91	4450.36	3334	539	3333.65	2.33	1745	3526	3786	1484
7657	92.03	359.24	4448.24	3396	538	3395.61	1.10	1683	3588	3787	1484
7720	91.26	358.72	4446.43	3459	537	3458.57	1.47	1620	3651	3787	1484
7784	90.77	358.60	4445.29	3523	536	3522.54	0.79	1556	3715	3787	1484
7847	91.19	357.57	4444.22	3585	533	3585.50	1.77	1493	3778	3786	1485
7910	90.77	357.85	4443.14	3648	531	3648.44	0.80	1430	3841	3784	1486
7973	89.79	358.96	4442.83	3711	529	3711.41	2.35	1367	3904	3784	1486
8036	89.51	1.45	4443.21	3774	529	3774.40	3.98	1304	3967	3785	1485
8099	89.02	1.63	4444.02	3837	531	3837.38	0.83	1241	4030	3788	1482
8163	88.32	1.37	4445.51	3901	533	3901.34	1.17	1177	4094	3791	1479
8226	87.06	1.33	4448.05	3964	534	3964.27	2.00	1114	4157	3794	1476
8289	87.76	1.54	4450.89	4027	536	4027.18	1.16	1051	4220	3797	1473
8352	89.30	1.60	4452.51	4090	538	4090.14	2.45	988	4283	3800	1470
8415	89.44	1.38	4453.20	4153	539	4153.11	0.41	925	4346	3802	1467
8478	90.70	1.98	4453.13	4216	541	4216.08	2.22	862	4409	3805	1464
8540	92.03	3.51	4451.65	4278	544	4277.99	3.27	800	4471	3810	1460
8603	92.03	3.16	4449.42	4341	548	4340.84	0.56	738	4533	3814	1455
8666	90.56	2.85	4447.99	4404	551	4403.74	2.38	675	4596	3819	1450
8729	91.05	2.61	4447.11	4467	554	4466.66	0.87	612	4659	3823	1446
8792	91.12	2.38	4445.92	4530	557	4529.59	0.38	549	4722	3827	1442
8855	92.45	3.74	4443.95	4592	560	4592.47	3.02	486	4785	3832	1438
8916	92.52	3.77	4441.31	4653	564	4653.28	0.12	425	4846	3837	1432
8976	92.52	3.77	4438.67	4713	568	4713.09	0.00	366	4905	3842	1427

WESTFALL 3206 2-34H

WESTFALL 3306 1-3H

Section 34
32S 6W



Section 35
32S 6W

BHL: 8976'
-97.953814 37.209715
Bottom Perf: 8910'
-97.953824 37.209536

366' FNL

CAROTHERS 3206 2-34H

1427' FEL



Harper County

Section 3
33S 6W

Section 2
33S 6W

Top Perf: 5196'
-97.953594 37.199442

Miss Entry: 4764'
-97.953577 37.198287

EUGENE 3306 1-10H

CAROTHERS 3306 1-3H



EUGENE 3306 3-10H

EUGENE 3306 2-10H

Section 10
33S 6W



Actual Bottom-Hole Location of Carothers 3306 1-3H
T&R: 33S 6W
Section: 3, 1427' FEL & 366' FNL
-97.953814 37.209715

1 in = 667 ft

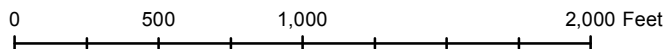


● Actual BH Location

* SandRidge Wells

--- Perf

□ Sections



Draftsman:

Dory Deines

Draft Date: 1/19/2015

Drawing Name/Number:

Addendum_Carothers 3306 1-3H.mxd

Coordinate System:

NAD 1927 State Plane
Kansas South FIPS: 1502